

Driving Shafts

Shouldered

Feature: Rotary Shafts suitable for driving motion. Accuracies and shapes needed for rotary driving applications are selectable.

RoHS

Type	D, P Tolerance	Concentricity	Material	Hardness	Surface Treatment
KZEN	h6	00.01	1045 Carbon Steel	-	-
KZEC			Black Oxide		
KZEP			Electroless Nickel Plating		
KZES			304 Stainless Steel		
KZEF			1045 Carbon Steel		Induction Hardened Surface Hardness 50HRC

D	Tolerance h6	Circularity M
8	0	0.003
10	-0.009	
12, 12A	0	
15	0	
17, 17A	-0.011	
20	0	0.005
25	0	
30	-0.013	
35	0	
40	-0.016	
45	0	

$\phi = L - (LA + T)$ $\phi LA + T \leq L/2$
 The shaft may have centering holes on ends.
 There is an undercut 1.5mm or less in width and 0.3mm or less in depth on the stepped part.
 *Ds: Tap dimension of Bearing Inner Race Reference: P.883

Part Number Type	0.5mm Increment		Selection	1mm Increment		0.5mm Increment		H	*Ds
	D	L		T	P	LA	D		
KZEN	8	50.0-300.0	5	6-9	4.0-40.0	12	10		
	10		10	8-12	5.0-50.0	15	13		
	12		15	10-13		16	14		
	12A		20	12-18		16	16		
	15		10	12-18	5.0-75.0	20	18		
	17	15	14-18		19	19			
	17A	20	14-20	5.0-100.0	21	21			
	20	25	17-23		24	24			
	25	100.0-500.0	10	20-28	10.0-125.0	30	29		
	30		20	25-33	15.0-150.0	35	34		
35	30		28-38		40	39			
40	40		35-47		48	48			
45	50		35-48		49	49			

Ordering Example: **KZEN30 - 350 - T20 - P25 - LA50**

Days to Ship: **Configure Online**

KZEF (Induction Hardened)

When alterations on the right-hand page are specified, the shafts are induction hardened (except the threaded sections) after machining. As a result, these may occur:

- Due to thermal conduction to the thread, the threads may be hardened by 2-3mm.
- Induction Hardened may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust it by gauging.

Price **Configure Online**

Type	KZEN					KZEC					KZEP				
	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5
D	-100.0	-200.0	-300.0	-400.0	-500.0	-100.0	-200.0	-300.0	-400.0	-500.0	-100.0	-200.0	-300.0	-400.0	-500.0
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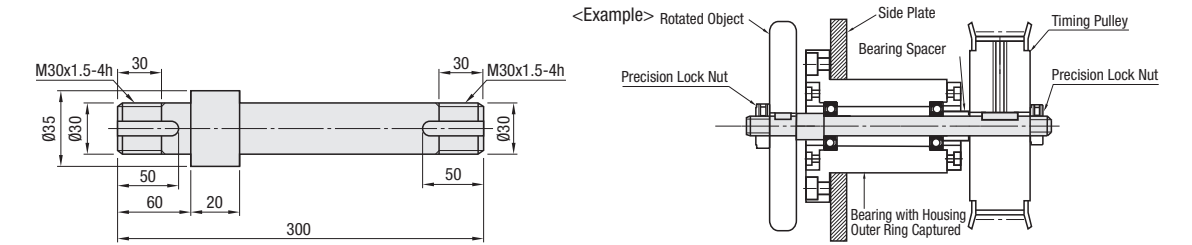
Type	KZES					KZEF				
	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5
D	-100.0	-200.0	-300.0	-400.0	-500.0	-100.0	-200.0	-300.0	-400.0	-500.0
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Selection of Driving Shaft

In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part Number>

Alteration Selection: Two Threaded Ends (Fine Thread, Precision Grade), Two Keyways



Alterations Part Number - L - T - P - LA - (MA, NA, KA, TA, SA, WA ... etc.)
KZEF30 - 300 - T20 - P30 - LA60 - MMA30 - MMB30 - KA0 - HA50 - KB0 - HB50

