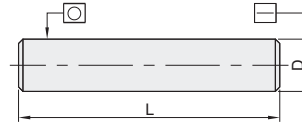


● L Dimension Tolerance

	L		L Dimension Tolerance		
	>	≤	Shaft Tolerance g6	Shaft Tolerance f8	Shaft Tolerance h8
Length Range	8	30	±0.2		
	30	120	±0.3		
	120	400	±0.5		
	400	1000	±0.8		
	1000	1500	±1.2		

● D Circularity

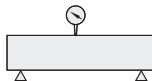
	D		Circularity		
	>	≤	Shaft Tolerance g6	Shaft Tolerance f8	Shaft Tolerance h8
O.D. Range	6	10	0.004	0.011	0.012
	10	13	0.004	0.014	0.012
	13	18	0.005	0.014	0.016
	18	20	0.005	0.017	0.016
	20	40	0.006	0.017	0.020
	40	50	0.007	—	—



● Shaft Straightness

Material	S45C			SUJ2			SUS440C			S45C		
O.D. Tolerance	Tolerance g6			Tolerance g6			Tolerance g6			Tolerance f8		
Hardness	HRC55~			HRC56~			HRC54~			Not Hardened		
Surface Treatment	No Surface Treatment Hard Chrome Plating			No Surface Treatment Hard Chrome Plating			No Surface Treatment Hard Chrome Plating			Hard Chrome Plating		
O.D.	Ø6~Ø50			Ø6~Ø50			Ø6~Ø50			Ø6~Ø50		
Length	L20~1200			L15~1500			L20~1200			L20~1200		
Straightness	Diameter Range	Length Range	Straightness Requirements	Diameter Range	Length Range	Straightness Requirements	Diameter Range	Length Range	Straightness Requirements	Diameter Range	Length Range	Straightness Requirements
	Ø6~Ø50	L≤100 L≥100	0.025 or less (L/100)×0.025 or less	Ø6~Ø50	L≤100 L≥100	0.01 or less (L/100)×0.01 or less	Ø6~Ø50	L≤100 L≥100	0.025 or less (L/100)×0.025 or less	Ø6~Ø50	L≤100 L≥100	0.025 or less (L/100)×0.025 or less

● Straightness Measuring Method



Shaft ends are supported on V-blocks and turned 360 degrees to measure shaft runout using a dial indicator. 1/2 of measured runout is defined as the straightness.

● Effective Hardened Layer Depth of Shafts

O.D. (D)	Effective Hardened Depth		
	SUJ2	SUS440C	S45C
6~10	≥0.4	≥0.4	≥0.3
12~13	≥0.6		≥0.5
15~20	≥0.8	≥0.6	≥0.8
≥25			

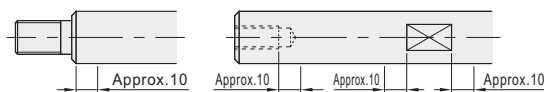
● Hardness and surface treatment of shaft



Except for Full Length Hardness and Full Length Surface Treatment of shaft, conventional shaft's heat treatment and surface treatment only refers to the outer circle area in the following example with . Other areas (stepped, tapped holes, threaded shafts, wrench flats, cross-drilled hole, optional processing) have no quenching layer and hard chromium layer.

● Notes on Hardening and Surface Treating

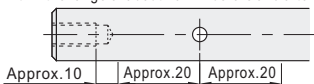
Annealing may lower hardness at shaft end machined areas (effective thread length + approx. 10mm).



- ① Areas that may lower hardness
- All threaded shafts;
 - All stepped shafts.
- ② Areas that may lower hardness
- All tapped holes;
 - All wrench flats.

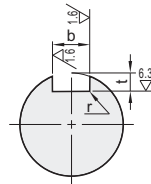
- ③ Other areas that may lower hardness due to annealing due to the above processing are:
- Optional processing of Retaining ring grooves, keyway, tapers, hex socket holes, wrench flats;
 - Optional processing of Cross-Drilled Hole, Screw Flat;
 - Optional processing of V-grooves.

- ④ When the material of shaft with Cross-Drilled Hole is SUJ2, the hardness may be reduced within the range of about 20 mm before and after the machining area.



- ⑤ Excluding "Full Length Hardness Guaranteed Type".

● Shaft Keyway Size



D	b		t		r
	Nominal size	Tol. (N9)	Nominal size	Tol.	
6~8	2	-0.004	1.2	+0.1 0	0.1
9~10	3	-0.029	1.8		
11~12	4	0 -0.03	2.5		
13~17	5		3.0	+0.2 0	0.2
18~22	6		3.5		
23~30	8	4.0			
31~38	10	0 -0.036	5.0	+0.2 0	0.3
39~44	12	0			
45~50	14	-0.043			

● Rust prevention and installation of shaft

- Yiheda shaft products are all treated with antirust oil before leaving the factory;
- When installing the shaft, please wear gloves to avoid sweat and water contact. After installation, antirust oil shall be sprayed, and antirust maintenance shall be carried out frequently during use;
- When storing and installing the non electroplated hard chromium models made of SUJ2 and S45C, pay special attention to rust prevention, otherwise it is easy to rust.