



Shaft kingdom

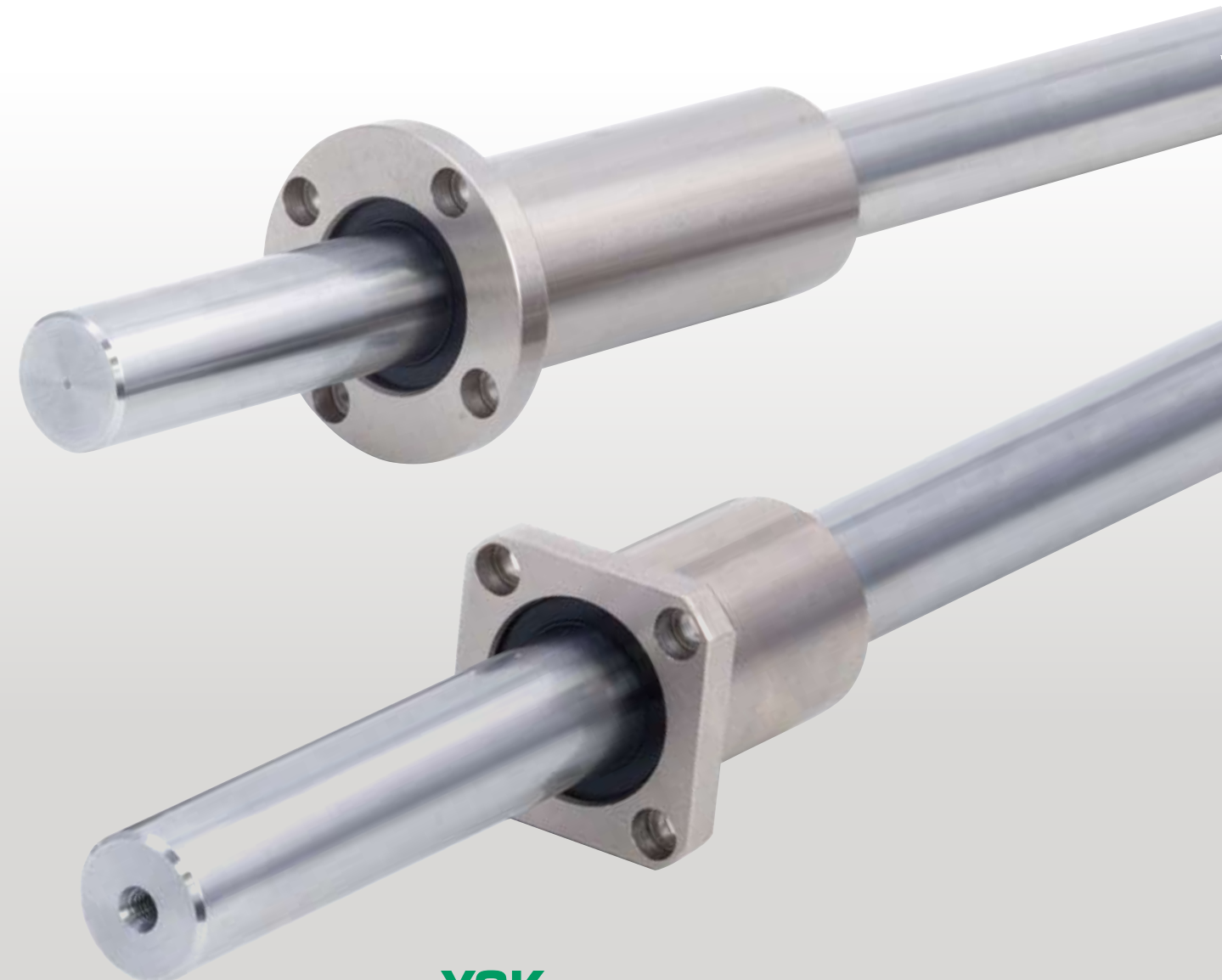


Catalog



**YSK Co.,Ltd.** <http://www.shaft.co.jp>

Head Office	1-17,Izumi-mati,Yao-shi,Osaka 581-0813,Japan TEL:+81(0)72-997-1466 FAX:+81(0)72-998-1959
Kyushu Factory, Office	3103-6,Kitanokawachi-otsu,Arita-cho,Nishimatsuura-gun,Saga 849-4166,Japan TEL: +81(0)955-46-5115 FAX:+81(0)955-46-5166
Tokyo Office	2-4-10-101B,Shinozaki-cho,Edogawa-ku,Tokyo 133-0061,Japan TEL: +81(0)3-5664-2160 FAX:+81(0)3-5664-2161
Nagoya Office	Taiyo Building 4F,107,Yanamori-cho,Nakagawa-ku,Nagoya-shi,Aichi 454-0871,Japan TEL: +81(0)52-365-2855 FAX:+81(0)52-365-2883
Fukushima Factory, Office	2-9,Higashi-ku,Taishinshimoshinjo,Shirakawa-shi,Fukushima 969-0304,Japan TEL: +81(0)248-54-5677 FAX: +81(0)248-54-5611
Thailand Office	1/19 Bangna Thani Building,9F B1, Soi Bangna-Trad 34, Bangna-Trad Road Km.3,Kwaeng Bangna,Khet Bangna,Bangkok 10260,Thailand TEL: +66(0)21-707-402 FAX: +66(0)21-707-403
Thailand Factory	589 Moo 7,T.Thatoom,A.Srimahaphote,Prachin Buri Thailand 2514



**YSK Co.,Ltd.**

YSK supports companies on the forefront of the mechatronical cultivated through on our knowledge and experience gained over

field technology by providing expertly manufactured machine parts years of production.



FUKUSHIMA  
TOKYO  
NAGOYA  
OSAKA  
KYUSHU

YSK

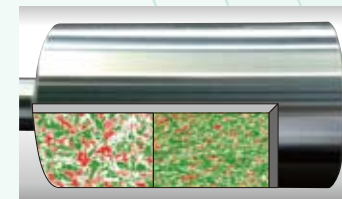
Shaft kingdom

SIAM YSK Co.,Ltd.

PRACHIN BURI  
BANGKOK

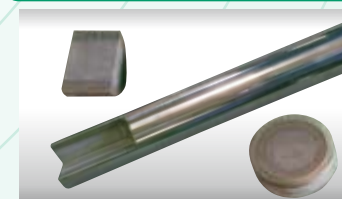


#### GR Shaft



We have succeeded in refining the surface texture of shafts by using our technology of induction hardening treatment. These high strengthened shafts have finally been perfected by using this texture refinement. It has 1.4 times the rotating strength and 10 times the abrasion resistance strength than conventional shafts.

#### YSJ-1



Effective case depth 10mm. Deep case depth. Easy to reuse of the roll. It becomes ecology measures. Thus, costs can be remarkably reduced.

#### Trapezoidal Screw



We have rolling trapezoidal screw series as well. There are YTr-R(L) type and SYTr-R(L) type which are used as trapezoidal screw shafts, and YNF-R(L) type and YNS-R(L) type which are used as nuts. Furthermore the basic size of trapezoidal screws follows JIS B0216.

#### SUS304 Rotary Shaft



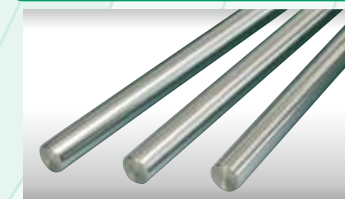
Antirust effect is provided in environments that are easy to cause rust by adopting SUS304, austenitic stainless. YSK SUS304 rotary shafts provide high-precision products for geometric tolerance such as circularity, straightness and concentricity.

#### YSU-1



"YSU-1" is the stainless shaft which is highly resistant to rust and abrasion. Corrosion resistance of new material "YSU-1" substantiates corrosion resistance of equivalent with SUS303 and SUS304.

#### Linear Shaft



The linear shaft is used as guide such as straight-line back-and-forth motion mechanism. Therefore linear shafts should have superior abrasion resistance and are high-precision products that satisfy the standard for geometrical tolerance such as cylindricity and circularity. Please use our linear shaft, which we proud of it's high precision, by all means.

#### Linear Bush



While maintaining a low price, our linear bushes retain their high-precision and high-rigidity performance. We provide the finest machinery parts for customers who designs and makes various machines.

#### Special Specification



We manufacture machine parts by our technology and experience which we have cultivated for long time. We provide rotary shafts, drive shafts and base plates, etc. which have heat treatment with short delivery term, high precision and low price.



Greetings

We worked on the manufacturing and sales of any kinds of shafts which are an essential part for machines since our company was established in 1966 in Osaka. We have been supported by our customers ever since. We have made an effort for 45 years concerning the questions; "What is necessary for customers?" and "Is our customer and users happy with our products?". We are using our accumulated experience and researched technologies. We put together the parts which are the essence of machines such as beginning linear shafts, drive shafts, eccentric shafts, rollers, spindles, linear rails, linear bushes, racks, no-oil-supply bushes, reduction gears and high-strengthened shafts. We have built a system which should be able to support customers by the power of commodity and technology which we have named "the general engineering company".

We work passionately on technological innovation as well. We have developed new products in joint projects with universities. One such product is the stainless shaft named YSU-1 which is highly resistant to rust. Another product is the refinement of a high-strengthened shaft which is able to be smaller than other conventional products. These new developed products attract people's attention since they are new materials which are unconventional. We contribute to societies evolution by aiding in the development of technology.

We turn our attention towards gaining support for overseas from a global view point. We set up our factory in Prachin Buri Thailand during the spring of 2013. We will provide our services to customers who are manufacturing in Asia. We will expand our business as a "general engineering company", drawing on our experience and technology which we have cultivated in Japan.

President

Naoto Ishikawa  
石川 直人



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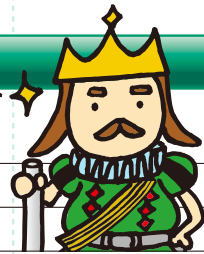
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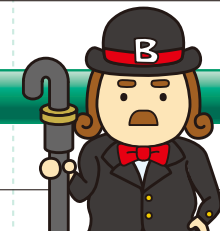
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KING SHAFT

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COUNT BUSH

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MINISTER SCREW

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## Company Overview

### Mind for YSK products

YSK started by making its first shaft in 1966. Through the years, we researched and developed, through trial and error. We met every customer's requirements and provided high quality products. We have made linear shafts, trapezoidal screw, SUS304 rotary shafts and machine keys with original technologies. We will strive to enhance the performance of our products which will enable them to be used for various fields.



## History We want to leap into the future.

**Firm name** : YSK Co.,Ltd.  
**Establishment** : June 1966  
**Capital stock** : 32 million Japanese yen  
**Executive** : Chairman Hiroyoshi Yamaguchi  
 : President Naoto Ishikawa  
 : Managing director Tomomi Yamaguchi  
**Employee** : Men and women total 200  
**Our bankers** : Mizuho bank (Yao branch)/Mitsui Sumitomo bank (Yao branch)/Awa bank (Higashi Osaka branch)/Saga bank (Arita ekimae branch)  
 Nanto bank (Yao branch)/Imari credit union (Nishi Arita branch)/ Japan Finance Corporation (Saga branch)

**Address** **Head office, factory**  
 1-17,Izumi-mati,Yao-shi,Osaka 581-0813,Japan  
 TEL : +81(0)72-997-1466  
 FAX : +81(0)72-998-1959



Head office

Osaka factory

**Kyushu factory, office**  
 3103-6,Kitanokawachi-otsu,Arita-cho,  
 Nishimatsuura-gun,Saga 849-4166,Japan  
 TEL : +81(0)955-46-5115  
 FAX : +81(0)955-46-5166



Kyushu Factory No.1

Kyushu Factory No.2

**Tokyo office**  
 2-4-10-101B,Shinozaki-cho,Edogawa-ku,  
 Tokyo 133-0061,Japan  
 TEL : +81(0)3-5664-2160  
 FAX : +81(0)3-5664-2161



Tokyo office

**Nagoya office**  
 Taiyo Building 4F,107,Yanamori-cho,Nakagawa-ku,  
 Nagoya-shi,Aichi 454-0871,Japan  
 TEL : +81(0)52-365-2855  
 FAX : +81(0)52-365-2883



Nagoya office

**Fukushima factory, office**  
 2-9,Higashi-ku,Taishinshimoshinjo,Shirakawa-shi,  
 Fukushima 969-0304,Japan  
 TEL : +81(0)248-54-5677  
 FAX : +81(0)248-54-5611



Fukushima Factory No.1

Fukushima Factory G

**Thailand factory, office (Siam YSK Co.,Ltd)**  
**Bangkok Office**  
 1/19 Bangna Thani Building,9F B1, Soi Bangna-Trad 34, Bangna-Trad Road Km.3,  
 Kwaeng Bangna,Khet Bangna,Bangkok 10260,Thailand  
 TEL : +66(0)21-707-402 FAX : +66(0)21-707-403  
**Purachin Buri factory**  
 589 Moo 7,T.Thatoom,A.Srimahaphote,Prachin Buri Thailand 2514



Siam YSK Co.,Ltd

Purachin Buri factory

## 1960

**1966年 6月** Hiroyoshi Yamaguchi (present Chairman) established Izumi Seisakusho under private management.



## 1970

**1970年 4月** Tomisabu Yamaguchi established Hanna Koushuuha Kogyosho under private management.

**1973年 7月** Izumi Seisakusho and Hanna Koushuuha Kogyosho were combined. We started and registered as Yamasan Kogyo Co., Ltd. Capital stock : 2,000,000 JPY



**1973年12月**



The location was moved to 6-53, Yamaga-cho, Yao-shi.

## 1980

**1983年12月** Heat treatment department and precision machinery department were established.

**1984年 8月** Precision machinery department has been moved to 1-17, Izumi-mati, Yao-shi. Production and sales of slide shafts were initiated.

**1985年 6月** Precision machinery department was registered as the head office of Yamasan Kogyo Co., Ltd. Capital stock : 8,000,000 JPY. Heat treatment department was started as Yamasan Co., Ltd.

**1989年 4月** We were identified as a designated factory by the NTN Corporation.

## 1990

**1990年 8月** Kyushu factory and business office were established by a capital stock of 32 million yen. Women staffs for field work was employed.



