More than forty years of experience in manufacturing

CHINA'S Linear Motion Production Base

Well-known brand / Hanjiang screws / Hanjiang rails

HANJIANG MACHINE TOOL CO,.LTD

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CHINA'S *Well-known brand / Hanjiang screws / Hanjiang rails*

Shaanxi Hanjiang Machine Tool Co., Ltd (HJMT), established in 1965, is a leading manufacturer of thread grinding machines, linear motion parts and mechatronics machine tools in China.

After over 40 years' development, the company now owns 200 million Yuan in fixed assets and 1166 sets of machining equipment, of which more than 800 sets are metal-cutting machines. Currently, the company's yearly production capacity for precision machines can reach 300 sets, ball screw-nut assy 200 thousand pairs, and linear guideways 50 thousand meters. In the company, there are 2 research institutes, with over 200 technical professonals specializing in thread grinding machines and linear motion parts respectively. Up to now, more than 60 significant research results have been accomplished by specialists of the research institutes, including self-developed high precision grating monitor, laser length comparator, laser dynamic leadscrew measuring machines, SK7450 CNC 5-meter and 10-meter leadscrew grinding machines, CNC 10-meter cylindrical grinding machine, HJZ037 CNC 3-meter linear guideway grinding machine, HJZ038 CNC slider grinding machine, S7640 large-size internal grinding machine, SKR7620 internal grinding center, and 6-meter screw whirlwind milling machine, all of which are unprecedented in the country and in domestic leading level.

HJMT is the first company to start developing and manufacturing linear motion parts in China to meet the needs for development of domestic CNC machine tools. Up to now, the company has possessed a series of dynamic measuring machines for ball screw production, such as HJY022 for micro ball screws, HJY05-1 for 1 meter long ballscrews, HJY05-1.5 for 1.5 meters long ball screws, HJY028 for 3 meters long ball screws and HJT012 for 5 meters long ballscrews, HJY041 for high speed ballscrews, etc, of which are all self-developed and made by the company, plus RG2000 CNC thread grinding machine imported from Switzerland, circular profile detector imported from Japan, and P65 precision measuring machine imported from Germany.

To meet the ever-growing markets, HJMT also expanded its production to Shanghai by setting up 2 factories there, producing ballscrews and linear guides.

HJMT now has implemented CAD/CAM in designing and manufacturing, and formed a complete system to guarantee machining procedures and quality of its products. Being the first company who obtained IS09001 quality certificate in China for ballscrews, in 2001 HJMT obtained ISO9001 for its linear guides, and in 2003, it successfully passed ISO9001:2000 quality certificate for both ballscrews and linear guides.

Over the past years, HJMT has been awarded many titles of honor: "National User Satisfaction Product" for four consecutive years", "Top Ten Enterprises to Create Brand", "Brand Product", etc. Now ballscrews and linear guides made by HJMT have become a well-known brand among users across China.


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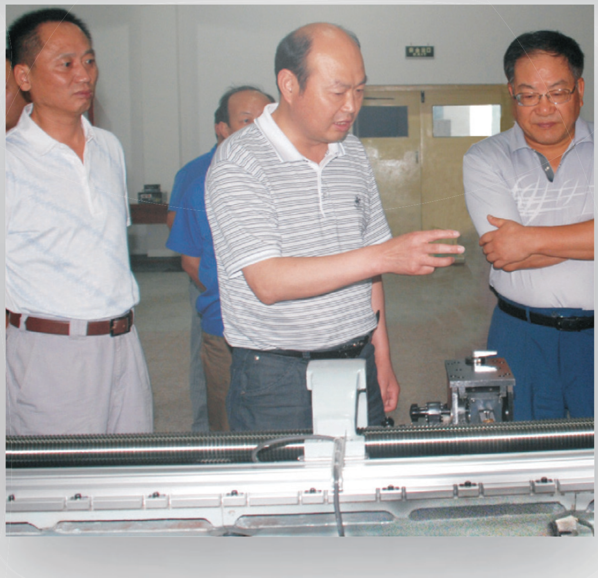
系列
CHINES

