

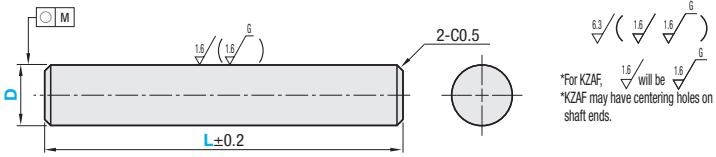
Driving Shafts

Straight

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

Type	D Tolerance	Material	Hardness	Surface Treatment
KZAN	h7	S45C	-	-
KZAC				Black Oxide
KZAP				Electroless Nickel Plating
KZAF	h6	S45C	Induction Hardened Surface Hardness 50HRC-	-

D	Tolerance		D	Circularity M
	h7	h6		
10	0	0	10	0.004
12	-0.015	-0.009	12	0.003
15	0	0	15	
17	-0.018	-0.011	17	
20	0	0	20	0.006
25	-0.021	-0.013	25	
30	0	0	30	
35	0	0	35	0.005
40	-0.025	-0.016	40	
45	0	0	45	
50	0	0	50	0.007



RoHS10

Please note that D dimension tolerance of KZAF is different from that of KZAN, KZAC and KZAP.

Part Number Type	D	L 0.5mm Increment
KZAN KZAC KZAP KZAF	10	50.0~300.0
	12	100.0~400.0
	15	
	17	
	20	100.0~500.0
25		
30		
KZAF	35	200.0~500.0
	40	
	45	
50		

Ordering Example
Part Number - L
KZAN30 - 500

■ **About KZAF (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:
①: Due to thermal conduction to the thread, the threads may be hardened by 2 ~ 3mm.
②: Induction Hardened may shrink the keyway width (around -0.01 ~ -0.02). If the key becomes hard to fit, adjust it by gauging.

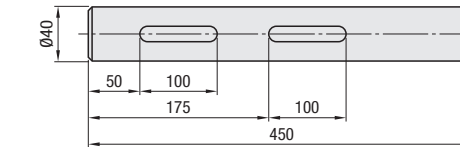
Type	KZAN					KZAC					KZAP				
	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5
D	~100.0	~200.0	~300.0	~400.0	~500.0	~100.0	~200.0	~300.0	~400.0	~500.0	~100.0	~200.0	~300.0	~400.0	~500.0
10															
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25															
30															

Type	KZAF				
	Min. L	L100.5	L200.5	L300.5	L400.5
D	~100.0	~200.0	~300.0	~400.0	~500.0
10					
12					
15					
17					
20					
25					
30					
35					
40					
45					
50					

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.

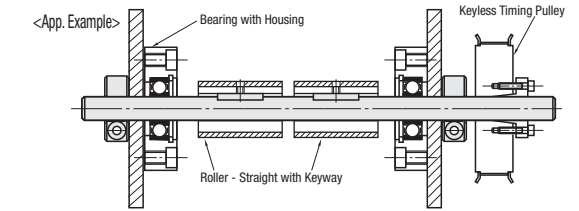
◀ Selection Example of Part Number ▶
• Alteration Selection: Two Keyways

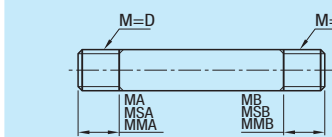
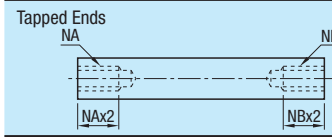
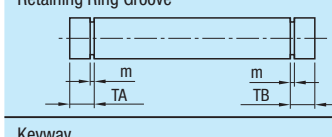
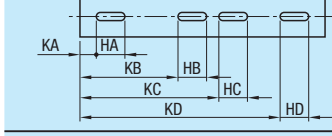
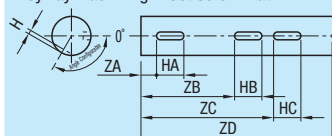
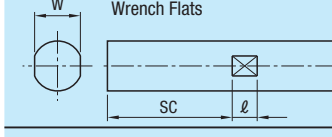
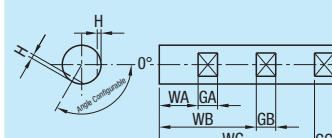


The example below shows the keyway shape under the following conditions: When KA, KB, KC, KD, ZA, ZB, ZC, ZD=0 When KA+HA, KB+HB, KC+HC, KD+HD, ZA+HA, ZB+HB, ZC+HC or ZD+HD = L



