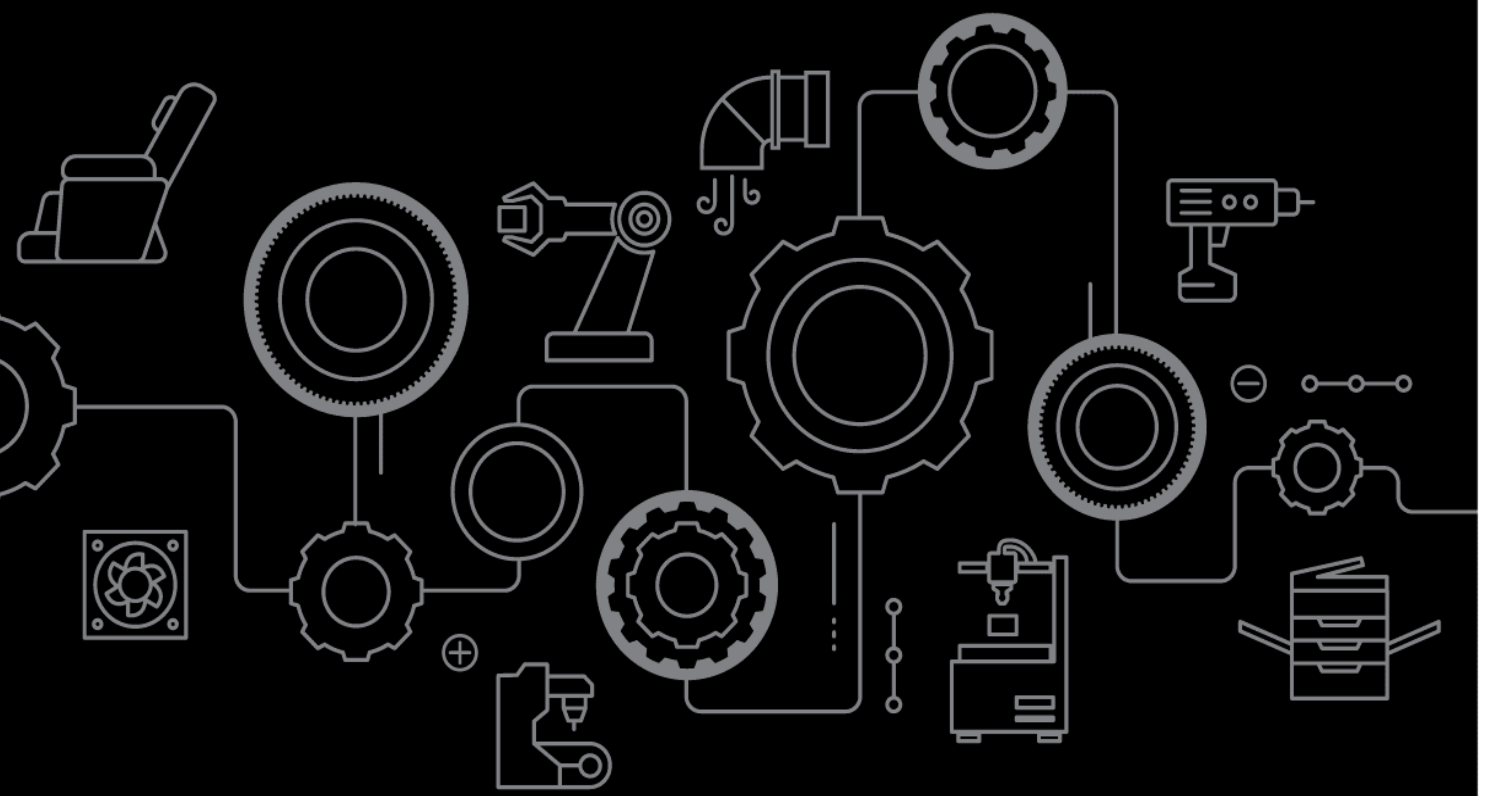
Bando Power Transmission Belts
Product Design Manual
(Latest Version for 2023)



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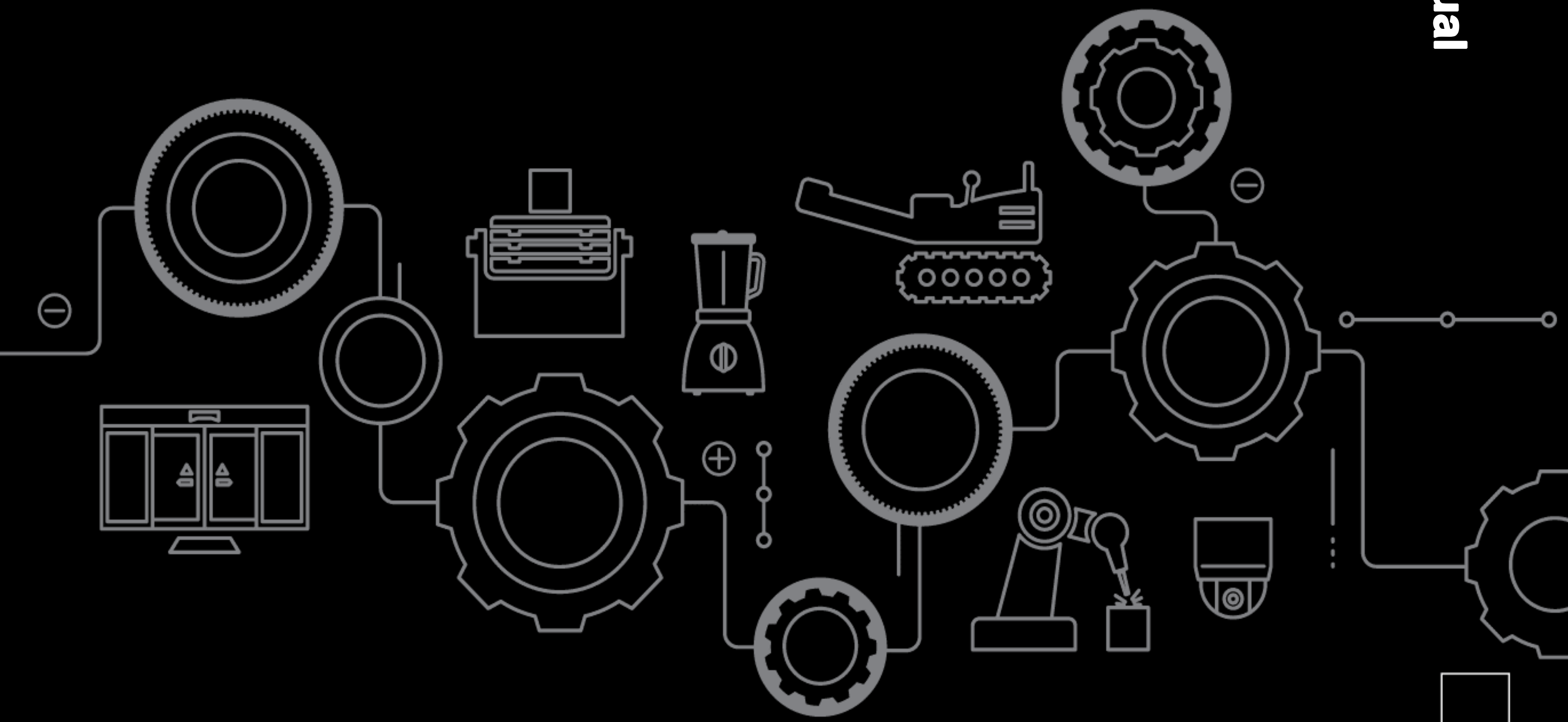
Product Design Manual

2023

Bando Chemical Industries, Ltd.



Bando Power Transmission Belts

https://www.bandogrp.com

2023.12

■If you have any inquiries, please contact the following distributors.

Authorised distributor:

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Na Pískách 731
CZ- 400 04 Trmice
Phone: +420 475 655 010
Email: info@tyma.cz
www.tyma.cz

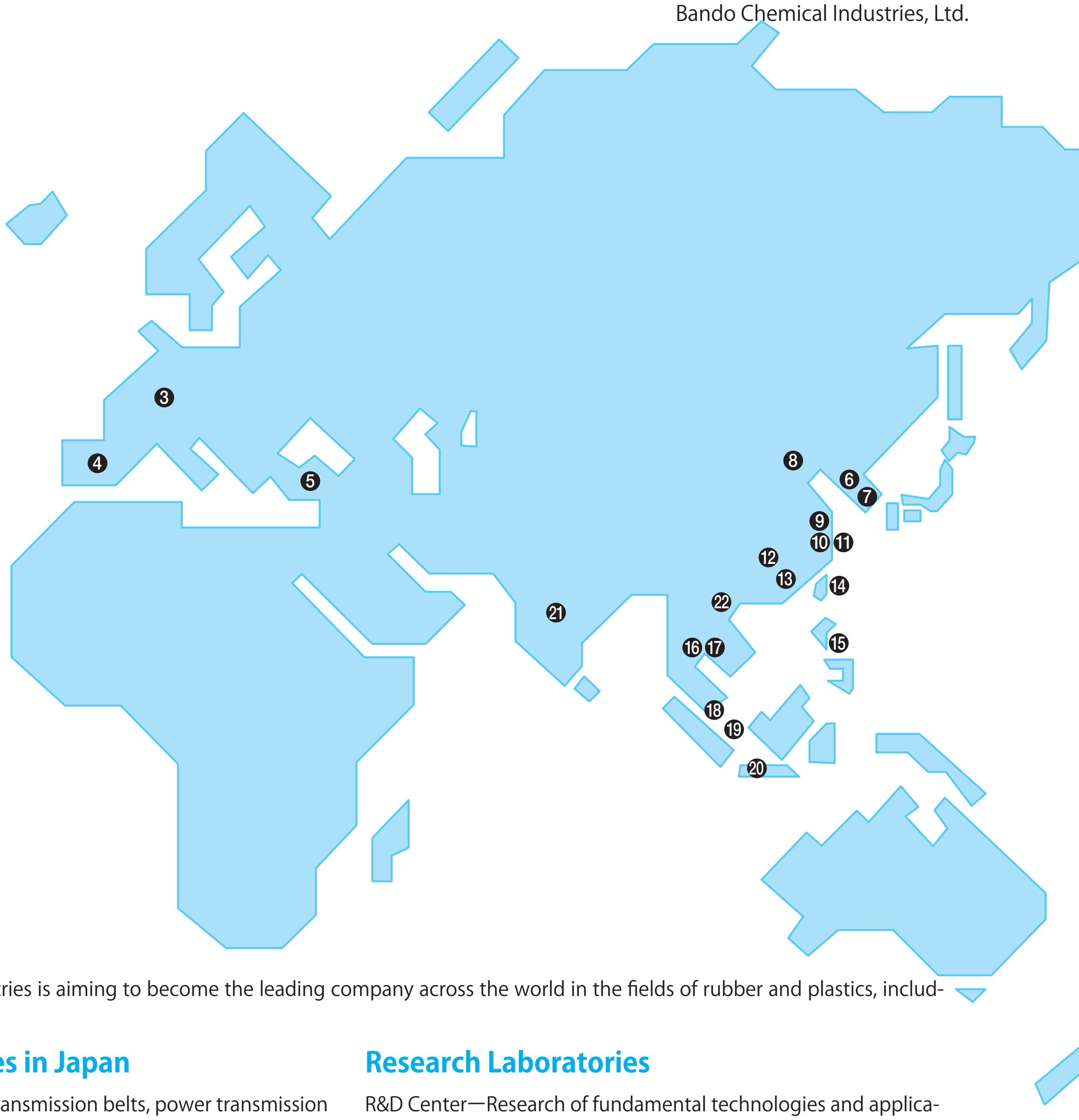
Bando Power Transmission Belts Product Design Manual

Greetings for the "Issuance of Bando Power Transmission Belts Product Design Manual"

Bando Chemical Industries was founded as a power transmission belt manufacturer in Kobe in 1906 and has met expectations of users through development of new technology and new products always ahead of the times and with reliable quality. We would like to express our heartfelt gratitude to you as it is all thanks to your long-standing favor and support.

In recent years, we have met the advanced and diversified needs of industry, advanced the development of various power transmission belts and related systems, and issued guides and design materials for each product unit. We would like to announce that we have decided to combine these materials and issue the "Bando Power Transmission Belts Product Design Manual" for you to be able to choose and design most suitable power transmission belts with ease from a comprehensive point of view. We would like to ask you to keep this Manual at hand and utilize it.

Bando Chemical Industries, Ltd.



Bando Chemical Industries is aiming to become the leading company across the world in the fields of rubber and plastics, including industrial belts.

Production Bases in Japan

Nankai Plant—Power transmission belts, power transmission systems, resin products, chemical products

Wakayama Plant—Power transmission belts, power transmission systems, polyurethane power transmission belts, resin products

Ashikaga Plant—OA/FA/Precision machinery and components, Rubber/polyurethane industrial products

Kakogawa Plant—Conveyor belts, rubber/polyurethane industrial products

Research Laboratories

R&D Center—Research of fundamental technologies and applications

Power Transmission Technical Research Center
—Research and development of power transmission belts and power transmission systems

“Worldwide Network of Trust”

Bando Chemical Industries gathers all employees’ ingenuity and power to keep on taking on challenges toward the future, pursues technological and product development that is friendly to people in the world and environment at all times, and works hard to achieve them.

North America

① **Bando USA, Inc.** (U.S.A.)
② **Bando Belting de Mexico, S.A. de C.V.** (Mexico)

Europe

③ **Bando Europe GmbH** (Germany)
④ **Bando Iberica, S. A.** (Spain)
⑤ **Bando Belt Manufacturing (Turkey), Inc.** (Turkey)

Asia

⑥ **Bando Jungkong Ltd.** (Korea)
⑦ **Bando Korea Co., Ltd.** (Korea)
⑧ **Bando Belt (Tianjin) Co., Ltd.** (China)
⑨ **Bando (Shanghai) Management Co., Ltd.** (China)

Asia

⑩ **Bando (Shanghai) Industry Equipment Element Co., Ltd.** (China)
⑪ **BL Autotec (Shanghai), Ltd.** (China)
⑫ **Bando Manufacturing (Dongguan) Co., Ltd.** (China)
⑬ **Bando Siix Ltd.** (Hong Kong)
⑭ **Sanwu Bando Inc.** (Taiwan)
⑮ **Philippine Belt Manufacturing Corp.** (Philippines)
⑯ **Bando Manufacturing (Thailand) Ltd.** (Thailand)
⑰ **Bando Asia & Pacific Co., Ltd.** (Thailand)
⑱ **Kee Fatt Industries Sdn. Bhd.** (Malaysia)
⑲ **Bando (Singapore) Pte. Ltd.** (Singapore)
⑳ **P.T. Bando Indonesia** (Indonesia)
㉑ **Bando (India) Private Ltd.** (India)
㉒ **Bando Manufacturing (Vietnam) Co., Ltd.** (Vietnam)

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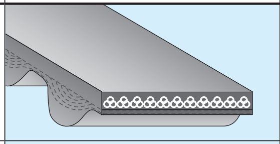
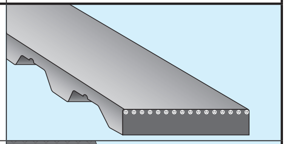
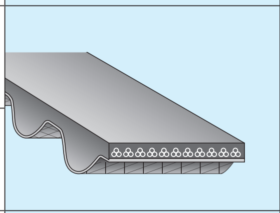
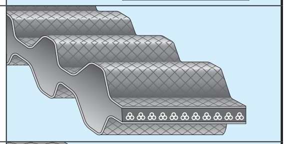
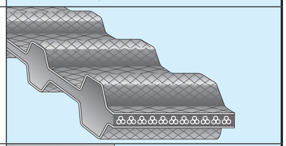
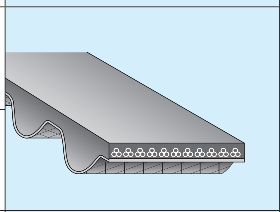
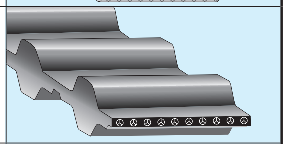
KPS II (King Power Synchronous Belt)	29		Bancollan Synchronous Belt	65	
Ceptor-X	42		Double-Sided STS	59	
Ceptor-VI	44		Double-Sided Synchronous Belt	76	
HP-STS (High-Performance Super-Torque Synchronous Belt) HP-HTS (High-Performance High-Torque Synchronous Belt)	48		Bancollan Double-Sided Synchronous Belt	76	
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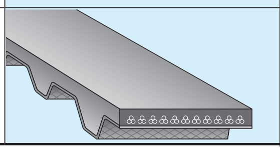
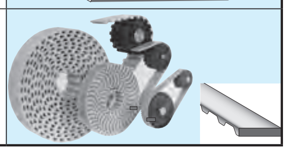
Synchronous Belt	64 65		Long Synchronous Belt Bancollan Long Synchronous Belt	199 200	
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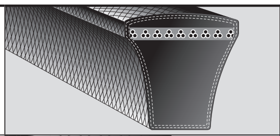
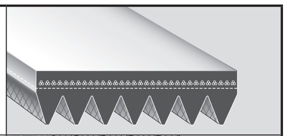
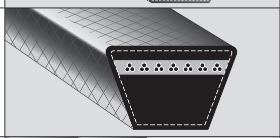
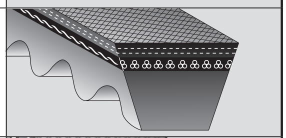
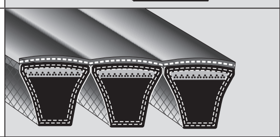
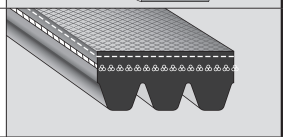
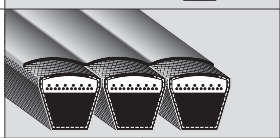
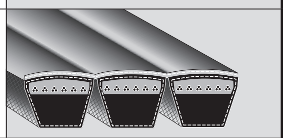
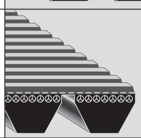
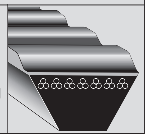
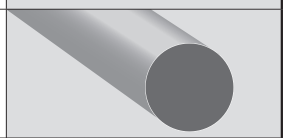
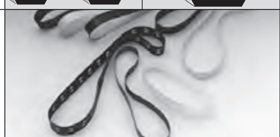
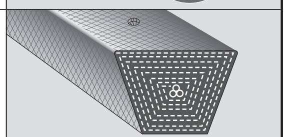
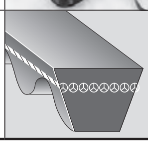
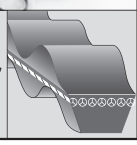
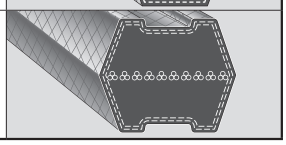
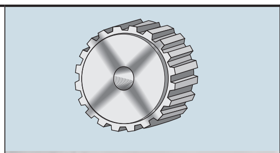
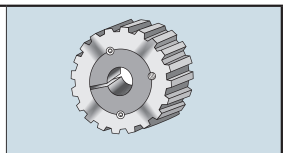
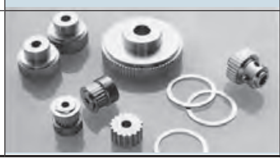
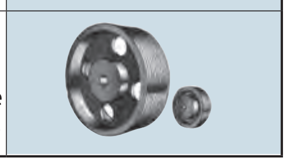
Power Ace Energy-Saving Power Ace	225 224		Bancollan Polybanrope	274	
V-Belt Red Standard Energy-Saving Red	231 224		Power Ace Cog	227	
Power Scrum (Power Ace type)	228		Rib Ace 2	236	
Power Ace Aramid Combo	229		Power Scrum (V-belt type)	234	
Banflescrum Banflex	279	 	Bancollan round belt Bancord round belt	297 302	
PS Belt	318		Sunrope (open end)	-	
Bancollan V-Belt (VC-DC)	293	 	Double-sided V-belt	-	
Pulleys for General-Purpose Power Transmission Belts					
STS pulley Synchronous Pulleys (shaft-hole-machined type) (rod-shaped pulley) HTS pulley (shaft-hole-machined type)	131 167		TL-STS pulley TL synchronous pulley With BAN-LOCK	143 169	
Synchronous pulley (Type XL) (molded product / sintered alloy)	178		TL Power Ace pulley (bushing type) Power Ace pulley (shaft-hole-machined type)	Refer to the separate booklet.	

Required Quality Communication Form for Power Transmission Belt (Information Necessary for Belt Design)

When you need calculation for power transmission belt design, please check the following listed items and contact us.

Machinery name		Section where the belt is to be used	
Driving machine characteristics	1. Standard motor (AC motor (normal torque / squirrel-cage type / synchronous transmission) / DC motor (shunt-wound)) Engine with two or more cylinders		
	2. Special motor (AC motor (high torque / single-phase / series-wound) / DC motor (series-wound / shunt-wound)) Single-cylinder engine / line shaft / clutch		
Driven power (If unclear, enter driving power)	Normal ________ (kW, W, kgf•m, kgf•cm Max. ________ PS, N•m, N•cm)		
Driving pulley dia.	Outside dia. ________ ± ________ mm Pitch dia. No. of teeth of pulley ________		
Driving pulley revolution	________ rpm		
Driven pulley dia.	Outside dia. ________ ± ________ mm Pitch dia. No. of teeth of pulley ________		
Driven pulley revolution	________ rpm ± ________ rpm		
Allowable pulley width	________ mm		
Center distance	________ mm ± ________ mm		
Operating time	1. Intermittent use (3 to 5 hours/day) 2. Normal use (8 to 10 hours/day) 3. Continuous use (16 to 24 hours/day)	Use of idler pulley	Use / Not use (inside / outside) (slack side / tight side)
Requirement characteristics	Vertical shaft power transmission / Fixed pulley diameter / Static electricity prevention / Electrical insulation / Water resistance Humidity resistance / Oil resistance (mist form / liquid form) / Dust particle resistance / Low noise Low speed / For positioning / With reciprocating motions / For food conveyance / For conveyance For high load / Multi-axis power transmission / With idler pulley / Fixed center distance Long span (power transmission / conveyance) / Special profile (back face processing etc.) Others		
Sudden stop and sudden acceleration	1. Sudden stop Braking on the (driving / driven side) Sum total of GD^2 ________ $kgf•m^2$ (opposite side to the brake) Deceleration from revolution n_1 ________ to n_2 ________ Time to change from n_1 to n_2 ________ s Frequency of sudden stop ________ times/day		
	1. Sudden acceleration Sum total of GD^2 ________ $kgf•m^2$ Acceleration from revolution n_1 ________ to n_2 ________ Time to change from n_1 to n_2 ________ s Frequency of sudden acceleration ________ times/day		
Other requirements			

Functional Selection Table

Belt type		Load (kW): 0.75 or less	Load (kW): 0.75 to 7.5	Load (kW): 7.5 to 75	Load (kW): 75 or more	Belt speed (m/s): 20 or less	Belt speed (m/s): 20 to 30	Belt speed (m/s): 30 or more	Driving machine characteristics: *1 Standard driving machine	Driving machine characteristics: *2 Special driving machine	Permanent elongation (%)	Center distance (m): 0.5 or less	Center distance (m): 0.5 to 2	Center distance (m): 2 or more	Speed ratio: 1:5 or less	Speed ratio: 1:5 to 1:10
Synchronous Belts	KPSII (King Power Synchronous Belt)			[S8M]	[S14M]		30				0.1 or less					1:10
Synchronous Belts	Ceptor-X Ceptor-VI HP-STS (High-Performance Super-Torque Synchronous Belt) STS (Super-Torque Synchronous Belt) Double-Sided STS HP-HTS (High-Performance High-Torque Synchronous Belt)	[S1.5M] [S2M]	[S3M] [S4.5M] [S5M]	[S8M] [8M]	[S14M]			33			0.15 or less					1:10
Synchronous Belts	Synchronous Belt Double-Sided Synchronous Belt	[MXL] [XL]	[L]	[H] [XH]	[XXH]			30			0.15 or less					1:10
Synchronous Belts	Bancollan Synchronous Belt Bancollan Double-Sided Synchronous Belt	[XL] [T5] [TN15]	[L] [T10]			20					0.25 or less					1:10
Synchronous Belts	Bancollan STS	[S2M]	[S3M]			20					0.25 or less					1:10
Synchronous Belts	Long Synchronous Belt					10					0.15 or less					1:10
Synchronous Belts	Bancollan Long Synchronous Belt					10					0.25 or less					1:10
Frictional Transmission Belts	V-belt: Red Scrum	[M]	[A]	[B,C]	[D,E]	[M]15	[A~E] 30				1.5~2		[M]	[A~E]		
Frictional Transmission Belts	V-belt: Standard		[A]	[B,C]	[D,E]		[A~E] 30				1.5~2			[A~E]		
Frictional Transmission Belts	V-belt: Red S II		[SA]	[SB,SC]			30				1.5~2					
Frictional Transmission Belts	Power Ace Scrum Power Ace Aramid Combo			[3V]	[5V,8V] [5VK,8VK]			40			1.0 or less		[3V]	[5V,8V] [5VK,8VK]		1:10
Frictional Transmission Belts	Power Ace Cog			[3VX]	[5VX]			40			1.0 or less		[3VX] [5VX]			1:10
Frictional Transmission Belts	Sunrope (open-ended)	[M]	[A,B,C]			[M]15 [A~C]20					2~3					
Frictional Transmission Belts	Double-sided V-belt		[AA]	[BB] [CC]			30				1.5~2		[AA]	[BB] [CC]		
Frictional Transmission Belts	Banflescrum		[5MS]	[7MS]	[11MS]			60			0.8 or less					1:10
Frictional Transmission Belts	Bancollan V-Belt	[J]				10					1.5~2					
Frictional Transmission Belts	Rib Ace 2 (for general industry)	[PJ]	[PK] [PL]					50			1~1.5					
Frictional Transmission Belts	Bancollan Polybanrope	[H]	[J]				25				2~2.5					
Frictional Transmission Belts	Bancollan round belt	$\phi2$ $\sim\phi5$				10					0.5~1					
Frictional Transmission Belts	Bancord round belt	$\phi1.5$ $\sim\phi12$				10					3~5					
Frictional Transmission Belts	PS Belt	[A series B series C series E series]				[C series] 20	[B series] 30	[A series] 60			2.0 or less		[A series B series C series E series]			1:10
Frictional Transmission Belts	Flat belt (cotton)			San Special San Atlas		20					2~3					
Frictional Transmission Belts	Banbelt		[Light]	[Medium] [Heavy]			30				1.5~2					

Values in the table indicate general allowable values of belt characteristics.
However, the permanent elongation indicates a normal range.
The brackets [ ] indicate belt type.

Color-coded indication
- Can be used sufficiently.
- Can be used conditionally.
- Avoid use.

Belt type		Characteristics: Minimum pulley diameter (mm) 50 or less	50 to 100	100 to 200	200 or more	*3 Back face tension Pulley dia.	Low initial tension	Miniaturized	Sudden stop	Vertical-shaft power transmission	Cross application	Back face tension	Back face drive
Synchronous Belts	KPSII (King Power Synchronous Belt)	[S8M] 18 teeth	[S14M] 22 teeth										
Synchronous Belts	Ceptor-X Ceptor-VI HP-STS (High-Performance Super-Torque Synchronous Belt) STS (Super-Torque Synchronous Belt) Double-Sided STS HP-HTS (High-Performance High-Torque Synchronous Belt)	[S1.5M] 16 teeth [S2M] 14 teeth [S3M] 14 teeth [S4.5M] 12 teeth [S5M] 14 teeth [S8M] 22 teeth [8M] 22 teeth		[HP-STS S14M] 28 teeth [STS S14M] 34 teeth		1.2x							
Synchronous Belts	Synchronous Belt Double-Sided Synchronous Belt	[MXL] 12 teeth [XL] 10 teeth [L] 12 teeth	[H] 14 teeth	[XH] 22 teeth [XXH] 22 teeth		1.2x							
Synchronous Belts	Bancollan Synchronous Belt Bancollan Double-Sided Synchronous Belt	[TN15] 20 teeth [XL,L,T5] 10 teeth [T10] 12 teeth				1.2x							
Synchronous Belts	Bancollan STS	[S2M] 14 teeth [S3M] 14 teeth				1.4x							
Synchronous Belts	Long Synchronous Belt	MXL,XL,L S4.5M,S5M	S8M H	XH S14M	XXH	1.2x							
Synchronous Belts	Bancollan Long Synchronous Belt	S2M,S3M XL,L T5,T10	S8M H			1.4x							
Frictional Transmission Belts	V-belt: Red Scrum	[M] 40	[A] 67	[B] 118 [C] 180	[D] 300 [E] 450	1.3x							
Frictional Transmission Belts	V-belt: Standard		[A] 67	[B] 118 [C] 180	[D] 300 [E] 450	1.3x							
Frictional Transmission Belts	V-belt: Red S II		[SA] 60 [SB] 80	[SC] 100		[SA] 35 [SB] 45 [SC] 60							
Frictional Transmission Belts	Power Ace Scrum Power Ace Aramid Combo		[3V] 67	[5V] 150 [5VK] 150	[8V] 300 [8VK] 300	1.3x							
Frictional Transmission Belts	Power Ace Cog		[3VX] 56	[5VX] 112		1.3x							
Frictional Transmission Belts	Sunrope (open-ended)		[M80]	[A] 100 [B] 150	[C] 250								
Frictional Transmission Belts	Double-Sided V-Belt			[AA] 100 [BB] 180	[CC] 260	-							
Frictional Transmission Belts	Banflescrum	[5MS] 26 [7MS] 40	[11MS] 63										
Frictional Transmission Belts	Bancollan V-Belt	16				1.3x							
Frictional Transmission Belts	Rib Ace 2 (for general industry)	[PJ] 20	[PK] 50 [PL] 70			1.5x							
Frictional Transmission Belts	Bancollan Polybanrope	[H] 14 [J] 24											
Frictional Transmission Belts	Bancollan round belt	[3ϕ] 18 [5ϕ] 30				-							
Frictional Transmission Belts	Bancord round belt	[3ϕ] 23	[10ϕ] 80			-							
Frictional Transmission Belts	PS Belt	[A] 5 [B] 11 [C] 5											
Frictional Transmission Belts	Flat belt (cotton)		[3P] 80	[4P] 130 [5P] 180		-							
Frictional Transmission Belts	Banbelt			[Spinning] 150	[Light] 225 [Medium] 375 [Heavy] 500	-							

*1 Standard driving machines refer to AC motors (normal torque, squirrel-cage type, synchronous power transmission), DC motors (shunt-wound), and engines with two or more cylinders.
*2 Special driving machines refer to AC motors (high torque, single-phase series-wound), DC motors (series-wound, compound-wound), single-cylinder engines, line shafts, and clutches.
*3 Back face tension pulley diameters are expressed by multiples of minimum pulley diameters.

Characteristics Selection Table (Reference)

Belt type			Characteristics: *1 Operating limit temperature (°C of cold resistance and heat resistance)
Synchronous Belts	KPSII (King Power Synchronous Belt)		-30 – 70
Synchronous Belts	Ceptor-X Ceptor-VI HP-STS (High-Performance Super-Torque Synchronous Belt) STS (Super-Torque Synchronous Belt) Double-Sided STS HP-HTS (High-Performance High-Torque Synchronous Belt)		-30 – 90
Synchronous Belts	Synchronous Belt Double-Sided Synchronous Belt		-30 – 90 (120: Heat-resistant specification)
Synchronous Belts	Bancollan Synchronous Belt Bancollan Double-Sided Synchronous Belt		-30 – 70
Synchronous Belts	Bancollan STS		-30 – 70
Synchronous Belts	Long Synchronous Belt		-30 – 90
Synchronous Belts	Bancollan Long Synchronous Belt		-20 – 70 (90: Humidity- and heat-resistant specification)
Frictional Transmission Belts	V-belt	Red Scrum	-30 – 90
Frictional Transmission Belts	V-belt	Standard	-40 – 70
Frictional Transmission Belts	V-belt	Red S II	-30 – 90
Frictional Transmission Belts	Power Ace Scrum Power Ace Aramid Combo		-30 – 90
Frictional Transmission Belts	Power Ace Cog		-30 – 90
Frictional Transmission Belts	Sunrope (open-ended)		-40 – 70
Frictional Transmission Belts	Double-Sided V-Belt		-30 – 90
Frictional Transmission Belts	Banflescrum		-30 – 60
Frictional Transmission Belts	Bancollan V-Belt		-30 – 70
Frictional Transmission Belts	Rib Ace 2 (for general industry)		-30 – 90
Frictional Transmission Belts	Bancollan Polybanrope		-30 – 70
Frictional Transmission Belts	Bancollan round belt		-10 – 70
Frictional Transmission Belts	Bancord round belt		0 – 50
Frictional Transmission Belts	PS Belt		-30 – 80
Frictional Transmission Belts	Flat belt (cotton)		-40 – 60
Frictional Transmission Belts	Banbelt		-40 – 70

Belt type			Oil resistance *2	Acid resistance	Alkali resistance	Weather resistance	Water and humidity resistance	Flame resistance	Noise	Vibration
Synchronous Belts	KPSII (King Power Synchronous Belt)		Very high	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	Very high
Synchronous Belts	Ceptor-X Ceptor-VI HP-STS (High-Performance Super-Torque Synchronous Belt) STS (Super-Torque Synchronous Belt) Double-Sided STS HP-HTS (High-Performance High-Torque Synchronous Belt)		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	Very high
Synchronous Belts	Synchronous Belt Double-Sided Synchronous Belt		*3 Slightly problematic	*4 Slightly problematic	Slightly problematic	High	*4 Slightly problematic	High	*5 Slightly problematic	Very high
Synchronous Belts	Bancollan Synchronous Belt Bancollan Double-Sided Synchronous Belt		Very high	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	Very high
Synchronous Belts	Bancollan STS		Very high	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	Very high
Synchronous Belts	Long Synchronous Belt		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	Slightly problematic	Very high
Synchronous Belts	Bancollan Long Synchronous Belt		Very high	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	Very high
Frictional Transmission Belts	V-belt	Red Scrum	Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	High
Frictional Transmission Belts	V-belt	Standard	Better not to use	Better not to use	Slightly problematic	High	Slightly problematic	Better not to use	High	High
Frictional Transmission Belts	V-belt	Red S II	Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	High
Frictional Transmission Belts	Power Ace Scrum Power Ace Aramid Combo		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	High
Frictional Transmission Belts	Power Ace Cog		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	High
Frictional Transmission Belts	Sunrope (open-ended)		Better not to use	Better not to use	Better not to use	High	Slightly problematic	Better not to use	High	Slightly problematic
Frictional Transmission Belts	Double-Sided V-Belt		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	High
Frictional Transmission Belts	Banflescrum		Slightly problematic	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	Very high
Frictional Transmission Belts	Bancollan V-Belt		Slightly problematic	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Slightly problematic	High
Frictional Transmission Belts	Rib Ace 2 (for general industry)		Slightly problematic	Slightly problematic	Slightly problematic	High	Slightly problematic	High	High	Very high
Frictional Transmission Belts	Bancollan Polybanrope		Slightly problematic	Better not to use	Better not to use	Very high	Better not to use	Better not to use	High	Very high
Frictional Transmission Belts	Bancollan round belt		Slightly problematic	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Very high	Slightly problematic
Frictional Transmission Belts	Bancord round belt		Slightly problematic	Better not to use	Better not to use	Very high	Better not to use	Better not to use	Very high	Slightly problematic
Frictional Transmission Belts	PS Belt		Slightly problematic	Slightly problematic	High	High	Slightly problematic	High	Very high	Very high
Frictional Transmission Belts	Flat belt (cotton)		Better not to use	Better not to use	Better not to use	High	Better not to use	Better not to use	High	Slightly problematic
Frictional Transmission Belts	Banbelt		Better not to use	Better not to use	Slightly problematic	High	Slightly problematic	Better not to use	High	Very high

Color-coded indication: Very high / High / Slightly problematic / Better not to use

*1 The operating limit temperature indicates ambient temperature.
*2 For material quality, oil resistance evaluation takes belt slip into consideration.
*3 Very high with oil-resistant specification products.
*4 Low-noise specification products should not be used.
*5 High with low-noise specification products.

List of Terms and Symbols for Power Transmission Belts

Design (transmission power, transmission capacity, correction factor)-related			Belt/pulley dimension-related		
Term	Symbol	Meaning of term	Term	Symbol	Meaning of term
Transmission power	Pt	Belt power to be transmitted from driving shaft to driven shaft	Pitch length	Lp	Length along the belt's pitch line
Design power	Pd	Power for belt selection obtained by correcting driven power with various transmission correction factors	Effective length	Le	Length calculated with the pulley's effective diameter when a belt is attached to two identical pulleys to a fixed tension
Driven power	Pn	Power consumed by the driven shaft	Outside length	Lo	Length along the back face or outer face of a belt
Overload factor	Ks	Correction factor for transmission power due to load characteristics or other operating conditions (Ks=Ko+Ki+Ke)	Inside length	Li	Length along the bottom face or inner face of a belt
Load correction factor	Ko	Transmission correction factor used in relation to load variation and operation frequency of the driving machine or machinery used	Pulley outside diameter	do	Maximum diameter of the periphery of a pulley body
Idler correction factor	Ki	Transmission correction factor used when an idler is used	Large pulley	D	The pulley with a larger diameter of a pair of pulleys connected by a belt
Environmental correction factor	Ke	Transmission correction factor used depending on the environmental conditions (temperature, humidity, etc.) in which a belt is used	Pinion	d	The pulley with a smaller diameter of a pair of pulleys connected by a belt
Speed ratio correction factor	Kr	Transmission correction factor used in relation to the speed ratio at the time of acceleration or deceleration	Pitch diameter	dp	Diameter of a pitch line of a belt wound around a pulley
Transmission capacity	Pe	Value obtained by adding an additional transmission capacity by the rotation ratio to the basic power rating (Pe = Pr + Pa)	Effective diameter	de	Diameter with the effective width of a V-pulley
Basic power rating	Pr	Power that can be transmitted for a certain time with the standard condition of a belt with reference dimensions	Center distance	C	Distance between the centers of two shafts to which pulleys are attached
Corrected power rating	Pc	Transmission capacity obtained by correcting the basic power rating with various belt correction factors	Temporary center distance	C′	Pre-planned rough center distance
Transmission capacity added depending on the speed ratio	Pa	Transmission capacity added to the basic power rating depending on the speed ratio	Adjustment range	Cs Ci	Amount of adjustment of the center distance for attaching or tensioning a belt
Length correction factor	Kl	Belt correction factor used when the effective length is other than the reference length	Standard effective length	L	Effective length of a belt of a standard size
Width correction factor	Kb	Belt correction factor used when the belt width is other than the reference width	Rough effective length of a belt	L′	Rough effective length of a belt calculated from a temporary center distance and a pulley diameter
Mesh correction factor	Km	Belt correction factor used when the number of meshed teeth in synchronous belt power transmission is five or less			
Contact angle correction factor	Kθ	Belt correction factor used when the angle of contact is less than 180°			

Belt-tensioning method-related			Others		
Term	Symbol	Meaning of term	Term	Symbol	Meaning of term
Initial tension	To	Theoretical tension that should be given to the belt for power transmission	Friction factor	μ	Dynamic frictional factor that occurs between the belt and the pulley
Installation tension	Ti	Tension applied when a belt is attached or re-tensioned taking changes in tension into consideration	Apparent frictional factor	μ'	Dynamic frictional factor corrected by the wedge effect of a V-belt
Static tension	Tp	Tension at a halt after the belt finished operating	Number of meshed teeth	Zm	Number of meshed teeth between a synchronous belt and a synchronous pulley
Effective tension	Te	Tension for rotating pulleys and a difference between tight side tension and slack side tension	Angle of contact	θ	Central angle to an arch in contact with a belt and a pulley
Centrifugal tension	Tc	Tension that is generated by centrifugal force on the belt on a rotating pulley	Belt speed	v	Speed (m/sec) in the length direction when a belt is running
Tight side tension	Tt	Tension that occurs on the tight side of a belt	Belt unit mass	m	Mass (kg/m) per unit width or length of a belt
Slack side tension	Ts	Tension that occurs on the slack side of a belt	Pinion revolution	n_1	Revolution of the shaft to which a pinion is attached
Maximum drive tension	Tmax	Maximum tension among the tensions that occur on a belt	Revolution of large pulley	n_2	Revolution of the shaft to which a large pulley is attached
Allowable tension	Ta	Maximum drive tension allowed under given conditions	Ride out	ro	Height of projection of a V-belt over the peripheral surface of a V-pulley
Shaft load	F	Load applied by belt tension on a shaft	PLD	a	Radial distance between the pitch diameter and the addendum circle diameter of a synchronous pulley
Static shaft load	Fr	Load applied on a shaft to which the respective pulley is attached when the belt is stationary	Adjacent pitch error	ak	Difference between two adjacent pitches on a pitch circle of a synchronous pulley
Dynamic shaft load	Fc	Load applied on a shaft to which each pulley is attached when the belt is operating	Cumulative pitch error	Ek	Difference between the sum of actual pitches and measured values on a pitch circle between two arbitrarily chosen teeth of a synchronous pulley
Deflection load	$F\delta$	Load with which a belt is pressed when the belt tension is measured by deflection	Backlash	Lc	Play between mating flanks when a synchronous belt is meshed with a synchronous pulley
Deflection	δ	Position of displacement in the load direction when a deflection load is applied	Pressure angle	β	Angle formed by the center line of a tooth and the line of a mating flank of a synchronous belt
Span length	Ls	Distance between contact points of a common tangent of two pulleys			

List of Formulas

Item	Formula	Remarks
Design power	$Pd = Pt \times (Ko + Ki + Kr + Ke)$	Pd : Design power (kW) Pt: Transmission power (kW) Ko : Load correction factor Ki: Idler correction factor Kr: Speed ratio correction factor Ke: Environmental correction factor
Transmission power	$Pt = \dfrac{Tr \times n}{9550}$	Pt : Transmission power (kW) Tr : Load torque (N•m) n : Revolution (rpm)
Torque (at the time of sudden stop or sudden acceleration)	$Trq = \dfrac{\Sigma GD^2 \times (n_1 - n_2)}{38.2 \times t}$ (synchronous belt)	Trq : Load torque at the time of a sudden stop or sudden acceleration (N•m) GD^2 : Flywheel effect (kgf•m²) $n_1 - n_2$: Difference in revolution (rpm) t : Time (s) to change from n_1 to n_2
Design power (at the time of sudden stop or sudden acceleration)	$Pdq = \dfrac{Trq \cdot n}{9550} \times Kq$ (synchronous belt)	Pdq : Design power at the time of a sudden stop or sudden acceleration (kW) n : Revolution (rpm) Kq : Correction factor by rotation at the time of a sudden stop or sudden acceleration
Speed ratio	$\text{Speed ratio} = \dfrac{n_1}{n_2}$	n_1 : Pinion revolution (rpm) n_2 : Large pulley revolution (rpm)
Pulley dia.	$dp = pt \cdot Z / \pi$ $do = pt \cdot Z / \pi - 2a$ (synchronous belt)	dp : Pitch diameter (mm) do : Pulley outside diameter (mm) Pt : Pulley tooth pitch (mm) Z : Number of teeth of pulley π : 3.1416 a : PLD (mm)
Belt speed	$v = \dfrac{dp \cdot n}{19100}$	v : Belt speed (m/s) dp : Pulley pitch diameter (mm) n : Pulley revolution (rpm)
Pitch length	$Lp = 2C + 1.57(Dp + dp) + \dfrac{(Dp - dp)^2}{4C}$	Lp : Pitch length (mm) C : Center distance (mm) Dp : Large pulley pitch diameter (mm) dp: Pinion pitch diameter (mm)
Center distance	$C = \dfrac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$	C : Center distance (mm) $B = Lp - 1.57(Dp + dp)$ Lp : Pitch length (mm) Dp: Large pulley pitch diameter (mm) dp: Pinion pitch diameter (mm)
Number of meshed teeth	$Zm = Z_1 \times \dfrac{\theta_1}{360}$ (synchronous belt)	Zm : Number of meshed teeth of pinion Z_1 : Number of teeth of pinion θ_1 : Angle (°) of contact of pinion
Angle of contact of pinion	$\Theta_1 = 180 - \dfrac{57.3(Dp - dp)}{C}$	θ_1 : Angle (°) of contact of pinion Dp : Large pulley pitch diameter (mm) dp : Pinion pitch diameter (mm)
Width correction factor	$Kb = \dfrac{Pd}{Pr \cdot km}$ (synchronous belt)	Kb : Width correction factor Pb : Design power (kW) Pr : Basic power rating (kW) Km: Mesh correction factor
Effective tension	$Te = \dfrac{1000Pt}{v}$	Te : Effective tension (N) v : Belt speed (m/s) Pt : Transmission power (kW)
Design tension	$TD = Te(Ko + Ki \times N)$ (synchronous belt)	TD : Design tension (N) Ko : Load correction factor Ki : Idler correction factor Te: Effective tension (N) N: Number of idlers
Tight side tension	$Tt = \dfrac{1000 \cdot Pd}{v} + mv^2$ (synchronous belt)	Tt : Tight side tension (N) v : Belt speed (m/s) Pd : Design power (kW) m: Belt unit mass (kg/m)
Tight side tension	$Tt = 1.25 \times \dfrac{1000 \cdot Pd}{K\theta \cdot v} + Nmv^2$ (V-belt)	Tt : Tight side tension (N) v : Belt speed (m/s) Kθ : Contact angle correction factor Pd: Design power (kW) N: Number of belts m: Belt unit mass (kg/m)

List of Formulas

Item	Formula	Remarks
Slack side tension	$Ts = Tc = mv^2$ (synchronous belt)	Ts : Slack side tension (N) Tc : Centrifugal tension (N) m : Belt unit mass (kg/m) v: Belt speed (m/s)
Slack side tension	$Ts = \frac{1.25 - K\theta}{K\theta} \times \frac{1000Pd}{v} + Nmv^2$ (V-belt)	Ts : Slack side tension (N) Kθ : Contact angle correction factor Pd : Design power (kW) v: Belt speed (m/s) N: Number of belts m: Belt unit mass (kg/m)
Initial tension	$To = 0.9 \times \frac{Tt + Ts}{2}$ (V-belt)	To : Initial tension (N) Tt : Tight side tension (N) Ts : Slack side tension (N)
Static shaft load (Max.)	$Fr = 1.5 \times (2 \cdot To \cdot \sin \frac{\theta_1}{2})$ (V-belt)	Fr : Static shaft load (N) To : Initial tension (N) θ_1 : Angle (°) of contact of pinion
Dynamic shaft load	$Fc = \frac{2.5 - K\theta}{K\theta} \times \frac{1000Pd}{v} \sin \frac{\theta_1}{2}$ (V-belt)	Fc : Dynamic shaft load (N) Pd : Design power (kW) v : Belt speed (m/s) Kθ : Contact angle correction factor θ_1: Pinion contact angle (°)
Static shaft load	$Fr = 2To \sin \frac{\theta_1}{2}$ (synchronous belt)	Fr : Static shaft load (N) To : Initial tension (N) θ_1 : Angle (°) of contact of pinion
Dynamic shaft load	$Fc = \frac{1000Pd}{v}$ (synchronous belt)	Fc : Dynamic shaft load (N) Pd : Design power (kW) v : Belt speed (m/s)
Span length	$Ls = \sqrt{C^2 - \frac{(Dp - dp)^2}{4}}$	Ls : Span length (mm) C : Center distance (mm) Dp : Large pulley pitch diameter (mm) dp: Pinion pitch diameter (mm)

List of SI Units

SI (abbreviation for International System of Units) units were defined to internationally unify previous unit systems. From a worldwide point of view, some countries have already switched to SI units entirely. Japan also switched from the previous unit systems, including standards such as JIS, and standardized the SI units in 1994.

This section summarizes how to convert previous unit systems into SI when needed for belt design. See below.

Quantity unit	Symbol of previous unit	Basic SI unit	Converted value
Mass	kg	kg	Same as before
Force / Weight	kgf	N (Newton)	1kgf=9.80665N 1000kgf=9.81kN
Moment of force	kgf•m	N•m	1 kgf•m = 9.80665 N•m
Power	ps,W	W	1ps=0.7355 kW
Acceleration	G	m/s^2	1G=9.80665 m/s^2
Length	m	m	Same as before
Angle	(°)	rad	1° = (π / 180) rad
Area	m^2	m^2	Same as before
Speed	m/s	m/s	Same as before
Revolution	rpm	s^{-1}	1 rpm = $1.667 \times 10^{-2} S^{-1}$
Pressure	kgf/cm^2	Pa (Pascal)	1 kgf/cm^2 = 9.80665×10^{-5} GPa

Precautions for Safe Use of Synchronous Belts and Frictional Power Transmission Belts

Before using our products, please read the catalog, design data, and other necessary documents carefully, pay close attention to the following items, and handle the products properly. The degree of impact of each item on safety is classified as follows.

Symbols and terms	Description
⚠ Danger	When the product is mishandled, it is expected to cause an imminent danger of death or serious injury to the user.
⚠ Warning	When the product is mishandled, it is expected that it may cause death or serious injury to the user.
⚠ Caution	When the product is mishandled, it is expected to cause a danger that causes injury to the user or an occurrence of property damage only.

Application/Purpose of Use

⚠ Danger	When a cut belt is expected to cause the device to run idle, run on its own, or stop and lead to a personal accident or serious accident, be sure to separately provide a safety device.
⚠ Danger	Do not use a belt as a hoisting tool or a towing tool.
⚠ Warning	When static electricity generated by a belt power transmission device is expected to cause a fire or a malfunction of control equipment, use an anti-static belt and provide a static elimination mechanism on the device side.
⚠ Caution	Do not use a belt as an insulator. The insulation characteristics vary depending on the belt type; please contact us.
⚠ Caution	When a belt comes into direct contact with food stuffs, use a belt that conforms to the Food Sanitation Law.
⚠ Caution	Do not additionally process belts. It may affect the quality or performance of the belt.

Functions and Performance

⚠ Caution	Do not use belts for other applications or outside the allowable ranges described in the catalog, design data, etc. of the respective belt. It may cause early breakage.
⚠ Caution	Adhesion of water, oil, chemicals, paints, or dust particles on a belt or pulley causes a reduced transmission force or early breakage.
⚠ Caution	Synchronous belts may emit large noise in high-speed operation. In that case, install a sound-proofing cover.

Storage and Transport

⚠ Caution	A heavy belt should be stored using an appropriate fixture or stopper to prevent it from collapsing or rolling.
⚠ Caution	When you transport or handle a heavy belt or pulley, use a transporting apparatus or device suitable for the weight. Lifting up with hands may hurt your lower back etc.
⚠ Caution	Do not bend belts with unreasonable force or place a heavy object on belts when transporting or storing them. The belts may remain bent or become damaged, leading to early breakage.
⚠ Caution	Store belts in a low-humidity location at temperatures of -10°C to 40°C. In addition, do not expose stored belts to direct sunlight.

Installation and Operation

⚠ Danger	Install safety covers for all rotating sections, including belts and pulleys. Hair, gloves, or clothing may be entangled with a belt or pulley. When a belt or a pulley broke, a projecting piece may cause injury.
⚠ Danger	When you maintain, inspect, or replace belts, follow the items below. (1) Be sure to turn off the switch and wait until the belts and pulleys completely stop before performing the work. (2) When removal of a belt may cause the machinery to start operating, fasten the machinery before performing the work. (3) Take measures to prevent the switch from being turned on unintentionally during the work.
⚠ Caution	When replacing a belt or a pulley, use an equivalent part type to the one that had been used. A different part type leads to early breakage.
⚠ Caution	A misaligned pulley causes early breakage of the belt or falling off of a flange. Perform adjustment.
⚠ Caution	Do not cut a tense belt with a knife or scissors. The belt may whip and cause injury.
⚠ Caution	When multiple belts are used, be sure to replace all belts on the same occasion. It causes early breakage.
⚠ Caution	Check if the belt sits on the pulley groove properly before using them.
⚠ Caution	The belts and pulleys may be at very high temperature immediately after they stop rotating. Do not touch them until they cool down.
⚠ Caution	When you install a belt, never ply it in with unreasonable force. Forcing a belt to climb over a flange or the peripheral section of a V-groove or plying the belt in using a screwdriver or the like causes early breakage. When you install a belt, use a motor slide, tension pulley, a dedicated tugging machine, etc.
⚠ Caution	Use an installation tension and elongation percentage of the belt that are appropriate tensions based on the catalog, design data, etc. An inappropriate tension causes early belt breakage or shaft breakage.
⚠ Caution	When you additionally machine a pulley before use: (1) Remove burrs and sharp edges of machined sections. (2) Ensure the dimensional accuracy after machining. (3) Ensure the pulley strength after machining.
⚠ Caution	When you install a flange on a pulley, check for no foreign substances in the joint between the pulley body and the flange and secure them by crimping etc. so that the flange has no looseness. Inappropriate securing causes the flange to come off.
⚠ Caution	When you replaced a flat belt, be sure to perform trial operation and adjust the running.

Endless Machining

⚠ Warning	Never use flame in the work site. It may cause a fire.
⚠ Warning	When you use a solvent or an adhesive, perform sufficient ventilation. It may harm health.
⚠ Warning	Perform installation and endless machining with the materials, method, and procedure specified by us.
⚠ Warning	Follow the instruction manual when you use a solvent or an adhesive.

Handling of Used products

⚠ Danger	Do not burn belts. They generate toxic gases.

Flat Belt Drive System: Hyper Flat Drive System

Eco Drive System with Top Energy-Saving Level!

The HFD (Hyper Flat Drive) is a high-efficiency power transmission system that meets the needs of the entire Earth environment, such as energy-saving and reduced CO_2 emissions.

Product Concept

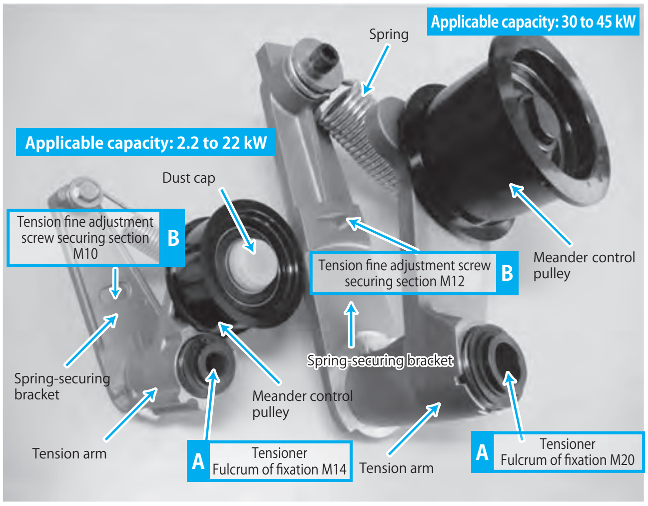
We have developed a high-efficiency belt power transmission system (HFD) using an anti-meander device and a newly designed flat belt that aim at energy-saving and reduced CO_2 emissions and that were developed as items that can smoothly transmit power with a flat belt at high efficiency.

Product Features

- ■ Transmission efficiency improvement and operation at an optimum tension allow you to expect a significant energy-saving effect and reduced CO_2 emissions.
- ■ The longer service life and tensioning by the tensioner eliminate the need for maintenance.
- ■ The thin belt and the resulting lower effect of distortion due to bending enable smaller pulleys and miniaturization.

Principles and structure of flat belt drive system (HFD)

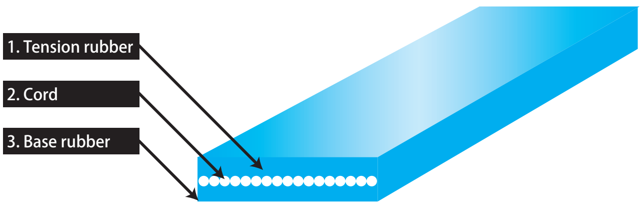
Device Structure



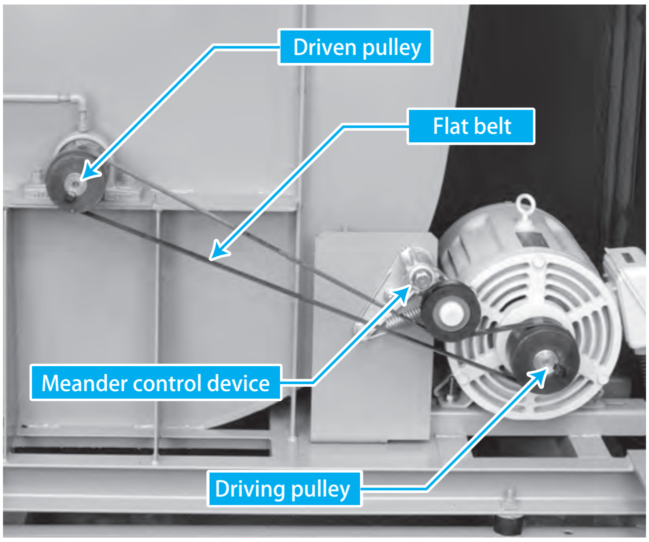
*The applicable capacities are guidelines.
*When you consider the use outside the range of the applicable capacity, please consult us.

This is a high-power-transmission and high-efficiency flat belt specification using the rubber and cord design techniques that were accumulated over many years in the automobile field.
By installing a pulley that controls the meander of the flat belt, the belt and the pulleys can autonomously control themselves, and by stably maintaining tensioning using the spring, a long service life and the elimination of the need for maintenance have become possible. The system can be easily installed by securing the sections A and B on the bracket as designed. By so doing, the system is designed to provide an appropriate tension.

Flat belt Structure



Mounting Example



Adoption Track Record

Air-conditioning machines, blowers, compressors, robotics field, etc.

Range of Manufacturable Sizes

■ Flat belt

● List of belt standard lengths (Unit: mm)

1000	1060	1120	1180	1250	1320
1400	1500	1600	1700	1800	1900
2000	2120	2240	2360	2500	2650
2800	3000	4000	4250	4400	4500
4750	5000	5200			

● The standard belt widths are 10 mm, 15 mm, 20 mm, 25 mm, 30 mm, 35 mm, 40 mm, and 45 mm, totaling eight types.
● The standard belt thickness is 2.6 mm (belt standard lengths: 1000 to 3000 mm) and 3.0 mm (belt standard lengths: 4000 to 5200 mm), totaling two types.

■ Meander control pulley

The standard pulley widths are 30 mm, 40 mm, and 75 mm, totaling three types.

■ Flat pulley

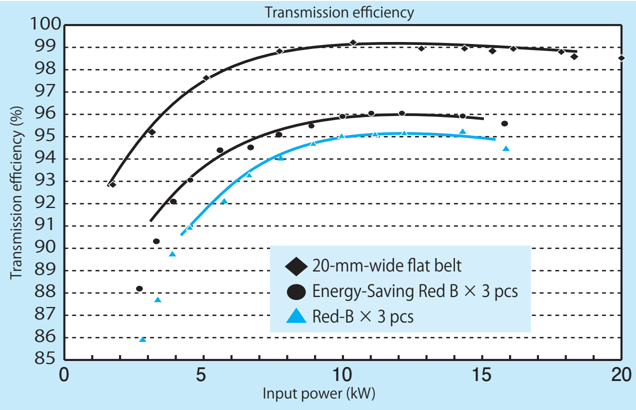
Driving and driven pulleys for the HFD system require flat pulleys.
*Flat pulleys are available from us; please consult us.

■ Flat belt system design

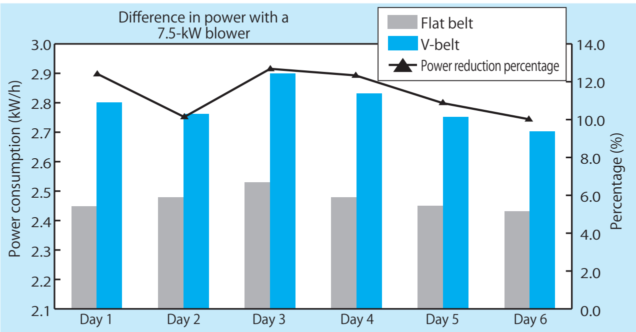
The current setting range is aimed at 2.2 to 45 kW (75 kW). For a capacity of 45 kW or more or outside the range of the applicable capacity, please consult us.
We will consult with you on energy-saving, pulley miniaturization, and size reduction in accordance with the operating conditions and layout drawings.

Verification Result for Flat Belt Drive System

■ Power transmission efficiency verification result



■ Power consumption verification result



■ Energy-saving and CO_2 emissions reduction effects

The Type-A three V-belts Red of the 7.5-kW blower were replaced with a single 10-mm flat belt!

(Calculated with an operating rate of 10 hr/day and 300 days of operation annually)

<Energy-saving effect> With approx. 0.3 kW/h and an electricity cost of 12 yen/kWh, the effect in value = 12 yen × 0.3 kW/h × 10 h/day × 300 days/year ≈ 10,800-yen/year reduction in cost.

<Amount of CO_2 emissions reduced> CO_2 conversion factor = 0.378 kg CO_2/kWh

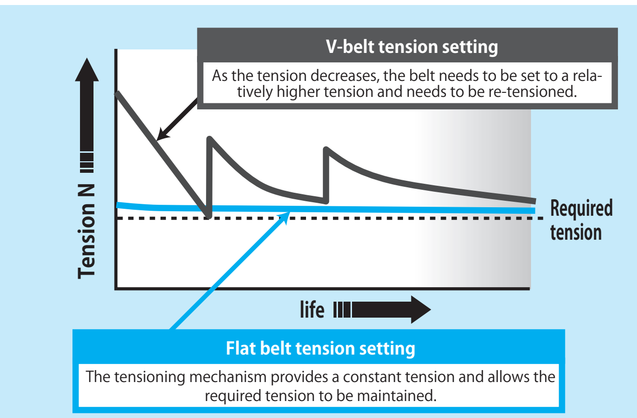
Amount reduced: 0.378 × 0.3 kW/h × 10 h/day × 300 days/year ≈ 340-kg/year reduction in CO_2 emissions

Note: The CO_2 conversion factor used the average value for general electric utilities by the "Calculation method of greenhouse gas emissions from utilities (draft proposal)" by the Global Environmental Bureau of the Ministry of Environment in July 2003.

■ Elimination of the need for maintenance

(Compared to V-belts: about 2.5-fold service life)

The longer service life and tensioning by the tensioner have eliminated the need for maintenance.



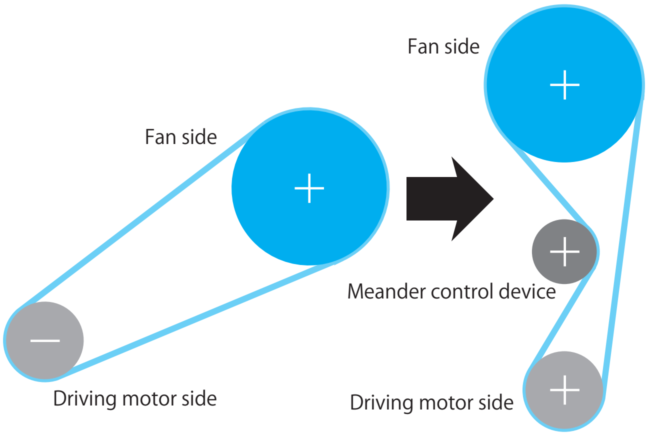
As the flat belt is thin, it is less affected by bending distortion when it is wrapped around a pulley. Therefore, even if it is affected by reverse bend, its service life is as long as approximately 2.5 times that of V-belts. The tensioning mechanism eliminates the reduction in tension that used to occur with V-belts and allows a tension close to the required tension to be maintained at all times; making the belt maintenance-free and achieving a longer service life.

■ Compact design possible

(Compared to V-belts: about 40% reduction)

The thinness and the little effect of distortion by bend eliminate the effect on durability even when reverse bend is applied, allowing compact designs.

		Previous system	Flat belt drive system
Belt specification		V-belt Red	Flat belt
(Example of an experiment at 11 kW)		Type B × 3 pcs (50.1 mm)	20 mm-wide
Pulley dia.	Pulley dia. on driving motor side	ϕ133 mm/1750 rpm	ϕ115 mm/1750 rpm
	Pulley dia. on fan side	ϕ710 mm	ϕ612 mm
Center distance		1220 mm	500 mm
Pitch length		3810 mm (150 inches)	2542 mm



Precautions for Use

- Applicable model: For driving blowers and compressors (For applications, please consult us.)
- Applicable capacity: 2.2 to 45 kW (75 kW) (For outside this range, please consult us.)
- Operating temperature range: -10°C to 60°C
- For HFD installation layout, we will provide a recommend design based on design layout drawings and operating conditions.
- Other environmental conditions that should be avoided
  - ① Operation in a condensing condition
  - ② Use in a dusty environment
  - ③ Use with 6P motors other than inverters
  - ④ Use with insufficient frame strength
  - ⑤ Use in an environment that may be directly exposed to rainwater

  *In particular, never let rainwater or the like into the sliding section of the fulcrum of the tensioner.
  - ⑥ For use in an environment in which water or oil may adhere and in environments described in ② and ⑤, provide protection by covers or the like.
  - ⑦ For HFD installation, we will provide guidance separately, including settings such as misalignment.

Next-Generation Tension Gauge [Natural Vibration Measuring Instrument]

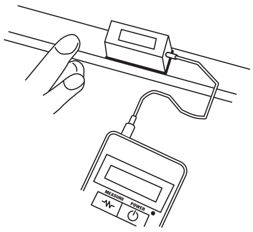
TENSION MASTER

Tension Master (Natural vibration measuring instrument) Capable of measuring natural vibration **+** **Smartphone** Download the dedicated app **=** **Tension gauge** Capable of measurement on the highest level in the industry

Features

① As vibrations can be measured directly with the acceleration sensor, measurement can be performed even under a noisy environment.
(A sonic-type tension gauge senses noise simultaneously with the microphone, making it likely to result in a measurement error.)
② Accurate measurement is possible even with a layout or belt type that emits low-frequency sound, which is difficult to measure with the sonic type.
③ Measurement accuracy on the highest level in the industry.
④ The calculation function software can be used with a smart-phone (tablets can also be used).
⑤ It can also be used as a measuring instrument for natural frequency of equipment, machinery, or buildings.

How to Measure Frequency



Flip with a finger etc. to vibrate it.

Measurement accuracy

- Measurement range of natural frequency: 10 to 1000 Hz
- Measurement accuracy of natural frequency: ±1%
- Sampling frequency: 3.2 kHz
- Operating ambient temperature: -10°C to 60°C

How to Use

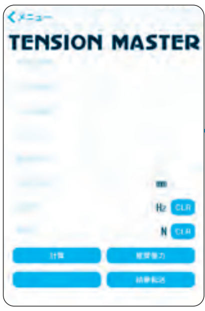
Download the app into your smartphone.

*The app is available on Google Play and App Store. Calculation on the website is also possible.

Pattern 1 Tension calculation by selecting a belt

① Input operating conditions.

② Measure the frequency with the Tension Master.→ Input the frequency and calculate the tension.



② Input a target tension (recommended tension) and calculate the target frequency.

Pattern 2 Tension calculation from the unit weight

① Input a unit weight and span length of the belt.

② Measure the frequency with the Tension Master.→ Input the frequency and calculate the tension.

② Input a target tension (recommended tension / design calculation) and calculate the target frequency.

Synchronous Power Transmission (Synchronous Belts)

List of Synchronous Power Transmission Belt Product Systems

Industrial machinery has recently been rapidly advancing in performance and automatization, with increasing demands for complication and diversification of power transmission mechanisms, and the fields in which synchronous belts are used have been expanding. Bando's synchronous power transmission belts are available in inventory in abundant types and sizes to meet the needs of any field, and they are sold together as a set with pulleys for ease of use.

Please adopt our synchronous power transmission belts for new designs or equipment improvement to help to solve your difficult problems.

Classification	Name		Belt type		S1.5M	S2M	S3M	S4.5M	S5M	S8M	S14M	Product introduction page	Design calculation page
Round teeth ①	King Power Synchronous Belt	KPS II	Material	R								29	31
				U						○	○		

Classification	Name		Belt type		S1.5M	S2M	S3M	S4.5M	S5M	S8M 8M	S14M	Product introduction page	Design calculation page
Round teeth ①	Ceptor-X	Ceptor-X	Material	R						●	●	42	79
				U									
	Ceptor-VI	Ceptor-VI	Material	R			●		●	●		44	
				U									
	High-Performance Super-Torque Synchronous Belt	HP-STS	Material	R					●	●	●	48	
				U									
	High-Performance High-Torque Synchronous Belt	HP-HTS	Material	R						●		48	
				U									
	Super-Torque Synchronous Belt Eco	STS-eco	Material	R		●	●					52	
				U									
	Super-Torque Synchronous Belt	STS	Material	R	●	●	●	●				53	
				U		○	○						

Classification	Name		Belt type			DS2M	DS3M	DS4.5M	DS5M	DS8M	DS14M	Product introduction page	Design calculation page
Round teeth ①	Double-Sided Super-Torque Synchronous Belt	Double-Sided STS	Material	R		●	●	●	●	●	●	59	79
				U									

Material symbol / R: rubber, U: polyurethane

Remark: For the following special specification synchronous belts, please contact us.

- Special pitch synchronous belt
- Steel cord synchronous belt
- Oil-resistant synchronous belt
- Heat-resistant synchronous belt
- High-electric-resistance synchronous belt
- Special profile synchronous belt
- Wide synchronous belt
- Pale-colored synchronous belt

Classification	Name	Belt type		XXL	MXL	XL	L	H	XH	XXH	T2.5	T5	T10	Product introduction page	Design calculation page
Trapezoidal teeth	Synchronous Belt Eco	Material	R		●									64	79
			U												
	Synchronous Belt	Material	R	●	●	●	●	●	●	●				65	79
			U		○	○	○				○	○	○		

Classification	Name	Belt type			DXL	DL	DH		DT5	DT10	Product introduction page	Design calculation page
Trapezoidal teeth	Double-Sided Synchronous Belt	Material	R		●	●	●				76	79
			U		○				○	○		

Classification	Name	Belt type		TN10	TN15						Product introduction page	Design calculation page
Triangular teeth	Synchronous Belt TN	Material	R								65	79
			U	○	○							

Material symbol / R: rubber, U: polyurethane

List of Belt Widths

Tooth pitch mm	Belt width: Type	Belt type	Ma-terial	2 mm	2.5 mm	3 mm	4 mm	5 mm	6 mm	8.5 mm	10 mm	15 mm	20 mm	25 mm	30 mm	40 mm	50 mm	55 mm	60 mm	70 mm	80 mm	85 mm	100 mm	115 mm	120 mm	130 mm	150 mm	170 mm
1.5	STS	S1.5M	R				●		●		●																	
2.0	STS	S2M	R				●		●		●																	
			U				○		○		○																	
	Double-Sided STS	DS2M	R				●		●		●																	
3.0	STS	S3M	R						●		●	●																
			U						○		○	○																
	Double-Sided STS	DS3M	R						●		●	●																
	Ceptor-VI	S3M	R						●		●	●																
4.5	STS	S4.5M	R						●		●	●																
	Double-Sided STS	DS4.5M	R						●		●	●																
5.0	Double-Sided STS	DS5M	R								●	●	●	●														
	HP-STS	S5M	R								●	●	●	●														
	Ceptor-VI	S5M	R								●	●	●	●														
8.0	Double-Sided STS	DS8M	R									●		●		●			●									
	HP-STS	S8M	R									●		●		●			●									
	HP-HTS	8M	R										●	●	●	●	●		●			●						
	Ceptor-VI	S8M	R									●		●		●			●		●							
	Ceptor-X	S8M	R									●		●		●			●		●							
	KPS II	KPS II 8M	U									○		○		○			○									
14.0	Double-Sided STS	DS14M	R													●			●		●		●					
	HP-STS	S14M	R													●			●		●		●		●			
	Ceptor-X	S14M	R													●			●		●		●		●			
	KPS II	KPS II 14M	U											○		○			○		○		○		○			
Belt width (mm)				2	2.5	3	4	5	6	8.5	10	15	20	25	30	40	50	55	60	70	80	85	100	115	120	130	150	170

Material symbol / R: rubber, U: polyurethane
* For the S tooth profile, the nominal width is ten times the belt width.

List of Belt Widths

Tooth pitch mm	Nominal width Type	Belt type	Material	3.2 (3.2mm)	4.8 (4.8mm)	6.4 (6.4mm)	7.9 (7.9mm)	9.5 (9.5mm)	12.7 (12.7mm)
2.032	Synchronous	MXL	R	●	●	●		●	●
			U	○	○	○	○	○	○

Tooth pitch mm	Nominal width Type	Belt type	Material	025 (6.4mm)	031 (7.9mm)	037 (9.5mm)	050 (12.7mm)	075 (19.1mm)	100 (25.4mm)	150 (38.1mm)	200 (50.8mm)	300 (76.2mm)	400 (101.6mm)	500 (127.0mm)	600 (152.4mm)
5.080	Synchronous	XL	R	●	●	●	●	●							
			U	○	○	○	○	○							
	Double-sided synchronous	DXL	R	●	●	●	●	●							
			U	○	○	○	○	○							
9.525	Synchronous	L	R				●	●	●	●	●				
			U				○	○	○	○	○				
	Double-sided synchronous	DL	R				●	●	●	●	●				
12.700	Synchronous	H	R					●	●	●	●	●			
	Double-sided synchronous	DH	R					●	●	●	●	●			
22.225	Synchronous	XH	R								●	●	●	●	●
31.750	Synchronous	XXH	R								●	●	●	●	●
3.175	Synchronous	XXL	R	No settings											

Tooth pitch mm	Nominal width Type	Belt type	Material	3 (3.04mm)	5 (5.0mm)	7 (7.0mm)	10 (10.0mm)	13 (13.0mm)	15 (15.0mm)	20 (20.0mm)	25 (25.0mm)	30 (30.0mm)	50 (50.0mm)
2.5	Synchronous	T2.5	U	○	○	○	○	○					
5.0	Synchronous	T5	U		○		○		○	○	○		
	Double-sided synchronous	DT5	U		○		○		○	○	○		
10.0	Synchronous	T10	U						○	○	○	○	○
	Double-sided synchronous	DT10	U						○	○	○	○	○

Material symbol / R: rubber, U: polyurethane

List of Pulley Product Systems

STS Pulleys with BAN-LOCK

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
S5M	Made-to-order	0150, 0200, 0250	26～60	Carbon steel for machine construction	137～142
S8M	Made-to-order	0150, 0250, 0400	19～60		
S14M	Made-to-order	0400, 0600	28～50		

TL STS Pulleys (Bushing Type)

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
S8M	Standard stock	0150	28～96	Cast iron or carbon steel for machine construction	143～144
	Made-to-order		120～156		
	Standard stock	0250	32～96		
	Made-to-order		120～156		
	Standard stock	0400	36～96		
	Made-to-order		120～156		
	Standard stock	0600	48～96		
	Made-to-order		120～156		
S14M	Standard stock	0400	28～84	Cast iron or carbon steel for machine construction	145～146
	Made-to-order		96～156		
	Standard stock	0600	28～84		
	Made-to-order		96～156		
	Standard stock	0800, 1000	36～84		
	Made-to-order		96～156		
	Made-to-order	1200	40～156		

STS Pulleys (Shaft-Hole-Machined Type)

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
S1.5M	Made-to-order	0040, 0060, 0100	16～60	High-strength aluminum alloy	147～152
S2M	Made-to-order	0040, 0060, 0100	14～24		
			26～60		
S3M	Made-to-order	0060, 0100, 0150	14～60		
S4.5M	Standard stock	0060, 0100, 0150	12～44	Carbon steel for machine construction	153～160
	Made-to-order		48～72		
S5M	Standard stock	0100, 0150, 0200, 0250	14～60		
S8M	Standard stock	0150, 0250, 0400, 0600	18～60		
	Made-to-order		72～156		
S14M	Standard stock	0400, 0600, 0800, 1000	28～50		
	Made-to-order		60～156		
		1200	28～156		

HTS Pulleys (Shaft-Hole-Machined Type)

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
8M	Made-to-order	0200, 0300, 0500	22～56	Carbon steel for machine construction	162～164
14M	Made-to-order	0400, 0550, 0850	28～44		

List of Pulley Product Systems

TL Synchronous Pulleys (Bushing Type)

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
L	**Standard stock**	050, 075, 100	19～84	Cast iron or carbon steel for machine construction	169～170
	Made-to-order				
H	**Standard stock**	100	18～96	Cast iron or carbon steel for machine construction	171～172
	Made-to-order				
	Standard stock	150	20～96		
	Made-to-order				
	Standard stock	200	24～96		
	Made-to-order				
	Made-to-order	300	40～72		
XH	Made-to-order	200, 300, 400	32～120	Cast iron or carbon steel for machine construction	173～174

Synchronous Pulleys (Shaft-Hole-Machined Type)

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material	Details page
TN15	Made-to-order	5.0, 10.0	20～96	High-strength aluminum alloy	175
MXL	Made-to-order	6.4	12～100	High-strength aluminum alloy	176
		9.5	16～100		
XL	**Standard stock**	037	10～72	Carbon steel for machine construction	177～178
	Made-to-order	050	10～72		
	Standard stock	037S	10～30	Sintered alloy	
L	**Standard stock**	050, 075	12～50	Carbon steel for machine construction	179～180
	Made-to-order		60, 72, 84		
	Standard stock	100	14～50		
	Made-to-order		60, 72, 84		
H	**Standard stock**	0100, 0150, 0200	14～72	Carbon steel for machine construction	181～182
	Made-to-order		84, 96		
	Standard stock	300	16～36		
	Made-to-order		40～72		
XH	Made-to-order	200, 300, 400	18～120	Carbon steel for machine construction	183～184
XXH	Made-to-order	200, 300, 400, 500	18～60	Carbon steel for machine construction	185～186
T5	Made-to-order	10, 15	12～72	Carbon steel for machine construction	187
T10	Made-to-order	15, 25	12～72	Carbon steel for machine construction	188

King Power Synchronous Belt (KPS II)

1. Product Introduction

KPS II was developed based on the new material and new technology developed for KPS, featuring reduction in belt tension changes and improvement of power transmission capacity, and enables energy-saving, space-saving, and high accuracy.

Features

■ High transmission capacity It has a high transmission capacity of 1.5 to 5 times that of rubber STS, with a smaller belt width than STS, enabling space-saving and resource-saving of power transmission devices.

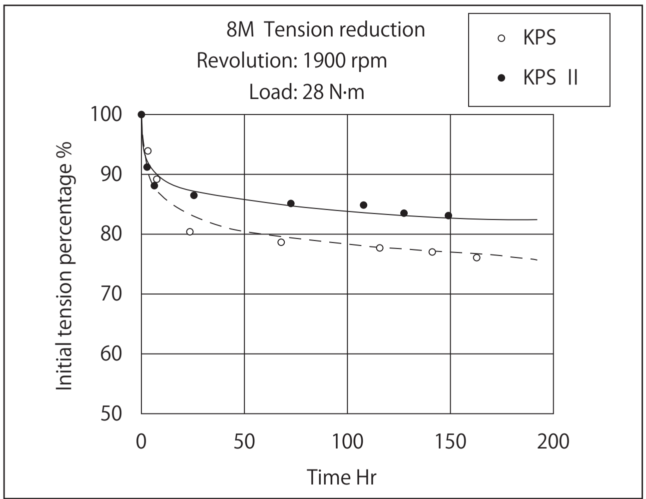
■ General-purpose The compatibility with rubber STS and the previous KPS allows utilization of STS standard pulleys in stock.

■ Clean activity The abrasion-resistant polyurethane has little rubber piece fracture, enabling a clean power transmission device to be designed.

■ Low noise The noise is lower than chain power transmission by 3 dB to 5 dB.

■ Ozone resistance It employs polyurethane, which has higher ozone resistance than that of chloroprene rubber.

<Belt tension reduction comparison>



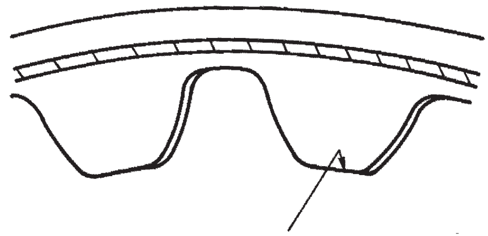
*The above data is based on our bench test results.

Mesh Theory of KPS II

Bando KPS II performs the following unique meshing.

The tip of the belt tooth and the bottom of the pulley are in contact.

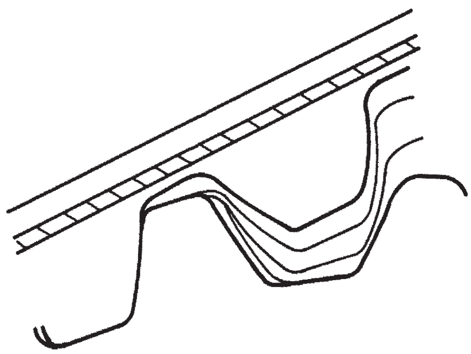
KPS II meshes with the tip of the belt tooth in close contact with the bottom of the pulley. As a result, the force applied on the belt is dispersed and becomes uniform. In addition, the cords mesh in a mostly perfect circle condition, which eliminates cord bending (polygonal phenomenon) and significantly reduces cord fatigue, resulting in an extended belt service life.
The pulley has an arc-shaped bottom and side face, allowing smooth close contact with the belt.



KPS II meshing condition

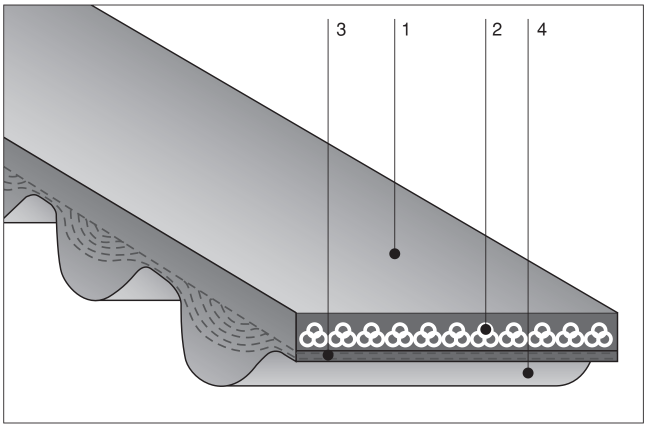
The tooth profile smooths meshing.

For synchronous belts, the tooth section needs to be enlarged as one method of increasing transmission capability. However, with the previous synchronous belts, enlarging the tooth profile causes interference between the teeth and the pulley, resulting in a reduced service life.
KPS II has an arc-shaped tooth profile; hence, enlarging the belt tooth section does not cause interference with the pulley, achieving smooth meshing.



Condition at the start of meshing of KPS II

Structure



1. Back face rubber 2. Cord 3. Special fiber 4. Tooth rubber

Belt dimensions and indication method

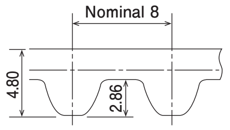
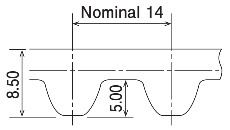
Belt type	Dimension (mm)	Belt indication method
8M		600 KPS II 8M 1000 Belt width (60mm) / Belt type (Type 8M) / Belt pitch length (1000mm)
14M		800 KPS II 14M 1400 Belt width (80mm) / Belt type (Type 14M) / Belt pitch length (1400mm)

Table of standard effective lengths

KPS II 8M					
Belt designation	Nominal pitch length (mm)	No. of teeth	Belt designation	Nominal pitch length (mm)	No. of teeth
KPS II 8M 640	640	80	KPS II 8M 1120	1120	140
KPS II 8M 680	680	85	KPS II 8M 1152	1152	144
KPS II 8M 720	720	90	KPS II 8M 1200	1200	150
KPS II 8M 760	760	95	KPS II 8M 1280	1280	160
KPS II 8M 800	800	100	KPS II 8M 1360	1360	170
KPS II 8M 848	848	106	KPS II 8M 1440	1440	180
KPS II 8M 896	896	112	KPS II 8M 1520	1520	190
KPS II 8M 944	944	118	KPS II 8M 1600	1600	200
KPS II 8M 1000	1000	125	KPS II 8M 1696	1696	212
KPS II 8M 1024	1024	128	KPS II 8M 1792	1792	224
KPS II 8M 1032	1032	129	KPS II 8M 1960	1960	245
KPS II 8M 1056	1056	132			

KPS II 14M					
Belt designation	Nominal pitch length (mm)	No. of teeth	Belt designation	Nominal pitch length (mm)	No. of teeth
KPS II 14M 994	994	71	KPS II 14M 1568	1568	112
KPS II 14M 1120	1120	80	KPS II 14M 1652	1652	118
KPS II 14M 1190	1190	85	KPS II 14M 1708	1708	122
KPS II 14M 1260	1260	90	KPS II 14M 1890	1890	135
KPS II 14M 1400	1400	100	KPS II 14M 1960	1960	140
KPS II 14M 1470	1470	105	KPS II 14M 2380	2380	170

Belt standard widths

(Nominal width: belt width (mm) × 10)

Nominal width	150	250	400	600	800	1000	1200
Belt width (mm)	15	25	40	60	80	100	120
8M	○	○	○	○			
14M		○	○	○	○	○	○

Note 1) For other belt widths than standard belt widths, please contact us.
Note 2) For pulleys, please use our standard STS pulleys (→ **P. 131**).

Belt dimensional tolerance

Effective length

(Unit: mm)

KPS II 8M		KPS II 14M	
Effective length	Tolerance	Effective length	Tolerance
754 or less	±0.42	1182 or less	±0.63
Over 754 to 994 or less	±0.63	Over 1182 to 1462 or less	±0.67
Over 994 to 1274 or less	±0.67	Over 1462 to 1702 or less	±0.78
Over 1274 to 1694 or less	±0.78	Over 1702 to 1972 or less	±0.98
Over 1694 to 1964 or less	±0.98	1972 or more	±1.45

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Belt width

(Unit: mm)

Belt nominal width	Effective length classification		
	840 or less	841~1680	1680 or more
400 or less	+0.8 -0.8	+0.8 -1.2	+0.8 -1.2
Over 400 to 500 or less	+0.8 -1.2	+1.2 -1.2	+1.2 -1.6
Over 500 to 750 or less	+1.2 -1.6	+1.6 -1.6	+1.6 -2.0
Over 750 to 1000 or less	+1.6 -1.6	+1.6 -2.0	+2.0 -2.0
Over 1000	+2.4 -2.4	+2.8 -2.8	+3.2 -3.2

2. How to Design KPS II

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Pinion revolution
⑥ Speed ratio $\left(\frac{\text{No. of teeth of large pulley}}{\text{No. of teeth of pinion}}\right)$
⑦ Temporary center distance
⑧ Pulley diameter restriction
⑨ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2-1 Calculating the design power

Calculate the design power with Formula 1.

Formula 1

$$Pd = Pt \times (Ko + Ki + Kr)$$

Pd	: Design power	(kW)
Pt	: Transmission power	(kW)
Ko	: Load correction factor	**(Table 1 → Table below)**
Ki	: Idler correction factor	**(Table 2 → P. 32)**
Kr	: Speed-up ratio correction factor	**(Table 3 → P. 32)**

Note 1) For transmission power, it is ideal to use the load of the driven machine; however, if it is unknown, use the rated power of the driving machine. If torque or horsepower is used for indication, convert it into watt or kilowatt using Formula 2.

Formula 2

$$Pt = \frac{Tr \times n}{9550}$$

Pt	: Transmission power	(kW)
n	: Revolution	(rpm)
Tr	: Load torque	(N•m)

1PS=0.7355(kW)

Table 1 Load correction factor (Ko)

Machine using the product Note 2) When your driven machine cannot be found in the table, use the load correction factor of a machine with a similar start-up load or shock load.	Driving machine					
	Those with the maximum output 300% or less of the rating			Those with the maximum output over 300% of the rating		
	AC motor (standard motor, synchronous motor) DC motor (shunt-wound) Engine with two or more cylinders			Special motor (high torque) DC motor (direct-wound) Single-cylinder engine Operation by line shaft or clutch		
	Operating hours			Operating hours		
	3~5hr/day	8~10hr/day	16~24hr/day	3~5hr/day	8~10hr/day	16~24hr/day
● Exhibition apparatuses ● Projectors ● Measuring instruments ● Medical equipment	1.0	1.2	1.4	1.2	1.4	1.6
● Vacuum cleaners ● Sewing machines ● Office machinery ● Woodworking lathes ● Band-sawing machines	1.2	1.4	1.6	1.4	1.6	1.8
● Light-duty belt conveyors ● Packaging machines ● Sieves	1.3	1.5	1.7	1.5	1.7	1.9
● Liquid stirring machines ● Drill presses ● Lathes ● Screw cutting machines ● Circular sawing machines ● Planing machines ● Laundry machines ● Papermaking machines (not including pulper) ● Printing machines	1.4	1.6	1.8	1.6	1.8	2.0
● Stirring machines (cement, viscous substances) ● Belt conveyors (ore, coal, sand) ● Grinding machines ● Shaping machines ● Boring machines ● Milling machines ● Compressors (centrifugal type) ● Vibrating sieves ● Fiber machines (warping machines, winders) ● Rotary compressors ● Compressors (reciprocating type)	1.5	1.7	1.9	1.7	1.9	2.1
● Conveyors (aprons, pans, buckets, elevators) ● Extraction pumps ● Rinsing machines ● Fans, blowers (centrifugal type, suction, exhaust) ● Generators ● Exciters ● Hoists ● Elevators ● Rubber processing machines (calenders, rolls, extruders) ● Fiber machines (weaving machines, spinning machines, yarn-twisting machines, pirn winders)	1.6	1.8	2.0	1.8	2.0	2.2
● Centrifugal separators / conveyors (flight, screw) ● Hammer mills ● Papermaking machines (pulper, beaders)	1.7	1.9	2.1	1.9	2.1	2.3
● Ceramic industry machines (bricks, clay kneading machines) ● Propellers for mines ● Forced air blowers	1.8	2.0	2.2	2.0	2.2	2.4

Table 2 Idler correction factor

Idler installation location	Ki
- No idlers	0.0
- Installed from the inside on the slack side	0.0
- Installed from the inside on the tight side	0.1

KPS II cannot be used by installing an idler from outside.

Table 3 Speed-up ratio correction factor

Speed-up ratio	Kr
1.00~1.24	0.0
1.25~1.74	0.1
1.75~2.49	0.2
2.50~3.49	0.3
3.50 or more	0.4

Step 2-2 Calculating the design power when there are sudden stops or sudden accelerations

Under conditions of sudden stop and sudden acceleration, an abnormal torque may be applied to the belt due to the inertial force of the machine; check with Formula 3 in advance, and if the width falls short, it needs to be corrected.
Compare the Pd calculated in **Step 2-1 (→ P. 31)** and the Pdq calculated next and use the larger value as the design power.

Formula 3

$$Trq = \frac{\Sigma GD^2 \times (n_1 - n_2)}{38.2 \times t} \quad (N\cdot m)$$

From Formula 2, $Ptq = \frac{Trq \times n}{9550}$ (kW)

$$Pdq = Ptq \times Kq \quad (kW)$$

Trq : Rotational torque at the time of a sudden stop or sudden acceleration (N•m)
GD^2 : Flywheel effect (kgf•m^2)
(Sum total of GD^2 on the opposite side to the brake)
$n_1 - n_2$: Difference in revolution (opposite side to the brake) (rpm)
t : Time to change from n_1 to n_2 (S)
Pdq : Design power (kW)
Kq : Correction factor **(table below)**

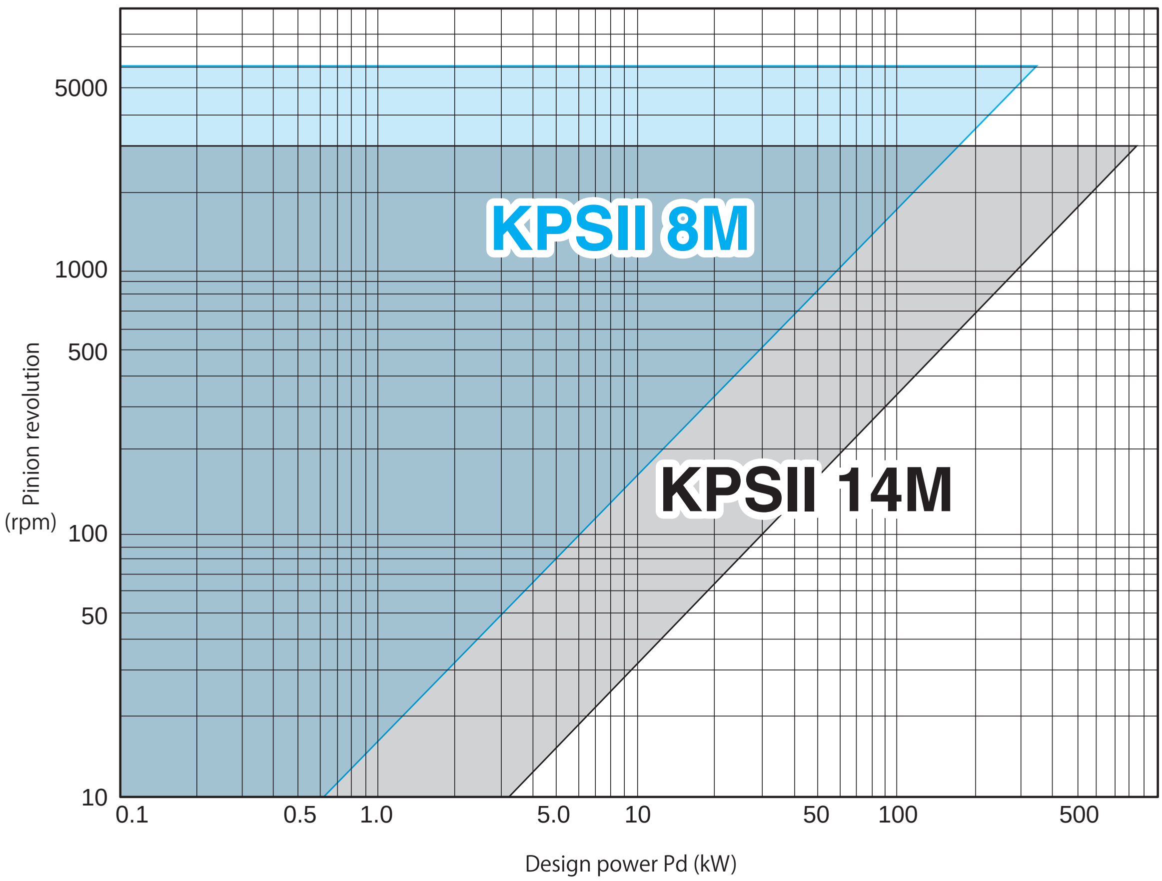
Correction factor Kq by rotation at the time of a sudden stop or sudden acceleration

revolutions/day	1	2	3~4	5~10	11~15
Kq	1.0	1.2	1.3	1.5	1.6
revolutions/day	16~25	26~40	41~60	61~100	101~
Kq	1.7	1.8	1.9	2.0	2.1

Step 3 Selecting a belt type

Obtain a belt type based on design power and pinion revolution from **Fig. 1**.
If an obtained type is close to the line of intersection of two types, design both belt types as a trial and choose the one that matches the purpose of the design and that is the more economical.

Fig. 1 Belt type selection diagram



Step 4 Selecting a pulley diameter

Select an appropriate pulley diameter from Formula 4, taking the restriction of the power transmission space etc. into consideration.

Formula 4

$$Z_2 = \frac{n_1}{n_2} \times Z_1$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

Z_1: Number of teeth of pinion
Z_2: No. of teeth of large pulley
n_1: Pinion revolution (rpm)
n_2: Large pulley revolution (rpm)

For relations among the number of teeth of pulleys, pulley diameter, and pitch diameter, refer to the **"List of pulley diameters" (→ P. 39 to P. 40)**. Calculate an unlisted number of teeth of a pulley with Formula 5.

Formula 5

$$dp = pt(Z) / \pi$$

$$do = pt(Z) / \pi - 2a$$

dp : Pulley pitch diameter (mm)
do : Pulley outside diameter (mm)
pt : Pulley tooth pitch (mm)
z : No. of teeth of pulley
2a : Difference between pulley pitch diameter and pulley outside diameter **(Table 4)**

Table 4 Difference between pulley pitch diameter and pulley outside diameter (2a)

(Unit: mm)

Belt type	8M	14M
2a	1.372	2.794

When you determine a pulley diameter, check the following items:

- Check on the minimum number of teeth of a pulley

Generally, when a pulley with a small number of teeth is used, the flex fatigue of the belt increases, reducing the belt service life.

Hence, please use a pulley with a larger number of teeth than the ones shown in **Table 5** at least.

Table 5 Minimum number of teeth of pulleys

Pinion revolution (rpm)	Belt type	
	8M	14M
870 or less	18(45.84)	22(98.04)
Over 870 to 1160 or less	18(45.84)	22(98.04)
Over 1160 to 1750 or less	20(50.93)	24(106.95)
Over 1750 to 3500 or less	22(56.02)	26(115.86)
Over 3500 to 4500 or less	22(56.02)	26(115.86)
Over 4500 to 5500 or less	24(61.12)	

Note) The parentheses ( ) indicate pitch diameter (mm).

- Check on the belt speed

KPS II can be used at a belt speed up to 30 m/s. When the belt speed exceeds 30 m/s, reduce the pulley diameter.

Calculate the belt speed from Formula 6.

Formula 6

$$V = \frac{dp \times n}{19100}$$

V : Belt speed (m/s)
dp : Pulley pitch diameter (mm)
n : Revolution (rpm)

Step 5 Selecting an effective length

Calculate a rough effective length with Formula 7 and select an effective length L' that is closest to this value from the **"Table of standard effective lengths" (→ P. 30)**.

Formula 7

$$L' = 2C + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C}$$

L' : Rough effective length (mm)
C : Center distance (mm)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)

Backcalculate the center distance at that time from the pitch length L of the selected belt using Formula 8.

Formula 8

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = Lp - 1.57(Dp + dp)$$

Lp : Belt pitch length (mm)

Step 6 Determining the belt width

(1) Determination of basic power rating

From the "Table of basic power ratings" (→ P. 37 to P. 38), obtain the transmission capacity per basic belt width. Please note that here **8M is the basic power rating per width of 15 mm, and 14M is** the basic power rating per width of 40 mm.

(2) Mesh correction factor Km

From Formula 9, calculate the number of meshed teeth of the pinion, and from **Table 6**, obtain the mesh correction factor.

Formula 9

$$Zm = Z \times \frac{\theta_1}{360}$$

$$\Theta_1 = 180 - \frac{57.3(Dp\text{-}dp)}{C}$$

Zm	: Number of meshed teeth of pinion	
Z	: Number of teeth of pinion	
θ_1	: Angle of contact of pinion	(°)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

Table 6 Mesh correction factor Km

Number of meshed teeth Zm	Km
6 or more	1.00
5	0.80
4	0.60
3	0.40
2	0.20

(3) Correction factor by effective length Kl

From **Table 8 (→ P. 35)**, obtain the correction factor by effective length.

(4) Correction factor by use of a pinion Kp

From **Table 7**, obtain the correction factor by use of a pinion.

Table 7 Correction factor by use of a pinion Kp

8M	Kp	14M	Kp
22	1.00	28	1.00
21	0.97	26	0.98
20	0.89	25	0.96
19	0.81	24	0.94
18	0.72	23	0.91
		22	0.89

(5) Corrected power rating Pc

From Formula 10, obtain the corrected power rating.

Formula 10

$$Pc = Pr \cdot K\ell \cdot Km \cdot Kp$$

Pc	: Corrected power rating	(kW)
Pr	: Basic power rating	(kW)
Kl	: Length correction factor	
Km	: Mesh correction factor	
Kp	: Correction factor by use of a pinion	

(6) Calculation of belt width

From Formula 11, obtain the correction factor of the belt width Kb.

Formula 11

$$Kb = \frac{Pd}{Pc}$$

Kb	: Width correction factor	
Pd	: Design power	(kW)
Pc	: Corrected power rating	(kW)

From **Tables 10 and 11 (→ P. 36)**, obtain the belt width for the width correction factor Kb obtained from Formula 11.

Table 8 Table of length correction factors Kl

Belt type	No. of teeth	Length correction factor Kl
KPS II 8M 640	80	0.76
680	85	0.78
720	90	0.80
760	95	0.82
800	100	0.84
848	106	0.86
896	112	0.88
944	118	0.90
1000	125	0.92
1024	128	0.93
1032	129	0.93
1056	132	0.94
1120	140	0.96
1152	144	0.97
1200	150	0.99
1280	160	1.01
1360	170	1.03
1440	180	1.05
1520	190	1.07
1600	200	1.09
1696	212	1.11
1792	224	1.13
1960	245	1.17

Belt type	No. of teeth	Length correction factor Kl
KPS II 14M 994	71	0.84
1120	80	0.89
1190	85	0.92
1260	90	0.95
1400	100	1.00
1470	105	1.02
1568	112	1.05
1652	118	1.08
1708	122	1.09
1890	135	1.14
1960	140	1.16
2380	170	1.25

Step 7 Checking the adjustment range of the center distance

From Table 9, obtain the installation range and the tension range of the belt.

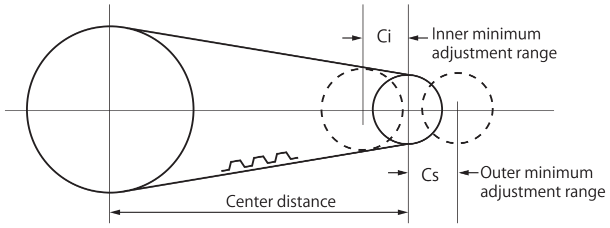


Table 9 Table of the adjustment range of center distance

(Unit: mm)

Effective length	Minimum adjustment range	
	Ci	Cs
500 or less	8M:15 14M:15	3
501～990		5
991 or more		10

Note: When the center distance is fixed and no idler is used

When the center distance is fixed and no idler is used for reasons such as reduction in assembly manhour or unavailability of a space of idlers, the resulting combination of ① effective length tolerance, ② pulley outside diameter tolerance, and ③ center distance tolerance causes troubles such as that the belt cannot be appropriately tensioned or the belt cannot be fit. Such a design requires the setting of special standards; please contact us in advance.

Table 10 Table of belt width correction factors for KPS II Type 8M

Width correction factor Kb	Belt width (mm)	Belt nominal width
~ 1.00	15	150
1.01 ~ 1.67	25	250
1.68 ~ 2.67	40	400
2.68 ~ 4.00	60	600

Table 11 Table of belt width correction factors for KPS II Type 14M

Width correction factor Kb	Belt width (mm)	Belt nominal width
~ 0.63	25	250
0.64 ~ 1.00	40	400
1.01 ~ 1.50	60	600
1.51 ~ 2.00	80	800
2.01 ~ 2.50	100	1000
2.51 ~ 3.00	120	1200

Table of basic power ratings for KPS II Type 8M (per width of 15 mm and length of 1200 mm)

(Unit: kW)

No. of teeth of pinion		18	20	22	24	26	28	30	35	40	45	50	55	60	72	84	120
Pitch diameter (mm)		45.84	50.93	56.02	61.12	66.21	71.30	76.39	89.13	101.86	114.59	127.32	140.06	152.79	183.35	213.90	305.58
Pinion revolution (rpm)	100	0.44	0.47	0.50	0.54	0.57	0.61	0.65	0.74	0.84	0.95	1.05	1.16	1.27	1.52	1.77	2.53
	150	0.62	0.67	0.72	0.77	0.82	0.88	0.93	1.08	1.23	1.38	1.53	1.69	1.84	2.21	2.58	3.68
	200	0.78	0.85	0.92	0.99	1.06	1.13	1.21	1.40	1.60	1.80	2.00	2.20	2.40	2.88	3.36	4.80
	250	0.94	1.03	1.11	1.20	1.29	1.38	1.47	1.72	1.97	2.21	2.46	2.70	2.95	3.54	4.13	5.90
	300	1.09	1.19	1.30	1.40	1.51	1.62	1.73	2.02	2.33	2.62	2.91	3.20	3.49	4.18	4.88	6.97
	350	1.24	1.36	1.48	1.60	1.73	1.86	1.99	2.33	2.68	3.01	3.35	3.68	4.02	4.82	5.62	8.03
	400	1.38	1.52	1.66	1.80	1.94	2.09	2.24	2.63	3.03	3.41	3.79	4.16	4.54	5.45	6.36	9.07
	450	1.52	1.67	1.83	1.99	2.15	2.32	2.49	2.92	3.37	3.80	4.22	4.64	5.06	6.07	7.08	10.10
	500	1.66	1.82	2.00	2.17	2.35	2.54	2.73	3.21	3.72	4.18	4.64	5.11	5.57	6.68	7.80	11.12
	550	1.79	1.97	2.16	2.36	2.56	2.76	2.97	3.50	4.05	4.56	5.07	5.57	6.08	7.29	8.50	12.13
	600	1.92	2.12	2.33	2.54	2.76	2.98	3.20	3.79	4.39	4.94	5.49	6.03	6.58	7.90	9.21	13.13
	650	2.04	2.26	2.49	2.72	2.95	3.19	3.44	4.07	4.72	5.31	5.90	6.49	7.08	8.49	9.90	14.11
	700	2.16	2.40	2.64	2.89	3.15	3.40	3.67	4.35	5.05	5.69	6.32	6.95	7.58	9.09	10.59	15.09
	750	2.28	2.54	2.80	3.06	3.34	3.61	3.90	4.63	5.38	6.05	6.73	7.40	8.07	9.67	11.28	16.06
	800	2.40	2.67	2.95	3.24	3.53	3.82	4.12	4.90	5.71	6.42	7.13	7.84	8.56	10.26	11.96	17.02
	850	2.52	2.81	3.10	3.40	3.71	4.03	4.35	5.18	6.03	6.79	7.54	8.29	9.04	10.84	12.63	17.97
	900	2.63	2.94	3.25	3.57	3.90	4.23	4.57	5.45	6.36	7.15	7.94	8.73	9.52	11.41	13.30	18.91
	950	2.74	3.07	3.40	3.74	4.08	4.43	4.79	5.72	6.68	7.51	8.34	9.17	10.00	11.99	13.97	19.85
	1000	2.86	3.19	3.54	3.90	4.26	4.63	5.01	5.99	6.99	7.87	8.74	9.61	10.48	12.55	14.63	20.77
	1100	3.07	3.45	3.83	4.22	4.62	5.03	5.45	6.52	7.63	8.58	9.52	10.47	11.42	13.68	15.93	22.60
	1200	3.28	3.69	4.11	4.54	4.97	5.42	5.87	7.04	8.25	9.28	10.31	11.33	12.35	14.79	17.22	24.40
	1300	3.49	3.93	4.38	4.85	5.32	5.80	6.30	7.56	8.87	9.98	11.08	12.18	13.27	15.89	18.50	26.16
	1400	3.69	4.16	4.65	5.15	5.66	6.18	6.71	8.08	9.49	10.67	11.84	13.02	14.19	16.98	19.75	27.89
	1500	3.88	4.39	4.92	5.45	6.00	6.56	7.13	8.59	10.10	11.35	12.60	13.85	15.09	18.06	20.99	29.58
	1600	4.07	4.62	5.18	5.75	6.33	6.93	7.53	9.09	10.70	12.03	13.35	14.67	15.99	19.12	22.22	31.25
	1700	4.26	4.84	5.43	6.04	6.66	7.29	7.94	9.59	11.30	12.70	14.10	15.49	16.87	20.17	23.43	32.88
	1800	4.44	5.06	5.68	6.33	6.99	7.66	8.34	10.09	11.90	13.37	14.84	16.30	17.75	21.21	24.62	
	1900	4.62	5.27	5.93	6.61	7.31	8.01	8.73	10.58	12.49	14.03	15.57	17.10	18.62	22.24	25.80	
	2000	4.79	5.48	6.18	6.89	7.62	8.37	9.12	11.07	13.07	14.69	16.29	17.89	19.48	23.25	26.96	
	2100	4.97	5.68	6.42	7.17	7.94	8.72	9.51	11.55	13.66	15.34	17.01	18.68	20.33	24.26	28.10	
	2200	5.13	5.89	6.66	7.44	8.25	9.06	9.90	12.03	14.24	15.99	17.73	19.46	21.18	25.25	29.23	
	2300	5.30	6.09	6.89	7.71	8.55	9.41	10.28	12.51	14.81	16.63	18.44	20.23	22.02	26.23	30.34	
	2400	5.46	6.28	7.12	7.98	8.86	9.75	10.66	12.98	15.38	17.27	19.14	21.00	22.84	27.20	31.43	
	2500	5.62	6.48	7.35	8.25	9.16	10.09	11.03	13.45	15.95	17.90	19.84	21.76	23.66	28.15	32.51	
	2600	5.78	6.67	7.58	8.51	9.46	10.42	11.40	13.92	16.51	18.53	20.53	22.51	24.48	29.10	33.57	
	2700	5.93	6.86	7.80	8.77	9.75	10.75	11.77	14.38	17.07	19.15	21.22	23.26	25.28	30.03		
	2800	6.08	7.04	8.02	9.02	10.04	11.08	12.14	14.84	17.62	19.77	21.90	24.00	26.08	30.95		
	2900	6.23	7.22	8.24	9.28	10.33	11.41	12.50	15.29	18.18	20.38	22.57	24.73	26.87	31.86		
	3000	6.38	7.41	8.46	9.53	10.62	11.73	12.86	15.75	18.72	20.99	23.24	25.46	27.64	32.75		
	3200	6.66	7.76	8.88	10.02	11.19	12.37	13.57	16.64	19.81	22.20	24.56	26.89	29.18			
	3400	6.94	8.11	9.29	10.51	11.74	13.00	14.27	17.53	20.88	23.39	25.86	28.29	30.68			
	3600	7.21	8.44	9.70	10.98	12.29	13.62	14.96	18.40	21.94	24.56	27.13	29.66	32.14			
	3800	7.47	8.77	10.10	11.45	12.83	14.22	15.64	19.26	22.98	25.71	28.39	31.01				
	4000	7.73	9.09	10.49	11.91	13.35	14.82	16.31	20.11	24.01	26.84	29.61	32.32				
	4200	7.97	9.40	10.87	12.36	13.87	15.41	16.97	20.95	25.02	27.95	30.82					
	4400	8.21	9.71	11.24	12.80	14.39	15.99	17.62	21.77	26.02	29.05	32.00					
	4600	8.44	10.01	11.61	13.24	14.89	16.56	18.26	22.59	27.00	30.12						
	4800	8.67	10.30	11.97	13.66	15.38	17.13	18.89	23.39	27.97	31.18						
	5000	8.89	10.59	12.32	14.08	15.87	17.68	19.52	24.18	28.92							
	5500	9.41	11.27	13.17	15.10	17.05	19.03	21.03	26.10	31.23							

(shaded box) indicates that use within this marked range causes a reduced belt endurance time; pay due attention at the time of design.

King Power Synchronous Belt (KPS II)

How to Design

Table of basic power ratings for KPS II Type 14M (per width of 40 mm and length of 1400 mm)

(Unit: kW)

No. of teeth of pinion	22	24	26	28	30	32	34	36	38	40	45	50	55	60	84	120
Pitch diameter (mm)	98.04	106.95	115.86	124.78	133.69	142.60	151.52	160.43	169.34	178.25	200.54	222.82	245.10	267.38	374.33	534.76
Pinion revolution (rpm)																
100	3.30	3.60	3.90	4.20	4.52	4.83	5.16	5.48	5.82	6.15	6.92	7.69	8.46	9.23	12.92	18.46
150	4.69	5.12	5.56	6.02	6.48	6.95	7.42	7.91	8.40	8.90	10.01	11.12	12.24	13.35	18.68	26.68
200	6.00	6.57	7.15	7.75	8.35	8.97	9.60	10.24	10.89	11.55	13.00	14.44	15.88	17.33	24.25	34.62
250	7.25	7.96	8.68	9.42	10.17	10.93	11.71	12.51	13.32	14.14	15.90	17.67	19.43	21.20	29.66	42.33
300	8.46	9.30	10.16	11.04	11.93	12.84	13.77	14.72	15.68	16.66	18.74	20.82	22.90	24.98	34.95	49.85
350	9.64	10.61	11.60	12.62	13.65	14.71	15.79	16.89	18.01	19.14	21.53	23.92	26.31	28.70	40.14	57.21
400	10.78	11.88	13.01	14.16	15.34	16.55	17.77	19.02	20.29	21.59	24.28	26.97	29.66	32.35	45.23	64.43
450	11.89	13.12	14.39	15.68	17.00	18.35	19.72	21.12	22.54	23.99	26.98	29.97	32.96	35.95	50.24	71.51
500	12.98	14.34	15.74	17.17	18.63	20.12	21.64	23.19	24.76	26.36	29.65	32.94	36.22	39.50	55.17	78.45
550	14.05	15.54	17.07	18.63	20.23	21.86	23.53	25.23	26.95	28.71	32.29	35.86	39.43	43.00	60.04	85.28
600	15.09	16.71	18.37	20.07	21.81	23.58	25.39	27.24	29.12	31.03	34.89	38.75	42.61	46.46	64.83	91.98
650	16.12	17.87	19.66	21.49	23.37	25.28	27.24	29.23	31.26	33.32	37.47	41.61	45.75	49.87	69.56	98.56
700	17.13	19.00	20.93	22.89	24.91	26.96	29.06	31.20	33.38	35.59	40.02	44.44	48.85	53.25	74.22	105.02
750	18.13	20.13	22.18	24.28	26.43	28.62	30.86	33.15	35.48	37.84	42.55	47.24	51.92	56.59	78.82	111.36
800	19.11	21.23	23.41	25.64	27.93	30.27	32.65	35.08	37.55	40.07	45.05	50.01	54.96	59.90	83.36	117.59
850	20.07	22.32	24.63	26.99	29.42	31.89	34.42	36.99	39.61	42.28	47.53	52.76	57.97	63.17	87.85	123.69
900	21.03	23.40	25.83	28.33	30.89	33.50	36.17	38.88	41.65	44.47	49.98	55.48	60.96	66.41	92.27	129.67
950	21.97	24.46	27.02	29.65	32.34	35.09	37.90	40.76	43.68	46.64	52.42	58.17	63.91	69.62	96.64	135.53
1000	22.89	25.51	28.20	30.96	33.78	36.67	39.62	42.62	45.68	48.80	54.83	60.85	66.83	72.80	100.94	141.26
1050	23.81	26.55	29.37	32.26	35.21	38.24	41.32	44.47	47.67	50.94	57.23	63.50	69.73	75.94	105.19	146.87
1100	24.72	27.58	30.52	33.54	36.63	39.79	43.01	46.30	49.65	53.06	59.60	66.12	72.61	79.05	109.38	
1150	25.61	28.59	31.66	34.81	38.03	41.33	44.69	48.12	51.61	55.16	61.96	68.73	75.45	82.13	113.51	
1200	26.49	29.60	32.79	36.07	39.42	42.85	46.35	49.92	53.55	57.25	64.30	71.31	78.27	85.19	117.59	
1250	27.37	30.60	33.91	37.32	40.80	44.36	48.00	51.71	55.49	59.33	66.62	73.87	81.07	88.21	121.60	
1300	28.23	31.58	35.02	38.55	42.17	45.86	49.64	53.48	57.40	61.39	68.92	76.41	83.83	91.20	125.55	
1350	29.09	32.56	36.12	39.78	43.52	47.35	51.26	55.25	59.30	63.43	71.21	78.92	86.58	94.17	129.45	
1400	29.94	33.52	37.21	40.99	44.87	48.83	52.87	57.00	61.19	65.47	73.47	81.42	89.30	97.10	133.28	
1450	30.78	34.48	38.29	42.20	46.20	50.29	54.47	58.73	63.07	67.48	75.72	83.89	91.99	100.00	137.05	
1500	31.61	35.43	39.36	43.39	47.53	51.75	56.06	60.46	64.93	69.49	77.96	86.35	94.66	102.88		
1550	32.43	36.37	40.42	44.58	48.84	53.19	57.64	62.17	66.78	71.47	80.17	88.78	97.30	105.72		
1600	33.24	37.30	41.47	45.76	50.14	54.63	59.20	63.87	68.62	73.45	82.37	91.20	99.92	108.53		
1650	34.05	38.22	42.52	46.92	51.44	56.05	60.76	65.56	70.44	75.41	84.55	93.59	102.51	111.32		
1700	34.85	39.14	43.55	48.08	52.72	57.46	62.30	67.23	72.25	77.36	86.72	95.96	105.08	114.07		
1750	35.64	40.05	44.58	49.23	53.99	58.86	63.83	68.90	74.05	79.29	88.86	98.31	107.63	116.79		
1800	36.43	40.95	45.60	50.37	55.26	60.26	65.35	70.55	75.84	81.22	91.00	100.64	110.14	119.49		
1850	37.20	41.84	46.61	51.50	56.52	61.64	66.87	72.19	77.61	83.12	93.11	102.95	112.64	122.15		
1900	37.97	42.73	47.61	52.63	57.76	63.01	68.37	73.82	79.38	85.02	95.21	105.24	115.10	124.78		
1950	38.74	43.60	48.61	53.74	59.00	64.37	69.86	75.44	81.12	86.90	97.29	107.51	117.55	127.38		
2000	39.50	44.47	49.59	54.85	60.23	65.73	71.34	77.05	82.86	88.77	99.35	109.76	119.96	129.95		
2100	40.99	46.19	51.55	57.04	62.66	68.40	74.26	80.23	86.30	92.46	103.43	114.19	124.71	134.99		
2200	42.46	47.89	53.47	59.20	65.06	71.04	77.15	83.37	89.69	96.11	107.44	118.54	129.36			
2400	45.33	51.19	57.23	63.42	69.75	76.21	82.80	89.51	96.32	103.24	115.26	126.97				
2600	48.10	54.40	60.87	67.51	74.30	81.23	88.29	95.47	102.76	110.15	122.80					
2800	50.78	57.50	64.41	71.49	78.73	86.11	93.62	101.26	109.00	116.85	130.05					
3000	53.38	60.51	67.85	75.35	83.02	90.84	98.79	106.86	115.05	123.33						
3200	55.89	63.43	71.17	79.10	87.19	95.43	103.80	112.29	120.89	129.58						
3400	58.32	66.25	74.40	82.73	91.22	99.86	108.64	117.53								
3600	60.67	68.99	77.52	86.24	95.12	104.15	113.31									
3800	62.93	71.63	80.54	89.64	98.89	108.29										
4000	65.13	74.18	83.46	92.91	102.53	112.28										

(shaded) indicates that use within this marked range causes a reduced belt endurance time; pay due attention at the time of design.

List of pulley diameters for KPS II Type 8M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
18	45.84	44.46
19	48.38	47.01
20	50.93	49.56
21	53.48	52.10
22	56.02	54.65
23	58.57	57.20
24	61.12	59.74
25	63.66	62.29
26	66.21	64.84
27	68.75	67.38
28	71.30	69.93
29	73.85	72.48
30	76.39	75.02
31	78.94	77.57
32	81.49	80.12
33	84.03	82.66
34	86.58	85.21
35	89.13	87.75
36	91.67	90.30
37	94.22	92.85
38	96.77	95.39
39	99.31	97.94
40	101.86	100.49
41	104.41	103.03
42	106.95	105.58
43	109.50	108.13
44	112.05	110.67
45	114.59	113.22
46	117.14	115.77
47	119.68	118.31
48	122.23	120.86
49	124.78	123.41
50	127.32	125.95
51	129.87	128.50
52	132.42	131.04
53	134.96	133.59
54	137.51	136.14
55	140.06	138.68
56	142.60	141.23
57	145.15	143.78
58	147.70	146.32
59	150.24	148.87
60	152.79	151.42
61	155.34	153.96
62	157.88	156.51

No. of teeth	Pitch diameter	Outside diameter
63	160.43	159.06
64	162.97	161.60
65	165.52	164.15
66	168.07	166.70
67	170.61	169.24
68	173.16	171.79
69	175.71	174.34
70	178.25	176.88
71	180.80	179.43
72	183.35	181.97
73	185.89	184.52
74	188.44	187.07
75	190.99	189.61
76	193.53	192.16
77	196.08	194.71
78	198.63	197.25
79	201.17	199.80
80	203.72	202.35
81	206.26	204.89
82	208.81	207.44
83	211.36	209.99
84	213.90	212.53
85	216.45	215.08
86	219.00	217.63
87	221.54	220.17
88	224.09	222.72
89	226.64	225.26
90	229.18	227.81
91	231.73	230.36
92	234.28	232.90
93	236.82	235.45
94	239.37	238.00
95	241.92	240.54
96	244.46	243.09
97	247.01	245.64
98	249.56	248.18
99	252.10	250.73
100	254.65	253.28
101	257.19	255.82
102	259.74	258.37
103	262.29	260.92
104	264.83	263.46
105	267.38	266.01
106	269.93	268.55
107	272.47	271.10

No. of teeth	Pitch diameter	Outside diameter
108	275.02	273.65
109	277.57	276.19
110	280.11	278.74
111	282.66	281.29
112	285.21	283.83
113	287.75	286.38
114	290.30	288.93
115	292.85	291.47
116	295.39	294.02
117	297.94	296.57
118	300.48	299.11
119	303.03	301.66
120	305.58	304.21
121	308.12	306.75
122	310.67	309.30
123	313.22	311.84
124	315.76	314.39
125	318.31	316.94
126	320.86	319.48
127	323.40	322.03
128	325.95	324.58
129	328.50	327.12
130	331.04	329.67
131	333.59	332.22
132	336.14	334.76
133	338.68	337.31
134	341.23	339.86
135	343.77	342.40
136	346.32	344.95
137	348.87	347.50
138	351.41	350.04
139	353.96	352.59
140	356.51	355.14
141	359.05	357.68
142	361.60	360.23
143	364.15	362.77
144	366.69	365.32
145	369.24	367.87
146	371.79	370.41
147	374.33	372.96
148	376.88	375.51
149	379.43	378.05
150	381.97	380.60

List of pulley diameters for KPS II Type 14M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
22	98.04	95.24
23	102.50	99.70
24	106.95	104.16
25	111.41	108.61
26	115.86	113.06
27	120.32	117.52
28	124.78	121.98
29	129.23	126.44
30	133.69	130.90
31	138.15	135.35
32	142.60	139.81
33	147.06	144.27
34	151.52	148.72
35	155.97	153.18
36	160.43	157.63
37	164.88	162.09
38	169.34	166.55
39	173.80	171.00
40	178.25	175.46
41	182.71	179.92
42	187.17	184.37
43	191.62	188.83
44	196.08	193.28
45	200.54	197.74
46	204.99	202.20
47	209.45	206.65
48	213.90	211.11
49	218.36	215.57
50	222.82	220.02
51	227.27	224.48
52	231.73	228.94
53	236.19	233.39
54	240.64	237.85
55	245.10	242.30
56	249.56	246.76
57	254.01	251.22
58	258.47	255.67
59	262.92	260.13
60	267.38	264.59
61	271.84	269.04
62	276.29	273.50
63	280.75	277.96
64	285.21	282.41
65	289.66	286.87
66	294.12	291.32
67	298.57	295.78
68	303.03	300.24
69	307.49	304.69
70	311.94	309.15
71	316.40	313.61
72	320.86	318.06
73	325.31	322.52
74	329.77	326.98
75	334.23	331.43
76	338.68	335.89
77	343.14	340.34
78	347.59	344.80
79	352.05	349.26
80	356.51	353.71
81	360.96	358.17
82	365.42	362.63
83	369.88	367.08
84	374.33	371.54
85	378.79	375.99
86	383.25	380.45
87	387.70	384.91
88	392.16	389.36
89	396.61	393.82
90	401.07	398.28
91	405.53	402.73
92	409.98	407.19
93	414.44	411.65
94	418.90	416.10
95	423.35	420.56
96	427.81	425.01
97	432.26	429.47
98	436.72	433.93
99	441.18	438.38
100	445.63	442.84
101	450.09	447.30
102	454.55	451.75
103	459.00	456.21
104	463.46	460.67
105	467.92	465.12
106	472.37	469.58
107	476.83	474.03
108	481.28	478.49
109	485.74	482.95
110	490.20	487.40
111	494.65	491.86
112	499.11	496.32
113	503.57	500.77
114	508.02	505.23
115	512.48	509.68
116	516.94	514.14
117	521.39	518.60
118	525.85	523.05
119	530.30	527.51
120	534.76	531.97
121	539.22	536.42
122	543.67	540.88
123	548.13	545.34
124	552.59	549.79
125	557.04	554.25
126	561.50	558.70
127	565.96	563.16
128	570.41	567.62
129	574.87	572.07
130	579.32	576.53
131	583.78	580.99
132	588.24	585.44
133	592.69	589.90
134	597.15	594.36
135	601.61	598.81
136	606.06	603.27
137	610.52	607.72
138	614.97	612.18
139	619.43	616.64
140	623.89	621.09
141	628.34	625.55
142	632.80	630.01
143	637.26	634.46
144	641.71	638.92
145	646.17	643.38
146	650.63	647.83
147	655.08	652.29
148	659.54	656.74
149	663.99	661.20
150	668.45	665.66

Step 1. Determining conditions required for the design

- Driving machine: Servo motor 3.75 kW
- Driven machine: Belt conveyor (8- to 10-hours/day operation)
- Revolution of driving shaft: 300 rpm
- Driving pulley diameter ϕ85 mm to ϕ100 mm
- Speed-up ratio: 1.294 (deceleration)
- Center distance 340 mm ± 15 mm

Step 2. Calculating the design power

① Obtain the load correction factor from **Table 1 (→ P. 31)**.

② From Formula 1**(→ P. 31)**, calculate the design power.

$Pd = 3.75 \times (1.7 + 0.0) = 6.38$

Step 3. Selecting a belt type

From the design power of 6.38 kW and the revolution of driving shaft of 300 rpm from **Fig. 1 Belt type selection diagram (→ P. 32)**, select Type 8M.

Step 4. Selecting a pulley diameter

① Due to the restriction of the driving pulley diameter, select 34 as the number of teeth of the 8M pulley **(→ P. 39)** and check if it is the minimum number of teeth of a pulley in **Table 5 (→ P. 33)** or more (in this case 18 teeth or more).

② From Formula 4**(→ P. 33)**, calculate the number of teeth of the driven pulley.

- Speed-up ratio = 1.294 (deceleration)

$Z_2 = 34 \times 1.294 = 44$

Step 5. Selecting an effective length

① Calculate a rough effective length with Formula 7 **(→ P. 33)** and select an effective length that is closest to this value from the **"Table of standard effective lengths" (→ P. 30)**.

$$L' = 2 \times 340 + 1.57(112.05 + 86.58) + \frac{(112.05 - 86.58)^2}{4 \times 340}$$
$$= 992.33 \rightarrow 1000$$

② From belt pitch length Lp = 1000 and Formula 8 **(→ P. 33)**, backcalculate the center distance at that time.

$$C = \frac{688.15 + \sqrt{688.15^2 - 2(112.05 - 86.58)^2}}{4}$$

$$=343.84$$

Step 6. Determining the belt width

① From **"Table of basic power ratings for KPS II 8M (per width of 15 mm)" (→ P. 37)**, obtain the basic power rating with 34 teeth of the pinion and at 300 rpm.

② From Formula 9 **(→ P. 34)**, calculate the angle of contact of the pulley and from **Table 6 (→ P. 34)**, obtain the mesh correction factor.

$$\Theta_1 = 180 - \frac{57.3\,(112.05\text{-}86.58)}{343.84} = 175.8°$$

$$Z_m = 34 \times \frac{175.8}{360} = 16.6 \rightarrow Km = 1.0$$

③ From **Table 8 (→ P. 35)**, obtain the correction factor by effective length.

④ From **Table 7 (→ P. 34)**, obtain the correction factor by use of a pinion.

⑤ From Formula 10 **(→ P. 34)**, obtain the corrected power rating.

$Pc = 1.97 \times 1.00 \times 0.92 \times 1.00 = 1.81$

⑥ From Formula 11 **(→ P. 34)**, obtain the correction factor of the belt width Kb.

$$K_b = \frac{6.38}{1.81} = 3.52$$

⑦ From **Table 10 "Table of 8M belt width correction factors" (→ P. 36)**, obtain the belt width.

Step 7. Checking the adjustment range of the center distance

From **Table 9 (→ P. 35)**, obtain the inner and outer adjustment ranges of the center distance.

Examination result

- Belt	600 KPS II 8M 1000
- Driving pulley	34 S8M 0600
- Driven pulley	44 S8M 0600

- Center distance 343.8 mm
  - Inner adjustment range: 15 mm
  - Outer adjustment range: 15 mm

Load correction factor Ko = 1.7
Design power Pd = 6.38 kW

Belt type: 8M

No. of teeth of driving pulley: 34
Driving pulley pitch diameter: 86.58 mm

No. of teeth of driven pulley: 44
Driving pulley pitch diameter: 112.05 mm

Effective length: KPS II 8M 1000
(Pitch length 1000 mm)

Center distance: 343.84 mm

Basic power rating Pr = 1.97 kW

Mesh correction factor Km = 1.00

Length correction factor K = 0.92
Pinion correction factor Kp = 1.00

Corrected power rating Pc = 1.81 kW
Belt width correction factor Kb = 3.67

Belt width: 60 mm
Belt nominal width: 600

Inner adjustment range (Ci): 15 mm
Outer adjustment range (Cs): 10 mm

Ceptor™-X

1. Product Introduction

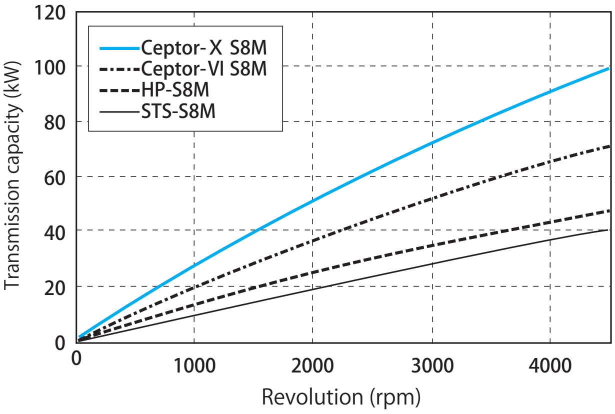
As a result of recent demands for "space-saving, weight reduction, and noise reduction" of industrial machinery, we have developed "Ceptor-X/heavy duty STS belt" utilizing our long-accumulated technological force.

Features

■ High-torque power transmission

Ceptor-X provides higher torque and higher power transmission than normal trapezoidal teeth due to the mesh theory of the unique curvilinear teeth and has achieved high torque and high power transmission by using high-rigidity and high-elasticity components. Although it varies depending on the field, it has a 2.7-fold or more transmission capacity compared to normal STS.

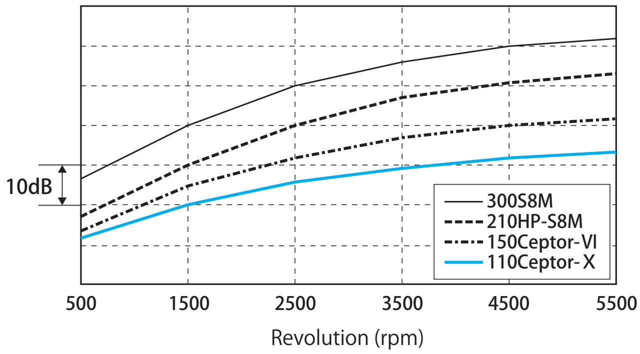
Belt width: 60 mm / Pulley: 26 teeth



■ Low noise

As the belt width can be narrower than the previous specification, the noise can be reduced.

Noise comparison evaluation



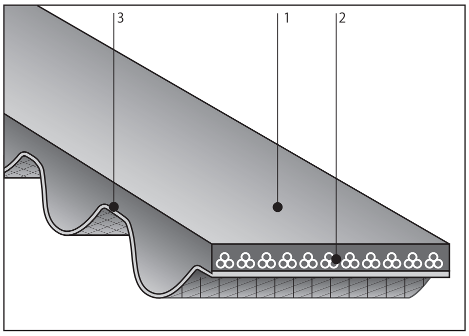
■ Miniaturized

The high transmission capacity allows a narrower width and a smaller pulley diameter than the previous specifications, allowing compact designs.

■ Pulleys used

Ceptor-X can be used with the standard STS pulleys and TL STS pulleys.

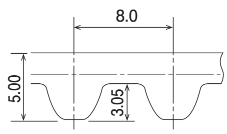
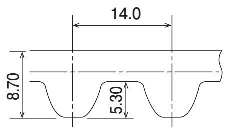
Structure



1. Rubber 2. Cord 3. Facing fabric

- **Rubber**: Adoption of a synthetic rubber with little tooth deformation, high hardness, and high elasticity
- **Cord**: Adoption of ultra-high-elasticity cord with excellent tension maintenance
- **Facing fabric**: Adoption of facing fabric with excellent tooth chipping resistance and abrasion resistance

Tooth profile dimensions and indication method

Belt type	Dimension (mm)	Belt indication method
Ceptor-X S8M		600 Ceptor-X S8M 1000 Belt nominal width (60.0mm) / Belt type (Ceptor-X S8M) / Belt nominal length (1000mm)
Ceptor-X S14M		800 Ceptor-X S14M 1400 Belt nominal width (80.0mm) / Belt type (Ceptor-X S14M) / Belt nominal length (1400mm)

Ceptor™-X standard effective lengths

Ceptor™- X Type S8M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor- X S8M 480	480.00	60
Ceptor- X S8M 496	496.00	62
Ceptor- X S8M 512	512.00	64
Ceptor- X S8M 520	520.00	65
Ceptor- X S8M 528	528.00	66
Ceptor- X S8M 560	560.00	70
Ceptor- X S8M 584	584.00	73
Ceptor- X S8M 600	600.00	75
Ceptor- X S8M 632	632.00	79
Ceptor- X S8M 640	640.00	80
Ceptor- X S8M 656	656.00	82
Ceptor- X S8M 672	672.00	84
Ceptor- X S8M 680	680.00	85
Ceptor- X S8M 712	712.00	89
Ceptor- X S8M 720	720.00	90
Ceptor- X S8M 728	728.00	91
Ceptor- X S8M 760	760.00	95
Ceptor- X S8M 800	800.00	100
Ceptor- X S8M 824	824.00	103
Ceptor- X S8M 840	840.00	105
Ceptor- X S8M 848	848.00	106
Ceptor- X S8M 880	880.00	110
Ceptor- X S8M 888	888.00	111
Ceptor- X S8M 896	896.00	112
Ceptor- X S8M 920	920.00	115
Ceptor- X S8M 944	944.00	118
Ceptor- X S8M 960	960.00	120
Ceptor- X S8M 976	976.00	122
Ceptor- X S8M 984	984.00	123
Ceptor- X S8M 1000	1000.00	125
Ceptor- X S8M 1032	1032.00	129
Ceptor- X S8M 1040	1040.00	130
Ceptor- X S8M 1056	1056.00	132
Ceptor- X S8M 1080	1080.00	135
Ceptor- X S8M 1096	1096.00	137
Ceptor- X S8M 1120	1120.00	140
Ceptor- X S8M 1136	1136.00	142
Ceptor- X S8M 1152	1152.00	144
Ceptor- X S8M 1160	1160.00	145
Ceptor- X S8M 1184	1184.00	148
Ceptor- X S8M 1192	1192.00	149
Ceptor- X S8M 1200	1200.00	150
Ceptor- X S8M 1216	1216.00	152
Ceptor- X S8M 1224	1224.00	153
Ceptor- X S8M 1240	1240.00	155
Ceptor- X S8M 1248	1248.00	156
Ceptor- X S8M 1272	1272.00	159
Ceptor- X S8M 1280	1280.00	160
Ceptor- X S8M 1296	1296.00	162
Ceptor- X S8M 1312	1312.00	164
Ceptor- X S8M 1344	1344.00	168
Ceptor- X S8M 1352	1352.00	169
Ceptor- X S8M 1360	1360.00	170
Ceptor- X S8M 1384	1384.00	173
Ceptor- X S8M 1392	1392.00	174

Ceptor™- X Type S8M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor- X S8M 1400	1400.00	175
Ceptor- X S8M 1424	1424.00	178
Ceptor- X S8M 1440	1440.00	180
Ceptor- X S8M 1480	1480.00	185
Ceptor- X S8M 1520	1520.00	190
Ceptor- X S8M 1552	1552.00	194
Ceptor- X S8M 1600	1600.00	200
Ceptor- X S8M 1648	1648.00	206
Ceptor- X S8M 1680	1680.00	210
Ceptor- X S8M 1728	1728.00	216
Ceptor- X S8M 1760	1760.00	220
Ceptor- X S8M 1776	1776.00	222
Ceptor- X S8M 1800	1800.00	225
Ceptor- X S8M 1808	1808.00	226
Ceptor- X S8M 1856	1856.00	232
Ceptor- X S8M 1880	1880.00	235
Ceptor- X S8M 1912	1912.00	239
Ceptor- X S8M 1952	1952.00	244
Ceptor- X S8M 2000	2000.00	250
Ceptor- X S8M 2040	2040.00	255
Ceptor- X S8M 2120	2120.00	265
Ceptor- X S8M 2160	2160.00	270
Ceptor- X S8M 2240	2240.00	280
Ceptor- X S8M 2304	2304.00	288
Ceptor- X S8M 2400	2400.00	300
Ceptor- X S8M 2496	2496.00	312
Ceptor- X S8M 2560	2560.00	320
Ceptor- X S8M 2600	2600.00	325
Ceptor- X S8M 2800	2800.00	350
Ceptor- X S8M 2880	2880.00	360
Ceptor- X S8M 2944	2944.00	368
Ceptor- X S8M 3200	3200.00	400
Ceptor- X S8M 3600	3600.00	450
Ceptor- X S8M 3720	3720.00	465
Ceptor- X S8M 3904	3904.00	488
Ceptor- X S8M 4400	4400.00	550

Ceptor™- X Type S14M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor- X S14M 1008	1008.00	72
Ceptor- X S14M 1120	1120.00	80
Ceptor- X S14M 1190	1190.00	85
Ceptor- X S14M 1246	1246.00	89
Ceptor- X S14M 1358	1358.00	97
Ceptor- X S14M 1400	1400.00	100
Ceptor- X S14M 1540	1540.00	110
Ceptor- X S14M 1610	1610.00	115
Ceptor- X S14M 1652	1652.00	118
Ceptor- X S14M 1778	1778.00	127
Ceptor- X S14M 1806	1806.00	129
Ceptor- X S14M 1890	1890.00	135
Ceptor- X S14M 1904	1904.00	136
Ceptor- X S14M 1960	1960.00	140
Ceptor- X S14M 2002	2002.00	143
Ceptor- X S14M 2100	2100.00	150
Ceptor- X S14M 2240	2240.00	160
Ceptor- X S14M 2310	2310.00	165
Ceptor- X S14M 2380	2380.00	170
Ceptor- X S14M 2450	2450.00	175
Ceptor- X S14M 2506	2506.00	179
Ceptor- X S14M 2590	2590.00	185
Ceptor- X S14M 2660	2660.00	190
Ceptor- X S14M 2800	2800.00	200
Ceptor- X S14M 3150	3150.00	225
Ceptor- X S14M 3248	3248.00	232
Ceptor- X S14M 3500	3500.00	250
Ceptor- X S14M 3556	3556.00	254
Ceptor- X S14M 3850	3850.00	275
Ceptor- X S14M 4004	4004.00	286
Ceptor- X S14M 4060	4060.00	290
Ceptor- X S14M 4326	4326.00	309
Ceptor- X S14M 4508	4508.00	322
Ceptor- X S14M 5012	5012.00	358

Ceptor™-X standard belt widths

Nominal width	150	250	400	600	800	1000	1200
Width (mm)	15	25	40	60	80	100	120
Ceptor-X S8M	●	●	●	●	●		
Ceptor-X S14M			●	●	●	●	●

Note: For other belt widths than the above, please contact us.
The nominal width is indicated by a factor of ten of the belt width (mm).

Ceptor™-VI

1. Product Introduction

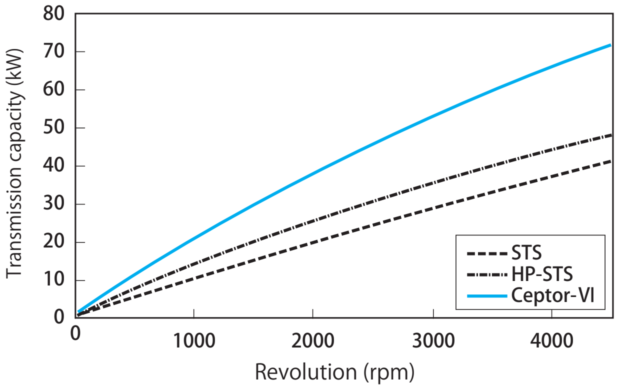
As a result of recent demands for "space-saving, weight reduction, and noise reduction" of industrial machinery, we have developed "Ceptor-VI/heavy duty STS belt" utilizing our long-accumulated technological force.

Features

■ High-torque power transmission

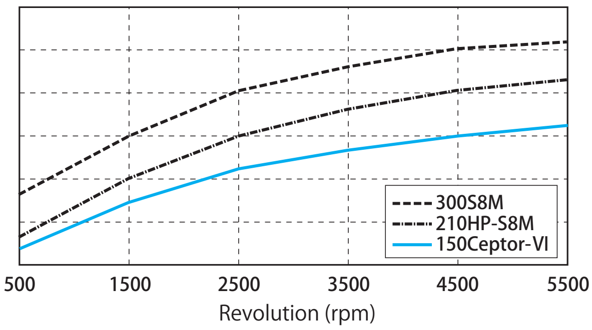
Ceptor-VI provides higher torque and higher power transmission than normal trapezoidal teeth due to the mesh theory of the unique curvilinear teeth and has achieved high torque and high power transmission by using high-rigidity and high-elasticity components. Although it varies depending on the field, it has a 2-fold or more transmission capacity compared to normal STS.

Belt width: 60 mm / Pulley: 26 teeth (S8M)



■ Low noise

As the belt width can be narrower than the standard and HP-STS specifications, the noise can be reduced.



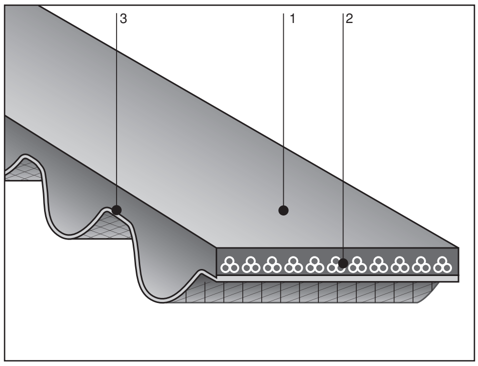
■ Miniaturized

The high transmission capacity allows a narrower width and a smaller pulley diameter than the standard products and the HP-STS specification, allowing compact designs.

■ Pulleys used

Ceptor-VI can be used with the standard STS pulleys and TL STS pulleys.
*Manufacturable with the STS standard belt sizes.

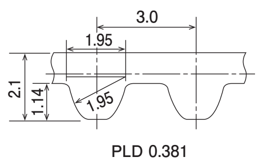
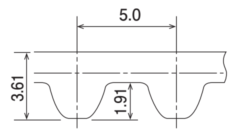
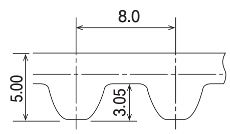
Structure



1. Rubber 2. Cord 3. Facing fabric

- **Rubber**: Adoption of a synthetic rubber with little tooth deformation, high hardness, and high elasticity
- **Cord**: Adoption of a high-elasticity cord with excellent tension maintenance and excellent strength
- **Facing fabric**: Adoption of facing fabric with excellent abrasion resistance and members with excellent tooth chipping resistance and abrasion resistance

Tooth profile dimensions and indication method

Belt type	Dimension (mm)	Belt indication method
Ceptor-VI S3M		100 Ceptor-VI S3M 200 Belt nominal width (10.0㎜) / Belt type (Ceptor-VI S3M) / Belt nominal length (200㎜)
Ceptor-VI S5M		150 Ceptor-VI S5M 630 Belt nominal width (15.0㎜) / Belt type (Ceptor-VI S5M) / Belt nominal length (630㎜)
Ceptor-VI S8M		600 Ceptor-VI S8M 1000 Belt nominal width (60.0㎜) / Belt type (Ceptor-VI S8M) / Belt nominal length (1000㎜)

Ceptor™-VI standard effective lengths

Ceptor™-VI Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S3M 93	93.00	31
Ceptor-VI S3M 96	96.00	32
Ceptor-VI S3M 99	99.00	33
Ceptor-VI S3M 108	108.00	36
Ceptor-VI S3M 120	120.00	40
Ceptor-VI S3M 123	123.00	41
Ceptor-VI S3M 129	129.00	43
Ceptor-VI S3M 132	132.00	44
Ceptor-VI S3M 138	138.00	46
Ceptor-VI S3M 141	141.00	47
Ceptor-VI S3M 144	144.00	48
Ceptor-VI S3M 147	147.00	49
Ceptor-VI S3M 150	150.00	50
Ceptor-VI S3M 156	156.00	52
Ceptor-VI S3M 159	159.00	53
Ceptor-VI S3M 162	162.00	54
Ceptor-VI S3M 168	168.00	56
Ceptor-VI S3M 171	171.00	57
Ceptor-VI S3M 174	174.00	58
Ceptor-VI S3M 177	177.00	59
Ceptor-VI S3M 180	180.00	60
Ceptor-VI S3M 183	183.00	61
Ceptor-VI S3M 186	186.00	62
Ceptor-VI S3M 189	189.00	63
Ceptor-VI S3M 192	192.00	64
Ceptor-VI S3M 195	195.00	65
Ceptor-VI S3M 198	198.00	66
Ceptor-VI S3M 201	201.00	67
Ceptor-VI S3M 204	204.00	68
Ceptor-VI S3M 207	207.00	69
Ceptor-VI S3M 210	210.00	70
Ceptor-VI S3M 213	213.00	71
Ceptor-VI S3M 219	219.00	73
Ceptor-VI S3M 222	222.00	74
Ceptor-VI S3M 225	225.00	75
Ceptor-VI S3M 228	228.00	76
Ceptor-VI S3M 234	234.00	78
Ceptor-VI S3M 237	237.00	79
Ceptor-VI S3M 240	240.00	80
Ceptor-VI S3M 243	243.00	81
Ceptor-VI S3M 246	246.00	82
Ceptor-VI S3M 249	249.00	83
Ceptor-VI S3M 252	252.00	84
Ceptor-VI S3M 255	255.00	85
Ceptor-VI S3M 258	258.00	86
Ceptor-VI S3M 261	261.00	87
Ceptor-VI S3M 264	264.00	88
Ceptor-VI S3M 267	267.00	89
Ceptor-VI S3M 270	270.00	90
Ceptor-VI S3M 273	273.00	91
Ceptor-VI S3M 276	276.00	92
Ceptor-VI S3M 279	279.00	93
Ceptor-VI S3M 282	282.00	94
Ceptor-VI S3M 285	285.00	95
Ceptor-VI S3M 288	288.00	96
Ceptor-VI S3M 291	291.00	97
Ceptor-VI S3M 294	294.00	98
Ceptor-VI S3M 297	297.00	99
Ceptor-VI S3M 300	300.00	100
Ceptor-VI S3M 303	303.00	101
Ceptor-VI S3M 306	306.00	102
Ceptor-VI S3M 309	309.00	103
Ceptor-VI S3M 312	312.00	104
Ceptor-VI S3M 315	315.00	105
Ceptor-VI S3M 318	318.00	106

Ceptor™-VI Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S3M 324	324.00	108
Ceptor-VI S3M 327	327.00	109
Ceptor-VI S3M 330	330.00	110
Ceptor-VI S3M 333	333.00	111
Ceptor-VI S3M 336	336.00	112
Ceptor-VI S3M 339	339.00	113
Ceptor-VI S3M 342	342.00	114
Ceptor-VI S3M 348	348.00	116
Ceptor-VI S3M 351	351.00	117
Ceptor-VI S3M 354	354.00	118
Ceptor-VI S3M 360	360.00	120
Ceptor-VI S3M 363	363.00	121
Ceptor-VI S3M 366	366.00	122
Ceptor-VI S3M 369	369.00	123
Ceptor-VI S3M 372	372.00	124
Ceptor-VI S3M 375	375.00	125
Ceptor-VI S3M 378	378.00	126
Ceptor-VI S3M 384	384.00	128
Ceptor-VI S3M 387	387.00	129
Ceptor-VI S3M 390	390.00	130
Ceptor-VI S3M 396	396.00	132
Ceptor-VI S3M 399	399.00	133
Ceptor-VI S3M 402	402.00	134
Ceptor-VI S3M 405	405.00	135
Ceptor-VI S3M 408	408.00	136
Ceptor-VI S3M 414	414.00	138
Ceptor-VI S3M 417	417.00	139
Ceptor-VI S3M 420	420.00	140
Ceptor-VI S3M 423	423.00	141
Ceptor-VI S3M 426	426.00	142
Ceptor-VI S3M 432	432.00	144
Ceptor-VI S3M 438	438.00	146
Ceptor-VI S3M 444	444.00	148
Ceptor-VI S3M 447	447.00	149
Ceptor-VI S3M 453	453.00	151
Ceptor-VI S3M 456	456.00	152
Ceptor-VI S3M 459	459.00	153
Ceptor-VI S3M 468	468.00	156
Ceptor-VI S3M 471	471.00	157
Ceptor-VI S3M 474	474.00	158
Ceptor-VI S3M 480	480.00	160
Ceptor-VI S3M 483	483.00	161
Ceptor-VI S3M 486	486.00	162
Ceptor-VI S3M 489	489.00	163
Ceptor-VI S3M 492	492.00	164
Ceptor-VI S3M 498	498.00	166
Ceptor-VI S3M 501	501.00	167
Ceptor-VI S3M 507	507.00	169
Ceptor-VI S3M 510	510.00	170
Ceptor-VI S3M 513	513.00	171
Ceptor-VI S3M 516	516.00	172
Ceptor-VI S3M 519	519.00	173
Ceptor-VI S3M 522	522.00	174
Ceptor-VI S3M 525	525.00	175
Ceptor-VI S3M 528	528.00	176
Ceptor-VI S3M 534	534.00	178
Ceptor-VI S3M 537	537.00	179
Ceptor-VI S3M 540	540.00	180
Ceptor-VI S3M 543	543.00	181
Ceptor-VI S3M 549	549.00	183
Ceptor-VI S3M 552	552.00	184
Ceptor-VI S3M 555	555.00	185
Ceptor-VI S3M 564	564.00	188
Ceptor-VI S3M 573	573.00	191
Ceptor-VI S3M 579	579.00	193

Ceptor™-VI Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S3M 588	588.00	196
Ceptor-VI S3M 597	597.00	199
Ceptor-VI S3M 600	600.00	200
Ceptor-VI S3M 603	603.00	201
Ceptor-VI S3M 609	609.00	203
Ceptor-VI S3M 612	612.00	204
Ceptor-VI S3M 621	621.00	207
Ceptor-VI S3M 633	633.00	211
Ceptor-VI S3M 636	636.00	212
Ceptor-VI S3M 648	648.00	216
Ceptor-VI S3M 657	657.00	219
Ceptor-VI S3M 660	660.00	220
Ceptor-VI S3M 666	666.00	222
Ceptor-VI S3M 678	678.00	226
Ceptor-VI S3M 681	681.00	227
Ceptor-VI S3M 687	687.00	229
Ceptor-VI S3M 690	690.00	230
Ceptor-VI S3M 696	696.00	232
Ceptor-VI S3M 699	699.00	233
Ceptor-VI S3M 720	720.00	240
Ceptor-VI S3M 726	726.00	242
Ceptor-VI S3M 735	735.00	245
Ceptor-VI S3M 741	741.00	247
Ceptor-VI S3M 750	750.00	250
Ceptor-VI S3M 768	768.00	256
Ceptor-VI S3M 771	771.00	257
Ceptor-VI S3M 789	789.00	263
Ceptor-VI S3M 804	804.00	268
Ceptor-VI S3M 810	810.00	270
Ceptor-VI S3M 819	819.00	273
Ceptor-VI S3M 825	825.00	275
Ceptor-VI S3M 831	831.00	277
Ceptor-VI S3M 837	837.00	279
Ceptor-VI S3M 852	852.00	284
Ceptor-VI S3M 858	858.00	286
Ceptor-VI S3M 882	882.00	294
Ceptor-VI S3M 885	885.00	295
Ceptor-VI S3M 888	888.00	296
Ceptor-VI S3M 900	900.00	300
Ceptor-VI S3M 909	909.00	303
Ceptor-VI S3M 918	918.00	306
Ceptor-VI S3M 927	927.00	309
Ceptor-VI S3M 936	936.00	312
Ceptor-VI S3M 954	954.00	318
Ceptor-VI S3M 990	990.00	330
Ceptor-VI S3M 999	999.00	333
Ceptor-VI S3M 1014	1014.00	338
Ceptor-VI S3M 1050	1050.00	350
Ceptor-VI S3M 1119	1119.00	373
Ceptor-VI S3M 1134	1134.00	378
Ceptor-VI S3M 1146	1146.00	382
Ceptor-VI S3M 1176	1176.00	392
Ceptor-VI S3M 1188	1188.00	396
Ceptor-VI S3M 1260	1260.00	420
Ceptor-VI S3M 1299	1299.00	433
Ceptor-VI S3M 1338	1338.00	446
Ceptor-VI S3M 1374	1374.00	458
Ceptor-VI S3M 1419	1419.00	473
Ceptor-VI S3M 1530	1530.00	510
Ceptor-VI S3M 1569	1569.00	523
Ceptor-VI S3M 1596	1596.00	532
Ceptor-VI S3M 1650	1650.00	550
Ceptor-VI S3M 1734	1734.00	578

CeptorTM-VI Type S5M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S5M 225	225.00	45
Ceptor-VI S5M 230	230.00	46
Ceptor-VI S5M 255	255.00	51
Ceptor-VI S5M 260	260.00	52
Ceptor-VI S5M 275	275.00	55
Ceptor-VI S5M 285	285.00	57
Ceptor-VI S5M 295	295.00	59
Ceptor-VI S5M 300	300.00	60
Ceptor-VI S5M 305	305.00	61
Ceptor-VI S5M 320	320.00	64
Ceptor-VI S5M 325	325.00	65
Ceptor-VI S5M 340	340.00	68
Ceptor-VI S5M 350	350.00	70
Ceptor-VI S5M 360	360.00	72
Ceptor-VI S5M 370	370.00	74
Ceptor-VI S5M 375	375.00	75
Ceptor-VI S5M 380	380.00	76
Ceptor-VI S5M 390	390.00	78
Ceptor-VI S5M 400	400.00	80
Ceptor-VI S5M 410	410.00	82
Ceptor-VI S5M 415	415.00	83
Ceptor-VI S5M 420	420.00	84
Ceptor-VI S5M 425	425.00	85
Ceptor-VI S5M 435	435.00	87
Ceptor-VI S5M 440	440.00	88
Ceptor-VI S5M 445	445.00	89
Ceptor-VI S5M 450	450.00	90
Ceptor-VI S5M 475	475.00	95
Ceptor-VI S5M 490	490.00	98
Ceptor-VI S5M 500	500.00	100
Ceptor-VI S5M 520	520.00	104
Ceptor-VI S5M 525	525.00	105
Ceptor-VI S5M 530	530.00	106
Ceptor-VI S5M 545	545.00	109
Ceptor-VI S5M 550	550.00	110
Ceptor-VI S5M 560	560.00	112
Ceptor-VI S5M 565	565.00	113
Ceptor-VI S5M 570	570.00	114
Ceptor-VI S5M 575	575.00	115
Ceptor-VI S5M 590	590.00	118
Ceptor-VI S5M 595	595.00	119
Ceptor-VI S5M 600	600.00	120
Ceptor-VI S5M 625	625.00	125
Ceptor-VI S5M 635	635.00	127
Ceptor-VI S5M 640	640.00	128
Ceptor-VI S5M 645	645.00	129
Ceptor-VI S5M 650	650.00	130
Ceptor-VI S5M 665	665.00	133
Ceptor-VI S5M 670	670.00	134
Ceptor-VI S5M 675	675.00	135
Ceptor-VI S5M 690	690.00	138
Ceptor-VI S5M 695	695.00	139
Ceptor-VI S5M 700	700.00	140
Ceptor-VI S5M 710	710.00	142
Ceptor-VI S5M 720	720.00	144
Ceptor-VI S5M 725	725.00	145
Ceptor-VI S5M 730	730.00	146
Ceptor-VI S5M 740	740.00	148
Ceptor-VI S5M 750	750.00	150
Ceptor-VI S5M 765	765.00	153
Ceptor-VI S5M 770	770.00	154
Ceptor-VI S5M 775	775.00	155
Ceptor-VI S5M 780	780.00	156
Ceptor-VI S5M 800	800.00	160
Ceptor-VI S5M 810	810.00	162
Ceptor-VI S5M 830	830.00	166
Ceptor-VI S5M 845	845.00	169
Ceptor-VI S5M 850	850.00	170
Ceptor-VI S5M 860	860.00	172
Ceptor-VI S5M 870	870.00	174

CeptorTM-VI Type S5M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S5M 890	890.00	178
Ceptor-VI S5M 900	900.00	180
Ceptor-VI S5M 920	920.00	184
Ceptor-VI S5M 930	930.00	186
Ceptor-VI S5M 940	940.00	188
Ceptor-VI S5M 950	950.00	190
Ceptor-VI S5M 965	965.00	193
Ceptor-VI S5M 975	975.00	195
Ceptor-VI S5M 1000	1000.00	200
Ceptor-VI S5M 1025	1025.00	205
Ceptor-VI S5M 1050	1050.00	210
Ceptor-VI S5M 1055	1055.00	211
Ceptor-VI S5M 1085	1085.00	217
Ceptor-VI S5M 1090	1090.00	218
Ceptor-VI S5M 1100	1100.00	220
Ceptor-VI S5M 1105	1105.00	221
Ceptor-VI S5M 1115	1115.00	223
Ceptor-VI S5M 1120	1120.00	224
Ceptor-VI S5M 1125	1125.00	225
Ceptor-VI S5M 1135	1135.00	227
Ceptor-VI S5M 1145	1145.00	229
Ceptor-VI S5M 1160	1160.00	232
Ceptor-VI S5M 1165	1165.00	233
Ceptor-VI S5M 1195	1195.00	239
Ceptor-VI S5M 1225	1225.00	245
Ceptor-VI S5M 1250	1250.00	250
Ceptor-VI S5M 1260	1260.00	252
Ceptor-VI S5M 1270	1270.00	254
Ceptor-VI S5M 1295	1295.00	259
Ceptor-VI S5M 1330	1330.00	266
Ceptor-VI S5M 1350	1350.00	270
Ceptor-VI S5M 1420	1420.00	284
Ceptor-VI S5M 1475	1475.00	295
Ceptor-VI S5M 1500	1500.00	300
Ceptor-VI S5M 1505	1505.00	301
Ceptor-VI S5M 1530	1530.00	306
Ceptor-VI S5M 1595	1595.00	319
Ceptor-VI S5M 1605	1605.00	321
Ceptor-VI S5M 1680	1680.00	336
Ceptor-VI S5M 1715	1715.00	343
Ceptor-VI S5M 1800	1800.00	360
Ceptor-VI S5M 2000	2000.00	400

CeptorTM-VI Type S8M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S8M 480	480.00	60
Ceptor-VI S8M 496	496.00	62
Ceptor-VI S8M 512	512.00	64
Ceptor-VI S8M 520	520.00	65
Ceptor-VI S8M 528	528.00	66
Ceptor-VI S8M 560	560.00	70
Ceptor-VI S8M 584	584.00	73
Ceptor-VI S8M 600	600.00	75
Ceptor-VI S8M 632	632.00	79
Ceptor-VI S8M 640	640.00	80
Ceptor-VI S8M 656	656.00	82
Ceptor-VI S8M 672	672.00	84
Ceptor-VI S8M 680	680.00	85
Ceptor-VI S8M 712	712.00	89
Ceptor-VI S8M 720	720.00	90
Ceptor-VI S8M 728	728.00	91
Ceptor-VI S8M 760	760.00	95
Ceptor-VI S8M 800	800.00	100
Ceptor-VI S8M 824	824.00	103
Ceptor-VI S8M 840	840.00	105

CeptorTM-VI Type S8M

Belt nominal length	Pitch length (mm)	No. of teeth
Ceptor-VI S8M 848	848.00	118
Ceptor-VI S8M 880	880.00	120
Ceptor-VI S8M 888	888.00	122
Ceptor-VI S8M 896	896.00	123
Ceptor-VI S8M 920	920.00	125
Ceptor-VI S8M 944	944.00	129
Ceptor-VI S8M 960	960.00	130
Ceptor-VI S8M 976	976.00	132
Ceptor-VI S8M 984	984.00	137
Ceptor-VI S8M 1000	1000.00	140
Ceptor-VI S8M 1032	1032.00	142
Ceptor-VI S8M 1040	1040.00	144
Ceptor-VI S8M 1056	1056.00	145
Ceptor-VI S8M 1096	1096.00	148
Ceptor-VI S8M 1120	1120.00	149
Ceptor-VI S8M 1136	1136.00	150
Ceptor-VI S8M 1152	1152.00	152
Ceptor-VI S8M 1160	1160.00	153
Ceptor-VI S8M 1184	1184.00	155
Ceptor-VI S8M 1192	1192.00	156
Ceptor-VI S8M 1200	1200.00	159
Ceptor-VI S8M 1216	1216.00	160
Ceptor-VI S8M 1224	1224.00	162
Ceptor-VI S8M 1240	1240.00	164
Ceptor-VI S8M 1248	1248.00	168
Ceptor-VI S8M 1272	1272.00	169
Ceptor-VI S8M 1280	1280.00	170
Ceptor-VI S8M 1296	1296.00	173
Ceptor-VI S8M 1312	1312.00	174
Ceptor-VI S8M 1344	1344.00	175
Ceptor-VI S8M 1352	1352.00	178
Ceptor-VI S8M 1360	1360.00	180
Ceptor-VI S8M 1384	1384.00	185
Ceptor-VI S8M 1392	1392.00	190
Ceptor-VI S8M 1400	1400.00	194
Ceptor-VI S8M 1424	1424.00	200
Ceptor-VI S8M 1440	1440.00	206
Ceptor-VI S8M 1480	1480.00	210
Ceptor-VI S8M 1520	1520.00	216
Ceptor-VI S8M 1552	1552.00	220
Ceptor-VI S8M 1600	1600.00	222
Ceptor-VI S8M 1648	1648.00	225
Ceptor-VI S8M 1680	1680.00	226
Ceptor-VI S8M 1728	1728.00	232
Ceptor-VI S8M 1760	1760.00	235
Ceptor-VI S8M 1776	1776.00	239
Ceptor-VI S8M 1800	1800.00	244
Ceptor-VI S8M 1808	1808.00	250
Ceptor-VI S8M 1856	1856.00	255
Ceptor-VI S8M 1880	1880.00	265
Ceptor-VI S8M 1912	1912.00	270
Ceptor-VI S8M 1952	1952.00	280
Ceptor-VI S8M 2000	2000.00	288
Ceptor-VI S8M 2040	2040.00	300
Ceptor-VI S8M 2120	2120.00	312
Ceptor-VI S8M 2160	2160.00	320
Ceptor-VI S8M 2240	2240.00	325
Ceptor-VI S8M 2304	2304.00	350
Ceptor-VI S8M 2400	2400.00	360
Ceptor-VI S8M 2496	2496.00	368
Ceptor-VI S8M 2560	2560.00	400
Ceptor-VI S8M 2600	2600.00	450
Ceptor-VI S8M 2800	2800.00	465
Ceptor-VI S8M 2880	2880.00	488
Ceptor-VI S8M 2944	2944.00	550
Ceptor-VI S8M 3200	3200.00	106
Ceptor-VI S8M 3600	3600.00	110
Ceptor-VI S8M 3720	3720.00	111
Ceptor-VI S8M 3904	3904.00	112
Ceptor-VI S8M 4400	4400.00	115

Ceptor™-VI standard belt widths

Nominal width	60	100	150	200	250	400	600	800
Width (mm)	6	10	15	20	25	40	60	80
Ceptor-VI S3M	●	●	●					
Ceptor-VI S5M		●	●	●	●			
Ceptor-VI S8M			●	●	●	●	●	●

Note: For other belt widths than the above, please contact us.
The nominal width is indicated by a factor of ten of the belt width (mm).

Belt dimensional tolerance

Effective length

(Unit: mm)

Length	Tolerance
256 or less	±0.20
Over 256 to 384 or less	±0.23
Over 384 to 512 or less	±0.25
Over 512 to 760 or less	±0.30
Over 760 to 1016 or less	±0.33
Over 1016 to 1272 or less	±0.38
Over 1272 to 1528 or less	±0.41
Over 1528 to 1776 or less	±0.43
Over 1776 to 2032 or less	±0.46
Over 2032 to 2288 or less	±0.48
Over 2288 to 2544 or less	±0.51
Over 2544 to 2792 or less	±0.53
Over 2792 to 3048 or less	±0.56
Over 3048 to 3304 or less	±0.58
Over 3304 to 3560 or less	±0.61
Over 3560 to 3808 or less	±0.64
Over 3808 to 4064 or less	±0.66
Over 4064 to 4320 or less	±0.69
Over 4320 to 4576 or less	±0.71

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Belt width (S3M/S5M)

(Unit: mm)

Belt width	Tolerance
6 or less	±0.3
Over 6 to 10 or less	±0.4
Over 10 to 20 or less	±0.5
Over 20 to 30 or less	±0.6
Over 30 to 40 or less	±0.7
Over 40 to 60 or less	±0.8

Belt width (S8M)

(Unit: mm)

Belt width	Belt pitch length 840 or less	Belt pitch length 841～1680	Belt pitch length 1681 or more
Over 10 to 40 or less	+0.8 -0.8	+0.8 -1.2	+0.8 -1.2
Over 40 to 50 or less	+0.8 -1.2	+1.2 -1.2	+1.2 -1.6
Over 50 to 75 or less	+1.2 -1.6	+1.6 -1.6	+1.6 -2.0
Over 75 to 100 or less	+1.6 -1.6	+1.6 -2.0	+2.0 -2.0
Over 100	+2.4 -2.4	+2.4 -2.8	+2.4 -3.2

HP-STS (High-Performance Super-Torque Synchronous Belt)
HP-HTS (High-Performance High-Torque Synchronous Belt)

1. HP-STS/HP-HTS Product Introduction

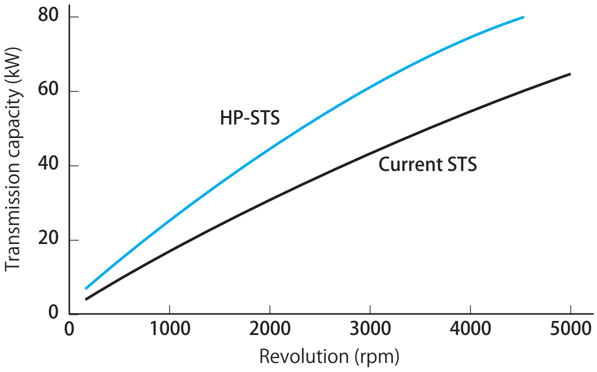
As a result of recent demands for “space-saving” of industrial machinery, we have developed “HP-STS/HP-HTS/heavy duty type belts” utilizing our long-accumulated technology and experience.

Features

■ High-torque power transmission

The HP-STS/HP-HTS belts provide higher torque and higher power transmission than normal trapezoidal teeth due to the mesh theory of the unique teeth profiles and have achieved high torque and high power transmission by using high-rigidity components. Although it varies depending on the field, it has a 1.4 to 1.8-fold transmission capacity compared to normal STS/HTS.

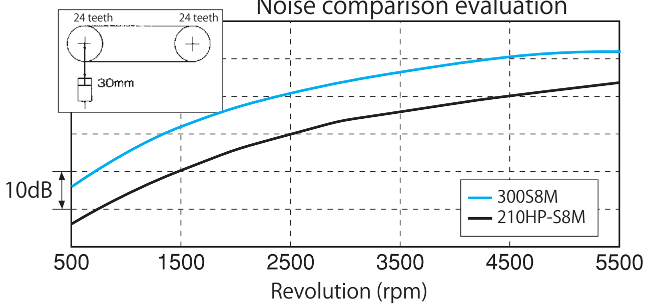
Belt width: 60 mm / Pulley: 26 teeth



■ Low noise

As the belt width can be narrower than the standard specification, the noise can be reduced.

Noise comparison



*The data shows STS data.

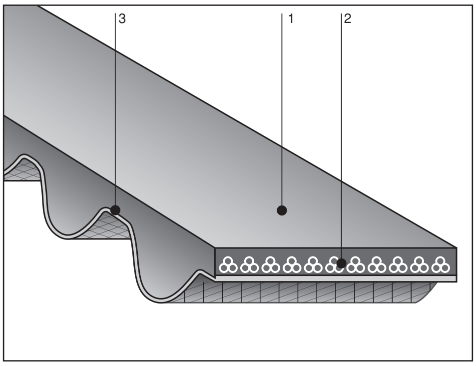
■ Miniaturized

The high transmission capacity allows a narrower width and a smaller pulley diameter than the standard specifications, allowing compact designs.

■ Pulleys used

HP-STS can be used with the standard STS pulleys and TL STS pulleys.
*Manufacturable with the STS standard belt sizes.
HP-HTS can be used with the standard HTS pulleys.

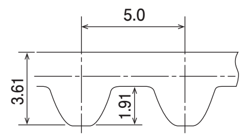
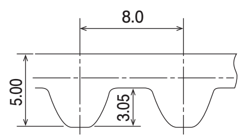
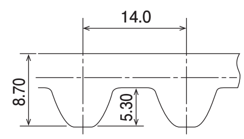
Structure

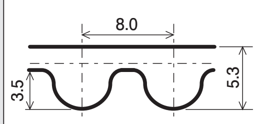
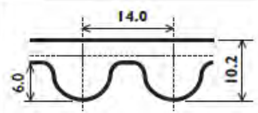


1. Back face rubber 2. Cord 3. Facing fabric

- **Back face rubber**: Adoption of a synthetic rubber with little tooth deformation and high hardness
- **Cord**: Glass cord taking the dimensional stability and flexibility into consideration
- **Facing fabric**: Low noise is achieved by providing irregularities on the facing fabric surface and with the low frictional factor Type S14M has two layers of facing fabric, further lowering the noise and enhancing the durability. HP-S5M has a clean facing fabric specification.