**1991年 9月** We started to make precision shafts for printing machines.

**1991年12月** Kyushu factory was extended.



**1992年 4月** Tomisabu Yamaguchi established Hanna Koushuuha Kogyosho under private management.

**1996年 3月** Welfare building was constructed.

## 1990

**1997年 6月** The name of the company was changed from Yamasan Kogyo Co., Ltd. to YSK Corporation Co., Ltd.

**1998年 3月** Tokyo branch was established.

## 2000

**2000年12月** Kyushu factory acquired ISO 9002.



**2001年 6月** The management system was installed. It is able to manage the production status by network from Osaka, Kyushu and Tokyo.



**2004年 1月** Nagoya branch was established. The name of the company was changed from YSK Corporation Co., Ltd. to YSK Co., Ltd. Osaka head office factory acquired ISO 9001.



**2004年10月** The second factory in Kyushu was completed.



Double column type machining center with five-face machining equipment was installed.

**2005年 2月** Tokyo branch was moved for business expansion.



**2006年 5月** Exclusive machining center for long material (SVC : Super Velocity Center) was installed.

**2006年 8月** Complex CNC lathe machine (INTEGREX30-IV) was installed.

**2008年 6月** Fukushima business office and factory were established.



**2009年 8月** "We became a certified company, based on the provisions of the 1st clause of article IV (Four) of the Act on Enhancement of Small and Medium Sized Enterprises' Core Manufacturing Technology."

**2009年 8月** We were also chosen to carry out the Strategic Basic Technology Enhancement Support Project in fiscal 2009 (revised budget project in fiscal 2009).

## 2010

**2012年 4月** Kyushu factory acquired ISO 14000.

**2013年 6月** We set up our factory in Purachin Buri Thailand and established business office in Bangkok Thailand.

**2014年 9月** Patented heating method and heat treatment equipment.



## SPECIAL WORK

Using the techniques and experiences that we have cultivated over many years, we can provide any working parts for machines and special machining parts with faster delivery, higher precision and lower cost than any other companies. YSK will make the special parts for special machine to meet customer's wishes.

YSK will make the special parts for special machine form.

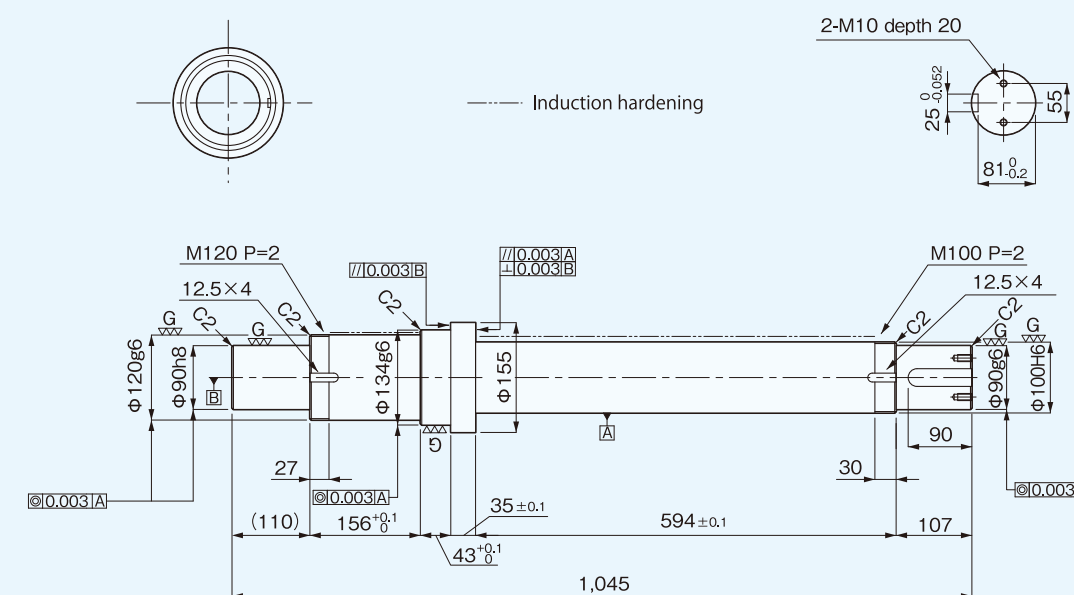
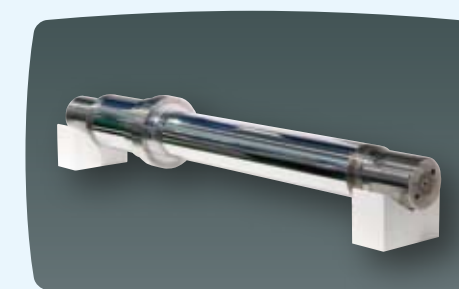
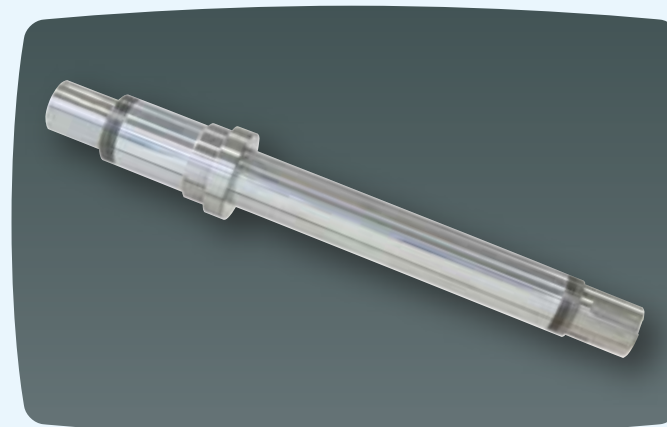


Spindle axis	Base plate
Drive shaft	Machining of wire cut
Roller shaft	Electrical discharge machining
Eccentric shaft	Gun drill, BTA
Cam shaft	Machining of slotter
Gear machining	Machining of spline
rack machining	Machining of internal grinding
Machining trapezoidal Screw, nut	surface grinding
Fine pin	Machining of trapezoidal screw shaft ends

## SPECIAL WORK

### Slitter main shaft

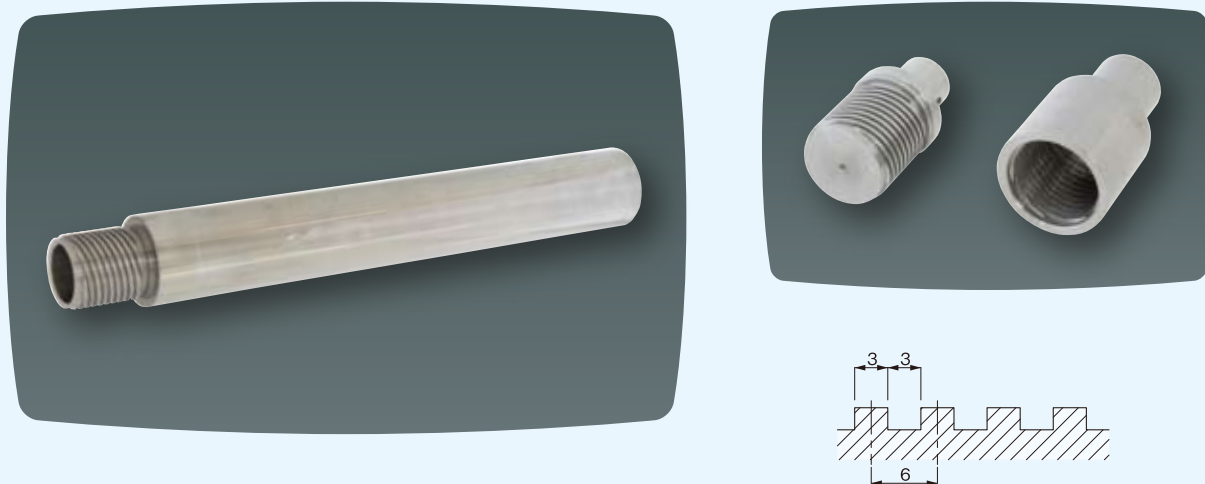
Based on the mechanical drawing, we correspond to various specifications such as ultra precise grinding and plating. We also make high precision main shafts.



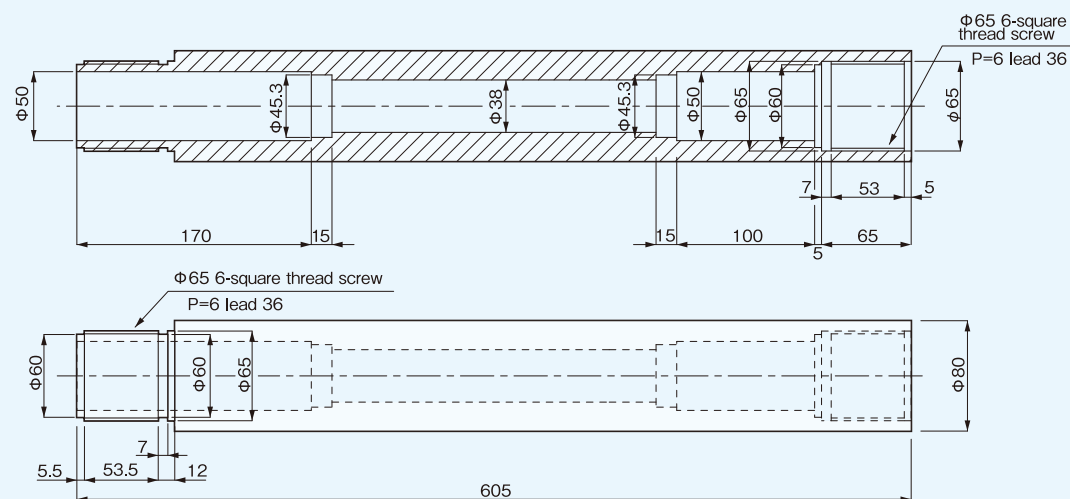
Material	SCM435
Part name	Slitter main shaft
Size	φ155 × 1045
Geometrical tolerance	Concentricity, Straightness, Parallelism 0.003
Treatment	Hcr plating
Manufacturing factory	Kyushu factory
Equipment	Lathe machine, Induction hardening, Cylindrical grinding machine

## Mirror roll (with 6-thread screw)

Based on the mechanical drawing, we correspond to various specifications such as ultra precise grinding and plating. We also make high precision mirror surface rolls.



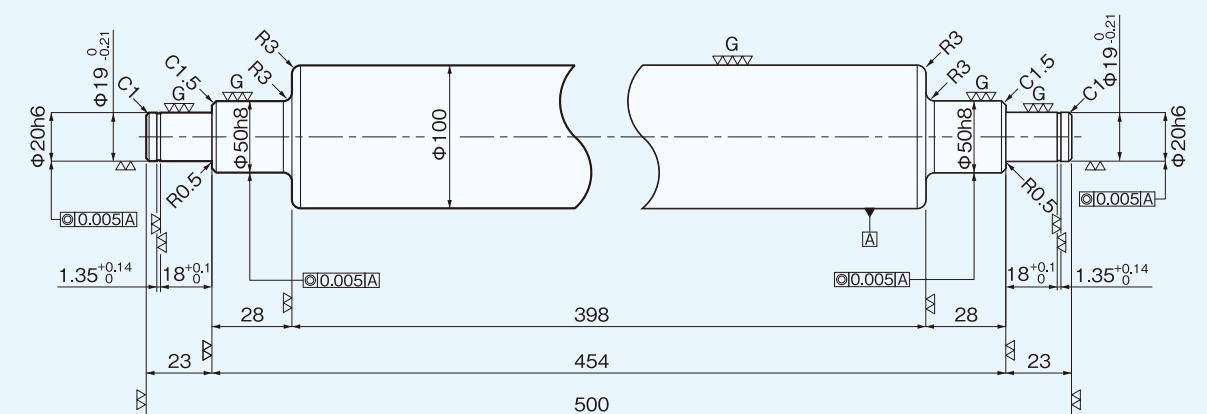
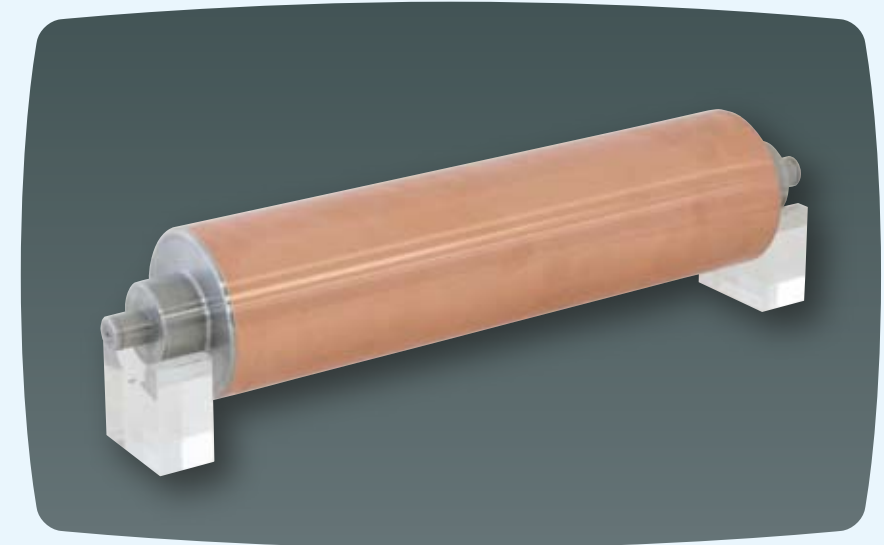
Enlarged view of threaded portion



Material	SUJ 2
Part name	Mirror surface roll (with 6-thread screw)
Size	φ80 × 605
Treatment	Hcr plating
Manufacturing factory	Fukushima factory
Equipment	Mirror surface grinding machine (Mirac)

## Copper roll

Based on the mechanical drawing, we correspond to various specifications such as ultra precise grinding and plating. We also make high precision rolls.

