Driving Shafts

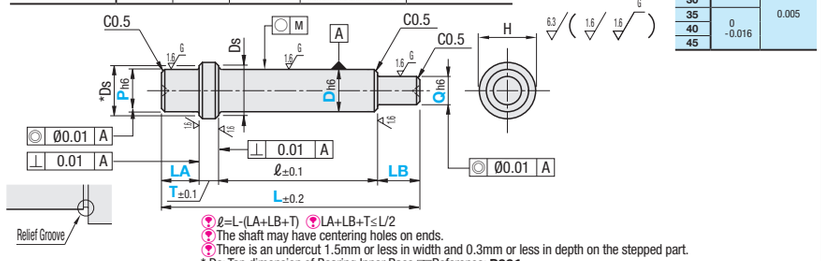
One End Stepped with Shoulder

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

RoHS10

Type	D, P, Q Tolerance	Concentricity	M Material	H Hardness	S Surface Treatment
KZFN	h6	Ø0.01	EN 1.1191 Equiv.	-	-
KZFC					Black Oxide
KZFP					Electroless Nickel Plating
KZFS			EN 1.4301 Equiv.		-
KZFF			EN 1.1191 Equiv.	Induction Hardened Surface Hardness 50HRC~	-

D	Tolerance h6	Circularity M
8	0 -0.009	0.003
10		
12, 12A	0 -0.011	
15		
17, 17A		
20	0 -0.013	0.005
25		
30		
35	0 -0.016	
40		
45		



- ℓ=L-(LA+LB+T) LA+LB+T≤L/2
- The shaft may have centering holes on ends.
- There is an undercut 1.5mm or less in width and 0.3mm or less in depth on the stepped part.

* Ds: Tap dimension of Bearing Inner Race Reference: **P991**

Part Number Type	D	0.5mm Increment L	Selection T	1mm Increment P	0.5mm Increment LA	1mm Increment Q	0.5mm Increment LB	H	*Ds
	8	50.0~300.0	5	6~9	4.0~40.0	5~7	4.0~40.0	12	10
	10		10 15 20	8~12	5.0~50.0	7~9	5.0~50.0	15	13
	12			10~13	5.0~60.0	7~11	5.0~60.0		14
	12A			12~18				20	16
KZFN	15	100.0~400.0	10 15 20 25	12~18	5.0~75.0	10~14	5.0~75.0		18
KZFC	17			14~18	5.0~100.0	10~16	5.0~100.0		19
KZFP	17A			14~20				25	21
KZFS	20			17~23		14~19			24
KZFF	25	100.0~500.0	10 20 30 40 50	20~28	10.0~125.0	14~24	10.0~125.0	30	29
	30			25~33	15.0~150.0	20~29	15.0~150.0	35	34
	35			28~38		20~34		40	39
	40	200.0~500.0		35~47	20.0~150.0	20~39	20.0~150.0	50	48
	45			35~48		20~44			49

Ordering Example

Part Number	-	L	-	T	-	P	-	LA	-	Q	-	LB
KZFN30	-	350	-	T20	-	P30	-	LA50	-	Q25	-	LB30

· About KZFF (Induction Hardened)

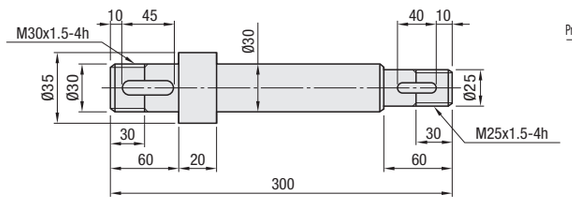
When alterations on the right-hand page are specified, the shafts are induction hardened (except the threaded sections) after machining.
As a result, these may occur:
①: Due to thermal conduction to the thread, the threads may be hardened by 2 ~ 3mm.
②: Induction Hardened may shrink the keyway width (around -0.01 ~ -0.02). If the key becomes hard to fit, adjust it by gauging.

