Driving Shafts
-Both Ends Stepped Type-

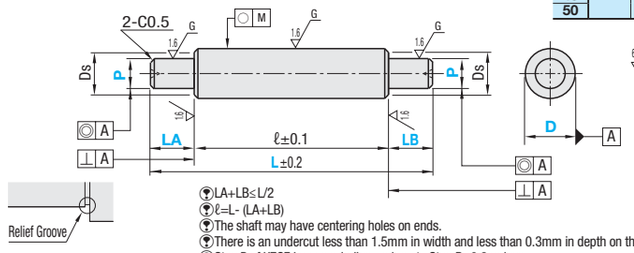
■Features: Rotary Shafts suitable for driving motion. Needed accuracies and shapes are provided for rotary driving applications.

RoHS

Type	D, P Tolerance	Concentricity	Perpendicularity	M Material	H Hardness	S Surface Treatment
KZCE	h7	φ0.05	⊥0.05	1.1191/C45E	-	Black Oxide
KZCN	h6	φ0.01	⊥0.01			-
KZCC						Black Oxide
KZCP						Electroless Nickel Plating
KZCF				1.1191/C45E	Induction Hardening Surface Hardness 50HRC~	-

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

D	Circularity M KZCE	Circularity M Others
10	0.004	0.003
12		
15	0.005	
20		
25	0.006	0.005
30		
35	-	
40		
50		



- LA+LB≤L/2
- ℓ=L- (LA+LB)
- The shaft may have centering holes on ends.
- There is an undercut less than 1.5mm in width and less than 0.3mm in depth on the stepped part.
- Step P of KZCE has no grinding undercut. Step R=0.2 or less.

Part Number Type	D	0.5mm Increment L	Selectable P	0.5mm Increment LA	0.5mm Increment LB	Ds
KZCE (D10~30) KZCN KZCC KZCP KZCF	10	50.0~300.0	6	4.0~40.0	4.0~40.0	8
			8			9.5
	12		8			10
			10	5.0~50.0	5.0~50.0	11.5
	15	100.0~400.0	10			13
			12	5.0~75.0		14
	20		15			18
			17	5.0~100.0		19
	25	100.0~500.0	17			21
			20	10.0~100.0	10.0~60.0	24
	30		20			27
			25	10.0~125.0		29
	*35		25			31
			30	15.0~150.0	15.0~70.0	34
	*40	200.0~500.0	30			37
			35			39
	*50		40	20.0~150.0	20.0~70.0	48
			45			49

Order Example

Part Number - L - P - LA - LB

KZCF50 - 450 - P45 - LA80 - LB50

Days to Ship

- KZCE: 8 Days
- KZCN KZCC: 10 Days
- KZCP KZCF: 12 Days

- KZCF (Induction Hardening)

When alterations on the right page are specified, the shafts are induction hardened (except the threaded sections) after machining.
Thus far, the following may occur:
(1) : Due to thermal conduction to the thread, the threads may be hardened by 2~3mm.
(2) : Induction Hardening may shrink the keyway width (around -0.01~-0.02). If the key becomes hard to fit, adjust by spot fixing.

*marked sizes are not available for KZCE.

Price

■Volume Discount (Round down to one Cent.) **P. 87**

Quantity	1~4	5~9	10~19
Rate	€ Unit Price	5%	10%

For orders larger than indicated quantity, please request a quotation.

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

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

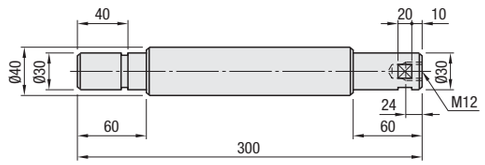
■Selection of Driving Shaft

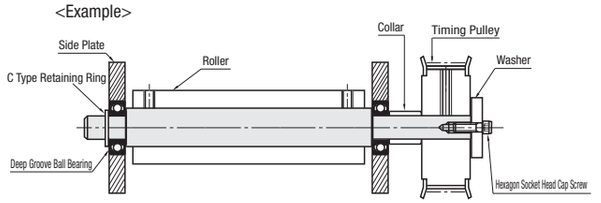
In selecting a driving shaft, select the basic shape and size from the specification table, then select necessary alterations such as thread machining, keyway addition etc.

<Selection Example of Part No.>
- Alteration Selection: A retaining ring groove, two set screw flats at 0° and 90° and a tap.

<Price Calculation Example>
Body Price 74,00 EUR + Retaining Ring Groove 4,50 EUR + Set Screw Flat 5,00 EUR + Female Thread Hole Machining 3,00 EUR = Total Price 74,00 EUR

<Example>





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 Left End	Code Middle	Code Right End	Spec.	Price Adder
Male Thread Ends	MA MSA MMA	Left End MC MSC / Right End MD MSD	MB MSB MMB	Adds threads at shaft ends. Specify the length of the threads. (For accuracy, coarse or fine threads can be specified by an ordering code.) Ordering Code MA15-MSB15 1 mm Increment 5≤Thread length≤Mx5, LA(LB)-2	Coarse / Fine
Female Thread Ends	NA	-	NB	Adds a tap at the shaft end. Select the thread diameter. Ordering Code NA5-NB5(P)NA, NB≤P-4	M3~M16 3,00 / M20~M36 4,50
Keyway Machining	KA	KC KD	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=1 mm Increment (P)3≤HA,HB,HC,HD≤100 (P)For Keyway details, P.737 (P)When more than 2 keyways are added, the tolerances may shift by up to 0.2°. (P)Specify the keyway position more than 2mm away from the stepped part.	D10~D15 2,00 / D20~D50 4,00
Keyway Machining + Set Screw Flat	ZA	ZC ZD	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=1 mm Increment AA, AB, AC, AD=30° Increment 30°≤AA, AB, AC, AD≤330° (P)HA, HB, HC, HD≤100 (P)Keyway Details P.737 (P)Specify the keyway position more than 2mm away from the stepped part. ·Ordering Code	6,00
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 (P)Retaining rings are attached. (P)For dimensions of the retaining ring groove, P.734	D10~D15 3,00 / D20~D50 4,50
Wrench Flat	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≤L-LA-LB-ℓ	4,00
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	5,00
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 (P)Both LA and LB tolerances will be changed. (X)Not available for KZCE.	10,00