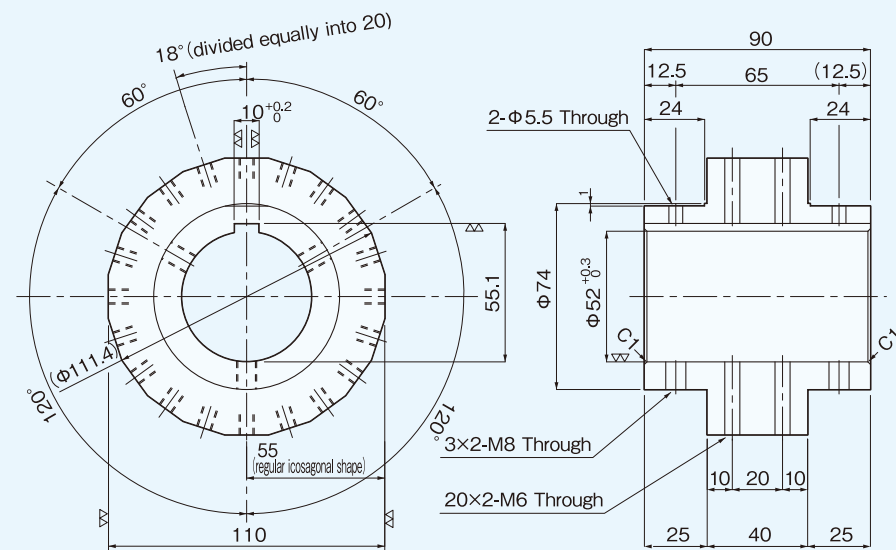


Material	Copper/SS400
Part name	Copper roll
Size	$\phi 100 \times 500$
Geometrical tolerance	Concentricity 0.003
Treatment	
Manufacturing factory	Fukushima factory
Equipment	Mirror surface grinding machine (Mirac)



# Flange

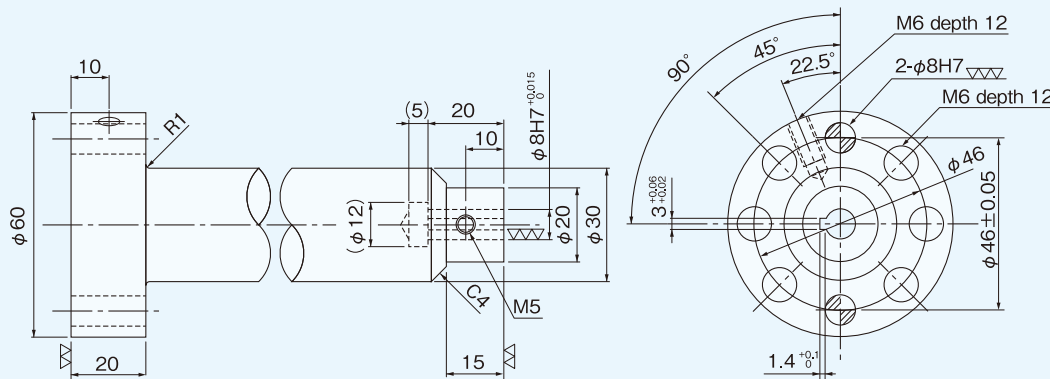
Based on the mechanical drawing, we correspond to various specifications such as ultra precise grinding and plating. We also make high precision flanges.



Material	SUS304
Part name	Flange
Size	φ111.4 × 90
Treatment	
Manufacturing factory	Head factory
Equipment	General purpose lathe machine, MC vertical type

# Post

We make also the products, which use a lot machining processing, except shafts. We can accept various processing by substantial equipments.



Notice) Chamfering without instruction is C0.5.

Material	S55C
Part name	Post
Size	φ60 × 172
Treatment	Electro less nickel plating

## Spindle axis

The high precision of level of micron is required on dimensional tolerance and geometrical tolerance also at the spindle axis, which is important as central part of machine tools. YSK has the grinding factory at constant temperature and then we can meet those requirements.



Spindle axis



Internal and external grinding, Spindle axis



Wire cutting, Spindle axis

## Drive shaft

The drive shaft, which is the main axis for transmitting the power to each working parts, needs hardening on required part qualitatively. YSK has induction hardening equipment and then we can control the consistent quality at machining precision and hardening precision also.



Drive shaft 1



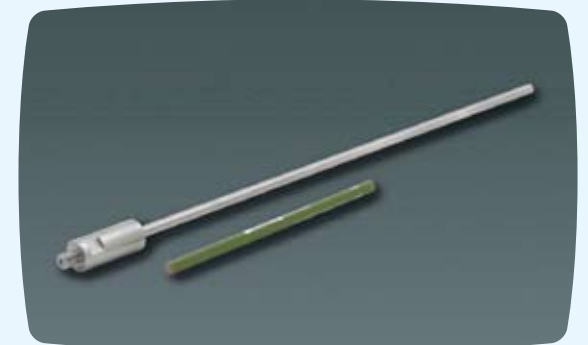
Drive shaft 2



Drive shaft 3

## Machining shaft

Machining external diameter of shaft is the base machining technology. YSK can put concentricity at also thin and long shaft with step out.



Machining shaft 1



Machining shaft 2



Black oxide finished machining shaft

## Roller shaft

About the quality of roller axis, which is core part of conveyer, high level is required such as the precision of run out is of course and precision of surface roughness also.



Roller axis



Taper roller axis



Precise cutter roller axis



## Eccentric axis, Cam shaft

A camshaft changing a moving direction, the eccentric axis needs the processing of multi axial directions.  
YSK can make various variations by the technique cultivated for many years.



Eccentric axis



Cam shaft



Eccentric axis, Cam shaft

## The shaft with quenching processing

For a quenched product, it is the most difficult skill to make such as the long keyway or tap.  
YSK has completed the technique as a specialized maker of the quenching shafts.



Hardening shaft with keyway



Shaft with welding flange



Hardening milling machining shaft

## Gear, Rack machining

A gear and the rack, used mainly for transmission of the power, are the indispensable processing for position forwarding and the timing mechanism of the machine tool.  
YSK makes from one piece for the customer's request.



Gear machining axis 1



Gear machining axis 2



Hardening round rack shaft

## Base plate

The basic precision is required in the base plate which is foundation of machine.  
YSK has large machining centers. We make not only shaft but also plate products.



Base plate



Plate(A5052)



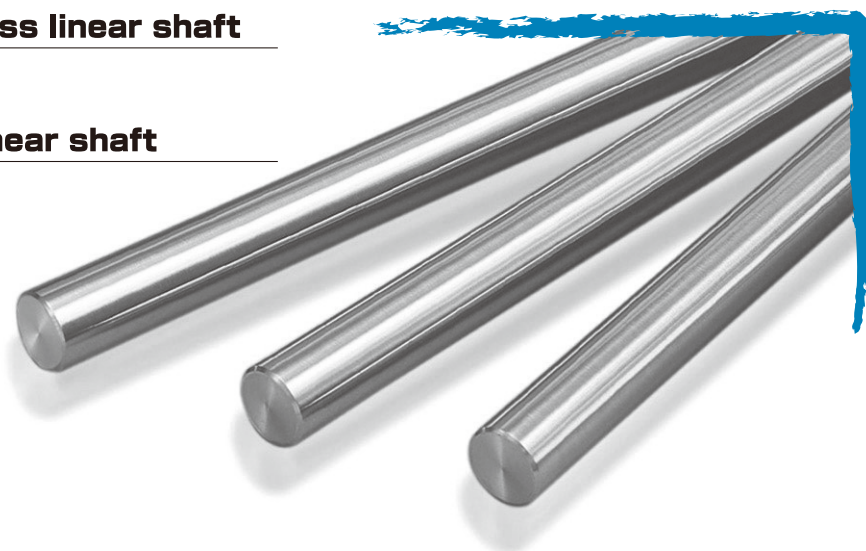
Plate(S50C)

# Linear Shaft



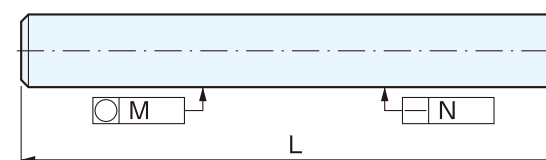
The linear shaft is used as a guide for straight-line back-and-forth motion mechanisms. Therefore linear shafts should have superior abrasion resistance and should be high-precision products that satisfy the standard of geometrical tolerance such as cylindricity and circularity. We highly recommend using our linear shafts, which we pride for their high-precision.

YS	Linear shaft
YSS	Stainless linear shaft
YSP	Pipe linear shaft



## The precision standard of Linear shaft

### ◎Circularity and straightness



#### ●Circularity

D	Be over	And under	Straightness N
3		18	0.02/100
18		50	0.01/100

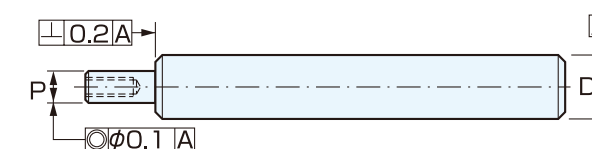
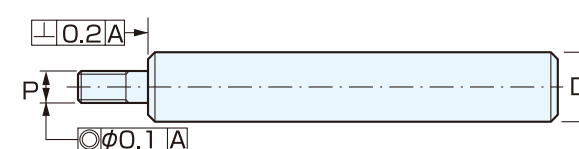
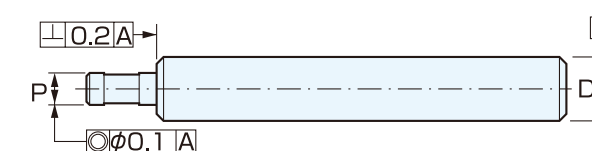
#### ●Circularity of D

D	Be over	And under	Straightness M
3		10	0.004
10		30	0.005
30		50	0.006

#### ●Allowance

L	Be over	And under	Allowance
3		6	±0.1
6		30	±0.2
30		120	±0.3
120		400	±0.5
400		1000	±0.8
1000		1500	±1.2

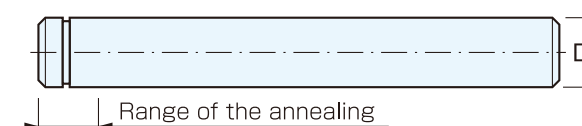
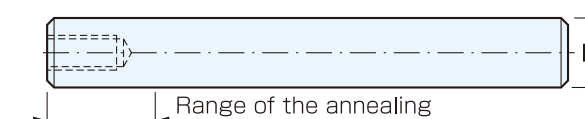
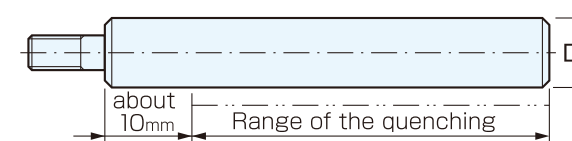
### ◎Concentricity and perpendicularity



## Linear shaft Material • hardness • Surface treatment

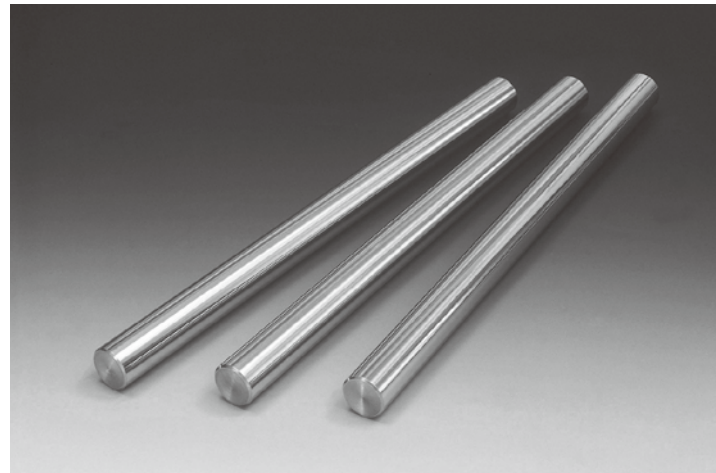
Form	Material	hardening treatment	Hardness	Surface treatment	Hardening Depth
Linear shaft	YS	SUJ2	and over HRC60		
	YSS	QPD5 (Equivalent of SUS440C)	and over HRC56	P22	0.5mm to 1.5mm
Pipe linear shaft	YSP	SUJ2	and over HRC60		

### ●Range of the induction hardening

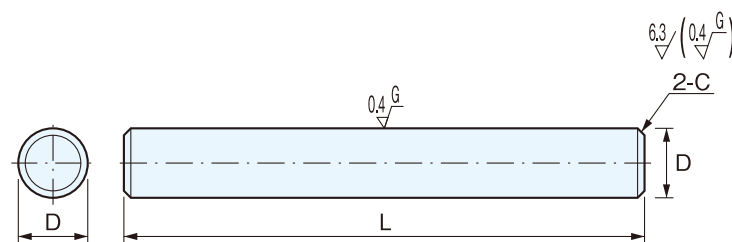
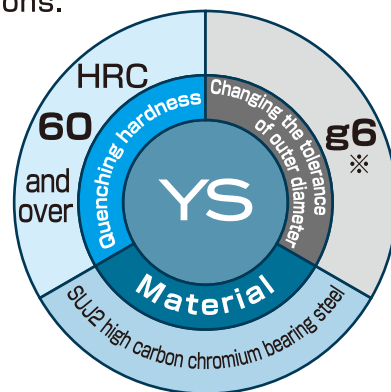




## YS LINEAR SHAFT



- We use SUJ2 that excels for abrasion resistant. It is induction hardening shaft and available for comprehensive use such as straight-line motion and rotating motion.
- We make the products accompany machining also.
- Please ask about the dimension except notations.



※We prepare the SUJ2 shafts of g6 tolerance as standard products. However we can make other shafts of specialized tolerance.