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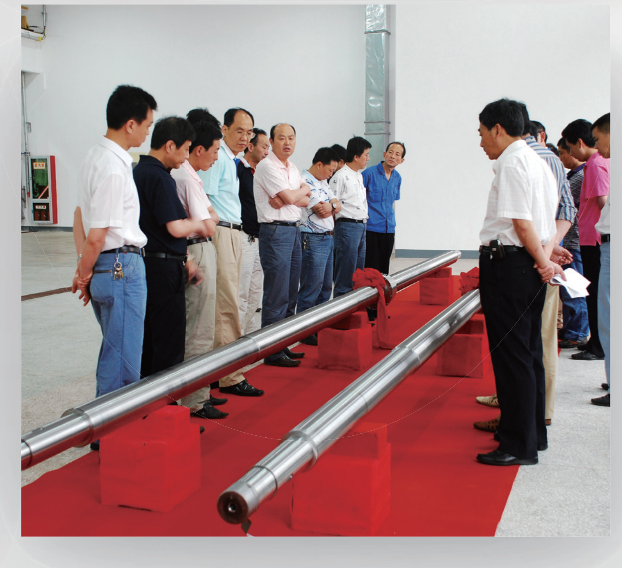


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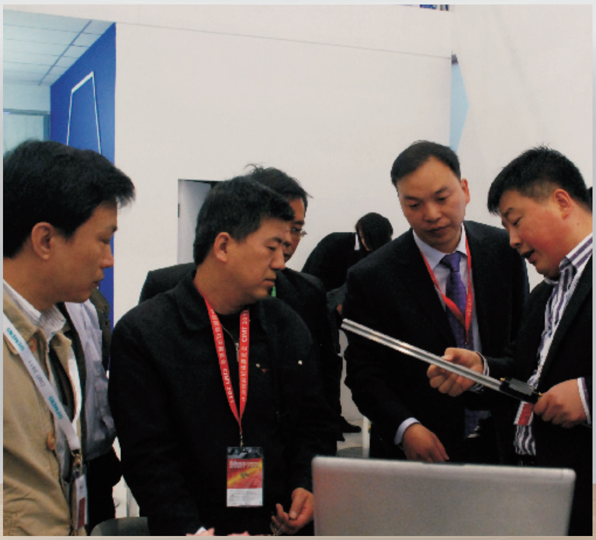


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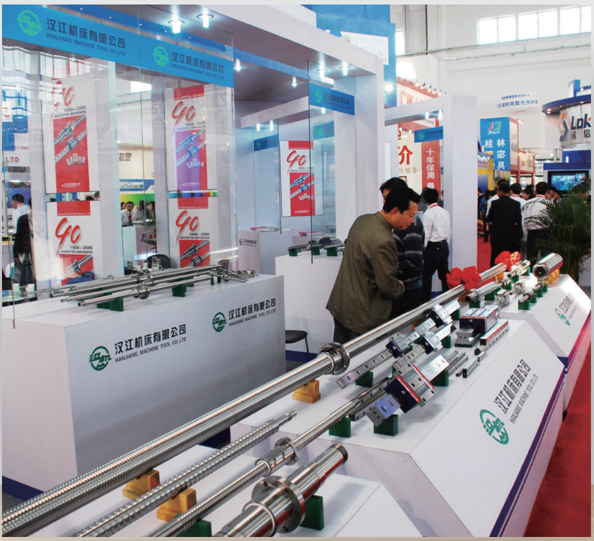
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HJG-S

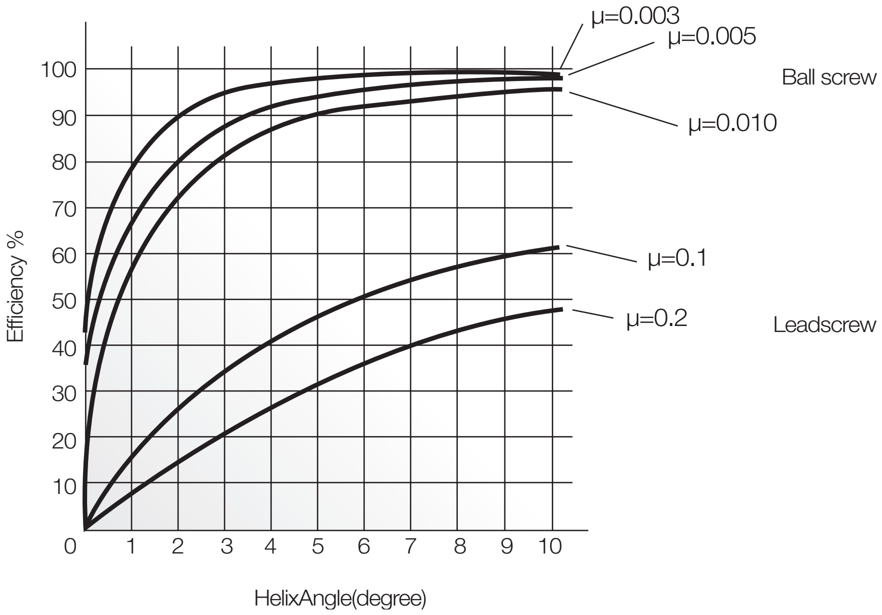
Characteristics of HJG-S Precision Ball Screws