Alterations	Code		Spec.	Price Adder																																																																																		
	Left End	Right End		Coarse	Fine																																																																																	
Threaded Ends 	MA, MSA, MMA	MB, MSB, MMB	Adds threads at shaft ends. Specify the length of the threads. Accuracy and threads (coarse or fine) can be specified by ordering code. [Ordering Code] MA15-MSB15 1mm Increment 5≤ Thread Length ≤Mx5, LA-2 <table border="1"> <thead> <tr> <th>Code</th> <th colspan="2">Screw Accuracy</th> <th>M (Coarse)</th> <th>Pitch</th> <th>M (Fine)</th> <th>Pitch</th> <th>M (Fine)</th> <th>Pitch</th> </tr> </thead> <tbody> <tr> <td>MA</td> <td>MB</td> <td>Coarse</td> <td>JIS 6h (Class 2)</td> <td>M6</td> <td>1.0</td> <td>M6</td> <td>0.75</td> <td>M25</td> <td>1.5</td> </tr> <tr> <td>MSA</td> <td>MSB</td> <td>Fine (Standard)</td> <td>JIS 6h (Class 2)</td> <td>M10</td> <td>1.5</td> <td>M10</td> <td>0.75</td> <td>M35</td> <td>1.5</td> </tr> <tr> <td>MMA</td> <td>MMB</td> <td>Fine (Precision)</td> <td>JIS 4h (Class 1)</td> <td>M12</td> <td>1.75</td> <td>M12</td> <td>1.0</td> <td>M40</td> <td>1.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td>M20</td> <td>2.5</td> <td>M15</td> <td>1.0</td> <td>M45</td> <td>1.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td>M24</td> <td>3</td> <td>M17</td> <td>1.0</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>M30</td> <td>3.5</td> <td>M20</td> <td>1.0</td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td>M36</td> <td>4</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Code	Screw Accuracy		M (Coarse)	Pitch	M (Fine)	Pitch	M (Fine)	Pitch	MA	MB	Coarse	JIS 6h (Class 2)	M6	1.0	M6	0.75	M25	1.5	MSA	MSB	Fine (Standard)	JIS 6h (Class 2)	M10	1.5	M10	0.75	M35	1.5	MMA	MMB	Fine (Precision)	JIS 4h (Class 1)	M12	1.75	M12	1.0	M40	1.5				M20	2.5	M15	1.0	M45	1.5				M24	3	M17	1.0						M30	3.5	M20	1.0						M36	4												
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Tapped Ends 	NA	NB	Adds taps on shaft ends. Select the thread diameter. [Ordering Code] NA5-NB5 $\phi NA, NB \leq D (P)-4$ NA (Coarse) NB (Coarse) Selection M3 M4 M5 M6 M8 M10 M12 M16 M20 M24 M30 M36																																																																																			
Keyway Machining 	KA	KB, KC	Adds a keyway. Specify the position and the length of the keyway. [Ordering Code] KA10-HA30-KB100-HB50 KA, HA, KB, HB, KC, HC=1mm Increment $3 \leq HA, HB, HC \leq 100$ Keyway Details P.710 When more than 2 keyways are added, the tolerances may shift by up to 0.2%. Specify the keyway position more than 2mm away from the shouldered part.																																																																																			
Keyway Machining + Set Screw Flat 	ZA	ZB, ZC	Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. [Ordering Code] ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD=1mm Increment AA, AB, AC, AD=30° Increment 30°≤AA, AB, AC, AD≤330° $3 \leq HA, HB, HC, HD \leq 100$ Keyway Details P.710. Specify the keyway position more than 2mm away from the shouldered part. Ordering Code <table border="1"> <thead> <tr> <th>Keyway Position Specified</th> <th>Keyway Width Specified</th> <th>Angle Specified 30° Increment</th> <th>D, P</th> <th>6-17</th> <th>18-40</th> <th>41-48</th> </tr> </thead> <tbody> <tr> <td>ZA</td> <td>HA</td> <td>AA</td> <td>H</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>ZB</td> <td>HB</td> <td>AB</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>ZC</td> <td>HC</td> <td>AC</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> The length of each set screw flat is the same as that of each keyway. For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2%.	Keyway Position Specified	Keyway Width Specified	Angle Specified 30° Increment	D, P	6-17	18-40	41-48	ZA	HA	AA	H	1	2	3	ZB	HB	AB					ZC	HC	AC																																																											
