Driving Shafts

One End Stepped with Flange

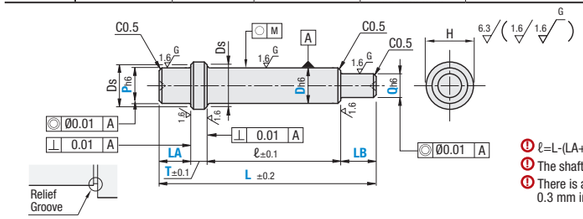
Rotary Shafts suitable for driving motion. Accuracies and shapes needed for rotary driving applications are selectable.

Driving Shafts – One End Stepped with Flange

RoHS10

Type	D, P, Q Tolerance	Concentricity	Material	Hardness	Surface Treatment
KZFN	h6	Φ0.01	1045 Carbon Steel or Equivalent	—	—
KZFC					Black Oxide
KZFP					Electroless Nickel Plating
KZFS			304 Stainless Steel		—
KZFF			1045 Carbon Steel or Equivalent	Induction Hardened Surface Hardness 50 HRC min.	—

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



① ℓ=L-(LA+LB+T) ① LA+LB+T≤L/2
① The shaft may have Center holes on ends.
① There is an undercut less than 1.5 mm in width and less than 0.3 mm in depth on the stepped part.

*Ds: Tap dimension of Bearing Inner Race, reference: **P.1028**.

Part Number Type	D	0.5 mm Increment L	Selection T	1 mm Increment P	0.5 mm Increment LA	1 mm Increment Q	0.5 mm Increment LB	H	Ds
KZFN KZFC KZFP KZFS KZFF	8	50.0-220.0	5 10 15 20	6–9	4.0–40.0	5–7	4.0–40.0	12	10
	10	50.0–300.0		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		10 15 20 25	12–18				20	16
	15	100.0–400.0		12–18	5.0–75.0	10–14	5.0–75.0		18
	17			14–18	5.0–100.0	10–16	5.0–100.0		19
	17A			14–20				25	21
	20			17–23		14–19			24
	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

Part Number Example

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

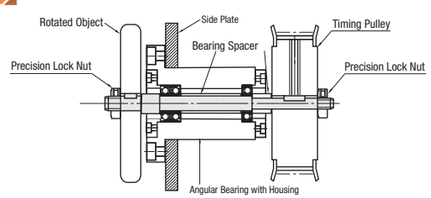
KZFF (Induction Hardened)

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

Available Types

Type	KZFN, KZFC, KZFP, KZFS, KZFF				
D	Min. L–100.0	L100.5–200.0	L200.5–300.0	L300.5–400.0	L400.5–500.0
8	•	•	•	—	—
10	•	•	•	—	—
12	•	•	•	—	—
12A	•	•	•	—	—
15	•	•	•	•	—
17	•	•	•	•	—
17A	•	•	•	•	—
20	•	•	•	•	—
25	•	•	•	•	•
30	•	•	•	•	•
35	•	•	•	•	•
40	—	•	•	•	•
45	—	•	•	•	•

Application Example

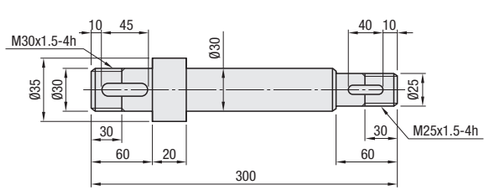


Selection of Driving Shaft

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: Two Threaded Ends (Fine Thread, Precision Class), Two Keyways

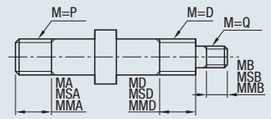
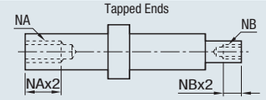
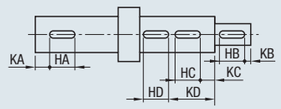
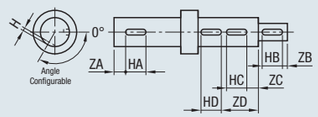
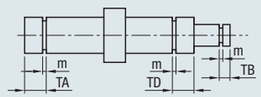
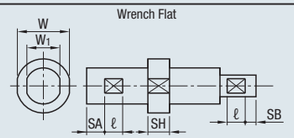
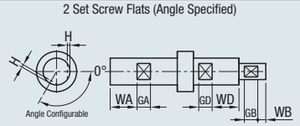
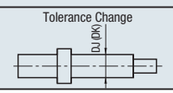