1.HJG-S ball screws are of advanced structure and excellent performance as they are designed and produced on the basis of the structures popular in America,Japan and Europe.Both their radial and axial sizes are obviously smaller in comparison with conventional ones.

2.HJG-S ball screws consist of 11 different constructions with a wide variety and range of sizes to meet requirements of customers with their best quality.

3.High driving efficiency is available.The mechanical efficiency of HJG-S ball screws can reach 90-95% i.e. About 3 times higher than that on the ACME leadscrews (refer to Fig)

Fig1. HJG-S ball screw machinery efficiency



4.HJG-S ball screws can ensure the highest repeated positioning accuracy and driving accuracy as a result of precise grinding and assemble as well as strict inspection.

5.The axial play can be reduced to zero in various ways of preloadings. Therefore the rigidity can be greatly improved by these preloading, especially by means of offset lead preloading on entire nut.

6.With superior characteristics of antifriction and vibration-proof due to advanced construction and careful manufacture, HJG-S ball screws are allowed to operate at a higher speed and under heavy load.

7. HJG-S is also been considerate of users with auxiliary lubricating devicating devices and dust proof covers.

8.For HJG-S, the factory is completely equipped with advanced measuring instruments and all tools necessary for ball screw production. Therefore it is capable of offering the products of superior quality, reasonable price,punctual delivery and considerate service to our users.

9.For HHG-S, the factory is pleased to design for customers according to their individual requests and to accept the orders for special construction or non-standard ball screws.

HJG-S

Characteristics of HJG-S Precision Ball Screws

1. Three factors of construction of HJG-S ball screws

(1)Ball return types

Extemal return tube type (C) (refer to Fig 2)

Internal deflector type (N) (refer to Fig 3)

(2)Preloading ways

Offset lead preloading type (B) Spacer preloading type (D) Oversize ball type (Z)

(3)Configuration features:

Cylindrical (Y) Flange shape (F) Micro shape (V) Double flange & Cylindrical shape (FY)

Big lead type (FDL)

Fig.2 External return tube type (C type)

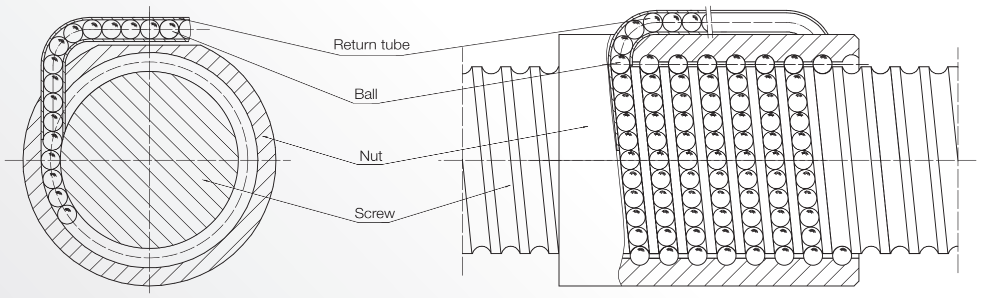
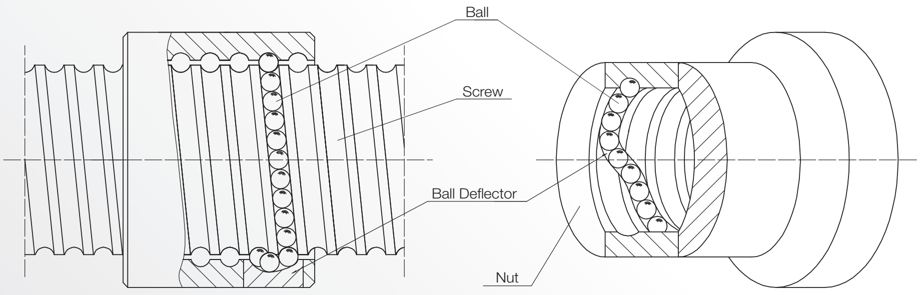