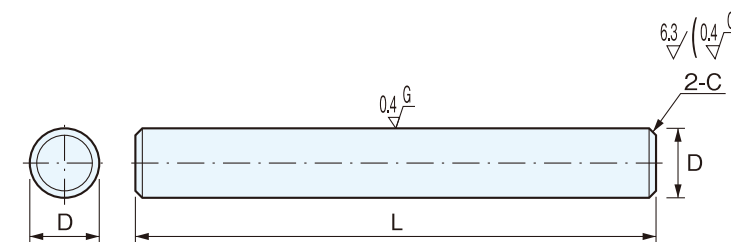
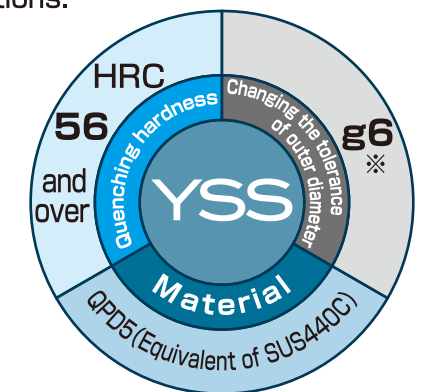
Standard stock products Option

Form	Dg6		Length L(mm)																Effective case depth (mm)
			100	200	300	400	500	600	700	800	900	1000	1500	2000	2500	3000			
YS	3	−0.002/−0.008															0.5 and over		
	4	−0.004 −0.012																	
	5																		
	6																		
	8	−0.005															1.0 and over		
	10	−0.014																	
	12	−0.006 −0.017																	
	13																		
	15																		
	16																		
	20	−0.007 −0.020																	
	25																		
	30																		
	35	−0.009 −0.025															1.5 and over		
	40																		
	50																		
	60	−0.010																	
80	−0.029																		
100	−0.012/−0.034																		

## YSS STAINLESS LINEAR SHAFT



- We use martensitic stainless steel QPD5 (equivalent of SUS440C). It has superior corrosion resistance, abrasion resistance and rigidity.
- We make the products accompany machining also.
- Please ask about the dimension except notations.



※We prepare the SUJ2 shafts of g6 tolerance as standard products. However we can make other shafts of specialized tolerance.

Standard stock products Option

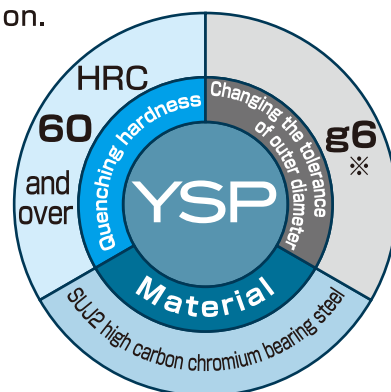
Form	Dg6		Length L(mm)															Effective case depth (mm)
			100	200	300	400	500	600	700	800	900	1000	1500	2000	2500	3000		
YSS	3	−0.002/−0.008															0.5 and over	
	4	−0.004 −0.012																
	5																	
	6																	
	8	−0.005														1.0 and over		
	10	−0.014																
	12	−0.006 −0.017																
	13																	
	15																	
	16																	
	20	−0.007															1.5 and over	
	25	−0.020																
	30																	
	35	−0.009 −0.025																
	40																	
	50																	
	60	−0.010/−0.029																

# YSP

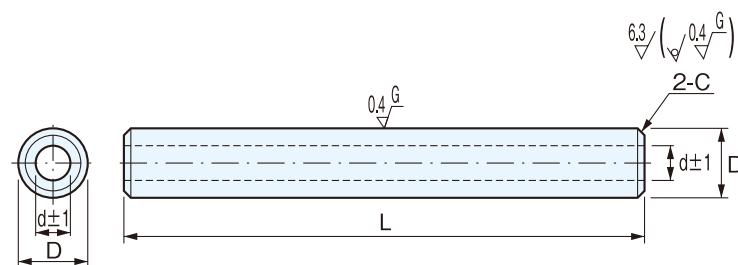
## PIPE LINEAR SHAFT



- The pipe linear shaft is most suitable for a case to attempt shaft itself of light-weighting and the use as duct lines such as the electric wiring.
- We make the products with machining work also.
- The tolerance of inner diameter is  $\pm 1$  mm.
- Please contact us about the size of except notation.



※We prepare the SUJ2 shafts of g6 tolerance as standard products. However we can make other shafts of specialized tolerance.



Standard stock products Option

Form	Dg6		Inner diameter d (mm)	Length L (mm)																Effective case depth (mm)
				100	200	300	400	500	600	700	800	900	1000	1500	2000	2500	3000			
YSP	6	-0.004/-0.012	2																0.8 and over	
	8	-0.005	3																	
	10	-0.014	4																	
	12	-0.006 -0.017	6															1.0 and over		
	13		7																	
	16		8																	
	20	-0.007 -0.020	10																	
	20		14																	
	25		15																	
	30	-0.009 -0.025	16														1.5 and over			
	35		19																	
	40		20																	
	50	26																		
	60	-0.010	30																	
	80	-0.029	52																	

### Surface treatment

You can various surface treatments.

Surface Treatments	Abrasion resistance	Corrosion resistance	Price	Delivery term	Color
Hard chrome plating	◎	○	△	○	Silver
Black oxide (Alkaline Blackening)	×	×	◎	◎	Black
Raydent <sup>®</sup>	○	◎	○	○	Black
With electro less nickel plating	○	◎	×	△	Gold

◎excellent ○Good △No Good ×Bad

### Characteristic of the surface treatment

Surface Treatments	Feature
Hard chrome plating (RoHS correspondence)	Good wear resistance. There is little frictional resistance. Film thickness designation from 1 $\mu$ to 30 $\mu$ is possible.
Black oxide (Alkaline Blackening)	Corrosion resistance wear resistance is low. Cost is low. The color is luster of the black.
Raydent <sup>®</sup>	Superthin film. Superior in long-term rust prevention. There is little influence on material.
With electro less nickel plating	Film thickness management is easy. Evenly construction. Corrosion resistance is good.

### Other processing surface treatment Heat treatment

Surface treatment	Alumite (white and black)	Parkerizing	Zinc Plating	Black chrome plating
	Hard Alumite	Unichrome Plating	Nickel plating	Ceramic Sraying

Heat treatment	Induction hardening	Vacuum Hardening	Tufftride	Thermal Refining
	Immersion Quenching	Nitriding	Carburizing and Quenching	Annealing



## YS · YSS Selection table

Pages	Figure	形式と材質・外径	
		SUJ2	QPD5 (Equivalent of SUS440C)
25	<b>Straight</b>	YSAA	YSSAA
		$\phi 3 \sim \phi 50$	
26	<b>One end tapped</b>	YSBA	YSSBA
		$\phi 4 \sim \phi 50$	
27	<b>Both ends tapped</b>	YSBB	YSSBB
		$\phi 4 \sim \phi 50$	
28	<b>One end threaded</b>	YSCA	YSSCA
		$\phi 3 \sim \phi 50$	
29	<b>Both ends threaded</b>	YSCC	YSSCC
		$\phi 3 \sim \phi 50$	
30	<b>One end threaded, another end tapped</b>	YSCB	YSSCB
		$\phi 4 \sim \phi 50$	
31	<b>One end stepped</b>	YSDA	YSSDA
		$\phi 3 \sim \phi 50$	
32	<b>Both ends stepped</b>	YSDD	YSSDD
		$\phi 3 \sim \phi 50$	
33	<b>One end stepped, another end tapped</b>	YSDB	YSSDB
		$\phi 4 \sim \phi 50$	
34	<b>One end stepped, another end threaded</b>	YSDC	YSSDC
		$\phi 3 \sim \phi 50$	
35	<b>One end stepped and tapped</b>	YSEA	YSSEA
		$\phi 8 \sim \phi 50$	
36	<b>Both ends stepped and tapped</b>	YSEE	YSSEE
		$\phi 8 \sim \phi 50$	
37	<b>One end stepped and tapped, another end tapped</b>	YSEB	YSSEB
		$\phi 8 \sim \phi 50$	
38	<b>One end stepped and tapped, another end threaded</b>	YSEC	YSSEC
		$\phi 8 \sim \phi 50$	
39	<b>One end stepped and tapped, another end stepped</b>	YSED	YSSED
		$\phi 8 \sim \phi 50$	
40	<b>Retaining ring groove on one end</b>	YSFA	YSSFA
		$\phi 3 \sim \phi 30$	
41	<b>Retaining ring grooves on both ends</b>	YSFF	YSSFF
		$\phi 3 \sim \phi 30$	
42	<b>One end stepped and grooved</b>	YSGA	YSSGA
		$\phi 6 \sim \phi 50$	
43	<b>Plate grooved</b>	YSHA	YSSHA
		$\phi 6 \sim \phi 50$	
44	<b>One end V grooved</b>	YSJA	YSSJA
		$\phi 6 \sim \phi 50$	
45	<b>Both ends V grooved</b>	YSJJ	YSSJJ
		$\phi 6 \sim \phi 50$	
46	<b>Tapped on generating line</b>	YSKK	YSSKK
		$\phi 10 \sim \phi 50$	

## YSP Selection table

Pages	Figure	形式と材質・外径	
		SUJ2	
47	<b>Pipe straight</b>	YSPAA	
		$\phi 6 \sim \phi 50$	
48	<b>Pipe one end tapped</b>	YSPBA	
		$\phi 6 \sim \phi 50$	
49	<b>Pipe both ends tapped</b>	YSPBB	
		$\phi 6 \sim \phi 50$	
50	<b>Pipe one end threaded</b>	YSPCA	
		$\phi 6 \sim \phi 40$	
51	<b>Pipe both ends threaded</b>	YSPCC	
		$\phi 6 \sim \phi 40$	
52	<b>Pipe one end threaded, another end threaded</b>	YSPCB	
		$\phi 6 \sim \phi 40$	
53	<b>Pipe one end stepped</b>	YSPDA	
		$\phi 6 \sim \phi 50$	
54	<b>Pipe both ends stepped</b>	YSPDD	
		$\phi 6 \sim \phi 50$	
55	<b>Pipe one end stepped, another end tapped</b>	YSPDB	
		$\phi 6 \sim \phi 50$	
56	<b>Pipe one end stepped, another end threaded</b>	YSPDC	
		$\phi 6 \sim \phi 40$	

## Specified method of form

Material·Figure — Outer diameter D — (Pipe Inner diameter d) — Length L — Machining — Additional machining

**YSP** — 20 — 10 — 650 — H — h5

### Material·Figure

Choose materials and surface treatment and the shape.

Material · Surface treatment	Form
SUJ2	YS
QPD5(SUS440C相当品)	YSS
SUJ2 Pipe	YSP

Machining form	Form
Straight	A
Tapped	B
Threaded	C
Stepped	D
Stepped and tapped	E
Retaining ring grooves	F
Stepped and grooved	G
Plate grooved	H
V grooved	J
Tapped on generating line	K

Outer diameter D Appoint the outer diameter of the shaft.

(Pipe Inner diameter d) Appoint the inside diameter of the pipe. Please fill in numerical value after d sign.

Length L Appoint length by a 1 mm unit.

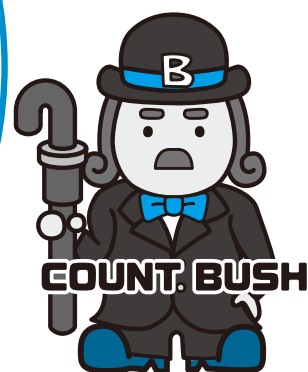
### Machining

Form	Contents
H · G	The length of the step. The position of the ditch.
M · N	Diameter of the screw.
V · Z	Diameter of the screw.
P · Q	Diameter of the step.

### Additional machining

Form	Contents
g5 · h5	The outer diameter clearance is changed to the clearance (g5, h5) by standard g6.
LCK	Changing L dimensional tolerance.
YCK	Changing Y dimensional tolerance.
HCA · HCB	Can turn it with a spanner. Write position dimensions later.
DCA · DCB	To carry out planing. Write position and cut width dimensions later.
PON · QON	Undercut machining of external thread. There is no numerical designation.
MSP · NSP	Thin screw switch to female screw. Write screw dimensions later.
PBP · QBP · PSP · QSP	Thin screw switch to male screw. Write screw dimensions later.

# Linear Bush

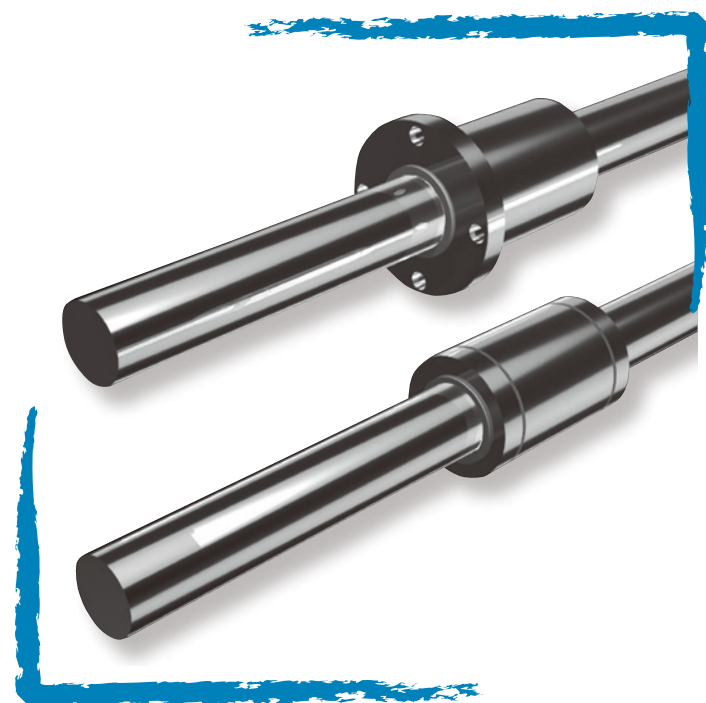


While we maintain a low price, our linear bushes retain their high-precision and high-rigidity performance.  
We provide the finest machinery parts for customers who design and make various machines.