Type / D	KZFN Min. L ~100.0	KZFN L100.5 ~200.0	KZFN L200.5 ~300.0	KZFN L300.5 ~400.0	KZFN L400.5 ~500.0	KZFC Min. L ~100.0	KZFC L100.5 ~200.0	KZFC L200.5 ~300.0	KZFC L300.5 ~400.0	KZFC L400.5 ~500.0	KZFP Min. L ~100.0	KZFP L100.5 ~200.0	KZFP L200.5 ~300.0	KZFP L300.5 ~400.0	KZFP L400.5 ~500.0
8				-	-				-	-				-	-
10				-	-				-	-				-	-
12				-	-				-	-				-	-
12A				-	-				-	-				-	-
15					-					-					-
17					-					-					-
17A					-					-					-
20					-					-					-
25															
30															
35															
40	-					-					-				
45	-					-					-				

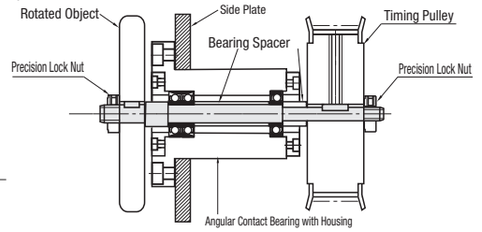
Type / D	KZFS Min. L ~100.0	KZFS L100.5 ~200.0	KZFS L200.5 ~300.0	KZFS L300.5 ~400.0	KZFS L400.5 ~500.0	KZFF Min. L ~100.0	KZFF L100.5 ~200.0	KZFF L200.5 ~300.0	KZFF L300.5 ~400.0	KZFF L400.5 ~500.0
8				-	-				-	-
10				-	-				-	-
12				-	-				-	-
12A				-	-				-	-
15					-					-
17					-					-
17A					-					-
20					-					-
25										
30										
35										
40	-					-				
45	-					-				

■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 Threaded Ends (Fine Thread, Precision Grade), Two Keyways

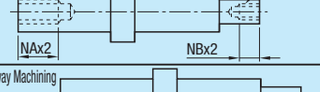


<App. Example>



Alterations

Part Number	-	L	-	T	-	P	-	LA	-	Q	-	LB	-	(MA, NA, KA, TA, SA···etc.)
KZFF30	-	300	-	T20	-	P30	-	LA60	-	Q25	-	LB60	-	MMA30 - MMB30 - KA10 - HA45 - KB10 - HB40

Alterations	Code Left End	Code Right End	Spec.
Threaded Ends 	MA MSA MMA	MB MSB MMB MD MSD 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 ▼ When D, P, Q=M, thread length can be specified. ▼ Specify Q diameter smaller than MD, MSD and MMD root diameter.
Tapped Ends	NA	NB	Adds taps on shaft ends. Select the thread diameter. Ordering Code NA5-NB5 ▼ NA,NB≤P(Q)-4
Keyway Machining	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°. ▼ Specify the keyway position more than 2mm away from the shouldered or stepped part.
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** ▼ Specify the keyway position more than 2mm away from the shouldered or stepped part. ▼ 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	TB TD	Adds a retaining ring groove. Specify the position of a retaining ring groove. Ordering Code TA10-TB100 TA, TB, TD = 1mm Increment 4≤TA(TB)≤LA(LB)-3 ▼ Retaining rings are included. ▼ For dimensions of the retaining ring groove, **P.820** ⊗ P,Q=27,31,33,34,36~39, Not available for 41~44 and 46~48.
Wrench Flats	SA SH	SB	Adds a wrench flat. Specify the position of a wrench flat. Ordering Code SA5-SB10-SH SA, SB = 1mm Increment SA, SB ≥ 0 SA ≤LA-ℓ, SB≤LB-ℓ ▼ Specification of the length for SH is not necessary. Adds wrench flats on the shoulder. (ℓ=h)
2 Set Screw Flats (Angle Specified)	WA	WB WD	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, WD, GA, GB, GD= 1mm Increment AA, AB, AC = 30° Increment 0°≤ AA, AB, AC ≤330°
Tolerance Change	DJ (js6) DK (k6)		Changes the D dimension tolerance to js6 or k6. Ordering Code DJ or DK

Material	Hardness	Surface Treatment	Material
EN 1.1191 Equiv.	-	-	Spring Steel
		Black Oxide	
		Electroless Nickel Plating	EN 1.4301 (CSP) Equiv.
EN 1.4301 Equiv.		-	
EN 1.1191 Equiv.	Surface 50HRC~	-	Spring Steel

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

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