Fig.3 Internal deflector type (N type)



2. HJG-S Construction Forms (see the following table)

Table

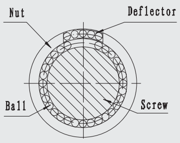
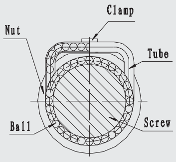
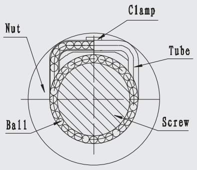
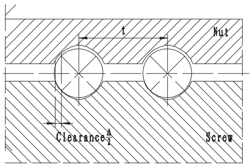
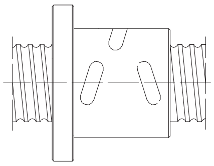
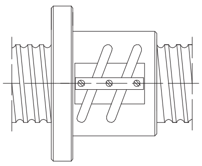
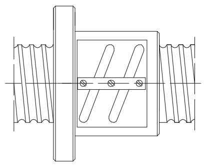
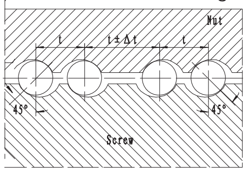
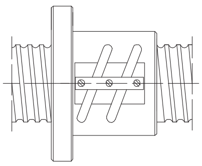
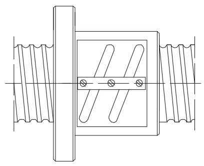
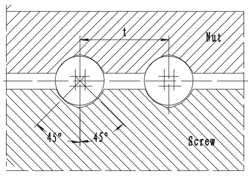
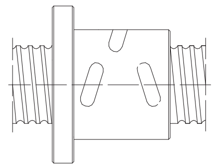
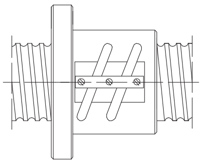
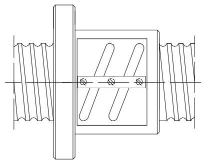
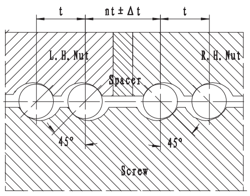
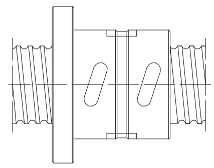
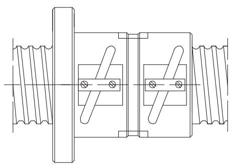
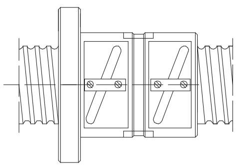
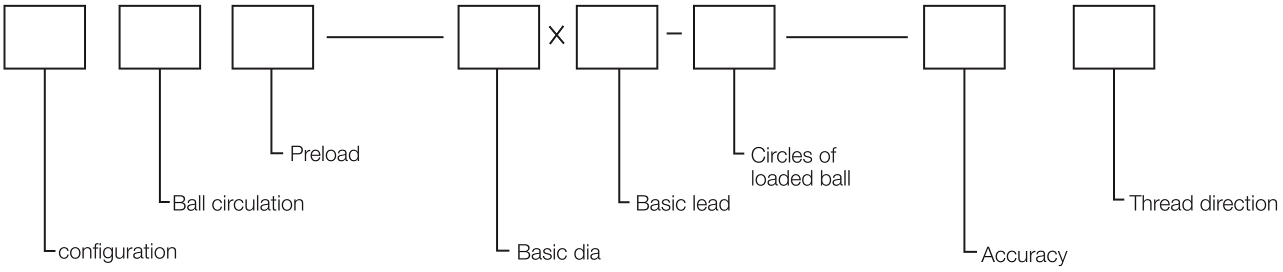
Recycle Structure Preload	N: Curved Deflector Type 	C$_1$: Exposed Tube Type 	C$_1$: Enclosed Tube Type 
No-preloading(△: 0.005-0.30) 	FN 	FC$_1$ 	FC$_2$ 
Offset Lead Preloading 		FC$_1$B 	FC$_2$B 
Over-size ball preloading 	FN(Z) 	FC$_1$(Z) 	FC$_2$(Z) 
Spacer Preloading 	FYND 	FYC$_1$D 	FYC$_2$D 