## Composition of part material

External cylinder	SUJ2
Holder	Resin (POM)
Ball	SUJ2
Ring seal	Nitrile rubber

Y-UU	Y-LUU	Only
Stop ring	Spring steel	



## LINEAR BUSH

You can select our linear bush from abundant kinds



**Y-UU**

Standard type linear bush (resin holder)



**YF-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YK-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YT-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YFP-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YKP-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YTP-UU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YFC-LUU**

Standard type linear bush (resin holder)

With electro less nickel plating



**YTC-LUU**

Standard type linear bush (resin holder)

With electro less nickel plating



**Y-LUU**

Long type linear bush (resin holder)



**YF-LUU**

Long type linear bush (resin holder)

With electro less nickel plating



**YK-LUU**

Long type linear bush (resin holder)

With electro less nickel plating



**YT-LUU**

Long type linear bush (resin holder)

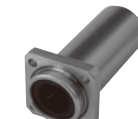
With electro less nickel plating



**YFP-LUU**

Long type linear bush (resin holder)

With electro less nickel plating



**YKP-LUU**

Long type linear bush (resin holder)

With electro less nickel plating



**YTP-LUU**

Long type linear bush (resin holder)

With electro less nickel plating



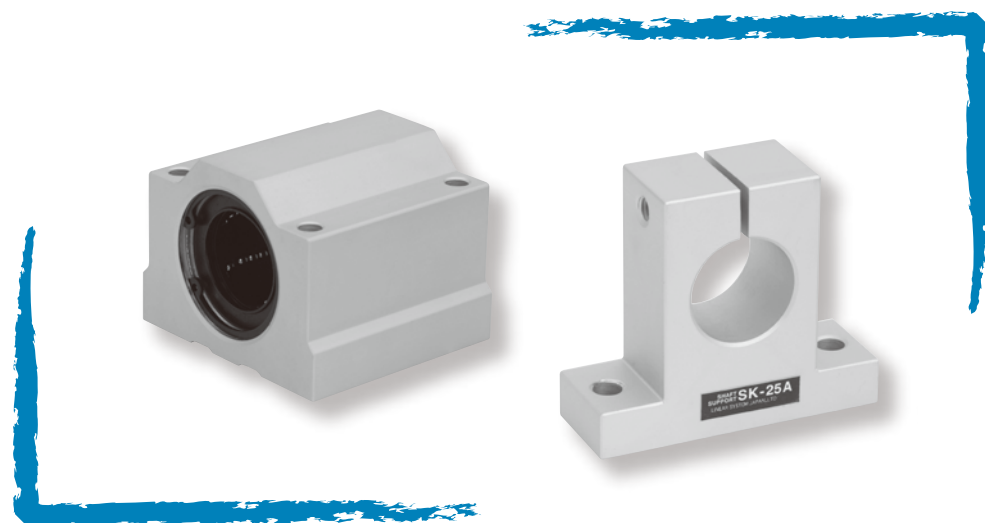
**YKC-LUU**

Long type linear bush (resin holder)

With electro less nickel plating

# Housing Support Unit

YU-AUU	Standard housing type
YU-LUU	Housing long type
SK	Support unit (horizontal specification type)
SHF	Support unit (vertical specification type)

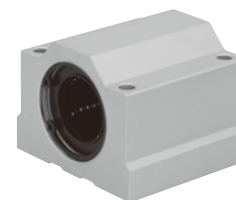


## Housing / Support Unit

### Housing

#### YU-AUU

Standard housing type



The standard linear bush is mounted inside. The white alumite is treated on aluminum body and then the anti-rust effect is improved.

#### Composition of part material

Housing	Aluminum alloy
Built-in bearing	
External cylinder	SUJ2
Holder	Resin (POM)
Ball	SUJ2
Ring seal	Nitrile rubber

Housing surface has alumite treatment.

#### YU-LUU

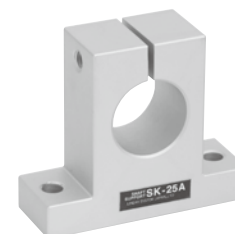
Housing long type



### Support Unit

#### SK

Support unit (horizontal specification type)



It's the unit which fix the shaft. It's most suitable to fix the shaft horizontally. The white alumite is treated on aluminum material and then antirust effect is improved.

#### Composition of part material

Body material	Aluminum alloy
Screw material	Stainless

The surface is treated by alumite.

#### SHF

Support unit (vertical specification type)

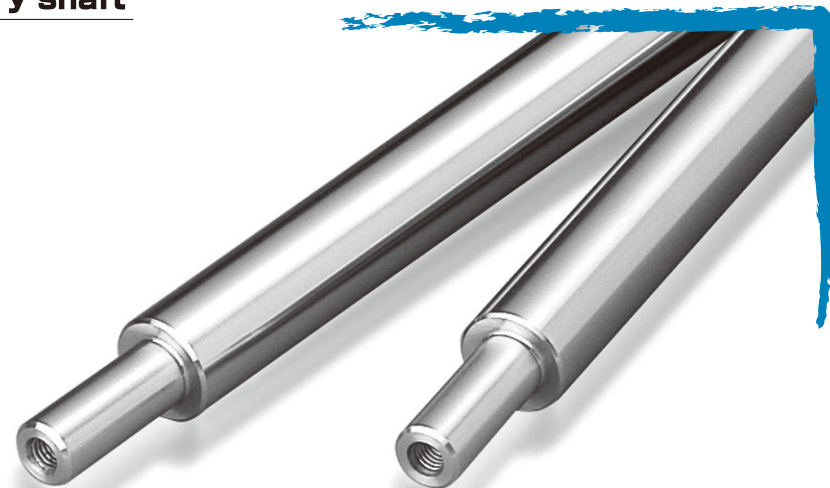




# SUS304 Rotary Shaft

SUS304 rotary shafts are used for the central shaft of rotary motion. Antirust effect is provided in environments that are easy to cause rust by adopting SUS304, austenitic stainless. YSK SUS304 rotary shafts provide high-precision products for geometric tolerance such as circularity, straightness and concentricity. We highly recommend using our SUS304 rotary shafts which pride for their high precision.

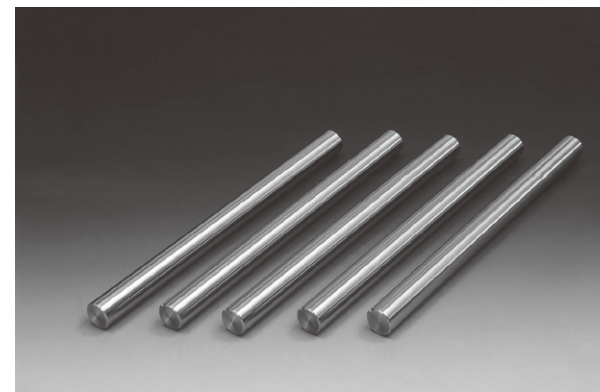
**SSY SUS304 rotary shaft**



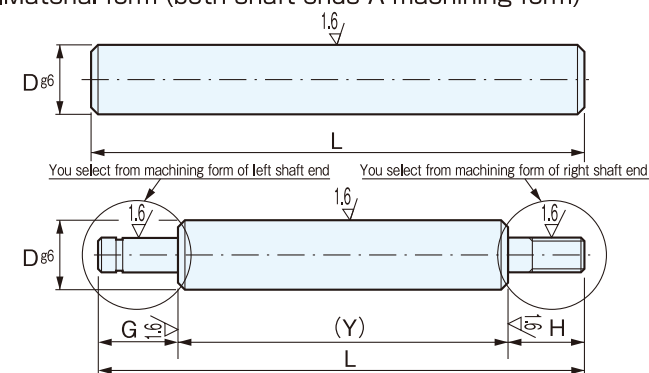
## SUS304 ROTARY SHAFT

# SSY SUS304 rotary shaft

	<b>SSY</b>
D tolerance	g6
Material	SUS304
Surface treatment	—



### Material form (both shaft ends A machining form)



©In case you want to process on shaft end of one side only, please select A machining form on another side.

### Form contents

Form	Machining form of left shaft end	Machining form of right shaft end	D	L	G · H	V · Z	J · K	P · Q	M · N	Y	C	R
			Designation by 1mm unit	Designation by 1mm unit	Designation by 1mm unit	Designation by 1mm unit	Designation by 1mm unit	Designation by 1mm unit	Selection	Minimum		
SSY	A B C D E F G	A B C D E F G	6 8 12 13 16 20 25 30	20.0~1500.0 (L≤D×50)	2≤G≤P×5 2≤H≤Q×5	2≤V≤M×3 2≤Z≤N×3 & B≤G-2 Z≤H-2 (When M·N≤6) B≤G-3 Z≤H-3 (When M·N≤8~10) B≤G-5 Z≤H-5 (When M·N≤12)	2≤J·K (DWhen ·P·Q≤6) 3≤J·K (When 6<D·P·Q≤10) 4≤J·K (When 10<D·P·Q≤20) 6≤J·K (When 20<D·P·Q)	D/3≤P·Q≤D	3 4 5 6 8 10 12 16 20 24 30	D is Y≥20 at time of 6-16  D is Y≥25 at time of 20-25  D is Y≥30 at time of 30	0.5	0.2

### Specified method of form

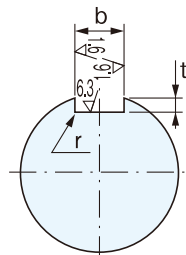
Form +	Machining form of left shaft end	+	Machining form of right shaft end	-	D	-	L	-	G	-	V	-	J	-	P	-	M	-	H	-	Z	-	K	-	Q	-	N
	SSYCE				20		650		G20		V16						M8		H20						Q14		N6

### End form combination

Machining form of left shaft end	Machining form of right shaft end	Machining condition
<b>A : With no machining</b>		
<b>B : Internal thread</b>		◎When M3~8, M≤D-2 ◎When M10~16, M≤D-3 ◎When M20, M≤D-4
<b>C : Stepped thread</b>		P(Q)=M(N) P(N) specified dimension
<b>D : Stepped</b>		
<b>E : Stepped internal thread</b>		◎When M3~8, M(N)≤P(Q)-2 ◎When M10~16, M(N)≤P(Q)-3 ◎When M20, M(N)≤P(Q)-3
<b>F : Peripheral snap ring groove</b>		Refer to the detail dimension of snap ring groove
<b>G : Stepped snap ring groove</b>		Refer to the detail dimension of snap ring groove

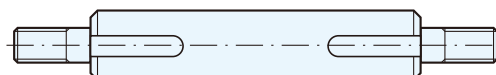
# SSY SUS304 ROTARY SHAFT

## Detail dimension of key groove



axis diameter	b		t		r
	Standard dimension	Tolerance (N9)	Standard dimension	Tolerance	
6~7	2	-0.004	1.2	+0.1 0	0.08~0.16
8~11	3	-0.029	1.8		
11~12	4	0	2.5		
13~17	5	-0.030	3.0		
18~22	6	0	3.5	+0.2 0	0.16~0.25
23~30	8	-0.036	4.0		

○In case KY-WKY-K=0 and KY+T≥L(Y), key way is the form as below drawing.



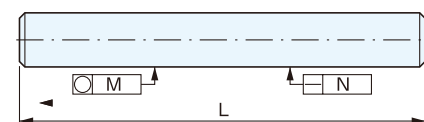
## The detail dimension of snap ring groove for axis diameter (D·P·Q)

D·P·Q	d Tolerance		W Tolerance	
3	2	+0.060	0.50	+0.05/0
4	3	0	0.70	+0.10 0
5	4	+0.075		
6	5	0		
7	6	+0.090		
8	7	0	0.90	+0.14 0
9	8	0/-0.09		
10	9.6	0		
11	10.5	0		
12	11.5	-0.110	1.15	
13	12.4			
14	13.4			
15	14.3			
16	15.2			
17	16.2			

D·P·Q	d Tolerance		W Tolerance	
18	17	0	1.35	+0.14 0
19	18	-0.11		
20	19	0		
21	20			
22	21	-0.21	1.65	
23	22			
24	22.9			
25	23.9			
26	24.9			
28	26.6			
29	27.6			
30	28.6			

## The precision standard of SUS304 machining axis

### ●Circularity and straightness



### ●Circularity and straightness

D	Circularity M	
	Be over	And under
3	13	0.004
13	20	0.005
20	30	0.006

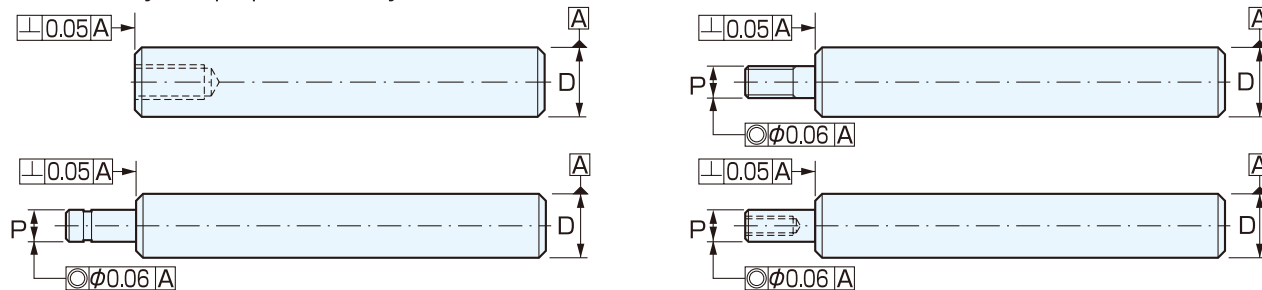
### ●Straightness

D	straightness N	
	Be over	And under
3	18	0.02/100
18	30	0.01/100

### ●Dimensional tolerance of L and Y

dimension	Dimensional tolerance	
	Be over	And under
3	6	±0.1
6	30	±0.2
30	120	±0.3
120	400	±0.5
400	800	±0.8

### ●Concentricity and perpendicularity



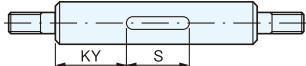
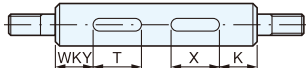

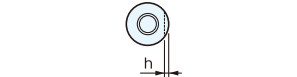
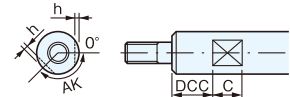

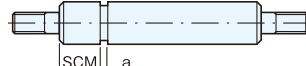
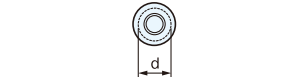
Standard stock products