Driving Shafts

One End Stepped with Flange, *continued*

Part Number 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. (For accuracy, coarse or fine threads can be specified by an ordering code.) **Ordering Code:** MA15-MSB15 1 mm Increment 5≤Thread length ≤ M x 5, LA (LB) - 2
Tapped Ends 	NA	NB	Adds a tap at the shaft end. Select the thread diameter. **Ordering Code:** NA5-NB5 ① 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 = 1 mm Increment ① 3 ≤ HA / HB / HC / HD ≤ 100 ① For keyway details refer to **P.853**. ① When more than 2 keyways are added / the tolerances may shift by up to 0.2°. ① Specify the keyway position more than 2 mm away from the flanged 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 = 1 mm Increment AA / AB / AC / AD = 30°Increment 30°≤ AA / AB / AC / AD ≤ 330° ① 3 ≤ HA / HB / HC / HD ≤ 100 ① For keyway details refer to **P.853**. ① Specify the keyway position more than 2 mm away from the flanged or stepped part. **Ordering Code:**
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 = 1 mm Increment 4 ≤ TA (TB) ≤ LA (LB) - 3 ① Retaining rings are attached. ① For dimensions of the retaining ring groove **P.853**. ⊗ P / Q = 27 / 31 / 33–34 / 36–39 Not available for 41–44 and 46–48.
Wrench Flat 	SA SH	SB	Adds a Wrench Flat. Specify the position of a wrench flat. **Ordering Code:** SA5-SB10-SH SA / SB = 1 mm Increment SA / SB ≥ 0 SA ≤ LA - ℓ / SB ≤ LB - ℓ ① 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 = 1 mm 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

Threaded Ends

Code Left End	Code Right End	Screw Precision	M (Coarse)	Pitch	M (Fine)	Pitch	M (Fine)	Pitch
			M5	0.8	M5	0.5	M25	1.5
MA	MB MD	Coarse JIS6h (Class 2)	M6	1.0	M6	0.75	M30	1.5
MSA	MSB MSD	Fine (Coarse) JIS6h (Class 2)	M8	1.25	M8	0.75	M35	1.5
MMA	MMB MMD	Fine (Precision) JIS4h (Class 1)	M10	1.5	M10	0.75	M40	1.5
			M12	1.75	M12	1.0	M45	1.5
			M20	2.5	M15	1.0		
			M24	3	M17	1.0		
			M30	3.5	M20	1.0		
			M36	4				

① When D, P, Q = M, thread length can be specified.
① Specify Q diameter smaller than MD, MSD and MMD root diameter.

Tapped Ends

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

Keyway Machining

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

D / P / Q	5	6–17	18–40	41–48
H	0.5	1	2	3

① The length of each set screw flat is the same as that of each keyway.
① For a keyway and the angle of a set screw flat, the tolerances may shift by up to ±0.2°.

Retaining Ring Groove

P / Q / D≤8: Retaining Ring Type EP / Q≥9 D≥10: Retaining Ring Type C

Driving Shafts Material	Hardness	Surface Treatment	Retaining Ring Material
1045 Carbon Steel or Equivalent	—	—	Spring Steel
		Black Oxide	
		Electroless Nickel Plating	304 Stainless Steel-CSP
304 Stainless Steel		—	
1045 Carbon Steel or Equivalent	Surface 50 HRC min.	—	Spring Steel

Wrench Flat

D	8	10	12	15	17	20	25	30	35	40	45
W	7	8	10	13	14	17	22	27	30	36	38
ℓ	8		10					15		20	

P / Q	5	6	7	8–10	11–13	14–15	16–18	19–21	22–25	26–28	29–31	32–37	38–41	42–45	46–48
W_1	4	5	5.5	7	10	13	14	17	19	22	27	30	36	38	41
ℓ	8				10					15			20		

2 Set Screw Flats (Angle Specified)

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

D / P / Q	5	6–17	18–40	41–48
H	0.5	1	2	3

① For dimensions of the retaining ring groove **P.853**. ① For Keyway details, see **P.853**.