Table shows the symbols and sketchs of various constructions of HJG-S ball screws.Please refer to the table "specification Table of HJG-S Ball screws"for their specific sizes and characteristics.

3.Designation of symbls for HJG-S Ball screws



Example:

F Y N D 50 X 6 — 5 —— 2 L

The example means:

Flange shape.exposed tube type.Offset lead preloading.Basic dia of 50mm, basic lead of 6mm. 5 circles of loaded ball in each nut.Accuracy of grade 2. Left-hand thread

HJG-S

Description and Selection of HJG-S Ball Screws

1)Type C1: This is one of the most popular types at home and abroad. The construction designed as FC1B in particular has many advantages such as shorter radial and axial sizes, greater rigidity,smooth operation,higher positioning accuracy,higher speed and lower price.Preference is given to its adoption in the case where a notch is allowed to make in the nut support for its return tube when the ball screw is mounted.(please refer to table"Specificaitons of HJG-S precision ball screws" for the sizes of X and Y)

2)Type C2: This is also very popular at home and abroad. The difference between type C2 and type C1 lies only in that height of return tube in type C2 does not go beyond the nut's external diameter which is larger than that of type C1.Therefore,there is no need to make a notch in the nut support for mounting purposes. Type C2 is suitable for use where the designed radial size is larger and a notch is not admitted of in the nut support.

3)Type N: The curved deflector is often adopted in Europe, America and Japan. It has a higher ability against vibration and high positioning accuracy. The dimensions of type N are the same as that of type C1,but the limited speed is lower. The price of type N is a bit higher than that of type C, because of its complicated construction and production.Type N is recommended for use in the construction with a requirement for smaller radial dimensions and without a notch in the nut support.

4)Type V: When the nominal diameter is ≤ 16mm,this kind of ball screw is called type V, i, e. Micro ball screw. For this kind of ball screws, advanced structure,high quality and excellent performance can be available.

5)Type FDL: This is a kind of ball screws with bigger lead. It is suitable to various situations that need rapid drive movement with lower power consumption.

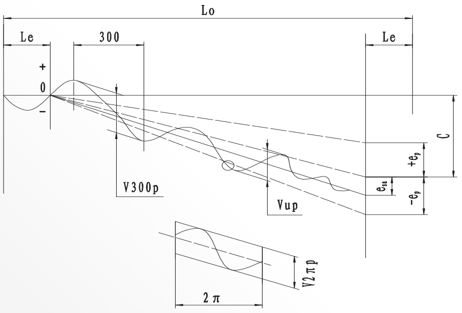
6)The factory is willing to provide the customers with various special ball screws, including heavy typed,nonstandard,etc.

HJG-S

Accuracy of HJG-S Precision Ball Screws

HJG-S ball screws can be divided into 2 groups:positioning (P) & travel (T). The accruacy can be divided into 7 grades:1,2,3,4,5,7 & 10 according to the national standard GB/T17587.3-1998. Among the 7 grades, 1 is the highest and 10 the lowest. The accuracy indexes are as follows: V2 π P-allowable travel variation on 2 π ; V300-pallowable travel variation on 300mm;Vup-allowable travel variation on effective travel;ep_target travel allowance;C-travel compensation on effective travel Lu.

1.The travel deviation & travel variation curves are shown in the following diagram.



