

Non-Backlash Timing Pulleys

S8M Type

Feature: Timing pulleys with significantly reduced backlash compared to the conventional pulleys. Special timing belts are not required. For Timing Belts, see P.1436, P.1445.

Non-Backlash Timing Pulleys – S8M Type

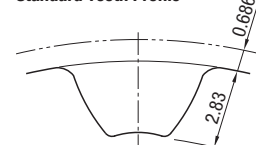


RoHS 10

Belt Width 15 mm				Belt Width 25 mm				Belt Width 30 mm				Belt Width 40 mm				Material		Access. Set Screws	
A: 17 W: 22 L: 37(42)				A: 28 W: 33 L: 48(53)				A: 33 W: 38 L: 53(58)				A: 44 W: 49 L: 64(69)				Pulley	Flange	Surface Treatment	Access. Set Screws
BLPA	S8M150	BLPA	S8M250	BLPA	S8M300	BLPA	S8M400	7075 Aluminum Alloy (Extra Super Duralumin)	5052 Aluminum Alloy	Clear Anodize	304 Stainless Steel								
BLPK	S8M150	BLPK	S8M250	BLPK	S8M300	BLPK	S8M400	1045 Carbon Steel or Equivalent	Low Carbon Steel	Hard Clear Anodize*	4137 Alloy Steel (Black Oxide)								
BLPN	S8M150	BLPN	S8M250	BLPN	S8M300	BLPN	S8M400			Electroless Nickel Plating									
BLPT	S8M150	BLPT	S8M250	BLPT	S8M300	BLPT	S8M400			—	Electroless Nickel Plating								
BLPM	S8M150	BLPM	S8M250	BLPM	S8M300	BLPM	S8M400			Black Oxide									
BLPP	S8M150	BLPP	S8M250	BLPP	S8M300	BLPP	S8M400			Electroless Nickel Plating									

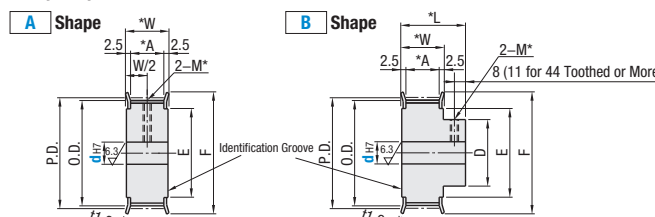
① Flanges are installed. Set screws are included with P, N & C bore hole specification.
② L Dimensions in () are for 44–60 toothed pulleys.
*Hard Anodize Treatment: Film Hardness 300 HV min.

Standard Tooth Profile



Tooth groove dimensions slightly change according to No. of teeth.
(Pitch: 8.0 mm)

Pulley Shape



Tapped Hole Dimensions (Shaft Bore: P / N / C)

d _{tr} Shaft Bore Inner Dia.	M (Coarse)	Accessories Set Screw
12	M4	M4 x 3
13-17	M5	M5 x 4
18-30	M6	M6 x 5
31-45	M8	M8 x 6
46-65	M10	M10 x 8

Shaft Bore Specs. ① The shaft bore may not have surface treatment.

H Round Hole	P Round Hole + Tap	N New JIS Keywayed Bore + Tap	V Stepped Hole	F Stepped Hole (counterbored holes on the hub side)	Y Both Ends Stepped Hole	WB Two-Stepped Hole
C Old JIS Keywayed Bore + Tap						

* No tapped holes and set screws.
* For A Shape pulley, the set screw hole is set at around 120° to keep away from peaks.
* For Keyway Dimension Details, refer to P.1338.
* No tapped holes and set screws.
* Applicable to B Shape only.
* No tapped holes and set screws.
* Applicable to A Shape only.
* Shaft Bore Dia. D is general tolerance.
* No tapped holes and set screws.
* Formulas: Q(R)-d>=2, * Q(R)-d>=2, * R-WB>=2
* No tapped holes or set screws.
* Applicable to Shape A only.
* No tapped holes or set screws.
* Formulas: Q(R)-d>=2, * R-WB>=2