Model	Dg6		Length(mm)						Surface roughness
	Outer diameter tolerance		500	1000	1500	2000	2500	3000	
SSY- 3	3	-0.002/-0.008							3S and under
SSY- 4	4	-0.004							
SSY- 5	5	-0.012							
SSY- 6	6								
SSY- 8	8	-0.005							
SSY-10	10	-0.014							
SSY-12	12								
SSY-13	13	-0.006							
SSY-15	15	-0.017							
SSY-16	16								
SSY-20	20	-0.007							
SSY-25	25	-0.020							
SSY-30	30								

## Additional machining

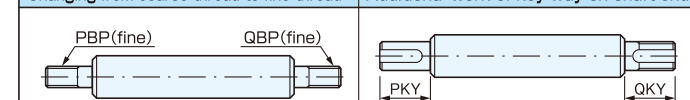
### ●Specified method of form (with additional machining)

Form + Machining form of left shaft end Machining form of right shaft end - D - L - G - V - J - P - M(PBP) - H - Z - K - Q - N(PBP) - (KY-WKY-DCA-DCB...etc.)  
SSYCE - 20 - 650 - G20 - V16 - M8 - H20 - Q14 - N6 - KC20/S25

Additional key groove	Additional work of planning	Additional machining of planning on 2 faces with specified angle	Additional work of groove for slit cam																											
<p>○One key way : KY</p>  <p>○Two key ways : WKY</p> 	 	 	 																											
KY-WKY	DCA-DCB	DCC	SCM																											
<p>KY : Additional work of 1 key way [Specified method] KY30/S10</p> <p>WKY : Additional work of 2key ways [Specified method] WKY50/T10-K30/X8</p> <p>○KY-S-WKY-T-K-X are designation of 1mm each</p> <p>○S-T-X≤100</p> <p>○In case of 3 key ways, use together KY and WKY.</p>	<p>We make additionally planning on the part of outer diameter.</p> <p>DCA : The location from the left end of the shaft [Specified method] DCA10/A8</p> <p>DCB : The location from the right end of the shaft [Specified method] DCB20/B15</p> <p>○DCA-A-DCB-B are designation of 1mm each</p> <p>○A-B≤50</p> <table><tr><th>D</th><th>H</th></tr><tr><td>6~13</td><td>1</td></tr><tr><td>16~30</td><td>2</td></tr></table>	D	H	6~13	1	16~30	2	<p>Additional work of planning on arbitrary angle location besides of standard face ( 0° )</p> <p>[Specified method] DCC10/C10/AK90</p> <p>○DCC-C are designation of 1mm each</p> <p>○C≤50</p> <p>○AK are designation of 15 degrees each</p> <table><tr><th>D</th><th>H</th></tr><tr><td>6~13</td><td>1</td></tr><tr><td>16~30</td><td>2</td></tr></table>	D	H	6~13	1	16~30	2	<p>Additional work of groove for slit cam [Specified method] SCM10</p> <p>○SCM are designation of 1mm each</p> <p>○SCM+a≤L(Y)</p> <p>○SCM≥1</p> <p>○Application to D=6-8-10-12</p> <table><tr><th>D</th><th>d</th><th>a</th></tr><tr><td>6</td><td>5</td><td>4</td></tr><tr><td>8</td><td>7</td><td>4</td></tr><tr><td>10</td><td>8</td><td>5</td></tr><tr><td>12</td><td>10</td><td>5</td></tr></table>	D	d	a	6	5	4	8	7	4	10	8	5	12	10	5
D	H																													
6~13	1																													
16~30	2																													
D	H																													
6~13	1																													
16~30	2																													
D	d	a																												
6	5	4																												
8	7	4																												
10	8	5																												
12	10	5																												

Additional work of flat for wrench	Changing of L tolerance	Changing of Y tolerance	Changing of concentricity
			
HCA·HCB	LCK	YCK	JCK
<p>We make additionally flat for wrench.</p> <p>HCA : The location from the left end of the shaft</p> <p>[Specified method] HCA10</p> <p>HCB : The location from the right end of the shaft</p> <p>[Specified method] HCB15</p> <p>○HCA·HCB are designation of 1mm each</p> <p>○HCA=0 or HCA≥1</p> <p>HCB=0 or HCB≥1</p>	<p>L tolerance is changed.</p> <p>[Specified method] LCK</p> <p>○L&lt;500→L±0.05</p> <p>L≥500→L±0.1</p> <p>○In case there is not step machining on both shaft ends, designation is possible.</p>	<p>Y tolerance is changed.</p> <p>[Specified method] YCK</p> <p>○Y&lt;500→Y±0.05</p> <p>Y≥500→Y±0.1</p>	<p>The concentricity is changed to D 0.02</p> <p>[Specified method] JCK</p>

### Changing from coarse thread to fine thread



### Additional work of key way on shaft end

It changes external thread to fine thread in the table as below.  
[Specified method] PBP12

D	PBP-QBP
6	3 4 5 6
8	3 4 5 6 8
10	4 5 6 8 10
12	5 6 8 10 12
13	5 6 8 10 12
16	5 6 8 10 12 15
20	6 8 10 12 15 17 20
25	8 10 12 15 17 20 25
30	8 10 12 15 17 20 25

○Change P dimension to PBP and specify.  
Change Q dimension to QBP and specify.  
○P dimension is same with PBP.  
Q dimension is same with QBP.

**PKY-QKY**

Additional work of 1 key way on the part P(Q) of shaft end  
[Specified method] PKY10(QKY10)  
○PKY-QKY are designation of 1mm each  
○PKY-QKY≤50  
PKY(QKY)≤G-H  
○Application to the form C and D of shaft end  
○Under P(Q)5 is not applicable.



Both round key One side round key Both square key

I recommend our handling machine key.  
(Reference page P37~38)



# Trapezoidal Screw



We have rolling trapezoidal screw series as well. There are YTr-R(L) type and SYTr-R(L) type which are used as trapezoidal screw shafts, and YNF-R(L) type and YNS-R(L) type which are used as nuts. Furthermore the basic size of trapezoidal screws follows JIS B0216.

**YTr-R(L)**

**Standard trapezoidal screw**

**SYTr-R**

**Stainless trapezoidal screw**

**YNF-R(L)**

**Nut with flange**

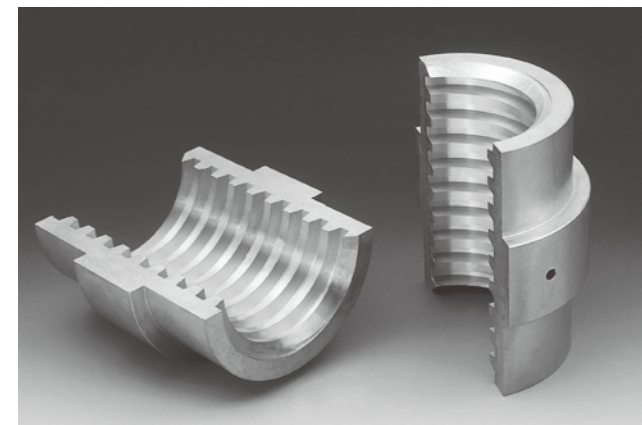
**YNS-R(L)**

**Straight nut**



## The example of machining of trapezoidal screw nut

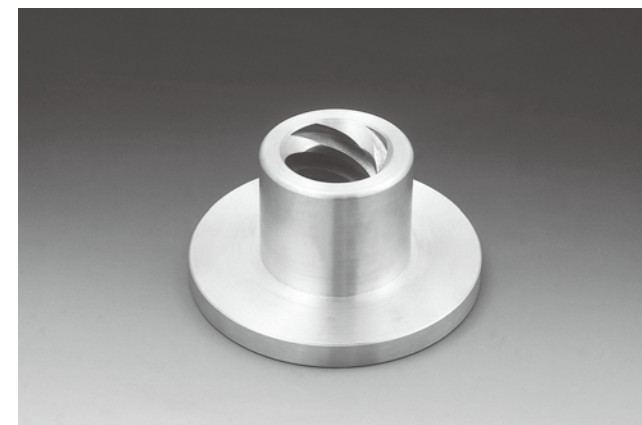
- We adopt BC6 material of the nut, because it's superior for abrasion resistant and low coefficient of friction, and it satisfies the feed function. We can make other materials and then please ask to us.
- We also take an order of special machining in accordance with standard nut. One of the examples is published. We can make according to customer's order in addition of the example and then please ask to us.
- About screw, we can make left and right screw, double thread screw, quadruple thread, etc. according to the order, and then please ask to us.



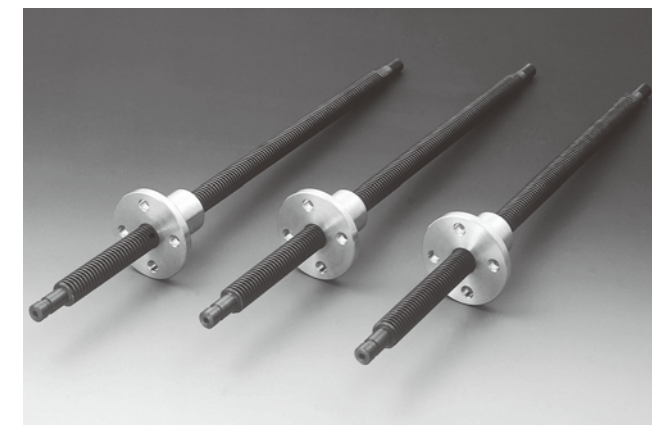
- The half nut for high precision feed screw such as lathe machine (split nut)



- The type that make the part of trapezoidal screw eccentricity and can mount with cylindrical form

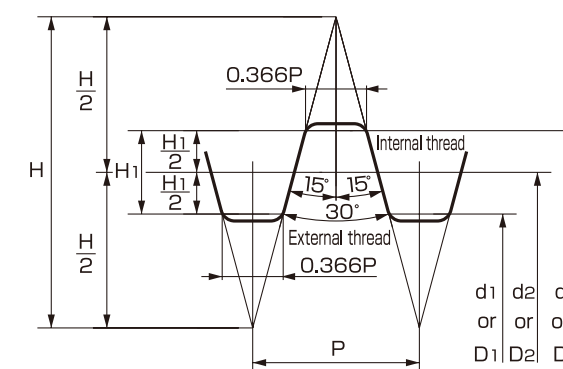


- The nut of quadruple thread which raised the feed speed



- The type which treat the trapezoidal screw anti-corrosion (Parkerizing)

Basic profile of trapezoidal screw



Formula : The formula, which is used for calculation of basic dimension of trapezoidal screw, is based on the equation as below.

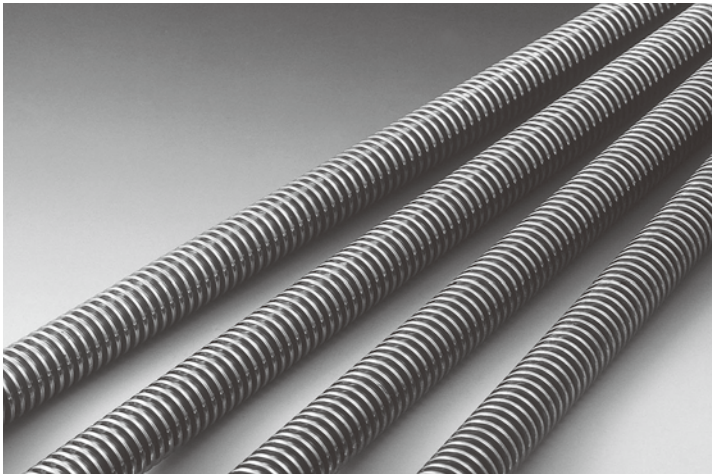
$$\begin{array}{lll} H = 1.866P & d_2 = d - 0.5P & D = d \\ H_1 = 0.5P & d_2 = d - P & D_2 = d_2 \\ & & D_1 = d_1 \end{array}$$



TRAPEZOIDAL SCREW

YTr-R(L)

Standard trapezoidal screw



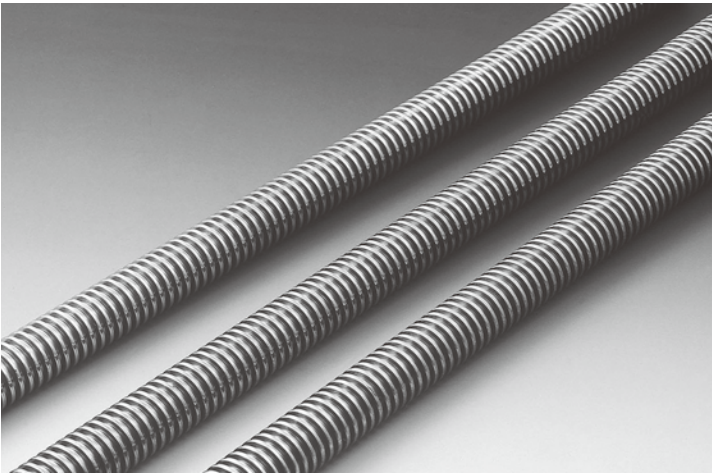
	YTr-R(L)
Material	Carbon steel for machine parts (S45C)
Single pitch error	±0.02(mm)
Accumulated pitch error	±0.1／300(mm)
Tolerance grade	7e

- We use carbon steel for machine parts S45C as material and the screw is molded by rolling.
- The right-hand thread is YTr-R type.
- The left-hand thread is YTr-L type.
- We machine the shaft ends

YTr-R(L)-10・12・14・16・18・20・22・25・28・32・36・40  
YTr-R-45・50

SYTr-R

Stainless trapezoidal screw



	SYTr-R
Material	SUS303(Austenitic stainless steel)
Single pitch error	±0.02(mm)
Accumulated pitch error	±0.1／300(mm)
Tolerance grade	7e

- We use austenitic stainless steel SUS303 as material and the screw is molded by rolling.
- It is superior in corrosion resistance and abrasion resistance
- Right-hand thread is standard.
- We machine the shaft ends

SYTr-R-10・12・14・16・18・20・22・25・28・32

YNF-R(L)

