

Driving Shafts

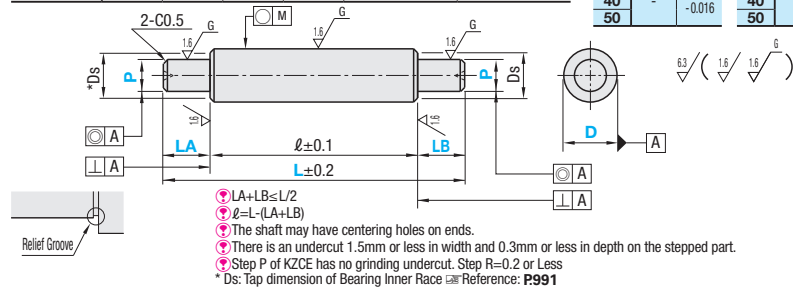
Both Ends Stepped

■ **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	S45C	-	Black Oxide
KZCN	h6	0.01	0.01	S45C	-	Black Oxide
KZCC	h6	0.01	0.01	S45C	-	Black Oxide
KZCP	h6	0.01	0.01	S45C	-	Electroless Nickel Plating
KZCF	h6	0.01	0.01	S45C	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	0.005	0.003
20	0	0	20	0.006	0.005
25	0	-0.013	25	0.006	0.005
30	-0.021	0	30	0.006	0.005
35	0	0	35	0.006	0.005
40	-	0	40	0.006	0.005
50	-	-0.016	50	0.006	0.005



RoHS10

Part Number	0.5mm Increment	Selection	0.5mm Increment		*Ds
			L	LA	
KZCE (D10~30)	10	6	4.0~40.0	4.0~40.0	8
	12	8	5.0~50.0	5.0~50.0	9.5
	15	10	5.0~50.0	5.0~50.0	10
	20	12	5.0~75.0	5.0~50.0	11.5
	25	15	5.0~100.0	5.0~50.0	13
KZCN KZCC KZCP KZCF	30	17	10.0~100.0	10.0~60.0	14
	*35	20	10.0~125.0	10.0~60.0	15
	*40	25	15.0~150.0	15.0~70.0	17
	*45	30	20.0~150.0	20.0~70.0	19
		35	20.0~150.0	20.0~70.0	21

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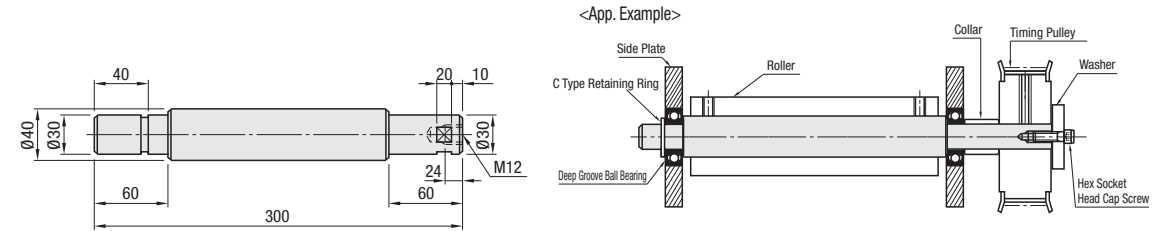
Type	KZCP					KZCF				
	Min. L	L100.5	L200.5	L300.5	L400.5	Min. L	L100.5	L200.5	L300.5	L400.5
D	~100.0	~200.0	~300.0	~400.0	~500.0	~100.0	~200.0	~300.0	~400.0	~500.0
10										
12										
15										
20										
25										
30										
35										
40										
50										

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	Right End	
Threaded Ends 	MA, MSA, MMA	MC, MSC, MMC, MD, MSD, MMD, 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, LA(LB)-2 Code: Screw Accuracy M(Coarse) Pitch M(Fine) Pitch M(Fine) Pitch M6 1.0 M6 0.75 M25 1.5 M8 1.25 M8 0.75 M30 1.5 M10 1.5 M10 0.75 M35 1.5 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) M3 M4 M5 M6 M8 M10 M12 M16 M20 M24
Keyway Machining 	KA	KC, 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	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, ZC, 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, 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)≤LA(LB)-3 * Retaining rings are included. * For dimensions of the retaining ring groove, P820 P=6, 8; Retaining Ring Type E, P≤10, D≥10; Retaining Ring Type C, Driving Shafts Material Hardness Surface Treatment Material S45C Black Oxide Spring Steel Surface 50HRC- Electroless Nickel Plating SUS304-CSP Spring Steel
Wrench Flats 	SA	SD, SB	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, 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-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 (jS6)	PK (k6)	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.