Tooth profile dimensions and indication method

Belt type	HP-STS	
	Dimension (mm)	Belt indication method
HP-S5M		150 HP-S5M 800 Belt nominal width (15.0mm) / Belt type (HP-S5M) / Belt nominal length (800mm)
HP-S8M		600 HP-S8M 1000 Belt nominal width (60.0mm) / Belt type (HP-S8M) / Belt nominal length (1000mm)
HP-S14M		800 HP-S14M 1400 Belt nominal width (80.0mm) / Belt type (HP-S14M) / Belt nominal length (1400mm)

Belt type	HP-HTS	
	Dimension (mm)	Belt indication method
8M		1000 8M 50 Belt pitch length (1000mm) / Belt type (8M) / Belt width (50.0mm)
14M		1400 14M 50 Belt pitch length (1000mm) / Belt type (14M) / Belt width (50.0mm)

HP-STS standard effective lengths

Type HP-S5M

Belt nominal length	Pitch length (mm)	No. of teeth
HP-S5M 225	225.00	45
HP-S5M 230	230.00	46
HP-S5M 255	255.00	51
HP-S5M 260	260.00	52
HP-S5M 275	275.00	55
HP-S5M 285	285.00	57
HP-S5M 295	295.00	59
HP-S5M 300	300.00	60
HP-S5M 305	305.00	61
HP-S5M 320	320.00	64
HP-S5M 325	325.00	65
HP-S5M 340	340.00	68
HP-S5M 350	350.00	70
HP-S5M 360	360.00	72
HP-S5M 370	370.00	74
HP-S5M 375	375.00	75
HP-S5M 380	380.00	76
HP-S5M 390	390.00	78
HP-S5M 400	400.00	80
HP-S5M 410	410.00	82
HP-S5M 415	415.00	83
HP-S5M 420	420.00	84
HP-S5M 425	425.00	85
HP-S5M 435	435.00	87
HP-S5M 440	440.00	88
HP-S5M 445	445.00	89
HP-S5M 450	450.00	90
HP-S5M 475	475.00	95
HP-S5M 490	490.00	98
HP-S5M 500	500.00	100
HP-S5M 520	520.00	104
HP-S5M 525	525.00	105
HP-S5M 530	530.00	106
HP-S5M 545	545.00	109
HP-S5M 550	550.00	110
HP-S5M 560	560.00	112
HP-S5M 565	565.00	113
HP-S5M 570	570.00	114
HP-S5M 575	575.00	115
HP-S5M 590	590.00	118
HP-S5M 595	595.00	119
HP-S5M 600	600.00	120
HP-S5M 625	625.00	125
HP-S5M 635	635.00	127
HP-S5M 640	640.00	128
HP-S5M 645	645.00	129
HP-S5M 650	650.00	130
HP-S5M 665	665.00	133
HP-S5M 670	670.00	134
HP-S5M 675	675.00	135
HP-S5M 690	690.00	138
HP-S5M 695	695.00	139
HP-S5M 700	700.00	140
HP-S5M 710	710.00	142
HP-S5M 720	720.00	144
HP-S5M 725	725.00	145
HP-S5M 730	730.00	146
HP-S5M 740	740.00	148
HP-S5M 750	750.00	150
HP-S5M 765	765.00	153
HP-S5M 770	770.00	154
HP-S5M 775	775.00	155
HP-S5M 780	780.00	156
HP-S5M 800	800.00	160
HP-S5M 810	810.00	162

Type HP-S5M

Belt nominal length	Pitch length (mm)	No. of teeth
HP-S5M 830	830.00	166
HP-S5M 845	845.00	169
HP-S5M 850	850.00	170
HP-S5M 860	860.00	172
HP-S5M 870	870.00	174
HP-S5M 890	890.00	178
HP-S5M 900	900.00	180
HP-S5M 920	920.00	184
HP-S5M 930	930.00	186
HP-S5M 940	940.00	188
HP-S5M 950	950.00	190
HP-S5M 965	965.00	193
HP-S5M 975	975.00	195
HP-S5M 1000	1000.00	200
HP-S5M 1025	1025.00	205
HP-S5M 1050	1050.00	210
HP-S5M 1055	1055.00	211
HP-S5M 1085	1085.00	217
HP-S5M 1090	1090.00	218
HP-S5M 1100	1100.00	220
HP-S5M 1105	1105.00	221
HP-S5M 1115	1115.00	223
HP-S5M 1120	1120.00	224
HP-S5M 1125	1125.00	225
HP-S5M 1135	1135.00	227
HP-S5M 1145	1145.00	229
HP-S5M 1160	1160.00	232
HP-S5M 1165	1165.00	233
HP-S5M 1195	1195.00	239
HP-S5M 1225	1225.00	245
HP-S5M 1250	1250.00	250
HP-S5M 1260	1260.00	252
HP-S5M 1270	1270.00	254
HP-S5M 1295	1295.00	259
HP-S5M 1330	1330.00	266
HP-S5M 1350	1350.00	270
HP-S5M 1420	1420.00	284
HP-S5M 1475	1475.00	295
HP-S5M 1500	1500.00	300
HP-S5M 1505	1505.00	301
HP-S5M 1530	1530.00	306
HP-S5M 1595	1595.00	319
HP-S5M 1605	1605.00	321
HP-S5M 1680	1680.00	336
HP-S5M 1715	1715.00	343
HP-S5M 1800	1800.00	360
HP-S5M 2000	2000.00	400

Type HP-S8M

Belt nominal length	Pitch length (mm)	No. of teeth
HP-S8M 352	352.00	44
HP-S8M 384	384.00	48
HP-S8M 408	408.00	51
HP-S8M 424	424.00	53
HP-S8M 440	440.00	55
HP-S8M 456	456.00	57
HP-S8M 480	480.00	60
HP-S8M 496	496.00	62
HP-S8M 512	512.00	64
HP-S8M 520	520.00	65
HP-S8M 528	528.00	66
HP-S8M 560	560.00	70
HP-S8M 584	584.00	73
HP-S8M 600	600.00	75
HP-S8M 632	632.00	79
HP-S8M 640	640.00	80
HP-S8M 656	656.00	82
HP-S8M 672	672.00	84
HP-S8M 680	680.00	85
HP-S8M 712	712.00	89
HP-S8M 720	720.00	90
HP-S8M 728	728.00	91
HP-S8M 760	760.00	95
HP-S8M 800	800.00	100
HP-S8M 824	824.00	103
HP-S8M 840	840.00	105
HP-S8M 848	848.00	106
HP-S8M 880	880.00	110
HP-S8M 888	888.00	111
HP-S8M 896	896.00	112
HP-S8M 920	920.00	115
HP-S8M 944	944.00	118
HP-S8M 960	960.00	120
HP-S8M 976	976.00	122
HP-S8M 984	984.00	123
HP-S8M 1000	1000.00	125
HP-S8M 1032	1032.00	129
HP-S8M 1040	1040.00	130
HP-S8M 1056	1056.00	132
HP-S8M 1080	1080.00	135
HP-S8M 1096	1096.00	137
HP-S8M 1120	1120.00	140
HP-S8M 1136	1136.00	142
HP-S8M 1152	1152.00	144
HP-S8M 1160	1160.00	145
HP-S8M 1184	1184.00	148
HP-S8M 1192	1192.00	149
HP-S8M 1200	1200.00	150
HP-S8M 1216	1216.00	152
HP-S8M 1224	1224.00	153
HP-S8M 1240	1240.00	155
HP-S8M 1248	1248.00	156
HP-S8M 1272	1272.00	159
HP-S8M 1280	1280.00	160
HP-S8M 1296	1296.00	162
HP-S8M 1312	1312.00	164
HP-S8M 1344	1344.00	168
HP-S8M 1352	1352.00	169
HP-S8M 1360	1360.00	170
HP-S8M 1384	1384.00	173
HP-S8M 1392	1392.00	174
HP-S8M 1400	1400.00	175
HP-S8M 1424	1424.00	178
HP-S8M 1440	1440.00	180
HP-S8M 1480	1480.00	185
HP-S8M 1520	1520.00	190
HP-S8M 1552	1552.00	194

Type HP-S8M

Belt nominal length	Pitch length (mm)	No. of teeth
HP-S8M 1600	1600.00	200
HP-S8M 1648	1648.00	206
HP-S8M 1680	1680.00	210
HP-S8M 1728	1728.00	216
HP-S8M 1760	1760.00	220
HP-S8M 1776	1776.00	222
HP-S8M 1800	1800.00	225
HP-S8M 1808	1808.00	226
HP-S8M 1856	1856.00	232
HP-S8M 1880	1880.00	235
HP-S8M 1912	1912.00	239
HP-S8M 1952	1952.00	244
HP-S8M 2000	2000.00	250
HP-S8M 2040	2040.00	255
HP-S8M 2120	2120.00	265
HP-S8M 2160	2160.00	270
HP-S8M 2240	2240.00	280
HP-S8M 2304	2304.00	288
HP-S8M 2400	2400.00	300
HP-S8M 2496	2496.00	312
HP-S8M 2560	2560.00	320
HP-S8M 2600	2600.00	325
HP-S8M 2800	2800.00	350
HP-S8M 2880	2880.00	360
HP-S8M 2944	2944.00	368
HP-S8M 3200	3200.00	400
HP-S8M 3600	3600.00	450
HP-S8M 3720	3720.00	465
HP-S8M 3904	3904.00	488
HP-S8M 4400	4400.00	550

Type HP-S14M

Belt nominal length	Pitch length (mm)	No. of teeth
HP-S14M 1008	1008.00	72
HP-S14M 1120	1120.00	80
HP-S14M 1190	1190.00	85
HP-S14M 1246	1246.00	89
HP-S14M 1358	1358.00	97
HP-S14M 1400	1400.00	100
HP-S14M 1540	1540.00	110
HP-S14M 1610	1610.00	115
HP-S14M 1652	1652.00	118
HP-S14M 1778	1778.00	127
HP-S14M 1806	1806.00	129
HP-S14M 1890	1890.00	135
HP-S14M 1904	1904.00	136
HP-S14M 1960	1960.00	140
HP-S14M 2002	2002.00	143
HP-S14M 2100	2100.00	150
HP-S14M 2240	2240.00	160
HP-S14M 2310	2310.00	165
HP-S14M 2380	2380.00	170
HP-S14M 2450	2450.00	175
HP-S14M 2506	2506.00	179
HP-S14M 2590	2590.00	185
HP-S14M 2660	2660.00	190
HP-S14M 2800	2800.00	200
HP-S14M 3150	3150.00	225
HP-S14M 3248	3248.00	232
HP-S14M 3500	3500.00	250
HP-S14M 3556	3556.00	254
HP-S14M 3850	3850.00	275
HP-S14M 4004	4004.00	286
HP-S14M 4060	4060.00	290
HP-S14M 4326	4326.00	309
HP-S14M 4508	4508.00	322
HP-S14M 5012	5012.00	358

HP-HTS standard effective lengths

Type HP-8M

Belt nominal length	Pitch length (mm)	No. of teeth
384 HP-8M	384.00	48
424 HP-8M	424.00	53
480 HP-8M	480.00	60
560 HP-8M	560.00	70
600 HP-8M	600.00	75
624 HP-8M	624.00	78
640 HP-8M	640.00	80
656 HP-8M	656.00	82
680 HP-8M	680.00	85
720 HP-8M	720.00	90
760 HP-8M	760.00	95
800 HP-8M	800.00	100
840 HP-8M	840.00	105
856 HP-8M	856.00	107
880 HP-8M	880.00	110
896 HP-8M	896.00	112
920 HP-8M	920.00	115
960 HP-8M	960.00	120
1000 HP-8M	1000.00	125
1040 HP-8M	1040.00	130
1056 HP-8M	1056.00	132
1064 HP-8M	1064.00	133
1080 HP-8M	1080.00	135
1120 HP-8M	1120.00	140
1152 HP-8M	1152.00	144
1160 HP-8M	1160.00	145
1184 HP-8M	1184.00	148
1192 HP-8M	1192.00	149
1200 HP-8M	1200.00	150
1224 HP-8M	1224.00	153
1248 HP-8M	1248.00	156
1264 HP-8M	1264.00	158
1280 HP-8M	1280.00	160
1304 HP-8M	1304.00	163
1360 HP-8M	1360.00	170
1392 HP-8M	1392.00	174
1400 HP-8M	1400.00	175
1424 HP-8M	1424.00	178
1440 HP-8M	1440.00	180
1480 HP-8M	1480.00	185
1512 HP-8M	1512.00	189
1520 HP-8M	1520.00	190
1584 HP-8M	1584.00	198
1600 HP-8M	1600.00	200
1680 HP-8M	1680.00	210
1728 HP-8M	1728.00	216
1760 HP-8M	1760.00	220
1800 HP-8M	1800.00	225
1904 HP-8M	1904.00	238
2000 HP-8M	2000.00	250
2056 HP-8M	2056.00	257
2080 HP-8M	2080.00	260
2104 HP-8M	2104.00	263
2160 HP-8M	2160.00	270
2240 HP-8M	2240.00	280
2248 HP-8M	2248.00	281
2272 HP-8M	2272.00	284
2400 HP-8M	2400.00	300
2504 HP-8M	2504.00	313
2600 HP-8M	2600.00	325
2800 HP-8M	2800.00	350
3048 HP-8M	3048.00	381
3200 HP-8M	3200.00	400
3280 HP-8M	3280.00	410
3360 HP-8M	3360.00	420
3600 HP-8M	3600.00	450
4400 HP-8M	4400.00	550

Belt standard widths

Nominal width (S tooth profile)	100	150	200	250	300	400	500	600	800	850	1000	1200
Nominal width (HTS tooth profile)	10	15	20	25	30	40	50	60	80	85	100	120
Width (mm)	10	15	20	25	30	40	50	60	80	85	100	120
HP-S5M	●	●	●	●								
HP-S8M		●		●		●		●				
HP-S14M						●		●	●		●	●
HP-8M			●	●	●	●	●	●		●		

Note: For other belt widths than the above, please contact us.
* For the S tooth profile, the nominal width is ten times the belt width. For the HTS tooth profile, the nominal width is the belt width.

Belt dimensional tolerance

Effective length

(Unit: mm)

Length	Tolerance
256 or less	±0.20
Over 256 to 384 or less	±0.23
Over 384 to 512 or less	±0.25
Over 512 to 760 or less	±0.30
Over 760 to 1016 or less	±0.33
Over 1016 to 1272 or less	±0.38
Over 1272 to 1528 or less	±0.41
Over 1528 to 1776 or less	±0.43
Over 1776 to 2032 or less	±0.46
Over 2032 to 2288 or less	±0.48
Over 2288 to 2544 or less	±0.51
Over 2544 to 2792 or less	±0.53
Over 2792 to 3048 or less	±0.56
Over 3048 to 3304 or less	±0.58
Over 3304 to 3560 or less	±0.61
Over 3560 to 3808 or less	±0.64
Over 3808 to 4064 or less	±0.66
Over 4064 to 4320 or less	±0.69
Over 4320 to 4576 or less	±0.71

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Belt width (S5M)

(Unit: mm)

Belt width	Tolerance
6 or less	±0.30
Over 6 to 10 or less	±0.40
Over 10 to 20 or less	±0.50
Over 20 to 30 or less	±0.60
Over 30 to 40 or less	±0.70
Over 40 to 60 or less	±0.80

Belt width (S8M/8M • S14M)

(Unit: mm)

Belt width	Belt pitch length 840 or less	Belt pitch length 841～1680	Belt pitch length 1681 or more
Over 10 to 40 or less	+0.80 -0.80	+0.80 -1.20	+0.80 -1.20
Over 40 to 50 or less	+0.80 -1.20	+1.20 -1.20	+1.20 -1.60
Over 50 to 75 or less	+1.20 -1.60	+1.60 -1.60	+1.60 -2.00
Over 75 to 100 or less	+1.60 -1.60	+1.60 -2.00	+2.00 -2.00
Over 100	+2.40 -2.40	+2.40 -2.80	+2.40 -3.20

STS-eco (Super-Torque Synchronous Belt Eco)

Product Introduction

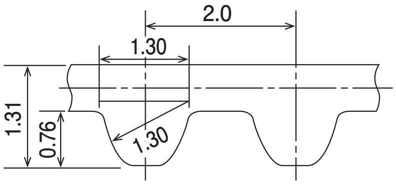
This synchronous belt is designed considering reduction of environmentally hazardous substances.

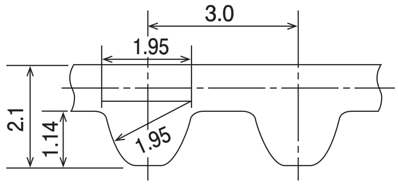
The mainstream rubber material that had been used in the previous synchronous belts was chloroprene rubber, which contains chlorine. The ecological specification developed this time is composed of ethylene propylene diene monomer (EPDM), which is gaining attention as an environmentally friendly halogen-free polymer, at all rubber sections including adhesion of the cords.

Product Name and Type

Super-Torque Synchronous Belt Eco
(STS-eco)
Type: S2M•S3M

Dimensions





Features

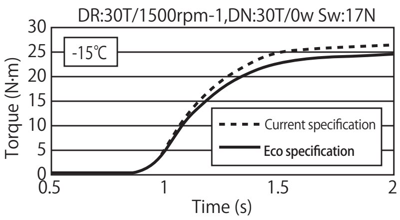
① Halogen-free specification (Not containing chlorine)
② Excellent ozone resistance
③ Excellent cold resistance characteristics

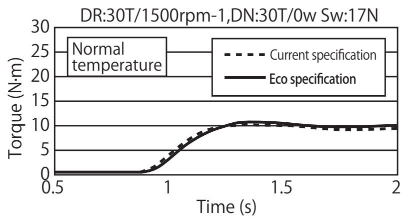
Ozone resistance

Ozone concentration		Crack occurrence time (hrs) Current specification	Crack occurrence time (hrs) Eco specification
10ppm	Condition 1	4	360 or more
	Condition 2	360 or more	360 or more
50pphm	Condition 1	360 or more	360 or more
	Condition 2	360 or more	360 or more

Condition 1 S2M was wound around a 20-tooth pulley and left, and the time of an occurrence of a crack in the back face was checked.
Condition 2 S2M was left in a free condition, and the time of an occurrence of a crack in the back face was checked.

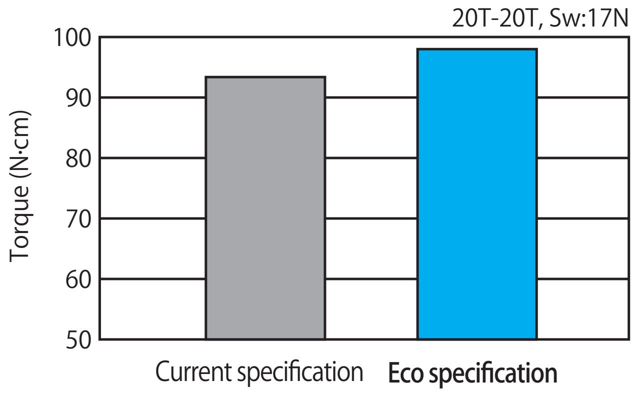
Cold resistance (starting torque)



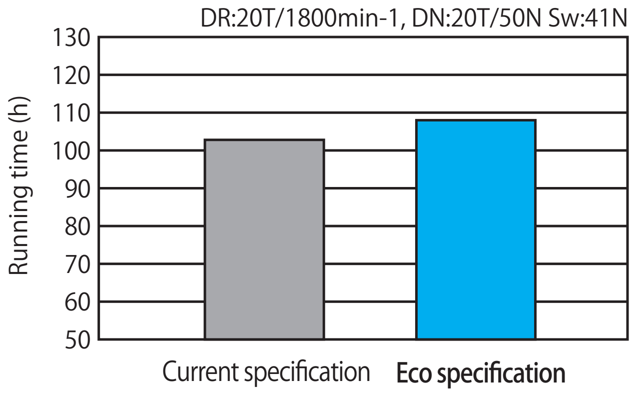


■ Belt performance

1 Skip torque (Type S2M Width of 4 mm)



2 Load durability (40S2M260)



*Avoid using this belt in conditions in which oil, grease, or the like adheres to the belt.
*For compatible sizes, please contact us.
*For belt design, please contact us.

STS / Double-Sided STS (Super-Torque Synchronous Belt)

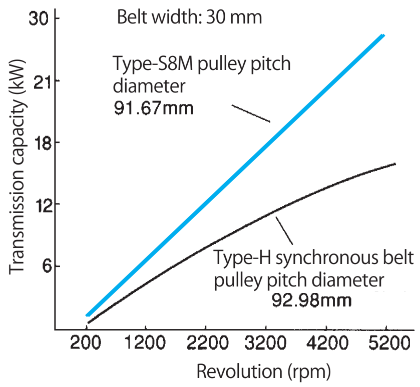
1. STS Product Introduction

It has an arc-shaped tooth profile and smoothly meshes with pulleys without interference; hence, it provides stable performance at low speed to high speed. This synchronous belt has high transmission capability with an excellent feature that allows the belt to be designed with a narrow width.

Features

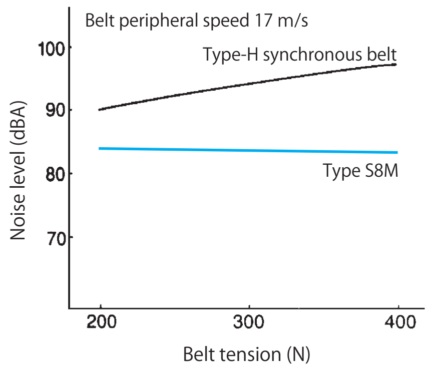
■ High-torque power transmission

The mesh theory with the unique tooth profile allows high-torque power transmission. STS has no reduction in transmission capability at high speed and provides stable performance at low speed to high speed.



■ Low noise

The smooth meshing between the belt and pulleys allows close contact between the belt tooth tip and the pulleys, leading to low noise levels.



■ Long service life

The belt cords are subject to little fatigue, allowing the belt to have a longer service life than the previous synchronous belts in the same layout.

■ Maintenance-free

STS has no elongation and requires no re-tensioning. In addition, it saves the trouble of lubrication.

■ Cost reduction possible

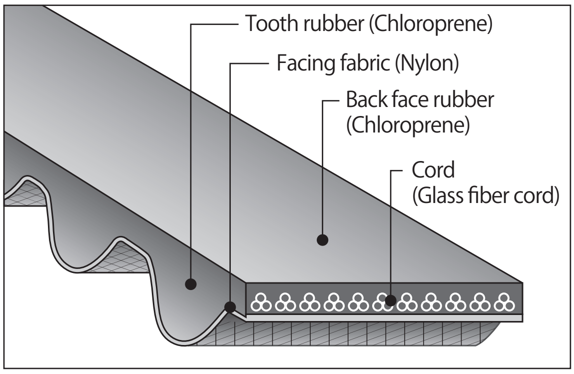
The high transmission capability allows approximately 30 to 40% reduction in belt width compared to the previous synchronous belts. In addition, the eliminated need for a lubrication device, such as the ones for chains and gears, reduces the equipment cost.

STS / Double-Sided STS (Super-Torque Synchronous Belt)

Product Introduction

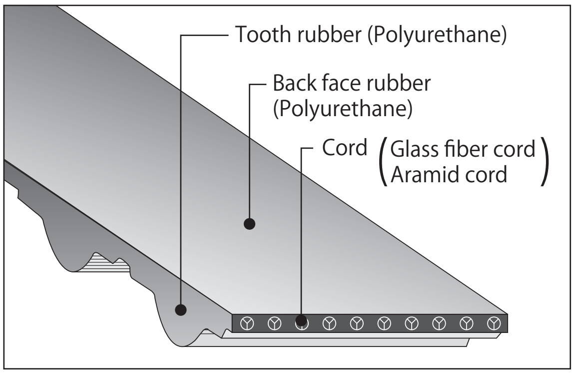
Structure

(1) Rubber STS



- **Back face rubber**: The chloroprene rubber, which has excellent weather resistance and abrasion resistance, protects the cords.
- **Cord**: Strong glass fiber cords are spirally s-twisted and z-twisted alternately, which allows little elongation and prevents side tracking of the belt.
- **Tooth rubber**: The chloroprene rubber combined with the back face rubber protects the cords and provides high flex fatigue strength and excellent heat resistance, oil resistance, and weather resistance.
- **Facing fabric**: The nylon woven cloth excellent in abrasion resistance protects the tooth section and smooths the meshing with the pulleys.

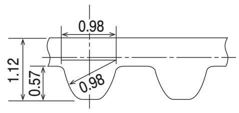
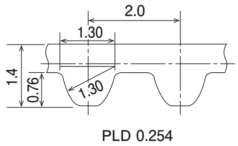
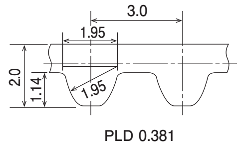
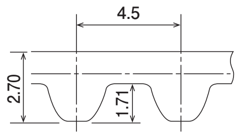
(2) Bancollan STS (polyurethane)



- **Back face rubber / Tooth rubber**:
  They use polyurethane and are excellent in shearing force, abrasion resistance, oil resistance, and weather resistance. (In the winter, white powder adheres to the belt surface and becomes liquid at normal temperature, but this has no problems in use. However, please avoid using the back face for paper conveyance.)
- **Cord**: Glass fiber cord
  Strong glass fiber cords are spirally s-twisted and z-twisted alternately, which allows little elongation and prevents side tracking of the belt.
  : Aramid cord
  High tensile strength and excellent flex fatigue. However, the dimensions vary depending on the ambient humidity; please check the performance, such as shaft load and tooth skip torque, before using the belt.

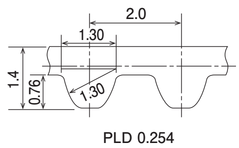
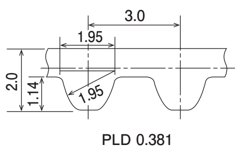
Tooth profile dimensions and indication method

(rubber STS)

Belt type	Dimension (mm)	Belt indication method
S1.5M		60 S1.5M 204 — Belt nominal width (6mm) / Belt type (S1.5M) / Belt nominal length (204mm)
S2M		60 S2M 200 — Belt nominal width (6mm) / Belt type (S2M) / Belt nominal length (200mm)
S3M		100 S3M 200 — Belt nominal width (10mm) / Belt type (S3M) / Belt nominal length (200mm)
S4.5M		150 S4.5M 630 — Belt nominal width (15.0mm) / Belt type (S4.5M) / Belt nominal length (630mm)

Tooth profile dimensions and indication method

(Bancollan STS)

Belt type	Dimension (mm)	Belt indication method
S2M		60 S2M 200 U G — Belt nominal width (6mm) / Belt type (S2M) / Belt nominal length (200mm) / Polyurethane / Glass fiber
S3M		100 S3M 200 U K — Belt nominal width (10mm) / Belt type (S3M) / Belt nominal length (200mm) / Polyurethane / Aramid

STS / Double-Sided STS (Super-Torque Synchronous Belt)
Product Introduction

STS standard effective lengths

R: Rubber
U: Polyurethane

Type S1.5M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not	
			R	U
S1.5M 84	84.00	56	●	—
S1.5M 92	91.50	61	●	—
S1.5M 93	93.00	62	●	—
S1.5M 95	94.50	63	●	—
S1.5M 98	97.50	65	●	—
S1.5M 99	99.00	66	●	—
S1.5M 101	100.50	67	●	—
S1.5M 102	102.00	68	●	—
S1.5M 114	114.00	76	●	—
S1.5M 119	118.50	79	●	—
S1.5M 123	123.00	82	●	—
S1.5M 134	133.50	89	●	—
S1.5M 135	135.00	90	●	—
S1.5M 137	136.50	91	●	—
S1.5M 141	141.00	94	●	—
S1.5M 150	150.00	100	●	—
S1.5M 158	157.50	105	●	—
S1.5M 161	160.50	107	●	—
S1.5M 164	163.50	109	●	—
S1.5M 165	165.00	110	●	—
S1.5M 168	168.00	112	●	—
S1.5M 174	174.00	116	●	—
S1.5M 180	180.00	120	●	—
S1.5M 186	186.00	124	●	—
S1.5M 195	195.00	130	●	—
S1.5M 198	198.00	132	●	—
S1.5M 204	204.00	136	●	—
S1.5M 206	205.50	137	●	—
S1.5M 210	210.00	140	●	—
S1.5M 222	222.00	148	●	—
S1.5M 224	223.50	149	●	—
S1.5M 225	225.00	150	●	—
S1.5M 227	226.50	151	●	—
S1.5M 236	235.50	157	●	—
S1.5M 240	240.00	160	●	—
S1.5M 248	247.50	165	●	—
S1.5M 249	249.00	166	●	—
S1.5M 252	252.00	168	●	—
S1.5M 255	255.00	170	●	—
S1.5M 261	261.00	174	●	—
S1.5M 263	262.50	175	●	—
S1.5M 273	273.00	182	●	—
S1.5M 281	280.50	187	●	—
S1.5M 288	288.00	192	●	—
S1.5M 290	289.50	193	●	—
S1.5M 293	292.50	195	●	—
S1.5M 302	301.50	201	●	—
S1.5M 303	303.00	202	●	—
S1.5M 305	304.50	203	●	—
S1.5M 315	315.00	210	●	—
S1.5M 335	334.50	223	●	—
S1.5M 347	346.50	231	●	—
S1.5M 365	364.50	243	●	—
S1.5M 366	366.00	244	●	—
S1.5M 378	378.00	252	●	—
S1.5M 390	390.00	260	●	—
S1.5M 441	441.00	294	●	—
S1.5M 444	444.00	296	●	—
S1.5M 480	480.00	320	●	—
S1.5M 501	501.00	334	●	—
S1.5M 516	516.00	344	●	—
S1.5M 555	555.00	370	●	—
S1.5M 560	559.50	373	●	—
S1.5M 567	567.00	378	●	—
S1.5M 720	720.00	480	●	—
S1.5M 792	792.00	528	●	—
S1.5M 1116	1116.00	744	●	—

Type S2M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not	
			R	U
S2M 74	74.00	37	●	—
S2M 76	76.00	38	●	○
S2M 78	78.00	39	●	○
S2M 80	80.00	40	●	○
S2M 84	84.00	42	●	—
S2M 86	86.00	43	●	○
S2M 88	88.00	44	●	—
S2M 90	90.00	45	●	○
S2M 92	92.00	46	●	○
S2M 94	94.00	47	●	—
S2M 96	96.00	48	●	—
S2M 98	98.00	49	●	—
S2M 100	100.00	50	●	○
S2M 102	102.00	51	●	○
S2M 104	104.00	52	●	—
S2M 106	106.00	53	●	○
S2M 108	108.00	54	●	—
S2M 110	110.00	55	●	○
S2M 112	112.00	56	●	○
S2M 114	114.00	57	●	○
S2M 116	116.00	58	●	○
S2M 118	118.00	59	●	—
S2M 120	120.00	60	●	○
S2M 122	122.00	61	●	○
S2M 124	124.00	62	●	—
S2M 126	126.00	63	●	○
S2M 128	128.00	64	●	○
S2M 130	130.00	65	●	—
S2M 132	132.00	66	●	—
S2M 134	134.00	67	●	—
S2M 136	136.00	68	●	—
S2M 138	138.00	69	●	○
S2M 140	140.00	70	●	○
S2M 142	142.00	71	●	○
S2M 144	144.00	72	●	○
S2M 146	146.00	73	●	—
S2M 148	148.00	74	●	○
S2M 150	150.00	75	●	—
S2M 152	152.00	76	●	—
S2M 156	156.00	78	●	—
S2M 158	158.00	79	●	○
S2M 160	160.00	80	●	○
S2M 162	162.00	81	●	—
S2M 164	164.00	82	●	○
S2M 166	166.00	83	●	○
S2M 168	168.00	84	●	○
S2M 170	170.00	85	●	○
S2M 172	172.00	86	●	○
S2M 174	174.00	87	●	—
S2M 176	176.00	88	●	○
S2M 178	178.00	89	●	—
S2M 180	180.00	90	●	○
S2M 182	182.00	91	●	—
S2M 184	184.00	92	●	○
S2M 186	186.00	93	●	○
S2M 188	188.00	94	●	—
S2M 190	190.00	95	●	○
S2M 192	192.00	96	●	○
S2M 194	194.00	97	●	—
S2M 196	196.00	98	●	—
S2M 198	198.00	99	●	—
S2M 200	200.00	100	●	○
S2M 202	202.00	101	●	—
S2M 204	204.00	102	●	—
S2M 206	206.00	103	●	○
S2M 208	208.00	104	●	—
S2M 210	210.00	105	●	○

Type S2M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not	
			R	U
S2M 212	212.00	106	●	—
S2M 214	214.00	107	●	○
S2M 216	216.00	108	●	○
S2M 218	218.00	109	●	○
S2M 220	220.00	110	●	○
S2M 222	222.00	111	●	—
S2M 224	224.00	112	●	○
S2M 226	226.00	113	●	—
S2M 230	230.00	115	●	○
S2M 232	232.00	116	●	—
S2M 234	234.00	117	●	○
S2M 236	236.00	118	●	○
S2M 238	238.00	119	●	○
S2M 240	240.00	120	●	○
S2M 242	242.00	121	●	—
S2M 244	244.00	122	●	—
S2M 248	248.00	124	●	—
S2M 250	250.00	125	●	○
S2M 252	252.00	126	●	—
S2M 254	254.00	127	●	—
S2M 256	256.00	128	●	○
S2M 258	258.00	129	●	○
S2M 260	260.00	130	●	○
S2M 262	262.00	131	●	—
S2M 264	264.00	132	●	○
S2M 266	266.00	133	●	○
S2M 268	268.00	134	●	—
S2M 270	270.00	135	●	—
S2M 272	272.00	136	●	—
S2M 274	274.00	137	●	—
S2M 276	276.00	138	●	—
S2M 278	278.00	139	●	—
S2M 280	280.00	140	●	○
S2M 282	282.00	141	●	—
S2M 284	284.00	142	●	—
S2M 286	286.00	143	●	—
S2M 288	288.00	144	●	—
S2M 290	290.00	145	●	○
S2M 292	292.00	146	●	—
S2M 294	294.00	147	●	—
S2M 296	296.00	148	●	—
S2M 298	298.00	149	●	—
S2M 300	300.00	150	●	○
S2M 302	302.00	151	●	—
S2M 304	304.00	152	●	—
S2M 306	306.00	153	●	—
S2M 308	308.00	154	●	—
S2M 310	310.00	155	●	—
S2M 312	312.00	156	●	—
S2M 314	314.00	157	●	○
S2M 316	316.00	158	●	○
S2M 318	318.00	159	●	—
S2M 320	320.00	160	●	○
S2M 322	322.00	161	●	○
S2M 324	324.00	162	●	—
S2M 326	326.00	163	●	—
S2M 328	328.00	164	●	—
S2M 330	330.00	165	●	—
S2M 332	332.00	166	●	—
S2M 334	334.00	167	●	○
S2M 336	336.00	168	●	—
S2M 338	338.00	169	●	—
S2M 340	340.00	170	●	○
S2M 342	342.00	171	●	—
S2M 344	344.00	172	●	—
S2M 350	350.00	175	●	—
S2M 354	354.00	177	●	○

STS / Double-Sided STS (Super-Torque Synchronous Belt)

Product Introduction

Type S2M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S2M 360	360.00	180	●	○
S2M 364	364.00	182	●	—
S2M 370	370.00	185	●	○
S2M 372	372.00	186	●	—
S2M 374	374.00	187	●	—
S2M 376	376.00	188	●	—
S2M 380	380.00	190	●	○
S2M 386	386.00	193	●	—
S2M 390	390.00	195	●	—
S2M 396	396.00	198	●	○
S2M 400	400.00	200	●	○
S2M 406	406.00	203	●	—
S2M 408	408.00	204	●	—
S2M 410	410.00	205	●	—
S2M 416	416.00	208	●	—
S2M 420	420.00	210	●	—
S2M 426	426.00	213	●	—
S2M 428	428.00	214	●	—
S2M 434	434.00	217	●	—
S2M 436	436.00	218	●	○
S2M 438	438.00	219	●	—
S2M 440	440.00	220	●	○
S2M 448	448.00	224	●	○
S2M 452	452.00	226	●	—
S2M 454	454.00	227	●	○
S2M 456	456.00	228	●	—
S2M 460	460.00	230	●	○
S2M 464	464.00	232	●	—
S2M 468	468.00	234	●	—
S2M 474	474.00	237	●	○
S2M 480	480.00	240	●	○
S2M 486	486.00	243	●	—
S2M 488	488.00	244	●	○
S2M 490	490.00	245	●	—
S2M 494	494.00	247	●	—
S2M 500	500.00	250	●	○
S2M 504	504.00	252	●	○
S2M 506	506.00	253	●	—
S2M 520	520.00	260	●	○
S2M 524	524.00	262	●	—
S2M 530	530.00	265	●	—
S2M 532	532.00	266	●	—
S2M 540	540.00	270	●	—
S2M 544	544.00	272	●	○
S2M 548	548.00	274	●	○
S2M 550	550.00	275	●	—
S2M 558	558.00	279	●	—
S2M 560	560.00	280	●	—
S2M 572	572.00	286	●	—
S2M 580	580.00	290	●	—
S2M 586	586.00	293	●	—
S2M 594	594.00	297	●	—
S2M 596	596.00	298	●	—
S2M 600	600.00	300	●	○
S2M 604	604.00	302	●	—
S2M 606	606.00	303	●	—
S2M 620	620.00	310	●	○
S2M 630	630.00	315	●	○
S2M 632	632.00	316	●	—
S2M 650	650.00	325	●	—
S2M 652	652.00	326	●	—
S2M 654	654.00	327	●	○
S2M 656	656.00	328	●	—
S2M 660	660.00	330	●	—
S2M 668	668.00	334	●	—
S2M 676	676.00	338	●	—
S2M 692	692.00	346	●	—

Type S2M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S2M 700	700.00	350	●	—
S2M 710	710.00	355	●	○
S2M 726	726.00	363	●	—
S2M 742	742.00	371	●	—
S2M 752	752.00	376	●	—
S2M 754	754.00	377	●	○
S2M 766	766.00	383	●	—
S2M 790	790.00	395	●	○
S2M 796	796.00	398	●	—
S2M 800	800.00	400	●	○
S2M 806	806.00	403	●	○
S2M 810	810.00	405	●	—
S2M 826	826.00	413	●	—
S2M 828	828.00	414	●	—
S2M 848	848.00	424	●	—
S2M 856	856.00	425	●	—
S2M 864	864.00	432	●	—
S2M 898	898.00	449	●	—
S2M 900	900.00	450	●	*○
S2M 940	940.00	470	●	—
S2M 946	946.00	473	●	—
S2M 950	950.00	475	●	—
S2M 984	984.00	492	●	—
S2M 1000	1000.00	500	●	*○
S2M 1020	1020.00	510	●	—
S2M 1024	1024.00	512	●	—
S2M 1032	1032.00	516	●	—
S2M 1036	1036.00	518	●	—
S2M 1042	1042.00	521	●	—
S2M 1064	1064.00	532	●	—
S2M 1066	1066.00	533	●	—
S2M 1074	1074.00	537	●	—
S2M 1086	1086.00	543	●	—
S2M 1094	1094.00	547	●	—
S2M 1100	1100.00	550	●	—
S2M 1110	1110.00	555	●	—
S2M 1136	1136.00	568	●	—
S2M 1154	1154.00	577	●	—
S2M 1166	1166.00	583	●	—
S2M 1196	1196.00	598	●	—
S2M 1200	1200.00	600	●	—
S2M 1224	1224.00	612	●	—
S2M 1228	1228.00	614	●	—
S2M 1250	1250.00	625	●	—
S2M 1274	1274.00	637	●	—
S2M 1284	1284.00	642	●	—
S2M 1290	1290.00	645	●	—

Bancollan STS and S2M of the sizes with the * mark are available in aramid cord type only.

Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S3M 93	93.00	31	●	—
S3M 96	96.00	32	●	—
S3M 99	99.00	33	●	—
S3M 108	108.00	36	●	—
S3M 120	120.00	40	●	○
S3M 123	123.00	41	●	—
S3M 129	129.00	43	●	—
S3M 132	132.00	44	●	—
S3M 138	138.00	46	●	—
S3M 141	141.00	47	●	—
S3M 144	144.00	48	●	○
S3M 147	147.00	49	●	—
S3M 150	150.00	50	●	○
S3M 156	156.00	52	●	—
S3M 159	159.00	53	●	○
S3M 162	162.00	54	●	○
S3M 168	168.00	56	●	—
S3M 171	171.00	57	●	○
S3M 174	174.00	58	●	○
S3M 177	177.00	59	●	○
S3M 180	180.00	60	●	—
S3M 183	183.00	61	●	—
S3M 186	186.00	62	●	○
S3M 189	189.00	63	●	○
S3M 192	192.00	64	●	○
S3M 195	195.00	65	●	○
S3M 198	198.00	66	●	—
S3M 201	201.00	67	●	○
S3M 204	204.00	68	●	○
S3M 207	207.00	69	●	—
S3M 210	210.00	70	●	○
S3M 213	213.00	71	●	○
S3M 219	219.00	73	●	○
S3M 222	222.00	74	●	○
S3M 225	225.00	75	●	○
S3M 228	228.00	76	●	—
S3M 234	234.00	78	●	○
S3M 237	237.00	79	●	○
S3M 240	240.00	80	●	○
S3M 243	243.00	81	●	—
S3M 246	246.00	82	●	○
S3M 249	249.00	83	●	—
S3M 252	252.00	84	●	○
S3M 255	255.00	85	●	○
S3M 258	258.00	86	●	—
S3M 261	261.00	87	●	—
S3M 264	264.00	88	●	○
S3M 267	267.00	89	●	○
S3M 270	270.00	90	●	○
S3M 273	273.00	91	●	—
S3M 276	276.00	92	●	○
S3M 279	279.00	93	●	—
S3M 282	282.00	94	●	—
S3M 285	285.00	95	●	○
S3M 288	288.00	96	●	—
S3M 291	291.00	97	●	—
S3M 294	294.00	98	●	—
S3M 297	297.00	99	●	—
S3M 300	300.00	100	●	○
S3M 303	303.00	101	●	—
S3M 306	306.00	102	●	—
S3M 309	309.00	103	●	—
S3M 312	312.00	104	●	○
S3M 315	315.00	105	●	—
S3M 318	318.00	106	●	○
S3M 324	324.00	108	●	—
S3M 327	327.00	109	●	○

STS / Double-Sided STS (Super-Torque Synchronous Belt)

Product Introduction

STS standard effective lengths

R: Rubber
U: Polyurethane

Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S3M 330	330.00	110	●	—
S3M 333	333.00	111	●	—
S3M 336	336.00	112	●	—
S3M 339	339.00	113	●	○
S3M 342	342.00	114	●	○
S3M 348	348.00	116	●	—
S3M 351	351.00	117	●	—
S3M 354	354.00	118	●	○
S3M 360	360.00	120	●	○
S3M 363	363.00	121	●	—
S3M 366	366.00	122	●	—
S3M 369	369.00	123	●	—
S3M 372	372.00	124	●	—
S3M 375	375.00	125	●	—
S3M 378	378.00	126	●	○
S3M 384	384.00	128	●	○
S3M 387	387.00	129	●	—
S3M 390	390.00	130	●	○
S3M 396	396.00	132	●	○
S3M 399	399.00	133	●	—
S3M 402	402.00	134	●	○
S3M 405	405.00	135	●	○
S3M 408	408.00	136	●	—
S3M 414	414.00	138	●	—
S3M 417	417.00	139	●	○
S3M 420	420.00	140	●	○
S3M 423	423.00	141	●	—
S3M 426	426.00	142	●	—
S3M 432	432.00	144	●	○
S3M 438	438.00	146	●	—
S3M 444	444.00	148	●	—
S3M 447	447.00	149	●	○
S3M 453	453.00	151	●	○
S3M 456	456.00	152	●	—
S3M 459	459.00	153	●	○
S3M 468	468.00	156	●	—
S3M 471	471.00	157	●	—
S3M 474	474.00	158	●	—
S3M 480	480.00	160	●	—
S3M 483	483.00	161	●	—
S3M 486	486.00	162	●	○
S3M 489	489.00	163	●	—
S3M 492	492.00	164	●	—
S3M 498	498.00	166	●	—
S3M 501	501.00	167	●	○
S3M 504	504.00	168	●	○
S3M 507	507.00	169	●	○
S3M 510	510.00	170	●	○
S3M 513	513.00	171	●	○
S3M 516	516.00	172	●	○
S3M 519	519.00	173	●	○
S3M 522	522.00	174	●	—
S3M 525	525.00	175	●	—
S3M 528	528.00	176	●	—
S3M 534	534.00	178	●	—
S3M 537	537.00	179	●	○
S3M 540	540.00	180	●	—
S3M 543	543.00	181	●	—
S3M 549	549.00	183	●	—
S3M 552	552.00	184	●	—
S3M 555	555.00	185	●	○
S3M 564	564.00	188	●	○
S3M 573	573.00	191	●	—
S3M 579	579.00	193	●	—
S3M 588	588.00	196	●	○
S3M 597	597.00	199	●	—
S3M 600	600.00	200	●	○

Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S3M 603	603.00	201	●	—
S3M 609	609.00	203	●	○
S3M 612	612.00	204	●	—
S3M 621	621.00	207	●	—
S3M 633	633.00	211	●	○
S3M 636	636.00	212	●	—
S3M 648	648.00	216	●	—
S3M 657	657.00	219	●	—
S3M 660	660.00	220	●	○
S3M 666	666.00	222	●	○
S3M 678	678.00	226	●	—
S3M 681	681.00	227	●	○
S3M 687	687.00	229	●	—
S3M 690	690.00	230	●	—
S3M 696	696.00	232	●	—
S3M 699	699.00	233	●	○
S3M 720	720.00	240	●	—
S3M 726	726.00	242	●	—
S3M 735	735.00	245	●	—
S3M 741	741.00	247	●	—
S3M 750	750.00	250	●	○
S3M 765	765.00	255	●	○
S3M 768	768.00	256	●	—
S3M 771	771.00	257	●	—
S3M 774	774.00	258	●	○
S3M 789	789.00	263	●	○
S3M 804	804.00	268	●	○
S3M 810	810.00	270	●	○
S3M 819	819.00	273	●	—
S3M 825	825.00	275	●	—
S3M 831	831.00	277	●	—
S3M 837	837.00	279	●	—
S3M 852	852.00	284	●	—
S3M 858	858.00	286	●	—
S3M 882	882.00	294	●	—
S3M 885	885.00	295	●	○
S3M 888	888.00	296	●	—
S3M 900	900.00	300	●	○
S3M 909	909.00	303	●	—
S3M 918	918.00	306	●	—
S3M 927	927.00	309	●	—
S3M 936	936.00	312	●	○
S3M 951	951.00	317	●	○
S3M 954	954.00	318	●	—
S3M 990	990.00	330	●	—
S3M 999	999.00	333	●	—
S3M 1005	1005.00	335	●	○
S3M 1014	1014.00	338	●	—
S3M 1050	1050.00	350	●	○
S3M 1080	1080.00	360	●	—
S3M 1119	1119.00	373	●	—
S3M 1134	1134.00	378	●	—
S3M 1146	1146.00	382	●	○
S3M 1170	1170.00	390	●	—
S3M 1176	1176.00	392	●	—
S3M 1188	1188.00	396	●	—
S3M 1203	1203.00	401	●	—
S3M 1221	1221.00	407	●	—
S3M 1236	1236.00	412	●	—
S3M 1245	1245.00	415	●	—
S3M 1260	1260.00	420	●	○
S3M 1290	1290.00	430	●	—
S3M 1299	1299.00	433	●	—
S3M 1332	1332.00	444	●	—
S3M 1338	1338.00	446	●	—
S3M 1374	1374.00	458	●	—
S3M 1383	1383.00	461	●	○

Type S3M

Belt nominal length	Pitch length (mm)	No. of teeth	Manufacturable or not R	Manufacturable or not U
S3M 1401	1401.00	467	●	—
S3M 1419	1419.00	473	●	—
S3M 1530	1530.00	510	●	—
S3M 1569	1569.00	523	●	—
S3M 1596	1596.00	532	●	○
S3M 1650	1650.00	550	●	—
S3M 1680	1680.00	560	●	—
S3M 1734	1734.00	578	●	—
S3M 1788	1788.00	596	●	—

Type S4.5M (rubber)

Belt nominal length	Pitch length (mm)	No. of teeth
S4.5M 162	162.00	36
S4.5M 180	180.00	40
S4.5M 198	198.00	44
S4.5M 225	225.00	50
S4.5M 239	238.50	53
S4.5M 252	252.00	56
S4.5M 279	279.00	62
S4.5M 284	283.50	63
S4.5M 315	315.00	70
S4.5M 324	324.00	72
S4.5M 351	351.00	78
S4.5M 383	382.50	85
S4.5M 396	396.00	88
S4.5M 450	450.00	100
S4.5M 491	490.50	109
S4.5M 504	504.00	112
S4.5M 518	517.50	115
S4.5M 558	558.00	124
S4.5M 563	562.50	125
S4.5M 612	612.00	136
S4.5M 630	630.00	140
S4.5M 711	711.00	158
S4.5M 729	729.00	162
S4.5M 801	801.00	178
S4.5M 1031	1030.50	229
S4.5M 2111	2110.50	469

STS belt standard widths

Nominal width	40	60	100	150
Width (mm)	4.0	6.0	10.0	15.0
S1.5M	●	●	●	
S2M	●	●	●	
S3M		●	●	●
S4.5M		●	●	●

Note: For other belt widths than the above, please contact us.
The nominal width is indicated by a factor of ten of the belt width (mm).

Belt dimensional tolerance

Rubber STS effective lengths

(Unit: mm)

Length	Tolerance
256 or less	±0.20
Over 256 to 384 or less	±0.23
Over 384 to 512 or less	±0.25
Over 512 to 760 or less	±0.30
Over 760 to 1016 or less	±0.33
Over 1016 to 1272 or less	±0.38
Over 1272 to 1528 or less	±0.41
Over 1528 to 1776 or less	±0.43
Over 1776 to 2032 or less	±0.46
Over 2032 to 2288 or less	±0.48
Over 2288 to 2544 or less	±0.51
Over 2544 to 2792 or less	±0.53
Over 2792 to 3048 or less	±0.56
Over 3048 to 3304 or less	±0.58
Over 3304 to 3560 or less	±0.61
Over 3560 to 3808 or less	±0.64
Over 3808 to 4064 or less	±0.66
Over 4064 to 4320 or less	±0.69
Over 4320 to 4576 or less	±0.71

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Rubber Double-Sided STS effective lengths

(Unit: mm)

Length	Tolerance
256 or less	+0.40, -0.20
Over 256 to 384 or less	+0.46, -0.23
Over 384 to 512 or less	+0.50, -0.25
Over 512 to 760 or less	+0.60, -0.30
Over 760 to 1016 or less	+0.66, -0.33
Over 1016 to 1272 or less	+0.76, -0.38
Over 1272 to 1528 or less	+0.82, -0.41
Over 1528 to 1776 or less	+0.86, -0.43
Over 1776 to 2032 or less	+0.92, -0.46
Over 2032 to 2288 or less	+0.96, -0.48
Over 2288 to 2544 or less	+1.02, -0.51
Over 2544 to 2792 or less	+1.06, -0.53
Over 2792 to 3048 or less	+1.12, -0.56
Over 3048 to 3304 or less	+1.16, -0.58
Over 3304 to 3560 or less	+1.21, -0.61
Over 3560 to 3808 or less	+1.28, -0.64
Over 3808 to 4064 or less	+1.32, -0.66
Over 4064 to 4320 or less	+1.38, -0.69
Over 4320 to 4576 or less	+1.42, -0.71

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Rubber STS belt width tolerances (S2M • S3M) (DS2M • DS3M • DS5M)

(Unit: mm)

Belt width	Tolerance
6 or less	±0.3
Over 6 to 10 or less	±0.4
Over 10 to 20 or less	±0.5
Over 20 to 30 or less	±0.6
Over 30 to 40 or less	±0.7
Over 40 to 60 or less	±0.8

Bancollan STS belt width tolerances (S2M • S3M)

(Unit: mm)

Nominal length	Width range and tolerance		
	3.0～6.0	6.1～10.0	10.1～25.0
～350	±0.15	±0.20	±0.25
351～840	±0.15	±0.20	±0.30
841～1680	±0.25	±0.30	±0.40
1681～1920	±0.30	±0.40	±0.50
1921～	±0.40	±0.50	±0.60

Rubber STS belt width tolerances (S4.5M) (DS4.5M • DS8M • DS14M)

(Unit: mm)

Belt width	Belt pitch length **840 or less**	Belt pitch length **841 to 1680**	Belt pitch length **1681 or more**
Over 10 to 40 or less	+0.80, -0.80	+0.80, -1.20	+0.80, -1.20
Over 40 to 50 or less	+0.80, -1.20	+1.20, -1.20	+1.20, -1.60
Over 50 to 75 or less	+1.20, -1.60	+1.60, -1.60	+1.60, -2.00
Over 75 to 100 or less	+1.60, -1.60	+1.60, -2.00	+2.00, -2.00
Over 100	+2.40, -2.40	+2.40, -2.80	+2.40, -3.20

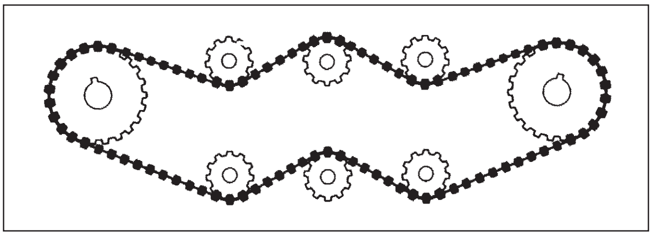
2. Double-Sided STS Product Introduction

Double-Sided STS is a double-sided synchronous belt of high horsepower type. Use this belt when the space for power transmission is limited, a long service life is required, or noise is large with a double-sided synchronous belt or chain.

Features

■ Multi-shaft synchronous power transmission possible

A single belt can synchronously transmit power with many shafts.



■ Easy maintenance

Unlike chains, it has no need to re-tension or lubricate and is easy to maintain.

■ Low noise

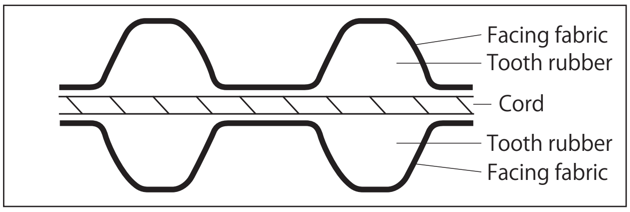
No metal-to-metal contact allows quiet power transmission.

■ Clean

Unlike chains or gears, it has no need for lubrication, eliminating oil dispersion, which provides cleanliness in the sections around the belt.

Structure

Double-Sided STS



Indication Method

Double-Sided STS

250 D S8M 1400

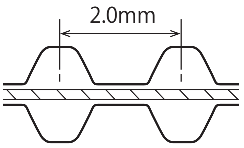
- 250: Belt nominal width (25㎜)
- D: Double-Sided STS
- S8M: Belt type (S8M)
- 1400: Belt nominal length (1400㎜)

Dimensional Tolerance

For dimensional tolerances of effective length and belt width, refer to **P. 58**.

Double-Sided STS standard effective lengths

Type DS2M



Belt standard widths

Nominal width	Width (mm)
40	4
60	6
100	10

Belt size (Type DS2M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS2M 300	300.00	150
DS2M 302	302.00	151
DS2M 304	304.00	152
DS2M 306	306.00	153
DS2M 308	308.00	154
DS2M 310	310.00	155
DS2M 312	312.00	156
DS2M 314	314.00	157
DS2M 316	316.00	158
DS2M 318	318.00	159
DS2M 320	320.00	160
DS2M 322	322.00	161
DS2M 324	324.00	162
DS2M 326	326.00	163
DS2M 328	328.00	164
DS2M 330	330.00	165
DS2M 332	332.00	166
DS2M 334	334.00	167
DS2M 336	336.00	168
DS2M 338	338.00	169
DS2M 340	340.00	170

Belt size (Type DS2M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS2M 342	342.00	171
DS2M 344	344.00	172
DS2M 350	350.00	175
DS2M 354	354.00	177
DS2M 360	360.00	180
DS2M 364	364.00	182
DS2M 370	370.00	185
DS2M 372	372.00	186
DS2M 374	374.00	187
DS2M 376	376.00	188
DS2M 380	380.00	190
DS2M 386	386.00	193
DS2M 390	390.00	195
DS2M 396	396.00	198
DS2M 400	400.00	200
DS2M 406	406.00	203
DS2M 408	408.00	204
DS2M 410	410.00	205
DS2M 416	416.00	208
DS2M 420	420.00	210
DS2M 426	426.00	213
DS2M 428	428.00	214
DS2M 434	434.00	217
DS2M 436	436.00	218
DS2M 438	438.00	219
DS2M 440	440.00	220
DS2M 448	448.00	224
DS2M 452	452.00	226
DS2M 454	454.00	227
DS2M 456	456.00	228
DS2M 460	460.00	230

Belt size (Type DS2M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS2M 464	464.00	232
DS2M 468	468.00	234
DS2M 474	474.00	237
DS2M 480	480.00	240
DS2M 486	486.00	243
DS2M 490	490.00	245
DS2M 494	494.00	247
DS2M 500	500.00	250
DS2M 506	506.00	253
DS2M 520	520.00	260
DS2M 524	524.00	262
DS2M 530	530.00	265
DS2M 532	532.00	266
DS2M 540	540.00	270
DS2M 550	550.00	275
DS2M 558	558.00	279
DS2M 560	560.00	280
DS2M 572	572.00	286
DS2M 580	580.00	290
DS2M 586	586.00	293
DS2M 594	594.00	297
DS2M 596	596.00	298
DS2M 600	600.00	300
DS2M 604	604.00	302
DS2M 606	606.00	303
DS2M 620	620.00	310
DS2M 630	630.00	315
DS2M 632	632.00	316
DS2M 650	650.00	325
DS2M 652	652.00	326
DS2M 654	654.00	327

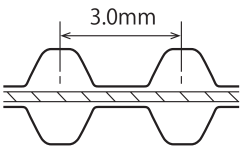
STS / Double-Sided STS (Super-Torque Synchronous Belt)

Product Introduction

Belt size (Type DS2M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS2M 656	656.00	328
DS2M 660	660.00	330
DS2M 668	668.00	334
DS2M 676	676.00	338
DS2M 692	692.00	346
DS2M 700	700.00	350
DS2M 710	710.00	355
DS2M 726	726.00	363
DS2M 742	742.00	371
DS2M 752	752.00	376
DS2M 754	754.00	377
DS2M 766	766.00	383
DS2M 796	796.00	398
DS2M 800	800.00	400
DS2M 810	810.00	405
DS2M 826	826.00	413
DS2M 828	828.00	414
DS2M 848	848.00	424
DS2M 856	856.00	428
DS2M 864	864.00	432
DS2M 898	898.00	449
DS2M 900	900.00	450
DS2M 940	940.00	470
DS2M 946	946.00	473
DS2M 950	950.00	475
DS2M 984	984.00	492
DS2M 1000	1000.00	500
DS2M 1020	1020.00	510
DS2M 1024	1024.00	512
DS2M 1032	1032.00	516
DS2M 1036	1036.00	518
DS2M 1042	1042.00	521
DS2M 1064	1064.00	532
DS2M 1066	1066.00	533
DS2M 1074	1074.00	537
DS2M 1086	1086.00	543
DS2M 1094	1094.00	547
DS2M 1100	1100.00	550
DS2M 1110	1110.00	555
DS2M 1136	1136.00	568
DS2M 1154	1154.00	577

Type DS3M



Belt standard widths

Nominal width	Width (mm)
60	6
100	10
150	15

Belt size (Type DS3M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS3M 300	300.00	100
DS3M 303	303.00	101
DS3M 306	306.00	102
DS3M 309	309.00	103
DS3M 312	312.00	104
DS3M 315	315.00	105
DS3M 318	318.00	106
DS3M 324	324.00	108
DS3M 327	327.00	109
DS3M 330	330.00	110
DS3M 333	333.00	111
DS3M 336	336.00	112
DS3M 339	339.00	113
DS3M 342	342.00	114
DS3M 348	348.00	116

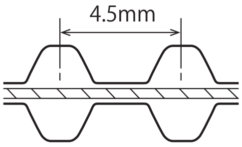
Belt size (Type DS3M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS3M 351	351.00	117
DS3M 354	354.00	118
DS3M 360	360.00	120
DS3M 363	363.00	121
DS3M 366	366.00	122
DS3M 369	369.00	123
DS3M 372	372.00	124
DS3M 375	375.00	125
DS3M 378	378.00	126
DS3M 384	384.00	128
DS3M 387	387.00	129
DS3M 390	390.00	130
DS3M 396	396.00	132
DS3M 399	399.00	133
DS3M 402	402.00	134
DS3M 405	405.00	135
DS3M 408	408.00	136
DS3M 414	414.00	138
DS3M 417	417.00	139
DS3M 420	420.00	140
DS3M 423	423.00	141
DS3M 426	426.00	142
DS3M 432	432.00	144
DS3M 438	438.00	146
DS3M 444	444.00	148
DS3M 447	447.00	149
DS3M 453	453.00	151
DS3M 456	456.00	152
DS3M 459	459.00	153
DS3M 468	468.00	156
DS3M 471	471.00	157
DS3M 474	474.00	158
DS3M 480	480.00	160
DS3M 483	483.00	161
DS3M 486	486.00	162
DS3M 489	489.00	163
DS3M 492	492.00	164
DS3M 498	498.00	166
DS3M 501	501.00	167
DS3M 507	507.00	169
DS3M 510	510.00	170
DS3M 513	513.00	171
DS3M 516	516.00	172
DS3M 519	519.00	173
DS3M 522	522.00	174
DS3M 525	525.00	175
DS3M 528	528.00	176
DS3M 534	534.00	178
DS3M 537	537.00	179
DS3M 540	540.00	180
DS3M 543	543.00	181
DS3M 549	549.00	183
DS3M 552	552.00	184
DS3M 555	555.00	185
DS3M 564	564.00	188
DS3M 573	573.00	191
DS3M 579	579.00	193
DS3M 588	588.00	196
DS3M 597	597.00	199
DS3M 600	600.00	200
DS3M 603	603.00	201
DS3M 609	609.00	203
DS3M 612	612.00	204
DS3M 621	621.00	207
DS3M 633	633.00	211
DS3M 636	636.00	212
DS3M 648	648.00	216
DS3M 657	657.00	219
DS3M 660	660.00	220

Belt size (Type DS3M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS3M 666	666.00	222
DS3M 678	678.00	226
DS3M 681	681.00	227
DS3M 687	687.00	229
DS3M 690	690.00	230
DS3M 696	696.00	232
DS3M 699	699.00	233
DS3M 720	720.00	240
DS3M 726	726.00	242
DS3M 735	735.00	245
DS3M 741	741.00	247
DS3M 750	750.00	250
DS3M 768	768.00	256
DS3M 771	771.00	257
DS3M 789	789.00	263
DS3M 804	804.00	268
DS3M 810	810.00	270
DS3M 819	819.00	273
DS3M 825	825.00	275
DS3M 831	831.00	277
DS3M 837	837.00	279
DS3M 852	852.00	284
DS3M 858	858.00	286
DS3M 882	882.00	294
DS3M 885	885.00	295
DS3M 888	888.00	296
DS3M 900	900.00	300
DS3M 909	909.00	303
DS3M 918	918.00	306
DS3M 927	927.00	309
DS3M 936	936.00	312
DS3M 954	954.00	318
DS3M 990	990.00	330
DS3M 999	999.00	333
DS3M 1014	1014.00	338
DS3M 1050	1050.00	350
DS3M 1080	1080.00	360
DS3M 1119	1119.00	373
DS3M 1134	1134.00	378
DS3M 1146	1146.00	382
DS3M 1170	1170.00	390
DS3M 1176	1176.00	392
DS3M 1188	1188.00	396
DS3M 1203	1203.00	401
DS3M 1221	1221.00	407
DS3M 1236	1236.00	412
DS3M 1245	1245.00	415
DS3M 1290	1290.00	430
DS3M 1299	1299.00	433
DS3M 1332	1332.00	444
DS3M 1338	1338.00	446
DS3M 1374	1374.00	458
DS3M 1401	1401.00	467
DS3M 1419	1419.00	473
DS3M 1530	1530.00	510

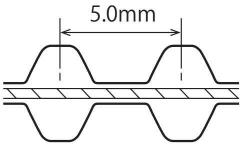
Type DS4.5M



Belt standard widths

Nominal width	Width (mm)
60	6
100	10
150	15

Type DS5M



Belt standard widths

Nominal width	Width (mm)
100	10
150	15
200	20
250	25

Belt size (Type DS4.5M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS4.5M 450	450.00	100
DS4.5M 491	490.50	109
DS4.5M 504	504.00	112
DS4.5M 518	517.50	115
DS4.5M 558	558.00	124
DS4.5M 563	562.50	125
DS4.5M 612	612.00	136
DS4.5M 630	630.00	140
DS4.5M 711	711.00	158
DS4.5M 729	729.00	162
DS4.5M 801	801.00	178
DS4.5M 1031	1030.50	229

Belt size (Type DS5M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS5M 425	425.00	85
DS5M 435	435.00	87
DS5M 440	440.00	88
DS5M 445	445.00	89
DS5M 450	450.00	90
DS5M 475	475.00	95
DS5M 490	490.00	98
DS5M 500	500.00	100
DS5M 520	520.00	104
DS5M 525	525.00	105
DS5M 530	530.00	106
DS5M 545	545.00	109
DS5M 550	550.00	110
DS5M 560	560.00	112
DS5M 565	565.00	113
DS5M 570	570.00	114
DS5M 575	575.00	115
DS5M 590	590.00	118
DS5M 595	595.00	119
DS5M 600	600.00	120
DS5M 625	625.00	125
DS5M 635	635.00	127
DS5M 640	640.00	128
DS5M 645	645.00	129
DS5M 650	650.00	130
DS5M 665	665.00	133
DS5M 670	670.00	134
DS5M 675	675.00	135
DS5M 690	690.00	138
DS5M 695	695.00	139
DS5M 700	700.00	140
DS5M 710	710.00	142
DS5M 720	720.00	144
DS5M 725	725.00	145
DS5M 730	730.00	146
DS5M 740	740.00	148
DS5M 750	750.00	150
DS5M 765	765.00	153
DS5M 770	770.00	154
DS5M 775	775.00	155
DS5M 780	780.00	156
DS5M 800	800.00	160
DS5M 810	810.00	162
DS5M 830	830.00	166
DS5M 845	845.00	169
DS5M 850	850.00	170
DS5M 860	860.00	172
DS5M 870	870.00	174
DS5M 890	890.00	178
DS5M 900	900.00	180
DS5M 920	920.00	184
DS5M 930	930.00	186
DS5M 940	940.00	188
DS5M 950	950.00	190
DS5M 965	965.00	193

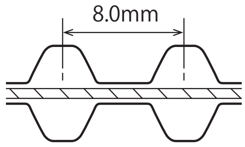
Belt size (Type DS5M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS5M 975	975.00	195
DS5M 1000	1000.00	200
DS5M 1025	1025.00	205
DS5M 1050	1050.00	210
DS5M 1055	1055.00	211
DS5M 1085	1085.00	217
DS5M 1090	1090.00	218
DS5M 1100	1100.00	220
DS5M 1105	1105.00	221
DS5M 1115	1115.00	223
DS5M 1120	1120.00	224
DS5M 1125	1125.00	225
DS5M 1135	1135.00	227
DS5M 1145	1145.00	229
DS5M 1160	1160.00	232
DS5M 1165	1165.00	233
DS5M 1195	1195.00	239
DS5M 1225	1225.00	245
DS5M 1250	1250.00	250
DS5M 1260	1260.00	252
DS5M 1270	1270.00	254
DS5M 1295	1295.00	259
DS5M 1330	1330.00	266
DS5M 1350	1350.00	270
DS5M 1420	1420.00	284
DS5M 1475	1475.00	295
DS5M 1500	1500.00	300
DS5M 1505	1505.00	301
DS5M 1530	1530.00	306
DS5M 1595	1595.00	319
DS5M 1605	1605.00	321
DS5M 1680	1680.00	336
DS5M 1715	1715.00	343
DS5M 1800	1800.00	360
DS5M 2000	2000.00	400

STS / Double-Sided STS (Super-Torque Synchronous Belt)

Product Introduction

Type DS8M



Belt standard widths

Nominal width	Width (mm)
150	15
250	25
400	40
600	60

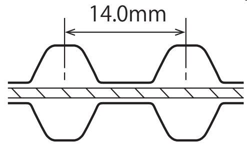
Belt size (Type DS8M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS8M 424	424.00	53
DS8M 440	440.00	55
DS8M 456	456.00	57
DS8M 480	480.00	60
DS8M 496	496.00	62
DS8M 512	512.00	64
DS8M 520	520.00	65
DS8M 528	528.00	66
DS8M 560	560.00	70
DS8M 584	584.00	73
DS8M 600	600.00	75
DS8M 632	632.00	79
DS8M 640	640.00	80
DS8M 656	656.00	82
DS8M 672	672.00	84
DS8M 680	680.00	85
DS8M 712	712.00	89
DS8M 720	720.00	90
DS8M 728	728.00	91
DS8M 760	760.00	95
DS8M 800	800.00	100
DS8M 824	824.00	103
DS8M 840	840.00	105
DS8M 848	848.00	106
DS8M 880	880.00	110
DS8M 888	888.00	111
DS8M 896	896.00	112
DS8M 920	920.00	115
DS8M 944	944.00	118
DS8M 960	960.00	120
DS8M 976	976.00	122
DS8M 984	984.00	123
DS8M 1000	1000.00	125
DS8M 1032	1032.00	129
DS8M 1040	1040.00	130
DS8M 1056	1056.00	132
DS8M 1080	1080.00	135
DS8M 1096	1096.00	137
DS8M 1120	1120.00	140
DS8M 1136	1136.00	142
DS8M 1152	1152.00	144
DS8M 1160	1160.00	145
DS8M 1184	1184.00	148
DS8M 1192	1192.00	149
DS8M 1200	1200.00	150
DS8M 1216	1216.00	152
DS8M 1224	1224.00	153
DS8M 1240	1240.00	155
DS8M 1248	1248.00	156
DS8M 1272	1272.00	159
DS8M 1280	1280.00	160
DS8M 1296	1296.00	162
DS8M 1312	1312.00	164
DS8M 1344	1344.00	168
DS8M 1352	1352.00	169

Belt size (Type DS8M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS8M 1360	1360.00	170
DS8M 1384	1384.00	173
DS8M 1392	1392.00	174
DS8M 1400	1400.00	175
DS8M 1424	1424.00	178
DS8M 1440	1440.00	180
DS8M 1480	1480.00	185
DS8M 1520	1520.00	190
DS8M 1552	1552.00	194
DS8M 1600	1600.00	200
DS8M 1648	1648.00	206
DS8M 1680	1680.00	210
DS8M 1728	1728.00	216
DS8M 1760	1760.00	220
DS8M 1776	1776.00	222
DS8M 1800	1800.00	225
DS8M 1808	1808.00	226
DS8M 1880	1880.00	235
DS8M 1912	1912.00	239
DS8M 1952	1952.00	244
DS8M 2000	2000.00	250
DS8M 2040	2040.00	255
DS8M 2120	2120.00	265
DS8M 2160	2160.00	270
DS8M 2240	2240.00	280
DS8M 2304	2304.00	288
DS8M 2400	2400.00	300
DS8M 2496	2496.00	312
DS8M 2560	2560.00	320
DS8M 2600	2600.00	325
DS8M 2800	2800.00	350
DS8M 2880	2880.00	360
DS8M 2944	2944.00	368
DS8M 3200	3200.00	400
DS8M 3600	3600.00	450
DS8M 3720	3720.00	465
DS8M 3904	3904.00	488
DS8M 4400	4400.00	550

Type DS14M



Belt standard widths

Nominal width	Width (mm)
400	40
600	60
800	80
1000	100
1200	120

Belt size (Type DS14M)

Belt nominal length	Pitch length (mm)	No. of teeth
DS14M 1400	1400.00	100
DS14M 1540	1540.00	110
DS14M 1610	1610.00	115
DS14M 1652	1652.00	118
DS14M 1778	1778.00	127
DS14M 1806	1806.00	129
DS14M 1890	1890.00	135
DS14M 1904	1904.00	136
DS14M 1960	1960.00	140
DS14M 2002	2002.00	143
DS14M 2100	2100.00	150
DS14M 2240	2240.00	160
DS14M 2310	2310.00	165
DS14M 2380	2380.00	170
DS14M 2450	2450.00	175
DS14M 2506	2506.00	179
DS14M 2590	2590.00	185
DS14M 2660	2660.00	190
DS14M 2800	2800.00	200
DS14M 3150	3150.00	225
DS14M 3248	3248.00	232
DS14M 3500	3500.00	250
DS14M 3556	3556.00	254
DS14M 3850	3850.00	275
DS14M 4004	4004.00	286
DS14M 4060	4060.00	290
DS14M 4326	4326.00	309
DS14M 4508	4508.00	322
DS14M 5012	5012.00	358

Synchronous Belt Eco

Product Introduction

This synchronous belt is designed considering reduction of environmentally hazardous substances.

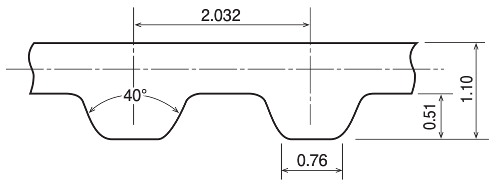
The mainstream rubber material that had been used in the previous synchronous belts was chloroprene rubber, which contains chlorine. The ecological specification developed this time is composed of ethylene propylene diene monomer (EPDM), which is gaining attention as an environmentally friendly halogen-free polymer, at all rubber sections including adhesion of the cords.

Product Name and Type

Synchronous Belt Eco

Type: MXL

Dimensions



Features

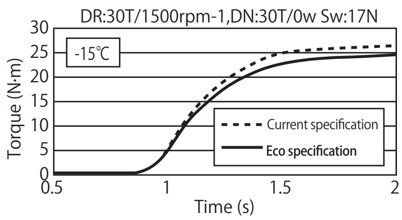
① Halogen-free specification (Not containing chlorine)
② Excellent ozone resistance
③ Excellent cold resistance characteristics

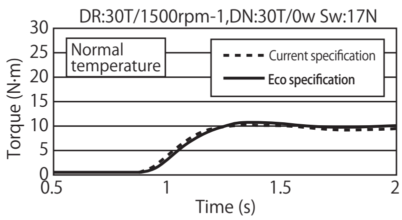
Ozone resistance

Ozone concentration		Crack occurrence time (hrs)	
		Current specification	**Eco specification**
10ppm	Condition 1	4	360 or more
	Condition 2	360 or more	360 or more
50pphm	Condition 1	360 or more	360 or more
	Condition 2	360 or more	360 or more

Condition 1 S2M was wound around a 20-tooth pulley and left, and the time of an occurrence of a crack in the back face was checked.
Condition 2 S2M was left in a free condition, and the time of an occurrence of a crack in the back face was checked.

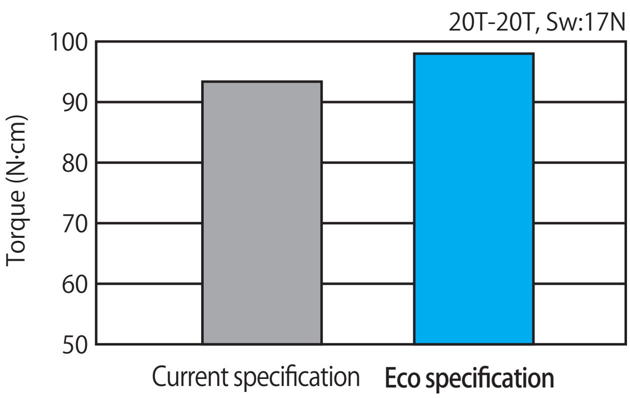
Cold resistance (starting torque)



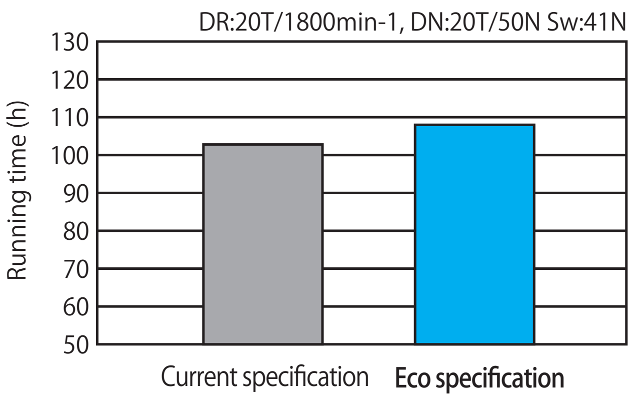


■ Belt performance

1 Skip torque (Type S2M Width of 4 mm)



2 Load durability (40S2M260)



*Avoid using this belt in conditions in which oil, grease, or the like adheres to the belt.
*For compatible sizes, please contact us.
*For belt design, please contact us.

Synchronous Belt / Double-Sided Synchronous Belt

1. Bancollan Synchronous Belt TN Product Introduction

Features

■ Usable with a small pulley with a pitch diameter of 5.09 mm!

Because of the thin belt and cords (especially the polyester specification), Type TN10 fits well even with a pulley with a pitch diameter of 5.09 mm.

☆TN10......Pitch diameter 5.09 mm / Outside diameter 4.74 mm

☆TN15......Pitch diameter 9.55 mm / Outside diameter 8.91 mm

■ High torque with low power consumption!

The belt flex resistance and power loss by slipping are small, and the bearing load due to the initial tension can also be reduced. It can transmit higher torques than rubber rectangular belts or flat belts. Decelerated drive can reduce power consumption compared to DD (direct drive).

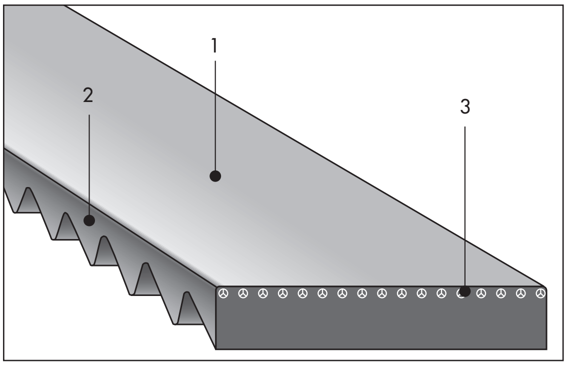
■ Little rotation non-uniformity!

The small belt pitch makes the pitch line close to a perfect circle when the belt is wound around a pulley. Therefore, it provides smooth rotation close to that of flat belts at accurate revolutions.

■ No backlash!

The triangular teeth at an angle of 70° mesh in contact with both wall surfaces of the pulley groove, causing no backlash.

Structure



1. Tension rubber (polyurethane)
2. Tooth rubber (polyurethane)
3. Cord Aramid cord Symbol K
Polyester cord Symbol T

Note) Type TN10 is available in the polyester cord type only.

●**Cord**: Aramid cord
High tensile strength and excellent flex fatigue. However, the dimensions vary depending on the ambient humidity; please check the performance, such as shaft load and tooth skip torque, before using the belt.

Example of use

■ Audio equipment

- Compact disc (disc-driving / loading sections)
- Car stereo (tuner-driving / loading sections)
- Radio cassette recorder (measure against slipping of a rectangular belt)

■ OA and automization equipment

- X-Y plotter (for forwarding / driving pens)
- Dot printer (carriage feed / pin tractor driving)
- Vending machine / money changer (for authenticating / feeding / driving bills)
- Bank terminal machine (for feeding / driving bills and cards)

■ Video equipment

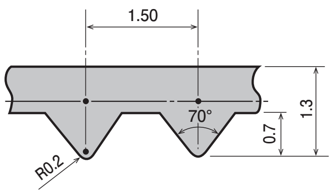
- VTR (tape-winding-driving / loading sections)
- Video disc (loading section and reading section)
- Ultra-compact TV (tuner section)

■ Other precision equipment

- Camera (film winding driving)
- Analytical equipment (sample feeding)
- Robots / NC devices (for position detection)
- Medical equipment

(1) Type TN15

• Belt cross section dimensions



- Belt indication method

180 TN15-5.0 K

No. of teeth / Belt type / Belt nominal width / Cord symbol

- Belt standard widths

Belt nominal width	Belt width (mm)
3.0	3.0
5.0	5.0
7.0	7.0
10.0	10.0
13.0	13.0

● Standard effective lengths

Belt nominal length	Pitch length (mm)	No. of teeth	Belt nominal length	Pitch length (mm)	No. of teeth	Belt nominal length	Pitch length (mm)	No. of teeth
25TN15	37.5	25	160TN15	240.0	160	320TN15	480.0	320
43TN15	64.5	43	164TN15	246.0	164	330TN15	495.0	330
50TN15	75.0	50	170TN15	255.0	170	334TN15	501.0	334
60TN15	90.0	60	172TN15	258.0	172	340TN15	510.0	340
63TN15	94.5	63	180TN15	270.0	180	350TN15	525.0	350
79TN15	118.5	79	186TN15	279.0	186	360TN15	540.0	360
82TN15	123.0	82	190TN15	285.0	190	370TN15	555.0	370
100TN15	150.0	100	192TN15	288.0	192	380TN15	570.0	380
110TN15	165.0	110	196TN15	294.0	196	390TN15	585.0	390
114TN15	171.0	114	204TN15	306.0	204	400TN15	600.0	400
120TN15	180.0	120	228TN15	342.0	228	421TN15	631.5	421
129TN15	193.5	129	240TN15	360.0	240	441TN15	661.5	441
130TN15	195.0	130	250TN15	375.0	250	460TN15	690.0	460
131TN15	196.5	131	260TN15	390.0	260	480TN15	720.0	480
137TN15	205.5	137	270TN15	405.0	270	481TN15	721.5	481
140TN15	210.0	140	271TN15	406.5	271	828TN15	1242.0	828
148TN15	222.0	148	280TN15	420.0	280			
150TN15	225.0	150	290TN15	435.0	290			
155TN15	232.5	155	300TN15	450.0	300			
157TN15	235.5	157	310TN15	465.0	310			

Note) Please note that the way the belt cross-sectional dimensions are indicated is different from that for the notched synchronous belt (Type N15) that has been manufactured.

● Effective length tolerances

(Unit: mm)

Belt type	Nominal length	Center distance tolerance
TN15	99 or less	±0.2
	100 or more to 179 or less	±0.3
	180 or more to 260 or less	±0.4
	261 or more to 339 or less	±0.5
	340 or more to 400 or less	±0.6
	401 or more	±0.7

● Belt width tolerances

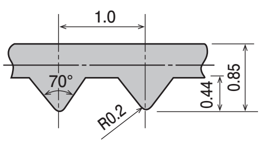
(Unit: mm)

Belt type	Nominal width	Tolerance
TN15	3.0	±0.2
	5.0	±0.2
	7.0	±0.3
	10.0	±0.4
	13.0	±0.4

Note) The center distance tolerance is the one in length measurement under our measurement conditions.

(2) Type TN10

• Belt cross section dimensions



- Belt indication method

170 TN10-2.0 T

No. of teeth / Belt type / Nominal width / Cord symbol

- Belt standard widths

Belt nominal width	Belt width (mm)
1.0	1.0
2.0	2.0
3.0	3.0

● Standard effective lengths

Belt nominal length	Pitch length (mm)	No. of teeth	Belt nominal length	Pitch length (mm)	No. of teeth	Belt nominal length	Pitch length (mm)	No. of teeth
50TN10	50.0	50	140TN10	140.0	140	287TN10	287.0	287
60TN10	60.0	60	150TN10	150.0	150	292TN10	292.0	292
66TN10	66.0	66	160TN10	160.0	160	294TN10	294.0	294
70TN10	70.0	70	170TN10	170.0	170	298TN10	298.0	298
80TN10	80.0	80	200TN10	200.0	200	302TN10	302.0	302
81TN10	81.0	81	207TN10	207.0	207	310TN10	310.0	310
98TN10	98.0	98	215TN10	215.0	215	329TN10	329.0	329
100TN10	100.0	100	220TN10	220.0	220	349TN10	349.0	349
107TN10	107.0	107	230TN10	230.0	230	360TN10	360.0	360
110TN10	110.0	110	250TN10	250.0	250	372TN10	372.0	372
120TN10	120.0	120	275TN10	275.0	275	467TN10	467.0	467
130TN10	130.0	130	279TN10	279.0	279			

● Effective length tolerances

(Unit: mm)

Belt type	Nominal length	Center distance tolerance
TN10	50 or more to 200 or less	±0.20
	201 or more to 300 or less	±0.30
	301 or more	±0.40

● Belt width tolerances

(Unit: mm)

Belt type	Nominal width	Tolerance
TN10	1.0	±0.2
	2.0	
	3.0	

Note) The center distance tolerance is the one in length measurement under our measurement conditions.

2. Synchronous Belt (Rubber/Polyurethane) Product Introduction

The synchronous belts are belts for synchronous power transmission that combine the features of gears, chains, and flat belts. They are available in abundant types and sizes and are therefore easy to design for a wide range of applications from light duty to heavy duty. They are available in synthetic rubber type and polyurethane type (Bancollan); select them based on their respective features.

(1) Synchronous Belt (rubber)

Features

■ Accurate power transmission

The belt and pulleys mesh accurately and therefore provide revolutions and the amount of movement as calculated.

■ Economical power transmission

- No metal-to-metal contact eliminates the necessity for lubrication devices.
- As high initial tension is unnecessary, the bearing and motor can be miniaturized.

■ Wide range of operating conditions

In addition to the standard specifications, we manufacture the following special specification synchronous belts.

- Oil-resistant synchronous belt
  (when the belt is used where it is subject to a large amount of oil)
- Heat-resistant synchronous belt
  (when the belt is used at high temperatures from 90°C to 120°C)
- High-electrical-resistance synchronous belt
  (when insulation of 100 MΩ or more is required)

(2) Bancollan Synchronous Belt (polyurethane)

Features

■ Resistant to oil and ozone

Non-occurrence of swelling by oil and of cracking by ozone makes the belt most suitable for the following applications.

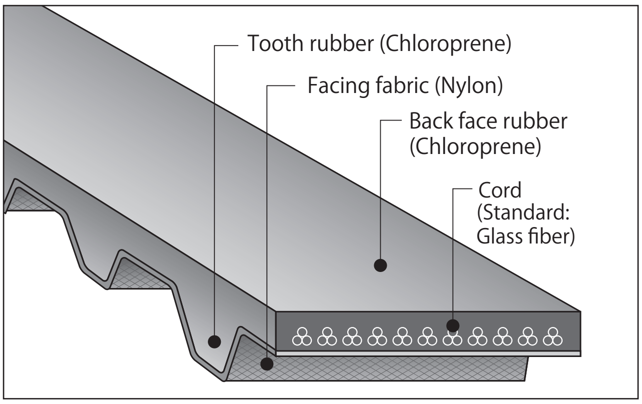
- Applications in which the oil from gears and bearings adhere to the belt, such as metal working machines and printing machines
- Applications that involve ozone generation, such as optical machines, copiers, and developers

■ Clean power transmission and conveyance

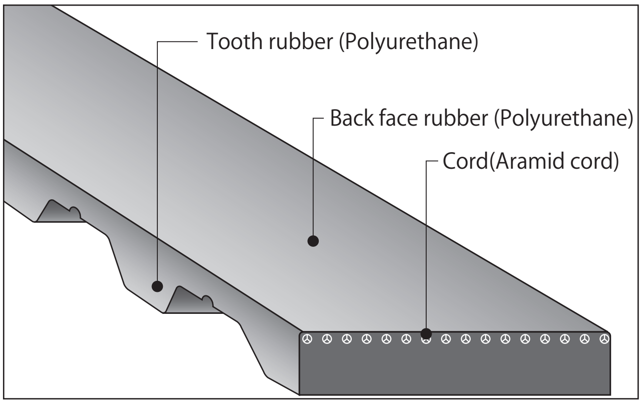
The beautiful color and the non-dispersion of rubber pieces allow sections around the belt to be kept clean. The belt is suitable for OA equipment and food packaging machines.

Structure

(1) Synchronous Belt (rubber)



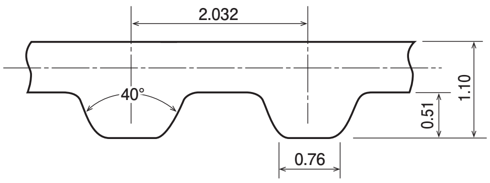
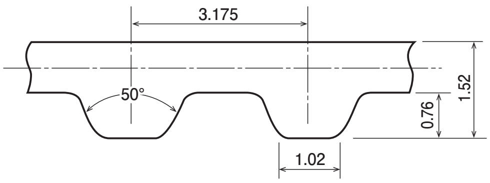
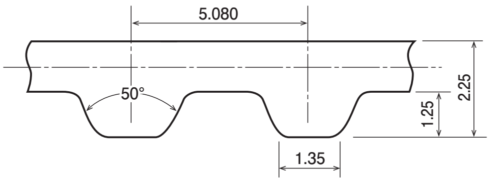
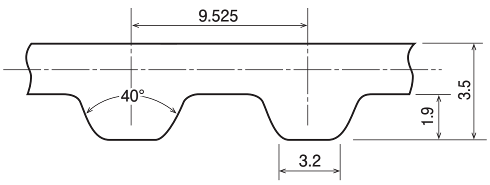
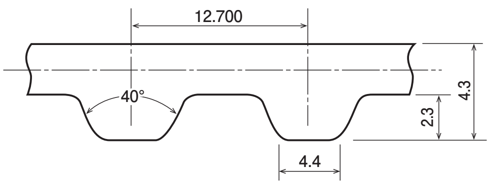
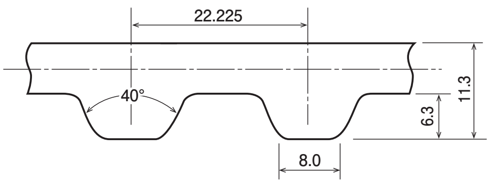
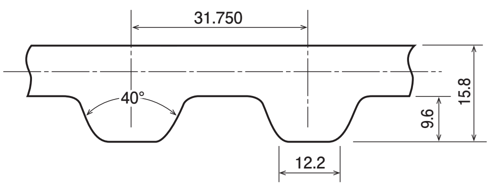
(2) Bancollan Synchronous Belt (polyurethane)



*Glass fiber cords are also available; please contact us.

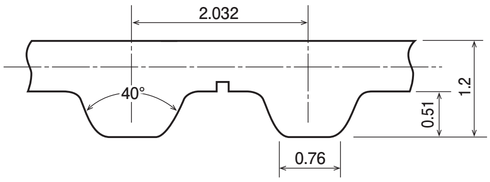
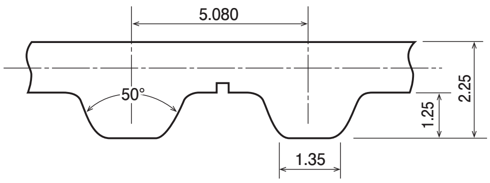
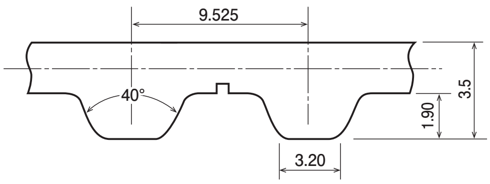
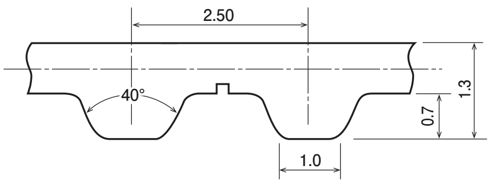
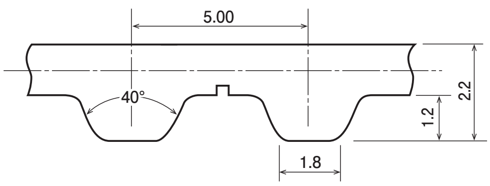
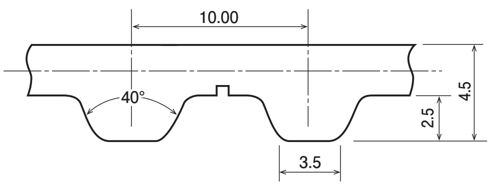
Belt dimensions and indication method

(1) Synchronous Belt (rubber)

Belt type	Dimension (mm)	Belt indication method
Type MXL		**B 250 MXL 6.4** Belt No. of teeth of belt (250 teeth: 508.0 mm) Belt type (Type MXL) Belt width (6.4㎜)
Type XXL		**60 XXL 4.8** No. of teeth of belt (60 teeth: 190.5 mm) Belt type (Type XXL) Belt width (4.8㎜)
Type XL		**250 XL 025 G** Belt nominal length (25 inches: 635 mm) Belt type (Type XL) Belt nominal width (0.25 inches: 6.4 mm) Cord symbol
Type L		**300 L 100 G** Belt nominal length (30 inches: 762 mm) Belt type (Type L) Belt nominal width (1.0 inches: 25.4 mm) Cord symbol
Type H		**600 H 200 G** Belt nominal length (60 inches: 1524 mm) Belt type (Type H) Belt nominal width (2.0 inches: 50.8 mm) Cord symbol
Type XH		**700 XH 400 G** Belt nominal length (70 inches: 1778 mm) Belt type (Type XH) Belt nominal width (4.0 inches: 101.6 mm) Cord symbol
Type XXH		**1200 XXH 600 G** Belt nominal length (120 inches: 3048 mm) Belt type (Type XXH) Belt nominal width (6.0 inches: 152.4 mm) Cord symbol

Belt Dimensions and Indication Method

(2) Bancollan Synchronous Belt (polyurethane)

Belt type	Dimension (mm)	Belt indication method
Type MXL		**180 MXL 6.4 UK** 180: No. of teeth of belt (180 teeth: 365.76 mm) MXL: Belt type (Type MXL) 6.4: Belt width (6.4mm) UK: U: Material symbol (polyurethane) K: Cord symbol (aramid)
Type XL		**180 XL 037 UK** 180: Belt nominal length (18 inches: 457.2 mm) XL: Belt type (Type XL) 037: Belt nominal width (0.37 inches: 9.5 mm) UK: U: Material symbol (polyurethane) K: Cord symbol (aramid)
Type L		**240 L 075 U** 240: Belt nominal length (24 inches: 609.6 mm) L: Belt type (Type L) 075: Belt nominal width (0.75 inches: 19.1 mm) U: Material symbol (Polyurethane)
Type T2.5		**10 T2.5 - 245** 10: Belt width (10mm) T2.5: Belt type (Type T2.5) 245: Belt pitch length (245mm)
Type T5		**10 T5 - 750** 10: Belt width (10mm) T5: Belt type (Type T5) 750: Belt pitch length (750 mm)
Type T10		**20 T10 - 1250** 20: Belt width (20mm) T10: Belt type (Type T10) 1250: Belt pitch length (1250mm)

Synchronous Belt (Rubber/Polyurethane) standard lengths

R: Rubber
U: Polyurethane

Type MXL

Pitch: 2.032 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
B30MXL	60.96	30	●	○
B35MXL	71.12	35	●	○
B36MXL	73.15	36	●	○
B37MXL	75.18	37	●	○
B40MXL	81.28	40	●	○
B41MXL	83.31	41	-	○
B42MXL	85.34	42	●	○
B43MXL	87.38	43	-	-
B44MXL	89.41	44	●	-
*B45MXL	91.44	45	●	○
B48MXL	97.54	48	●	○
*B50MXL	101.60	50	●	○
B52MXL	105.66	52	●	○
B53MXL	107.70	53	●	○
B54MXL	109.73	54	●	○
*B55MXL	111.76	55	●	○
B56MXL	113.79	56	●	○
B57MXL	115.82	57	●	○
B59MXL	119.89	59	●	○
*B60MXL	121.92	60	●	○
B61MXL	123.95	61	●	-
B62MXL	125.98	62	●	-
B63MXL	128.02	63	●	○
B64MXL	130.05	64	●	-
B65MXL	132.08	65	●	○
B67MXL	136.14	67	●	○
B68MXL	138.18	68	●	○
B69MXL	140.21	69	●	-
*B70MXL	142.24	70	●	○
B71MXL	144.27	71	●	○
B72MXL	146.30	72	●	○
B73MXL	148.34	73	●	○
B74MXL	150.37	74	●	-
*B75MXL	152.40	75	●	○
B76MXL	154.43	76	●	○
B77MXL	156.46	77	●	-
B78MXL	158.50	78	●	-
B79MXL	160.53	79	●	○
*B80MXL	162.56	80	●	○
B81MXL	164.59	81	●	○
B82MXL	166.62	82	●	○
B83MXL	168.66	83	●	○
B84MXL	170.69	84	●	-
B85MXL	172.72	85	●	○
B86MXL	174.75	86	●	-
B87MXL	176.78	87	●	○
B88MXL	178.82	88	●	○
*B90MXL	182.88	90	●	○
B91MXL	184.91	91	●	○
B92MXL	186.94	92	●	-
B93MXL	188.98	93	●	-
B94MXL	191.01	94	●	○
B95MXL	193.04	95	●	○
B96MXL	195.07	96	●	-
B97MXL	197.10	97	●	○
B98MXL	199.14	98	●	○
B99MXL	201.17	99	●	-
B100MXL	203.20	100	●	○
B101MXL	205.23	101	●	-
B102MXL	207.26	102	●	○
B103MXL	209.30	103	●	○
B104MXL	211.33	104	●	○
B105MXL	213.36	105	●	-
B106MXL	215.39	106	●	○
B108MXL	219.46	108	●	-
B109MXL	221.49	109	●	-
*B110MXL	223.52	110	●	○
B112MXL	227.58	112	●	○
B114MXL	231.65	114	●	○
B115MXL	233.68	115	●	○
B118MXL	239.78	118	●	○
B119MXL	241.81	119	●	-
B120MXL	243.84	120	●	○
B121MXL	245.87	121	●	-
B122MXL	247.90	122	●	-
B123MXL	249.94	123	●	○
B124MXL	251.97	124	●	-
*B125MXL	254.00	125	●	○
B126MXL	256.03	126	●	○
B127MXL	258.06	127	●	-

Type MXL

Pitch: 2.032 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
B128MXL	260.10	128	●	○
B129MXL	262.13	129	●	-
B130MXL	264.16	130	●	○
B131MXL	266.19	131	●	-
B132MXL	268.22	132	●	○
B134MXL	272.29	134	●	○
B135MXL	274.32	135	●	-
B136MXL	276.35	136	●	
B137MXL	278.38	137	●	-
B138MXL	280.42	138	●	-
B140MXL	284.48	140	●	○
B142MXL	288.54	142	●	-
B144MXL	292.61	144	●	○
B145MXL	294.64	145	●	-
B146MXL	296.67	146	●	-
B148MXL	300.74	148	●	-
B150MXL	304.80	150	●	○
B151MXL	306.83	151	●	-
*B155MXL	314.96	155	●	○
B157MXL	319.02	157	●	○
B158MXL	321.06	158	●	-
B159MXL	323.09	159	●	-
B160MXL	325.12	160	●	○
B162MXL	329.18	162	●	-
B163MXL	331.22	163	●	-
B164MXL	333.25	164	●	-
B165MXL	335.28	165	●	○
B169MXL	343.41	169	●	-
B170MXL	345.44	170	●	○
*B175MXL	355.60	175	●	○
B177MXL	359.66	177	●	-
B180MXL	365.76	180	●	○
B184MXL	373.89	184	●	○
B188MXL	382.02	188	●	-
B190MXL	386.08	190	●	○
B192MXL	390.14	192	●	-
B194MXL	394.21	194	●	○
B195MXL	396.24	195	●	○
B196MXL	398.27	196	●	-
B200MXL	406.40	200	●	○
B204MXL	414.53	204	●	-
B205MXL	416.56	205	●	○
B210MXL	426.72	210	●	○
B212MXL	430.78	212	●	○
B215MXL	436.88	215	●	○
B220MXL	447.04	220	●	○
B221MXL	449.07	221	●	-
B222MXL	451.10	222	●	-
B224MXL	455.17	224	●	-
*B225MXL	457.20	225	●	○
B226MXL	459.23	226	●	-
B228MXL	463.30	228	●	-
B230MXL	467.36	230	●	○
B232MXL	471.42	232	●	-
B234MXL	475.49	234	●	-
B236MXL	479.55	236	●	○
B239MXL	485.65	239	●	-
B240MXL	487.68	240	●	○
B245MXL	497.84	245	●	-
B248MXL	503.94	248	●	-
B249MXL	505.97	249	●	-
*B250MXL	508.00	250	●	○
B251MXL	510.03	251	●	-
B255MXL	518.16	255	●	○
B256MXL	520.19	256	●	-
B260MXL	528.32	260	●	○
B262MXL	532.38	262	●	-
B265MXL	538.48	265	●	○
B268MXL	544.58	268	●	-
B270MXL	548.64	270	●	○
B271MXL	550.67	271	●	-
B273MXL	554.74	273	●	-
B275MXL	558.80	275	●	-
B280MXL	568.96	280	●	○
B281MXL	570.99	281	●	-
B285MXL	579.12	285	●	-
B288MXL	585.22	288	●	-
B290MXL	589.28	290	●	-
B295MXL	599.44	295	●	○
B297MXL	603.50	297	●	-

Type MXL

Pitch: 2.032 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
B300MXL	609.60	300	●	○
B305MXL	619.76	305	●	○
B308MXL	625.86	308	●	-
B310MXL	629.92	310	●	○
B312MXL	633.98	312	●	-
B315MXL	640.08	315	●	-
B318MXL	646.18	318	●	-
B320MXL	650.24	320	●	-
B321MXL	652.27	321	●	○
B323MXL	656.34	323	●	-
B326MXL	662.43	326	●	-
B328MXL	666.50	328	●	○
B330MXL	670.56	330	●	○
B332MXL	674.62	332	●	-
B334MXL	678.69	334	●	-
B336MXL	682.75	336	●	○
B337MXL	684.78	337	●	-
B340MXL	690.88	340	●	○
B347MXL	705.10	347	●	○
B350MXL	711.20	350	●	○
B354MXL	719.33	354	●	-
B355MXL	721.36	355	●	-
B358MXL	727.46	358	●	-
B359MXL	729.49	359	●	-
B360MXL	731.52	360	●	○
B364MXL	739.65	364	●	-
B365MXL	741.68	365	●	-
B366MXL	743.71	366	●	-
B371MXL	753.87	371	●	-
B372MXL	755.90	372	●	-
B380MXL	772.16	380	●	-
B388MXL	788.42	388	●	-
B397MXL	806.70	397	●	-
B400MXL	812.80	400	●	-
B402MXL	816.86	402	●	-
B405MXL	822.96	405	●	-
B410MXL	833.12	410	●	-
B413MXL	839.22	413	●	-
B419MXL	851.41	419	●	-
B425MXL	863.60	425	●	-
B431MXL	875.79	431	●	-
B434MXL	881.89	434	●	-
B435MXL	883.92	435	●	-
B440MXL	894.08	440	●	-
B448MXL	910.34	448	●	-
B453MXL	920.50	453	●	○
B464MXL	942.90	464	●	-
B468MXL	950.98	468	●	○
B473MXL	961.14	473	●	-
B475MXL	965.20	475	●	-
B480MXL	975.36	480	●	-
B487MXL	989.58	487	●	-
B493MXL	1001.78	493	●	-
B498MXL	1011.94	498	●	-
B500MXL	1016.00	500	●	-
B516MXL	1048.51	516	●	-
B522MXL	1060.70	522	●	-
B524MXL	1064.77	524	●	-
B525MXL	1066.80	525	●	-
B535MXL	1087.12	535	●	-
B550MXL	1117.60	550	●	-
B579MXL	1176.53	579	●	○
B591MXL	1200.91	591	●	-
B612MXL	1243.58	612	●	-
B660MXL	1341.12	660	●	○
B665MXL	1351.28	665	●	-

Note) * indicates RMA standard sizes.

Synchronous Belt (Rubber/Polyurethane) standard lengths

R: Rubber
U: Polyurethane

Type XXL

Pitch: 3.175 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
51XXL	161.93	51	●	-
80XXL	254.00	80	●	-
100XXL	317.50	100	●	-
103XXL	327.03	103	●	-
104XXL	330.20	104	●	-
105XXL	333.38	105	●	-
114XXL	361.95	114	●	-
115XXL	365.13	115	●	-
126XXL	400.50	126	●	-
150XXL	476.25	150	●	-
153XXL	485.78	153	●	-
154XXL	488.95	154	●	-
156XXL	495.30	156	●	-
160XXL	508.00	160	●	-
162XXL	514.35	162	●	-
163XXL	517.53	163	●	-
168XXL	533.40	168	●	-
173XXL	549.28	173	●	-
220XXL	698.50	220	●	-
231XXL	733.43	231	●	-
321XXL	1019.18	321	●	-
379XXL	1203.33	379	●	-

Type XL

Pitch: 5.080 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
50XL	127.00	25	●	-
60XL	152.40	30	●	○
64XL	162.56	32	●	-
68XL	172.72	34	●	-
*70XL	177.80	35	●	○
72XL	182.88	36	●	-
74XL	187.96	37	●	-
76XL	193.04	38	●	-
78XL	198.12	39	●	-
*80XL	203.20	40	●	○
84XL	213.36	42	●	○
88XL	223.52	44	●	-
*90XL	228.60	45	●	○
92XL	233.68	46	●	-
94XL	238.76	47	●	-
96XL	243.84	48	●	○
98XL	248.92	49	●	-
*100XL	254.00	50	●	○
102XL	259.08	51	●	-
104XL	264.16	52	●	-
106XL	269.24	53	●	-
108XL	274.32	54	●	-
*110XL	279.40	55	●	○
112XL	284.48	56	●	-
114XL	289.56	57	●	○
116XL	294.64	58	●	-
118XL	299.72	59	●	-
*120XL	304.80	60	●	○
122XL	309.88	61	●	-
124XL	314.96	62	●	-
126XL	320.04	63	●	-
128XL	325.12	64	●	-
*130XL	330.20	65	●	○
132XL	335.28	66	●	-
134XL	340.36	67	●	-
136XL	345.44	68	●	-
138XL	350.52	69	●	-
*140XL	355.60	70	●	○
142XL	360.68	71	●	-
144XL	365.76	72	●	-
146XL	370.84	73	●	-
148XL	375.92	74	●	-
*150XL	381.00	75	●	○
152XL	386.08	76	●	-
154XL	391.16	77	●	○
156XL	396.24	78	●	○
158XL	401.32	79	●	-
*160XL	406.40	80	●	○
162XL	411.48	81	●	-
164XL	416.56	82	●	-
166XL	421.64	83	●	○
168XL	426.72	84	●	○
*170XL	431.80	85	●	○
172XL	436.88	86	●	-
174XL	441.96	87	●	-
176XL	447.04	88	●	○
178XL	452.12	89	●	-
*180XL	457.20	90	●	○
182XL	462.28	91	●	-
184XL	467.36	92	●	-
188XL	477.52	94	●	-
*190XL	482.60	95	●	○
194XL	492.76	97	●	-
196XL	497.84	98	●	-
198XL	502.92	99	●	○
*200XL	508.00	100	●	○
202XL	513.08	101	●	○
206XL	523.24	103	●	-
208XL	528.32	104	●	-
*210XL	533.40	105	●	○
212XL	538.48	106	●	○
214XL	543.56	107	●	-
216XL	548.64	108	●	-
*220XL	558.80	110	●	○
222XL	563.88	111	●	-
224XL	568.96	112	●	-
228XL	579.12	114	●	-
*230XL	584.20	115	●	○
234XL	594.36	117	●	-
*240XL	609.60	120	●	○

Type XL

Pitch: 5.080 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
244XL	619.75	122	●	-
248XL	629.92	124	●	-
*250XL	635.00	125	●	○
254XL	645.16	127	●	○
*260XL	660.40	130	●	○
262XL	665.48	131	●	-
266XL	675.64	133	●	-
270XL	685.80	135	●	○
276XL	701.04	138	●	-
280XL	711.20	140	●	-
282XL	716.28	141	●	-
290XL	736.60	145	●	○
300XL	762.00	150	●	○
310XL	787.40	155	●	-
314XL	797.56	157	●	-
320XL	812.80	160	●	○
322XL	817.88	161	●	-
330XL	838.20	165	●	○
340XL	863.60	170	●	-
344XL	873.76	172	●	-
348XL	883.92	174	●	-
352XL	894.08	176	●	-
356XL	904.24	178	●	-
360XL	914.40	180	●	-
364XL	924.00	182	●	-
370XL	939.80	185	●	-
372XL	944.88	186	●	-
376XL	955.04	188	●	○
384XL	975.36	192	●	-
386XL	980.44	193	●	-
388XL	985.52	194	●	-
390XL	990.60	195	●	-
396XL	1005.84	198	●	○
400XL	1016.00	200	●	-
408XL	1036.32	204	●	-
414XL	1015.56	207	●	○
424XL	1076.96	212	●	-
430XL	1092.20	215	●	○
450XL	1143.00	225	●	-
456XL	1158.24	228	●	-
460XL	1168.40	230	●	○
470XL	1193.80	235	●	-
478XL	1214.12	239	●	○
480XL	1219.20	240	●	○
490XL	1244.60	245	●	○
496XL	1259.84	248	●	-
510XL	1295.40	255	●	-
512XL	1300.48	256	●	○
564XL	1432.56	282	●	○
592XL	1503.68	296	●	-
608XL	1544.32	304	●	-
630XL	1600.20	315	●	○
638XL	1620.52	319	●	-
670XL	1701.80	335	●	○
686XL	1742.44	343	●	○
730XL	1854.20	365	●	○
828XL	2103.12	414	●	-
860XL	2184.40	430	●	-
888XL	2255.52	444	●	-
900XL	2286.00	450	●	-
908XL	2306.32	454	●	-
914XL	2321.56	457	●	-
926XL	2352.04	463	●	-
1014XL	2575.56	507	●	-
1020XL	2590.80	510	●	-

Synchronous Belt (Rubber/Polyurethane) standard lengths

R: Rubber
U: Polyurethane

Type L

Pitch: 9.525 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
98L	247.65	26	●	-
109L	276.23	29	●	-
*124L	314.33	33	●	○
135L	342.90	36	●	-
*150L	381.00	40	●	○
165L	419.10	44	●	○
169L	428.63	45	●	-
172L	438.15	46	●	-
*187L	476.25	50	●	○
203L	514.35	54	●	-
*210L	533.40	56	●	○
218L	552.45	58	●	-
*225L	571.50	60	●	○
240L	609.60	64	●	○
248L	628.65	66	●	-
*255L	647.70	68	●	○
263L	666.75	70	●	-
*270L	685.80	72	●	○
277L	704.85	74	●	-
*285L	723.90	76	●	○
*300L	762.00	80	●	○
304L	771.53	81	●	-
315L	800.10	84	●	-
320L	809.63	85	●	-
*322L	819.15	86	●	○
334L	847.73	89	●	-
337L	857.25	90	●	-
*345L	876.30	92	●	○
360L	914.40	96	●	○
*367L	933.45	98	●	○
375L	952.50	100	●	-
382L	971.55	102	●	-
*390L	990.60	104	●	○
394L	1000.13	105	●	-
*420L	1066.80	112	●	○
427L	1085.85	114	●	-
436L	1104.90	116	●	-
439L	1114.43	117	●	-
446L	1133.48	119	●	-
*450L	1143.00	120	●	○
465L	1181.10	124	●	-
*480L	1219.20	128	●	○
*510L	1295.40	136	●	○
514L	1304.93	137	●	-
525L	1333.50	140	●	-
*540L	1371.60	144	●	○
548L	1390.65	146	●	-
581L	1476.38	155	●	-
*600L	1524.00	160	●	○
605L	1533.53	161	●	-
619L	1571.63	165	●	-
630L	1600.20	168	●	-
●640L	1619.25	170	●	-
653L	1657.35	174	●	-
660L	1676.40	176	●	-
697L	1771.65	186	●	-
728L	1847.85	194	●	-
731L	1857.38	195	●	-
●767L	1952.63	205	●	-
780L	1981.20	208	●	-
788L	2000.25	210	●	-
806L	2047.88	215	●	-
855L	2171.70	228	●	-
863L	2190.75	230	●	-
881L	2238.38	235	●	-
915L	2324.10	244	●	-
919L	2333.63	245	●	-
938L	2381.25	250	●	-
1294L	3286.13	345	●	-

(Remarks)
1) For Type L with the ● mark, check the length and the number of teeth.
2) * indicates RMA standard sizes.

Type H

Pitch: 12.7 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
185H	469.90	37	●	-
225H	571.50	45	●	-
230H	584.20	46	●	-
*240H	609.60	48	●	-
245H	622.30	49	●	-
*270H	685.80	54	●	-
280H	711.20	56	●	-
*300H	762.00	60	●	-
310H	787.40	62	●	-
315H	800.10	63	●	-
320H	812.80	64	●	-
*330H	838.20	66	●	-
340H	863.60	68	●	-
350H	889.00	70	●	-
*360H	914.40	72	●	-
370H	939.80	74	●	-
375H	952.50	75	●	-
*390H	990.60	78	●	-
400H	1016.00	80	●	-
410H	1041.40	82	●	-
*420H	1066.80	84	●	-
430H	1092.20	86	●	-
*450H	1143.00	90	●	-
465H	1181.10	93	●	-
*480H	1219.20	96	●	-
490H	1244.60	98	●	-
*510H	1295.40	102	●	-
530H	1346.20	106	●	-
540H	1371.60	108	●	-
560H	1422.40	112	●	-
565H	1435.10	113	●	-
*570H	1447.80	114	●	-
580H	1473.20	116	●	-
*600H	1524.00	120	●	-
605H	1536.70	121	●	-
*630H	1600.20	126	●	-
640H	1625.60	128	●	-
650H	1651.00	130	●	-
*660H	1676.40	132	●	-
680H	1727.20	136	●	-
*700H	1778.00	140	●	-
730H	1854.20	146	●	-
*750H	1905.00	150	●	-
760H	1930.40	152	●	-
770H	1955.80	154	●	-
*800H	2032.00	160	●	-
810H	2057.40	162	●	-
820H	2082.80	164	●	-
840H	2133.60	168	●	-
*850H	2159.00	170	●	-
860H	2184.40	172	●	-
880H	2235.20	176	●	-
*900H	2286.00	180	●	-
950H	2413.00	190	●	-
985H	2501.90	197	●	-
*1000H	2540.00	200	●	-
1020H	2590.80	204	●	-
1050H	2667.00	210	●	-
*1100H	2794.00	220	●	-
1130H	2870.20	226	●	-
1140H	2895.60	228	●	-
*1250H	3175.00	250	●	-
1325H	3365.50	265	●	-
1350H	3429.00	270	●	-
*1400H	3556.00	280	●	-
1680H	4267.20	336	●	-
*1700H	4318.00	340	●	-

Type XH

Pitch: 22.225 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
*507XH	1289.05	58	●	-
*560XH	1422.40	64	●	-
*630XH	1600.20	72	●	-
*700XH	1778.00	80	●	-
735XH	1866.90	84	●	-
*770XH	1955.80	88	●	-
*840XH	2133.60	96	●	-
875XH	2222.50	100	●	-
927XH	2355.85	106	●	-
*980XH	2489.20	112	●	-
*1120XH	2844.80	128	●	-
*1260XH	3200.40	144	●	-
*1400XH	3556.00	160	●	-
*1540XH	3911.60	176	●	-
*1750XH	4445.00	200	●	-

Type XXH

Pitch: 31.75 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
*700XXH	1778.00	56	●	-
*800XXH	2032.00	64	●	-
*900XXH	2286.00	72	●	-
*1000XXH	2540.00	80	●	-
*1200XXH	3048.00	96	●	-
*1400XXH	3556.00	112	●	-
*1600XXH	4064.00	128	●	-
*1800XXH	4572.00	144	●	-
1915XXH	4857.75	153	●	-

Note) * indicates RMA standard sizes.

Bancollan Synchronous Belt (polyurethane) standard lengths

R: Rubber
U: Polyurethane

Type T2.5

Pitch: 2.5 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
T2.5-120	120.0	48	-	○
T2.5-145	145.0	58	-	○
T2.5-160	160.0	64	-	○
T2.5-177.5	177.5	71	-	○
T2.5-182.5	182.5	73	-	○
T2.5-200	200.0	80	-	○
T2.5-230	230.0	92	-	○
T2.5-245	245.0	98	-	○
T2.5-265	265.0	106	-	○
T2.5-285	285.0	114	-	○
T2.5-305	305.0	122	-	○
T2.5-317.5	317.5	127	-	○
T2.5-330	330.0	132	-	○
T2.5-380	380.0	152	-	○
T2.5-420	420.0	168	-	○
T2.5-480	480.0	192	-	○
T2.5-492.5	492.5	197	-	○
T2.5-500	500.0	200	-	○
T2.5-600	600.0	240	-	○
T2.5-620	620.0	248	-	○
T2.5-650	650.0	260	-	○
T2.5-780	780.0	312	-	○
T2.5-915	915.0	366	-	○
T2.5-950	950.0	380	-	○

Type T5

Pitch: 5.0 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
T5-165	165.0	33	-	○
T5-185	185.0	37	-	○
T5-200	200.0	40	-	○
T5-215	215.0	43	-	○
T5-220	220.0	44	-	○
T5-225	225.0	45	-	○
T5-245	245.0	49	-	○
T5-250	250.0	50	-	○
T5-255	255.0	51	-	○
T5-260	260.0	52	-	○
T5-270	270.0	54	-	○
T5-275	275.0	55	-	○
T5-280	280.0	56	-	○
T5-295	295.0	59	-	○
T5-300	300.0	60	-	○
T5-305	305.0	61	-	○
T5-325	325.0	65	-	○
T5-330	330.0	66	-	○
T5-340	340.0	68	-	○
T5-350	350.0	70	-	○
T5-355	355.0	71	-	○
T5-365	365.0	73	-	○
T5-375	375.0	75	-	○
T5-390	390.0	78	-	○
T5-400	400.0	80	-	○
T5-410	410.0	82	-	○
T5-420	420.0	84	-	○
T5-425	425.0	85	-	○
T5-450	450.0	90	-	○
T5-455	455.0	91	-	○
T5-465	465.0	93	-	○
T5-475	475.0	95	-	○
T5-480	480.0	96	-	○
T5-500	500.0	100	-	○
T5-510	510.0	102	-	○
T5-525	525.0	105	-	○
T5-545	545.0	109	-	○
T5-550	550.0	110	-	○
T5-560	560.0	112	-	○
T5-575	575.0	115	-	○
T5-600	600.0	120	-	○
T5-610	610.0	122	-	○
T5-620	620.0	124	-	○
T5-630	630.0	126	-	○
T5-640	640.0	128	-	○
T5-650	650.0	130	-	○
T5-660	660.0	132	-	○
T5-675	675.0	135	-	○
T5-690	690.0	138	-	○
T5-695	695.0	139	-	○
T5-700	700.0	140	-	○
T5-720	720.0	144	-	○
T5-750	750.0	150	-	○
T5-780	780.0	156	-	○
T5-800	800.0	160	-	○
T5-815	815.0	163	-	○
T5-840	840.0	168	-	○
T5-850	850.0	170	-	○
T5-900	900.0	180	-	○
T5-940	940.0	188	-	○
T5-990	990.0	198	-	○
T5-1000	1000.0	200	-	○
T5-1075	1075.0	215	-	○
T5-1100	1100.0	220	-	○
T5-1140	1140.0	228	-	○
T5-1215	1215.0	243	-	○
T5-1380	1380.0	276	-	○
T5-1440	1440.0	288	-	○

Type T10

Pitch: 10.0 mm

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
T10-260	260.0	26	-	○
T10-370	370.0	37	-	○
T10-400	400.0	40	-	○
T10-410	410.0	41	-	○
T10-440	440.0	44	-	○
T10-450	450.0	45	-	○
T10-500	500.0	50	-	○
T10-530	530.0	53	-	○
T10-560	560.0	56	-	○
T10-610	610.0	61	-	○
T10-630	630.0	63	-	○
T10-660	660.0	66	-	○
T10-690	690.0	69	-	○
T10-700	700.0	70	-	○
T10-720	720.0	72	-	○
T10-750	750.0	75	-	○
T10-780	780.0	78	-	○
T10-810	810.0	81	-	○
T10-840	840.0	84	-	○
T10-880	880.0	88	-	○
T10-890	890.0	89	-	○
T10-900	900.0	90	-	○
T10-920	920.0	92	-	○
T10-960	960.0	96	-	○
T10-970	970.0	97	-	○
T10-980	980.0	98	-	○
T10-1000	1000.0	100	-	○
T10-1010	1010.0	101	-	○
T10-1080	1080.0	108	-	○
T10-1100	1100.0	110	-	○
T10-1110	1110.0	111	-	○
T10-1140	1140.0	114	-	○
T10-1150	1150.0	115	-	○
T10-1210	1210.0	121	-	○
T10-1240	1240.0	124	-	○
T10-1250	1250.0	125	-	○
T10-1300	1300.0	130	-	○
T10-1320	1320.0	132	-	○
T10-1350	1350.0	135	-	○
T10-1390	1390.0	139	-	○
T10-1400	1400.0	140	-	○
T10-1420	1420.0	142	-	○
T10-1440	1440.0	144	-	○
T10-1450	1450.0	145	-	○
T10-1460	1460.0	146	-	○
T10-1500	1500.0	150	-	○
T10-1560	1560.0	156	-	○
T10-1610	1610.0	161	-	○
T10-1750	1750.0	175	-	○
T10-1780	1780.0	178	-	○
T10-1880	1880.0	188	-	○
T10-1960	1960.0	196	-	○
T10-2250	2250.0	225	-	○

Rubber Synchronous Belt standard widths

Nominal width			025	031	037	050	075	100	150	200	300	400	500	600
Width (mm)	3.2	4.8	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2	101.6	127.0	152.4
MXL	●	●	●		●	●								
XL(DXL)			●	●	●	●	●							
L(DL)						●	●	●	●	●				
H(DH)							●	●	●	●	●			
XH										●	●	●	●	●
XXH										●	●	●	●	●

Rubber Synchronous Belt length tolerances

(Unit: mm)

MXL nominal length	Tolerance
Over 45 to 71 or less	±0.15
Over 71 to 180 or less	±0.20
Over 180 to 250 or less	±0.25
Over 250 to 379 or less	±0.30
Over 379 to 480 or less	±0.35
Over 480 to 550 or less	±0.40
551 or more	±0.45

Note) The effective length tolerance is the tolerance of center distance in length measurement.

(Unit: mm)

XL/L/H/XH/XXH nominal length	Tolerance
Over 60 to 100 or less	±0.20
Over 100 to 150 or less	±0.23
Over 150 to 200 or less	±0.25
Over 200 to 300 or less	±0.30
Over 300 to 390 or less	±0.33
Over 390 to 480 or less	±0.38
Over 480 to 600 or less	±0.40
Over 600 to 700 or less	±0.43
Over 700 to 800 or less	±0.45
Over 800 to 900 or less	±0.48
Over 900 to 1000 or less	±0.51
Over 1000 to 1100 or less	±0.53
Over 1100 to 1200 or less	±0.56
Over 1200 to 1300 or less	±0.58
Over 1300 to 1400 or less	±0.61
Over 1400 to 1500 or less	±0.64
Over 1500 to 1600 or less	±0.66
Over 1600 to 1700 or less	±0.68
Over 1700 to 1800 or less	±0.71
1801 or more	±0.75

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Rubber Double-Sided Synchronous Belt length tolerances

(Unit: mm)

DXL/DL/DH nominal length	Tolerance
100 or less	+0.40, -0.20
Over 100 to 150 or less	+0.46, -0.23
Over 150 to 200 or less	+0.50, -0.25
Over 200 to 300 or less	+0.60, -0.30
Over 300 to 390 or less	+0.66, -0.33
Over 390 to 480 or less	+0.76, -0.38
Over 480 to 600 or less	+0.80, -0.40
Over 600 to 700 or less	+0.86, -0.43
Over 700 to 800 or less	+0.90, -0.45
Over 800 to 900 or less	+0.96, -0.48
Over 900 to 1000 or less	+1.02, -0.51
Over 1000 to 1100 or less	+1.06, -0.53
Over 1100 to 1200 or less	+1.12, -0.56
Over 1200 to 1300 or less	+1.16, -0.58
Over 1300 to 1400 or less	+1.21, -0.61
Over 1400 to 1500 or less	+1.28, -0.64
Over 1500 to 1600 or less	+1.32, -0.66
Over 1600 to 1700 or less	+1.36, -0.68

Note) The effective length tolerance is the tolerance of center distance in length measurement.

Rubber Synchronous Belt width tolerances

(Unit: mm)

XL/L/H nominal width	Toler-ance
025	±0.4
031	
037	
050	±0.5
075	
100	±0.7
150	
200	±0.8
250	±1.3
300	

MXL nominal width	Tolerance
3.2	+0.3 -0.6
4.8	
8.4	
9.5	
12.7	+0.4, -0.8

***The tolerance for Types XH and XXH is ±2.0 mm regardless of the nominal width.**

Bancollan Synchronous Belt (polyurethane) standard widths

Nominal width			025	031	037	050	075	100	150	200	3	5	7	10	13	15	20	25	30	50
Width (mm)	3.2	4.8	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	3	5	7	10	13	15	20	25	30	50
MXL	○	○	○	○	○	○														
XL(DXL)			○	○	○	○	○													
L						○	○	○	○	○										
T2.5											○	○	○		○					
T5(DT5)												○		○		○	○	○		
T10(DT10)																○	○	○	○	○

Bancollan Synchronous Belt (polyurethane) length tolerances

(Unit: mm)

Belt type	Nominal length	Tolerance
MXL	45 or more to 71 or less	±0.15
	Over 71 to 180 or less	±0.20
	Over 180 to 250 or less	±0.25
	Over 250 to 375 or less	±0.30
	Over 375 to 490 or less	±0.35
	Over 490 to 600 or less	±0.40
	Over 600 to 1000 or less	±0.45
XL(DXL) L	Over 60 to 100 or less	±0.20
	Over 100 to 200 or less	±0.25
	Over 200 to 300 or less	±0.30
	Over 300 to 390 or less	±0.35
	Over 390 to 780 or less	±0.40
	Over 780 to 800 or less	±0.45
T5(DT5) T10(DT10)	Over 150 to 320 or less	±0.15
	Over 320 to 630 or less	±0.18
	Over 630 to 1000 or less	±0.25
	Over 1000 to 1960 or less	±0.40
	Over 1960 to 2300 or less	±0.50

Bancollan Synchronous Belt (polyurethane) width tolerances

(Unit: mm)

MXL		XL (DXL)/L		T5 (DT5) / T10 (DT10)	
Nominal width	Tolerance	Nominal width	Tolerance	Width	Tolerance
3.2	+0.3 -0.6	025	±0.4	5	±0.5
4.8		031		—	
8.4		037		10	
9.5		050	±0.5	15	
12.7	+0.4, -0.8	075		20	
		100	±0.7	25	
		150		30	
		200	±1.0	50	

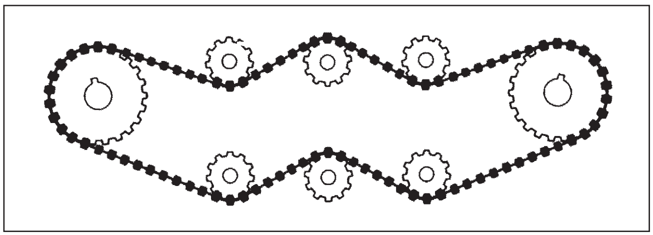
3. Double-Sided Synchronous Belt (Rubber/Polyurethane) Product Introduction

The Double-Sided Synchronous Belt [rubber/polyurethane (Bancollan)] has identical tooth profiles on the top and back surfaces of the belt, and a single belt of this belt can synchronously transmit power with multiple shafts. The Bancollan Double-Sided Synchronous Belt is suitable when it is subject to oil or ozone or when dispersion of rubber pieces should be avoided.

Features

■ Multi-shaft synchronous power transmission possible

A single belt can synchronously transmit power with many shafts.



■ Easy maintenance

Unlike chains, it has no need to re-tension or lubricate and is easy to maintain.

■ Low noise

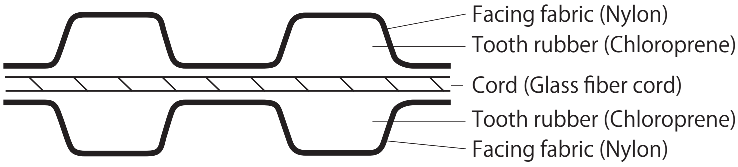
No metal-to-metal contact allows quiet power transmission.

■ Clean

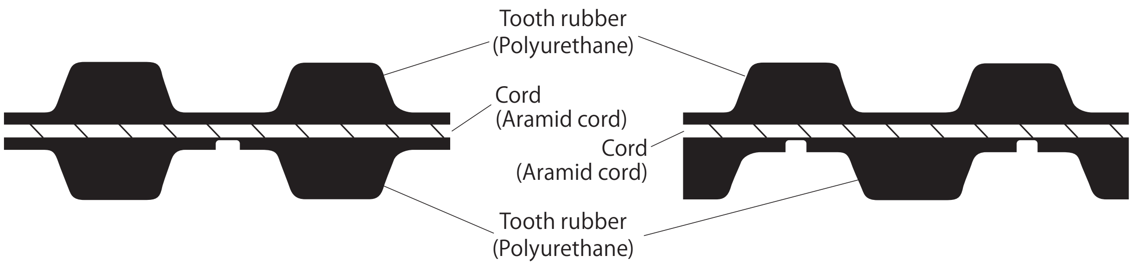
Unlike chains or gears, it has no need for lubrication, eliminating oil dispersion, which provides cleanliness in the sections around the belt.

Structure

Double-Sided Synchronous Belt (Types DXL/DL/DH)



Bancollan Double-Sided Synchronous Belt (Type DXL)　Bancollan Double-Sided Synchronous Belt (Types DT5/DT10)



The beads type (—●—●—) and the zigzag type (—▲▼▲—) exist taking into consideration domestic and foreign standards and compatibility with other companies' products and have no difference in performance.

Indication Method

Double-Sided Synchronous Belt

600 D H 100 G

- 600: Belt pitch length (60 inches: 1524 mm)
- D: Double-Sided Synchronous Belt
- H: Belt type (Type H)
- 100: Belt nominal width (1 inch: 25.4 mm)
- G: Cord symbol (Glass fiber)

Bancollan Double-Sided Synchronous Belt

180 D XL 025 UK

- 180: Belt pitch length (18 inches: 457.2 mm)
- D: Double-Sided Synchronous Belt
- XL: Belt type (Type XL)
- 025: Belt nominal width (0.25 inches: 6.4 mm)
- U: Material symbol (Polyurethane)
- K: Cord symbol (Aramid)

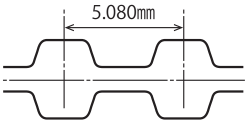
25 D T10 - 1800

- 25: Belt nominal width (25㎜)
- D: Double-Sided Synchronous Belt
- T10: Belt type (Type T10)
- 1800: Belt pitch length (1800㎜)

Rubber Double-Sided Synchronous Belt standard lengths

R: Rubber
U: Polyurethane

Type DXL



Belt standard widths

Nominal width	Width (mm)
025	6.4
031	7.9
037	9.5
050	12.7
075	19.1

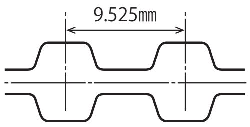
Belt size (Type DXL)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
160DXL	406.40	80	●	-
162DXL	411.48	81	●	-
164DXL	416.56	82	●	-
166DXL	421.64	83	●	-
168DXL	426.72	84	●	-
170DXL	431.80	85	●	-
172DXL	436.88	86	●	-
174DXL	441.96	87	●	-
176DXL	447.04	88	●	-
178DXL	452.12	89	●	-
180DXL	457.20	90	●	-
182DXL	462.28	91	●	-
184DXL	467.36	92	●	-
188DXL	477.52	94	●	-
190DXL	482.60	95	●	-
194DXL	492.76	97	●	-
196DXL	497.84	98	●	-
198DXL	502.92	99	●	-
200DXL	508.00	100	●	-
202DXL	513.08	101	●	-
206DXL	523.24	103	●	-
208DXL	528.32	104	●	-
210DXL	533.40	105	●	-
212DXL	538.48	106	●	-
214DXL	543.56	107	●	-
216DXL	548.64	108	●	-
220DXL	558.80	110	●	-
222DXL	563.88	111	●	-
224DXL	568.96	112	●	-
228DXL	579.12	114	●	-
230DXL	584.20	115	●	-
234DXL	594.36	117	●	-
240DXL	609.60	120	●	-
244DXL	619.76	122	●	-
248DXL	629.92	124	●	-
250DXL	635.00	125	●	-
260DXL	660.40	130	●	-
262DXL	665.48	131	●	-
266DXL	675.64	133	●	-
270DXL	685.80	135	●	-
276DXL	701.04	138	●	-
280DXL	711.20	140	●	-
282DXL	716.28	141	●	-
290DXL	736.60	145	●	-
300DXL	762.00	150	●	-
310DXL	787.40	155	●	-
314DXL	797.56	157	●	-
320DXL	812.80	160	●	-
322DXL	817.88	161	●	-
330DXL	838.20	165	●	-
340DXL	863.60	170	●	-
344DXL	873.76	172	●	-
348DXL	883.92	174	●	-
352DXL	894.08	176	●	-
356DXL	904.24	178	●	-
360DXL	914.40	180	●	-
364DXL	924.56	182	●	-
370DXL	939.80	185	●	-

Belt size (Type DXL)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
372DXL	944.88	186	●	-
376DXL	955.04	188	●	-
384DXL	975.36	192	●	-
386DXL	980.44	193	●	-
388DXL	985.52	194	●	-
390DXL	990.60	195	●	-
396DXL	1005.84	198	●	-
400DXL	1016.00	200	●	-
408DXL	1036.32	204	●	-
424DXL	1076.96	212	●	-
430DXL	1092.29	215	●	-
450DXL	1143.00	225	●	-
456DXL	1158.24	228	●	-
460DXL	1168.40	230	●	-
470DXL	1193.80	235	●	-
490DXL	1244.60	245	●	-
496DXL	1259.84	248	●	-
510DXL	1295.40	255	●	-
564DXL	1432.56	282	●	-
592DXL	1503.68	296	●	-
608DXL	1544.32	304	●	-
630DXL	1600.20	315	●	-
638DXL	1620.52	319	●	-

Type DL



Belt standard widths

Nominal width	Width (mm)
050	12.7
075	19.1
100	25.4
150	38.1
200	50.8

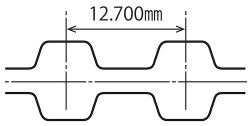
Belt size (Type DL)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
165DL	419.10	44	●	-
169DL	428.63	45	●	-
172DL	438.15	46	●	-
187DL	476.25	50	●	-
203DL	514.35	54	●	-
210DL	533.40	56	●	-
218DL	552.45	58	●	-
225DL	571.50	60	●	-
240DL	609.60	64	●	-
248DL	628.65	66	●	-
255DL	647.70	68	●	-
263DL	666.75	70	●	-
270DL	685.80	72	●	-
277DL	704.85	74	●	-
285DL	723.90	76	●	-
300DL	762.00	80	●	-
304DL	771.53	81	●	-
315DL	800.10	84	●	-
320DL	809.63	85	●	-
322DL	819.15	86	●	-
334DL	847.73	89	●	-
337DL	857.25	90	●	-
345DL	876.30	92	●	-
360DL	914.40	96	●	-
367DL	933.45	98	●	-
375DL	952.50	100	●	-
382DL	971.55	102	●	-
390DL	990.60	104	●	-
394DL	1000.13	105	●	-
420DL	1066.80	112	●	-

Belt size (Type DL)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
427DL	1085.85	114	●	-
436DL	1104.90	116	●	-
439DL	1114.43	117	●	-
446DL	1133.48	119	●	-
450DL	1143.00	120	●	-
465DL	1181.10	124	●	-
480DL	1219.20	128	●	-
510DL	1295.40	136	●	-
514DL	1304.93	137	●	-
525DL	1333.50	140	●	-
540DL	1371.60	144	●	-
548DL	1390.65	146	●	-
581DL	1476.38	155	●	-
600DL	1524.00	160	●	-
605DL	1533.53	161	●	-
619DL	1571.63	165	●	-
630DL	1600.20	168	●	-
640DL	1619.25	170	●	-
653DL	1657.35	174	●	-
660DL	1676.40	176	●	-
697DL	1771.65	186	●	-
728DL	1847.85	194	●	-
731DL	1857.38	195	●	-
767DL	1952.63	205	●	-
780DL	1981.20	208	●	-
788DL	2000.25	210	●	-
806DL	2047.88	215	●	-
855DL	2171.70	228	●	-
863DL	2190.75	230	●	-
881DL	2238.38	235	●	-
915DL	2324.10	244	●	-
919DL	2333.63	245	●	-
938DL	2381.25	250	●	-
1294DL	3286.13	345	●	-

Type DH



Belt standard widths

Nominal width	Width (mm)
075	19.1
100	25.4
150	38.1
200	50.8
300	76.2

Belt size (Type DH)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
185DH	469.90	37	●	-
225DH	571.50	45	●	-
230DH	584.20	46	●	-
240DH	609.60	48	●	-
245DH	622.30	49	●	-
270DH	685.80	54	●	-
280DH	711.20	56	●	-
300DH	762.00	60	●	-
310DH	787.40	62	●	-
315DH	800.10	63	●	-
320DH	812.80	64	●	-
330DH	838.20	66	●	-
340DH	863.60	68	●	-
350DH	889.00	70	●	-
360DH	914.40	72	●	-
370DH	939.80	74	●	-
375DH	952.50	75	●	-
390DH	990.60	78	●	-
400DH	1016.00	80	●	-
410DH	1041.40	82	●	-

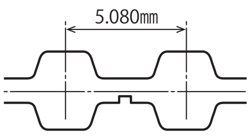
Belt size (Type DH)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
420DH	1066.80	84	●	-
430DH	1092.20	86	●	-
450DH	1143.00	90	●	-
465DH	1181.10	93	●	-
480DH	1219.20	96	●	-
490DH	1244.60	98	●	-
510DH	1295.40	102	●	-
530DH	1346.20	106	●	-
540DH	1371.60	108	●	-
560DH	1422.40	112	●	-
565DH	1435.10	113	●	-
570DH	1447.80	114	●	-
580DH	1473.20	116	●	-
600DH	1524.00	120	●	-
605DH	1536.70	121	●	-
630DH	1600.20	126	●	-
640DH	1625.60	128	●	-
650DH	1651.00	130	●	-
660DH	1676.40	132	●	-
680DH	1727.20	136	●	-
700DH	1778.00	140	●	-
730DH	1854.20	146	●	-
750DH	1905.00	150	●	-
760DH	1930.40	152	●	-
770DH	1955.80	154	●	-
800DH	2032.00	160	●	-
810DH	2057.40	162	●	-
820DH	2082.80	164	●	-
840DH	2133.60	168	●	-
850DH	2159.00	170	●	-
860DH	2184.40	172	●	-
880DH	2235.20	176	●	-
900DH	2286.00	180	●	-
950DH	2413.00	190	●	-
985DH	2501.90	197	●	-
1000DH	2540.00	200	●	-
1020DH	2590.80	204	●	-
1050DH	2667.00	210	●	-
1100DH	2794.00	220	●	-
1130DH	2870.20	226	●	-
1140DH	2895.60	228	●	-
1250DH	3175.00	250	●	-
1325DH	3365.50	265	●	-
1350DH	3429.00	270	●	-
1400DH	3556.00	280	●	-
1680DH	4267.20	336	●	-
1700DH	4318.00	340	●	-

Bancollan Double-Sided Synchronous Belt (polyurethane) standard lengths

R: Rubber
U: Polyurethane

Type DXL



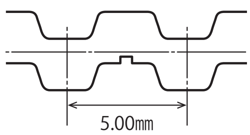
Belt standard widths

Nominal width	Width (mm)
025	6.4
031	7.9
037	9.5
050	12.7
075	19.1

Belt size (Type DXL)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
140DXL	355.60	70	-	○
146DXL	370.84	73	-	○
150DXL	381.00	75	-	○
166DXL	421.64	83	-	○
170DXL	431.80	85	-	○
180DXL	457.20	90	-	○
190DXL	482.60	95	-	○
200DXL	508.00	100	-	○
210DXL	533.40	105	-	○
220DXL	558.80	110	-	○
230DXL	584.20	115	-	○
240DXL	609.60	120	-	○
270DXL	685.80	135	-	○
290DXL	736.60	145	-	○
300DXL	762.00	150	-	○
320DXL	812.80	160	-	○
376DXL	955.04	188	-	○
400DXL	1016.00	200	-	○
430DXL	1092.20	215	-	○
490DXL	1244.60	245	-	○

Type DT5



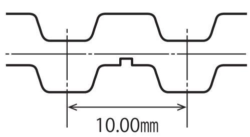
Belt standard widths

Nominal width	Width (mm)
5	5
10	10
15	15
20	20
25	25

Belt size (Type DT5)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
DT5- 300	300.0	60	-	○
DT5- 410	410.0	82	-	○
DT5- 460	460.0	92	-	○
DT5- 480	480.0	96	-	○
DT5- 515	515.0	103	-	○
DT5- 550	550.0	110	-	○
DT5- 590	590.0	118	-	○
DT5- 620	620.0	124	-	○
DT5- 650	650.0	130	-	○
DT5- 700	700.0	140	-	○
DT5- 750	750.0	150	-	○
DT5- 800	800.0	160	-	○
DT5- 815	815.0	163	-	○
DT5- 860	860.0	172	-	○
DT5- 900	900.0	180	-	○
DT5- 940	940.0	188	-	○
DT5-1075	1075.0	215	-	○
DT5-1100	1100.0	220	-	○

Type DT10



Belt standard widths

Nominal width	Width (mm)
15	15
20	20
25	25
30	30
50	50

Belt size (Type DT10)

Belt nominal length	Pitch length (mm)	No. of teeth	R	U
DT10- 260	260.0	26	-	-
DT10- 400	400.0	40	-	○
DT10- 530	530.0	53	-	○
DT10- 630	630.0	63	-	○
DT10- 660	660.0	66	-	○
DT10- 700	700.0	70	-	○
DT10- 720	720.0	72	-	○
DT10- 800	800.0	80	-	○
DT10- 840	840.0	84	-	○
DT10- 900	900.0	90	-	○
DT10- 980	980.0	98	-	○
DT10-1100	1100.0	110	-	○
DT10-1210	1210.0	121	-	○
DT10-1240	1240.0	124	-	○
DT10-1250	1250.0	125	-	○
DT10-1320	1320.0	132	-	○
DT10-1350	1350.0	135	-	○
DT10-1420	1420.0	142	-	○
DT10-1500	1500.0	150	-	○
DT10-1610	1610.0	161	-	○
DT10-1800	1800.0	180	-	○
DT10-1880	1880.0	188	-	○

For tolerances of effective length and belt width, refer to **P. 74**.

How to Design a Synchronous Belt

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Pinion revolution
⑥ Speed ratio $\left(\frac{\text{No. of teeth of large pulley}}{\text{No. of teeth of pinion}}\right)$
⑦ Temporary center distance
⑧ Pulley diameter restriction
⑨ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2-1 Calculating the design power

Calculate the design power with Formula 1.

Formula 1

$$Pd = Pt \times (Ko + Ki + Kr)$$

Pd	: Design power	(kW)
Pt	: Transmission power	(kW)
Ko	: Load correction factor	**(Table 1 → P. 81)**
Ki	: Idler correction factor	**(Table 2 → P. 81)**
Kr	: Speed-up ratio correction factor	**(Table 3 → P. 81)**

Note 1) For transmission power, it is ideal to use the load of the driven machine; however, if it is unknown, use the rated power of the driving machine.
If torque or horsepower is used for indication, convert it into watt or kilowatt using Formula 2.
Note 2) For use in a decelerating mechanism, Kr = 0.

Formula 2

$$Pt = \frac{Tr \times n}{9550}$$

Pt	: Transmission power	(kW)
n	: Revolution	(rpm)
Tr	: Load torque	(Nm)

1PS=0.7355(kW)

Step 2-2 Calculating the design power when there are sudden stops or sudden accelerations

Under conditions of sudden stop and sudden acceleration, an abnormal torque may be applied to the belt due to the inertial force of the machine; check with Formula 3 in advance, and if the width falls short, it needs to be corrected.
Compare the Pd calculated in **Step 2-1** and the Pdq calculated next and use the larger value as the design power.

Formula 3

$$Trq = \frac{\Sigma GD^2 \times (n_1 - n_2)}{38.2 \times t} \quad (\text{N·m})$$

From Formula 2, $Ptq = \frac{Trq \times n}{9550}$ (kW)

$$Pdq = Ptq \times Kq \quad (\text{kW})$$

Trq	: Rotational torque at the time of a sudden stop or sudden acceleration	(N•m)
GD^2	: Flywheel effect (Sum total of GD^2 on the opposite side to the brake)	(kgf•m^2)
$n_1 - n_2$	: Difference in revolution (opposite side to the brake)	(rpm)
t	: Time to change from n_1 to n_2	(S)
Pdq	: Design power	(kW)
Kq	: Correction factor(table below)	

Correction factor Kq by rotation at the time of a sudden stop or sudden acceleration

revolutions/day	1	2	3～4	5～10	11～15
Kq	1.0	1.2	1.3	1.5	1.6
revolutions/day	16～25	26～40	41～60	61～100	101～
Kq	1.7	1.8	1.9	2.0	2.1

Step 3 Selecting a belt type

Obtain a belt type based on design power and pinion revolution from **Fig. 3 "Belt type selection diagram" (→ P. 82)**.
If an obtained type is close to the line of intersection of two types, design both belt types as a trial and choose the one that matches the purpose of the design and that is the more economical.
For S4.5M and DS4.5M, please contact us.

Step 4 Selecting a pulley diameter

Select an appropriate pulley diameter from Formula 4, taking the restriction of the power transmission space etc. into consideration.

Formula 4

$$Z_2 = \frac{n_1}{n_2} \times Z_1$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

Z_1: Number of teeth of pinion
Z2: No. of teeth of large pulley
n_1: Pinion revolution (rpm)
n2: Large pulley revolution (rpm)

For relations among the number of teeth of pulleys, pulley diameter, and pitch diameter, refer to the **"List of Pulley Diameters" (→ P. 83 to P. 99)**. Obtain an unlisted number of teeth of a pulley from Formula 5.

Formula 5

$$dp = pt(Z) / \pi$$
$$do = pt(Z) / \pi - 2a$$

dp	: Pulley pitch diameter	(mm)
do	: Pulley outside diameter	(mm)
pt	: Pulley tooth pitch	(mm)
z	: No. of teeth of pulley	
2a	: Difference between pulley pitch diameter and pulley outside diameter	**(Table 4 → P. 100)**

How to Design a Synchronous Belt

When you determine a pulley diameter, check the following items:

- Check of the minimum number of teeth of a pulley

Generally, when a pulley with a small number of teeth is used, the flex fatigue of the belt increases, reducing the belt service life.

Hence, please use a pulley with a larger number of teeth than the ones shown in **Table 5 "Minimum number of teeth of pulleys" (→ P. 100)** at least.

- Check on the belt speed

Check if the belt speed exceeds the value in **Table 6 "Basic Belt Speeds" (→ P. 100)**. If the belt speed exceeds it, reduce the pulley diameter. If the minimum pulley diameter is not satisfied, change and reconsider the belt type. Calculate the belt speed from Formula 6.

Formula 6

$$v = \frac{dp \times n}{19100}$$

v	: Belt speed	(m/s)
dp	: Pulley pitch diameter	(mm)
n	: Revolution	(rpm)

Step 5 Selecting an effective length

Calculate a rough effective length with Formula 7 and select an effective length L' that is closest to this value from the **"Table of standard effective lengths."**

■ Table of standard effective lengths

Ceptor-X → P. 43
Ceptor-VI→P.45～P.46
HP-STS→P.49～P.50
HP-HTS → P. 50
STS→P.55～P.57
Double-Sided STS → P. 59 to P. 62
TN10/TN15 → P. 66
Synchronous Belt →P.70～P.73
Double-Sided Synchronous Belt →P.77～P.78

Formula 7

$$L' = 2C + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C}$$

L'	: Rough effective length	(mm)
C	: Center distance	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

Backcalculate the center distance at that time from the pitch length L of the selected belt using Formula 8.

Formula 8

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = Lp - 1.57\,(Dp + dp)$$

Lp: Belt pitch length (mm)

Step 6 Determining the belt width

(1) Determination of basic power rating

From the **"Table of basic power ratings" (→ P. 101 to P. 126)**, obtain the transmission capacity per basic belt width. For the basic belt width, refer to the values listed in the "Table of basic power ratings."

(2) Mesh correction factor Km

From Formula 9, calculate the number of meshed teeth of the pinion, and from **Table 7 (→ P. 127)**, obtain the mesh correction factor Km.

Formula 9

$$Zm = Z \times \frac{\theta_1}{360}$$

$$\theta_1 = 180 - \frac{57.3(Dp - dp)}{C}$$

Zm	: Number of meshed teeth of pinion	
Z	: Number of teeth of pinion	
θ_1	: Angle of contact of pinion	(°)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

(3) Correction factor by effective length Kl

Obtain the effective length correction factor Kl for the standard effective length obtained in **Step 5** from **Table 8 "Table of Effective Length Correction Factors" (→ P. 127)**.

Note) For STS and Synchronous Belts, Kl is unnecessary.

(4) Calculation of belt width

From Formula 10, obtain the correction factor of the belt width Kb.

Formula 10

$$Kb = \frac{Pd}{Pr \cdot Km \cdot Kl}$$

Kb	: Width correction factor	
Pd	: Design power	(kW)
Pr	: Basic power rating	(kW)
Km	: Mesh correction factor	
Kl	: Length correction factor	

From **Table 9 "Table of Belt Width Correction Factors" (→ P. 127 to P. 129)**, obtain the belt width for the width correction factor Kb obtained from Formula 10.

Step 7 Checking the adjustment range of the center distance

From **Table 10 "Table of Adjustment Ranges of Center Distance" (→ P. 129)**, obtain the installation range and the tension range of the belt.

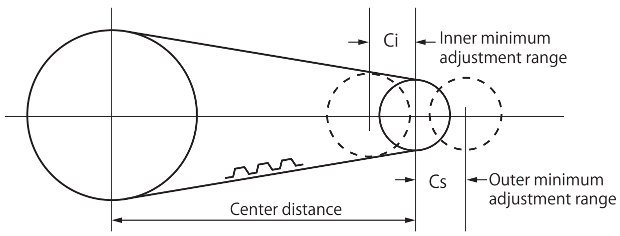


Table 1 Load Correction Factors (Ko)

Machine using the product Note 2) When your driven machine cannot be found in the table, use the load correction factor of a machine with a similar start-up load or shock load.	Driving machine Those with the maximum output 300% or less of the rating AC motor (standard motor, synchronous motor) DC motor (shunt-wound) Engine with two or more cylinders Operating hours			Driving machine Those with the maximum output over 300% of the rating Special motor (high torque) DC motor (direct-wound) Single-cylinder engine Operation by line shaft or clutch Operating hours		
	3~5hr/day	8~10hr/day	16~24hr/day	3~5hr/day	8~10hr/day	16~24hr/day
● Exhibition apparatuses ● Projectors ● Measuring instruments ● Medical equipment	1.0	1.2	1.4	1.2	1.4	1.6
● Vacuum cleaners ● Sewing machines ● Office machinery ● Woodworking lathes ● Band-sawing machines	1.2	1.4	1.6	1.4	1.6	1.8
● Light-duty belt conveyors ● Packaging machines ● Sieves	1.3	1.5	1.7	1.5	1.7	1.9
● Liquid stirring machines ● Drill presses ● Lathes ● Screw cutting machines ● Circular sawing machines ● Planing machines ● Laundry machines ● Papermaking machines (not including pulper) ● Printing machines	1.4	1.6	1.8	1.6	1.8	2.0
● Stirring machines (cement, viscous substances) ● Belt conveyors (ore, coal, sand) ● Grinding machines ● Shaping machines ● Boring machines ● Milling machines ● Compressors (centrifugal type) ● Vibrating sieves ● Fiber machines (warping machines, winders) ● Rotary compressors ● Compressors (reciprocating type)	1.5	1.7	1.9	1.7	1.9	2.1
● Conveyors (aprons, pans, buckets, elevators) ● Extraction pumps ● Rinsing machines ● Fans, blowers (centrifugal type, suction, exhaust) ● Generators ● Exciters ● Hoists ● Elevators ● Rubber processing machines (calenders, rolls, extruders) ● Fiber machines (weaving machines, spinning machines, yarn-twisting machines, pirn winders)	1.6	1.8	2.0	1.8	2.0	2.2
● Centrifugal separators / conveyors (flight, screw) ● Hammer mills ● Papermaking machines (pulper, beaders)	1.7	1.9	2.1	1.9	2.1	2.3
● Ceramic industry machines (bricks, clay kneading machines) ● Propellers for mines ● Forced air blowers	1.8	2.0	2.2	2.0	2.2	2.4

Table 2 Idler Correction Factors

Idler installation location	Ki
- No idlers	0.0
- Installed from the inside on the slack side	0.0
- Installed from the outside on the slack side	0.1
- Installed from the inside on the tight side	0.1
- Installed from the outside on the tight side	0.2

Table 3 Speed-up Ratio Correction Factors

Speed-up ratio	Kr
1.00~1.24	0.0
1.25~1.74	0.1
1.75~2.49	0.2
2.50~3.49	0.3
3.50 or more	0.4

Fig. 3-1 Belt type selection diagram (Ceptor-X)

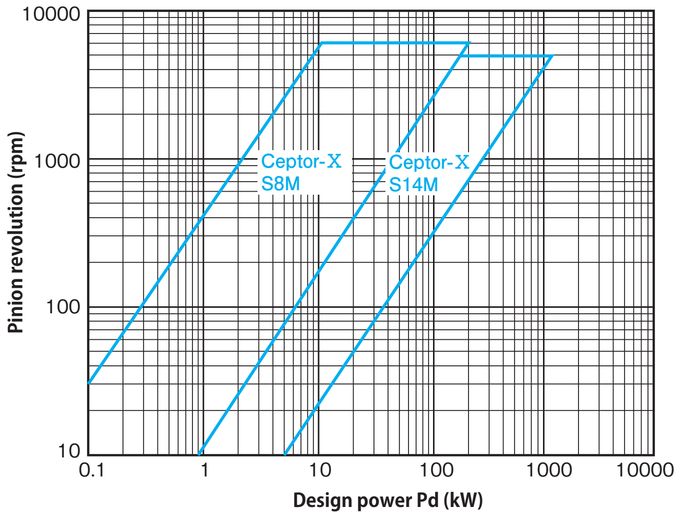


Fig. 3-2 Belt type selection diagram (Ceptor-VI)

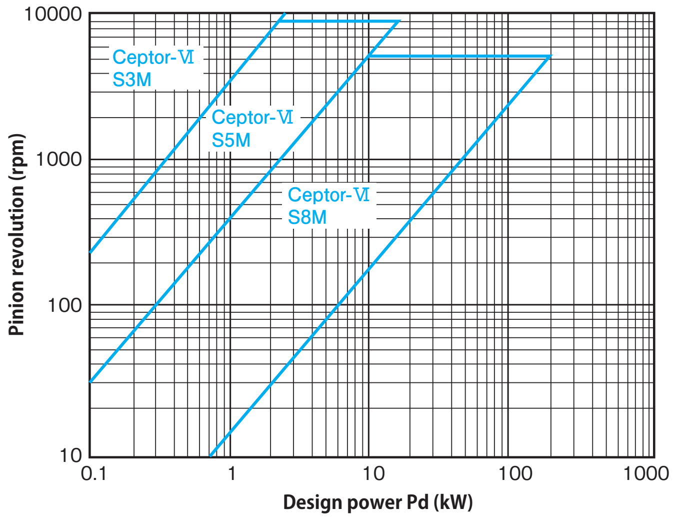


Fig. 3-3 Belt type selection diagram (HP-STS/HP-HTS)

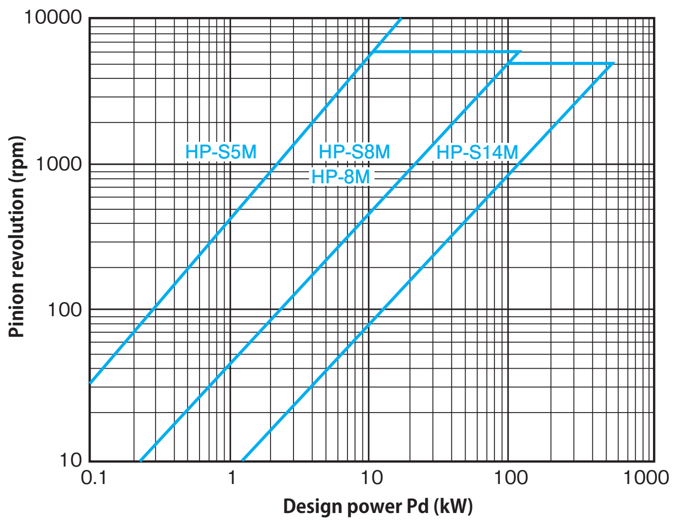


Fig. 3-4 Belt type selection diagram (STS)

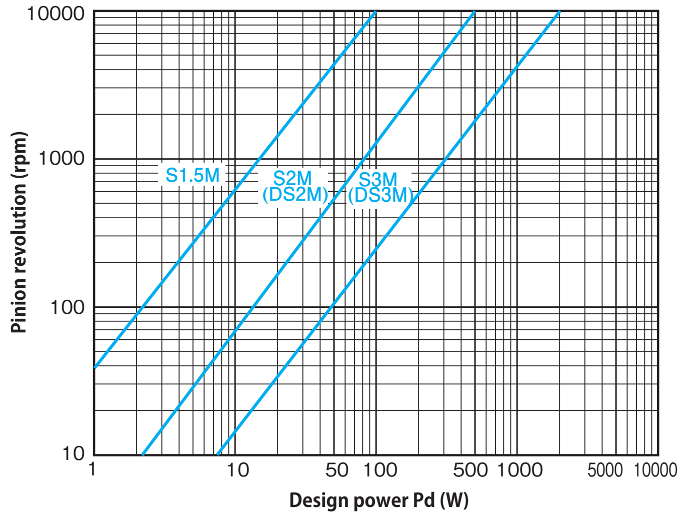
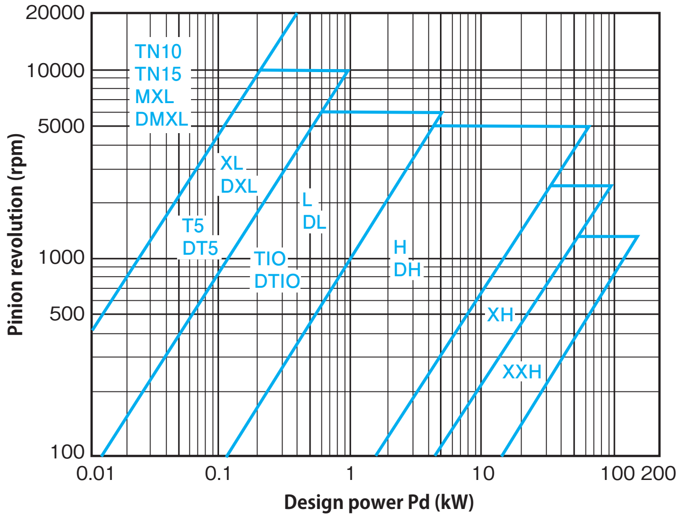


Fig. 3-5 Belt type selection diagram (Synchronous Belt)



List of Pulley Diameters

Type S1.5M (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	4.77	4.27
11	5.25	4.75
12	5.73	5.23
13	6.21	5.70
14	6.68	6.18
15	7.16	6.66
16	7.64	7.13
17	8.12	7.61
18	8.59	8.09
19	9.07	8.57
20	9.55	9.04
21	10.03	9.52
22	10.50	10.00
23	10.98	10.48
24	11.46	10.95
25	11.94	11.43
26	12.41	11.91
27	12.89	12.39
28	13.37	12.86
29	13.85	13.34
30	14.32	13.82
31	14.80	14.30
32	15.28	14.77
33	15.76	15.25
34	16.23	15.73
35	16.71	16.21
36	17.19	16.68
37	17.67	17.16
38	18.14	17.64
39	18.62	18.12
40	19.10	18.59
41	19.58	19.07
42	20.05	19.55
43	20.53	20.03
44	21.01	20.50
45	21.49	20.98
46	21.96	21.46
47	22.44	21.94
48	22.92	22.41
49	23.40	22.89
50	23.87	23.37
51	24.35	23.85
52	24.83	24.32
53	25.31	24.80
54	25.78	25.28
55	26.26	25.76

Type S1.5M (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
56	26.74	26.23
57	27.22	26.71
58	27.69	27.19
59	28.17	27.67
60	28.65	28.14
61	29.13	28.62
62	29.60	29.10
63	30.08	29.58
64	30.56	30.05
65	31.04	30.53
66	31.51	31.01
67	31.99	31.49
68	32.47	31.96
69	32.95	32.44
70	33.42	32.92
71	33.90	33.40
72	34.38	33.87
73	34.85	34.35
74	35.33	34.83
75	35.81	35.31
76	36.29	35.78
77	36.76	36.26
78	37.24	36.74
79	37.72	37.22
80	38.20	37.69
81	38.67	38.17
82	39.15	38.65
83	39.63	39.13
84	40.11	39.60
85	40.58	40.08
86	41.06	40.56
87	41.54	41.04
88	42.02	41.51
89	42.49	41.99
90	42.97	42.47
91	43.45	42.95
92	43.93	43.42
93	44.40	43.90
94	44.88	44.38
95	45.36	44.86
96	45.84	45.33
97	46.31	45.81
98	46.79	46.29
99	47.27	46.77
100	47.75	47.24

Type S2M (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	6.37	5.86
11	7.00	6.49
12	7.64	7.13
13	8.28	7.77
14	8.91	8.40
15	9.55	9.04
16	10.19	9.68
17	10.82	10.31
18	11.46	10.95
19	12.10	11.59
20	12.73	12.22
21	13.37	12.86
22	14.01	13.50
23	14.64	14.13
24	15.28	14.77
25	15.92	15.41
26	16.55	16.04
27	17.19	16.68
28	17.83	17.32
29	18.46	17.95
30	19.10	18.59
31	19.74	19.23
32	20.37	19.86
33	21.01	20.50
34	21.65	21.14
35	22.28	21.77
36	22.92	22.41
37	23.55	23.05
38	24.19	23.68
39	24.83	24.32
40	25.46	24.96
41	26.10	25.59
42	26.74	26.23
43	27.37	26.87
44	28.01	27.50
45	28.65	28.14
46	29.28	28.78
47	29.92	29.41
48	30.56	30.05
49	31.19	30.69
50	31.83	31.32
51	32.47	31.96
52	33.10	32.60
53	33.74	33.23
54	34.38	33.87

Type S2M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	35.01	34.51
56	35.65	35.14
57	36.29	35.78
58	36.92	36.42
59	37.56	37.05
60	38.20	37.69
61	38.83	38.33
62	39.47	38.96
63	40.11	39.60
64	40.74	40.24
65	41.38	40.87
66	42.02	41.51
67	42.65	42.15
68	43.29	42.78
69	43.93	43.42
70	44.56	44.06
71	45.20	44.69
72	45.84	45.33
73	46.47	45.97
74	47.11	46.60
75	47.75	47.24
76	48.38	47.87
77	49.02	48.51
78	49.66	49.15
79	50.29	49.78
80	50.93	50.42
81	51.57	51.06
82	52.20	51.69
83	52.84	52.33
84	53.48	52.97
85	54.11	53.60
86	54.75	54.24
87	55.39	54.88
88	56.02	55.51
89	56.66	56.15
90	57.30	56.79
91	57.93	57.42
92	58.57	58.06
93	59.21	58.70
94	59.84	59.33
95	60.48	59.97
96	61.12	60.61
97	61.75	61.24
98	62.39	61.88
99	63.03	62.52

Type S2M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	63.66	63.15
101	64.30	63.79
102	64.94	64.43
103	65.57	65.06
104	66.21	65.70
105	66.85	66.34
106	67.48	66.97
107	68.12	67.61
108	68.75	68.25
109	69.39	68.88
110	70.03	69.52
111	70.66	70.16
112	71.30	70.79
113	71.94	71.43
114	72.57	72.07
115	73.21	72.70
116	73.85	73.34
117	74.48	73.98
118	75.12	74.61
119	75.76	75.25
120	76.39	75.89

Type S3M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	9.55	8.79
11	10.50	9.74
12	11.46	10.70
13	12.41	11.65
14	13.37	12.61
15	14.32	13.56
16	15.28	14.52
17	16.23	15.47
18	17.19	16.43
19	18.14	17.38
20	19.10	18.34
21	20.05	19.29
22	21.01	20.25
23	21.96	21.20
24	22.92	22.16
25	23.87	23.11
26	24.83	24.07
27	25.78	25.02
28	26.74	25.98
29	27.69	26.93
30	28.65	27.89
31	29.60	28.84
32	30.56	29.80
33	31.51	30.75
34	32.47	31.71
35	33.42	32.66
36	34.38	33.62
37	35.33	34.57
38	36.29	35.53
39	37.24	36.48
40	38.20	37.44
41	39.15	38.39
42	40.11	39.34
43	41.06	40.30
44	42.02	41.25
45	42.97	42.21
46	43.93	43.16
47	44.88	44.12
48	45.84	45.07
49	46.79	46.03
50	47.75	46.98
51	48.70	47.94
52	49.66	48.89
53	50.61	49.85
54	51.57	50.80

Type S3M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	52.52	51.76
56	53.48	52.71
57	54.43	53.67
58	55.39	54.62
59	56.34	55.58
60	57.30	56.53
61	58.25	57.49
62	59.21	58.44
63	60.16	59.40
64	61.12	60.35
65	62.07	61.31
66	63.03	62.26
67	63.98	63.22
68	64.94	64.17
69	65.89	65.13
70	66.85	66.08
71	67.80	67.04
72	68.75	67.99
73	69.71	68.95
74	70.66	69.90
75	71.62	70.86
76	72.57	71.81
77	73.53	72.77
78	74.48	73.72
79	75.44	74.68
80	76.39	75.63
81	77.35	76.59
82	78.30	77.54
83	79.26	78.50
84	80.21	79.45
85	81.17	80.41
86	82.12	81.36
87	83.08	82.32
88	84.03	83.27
89	84.99	84.23
90	85.94	85.18
91	86.90	86.14
92	87.85	87.09
93	88.81	88.05
94	89.76	89.00
95	90.76	89.96
96	91.67	90.91
97	92.63	91.87
98	93.58	92.82
99	94.54	93.78

Type S3M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	95.49	94.73
101	96.45	95.69
102	97.40	96.64
103	98.36	97.60
104	99.31	98.55
105	100.27	99.51
106	101.22	100.46
107	102.18	101.42
108	103.13	102.37
109	104.09	103.33
110	105.04	104.28
111	106.00	105.23
112	106.95	106.19
113	107.91	107.14
114	108.86	108.10
115	109.82	109.05
116	110.77	110.01
117	111.73	110.96
118	112.68	111.92
119	113.64	112.87
120	114.59	113.83

Type S4.5M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
12	17.19	16.43
13	18.62	17.86
14	20.05	19.29
15	21.49	20.72
16	22.92	22.16
17	24.35	23.59
18	25.78	25.02
19	27.22	26.45
20	28.65	27.89
21	30.08	29.32
22	31.51	30.75
23	32.95	32.18
24	34.38	33.62
25	35.81	35.05
26	37.24	36.48
27	38.67	37.91
28	40.11	39.35
29	41.54	40.78
30	42.97	42.21
31	44.40	43.64
32	45.84	45.07
33	47.27	46.51
34	48.70	47.94
35	50.13	49.37
36	51.57	50.80
37	53.00	52.24
38	54.43	53.67
39	55.86	55.10
40	57.30	56.53
41	58.73	57.97
42	60.16	59.40
43	61.59	60.83
44	63.03	62.26
45	64.46	63.70
46	65.89	65.13
47	67.32	66.56
48	68.75	67.99
49	70.19	69.43
50	71.62	70.86
51	73.05	72.29
52	74.48	73.72
53	75.92	75.15
54	77.35	76.59
55	78.78	78.02
56	80.21	79.45

Type S4.5M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
57	81.65	80.88
58	83.08	82.32
59	84.51	83.75
60	85.94	85.18
61	87.38	86.61
62	88.81	88.05
63	90.24	89.48
64	91.67	90.91
65	93.11	92.34
66	94.54	93.78
67	95.97	95.21
68	97.40	96.64
69	98.84	98.07
70	100.27	99.51
71	101.70	100.94
72	103.13	102.37
73	104.56	103.80
74	106.00	105.24
75	107.43	106.67
76	108.86	108.10
77	110.29	109.53
78	111.73	110.96
79	113.16	112.40
80	114.59	113.83
81	116.02	115.26
82	117.46	116.69
83	118.89	118.13
84	120.32	119.56
85	121.75	120.99
86	123.19	122.42
87	124.62	123.86
88	126.05	125.29
89	127.48	126.72
90	128.92	128.15
91	130.35	129.59
92	131.78	131.02
93	133.21	132.45
94	134.65	133.88
95	136.08	135.32
96	137.51	136.75
97	138.94	138.18
98	140.37	139.61
99	141.81	141.05
100	143.24	142.48
101	144.67	143.91

Type S4.5M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
102	146.10	145.34
103	147.54	146.77
104	148.97	148.21
105	150.40	149.64
106	151.83	151.07
107	153.27	152.50
108	154.70	153.94
109	156.13	155.37
110	157.56	156.80
111	159.00	158.23
112	160.43	159.67
113	161.86	161.10
114	163.29	162.53
115	164.73	163.96
116	166.16	165.40
117	167.59	166.83
118	169.02	168.26
119	170.45	169.69
120	171.89	171.13

Type S5M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	15.92	14.96
11	17.51	16.55
12	19.10	18.14
13	20.69	19.73
14	22.28	21.32
15	23.87	22.91
16	25.46	24.50
17	27.06	26.10
18	28.65	27.69
19	30.24	29.28
20	31.83	30.87
21	33.42	32.46
22	35.01	34.05
23	36.61	35.65
24	38.20	37.24
25	39.79	38.83
26	41.38	40.42
27	42.97	42.01
28	44.56	43.60
29	46.15	45.19
30	47.75	46.79
31	49.34	48.38
32	50.93	49.97
33	52.52	51.56
34	54.11	53.15
35	55.70	54.74
36	57.30	56.34
37	58.89	57.93
38	60.48	59.52
39	62.07	61.11
40	63.66	62.70
41	65.25	64.29
42	66.85	65.89
43	68.44	67.48
44	70.03	69.07
45	71.62	70.66
46	73.21	72.25
47	74.80	73.84
48	76.39	75.43
49	77.99	77.03
50	79.58	78.62
51	81.17	80.21
52	82.76	81.80
53	84.35	83.39
54	85.94	84.98

Type S5M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	87.54	86.58
56	89.13	88.17
57	90.72	89.76
58	92.31	91.35
59	93.90	92.94
60	95.49	94.53
61	97.08	96.12
62	98.68	97.72
63	100.27	99.31
64	101.86	100.90
65	103.45	102.49
66	105.04	104.08
67	106.63	105.67
68	108.23	107.27
69	109.82	108.86
70	111.41	110.45
71	113.00	112.04
72	114.59	113.63
73	116.18	115.22
74	117.77	116.81
75	119.37	118.41
76	120.96	120.00
77	122.55	121.59
78	124.14	123.18
79	125.73	124.77
80	127.32	126.36
81	128.92	127.96
82	130.51	129.55
83	132.10	131.14
84	133.69	132.73
85	135.28	134.32
86	136.87	135.91
87	138.46	137.50
88	140.06	139.10
89	141.65	140.69
90	143.24	142.28
91	144.83	143.87
92	146.42	145.46
93	148.01	147.05
94	149.61	148.65
95	151.20	150.24
96	152.79	151.83
97	154.38	153.42
98	155.97	155.01
99	157.56	156.60

Type S5M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	159.15	158.19
101	160.75	159.79
102	162.34	161.38
103	163.93	162.97
104	165.52	164.56
105	167.11	166.15
106	168.70	167.74
107	170.30	169.34
108	171.89	170.93
109	173.48	172.52
110	175.07	174.11
111	176.66	175.70
112	178.25	177.29
113	179.85	178.89
114	181.44	180.48
115	183.03	182.07
116	184.62	183.66
117	186.21	185.25
118	187.80	186.84
119	189.39	188.43
120	190.99	190.03

Type S8M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
18	45.84	44.46
19	48.38	47.01
20	50.93	49.56
21	53.48	52.10
22	56.02	54.65
23	58.57	57.20
24	61.12	59.74
25	63.66	62.29
26	66.21	64.84
27	68.75	67.38
28	71.30	69.93
29	73.85	72.48
30	76.39	75.02
31	78.94	77.57
32	81.49	80.12
33	84.03	82.66
34	86.58	85.21
35	89.13	87.75
36	91.67	90.30
37	94.22	92.85
38	96.77	95.39
39	99.31	97.94
40	101.86	100.49
41	104.41	103.03
42	106.95	105.58
43	109.50	108.13
44	112.05	110.67
45	114.59	113.22
46	117.14	115.77
47	119.68	118.31
48	122.23	120.86
49	124.78	123.41
50	127.32	125.95
51	129.87	128.50
52	132.42	131.04
53	134.96	133.59
54	137.51	136.14
55	140.06	138.68
56	142.60	141.23
57	145.15	143.78
58	147.70	146.32
59	150.24	148.87
60	152.79	151.42
61	155.34	153.96
62	157.88	156.51
63	160.43	159.06
64	162.97	161.60
65	165.52	164.15
66	168.07	166.70
67	170.61	169.24

Type S8M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
68	173.16	171.79
69	175.71	174.34
70	178.25	176.88
71	180.80	179.43
72	183.35	181.97
73	185.89	184.52
74	188.44	187.07
75	190.99	189.61
76	193.53	192.16
77	196.08	194.71
78	198.63	197.25
79	201.17	199.80
80	203.72	202.35
81	206.26	204.89
82	208.81	207.44
83	211.36	209.99
84	213.90	212.53
85	216.45	215.08
86	219.00	217.63
87	221.54	220.17
88	224.09	222.72
89	226.64	225.26
90	229.18	227.81
91	231.73	230.36
92	234.28	232.90
93	236.82	235.45
94	239.37	238.00
95	241.92	240.54
96	244.46	243.09
97	247.01	245.64
98	249.56	248.18
99	252.10	250.73
100	254.65	253.28
101	257.19	255.82
102	259.74	258.37
103	262.29	260.92
104	264.83	263.46
105	267.38	266.01
106	269.93	268.55
107	272.47	271.10
108	275.02	273.65
109	277.57	276.19
110	280.11	278.74
111	282.66	281.29
112	285.21	283.83
113	287.75	286.38
114	290.30	288.93
115	292.85	291.47
116	295.39	294.02
117	297.94	296.57

Type S8M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
118	300.48	299.11
119	303.03	301.66
120	305.58	304.21
121	308.12	306.75
122	310.67	309.30
123	313.22	311.84
124	315.76	314.39
125	318.31	316.94
126	320.86	319.48
127	323.40	322.03
128	325.95	324.58
129	328.50	327.12
130	331.04	329.67
131	333.59	332.22
132	336.14	334.76
133	338.68	337.31
134	341.23	339.86
135	343.77	342.40
136	346.32	344.95
137	348.87	347.50
138	351.41	350.04
139	353.96	352.59
140	356.51	355.14
141	359.05	357.68
142	361.60	360.23
143	364.15	362.77
144	366.69	365.32
145	369.24	367.87
146	371.79	370.41
147	374.33	372.96
148	376.88	375.51
149	379.43	378.05
150	381.97	380.60
151	384.52	383.15
152	387.06	385.69
153	389.61	388.24
154	392.16	390.79
155	394.70	393.33
156	397.25	395.88

Type S14M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
28	124.78	121.98
29	129.23	126.44
30	133.69	130.90
31	138.15	135.35
32	142.60	139.81
33	147.06	144.27
34	151.52	148.72
35	155.97	153.18
36	160.43	157.63
37	164.88	162.09
38	169.34	166.55
39	173.80	171.00
40	178.25	175.46
41	182.71	179.92
42	187.17	184.37
43	191.62	188.83
44	196.08	193.28
45	200.54	197.74
46	204.99	202.20
47	209.45	206.65
48	213.90	211.11
49	218.36	215.57
50	222.82	220.02
51	227.27	224.48
52	231.73	228.94
53	236.19	233.39
54	240.64	237.85
55	245.10	242.30
56	249.56	246.76
57	254.01	251.22
58	258.47	255.67
59	262.92	260.13
60	267.38	264.59
61	271.84	269.04
62	276.29	273.50
63	280.75	277.96
64	285.21	282.41
65	289.66	286.87
66	294.12	291.32
67	298.57	295.78
68	303.03	300.24
69	307.49	304.69
70	311.94	309.15
71	316.40	313.61
72	320.86	318.06

Type S14M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
73	325.31	322.52
74	329.77	326.98
75	334.23	331.43
76	338.68	335.89
77	343.14	340.34
78	347.59	344.80
79	352.05	349.26
80	356.51	353.71
81	360.96	358.17
82	365.42	362.63
83	369.88	367.08
84	374.33	371.54
85	378.79	375.99
86	383.25	380.45
87	387.70	384.91
88	392.16	389.36
89	396.61	393.82
90	401.07	398.28
91	405.53	402.73
92	409.98	407.19
93	414.44	411.65
94	418.90	416.10
95	423.35	420.56
96	427.81	425.01
97	432.26	429.47
98	436.72	433.93
99	441.18	438.38
100	445.63	442.84
101	450.09	447.30
102	454.55	451.75
103	459.00	456.21
104	463.46	460.67
105	467.92	465.12
106	472.37	469.58
107	476.83	474.03
108	481.28	478.49
109	485.74	482.95
110	490.20	487.40
111	494.65	491.86
112	499.11	496.32
113	503.57	500.77
114	508.02	505.23
115	512.48	509.68
116	516.94	514.14
117	521.39	518.60

Type S14M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
118	525.85	523.05
119	530.30	527.51
120	534.76	531.97
121	539.22	536.42
122	543.67	540.88
123	548.13	545.34
124	552.59	549.79
125	557.04	554.25
126	561.50	558.70
127	565.96	563.16
128	570.41	567.62
129	574.87	572.07
130	579.32	576.53
131	583.78	580.99
132	588.24	585.44
133	592.69	589.90
134	597.15	594.36
135	601.61	598.81
136	606.06	603.27
137	610.52	607.72
138	614.97	612.18
139	619.43	616.64
140	623.89	621.09
141	628.34	625.55
142	632.80	630.01
143	637.26	634.46
144	641.71	638.92
145	646.17	643.38
146	650.63	647.83
147	655.08	652.29
148	659.54	656.74
149	663.99	661.20
150	668.45	665.66
151	672.91	670.11
152	677.36	674.57
153	681.82	679.03
154	686.28	683.48
155	690.73	687.94
156	695.19	692.39

HTS Type 8M
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
22	56.02	54.65
23	58.57	57.20
24	61.12	59.74
25	63.66	62.29
26	66.21	64.84
27	68.75	67.38
28	71.30	69.93
29	73.85	72.48
30	76.39	75.02
31	78.94	77.57
32	81.49	80.12
33	84.03	82.66
34	86.58	85.21
35	89.13	87.75
36	91.67	90.30
37	94.22	92.85
38	96.77	95.39
39	99.31	97.94
40	101.86	100.49
41	104.41	103.03
42	106.95	105.58
43	109.50	108.13
44	112.05	110.67
45	114.59	113.22
46	117.14	115.77
47	119.68	118.31
48	122.23	120.86
49	124.78	123.41
50	127.32	125.95
51	129.87	128.50
52	132.42	131.04
53	134.96	133.59
54	137.51	136.14
55	140.06	138.68
56	142.60	141.23
57	145.15	143.78
58	147.70	146.32
59	150.24	148.87
60	152.79	151.42
61	155.34	153.96
62	157.88	156.51
63	160.43	159.06
64	162.97	161.60
65	165.52	164.15
66	168.07	166.70

HTS Type 8M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
67	170.61	169.24
68	173.16	171.79
69	175.71	174.34
70	178.25	176.88
71	180.80	179.43
72	183.35	181.97
73	185.89	184.52
74	188.44	187.07
75	190.99	189.61
76	193.53	192.16
77	196.08	194.71
78	198.63	197.25
79	201.17	199.80
80	203.72	202.35
81	206.26	204.89
82	208.81	207.44
83	211.36	209.99
84	213.90	212.53
85	216.45	215.08
86	219.00	217.63
87	221.54	220.17
88	224.09	222.72
89	226.64	225.26
90	229.18	227.81
91	231.73	230.36
92	234.28	232.90
93	236.82	235.45
94	239.37	238.00
95	241.92	240.54
96	244.46	243.09
97	247.01	245.64
98	249.55	248.18
99	252.10	250.73
100	254.65	253.28
101	257.19	255.82
102	259.74	258.37
103	262.29	260.92
104	264.83	263.46
105	267.38	266.01
106	269.93	268.55
107	272.47	271.10
108	275.02	273.65
109	277.57	276.19
110	280.11	278.74
111	282.66	281.29

HTS Type 8M

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
112	285.21	283.83
113	287.75	286.38
114	290.30	288.93
115	292.85	291.47
116	295.39	294.02
117	297.94	296.57
118	300.48	299.11
119	303.03	301.66
120	305.58	304.21
121	308.12	306.75
122	310.67	309.30
123	313.22	311.84
124	315.76	314.39
125	318.31	316.94
126	320.86	319.48
127	323.40	322.03
128	325.95	324.58
129	328.50	327.12
130	331.04	329.67
131	333.59	332.22
132	336.14	334.76
133	338.68	337.31
134	341.23	339.86
135	343.77	342.40
136	346.32	344.95
137	348.87	347.50
138	351.41	350.04
139	353.96	352.59
140	356.51	355.14
141	359.05	357.68
142	361.60	360.23
143	364.15	362.77
144	366.69	365.32
145	369.24	367.87
146	371.79	370.41
147	374.33	372.96
148	376.88	375.51
149	379.43	378.05
150	381.97	380.60

Type TN10

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
16	5.09	4.74
17	5.41	5.06
18	5.73	5.38
19	6.05	5.70
20	6.37	6.02
21	6.68	6.33
22	7.00	6.65
23	7.32	6.97
24	7.64	7.29
25	7.96	7.61
26	8.28	7.93
27	8.59	8.24
28	8.91	8.56
29	9.23	8.88
30	9.55	9.20
31	9.87	9.52
32	10.19	9.84
33	10.50	10.15
34	10.82	10.47
35	11.14	10.79
36	11.46	11.11
37	11.78	11.43
38	12.10	11.75
39	12.41	12.06
40	12.73	12.38
41	13.05	12.70
42	13.37	13.02
43	13.69	13.34
44	14.01	13.66
45	14.32	13.97
46	14.64	14.29
47	14.96	14.61
48	15.28	14.93
49	15.60	15.25
50	15.92	15.57
51	16.23	15.88
52	16.55	16.20
53	16.87	16.52
54	17.19	16.84
55	17.51	17.16
56	17.83	17.48
57	18.14	17.79
58	18.46	18.11
59	18.78	18.43
60	19.10	18.75

