Driving Shafts
Straight

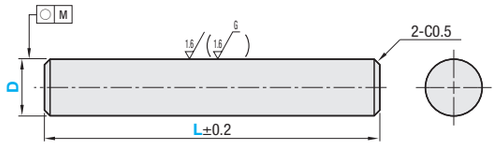
■**Features**: Rotary Shafts suitable for driving motion. Accuracies and shapes needed for rotary driving applications are selectable.

RoHS10

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

D	Tolerance h7	Tolerance h6
10	0 -0.015	0 -0.009
12		
15	0 -0.018	0 -0.011
17		
20		
25	0 -0.021	0 -0.013
30		
35		
40	0 -0.025	0 -0.016
45		
50		

D	Circularity M Not Hardened	Circularity M Hardened
10	0.004	0.003
12		
15	0.005	
17		
20		
25	0.006	0.005
30		
35		
40		
45	0.007	
50		



*For KZAF, 6.3 will be 1.6 G
*KZAF may have centering holes on shaft ends.

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	
	15	100.0~400.0
	17	
	20	
	25	100.0~500.0
	30	
KZAF	35	
	40	
	45	200.0~500.0
	50	

Ordering Example: Part Number KZAN30 - L 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 D	KZAN Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10				-	-
12				-	-
15					-
17					-
20					-
25					
30					

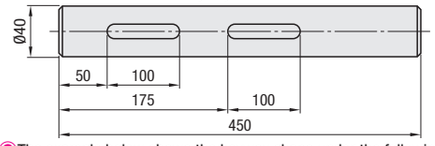
Type D	KZAC Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10				-	-
12				-	-
15					-
17					-
20					-
25					
30					

Type D	KZAP Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10				-	-
12				-	-
15					-
17					-
20					-
25					
30					

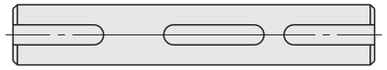
Type D	KZAF Min. L ~100.0	L100.5 ~200.0	L200.5 ~300.0	L300.5 ~400.0	L400.5 ~500.0
10				-	-
12				-	-
15					-
17					-
20					-
25					
30					
35					
40					
45	-				
50	-				

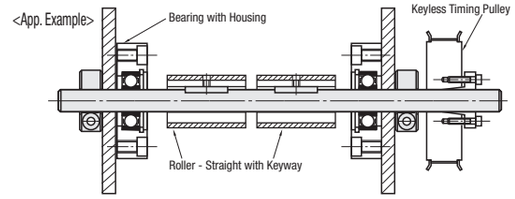
■**Selection of Driving Shaft**

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

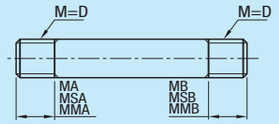


The example below shows the keyway shape under the following conditions: When KA, KB, KC, KD, ZA, ZB, ZC, ZD=0 When KA+HA, KB+HB, KC+HC, KD+HD, ZA+HA, ZB+HB, ZC+HC or ZD+HD = L





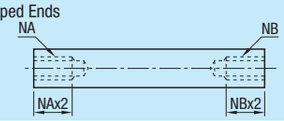
Alterations: Part Number - L - (MA, NA, KA, TA, SC, WA···etc.)
KZAF40 - 450 - KA50 - HA100 - KB175 - HB100

Alterations	Code Left End	Code Right End	Spec.
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

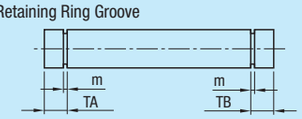
Code Left End	Code Right End	Screw Accuracy
MA	MB	Coarse JIS 6h (Class 2)
MSA	MSB	Fine (Standard) JIS 6h (Class 2)
MMA	MMB	Fine (Precision) JIS 4h (Class 1)

M (Coarse)	Pitch	M (Fine)	Pitch	M (Fine)	Pitch
M10	1.5	M10	0.75	M25	1.5
M12	1.75	M12	1.0	M30	1.5
M20	2.5	M15	1.0	M35	1.5
M30	3.5	M17	1.0	M40	1.5
		M20	1.0	M45	1.5
				M50	1.5

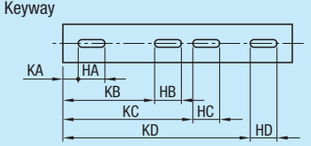
When D=M, thread length can be specified.
MMA, MMB (Fine Thread, Precision Grade) is available for KZAF only.

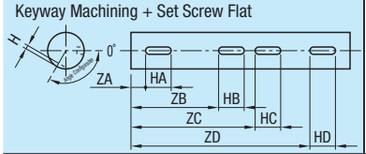
Tapped Ends 	NA	NB	Adds taps on shaft ends. Select the thread diameter. Ordering Code NA5-NB5 NA,NB≤D-4

NA (Coarse) Selection	NB (Coarse) Selection
M3 M4 M5 M6 M8	
M10 M12 M16 M20	
M24 M30 M36	

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, **P.820**

Driving Shafts M Material	H Hardness	S Surface Treatment	Retaining Ring Type C M Material
S45C	-	-	Spring Steel
		Black Oxide	
		Electroless Nickel Plating	SUS304-CSP
	Surface 50HRC~	-	Spring Steel

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 **P.820** When more than 2 keyways are added, the tolerances may shift by up to 0.2°.

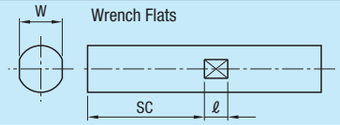
Keyway Machining + Set Screw Flat 	ZA ZB ZC ZD		Adds a flat at any designated angle based on the keyways. Specify the position and the length for each keyway, and the angle for the set screw flats. Ordering Code ZA40-HA20-AA90 ZA, HA, ZB, HB, ZC, HC, ZD, HD= 1mm Increment AA, AB, AC, AD= 30° Increment 30°≤ AA, AB, AC, AD ≤330° 3≤HA,HB,HC,HD≤100 Keyway Details **P.820**

・Ordering Code

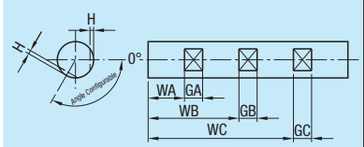
Keyway Position Specified	Keyway Width Specified	Angle Specified 30° Increment
ZA	HA	AA
ZB	HB	AB
ZC	HC	AC
ZD	HD	AD

D	10–17	18–40	45, 50
H	1	2	3

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°.

Wrench Flats 	SC		Adds a wrench flat. Specify the position of a wrench flat. Ordering Code SC180 SC = 1mm Increment 0≤SC≤L-ℓ

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		

2 Set Screw Flats (Angle Specified) 	WA WB WC		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-AA0 WA, WB, WC, GA, GB, GC= 1mm Increment AA, AB, AC = 30° Increment 0°≤ AA, AB, AC ≤330°

・Ordering Code

Set Screw Flat Position Specified	Set Screw Flat Width Specified	Angle Specified 30° Increment
WA	GA	AA
WB	GB	AB
WC	GC	AC

D	10–17	18–40	45, 50
H	1	2	3