2. V300p & V2 π p are shown in the following table:

Accuracy grade	1	2	3	4	5
V300p	6	8	12	16	23
V2πp	4	5	6	7	8

3. ep & Vup are shown in the following table:

Effective travel (mm)	Accuracy grade									
	1		2		3		4		5	
	ep	Vup	ep	Vup	ep	Vup	ep	Vup	ep	Vup
≤315	6	6	8	8	12	12	16	16	23	23
>315-400	7	6	9	8	13	12	18	17	25	25
>400-500	8	7	10	10	15	13	20	19	27	26
>500-630	9	7	11	11	16	14	22	21	30	29
>630-800	10	8	13	12	18	16	25	23	35	31
>800-1000	11	9	15	13	21	17	29	25	40	33
>1000-1250	13	10	18	14	24	19	34	29	46	39
>1250-1600	15	11	21	17	29	22	40	33	54	44
>1600-2000	18	13	25	19	35	25	48	38	65	51
>2000-2500	22	15	30	22	41	29	57	44	77	59
>2500-3150	26	17	36	25	50	34	69	52	93	69
>3150-4000	32	21	45	31	62	41	86	62	115	82
>4000-5000	-	-	-	-	76	49	110	74	140	99
>5000-6300	-	-	-	-	-	-	-	-	170	119

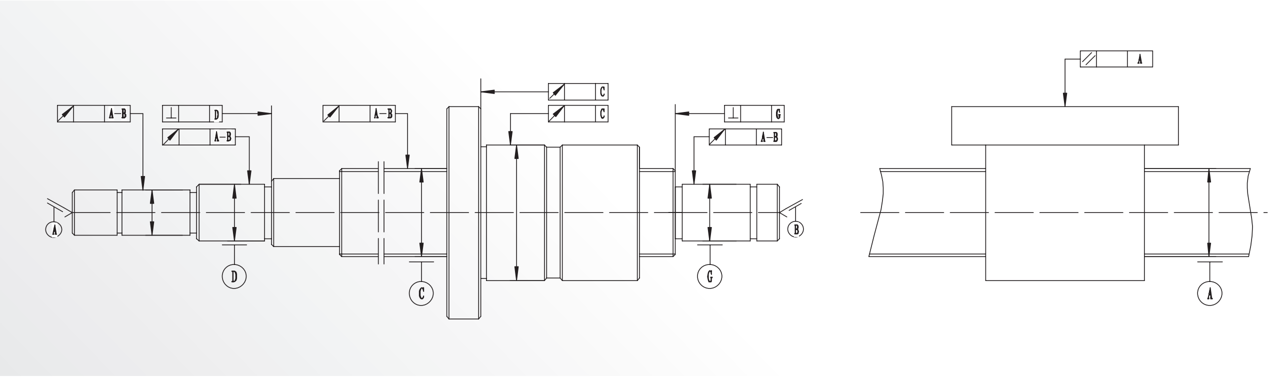
Note: When calculating the effective travel, the following equation is to applied:

Lu =Lo – 2 Le

Lu—effective travel; Lo—full thread length; Le— rest thread length

Lead	4	5	6	8	10	12	16	20	32
Rest thread Travel	16	20	24	32	40	45	50	60	100

4. Accuracies on the relative sections of ball screws according to the national standard GB/T17587.3-1998:



HJG-S

Main Characteristics selection of HJG-S Ball Screws

1. Selection of Axial Load & Life of Ball Screws

a. Selection of rated dynamic load Ca:

Rated dynamic load Ca is defined as an axial load Fa under which 90 percent of a batch of the same ball screws. When subjected to a high speed for 10 revolutions. can operate normally without producing any flaking as a result of metal fatigue.(Ca can be found in the specification Table of HJG-S Ball Screws)

b. Selection of rated static load Cao:

Cao is defined as an axial load of a ball screw in static status or operating at a lower speed, when the contact surface between ball and ball race is under max. contact stress and the plastic deformation thus caused reaches one ten-thousandth of ball diameter.(The value can be found in specification table of HJG-S Ball screws)

c. Run life L

$$L = [\frac{Ca}{F_W \cdot Fa}]^3 \times 10^6$$

Where. L----Run life Ca----Rated dynamic load Fa----Axial load(N) F_w----Load factor

In smooth run without impact	F_w=1.0-1.2
In common run	F_w=1.2-1.5
In run with impact	F_w=1.5-2.5

d. Time life L_h

$$L_h = \frac{L}{60n}$$

Where. L_h----Time life L----Run life n=Rotary speed

2. Rated dynamic load "Cam",which is determined according to the expected working hours.

1).Equivalent lood &equivaeat rotaary speed In application,the axiac load will vary:Assume the leadscrews at anyspeed of $n_1, n_2, n_3 ... n_n$, therunning time is $T_1, T_2, T_3 ... T_n$ respectively, the load appled is $F_1, F_2, F_3, ... F_n$ then.