Type TN10

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
61	19.42	19.07
62	19.74	19.39
63	20.05	19.70
64	20.37	20.02
65	20.69	20.34
66	21.01	20.66
67	21.33	20.98
68	21.65	21.30
69	21.96	21.61
70	22.28	21.93
71	22.60	22.25
72	22.92	22.57
73	23.24	22.89
74	23.55	23.20
75	23.87	23.52
76	24.19	23.84
77	24.51	24.16
78	24.83	24.48
79	25.15	24.80
80	25.46	25.11
81	25.78	25.43
82	26.10	25.75
83	26.42	26.07
84	26.74	26.39
85	27.06	26.71
86	27.37	27.02
87	27.70	27.34
88	28.01	27.66
89	28.33	27.98
90	28.65	28.30
91	28.97	28.62
92	29.29	28.94
93	29.60	29.25
94	29.92	29.57
95	30.24	29.89
96	30.56	30.21
97	30.88	30.53
98	31.19	30.84
99	31.51	31.16
100	31.83	31.48
101	32.15	31.80
102	32.47	32.12

Type TN15

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
20	9.55	8.91
21	10.03	9.39
22	10.50	9.86
23	10.98	10.34
24	11.46	10.82
25	11.94	11.30
26	12.41	11.77
27	12.89	12.25
28	13.37	12.73
29	13.85	13.21
30	14.32	13.68
31	14.80	14.16
32	15.28	14.64
33	15.76	15.12
34	16.23	15.59
35	16.71	16.07
36	17.19	16.55
37	17.67	17.03
38	18.14	17.50
39	18.62	17.98
40	19.10	18.46
41	19.58	18.94
42	20.05	19.41
43	20.53	19.89
44	21.01	20.37
45	21.49	20.85
46	21.96	21.32
47	22.44	21.80
48	22.92	22.28
49	23.40	22.76
50	23.87	23.23
51	24.35	23.71
52	24.83	24.19
53	25.31	24.67
54	25.78	25.14
55	26.26	25.62
56	26.74	26.10
57	27.22	26.58
58	27.69	27.05
59	28.17	27.53
60	28.65	28.01
61	29.13	28.49
62	29.60	28.96
63	30.08	29.44
64	30.56	29.92

Type TN15

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
65	31.04	30.40
66	31.51	30.87
67	31.99	31.35
68	32.47	31.83
69	32.95	32.31
70	33.42	32.78
71	33.90	33.26
72	34.38	33.74
73	34.85	34.21
74	35.33	34.69
75	35.81	35.17
76	36.29	35.65
77	36.76	36.12
78	37.24	36.60
79	37.72	37.08
80	38.20	37.56
81	38.67	38.03
82	39.15	38.51
83	39.63	38.99
84	40.11	39.47
85	40.58	39.94
86	41.06	40.42
87	41.54	40.90
88	42.02	41.38
89	42.49	41.85
90	42.97	42.33
91	43.45	42.81
92	43.93	43.29
93	44.40	43.76
94	44.88	44.24
95	45.36	44.72
96	45.84	45.20
97	46.31	45.67
98	46.79	46.15
99	47.27	46.63
100	47.75	47.11
101	48.22	47.58
102	48.70	48.06

Type MXL (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	6.47	5.96
11	7.11	6.61
12	7.76	7.25
13	8.41	7.90
14	9.06	8.55
15	9.70	9.19
16	10.35	9.84
17	11.00	10.49
18	11.64	11.14
19	12.29	11.78
20	12.94	12.43
21	13.58	13.08
22	14.23	13.72
23	14.88	14.37
24	15.52	15.02
25	16.17	15.66
26	16.82	16.31
27	17.46	16.96
28	18.11	17.61
29	18.76	18.25
30	19.40	18.90
31	20.05	19.54
32	20.70	20.19
33	21.34	20.84
34	21.99	21.48
35	22.64	22.13
36	23.29	22.78
37	23.93	23.42
38	24.58	24.07
39	25.23	24.72
40	25.87	25.36
41	26.52	26.01
42	27.17	26.66
43	27.81	27.31
44	28.46	27.95
45	29.11	28.60
46	29.75	29.25
47	30.40	29.89
48	31.05	30.54
49	31.69	31.19
50	32.34	31.83
51	32.99	32.48
52	33.63	33.13
53	34.28	33.77
54	34.93	34.42
55	35.57	35.07
56	36.22	35.71
57	36.87	36.36
58	37.51	37.01
59	38.16	37.65

Type MXL (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
60	38.81	38.30
61	39.46	38.95
62	40.10	39.59
63	40.75	40.24
64	41.40	40.89
65	42.04	41.53
66	42.69	42.18
67	43.34	42.83
68	43.98	43.48
69	44.63	44.12
70	45.28	44.77
71	45.92	45.42
72	46.57	46.06
73	47.22	46.71
74	47.86	47.36
75	48.51	48.00
76	49.16	48.65
77	49.80	49.30
78	50.45	49.94
79	51.10	50.59
80	51.74	51.24
81	52.39	51.88
82	53.04	52.53
83	53.68	53.18
84	54.33	53.82
85	54.98	54.47
86	55.63	55.12
87	56.27	55.76
88	56.92	56.41
89	57.57	57.06
90	58.21	57.71
91	58.86	58.35
92	59.51	59.00
93	60.15	59.65
94	60.80	60.29
95	61.45	60.94
96	62.09	61.59
97	62.74	62.23
98	63.39	62.88
99	64.03	63.53
100	64.68	64.17
101	65.33	64.82
102	65.97	65.47
103	66.62	66.11
104	67.27	66.76
105	67.91	67.40
106	68.56	68.06
107	69.21	68.70
108	69.86	69.35
109	70.50	69.99

Type MXL (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
110	71.15	70.64
111	71.80	71.29
112	72.44	71.93
113	73.09	72.58
114	73.74	73.23
115	74.38	73.88
116	75.03	74.52
117	75.68	75.17
118	76.32	75.82
119	76.97	76.46
120	77.62	77.11
121	78.26	77.76
122	78.91	78.40
123	79.56	79.05
124	80.20	79.70
125	80.85	80.34
126	81.50	80.99
127	82.14	81.64
128	82.79	82.28
129	83.44	82.93
130	84.08	83.58
131	84.73	84.22
132	85.38	84.87
133	86.03	85.52
134	86.67	86.16
135	87.32	86.81
136	87.97	87.46
137	88.61	88.10
138	89.26	88.75
139	89.91	89.40
140	90.55	90.05
141	91.20	90.69
142	91.85	91.34
143	92.49	91.99
144	93.14	92.63
145	93.79	93.28
146	94.43	93.93
147	95.08	94.57
148	95.73	95.22
149	96.37	95.87
150	97.02	96.51

Type XL
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	16.17	15.66
11	17.79	17.28
12	19.40	18.90
13	21.02	20.51
14	22.64	22.13
15	24.26	23.75
16	25.87	25.36
17	27.49	26.98
18	29.11	28.60
19	30.72	30.22
20	32.34	31.83
21	33.96	33.45
22	35.57	35.07
23	37.19	36.68
24	38.81	38.30
25	40.43	39.92
26	42.04	41.53
27	43.66	43.15
28	45.28	44.77
29	46.89	46.39
30	48.51	48.00
31	50.13	49.62
32	51.74	51.24
33	53.36	52.85
34	54.98	54.47
35	56.60	56.09
36	58.21	57.70
37	59.83	59.32
38	61.45	60.94
39	63.06	62.56
40	64.68	64.17
41	66.30	65.79
42	67.91	67.41
43	69.53	69.02
44	71.15	70.64
45	72.77	72.26
46	74.38	73.87
47	76.00	75.49
48	77.62	77.11
49	79.23	78.73
50	80.85	80.34
51	82.47	81.96
52	84.08	83.58
53	85.70	85.19
54	87.32	86.81

Type XL
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	88.94	88.43
56	90.55	90.04
57	92.17	91.66
58	93.79	93.28
59	95.40	94.90
60	97.02	96.51
61	98.64	98.13
62	100.25	99.75
63	101.87	101.36
64	103.49	102.98
65	105.11	104.60
66	106.72	106.21
67	108.34	107.83
68	109.96	109.45
69	111.57	111.07
70	113.19	112.68
71	114.81	114.30
72	116.43	115.92
73	118.04	117.53
74	119.66	119.15
75	121.28	120.77
76	122.89	122.39
77	124.51	124.00
78	126.13	125.62
79	127.74	127.24
80	129.36	128.85
81	130.98	130.47
82	132.60	132.09
83	134.21	133.70
84	135.83	135.32
85	137.45	136.94
86	139.06	138.56
87	140.68	140.17
88	142.30	141.79
89	143.91	143.41
90	145.53	145.02
91	147.15	146.64
92	148.77	148.26
93	150.38	149.87
94	152.00	151.49
95	153.62	153.11
96	155.23	154.73
97	156.85	156.34
98	158.47	157.96
99	160.08	159.58

Type XL
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	161.70	161.19
101	163.32	162.81
102	164.94	164.43
103	166.55	166.04
104	168.17	167.66
105	169.79	169.28
106	171.40	170.90
107	173.02	172.51
108	174.64	174.13
109	176.25	175.75
110	177.87	177.36
111	179.49	178.98
112	181.11	180.60
113	182.72	182.21
114	184.34	183.83
115	185.96	185.45
116	187.57	187.07
117	189.19	188.68
118	190.81	190.30
119	192.42	191.92
120	194.04	193.53

Type L

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	30.32	29.56
11	33.35	32.59
12	36.38	35.62
13	39.41	38.65
14	42.45	41.68
15	45.48	44.72
16	48.51	47.75
17	51.54	50.78
18	54.57	53.81
19	57.61	56.84
20	60.64	59.88
21	63.67	62.91
22	66.70	65.94
23	69.73	68.97
24	72.77	72.00
25	75.80	75.04
26	78.83	78.07
27	81.86	81.10
28	84.89	84.13
29	87.93	87.16
30	90.96	90.20
31	93.99	93.23
32	97.02	96.26
33	100.05	99.29
34	103.08	102.32
35	106.12	105.35
36	109.15	108.39
37	112.18	111.42
38	115.21	114.45
39	118.24	117.48
40	121.28	120.51
41	124.31	123.55
42	127.34	126.58
43	130.37	129.61
44	133.40	132.64
45	136.44	135.67
46	139.47	138.71
47	142.50	141.74
48	145.53	144.77
49	148.56	147.80
50	151.60	150.83
51	154.63	153.86
52	157.66	156.90
53	160.69	159.93
54	163.72	162.96

Type L

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	166.75	165.99
56	169.79	169.02
57	172.82	172.06
58	175.85	175.09
59	178.88	178.12
60	181.91	181.15
61	184.95	184.18
62	187.98	187.22
63	191.01	190.25
64	194.04	193.28
65	197.07	196.31
66	200.11	199.34
67	203.14	202.38
68	206.17	205.41
69	209.20	208.44
70	212.23	211.47
71	215.27	214.50
72	218.30	217.53
73	221.33	220.57
74	224.36	223.60
75	227.39	226.63
76	230.42	229.66
77	233.46	232.69
78	236.49	235.73
79	239.52	238.76
80	242.55	241.79
81	245.58	244.82
82	248.62	247.85
83	251.65	250.89
84	254.68	253.92
85	257.71	256.95
86	260.74	259.98
87	263.78	263.01
88	266.81	266.05
89	269.84	269.08
90	272.87	272.11
91	275.90	275.14
92	278.93	278.17
93	281.97	281.20
94	285.00	284.24
95	288.03	287.27
96	291.06	290.30
97	294.09	293.33
98	297.13	296.36
99	300.16	299.40

Type L

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	303.19	302.43
101	306.22	305.46
102	309.25	308.49
103	312.29	311.52
104	315.32	314.56
105	318.35	317.59
106	321.38	320.62
107	324.41	323.65
108	327.45	326.68
109	330.48	329.72
110	333.51	332.75
111	336.54	335.78
112	339.57	338.81
113	342.60	341.84
114	345.64	344.87
115	348.67	347.91
116	351.70	350.94
117	354.73	353.97
118	357.76	357.00
119	360.80	360.03
120	363.83	363.07
130	394.15	393.39
140	424.47	423.70
150	454.79	454.02

Type H

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
14	56.60	55.22
15	60.64	59.27
16	64.68	63.31
17	68.72	67.35
18	72.77	71.39
19	76.81	75.44
20	80.85	79.48
21	84.89	83.52
22	88.94	87.56
23	92.98	91.61
24	97.02	95.65
25	101.06	99.69
26	105.11	103.73
27	109.15	107.78
28	113.19	111.82
29	117.23	115.86
30	121.28	119.90
31	125.32	123.95
32	129.36	127.99
33	133.40	132.03
34	137.45	136.07
35	141.49	140.12
36	145.53	144.16
37	149.57	148.20
38	153.62	152.24
39	157.66	156.29
40	161.70	160.33
41	165.74	164.37
42	169.79	168.41
43	173.83	172.46
44	177.87	176.50
45	181.91	180.54
46	185.96	184.59
47	190.00	188.63
48	194.04	192.67
49	198.08	196.71
50	202.13	200.76
51	206.17	204.80
52	210.21	208.84
53	214.25	212.88
54	218.30	216.93
55	222.34	220.97
56	226.38	225.01
57	230.42	229.05
58	234.47	233.10

Type H

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
59	238.51	237.14
60	242.55	241.18
61	246.59	245.22
62	250.64	249.27
63	254.68	253.31
64	258.72	257.35
65	262.76	261.39
66	266.81	265.44
67	270.85	269.48
68	274.89	273.52
69	278.93	277.56
70	282.98	281.61
71	287.02	285.65
72	291.06	289.69
73	295.11	293.73
74	299.15	297.78
75	303.19	301.82
76	307.23	305.86
77	311.28	309.90
78	315.32	313.95
79	319.36	317.99
80	323.40	322.03
81	327.45	326.07
82	331.49	330.12
83	335.53	334.16
84	339.57	338.20
85	343.62	342.24
86	347.66	346.29
87	351.70	350.33
88	355.74	354.37
89	359.79	358.41
90	363.83	362.46
91	367.87	366.50
92	371.91	370.54
93	375.96	374.58
94	380.00	378.63
95	384.04	382.67
96	388.08	386.71
97	392.13	390.75
98	396.17	394.80
99	400.21	398.84
100	404.25	402.88
101	408.30	406.92
102	412.34	410.97
103	416.38	415.01

Type H

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
104	420.42	419.05
105	424.47	423.09
106	428.51	427.14
107	432.55	431.18
108	436.59	435.22
109	440.64	439.26
110	444.68	443.31
111	448.72	447.35
112	452.76	451.39
113	456.81	455.43
114	460.85	459.48
115	464.89	463.52
116	468.93	467.56
117	472.98	471.61
118	477.02	475.65
119	481.06	479.69
120	485.10	483.73
125	505.32	503.95
130	525.53	524.16
135	545.74	544.37
140	565.95	564.58
145	586.17	584.80
150	606.38	605.01
156	630.64	629.26

Type XH
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
18	127.34	124.55
19	134.41	131.62
20	141.49	138.69
21	148.56	145.77
22	155.64	152.84
23	162.71	159.92
24	169.79	166.99
25	176.86	174.07
26	183.94	181.14
27	191.01	188.22
28	198.08	195.29
29	205.16	202.36
30	212.23	209.44
31	219.31	216.51
32	226.38	223.59
33	233.46	230.66
34	240.53	237.74
35	247.61	244.81
36	254.68	251.89
37	261.75	258.96
38	268.83	266.03
39	275.90	273.11
40	282.98	280.18
41	290.05	287.26
42	297.13	294.33
43	304.20	301.41
44	311.28	308.48
45	318.35	315.56
46	325.42	322.63
47	332.50	329.70
48	339.57	336.78
49	346.65	343.85
50	353.72	350.93
51	360.80	358.00
52	367.87	365.08
53	374.95	372.15
54	382.02	379.23
55	389.09	386.30
56	396.17	393.37
57	403.24	400.45
58	410.32	407.52
59	417.39	414.60
60	424.47	421.67
61	431.54	428.75
62	438.62	435.82

Type XH
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
63	445.69	442.90
64	452.76	449.97
65	459.84	457.04
66	466.91	464.12
67	473.99	471.19
68	481.06	478.27
69	488.14	485.34
70	495.21	492.42
71	502.29	499.49
72	509.36	506.57
73	516.43	513.64
74	523.51	520.71
75	530.58	527.79
76	537.66	534.86
77	544.73	541.94
78	551.81	549.01
79	558.88	556.09
80	565.95	563.16
81	573.03	570.24
82	580.10	577.31
83	587.18	584.38
84	594.25	591.46
85	601.33	598.53
86	608.40	605.61
87	615.48	612.68
88	622.55	619.76
89	629.62	626.83
90	636.70	633.91
91	643.77	640.98
92	650.85	648.05
93	657.92	655.13
94	665.00	662.20
95	672.07	669.28
96	679.15	676.35
97	686.22	683.43
98	693.29	690.50
99	700.37	697.58
100	707.44	704.65
101	714.52	711.72
102	721.59	718.80
103	728.67	725.87
104	735.74	732.95
105	742.82	740.02
106	749.89	747.10
107	756.96	754.17

Type XH
(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
108	764.04	761.25
109	771.11	768.32
110	778.19	775.39
111	785.26	782.47
112	792.34	789.54
113	799.41	796.62
114	806.49	803.69
115	813.56	810.77
116	820.63	817.84
117	827.71	824.92
118	834.78	831.99
119	841.86	839.06
120	848.93	846.14
122	863.08	860.29
124	877.23	874.44
125	884.30	881.51
126	891.38	888.59
128	905.53	902.73
130	919.68	916.88
132	933.83	931.03
134	947.97	945.18
135	955.05	952.26
136	962.12	959.33
138	976.27	973.48
140	990.42	987.63
142	1004.57	1001.78
144	1018.72	1015.92
145	1025.79	1023.00
146	1032.87	1030.07
148	1047.02	1044.22
150	1061.17	1058.37

Type XXH

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
18	181.91	178.87
19	192.02	188.97
20	202.13	199.08
21	212.23	209.19
22	222.34	219.29
23	232.45	229.40
24	242.55	239.50
25	252.66	249.61
26	262.76	259.72
27	272.87	269.82
28	282.98	279.93
29	293.08	290.04
30	303.19	300.14
31	313.30	310.25
32	323.40	320.35
33	333.51	330.46
34	343.62	340.57
35	353.72	350.67
36	363.83	360.78
37	373.93	370.89
38	384.04	380.99
39	394.15	391.10
40	404.25	401.21
41	414.36	411.31
42	424.47	421.42
43	434.57	431.52
44	444.68	441.63
45	454.79	451.74
46	464.89	461.84
47	475.00	471.95
48	485.10	482.06
49	495.21	492.16
50	505.32	502.27
51	515.42	512.38
52	525.53	522.48
53	535.64	532.59
54	545.74	542.69
55	555.85	552.80
56	565.95	562.91
57	576.06	573.01
58	586.17	583.12
59	596.27	593.23
60	606.38	603.33
61	616.49	613.44
62	626.59	623.55

Type XXH

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
63	636.70	633.65
64	646.81	643.76
65	656.91	653.86
66	667.02	663.97
67	677.12	674.08
68	687.23	684.18
69	697.34	694.29
70	707.44	704.40
71	717.55	714.50
72	727.66	724.61
73	737.76	734.71
74	747.87	744.82
75	757.98	754.93
76	768.08	765.03
77	778.19	775.14
78	788.29	785.25
79	798.40	795.35
80	808.51	805.46
81	818.61	815.57
82	828.72	825.67
83	838.83	835.78
84	848.93	845.88
85	859.04	855.99
86	869.15	866.10
87	879.25	876.20
88	889.36	886.31
89	899.46	896.42
90	909.57	906.52
91	919.68	916.63
92	929.78	926.74
93	939.89	936.84
94	950.00	946.95
95	960.10	957.05
96	970.21	967.16
97	980.31	977.27
98	990.42	987.37
99	1000.53	997.48
100	1010.63	1007.59
101	1020.74	1017.69
102	1030.85	1027.80
103	1040.95	1037.90
104	1051.06	1048.01
105	1061.17	1058.12
106	1071.27	1068.22
107	1081.38	1078.33

Type XXH

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
108	1091.48	1088.43
109	1101.59	1098.54
110	1111.70	1108.65
111	1121.80	1118.76
112	1131.91	1128.86
113	1142.02	1138.97
114	1152.12	1149.07
115	1162.23	1159.18
116	1172.34	1169.29
117	1182.44	1179.39
118	1192.55	1189.50
119	1202.65	1199.61
120	1212.76	1209.71

Type T5 (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	15.92	15.05
11	17.51	16.65
12	19.10	18.25
13	20.69	19.85
14	22.28	21.45
15	23.87	23.05
16	25.46	24.60
17	27.06	26.20
18	28.65	27.80
19	30.24	29.40
20	31.83	31.00
21	33.42	32.70
22	35.01	34.25
23	36.61	35.85
24	38.20	37.40
25	39.79	39.00
26	41.38	40.60
27	42.97	42.20
28	44.56	43.75
29	46.15	45.35
30	47.75	46.95
31	49.34	48.55
32	50.93	50.10
33	52.52	51.70
34	54.11	53.25
35	55.70	54.85
36	57.30	56.45
37	58.89	58.05
38	60.48	59.65
39	62.07	61.25
40	63.66	62.85
41	65.25	64.40
42	66.85	66.00
43	68.44	67.60
44	70.03	69.20
45	71.62	70.80
46	73.21	72.40
47	74.80	73.95
48	76.39	75.55
49	77.99	77.15
50	79.58	78.75
51	81.17	80.35
52	82.76	81.95
53	84.35	83.50
54	85.94	85.10

Type T5 (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	87.54	86.70
56	89.13	88.30
57	90.72	89.90
58	92.31	91.50
59	93.90	93.05
60	95.49	94.65
61	97.08	96.25
62	98.68	97.85
63	100.27	99.45
64	101.86	101.05
65	103.45	102.65
66	105.04	104.20
67	106.63	105.80
68	108.23	107.40
69	109.82	109.00
70	111.41	110.60
71	113.00	112.20
72	114.59	113.75
73	116.18	115.35
74	117.77	116.95
75	119.37	118.55
76	120.96	120.15
77	122.55	121.75
78	124.14	123.30
79	125.73	124.90
80	127.32	126.50
81	128.92	128.10
82	130.51	129.70
83	132.10	131.30
84	133.69	132.85
85	135.28	134.45
86	136.87	136.05
87	138.46	137.65
88	140.06	139.25
89	141.65	140.85
90	143.24	142.45
91	144.83	144.00
92	146.42	145.60
93	148.01	147.20
94	149.61	148.80
95	151.20	150.40
96	152.79	152.00
97	154.38	153.55
98	155.97	155.15
99	157.56	156.75

Type T5 (Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	159.15	158.35
101	160.75	159.95
102	162.34	161.55
103	163.93	163.10
104	165.52	164.70
105	167.11	166.30
106	168.70	167.90
107	170.30	169.50
108	171.89	171.10
109	173.48	172.65
110	175.07	174.25
111	176.66	175.85
112	178.25	177.45
113	179.85	179.05
114	181.44	180.62
115	183.03	182.21
116	184.62	183.80
117	186.21	185.39
118	187.80	186.98
119	189.39	188.56
120	190.99	190.17

Type T10

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
10	31.83	30.00
11	35.01	33.15
12	38.20	36.35
13	41.38	39.50
14	44.56	42.70
15	47.75	45.90
16	50.93	49.05
17	54.11	52.25
18	57.30	55.45
19	60.48	58.60
20	63.66	61.80
21	66.85	65.00
22	70.03	68.15
23	73.21	71.35
24	76.39	74.55
25	79.58	77.70
26	82.76	80.90
27	85.94	84.10
28	89.13	87.25
29	92.31	90.45
30	95.49	93.65
31	98.68	96.80
32	101.86	100.00
33	105.04	103.20
34	108.23	106.40
35	111.41	109.55
36	114.59	112.75
37	117.77	115.90
38	120.96	119.10
39	124.14	122.30
40	127.32	125.45
41	130.51	128.65
42	133.69	131.85
43	136.87	135.00
44	140.06	138.20
45	143.24	141.40
46	146.42	144.55
47	149.61	147.75
48	152.79	150.95
49	155.97	154.10
50	159.15	157.30
51	162.34	160.50
52	165.52	163.65
53	168.70	166.85
54	171.89	170.05

Type T10

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
55	175.07	173.20
56	178.25	176.40
57	181.44	179.60
58	184.62	182.75
59	187.80	185.95
60	190.99	189.10
61	194.17	192.30
62	197.35	195.50
63	200.54	198.65
64	203.72	201.85
65	206.90	205.05
66	210.08	208.20
67	213.27	211.40
68	216.45	214.60
69	219.63	217.75
70	222.82	220.95
71	226.00	224.15
72	229.18	227.30
73	232.37	230.50
74	235.55	233.70
75	238.73	236.90
76	241.92	240.05
77	245.10	243.25
78	248.28	246.40
79	251.46	249.60
80	254.65	252.80
81	257.83	255.95
82	261.01	259.15
83	264.20	262.35
84	267.38	265.50
85	270.56	268.70
86	273.75	271.90
87	276.93	275.05
88	280.11	278.25
89	283.30	281.45
90	286.48	284.60
91	289.66	287.80
92	292.85	291.00
93	296.03	294.15
94	299.21	297.35
95	302.39	300.55
96	305.58	303.70
97	308.76	306.90
98	311.94	310.10
99	315.13	313.25

Type T10

(Unit: mm)

No. of teeth	Pitch diameter	Outside diameter
100	318.31	316.45
101	321.49	319.65
102	324.68	322.80
103	327.86	326.00
104	331.04	329.20
105	334.23	332.35
106	337.41	335.55
107	340.59	338.75
108	343.77	341.90
109	346.96	345.10
110	350.14	348.30
111	353.32	351.45
112	356.51	354.65
113	359.69	357.80
114	362.87	361.01
115	366.06	364.20
116	369.24	367.38
117	372.42	370.56
118	375.61	373.75
119	378.79	376.93
120	381.97	380.11
130	413.80	411.94
140	445.63	443.77
150	477.46	475.60

■ Table 4 Difference Between Pulley Pitch Diameter and Pulley Outside Diameter (2a)

Table 4-1 S tooth profiles

(Unit: mm)

Belt type	S1.5M	S2M DS2M	S3M DS3M	S4.5M DS4.5M	S5M DS5M	S8M DS8M	S14M DS14M
2a	0.508	0.508	0.762	0.762	0.960	1.372	2.794

Table 4-2 H tooth profiles

(Unit: mm)

Belt type	HP-8M
2a	1.372

Table 4-3 Trapezoidal tooth profiles

(Unit: mm)

Belt type	TN10	TN15	MXL	XL/DXL	L/DL	H/DH	XH	XXH	T5/DT5	T10/DT10
2a	0.35	0.64	0.51	0.51	0.76	1.37	2.79	3.05	*	*

Note) For the * mark, perform calculation with the pitch diameter and outside diameter in the list of pulley diameters.

■ Table 5 Minimum Number of Teeth of Pulleys

Table 5-1 Ceptor-X/Ceptor-VI

Belt type	No. of teeth (pitch diameter mm)
Ceptor-X S8M	22 (φ56.02)
Ceptor-X S14M	28 (φ124.78)
Ceptor-VI S3M	14 (φ13.37)
Ceptor-VI S5M	14 (φ22.28)
Ceptor-VI S8M	22 (φ56.02)

Table 5-2 STS

(Pitch diameter unit: mm)

Pinion revolution (rpm)	S1.5M		S2M/DS2M		S3M/DS3M		S4.5M/DS4.5M	
	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter
870 or less	16	φ7.64	14	φ8.91	14	φ13.37	12	φ17.19
Over 870 to 1160 or less	18	φ8.59	14	φ8.91	14	φ13.37	14	φ20.05
Over 1160 to 1750 or less	20	φ9.55	16	φ10.19	16	φ15.28	16	φ22.92
Over 1750 to 3500 or less	22	φ10.50	18	φ11.46	18	φ17.19	18	φ25.78
Over 3500 to 4500 or less	24	φ11.46	20	φ12.73	20	φ19.10	18	φ25.78
Over 4500 to 5500 or less	-	-	-	-	-	-	18	φ25.78
5500 or more	-	-	-	-	-	-	18	φ25.78

Table 5-3 HP-STS

Belt type	No. of teeth (pitch diameter mm)
HP-S5M	14 (φ22.28)
HP-S8M	22 (φ56.02)
HP-S14M	28 (φ124.78)

Table 5-4 HP-STS

Belt type	No. of teeth (pitch diameter mm)
HP-8M	22 (φ56.02)

Table 5-5 Synchronous Belts

(Pitch diameter unit: mm)

Pinion revolution (rpm)	TN10		TN15		MXL		XL/DXL		L/DL		H/DH		XH		XXH		T5/DT5		T10/DT10	
	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter	No. of teeth	Pitch diameter
900 or less	16	φ5.09	20	φ9.55	—	—	10	φ16.17	12	φ36.38	14	φ56.60	22	φ155.64	22	φ222.34	12	φ19.10	14	φ44.56
Over 900 to 1200 or less	16	φ5.09	20	φ9.55	12	φ7.76	10	φ16.17	12	φ36.38	16	φ64.68	24	φ169.79	24	φ242.55	12	φ19.10	16	φ50.93
Over 1200 to 1800 or less	18	φ5.73	22	φ10.50	14	φ9.06	12	φ19.40	14	φ42.45	18	φ72.77	26	φ183.94	26	φ262.76	14	φ22.28	18	φ57.30
Over 1800 to 3600 or less	24	φ7.64	24	φ11.46	16	φ10.35	12	φ19.40	16	φ48.51	20	φ80.85	30	φ212.23			16	φ25.46	20	φ63.66
Over 3600 to 4800 or less	24	φ7.64	29	φ13.85	18	φ11.64	15	φ24.26	18	φ54.57	22	φ88.94					20	φ31.83	22	φ70.03

■ Table 6 Basic Belt Speeds

Belt specification	Belt speed (m/s)
Ceptor-X	33
Ceptor-VI	33
HP-STS	33
STS	33
HP-HTS	33
Synchronous Belt	30

Table of basic power ratings for Ceptor-X Type S8M (per width of 60 mm and length of 1200 mm)

(Unit: kW)

No. of teeth of pinion		20	22	24	26	28	30	32	34	36	40	44	48	50	60	72	84	96	120
Pitch diameter (mm)		50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	101.86	112.05	122.23	127.32	152.79	183.35	213.90	244.46	305.58
Pinion revolution (rpm)	50	1.12	1.34	1.55	1.77	2.01	2.27	2.50	2.75	3.00	3.47	3.96	4.42	4.64	5.66	6.76	7.78	8.79	10.8
	100	2.13	2.54	2.93	3.36	3.81	4.29	4.73	5.19	5.68	6.55	7.47	8.35	8.76	10.7	12.7	14.6	16.5	20.2
	200	4.02	4.79	5.54	6.34	7.19	8.08	8.92	9.79	10.7	12.3	14.1	15.7	16.5	20.0	23.9	27.5	31.0	37.9
	300	5.82	6.94	8.02	9.17	10.4	11.7	12.9	14.1	15.5	17.8	20.3	22.7	23.8	28.9	34.4	39.6	44.6	54.5
	400	7.6	9.01	10.4	11.9	13.5	15.2	16.7	18.4	20.1	23.1	26.3	29.4	30.8	37.5	44.6	51.2	57.7	70.5
	500	9.3	11.0	12.7	14.6	16.5	18.6	20.5	22.5	24.5	28.3	32.2	36.0	37.7	45.8	54.5	62.5	70.5	86.0
	600	10.9	13.0	15.0	17.2	19.5	21.9	24.1	26.5	28.9	33.3	37.9	42.4	44.4	53.9	64.1	73.6	82.9	101.1
	700	12.6	15.0	17.3	19.8	22.4	25.2	27.7	30.4	33.2	38.2	43.6	48.6	51.0	61.9	73.6	84.4	95.0	115.9
	800	14.2	16.9	19.5	22.3	25.2	28.4	31.3	34.3	37.4	43.1	49.1	54.8	57.4	69.7	82.8	95.0	107.0	130.3
	900	15.8	18.8	21.7	24.8	28.1	31.5	34.8	38.1	41.6	47.9	54.5	60.9	63.8	77.4	92.0	105.5	118.7	144.6
	1000	17.3	20.6	23.8	27.2	30.8	34.6	38.2	41.9	45.7	52.6	59.9	66.8	70.1	85.0	100.9	115.7	130.2	158.6
	1100	18.9	22.5	25.9	29.6	33.6	37.7	41.6	45.6	49.7	57.3	65.2	72.7	76.2	92.5	109.8	125.9	141.6	172.4
	1200	20.4	24.3	28.0	32.0	36.3	40.8	44.9	49.2	53.8	61.9	70.4	78.6	82.3	99.8	118.5	135.9	152.8	186.0
	1300	21.9	26.1	30.1	34.4	39.0	43.8	48.2	52.9	57.7	66.4	75.6	84.3	88.4	107.1	127.2	145.7	163.9	199.4
	1400	23.4	27.9	32.2	36.7	41.6	46.7	51.5	56.5	61.6	70.9	80.7	90.0	94.3	114.3	135.7	155.5	174.8	212.6
	1500	24.9	29.6	34.2	39.1	44.2	49.7	54.7	60.0	65.5	75.3	85.7	95.6	100.2	121.5	144.1	165.1	185.6	225.7
	1600	26.4	31.4	36.2	41.4	46.8	52.6	58.0	63.5	69.3	79.7	90.7	101.2	106.0	128.5	152.5	174.6	196.3	238.6
	1700	27.8	33.1	38.2	43.6	49.4	55.5	61.1	67.0	73.1	84.1	95.7	106.7	111.8	135.5	160.7	184.0	206.9	251.4
	1800	29.2	34.8	40.2	45.9	51.9	58.3	64.3	70.4	76.9	88.4	100.6	112.2	117.5	142.4	168.8	193.3	217.3	264.0
	1900	30.7	36.5	42.1	48.1	54.5	61.2	67.4	73.9	80.6	92.7	105.4	117.6	123.2	149.2	176.9	202.5	227.6	276.5
	2000	32.1	38.2	44.1	50.3	57.0	64.0	70.5	77.2	84.3	96.9	110.2	122.9	128.8	156.0	184.9	211.6	237.8	288.8
	2200	34.9	41.5	47.9	54.7	61.9	69.5	76.6	83.9	91.5	105.2	119.7	133.5	139.8	169.3	200.6	229.6	257.9	313.1
	2400	37.6	44.8	51.6	59.0	66.7	75.0	82.5	90.4	98.6	113.4	129.0	143.8	150.6	182.3	216.0	247.1	277.6	336.8
	2600	40.3	48.0	55.3	63.2	71.5	80.3	88.4	96.9	105.6	121.5	138.1	153.9	161.2	195.1	231.1	264.3	296.8	360.1
	2800	43.0	51.1	59.0	67.3	76.2	85.5	94.2	103.2	112.5	129.3	147.0	163.9	171.6	207.6	245.9	281.1	315.7	382.8
	3000	45.6	54.2	62.5	71.4	80.8	90.7	99.8	109.3	119.3	137.1	155.8	173.6	181.8	219.9	260.4	297.6	334.1	405.0
	3200	48.2	57.2	66.0	75.4	85.3	95.7	105.4	115.4	125.9	144.6	164.4	183.2	191.8	231.9	274.5	313.8	352.1	
	3400	50.7	60.2	69.5	79.3	89.7	100.7	110.8	121.4	132.3	152.1	172.8	192.5	201.6	243.7	288.4	329.5	369.7	
	3600	53.1	63.2	72.8	83.1	94.0	105.5	116.2	127.2	138.7	159.3	181.1	201.7	211.2	255.2	301.9	344.9	386.9	
	3800	55.6	66.0	76.1	86.9	98.3	110.3	121.4	132.9	144.9	166.5	189.1	210.7	220.6	266.5	315.2	360.0	403.7	
	4000	57.9	68.8	79.4	90.6	102.4	114.9	126.5	138.5	151.0	173.5	197.0	219.5	229.8	277.5	328.1	374.7		
	4500	63.7	75.6	87.2	99.4	112.4	126.2	138.8	152.0	165.7	190.2	216.0	240.5	251.8	303.9	359.1			
	5000	69.1	82.1	94.5	107.8	121.9	136.7	150.4	164.7	179.4	205.9	233.8	260.2	272.4	328.6	387.9			
	5500	74.2	88.1	101.5	115.7	130.7	146.6	161.3	176.5	192.3	220.6	250.4	278.6	291.6	351.4				
	6000	78.9	93.7	107.9	123.0	139.0	155.8	171.3	187.5	204.2	234.2	265.7	295.5	309.2	372.4				

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for Ceptor-X Type S14M (per width of 120 mm and length of 1400 mm) (Unit: kW)

	No. of teeth of pinion	28	30	32	34	36	40	42	44	48	50	54	60	64	72	84	96	120	144
	Pitch diameter (mm)	124.78	133.69	142.60	151.52	160.43	178.25	187.17	196.08	213.90	222.82	240.64	267.38	285.21	320.86	374.33	427.81	534.76	641.71
Pinion revolution (rpm)	20	4.27	4.81	5.31	5.83	6.37	7.36	7.87	8.40	9.40	9.86	10.7	12.0	12.9	14.4	16.6	18.7	23.0	27.1
	40	8.10	9.12	10.1	11.0	12.1	13.9	14.9	15.9	17.8	18.7	20.2	22.7	24.4	27.1	31.3	35.3	43.3	51.1
	50	9.94	11.2	12.4	13.6	14.8	17.1	18.3	19.5	21.8	22.9	24.8	27.9	29.9	33.3	38.3	43.3	53.0	62.6
	60	11.8	13.2	14.6	16.0	17.5	20.2	21.6	23.1	25.8	27.1	29.3	33.0	35.3	39.3	45.2	51.1	62.6	73.8
	80	15.3	17.2	19.0	20.9	22.8	26.3	28.1	30.0	33.5	35.2	38.1	42.8	45.9	51.1	58.8	66.3	81.2	95.8
	100	18.8	21.1	23.3	25.6	28.0	32.2	34.5	36.8	41.1	43.1	46.7	52.5	56.2	62.6	71.9	81.2	99.3	117.1
	150	27.2	30.6	33.7	37.0	40.5	46.6	49.9	53.2	59.4	62.3	67.5	75.8	81.2	90.3	103.8	117.1	143.1	168.6
	200	35.3	39.8	43.8	48.1	52.5	60.6	64.7	69.0	77.1	80.9	87.6	98.3	105.3	117.1	134.5	151.7	185.3	218.1
	250	43.3	48.7	53.7	58.9	64.3	74.1	79.2	84.5	94.3	98.9	107.1	120.2	128.7	143.1	164.4	185.3	226.2	266.2
	300	51.1	57.4	63.3	69.4	75.8	87.4	93.4	99.6	111.2	116.6	126.2	141.6	151.6	168.5	193.5	218.1	266.1	313.0
	350	58.7	66.0	72.8	79.8	87.1	100.4	107.3	114.4	127.7	133.9	145.0	162.6	174.1	193.5	222.1	250.2	305.2	358.9
	400	66.2	74.4	82.1	90.0	98.3	113.2	121.0	128.9	144.0	150.9	163.4	183.3	196.2	218.0	250.1	281.7	343.6	403.8
	450	73.6	82.8	91.2	100.1	109.2	125.8	134.4	143.3	160.0	167.7	181.5	203.6	217.9	242.1	277.7	312.8	381.3	448.0
	500	80.9	91.0	100.3	110.0	120.1	138.3	147.7	157.5	175.8	184.2	199.4	223.7	239.3	265.8	304.9	343.3	418.4	491.6
	600	95.3	107.1	118.1	129.5	141.3	162.7	173.8	185.3	206.8	216.7	234.5	263.0	281.3	312.4	358.2	403.2	491.1	576.7
	700	109.4	122.9	135.5	148.5	162.1	186.6	199.4	212.4	237.1	248.4	268.9	301.4	322.4	357.9	410.3	461.7	562.0	659.7
	800	123.2	138.4	152.5	167.2	182.5	210.0	224.4	239.1	266.7	279.5	302.4	339.0	362.6	402.4	461.2	518.8	631.3	740.7
	900	136.7	153.6	169.3	185.5	202.5	233.0	248.9	265.2	295.9	310.0	335.4	375.8	401.9	446.0	511.0	574.7	699.1	819.9
	1000	150.0	168.6	185.7	203.6	222.1	255.6	273.0	290.8	324.4	339.9	367.7	412.0	440.5	488.8	559.9	629.5	765.4	897.4
	1100	163.1	183.3	201.9	221.3	241.4	277.8	296.7	316.0	352.5	369.3	399.4	447.5	478.5	530.8	607.8	683.3	830.4	973.3
	1200	176.0	197.7	217.8	238.7	260.4	299.6	319.9	340.8	380.1	398.2	430.6	482.3	515.7	572.0	654.8	736.0	894.2	1047.7
	1300	188.7	212.0	233.4	255.8	279.1	321.0	342.8	365.1	407.2	426.6	461.3	516.6	552.2	612.4	701.0	787.7	956.7	1120.6
	1400	201.2	225.9	248.8	272.7	297.5	342.1	365.3	389.1	433.8	454.4	491.4	550.2	588.2	652.1	746.3	838.5	1018.0	1192.0
	1500	213.5	239.7	264.0	289.3	315.5	362.8	387.4	412.6	460.0	481.8	521.0	583.2	623.4	691.1	790.7	888.2	1078.0	1262.0
	1600	225.5	253.3	278.9	305.6	333.3	383.2	409.1	435.7	485.7	508.8	550.0	615.7	658.1	729.4	834.3	937.1	1136.9	
	1700	237.4	266.6	293.5	321.6	350.8	403.2	430.5	458.4	511.0	535.2	578.6	647.5	692.1	767.0	877.1	984.9	1194.6	
	1800	249.1	279.7	307.9	337.3	367.9	422.9	451.5	480.8	535.8	561.2	606.6	678.8	725.4	803.8	919.1	1031.8	1251.1	
	1900	260.6	292.6	322.1	352.8	384.8	442.2	472.1	502.7	560.2	586.7	634.1	709.5	758.1	840.0	960.2	1077.8		
	2000	271.9	305.2	336.0	368.0	401.3	461.2	492.3	524.2	584.1	611.7	661.0	739.6	790.2	875.4	1000.5	1122.8		
	2200	293.8	329.8	363.0	397.6	433.5	498.1	531.6	566.0	630.5	660.3	713.4	797.9	852.4	944.0	1078.5	1209.9		
	2400	315.0	353.5	389.0	426.0	464.5	533.5	569.3	606.1	675.1	706.8	763.6	853.8	912.0	1009.6	1152.9			
	2600	335.3	376.2	414.0	453.3	494.1	567.4	605.5	644.4	717.7	751.3	811.5	907.2	968.8	1072.2	1223.8			
	2800	354.7	397.9	437.8	479.3	522.4	599.7	639.9	681.0	758.2	793.7	857.1	957.9	1022.8	1131.6				
	3000	373.2	418.6	460.5	504.1	549.3	630.5	672.6	715.8	796.7	833.9	900.3	1005.9	1073.8	1187.6				
	3200	390.7	438.2	482.0	527.5	574.8	659.6	703.5	748.6	833.0	871.9	941.0	1051.1	1121.9					
	3400	407.3	456.7	502.3	549.6	598.8	686.9	732.6	779.4	867.1	907.4	979.2	1093.3	1166.7					
	3600	422.9	474.1	521.3	570.3	621.3	712.4	759.7	808.1	898.9	940.5	1014.7	1132.6						
	3800	437.4	490.3	539.0	589.6	642.1	736.1	784.8	834.7	928.2	971.1	1047.4	1168.6						
	4000	450.8	505.2	555.3	607.3	661.3	757.8	807.9	859.1	955.0	999.0								
	4500	479.3	536.8	589.7	644.6	701.6	803.2	855.9	909.8	1010.5	1056.6								
	5000	500.0	559.7	614.4	671.2	730.1	835.0	889.2	944.7										

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for Ceptor-VI Type S3M (per width of 6 mm and length of 300 mm)

(Unit: W)

No. of teeth of pinion	14	15	16	18	20	22	24	26	28	30	32	34	36	40	44	48	50	60
Pitch diameter (mm)	13.37	14.32	15.28	17.19	19.10	21.01	22.92	24.83	26.74	28.65	30.56	32.47	34.38	38.20	42.02	45.84	47.75	57.30
Pinion revolution (rpm)																		
50	5	6	6	7	8	9	10	11	12	12	13	14	15	17	19	21	22	26
100	10	11	12	14	15	17	19	20	22	23	25	27	29	32	36	39	41	49
200	19	21	22	26	29	32	35	38	41	44	47	51	54	61	67	73	76	91
300	28	30	33	37	42	46	50	55	59	64	68	73	78	87	96	105	110	131
400	36	39	42	48	54	60	65	71	77	83	89	95	101	113	125	136	143	170
500	45	48	52	59	66	73	80	87	94	101	108	116	123	138	152	166	174	207
600	53	57	61	69	78	86	94	103	111	119	128	136	145	163	179	196	205	244
700	61	65	70	80	90	99	108	118	127	137	147	157	167	187	206	225	235	280
800	68	74	79	90	101	112	122	133	143	154	165	176	188	211	232	253	265	315
900	76	82	88	100	113	124	136	147	159	171	184	196	208	234	257	281	294	349
1000	83	90	97	110	124	136	149	162	175	188	202	215	229	257	282	308	323	383
1100	91	98	105	120	135	148	162	176	190	205	219	234	249	279	307	335	351	416
1200	98	106	114	129	146	160	175	190	206	221	237	253	269	301	331	362	379	449
1300	106	114	122	139	156	172	188	204	221	237	254	271	288	323	355	388	406	482
1400	113	121	130	148	167	184	201	218	236	253	271	289	308	345	379	414	433	514
1500	120	129	138	158	177	195	213	232	250	269	288	307	327	366	403	439	460	546
1600	127	137	147	167	188	207	226	245	265	285	305	325	346	387	426	465	487	577
1700	134	144	155	176	198	218	238	259	279	300	321	343	364	408	449	490	513	608
1800	141	152	163	185	208	229	250	272	293	315	338	360	383	429	472	514	538	638
1900	148	159	170	194	218	240	262	285	308	331	354	377	401	450	494	539	564	668
2000	154	166	178	203	228	251	274	298	321	346	370	394	419	470	516	563	589	698
2100	161	173	186	211	238	262	286	311	335	360	386	411	437	490	538	587	614	728
2200	168	180	194	220	248	272	298	323	349	375	401	428	455	509	560	610	639	757
2300	174	188	201	229	257	283	309	336	362	389	417	444	472	529	581	634	663	785
2400	181	195	209	237	267	294	321	348	376	404	432	461	490	548	602	657	687	814
2500	187	201	216	246	276	304	332	360	389	418	447	477	507	567	623	679	711	842
2600	194	208	223	254	285	314	343	372	402	432	462	493	523	586	644	702	735	870
2700	200	215	231	262	295	324	354	384	415	446	477	508	540	605	664	724	758	897
2800	206	222	238	270	304	334	365	396	428	459	491	524	557	623	684	746	781	924
2900	212	228	245	278	313	344	376	408	440	473	506	539	573	642	704	768	803	951
3000	218	235	252	286	322	354	387	419	453	486	520	554	589	660	724	789	826	977
3200	230	248	266	302	339	373	408	442	477	513	548	584	621	695	763	831	870	1029
3400	242	261	279	317	357	392	428	464	501	538	576	613	652	729	800	872	913	1079
3600	254	273	293	332	373	411	448	486	524	563	602	642	682	763	837	912	954	1128
3800	265	285	305	347	390	429	468	507	547	588	628	669	711	796	873	951	995	1175
4000	276	297	318	361	406	446	487	528	569	611	654	696	739	827	907	988	1034	1221
4200	287	308	330	375	421	463	505	548	591	634	678	722	767	858	941	1024	1072	1265
4400	297	319	342	389	436	479	523	567	612	656	702	748	794	888	973	1060	1108	1308
4600	307	330	354	402	451	495	540	586	632	678	725	772	820	916	1005	1093	1144	1349
4800	317	341	365	414	465	511	557	604	651	699	747	795	844	944	1035	1126	1178	1389
5000	326	351	376	427	479	526	574	622	670	719	768	818	868	971	1064	1157	1211	1427
5500	349	375	401	455	511	561	612	663	714	766	818	871	924	1032	1131	1230	1286	1515
6000	369	397	425	481	540	592	646	699	753	808	863	918	974	1087	1190	1294	1353	1591
6500	387	416	445	504	565	620	676	731	787	844	901	959	1017	1134	1241	1349	1409	
7000	403	433	463	524	587	644	701	759	816	875	934	993	1053	1174	1283	1393	1456	
7500																		
8000																		
8500																		
9000																		

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for Ceptor-VI Type S5M (per width of 10 mm and length of 800 mm)

(Unit: kW)

No. of teeth of pinion	14	16	18	20	22	24	25	26	28	30	32	34	36	40	42	44	48	50	60
Pitch diameter (mm)	22.28	25.46	28.65	31.83	35.01	38.20	39.79	41.38	44.56	47.75	50.93	54.11	57.30	63.66	66.85	70.03	76.39	79.58	95.49
Pinion revolution (rpm) 50	0.04	0.05	0.05	0.06	0.07	0.08	0.08	0.09	0.09	0.10	0.11	0.12	0.13	0.15	0.16	0.17	0.18	0.19	0.22
100	0.08	0.09	0.10	0.12	0.13	0.15	0.16	0.16	0.18	0.19	0.21	0.23	0.25	0.29	0.30	0.31	0.34	0.35	0.42
200	0.14	0.17	0.20	0.22	0.25	0.27	0.30	0.31	0.34	0.37	0.40	0.43	0.47	0.54	0.56	0.59	0.64	0.66	0.78
300	0.21	0.24	0.28	0.32	0.36	0.40	0.43	0.44	0.49	0.53	0.58	0.63	0.67	0.78	0.82	0.85	0.92	0.96	1.13
400	0.27	0.32	0.37	0.42	0.47	0.52	0.56	0.58	0.63	0.69	0.75	0.81	0.88	1.01	1.06	1.10	1.20	1.24	1.46
500	0.33	0.39	0.45	0.51	0.57	0.63	0.68	0.71	0.77	0.84	0.92	1.00	1.07	1.24	1.30	1.35	1.46	1.52	1.79
600	0.40	0.46	0.53	0.60	0.67	0.75	0.80	0.83	0.91	0.99	1.09	1.17	1.26	1.46	1.53	1.59	1.72	1.79	2.10
700	0.45	0.53	0.61	0.69	0.77	0.86	0.92	0.96	1.05	1.14	1.25	1.35	1.45	1.68	1.75	1.83	1.98	2.05	2.42
800	0.51	0.60	0.69	0.78	0.87	0.97	1.04	1.08	1.18	1.29	1.41	1.52	1.64	1.89	1.98	2.06	2.23	2.31	2.72
900	0.57	0.66	0.77	0.87	0.97	1.08	1.16	1.20	1.31	1.43	1.57	1.69	1.82	2.10	2.20	2.29	2.48	2.57	3.02
1000	0.63	0.73	0.84	0.95	1.07	1.18	1.27	1.32	1.44	1.57	1.72	1.86	2.00	2.31	2.41	2.52	2.72	2.82	3.32
1100	0.68	0.79	0.92	1.04	1.16	1.29	1.39	1.44	1.57	1.71	1.87	2.02	2.17	2.52	2.63	2.74	2.96	3.07	3.61
1200	0.74	0.86	0.99	1.12	1.26	1.39	1.50	1.55	1.70	1.85	2.03	2.19	2.35	2.72	2.84	2.96	3.20	3.32	3.90
1300	0.80	0.92	1.07	1.21	1.35	1.50	1.61	1.67	1.82	1.99	2.18	2.35	2.52	2.92	3.05	3.18	3.43	3.56	4.19
1400	0.85	0.99	1.14	1.29	1.44	1.60	1.72	1.78	1.95	2.12	2.32	2.51	2.69	3.12	3.25	3.39	3.67	3.80	4.47
1500	0.90	1.05	1.21	1.37	1.53	1.70	1.83	1.89	2.07	2.25	2.47	2.66	2.86	3.31	3.46	3.61	3.90	4.04	4.75
1600	0.96	1.11	1.29	1.45	1.62	1.80	1.94	2.00	2.19	2.39	2.61	2.82	3.03	3.51	3.66	3.82	4.12	4.28	5.03
1700	1.01	1.17	1.36	1.53	1.71	1.90	2.04	2.12	2.31	2.52	2.76	2.98	3.20	3.70	3.86	4.03	4.35	4.51	5.30
1800	1.06	1.23	1.43	1.61	1.80	2.00	2.15	2.22	2.43	2.65	2.90	3.13	3.36	3.89	4.06	4.23	4.57	4.74	5.57
1900	1.12	1.29	1.50	1.69	1.89	2.09	2.25	2.33	2.55	2.78	3.04	3.28	3.53	4.08	4.26	4.44	4.79	4.97	5.84
2000	1.17	1.35	1.57	1.77	1.98	2.19	2.36	2.44	2.67	2.90	3.18	3.43	3.69	4.26	4.45	4.64	5.01	5.20	6.10
2100	1.22	1.41	1.64	1.85	2.06	2.29	2.46	2.55	2.79	3.03	3.32	3.58	3.85	4.45	4.64	4.84	5.23	5.42	6.37
2200	1.27	1.47	1.71	1.92	2.15	2.38	2.56	2.65	2.90	3.16	3.46	3.73	4.01	4.63	4.84	5.04	5.44	5.64	6.63
2300	1.32	1.53	1.77	2.00	2.23	2.48	2.66	2.76	3.02	3.28	3.59	3.88	4.16	4.81	5.03	5.24	5.65	5.86	6.88
2400	1.37	1.59	1.84	2.08	2.32	2.57	2.76	2.86	3.13	3.40	3.73	4.02	4.32	4.99	5.21	5.43	5.87	6.08	7.14
2500	1.42	1.65	1.91	2.15	2.40	2.66	2.86	2.96	3.24	3.53	3.86	4.16	4.48	5.17	5.40	5.63	6.07	6.30	7.39
2600	1.47	1.70	1.97	2.23	2.49	2.75	2.96	3.07	3.35	3.65	3.99	4.31	4.63	5.35	5.58	5.82	6.28	6.51	7.64
2700	1.52	1.76	2.04	2.30	2.57	2.84	3.06	3.17	3.46	3.77	4.13	4.45	4.78	5.52	5.77	6.01	6.49	6.72	7.89
2800	1.57	1.82	2.10	2.37	2.65	2.93	3.16	3.27	3.57	3.89	4.26	4.59	4.93	5.70	5.95	6.20	6.69	6.93	8.14
2900	1.62	1.87	2.17	2.44	2.73	3.02	3.25	3.37	3.68	4.00	4.38	4.73	5.08	5.87	6.13	6.38	6.89	7.14	8.38
3000	1.66	1.93	2.23	2.52	2.81	3.11	3.35	3.47	3.79	4.12	4.51	4.87	5.23	6.04	6.30	6.57	7.09	7.35	8.62
3200	1.76	2.04	2.36	2.66	2.97	3.29	3.54	3.66	4.00	4.35	4.76	5.14	5.52	6.37	6.65	6.93	7.48	7.75	9.09
3400	1.85	2.15	2.48	2.80	3.12	3.46	3.72	3.85	4.21	4.58	5.01	5.40	5.81	6.70	7.00	7.29	7.87	8.15	9.56
3600	1.94	2.25	2.60	2.94	3.28	3.63	3.90	4.04	4.42	4.80	5.26	5.67	6.09	7.03	7.33	7.64	8.24	8.54	10.02
3800	2.03	2.36	2.72	3.07	3.43	3.80	4.08	4.22	4.62	5.02	5.49	5.92	6.36	7.34	7.66	7.98	8.61	8.93	10.46
4000	2.12	2.46	2.84	3.20	3.57	3.96	4.25	4.40	4.81	5.23	5.73	6.17	6.63	7.65	7.99	8.32	8.97	9.30	10.90
4200	2.21	2.56	2.96	3.33	3.72	4.12	4.43	4.58	5.01	5.44	5.96	6.42	6.89	7.96	8.30	8.65	9.33	9.67	11.32
4400	2.29	2.66	3.07	3.46	3.86	4.27	4.59	4.75	5.20	5.65	6.18	6.66	7.15	8.25	8.61	8.97	9.67	10.02	11.74
4600	2.38	2.75	3.18	3.58	4.00	4.43	4.76	4.92	5.38	5.85	6.40	6.90	7.41	8.54	8.92	9.28	10.01	10.37	12.15
4800	2.46	2.85	3.29	3.71	4.13	4.58	4.92	5.09	5.56	6.05	6.61	7.13	7.65	8.83	9.21	9.59	10.34	10.71	12.54
5000	2.54	2.94	3.40	3.83	4.27	4.72	5.08	5.25	5.74	6.24	6.82	7.35	7.89	9.10	9.50	9.89	10.66	11.05	12.93
5500	2.73	3.16	3.65	4.11	4.58	5.07	5.45	5.64	6.16	6.69	7.32	7.89	8.47	9.76	10.18	10.60	11.43	11.84	13.84
6000	2.91	3.37	3.89	4.38	4.88	5.40	5.80	6.00	6.56	7.12	7.79	8.39	9.00	10.38	10.82	11.26	12.14	12.57	14.69
6500	3.08	3.56	4.11	4.63	5.16	5.70	6.13	6.34	6.92	7.52	8.22	8.85	9.49	10.94	11.41	11.87	12.79	13.24	15.46
7000	3.24	3.74	4.32	4.86	5.41	5.98	6.43	6.65	7.25	7.88	8.61	9.27	9.94	11.45	11.94	12.42	13.38	13.85	16.16
7500	3.38	3.90	4.50	5.07	5.64	6.23	6.70	6.93	7.56	8.20	8.96	9.65	10.35	11.91	12.41	12.91	13.90	14.39	16.77
8000	3.51	4.05	4.67	5.25	5.85	6.46	6.94	7.17	7.82	8.49	9.27	9.98	10.70	12.31	12.83	13.34	14.36	14.86	17.30
8500	3.62	4.18	4.82	5.42	6.03	6.66	7.15	7.39	8.06	8.74	9.54	10.26	11.00	12.65	13.18	13.71	14.74	15.25	17.74
9000	3.72	4.29	4.95	5.55	6.18	6.82	7.32	7.57	8.25	8.95	9.77	10.50	11.25	12.93	13.47	14.00	15.05	15.57	18.09

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for Ceptor-VI Type S8M (per width of 60 mm and length of 1200 mm)

(Unit: kW)

No. of teeth of pinion	20	22	24	26	28	30	32	34	36	40	44	48	50	60	72	84	96	120
Pitch diameter (mm)	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	101.86	112.05	122.23	127.32	152.79	183.35	213.90	244.46	305.58
Pinion revolution (rpm)																		
50	0.84	1.00	1.16	1.33	1.51	1.70	1.88	2.06	2.25	2.60	2.97	3.32	3.48	4.24	5.07	5.84	6.59	8.08
100	1.60	1.90	2.20	2.52	2.86	3.22	3.55	3.90	4.26	4.91	5.60	6.26	6.57	8.00	9.55	10.98	12.40	15.18
200	3.01	3.59	4.15	4.75	5.39	6.06	6.69	7.34	8.02	9.24	10.54	11.78	12.35	15.03	17.91	20.59	23.23	28.40
300	4.36	5.20	6.01	6.88	7.80	8.77	9.67	10.61	11.59	13.36	15.23	17.01	17.84	21.69	25.83	29.67	33.46	40.87
400	5.67	6.76	7.81	8.93	10.12	11.38	12.55	13.77	15.04	17.33	19.75	22.06	23.12	28.11	33.45	38.41	43.29	52.85
500	6.94	8.27	9.56	10.93	12.39	13.93	15.36	16.84	18.39	21.19	24.14	26.96	28.26	34.34	40.85	46.89	52.83	64.46
600	8.19	9.76	11.27	12.89	14.60	16.42	18.10	19.85	21.67	24.97	28.44	31.75	33.28	40.42	48.07	55.16	62.13	75.76
700	9.41	11.21	12.95	14.81	16.78	18.86	20.79	22.80	24.89	28.66	32.64	36.45	38.20	46.38	55.13	63.25	71.22	86.82
800	10.62	12.64	14.60	16.69	18.91	21.26	23.43	25.69	28.05	32.30	36.78	41.05	43.03	52.23	62.06	71.18	80.14	97.65
900	11.80	14.05	16.23	18.55	21.01	23.62	26.03	28.54	31.16	35.87	40.84	45.59	47.78	57.97	68.87	78.98	88.90	108.27
1000	12.97	15.44	17.83	20.38	23.08	25.94	28.59	31.35	34.22	39.39	44.84	50.05	52.45	63.63	75.57	86.64	97.50	118.72
1100	14.12	16.81	19.41	22.19	25.13	28.24	31.12	34.12	37.24	42.86	48.79	54.44	57.06	69.20	82.17	94.18	105.97	128.99
1200	15.26	18.17	20.98	23.97	27.14	30.50	33.61	36.85	40.21	46.28	52.68	58.78	61.60	74.69	88.67	101.61	114.31	139.10
1300	16.39	19.50	22.52	25.73	29.14	32.74	36.07	39.54	43.15	49.66	56.52	63.06	66.07	80.10	95.08	108.94	122.53	149.05
1400	17.50	20.83	24.04	27.47	31.10	34.94	38.50	42.20	46.05	52.99	60.31	67.28	70.49	85.45	101.40	116.16	130.63	158.86
1500	18.60	22.13	25.55	29.19	33.05	37.13	40.90	44.83	48.92	56.29	64.05	71.44	74.86	90.72	107.63	123.28	138.62	168.52
1600	19.68	23.42	27.03	30.88	34.97	39.28	43.27	47.43	51.75	59.54	67.74	75.56	79.16	95.92	113.78	130.30	146.49	178.05
1700	20.76	24.70	28.50	32.56	36.86	41.41	45.61	49.99	54.55	62.75	71.39	79.62	83.42	101.05	119.85	137.23	154.25	187.44
1800	21.82	25.96	29.96	34.22	38.74	43.51	47.93	52.53	57.31	65.92	74.99	83.63	87.61	106.12	125.84	144.06	161.91	196.70
1900	22.87	27.21	31.40	35.86	40.59	45.59	50.22	55.03	60.04	69.05	78.55	87.59	91.76	111.12	131.75	150.80	169.47	205.82
2000	23.91	28.44	32.82	37.48	42.42	47.65	52.48	57.51	62.74	72.15	82.06	91.50	95.85	116.06	137.58	157.45	176.91	214.81
2200	25.95	30.86	35.61	40.66	46.02	51.68	56.92	62.36	68.03	78.22	88.95	99.17	103.89	125.74	149.00	170.47	191.50	232.41
2400	27.94	33.23	38.33	43.77	49.53	55.62	61.25	67.10	73.19	84.15	95.68	106.65	111.71	135.17	160.12	183.14	205.66	249.49
2600	29.89	35.54	41.00	46.80	52.96	59.46	65.47	71.72	78.23	89.92	102.22	113.93	119.32	144.34	170.92	195.43	219.41	266.04
2800	31.79	37.79	43.59	49.76	56.30	63.21	69.58	76.22	83.12	95.53	108.59	121.01	126.73	153.24	181.41	207.36	232.74	282.07
3000	33.64	39.99	46.12	52.64	59.55	66.85	73.59	80.60	87.89	100.99	114.77	127.88	133.92	161.89	191.57	218.91	245.64	297.57
3200	35.44	42.13	48.58	55.44	62.71	70.39	77.47	84.85	92.52	106.29	120.78	134.55	140.89	170.26	201.41	230.09	258.11	312.52
3400	37.19	44.20	50.96	58.16	65.78	73.82	81.25	88.98	97.00	111.43	126.59	141.01	147.64	178.36	210.92	240.87	270.13	
3600	38.90	46.22	53.28	60.79	68.75	77.15	84.90	92.97	101.35	116.39	132.21	147.25	154.16	186.17	220.08	251.25	281.70	
3800	40.54	48.17	55.52	63.34	71.63	80.37	88.44	96.83	105.54	121.19	137.64	153.26	160.45	193.70	228.89	261.23	292.79	
4000	42.14	50.06	57.69	65.81	74.41	83.48	91.84	100.55	109.59	125.81	142.86	159.05	166.50	200.93	237.34	270.78		
4500	45.88	54.48	62.77	71.57	80.90	90.73	99.80	109.22	119.01	136.56	155.00	172.49	180.53	217.65	256.83	292.76		
5000	49.25	58.46	67.32	76.74	86.70	97.21	106.89	116.95	127.40	146.10	165.74	184.36	192.90	232.32	273.85			
5500	52.22	61.96	71.32	81.26	91.78	102.87	113.07	123.67	134.67	154.35	174.99	194.55	203.52	244.81				
6000	54.77	64.95	74.72	85.10	96.07	107.63	118.26	129.30	140.75	161.21	182.66	202.95	212.24	254.97				

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for HP-STS Type S5M (per width of 10 mm and length of 800 mm)

(Unit: kW)

No. of teeth of pinion		14	16	18	20	22	24	25	26	28	30	32	34	36	40	42	44	48	50	60
Pitch diameter (mm)		22.28	25.46	28.65	31.83	35.01	38.20	39.79	41.38	44.56	47.75	50.93	54.11	57.30	63.66	66.85	70.03	76.39	79.58	95.49
Pinion revolution (rpm)	50	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.11	0.12	0.12	0.15
	100	0.05	0.06	0.07	0.08	0.09	0.10	0.10	0.11	0.12	0.13	0.14	0.15	0.16	0.19	0.20	0.21	0.23	0.23	0.28
	200	0.10	0.11	0.13	0.15	0.17	0.18	0.20	0.20	0.22	0.24	0.27	0.29	0.31	0.36	0.38	0.39	0.43	0.44	0.52
	300	0.14	0.16	0.19	0.21	0.24	0.26	0.29	0.30	0.32	0.35	0.39	0.42	0.45	0.52	0.54	0.57	0.61	0.64	0.75
	400	0.18	0.21	0.25	0.28	0.31	0.34	0.37	0.38	0.42	0.46	0.50	0.54	0.58	0.68	0.71	0.74	0.80	0.83	0.97
	500	0.22	0.26	0.30	0.34	0.38	0.42	0.45	0.47	0.51	0.56	0.61	0.66	0.71	0.83	0.86	0.90	0.97	1.01	1.19
	600	0.26	0.31	0.35	0.40	0.45	0.50	0.54	0.55	0.61	0.66	0.72	0.78	0.84	0.97	1.02	1.06	1.15	1.19	1.40
	700	0.30	0.35	0.41	0.46	0.52	0.57	0.62	0.64	0.70	0.76	0.83	0.90	0.97	1.12	1.17	1.22	1.32	1.37	1.61
	800	0.34	0.40	0.46	0.52	0.59	0.64	0.69	0.72	0.79	0.86	0.94	1.01	1.09	1.26	1.32	1.37	1.49	1.54	1.81
	900	0.38	0.44	0.51	0.58	0.65	0.72	0.77	0.80	0.87	0.95	1.04	1.13	1.21	1.40	1.46	1.53	1.65	1.71	2.02
	1000	0.42	0.49	0.56	0.64	0.72	0.79	0.85	0.88	0.96	1.05	1.15	1.24	1.33	1.54	1.61	1.68	1.81	1.88	2.21
	1100	0.46	0.53	0.61	0.69	0.78	0.86	0.92	0.96	1.05	1.14	1.25	1.35	1.45	1.68	1.75	1.83	1.97	2.05	2.41
	1200	0.49	0.57	0.66	0.75	0.85	0.93	1.00	1.03	1.13	1.23	1.35	1.46	1.57	1.81	1.89	1.97	2.13	2.21	2.60
	1300	0.53	0.62	0.71	0.80	0.91	1.00	1.07	1.11	1.22	1.32	1.45	1.56	1.68	1.95	2.03	2.12	2.29	2.37	2.79
	1400	0.57	0.66	0.76	0.86	0.97	1.07	1.15	1.19	1.30	1.41	1.55	1.67	1.80	2.08	2.17	2.26	2.44	2.53	2.98
	1500	0.60	0.70	0.81	0.91	1.03	1.13	1.22	1.26	1.38	1.50	1.65	1.78	1.91	2.21	2.31	2.40	2.60	2.69	3.17
	1600	0.64	0.74	0.86	0.97	1.10	1.20	1.29	1.34	1.46	1.59	1.74	1.88	2.02	2.34	2.44	2.54	2.75	2.85	3.35
	1700	0.67	0.78	0.91	1.02	1.16	1.27	1.36	1.41	1.54	1.68	1.84	1.98	2.13	2.47	2.57	2.68	2.90	3.01	3.53
	1800	0.71	0.82	0.95	1.07	1.22	1.33	1.43	1.48	1.62	1.77	1.93	2.09	2.24	2.59	2.71	2.82	3.05	3.16	3.71
	1900	0.74	0.86	1.00	1.13	1.28	1.40	1.50	1.56	1.70	1.85	2.03	2.19	2.35	2.72	2.84	2.96	3.19	3.31	3.89
	2000	0.78	0.90	1.05	1.18	1.33	1.46	1.57	1.63	1.78	1.94	2.12	2.29	2.46	2.84	2.97	3.09	3.34	3.46	4.07
	2100	0.81	0.94	1.09	1.23	1.39	1.52	1.64	1.70	1.86	2.02	2.21	2.39	2.57	2.97	3.10	3.23	3.49	3.61	4.24
	2200	0.85	0.98	1.14	1.28	1.45	1.59	1.71	1.77	1.93	2.10	2.30	2.49	2.67	3.09	3.22	3.36	3.63	3.76	4.42
	2300	0.88	1.02	1.18	1.33	1.51	1.65	1.78	1.84	2.01	2.19	2.40	2.58	2.78	3.21	3.35	3.49	3.77	3.91	4.59
	2400	0.91	1.06	1.23	1.38	1.57	1.71	1.84	1.91	2.09	2.27	2.49	2.68	2.88	3.33	3.48	3.62	3.91	4.05	4.76
	2500	0.95	1.10	1.27	1.43	1.62	1.77	1.91	1.98	2.16	2.35	2.57	2.78	2.98	3.45	3.60	3.75	4.05	4.20	4.93
	2600	0.98	1.14	1.32	1.48	1.68	1.84	1.97	2.04	2.24	2.43	2.66	2.87	3.09	3.57	3.72	3.88	4.19	4.34	5.10
	2700	1.01	1.17	1.36	1.53	1.73	1.90	2.04	2.11	2.31	2.51	2.75	2.97	3.19	3.68	3.84	4.00	4.32	4.48	5.26
	2800	1.05	1.21	1.40	1.58	1.79	1.96	2.10	2.18	2.38	2.59	2.84	3.06	3.29	3.80	3.96	4.13	4.46	4.62	5.42
	2900	1.08	1.25	1.45	1.63	1.84	2.02	2.17	2.24	2.45	2.67	2.92	3.15	3.39	3.91	4.08	4.25	4.59	4.76	5.59
	3000	1.11	1.29	1.49	1.68	1.90	2.08	2.23	2.31	2.53	2.75	3.01	3.24	3.49	4.03	4.20	4.38	4.73	4.90	5.75
	3200	1.17	1.36	1.57	1.77	2.00	2.19	2.36	2.44	2.67	2.90	3.18	3.42	3.68	4.25	4.44	4.62	4.99	5.17	6.06
	3400	1.23	1.43	1.65	1.87	2.11	2.31	2.48	2.57	2.81	3.05	3.34	3.60	3.87	4.47	4.66	4.86	5.24	5.43	6.37
	3600	1.30	1.50	1.74	1.96	2.21	2.42	2.60	2.69	2.94	3.20	3.50	3.78	4.06	4.68	4.89	5.09	5.50	5.70	6.68
	3800	1.36	1.57	1.82	2.05	2.31	2.53	2.72	2.82	3.08	3.35	3.66	3.95	4.24	4.90	5.11	5.32	5.74	5.95	6.97
	4000	1.41	1.64	1.89	2.14	2.41	2.64	2.84	2.94	3.21	3.49	3.82	4.12	4.42	5.10	5.32	5.55	5.98	6.20	7.27
	4200	1.47	1.70	1.97	2.22	2.51	2.74	2.95	3.05	3.34	3.63	3.97	4.28	4.60	5.31	5.54	5.77	6.22	6.44	7.55
	4400	1.53	1.77	2.05	2.31	2.61	2.85	3.06	3.17	3.46	3.77	4.12	4.44	4.77	5.50	5.74	5.98	6.45	6.68	7.83
	4600	1.58	1.83	2.12	2.39	2.70	2.95	3.17	3.28	3.59	3.90	4.27	4.60	4.94	5.70	5.94	6.19	6.68	6.92	8.10
	4800	1.64	1.90	2.19	2.47	2.79	3.05	3.28	3.39	3.71	4.03	4.41	4.75	5.10	5.89	6.14	6.39	6.89	7.14	8.36
	5000	1.69	1.96	2.26	2.55	2.88	3.15	3.38	3.50	3.83	4.16	4.55	4.90	5.26	6.07	6.33	6.59	7.11	7.36	8.62
	5500	1.82	2.11	2.43	2.74	3.10	3.38	3.63	3.76	4.11	4.46	4.88	5.26	5.64	6.51	6.79	7.07	7.62	7.89	9.23
	6000	1.94	2.25	2.59	2.92	3.30	3.60	3.87	4.00	4.37	4.75	5.19	5.59	6.00	6.92	7.21	7.51	8.09	8.38	9.79
	6500	2.05	2.37	2.74	3.09	3.48	3.80	4.09	4.23	4.61	5.01	5.48	5.90	6.33	7.29	7.61	7.91	8.53	8.83	10.31
	7000	2.16	2.49	2.88	3.24	3.65	3.99	4.28	4.43	4.84	5.25	5.74	6.18	6.63	7.64	7.96	8.28	8.92	9.23	10.77
	7500	2.25	2.60	3.00	3.38	3.81	4.16	4.46	4.62	5.04	5.47	5.98	6.43	6.90	7.94	8.28	8.61	9.27	9.59	11.18
	8000	2.34	2.70	3.11	3.50	3.95	4.31	4.62	4.78	5.22	5.66	6.18	6.65	7.13	8.21	8.55	8.90	9.57	9.90	11.54
	8500	2.42	2.79	3.21	3.61	4.07	4.44	4.76	4.93	5.37	5.83	6.36	6.84	7.34	8.44	8.79	9.14	9.83	10.17	11.83
	9000	2.48	2.86	3.30	3.70	4.17	4.55	4.88	5.05	5.50	5.96	6.51	7.00	7.50	8.62	8.98	9.33	10.03	10.38	12.06

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for HP-STS Type S8M / HP-HTS Type 8M (per width of 60 mm and length of 1200 mm) (Unit: kW)

No. of teeth of pinion	20	22	24	26	28	30	32	34	36	40	44	48	50	60	72	84	96	120
Pitch diameter (mm)	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	101.86	112.05	122.23	127.32	152.79	183.35	213.90	244.46	305.58
Pinion revolution (rpm)																		
50	0.56	0.67	0.77	0.89	1.01	1.13	1.25	1.37	1.50	1.73	1.98	2.21	2.32	2.83	3.38	3.89	4.40	5.39
100	1.06	1.27	1.47	1.68	1.90	2.14	2.37	2.60	2.84	3.27	3.73	4.18	4.38	5.34	6.36	7.32	8.27	10.12
200	2.01	2.39	2.77	3.17	3.59	4.04	4.46	4.89	5.34	6.16	7.03	7.85	8.24	10.02	11.94	13.73	15.48	18.93
300	2.91	3.47	4.01	4.58	5.20	5.85	6.45	7.07	7.73	8.91	10.15	11.34	11.89	14.46	17.22	19.78	22.30	27.25
400	3.78	4.50	5.21	5.95	6.75	7.59	8.37	9.18	10.03	11.55	13.16	14.70	15.42	18.74	22.30	25.61	28.86	35.23
500	4.63	5.52	6.37	7.29	8.26	9.29	10.24	11.23	12.26	14.13	16.09	17.97	18.84	22.89	27.23	31.26	35.22	42.97
600	5.46	6.50	7.51	8.59	9.73	10.94	12.06	13.23	14.45	16.64	18.96	21.17	22.19	26.95	32.04	36.77	41.42	50.51
700	6.28	7.47	8.63	9.87	11.18	12.57	13.86	15.20	16.59	19.11	21.76	24.30	25.47	30.92	36.75	42.17	47.48	57.88
800	7.08	8.43	9.74	11.13	12.61	14.17	15.62	17.13	18.70	21.53	24.52	27.37	28.69	34.82	41.38	47.46	53.43	65.10
900	7.87	9.37	10.82	12.37	14.01	15.74	17.35	19.03	20.77	23.91	27.23	30.39	31.85	38.65	45.92	52.65	59.26	72.18
1000	8.65	10.29	11.89	13.59	15.39	17.30	19.06	20.90	22.81	26.26	29.90	33.37	34.97	42.42	50.38	57.76	65.00	79.14
1100	9.42	11.21	12.94	14.79	16.75	18.83	20.74	22.74	24.82	28.57	32.53	36.30	38.04	46.13	54.78	62.79	70.65	85.99
1200	10.17	12.11	13.98	15.98	18.10	20.33	22.41	24.56	26.81	30.86	35.12	39.19	41.06	49.79	59.11	67.74	76.21	92.73
1300	10.92	13.00	15.01	17.15	19.42	21.82	24.05	26.36	28.77	33.11	37.68	42.04	44.05	53.40	63.39	72.62	81.69	99.37
1400	11.67	13.88	16.03	18.31	20.74	23.30	25.67	28.13	30.70	35.33	40.20	44.85	47.00	56.96	67.60	77.44	87.09	105.91
1500	12.40	14.75	17.03	19.46	22.03	24.75	27.27	29.89	32.61	37.52	42.70	47.63	49.90	60.48	71.75	82.18	92.41	112.35
1600	13.12	15.61	18.02	20.59	23.31	26.19	28.85	31.62	34.50	39.69	45.16	50.37	52.78	63.95	75.85	86.87	97.66	118.70
1700	13.84	16.46	19.00	21.71	24.58	27.61	30.41	33.33	36.36	41.83	47.59	53.08	55.61	67.37	79.90	91.48	102.84	124.96
1800	14.55	17.31	19.97	22.81	25.83	29.01	31.95	35.02	38.21	43.95	49.99	55.75	58.41	70.75	83.89	96.04	107.94	131.13
1900	15.24	18.14	20.93	23.91	27.06	30.40	33.48	36.69	40.03	46.04	52.36	58.39	61.17	74.08	87.83	100.53	112.98	137.21
2000	15.94	18.96	21.88	24.99	28.28	31.76	34.98	38.34	41.82	48.10	54.71	61.00	63.90	77.37	91.72	104.97	117.94	143.21
2200	17.30	20.57	23.74	27.11	30.68	34.46	37.94	41.58	45.35	52.15	59.30	66.12	69.26	83.83	99.34	113.65	127.66	154.94
2400	18.63	22.15	25.56	29.18	33.02	37.08	40.83	44.74	48.80	56.10	63.78	71.10	74.47	90.11	106.75	122.09	137.11	166.32
2600	19.92	23.69	27.33	31.20	35.31	39.64	43.65	47.82	52.15	59.94	68.15	75.95	79.55	96.22	113.95	130.29	146.28	177.36
2800	21.19	25.20	29.06	33.17	37.53	42.14	46.39	50.82	55.42	63.69	72.39	80.67	84.49	102.16	120.94	138.24	155.16	188.05
3000	22.43	26.66	30.75	35.09	39.70	44.57	49.06	53.73	58.59	67.33	76.52	85.26	89.28	107.92	127.72	145.94	163.76	198.38
3200	23.63	28.09	32.38	36.96	41.81	46.93	51.65	56.57	61.68	70.86	80.52	89.70	93.93	113.51	134.28	153.39	172.07	208.34
3400	24.80	29.47	33.98	38.77	43.85	49.22	54.17	59.32	64.67	74.28	84.39	94.00	98.43	118.90	140.61	160.58	180.09	
3600	25.93	30.81	35.52	40.53	45.83	51.43	56.60	61.98	67.57	77.60	88.14	98.16	102.78	124.11	146.72	167.50	187.80	
3800	27.03	32.12	37.02	42.23	47.75	53.58	58.96	64.55	70.36	80.79	91.76	102.18	106.97	129.13	152.59	174.15	195.19	
4000	28.09	33.37	38.46	43.87	49.60	55.65	61.23	67.03	73.06	83.87	95.24	106.04	111.00	133.95	158.23	180.52		
4500	30.59	36.32	41.84	47.71	53.93	60.49	66.53	72.82	79.34	91.04	103.33	114.99	120.35	145.10	171.22	195.17		
5000	32.83	38.97	44.88	51.16	57.80	64.81	71.26	77.97	84.93	97.40	110.49	122.91	128.60	154.88				
5500	34.81	41.31	47.55	54.17	61.19	68.58	75.38	82.45	89.78	102.90	116.66	129.70	135.68	163.21				
6000	36.51	43.30	49.81	56.73	64.05	71.76	78.84	86.20	93.83	107.47	121.77	135.30	141.49	169.98				

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for HP-STS Type S14M (per width of 120 mm and length of 1400 mm)

(Unit: kW)

No. of teeth of pinion	28	30	32	34	36	40	42	44	48	50	54	60	64	72	84	96	120	144
Pitch diameter (mm)	124.78	133.69	142.60	151.52	160.43	178.25	187.17	196.08	213.90	222.82	240.64	267.38	285.21	320.86	374.33	427.81	534.76	641.71
Pinion revolution (rpm) 20	2.16	2.43	2.68	2.95	3.22	3.72	3.98	4.25	4.75	4.98	5.41	6.08	2.56	7.26	8.37	9.46	11.61	13.72
40	4.09	4.61	5.08	5.58	6.10	7.04	7.53	8.04	8.99	9.43	10.22	11.49	5.11	13.72	15.79	17.84	21.86	25.81
50	5.02	5.66	6.24	6.85	7.49	8.64	9.24	9.86	11.03	11.57	12.54	14.10	6.39	16.82	19.36	21.86	26.79	31.61
60	5.94	6.69	7.38	8.10	8.85	10.21	10.92	11.65	13.03	13.67	14.82	16.65	7.67	19.86	22.86	25.81	31.61	37.29
80	7.74	8.71	9.60	10.54	11.52	13.29	14.21	15.16	16.95	17.78	19.27	21.65	10.23	25.81	29.69	33.52	41.03	48.38
100	9.49	10.68	11.78	12.93	14.13	16.29	17.42	18.58	20.77	21.78	23.61	26.52	12.78	31.61	36.35	41.03	50.20	59.17
150	13.74	15.46	17.05	18.71	20.44	23.57	25.20	26.87	30.03	31.49	34.12	38.31	19.16	45.63	52.45	59.16	72.32	85.19
200	17.86	20.08	22.15	24.30	26.55	30.60	32.71	34.88	38.96	40.86	44.26	49.68	25.52	59.15	67.96	76.63	93.61	110.20
250	21.87	24.59	27.12	29.75	32.49	37.44	40.02	42.67	47.66	49.97	54.12	60.74	31.87	72.29	83.03	93.59	114.27	134.46
300	25.79	29.00	31.98	35.08	38.31	44.14	47.18	50.29	56.17	58.89	63.77	71.55	38.19	85.13	97.75	110.15	134.42	158.11
350	29.65	33.33	36.75	40.31	44.02	50.71	54.19	57.77	64.51	67.63	73.23	82.15	44.49	97.71	112.16	126.36	154.15	181.25
400	33.44	37.60	41.44	45.46	49.63	57.17	61.10	65.12	72.71	76.22	82.52	92.57	50.75	110.07	126.32	142.28	173.50	203.94
450	37.18	41.80	46.07	50.53	55.17	63.54	67.89	72.36	80.79	84.68	91.68	102.82	56.98	122.23	140.24	157.93	192.52	226.23
500	40.87	45.94	50.63	55.53	60.62	69.81	74.59	79.50	88.75	93.03	100.70	112.92	63.17	134.21	153.95	173.34	211.24	248.16
600	48.11	54.07	59.59	65.34	71.33	82.13	87.74	93.50	104.37	109.38	118.38	132.72	75.40	157.68	180.80	203.51	247.87	291.05
700	55.19	62.02	68.34	74.93	81.79	94.15	100.58	107.18	119.61	125.35	135.64	152.04	87.41	180.56	206.97	232.90	283.51	332.76
800	62.12	69.81	76.91	84.32	92.03	105.92	113.14	120.55	134.51	140.96	152.51	170.92	99.17	202.91	232.52	261.58	318.28	373.41
900	68.92	77.43	85.31	93.52	102.06	117.44	125.44	133.65	149.10	156.24	169.02	189.39	110.63	224.76	257.49	289.59	352.21	413.06
1000	75.58	84.92	93.55	102.54	111.89	128.74	137.50	146.48	163.40	171.20	185.19	207.47	121.77	246.15	281.92	316.99	385.36	451.78
1100	82.13	92.26	101.62	111.38	121.53	139.81	149.31	159.06	177.40	185.87	201.03	225.17	132.54	267.08	305.81	343.77	417.76	489.59
1200	88.54	99.46	109.55	120.06	130.99	150.66	160.89	171.38	191.13	200.23	216.54	242.51	142.91	287.56	329.18	369.97	449.41	526.51
1300	94.84	106.52	117.32	128.57	140.26	161.31	172.25	183.47	204.58	214.31	231.74	259.49	152.84	307.61	352.05	395.58	480.34	562.56
1400	101.02	113.45	124.94	136.91	149.35	171.73	183.37	195.30	217.75	228.10	246.62	276.12	162.29	327.23	374.41	420.61	510.54	597.73
1500	107.08	120.25	132.41	145.08	158.25	181.95	194.27	206.90	230.65	241.59	261.19	292.38	171.23	346.41	396.26	445.06	540.02	632.04
1600	113.02	126.90	139.73	153.09	166.98	191.95	204.94	218.24	243.27	254.80	275.43	308.28	179.63	365.15	417.60	468.93	568.77	
1700	118.83	133.42	146.90	160.93	175.51	201.74	215.37	229.34	255.61	267.71	289.36	323.82	187.44	383.45	438.43	492.21	596.79	
1800	124.52	139.80	153.91	168.60	183.86	211.31	225.57	240.19	267.67	280.33	302.96	338.99	194.63	401.31	458.73	514.90	624.06	
1900	130.09	146.04	160.76	176.09	192.02	220.66	235.54	250.78	279.44	292.64	316.23	353.79	201.16	418.71	478.51	536.98		
2000	135.53	152.13	167.46	183.41	199.99	229.78	245.26	261.12	290.92	304.64	329.17	368.21	207.00	435.65	497.75	558.45		
2200	146.02	163.88	180.36	197.51	215.33	247.34	263.96	280.99	312.99	327.71	354.02	395.87	216.44	468.13	534.58			
2400	155.97	175.02	192.58	210.86	229.85	263.94	281.64	299.77	333.82	349.48	377.44	421.93	222.67	498.65	569.14			
2600	165.36	185.52	204.10	223.43	243.51	279.54	298.24	317.40	353.36	369.89	399.39	446.31	225.40	527.13	601.32			
2800	174.16	195.35	214.88	235.19	256.29	294.11	313.74	333.84	371.55	388.88	419.79	468.93	224.32	553.49				
3000	182.35	204.49	224.89	246.10	268.12	307.59	328.06	349.03	388.34	406.39	438.57	489.72	219.15	577.62				
3200	189.90	212.91	234.09	256.12	278.98	319.93	341.16	362.90	403.65	422.35	455.66	508.59						
3400	196.77	220.56	242.45	265.21	288.83	331.08	352.99	375.42	417.43	436.69	470.98	525.46						
3600	202.94	227.42	249.93	273.33	297.60	340.99	363.49	386.51	429.59	449.34	484.45	540.23						
3800	208.39	233.46	256.50	280.44	305.26	349.61	372.59	396.10	440.08	460.22	496.00	552.82						
4000	213.07	238.63	262.11	286.49	311.77	356.88	380.25	404.15	448.83	469.27	505.54							
4500	221.23	247.56	271.68	296.71	322.65	368.79	392.66	417.06	462.57	483.33								
5000	223.94	250.30	274.40	299.38	325.22	371.04	394.70	418.86										

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Table of basic power ratings for rubber Type S1.5M (per width of 4 mm)

(Unit: W)

	No. of teeth of pinion	16	18	20	22	24	26	28	30	32	34	36	40
	Pitch diameter (mm)	7.64	8.59	9.55	10.50	11.46	12.41	13.37	14.32	15.28	16.23	17.19	19.10
Pinion revolution (rpm)	50	1	1	1	1	1	1	1	1	2	2	2	2
	100	1	1	2	2	2	2	2	3	3	3	3	3
	200	2	2	3	3	3	4	4	4	5	5	6	6
	300	3	3	4	4	5	5	6	6	7	7	8	9
	400	3	4	5	5	6	7	7	8	8	9	10	11
	500	4	5	5	6	7	8	9	9	10	11	12	13
	600	4	5	6	7	8	9	10	11	12	13	13	15
	700	5	6	7	8	9	10	11	12	13	14	15	17
	800	5	6	8	9	10	11	12	14	15	16	17	19
	900	6	7	8	10	11	12	14	15	16	17	18	21
	1000	6	8	9	10	12	13	15	16	17	19	20	23
	1100	6	8	10	11	13	14	16	17	19	20	21	24
	1200	7	9	10	12	14	15	17	18	20	21	23	26
	1300	7	9	11	13	14	16	18	19	21	23	24	28
	1400	7	9	11	13	15	17	19	21	22	24	26	29
	1500	8	10	12	14	16	18	20	22	23	25	27	31
	1600	8	10	12	15	17	19	21	23	25	26	28	32
	1700	8	11	13	15	17	19	22	24	26	28	30	34
	1800	9	11	13	16	18	20	22	25	27	29	31	35
	1900	9	11	14	16	19	21	23	26	28	30	32	36
	2000	9	12	14	17	19	22	24	27	29	31	33	38
	2100	9	12	15	17	20	23	25	27	30	32	35	39
	2200	10	12	15	18	21	23	26	28	31	33	36	40
	2300	10	13	16	18	21	24	27	29	32	34	37	42
	2400	10	13	16	19	22	25	27	30	33	35	38	43
	2500	10	13	17	19	22	25	28	31	34	36	39	44
	2600	10	14	17	20	23	26	29	32	35	37	40	45
	2700	11	14	17	20	24	27	30	33	35	38	41	47
	2800	11	14	18	21	24	27	30	33	36	39	42	48
	2900	11	15	18	21	25	28	31	34	37	40	43	49
	3000	11	15	18	22	25	28	32	35	38	41	44	50
	3200	12	15	19	23	26	30	33	36	40	43	46	52
	3400	12	16	20	23	27	31	34	38	41	45	48	55
	3600	12	16	20	24	28	32	36	39	43	46	50	57
	3800	12	17	21	25	29	33	37	41	44	48	52	59
	4000	12	17	21	26	30	34	38	42	46	50	53	61
	4200	13	17	22	26	31	35	39	43	47	51	55	63
	4400	13	18	22	27	32	36	40	44	49	53	57	64
	4600	13	18	23	28	32	37	41	46	50	54	58	66
	4800	13	18	23	28	33	38	42	47	51	56	60	68
	5000	13	19	24	29	34	39	43	48	52	57	61	70
	5500	13	19	25	30	35	41	46	51	55	60	65	74
	6000	14	20	26	31	37	43	48	53	58	63	68	78
	6500	14	20	26	32	38	44	50	55	61	66	71	81
	7000	14	20	27	33	40	46	52	58	63	69	74	85
	7500												
	8000												
	8500												
	9000												

Table of basic power ratings for Types S2M/DS2M (per width of 4 mm)

(Unit: W)

No. of teeth of pinion		14	15	16	18	20	22	24	26	28	30	32	34	36	40	44	48	50	60
Pitch diameter (mm)		8.91	9.55	10.19	11.46	12.73	14.01	15.28	16.55	17.83	19.10	20.37	21.65	22.92	25.46	28.01	30.56	31.83	38.20
Pinion revolution (rpm)	50	1	1	1	2	2	2	2	2	3	3	3	3	3	4	4	5	5	6
	100	2	2	2	3	3	4	4	4	5	5	6	6	6	7	8	8	9	11
	200	4	4	4	5	6	7	7	8	9	9	10	11	11	13	14	15	16	19
	300	5	5	6	7	8	9	10	11	12	13	14	15	16	18	19	21	22	26
	400	6	7	8	9	10	11	13	14	15	16	18	19	20	22	25	27	28	33
	500	7	8	9	11	12	14	15	17	18	20	21	23	24	27	29	32	33	40
	600	8	9	10	12	14	16	18	19	21	23	24	26	28	31	34	37	39	46
	700	9	10	12	14	16	18	20	22	24	26	28	29	31	35	39	42	44	52
	800	10	12	13	15	17	20	22	24	26	28	31	33	35	39	43	47	49	58
	900	11	13	14	16	19	22	24	26	29	31	34	36	38	43	47	51	53	63
	1000	12	14	15	18	21	23	26	29	31	34	36	39	41	46	51	55	58	69
	1100	13	14	16	19	22	25	28	31	34	36	39	42	44	50	55	60	62	74
	1200	14	15	17	20	24	27	30	33	36	39	42	45	47	53	58	64	66	79
	1300	14	16	18	22	25	28	32	35	38	41	44	47	50	56	62	68	71	84
	1400	15	17	19	23	26	30	33	37	40	44	47	50	53	60	66	72	75	89
	1500	16	18	20	24	28	31	35	39	42	46	49	53	56	63	69	75	79	94
	1600	17	19	21	25	29	33	37	41	44	48	52	55	59	66	73	79	82	98
	1700	17	19	22	26	30	34	39	43	46	50	54	58	62	69	76	83	86	103
	1800	18	20	22	27	32	36	40	44	48	52	56	60	64	72	79	86	90	107
	1900	18	21	23	28	33	37	42	46	50	55	59	63	67	75	82	90	94	111
	2000	19	22	24	29	34	39	43	48	52	57	61	65	69	78	85	93	97	115
	2100	20	22	25	30	35	40	45	49	54	59	63	67	72	80	89	97	101	120
	2200	20	23	26	31	36	41	46	51	56	61	65	70	74	83	92	100	104	124
	2300	21	24	26	32	37	43	48	53	58	63	67	72	77	86	95	103	107	128
	2400	21	24	27	33	38	44	49	54	59	64	69	74	79	88	97	106	111	131
	2500	22	25	28	34	39	45	50	56	61	66	71	76	81	91	100	109	114	135
	2600	22	25	28	35	40	46	52	57	63	68	73	79	84	93	103	112	117	139
	2700	23	26	29	35	41	47	53	59	64	70	75	81	86	96	106	115	120	143
	2800	23	26	30	36	42	49	55	60	66	72	77	83	88	98	109	118	123	146
	2900	24	27	30	37	43	50	56	62	68	73	79	85	90	101	111	121	126	150
	3000	24	28	31	38	44	51	57	63	69	75	81	87	92	103	114	124	129	153
	3200	25	29	32	39	46	53	60	66	72	79	85	91	96	108	119	130	135	160
	3400	26	30	33	41	48	55	62	69	75	82	88	94	100	112	124	135	140	167
	3600	26	30	34	42	50	57	64	71	78	85	92	98	104	117	129	140	146	173
	3800	27	31	35	44	51	59	67	74	81	88	95	102	108	121	133	145	151	179
	4000	28	32	36	45	53	61	69	76	84	91	98	105	112	125	138	150	156	185
	4200	28	33	37	46	55	63	71	79	86	94	101	108	115	129	142	155	161	191
	4400	29	34	38	47	56	65	73	81	89	97	104	112	119	133	147	160	166	196
	4600	30	34	39	48	58	66	75	83	91	99	107	115	122	137	151	164	171	201
	4800	30	35	40	50	59	68	77	85	94	102	110	118	126	140	155	168	175	206
	5000	31	36	41	51	60	70	79	88	96	105	113	121	129	144	159	173	179	211
	5500	32	37	43	53	64	73	83	93	102	111	120	128	136	152	168	183	190	223
	6000	33	38	44	56	66	77	87	97	107	117	126	135	143	160	176	192	199	233
	6500	33	40	46	58	69	80	91	102	112	122	132	141	150	168	184	200	208	243
	7000	34	41	47	60	72	83	95	106	116	127	137	147	156	175	192	208	216	251

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for Types S3M/DS3M (per width of 6 mm)

(Unit: W)

No. of teeth of pinion	14	15	16	18	20	22	24	26	28	30	32	34	36	40	44	48	50	60
Pitch diameter (mm)	13.37	14.32	15.28	17.19	19.10	21.01	22.92	24.83	26.74	28.65	30.56	32.47	34.38	38.20	42.02	45.84	47.75	57.30
Pinion revolution (rpm)																		
50	5	5	6	6	7	8	8	9	10	11	11	12	13	14	15	17	17	20
100	9	9	10	12	13	14	15	17	18	19	21	22	23	25	28	30	31	37
200	16	17	18	21	23	26	28	30	33	35	37	39	42	46	50	54	56	67
300	22	24	26	29	33	36	39	43	46	49	52	55	58	65	71	76	79	94
400	28	31	33	37	42	46	50	54	58	62	66	70	74	82	90	97	101	119
500	34	37	39	45	50	55	60	65	70	75	80	85	89	99	108	117	121	143
600	39	43	46	52	58	64	70	76	82	87	93	98	104	114	125	135	140	165
700	45	48	52	59	66	73	79	86	92	99	105	111	118	130	142	153	159	187
800	50	54	58	66	73	81	89	96	103	110	117	124	131	145	158	171	177	208
900	55	59	64	72	81	89	97	105	113	121	129	137	144	159	173	187	194	228
1000	60	64	69	79	88	97	106	115	123	132	140	149	157	173	188	204	211	248
1100	64	69	75	85	95	105	114	124	133	142	151	160	169	186	203	220	228	267
1200	69	74	80	91	102	112	122	133	143	152	162	172	181	200	218	235	244	286
1300	73	79	85	97	108	119	130	141	152	162	173	183	193	212	232	250	260	304
1400	78	84	90	103	115	127	138	150	161	172	183	194	204	225	245	265	275	322
1500	82	89	95	108	121	134	146	158	170	182	193	204	216	238	259	280	290	340
1600	86	93	100	114	127	141	154	166	179	191	203	215	227	250	272	294	305	357
1700	90	98	105	119	134	147	161	174	187	200	213	225	238	262	285	308	319	373
1800	94	102	110	125	140	154	168	182	196	209	222	235	248	273	298	322	333	390
1900	98	106	114	130	146	161	175	190	204	218	232	245	259	285	310	335	347	406
2000	102	110	119	135	151	167	182	198	212	227	241	255	269	296	322	348	361	421
2100	106	115	123	140	157	173	189	205	220	235	250	265	279	307	334	361	374	437
2200	110	119	128	146	163	180	196	212	228	244	259	274	289	318	346	374	387	452
2300	113	123	132	150	168	186	203	220	236	252	268	284	299	329	358	386	400	466
2400	117	127	136	155	174	192	210	227	244	260	277	293	309	340	369	398	413	481
2500	121	131	141	160	179	198	216	234	251	269	285	302	318	350	381	411	425	495
2600	124	135	145	165	185	204	223	241	259	277	294	311	328	360	392	422	437	509
2700	128	138	149	170	190	210	229	248	266	284	302	320	337	370	403	434	449	523
2800	131	142	153	174	195	215	235	255	274	292	311	328	346	380	413	446	461	536
2900	135	146	157	179	200	221	242	261	281	300	319	337	355	390	424	457	473	549
3000	138	150	161	184	205	227	248	268	288	308	327	345	364	400	434	468	484	562
3200	145	157	169	193	215	238	260	281	302	322	342	362	381	419	455	490	507	587
3400	151	164	176	201	225	249	272	294	316	337	358	378	398	437	475	511	528	612
3600	157	171	184	210	235	259	283	306	329	351	373	394	415	455	494	531	549	635
3800	164	177	191	218	244	270	294	318	342	365	387	409	431	473	513	551	570	658
4000	170	184	198	226	253	280	305	330	355	378	402	424	447	490	531	570	589	679
4200	175	191	205	234	262	290	316	342	367	392	416	439	462	506	549	589	609	700
4400	181	197	212	242	271	299	327	353	379	405	429	453	477	522	566	607	627	720
4600	187	203	219	250	280	309	337	364	391	417	443	467	491	538	582	624	645	739
4800	193	209	226	257	288	318	347	375	403	430	456	481	506	553	598	641	662	757
5000	198	215	232	265	296	327	357	386	414	442	468	494	520	568	614	658	679	774
5500	211	230	248	283	317	349	381	412	442	471	499	526	553	603	651	696	717	813
6000	224	243	263	300	336	370	404	436	468	498	528	556	584	636	685	731	753	848
6500	236	257	277	316	354	390	426	460	492	524	555	584	613	667	717	763	784	876
7000	247	269	291	332	371	410	446	482	516	549	580	611	640	695	745	791	812	900
7500																		
8000																		
8500																		
9000																		

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Types S4.5M/DS4.5M (per width of 15 mm)

(Unit: kW)

No. of teeth of pinion	12	14	16	18	20	22	24	26	28	32	36	40	44	48	50	60	72
Pitch diameter (mm)	17.19	20.05	22.92	25.78	28.65	31.51	34.38	37.24	40.11	45.84	51.57	57.30	63.03	68.75	71.62	85.94	103.13
Pinion revolution (rpm)																	
50	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04
100	0.01	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.07	0.08
200	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.11	0.13	0.16
300	0.04	0.05	0.05	0.06	0.07	0.07	0.08	0.09	0.09	0.11	0.12	0.13	0.15	0.16	0.17	0.20	0.24
400	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.11	0.12	0.14	0.16	0.18	0.19	0.21	0.22	0.26	0.32
500	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15	0.18	0.20	0.22	0.24	0.26	0.27	0.33	0.40
600	0.08	0.09	0.11	0.12	0.13	0.15	0.16	0.17	0.18	0.21	0.24	0.26	0.29	0.32	0.33	0.40	0.47
700	0.09	0.11	0.12	0.14	0.15	0.17	0.18	0.20	0.22	0.25	0.28	0.31	0.34	0.37	0.38	0.46	0.55
800	0.11	0.12	0.14	0.16	0.18	0.19	0.21	0.23	0.25	0.28	0.32	0.35	0.39	0.42	0.44	0.53	0.63
900	0.12	0.14	0.16	0.18	0.20	0.22	0.24	0.26	0.28	0.32	0.36	0.40	0.44	0.47	0.49	0.59	0.71
1000	0.13	0.15	0.18	0.20	0.22	0.24	0.26	0.29	0.31	0.35	0.40	0.44	0.48	0.53	0.55	0.66	0.79
1100	0.15	0.17	0.19	0.22	0.24	0.27	0.29	0.31	0.34	0.39	0.44	0.48	0.53	0.58	0.60	0.72	0.87
1200	0.16	0.18	0.21	0.24	0.26	0.29	0.32	0.34	0.37	0.42	0.47	0.53	0.58	0.63	0.66	0.79	0.94
1300	0.17	0.20	0.23	0.26	0.29	0.31	0.34	0.37	0.40	0.46	0.51	0.57	0.63	0.68	0.71	0.85	1.02
1400	0.18	0.22	0.25	0.28	0.31	0.34	0.37	0.40	0.43	0.49	0.55	0.61	0.68	0.74	0.77	0.92	1.10
1500	0.20	0.23	0.26	0.30	0.33	0.36	0.40	0.43	0.46	0.53	0.59	0.66	0.72	0.79	0.82	0.98	1.18
1600	0.21	0.25	0.28	0.32	0.35	0.39	0.42	0.46	0.49	0.56	0.63	0.70	0.77	0.84	0.88	1.05	1.25
1700	0.22	0.26	0.30	0.34	0.37	0.41	0.45	0.49	0.52	0.60	0.67	0.75	0.82	0.89	0.93	1.11	1.33
1800	0.24	0.28	0.32	0.36	0.40	0.44	0.47	0.51	0.55	0.63	0.71	0.79	0.87	0.94	0.98	1.18	1.41
1900	0.25	0.29	0.33	0.38	0.42	0.46	0.50	0.54	0.58	0.67	0.75	0.83	0.91	1.00	1.04	1.24	1.48
2000	0.26	0.31	0.35	0.40	0.44	0.48	0.53	0.57	0.61	0.70	0.79	0.88	0.96	1.05	1.09	1.30	1.56
2100	0.28	0.32	0.37	0.42	0.46	0.51	0.55	0.60	0.65	0.74	0.83	0.92	1.01	1.10	1.14	1.37	1.63
2200	0.29	0.34	0.39	0.44	0.48	0.53	0.58	0.63	0.68	0.77	0.87	0.96	1.06	1.15	1.20	1.43	1.71
2300	0.30	0.35	0.40	0.45	0.51	0.56	0.61	0.66	0.71	0.81	0.91	1.00	1.10	1.20	1.25	1.49	1.78
2400	0.32	0.37	0.42	0.47	0.53	0.58	0.63	0.68	0.74	0.84	0.94	1.05	1.15	1.25	1.30	1.56	1.85
2500	0.33	0.38	0.44	0.49	0.55	0.60	0.66	0.71	0.77	0.88	0.98	1.09	1.20	1.30	1.36	1.62	1.93
2600	0.34	0.40	0.46	0.51	0.57	0.63	0.68	0.74	0.80	0.91	1.02	1.13	1.24	1.35	1.41	1.68	2.00
2700	0.36	0.42	0.47	0.53	0.59	0.65	0.71	0.77	0.83	0.94	1.06	1.18	1.29	1.41	1.46	1.74	2.07
2800	0.37	0.43	0.49	0.55	0.61	0.68	0.74	0.80	0.86	0.98	1.10	1.22	1.34	1.46	1.51	1.80	2.14
2900	0.38	0.45	0.51	0.57	0.64	0.70	0.76	0.83	0.89	1.01	1.14	1.26	1.38	1.51	1.57	1.86	2.21
3000	0.40	0.46	0.53	0.59	0.66	0.72	0.79	0.85	0.92	1.05	1.18	1.30	1.43	1.56	1.62	1.93	2.28
3200	0.42	0.49	0.56	0.63	0.70	0.77	0.84	0.91	0.98	1.12	1.25	1.39	1.52	1.66	1.72	2.05	2.42
3400	0.45	0.52	0.60	0.67	0.75	0.82	0.89	0.97	1.04	1.18	1.33	1.47	1.61	1.75	1.82	2.16	2.56
3600	0.47	0.55	0.63	0.71	0.79	0.87	0.94	1.02	1.10	1.25	1.41	1.56	1.71	1.85	1.93	2.28	2.69
3800	0.50	0.58	0.67	0.75	0.83	0.91	1.00	1.08	1.16	1.32	1.48	1.64	1.80	1.95	2.03	2.40	2.82
4000	0.53	0.61	0.70	0.79	0.88	0.96	1.05	1.13	1.22	1.39	1.56	1.72	1.89	2.05	2.13	2.51	2.94
4200	0.55	0.65	0.74	0.83	0.92	1.01	1.10	1.19	1.28	1.46	1.63	1.80	1.97	2.14	2.22	2.62	3.07
4400	0.58	0.68	0.77	0.87	0.96	1.06	1.15	1.24	1.34	1.52	1.71	1.89	2.06	2.23	2.32	2.73	3.19
4600	0.61	0.71	0.81	0.91	1.00	1.10	1.20	1.30	1.40	1.59	1.78	1.97	2.15	2.33	2.42	2.84	3.30
4800	0.63	0.74	0.84	0.94	1.05	1.15	1.25	1.35	1.46	1.66	1.85	2.05	2.23	2.42	2.51	2.94	3.41
5000	0.66	0.77	0.88	0.98	1.09	1.20	1.30	1.41	1.51	1.72	1.93	2.13	2.32	2.51	2.60	3.05	3.52
5500	0.72	0.84	0.96	1.08	1.20	1.31	1.43	1.55	1.66	1.89	2.11	2.32	2.53	2.73	2.83	3.29	3.77
6000	0.79	0.92	1.05	1.18	1.30	1.43	1.56	1.68	1.80	2.05	2.28	2.51	2.73	2.94	3.05	3.52	3.99
6500	0.85	0.99	1.13	1.27	1.41	1.55	1.68	1.81	1.95	2.20	2.45	2.69	2.93	3.15	3.25	3.73	4.18
7000	0.92	1.07	1.22	1.37	1.51	1.66	1.80	1.95	2.09	2.36	2.62	2.87	3.11	3.34	3.45	3.92	4.34
7500	0.98	1.14	1.30	1.46	1.62	1.77	1.93	2.08	2.22	2.51	2.79	3.05	3.29	3.52	3.63	4.09	4.46
8000	1.05	1.22	1.39	1.56	1.72	1.89	2.05	2.20	2.36	2.66	2.94	3.21	3.46	3.69	3.80	4.24	4.54
8500	1.11	1.29	1.47	1.65	1.82	2.00	2.16	2.33	2.49	2.80	3.10	3.37	3.62	3.85	3.95	4.36	4.57
9000	1.18	1.37	1.56	1.74	1.93	2.11	2.28	2.45	2.62	2.94	3.24	3.52	3.77	3.99	4.09	4.46	4.56

(grey mark) Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

(blue mark) Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Types S5M/DS5M (per width of 10 mm)

(Unit: kW)

Pinion revolution (rpm) \ No. of teeth of pinion	14	16	18	20	22	24	25	26	28	30	32	34	36	40	42	44	48	50	60
Pitch diameter (mm)	22.28	25.46	28.65	31.83	35.01	38.20	39.79	41.38	44.56	47.75	50.93	54.11	57.30	63.66	66.85	70.03	76.39	79.58	95.49
50	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.08
100	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.07	0.07	0.08	0.08	0.09	0.10	0.10	0.11	0.12	0.12	0.15
200	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.11	0.12	0.13	0.14	0.15	0.16	0.18	0.19	0.20	0.22	0.22	0.27
300	0.07	0.09	0.10	0.12	0.13	0.15	0.15	0.16	0.17	0.19	0.20	0.21	0.23	0.25	0.27	0.28	0.30	0.32	0.38
400	0.09	0.11	0.13	0.15	0.17	0.19	0.19	0.20	0.22	0.24	0.26	0.27	0.29	0.32	0.34	0.36	0.39	0.40	0.48
500	0.11	0.13	0.16	0.18	0.20	0.22	0.23	0.24	0.27	0.29	0.31	0.33	0.35	0.39	0.41	0.43	0.47	0.49	0.58
600	0.13	0.16	0.18	0.21	0.23	0.26	0.27	0.28	0.31	0.33	0.36	0.38	0.41	0.45	0.48	0.50	0.54	0.57	0.68
700	0.15	0.18	0.21	0.24	0.27	0.29	0.31	0.32	0.35	0.38	0.41	0.43	0.46	0.51	0.54	0.57	0.62	0.64	0.77
800	0.16	0.20	0.23	0.26	0.30	0.33	0.34	0.36	0.39	0.42	0.45	0.48	0.51	0.57	0.60	0.63	0.69	0.72	0.86
900	0.18	0.22	0.25	0.29	0.33	0.36	0.38	0.40	0.43	0.47	0.50	0.53	0.57	0.63	0.66	0.70	0.76	0.79	0.94
1000	0.19	0.23	0.28	0.32	0.35	0.39	0.41	0.43	0.47	0.51	0.54	0.58	0.62	0.69	0.72	0.76	0.83	0.86	1.02
1100	0.21	0.25	0.30	0.34	0.38	0.42	0.45	0.47	0.51	0.55	0.59	0.63	0.67	0.74	0.78	0.82	0.89	0.93	1.11
1200	0.22	0.27	0.32	0.36	0.41	0.46	0.48	0.50	0.54	0.59	0.63	0.67	0.71	0.80	0.84	0.88	0.96	1.00	1.18
1300	0.23	0.29	0.34	0.39	0.44	0.49	0.51	0.53	0.58	0.63	0.67	0.72	0.76	0.85	0.89	0.93	1.02	1.06	1.26
1400	0.25	0.30	0.36	0.41	0.46	0.51	0.54	0.56	0.61	0.66	0.71	0.76	0.81	0.90	0.95	0.99	1.08	1.12	1.34
1500	0.26	0.32	0.38	0.43	0.49	0.54	0.57	0.60	0.65	0.70	0.75	0.80	0.85	0.95	1.00	1.05	1.14	1.19	1.41
1600	0.27	0.34	0.40	0.46	0.51	0.57	0.60	0.63	0.68	0.74	0.79	0.84	0.90	1.00	1.05	1.10	1.20	1.25	1.48
1700	0.29	0.35	0.42	0.48	0.54	0.60	0.63	0.66	0.72	0.77	0.83	0.89	0.94	1.05	1.10	1.15	1.26	1.31	1.55
1800	0.30	0.37	0.43	0.50	0.56	0.63	0.66	0.69	0.75	0.81	0.87	0.93	0.98	1.10	1.15	1.21	1.31	1.37	1.62
1900	0.31	0.38	0.45	0.52	0.59	0.65	0.69	0.72	0.78	0.84	0.91	0.97	1.03	1.14	1.20	1.26	1.37	1.42	1.69
2000	0.32	0.40	0.47	0.54	0.61	0.68	0.71	0.75	0.81	0.88	0.94	1.00	1.07	1.19	1.25	1.31	1.42	1.48	1.75
2100	0.33	0.41	0.49	0.56	0.63	0.70	0.74	0.77	0.84	0.91	0.98	1.04	1.11	1.23	1.30	1.36	1.48	1.54	1.82
2200	0.35	0.43	0.50	0.58	0.66	0.73	0.77	0.80	0.87	0.94	1.01	1.08	1.15	1.28	1.34	1.41	1.53	1.59	1.88
2300	0.36	0.44	0.52	0.60	0.68	0.75	0.79	0.83	0.90	0.98	1.05	1.12	1.19	1.32	1.39	1.45	1.58	1.64	1.94
2400	0.37	0.45	0.54	0.62	0.70	0.78	0.82	0.86	0.93	1.01	1.08	1.15	1.23	1.36	1.43	1.50	1.63	1.69	2.00
2500	0.38	0.47	0.55	0.64	0.72	0.80	0.84	0.88	0.96	1.04	1.12	1.19	1.26	1.41	1.48	1.54	1.68	1.74	2.05
2600	0.39	0.48	0.57	0.66	0.74	0.83	0.87	0.91	0.99	1.07	1.15	1.23	1.30	1.45	1.52	1.59	1.73	1.79	2.11
2700	0.40	0.49	0.59	0.68	0.76	0.85	0.89	0.94	1.02	1.10	1.18	1.26	1.34	1.49	1.56	1.63	1.77	1.84	2.16
2800	0.41	0.51	0.60	0.69	0.79	0.87	0.92	0.96	1.05	1.13	1.21	1.29	1.37	1.53	1.60	1.68	1.82	1.89	2.22
2900	0.42	0.52	0.62	0.71	0.81	0.90	0.94	0.99	1.07	1.16	1.25	1.33	1.41	1.57	1.64	1.72	1.86	1.94	2.27
3000	0.43	0.53	0.63	0.73	0.83	0.92	0.97	1.01	1.10	1.19	1.28	1.36	1.44	1.61	1.68	1.76	1.91	1.98	2.32
3200	0.45	0.56	0.66	0.76	0.87	0.96	1.01	1.06	1.15	1.25	1.34	1.43	1.51	1.68	1.76	1.84	1.99	2.07	2.41
3400	0.47	0.58	0.69	0.80	0.90	1.01	1.06	1.11	1.21	1.30	1.40	1.49	1.58	1.75	1.84	1.92	2.08	2.15	2.50
3600	0.48	0.60	0.72	0.83	0.94	1.05	1.10	1.15	1.26	1.36	1.45	1.55	1.64	1.82	1.91	1.99	2.15	2.23	2.58
3800	0.50	0.63	0.75	0.86	0.98	1.09	1.14	1.20	1.30	1.41	1.51	1.61	1.70	1.89	1.98	2.06	2.23	2.30	2.66
4000	0.52	0.65	0.77	0.89	1.01	1.13	1.19	1.24	1.35	1.46	1.56	1.66	1.76	1.95	2.04	2.13	2.30	2.37	2.73
4200	0.53	0.67	0.80	0.92	1.05	1.17	1.23	1.28	1.40	1.51	1.61	1.72	1.82	2.01	2.10	2.19	2.36	2.44	2.79
4400	0.55	0.69	0.82	0.95	1.08	1.20	1.27	1.32	1.44	1.55	1.66	1.77	1.87	2.07	2.16	2.25	2.42	2.50	2.84
4600	0.57	0.71	0.85	0.98	1.11	1.24	1.30	1.36	1.48	1.60	1.71	1.82	1.93	2.12	2.22	2.31	2.48	2.56	2.89
4800	0.58	0.73	0.87	1.01	1.15	1.28	1.34	1.40	1.53	1.64	1.76	1.87	1.98	2.18	2.27	2.36	2.53	2.61	2.93
5000	0.59	0.75	0.90	1.04	1.18	1.31	1.38	1.44	1.57	1.69	1.80	1.92	2.02	2.23	2.32	2.41	2.58	2.66	2.96
5500	0.63	0.79	0.95	1.10	1.25	1.39	1.46	1.53	1.66	1.79	1.91	2.02	2.13	2.34	2.43	2.52	2.68	2.75	3.01
6000	0.66	0.83	1.00	1.16	1.32	1.47	1.54	1.61	1.75	1.88	2.00	2.12	2.23	2.43	2.52	2.61	2.75	2.82	3.01
6500	0.69	0.87	1.05	1.22	1.38	1.54	1.61	1.68	1.82	1.96	2.08	2.20	2.31	2.51	2.59	2.67	2.80	2.85	2.95
7000	0.72	0.91	1.09	1.27	1.44	1.60	1.68	1.75	1.89	2.03	2.15	2.27	2.38	2.56	2.64	2.71	2.81	2.84	2.84
7500	0.74	0.94	1.14	1.32	1.49	1.66	1.73	1.81	1.95	2.09	2.21	2.32	2.43	2.60	2.66	2.72	2.79	2.80	2.66
8000	0.76	0.97	1.17	1.36	1.54	1.71	1.79	1.86	2.01	2.14	2.26	2.37	2.46	2.61	2.66	2.70	2.73	2.72	2.42
8500	0.78	1.00	1.21	1.40	1.58	1.75	1.83	1.91	2.05	2.18	2.29	2.39	2.48	2.60	2.64	2.66	2.64	2.60	2.12
9000	0.80	1.03	1.24	1.44	1.62	1.79	1.87	1.94	2.08	2.21	2.31	2.40	2.48	2.57	2.58	2.58	2.51	2.44	1.74

(Grey mark) Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

(Blue mark) Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Types S8M/DS8M (per width of 60 mm)

(Unit: kW)

No. of teeth of pinion	20	22	24	26	28	30	32	34	36	40	44	48	50	60	72	84	96	120
Pitch diameter (mm)	50.93	56.02	61.12	66.21	71.30	76.39	81.49	86.58	91.67	101.86	112.05	122.23	127.32	152.79	183.35	213.90	244.46	305.58
Pinion revolution (rpm) 50	0.37	0.40	0.44	0.48	0.51	0.55	0.59	0.62	0.66	0.73	0.81	0.88	0.92	1.10	1.32	1.54	1.76	2.20
100	0.73	0.81	0.88	0.95	1.03	1.10	1.17	1.25	1.32	1.47	1.61	1.76	1.83	2.20	2.64	3.08	3.52	4.40
200	1.47	1.61	1.76	1.91	2.05	2.20	2.35	2.49	2.64	2.94	3.23	3.52	3.67	4.40	5.28	6.16	7.04	8.79
300	2.20	2.42	2.64	2.86	3.08	3.30	3.52	3.74	3.96	4.40	4.84	5.28	5.50	6.60	7.92	9.23	10.54	13.16
400	2.94	3.23	3.52	3.82	4.11	4.40	4.69	4.99	5.28	5.87	6.45	7.04	7.33	8.79	10.54	12.29	14.03	17.49
500	3.67	4.03	4.40	4.77	5.13	5.50	5.87	6.23	6.60	7.33	8.06	8.79	9.16	10.98	13.16	15.33	17.49	21.78
600	4.40	4.84	5.28	5.72	6.16	6.60	7.04	7.48	7.92	8.79	9.67	10.54	10.98	13.16	15.76	18.35	20.93	26.01
700	5.13	5.65	6.16	6.67	7.18	7.70	8.21	8.72	9.23	10.25	11.27	12.29	12.80	15.33	18.35	21.35	24.33	30.18
800	5.87	6.45	7.04	7.62	8.21	8.79	9.38	9.96	10.54	11.71	12.87	14.03	14.61	17.49	20.93	24.33	27.69	34.26
900	6.60	7.26	7.92	8.57	9.23	9.89	10.54	11.20	11.85	13.16	14.46	15.76	16.41	19.64	23.48	27.27	31.00	38.26
1000	7.33	8.06	8.79	9.52	10.25	10.98	11.71	12.43	13.16	14.61	16.05	17.49	18.21	21.78	26.01	30.18	34.26	42.15
1100	8.06	8.86	9.67	10.47	11.27	12.07	12.87	13.67	14.46	16.05	17.64	19.21	20.00	23.91	28.52	33.05	37.47	45.93
1200	8.79	9.67	10.54	11.42	12.29	13.16	14.03	14.90	15.76	17.49	19.21	20.93	21.78	26.01	31.00	35.87	40.61	49.59
1300	9.52	10.47	11.42	12.36	13.30	14.25	15.19	16.12	17.06	18.93	20.79	22.63	23.55	28.10	33.45	38.65	43.68	53.11
1400	10.25	11.27	12.29	13.30	14.32	15.33	16.34	17.35	18.35	20.36	22.35	24.33	25.31	30.18	35.87	41.38	46.67	56.48
1500	10.98	12.07	13.16	14.25	15.33	16.41	17.49	18.57	19.64	21.78	23.91	26.01	27.06	32.23	38.26	44.06	49.59	59.70
1600	11.71	12.87	14.03	15.19	16.34	17.49	18.64	19.79	20.93	23.20	25.45	27.69	28.80	34.26	40.61	46.67	52.41	62.74
1700	12.43	13.67	14.90	16.12	17.35	18.57	19.79	21.00	22.21	24.61	26.99	29.35	30.52	36.27	42.92	49.23	55.15	65.61
1800	13.16	14.46	15.76	17.06	18.35	19.64	20.93	22.21	23.48	26.01	28.52	31.00	32.23	38.26	45.18	51.72	57.79	68.28
1900	13.88	15.26	16.63	18.00	19.36	20.71	22.07	23.41	24.75	27.41	30.04	32.64	33.93	40.22	47.41	54.13	60.32	70.75
2000	14.61	16.05	17.49	18.93	20.36	21.78	23.20	24.61	26.01	28.80	31.55	34.26	35.61	42.15	49.59	56.48	62.74	73.00
2200	16.05	17.64	19.21	20.79	22.35	23.91	25.45	26.99	28.52	31.55	34.53	37.47	38.91	45.93	53.79	60.93	67.23	76.82
2400	17.49	19.21	20.93	22.63	24.33	26.01	27.69	29.35	31.00	34.26	37.47	40.61	42.15	49.59	57.79	65.05	71.22	79.65
2600	18.93	20.79	22.63	24.47	26.29	28.10	29.90	31.69	33.45	36.94	40.35	43.68	45.31	53.11	61.54	68.79	74.65	81.39
2800	20.36	22.35	24.33	26.29	28.24	30.18	32.09	33.99	35.87	39.57	43.17	46.67	48.38	56.48	65.05	72.13	77.47	81.96
3000	21.78	23.91	26.01	28.10	30.18	32.23	34.26	36.27	38.26	42.15	45.93	49.59	51.36	59.70	68.28	75.03	79.65	81.26
3200	23.20	25.45	27.69	29.90	32.09	34.26	36.41	38.52	40.61	44.68	48.62	52.41	54.25	62.74	71.22	77.47	81.14	79.21
3400	24.61	26.99	29.35	31.69	33.99	36.27	38.52	40.74	42.92	47.16	51.25	55.15	57.03	65.61	73.84	79.42	81.88	
3600	26.01	28.52	31.00	33.45	35.87	38.26	40.61	42.92	45.18	49.59	53.79	57.79	59.70	68.28	76.14	80.83	81.84	
3800	27.41	30.04	32.64	35.20	37.73	40.22	42.66	45.06	47.41	51.95	56.26	60.32	62.25	70.75	78.08	81.69	80.96	
4000	28.80	31.55	34.26	36.94	39.57	42.15	44.68	47.16	49.59	54.25	58.64	62.74	64.67	73.00	79.65	81.96		
4500	32.23	35.27	38.26	41.19	44.06	46.86	49.59	52.24	54.81	59.70	64.20	68.28	70.15	77.63	81.83	79.85		
5000	35.61	38.91	42.15	45.31	48.38	51.36	54.25	57.03	59.70	64.67	69.13	73.00	74.71	80.66	81.26			
5500	38.91	42.47	45.93	49.29	52.53	55.65	58.64	61.49	64.20	69.13	73.36	76.82	78.25	81.93				
6000	42.15	45.93	49.59	53.11	56.48	59.70	62.74	65.61	68.28	73.00	76.82	79.65	80.66	81.26				

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Types S14M/DS14M (per width of 120 mm)

(Unit: kW)

No. of teeth of pinion		28	30	32	34	36	40	42	44	48	50	54	60	64	72	84	96	120	144
Pitch diameter (mm)		124.78	133.69	142.60	151.52	160.43	178.25	187.17	196.08	213.90	222.82	240.64	267.38	285.21	320.86	374.33	427.81	534.76	641.71
Pinion revolution (rpm)	20	1.12	1.20	1.28	1.36	1.44	1.60	1.68	1.76	1.92	2.00	2.16	2.40	2.56	2.88	3.36	3.84	4.79	5.75
	40	2.24	2.40	2.56	2.72	2.88	3.20	3.36	3.52	3.84	4.00	4.31	4.79	5.11	5.75	6.71	7.67	9.59	11.50
	50	2.80	3.00	3.20	3.40	3.60	4.00	4.20	4.39	4.79	4.99	5.39	5.99	6.39	7.19	8.39	9.59	11.98	14.38
	60	3.36	3.60	3.84	4.08	4.31	4.79	5.03	5.27	5.75	5.99	6.47	7.19	7.67	8.63	10.07	11.50	14.38	17.25
	80	4.47	4.79	5.11	5.43	5.75	6.39	6.71	7.03	7.67	7.99	8.63	9.59	10.23	11.50	13.42	15.33	19.16	22.98
	100	5.59	5.99	6.39	6.79	7.19	7.99	8.39	8.79	9.59	9.99	10.78	11.98	12.78	14.38	16.77	19.16	23.93	28.70
	150	8.39	8.99	9.59	10.19	10.78	11.98	12.58	13.18	14.38	14.97	16.17	17.96	19.16	21.55	25.13	28.70	35.82	42.92
	200	11.18	11.98	12.78	13.58	14.38	15.97	16.77	17.56	19.16	19.95	21.55	23.93	25.52	28.70	33.45	38.19	47.63	56.98
	250	13.98	14.97	15.97	16.97	17.96	19.95	20.95	21.94	23.93	24.93	26.91	29.89	31.87	35.82	41.74	47.63	59.31	70.84
	300	16.77	17.96	19.16	20.35	21.55	23.93	25.13	26.32	28.70	29.89	32.27	35.82	38.19	42.92	49.97	56.98	70.84	84.43
	350	19.56	20.95	22.34	23.73	25.13	27.91	29.29	30.68	33.45	34.84	37.60	41.74	44.49	49.97	58.14	66.24	82.19	97.71
	400	22.34	23.93	25.52	27.11	28.70	31.87	33.45	35.03	38.19	39.77	42.92	47.63	50.75	56.98	66.24	75.40	93.32	110.63
	450	25.13	26.91	28.70	30.48	32.27	35.82	37.60	39.38	42.92	44.69	48.21	53.48	56.98	63.94	74.26	84.43	104.22	123.13
	500	27.91	29.89	31.87	33.85	35.82	39.77	41.74	43.70	47.63	49.58	53.48	59.31	63.17	70.84	82.19	93.32	114.85	135.17
	600	33.45	35.82	38.19	40.56	42.92	47.63	49.97	52.31	56.98	59.31	63.94	70.84	75.40	84.43	97.71	110.63	135.17	157.62
	700	38.98	41.74	44.49	47.23	49.97	55.43	58.14	60.85	66.24	68.93	74.26	82.19	87.41	97.71	112.75	127.20	154.04	177.58
	800	44.49	47.63	50.75	53.87	56.98	63.17	66.24	69.31	75.40	78.42	84.43	93.32	99.17	110.63	127.20	142.91	171.23	194.63
	900	49.97	53.48	56.98	60.47	63.94	70.84	74.26	77.67	84.43	87.78	94.43	104.22	110.63	123.13	140.99	157.62	186.50	208.34
	1000	55.43	59.31	63.17	67.01	70.84	78.42	82.19	85.92	93.32	96.98	104.22	114.85	121.77	135.17	154.04	171.23	199.59	218.31
	1100	60.85	65.09	69.31	73.50	77.67	85.92	90.01	94.06	102.06	106.01	113.80	125.17	132.54	146.68	166.27	183.61	210.28	224.12
	1200	66.24	70.84	75.40	79.93	84.43	93.32	97.71	102.06	110.63	114.85	123.13	135.17	142.91	157.62	177.58	194.63	218.31	225.35
	1300	71.60	76.54	81.44	86.30	91.11	100.62	105.30	109.93	119.02	123.48	132.21	144.80	152.84	167.94	187.91	204.17	223.46	221.59
	1400	76.91	82.19	87.41	92.59	97.71	107.80	112.75	117.63	127.20	131.88	140.99	154.04	162.29	177.58	197.16	212.10	225.47	212.41
	1500	82.19	87.78	93.32	98.81	104.22	114.85	120.05	125.17	135.17	140.03	149.47	162.86	171.23	186.50	205.25	218.31	224.12	197.41
	1600	87.41	93.32	99.17	104.94	110.63	121.77	127.20	132.54	142.91	147.93	157.62	171.23	179.63	194.63	212.10	222.67	219.15	
	1700	92.59	98.81	104.94	110.99	116.94	128.54	134.19	139.71	150.40	155.54	165.42	179.12	187.44	201.93	217.64	225.06	210.32	
	1800	97.71	104.22	110.63	116.94	123.13	135.17	140.99	146.68	157.62	162.86	172.85	186.50	194.63	208.34	221.76	225.35	197.41	
	1900	102.78	109.57	116.24	122.79	129.21	141.63	147.62	153.44	164.58	169.87	179.88	193.33	201.16	213.82	224.40	223.42		
	2000	107.80	114.85	121.77	128.54	135.17	147.93	154.04	159.97	171.23	176.55	186.50	199.59	207.00	218.31	225.47	219.15		
	2200	117.63	125.17	132.54	139.71	146.68	159.97	166.27	172.31	183.61	188.84	198.39	210.28	216.44	224.12	222.58	203.08		
	2400	127.20	135.17	142.91	150.40	157.62	171.23	177.58	183.61	194.63	199.59	208.34	218.31	222.67	225.35	212.41			
	2600	136.48	144.80	152.84	160.56	167.94	181.64	187.91	193.76	204.17	208.67	216.19	223.46	225.40	221.59	194.31			
	2800	145.43	154.04	162.29	170.14	177.58	191.11	197.16	202.69	212.10	215.94	221.76	225.47	224.32	212.41				
	3000	154.04	162.86	171.23	179.12	186.50	199.59	205.25	210.28	218.31	221.26	224.87	224.12	219.15	197.41				
	3200	162.29	171.23	179.63	187.44	194.63	207.00	212.10	216.44	222.67	224.49	225.35	219.15	209.59					
	3400	170.14	179.12	187.44	195.06	201.93	213.26	217.64	221.09	225.06	225.49	223.02	210.32	195.36					
	3600	177.58	186.50	194.63	201.93	208.34	218.31	221.76	224.12	225.35	224.12	217.70	197.41						
	3800	184.58	193.33	201.16	208.01	213.82	222.08	224.40	225.44	223.42	220.24	209.22	180.15						
	4000	191.11	199.59	207.00	213.26	218.31	224.49	225.47	224.96	219.15	213.71								
	4500	205.25	212.54	218.31	222.46	224.87	224.12	220.74	215.23	197.41	184.89								
	5000	215.94	221.26	224.49	225.49	224.12	213.71	204.39	192.15										

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark results in a shorter belt service life.

The value with this mark varies between the above two types; use them only when a special design is necessary.

Table of basic power ratings for polyurethane Type TN10 (per width of 6 mm)

(Unit: W)

No. of teeth of pinion	16	18	20	22	24	26	28	30	32	34	36	40	44	48	52	56	60
Pitch diameter (mm)	5.09	5.73	6.37	7.00	7.64	8.28	8.91	9.55	10.19	10.82	11.46	12.73	14.01	15.28	16.55	17.83	19.10
Pinion revolution (rpm)																	
100	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6
150	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8
200	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1
250	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.4
300	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.5	1.6	1.7
350	0.5	0.6	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.6	1.7	1.8	2.0
400	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.3	1.3	1.5	1.6	1.8	1.9	2.1	2.2
450	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.7	1.8	2.0	2.2	2.3	2.5
500	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.9	2.0	2.2	2.4	2.6	2.8
550	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	2.0	2.3	2.5	2.7	2.9	3.1
600	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.5	2.7	2.9	3.1	3.4
650	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8	1.9	2.1	2.2	2.4	2.7	2.9	3.1	3.4	3.6
700	1.0	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.3	2.6	2.9	3.1	3.4	3.7	3.9
750	1.1	1.3	1.4	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.8	3.1	3.4	3.6	3.9	4.2
800	1.2	1.3	1.5	1.6	1.8	1.9	2.1	2.2	2.4	2.5	2.7	3.0	3.3	3.6	3.9	4.2	4.5
850	1.3	1.4	1.6	1.7	1.9	2.1	2.2	2.4	2.5	2.7	2.9	3.2	3.5	3.8	4.1	4.4	4.7
900	1.3	1.5	1.7	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.0	3.4	3.7	4.0	4.4	4.7	5.0
950	1.4	1.6	1.8	1.9	2.1	2.3	2.5	2.7	2.8	3.0	3.2	3.5	3.9	4.2	4.6	5.0	5.3
1000	1.5	1.7	1.9	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.7	4.1	4.5	4.8	5.2	5.6
1100	1.6	1.8	2.0	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	4.1	4.5	4.9	5.3	5.7	6.1
1200	1.8	2.0	2.2	2.5	2.7	2.9	3.1	3.4	3.6	3.8	4.0	4.5	4.9	5.4	5.8	6.3	6.7
1300	1.9	2.2	2.4	2.7	2.9	3.1	3.4	3.6	3.9	4.1	4.4	4.8	5.3	5.8	6.3	6.8	7.3
1400	2.1	2.3	2.6	2.9	3.1	3.4	3.7	3.9	4.2	4.4	4.7	5.2	5.7	6.3	6.8	7.3	7.8
1500	2.2	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.7	5.0	5.6	6.1	6.7	7.3	7.8	8.4
1600	2.4	2.7	3.0	3.3	3.6	3.9	4.2	4.5	4.8	5.1	5.4	6.0	6.6	7.1	7.7	8.3	8.9
1700	2.5	2.9	3.2	3.5	3.8	4.1	4.4	4.7	5.1	5.4	5.7	6.3	7.0	7.6	8.2	8.9	9.5
1800	2.7	3.0	3.4	3.7	4.0	4.4	4.7	5.0	5.4	5.7	6.0	6.7	7.4	8.0	8.7	9.4	10.0
1900	2.8	3.2	3.5	3.9	4.2	4.6	5.0	5.3	5.7	6.0	6.4	7.1	7.8	8.5	9.2	9.9	10.6
2000	3.0	3.4	3.7	4.1	4.5	4.8	5.2	5.6	6.0	6.3	6.7	7.4	8.2	8.9	9.7	10.4	11.1
2100	3.1	3.5	3.9	4.3	4.7	5.1	5.5	5.9	6.3	6.6	7.0	7.8	8.6	9.4	10.1	10.9	11.7
2200	3.3	3.7	4.1	4.5	4.9	5.3	5.7	6.1	6.6	7.0	7.4	8.2	9.0	9.8	10.6	11.4	12.2
2300	3.4	3.9	4.3	4.7	5.1	5.6	6.0	6.4	6.8	7.3	7.7	8.6	9.4	10.3	11.1	12.0	12.8
2400	3.6	4.0	4.5	4.9	5.4	5.8	6.3	6.7	7.1	7.6	8.0	8.9	9.8	10.7	11.6	12.5	13.3
2500	3.7	4.2	4.7	5.1	5.6	6.0	6.5	7.0	7.4	7.9	8.4	9.3	10.2	11.1	12.1	13.0	13.9
2600	3.9	4.4	4.8	5.3	5.8	6.3	6.8	7.3	7.7	8.2	8.7	9.7	10.6	11.6	12.5	13.5	14.4
2700	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	10.0	11.0	12.0	13.0	14.0	15.0
2800	4.2	4.7	5.2	5.7	6.3	6.8	7.3	7.8	8.3	8.9	9.4	10.4	11.4	12.5	13.5	14.5	15.5
2900	4.3	4.9	5.4	5.9	6.5	7.0	7.6	8.1	8.6	9.2	9.7	10.8	11.8	12.9	14.0	15.0	16.1
3000	4.5	5.0	5.6	6.1	6.7	7.3	7.8	8.4	8.9	9.5	10.0	11.1	12.2	13.3	14.4	15.5	16.6
3100	4.6	5.2	5.8	6.3	6.9	7.5	8.1	8.6	9.2	9.8	10.4	11.5	12.7	13.8	14.9	16.1	17.2
3200		5.4	6.0	6.6	7.1	7.7	8.3	8.9	9.5	10.1	10.7	11.9	13.1	14.2	15.4	16.6	17.7
3300		5.5	6.1	6.8	7.4	8.0	8.6	9.2	9.8	10.4	11.0	12.2	13.5	14.7	15.9	17.1	18.3
3400		5.7	6.3	7.0	7.6	8.2	8.9	9.5	10.1	10.7	11.4	12.6	13.9	15.1	16.3	17.6	18.8
3500		5.9	6.5	7.2	7.8	8.5	9.1	9.8	10.4	11.0	11.7	13.0	14.3	15.5	16.8	18.1	19.4
3600		6.0	6.7	7.4	8.0	8.7	9.4	10.0	10.7	11.4	12.0	13.3	14.7	16.0	17.3	18.6	19.9
3700		6.2	6.9	7.6	8.3	8.9	9.6	10.3	11.0	11.7	12.4	13.7	15.1	16.4	17.8	19.1	20.4
3800		6.4	7.1	7.8	8.5	9.2	9.9	10.6	11.3	12.0	12.7	14.1	15.5	16.9	18.2	19.6	21.0
3900		6.5	7.3	8.0	8.7	9.4	10.1	10.9	11.6	12.3	13.0	14.4	15.9	17.3	18.7	20.1	21.5
4000		6.7	7.4	8.2	8.9	9.7	10.4	11.1	11.9	12.6	13.3	14.8	16.3	17.7	19.2	20.6	22.1
4100		6.9	7.6	8.4	9.1	9.9	10.7	11.4	12.2	12.9	13.7	15.2	16.7	18.2	19.6	21.1	22.6
4200		7.0	7.8	8.6	9.4	10.1	10.9	11.7	12.5	13.2	14.0	15.5	17.1	18.6	20.1	21.6	23.1
4300		7.2	8.0	8.8	9.6	10.4	11.2	12.0	12.8	13.6	14.3	15.9	17.5	19.0	20.6	22.1	23.7
4400		7.4	8.2	9.0	9.8	10.6	11.4	12.2	13.1	13.9	14.7	16.3	17.9	19.5	21.1	22.6	24.2
4500		7.5	8.4	9.2	10.0	10.9	11.7	12.5	13.3	14.2	15.0	16.6	18.3	19.9	21.5	23.1	24.7
4600		7.7	8.6	9.4	10.3	11.1	12.0	12.8	13.6	14.5	15.3	17.0	18.7	20.3	22.0	23.6	25.2
4700		7.9	8.7	9.6	10.5	11.3	12.2	13.1	13.9	14.8	15.7	17.4	19.1	20.8	22.4	24.1	25.8
4800		8.0	8.9	9.8	10.7	11.6	12.5	13.3	14.2	15.1	16.0	17.7	19.5	21.2	22.9	24.6	26.3
4900		8.2	9.1	10.0	10.9	11.8	12.7	13.6	14.5	15.4	16.3	18.1	19.9	21.6	23.4	25.1	26.8
5000		8.4	9.3	10.2	11.1	12.1	13.0	13.9	14.8	15.7	16.6	18.5	20.3	22.1	23.8	25.6	27.4
5500		9.2	10.2	11.2	12.2	13.3	14.3	15.3	16.3	17.3	18.3	20.3	22.2	24.2	26.1	28.0	29.9
6000		10.0	11.1	12.2	13.3	14.4	15.5	16.6	17.7	18.8	19.9	22.1	24.2	26.3	28.4	30.5	32.5

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for polyurethane Type TN15 (per width of 10 mm)

(Unit: W)

No. of teeth of pinion	20	22	24	26	28	30	34	38	42	46	50	55	60	64	72	80	88	96
Pitch diameter (mm)	9.55	10.50	11.46	12.41	13.37	14.32	16.23	18.14	20.05	21.96	23.87	26.26	28.65	30.56	34.38	38.20	42.02	45.84
Pinion revolution (rpm)																		
100	1.1	1.2	1.3	1.4	1.5	1.6	1.8	2.0	2.3	2.5	2.7	3.0	3.2	3.5	3.9	4.3	4.7	5.2
200	2.2	2.4	2.6	2.8	3.0	3.2	3.7	4.1	4.5	5.0	5.4	5.9	6.5	6.9	7.8	8.6	9.5	10.4
300	3.2	3.6	3.9	4.2	4.5	4.9	5.5	6.1	6.8	7.4	8.1	8.9	9.7	10.4	11.6	12.9	14.2	15.5
400	4.3	4.7	5.2	5.6	6.0	6.5	7.3	8.2	9.1	9.9	10.8	11.9	12.9	13.8	15.5	17.3	19.0	20.7
500	5.4	5.9	6.5	7.0	7.6	8.1	9.2	10.2	11.3	12.4	13.5	14.8	16.2	17.3	19.4	21.6	23.7	25.9
600	6.5	7.1	7.8	8.4	9.1	9.7	11.0	12.3	13.6	14.9	16.2	17.8	19.4	20.7	23.3	25.9	28.5	31.0
700	7.6	8.3	9.1	9.8	10.6	11.3	12.8	14.3	15.9	17.4	18.9	20.8	22.6	24.2	27.2	30.2	33.2	36.2
800	8.6	9.5	10.4	11.2	12.1	12.9	14.7	16.4	18.1	19.8	21.6	23.7	25.9	27.6	31.0	34.5	37.9	41.4
900	9.7	10.7	11.6	12.6	13.6	14.6	16.5	18.4	20.4	22.3	24.3	26.7	29.1	31.0	34.9	38.8	42.6	46.5
1000	10.8	11.9	12.9	14.0	15.1	16.2	18.3	20.5	22.6	24.8	26.9	29.6	32.3	34.5	38.8	43.1	47.4	51.6
1100	11.9	13.1	14.2	15.4	16.6	17.8	20.2	22.5	24.9	27.3	29.6	32.6	35.6	37.9	42.6	47.4	52.1	56.8
1200	12.9	14.2	15.5	16.8	18.1	19.4	22.0	24.6	27.2	29.7	32.3	35.6	38.8	41.4	46.5	51.6	56.8	61.9
1300	14.0	15.4	16.8	18.2	19.6	21.0	23.8	26.6	29.4	32.2	35.0	38.5	42.0	44.8	50.4	55.9	61.5	67.0
1400	15.1	16.6	18.1	19.6	21.1	22.6	25.7	28.7	31.7	34.7	37.7	41.5	45.2	48.2	54.2	60.2	66.2	72.1
1500	16.2	17.8	19.4	21.0	22.6	24.3	27.5	30.7	33.9	37.2	40.4	44.4	48.4	51.6	58.1	64.5	70.8	77.2
1600	17.3	19.0	20.7	22.4	24.2	25.9	29.3	32.8	36.2	39.6	43.1	47.4	51.6	55.1	61.9	68.7	75.5	82.3
1700	18.3	20.2	22.0	23.8	25.7	27.5	31.1	34.8	38.5	42.1	45.8	50.3	54.9	58.5	65.7	73.0	80.2	87.3
1800	19.4	21.4	23.3	25.2	27.2	29.1	33.0	36.8	40.7	44.6	48.4	53.2	58.1	61.9	69.6	77.2	84.8	92.4
1900	20.5	22.5	24.6	26.6	28.7	30.7	34.8	38.9	43.0	47.0	51.1	56.2	61.3	65.3	73.4	81.4	89.5	97.4
2000	21.6	23.7	25.9	28.0	30.2	32.3	36.6	40.9	45.2	49.5	53.8	59.1	64.5	68.7	77.2	85.7	94.1	102.5
2100	22.6	24.9	27.2	29.4	31.7	33.9	38.5	43.0	47.5	52.0	56.5	62.1	67.7	72.1	81.0	89.9	98.7	107.5
2200	23.7	26.1	28.5	30.8	33.2	35.6	40.3	45.0	49.7	54.4	59.1	65.0	70.8	75.5	84.8	94.1	103.3	112.4
2300	24.8	27.3	29.7	32.2	34.7	37.2	42.1	47.0	52.0	56.9	61.8	67.9	74.0	78.9	88.6	98.3	107.9	117.4
2400	25.9	28.5	31.0	33.6	36.2	38.8	43.9	49.1	54.2	59.3	64.5	70.8	77.2	82.3	92.4	102.5	112.4	122.4
2500	26.9	29.6	32.3	35.0	37.7	40.4	45.8	51.1	56.5	61.8	67.1	73.8	80.4	85.7	96.2	106.6	117.0	127.3
2600	28.0	30.8	33.6	36.4	39.2	42.0	47.6	53.1	58.7	64.2	69.8	76.7	83.6	89.0	99.9	110.8	121.5	132.2
2700	29.1	32.0	34.9	37.8	40.7	43.6	49.4	55.2	60.9	66.7	72.4	79.6	86.7	92.4	103.7	114.9	126.1	137.1
2800	30.2	33.2	36.2	39.2	42.2	45.2	51.2	57.2	63.2	69.1	75.1	82.5	89.9	95.8	107.5	119.1	130.6	142.0
2900	31.3	34.4	37.5	40.6	43.7	46.8	53.0	59.2	65.4	71.6	77.7	85.4	93.0	99.1	111.2	123.2	135.1	146.8
3000	32.3	35.6	38.8	42.0	45.2	48.4	54.9	61.3	67.7	74.0	80.4	88.3	96.2	102.5	114.9	127.3	139.5	151.6
3200		37.9	41.4	44.8	48.2	51.6	58.5	65.3	72.1	78.9	85.7	94.1	102.5	109.1	122.4	135.5	148.4	161.2
3400		40.3	43.9	47.6	51.2	54.9	62.1	69.4	76.6	83.8	90.9	99.8	108.7	115.8	129.7	143.6	157.2	170.6
3600		42.6	46.5	50.4	54.2	58.1	65.7	73.4	81.0	88.6	96.2	105.6	114.9	122.4	137.1	151.6	165.9	180.0
3800		45.0	49.1	53.1	57.2	61.3	69.4	77.4	85.5	93.5	101.4	111.3	121.1	128.9	144.4	159.6	174.5	189.2
4000		47.4	51.6	55.9	60.2	64.5	73.0	81.4	89.9	98.3	106.6	117.0	127.3	135.5	151.6	167.5	183.0	198.3
4200		49.7	54.2	58.7	63.2	67.7	76.6	85.5	94.3	103.1	111.8	122.7	133.4	142.0	158.8	175.3	191.5	207.2
4400		52.1	56.8	61.5	66.2	70.8	80.2	89.5	98.7	107.9	117.0	128.3	139.5	148.4	165.9	183.0	199.8	216.1
4600		54.4	59.3	64.2	69.1	74.0	83.8	93.5	103.1	112.7	122.2	133.9	145.6	154.8	173.0	190.7	208.0	224.7
4800		56.8	61.9	67.0	72.1	77.2	87.3	97.4	107.5	117.4	127.3	139.5	151.6	161.2	180.0	198.3	216.1	233.3
5000		59.1	64.5	69.8	75.1	80.4	90.9	101.4	111.8	122.2	132.4	145.1	157.6	167.5	186.9	205.8	224.0	241.6
5500		65.0	70.8	76.7	82.5	88.3	99.8	111.3	122.7	133.9	145.1	158.8	172.4	183.0	203.9	224.0	243.3	261.8
6000		70.8	77.2	83.6	89.9	96.2	108.7	121.1	133.4	145.6	157.6	172.4	186.9	198.3	220.4	241.6	261.8	280.8

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for polyurethane Type MXL (per width of 10 mm)

(Unit: W)

No. of teeth of pinion	12	14	16	18	20	24	28	32	36	40	44	48	52	56	60	64	68	72
Pitch diameter (mm)	7.76	9.06	10.35	11.64	12.94	15.52	18.11	20.70	23.29	25.87	28.46	31.05	33.63	36.22	38.81	41.40	43.98	46.57
Pinion revolution (rpm)																		
100	0.9	1.0	1.2	1.3	1.5	1.8	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.4	4.7	5.0	5.3
200	1.8	2.0	2.3	2.6	2.9	3.5	4.1	4.7	5.3	5.8	6.4	7.0	7.6	8.2	8.8	9.4	9.9	10.5
300	2.6	3.1	3.5	3.9	4.4	5.3	6.1	7.0	7.9	8.8	9.6	10.5	11.4	12.3	13.1	14.0	14.9	15.8
400	3.5	4.1	4.7	5.3	5.8	7.0	8.2	9.4	10.5	11.7	12.9	14.0	15.2	16.4	17.5	18.7	19.9	21.0
500	4.4	5.1	5.8	6.6	7.3	8.8	10.2	11.7	13.1	14.6	16.1	17.5	19.0	20.4	21.9	23.4	24.8	26.3
600	5.3	6.1	7.0	7.9	8.8	10.5	12.3	14.0	15.8	17.5	19.3	21.0	22.8	24.5	26.3	28.0	29.8	31.5
700	6.1	7.2	8.2	9.2	10.2	12.3	14.3	16.4	18.4	20.4	22.5	24.5	26.6	28.6	30.7	32.7	34.7	36.8
800	7.0	8.2	9.4	10.5	11.7	14.0	16.4	18.7	21.0	23.4	25.7	28.0	30.4	32.7	35.0	37.3	39.7	42.0
900	7.9	9.2	10.5	11.8	13.1	15.8	18.4	21.0	23.7	26.3	28.9	31.5	34.1	36.8	39.4	42.0	44.6	47.2
1000	8.8	10.2	11.7	13.1	14.6	17.5	20.4	23.4	26.3	29.2	32.1	35.0	37.9	40.8	43.7	46.6	49.5	52.4
1100	9.6	11.3	12.9	14.5	16.1	19.3	22.5	25.7	28.9	32.1	35.3	38.5	41.7	44.9	48.2	51.3	54.5	57.6
1200	10.5	12.3	14.0	15.8	17.5	21.0	24.5	28.0	31.5	35.0	38.5	42.0	45.5	49.0	52.4	55.9	59.4	62.8
1300		13.3	15.2	17.1	19.0	22.8	26.6	30.4	34.1	37.9	41.7	45.5	49.3	53.0	56.8	60.5	64.3	68.0
1400		14.3	16.4	18.4	20.4	24.5	28.6	32.7	36.8	40.8	44.9	49.0	53.0	57.3	61.1	65.1	69.2	73.2
1500		15.3	17.5	19.7	21.9	26.3	30.7	35.0	39.4	43.7	48.1	52.4	56.8	61.1	65.4	69.7	74.0	78.3
1600		16.4	18.7	21.0	23.4	28.0	32.7	37.3	42.0	46.6	51.3	55.9	60.5	65.1	69.7	74.3	78.9	83.5
1700		17.4	19.9	22.3	24.8	29.8	34.7	39.7	44.6	49.5	54.5	59.4	64.3	69.2	74.0	78.9	83.7	88.6
1800		18.4	21.0	23.7	26.3	31.5	36.8	42.0	47.2	52.4	57.6	62.8	68.0	73.2	78.3	83.5	88.6	93.7
1900			22.2	25.0	27.7	33.3	38.8	44.3	49.8	55.3	60.8	66.3	71.7	77.2	82.6	88.0	93.4	98.8
2000			23.4	26.3	29.2	35.0	40.8	46.6	52.4	58.2	64.6	69.7	75.5	81.2	86.9	92.6	98.2	103.8
2100			24.5	27.6	30.7	36.8	42.9	49.0	55.0	61.1	67.1	73.2	79.2	85.2	91.1	97.1	103.0	108.9
2200			25.7	28.9	32.1	38.5	44.9	51.3	57.6	64.0	70.3	76.6	82.9	89.1	95.4	101.6	107.8	113.9
2300			26.9	30.2	33.6	40.3	46.9	53.6	60.2	66.9	73.5	80.0	86.6	93.1	99.6	106.1	112.5	118.9
2400			28.0	31.5	35.0	42.0	49.0	55.9	62.8	69.7	76.6	83.5	90.3	97.1	103.8	110.5	117.2	123.9
2500			29.2	32.8	36.5	43.7	51.0	58.2	65.4	72.6	79.8	86.9	94.0	101.0	108.0	115.0	121.9	128.8
2600			30.4	34.1	37.9	45.5	53.0	60.5	68.0	75.5	82.9	90.3	97.6	104.9	112.2	119.4	126.6	133.7
2700			31.5	35.5	39.4	47.2	55.0	62.8	70.6	78.3	86.0	93.7	101.3	108.9	116.4	123.9	131.3	138.6
2800			32.7	36.8	40.8	49.0	57.1	65.1	73.2	81.2	89.1	97.1	104.9	112.8	120.5	128.3	135.9	143.5
2900			33.9	38.1	42.3	50.7	59.1	67.4	75.8	84.0	92.3	100.5	108.6	116.7	124.7	132.6	140.5	148.3
3000			35.0	39.4	43.7	52.4	61.1	69.7	78.3	88.0	95.4	103.8	112.2	120.5	128.8	137.0	145.1	153.1
3200			37.3	42.0	46.6	55.9	65.1	74.3	83.5	92.6	101.6	110.5	119.4	128.3	137.0	145.6	154.2	162.6
3400			39.7	44.6	49.5	59.4	69.2	78.9	88.6	98.2	107.8	117.2	126.6	135.9	145.1	154.2	163.2	172.0
3600			42.0	47.2	52.4	62.8	73.2	83.5	93.7	103.8	113.9	123.9	133.7	143.5	153.1	162.6	172.0	181.3
3800			44.3	49.8	55.3	66.3	77.2	88.0	98.8	109.4	120.0	130.4	140.8	151.0	161.1	171.0	180.8	190.4
4000			46.6	52.4	58.2	69.7	81.2	92.6	103.8	115.0	126.1	137.0	147.8	158.4	168.9	179.2	189.4	199.3
4200			49.0	55.0	61.1	73.2	85.2	97.1	108.9	120.5	132.1	143.5	154.7	165.8	176.7	187.4	197.8	208.1
4400			51.3	57.6	64.0	76.6	89.1	101.6	113.9	126.1	138.1	149.9	161.6	173.1	184.3	195.3	206.2	216.7
4600			53.6	60.2	66.9	80.0	93.1	106.1	118.9	131.5	144.0	156.3	168.4	180.3	191.9	203.2	214.3	225.1
4800			55.9	62.8	69.7	83.5	97.1	110.5	123.9	137.0	149.9	162.6	175.1	187.4	199.3	210.9	222.3	233.3

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Type MXL (per width of 6.4 mm)

(Unit: W)

	No. of teeth of pinion	12	14	16	20	24	28	32	40	48	52	60	64	72	80	88	96	100
	Pitch diameter (mm)	7.76	9.06	10.35	12.94	15.52	18.11	20.70	25.87	31.05	33.63	38.81	41.40	46.57	51.74	56.92	62.09	64.68
Pinion revolution (rpm)	100	1.0	1.1	1.3	1.6	1.9	2.2	2.5	3.2	3.8	4.1	4.8	5.1	5.7	6.4	7.0	7.6	7.9
	150	1.4	1.7	1.9	2.4	2.9	3.3	3.8	4.8	5.7	6.2	7.1	7.6	8.6	9.5	10.5	11.4	11.9
	200	1.9	2.2	2.5	3.2	3.8	4.4	5.1	6.4	7.6	8.3	9.5	10.2	11.4	12.7	14.0	15.2	15.9
	250	2.4	2.8	3.2	4.0	4.8	5.6	6.4	7.9	9.5	10.3	11.9	12.7	14.3	15.9	17.5	19.0	19.8
	300	2.9	3.3	3.8	4.8	5.7	6.7	7.6	9.5	11.4	12.4	14.3	15.2	17.1	19.0	21.0	22.9	23.8
	350	3.3	3.9	4.4	5.6	6.7	7.8	8.9	11.1	13.3	14.4	16.7	17.8	20.0	22.2	24.4	26.7	27.8
	400	3.8	4.4	5.1	6.4	7.6	8.9	10.2	12.7	15.2	16.5	19.0	20.3	22.9	25.4	27.9	30.5	31.7
	450	4.3	5.0	5.7	7.1	8.6	10.0	11.4	14.3	17.1	18.6	21.4	22.9	25.7	28.6	31.4	34.3	35.7
	500	4.8	5.6	6.4	7.9	9.5	11.1	12.7	15.9	19.0	20.6	23.8	25.4	28.6	31.7	34.9	38.1	39.6
	600	5.7	6.7	7.6	9.5	11.4	13.3	15.2	19.0	22.9	24.8	28.6	30.5	34.3	38.1	41.9	45.7	47.6
	700	6.7	7.8	8.9	11.1	13.3	15.6	17.8	22.2	26.7	28.9	33.3	35.5	40.0	44.4	48.8	53.2	55.5
	800	7.6	8.9	10.2	12.7	15.2	17.8	20.3	25.4	30.5	33.0	38.1	40.6	45.7	50.7	55.8	60.8	63.3
	900	8.6	10.0	11.4	14.3	17.1	20.0	22.9	28.6	34.3	37.1	42.8	45.7	51.3	57.0	62.7	68.4	71.2
	1000	9.5	11.1	12.7	15.9	19.0	22.2	25.4	31.7	38.1	41.2	47.6	50.7	57.0	63.3	69.6	75.9	79.1
	1100	10.5	12.2	14.0	17.5	21.0	24.4	27.9	34.9	41.9	45.3	52.3	55.8	62.7	69.6	76.5	83.4	86.9
	1200	11.4	13.3	15.2	19.0	22.9	26.7	30.5	38.1	45.7	49.5	57.0	60.8	68.4	75.9	83.4	90.9	94.7
	1300	12.4	14.4	16.5	20.6	24.8	28.9	33.0	41.2	49.5	53.6	61.8	65.9	74.0	82.2	90.3	98.4	102.5
	1400	13.3	15.6	17.8	22.2	26.7	31.1	35.5	44.4	53.2	57.7	66.5	70.9	79.7	88.4	97.2	105.9	110.2
	1500	14.3	16.7	19.0	23.8	28.6	33.3	38.1	47.6	57.0	61.8	71.2	75.9	85.3	94.7	104.0	113.3	118.0
	1600	15.2	17.8	20.3	25.4	30.5	35.5	40.6	50.7	60.8	65.9	75.9	80.9	90.9	100.9	110.9	120.7	125.7
	1700	16.2	18.9	21.6	27.0	32.4	37.7	43.1	53.9	64.6	69.9	80.6	85.9	96.6	107.1	117.7	128.1	133.3
	1800	17.1	20.0	22.9	28.6	34.3	40.0	45.7	57.0	68.4	74.0	85.3	90.9	102.2	113.3	124.4	135.5	141.0
	1900	18.1	21.1	24.1	30.1	36.2	42.2	48.2	60.2	72.1	78.1	90.0	95.9	107.8	119.5	131.2	142.8	148.6
	2000	19.0	22.2	25.4	31.7	38.1	44.4	50.7	63.3	75.9	82.2	94.7	100.9	113.3	125.7	137.9	150.1	156.2
	2100	20.0	23.3	26.7	33.3	40.0	46.6	53.2	66.5	79.7	86.3	99.4	105.9	118.9	131.8	144.6	157.4	163.7
	2200	21.0	24.4	27.9	34.9	41.9	48.8	55.8	69.6	83.4	90.3	104.0	110.9	124.4	137.9	151.3	164.6	171.2
	2300	21.9	25.5	29.2	36.5	43.8	51.0	58.3	72.8	87.2	94.4	108.7	115.8	130.0	144.0	158.0	171.8	178.6
	2400	22.9	26.7	30.5	38.1	45.7	53.2	60.8	75.9	90.9	98.4	113.3	120.7	135.5	150.1	164.6	178.9	186.0
	2500	23.8	27.8	31.7	39.6	47.6	55.5	63.3	79.1	94.7	102.5	118.0	125.7	141.0	156.2	171.2	186.0	193.4
	2600	24.8	28.9	33.0	41.2	49.5	57.7	65.9	82.2	98.4	106.5	122.6	130.6	146.5	162.2	177.7	193.1	200.7
	2700	25.7	30.0	34.3	42.8	51.3	59.9	68.4	85.3	102.2	110.5	127.2	135.5	151.9	168.2	184.2	200.1	207.9
	2800	26.7	31.1	35.5	44.4	53.2	62.1	70.9	88.4	105.9	114.6	131.8	140.4	157.4	174.1	190.7	207.0	215.1
	2900	27.6	32.2	36.8	46.0	55.1	64.3	73.4	91.6	109.6	118.6	136.4	145.2	162.8	180.1	197.2	214.0	222.2
	3000	28.6	33.3	38.1	47.6	57.0	66.5	75.9	94.7	113.3	122.6	141.0	150.1	168.2	186.0	203.6	220.8	229.3
	3200	30.5	35.5	40.6	50.7	60.8	70.9	80.9	100.9	120.7	130.6	150.1	159.8	178.9	197.7	216.3	234.4	243.3
	3400	32.4	37.7	43.1	53.9	64.6	75.3	85.9	107.1	128.1	138.5	159.2	169.4	189.5	209.4	228.8	247.8	257.1
	3600	34.3	40.0	45.7	57.0	68.4	79.7	90.9	113.3	135.5	146.5	168.2	178.9	200.1	220.8	241.1	260.9	270.6
	3800	36.2	42.2	48.2	60.2	72.1	84.1	95.9	119.5	142.8	154.3	177.1	188.4	210.5	232.2	253.2	273.7	283.7
	4000	38.1	44.4	50.7	63.3	75.9	88.4	100.9	125.7	150.1	162.2	186.0	197.7	220.8	243.3	265.2	286.4	296.6
	4200	40.0	46.6	53.2	66.5	79.7	92.8	105.9	131.8	157.4	170.0	194.8	207.0	231.0	254.3	276.9	298.7	309.2
	4400	41.9	48.8	55.8	69.6	83.4	97.2	110.9	137.9	164.6	177.7	203.6	216.3	241.1	265.2	288.4	310.7	321.5
	4600	43.8	51.0	58.3	72.8	87.2	101.5	115.8	144.0	171.8	185.4	212.2	225.4	251.1	275.9	299.7	322.5	333.4
	4800	45.7	53.2	60.8	75.9	90.9	105.9	120.7	150.1	178.9	193.1	220.8	234.4	260.9	286.4	310.7	333.9	345.0

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for Types XL/DXL (per width of 25.4 mm)

(Unit: kW)

No. of teeth of pinion	10	12	14	16	18	20	22	24	28	30	34	38	40	45	50	60	72
Pitch diameter (mm)	16.17	19.40	22.64	25.87	29.11	32.34	35.57	38.81	45.28	48.51	54.98	61.45	64.68	72.77	80.85	97.02	116.43
Pinion revolution (rpm)																	
100	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.09	0.11
200	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.07	0.09	0.09	0.11	0.12	0.12	0.14	0.15	0.19	0.22
300	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.14	0.16	0.18	0.19	0.21	0.23	0.28	0.33
400	0.06	0.07	0.09	0.10	0.11	0.12	0.14	0.15	0.17	0.19	0.21	0.23	0.25	0.28	0.31	0.37	0.44
500	0.08	0.09	0.11	0.12	0.14	0.15	0.17	0.19	0.22	0.23	0.26	0.29	0.31	0.35	0.39	0.46	0.55
600	0.09	0.11	0.13	0.15	0.17	0.19	0.20	0.22	0.26	0.28	0.31	0.35	0.37	0.42	0.46	0.55	0.66
700	0.11	0.13	0.15	0.17	0.19	0.22	0.24	0.26	0.30	0.32	0.37	0.41	0.43	0.49	0.54	0.65	0.77
800	0.12	0.15	0.17	0.20	0.22	0.25	0.27	0.30	0.35	0.37	0.42	0.47	0.49	0.55	0.62	0.74	0.88
900	0.14	0.17	0.19	0.22	0.25	0.28	0.31	0.33	0.39	0.42	0.47	0.53	0.55	0.62	0.69	0.83	0.99
1000	0.15	0.19	0.22	0.25	0.28	0.31	0.34	0.37	0.43	0.46	0.52	0.58	0.62	0.69	0.77	0.92	1.10
1100	0.17	0.20	0.24	0.27	0.31	0.34	0.37	0.41	0.47	0.51	0.58	0.64	0.68	0.76	0.84	1.01	1.20
1200	0.19	0.22	0.26	0.30	0.33	0.37	0.41	0.44	0.52	0.55	0.63	0.70	0.74	0.83	0.92	1.10	1.31
1300	0.20	0.24	0.28	0.32	0.36	0.40	0.44	0.48	0.56	0.60	0.68	0.76	0.80	0.90	0.99	1.19	1.41
1400	0.22	0.26	0.30	0.35	0.39	0.43	0.47	0.52	0.60	0.65	0.73	0.82	0.86	0.96	1.07	1.27	1.51
1500	0.23	0.28	0.32	0.37	0.42	0.46	0.51	0.55	0.65	0.69	0.78	0.87	0.92	1.03	1.14	1.36	1.62
1600	0.25	0.30	0.35	0.39	0.44	0.49	0.54	0.59	0.69	0.74	0.83	0.93	0.98	1.10	1.21	1.45	1.72
1700	0.26	0.31	0.37	0.42	0.47	0.52	0.58	0.63	0.73	0.78	0.88	0.99	1.04	1.16	1.29	1.53	1.81
1800	0.28	0.33	0.39	0.44	0.50	0.55	0.61	0.66	0.77	0.83	0.94	1.04	1.10	1.23	1.36	1.62	1.91
1900	0.29	0.35	0.41	0.47	0.53	0.58	0.64	0.70	0.82	0.87	0.99	1.10	1.16	1.29	1.43	1.70	2.01
2000	0.31	0.37	0.43	0.49	0.55	0.62	0.68	0.74	0.86	0.92	1.04	1.16	1.21	1.36	1.50	1.78	2.10
2100	0.32	0.39	0.45	0.52	0.58	0.65	0.71	0.77	0.90	0.96	1.09	1.21	1.27	1.42	1.57	1.86	2.19
2200	0.34	0.41	0.47	0.54	0.61	0.68	0.74	0.81	0.94	1.01	1.14	1.27	1.33	1.49	1.64	1.94	2.28
2300	0.35	0.43	0.50	0.57	0.64	0.71	0.78	0.85	0.98	1.05	1.19	1.32	1.39	1.55	1.71	2.02	2.37
2400	0.37	0.44	0.52	0.59	0.66	0.74	0.81	0.88	1.03	1.10	1.24	1.38	1.45	1.62	1.78	2.10	2.46
2500	0.39	0.46	0.54	0.62	0.69	0.77	0.84	0.92	1.07	1.14	1.29	1.43	1.50	1.68	1.85	2.18	2.54
2600	0.40	0.48	0.56	0.64	0.72	0.80	0.88	0.95	1.11	1.19	1.34	1.49	1.56	1.74	1.92	2.25	2.62
2700	0.42	0.50	0.58	0.66	0.75	0.83	0.91	0.99	1.15	1.23	1.39	1.54	1.62	1.80	1.98	2.33	2.70
2800	0.43	0.52	0.60	0.69	0.77	0.86	0.94	1.03	1.19	1.27	1.43	1.59	1.67	1.86	2.05	2.40	2.78
2900	0.45	0.54	0.62	0.71	0.80	0.89	0.97	1.06	1.23	1.32	1.48	1.65	1.73	1.92	2.11	2.47	2.85
3000	0.46	0.55	0.65	0.74	0.83	0.92	1.01	1.10	1.27	1.36	1.53	1.70	1.78	1.98	2.18	2.54	2.92
3200	0.49	0.59	0.69	0.79	0.88	0.98	1.07	1.17	1.35	1.45	1.63	1.80	1.89	2.10	2.30	2.67	3.05
3400	0.52	0.63	0.73	0.83	0.94	1.04	1.14	1.24	1.43	1.53	1.72	1.91	2.00	2.22	2.42	2.80	3.18
3600	0.55	0.66	0.77	0.88	0.99	1.10	1.20	1.31	1.51	1.62	1.81	2.01	2.10	2.33	2.54	2.92	3.28
3800	0.58	0.70	0.82	0.93	1.04	1.16	1.27	1.38	1.59	1.70	1.91	2.11	2.20	2.43	2.65	3.03	3.38
4000	0.62	0.74	0.86	0.98	1.10	1.21	1.33	1.45	1.67	1.78	2.00	2.20	2.30	2.54	2.76	3.14	3.46
4200	0.65	0.77	0.90	1.03	1.15	1.27	1.39	1.51	1.75	1.86	2.09	2.30	2.40	2.64	2.86	3.23	3.53
4400	0.68	0.81	0.94	1.07	1.20	1.33	1.46	1.58	1.83	1.94	2.17	2.39	2.49	2.74	2.96	3.32	3.58
4600	0.71	0.85	0.98	1.12	1.26	1.39	1.52	1.65	1.90	2.02	2.26	2.48	2.58	2.83	3.05	3.39	3.62
4800	0.74	0.88	1.03	1.17	1.31	1.45	1.58	1.72	1.98	2.10	2.34	2.57	2.67	2.92	3.14	3.46	3.63
5000	0.77	0.92	1.07	1.21	1.36	1.50	1.64	1.78	2.05	2.18	2.42	2.65	2.76	3.00	3.22	3.52	3.63
5500				1.33	1.49	1.64	1.80	1.94	2.23	2.36	2.62	2.85	2.96	3.20	3.39	3.61	3.55
6000				1.45	1.62	1.78	1.94	2.10	2.40	2.54	2.80	3.03	3.14	3.36	3.52	3.63	3.34
6500				1.56	1.74	1.92	2.09	2.25	2.56	2.71	2.97	3.19	3.29	3.48	3.60	3.57	3.00
7000				1.67	1.86	2.05	2.23	2.40	2.72	2.86	3.12	3.33	3.42	3.57	3.64	3.43	2.50
7500				1.78	1.98	2.18	2.36	2.54	2.86	3.00	3.25	3.45	3.52	3.63	3.61	3.19	1.84
8000				1.89	2.10	2.30	2.49	2.67	3.00	3.14	3.37	3.54	3.59	3.63	3.54	2.85	1.01
8500					2.22	2.42	2.62	2.80	3.12	3.25	3.47	3.60	3.63	3.60	3.40	2.40	
9000					2.33	2.54	2.74	2.92	3.23	3.36	3.54	3.63	3.63	3.51	3.19	1.84	
9500					2.43	2.65	2.85	3.03	3.33	3.45	3.60	3.63	3.60	3.38	2.91	1.16	
10000					2.54	2.76	2.96	3.14	3.42	3.52	3.63	3.60	3.54	3.19	2.56	0.35	

Use within the range of this mark (grey) causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark (blue) results in a shorter belt service life.

