

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

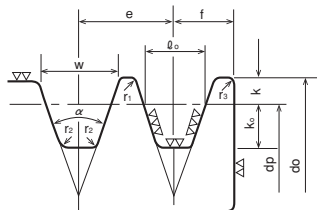


Table 1 Standard pulley groove dimensions

Type	Pulley pitch diameter (dp)	α (°)	l_o	(w)	k	ko	e	f	r_1	r_2	r_3	(Reference) Belt thickness
M	50~71	34	8.0	9.65	2.7	6.3	*	9.5	0.2~0.5	0.5~1.0	1~2	5.5
	72~90	36		9.75								
	91 or more	38		9.86								
A	71~100	34	9.2	11.95	4.5	8.0	15.0	10.0	0.2~0.5	0.5~1.0	1~2	8
	101~125	36		12.12								
	126 or more	38		12.30								
B	125~160	34	12.5	15.86	5.5	9.5	19.0	12.5	0.2~0.5	0.5~1.0	1~2	10.3
	161~200	36		16.07								
	201 or more	38		16.29								
C	200~250	34	16.9	21.18	7.0	12.0	25.5	17.0	0.2~0.5	1.0~1.6	2~3	13.5
	251~315	36		21.45								
	316 or more	38		21.72								
D	355~450	36	24.6	30.77	9.5	15.5	37.0	24.0	0.2~0.5	1.6~2.0	3~4	19
	451 or more	38		31.14								
E	500~630	36	28.7	36.95	12.7	19.3	44.5	29.0	0.2~0.5	1.6~2.0	4~5	23
	631 or more	38		37.45								

(Unit: mm)

(Note) For Type M, only one belt should be used in principle.

Table 2 Deep pulley groove dimensions

Type	Pulley pitch diameter (dp)	α (°)	l_o	(w)	k	ko	e	f	r_1	r_2	r_3
A	71~100	34	9.2	14.40	8.5	8.0	18	12	0.2~0.5	0.5~1.0	1~2
	101~125	36		14.72							
	126 or more	38		15.05							
B	125~160	34	12.5	18.61	10.0	9.5	22	14.5	0.2~0.5	0.5~1.0	1~2
	161~200	36		19.00							
	201 or more	38		19.39							
C	200~250	34	16.9	25.46	14.0	12.0	31.5	20	0.2~0.5	1.0~1.6	2~3
	251~315	36		26.00							
	316 or more	38		26.54							
D	355~450	36	24.6	37.27	19.5	15.5	45	29	0.2~0.5	1.6~2.0	3~4
	451 or more	38		38.03							
E	500~630	36	28.7	44.10	23.7	19.3	52.5	34	0.2~0.5	1.6~2.0	4~5
	631 or more	38		45.02							

(Unit: mm)

● 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**

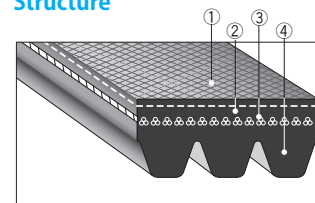
Heat resistance: It compounds heat-resistant rubber.

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.

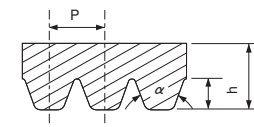
Structure



1. Top canvas
2. Adhesion rubber
3. Cord
4. Rib rubber

Indication

■ Belt designation example
4 PK 1000



No. of ribs Effective length (1000 mm)

Belt type (Type PK)

	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

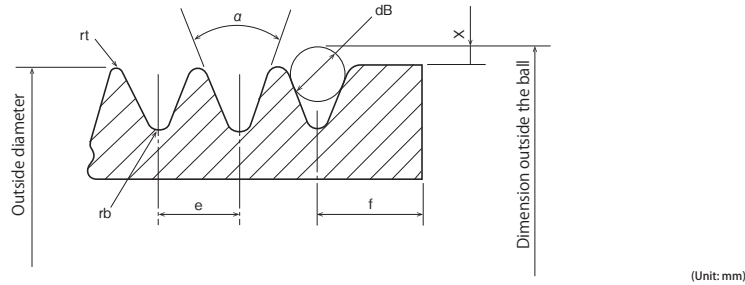
* When using multiple belts, please specify a matched set. However, please note that Rib-Ace is used in a multiple quantity with the same number of ribs.

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	e (mm)	f (minimum) (mm)	α (°)	rt (minimum) (mm)	rb (maximum) (mm)	dB (mm)	2X (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

(Unit: mm)

Note 1) A cumulative pitch error is ±0.3 mm or less.

Outside diameter

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])

(Unit: mm)

Groove outside diameter of a single pulley Tolerance of (the dimension outside the ball)

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.)

(Unit: mm)

Circumferential run-out

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

(Unit: mm)

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

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

(Unit: mm)

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 ㉑ or ㉒ is used as the tolerance.

- ㉑ 0.001 kg
 - ㉒ 0.1% of the total mass of the pulley and the bushing
- The value of ㉒ 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 "ISOMECE™ 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.

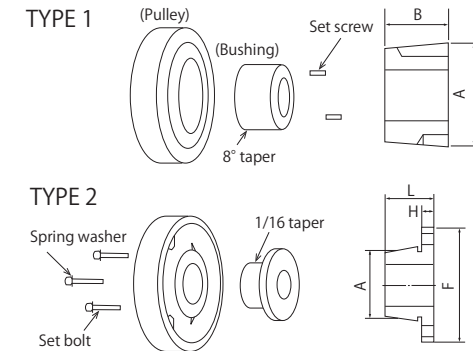


Table of Type 1 ISOMECE™ Bushing dimensions

Bushing part number	Maximum shaft hole dia. ^{mm} (mm)	A (mm)	B (mm)	Set screw				Mass ^{kg} (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

(Unit: mm)

Table of Type 2 ISOMECE™ Bushing dimensions

Bushing part number	Maximum shaft hole dia. ^{mm} (mm)	A (mm)	B (mm)	F (mm)	L (mm)	H (mm)	Set bolt				Mass ^{kg} (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.

How to designate pulleys and bushings

Pulley (example) **PK - 80 - 4**
 Type PK | No. of grooves
 Pulley nominal diameter (80 mm)

Bushing (example) **1210 - 20 - N**
 Bushing part number | Keyway for new JIS keys
 Shaft hole diameter (20 mm)

Table of applicable part numbers

Pulley nominal diameter (mm)	No. of pulley grooves					
	4	5	6	8	10	12
63						
71		1108				
80				1310		
90	1210					
100						
112			1610			
125						
140						
160						
180						
200						
224						
250	2012				2517	
280						
315						
355					3020	
400						
450						3526
500						
560						4036
630						