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Retaining Ring Groove 	TA	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. [Ordering Code] TA10-TB100 TA, TB=1mm Increment 4≤TA≤LA-3 Retaining rings are included. For dimensions of the retaining ring groove, P.710. Not available for 41-44 and 46-48.	P, D: 8: Retaining Ring Type E P: 9, D: 10: Retaining Ring Type C Driving Shafts Retaining Ring <table border="1"> <thead> <tr> <th>Material</th> <th>Hardness</th> <th>Surface Treatment</th> <th>Material</th> </tr> </thead> <tbody> <tr> <td>1045 Carbon Steel</td> <td>-</td> <td>Black Oxide</td> <td>Spring Steel</td> </tr> <tr> <td>304 Stainless Steel</td> <td>-</td> <td>Electroless Nickel Plating</td> <td>304 Stainless Steel</td> </tr> <tr> <td>1045 Carbon Steel</td> <td>Surface 50HRC</td> <td>-</td> <td>Spring Steel</td> </tr> </tbody> </table>	Material	Hardness	Surface Treatment	Material	1045 Carbon Steel	-	Black Oxide	Spring Steel	304 Stainless Steel	-	Electroless Nickel Plating	304 Stainless Steel	1045 Carbon Steel	Surface 50HRC	-	Spring Steel																																																																		
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Wrench Flats 	SA	SH, SB	Adds a wrench flat. Specify the position of a wrench flat. [Ordering Code] SA5-SB10-SH SA, SB=1mm Increment SA, SB>0 SA≤LA-ℓ, SB≤LA-LA-T-ℓ Specification for the length for SH is not necessary. Adds wrench flats on the shoulder (ℓ=h). <table border="1"> <thead> <tr> <th>D</th> <th>8</th> <th>10</th> <th>12</th> <th>15</th> <th>17</th> <th>20</th> <th>25</th> <th>30</th> <th>35</th> <th>40</th> <th>45</th> </tr> </thead> <tbody> <tr> <td>W</td> <td>7</td> <td>8</td> <td>10</td> <td>13</td> <td>14</td> <td>17</td> <td>22</td> <td>27</td> <td>30</td> <td>36</td> <td>38</td> </tr> <tr> <td>ℓ</td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>15</td> <td></td> <td></td> <td>20</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th>P</th> <th>6</th> <th>7</th> <th>8-10</th> <th>11-13</th> <th>14-15</th> <th>16-18</th> <th>19-21</th> <th>22-25</th> <th>26-28</th> <th>29-31</th> <th>32-37</th> <th>38-41</th> <th>42-45</th> <th>46-48</th> </tr> </thead> <tbody> <tr> <td>W1</td> <td>5</td> <td>5.5</td> <td>7</td> <td>10</td> <td>13</td> <td>14</td> <td>17</td> <td>19</td> <td>22</td> <td>27</td> <td>30</td> <td>36</td> <td>38</td> <td>41</td> </tr> <tr> <td>ℓ</td> <td></td> <td>8</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>10</td> <td>15</td> <td></td> <td></td> <td>20</td> <td></td> </tr> </tbody> </table>	D	8	10	12	15	17	20	25	30	35	40	45	W	7	8	10	13	14	17	22	27	30	36	38	ℓ	8							15			20	P	6	7	8-10	11-13	14-15	16-18	19-21	22-25	26-28	29-31	32-37	38-41	42-45	46-48	W1	5	5.5	7	10	13	14	17	19	22	27	30	36	38	41	ℓ		8							10	15			20			
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2 Set Screw Flats (Angle Specified) 	WA	WB	Adds a flat at any designated angle besides the datum plane 0°. Specify the position, the length and the angle of the set screw flats. When 0° is specified, only one set screw flat is machinable. [Ordering Code] WA15-GA10-AAO WA, WB, GA, GB=1mm Increment AA, AB=30° Increment 0°≤AA, AB≤330° Ordering Code <table border="1"> <thead> <tr> <th>Set Screw Flat Position Specified</th> <th>Set Screw Flat Width Specified</th> <th>Angle Specified 30° Increment</th> <th>D, P</th> <th>6-17</th> <th>18-40</th> <th>41-48</th> </tr> </thead> <tbody> <tr> <td>WA</td> <td>GA</td> <td>AA</td> <td>H</td> <td>1</td> <td>2</td> <td>3</td> </tr> <tr> <td>WB</td> <td>GB</td> <td>AB</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Set Screw Flat Position Specified	Set Screw Flat Width Specified	Angle Specified 30° Increment	D, P	6-17	18-40	41-48	WA	GA	AA	H	1	2	3	WB	GB	AB																																																																		
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Tolerance Change 	DJ (j6)	DK (k6)	Changes the D dimension tolerance to j6 or k6. [Ordering Code] DJ or DK																																																																																			