Table of basic power ratings for Types L/DL (per width of 25.4 mm)

(Unit: kW)

No. of teeth of pinion		10	12	14	16	18	20	22	24	28	30	35	40	45	50	60	72	84
Pitch diameter (mm)		30.32	36.38	42.45	48.51	54.57	60.64	66.70	72.77	84.89	90.96	106.12	121.28	136.44	151.60	181.91	218.30	254.68
Pinion revolution (rpm)	50	0.02	0.02	0.03	0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.14	0.16
	100	0.04	0.05	0.05	0.06	0.07	0.08	0.09	0.09	0.11	0.12	0.14	0.16	0.17	0.19	0.23	0.28	0.33
	200	0.08	0.09	0.11	0.12	0.14	0.16	0.17	0.19	0.22	0.23	0.27	0.31	0.35	0.39	0.46	0.56	0.65
	300	0.12	0.14	0.16	0.19	0.21	0.23	0.26	0.28	0.33	0.35	0.41	0.46	0.52	0.58	0.70	0.83	0.97
	400	0.16	0.19	0.22	0.25	0.28	0.31	0.34	0.37	0.43	0.46	0.54	0.62	0.70	0.77	0.93	1.11	1.29
	500	0.19	0.23	0.27	0.31	0.35	0.39	0.43	0.46	0.54	0.58	0.68	0.77	0.87	0.96	1.15	1.38	1.60
	600	0.23	0.28	0.33	0.37	0.42	0.46	0.51	0.56	0.65	0.70	0.81	0.93	1.04	1.15	1.38	1.64	1.90
	700	0.27	0.33	0.38	0.43	0.49	0.54	0.60	0.65	0.76	0.81	0.94	1.08	1.21	1.34	1.60	1.90	2.20
	800	0.31	0.37	0.43	0.50	0.56	0.62	0.68	0.74	0.86	0.93	1.08	1.23	1.38	1.53	1.82	2.16	2.49
	900	0.35	0.42	0.49	0.56	0.63	0.70	0.76	0.83	0.97	1.04	1.21	1.38	1.54	1.71	2.03	2.41	2.76
	1000	0.39	0.46	0.54	0.62	0.70	0.77	0.85	0.93	1.08	1.15	1.34	1.53	1.71	1.89	2.24	2.65	3.03
	1100	0.43	0.51	0.60	0.68	0.76	0.85	0.93	1.02	1.18	1.27	1.47	1.67	1.87	2.07	2.45	2.88	3.28
	1200	0.46	0.56	0.65	0.74	0.83	0.93	1.02	1.11	1.29	1.38	1.60	1.82	2.03	2.24	2.65	3.10	3.51
	1300	0.50	0.60	0.70	0.80	0.90	1.00	1.10	1.20	1.39	1.49	1.73	1.96	2.19	2.41	2.84	3.31	3.73
	1400	0.54	0.65	0.76	0.86	0.97	1.08	1.18	1.29	1.50	1.60	1.85	2.10	2.35	2.58	3.03	3.51	3.93
	1500	0.58	0.70	0.81	0.93	1.04	1.15	1.27	1.38	1.60	1.71	1.98	2.24	2.50	2.75	3.21	3.70	4.12
	1600	0.62	0.74	0.86	0.99	1.11	1.23	1.35	1.47	1.70	1.82	2.10	2.38	2.65	2.90	3.38	3.88	4.28
	1700	0.66	0.79	0.92	1.05	1.18	1.30	1.43	1.56	1.80	1.93	2.23	2.52	2.79	3.06	3.55	4.04	4.42
	1800		0.83	0.97	1.11	1.24	1.38	1.51	1.64	1.90	2.03	2.35	2.65	2.94	3.21	3.70	4.19	4.53
	1900		0.88	1.02	1.17	1.31	1.45	1.59	1.73	2.00	2.14	2.46	2.78	3.07	3.35	3.85	4.32	4.62
	2000		0.93	1.08	1.23	1.38	1.53	1.67	1.82	2.10	2.24	2.58	2.90	3.21	3.49	3.99	4.43	4.69
	2100		0.97	1.13	1.29	1.44	1.60	1.75	1.90	2.20	2.35	2.70	3.03	3.34	3.63	4.12	4.53	4.73
	2200		1.02	1.18	1.35	1.51	1.67	1.83	1.99	2.30	2.45	2.81	3.15	3.46	3.75	4.23	4.61	4.74
	2300		1.06	1.24	1.41	1.58	1.75	1.91	2.08	2.39	2.55	2.92	3.27	3.59	3.87	4.34	4.67	4.72
	2400		1.11	1.29	1.47	1.64	1.82	1.99	2.16	2.49	2.65	3.03	3.38	3.70	3.99	4.43	4.72	4.67
	2500		1.15	1.34	1.53	1.71	1.89	2.07	2.24	2.58	2.75	3.13	3.49	3.81	4.10	4.52	4.74	4.58
	2600		1.20	1.39	1.59	1.77	1.96	2.15	2.33	2.67	2.84	3.24	3.60	3.92	4.20	4.59	4.74	4.46
	2700		1.24	1.44	1.64	1.84	2.03	2.22	2.41	2.76	2.94	3.34	3.70	4.02	4.29	4.65	4.71	4.31
	2800		1.29	1.50	1.70	1.90	2.10	2.30	2.49	2.85	3.03	3.44	3.80	4.12	4.37	4.69	4.67	4.12
	2900		1.33	1.55	1.76	1.97	2.17	2.37	2.57	2.94	3.12	3.53	3.90	4.20	4.45	4.72	4.60	3.89
	3000		1.38	1.60	1.82	2.03	2.24	2.45	2.65	3.03	3.21	3.63	3.99	4.29	4.52	4.74	4.50	3.62
	3200			1.70	1.93	2.16	2.38	2.60	2.80	3.20	3.38	3.80	4.16	4.43	4.63	4.72	4.23	2.96
	3400			1.80	2.05	2.28	2.52	2.74	2.95	3.36	3.55	3.97	4.31	4.55	4.70	4.65	3.85	2.12
	3600			1.90	2.16	2.41	2.65	2.88	3.10	3.51	3.70	4.12	4.43	4.65	4.74	4.50	3.36	1.09
	3800			2.00	2.27	2.53	2.78	3.02	3.24	3.66	3.85	4.25	4.54	4.71	4.73	4.28	2.73	
	4000			2.10	2.38	2.65	2.90	3.15	3.38	3.80	3.99	4.37	4.63	4.74	4.68	3.99	1.98	
	4200				2.49	2.76	3.03	3.28	3.51	3.93	4.12	4.48	4.69	4.73	4.58	3.62	1.09	
	4400				2.60	2.88	3.15	3.40	3.64	4.06	4.23	4.57	4.73	4.69	4.44	3.16	0.06	
	4600				2.70	2.99	3.27	3.52	3.76	4.17	4.34	4.64	4.74	4.62	4.24	2.62		
	4800				2.80	3.10	3.38	3.64	3.88	4.28	4.43	4.69	4.72	4.50	3.99	1.98		
	5000				2.90	3.21	3.49	3.75	3.99	4.37	4.52	4.72	4.68	4.34	3.69	1.25		
	5500				3.15	3.46	3.75	4.01	4.23	4.57	4.67	4.72	4.44	3.77	2.67			
	6000				3.38	3.70	3.99	4.23	4.43	4.69	4.74	4.58	3.99	2.90	1.25			

(grey) Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

(blue) Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Types H/DH (per width of 25.4 mm)

(Unit: kW)

No. of teeth of pinion	14	16	18	20	22	24	26	28	30	35	40	45	50	60	72	84	96
Pitch diameter (mm)	56.60	64.68	72.77	80.85	88.94	97.02	105.11	113.19	121.28	141.49	161.70	181.91	202.13	242.55	291.06	339.57	388.08
Pinion revolution (rpm)																	
100	0.18	0.21	0.24	0.26	0.29	0.32	0.34	0.37	0.40	0.46	0.53	0.59	0.66	0.79	0.95	1.11	1.26
200	0.37	0.42	0.47	0.53	0.58	0.63	0.69	0.74	0.79	0.92	1.05	1.19	1.32	1.58	1.89	2.21	2.52
300	0.55	0.63	0.71	0.79	0.87	0.95	1.03	1.11	1.19	1.38	1.58	1.78	1.97	2.37	2.83	3.30	3.77
400	0.74	0.84	0.95	1.05	1.16	1.26	1.37	1.47	1.58	1.84	2.10	2.37	2.63	3.15	3.77	4.38	4.99
500	0.92	1.05	1.19	1.32	1.45	1.58	1.71	1.84	1.97	2.30	2.63	2.95	3.28	3.92	4.69	5.44	6.19
600	1.11	1.26	1.42	1.58	1.74	1.89	2.05	2.21	2.37	2.76	3.15	3.53	3.92	4.69	5.59	6.48	7.35
700	1.29	1.47	1.66	1.84	2.03	2.21	2.39	2.57	2.76	3.21	3.66	4.11	4.56	5.44	6.48	7.49	8.48
800	1.47	1.68	1.89	2.10	2.31	2.52	2.73	2.94	3.15	3.66	4.18	4.69	5.19	6.19	7.35	8.48	9.55
900	1.66	1.89	2.13	2.37	2.60	2.83	3.07	3.30	3.53	4.11	4.69	5.25	5.82	6.92	8.20	9.42	10.57
1000	1.84	2.10	2.37	2.63	2.89	3.15	3.41	3.66	3.92	4.56	5.19	5.82	6.43	7.64	9.02	10.32	11.54
1100	2.03	2.31	2.60	2.89	3.17	3.46	3.74	4.02	4.30	5.00	5.69	6.37	7.04	8.34	9.81	11.18	12.43
1200		2.52	2.83	3.15	3.46	3.77	4.07	4.38	4.69	5.44	6.19	6.92	7.64	9.02	10.57	11.99	13.26
1300		2.73	3.07	3.41	3.74	4.07	4.41	4.74	5.07	5.88	6.68	7.46	8.22	9.68	11.30	12.75	14.00
1400		2.94	3.30	3.66	4.02	4.38	4.74	5.09	5.44	6.31	7.16	7.99	8.79	10.32	11.99	13.45	14.65
1500		3.15	3.53	3.92	4.30	4.69	5.07	5.44	5.82	6.74	7.64	8.51	9.35	10.94	12.65	14.08	15.21
1600		3.35	3.77	4.18	4.58	4.99	5.39	5.79	6.19	7.16	8.11	9.02	9.90	11.54	13.26	14.65	15.67
1700		3.56	4.00	4.43	4.86	5.29	5.72	6.14	6.56	7.58	8.57	9.52	10.43	12.11	13.82	15.15	16.03
1800		3.77	4.23	4.69	5.14	5.59	6.04	6.48	6.92	7.99	9.02	10.01	10.94	12.65	14.34	15.57	16.27
1900		3.97	4.46	4.94	5.42	5.89	6.36	6.82	7.28	8.39	9.46	10.48	11.44	13.16	14.80	15.91	16.38
2000		4.18	4.69	5.19	5.69	6.19	6.68	7.16	7.64	8.79	9.90	10.94	11.92	13.64	15.21	16.16	16.38
2100			4.91	5.44	5.97	6.48	6.99	7.49	7.99	9.19	10.32	11.39	12.38	14.08	15.57	16.32	16.23
2200			5.14	5.69	6.24	6.77	7.30	7.82	8.34	9.57	10.74	11.83	12.82	14.50	15.86	16.39	15.95
2300			5.37	5.94	6.51	7.06	7.61	8.15	8.68	9.95	11.14	12.24	13.24	14.87	16.10	16.36	15.52
2400			5.59	6.19	6.77	7.35	7.92	8.48	9.02	10.32	11.54	12.65	13.64	15.21	16.27	16.23	14.93
2500			5.82	6.43	7.04	7.64	8.22	8.79	9.35	10.69	11.92	13.03	14.01	15.51	16.37	15.99	14.19
2600			6.04	6.68	7.30	7.92	8.52	9.11	9.68	11.04	12.29	13.40	14.36	15.77	16.40	15.64	13.27
2700			6.26	6.92	7.57	8.20	8.82	9.42	10.01	11.39	12.65	13.75	14.69	15.99	16.35	15.17	12.19
2800			6.48	7.16	7.82	8.48	9.11	9.73	10.32	11.73	12.99	14.08	14.99	16.16	16.23	14.58	10.92
2900			6.70	7.40	8.08	8.75	9.40	10.03	10.64	12.06	13.32	14.40	15.27	16.29	16.03	13.86	9.46
3000			6.92	7.64	8.34	9.02	9.68	10.32	10.94	12.38	13.64	14.69	15.51	16.37	15.75	13.02	7.81
3200			7.35	8.11	8.84	9.55	10.24	10.90	11.54	12.99	14.23	15.21	15.92	16.38	14.93	10.92	3.90
3400			7.78	8.57	9.33	10.07	10.78	11.46	12.11	13.56	14.75	15.65	16.21	16.17	13.75	8.24	
3600				9.02	9.81	10.57	11.30	11.99	12.65	14.08	15.21	15.99	16.37	15.75	12.19	4.96	
3800				9.46	10.28	11.06	11.81	12.50	13.16	14.56	15.60	16.23	16.39	15.09	10.21	1.03	
4000				9.90	10.74	11.54	12.29	12.99	13.64	14.99	15.92	16.37	16.27	14.19	7.81		
4200				10.32	11.18	11.99	12.75	13.45	14.08	15.37	16.16	16.39	15.99	13.02	4.96		
4400				10.74	11.61	12.43	13.19	13.88	14.50	15.69	16.32	16.30	15.56	11.58	1.63		
4600				11.14	12.03	12.85	13.61	14.28	14.87	15.95	16.39	16.09	14.96	9.84			
4800				11.54	12.43	13.26	14.00	14.65	15.21	16.16	16.38	15.75	14.19	7.81			
5000				11.92	12.82	13.64	14.36	14.99	15.51	16.30	16.27	15.28	13.23	5.47			
5500				12.82	13.71	14.50	15.16	15.69	16.08	16.37	15.56	13.49	10.00				
6000				13.64	14.50	15.21	15.77	16.16	16.37	15.99	14.19	10.75	5.47				

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for rubber Type XH (per width of 25.4 mm)

(Unit: kW)

No. of teeth of pinion	18	20	22	24	26	30	35	40	45	50	60	72	84	96	120
Pitch diameter (mm)	127.34	141.49	155.64	169.79	183.94	212.23	247.61	282.98	318.35	353.72	424.47	509.36	594.25	679.15	848.93
Pinion revolution (rpm) 100	0.57	0.63	0.69	0.75	0.82	0.94	1.10	1.26	1.41	1.57	1.88	2.26	2.63	3.01	3.75
200	1.13	1.26	1.38	1.51	1.63	1.88	2.20	2.51	2.82	3.13	3.75	4.48	5.21	5.93	7.33
300	1.70	1.88	2.07	2.26	2.45	2.82	3.28	3.75	4.21	4.67	5.57	6.63	7.67	8.68	10.58
400	2.26	2.51	2.76	3.01	3.25	3.75	4.36	4.97	5.57	6.16	7.33	8.68	9.97	11.18	13.34
500	2.82	3.13	3.44	3.75	4.05	4.67	5.42	6.16	6.90	7.62	9.01	10.58	12.03	13.34	15.44
600	3.38	3.75	4.12	4.48	4.85	5.57	6.46	7.33	8.18	9.01	10.58	12.31	13.82	15.08	16.71
700	3.93	4.36	4.79	5.21	5.63	6.46	7.47	8.46	9.41	10.33	12.03	13.82	15.26	16.31	16.99
800	4.48	4.97	5.45	5.93	6.40	7.33	8.46	9.55	10.58	11.56	13.34	15.08	16.31	16.95	16.12
900	5.03	5.57	6.11	6.63	7.16	8.18	9.41	10.58	11.68	12.71	14.48	16.05	16.90	16.91	13.92
1000	5.57	6.16	6.75	7.33	7.90	9.01	10.33	11.56	12.71	13.74	15.44	16.71	16.99	16.12	
1100	6.11	6.75	7.39	8.01	8.62	9.81	11.20	12.49	13.64	14.65	16.19	17.01	16.51	14.47	
1200		7.33	8.01	8.68	9.33	10.58	12.03	13.34	14.48	15.44	16.71	16.91	15.41		
1300		7.90	8.62	9.33	10.02	11.32	12.81	14.12	15.22	16.08	16.98	16.39	13.62		
1400		8.46	9.22	9.97	10.68	12.03	13.54	14.82	15.84	16.56	16.99	15.41			
1500		9.01	9.81	10.58	11.32	12.71	14.21	15.44	16.34	16.88	16.71	13.92			
1600		9.55	10.38	11.18	11.94	13.34	14.82	15.96	16.71	17.02	16.12				
1700		10.07	10.93	11.75	12.53	13.93	15.36	16.39	16.94	16.96	15.19				
1800		10.58	11.47	12.31	13.09	14.48	15.84	16.71	17.02	16.71	13.92				
1900			11.99	12.84	13.62	14.98	16.24	16.92	16.95	16.24					
2000			12.49	13.34	14.12	15.44	16.56	17.02	16.71	15.54					
2100			12.96	13.82	14.59	15.84	16.80	16.99	16.29	14.60					
2200			13.42	14.27	15.02	16.19	16.96	16.84	15.70						
2300			13.86	14.69	15.41	16.48	17.02	16.55	14.91						
2400				15.08	15.76	16.71	16.99	16.12	13.92						
2500				15.44	16.08	16.88	16.86	15.54							
2600				15.76	16.35	16.98	16.63	14.81							
2700				16.05	16.58	17.02	16.29								
2800				16.31	16.76	16.99	15.85								
2900				16.53	16.90	16.89	15.28								
3000				16.71	16.98	16.71									
3200				16.95	17.01	16.12									
3400				17.02	16.81	15.19									
3600				16.91	16.39	13.92									

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark results in a shorter belt service life.

The value with this mark varies between the above two types; use them only when a special design is necessary.

Table of basic power ratings for rubber Type XXH (per width of 25.4 mm)

(Unit: kW)

Pinion revolution (rpm) \ No. of teeth of pinion	18	20	22	24	26	28	30	32	34	36	40	42	44	48	50	60
Pitch diameter (mm)	181.91	202.13	222.34	242.55	262.76	282.98	303.19	323.40	343.62	363.83	404.25	424.47	444.68	485.10	505.32	606.38
100	0.99	1.10	1.21	1.32	1.43	1.54	1.65	1.76	1.87	1.98	2.20	2.31	2.42	2.64	2.75	3.29
200	1.98	2.20	2.42	2.64	2.86	3.07	3.29	3.51	3.73	3.94	4.38	4.59	4.81	5.24	5.45	6.51
300	2.97	3.29	3.62	3.94	4.27	4.59	4.91	5.24	5.56	5.87	6.51	6.82	7.13	7.75	8.06	9.57
400	3.94	4.38	4.81	5.24	5.66	6.09	6.51	6.93	7.34	7.75	8.57	8.97	9.37	10.15	10.54	12.40
500	4.91	5.45	5.98	6.51	7.03	7.55	8.06	8.57	9.07	9.57	10.54	11.02	11.48	12.40	12.84	14.92
600	5.87	6.51	7.13	7.75	8.37	8.97	9.57	10.15	10.73	11.30	12.40	12.93	13.44	14.44	14.92	17.05
700	6.82	7.55	8.26	8.97	9.67	10.35	11.02	11.67	12.31	12.93	14.11	14.68	15.22	16.25	16.72	18.72
800	7.75	8.57	9.37	10.15	10.92	11.67	12.40	13.10	13.78	14.44	15.67	16.25	16.79	17.78	18.22	19.85
900	8.67	9.57	10.44	11.30	12.13	12.93	13.70	14.44	15.15	15.82	17.05	17.60	18.11	18.99	19.36	20.36
1000	9.57	10.54	11.48	12.40	13.27	14.11	14.92	15.67	16.39	17.05	18.22	18.72	19.16	19.85	20.09	20.17
1100	10.44	11.48	12.49	13.44	14.36	15.22	16.04	16.79	17.48	18.11	19.16	19.57	19.90	20.31	20.38	19.22
1200		12.40	13.44	14.44	15.38	16.25	17.05	17.78	18.43	18.99	19.85	20.13	20.31	20.34	20.17	17.41
1300		13.27	14.36	15.38	16.32	17.18	17.95	18.62	19.20	19.67	20.26	20.37	20.35	19.89	19.43	
1400		14.11	15.22	16.25	17.18	18.00	18.72	19.32	19.79	20.13	20.38	20.27	20.00	18.93	18.11	
1500		14.92	16.04	17.05	17.95	18.72	19.36	19.85	20.18	20.36	20.17	19.80	19.22	17.41		
1600		15.67	16.79	17.78	18.62	19.32	19.85	20.20	20.37	20.34	19.63	18.93	17.98			
1700		16.39	17.48	18.43	19.20	19.79	20.18	20.37	20.33	20.05	18.71	17.63	16.25			
1800		17.05	18.11	18.99	19.67	20.13	20.36	20.34	20.05	19.47	17.41					
1900		17.66	18.67	19.47	20.02	20.33	20.36	20.09	19.51	18.60						
2000		18.22	19.16	19.85	20.26	20.38	20.17	19.63	18.71	17.41						
2100		18.72	19.57	20.13	20.37	20.27	19.80	18.93	17.63							
2200		19.16	19.90	20.31	20.35	20.00	19.22	17.98	16.25							
2300		19.54	20.15	20.38	20.19	19.55	18.42	16.77								
2400		19.85	20.31	20.34	19.89	18.93	17.41									
2500		20.09	20.38	20.17	19.43	18.11										
2600		20.26	20.35	19.89	18.82	17.10										
2700		20.36	20.23	19.47	18.05	15.89										
2800		20.38	20.00	18.93	17.10	14.46										
2900		20.32	19.66	18.24	15.98	12.81										
3000		20.17	19.22	17.41	14.68	10.94										

Use within the range of this mark causes a belt speed of 33 m/s or more; use the belt by taking the dynamic balance with the pulleys.

Use within the range of this mark results in a shorter belt service life.

The value with this mark varies between the above two types; use them only when a special design is necessary.

Table of basic power ratings for polyurethane Types T5/DT5 (per width of 10 mm)

(Unit: kW)

	No. of teeth of pinion	12	14	16	18	20	22	24	26	28	30	35	40	45	50	60	72
	Pitch diameter (mm)	19.10	22.28	25.46	28.65	31.83	35.01	38.20	41.38	44.56	47.75	55.70	63.66	71.62	79.58	95.49	114.59
Pinion revolution (rpm)	100	0.014	0.017	0.019	0.021	0.024	0.026	0.029	0.031	0.033	0.036	0.042	0.048	0.054	0.060	0.072	0.086
	200	0.021	0.025	0.028	0.032	0.035	0.039	0.043	0.046	0.050	0.053	0.062	0.071	0.080	0.089	0.106	0.128
	300	0.030	0.035	0.040	0.045	0.050	0.055	0.060	0.065	0.070	0.075	0.087	0.100	0.112	0.125	0.150	0.180
	400	0.039	0.045	0.052	0.058	0.065	0.071	0.078	0.084	0.091	0.097	0.113	0.130	0.146	0.162	0.194	0.233
	500	0.048	0.056	0.064	0.072	0.080	0.088	0.095	0.103	0.111	0.119	0.139	0.159	0.179	0.199	0.239	0.286
	600	0.056	0.066	0.075	0.084	0.094	0.103	0.113	0.122	0.131	0.141	0.164	0.188	0.211	0.235	0.282	0.338
	700	0.065	0.075	0.086	0.097	0.108	0.119	0.129	0.140	0.151	0.162	0.189	0.215	0.242	0.269	0.323	0.388
	800	0.073	0.085	0.097	0.109	0.121	0.133	0.145	0.157	0.170	0.182	0.212	0.242	0.272	0.303	0.363	0.436
	900	0.080	0.094	0.107	0.121	0.134	0.147	0.161	0.174	0.188	0.201	0.234	0.268	0.301	0.335	0.402	0.482
	1000	0.088	0.102	0.117	0.132	0.146	0.161	0.176	0.190	0.205	0.220	0.256	0.293	0.329	0.366	0.439	0.527
	1100	0.095	0.111	0.127	0.143	0.158	0.174	0.190	0.206	0.222	0.238	0.277	0.317	0.357	0.396	0.475	0.570
	1200	0.102	0.119	0.136	0.153	0.170	0.187	0.204	0.221	0.238	0.255	0.298	0.340	0.383	0.425	0.510	0.612
	1300	0.109	0.127	0.145	0.163	0.181	0.200	0.218	0.236	0.254	0.272	0.317	0.363	0.408	0.453	0.544	0.653
	1400	0.115	0.135	0.154	0.173	0.192	0.212	0.231	0.250	0.269	0.289	0.337	0.385	0.433	0.481	0.577	0.692
	1500	0.122	0.142	0.162	0.183	0.203	0.223	0.244	0.264	0.284	0.304	0.355	0.406	0.457	0.507	0.609	0.731
	1600	0.128	0.149	0.171	0.192	0.213	0.235	0.256	0.277	0.299	0.320	0.373	0.427	0.480	0.533	0.640	0.768
	1700	0.134	0.156	0.179	0.201	0.223	0.246	0.268	0.290	0.313	0.335	0.391	0.447	0.503	0.559	0.670	0.804
	1800	0.140	0.163	0.187	0.210	0.233	0.257	0.280	0.303	0.327	0.350	0.408	0.466	0.525	0.583	0.700	0.840
	1900	0.146	0.170	0.194	0.219	0.243	0.267	0.291	0.316	0.340	0.364	0.425	0.486	0.546	0.607	0.728	0.874
	2000	0.151	0.177	0.202	0.227	0.252	0.277	0.303	0.328	0.353	0.378	0.441	0.504	0.567	0.630	0.757	0.908
	2100	0.157	0.183	0.209	0.235	0.261	0.287	0.314	0.340	0.366	0.392	0.457	0.523	0.588	0.653	0.784	0.941
	2200	0.162	0.189	0.216	0.243	0.270	0.297	0.324	0.351	0.378	0.405	0.473	0.541	0.608	0.676	0.811	0.973
	2300	0.167	0.195	0.223	0.251	0.279	0.307	0.335	0.363	0.391	0.419	0.488	0.558	0.628	0.698	0.837	1.004
	2400	0.173	0.201	0.230	0.259	0.288	0.316	0.345	0.374	0.403	0.431	0.503	0.575	0.647	0.719	0.863	1.035
	2500	0.178	0.207	0.237	0.266	0.296	0.326	0.355	0.385	0.414	0.444	0.518	0.592	0.666	0.740	0.888	1.066
	2600	0.183	0.213	0.243	0.274	0.304	0.335	0.365	0.395	0.426	0.456	0.532	0.608	0.685	0.761	0.913	1.095
	2700	0.187	0.219	0.250	0.281	0.312	0.344	0.375	0.406	0.437	0.468	0.547	0.625	0.703	0.781	0.937	1.124
	2800	0.192	0.224	0.256	0.288	0.320	0.352	0.384	0.416	0.448	0.480	0.560	0.640	0.721	0.801	0.961	1.153
	2900	0.197	0.230	0.262	0.295	0.328	0.361	0.394	0.426	0.459	0.492	0.574	0.656	0.738	0.820	0.984	1.181
	3000	0.201	0.235	0.269	0.302	0.336	0.369	0.403	0.436	0.470	0.504	0.587	0.671	0.755	0.839	1.007	1.208
	3200	0.210	0.245	0.280	0.316	0.351	0.386	0.421	0.456	0.491	0.526	0.614	0.701	0.789	0.877	1.052	1.262
	3400	0.219	0.256	0.292	0.329	0.365	0.402	0.438	0.475	0.511	0.548	0.639	0.730	0.821	0.913	1.095	1.314
	3600	0.227	0.265	0.303	0.341	0.379	0.417	0.455	0.493	0.531	0.569	0.663	0.758	0.853	0.948	1.137	1.365
	3800	0.236	0.275	0.314	0.353	0.393	0.432	0.471	0.510	0.550	0.589	0.687	0.785	0.883	0.982	1.178	1.414
	4000	0.244	0.284	0.325	0.365	0.406	0.446	0.487	0.528	0.568	0.609	0.710	0.812	0.913	1.015	1.218	1.461
	4200	0.251	0.293	0.335	0.377	0.419	0.461	0.502	0.544	0.586	0.628	0.733	0.837	0.942	1.047	1.256	1.507
	4400	0.259	0.302	0.345	0.388	0.431	0.474	0.518	0.561	0.604	0.647	0.755	0.863	0.970	1.078	1.294	1.553
	4600	0.266	0.310	0.355	0.399	0.443	0.488	0.532	0.577	0.621	0.665	0.776	0.887	0.998	1.109	1.330	1.597
	4800	0.273	0.319	0.364	0.410	0.455	0.501	0.546	0.592	0.638	0.683	0.797	0.911	1.025	1.139	1.366	1.639
	5000	0.280	0.327	0.374	0.420	0.467	0.514	0.560	0.607	0.654	0.701	0.817	0.934	1.051	1.168	1.401	1.681
	5500			0.396	0.446	0.495	0.545	0.594	0.644	0.693	0.743	0.866	0.990	1.114	1.238	1.485	
	6000			0.417	0.469	0.522	0.574	0.626	0.678	0.730	0.782	0.913	1.043	1.174	1.304	1.565	
	6500			0.438	0.492	0.547	0.602	0.656	0.711	0.766	0.820	0.957	1.094	1.231	1.367		
	7000			0.457	0.514	0.571	0.628	0.685	0.742	0.800	0.857	0.999	1.142	1.285	1.428		
	7500			0.475	0.535	0.594	0.654	0.713	0.773	0.832	0.891	1.040	1.189				
	8000				0.555	0.617	0.678	0.740	0.802	0.863	0.925	1.079	1.233				
	8500				0.574	0.638	0.702	0.766	0.829	0.893	0.957	1.117	1.276				
	9000				0.593	0.659	0.725	0.790	0.856	0.922	0.988	1.153	1.317				
	9500				0.611	0.679	0.747	0.814	0.882	0.950	1.018	1.188					
	10000				0.628	0.698	0.768	0.838	0.907	0.977	1.047	1.222					

Use within the range of this mark results in a shorter belt service life.

Table of basic power ratings for polyurethane Types T10/DT10 (per width of 10 mm)

(Unit: kW)

No. of teeth of pinion	12	14	16	18	20	22	24	26	28	30	35	40	45	50	60	72
Pitch diameter (mm)	38.20	44.56	50.93	57.30	63.66	70.03	76.39	82.76	89.13	95.49	111.41	127.32	143.24	159.15	190.99	229.18
Pinion revolution (rpm)																
100	0.04	0.04	0.05	0.06	0.06	0.07	0.07	0.08	0.09	0.09	0.11	0.12	0.14	0.16	0.19	0.22
200	0.07	0.08	0.09	0.10	0.11	0.13	0.14	0.15	0.16	0.17	0.20	0.23	0.26	0.29	0.34	0.41
300	0.10	0.11	0.13	0.15	0.16	0.18	0.20	0.21	0.23	0.25	0.29	0.33	0.37	0.41	0.49	0.59
400	0.13	0.15	0.17	0.19	0.21	0.23	0.25	0.28	0.30	0.32	0.37	0.42	0.48	0.53	0.64	0.76
500	0.16	0.18	0.21	0.23	0.26	0.28	0.31	0.34	0.36	0.39	0.45	0.52	0.58	0.65	0.78	0.93
600	0.18	0.21	0.24	0.27	0.30	0.33	0.36	0.39	0.43	0.46	0.53	0.61	0.68	0.76	0.91	1.09
700	0.21	0.24	0.28	0.31	0.35	0.38	0.42	0.45	0.49	0.52	0.61	0.70	0.78	0.87	1.04	1.25
800	0.23	0.27	0.31	0.35	0.39	0.43	0.47	0.51	0.55	0.59	0.68	0.78	0.88	0.98	1.17	1.40
900	0.26	0.30	0.35	0.39	0.43	0.47	0.52	0.56	0.60	0.65	0.75	0.86	0.97	1.08	1.29	1.55
1000	0.28	0.33	0.38	0.42	0.47	0.52	0.57	0.61	0.66	0.71	0.82	0.94	1.06	1.18	1.41	1.70
1100	0.31	0.36	0.41	0.46	0.51	0.56	0.61	0.66	0.71	0.76	0.89	1.02	1.15	1.27	1.53	1.84
1200	0.33	0.38	0.44	0.49	0.55	0.60	0.66	0.71	0.77	0.82	0.96	1.09	1.23	1.37	1.64	1.97
1300	0.35	0.41	0.47	0.53	0.58	0.64	0.70	0.76	0.82	0.88	1.02	1.17	1.31	1.46	1.75	2.10
1400	0.37	0.43	0.50	0.56	0.62	0.68	0.74	0.81	0.87	0.93	1.08	1.24	1.39	1.55	1.86	2.23
1500	0.39	0.46	0.52	0.59	0.65	0.72	0.78	0.85	0.92	0.98	1.14	1.31	1.47	1.63	1.96	2.35
1600	0.41	0.48	0.55	0.62	0.69	0.76	0.83	0.89	0.96	1.03	1.20	1.38	1.55	1.72	2.06	2.48
1700	0.43	0.50	0.58	0.65	0.72	0.79	0.86	0.94	1.01	1.08	1.26	1.44	1.62	1.80	2.16	2.59
1800	0.45	0.53	0.60	0.68	0.75	0.83	0.90	0.98	1.05	1.13	1.32	1.51	1.69	1.88	2.26	2.71
1900	0.47	0.55	0.63	0.71	0.78	0.86	0.94	1.02	1.10	1.18	1.37	1.57	1.76	1.96	2.35	2.82
2000	0.49	0.57	0.65	0.73	0.81	0.90	0.98	1.06	1.14	1.22	1.43	1.63	1.83	2.04	2.44	2.93
2100	0.51	0.59	0.68	0.76	0.84	0.93	1.01	1.10	1.18	1.27	1.48	1.69	1.90	2.11	2.53	3.04
2200	0.52	0.61	0.70	0.79	0.87	0.96	1.05	1.14	1.22	1.31	1.53	1.75	1.97	2.19	2.62	3.15
2300	0.54	0.63	0.72	0.81	0.90	0.99	1.08	1.17	1.26	1.35	1.58	1.81	2.03	2.26	2.71	3.25
2400	0.56	0.65	0.75	0.84	0.93	1.02	1.12	1.21	1.30	1.40	1.63	1.86	2.10	2.33	2.79	3.35
2500	0.58	0.67	0.77	0.86	0.96	1.06	1.15	1.25	1.34	1.44	1.68	1.92	2.16	2.40	2.88	3.45
2600	0.59	0.69	0.79	0.89	0.99	1.09	1.18	1.28	1.38	1.48	1.73	1.97	2.22	2.47	2.96	
2700	0.61	0.71	0.81	0.91	1.01	1.11	1.22	1.32	1.42	1.52	1.77	2.03	2.28	2.53	3.04	
2800	0.62	0.73	0.83	0.94	1.04	1.14	1.25	1.35	1.46	1.56	1.82	2.08	2.34	2.60	3.12	
2900		0.75	0.85	0.96	1.07	1.17	1.28	1.39	1.49	1.60	1.87	2.13	2.40	2.66	3.20	
3000		0.76	0.87	0.98	1.09	1.20	1.31	1.42	1.53	1.64	1.91	2.18	2.46	2.73	3.27	
3200		0.80	0.91	1.03	1.14	1.26	1.37	1.48	1.60	1.71	2.00	2.28	2.57	2.85		
3400		0.83	0.95	1.07	1.19	1.31	1.43	1.55	1.67	1.78	2.08	2.38	2.68	2.97		
3600		0.87	0.99	1.11	1.24	1.36	1.48	1.61	1.73	1.85	2.16	2.47	2.78	3.09		
3800		0.90	1.03	1.15	1.28	1.41	1.54	1.67	1.80	1.92	2.24	2.56	2.88			
4000			1.06	1.19	1.33	1.46	1.59	1.72	1.86	1.99	2.32	2.65	2.98			
4200			1.10	1.23	1.37	1.51	1.64	1.78	1.92	2.05	2.40	2.74				
4400			1.13	1.27	1.41	1.55	1.69	1.84	1.98	2.12	2.47	2.82				
4600			1.16	1.31	1.45	1.60	1.74	1.89	2.03	2.18	2.54					
4800			1.20	1.34	1.49	1.64	1.79	1.94	2.09	2.24	2.61					
5000			1.23	1.38	1.53	1.69	1.84	1.99	2.15	2.30	2.68					
5500			1.30	1.47	1.63	1.79	1.95	2.12	2.28	2.44						
6000			1.38	1.55	1.72	1.89	2.06	2.23	2.41	2.58						

Use within the range of this mark results in a shorter belt service life.

Table 7 Mesh correction factor (Km)

Number of meshed teeth Zm	Km
6 or more	1.00
5	0.80
4	0.60
3	0.40
2	0.20

Table 8 Table of Effective Length Correction Factors (Kl)

Table 8-1 Ceptor-VI S3M

Effective length	Length correction factor Kl
93～195	0.96
198～276	0.98
279～363	1.00
366～450	1.02
453～534	1.04
537～630	1.06
633～702	1.08
720～801	1.10
804～1587	1.12

Table 8-2 Ceptor-VI S5M

Effective length	Length correction factor Kl
225～425	0.96
435～555	0.98
560～855	1.00
860～980	1.02
1000～1300	1.04
1350～1590	1.06
1595～1710	1.07
1715～1795	1.10
1800～2000	1.12

Table 8-3 Ceptor-VI/X S8M

Effective length	Length correction factor Kl
480～624	0.94
632～792	0.96
800～1024	0.98
1032～1264	1.00
1272～1640	1.02
1648～2032	1.04
2040～2792	1.06
2800～3592	1.08
3600～4392	1.10
4400	1.12

Table 8-4 Ceptor-X S14M

Effective length	Length correction factor Kl
1008～1176	0.98
1190～1526	1.00
1540～1876	1.02
1890～2356	1.04
2380～3136	1.06
3150～3836	1.08
3850～4998	1.10
5012	1.12

Table 8-5 HP-S5M

Effective length	Length correction factor Kl
225～425	0.96
435～555	0.98
560～855	1.00
860～980	1.02
1000～1300	1.04
1350～1590	1.06
1595～1710	1.07
1715～1795	1.10
1800～2000	1.12

Table 8-6 HP-S8M / HP-8M

Effective length	Length correction factor Kl
352～400	0.90
408～512	0.92
520～624	0.94
632～792	0.96
800～1024	0.98
1032～1267	1.00
1275～1640	1.02
1648～2032	1.04
2040～2792	1.06
2800～3592	1.08
3600～4392	1.10
4400	1.12

Table 8-7 HP-S14M

Effective length	Length correction factor Kl
1008～1176	0.98
1190～1526	1.00
1540～1876	1.02
1890～2356	1.04
2380～3136	1.06
3150～3836	1.08
3850～4998	1.10
5012	1.12

Table 9 Table of Belt Width Correction Factors (Kb)

Table 9-1 Ceptor-VI S3M

Width correction factor Kb	Belt width (mm)	Nominal width
～0.62	4	40
0.63～0.81	5	50
0.82～1.00	6	60
1.01～1.19	7	70
1.20～1.38	8	80
1.39～1.58	9	90
1.59～1.79	10	100
1.80～2.20	12	120
2.21～2.62	14	140
2.63～2.84	15	150
2.85～3.49	18	180
3.50～4.86	20	200

Table 9-2 Ceptor-VI S5M

Width correction factor Kb	Belt width (mm)	Nominal width
～0.45	5	50
0.46～0.56	6	60
0.57～0.78	8	80
0.79～0.89	9	90
0.90～1.00	10	100
1.01～1.23	12	120
1.24～1.59	15	150
1.60～2.20	20	200
2.21～2.84	25	250
2.85～3.50	30	300
3.51～4.17	35	350
4.18～4.86	40	400
4.87～6.26	50	500
6.27～7.71	60	600

Table 9-3 Ceptor-VI/X S8M

Width correction factor Kb	Belt width (mm)	Nominal width
～0.21	15	150
0.22～0.29	20	200
0.30～0.37	25	250
0.38～0.45	30	300
0.46～0.63	40	400
0.64～0.81	50	500
0.82～1.00	60	600
1.01～1.19	70	700
1.20～1.39	80	800
1.40～1.79	100	1000
1.80～2.31	125	1250
2.32～2.84	150	1500
2.85～3.95	200	2000
3.96～6.26	300	3000

Table 9-4 Ceptor-X S14M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	30	300
0.22~0.29	40	400
0.30~0.37	50	500
0.38~0.45	60	600
0.46~0.63	80	800
0.64~0.81	100	1000
0.82~1.00	120	1200
1.01~1.19	140	1400
1.20~1.39	160	1600
1.40~1.79	200	2000
1.80~2.31	250	2500
2.32~2.84	300	3000

Table 9-5 HP-S5M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.45	5	50
0.46~0.56	6	60
0.57~0.78	8	80
0.79~0.89	9	90
0.90~1.00	10	100
1.01~1.23	12	120
1.24~1.59	15	150
1.60~2.20	20	200
2.21~2.84	25	250
2.85~3.50	30	300
3.51~4.17	35	350
4.18~4.86	40	400
4.87~6.26	50	500
6.27~7.71	60	600

Table 9-6 HP-S8M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	15	150
0.22~0.29	20	200
0.30~0.37	25	250
0.38~0.45	30	300
0.46~0.63	40	400
0.64~0.81	50	500
0.82~1.00	60	600
1.01~1.19	70	700
1.20~1.39	80	800
1.40~1.79	100	1000
1.80~2.31	125	1250
2.32~2.84	150	1500
2.85~3.95	200	2000
3.96~6.26	300	3000

Table 9-7 HP-S14M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	30	300
0.22~0.29	40	400
0.30~0.37	50	500
0.38~0.45	60	600
0.46~0.63	80	800
0.64~0.81	100	1000
0.82~1.00	120	1200
1.01~1.19	140	1400
1.20~1.39	160	1600
1.40~1.79	200	2000
1.80~2.31	250	2500
2.32~2.84	300	3000

Table 9-8 HP-8M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.29	20	20
0.30~0.37	25	25
0.38~0.45	30	30
0.46~0.63	40	40
0.64~0.81	50	50
0.82~1.00	60	60
1.01~1.49	85	85

Table 9-9 Rubber S1.5M/S2M/DS2M

Width correction factor Kb	Belt width (mm)	Nominal width
~1.00	4	40
1.01~1.28	5	50
1.29~1.58	6	60
1.59~1.89	7	70
1.90~2.20	8	80
2.21~2.52	9	90
2.53~2.84	10	100
2.85~3.49	12	120
3.50~4.17	14	140
4.18~4.51	15	150
4.52~5.55	18	180
5.56~6.26	20	200

Table 9-10 Rubber S3M/DS3M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.62	4	40
0.63~0.81	5	50
0.82~1.00	6	60
1.01~1.19	7	70
1.20~1.38	8	80
1.39~1.58	9	90
1.59~1.79	10	100
1.80~2.20	12	120
2.21~2.62	14	140
2.63~2.84	15	150
2.85~3.49	18	180
3.50~4.86	20	200

Table 9-11 Rubber S4.5M/DS4.5M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.29	5	50
0.30~0.35	6	60
0.36~0.42	7	70
0.43~0.49	8	80
0.50~0.63	10	100
0.64~0.78	12	120
0.79~1.00	15	150
1.01~1.39	20	200
1.40~1.79	25	250
1.80~2.20	30	300
2.21~2.63	35	350
2.64~3.06	40	400
3.07~3.33	50	500
3.34~4.86	60	600

Table 9-12 Rubber S5M/DS5M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.45	5	50
0.46~0.56	6	60
0.57~0.78	8	80
0.79~0.89	9	90
0.90~1.00	10	100
1.01~1.23	12	120
1.24~1.59	15	150
1.60~2.20	20	200
2.21~2.84	25	250
2.85~3.50	30	300
3.51~4.17	35	350
4.18~4.86	40	400
4.87~6.26	50	500
6.27~7.71	60	600

Table 9-13 Rubber S8M/DS8M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	15	150
0.22~0.29	20	200
0.30~0.37	25	250
0.38~0.45	30	300
0.46~0.63	40	400
0.64~0.81	50	500
0.82~1.00	60	600
1.01~1.19	70	700
1.20~1.39	80	800
1.40~1.79	100	1000
1.80~2.31	125	1250
2.32~2.84	150	1500
2.85~3.95	200	2000
3.96~6.26	300	3000

Table 9-14 Rubber S14M/DS14M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	30	300
0.22~0.29	40	400
0.30~0.37	50	500
0.38~0.45	60	600
0.46~0.63	80	800
0.64~0.81	100	1000
0.82~1.00	120	1200
1.01~1.19	140	1400
1.20~1.39	160	1600
1.40~1.79	200	2000
1.80~2.31	250	2500
2.32~2.84	300	3000

Table 9-15 Polyurethane S2M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.33	2	20
0.34~0.66	3	30
0.67~1.00	4	40
1.01~1.33	5	50
1.34~1.66	6	60
1.67~2.00	7	70
2.01~2.33	8	80
2.34~2.66	9	90
2.67~3.00	10	100
3.01~3.66	12	120
3.67~4.33	14	140
4.34~4.66	15	150
4.67~5.66	18	180
5.67~6.33	20	200

■ Table 9 Table of Belt Width Correction Factors (Kb)

Table 9-17 Polyurethane S3M

Width correction factor Kb	Belt width (mm)	Nominal width
~0.33	3	30
0.34~0.54	4	40
0.55~0.75	5	50
0.76~1.00	6	60
1.01~1.16	7	70
1.17~1.37	8	80
1.38~1.58	9	90
1.59~1.79	10	100
1.80~2.21	12	120
2.22~2.63	14	140
2.64~2.84	15	150
2.85~3.47	18	180
3.48~3.88	20	200
3.89~4.93	25	250

Table 9-18 XL/DXL/L/DL/H/DH/XH/XXH

Width correction factor Kb	Belt width (mm)	Nominal width
~0.15	6.4	025
0.16~0.21	7.9	031
0.22~0.28	9.5	037
0.29~0.42	12.7	050
0.43~0.71	19.1	075
0.72~1.00	25.4	100
1.01~1.56	38.1	150
1.57~2.14	50.8	200
2.15~3.36	76.2	300
3.37~4.76	101.6	400
4.77~6.15	127.0	500
6.16~7.50	152.4	600

Table 9-19 Polyurethane T5/DT5/T10/DT10

Width correction factor Kb	Belt width (mm)	Nominal width
~0.35	5.0	5
0.36~1.00	10.0	10
1.01~1.60	15.0	15
1.61~2.30	20.0	20
2.31~2.90	25.0	25
2.91~3.50	30.0	30
3.51~4.60	40.0	40
4.61~5.80	50.0	50

Table 9-20 Polyurethane TN10

Width correction factor Kb	Belt width (mm)	Nominal width
~0.10	1.0	1.0
0.11~0.31	2.0	2.0
0.32~0.45	3.0	3.0
0.46~0.58	4.0	4.0
0.59~0.75	5.0	5.0
0.76~1.00	6.0	6.0

Table 9-21 Polyurethane TN15

Width correction factor Kb	Belt width (mm)	Nominal width
~0.17	3.0	3.0
0.18~0.39	5.0	5.0
0.40~0.61	7.0	7.0
0.62~1.00	10.0	10.0
1.01~1.35	13.0	13.0

Table 9-22 Polyurethane MXL

Width correction factor Kb	Belt width (mm)	Nominal width
~0.21	3.2	3.2
0.22~0.35	4.8	4.8
0.36~0.55	6.4	6.4
0.56~0.90	9.6	9.6
0.91~1.35	12.7	12.7

Table 9-23 Rubber MXL

Width correction factor Kb	Belt width (mm)	Nominal width
~0.45	3.2	3.2
0.46~0.72	4.8	4.8
0.73~1.00	6.4	6.4
1.01~1.56	9.5	9.5
1.57~2.18	12.7	12.7

■ Table 10 Table of Adjustment Ranges of Center Distance

Table 10-1 Type S/H teeth

(Unit: mm)

<table>
<tr><th colspan="2" rowspan="2"></th><th rowspan="2">Size</th><th colspan="4">Effective length</th></tr>
<tr><th>500 or less</th><th>501~990</th><th>991~2000</th><th>2001 or more</th></tr>
<tr><td rowspan="30">Minimum adjustment range</td><td rowspan="15">Cs</td><td>S1.5M</td><td>2</td><td>3</td><td>5</td><td>10</td></tr>
<tr><td>S2M/DS2M</td><td>2</td><td>3</td><td>5</td><td>10</td></tr>
<tr><td>S3M/DS3M</td><td>2</td><td>3</td><td>5</td><td>10</td></tr>
<tr><td>S4.5M/DS4.5M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>S5M/DS5M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>S8M/DS8M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>S14M/DS14M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>HP-S5M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>HP-S8M/8M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>HP-S14M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>Ceptor-VI S3M</td><td>2</td><td>3</td><td>5</td><td>10</td></tr>
<tr><td>Ceptor-VI S5M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>Ceptor-VI S8M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>Ceptor-X S8M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td>Ceptor-X S14M</td><td>3</td><td>5</td><td>10</td><td>15</td></tr>
<tr><td rowspan="15">Ci</td><td>S1.5M</td><td colspan="4">5</td></tr>
<tr><td>S2M/DS2M</td><td colspan="4">5</td></tr>
<tr><td>S3M/DS3M</td><td colspan="4">5</td></tr>
<tr><td>S4.5M/DS4.5M</td><td colspan="4">5</td></tr>
<tr><td>S5M/DS5M</td><td colspan="4">10</td></tr>
<tr><td>S8M/DS8M</td><td colspan="4">15</td></tr>
<tr><td>S14M/DS14M</td><td colspan="4">15</td></tr>
<tr><td>HP-S5M</td><td colspan="4">10</td></tr>
<tr><td>HP-S8M/8M</td><td colspan="4">15</td></tr>
<tr><td>HP-S14M</td><td colspan="4">15</td></tr>
<tr><td>Ceptor-VI S3M</td><td colspan="4">5</td></tr>
<tr><td>Ceptor-VI S5M</td><td colspan="4">10</td></tr>
<tr><td>Ceptor-VI S8M</td><td colspan="4">15</td></tr>
<tr><td>Ceptor-X S8M</td><td colspan="4">15</td></tr>
<tr><td>Ceptor-X S14M</td><td colspan="4">15</td></tr>
</table>

Table 10-2 Trapezoidal teeth / triangular teeth

(Unit: mm)

<table>
<tr><th colspan="2" rowspan="2"></th><th rowspan="2">Size</th><th colspan="5">Effective length</th></tr>
<tr><th>508.0 or less</th><th>508.1~ 990.60</th><th>990.61~ 2032.00</th><th>2032.01~ 3048.00</th><th>3048.01 or more</th></tr>
<tr><td rowspan="8">Minimum adjustment range</td><td rowspan="2">Cs</td><td>TN10/TN15 MXL</td><td>2</td><td>3</td><td>5</td><td>10</td><td>-</td></tr>
<tr><td>XL/DXL T5/DT5 L/DL T10/DT10 H/DH XH/XXH</td><td>3</td><td>5</td><td>10</td><td>15</td><td>25</td></tr>
<tr><td rowspan="6">Ci</td><td>TN10/TN15 MXL</td><td colspan="5">5</td></tr>
<tr><td>XL/DXL/ T5/DT5</td><td colspan="5">5</td></tr>
<tr><td>L/DL T10/DT10</td><td colspan="5">10</td></tr>
<tr><td>H/DH</td><td colspan="5">15</td></tr>
<tr><td>XH</td><td colspan="5">40</td></tr>
<tr><td>XXH</td><td colspan="5">50</td></tr>
</table>

Ceptor-X design example

Step 1. Determining conditions required for the design

- Driving machine AC motor 3.75 kW / 1700 rpm
- Driven machine: Compressor (8-hours/day operation)
- Revolution of driven shaft: 850 rpm
- Center distance 290 mm ± 15 mm

Step 2. Calculating the design power

① Obtain the load correction factor from **Table 1 (→ P. 81)**.
② From Formula 1 **(→ P. 79)**, calculate the design power.
Pd = 3.75 × (1.7 + 0.0) = 6.38

Step 3. Selecting a belt type

From the design power of 6.38 kW and the pinion revolution of 1,700 rpm from **Fig. 1 Belt type selection diagram (→ P. 82)**, select Ceptor-X Type S8M.

Step 4. Selecting a pulley diameter

① From **Table 5 (→ P. 100)**, select 22 as the minimum number of teeth of a pulley for Ceptor-X Type S8M and use this as the driving pulley.
② From Formula 4 **(→ P. 79)**, calculate the number of teeth of the driven pulley and the speed ratio.

$$Z_2 = \frac{1700}{850} \times 22 = 44$$

$$\text{Speed ratio} = \frac{1700}{850} = 2$$

Step 5. Selecting an effective length

① Calculate a rough effective length with Formula 7 **(→ P. 80)** and select an effective length that is closest to this value from the **"Table of standard effective lengths" (→ P. 43)**.

$$L' = 2 \times 290 + 1.57(112.05 + +56.02) + \frac{(112.05 - 56.02)^2}{4 \times 290}$$
$$= 846.58 \rightarrow 848$$

② From the belt pitch length of 848 and Formula 8 **(→ P. 80)**, backcalculate the center distance at that time.

$$C = \frac{584.13 + \sqrt{584.13^2 - 2\,(112.05 - 56.02)^2}}{4}$$
$$= 290.72$$

$$B = 848 - 1.57(112.05 - 56.02) \approx 584.13$$

Step 6. Determining the belt width

① From **"Table of basic power ratings for Ceptor-X S8M (per width of 60 mm)" (→ P. 101)**, obtain the basic power rating with 22 teeth of the pinion and at 1,700 rpm.
② From Formula 9 **(→ P. 80)**, calculate the angle of contact of the pulley and from **Table 7 (→ P. 127)**, obtain the mesh correction factor Km.

$$\Theta_1 = 180 - \frac{57.3\,(112.05 - 56.02)}{290.72} = 168.96$$

$$Z_m = 22 \times \frac{168.96}{360} = 10$$

③ Obtain the effective length correction factor Kl from **Table 8 (→ P. 127)**. Kl = 0.98
④ From Formula 10 **(→ P. 80)**, calculate the width correction factor, and from **Table 9-3 "Table of S8M belt width correction factors" (→ P. 127)**, obtain the belt width.

$$K_b = \frac{6.38}{33.1 \times 1.0 \times 0.98} = 0.20$$

Step 7. Checking the adjustment range of the center distance

From **Table 10 (→ P. 129)**, obtain the inner and outer adjustment ranges of the center distance.

Examination result

- Belt: 150 Ceptor-X S8M 848
- Driving pulley: 22 S8M 150
- Driven pulley: 44 S8M 150
- Center distance 290.72 mm
  - Inner adjustment range: 15 mm
  - Outer adjustment range: 5 mm

Load correction factor Ko = 1.7
Design power Pd = 6.38 kW

Belt type: Ceptor-X S8M

No. of teeth of driving pulley: 22
Driven pulley pitch diameter: 56.02 mm

No. of teeth of driven pulley: 44
Driven pulley pitch diameter: 112.05 mm

Effective length: Ceptor-X S8M 848
(Pitch length 848 mm)

Center distance: 290.72 mm

Basic power rating Pr = 33.1 kW

Angle of contact of pinion $\theta_1 = 168.96°$

Number of meshed teeth Zm = 10
Mesh correction factor Km = 1.00
Length correction factor Kl = 0.98

Belt width correction factor Kb = 0.20
Belt width: 15 mm
Belt nominal width: 150

Inner adjustment range (Ci): 15 mm
Outer adjustment range (Cs): 5 mm

STS Pulleys

We offer STS standard pulleys for more convenient use of STS. The STS standard pulleys are standardized in two types, bushing type and shaft-hole-machined type, as shown in the following tables. Please use them in accordance with your purpose.
The pulleys for KPS have the same dimensions as those for the STS standard pulleys. When you order KPS pulleys, please use the designation for STS pulleys.

(1) STS Standard Pulley System

STS Pulleys with BAN-LOCK

- No need for troublesome shaft hole machining and keyway machining. They provide a strong fastening force by the wedge effect.
- The frictional fastening structure eliminates backlash and such concerns as thinning or seizure of the shaft by vibration or shock.
- The key-less structure allows installation at any position on the shaft, making positioning and phase alignment simple and free.
- Excellent centering effect.
- The installation on a shaft only requires tightening of the clamping screws.
  Removal can also easily be done by loosening the screws and tightening the clamping screws into the screw holes for removal.

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
S5M	Made-to-order	0150, 0200, 0250	26～60	Carbon steel for machine construction
S8M	Made-to-order	0150, 0250, 0400	19～60	
S14M	Made-to-order	0400, 0600	28～50	

TL STS Pulleys (bushing type)

The TL STS pulleys are designed to provide the performance of STS sufficiently and provide many benefits.

- The simple structure allows very simple installation on and removal from a shaft.
- The slit in the entire bushing allows easy movement of the bushing on the shaft.
- JIS keys can be used without any modification.
- The absence of projections such as a bolt head makes the pulley simple and allows effective use of the space.

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
S8M	Standard stock	0150	28～96	Cast iron or carbon steel for machine construction
	Made-to-order		120～156	
	Standard stock	0250	32～96	
	Made-to-order		120～156	
	Standard stock	0400	36～96	
	Made-to-order		120～156	
	Standard stock	0600	48～96	
	Made-to-order		120～156	
S14M	Standard stock	0400	28～84	Cast iron or carbon steel for machine construction
	Made-to-order		96～156	
	Standard stock	0600	28～84	
	Made-to-order		96～156	
	Standard stock	0800, 1000	36～84	
	Made-to-order		96～156	
	Made-to-order	1200	40～156	

STS Pulleys (shaft-hole-machined type)

They are very beneficial as they can adapt to shafts of special sizes by machining and are available in a wide range of pulley sizes.

- For details such as the machining method and the flange installation method, refer to **P. 134 to P. 135 and P. 189 to P. 190**.

> In addition to the standard pulleys, we also manufacture pulleys with a requested number of teeth and a requested profile. Please contact us.

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
S1.5M	Made-to-order	0040, 0060, 0100	16～60	High-strength aluminum alloy
S2M	Made-to-order	0040, 0060, 0100	14～60	
S3M	Made-to-order	0060, 0100, 0150	14～60	
S4.5M	Standard stock	0060, 0100, 0150	12～44	Carbon steel for machine construction
	Made-to-order		48～72	
S5M	Standard stock	0100, 0150, 0200, 0250	14～60	
S8M	Standard stock	0150, 0250, 0400, 0600	18～60	
	Made-to-order		72～156	
S14M	Standard stock	0400, 0600, 0800, 1000	28～50	
	Made-to-order		60～156	
		1200	28～156	

(2) Designation for STS Pulleys

Type	Designation example
Pulley with BAN-LOCK	**24 S5M 0150 AF-S 14** 24: No. of teeth of pulley (24 teeth) S5M: Pulley tooth profile (Type S5M) 0150: Belt width (15mm) AF-S: Pulley profile (Type AF-S) 14: Shaft dia. (14mm) **Material** Pulley, inner ring ...... S45C Clamping screw SCM435
TL STS pulley (bushing type)	Pulley body: **40 S14M 1200** 40: No. of teeth of pulley (40 teeth) S14M: Pulley tooth profile (Type S14M) 1200: Pulley nominal width (For a belt width of 120 mm) Applicable bushing: **11080 × 75 N** 11080: TL bushing type number 75: Shaft hole dia. (75mm) N: Keyway for new JIS keys (Previous JIS keys: F)
STS pulley (shaft-hole-machined type)	**30 S8M 0150 AF** 30: No. of teeth of pulley (30 teeth) S8M: Pulley tooth profile (Type S8M) 0150: Pulley nominal width (For a belt width of 15 mm) AF: Pulley profile (Type A, with flange)
STS pulley (rod-shaped pulley)	**M - A - 18 - S2M - 100L** M: M (As per Manual) A: Material (A: Aluminum) 18: No. of teeth of pulley (18 teeth) S2M: Pulley tooth profile (Type S2M) 100L: Length (100mm)

(Note) When you need a backlash-less pulley, please contact us.

STS Pulley Dimensional Accuracy

For pulley dimensional accuracy, use pulleys with the following dimensional accuracies to sufficiently obtain the belt function.

■ Outside diameter

(Unit: mm)

Pulley outside diameter do	Tolerance	
	S2M/S3M	S4.5M/S5M/S8M/S14M
Over 5.96 to 25.40 or less	±0.025	$^{+0.05}_{0}$
Over 25.40 to 50.80 or less	±0.030	$^{+0.08}_{0}$
Over 50.80 to 101.60 or less	±0.035	$^{+0.10}_{0}$
Over 101.60 to 177.80 or less	±0.040	$^{+0.13}_{0}$
Over 177.80 to 304.80 or less	—	$^{+0.15}_{0}$
Over 304.80 to 508.00 or less	—	$^{+0.18}_{0}$
Over 508.00 to 762.00 or less	—	$^{+0.20}_{0}$
Over 762.00 to 967.16 or less	—	$^{+0.23}_{0}$

■ Shaft hole diameter

(Unit: mm)

Shaft hole dia.	Tolerance	
	TL bushing (H8)	Shaft-hole-machined type
Over 3 to 6 or less	$^{+0.018}_{0}$	The shaft holes for the shaft-hole-machined type are pilot holes.
Over 6 to 10 or less	$^{+0.022}_{0}$	
Over 10 to 18 or less	$^{+0.027}_{0}$	
Over 18 to 30 or less	$^{+0.033}_{0}$	
Over 30 to 50 or less	$^{+0.039}_{0}$	
Over 50 to 80 or less	$^{+0.046}_{0}$	
Over 80 to 120 or less	$^{+0.054}_{0}$	
Over 120 to 180 or less	$^{+0.063}_{0}$	

■ Run-out of the outside diameter in relation to the shaft hole

(Unit: mm)

Pulley outside diameter do	Run-out tolerance (TIR) (Note)
203.20 or less	0.13 or less
Over 203.20 to 967.16 or less	0.13 + {(Pulley outside diameter - 203.20) × 0.0005}

■ Run-out of the pulley side face in relation to the shaft hole

(Unit: mm)

Pulley outside diameter do	Run-out tolerance (TIR) (Note)
101.60 or less	0.10
Over 101.60 to 254.00 or less	Pulley outside diameter × 0.001
Over 254.00 to 967.16 or less	0.25 + {(Pulley outside diameter - 254.00) × 0.0005}

(Note) TIR is an abbreviation for Total Indicator Reading and refers to a difference between the maximum value and the minimum value in readings of run-out measurement.

■ Cylindricity of outside diameter

(Unit: mm)

Pulley nominal width	Tolerance
~0100	0.01
0150~0400	0.02
0600~1000	0.04
1200	0.06

■ Parallelism between teeth and shaft hole center line

(Unit: mm)

Pulley nominal width	Tolerance
~0400	0.03
0600~1000	0.04
1200	0.05

■ Adjacent pitch error and cumulative pitch error

(Unit: mm)

Pulley outside diameter do	Tolerance	
	Adjacent pitch error	Cumulative pitch error (90° or more)
Over 5.96 to 25.40 or less	0.03	0.05
Over 25.40 to 50.80 or less	0.03	0.08
Over 50.80 to 101.60 or less	0.05	0.10
Over 101.60 to 177.80 or less	0.05	0.13
Over 177.80 to 304.80 or less	0.05	0.15
Over 304.80 to 508.00 or less	0.08	0.18
Over 508.00 to 762.00 or less	0.08	0.20
Over 762.00 to 967.16 or less	0.08	0.23

■ Keyway

Refer to keyway dimensions (parallel keys) on **P. 195**.

■ Pulley's blank outside diameter

As pulley's gear cutting is a topping process, the blank outside diameter is a value with the value in the following table (topping range) added.

■ Topping range for pulley outside diameter

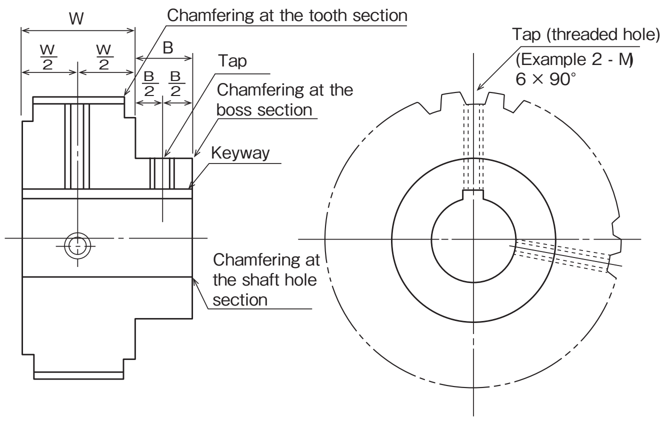
(Unit: mm)

Pulley outside diameter	Topping range
50.80 or less	0.5
Over 50.80 to 101.60 or less	0.6
Over 101.60 to 177.80 or less	0.7
Over 177.80 to 304.80 or less	0.8
Over 304.80 to 508.00 or less	1.0
Over 508.00 to 700.00 or less	1.2
Over 700.00	1.4

(Example) Blank outside diameter of STS pulley 60S8M0250A
Blank outside diameter = pulley outside diameter + topping range
$= \phi 151.42^{+0.13}_{0} + 0.7 = \phi 152.12^{+0.13}_{0}$

STS Pulley Machining

We perform the following machining as standards unless otherwise specified in a manufacturing request based on drawings provided by the customer, a request for additional machining of standard pulleys, etc.



■ Screw-cutting (tapping)

- Screw-cutting from the tooth section will be performed from the tooth bottom (root of the teeth).
  When screw-cutting is required for two sections at an angle of 90° (or 120°), screw-cutting will be performed at 90° (or 120°) or more and from the tooth bottom closest to 90° (or 120°).
- When screw-cutting at two sections at the tooth section or the boss section has a direction, (e.g.: rotating direction in relation to the keyway position), screw-cutting will be performed clockwise as seen from the boss side.
- Screw-cutting at the tooth section and the boss section will be performed at the center of the tooth section (W) and the boss section (B).
  If you specify a screw-cutting position from the end face, the standard position accuracy will be ±0.3 mm.
- The standard depth of thread is the effective thread diameter × (1.5 to 2.0).
- Screw-cutting on an end face (tapping) is specified, the standard position accuracy is the pitch diameter ±0.3 mm and ±0.3 mm in the rotating direction.

■ Keyway machining

A keyway is machined to match the tooth bottom (the root of teeth).

■ Chamfering (C-chamfering)

Chamfering of each section will be performed as follows.

● Tooth section

(Unit: mm)

Outside diameter	Chamfering (C-chamfering)
30 or less	C 0.3
Over 30 to 100 or less	C 0.5
Over 100	C 1

● Shaft hole section

(Unit: mm)

Inside diameter	Chamfering (C-chamfering)
25 or less	C 0.5
Over 25	C 1

● Boss section

(Unit: mm)

Inside diameter	Chamfering (C-chamfering)
50 or less	C 0.5
Over 50	C 1

■ Tolerance of retaining ring grooves (ring grooves)

This follows JIS B2804, 2805, and 2806.

■ Major surface treatment names and the amount of coating

Although we provide surface treatment if requested, the surface treatment on backlash-less pulleys in particular requires caution due to relation with the amount of coating.

(Reference) (Unit: μ)

Name	Amount of coating
Carbon black dyeing	1～ 2
Phosphating	5～ 6
Unichrome plating	5～ 7
Chromate plating	5～ 7
Nickel plating	10～12
Chromium plating	13～15
Hard chromium plating	13～15
White anodizing treatment	9～12
Hard anodizing treatment	15～20

Note: The amount of coating will be thick at corners (two to three-fold).

How to Install a Pulley Flange

STS and Synchronous Belts can be used at high torques and high speeds; hence, to prevent accidents, installation of flanges should be performed securely with the following procedure.

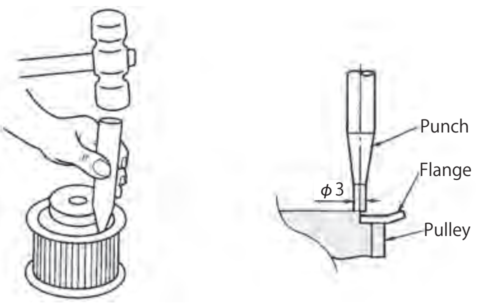
(1) Crimping method (standard flange)

Follow the steps below.

① Prepare an eye punch, a flat disk, a cylindrical fixture, and a hammer.

② When a foreign object is adhering to the flange-fitting section of the pulley, a gap is created between the pulley and the flange, preventing crimping; clean the flange-fitting section.

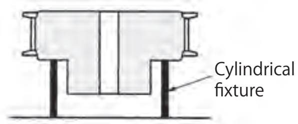
③ As shown in the following figure, place the pulley body on the flat disk and crimp the pulley body over the flange with the eye punch.



● When crimping a sintered pulley of Type XL, exercise due caution.
(Hitting it in the same way as you do for S45C may cause chipping.)

(Note)

* When crimping a Type-B pulley, the boss makes an unstable condition; use a cylindrical fixture so that the pulley can be crimped uniformly.



④ When crimping a flange, be sure to crimp it in diagonal order.

⑤ The number of crimping should be as follows.

■ STS pulley flange

Pulley outside diameter (mm)	No. of crimping (one side)
31 or less	6 sections or more
Over 31 to 50 or less	8 sections or more
Over 50 to 80 or less	10 sections or more
Over 80 to 150 or less	12 sections or more
Over 150 to 220 or less	16 sections or more
Over 220	20 sections or more

■ Synchronous pulley flange

Pulley outside diameter (mm)	No. of crimping (one side)
51 or less	4 sections or more
Over 51 to 80 or less	6 sections or more
Over 80 to 100 or less	8 sections or more
Over 100 to 120 or less	10 sections or more
Over 120 to 150 or less	12 sections or more
Over 150	16 sections or more

(Note) Flanges for a cast pulley should be installed with screws.

⑥ After installing flanges, check for looseness.

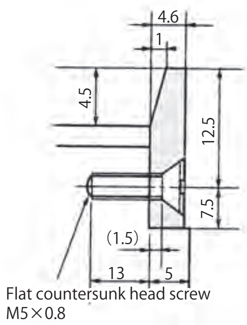
When a flange comes in the way due to a fixed center distance etc. and prevents belt installation, fastening with screws is effective. In this case, however, the standard flanges cannot be used; please contact us.

(2) Screw-fastening method

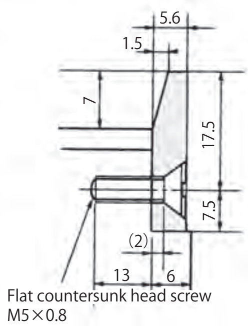
Flanges for large-diameter pulleys of Types S8M/S14M and pulleys of Types XH/XXH should be cut flanges, and fasten them on the pulley body using flat countersunk head screws.

(Reference)

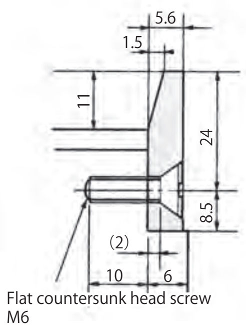
●Type S8M



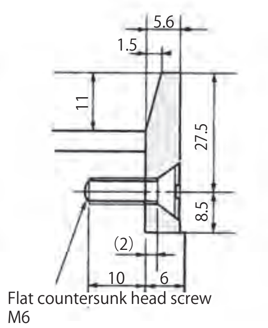
●Type S14M



●Type XH



●Type XXH



■ STS pulleys (KPS): No. of screws for fastening a flange (one side)

Pulley tooth profile / No. of fastening screws	Type S8M	Type S14M
8 sections or more	72S8M~95S8M	—
10 sections or more	96S8M~143S8M	60S14M~ 71S14M
12 sections or more	144S8M~156S8M	72S14M~ 84S14M
16 sections or more	157 S8M or more	85S14M~120S14M
18 sections or more	—	121S14M~156S14M
20 sections or more	—	157 S14M or more

■ Synchronous pulleys: No. of screws for fastening a flange (one side)

Pulley tooth profile / No. of fastening screws	Type XH	Type XXH
4 sections or more	25 XH or less	—
6 sections or more	26XH~ 35XH	24 XXH or less
8 sections or more	36XH~ 49XH	25XXH~ 31XXH
10 sections or more	50XH~ 60XH	32XXH~ 39XXH
12 sections or more	61XH~ 77XH	40XXH~ 47XXH
16 sections or more	78XH~109XH	48XXH~ 61XXH
18 sections or more	110 XH or more	62XXH~ 72XXH
20 sections or more	—	73 XXH or more

(3) Knurling method

Crimping by knurling using a lathe is also often used.

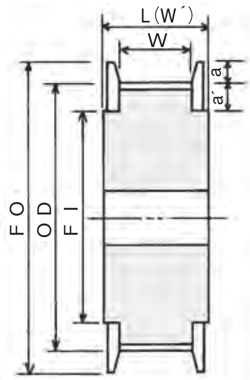
Non-Standard Pulley Design

For non-standard pulley designs, refer to the following proportion of dimensions.

(Reference)

■ Belt width, pulley tooth width, and inside and outside flange diameters

A) STS Pulleys



(Unit: mm)

Pulley type	Belt standard widths		Pulley with flanges	Pulley without flanges	FO=OD+2a	FI = OD - 2a'
	Nominal width	Belt width (mm)	W	L=W'	a	a'
S2M	0040	4	6	10	2	2
	0060	6	8	12	2	2
	0100	10	12	16	2	2
S3M	0060	6	8	12	3	2
	0100	10	12	16	3	2
	0150	15	17	21	3	2
S4.5M	0060	6	8	12	3	3
	0100	10	12	16	3	3
	0150	15	17	21	3	3
S5M	0100	10	12	17	4	4
	0150	15	17	22	4	4
	0200	20	23	28	4	4
	0250	25	28	33	4	4
S8M	0150	15	17	23(27)	5(4.5)	5(15.5)
	0250	25	28	34(38)	5(4.5)	5(15.5)
	0400	40	44	50(54)	5(4.5)	5(15.5)
	0600	60	65	71(75)	5(4.5)	5(15.5)
S14M	0400	40	46	52(58)	8(7)	8(18)
	0600	60	67	73(79)	8(7)	8(18)
	0800	80	88	94(100)	8(7)	8(18)
	1000	100	109	115(121)	8(7)	8(18)
	1200	120	130	136(142)	8(7)	8(18)

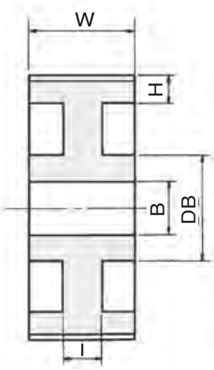
Note: The dimensions within the parentheses ( ) indicate those when flanges are fastened on a large-diameter pulley with screws.

b) Synchronous pulleys

(Unit: mm)

Pulley type	Belt standard widths		Pulley with flanges	Pulley without flanges	FO=OD+2a	FI = OD - 2a'
	Nominal width	Belt width (mm)	W	L=W'	a	a'
MXL	3.2	3.2	4.0	8.0	2	2
	4.8	4.8	5.5	9.5	2	2
	6.4	6.4	7.5	11.5	2	2
	9.5	9.5	10.5	14.5	2	2
	12.7	12.7	14.0	16.0	2	2
XL	025	6.4	8.0	13.0	4	3
	031	7.9	9.5	14.5	4	3
	037	9.5	11.0	16.0	4	3
	050	12.7	14.0	19.0	4	3
L	050	12.7	14.0	19.0	4	5
	075	19.1	21.0	26.0	4	5
	100	25.4	27.0	32.0	4	5
	150	38.1	40.0	45.0	4	5
H	075	19.1	22.0	27.0	4	5
	100	25.4	27.0	32.0	4	5
	150	38.1	40.0	45.0	4	5
	200	50.8	54.0	59.0	4	5
	300	76.2	80.0	85.0	4	5
XH	200	50.8	57.0	69.0	11	21.5
	300	76.2	84.0	96.0	11	21.5
	400	101.6	111.0	123.0	11	21.5
XXH	200	50.8	57.0	69.0	11	25
	300	76.2	84.0	96.0	11	25
	400	101.6	111.0	123.0	11	25
	500	127.0	139.0	151.0	11	25

■ Dimensional proportion of each section of a pulley



a) Dimensional proportion of each section of an STS pulley

(Unit: mm)

W		30～50	51～70	71～90	91～170
H	S4.5M•S5M	10			
	S8M	15	18	20	25
	S14M	20	25	25	30
I	S4.5M•S5M	10			
	S8M	15	18	20	25
	S14M		20	25	35
DB		B×1.8～1.9			

b) Dimensional proportion of each section of a synchronous pulley

(Unit: mm)

W		30～50	51～70	71～90	91～170	171～
H	XL•L	13				
	H	15	15	18		
	XH		35	35	35	35
	XXH			40	40	40
I	H	15	15	20		
	XH•XXH			25	30	35
DB		B×1.8～1.9				

STS Pulleys with BAN-LOCK

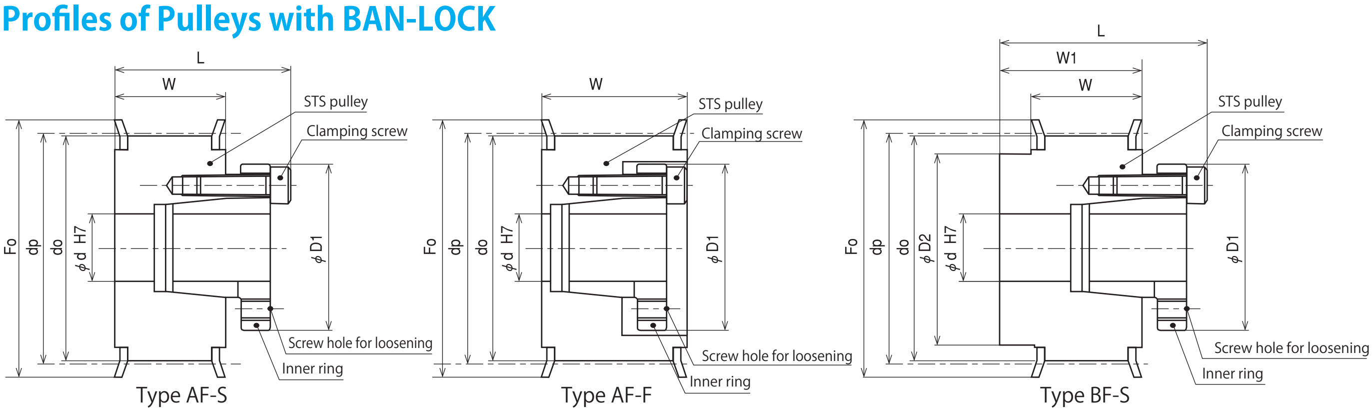
Features

1. No need for troublesome shaft hole machining and keyway machining. They provide a strong fastening force by the wedge effect.
2. The frictional fastening structure eliminates backlash and such concerns as thinning or seizure of the shaft by vibration or shock.
3. The key-less structure allows installation at any position on the shaft, making positioning and phase alignment simple and free.
4. Excellent centering effect.
5. The installation on a shaft only requires tightening of the clamping screws. Removal can also easily be done by loosening the screws and tightening the clamping screws into the screw holes for removal.

Structure and Principles

When clamping screws are tightened, the pulley is pulled and moves in the axial direction.
At this time, the wedge effect at the taper surface with the inner ring* generates a pressure force in the axial direction and the direction of the pulley inner periphery, causing the shaft and the pulley to be fastened. (*Manufactured by Sanki)

Profiles of Pulleys with BAN-LOCK



Designations for Pulleys with BAN-LOCK

(Example)

24 S5M 0150 AF - S - 14

- 24: No. of teeth of pulley (24 teeth)
- S5M: Pulley tooth profile (Type S5M)
- 0150: Belt width (15mm)
- AF - S: Pulley profile (Type AF-S)
- 14: Shaft dia. (14mm)

○ Material: Pulley, inner ring ••• S45C
Clamping screw ••• SCM435

- For details on each section of the STS pulley body, **refer to our Power Transmission Belts Product Design Manual.**
- For details on the inner rings by shaft hole type, **refer to pages 140 to 142.**
- Flanges are packaged with the flanges installed on the pulley body.
- When the transmission torque falls short, please consult us.

Selection Criteria for Pulleys with BAN-LOCK

1. **Selecting a belt and a pulley**
   Refer to **Bando Power Transmission Belts Product Design Manual** and select a belt and pulleys in accordance with the selection procedures.
2. **Selecting an STS pulley with BAN-LOCK**
   Select a type of an STS pulley with BAN-LOCK from the respective table of dimensions.
3. **Checking the maximum torque of BAN-LOCK**
   Allow for the peak torque in addition to the torque in normal operation in the design maximum torque.
   In particular, exercise due caution when selecting a pulley that involves forward and reverse revolutions, large inertia, and shock.
4. **Considering BAN-LOCK (inner ring)**
   From the selected shaft diameter, compare the maximum torque from the **list of inner rings (→ P. 140 to P. 142)** with the calculated maximum torque Tmax.
   Maximum torque ≧ Tmax: Usable
   Maximum torque < Tmax: Reconsider

$$T_{max} = \frac{9550 \times P}{N} \times K \,[\mathrm{N \cdot m}]$$

Tmax	: Maximum torque (including peak torque)	(N•m)
P	: Transmission power	(kW)
N	: Revolution	(min^{-1})
K	: Load factor	

Load factors (reference)

Load condition	K
Fixed load not involving shocks	1.25～2.0
Load involving light shocks	2.0～3.0
Load involving large shocks	3.0～5.0

5. Consideration of shafts

① Checking the material strength
Check that the material strength of the shaft satisfies the following equation.

$$\sigma s > P$$

σs	: Yield point stress of shaft material	(MPa)
P	: Pressure on the shaft side surface	(MPa)

② Checking the inside diameter of a hollow shaft
Check that the inside diameter of the hollow shaft satisfies the following equation.

$$di \leqq d\sqrt{\frac{\sigma s - 2P \times 0.6}{\sigma s}}$$

di	: Inside diameter of hollow shaft	(mm)
d	: Shaft diameter	(mm)
0.6	: Factor	

Installation and Removal Procedures and Precautions

1. Installation

1) The fitting with the shaft is H7/h7. Finish the shaft surface roughness to 12.5S or less.
2) Wipe off dirt from the inner peripheral surface of the pulley and the surface of the inner ring and the shaft, and thinly apply machine oil. Perform the same for the head, seating surface, and screw holes of the clamping screws.
Never use oils or greases containing molybdenum disulfide or extreme-pressure additives.
3) Lightly tighten the clamping screws and temporarily set the inner ring on the pulley.
4) Insert the pulley with BAN-LOCK temporarily set in 3) onto the shaft, lightly tighten the clamping screws, and position the pulley.
5) Tighten the clamping screws gradually using a torque wrench. At first, tighten the clamping screws to approximately one third of the tightening torque MS **(Table 1)** for clamping screws in diagonal order **(Fig. 1)**.
6) Perform the same as 5) with a two-third value of the tightening torque MS and then tighten the clamping screws again to the tightening torque MS.
7) Finally, check that all clamping screws have been tightened to the tightening torque MS one by one. Now the installation is complete.

Fig. 1 Order of tightening of clamping screws

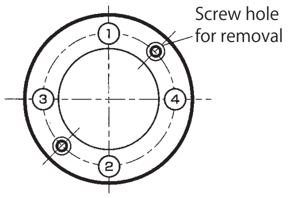


Table 1 Clamping screw tightening torque MS

Clamping screw size	Tightening torque Ms (N•m)
M5	5.8
M6	14
M8	34

*Tightening exceeding the MS value can cause clamping screw breakage, difficulty with pulley removal, and other problems; be particularly careful.
*When you install a pulley on a shaft with a machined keyway, the transmission torque decreases by approximately 10%.

2. Removal

1) Be sure to turn off the power supply and power, and after making sure that rotary objects (pulleys) have stopped, confirm the safety before starting the work, by checking if a torque, a thrust load, etc. is not applied on the pulleys and shafts and checking that there is no danger of falling on their own weights, for example.
2) Gradually loosen the clamping screws in diagonal order. Loosen all clamping screws until there is a gap of approximately 5 mm from the seating surface.
3) When you pull out the same number of clamping screws as the screw holes for removal and tighten the clamping screws into the screw holes for flange removal, the pulley will be unfastened.

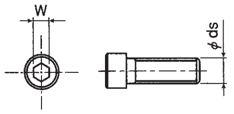
*When a long period of use has caused the taper section to run in tightly and prevents disassembly, lightly hit the heads of the screws and the pulley to apply a shock.

3. Precautions for installation and removal

1) Before installation and removal, be sure to turn off the power and wait until the machine stops completely.
2) Be sure to use a torque wrench to tighten the clamping screws.
Never use a wrench to which a torque value cannot be set as the tightening torque becomes inaccurate and causes trouble.
Do not sandwich a pipe or the like with the lever of the torque wrench for tightening as an appropriate tightening torque may not be obtained and it can cause torque wrench breakage.
3) Do not use other clamping screws than those installed in the product. When you need clamping screws because you lost or replace them, please contact us.
4) Although BAN-LOCK (inner ring) can be reused, the inner ring or clamping screws may have deformed or may have been abraded depending on the installation or use conditions. If there is any abnormality, do not reuse it.

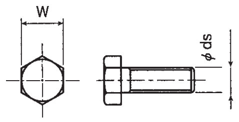
Applicable Torque Wrenches

For hexagon socket head bolts



Clamping screw size		A. For installation at the end of a shaft			B. For installation at the center of a shaft		
ds	W	Torque wrench type	Adjustable torque range (N•m)	Hexagon socket square drive × W	Torque wrench type	Adjustable torque range (N•m)	Hexagon type replacement head
M5	4	N120QLK 120QL-N	4～12 〃	6.35×4	N120LCK 120CL-N	4～12 〃	230HCK-4 4×120HH
M6	5	N230QLK 225QL-N	7～23 5～22.5	9.53×5	N230LCK 225CL-N	7～23 5～22.5	230HCK-5 5×225HH
M8	6	N450QLK 450QL-N	10～45 〃	9.53×6	N450LCK 450CL-N	10～45 〃	450HCK-6 6×450HH

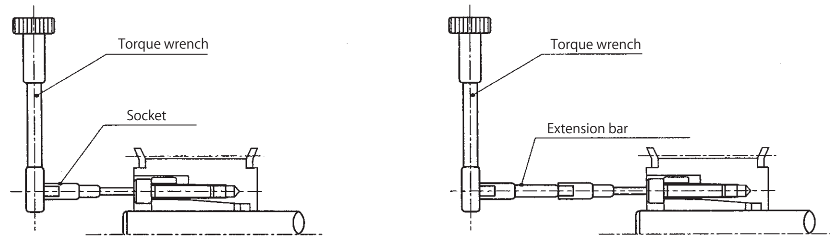
For hexagon head bolts



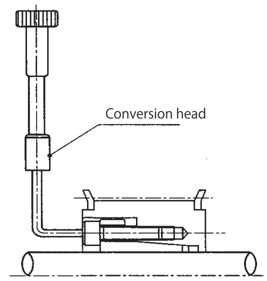
Clamping screw size		A. For installation at the end of a shaft		B. For installation at the center of a shaft	
ds	W	Torque wrench type	Socketsquare drive × W	Torque wrench type	Spanner type replacement head
M5	8	N60QLK 60QL-N	6.35×8	N60LCK 60CL-N	230SCK-8 8×120SH
M6	10	N120QLK 120QL-N	6.35×10	N120LCK 120CL-N	230SCK-10 10×120SH
M8	13	N450QLK 450QL-N	9.53×13	N450LCK 450CL-N	450SCK-13 13×450SH

Notes) 1. The torque wrench types indicate products from Nakamura Mfg. Co., Ltd. in the upper row and products from Tohnichi Mfg. Co., Ltd. in the lower row.
2. The hexagon sockets and sockets indicate the sizes of commercially available products.
3. The hexagon type replacement heads and the spanner type replacement heads are products exclusively from the torque wrench manufacturer.

A. For installation at the end of a shaft



B. For installation at the center of a shaft



Precautions for Safe Use of Synchronous Belts and Pulleys

Before using our products, please read Bando Power Transmission Belts Product Design Manual and other necessary documents carefully, pay close attention to the following items, and handle the products properly. The degree of impact of each item on safety is classified as follows.

Symbols and terms	Description
⚠ Danger	When the product is mishandled, it is expected to cause an imminent danger of death or serious injury to the user.
⚠ Warning	When the product is mishandled, it is expected that it may cause death or serious injury to the user.
⚠ Caution	When the product is mishandled, it is expected to cause a danger that causes injury to the user or an occurrence of property damage only.

Application/Purpose of Use

⚠ **Warning** When static electricity generated by a belt power transmission device is expected to cause a fire or a malfunction of control equipment, provide a static elimination mechanism on the device side.

Functions and Performance

⚠ **Caution** Do not use belts for other applications or outside the allowable ranges described in the catalog, design data, etc. of the respective belt. It may cause early breakage.

⚠ **Caution** Adhesion of water, oil, chemicals, paints, or dust particles on a belt or pulley causes a reduced transmission force or early breakage.

⚠ **Caution** Synchronous belts may emit large noise in high-speed operation.
In that case, install a sound-proofing cover.

Storage and Transport

⚠ **Caution** When you transport or handle a heavy belt or pulley, use a transporting apparatus or device suitable for the weight. Lifting up with hands may hurt your lower back etc.

Installation and Operation

⚠ **Danger** Install safety covers for all rotating sections, including belts and pulleys. Hair, gloves, or clothing may be entangled with a belt or pulley. When a belt or a pulley broke, a projecting piece may cause injury.

⚠ **Danger** When you maintain, inspect, or replace our products, follow the items below.
(1) e sure to turn off the switch and wait until the belts and pulleys stop before performing the work.
(2) Take measures to prevent the switch from being turned on unintentionally during the work.

⚠ **Caution** When replacing a belt or a pulley, use an equivalent part type to the one that had been used.

⚠ **Caution** A misaligned pulley causes early breakage of the belt or falling off of a flange. Perform adjustment.

⚠ **Caution** Loosen the belt tension before replacing a belt. Forcing a belt to climb over a flange or plying the belt in using a screwdriver or the like causes early breakage.

⚠ **Caution** When replacing our products containing bolts or screws, use an equivalent part type to the one that had been used. A different part type leads to early breakage.

⚠ **Caution** Using our products beyond specified transmission torques may cause breakage of the product itself or may affect the device; be sure to use our products within the specified transmission torques.

⚠ **Caution** Using our products with the fastening section slipping causes the product itself to heat up or break, potentially affecting the device; never use our products with the fastening section slipping.

⚠ **Caution** When abnormal noise or vibration occurred, an abnormality may have occurred with the device or products and may cause the device itself to break if left unaddressed; immediately stop the operation and inspect the device and the product.

Handling of Used Products

⚠ **Caution** To avoid affecting the environment, please request disposal by a specialized contractor.

S5M0150 (for a belt width of 15 mm) W = 22 mm W1 = 34 mm

Pulley				Shaft diameter d / D1 / L (mm)																		
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74
				L	47.5	47.5	47.5	47.5	47.5	52	52	52	52	52	52	52	52	52	52	52	58	58
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060
26	41.38	40.42	48		◎	◎	◎	◎														
28	44.56	43.60	48	No. of clamping	◎	◎	◎	◎	◎													
30	47.75	46.79	55	screws	◎	◎	◎	◎	◎													
32	50.93	49.97	55		◎	◎	◎	◎	◎													
34	54.11	53.15	61	(Shaft dia.) ϕ14 to 18	◎	◎	◎	◎	◎													
36	57.30	56.34	61	3-M5	◎	◎	◎	◎	◎													
40	63.66	62.70	70	(Shaft dia.) ϕ19 to 40	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎								
42	66.85	65.89	70	4-M6	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎						
44	70.03	69.07	77		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎				
48	76.39	75.43	83	(Shaft dia.) ϕ42 to 45	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
50	79.58	78.62	88	4-M8	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
60	95.49	94.53	103		◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

◎ : Type BF-S

S5M0200 (for a belt width of 20 mm) W = 28 mm

Pulley				Shaft diameter d / D1 / L (mm)																		
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74
				L	41.5	41.5	41.5	41.5	41.5	46	46	46	46	46	46	46	46	46	46	46	52	52
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060
26	41.38	40.42	48		■	■	■	■														
28	44.56	43.60	48	No. of clamping	■	■	■	■	■													
30	47.75	46.79	55	screws	■	■	■	■	■													
32	50.93	49.97	55		■	■	■	■	■													
34	54.11	53.15	61	(Shaft dia.) ϕ14 to 18	■	■	■	■	■	■	■	■										
36	57.30	56.34	61	3-M5	■	■	■	■	■	■	■	■										
40	63.66	62.70	70	(Shaft dia.) ϕ19 to 40	■	■	■	■	■	■	■	■	■	■	■	■						
42	66.85	65.89	70	4-M6	■	■	■	■	■	■	■	■	■	■	■	■						
44	70.03	69.07	77		■	■	■	■	■	■	■	■	■	■	■	■	■	■				
48	76.39	75.43	83	(Shaft dia.) ϕ42 to 45	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
50	79.58	78.62	88	4-M8	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■		
60	95.49	94.53	103		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

■ : Type AF-S

S5M0250 (for a belt width of 25 mm) W = 33 mm

Pulley				Shaft diameter d / D1 / L (mm)																		
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74
				L	46.5	46.5	46.5	46.5	46.5	51	51	51	51	51	51	51	51	51	51	51	57	57
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060
26	41.38	40.42	48		■	■	■	■														
28	44.56	43.60	48	No. of clamping	■	■	■	■	■													
30	47.75	46.79	55	screws	○	○	■	■	■													
32	50.93	49.97	55		○	○	■	■	■													
34	54.11	53.15	61	(Shaft dia.) ϕ14 to 18	○	○	○	○	○	■	■	■										
36	57.30	56.34	61	3-M5	○	○	○	○	○	■	■	■										
40	63.66	62.70	70	(Shaft dia.) ϕ19 to 40	○	○	○	○	○	■	■	■	■	■	■	■						
42	66.85	65.89	70	4-M6	○	○	○	○	○	■	■	■	■	■	■	■						
44	70.03	69.07	77		○	○	○	○	○	■	■	■	■	■	■	■	■	■				
48	76.39	75.43	83	(Shaft dia.) ϕ42 to 45	○	○	○	○	○	■	■	■	■	■	■	■	■	■	■	■		
50	79.58	78.62	88	4-M8		○	○	○	○	■	■	■	■	■	■	■	■	■	■	■		
60	95.49	94.53	103			○	○	○	○	■	■	■	■	■	■	■	■	■	■	■	■	■

■ : Type AF-S ○ : Types AF-S/AF-F

S8M0150 (for a belt width of 15 mm) W = 23 mm W1 = 24 to 40 teeth - 38 mm 44 to 60 teeth - 46 mm

Pulley				Shaft diameter d / D1 / L (mm)																							
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74	79	79	84	89	94
				* L	36.5	36.5	36.5	36.5	36.5	41	41	41	41	41	41	41	41	41	41	41	47	47	47	47	47	47	47
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060	1130	1180	1300	1410	1530
19	48.38	47.01	56	No. of clamping screws	░	░	░	░	░																		
20	50.93	49.56	59		░	░	░	░	░																		
21	53.48	52.10	59		░	░	░	░	░																		
22	56.02	54.65	62		○	○	○	○	░																		
24	61.12	59.74	68	(Shaft dia.) ϕ14 to 18	○	○	○	○	○	◎	◎	◎															
26	66.21	64.84	75		○	○	○	○	○	◎	◎	◎	◎	◎	◎	◎											
28	71.30	69.93	77	3-M5		○	○	○	○	◎	◎	◎	◎	◎	◎	◎											
30	76.39	75.02	83			○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎									
32	81.49	80.12	89	(Shaft dia.) ϕ19 to 40		○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎							
34	86.58	85.21	92			○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎							
36	91.67	90.30	98	4-M6		○	○	○	○	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎		
40	101.86	100.49	108							◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
44	112.05	110.67	120	(Shaft dia.) ϕ42 to 65								◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
48	122.23	120.86	129									◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
50	127.32	125.95	136	4-M8								◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎
60	152.79	151.42	160									◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

░ : Type AF-S ○ : Types AF-S/AF-F ◎ : Type BF-S *L indicates dimension L of Type BF-S; 24 to 40 teeth: L + 15 mm and 44 to 60 teeth: L + 23 mm.

S8M0250 (for a belt width of 25 mm) W = 34 mm

Pulley				Shaft diameter d / D1 / L (mm)																							
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74	79	79	84	89	94
				L	47.5	47.5	47.5	47.5	47.5	52	52	52	52	52	52	52	52	52	52	52	58	58	58	58	58	58	58
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060	1130	1180	1300	1410	1530
19	48.38	47.01	56	No. of clamping screws	░	░	░	░	░																		
20	50.93	49.56	59		░	░	░	░	░																		
21	53.48	52.10	59		░	░	░	░	░																		
22	56.02	54.65	62		○	○	○	○	░																		
24	61.12	59.74	68	(Shaft dia.) ϕ14 to 18	○	○	○	○	○	░	░	░															
26	66.21	64.84	75			○	○	○	○	░	░	░	░	░	░	░											
28	71.30	69.93	77	3-M5		○	○	○	○	░	░	░	░	░	░	░											
30	76.39	75.02	83			○	○	○	○	░	░	░	░	░	░	░	░	░									
32	81.49	80.12	89	(Shaft dia.) ϕ19 to 40		○	○	○	○	░	░	░	░	░	░	░	░	░	░	░							
34	86.58	85.21	92					○	○	░	░	░	░	░	░	░	░	░	░	░							
36	91.67	90.30	98	4-M6				○	○	░	░	░	░	░	░	░	░	░	░	░	░	░					
40	101.86	100.49	108									░	░	░	░	░	░	░	░	░	░	░	░	░	░		
44	112.05	110.67	120	(Shaft dia.) ϕ42 to 65										░	░	░	░	░	░	░	░	░	░	░	░	░	░
48	122.23	120.86	129											░	░	░	░	░	░	░	░	░	░	░	░	░	░
50	127.32	125.95	136	4-M8										░	░	░	░	░	░	░	░	░	░	░	░	░	░
60	152.79	151.42	160											░	░	░	░	░	░	░	░	░	░	░	░	░	░

░ : Type AF-S ○ : Types AF-S/AF-F

S8M0400 (for a belt width of 40 mm) W = 50 mm

Pulley				Shaft diameter d / D1 / L (mm)																							
No. of teeth	dp	do	Fo	Shaft dia. d	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65
				D1	34	35	36	37	38	46	46	46	49	49	54	54	59	59	64	64	74	74	79	79	84	89	94
				L	63.5	63.5	63.5	63.5	63.5	68	68	68	68	68	68	68	68	68	68	68	74	74	74	74	74	74	74
				Transmission torque (N•m)	69	74	79	84	89	240	260	285	310	325	365	390	415	455	495	520	990	1060	1130	1180	1300	1410	1530
19	48.38	47.01	56	No. of clamping screws	░	░	░	░	░																		
20	50.93	49.56	59		░	░	░	░	░																		
21	53.48	52.10	59		░	░	░	░	░																		
22	56.02	54.65	62			○	○	░	░																		
24	61.12	59.74	68	(Shaft dia.) ϕ14 to 18		○	○	○	○	░	░	░															
26	66.21	64.84	75				○	○	○	○	○	○	░	░	░	░											
28	71.30	69.93	77	3-M5					○	○	○	○	○	○	░	░											
30	76.39	75.02	83								○	○	○	○	○	○	░	░									
32	81.49	80.12	89	(Shaft dia.) ϕ19 to 40							○	○	○	○	○	○	○	○	░	░							
34	86.58	85.21	92											○	○	○	○	○	○	○							
36	91.67	90.30	98	4-M6										○	○	○	○	○	○	○	░	░					
40	101.86	100.49	108											○	○	○	○	○	○	○	○	○	░	░	░		
44	112.05	110.67	120	(Shaft dia.) ϕ42 to 65												○	○	○	○	○	○	○	○	○	○	○	○
48	122.23	120.86	129															○	○	○	○	○	○	○	○	○	○
50	127.32	125.95	136	4-M8														○	○	○	○	○	○	○	○	○	○
60	152.79	151.42	160															○	○	○	○	○	○	○	○	○	○

░ : Type AF-S ○ : Types AF-S/AF-F

S14M0400 (for a belt width of 40 mm) W = 52 mm

Pulley				Shaft diameter d / D1 / L (mm)													
No. of teeth	dp	do	Fo	Shaft dia. d	28	30	32	35	38	40	42	45	48	50	55	60	65
				D1	54	54	59	59	64	64	74	74	79	79	84	89	94
				L	70	70	70	70	70	70	76	76	76	76	76	76	76
				Transmission torque (N•m)	365	390	415	455	495	520	990	1060	1130	1180	1300	1410	1530
28	124.78	121.98	136	No. of clamping screws	○	○	○	○	○	○	○	○	○	○	○	○	○
30	133.69	130.90	145			○	○	○	○	○	○	○	○	○	○	○	○
32	142.60	139.81	154				○	○	○	○	○	○	○	○	○	○	○
34	151.52	148.72	163	(Shaft dia.) ϕ28 to 40						○	○	○	○	○	○	○	○
36	160.43	157.63	172							○	○	○	○	○	○	○	○
40	178.25	175.46	189	**4-M6**						○	○	○	○	○	○	○	○
42	187.17	184.37	198							○	○	○	○	○	○	○	○
44	196.08	193.28	207	(Shaft dia.) ϕ42 to 65						○	○	○	○	○	○	○	○
48	213.90	211.11	225							○	○	○	○	○	○	○	○
50	222.82	220.02	234	**4-M8**						○	○	○	○	○	○	○	○

○ : Types AF-S/AF-F

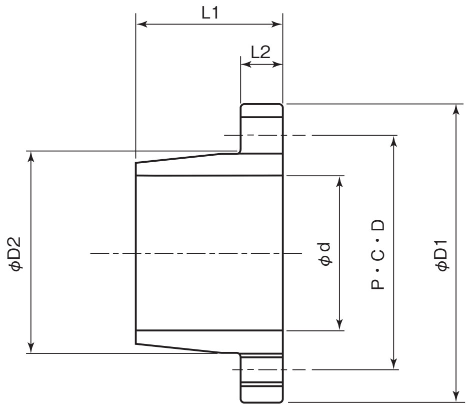
S14M0600 (for a belt width of 60 mm) W = 73 mm

Pulley				Shaft diameter d / D1 / L (mm)										
No. of teeth	dp	do	Fo	Shaft dia. d	35	38	40	42	45	48	50	55	60	65
				D1	59	64	64	74	74	79	79	84	89	94
				L	91	91	91	97	97	97	97	97	97	97
				Transmission torque (N•m)	455	495	520	990	1060	1130	1180	1300	1410	1530
28	124.78	121.98	136	No. of clamping screws	○	○	○	○	○	○	○	○	○	○
30	133.69	130.90	145		○	○	○	○	○	○	○	○	○	○
32	142.60	139.81	154		○	○	○	○	○	○	○	○	○	○
34	151.52	148.72	163	(Shaft dia.) ϕ28 to 40			○	○	○	○	○	○	○	○
36	160.43	157.63	172				○	○	○	○	○	○	○	○
40	178.25	175.46	189	**4-M6**				○	○	○	○	○	○	○
42	187.17	184.37	198					○	○	○	○	○	○	○
44	196.08	193.28	207	(Shaft dia.) ϕ42 to 65				○	○	○	○	○	○	○
48	213.90	211.11	225					○	○	○	○	○	○	○
50	222.82	220.02	234	**4-M8**					○	○	○	○	○	○

○ : Types AF-S/AF-F

List of BAN-LOCK (Inner Ring) Specifications

Profile

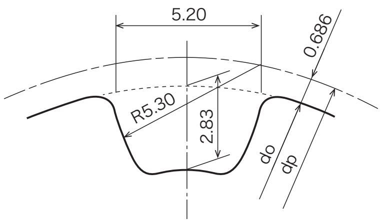


Dimensions						Clamping screw number × Size (mm)	Tightening torque Ms (N•m)	Tightening force Fs (N)	Transmission torque M (N•m)	Surface pressure on the shaft side Ps(MPa)
Shaft dia. d mm	D1 mm	P.C.D mm	D2 mm	L1 mm	L2 mm					
14	34	24	17.8	17	5	3×M5	5.8	6400	69	245
15	35	25	18.8	17	5	3×M5	5.8	6400	74	228
16	36	26	19.8	17	5	3×M5	5.8	6400	79	214
17	37	27	20.8	17	5	3×M5	5.8	6400	84	202
18	38	28	21.8	17	5	3×M5	5.8	6400	89	190
19	46	34.5	27.3	27	8	4×M6	14	12700	240	271
20	46	34.5	27.3	27	8	4×M6	14	12700	260	257
22	46	34.5	27.3	27	8	4×M6	14	12700	285	234
24	49	37.5	30.3	27	8	4×M6	14	12700	310	214
25	49	37.5	30.3	27	8	4×M6	14	12700	325	206
28	54	42.5	35.3	27	8	4×M6	14	12700	365	184
30	54	42.5	35.3	27	8	4×M6	14	12700	390	172
32	59	47.5	40.3	27	8	4×M6	14	12700	415	161
35	59	47.5	40.3	27	8	4×M6	14	12700	455	147
38	64	52.5	45.3	27	8	4×M6	14	12700	495	136
40	64	52.5	45.3	27	8	4×M6	14	12700	520	129
42	74	60	50.8	34	11	4×M8	34	23000	990	185
45	74	60	50.8	34	11	4×M8	34	23000	1060	173
48	79	65	55.8	34	11	4×M8	34	23000	1130	162
50	79	65	55.8	34	11	4×M8	34	23000	1180	156
55	84	70	60.8	34	11	4×M8	34	23000	1300	141
60	89	75	65.8	34	11	4×M8	34	23000	1410	130
65	94	80	70.8	34	11	4×M8	34	23000	1530	120

● The transmission torques are the maximum values.

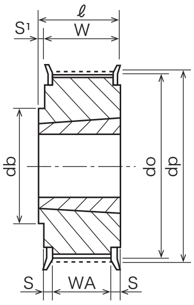
Table of TL STS Pulley Standard Dimensions (Bushing Type)
Type S8M

(Pulley Tooth Profile Dimensions)

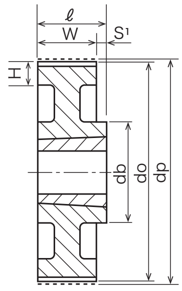


(Pulley Profile)

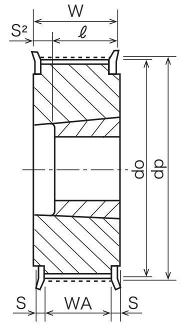
Type 1-1BF



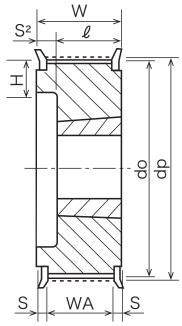
Type 1-2



Type 4-1BF



Type 4-1CF



(Pulley Designation)

(Example) 32 S8M 0250

- 32: No. of teeth of pulley (32 teeth)
- S8M: Pulley tooth profile (S8M)
- 0250: Pulley nominal width (For a belt width of 25 mm)

(Bushing Designation)

(Example) 5035 × 28 N

- 5035: TL bushing type number
- 28: Shaft hole dia. (28 mm)
- N: Keyway for new JIS keys (Previous JIS keys: F)

S8M0150 (For a belt width of 15 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S1	S2	S3	H	Roughly calculated pulley mass (kg)	Flange part No.
28	71.30	69.93	1-1BF	Carbon steel for machine construction	4225	28	23	17	3	47	25	2				0.45	FS 7753
30	76.39	75.02	1-1BF		4225	28	23	17	3	57	25	2				0.57	FS 8363
32	81.49	80.12	1-1BF		4225	28	23	17	3	60	25	2				0.69	FS 8969
34	86.59	85.21	1-1BF		4225	28	23	17	3	60	25	2				0.79	FS 9272
36	91.67	90.30	1-1BF		5035	32	23	17	3	70	35	12				0.99	FS 9878
40	101.86	100.49	1-1BF		5035	32	23	17	3	75	35	12				1.3	FS 10887
44	112.05	110.67	1-1BF		5035	32	23	17	3	80	35	12				1.7	FS120100
48	122.23	120.86	1-1BF	Cast iron or carbon steel for machine construction	5035	32	23	17	3	80	35	12				2.1	FS129108
50	127.32	125.95	1-1BF		5035	32	23	17	3	80	35	12				2.4	FS136116
60	152.79	151.42	1-1BF		5035	32	23	17	3	80	35	12				3.4	FS160140
72	183.35	181.97	1-2		6340	42	23			100	40	17			15	4.9	
84	213.90	212.53	1-2		6340	42	23			100	40	17			15	5.1	
96	244.46	243.09	1-2		6340	42	23			100	40	17			15	5.8	
120	305.58	304.21	1-2		8545	60	23			140	45	22			15	9.4	
156	397.25	395.88	1-2		8545	60	23			140	45	22			15	13.7	

S8M0250 (For a belt width of 25 mm)

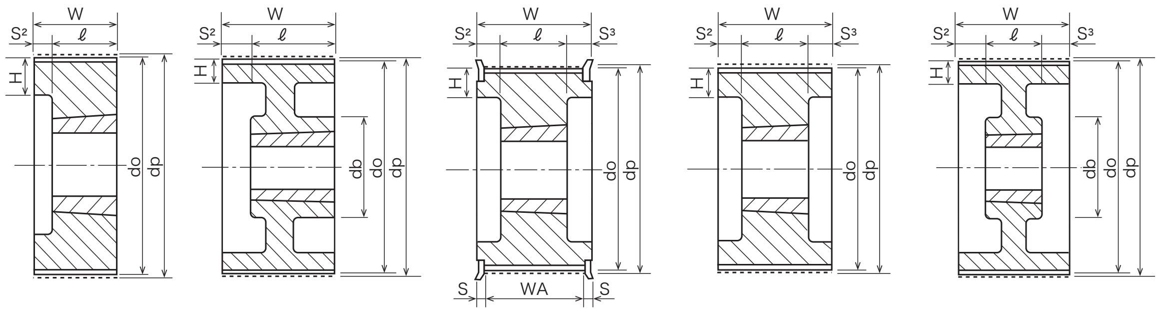
: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S1	S2	S3	H	Roughly calculated pulley mass (kg)	Flange part No.
32	81.49	80.12	1-1BF	Carbon steel for machine construction	5035	32	34	28	3	63	35	1				0.83	FS 8969
34	86.59	85.21	1-1BF		5035	32	34	28	3	63	35	1				0.99	FS 9272
36	91.67	90.30	1-1BF		5035	32	34	28	3	63	35	1				1.2	FS 9878
40	101.86	100.49	1-1BF		6340	42	34	28	3	80	40	6				1.4	FS 10887
44	112.05	110.67	1-1BF		6340	42	34	28	3	80	40	6				1.9	FS120100
48	122.23	120.86	1-1BF	Cast iron or carbon steel for machine construction	6340	42	34	28	3	90	40	6				2.4	FS129108
50	127.32	125.95	1-1BF		6340	42	34	28	3	90	40	6				2.7	FS136116
60	152.79	151.42	1-1BF		6340	42	34	28	3	90	40	6				4.2	FS160140
72	183.35	181.97	1-2		6340	42	34			100	40	6			15	6.3	
84	213.90	212.53	1-2		8545	60	34			140	45	11			15	8.6	
96	244.46	243.09	1-2		8545	60	34			140	45	11			15	8.6	
120	305.58	304.21	1-2		8545	60	34			140	45	11			16	11.0	
156	397.25	395.88	1-2		8545	60	34			140	45	11			16	15.6	

Table of TL STS Pulley Standard Dimensions (Bushing Type)
Type S8M

(Pulley Profile) Type 4-1C Type 4-2B Type 5-1F Type 5-1 Type 5-2



S8M0400 (For a belt width of 40 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
36	91.67	90.30	4-1BF	Carbon steel for machine construction	6340	42	50	44	3		40		10			1.3	FS 9878
40	101.86	100.49	4-1BF		6340	42	50	44	3		40		10			1.9	FS 10887
44	112.05	110.67	4-1BF		6340	42	50	44	3		40		10			2.5	FS120100
48	122.23	120.86	4-1BF		8545	60	50	44	3		45		5			2.3	FS129108
50	127.32	125.95	4-1BF		8545	60	50	44	3		45		5			2.7	FS136116
60	152.79	151.42	4-1CF	Cast iron or carbon steel for machine construction	8545	60	50	44	3		45		5		15	4.9	FS160140
72	183.35	181.97	4-1C		8545	60	50				45		5		15	7.2	
84	213.90	212.53	4-2B		8545	60	50			125	45		5		15	10.4	
96	244.46	243.09	4-2B		8545	60	50			140	45		5		15	11.2	
120	305.58	304.21	4-2B		8545	60	50			140	45		5		16	13.5	
156	397.25	395.88	1-2		11055	75	50			180	55	5			16	21	

S8M0600 (For a belt width of 60 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

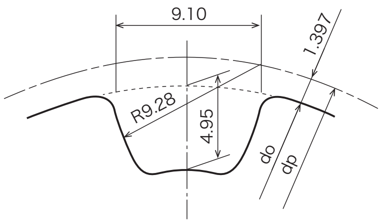
No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
48	122.23	120.86	4-1BF	*	8545	60	71	65	3		45		26			3.2	FS129108
50	127.32	125.95	4-1BF		8545	60	71	65	3		45		26			3.7	FS136116
60	152.79	151.42	5-1F	Cast iron or carbon steel for machine construction	8545	60	71	65	3		45		15	11	16	6.1	FS160140
72	183.35	181.97	5-1		8545	60	71				45		15	11	16	8.8	
84	213.90	212.53	5-2		8545	60	71			125	45		15	11	16	12.3	
96	244.46	243.09	5-2		11055	75	71			160	55		5	11	16	16.7	
120	305.58	304.21	5-2		11055	75	71			180	55		5	11	16	19.8	
156	397.25	395.88	5-2		11055	75	71			180	55		5	11	16	25	

* Carbon steel for machine construction

Table of TL STS Pulley Standard Dimensions (Bushing Type)

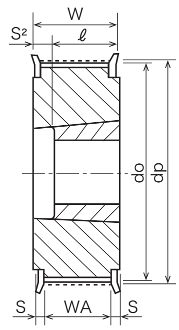
Type S14M

(Pulley Tooth Profile Dimensions)

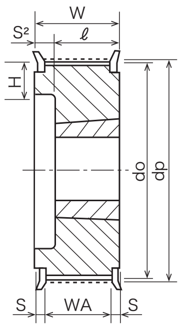


(Pulley Profile)

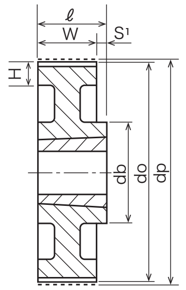
Type 4-1BF



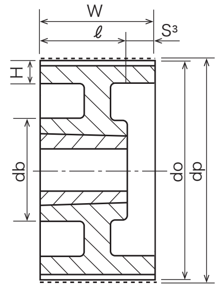
Type 4-1CF



Type 1-2



Type 4-2A



(Pulley Designation)

(Example) 40 S14M 1200

- 40: No. of teeth of pulley (40 teeth)
- S14M: Pulley tooth profile (S14M)
- 1200: Pulley nominal width (For a belt width of 120 mm)

(Bushing Designation)

(Example) 1108 × 75 N

- 1108: TL bushing type number
- 75: Shaft hole dia. (75 mm)
- N: Keyway for new JIS keys (Previous JIS keys: F)

S14M0400 (For a belt width of 40 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
28	124.78	121.98	4-1BF	Carbon steel for machine construction	8545	60	52	46	3		45		7			2.3	FS136106
30	133.69	130.90	4-1BF		8545	60	52	46	3		45		7			3.0	FS145115
32	142.60	139.81	4-1BF		8545	60	52	46	3		45		7			3.8	FS154124
34	151.52	148.72	4-1BF		8545	60	52	46	3		45		7			4.6	FS163133
36	160.43	157.63	4-1BF		8545	60	52	46	3		45		7			5.4	FS172142
40	178.25	175.46	5-1F	Cast iron or carbon steel for machine construction	8545	60	52	46	3		45		5	2	18	7.5	FS189159
42	187.17	184.37	5-1F		8545	60	52	46	3		45		5	2	18	8.5	FS198168
44	196.08	193.28	5-1F		8545	60	52	46	3		45		5	2	18	9.6	FS207177
48	213.90	211.11	5-2F		8545	60	52	46	3	125	45		5	2	18	11.9	FS225195
50	222.82	220.02	5-2F		8545	60	52	46	3	125	45		5	2	18	10.4	FS234204
60	267.38	264.59	5-2		8545	60	52			140	45		5	2	18	12.2	
72	320.86	318.06	1-2		11055	75	52			180	55	3			18	18.1	
84	374.33	371.54	1-2		11055	75	52			180	55	3			18	21	
96	427.81	425.01	1-2		11055	75	52			180	55	3			18	24	
120	534.76	531.97	6		11080	75	52			180	80	14			18	37	
156	695.19	692.39	6		13090	90	52			212	90	19			18	58	

S14M0600 (For a belt width of 60 mm)

: Standard stock **The other sizes are made to order.**

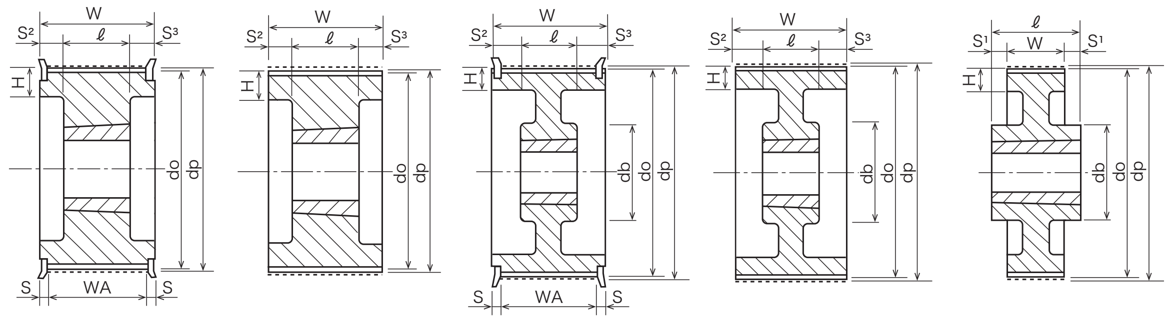
(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
28	124.78	121.98	4-1CF	Carbon steel for machine construction	8545	60	73	67	3		45		28		18	3.2	FS136106
30	133.69	130.90	4-1CF		8545	60	73	67	3		45		28		18	4.2	FS145115
32	142.60	139.81	4-1CF		8545	60	73	67	3		45		28		18	5.2	FS154124
34	151.52	148.72	5-1F		8545	60	73	67	3		45		20	8	18	5.5	FS163133
36	160.43	157.63	5-1F		8545	60	73	67	3		45		20	8	18	6.3	FS172142
40	178.25	175.46	5-1F		8545	60	73	67	3		45		20	8	18	8.1	FS189159
42	187.17	184.37	5-1F	Cast iron or carbon steel for machine construction	11055	75	73	67	3		55		10	8	18	9.0	FS198168
44	196.08	193.28	5-1F		11055	75	73	67	3		55		10	8	18	9.8	FS207177
48	213.90	211.11	5-1F		11055	75	73	67	3		55		10	8	18	12.3	FS225195
50	222.82	220.02	5-1F		11055	75	73	67	3		55		10	8	18	13.6	FS234204
60	267.38	264.59	5-2		11055	75	73			180	55		10	8	18	20	
72	320.86	318.06	5-2		11055	75	73			180	55		10	8	18	22	
84	374.33	371.54	1-2		11080	75	73			180	80	7			18	29	
96	427.81	425.01	1-2		11080	75	73			180	80	7			18	34	
120	534.76	531.97	1-2		13090	90	73			212	90	17			20	49	
156	695.19	692.39	1-2		13090	90	73			212	90	17			20	71	

Table of TL STS Pulley Standard Dimensions (Bushing Type)

Type S14M

(Pulley Profile) Type 5-1F Type 5-1 Type 5-2F Type 5-2 Type 6



S14M0800 (For a belt width of 80 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S1	S2	S3	H	Roughly calculated pulley mass (kg)	Flange part No.
36	160.43	157.63	4-1BF	*	11055	75	94	88	3		55		39			6.8	FS172142
40	178.25	175.46	4-1BF	*	11055	75	94	88	3		55		39			10.1	FS189159
42	187.17	184.37	5-1F	*	11055	75	94	88	3		55		25	14	20	11.1	FS198168
44	196.08	193.28	5-1F	Cast iron or carbon steel for machine construction	11055	75	94	88	3		55		25	14	20	11.4	FS207177
48	213.90	211.11	5-1F	Cast iron or carbon steel for machine construction	11055	75	94	88	3		55		25	14	20	14.1	FS225195
50	222.82	220.02	5-1F	Cast iron or carbon steel for machine construction	11055	75	94	88	3		55		25	14	20	15.5	FS234204
60	267.38	264.59	5-2	Cast iron or carbon steel for machine construction	11080	75	94			160	80		10	4	20	25	
72	320.86	318.06	5-2	Cast iron or carbon steel for machine construction	11080	75	94			180	80		10	4	20	29	
84	374.33	371.54	4-2A	Cast iron or carbon steel for machine construction	13090	90	94			212	90			4	20	39	
96	427.81	425.01	4-2A	Cast iron or carbon steel for machine construction	13090	90	94			212	90			4	20	44	
120	534.76	531.97	4-2A	Cast iron or carbon steel for machine construction	13090	90	94			212	90			4	20	56	
156	695.19	692.39	4-2A	Cast iron or carbon steel for machine construction	14090	100	94			236	90			4	20	85	

S14M1000 (For a belt width of 100 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S1	S2	S3	H	Roughly calculated pulley mass (kg)	Flange part No.
36	160.43	157.63	4-1BF	*	11080	75	115	109	3		80		35			8.7	FS172142
40	178.25	175.46	5-1F	*	11080	75	115	109	3		80		25	10	20	12.3	FS189159
42	187.17	184.37	5-1F	*	11080	75	115	109	3		80		25	10	20	14.4	FS198168
44	196.08	193.28	5-1F	Cast iron or carbon steel for machine construction	11080	75	115	109	3		80		20	15	20	14.8	FS207177
48	213.90	211.11	5-1F	Cast iron or carbon steel for machine construction	11080	75	115	109	3		80		20	15	20	18.5	FS225195
50	222.82	220.02	5-1F	Cast iron or carbon steel for machine construction	11080	75	115	109	3		80		20	15	20	20	FS234204
60	267.38	264.59	5-1	Cast iron or carbon steel for machine construction	13090	90	115				90		10	15	20	30	
72	320.86	318.06	5-2	Cast iron or carbon steel for machine construction	13090	90	115			200	90		10	15	20	38	
84	374.33	371.54	5-2	Cast iron or carbon steel for machine construction	13090	90	115			212	90		10	15	20	43	
96	427.81	425.01	5-2	Cast iron or carbon steel for machine construction	14090	100	115			236	90		10	15	20	54	
120	534.76	531.97	5-2	Cast iron or carbon steel for machine construction	14090	100	115			236	90		10	15	20	68	
156	695.19	692.39	4-2A	Cast iron or carbon steel for machine construction	160110	110	115			265	110			5	20	102	

S14M1200 (For a belt width of 120 mm)

Made-to-order

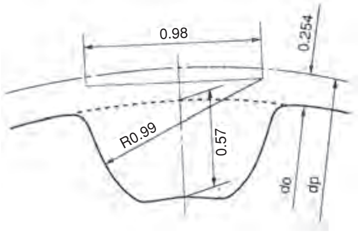
(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S1	S2	S3	H	Roughly calculated pulley mass (kg)	Flange part No.
40	178.25	175.46	5-1F	*	11080	75	136	130	3		80		40	16	20	12.6	FS189159
42	187.17	184.37	5-1F	*	11080	75	136	130	3		80		40	16	20	14.3	FS198168
44	196.08	193.28	5-1F	Cast iron or carbon steel for machine construction	11080	75	136	130	3		80		40	16	20	16.6	FS207177
48	213.90	211.11	5-1F	Cast iron or carbon steel for machine construction	11080	75	136	130	3		80		40	16	20	20	FS225195
50	222.82	220.02	5-1F	Cast iron or carbon steel for machine construction	11080	75	136	130	3		80		40	16	20	22	FS234204
60	267.38	264.59	5-1	Cast iron or carbon steel for machine construction	13090	90	136				90		30	16	20	33	
72	320.86	318.06	5-2	Cast iron or carbon steel for machine construction	13090	90	136			200	90		30	16	20	50	
84	374.33	371.54	5-2	Cast iron or carbon steel for machine construction	14090	100	136			236	90		30	16	20	52	
96	427.81	425.01	5-2	Cast iron or carbon steel for machine construction	14090	100	136			236	90		30	16	20	61	
120	534.76	531.97	5-2	Cast iron or carbon steel for machine construction	160110	110	136			265	110		10	16	20	87	
156	695.19	692.39	5-2	Cast iron or carbon steel for machine construction	160110	110	136			265	110		10	16	20	117	

* Carbon steel for machine construction

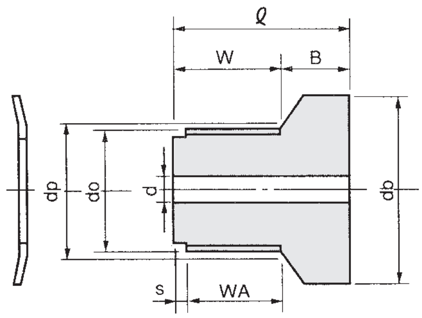
Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S1.5M

(Pulley Tooth Profile Dimensions)

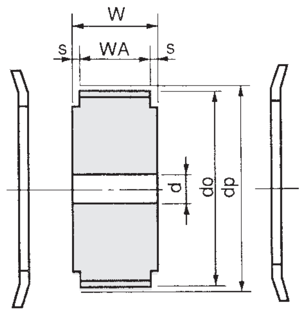


(Pulley Profile)

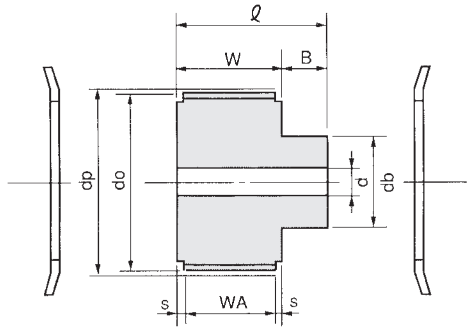
Type SF



Type AF



Type BF



(Pulley Designation)

(Example) 24 S1.5M 0040 AF

- 24: No. of teeth of pulley (24 teeth)
- S1.5M: Pulley tooth profile (Type S1.5M)
- 0040: Pulley nominal width (For a belt width of 4.0 mm)
- AF: Pulley profile (Type AF)

For the flange installation procedure, refer to **P. 135 and P. 190**.

S1.5M0040 (For a belt width of 4 mm) — Made-to-order

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
16	SF,AF	High-strength aluminum alloy	7.64	7.13	8	10	15	6	2	7	11	3	3	3	1	3	FM1105
18	SF,AF		8.59	8.09	8	10	15	6	2	7	13	4	4	3	1	3	FM1306
20	SF,AF		9.55	9.04	8	10	15	6	2	7	13	4	4	3	2	4	FM1306
22	SF,AF		10.50	10.00	8	10	15	6	2	7	14	5	5	3	2	5	FM1407
24	SF,AF		11.46	10.95	8	10	15	6	2	7	14	5	5	3	2	5	FM1407
26	SF,AF		12.41	11.91	8	10	15	6	2	7	16	7	7	3	3	6	FM1609
28	SF,AF		13.37	12.86	8	10	15	6	2	7	17	7	7	3	3	7	FM1710
30	SF,AF		14.32	13.82	8	10	15	6	2	7	17	7	7	3	4	8	FM1710
32	SF,AF		15.28	14.77	8	10	17	6	2	7	18	8	8	4	4	8	FM1811
34	BF,AF		16.23	15.73	-	10	17	6	2	7	11	10	6	4	5	7	FM2013
36	BF,AF		17.19	16.68	-	10	17	6	2	7	11	10	6	4	6	7	FM2113
40	BF,AF		19.10	18.59	-	10	17	6	2	7	13	12	6	4	7	10	FM2215
44	BF,AF		21.01	20.50	-	10	17	6	2	7	14	13	8	4	9	12	FM2516
48	BF,AF		22.92	22.41	-	10	17	6	2	7	17	16	11	4	11	15	FM2919
50	BF,AF		23.87	23.37	-	10	17	6	2	7	17	16	11	5	11	16	FM2919
60	BF,AF		28.65	28.14	-	10	17	6	0	7	22	21	16	5	17	24	FM3424

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S1.5M with 14 teeth at the minimum if requested.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S1.5M

S1.5M0060 (For a belt width of 6 mm)

Made-to-order

(Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
16	SF,AF	High-strength aluminum alloy	7.64	7.13	10	12	17	8	2	7	11	3	3	3	1	3	FM1105
18	SF,AF		8.59	8.09	10	12	17	8	2	7	13	4	4	3	2	4	FM1306
20	SF,AF		9.55	9.04	10	12	17	8	2	7	13	4	4	3	2	4	FM1306
22	SF,AF		10.50	10.00	10	12	17	8	2	7	14	5	5	3	2	5	FM1407
24	SF,AF		11.46	10.95	10	12	17	8	2	7	14	5	5	3	3	5	FM1407
26	SF,AF		12.41	11.91	10	12	17	8	2	7	16	7	7	3	4	7	FM1609
28	SF,AF		13.37	12.86	10	12	17	8	2	7	17	7	7	3	4	8	FM1710
30	SF,AF		14.32	13.82	10	12	17	8	2	7	17	7	7	4	5	8	FM1710
32	SF,AF		15.28	14.77	10	12	17	8	2	7	18	8	8	4	5	9	FM1811
34	BF,AF		16.23	15.73	-	12	19	8	2	7	11	10	6	4	6	8	FM2013
36	BF,AF		17.19	16.68	-	12	19	8	2	7	11	10	6	4	7	9	FM2113
40	BF,AF		19.10	18.59	-	12	19	8	2	7	13	12	6	4	9	11	FM2215
44	BF,AF		21.01	20.50	-	12	19	8	2	7	14	13	8	4	11	13	FM2516
48	BF,AF		22.92	22.41	-	12	19	8	2	7	17	16	11	4	13	17	FM2919
50	BF,AF		23.87	23.37	-	12	19	8	2	7	17	16	11	5	14	18	FM2919
60	BF,AF		28.65	28.14	-	12	19	8	2	7	22	21	16	5	20	27	FM3424

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S1.5M with 14 teeth at the minimum if requested.

S1.5M0100 (For a belt width of 10 mm)

Made-to-order

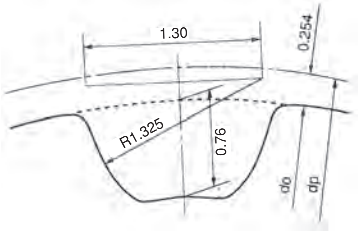
(Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
16	SF,AF	High-strength aluminum alloy	7.64	7.13	14	16	21	12	2	7	11	3	3	3	2	3	FM1105
18	SF,AF		8.59	8.09	14	16	21	12	2	7	13	4	4	3	2	4	FM1306
20	SF,AF		9.55	9.04	14	16	21	12	2	7	13	4	4	3	3	5	FM1306
22	SF,AF		10.50	10.00	14	16	21	12	2	7	14	5	5	3	3	6	FM1407
24	SF,AF		11.46	10.95	14	16	21	12	2	7	14	5	5	3	4	6	FM1407
26	SF,AF		12.41	11.91	14	16	21	12	2	7	16	7	7	3	5	8	FM1609
28	SF,AF		13.37	12.86	14	16	21	12	2	7	17	7	7	3	6	9	FM1710
30	SF,AF		14.32	13.82	14	16	21	12	2	7	17	7	7	4	6	10	FM1710
32	SF,AF		15.28	14.77	14	16	21	12	2	7	18	8	8	4	7	11	FM1811
34	BF,AF		16.23	15.73	-	16	23	12	2	7	11	10	6	4	8	10	FM2013
36	BF,AF		17.19	16.68	-	16	23	12	2	7	11	10	6	4	9	11	FM2113
40	BF,AF		19.10	18.59	-	16	23	12	2	7	13	12	6	4	12	14	FM2215
44	BF,AF		21.01	20.50	-	16	23	12	2	7	14	13	8	4	14	17	FM2516
48	BF,AF		22.92	22.41	-	16	23	12	2	7	17	16	11	4	17	21	FM2919
50	BF,AF		23.87	23.37	-	16	23	12	2	7	17	16	11	5	18	22	FM2919
60	BF,AF		28.65	28.14	-	16	23	12	2	7	22	21	16	5	27	34	FM3424

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S1.5M with 14 teeth at the minimum if requested.

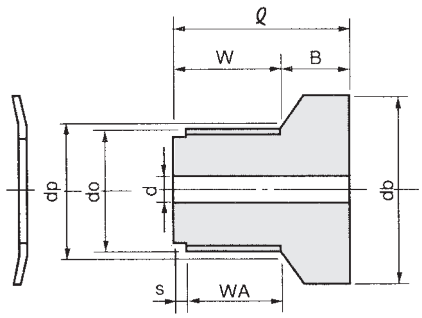
Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S2M

(Pulley Tooth Profile Dimensions)

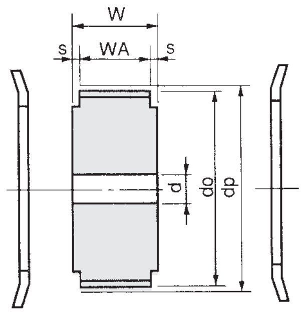


(Pulley Profile)

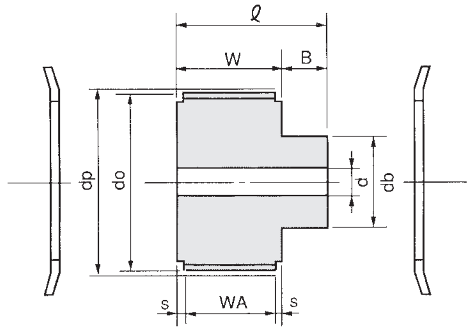
Type SF



Type AF



Type BF



(Pulley Designation)

(Example) 24 S2M 0040 BF

- 24: No. of teeth of pulley (24 teeth)
- S2M: Pulley tooth profile (Type S2M)
- 0040: Pulley nominal width (For a belt width of 4.0 mm)
- BF: Pulley profile (Type BF)

For the flange installation procedure, refer to **P. 135 and P. 190**.

S2M0040 (For a belt width of 4 mm) **Made-to-order** (Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	8.91	8.40	8	10	15	6	2	7	13	4	4	3	1	3	FM1306
15	SF,AF		9.55	9.04	8	10	15	6	2	7	13	4	4	3	1	3	FM1306
16	SF,AF		10.19	9.68	8	10	15	6	2	7	14	5	5	3	2	4	FM1407
18	SF,AF		11.46	10.95	8	10	15	6	2	7	14	5	5	3	2	4	FM1407
20	SF,AF		12.73	12.22	8	10	15	6	2	7	16	7	6	3	3	6	FM1609
22	SF,AF		14.01	13.50	8	10	15	6	2	7	17	8	6	4	3	7	FM1710
24	SF,AF		15.28	14.77	8	10	15	6	2	7	19	9	6	4	4	8	FM1912
26	BF,AF		16.55	16.04	-	10	17	6	2	7	11	10	6	4	5	6	FM2013
28	BF,AF		17.83	17.32	-	10	17	6	2	7	11	11	6	5	5	7	FM2113
30	BF,AF		19.10	18.59	-	10	17	6	2	7	13	12	7	5	6	8	FM2215
32	BF,AF		20.37	19.86	-	10	17	6	2	7	14	14	8	5	7	10	FM2516
34	BF,AF		21.65	21.14	-	10	17	6	2	7	14	14	8	5	8	11	FM2516
36	BF,AF		22.92	22.41	-	10	17	6	2	7	17	16	10	5	9	13	FM2919
40	BF,AF		25.46	24.96	-	10	17	6	2	7	19	18	10	5	12	17	FM3121
44	BF,AF		28.01	27.50	-	10	17	6	2	7	20	20	10	5	15	20	FM3222
48	BF,AF		30.56	30.05	-	10	17	6	2	7	24	24	10	5	18	26	FM3626
50	BF,AF		31.83	31.32	-	10	17	6	2	7	25	25	12	5	19	28	FM3727
60	BF,AF		38.20	37.69	-	10	17	6	2	7	26	25	12	5	29	38	FM4328

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S2M with 10 teeth at the minimum if requested.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S2M

S2M0060 (For a belt width of 6 mm)

Made-to-order

(Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	8.91	8.40	10	12	17	8	2	7	13	4	4	3	1	3	FM1306
15	SF,AF		9.55	9.04	10	12	17	8	2	7	13	4	4	3	2	4	FM1306
16	SF,AF		10.19	9.68	10	12	17	8	2	7	14	5	5	3	2	4	FM1407
18	SF,AF		11.46	10.95	10	12	17	8	2	7	14	5	5	3	2	5	FM1407
20	SF,AF		12.73	12.22	10	12	17	8	2	7	16	7	6	3	3	6	FM1609
22	SF,AF		14.01	13.50	10	12	17	8	2	7	17	8	6	4	4	7	FM1710
24	SF,AF		15.28	14.77	10	12	17	8	2	7	19	9	6	4	5	9	FM1912
26	BF,AF		16.55	16.04	-	12	19	8	2	7	11	10	6	4	6	7	FM2013
28	BF,AF		17.83	17.32	-	12	19	8	2	7	11	11	6	5	6	8	FM2113
30	BF,AF		19.10	18.59	-	12	19	8	2	7	13	12	7	5	8	10	FM2215
32	BF,AF		20.37	19.86	-	12	19	8	2	7	14	14	8	5	9	11	FM2516
34	BF,AF		21.65	21.14	-	12	19	8	2	7	14	14	8	5	10	13	FM2516
36	BF,AF		22.92	22.41	-	12	19	8	2	7	17	16	10	5	11	15	FM2919
40	BF,AF		25.46	24.96	-	12	19	8	2	7	19	18	10	5	14	19	FM3121
44	BF,AF		28.01	27.50	-	12	19	8	2	7	20	20	10	5	18	23	FM3222
48	BF,AF		30.56	30.05	-	12	19	8	2	7	24	24	10	5	21	30	FM3626
50	BF,AF		31.83	31.32	-	12	19	8	2	7	25	25	12	5	23	32	FM3727
60	BF,AF		38.20	37.69	-	12	19	8	2	7	26	25	12	5	34	44	FM4328

S2M0100 (For a belt width of 10 mm)

Made-to-order

(Unit: mm)

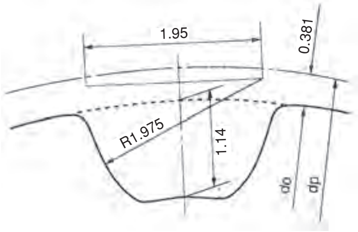
No. of teeth	Profile	Mate-rial	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
												MAX		MIN			
					SF	AF,BF						AF	SF,BF	AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	8.91	8.40	14	16	21	12	2	7	13	4	4	3	2	4	FM1306
15	SF,AF		9.55	9.04	14	16	21	12	2	7	13	4	4	3	2	4	FM1306
16	SF,AF		10.19	9.68	14	16	21	12	2	7	14	5	5	3	2	5	FM1407
18	SF,AF		11.46	10.95	14	16	21	12	2	7	14	5	5	3	3	6	FM1407
20	SF,AF		12.73	12.22	14	16	21	12	2	7	16	7	6	3	4	7	FM1609
22	SF,AF		14.01	13.50	14	16	21	12	2	7	17	8	6	4	5	8	FM1710
24	SF,AF		15.28	14.77	14	16	21	12	2	7	19	9	6	4	6	10	FM1912
26	BF,AF		16.55	16.04	-	16	23	12	2	7	11	10	6	4	7	9	FM2013
28	BF,AF		17.83	17.32	-	16	23	12	2	7	11	11	6	5	9	10	FM2113
30	BF,AF		19.10	18.59	-	16	23	12	2	7	13	12	7	5	10	12	FM2215
32	BF,AF		20.37	19.86	-	16	23	12	2	7	14	14	8	5	12	14	FM2516
34	BF,AF		21.65	21.14	-	16	23	12	2	7	14	14	8	5	13	16	FM2516
36	BF,AF		22.92	22.41	-	16	23	12	2	7	17	16	10	5	15	19	FM2919
40	BF,AF		25.46	24.96	-	16	23	12	2	7	19	18	10	5	19	24	FM3121
44	BF,AF		28.01	27.50	-	16	23	12	2	7	20	20	10	5	24	29	FM3222
48	BF,AF		30.56	30.05	-	16	23	12	2	7	24	24	10	5	28	37	FM3626
50	BF,AF		31.83	31.32	-	16	23	12	2	7	25	25	12	5	31	40	FM3727
60	BF,AF		38.20	37.69	-	16	23	12	2	7	26	25	12	5	46	55	FM4328

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S2M with 10 teeth at the minimum if requested.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)

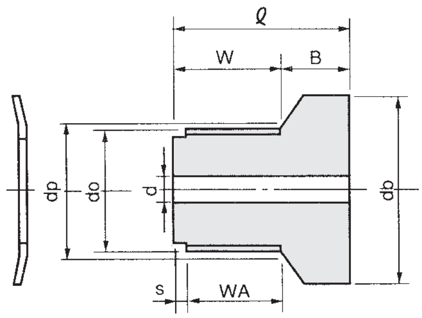
Type S3M

(Pulley Tooth Profile Dimensions)

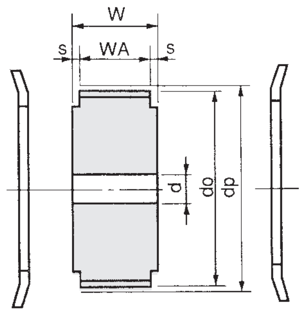


(Pulley Profile)

Type SF



Type AF



(Pulley Designation)

(Example) 36 S3M 0150 BF

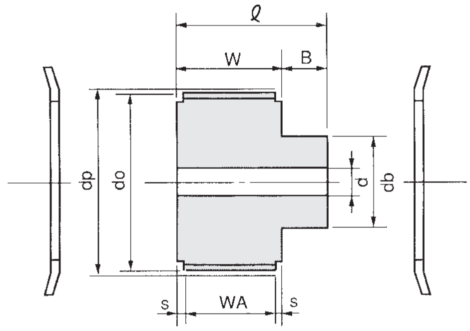
- 36: No. of teeth of pulley (36 teeth)
- S3M: Pulley tooth profile (Type S3M)
- 0150: Pulley nominal width (For a belt width of 15 mm)
- BF: Pulley profile (Type BF)

(Pulley Designation)

(Example) 36 S3M 0150 BF

- 36: No. of teeth of pulley (36 teeth)
- S3M: Pulley tooth profile (Type S3M)
- 0150: Pulley nominal width (For a belt width of 15 mm)
- BF: Pulley profile (Type BF)

Type BF



For the flange installation procedure, r efer to **P. 135 and P. 190**.

S3M0060 (For a belt width of 6 mm)

Made-to-order

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
					SF	AF,BF						MAX AF	MAX SF,BF	MIN AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	13.37	12.61	10	12	18	8	2	8	16	7	6	4	3	7	FM1609
15	SF,AF		14.32	13.56	10	12	18	8	2	8	17	8	6	4	4	8	FM1710
16	SF,AF		15.28	14.52	10	12	18	8	2	8	19	10	6	4	4	9	FM1912
18	BF,AF		17.19	16.43	-	12	20	8	2	8	11	10	6	4	6	7	FM2113
20	BF,AF		19.10	18.34	-	12	20	8	2	8	13	10	6	4	7	10	FM2215
22	BF,AF		21.01	20.25	-	12	20	8	2	8	14	12	8	4	9	12	FM2516
24	BF,AF		22.92	22.16	-	12	20	8	2	8	17	15	10	4	11	16	FM2919
26	BF,AF		24.83	24.07	-	12	20	8	2	8	17	15	10	6	13	17	FM2919
28	BF,AF		26.74	25.98	-	12	20	8	2	8	19	17	10	6	15	20	FM3121
30	BF,AF		28.65	27.89	-	12	20	8	2	8	22	20	10	6	17	25	FM3424
32	BF,AF		30.56	29.80	-	12	20	8	2	8	24	22	10	6	20	29	FM3626
34	BF,AF		32.47	31.71	-	12	20	8	2	8	25	23	12	6	23	33	FM3727
36	BF,AF		34.38	33.62	-	12	20	8	2	8	26	26	12	6	26	37	FM4030
40	BF,AF		38.20	37.44	-	12	20	8	2	8	26	26	12	8	32	43	FM4328
44	BF,AF		42.02	41.25	-	12	20	8	2	8	32	30	15	8	40	56	FM4734
48	BF,AF		45.84	45.07	-	12	20	8	2	8	34	32	15	8	48	67	FM5136
50	BF,AF		47.75	46.98	-	12	20	8	2	8	39	38	15	8	52	77	FM5442
60	BF,AF		57.30	56.53	-	12	20	8	2	8	39	38	16	8	77	102	FM6141

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S3M with 10 teeth at the minimum if requested.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S3M

S3M0100 (For a belt width of 10 mm) — Made-to-order

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
					SF	AF,BF						MAX AF	MAX SF,BF	MIN AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	13.37	12.61	14	16	22	12	2	8	16	7	6	4	4	8	FM1609
15	SF,AF		14.32	13.56	14	16	22	12	2	8	17	8	6	4	5	9	FM1710
16	SF,AF		15.28	14.52	14	16	22	12	2	8	19	10	6	4	6	11	FM1912
18	BF,AF		17.19	16.43	-	16	24	12	2	8	11	10	6	4	7	9	FM2113
20	BF,AF		19.10	18.34	-	16	24	12	2	8	13	10	6	4	10	12	FM2215
22	BF,AF		21.01	20.25	-	16	24	12	2	8	14	12	8	4	12	15	FM2516
24	BF,AF		22.92	22.16	-	16	24	12	2	8	17	15	10	4	15	19	FM2919
26	BF,AF		24.83	24.07	-	16	24	12	2	8	17	15	10	6	17	21	FM2919
28	BF,AF		26.74	25.98	-	16	24	12	2	8	19	17	10	6	20	25	FM3121
30	BF,AF		28.65	27.89	-	16	24	12	2	8	22	20	10	6	23	31	FM3424
32	BF,AF		30.56	29.80	-	16	24	12	2	8	24	22	10	6	27	36	FM3626
34	BF,AF		32.47	31.71	-	16	24	12	2	8	25	23	12	6	31	41	FM3727
36	BF,AF		34.38	33.62	-	16	24	12	2	8	26	26	12	6	35	46	FM4030
40	BF,AF		38.20	37.44	-	16	24	12	2	8	26	26	12	8	43	53	FM4328
44	BF,AF		42.02	41.25	-	16	24	12	2	8	32	30	15	8	53	69	FM4734
48	BF,AF		45.84	45.07	-	16	24	12	2	8	34	32	15	8	64	82	FM5136
50	BF,AF		47.75	46.98	-	16	24	12	2	8	39	38	15	8	70	95	FM5442
60	BF,AF		57.30	56.53	-	16	24	12	2	8	39	38	16	8	103	128	FM6141

S3M0150 (For a belt width of 15 mm) — Made-to-order

(Unit: mm)

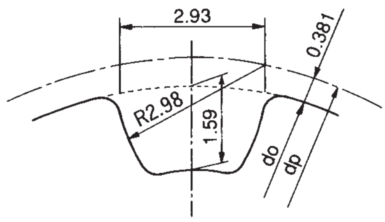
No. of teeth	Profile	Material	dp	do	W		ℓ	WA	S	B	db	d			Roughly calculated-pulley mass (g)		Flange part No.
					SF	AF,BF						MAX AF	MAX SF,BF	MIN AF,SF,BF	AF	SF,BF	
14	SF,AF	High-strength aluminum alloy	13.37	12.61	19	21	27	17	2	8	16	7	6	4	5	9	FM1609
15	SF,AF		14.32	13.56	19	21	27	17	2	8	17	8	6	4	6	10	FM1710
16	SF,AF		15.28	14.52	19	21	27	17	2	8	19	10	6	4	7	12	FM1912
18	BF,AF		17.19	16.43	-	21	29	17	2	8	11	10	6	4	10	12	FM2113
20	BF,AF		19.10	18.34	-	21	29	17	2	8	13	10	6	4	13	15	FM2215
22	BF,AF		21.01	20.25	-	21	29	17	2	8	14	12	8	4	16	19	FM2516
24	BF,AF		22.92	22.16	-	21	29	17	2	8	17	15	10	4	19	24	FM2919
26	BF,AF		24.83	24.07	-	21	29	17	2	8	17	15	10	6	22	26	FM2919
28	BF,AF		26.74	25.98	-	21	29	17	2	8	19	17	10	6	26	32	FM3121
30	BF,AF		28.65	27.89	-	21	29	17	2	8	22	20	10	6	31	38	FM3424
32	BF,AF		30.56	29.80	-	21	29	17	2	8	24	22	10	6	35	45	FM3626
34	BF,AF		32.47	31.71	-	21	29	17	2	8	25	23	12	6	40	50	FM3727
36	BF,AF		34.38	33.62	-	21	29	17	2	8	26	26	12	6	46	57	FM4030
40	BF,AF		38.20	37.44	-	21	29	17	2	8	26	26	12	8	56	67	FM4328
44	BF,AF		42.02	41.25	-	21	29	17	2	8	32	30	15	8	69	86	FM4734
48	BF,AF		45.84	45.07	-	21	29	17	2	8	34	32	15	8	84	102	FM5136
50	BF,AF		47.75	46.98	-	21	29	17	2	8	39	38	15	8	91	116	FM5442
60	BF,AF		57.30	56.53	-	21	29	17	2	8	39	38	16	8	135	160	FM6141

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.
- We manufacture Type S3M with 10 teeth at the minimum if requested.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)

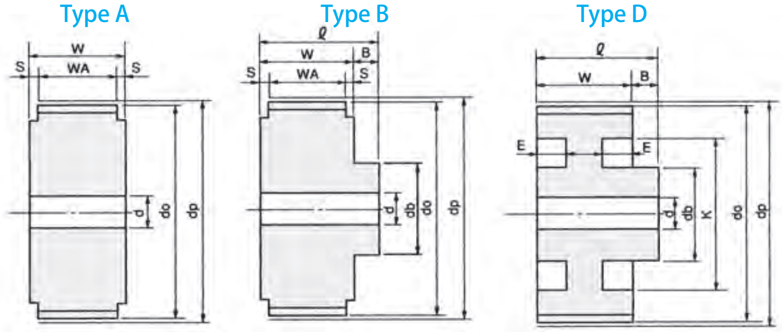
Type S4.5M

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type A Type B Type D



(Pulley Designation)

(Example) 20 S4.5M 0100 A

- 20: No. of teeth of pulley (20 teeth)
- S4.5M: Pulley tooth profile (Type S4.5M)
- 0100: Pulley nominal width (For a belt width of 10 mm)
- A: Pulley profile (Type A)

Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the installation procedure (**→ P. 135 and P. 190**).

S4.5M0060 (For a belt width of 6 mm)

(shaded): Standard stock **The other sizes are made to order.** (Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,D	*d MIN A,B,D	K	E	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,D	Flange part No.
12	A,B	Carbon steel for machine construction	17.19	16.43	12	20	8	2	8	10	7	5	4	-	-	0.014	0.018	FS2312
13	A,B		18.62	17.86	12	20	8	2	8	10	8	5	4	-	-	0.017	0.021	FS2312
14	A,B		20.05	19.29	12	20	8	2	8	12	9	6	5	-	-	0.020	0.026	FS2514
15	A,B		21.49	20.72	12	20	8	2	8	12	10	6	5	-	-	0.024	0.030	FS2514
16	A,B		22.92	22.16	12	20	8	2	8	13	10	6	5	-	-	0.028	0.035	FS2616
18	A,B		25.78	25.02	12	20	8	2	8	17	13	10	5	-	-	0.037	0.050	FS3120
20	A,B		28.65	27.89	12	24	8	2	12	19	15	12	6	-	-	0.047	0.071	FS3322
22	A,B		31.51	30.75	12	24	8	2	12	19	17	12	6	-	-	0.058	0.083	FS3522
24	A,B		34.38	33.62	12	24	8	2	12	25	20	17	8	-	-	0.069	0.11	FS4028
26	A,B		37.24	36.48	12	24	8	2	12	25	22	17	8	-	-	0.083	0.12	FS4328
28	A,B		40.11	39.35	12	24	8	2	12	29	24	20	10	-	-	0.096	0.15	FS4432
30	A,B		42.97	42.21	12	24	8	2	12	30	26	20	10	-	-	0.11	0.17	FS4734
32	A,B		45.84	45.07	12	24	8	2	12	32	28	20	10	-	-	0.13	0.19	FS5136
34	A,B		48.70	47.94	12	24	8	2	12	34	30	22	10	-	-	0.14	0.22	FS5136
36	A,B		51.57	50.80	12	24	8	2	12	35	32	22	12	-	-	0.16	0.24	FS5741
38	A,B		54.43	53.67	12	24	8	2	12	36	34	24	12	-	-	0.18	0.27	FS6141
40	A,B		57.30	56.53	12	24	8	2	12	38	37	24	12	-	-	0.21	0.30	FS6141
42	A,B		60.16	59.40	12	24	8	2	12	41	39	26	12	-	-	0.23	0.34	FS6950
44	A,B		63.03	62.26	12	24	8	2	12	42	41	26	12	-	-	0.25	0.37	FS6950
48	D		68.75	67.99	12	24	-	-	12	44	-	28	12	55	3.5	-	0.39	-
50	D		71.62	70.86	12	24	-	-	12	44	-	28	12	58	3.5	-	0.41	-
60	D		85.94	85.18	12	24	-	-	12	50	-	30	12	72	3.5	-	0.56	-
72	D		103.13	102.37	12	24	-	-	12	56	-	32	16	89	3.5	-	0.73	-

S4.5M0100 (For a belt width of 10 mm)

(shaded): Standard stock **The other sizes are made to order.** (Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,D	*d MIN A,B,D	K	E	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,D	Flange part No.
12	A,B	Carbon steel for machine construction	17.19	16.43	16	24	12	2	8	10	7	5	4	-	-	0.019	0.023	FS2312
13	A,B		18.62	17.86	16	24	12	2	8	10	8	5	4	-	-	0.023	0.027	FS2312
14	A,B		20.05	19.29	16	24	12	2	8	12	9	6	5	-	-	0.027	0.033	FS2514
15	A,B		21.49	20.72	16	24	12	2	8	12	10	6	5	-	-	0.032	0.038	FS2514
16	A,B		22.92	22.16	16	24	12	2	8	13	10	6	5	-	-	0.037	0.045	FS2616
18	A,B		25.78	25.02	16	24	12	2	8	17	13	10	5	-	-	0.050	0.063	FS3120
20	A,B		28.65	27.89	16	28	12	2	12	19	15	12	6	-	-	0.063	0.087	FS3322
22	A,B		31.51	30.75	16	28	12	2	12	19	17	12	6	-	-	0.078	0.10	FS3522
24	A,B		34.38	33.62	16	28	12	2	12	25	20	17	8	-	-	0.093	0.13	FS4028
26	A,B		37.24	36.48	16	28	12	2	12	25	22	17	8	-	-	0.11	0.15	FS4328
28	A,B		40.11	39.35	16	28	12	2	12	29	24	20	10	-	-	0.12	0.18	FS4432
30	A,B		42.97	42.21	16	28	12	2	12	30	26	20	10	-	-	0.15	0.20	FS4734
32	A,B		45.84	45.07	16	28	12	2	12	32	28	20	10	-	-	0.17	0.24	FS5136
34	A,B		48.70	47.94	16	28	12	2	12	34	30	22	10	-	-	0.19	0.27	FS5136
36	A,B		51.57	50.80	16	28	12	2	12	35	32	22	12	-	-	0.22	0.30	FS5741
38	A,B		54.43	53.67	16	28	12	2	12	36	34	24	12	-	-	0.25	0.33	FS6141
40	A,B		57.30	56.53	16	28	12	2	12	38	37	24	12	-	-	0.28	0.37	FS6141
42	A,B		60.16	59.40	16	28	12	2	12	41	39	26	12	-	-	0.31	0.42	FS6950
44	A,B		63.03	62.26	16	28	12	2	12	42	41	26	12	-	-	0.34	0.46	FS6950
48	D		68.75	67.99	16	28	-	-	12	44	-	28	12	55	4	-	0.49	-
50	D		71.62	70.86	16	28	-	-	12	44	-	28	12	58	4	-	0.51	-
60	D		85.94	85.18	16	28	-	-	12	50	-	30	12	72	4	-	0.71	-
72	D		103.13	102.37	16	28	-	-	12	56	-	32	16	89	4	-	0.94	-

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S4.5M

S4.5M0150 (For a belt width of 15 mm) : Standard stock **The other sizes are made to order.**

(Unit: mm)

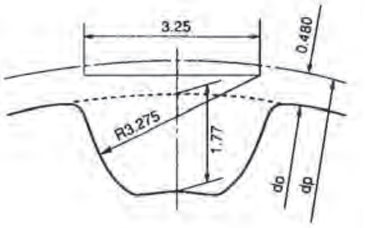
No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	* d MAX A	* d MAX B,D	* d MIN A,B,D	K	E	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,D	Flange part No.
12	A,B	Carbon steel for machine construction	17.19	16.43	21	29	17	2	8	10	7	5	4	-	-	0.024	0.029	FS2312
13	A,B		18.62	17.86	21	29	17	2	8	10	8	5	4	-	-	0.030	0.034	FS2312
14	A,B		20.05	19.29	21	29	17	2	8	12	9	6	5	-	-	0.035	0.041	FS2514
15	A,B		21.49	20.72	21	29	17	2	8	12	10	6	5	-	-	0.042	0.048	FS2514
16	A,B		22.92	22.16	21	29	17	2	8	13	10	6	5	-	-	0.049	0.056	FS2616
18	A,B		25.78	25.02	21	29	17	2	8	17	13	10	5	-	-	0.065	0.078	FS3120
20	A,B		28.65	27.89	21	33	17	2	12	19	15	12	6	-	-	0.082	0.10	FS3322
22	A,B		31.51	30.75	21	33	17	2	12	19	17	12	6	-	-	0.10	0.12	FS3522
24	A,B		34.38	33.62	21	33	17	2	12	25	20	17	8	-	-	0.12	0.16	FS4028
26	A,B		37.24	36.48	21	33	17	2	12	25	22	17	8	-	-	0.14	0.18	FS4328
28	A,B		40.11	39.35	21	33	17	2	12	29	24	20	10	-	-	0.16	0.22	FS4432
30	A,B		42.97	42.21	21	33	17	2	12	30	26	20	10	-	-	0.19	0.25	FS4734
32	A,B		45.84	45.07	21	33	17	2	12	32	28	20	10	-	-	0.22	0.29	FS5136
34	A,B		48.70	47.94	21	33	17	2	12	34	30	22	10	-	-	0.26	0.34	FS5136
36	A,B		51.57	50.80	21	33	17	2	12	35	32	22	12	-	-	0.29	0.37	FS5741
38	A,B		54.43	53.67	21	33	17	2	12	36	34	24	12	-	-	0.32	0.41	FS6141
40	A,B		57.30	56.53	21	33	17	2	12	38	37	24	12	-	-	0.36	0.46	FS6141
42	A,B		60.16	59.40	21	33	17	2	12	41	39	26	12	-	-	0.41	0.52	FS6950
44	A,B		63.03	62.26	21	33	17	2	12	42	41	26	12	-	-	0.45	0.57	FS6950
48	D		68.75	67.99	21	33	-	-	12	44	-	28	12	55	5	-	0.61	-
50	D		71.62	70.86	21	33	-	-	12	44	-	28	12	58	5	-	0.64	-
60	D		85.94	85.18	21	33	-	-	12	50	-	30	12	72	5	-	0.88	-
72	D		103.13	102.37	21	33	-	-	12	56	-	32	16	89	5	-	1.1	-

* For the d MAX dimensions, please consult us when you machine keyways.

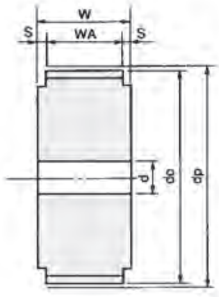
Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)

Type S5M

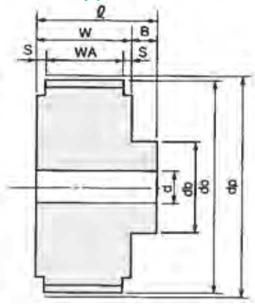
(Pulley Tooth Profile Dimensions) (Pulley Profile)



Type A



Type B



Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the installation procedure **(→ P. 135 and P. 190)**.

(Pulley Designation)

(Example) 30 S5M 0150 A

- 30: No. of teeth of pulley (30 teeth)
- S5M: Pulley tooth profile (Type S5M)
- 0150: Pulley nominal width (For a belt width of 15 mm)
- A: Pulley profile (Type A)

S5M0100 (For a belt width of 10 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B	*d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
14	A,B	Carbon steel for machine construction	22.28	21.32	17	29	12	2.5	12	14	10	6	5	0.037	0.050	F 2817
16	A,B		25.46	24.50	17	29	12	2.5	12	17	13	10	5	0.052	0.071	F 3220
18	A,B		28.65	27.69	17	29	12	2.5	12	19	15	12	6	0.067	0.091	F 3422
20	A,B		31.83	30.87	17	29	12	2.5	12	19	17	12	6	0.085	0.10	F 3925
22	A,B		35.01	34.05	17	29	12	2.5	12	25	20	17	8	0.10	0.14	F 4228
24	A,B		38.20	37.24	17	29	12	2.5	12	29	22	17	8	0.12	0.18	F 4531
25	A,B		39.79	38.83	17	29	12	2.5	12	29	24	18	10	0.13	0.18	F 4531
26	A,B		41.38	40.42	17	29	12	2.5	12	30	26	20	10	0.14	0.20	F 4836
28	A,B		44.56	43.60	17	29	12	2.5	12	32	28	22	10	0.17	0.24	F 4836
30	A,B		47.75	46.79	17	29	12	2.5	12	35	30	24	10	0.20	0.28	F 5541
32	A,B		50.93	49.97	17	29	12	2.5	12	38	32	26	10	0.23	0.33	F 5541
34	A,B		54.11	53.15	17	29	12	2.5	12	38	34	26	10	0.26	0.36	F 6146
36	A,B		57.30	56.34	17	29	12	2.5	12	44	37	30	10	0.30	0.43	F 6146
40	A,B		63.66	62.70	17	29	12	2.5	12	48	41	32	10	0.37	0.54	F 7056
42	A,B		66.85	65.89	17	29	12	2.5	12	52	43	34	10	0.42	0.61	F 7056
44	A,B		70.03	69.07	17	29	12	2.5	12	56	45	38	12	0.46	0.68	F 7761
48	A,B		76.39	75.43	17	29	12	2.5	12	60	50	38	12	0.55	0.80	F 8366
50	A,B		79.58	78.62	17	29	12	2.5	12	64	52	42	12	0.60	0.89	F 8871
60	A,B		95.49	94.53	17	29	12	2.5	12	80	60	54	12	0.88	1.3	F 10385

S5M0150 (For a belt width of 15 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Mate-rial	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B	*d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
14	A,B	Carbon steel for machine construction	22.28	21.32	22	34	17	2.5	12	14	10	6	5	0.048	0.061	F 2817
16	A,B		25.46	24.50	22	34	17	2.5	12	17	13	10	5	0.067	0.086	F 3220
18	A,B		28.65	27.69	22	34	17	2.5	12	19	15	12	6	0.086	0.11	F 3422
20	A,B		31.83	30.87	22	34	17	2.5	12	19	17	12	6	0.11	0.13	F 3925
22	A,B		35.01	34.05	22	34	17	2.5	12	25	20	17	8	0.13	0.17	F 4228
24	A,B		38.20	37.24	22	34	17	2.5	12	29	22	17	8	0.16	0.21	F 4531
25	A,B		39.79	38.83	22	34	17	2.5	12	29	24	18	10	0.17	0.22	F 4531
26	A,B		41.38	40.42	22	34	17	2.5	12	30	26	20	10	0.18	0.24	F 4836
28	A,B		44.56	43.60	22	34	17	2.5	12	32	28	22	10	0.22	0.29	F 4836
30	A,B		47.75	46.79	22	34	17	2.5	12	35	30	24	10	0.26	0.34	F 5541
32	A,B		50.93	49.97	22	34	17	2.5	12	38	32	26	10	0.30	0.40	F 5541
34	A,B		54.11	53.15	22	34	17	2.5	12	38	34	26	10	0.34	0.44	F 6146
36	A,B		57.30	56.34	22	34	17	2.5	12	44	37	30	10	0.39	0.52	F 6146
40	A,B		63.66	62.70	22	34	17	2.5	12	48	41	32	10	0.49	0.65	F 7056
42	A,B		66.85	65.89	22	34	17	2.5	12	52	43	34	10	0.54	0.73	F 7056
44	A,B		70.03	69.07	22	34	17	2.5	12	56	45	38	12	0.59	0.81	F 7761
48	A,B		76.39	75.43	22	34	17	2.5	12	60	50	38	12	0.71	0.97	F 8366
50	A,B		79.58	78.62	22	34	17	2.5	12	64	52	42	12	0.78	1.0	F 8871
60	A,B		95.49	94.53	22	34	17	2.5	12	80	60	54	12	1.1	1.6	F 10385

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S5M

S5M0200 (For a belt width of 20 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	* d MAX A	* d MAX B	* d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
14	A,B	Carbon steel for machine construction	22.28	21.32	28	40	23	2.5	12	14	10	6	5	0.062	0.074	F 2817
16	A,B		25.46	24.50	28	40	23	2.5	12	17	13	10	5	0.085	0.10	F 3220
18	A,B		28.65	27.69	28	40	23	2.5	12	19	15	12	6	0.11	0.13	F 3422
20	A,B		31.83	30.87	28	40	23	2.5	12	19	17	12	6	0.14	0.16	F 3925
22	A,B		35.01	34.05	28	40	23	2.5	12	25	20	17	8	0.16	0.21	F 4228
24	A,B		38.20	37.24	28	40	23	2.5	12	29	22	17	8	0.20	0.26	F 4531
25	A,B		39.79	38.83	28	40	23	2.5	12	29	24	18	10	0.22	0.27	F 4531
26	A,B		41.38	40.42	28	40	23	2.5	12	30	26	20	10	0.24	0.30	F 4836
28	A,B		44.56	43.60	28	40	23	2.5	12	32	28	22	10	0.28	0.35	F 4836
30	A,B		47.75	46.79	28	40	23	2.5	12	35	30	24	10	0.33	0.41	F 5541
32	A,B		50.93	49.97	28	40	23	2.5	12	38	32	26	10	0.38	0.48	F 5541
34	A,B		54.11	53.15	28	40	23	2.5	12	38	34	26	10	0.43	0.53	F 6146
36	A,B		57.30	56.34	28	40	23	2.5	12	44	37	30	10	0.49	0.63	F 6146
40	A,B		63.66	62.70	28	40	23	2.5	12	48	41	32	10	0.62	0.78	F 7056
42	A,B		66.85	65.89	28	40	23	2.5	12	52	43	34	10	0.69	0.88	F 7056
44	A,B		70.03	69.07	28	40	23	2.5	12	56	45	38	12	0.75	0.97	F 7761
48	A,B		76.39	75.43	28	40	23	2.5	12	60	50	38	12	0.91	1.1	F 8366
50	A,B		79.58	78.62	28	40	23	2.5	12	64	52	42	12	0.99	1.2	F 8871
60	A,B		95.49	94.53	28	40	23	2.5	12	80	60	54	12	1.4	1.9	F 10385

S5M0250 (For a belt width of 25 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

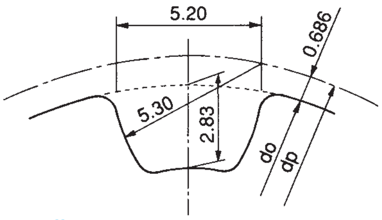
No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	* d MAX A	* d MAX B	* d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
14	A,B	Carbon steel for machine construction	22.28	21.32	33	45	28	2.5	12	14	10	6	5	0.073	0.085	F 2817
16	A,B		25.46	24.50	33	45	28	2.5	12	17	13	10	5	0.10	0.12	F 3220
18	A,B		28.65	27.69	33	45	28	2.5	12	19	15	12	6	0.12	0.15	F 3422
20	A,B		31.83	30.87	33	45	28	2.5	12	19	17	12	6	0.16	0.18	F 3925
22	A,B		35.01	34.05	33	45	28	2.5	12	25	20	17	8	0.19	0.24	F 4228
24	A,B		38.20	37.24	33	45	28	2.5	12	29	22	17	8	0.24	0.30	F 4531
25	A,B		39.79	38.83	33	45	28	2.5	12	29	24	18	10	0.25	0.31	F 4531
26	A,B		41.38	40.42	33	45	28	2.5	12	30	26	20	10	0.28	0.34	F 4836
28	A,B		44.56	43.60	33	45	28	2.5	12	32	28	22	10	0.33	0.40	F 4836
30	A,B		47.75	46.79	33	45	28	2.5	12	35	30	24	10	0.39	0.47	F 5541
32	A,B		50.93	49.97	33	45	28	2.5	12	38	32	26	10	0.45	0.55	F 5541
34	A,B		54.11	53.15	33	45	28	2.5	12	38	34	26	10	0.51	0.61	F 6146
36	A,B		57.30	56.34	33	45	28	2.5	12	44	37	30	10	0.58	0.72	F 6146
40	A,B		63.66	62.70	33	45	28	2.5	12	48	41	32	10	0.73	0.89	F 7056
42	A,B		66.85	65.89	33	45	28	2.5	12	52	43	34	10	0.81	1.0	F 7056
44	A,B		70.03	69.07	33	45	28	2.5	12	56	45	38	12	0.89	1.1	F 7761
48	A,B		76.39	75.43	33	45	28	2.5	12	60	50	38	12	1.0	1.3	F 8366
50	A,B		79.58	78.62	33	45	28	2.5	12	64	52	42	12	1.1	1.4	F 8871
60	A,B		95.49	94.53	33	45	28	2.5	12	80	60	54	12	1.7	2.1	F 10385

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)

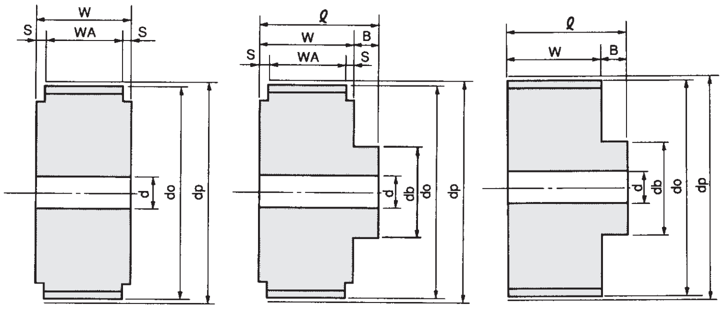
Type S8M

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type A Type B Type B_1



Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the installation procedure (→ **P. 135 and P. 190**).

(Pulley Designation)

(Example) 18 S8M 0150 B

- 18: No. of teeth of pulley (18 teeth)
- S8M: Pulley tooth profile (Type S8M)
- 0150: Pulley nominal width (For a belt width of 15 mm)
- B: Pulley profile (Type B)

S8M0150 (For a belt width of 15 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
18	A,B	Carbon steel for machine construction	45.84	44.46	23	38	17	3	15	29	28	19	12	0.21	0.28	FS 5333
19	A,B		48.38	47.01	23	38	17	3	15	34	30	22	12	0.24	0.34	FS 5638
20	A,B		50.93	49.56	23	38	17	3	15	35	32	23	12	0.28	0.38	FS 5939
21	A,B		53.48	52.10	23	38	17	3	15	35	34	23	12	0.31	0.41	FS 5939
22	A,B		56.02	54.65	23	38	17	3	15	35	35	23	12	0.35	0.45	FS 6242
24	A,B		61.12	59.74	23	38	17	3	15	40	39	25	12	0.43	0.56	FS 6848
26	A,B		66.21	64.84	23	38	17	3	15	40	42	25	12	0.51	0.65	FS 7555
28	A,B		71.30	69.93	23	38	17	3	15	50	44	30	12	0.60	0.82	FS 7753
30	A,B		76.39	75.02	23	38	17	3	15	50	49	30	12	0.70	0.92	FS 8363
32	A,B		81.49	80.12	23	38	17	3	15	65	51	42	12	0.81	1.1	FS 8969
34	A,B		86.58	85.21	23	38	17	3	15	65	55	42	12	0.93	1.3	FS 9272
36	A,B		91.67	90.30	23	38	17	3	15	75	58	45	12	1.0	1.5	FS 9878
40	A,B		101.86	100.49	23	38	17	3	15	80	65	50	12	1.3	1.8	FS 10887
44	A,B		112.05	110.67	23	46	17	3	23	90	72	56	20	1.5	2.6	FS120100
48	A,B		122.23	120.86	23	46	17	3	23	100	78	62	20	1.9	3.2	FS129108
50	A,B		127.32	125.95	23	46	17	3	23	100	82	62	20	2.0	3.4	FS136116
60	A,B		152.79	151.42	23	46	17	3	23	100	107	62	20	3.0	4.4	FS160140
72	B_1		183.35	181.97	27	50	-	-	23	100	-	62	25	-	6.6	-
84	B_1		213.90	212.53	27	50	-	-	23	115	-	70	25	-	9.0	-
96	B_1		244.46	243.09	27	50	-	-	23	130	-	80	30	-	11.7	-
120	B_1		305.58	304.21	27	50	-	-	23	130	-	80	30	-	17.2	-
144	B_1		366.69	365.32	27	50	-	-	23	130	-	80	30	-	24.0	-
156	B_1		397.25	395.88	27	50	-	-	23	130	-	80	30	-	27.8	-

S8M0250 (For a belt width of 25 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
18	A,B	Carbon steel for machine construction	45.84	44.46	34	49	28	3	15	29	28	19	12	0.32	0.38	FS 5333
19	A,B		48.38	47.01	34	49	28	3	15	34	30	22	12	0.36	0.46	FS 5638
20	A,B		50.93	49.56	34	49	28	3	15	35	32	23	12	0.41	0.51	FS 5939
21	A,B		53.48	52.10	34	49	28	3	15	35	34	23	12	0.46	0.56	FS 5939
22	A,B		56.02	54.65	34	49	28	3	15	35	35	23	12	0.52	0.62	FS 6242
24	A,B		61.12	59.74	34	49	28	3	15	40	39	25	12	0.63	0.77	FS 6848
26	A,B		66.21	64.84	34	49	28	3	15	40	42	25	12	0.76	0.89	FS 7555
28	A,B		71.30	69.93	34	49	28	3	15	50	44	30	12	0.90	1.1	FS 7753
30	A,B		76.39	75.02	34	49	28	3	15	50	49	30	12	1.0	1.2	FS 8363
32	A,B		81.49	80.12	34	49	28	3	15	65	51	42	12	1.2	1.5	FS 8969
34	A,B		86.58	85.21	34	49	28	3	15	65	55	42	12	1.3	1.7	FS 9272
36	A,B		91.67	90.30	34	49	28	3	15	75	58	45	12	1.5	2.0	FS 9878
40	A,B		101.86	100.49	34	49	28	3	15	80	65	50	12	1.9	2.5	FS 10887
44	A,B		112.05	110.67	34	57	28	3	23	90	72	56	20	2.3	3.4	FS120100
48	A,B		122.23	120.86	34	57	28	3	23	100	78	62	20	2.8	4.1	FS129108
50	A,B		127.32	125.95	34	57	28	3	23	100	82	62	20	3.0	4.4	FS136116
60	A,B		152.79	151.42	34	57	28	3	23	100	107	62	20	4.5	5.8	FS160140
72	B_1		183.35	181.97	38	61	-	-	23	100	-	62	25	-	8.7	-
84	B_1		213.90	212.53	38	61	-	-	23	115	-	70	25	-	11.9	-
96	B_1		244.46	243.09	38	61	-	-	23	130	-	80	30	-	15.6	-
120	B_1		305.58	304.21	38	61	-	-	23	130	-	80	30	-	23.3	-
144	B_1		366.69	365.32	38	61	-	-	23	130	-	80	30	-	32.8	-
156	B_1		397.25	395.88	38	61	-	-	23	130	-	80	30	-	38.3	-

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S8M

S8M0400 (For a belt width of 40 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	* d MAX		d MIN	Roughly calculated pulley mass (kg)		Flange part No.
											A	B,B_1	A,B,B_1	A	B,B_1	
18	A,B	Carbon steel for machine construction	45.84	44.46	50	65	44	3	15	29	28	19	12	0.47	0.53	FS 5333
19	A,B		48.38	47.01	50	65	44	3	15	34	30	22	12	0.54	0.63	FS 5638
20	A,B		50.93	49.56	50	65	44	3	15	35	32	23	12	0.61	0.71	FS 5939
21	A,B		53.48	52.10	50	65	44	3	15	35	34	23	12	0.68	0.78	FS 5939
22	A,B		56.02	54.65	50	65	44	3	15	35	35	23	12	0.76	0.86	FS 6242
24	A,B		61.12	59.74	50	65	44	3	15	40	39	25	12	0.93	1.0	FS 6848
26	A,B		66.21	64.84	50	65	44	3	15	40	42	25	12	1.1	1.2	FS 7555
28	A,B		71.30	69.93	50	65	44	3	15	50	44	30	12	1.3	1.5	FS 7753
30	A,B		76.39	75.02	50	65	44	3	15	50	49	30	12	1.5	1.7	FS 8363
32	A,B		81.49	80.12	50	65	44	3	15	65	51	42	12	1.7	2.1	FS 8969
34	A,B		86.58	85.21	50	65	44	3	15	65	55	42	12	2.0	2.4	FS 9272
36	A,B		91.67	90.30	50	65	44	3	15	75	58	45	12	2.2	2.7	FS 9878
40	A,B		101.86	100.49	50	65	44	3	15	80	65	50	12	2.8	3.4	FS 10887
44	A,B		112.05	110.67	50	73	44	3	23	90	72	56	20	3.4	4.5	FS120100
48	A,B		122.23	120.86	50	73	44	3	23	100	78	62	20	4.1	5.5	FS129108
50	A,B		127.32	125.95	50	73	44	3	23	100	82	62	20	4.5	5.8	FS136116
60	A,B		152.79	151.42	50	73	44	3	23	100	107	62	20	6.6	8.0	FS160140
72	B_1		183.35	181.97	54	77	-	-	23	100	-	62	25	-	11.8	-
84	B_1		213.90	212.53	54	77	-	-	23	115	-	70	25	-	16.2	-
96	B_1		244.46	243.09	54	77	-	-	23	130	-	80	30	-	21.2	-
120	B_1		305.58	304.21	54	77	-	-	23	130	-	80	30	-	32.2	-
144	B_1		366.69	365.32	54	77	-	-	23	130	-	80	30	-	45.7	-
156	B_1		397.25	395.88	54	77	-	-	23	130	-	80	30	-	53.4	-

S8M0600 (For a belt width of 60 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

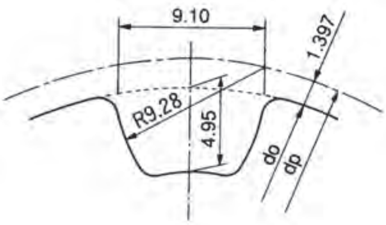
No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	* d MAX		d MIN	Roughly calculated pulley mass (kg)		Flange part No.
											A	B,B_1	A,B,B_1	A	B,B_1	
18	A,B	Carbon steel for machine construction	45.84	44.46	71	86	65	3	15	29	28	19	12	0.67	0.73	FS 5333
19	A,B		48.38	47.01	71	86	65	3	15	34	30	22	12	0.77	0.86	FS 5638
20	A,B		50.93	49.56	71	86	65	3	15	35	32	23	12	0.87	0.97	FS 5939
21	A,B		53.48	52.10	71	86	65	3	15	35	34	23	12	0.97	1.0	FS 5939
22	A,B		56.02	54.65	71	86	65	3	15	35	35	23	12	1.0	1.1	FS 6242
24	A,B		61.12	59.74	71	86	65	3	15	40	39	25	12	1.3	1.4	FS 6848
26	A,B		66.21	64.84	71	86	65	3	15	40	42	25	12	1.5	1.7	FS 7555
28	A,B		71.30	69.93	71	86	65	3	15	50	44	30	12	1.8	2.0	FS 7753
30	A,B		76.39	75.02	71	86	65	3	15	50	49	30	12	2.1	2.4	FS 8363
32	A,B		81.49	80.12	71	86	65	3	15	65	51	42	12	2.5	2.8	FS 8969
34	A,B		86.58	85.21	71	86	65	3	15	65	55	42	12	2.8	3.2	FS 9272
36	A,B		91.67	90.30	71	86	65	3	15	75	58	45	12	3.2	3.7	FS 9878
40	A,B		101.86	100.49	71	86	65	3	15	80	65	50	12	4.0	4.6	FS 10887
44	A,B		112.05	110.67	71	94	65	3	23	90	72	56	20	4.9	6.1	FS120100
48	A,B		122.23	120.86	71	94	65	3	23	100	78	62	20	5.8	7.2	FS129108
50	A,B		127.32	125.95	71	94	65	3	23	100	82	62	20	6.4	7.7	FS136116
60	A,B		152.79	151.42	71	94	65	3	23	100	107	62	20	9.4	10.7	FS160140
72	B_1		183.35	181.97	75	98	-	-	23	100	-	62	25	-	15.9	-
84	B_1		213.90	212.53	75	98	-	-	23	115	-	70	25	-	21.8	-
96	B_1		244.46	243.09	75	98	-	-	23	130	-	80	30	-	28.5	-
120	B_1		305.58	304.21	75	98	-	-	23	130	-	80	30	-	43.9	-
144	B_1		366.69	365.32	75	98	-	-	23	130	-	80	30	-	62.6	-
156	B_1		397.25	395.88	75	98	-	-	23	130	-	80	30	-	73.3	-

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)

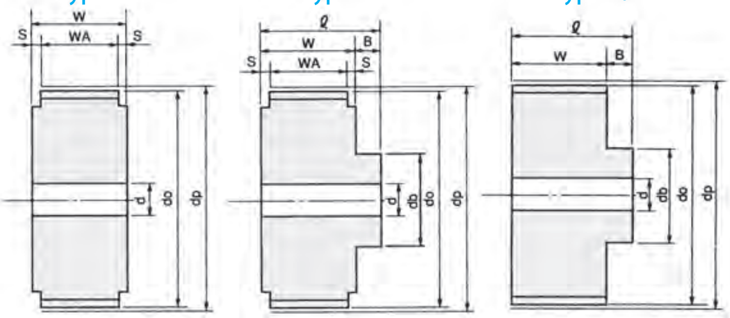
Type S14M

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type A　Type B　Type B_1



(Pulley Designation)

(Example) 40 S14M 0400 A

- 40: No. of teeth of pulley (40 teeth)
- S14M: Pulley tooth profile (Type S14M)
- 0400: Pulley nominal width (For a belt width of 40 mm)
- A: Pulley profile (Type A)

Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the installation procedure **(→ P. 135 and P. 190)**.