Part Number	Type	Teeth	Type Nominal Width	Pulley Shape	Shaft Bore Specs	Shaft Bore Spec. (1 mm Increment)												P.D.	O.D.	D	F	E								
						H				P				N / C									V / F				Y / WB			
						A Shape	B Shape	A Shape	B Shape	A Shape	B Shape	A Shape	B Shape	A Shape	B Shape	A Shape	B Shape						A Shape	B Shape	A Shape	B Shape	A Shape	B Shape	A Shape	B Shape
18	7075 Aluminum Alloy BLPA BLPK BLPN	15	S8M150	H	H	12-32	12-28	12-26	12-22	12-26	12-20	12-30	12-26	14-32	14-28	12-30	14-32	45.84	44.46	32	52	36								
19						12-36	12-31	12-28	12-25	12-28	12-20	12-34	12-29	14-36	14-31	12-34	14-36	48.38	47.01	35	55	40								
20						12-36	12-32	12-30	12-26	12-30	12-22	12-34	12-29	14-36	14-32	12-34	14-36	50.93	49.56	36	58									
21						12-41	12-36	12-32	12-30	12-32	12-24	12-39	12-34	14-41	14-36	12-39	14-41	53.48	52.10	40										
22						12-41	12-37	12-34	12-30	12-34	12-25	12-39	12-35	14-41	14-37	12-39	14-41	56.02	54.65	41	61	45								
24						12-46	12-42	12-40	12-34	12-40	12-28	12-44	12-40	14-46	14-42	12-44	14-46	61.12	59.74	46	67	50								
25						12-52	12-44	12-40	12-36	12-40	12-28	12-50	12-42	14-52	14-44	12-50	14-52	63.66	62.29	48	70	56								
26						14-54	14-47	14-45	14-39	14-45	14-31	14-52	14-45	16-54	16-47	14-52	16-54	66.21	64.84	51	74	58								
28						14-56	14-51	14-48	14-43	14-48	14-35	14-54	14-49	16-56	16-51	14-54	16-56	71.30	69.93	55	80	60								
30						14-63	14-56	14-50	14-46	14-50	14-38	14-61	14-54	16-63	16-56	14-61	16-63	76.39	75.02	60										
32	14-63	14-59	14-55	14-49	14-55	14-45	14-61	14-57	16-63	16-59	14-61	16-63	81.49	80.12	63	87	67													
34	16-67	16-66	16-60	16-56	16-65	16-48	16-65	16-64	18-67	18-66	16-65	18-67	86.58	85.21	70	95	75													
36	16-72	16-71	16-65	16-61	16-65	16-50	16-70	16-69	18-72	18-71	16-70	18-72	91.67	90.30	75	99	80													
38	16-76	16-76	16-65	16-65	16-65	16-50	16-74	16-74	18-76	18-76	16-74	18-76	96.77	95.39	80	104	84													
40	20-80	20-80	20-70	20-65	20-55	20-55	20-80	20-79	22-82	22-81	20-80	22-82	101.86	100.49	85	111	90													
44	20-85	20-80	20-70	20-70	20-55	20-55	20-85	20-84	22-92	22-86	20-85	22-92	112.05	110.67	90	119	100													
48	20-85	20-85	20-70	20-70	20-55	20-55	20-85	20-85	22-95	22-95	20-85	22-95	122.23	120.86		127	105													
50	20-85	20-85	20-70	20-70	20-55	20-55	20-85	20-85	22-95	22-95	20-85	22-95	127.32	125.95	100	135	115													
60	20-85	20-85	20-70	20-70	20-55	20-55	20-85	20-85	22-95	22-95	20-85	22-95	152.79	151.42		160	140													

① Z-d>=2 for shaft bore specification V and F. ② Shaft Bore Dia. 13, 14, 17, 21 – 55 are not available for Shaft Bore specification C.
③ Q(R)-d>=2 for shaft bore specification Y. ④ L Dimensions in () are for 44–60 toothed pulleys. ⑤ For shaft hole specification N, shaft hole diameters 51 to 54 can not be manufactured.