Mean load $Fm = \sqrt[3]{\frac{F_1^3 \cdot n_1 \cdot t_1 + F_2^3 \cdot n_2 \cdot t_2 + ... + F_n^3 \cdot n_n \cdot t_n}{n_1 \cdot t_1 + n_2 \cdot t_2 + ... + n_n \cdot t_n}}$ mean speed $n_m = \frac{n_1 \cdot t_1 + n_2 \cdot t_2 + ... + n_n \cdot t_n}{t_1 + t_2 + ... + t_n}$

Which is determined according to the expected working hours

n_m----equivalent rotary speed(rpm) $n_m = \frac{n_{max} + n_{min}}{2}$ F_m----equivalent load(N) $F_m = \frac{2F_{max} + F_{min}}{3}$

2).Rated dynamic load "Cam" $Cam= \sqrt[3]{60 \cdot n_m \cdot L_h} \cdot \frac{f_m \cdot f_W}{100fa \cdot fc}$ (N)

Where. L_h-expected working time(hours),see table "a"; fa-accuracy factor,see table "b";

fc-reliability factor. In a rule, fc=1 ; fw-load factor, see table "c";

Table a : Expected working hours(L_h)

Machinery type	Working hours
Common machinery	5000-10000
Common machine tool	10000-15000
CNC machine tool	20000
Precision machine tool	20000
Testing machinery	15000
Aviation machinery	1000

Table b :

Accuracy factor	1,2,3	4,5	7	10
fa	1.0	0.9	0.8	0.8

Table c :

Load factor	Smooth run without impact	run with slight impact	run with impact & vibration
fw	1-1.2	1.2-1.5	1.5-2

3. Preloading of ball screws

a).Preloading between ball screw shaft and nut (Fp)

In order to remove the axial clearance and to increase the rigidity & positioning accuracy of the ball screws,the preloading between ball screw shaft and nut should be applied. However, if Fp is too big, the run life of ball screws will be decreased but the friction torque be increased,and if Fp is too small,the axial clearance will appear to give a negetive effect to the positioning accuracy. Therefore,in general,Fp is taken as follows:

$Fp= \frac{Fmax}{3}$

Where,Fp----preload(N) Fm----equivalent load (N) ;

When the axial preload can not be defined, then Fp=Ca(8-10)%

b).Travel compensation C for preloaded ball screw and the anti-stretcing preload Fpl on ball screw shaft.

In order to compensate stretch of the screw shaft caused by temperature rise,the anti-stretcing preload should be applied onto the screw shaft so that the positioning accuracy and the systematic rigidity can be kept in normal operation.For precision ball screws,the anti-stretcing preloading can be made according to the following suggestions.

1). Define target travel compensation C in the machining process

$$C=a \cdot \Delta t \cdot Lu=11.8\Delta t \cdot Lu \cdot 10^{-3}$$

Where, C Travel compensation(μm) Δt----Temperature 2°C~3°C is taken usually

Lu----Effective travel of ball screw (mm)

a----Linear expansion factor of material (for steel:$a=11.8\times10^{-6}/$ °C)

2). Define anti-stretching preload Fpl of the screw shaft in assembly process

$$Fpl = \frac{\Delta Lt \cdot E \cdot A}{Ls} = a \cdot \Delta \cdot t \frac{\pi d_2^2}{4} \cdot E = 1.95\Delta t \cdot d_2^2$$

Where, Fp----Anti-stretching preload(N) Δt----Temperature rise, 2°C to 3°C is taken usually.

d_2----Thread minor diameter of screw shaft(mm)

E----Elastic modulus,usually 2.1×10^5 is taken (N/mm^2)

ΔLt----Total corrected value. ΔLt=a.Ls.Δt(mm) Ls----Distance between bearings(mm)

4.Limit rotary speed and allowable rotary speed of ball screws.