S14M0400 (For a belt width of 40 mm)

: Standard stock **The other sizes are made to order.** (Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
28	A,B	Carbon steel for machine construction	124.78	121.98	52	72	46	3	20	100	82	62	25	4.1	5.2	FS136106
30	A,B		133.69	130.90	52	72	46	3	20	110	90	62	25	4.8	6.2	FS145115
32	A,B		142.60	139.81	52	72	46	3	20	110	100	62	25	5.5	6.9	FS154124
34	A,B		151.52	148.72	52	72	46	3	20	130	110	75	25	6.3	8.3	FS163133
36	A,B		160.43	157.63	52	72	46	3	20	130	117	75	25	7.2	9.2	FS172142
40	A,B		178.25	175.46	52	72	46	3	20	130	135	75	30	8.9	10.9	FS189159
42	A,B		187.17	184.37	52	72	46	3	20	160	140	90	30	9.9	13.0	FS198168
44	A,B		196.08	193.28	52	77	46	3	25	160	143	90	30	11.0	14.8	FS207177
48	A,B		213.90	211.11	52	77	46	3	25	160	160	90	30	13.2	17.0	FS225195
50	A,B		222.82	220.02	52	77	46	3	25	160	170	90	30	14.4	18.2	FS234204
60	B_1		267.38	264.59	58	88	-	-	30	155	-	90	35	-	27.9	-
64	B_1		285.21	282.41	58	88	-	-	30	155	-	90	35	-	31.3	-
72	B_1		320.86	318.06	58	88	-	-	30	155	-	90	35	-	38.8	-
84	B_1		374.33	371.54	58	88	-	-	30	165	-	90	40	-	52.2	-
96	B_1		427.81	425.01	58	88	-	-	30	165	-	90	40	-	67.3	-
120	B_1		534.76	531.97	58	93	-	-	35	175	-	95	40	-	105.0	-
144	B_1		641.71	638.92	58	93	-	-	35	180	-	100	40	-	149.8	-
156	B_1		695.19	692.39	58	93	-	-	35	180	-	100	40	-	175.1	-

S14M0600 (For a belt width of 60 mm)

: Standard stock **The other sizes are made to order.** (Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
28	A,B	Carbon steel for machine construction	124.78	121.98	73	93	67	3	20	100	82	62	25	5.8	6.9	FS136106
30	A,B		133.69	130.90	73	93	67	3	20	110	90	62	25	6.7	8.1	FS145115
32	A,B		142.60	139.81	73	93	67	3	20	110	100	62	25	7.8	9.2	FS154124
34	A,B		151.52	148.72	73	93	67	3	20	130	110	75	25	8.9	10.9	FS163133
36	A,B		160.43	157.63	73	93	67	3	20	130	117	75	25	10.1	12.1	FS172142
40	A,B		178.25	175.46	73	93	67	3	20	130	135	75	30	12.5	14.5	FS189159
42	A,B		187.17	184.37	73	93	67	3	20	160	140	90	30	13.9	17.0	FS198168
44	A,B		196.08	193.28	73	98	67	3	25	160	143	90	30	15.4	19.2	FS207177
48	A,B		213.90	211.11	73	98	67	3	25	160	160	90	30	18.6	22.4	FS225195
50	A,B		222.82	220.02	73	98	67	3	25	160	170	90	30	20.2	24.1	FS234204
60	B_1		267.38	264.59	79	109	-	-	30	155	-	90	35	-	36.5	-
64	B_1		285.21	282.41	79	109	-	-	30	155	-	90	35	-	41.4	-
72	B_1		320.86	318.06	79	109	-	-	30	155	-	90	35	-	51.4	-
84	B_1		374.33	371.54	79	109	-	-	30	165	-	90	40	-	69.4	-
96	B_1		427.81	425.01	79	109	-	-	30	165	-	90	40	-	89.9	-
120	B_1		534.76	531.97	79	114	-	-	35	175	-	95	40	-	140.8	-
144	B_1		641.71	638.92	79	114	-	-	35	180	-	100	40	-	201.6	-
156	B_1		695.19	692.39	79	114	-	-	35	180	-	100	40	-	236.0	-

* For the d MAX dimensions, please consult us when you machine keyways.

Table of STS Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type S14M

S14M0800 (For a belt width of 80 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
28	A,B	Carbon steel for machine construction	124.78	121.98	94	114	88	3	20	100	82	62	25	7.4	8.6	FS136106
30	A,B		133.69	130.90	94	114	88	3	20	110	90	62	25	8.7	10.1	FS145115
32	A,B		142.60	139.81	94	114	88	3	20	110	100	62	25	10.0	11.4	FS154124
34	A,B		151.52	148.72	94	114	88	3	20	130	110	75	25	11.5	13.5	FS163133
36	A,B		160.43	157.63	94	114	88	3	20	130	117	75	25	13.0	15.0	FS172142
40	A,B		178.25	175.46	94	114	88	3	20	130	135	75	30	16.1	18.1	FS189159
42	A,B		187.17	184.37	94	114	88	3	20	160	140	90	30	18.0	21.0	FS198168
44	A,B		196.08	193.28	94	119	88	3	25	160	143	90	30	19.8	23.7	FS207177
48	A,B		213.90	211.11	94	119	88	3	25	160	160	90	30	23.9	27.7	FS225195
50	A,B		222.82	220.02	94	119	88	3	25	160	170	90	30	26.1	29.9	FS234204
60	B_1		267.38	264.59	100	130	-	-	30	155	-	90	35	-	45.0	-
64	B_1		285.21	282.41	100	130	-	-	30	155	-	90	35	-	50.9	-
72	B_1		320.86	318.06	100	130	-	-	30	155	-	90	35	-	63.9	-
84	B_1		374.33	371.54	100	130	-	-	30	165	-	90	40	-	86.6	-
96	B_1		427.81	425.01	100	130	-	-	30	165	-	90	40	-	112.5	-
120	B_1		534.76	531.97	100	135	-	-	35	175	-	95	40	-	176.5	-
144	B_1		641.71	638.92	100	135	-	-	35	180	-	100	40	-	253.5	-
156	B_1		695.19	692.39	100	135	-	-	35	180	-	100	40	-	297.0	-

S14M1000 (For a belt width of 100 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
28	A,B	Carbon steel for machine construction	124.78	121.98	115	135	109	3	20	100	82	62	25	9.1	10.3	FS136106
30	A,B		133.69	130.90	115	135	109	3	20	110	90	62	25	10.6	12.0	FS145115
32	A,B		142.60	139.81	115	135	109	3	20	110	100	62	25	12.3	13.7	FS154124
34	A,B		151.52	148.72	115	135	109	3	20	130	110	75	25	14.0	16.0	FS163133
36	A,B		160.43	157.63	115	135	109	3	20	130	117	75	25	15.9	17.9	FS172142
40	A,B		178.25	175.46	115	135	109	3	20	130	135	75	30	19.8	21.7	FS189159
42	A,B		187.17	184.37	115	135	109	3	20	160	140	90	30	22.0	25.0	FS198168
44	A,B		196.08	193.28	115	140	109	3	25	160	143	90	30	24.3	28.1	FS207177
48	A,B		213.90	211.11	115	140	109	3	25	160	160	90	30	29.3	33.1	FS225195
50	A,B		222.82	220.02	115	140	109	3	25	160	170	90	30	31.9	35.7	FS234204
60	B_1		267.38	264.59	121	151	-	-	30	155	-	90	35	-	53.6	-
64	B_1		285.21	282.41	121	151	-	-	30	155	-	90	35	-	60.7	-
72	B_1		320.86	318.06	121	151	-	-	30	155	-	90	35	-	76.4	-
84	B_1		374.33	371.54	121	151	-	-	30	165	-	90	40	-	103.8	-
96	B_1		427.81	425.01	121	151	-	-	30	165	-	90	40	-	135.2	-
120	B_1		534.76	531.97	121	156	-	-	35	175	-	95	40	-	212.3	-
144	B_1		641.71	638.92	121	156	-	-	35	180	-	100	40	-	305.3	-
156	B_1		695.19	692.39	121	156	-	-	35	180	-	100	40	-	358.0	-

S14M1200 (For a belt width of 120 mm)

Made-to-order

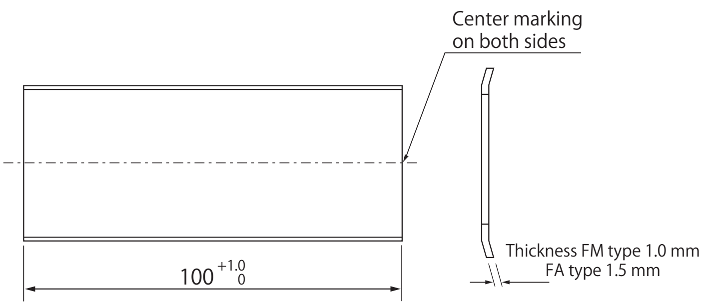
(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	*d MAX A	*d MAX B,B_1	*d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
28	A,B	Carbon steel for machine construction	124.78	121.98	136	156	130	3	20	100	82	62	25	10.8	11.9	FS136106
30	A,B		133.69	130.90	136	156	130	3	20	110	90	62	25	12.6	14.0	FS145115
32	A,B		142.60	139.81	136	156	130	3	20	110	100	62	25	14.5	15.9	FS154124
34	A,B		151.52	148.72	136	156	130	3	20	130	110	75	25	16.6	18.6	FS163133
36	A,B		160.43	157.63	136	156	130	3	20	130	117	75	25	18.8	20.8	FS172142
40	A,B		178.25	175.46	136	156	130	3	20	130	135	75	30	23.4	25.4	FS189159
42	A,B		187.17	184.37	136	156	130	3	20	160	140	90	30	26.0	29.0	FS198168
44	A,B		196.08	193.28	136	161	130	3	25	160	143	90	30	28.7	32.5	FS207177
48	A,B		213.90	211.11	136	161	130	3	25	160	160	90	30	34.6	38.4	FS225195
50	A,B		222.82	220.02	136	161	130	3	25	160	170	90	30	37.8	41.6	FS234204
60	B_1		267.38	264.59	142	172	-	-	30	155	-	90	35	-	62.2	-
64	B_1		285.21	282.41	142	172	-	-	30	155	-	90	35	-	70.5	-
72	B_1		320.86	318.06	142	172	-	-	30	155	-	90	35	-	89.0	-
84	B_1		374.33	371.54	142	172	-	-	30	165	-	90	40	-	121.0	-
96	B_1		427.81	425.01	142	172	-	-	30	165	-	90	40	-	157.8	-
120	B_1		534.76	531.97	142	177	-	-	35	175	-	95	40	-	248.0	-
144	B_1		641.71	638.92	142	177	-	-	35	180	-	100	40	-	357.1	-
156	B_1		695.19	692.39	142	177	-	-	35	180	-	100	40	-	419.0	-

* For the d MAX dimensions, please consult us when you machine keyways.

Rod-shaped pulleys
S2M/S3M/S5M Aluminum rod-shaped type

(Pulley Profile)



■ Pulley and flange size indications

Body indication example **M-A-18S2M100L**
(M: As per manual - Material - No. of teeth, Type, Length 100L)

Flange indication example **M-A-FM1306**
(M: As per manual - Material - Flange size)

List of the number of teeth of pulleys (standard stock)

S2M

No. of teeth	Length (mm)	Flange
14	100	FM1306
15		FM1306
16		FM1407
18		FM1407
20		FM1609
22		FM1710
24		FM1912
26		FM2013
28		FM2113
30		FM2215
32		FM2516
34		FM2516
36		FM2919
40		FM3121

S3M

No. of teeth	Length (mm)	Flange
14	100	FM1609
15		FM1710
16		FM1912
18		FM2113
20		FM2215
22		FM2516
24		FM2919
26		FM2919
28		FM3121
30		FM3424
32		FM3626
34		FM3727
36		FM4030
40		FM4328

S5M

No. of teeth	Length (mm)	Flange
14	100	FA2817
16		FA3220
18		FA3422
20		FA3925
22		FA4228
24		FA4531
26		FA4836
28		FA4836
30		FA5541

○ Pulley material: High-strength aluminum alloy
○ Pulley delivery period: Please contact us.

HTS Pulleys

(1) HTS Pulley System

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
H8M	Made-to-order	0200, 0300, 0500	22～56	Carbon steel for machine construction
H14M	Made-to-order	0400, 0550, 0850	28～44	

(2) Designations for HTS Pulleys

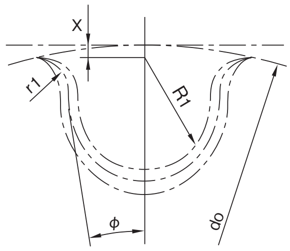
Designation example

22 H8M 0200 BF

- 22: No. of teeth of pulley (22 teeth)
- H8M: Pulley tooth profile (Type H8M)
- 0200: Belt width (20mm)
- BF: Pulley profile (Type BF)

Table of HTS Pulley Standard Dimensions (Shaft-Hole-Machined Type) Type 8M

(Pulley Tooth Profile Dimensions)

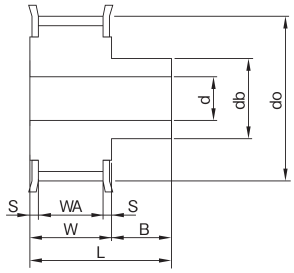


■ JIS-B 1857-2 Type H

(Dimension unit: mm, Angle unit: °)

No. of teeth		R1	r1	X	ϕ
22～27	Basic	2.675	0.874	0.62	11.3
	Max	2.764	1.052	0.62	11.3
	Min	2.598	0.798	0.62	11.3
28～89	Basic	2.629	1.024	0.975	7
	Max	2.718	1.201	0.975	7
	Min	2.553	0.947	0.975	7

(Pulley Profile) Type BF



(Pulley Designation) **(Example)**

22 H8M 0200 BF

- 22: No. of teeth of pulley (22 teeth)
- H8M: Pulley tooth profile (Type H8M)
- 0200: Pulley nominal width (For a belt width of 20 mm)
- BF: Pulley profile (Type BF)

H8M0200 (For a belt width of 20 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
22	Carbon steel for machine construction	56.02	54.65	28	48	21.7	3.15	20	16	40	BF	0.6	FS20064045
24		61.12	59.74	28	48	21.7	3.15	20	16	44	BF	0.7	FS20070050
25		63.66	62.29	28	48	21.7	3.15	20	16	46	BF	0.8	FS20072052
26		66.21	64.84	28	48	21.7	3.15	20	16	48	BF	0.9	FS20075054
28		71.30	69.93	28	48	21.7	3.15	20	16	52	BF	1.1	FS20080059
30		76.39	75.02	28	48	21.7	3.15	20	16	56	BF	1.2	FS20085064
32		81.49	80.12	28	48	21.7	3.15	20	20	60	BF	1.4	FS20090069
34		86.58	85.21	28	48	21.7	3.15	20	20	64	BF	1.6	FS20095074
36		91.67	90.30	28	48	21.7	3.15	20	20	68	BF	1.8	FS20100079
38		96.77	95.39	28	48	21.7	3.15	20	20	72	BF	2.0	FS20105084
40		101.86	100.49	28	48	21.7	3.15	20	20	74	BF	2.2	FS20110089
44		112.05	110.67	28	48	21.7	3.15	20	20	78	BF	2.7	FS20121099
48		122.23	120.86	28	48	21.7	3.15	20	20	80	BF	3.1	FS20131109
56		142.60	141.23	28	48	21.7	3.15	20	20	86	BF	4.1	FS20151130

H8M0300 (For a belt width of 30 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
22	Carbon steel for machine construction	56.02	54.65	38	58	31.7	3.15	20	16	40	BF	0.8	FS20064045
24		61.12	59.74	38	58	31.7	3.15	20	16	44	BF	0.9	FS20070050
25		63.66	62.29	38	58	31.7	3.15	20	16	46	BF	1.0	FS20072052
26		66.21	64.84	38	58	31.7	3.15	20	16	48	BF	1.1	FS20075054
28		71.30	69.93	38	58	31.7	3.15	20	16	52	BF	1.3	FS20080059
30		76.39	75.02	38	58	31.7	3.15	20	16	56	BF	1.5	FS20085064
32		81.49	80.12	38	58	31.7	3.15	20	20	60	BF	1.7	FS20090069
34		86.58	85.21	38	58	31.7	3.15	20	20	64	BF	2.0	FS20095074
36		91.67	90.30	38	58	31.7	3.15	20	20	68	BF	2.2	FS20100079
38		96.77	95.39	38	58	31.7	3.15	20	20	72	BF	2.5	FS20105084
40		101.86	100.49	38	58	31.7	3.15	20	20	74	BF	2.8	FS20110089
44		112.05	110.67	38	58	31.7	3.15	20	20	78	BF	3.4	FS20121099
48		122.23	120.86	38	58	31.7	3.15	20	20	80	BF	4.0	FS20131109
56		142.60	141.23	38	58	31.7	3.15	20	20	86	BF	5.3	FS20151130

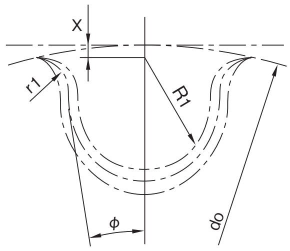
H8M0500 (For a belt width of 50 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
22	Carbon steel for machine construction	56.02	54.65	59	79	52.7	3.15	20	16	40	BF	1.1	FS20064045
24		61.12	59.74	59	79	52.7	3.15	20	16	44	BF	1.3	FS20070050
25		63.66	62.29	59	79	52.7	3.15	20	16	46	BF	1.4	FS20072052
26		66.21	64.84	59	79	52.7	3.15	20	16	48	BF	1.6	FS20075054
28		71.30	69.93	59	79	52.7	3.15	20	16	52	BF	1.8	FS20080059
30		76.39	75.02	59	79	52.7	3.15	20	16	56	BF	2.2	FS20085064
32		81.49	80.12	59	79	52.7	3.15	20	20	60	BF	2.4	FS20090069
34		86.58	85.21	59	79	52.7	3.15	20	20	64	BF	2.8	FS20095074
36		91.67	90.30	59	79	52.7	3.15	20	20	68	BF	3.2	FS20100079
38		96.77	95.39	59	79	52.7	3.15	20	20	72	BF	3.6	FS20105084
40		101.86	100.49	59	79	52.7	3.15	20	20	74	BF	3.9	FS20110089
44		112.05	110.67	59	79	52.7	3.15	20	20	78	BF	4.8	FS20121099
48		122.23	120.86	59	79	52.7	3.15	20	20	80	BF	5.7	FS20131109
56		142.60	141.23	59	79	52.7	3.15	20	20	86	BF	7.7	FS20151130

Table of HTS Pulley Standard Dimensions (Shaft-Hole-Machined Type) Type 14M

(Pulley Tooth Profile Dimensions)

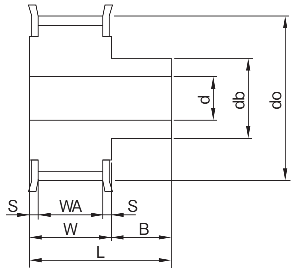


■ JIS-B 1857-2 Type H

(Dimension unit: mm, Angle unit: °)

No. of teeth		R1	r1	X	φ
28～32	Basic	4.859	1.544	1.468	7.1
	Max	4.948	1.722	1.468	7.1
	Min	4.783	1.468	1.468	7.1
33～36	Basic	4.834	1.613	1.494	5.2
	Max	4.923	1.791	1.494	5.2
	Min	4.757	1.537	1.494	5.2
37～57	Basic	4.737	1.654	1.461	9.3
	Max	4.826	1.831	1.461	9.3
	Min	4.661	1.577	1.461	9.3

(Pulley Profile) Type BF



(Pulley Designation) **(Example)**

28	H14M	0400	BF
No. of teeth of pulley (28 teeth)	Pulley tooth profile (Type H14M)	Pulley nominal width (For a belt width of 40 mm)	Pulley profile (Type BF)

H14M0400 (For a belt width of 40 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
28	Carbon steel for machine construction	124.78	121.98	50	75	42	4	25	25	92	BF	5.3	FS26137106
29		129.23	126.44	50	75	42	4	25	25	94	BF	5.7	FS26141111
30		133.69	130.90	50	75	42	4	25	25	96	BF	6.1	FS26146115
32		142.60	139.81	50	75	42	4	25	25	100	BF	6.9	FS26155123
34		151.52	148.72	50	75	42	4	25	25	104	BF	7.8	FS26164132
36		160.43	157.63	50	75	42	4	25	30	108	BF	8.6	FS26173140
38		169.34	166.55	50	75	42	4	25	30	112	BF	9.6	*FS26182149
40		178.25	175.46	50	75	42	4	25	30	114	BF	10.6	FS26190158
44		196.08	193.28	50	75	42	4	25	30	118	BF	12.7	FS26208176

H14M0550 (For a belt width of 55 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
28	Carbon steel for machine construction	124.78	121.98	66	91	58	4	25	25	92	BF	6.5	FS26137106
29		129.23	126.44	66	91	58	4	25	25	94	BF	7.0	FS26141111
30		133.69	130.90	66	91	58	4	25	25	96	BF	7.5	FS26146115
32		142.60	139.81	66	91	58	4	25	25	100	BF	8.6	FS26155123
34		151.52	148.72	66	91	58	4	25	25	104	BF	9.7	FS26164132
36		160.43	157.63	66	91	58	4	25	30	108	BF	10.8	FS26173140
38		169.34	166.55	66	91	58	4	25	30	112	BF	12.1	*FS26182149
40		178.25	175.46	66	91	58	4	25	30	114	BF	13.3	FS26190158
44		196.08	193.28	66	91	58	4	25	30	118	BF	16.1	FS26208176

H14M0850 (For a belt width of 85 mm) Made-to-order

(Unit: mm)

No. of teeth	Material	dp	do	W	L	WA	S	B	d	db	Profile	Roughly calculated pulley mass (kg)	Flange part No.
28	Carbon steel for machine construction	124.78	121.98	97	122	89	4	25	25	92	BF	9.0	FS26137106
29		129.23	126.44	97	122	89	4	25	25	94	BF	9.7	FS26141111
30		133.69	130.90	97	122	89	4	25	25	96	BF	10.4	FS26146115
32		142.60	139.81	97	122	89	4	25	25	100	BF	11.9	FS26155123
34		151.52	148.72	97	122	89	4	25	25	104	BF	13.5	FS26164132
36		160.43	157.63	97	122	89	4	25	30	108	BF	15.0	FS26173140
38		169.34	166.55	97	122	89	4	25	30	112	BF	16.8	*FS26182149
40		178.25	175.46	97	122	89	4	25	30	114	BF	18.6	FS26190158
44		196.08	193.28	97	122	89	4	25	30	118	BF	22.6	FS26208176

*Available with a cut straight flange. For other sizes than the above, please contact us.

HTS Pulley Dimensional Tolerance

■ Tip diameter (do)

(Unit: mm)

Tip diameter do	Tolerance
25.4 or less	+0.05 0
Over 25.4 to 50.8 or less	+0.08 0
Over 50.8 to 101.6 or less	+0.10 0
Over 101.6 to 177.8 or less	+0.13 0
Over 177.8 to 304.8 or less	+0.15 0
Over 304.8 to 508.0 or less	+0.18 0
Over 508.0	+0.20 0

■ Cylindricity of tip diameter

(Unit: mm)

Per a tooth width of 10	Within 0.01

■ Run-out tolerance for shaft hole and tip diameter

(Unit: mm)

Tip diameter	Run-out tolerance
203.2 or less	0.13
Over 203.2	0.13 + ((tip diameter - 203.2) × 0.0005)

■ Parallelism between teeth and shaft hole center line

(Unit: mm)

Per a tooth width of 10	Within 0.01

■ Run-out tolerance for shaft hole and side face

(Unit: mm)

Tip diameter	Run-out tolerance
101.6 or less	0.10
Over 101.6 to 254.0 or less	Tip diameter × 0.001
Over 254.0	0.25 + ((tip diameter - 254.0) × 0.0005)

■ Outside diameter tolerance for a pulley's stepped sections and flange inside diameter tolerance

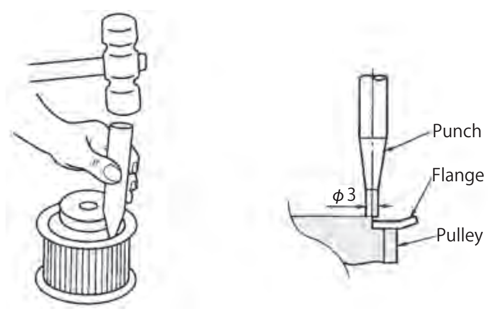
(Unit: mm)

Outside diameter at a pulley's stepped sections and flange inside diameter	Outside diameter tolerance for a pulley's stepped sections	Flange inside diameter tolerance
18 or less	+0 −0.03	+0.07 −0
Over 18 to 30 or less	+0 −0.03	+0.08 −0
Over 30 to 50 or less	+0 −0.04	+0.10 −0
Over 50 to 80 or less	+0 −0.05	+0.12 −0
Over 80 to 120 or less	+0 −0.05	+0.14 −0
Over 120 to 180 or less	+0 −0.06	+0.16 −0
Over 180 to 250 or less	+0 −0.07	+0.19 −0
Over 250 to 315 or less	+0 −0.08	+0.21 −0
Over 315 to 400 or less	+0 −0.09	+0.23 −0
Over 400 to 500 or less	+0 −0.10	+0.25 −0
Over 500 to 630 or less	+0 −0.11	+0.28 −0
Over 630 to 800 or less	+0 −0.13	+0.32 −0
Over 800 to 1000 or less	+0 −0.14	+0.36 −0
Over 1000	+0 −0.17	+0.42 −0

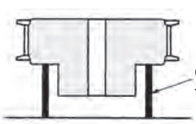
Crimping Method (Standard Flange)

Follow the steps below.

① Prepare an eye punch, a flat disk, a cylindrical fixture, and a hammer.
② When a foreign object is adhering to the flange-fitting section of the pulley, a gap is created between the pulley and the flange, preventing crimping; clean the flange-fitting section.
③ As shown in the following figure, place the pulley body on the flat disk and crimp the pulley body over the flange with the eye punch.



(Note) When crimping a Type-B pulley, the boss causes an unstable condition; use a cylindrical fixture so that the pulley can be crimped uniformly.



④ When crimping a flange, be sure to crimp it in diagonal order.
⑤ The number of crimping should be as follows.

■ HTS pulley flange

Pulley outside diameter (mm)	No. of crimping (one side)
31 or less	6 sections or more
Over 31 to 50 or less	8 sections or more
Over 50 to 80 or less	10 sections or more
Over 80 to 150 or less	12 sections or more
Over 150 to 220 or less	16 sections or more
Over 220	20 sections or more

⑥ After installing flanges, check for looseness.

When a flange comes in the way due to a fixed center distance etc. and prevents belt installation, fastening with screws is effective. In this case, however, the standard flanges cannot be used; please contact us.

Synchronous Pulleys

We offer synchronous standard pulleys for more convenient use of synchronous belts. The standard pulleys are standardized in two types, bushing type and shaft-hole-machined type, as shown in the following tables. Please use them in accordance with your purpose.

(1) Synchronous Standard Pulley System

TL synchronous pulleys (bushing type)

The TL synchronous pulleys are designed to provide the performance of synchronous belts sufficiently and provide many benefits.

- The simple structure allows very simple installation on and removal from a shaft.
- The slit in the entire bushing allows easy movement of the bushing on the shaft.
- JIS keys can be used without any modification.
- The absence of projections such as a bolt head makes the pulley simple and allows effective use of the space.

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
L	Standard stock	050, 075, 100	19～84	Cast iron or carbon steel for machine construction
H	Standard stock	100	18～96	Cast iron or carbon steel for machine construction
	Standard stock	150	20～96	
	Standard stock	200	24～96	
	Standard stock	300	40～72	
XH	Made-to-order	200, 300, 400	22～30	Cast iron or carbon steel for machine construction
	Made-to-order		32～120	

Synchronous Pulleys (Shaft-Hole-Machined Type)

They are very beneficial as they can adapt to shafts of special sizes by machining and are available in a wide range of pulley sizes.

- For details such as the machining method and the flange installation method, refer to **P. 134 to P. 136** and **P. 189 to P. 191**.

In addition to the standard pulleys, we also manufacture pulleys with a requested number of teeth and a requested profile. Please contact us.

Pulley tooth profile	Stock	Pulley nominal width	No. of teeth of pulley	Material
TN15	Made-to-order	5.0, 10.0	20～96	High-strength aluminum alloy
MXL	Standard stock	6.4	12～100	
	Made-to-order	9.5	16～100	
XL	Standard stock	037	10～72	Carbon steel for machine construction
	Made-to-order	050	10～72	
	Standard stock	037S	10～30	Sintered alloy
L	Standard stock	050, 075	12～50	Cast iron or carbon steel for machine construction
	Made-to-order		60, 72, 84	
	Standard stock	100	14～50	
	Made-to-order		60, 72, 84	
H	Standard stock	100, 150	14～36	Cast iron or carbon steel for machine construction
	Made-to-order		40～96	
	Standard stock	200	14～38	
	Made-to-order		40～96	
	Standard stock	300	16～36	
	Made-to-order		40～72	
XH	Made-to-order	200, 300, 400	18～120	Carbon steel for machine construction
XXH	Made-to-order	200, 300, 400, 500	18～60	
T5	Made-to-order	10, 15	12～72	
T10	Made-to-order	15, 25	12～72	

(2) Designation for Synchronous Pulleys

Type	Designation example
TL synchronous pulley (bushing type)	Pulley body: **30 L 100** 30: No. of teeth of pulley (30 teeth) L: Pulley tooth profile (Type L) 100: Pulley nominal width (For a belt width of 1 inch: 25.4 mm) Applicable bushing: **4225 × 20 N** 4225: TL bushing type number 20: Shaft hole dia. (20mm) N: Keyway for new JIS keys (Previous JIS keys: F)
Synchronous pulley (shaft-hole-machined type)	**40 H 100 B** 40: No. of teeth of pulley (40 teeth) H: Pulley tooth profile (Type H) 100: Pulley nominal width (For a belt width of 1 inch: 25.4 mm) B: Pulley profile (Type B)

(Note) When you need a backlash-less pulley, please contact us.

Pulley Dimensional Accuracy

For pulley dimensional accuracy, use pulleys with the following dimensional accuracies to sufficiently obtain the belt function.

■ Outside diameter

(Unit: mm)

Pulley outside diameter do	Tolerance	
	MXL/XXL/XL/L/H/XH/XXH	T5/T10
Over 5.96 to 25.40 or less	+0.05, 0	±0.05 regardless of the diameter
Over 25.40 to 50.80 or less	+0.08, 0	
Over 50.80 to 101.60 or less	+0.10, 0	
Over 101.60 to 177.80 or less	+0.13, 0	
Over 177.80 to 304.80 or less	+0.15, 0	
Over 304.80 to 508.00 or less	+0.18, 0	
Over 508.00 to 762.00 or less	+0.20, 0	
Over 762.00 to 967.16 or less	+0.23, 0	

■ Shaft hole diameter

(Unit: mm)

Shaft hole dia.	Tolerance	
	TL bushing (H8)	Shaft-hole-machined type
Over 3 to 6 or less	+0.018, 0	The shaft holes for the shaft-hole-machined type are pilot holes.
Over 6 to 10 or less	+0.022, 0	
Over 10 to 18 or less	+0.027, 0	
Over 18 to 30 or less	+0.033, 0	
Over 30 to 50 or less	+0.039, 0	
Over 50 to 80 or less	+0.046, 0	
Over 80 to 120 or less	+0.054, 0	
Over 120 to 180 or less	+0.063, 0	

■ Run-out of the outside diameter in relation to the shaft hole

(Unit: mm)

Pulley outside diameter do	Run-out tolerance (TIR) (Note)
203.20 or less	0.13 or less
Over 203.20 to 967.16 or less	0.13 + {(Pulley outside diameter - 203.20) × 0.0005}

■ Run-out of the pulley side face in relation to the shaft hole

(Unit: mm)

Pulley outside diameter do	Run-out tolerance (TIR) (Note)
101.60 or less	0.10
Over 101.60 to 254.00 or less	Pulley outside diameter × 0.001
Over 254.00 to 967.16 or less	0.25 + {(Pulley outside diameter - 254.00) × 0.0005}

(Note) TIR is an abbreviation for Total Indicator Reading and refers to a difference between the maximum value and the minimum value in readings of run-out measurement.

■ Cylindricity of outside diameter

(Unit: mm)

Pulley nominal width		Tolerance
XL•L•H•XH•XXH	T5•T10	
025～050	～ 19	0.01
075～150	20～ 40	0.02
200•300	41～100	0.04
400•500		0.06

■ Parallelism between teeth and shaft hole center line

(Unit: mm)

Pulley nominal width		Tolerance
XL•L•H•XH•XXH	T5•T10	
025～150	～40	0.03
200•300	41～100	0.04
400•500		0.05

■ Adjacent pitch error and cumulative pitch error

(Unit: mm)

Pulley outside diameter do	Tolerance	
	Adjacent pitch error	Cumulative pitch error (90° or more)
Over 5.96 to 25.40 or less	0.03	0.05
Over 25.40 to 50.80 or less	0.03	0.08
Over 50.80 to 101.60 or less	0.03	0.10
Over 101.60 to 177.80 or less	0.05	0.13
Over 177.80 to 304.80 or less	0.05	0.15
Over 304.80 to 508.00 or less	0.08	0.18
Over 508.00 to 762.00 or less	0.08	0.20
Over 762.00 to 967.16 or less	0.08	0.23

■ Keyway

Refer to keyway dimensions (parallel keys) on **P. 195**.

■ Pulley's blank outside diameter

As pulley's gear cutting is a topping process, the blank outside diameter is a value with the value in the following table (topping range) added.

■ Topping range for pulley outside diameter

(Unit: mm)

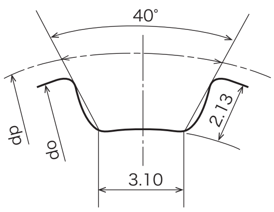
Pulley outside diameter	Topping range
50.80 or less	0.5
Over 50.80 to 101.60 or less	0.6
Over 101.60 to 177.80 or less	0.7
Over 177.80 to 304.80 or less	0.8
Over 304.80 to 508.00 or less	1.0
Over 508.00 to 700.00 or less	1.2
Over 700.00	1.4

(Example) Blank outside diameter of synchronous pulley 30H100A
Blank outside diameter = pulley outside diameter + topping range
$=119.90^{+0.13}_{0}+0.7=120.60^{+0.13}_{0}$

Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)

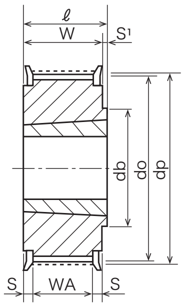
Type L

(Pulley Tooth Profile Dimensions)

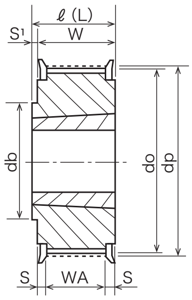


(Pulley Profile)

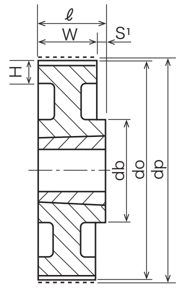
Type 1-1AF



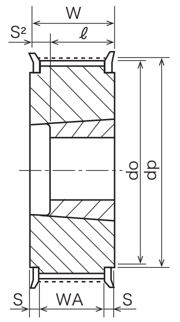
Type 1-1B



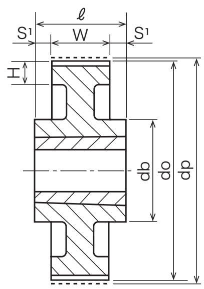
Type 1-2



Type 4-1BF



Type 6



(Pulley Designation)

(Example) 30 L 100

- 30: No. of teeth of pulley (30 teeth)
- L: Pulley tooth profile (Type L)
- 100: Pulley nominal width (For a belt width of 1 inch: 25.4 mm)

(Bushing Designation)

(Example) 4225 × 20 N

- 4225: TL bushing type number
- 20: Shaft hole dia. (20 mm)
- N: Keyway for new JIS keys (Previous JIS keys: F)

L 050 (For a belt width of 12.7 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated-pulley mass (kg)	Flange part No.
19	57.61	56.84	1-1BF	Carbon steel for machine construction	3622	22	19	14	2.5	45	22	3	-	-	-	0.23	F 6751
20	60.64	59.88	1-1BF		3622	22	19	14	2.5	45	22	3	-	-	-	0.27	F 6751
21	63.67	62.91	1-1BF		4225	28	19	14	2.5	50	25	6	-	-	-	0.3	F 7056
22	66.70	65.94	1-1BF		4225	28	19	14	2.5	50	25	6	-	-	-	0.36	F 7761
23	69.73	68.97	1-1BF		4225	28	19	14	2.5	50	25	6	-	-	-	0.39	F 7761
24	72.77	72.00	1-1BF		4225	28	19	14	2.5	50	25	6	-	-	-	0.45	F 8366
25	75.80	75.04	1-1BF		4225	28	19	14	2.5	50	25	6	-	-	-	0.5	F 8366
26	78.83	78.07	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	0.61	F 8871
28	84.89	84.13	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	0.73	F 9575
30	90.96	90.20	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	0.84	F 9980
32	97.02	96.26	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	0.97	F 10385
34	103.08	102.32	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	1.1	F 11595
36	109.15	108.39	1-1BF		4225	28	19	14	2.5	63	25	6	-	-	-	1.3	F119100
40	121.28	120.51	1-1AF	Cast iron or carbon steel for machine construction	4225	28	19	14	2.5	63	25	6	-	-	-	1.5	F131110
42	127.34	126.58	1-1AF		4225	28	19	14	2.5	63	25	6	-	-	-	1.7	F135115
44	133.40	132.64	1-1AF		5035	32	19	14	2.5	80	35	16	-	-	-	2.0	F140120
48	145.53	144.77	1-1AF		5035	32	19	14	2.5	80	35	16	-	-	-	2.4	F152130
50	151.60	150.83	1-1AF		5035	32	19	14	2.5	80	35	16	-	-	-	2.6	F160140
60	181.90	181.15	1-2		5035	32	19	-	-	80	35	16	-	-	11	2.2	-
72	218.30	217.53	1-2		5035	32	19	-	-	80	35	16	-	-	11	2.5	-
84	254.68	253.92	6		6340	42	19	-	-	100	40	10.5	-	-	11	3.6	-

Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)
Type L

L 075 (For a belt width of 19.0 mm)

(shaded): Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated-pulley mass (kg)	Flange part No.
19	57.61	56.84	4-1BF	Carbon steel for machine construction	3622	22	26	21	2.5	-	22	-	4	-	-	0.3	F 6751
20	60.64	59.88	4-1BF		3622	22	26	21	2.5	-	22	-	4	-	-	0.35	F 6751
21	63.67	62.91	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.36	F 7056
22	66.70	65.94	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.43	F 7761
23	69.73	68.97	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.49	F 7761
24	72.77	72.00	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.56	F 8366
25	75.80	75.04	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.62	F 8366
26	78.83	78.07	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.7	F 8871
28	84.89	84.13	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	0.86	F 9575
30	90.96	90.20	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	1.0	F 9980
32	97.02	96.26	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	1.2	F 10385
34	103.08	102.32	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	1.4	F 11595
36	109.15	108.39	4-1BF		4225	28	26	21	2.5	-	25	-	1	-	-	1.6	F119100
40	121.28	120.51	4-1BF	Cast iron or carbon steel for machine construction	4225	28	26	21	2.5	-	25	-	1	-	-	1.9	F131110
42	127.34	126.58	1-1AF		5035	32	26	21	2.5	80	35	9	-	-	-	2.2	F135115
44	133.40	132.64	1-1AF		5035	32	26	21	2.5	80	35	9	-	-	-	2.5	F140120
48	145.53	144.77	1-1AF		5035	32	26	21	2.5	80	35	9	-	-	-	3.0	F152130
50	151.60	150.83	1-1AF		5035	32	26	21	2.5	80	35	9	-	-	-	3.2	F160140
60	181.90	181.15	1-2		5035	32	26	-	-	80	35	9	-	-	11	2.5	-
72	218.30	217.53	1-2		6340	42	26	-	-	100	40	14	-	-	11	3.5	-
84	254.68	253.92	1-2		6340	42	26	-	-	100	40	14	-	-	11	4.1	-

L 100 (For a belt width of 25.4 mm)

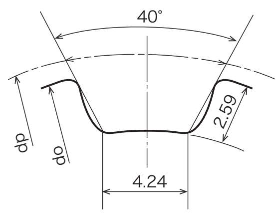
(shaded): Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated-pulley mass (kg)	Flange part No.
19	57.61	56.84	4-1BF	Carbon steel for machine construction	3622	22	32	27	2.5	-	22	-	10	-	-	0.37	F 6751
20	60.64	59.88	4-1BF		3622	22	32	27	2.5	-	22	-	10	-	-	0.43	F 6751
21	63.67	62.91	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.44	F 7056
22	66.70	65.94	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.52	F 7761
23	69.73	68.97	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.59	F 7761
24	72.77	72.00	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.68	F 8366
25	75.80	75.04	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.76	F 8366
26	78.83	78.07	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.86	F 8871
28	84.89	84.13	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	1.1	F 9575
30	90.96	90.20	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	1.3	F 9980
32	97.02	96.26	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	1.5	F 10385
34	103.08	102.32	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	1.7	F 11595
36	109.15	108.39	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	1.9	F119100
40	121.28	120.51	1-1BF	Cast iron or carbon steel for machine construction	5035	32	32	27	2.5	80	35	3	-	-	-	2.3	F131110
42	127.34	126.58	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	2.6	F135115
44	133.40	132.64	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	2.8	F140120
48	145.53	144.77	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	3.5	F152130
50	151.60	150.83	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	3.8	F160140
60	181.90	181.15	1-2		6340	42	32	-	-	100	40	8	-	-	11	3.5	-
72	218.30	217.53	1-2		6340	42	32	-	-	100	40	8	-	-	11	3.9	-
84	254.68	253.92	1-2		6340	42	32	-	-	100	40	8	-	-	11	4.5	-

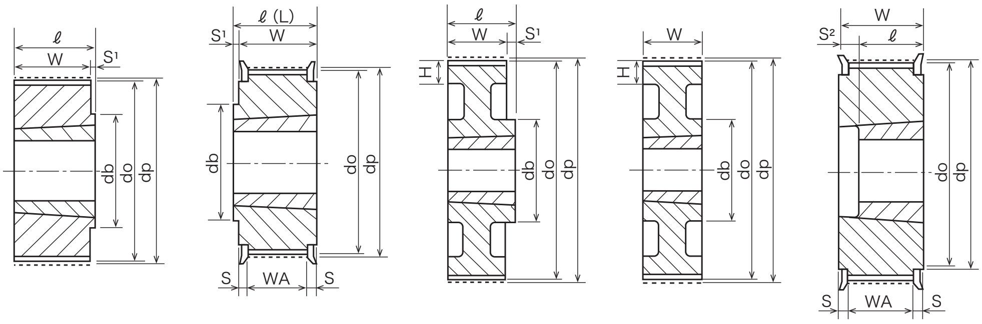
Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)
Type H

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type 1-1A · Type 1-1BF · Type 1-2 · Type 3-2 · Type 4-1BF



(Pulley Designation) (Example) 20 H 100
- 20: No. of teeth of pulley (20 teeth)
- H: Pulley tooth profile (Type H)
- 100: Pulley nominal width (For a belt width of 1 inch: 25.4 mm)

(Bushing Designation) (Example) 4225 × 20 N
- 4225: TL bushing type number
- 20: Shaft hole dia. (20 mm)
- N: Keyway for new JIS keys (Previous JIS keys: F)

H100 (For a belt width of 25.4 mm) [ ] are available in stock.

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
18	72.77	71.39	4-1BF	Carbon steel for machine construction	4225	28	32	27	2.5	-	25	-	7	-	-	0.67	F 7761
19	76.81	75.44	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.77	F 8366
20	80.85	79.48	4-1BF		4225	28	32	27	2.5	-	25	-	7	-	-	0.89	F 8871
21	84.89	83.52	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	0.93	F 9575
22	88.94	87.56	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	1.1	F 9575
24	97.02	95.65	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	1.3	F 10385
25	101.06	99.69	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	1.5	F 11190
26	105.11	103.73	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	1.6	F 11190
28	113.19	111.82	1-1BF		5035	32	32	27	2.5	63	35	3	-	-	-	2.0	F119100
30	121.28	119.90	1-1BF	Cast iron or carbon steel for machine construction	5035	32	32	27	2.5	80	35	3	-	-	-	2.2	F127105
32	129.36	127.99	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	2.6	F135115
34	137.45	136.07	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	3.0	F144125
36	145.53	144.16	1-1BF		5035	32	32	27	2.5	80	35	3	-	-	-	3.4	F152130
40	161.70	160.33	1-1A		6340	42	32	-	-	100	40	8	-	-	-	4.2	-
42	169.79	168.41	1-1A		6340	42	32	-	-	100	40	8	-	-	-	4.7	-
44	177.87	176.50	1-2		6340	42	32	-	-	100	40	8	-	-	12	3.5	-
48	194.04	192.67	1-2		6340	42	32	-	-	100	40	8	-	-	12	3.6	-
50	202.13	200.76	1-2		6340	42	32	-	-	100	40	8	-	-	12	3.8	-
60	242.55	241.18	1-2		6340	42	32	-	-	100	40	8	-	-	12	4.5	-
72	291.06	289.69	1-2		8545	60	32	-	-	140	45	13	-	-	13	7.3	-
84	339.57	338.20	1-2		8545	60	32	-	-	140	45	13	-	-	13	8.4	-
96	388.08	386.71	1-2		8545	60	32	-	-	140	45	13	-	-	13	9.8	-

H150 (For a belt width of 38.1 mm) [ ] are available in stock.

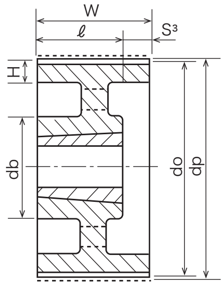
(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
20	80.85	79.48	4-1BF	Carbon steel for machine construction	5035	32	45	40	2.5	-	35	-	10	-	-	1.1	F 8871
21	84.89	83.52	4-1BF		5035	32	45	40	2.5	-	35	-	10	-	-	1.3	F 9575
22	88.94	87.56	4-1BF		5035	32	45	40	2.5	-	35	-	10	-	-	1.4	F 9575
24	97.02	95.65	4-1BF		5035	32	45	40	2.5	-	35	-	10	-	-	1.8	F 10385
25	101.06	99.69	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	1.7	F 11190
26	105.11	103.73	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	1.9	F 11190
28	113.19	111.82	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	2.4	F119100
30	121.28	119.90	4-1BF	Cast iron or carbon steel for machine construction	6340	42	45	40	2.5	-	40	-	5	-	-	2.7	F127105
32	129.36	127.99	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	3.2	F135115
34	137.45	136.07	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	3.7	F144125
36	145.53	144.16	4-1BF		6340	42	45	40	2.5	-	40	-	5	-	-	4.3	F152130
40	161.70	160.33	4-2B		6340	42	45	-	-	90	40	-	5	-	12	3.5	-
42	169.79	168.41	4-2B		6340	42	45	-	-	90	40	-	5	-	12	3.8	-
44	177.87	176.50	4-2B		6340	42	45	-	-	100	40	-	5	-	12	4.1	-
48	194.04	192.67	4-2B		6340	42	45	-	-	100	40	-	5	-	12	4.2	-
50	202.13	200.76	3-2		8545	60	45	-	-	125	-	-	-	-	13	5.9	-
60	242.55	241.18	3-2		8545	60	45	-	-	140	-	-	-	-	13	7.3	-
72	291.06	289.69	3-2		8545	60	45	-	-	140	-	-	-	-	13	8.5	-
84	339.57	338.20	3-2		8545	60	45	-	-	140	-	-	-	-	13	10.0	-
96	388.08	386.71	3-2		8545	60	45	-	-	140	-	-	-	-	13	11.7	-

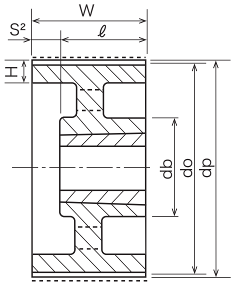
Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)
Type H

(Pulley Profile)

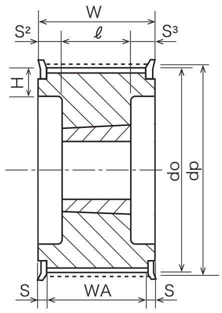
Type 4-2A



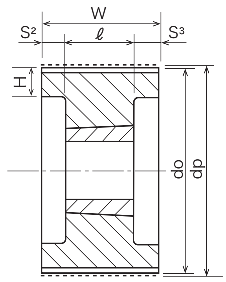
Type 4-2B



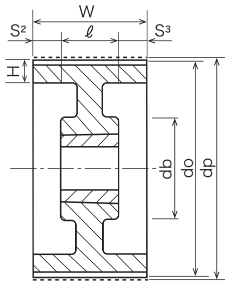
Type 5-1F



Type 5-1



Type 5-2



H200 (For a belt width of 50.8 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing		W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
					Type No.	Maximum shaft hole dia.											
24	97.02	95.65	4-1BF	Carbon steel for machine construction	6340	42	59	54	2.5	-	40	-	19	-	-	1.9	F 10385
25	101.06	99.69	4-1BF		6340	42	59	54	2.5	-	40	-	19	-	-	2.2	F 11190
26	105.11	103.73	4-1BF		6340	42	59	54	2.5	-	40	-	19	-	-	2.5	F 11190
28	113.19	111.82	4-1BF		6340	42	59	54	2.5	-	40	-	19	-	-	3.1	F119100
30	121.28	119.90	4-1BF	Cast iron or carbon steel for machine construction	6340	42	59	54	2.5	-	40	-	19	-	-	3.5	F127105
32	129.36	127.99	5-1F		6340	42	59	54	2.5	-	40	-	10	9	13	3.6	F135115
34	137.45	136.07	5-1F		6340	42	59	54	2.5	-	40	-	10	9	13	4.1	F144125
36	145.53	144.16	5-1F		6340	42	59	54	2.5	-	40	-	10	9	13	4.7	F152130
40	161.70	160.33	5-1		8545	60	59	-	-	-	45	-	10	4	13	5.3	-
42	169.79	168.41	5-1		8545	60	59	-	-	-	45	-	10	4	13	6.0	-
44	177.87	176.50	5-1		8545	60	59	-	-	-	45	-	10	4	13	6.8	-
48	194.04	192.67	5-1		8545	60	59	-	-	-	45	-	10	4	13	8.4	-
50	202.13	200.76	5-2		8545	60	59	-	-	125	45	-	10	4	13	6.7	-
60	242.55	241.18	5-2		8545	60	59	-	-	140	45	-	10	4	13	8.4	-
72	291.06	289.69	5-2		8545	60	59	-	-	140	45	-	10	4	13	9.6	-
84	339.57	338.20	5-2		8545	60	59	-	-	140	45	-	10	4	13	11.3	-
96	388.08	386.71	4-2A		11055	75	59	-	-	180	55	-	-	4	13	16.8	-

H300 (For a belt width of 76.2 mm)

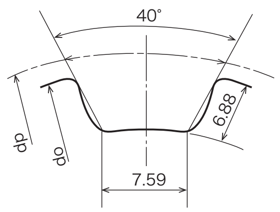
: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing		W	WA	S	db	ℓ	S_1	S_2	S_3	H	Roughly calculated pulley mass (kg)	Flange part No.
					Type No.	Maximum shaft hole dia.											
40	161.70	160.33	5-1	Cast iron or carbon steel for machine construction	8545	60	85	-	-	-	45	-	25	15	14	6.5	-
42	169.79	168.41	5-1		8545	60	85	-	-	-	45	-	25	15	14	7.3	-
44	177.87	176.50	5-1		8545	60	85	-	-	-	45	-	25	15	14	8.1	-
48	194.04	192.67	5-1		8545	60	85	-	-	-	45	-	25	15	14	9.8	-
50	202.13	200.76	5-1		8545	60	85	-	-	-	45	-	25	15	14	10.7	-
60	242.55	241.18	5-2		8545	60	85	-	-	140	45	-	25	15	14	10.6	-
72	291.06	289.69	5-2		11055	75	85	-	-	180	55	-	15	15	14	15.9	-

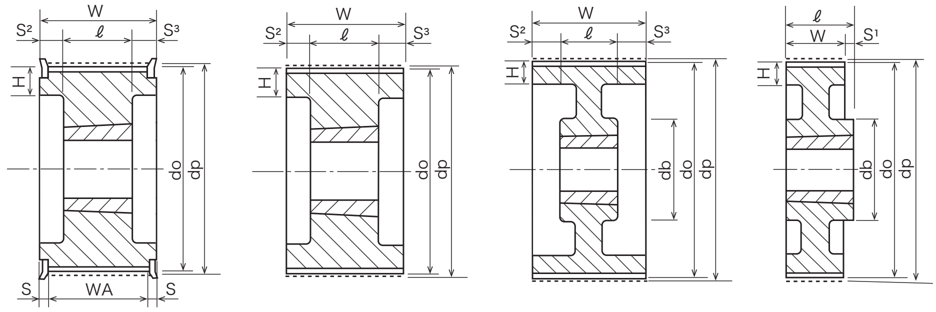
Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)
Type XH

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type 5-1F Type 5-1 Type 5-2 Type 1-2



(Pulley Designation) (Example) 36 XH 200

- 36: No. of teeth of pulley (36 teeth)
- XH: Pulley tooth profile (Type XH)
- 200: Pulley nominal width (For a belt width of 2 inches: 50.8 mm)

(Bushing Designation) (Example) 8545×50 N

- 8545: TL bushing type number
- 50: Shaft hole dia. (50 mm)
- N: Keyway for new JIS keys (Previous JIS keys: F)

XH200 (For a belt width of 50.8 mm) Made-to-order

(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Flange Outside diameter	Flange Inside diameter
22	155.64	152.84	5-1F	Carbon steel for machine construction	8545	60	67	57	5	-	45	-	15	7	20	168	128
24	169.79	166.99	5-1F		8545	60	67	57	5	-	45	-	15	7	20	182	142
26	183.94	181.14	5-1F		8545	60	67	57	5	-	45	-	15	7	20	196	156
28	198.08	195.29	5-1F		8545	60	67	57	5	-	45	-	15	7	20	210	170
30	212.23	209.44	5-1F		8545	60	67	57	5	-	45	-	15	7	20	224	184
32	226.38	223.59	5-2	Cast iron or carbon steel for machine construction	8545	60	67	-	-	125	45	-	15	7	20	-	-
34	240.53	237.74	5-2		8545	60	67	-	-	125	45	-	15	7	20	-	-
36	254.68	251.89	5-2		8545	60	67	-	-	140	45	-	15	7	20	-	-
40	282.98	280.18	5-2		8545	60	67	-	-	140	45	-	15	7	20	-	-
42	297.13	294.33	5-2		8545	60	67	-	-	140	45	-	15	7	20	-	-
44	311.28	308.48	5-2		8545	60	67	-	-	140	45	-	15	7	20	-	-
48	339.57	336.78	5-2		11055	75	67	-	-	180	55	-	5	7	21	-	-
60	424.47	421.67	5-2		11055	75	67	-	-	180	55	-	5	7	21	-	-
72	509.36	506.57	5-2		11055	75	67	-	-	180	55	-	5	7	21	-	-
84	594.25	591.46	1-2		13070	90(85)	67	-	-	212	70	3	-	-	23	-	-
96	679.15	676.35	6		13090	90(85)	67	-	-	200	90	11.5	-	-	23	-	-
120	848.93	846.14	6		13090	90(85)	67	-	-	200	90	11.5	-	-	25	-	-

XH300 (For a belt width of 76.2 mm) Made-to-order

(Unit: mm)

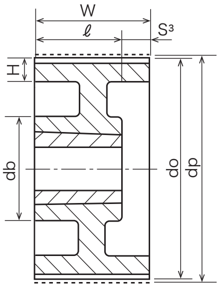
No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Flange Outside diameter	Flange Inside diameter
22	155.64	152.84	5-1F	Carbon steel for machine construction	8545	60	94	84	5	-	45	-	35	14	20	168	128
24	169.79	166.99	5-1F		8545	60	94	84	5	-	45	-	35	14	20	182	142
26	183.94	181.14	5-1F		8545	60	94	84	5	-	45	-	35	14	20	196	156
28	198.08	195.29	5-1F		8545	60	94	84	5	-	45	-	35	14	20	210	170
30	212.23	209.44	5-1F		8545	60	94	84	5	-	45	-	35	14	20	224	184
32	226.38	223.59	5-1	Cast iron or carbon steel for machine construction	11055	75	94	-	-	-	55	-	25	14	20	-	-
34	240.53	237.74	5-1		11055	75	94	-	-	-	55	-	25	14	20	-	-
36	254.68	251.89	5-1		11055	75	94	-	-	-	55	-	25	14	20	-	-
40	282.98	280.18	5-2		11055	75	94	-	-	180	55	-	25	14	21	-	-
42	297.13	294.33	5-2		11055	75	94	-	-	180	55	-	25	14	21	-	-
44	311.28	308.48	5-2		11055	75	94	-	-	180	55	-	25	14	21	-	-
48	339.57	336.78	5-2		11055	75	94	-	-	180	55	-	25	14	21	-	-
60	424.47	421.67	5-2		13070	90(85)	94	-	-	212	70	-	10	14	23	-	-
72	509.36	506.57	5-2		13070	90(85)	94	-	-	212	70	-	10	14	23	-	-
84	594.25	591.46	4-2A		13090	90(85)	94	-	-	200	90	-	-	4	23	-	-
96	679.15	676.35	4-2A		13090	90(85)	94	-	-	200	90	-	-	4	23	-	-
120	848.93	846.14	4-2A		13090	90(85)	94	-	-	200	90	-	-	4	25	-	-

(Note): ① The dimensions within ( ) in the maximum shaft hole diameter indicate those when previous JIS keys are used.
② Flanges are installed by welding (spot-welded).

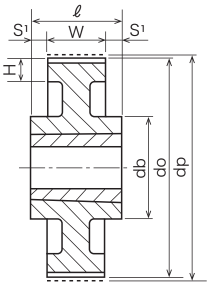
Table of TL Synchronous Pulley Standard Dimensions (Bushing Type)
Type XH

(Pulley Profile)

Type 4-2A



Type 6



X H400 (For a belt width of 101.6 mm) **Made-to-order**

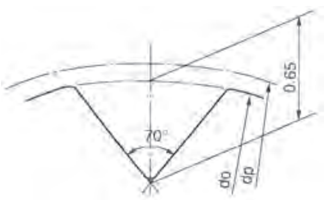
(Unit: mm)

No. of teeth	dp	do	Profile	Pulley material	TL bushing Type No.	TL bushing Maximum shaft hole dia.	W	WA	S	db	ℓ	S_1	S_2	S_3	H	Flange Outside diameter	Flange Inside diameter
22	155.64	152.84	5-1F	Carbon steel for machine construction	8545	60	121	111	5	-	45	-	55	21	20	168	128
24	169.79	166.99	5-1F		8545	60	121	111	5	-	45	-	55	21	20	182	142
26	183.94	181.14	5-1F		11055	75	121	111	5	-	55	-	45	21	20	196	156
28	198.08	195.29	5-1F		11055	75	121	111	5	-	55	-	45	21	20	210	170
30	212.23	209.44	5-1F		11055	75	121	111	5	-	55	-	45	21	20	224	184
32	226.38	223.59	5-1	Cast iron or carbon steel for machine construction	11055	75	121	-	-	-	55	-	45	21	20	-	-
34	240.53	237.74	5-1		11055	75	121	-	-	-	55	-	45	21	20	-	-
36	254.68	251.89	5-1		11055	75	121	-	-	-	55	-	45	21	20	-	-
40	282.98	280.18	5-2		11055	75	121	-	-	180	55	-	45	21	21	-	-
42	297.13	294.33	5-2		11055	75	121	-	-	180	55	-	45	21	21	-	-
44	311.28	308.48	5-2		11055	75	121	-	-	180	55	-	45	21	21	-	-
48	339.57	336.78	5-2		13090	90(85)	121	-	-	200	90	-	10	21	23	-	-
60	424.47	421.67	5-2		13090	90(85)	121	-	-	200	90	-	10	21	23	-	-
72	509.36	506.57	5-2		13090	90(85)	121	-	-	200	90	-	10	21	23	-	-
84	594.25	591.46	5-2		13090	90(85)	121	-	-	200	90	-	10	21	23	-	-
96	679.15	676.35	5-2		13090	90(85)	121	-	-	200	90	-	10	21	23	-	-
120	848.93	846.14	5-2		13090	90(85)	121	-	-	200	90	-	10	21	25	-	-

(Note): ① The dimensions within ( ) in the maximum shaft hole diameter indicate those when previous JIS keys are used.
② Flanges are installed by welding (spot-welded).

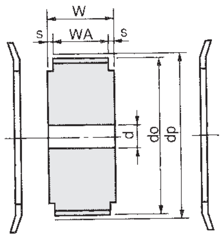
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type TN15

(Pulley Tooth Profile Dimensions)

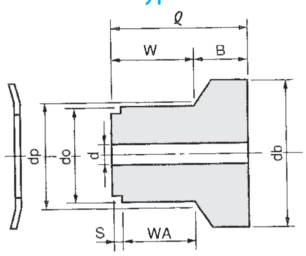


(Pulley Profile)

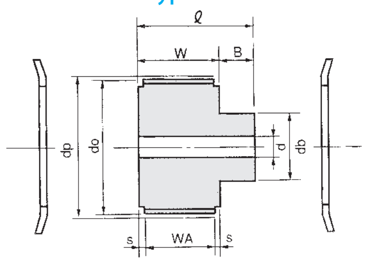
Type AF



Type SF



Type BF



(Pulley Designation) **(Example) 20 TN15 – 5.0 AF**

- 20: No. of teeth of pulley (20 teeth)
- TN15: Pulley tooth profile (Type TN15)
- 5.0: Pulley nominal width (For a belt width of 5 mm)
- AF: Pulley profile (Type A, with flange)

TN15-5.0 (For a belt width of 5 mm) — Made-to-order

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W SF	W AF,BF	ℓ	WA	S	B	db	d MAX AF	d MAX SF,BF	d MIN AF,SF,BF	Roughly calculated-pulley mass (g) AF	Roughly calculated-pulley mass (g) SF,BF	Flange part No.
20	AF,SF	High-strength aluminum alloy	9.55	8.91	8	10	14.5	6	2	6.5	13	4	4	3	1	4	FM1306
22	AF,SF		10.50	9.86	8	10	14.5	6	2	6.5	14	5	5	3	2	4	FM1407
24	AF,SF		11.46	10.82	8	10	14.5	6	2	6.5	14	5	5	4	2	4	FM1407
26	AF,SF		12.41	11.77	8	10	14.5	6	2	6.5	16	7	5	4	2	6	FM1609
28	AF,SF		13.37	12.73	8	10	14.5	6	2	6.5	17	8	6	4	3	7	FM1710
30	AF,SF		14.32	13.68	8	10	14.5	6	2	6.5	17	8	6	4	3	7	FM1710
32	AF,SF		15.28	14.64	8	10	14.5	6	2	6.5	18	9	6	5	4	8	FM1811
34	AF,BF		16.23	15.59	-	10	17.0	6	2	7	11	10	6	5	4	6	FM2013
36	AF,BF		17.19	16.55	-	10	17.0	6	2	7	11	10	6	5	5	6	FM2013
40	AF,BF		19.10	18.46	-	10	17.0	6	2	7	13	12	7	5	6	8	FM2215
44	AF,BF		21.01	20.37	-	10	17.0	6	2	7	14	12	8	5	8	10	FM2516
48	AF,BF		22.92	22.28	-	10	17.0	6	2	7	14	12	8	5	9	12	FM2516
52	AF,BF		24.83	24.19	-	10	17.0	6	2	7	15	15	8	5	10	14	FM2919
56	AF,BF		26.74	26.10	-	10	17.0	6	2	7	16	15	10	5	13	17	FM3121
60	AF,BF		28.65	28.01	-	10	17.0	6	2	7	16	15	10	5	15	19	FM3422
64	AF,BF		30.56	29.92	-	10	17.0	6	2	7	18	20	10	5	18	22	FM3424
68	AF,BF		32.47	31.83	-	10	17.0	6	2	7	18	20	10	5	20	25	FM3727
72	AF,BF		34.38	33.74	-	10	17.0	6	2	7	18	20	10	5	23	27	FM3828
80	AF,BF		38.20	37.56	-	10	17.0	6	2	7	20	25	14	5	29	34	FM4328
88	AF,BF		42.02	41.38	-	10	17.0	6	2	7	20	25	14	5	35	41	FM4734
96	AF,BF		45.84	45.20	-	10	17.0	6	2	7	20	25	14	5	42	47	FM5136

TN15-10.0 (For a belt width of 10 mm) — Made-to-order

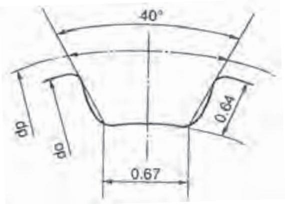
(Unit: mm)

No. of teeth	Profile	Material	dp	do	W SF	W AF,BF	ℓ	WA	S	B	db	d MAX AF	d MAX SF,BF	d MIN AF,SF,BF	Roughly calculated-pulley mass (g) AF	Roughly calculated-pulley mass (g) SF,BF	Flange part No.
20	AF,SF	High-strength aluminum alloy	9.55	8.91	13.5	15.5	21	11.5	2	7.5	13	4	4	3	2	5	FM1306
22	AF,SF		10.50	9.86	13.5	15.5	21	11.5	2	7.5	14	5	5	3	3	6	FM1407
24	AF,SF		11.46	10.82	13.5	15.5	21	11.5	2	7.5	14	5	5	4	3	6	FM1407
26	AF,SF		12.41	11.77	13.5	15.5	21	11.5	2	7.5	16	7	5	4	4	7	FM1609
28	AF,SF		13.37	12.73	13.5	15.5	21	11.5	2	7.5	17	8	6	4	4	9	FM1710
30	AF,SF		14.32	13.68	13.5	15.5	21	11.5	2	7.5	17	8	6	4	5	10	FM1710
32	AF,SF		15.28	14.64	13.5	15.5	21	11.5	2	7.5	18	9	6	5	6	11	FM1811
34	AF,BF		16.23	15.59	-	15.5	22.5	11.5	2	7	11	10	6	5	7	8	FM2013
36	AF,BF		17.19	16.55	-	15.5	22.5	11.5	2	7	11	10	6	5	8	9	FM2013
40	AF,BF		19.10	18.46	-	15.5	22.5	11.5	2	7	13	12	7	5	10	12	FM2215
44	AF,BF		21.01	20.37	-	15.5	22.5	11.5	2	7	14	12	8	5	12	15	FM2516
48	AF,BF		22.92	22.28	-	15.5	22.5	11.5	2	7	14	12	8	5	15	17	FM2516
52	AF,BF		24.83	24.19	-	15.5	22.5	11.5	2	7	15	15	8	5	18	20	FM2919
56	AF,BF		26.74	26.10	-	15.5	22.5	11.5	2	7	16	15	10	5	21	24	FM3121
60	AF,BF		28.65	28.01	-	15.5	22.5	11.5	2	7	16	15	10	5	24	27	FM3422
64	AF,BF		30.56	29.92	-	15.5	22.5	11.5	2	7	18	20	10	5	28	32	FM3424
68	AF,BF		32.47	31.83	-	15.5	22.5	11.5	2	7	18	20	10	5	31	36	FM3727
72	AF,BF		34.38	33.74	-	15.5	22.5	11.5	2	7	18	20	10	5	35	40	FM3828
80	AF,BF		38.20	37.56	-	15.5	22.5	11.5	2	7	20	25	14	5	44	50	FM4328
88	AF,BF		42.02	41.38	-	15.5	22.5	11.5	2	7	20	25	14	5	54	60	FM4734
96	AF,BF		45.84	45.20	-	15.5	22.5	11.5	2	7	20	25	14	5	65	70	FM5136

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.

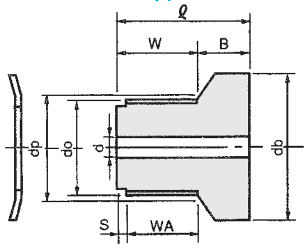
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type MXL

(Pulley Tooth Profile Dimensions)

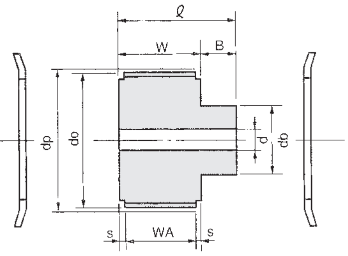


(Pulley Profile)

Type SF



Type BF



(Pulley Designation) **(Example)** 20 MXL 6.4 SF

- 20: No. of teeth of pulley (20 teeth)
- MXL: Pulley tooth profile (Type MXL)
- 6.4: Pulley nominal width (For a belt width of 6.4 mm)
- SF: Pulley profile (Type S, with flange)

MXL6.4 (For a belt width of 6.4 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	Roughly calculated pulley mass(g)	Flange part No.
12	SF	High-strength aluminum alloy	7.76	7.25	9.5	16.5	7.5	2	7	11	3	3	3	FM1105
14	SF		9.06	8.55	9.5	16.5	7.5	2	7	13	4	3	4	FM1306
15	SF		9.70	9.19	9.5	16.5	7.5	2	7	13	4	3	4	FM1306
16	SF		10.35	9.84	9.5	16.5	7.5	2	7	14	5	4	5	FM1407
18	SF		11.64	11.14	9.5	16.5	7.5	2	7	14	5	4	5	FM1407
20	SF		12.94	12.43	9.5	16.5	7.5	2	7	16	6	4	7	FM1609
22	SF		14.23	13.72	9.5	16.5	7.5	2	7	17	6	4	8	FM1710
24	BF		15.52	15.02	11.5	18.5	7.5	2	7	11	6	5	6	FM2013
25	BF		16.17	15.66	11.5	18.5	7.5	2	7	11	6	5	6	FM2013
26	BF		16.82	16.31	11.5	18.5	7.5	2	7	11	6	5	7	FM2013
28	BF		18.11	17.60	11.5	18.5	7.5	2	7	13	8	5	9	FM2215
30	BF		19.40	18.90	11.5	18.5	7.5	2	7	13	8	5	10	FM2215
32	BF		20.70	20.19	11.5	18.5	7.5	2	7	14	8	5	11	FM2516
34	BF		21.99	21.48	11.5	18.5	7.5	2	7	14	8	5	13	FM2516
36	BF		23.29	22.78	11.5	18.5	7.5	2	7	16	10	5	15	FM2919
40	BF		25.87	25.36	11.5	18.5	7.5	2	7	16	10	5	18	FM3121
42	BF		27.17	26.66	11.5	18.5	7.5	2	7	16	10	5	19	FM3222
44	BF		28.46	27.95	11.5	18.5	7.5	2	7	16	10	5	21	FM3424
48	BF		31.05	30.54	11.5	18.5	7.5	2	7	16	10	5	25	FM3626
50	BF		32.34	31.83	11.5	18.5	7.5	2	7	18	12	5	28	FM3828
52	BF		33.63	33.13	11.5	18.5	7.5	2	7	18	12	5	30	FM3828
56	BF		36.22	35.71	11.5	18.5	7.5	2	7	18	12	5	34	FM4030
60	BF		38.81	38.30	11.5	18.5	7.5	2	7	18	12	5	39	FM4432
64	BF		41.40	40.89	11.5	18.5	7.5	2	7	20	14	5	45	FM4734
68	BF		43.98	43.48	11.5	18.5	7.5	2	7	20	14	5	50	FM4938
72	BF		46.57	46.06	11.5	18.5	7.5	2	7	20	14	5	56	FM5136
76	BF		49.16	48.65	11.5	18.5	7.5	2	7	24	16	5	64	FM5442
80	BF		51.74	51.24	11.5	18.5	7.5	2	7	24	16	5	71	FM5741
88	BF		56.92	56.41	11.5	18.5	7.5	2	7	24	16	5	84	FM6141
96	BF		62.09	61.59	11.5	18.5	7.5	2	7	24	16	5	99	FM6957
100	BF		64.68	64.17	11.5	18.5	7.5	2	7	24	16	5	107	FM7260

MXL9.5 (For a belt width of 9.5 mm)

Made-to-order

(Unit: mm)

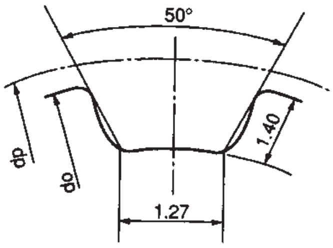
No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	Roughly calculated pulley mass (g)	Flange part No.
16	SF	High-strength aluminum alloy	10.35	9.84	12.5	20	10.5	2	7.5	14	5	4	5	FM1407
18	SF		11.64	11.14	12.5	20	10.5	2	7.5	14	5	4	5	FM1407
20	SF		12.94	12.43	12.5	20	10.5	2	7.5	16	6	4	7	FM1609
22	SF		14.73	13.72	12.5	20	10.5	2	7.5	17	6	4	9	FM1710
24	BF		15.52	15.02	14.5	22	10.5	2	7.5	11	6	5	7	FM2013
25	BF		16.17	15.66	14.5	22	10.5	2	7.5	11	6	5	8	FM2013
26	BF		16.82	16.31	14.5	22	10.5	2	7.5	11	6	5	8	FM2013
28	BF		18.11	17.60	14.5	22	10.5	2	7.5	13	8	5	10	FM2215
30	BF		19.40	18.90	14.5	22	10.5	2	7.5	13	8	5	12	FM2215
32	BF		20.70	20.19	14.5	22	10.5	2	7.5	14	8	5	14	FM2516
34	BF		21.99	21.48	14.5	22	10.5	2	7.5	14	8	5	16	FM2516
36	BF		23.29	22.78	14.5	22	10.5	2	7.5	16	10	5	18	FM2919
40	BF		25.87	25.36	14.5	22	10.5	2	7.5	16	10	5	22	FM3121
42	BF		27.17	26.66	14.5	22	10.5	2	7.5	16	10	5	24	FM3222
44	BF		28.46	27.95	14.5	22	10.5	2	7.5	16	10	5	27	FM3424
48	BF		31.05	30.54	14.5	22	10.5	2	7.5	16	10	5	31	FM3626
50	BF		32.34	31.83	14.5	22	10.5	2	7.5	18	12	5	34	FM3828
52	BF		33.63	33.13	14.5	22	10.5	2	7.5	18	12	5	37	FM3828
56	BF		36.22	35.71	14.5	22	10.5	2	7.5	18	12	5	42	FM4030
60	BF		38.81	38.30	14.5	22	10.5	2	7.5	18	12	5	48	FM4432
64	BF		41.40	40.89	14.5	22	10.5	2	7.5	20	14	5	55	FM4734
68	BF		43.98	43.48	14.5	22	10.5	2	7.5	20	14	5	62	FM4938
72	BF		46.57	46.06	14.5	22	10.5	2	7.5	20	14	5	69	FM5136
76	BF		49.16	48.65	14.5	22	10.5	2	7.5	24	16	5	79	FM5442
80	BF		51.74	51.24	14.5	22	10.5	2	7.5	24	16	5	87	FM5741
88	BF		56.92	56.41	14.5	22	10.5	2	7.5	24	16	5	104	FM6141
96	BF		62.03	61.59	14.5	22	10.5	2	7.5	24	16	5	123	FM6957
100	BF		64.68	64.17	14.5	22	10.5	2	7.5	24	16	5	133	FM7260

- We manufacture rod-shaped pulleys with a length of 100 mm if requested.

For the d MAX dimensions, please consult us when you machine keyways.

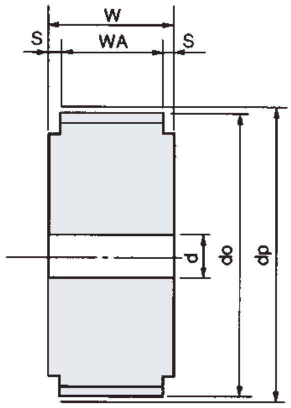
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type XL

(Pulley Tooth Profile Dimensions)

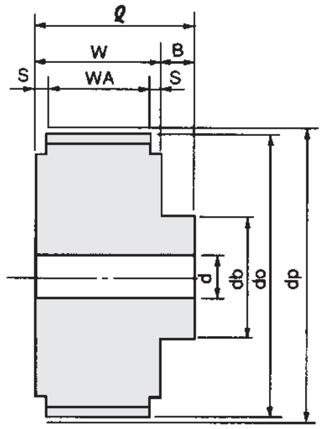


(Pulley Profile)

Type A



Type B



(Pulley Designation) **(Example)** 20 XL 037 A

- 20: No. of teeth of pulley (20 teeth)
- XL: Pulley tooth profile (Type XL)
- 037: Pulley nominal width (For a belt width of 0.37 inches: 9.5 mm)
- A: Pulley profile (Type A)

The flanges for Types AF and BF are not installed on the pulley body. When using the flanges, install them by referring to the **installation procedure** (**→ P. 190**).

XL037 (Common to belt widths of 6.4 mm, 7.9 mm, and 9.5 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX A	d MAX B	d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
10	A	Carbon steel for machine construction	16.17	15.66	16	-	11	2.5	-	-	8	-	5	0.017	-	F 2412
11	A		17.79	17.28	16	-	11	2.5	-	-	8	-	5	0.022	-	F 2412
12	A		19.40	18.90	16	-	11	2.5	-	-	11	-	5	0.027	-	F 2515
13	A		21.02	20.51	16	-	11	2.5	-	-	13	-	6	0.032	-	F 2817
14	A		22.64	22.13	16	-	11	2.5	-	-	13	-	6	0.038	-	F 2817
15	A		24.26	23.75	16	-	11	2.5	-	-	16	-	6	0.045	-	F 3220
16	A,B		25.87	25.36	16	25	11	2.5	9	16	17	9	6	0.053	0.065	F 3220
18	A,B		29.11	28.60	16	25	11	2.5	9	20	18	13	6	0.069	0.089	F 3525
19	A,B		30.72	30.22	16	25	11	2.5	9	22	20	15	6	0.078	0.10	F 3525
20	A,B		32.34	31.83	16	25	11	2.5	9	22	22	15	8	0.084	0.10	F 3525
21	A,B		33.96	33.45	16	25	11	2.5	9	22	23	16	8	0.094	0.11	F 3925
22	A,B		35.57	35.07	16	25	11	2.5	9	25	25	17	8	0.10	0.13	F 4531
24	A,B		38.81	38.30	16	25	11	2.5	9	25	28	17	8	0.12	0.15	F 4531
25	A,B		40.43	39.92	16	25	11	2.5	9	25	30	17	10	0.13	0.16	F 4836
26	A,B		42.04	41.53	16	25	11	2.5	9	25	31	17	10	0.14	0.17	F 4836
27	A,B		43.66	43.15	16	25	11	2.5	9	28	33	20	10	0.16	0.19	F 4836
28	A,B		45.28	44.77	16	25	11	2.5	9	28	34	20	10	0.17	0.21	F 5541
30	A,B		48.51	48.00	16	25	11	2.5	9	28	38	20	10	0.20	0.24	F 5541
32	A,B		51.74	51.24	16	25	11	2.5	9	28	41	20	10	0.23	0.27	F 6146
34	A,B		54.98	54.47	16	25	11	2.5	9	32	43	23	10	0.26	0.31	F 6146
36	A,B		58.21	57.70	16	25	11	2.5	9	32	46	23	10	0.30	0.35	F 6751
38	A,B		61.45	60.94	16	25	11	2.5	9	32	50	23	10	0.33	0.39	F 7056
40	A,B		64.68	64.17	16	25	11	2.5	9	32	53	23	10	0.37	0.42	F 7056
42	A,B		67.91	67.41	16	25	11	2.5	9	32	56	23	10	0.41	0.47	F 7761
44	A,B		71.15	70.64	16	25	11	2.5	9	32	59	23	10	0.46	0.51	F 7761
48	A,B		77.62	77.11	16	25	11	2.5	9	32	63	23	12	0.55	0.59	F 8366
50	A,B		80.85	80.34	16	25	11	2.5	9	34	68	25	12	0.60	0.65	F 8871
60	A,B		97.02	96.51	16	25	11	2.5	9	36	84	27	15	0.86	0.92	F 11190
72	A,B		116.43	115.92	16	25	11	2.5	9	38	102	29	15	1.2	1.3	F123105

For the d MAX dimensions, please consult us when you machine keyways.

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)

Type XL

XL050 (For a belt width of 12.7 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX A	d MAX B	d MIN A,B	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
10	A	Carbon steel for machine construction	16.17	15.66	19	-	14	2.5	-	-	8	-	5	0.021	-	F 2412
11	A		17.79	17.28	19	-	14	2.5	-	-	8	-	5	0.027	-	F 2412
12	A		19.40	18.90	19	-	14	2.5	-	-	11	-	5	0.033	-	F 2515
13	A		21.02	20.51	19	-	14	2.5	-	-	13	-	6	0.039	-	F 2817
14	A		22.64	22.13	19	-	14	2.5	-	-	13	-	6	0.046	-	F 2817
15	A		24.26	23.75	19	-	14	2.5	-	-	16	-	6	0.054	-	F 3220
16	A,B		25.87	25.36	19	28	14	2.5	9	16	17	9	6	0.063	0.075	F 3220
18	A,B		29.11	28.60	19	28	14	2.5	9	20	18	13	6	0.082	0.10	F 3525
19	A,B		30.72	30.22	19	28	14	2.5	9	22	20	15	6	0.093	0.11	F 3525
20	A,B		32.34	31.83	19	28	14	2.5	9	22	22	15	8	0.10	0.12	F 3525
21	A,B		33.96	33.45	19	28	14	2.5	9	22	23	16	8	0.11	0.13	F 3925
22	A,B		35.57	35.07	19	28	14	2.5	9	25	25	17	8	0.12	0.15	F 4531
24	A,B		38.81	38.30	19	28	14	2.5	9	25	28	17	8	0.15	0.18	F 4531
25	A,B		40.43	39.92	19	28	14	2.5	9	25	30	17	10	0.16	0.19	F 4836
26	A,B		42.04	41.53	19	28	14	2.5	9	25	31	17	10	0.17	0.20	F 4836
27	A,B		43.66	43.15	19	28	14	2.5	9	28	33	20	10	0.19	0.23	F 4836
28	A,B		45.28	44.77	19	28	14	2.5	9	28	34	20	10	0.20	0.24	F 5541
30	A,B		48.51	48.00	19	28	14	2.5	9	28	38	20	10	0.24	0.28	F 5541
32	A,B		51.74	51.24	19	28	14	2.5	9	28	41	20	10	0.27	0.31	F 6146
34	A,B		54.98	54.47	19	28	14	2.5	9	32	43	23	10	0.31	0.36	F 6146
36	A,B		58.21	57.70	19	28	14	2.5	9	32	46	23	10	0.35	0.41	F 6751
38	A,B		61.45	60.94	19	28	14	2.5	9	32	50	23	10	0.40	0.45	F 7056
40	A,B		64.68	64.17	19	28	14	2.5	9	32	53	23	10	0.45	0.50	F 7056
42	A,B		67.91	67.41	19	28	14	2.5	9	32	56	23	10	0.49	0.55	F 7761
44	A,B		71.15	70.64	19	28	14	2.5	9	32	59	23	10	0.55	0.60	F 7761
48	A,B		77.62	77.11	19	28	14	2.5	9	32	66	23	12	0.65	0.70	F 8366
50	A,B		80.85	80.34	19	28	14	2.5	9	34	69	25	12	0.71	0.76	F 8871
60	A,B		97.02	96.51	19	28	14	2.5	9	36	84	27	15	1.0	1.0	F 11190
72	A,B		116.43	115.92	19	28	14	2.5	9	38	104	29	15	1.5	1.5	F123105

For the d MAX dimensions, please consult us when you machine keyways.

Type XL sintered alloy pulley (for light duty)

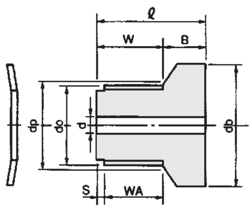
The synchronous pulley S is a pulley made of a sintered alloy that has an equivalent level of performance to cut pulleys and that can be immediately delivered at low prices.

(Pulley Designation) **(Example)** 20 XL 037 BF − S

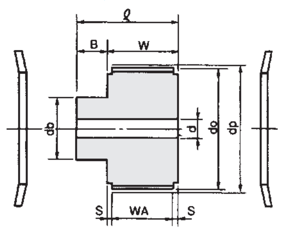
- 20: No. of teeth of pulley (20 teeth)
- XL: Pulley tooth profile (Type XL)
- 037: Pulley nominal width (For a belt width of 0.37 inches: 9.5 mm)
- BF: Pulley profile (Type B, with flange)
- S: Symbol for sintering

(Pulley Profile)

Type SF



Type BF



XL037S (Common to belt widths of 6.4 mm, 7.9 mm, and 9.5 mm)

: Standard stock **The other sizes are made to order.**

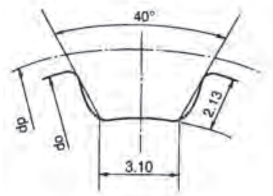
(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	Roughly calculated pulley mass (kg)	Flange part No.
10	SF	Sintered alloy	16.17	15.66	13.5	23.5	11	2.5	10	24	8	4	0.039	F 2412
11	SF		17.79	17.28	13.5	23.5	11	2.5	10	24	9	5	0.041	F 2412
12	SF		19.40	18.90	13.5	23.5	11	2.5	10	25	10	5	0.048	F 2515
13	SF		21.02	20.51	13.5	23.5	11	2.5	10	28	14	6	0.058	F 2817
14	SF		22.64	22.13	13.5	23.5	11	2.5	10	28	14	6	0.061	F 2817
15	SF		24.26	23.75	13.5	23.5	11	2.5	10	32	14	6	0.079	F 3220
16	BF		25.87	25.36	16	25	11	2.5	9	16	10	6	0.048	F 3220
18	BF		29.11	28.60	16	25	11	2.5	9	20	12	6	0.069	F 3525
19	BF		30.72	30.22	16	25	11	2.5	9	22	14	6	0.081	F 3525
20	BF		32.34	31.83	16	25	11	2.5	9	22	14	8	0.080	F 3525
21	BF		33.96	33.45	16	25	11	2.5	9	22	16	8	0.087	F 3925
22	BF		35.57	35.07	16	25	11	2.5	9	25	17	8	0.10	F 4531
24	BF		38.81	38.30	16	25	11	2.5	9	25	17	8	0.12	F 4531
25	BF		40.43	39.92	16	25	11	2.5	9	30	20	8	0.14	F 4836
26	BF		42.04	41.53	16	25	11	2.5	9	30	20	8	0.15	F 4836
27	BF		43.66	43.15	16	25	11	2.5	9	30	20	8	0.16	F 4836
28	BF		45.28	44.77	16	25	11	2.5	9	33	20	8	0.18	F 5541
30	BF		48.51	48.00	16	25	11	2.5	9	33	20	8	0.20	F 5541

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)

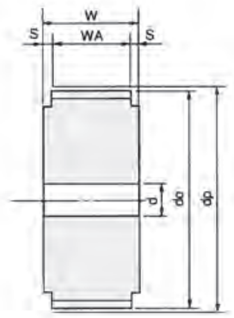
Type L

(Pulley Tooth Profile Dimensions)

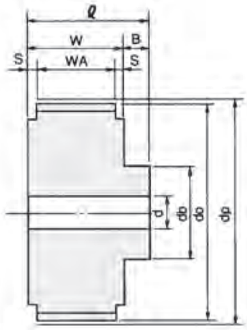


(Pulley Profile)

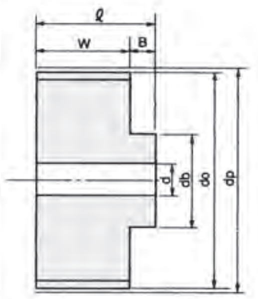
Type A



Type B



Type B₁



(Pulley Designation) **(Example)** 30 L 050 B

- 30: No. of teeth of pulley (30 teeth)
- L: Pulley tooth profile (Type L)
- 050: Pulley nominal width (For a belt width of 0.5 inches: 12.7 mm)
- B: Pulley profile (Type B)

The flanges for Types AF and BF are not installed on the pulley body. When using the flanges, install them by referring to the **installation procedure** **(→ P. 190)**.

L050 (For a belt width of 12.7 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX A	d MAX B,B₁	d MIN A,B,B₁	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B₁	Flange part No.
10	A,B	Carbon steel for machine construction	30.32	29.56	19	31	14	2.5	12	22	19	12	8	0.08	0.11	F 3925
12	A,B		36.38	35.62	19	31	14	2.5	12	27	22	17	8	0.12	0.17	F 4531
14	A,B		42.45	41.68	19	31	14	2.5	12	30	27	20	10	0.17	0.22	F 4836
15	A,B		45.48	44.72	19	31	14	2.5	12	30	29	20	10	0.19	0.25	F 4836
16	A,B		48.51	47.75	19	31	14	2.5	12	32	32	20	10	0.23	0.29	F 5541
18	A,B		54.57	53.81	19	31	14	2.5	12	36	37	24	12	0.29	0.38	F 6146
19	A,B		57.61	56.84	19	31	14	2.5	12	40	40	26	12	0.33	0.44	F 6751
20	A,B		60.64	59.88	19	31	14	2.5	12	40	42	26	12	0.37	0.48	F 6751
21	A,B		63.67	62.91	19	31	14	2.5	12	45	45	30	12	0.41	0.55	F 7056
22	A,B		66.70	65.94	19	31	14	2.5	12	45	47	30	12	0.45	0.59	F 7761
23	A,B		69.73	68.97	19	31	14	2.5	12	45	50	30	12	0.50	0.64	F 7761
24	A,B		72.77	72.00	19	31	14	2.5	12	50	52	34	12	0.55	0.72	F 8366
25	A,B		75.80	75.04	19	31	14	2.5	12	50	55	34	12	0.60	0.77	F 8366
26	A,B		78.83	78.07	19	31	14	2.5	12	50	57	34	12	0.65	0.83	F 8871
28	A,B		84.89	84.13	19	31	14	2.5	12	50	62	34	12	0.76	0.94	F 9575
30	A,B		90.96	90.20	19	31	14	2.5	12	56	67	36	15	0.88	1.0	F 9980
32	A,B		97.02	96.26	19	31	14	2.5	12	56	73	36	15	1.0	1.2	F 10385
34	A,B		103.08	102.32	19	31	14	2.5	12	63	77	39	15	1.1	1.4	F 11595
36	A,B		109.15	108.39	19	31	14	2.5	12	63	82	39	15	1.2	1.5	F119100
40	A,B		121.28	120.51	19	31	14	2.5	12	63	93	39	20	1.5	1.8	F131110
42	A,B		127.34	126.58	19	31	14	2.5	12	63	98	39	20	1.7	2.0	F135115
44	A,B		133.40	132.64	19	31	14	2.5	12	71	103	44	20	1.9	2.2	F140120
48	A,B		145.53	144.77	19	31	14	2.5	12	71	113	44	20	2.3	2.6	F152130
50	A,B		151.60	150.83	19	31	14	2.5	12	71	118	44	20	2.5	2.8	F160140
60	B₁		181.91	181.15	19	31	-	-	12	71	-	44	20	-	4.0	-
72	B₁		218.30	217.53	19	31	-	-	12	80	-	50	25	-	5.8	-
84	B₁		254.68	253.92	19	31	-	-	12	80	-	50	25	-	7.8	-

For the d MAX dimensions, please consult us when you machine keyways.

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type L

L075 (For a belt width of 19.0 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d			Roughly calculated pulley mass (kg)		Flange part No.
											MAX		MIN			
											A	B,B_1	A,B,B_1	A	B,B_1	
12	A,B	Carbon steel for machine construction	36.38	35.62	26	38	21	2.5	12	27	22	17	8	0.16	0.21	F 4531
14	A,B		42.45	41.68	26	38	21	2.5	12	30	27	20	10	0.23	0.29	F 4836
15	A,B		45.48	44.72	26	38	21	2.5	12	30	29	20	10	0.27	0.33	F 4836
16	A,B		48.51	47.75	26	38	21	2.5	12	32	32	20	10	0.31	0.38	F 5541
18	A,B		54.57	53.81	26	38	21	2.5	12	36	37	24	12	0.40	0.48	F 6146
19	A,B		57.61	56.84	26	38	21	2.5	12	40	40	26	12	0.45	0.56	F 6751
20	A,B		60.64	59.88	26	38	21	2.5	12	40	42	26	12	0.50	0.61	F 6751
21	A,B		63.67	62.91	26	38	21	2.5	12	45	45	28	12	0.56	0.70	F 7056
22	A,B		66.70	65.94	26	38	21	2.5	12	45	47	28	12	0.62	0.76	F 7761
23	A,B		69.73	68.97	26	38	21	2.5	12	45	50	28	12	0.69	0.83	F 7761
24	A,B		72.77	72.00	26	38	21	2.5	12	50	52	30	12	0.75	0.93	F 8366
25	A,B		75.80	75.04	26	38	21	2.5	12	50	55	30	12	0.82	1.0	F 8366
26	A,B		78.83	78.07	26	38	21	2.5	12	50	57	30	12	0.89	1.0	F 8871
28	A,B		84.89	84.13	26	38	21	2.5	12	50	62	30	12	1.0	1.2	F 9575
30	A,B		90.96	90.20	26	38	21	2.5	12	56	67	32	15	1.2	1.4	F 9980
32	A,B		97.02	96.26	26	38	21	2.5	12	56	73	32	15	1.3	1.5	F 10385
34	A,B		103.08	102.32	26	38	21	2.5	12	63	77	36	15	1.5	1.8	F 11595
36	A,B		109.15	108.39	26	38	21	2.5	12	63	82	36	15	1.7	2.0	F119100
40	A,B		121.28	120.51	26	38	21	2.5	12	63	93	36	20	2.1	2.4	F131110
42	A,B		127.34	126.58	26	38	21	2.5	12	63	98	36	20	2.4	2.6	F135115
44	A,B		133.40	132.64	26	38	21	2.5	12	71	103	40	20	2.6	3.0	F140120
48	A,B		145.53	144.77	26	38	21	2.5	12	71	113	40	20	3.1	3.5	F152130
50	A,B		151.60	150.83	26	38	21	2.5	12	71	118	40	20	3.4	3.8	F160140
60	B_1		181.91	181.15	26	38	-	-	12	71	-	40	20	-	5.4	-
72	B_1		218.30	217.53	26	38	-	-	12	80	-	50	25	-	7.8	-
84	B_1		254.68	253.92	26	38	-	-	12	80	-	50	25	-	10.5	-

L100 (For a belt width of 25.4 mm)

: Standard stock **The other sizes are made to order.**

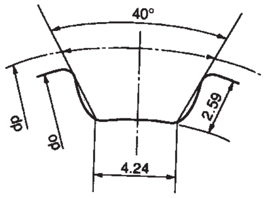
(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d			Roughly calculated pulley mass (kg)		Flange part No.
											MAX		MIN			
											A	B, B_1	A, B, B_1	A	B, B_1	
14	A,B	Carbon steel for machine construction	42.45	41.68	32	44	27	2.5	12	30	27	20	10	0.28	0.34	F 4836
15	A,B		45.48	44.72	32	44	27	2.5	12	30	29	20	10	0.33	0.39	F 4836
16	A,B		48.51	47.75	32	44	27	2.5	12	32	32	20	10	0.38	0.45	F 5541
18	A,B		54.57	53.81	32	44	27	2.5	12	36	37	24	12	0.49	0.58	F 6146
19	A,B		57.61	56.84	32	44	27	2.5	12	40	40	26	12	0.56	0.66	F 6751
20	A,B		60.64	59.88	32	44	27	2.5	12	40	42	26	12	0.62	0.73	F 6751
21	A,B		63.67	62.91	32	44	27	2.5	12	45	45	28	12	0.69	0.83	F 7056
22	A,B		66.70	65.94	32	44	27	2.5	12	45	47	28	12	0.77	0.91	F 7761
23	A,B		69.73	68.97	32	44	27	2.5	12	45	50	28	12	0.85	0.98	F 7761
24	A,B		72.77	72.00	32	44	27	2.5	12	50	52	30	12	0.93	1.1	F 8366
25	A,B		75.80	75.04	32	44	27	2.5	12	50	55	30	12	1.0	1.1	F 8366
26	A,B		78.83	78.07	32	44	27	2.5	12	50	57	30	12	1.1	1.2	F 8871
28	A,B		84.89	84.13	32	44	27	2.5	12	50	62	30	12	1.2	1.4	F 9575
30	A,B		90.96	90.20	32	44	27	2.5	12	56	67	32	15	1.4	1.6	F 9980
32	A,B		97.02	96.26	32	44	27	2.5	12	56	73	32	15	1.7	1.9	F 10385
34	A,B		103.08	102.32	32	44	27	2.5	12	63	77	36	15	1.9	2.2	F 11595
36	A,B		109.15	108.39	32	44	27	2.5	12	63	82	36	15	2.1	2.4	F119100
40	A,B		121.28	120.51	32	44	27	2.5	12	63	93	36	20	2.6	2.9	F131110
42	A,B		127.34	126.58	32	44	27	2.5	12	63	98	36	20	2.9	3.2	F135115
44	A,B		133.40	132.64	32	44	27	2.5	12	71	103	40	20	3.2	3.6	F140120
48	A,B		145.53	144.77	32	44	27	2.5	12	71	113	40	20	3.9	4.2	F152130
50	A,B		151.60	150.83	32	44	27	2.5	12	71	118	40	20	4.2	4.6	F160140
60	B_1		181.91	181.15	32	44	-	-	12	71	-	40	20	-	6.6	-
72	B_1		218.30	217.53	32	44	-	-	12	80	-	50	25	-	9.5	-
84	B_1		254.68	253.92	32	44	-	-	12	80	-	50	25	-	12.8	-

For the d MAX dimensions, please consult us when you machine keyways.

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type H

(Pulley Tooth Profile Dimensions)



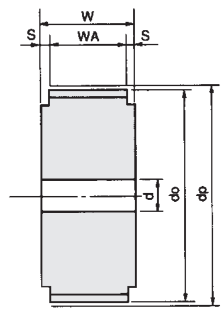
(Pulley Designation)

(Example) 15 H 100 A

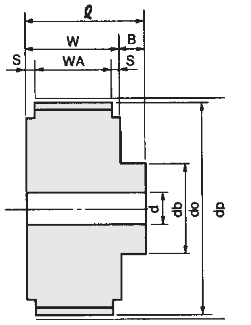
No. of teeth of pulley (15 teeth)
Pulley tooth profile (Type H)
Pulley nominal width (For a belt width of 1 inch: 25.4 mm)
Pulley profile (Type A)

(Pulley Profile)

Type A



Type B



H100 (For a belt width of 25.4 mm)

: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX A	d MAX B,B_1	d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
14	A,B	Carbon steel for machine construction	56.60	55.22	32	47	27	2.5	15	39	35	26	15	0.50	0.62	F 6146
15	A,B		60.64	59.27	32	47	27	2.5	15	45	38	30	15	0.58	0.75	F 6751
16	A,B		64.68	63.31	32	47	27	2.5	15	48	42	30	15	0.68	0.87	F 7056
18	A,B		72.77	71.39	32	47	27	2.5	15	50	48	32	15	0.88	1.0	F 7761
19	A,B		76.81	75.44	32	47	27	2.5	15	50	52	32	15	1.0	1.2	F 8366
20	A,B		80.85	79.48	32	47	27	2.5	15	56	55	38	15	1.1	1.3	F 8871
21	A,B		84.89	83.52	32	47	27	2.5	15	56	58	38	15	1.2	1.5	F 9575
22	A,B		88.94	87.56	32	47	27	2.5	15	56	62	38	15	1.3	1.6	F 9575
24	A,B		97.02	95.65	32	47	27	2.5	15	56	68	38	15	1.6	1.9	F 10385
25	A,B		101.06	99.69	32	47	27	2.5	15	63	72	38	20	1.7	2.1	F 11190
26	A,B		105.11	103.73	32	47	27	2.5	15	63	75	38	20	1.9	2.2	F 11190
28	A,B		113.19	111.82	32	47	27	2.5	15	63	82	38	20	2.2	2.6	F119100
30	A,B		121.28	119.90	32	47	27	2.5	15	63	88	38	20	2.6	2.9	F127105
32	A,B		129.36	127.99	32	47	27	2.5	15	63	95	38	20	3.0	3.3	F135115
34	A,B		137.45	136.07	32	47	27	2.5	15	63	102	38	20	3.4	3.7	F144125
36	A,B		145.53	144.16	32	47	27	2.5	15	71	108	40	20	3.8	4.3	F152130
40	B_1		161.70	160.33	32	47	-	-	15	90	-	52	20	-	5.5	-
42	B_1		169.79	168.41	32	47	-	-	15	90	-	52	25	-	6.0	-
44	B_1		177.87	176.50	32	47	-	-	15	90	-	52	25	-	6.5	-
48	B_1		194.04	192.67	32	47	-	-	15	90	-	52	25	-	7.7	-
50	B_1		202.13	200.76	32	47	-	-	15	90	-	52	25	-	8.3	-
60	B_1		242.55	241.18	32	47	-	-	15	90	-	52	30	-	11.7	-
72	B_1		291.06	289.69	32	47	-	-	15	90	-	52	30	-	16.7	-
84	B_1		339.57	338.20	32	47	-	-	15	90	-	52	30	-	22.7	-
96	B_1		388.08	386.71	32	47	-	-	15	90	-	52	30	-	29.6	-

H150 (For a belt width of 38.1 mm)

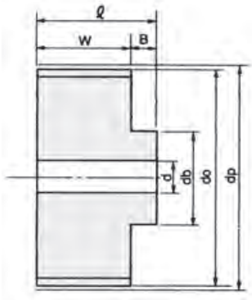
: Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX A	d MAX B,B_1	d MIN A,B,B_1	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,B_1	Flange part No.
14	A,B	Carbon steel for machine construction	56.60	55.22	45	60	40	2.5	15	39	35	26	15	0.70	0.82	F 6146
15	A,B		60.64	59.27	45	60	40	2.5	15	45	38	30	15	0.82	0.99	F 6751
16	A,B		64.68	63.31	45	60	40	2.5	15	48	42	30	15	0.95	1.1	F 7056
18	A,B		72.77	71.39	45	60	40	2.5	15	50	48	32	15	1.2	1.4	F 7761
19	A,B		76.81	75.44	45	60	40	2.5	15	50	52	32	15	1.4	1.6	F 8366
20	A,B		80.85	79.48	45	60	40	2.5	15	56	55	38	15	1.5	1.8	F 8871
21	A,B		84.89	83.52	45	60	40	2.5	15	56	58	38	15	1.7	2.0	F 9575
22	A,B		88.94	87.56	45	60	40	2.5	15	56	62	38	15	1.9	2.2	F 9575
24	A,B		97.02	95.65	45	60	40	2.5	15	56	68	38	15	2.3	2.6	F 10385
25	A,B		101.06	99.69	45	60	40	2.5	15	63	72	38	20	2.5	2.8	F 11190
26	A,B		105.11	103.73	45	60	40	2.5	15	63	75	38	20	2.7	3.0	F 11190
28	A,B		113.19	111.82	45	60	40	2.5	15	63	82	38	20	3.1	3.5	F119100
30	A,B		121.28	119.90	45	60	40	2.5	15	63	88	38	20	3.7	4.0	F127105
32	A,B		129.36	127.99	45	60	40	2.5	15	63	95	38	20	4.2	4.5	F135115
34	A,B		137.45	136.07	45	60	40	2.5	15	63	102	38	20	4.8	5.1	F144125
36	A,B		145.53	144.16	45	60	40	2.5	15	71	108	40	20	5.4	5.8	F152130
40	B_1		161.70	160.33	45	60	-	-	15	90	-	52	20	-	7.5	-
42	B_1		169.79	168.41	45	60	-	-	15	90	-	52	25	-	8.1	-
44	B_1		177.87	176.50	45	60	-	-	15	90	-	52	25	-	8.9	-
46	B_1		185.96	184.59	45	60	-	-	15	90	-	52	25	-	9.7	-
48	B_1		194.04	192.67	45	60	-	-	15	90	-	52	25	-	10.5	-
50	B_1		202.13	200.76	45	60	-	-	15	90	-	52	25	-	11.4	-
60	B_1		242.55	241.18	45	60	-	-	15	90	-	52	30	-	16.2	-
72	B_1		291.06	289.69	45	60	-	-	15	90	-	52	30	-	23.3	-
84	B_1		339.57	338.20	45	60	-	-	15	90	-	52	30	-	31.7	-
96	B_1		388.08	386.71	45	60	-	-	15	90	-	52	30	-	41.4	-

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type H

Type B_1



Although Types AF and BF come with flanges, the flange (flange number in accordance with the number of teeth) is not installed on the pulley body. When using the flanges, install them by referring to the **installation procedure (→ P. 190)**.

H200 (For a belt width of 50.8 mm)

(shaded): Standard stock **The other sizes are made to order.**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d			Roughly calculated pulley mass (kg)		Flange part No.
											MAX		MIN			
											A	B,B_1	A,B,B_1	A	B,B_1	
14	A,B	Carbon steel for machine construction	56.60	55.22	59	74	54	2.5	15	39	35	26	15	0.92	1.0	F 6146
15	A,B		60.64	59.27	59	74	54	2.5	15	45	38	30	15	1.0	1.2	F 6751
16	A,B		64.68	63.31	59	74	54	2.5	15	48	42	30	15	1.2	1.4	F 7056
18	A,B		72.77	71.39	59	74	54	2.5	15	50	48	32	15	1.6	1.8	F 7761
19	A,B		76.81	75.44	59	74	54	2.5	15	50	52	32	15	1.8	2.0	F 8366
20	A,B		80.85	79.48	59	74	54	2.5	15	56	55	38	15	2.0	2.3	F 8871
21	A,B		84.89	83.52	59	74	54	2.5	15	56	58	38	15	2.2	2.5	F 9575
22	A,B		88.94	87.56	59	74	54	2.5	15	56	62	38	15	2.5	2.8	F 9575
24	A,B		97.02	95.65	59	74	54	2.5	15	56	68	38	15	3.0	3.3	F 10385
25	A,B		101.06	99.69	59	74	54	2.5	15	63	72	38	20	3.2	3.6	F 11190
26	A,B		105.11	103.73	59	74	54	2.5	15	63	75	38	20	3.5	3.9	F 11190
28	A,B		113.19	111.82	59	74	54	2.5	15	63	82	38	20	4.1	4.5	F119100
30	A,B		121.28	119.90	59	74	54	2.5	15	63	88	38	20	4.8	5.1	F127105
32	A,B		129.36	127.99	59	74	54	2.5	15	63	95	38	20	5.5	5.9	F135115
34	A,B		137.45	136.07	59	74	54	2.5	15	63	102	38	20	6.3	6.6	F144125
36	A,B		145.53	144.16	59	74	54	2.5	15	71	108	40	20	7.1	7.5	F152130
38	A,B		153.62	152.24	59	74	54	2.5	15	71	114	52	20	7.9	8.4	F160140
40	B_1		161.70	160.33	59	74	-	-	15	90	-	52	20	-	9.6	-
42	B_1		169.79	168.41	59	74	-	-	15	90	-	52	25	-	10.5	-
44	B_1		177.87	176.50	59	74	-	-	15	90	-	52	25	-	11.5	-
48	B_1		194.04	192.67	59	74	-	-	15	90	-	52	25	-	13.6	-
50	B_1		202.13	200.76	59	74	-	-	15	90	-	52	25	-	14.7	-
60	B_1		242.55	241.18	59	74	-	-	15	100	-	60	30	-	21.0	-
72	B_1		291.06	289.69	59	74	-	-	15	100	-	60	30	-	30.3	-
84	B_1		339.57	338.20	59	74	-	-	15	100	-	60	30	-	41.3	-
96	B_1		388.08	386.71	59	74	-	-	15	100	-	60	30	-	54.0	-

H300 (For a belt width of 76.2 mm)

(shaded): Standard stock **The other sizes are made to order.**

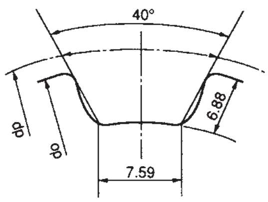
(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d			Roughly calculated pulley mass (kg)		Flange part No.
											MAX		MIN			
											A	B,B_1	A,B,B_1	A	B,B_1	
16	A,B	Carbon steel for machine construction	64.68	63.31	85	100	80	2.5	15	48	42	30	15	1.8	2.0	F 7056
18	A,B		72.77	71.39	85	100	80	2.5	15	50	48	32	15	2.3	2.5	F 7761
19	A,B		76.81	75.44	85	100	80	2.5	15	50	52	32	15	2.6	2.8	F 8366
20	A,B		80.85	79.48	85	100	80	2.5	15	56	55	38	15	2.9	3.2	F 8871
21	A,B		84.89	83.52	85	100	80	2.5	15	56	58	38	15	3.3	3.5	F 9575
22	A,B		88.94	87.56	85	100	80	2.5	15	56	62	38	15	3.6	3.9	F 9575
24	A,B		97.02	95.65	85	100	80	2.5	15	56	68	38	15	4.4	4.6	F 10385
25	A,B		101.06	99.69	85	100	80	2.5	15	63	72	38	20	4.7	5.0	F 11190
26	A,B		105.11	103.73	85	100	80	2.5	15	63	75	38	20	5.1	5.4	F 11190
28	A,B		113.19	111.82	85	100	80	2.5	15	63	82	38	20	6.0	6.3	F119100
30	A,B		121.28	119.90	85	100	80	2.5	15	63	88	38	20	6.9	7.3	F127105
32	A,B		129.36	127.99	85	100	80	2.5	15	63	95	38	20	8.0	8.3	F135115
34	A,B		137.45	136.07	85	100	80	2.5	15	63	102	38	20	9.1	9.4	F144125
36	A,B		145.53	144.16	85	100	80	2.5	15	71	108	40	20	10.2	10.7	F152130
40	B_1		161.70	160.33	85	100	-	-	15	90	-	52	20	-	13.5	-
42	B_1		169.79	168.41	85	100	-	-	15	90	-	52	25	-	14.8	-
44	B_1		177.87	176.50	85	100	-	-	15	90	-	52	25	-	16.2	-
48	B_1		194.04	192.67	85	100	-	-	15	90	-	52	25	-	19.3	-
60	B_1		242.55	241.18	85	100	-	-	15	100	-	60	30	-	30.0	-
72	B_1		291.06	289.69	85	100	-	-	15	100	-	60	30	-	43.4	-

For the d MAX dimensions, please consult us when you machine keyways.

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type XH

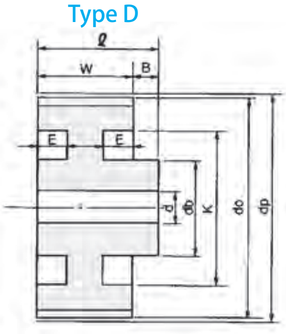
(Pulley Tooth Profile Dimensions)



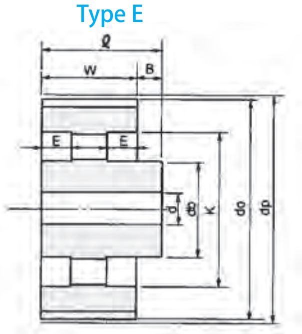
(Pulley Profile)

Type A

Type D



Type E



*When you need flanges, flanges are installed using screws: refer to **P. 190**.

(Pulley Designation) **(Example)** 40 XH 200 D

- 40: No. of teeth of pulley (40 teeth)
- XH: Pulley tooth profile (Type XH)
- 200: Pulley nominal width (For a belt width of 2 inches: 50.8 mm)
- D: Pulley profile (Type D)

XH200 (For a belt width of 50.8 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d MAX	d MIN	K	E	Roughly calculated pulley mass (kg)
18	A	Carbon steel for machine construction	127.34	124.55	69	-	-	-	60	25	-	-	5.3
20	A		141.49	138.69	69	-	-	-	60	25	-	-	6.7
22	A		155.64	152.84	69	-	-	-	70	25	-	-	8.2
24	A		169.79	166.99	69	-	-	-	80	25	-	-	9.9
26	A		183.94	181.14	69	-	-	-	100	30	-	-	11.7
28	A		198.08	195.29	69	-	-	-	110	30	-	-	13.8
30	A		212.23	209.44	69	-	-	-	120	30	-	-	16.0
32	D		226.38	223.59	69	100	31	110	65	35	172	25	16.8
36	D		254.68	251.89	69	100	31	116	70	35	200	25	19.9
40	D		282.98	280.18	69	100	31	116	70	35	228	25	22.5
44	D		311.28	308.48	69	100	31	125	75	35	256	24	27.1
48	D		339.57	336.78	69	100	31	130	80	40	284	24	30.7
60	E		424.47	421.67	69	100	31	135	85	40	370	24	38.6
72	E		509.36	506.57	69	100	31	145	95	40	454	23	51.3
84	E		594.25	591.46	69	100	31	152	100	45	538	23	64.4
96	E		679.15	676.35	69	100	31	160	105	45	624	23	76.3
120	E		848.93	846.14	69	100	31	170	115	45	790	22	118

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type XH

XH300 (For a belt width of 76.2 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d		K	E	Roughly calculated pulley mass (kg)
									MAX	MIN			
18	A	Carbon steel for machine construction	127.34	124.55	96	-	-	-	60	25	-	-	7.4
20	A		141.49	138.69	96	-	-	-	60	25	-	-	9.3
22	A		155.64	152.84	96	-	-	-	70	25	-	-	11.5
24	A		169.79	166.99	96	-	-	-	80	25	-	-	13.9
26	A		183.94	181.14	96	-	-	-	100	30	-	-	16.4
28	A		198.08	195.29	96	-	-	-	110	30	-	-	19.3
30	A		212.23	209.44	96	-	-	-	120	30	-	-	22.4
32	D		226.38	223.59	96	130	34	110	65	35	172	35	22.6
36	D		254.68	251.89	96	130	34	116	70	35	200	35	26.8
40	D		282.98	280.18	96	130	34	116	70	35	228	35	30.4
44	D		311.28	308.48	96	130	34	125	75	35	256	34	36.3
48	D		339.57	336.78	96	130	34	130	80	40	284	34	41.1
60	E		424.47	421.67	96	130	34	135	85	40	370	34	51.9
72	E		509.36	506.57	96	130	34	145	95	40	454	32.5	69.2
84	E		594.25	591.46	96	130	34	152	100	45	538	32.5	86.9
96	E		679.15	676.35	96	130	34	160	105	45	624	32.5	103
120	E		848.93	846.14	96	130	34	170	115	45	790	32.5	152.4

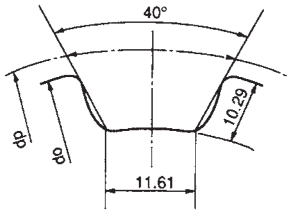
XH400 (For a belt width of 101.6 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d		K	E	Roughly calculated pulley mass (kg)
									MAX	MIN			
18	A	Carbon steel for machine construction	127.34	124.55	123	-	-	-	60	25	-	-	9.4
20	A		141.49	138.69	123	-	-	-	60	25	-	-	12.0
22	A		155.64	152.84	123	-	-	-	70	25	-	-	14.8
24	A		169.79	166.99	123	-	-	-	80	25	-	-	17.9
26	A		183.94	181.14	123	-	-	-	100	30	-	-	21.0
28	A		198.08	195.29	123	-	-	-	110	30	-	-	24.7
30	A		212.23	209.44	123	-	-	-	120	30	-	-	28.6
32	D		226.38	223.59	123	157	34	110	65	35	172	45	28.2
36	D		254.68	251.89	123	157	34	116	70	35	200	45	33.5
40	D		282.98	280.18	123	157	34	116	70	35	228	45	38
44	D		311.28	308.48	123	157	34	125	75	35	256	44	45.3
48	D		339.57	336.78	123	157	34	130	80	40	284	44	51.3
60	E		424.47	421.67	123	157	34	135	85	40	370	44	64.8
72	E		509.36	506.57	123	157	34	145	95	40	454	42	86.7
84	E		594.25	591.46	123	157	34	152	100	45	538	42	109
96	E		679.15	676.35	123	157	34	160	105	45	624	42	129.3
120	E		848.93	846.14	123	157	34	170	115	45	790	42	191.6

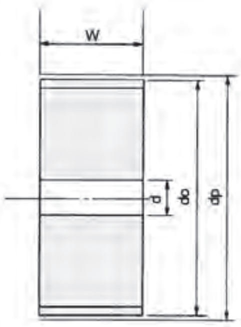
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type XXH

(Pulley Tooth Profile Dimensions)

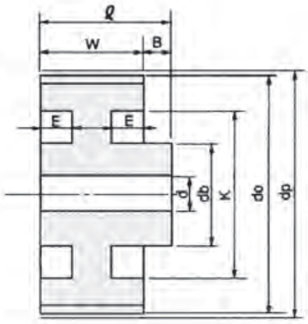


(Pulley Profile)

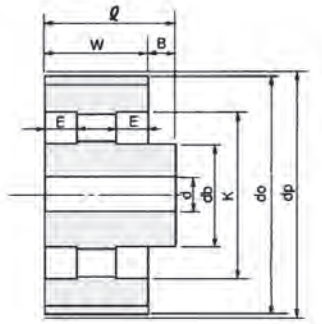
Type A



Type D



Type E



(Pulley Designation) **(Example)** 20 XXH 300 A

- 20: No. of teeth of pulley (20 teeth)
- XXH: Pulley tooth profile (Type XXH)
- 300: Pulley nominal width (For a belt width of 3 inches: 76.2 mm)
- A: Pulley profile (Type A)

*When you need flanges, flanges are installed using screws: refer to **P. 190**.

XXH200 (For a belt width of 50.8 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d MAX	d MIN	K	E	Roughly calculated pulley mass (kg)
18	A	Carbon steel for machine construction	181.91	178.87	69	-	-	-	100	30	-	-	10.9
20	A		202.13	199.08	69	-	-	-	120	30	-	-	13.8
22	A		222.34	219.29	69	-	-	-	140	30	-	-	17.0
24	A		242.55	239.50	69	-	-	-	160	30	-	-	20.5
26	A		262.76	259.72	69	-	-	-	180	30	-	-	24.1
28	D		282.98	279.93	69	106	37	165	110	45	220	23	30.9
32	D		323.40	320.35	69	106	37	170	110	45	260	23	36.4
34	D		343.62	340.57	69	106	37	170	115	50	280	23	38.6
36	D		363.83	360.78	69	106	37	175	120	50	300	23	42.1
40	D		404.25	401.21	69	106	37	180	125	50	340	23	48.7
44	D		444.68	441.63	69	106	37	185	130	50	380	22	57.1
48	E		485.10	482.06	69	106	37	190	135	50	420	22	61.3
60	E		606.38	603.33	69	106	37	200	140	60	540	22	81.1

XXH300 (For a belt width of 76.2 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d MAX	d MIN	K	E	Roughly calculated pulley mass (kg)
18	A	Carbon steel for machine construction	181.91	178.87	96	-	-	-	100	30	-	-	15.2
20	A		202.13	199.08	96	-	-	-	120	30	-	-	19.2
22	A		222.34	219.29	96	-	-	-	140	30	-	-	23.7
24	A		242.55	239.50	96	-	-	-	160	30	-	-	28.6
26	A		262.76	259.72	96	-	-	-	180	30	-	-	33.5
28	D		282.98	279.93	96	133	37	165	110	45	220	34	40.0
32	D		323.40	320.35	96	133	37	170	110	45	260	34	47.1
34	D		343.62	340.57	96	133	37	170	115	50	280	34	49.9
36	D		363.83	360.78	96	133	37	175	120	50	300	34	54.4
40	D		404.25	401.21	96	133	37	180	125	50	340	34	62.7
44	D		444.68	441.63	96	133	37	185	130	50	380	33	73.1
48	E		485.10	482.06	96	133	37	190	135	50	420	33	77.7
60	E		606.38	603.33	96	133	37	200	140	60	540	33	109.3

Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type XXH

XXH400 (For a belt width of 101.6 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d		K	E	Roughly calculated pulley mass (kg)
									MAX	MIN			
18	A	Carbon steel for machine construction	181.91	178.87	123	-	-	-	100	40	-	-	19.0
20	A		202.13	199.08	123	-	-	-	120	40	-	-	24.1
22	A		222.34	219.29	123	-	-	-	140	40	-	-	29.8
24	A		242.55	239.50	123	-	-	-	160	40	-	-	36.1
26	A		262.76	259.72	123	-	-	-	180	50	-	-	42.3
28	D		282.98	279.93	123	160	37	165	110	45	220	45	49.2
32	D		323.40	320.35	123	160	37	170	110	45	260	45	57.8
34	D		343.62	340.57	123	160	37	170	115	50	280	45	61.3
36	D		363.83	360.78	123	160	37	175	120	50	300	45	66.7
40	D		404.25	401.21	123	160	37	180	125	50	340	45	76.8
44	D		444.68	441.63	123	160	37	185	130	50	380	44	87.7
48	E		485.10	482.06	123	160	37	190	135	50	420	44	94.8
60	E		606.38	603.33	123	160	37	200	140	60	540	44	125

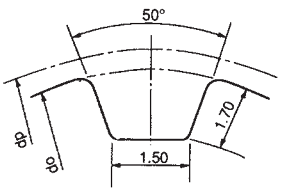
XXH500 (For a belt width of 127.0 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	B	db	d		K	E	Roughly calculated pulley mass (kg)
									MAX	MIN			
18	A	Carbon steel for machine construction	181.91	178.87	151	-	-	-	100	40	-	-	23.3
20	A		202.13	199.08	151	-	-	-	120	40	-	-	29.6
22	A		222.34	219.29	151	-	-	-	140	40	-	-	36.6
24	A		242.55	239.50	151	-	-	-	160	40	-	-	44.3
26	A		262.76	259.72	151	-	-	-	180	50	-	-	52
28	D		282.98	279.93	151	188	37	165	110	45	220	55	59.5
32	D		323.40	320.35	151	188	37	170	110	45	260	55	69.6
34	D		343.62	340.57	151	188	37	170	115	50	280	55	73.9
36	D		363.83	360.78	151	188	37	175	120	50	300	55	80.5
40	D		404.25	401.21	151	188	37	180	125	50	340	55	92.9
44	D		444.68	441.63	151	188	37	185	130	50	380	53	100.8
48	E		485.10	482.06	151	188	37	190	135	50	420	53	115.9
60	E		606.38	603.33	151	188	37	200	140	60	540	53	153.7

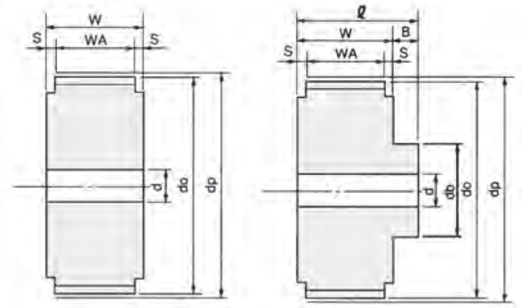
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type T 5

(Pulley Tooth Profile Dimensions)



(Pulley Profile)

Type A Type B



Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the **installation procedure** **(→ P. 190)**.

(Pulley Designation) **(Example)** 20 T5 — 10 AF

- 20: No. of teeth of pulley (20 teeth)
- T5: Pulley tooth profile (Type T5)
- 10: Pulley nominal width (For a belt width of 10 mm)
- AF: Pulley profile (Type A, with flange)

T5-10 (For a belt width of 10 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
12	A	Carbon steel for machine construction	19.10	18.25	16	-	11	2.5	-	-	8	5	0.025	-	F 2412
14	A		22.28	21.45	16	-	11	2.5	-	-	10	6	0.035	-	F 2515
15	A		23.87	23.05	16	-	11	2.5	-	-	10	6	0.041	-	F 2817
16	B		25.46	24.60	16	25	11	2.5	9	15	8	6	-	0.059	F 2817
18	B		28.65	27.80	16	25	11	2.5	9	18	10	6	-	0.080	F 3220
20	B		31.83	31.00	16	25	11	2.5	9	19	11	6	-	0.099	F 3525
22	B		35.01	34.25	16	25	11	2.5	9	22	15	8	-	0.12	F 3925
24	B		38.20	37.40	16	25	11	2.5	9	25	15	8	-	0.15	F 4531
25	B		39.79	39.00	16	25	11	2.5	9	25	15	8	-	0.16	F 4531
26	B		41.38	40.60	16	25	11	2.5	9	28	20	8	-	0.18	F 4531
28	B		44.56	43.75	16	25	11	2.5	9	30	20	8	-	0.21	F 4836
30	B		47.75	46.95	16	25	11	2.5	9	30	20	8	-	0.24	F 5541
32	B		50.93	50.10	16	25	11	2.5	9	30	20	10	-	0.26	F 5541
36	B		57.30	56.45	16	25	11	2.5	9	30	20	10	-	0.33	F 6146
40	B		63.66	62.85	16	25	11	2.5	9	35	25	10	-	0.42	F 6751
44	B		70.03	69.20	16	25	11	2.5	9	35	25	10	-	0.50	F 7761
48	B		76.39	75.55	16	25	11	2.5	9	35	25	10	-	0.59	F 8366
50	B		79.58	78.75	16	25	11	2.5	9	35	25	10	-	0.63	F 8366
60	B		95.49	94.65	16	25	11	2.5	9	35	25	10	-	0.90	F 9980
72	B		114.59	113.75	16	25	11	2.5	9	35	25	12	-	1.2	F119100

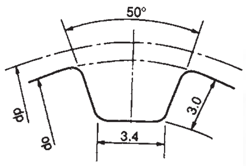
T5-15 (For a belt width of 15 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B	Flange part No.
12	A	Carbon steel for machine construction	19.10	18.25	22	-	17	2.5	-	-	8	5	0.034	-	F 2412
14	A		22.28	21.45	22	-	17	2.5	-	-	10	6	0.048	-	F 2515
15	A		23.87	23.05	22	-	17	2.5	-	-	10	6	0.057	-	F 2817
16	B		25.46	24.60	22	31	17	2.5	9	15	8	6	-	0.088	F 2817
18	B		28.65	27.80	22	31	17	2.5	9	18	10	6	-	0.11	F 3220
20	B		31.83	31.00	22	31	17	2.5	9	19	11	6	-	0.14	F 3525
22	B		35.01	34.25	22	31	17	2.5	9	22	15	8	-	0.18	F 3925
24	B		38.20	37.40	22	31	17	2.5	9	25	15	8	-	0.22	F 4531
25	B		39.79	39.00	22	31	17	2.5	9	25	15	8	-	0.24	F 4531
26	B		41.38	40.60	22	31	17	2.5	9	28	20	8	-	0.27	F 4531
28	B		44.56	43.75	22	31	17	2.5	9	30	20	8	-	0.32	F 4836
30	B		47.75	46.95	22	31	17	2.5	9	30	20	8	-	0.36	F 5541
32	B		50.93	50.10	22	31	17	2.5	9	30	20	10	-	0.39	F 5541
36	B		57.30	56.45	22	31	17	2.5	9	30	20	10	-	0.48	F 6146
40	B		63.66	62.85	22	31	17	2.5	9	35	25	10	-	0.61	F 6751
44	B		70.03	69.20	22	31	17	2.5	9	35	25	10	-	0.72	F 7761
48	B		76.39	75.55	22	31	17	2.5	9	35	25	10	-	0.84	F 8366
50	B		79.58	78.75	22	31	17	2.5	9	35	25	10	-	0.91	F 8366
60	B		95.49	94.65	22	31	17	2.5	9	35	25	10	-	1.2	F 9980
72	B		114.59	113.75	22	31	17	2.5	9	35	25	12	-	1.8	F119100

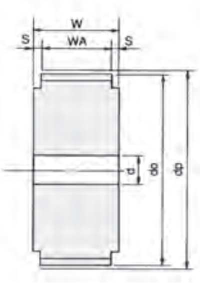
Table of Synchronous Pulley Standard Dimensions (Shaft-Hole-Machined Type)
Type T 10

(Pulley Tooth Profile Dimensions)

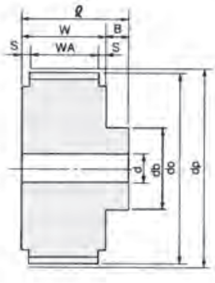


(Pulley Profile)

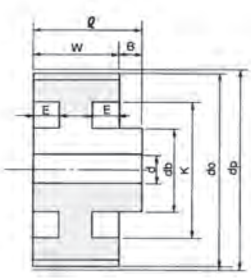
Type A



Type B



Type D



Although Types AF and BF come with flanges, the flanges (flange number in accordance with the number of teeth) are not installed on the pulley body. When using the flanges, install them by referring to the **installation procedure** **(→ P. 190)**.

(Pulley Designation) **(Example)** 28 T10 — 25 BF

- 28: No. of teeth of pulley (28 teeth)
- T10: Pulley tooth profile (Type T10)
- 25: Pulley nominal width (For a belt width of 25 mm)
- BF: Pulley profile (Type B, with flange)

T10-15 (For a belt width of 15 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	K	E	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,D	Flange part No.
12	A,B	Carbon steel for machine construction	38.20	36.35	22	32	17	2.5	10	25	15	8	-	-	0.14	0.17	FT 4828
14	A,B		44.56	42.70	22	32	17	2.5	10	30	20	10	-	-	0.20	0.24	FT 5333
15	A,B		47.75	45.90	22	32	17	2.5	10	33	22	10	-	-	0.23	0.29	FT 5939
16	A,B		50.93	49.05	22	32	17	2.5	10	35	24	10	-	-	0.27	0.34	FT 6242
18	A,B		57.30	55.45	22	32	17	2.5	10	37	26	12	-	-	0.35	0.42	FT 6848
20	A,B		63.66	61.80	22	32	17	2.5	10	40	28	12	-	-	0.44	0.53	FT 7555
22	A,B		70.03	68.15	22	32	17	2.5	10	40	28	12	-	-	0.55	0.64	FT 7753
24	A,B		76.39	74.55	22	32	17	2.5	10	40	28	12	-	-	0.67	0.76	FT 8363
25	A,B		79.58	77.70	22	32	17	2.5	10	40	28	12	-	-	0.73	0.82	FT 8969
26	A,B		82.76	80.90	22	32	17	2.5	10	45	30	12	-	-	0.80	0.91	FT 9272
28	A,B		89.13	87.25	22	32	17	2.5	10	45	30	12	-	-	0.94	1.0	FT 9878
30	A,B		95.49	93.65	22	32	17	2.5	10	45	30	12	-	-	1.0	1.2	FT 10887
32	A,B		101.86	100.00	22	35	17	2.5	13	50	32	14	-	-	1.2	1.4	FT 10887
36	A,B		114.59	112.75	22	35	17	2.5	13	50	32	14	-	-	1.6	1.7	FT120100
40	A,B		127.32	125.45	22	35	17	2.5	13	50	32	14	-	-	2.0	2.1	FT136116
44	D		140.06	138.20	22	35	-	-	13	55	34	16	120	8	-	1.5	-
48	D		152.79	150.95	22	35	-	-	13	55	34	16	132	8	-	1.7	-
50	D		159.15	157.30	22	35	-	-	13	60	35	16	140	8	-	1.8	-
60	D		190.99	189.10	22	35	-	-	13	60	35	16	170	8	-	2.4	-
72	D		229.18	227.30	22	35	-	-	13	60	35	16	180	8	-	4.2	-

T10-25 (For a belt width of 25 mm) **Made-to-order**

(Unit: mm)

No. of teeth	Profile	Material	dp	do	W	ℓ	WA	S	B	db	d MAX	d MIN	K	E	Roughly calculated pulley mass (kg) A	Roughly calculated pulley mass (kg) B,D	Flange part No.
12	A,B	Carbon steel for machine construction	38.20	36.35	32	45	27	2.5	13	25	15	8	-	-	0.20	0.25	FT 4828
14	A,B		44.56	42.70	32	45	27	2.5	13	30	20	10	-	-	0.29	0.35	FT 5333
15	A,B		47.75	45.90	32	45	27	2.5	13	33	22	10	-	-	0.34	0.42	FT 5939
16	A,B		50.93	49.05	32	45	27	2.5	13	35	24	10	-	-	0.39	0.48	FT 6242
18	A,B		57.30	55.45	32	45	27	2.5	13	37	26	12	-	-	0.51	0.61	FT 6848
20	A,B		63.66	61.80	32	45	27	2.5	13	40	28	12	-	-	0.65	0.77	FT 7555
22	A,B		70.03	68.15	32	45	27	2.5	13	40	28	12	-	-	0.80	0.92	FT 7753
24	A,B		76.39	74.55	32	45	27	2.5	13	40	28	12	-	-	0.98	1.0	FT 8363
25	A,B		79.58	77.70	32	45	27	2.5	13	40	28	12	-	-	1.0	1.1	FT 8969
26	A,B		82.76	80.90	32	45	27	2.5	13	45	30	12	-	-	1.1	1.3	FT 9272
28	A,B		89.13	87.25	32	45	27	2.5	13	45	30	12	-	-	1.3	1.5	FT 9878
30	A,B		95.49	93.65	32	45	27	2.5	13	45	30	12	-	-	1.5	1.7	FT 10887
32	A,B		101.86	100.00	32	45	27	2.5	13	50	32	14	-	-	1.8	2.0	FT 10887
36	A,B		114.59	112.75	32	45	27	2.5	13	50	32	14	-	-	2.3	2.5	FT120100
40	A,B		127.32	125.45	32	45	27	2.5	13	50	32	14	-	-	2.9	3.1	FT136116
44	D		140.06	138.20	32	50	-	-	18	55	34	16	120	11	-	2.3	-
48	D		152.79	150.95	32	50	-	-	18	55	34	16	132	11	-	2.6	-
50	D		159.15	157.30	32	50	-	-	18	60	35	16	140	11	-	2.8	-
60	D		190.99	189.10	32	50	-	-	18	60	35	16	170	11	-	3.7	-
72	D		229.18	227.30	32	50	-	-	18	60	35	16	180	11	-	6.3	-

STS Pulley and Synchronous Pulley Materials

Although the materials of standard pulleys are indicated in the table of dimensions for each type, we recommend the following materials for the pulleys.

- Carbon steel for machine construction S15C to S55C
- Spheroidal graphite cast iron FCD450 to 500
- Gray cast iron FC200 to 250
- High tensile aluminum alloy A2017 etc.
- Sintered alloy Iron type / Copper type
- Die-cast zinc alloy ZDC

*For light duty (Gray cast iron, High tensile aluminum alloy, Sintered alloy)

In addition to the above, we also manufacture products made of stainless-steel bar steel, rolled steel for general structure, and various types of resins; please consult us.

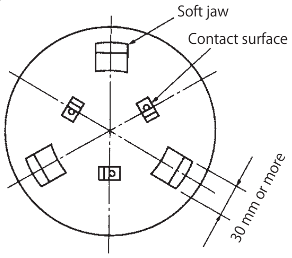
Post-Processing Method for Standard Pulley Shaft Holes

When you machine the shaft hole of a pulley, use the pulley's outside diameter as the reference.
When you machine the shaft hole of our pulleys, refer to the following operation procedure.

■ Machining procedure

Chuck the workpiece's outer periphery when you machine a shaft hole.

(1) Shaping soft jaws and contacts



① **Soft jaw shaping**
Machine the soft jaws in accordance with the workpiece dimensions each time.
(-0.1 to 0.2 mm from the outside diameter is appropriate.)
② **Machining of the contact surface plate**
For installation, make the three points uniform.
③ **After machining, check for run-out using a dial gauge.**

(2) Cleaning the workpiece
Wipe off dirt from workpieces cleanly.
Check the outer periphery and side faces (contact faces) of the workpiece to check that there is no hitting damage and if there is any swelling due to hitting damage, smooth it out with a file.

(3) Chucking the workpiece
Attach the workpiece, making sure that it is in contact with the contacts.

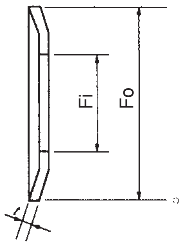
(4) Performing shaft hole machining

(Note)
When you perform machining using hard jaws, apply copper plates on the jaws, chuck the outer periphery of the workpiece, and center the workpiece using a dial gauge before machining.

Pulley Flanges

■ How to indicate standard flange part numbers

(Profile) Bending-pressed flange



(Indication example) FS 136 106

Flange inside diameter (Fi) 106 mm
Flange outside diameter (Fo) 136 mm

■ Materials and thicknesses (t) of standard flanges

The materials, thicknesses, and profiles of flanges used in standard pulleys are as follows.

(Standard flange)

Product type	Type	Material	Thickness t (mm)	Profile (Note)
STS Pulleys	S2M	Aℓ	1.0	Bending
	S3M	Aℓ	1.0	Bending
	S4.5M	SPC1	1.0	Bending
	S5M	SPC1	1.6	Bending
	S8M	SPC1	2.3	Bending
	S14M	SPC1	2.3	Bending
Synchronous pulley	MXL	Aℓ	1.0	Bending
	XL	SPC1	1.6	Bending
	L	SPC1	1.6	Bending
	H	SPC1	1.6	Bending
	T5	SPC1	1.6	Bending
	T10	SPC1	1.6	Bending

How to Install a Pulley Flange

STS and Synchronous Belts can be used at high torques and high speeds; hence, to prevent accidents, installation of a flange should be performed securely with the following procedure.

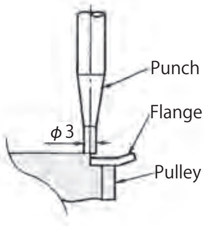
(1) Crimping method (standard flange)

Follow the steps below.

① Prepare an eye punch, a flat disk, a cylindrical fixture, and a hammer.

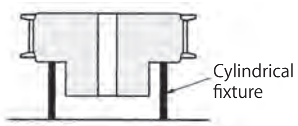
② When a foreign object is adhering to the flange-fitting section of the pulley, a gap is created between the pulley and the flange, preventing crimping; clean the flange-fitting section.

③ As shown in the following figure, place the pulley body on the flat disk and crimp the pulley body over the flange with the eye punch.



● When crimping a sintered pulley of Type XL, exercise due caution.
(Hitting it in the same way as you do for S45C may cause chipping.)

(Note)
* When crimping a Type-B pulley, the boss makes an unstable condition; use a cylindrical fixture so that the pulley can be crimped uniformly.



④ When crimping a flange, be sure to crimp it in diagonal order.

⑤ The number of crimping should be as follows.

■ STS pulley flange

Pulley outside diameter (mm)	No. of crimping (one side)
31 or less	6 sections or more
Over 31 to 50 or less	8 sections or more
Over 50 to 80 or less	10 sections or more
Over 80 to 150 or less	12 sections or more
Over 150 to 220 or less	16 sections or more
Over 220	20 sections or more

■ Synchronous pulley flange

Pulley outside diameter (mm)	No. of crimping (one side)
51 or less	4 sections or more
Over 51 to 80 or less	6 sections or more
Over 80 to 100 or less	8 sections or more
Over 100 to 120 or less	10 sections or more
Over 120 to 150 or less	12 sections or more
Over 150	16 sections or more

(Note) Flanges for a cast pulley should be installed with screws.

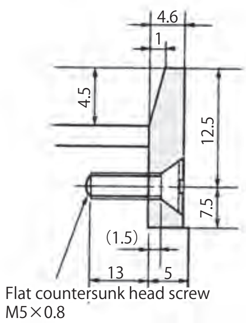
⑥ After installing flanges, check for looseness.

When a flange comes in the way due to a fixed center distance etc. and prevents belt installation, fastening with screws is effective. In this case, however, the standard flanges cannot be used; please contact us.

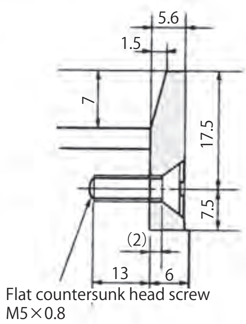
(2) Screw-fastening method

Flanges for large-diameter pulleys of Types S8M/S14M and pulleys of Types XH/XXH should be cut flanges, and fasten them on the pulley body using flat countersunk head screws.
(Reference)

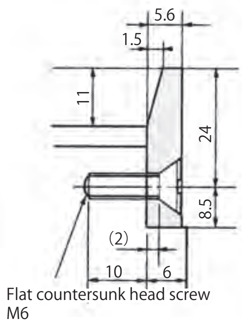
●Type S8M



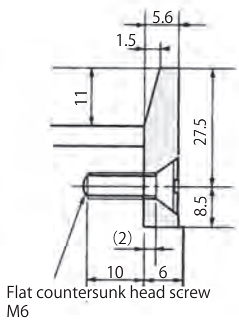
●Type S14M



●Type XH



●Type XXH



■ STS pulleys (KPS): No. of screws for fastening a flange (one side)

Pulley tooth profile / No. of fastening screws	Type S8M	Type S14M
8 sections or more	72S8M～95S8M	—
10 sections or more	96S8M～143S8M	60S14M～ 71S14M
12 sections or more	144S8M～156S8M	72S14M～ 84S14M
16 sections or more	157S8M or more	85S14M～120S14M
18 sections or more	—	121S14M～156S14M
20 sections or more	—	157 S14M or more

■ Synchronous pulleys: No. of screws for fastening a flange (one side)

Pulley tooth profile / No. of fastening screws	Type XH	Type XXH
4 sections or more	25XH or less	—
6 sections or more	26XH～ 35XH	24 XXH or less
8 sections or more	36XH～ 49XH	25XXH～ 31XXH
10 sections or more	50XH～ 60XH	32XXH～ 39XXH
12 sections or more	61XH～ 77XH	40XXH～ 47XXH
16 sections or more	78XH～109XH	48XXH～ 61XXH
18 sections or more	110XH or more	62XXH～ 72XXH
20 sections or more	—	73 XXH or more

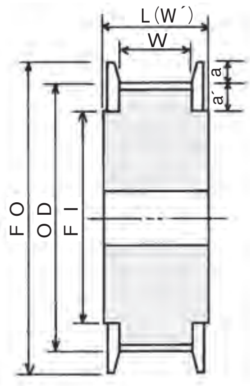
(3) Knurling method

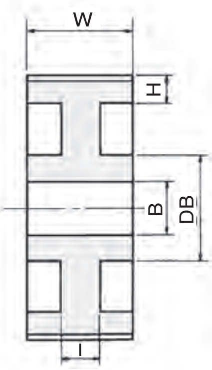
Crimping by knurling using a lathe is also often used.

Non-Standard Pulley Design

For non-standard pulley designs, refer to the following proportion of dimensions.

(Reference)





■ Belt width, pulley tooth width, and inside and outside flange diameters

A) STS Pulleys

(Unit: mm)

Pulley type	Belt standard widths		Pulley with flanges	Pulley without flanges	FO=OD+2a	FI=OD−2a'
	Nominal width	Belt width (mm)	W	L=W'	a	a'
S2M	0040	4	6	10	2	2
	0060	6	8	12	2	2
	0100	10	12	16	2	2
S3M	0060	6	8	12	3	2
	0100	10	12	16	3	2
	0150	15	17	21	3	2
S4.5M	0060	6	8	12	3	3
	0100	10	12	16	3	3
	0150	15	17	21	3	3
S5M	0100	10	12	17	4	4
	0150	15	17	22	4	4
	0200	20	23	28	4	4
	0250	25	28	33	4	4
S8M	0150	15	17	23(27)	5(4.5)	5(15.5)
	0250	25	28	34(38)	5(4.5)	5(15.5)
	0400	40	44	50(54)	5(4.5)	5(15.5)
	0600	60	65	71(75)	5(4.5)	5(15.5)
S14M	0400	40	46	52(58)	8(7)	8(18)
	0600	60	67	73(79)	8(7)	8(18)
	0800	80	88	94(100)	8(7)	8(18)
	1000	100	109	115(121)	8(7)	8(18)
	1200	120	130	136(142)	8(7)	8(18)

Note: The dimensions within the parentheses ( ) indicate those when flanges are fastened on a large-diameter pulley with screws.

b) Synchronous pulleys

(Unit: mm)

Pulley type	Belt standard widths		Pulley with flanges	Pulley without flanges	FO=OD+2a	FI=OD−2a'
	Nominal width	Belt width (mm)	W	L=W'	a	a'
MXL	3.2	3.2	4.0	8.0	2	2
	4.8	4.8	5.5	9.5	2	2
	6.4	6.4	7.5	11.5	2	2
	9.5	9.5	10.5	14.5	2	2
	12.7	12.7	14.0	16.0	2	2
XL	025	6.4	8.0	13.0	4	3
	031	7.9	9.5	14.5	4	3
	037	9.5	11.0	16.0	4	3
	050	12.7	14.0	19.0	4	3
L	050	12.7	14.0	19.0	4	5
	075	19.1	21.0	26.0	4	5
	100	25.4	27.0	32.0	4	5
	150	38.1	40.0	45.0	4	5
H	075	19.1	22.0	27.0	4	5
	100	25.4	27.0	32.0	4	5
	150	38.1	40.0	45.0	4	5
	200	50.8	54.0	59.0	4	5
	300	76.2	80.0	85.0	4	5
XH	200	50.8	57.0	69.0	11	21.5
	300	76.2	84.0	96.0	11	21.5
	400	101.6	111.0	123.0	11	21.5
XXH	200	50.8	57.0	69.0	11	25
	300	76.2	84.0	96.0	11	25
	400	101.6	111.0	123.0	11	25
	500	127.0	139.0	151.0	11	25

■ Dimensional proportion of each section of a pulley

a) Dimensional proportion of each section of an STS pulley

(Unit: mm)

W		30~50	51~70	71~90	91~170
H	S4.5M/S5M	10			
	S8M	15	18	20	25
	S14M	20	25	25	30
I	S4.5M/S5M	10			
	S8M	15	18	20	25
	S14M		20	25	35
DB		B×1.8~1.9			

b) Dimensional proportion of each section of a synchronous pulley

(Unit: mm)

W		30~50	51~70	71~90	91~170	171~
H	XL/L	13				
	H	15	15	18		
	XH		35	35	35	35
	XXH			40	40	40
I	H	15	15	20		
	XH/XXH			25	30	35
DB		B×1.8~1.9				

TL Bushing System

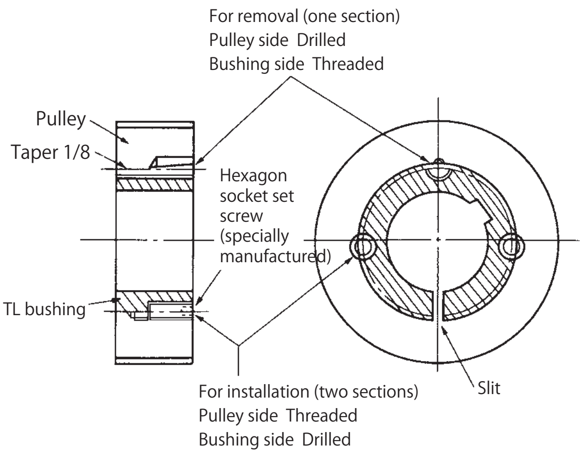
The TL Bushing System is a bushing system consisting of two products: a pulley body (product name: TL STS pulley/TL synchronous pulley) and a taper lock part bushing (product name: TL bushing).
The TL Bushing System is designed in the same way as bushing systems that are widely used in the U.S. and Europe and therefore can be used with a sense of security.

Features

- **Easy to install on and remove from a shaft.**
  Easy to remove and install a pulley at a position with poor workability and easy to replace a pulley when changing the revolution.
- **JIS keys can be used without any modification.**
  As the maximum shaft hole diameter is set targeting JIS keys, new and previous JIS keys can be used without any modification within the range of standard shaft diameters.
- **Facilitates machine maintenance and inspection.**
  It facilitates pulley removal for machine maintenance and inspection and allows significantly faster work.
- **Secure fastening with a shaft.**
  The bushing installation thread plays a role of a key in tightening and prevents the taper section from slipping.
- **Can be used in a small space.**
  The absence of projections, such as a bolt head, on the bushing allows effective use of the space.

TL Bushing Structure

- **Type X (Type Nos. 3622 to 11080)**



- **Type Y (Type Nos. 13090 to 160110)**

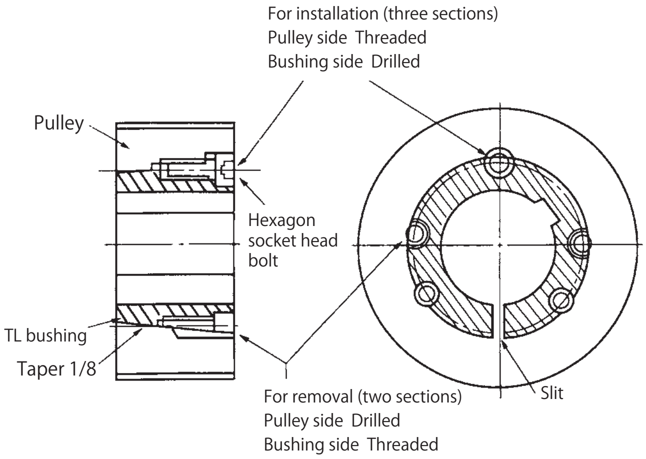
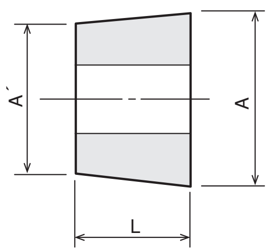


Table of TL Bushing Dimensions

Type No. (AL)	Maximum shaft dia. dmax (New JIS key)	Maximum shaft dia. dmax (Previous JIS key)	Bushing type	A	A'	L	Set screw or bolt Size	Set screw or bolt Qty.	Mass (kg) (dmax)	Mass (kg) (dmax/2)	GD² (kg•m²) (dmax)	GD² (kg•m²) (dmax/2)
3622	22	22	X	36	33.25	22	ⒶM6×12	2	0.09	0.13	0.00007	0.00008
4225	28	28	X	42	38.88	25	ⒶM6×12	2	0.12	0.21	0.00014	0.00018
5035	32	32	X	50	45.63	35	ⒶM8×16	2	0.25	0.41	0.00042	0.00052
6340	42	42	X	63	58.00	40	ⒶM10×18	2	0.44	0.74	0.00117	0.00150
8545	60	60	X	85	79.38	45	ⒶM12×25	2	0.82	1.51	0.00414	0.00570
11055	75	75	X	110	103.13	55	ⒶM16×32	2	1.8	3.1	0.0148	0.0195
11080	75	75	X	110	100.00	80	ⒶM16×32	2	2.5	4.4	0.0205	0.0273
13070	90	85	Y	130	121.25	70	ⒷM14×40	3	3.1	5.5	0.0356	0.0480
13090	90	85	Y	130	118.75	90	ⒷM14×40	3	3.8	6.9	0.0442	0.0590
14090	100	95	Y	140	128.75	90	ⒷM16×45	3	4.2	8.0	0.057	0.080
160110	110	110	Y	160	146.25	110	ⒷM20×50	3	7.2	13	0.122	0.164

(Note) Ⓐ represents a hexagon socket set screw (specially manufactured screw tip).
Ⓑ represents a hexagon socket head bolt (uses the entire thread).



TL bushing type number

110 80
Bushing dia. (A) — Bushing length (L)

Table of Standard Shaft Hole Diameters of TL Bushings

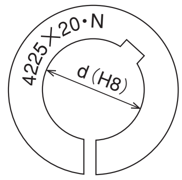
Keyways are available in new and previous JIS types; please specify the new or previous JIS when you place an order.
The keyway dimensions are finished with the tolerance for Js9 for the new JIS and F7 for the previous JIS.

(Unit: mm)

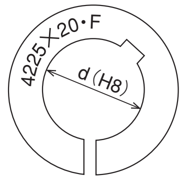
TL bushing type number	Standard shaft hole dia. (d)																							
	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70	75
3622	○	○	○	○	○	○	○																	
4225	○	○	○	○	○	○	○	○	○	○														
5035						○	○	○	○	○	○	○												
6340								○	○	○	○	○	○	◎	○	○								
8545										○	○	○	○	◎	○	○	○	○	○	○	○			
11055													○	◎	○	○	○	○	○	○	○	○	○	○
11080																○	○	○	○	○	○	○	○	○

TL bushing type number	Standard shaft hole dia. (d)																
	48	50	55	60	65	70	75	80	85	90	95	100	110	120	125	130	140
13070	○	○	○	○	○	○	○	○	○	◎							
13090	○	○	○	○	○	○	○	○	○	◎							
14090				○	○	○	○	○	○	○	○	◎					
160110							○	○	○	○	○	○	○				

TL bushing keyway indication



New JIS key indication (N)



Previous JIS key indication (F)

(Note)
- The ◎ mark above indicates that only new JIS keys are available. The ○ mark indicates that both new and previous JIS keys are available.
- The sizes shown above indicate those of standard stocks; we offer machining for other shaft hole dimensions as well.
(However, if the shaft hole diameter exceeds the maximum shaft hole diameter, please consult us.)
- When you place an order, please let us know the TL bushing part number, shaft hole diameter, and whether the keyway is for the new or previous JIS.

4225 × 20 N

TL bushing type number (4225)
Shaft hole dia. (20 mm)
Keyway for new JIS keys (Previous JIS keys: F)

Table of Applicable Type Numbers of TL Bushings

TL STS pulleys are available with the following number of teeth.

Type S8M

No. of teeth of pulley	Pulley nominal width			
	0150	0250	0400	0600
28	4225			
30	4225			
32	4225	5035		
34	4225	5035		
36	5035	5035	6340	
40	5035	6340	6340	
44	5035	6340	6340	
48	5035	6340	8545	8545
50	5035	6340	8545	8545
60	5035	6340	8545	8545
72	6340	6340	8545	8545
84	6340	8545	8545	8545
96	6340	8545	8545	11055
120	8545	8545	8545	11055
156	8545	8545	11055	11055

Type S14M

No. of teeth of pulley	Pulley nominal width				
	0400	0600	0800	1000	1200
28	8545	8545			
30	8545	8545			
32	8545	8545			
34	8545	8545			
36	8545	8545	11055	11080	
40	8545	8545	11055	11080	11080
42	8545	11055	11055	11080	11080
44	8545	11055	11055	11080	11080
48	8545	11055	11055	11080	11080
50	8545	11055	11055	11080	11080
60	8545	11055	11080	13090	13090
72	11055	11055	11080	13090	13090
84	11055	11080	13090	13090	14090
96	11055	11080	13090	14090	14090
120	11080	13090	13090	14090	160110
156	13090	13090	14090	160110	160110

TL synchronous pulleys are available with the following number of teeth.

Type L

No. of teeth of pulley	Pulley nominal width		
	L050	L075	L100
19	3622	3622	3622
20	3622	3622	3622
21	4225	4225	4225
22	4225	4225	4225
23	4225	4225	4225
24	4225	4225	4225
25	4225	4225	4225
26	4225	4225	4225
28	4225	4225	4225
30	4225	4225	4225
32	4225	4225	4225
34	4225	4225	5035
36	4225	4225	5035
40	4225	4225	5035
42	4225	5035	5035
44	5035	5035	5035
48	5035	5035	5035
50	5035	5035	5035
60	5035	5035	6340
72	5035	6340	6340
84	6340	6340	6340

Type H

No. of teeth of pulley	Pulley nominal width			
	H100	H150	H200	H300
18	4225			
19	4225			
20	4225	5035		
21	5035	5035		
22	5035	5035		
24	5035	5035	6340	
25	5035	6340	6340	
26	5035	6340	6340	
28	5035	6340	6340	
30	5035	6340	6340	
32	5035	6340	6340	
34	5035	6340	6340	
36	5035	6340	6340	
40	6340	6340	8545	8545
42	6340	6340	8545	8545
44	6340	6340	8545	8545
48	6340	6340	8545	8545
50	6340	8545	8545	8545
60	6340	8545	8545	8545
72	8545	8545	8545	11055
84	8545	8545	8545	
96	8545	8545	11055	

Type XH

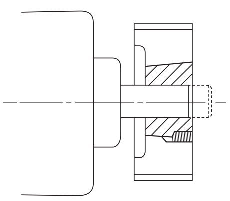
No. of teeth of pulley	Pulley nominal width		
	XH200	XH300	XH400
22	8545	8545	8545
24	8545	8545	8545
26	8545	8545	11055
28	8545	8545	11055
30	8545	8545	11055
32	8545	11055	11055
34	8545	11055	11055
36	8545	11055	11055
40	8545	11055	11055
42	8545	11055	11055
44	8545	11055	11055
48	11055	11055	13090
60	11055	13070	13090
72	11055	13070	13090
84	13070	13090	13090
96	13090	13090	13090
120	13090	13090	13090

(Note): Type XH is all made to order.

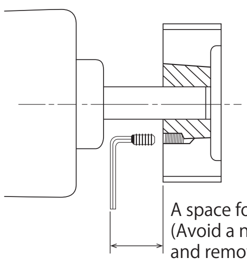
TL Pulley Installation Direction

A TL pulley can be installed in two directions, as shown in the following figure.

① Standard installation

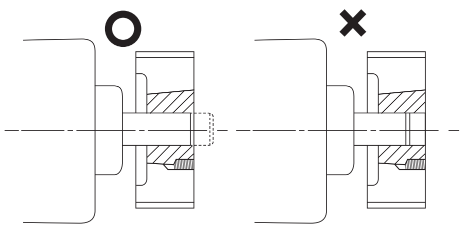


② Reverse installation



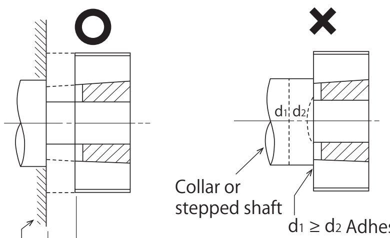
A space for attaching the screw is necessary.
(Avoid a narrow space as screw attachment and removal are difficult.)

● Precaution for installation



Set the shaft up to the entire length of the bushing or set it so that the shaft protrudes.

● Dimension and precaution for installing a stepped shaft or collar



Collar or stepped shaft

$d_1 \geq d_2$ Adhesion impossible (irremovable)

Provide a taper loosening range. Approx. 5% of the shaft dia. (2 to 3 mm min.)

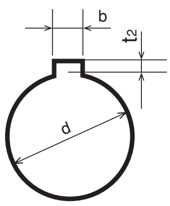
Provide a loosening range even when there is an obstruction.

Table of Recommended Thread Tightening Torques and Transmission Torques of TL Bushings

TL bushing type number	Thread tightening torque (N•m)	Thread nominal designation	Shaft dia. d(mm)	Transmission torque (N•m)	
				Rated torque	Limit torque
3622	3.5	M6	22 18 12	65 51 31	80
4225	4	M6	28 20 12	100 71 36	120
5035	10	M8	32 25 19	210 160 110	250
6340	18	M10	42 35 24	370 310 200	450
8545	40	M12	60 45 28	920 650 380	1250
11055	80	M16	75 55 35	1700 1250 700	2400

TL bushing type number	Thread tightening torque (N•m)	Thread nominal designation	Shaft dia. d(mm)	Transmission torque (N•m)	
				Rated torque	Limit torque
11080	80	M16	75 60 42	1900 1500 900	2800
13070	100	M14	90 70 48	3200 2350 1500	4500
13090	100	M14	90 70 48	3500 2550 1600	5000
14090	160	M16	100 80 60	5000 3850 2750	7500
160110	280	M20	110 90 75	7500 6000 4700	12500

■ Reference: Table of Keyway Dimensions



1. New JIS

(Unit: mm)

Applicable shaft dia. d	Key dimensions	b				t2	
		Key width	P9	Js9	E9	Key depth	Tolerance
Over 6 to 8 or less	2× 2	2	−0.006 −0.031	±0.0125	+0.039 +0.014	1.0	+0.1 0
Over 8 to 10 or less	3× 3	3				1.4	
Over 10 to 12 or less	4× 4	4	−0.012 −0.042	±0.015	+0.050 +0.020	1.8	
Over 12 to 17 or less	5× 5	5				2.3	
Over 17 to 22 or less	6× 6	6				2.8	
Over 22 to 25 or less	(7× 7)	7	−0.015 −0.051	±0.018	+0.061 +0.025	3.0	+0.2 0
Over 25 to 30 or less	8 × 7	8				3.3	
Over 30 to 38 or less	10× 8	10				3.3	
Over 38 to 44 or less	12× 8	12	−0.018 −0.061	±0.0215	+0.075 +0.032	3.3	
Over 44 to 50 or less	14 × 9	14				3.8	
Over 50 to 55 or less	(15×10)	15				5.0	
Over 55 to 58 or less	16×10	16				4.3	
Over 58 to 65 or less	18×11	18				4.4	
Over 65 to 75 or less	20×12	20	−0.022 −0.074	±0.026	+0.092 +0.040	4.9	
Over 75 to 85 or less	22×14	22				5.4	
Over 85 to 90 or less	(24×16)	24				8.0	
Over 90 to 95 or less	25×14	25				5.4	
Over 95 to 110 or less	28×16	28				6.4	

Note: The parentheses ( ) indicate a specially ordered part.

- TL bushings are finished only to Js9.

2. Previous JIS

(Unit: mm)

Applicable shaft dia. d	Key dimensions	b		t2	
		Key width	F7	Key depth	Tolerance
Over 10 to 13 or less	4× 4	4	+0.022 +0.010	1.5	+0.1 0
Over 13 to 20 or less	5× 5	5		2	
Over 20 to 30 or less	7× 7	7	+0.028 +0.013	3	
Over 30 to 40 or less	10× 8	10		3.5	
Over 40 to 50 or less	12× 8	12	+0.034 +0.016	3.5	
Over 50 to 60 or less	15×10	15		5	
Over 60 to 70 or less	18×12	18		6	
Over 70 to 80 or less	20×13	20	+0.041 +0.020	6	
Over 80 to 95 or less	24×16	24		8	
Over 95 to 110 or less	28×18	28		9	
Over 110 to 125 or less	32×20	32	+0.050	10	

Handling of and Precautions for TL Bushing System

Wait until the machine stops completely when you install a pulley on a shaft.
Follow the steps below to install or remove a pulley.

Installation procedure

① Wipe off oil, dirt, etc. from the shaft hole and the taper section cleanly.

② Temporary assembly of the bushing and the pulley

- The bushing is floating (the taper is not in close contact).
- Apply oil on the thread tip and the thread section.
- Tighten the set screws (or bolts) to about two-thirds of the entire length.

③ Insertion onto the shaft

- Slide the bushing in with the bushing floating off the taper hole of the pulley and set the bushing at a desired position.
- The bushing can be slid in more easily by inserting a slotted screwdriver or the like into the slit in the bushing and widening the slit.
- Use a parallel key (See Note 1) and with this key embedded in the keyway in the shaft in advance, set the pulley and the bushing.

④ Tightening of the set screws (or bolts)

- Tighten with a torque wrench if possible.
- Performing tightening referring to the table on **P. 195** for thread-tightening torque.
- When the set screws (or bolts) are difficult to tighten, lightly hit the boss of the pulley.
- Tighten the screws (or bolts) little by little and alternately.
- Finally, tighten each screw two to three times to a uniform torque and make sure that each screw is tightened securely. (See Note 2)
- After tightening the screws, fill the screw holes for removal with grease. (for dust and rust prevention)
- For use in a machine with frequent starts/stops or frequent changes in the rotating direction, additionally tighten the screws after a loaded test operation.
  When you cannot additionally tighten the screws, we recommend that a thread-locking agent (a removable locking agent, such as Loctite 242 or ThreeBond 1401) be applied on the threaded sections.

⑤ Installation complete

For assembly and disassembly of a pulley, prepare the following tools.

Assembly and Disassembly Tools
● Torque wrench or hexagonal wrench key (socket wrench for 220170) ● Plastic hammer ● Screwdriver (slotted) or wedge
● Other necessary tools

Removal procedure

① Pull off the fastening screws (or bolts).

② Loosen the fitting of the taper section.

- Apply oil on the thread tip and the thread section.
- Tighten the thread until the bushing protrudes by approximately 5 mm.
- When the taper section does not come off easily, hit the boss of the pulley with a hammer.

③ Remove the pulley from the shaft.

- Widening the slit with a screwdriver allows smooth removal.

④ Removal is complete.

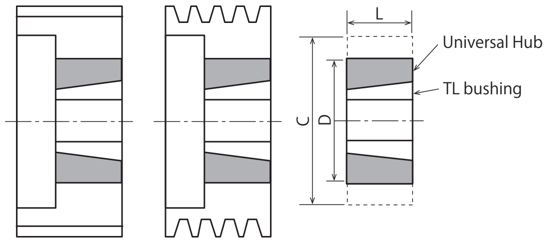
(Note 1) The fitting of the keyway in the TL bushings is made using new and previous JIS keys; hence, use a parallel key. In this case, make the key work in the width direction and make sure that there is clearance between the top of the keyway and the key in the depth (height) direction.
(Note 2) An inappropriate installation method may cause run-out. Be sure to follow the installation procedure. When a run-out is large, further tighten a specific or all set screws while measuring them with a dial gauge, or remove the bushing and re-install it.

Universal Adapter Series

The Universal Adapter Series is a product planned and developed for utilizing the benefits of the TL bushings for any rotary objects.
The Universal Adapter Series allows the benefits of the TL bushings to be easily utilized by selecting ① straight hole machining, ② bolt coupling, ③ welding, or other options for a rotary object that is not designed or manufactured for a bushing.
Please utilize our TL Bushing System to help you to reduce your total cost.

<Applicable rotary objects> Examples) Pulleys, sprockets, fan rotors, impellers, stirring blades

Universal Hubs



● **How to use**
The Universal Hubs can be used immediately by machining a straight hole that matches the dimension D of the universal hub in the boss section of a rotary object.

● **How to install**
When you insert the Universal Hub into the straight hole in the rotary object, set a bushing on them, and tighten the set screws, the wedge effect of the taper and the spring effect of the slit ensure the fastening among the rotary object, the hub, and the shaft.

● **Material** FC200 or more

(Unit: mm)

Universal Hub Nominal No.	Applicable bushing type No.	Applicable shaft dia.	Note 1 D	L	Note 2 C (min.) FC200	C (min.) Steel
UH3622	3622	12～22	46	22	70	63
UH4225	4225	12～28	53	25	80	73
UH5035	5035	19～32	63	35	95	88
UH6340	6340	24～42	80	40	115	110
UH8545	8545	28～60	105	45	150	140

Note 1 Machine the dimension D on the boss side targeting the tolerance of G7.
Note 2 When the operating condition is severe, the boss diameter needs to be increased.

Universal Adapter Design Data

TL bushing transmission torque

Type No.	Thread tightening torque (N•m)	Transmission torque (N•m) Rated torque	Transmission torque (N•m) Limit torque
3622	3.5	See P. 195.	80
4225	4		120
5035	10		250
6340	18		450
8545	40		1250

Note: The transmission torques indicate the ones when the thread-tightening torque was appropriately applied.

List of Standard Shaft Hole Diameters of TL Bushings

(Unit: mm)

Bushing type number	12	14	15	16	18	19	20	24	25	28	30	32	35	38	40	42	45	48	50	55	60
3622	○	○	○	○	○	○	○														
4225	○	○	○	○	○	○	○	○	○	○											
5035						○	○	○	○	○	○	○									
6340								○	○	○	○	○	○	◎	○	○					
8545										○	○	○	○	◎	○	○	○	○	○	○	○

◎: New JIS key only. ○: Both new and previous JIS keys can be used.

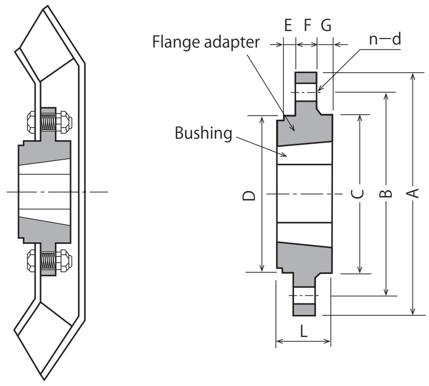
● **Select a bushing type number with an allowance for the bushing transmission torque.**

Universal Flanged Adapter

● **How to use**
You only need to machine a spigot joint and bolt holes in a rotary object.

● **How to install**
When you bolt the Universal Flanged Adapter on a rotary object, set a bushing, and fasten it with a shaft, they are securely set.

● **Material**
FC200 or more



(Non-stocked products)

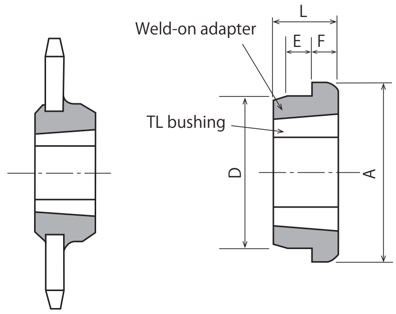
(Unit: mm)

Universal Flanged Adapter nominal No.	Applicable bushing type No.	Applicable shaft dia.	A	B	C	D (h7)	E	F	G	L	Bolt hole n-d	Nominal designation for rotary object-mounting bolt
UF5035	5035	19～32	125	100	78	80	6	14	8	35	6-8.5	M8
UF6340	6340	24～42	145	120	98	95	6	14	8	40	6-8.5	M8
UF8545	8545	28～60	190	160	130	130	8	16	10	45	8-10.5	M10

(Note) Please arrange the bolts as their length differs depending on the thickness of the rotary object.

Universal Weld-on Adapter

● **How to use and install**
The Universal Weld-on Adapter is a steel boss. When this is welded on a rotary object and a bushing is set, they can be securely fastened with a shaft.



(Unit: mm)

Universal Weld-on Adapter nominal No.	Applicable bushing type No.	Applicable shaft dia.	A	D $\left(^{\ 0}_{-0.05}\right)$	E	F	L
UW3622	3622	12～22	60	50	7	10	22
UW4225	4225	12～28	73	60	8	12	25
UW5035	5035	19～32	85	70	10	14	35
UW6340	6340	24～42	100	85	12	16	40
UW8545	8545	28～60	125	110	15	20	45

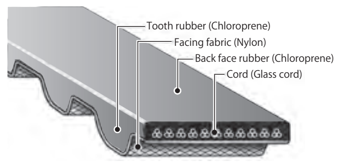
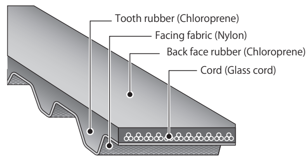
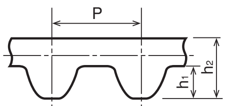
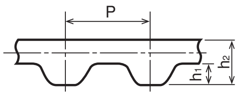
(Notes) 1. For the standard shaft hole diameters and transmission torques of TL bushings, refer to **P. 193 and P. 195**.
2. Select a type number with an allowance for the bushing transmission torque.

Long Synchronous Belt

1. Long Synchronous Belt (Rubber) Product Introduction

This belt allows synchronous power transmission and synchronous conveyance over long spans. It is lighter and more quiet than chains and requires no lubrication.
Please utilize it in place of chains, flat belts, and conveyor belts for factory automation.

Structure and Tooth Profile Dimensions

Belt type	Long STS Belt	Long Synchronous Belt
Structure		
Tooth profile dimensions	 The dimensions in ( ) are of seamless type.	 The dimensions in ( ) are of seamless type.

Long STS Belt (Unit: mm)

Type \ Item	P	h_1	h_2
S2M	2.0	0.76	1.31
S3M	3.0	1.14	2.10
S4.5M	4.5	1.71	2.70
S5M	5.0	1.91	3.61
S8M	8.0	3.05	5.30(6.05)
S14M	14.0	5.30	(11.3)

Long Synchronous Belt (Unit: mm)

Type \ Item	P	h_1	h_2
MXL	2.032	0.51	1.10
XL	5.080	1.25	2.25
L	9.525	1.90	3.50
H	12.700	2.30	4.30(5.30)
XH	22.225	6.30	11.3(12.3)
XXH	31.75	9.60	15.8(16.1)

Type / Features / Standard Sizes / Indications

Type	Seamless (no joint)	Open-ended (band form)
Features	● The absence of a joint allows power transmission and conveyance with the same performance as that of standard synchronous belts. ● The effective length can be freely made in units of tooth. ● Special specifications (such as back face design and white color) can also be manufactured.	● Accurate reciprocal motions.

Standard size — Seamless (no joint)

Type	Standard nominal width	Manufacturable range
H	100, 200, 400 600, 800, 1000 (inches × 100)	4.7～30（m）
XH		
XXH		
S8M	250, 500, 1000 1500, 2000, 2800 （mm×10） * For other widths than the above, please contact us.	4.7～30（m）
S14M		

Standard size — Open-ended (band form) (Unit: m)

Nominal width	019	025	031	037	050	075	100	150	200	300
Width (mm)	4.8	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2
MXL	41	30	24	41	30					
XL		54	43	36	26	34				
L					49	31	46			
H						41	30	38	27	16

Nominal width	50	60	70	80	100	140	150	200	250	300	400	500	600
Width (mm)	5	6	7	8	10	14	15	20	25	30	40	50	60
S2M	43	36	30	53									
S3M	50	42											
S4.5M		45			40	28							
S5M				53	42		42	30	24				
S8M					56		55	40	31	52	37	28	22

Indication

Seamless (no joint):

- Synchronous Belt

200 XH 10000

- 10000: Effective length (mm)
- XH: Belt type (Type XH)
- 200: Belt nominal width (2 inches: 50.8 mm)

- STS Belt

500 S14M 7770

- 7770: Effective length (mm)
- S14M: Belt type (Type S14M)
- 500: Belt nominal width (50 mm)

Open-ended (band form):

- Synchronous Belt

XL 025 53m

- 53m: Effective length (m)
- 025: Belt nominal width (0.25 inches: 6.4 mm)
- XL: Belt type (Type XL)

- STS Belt

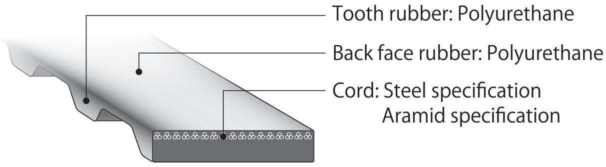
250 S8M 30m

- 30m: Effective length (m)
- S8M: Belt type (Type S8M)
- 250: Belt nominal width (25 mm)

2. Bancollan Long Synchronous Belt (Polyurethane)

This belt made of polyurethane allows synchronous power transmission and synchronous conveyance over long spans. It is suitable for food processing machines, clean power transmission, and conveyance. Various profiles can be fused on the back face of the belt to enhance the conveyance function.

Structure and Features



Steel: Suitable for applications that require responsiveness, dimensions, positioning.
Aramid: Suitable for food stuff applications.

