

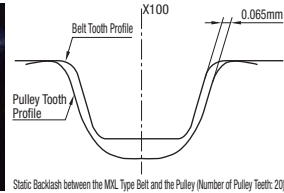
Timing Pulleys and Belts - Overview ②

Timing Pulley Alteration - Overview

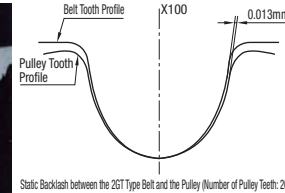
Features of GT Belts

- The tooth engagements occur based on involute motion that closely assimilates the profiles of both teeth, thus minimizing backlash and making the scheme suitable for high accuracy positioning applications.
- * Backlash means the clearances between the belt tooth surface and the pulley tooth surface when engaged.

MXL (10 Toothed, Ø6.47mm)



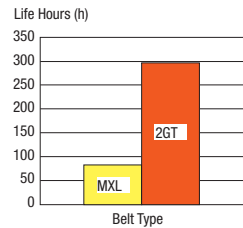
2GT (10 Toothed, Ø6.37mm)



Performance Comparison between MXL and 2GT Belts

Reference ①: Durability

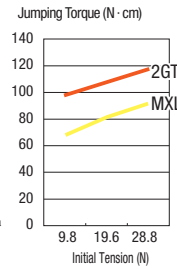
<Performance Conditions>
 Number of belt teeth: 126
 Belt Width: 9.5mm
 Number of Pulley Teeth: 12 (2GT)
 : 14 (MXL)
 Speed: 7,900rpm
 Load Torque: 24.3Nm



Reference ②: Jumping Torque Capability

<Performance Conditions>
 Number of belt teeth: 126
 Belt Width: 4.8mm
 Number of Pulley Teeth: 20 (2GT)
 : 20 (MXL)
 Speed: 1,130rpm
 Tooth Height
 MXL: 0.51mm 2GT: 0.75mm

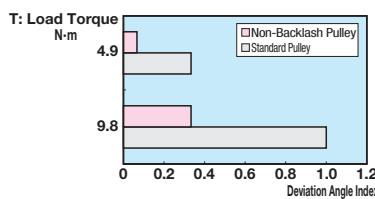
*Jumping Torque represents the max. torque when a jumping occurs.



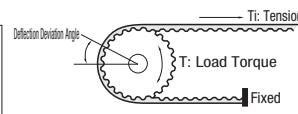
Features of Non-backlash Pulleys (S8M)

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

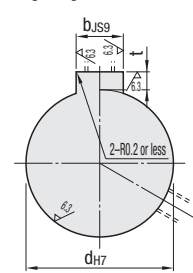
Reference: Comparison of Deviation Angles between Non-Backlash Pulleys and Standard Pulleys



<Test Conditions>
 Belt Type :S8M
 Belt Width :25mm
 Pulley Size : 30 Toothed (P.D.76.39mm)
 Tension T_i :382N



Keyway Dimensions N: New JIS (B1301) Keyway Dimensions



Nominal	d _{H7}	b _{JIS9}	t Tolerance	Nominal	d _{H7}	b _{JIS9}	t Tolerance
N 8	8	3	±0.0125	N39	39	12	3.3
N10	10	4	±0.0125	N40	40	14	3.8
NK10	10	4	±0.0150	N41	41	16	4.3
N11	11	5	±0.0150	N42	42	18	4.4
N12	12	6	±0.0150	N43	43	20	4.9
N13	13	8	±0.0180	N44	44	22	5.8
N14	14	10	±0.0210	N45	45	24	6.8
N15	15	12	±0.0250	N46	46	26	7.8
N16	16	14	±0.0250	N47	47	28	8.8
N17	17	16	±0.0250	N48	48	30	9.8
N18	18	18	±0.0250	N49	49	32	10.8
N19	19	20	±0.0250	N50	50	34	11.8
N20	20	22	±0.0250	N51	51	36	12.8
N21	21	24	±0.0250	N52	52	38	13.8
N22	22	26	±0.0250	N53	53	40	14.8
N23	23	28	±0.0250	N54	54	42	15.8
N24	24	30	±0.0250	N55	55	44	16.8
N25	25	32	±0.0250	N56	56	46	17.8
N26	26	34	±0.0250	N57	57	48	18.8
N27	27	36	±0.0250	N58	58	50	19.8
N28	28	38	±0.0250	N59	59	52	20.8
N29	29	40	±0.0250	N60	60	54	21.8
N30	30	42	±0.0250	N61	61	56	22.8
N31	31	44	±0.0250	N62	62	58	23.8
N32	32	46	±0.0250	N63	63	60	24.8
N33	33	48	±0.0250	N64	64	62	25.8
N34	34	50	±0.0250	N65	65	64	26.8
N35	35	52	±0.0250	N66	66	66	27.8
N36	36	54	±0.0250	N67	67	68	28.8
N37	37	56	±0.0250	N68	68	70	29.8
N38	38	58	±0.0250	N69	69	72	30.8
				N70	70	74	31.8

C: Old JIS Keyway Dimensions

DH7 Shaft Bore Dia. and Code	b _{F7}	t Tolerance
C10	4	1.5
C12	5	2
C15	6	2.5
C16	7	3
C18	8	3.5
C19	9	4
C20	10	4.5
C30	12	5.5
C33	14	6.5
C34	16	7.5
C35	18	8.5
C36	20	9.5
C37	22	10.5
C38	24	11.5
C39	26	12.5
C40	28	13.5
C41	30	14.5
C42	32	15.5
C43	34	16.5
C44	36	17.5
C45	38	18.5
C50	40	19.5
C55	45	22.5
C60	50	25.5
C61	55	28.5
C62	60	31.5
C63	65	34.5
C64	70	37.5
C65	75	40.5
C66	80	43.5
C67	85	46.5
C68	90	49.5
C69	95	52.5
C70	100	55.5

Keyway Dimensions

For alterations for S14M Type, see the relevant product page (P.1406).