Non-Backlash Timing Pulleys

S8M Type, continued

Part Number Example

Part Number: BLPA40S8M150 - Pulley Shape: A - Shaft Bore Spec. / Inner Dia.: N30 - Z - J - Q - R - S - T

Shaft Bore: H / P / N / C BLPA40S8M150 - A - N30
Shaft Bore: V / F BLPK60S8M400 - B - F40 - Z60 - J25.0
Shaft Bore: BLPA20S8M250 - A - Y15 - Q20 - R23 - S3 - T15

Part Number Alterations

Part Number: BLPA36S8M250 - Pulley Shape: A - Shaft Bore Spec. / Inner Dia.: H65 - Z - J - Q - R - S - T - (KC90 / QSC / QFC / QTC / KSC / KFC / KTC / BC / NFC / RFC / LFC / FC / TPC / SLH) - NFC

Alterations	Set Screw Angle	Side Tapped Hole	Side Counterbore Holes	Groove for Retainer Ring	Taper for Retaining Bearing
Code	KC90	QSC / QFC / QTC	ZTC-ZFC-ZSC	SRG	BTC
Spec.	Changes an angle of set screw to 90°. ① For A shape pulley, the set screw hole is set at around 90° to keep away from peaks.	Machines tapped hole on the side surface of hub side. (QSC, QFC, QTC: 1 mm Increment) ① Thickness required: minimum 2 mm A Shape: d+M+4<=QSC(QFC / QTC)<=E-(M+4) B Shape: d+M+4<=QSC(QFC / QTC)<=D-(M+4) ② Specify KC90 when selecting QFC for the Shaft Bore specifications P and N. ③ d=Z when the Shaft Bore Specifications is V. ④ The pilot hole for tapping may go through. ⑤ Not applicable to Shaft Bore Specifications F or Y. ⑥ QSC is not applicable to the Shaft Bore Specification P and N. ⑦ When QTC is selected for shaft bore specifications P, N, C, KC90 is not available. M Selection: M3, M4, M5, M6, M8 Ordering Code: QFC28-M4	Machines counterbore holes on the side surface of the hub side. Ordering Code: ZTC28-ZM4 Z/C Selection: Please specify the hole's manufacturing position (P.C.D.) ZM Selection: ZM3, ZM4, ZM5, ZM6, ZM8 Application Notes ① Not applicable for 1.5GT ② Minimum thickness is 2mm ③ Conditions vary depending on the shaft hole specifications	Machines groove for retainer ring in line with the stepped hole of the shaft SRG Specification: 2.5-36.5mm (0.5mm increments) Application Notes ① Minimum thickness is 2mm ② Applicable to shaft bore specifications V, F only. ③ Use retainer ring groove standards for Z dimension ④ n <= J-SRG-m Ordering Code: SRG7	Add taper for retaining bearing inner ring Ordering Code: BTC8-TL1.5 Application Notes ① Applicable to Shape A only. ② Applicable to shaft bore specifications H, P only. ③ TL < L-W

Alterations	Hub Shortening	Flange Not Swaged	Flange Swaged on One Side	Flange Cut	Tapped Hole Dimensions	Set Screw Length	Side Through Holes
Code	BC	NFC	RFC / LFC	FC	TPC	SLH	KSC-KTC-KFC
Spec.	Cuts the hub length in 0.5mm increments Ordering Code: BC6.5 Application Notes ① Shaft Bore specification H, V, F: 3<=BC<=L-W ② Shaft Bore specification P, N, C: M+3<=BC<=L-W ③ Not available for K, A shape	Flange is not installed. (Flange included)	Flange installed on the hub side (RFC) or the opposite side (LFC) only. ① Same on A Shape	Cuts the outer diameter of the flange in 0.5mm increments Ordering Code: FC17 Application Notes ① FC >= (O.D.) + 1 ② FC <= F - 2 ③ No surface treatment applied on flange circumference.	Changes the tapped hole dimension. ① Applicable to Shaft Bore specification P, N, C only.	Changes the length of the included set screws. ① Applicable to Shaft Bore specification P, N, C only.	Machines through hole on the side surface of hub side. Ordering Code: KTC28-K4.5 K, C Selection: Please specify the hole's manufacturing position (P.C.D.) K Specification: K4.0-11.0 (0.5mm increments) Application Notes ① Not available for K shape

Features of Non-Backlash Pulleys (S8M)

- Non-backlash pulley has reduced backlash compare to conventional type to work with high-accuracy positioning mechanism.
- Backlash is significantly smaller than standard pulleys. (The amount reduced depends on application.)
- Use regular S8M timing belt.

Reference: Comparison of Deviation Angles Between Non-Backlash Pulleys & Standard Pulleys