- **Little dust generation and excellent cleanliness**
- **Joint of any length possible**
- **Back face profile processing possible**
- **The steel cord specification has little belt elongation.**
- **Direct conveyance of food stuffs possible** (passed Notice No. 370 of the Ministry of Health and Welfare concerning food hygiene)
- **Synchronous power transmission over long spans possible**

How to Understand Product Name

[Inch-pitch trapezoidal teeth] (XL/L/H)

037 XL–1015 S W-C

- 037: Belt nominal width (0.37 inches: 9.5 mm)
- XL: Belt tooth profile (Type XL)
- 1015: No. of teeth of belt
- S: Rubber material (symbol)
- W: Cord material (symbol)
- C: Cut (open-ended)

[Round teeth] (S2M/S3M/S5M/S8M/S14M/S25M)

240 S3M–1000 L W-C

- 240: Belt width (240: 24 mm)
- S3M: Belt tooth profile (Type S3M)
- 1000: No. of teeth of belt
- L: Rubber material (symbol)
- W: Cord material (symbol)
- C: Cut (open-ended)

[Millimeter-pitch trapezoidal teeth] (T5/T10/AT5/AT10/AT20)

25 T10–890 S W Z–J(P)

- 25: Belt width (mm)
- T10: Belt tooth profile (Type T10)
- 890: No. of teeth of belt
- S: Rubber material (symbol)
- W: Cord material (symbol)
- Z: Special specifications
- J: Joint
- (P): Special processing

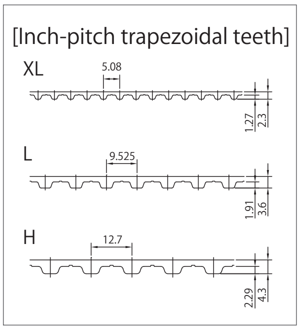
● **Rubber material symbols**
S: Standard, semi-transparent / **W**: Standard, white / **L**: Low friction, white / **B**: Low friction, blue / **M**: Moisture- and heat-resistant, white

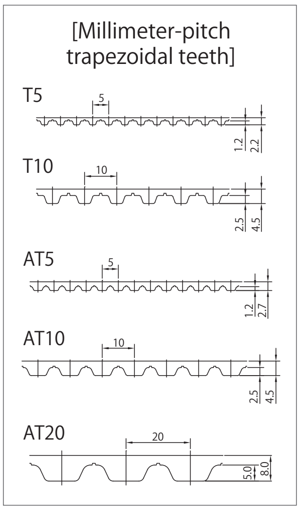
● **Cord material symbols**
W: Steel cord / **K** : Aramid cord

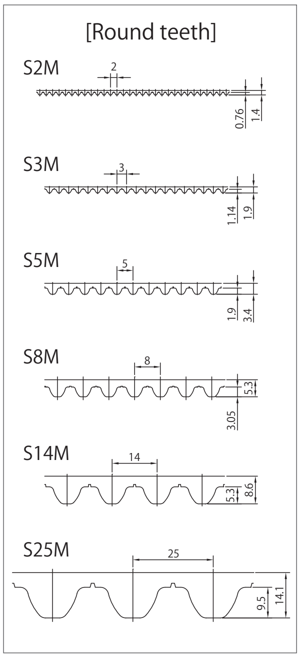
● **Special specifications**
Z: Canvas on mating flank / **G**: Back face polishing

● **Joints and special processing**
C: Cut (open-ended) / **J**: Joint / **(P)**: Special processing (such as profile)

Tooth Profiles / Standard Sizes / Joints







Tooth profile	Standard nominal width	Width (mm)	Maximum nominal width	Maximum length	Joint	Minimum joint length
XL	025	6.4	200	50m	○	0.5m
	031	7.9				
	037	9.5				
	050	12.7				
	075	19.1				
	100	25.4				
	150	38.1				
	200	50.8				
L	050	12.7	200	50m	○	0.5m
	075	19.1				
	100	25.4				
	150	38.1				
	200	50.8				
H	075	19.1	400	50m	○	0.5m
	100	25.4				
	150	38.1				
	200	50.8				
	300	76.2				2m
	400	101.6				
T5	7	7	50	50m	○	0.5m
	10	10				
	15	15				
	20	20				
	25	25				
	30	30				
	40	40				
	50	50				
T10	15	15	100	50m	○	0.5m
	20	20				
	25	25				
	30	30				
	40	40				
	50	50				
	60	60				2m
	75	75				
	100	100				
AT5	10	10	50	50m	○	0.5m
	15	15				
	20	20				
	25	25				
	30	30				
	40	40				
	50	50				

Tooth profile	Standard nominal width	Width (mm)	Maximum nominal width	Maximum length	Joint	Minimum joint length
AT10	15	15	100	50m	○	0.5m
	20	20				
	25	25				
	30	30				
	40	40				
	50	50				
	60	60				
	75	75				2m
	100	100				
AT20	25	25	100	50m	×	—
	50	50				
	75	75				
	100	100				
S2M	50	5	400	60m	×	—
	100	10				
	150	15				
	200	20				
	250	25				
	300	30				
	350	35				
	400	40				
S3M	60	6	480	60m	×	—
	120	12				
	180	18				
	240	24				
	300	30				
	360	36				
	420	42				
	480	48				
S5M	100	10	500	50m	○	0.5m
	150	15				
	200	20				
	250	25				
	300	30				
	400	40				
	500	50				
S8M	150	15	1000	50m	○*1	0.5m
	200	20				
	250	25				
	300	30				
	400	40				
	500	50				
	750	75				2m
	1000	100				
S14M	1000	100	1000	30m	×	—
S25M	250	25	1000	20m	×	—
	330	33				
	1000	100				

* The maximum joint length for connectable product types is 50 m.
If this is exceeded, please consult our sales company or distributor.
* If you need other widths than the standard widths, please consult our sales company or distributor.
*1 There is a limitation on use; please make an inquiry.

Bancollan Long Synchronous Belt System Table

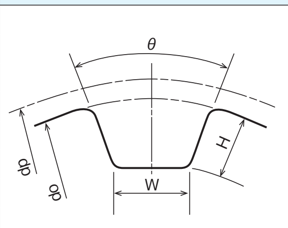
<table>
<tr><th rowspan="3">Tooth profile</th><th rowspan="3">Cord type</th><th colspan="5">Rubber type</th><th>Canvas affixation</th></tr>
<tr><th>S: Standard</th><th>W: Standard</th><th>L: Low friction</th><th>B: Low friction</th><th>M: Moisture- and heat-resistant</th><th rowspan="2">Mating flank</th></tr>
<tr><th>Semi-transparent</th><th>White</th><th>White</th><th>Blue</th><th>White</th></tr>
<tr><td rowspan="2">XL</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td></td></tr>
<tr><td>Aramid cord</td><td>○</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">L</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td></td></tr>
<tr><td>Aramid cord</td><td>○</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">H</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td></td></tr>
<tr><td>Aramid cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td></td></tr>
<tr><td rowspan="2">T5</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td>○</td></tr>
<tr><td>Aramid cord</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">T10</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td>○</td></tr>
<tr><td>Aramid cord</td><td>○</td><td>○</td><td></td><td></td><td>○</td><td></td></tr>
<tr><td>AT5</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>AT10</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>AT20</td><td>Steel cord</td><td>○</td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>S2M</td><td>Steel cord</td><td></td><td></td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>S3M</td><td>Steel cord</td><td></td><td></td><td>○</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">S5M</td><td>Steel cord</td><td></td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Aramid cord</td><td></td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">S8M</td><td>Steel cord</td><td></td><td>○</td><td></td><td></td><td></td><td></td></tr>
<tr><td>Aramid cord</td><td></td><td>○*</td><td></td><td></td><td></td><td></td></tr>
<tr><td>S14M</td><td>Steel cord</td><td></td><td></td><td>○</td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">S25M</td><td>Steel cord</td><td></td><td></td><td>○</td><td></td><td></td><td></td></tr>
<tr><td>Aramid cord</td><td></td><td></td><td></td><td>○*</td><td></td><td></td></tr>
</table>

* The ○ mark indicates that it is manufacturable.
* Cord symbol Steel: W
  Aramid: K
* S14M and S25M are used for conveyance; please contact us for details.

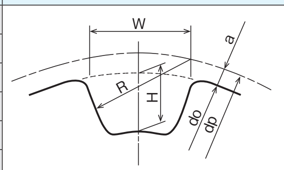
* For the aramid specifications of S8M and S25M, please contact us.

About Pulleys

- Synchronous belt pulley

<table>
<tr><th rowspan="2">Type</th><th rowspan="2">Tooth profile</th><th colspan="3">Dimensions (mm)</th></tr>
<tr><th>W</th><th>H</th><th>Θ (degree)</th></tr>
<tr><td>XL</td><td rowspan="8">
</td><td>1.27</td><td>1.40</td><td>50</td></tr>
<tr><td>L</td><td>3.10</td><td>2.13</td><td>40</td></tr>
<tr><td>H</td><td>4.24</td><td>2.59</td><td>40</td></tr>
<tr><td>T5</td><td>1.50</td><td>1.70</td><td>50</td></tr>
<tr><td>T10</td><td>3.40</td><td>3.00</td><td>50</td></tr>
<tr><td>AT5</td><td>2.70</td><td>1.10</td><td>50</td></tr>
<tr><td>AT10</td><td>5.40</td><td>2.35</td><td>50</td></tr>
<tr><td>AT20</td><td>10.80</td><td>4.65</td><td>50</td></tr>
</table>

- STS pulley

<table>
<tr><th rowspan="2">Type</th><th rowspan="2">Tooth profile</th><th colspan="4">Dimensions (mm)</th></tr>
<tr><th>W</th><th>R</th><th>H</th><th>a</th></tr>
<tr><td>S2M</td><td rowspan="6">
</td><td>1.30</td><td>1.325</td><td>0.76</td><td>0.254</td></tr>
<tr><td>S3M</td><td>1.95</td><td>1.975</td><td>1.14</td><td>0.381</td></tr>
<tr><td>S5M</td><td>3.25</td><td>3.275</td><td>1.77</td><td>0.480</td></tr>
<tr><td>S8M</td><td>5.20</td><td>5.30</td><td>2.83</td><td>0.686</td></tr>
<tr><td>S14M</td><td>9.10</td><td>9.28</td><td>4.95</td><td>1.397</td></tr>
<tr><td>S25M</td><td>16.25</td><td>16.56</td><td>8.65</td><td>2.055</td></tr>
</table>

- No. of teeth of pulley applied to each belt type (minimum, maximum)

<table>
<tr><th colspan="3">Synchronous belt pulley</th><th>XL</th><th>L</th><th>H</th><th>T5</th><th>T10</th><th>AT5</th><th>AT10</th><th>AT20</th></tr>
<tr><td colspan="3">Pitch (mm)</td><td>5.08</td><td>9.525</td><td>12.7</td><td>5</td><td>10</td><td>5</td><td>10</td><td>20</td></tr>
<tr><td rowspan="7">Minimum No. of teeth of pulley</td><td rowspan="7">Revolution rpm</td><td>900</td><td rowspan="2">10</td><td rowspan="2">12</td><td>14</td><td rowspan="2">12</td><td>14</td><td rowspan="5">15</td><td rowspan="5">15</td><td rowspan="5">18</td></tr>
<tr><td>1200</td><td>16</td><td>16</td></tr>
<tr><td>1800</td><td rowspan="4">12</td><td>14</td><td>18</td><td>14</td><td>18</td></tr>
<tr><td>2360</td><td rowspan="3">16</td><td>20</td><td rowspan="3">16</td><td rowspan="3">20</td></tr>
<tr><td>3000</td><td></td></tr>
<tr><td>3600</td><td></td><td></td><td></td><td></td></tr>
<tr><td>4800</td><td>14</td><td>18</td><td></td><td>20</td><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="3">Maximum No. of teeth of pulley</td><td>30</td><td>40</td><td>40</td><td>69</td><td>69</td><td>80</td><td>80</td><td>50</td></tr>
</table>

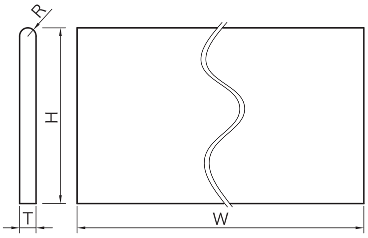
<table>
<tr><th colspan="3">STS pulley</th><th>S2M</th><th>S3M</th><th>S5M</th><th>S8M</th><th>S14M</th><th>S25M</th></tr>
<tr><td colspan="3">Pitch (mm)</td><td>2</td><td>3</td><td>5</td><td>8</td><td>14</td><td>25</td></tr>
<tr><td rowspan="5">Minimum No. of teeth of pulley</td><td rowspan="5">Revolution rpm</td><td>870</td><td>27</td><td>27</td><td rowspan="2">16</td><td>22</td><td>26</td><td>28</td></tr>
<tr><td>1160</td><td></td><td></td><td>24</td><td></td><td></td></tr>
<tr><td>1750</td><td></td><td></td><td rowspan="2">20</td><td>26</td><td></td><td></td></tr>
<tr><td>2670</td><td></td><td></td><td>28</td><td></td><td></td></tr>
<tr><td>5000</td><td></td><td></td><td>24</td><td></td><td></td><td></td></tr>
<tr><td colspan="3">Maximum No. of teeth of pulley</td><td>60</td><td>60</td><td>60</td><td>84</td><td>48</td><td>38</td></tr>
</table>

(grey box) indicates "not applicable."
Please use pulleys with the number of teeth equal to or larger than the minimum number of teeth of a pulley and equal to or smaller than the maximum number of teeth of a pulley.
An applicable minimum number of teeth of a pulley varies depending on the revolution.
For synchronous belt pulleys and STS pulleys, the classification of revolution differs due to the difference in pitch between inch and millimeter.
Please use Types S2M and S3M at a belt speed of 10 m/s or less.

Look-up Table of Profiles for Bancollan Long Synchronous Belts

For Bancollan Long Synchronous Belts, functions can be added by welding various profiles on belts.
If you need other profiles than the standard profiles, please consult our sales company or distributor.

■P-0102～P-0108

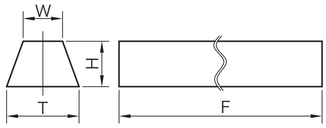


H and W can be cut according to your request.

(Unit: mm)

Profile No.	T	Tolerance	H	W	R
P-0102	2.0	±0.2	50.0	101.6	1.0
P-0103	5.0	±0.25	50.0	101.6	2.5
P-0104	6.0	±0.25	50.0	101.6	3.0
P-0105	8.0	±0.3	50.0	101.6	4.0
P-0106	10.0	±0.4	50.0	101.6	5.0
P-0107	3.0	±0.2	50.0	101.6	1.5
P-0108	4.0	±0.25	50.0	101.6	2.0

■P-0201～P-0203

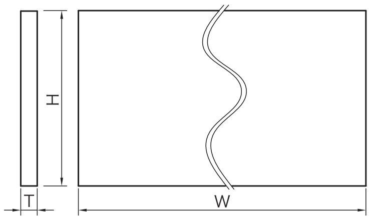


F can be cut to a length of your request.

(Unit: mm)

Profile No.	T	H	W
P-0201	8.0	5.0	4.4
P-0202	10.0	5.0	6.0
P-0203	12.7	8.0	6.9

■P-0302～P-0308

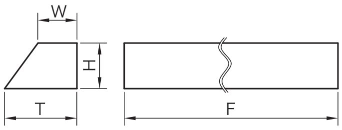


H and W can be cut according to your request.

(Unit: mm)

Profile No.	T	Tolerance	H	W
P-0302	2.0	±0.2	45.0	101.6
P-0303	5.0	±0.25	45.0	101.6
P-0304	6.0	±0.25	45.0	101.6
P-0305	8.0	±0.3	45.0	101.6
P-0306	10.0	±0.4	45.0	101.6
P-0307	3.0	±0.2	45.0	101.6
P-0308	4.0	±0.25	45.0	101.6

■P-0401～P-0403

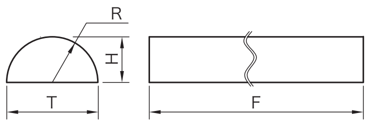


F can be cut to a length of your request.

(Unit: mm)

Profile No.	T	H	W
P-0401	4.0	5.0	2.2
P-0402	5.0	5.0	3.0
P-0403	6.4	8.0	3.5

■P-0501～P-0504

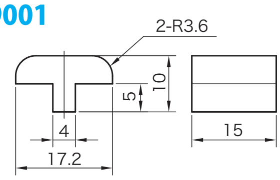


F can be cut to a length of your request.

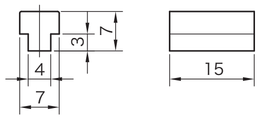
(Unit: mm)

Profile No.	T	H	R
P-0501	5.0	10.0	5.0
P-0502	3.0	6.0	3.0
P-0503	4.0	8.0	4.0
P-0504	6.0	12.0	6.0

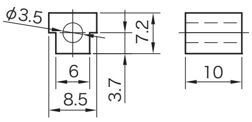
■ P-9001



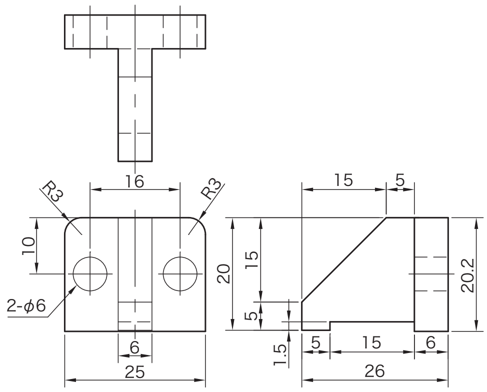
■ P-9002



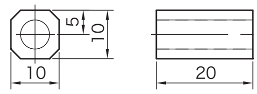
■ P-9004



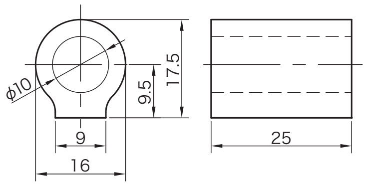
■ P-9005



■ P-9008



■ P-9006



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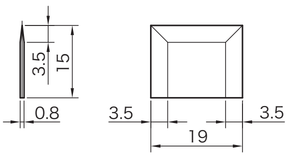

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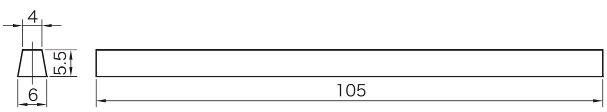
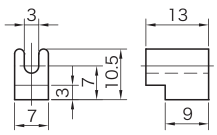


■ FUZE-2



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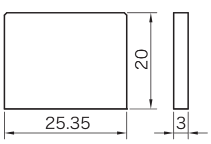

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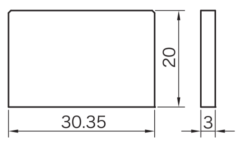
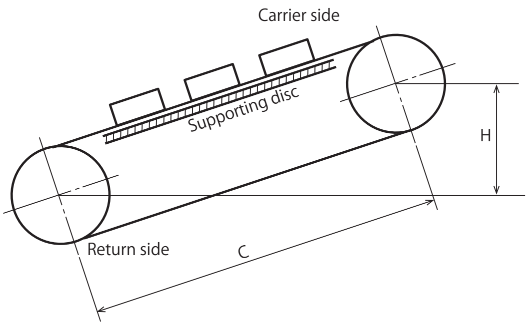


Long Synchronous Belt

3. How to Design a Long Synchronous Belt (Rubber)

(1) How to design a belt when using it for conveyance



Step 1 Calculating the effective length

(when the rotation ratio is 1:1)

Formula 1

$$L = 2C + Z \cdot Pt$$
$$= 2C + \pi \cdot Dp$$

L : Effective length (mm)
C : Center distance (mm)
Z : No. of teeth of pulley
Pt : Pulley tooth pitch (mm)
Dp : Pulley pitch diameter (mm)

For information on how to design a Bancollan Long Synchronous Belt, refer to the separate "Bancollan Long Synchronous Belt Design Manual."

Step 2 Calculating the drive power (effective tension)

Formula 2

$$Te' = 9.8f\ (W_G + m)\ C \pm 9.8 W_G H$$

+: Ascending incline
-: Descending incline

Te' : Drive power (effective tension) (N)
f : Frictional factor of belt and support plate **(Table 1)**
W_G : Amount of material conveyed per meter of the effective length (kg/m)
m : Belt unit mass (**Table 2**)
C : Center distance (m)
H : Difference of elevation (m)

Table 1 Frictional factors (f)

Support plate material	Rubber belt	Bancollan (polyurethane) belt	
		Standard specification	Low-friction specification
Iron (e.g. S45C)	**0.3**	0.5	0.3
Aluminum	**0.3**	0.4	0.3
High-molecular polyethylene	**0.2**	0.3	0.2

Table 2 Belt unit mass (m)

Rubber (seamless) / Type	H	XH	XXH	S8M	S14M
Belt unit width (mm)	25.4	25.4	25.4	50	100
Unit mass (kg/m)	0.167	0.346	0.413	0.326	1.053

Rubber (open-ended) / Type	MXL	XL	L	H	S2M	S3M	S4.5M	S5M	S8M
Belt unit width (mm)	6.4	25.4	25.4	25.4	4.0	6.0	25.0	25.0	25.0
Unit mass (kg/m)	0.0073	0.068	0.096	0.133	0.0064	0.0138	0.031	0.097	0.138

Step 3 Correcting the effective tension (Te)

When using an idler pulley, correct the effective tension (Te').

Formula 3-1

$$Te = Te'\ (Kq + Ki \times N)$$

Te	: Effective tension after correction	
Kq	: Factor by frequency of use	**(Table 3)**
Ki	: Idler correction factor	**(Table 4)**
N	: No. of idlers	

If the conveyance conditions are unknown, use the following equation.

Formula 3-2

$$Te' = \frac{1000Pt}{v}$$

Te	: Drive power (effective tension)	(N)
v	: Belt speed	(m/s)
Pt	: Transmission power	(kW)

Table 3 Factor by frequency of use (Kq)

3～5 hr/day	8～10 hr/day	16～24 hr/day
1.0	1.2	1.3

Table 4 Idler correction factor (Ki)

Idler installation location	Ki
No idlers	0.0
Installed from the inside on the slack side	0.0
Installed from the outside on the slack side	0.1
Installed from the inside on the tight side	0.1
Installed from the outside on the tight side	0.2

Step 4 Selecting a belt type and width

4-1) Selecting the number of teeth of a pulley

For relations among the number of teeth of pulleys, pulley diameter, and pitch diameter, refer to the pulley section for Synchronous Belts and Super-Torque Synchronous Belts. (**→P.83～99**)

● Check of the minimum number of teeth of a pulley

Generally, when a pulley with a small diameter is used, the flex fatigue of the belt increases, reducing the belt service life. Hence, please use a pulley with a larger number of teeth than the ones shown in **(Table 5)** at least.

4-2) Selecting the number of teeth (length) of a belt (Bz)

Formula 4

$$L' = 2C + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C}$$

$$Bz = \frac{L'}{P}$$

L'	: Rough effective length	(mm)
C	: Center distance	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)
Bz	: No. of teeth of belt	
P	: Belt tooth pitch	(mm)

Table 5 Minimum number of teeth of pulleys

	Long Super-Torque Synchronous Belt						
	Pinion revolution (rpm)	Belt type					
		S2M	S3M	S4.5M	S5M	S8M	S14M
Rubber	870 or less	14	14	12	14	22	34
	Over 870 to 1160 or less	14	14	14	16	24	38 (1120 rpm or less)
	Over 1160 to 1750 or less	16	16	16	20	26	
	Over 1750 to 3500 or less	18	18	18	24	28 (2670 rpm or less)	
	Over 3500 to 4500 or less	20	20	18	24		
	Over 4500 to 5500 or less	20	20	18	24 (5000 rpm or less)		
	Over 5500	20	20	18			
	Long Synchronous Belt						
	Pinion revolution (rpm)	Belt type					
		MXL	XL	L	H	XH	XXH
	900 or less	12	10	12	14	22	22 (850 rpm or less)
	Over 900 to 1200 or less	12	10	12	16	24 (1120 rpm or less)	
	Over 1200 to 1800 or less	14	12	14	18		
	Over 1800 to 3600 or less	16	12	16	20 (2360 rpm or less)		
	Over 3600 to 4800 or less	18	15	18 (3490 rpm or less)			

* Please use Types S2M and S3M with a minimum number of teeth of a pulley of 27 or more and at a belt speed of 10 m/s or less as they have higher responsiveness than that of previous belts.

4-3) Correction by the number of meshed teeth (Zm)

From Formula 5, calculate the number of meshed teeth of the pinion, and from **(Table 6)**, obtain the correction factor by the number of meshed teeth Km.

Formula 5

$$Zm = Z \times \frac{\theta_1}{360}$$

$$\Theta_1 = 180 - \frac{57.3(Dp-dp)}{C}$$

Zm	: Number of meshed teeth of pinion	
Z	: Number of teeth of pinion	
θ_1	: Angle of contact of pinion	(°)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)
C	: Center distance	(mm)

Table 6 Correction factor by the number of meshed teeth Km

Number of meshed teeth Zm	Km
6 or more	1.00
5	0.80
4	0.60
3	0.40
2	0.20

4-4) Calculation of belt width

Select a belt width that satisfies Formula 6 from the allowable tension **(Tables 7-1 to 2)**.

Formula 6

$$Ta \geqq \frac{Te}{Km}$$

Ta	: Allowable tension	**(Table 7)**
Te	: Effective tension	(N)
Km	: Correction factor by the number of meshed teeth	

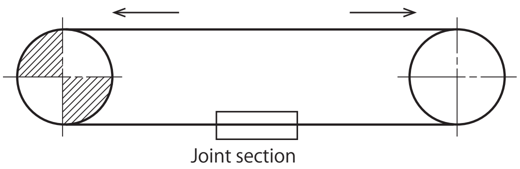
Table 7-1 Allowable belt tension (Ta)

Rubber Long Synchronous (Seamless)						(N)
Belt width \ Type	H	XH	XXH	Belt width \ Type	S8M	S14M
100 (25.4mm)	460	590	620	250 (25.0mm)	810	1040
200 (50.8mm)	1020	1300	1370	500 (50.0mm)	1800	2300
400 (101.6mm)	2070	2640	2780	1000 (100.0mm)	3650	4670
600 (152.4mm)	3180	4060	4270	1500 (150.0mm)	5540	7080
800 (203.2mm)	4250	5420	5710	2000 (200.0mm)	7420	9480
1000 (254.0mm)	5360	6830	7190	3000 (300.0mm)	11030	14100

Table 7-2 Allowable belt tension (Ta)

Rubber Long Synchronous (Open-Ended)								(N)
Belt width \ Type	MXL	XL	L	H	Belt width \ Type	S4.5M	S5M	S8M
019 (4.8mm)	16	—	—	—	60 (6.0mm)	50	—	—
025 (6.4mm)	22	25	—	—	80 (8.0mm)	—	240	—
031 (7.9mm)	28	35	—	—	100 (10.0mm)	90	310	340
037 (9.5mm)	35	45	—	—	140 (14.0mm)	130	—	—
050 (12.7mm)	48	70	95	—	150 (15.0mm)	—	490	560
075 (19.1mm)	—	120	165	425	200 (20.0mm)	—	680	750
100 (25.4mm)	—	—	235	600	250 (25.0mm)	—	850	950
150 (38.1mm)	—	—	—	900	300 (30.0mm)	—	—	1150
200 (50.8mm)	—	—	—	1250	400 (40.0mm)	—	—	1550
300 (76.2mm)	—	—	—	2000	500 (50.0mm)	—	—	1960
					600 (60.0mm)	—	—	2360

(2) How to design a belt when using it for reciprocal motions



Step 1 Calculating the maximum drive tension

Formula 7

$$\mathrm{Tmax} = \frac{1000 \cdot \mathrm{Pt}}{v} + mv^2$$

$$v = \frac{\mathrm{Dp} \times \pi \times n}{60000}$$

Tmax	: Maximum drive tension	(N)
Pt	: Transmission power	(kW)
v	: Belt speed	(m/sec)
m	: Belt unit mass	(kg/m)
Dp	: Pulley pitch diameter	(mm)
n	: Pulley revolution	(rpm)

Step 2 Correcting the maximum drive tension

When using an idler pulley, correct the maximum drive tension (Tmax) with Formula 8.

Formula 8

$$\mathrm{T'max} = \mathrm{Tmax} \times (\mathrm{Kq} + \mathrm{Ki} \times \mathrm{N})$$

T'max : Maximum drive tension correction
Kq : Correction factor by frequency of use **(→ Table 3 on P. 204)**
Ki : Idler correction factor **(→ Table 4 on P. 204)**
N : No. of idlers

Step 3 Selecting a belt type and width

3-1) Selecting the number of teeth of a pulley

For relations among the number of teeth of pulleys, pulley diameter, and pitch diameter, refer to the pulley section for Synchronous Belts and Super-Torque Synchronous Belts. **(→P.88～99)**

3-2) Selecting a belt width

When selecting a belt width, select one so that the T'•max obtained with Formula 8 forms T'•max < Ta from **(Tables 7-1 to 2)**.

(3) How to design a belt when there are sudden stops and sudden accelerations

Under conditions of sudden stop and sudden acceleration, an abnormal torque may be applied to the belt due to the inertial force of the machine; check with Formula 9 in advance, and if the width falls short, it needs to be corrected.
Calculate Te by substituting the Pdq obtained with Formula 9 as Pt of Formula 3-2 **(→ P. 204)** in **Step 3** and select a belt width by following **Step 4 (→ P. 204)**.
Also, compare belt widths in the same way without considering sudden stops and sudden accelerations and use the wider belt.

Formula 9

$$\mathrm{Trq} = \frac{\Sigma GD^2 \times (n_1 - n_2)}{38.2 \times t} \quad (\mathrm{N \cdot m})$$

$$\mathrm{Ptq} = \frac{n \times \mathrm{Trq}}{9550} \quad (\mathrm{kW})$$

$$\mathrm{Pdq} = \mathrm{Ptq} \times \mathrm{Kq} \quad (\mathrm{kW})$$

Trq	: Rotational torque at the time of a sudden stop or sudden acceleration	(N•m)
ΣGD^2	: Flywheel effect (Sum total of GD^2 on the opposite side to the brake)	(kgf•m²)
$n_1 - n_2$	: Difference in revolution (opposite side to the brake)	
t	: Time to change from n_1 to n_2	(S)
Pdq	: Design power	
Kq	: Correction factor (table below)	

Correction factor Kq by rotation at the time of a sudden stop or sudden acceleration

revolutions/day	1	2	3～4	5～10	11～15
Kq	1.0	1.2	1.3	1.5	1.6
revolutions/day	16～25	26～40	41～60	61～100	101～
Kq	1.7	1.8	1.9	2.0	2.1

Precautions for Designing and Using a Synchronous Belt

(1) How to appropriately tension a synchronous belt

An appropriate belt tension has no slack, and an excessive tension reduces the belt service life. If the tension is loose, a high shock load or a high starting torque may cause the belt to jump and be stranded on the pulley groove.
When numerically controlling the belt tension, follow the next procedure.

Step 1 Calculating the span

$$Ls = \sqrt{C^2 - \frac{(Dp - dp)^2}{4}}$$

Ls	: Span length	(mm)
C	: Center distance	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

Step 2 calculating the slack and tension load

① Slack calculation

$$\delta = 0.016\ Ls$$

δ	: Deflection	(mm)
Ls	: Span length	(mm)

② Calculation of deflection load

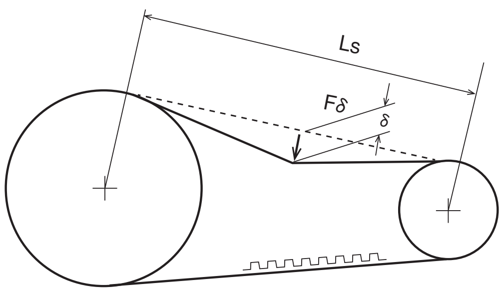
$$F\delta = \frac{To + (Ls / Lp) \cdot Y}{16}$$

Fδ	: Deflection load	(N)
Ls	: Span length	(mm)
Lp	: Belt pitch length	(mm)
To•Y	: Constant **(Table 1/Table 2/Table 3)**	

* For the value of To, the deflection load is calculated by substituting the max and min in **Table 1** to **Table 3**. If there is a recommended value, perform the calculation with a recommended value.
Apply a tension so that the deflection load at this time falls within the range of Fδ that was calculated by substituting To max and To min. If you substituted a recommended value, apply a tension of calculated Fδ.

Step 3 Adjusting the tension

Apply a deflection of δ mm to the center of the span and apply a tension so that the deflection load at this time is Fδ.
[Note] If a shock load or the starting torque is high and the belt jumps and becomes stranded on the pulley groove, tension the belt to the maximum To.



(2) In the case of outside the range of tension meter measurement

When adjusting tension, the value may fall outside the range of measurement with a tension meter, such as when the belt is large (e.g., XH, XXH). In such a case, correct the equation for deflection load and change the value to the one that can be measured with a tension meter.

*Bando tension meter	
Applicable range of deflection	2 to 62 mm
Applicable range of deflection load	4.9 to 120 N (0.5 to 12 kgf)

Correction equation when the value is outside the range of measurement (Synchronous Belt / STS)

$$\delta = 0.016 \cdot Ls \cdot A$$

$$F\delta = \frac{To + (Ls / Lp) \cdot Y \cdot A^2}{16/A}$$

A	: Correction rate (e.g. 1.5, 0.5, 0.3, 0.2)	
δ	: Deflection	(mm)
Ls	: Span length	(mm)
Fδ	: Deflection load	(N)
Y	: Constant	

[Calculation example]

With STS, if as a result of 1200 S14M3150, the deflection δ is 14.29 mm and the deflection load Fδ is 313.1 N, make the following correction.
In this case, the span Ls should be set as 893.3 mm.

[Correction value]

As the deflection load is 313.1N, in order to perform a measurement with a tension meter, it needs to be made 120 N or less.
Recommended To for an S14M belt with a belt width of 120 mm (1200): 4320 N
Span length Ls = 893.3 mm Effective length Lp = 3150 mm
Factor Y = 2430 N Correction rate A = 0.3

$$F\delta = \frac{4320 + 893.3/3150 \times 2430 \times (0.3)^2}{16/0.3} = 82.2$$

$$\delta = 0.016 \times 893.3 \times 0.3 = 4.29$$

Therefore, using 0.3 for the correction rate A, the result shown in the following table is obtained.

Setting example with the correction equation

	Unit	Before correction	After correction
Deflection δ	mm	14.29	4.29
Deflection load Fδ	N	294.2	82.2

(2) Table of constants for synchronous belts

① Table of Constants for Synchronous Belts

Table 1-1 Table of To•Y constants for Synchronous Belts (Rubber)

(Unit: N)

Belt type	Factor	Belt nominal width / Belt width (mm)	3.2	4.8	025 6.4	031 7.9	037 9.5	050 12.7	075 19.1	100 25.4	150 38.1	200 50.8	300 76.2	400 101.6	500 127.0	600 152.4
MXL	To	max	6.5	10.0	14.0		21.1	28.7								
		min	3.0	5.2	7.8		12.4	17.2								
	Y		5.5	9.1	12.7		19.7	27.0								
XL	To	max			30.0	38.0	45.0	76.0	129.0							
		min			14.0	20.0	25.0	39.0	66.0							
	Y				3.9	5.5	7.7	11.3	19.2							
L	To	max						78.0	127.0	178.0	287.0	394.0				
		min						53.0	89.0	125.0	195.0	268.0				
	Y							45.0	77.0	109.0	168.0	231.0				
H	To	max							299.0	429.0	659.0	907.0	1419.0			
		min							226.0	318.0	496.0	681.0	1068.0			
	Y								145.0	209.0	322.0	431.0	690.0			
XH	To	max										1029.0	1614.0	2286.0	2957.0	3606.0
		min										927.0	1455.0	2061.0	2664.0	3249.0
	Y											863.0	1385.0	1998.0	2480.0	3025.0
XXH	To	max										2520.0	3960.0	5615.0	7250.0	8834.0
		min										1136.0	1784.0	2528.0	3266.0	3981.0
	Y											1407.0	2270.0	3223.0	4177.0	4930.0

Table 1-2 Table of To•Y constants for polyurethane TN10/TN15

(Unit: N)

Belt type	Factor	Belt nominal width / Belt width (mm)	1.0 1	2.0 2	3.0 3	4.0 4	5.0 5	6.0 6	7.0 7	10.0 10	13.0 13
TN10	To	max	0.62	2.03	3.3	3.92	5.18	7.06			
		Recommended	0.46	1.41	2.19	2.67	3.46	4.70			
		min	0.29	0.88	1.37	1.67	2.16	2.94			
	Y		0.05	0.16	0.32	0.46	0.62	0.78			
TN15	To	max			1.89		3.30		5.32	8.62	13.18
		Recommended			1.24		2.19		3.62	5.81	8.78
		min			0.78		1.37		2.26	3.63	5.49
	Y				0.32		0.62		0.90	1.60	2.35

Table 1-3 Table of To•Y constants for polyurethane MXL/XL/L

(Unit: N)

Belt type	Factor	Belt nominal width / Belt width (mm)	3.2	4.8	025 6.4	031 7.9	037 9.5	050 12.7	075 19.1	100 25.4	150 38.1	200 50.8
MXL	To	max	1.2	2.1	3.5		5.6	8.4				
		Recommended	0.8	1.4	2.3		3.7	5.6				
		min	—	—	—		—	—				
	Y		0.2	0.4	0.6		1.0	1.5				
XL	To	max			30.0	38.0	45.0	76.0	129.0			
		Recommended			14.0	20.0	25.0	39.0	66.0			
		min			—	—	—	—	—			
	Y				3.9	5.5	7.7	11.3	19.2			
L	To	max						78.0	127.0	178.0	287.0	394.0
		min						53.0	89.0	125.0	195.0	268.0
	Y							45.0	77.0	109.0	168.0	231.0

Table 1-4 Table of To•Y constants for polyurethane T5/T10

(Unit: N)

Belt type	Factor	Belt nominal width / Belt width (mm)	5 5	10 10	15 15	20 20	25 25	30 30	50 50
T5	To	max	13.0	32.0	52.0	75.0			
		min	10.0	25.0	40.0	58.0			
	Y		7.0	17.0	27.0	39.0			
T10	To	max			125.0	182.0	228.0	285.0	490.0
		min			110.0	160.0	200.0	250.0	430.0
	Y				73.0	107.0	133.0	167.0	287.0

② Table of Constants for Ceptor-VI/Ceptor-X

Table 2-1 Table of To•Y constants for Ceptor-VI

(Unit: N)

Belt type	Factor	Belt nominal width	60	100	150	200	250	400	600	800
		Belt width (mm)	6	10	15	20	25	40	60	80
S3M	To	max	43	78	122					
		min	26	47	74					
	Y		16	29	44					
S5M	To	max		177	285	396	507			
		min		89	143	198	254			
	Y			42	68	95	120			
S8M	To	max			390	530	680	1160	1830	2550
		min			350	470	600	1010	1610	2250
	Y				130	200	260	440	690	960

Table 2-2 Table of To•Y constants for Ceptor-X

(Unit: N)

Belt type	Factor	Belt nominal width	150	250	400	600	800	1000	1200
		Belt width (mm)	15	25	40	60	80	100	120
S8M	To	max	700	1200	2020	3220	4500		
		min	350	600	1010	1610	2250		
	Y		180	360	620	970	1340		
S14M	To	max			3100	4820	6740	8660	10680
		min			1550	2410	3370	4330	5340
	Y				1360	2100	2980	3840	4740

③ Table of Constants for STS/HP-STS//HP-HTS

Table 3-1-1 Table 1 of To•Y constants for STS/HP-STS

(Unit: N)

Belt type	Factor	Belt nominal width	40	50	60	70	80	90	100	120	150	200	250	300	350	400
		Belt width (mm)	4	5	6	7	8	9	10	12	15	20	25	30	35	40
S1.5M	To	max	11.0		16.0				30.0							
		min	5.8		9.0				17.0							
	Y		7.6		11.4				21.0							
S2M	To	max	12.0	14.9	18.0	21.4	25.0	28.9	33.0	42.0	57.4					
		min	6.4	8.3	10.0	12.5	15.0	16.7	19.0	23.1	29.5					
	Y		7.6	9.6	11.4	14.1	16.3	18.6	21.0	25.4	32.1					
S3M	To	max	20	26	33	40	46	53	60	74	94	128				
		min	12	16	20	24	28	32	36	45	57	79				
	Y		7	10	12	15	17	19	22	27	34	46				
S4.5M	To	max		23	27	32	36		45	57	68	102	136	170	202	235
		min		18	22	26	29		36	46	54	82	109	136	162	188
	Y			5	9	15	20		30	40	56	82	108	134	160	185
S5M HP-S5M	To	max		29	52	68	77	89	102	127	165	228	291	354	417	480
		min		23	30	39	45	52	59	73	95	132	169	207	245	284
	Y			11	14	19	21	24	28	35	45	63	80	98	115	132
S8M HP-S8M	To	max									300	410	520	640	760	890
		min									270	360	460	560	670	780
	Y										100	150	200	240	290	340
S14M HP-S14M	To	max												910	1060	1250
		min												860	1010	1190
	Y													500	600	700

Table 3-1-2 Table 2 of To•Y constants for STS/HP-STS

(Unit: N)

Belt type	Factor	Belt nominal width	500	600	700	800	1000	1200	1250	1400	1500	1600	2000	2500	3000
		Belt width (mm)	50	60	70	80	100	120	125	140	150	160	200	250	300
S4.5M	To	max	302	381											
		min	242	305											
	Y		235	285											
S5M HP-S5M	To	max	606												
		min	363												
	Y		167												
S8M HP-S8M	To	max	1140	1410	1680	1960	2520		3250		3990		5550		8790
		min	1000	1240	1480	1730	2230		2880		3540		4230		6700
	Y		430	530	630	740	950		1230		1510		2100		3330
S14M HP-S14M	To	max	1600	1950		2730	3500	4320		5150		6020	7750	10000	12290
		min	1520	1850		2590	3330	4110		4890		5710	7350	9490	11670
	Y		850	1080		1530	1970	2430		2870		3380	4350	5610	6900

Table 3-2 Table of To•Y constants for polyurethane S2M/S3M

(Unit: N)

Belt type	Factor		Belt nominal width: 40	60	100	150
		Belt width (mm)	4	6	10	15
S2M	To	max	19.0	32.5	56.0	
		min	14.0	24.5	43.0	
	Y		3.0	5.1	9.0	
S3M	To	max		45.0	80.5	128.0
		min		32.0	57.5	91.0
	Y			5.0	9.0	14.2

Table 3-3 Table of To•Y constants for HP-HTS

(Unit: N)

Belt type	Factor		Belt nominal width: 20	25	30	40	50	55	60	70	85	100	115	120	130	150	170
		Belt width (mm)	20	25	30	40	50	55	60	70	85	100	115	120	130	150	170
8M	To	max	410	520	640	890	1140		1410		2100						
		min	360	460	560	780	1000		1240		1840						
	Y		150	200	240	340	430		530		790						
14M	To	max			910	1250		1780		2340	2920	3500	4120	4320	4730	5570	6430
		min			860	1190		1690		2220	2770	3330	3920	4110	4500	5300	6110
	Y				500	700		1000		1310	1640	1970	2320	2430	2660	3130	3610

④ Table of Constants for King Power Synchronous Belt (KPS II)

Obtain the deflection load F δ of KPS using the following equation.

$$F\delta = \frac{To + W(Ls / Lp) \cdot Y}{16}$$

Table 4-1 Table of To •Y constants for KPS II

(Unit: N)

Belt type	To	Y
8M	Based on the following equation	18.96
14M		28.42

$$To\,(N) = (W / B_1) \times To'$$

W : Belt width (mm)
B_1 : 8M = 15 14M = 40
To′ : Based on **Table 4-2**

Table 4-2 List of To′

KPS II 8M (Unit: N)

Revolution (rpm) \ Lp(mm)	800 or less	1200 or less	1600 or less	1960 or less
250 or less	382	461	510	539
500 or less	353	412	461	490
1000 or less	314	363	402	431
2000 or less	275	324	353	373
4000 or less	226	275	304	314
4001 or more	177	216	235	255

KPS II 14M (Unit: N)

Revolution (rpm) \ Lp(mm)	1190 or less	1568 or less	1960 or less
150 or less	1706	1942	2138
300 or less	1569	1785	1981
600 or less	1432	1628	1804
1200 or less	1294	1471	1628
2400 or less	1157	1294	1432
2401 or more	961	1098	1196

⑤ Table of Constants for Long Synchronous Belts

Table 5-1 Table of To•Y constants for Long Synchronous Belts

(Unit: N)

Belt type	Factor		Belt nominal width	019	025	031	037	050	075	100	150	200	300	400	500	600
			Belt width (mm)	4.8	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2	101.6	127.0	152.4
MXL	To	max		10.0	14.0		21.1	28.7								
		min		5.2	7.8		12.4	17.2								
	Y			9.1	12.7		19.7	27.0								
XL	To	max			30.0	38.0	45.0	76.0	129.0							
		min			14.0	20.0	25.0	39.0	66.0							
	Y				3.9	5.5	7.7	11.3	19.2							
L	To	max						78	127	178						
		min						53	89	125						
	Y							45	77	109						
H	To	max							299	429	659	907	1419			
		min							226	318	496	681	1068			
	Y								145	209	322	431	690			
XH	To	max										1029	1614	2286	2957	3606
		min										927	1455	2061	2664	3249
	Y											863	1385	1998	2480	3025
XXH	To	max										2520	3960	5615	7250	8834
		min										1136	1784	2528	3266	3981
	Y											1407	2270	3223	4177	4930

Table 5-2-1 Table 1 of To•Y constants for Long STS Belts

(Unit: N)

Belt type	Factor		Belt nominal width	50	60	80	100	150	200	250	300	400	500	600	700	800
			Belt width (mm)	5	6	8	10	15	20	25	30	40	50	60	70	80
S2M	To	max		15.0	18.0	25.0										
		min		8.0	10.0	15.0										
	Y			9.6	11.4	16.3										
S3M	To	max		26	33											
		min		16	20											
	Y			10	12											
S4.5M	To	max			27		45									
		min			22		36									
	Y				9		30									
S5M	To	max					102	165	228	291						
		min					59	95	132	169						
	Y						28	45	63	80						
S8M	To	max						300	410	520	640	890	1140	1410	1680	1960
		min						270	360	460	560	780	1000	1240	1480	1730
	Y							100	150	200	240	340	430	530	630	740
S14M	To	max									910	1250	1600	1950		2730
		min									860	1190	1520	1850		2590
	Y										500	700	850	1080		1530

Table 5-2-2 Table 2 of To•Y constants for Long STS Belts

(Unit: N)

Belt type	Factor		Belt nominal width	1000	1200	1250	1400	1500	1600	2000	2500	3000
			Belt width (mm)	100	120	125	140	150	160	200	250	300
S8M	To	max		2520		3250		3990		5550		8790
		min		2230		2880		3540		4230		6700
	Y			950		1230		1510		2100		3330
S14M	To	max		3500	4320		5150		6020	7750	10000	12290
		min		3330	4110		4890		5710	7350	9490	11670
	Y			1970	2430		2870		3380	4350	5610	6900

Table 5-3-1 Table 1 of To•Y constants for Bancollan Long Synchronous Belts (open-ended)

(Unit: N)

Belt type	Factor		Belt nominal width	025	031	037	050	075	100	150	200	300	400
			Belt width (mm)	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2	101.6
XL	To	max		30.0	38.0	45.0	76.0	129.0	182.0	284.0	389.0		
		min		14.0	20.0	25.0	39.0	66.0	93.0	145.0	199.0		
	Y			3.9	5.5	7.7	11.3	19.2	27.0	42.1	57.8		
L	To	max					78	127	178	284	394		
		min					53	89	125	195	268		
	Y						45	77	109	168	231		
H	To	max						299	429	659	907	1419	2003
		min						226	318	496	681	1065	1484
	Y							145	209	322	431	690	948

Table 5-3-2 Table 2 of To•Y constants for Bancollan Long Synchronous Belts (open-ended) (Unit: N)

Belt type	Factor		10	15	20	25	30	40	50	75	100
		Belt nominal width	10	15	20	25	30	40	50	75	100
		Belt width (mm)	10	15	20	25	30	40	50	75	100
T5	To	max	32	52	75	108	132	178	224		
		min	25	40	58	72	88	118	149		
	Y		17	27	39	48	59	79	100		
T10	To	max		169	235	294	368	471	633	833	1192
		min		108	157	196	245	314	422	588	794
	Y			72	105	130	164	208	282	388	519

Table 5-4-1 Table 1 of To•Y constants for Bancollan Long STS Belts (open-ended) (Unit: N)

Belt type	Factor												
		Belt nominal width	50	100	150	200	250	300	350	400	500	750	1000
		Belt width (mm)	5	10	15	20	25	30	35	40	50	75	100
S2M	To	max	15	32	50	69	86	104	122	139			
		min	8	19	29	40	50	61	72	81			
	Y		22	47	73	99	126	152	178	204			
S5M	To	max		102	165	228	291	354		480	606		
		min		59	95	132	169	207		280	354		
	Y			28	45	63	80	98		133	168		
S8M	To	max		183	276	367	458	550		734	917	1375	1834
		min		131	197	263	329	394		526	657	986	1314
	Y			92	138	185	231	278		370	461	691	922

Table 5-4-2 Table 2 of To•Y constants for Bancollan Long STS Belts (open-ended) (Unit: N)

Belt type	Factor									
		Belt nominal width	60	120	180	240	300	360	420	480
		Belt width (mm)	6	12	18	24	30	36	42	48
S3M	To	max	32	72	112	152	192	231	272	312
		min	19	44	68	92	117	140	165	189
	Y		23	52	81	110	138	163	196	225

Table 5-5 Value T conversion table (Unit: N)

Width (mm)	AT5			AT10			AT20		
	TO		Y	TO		Y	TO		Y
	MIN	MAX		MIN	MAX		MIN	MAX	
10	54	81	36						
15	81	121	54	171	256	114			
20	108	162	72	227	340	151			
25	136	204	91	302	453	201	453	680	302
30	166	250	111	358	537	239			
40	220	331	147	492	738	328			
50	286	429	191	607	910	405	911	1366	607
75				929	1393	619	1394	2090	929
100				1270	1905	846	1906	2858	1270

Table 6-1 Table 1 of To•Y constants for Bancollan Long Synchronous Belts (endless) (Unit: N)

Belt type	Factor											
		Belt nominal width	025	031	037	050	075	100	150	200	300	400
		Belt width (mm)	6.4	7.9	9.5	12.7	19.1	25.4	38.1	50.8	76.2	101.6
XL	To	max	15.0	19.0	22.5	38.0	64.5	91.0	142.0	194.5		
		min	7.0	10.0	12.5	19.5	33.0	46.5	72.5	99.5		
	Y		2.0	2.8	3.9	5.7	9.6	13.5	21.1	28.9		
L	To	max				39.0	63.5	89.0	143.5	197.0		
		min				26.5	44.5	62.5	97.5	134.0		
	Y					22.5	38.5	54.5	84.0	115.5		
H	To	max					150	215	330	454	710	1001
		min					113	159	248	341	534	742
	Y						73	105	161	216	345	487

Table 6-2 Table 2 of To•Y constants for Bancollan Long Synchronous Belts (endless) (Unit: N)

Belt type	Factor										
		Belt nominal width	10	15	20	25	30	40	50	75	100
		Belt width (mm)	10	15	20	25	30	40	50	75	100
T5	To	max	16.0	26.0	37.5	54.0	66.0	89.0	112.0		
		min	12.5	20.0	29.0	36.0	44.0	59.0	74.5		
	Y		8.5	13.5	19.5	24.0	29.5	39.5	50.0		
T10	To	max		81.0	117.5	147.0	184.0	235.5	316.5	441.5	596.0
		min		54.0	78.5	98.0	122.5	157.0	211.0	294.0	397.0
	Y			36.0	52.5	65.0	82.0	104.0	141.0	194.0	259.5

Table 7 Table of To•Y constants for Bancollan Long STS Belts (endless) (Unit: N)

Belt type	Factor		Belt nominal width	10	15	20	25	30	40	50
			Belt width (mm)	10	15	20	25	30	40	50
S5M	To	max		51.0	82.5	114.0	145.5	177.0	240.0	303.0
		min		24.5	47.5	66.0	84.5	103.5	142.0	181.5
	Y			14.0	22.5	31.5	40.0	49.0	66.5	84.0

Synchronous Belt Unit Mass [g/mm/m]

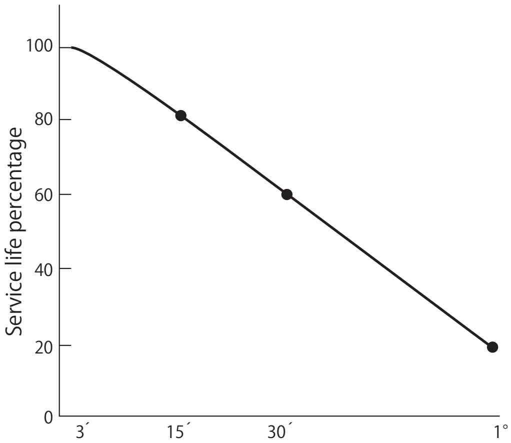
* Weight per width of a millimeter and length of one meter

Belt classification	Belt classification	Unit mass (g/mm/m)
KPS II	S8M	3.8
	S14M	6.6
Ceptor- X	S8M	4.5
	S14M	7.6
Ceptor-VI	S3M	2.3
	S5M	3.3
	S8M	4.6
HP-STS	S5M	3.5
	S8M	5.6
	S14M	8.9
HP-HTS	8M	5.6
	14M	10.3
STS	S1.5M	1.1
	S2M	1.3
	S3M	2.3
	S4.5M	2.8
	S5M	3.8
	S8M	5.4
	S14M	9.0
Bancollan STS	S2M-UG	1.2
	S3M-UG	1.7
Double-Sided STS	DS2M	1.6
	DS3M	2.3
	DS4.5M	2.9
	DS5M	3.9
	DS8M	5.8
	DS14M	10.2

Belt classification	Belt classification	Unit mass (g/mm/m)
Synchronous Belt	MXL	1.1
	XXL	1.5
	XL	2.2
	L	3.3
	H	4.3
	XH	12.3
	XXH	15.8
Bancollan Synchronous Belt	MXL-UK	0.8
	XL-UK	1.6
	L-UK	2.6
	T2.5	1.1
	T5	2.0
	T10	4.3
Double-Sided Synchronous Belt	DXL	2.3
	DL	3.5
	DH	4.5

(3) Pulley alignment (parallelism of shafts)

A synchronous belt tracks to one side of the ends of the pulleys even when the pulley alignment is correctly adjusted. Although that strength is very small, if pulley alignment is not correctly adjusted, the strength of side tracking becomes extremely large and causes the belt to be strongly pushed onto the pulley flange, causing abrasion damage on the side of the belt.
In addition to abrasion, the non-uniform tension applied on the belt tension member causes abnormal strength fatigue, significantly reducing the service life.

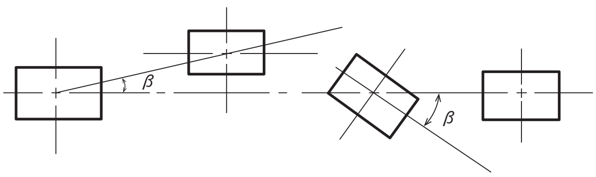


Relationship between pulley alignment and belt service life

Hence, adjust the pulley alignment correctly based on **Table 8** before using a belt.

Table 8 Alignment tolerance

Belt width (mm)	～25	26～60	61～
tan β (or less)	$\frac{6}{1000}$	$\frac{4.5}{1000}$	$\frac{3}{1000}$



(4) About the use of idlers

When using an idler for a synchronous belt power transmission device, take the following into consideration in order to obtain the best power transmission device.

■ Example of use of an idler

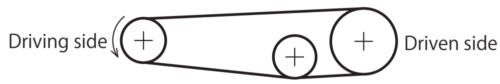
The use of an idler increases fatigue due to bending of the belt; hence, avoid using an idler if possible except when it is absolutely necessary such as the following cases.

- **Tension adjustment when the center distance cannot be adjusted**
- **Division of a long span to an extent that makes belt vibration a problem**
- **Guide for avoiding obstacles**
- **When increasing the number of meshed teeth (angle of contact) on the pinion side**

■ How to use an idler

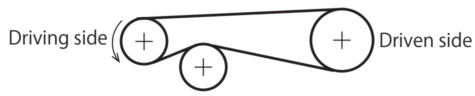
Fasten an idler and always use it on the slack side. When using an idler on the tight side, tooth skipping is likely to occur; hence, it needs to be used with a stronger belt tension than the standard, which affects the belt's service life as well.
In addition, use an idler at an angle as low as possible.

When using an idler on the inside



- Use a synchronous pulley.
- Move the idler installation position close to the large pulley.
  This decreases the reduction in the angle of contact of the pinion.

When using an idler on the outside



- Use a flat pulley without a crown.
- Move the idler installation position close to the pinion.

■ Idler diameter

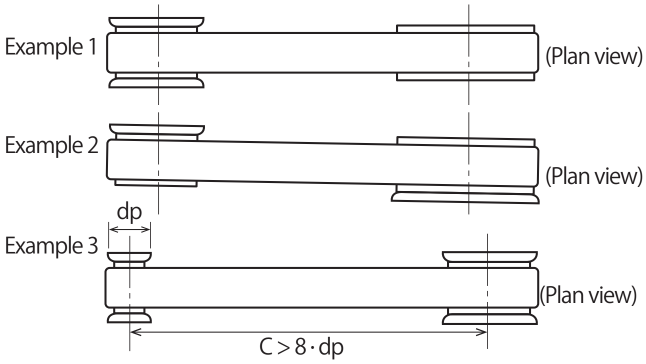
Use a diameter of an inner idler that is equal to or larger than the minimum pulley diameter for the revolution to be used, and for a flat pulley that is used on the outer side, use an idler diameter that is 1.2 to 1.4 times as large as the minimum pulley diameter.
(The limitation differs depending on the belt; for individual designs, please contact us.)

(5) Pulley flanges

A synchronous pulley is not fitted with a crown unlike a flat pulley; hence, the belt tracks to one side during operation due to the parallelism of the shafts and the belt revolution. At the time of designing, attach flanges with the following procedure.

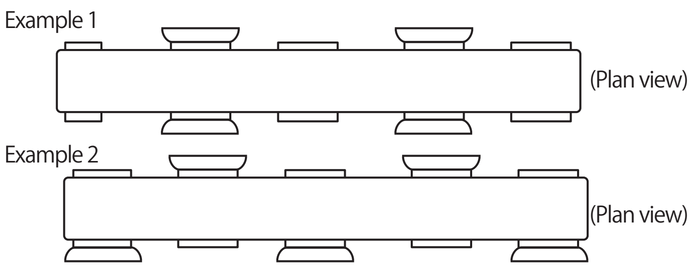
■ In the case of two-shaft power transmission

Attach a flange to both sides of one of the two pulleys **(Example 1)** or attach one flange to each of opposite sides of the two pulleys. **(Example 2)**
When the center distance is eight times or more of the pinion diameter, attach a flange to both sides of both pulleys. **(Example 3)**
* When attaching a flange to both sides, it is economical to attach flanges to the pinion side.



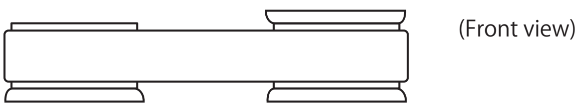
■ In the case of multi-shaft power transmission

Use a double-flanged pulley for every other pulley **(Example 1)** or use single-flanged pulleys with different installation directions. **(Example 2)**



■ In the case of a vertical shaft drive

When using a vertical shaft drive, the belt may protrude from the pulleys under its own weight; be sure to attach a flange on both sides of one of the pulleys and attach a flange on one side (the following example) of the other pulley (in particular Types S14M, XH, and XXH).



Flanges for a cast pulley should be installed with screws. **(→ P. 190)**

(6) Handling of synchronous belts

■ Belt storage

If belts are poorly stored, their performance deteriorates; store belts in the following conditions.

- Store belts at normal temperature avoiding exposure to direct sunlight.
- Do not place belts directly on the ground while hanging on a shelf or a wall.
- Avoid piling up a large amount of belts or storing belts in a sharply folded condition.
- Take care to avoid adhesion of oil or chemicals on belts.

■ Belt installation

- When attaching a belt on a pulley, forcing the belt to climb over a flange may cause an early break; attach a belt by sliding the motor or loosening the idler device.
- Adhesion of a large amount of oil on a rubber synchronous belt causes the belt to swell and reduction of the belt's service life; take care to avoid adhesion of oil.
- Adjust the belt tension within an appropriate range. (**→P.208～214**)
- Use pulley alignment (parallelism of shafts) within the standard **(→ P. 215)**.
- When a pulley has rust or other abnormalities, abrasion occurs early; remove them before using the pulley.

■ Belt operation

- A foreign substance trapped during operation may lead to a belt break. When there is such a possibility, install a belt cover.

(7) Causes of and countermeasures against early damage on belts and pulleys

Phenomenon	Cause	Countermeasure
1. Break (The belt has no fatigue condition and is broken at one point.)	The belt's power transmission capacity is insufficient.	Reconsider the design. (Increase the belt width, increase the pulley diameter, or redo the belt selection.)
	Bending of the belt with unreasonable force.	Take care in storage or handling of the belt.
	The belt was forcibly plied in when it was installed.	Attach the belt by sliding the pulley or loosening the tension pulley.
	Trapping of foreign objects.	Install a belt cover.
	Misalignment is significant, causing the belt to be stranded on the flange of a pulley.	Adjust the pulley alignment.
2. The belt became hard and the surface cracked.	The ambient temperature is high. (90°C or more)	Improve the environment or use a heat-resistant belt.
3. The belt teeth are damaged.	An insufficient belt tension is causing skipping.	Appropriately control the belt tension.
	Poor machining of the pulley tooth dimensions, or the dimensions have changed due to abrasion.	Replace the pulley with the one with appropriate tooth dimensions. If dust particles have scattered over, install a belt cover.
	Sudden stops are not taken into consideration.	Extend the period of a sudden stop or redo the selection of the belt.
	An insufficient number of meshed teeth due to a mistake in the design.	Install a back face idler pulley with an appropriate diameter on the slack side. Or change the design.
4. The canvas on the mating flank of the belt becomes abraded early.	Excessive belt tension.	Appropriately control the belt tension.
	Dust particles have scattered over.	Install a belt cover.
5. The belt side face is abraded or damaged.	The pulley's misalignment is large.	Adjust the alignment.
	The outside diameters of the pulley on the left side and the right side are different.	Replace the pulley with the one with appropriate outside diameters.
6. The belt meanders.	The pulley's misalignment is large.	Adjust the alignment.

(7) Causes of and countermeasures against early damage on belts and pulleys

Phenomenon	Cause	Countermeasure
7. Vertically torn	When the belt ran protruding from the end of a pulley.	Correct the pulley position and pulley alignment.
	When the belt became stranded over a flange of a pulley.	Correct the pulley position and pulley alignment.
8. Rubber swelling	A large amount of oil is splashed over.	Install a belt cover or use an oil-resistant belt.
9. Occurrence of metallic noise	Excessive belt tension.	Appropriately control the belt tension.
	A load exceeding the design value is applied.	Reconsider the design.
	The belt speed is too high.	Reduce the pulley diameter, including a change of the belt profile.
10. Abrasion of pulley teeth	Excessive belt tension.	Appropriately control the belt tension.
	Inappropriate pulley material.	Use a harder one or apply a surface treatment.

Frictional (Frictional Transmission Belts)

List of Frictional Transmission Belt Product Systems

Classification	Name	Belt type		M	A	B	C	D	E	Product introduction page	Design calculation page
General V-belt	V-Belt Standard	Material	R		●	●	●	●	●	231	245
	V-Belt Red		R	●	●	●	●	●	●	231	
	Energy-Saving Red		R		●	●	●	●		224	
	Power Scrum (V-belt type)		R		●	●	●	●		234	

Classification	Name	Belt type			3V		5V		8V	Product introduction page	Design calculation page
Narrow V-belt	Power Ace	Material	R		●		●		●	225	245
	Power Ace Cog		R		●		●			227	
	Energy-Saving Power Ace		R		●		●		●	224	
	Power Scrum (Power Ace type)		R		●		●		●	228	
	Power Ace Aramid Combo		R				●		●	229	

Classification	Name	Belt type		H	J/PJ	PK	PL			Product introduction page	Design calculation page
V-ribbed belt	Bancollan Polybanrope	Material	U	○	○					274	245
	Rib-Ace 2		R		●	●	●			236	

Classification	Name	Belt type			5MS	7MS	11MS			Product introduction page	Design calculation page
High-performance V-belt	Banflescrum	Material	U		○	○	○			279	282

Classification	Name	Belt type		3M	5M	7M	11M			Product introduction page	Design calculation page
High-performance V-belt	Banflex	Material	U	○	○	○	○			279	282

Classification	Name	Belt type		VC	DC					Product introduction page	Design calculation page
Light-duty belt	Bancollan V-Belt	Material	U	○	○					293	295

Classification	Name	Belt type		$\phi 2$	$\phi 3$	$\phi 4$	$\phi 5$			Product introduction page	Design calculation page
Light-duty belt	Bancollan round belt	Material	U	○	○	○	○			297	299

Classification	Name		Belt type	1.5	2	2.5	3	3.5	4	5	6	7	8	9	10	11	12	15	Product introduction page	Design calculation page
Light-duty belt	Bancord round belt	Material	#480	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	302	305
			#485N				○		○	○	○									
			#485T						○	○	○									
			#485RB						○	○	○		○							
			#489	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
			#490	○	○	○	○	○	○	○	○	○	○	○	○	○	○			
			#490 (Charge prevention)		○	○			○	○										
	Name		Belt type	M	A	B														
	Bancord V-Belt	Material	U	○	○	○														

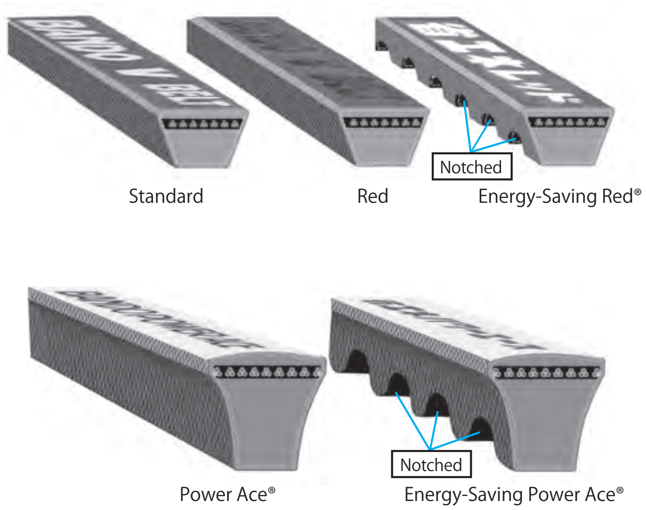
Classification	Name	List of belt specifications								Product introduction page	Design calculation page
Belt for precision conveyance (PS belt)	A-series high-speed transmission	A-1C	A-1N	A-1U	A-1H	A-4C	A-4N	A-4U	A-4H	318	327
		A-10C	A-10N	A-10U	A-10H	A-13C	A-13N	A-13U	A-13H		
	B-series Light article conveyance, such as sheets and tickets	B-2C	B-2N	B-2U	B-2H						
		B-3C	B-3N	B-3U	B-3H	B-6C	B-6N	B-6U	B-6H		
	C-series Precision transmission at 100 W or less, light article conveyance	C-8C	C-8N	C-8U	C-8H	C-16C	C-16N	C-16U	C-16H		
	Z-series (for heat resistance)	Z-H250X						Z-H250X			
	E-series (light article conveyance)			E-8U				EXL-101			

Energy-Saving V-Belt

Product Introduction

By reducing losses by belt bending stress, CO_2 emissions reduction and energy-saving effects can be expected.

Product Features



■ **Energy-saving (power-saving) and CO_2 emissions reduction can be expected.**

Although it depends on the conditions, a maximum of approximately 6% power can be reduced.

■ **No change of pulleys is necessary.**

It can be used just by replacing the previous V-belt with Energy-Saving Red and replacing Power Ace with Energy-Saving Power Ace.

■ **Long service life.** *Based on our bench tests.

Due to the belt structure, internal heating is little, and the service life is long.

■ **Cost reduction possible.**

The cost can be reduced by the energy-saving (power-saving) effect and the reduction in the number of belts.

Why Can the Energy-Saving (Power-Saving) Effect Be Obtained?

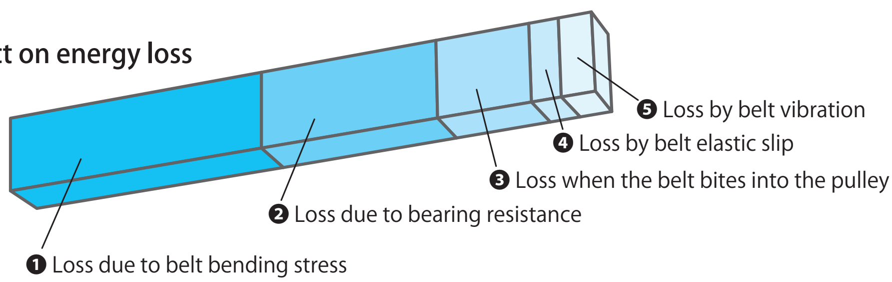
■ Energy losses by a belt (explanatory drawing)

Any power transmission device has losses (energy losses), and belt power transmission devices have the following energy losses.

Belt bending stress	Bearing resistance	Loss when the belt bites into the pulley	Belt elastic slip	Belt vibration

Large ← Degree of impact → Small

■ Degree of impact on energy loss



The Energy-Saving V-Belt can be bent with a small force structurally; hence, the reduction of "losses by bending stress," whose energy loss ratio is high, can provide the energy-saving (power-saving) effect.

* The belt bending rigidity EI is an index of the ease of bending. The lower the value, the more easily the belt can be bent.

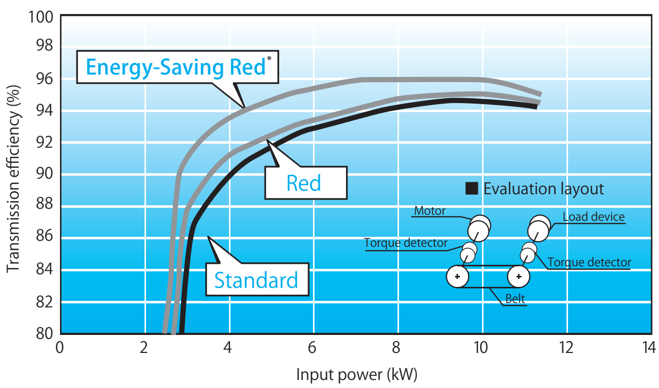
1. Energy-Saving Red™

Belt type	Range of manufacturable sizes
JIS Type A	20 to 360 inches
JIS Type B	25 to 360 inches
JIS Type C	35 to 360 inches
JIS Type D	100 to 360 inches

[Note] Effective length (mm) = 25.4 × size (nominal designation)

■ Power transmission efficiency verification result

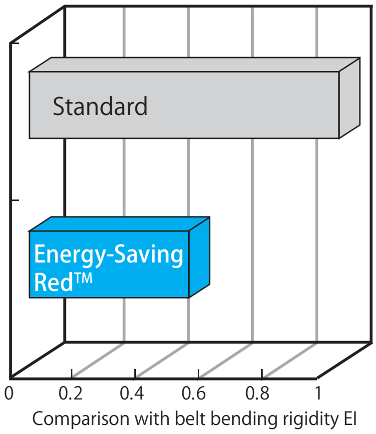
Input power and power transmission efficiency
<Power Standard> Tension 50 kgf | B-50 | 3 belts | ϕ118-ϕ118



- The design transmission efficiency in the range of use of Energy-Saving Red* is **4%** higher than that of the standard.

■ Comparison of belt bending rigidities <Belt Type B>

(When the standard is 1)



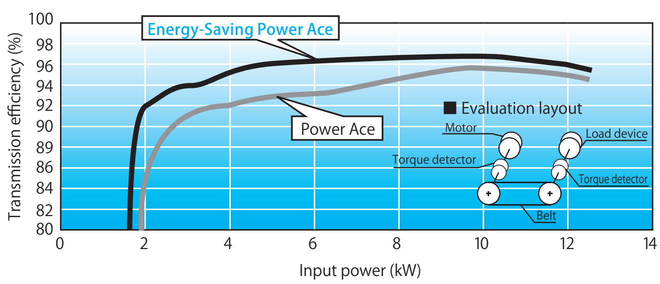
2. Energy-Saving Power Ace™

Belt type	Range of manufacturable sizes
Type 3V	250～1400
Type 5V	500～3550
Type 8V	1000～3550

*Please specify the effective length with a nominal number.
*Effective length = Effective outside length (mm) = 25.4 × Nominal No. / 10

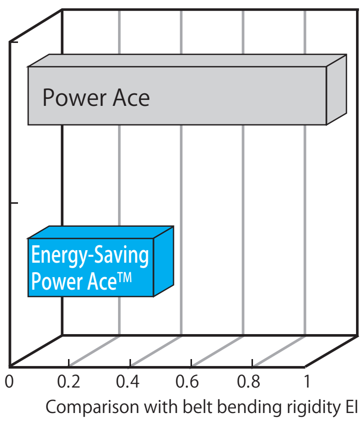
■ Power transmission efficiency verification result

Input power and power transmission efficiency
<Power Standard> Tension 50 kgf | 5V530 | 1 belts | ϕ150-ϕ150



■ Comparison of belt bending rigidities <Belt Type 5V>

(When Power Ace is 1)



3. How to Design an Energy-Saving V-Belt

The transmission capacity of the Energy-Saving V-Belt is the same as that of the standard belt.
Refer to the design calculation page for the respective standard type belt.

Energy-Saving V-Belt	Reference product	Design calculation page
Energy-Saving Power Ace	Power Ace	245～273
Energy-Saving Red	V-Belt Red	

Power Ace / Power Ace Cog / Power Scrum
Power Ace Aramid Combo

1. Power Ace Product Introduction

Power Ace is a narrow V-belt for high power transmission capability that significantly enhanced various characteristics and performance such as power transmission capability, high speed, and reliability by changing the cross-sectional structure of the previous V-belt. (Prescribed as Narrow V-belts for power transmission in JIS K 6368.)

Features

■ Allows miniaturization and cost reduction of power transmission devices.

Power Ace has an extremely high power transmission capability, and the space for the power transmission device is about one-third of that of the standard V-belt.
Unlike chain transmission or gear transmission, it requires no lubrication device, allowing the equipment cost and maintenance cost to be reduced.

■ Allows high-speed operation.

Power Ace has an extremely high power transmission capability per belt and has a reduced loss in power transmission by centrifugal force; hence, it is also suitable for high-speed operation and can be used up to a speed of 40 m/s.

■ Allows labor-saving in maintenance.

Power Ace has little belt elongation during operation and rarely requires re-tensioning. Unlike chain transmission and gear transmission, it requires no lubrication, allowing significant labor-saving in maintenance.

■ Long belt service life and excellent reliability.

Power Ace, based on the ideal profile that was made by studying the power transmission theory as well as on the manufacturing technology on the highest standard, has a long service life and rarely incurs trouble during operation.

■ Excellent physical characteristics.

● Excellent heat resistance.
Generally, the higher the ambient temperature, the shorter the belt service life becomes; however, Power Ace can withstand high temperature compared to the standard V-belt.

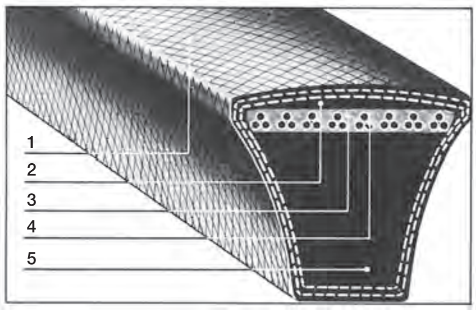
● Static electricity prevention.
It has an electric resistance performance that conforms to the U.S. RMA standard.
*RMA (An abbreviation for Rubber Manufacturers Association)

● Excellent flame resistance.
The specially compounded chloroprene rubber used in Power Ace has a self-anti-inflammation property and therefore can be used at ease.

● Excellent oil resistance.
It can be used even with slight adhesion of oil mist, oil, or grease.

● Excellent weather resistance and ozone resistance.
It can also be used outdoors and in coastline areas without problems. Where the belt is exposed to direct sunlight, please protect the belt with a belt cover of the like if possible.

Structure



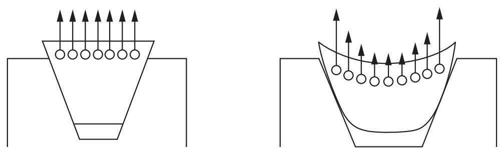
1. Cover fabric
2. Tension rubber
3. Adhesion rubber
4. Cord
5. Compression rubber

● Cord
It uses a polyester cord, has extremely little elongation, and has no concern for peeling of the cord layer.

● Compression rubber
The specially compounded chloroprene rubber reduces heat generation during running and increases the belt service life.

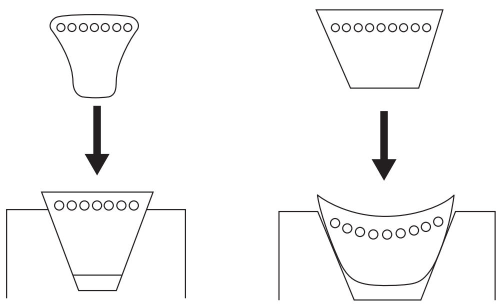
● Cover canvas
The special canvas has only a little tension and strain on the fiber even when it is wound around a small-diameter pulley, reducing losses in power transmission due to bending stress.
It is also excellent in protection of the inside of the belt.

● Arched top
At the time of operation, it prevents cross-sectional deformation of the belt and maintains the group of tension members at a normal position; hence the group of tension members receives a uniform force, leading to a longer belt service life.



Power Ace　　Standard V-belt

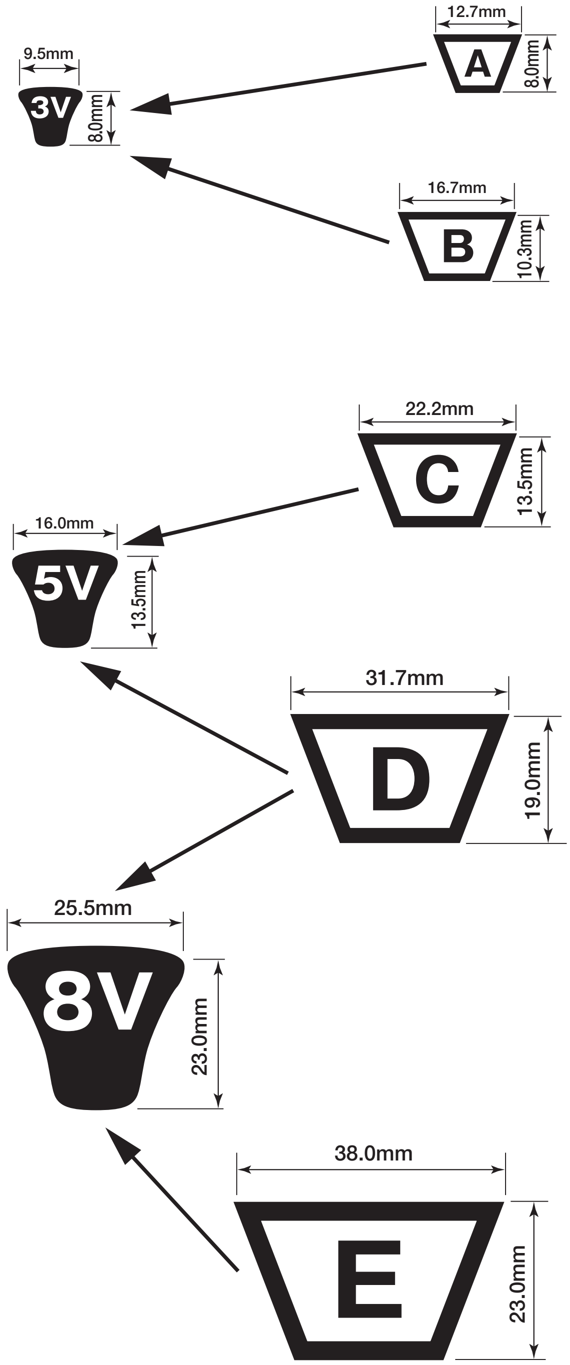
● Concave side wall
When the belt is wound around a pulley, the belt side face becomes straight and comes in uniform contact with the pulley, which increases the power transmission capability. The abrasion on the belt side face is uniform, which extends the belt service life.



Power Ace　　Standard V-belt

Power Ace / Power Ace Cog / Power Scrum / Power Ace Aramid Combo
Product Introduction

Type



(Note) The cross-sectional dimensions of Power Ace are nominal dimensions.

■ Belt size

Type 3V		Type 5V		Type 8V	
Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)
250	635	500	1270	1000	2540
265	673	530	1346	1060	2692
280	711	560	1422	1120	2845
300	762	600	1524	1180	2997
315	800	630	1600	1250	3175
335	851	670	1702	1320	3353
355	902	710	1803	1400	3556
375	953	750	1905	1500	3810
400	1016	800	2032	1600	4064
425	1080	850	2159	1700	4318
450	1143	900	2286	1800	4572
475	1207	950	2413	1900	4826
500	1270	1000	2540	2000	5080
530	1346	1060	2692	2120	5385
560	1422	1120	2845	2240	5690
600	1524	1180	2997	2360	5994
630	1600	1250	3175	2500	6350
670	1702	1320	3353	2650	6731
710	1803	1400	3556	2800	7112
750	1905	1500	3810	3000	7620
800	2032	1600	4064	3150	8001
850	2159	1700	4318	3350	8509
900	2286	1800	4572	3550	9017
950	2413	1900	4826	3750	9525
1000	2540	2000	5080	4000	10160
1060	2692	2120	5385	4250	10795
1120	2845	2240	5690	4500	11430
1180	2997	2360	5994	4750	12065
1250	3175	2500	6350	5000	12700
1320	3353	2650	6731	5600	14224
1400	3556	2800	7112		
		3000	7620		
		3150	8001		
		3350	8509		
		3550	9017		

When using multiple belts, please specify a matched set.

Indication Example

5V 1250

Nominal No.
Effective outside length (125 inches: 3175 mm)

Belt type (Type 5V)
Top width (5/8 inches: 16 mm)

2. Power Ace Cog Product Introduction

This is an additional specification of the high power transmission narrow V-belt "Bando Power Ace" and is a raw-edge cogged type narrow V-belt that can meet the requirements of high transmission capacity and miniaturization. *For other widths than the above, please contact us.

Features

■ Allows miniaturization and cost reduction of power transmission devices.

Power Ace Cog has a higher transmission capacity than that of Power Ace and can also be used for small pulley diameters and high-speed revolution.

■ Transmission capacity

Although the rate of increase of transmission capacity varies slightly depending on the pulley diameter and the revolution, in generally used operating conditions, it has 20 to 30% higher transmission capacity than that of Power Ace.

■ Minimum pulley diameter

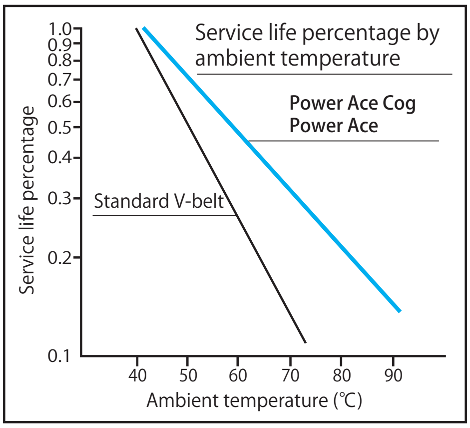
Power Ace Cog has a cogged profile at the bottom of the belt and therefore can be used for small pulley diameters as well.

Belt type	Minimum pulley diameter	
	Power Ace Cog	Power Ace
Type 3V	56 (3VX)	67 (3V)
Type 5V	112 (5VX)	150 (5V)

■ Allows high-speed operation.

Power Ace Cog has a high power transmission capacity per belt and has a small loss in power transmission by centrifugal force; hence, it is also suitable for high-speed operation and can be used up to a speed of 40 m/s.

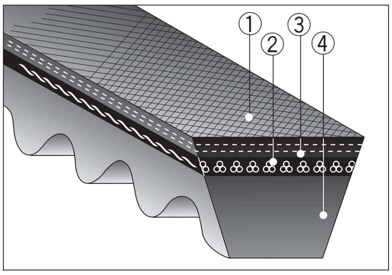
■ Excellent heat resistance.



■ Excellent oil resistance.

As this belt uses a synthetic rubber and takes oil resistance into consideration, it can be used even with slight adhesion of oil mist, oil, or grease.

Structure



1. Top canvas
2. Cord
3. Adhesion rubber
4. Compression rubber

● **Top canvas**
The highly elastic biased canvas protects the belt.

● **Adhesion rubber**
While it maintains the cord at an appropriate position, it also improves the adhesion between the cord and the rubber layer.

● **Cord**
It users a polyester cord and completely adheres to the adhesion rubber; hence, it rarely has belt elongation during running. In addition, it has no concern for peeling of the cord, allowing stable power transmission.

● **Compression rubber**
The specially compounded synthetic rubber mitigates fatigue during running and provides high side pressure resistance.

● **Cogged profile**
The cogged profile at the bottom of the belt allows a smaller-diameter pulley than the previous pulley diameter to be used and provides high flexibility; hence, it generates only little heat during running and has a longer belt service life.

Belt profile and size range

● **The bottom of the belt is "cogged."**

● **Because Power Ace Cog is often used in small to medium-sized machines that generally use small-diameter pulleys; hence, the types and sizes of the belt are limited.**

Type	Size
3VX	3VX250～3VX1400
5VX	5VX500～5VX2000

When using multiple belts, please specify a matched set.
For details of the size, refer to the **table on P. 230**.

For Power Ace Cog Scrum (3VX), please contact us.

3. Power Scrum Product Introduction

Bando Power Scrum is a combined belt that combines the top sections of Power Ace using tie bands.
As the cross-sectional profile of the belt is the same as Power Ace, our Power Ace pulleys can be used.

Features

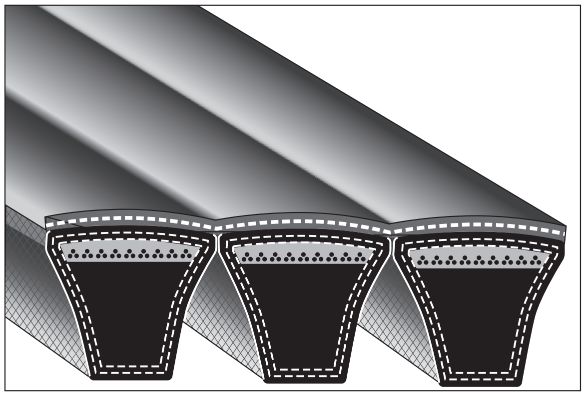
■ Stable operation even under violent load fluctuations

Even when the machine involves shock loads and pulsating loads, the belt tied with tie bands vibrates little and can operate stably, and it does not flip over to the side or come off of a pulley.

■ Belt most suitable for vertical shaft drives

The tying with tie bands allows the belt to be used even in a vertical shaft drive with no detachment from the pulleys.

Structure



■ Standard effective lengths

Type 3V		Type 5V		Type 8V	
Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)
400	1016	600	1524	1000	2540
425	1080	630	1600	1060	2692
450	1143	670	1702	1120	2845
475	1207	710	1803	1180	2997
500	1270	750	1905	1250	3175
530	1346	800	2032	1320	3353
560	1422	850	2159	1400	3556
600	1524	900	2286	1500	3810
630	1600	950	2413	1600	4064
670	1702	1000	2540	1700	4318
710	1803	1060	2692	1800	4572
750	1905	1120	2845	1900	4826
800	2032	1180	2997	2000	5080
850	2159	1250	3175	2120	5385
900	2286	1320	3353	2240	5690
950	2413	1400	3556	2360	5994
1000	2540	1500	3810	2500	6350
1060	2692	1600	4064	2650	6731
1120	2845	1700	4318	2800	7112
1180	2997	1800	4572	3000	7620
1250	3175	1900	4826	3150	8001
1320	3353	2000	5080	3350	8509
1400	3556	2120	5385	3550	9017
		2240	5690	3750	9525
		2360	5994	4000	10160
		2500	6350	4250	10795
		2650	6731	4500	11430
		2800	7112	4750	12065
		3000	7620	5000	12700
		3150	8001	5600	14224
		3350	8509		
		3550	9017		

How to Design

Refer to Power Ace belt design **(P. 245 to P. 273)**.

Belt Indication

■ Indication example

10 - 5V 1250

No. of ridges
Nominal No. (1250 inches: 3175 mm)
Belt type (Type 5 V)

■ Belt combination

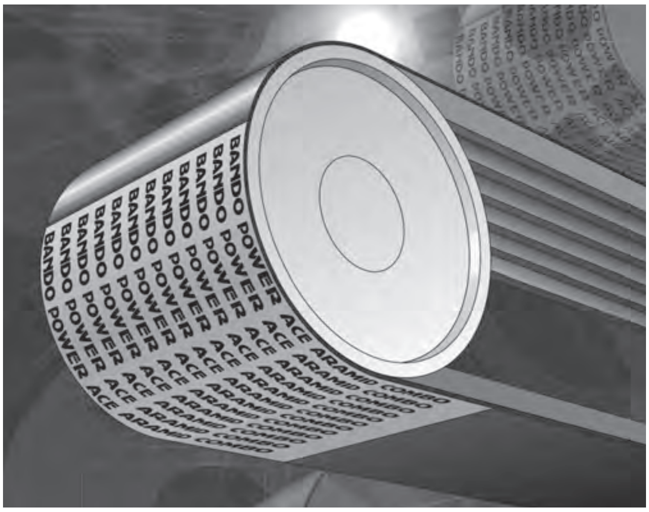
No. of ridges	Combination	No. of ridges	Combination
-	-	11	4+3+4
2	2	12	4+4+4
3	3	13	4+5+4
4	4	14	5+4+5
5	5	15	5+5+5
6	3+3	16	4+4+4+4
7	3+4	17	4+4+5+4
8	4+4	18	5+4+4+5
9	4+5	19	5+4+5+5
10	5+5	20	5+5+5+5

■ Matched set

When using multiple belts, please specify a matched set.

4. Power Ace™ Aramid Combo Product Introduction

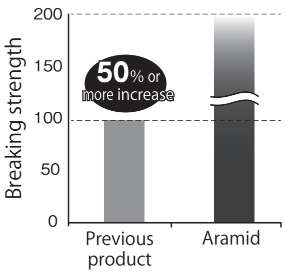
Power Ace™ Aramid Combo is a belt that employs a high-elasticity aramid cord and has improved dimensional stability and shock resistance. It also has excellent heat resistance and electric conductivity.



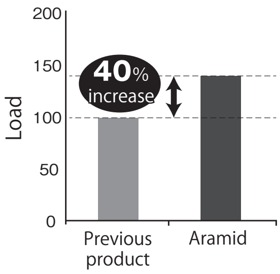
Features

- **The new tie band structure is resistant to peeling.**
- **The high-elasticity aramid cord provides a 50% or higher breaking strength than the previous products.**
- **The belt has a 40% or higher transmission capacity than the previous products.**
- **The belt has an electric conductivity that conforms to the ARPM (RMA) standard.**

● Breaking strength

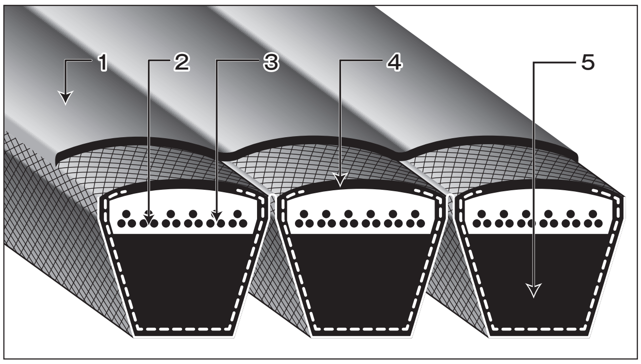


●Transmission capacity



*Pay due attention to the installation tension of the belt.

Structure



1. Tie band 2. High-elasticity aramid cord
3. Adhesion rubber 4. Cover fabric 5. Compression rubber

● Tie band

A peeling-resistant new type tie band structure is employed.

● High-elasticity aramid cord

The high-elasticity aramid cord provides a 50% or higher breaking strength than the previous products.
The belt has a 40% or higher transmission capacity than the previous products.

● Cover fabric

The belt has an electric conductivity that conforms to ARPM (RMA).

Belt Indication

■ Indication example

3 - 8VK 1250

No. of ridges (3)
Belt type (Type 8VK)
Nominal No. (1250 inches: 3175 mm)

■ Standard effective lengths

5VK				8VK			
Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)	Nominal No.	Effective outside length (mm)
600	1524	**2120**	5385	**1060**	2692	**3750**	9525
630	1600	**2240**	5690	**1120**	2845	**4000**	10160
670	1702	**2360**	5994	**1180**	2997	**4250**	10795
710	1803	**2500**	6350	**1250**	3175	**4500**	11430
750	1905	**2650**	6731	**1320**	3353	**4750**	12065
800	2032	**2800**	7112	**1400**	3556	**5000**	12700
850	2159	**3000**	7620	**1500**	3810	**5600**	14224
900	2286	**3150**	8001	**1600**	4064		
950	2413	**3350**	8509	**1700**	4318		
1000	2540	**3550**	9017	**1800**	4572		
1060	2692			**1900**	4826		
1120	2845			**2000**	5080		
1180	2997			**2120**	5385		
1250	3175			**2240**	5690		
1320	3353			**2360**	5994		
1400	3556			**2500**	6350		
1500	3810			**2650**	6731		
1600	4064			**2800**	7112		
1700	4318			**3000**	7620		
1800	4572			**3150**	8001		
1900	4826			**3350**	8509		
2000	5080			**3550**	9017		

● 5VK can be manufactured with up to 16 ridges, and 8VK can be manufactured with up to 10 ridges.
(For other sizes than the indicated sizes, please contact us.)

■ Belt combination

No. of ridges	Combination	No. of ridges	Combination
-	-	11	4+3+4
2	2	12	4+4+4
3	3	13	4+5+4
4	4	14	5+4+5
5	5	15	5+5+5
6	3+3	16	4+4+4+4
7	3+4	17	4+4+5+4
8	4+4	18	5+4+4+5
9	4+5	19	5+4+5+5
10	5+5	20	5+5+5+5

For pulleys, our Power Ace pulleys can be used as with Power Ace and Power Scrum.

■ List of belt sizes of Power Ace / Power Ace Cog / Power Scrum / Power Ace Aramid Combo

Belt nominal No.	Effective outside length (mm)	3V		
		Power Ace	Power Scrum	Power Ace Cog 3VX
250	635	○		○
265	673	○		○
280	711	○		○
300	762	○		○
315	800	○		○
335	851	○		○
355	902	○		○
375	953	○		○
400	1016	○	○	○
425	1080	○	○	○
450	1143	○	○	○
475	1207	○	○	○
500	1270	○	○	○
530	1346	○	○	○
560	1422	○	○	○
600	1524	○	○	○
630	1600	○	○	○
670	1702	○	○	○
710	1803	○	○	○
750	1905	○	○	○
800	2032	○	○	○
850	2159	○	○	○
900	2286	○	○	○
950	2413	○	○	○
1000	2540	○	○	○
1060	2692	○	○	○
1120	2845	○	○	○
1180	2997	○	○	○
1250	3175	○	○	○
1320	3353	○	○	○
1400	3556	○	○	○

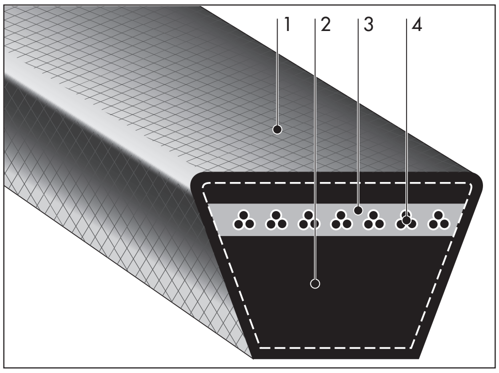
Belt nominal No.	Effective outside length (mm)	5V			
		Power Ace	Power Scrum	Power Ace Cog 5VX	Power Ace Aramid Combo 5VK
500	1270	○		○	
530	1346	○		○	
560	1422	○		○	
600	1524	○	○	○	○
630	1600	○	○	○	○
670	1702	○	○	○	○
710	1803	○	○	○	○
750	1905	○	○	○	○
800	2032	○	○	○	○
850	2159	○	○	○	○
900	2286	○	○	○	○
950	2413	○	○	○	○
1000	2540	○	○	○	○
1060	2692	○	○	○	○
1120	2845	○	○	○	○
1180	2997	○	○	○	○
1250	3175	○	○	○	○
1320	3353	○	○	○	○
1400	3556	○	○	○	○
1500	3810	○	○	○	○
1600	4064	○	○	○	○
1700	4318	○	○	○	○
1800	4572	○	○	○	○
1900	4826	○	○	○	○
2000	5080	○	○	○	○
2120	5385	○	○		○
2240	5690	○	○		○
2360	5994	○	○		○
2500	6350	○	○		○
2650	6731	○	○		○
2800	7112	○	○		○
3000	7620	○	○		○
3150	8001	○	○		○
3350	8509	○	○		○
3550	9017	○	○		○

Belt nominal No.	Effective outside length (mm)	8V		
		Power Ace	Power Scrum	Power Ace Aramid Combo 8VK
1000	2540	○	○	
1060	2692	○	○	○
1120	2845	○	○	○
1180	2997	○	○	○
1250	3175	○	○	○
1320	3353	○	○	○
1400	3556	○	○	○
1500	3810	○	○	○
1600	4064	○	○	○
1700	4318	○	○	○
1800	4572	○	○	○
1900	4826	○	○	○
2000	5080	○	○	○
2120	5385	○	○	○
2240	5690	○	○	○
2360	5994	○	○	○
2500	6350	○	○	○
2650	6731	○	○	○
2800	7112	○	○	○
3000	7620	○	○	○
3150	8001	○	○	○
3350	8509	○	○	○
3550	9017	○	○	○
3750	9525	○	○	○
4000	10160	○	○	○
4250	10795	○	○	○
4500	11430	○	○	○
4750	12065	○	○	○
5000	12700	○	○	○
5600	14224	○	○	○

V-Belt Power Scrum

1. V-Belt (Red Standard) Product Introduction

Structure



① **Cover fabric**

The cover fabric has a sufficient abrasion resistance to friction with the pulleys and is made of a strong, elastic, and bias special cloth. The further reinforcement with the abrasion-resistant rubber protects the inside sufficiently.

② **Compression rubber**

It keeps the normal belt cross-sectional profile, has extremely little heat generation against bending, and is very flexible.

③ **Adhesion rubber**

While it maintains the cord layer at an appropriate position, it also improves the adhesion between the cord layer and the rubber layer.

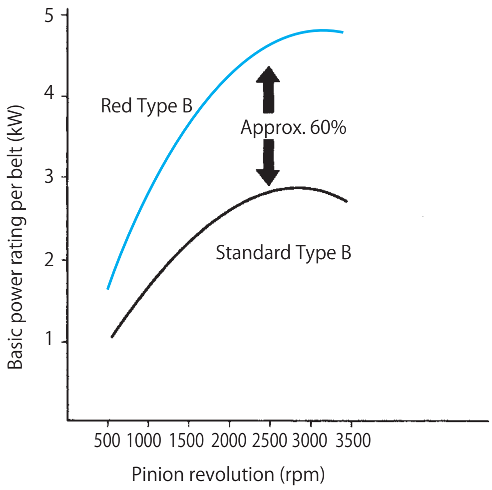
④ **Cord**

It is the main part that transmits power and uses a polyester cord that has a high strength, has little elongation, and has little flex fatigue. It strongly adheres to and is integrated with the rubber layer; hence, in power transmission, each cord receives uniform force and can perform stable power transmission.

Features/Red

■ High-quality and high-power-transmission V-belt

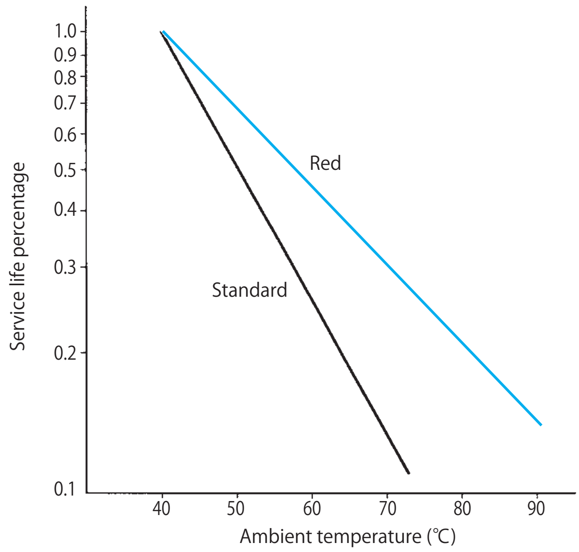
It employs polyester cords that are strong and have little elongation and a synthetic rubber compound, and has about 60% higher power than the previous Standard.



This graph plots the transmission power per belt as compared to revolution when a Type-B 125-mm-dia. pulley is used.

■ Excellent heat resistance

Generally, when the ambient temperature increases, the belt service life decreases as shown in the graph below. However, Bando Red has a lower reduction rate than Standard; hence, when the ambient temperature is high (normally 60 °C or more), it is recommended to use Bando Red.



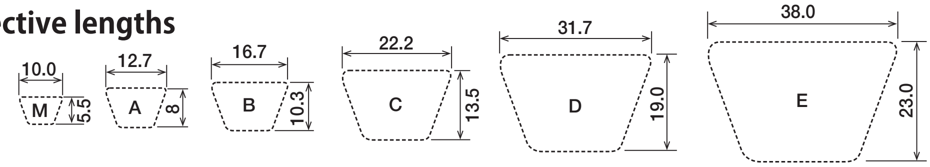
■ Excellent flame resistance.

Because it does not have a self-burning property, the risk of ignition due to excessive slipping is low.

V-Belt Power Scrum

Product Introduction

Table of effective lengths



Manufacturable range for Standard
Manufacturable range for Red

*: Standard dimension prescribed in JIS
○: Bando's standard dimension

Effective dimension: Represents effective outside length for Type M and effective pitch length for Types A, B, C, D, and E.

Nominal No.	Effective dimension (mm)	Belt type M		A		B		C		D		E	
11	279												
12	305												
13	330												
14	356												
15	381												
16	406												
17	432												
18	457												
19	483												
20	508		⊛	⊛	⊛								
21	533		⊛	⊛	⊛								
22	559		⊛	⊛	⊛								
23	584		⊛	⊛	⊛								
24	610		⊛	⊛	⊛								
25	635		⊛	⊛	⊛								
26	660		⊛	⊛	⊛								
27	686		⊛	⊛	⊛								
28	711		⊛	⊛	⊛								
29	737		⊛	⊛	⊛								
30	762		⊛	⊛	⊛	⊛	⊛						
31	787		⊛	⊛	⊛	⊛	⊛						
32	813		⊛	⊛	⊛	⊛	⊛						
33	838		⊛	⊛	⊛	⊛	⊛						
34	864		⊛	⊛	⊛	⊛	⊛						
35	889		⊛	⊛	⊛	⊛	⊛						
36	914		⊛	⊛	⊛	⊛	⊛						
37	940		⊛	⊛	⊛	⊛	⊛						
38	965		⊛	⊛	⊛	⊛	⊛						
39	991		⊛	⊛	⊛	⊛	⊛						
40	1016		⊛	⊛	⊛	⊛	⊛						
41	1041		⊛	⊛	⊛	⊛	⊛						
42	1067		⊛	⊛	⊛	⊛	⊛						
43	1092		⊛	⊛	⊛	⊛	⊛						
44	1118		⊛	⊛	⊛	⊛	⊛						
45	1143		⊛	⊛	⊛	⊛	⊛	⊛	⊛				
46	1168		⊛	⊛	⊛	⊛	⊛						
47	1194		⊛	⊛	⊛	⊛	⊛						
48	1219		⊛	⊛	⊛	⊛	⊛	⊛	⊛				
49	1245		⊛	⊛	⊛	⊛	⊛						
50	1270		⊛	⊛	⊛	⊛	⊛	⊛	⊛				
51	1295			⊛	⊛	⊛	⊛	○					
52	1321			⊛	⊛	⊛	⊛	⊛	⊛				
53	1346			⊛	⊛	⊛	⊛	○					
54	1372			⊛	⊛	⊛	⊛	⊛	⊛				
55	1397			⊛	⊛	⊛	⊛	⊛	⊛				
56	1422			⊛	⊛	⊛	⊛	○					
57	1448			⊛	⊛	⊛	⊛	○					
58	1473			⊛	⊛	⊛	⊛	⊛	⊛				
59	1499			⊛	⊛	⊛	⊛	○					
60	1524			⊛	⊛	⊛	⊛	⊛	⊛				
61	1549			⊛	⊛	⊛	⊛	○					
62	1575			⊛	⊛	⊛	⊛	⊛	⊛				
63	1600			⊛	⊛	⊛	⊛	○					
64	1626			⊛	⊛	⊛	⊛	○					
65	1651			⊛	⊛	⊛	⊛	⊛	⊛				
66	1676			⊛	⊛	⊛	⊛	○					
67	1702			⊛	⊛	⊛	⊛	○					
68	1727			⊛	⊛	⊛	⊛	⊛	⊛				
69	1753			⊛	⊛	⊛	⊛	○					
70	1778			⊛	⊛	⊛	⊛	⊛	⊛				
71	1803			⊛	⊛	⊛	⊛	○					
72	1829			⊛	⊛	⊛	⊛	⊛	⊛				
73	1854			⊛	⊛	⊛	⊛	○					
74	1880			⊛	⊛	⊛	⊛	○					
75	1905			⊛	⊛	⊛	⊛	⊛	⊛				
76	1930			⊛	⊛	⊛	⊛	○					
77	1956			⊛	⊛	⊛	⊛	○					
78	1981			⊛	⊛	⊛	⊛	⊛	⊛				
79	2007			⊛	⊛	⊛	⊛	○					
80	2032			⊛	⊛	⊛	⊛	⊛	⊛				
81	2057			⊛	⊛	⊛	⊛	○					
82	2083			⊛	⊛	⊛	⊛	⊛	⊛				
83	2108			⊛	⊛	⊛	⊛	○					
84	2134			⊛	⊛	⊛	⊛	○					
85	2159			⊛	⊛	⊛	⊛	⊛	⊛				
86	2184			⊛	⊛	⊛	⊛	○					
87	2210			⊛	⊛	⊛	⊛	○					
88	2235			⊛	⊛	⊛	⊛	⊛	⊛				
89	2261			⊛	⊛	⊛	⊛	○					
90	2286			⊛	⊛	⊛	⊛	⊛	⊛				
91	2311			⊛	⊛	⊛	⊛	○					
92	2337			⊛	⊛	⊛	⊛	⊛	⊛				
93	2362			⊛	⊛	⊛	⊛	○					
94	2388			⊛	⊛	⊛	⊛	○					
95	2413			⊛	⊛	⊛	⊛	⊛	⊛				
96	2438			⊛	⊛	⊛	⊛	○					
97	2464			⊛	⊛	⊛	⊛	○					
98	2489			⊛	⊛	⊛	⊛	⊛	⊛				
99	2515			⊛	⊛	⊛	⊛	○					
100	2540			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
101	2565												
102	2591			⊛	⊛	⊛	⊛	⊛	⊛				
103	2616												
104	2642												
105	2667			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
106	2692												
107	2718												
108	2743			⊛	⊛	⊛	⊛	⊛	⊛				
109	2769												
110	2794			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
111	2819												
112	2845			⊛	⊛	⊛	⊛	⊛	⊛				
113	2870												
114	2896												
115	2921			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
116	2946												
117	2972												
118	2997			⊛	⊛	⊛	⊛	⊛	⊛				
119	3023												
120	3048			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
121	3073												
122	3099			⊛	⊛	⊛	⊛	⊛	⊛				
123	3124												
124	3150												
125	3175			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
126	3200												
127	3226												
128	3251			⊛	⊛	⊛	⊛	⊛	⊛				
129	3277												
130	3302			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
131	3327												
132	3353					⊛	⊛	⊛	⊛				
133	3378												
134	3404												
135	3429			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
136	3454												

V-Belt Power Scrum

Table of effective lengths

Manufacturable range for Standard
Manufacturable range for Red

*: Standard dimension prescribed in JIS
○: Bando's standard dimension

Effective dimension: Represents effective outside length for Type M and effective pitch length for Types A, B, C, D, and E.

Nominal No.	Effective dimension (mm)	Belt type											
		M		A		B		C		D		E	
137	3480												
138	3505					⊛	⊛	⊛	⊛				
139	3531												
140	3556			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
141	3581												
142	3607							⊛	⊛				
143	3632												
144	3658												
145	3683			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
146	3708												
147	3734												
148	3759							⊛	⊛				
149	3785												
150	3810			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
151	3835												
152	3861												
153	3886												
154	3912												
155	3937			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
156	3962												
157	3988												
158	4013												
159	4039												
160	4064			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
161	4089												
162	4115												
163	4140												
164	4166												
165	4191					⊛	⊛	⊛	⊛	⊛	⊛		
166	4216												
167	4242												
168	4267												
169	4293												
170	4318			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
171	4343												
172	4369												
173	4394												
174	4420												
175	4445												
176	4470												
177	4496												
178	4521												
179	4547												
180	4572			⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛		
181	4597												
182	4623												
183	4648												
184	4674												
185	4699												
186	4724												
187	4750												
188	4775												
189	4801												
190	4826					⊛	⊛	⊛	⊛	⊛	⊛		
191	4851												
192	4877												
193	4902												
194	4928												
195	4953												
196	4978												
197	5004												
198	5029												
199	5055												
200	5080					⊛	⊛	⊛	⊛	⊛	⊛		
205	5207												
210	5334					⊛	⊛	⊛	⊛	⊛	⊛		

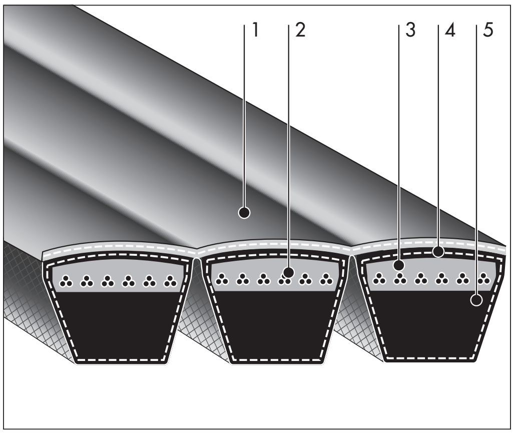
Nominal No.	Effective dimension (mm)	Belt type											
		M		A		B		C		D		E	
215	5461												
220	5588							⊛	⊛	⊛	⊛		
225	5715												
230	5842							⊛	⊛	⊛	⊛		
235	5969												
240	6096							⊛	⊛	⊛	⊛		
245	6223												
250	6350							⊛	⊛	⊛	⊛		
255	6477												
260	6604									⊛	⊛		
265	6731												
270	6858									⊛	⊛		
275	6985												
280	7112									⊛	⊛		
285	7239												
290	7366												
295	7493												
300	7620									⊛	⊛		
305	7747												
310	7874									⊛	⊛		
315	8001												
320	8128												
325	8255												
330	8382									⊛	⊛		
335	8509												
340	8636												
345	8763												
350	8890												
355	9017												
360	9144												
365	9271												
370	9398												
375	9525												
380	9652												
385	9779												
390	9906												
395	10033												
400	10160												
410	10414												
420	10668												
430	10922												
440	11176												
450	11430												
460	11684												
470	11938												
480	12192												
490	12446												
500	12700												
510	12954												
520	13208												
530	13462												
540	13716												
550	13970												
560	14224												
570	14478												
580	14732												
590	14986												
600	15240												
610	15494												
620	15748												
630	16002												
640	16256												
650	16510												

When using multiple belts, please specify a matched set.

2. Power Scrum Product Introduction

Bando Power Scrum is a combined belt that combines the top sections of V-Belt Red using tie bands. As the cross-sectional profile of the belt is the same as V-belts, JIS V-grooved pulleys can be used.

Structure (V-Belt Type)



1. Tie band 2. Cord 3. Adhesion rubber
4. Cover fabric 5. Compression rubber

Features

■ **Stable operation even under violent load fluctuations**

Even when the machine involves shock loads and pulsating loads, the belt tied with tie bands vibrates little and can operate stably, and it does not flip over to the side or come off of a pulley.

■ **Belt most suitable for vertical shaft drives**

The tying with tie bands allows the belt to be used even in a vertical shaft drive with no detachment from the pulleys.

■ **Allows V-flat power transmission.**

Deceleration at a high speed ratio is possible with V-flat power transmission, allowing inexpensive power transmission.

■ **Can also be used for conveyance.**

■ Manufacturable range for Power Scrum

Belt type	P (mm)	Nominal No.*
A	15.0	60～200
B	19.0	60～350
C	25.5	100～350
D	37.0	100～350

*The nominal numbers for V-belt type represent the effective pitch length of the belt in units of inches.

● The V-belt type is made to order. Please use the Power Ace type if possible.

Belt Indication

■ Indication example

5 - C 100

No. of ridges
Nominal No. (100 inches: 2540 mm)
Belt type (Type C)

Standard Combination by the Number of Ridges

A single Power Scrum belt consists of a combination of two, three, four, and/or five ridges. For six ridges or more, the standard combinations are shown in the following table.

No. of ridges	Standard combination	No. of ridges	Standard combination
6	3+3	13	4+5+4
7	3+4	14	5+4+5
8	4+4	15	5+5+5
9	4+5	16	4+4+4+4
10	5+5	17	4+4+5+4
11	4+3+4	18	5+4+4+5
12	4+4+4	19	5+4+5+5

When using multiple belts, please specify a matched set.

Pulley

For pulleys for Power Scrum, the groove pitch is especially important.
Use JIS pulleys.

3. V-grooved pulley groove dimensions

The pulley groove profile is shown in Fig. 1. Use Table 1 Standard pulley groove dimensions. For horizontal power transmission or vertical power transmission, use Table 2 Deep pulley groove dimensions.

Fig. 1 Pulley groove cross section

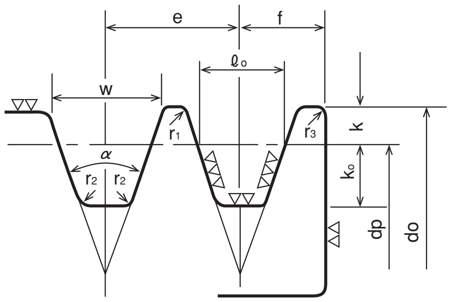


Table 1 Standard pulley groove dimensions

(Unit: mm)

Type	Pulley pitch diameter (dp)	α (°)	ℓo	(w)	k	ko	e	f	r_1	r_2	r_3	(Reference) Belt thickness
M	50～71 72～90 91 or more	34 36 38	8.0	9.65 9.75 9.86	2.7	6.3	*	9.5	0.2～0.5	0.5～1.0	1～2	5.5
A	71～100 101～125 126 or more	34 36 38	9.2	11.95 12.12 12.30	4.5	8.0	15.0	10.0	0.2～0.5	0.5～1.0	1～2	8
B	125～160 161～200 201 or more	34 36 38	12.5	15.86 16.07 16.29	5.5	9.5	19.0	12.5	0.2～0.5	0.5～1.0	1～2	10.3
C	200～250 251～315 316 or more	34 36 38	16.9	21.18 21.45 21.72	7.0	12.0	25.5	17.0	0.2～0.5	1.0～1.6	2～3	13.5
D	355～450 451 or more	36 38	24.6	30.77 31.14	9.5	15.5	37.0	24.0	0.2～0.5	1.6～2.0	3～4	19
E	500～630 631 or more	36 38	28.7	36.95 37.45	12.7	19.3	44.5	29.0	0.2～0.5	1.6～2.0	4～5	23

(Note) For Type M, only one belt should be used in principle.

Table 2 Deep pulley groove dimensions

(Unit: mm)

Type	Pulley pitch diameter (dp)	α (°)	ℓo	(w)	k	ko	e	f	r_1	r_2	r_3
A	71～100 101～125 126 or more	34 36 38	9.2	14.40 14.72 15.05	8.5	8.0	18	12	0.2～0.5	0.5～1.0	1～2
B	125～160 161～200 201 or more	34 36 38	12.5	18.61 19.00 19.39	10.0	9.5	22	14.5	0.2～0.5	0.5～1.0	1～2
C	200～250 251～315 316 or more	34 36 38	16.9	25.46 26.00 26.54	14.0	12.0	31.5	20	0.2～0.5	1.0～1.6	2～3
D	355～450 451 or more	36 38	24.6	37.27 38.03	19.5	15.5	45	29	0.2～0.5	1.6～2.0	3～4
E	500～630 631 or more	36 38	28.7	44.10 45.02	23.7	19.3	52.5	34	0.2～0.5	1.6～2.0	4～5

● **Pulley material**

JIS G 5501 "Gray Iron Castings"　FC200 to 250

Rib-Ace 2

It is generally called V-ribbed belt and is a belt that combines a flat belt and a V-belt to make use of the features of both. Previously, the application of this belt was limited to driving of auxiliary machinery for automobiles; however, even for general-purpose machinery, it is a power transmission belt that can meet such requirements as miniaturization, machinery functional improvement, and labor-saving in maintenance.

1. Product Introduction

Features

Already from around 1980, “Bando Rib-Ace Auto” started to be used as a belt for automobiles, and it has been providing such features as pulley miniaturization, labor-saving in belt maintenance, and belt service life extension for such purposes as weight reduction, space-saving, and energy-saving of automotive engines.

■ **Allows miniaturization of power transmission devices.**

It can be used with small-diameter pulleys and allows compact designs.

■ **Allows high-speed operation.**

It has little losses in power transmission by centrifugal force, is suitable for high-speed operation, and can be used up to a belt speed of 50 m/s.

■ **It has high rotation accuracy and has little belt vibration.**

The rib section is combined with the belt and is ground, it has little rotation non-uniformity during each rotation of the belt in running, allowing you to expect smooth operation.

■ **High transmission efficiency (little power loss).**

The belt is thinner than V-belts and has little loss from bending, which provides high transmission efficiency.

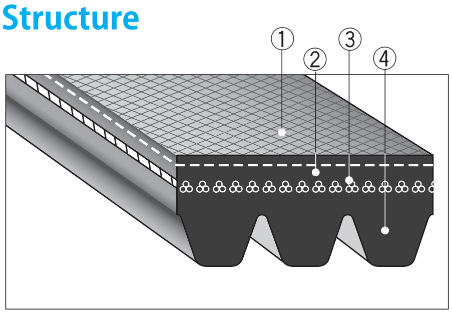
■ **Advantageous in tension retention and maintenance.**

Compared to V-belts, it has less belt deformation and has less sink into the pulley groove due to abrasion, allowing the maintenance period, such as re-tensioning, to be extended.

■ **Characteristics**

Heat resistance: It compounds heat-resistant rubber.
Oil resistance: It can be used even with slight adhesion of oil or grease. (Be careful that adhesion of dispersed cutting oil etc. can cause slipping.)
Water resistance: Be careful that slip tends to occur when water splashes over directly or when the belt is constantly used in a high-temperature condition.
Static electricity prevention: When you need static electricity prevention, please contact us.

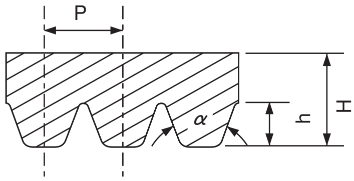
Structure



1. Top canvas
2. Adhesion rubber
3. Cord
4. Rib rubber

Indication

■ Belt designation example



4 PK 1000

No. of ribs — Belt type (Type PK) — Effective length (1000 mm)

	P	H	h	α
	mm	mm	mm	(°)
Type PJ	2.34	3.4	1.3	40
Type PK	3.56	4.3	2.0	40
Type PL	4.70	6.0	3.3	40

■ Standard size

(Unit: mm)

Effective length					
Type PJ		Type PK		Type PL	
273	887	600	1220	540	1520
294	911	615	1250	605	1555
332	937	630	1280	655	1645
353	962	650	1320	700	1720
401	988	670	1360	730	1750
454	1013	690	1400	825	1850
480	1089	710	1450	850	1900
502	1140	730	1500	870	1975
530	1165	750	1550	875	2065
556	1191	775	1600	880	2115
567	1201	800	1650	905	2190
594	1242	825	1700	915	2360
607	1318	850	1750	950	2470
619	1343	875	1800	975	2575
634		900	1850	1000	2695
657		925	1900	1035	2840
704		950	1950	1050	3045
708		975	2000	1055	
759		1000	2120	1070	
777		1030	2240	1190	
797		1060	2360	1240	
817		1090	2500	1305	
835		1120	2650	1340	
852		1150	2800	1365	
861		1180	3000	1445	

■ Standard No. of ribs

Type PJ	3PJ～18PJ
Type PK	3PK～12PK
Type PL	3PL～12PL

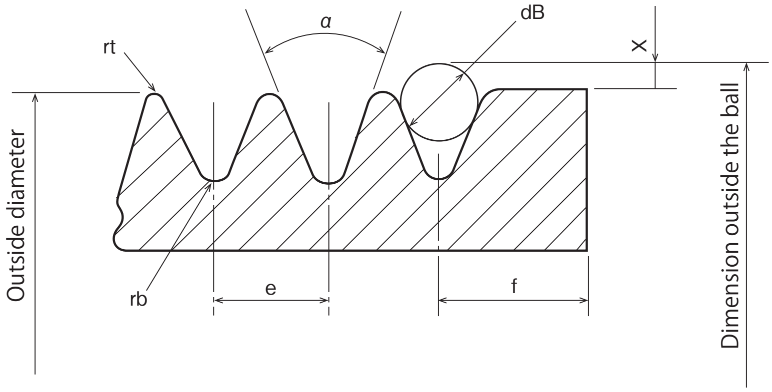
* When using multiple belts, please specify a matched set. However, please note that Rib-Ace is used in a multiple quantity with the same number of ribs.

2. Rib-Ace 2 pulley

We standardize Rib-Ace Type-PK pulleys (bushing type) for you to be able to use Rib-Ace (Type PK) more conveniently. Please make use of them. **(→ See P. 241 to P. 242)**

Dimensional accuracy

■ Profile and dimensions of the groove section



(Unit: mm)

	e	f (minimum)	α	rt (minimum)	rb (maximum)	dB	2X
Unit	mm	mm	°	mm	mm	mm	mm
PJ	2.34±0.03	1.8	40±0.5	0.20	0.4	1.50±0.01	0.23
PK	3.56±0.05	2.5	40±0.5	0.25	0.5	2.50±0.01	0.99
PL	4.70±0.05	3.3	40±0.5	0.40	0.4	3.50±0.01	2.36

Note 1) A cumulative pitch error is ±0.3 mm or less.

■ Outside diameter

(Unit: mm)

Nominal outside diameter	Tolerance
74 or less	±0.25
74 to 200 or less	±0.50
200 or more	±{0.50 + [(pulley diameter - 200) × 0.002]}

■ Groove outside diameter of a single pulley Tolerance of (the dimension outside the ball)

(Unit: mm)

Range of nominal outside diameter and No. of grooves	Maximum dimension outside the ball
74 or less and 6 grooves or less	0.10 (When 6 grooves are exceeded, add 0.003 per groove.)
74 to 500 or less and 10 grooves or less	0.15 (When 10 grooves are exceeded, add 0.005 per groove.)

■ Circumferential run-out

(Unit: mm)

Nominal outside diameter	Run-out tolerance (TIR) (Note 2)
74 or less	0.13
74 to 250 or less	0.25
250 or more	0.25 with 0.0004 added per outside diameter of 1.0 over 250

Note 2: TIR is an abbreviation for Total Indicator Reading and refers to a difference between the maximum value and the minimum value in readings of run-out measurement.

■ Run-out of rim side face

(Unit: mm)

Nominal outside diameter	Tolerance of run-out of rim side face
125 or less	0.15
Over 125 to 315 or less	0.20
Over 315	0.30

■ About balance

Cases with a peripheral speed of 35 m/s or less and cases with a peripheral speed over 35 m/s need to be separated.

① **Standard pulley (use up to a peripheral speed of 35 m/s)**

For an unbalanced mass at the periphery, the larger of ⓐ or ⓑ is used as the tolerance.

ⓐ **0.001 kg**

ⓑ **0.1% of the total mass of the pulley and the bushing**

The value of ⓑ corresponds to G16 of JIS B 0905 "Balance quality of rotating machines" at a peripheral speed of 15 m/s..

② **When a peripheral speed of 35 m/s is exceeded**

When 35 m/s is exceeded, a dynamic balance is required.

● Finish accuracy

The finish accuracy of the groove section that contacts with the belt is 3.2a or less (10•S (JIS)).

● Material

FC200 (former FC20) or more of JIS-G-5501 "Gray Iron Castings."

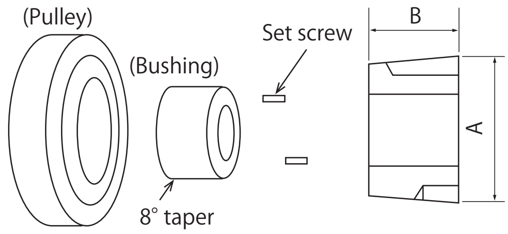
Bushing System

The pulley for Rib-Ace is a bushing system that consists of a combination of the pulley body and a bushing.
It employs "ISOMEC™ Bushing" (hereinafter referred to as bushing), does not require machining of the shaft hole or keyway, and allows installation on, removal from, and positioning on a shaft to be performed with a single hex key. It has an equivalent fastening force with shrinkage fit and guarantees safe and reliable power transmission.

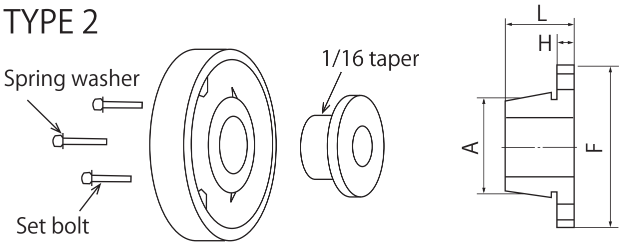
Features

- **Allows simple and speedy installation on, removal from, and positioning on a shaft.**
- **No need for additional machining such as shaft hole machining.**
- **Safe and reliable fastening system.**
- **Easy responses to design changes.**
- **Design standardization by the bushing system leads to cost reduction.**
- **The same standard with major European and American manufacturers provides compatibility.**
- **Can be applied to any rotating power transmission devices.**

TYPE 1



TYPE 2



■ How to designate pulleys and bushings

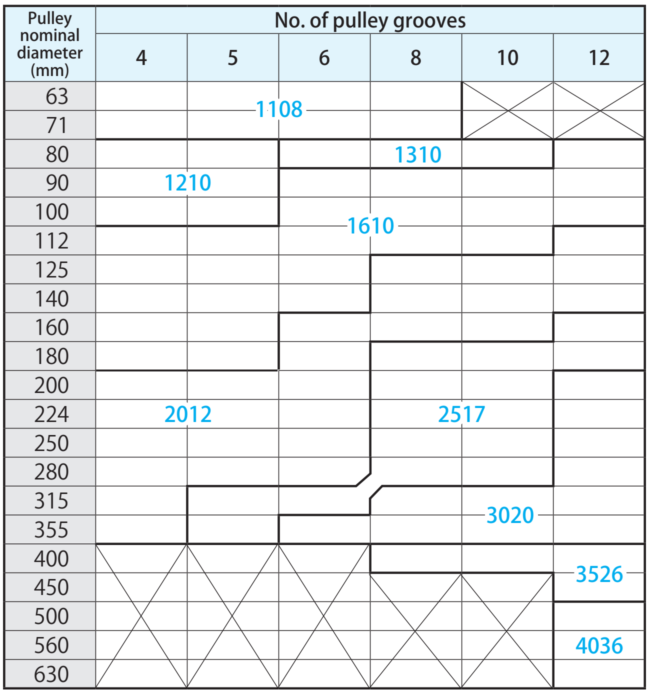
Pulley (example) **PK - 80 - 4**

- PK: Type PK
- 80: Pulley nominal diameter (80 mm)
- 4: No. of grooves

Bushing (example) **1210 - 20 - N**

- 1210: Bushing part number
- 20: Shaft hole diameter (20 mm)
- N: Keyway for new JIS keys

■ Table of applicable part numbers



■ Table of Type 1 ISOMEC™ Bushing dimensions

(Unit: mm)

Bushing part number	Maximum shaft hole dia. Note 1 (mm)	A (mm)	B (mm)	Set screw				Mass Note 2 (kg)	Allowable transmission torque (N·m)
				Nominal (inch)	Length (inch)	Quantity	Hex key Nominal (mm)		
1108	28 (25)	38.48	22	W1/4	1/2	2	3	0.13	150
1210	32 (28)	47.60	25	W3/8	5/8	2	5	0.23	290
1310	35 (32)	50.77	25	W3/8	5/8	2	5	0.27	350
1610	42 (38)	57.12	25	W3/8	5/8	2	5	0.32	490
2012	50 (48)	69.82	32	W7/16	7/8	2	5	0.59	900
2517	60 (60)	85.70	45	W1/2	1	2	6	1.22	1,700
3020	75 (70)	107.92	51	W5/8	1 1/4	2	8	2.41	3,000

■ Table of Type 2 ISOMEC™ Bushing dimensions

Bushing part number	Maximum shaft hole dia. Note 1 (mm)	A (mm)	B (mm)	F (mm)	L (mm)	H (mm)	Set bolt				Mass Note 2 (kg)	Allowable transmission torque (N·m)
							Nominal (mm)	Length (mm)	Quantity	Socket wrench nominal (mm)		
3526	75(75)	97.38	-	152	67	19	M12	65	3	19	3.92	3,200
4036	95(85)	112.71	-	168	92	21	M14	90	3	22	6.33	3,400

(Note 1) Maximum shaft hole diameter when the new JIS parallel key or shallow key is applied. However, the values within the parentheses ( ) are maximum shaft hole diameters when the previous JIS parallel key is applied.
(Note 2) Mass with the intermediate size of the standard shaft hole diameter.

■ List of standard shaft hole diameters

(Unit: mm)

Bushing part number	10	11	12	14	15	16	17	18	19	20	22	24	25	28	30	32	35	38	40	42	45	48	50	55	60	65	70	75	80	85	90	95
	Standard shaft hole dia.																															
1108	●	●	●	●	●	●	●	●	●	●	●	●	●	△																		
1210	○	○	○	○	○	○	○	●	●	●	●	●	●	●	○	△																
1310				○	○	○	○	●	●	●	●	●	●	●	●	●	△															
1610				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	△	△												
2012				○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●	●	●	●	△									
2517						○	○	○	○	○	○	○	○	○	●	●	●	●	●	●	●	●	●	●	●							
3020													○	○	○	●	●	●	●	●	●	●	●	●	●	●	●	○				
3526																			●	●	●	●	●	●	●	●	●	●				
4036																				●	●	●	●	●	●	●	●	●	●	●	○	△

●, ○, and △ are all standard stock products.
Applicable keys are as follows.
● - Parallel key of the new JIS and previous JIS
○ - Parallel key of the new JIS
△ - Shallow key (a special standard key, equipped with the bushing)

(Reference) About shaft diameters and keys used

● Shaft diameter

When a bushing is applied, the shaft diameter tolerance can be increased from the previous one; for the diameter tolerance, refer to the following table.

(Unit: mm)

Shaft diameter	Tolerance
10～30	+0.03 -0.06
32～125	+0.03 -0.12

● Key used

When a key is used for a bushing, use the parallel key of the nominal dimension indicated in the following table for the respective standard shaft hole diameter.
Do not use a taper key.
Although the bushings with the shaft hole diameters to which a shallow key is applied (△ mark in the table above) are all equipped with a shallow key, perform keyway machining on the shaft to the same dimensions as those of the new JIS parallel key.

■ Bushing for the new JIS parallel key groove

(Unit: mm)

Standard shaft hole dimension d	Key nominal dimension b × h	Standard shaft hole dimension d	Key nominal dimension b × h
10	3 × 3	32	10 × 8
11	4 × 4	35	
12		38	
14	5 × 5	40	12 × 8
15		42	
16		45	14 × 9
17		48	
18	6 × 6	50	
19		55	16 × 10
20		60	18 × 11
22		65	
24	8 × 7	70	20 × 12
25		75	
28			
30			

- The tolerance of width b of the keyway of the bushing is Js9.

■ Bushing for the previous-JIS parallel key groove

(Unit: mm)

Standard shaft hole dimension d	Key nominal dimension b × h	Standard shaft hole dimension d	Key nominal dimension b × h
10	4 × 4	32	10 × 8
11		35	
12		38	
14	5 × 5	40	
15		42	12 × 8
16		45	
17		48	
18		50	
19		55	15 × 10
20		60	
21	7 × 7	65	20 × 12
22		70	
24		75	20 × 13
25			
28			
30			

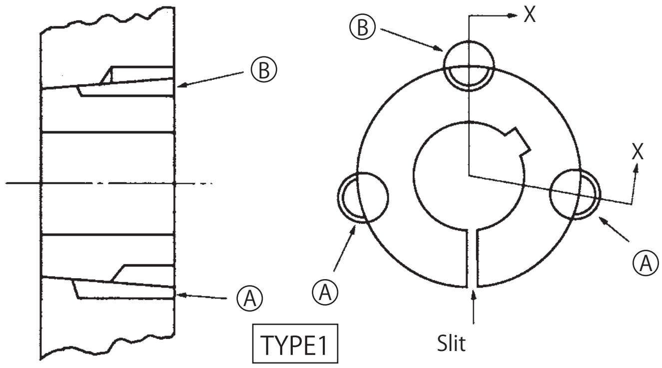
- The tolerance of width b of the keyway of the bushing is F7.

Note) Distinction of the new and previous JIS keyways. Previous-JIS product: with an inscribed "K" mark, contained in a box with a blue label, New-JIS product: Without an inscribed "K" mark, contained in a box with a red label.

Handling Method and Precautions for the Bushing System (Type 1)

The bushing has a total of three holes, two half drilled holes and one half threaded hole. The pulley side has threaded holes at positions corresponding to the drilled holes in the bushing and a drilled hole at a position corresponding to the threaded holes in the bushing Type 1.
Installation and removal are performed by tightening set screws into these holes and utilizing their jacking effect.

(Bushing)



Installation Procedure (Type 1)

① Clean the bushing, the taper holes in the pulley, and the shaft. Adhesion of oil or dust is not allowed.

② Gently fit the bushing in the taper hole in the pulley, insert set screws in two holes Ⓐ (a combination of drilled holes for the bushing and threaded taper holes in the pulley) of Type 1, and temporarily tighten them to about one-third of the entire length.
Be sure to use provided set screws.

③ Slide the bushing in with the bushing floating off the taper holes in the pulley and set the bushing at a desired position **(Type 1-①)**.
The bushing can be slid in more easily by inserting a slotted screwdriver or the like into the slit in the bushing and widening the slit. When using a key, use a parallel key **(→ See P. 239)** and with this key embedded in the keyway in the shaft in advance, set the pulley and the bushing. Do not use a taper key.

④ Uniformly tighten the set screws alternately and gradually using the hex key **(Type 2-②)**. The propulsive force of the screw attracts the pulley in the direction of the bushing, and the wedge effect of the taper and the spring effect of the slit contract the shaft hole, completely fastening the pulley, bushing, and shaft.
When the set screws are difficult to tighten, lightly hit the hub section of the pulley and the bushing with a wooden or plastic hammer. For the tightening torque of the set screws, follow the table below. Be careful that non-uniform tightening can cause run-out.

⑤ Measure the run-out of the rim side face and the outer periphery of the pulley and check that they are equal to or less than the tolerance.
Perform a loaded trial operation for about ten minutes and check the fastening condition and the tightening condition of the set screws.

<Type 1-①>

<Type 1-②>

<Type 1-③>

Tightening torques of Type-1 set screws

Bushing part number	Set screw nominal (inch)	Tightening torque (N•m)	Bushing part number	Set screw nominal (inch)	Tightening torque (N•m)
1108	W1/4	5.6	2012	W7/16	31
1210	W3/8	20	2517	W1/2	48
1310	W3/8	20	3020	W5/8	90
1610	W3/8	20			

Tightening torques of Type-2 set bolts

Bushing part number	Set bolt nominal (mm)	Tightening torque (N•m)	Bushing part number	Set bolt nominal (mm)	Tightening torque (N•m)
3526	M12	81	4036	M14	102

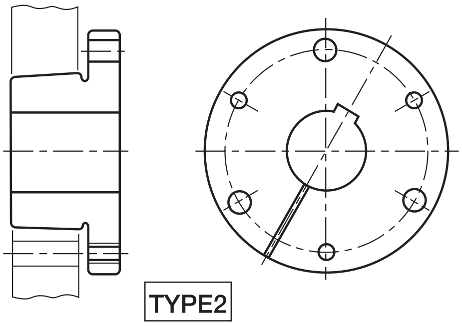
Removal Procedure (Type 1)

① Remove the set screws from the holes Ⓐ of Type 1.

② Apply oil on the tips of the set screws and insert and tighten them in the holes Ⓑ (a combination of the threaded hole in the bushing and the drilled taper hole in the pulley) of Type 1 **(Type 1-③)**.
The jacking effect of the set screws separates the pulley, bushing, and shaft, allowing them to be easily removed.

Handling Method and Precautions for the Bushing System (Type 2)

The Type-2 ISOMEC Bushing has three threaded holes and three drilled holes alternately at equal intervals. As with Type 2, the pulley also has three threaded holes and three drilled holes.
Although installation and removal are performed in the same way as Type 1 by inserting set bolts into these holes, there are four methods depending on the combination of the direction of the bushing in relation to the shaft and the direction of insertion of the set bolts.
Type 2-① Type 2-② Type 2-③ Type 2-④



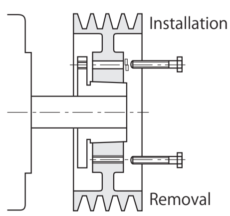
■ Installation Procedure - In the case of Type 2-①

① Clean the bushing, the taper holes in the pulley, and the shaft. Adhesion of oil or dust is not allowed.
② Set the pulley and the bushing aligning the drilled hole position of the pulley with the threaded hole position of the bushing, insert a set bolt from the pulley side, and slightly tighten the set bolt. Do not lubricate the threaded section. Be sure to use provided set bolts.
③ Slide the pulley and the bushing assembled in ② onto the shaft and set them at a desired position.
When using a key, use a parallel key and with this key embedded in the keyway in the shaft in advance, set the pulley and the bushing. Do not use an inclined key.
④ Uniformly tighten the set bolts alternately and gradually using the socket wrench. Check that at the time of completion of tightening, there is a clearance between the flange section of the bushing and the hub section of the pulley. When the set bolts are difficult to tighten, lightly hit the hub section of the pulley and the bushing with a wooden or plastic hammer.
For the tightening torque of the set bolts, follow the separate table. Non-uniform tightening can cause run-out.
⑤ Measure the run-out of the rim side face and the outer periphery of the pulley and check that they are equal to or less than the tolerance. Perform a loaded trial operation for about ten minutes and check the fastening condition and the tightening condition of the set bolts.

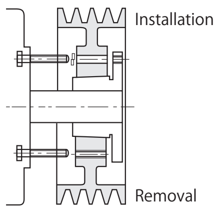
■ Removal - In the case of Type 2-①

① Remove all set bolts.
② Insert the set bolts into the threaded holes in the pulley and tighten them alternately. The set bolts come in contact with the flange section of the bushing, and pushing this separates the pulley, bushing, and shaft, allowing them to be easily removed.

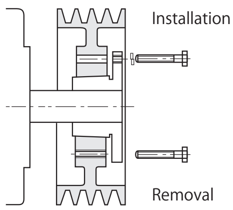
The same as above applies to installation and removal indicated in Type 2-②, Type 2-③, and Type 2-④.
A tip for installation is to set the bushing and the pulley so that the drilled holes come to the side to which the set bolts are inserted and the threaded holes come to the opposite side.



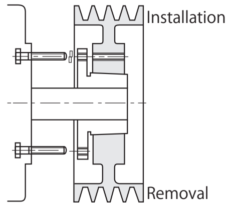
TYPE2-①



TYPE2-②



TYPE2-③



TYPE2-④

■ Precautions

The Bushing System uses fastening using taper and therefore has a centering function that automatically matches the shaft center with the rotation center, causing the run-out of the outer periphery and side face of the pulley to be extremely smaller compared to the previous fastening method. However, an inappropriate installation method may inhibit this self-centering function and cause run-out.
In particular, pay attention to the following three points at the time of installation.

- **Clean the outer peripheral taper surface of the bushing, the taper holes in the pulley, threaded holes, and drilled holes in the pulley.**
  Completely remove foreign objects such as dust.
- **Tighten set screws (set screws for the bushing) uniformly, alternately, and gradually.**
- **When you use a key, use a parallel key.**
  In this case, make the key work in the axial direction and make sure that there is a clearance between the top of the keyway and the key in the depth (height) direction.

(Note) Do not use a taper key.

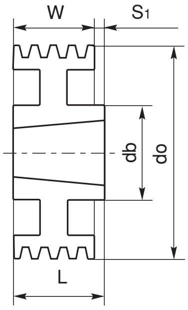
When a run-out is still large even after taking care of the above three points, further tighten a specific or all set screws while measuring them with a dial gauge, or remove the bushing and re-install it.

Table of Rib-Ace 2 (Type PK) pulley standard dimensions

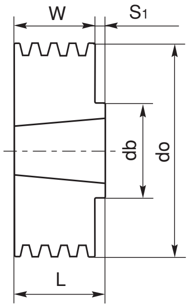
4PK

(Pulley Profile)

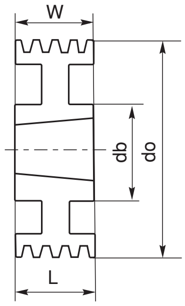
Types 10U/10Y/10Z



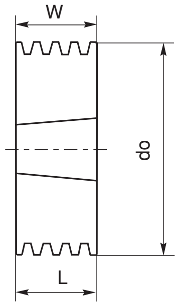
Type 11U



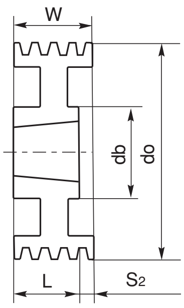
Types 30U/30Y/30Z



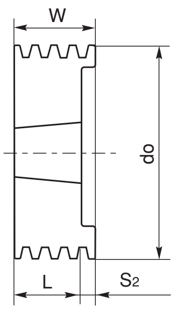
Type 31U



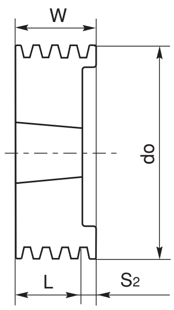
Types 40U/40Z



Type 41U



Type 41UR

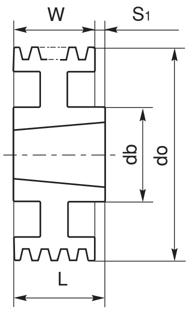


Explanation of symbols
U: Flat-plate solid type
Y: Six-arm type
Z: Flat-plate round-window type
R: Bushing insertion direction

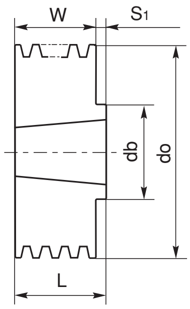
4PK/5PK/6PK/8PK/10PK/12PK

(Pulley Profile)

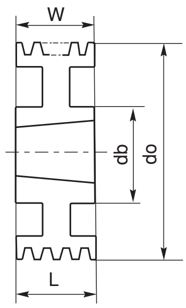
Types 10U/10Y/10Z



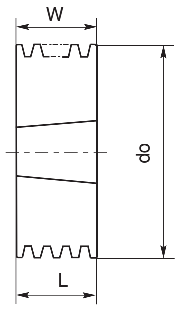
Type 11U



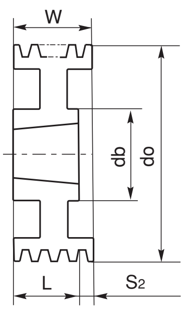
Types 30U/30Y/30Z



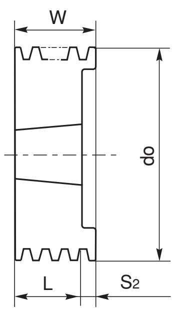
Type 31U



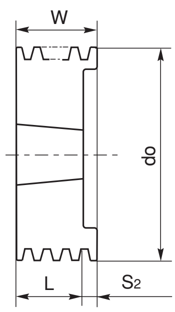
Types 40U/40Z



Type 41U



Type 41UR



Explanation of symbols
U: Flat-plate solid type
Y: Six-arm type
Z: Flat-plate round-window type
R: Bushing insertion direction

PK-4 (for belts with four ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S_2	Width W	Height H	
50	(11U)	Shaft-hole type	22	40	30	9.32	-	20.68	-	0.35
56	(11U)	Shaft-hole type	25	46	30	9.32	-	20.68	-	0.45
63	11U	1108	28	60	22	1.32	-	20.68	-	0.28
67	11U	1108	28	60	22	1.32	-	20.68	-	0.34
71	11U	1108	28	60	22	1.32	-	20.68	-	0.40
75	11U	1108	28	60	22	1.32	-	20.68	-	0.47
80	11U	1210	32	75	25	4.32	-	20.68	-	0.54
85	11U	1210	32	75	25	4.32	-	20.68	-	0.64
90	11U	1210	32	75	25	4.32	-	20.68	-	0.74
95	11U	1210	32	75	25	4.32	-	20.68	-	0.85
100	11U	1210	32	75	25	4.32	-	20.68	-	0.96
106	11U	1610	42	85	25	4.32	-	20.68	-	1.00
112	11U	1610	42	85	25	4.32	-	20.68	-	1.16
118	11U	1610	42	85	25	4.32	-	20.68	-	1.32
125	11U	1610	42	85	25	4.32	-	20.68	-	1.52
132	11U	1610	42	85	25	4.32	-	20.68	-	1.73
140	11U	1610	42	85	25	4.32	-	20.68	-	1.99
150	11U	1610	42	85	25	4.32	-	20.68	-	2.34
160	11U	1610	42	85	25	4.32	-	20.68	-	2.70
170	10U	1610	42	85	25	4.32	-	20.68	10	1.87
180	10U	1610	42	85	25	4.32	-	20.68	10	2.03
190	10U	2012	50	105	32	11.32	-	20.68	10	2.66
200	10U	2012	50	105	32	11.32	-	20.68	10	3.09
212	10U	2012	50	105	32	11.32	-	20.68	10	3.07
224	10U	2012	50	105	32	11.32	-	20.68	10	3.67
236	10U	2012	50	105	32	11.32	-	20.68	10	3.57
250	10U	2012	50	105	32	11.32	-	20.68	10	4.37
280	10Z	2012	50	105	32	11.32	-	20.68	10	4.71
315	10Z	2012	50	105	32	11.32	-	20.68	10	5.80
355	10Z	2012	50	105	32	11.32	-	20.68	10	7.04

PK-5 (for belts with five ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S_2	Width W	Height H	
50	(11U)	Shaft-hole type	22	40	32	7.76	-	24.24	-	0.38
56	(11U)	Shaft-hole type	25	46	32	7.76	-	24.24	-	0.48
63	41UR	1108	28	-	22	-	2.24	24.24	10	0.30
67	41UR	1108	28	-	22	-	2.24	24.24	10	0.36
71	41UR	1108	28	-	22	-	2.24	24.24	10	0.43
75	41UR	1108	28	-	22	-	2.24	24.24	10	0.50
80	11U	1210	32	75	25	0.76	-	24.24	-	0.54
85	11U	1210	32	75	25	0.76	-	24.24	-	0.65
90	11U	1210	32	75	25	0.76	-	24.24	-	0.77
95	11U	1210	32	75	25	0.76	-	24.24	-	0.90
100	11U	1210	32	75	25	0.76	-	24.24	-	1.03
106	11U	1610	42	85	25	0.76	-	24.24	-	1.06
112	11U	1610	42	85	25	0.76	-	24.24	-	1.24
118	11U	1610	42	85	25	0.76	-	24.24	-	1.43
125	11U	1610	42	85	25	0.76	-	24.24	-	1.67
132	11U	1610	42	85	25	0.76	-	24.24	-	1.92
140	11U	1610	42	85	25	0.76	-	24.24	-	2.22
150	11U	1610	42	85	25	0.76	-	24.24	-	2.62
160	11U	1610	42	85	25	0.76	-	24.24	-	3.05
170	10U	1610	42	85	25	0.76	-	24.24	10	1.96
180	10U	1610	42	85	25	0.76	-	24.24	10	2.13
190	10U	2012	50	105	32	7.76	-	24.24	10	2.76
200	10U	2012	50	105	32	7.76	-	24.24	10	3.08
212	10U	2012	50	105	32	7.76	-	24.24	10	3.19
224	10U	2012	50	105	32	7.76	-	24.24	10	3.62
236	10U	2012	50	105	32	7.76	-	24.24	10	3.70
250	10U	2012	50	105	32	7.76	-	24.24	10	4.52
280	10Z	2012	50	105	32	7.76	-	24.24	10	4.87
315	10Z	2517	60	120	45	20.76	-	24.24	10	6.55
355	10Z	2517	60	120	45	20.76	-	24.24	10	7.77

PK-6 (for belts with six ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S_2	Width W	Height H	
50	(11U)	Shaft-hole type	22	40	35	7.2	-	27.8	-	0.41
56	(11U)	Shaft-hole type	25	46	35	7.2	-	27.8	-	0.53
63	41UR	1108	28	-	22	-	5.8	27.8	10	0.33
67	41UR	1108	28	-	22	-	5.8	27.8	10	0.39
71	41UR	1108	28	-	22	-	5.8	27.8	10	0.47
75	41UR	1108	28	-	22	-	5.8	27.8	10	0.54
80	31U	1310	35	-	27.8	-	-	27.8	-	0.55
85	31U	1310	35	-	27.8	-	-	27.8	-	0.67
90	31U	1610	42	-	27.8	-	-	27.8	-	0.70
95	31U	1610	42	-	27.8	-	-	27.8	-	0.85
100	31U	1610	42	-	27.8	-	-	27.8	-	1.00
106	31U	1610	42	-	27.8	-	-	27.8	-	1.19
112	31U	1610	42	-	27.8	-	-	27.8	-	1.40
118	31U	1610	42	-	27.8	-	-	27.8	-	1.62
125	31U	1610	42	-	27.8	-	-	27.8	-	1.89
132	31U	1610	42	-	27.8	-	-	27.8	-	2.17
140	31U	1610	42	-	27.8	-	-	27.8	-	2.55
150	11U	2012	50	105	32	4.2	-	27.8	-	2.89
160	11U	2012	50	105	32	4.2	-	27.8	-	3.38
170	10U	2012	50	105	32	4.2	-	27.8	10	2.57
180	10U	2012	50	105	32	4.2	-	27.8	10	2.85
190	10U	2012	50	105	32	4.2	-	27.8	10	2.98
200	10U	2012	50	105	32	4.2	-	27.8	10	3.32
212	10U	2012	50	105	32	4.2	-	27.8	10	3.46
224	10U	2012	50	105	32	4.2	-	27.8	10	3.93
236	10U	2012	50	105	32	4.2	-	27.8	10	4.05
250	10U	2012	50	105	32	4.2	-	27.8	10	4.91
280	10Z	2012	50	105	32	4.2	-	27.8	10	5.21
315	10Z	2517	60	120	45	17.2	-	27.8	10	7.07
355	10Z	3020	75	145	51	23.2	-	27.8	10	9.22

Note 1) The mass is only of the pulley body. When you include the mass of the bushing, add the **bushing mass** on **P. 238**.

PK-8 (for belts with eight ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S2	Width W	Height H	
50	(11U)	Shaft-hole type	22	40	40	5.08	-	34.92	-	0.47
56	(11U)	Shaft-hole type	25	46	40	5.08	-	34.92	-	0.61
63	41UR	1108	28	-	22	-	12.92	34.92	10	0.39
67	41UR	1108	28	-	22	-	12.92	34.92	10	0.46
71	41UR	1108	28	-	22	-	12.92	34.92	10	0.54
75	41UR	1108	28	-	22	-	12.92	34.92	10	0.62
80	41UR	1310	35	-	25	-	9.92	34.92	10	0.61
85	41UR	1310	35	-	25	-	9.92	34.92	10	0.73
90	41UR	1610	42	-	25	-	9.92	34.92	10	0.77
95	41UR	1610	42	-	25	-	9.92	34.92	10	0.90
100	41U	1610	42	-	25	-	9.92	34.92	10	1.05
106	41U	1610	42	-	25	-	9.92	34.92	10	1.23
112	41U	1610	42	-	25	-	9.92	34.92	10	1.43
118	41U	1610	42	-	25	-	9.92	34.92	10	1.64
125	31U	2012	50	-	34.92	-	-	34.92	-	2.05
132	31U	2012	50	-	34.92	-	-	34.92	-	2.40
140	31U	2012	50	-	34.92	-	-	34.92	-	2.84
150	31U	2012	50	-	34.92	-	-	34.92	-	3.41
160	31U	2012	50	-	34.92	-	-	34.92	-	4.03
170	30U	2012	50	105	34.92	-	-	34.92	10	2.94
180	10U	2517	60	120	45	10.08	-	34.92	10	3.74
190	10U	2517	60	120	45	10.08	-	34.92	10	3.91
200	10U	2517	60	120	45	10.08	-	34.92	10	4.26
212	10U	2517	60	120	45	10.08	-	34.92	10	4.47
224	10U	2517	60	120	45	10.08	-	34.92	10	4.96
236	10U	2517	60	120	45	10.08	-	34.92	10	5.14
250	10U	2517	60	120	45	10.08	-	34.92	10	5.79
280	10Z	2517	60	120	45	10.08	-	34.92	10	6.68
315	10Z	3020	75	145	51	16.08	-	34.92	10	8.62
355	10Z	3020	75	145	51	16.08	-	34.92	10	10.2
400	10Z	3526	75	180	41	6.08	-	34.92	12	16.38

PK-10 (for belts with ten ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S2	Width W	Height H	
80	41UR	1310	35	-	25	-	17.04	42.04	10	0.69
85	41UR	1310	35	-	25	-	17.04	42.04	10	0.82
90	41UR	1610	42	-	25	-	17.04	42.04	10	0.86
95	41UR	1610	42	-	25	-	17.04	42.04	10	1.00
100	41U	1610	42	-	25	-	17.04	42.04	10	1.16
106	41U	1610	42	-	25	-	17.04	42.04	10	1.35
112	41U	1610	42	-	25	-	17.04	42.04	10	1.55
118	41U	1610	42	-	25	-	17.04	42.04	10	1.76
125	41U	2012	50	-	32	-	10.04	42.04	10	2.07
132	41U	2012	50	-	32	-	10.04	42.04	10	2.41
140	41U	2012	50	-	32	-	10.04	42.04	10	2.82
150	41U	2012	50	-	32	-	10.04	42.04	10	3.37
160	41U	2012	50	-	32	-	10.04	42.04	10	3.95
170	40U	2012	50	105	32	-	10.04	42.04	10	3.02
180	10U	2517	60	120	45	2.96	-	42.04	10	4.00
190	10U	2517	60	120	45	2.96	-	42.04	10	4.12
200	10U	2517	60	120	45	2.96	-	42.04	10	4.60
212	10U	2517	60	120	45	2.96	-	42.04	10	4.71
224	10U	2517	60	120	45	2.96	-	42.04	10	5.37
236	10U	2517	60	120	45	2.96	-	42.04	10	5.41
250	10U	2517	60	120	45	2.96	-	42.04	10	6.30
280	10Z	2517	60	120	45	2.96	-	42.04	10	7.00
315	10Z	3020	75	145	51	8.96	-	42.04	10	8.99
355	10Z	3020	75	145	51	8.96	-	42.04	10	10.57
400	30Z	3526	75	180	42	-	-	42.04	12	15.38

PK-12 (for belts with 12 ribs)

(Unit: mm)

Nominal outside diameter do	Profile drawing number	Bushing		Hub				Rim		Mass Note 1) (kg)
		Product No.	Maximum shaft hole dia.	Dia. db	Length L	Projection Si	Recess S2	Width W	Height H	
80	41UR	1610	42	-	25	-	24.16	49.16	10	0.67
85	41UR	1610	42	-	25	-	24.16	49.16	10	0.81
90	41UR	1610	42	-	25	-	24.16	49.16	10	0.95
95	41UR	1610	42	-	25	-	24.16	49.16	10	1.10
100	41UR	1610	42	-	25	-	24.16	49.16	10	1.26
106	41UR	1610	42	-	25	-	24.16	49.16	10	1.46
112	41U	2012	50	-	32	-	17.16	49.16	10	1.61
118	41U	2012	50	-	32	-	17.16	49.16	10	1.88
125	41U	2012	50	-	32	-	17.16	49.16	10	2.21
132	41U	2012	50	-	32	-	17.16	49.16	10	2.55
140	41U	2012	50	-	32	-	17.16	49.16	10	2.97
150	41U	2517	60	-	45	-	4.16	49.16	10	3.88
160	41U	2517	60	-	45	-	4.16	49.16	10	4.68
170	41U	2517	60	-	45	-	4.16	49.16	10	5.54
180	41U	2517	60	-	45	-	4.16	49.16	10	6.45
190	40U	2517	60	120	45	-	4.16	49.16	10	4.51
200	11U	3020	75	145	51	1.84	-	49.16	-	7.98
212	11U	3020	75	145	51	1.84	-	49.16	-	9.38
224	11U	3020	75	145	51	1.84	-	49.16	-	10.86
236	10U	3020	75	145	51	1.84	-	49.16	10	6.67
250	10U	3020	75	145	51	1.84	-	49.16	10	7.38
280	10U	3020	75	145	51	1.84	-	49.16	10	8.68
315	10Z	3020	75	145	51	1.84	-	49.16	10	9.61
355	10Z	3020	75	145	51	1.84	-	49.16	10	11.35
400	40Z	3526	75	180	41	-	8.16	49.16	12	15.83
450	30X	3526	75	190	49	-	-	49.16	12	18.17
500	10X	4036	95	190	64	14.84	-	49.16	14	24.70
560	10X	4036	75	190	64	14.84	-	49.16	12	24.29
630	10X	4036	75	190	64	14.84	-	49.16	12	27.31

Note 1) The mass is only of the pulley body. When you include the mass of the bushing, add the **bushing mass** on **P. 238**.

Procedure for Designing a Frictional Forced Power Transmission Belt

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Speed ratio

$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$

⑥ Temporary center distance
⑦ Pulley diameter restriction
⑧ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Calculate the design power with Formula 1.

Formula 1

$$Pd = Pt \times (Ko + Ki + Ke)$$

Pd	: Design power	(kW)
Pt	: Transmission power[Note1)]	(kW)
Ko	: Load correction factor	**(Table 1 → P. 247)**
Ki	: Idler correction factor	**(Table 2 → P. 247)**
Ke	: Environment correction factor	**(Table 3 → P. 247)**

Note 1) For transmission power, it is ideal to use the load of the driven machine; however, if it is unknown, use the rated power of the driving machine.
If torque or horsepower is used for indication, convert it into watt or kilowatt using Formula 2.

Formula 2

$$Pt = \frac{Tr \times n}{9550}$$

Pt	: Transmission power	(kW)
n	: Revolution	(rpm)
Tr	: Load torque	(N•m)

1PS=0.7355(kW)

Step 3. Selecting a belt type

Obtain a belt type based on the design power and pinion revolution from **Fig. 1 "Belt type selection diagram" (→ P. 247 to P. 248)**.
If an obtained type is close to the line of intersection of two types, design both belt types as a trial and choose the one that matches the purpose of the design and that is the more economical.

Step 4. Selecting a pulley diameter

Select an appropriate pulley diameter with Formula 3, taking the restriction of the power transmission space etc. into consideration.

■ **In the cases of V-belts, Power Ace, and Power Ace Cog**

Formula 3

$$Dp = \frac{n_1}{n_2} \times dp$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

dp	: Pinion pitch diameter	(mm)
Dp	: Large pulley pitch diameter	(mm)
n_1	: Pinion revolution	(rpm)
n_2	: Large pulley revolution	(rpm)

The relationship between pulley nominal outside diameter and pulley pitch diameter is based on **Table 4 (→ P. 249)**.

■ **In the case of Rib-Ace**

Formula 3

$$Do = \frac{n_1}{n_2} \times do$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

do	: Pinion outside diameter	(mm)
Do	: Large-pulley outside diameter	(mm)
n_1	: Pinion revolution	(rpm)
n_2	: Large pulley revolution	(rpm)

When you determine a pulley diameter, check the following items:

- Check of the belt speed

Calculate the belt speed with Formula **4**.

■ **In the cases of V-belts, Power Ace, and Power Ace Cog**

Formula 4

$$v = \frac{dp \times n}{19100}$$

v	: Belt speed	(m/s)
dp	: Pinion pitch diameter	(mm)
n	: Pinion revolution	(rpm)

■ **In the case of Rib-Ace**

Formula 4

$$v = \frac{do \times n}{19100}$$

v	: Belt speed	(m/s)
do	: Pinion outside diameter	(mm)
n	: Pinion revolution	(rpm)

The belt speed needs to satisfy **Table 6 (→ P. 249)**.
If the belt speed exceeds the standard, reduce the pulley diameter.

Note 2)
If the belt speed exceeds the value in the following table, you need to take a dynamic balance of the pulley. In this case, use rolled steel for general structure or carbon steel for machine construction.

	Power Ace	Rib-Ace 2
Belt speed	30m/s	35m/s

- Check of the minimum nominal outside diameter of a pulley

Generally, when a pulley with a small diameter is used, the flex fatigue of the belt increases, reducing the belt service life.
Therefore, it is ideal to at least use a pulley diameter equal to or larger than the minimum nominal outside diameter of a pulley indicated in **Table 5 "Minimum pulley diameters" (→ P. 249)**.

Step 5. Selecting an effective length

Calculate a rough effective length L′ with Formula 5 and select an effective length that is closest to this value from the standard size of the respective belt.

■ In the case of V-belts (Table of standard sizes → P. 232 to P. 233)

Formula 5

$$L' = 2C' + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C'}$$

L′	: Rough effective length	(mm)
C′	: Temporary center distance	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

■ In the cases of Power Ace / Power Ace Cog / Power Ace Aramid Combo / Rib-Ace (Table of standard sizes → P. 230, P. 236)

Formula 5

$$L' = 2C' + 1.57\,(Do + do) + \frac{(Do - do)^2}{4C'}$$

L′	: Rough effective length	(mm)
C′	: Temporary center distance	(mm)
Do	: Large-pulley nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Large-pulley outside diameter (Rib-Ace)	(mm)
do	: Pinion nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Pinion outside diameter (Rib-Ace)	(mm)

- Calculation of the center distance

From the selected effective length, backcalculate the center distance with Formula 6.

■ In the case of V-belts

Formula 6

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = Le - 1.57(Dp + dp)$$

C	: Center distance	(mm)
Le	: Effective length	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

■ In the cases of Power Ace / Power Ace Cog / Power Ace Aramid Combo / Rib-Ace

Formula 6

$$C = \frac{B + \sqrt{B^2 - 2(Do - do)^2}}{4}$$

$$B = Le - 1.57(Do + do)$$

C	: Center distance	(mm)
Le	: Effective length	(mm)
Do	: Large-pulley nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Large-pulley outside diameter (Rib-Ace)	(mm)
do	: Pinion nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Pinion outside diameter (Rib-Ace)	(mm)

Note 3) For Power Ace, Power Ace Cog, and Power Ace Aramid Combo, Le = effective outside length.

Step 6. Calculating the number of belts and the number of ribs

① Determination of the basic power rating

Obtain the basic power rating for the pinion diameter and its revolution from the **tables of basic power ratings (P. 250 to P. 270)**. Add an "additional transmission capacity by the speed ratio" in the lower table and set it as the basic power rating per belt or per rib.

② Correction of the basic power rating

From **Table 7 (→ P. 271)**, obtain the correction factor Kl by the effective length.

From Formula 7, obtain the angle of contact of the pinion $\theta 1$ and from **Table 8 (→ P. 272)**, obtain the correction factor $K\theta 1$.

■ In the case of V-belts

Formula 7

$$\theta_1 = 180 - \frac{57(Dp - dp)}{C}$$

θ_1	: Angle of contact of pinion	(°)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)
C	: Center distance	(mm)

■ In the cases of Power Ace / Power Ace Cog / Power Ace Aramid Combo / Rib-Ace

Formula 7

$$\theta_1 = 180 - \frac{57(Do - do)}{C}$$

θ_1	: Angle of contact of pinion	(°)
Do	: Large-pulley nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Large-pulley outside diameter (Rib-Ace)	(mm)
do	: Pinion nominal outside diameter (Power Ace / Power Ace Cog / Power Ace Aramid Combo)	(mm)
	Pinion outside diameter (Rib-Ace)	(mm)
C	: Center distance	(mm)

③ Calculating the number of belts

Calculate the number of belts with Formula 8. Round up the figures after the decimal point to an integer.

Formula 8

$$N = \frac{Pd}{Pr \times Kl \times K\theta_1}$$

N	: No. of belts	(pcs) or (No. of ribs)
Pd	: Design power	(kW)
Pr	: Basic power rating	(kW/pc) or (kW/rib)
Kl	: Length correction factor	**(Table 7 → P. 271)**
$K\theta_1$	: Pinion contact angle correction factor	**(Table 8 → P. 272)**

Step 7. Checking the adjustment range of the center distance

From **Table 9 (→ P. 272)**, obtain the installation range and the tension range of the belt.

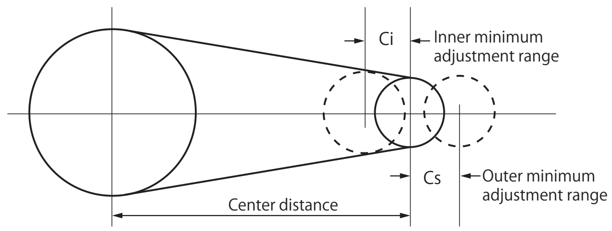


Table 1 Load correction factor (Ko)

Driven machine		Driving machine					
		Starting torque less than 300%			Starting torque 300% or more		
Note 2) When your driven machine cannot be found in the table, use the load correction factor of a machine with a similar start-up load or shock load.		AC motor (normal torque, squirrel-cage type, synchronous electric) DC motor (shunt-wound)			AC motor (high torque / single-phase / series-wound) DC motor (compound-wound, series-wound) Engine / line shaft / clutch		
		I	II	III	I	II	III
A	● Fluid stirring machines ● Blowers ● Exhausters ● Centrifugal pumps ● Compact compressors ● Fans of 7.5 kW or less ● Light-duty conveyors	1.0	1.1	1.2	1.1	1.2	1.3
B	● Sand and grain conveyors ● Kneading mixers ● Fans of 7.5 kW or more ● Generators ● Line shafts ● Laundry machines ● Machine tools ● Punches, presses, shearers ● Printing machines ● Rotary/vibrating sieves ● Rotary pumps	1.1	1.2	1.3	1.2	1.3	1.4
C	● Brick-processing machines ● Bucket elevators ● Exciters ● Conveyors ● Piston compressors ● Hammer mills ● Papermaking mills, heaters ● Piston pumps ● Forced portable blowers ● Pulverizers ● Saw mills, Woodworking machines ● Fabric machines	1.2	1.3	1.4	1.4	1.5	1.6
D	● Sand pumps ● Crashers ● Mills (ball, rod, tube) ● Hoists ● Rubber calenders, Extruders	1.3	1.4	1.5	1.5	1.6	1.8

Note)
I: Intermittent use (3 to 5 hrs/day or seasonal use)
II: Normal use (8 to 10 hrs/day)
III: Continuous use (16 to 24 hrs/day)

Table 2 Idler correction factor (Ki)

Idler installation location	Ki
- No idlers	0.0
- Installed from the inside on the slack side	0.0
- Installed from the outside on the slack side	0.1
- Installed from the inside on the tight side	0.1
- Installed from the outside on the tight side	0.2

Table 3 Environmental correction factors (Ke)

Environment	Ke
Frequent starts and stops (10 times or more/day)	0.2
Difficult to maintain/inspect	0.2
Dusty and likely to abrade	0.2
High ambient temperature	0.2
Oil and water adhesion	0.2 (0.3 only in the case of Rib-Ace)

Note) For environmental correction factors, add all applicable ones.