Nut with flange



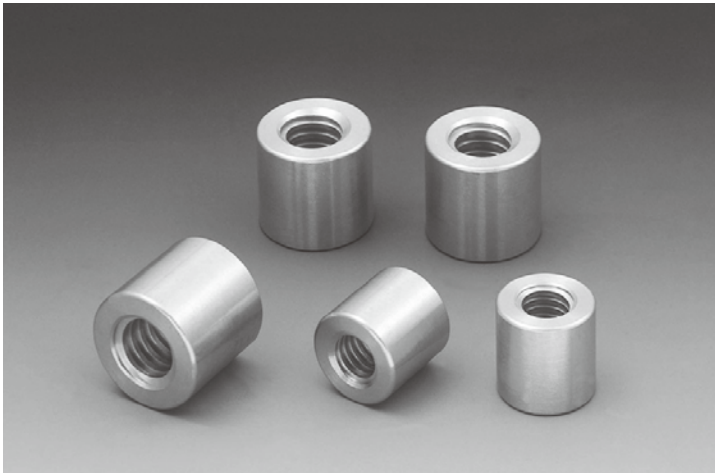
	YNF-R(L)
Material	BC6(Bronze casting)
Tolerance grade	7H

- We use BC6 as the material of nut in order to satisfy enough the function (abrasion resistance and low coefficient of friction) of sliding conduction.
- The right-hand screw is YNF-R type
- The left-hand screw is YNF-L type

YNF-R(L)-10・12・14・16・18・20・22・25・28・32・36・40  
YNF-R-45・50

YNS-R(L)

Straight nut



	YNS-R(L)
Material	BC6(Bronze casting)
Tolerance grade	7H

- We use BC6 as the material of nut in order to satisfy enough the function (abrasion resistance and low coefficient of friction) of sliding conduction.
- The right-hand screw is YNS-R type
- The left-hand screw is YNS-L type

YNS-R(L)-10・12・14・16・18・20・22・25・28・32・36・40  
YNS-R-45・50

# Machine Key

**YKM** Both round key

**YKMS** Stainless both round key

**YKH** One side round key

**YKHS** Stainless one side round key

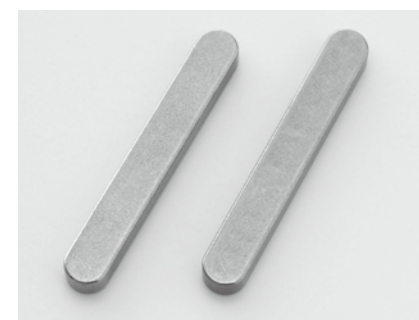
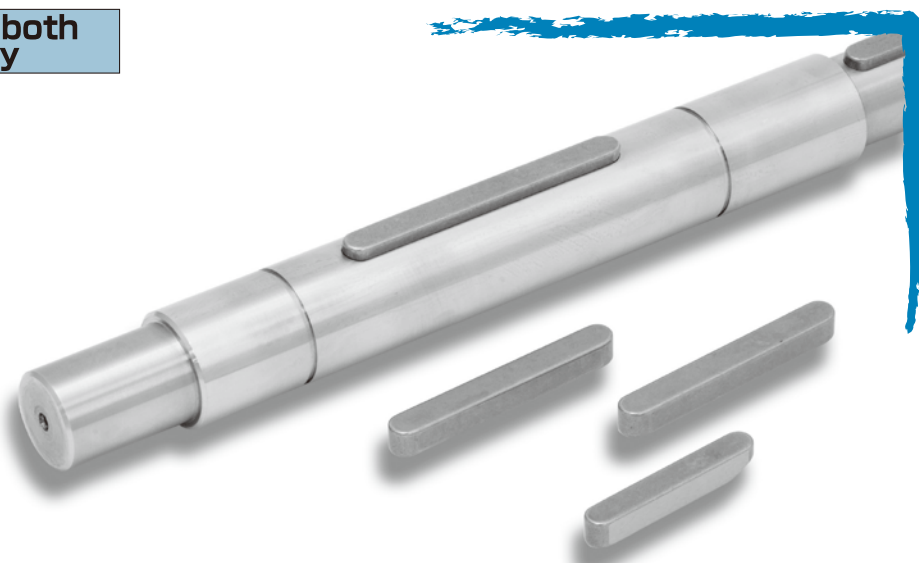
**YKK** Both square key

**YKKS** Stainless both square key

**RoHS**  
correspondence

## High precision • High quality

The machine key fixes the gear and belt to the rotating shaft, and enables them to rotate together. If a high-precision and high-quality machine key is used, reliable machine designing is possible. YSK is the shaft kingdom. That's why we can provide the machine key which is the best match for the shaft.



■ Both round key



■ One side round key



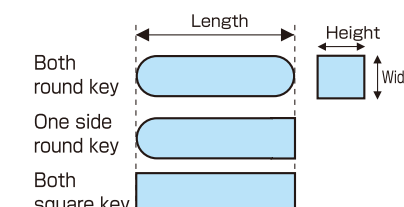
■ Both square key

## Order example

Form Width Length  
YKM — 10 — 60  
Form code Width(mm) × Length(mm)  
(Example) Both round key, Material : S50C, Width 10mm, Height 8mm, Length 60mm

## Form

Figure	Material	Parts number code
Both round	S50C	YKM
Both round	SUS316	YKMS
One side round	S50C	YKH
One side round	SUS316	YKHS
Both square	S50C	YKK
Both square	SUS316	YKKS



## Available upon the option order

- It's available upon the order by length 1mm each.
- It's available upon the option order of special dimension of nonstandard of JIS.
- We can accept also special materials and quenched materials.

## The list of standard products

Width × Height	Length																											Unit : m
	8	10	12	14	15	16	18	20	22	24	25	28	30	32	35	40	45	50	55	60	65	70	75	80	85	90	100	
2×2		○			○			○																				
3×3	○	○	○		○	○		○			○		○															
4×4	○	○	○	○	○	○	○	○	○	○	○		○		○	○												
5×5		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○								
6×6		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○								
7×7					○			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○						
8×7					○			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
10×8								○			○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	
12×8											○		○		○	○	○	○	○	○	○	○	○	○	○	○	○	

[Corresponding to a short delivery period]

◆Material S50C : Width×Height 36×20mm, Length until 350mm

◆Material SUS316 : Width×Height 16×10mm, Length until 300mm

## Special key

We accept the special keys such as the key with drawing tap and with counter sink.



## The table of dimension and tolerance of JIS key JIS B1301

Width × Height	Width	Height
	Tolerance(h9)	Tolerance
2×2	0	0
3×3	-0.025	-0.025
4×4		
5×5	0	0
6×6	-0.03	-0.03
7×7		0
8×7	0	-0.036
10×8	-0.036	
12×8		0
14×9	0	-0.09
16×10	-0.043	
18×11		
20×12		
22×14	0	0
25×14	-0.052	-0.11
28×16		
32×18	0	
36×20	-0.062	0
		-0.13



# GR Shaft (Grain Refinement Shaft)

NEW  
TECHNOLOGY

We have succeeded in refinement of surface texture of shafts by YSK technology of induction hardening treatment. At last high strengthened shaft is born by this texture refinement. It is 1.4 times of rotating strength and 10 times of abrasion resistance strength than conventional shafts. We have substantiated compacting and weight reduction of shafts for press machines and rolling rollers. The refinement shafts solve your problems and respond to a demand, Our technology can make shafts with further strength and further prolong it's life.

**1.4** times of rotating strength

**10** times of abrasion resistance strength

## For example the strut of press machine

You can make shafts small size from 100 diameter to 75 diameter as well by the specification.

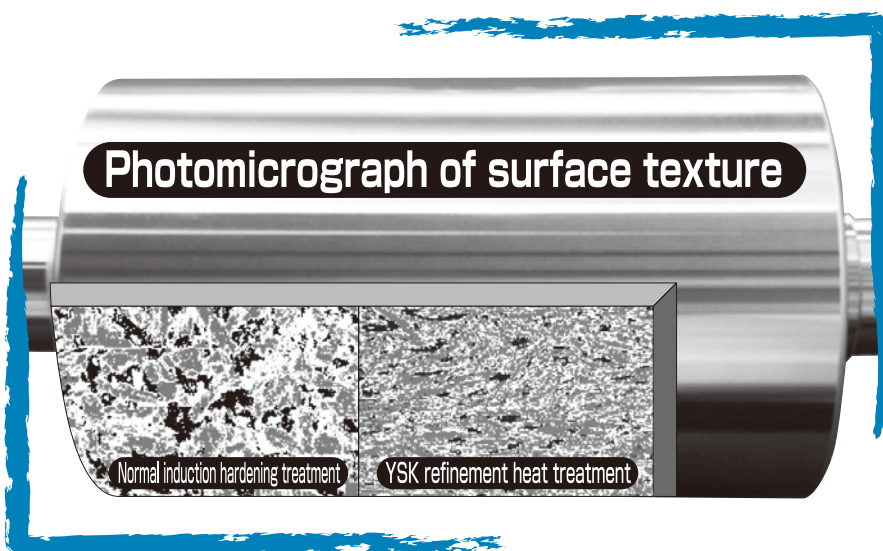
For these distress.

You want to prolong life of shafts.

You want to make shafts be excellent for abrasion resistance.

You want to let shafts have further strength.

You want to make equipment be compacting.

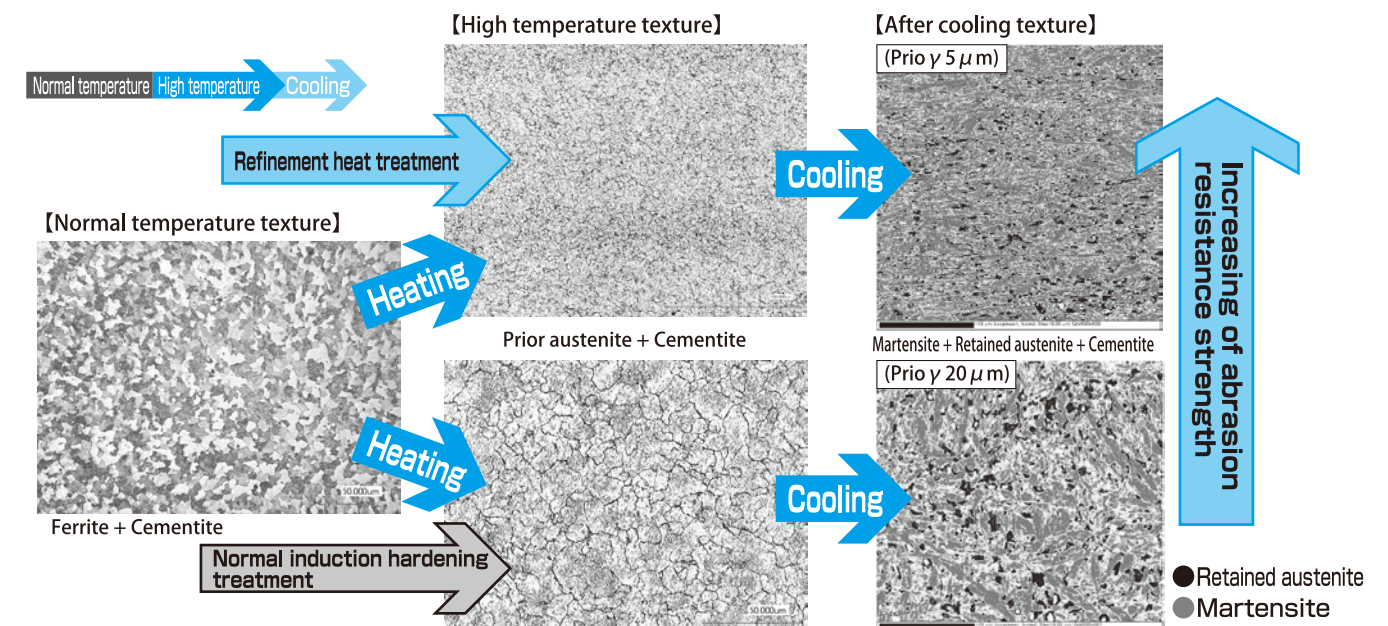


Why could YSK make high-strengthened shafts? Because we have made surface texture be refinement.

Instead of depending on adding alloy elements, we refine crystal grains by using our induction hardening technology and have succeeded increase the strength of steel.

## Photomicrograph of surface steel texture

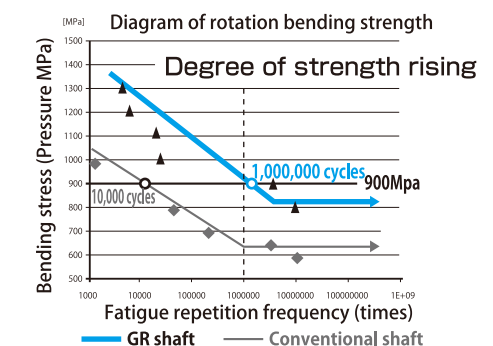
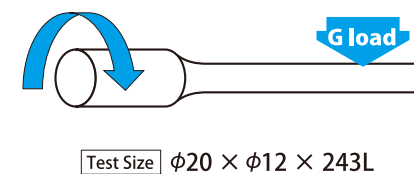
### The process of quenching



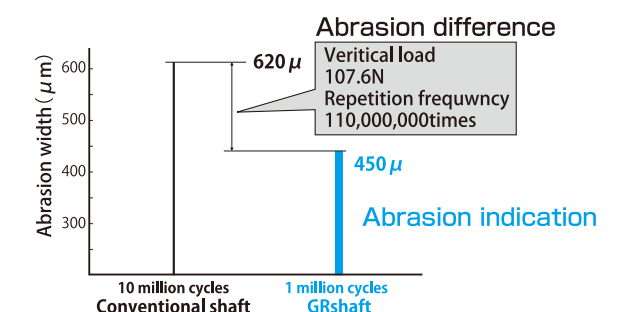
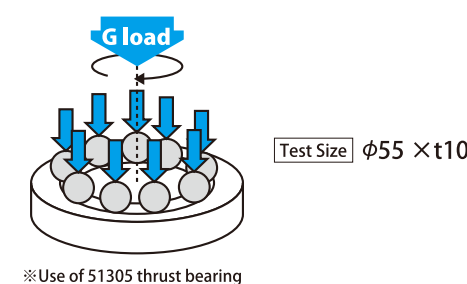
## Verified data of GR shaft

Please look at the ability of refinement high strength shafts by verified data.