Alterations Part Number - L - (MA, NA, KA, TA, SC, WA...etc.)
KZAF40 - 450 - KA50 - HA100 - KB175 - HB100



Alterations	Code		Spec.																																																												
	Left End	Right End																																																													
Threaded Ends 	MA MSA MMA	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (Accuracy, coarse or fine threads can be specified by ordering code.) [Ordering Code] MA15-MSB15 1mm Increment 5≤ Thread Length ≤Mx5 <table border="1"> <thead> <tr> <th>Code</th> <th>Left End</th> <th>Right End</th> <th>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>M10</td> <td>1.5</td> <td>M10</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>M20</td> <td>2.5</td> <td>M15</td> <td>1.0</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>M30</td> <td>3.5</td> <td>M17</td> <td>1.0</td> <td>M40</td> <td>1.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>M20</td> <td>1.0</td> <td>M45</td> <td>1.5</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>M50</td> <td>1.5</td> </tr> </tbody> </table>	Code	Left End	Right End	Screw Accuracy	M (Coarse)	Pitch	M (Fine)	Pitch	M (Fine)	Pitch	MA	MB	Coarse	JIS 6h (Class 2)	M10	1.5	M10	0.75	M25	1.5	MSA	MSB	Fine (Standard)	JIS 6h (Class 2)	M20	2.5	M15	1.0	M35	1.5	MMA	MMB	Fine (Precision)	JIS 4h (Class 1)	M30	3.5	M17	1.0	M40	1.5							M20	1.0	M45	1.5									M50	1.5
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Tapped Ends 	NA	NB	Adds taps on shaft ends. Select the thread diameter. [Ordering Code] NA5-NB5 NA, NB ≤ D-4 NA (Coarse) NB (Coarse) Selection M3 M4 M5 M6 M8 M10 M12 M16 M20 M24																																																												
Retaining Ring Groove 	TA	TB	Adds a retaining ring groove. Specify the position of a retaining ring groove. [Ordering Code] TA10-TB10 TA, TB = 1mm Increment 4≤TA(TB) Retaining rings are included. For dimensions of the retaining ring groove, P820																																																												
Keyway 	KA KB KC KD		Adds a keyway. Specify the position and the length of the keyway. [Ordering Code] KA10-HA30-KB100-HB50 KA, HA, KB, HB, KC, HC, KD, HD = 1mm Increment 3≤HA, HB, HC, HD≤100 Keyway Details P820 When more than 2 keyways are added, the tolerances may shift by up to 0.2°.																																																												
Keyway Machining + Set Screw Flat 	ZA ZB ZC ZD		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≤HA, HB, HC, HD≤100 Keyway Details P820 • Ordering Code <table border="1"> <thead> <tr> <th>Keyway Position Specified</th> <th>Keyway Width Specified</th> <th>Angle Specified</th> <th>D</th> <th>10-17</th> <th>18-40</th> <th>45, 50</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> <tr> <td>ZD</td> <td>HD</td> <td>AD</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	D	10-17	18-40	45, 50	ZA	HA	AA	H	1	2	3	ZB	HB	AB					ZC	HC	AC					ZD	HD	AD																													
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Wrench Flats 	SC		Adds a wrench flat. Specify the position of a wrench flat. [Ordering Code] SC180 SC = 1mm Increment 0≤SC≤L-l <table border="1"> <thead> <tr> <th>D</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> <th>50</th> </tr> </thead> <tbody> <tr> <td>W</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> <td>41</td> </tr> <tr> <td>l</td> <td>8</td> <td></td> <td></td> <td></td> <td>10</td> <td></td> <td></td> <td>15</td> <td></td> <td></td> <td>20</td> </tr> </tbody> </table>	D	10	12	15	17	20	25	30	35	40	45	50	W	8	10	13	14	17	22	27	30	36	38	41	l	8				10			15			20																								
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2 Set Screw Flats (Angle Specified) 	WA WB WC	GA GB GC	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, WC, GA, GB, GC = 1mm Increment AA, AB, AC = 30° Increment 0°≤AA, AB, AC ≤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</th> <th>D</th> <th>10-17</th> <th>18-40</th> <th>45, 50</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> <tr> <td>WC</td> <td>GC</td> <td>AC</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Set Screw Flat Position Specified	Set Screw Flat Width Specified	Angle Specified	D	10-17	18-40	45, 50	WA	GA	AA	H	1	2	3	WB	GB	AB					WC	GC	AC																																				
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