Fig. 1-1 Belt type selection diagram (V-belts)

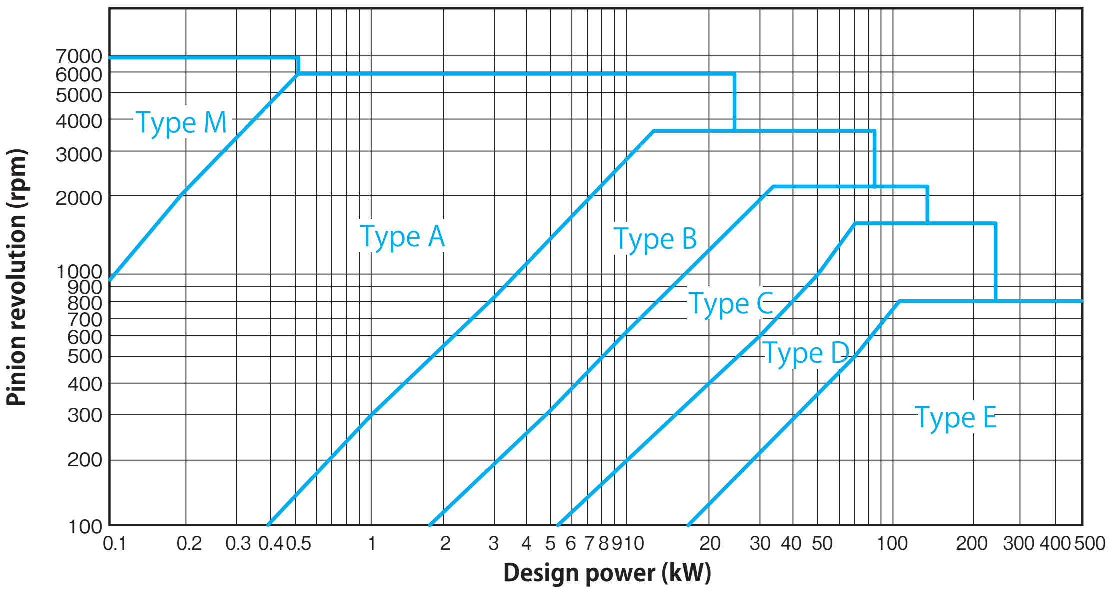


Fig. 1-2 Belt type selection diagram (Energy-Saving Power Ace / Power Ace Cog / Power Scrum)

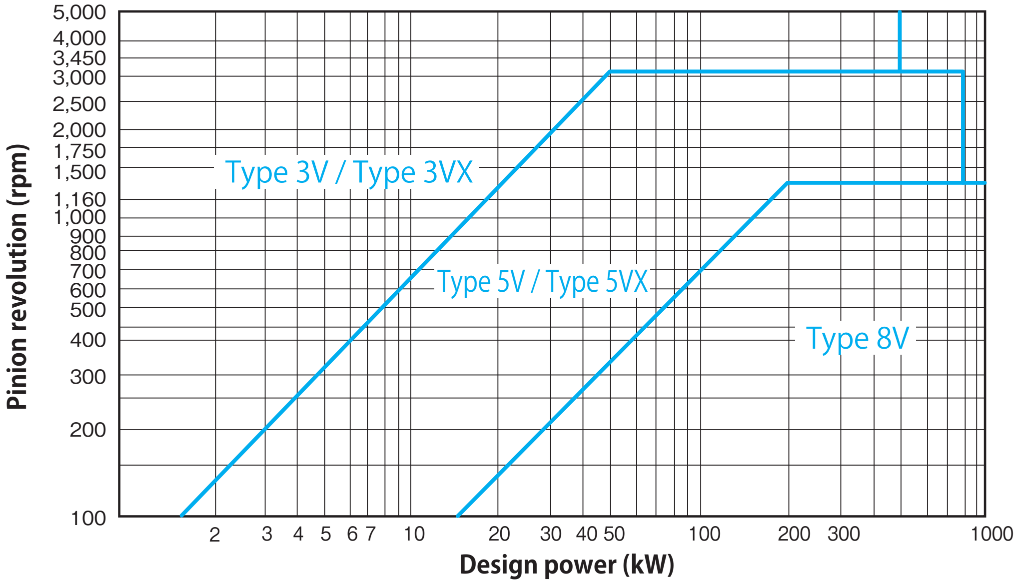


Fig. 1-3 Belt type selection diagram (Power Ace Aramid Combo)

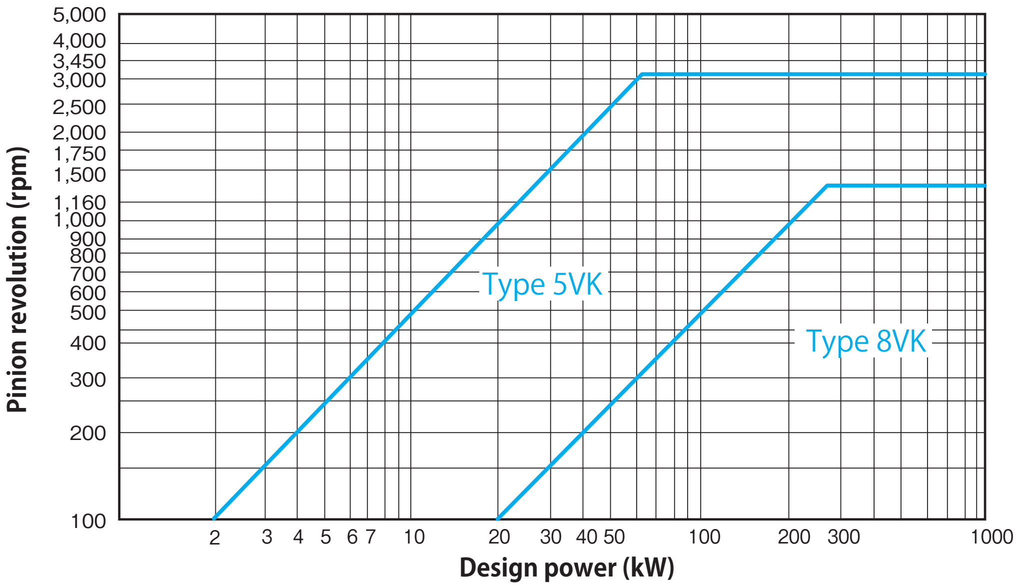


Fig. 1-4 Belt type selection diagram (Rib-Ace 2)

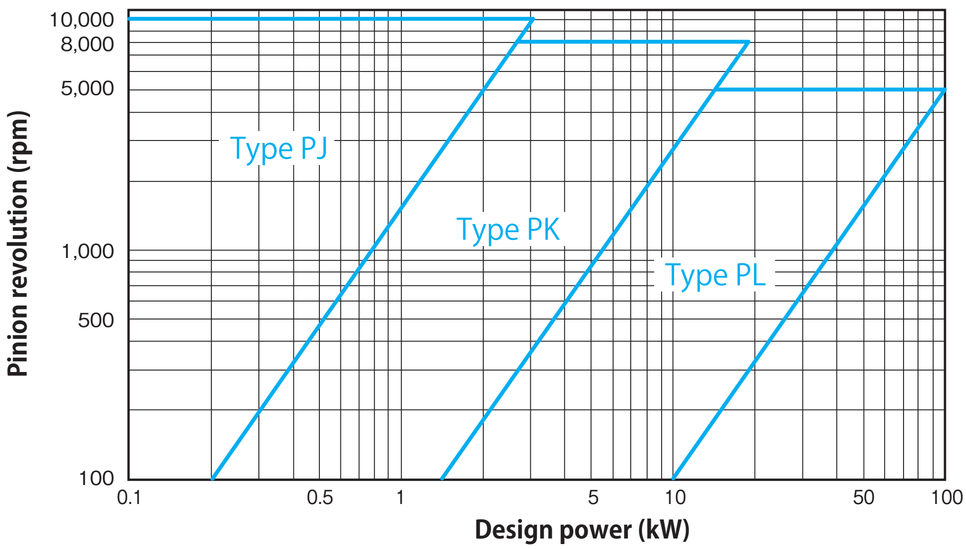


Table 4 Difference between pulley outside diameter and pitch diameter (2k)

(Unit: mm)

Belt type	M	A	B	C	D	E	3V・3VX	5V・5VK・5VX	8V・8VK
2k	5.5	9.0	11.0	14.0	19.0	25.4	1.2	2.6	5.0

Pulley outside diameter = Pulley pitch diameter + 2k

■ Table 5 Minimum pulley diameters

Table 5-1 V-belts

(Unit: mm)

Belt type	M	A	B	C	D	E
Minimum pulley pitch diameter	40	67	118	180	300	450

Table 5-2 Power Ace / Energy-Saving Power Ace / Power Ace Cog / Power Ace Aramid Combo / Power Scrum

(Unit: mm)

Belt type	3V	3VX	5V・5VK	5VX	8V・8VK
Minimum nominal outside diameter of pulley	67	56	150	112	300

Table 5-3 Rib-Ace 2

(Unit: mm)

Belt type	PJ	PK	PL
Minimum pulley outside diameter	20	50	70

Table 6 Design belt speed standards

Belt type	Design belt speed standard
V-belts (including Energy-Saving and Scrum types)	30 m/s or less
Power Ace (including Energy-Saving and Scrum types) / Power Ace Aramid Combo	40 m/s or less
Power Ace Cog	40 m/s or less
Rib-Ace 2	50 m/s or less

Table of basic power ratings for Type-3V Power Ace / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																
	67	71	75	80	85	90	100	112	125	140	160	180	200	250	280	300	315
100	0.12	0.13	0.15	0.17	0.19	0.21	0.24	0.29	0.34	0.39	0.47	0.54	0.61	0.79	0.90	0.97	1.02
200	0.21	0.24	0.27	0.31	0.35	0.38	0.46	0.54	0.64	0.74	0.88	1.02	1.16	1.50	1.70	1.84	1.94
300	0.30	0.35	0.39	0.44	0.50	0.55	0.66	0.78	0.92	1.07	1.28	1.48	1.68	2.18	2.47	2.66	2.81
400	0.38	0.44	0.50	0.57	0.64	0.71	0.85	1.01	1.19	1.39	1.66	1.92	2.18	2.83	3.21	3.46	3.65
500	0.46	0.53	0.60	0.69	0.77	0.86	1.03	1.23	1.45	1.70	2.03	2.35	2.67	3.46	3.93	4.23	4.46
600	0.54	0.62	0.70	0.80	0.91	1.01	1.21	1.45	1.71	2.00	2.39	2.77	3.15	4.08	4.62	4.99	5.25
700	0.61	0.70	0.80	0.92	1.03	1.15	1.38	1.66	1.96	2.29	2.74	3.18	3.61	4.68	5.30	5.71	6.02
800	0.68	0.79	0.89	1.03	1.16	1.29	1.55	1.87	2.20	2.58	3.08	3.58	4.07	5.26	5.96	6.42	6.76
900	0.75	0.87	0.99	1.13	1.28	1.43	1.72	2.07	2.44	2.86	3.42	3.97	4.51	5.83	6.60	7.11	7.48
1000	0.81	0.94	1.08	1.24	1.40	1.56	1.89	2.27	2.68	3.14	3.75	4.36	4.95	6.39	7.23	7.77	8.17
1200	0.94	1.09	1.25	1.44	1.64	1.83	2.21	2.66	3.14	3.68	4.40	5.10	5.79	7.46	8.41	9.03	9.48
1400	1.06	1.24	1.42	1.64	1.86	2.08	2.51	3.03	3.58	4.21	5.02	5.82	6.60	8.46	9.51	10.18	10.67
1600	1.17	1.38	1.58	1.83	2.08	2.32	2.81	3.39	4.01	4.71	5.62	6.50	7.36	9.39	10.52	11.23	11.74
1800	1.28	1.51	1.73	2.01	2.29	2.56	3.10	3.74	4.42	5.19	6.19	7.16	8.09	10.25	11.43	12.15	12.67
2000	1.39	1.63	1.88	2.19	2.49	2.79	3.38	4.08	4.82	5.66	6.74	7.77	8.77	11.03	12.23	12.95	13.45
2200	1.49	1.76	2.02	2.35	2.68	3.01	3.65	4.41	5.21	6.11	7.26	8.36	9.40	11.73	12.91	13.61	14.07
2400	1.58	1.87	2.16	2.52	2.87	3.22	3.91	4.72	5.58	6.53	7.75	8.90	9.98	12.33	13.47	14.11	14.52
2600	1.67	1.98	2.29	2.68	3.05	3.43	4.16	5.03	5.93	6.94	8.21	9.41	10.51	12.84	13.90		
2800	1.76	2.09	2.42	2.83	3.23	3.63	4.41	5.32	6.27	7.32	8.64	9.87	10.98	13.24			
3000	1.84	2.19	2.54	2.97	3.40	3.82	4.64	5.59	6.59	7.68	9.04	10.29	11.40	13.53			
3200	1.92	2.29	2.66	3.11	3.56	4.00	4.86	5.86	6.89	8.02	9.41	10.66	11.75				
3400	2.00	2.39	2.77	3.25	3.71	4.17	5.07	6.11	7.18	8.33	9.74	10.98	12.04				
3600	2.07	2.47	2.88	3.37	3.86	4.34	5.27	6.34	7.44	8.62	10.04	11.25	12.25				
3800	2.13	2.56	2.98	3.49	4.00	4.50	5.46	6.57	7.69	8.88	10.29	11.47	12.40				
4000	2.19	2.64	3.07	3.61	4.13	4.65	5.64	6.77	7.91	9.12	10.51	11.63					
4500	2.33	2.81	3.29	3.87	4.43	4.98	6.04	7.22	8.39	9.57	10.86						
5000	2.44	2.96	3.46	4.08	4.68	5.26	6.36	7.56	8.71	9.83							

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio								
	1.00～1.01	1.02～1.05	1.06～1.11	1.12～1.18	1.19～1.26	1.27～1.38	1.58～1.94	1.95～3.38	3.39 or more
200	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.03
300	0.00	0.00	0.01	0.02	0.03	0.03	0.05	0.05	0.05
400	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.07
500	0.00	0.01	0.02	0.03	0.05	0.06	0.08	0.08	0.09
600	0.00	0.01	0.02	0.04	0.06	0.07	0.09	0.10	0.10
700	0.00	0.01	0.03	0.05	0.07	0.08	0.11	0.11	0.12
800	0.00	0.01	0.03	0.06	0.08	0.09	0.12	0.13	0.14
900	0.00	0.01	0.04	0.06	0.08	0.10	0.14	0.15	0.16
1000	0.00	0.01	0.04	0.07	0.09	0.11	0.15	0.16	0.17
1200	0.00	0.02	0.05	0.08	0.11	0.14	0.18	0.20	0.21
1400	0.00	0.02	0.06	0.10	0.13	0.16	0.21	0.23	0.24
1600	0.00	0.02	0.06	0.11	0.15	0.18	0.24	0.26	0.28
1800	0.00	0.03	0.07	0.12	0.17	0.21	0.27	0.29	0.31
2000	0.00	0.03	0.08	0.14	0.19	0.23	0.30	0.33	0.35
2200	0.00	0.03	0.09	0.15	0.21	0.25	0.33	0.36	0.38
2400	0.00	0.03	0.10	0.17	0.23	0.27	0.36	0.39	0.42
2600	0.00	0.04	0.10	0.18	0.25	0.30	0.39	0.42	0.45
2800	0.00	0.04	0.11	0.19	0.26	0.32	0.42	0.46	0.49
3000	0.00	0.04	0.12	0.21	0.28	0.34	0.45	0.49	0.52
3200	0.00	0.05	0.13	0.22	0.30	0.37	0.48	0.52	0.56
3400	0.00	0.05	0.14	0.24	0.32	0.39	0.51	0.55	0.59
3600	0.00	0.05	0.14	0.25	0.34	0.41	0.54	0.59	0.63
3800	0.00	0.05	0.15	0.26	0.36	0.43	0.57	0.62	0.66
4000	0.00	0.06	0.16	0.28	0.38	0.46	0.60	0.65	0.69
4500	0.00	0.06	0.18	0.31	0.42	0.51	0.68	0.73	0.78
5000	0.00	0.07	0.20	0.35	0.47	0.57	0.75	0.81	0.87

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-5V Power Ace / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																
	150	160	170	180	190	200	212	224	236	250	280	315	340	355	380	400	450
100	0.83	0.93	1.04	1.15	1.26	1.36	1.49	1.62	1.74	1.89	2.20	2.56	2.82	2.97	3.23	3.43	3.93
150	1.18	1.34	1.49	1.65	1.81	1.96	2.15	2.33	2.52	2.73	3.19	3.71	4.09	4.31	4.68	4.98	5.71
200	1.51	1.72	1.93	2.13	2.33	2.54	2.78	3.02	3.26	3.54	4.14	4.83	5.31	5.61	6.09	6.47	7.43
250	1.84	2.09	2.34	2.59	2.84	3.09	3.39	3.69	3.99	4.33	5.06	5.91	6.51	6.87	7.46	7.93	9.10
300	2.15	2.45	2.75	3.05	3.34	3.64	3.99	4.34	4.69	5.10	5.97	6.97	7.67	8.10	8.80	9.35	10.73
350	2.45	2.80	3.14	3.49	3.83	4.17	4.58	4.98	5.38	5.85	6.85	8.00	8.82	9.30	10.11	10.74	12.33
400	2.74	3.14	3.53	3.92	4.30	4.69	5.15	5.61	6.06	6.59	7.72	9.02	9.93	10.48	11.39	12.11	13.89
450	3.03	3.47	3.91	4.34	4.77	5.20	5.71	6.22	6.73	7.32	8.57	10.01	11.03	11.64	12.64	13.44	15.41
500	3.31	3.80	4.28	4.75	5.23	5.70	6.26	6.83	7.38	8.03	9.41	10.99	12.11	12.77	13.87	14.75	16.89
550	3.59	4.12	4.64	5.16	5.68	6.19	6.81	7.42	8.03	8.73	10.23	11.95	13.17	13.89	15.08	16.02	18.35
600	3.86	4.43	5.00	5.56	6.12	6.68	7.34	8.00	8.66	9.42	11.04	12.90	14.20	14.98	16.26	17.27	19.76
650	4.13	4.74	5.35	5.95	6.56	7.15	7.87	8.58	9.28	10.10	11.83	13.82	15.22	16.05	17.41	18.49	21.14
700	4.39	5.04	5.69	6.34	6.98	7.62	8.39	9.15	9.90	10.77	12.62	14.73	16.22	17.10	18.54	19.69	22.48
800	4.89	5.63	6.37	7.10	7.82	8.54	9.40	10.25	11.10	12.07	14.14	16.50	18.15	19.12	20.72	21.98	25.04
900	5.38	6.21	7.02	7.83	8.63	9.43	10.38	11.32	12.26	13.33	15.61	18.19	19.99	21.05	22.79	24.15	27.43
1000	5.86	6.76	7.65	8.54	9.42	10.29	11.33	12.36	13.38	14.55	17.02	19.81	21.75	22.89	24.75	26.19	29.65
1200	6.76	7.81	8.86	9.89	10.92	11.93	13.14	14.33	15.50	16.85	19.67	22.82	24.99	26.24	28.27	29.83	33.48
1400	7.60	8.80	9.99	11.16	12.32	13.46	14.82	16.15	17.46	18.96	22.07	25.50	27.81	29.14	31.25	32.84	36.43
1600	8.38	9.71	11.03	12.33	13.61	14.88	16.36	17.82	19.25	20.87	24.20	27.80	30.18	31.52	33.60	35.13	38.38
1800	9.09	10.56	12.00	13.41	14.80	16.17	17.77	19.33	20.85	22.56	26.03	29.70	32.04	33.33	35.27	36.63	
2000	9.74	11.32	12.87	14.39	15.88	17.33	19.02	20.66	22.24	24.02	27.55	31.15	33.35	34.52	36.18		
2200	10.33	12.01	13.66	15.27	16.83	18.35	20.11	21.80	23.42	25.22	28.71	32.11	34.06				
2600	11.28	13.14	14.94	16.67	18.34	19.94	21.76	23.47	25.07	26.79	29.89						
3000	11.94	13.91	15.80	17.59	19.28	20.87	22.63	24.23	25.67	27.11							
3400	12.26	14.29	16.18	17.95	19.57	21.05	22.63	23.97									
3800	12.22	14.22	16.05	17.70	19.16	20.42											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~1.01	1.02~1.05	1.06~1.11	1.12~1.18	1.19~1.26	1.27~1.38	1.39~1.57	1.58~1.94	1.95~3.38	3.39 or more
100	0.00	0.01	0.02	0.04	0.05	0.06	0.08	0.09	0.09	0.10
150	0.00	0.01	0.03	0.06	0.08	0.10	0.11	0.13	0.14	0.15
200	0.00	0.02	0.04	0.08	0.11	0.13	0.15	0.17	0.18	0.20
250	0.00	0.02	0.06	0.10	0.13	0.16	0.19	0.21	0.23	0.25
300	0.00	0.02	0.07	0.12	0.16	0.19	0.23	0.26	0.28	0.30
350	0.00	0.03	0.08	0.14	0.19	0.23	0.27	0.30	0.32	0.34
400	0.00	0.03	0.09	0.16	0.21	0.26	0.30	0.34	0.37	0.39
450	0.00	0.04	0.10	0.18	0.24	0.29	0.34	0.38	0.42	0.44
500	0.00	0.04	0.11	0.20	0.27	0.32	0.38	0.43	0.46	0.49
550	0.00	0.04	0.12	0.22	0.29	0.36	0.42	0.47	0.51	0.54
600	0.00	0.05	0.13	0.24	0.32	0.39	0.45	0.51	0.55	0.59
650	0.00	0.05	0.15	0.25	0.35	0.42	0.49	0.55	0.60	0.64
700	0.00	0.06	0.16	0.27	0.37	0.45	0.53	0.60	0.65	0.69
800	0.00	0.07	0.18	0.31	0.43	0.52	0.61	0.68	0.74	0.79
900	0.00	0.07	0.20	0.35	0.48	0.58	0.68	0.77	0.83	0.89
1000	0.00	0.08	0.22	0.39	0.53	0.65	0.76	0.85	0.92	0.98
1200	0.00	0.10	0.27	0.47	0.64	0.78	0.91	1.02	1.11	1.18
1400	0.00	0.11	0.31	0.55	0.75	0.91	1.06	1.19	1.29	1.38
1600	0.00	0.13	0.36	0.63	0.85	1.03	1.21	1.36	1.48	1.57
1800	0.00	0.15	0.40	0.71	0.96	1.16	1.36	1.53	1.66	1.77
2000	0.00	0.16	0.45	0.78	1.07	1.29	1.51	1.70	1.84	1.97
2200	0.00	0.18	0.49	0.86	1.17	1.42	1.67	1.88	2.03	2.16
2600	0.00	0.21	0.58	1.02	1.39	1.68	1.97	2.22	2.40	2.56
3000	0.00	0.25	0.67	1.18	1.60	1.94	2.27	2.56	2.77	2.95
3400	0.00	0.28	0.76	1.33	1.81	2.20	2.57	2.90	3.14	3.34
3800	0.00	0.31	0.85	1.49	2.03	2.46	2.88	3.24	3.50	3.74

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-8V Power Ace / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																
	300	315	335	355	375	400	425	450	460	475	500	520	540	560	600	630	710
100	4.48	4.90	5.46	6.02	6.58	7.28	7.97	8.66	8.94	9.35	10.04	10.58	11.13	11.67	12.76	13.57	15.71
120	5.25	5.76	6.43	7.09	7.75	8.58	9.40	10.22	10.55	11.03	11.85	12.49	13.14	13.78	15.07	16.02	18.56
140	6.01	6.60	7.37	8.14	8.90	9.85	10.80	11.75	12.12	12.69	13.62	14.37	15.11	15.86	17.34	18.44	21.36
160	6.76	7.42	8.29	9.16	10.03	11.11	12.18	13.25	13.67	14.31	15.37	16.22	17.06	17.90	19.57	20.82	24.12
180	7.49	8.22	9.20	10.17	11.14	12.34	13.54	14.73	15.20	15.91	17.09	18.03	18.97	19.91	21.77	23.16	26.83
200	8.21	9.02	10.09	11.16	12.23	13.55	14.87	16.18	16.71	17.49	18.79	19.83	20.86	21.89	23.94	25.46	29.50
250	9.95	10.95	12.27	13.58	14.89	16.52	18.14	19.75	20.39	21.35	22.94	24.21	25.47	26.73	29.23	31.09	36.01
300	11.64	12.82	14.38	15.93	17.48	19.40	21.30	23.20	23.96	25.09	26.96	28.45	29.94	31.42	34.35	36.53	42.28
350	13.27	14.63	16.42	18.21	19.98	22.19	24.38	26.56	27.42	28.72	30.86	32.57	34.27	35.96	39.30	41.79	48.32
400	14.85	16.38	18.41	20.42	22.42	24.91	27.37	29.82	30.79	32.24	34.65	36.56	38.46	40.35	44.09	46.86	54.12
450	16.39	18.09	20.34	22.58	24.80	27.55	30.28	32.98	34.06	35.66	38.32	40.43	42.52	44.60	48.71	51.74	59.66
500	17.89	19.75	22.22	24.67	27.10	30.12	33.10	36.06	37.23	38.98	41.88	44.17	46.44	48.70	53.14	56.43	64.94
550	19.34	21.36	24.05	26.71	29.35	32.61	35.84	39.03	40.30	42.19	45.31	47.78	50.22	52.64	57.40	60.90	69.94
600	20.75	22.93	25.82	28.69	31.53	35.03	38.50	41.92	43.27	45.29	48.62	51.25	53.85	56.42	61.46	65.16	74.64
650	22.12	24.46	27.55	30.61	33.64	37.38	41.07	44.70	46.14	48.28	51.81	54.59	57.33	60.03	65.32	69.19	79.03
700	23.44	25.93	29.22	32.47	35.69	39.65	43.55	47.38	48.90	51.15	54.86	57.77	60.64	63.47	68.97	72.98	83.08
750	24.73	27.37	30.84	34.28	37.67	41.84	45.94	49.96	51.55	53.91	57.78	60.81	63.79	66.72	72.40	76.51	86.79
800	25.97	28.75	32.41	36.02	39.58	43.95	48.23	52.43	54.08	56.54	60.55	63.69	66.77	69.78	75.60	79.79	90.13
900	28.34	31.38	35.38	39.32	43.18	47.91	52.53	57.03	58.79	61.40	65.65	68.95	72.16	75.29	81.26	85.49	95.63
1000	30.53	33.82	38.13	42.35	46.49	51.52	56.41	61.14	62.99	65.71	70.10	73.49	76.77	79.93	85.86	89.98	99.42
1100	32.54	36.05	40.64	45.11	49.48	54.76	59.85	64.74	66.63	69.41	73.87	77.27	80.52	83.61	89.31	93.14	
1200	34.36	38.07	42.90	47.59	52.13	57.60	62.82	67.78	69.69	72.48	76.90	80.22	83.35	86.28	91.52	94.87	
1400	37.41	41.43	46.61	51.59	56.34	61.96	67.21	72.06	73.89	76.50	80.50	83.38	85.96				
1600	39.59	43.80	49.16	54.22	58.96	64.42	69.33	73.66	75.23	77.39							
1800	40.82	45.08	50.42	55.33	59.80	64.74											
2000	41.02	45.18	50.26	54.77	58.69												

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.05	1.06～1.11	1.12～1.18	1.19～1.26	1.27～1.38	1.39～1.57	1.58～1.94	1.95～3.38	3.39 or more
100	0.00	0.04	0.11	0.20	0.27	0.33	0.39	0.43	0.47	0.50
120	0.00	0.05	0.14	0.24	0.33	0.39	0.46	0.52	0.56	0.60
140	0.00	0.06	0.16	0.28	0.38	0.46	0.54	0.61	0.66	0.70
160	0.00	0.07	0.18	0.32	0.43	0.53	0.62	0.69	0.75	0.80
180	0.00	0.07	0.21	0.36	0.49	0.59	0.69	0.78	0.84	0.90
200	0.00	0.08	0.23	0.40	0.54	0.66	0.77	0.87	0.94	1.00
250	0.00	0.10	0.29	0.50	0.68	0.82	0.96	1.08	1.17	1.25
300	0.00	0.12	0.34	0.60	0.81	0.99	1.16	1.30	1.41	1.50
350	0.00	0.15	0.40	0.70	0.95	1.15	1.35	1.52	1.64	1.75
400	0.00	0.17	0.46	0.80	1.09	1.32	1.54	1.73	1.88	2.00
450	0.00	0.19	0.51	0.90	1.22	1.48	1.73	1.95	2.11	2.25
500	0.00	0.21	0.57	1.00	1.36	1.64	1.93	2.17	2.34	2.50
550	0.00	0.23	0.63	1.10	1.49	1.81	2.12	2.38	2.58	2.75
600	0.00	0.25	0.69	1.20	1.63	1.97	2.31	2.60	2.81	3.00
650	0.00	0.27	0.74	1.30	1.76	2.14	2.50	2.82	3.05	3.25
700	0.00	0.29	0.80	1.40	1.90	2.30	2.70	3.03	3.28	3.50
750	0.00	0.31	0.86	1.49	2.03	2.47	2.89	3.25	3.52	3.75
800	0.00	0.33	0.91	1.59	2.17	2.63	3.08	3.47	3.75	4.00
900	0.00	0.37	1.03	1.79	2.44	2.96	3.47	3.90	4.22	4.50
1000	0.00	0.42	1.14	1.99	2.71	3.29	3.85	4.33	4.69	5.00
1100	0.00	0.46	1.26	2.19	2.98	3.62	4.24	4.77	5.16	5.50
1200	0.00	0.50	1.37	2.39	3.26	3.95	4.62	5.20	5.63	6.00
1400	0.00	0.58	1.60	2.79	3.80	4.60	5.39	6.07	6.57	7.00
1600	0.00	0.66	1.83	3.19	4.34	5.26	6.16	6.93	7.50	8.00
1800	0.00	0.75	2.06	3.59	4.88	5.92	6.93	7.80	8.44	9.00
2000	0.00	0.83	2.29	3.99	5.43	6.58	7.70	8.67	9.38	10.00

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-3VX Power Ace Cog

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																					
	56	60	63	67	71	75	80	85	90	95	100	112	125	140	150	160	180	200	250	280	300	315
200	0.17	0.20	0.22	0.24	0.27	0.30	0.33	0.36	0.40	0.43	0.46	0.54	0.63	0.72	0.79	0.85	0.98	1.10	1.41	1.60	1.72	1.81
400	0.31	0.36	0.40	0.45	0.50	0.55	0.62	0.68	0.74	0.81	0.87	1.02	1.18	1.36	1.48	1.61	1.85	2.09	2.67	3.02	3.25	3.42
600	0.43	0.51	0.56	0.64	0.72	0.79	0.88	0.98	1.07	1.16	1.25	1.47	1.70	1.97	2.15	2.32	2.67	3.02	3.87	4.37	4.70	4.95
800	0.55	0.65	0.72	0.82	0.92	1.02	1.14	1.26	1.38	1.50	1.62	1.90	2.21	2.55	2.78	3.01	3.47	3.92	5.01	5.66	6.08	6.40
1000	0.66	0.78	0.87	0.99	1.11	1.23	1.38	1.53	1.68	1.83	1.97	2.32	2.69	3.12	3.40	3.68	4.24	4.78	6.11	6.89	7.40	7.78
1200	0.77	0.91	1.02	1.16	1.30	1.44	1.62	1.80	1.97	2.14	2.32	2.73	3.17	3.67	4.00	4.33	4.98	5.62	7.17	8.07	8.65	9.08
1400	0.87	1.03	1.16	1.32	1.49	1.65	1.85	2.05	2.25	2.45	2.65	3.12	3.63	4.21	4.58	4.96	5.70	6.43	8.18	9.18	9.83	10.31
1600	0.96	1.15	1.29	1.48	1.66	1.85	2.08	2.31	2.53	2.76	2.98	3.51	4.08	4.73	5.15	5.57	6.40	7.20	9.14	10.23	10.93	11.45
1800	1.06	1.27	1.43	1.63	1.84	2.04	2.30	2.55	2.80	3.05	3.30	3.89	4.52	5.23	5.70	6.16	7.07	7.95	10.04	11.21	11.96	12.49
2000	1.15	1.38	1.55	1.78	2.01	2.23	2.51	2.79	3.07	3.34	3.61	4.26	4.95	5.73	6.24	6.74	7.72	8.67	10.90	12.12	12.89	13.44
2200	1.24	1.49	1.68	1.93	2.17	2.42	2.72	3.03	3.33	3.62	3.92	4.62	5.36	6.20	6.75	7.29	8.34	9.36	11.69	12.96	13.73	14.28
2400	1.33	1.60	1.80	2.07	2.33	2.60	2.93	3.25	3.58	3.90	4.22	4.97	5.77	6.67	7.25	7.83	8.94	10.01	12.43	13.70	14.47	15.00
2600	1.41	1.70	1.92	2.21	2.49	2.78	3.13	3.48	3.83	4.17	4.51	5.31	6.16	7.12	7.74	8.34	9.51	10.62	13.10	14.36		
2800	1.49	1.80	2.03	2.34	2.65	2.95	3.33	3.70	4.07	4.43	4.79	5.65	6.55	7.55	8.20	8.84	10.05	11.20	13.70			
3000	1.57	1.90	2.15	2.47	2.80	3.12	3.52	3.91	4.30	4.69	5.07	5.97	6.92	7.97	8.65	9.31	10.57	11.73	14.22			
3200	1.64	1.99	2.26	2.60	2.94	3.28	3.70	4.12	4.53	4.94	5.34	6.28	7.27	8.37	9.08	9.76	11.05	12.23				
3400	1.72	2.09	2.36	2.73	3.09	3.45	3.89	4.32	4.76	5.18	5.60	6.59	7.62	8.76	9.48	10.18	11.49	12.68				
3600	1.79	2.18	2.47	2.85	3.23	3.60	4.07	4.52	4.97	5.42	5.86	6.88	7.95	9.13	9.87	10.58	11.91	13.09				
3800	1.86	2.27	2.57	2.97	3.36	3.76	4.24	4.72	5.19	5.65	6.10	7.17	8.27	9.48	10.24	10.96	12.28	13.44				
4000	1.93	2.35	2.67	3.08	3.50	3.90	4.41	4.90	5.39	5.87	6.34	7.44	8.58	9.81	10.58	11.30	12.63					
4200	1.99	2.43	2.76	3.20	3.63	4.05	4.57	5.09	5.59	6.09	6.58	7.71	8.87	10.12	10.90	11.62	12.93					
4400	2.05	2.51	2.86	3.31	3.75	4.19	4.73	5.26	5.79	6.30	6.80	7.96	9.14	10.41	11.19	11.91						
4600	2.11	2.59	2.95	3.41	3.87	4.33	4.89	5.43	5.97	6.50	7.01	8.20	9.41	10.68	11.46	12.17						
4800	2.17	2.67	3.03	3.52	3.99	4.46	5.04	5.60	6.15	6.69	7.22	8.43	9.65	10.93	11.70	12.40						
5000	2.23	2.74	3.12	3.62	4.11	4.59	5.18	5.76	6.33	6.88	7.42	8.65	9.88	11.16	11.92							
6000	2.48	3.06	3.50	4.06	4.62	5.16	5.83	6.47	7.09	7.69	8.26	9.54	10.77									
7000	2.67	3.32	3.80	4.42	5.03	5.62	6.33	7.01	7.66	8.27	8.85											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~1.01	1.02~1.03	1.04~1.06	1.07~1.09	1.10~1.13	1.14~1.18	1.19~1.25	1.26~1.35	1.36~1.57	1.58 or more
200	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03
400	0.00	0.00	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.05
600	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.07	0.08
800	0.00	0.01	0.02	0.04	0.06	0.07	0.08	0.09	0.10	0.10
1000	0.00	0.01	0.03	0.05	0.07	0.08	0.10	0.11	0.12	0.13
1200	0.00	0.01	0.04	0.06	0.08	0.10	0.12	0.13	0.15	0.15
1400	0.00	0.02	0.04	0.07	0.10	0.12	0.14	0.16	0.17	0.18
1600	0.00	0.02	0.05	0.08	0.11	0.14	0.16	0.18	0.19	0.21
1800	0.00	0.02	0.05	0.09	0.13	0.15	0.18	0.20	0.22	0.23
2000	0.00	0.02	0.06	0.10	0.14	0.17	0.20	0.22	0.24	0.26
2200	0.00	0.02	0.06	0.11	0.15	0.19	0.22	0.25	0.27	0.28
2400	0.00	0.03	0.07	0.12	0.17	0.20	0.24	0.27	0.29	0.31
2600	0.00	0.03	0.08	0.13	0.18	0.22	0.26	0.29	0.32	0.33
2800	0.00	0.03	0.08	0.14	0.20	0.24	0.28	0.31	0.34	0.36
3000	0.00	0.03	0.09	0.15	0.21	0.25	0.30	0.33	0.36	0.39
3200	0.00	0.03	0.09	0.16	0.22	0.27	0.32	0.36	0.39	0.41
3400	0.00	0.04	0.10	0.17	0.24	0.29	0.34	0.38	0.41	0.44
3600	0.00	0.04	0.11	0.18	0.25	0.30	0.36	0.40	0.44	0.46
3800	0.00	0.04	0.11	0.19	0.27	0.32	0.38	0.42	0.46	0.49
4000	0.00	0.04	0.12	0.21	0.28	0.34	0.40	0.45	0.49	0.51
4200	0.00	0.05	0.12	0.22	0.29	0.36	0.42	0.47	0.51	0.54
4400	0.00	0.05	0.13	0.23	0.31	0.37	0.44	0.49	0.53	0.57
4600	0.00	0.05	0.14	0.24	0.32	0.39	0.46	0.51	0.56	0.59
4800	0.00	0.05	0.14	0.25	0.33	0.41	0.48	0.54	0.58	0.62
5000	0.00	0.05	0.15	0.26	0.35	0.42	0.50	0.56	0.61	0.64
6000	0.00	0.06	0.18	0.31	0.42	0.51	0.59	0.67	0.73	0.77
7000	0.00	0.08	0.21	0.36	0.49	0.59	0.69	0.78	0.85	0.90

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-5VX Power Ace Cog

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																						
	112	118	125	132	140	150	160	170	180	190	200	212	224	236	250	260	280	315	340	355	380	400	450
100	0.53	0.59	0.65	0.72	0.80	0.89	0.99	1.08	1.17	1.27	1.36	1.47	1.58	1.69	1.82	1.91	2.10	2.41	2.64	2.77	3.00	3.18	3.62
200	0.98	1.09	1.22	1.34	1.49	1.67	1.85	2.03	2.21	2.39	2.57	2.78	3.00	3.21	3.46	3.63	3.98	4.59	5.02	5.28	5.71	6.05	6.89
300	1.39	1.56	1.74	1.93	2.14	2.41	2.68	2.94	3.20	3.46	3.72	4.04	4.35	4.66	5.02	5.27	5.78	6.67	7.30	7.67	8.29	8.79	10.02
400	1.79	2.00	2.25	2.49	2.77	3.12	3.47	3.81	4.16	4.50	4.84	5.25	5.65	6.06	6.53	6.86	7.53	8.68	9.50	9.99	10.80	11.44	13.04
500	2.17	2.43	2.73	3.04	3.38	3.81	4.23	4.66	5.08	5.50	5.92	6.42	6.92	7.42	8.00	8.41	9.22	10.64	11.64	12.24	13.23	14.01	15.96
600	2.53	2.84	3.20	3.56	3.97	4.48	4.98	5.49	5.99	6.48	6.98	7.57	8.16	8.75	9.43	9.91	10.88	12.54	13.72	14.42	15.59	16.51	18.78
700	2.89	3.25	3.66	4.08	4.55	5.13	5.72	6.30	6.87	7.45	8.02	8.70	9.38	10.05	10.83	11.39	12.49	14.40	15.75	16.55	17.88	18.93	21.51
800	3.24	3.64	4.11	4.58	5.11	5.77	6.43	7.09	7.74	8.39	9.03	9.80	10.56	11.32	12.21	12.83	14.07	16.22	17.73	18.62	20.10	21.27	24.14
900	3.57	4.03	4.55	5.07	5.67	6.40	7.14	7.86	8.59	9.31	10.03	10.88	11.73	12.57	13.55	14.24	15.62	17.99	19.65	20.63	22.26	23.54	26.66
1000	3.90	4.40	4.98	5.55	6.21	7.02	7.83	8.63	9.42	10.21	11.00	11.94	12.87	13.79	14.86	15.62	17.12	19.71	21.51	22.58	24.34	25.72	29.08
1100	4.23	4.77	5.40	6.03	6.74	7.62	8.50	9.38	10.24	11.10	11.96	12.98	13.99	14.99	16.15	16.97	18.59	21.38	23.32	24.47	26.35	27.82	31.38
1200	4.54	5.13	5.81	6.49	7.26	8.22	9.17	10.11	11.05	11.98	12.90	13.99	15.08	16.16	17.41	18.29	20.03	23.00	25.07	26.29	28.28	29.83	33.56
1300	4.85	5.49	6.22	6.95	7.78	8.80	9.82	10.83	11.84	12.83	13.82	14.99	16.15	17.30	18.63	19.57	21.42	24.57	26.76	28.04	30.12	31.74	35.61
1400	5.15	5.83	6.62	7.39	8.28	9.38	10.46	11.54	12.61	13.67	14.72	15.97	17.20	18.42	19.83	20.82	22.77	26.09	28.38	29.71	31.88	33.56	37.52
1500	5.45	6.17	7.01	7.83	8.77	9.94	11.09	12.24	13.37	14.49	15.60	16.92	18.23	19.51	20.99	22.04	24.09	27.55	29.93	31.31	33.55	35.26	39.28
1600	5.74	6.51	7.39	8.27	9.26	10.49	11.71	12.92	14.11	15.30	16.47	17.85	19.22	20.57	22.12	23.22	25.36	28.96	31.41	32.83	35.12	36.86	40.89
1700	6.03	6.83	7.76	8.69	9.74	11.03	12.32	13.59	14.84	16.08	17.31	18.77	20.20	21.61	23.22	24.36	26.58	30.30	32.82	34.27	36.58	38.34	
1800	6.30	7.15	8.13	9.10	10.20	11.57	12.91	14.24	15.56	16.86	18.14	19.65	21.15	22.61	24.29	25.47	27.76	31.58	34.15	35.62	37.95	39.70	
1900	6.58	7.47	8.49	9.51	10.66	12.09	13.49	14.88	16.25	17.61	18.94	20.52	22.07	23.59	25.32	26.53	28.89	32.79	35.39	36.87	39.20	40.94	
2000	6.84	7.78	8.85	9.91	11.11	12.60	14.06	15.51	16.94	18.34	19.73	21.36	22.96	24.53	26.31	27.56	29.97	33.94	36.56	38.04	40.34		
2400	7.85	8.95	10.19	11.43	12.82	14.54	16.22	17.88	19.50	21.09	22.65	24.47	26.24	27.96	29.90	31.23	33.77	37.79					
2800	8.77	10.02	11.42	12.81	14.38	16.30	18.17	20.00	21.78	23.51	25.20	27.15	29.02	30.81	32.80	34.14							
3000	9.19	10.51	11.99	13.46	15.10	17.10	19.06	20.96	22.80	24.59	26.32	28.31	30.20	32.00	33.96								
3500	10.13	11.57	13.22	14.83	16.63	18.82	20.92	22.95	24.88	26.87	28.49												
4000	10.91	12.56	14.35	16.10	18.03	20.35	22.57	24.66	26.63	28.48													
4500	11.52	13.18	15.07	16.89	18.89	21.25	23.46																
5000	11.93	13.82	15.79	17.68	19.72	22.09																	

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.09	1.10～1.13	1.14～1.18	1.19～1.25	1.26～1.35	1.36～1.57	1.58 or more
100	0.00	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.07
200	0.00	0.01	0.03	0.05	0.07	0.09	0.10	0.11	0.12	0.13
300	0.00	0.02	0.05	0.08	0.11	0.13	0.15	0.17	0.19	0.20
400	0.00	0.02	0.06	0.11	0.14	0.17	0.20	0.23	0.25	0.26
500	0.00	0.03	0.08	0.13	0.18	0.22	0.25	0.29	0.31	0.33
600	0.00	0.03	0.09	0.16	0.21	0.26	0.30	0.34	0.37	0.40
700	0.00	0.04	0.11	0.18	0.25	0.30	0.36	0.40	0.44	0.46
800	0.00	0.04	0.12	0.21	0.29	0.35	0.41	0.46	0.50	0.53
900	0.00	0.05	0.14	0.24	0.32	0.39	0.46	0.51	0.56	0.59
1000	0.00	0.06	0.15	0.26	0.36	0.43	0.51	0.57	0.62	0.66
1100	0.00	0.06	0.17	0.29	0.39	0.48	0.56	0.63	0.68	0.73
1200	0.00	0.07	0.18	0.32	0.43	0.52	0.61	0.69	0.75	0.79
1300	0.00	0.07	0.20	0.34	0.46	0.56	0.66	0.74	0.81	0.86
1400	0.00	0.08	0.21	0.37	0.50	0.61	0.71	0.80	0.87	0.92
1500	0.00	0.08	0.23	0.39	0.54	0.65	0.76	0.86	0.93	0.99
1600	0.00	0.09	0.24	0.42	0.57	0.69	0.81	0.91	1.00	1.05
1700	0.00	0.09	0.26	0.45	0.61	0.74	0.86	0.97	1.06	1.12
1800	0.00	0.10	0.27	0.47	0.64	0.78	0.91	1.03	1.12	1.19
1900	0.00	0.11	0.29	0.50	0.68	0.82	0.96	1.09	1.18	1.25
2000	0.00	0.11	0.30	0.53	0.72	0.87	1.02	1.14	1.24	1.32
2400	0.00	0.13	0.36	0.63	0.86	1.04	1.22	1.37	1.49	1.58
2800	0.00	0.15	0.42	0.74	1.00	1.21	1.42	1.60	1.74	1.85
3000	0.00	0.17	0.45	0.79	1.07	1.30	1.52	1.71	1.87	1.98
3500	0.00	0.19	0.53	0.92	1.25	1.52	1.78	2.00	2.18	2.31
4000	0.00	0.22	0.60	1.05	1.43	1.73	2.03	2.29	2.49	2.64
4500	0.00	0.25	0.68	1.18	1.61	1.95	2.28	2.57	2.80	2.97
5000	0.00	0.28	0.75	1.31	1.79	2.17	2.54	2.86	3.11	3.30

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-5VK Power Ace Aramid Combo

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																
	150	160	170	180	190	200	212	224	236	250	260	280	315	340	355	400	450
100	1.34	1.71	2.08	2.45	2.82	3.19	3.63	4.07	4.51	5.02	5.38	6.10	7.36	8.25	8.79	10.39	12.15
150	1.84	2.39	2.93	3.48	4.02	4.56	5.20	5.85	6.49	7.24	7.77	8.83	10.68	11.99	12.78	15.12	17.71
200	2.30	3.01	3.73	4.44	5.15	5.86	6.71	7.56	8.40	9.38	10.08	11.47	13.90	15.62	16.65	19.72	23.11
250	2.71	3.60	4.48	5.37	6.24	7.12	8.17	9.21	10.25	11.46	12.33	14.04	17.04	19.16	20.43	24.22	28.41
300	3.10	4.16	5.21	6.25	7.30	8.34	9.58	10.82	12.06	13.50	14.52	16.56	20.11	22.64	24.14	28.64	33.60
350	3.47	4.69	5.90	7.11	8.32	9.52	10.96	12.40	13.83	15.49	16.67	19.03	23.14	26.05	27.79	32.99	38.71
400	3.81	5.20	6.58	7.95	9.32	10.68	12.31	13.94	15.56	17.44	18.79	21.46	26.11	29.41	31.38	37.27	43.75
450	4.14	5.69	7.23	8.76	10.29	11.81	13.64	15.45	17.26	19.37	20.87	23.85	29.04	32.73	34.93	41.49	48.71
500	4.45	6.16	7.86	9.55	11.24	12.92	14.94	16.94	18.94	21.26	22.92	26.21	31.94	36.00	38.42	45.65	53.61
550	4.75	6.62	8.48	10.33	12.17	14.01	16.21	18.41	20.59	23.13	24.94	28.54	34.79	39.23	41.88	49.77	58.44
600	5.03	7.06	9.08	11.09	13.09	15.09	17.47	19.85	22.22	24.97	26.93	30.83	37.61	42.42	45.29	53.83	63.21
650	5.30	7.49	9.66	11.83	13.99	16.14	18.71	21.27	23.82	26.79	28.90	33.10	40.40	45.57	48.65	57.84	67.92
700	5.56	7.90	10.23	12.56	14.87	17.17	19.93	22.67	25.41	28.58	30.84	35.34	43.15	48.68	51.98	61.80	72.56
800	6.05	8.70	11.34	13.97	16.59	19.20	22.32	25.42	28.52	32.11	34.66	39.75	48.57	54.80	58.52	69.57	81.67
900	6.49	9.45	12.40	15.33	18.26	21.17	24.64	28.10	31.55	35.55	38.39	44.05	53.86	60.78	64.91	77.15	90.52
1000	6.90	10.17	13.42	16.65	19.87	23.08	26.91	30.72	34.51	38.91	42.04	48.26	59.03	66.62	71.14	84.54	99.12
1200	7.62	11.48	15.33	19.15	22.96	26.74	31.26	35.76	40.23	45.41	49.09	56.39	69.00	77.88	83.14	98.70	115.51
1400	8.21	12.66	17.08	21.48	25.86	30.21	35.40	40.55	45.67	51.60	55.80	64.14	78.49	88.54	94.50	112.00	130.75
1600	8.69	13.71	18.70	23.66	28.59	33.48	39.31	45.10	50.84	57.48	62.19	71.50	87.46	98.60	105.17	124.37	144.75
1800	9.05	14.63	20.18	25.68	31.14	36.56	43.02	49.41	55.75	63.06	68.23	78.45	95.89	108.00	115.11	135.75	
2000	9.31	15.44	21.51	27.54	33.52	39.45	46.50	53.47	60.36	68.31	73.92	84.98	103.75	116.70	124.27		
2200	9.46	16.11	22.71	29.25	35.72	42.14	49.75	57.27	64.69	73.23	79.24	91.05	111.00				
2400	9.50	16.67	23.77	30.80	37.75	44.62	52.77	60.80	68.71	77.79	84.17	96.66	117.60				
2600	9.43	17.10	24.69	32.18	39.58	46.89	55.54	64.05	72.41	81.98	88.68						
2800	9.26	17.41	25.45	33.39	41.23	48.95	58.06	67.01	75.78	85.78	92.77						
3000	8.97	17.58	26.07	34.44	42.67	50.78	60.32	69.66	78.80	89.17							
3500	7.75	17.42	26.92	36.24	45.37	54.30	64.74										
3800	6.65	16.90	26.94	36.74	46.31	55.64											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~1.01	1.02~1.05	1.06~1.11	1.12~1.18	1.19~1.26	1.27~1.38	1.39~1.57	1.58~1.94	1.95~3.38	3.39 or more
100	0.00	0.04	0.11	0.20	0.27	0.33	0.39	0.44	0.47	0.50
150	0.00	0.06	0.17	0.30	0.41	0.50	0.58	0.65	0.71	0.75
200	0.00	0.08	0.23	0.40	0.54	0.66	0.77	0.87	0.94	1.00
250	0.00	0.10	0.29	0.50	0.68	0.83	0.97	1.09	1.18	1.26
300	0.00	0.13	0.34	0.60	0.82	0.99	1.16	1.31	1.41	1.51
350	0.00	0.15	0.40	0.70	0.95	1.16	1.35	1.52	1.65	1.76
400	0.00	0.17	0.46	0.80	1.09	1.32	1.55	1.74	1.88	2.01
450	0.00	0.19	0.52	0.90	1.23	1.49	1.74	1.96	2.12	2.26
500	0.00	0.21	0.57	1.00	1.36	1.65	1.93	2.18	2.35	2.51
550	0.00	0.23	0.63	1.10	1.50	1.82	2.13	2.39	2.59	2.76
600	0.00	0.25	0.69	1.20	1.63	1.98	2.32	2.61	2.83	3.01
650	0.00	0.27	0.75	1.30	1.77	2.15	2.51	2.83	3.06	3.26
700	0.00	0.29	0.80	1.40	1.91	2.31	2.71	3.05	3.30	3.52
800	0.00	0.33	0.92	1.60	2.18	2.64	3.09	3.48	3.77	4.02
900	0.00	0.38	1.03	1.80	2.45	2.97	3.48	3.92	4.24	4.52
1000	0.00	0.42	1.15	2.00	2.72	3.30	3.87	4.35	4.71	5.02
1200	0.00	0.50	1.38	2.40	3.27	3.96	4.64	5.22	5.65	6.03
1400	0.00	0.58	1.61	2.80	3.81	4.62	5.41	6.09	6.59	7.03
1600	0.00	0.67	1.84	3.20	4.36	5.28	6.19	6.96	7.54	8.04
1800	0.00	0.75	2.07	3.60	4.90	5.94	6.96	7.83	8.48	9.04
2000	0.00	0.83	2.30	4.00	5.45	6.60	7.74	8.71	9.42	10.05
2200	0.00	0.92	2.53	4.40	5.99	7.26	8.51	9.58	10.36	11.05
2400	0.00	1.00	2.76	4.80	6.54	7.93	9.28	10.45	11.30	12.05
2600	0.00	1.08	2.99	5.20	7.08	8.59	10.06	11.32	12.25	13.06
2800	0.00	1.17	3.22	5.61	7.63	9.25	10.83	12.19	13.19	14.06
3000	0.00	1.25	3.45	6.01	8.17	9.91	11.60	13.06	14.13	15.07
3500	0.00	1.46	4.02	7.01	9.54	11.56	13.54	15.23	16.48	17.58
3800	0.00	1.58	4.36	7.61	10.35	12.55	14.70	16.54	17.90	19.09

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

How to Design a Frictional Forced Power Transmission Belt

Table of Basic Power Ratings

Table of basic power ratings for Type-8VK Power Ace Aramid Combo

(Unit: kW)

Pinion revolution (rpm)	Pinion nominal outside diameter (mm)																
	300	315	335	355	375	400	425	450	460	475	500	520	540	560	600	630	710
50	2.68	3.22	3.94	4.66	5.38	6.28	7.17	8.07	8.42	8.96	9.85	10.57	11.28	11.99	13.42	14.48	17.32
60	3.18	3.83	4.69	5.55	6.40	7.48	8.55	9.62	10.04	10.69	11.75	12.61	13.46	14.31	16.02	17.29	20.69
70	3.67	4.42	5.42	6.42	7.42	8.67	9.91	11.16	11.66	12.40	13.64	14.64	15.63	16.62	18.60	20.09	24.04
80	4.15	5.01	6.15	7.29	8.43	9.85	11.27	12.69	13.26	14.11	15.53	16.66	17.79	18.92	21.18	22.87	27.38
90	4.63	5.59	6.88	8.16	9.43	11.03	12.63	14.22	14.86	15.81	17.40	18.67	19.94	21.21	23.75	25.64	30.70
100	5.11	6.17	7.60	9.02	10.43	12.20	13.97	15.74	16.44	17.50	19.27	20.68	22.08	23.49	26.30	28.41	34.02
110	5.58	6.75	8.31	9.87	11.43	13.37	15.31	17.25	18.03	19.19	21.13	22.67	24.22	25.77	28.85	31.17	37.33
120	6.05	7.32	9.02	10.72	12.42	14.53	16.65	18.76	19.61	20.87	22.98	24.67	26.35	28.03	31.40	33.92	40.62
130	6.51	7.89	9.73	11.57	13.40	15.69	17.98	20.27	21.18	22.55	24.83	26.65	28.48	30.30	33.93	36.66	43.92
140	6.97	8.46	10.44	12.41	14.38	16.85	19.31	21.77	22.75	24.22	26.67	28.64	30.60	32.55	36.47	39.40	47.20
150	7.43	9.02	11.14	13.25	15.36	18.00	20.63	23.26	24.31	25.89	28.51	30.61	32.71	34.80	38.99	42.13	50.48
200	9.69	11.80	14.61	17.41	20.21	23.71	27.20	30.69	32.08	34.17	37.65	40.44	43.22	46.00	51.55	55.71	66.78
300	14.08	17.22	21.40	25.57	29.74	34.94	40.14	45.34	47.41	50.52	55.71	59.85	63.99	68.12	76.39	82.58	99.05
400	18.34	22.50	28.04	33.57	39.10	46.00	52.90	59.78	62.53	66.66	73.53	79.02	84.51	89.99	100.95	109.15	130.99
500	22.50	27.68	34.57	41.46	48.34	56.93	65.51	74.08	77.50	82.64	91.19	98.02	104.85	111.67	125.30	135.50	162.67
600	26.58	32.77	41.01	49.25	57.48	67.75	78.00	88.25	92.34	98.48	108.70	116.86	125.02	133.18	149.46	161.66	194.12
700	30.59	37.79	47.38	56.96	66.53	78.47	90.39	102.31	107.07	114.20	126.08	135.58	145.06	154.54	173.47	187.64	225.36
800	34.55	42.75	53.68	64.60	75.50	89.11	102.70	116.27	121.69	129.82	143.35	154.17	164.97	175.77	197.33	213.47	256.40
900	38.45	47.66	59.92	72.17	84.40	99.67	114.92	130.14	136.22	145.34	160.52	172.65	184.77	196.87	221.04	239.14	287.26
1000	42.30	52.51	66.10	79.68	93.24	110.16	127.06	143.93	150.67	160.77	177.59	191.03	204.45	217.86	244.63	264.67	317.94
1100	46.11	57.32	72.24	87.14	102.02	120.59	139.12	157.63	165.03	176.11	194.56	209.30	224.02	238.73	268.08	290.05	
1200	49.88	62.08	78.32	94.54	110.74	130.95	151.12	171.26	179.31	191.37	211.44	227.48	243.49	259.48	291.40	315.28	
1300	53.60	66.80	84.36	101.89	119.40	141.25	163.05	184.82	193.51	206.54	228.23	245.55	262.85	280.12			
1400	57.29	71.47	90.35	109.19	128.01	151.48	174.91	198.30	207.64	221.64	244.93	263.53	282.10				
1500	60.95	76.11	96.30	116.45	136.57	161.66	186.71	211.70	221.69	236.65	261.54						
1600	64.57	80.71	102.20	123.66	145.07	171.79	198.44	225.04	235.66	251.58							
1800	71.70	89.80	113.89	137.94	161.93	191.86	221.71										
2000	78.70	98.74	125.42	152.03	178.59												

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.05	1.06～1.11	1.12～1.18	1.19～1.26	1.27～1.38	1.39～1.57	1.58～1.94	1.95～3.38	3.39 or more
50	0.00	0.08	0.21	0.37	0.50	0.61	0.71	0.80	0.86	0.92
60	0.00	0.09	0.25	0.44	0.60	0.73	0.85	0.96	1.04	1.11
70	0.00	0.11	0.29	0.51	0.70	0.85	0.99	1.12	1.21	1.29
80	0.00	0.12	0.34	0.59	0.80	0.97	1.13	1.28	1.38	1.47
90	0.00	0.14	0.38	0.66	0.90	1.09	1.28	1.44	1.55	1.66
100	0.00	0.15	0.42	0.73	1.00	1.21	1.42	1.60	1.73	1.84
110	0.00	0.17	0.46	0.81	1.10	1.33	1.56	1.76	1.90	2.03
120	0.00	0.19	0.51	0.88	1.20	1.45	1.70	1.92	2.07	2.21
130	0.00	0.20	0.55	0.95	1.30	1.57	1.84	2.08	2.25	2.40
140	0.00	0.22	0.59	1.03	1.40	1.70	1.99	2.24	2.42	2.58
150	0.00	0.23	0.63	1.10	1.50	1.82	2.13	2.40	2.59	2.76
200	0.00	0.31	0.84	1.47	2.00	2.42	2.84	3.19	3.46	3.68
300	0.00	0.46	1.26	2.20	3.00	3.63	4.26	4.79	5.18	5.53
400	0.00	0.62	1.69	2.94	4.00	4.85	5.67	6.39	6.91	7.37
500	0.00	0.77	2.11	3.67	5.00	6.06	7.09	7.98	8.64	9.21
600	0.00	0.93	2.53	4.41	6.00	7.27	8.51	9.58	10.37	11.05
700	0.00	1.08	2.95	5.14	7.00	8.48	9.93	11.18	12.09	12.90
800	0.00	1.24	3.37	5.87	8.00	9.69	11.35	12.77	13.82	14.74
900	0.00	1.39	3.79	6.61	9.00	10.90	12.77	14.37	15.55	16.58
1000	0.00	1.55	4.21	7.34	9.99	12.11	14.19	15.97	17.28	18.42
1100	0.00	1.70	4.63	8.08	10.99	13.32	15.61	17.56	19.00	20.27
1200	0.00	1.86	5.06	8.81	11.99	14.54	17.02	19.16	20.73	22.11
1300	0.00	2.01	5.48	9.55	12.99	15.75	18.44	20.76	22.46	23.95
1400	0.00	2.16	5.90	10.28	13.99	16.96	19.86	22.35	24.19	25.79
1500	0.00	2.32	6.32	11.01	14.99	18.17	21.28	23.95	25.92	27.64
1600	0.00	2.47	6.74	11.75	15.99	19.38	22.70	25.55	27.64	29.48
1800	0.00	2.78	7.58	13.22	17.99	21.80	25.54	28.74	31.10	33.16
2000	0.00	3.09	8.43	14.69	19.99	24.23	28.37	31.93	34.55	36.85

The belt speed exceeds 30 m/s. Please use pulleys made of rolled steel for general structure or carbon steel for machine construction.

Table of basic power ratings for Type-A Standard

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm) 67	71	75	80	85	90	95	100	106	112	118	125	132	140	155
200	0.12	0.14	0.16	0.18	0.20	0.22	0.25	0.27	0.29	0.32	0.34	0.37	0.40	0.44	0.50
400	0.20	0.24	0.27	0.31	0.35	0.40	0.44	0.48	0.53	0.57	0.62	0.68	0.73	0.80	0.91
600	0.27	0.32	0.37	0.43	0.49	0.55	0.61	0.67	0.74	0.81	0.88	0.96	1.04	1.13	1.29
800	0.33	0.40	0.46	0.54	0.61	0.69	0.77	0.84	0.93	1.02	1.11	1.21	1.32	1.43	1.65
1000	0.39	0.46	0.54	0.63	0.73	0.82	0.91	1.01	1.12	1.23	1.33	1.46	1.58	1.72	1.99
1200	0.43	0.52	0.61	0.73	0.84	0.95	1.05	1.16	1.29	1.42	1.54	1.69	1.84	2.00	2.30
1400	0.48	0.58	0.68	0.81	0.94	1.06	1.19	1.31	1.46	1.60	1.74	1.91	2.07	2.26	2.60
1600	0.51	0.63	0.75	0.89	1.03	1.17	1.31	1.45	1.61	1.77	1.93	2.11	2.30	2.50	2.87
1800	0.55	0.68	0.81	0.96	1.12	1.27	1.43	1.58	1.76	1.93	2.11	2.31	2.50	2.72	3.12
2000	0.58	0.72	0.86	1.03	1.20	1.37	1.53	1.70	1.89	2.08	2.27	2.48	2.69	2.93	3.35
2200	0.61	0.76	0.91	1.09	1.28	1.46	1.64	1.81	2.02	2.22	2.42	2.65	2.87	3.12	3.56
2400	0.63	0.79	0.95	1.15	1.35	1.54	1.73	1.92	2.13	2.35	2.56	2.80	3.03	3.28	3.73
2600	0.65	0.82	0.99	1.20	1.41	1.61	1.81	2.01	2.24	2.47	2.68	2.93	3.17	3.43	3.89
2800	0.66	0.85	1.03	1.25	1.47	1.68	1.89	2.10	2.34	2.57	2.79	3.05	3.29	3.55	4.01
3000	0.67	0.87	1.06	1.29	1.52	1.74	1.96	2.17	2.42	2.66	2.89	3.15	3.39	3.65	4.10
3200	0.68	0.88	1.08	1.33	1.56	1.80	2.02	2.24	2.49	2.74	2.97	3.23	3.47	3.73	4.15
3400	0.69	0.90	1.10	1.36	1.60	1.84	2.07	2.30	2.55	2.80	3.03	3.29	3.53	3.78	4.18
3600	0.69	0.91	1.12	1.38	1.63	1.88	2.11	2.34	2.60	2.85	3.08	3.33	3.56	3.80	4.16
3800	0.68	0.91	1.13	1.40	1.66	1.91	2.14	2.37	2.64	2.88	3.11	3.35	3.57	3.80	
4000	0.67	0.91	1.13	1.41	1.67	1.92	2.17	2.40	2.66	2.90	3.12	3.35	3.56	3.76	
4500	0.63	0.88	1.12	1.40	1.68	1.93	2.17	2.40	2.64	2.87	3.06	3.25			
5000	0.57	0.82	1.07	1.36	1.63	1.88	2.11	2.31	2.53	2.72					
5500	0.47	0.73	0.97	1.26	1.52	1.75	1.96	2.14							
6000	0.34	0.60	0.84	1.11	1.35	1.56	1.73								
6500	0.17	0.43	0.65	0.90	1.12										
7000		0.21	0.42	0.64											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio 1.00~1.01	1.02~1.04	1.05~1.08	1.09~1.12	1.13~1.18	1.19~1.24	1.25~1.34	1.35~1.51	1.52~1.99	2.00 or more
200	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03
400	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
600	0.00	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08
800	0.00	0.01	0.02	0.03	0.04	0.06	0.07	0.08	0.09	0.10
1000	0.00	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.13
1200	0.00	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.13	0.15
1400	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
1600	0.00	0.02	0.04	0.07	0.09	0.11	0.13	0.16	0.18	0.20
1800	0.00	0.03	0.05	0.08	0.10	0.13	0.15	0.18	0.20	0.23
2000	0.00	0.03	0.06	0.08	0.11	0.14	0.17	0.20	0.22	0.25
2200	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.25	0.28
2400	0.00	0.03	0.07	0.10	0.13	0.17	0.20	0.23	0.27	0.30
2600	0.00	0.04	0.07	0.11	0.15	0.18	0.22	0.25	0.29	0.33
2800	0.00	0.04	0.08	0.12	0.16	0.20	0.23	0.27	0.31	0.35
3000	0.00	0.04	0.08	0.13	0.17	0.21	0.25	0.29	0.33	0.38
3200	0.00	0.04	0.09	0.13	0.18	0.22	0.27	0.31	0.36	0.40
3400	0.00	0.05	0.09	0.14	0.19	0.24	0.28	0.33	0.38	0.43
3600	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45
3800	0.00	0.05	0.11	0.16	0.21	0.27	0.32	0.37	0.42	0.48
4000	0.00	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.45	0.50
4500	0.00	0.06	0.13	0.19	0.25	0.31	0.38	0.44	0.50	0.56
5000	0.00	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63
5500	0.00	0.08	0.15	0.23	0.31	0.38	0.46	0.54	0.61	0.69
6000	0.00	0.08	0.17	0.25	0.33	0.42	0.50	0.59	0.67	0.75
6500	0.00	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.73	0.82
7000	0.00	0.10	0.20	0.29	0.39	0.49	0.59	0.68	0.78	0.88

Table of basic power ratings for Type-B Standard

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	118	125	132	140	155	160	170	180	190	200	212	224	236	250	265
100	0.25	0.27	0.30	0.33	0.39	0.41	0.45	0.49	0.53	0.57	0.61	0.66	0.70	0.76	0.81
200	0.43	0.48	0.54	0.59	0.71	0.74	0.81	0.89	0.96	1.03	1.12	1.20	1.29	1.39	1.49
300	0.59	0.67	0.74	0.83	0.99	1.04	1.15	1.25	1.36	1.46	1.58	1.71	1.83	1.97	2.12
400	0.74	0.84	0.94	1.05	1.26	1.32	1.46	1.60	1.73	1.86	2.02	2.18	2.34	2.52	2.72
500	0.88	1.00	1.12	1.26	1.51	1.59	1.76	1.92	2.09	2.25	2.44	2.64	2.83	3.05	3.28
600	1.01	1.15	1.29	1.45	1.75	1.85	2.04	2.24	2.43	2.62	2.85	3.07	3.29	3.55	3.83
700	1.13	1.30	1.46	1.64	1.98	2.09	2.31	2.54	2.75	2.97	3.23	3.49	3.74	4.03	4.34
800	1.25	1.43	1.61	1.82	2.20	2.33	2.58	2.82	3.07	3.31	3.60	3.88	4.17	4.49	4.83
900	1.36	1.56	1.76	1.99	2.41	2.55	2.83	3.10	3.37	3.64	3.95	4.26	4.57	4.93	5.30
1000	1.46	1.69	1.91	2.15	2.61	2.77	3.07	3.36	3.66	3.95	4.29	4.62	4.96	5.34	5.73
1100	1.56	1.80	2.04	2.31	2.81	2.97	3.30	3.62	3.93	4.24	4.61	4.97	5.32	5.72	6.14
1200	1.66	1.92	2.17	2.46	2.99	3.17	3.51	3.86	4.19	4.52	4.91	5.29	5.66	6.08	6.52
1300	1.75	2.02	2.30	2.60	3.17	3.36	3.72	4.08	4.44	4.78	5.19	5.59	5.98	6.42	6.87
1400	1.83	2.12	2.41	2.74	3.34	3.53	3.92	4.30	4.67	5.03	5.46	5.87	6.27	6.72	7.18
1500	1.91	2.22	2.52	2.87	3.50	3.70	4.11	4.50	4.89	5.26	5.70	6.13	6.54	6.99	7.46
1600	1.98	2.31	2.63	2.99	3.65	3.86	4.28	4.69	5.09	5.48	5.93	6.36	6.78	7.24	7.70
1700	2.05	2.39	2.73	3.10	3.79	4.01	4.44	4.87	5.28	5.67	6.13	6.57	6.99	7.45	7.91
1800	2.12	2.47	2.82	3.21	3.92	4.15	4.59	5.03	5.45	5.85	6.32	6.76	7.17	7.62	8.07
1900	2.18	2.54	2.90	3.31	4.04	4.27	4.73	5.18	5.60	6.01	6.48	6.91	7.32	7.77	8.19
2000	2.23	2.61	2.98	3.40	4.15	4.39	4.86	5.31	5.74	6.15	6.61	7.05	7.45	7.87	8.27
2200	2.32	2.72	3.12	3.55	4.33	4.58	5.06	5.52	5.95	6.36	6.81	7.22	7.59	7.96	
2400	2.39	2.81	3.22	3.67	4.48	4.73	5.22	5.67	6.09	6.48	6.90	7.27	7.58		
2600	2.43	2.87	3.29	3.76	4.57	4.82	5.30	5.74	6.15	6.50	6.88				
2800	2.45	2.90	3.33	3.80	4.62	4.86	5.33	5.74	6.11	6.43					
3000	2.45	2.90	3.34	3.81	4.61	4.84	5.28	5.66	5.98						
3500	2.31	2.77	3.19	3.63	4.33	4.52									
4000	1.99	2.42	2.79	3.15											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~1.01	1.02~1.04	1.05~1.08	1.09~1.12	1.13~1.18	1.19~1.24	1.25~1.34	1.35~1.51	1.52~1.99	2.00 or more
100	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
200	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07
300	0.00	0.01	0.02	0.03	0.04	0.05	0.07	0.08	0.09	0.10
400	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
500	0.00	0.02	0.04	0.05	0.07	0.09	0.11	0.13	0.15	0.16
600	0.00	0.02	0.04	0.07	0.09	0.11	0.13	0.15	0.18	0.20
700	0.00	0.03	0.05	0.08	0.10	0.13	0.15	0.18	0.20	0.23
800	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.20	0.23	0.26
900	0.00	0.03	0.07	0.10	0.13	0.16	0.20	0.23	0.26	0.30
1000	0.00	0.04	0.07	0.11	0.15	0.18	0.22	0.26	0.29	0.33
1100	0.00	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.32	0.36
1200	0.00	0.04	0.09	0.13	0.18	0.22	0.26	0.31	0.35	0.40
1300	0.00	0.05	0.10	0.14	0.19	0.24	0.29	0.33	0.38	0.43
1400	0.00	0.05	0.10	0.15	0.20	0.26	0.31	0.36	0.41	0.46
1500	0.00	0.05	0.11	0.16	0.22	0.27	0.33	0.38	0.44	0.49
1600	0.00	0.06	0.12	0.18	0.23	0.29	0.35	0.41	0.47	0.53
1700	0.00	0.06	0.12	0.19	0.25	0.31	0.37	0.44	0.50	0.56
1800	0.00	0.07	0.13	0.20	0.26	0.33	0.39	0.46	0.53	0.59
1900	0.00	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63
2000	0.00	0.07	0.15	0.22	0.29	0.37	0.44	0.51	0.59	0.66
2200	0.00	0.08	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.72
2400	0.00	0.09	0.18	0.26	0.35	0.44	0.53	0.61	0.70	0.79
2600	0.00	0.10	0.19	0.29	0.38	0.48	0.57	0.67	0.76	0.86
2800	0.00	0.10	0.21	0.31	0.41	0.51	0.61	0.72	0.82	0.92
3000	0.00	0.11	0.22	0.33	0.44	0.55	0.66	0.77	0.88	0.99
3500	0.00	0.13	0.26	0.38	0.51	0.64	0.77	0.90	1.02	1.15
4000	0.00	0.15	0.29	0.44	0.59	0.73	0.88	1.02	1.17	1.32

Table of basic power ratings for Type-C Standard

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	180	190	200	212	224	236	250	265	280	300	315	335	355	375	400
50	0.37	0.41	0.45	0.50	0.54	0.59	0.64	0.69	0.75	0.82	0.87	0.95	1.02	1.09	1.18
100	0.66	0.73	0.80	0.89	0.97	1.05	1.15	1.25	1.36	1.50	1.60	1.73	1.87	2.00	2.17
150	0.91	1.01	1.12	1.24	1.36	1.48	1.62	1.77	1.92	2.12	2.27	2.46	2.66	2.85	3.09
200	1.14	1.28	1.41	1.57	1.73	1.88	2.07	2.26	2.46	2.71	2.90	3.16	3.41	3.66	3.97
250	1.36	1.53	1.69	1.88	2.08	2.27	2.49	2.73	2.97	3.28	3.51	3.82	4.13	4.43	4.81
300	1.57	1.76	1.95	2.18	2.41	2.64	2.90	3.18	3.46	3.83	4.10	4.46	4.82	5.18	5.63
350	1.77	1.99	2.21	2.47	2.73	2.99	3.29	3.62	3.93	4.36	4.67	5.08	5.50	5.90	6.41
400	1.95	2.20	2.45	2.75	3.04	3.34	3.68	4.04	4.39	4.87	5.22	5.69	6.15	6.60	7.17
450	2.14	2.41	2.69	3.02	3.34	3.67	4.04	4.44	4.84	5.36	5.75	6.27	6.78	7.28	7.90
500	2.31	2.61	2.92	3.28	3.64	3.99	4.40	4.84	5.27	5.85	6.27	6.83	7.38	7.93	8.61
550	2.48	2.81	3.14	3.53	3.92	4.30	4.75	5.22	5.69	6.31	6.77	7.38	7.97	8.56	9.29
600	2.64	3.00	3.35	3.77	4.19	4.61	5.09	5.60	6.10	6.76	7.26	7.90	8.54	9.17	9.94
650	2.80	3.18	3.56	4.01	4.46	4.90	5.41	5.96	6.49	7.20	7.72	8.41	9.08	9.75	10.56
700	2.95	3.35	3.76	4.24	4.71	5.19	5.73	6.31	6.88	7.62	8.17	8.90	9.61	10.30	11.16
750	3.09	3.52	3.95	4.46	4.96	5.46	6.04	6.64	7.24	8.03	8.61	9.37	10.11	10.84	11.72
800	3.23	3.68	4.14	4.67	5.20	5.73	6.33	6.97	7.60	8.42	9.03	9.82	10.59	11.34	12.25
850	3.36	3.84	4.32	4.88	5.44	5.99	6.62	7.28	7.94	8.80	9.42	10.24	11.04	11.82	12.75
900	3.49	3.99	4.49	5.08	5.66	6.23	6.89	7.59	8.27	9.16	9.81	10.65	11.47	12.27	13.22
950	3.61	4.14	4.66	5.27	5.87	6.47	7.16	7.88	8.58	9.50	10.17	11.04	11.88	12.69	13.65
1000	3.73	4.28	4.82	5.45	6.08	6.70	7.41	8.15	8.88	9.82	10.51	11.40	12.25	13.08	14.05
1200	4.15	4.77	5.39	6.11	6.82	7.52	8.31	9.13	9.93	10.95	11.68	12.61	13.49	14.31	15.25
1400	4.48	5.17	5.85	6.64	7.42	8.17	9.01	9.88	10.71	11.76	12.49	13.40	14.22	14.96	15.76
1600	4.71	5.46	6.19	7.03	7.85	8.63	9.50	10.38	11.21	12.22	12.90	13.71	14.40		
1800	4.85	5.64	6.40	7.27	8.11	8.89	9.76	10.61	11.38	12.29	12.86				
2000	4.88	5.69	6.47	7.35	8.17	8.94	9.76	10.53	11.21						
2500	4.45	5.24	5.97	6.74	7.42										
3000	3.19	3.82													

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~1.01	1.02~1.04	1.05~1.08	1.09~1.12	1.13~1.18	1.19~1.24	1.25~1.34	1.35~1.51	1.52~1.99	2.00 or more
50	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
100	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
150	0.00	0.02	0.03	0.05	0.06	0.08	0.09	0.11	0.12	0.14
200	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
250	0.00	0.03	0.05	0.08	0.10	0.13	0.15	0.18	0.20	0.23
300	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27
350	0.00	0.04	0.07	0.11	0.14	0.18	0.21	0.25	0.28	0.32
400	0.00	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.33	0.37
450	0.00	0.05	0.09	0.14	0.18	0.23	0.27	0.32	0.37	0.41
500	0.00	0.05	0.10	0.15	0.20	0.25	0.31	0.36	0.41	0.46
550	0.00	0.06	0.11	0.17	0.22	0.28	0.34	0.39	0.45	0.50
600	0.00	0.06	0.12	0.18	0.24	0.31	0.37	0.43	0.49	0.55
650	0.00	0.07	0.13	0.20	0.26	0.33	0.40	0.46	0.53	0.59
700	0.00	0.07	0.14	0.21	0.28	0.36	0.43	0.50	0.57	0.64
750	0.00	0.08	0.15	0.23	0.31	0.38	0.46	0.53	0.61	0.69
800	0.00	0.08	0.16	0.24	0.33	0.41	0.49	0.57	0.65	0.73
850	0.00	0.09	0.17	0.26	0.35	0.43	0.52	0.60	0.69	0.78
900	0.00	0.09	0.18	0.27	0.37	0.46	0.55	0.64	0.73	0.82
950	0.00	0.10	0.19	0.29	0.39	0.48	0.58	0.68	0.77	0.87
1000	0.00	0.10	0.20	0.30	0.41	0.51	0.61	0.71	0.81	0.92
1200	0.00	0.12	0.24	0.37	0.49	0.61	0.73	0.85	0.98	1.10
1400	0.00	0.14	0.29	0.43	0.57	0.71	0.85	1.00	1.14	1.28
1600	0.00	0.16	0.33	0.49	0.65	0.81	0.98	1.14	1.30	1.46
1800	0.00	0.18	0.37	0.55	0.73	0.92	1.10	1.28	1.46	1.65
2000	0.00	0.20	0.41	0.61	0.81	1.02	1.22	1.42	1.63	1.83
2500	0.00	0.25	0.51	0.76	1.02	1.27	1.53	1.78	2.03	2.29
3000	0.00	0.31	0.61	0.91	1.22	1.53	1.83	2.14	2.44	2.75

Table of basic power ratings for Type-D Standard

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	300	315	335	355	375	400	425	450	475	500	530	560	600	630	670
20	0.58	0.63	0.69	0.76	0.83	0.91	0.99	1.07	1.15	1.23	1.33	1.43	1.55	1.65	1.78
40	1.02	1.11	1.24	1.36	1.49	1.64	1.80	1.95	2.10	2.25	2.44	2.62	2.85	3.03	3.27
60	1.41	1.55	1.73	1.91	2.09	2.32	2.54	2.76	2.98	3.20	3.46	3.72	4.07	4.33	4.67
80	1.78	1.96	2.19	2.43	2.66	2.95	3.24	3.53	3.82	4.10	4.44	4.78	5.23	5.56	6.01
100	2.13	2.34	2.63	2.92	3.21	3.56	3.92	4.27	4.62	4.97	5.38	5.80	6.35	6.75	7.30
150	2.93	3.24	3.66	4.07	4.49	5.00	5.51	6.02	6.52	7.02	7.62	8.22	9.00	9.59	10.37
200	3.66	4.07	4.61	5.15	5.68	6.34	7.00	7.66	8.31	8.96	9.73	10.50	11.51	12.26	13.26
250	4.34	4.83	5.50	6.15	6.80	7.61	8.42	9.21	10.01	10.79	11.73	12.65	13.88	14.79	15.99
300	4.97	5.56	6.33	7.10	7.87	8.82	9.76	10.69	11.62	12.53	13.62	14.70	16.12	17.18	18.56
350	5.57	6.24	7.13	8.01	8.88	9.96	11.04	12.10	13.15	14.19	15.42	16.64	18.24	19.43	20.98
400	6.13	6.88	7.88	8.87	9.84	11.05	12.25	13.43	14.60	15.76	17.13	18.47	20.24	21.54	23.24
450	6.66	7.49	8.59	9.68	10.76	12.09	13.40	14.70	15.98	17.24	18.73	20.20	22.11	23.50	25.33
500	7.15	8.06	9.26	10.45	11.62	13.07	14.49	15.90	17.28	18.64	20.23	21.80	23.83	25.32	27.23
550	7.62	8.60	9.90	11.18	12.44	13.99	15.52	17.02	18.49	19.94	21.63	23.28	25.42	26.96	28.95
600	8.05	9.11	10.49	11.86	13.21	14.86	16.48	18.07	19.62	21.14	22.92	24.64	26.85	28.44	30.46
650	8.46	9.58	11.05	12.50	13.93	15.67	17.38	19.04	20.67	22.25	24.09	25.86	28.12	29.73	31.75
700	8.83	10.02	11.57	13.09	14.59	16.42	18.20	19.94	21.62	23.25	25.14	26.94	29.22	30.82	32.82
750	9.17	10.42	12.05	13.64	15.21	17.11	18.96	20.75	22.47	24.14	26.05	27.87	30.14	31.71	33.64
800	9.48	10.78	12.48	14.14	15.76	17.73	19.64	21.47	23.23	24.92	26.84	28.65	30.87	32.39	34.20
850	9.76	11.11	12.88	14.59	16.27	18.29	20.24	22.10	23.88	25.57	27.48	29.26	31.40	32.83	34.50
900	10.00	11.40	13.22	15.00	16.71	18.78	20.76	22.64	24.42	26.10	27.98	29.70	31.72	33.04	
1000	10.39	11.87	13.79	15.64	17.42	19.54	21.54	23.41	25.16	26.76	28.50	30.03			
1200	10.71	12.30	14.32	16.24	18.03	20.11	21.99	23.66	25.11						
1400	10.39	12.00	13.99	15.82	17.47	19.27									
1600	9.35	10.87	12.69	14.26											
1800	7.52	8.84													

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00~ 1.01	1.02~ 1.04	1.05~ 1.08	1.09~ 1.12	1.13~ 1.18	1.19~ 1.24	1.25~ 1.34	1.35~ 1.51	1.52~ 1.99	2.00 or more
20	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06
40	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
60	0.00	0.02	0.04	0.06	0.09	0.11	0.13	0.15	0.17	0.19
80	0.00	0.03	0.06	0.09	0.12	0.14	0.17	0.20	0.23	0.26
100	0.00	0.04	0.07	0.11	0.14	0.18	0.22	0.25	0.29	0.32
150	0.00	0.05	0.11	0.16	0.22	0.27	0.32	0.38	0.43	0.49
200	0.00	0.07	0.14	0.22	0.29	0.36	0.43	0.50	0.58	0.65
250	0.00	0.09	0.18	0.27	0.36	0.45	0.54	0.63	0.72	0.81
300	0.00	0.11	0.22	0.32	0.43	0.54	0.65	0.76	0.87	0.97
350	0.00	0.13	0.25	0.38	0.51	0.63	0.76	0.88	1.01	1.14
400	0.00	0.14	0.29	0.43	0.58	0.72	0.87	1.01	1.15	1.30
450	0.00	0.16	0.33	0.49	0.65	0.81	0.97	1.14	1.30	1.46
500	0.00	0.18	0.36	0.54	0.72	0.90	1.08	1.26	1.44	1.62
550	0.00	0.20	0.40	0.59	0.79	0.99	1.19	1.39	1.59	1.79
600	0.00	0.22	0.43	0.65	0.87	1.08	1.30	1.51	1.73	1.95
650	0.00	0.23	0.47	0.70	0.94	1.17	1.41	1.64	1.88	2.11
700	0.00	0.25	0.51	0.76	1.01	1.26	1.51	1.77	2.02	2.27
750	0.00	0.27	0.54	0.81	1.08	1.35	1.62	1.89	2.16	2.44
800	0.00	0.29	0.58	0.87	1.15	1.44	1.73	2.02	2.31	2.60
850	0.00	0.31	0.61	0.92	1.23	1.53	1.84	2.15	2.45	2.76
900	0.00	0.32	0.65	0.97	1.30	1.62	1.95	2.27	2.60	2.92
1000	0.00	0.36	0.72	1.08	1.44	1.80	2.16	2.52	2.89	3.25
1200	0.00	0.43	0.87	1.30	1.73	2.16	2.60	3.03	3.46	3.90
1400	0.00	0.51	1.01	1.51	2.02	2.53	3.03	3.53	4.04	4.55
1600	0.00	0.58	1.16	1.73	2.31	2.89	3.46	4.04	4.62	5.19
1800	0.00	0.65	1.30	1.95	2.60	3.25	3.89	4.54	5.19	5.84

Table of basic power ratings for Type-E Standard

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	450	475	500	530	560	600	630	670	710	750	800	850	900	950	1000
20	1.33	1.45	1.56	1.71	1.85	2.03	2.17	2.36	2.54	2.72	2.95	3.17	3.40	3.62	3.84
40	2.37	2.59	2.82	3.08	3.34	3.69	3.95	4.30	4.64	4.99	5.41	5.84	6.26	6.68	7.09
60	3.32	3.64	3.96	4.34	4.72	5.23	5.61	6.11	6.60	7.10	7.71	8.32	8.93	9.53	10.13
80	4.20	4.62	5.04	5.53	6.03	6.68	7.17	7.82	8.47	9.11	9.90	10.69	11.48	12.26	13.04
100	5.04	5.55	6.06	6.67	7.28	8.08	8.68	9.47	10.26	11.04	12.01	12.98	13.93	14.89	15.83
120	5.85	6.45	7.05	7.77	8.48	9.42	10.13	11.06	11.99	12.91	14.05	15.18	16.31	17.43	18.54
140	6.62	7.31	8.00	8.83	9.65	10.73	11.54	12.60	13.67	14.72	16.03	17.32	18.61	19.89	21.15
160	7.37	8.15	8.93	9.85	10.78	11.99	12.90	14.10	15.30	16.48	17.95	19.40	20.84	22.27	23.69
180	8.09	8.96	9.82	10.85	11.87	13.23	14.23	15.56	16.89	18.20	19.82	21.42	23.01	24.59	26.14
200	8.80	9.75	10.70	11.82	12.95	14.43	15.53	16.99	18.43	19.86	21.63	23.39	25.12	26.83	28.52
220	9.48	10.52	11.55	12.77	13.99	15.60	16.79	18.37	19.94	21.48	23.40	25.29	27.16	29.00	30.82
240	10.14	11.26	12.37	13.69	15.00	16.74	18.02	19.72	21.40	23.06	25.11	27.14	29.13	31.09	33.03
260	10.79	11.99	13.18	14.59	15.99	17.85	19.22	21.03	22.82	24.59	26.78	28.92	31.04	33.12	35.16
280	11.42	12.70	13.96	15.47	16.96	18.93	20.39	22.31	24.21	26.08	28.39	30.65	32.88	35.06	37.20
300	12.03	13.38	14.73	16.32	17.90	19.98	21.52	23.55	25.55	27.52	29.95	32.32	34.65	36.93	39.15
320	12.63	14.05	15.47	17.15	18.81	21.00	22.62	24.76	26.85	28.92	31.45	33.93	36.35	38.71	41.01
340	13.20	14.71	16.19	17.96	19.70	22.00	23.70	25.92	28.12	30.27	32.90	35.47	37.98	40.41	42.78
360	13.77	15.34	16.90	18.74	20.57	22.97	24.73	27.06	29.33	31.57	34.29	36.95	39.53	42.03	44.44
380	14.31	15.96	17.58	19.51	21.41	23.90	25.74	28.15	30.51	32.82	35.63	38.36	41.00	43.55	46.00
400	14.84	16.55	18.25	20.25	22.22	24.81	26.71	29.20	31.64	34.02	36.90	39.70	42.39	44.98	47.46
450	16.10	17.97	19.82	22.00	24.15	26.94	29.00	31.67	34.27	36.78	39.82	42.72	45.49	48.12	50.60
500	17.25	19.27	21.26	23.60	25.90	28.88	31.05	33.87	36.59	39.20	42.32	45.27	48.03	50.61	52.98
600	19.24	21.52	23.74	26.35	28.87	32.11	34.45	37.43	40.24	42.89	45.96	48.74	51.22	53.38	
700	20.78	23.25	25.64	28.41	31.07	34.42	36.78	39.73	42.43	44.88	47.56				
800	21.84	24.43	26.91	29.74	32.40	35.68	37.93	40.63	42.97						
900	22.38	25.00	27.48	30.25	32.79	35.80	37.76								

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.04	1.05～1.08	1.09～1.12	1.13～1.18	1.19～1.24	1.25～1.34	1.35～1.51	1.52～1.99	2.00 or more
20	0.00	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.12
40	0.00	0.03	0.06	0.08	0.11	0.14	0.17	0.19	0.22	0.25
60	0.00	0.04	0.08	0.12	0.17	0.21	0.25	0.29	0.33	0.37
80	0.00	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.44	0.50
100	0.00	0.07	0.14	0.21	0.28	0.34	0.41	0.48	0.55	0.62
120	0.00	0.08	0.17	0.25	0.33	0.41	0.50	0.58	0.66	0.74
140	0.00	0.10	0.19	0.29	0.39	0.48	0.58	0.68	0.77	0.87
160	0.00	0.11	0.22	0.33	0.44	0.55	0.66	0.77	0.88	0.99
180	0.00	0.12	0.25	0.37	0.50	0.62	0.74	0.87	0.99	1.12
200	0.00	0.14	0.28	0.41	0.55	0.69	0.83	0.96	1.10	1.24
220	0.00	0.15	0.30	0.45	0.61	0.76	0.91	1.06	1.21	1.36
240	0.00	0.17	0.33	0.50	0.66	0.83	0.99	1.16	1.32	1.49
260	0.00	0.18	0.36	0.54	0.72	0.90	1.07	1.25	1.43	1.61
280	0.00	0.19	0.39	0.58	0.77	0.96	1.16	1.35	1.54	1.74
300	0.00	0.21	0.41	0.62	0.83	1.03	1.24	1.45	1.65	1.86
320	0.00	0.22	0.44	0.66	0.88	1.10	1.32	1.54	1.76	1.98
340	0.00	0.23	0.47	0.70	0.94	1.17	1.41	1.64	1.87	2.11
360	0.00	0.25	0.50	0.74	0.99	1.24	1.49	1.74	1.98	2.23
380	0.00	0.26	0.52	0.79	1.05	1.31	1.57	1.83	2.09	2.36
400	0.00	0.28	0.55	0.83	1.10	1.38	1.65	1.93	2.20	2.48
450	0.00	0.31	0.62	0.93	1.24	1.55	1.86	2.17	2.48	2.79
500	0.00	0.34	0.69	1.03	1.38	1.72	2.07	2.41	2.76	3.10
600	0.00	0.41	0.83	1.24	1.65	2.07	2.48	2.89	3.31	3.72
700	0.00	0.48	0.97	1.45	1.93	2.41	2.89	3.38	3.86	4.34
800	0.00	0.55	1.10	1.65	2.21	2.76	3.31	3.86	4.41	4.96
900	0.00	0.62	1.24	1.86	2.48	3.10	3.72	4.34	4.96	5.58

Table of basic power ratings for Type-M Red

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	40	42	45	47	50	53	56	60	63	67	71	75	80	85	90
200	0.02	0.03	0.03	0.04	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.08	0.08	0.09	0.10
400	0.04	0.05	0.06	0.06	0.07	0.08	0.09	0.10	0.10	0.12	0.13	0.14	0.15	0.16	0.17
600	0.06	0.06	0.08	0.08	0.10	0.11	0.12	0.14	0.15	0.16	0.18	0.19	0.21	0.23	0.25
800	0.07	0.08	0.10	0.11	0.12	0.14	0.15	0.17	0.19	0.21	0.23	0.24	0.27	0.29	0.32
1000	0.08	0.09	0.11	0.12	0.14	0.16	0.18	0.20	0.22	0.25	0.27	0.29	0.32	0.35	0.38
1200	0.09	0.11	0.13	0.14	0.17	0.19	0.21	0.24	0.26	0.29	0.31	0.34	0.38	0.41	0.44
1400	0.10	0.12	0.14	0.16	0.19	0.21	0.24	0.27	0.29	0.32	0.36	0.39	0.43	0.47	0.50
1600	0.11	0.13	0.16	0.18	0.20	0.23	0.26	0.30	0.32	0.36	0.40	0.43	0.47	0.52	0.56
1800	0.12	0.14	0.17	0.19	0.22	0.25	0.28	0.32	0.35	0.39	0.43	0.47	0.52	0.57	0.61
2000	0.12	0.15	0.18	0.21	0.24	0.27	0.31	0.35	0.38	0.43	0.47	0.51	0.56	0.61	0.66
2200	0.13	0.16	0.19	0.22	0.26	0.29	0.33	0.38	0.41	0.46	0.50	0.55	0.60	0.66	0.71
2400	0.14	0.16	0.21	0.23	0.27	0.31	0.35	0.40	0.44	0.49	0.53	0.58	0.64	0.70	0.75
2600	0.14	0.17	0.22	0.24	0.29	0.33	0.37	0.42	0.46	0.51	0.56	0.61	0.67	0.73	0.79
2800	0.15	0.18	0.22	0.25	0.30	0.34	0.39	0.44	0.48	0.54	0.59	0.64	0.71	0.77	0.82
3000	0.15	0.18	0.23	0.26	0.31	0.36	0.40	0.46	0.51	0.56	0.62	0.67	0.73	0.80	0.85
3200	0.16	0.19	0.24	0.27	0.32	0.37	0.42	0.48	0.52	0.58	0.64	0.69	0.76	0.82	0.88
3400	0.16	0.19	0.25	0.28	0.33	0.38	0.43	0.50	0.54	0.60	0.66	0.72	0.78	0.84	0.90
3600	0.16	0.20	0.25	0.29	0.34	0.39	0.45	0.51	0.56	0.62	0.68	0.73	0.80	0.86	0.92
3800	0.16	0.20	0.26	0.30	0.35	0.40	0.46	0.52	0.57	0.63	0.69	0.75	0.81	0.87	0.93
4000	0.16	0.20	0.26	0.30	0.36	0.41	0.47	0.53	0.58	0.65	0.71	0.76	0.82	0.88	0.93
4500	0.16	0.21	0.27	0.31	0.37	0.43	0.48	0.55	0.60	0.67	0.72	0.78	0.83	0.88	0.92
5000	0.16	0.20	0.27	0.31	0.38	0.44	0.49	0.56	0.61	0.67	0.72	0.77	0.82	0.85	0.88
5500	0.15	0.20	0.27	0.31	0.37	0.43	0.49	0.56	0.60	0.65	0.70	0.74	0.77	0.79	0.79
6000	0.14	0.19	0.26	0.30	0.36	0.42	0.47	0.54	0.58	0.62	0.65	0.68	0.69	0.68	0.65
6500	0.12	0.17	0.24	0.28	0.34	0.40	0.45	0.50	0.53	0.57	0.58	0.59	0.57	0.53	
7000	0.09	0.14	0.21	0.25	0.31	0.36	0.40	0.45	0.47	0.49	0.49	0.47	0.42		
8000	0.03	0.07	0.14	0.17	0.22	0.25	0.28	0.29	0.28	0.26	0.20				

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.04	1.05～1.08	1.09～1.12	1.13～1.18	1.19～1.24	1.25～1.34	1.35～1.51	1.52～1.99	2.00 or more
200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
600	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
800	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.02	0.02
1000	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
1200	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
1400	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
1600	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.04
1800	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04
2000	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
2200	0.00	0.01	0.01	0.02	0.02	0.03	0.04	0.04	0.05	0.05
2400	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.06
2600	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.06
2800	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07
3000	0.00	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.06	0.07
3200	0.00	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08
3400	0.00	0.01	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08
3600	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
3800	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
4000	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.09	0.10
4500	0.00	0.01	0.02	0.04	0.05	0.06	0.07	0.08	0.10	0.11
5000	0.00	0.01	0.03	0.04	0.05	0.07	0.08	0.09	0.11	0.12
5500	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
6000	0.00	0.02	0.03	0.05	0.06	0.08	0.10	0.11	0.13	0.14
6500	0.00	0.02	0.03	0.05	0.07	0.09	0.10	0.12	0.14	0.16
7000	0.00	0.02	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.17
8000	0.00	0.02	0.04	0.06	0.09	0.11	0.13	0.15	0.17	0.19

Table of basic power ratings for Type-A Red / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	67	71	75	80	85	90	95	100	106	112	118	125	132	140	155
200	0.19	0.22	0.25	0.29	0.33	0.37	0.41	0.44	0.49	0.54	0.58	0.63	0.69	0.75	0.86
400	0.31	0.37	0.43	0.50	0.58	0.65	0.72	0.79	0.88	0.96	1.05	1.15	1.25	1.36	1.56
600	0.41	0.50	0.58	0.69	0.79	0.90	1.00	1.10	1.23	1.35	1.47	1.61	1.75	1.91	2.21
800	0.49	0.60	0.71	0.85	0.99	1.12	1.26	1.39	1.55	1.71	1.87	2.05	2.23	2.43	2.81
1000	0.56	0.70	0.83	1.00	1.17	1.33	1.49	1.66	1.85	2.04	2.23	2.45	2.67	2.92	3.38
1200	0.62	0.78	0.94	1.14	1.33	1.52	1.71	1.91	2.13	2.36	2.58	2.84	3.09	3.38	3.91
1400	0.67	0.86	1.04	1.26	1.48	1.70	1.92	2.14	2.40	2.65	2.90	3.20	3.49	3.81	4.41
1600	0.72	0.92	1.12	1.37	1.62	1.87	2.12	2.36	2.65	2.93	3.21	3.54	3.86	4.22	4.88
1800	0.75	0.98	1.20	1.48	1.75	2.03	2.30	2.56	2.88	3.19	3.50	3.86	4.21	4.60	5.32
2000	0.78	1.03	1.27	1.58	1.88	2.17	2.47	2.76	3.10	3.44	3.77	4.15	4.53	4.95	5.72
2200	0.80	1.07	1.34	1.66	1.99	2.31	2.62	2.93	3.30	3.67	4.02	4.43	4.83	5.28	6.09
2400	0.82	1.11	1.39	1.74	2.09	2.43	2.77	3.10	3.49	3.88	4.26	4.69	5.11	5.58	6.42
2600	0.83	1.13	1.44	1.81	2.18	2.54	2.90	3.25	3.67	4.07	4.47	4.92	5.36	5.85	6.72
2800	0.83	1.16	1.48	1.87	2.26	2.65	3.02	3.39	3.82	4.25	4.66	5.13	5.59	6.09	6.98
3000	0.83	1.17	1.51	1.93	2.34	2.74	3.13	3.51	3.97	4.41	4.84	5.32	5.79	6.30	7.19
3200	0.82	1.18	1.54	1.97	2.40	2.82	3.23	3.63	4.09	4.55	4.99	5.48	5.96	6.48	7.37
3400	0.81	1.18	1.55	2.01	2.45	2.89	3.31	3.72	4.20	4.67	5.12	5.62	6.10	6.62	7.50
3600	0.79	1.18	1.56	2.03	2.49	2.94	3.38	3.80	4.30	4.77	5.23	5.73	6.21	6.72	7.58
3800	0.76	1.17	1.57	2.05	2.53	2.99	3.44	3.87	4.37	4.85	5.31	5.82	6.29	6.79	
4000	0.73	1.15	1.56	2.06	2.55	3.02	3.48	3.92	4.43	4.91	5.37	5.87	6.34	6.83	
4500	0.62	1.07	1.51	2.04	2.56	3.05	3.52	3.97	4.49	4.97	5.41	5.89			
5000	0.47	0.95	1.41	1.96	2.49	3.00	3.47	3.92	4.42	4.87					
5500	0.29	0.78	1.26	1.82	2.35	2.86	3.32	3.75							
6000	0.05	0.56	1.04	1.61	2.14	2.62	3.06								
6500		0.29	0.77	1.32	1.83										
7000			0.43	0.96											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.08	1.09～1.12	1.13～1.16	1.17～1.22	1.23～1.32	1.33～1.50	1.51 or more
200	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
400	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07
600	0.00	0.01	0.02	0.03	0.04	0.06	0.07	0.08	0.09	0.10
800	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
1000	0.00	0.02	0.04	0.06	0.07	0.09	0.11	0.13	0.15	0.17
1200	0.00	0.02	0.04	0.07	0.09	0.11	0.13	0.16	0.18	0.20
1400	0.00	0.03	0.05	0.08	0.10	0.13	0.16	0.18	0.21	0.23
1600	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27
1800	0.00	0.03	0.07	0.10	0.13	0.17	0.20	0.23	0.27	0.30
2000	0.00	0.04	0.07	0.11	0.15	0.19	0.22	0.26	0.30	0.33
2200	0.00	0.04	0.08	0.12	0.16	0.20	0.25	0.29	0.33	0.37
2400	0.00	0.04	0.09	0.13	0.18	0.22	0.27	0.31	0.36	0.40
2600	0.00	0.05	0.10	0.15	0.19	0.24	0.29	0.34	0.39	0.43
2800	0.00	0.05	0.10	0.16	0.21	0.26	0.31	0.36	0.42	0.47
3000	0.00	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.45	0.50
3200	0.00	0.06	0.12	0.18	0.24	0.30	0.36	0.42	0.48	0.53
3400	0.00	0.06	0.13	0.19	0.25	0.32	0.38	0.44	0.51	0.57
3600	0.00	0.07	0.13	0.20	0.27	0.33	0.40	0.47	0.54	0.60
3800	0.00	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.64
4000	0.00	0.07	0.15	0.22	0.30	0.37	0.45	0.52	0.59	0.67
4500	0.00	0.08	0.17	0.25	0.33	0.42	0.50	0.58	0.67	0.75
5000	0.00	0.09	0.19	0.28	0.37	0.46	0.56	0.65	0.74	0.84
5500	0.00	0.10	0.20	0.31	0.41	0.51	0.61	0.71	0.82	0.92
6000	0.00	0.11	0.22	0.33	0.45	0.56	0.67	0.78	0.89	1.00
6500	0.00	0.12	0.24	0.36	0.48	0.60	0.72	0.84	0.97	1.09
7000	0.00	0.13	0.26	0.39	0.52	0.65	0.78	0.91	1.04	1.17

Table of basic power ratings for Type-B Red / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	118	125	132	140	155	160	170	180	190	200	212	224	236	250	265
100	0.38	0.42	0.47	0.52	0.61	0.64	0.71	0.77	0.83	0.89	0.96	1.04	1.11	1.19	1.28
200	0.67	0.76	0.84	0.93	1.11	1.17	1.29	1.40	1.52	1.63	1.77	1.90	2.04	2.20	2.36
300	0.93	1.05	1.17	1.31	1.56	1.65	1.82	1.98	2.15	2.31	2.51	2.71	2.90	3.13	3.37
400	1.17	1.32	1.48	1.66	1.99	2.10	2.31	2.53	2.74	2.96	3.21	3.46	3.71	4.01	4.31
500	1.39	1.58	1.77	1.99	2.39	2.52	2.79	3.05	3.31	3.57	3.88	4.18	4.49	4.84	5.22
600	1.59	1.82	2.04	2.30	2.77	2.93	3.24	3.54	3.85	4.15	4.52	4.87	5.23	5.64	6.08
700	1.79	2.04	2.30	2.59	3.13	3.31	3.67	4.02	4.37	4.72	5.13	5.54	5.94	6.41	6.90
800	1.97	2.26	2.55	2.88	3.48	3.68	4.08	4.48	4.87	5.25	5.71	6.17	6.62	7.14	7.69
900	2.14	2.47	2.78	3.15	3.82	4.04	4.48	4.91	5.34	5.77	6.28	6.78	7.27	7.84	8.44
1000	2.31	2.66	3.01	3.41	4.14	4.38	4.86	5.33	5.80	6.27	6.81	7.36	7.89	8.50	9.15
1100	2.46	2.85	3.23	3.65	4.45	4.71	5.23	5.74	6.24	6.74	7.33	7.91	8.48	9.13	9.82
1200	2.61	3.02	3.43	3.89	4.74	5.02	5.58	6.12	6.66	7.19	7.82	8.44	9.04	9.73	10.45
1300	2.75	3.19	3.63	4.12	5.03	5.32	5.91	6.49	7.06	7.62	8.29	8.93	9.57	10.29	11.04
1400	2.89	3.35	3.81	4.34	5.30	5.61	6.23	6.84	7.44	8.03	8.73	9.40	10.06	10.81	11.59
1500	3.01	3.50	3.99	4.54	5.55	5.88	6.54	7.18	7.81	8.42	9.14	9.85	10.53	11.30	12.10
1600	3.13	3.65	4.16	4.74	5.80	6.14	6.83	7.49	8.15	8.79	9.53	10.26	10.96	11.75	12.56
1700	3.24	3.78	4.32	4.92	6.03	6.39	7.10	7.79	8.47	9.13	9.89	10.64	11.35	12.15	12.97
1800	3.34	3.91	4.47	5.10	6.25	6.62	7.35	8.07	8.77	9.44	10.23	10.98	11.71	12.51	13.33
1900	3.44	4.03	4.61	5.26	6.45	6.84	7.59	8.33	9.04	9.74	10.53	11.30	12.03	12.83	13.64
2000	3.53	4.14	4.74	5.42	6.64	7.04	7.82	8.57	9.30	10.00	10.81	11.58	12.31	13.11	13.89
2200	3.68	4.33	4.97	5.69	6.98	7.40	8.21	8.99	9.74	10.46	11.27	12.03	12.75	13.51	
2400	3.80	4.49	5.17	5.92	7.27	7.70	8.53	9.33	10.08	10.80	11.60	12.34	13.01		
2600	3.90	4.62	5.32	6.10	7.49	7.93	8.77	9.57	10.32	11.02	11.79				
2800	3.96	4.71	5.43	6.23	7.65	8.09	8.94	9.73	10.45	11.12					
3000	3.98	4.76	5.50	6.32	7.74	8.18	9.01	9.78	10.47						
3500	3.90	4.70	5.47	6.28	7.66	8.07									
4000	3.58	4.38	5.12	5.89											

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.08	1.09～1.12	1.13～1.16	1.17～1.22	1.23～1.32	1.33～1.50	1.51 or more
100	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.04
200	0.00	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.07
300	0.00	0.01	0.02	0.04	0.05	0.06	0.07	0.09	0.10	0.11
400	0.00	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.13	0.15
500	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.17	0.19
600	0.00	0.02	0.05	0.07	0.10	0.12	0.15	0.17	0.20	0.22
700	0.00	0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.23	0.26
800	0.00	0.03	0.07	0.10	0.13	0.17	0.20	0.23	0.27	0.30
900	0.00	0.04	0.07	0.11	0.15	0.19	0.22	0.26	0.30	0.34
1000	0.00	0.04	0.08	0.12	0.17	0.21	0.25	0.29	0.33	0.37
1100	0.00	0.05	0.09	0.14	0.18	0.23	0.27	0.32	0.36	0.41
1200	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45
1300	0.00	0.05	0.11	0.16	0.22	0.27	0.32	0.38	0.43	0.48
1400	0.00	0.06	0.12	0.17	0.23	0.29	0.35	0.41	0.46	0.52
1500	0.00	0.06	0.12	0.19	0.25	0.31	0.37	0.43	0.50	0.56
1600	0.00	0.07	0.13	0.20	0.27	0.33	0.40	0.46	0.53	0.60
1700	0.00	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63
1800	0.00	0.07	0.15	0.22	0.30	0.37	0.45	0.52	0.60	0.67
1900	0.00	0.08	0.16	0.24	0.31	0.39	0.47	0.55	0.63	0.71
2000	0.00	0.08	0.17	0.25	0.33	0.41	0.50	0.58	0.66	0.75
2200	0.00	0.09	0.18	0.27	0.36	0.46	0.55	0.64	0.73	0.82
2400	0.00	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
2600	0.00	0.11	0.22	0.32	0.43	0.54	0.65	0.75	0.86	0.97
2800	0.00	0.12	0.23	0.35	0.46	0.58	0.70	0.81	0.93	1.04
3000	0.00	0.12	0.25	0.37	0.50	0.62	0.75	0.87	1.00	1.12
3500	0.00	0.15	0.29	0.44	0.58	0.73	0.87	1.01	1.16	1.31
4000	0.00	0.17	0.33	0.50	0.66	0.83	1.00	1.16	1.33	1.49

Table of basic power ratings for Type-C Red / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	180	190	200	212	224	236	250	265	280	300	315	335	355	375	400
50	0.54	0.59	0.64	0.71	0.77	0.84	0.91	0.99	1.07	1.17	1.25	1.35	1.45	1.56	1.68
100	0.97	1.07	1.17	1.29	1.41	1.53	1.67	1.82	1.97	2.16	2.31	2.50	2.70	2.89	3.13
150	1.36	1.51	1.65	1.83	2.00	2.18	2.38	2.59	2.80	3.09	3.30	3.58	3.86	4.13	4.48
200	1.72	1.91	2.10	2.33	2.56	2.78	3.04	3.32	3.60	3.97	4.24	4.60	4.96	5.32	5.77
250	2.07	2.30	2.53	2.81	3.09	3.36	3.68	4.02	4.36	4.81	5.14	5.59	6.03	6.46	7.00
300	2.39	2.67	2.94	3.27	3.60	3.92	4.30	4.70	5.10	5.62	6.02	6.54	7.05	7.56	8.20
350	2.71	3.02	3.34	3.72	4.09	4.46	4.89	5.35	5.81	6.41	6.86	7.45	8.04	8.63	9.35
400	3.01	3.37	3.72	4.14	4.57	4.98	5.47	5.99	6.50	7.18	7.68	8.35	9.01	9.66	10.47
450	3.30	3.70	4.09	4.56	5.03	5.49	6.03	6.60	7.17	7.92	8.48	9.21	9.94	10.66	11.56
500	3.58	4.01	4.45	4.96	5.48	5.98	6.57	7.20	7.82	8.64	9.25	10.05	10.85	11.63	12.60
550	3.85	4.32	4.79	5.35	5.91	6.46	7.10	7.78	8.45	9.34	10.00	10.87	11.73	12.57	13.62
600	4.11	4.62	5.13	5.74	6.33	6.93	7.62	8.35	9.07	10.02	10.73	11.66	12.58	13.48	14.59
650	4.37	4.91	5.46	6.10	6.75	7.38	8.12	8.90	9.67	10.68	11.43	12.42	13.40	14.36	15.54
700	4.61	5.20	5.78	6.46	7.15	7.82	8.60	9.43	10.25	11.33	12.12	13.17	14.19	15.21	16.44
750	4.85	5.47	6.08	6.81	7.54	8.25	9.08	9.95	10.81	11.95	12.78	13.88	14.96	16.02	17.31
800	5.08	5.73	6.38	7.15	7.91	8.67	9.54	10.45	11.36	12.55	13.43	14.57	15.70	16.80	18.14
850	5.30	5.99	6.67	7.48	8.28	9.07	9.98	10.94	11.89	13.13	14.05	15.24	16.41	17.55	18.94
900	5.52	6.24	6.95	7.80	8.64	9.46	10.41	11.42	12.40	13.69	14.64	15.88	17.09	18.26	19.69
950	5.73	6.48	7.23	8.11	8.98	9.84	10.83	11.87	12.90	14.24	15.22	16.49	17.74	18.94	20.40
1000	5.93	6.72	7.49	8.41	9.32	10.21	11.24	12.32	13.38	14.76	15.77	17.08	18.35	19.59	21.07
1200	6.67	7.57	8.46	9.51	10.54	11.55	12.71	13.92	15.10	16.62	17.72	19.14	20.49	21.77	23.28
1400	7.29	8.30	9.29	10.45	11.58	12.69	13.95	15.25	16.51	18.11	19.25	20.70	22.04	23.29	24.70
1600	7.80	8.89	9.96	11.22	12.43	13.61	14.93	16.29	17.58	19.19	20.32	21.71	22.96		
1800	8.18	9.35	10.49	11.80	13.07	14.29	15.64	17.00	18.27	19.83	20.87				
2000	8.44	9.66	10.84	12.20	13.49	14.71	16.05	17.37	18.57						
2500	8.48	9.75	10.93	12.25	13.45										
3000	7.56	8.71													

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.08	1.09～1.12	1.13～1.16	1.17～1.22	1.23～1.32	1.33～1.50	1.51 or more
50	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04
100	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
150	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
200	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.17
250	0.00	0.02	0.05	0.07	0.10	0.12	0.15	0.17	0.19	0.22
300	0.00	0.03	0.06	0.09	0.12	0.15	0.17	0.20	0.23	0.26
350	0.00	0.03	0.07	0.10	0.14	0.17	0.20	0.24	0.27	0.31
400	0.00	0.04	0.08	0.12	0.16	0.19	0.23	0.27	0.31	0.35
450	0.00	0.04	0.09	0.13	0.17	0.22	0.26	0.31	0.35	0.39
500	0.00	0.05	0.10	0.15	0.19	0.24	0.29	0.34	0.39	0.44
550	0.00	0.05	0.11	0.16	0.21	0.27	0.32	0.37	0.43	0.48
600	0.00	0.06	0.12	0.18	0.23	0.29	0.35	0.41	0.47	0.52
650	0.00	0.06	0.13	0.19	0.25	0.32	0.38	0.44	0.51	0.57
700	0.00	0.07	0.14	0.20	0.27	0.34	0.41	0.48	0.54	0.61
750	0.00	0.07	0.15	0.22	0.29	0.36	0.44	0.51	0.58	0.66
800	0.00	0.08	0.16	0.23	0.31	0.39	0.47	0.54	0.62	0.70
850	0.00	0.08	0.17	0.25	0.33	0.41	0.50	0.58	0.66	0.74
900	0.00	0.09	0.18	0.26	0.35	0.44	0.52	0.61	0.70	0.79
950	0.00	0.09	0.18	0.28	0.37	0.46	0.55	0.65	0.74	0.83
1000	0.00	0.10	0.19	0.29	0.39	0.49	0.58	0.68	0.78	0.87
1200	0.00	0.12	0.23	0.35	0.47	0.58	0.70	0.82	0.93	1.05
1400	0.00	0.14	0.27	0.41	0.54	0.68	0.82	0.95	1.09	1.22
1600	0.00	0.16	0.31	0.47	0.62	0.78	0.93	1.09	1.24	1.40
1800	0.00	0.18	0.35	0.53	0.70	0.87	1.05	1.22	1.40	1.57
2000	0.00	0.19	0.39	0.58	0.78	0.97	1.17	1.36	1.56	1.75
2500	0.00	0.24	0.49	0.73	0.97	1.21	1.46	1.70	1.94	2.19
3000	0.00	0.29	0.58	0.88	1.17	1.46	1.75	2.04	2.33	2.62

Table of basic power ratings for Type-D Red / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	300	315	335	355	375	400	425	450	475	500	530	560	600	630	670
20	0.74	0.80	0.88	0.97	1.05	1.15	1.25	1.35	1.45	1.55	1.67	1.79	1.94	2.06	2.21
40	1.35	1.47	1.63	1.78	1.94	2.13	2.32	2.51	2.70	2.89	3.11	3.33	3.63	3.85	4.15
60	1.92	2.09	2.32	2.54	2.77	3.04	3.32	3.60	3.87	4.14	4.47	4.79	5.22	5.54	5.97
80	2.46	2.68	2.97	3.26	3.56	3.92	4.28	4.64	4.99	5.35	5.77	6.19	6.75	7.17	7.72
100	2.97	3.24	3.60	3.96	4.32	4.76	5.20	5.64	6.08	6.51	7.03	7.55	8.23	8.74	9.42
150	4.17	4.57	5.09	5.61	6.12	6.76	7.40	8.03	8.66	9.29	10.04	10.78	11.76	12.50	13.47
200	5.29	5.80	6.48	7.15	7.82	8.65	9.48	10.29	11.11	11.92	12.88	13.84	15.11	16.05	17.29
250	6.35	6.98	7.80	8.62	9.44	10.45	11.45	12.45	13.44	14.42	15.59	16.75	18.29	19.43	20.93
300	7.36	8.09	9.06	10.03	10.98	12.17	13.35	14.51	15.67	16.82	18.18	19.54	21.32	22.64	24.38
350	8.32	9.16	10.27	11.37	12.46	13.82	15.16	16.49	17.81	19.11	20.66	22.19	24.21	25.70	27.65
400	9.23	10.18	11.42	12.66	13.88	15.40	16.90	18.38	19.85	21.30	23.02	24.72	26.95	28.59	30.74
450	10.11	11.15	12.53	13.89	15.25	16.92	18.57	20.20	21.80	23.39	25.27	27.12	29.54	31.31	33.63
500	10.95	12.09	13.59	15.08	16.55	18.37	20.16	21.93	23.67	25.38	27.40	29.39	31.97	33.87	36.32
550	11.75	12.98	14.61	16.21	17.80	19.75	21.68	23.57	25.43	27.26	29.42	31.52	34.25	36.24	38.80
600	12.51	13.83	15.58	17.29	18.99	21.08	23.12	25.13	27.11	29.04	31.30	33.51	36.35	38.41	41.06
650	13.24	14.65	16.50	18.33	20.12	22.33	24.49	26.61	28.68	30.70	33.06	35.35	38.28	40.39	43.08
700	13.93	15.42	17.38	19.30	21.20	23.52	25.78	27.99	30.15	32.25	34.69	37.04	40.03	42.16	44.85
750	14.59	16.15	18.21	20.23	22.21	24.63	26.99	29.29	31.51	33.67	36.17	38.56	41.58	43.71	46.36
800	15.20	16.85	19.00	21.10	23.17	25.68	28.12	30.48	32.77	34.97	37.51	39.92	42.92	45.02	47.60
850	15.78	17.50	19.73	21.92	24.06	26.65	29.16	31.58	33.91	36.14	38.69	41.09	44.06	46.09	48.54
900	16.33	18.10	20.42	22.68	24.88	27.55	30.11	32.57	34.93	37.17	39.72	42.09	44.97	46.91	
1000	17.29	19.19	21.65	24.03	26.33	29.10	31.74	34.24	36.60	38.81	41.26	43.49			
1100	18.10	20.09	22.66	25.13	27.50	30.32	32.97	35.44	37.74	39.84					
1200	18.74	20.80	23.45	25.97	28.37	31.18	33.78	36.16	38.30						
1400	19.48	21.61	24.30	26.81	29.13	31.74									
1600	19.44	21.54	24.11	26.42											
1800	18.54	20.48													

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.08	1.09～1.12	1.13～1.16	1.17～1.22	1.23～1.32	1.33～1.50	1.51 or more
20	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
40	0.00	0.01	0.02	0.03	0.04	0.06	0.07	0.08	0.09	0.10
60	0.00	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.13	0.15
80	0.00	0.02	0.04	0.07	0.09	0.11	0.13	0.16	0.18	0.20
100	0.00	0.03	0.06	0.08	0.11	0.14	0.17	0.20	0.22	0.25
150	0.00	0.04	0.08	0.13	0.17	0.21	0.25	0.29	0.33	0.38
200	0.00	0.06	0.11	0.17	0.22	0.28	0.33	0.39	0.45	0.50
250	0.00	0.07	0.14	0.21	0.28	0.35	0.42	0.49	0.56	0.63
300	0.00	0.08	0.17	0.25	0.33	0.42	0.50	0.59	0.67	0.75
350	0.00	0.10	0.20	0.29	0.39	0.49	0.59	0.68	0.78	0.88
400	0.00	0.11	0.22	0.34	0.45	0.56	0.67	0.78	0.89	1.00
450	0.00	0.13	0.25	0.38	0.50	0.63	0.75	0.88	1.00	1.13
500	0.00	0.14	0.28	0.42	0.56	0.70	0.84	0.98	1.12	1.26
550	0.00	0.15	0.31	0.46	0.61	0.77	0.92	1.07	1.23	1.38
600	0.00	0.17	0.34	0.50	0.67	0.84	1.00	1.17	1.34	1.51
650	0.00	0.18	0.36	0.54	0.73	0.91	1.09	1.27	1.45	1.63
700	0.00	0.20	0.39	0.59	0.78	0.98	1.17	1.37	1.56	1.76
750	0.00	0.21	0.42	0.63	0.84	1.05	1.26	1.46	1.67	1.88
800	0.00	0.22	0.45	0.67	0.89	1.12	1.34	1.56	1.79	2.01
850	0.00	0.24	0.47	0.71	0.95	1.19	1.42	1.66	1.90	2.13
900	0.00	0.25	0.50	0.75	1.00	1.26	1.51	1.76	2.01	2.26
1000	0.00	0.28	0.56	0.84	1.12	1.40	1.67	1.95	2.23	2.51
1100	0.00	0.31	0.61	0.92	1.23	1.53	1.84	2.15	2.46	2.76
1200	0.00	0.33	0.67	1.01	1.34	1.67	2.01	2.34	2.68	3.01
1400	0.00	0.39	0.78	1.17	1.56	1.95	2.34	2.73	3.13	3.51
1600	0.00	0.45	0.89	1.34	1.78	2.23	2.68	3.12	3.57	4.02
1800	0.00	0.50	1.01	1.51	2.01	2.51	3.01	3.51	4.02	4.52

Table of basic power ratings for Type-E Red / Power Scrum

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)														
	450	475	500	530	560	600	630	670	710	750	800	850	900	950	1000
20	1.64	1.78	1.91	2.08	2.24	2.45	2.61	2.83	3.04	3.25	3.51	3.78	4.04	4.29	4.55
40	3.03	3.29	3.55	3.85	4.16	4.57	4.87	5.28	5.68	6.08	6.57	7.07	7.56	8.05	8.54
60	4.32	4.69	5.07	5.52	5.96	6.55	6.99	7.58	8.16	8.74	9.46	10.17	10.88	11.59	12.29
80	5.55	6.03	6.52	7.10	7.68	8.45	9.02	9.78	10.54	11.29	12.22	13.15	14.07	14.99	15.90
100	6.72	7.32	7.92	8.63	9.34	10.28	10.98	11.91	12.84	13.75	14.90	16.03	17.15	18.27	19.39
120	7.86	8.57	9.28	10.12	10.95	12.06	12.88	13.98	15.07	16.15	17.49	18.82	20.15	21.46	22.77
140	8.97	9.78	10.59	11.56	12.52	13.79	14.74	15.99	17.24	18.48	20.02	21.54	23.05	24.56	26.05
160	10.05	10.96	11.88	12.96	14.05	15.48	16.54	17.96	19.36	20.75	22.48	24.19	25.89	27.57	29.24
180	11.10	12.12	13.13	14.34	15.54	17.13	18.31	19.88	21.43	22.97	24.88	26.77	28.64	30.50	32.34
200	12.12	13.24	14.35	15.68	17.00	18.74	20.04	21.75	23.45	25.14	27.22	29.29	31.33	33.35	35.35
220	13.12	14.34	15.55	16.99	18.42	20.32	21.72	23.58	25.43	27.25	29.51	31.74	33.94	36.12	38.27
240	14.11	15.42	16.73	18.28	19.82	21.86	23.37	25.38	27.36	29.32	31.74	34.13	36.49	38.81	41.11
260	15.07	16.48	17.87	19.54	21.19	23.37	24.99	27.13	29.24	31.33	33.91	36.45	38.96	41.42	43.85
280	16.01	17.51	19.00	20.77	22.53	24.85	26.57	28.84	31.08	33.30	36.03	38.71	41.35	43.95	46.50
300	16.93	18.52	20.10	21.98	23.84	26.30	28.12	30.51	32.88	35.21	38.09	40.91	43.67	46.39	49.05
320	17.83	19.52	21.18	23.17	25.13	27.71	29.63	32.15	34.63	37.08	40.08	43.03	45.92	48.74	51.50
340	18.72	20.49	22.24	24.32	26.38	29.10	31.10	33.74	36.34	38.89	42.02	45.09	48.08	51.00	53.85
360	19.59	21.44	23.28	25.46	27.61	30.45	32.54	35.29	38.00	40.65	43.90	47.08	50.17	53.17	56.10
380	20.43	22.37	24.29	26.57	28.81	31.77	33.94	36.80	39.61	42.36	45.72	48.99	52.17	55.25	58.23
400	21.26	23.28	25.28	27.65	29.99	33.05	35.31	38.27	41.17	44.01	47.47	50.83	54.08	57.23	60.26
450	23.26	25.48	27.66	30.25	32.80	36.12	38.57	41.76	44.87	47.90	51.57	55.09	58.48	61.72	64.80
500	25.15	27.54	29.90	32.69	35.42	38.98	41.58	44.97	48.25	51.42	55.22	58.85	62.28	65.52	68.55
550	26.92	29.48	32.00	34.96	37.86	41.62	44.35	47.88	51.28	54.54	58.42	62.05	65.45	68.59	71.46
600	28.57	31.29	33.95	37.07	40.10	44.02	46.85	50.49	53.96	57.25	61.11	64.68	67.93	70.86	
700	31.52	34.48	37.37	40.73	43.96	48.07	51.00	54.70	58.14	61.31	64.89				
800	33.95	37.09	40.12	43.61	46.92	51.05	53.92	57.45	60.61						
900	35.83	39.07	42.15	45.64	48.89	52.83	55.48								

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00～1.01	1.02～1.03	1.04～1.06	1.07～1.08	1.09～1.12	1.13～1.16	1.17～1.22	1.23～1.32	1.33～1.50	1.51 or more
20	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
40	0.00	0.02	0.04	0.06	0.08	0.10	0.11	0.13	0.15	0.17
60	0.00	0.03	0.06	0.09	0.11	0.14	0.17	0.20	0.23	0.26
80	0.00	0.04	0.08	0.11	0.15	0.19	0.23	0.27	0.31	0.34
100	0.00	0.05	0.10	0.14	0.19	0.24	0.29	0.33	0.38	0.43
120	0.00	0.06	0.11	0.17	0.23	0.29	0.34	0.40	0.46	0.52
140	0.00	0.07	0.13	0.20	0.27	0.33	0.40	0.47	0.54	0.60
160	0.00	0.08	0.15	0.23	0.31	0.38	0.46	0.54	0.61	0.69
180	0.00	0.09	0.17	0.26	0.34	0.43	0.52	0.60	0.69	0.77
200	0.00	0.10	0.19	0.29	0.38	0.48	0.57	0.67	0.77	0.86
220	0.00	0.11	0.21	0.32	0.42	0.53	0.63	0.74	0.84	0.95
240	0.00	0.11	0.23	0.34	0.46	0.57	0.69	0.80	0.92	1.03
260	0.00	0.12	0.25	0.37	0.50	0.62	0.75	0.87	1.00	1.12
280	0.00	0.13	0.27	0.40	0.54	0.67	0.80	0.94	1.07	1.20
300	0.00	0.14	0.29	0.43	0.57	0.72	0.86	1.00	1.15	1.29
320	0.00	0.15	0.31	0.46	0.61	0.77	0.92	1.07	1.22	1.38
340	0.00	0.16	0.33	0.49	0.65	0.81	0.98	1.14	1.30	1.46
360	0.00	0.17	0.34	0.52	0.69	0.86	1.03	1.20	1.38	1.55
380	0.00	0.18	0.36	0.55	0.73	0.91	1.09	1.27	1.45	1.64
400	0.00	0.19	0.38	0.57	0.77	0.96	1.15	1.34	1.53	1.72
450	0.00	0.22	0.43	0.65	0.86	1.08	1.29	1.51	1.72	1.94
500	0.00	0.24	0.48	0.72	0.96	1.20	1.44	1.67	1.91	2.15
550	0.00	0.26	0.53	0.79	1.05	1.32	1.58	1.84	2.10	2.37
600	0.00	0.29	0.57	0.86	1.15	1.44	1.72	2.01	2.30	2.58
700	0.00	0.34	0.67	1.01	1.34	1.67	2.01	2.34	2.68	3.01
800	0.00	0.38	0.77	1.15	1.53	1.91	2.30	2.68	3.06	3.44
900	0.00	0.43	0.86	1.29	1.72	2.15	2.58	3.01	3.44	3.87

Table of basic power ratings for Type-PJ Rib-Ace

(Unit: kW)

Pinion revolution (rpm)	Pinion outside diameter (mm)														
	20	25	30	35	40	45	50	55	60	70	80	90	100	120	150
100		0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.05
200		0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.08	0.10
300	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.14
400	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.08	0.09	0.10	0.11	0.14	0.18
500	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.12	0.14	0.17	0.22
600	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.13	0.15	0.16	0.20	0.25
700	0.01	0.02	0.03	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.15	0.17	0.19	0.23	0.29
800	0.01	0.02	0.04	0.05	0.06	0.08	0.09	0.10	0.12	0.14	0.16	0.19	0.21	0.26	0.33
900	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.11	0.13	0.16	0.18	0.21	0.24	0.29	0.36
1000	0.01	0.03	0.05	0.06	0.08	0.09	0.11	0.12	0.14	0.17	0.20	0.23	0.26	0.32	0.40
1100	0.01	0.03	0.05	0.07	0.08	0.10	0.12	0.14	0.15	0.18	0.22	0.25	0.28	0.34	0.43
1200	0.01	0.03	0.05	0.07	0.09	0.11	0.13	0.15	0.16	0.20	0.23	0.27	0.30	0.37	0.47
1300	0.01	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.21	0.25	0.29	0.33	0.40	0.50
1400	0.01	0.04	0.06	0.08	0.10	0.12	0.15	0.17	0.19	0.23	0.27	0.31	0.35	0.42	0.53
1500	0.01	0.04	0.06	0.09	0.11	0.13	0.15	0.18	0.20	0.24	0.28	0.33	0.37	0.45	0.57
1600	0.01	0.04	0.07	0.09	0.11	0.14	0.16	0.19	0.21	0.26	0.30	0.35	0.39	0.48	0.60
1700	0.02	0.04	0.07	0.09	0.12	0.15	0.17	0.20	0.22	0.27	0.32	0.36	0.41	0.50	0.63
1800	0.02	0.04	0.07	0.10	0.13	0.15	0.18	0.21	0.23	0.28	0.33	0.38	0.43	0.53	0.66
1900	0.02	0.05	0.07	0.10	0.13	0.16	0.19	0.22	0.24	0.30	0.35	0.40	0.45	0.55	0.69
2000	0.02	0.05	0.08	0.11	0.14	0.17	0.20	0.22	0.25	0.31	0.36	0.42	0.47	0.57	0.72
2500	0.02	0.05	0.09	0.13	0.17	0.20	0.24	0.27	0.31	0.37	0.44	0.50	0.57	0.69	0.86
3000	0.02	0.06	0.10	0.15	0.19	0.23	0.27	0.32	0.36	0.43	0.51	0.59	0.66	0.79	0.98
3500	0.01	0.07	0.12	0.17	0.22	0.26	0.31	0.36	0.40	0.49	0.58	0.66	0.74	0.89	1.08
4000	0.01	0.07	0.13	0.18	0.24	0.29	0.35	0.40	0.45	0.55	0.64	0.73	0.82	0.97	1.16
6000		0.09	0.17	0.25	0.32	0.40	0.47	0.54	0.61	0.73	0.85	0.95	1.03	1.16	1.22
8000		0.10	0.20	0.30	0.39	0.48	0.57	0.64	0.72	0.85	0.96	1.03	1.08		
10000		0.10	0.22	0.33	0.44	0.54	0.63	0.71	0.78	0.89	0.95	0.96			

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00	1.01~1.03	1.04~1.07	1.08~1.11	1.12~1.17	1.18~1.23	1.24~1.33	1.34~1.50	1.51~1.98	1.99 or more
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
200	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
300	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
400	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
500	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
600	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
700	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
800	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
900	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
1000	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1100	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
1200	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
1300	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
1400	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01
1500	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1600	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1700	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1800	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
1900	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
2000	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
2500	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02
3000	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
3500	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.03
4000	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
6000	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
8000	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.06
10000	0.00	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08

The belt speed exceeds 35 m/s. Please take a dynamic balance of the pulley before use.

Table of basic power ratings for Type-PK Rib-Ace

(Unit: kW)

Pinion revolution (rpm)	Pinion outside diameter (mm)												
	50	56	63	71	80	90	100	112	125	140	160	180	200
200	0.04	0.06	0.08	0.10	0.12	0.14	0.17	0.20	0.23	0.27	0.31	0.36	0.41
400	0.07	0.10	0.14	0.18	0.22	0.27	0.31	0.37	0.43	0.49	0.58	0.67	0.76
600	0.10	0.14	0.19	0.25	0.31	0.38	0.44	0.52	0.61	0.71	0.84	0.97	1.09
800	0.12	0.18	0.24	0.31	0.39	0.48	0.57	0.67	0.79	0.91	1.08	1.24	1.41
1000	0.14	0.21	0.29	0.38	0.48	0.58	0.69	0.82	0.95	1.11	1.31	1.51	1.71
1200	0.16	0.24	0.33	0.44	0.55	0.68	0.81	0.96	1.12	1.30	1.54	1.77	2.00
1400	0.18	0.27	0.38	0.50	0.63	0.78	0.92	1.09	1.27	1.48	1.75	2.02	2.28
1600	0.19	0.30	0.42	0.55	0.70	0.87	1.03	1.22	1.43	1.66	1.96	2.25	2.54
1800	0.21	0.32	0.46	0.61	0.77	0.96	1.14	1.35	1.57	1.83	2.16	2.48	2.79
2000	0.22	0.35	0.49	0.66	0.84	1.04	1.24	1.47	1.72	1.99	2.35	2.70	3.03
2200	0.23	0.37	0.53	0.71	0.91	1.12	1.34	1.59	1.85	2.15	2.53	2.90	3.25
2400	0.24	0.39	0.56	0.76	0.97	1.20	1.43	1.70	1.99	2.30	2.71	3.10	3.46
2600	0.25	0.41	0.60	0.80	1.03	1.28	1.53	1.81	2.11	2.45	2.87	3.28	3.65
2800	0.26	0.43	0.63	0.85	1.09	1.36	1.62	1.92	2.23	2.59	3.03	3.44	3.83
3000	0.27	0.45	0.66	0.89	1.15	1.43	1.70	2.02	2.35	2.72	3.18	3.60	3.99
3200	0.27	0.47	0.69	0.93	1.21	1.50	1.79	2.12	2.46	2.84	3.31	3.74	4.13
3400	0.28	0.48	0.71	0.97	1.26	1.57	1.87	2.21	2.57	2.96	3.44	3.87	4.25
3600	0.29	0.50	0.74	1.01	1.31	1.63	1.94	2.30	2.67	3.07	3.55	3.98	4.35
3800	0.29	0.51	0.77	1.05	1.36	1.69	2.02	2.38	2.76	3.17	3.66	4.08	4.42
4000	0.29	0.53	0.79	1.09	1.41	1.75	2.09	2.46	2.85	3.26	3.75	4.16	4.48
4250	0.30	0.54	0.82	1.13	1.46	1.82	2.17	2.56	2.95	3.37	3.84	4.23	4.52
4500	0.30	0.55	0.85	1.17	1.52	1.89	2.24	2.64	3.04	3.46	3.92	4.28	4.52
4750	0.30	0.57	0.87	1.20	1.57	1.95	2.31	2.72	3.12	3.53	3.98	4.30	4.48
5000	0.30	0.58	0.89	1.24	1.61	2.01	2.38	2.79	3.19	3.59	4.01	4.29	
6000	0.29	0.60	0.96	1.35	1.76	2.19	2.57	2.98	3.35	3.67			
7000	0.25	0.60	1.00	1.41	1.85	2.28	2.65	3.01	3.29				
8000	0.20	0.58	0.99	1.43	1.86	2.27	2.60	2.86					

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00	1.01～1.03	1.04～1.07	1.08～1.11	1.12～1.17	1.18～1.23	1.24～1.33	1.34～1.50	1.51～1.98	1.99 or more
200	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01
400	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
600	0.00	0.00	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03
800	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
1000	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.06
1200	0.00	0.01	0.02	0.02	0.03	0.04	0.05	0.05	0.06	0.07
1400	0.00	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.08
1600	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
1800	0.00	0.01	0.02	0.03	0.05	0.06	0.07	0.08	0.09	0.10
2000	0.00	0.01	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.11
2200	0.00	0.01	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.13
2400	0.00	0.02	0.03	0.05	0.06	0.08	0.09	0.11	0.12	0.14
2600	0.00	0.02	0.03	0.05	0.07	0.08	0.10	0.12	0.13	0.15
2800	0.00	0.02	0.04	0.05	0.07	0.09	0.11	0.12	0.14	0.16
3000	0.00	0.02	0.04	0.06	0.08	0.09	0.11	0.13	0.15	0.17
3200	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
3400	0.00	0.02	0.04	0.06	0.09	0.11	0.13	0.15	0.17	0.19
3600	0.00	0.02	0.05	0.07	0.09	0.11	0.14	0.16	0.18	0.21
3800	0.00	0.02	0.05	0.07	0.10	0.12	0.14	0.17	0.19	0.22
4000	0.00	0.03	0.05	0.08	0.10	0.13	0.15	0.18	0.20	0.23
4250	0.00	0.03	0.05	0.08	0.11	0.13	0.16	0.19	0.22	0.24
4500	0.00	0.03	0.06	0.09	0.11	0.14	0.17	0.20	0.23	0.26
4750	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.27
5000	0.00	0.03	0.06	0.09	0.13	0.16	0.19	0.22	0.25	0.28
6000	0.00	0.04	0.08	0.11	0.15	0.19	0.23	0.27	0.30	0.34
7000	0.00	0.04	0.09	0.13	0.18	0.22	0.27	0.31	0.35	0.40
8000	0.00	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.46

The belt speed exceeds 35 m/s. Please take a dynamic balance of the pulley before use.

Table of basic power ratings for Type-PL Rib-Ace

(Unit: kW)

Pinion revolution (rpm)	Pinion outside diameter (mm)														
	75	80	85	90	95	100	110	120	130	140	150	180	200	250	300
100	0.08	0.09	0.09	0.10	0.11	0.12	0.14	0.15	0.17	0.19	0.20	0.25	0.28	0.36	0.44
200	0.14	0.15	0.17	0.18	0.20	0.22	0.25	0.28	0.31	0.34	0.37	0.46	0.52	0.67	0.81
300	0.19	0.21	0.24	0.26	0.28	0.31	0.35	0.40	0.44	0.48	0.53	0.66	0.74	0.95	1.16
400	0.24	0.27	0.30	0.33	0.36	0.39	0.45	0.51	0.56	0.62	0.68	0.85	0.96	1.23	1.50
500	0.29	0.33	0.36	0.40	0.43	0.47	0.54	0.61	0.68	0.75	0.82	1.03	1.17	1.50	1.82
600	0.33	0.38	0.42	0.46	0.51	0.55	0.63	0.72	0.80	0.88	0.97	1.21	1.37	1.76	2.13
700	0.38	0.43	0.48	0.53	0.58	0.62	0.72	0.82	0.91	1.01	1.10	1.38	1.56	2.01	2.44
800	0.42	0.48	0.53	0.59	0.64	0.70	0.81	0.92	1.02	1.13	1.24	1.55	1.75	2.25	2.73
900	0.46	0.52	0.59	0.65	0.71	0.77	0.89	1.01	1.13	1.25	1.37	1.71	1.94	2.49	3.01
1000	0.50	0.57	0.64	0.71	0.77	0.84	0.97	1.11	1.24	1.37	1.50	1.87	2.12	2.72	3.28
1200	0.58	0.66	0.74	0.82	0.90	0.98	1.13	1.29	1.44	1.59	1.74	2.18	2.47	3.15	3.79
1400	0.65	0.74	0.83	0.93	1.02	1.11	1.29	1.46	1.64	1.81	1.98	2.48	2.80	3.56	4.26
1600	0.72	0.82	0.93	1.03	1.13	1.23	1.43	1.63	1.83	2.02	2.21	2.76	3.11	3.93	4.67
1800	0.78	0.90	1.01	1.13	1.24	1.35	1.57	1.79	2.01	2.22	2.42	3.02	3.40	4.27	5.02
2000	0.84	0.97	1.10	1.22	1.35	1.47	1.71	1.95	2.18	2.41	2.63	3.27	3.67	4.57	5.31
2200	0.90	1.04	1.18	1.31	1.45	1.58	1.84	2.10	2.34	2.59	2.83	3.50	3.92	4.83	5.54
2400	0.96	1.11	1.26	1.40	1.54	1.69	1.96	2.24	2.50	2.76	3.01	3.71	4.14	5.05	5.69
2600	1.02	1.17	1.33	1.49	1.64	1.79	2.08	2.37	2.65	2.92	3.18	3.91	4.34	5.22	5.76
2800	1.07	1.24	1.40	1.57	1.73	1.89	2.20	2.50	2.79	3.07	3.34	4.08	4.51	5.34	5.75
3000	1.12	1.29	1.47	1.64	1.81	1.98	2.30	2.62	2.92	3.21	3.48	4.23	4.65	5.40	5.65
3200	1.16	1.35	1.53	1.71	1.89	2.06	2.40	2.73	3.04	3.33	3.62	4.36	4.77	5.41	
3400	1.21	1.40	1.59	1.78	1.97	2.15	2.50	2.83	3.15	3.45	3.73	4.47	4.85	5.36	
3600	1.25	1.45	1.65	1.85	2.04	2.22	2.58	2.93	3.25	3.55	3.84	4.55	4.89	5.25	
3800	1.29	1.50	1.70	1.91	2.10	2.29	2.66	3.01	3.34	3.64	3.92	4.60	4.91	5.07	
4000	1.32	1.54	1.75	1.96	2.16	2.36	2.74	3.09	3.42	3.72	3.99	4.63	4.88		
4500	1.40	1.63	1.86	2.08	2.29	2.50	2.89	3.24	3.56	3.85	4.09	4.57	4.65		
5000	1.46	1.70	1.94	2.17	2.39	2.60	2.99	3.33	3.63	3.88	4.07	4.31			

(Unit: kW)

Pinion revolution (rpm)	Transmission capacity added depending on the speed ratio									
	1.00	1.01~1.03	1.04~1.07	1.08~1.11	1.12~1.17	1.18~1.23	1.24~1.33	1.34~1.50	1.51~1.99	2.00 or more
100	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.01
200	0.00	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
300	0.00	0.00	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
400	0.00	0.00	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03
500	0.00	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04
600	0.00	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04	0.05
700	0.00	0.01	0.01	0.02	0.03	0.03	0.04	0.04	0.05	0.06
800	0.00	0.01	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.06
900	0.00	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.06	0.07
1000	0.00	0.01	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.08
1200	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09	0.10
1400	0.00	0.01	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.11
1600	0.00	0.01	0.03	0.04	0.06	0.07	0.09	0.10	0.12	0.13
1800	0.00	0.02	0.03	0.05	0.06	0.08	0.10	0.11	0.13	0.15
2000	0.00	0.02	0.04	0.05	0.07	0.09	0.11	0.13	0.14	0.16
2200	0.00	0.02	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18
2400	0.00	0.02	0.04	0.06	0.09	0.11	0.13	0.15	0.17	0.19
2600	0.00	0.02	0.05	0.07	0.09	0.12	0.14	0.16	0.19	0.21
2800	0.00	0.03	0.05	0.08	0.10	0.13	0.15	0.18	0.20	0.23
3000	0.00	0.03	0.05	0.08	0.11	0.13	0.16	0.19	0.22	0.24
3200	0.00	0.03	0.06	0.09	0.12	0.14	0.17	0.20	0.23	0.26
3400	0.00	0.03	0.06	0.09	0.12	0.15	0.18	0.21	0.24	0.28
3600	0.00	0.03	0.06	0.10	0.13	0.16	0.19	0.23	0.26	0.29
3800	0.00	0.03	0.07	0.10	0.14	0.17	0.20	0.24	0.27	0.31
4000	0.00	0.04	0.07	0.11	0.14	0.18	0.22	0.25	0.29	0.32
4500	0.00	0.04	0.08	0.12	0.16	0.20	0.24	0.28	0.32	0.36
5000	0.00	0.04	0.09	0.13	0.18	0.22	0.27	0.31	0.36	0.40

The belt speed exceeds 35 m/s. Please take a dynamic balance of the pulley before use.

■ Table 7 Length correction factors (Kl)

Table 7-1 V-belts

Nominal No.	Belt type				
	A	B	C	D	E
20～25	0.80	0.78			
26～30	0.81	0.79			
31～34	0.84	0.80			
35～37	0.87	0.81			
38～41	0.88	0.83			
42～45	0.90	0.85	0.78		
46～50	0.92	0.87	0.79		
51～54	0.94	0.89	0.80		
55～59	0.96	0.90	0.81		
60～67	0.98	0.92	0.82		
68～74	1.00	0.95	0.85		
75～79	1.02	0.97	0.87		
80～84	1.04	0.98	0.89		
85～89	1.05	0.99	0.90		
90～95	1.06	1.00	0.91		
96～104	1.08	1.02	0.92	0.83	
105～111	1.10	1.04	0.94	0.84	
112～119	1.11	1.05	0.95	0.85	
120～127	1.13	1.07	0.97	0.86	
128～144	1.14	1.08	0.98	0.87	
145～154	1.15	1.11	1.00	0.90	
155～169	1.16	1.13	1.02	0.92	
170～179	1.17	1.15	1.04	0.93	
180～194	1.18	1.16	1.05	0.94	0.91
195～209		1.18	1.07	0.96	0.92
210～239		1.19	1.08	0.98	0.94
240～269			1.11	1.00	0.96
270～299			1.14	1.03	0.99
300～329			1.16	1.05	1.01
330～359			1.19	1.07	1.03
360～389			1.21	1.09	1.05
390～419			1.23	1.11	1.07
420～479			1.24	1.12	1.09
480～539				1.16	1.12
540～600				1.18	1.14

Table 7-2 Power Ace / Energy-Saving Power Ace / Power Ace Cog / Power Ace Aramid Combo

Nominal No.	Belt type			Nominal No.	Belt type		
	3V•3VX	5V•5VK•5VX	8V•8VK		3V•3VX	5V•5VK•5VX	8V•8VK
250	0.83			1180	1.12	0.99	0.89
265	0.84			1250	1.13	1.00	0.90
280	0.85			1320	1.14	1.01	0.91
300	0.86			1400	1.15	1.02	0.92
315	0.87			1500		1.03	0.93
335	0.88			1600		1.04	0.94
355	0.89			1700		1.05	0.94
375	0.90			1800		1.06	0.95
400	0.92			1900		1.07	0.96
425	0.93			2000		1.08	0.97
450	0.94			2120		1.09	0.98
475	0.95			2240		1.09	0.98
500	0.96	0.85		2360		1.10	0.99
530	0.97	0.86		2500		1.11	1.00
560	0.98	0.87		2650		1.12	1.01
600	0.99	0.88		2800		1.13	1.02
630	1.00	0.89		3000		1.14	1.03
670	1.01	0.90		3150		1.15	1.03
710	1.02	0.91		3350		1.16	1.04
750	1.03	0.92		3550		1.17	1.05
800	1.04	0.93		3750			1.06
850	1.06	0.94		4000			1.07
900	1.07	0.95		4250			1.08
950	1.08	0.96		4500			1.09
1000	1.09	0.96	0.87	4750			1.09
1060	1.10	0.97	0.88	5000			1.10
1120	1.11	0.98	0.88	5600			1.12

Table 7-3 Rib-Ace 2

Type PJ				Type PK				Type PL			
Effective length (mm)	Kl	Effective length (mm)	K ℓ	Effective length (mm)	K ℓ	Effective length (mm)	K ℓ	Effective length (mm)	K ℓ	Effective length (mm)	K ℓ
273	0.71	887	0.97	600	0.81	1220	0.96	540	0.70	1520	0.93
294	0.73	911	0.98	615	0.81	1250	0.96	605	0.72	1555	0.93
332	0.76	937	0.98	630	0.82	1280	0.97	655	0.74	1645	0.94
353	0.77	962	0.99	650	0.82	1320	0.97	700	0.75	1720	0.95
401	0.80	988	1.00	670	0.83	1360	0.98	730	0.76	1750	0.96
454	0.82	1013	1.00	690	0.83	1400	0.98	825	0.79	1850	0.97
480	0.84	1089	1.02	710	0.84	1450	0.99	850	0.80	1900	0.98
502	0.85	1140	1.03	730	0.85	1500	1.00	870	0.80	1975	0.98
530	0.86	1165	1.03	750	0.85	1550	1.01	875	0.80	2065	0.99
556	0.87	1191	1.04	775	0.86	1600	1.02	880	0.81	2115	1.00
567	0.87	1201	1.04	800	0.87	1650	1.02	905	0.81	2190	1.01
594	0.88	1242	1.05	825	0.88	1700	1.03	915	0.81	2360	1.02
607	0.89	1318	1.06	850	0.88	1750	1.04	950	0.82	2470	1.03
619	0.89	1343	1.06	875	0.89	1800	1.05	975	0.83	2575	1.04
634	0.90			900	0.90	1850	1.06	1000	0.83	2695	1.05
657	0.91			925	0.90	1900	1.06	1035	0.84	2840	1.06
704	0.92			950	0.91	1950	1.07	1050	0.84	3045	1.08
708	0.92			975	0.91	2000	1.08	1055	0.85		
759	0.94			1000	0.92	2120	1.09	1070	0.85		
777	0.94			1030	0.92	2240	1.10	1190	0.87		
797	0.95			1060	0.93	2360	1.11	1240	0.88		
817	0.95			1090	0.93	2500	1.12	1305	0.89		
835	0.96			1120	0.94	2650	1.13	1340	0.90		
852	0.96			1150	0.94	2800	1.14	1365	0.90		
861	0.97			1180	0.95	3000	1.16	1445	0.91		

Table 8 Pinion contact angle correction factors Kθ₁

$\frac{Do - do}{C}$	Angle of contact of pinion θ_1 (°)	$K\theta_1$	$\frac{Do - do}{C}$	Angle of contact of pinion θ_1 (°)	$K\theta_1$	$\frac{Do - do}{C}$	Angle of contact of pinion θ_1 (°)	$K\theta_1$
0.00	180	1.00	0.60	145	0.91	1.20	106	0.77
0.10	174	0.99	0.70	139	0.89	1.30	99	0.73
0.20	169	0.97	0.80	133	0.87	1.40	91	0.70
0.30	163	0.96	0.90	127	0.85	1.50	83	0.65
0.40	157	0.94	1.00	120	0.82			
0.50	151	0.93	1.10	113	0.80			

■ Table 9 Adjustment range of center distance (Ci/Cs)

Table 9-1 V-belts

(Unit: mm)

Nominal No.	Inner minimum adjustment range (Ci)						Outer minimum adjustment range (Cs)
	M	A	B	C	D	E	
20～ 25	15	20	25				25
26～ 38	15	20	25				25
39～ 60	15	20	25	38			38
61～ 90		20	32	38			51
91～120		25(40)	32(55)	38(60)	51(75)		64
121～158		25(40)	32(55)	38(60)	51(75)		76
159～195		25	32(58)	51(75)	51(75)	64	89
196～240			38(60)	51(75)	51(100)	64	102
241～270				51(75)	64(100)	64	114
271～330				51	64(100)	76	127
331～420				64	64(100)	76	152

Note) The values in the parentheses ( ) indicate the case of Power Scrum.

Table 9-2 Power Ace / Energy-Saving Power Ace / Power Ace Cog / Power Ace Aramid Combo

(Unit: mm)

Nominal No.	Inner minimum adjustment range (Ci)			Outer minimum adjustment range (Cs)
	3V•3VX	5V•5VK•5VX	8V•8VK	
250～ 475	13(38)			25
500～ 710	20(39)	25(61)		31
750～ 1060	20(41)	25(63)	38(102)	38
1120～ 1250	20(42)	25(64)	38(103)	46
1320～1700	20(43)	25(66)	38(105)	56
1800～2000		25(68)	46(107)	64
2120, 2240		31(70)	46(109)	71
2360		31(71)	46(110)	76
2500～2650		31(72)	46(111)	82
2800～3000		31(74)	46(113)	89
3150		31(76)	46(115)	102
3350, 3550		31(78)	51(117)	102
3750			51(118)	114
4000～5000			51(126)	140
5600			51(128)	152

Note) The values in the parentheses ( ) indicate the case of Power Scrum.

Table 9-3 Rib-Ace 2

(Unit: mm)

Type PJ			Type PK			Type PL		
Effective length	Inner minimum adjustment range (Ci)	Outer minimum adjustment range (Cs)	Effective length	Inner minimum adjustment range (Ci)	Outer minimum adjustment range (Cs)	Effective length	Inner minimum adjustment range (Ci)	Outer minimum adjustment range (Cs)
273～ 710	8	5	600～ 710	15	15	540～ 730	18	10
730～ 759	10	8	730～1090	15	20	825～1035	20	12
777～1013	12	10	1120～1500	20	25	1050～1240	20	14
1089～1343	16	14	1550～1900	20	30	1305～1520	22	16
			1950～2500	25	35	1555～1750	22	20
			2650～3000	30	40	1850～2360	24	25
						2470～3045	28	35

Step 1. Determining conditions required for the design
- Driving machine: Induction motor 45 kW/1160 rpm
- Driven machine: Piston pump (24-hour/day continuous operation)
- Driven pulley 600 rpm/ϕ520 mm (do)
- Center distance 1150mm
- Minimum maintenance and inspection

Step 2. Calculating the design power
① Obtain the load correction factor from **Table 1 (→ P. 247)**.
Ko=1.4

② Obtain the idler correction factor and the environmental correction factor from **Table 2** and **Table 3 (→ P. 247)**.
Ki=0.0 Ke=0.2

③ Therefore, the design power is 72 kW.
$Pd = 45 \times (1.4 + 0.0 + 0.2) = 72kW$

Step 3. Selecting a belt type
From the design power of 72 kW and the pinion revolution of 1160 rpm from **Fig. 1 Belt type selection diagram (→ P. 248)**, select Type 5V.

Step 4. Selecting a pulley diameter
① The speed ratio is 1160 / 600 = 1.93

② Assuming the large-pulley nominal outside diameter is 520 mm, from the speed ratio calculation, set the pinion nominal outside diameter to 270 mm.

$$\frac{520 - 2.6}{1.93} + 2.6 \approx 270 \text{ mm}$$

③ Satisfy the minimum nominal outside diameter of a pulley of 150 mm for Type 5V.

④ The belt speed satisfies 40 m/s or less.

$$\frac{(270 - 2.6) \times 1160}{19100} = 16.2 \text{m/s}$$

Step 5. Selecting an effective length
① The effective length calculation results in 3554 mm, and from the **list of belt sizes (→ P. 230)**, select 5V1400(effective outside length 3556 mm).

$$2 \times 1150 + 1.57\,(520 + 270) + \frac{(520 - 270)^2}{4 \times 1150} = 3554\text{mm}$$

② From the effective outside length of the selected belt, the center distance is 1151 mm.

B=3556-1.57(520+270)=2316

$$C = \frac{2316 + \sqrt{2316^2 - 2(520 - 270)^2}}{4}$$

=1151mm

Step 6. Determining the number of belts
① In the **Table of basic power ratings for 5V (→ P. 251)**, obtain the transmission capacity for the pinion revolution of 1160 rpm and the pinion nominal outside diameter of 270 mm by proportional distribution as shown below, and add an additional capacity by the speed ratio to obtain the transmission capacity.

Pinion revolution (rpm)	Pinion nominal diameter (mm)		Transmission capacity added depending on the speed ratio (kW/pc)
	260	280	1.58 ∫ 1.94
	⋮	⋮	⋮
1160	17.34	19.16	0.99

② Obtain the effective length correction factor Kl from **Table 7 (→ P. 271)**.
Kl = 1.02

③ Obtain the contact angle correction factor $K\theta_1$ from **Table 8 (→ P. 272)**.
$K\theta_1 = 0.97$

④ Therefore, the number of belts is 4.

$$N = \frac{72}{19.24 \times 0.97 \times 1.02} = 3.8 \rightarrow 4 \text{ belts}$$

Step 7. Checking the adjustment range of the center distance
From **Table 9 (→ P. 272),** obtain Ci and Cs.

Ci=25mm

Cs=56mm

Examination result
- Belt	5V1400 × 4
- Pinion (driving pulley) nominal outside diameter:	270 mm
- Large (driven) pulley nominal outside diameter:	520 mm
- Center distance	1151 mm

Inner minimum adjustment range: 25 mm
Outer minimum adjustment range: 56 mm

Design power: 72 kW

Belt type: 5 V

Large-pulley nominal outside diameter: 520 mm
Pinion nominal outside diameter: 270 mm

Effective length: 5V1400

Center distance: 1151mm

Basic power rating = 19.24 kW/pc

$K\ell = 1.02$

$K\theta_1 = 0.97$

Number of belts = 4 belts

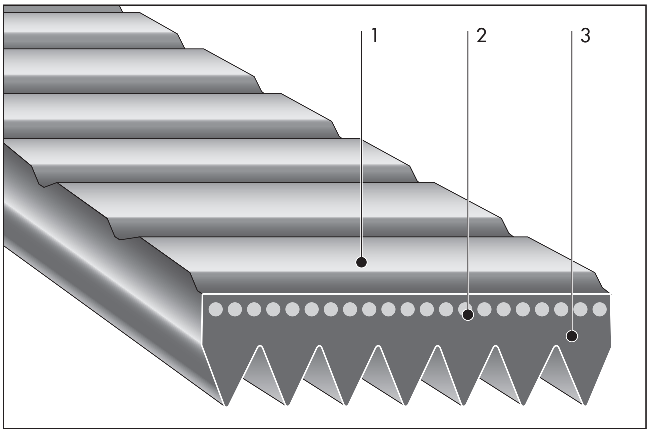
Inner minimum adjustment range (Ci) = 25 mm
Outer maximum adjustment range (Cs) = 56 mm

Bancollan Polybanrope

1. Product Introduction

Bancollan Polybanrope is a polyurethane light-duty belt that combines the flexibility of flat belts and the high power transmission capability of V-belts. Many light-duty machines are generally assembled in a line and require simple belt installation and a high transmission capacity.
Bancollan Polybanrope is an easily installable and tough belt that exactly meets these requirements.

Structure and Features



1. **Tension rubber** (polyurethane rubber)
2. **Cord** (polyamide cord)
3. **V-rib** (polyurethane rubber)

Bancollan Polybanrope provides the following features due to its unique structure.

■ Installable with a fixed center distance

It uses polyamide cords, and the belt has appropriate elasticity. When this elasticity is used, the belt can be installed with the pulleys fixed to the center distance in accordance with the initial stretch rate (normally 1.3%). Because pulley relocation and tension adjustment are unnecessary, the installation cost can be reduced.

■ Shock resistance

The polyamide cords have instantaneous elasticity, which has an effect of absorbing shock loads.

■ Clean transmission

The use of abrasion-resistant polyurethane rubber in the V-ribs prevents most of rubber dropping. Therefore, the transmission system and its peripheral areas can be kept clean.

■ High speed ratio

Because Type H can be used with a small pulley outside diameter of 13 mm and Type J can be used with a small pulley diameter of 23 mm, a high speed ratio is available within a fixed space.

■ High transmission capacity

The large friction surface and the uniform arrangement of the cords in the upper section of the V-ribs provide a high transmission capacity.

■ Excellent high-speed revolution

The light belt and the uniform arrangement of the cords allow smooth transmission even with ϕ23 / 14000 rpm (Type J) ϕ13 / 16000 rpm (Type H).

Major applications

Electric tools
Electric planes, compact grinders, belt sanders, groove-cutting machines

Office machines and automization equipment
Blowers for computers, vending machines, automatic ticket gate, financial system terminal machines, line printers, typewriters, card-making machines, bill-processing machines, paper-cutting machines

Fiber machines
Temporary twisting machines, high-speed winders, spinning machines

Rotary electric equipment
Electric rice-cake-making machines, noodle-making machines, juicers/mixers, electric cooking apparatuses, electric grass cutters, electric massage machines, hemming machines, industrial sawing machines, projectors

Compact machine tools
Desktop lathes, riveters, punching machines, marking presses, mini drill presses, spindle units

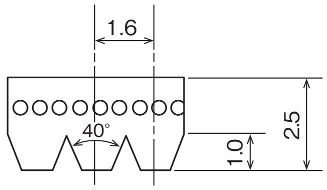
Others
Food cutters (ham/bread slicers), compact winding machines, wrapping machines

Belt Dimensions

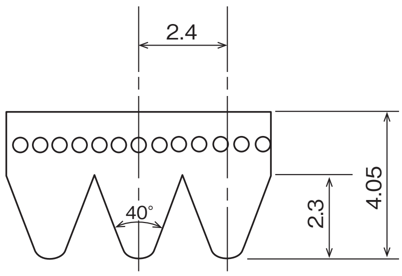
Please use Bancollan Polybanrope of sizes indicated in **Table 1** if possible.

■ Cross-sectional dimensions

Type H



Type J



■ Belt size indication example

108 J 5

- 108: Nominal length (10.8 inches: 273.8 mm)
- J: Belt type (Type J)
- 5: No. of ridges (5)

■ Table 1 Table of belt sizes

Type H		Type J	
Nominal length	Pitch length (mm)	Nominal length	Pitch length (mm)
63H	160.0	81J	205.3
71H	180.3	82J	209.1
80H	203.2	85J	215.9
85H	215.9	90J	228.6
90H	228.6	95J	241.3
95H	241.3	97J	247.3
100H	254.0	99J	251.3
106H	269.2	103J	261.6
112H	284.5	108J	273.8
118H	299.7	116J	293.5
125H	317.5	117J	297.0
132H	335.3	122J	310.9
136H	345.6	125J	317.5
140H	355.6	130J	330.0
147H	373.4	135J	343.8
150H	381.0	139J	351.5
160H	406.4	142J	363.3
170H	431.8	145J	368.3
180H	457.2	153J	389.3
190H	482.6	160J	406.4
200H	508.0	171J	431.3
214H	543.2	175J	442.3
215H	547.0	180J	457.2
221H	562.0	189J	480.2
230H	584.2	194J	492.8
235H	596.9	201J	510.5
304H	772.2	234J	594.0
		236J	599.4
		250J	630.8
		260J	660.4
		264J	670.0
		280J	711.2
		300J	762.0
		312J	792.5
		318J	807.7
		323J	819.3

Please note that some sizes have a different pitch length from the value obtained by converting the nominal length into milli-meters.

Dimensional Tolerance

■ Thickness

(Unit: mm)

Type H	2.5±0.2
Type J	4.05±0.2

■ Outside length

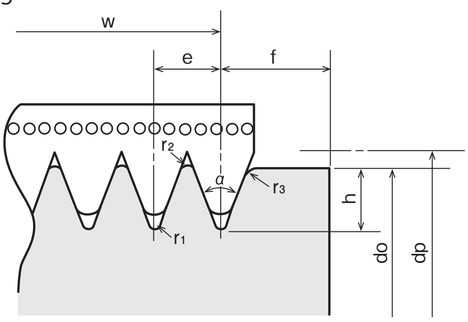
(Unit: mm)

270 or less	+1 −2
Over 270 to 500 or less	+1 −3
Over 500 to 700 or less	+1 −4
Over 700 to 850 or less	+2 −4

Note) The outside length tolerance is based on our measurement method.

Pulley groove dimensions

Please use Bancollan Polybanrope with pulleys having the following groove dimensions.



We also manufacture pulleys for Bancollan Polybanrope; please contact us.

■ Table 2 Pulley groove dimensions

(Unit: mm)

Pulley type	e ±0.05	f	h ±0.1	α ±30' (°)	r_1 ±0.05	r_2	r_3	W ±0.1	(dp-do)
H	1.6	3	1.5	40	0.21	0.15	0.2	(N−1)×1.6	0.58
J	2.4	4	2.3	40	0.34	0.18	0.2	(N−1)×2.4	0.70

2. How to Design

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Speed ratio

$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$

⑥ Temporary center distance
⑦ Pulley diameter restriction
⑧ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Correct the driven load with the degree of overload of the machine and obtain the design power.

$$Pd = Pt \times Ko$$

Pd : Design power (W)
Pt : Transmission power (driven load or motor rating) (W)
Ko : Load correction factor

Select the load correction factor from **Table 3** in accordance with the load characteristics and operating time of the machine.

■ Table 3 Load correction factors Ko

Overload	Operating time / Machinery name	Intermittent use 3 to 4 hrs/day	Normal use 8 to 10 hrs/day	Continuous use 16 to 24 hrs/day
Small	Office machinery (paper feed), compact fans, liquid stirring machines	1.0	1.2	1.4
Medium	Office machinery (for driving), sawing machines, vacuum cleaners, juicers/mixers, cooking apparatuses, projectors, blowers, fiber machines	1.2	1.4	1.6
Large	Electric planes, grinders, grass cutters, compact machine tools, cutting machines	1.5	1.6	1.7

Step 3. Determining the transmission capacity

Correct the basic power rating of the belt (→ P. 277 to P. 278) with the angle of contact and obtain the corrected power rating.

$$Pc = Pr \times K\theta_1$$

Pc : Corrected power rating per ridge (W)
Pr : Basic power rating per ridge (W)
$K\theta_1$: Pinion contact angle correction factor **(Table 4)**

■ Table 4 Pinion contact angle correction factors $K\theta_1$

Equation for contact angle calculation	$\Theta_1 = 180 - \frac{57.3(Dp - dp)}{C}$							
(Dp-dp)/C	0.0	0.2	0.4	0.6	0.8	1.0	1.2	1.4
θ_1	180	169	157	145	133	120	106	91
$K\theta_1$	1.00	0.97	0.94	0.91	0.87	0.82	0.77	0.70

Step 4. Determining the number of ridges of the belt

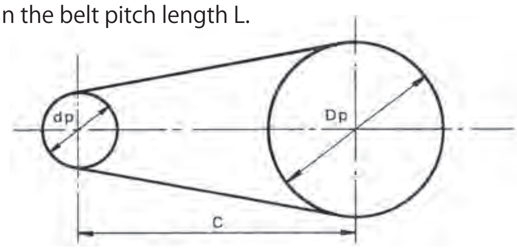
$$N = Pd/Pc$$

N : No. of ridges of belt (three or a larger integer)

The minimum number of ridges is three. Round up the figures after the decimal point for three or more ridges to an integer. (Max. 13 ridges/Type H, 23 ridges/Type J)

Step 5. Selecting an effective length

Obtain the pitch length L′ after belt installation in the desired conditions and, taking the initial stretch rate (normally 1.3%), obtain the belt pitch length L.



$$L' = 2C' + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C'}$$

L=L′/1.013
L′ : Pitch length after belt installation (mm)
L : Belt pitch length (mm)
C′ : Center distance (mm)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)
(Type H: Outside diameter + 0.58
Type J: Outside diameter + 0.70)

Select the belt size with the pitch length that is closest to the calculated belt pitch length L from **Table 1 (→ P. 275)**.

Step 6. Setting the center distance

Set the center distance for the belt selected from Table 1 (→ P. 275) with the following equation.

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = 1.013 \times L - 1.57(Dp + dp)$$

L : Pitch length of standard belt (Table 1) (mm)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)
C : Center distance (mm)

Table of basic power ratings for Type H (per ridge)

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)								
	14	16	18	20	24	28	32	36	40
100	0.5	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3
200	0.9	1.1	1.2	1.3	1.6	1.8	2.1	2.4	2.6
300	1.4	1.6	1.8	2.0	2.4	2.8	3.2	3.5	3.9
400	1.8	2.1	2.4	2.6	3.2	3.7	4.2	4.7	5.3
500	2.3	2.6	3.0	3.3	3.9	4.6	5.3	5.9	6.6
600	2.8	3.2	3.5	3.9	4.7	5.5	6.3	7.1	7.9
700	3.2	3.7	4.1	4.6	5.5	6.4	7.4	8.3	9.2
800	3.7	4.2	4.7	5.3	6.3	7.4	8.4	9.5	10.5
900	4.1	4.7	5.3	5.9	7.1	8.3	9.5	10.6	11.8
1000	4.6	5.3	5.9	6.6	7.9	9.2	10.5	11.8	13.1
1200	5.5	6.3	7.1	7.9	9.5	11.0	12.6	14.2	15.7
1400	6.4	7.4	8.3	9.2	11.0	12.9	14.7	16.5	18.3
1600	7.4	8.4	9.5	10.5	12.6	14.7	16.8	18.9	20.9
1800	8.3	9.5	10.6	11.8	14.2	16.5	18.9	21.2	23.5
2000	9.2	10.5	11.8	13.1	15.7	18.3	20.9	23.5	26.1
2500	11.5	13.1	14.8	16.4	19.6	22.9	26.1	29.3	32.5
3000	13.8	15.7	17.7	19.6	23.5	27.4	31.2	35.0	38.8
3500	16.1	18.3	20.6	22.9	27.4	31.8	36.3	40.7	45.0
4000	18.3	20.9	23.5	26.1	31.2	36.3	41.3	46.2	51.0
4500	20.6	23.5	26.4	29.3	35.0	40.7	46.2	51.6	56.9
5000	22.9	26.1	29.3	32.5	38.8	45.0	51.0	56.9	62.7
5500	25.1	28.7	32.2	35.6	42.5	49.2	55.8	62.1	68.3
6000	27.4	31.2	35.0	38.8	46.2	53.4	60.4	67.2	73.6
6500	29.6	33.8	37.8	41.9	49.8	57.5	64.9	72.0	78.8
7000	31.8	36.3	40.7	45.0	53.4	61.6	69.4	76.7	83.7
7500	34.1	38.8	43.4	48.0	56.9	65.5	73.6	81.3	88.4
8000	36.3	41.3	46.2	51.0	60.4	69.4	77.8	85.6	92.7
8500	38.5	43.7	48.9	54.0	63.8	73.1	81.8	89.7	96.8
9000	40.7	46.2	51.6	56.9	67.2	76.7	85.6	93.6	100.6
9500	42.8	48.6	54.3	59.8	70.4	80.3	89.3	97.2	104.1
10000	45.0	51.0	56.9	62.7	73.6	83.7	92.7	100.6	
11000	49.2	55.8	62.1	68.3	79.8	90.1	99.1		
12000	53.4	60.4	67.2	73.6	85.6	96.0			
13000	57.5	64.9	72.0	78.8	91.0	101.3			
14000	61.6	69.4	76.7	83.7	96.0				
15000	65.5	73.6	81.3	88.4	100.6				
16000	69.4	77.8	85.6	92.7					

Table of basic power ratings for Type J (per ridge)

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)								
	24	26	28	30	32	36	40	45	50
100	1.5	1.6	1.7	1.8	2.0	2.2	2.5	2.8	3.1
200	3.0	3.2	3.5	3.7	3.9	4.4	4.9	5.5	6.2
300	4.4	4.8	5.2	5.5	5.9	6.7	7.4	8.3	9.2
400	5.9	6.4	6.9	7.4	7.9	8.9	9.9	11.1	12.3
500	7.4	8.0	8.6	9.2	9.9	11.1	12.3	13.9	15.4
600	8.9	9.6	10.3	11.1	11.8	13.3	14.8	16.6	18.5
700	10.3	11.2	12.1	12.9	13.8	15.5	17.2	19.4	21.5
800	11.8	12.8	13.8	14.8	15.8	17.7	19.7	22.1	24.6
900	13.3	14.4	15.5	16.6	17.7	19.9	22.1	24.9	27.6
1000	14.8	16.0	17.2	18.5	19.7	22.1	24.6	27.6	30.7
1200	17.7	19.2	20.7	22.1	23.6	26.5	29.5	33.1	36.8
1400	20.7	22.4	24.1	25.8	27.5	30.9	34.3	38.6	42.8
1600	23.6	25.6	27.5	29.5	31.4	35.3	39.2	44.0	48.8
1800	26.5	28.7	30.9	33.1	35.3	39.7	44.0	49.4	54.8
2000	29.5	31.9	34.3	36.8	39.2	44.0	48.8	54.8	60.7
2500	36.8	39.8	42.8	45.8	48.8	54.8	60.7	68.0	75.2
3000	44.0	47.6	51.2	54.8	58.3	65.4	72.4	80.9	89.3
3500	51.2	55.4	59.5	63.6	67.7	75.8	83.7	93.5	102.9
4000	58.3	63.1	67.7	72.4	76.9	86.0	94.8	105.6	115.9
4500	65.4	70.6	75.8	80.9	86.0	95.9	105.6	117.1	128.2
5000	72.4	78.1	83.7	89.3	94.8	105.6	115.9	128.2	139.7
5500	79.2	85.4	91.5	97.5	103.4	114.9	125.8	138.6	150.3
6000	86.0	92.6	99.2	105.6	111.8	123.8	135.2	148.3	160.0
6500	92.6	99.7	106.6	113.3	119.9	132.4	144.1	157.2	168.7
7000	99.2	106.6	113.9	120.9	127.7	140.6	152.4	165.4	176.3
7500	105.6	113.3	120.9	128.2	135.2	148.3	160.0	172.6	182.6
8000	111.8	119.9	127.7	135.2	142.3	155.5	167.1	178.9	
8500	117.9	126.3	134.3	141.9	149.1	162.2	173.4		
9000	123.8	132.4	140.6	148.3	155.5	168.4	178.9		
9500	129.6	138.3	146.6	154.3	161.5	174.0	183.7		
10000	135.2	144.1	152.4	160.0	167.1	178.9			
11000	145.8	154.7	162.9	170.3	176.8				
12000	155.5	164.3	172.2	178.9					
13000	164.3	172.8	180.0						
14000	172.2	180.0							

Banflescrum/Banflex

1. Product Introduction

Features

Features of Banflescrum

■ Vibration-free stable transmission

The belt bonds two or three ridges and therefore is mostly vibration-free. Hence, it allows stable transmission without the belt flipping over or detachment from the pulleys.

■ Most suitable for vertical shaft drive operation

The bonding of the belt prevents contact between belts and detachment from the pulleys. Therefore, even in the case of a vertical shaft drive, there is no need to use special pulleys (such as deep-grooved pulleys).

Features common to Banflescrum and Banflex

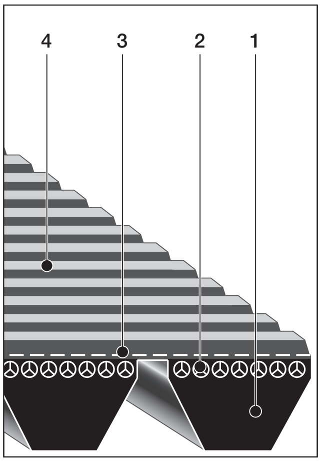
■ High-speed and smooth power transmission

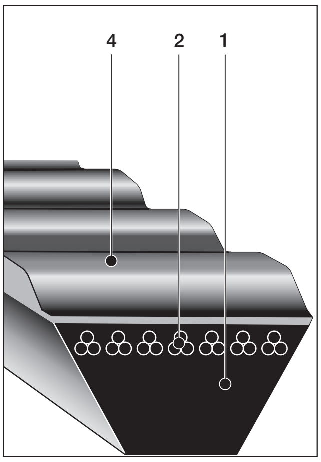
The high accuracy of the belt cross-section and effective length and no variation of belt sink on the pulleys allow high-speed smooth power transmission close to flat belts. Although the previous V-belts can be used up to 30 to 40 m/s, Banflescrum can be designed to be used with a speed up to 60 m/s.

■ Lightweight and compact design

It can be used with small pulley diameters, allows for a high speed ratio, and allows the power transmission system to be light and compact. For example, a device that had used two-stage deceleration with V-belts can be changed to one-stage deceleration.

Structure





1. Compression rubber
 - Polyurethane rubber with excellent abrasion resistance and large friction factor and allowable compression stress
 - 60° belt angle that gives uniform load distribution

2. Cord
 Polyester cord with a large tensile strength, little flex fatigue, and little permanent elongation
3. Reinforcing canvas
 Polyamide fiber that increases the widthwise rigidity and ensures stable running
4. Back face rib
 Unique ribs that reduce bending stress

Note)
- When you use multiple Banflex belts, be sure to use the Scrum type.
- To provide the dynamic performance of the belt, a "lubricant" is compounded in the belt. This compounding ingredient may become deposited in white on the belt surface due to changes in ambient temperature etc. or may become slightly wet due to a liquid. This will be absorbed into the belt with time and is no abnormality.

Belt Combinations

Banflescrum has two or three ridges as the standard. For four or more ridges, please use a combination of belts with two and three belts as shown in the **following table**.
(The recommended maximum number of ridges is 12.)

■ Belt combination

No. of ridges	Combination	No. of ridges	Combination
2	2	7	2+3+2
3	3	8	3+2+3
4	2+2	9	3+3+3
5	2+3	10	2+3+3+2
6	3+3	12	3+3+3+3

Matched set

When using a combination of multiple belts, please specify a matched set. We deliver a set of belts of lengths within the allowable range shown in the **following table**.

■ Allowable range of effective lengths for use of multiple belts (matching limit)

Nominal outside length	Allowable range of length (mm)
180~500	0.25
515~1000	0.50
1030~1500	0.75
1550~2300	1.00

Standard length of Banflescrum

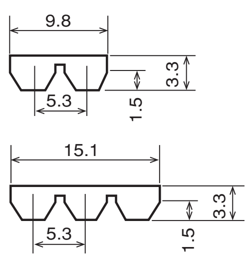
■ Belt indication method

7 - 5MS 1000

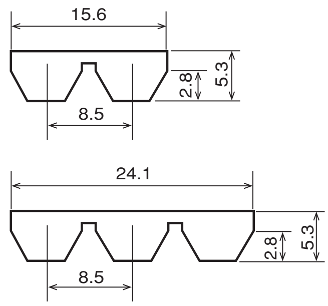
No. of ridges (Combination 2+3+2)
Belt type (Type 5MS)
Nominal length (1000 mm)

■ Cross-sectional profile of Banflescrum belt

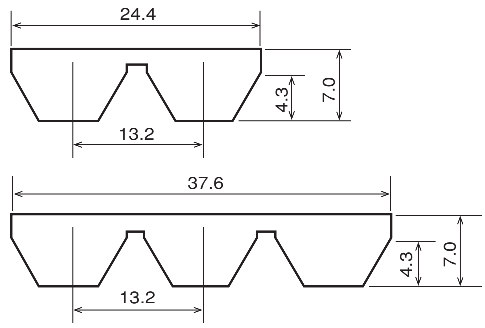
5MS



7MS



11MS



■ Standard effective lengths (Banflescrum)

(Unit: mm)

5MS				7MS				11MS			
Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length
280	277	670	667	500	494	1090	1084	710	701	1280	1271
290	287	690	687	515	509	1120	1114	730	721	1320	1311
300	297	710	707	530	524	1150	1144	750	741	1360	1351
307	304	730	727	545	539	1180	1174	775	766	1400	1391
315	312	750	747	560	554	1220	1214	800	791	1450	1441
325	322	775	772	580	574	1250	1244	825	816	1500	1491
335	332	800	797	600	594	1280	1274	850	841	1550	1541
345	342	805	802	615	609	1320	1314	875	866	1600	1591
355	352	825	822	630	624	1360	1354	900	891	1650	1641
365	362	850	847	650	644	1400	1394	925	916	1700	1691
375	372	875	872	670	664	1450	1444	950	941	1750	1741
387	384	900	897	690	684	1500	1494	975	966	1800	1791
400	397	925	922	710	704	1550	1544	1000	991	1850	1841
412	409	950	947	730	724	1600	1594	1030	1021	1900	1891
425	422	975	972	750	744	1650	1644	1060	1051	1950	1941
437	434	1000	997	775	769	1700	1694	1090	1081	2000	1991
450	447	1030	1027	800	794	1750	1744	1120	1111	2060	2051
462	459	1060	1057	825	819	1800	1794	1150	1141	2120	2111
475	472	1090	1087	850	844	1850	1844	1180	1171	2180	2171
487	484	1120	1117	875	869	1900	1894	1220	1211	2240	2231
500	497	1150	1147	900	894	1950	1944	1250	1241	2300	2291
515	512	1180	1177	925	919	2000	1994				
518	515	1220	1217	950	944	2060	2054				
530	527	1250	1247	975	969	2120	2114				
545	542	1280	1277	1000	994	2180	2174				
560	557	1320	1317	1030	1024	2240	2234				
580	577	1360	1357	1060	1054	2300	2294				
600	597	1400	1397								
615	612	1450	1447								
630	627	1500	1497								
650	647	1850	1847								

■ Belt outside length tolerance

Nominal outside length	Outside length tolerance (mm)
180~ 307	±2.5
315~ 615	±4.0
630~1090	±5.0
1120~1500	±6.5
1550~1900	±7.5
1950~2300	±9.0

(Note) Please note that when you switch from Banflex to Banflescrum, the center distance becomes shorter (3 to 5 mm for 5M → 5MS, 5 to 6 mm for 7M → 7MS, 6 to 8 mm for 11M → 11MS).

Banflex standard length

■ Belt indication method

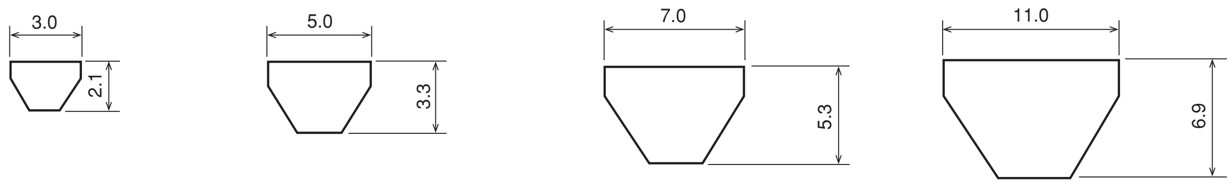
5M - 1000

Nominal length (1000 mm)

Belt type (Type 5M)

■ Cross-sectional profile of Banflex belt

3M 5M 7M 11M



■ Standard effective lengths (Banflex)

(Unit: mm)

3M				5M				7M				11M			
Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length	Nominal length	Pitch length
180	178	**437**	435	**280**	278	**670**	668	**500**	496	**1220**	1216	**710**	703	**1750**	1743
185	183	**450**	448	**290**	288	**690**	688	**515**	511	**1250**	1246	**730**	723	**1800**	1793
190	188	**462**	460	**300**	298	**710**	708	**530**	526	**1280**	1276	**750**	743	**1850**	1843
195	193	**475**	473	**307**	305	**730**	728	**545**	541	**1320**	1316	**775**	768	**1900**	1893
200	198	**487**	485	**315**	313	**750**	748	**560**	556	**1360**	1356	**800**	793	**1950**	1943
206	204	**500**	498	**325**	323	**775**	773	**580**	576	**1400**	1396	**825**	818	**2000**	1993
212	210	**515**	513	**335**	333	**800**	798	**600**	596	**1450**	1446	**850**	843	**2060**	2053
218	216	**530**	528	**345**	343	**805**	803	**615**	611	**1500**	1496	**875**	868	**2120**	2113
224	222	**545**	543	**355**	353	**825**	823	**630**	626	**1550**	1546	**900**	893	**2180**	2173
230	228	**560**	558	**365**	363	**850**	848	**650**	646	**1600**	1596	**925**	918	**2240**	2233
236	234	**580**	578	**375**	373	**875**	873	**670**	666	**1650**	1646	**950**	943	**2300**	2293
243	241	**600**	598	**387**	385	**900**	898	**690**	686	**1700**	1696	**975**	968		
250	248	**615**	613	**400**	398	**925**	923	**710**	706	**1750**	1746	**1000**	993		
258	256	**630**	628	**412**	410	**950**	948	**730**	726	**1800**	1796	**1030**	1023		
265	263	**650**	648	**425**	423	**975**	973	**750**	746	**1850**	1846	**1060**	1053		
272	270	**670**	668	**437**	435	**1000**	998	**775**	771	**1900**	1896	**1090**	1083		
280	278	**690**	688	**450**	448	**1030**	1028	**800**	796	**1950**	1946	**1120**	1113		
290	288	**710**	708	**462**	460	**1060**	1058	**825**	821	**2000**	1996	**1150**	1143		
300	298	**730**	728	**475**	473	**1090**	1088	**850**	846	**2060**	2056	**1180**	1173		
307	305	**750**	748	**487**	485	**1120**	1118	**875**	871	**2120**	2116	**1220**	1213		
315	313			**500**	498	**1150**	1148	**900**	896	**2180**	2176	**1250**	1243		
325	323			**515**	513	**1180**	1178	**925**	921	**2240**	2236	**1280**	1273		
335	333			**518**	516	**1220**	1218	**950**	946	**2300**	2296	**1320**	1313		
345	343			**530**	528	**1250**	1248	**975**	971			**1360**	1353		
355	353			**545**	543	**1280**	1278	**1000**	996			**1400**	1393		
365	363			**560**	558	**1320**	1318	**1030**	1026			**1450**	1443		
375	373			**580**	578	**1360**	1358	**1060**	1056			**1500**	1493		
387	385			**600**	598	**1400**	1398	**1090**	1086			**1550**	1543		
400	398			**615**	613	**1450**	1448	**1120**	1116			**1600**	1593		
412	410			**630**	628	**1500**	1498	**1150**	1146			**1650**	1643		
425	423			**650**	648	**1850**	1848	**1180**	1176			**1700**	1693		

2. How to Design

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Speed ratio

$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$

⑥ Temporary center distance
⑦ Pulley diameter restriction
⑧ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Calculate the design power with Formula 1.