Alterations	Code	Spec.		Ordering Code
		Description	Type-by-Type Condition Formula and Caution	
Set Screw Angle	KC90	Changes an angle of set screw to 90°.	For A-Shape pulley, the screw holes are set at around 90° to keep away from peaks.	KC90
	KC120	Changes angle layout of set screws to 120°.	For A-Shape pulley, the screw holes are set at around 120° to keep away from peaks. Not applicable to Shape K.	KC120
Flange Swaging	NFC	Flange is not installed. (Flange 2 pcs. Included)	Not applicable to Shape K.	NFC
	RFC	Flange installed by swaging only on either hub side (RFC) or the opposite side (LFC) at the time of shipment. (Flange 1 pc. Included)	Not applicable to Shapes K and D.	RFC
	LFC	Flange installed by swaging only on either hub side (RFC) or the opposite side (LFC) at the time of shipment. (Flange 1 pc. Included)	Not applicable to Shapes K and D.	LFC
Flange Cut	FC	Lowers flange by cutting. FC: 0.5mm Increment FC: (0. D.)+1 FC:F-2	No surface treatment is applied on flange circumference. Not available for Stainless Steel Type.	FC33
	BTC	Adds taper for retaining bearing inner ring. TL<L-W	Surface treatment may not be applied to shaft bores on the tapered area. Applicable to Shape A only. Applicable to Shaft Bore Specs. H and P only. Not available for GT and YU.	BTC4-TL1.5
Tapped Hole Dimensions	TPC	Changes the tapped hole dimension.	Applicable to Shaft Bore Specs. P, N, C only. Not available for GT, YU, P2M, P3M Not applicable to MXL Type - Shape K.	TPC5
	SLH	Changes the length of the included set screws.	Applicable to Shaft Bore Specs. P, N, C only. Not available for GT, YU, P2M, P3M	SLH10
Hub Shortening	BC	Cuts the hub length in 0.5mm increment. When the hub has no tapped hole: 3:BC<L-W (when specifying Shaft Bore Specs. H, V, F) When the hub has any tapped hole: M+3:BC<L-W (when specifying Shaft Bore Specs. P, N, C)	Applicable to Shape B only. Clear anodized products may not have surface treatment on machined hub surfaces. Not available for P2M, P3M	BC6.5

Alterations	Code	Spec.		Ordering Code
		Description	Type-by-Type Condition Formula and Caution	
Side Hole Machining	KSC	Machines through hole on the side surface. Minimum Thickness: 2mm Shape A: d+K+4<K<C<E-(K+4) Shape B: d+K+4<K<C<D-(K+4) Shape D: d+K+4<K<C<D-(K+4) When the Shaft Bore Specs. is V, Z+K+4<K<C<D-(K+4)	Applicable to Shaft Bore Specs. H and V only. Not available for P2M, P3M Not applicable to Shape K.	KSC20-K5
	KFC	K<C : 1mm Increment 8YU Type and S14M Type are specified in 1mm increments. Code K : 0.5mm Increment Select from K4.0-K13.0. For 2GT, select from K4.0-K8.0.	Specify KC90 when selecting KFC for Shaft Bore Specs. P, N and C. Not available for P2M, P3M Not applicable to Shape K. Not applicable to Shaft Bore Specs. F or Y.	KFC20-K5
	KTC	Side through holes and tooth face tapped holes might interfere with each other. For details, see the relevant CAD data.	Not available for P2M, P3M Not applicable to Shape K. Not applicable to Shaft Bore Specs. F or Y.	KTC20-K5
	QSC	Machines tapped hole on the side surface of hub side. Minimum Thickness: 2mm Shape A: d+M+4<Q<C<E-(M+4) Shape B: d+M+4<Q<C<D-(M+4) Shape D: d+M+4<Q<C<D-(M+4) When the Shaft Bore Specs. is V, Z+K+4<Q<C<D-(K+4)	Applicable to Shaft Bore Specs. H and V only. Not available for P2M, P3M Not applicable to Shape K. Combination with KC90 is not available.	QSC28-M4
	QFC	Q<C : 1mm Increment 8YU Type and S14M Type are specified in 1mm increments. MSelection : Select from M3, M4, M5, M6, M8. For P2M, P3M, select from M3, M4, M5.	Specify KC90 when selecting QFC for Shaft Bore Specs. P, N and C. When QFC is selected for Shaft Bore Specs. P, N and C of P<M Type, KC120 is not available. Not applicable to Shape K. Not applicable to Shaft Bore Specs. F or Y.	QFC28-M4
	QTC	Mx2 QTC (3 places) 3-M	The pilot hole for tapping might go through, or side through holes and tooth face tapped holes might interfere with each other. For details, see the relevant CAD data.	Not applicable to Shape K. Not applicable to Shaft Bore Specs. F or Y.
Changes the length of the included set screws	SLH	Changes the length of the included set screws.	Applicable to Shaft Bore Specs. P, N, C only. Not available for GT, YU, P2M, P3M	SLH10