### Increasing of the rotary strength



### Increasing of abrasion resistance strength







## High rust resistance stainless shaft

A new material [YSU-1] has the same degree of the hardness HRC50 using the technology of induction hardening from our own facilities.

**Abrasion resistance** → YSU-1 has a hardness equivalent to the SUS630(H900) and abrasion resistance.

**Corrosion resistance** → We made the YSU-1 with a corrosion resistance equivalent to the SUS303・304.

### Standard stock size

φ6×2000  
 φ8×2000  
 φ10×2000  
 φ12×2000  
 φ13×2000  
 φ20×3000  
 φ25×3000  
 (mm)



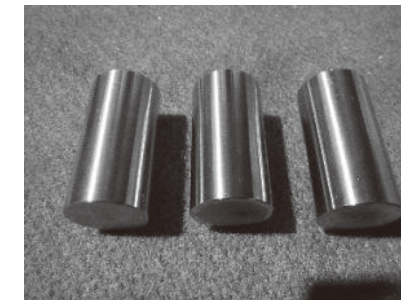
### Salt spray corrosion test

The reciprocal movement test is preformed by putting a fix load on the test parts, letting it reciprocate linearly within a constant distance.

**Test conditions** JIS Z 2371 240h

The concentration of the salt water 5±0.5%  
Temperature of 35 degrees centigrade

Left side:SUS304 / Center:SUS440C / Right side: YSU-1



Before the test



240h After the test



Applied  
Mechanics and Materials  
(ISSN:1660-9336), (2014). in press

Based on the results of the test, YSU-1 has superior corrosion resistance.

**YSU-1 has superior corrosion resistance in high humidity.**

Used in various environments and fields such as marine businesses, agricultural machinery, food machinery, construction machinery.

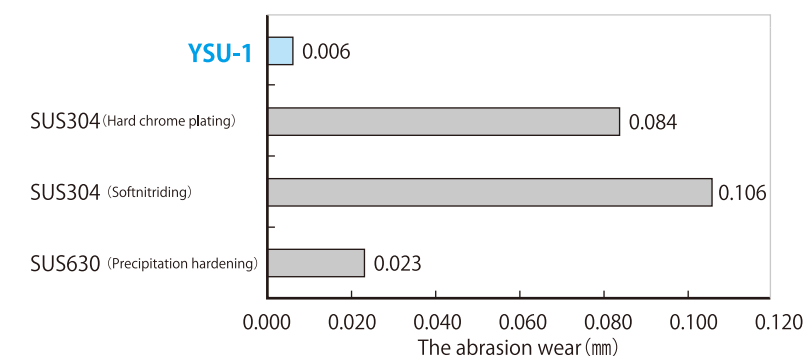
### Reciprocal movement test (for the linear guide)

- Based on the results of the test, YSU-1 has superior corrosion resistance.
- YSU-1 has superior corrosion resistance in high humidity.
- Used in various environments and fields such as marine businesses, agricultural machinery, food machinery, construction machinery.

**Test conditions**

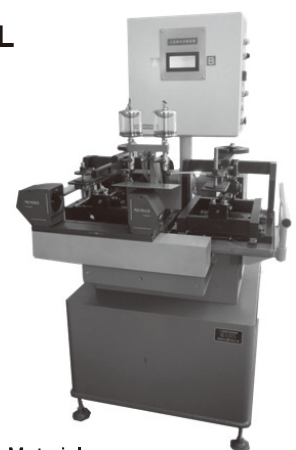
The specifications of the test parts : φ20 × 500L  
The load : 67kgf

**YSU-1 The comparison for surface treatment** The weight of the load : 67kgf



The comparison between SUS304(hard chrome plating), SUS304(softnitriding), precipitation hardening of SUS630(h900) and YSU-1.

**YSU-1 is most suitable for upgrading products of precipitation hardening of SUS630(h900) and hard chrome plating of SUS304.**



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Mechanics and Materials  
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Doi:10.4028/www.scientific.net/AMM.563.270.

YSU-1



## Production facilities

We do my best to meet your demands.



We promise to provide the high precision and steady products by the result of manufacturing technology which we cultivated for many years since 1966.

Double column type machining center with five-face machining equipment, Complex CNC lathe machine, Machining center of long material, Mirror polishing machine, Grinding machine. And factory is kept constant temperature environment. We put together various facilities. We can accept for the production of many kinds in small quantities. We help customers by our production and sales system which we can follow absolutely user's requirements.

## Kyushu factory

This factory can meet various demands as mass production factory of slide shafts.

### Cutting machine

● High speed cutting machine	Manufactured by ourselves	1
● Automatic cutting machine	Manufactured by ourselves	1
● Manual cutting machine	Manufactured by ourselves	2
● Automatic band sawing machine	NIKO TECH	1
● Semi-automatic cutting machine		1



### Machining department, Milling machine

● Double column type machining center with five-face machining equipment	OKUMA	2550×6000×1350	1
● Double column type machining center	OKUMA	1400×3000×1000 Others	2
● Vertical type machining center	OKUMA, MAZAK	660×1530×610 Others	4
● NC milling machine	MITSUBISHI, SHIZUOKA	800×500×500 Others	3
● General purpose milling machine	SHIZUOKA	280×1100 Others	4
● Horizontal boring machine	TOSHIBA	800×1000×700	1



### Grinding department

● Internal cylindrical grinding machine	YAMADA KIKO, Hole diameter 8 to 200mm, Maximum length 200mm, 1 machine	1
● External cylindrical grinding machine	JTEKT, SHIGIYA MACHINERY WORKS, OKUMA	φ200, 3000 Others 8
● Center less grinding machine	MICRON MACHINERY, OHMIYA MACHINERY	φ80×6000 Others 6
● CNC grinding machine	JTEKT, OKUMA, OKAMOTO	φ200×1500 Others 3
● Center less grinding machine (Buffing)	NIPPON KENMAKI	φ6 ~ φ60 1



### Special processing machines

● Gun drill machine	KOREA GUN DRILL	φ32 × 2000	1
● Wire electric discharge machine	SEIBU ELECTRIC & MACHINERY	950×700×300	1



### Machining department, Lathe machine

● CNC lathe machine for long material	KINWA Taiwan	φ660~3435	1
● CNC lathe machine	MORI SEIKI, MAZAK, TAKISAWA	390×964 Others	2
● Numerical controlled high precision lathe machine	TAKISAWA	650×3000 Others	4
● General purpose late machine	TAKISAWA, MAZAK, CHUBU	650×2000 Others	3
	(INTEGREX) MAZAK	φ75×350×1000	4
● Complex CNC lathe machine	(Multiplex) MAZAK	φ35×1200	1



### Straightening

● Oil hydraulic press	MANABE	Various	1
● Manual press	Manufactured by ourselves		4

### Heat treatment department

● High frequency oscillator	JEOL	150kw×60kHz	1
	KONDO ELECTRONICS INDUSTRY	100kw×150kHz	1
● Traverse movement hardening machine	Manufactured by ourselves	φ80×6000	1
● Small diameter horizontal movement hardening machine	Manufactured by ourselves	φ13×3000	1
● Vertical movement hardening machine	Manufactured by ourselves	φ200×2800	1
● Small diameter vertical movement hardening machine	KONDO ELECTRONICS INDUSTRY	φ20×1000	1
● Tempering furnace	TAKEMOTO INDUSTRY ELECTRIC HEAT	3200×1000×1000	2



### Inspection equipment

● Wet type magnaflux inspection equipment	TOYO JIKI INDUSTRY	1
● Hand type magnaflux inspection equipment	TOYO JIKI INDUSTRY	1
● Rockwell hardness tester	FUTURE-TECH CORP.	3
● Shore hardness tester	NAKAI PRECISION MACHINERY MFG.	2
● Micro-vickers tester	FUTURE-TECH CORP.	1
● Digital length measuring	Manufactured by ourselves	1
● Surface roughness measuring instrument	MITUTOYO	1
● Three dimensions measuring instrument	MITUTOYO	1
● Projector	MITUTOYO	2550×5000×1350 1

### Production control system

● Production control system	Placement in whole branches and factories, Manufactured by ourselves	1
-----------------------------	--	---

## Fukushima factory

The factory of base point for further technology advancement of YSK.

### Cutting machine

● Manual cutting machine	Manufactured by ourselves	1
● Semi-automatic cutting machine		1
● Band sawing	AMADA	1



### Machining department, Milling machine

● Double column type machining center	OKUMA	1530 × 660 × 610	2
● NC milling machine	OKUMA	300 × 1000	1
● General purpose milling machine	SHIZUOKA, YAMAZAKI	300 × 1500 Others	3
● Horizontal boring	AOYAMA, TEKKOSHO	1100 × 1300 × 1400	1



### Inspection equipment

● Rockwell hardness tester	FUTURE-TECH CORP.	2
● Shore hardness tester	NAKAI PRECISION MACHINERY MFG.	1
● Micro-Vickers tester	FUTURE-TECH CORP.	1
● Simple surface roughness tester	TAYLOR HOBSON	1
● Roundness measuring	TAYLOR HOBSON	1
● Shore hardness tester	KEYENCE	1
● Texture microscope	MITUTOYO	1



### Straightening

● Oil hydraulic press	OSAKA JACK	600~3000kN	1
● Oil hydraulic press	ATSUGI, TOWA SEIKI (30t, 15t)		1
● Manual press	Manufactured by ourselves		1

### Machining department, Lathe machine

● CNC lathe machine for long material	TAIWAN KINWA	φ900 × 6310 Others	3
● CNC lathe machine	MORI SEIKI	φ420 × 570 Others	3
● Numerical control precision lathe machine	TAKISAWA	650 × 4000 Others	5
● General purpose late machine	TAKISAWA, MAZAK, MORI SEIKI	600 × 1500 Others	9



### Heat treatment department

● High frequency oscillator	FUJII ELECTRONICS INDUSTRY	5kHz~600kw/50kHz~340kw SWITCHING-TYPE	1
● Vertical movement induction hardening	Manufactured by ourselves	φ20~φ200 × 4000	1
● Horizontal movement induction hardening	Auto system	φ16~ 80×3000	1
● Tempering furnace	TAKASAGO INDUSTRY	4000 × 1000 × 1000	1



### Grinding department

● CNC cylindrical grinding	SHIGIYA MACHINERY WORKS	φ430×5000 Others	2
● Cylindrical grinding	JTEKT	φ420×3200 Others	3
● Center-less grinding	MICRON MACHINERY, OHMIYA MACHINERY	φ80×3000 Others	4
● Mirror polishing	MIRAC CORPORATION	φ200×4000	1
● Center hole grinding	TAKATA	1000	1





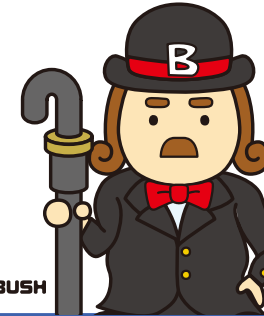
## Production facilities

We aim at the world's best shaft maker.

KING SHAFT



COUNT BUSH



MINISTER SCREW



## Osaka factory

The Osaka factory is smallest and offers the largest service in YSK.

### Cutting machine

● Manual cutting machine	Manufactured by ourselves	2
● Metal saw	AMADA	1



### Machining department, Lathe machine

● CNC lathe machine	OKUMA	φ300 × 500 Others	2
● General purpose high precision lathe	TAKISAWA	φ200 × 1500 Others	2
● General purpose lathe	TAKISAWA	φ200 × 1500 Others	4



### Machining department, Milling machine

● General purpose milling	SHIZUOKA MACHINE TOOL	200 × 700	1
● Bench drilling	YOSHIDA TEKOSHO		2
● Vertical machining center	OKUMA	560 × 460 × 460	1



### Grinding department

● Center-less grinding	OHMIYA SEISAKUSHO	φ50 × 1000	1
● Cylindrical grinding	JTEKT, SHIGIYA MACHINERY WORKS	φ200 × 2000 Others	2



### Straightening machines

● Manual press	Manufactured by ourselves	1
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### Inspection equipment

● Rockwell hardness tester	NAKAI PRECISION MACHINERY MFG.	1
● Shore hardness tester	NAKAI PRECISION MACHINERY MFG.	1
● Surface roughness tester	TOKYO SEIMITSU	1
● Projector	MITUTOYO	1

## Purachin Buri Thailand factory

### Cutting machine

● Cutting machine	KIMURA JAPAN	φ50	2
● Band sawing machine	EVERISING	φ200	1

### Machining department, Milling machine

● General purpose milling machine	MILLSTAR	300 × 1300	2
● Vertical type machining center	YCM	600 × 1200	1
● Double column type machining center	YCM	4100 × 2000	1
● Horizontal boring machine	TOPKING TECHNOLOGY	900 × 1050	1



### Straightening machines

● Oil hydraulic press	OSAKA JACK	1
● Auto press	CHUN KAI	1
● Manual press	Manufactured by ourselves	1

### Special processing machines

● Gun drill machine	HONG JI	φ5~φ25 1300 × 1800	1
● Slotting machine	EASTERN STAR PRECISION	φ560 300m	1



### Machining department, Lathe machine

● General purpose late machine	KINWA	φ860 MAX5000m	3
● CNC lathe machine for long material	KINWA	φ660 MAX4130m	4



### Grinding department

● Center less grinding machine	TOPKING TECHNOLOGY	φ16~φ80	2
● Center less grinding machine	PALMARY	φ3~φ80	2
● External cylindrical grinding machine	PALMARY	φ300~φ420	2
● Surface grinding machine	PALMARY	500 × 1500 × 600	1



### Hardening department

● Vertical movement hardening machine	φ3~φ200 MAX4000m	1
● Horizontal movement induction hardening	φ6~φ80 MAX3000m	1
● High frequency oscillator	100kW~400kW	1
● Electric furnace	W.S.ROYAL TECHNOLOGY L5000×W1500×H1000 MAX600°C	1



### Inspection equipment

● Rockwell hardness tester	NAKAI PRECISION MACHINERY MFG.	1
● Shore hardness tester	NAKAI PRECISION MACHINERY MFG.	1
● Micro-vickers tester	FUTURE-TECH CORP	1