Formula 1

$$Pd = Pt \times Ko$$

Pd	: Design power	(kW)
Pt	: Transmission power	(kW) (Note 1)
Ko	: Load correction factor	**(Table 1)**

Note 1) For transmission power, it is ideal to use the load of the driven machine; however, if it is unknown, use the rated power of the driving machine.
If torque or horsepower is used for indication, convert it into watt or kilowatt using Formula 2.

Formula 2

$$Pt = \frac{Tr \times n}{9550}$$

Pt	: Transmission power	(kW) (Note 1)
n	: Revolution	(rpm)
Tr	: Load torque	(N•m)

1PS=0.7355(kW)

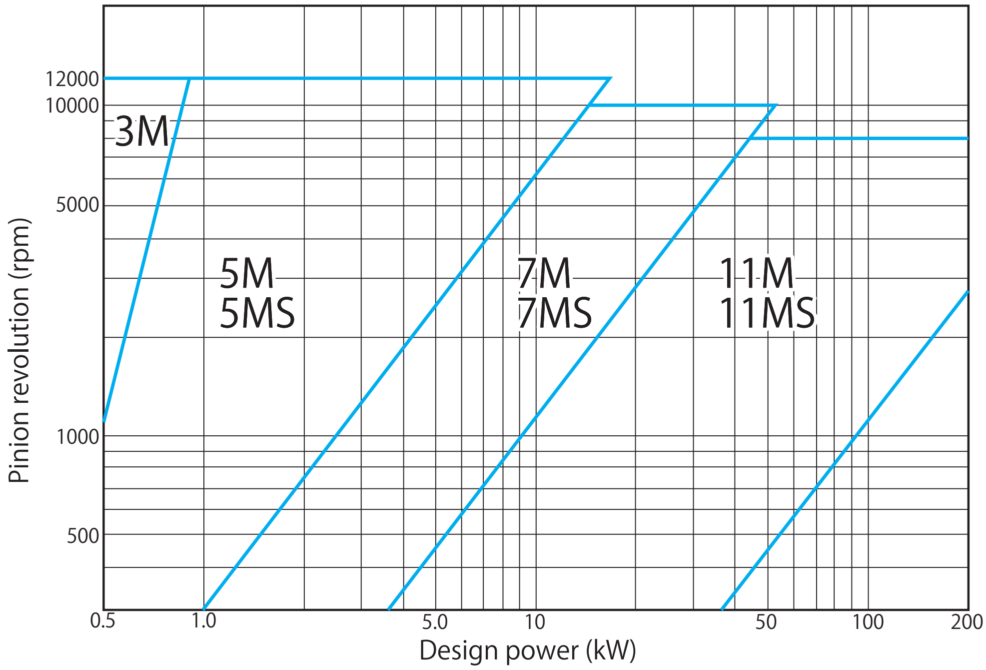
Table 1 Load correction factors Ko

Driven machine \ Driving machine	Peak load less than 200% AC motor (Normal torque squirrel-cage type, synchronous) DC motor (shunt-wound)	Peak load 200% or more AC motor (High torque single-phase, series-wound) DC motor (compound-wound, series-wound) Engine / line shaft / clutch
● Fluid stirring machines ● Blowers ● Exhausters ● Centrifugal pumps ● Compact compressors ● Fans of 7.5 kW or less ● Lightweight conveyors	1.2	1.3
● Sand and grain conveyors ● Kneading mixers, laundry machines ● Fans of 7.5 kW or more ● Generators, rotary pumps ● Line shafts ◦ Machine tools, printing machines ● Rotary/vibrating sieves	1.3	1.4
● Brick-processing machines ● Bucket elevators ● Exciters ● Piston pumps, compressors ● Papermaking mills, beaders ● Forced portable blowers ● Saw mills	1.4	1.5
● Sand pumps ● Crashers ● Mills (ball, rod, tube) ● Hoists ● Rubber calenders, extruders	1.5	1.6

Step 3. Selecting a belt type

Obtain a belt type based on design power and pinion revolution from **Fig. 1**.
If an obtained type is close to the line of intersection of two types, design both belt types as a trial and choose the one that matches the purpose of the design and that is the more economical.

Fig. 1 Belt type selection diagram



Step 4. Selecting a pulley diameter

Select an appropriate pulley diameter from Formula 3, taking the restriction of the power transmission space etc. into consideration.

Formula 3

$$Dp = \frac{n_1}{n_2} \times dp$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

dp	: Pinion pitch diameter	(mm)
Dp	: Large pulley pitch diameter	(mm)
n_1	: Pinion revolution	(rpm)
n_2	: Large pulley revolution	(rpm)

The relationship between pulley outside diameter and pulley pitch diameter is based on **Table 2**.

Table 2 Difference between pulley outside diameter and pitch diameter 2k

(Unit: mm)

Belt type	Single				Scrum		
	3M	5M	7M	11M	5MS	7MS	11MS
2K	-0.5	-0.9	-1.4	-2.1	1.0	1.4	1.0

Pulley pitch diameter = Pulley outside diameter + 2k

When you determine a pulley diameter, check the following items:

● **Check of the minimum pulley pitch diameter**

Generally, when a pulley with a small diameter is used, the flex fatigue of the belt increases, reducing the belt service life. Therefore, it is ideal to at least use a pulley diameter equal to or larger than the minimum pulley diameter indicated in **Table 3**.

Table 3 Minimum pulley pitch diameter

(Unit: mm)

Belt type	Single				Scrum		
	3M	5M	7M	11M	5MS	7MS	11MS
Minimum pulley pitch diameter	17	26	40	63	26	40	63

● **Check of the belt speed**

Banflex and Banflescrum can normally be used up to 60 m/s. If the design exceeds 60 m/s, use a small pulley so that the belt speed is 60 m/s or less.
If the minimum pulley diameter indicated in **Table 3** is not satisfied, change and reconsider the belt type. Calculate the belt speed with Formula 4 **(P. 284)**.

Formula 4

$$v = \frac{dp \times n}{19100}$$

v : Belt speed (m/s)
dp : Pinion pitch diameter (mm)
n : Pinion revolution (rpm)

Step 5. Selecting an effective length

① **Determination of the effective length**

Calculate a rough effective length L' with Formula 5 and select an effective length that is closest to this value from the **"Table of standard effective lengths" (→ P. 280 to P. 281)**.

Formula 5

$$L' = 2C + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C}$$

L' : Rough effective length (mm)
C : Center distance (mm)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)

② **Calculation of the center distance**

From the selected pitch length, backcalculate the center distance with Formula 6.

Formula 6

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = Lp - 1.57(Dp + dp)$$

Lp: Belt pitch length (mm)
Dp: Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)

Step 6. Calculating the number of belts

① **Determination of the basic power rating**

Obtain the basic power rating for the pinion pitch diameter and its revolution from the tables of basic power ratings (P. 285 to P. 288).

② **Correction of the basic power rating**

From Formula 7, obtain the angle of contact of the pinion $\theta 1$ and from **Table 4**, obtain the correction factor ($K\theta 1$).

Formula 7

$$\Theta_1 = 180 - \frac{57(Dp - dp)}{C}$$

θ_1 : Angle of contact of pinion (°)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)
C : Center distance (mm)

Table 4 Pinion contact angle correction factors $K\theta_1$

$\frac{Dp-dp}{C}$	Angle of contact of pinion (°)	$K\theta_1$	$\frac{Dp-dp}{C}$	Angle of contact of pinion (°)	$K\theta_1$	$\frac{Dp-dp}{C}$	Angle of contact of pinion (°)	$K\theta_1$
0.00	180	1.00	0.60	145	0.91	1.20	106	0.77
0.10	174	0.99	0.70	139	0.89	1.30	99	0.73
0.20	169	0.97	0.80	133	0.87	1.40	91	0.70
0.30	163	0.96	0.90	127	0.85	1.50	83	0.65
0.40	157	0.94	1.00	120	0.82			
0.50	151	0.93	1.10	113	0.80			

③ **Calculating the number of ridges of belt**

Calculate the number of belt ridges (or belts) with Formula 8. Round up the figures after the decimal point to an integer.

Formula 8

$$N = \frac{Pd}{Pr \times K\theta_1}$$

N : Number of belt ridges (or belts)
Pd : Design power (kW)
Pr : Basic power rating (kW)

Step 7. Checking the adjustment range of the center distance

From **Table 5**, obtain the installation range and the tension range of the belt.

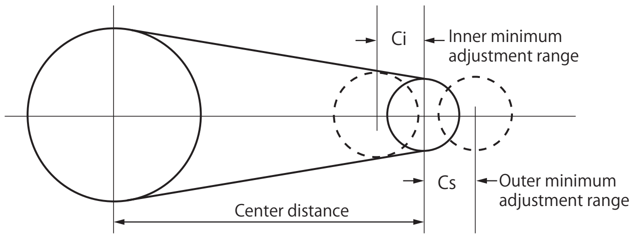


Table 5 Table of adjustment ranges of center distance

(Unit: mm)

Nominal length	Inner minimum adjustment range Ci	Outer minimum adjustment range Cs
180~ 272	4.5	4.5
280~ 710	10.0	10.0
730~1090	12.5	15.0
1120~1500	14.0	19.0
1550~1900	16.5	23.0
1950~2300	19.0	26.5

Table of basic power ratings for Type 3M

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)															
	17	18	19	20	21	22	23	24	25	26	28	30	35	40	45	50
1000	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.13	0.15	0.17	0.18	0.20
1200	0.03	0.04	0.05	0.06	0.07	0.07	0.08	0.09	0.10	0.11	0.13	0.15	0.17	0.19	0.21	0.23
1400	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.14	0.17	0.20	0.22	0.23	0.25
1600	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.11	0.12	0.13	0.16	0.18	0.22	0.24	0.26	0.28
1800	0.03	0.04	0.05	0.07	0.08	0.09	0.11	0.12	0.13	0.15	0.17	0.20	0.23	0.26	0.28	0.30
2000	0.02	0.04	0.05	0.07	0.08	0.10	0.11	0.13	0.14	0.15	0.18	0.21	0.25	0.28	0.30	0.32
2500		0.04	0.05	0.07	0.09	0.11	0.12	0.14	0.16	0.18	0.21	0.25	0.29	0.32	0.34	0.37
3000		0.03	0.05	0.07	0.09	0.11	0.13	0.15	0.17	0.19	0.24	0.28	0.33	0.36	0.38	0.41
3500		0.02	0.05	0.07	0.09	0.12	0.14	0.16	0.19	0.21	0.26	0.30	0.36	0.39	0.42	0.45
4000		0.02	0.04	0.07	0.10	0.12	0.15	0.17	0.20	0.22	0.28	0.33	0.39	0.42	0.46	0.48
4500			0.04	0.07	0.10	0.12	0.15	0.18	0.21	0.24	0.30	0.35	0.42	0.46	0.49	0.52
5000			0.03	0.06	0.10	0.13	0.16	0.19	0.22	0.25	0.31	0.37	0.45	0.48	0.52	0.55
5500			0.03	0.06	0.10	0.13	0.16	0.20	0.23	0.26	0.33	0.40	0.47	0.51	0.55	0.58
6000			0.02	0.06	0.09	0.13	0.17	0.20	0.24	0.27	0.34	0.42	0.50	0.54	0.58	0.61
6500				0.05	0.09	0.13	0.17	0.21	0.24	0.28	0.36	0.43	0.52	0.56	0.60	0.64
7000				0.05	0.09	0.13	0.17	0.21	0.25	0.29	0.37	0.45	0.55	0.59	0.63	0.67
7500				0.05	0.09	0.13	0.17	0.22	0.26	0.30	0.39	0.47	0.57	0.61	0.66	0.70
8000				0.04	0.09	0.13	0.18	0.22	0.26	0.31	0.40	0.49	0.59	0.64	0.68	0.72
8500					0.08	0.13	0.18	0.22	0.27	0.32	0.41	0.50	0.61	0.66	0.70	0.75
9000					0.08	0.13	0.18	0.23	0.28	0.32	0.42	0.52	0.63	0.68	0.73	0.77
9500					0.08	0.13	0.18	0.23	0.28	0.33	0.43	0.54	0.65	0.70	0.75	0.80
10000					0.07	0.13	0.18	0.23	0.29	0.34	0.45	0.55	0.67	0.72	0.77	0.82
10500						0.13	0.18	0.24	0.29	0.35	0.46	0.57	0.69	0.74	0.79	0.84
11000						0.12	0.18	0.24	0.30	0.35	0.47	0.58	0.71	0.76	0.82	0.87
11500						0.12	0.18	0.24	0.30	0.36	0.48	0.59	0.73	0.78	0.84	0.89
12000						0.12	0.18	0.24	0.30	0.36	0.49	0.61	0.74	0.80	0.86	0.91

Table of basic power ratings for Types 5M and 5MS

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)																
	26	28	30	32	34	36	38	40	42	44	46	48	50	60	70	80	90
500	0.01	0.03	0.05	0.06	0.08	0.10	0.12	0.13	0.15	0.17	0.19	0.20	0.22	0.28	0.33	0.38	0.43
600	0.02	0.04	0.07	0.09	0.11	0.13	0.15	0.17	0.19	0.21	0.24	0.26	0.28	0.34	0.40	0.46	0.51
700	0.03	0.06	0.08	0.11	0.13	0.16	0.18	0.21	0.23	0.26	0.28	0.31	0.33	0.40	0.46	0.52	0.58
800	0.04	0.07	0.10	0.12	0.15	0.18	0.21	0.24	0.27	0.30	0.32	0.35	0.38	0.46	0.52	0.59	0.65
900	0.05	0.08	0.11	0.14	0.17	0.20	0.24	0.27	0.30	0.33	0.36	0.40	0.43	0.51	0.58	0.65	0.72
1000	0.05	0.09	0.12	0.16	0.19	0.23	0.26	0.30	0.33	0.37	0.40	0.44	0.47	0.56	0.64	0.71	0.79
1200	0.06	0.10	0.14	0.18	0.22	0.27	0.31	0.35	0.39	0.43	0.47	0.52	0.56	0.65	0.74	0.83	0.91
1400	0.06	0.11	0.16	0.21	0.26	0.30	0.35	0.40	0.45	0.49	0.54	0.59	0.64	0.74	0.84	0.94	1.03
1600	0.07	0.12	0.18	0.23	0.28	0.34	0.39	0.44	0.50	0.55	0.61	0.66	0.71	0.83	0.94	1.04	1.14
1800	0.07	0.13	0.19	0.25	0.31	0.37	0.43	0.49	0.55	0.61	0.67	0.73	0.79	0.91	1.03	1.14	1.25
2000	0.07	0.14	0.20	0.27	0.33	0.40	0.46	0.53	0.59	0.66	0.73	0.79	0.86	0.99	1.11	1.23	1.35
2200	0.07	0.14	0.22	0.29	0.36	0.43	0.50	0.57	0.64	0.71	0.78	0.85	0.92	1.07	1.20	1.33	1.45
2400	0.07	0.15	0.23	0.30	0.38	0.46	0.53	0.61	0.68	0.76	0.84	0.91	0.99	1.14	1.28	1.42	1.55
2600	0.07	0.16	0.24	0.32	0.40	0.48	0.56	0.64	0.73	0.81	0.89	0.97	1.05	1.21	1.36	1.50	1.64
2800	0.07	0.16	0.25	0.33	0.42	0.51	0.59	0.68	0.77	0.85	0.94	1.03	1.11	1.28	1.44	1.59	1.73
3000	0.07	0.16	0.26	0.35	0.44	0.53	0.62	0.72	0.81	0.90	0.99	1.08	1.18	1.35	1.52	1.67	1.82
3500	0.07	0.17	0.28	0.38	0.49	0.59	0.69	0.80	0.90	1.01	1.11	1.22	1.32	1.52	1.70	1.87	2.04
4000	0.06	0.18	0.30	0.41	0.53	0.64	0.76	0.88	0.99	1.11	1.23	1.34	1.46	1.67	1.87	2.07	2.25
4500	0.05	0.18	0.31	0.44	0.57	0.70	0.82	0.95	1.08	1.21	1.34	1.47	1.59	1.82	2.04	2.25	2.45
5000	0.05	0.19	0.33	0.47	0.60	0.74	0.88	1.02	1.16	1.30	1.44	1.58	1.72	1.97	2.21	2.43	2.64
5500		0.19	0.34	0.49	0.64	0.79	0.94	1.09	1.24	1.40	1.55	1.70	1.85	2.11	2.36	2.60	2.83
6000		0.19	0.35	0.51	0.67	0.84	1.00	1.16	1.32	1.48	1.65	1.81	1.97	2.25	2.52	2.77	3.01
6500		0.19	0.36	0.53	0.70	0.88	1.05	1.22	1.40	1.57	1.74	1.92	2.09	2.38	2.66	2.93	3.19
7000		0.18	0.37	0.55	0.74	0.92	1.10	1.29	1.47	1.65	1.84	2.02	2.21	2.52	2.81	3.09	3.36
7500		0.18	0.38	0.57	0.76	0.96	1.15	1.35	1.54	1.74	1.93	2.12	2.32	2.64	2.95	3.25	3.53
8000		0.18	0.38	0.59	0.79	1.00	1.20	1.41	1.61	1.82	2.02	2.22	2.43	2.77	3.09	3.40	3.70
8500		0.17	0.39	0.60	0.82	1.03	1.25	1.46	1.68	1.89	2.11	2.32	2.54	2.89	3.23	3.55	3.86
9000		0.17	0.39	0.62	0.84	1.07	1.29	1.52	1.74	1.97	2.19	2.42	2.64	3.01	3.36	3.70	4.02
9500		0.17	0.40	0.63	0.87	1.10	1.34	1.57	1.81	2.04	2.28	2.51	2.75	3.13	3.49	3.84	4.17
10000		0.16	0.40	0.65	0.89	1.14	1.38	1.63	1.87	2.12	2.36	2.61	2.85	3.25	3.62	3.98	4.32
10500		0.15	0.41	0.66	0.92	1.17	1.43	1.68	1.93	2.19	2.44	2.70	2.95	3.36	3.75	4.12	4.47
11000		0.15	0.41	0.68	0.94	1.20	1.47	1.73	2.00	2.26	2.52	2.79	3.05	3.47	3.87	4.26	4.62
11500		0.14	0.41	0.69	0.96	1.24	1.51	1.78	2.06	2.33	2.60	2.88	3.15	3.59	4.00	4.39	4.77
12000		0.13	0.42	0.70	0.98	1.27	1.55	1.83	2.12	2.40	2.68	2.96	3.25	3.70	4.12	4.52	4.91

Table of basic power ratings for Types 7M and 7MS

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)																
	40	42	44	46	48	50	55	60	70	80	90	100	110	130	150	175	200
500	0.05	0.07	0.09	0.12	0.14	0.16	0.22	0.28	0.40	0.51	0.65	0.78	0.90	1.12	1.32	1.56	1.78
600	0.06	0.10	0.13	0.16	0.20	0.23	0.31	0.40	0.56	0.73	0.88	1.01	1.14	1.38	1.60	1.86	2.11
700	0.08	0.12	0.16	0.20	0.25	0.29	0.39	0.50	0.71	0.92	1.08	1.22	1.36	1.62	1.86	2.15	2.41
800	0.09	0.14	0.19	0.24	0.29	0.34	0.47	0.59	0.85	1.10	1.26	1.42	1.57	1.85	2.11	2.41	2.70
900	0.10	0.16	0.22	0.27	0.33	0.39	0.54	0.68	0.97	1.26	1.44	1.60	1.76	2.06	2.34	2.67	2.98
1000	0.11	0.17	0.24	0.30	0.37	0.44	0.60	0.76	1.09	1.42	1.60	1.78	1.95	2.26	2.56	2.91	3.24
1200	0.12	0.20	0.28	0.36	0.44	0.52	0.72	0.92	1.31	1.71	1.91	2.11	2.29	2.65	2.98	3.37	3.74
1400	0.14	0.23	0.32	0.41	0.51	0.60	0.83	1.06	1.52	1.98	2.20	2.41	2.62	3.01	3.37	3.80	4.21
1600	0.15	0.25	0.36	0.46	0.57	0.67	0.93	1.19	1.71	2.23	2.47	2.70	2.92	3.35	3.74	4.21	4.66
1800	0.16	0.28	0.39	0.51	0.62	0.74	1.03	1.32	1.89	2.47	2.73	2.98	3.22	3.67	4.10	4.60	5.08
2000	0.17	0.30	0.42	0.55	0.68	0.80	1.12	1.44	2.07	2.70	2.98	3.24	3.50	3.98	4.44	4.98	5.49
2200	0.18	0.32	0.45	0.59	0.73	0.86	1.21	1.55	2.24	2.92	3.22	3.50	3.77	4.28	4.76	5.34	5.88
2400	0.19	0.33	0.48	0.63	0.78	0.92	1.29	1.66	2.40	3.14	3.45	3.74	4.03	4.57	5.08	5.69	6.26
2600	0.19	0.35	0.51	0.67	0.82	0.98	1.38	1.77	2.56	3.35	3.67	3.98	4.28	4.85	5.39	6.02	6.63
2800	0.20	0.37	0.54	0.70	0.87	1.04	1.46	1.87	2.71	3.55	3.89	4.21	4.53	5.12	5.69	6.35	6.98
3000	0.21	0.38	0.56	0.74	0.91	1.09	1.53	1.97	2.86	3.74	4.10	4.44	4.76	5.39	5.98	6.67	7.33
3500	0.22	0.42	0.62	0.82	1.02	1.22	1.72	2.22	3.21	4.21	4.60	4.98	5.34	6.02	6.67	7.44	8.17
4000	0.23	0.45	0.68	0.90	1.12	1.34	1.89	2.44	3.55	4.66	5.08	5.49	5.88	6.63	7.33	8.17	8.95
4500	0.24	0.49	0.73	0.97	1.21	1.45	2.06	2.66	3.87	5.08	5.54	5.98	6.40	7.20	7.96	8.86	9.70
5000	0.25	0.51	0.78	1.04	1.30	1.56	2.22	2.87	4.18	5.49	5.98	6.45	6.90	7.76	8.56	9.52	10.42
5500	0.26	0.54	0.82	1.10	1.38	1.66	2.37	3.07	4.48	5.88	6.40	6.90	7.38	8.29	9.14	10.16	11.11
6000	0.27	0.57	0.87	1.16	1.46	1.76	2.51	3.26	4.76	6.26	6.81	7.33	7.84	8.80	9.70	10.77	
6500	0.27	0.59	0.91	1.22	1.54	1.86	2.65	3.45	5.04	6.63	7.20	7.76	8.29	9.30	10.24	11.36	
7000	0.28	0.61	0.95	1.28	1.62	1.95	2.79	3.63	5.31	6.98	7.59	8.17	8.72	9.78	10.77		
7500	0.28	0.63	0.98	1.34	1.69	2.04	2.92	3.81	5.57	7.33	7.96	8.56	9.14	10.24	11.28		
8000	0.28	0.65	1.02	1.39	1.76	2.13	3.05	3.98	5.82	7.67	8.33	8.95	9.56	10.70			
8500	0.28	0.67	1.06	1.44	1.83	2.21	3.18	4.14	6.07	8.00	8.68	9.33	9.96	11.14			
9000	0.29	0.69	1.09	1.49	1.89	2.30	3.30	4.31	6.32	8.33	9.03	9.70	10.35				
9500	0.29	0.70	1.12	1.54	1.96	2.38	3.42	4.46	6.55	8.64	9.37	10.07	10.74				
10000	0.29	0.72	1.15	1.59	2.02	2.45	3.54	4.62	6.79	8.95	9.70	10.42	11.11				

Table of basic power ratings for Types 11M and 11MS

(Unit: kW)

Pinion revolution (rpm)	Pinion pitch diameter (mm)																
	63	65	70	75	80	85	90	100	110	120	130	140	150	180	210	250	300
500	0.50	0.54	0.64	0.75	0.85	0.95	1.06	1.26	1.47	1.68	1.93	2.22	2.49	3.23	3.90	4.73	5.67
600	0.64	0.70	0.84	0.99	1.14	1.29	1.44	1.74	2.04	2.34	2.64	2.94	3.23	4.03	4.77	5.67	6.72
700	0.76	0.84	1.03	1.22	1.41	1.60	1.79	2.16	2.54	2.92	3.28	3.60	3.90	4.77	5.56	6.55	7.69
800	0.88	0.97	1.20	1.42	1.65	1.88	2.10	2.55	3.01	3.46	3.86	4.20	4.53	5.45	6.31	7.37	8.60
900	0.99	1.09	1.35	1.61	1.88	2.14	2.40	2.92	3.44	3.96	4.41	4.77	5.12	6.10	7.02	8.15	9.46
1000	1.09	1.21	1.50	1.80	2.09	2.38	2.68	3.26	3.85	4.43	4.92	5.30	5.67	6.72	7.69	8.89	10.29
1200	1.28	1.42	1.78	2.13	2.49	2.84	3.19	3.90	4.61	5.32	5.89	6.31	6.72	7.87	8.95	10.29	11.84
1400	1.46	1.62	2.03	2.44	2.85	3.26	3.68	4.50	5.32	6.14	6.78	7.24	7.69	8.95	10.13	11.59	13.28
1600	1.62	1.81	2.27	2.73	3.20	3.66	4.12	5.05	5.98	6.91	7.62	8.12	8.60	9.96	11.23	12.81	14.63
1800	1.77	1.98	2.49	3.01	3.52	4.03	4.55	5.58	6.61	7.64	8.42	8.95	9.46	10.92	12.28	13.96	15.91
2000	1.91	2.14	2.70	3.27	3.83	4.39	4.95	6.08	7.20	8.33	9.18	9.74	10.29	11.84	13.28	15.07	17.13
2200	2.05	2.29	2.90	3.51	4.12	4.73	5.34	6.56	7.78	8.99	9.91	10.50	11.08	12.71	14.23	16.12	18.29
2400	2.18	2.44	3.09	3.75	4.40	5.06	5.71	7.02	8.33	9.63	10.61	11.23	11.84	13.55	15.15	17.13	19.41
2600	2.30	2.58	3.28	3.97	4.67	5.37	6.07	7.46	8.86	10.25	11.28	11.94	12.57	14.37	16.04	18.10	20.48
2800	2.42	2.71	3.45	4.19	4.93	5.67	6.41	7.89	9.37	10.85	11.94	12.62	13.28	15.15	16.89	19.04	21.51
3000	2.53	2.84	3.62	4.40	5.18	5.96	6.74	8.30	9.86	11.43	12.57	13.28	13.96	15.91	17.72	19.95	22.51
3200	2.64	2.96	3.78	4.60	5.43	6.25	7.07	8.71	10.35	11.99	13.18	13.92	14.63	16.65	18.52	20.83	23.48
3400	2.74	3.08	3.94	4.80	5.66	6.52	7.38	9.10	10.82	12.53	13.78	14.54	15.28	17.37	19.30	21.68	24.41
3600	2.84	3.20	4.09	4.99	5.89	6.79	7.68	9.48	11.27	13.07	14.37	15.15	15.91	18.07	20.06	22.51	25.32
3800	2.93	3.31	4.24	5.18	6.11	7.05	7.98	9.85	11.72	13.59	14.94	15.75	16.53	18.75	20.80	23.32	26.20
4000	3.03	3.41	4.39	5.36	6.33	7.30	8.27	10.21	12.15	14.10	15.49	16.33	17.13	19.41	21.51	24.10	
4500	3.24	3.67	4.73	5.78	6.84	7.90	8.96	11.08	13.20	15.32	16.83	17.72	18.58	21.00	23.24	25.98	
5000	3.44	3.90	5.04	6.19	7.33	8.47	9.62	11.90	14.19	16.48	18.10	19.04	19.95	22.51	24.87		
5500	3.63	4.12	5.34	6.57	7.79	9.01	10.24	12.69	15.14	17.59	19.32	20.31	21.26	23.95			
6000	3.80	4.32	5.62	6.92	8.23	9.53	10.83	13.44	16.04	18.65	20.48	21.51	22.51	25.32			
6500	3.96	4.51	5.89	7.26	8.64	10.02	11.40	14.15	15.91	19.67	21.60	22.67	23.71				
7000	4.10	4.68	6.14	7.59	9.04	10.49	11.94	14.84	17.75	20.65	22.67	23.79	24.87				
7500	4.24	4.85	6.37	7.89	9.42	10.94	12.46	15.51	18.55	21.60	23.71	24.87	25.98				
8000	4.37	5.01	6.60	8.19	9.78	11.37	12.96	16.15	19.33	22.51	24.71	25.91					

Step 1. Determining conditions required for the design

Driven machine: Viscous torque testing machine

- Motor power: 5.5 kW/2600 rpm
- Driving pulley outside diameter: 99.0 mm
- Driven pulley revolution: 6500 rpm
- Center distance: 550±20 mm
- Use Banflescrum.

Step 2. Calculating the design power

① Obtain the load correction factor from **Table 1 (→ P. 282)**.
From a similar machine (kneading mixer), take Ko = 1.4.

② From Formula 1 **(→ P. 282)**, calculate the design power.
$Pd = 5.5 \times 1.4 = 7.7$ (kW)

Step 3. Selecting a belt type

Select MS from the design power of 7.7 kW and the pinion revolution of 6500 rpm from **Fig. 1 (→ P. 283)**.

Step 4. Selecting a pulley diameter

① From **Table 2 (→ P. 283)**, obtain the large pulley pitch diameter.
Dp=99.0+1.0=100mm

② From Formula 3 **(→ P. 283)**, obtain the pinion pitch diameter.

$$dp = \frac{2600}{6500} \times 100 = 40\text{mm}$$

③ From **Table 3 (→ P. 283)**, satisfy the minimum pulley pitch diameter.

④ The belt speed is

$$v = \frac{40 \times 6500}{19100} = 13.6\text{m/s}$$

This falls sufficiently within 60 m/s.

Step 5. Selecting an effective length

① Calculate a **rough effective length L′ (→ P. 284)** and select an effective length that is closest to this value from the **"Standard effective lengths (Banflescrum)" (→ P. 280)**.

$$L' = 2 \times 550 + 1.57\,(100 + 40) + \frac{(100 - 40)^2}{4 \times 550}$$

$$\approx 1321.4 \rightarrow 1317 \text{ mm}$$

② From the belt pitch length of 1317 and Formula 6 **(→ P. 284)**, backcalculate the center distance at that time.

$$B = 1317 - 1.57(100 + 40) = 1097.2$$

$$C = \frac{1097.2 + \sqrt{1097.2^2 - 2(100 - 40)^2}}{4}$$

$$\approx 547.8 \text{ mm}$$

Step 6. Determining the number of belts

① **Obtain the basic power rating for the pinion revolution of 6500 rpm and the pinion pitch diameter of 40 mm** from the table of basic power ratings for Type 5MS (P. 286).

② From Formula 7 **(→ P. 284)**, calculate the pinion contact angle θ_1 and from **Table 4 (→ P. 284),** obtain its correction factor.

$$\theta_1 = 180 - \frac{57\,(100 - 40)}{547.8} \fallingdotseq 174°$$

$$K\theta_1 = 0.99$$

③ Calculate the number of belt ridges with Formula 8 **(→ P. 284)**.

$$N = \frac{7.7}{1.22 \times 0.99} = 6.4 \rightarrow 7\text{山}$$

Step 7. Checking the adjustment range of the center distance

From **Table 5 (→ P. 284)**, obtain the inner and outer minimum adjustment ranges of the center distance.

Examination result

- Belt	7-5MS1320
- Driving pulley pitch diameter:	100mm
- Driven pulley pitch diameter:	40mm
- Center distance	547.8 mm

[Inner minimum adjustment range: 14 mm
[Outer minimum adjustment range: 19 mm

Load correction factor Ko = 1.4

Design power Pd = 7.7 (kW)

Belt type: 5MS

Large-pulley pitch diameter: 100 mm

Pinion pitch diameter: 40 mm

Effective length: 5MS1320

Center distance: 547.8 mm

Basic power rating = 1.22 kW

Correction factor $K\theta_1 = 0.99$

Number of belt ridges = 7

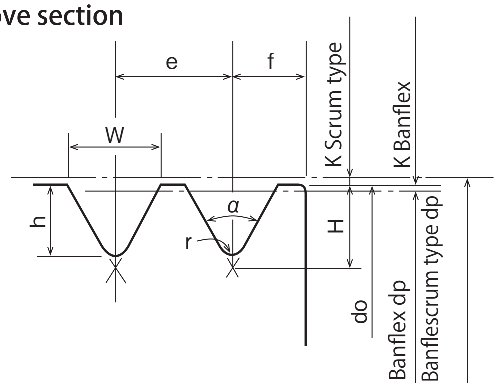
Inner minimum adjustment range (Ci) = 14 mm
Outer maximum adjustment range (Cs) = 19mm

3. Banflescrum Pulley/Banflex Pulley

For Banflex and Banflescrum pulleys, please use the ones with the dimensions shown in the following table.
We also manufacture pulleys; please contact us.

Dimensional accuracy

■ Profile of the groove section



■ Groove dimensions

(Unit: mm)

Type	W ±0.05	e +0.13 −0.05	f min	Groove angle		h with r max	H	r max	K
				Outside diameter do	α ±1/4 (°)				
3M	2.80	3.35	2.23	17.5 to 18 or less 18 to 32 or less 33 or more	60 61 62	2.12 2.09 2.05	2.42 2.38 2.33	0.3	-0.25
5M 5MS	4.50	5.30	3.5	25 to 28 or less 28 to 38 or less 38 to 62 or less 62 or more	60 61 62 63	3.50 3.43 3.37 3.31	3.90 3.82 3.74 3.67	0.4	-0.45 0.5
7M 7MS	7.10	8.50	5.7	38 to 44 or less 44 to 62 or less 62 to 100 or less 100 or more	59 60 61 62	5.66 5.55 5.44 5.34	6.27 6.15 6.03 5.91	0.6	-0.70 0.7
11M 11MS	11.20	13.20	8.6	60 to 80 or less 80 to 120 or less 120 to 238 or less 238 or more	60 61 62 63	8.90 8.73 8.57 8.41	9.70 9.51 9.32 9.14	0.8	-1.05 0.5

■ Run-out of outside diameter and side face (outside diameter and side face)

(Unit: mm)

Product No. Pulley outside diameter	Pulley for Banflex			Pulley for Banscrum		
	Outside diameter tolerance	Outside diameter run-out tolerance	Side face run-out tolerance	Outside diameter tolerance	Outside diameter run-out tolerance	Side face run-out tolerance
25 or less	±0.03	0.13	0.03	-	-	-
25 to 50 or less	±0.05	0.13	0.06	±0.15	0.15	0.15
50 to 126 or less	±0.13	0.13	0.13	±0.15	0.15	0.15
126 to 250 or less	±0.25	0.13	0.13	±0.25	0.20	0.20
250 to 500 or less	±0.50	Add 0.01 for every increase of outside diameter of 25 mm.	0.20	±0.50	0.25	0.25
500 or more	±1.00		0.25	±1.00	0.35	0.35

(Note) When the side face of the groove is high-frequency-quenched uniformly to a depth of 1 mm or more and to approximately a surface hardness of HRC55, the abrasion resistance of the pulley improves.

■ Roughness of side face of groove

As finish accuracy, perform finishing to 3.2a or less (10•S (JIS)).

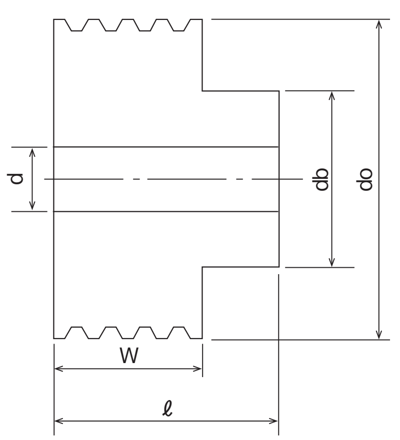
■ Pulley material

As a material, please use S45C or SS410.
However, when the pulley diameter is 100 mm or more, FC250 or more can also be used.

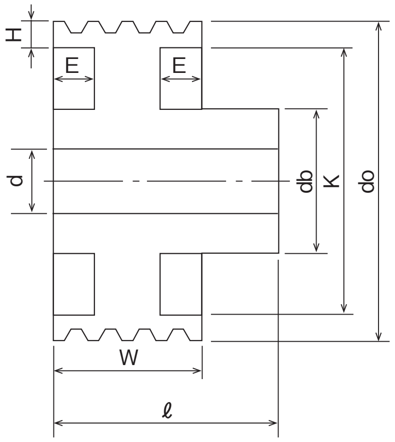
Reference Profiles and Dimensions of Banfle Pulleys

We also manufacture pulleys. Please make use of the following table as reference profiles and dimensions when you make a design.

(Pulley Profile) Type B



Type D



(Banfle Pulley Designation)

(Example) ● Pulley for Banflescrum

100 × 7MS − 4

Pulley outside diameter (100 mm) | Belt type (Type 7MS) | No. of grooves (4 grooves)

● Pulley for Banflex

20 × 3M

Pulley outside diameter (20 mm) | Belt type (Type 3M)

Table of Standard Dimensions of Pulley for Banflescrum (Reference)

Pulley for 5MS (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	For two ridges			For three ridges			db	d min	d max	H	K
				W	l	E	W	l	E					
30	31.0	B	Carbon steel for machine construction	12.3	27	—	17.6	35	—	20	Center marking	7	—	—
40	41.0	↑		↑	↑	—	↑	↑	—	25		10	—	—
50	51.0	↑		↑	↑	—	↑	↑	—	30	6	15	—	—
60	61.0	↑		↑	↑	—	↑	↑	—	35	8	16	—	—
70	71.0	↑		↑	↑	—	↑	↑	—	45	8	22	—	—
80	81.0	↑		↑	↑	—	↑	↑	—	50	10	28	—	—
90	91.0	↑		↑	↑	—	↑	↑	—	60	10	32	—	—

Pulley for 7MS (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	For two ridges			For three ridges			For four ridges			db	d min	d max	H	K
				W	ℓ	E	W	ℓ	E	W	ℓ	E					
70	71.4	B	Carbon steel for machine construction	19.9	40	—	28.4	50	—	36.9	62	—	45	8	22	—	—
90	91.4	↑		↑	↑	—	↑	↑	—	↑	↑	—	60	10	32	—	—
110	111.4	↑		↑	↑	—	↑	↑	—	↑	↑	—	70	12	40	—	—
130	131.4	↑		↑	↑	—	↑	↑	—	↑	↑	—	80	12	45	—	—
150	151.4	↑		↑	45	—	↑	55	—	↑	↑	—	90	15	50	—	—
175	176.4	D		↑	↑	5	↑	↑	9	↑	↑	12	100	15	55	13	149
200	201.4	↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	105	20	58	13	174

(Note) ① "d min" represents "pilot hole dimension" or "center marking" at the time of manufacture at our company.
For center marking, the nominal dimension is 2.5 or less. (JIS B1011-1987 60° center hole)
② "d max" is the maximum dimension in machining.
③ These are reference profiles and dimensions; when you place an order to us, please provide drawings.

Pulley for 11MS (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	For two ridges			For four ridges			For six ridges			db	d min	d max	H	K
				W	ℓ	E	W	ℓ	E	W	ℓ	E					
80	81.0	B	Carbon steel for machine construction	30.4	52	—	—	—	—	—	—	—	50	12	28	—	—
100	101.0	↑		↑	↑	—	56.8	82	—	83.2	108	—	65	15	35	—	—
120	121.0	↑		↑	↑	—	↑	↑	—	↑	↑	—	75	15	42	—	—
150	151.0	↑		↑	55	—	↑	87	—	↑	113	—	90	15	50	—	—
180	181.0	D		↑	↑	10	↑	↑	20	↑	↑	31	100	20	55	20	140
210	211.0	↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	110	20	60	↑	170
250	251.0	↑		↑	↑	↑	↑	↑	↑	↑	↑	↑	120	20	65	↑	210
300	301.0	↑		—	—	—	↑	↑	↑	↑	↑	↑	130	25	70	↑	260

Table of Standard Dimensions of Pulley for Banflex (Reference)

Pulley for 3M (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	W	ℓ	db	d min	d max	H	E	K
20	19.5	B	Carbon steel for machine construction	4.46	15	15	Center marking	5	—	—	—
25	24.5	B		4.46	15	15		5	—	—	—
30	29.5	B		4.46	15	20		7	—	—	—
35	34.5	B		4.46	15	25		10	—	—	—
40	39.5	B		4.46	15	25		10	—	—	—
45	44.5	B		4.46	15	30		15	—	—	—
50	49.5	B		4.46	15	30	6	15	—	—	—

Pulley for 5M (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	W	ℓ	db	d min	d max	H	E	K
30	29.1	B	Carbon steel for machine construction	7.0	19	20	Center marking	20	7	—	—
40	39.1	B		7.0	19	25		25	10	—	—
50	49.1	B		7.0	19	30	6	30	15	—	—
60	59.1	B		7.0	19	35	8	35	18	—	—
70	69.1	B		7.0	19	45	8	45	22	—	—
80	79.1	B		7.0	19	50	10	50	28	—	—
90	89.1	B		7.0	19	60	10	60	32	—	—

Pulley for 7M (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	W	ℓ	db	d min	d max	H	E	K
70	68.6	B	Carbon steel for machine construction	11.4	25	45	8	22	—	—	—
90	88.6	B		11.4	25	60	10	32	—	—	—
110	108.6	B		11.4	25	70	12	40	—	—	—
130	128.6	B		11.4	25	80	12	45	—	—	—
150	148.6	B		11.4	27	90	15	50	—	—	—
175	173.6	D		11.4	27	100	15	55	12	3.5	151
200	198.6	D		11.4	27	105	20	58	12	3.5	176

Pulley for 11M (non-stocked product)

(Unit: mm)

Nominal outside diameter do	Pitch diameter dp	Profile	Material	W	ℓ	db	d min	d max	H	E	K
80	77.9	B	Carbon steel for machine construction	17.2	33	50	10	28	—	—	—
100	97.9	B		17.2	33	65	12	35	—	—	—
120	117.9	B		17.2	33	75	12	42	—	—	—
150	147.9	B		17.2	33	90	15	50	—	—	—
180	177.9	D		17.2	33	100	15	55	20	5	140
210	207.9	D		17.2	33	110	20	60	20	5	170
250	247.9	D		17.2	33	120	20	65	20	5	210

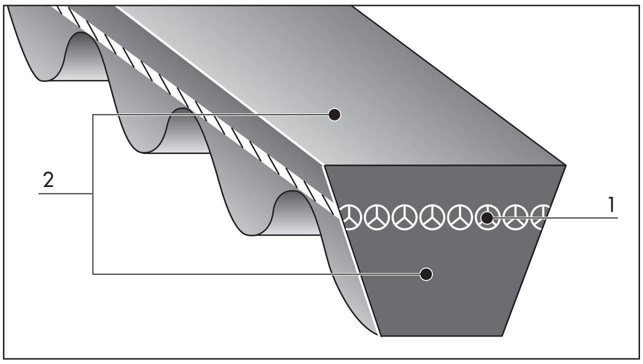
Bancollan V-Belt (VC/DC)

1. Product Introduction

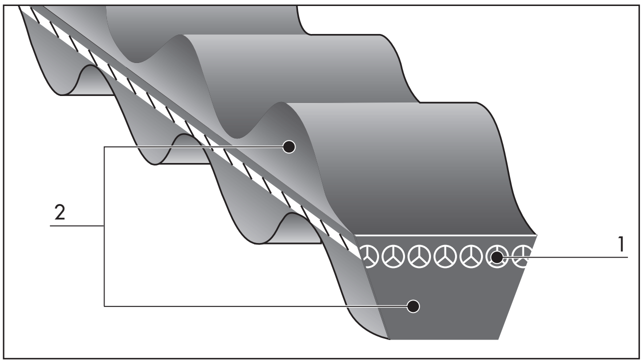
The Bancollan V-Belt is highly evaluated by users as an optimum belt for light-duty equipment. Recently it is widely used even in general industry and is called a standard V-belt in the light-duty field.

(1) Structure and Features

■ **VC (cogged on the inner surface)**



■ **DC (cogged on both sides)**



1. **Cord** (Polyester cord)
2. **Tension rubber/Base rubber** (polyurethane rubber)

The Bancollan V-Belt provides the following features.

■ **Economical power transmission**

Because it has a large friction factor and uses flexible polyurethane, it has little transmission loss and consumes less power.

■ **Compact design**

The cog effect and the highly flexible polyurethane provide fine fitting with pulleys, allowing use in a small space.

■ **Clean power transmission**

As it uses polyurethane, which has excellent abrasion resistance, it is rarely abraded, making it most suitable for use in a transmission system that should avoid dirt.

■ **Re-tensioning unnecessary**

As it uses polyester cords that have high strength, elongate little, and have little flex fatigue, the belt elongates little due to running and rarely requires re-tensioning.

(2) Major Applications

Household electric equipment
Sewing machines, pencil sharpeners, vacuum cleaners, dish-washing machines

Office machinery, optical machines
Typewriters, terminal devices, Blowers for computers, projectors

Compact machine tools, electric tools
Lathes, drill presses, grinders, electric planes

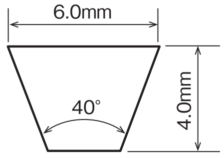
Labor-saving equipment
Automatic packaging machines, vending machines, automatic doors, bill and coin calculators, automatic shoe polishers, ticket vending machines

Chemical equipment
Stirring machines, sizing machines, winding machines, centrifugal separators

Others
Massage machines, radio-controlled gadgets (vehicles, helicopters), conveyance equipment (coins, cards)

(3) Belt Dimensions

■ Cross-sectional dimensions



The same dimensions for the VC type and the DC type.

■ Belt size indication example

VC type **6 × 350 La**

- 6: Top width (mm)
- 350: Outside length (mm)
- La: Outside length symbol

DC type **6 × 350**

- 6: Top width (mm)
- 350: Outside length (mm)

The VC type has a size indication on the back face of the belt; however, the DC type does not have the indication.

(4) Pulley Groove Dimensions

As pulleys for the Bancollan V-Belt, please use pulleys with the following dimensions.

Groove dimensions

(Unit: mm)

Pulley outside diameter do	α (°) ±30	W ±0.05	h	f
Over 16 to 20 or less	36	5.6	5.0	2.0
Over 20 to 50 or less	37			
Over 50	38			

For pulleys for special applications and other belt types than the above, please contact us.

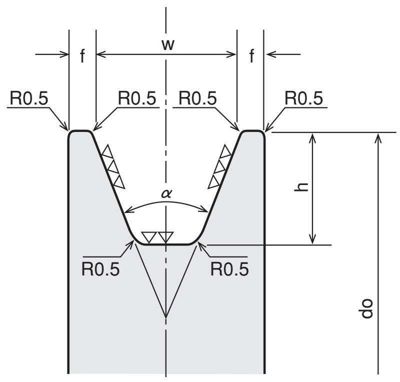


Table 1 Belt sizes

(Unit: mm)

VC type				DC type	
Nominal size	Outside length (mm)	Nominal size	Outside length (mm)	Nominal size	Outside length (mm)
6×207	207.0	6× 460	460.0	6×200	200.0
6×220	220.0	6× 466	466.0	6×210	210.0
6×232	232.0	6× 470	470.0	6×230	230.0
6×250	250.0	6× 480	480.0	6×240	240.0
6×260	260.0	6× 485	485.0	6×250	250.0
6×261	261.0	6× 490	490.0	6×260	260.0
6×270	270.0	6× 500	500.0	6×270	270.0
6×280	280.0	6× 511	511.0	6×277	277.0
6×289	289.0	6× 520	520.0	6×280	280.0
6×290	290.0	6× 530	530.0	6×290	290.0
6×297	297.0	6× 540	540.0	6×300	300.0
6×300	300.0	6× 550	550.0	6×310	310.0
6×315	315.0	6× 561	561.0	6×315	315.0
6×320	320.0	6× 587	587.0	6×320	320.0
6×330	330.0	6× 600	600.0	6×330	330.0
6×340	340.0	6× 613	613.0	6×340	340.0
6×343	343.0	6× 628	628.0	6×350	350.0
6×345	345.0	6× 650	650.0	6×360	360.0
6×349	349.0	6× 663	663.0	6×365	365.0
6×350	350.0	6× 700	700.0	6×370	370.0
6×360	360.0	6× 713	713.0	6×375	375.0
6×370	370.0	6× 730	730.0	6×380	380.0
6×380	380.0	6× 750	750.0	6×390	390.0
6×381	381.0	6× 760	760.0	6×400	400.0
6×390	390.0	6× 764	764.0	6×450	450.0
6×400	400.0	6× 800	800.0	6×500	500.0
6×407	407.0	6× 821	821.0	6×520	520.0
6×410	410.0	6× 850	850.0	6×540	540.0
6×414	414.0	6× 866	866.0		
6×420	420.0				
6×430	430.0				
6×432	432.0				
6×440	440.0				
6×444	444.0				
6×450	450.0				

Dimensional Tolerance

(Unit: mm)

		VC type	DC type
Top width		6±0.2	6±0.2
Thickness		4±0.2	4±0.2
Length	Less than 400	±2.0	±2.0
	400 to less than 600	±2.0	±2.5
	600 to less than 800	±2.5	—
	800 to less than 850	±3.0	

2. How to Design a Bancollan V-Belt

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Speed ratio

$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$

⑥ Temporary center distance
⑦ Pulley diameter restriction
⑧ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Obtain the design power with the following Formula 1.

Formula 1

$$Pd = Pt \times Ko$$

Pd	: Design power	(W)
Pt	: Transmission power	(W)
Ko	: Load correction factor	

Determine the load correction factor from the **following table**.

Driven machine	Load correction factor Ko
Normal use	1.2
Large load fluctuation	1.4

Step 3. Selecting a pulley diameter

Select a pulley with a minimum diameter ϕ of 18 mm or more and obtain a large pulley with the following Formula 2.

Formula 2

$$Do = \frac{n_1}{n_2} \times do$$

do	: Pinion outside diameter	(mm)
Do	: Large-pulley outside diameter	(mm)
n_1	: Pinion revolution	(rpm)
n_2	: Large pulley revolution	(rpm)

Step 4. Selecting an effective length

Formula 3

$$L' = 2C + 1.57(Do + do) + \frac{(Do - do)^2}{4C}$$

L′	: Rough outside length	(mm)
C	: Center distance	(mm)

From **Table 1 (→ P. 294)**, obtain an effective length L that is closest to the rough belt outside length L′ obtained with Formula 3.

Step 5. Setting the center distance

Set the center distance for the belt outside length L obtained from Table 1 (→ P. 294) with the following Formula 4.

Formula 4

$$C = \frac{B + \sqrt{B^2 - 2(Do - do)^2}}{4}$$

$$B = L - 1.57(Do + do)$$

L : Belt outside length (Table 1) (mm)

Step 6. Determining the number of belts

The number of belts is one in principle, but obtain the number with the following Formula 5.

Formula 5

$$N = \frac{Pd}{Pr \times K\theta_1}$$

N	: Number of belts	(pcs)
Pd	: Design power	(W)
Pr	: Basic power rating	(W/pc) **→ P. 296**
$K\theta_1$	: Pinion contact angle correction factor **→ Table 2**	

* For details on design, please contact us.

■ Table 2 Pinion contact angle correction factors

$\frac{(Do-do)}{C}$	Angle of contact of pinion θ_1(°)	$K\theta_1$
0.00	180	1.00
0.20	169	0.97
0.40	157	0.94
0.60	145	0.91
0.80	133	0.87
1.00	120	0.82
1.20	106	0.77
1.40	91	0.70

Equation for contact angle calculation

$$\theta_1 = 180 - \frac{57.3(Do - do)}{C}$$

Adjustment ranges of the center distance for Bancollan V-Belts

For belt installation and tension adjustment, provide the adjustment range of the center distance shown in the following table at least.

Minimum adjustment ranges of center distance

(Unit: mm)

Belt outside length	Inside △Ci	Outside △Ct
200~400	4.0	4.0
410~600	6.0	6.0
610~850	7.0	7.0

Table of basic power ratings for Bancollan V-Belts

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)											
	16	18	20	22	24	26	28	30	32	34	36	40
500	4.2	6.3	8.4	10.5	12.6	14.6	16.7	18.7	20.7	22.7	24.7	28.6
600	4.7	7.2	9.7	12.1	14.6	17.0	19.4	21.8	24.2	26.5	28.9	33.5
700	5.1	8.0	10.9	13.7	16.5	19.3	22.1	24.8	27.6	30.3	33.0	38.3
800	5.6	8.8	12.1	15.2	18.4	21.6	24.7	27.8	30.9	33.9	37.0	43.0
900	5.9	9.6	13.2	16.7	20.3	23.8	27.2	30.7	34.1	37.5	40.9	47.6
1000	6.3	10.3	14.3	18.2	22.0	25.9	29.7	33.5	37.3	41.0	44.7	52.1
1200	6.9	11.6	16.3	20.9	25.5	30.1	34.6	39.0	43.5	47.9	52.3	61.0
1400	7.5	12.9	18.3	23.6	28.8	34.1	39.2	44.4	49.5	54.5	59.6	69.6
1600	7.9	14.1	20.1	26.1	32.1	37.9	43.8	49.6	55.3	61.0	66.7	77.9
1800	8.3	15.2	21.9	28.6	35.2	41.7	48.2	54.6	61.0	67.4	73.7	86.1
2000	8.7	16.2	23.6	30.9	38.2	45.4	52.5	59.6	66.6	73.5	80.5	94.1
2200	9.0	17.2	25.2	33.2	41.1	49.0	56.7	64.4	72.0	79.6	87.1	101.9
2400	9.2	18.1	26.8	35.4	44.0	52.4	60.8	69.1	77.4	85.5	93.6	109.6
2600	9.4	18.9	28.3	37.6	46.8	55.8	64.8	73.7	82.6	91.3	100.0	117.1
2800	9.6	19.8	29.8	39.7	49.5	59.2	68.8	78.3	87.7	97.0	106.2	124.4
3000	9.7	20.5	31.2	41.7	52.1	62.4	72.6	82.7	92.7	102.5	112.3	131.5
3200	9.8	21.3	32.5	43.7	54.7	65.6	76.4	87.0	97.5	108.0	118.3	138.5
3400	9.9	22.0	33.9	45.6	57.2	68.7	80.0	91.2	102.3	113.3	124.1	145.4
3600	9.9	22.6	35.1	47.5	59.7	71.7	83.6	95.4	107.0	118.5	129.8	152.0
3800	9.9	23.2	36.4	49.3	62.1	74.7	87.2	99.5	111.6	123.6	135.4	158.5
4000	9.8	23.8	37.5	51.1	64.4	77.6	90.6	103.4	116.1	128.5	140.8	164.9
4200	9.8	24.3	38.7	52.8	66.7	80.4	94.0	107.3	120.4	133.4	146.1	171.0
4400	9.7	24.8	39.8	54.5	69.0	83.2	97.3	111.1	124.7	138.1	151.3	177.0
4600	9.6	25.3	40.8	56.1	71.1	85.9	100.5	114.8	128.9	142.7	156.4	182.8
4800	9.4	25.8	41.9	57.7	73.2	88.6	103.6	118.4	133.0	147.2	161.3	188.5
5000	9.2	26.2	42.8	59.2	75.3	91.1	106.7	121.9	136.9	151.6	166.0	
5200	9.0	26.6	43.8	60.7	77.3	93.6	109.7	125.4	140.8	155.9	170.6	
5400	8.8	26.9	44.7	62.1	79.3	96.1	112.6	128.7	144.5	160.0	175.1	
5600	8.5	27.2	45.6	63.5	81.2	98.4	115.4	132.0	148.2	164.0		
5800	8.3	27.5	46.4	64.9	83.0	100.8	118.1	135.1	151.7	167.9		
6000	8.0	27.8	47.2	66.2	84.8	103.0	120.8	138.2	155.1			

Bancollan Round Belt

1. Product Introduction

We offer the Bancord round belt (joint type) of a long cord type as a round belt. However, for recent office equipment and optical machinery, the needs for round belts that do not require joining and have excellent low-temperature characteristics have been increasing. The Bancollan round belt is a high-performance round belt that has undergone our original quality improvements and meets those needs.

Features

■ Easy belt installation

The belt can be easily installed by stretching it even when the center distance is fixed. Unlike a belt containing tension members, there is no need to slide pulleys or take time for tension adjustment; hence, it reduces the installation man-hour.

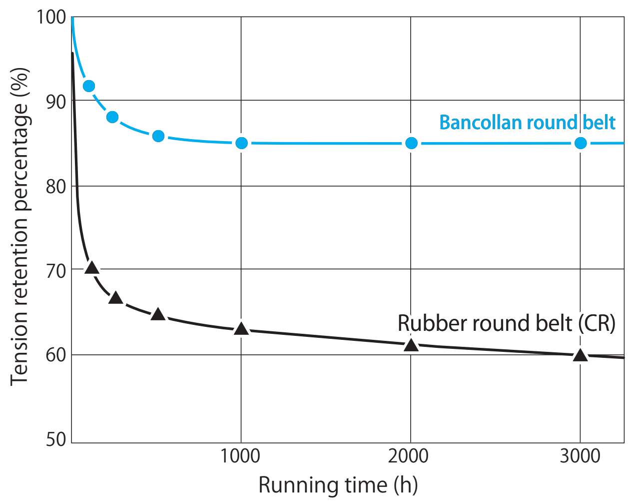
■ Stable tension

For belts without tension members, tension stability is especially important for belt performance. The Bancollan round belt has less changes in tension due to bending or permanent elongation than general rubber round belts or belts containing tension members, and can be used with almost no maintenance.

■ Smooth start even at low temperature

The specially compounded polyurethane rubber mostly prevents the belt from hardening or becoming set even at -20 °C. Therefore, it starts smoothly with no trouble due to the starting torque.

Fig. 1 Tension changes of the Bancollan round belt (Initial stretch rate 6%)



Example of use

Office equipment
Copiers
Fax machines
Electric typewriters
Registers
Ticket vending machines, bill exchange machines
Automatic ticket gates
Weighing-pricing machines
Automatic cash payment machines

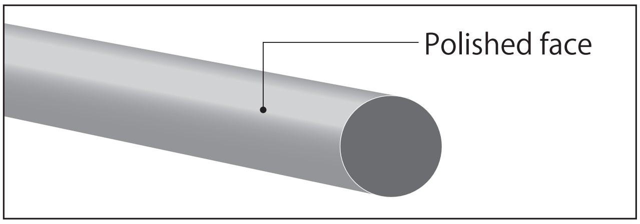
Optical equipment/music equipment
Tape decks
VTR

Others
Ultra-compact fans, air pollution measurement machines
Vacuum cleaners, spectroscopic analysis devices
Stirring machines, desktop winding machines
Roller conveyors
Rotating lights
Polishing machines

Structure and Characteristics

For orders for Bancollan round belts, please specify the belt sizes shown in Table 1 if possible. However, as this belt is made to order, please contact us about delivery period, lots, and prices.

■ Belt appearance



■ Belt indication example

4 × 305

Effective length (mm)

Cross-sectional diameter (mm)

Sizes are indicated in units of individual package.

■ Basic physical properties of the belt

Item \ Material		#267WLS
Hardness		72° (JIS)
Specific gravity		1.26
Tensile stress	When stretched by 4%	35×10^4 (Pa)
	When stretched by 6%	50×10^4 (Pa)
	When stretched by 8%	64×10^4 (Pa)
Tensile strength		3000 or more (N/cm^2)
Elongation at the time of break		600(%)

Dimensional Tolerance

■ Belt cross-sectional tolerance

(Unit: mm)

Cross-sectional diameter	2	3	4	5
Tolerance	±0.10	±0.10	±0.15	±0.20

■ Effective length

(Unit: mm)

Effective length	Tolerance
100~200	±2.0
201~400	±3.0
401~500	±4.0

Belt Size

Table 1 Table of belt standard sizes

(Unit: mm)

φ2		φ3		φ4		φ5	
Effective length	Effective center perimeter	Effective length	Effective center perimeter	Effective length	Effective center perimeter	Effective length	Effective center perimeter
104	110.2	107	113.4	135	143.1	157	166.4
107	113.4	108	114.5	140	148.4	168	178.1
100	106.0	113	119.8	142	150.5	182	192.9
112	118.7	115	121.9	160	169.6	200	212.0
115	121.9	120	127.2	165	174.9	210	222.6
120	127.2	128	135.7	170	180.2	220	233.2
125	132.5	132	139.9	173	183.4	225	238.5
130	137.8	138	146.3	175	185.5	230	243.8
134	142.0	140	148.4	184	195.0	247	261.8
135	143.1	145	153.7	197	208.8	248	262.9
140	148.4	150	159.0	200	212.0	250	265.0
145	153.7	153	162.2	206	218.4	275	291.5
147	155.8	155	164.3	213	225.8	290	307.4
152	161.1	160	169.6	225	238.5	300	318.0
158	167.5	165	174.9	230	243.8	305	323.3
160	169.6	170	180.2	235	249.1	310	328.6
163	172.8	172	182.3	240	254.4	315	333.9
167	177.0	175	185.5	250	265.0	320	339.2
170	180.2	180	190.8	254	269.2	330	349.8
180	190.8	182	192.9	258	273.5	345	365.7
183	194.0	190	201.4	264	279.8	348	368.9
190	201.4	193	204.6	270	286.2	363	384.8
194	205.6	200	212.0	275	291.5	374	396.4
196	207.8	201	213.1	284	301.0	375	397.5
200	212.0	204	216.2	285	302.1	380	402.8
213	225.8	213	225.8	290	307.4	402	426.1
227	240.6	223	236.4	300	318.0	416	441.0
239	253.3	230	243.8	305	323.3	422	447.3
244	258.6	236	250.2	316	335.0	434	460.0
250	265.0	240	254.4	323	342.4	440	466.4
273	289.4	250	265.0	332	351.9	460	487.6
290	307.4	260	275.6	346	366.8		
330	349.8	270	286.2	361	382.7		
444	470.6	275	291.5	367	389.0		
		282	298.9	374	396.4		
		285	302.1	377	399.6		
		290	307.4	385	408.1		
		294	311.6	390	413.4		
		305	323.3	415	439.9		
		308	326.5	440	466.4		
		314	332.8	450	477.0		
		318	337.1				
		330	349.8				
		347	367.8				
		356	377.4				
		359	380.5				
		363	384.8				
		376	398.6				
		387	410.2				
		390	413.4				
		395	418.7				
		400	424.0				
		410	434.6				
		430	455.8				
		441	467.5				
		450	477.0				
		460	487.6				

- The effective length is the center perimeter with no stretch.
- The effective center perimeter represents the center perimeter when the belt is stretched by 6%.

2. How to Design

Step 1. Determining conditions required for the design

① Machine type
② Transmission power, or rated power of the driving machine
③ Degree of load fluctuation
④ Daily operating hours
⑤ Speed ratio

$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$

⑥ Temporary center distance
⑦ Pulley diameter restriction
⑧ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Correct the driven load and obtain the design power to be used.

$$Pd = Pt \times \left(\frac{Ko}{K\theta_1 \times Kt}\right)$$

Pd	: Design power	(W)
Pt	: Transmission power (driven load or motor rating)	(W)
Ko	: Load correction factor	**(Table 2)**
$K\theta_1$	: Pinion contact angle correction factor	**(Table 3)**
Kt	: Correction factor by initial stretch rate	**(Table 4)**

When the transmission power was given in torques, convert it into watts with the following equation.

$$Pt = Tr \cdot n \times 1.047 \times 10^{-3}$$

Pt	: Transmission power	(W)
Tr	: Torque	(N•cm)
n	: Revolution	(rpm)

Table 2 Load correction factor (Ko)

Load characteristics	Factor Ko
When the maximum load is used	1.0
When a normal load is used	1.3
When the frequency of starting and stopping is high	1.5

Table 3 Pinion contact angle correction factors ($K\theta_1$)

Equation for contact angle calculation	$\Theta_1 = 180 - 57.3(Dp - dp) / C$					
(Dp-dp)/C	0.0	0.4	0.6	0.8	1.0	1.4
θ_1 (°)	180	157	145	133	120	91
Correction factor $K\theta_1$	1.00	0.94	0.91	0.87	0.82	0.70

Table 4 Correction factors by initial stretch rate (Kt)

⊿T (%)	4	5	6	7	8
Correction factor Kt	0.8	0.9	1.0	1.1	1.2

The correction factors in **Table 3** and **Table 4** correct the basic power rating; however, for convenience, they are in the form of correcting the transmission power.

Step 3. Selecting a cross-sectional diameter

Select a cross-sectional diameter so that Pr ≥ Pd from the basic power rating Pr and the design power Pd in Tables 5 to 8 (→ P. 300).
When Pr < Pd, increase the number of belts or increase the cross-sectional diameter.

Step 4. Selecting an effective length

With the following equation, obtain the effective center perimeter of the belt and set the belt with the effective center perimeter closest to it from **Table 1** **(→ P. 298)**.

$$L' = 2C' + 1.57(Dp + dp) + \frac{(Dp - dp)^2}{4C}$$

L′	: Effective center perimeter of the belt	(mm)
C′	: Center distance	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

Check the following points for the selected belt in accordance with the conditions.

(A) When the center distance is fixed

Check whether the initial stretch rate is between 4% and 8% with the following equation.

$$4 \leqq \Delta t \leqq 8$$

Δt	: Initial stretch rate 100(L′ / L - 1)	(%)
L′	: Effective center perimeter of the belt	(mm)
L	: Effective center perimeter of the standard belt	(mm)

(B) When the center distance can be adjusted

Obtain the center distance with the following equation so that the initial stretch rate is 6%.

$$C = \frac{B + \sqrt{B^2 - 2(Dp - dp)^2}}{4}$$

$$B = L \times 1.06 - 1.57(Dp + dp)$$

C	: Center distance	(mm)
L	: Effective center perimeter of the standard belt	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)

Table 5 Table of basic power ratings for $\phi 2$

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)				
	16	18	20	24	28
250	0.2	0.2	0.2	0.3	0.3
500	0.3	0.4	0.4	0.5	0.6
750	0.5	0.6	0.7	0.8	0.9
1000	0.7	0.8	0.9	1.1	1.2
1250	0.9	1.0	1.1	1.3	1.5
1500	1.0	1.2	1.3	1.5	1.8
1750	1.2	1.3	1.5	1.8	2.1
2000	1.4	1.5	1.7	2.0	2.3
2500	1.7	1.9	2.1	2.5	2.9
3000	2.0	2.3	2.5	2.9	3.3
3500	2.3	2.6	2.9	3.3	3.8

Table 6 Table of basic power ratings for $\phi 3$

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)				
	22	24	28	32	36
250	0.5	0.6	0.7	0.8	0.9
500	1.1	1.2	1.4	1.5	1.7
750	1.6	1.7	2.0	2.3	2.6
1000	2.1	2.3	2.7	3.1	3.4
1250	2.6	2.9	3.3	3.8	4.3
1500	3.2	3.4	4.0	4.5	5.1
1750	3.7	4.0	4.6	5.3	5.9
2000	4.2	4.5	5.3	5.9	6.6
2500	5.2	5.6	6.4	7.2	8.0
3000	6.1	6.6	7.5	8.4	9.2
3500	7.0	7.5	8.5	9.4	10.2

Table 7 Table of basic power ratings for $\phi 4$

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)				
	28	32	36	40	45
250	1.2	1.4	1.5	1.7	1.9
500	2.4	2.7	3.1	3.4	3.8
750	3.6	4.1	4.6	5.1	5.7
1000	4.8	5.4	6.1	6.8	7.6
1250	5.9	6.8	7.6	8.4	9.4
1500	7.1	8.1	9.0	9.9	11.3
1750	8.2	9.3	10.4	11.4	12.7
2000	9.3	10.5	11.7	12.8	14.2
2500	11.4	12.8	14.2	15.4	16.8
3000	13.4	14.9	16.3	17.5	18.8
3500	15.2	16.7	18.1	19.3	24.7

Table 8 Table of basic power ratings for $\phi 5$

(Unit: W)

Pinion revolution (rpm)	Pinion pitch diameter (mm)				
	36	40	45	50	60
250	2.4	2.7	3.0	3.4	4.0
500	4.8	5.4	6.0	6.7	8.0
750	7.2	8.0	9.0	9.9	11.8
1000	9.5	10.6	11.8	13.1	15.5
1250	11.8	13.1	14.6	16.1	19.0
1500	14.1	15.5	17.3	19.0	22.1
1750	16.2	17.8	19.8	21.6	24.9
2000	18.7	20.0	22.1	24.0	27.4
2500	22.1	24.0	26.2	28.1	30.8
3000	25.5	27.4	29.3	30.8	31.9
3500	28.2	29.9	31.3	31.7	30.7

When the effective lengths in **Table 1 (P. 298)** cannot be used, please contact us.

Pulleys for the Bancollan Round Belt

As pulleys for the Bancollan round belt, please use pulleys with the following dimensions.

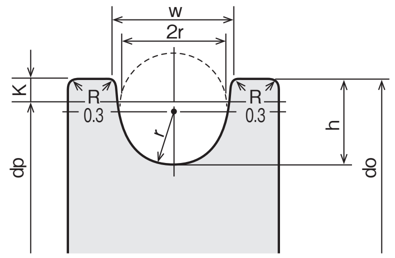


Table of pulley groove dimensions

(Unit: mm)

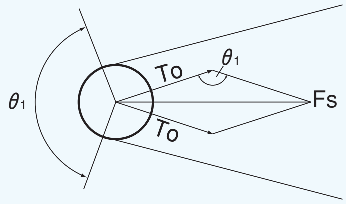
Belt cross-sectional diameter	ϕ2	ϕ3	ϕ4	ϕ5
Groove top width **W** ±0.1	2.2	3.2	4.2	5.2
Groove depth **h** $^{+0.1}_{-0}$	1.3	2.0	2.7	3.3
Groove bottom **r** ±0.05	0.9	1.4	1.9	2.4
Difference between outside diameter and pitch diameter **2k**	0.6	1.0	1.4	1.6
Minimum pulley pitch diameter	14	21	28	35

Avoid using V-grooved pulleys as they can cause partial abrasion of the belt.

Shaft Load of Bancollan Round Belt

Obtain the shaft load of the Bancollan round belt with the following equation from the following table of the initial tension To in accordance with the initial stretch rate.

$$Fr=2To\sin(\theta_1/2)$$



Initial tension To

(Unit: N)

Stretch rate (%) Δt \ Belt cross-sectional diameter	ϕ2	ϕ3	ϕ4	ϕ5
4	1.08	2.45	4.31	6.76
5	1.27	3.53	6.57	10.3
6	1.57	4.31	7.64	11.8
7	1.76	4.80	8.62	14.4
8	1.96	5.19	9.60	16.5

Bancord Round Belt/V-Belt

They are long belts that use polyurethane "Bancollan" as a material and can be easily joined by heat adhesion.
The light-duty machinery industry has recently been developing considerably and requires more convenient and higher-performance belts.
Bancord has been highly evaluated by users as an industrial material as well as a belt that has foreseen the needs of the times since its development.
Please make use of the convenience and excellent performance of Bancord for your designs.

1. Product Introduction

Features

■ Flexible effective length

As it can be simply and strongly joined by heating, a belt with a required effective length can be obtained in an instant. As the effective length can be freely selected regardless of standards, it allows for a design that makes most of the performance of the machine.

■ Multi-shaft transmission and three-dimensional transmission are possible (round belt).

As the cross section has no direction, the belt allows multi-shaft transmission and three-dimensional complex transmission such as direction changes by idler pulleys.

■ Simple installation and management

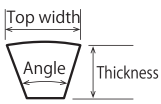
It can be installed without disassembling the machine and requires little management, such as troublesome tension adjustment.

■ Excellent mechanical characteristics

As it uses Bancollan (polyurethane), which has excellent abrasion resistance and tear resistance, it provides excellent performance as a belt as well as an industrial material.

Type/Size

Product type	Compound	Use example (application)	Color tone	Cross-sectional diameter (mm)														
				1.5	2	2.5	3	3.5	4	5	6	7	8	9	10	11	12	15
Round belt	#480	General-purpose and food stuff conveyance	Orange (standard) Semi-transparent Black	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
	#485N	Roller conveyor driving	Semi-transparent	—	—	—	○	—	○	○	○	—	—	—	—	—	—	—
	#485T	Roller conveyor driving (durable and abrasion-resistant)	Semi-transparent	—	—	—	—	—	○	○	○	—	—	—	—	—	—	—
	#485RB	Paper and food stuff conveyance *1	Green	—	—	—	○	—	○	○	○	—	○	—	—	—	—	—
	#489 #490	Abrasion-resistant (heavy-duty)	White (standard) Semi-transparent Blue Red Green	○	○	○	○	○	○	○	○	○	○	○	○	○	○	—
	#494C (Charge prevention)	Semi-conductor field	Black	—	○	○	—	—	○	○	—	—	—	—	—	—	—	—
	Winding length			#480 200 m/winding each #485N 200 m/winding each #485T 200 m/winding each #485RB 200 m/winding each #489 100 m/winding each #490 200 m/winding each #490C 200 m/winding each						100 m/winding each *2								



Product type	Compound	Use example (application)	Color tone	Dimension	Value	Winding length
V-belt	Type M (#480/#495)		Orange (#480) White (#495)	Top width (mm)	10.0	100 m/winding each
				Thickness (mm)	5.5	
				Angle (°)	40	
	Type A (#480/#495)			Top width (mm)	12.7	
				Thickness (mm)	8.0	
				Angle (°)	40	
	Type B (#480/#495)			Top width (mm)	16.7	
				Thickness (mm)	10.3	
				Angle (°)	40	

*1 Grain surface specification
*2 For [#480 Cross-sectional dia. 15 mm] and [#494C Cross-sectional dia. 5 mm], 50 m/winding is supplied.
* We perform joining if requested. (Only winding for a line diameter of 15 mm) The perimeters that can be joined are 125 mm or more for a line diameter of up to 2.5 mm and 50 times the line diameter or more for a line diameter of 3 mm or more.
* #480 (not including standard products) and #490 are made to order; hence, for delivery period and lots, please contact our sales company or distributer.
* For joining of belts with a line diameter of 15 mm, please contact our sales company or distributor.
* Passed Notice No. 370 of the Ministry of Health and Welfare concerning food hygiene (not including #480 black and #494C).

Mechanical Properties

Bancord is widely used as a general industrial material, such as a power transmission belt, for its excellent mechanical properties. The main mechanical properties of Bancord are as follows.

Characteristics	#480	#485N	#485T	#485RB	#489	#490	#494C	#495 (V type)
Color tone	Orange, semi-transparent, black	Semi-transparent	Semi-transparent	Green	White	Semi-transparent, blue, red, green	Black	White
Hardness (JIS-Hs)	85°	86°	86°	86°	90°		94°	95°
Specific gravity	1.23	1.23	1.23	1.23	1.23		1.23	1.23
Tensile modulus 3% (GPa)	2.9×10^{-4}	2.9×10^{-4}	2.9×10^{-4}	3.3×10^{-4}	9.8×10^{-4}		5.6×10^{-4}	1.7×10^{-3}
Tensile modulus 4% (GPa)	3.9×10^{-4}	3.9×10^{-4}	3.9×10^{-4}	4.4×10^{-4}	1.08×10^{-3}		8.3×10^{-4}	2.2×10^{-3}
Tensile modulus 5% (GPa)	4.9×10^{-4}	4.9×10^{-4}	4.9×10^{-4}	5.6×10^{-4}	1.47×10^{-3}		1.1×10^{-3}	2.6×10^{-3}
Tensile modulus 6% (GPa)	6.4×10^{-4}	6.4×10^{-4}	6.4×10^{-4}	7.3×10^{-4}	1.52×10^{-3}		1.4×10^{-3}	2.8×10^{-3}
Tensile modulus 7% (GPa)	6.9×10^{-4}	6.9×10^{-4}	6.9×10^{-4}	7.9×10^{-4}	1.72×10^{-3}		1.7×10^{-3}	3.1×10^{-3}
Tensile modulus 100% (GPa)	4.9×10^{-3}	5.4×10^{-3}	3.9×10^{-3}	5.4×10^{-3}	7.85×10^{-3}		8.8×10^{-3}	9.8×10^{-3}
Tensile break strength (GPa)	2.94×10^{-2} or more	2.94×10^{-2} or more	2.94×10^{-2} or more	2.94×10^{-2} or more	2.94×10^{-2} or more		1.96×10^{-2} or more	3.23×10^{-2} or more
Tensile break elongation rate (%)	450 or more	300 or more	400 or more	300 or more	350 or more		400 or more	350 or more
Linear expansion factor (1°C)	2.6×10^{-4}	2.6×10^{-4}	2.6×10^{-4}	2.6×10^{-4}	2.6×10^{-4}		2.6×10^{-4}	2.6×10^{-4}

Round belt

Cross-sectional diameter (mm)	1.5	2	2.5	3	3.5	4	5	6	7	8	9	10	11	12	15
Tensile strength (N/pc)	60	100	160	230	310	410	640	930	1150	1500	1900	2360	2850	3390	5300

V-belt

Type	M	A	B
Tensile strength (N/pc)	1450	2590	4400

Water Resistance

Bancord is especially studied and improved in water resistance; hence, it can be used for a very long period of time even under high humidity.

Variation per day in tensile strength under water (Material #489)				
Immersion period (day)	20	30	50	70
Remaining strength rate (%)	99	98	96	91

Note 1) The samples were immersed under water at a temperature of 40°C with 5% stretch.

Oil Resistance and Chemical Resistance

The following table shows a rough guide of applicability when oil or chemicals adhere to the belt at normal temperature.

Oil/chemical name	Applicability	Oil/chemical name	Applicability	Food name	Applicability
Oil-resistant ASTM #1	○	Strong acid	×	Water	○
Oil-resistant ASTM #3	○	Weak acid	○	Vinegar	○
Gasoline	○	Sodium hypochlorite	△	Soy sauce	○
Volatile oil	○	Sodium hypochlorite (600 ppm)	○	Sauce	○
Light oil	○	Ethanol	○	Syrup	○
Heavy oil	○	Acetone	×	Cream	○
Cutting oil	△	Benzine	×	Olive oil	○
Diesel oil	○	Methanol	△	Edible oil (salad oil)	○
Rust-inhibiting oil	△	Toluene (Toluol)	×	Butter	○
Machine oil	△			Sugar	○
Caustic soda (NaOH) solution (10%)	△			Flour	○
Strong alkali	×			Salt	○
Weak alkali	○			Bread	○
Soap	○			Vegetables	○
Hydrochloric acid (10%)	○			Meat	○
Acetic acid	×			Fish	○

○: Not affected at all.
△: Affected to some extent.
(There is a possibility of embrittlement, discoloration, or swelling after use.)
×: Completely affected.

* If the belt is completely affected or you use the belt at a higher-temperature range than normal temperature, please consult our sales company or distributor.

Bancord Round Belt/V-Belt

How to Join Bancord Belts

Join a Bancord with the following procedure.

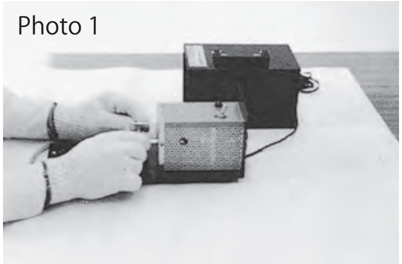


Photo 1

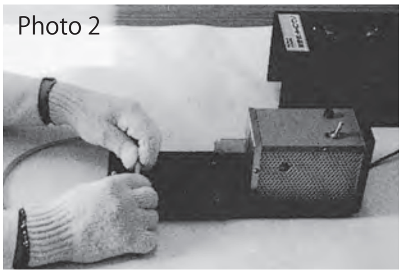


Photo 2

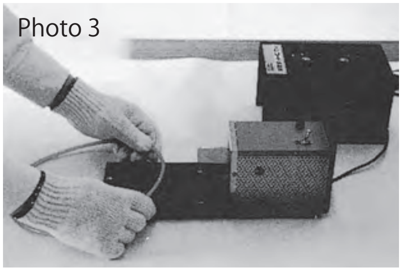


Photo 3

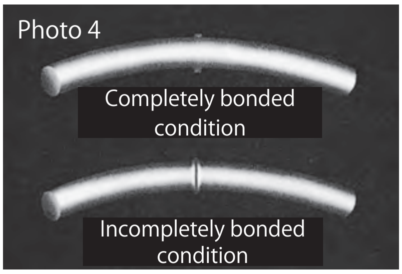


Photo 4

■ Cutting a Bancord belt

① Calculate (or actually measure) the installation length of Bancord.
② Determine the joint length of the Bancord 3 to 7% (normally 5%) shorter than the installation length and cut the Bancord at right angles to the belt.
Example: When the installation length is 1 m, normally cut the belt to 950 mm.
Note: An excessively long Bancord causes slip, and an excessively short Bancord reduces the belt service life; be particularly careful.

■ Finishing the joint of the Bancord

① Put the Bancord lightly and uniformly in contact with both sides of the heating plate and melt the Bancord. (Photo 1)
The standard melting time is as follows. (Heating plate temperature: 240°C±10°C)

Compound	Diameter (mm)		
	1.5 to 5	6 to 10	11 to 15
#480	20 sec	50 sec	70 sec
#485N/485T	60 sec	80 sec	—
#485RB	60 sec	80 sec	—
#489/490	40 sec	60 sec	90 sec

* For a long V-belt, the time is 90 seconds for Types M, A, and B.

② If the Bancord melted, quickly press-fit the melted surfaces in alignment. (Photo 2)
③ While the Bancord is press-fit, hold it for one to two minutes and solidify the melted sections by cooling. (Photos 2 and 3)
④ Cut off protruding sections with scissors, a nail clipper, a grinder, etc. for finishing.
* If the joint is incomplete, a transparent layer as shown in (Photo 4) is created. (Especially with #489)

■ Bonding machine for Bancord

We also offer a bonding machine for Bancord (DX-81); please use it. (Standard setting temperature: 240°C±10°C)
* Bonding machine specifications: Width: 130 mm Depth: 210 mm Height: 130 mm Power supply: 100 VAC

■ For joining work, wear cotton work gloves or similar protective equipment to prevent a burn.

■ Avoid joining using a candle, a cigarette lighter, or other inappropriate tools.

Operating Conditions

Classification	Item	
Round belt	Belt tension rate	3 to 7% (normally 5%)
	Pulley used	Pulley for Bancord round belt
	Angle of contact of pinion	180°
	Belt speed	#480･485N･485T･485RB：2～12m/s #489/490: 2 to 20 m/s
	Operating temperature	0 to 50°C
V-belt	Belt tension rate	3 to 7% (normally 5%)
	Pulley used	Pulley for Bancord V-Belt
	Angle of contact of pinion	180°
	Belt speed	2 to 20 m/s
	Operating temperature	0 to 50°C

Precautions for Storage and Transportation

- When you transport or handle a heavy belt or pulley, use a transporting apparatus or device suitable for the weight. Lifting up with hands may hurt your lower back etc.
- Do not bend belts with unreasonable force or place a heavy object on belts when transporting or storing them. The belts may remain bent or become damaged, leading to early breakage.
- Store belts in a low-humidity location at temperatures of -10°C to 40°C. In addition, do not expose stored belts to direct sunlight.

2. How to Design

Step 1. Determining conditions required for the design

① Transmission power, or rated power of the driving machine
② Speed ratio
$$\left(\frac{\text{Pinion revolution}}{\text{Revolution of large pulley}}\right)$$
③ Center distance
④ Pulley diameter
⑤ Operating environment (high temperature, low temperature, oil, water, dirt, acid, alkali)

Step 2. Calculating the design power

Calculate the design power with Formula 1.

Formula 1

$$Pd = Pt \times Ko$$

Pd : Design power[Note 1] (W)
Ko : Load correction factor **(Table 1)**

Note 1) For transmission power, it is ideal to use the load of the driven machine; however, if it is unknown, use the rated power of the driving machine.
If torque or horsepower is used for indication, convert it into watt using Formula 2.

Formula 2

$$Pt = \frac{Tr \times n}{955}$$

Pt : Transmission power (W)
n : Revolution (rpm)
Tr : Load torque (N•cm)
1PS=735.5(W)

Table 1 Load correction factor (Ko)

Load characteristics	Factor Ko
When the maximum load is used	1.0
When a normal load is used	1.3
When the frequency of starting and stopping is high	1.5

Step 3. Calculating the belt speed

Determine the pulley diameter with Formula 3 and obtain the belt speed with Formula 4.

Formula 3

$$Dp = \frac{n_1}{n_2} \times dp$$

$$\text{Speed ratio} = \frac{n_1}{n_2}$$

dp : Pinion pitch diameter (mm)
Dp : Large pulley pitch diameter (mm)
n_1 : Pinion revolution (rpm)
n2 : Large pulley revolution (rpm)

Formula 4

$$v = \frac{dp \times n}{19100}$$

v : Belt speed (m/s)
dp : Pinion pitch diameter (mm)
n : Pinion revolution (rpm)

Step 4. Selecting a cross-sectional diameter

① Calculation of the pinion contact angle correction factor

From Formula 5, obtain the angle of contact of the pinion $\theta 1$ and from **Table 2**, obtain the correction factor $K\theta 1$.

Formula 5

$$\theta_1 = 180 - \frac{57.3(Dp - dp)}{C}$$

θ_1 : Angle of contact of pinion (°)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)
C : Center distance (mm)

Table 2 Pinion contact angle correction factors $K\theta_1$

$\frac{Dp-dp}{C}$	Angle of contact of pinion θ_1(°)	$K\theta_1$	$\frac{Dp-dp}{C}$	Angle of contact of pinion θ_1(°)	$K\theta_1$	$\frac{Dp-dp}{C}$	Angle of contact of pinion θ_1(°)	$K\theta_1$
0.00	180	1.00	**0.60**	145	0.91	**1.20**	106	0.77
0.10	174	0.99	**0.70**	139	0.89	**1.30**	99	0.73
0.20	169	0.97	**0.80**	133	0.87	**1.40**	91	0.70
0.30	163	0.96	**0.90**	127	0.85	**1.50**	83	0.65
0.40	157	0.94	**1.00**	120	0.82			
0.50	151	0.93	**1.10**	113	0.80			

② Selection of a cross-sectional diameter

Obtain the basic power rating with Formula 6 and obtain a cross-sectional diameter equivalent to a larger value than that value from **Table 4 "Table of basic power ratings" (→ P. 306)**. When you select a cross-sectional diameter, check whether it satisfies **Table 3 "Minimum pulley pitch diameters."**

Formula 6

$$Pr \geq \frac{Pd}{K\theta_1}$$

Pr : Basic power rating (W)
Pd : Design power (W)
$K\theta_1$: Pinion contact angle correction factor

Table 3 Minimum pulley pitch diameter

(Unit: mm)

Cross-sectional diameter	Minimum pulley pitch diameter	Cross-sectional diameter	Minimum pulley pitch diameter
1.5	12	11	91
2	17	12	107
2.5	20.5	15	143
3	23	Type M	50
4	29	Type A	75
5	40	Type B	125
6	46		
7	52		
8	63		
9	69		
10	80		

Note 1) When a pulley with a diameter equal to or smaller than the minimum pulley diameter is used, the flex fatigue of the belt increases, reducing the belt service life.

Table 4 Table of basic power ratings

(Unit: W)

Type / Cross-sectional diameter (mm) / Belt speed (m/sec)	Round belts #480/＃485N/＃485RB												Round belts #489/＃490						V-belt		
	2	3	4	5	6	7	8	9	10	11	12	15	2	4	6	8	10	12	M	A	B
0.5			1	2	3	4	6	7	9	12	13	19	1	4	9	15	26	37	28	50	85
1		1	2	4	6	7	9	11	14	18	23	38	2	8	18	31	52	74	55	99	169
2	1	3	5	9	12	17	22	28	34	41	49	85	4	17	37	66	104	149	110	196	334
3	2	4	7	13	18	24	31	41	49	49	71	128	6	25	55	99	154	223	164	289	496
4	3	6	10	16	23	32	42	53	65	79	94	163	8	33	73	131	204	294	218	388	661
5	3	7	12	19	28	37	49	64	78	93	114	195	10	40	90	163	255	362	269	478	818
6	4	8	14	22	32	44	57	73	90	108	129	225	12	48	107	191	298	429	322	573	976
8	4	9	17	26	38	51	67	85	105	126	151	263	15	61	138	245	383	551	419	746	1271
10	4	10	17	26	39	53	68	87	107	129	154	271	18	72	164	291	454	654	508	905	1541
12	4	8	15	23	34	46	60	76	94	112	124	238	20	81	184	326	510	734	587	1044	1779
14													22	87	197	350	547	786	652	1161	1978
16													22	89	203	359	561	806	703	1252	2132
18													22	87	199	351	551	789	737	1312	2235
20													20	80	185	325	511	731	752	1339	2280

Step 5. Determining the effective length

Bancord is normally installed by applying a 3 to 7% initial stretch rate (standard: 5%); hence, make the effective length (joint length) 3 to 7% shorter than the post-installation length and determine it with Formula 7.

Formula 7

$$L=2C+1.57(Dp+dp)+\frac{(Dp-dp)^2}{4C}$$

$$L'=L\times(0.93\sim0.97)$$

L	: Post-installation effective length	(mm)
L′	: Joint effective length	(mm)
Dp	: Large pulley pitch diameter	(mm)
dp	: Pinion pitch diameter	(mm)
C	: Center distance	(mm)

3. About Pulleys

- For pulleys for a round belt, the groove dimensions are as shown in **Fig. 1**; however, the pulley can also be used with the groove dimensions shown in **Fig. 2**.

- As a pulley for a V-belt, please use a pulley with the dimensions prescribed on **P. 235**.

Fig. 1

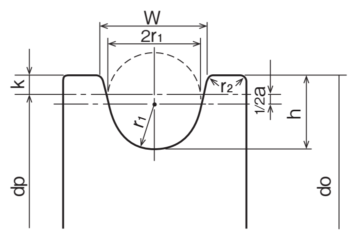
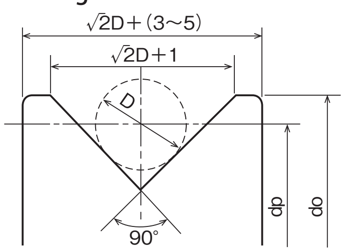


Fig. 2



- Determine the dimension of each section with the following equation.

$$W=D+0.2$$

$$h=\frac{2}{3}\times D$$

$$2K=2\left(h-\frac{D}{2}\right)$$

$$r_1=\frac{1}{2}\times(D-a)$$

$$r_2=R0.3$$

D = Belt cross-sectional diameter (mm)

a = Constant

Belt cross-sectional diameter (D) mm	a
1.5~ 3	0.20
4 ~ 5	0.25
6 ~ 8	0.35
9 ~12	0.40
15	0.50

Step 1. Determining conditions required for the design

- Driven machine: Fiber machine
- Motor power: Maximum load 40 W / 1750 rpm
- Driving pulley pitch diameter: 66 mm
- Revolution of driven shaft: 1150 mm
- Minimum maintenance and inspection

Step 2. Calculating the design power

① From Formula 1 (**→ P. 305**), calculate the design power.

$$Pd = 40 \times 1.0 = 40W$$

Step 3. Calculating the belt speed

① From Formula 3 (**→ P. 305**), calculate the large pulley pitch diameter.

$$Dp = \frac{1750}{875} \times 66$$
$$= 132mm$$

② Calculate the belt speed with Formula 4 (**→ P. 305**).

$$V = \frac{66 \times 1750}{19100}$$
$$\approx 6.0\ m/s$$

Step 4. Selecting a cross-sectional diameter

① From Formula 5 (**→ P. 305**), obtain the angle of contact of the pinion $\theta 1$ and from **Table 2** (**→ P. 305**), obtain the correction factor $K\theta 1$.

$$\Theta_1 = 180 - \frac{57(132-66)}{300}$$
$$= 167.5° \quad \rightarrow K\theta_1 = 0.96$$

② From Formula 6 (**→ P. 305**), obtain the basic power rating.

$$Pr \geq \frac{40}{0.96} \approx 41.7\ W$$

Obtain the cross-sectional diameter of #480 that is equivalent to a value larger than 41.7 W when the belt speed is 6.0 m/sec indicated in **Table 4 Table of basic power ratings (→ P. 306)**.

41.7 W < 44 W → Cross-sectional diameter 7 mm

③ From **Table 3 (→ P. 305)**, satisfy the recommended minimum pulley pitch diameter of 52 mm for a cross-sectional diameter of 7 mm.

Step 5. Determining the effective length

Post-installation effective length

$$L = 2 \times 300 + 1.57(132+66) + \frac{(132-66)^2}{4 \times 300}$$
$$= 910.9m$$

The belt joint length is

$$L' = 910.9 \times 0.95$$
$$\approx 865\ mm$$

Examination result

- Belt: Bancord round belt #480
- Cross-sectional diameter : 7 mm
- Post-installation effective length : 910.9 mm
- Belt joint length : 865 mm
- Pinion pitch diameter : 66 mm
- Large pulley pitch diameter : 132 mm

Design power: 40 W

Large pulley pitch diameter: 132 mm

Belt speed: 6.0 m/s

Pinion contact angle correction factor: 0.96

Cross-sectional diameter: 7 mm

Post-installation effective length: 910.9 mm

Belt joint length: 865 mm

1. Precautions for Designing and Using a V-Belt

(1) How to appropriately tension a V-belt

An excessively low or high belt tension can cause a service life reduction; adjust the tension with the following procedure.

Step 1 Calculating the belt speed

$$V=\frac{dp\cdot n}{19100}$$

V : Belt speed (m/s)
dp : Pinion pitch diameter (mm)
n : Pulley revolution (rpm)

Step 2 Calculating the belt tension

$$Tt=1.25\times\frac{1000\cdot Pd}{K\theta_1\cdot V}+NmV^2$$

$$Ts=\frac{1.25-K\theta_1}{K\theta_1}\times\frac{1000\cdot Pd}{V}+NmV^2$$

Tt : Tight side tension (N)
Ts : Slack side tension (N)
Pd : Design power (W)
N : Number of belts
m : Belt unit mass (kg/m) **(Table 1 → P. 309)**
V : Belt speed (m/s)
$K\theta_1$: Contact angle correction factor

Step 3 Calculating the initial tension

$$To=0.9\times\frac{Tt+Ts}{2}$$

To : Initial tension (N)
Tt : Tight side tension (N)
Ts : Slack side tension (N)

Step 4 Calculating the span length

$$Ls=\sqrt{C^2-\frac{(Dp-dp)^2}{4}}$$

Ls : Span length (mm)
C : Center distance (mm)
Dp : Large pulley pitch diameter (mm)
dp : Pinion pitch diameter (mm)

Step 5 Calculating the deflection and the deflection load

① Calculating the deflection

$$\delta=0.016\,Ls$$

δ : Deflection (mm)
Ls : Span length (mm)

② Calculating the deflection load

$$F\delta=\frac{X(To/N)+Y}{16}$$

Fδ : Deflection load (N)
To : Initial tension (N)
N : Number of belts
X : Constant **(Table 2 → P. 309)**
Y : Constant **(Table 3 → P. 309)**

Table 1 Belt unit mass m

(Unit: kg/m)

Energy-Saving V-Belt Energy-Saving Power Ace		Power Ace Power Ace Cog		V-Belt Red Standard		Banflex Banflescrum		Rib-Ace 2	
A	0.11	3V	0.08	M	0.06	3M	0.005	PJ	0.009
B	0.18	5V	0.20	A	0.12	5M	0.01	PK	0.018
C	0.30	8V	0.50	B	0.20	7M	0.028	PL	0.032
D	0.57	3VX	0.08	C	0.36	11M	0.055		
3V	0.07	5VX	0.22	D	0.66	5MS	0.016		
5V	0.19			E	1.02	7MS	0.035		
8V	0.46					11MS	0.075		

Table 2 Constant X

	Deflection load of a new belt	Load when re-tensioned	
		First time	Second time and later
Power Ace / Power Ace Cog / Power Scrum	1.5	1.3	1.0
V-Belt Power Scrum	1.5	1.3	1.3
Banflex/Banflescrum	1.5	1.3	1.0
Rib-Ace	1.5	1.3	1.3

Table 3 Constant Y

(Unit: N)

Power Ace Power Ace Cog Power Ace Aramid Combo Energy-Saving Power Ace	Y	V-Belt Red Standard Energy-Saving V-Belt	Y	Banflex Banflescrum	Y	Rib-Ace 2	Y
3V/3VX	20	M	10	3M	4	PJ	0.8
5V/5VX	49	A	15	5M	8	PK	2.5
8V	98	B	20	7M	19	PL	4.2
5VK	170	C	29	11M	42		
8VK	400	D	59	5MS	8		
		E	108	7MS	19		
				11MS	42		

Step 6 Adjusting the tension

For tension adjustment, apply the deflection of δ mm on the center of the span length, read the deflection load Fδ (N/pc) at this time, and adjust the belt tension so that this value becomes the value obtained in the calculation of the deflection load. However, the value Fδ differs for a new belt and for re-adjustment.
In this case, it is convenient to use the tension meter.
If the deflection or the deflection load is outside the range of application of the tension meter, calculate the correction with the following equation.

$$\delta = 0.016 Ls \times A$$

$$F\delta = \frac{X \cdot (To/N) + Y \cdot A^2}{16/A}$$

- A : Correction rate (e.g. 1.5, 0.5, 0.3, 0.2)
- δ : Deflection (mm)
- Ls : Span length (mm)
- Fδ : Deflection load (N)
- N : Number of belts
- Y : Constant

Bando tension meter

Applicable range of deflection: 2 to 62 mm
Applicable range of deflection load: 4.9 to 120 N (0.5~12kgf)

*Please note that the unit of deflection load is currently N (integer indication).

[Calculation example]

With Power Ace, if as a result of nine belts of 8V3150, the deflection δ is 36.40 mm and the deflection load Fδ is 200.5 N, make the following correction.
In this case, set the span Ls as 2353.2 mm.

[Correction value]

As the deflection load is 200.5N, in order to perform a measurement with a tension meter, it needs to be made 120 N or less.
Recommended belt To for nine belts of Power Ace 8V3150: 18664.0 N
Span length Ls = 2353.2 mm No. of belts N = 9 belts
Factor Y = 98 Correction rate A = 0.3

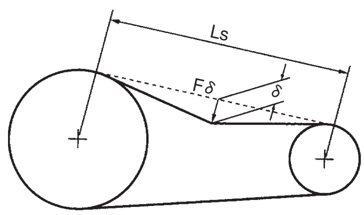
$$F\delta = \frac{1.5 \times (18664.0/9) + 98 \times (0.3)^2}{16/0.3} \fallingdotseq 58.5\text{N}$$

$$\delta = 0.016 \times 2353.2 \times 0.3 = 10.9$$

Therefore, using 0.3 for the correction rate A, the result shown in the following table is obtained.

Setting example with the correction equation

	Unit	Before correction	After correction
Deflection δ	mm	36.4	10.9
Deflection load Fδ	N	200.5	58.5



Step 7 Minimum deflection load and shaft load

When the design power is very small, take into consideration that the deflection load needs to be corrected and that it must not be less than the value indicated in **Table 4 Minimum deflection loads** for Power Ace, Power Ace Cog, Power Scrum, V-Belt Power Scrum, and Rib-Ace.

○ Banflex/Banflescrum

For Banflex/Banflescrum, take into consideration that the value must not be less than **Table 5 Minimum initial tension**.

Table 4 Minimum deflection loads

○ Power Ace / Power Ace Cog / Power Scrum

Belt type	Range of pinion outside diameter (mm)	Minimum value of deflection load (N/ridge)	Shaft load (N/ridge)
3V 3VX	67~ 90	18	530
	91~115	20	590
	116~150	23	680
	151~	26	780
5V 5VX	150~230	58	1750
	231~310	70	2130
	311~	82	2540
8V	300~420	153	4700
	421~520	172	5300
	521~	184	5700

○ V-Belt Power Scrum

Belt type	Range of pinion pitch diameter (mm)	Minimum value of deflection load (N/ridge)		Shaft load (N/ridge)	
		Red Power Scrum	Standard	Red Power Scrum	Standard
M	40 to 50	7	5	200	140
A	67~ 80	11	8	310	230
	81~ 90	13	9	380	250
	91~105	16	11	460	300
	106~	19	12	550	340
B	118~135	22	14	670	440
	136~160	27	18	790	530
	161~	29	19	850	570
C	180~205	39	27	1210	820
	206~255	47	32	1460	1000
	256~	55	38	1690	1170
D	300~330	77	56	2340	1680
	331~390	88	67	2700	2040
	391~	96	73	2960	2210
E	450~550	132	102	4010	3100
	551~	152	122	4650	3710

○ Rib-Ace 2

(Unit: N/rib)

Belt type	Minimum value of deflection load	Shaft load
PJ	2	70
PK	6	200
PL	10	350

Table 5 Minimum initial tension

(Unit: N/ridge)

Belt type	Minimum initial tension
3M	23
5M	44
7M	89
11M	133
5MS	44
7MS	89
11MS	133

(2) How to use an idler for a V-belt

When using an idler for a V-belt power transmission device, take the following into consideration in order to obtain the best power transmission device.

■ Example of use of an idler

The use of an idler increases flex fatigue due to bending of the belt; hence, avoid using an idler except when it is absolutely necessary such as the following cases.

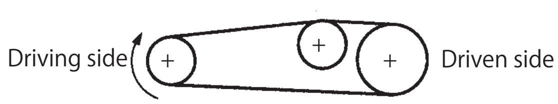
- **Tension adjustment when the center distance cannot be adjusted**
- **Division of a long span to an extent that makes belt vibration a problem**
- **Automatic tension adjustment of spring type or weight type**
- **Guide for avoiding obstacles**
- **When increasing the angle of contact of the pinion**
- **Power Ace, Power Scrum, Power Ace Aramid Combo, and Power Ace Cog have a belt pitch line at a higher position than that of the standard V-belt. Hence, note that when the belt is reverse-bent from the outside of the belt using an idler pulley, the belt becomes more likely to crack.**

■ How to use an idler

The best way of using an idler is to attach it on the slack side on the inside to reduce the flex fatigue of the belt.

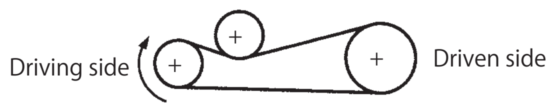
Please note that the use on the outside significantly affects the belt service life.

When using an idler on the inside



- Use a grooved pulley.
  In this case, the groove profile can be the one with which the bottom of the belt comes in contact with the bottom of the pulley groove.
- Move the idler installation position close to the large pulley.
  This decreases the reduction in the angle of contact of the pinion.

When using an idler on the outside



- Use a flat pulley without a crown.
- Move the idler installation position close to the pinion.
- Never use Banflex or Banflescrum.

■ Idler diameter

● Power Ace / Power Scrum / Power Ace Aramid Combo

When you use an inner idler, use the one with a diameter that is equal to or larger than the pinion diameter of the two power transmission pulleys.

When you use an outer idler, use the one with a diameter that is equal to or larger than 1.3 times the pinion diameter of the two power transmission pulleys.

● V-Belt Power Scrum

The diameter of an idler is 1.3 times the pinion diameter; however, even when this cannot be satisfied due to a limited space etc., use a pulley diameter larger than the idler diameter indicated in the table.

Table 6 Minimum idler pulley diameters

(Unit: mm)

Type	A	B	C	D	E
Inner idler diameter	75	125	230	330	530
Outer idler diameter	100	165	300	430	700

● Rib-Ace 2

Use an idler with a diameter larger than the idler diameters indicated in the table of minimum idler diameters.

Table 7 Minimum idler pulley diameters

(Unit: mm)

Type	PJ	PK	PL
Inner idler diameter	20	50	70
Outer idler diameter	50	80	150

● Banflex/Banflescrum

Use a diameter equal to or larger than the small pulley of the power transmission system.

■ Others

For Rib-Ace, do not use an idler for tension clutching.

2. Precautions for Using a V-Belt

Be sure to maintain and inspect belts with the machine completely stopped (powered off).

① Belt storage

■ If belts are poorly stored, their performance deteriorates; store belts in the following conditions.

- Store belts at normal temperature avoiding exposure to direct sunlight.
- Do not place belts directly on the ground or floor while hanging on a shelf or a wall.
- Avoid piling up a large amount of belts or storing belts in a sharply folded condition.
- Take care to avoid adhesion of oil or chemicals on belts.

② At the time of belt installation

■ When using multiple belts, please use a matched set. When you place an order, please specify a matched set.

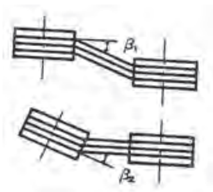
- When the effective length varies, tension is not applied uniformly, which causes belt fatigue and pulsation, which reduce the belt service life.

■ When you attach a belt on a pulley, use a motor slide etc. and avoid plying it in using a lever.

- If you plied a belt in, the belt may flip over during operation and break early.

■ Accurately adjust the parallelism and alignment of the power transmission shafts.

- Poor parallelism or alignment of the power transmission shafts causes partial abrasion or flipping over of the belt.
- We recommend using pulley alignment with the following standard.



	Pulley alignment ($\beta 1 + \beta 2$)
V-belt Flat belt	20′ or less

■ Appropriately tension the belt.

- For belt tension adjustment, calculate the deflection and load and apply an accurate tension.
- Exercise due caution as an excessive tension causes bearing breakage and an insufficient tension causes belt slip, heat generation of the belt, and reduced durability.
- For tension adjustment, please use Bando tension meter, which can simultaneously measure the deflection and the load.

■ Finish the surface roughness of pulleys to approximately 3S to 12S.

- Rustor other abnormalities also promote abrasion; remove them before using the pulley.
- Avoid painting the pulley groove section or the belt or applying wax on them.
  It promotes belt abrasion and reduces the service life.

Never convey or hoist a heavy object with a belt as it has a risk of causing an accident.

③ At the time of belt operation

■ Be sure to install a safety cover to prevent belt damage and accidents due to "entrapment" of foreign objects or other causes.
However, complete sealing inhibits heat dissipation and reduces the belt service life; therefore, perform sufficient ventilation.

■ Avoid dirt or oil splashing over the belts. In particular, adhesion of oil not only causes larger slip and prevents the power transmission capability from being obtained sufficiently but also causes the resulting generated heat to reduce the belt service life.

④ At the time of belt replacement

■ When you are using multiple belts, if even some of the belts break, replace all belts with new ones and keep the old belts as spares.
If you use new belts and old belts together, their lengths and elongations during operation are different, which can cause misaligned belts.

■ Check that the pulleys are not abraded.
If a pulley is abraded, it can cause early break of the belt; replace it with a new pulley.

⑤ Application to food machines

■ Do not use belts for applications in which the belts come in direct contact with food stuffs (conveyance of unpackaged food stuffs).
When abraded powder of the belts are dispersed and may adhere to food stuffs, separate the belts with covers or the like.

⑥ About seasonal use

■ Loosen the belts during the off-season, and when you resume using the belts, check the pulleys for rust, adjust the belt tension, and perform running in.

3. Precautions for Designing and Using a Bancollan Belt

(Applied to Bancollan V-Belt and Bancollan Polybanrope)

1. How to Store Belts

■ If belts are poorly stored, their performance deteriorates; store belts by hanging them in a ring form or placing them on a flat board in a natural form in a well-ventilated, cool, and dark place.
The Bancollan products become discolored slightly, but it does not affect the performance.

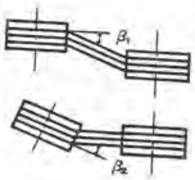
2. Environmental Conditions

- Use belts at ambient temperatures from -30°C to 70°C.
- At temperatures of -30°C or less, belts harden, and at temperatures of 70°C or more, the service life may become shorter.
- Avoid using belts in locations at high temperature and high humidity and locations that are exposed to strong acid or strong alkaline products or organic solvents.
- Do not use belts for applications in which the belts come in direct contact with food stuffs.

3. Parallelism and Alignment of Power Transmission Shafts

Poor parallelism or alignment of power transmission shafts causes partial belt abrasion or noise; adjust them to the following standard.

- Bancollan V-Belt
- Bancollan Polybanrope



Pulley alignment (β1 + β2)
20′ or less

4. Idler Pulley

- Bancollan V-Belt

Avoid using an idler pulley if possible. (Especially the use for the DC type is not allowed.) If you use an idler pulley, use a V-grooved pulley with a diameter of 1.3 times the pinion diameter from the slack side of belt.

- Bancollan Polybanrope

Avoid using an idler pulley if possible. (Especially the use of a back face idler is not allowed.) If you use a back face idler, use a pulley with a diameter equal to or larger than the pinion diameter of the power transmission system on the inside on the slack side of belt.

5. Precautions for Belt Installation

- Bancollan V-Belt

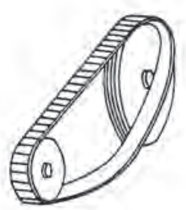
When you attach a belt on a pulley, use a motor slide etc. and avoid plying it in using a lever.

- Bancollan Polybanrope

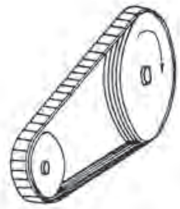
(How to attach a belt with a fixed center distance)
When attaching a belt with a fixed center distance, follow the procedure below.

A. Number of belt ridges: 5 or less

First, set all ridges of the belt on the pinion, then set all ridges on part of the large pulley, and set the belt by rotating the large pulley one turn.



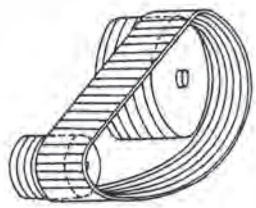
① Set all ridges on the pinion and set all ridges on part of the large pulley.



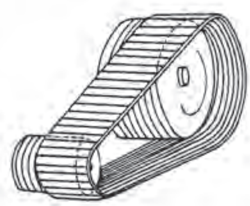
② Turn the large pulley, set the belt on the large pulley, and rotate the large pulley two to three turns to run in the belt.

B. Number of belt ridges: 6 to 10 ridges

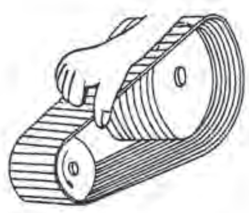
Although the method is basically the same as A, since the number of ridges is large, set half ridges first, move them from the pinion to the large pulley, and set the belt completely.



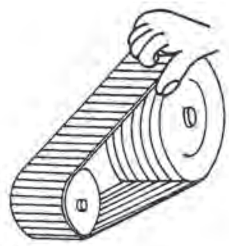
① Set half ridges on the pinion and set the belt on the top end of the large pulley.



② Rotate the large pulley and set the half ridges completely on it.



③ Slide the belt on the pinion with your thumb etc. to set all ridges.



③ Slide the belt on the large pulley with your thumb etc. to set all ridges.

Troubleshooting

Troubles that occur during the use of a belt always have a cause.
In order to determine the cause and take appropriate countermeasures, causes and countermeasures are listed by phenomenon of troubles. Please use the table as a troubleshooting guide.

① V-belts

Phenomenon	Cause	Countermeasure
The bottom of the belt cracks.	Dust particles or chemicals are adhering to the belt.	Install a belt cover.
	The pulley diameter is too small.	Change the pulley diameter to an appropriate one, or make a design change to use a belt with which a small pulley diameter can be used.
	Excessive heat is applied.	Consider a cooling method or use a heat-resistant belt.
	The belt tension is loose, and the belt slips.	Control the tension for an appropriate tension.
	The back face idler pulley diameter is small.	Change the pulley diameter to an appropriate one, change the back face idler to an inner face idler, or stop using the idler.
The belt flips over.	The pulley's misalignment is large.	Adjust the alignment.
	Poor machining of the pulley groove angle or partial abrasion during use.	Replace the pulley with the one with an appropriate groove angle.
	Trapping of foreign objects.	Install a belt cover.
	Although multiple belts are used, they are not a matched set.	Replace the belts with belts of a matched set.
	The belt tension is inappropriate.	Control the tension for an appropriate tension.
	The pulsating load is significantly large.	Use a Scrum belt, a Poly V-belt, or a flat belt.
The belt breaks early.	The number of belts is small. (The evaluation of the load is inappropriate.)	Increase the number of belts, or change the design to use a belt with a higher transmission capability.
	Trapping of foreign objects.	Install a belt cover.
	The pulley diameter is too small.	Change the pulley diameter to an appropriate one, or make a design change to use a belt with which a small pulley diameter can be used.
The belt side face became abraded early or is partially abraded.	Dust particles have scattered over.	Install a belt cover.
	The belt tension is insufficient.	Control the tension for an appropriate tension.
	The number of belts is small.	Increase the number of belts.
	The pulley groove rusted.	Remove the rust or replace the pulley with a new one.
	The pulley's misalignment is large.	Adjust the alignment.
	Poor machining of the pulley groove angle.	Replace the pulley with the one with an appropriate groove angle.
Abnormal noise occurs.	The belt tension is insufficient.	Control the tension for an appropriate tension.
	There are sudden starts or stops.	Extend the time of start or stop to make the operation gentle.
	The number of belts is small.	Increase the number of belts.
	Inappropriate selection of the belt type.	Re-select a belt that matches the operating conditions.

① V-belts

Phenomenon	Cause	Countermeasure
The belt slips significantly.	The belt tension is insufficient.	Control the tension for an appropriate tension.
	The number of belts is small.	Increase the number of belts.
	The angle of contact is small.	Install a back face idler pulley with an appropriate diameter on the slack side or change the design to use a synchronous belt.
	Oil or water is splashed over.	Install a belt cover. Completely wipe off the oil or water.
The belt is partially burned or melted.	The pulley diameter is too small.	Change the pulley diameter to an appropriate one, or make a design change to use a belt with which a small pulley diameter can be used.
	The belt tension is insufficient.	Control the tension for an appropriate tension.
	There are sudden starts or stops.	Extend the time of start or stop to make the operation gentle.
	The evaluation of the load is inappropriate.	Increase the number of belts, or change the design to use a belt with a higher transmission capability.
	Oil or water is splashed over.	Install a belt cover. Completely wipe off the oil or water.
The belt vibrates.	The center distance is long.	Install an idler pulley between the shafts.
	The belt tension is insufficient.	Control the tension for an appropriate tension.
	Although multiple belts are used, they are not a matched set.	Replace the belts with belts of a matched set.
The belt remains bent.	The belt is bent with unreasonable force or piled up in storage.	Unpack belts immediately and store them by suspending them from a cross arm.

Belts for Precision Conveyance

PS Belt

1. Product Introduction

The PS Belt is an abbreviation for Precision Seamless Belt and is a thin, seamless, woven flat belt. It is a new type of high-performance flat belt that was developed to meet requests for little non-uniformity of rotation, little vibration, and reliable feed for sheets, tickets, cards, or the like in OA equipment, financial equipment, computer peripheral devices, and automization equipment that are recently showing remarkable developments.

Features

■ Most suitable for miniaturization
The thin, seamless, and highly flexible belt can be designed with small pulleys.

■ Smooth rotation
As the tension member is seamless and at a fixed position at all times, the belt provides vibration-free, smooth rotation.

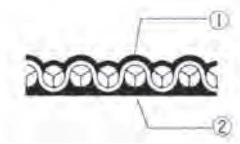
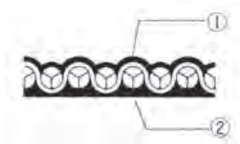
■ Re-tensioning is unnecessary
The specially processed tension member provides excellent dimensional stability and has little elongation during running.

■ Contributes to energy-saving
The thin, light, and highly flexible belt minimizes power transmission loss.

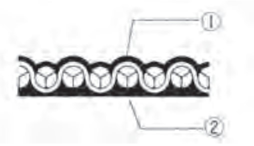
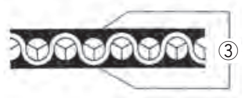
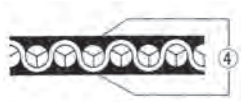
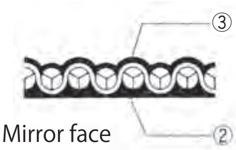
■ Rich selection
The wide selection of product types with various combinations of tension member, cover material, and surface profile allows optimum belt selection that matches the purpose of use and conditions.

Structure

(Unit: mm)

Product type	Structure	Thickness	Width
A-1C	 ① Rough face ② Smooth face	0.22	3～300
A-1N		0.22	
A-1U		0.22	
A-1H		0.22	
A-4C		0.6	5～300
A-4N		0.6	
A-4U		0.45	
A-4H		0.6	
A-10C		1.0	5～300
A-10N		1.0	
A-10U		0.9	
A-10H		1.0	
A-13C		1.1	5～300
A-13N		1.1	
A-13U		1.0	
A-13H		1.1	
B-2C	 ① Rough face ② Smooth face	0.8	5～300
B-2N		0.8	
B-2U		0.8	
B-2H		0.8	
B-3C		0.6	10～300
B-3N		0.6	
B-3U		0.6	
B-3H		0.6	
B-6C		1.0	10～300
B-6N		1.0	
B-6U		0.9	
B-6H		1.0	

(Unit: mm)

Product type	Structure	Thickness	Width
C-8C	 ① Rough face ② Smooth face	0.7	3～300
C-8N		0.7	
C-8U		0.6	
C-8H		0.7	
C-16C		0.7	3～300
C-16N		0.7	
C-16U		0.6	
C-16H		0.7	
Z-H250X	 ③ Mirror face	0.9	10～300
E-8U	 ④ Polished face	0.65 0.8 1.0	8～200
EXL-101	 ③ Mirror face ② Polished face	0.65 0.8 1.0	8～200

Indication Method

A-10N　20 × 500

- A-10N: Product type
- 20: Width (20 mm)
- 500: Inside length (500 mm)

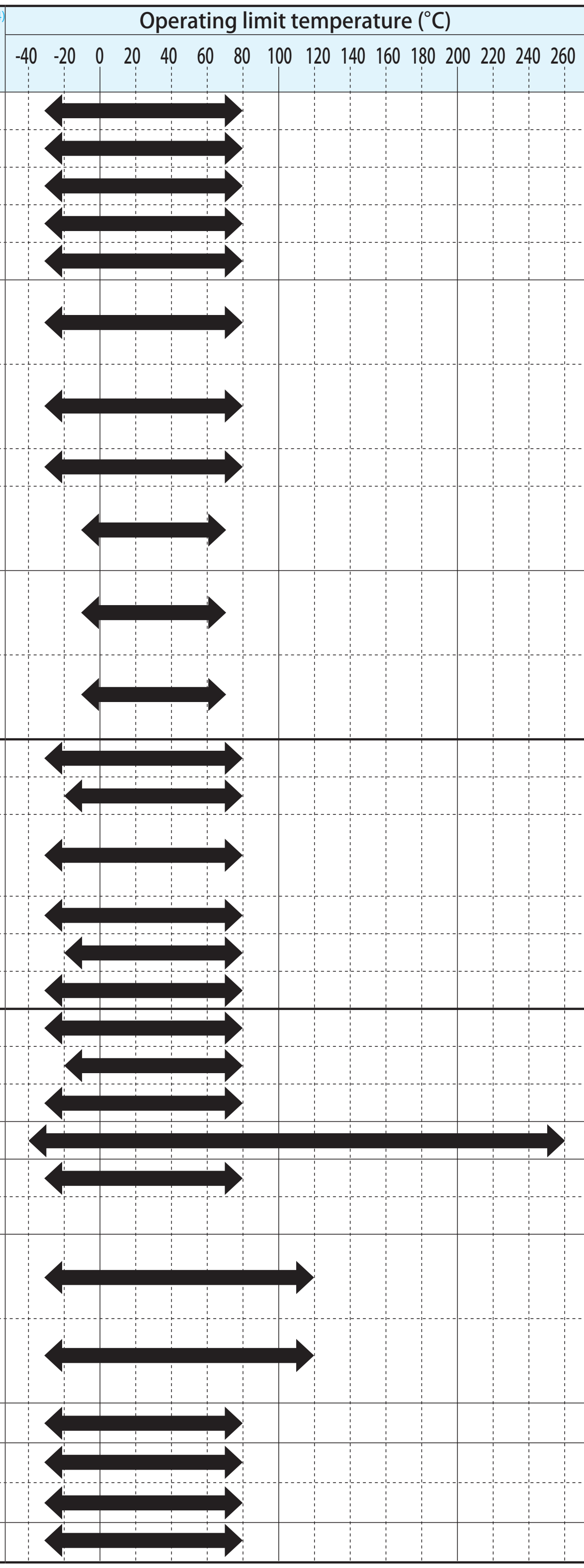
Table 1 Table for Characteristic and Functional Selections

Main use	Application	Belt specification Note 1)	Structure: Face profile Note 2)			Structure: Tension member		Structure: Cover material	Color tone	Manufacturable dimensions (mm) Note 3)		
			Designation	Front face	Back face	Material	No. of sheets			Thickness	Width	Inside length
Conveyance	For food stuffs Note 5)	A-1UDW	P/S	Pressed face	Impregnated face	Polyester	1	Polyurethane	White	0.2	3～200	400～1500
		A-4UDG	F/R	Smooth face	Rough face	Polyester	1	Polyurethane	Green	0.45	5～200	180～2700
		A-4UDGr	F/S	Smooth face	Impregnated face	Polyester	1	Polyurethane	Gray	0.45	5～200	180～2700
		A-4UDW	P/S	Pressed face	Impregnated face	Polyester	1	Polyurethane	White	0.4	5～200	180～2700
		A-4UDBL	P/S	Pressed face	Impregnated face	Polyester	1	Polyurethane	Blue	0.4	5～200	400～2700
	Paper (sandwiched)	B-2CB	R/F	Rough face	Smooth face	Polyester	1	Chloroprene rubber	Black	0.80	5～200	250～2600
		C-16UB	R/F	Rough face	Smooth face	Polyester	1	Polyurethane	Black	0.60	3～200	160～2500
	Paper (vacuumed)	A-4UEB	F/R-A	Smooth face	Rough face	Polyester	1	Polyurethane	Black	0.45	～360	180～2700
		E-8UB	M/K-A	Mirror face	Polished face	Polyester	1	Millable urethane	Black	0.65/0.8/1.0	8～200	50～1457
	Bill (sandwiched)	E-8UB	K/K	Polished face	Polished face	Polyester	1	Millable urethane	Black	0.65/0.8/1.0	8～200	50～1457
		EXL101B	M/K	Mirror face	Polished face	Polyester	1	Millable urethane	Black	0.65/0.8/1.0	8～200	50～1457
Power transmission	Low torque	A-4CB	R/F	Rough face	Smooth face	Polyester	1	Chloroprene rubber	Black	0.60	5～200	180～2700
		A-4NB	R/F	Rough face	Smooth face	Polyester	1	Nitrile rubber	Black	0.60	5～200	180～2700
		B-6NB	R/F	Rough face	Smooth face	Polyester	1	Nitrile rubber	Black	1.00	10～200	250～2800
	Medium torque	A-10CB	R/F	Rough face	Smooth face	Polyester	1	Chloroprene rubber	Black	1.00	5～200	300～3000
		A-10NB	R/F	Rough face	Smooth face	Polyester	1	Nitrile rubber	Black	1.00	5～200	300～3000
		A-13CB	R/F	Rough face	Smooth face	Polyester	1	Chloroprene rubber	Black	1.10	5～200	300～3000
Special	Chipping	A-1UEW	F/F	Smooth face	Smooth face	Polyester	1	Polyurethane	White	0.22	3～50	100～1500
		A-1NB	P/M	Pressed face	Mirror face	Polyester	1	Nitrile rubber	Black	0.22	3～50	100～1500
		A-4UEW	M/P	Mirror face	Pressed face	Polyester	1	Polyurethane	White	0.4	5～200	180～2700
	Ultra-heat-resistant	ZH250X	M/M	Mirror face	Mirror face	Aramid	1	Silicone rubber	Dark brown	0.90	10～200	460～1500
	Bend-resistant	A-P	S/S	Woven material	Woven material	Nylon	2, 4, 8	Chloroprene impregnation	Black	—	10～100	200～2700
		A-PW	O/O	Woven material	Woven material	Nylon	2, 4, 8	Stiffening agent impregnation	White	—	10～100	200～2700
	Heat- and weather-resistant	B-2HW	R/F	Rough face	Smooth face	Polyester	1	CSM	White	0.80	5～200	250～2600
		B-2HG	R/F	Rough face	Smooth face	Polyester	1	CSM	Green	0.80	5～200	250～2600
	Support for reverse conveyance	A-ESS2W	M/O	Mirror face	Woven material	Polyester	2	Polyurethane	White	1.10	620	2482
	Ear fraying prevention	TA-4UEB	M/D	Mirror face	Texture-adjusted surface	Polyester	1	Polyurethane	Black	0.65	4.5～200	350～2700
		TA-4UW	D/D	Texture-adjusted surface	Texture-adjusted surface	Polyester	1	Polyurethane	White	0.45	5～200	350～2700
	Blade-resistant	G-15TSDK	M/O	Mirror face	Woven material	Polyester	1	Silicone rubber	Light yellow (Woven material base color)	0.55	200～500	1000～3000

Note 1) In addition to the above product types, various combinations of cover material, surface profile, and color are available; please contact us.
Note 2) Select an appropriate surface to be used in accordance with the operating conditions. (Normally, use the smooth face as the pulley surface.) In addition to the above surface profiles; impregnation / smooth face, smooth face / smooth face, and mirror face / mirror face are also available; please contact us.
Note 3) If you need belt dimensions outside the manufacturable range, please contact us.
Note 4) The above items describe general physical characteristics of cover rubber. These are not guaranteed values. Please contact us and perform sufficient evaluation before use.
Note 5) For tones that conform to the Food Sanitation Law, select a tone from white, green, gray, and blue. Only the white tone conforms to AFD and PIM.
Note 6) These are a rough guide for belt selection and are not standard values.

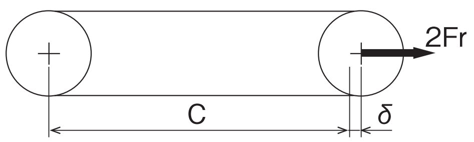
Tensile strength N/10 mm (Note 6)	Stable shaft load with each stretch N/10mm (Note 7)	Minimum pulley diameter (mm)	Abrasion resistance (Note 4)	Oil resistance (Note 4)	Conductivity (Note 4)	Flame resistance (Note 4)	Ozone resistance (Note 4)	Heat and weather resistance (Note 4)	Water and humidity resistance (Note 4)	Food Sanitation (Note 4)	Belt specification
150	0.5% 30	5	◎	◎	○	○	◎	○	×	◎	A-1UDW
400	0.5% 45	10	◎	◎	○	○	◎	○	×	◎	A-4UDG
400	0.5% 45	10	◎	◎	○	○	◎	○	×	◎	A-4UDGr
400	0.5% 45	10	◎	◎	○	○	◎	○	×	◎	A-4UDW
400	0.5% 45	10	◎	◎	○	○	◎	○	×	◎	A-4UDBL
250	1% 30 2% 50 3% 60	10	○	○	◎	◎	◎	○	◎	×	B-2CB
160	1% 20 2% 30 3% 40	7	◎	◎	×	○	◎	○	×	×	C-16UB
400	0.5% 45	10	◎	◎	◎	○	◎	○	×	×	A-4UEB
—	5% 10 6% 12 7% 14	8/12/14	◎	○	×	○	◎	○	×	×	E-8UB
—	5% 10 6% 12 7% 14	8/12/14	◎	○	×	○	◎	○	×	×	E-8UB
—	5% 10 6% 12 7% 14	8/12/14	◎	○	◎	○	◎	○	×	×	EXL101B
400	0.5% 45	10	○	○	◎	◎	◎	○	◎	×	A-4CB
400	0.5% 45	10	◎	◎	◎	○	×	○	◎	×	A-4NB
600	1% 180 2% 280 3% 360	25	◎	◎	◎	○	×	○	◎	×	B-6NB
1000	0.5% 110	15	○	○	◎	◎	◎	○	◎	×	A-10CB
1000	0.5% 110	15	◎	◎	◎	○	×	○	◎	×	A-10NB
1350	0.5% 170	20	○	○	◎	◎	◎	○	◎	×	A-13CB
150	0.5% 30	5	◎	◎	○	◎	◎	○	◎	×	A-1UEW
150	0.5% 30	5	◎	◎	◎	○	×	○	◎	×	A-1NB
400	0.5% 45	10	◎	◎	◎	○	◎	○	×	×	A-4UEW
400	1% 120	30	×	○	×	○	◎	◎	◎	×	ZH250X
	1% 130 2% 210	50	○	○	×	○	○	○	◎	×	A-P
			×	◎	×	×	◎	○	×	×	A-PW
250	1% 30 2% 50 3% 60	10	○	○	×	◎	◎	◎	◎	×	B-2HW
250	1% 30 2% 50 3% 60	10	○	○	×	◎	◎	◎	◎	×	B-2HG
780	0.5% 80	10	○	○	×	◎	◎	○	×	◎	A-ESS2W
400	0.5% 40	10	◎	◎	◎	○	◎	○	×	×	TA-4UEB
400	0.5% 45	20	◎	◎	×	○	◎	○	×	×	TA-4UW
800	0.5% 180	30	×	○	○	○	◎	◎	◎	◎	G-15TSDK

Operating limit temperature (°C)



◎: Most suitable ○: Suitable △: Slightly problematic ×: Not usable

Note 7)



■ How to understand belt product names

B - 2 U F Gr R/F

Belt type	Tensile strength factor	Cover material	Additional function Note 1)		Color				Face profile						
	N/10-mm width	For A, B, and C series, four types of materials can be selected.	E Conductivity on a 100-Ω level	F Passed Article 20 of the Notice of the Ministry of Health, Labour and Welfare concerning food hygiene.	B Black	W White	G Green	Gr Gray	R Rough face	F Smooth face	M Mirror face	S Impregnation	K Polished face	P Pressed face	O Woven material
A-1 A-4 A-10 A-13	The A series indicates 1/100 of the tensile strength.	C Chloroprene	○	×	○	—	—	—	○	○	We examine the manufacturability from the combination of the belt type and the cover material; please contact us.				
B-2 B-3	The B series indicates 1/100 of the tensile strength.	N Nitrile rubber	×	×	○	—	—	—	○	○					
B-6		U Polyurethane	×	×	○	—	—	—	—	—					
C-8	The C series indicates 1/10 of the tensile strength.			○	—	○	○	○	○	○					
C-16		H CSM	×	×	—	○	○	—	○	○					
E-8U	—	Urethane (Millable)	×	×	○	—	—	—	×	×	Note 2) ○	×	○	×	×
EXL-101	—		×	×	○	—	—	—	×	×	Note 2) ○	×	Note 2) ○	×	×

Note 1) Additional functions D: Charge prevention effect by conductive threads, E: 100-Ω-level conductivity by conductive rubber
F: Passed Notice No. 201 of the Ministry of Health, Labour and Welfare concerning food hygiene, AF: Passed the Food Sanitation Law and FDA, PF: Passed the Food Sanitation Law and PIM

Note 2) The mirror face profile of E-8U is only one side, and EXL-101 has a mirror face on one side and a polished face on the other side.

A, B, and C series: Dynamic friction factor (for PPC paper)

Face profile	Smooth face	Polished face	Mirror face	Rough face	Impregnation	Woven material
Friction factor	0.6~0.8	0.6~0.8	0.6~0.8	0.5	0.4	0.3

The above values differ slightly depending on the belt type (tension member and cover material); please contact us for details.

E series

Face profile	Mirror face	Polished face
Friction factor	0.8~1.3	0.6~1.0

Belt Dimensions and Tolerance

Table 2 Standard effective lengths

(Unit: mm)

Belt type	Inside length																			
A-1	125	132	140	150	160	170	180	190	200	212	224	236	250	265	280	300	315	335	355	375
	400	425	450	475	500	530	560	600	630	670	710	750	800	850	900	950	1000	1060	1120	1180
	1250	1320	1400	1500																
A-4	180	190	200	212	224	236	250	265	280	300	315	335	355	375	400	425	450	475	500	530
	560	600	630	670	710	750	800	850	900	950	1000	1060	1120	1180	1250	1320	1440	1500	1600	1700
	1800	1900	2000	2120	2240	2710														
A-10	300	315	335	355	375	400	425	450	475	500	530	560	600	630	670	710	750	800	850	900
A-13	950	1000	1060	1120	1180	1250	1320	1440	1500	1600	1700	1800	1900	2000	2120	2200				
B-2	250	265	280	300	315	335	355	375	400	425	450	475	500	530	560	600	630	670	710	750
B-3	800	850	900	950	1000	1060	1120	1180	1250	1320	1440	1500	1600	1700	1800	1900	2000	2120	2240	2600
B-6																				
C-8	180	190	200	212	224	236	250	265	280	300	315	335	375	400	425	450	475	500	530	560
C-16	600	630	670	710	750	800	850	900	950	1000	1060	1120	1180	1250	1320	1400	1500	1600	1700	1800
	1900	2000	2120	2240	2600															
E-8U	41	66	72	76	82	90	95	103	104	106	110	114	116	118	120	121	125	128	131	134
	136	138	140	145	148	149	151	152	154	155	157	159	162	164	165	166	167	168	170	173
	176	178	180	182	185	187	189	191	192	194	197	200	204	205	207	210	211	212	214	216
	219	221	224	228	232	235	239	240	241	243	245	247	248	250	253	256	258	261	262	264
	267	269	272	276	280	282	284	286	288	293	295	296	300	302	303	305	309	312	314	318
	321	323	328	331	335	336	338	341	342	343	347	348	353	354	356	358	360	363	366	368
	371	376	381	382	383	388	393	394	399	404	405	410	417	421	423	426	431	435	438	442
	444	445	447	453	457	462	467	471	477	479	482	484	487	490	494	497	499	502	505	509
	514	518	520	525	534	540	547	552	555	559	564	569	573	577	580	586	591	593	597	603
	608	613	619	625	632	643	650	658	661	667	672	674	683	690	698	705	715	735	750	755
	764	773	777	787	803	811	815	820	828	833	843	847	857	865	867	881	899	909	914	925
	934	943	947	949	965	969	994	995	1000	1012	1020	1029	1039	1055	1061	1072	1100	1103	1164	1219
	1264	1335	1337	1398	1457	1579	1611													
EKL-101	111	113	115	122	125	128	131	133	135	137	140	142	145	146	148	149	151	152	154	156
	159	161	162	164	165	166	168	171	174	176	178	180	183	185	187	189	190	192	195	197
	201	202	204	207	208	209	211	213	216	218	221	225	229	232	236	237	238	240	242	244
	245	247	250	253	255	258	259	261	264	266	269	273	277	279	281	283	285	290	292	293
	297	299	300	302	306	309	311	315	318	320	325	328	332	333	335	338	339	340	344	345
	350	351	353	355	357	360	363	365	368	373	378	379	380	385	390	391	396	401	402	407
	414	418	420	423	428	432	435	439	441	442	444	450	454	459	464	468	474	476	479	481
	484	487	491	494	496	500	503	507	512	516	518	523	532	538	545	550	553	557	562	565
	569	573	578	584	589	591	594	600	605	610	616	622	629	640	647	655	658	664	669	671
	680	687	694	699	709	729	744	749	758	767	771	781	797	805	809	814	822	827	837	842
	852	860	862	876	893	903	908	919	928	937	941	943	959	963	988	989	994	1006	1014	1023
	1033	1049	1055	1066	1093	1106	1157													

Note 1) For the A, B, and C series, if you need other lengths than the above, please consult us.

Note 2) The E series is molded; if you need other lengths than the above, please consult us.

Z series	For the standard effective lengths, please contact us.

Table 3 Thickness

(Unit: mm)

A series		B series		C series		Z series		E series
A-1	±0.05	B-2 B-3 B-6	±0.1	C-8 C-16	±0.1	Z-H250X	±0.1	±0.05
A-4,A-10,A-13	±0.1							

Table 4 Widths

(Unit: mm)

Manufactured dimensions	Manufacturing tolerance					
	A series	B series	C series	Z series	Manufactured dimensions	E series
Less than 30	±0.5	±0.5	±0.5	±0.5	Less than 12	±0.3
30 to less than 100	±1.0	±1.0	±1.0	±1.0	12 to less than 20	±0.5
100 to less than 150	±1.5	±1.5	±1.5	±1.5	20 to less than 100	±1.0
150 to less than 200	±2.0	±2.0	±2.0	±2.0	100	±1.5
200〜	±2.5	±2.5	±2.5	±2.5		

Table 5 Inside lengths

(Unit: mm)

Manufactured dimensions	Manufacturing tolerance					
	A series	B series	C series	Z series	Manufactured dimensions	E series
Less than 300	±2	±2	±2	—	Less than 200	±2
300 to less than 600	±3	±3	±3	±5	200 to less than 400	±3
600 to less than 800	±4	±4	±4	±6	400 to less than 600	±5
800 to less than 1000	±5	±5	±5	±7	600 to less than 800	±6
1000	±0.5%	±0.5%	±0.5%	±0.5%	800 to less than 1000	±8
					1000	±0.8%

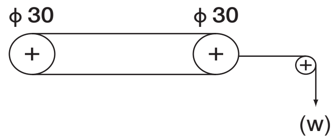
Note 1) If you need an accuracy higher than the above tolerance, please consult us.

Note 2) Matching tolerance: The tolerance between matches is as shown above. For tolerances within a match, 1 mm for a length of 1000 mm or less and 2 mm for longer lengths are available; please contact us.

Table 6 Table of measured loads (W) for inside length of belt

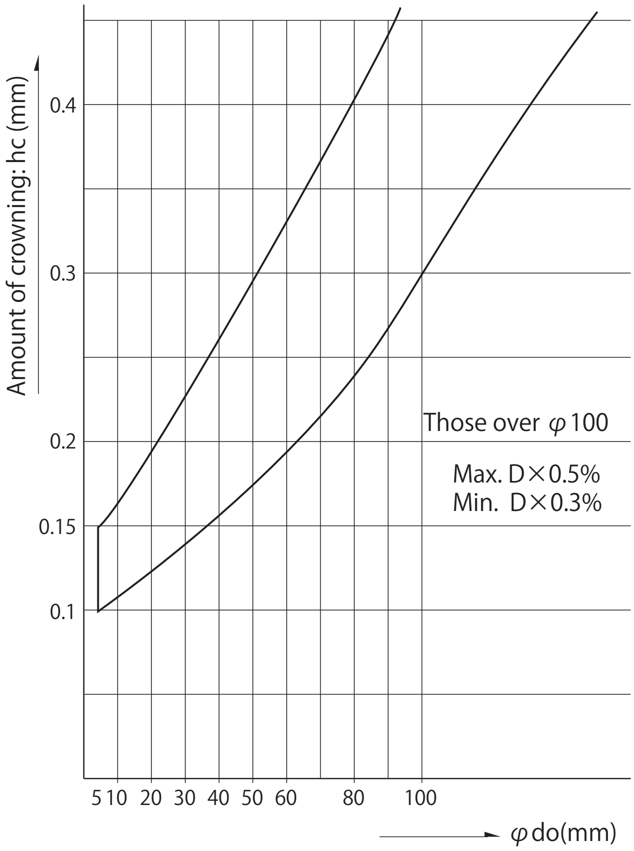
(Unit: N/mm width)

Belt type	Measured load	Belt type	Measured load	Belt type	Measured load	Belt type	Measured load
A-1	0.5	C-8,C-16	0.3	E-8U (1.0-mm thickness)	0.25	Z-H250X	0.98
A-10,A-13	2.0	E-8U (0.65-mm thickness)	0.15	EXL-101 (0.65-mm thickness)	0.15		
A-4,B-2,B-3,B-6	1.0	E-8U (0.8-mm thickness)	0.20				



About Pulleys

■ Pulley crown height
- Obtain a crown height from the graph on the right.



■ Pulley surface finish
- We recommend approximately 3S to 6S as the surface finish roughness.

■ Pulley width
- We recommend a pulley width that is obtained with the following equation.

Pulley width (bp) = 1.1 × b + 5 (mm)

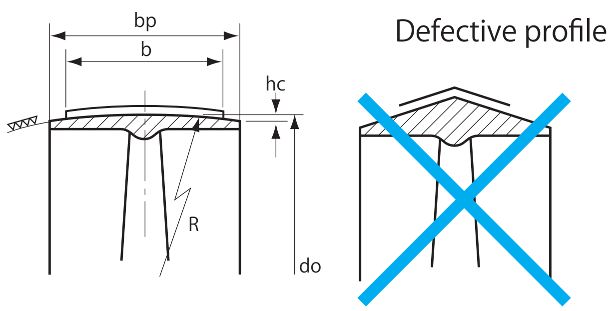
b : Belt width

■ Obtain the radius of curvature (R) of the pulley surface with the following equation. (This equation is applied to Types A to C.)

$$R \approx \frac{bp^2}{8hc} \text{(mm)}$$

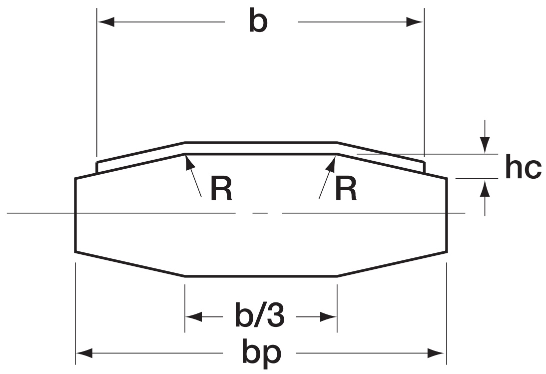
(Note) For a wide belt (length / width < 12), measures may be required such as increasing the amount of crowning over the value shown in the graph on the right for belt side tracking prevention; however, there is a possibility of a reduction in transmission capacity and service life. Please be careful.

■ Pulley profile
- Use a symmetrical profile as shown in the right figure.
- Avoid a conical crown as it reduces the belt service life.



bp : Pulley width
b : Belt width
hc : Crown height
do : Pulley outside diameter
R : Radius of curvature

■ In the case of a wide conveyance belt



* Do not use a flange on the pulleys.

Precautions for Designing and Use

■ Environmental conditions

Use belts within the belt operating temperatures shown on **P. 320.**
At temperatures of the minimum operating temperature or less, belts may harden, and at temperatures of the maximum operating temperature or more, the service life may become shorter.

Avoid use in the presence of oil, chemicals, solvents, or the like.

Avoid use for applications in which the belt comes in direct contact with food stuffs.

However, B-2UF has passed Notice No. 20 of the Ministry of Health and Welfare and therefore is suitable for applications in which the belt comes in direct contact with food stuffs.

■ Pulley shaft misalignment

Pulley shaft misalignment (parallelism and eccentricity) can cause breakage due to belt meander or detachment from the pulleys; adjust the alignment within 20′ accurately.

■ Safety cover

Be sure to install a safety cover to prevent belt damage and accidents due to entrapment of foreign objects or other causes. However, complete sealing increases the temperature and affects the belt service life; provide sufficient ventilation.

■ Belt inspection

Be sure to turn off the power supply and wait until the rotation stops completely before maintaining and inspecting belts.

■ Belt storage

To prevent belts from setting and to avoid the effect of humidity and direct sunlight, it is ideal to store belts wrapped in the polyethylene bag that was used for delivery, in a well-ventilated, cool, and dark place.

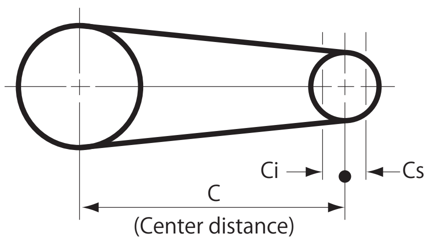
About Minimum Adjustment Range of Center Distance

For belt installation and tension adjustment, the drive device requires a device that adjusts the center distance. (A and B series)
Depending on the effective length, a sliding space for belt installation (Ci) on the inner side than the appropriate position and a sliding space for tension adjustment (Cs) on the outer side than the appropriate position are required.

Table of minimum adjustment ranges of center distance

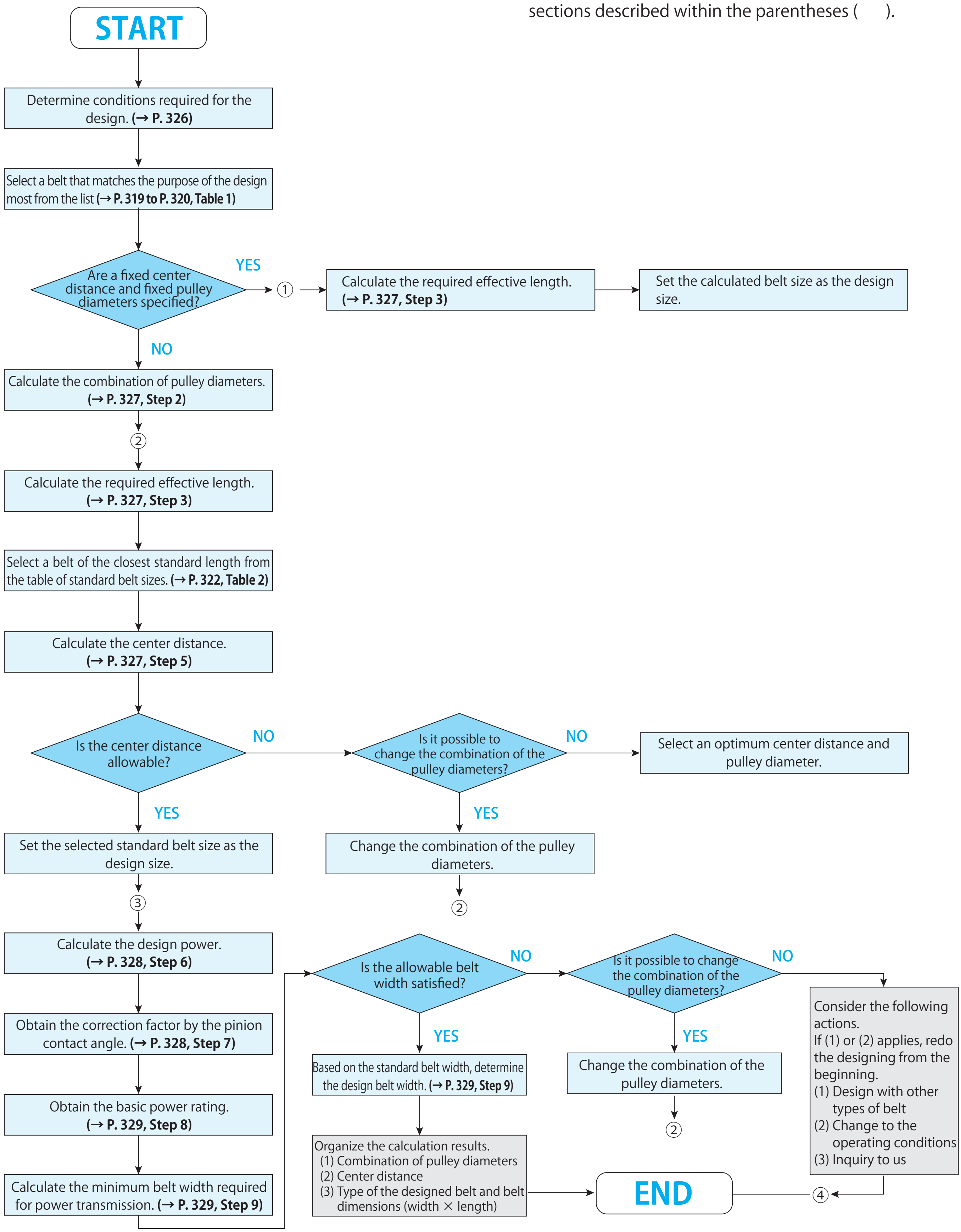
(Unit: mm)

Belt Dimensions	Inner adjustment range Ci	Outer adjustment range Cs
Less than 500	2	4
500 to less than 1000	4	8
1000 to less than 1500	8	12
1500 to less than 2000	10	15
2000 to less than 2500	12	18
2500～	Belt inside length × 0.8%	Belt inside length × 1%



Flow Chart for Belt Design

1) This design flow chart is applied to a two-shaft transmission device for the PS belt.
2) For details on each design step, refer to the pages and sections described within the parentheses (   ).



Conditions Required for Belt Design

Designing of a PS belt requires the following conditions.
(sections are “must” conditions for design.)

<table>
<tr><td>Machinery name</td><td></td><td>Location of use of belt</td><td colspan="2"></td></tr>
<tr><td>Driving machine</td><td>• Motor type
• Others</td><td>Driven power</td><td>• Normal
• Maximum</td><td>PS
kW
W
N•m
N•mm</td></tr>
<tr><td>Driving pulley</td><td>• (Outside diameter / Pitch diameter) mm × rpm
• Flange Use / Not use • Pulley/crown (hc)</td><td>Driven pulley</td><td colspan="2">• (Outside diameter / Pitch diameter) mm × rpm
• Flange Use / Not use • Pulley/crown (hc)</td></tr>
<tr><td>Power transmission characteristics</td><td>• Torque constant • Horsepower constant</td><td colspan="3">When the revolution of driving shaft changes, please let us know.</td></tr>
<tr><td>Tension pulley</td><td>• Use ϕ mm (Inside / Outside) (Slack side / Tight side)
• Not use</td><td>Pulley space</td><td colspan="2">Limitation • Maximum dia. mm ②
• Maximum width mm</td></tr>
<tr><td>Center distance</td><td>± mm
• [Enter ±0 mm when using the belt with a fixed center distance]</td><td>Operating time</td><td colspan="2">• Ⅰ Intermittent use (3 to 5 hrs/day or seasonal)
• Ⅱ Normal use (8 to 10 hrs/day)
• Ⅲ Continuous use (16 to 24 hrs/day)</td></tr>
<tr><td>Allowable belt tension</td><td colspan="4">N/pc (2Fr)</td></tr>
<tr><td>Schematic drawing of use

Enter the power transmission type.
① Other than two shafts
② Special power transmission system
- Parallel multiple belt use
- Quarter turn
③ Application other than power transmission
- What do you convey and how?
- Others
④ Special profile
⑤ Sandwiched conveyance</td><td colspan="4">Enter the type of the belt that drives the PS belt.

①</td></tr>
<tr><td>Sudden stop / sudden acceleration</td><td colspan="4">• Yes
• No
• Is the brake on the driving side or the driven side?
Time until: • Sudden stop • Sudden acceleration sec
• $GD^2 =$ kg•m^2
(GD^2 means the flywheel effect.)</td></tr>
<tr><td>Especially required characteristics
(Circle applicable items.)</td><td colspan="4">1. Heat resistance
2. Cold resistance
3. Oil resistance
4. Water resistance
5. Chemical resistance
6. Abrasion resistance
7. Dist particle resistance
8. Ozone resistance
9. Pulsating load resistance
10. Shock absorption
11. Reverse rotation
12. Rotation (conveyance) accuracy
13. Dimensional accuracy
14. Electrical resistance
15. Flame resistance
16. Compactness
17. Low noise
18. Belt mark
19. Belt color
20. No rubber dropping
21. No meander
22. Alignment
23. Lighter weight
24. Maintenance-free
25. Standard of Notice No. 20 of the Ministry of Health, Labour and Welfare
26. Belt thickness
27. Friction factor

Enter specific details and standards of the requirements for circled items.</td></tr>
<tr><td></td><td>Required service life (reliability)</td><td colspan="3">(hours %)</td></tr>
</table>

PS Belt Design Procedure

Step 1. Conditions required for PS belt design

When designing a PS belt, determine the **design conditions** on **P. 326**.

Step 2. Combination of pulley diameters

Obtain the optimum combination of pulley diameters with Formula 1.

Formula 1

$$i=\frac{do+2a}{Do+2a}$$

i : Speed ratio
do : Pinion outside diameter (mm)
Do : Large-pulley outside diameter (mm)
2a : Difference between pulley outside diameter and pitch diameter (mm) **(Table 7)**

From **Table 7**, obtain the difference between pulley outside diameter and pitch diameter (2a).

Step 3. Calculating the effective length

Obtain the required effective length with Formula 2.

Formula 2

$$Li=\frac{2C+1.57(Do+do)+\frac{(Do-do)^2}{4C}}{1+\varepsilon}$$

Li : Belt inside length (mm)
C : Center distance (mm)
do : Pinion outside diameter (mm)
Do : Large-pulley outside diameter (mm)
ε : Stretch rate **(Table 8)**

From **Table 8**, obtain the stretch rate (ε).
I) When you use other stretch rates than the standard stretch rate, the belt service life and transmission capability change; please contact us.

Step 4. Selecting the standard inside length

Select a belt with a standard inside length closest to the required belt inside length from **Table 2** **(→ P. 322)**.

Step 5. Calculating the center distance

Obtain the center distance from the determined belt inside length with Formula 3.

Formula 3

$$C=\frac{B+\sqrt{B^2-2(Do-do)^2}}{4}$$

$$B=Li(1+\varepsilon)-1.57(Do+do)$$

C : Center distance (mm)
do : Pinion outside diameter (mm)
Do : Large-pulley outside diameter (mm)
Li : Belt inside length (mm)
ε : Stretch rate **(Table 8)**

Table 7 Table of a values

(Unit: mm)

Belt type	a	Belt type	a
A-1	0.11	B-2	0.40
A-C, A-4N	0.30	B-3	0.30
A-4U	0.20	B-6	0.50
A-10	0.50	C-8C, C-8N	0.35
A-13	0.55	C-8U	0.30
		C-16C, C-16N	0.35
		C-16U	0.30
		E-8U, EXL-101	1/2 of the overall thickness

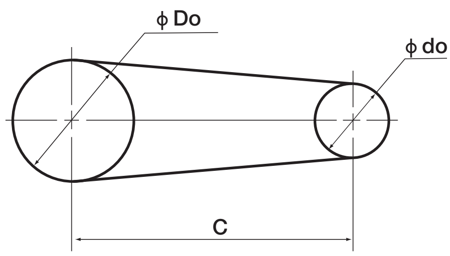


Table 8 Table of (ε) standard stretch rates

Belt series	A	B	C	E
Stretch rate	0.005	0.01	0.02	0.05

Step 6. Calculating the design power

Obtain the design power Pd with Formula 4.

Formula 4

$$Pd = Pt \times Ko$$

Pd : Design power		(kW)
Pt : Transmission power		(kW)
Ko : Load correction factor		**(Table 9)**

1) From **Table 9**, select a load correction factor Ko that is suitable for the machine to be designed and its operating conditions.
2) When the machine name cannot be found in **Table 9**, use the load correction factor of a machine with a similar load fluctuation etc.

Table 9 Table of load correction factors (Ko)

Duty cycle / Machinery name	Intermittent use	Normal use	Continuous use
	3 to 5 hrs/day or seasonal use	8~10Hrs/day	16~24Hrs/day
- Audio equipment - Communication equipment - Cassette tape winding machines - Balancing machines - Line printers - Copiers	1.0	1.1	1.2
- Vending machines - Automatic ticket gates - Card readers - Magnetic discs - Printers - Yarn-twisting machines - Automatic packaging machines	1.1	1.2	1.3
- Fiber machines - Grinders - Machining centers - Router machines - Deposit automatic reception/payment machines	1.3	1.4	1.5

Step 7. Correction factor by the pinion contact angle.

From Formula 5, obtain the angle of contact of the pinion $\theta 1$.
Then, from **Fig. 1**, obtain the correction factor $K\theta$.

Formula 5

$$\theta_1 = 180 - \frac{57(Do - do)}{C}$$

θ_1 : Angle of contact of pinion	(°)
Do : Large-pulley outside diameter	(mm)
do : Pinion outside diameter	(mm)
C : Center distance	(mm)

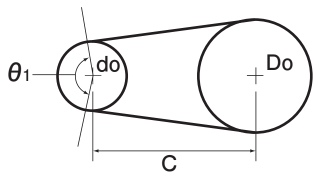
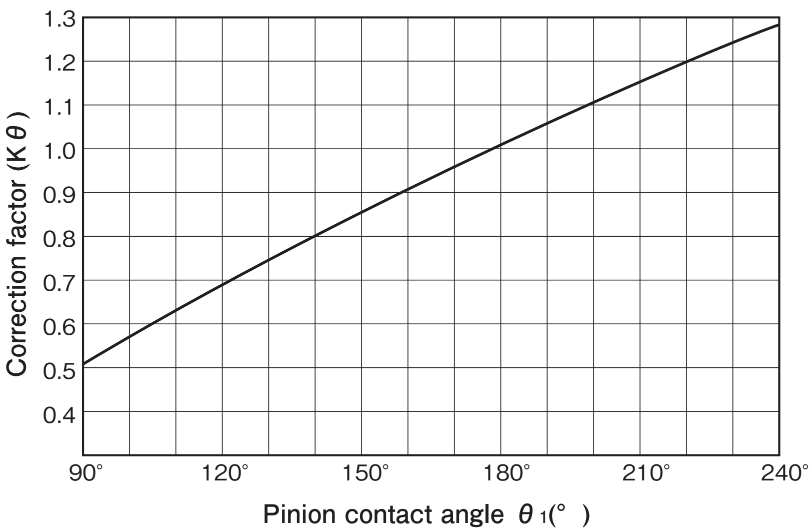


Fig. 1 Correction factor by the pinion contact angle ($K\theta$)



PS Belt Design Procedure

Step 8. Calculating the basic power rating

From Formula 6 or **Tables 12 to 15 (→ P. 330)**, obtain the basic power rating.

Formula 6

$$Pr = dp \times n\left[C_1 - C_2(dp_1 \times n)^2\right]$$

Pr	: Basic power rating	(kW)
dp1	: Pinion pitch diameter	(mm)
n	: Pinion revolution (rpm) $\times \frac{1}{1000}$	
C_1 and C_2	: (Table 10)	

1) When you use the A series with the standard stretch rate, obtain the basic power rating from **Table 12 to Table 15** and for the basic power rating for other cases, obtain it with Formula 6.
2) When the power of the transmission device is indicated in torque (moment of rotation), convert it into power with Formula 7.
3) As the E series is for conveyance, Formula 6 is not used.

Formula 7

$$Pt = \frac{n \times Tr}{9550}$$

Pt	: Driven power	(kW)
n	: Pinion revolution (rpm) $\times \frac{1}{1000}$	
Tr	: Load torque	(N•m)

Step 9. Calculating the belt width

Calculate the minimum belt width required for power transmission with Formula 8 and roundup the obtained width to the standard width indicated in **Table 11**.

Formula 8

$$b = \frac{10 \times Pd}{Pr \times K\theta_1}$$

b	: Minimum belt width	(mm)
Pd	: Design power	(kW)
Pr	: Basic power rating	(kW/cm width)
$K\theta_1$	: Pinion contact angle correction factor	

Table 10　Table of C_1 and C_2 values

Belt type \ Stretch rate used (%)		0.5	1.0	2.0	3.0
A-1	C_1	Table 12	13.54×10^{-4}	—	—
	C_2		3.16×10^{-12}	—	—
A-4	C_1	Table 13	20.31×10^{-4}	—	—
	C_2		8.84×10^{-12}	—	—
A-10	C_1	Table 14	19.65×10^{-4}	—	—
	C_2		13.9×10^{-12}	—	—
A-13	C_1	Table 15	76.73×10^{-4}	—	—
	C_2		15.2×10^{-12}	—	—
B-2	C_1	—	6.77×10^{-4}	11.28×10^{-4}	13.54×10^{-4}
	C_2	—	11.4×10^{-12}	11.4×10^{-12}	11.4×10^{-12}
B-3	C_1	—	15.80×10^{-4}	27.08×10^{-4}	31.60×10^{-4}
	C_2	—	8.84×10^{-12}	8.84×10^{-12}	8.84×10^{-12}
B-6	C_1	—	40.62×10^{-4}	63.19×10^{-4}	81.25×10^{-4}
	C_2	—	13.9×10^{-12}	13.9×10^{-12}	13.9×10^{-12}
C-8	C_1	—	—	3.39×10^{-4}	4.51×10^{-4}
	C_2	—	—	10.1×10^{-12}	10.1×10^{-12}
C-16	C_1	—	—	6.77×10^{-4}	9.03×10^{-4}
	C_2	—	—	10.1×10^{-12}	10.1×10^{-12}

Table 11　Table of standard widths

(Unit: mm)

Belt type \ Standard width	3	5	7	10	15	20	25	30	40	50	75	100	150	200
A-1	○	○	○	○	○	○								
A-4		○	○	○	○	○	○	○						
A-10				○	○	○	○	○	○	○				
A-13				○	○	○	○	○	○	○	○			
B-2			○	○	○	○	○	○	○	○	○	○		
B-3			○	○	○	○	○	○	○	○	○	○		
B-6				○	○	○	○	○	○	○	○	○		
C-8	○	○	○	○	○	○	○	○						
C-16	○	○	○	○	○	○	○	○						
E-8U/EXL-101	E series standard width: 8, 10, 12, 14, 16													

Note) When the standard widths cannot be applied due to the machinery design, we will cut the belt to a desired width; please consult us.

Table 12 Table of basic power ratings for PS belt Type A-1 (kW/cm width)

Pulley revolution (rpm) \ Pulley outside diameter (mm)	5	10	15	20	25	30	35	40	45	50
950	0.002	0.005	0.009	0.013	0.018	0.023	0.029	0.035	0.042	0.048
1160	0.003	0.006	0.011	0.016	0.022	0.028	0.035	0.043	0.051	0.059
1425	0.003	0.008	0.013	0.019	0.026	0.034	0.043	0.052	0.062	0.072
1750	0.004	0.009	0.016	0.023	0.032	0.042	0.052	0.064	0.075	0.088
2850	0.006	0.015	0.026	0.038	0.052	0.067	0.084	0.101	0.120	0.139
3450	0.008	0.018	0.031	0.045	0.062	0.080	0.100	0.121	0.143	0.165
500	0.001	0.003	0.005	0.007	0.009	0.012	0.015	0.019	0.022	0.026
600	0.001	0.003	0.005	0.008	0.011	0.015	0.018	0.022	0.026	0.031
700	0.002	0.004	0.006	0.009	0.013	0.017	0.021	0.026	0.031	0.036
800	0.002	0.004	0.007	0.011	0.015	0.019	0.024	0.030	0.035	0.041
900	0.002	0.005	0.008	0.012	0.017	0.022	0.027	0.033	0.039	0.046
1000	0.002	0.005	0.009	0.014	0.019	0.024	0.030	0.037	0.044	0.051
1200	0.003	0.006	0.011	0.016	0.022	0.029	0.036	0.044	0.052	0.061
1400	0.003	0.007	0.013	0.019	0.026	0.034	0.042	0.051	0.061	0.071
1600	0.004	0.009	0.014	0.022	0.030	0.038	0.048	0.058	0.069	0.080
1800	0.004	0.010	0.016	0.024	0.033	0.043	0.054	0.065	0.077	0.090
2000	0.005	0.011	0.018	0.027	0.037	0.048	0.060	0.072	0.086	0.100
2500	0.006	0.013	0.022	0.033	0.046	0.059	0.074	0.089	0.106	0.123
3000	0.007	0.016	0.027	0.040	0.054	0.070	0.088	0.106	0.125	0.146
3500	0.008	0.018	0.031	0.046	0.063	0.081	0.101	0.122	0.144	0.167
4000	0.009	0.021	0.035	0.052	0.071	0.092	0.115	0.138	0.163	0.188
4500	0.010	0.023	0.040	0.059	0.080	0.103	0.127	0.153	0.181	0.208
5000	0.011	0.026	0.044	0.065	0.088	0.113	0.140	0.168	0.198	0.228
7500	0.017	0.038	0.064	0.094	0.126	0.161	0.197	0.234	0.272	0.309
10000	0.022	0.050	0.084	0.121	0.161	0.202	0.244	0.285	0.325	0.362
20000	0.043	0.094	0.149	0.202	0.250	0.289	0.314	0.324	0.315	0.289
30000	0.062	0.130	0.191	0.237	0.258	0.249	0.209	0.142		
40000	0.080	0.156	0.210	0.244	0.192					
50000	0.096	0.174	0.205							

Table 13 Table of basic power ratings for PS belt Type A-4 (kW/cm width)

Pulley revolution (rpm) \ Pulley outside diameter (mm)	10	20	30	40	50	60	70	80	90	100
950	0.006	0.016	0.026	0.038	0.052	0.068	0.089	0.103	0.122	0.142
1160	0.008	0.018	0.031	0.046	0.063	0.082	0.103	0.124	0.147	0.171
1425	0.010	0.022	0.038	0.057	0.077	0.100	0.125	0.151	0.178	0.207
1750	0.012	0.027	0.047	0.069	0.094	0.122	0.151	0.182	0.214	0.248
2850	0.019	0.044	0.074	0.109	0.147	0.188	0.232	0.276	0.321	0.337
3450	0.023	0.053	0.089	0.130	0.174	0.221	0.270	0.319	0.368	0.415
500	0.003	0.008	0.014	0.020	0.028	0.036	0.045	0.055	0.066	0.076
600	0.004	0.010	0.016	0.024	0.033	0.043	0.054	0.066	0.078	0.091
700	0.005	0.011	0.019	0.028	0.039	0.050	0.063	0.077	0.091	0.106
800	0.005	0.013	0.022	0.032	0.044	0.057	0.072	0.087	0.103	0.120
900	0.006	0.014	0.024	0.036	0.050	0.064	0.081	0.098	0.116	0.135
1000	0.007	0.016	0.027	0.040	0.055	0.071	0.089	0.108	0.128	0.149
1200	0.008	0.019	0.032	0.048	0.066	0.085	0.106	0.129	0.152	0.177
1400	0.009	0.022	0.038	0.056	0.076	0.099	0.123	0.148	0.175	0.203
1600	0.011	0.025	0.043	0.063	0.086	0.112	0.139	0.168	0.198	0.229
1800	0.012	0.028	0.048	0.071	0.097	0.125	0.155	0.187	0.220	0.254
2000	0.013	0.031	0.053	0.078	0.107	0.137	0.170	0.205	0.241	0.278
2500	0.017	0.039	0.066	0.097	0.131	0.168	0.207	0.248	0.290	0.333
3000	0.020	0.046	0.078	0.114	0.154	0.197	0.242	0.287	0.334	0.380
3500	0.023	0.054	0.090	0.131	0.176	0.224	0.273	0.322	0.371	0.419
4000	0.027	0.061	0.102	0.148	0.197	0.249	0.301	0.353	0.402	0.449
4500	0.030	0.068	0.113	0.163	0.217	0.271	0.326	0.378	0.427	0.470
5000	0.033	0.075	0.124	0.178	0.235	0.292	0.347	0.398	0.444	0.482
7500	0.049	0.109	0.175	0.241	0.304	0.357	0.397	0.419	0.419	0.395
10000	0.064	0.139	0.215	0.282	0.333	0.358	0.351	0.307		
20000	0.118	0.218	0.260	0.213						
30000	0.159	0.226	0.127							
40000	0.185	0.163								
50000	0.196									

Table 14 Table of basic power ratings for PS belt Type A-10 (kW/cm width)

Pulley revolution (rpm) \ Pulley outside diameter (mm)	15	30	45	60	75	90	105	120	135	150
950	0.02	0.05	0.09	0.14	0.19	0.25	0.31	0.37	0.44	0.51
1160	0.03	0.07	0.11	0.17	0.23	0.30	0.37	0.45	0.53	0.61
1425	0.04	0.08	0.14	0.20	0.26	0.36	0.45	0.54	0.63	0.73
1750	0.04	0.10	0.17	0.25	0.34	0.43	0.53	0.64	0.75	0.86
2850	0.07	0.16	0.27	0.39	0.52	0.65	0.79	0.93	1.07	1.20
3450	0.08	0.19	0.32	0.45	0.60	0.75	0.90	1.05	1.19	1.31
500	0.01	0.03	0.05	0.07	0.10	0.13	0.17	0.20	0.24	0.28
600	0.01	0.03	0.06	0.09	0.12	0.16	0.20	0.24	0.28	0.33
700	0.02	0.04	0.07	0.10	0.14	0.18	0.23	0.28	0.33	0.38
800	0.02	0.05	0.08	0.12	0.16	0.21	0.26	0.32	0.37	0.43
900	0.02	0.05	0.09	0.13	0.18	0.23	0.29	0.35	0.42	0.48
1000	0.02	0.06	0.10	0.15	0.20	0.26	0.32	0.39	0.46	0.53
1200	0.03	0.07	0.12	0.17	0.24	0.31	0.38	0.46	0.54	0.63
1400	0.03	0.08	0.14	0.20	0.27	0.35	0.44	0.53	0.62	0.72
1600	0.04	0.09	0.15	0.23	0.31	0.40	0.49	0.59	0.70	0.80
1800	0.04	0.10	0.17	0.25	0.35	0.43	0.55	0.66	0.77	0.88
2000	0.05	0.11	0.19	0.28	0.38	0.49	0.60	0.72	0.84	0.96
2500	0.06	0.14	0.24	0.34	0.46	0.59	0.72	0.85	0.98	1.12
3000	0.07	0.17	0.28	0.40	0.54	0.68	0.82	0.97	1.40	1.24
3500	0.08	0.19	0.32	0.46	0.61	0.76	0.91	1.06	1.19	1.32
4000	0.10	0.22	0.36	0.51	0.67	0.83	0.98	1.13	1.25	1.35
4500	0.11	0.24	0.40	0.56	0.73	0.89	1.04	1.17	1.27	1.34
5000	0.12	0.27	0.43	0.61	0.78	0.94	1.08	1.19	1.26	1.30
7500	0.18	0.38	0.59	0.77	0.92	1.04	1.02	0.95		
10000	0.23	0.47	0.69	0.83	0.88	0.80				
20000	0.40	0.64	0.58	0.21						
30000	0.51	0.50								
40000	0.54									
50000	0.51									

Table 15 Table of basic power ratings for PS belt Type A-13 (kW/cm width)

Pulley revolution (rpm) \ Pulley outside diameter (mm)	20	40	60	80	100	120	140	160	180	200
950	0.05	0.11	0.19	0.28	0.39	0.50	0.62	0.75	0.88	1.02
1160	0.06	0.14	0.23	0.34	0.47	0.60	0.74	0.90	1.05	1.22
1425	0.07	0.17	0.28	0.41	0.56	0.72	0.89	1.07	1.25	1.44
1750	0.09	0.20	0.34	0.50	0.68	0.86	1.06	1.27	1.48	1.69
2850	0.14	0.32	0.53	0.77	1.02	1.27	1.52	1.77	2.00	2.21
3450	0.17	0.38	0.63	0.90	1.17	1.44	1.69	1.93	2.13	2.29
500	0.03	0.06	0.10	0.15	0.21	0.27	0.34	0.41	0.49	0.57
600	0.03	0.07	0.12	0.18	0.25	0.32	0.40	0.49	0.58	0.67
700	0.04	0.08	0.14	0.21	0.29	0.37	0.47	0.56	0.67	0.78
800	0.04	0.10	0.16	0.24	0.33	0.42	0.53	0.64	0.76	0.88
900	0.05	0.10	0.18	0.27	0.37	0.47	0.59	0.71	0.84	0.97
1000	0.05	0.12	0.20	0.30	0.40	0.52	0.65	0.78	0.92	1.07
1200	0.06	0.14	0.24	0.35	0.48	0.62	0.77	0.92	1.09	1.25
1400	0.07	0.16	0.28	0.41	0.55	0.71	0.88	1.05	1.24	1.42
1600	0.08	0.19	0.31	0.46	0.62	0.80	0.99	1.18	1.38	1.58
1800	0.09	0.21	0.35	0.51	0.69	0.89	1.09	1.29	1.51	1.72
2000	0.10	0.23	0.39	0.57	0.76	0.97	1.18	1.40	1.63	1.85
2500	0.13	0.29	0.48	0.69	0.92	1.16	1.40	1.64	1.87	2.10
3000	0.15	0.34	0.56	0.80	1.06	1.32	1.57	1.82	2.04	2.24
3500	0.17	0.39	0.64	0.91	1.18	1.45	1.71	1.94	2.13	2.29
4000	0.20	0.44	0.71	1.00	1.29	1.56	1.80	2.00	2.15	2.23
4500	0.22	0.49	0.78	1.09	1.38	1.64	1.85	2.00	2.09	2.03
5000	0.24	0.53	0.85	1.16	1.45	1.69	1.86	1.95	1.95	1.86
7500	0.35	0.74	1.10	1.38	1.54	1.54	1.37			
10000	0.45	0.90	1.23	1.35	1.24					
20000	0.76	1.04								
30000	0.90									
40000	0.88									
50000										

Note) When your operating conditions do not apply to the pulley diameters and revolutions shown in the above tables, perform linear correction from the closest value, respectively. (Proportional distribution)

PS Belt

PS Belt Design Example

Condition		Examination result
1. Consideration for ozone resistance is required. 2. Machine name: Micro-printer roller drive 3. Load: 320 N•mm max 4. Duty cycle: Normal use (8 to 10 hrs/day) 5. Revolution: 500 rpm at ϕ60 on the driving side	6. Revolution ratio 1:1.5 deceleration 7. Center distance: 90 mm 8. Pulley outside diameter: Specified Driving side ϕ60, Driven side ϕ90 9. Allowable belt width: 9 mm max	- Belt specification: A-4CB - Belt size: $0.6^t \times 7^W \times 416^L$ (mm) - Stretch rate used: 0.5%

Step 1. Selecting from the List of Types

As this is for driving, select the **A series (→P. 319 to P. 320)** and select A-4CB from the necessity for ozone resistance.

Here, start with **A-4C.**

Step 2. Calculating the Required Effective Length

(As pulleys have been selected, proceed to ① of the flow chart.)

From Formula 2 **(→ P. 321)**, $L_1 = \dfrac{2\times90+1.57\,(60+90) + \dfrac{(90-60)^2}{4\times90}}{1+0.005}$

[For the stretch rate used, use 0.5% of the standard.]

= 415.9 mm - 416 mm

As there is no standard size, use **416 mm**.

Effective length = **416 mm**

Step 3. Calculating the Design Power

(Since the effective length was determined, proceed to ③ of the flow chart.)
Because the load is given in torque, convert it into power.

From Formula 7 **(→ P. 329)**, $Pt = \dfrac{\dfrac{500}{1000}\times320}{9550} = 167.54 \times 10^{-4}$ kW

From **Table 9 (→ P. 328)**, obtain the load correction factor Ko. → **1.1**

From Formula 4 **(→ P. 328)**, **Pd** = 167.54 × 10^{-4} × 1.1 = **184.29 × 10^{-4} kW**

Pd = **184.29 × 10^{-4} kW**

Step 4. Obtaining the Correction Factor by the Pinion Contact Angle

From Formula 5 **(→ P. 328)**, $\theta_1 = 180\ \dfrac{57(90-60)}{90} = 161°$

From **Fig. 1 (→ P. 328)**, Kθ = **0.91**

Kθ = **0.91**

Step 5. Obtaining the Basic Power Rating

Assuming the belt is A-4CB and the stretch rate used is 0.5%
From the table of basic power ratings in **Table 13 (→ P. 330)**, obtain the basic power rating when the pinion revolution is 500 rpm and the pinion outside diameter is 60 mm.

Pr = **360 × 10^{-4} kW**

Step 6. Obtaining the Belt Width

From Formula 8 **(→ P. 329)**, $b = \dfrac{10\times167.54\times10^{-4}}{360\times10^{-4}\times0.91} = 5.6$ mm

When the standard width is obtained from **Table 11 (→ P. 329)**, the width is **7 mm**.

b = **7 mm**

Check of the Pulley Width and Belt Width

From the **pulley width calculation equation (→ P. 323)**, obtain the optimum pulley width for the belt with a width of 7 mm.

7 × 1.1 + 5 = 12.7 mm → **13 mm**

br = **13 mm**

Belt specification $\boxed{\text{A-4CB} \quad 0.6^t\times7^W\times416^L}$

The stretch rate used is 0.5%.

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