

Driving Shafts

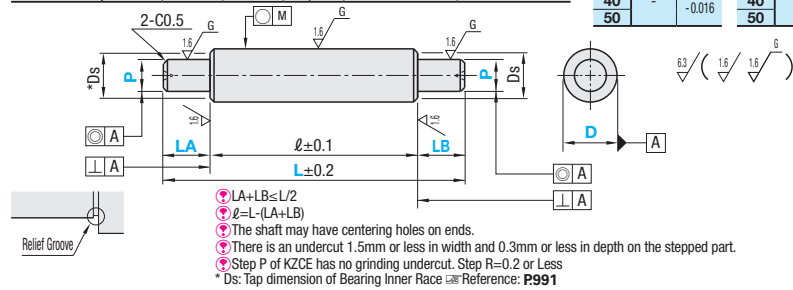
Both Ends Stepped

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



Type	D, P Tolerance	Concentricity	Perpendicularity	Material	Hardness	Surface Treatment
KZCE	h7	0.05	0.05	EN 1.1191 Equiv.	-	Black Oxide
KZCN	h6	0.01	0.01	EN 1.1191 Equiv.	-	Black Oxide
KZCC						Black Oxide
KZCP						Electroless Nickel Plating
KZCF						Induction Hardened Surface Hardness 50HRC-

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



RoHS10

Part Number Type	D	0.5mm Increment Selection		0.5mm Increment		*Ds
		L	P	LA	LB	
KZCE (D10~30)	10	50.0~300.0	6	4.0~40.0	4.0~40.0	8
	12		8			10
	15		10			11.5
	20		12			13
	25		15			14
KZCN	100.0~400.0	17	5.0~100.0	5.0~50.0	19	
		20			21	
		25			24	
		30			27	
		35			29	
KZCC	100.0~500.0	30	10.0~100.0	10.0~60.0	31	
		35			34	
		40			37	
		45			39	
		50			42	
KZCP	200.0~500.0	40	15.0~150.0	15.0~70.0	48	
		45			49	

Ordering Example: **KZCF50 - 450 - P45 - LA80 - LB50**

• About KZCF (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.

* marked sizes are not available for KZCE.

Type	KZCE					KZCN					KZCC				
	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															
12															
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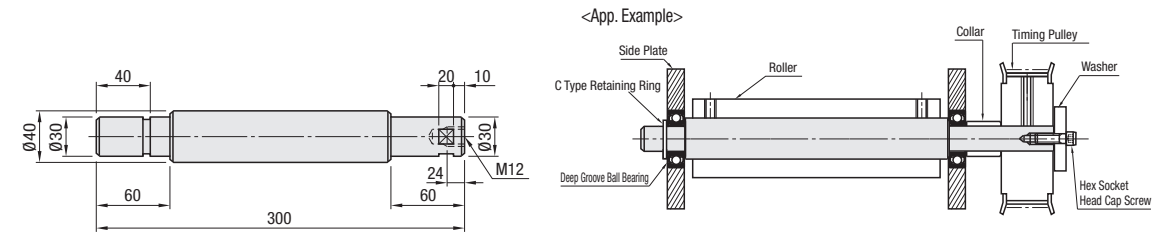
Type	KZCP					KZCF				
	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5
D	~100.0	~200.0	~300.0	~400.0	~500.0	~100.0	~200.0	~300.0	~400.0	~500.0
10										
12										
15										
20										
25										
30										
35										
40										
50										

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: A retaining ring groove, two set screw flats at 0° and 90° and a tap.



Alterations Part Number - L - P - LA - LB - (MA, NA, KA, TA, SA, WA...etc.)
KZCF40 - 300 - P30 - LA60 - LB60 - NB12 - TA40 - WB10 - GB20 - AB90

Alterations	Code		Spec.
	Left End	Middle Right End	
Threaded Ends 	MA MMA	MC MMC MMD MMD	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, LA(LB)-2 Code Screw Accuracy M (Coarse) Pitch M (Fine) Pitch M (Fine) Pitch MA MC MB MD Coarse JIS 6h (Class 2) M6 1.0 M6 0.75 M25 1.5 MSA MSC MSB MSD Fine (Standard) JIS 6h (Class 2) M10 1.5 M10 0.75 M35 1.5 MMA MMC MMB MMD Fine (Precision) JIS 4h (Class 1) M12 1.75 M12 1.0 M40 1.5 M20 2.5 M15 1.0 M45 1.5 M30 3.5 M17 1.0 M50 1.5 M20 1.0 When D, P=M, thread length can be specified. Fine (Precision Grade) is not available for KZCE.
Tapped Ends 	NA	NB	Adds taps on shaft ends. Select the thread diameter. Ordering Code NA5-NB5 NA, NB ≤ P-4 NA (Coarse) NB (Coarse) Selection M3 M4 M5 M6 M8 M10 M12 M16 M20 M24
Keyway Machining 	KA	KB	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°. Specify the keyway position more than 2mm away from the stepped part.
Keyway Machining + Set Screw Flat 	ZA	ZB	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° HA, HB, HC, HD ≤ 100 Keyway Details P820 Specify the keyway position more than 2mm away from the stepped part. Ordering Code Keyway Position Specified Keyway Width Specified Angle Specified 30° Increment ZA HA AA ZB HB AB ZC HC AC ZD HD AD 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°.
Retaining Ring Groove 	TA	TC TD	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB10 TA, TB = 1mm Increment 4≤TA(TB)≤LA(LB)-3 Retaining rings are included. For dimensions of the retaining ring groove, P820 P: 6, 8, 10, 12, 15, 20, 25, 30, 35, 40, 50 D, P: 6-17 20-40 45, 50 H: 1 2 3 Material Hardness Surface Treatment Retaining Ring EN 1.1191 Equiv. Black Oxide Electroless Nickel Plating Spring Steel Surface 50HRC- Spring Steel
Wrench Flats 	SA	SD	Adds a wrench flat. Specify the position of a wrench flat. Ordering Code SA5 SA, SB, SD = 1mm Increment SA, SB, SD ≥ 0 SA ≤ LA-ℓ, SB ≤ LB-ℓ, SD ≤ LA-LB-ℓ D: 10 12 15 20 25 30 35 40 50 W: 8 10 13 17 22 27 30 36 41 ℓ: 8 10 15 20 P: 6 8, 10 12 15 17 20 25 30 35 40 45 W1: 5 7 10 13 14 17 19 27 30 36 38 ℓ: 8 10 15 20
2 Set Screw Flats (Angle Specified) 	WA	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, P: 6-17 20-40 45, 50 H: 1 2 3
Tolerance Change 	PJ	PK	Changes the tolerance of P Dimension of the stepped part to js6 or k6. Ordering Code PJ or PK Both LA and LB tolerances will be changed. Not available for KZCE.