The purpose of limit rotary speed setting is to avoid resonant for ball screws during high speed operation so that the normal working condition of ball screw can be kept.

$$n_c = k \frac{60\ \lambda^2}{2\pi Lb^2}\sqrt{\frac{EI}{\gamma A}} = f\frac{d_2}{Lb^2} \cdot 10^7$$

Where, n_c----Limit rotary speed(rpm) Lb----mounting space

K----safty factor.it is usually 0.8 $A = \frac{\pi d_2^2}{4} mm^2$

Where, A----cross section of ball screw

d_2----thread minor dia. of ball screw $I = \frac{\pi}{64} d_2^4\ mm^4$

Where, I----min.Inertia torque on section of ball screw

E----Elastic modulus,usually$2.1\times10^5 N/mm^2$

γ-material density.

$$\text{For steel, } \gamma = \frac{7.8 \times 10^{-5} N/mm^2}{9.8 \times 10^{-3} mm/S^2}$$

The allowable rotary speed of ball screw can be calculated from the limit rotary speed and Dn In this case $Dn_{max} \leq 70000$

Where, D----Nominal diameter of ball screw(mm) n_{max}----Allowable rotary speed of ball screw (rpm)

5.Selection of motor

(1).Friction torque Tp caused by outside load:

$$Tp = \frac{Fa \cdot l}{2\pi \cdot \eta} \times 10^{-3} (N \cdot M)$$

Where, Tp----Torque caused by outside load(N · M) Fa----Axial load and Fa=F+μ · w (N)

Where, F----cutting force(N) μ----friction factor sliding or rolling

w----total qty of working table plus weight of work piece(N) l----lead(mm)

η----Effectiveness(0.85~0.9)

(2).Friction torque T_D caused by preload:

$$T_D = \frac{F_P \cdot L}{2\pi} \cdot \frac{I-\eta^2}{\eta^2}\ N\cdot m$$

where, T_D----Friction torque caused by preload (N.m), Fp----Preload(N) ,

η----Effectiveness of preloaded ball screws(0.85-0.9) I----Lead(m) ,

(3).Friction torque T_D caused by supporting bearings: Please see the bearing's catalogues.

(4).Loading torque T_j caused by acceleration:

when motor speed is increased from n_1 to n_2

$$T_j = j\,\frac{2\pi\,(n_1-n_2)}{60\ ta}$$

when motor speed is increased from zero (still state)to n_{max} $T_j = j\,\frac{2\pi\, n_{max}}{60\ ta}$

where, j----inertia torque applied to motor, n----rotary sppeed of motor(rpm),

n_{max}----max.rotary speed of motor(rpm), ta----accelerating time(second)

(5).Total torques of motor:

$$Tm=Tp+T_D+Tj+Tb$$

In general, $Tp+T_D$ should be confined to about 10~30 percent of output power of the motor and especially a great attention must paid to in selecting small-typed motors.

6.Calculation of feed system's rigidity K

It is necessary to design every element with an even axial rigidity in a feed system, in order to improve the accuracy of positioning for a precise machine. The axial elastic displacement and the rigidity in a feed ball screws can be calculated with the following formulas:

$$\delta = \frac{F_a}{K} \qquad \frac{1}{K} = \frac{1}{K1} + \frac{1}{K2} + \frac{1}{K3} + \frac{1}{K4}$$

where, K----axial rigidity of feed system (N/μm), K1----axial rigidity of ball screw (N/μm),

K2----axial rigidity of nut (N/μm), K3----axial rigidity of supporting bearings (N/μm),

K4----axial rigidity of ball nut rest and bearings rest (N/μm)

(1) Axial rigidity of ball screw K1 (N/μm)

a) When fixed----free or fixed----supported

$$K_1 = \frac{A\cdot E}{X} \cdot 10^{-3}$$

where, E----Young's modulus usually 2.1×10^5 is taken (N/mm^2),

X----Distance between effecting points of load (mm),

A----Section area of ball screw ($A=\frac{\pi d_2^2}{4}$, where d_2 is the minor diameter of the thread) (mm^2),

b) When fixed----fixed or supported----supported

$$K_1 = \frac{A\cdot E\cdot L}{X\,(L-X)} \cdot 10^{-3}$$

where, L---Mounting space (mm),

X---The max. axial displacement is obtained when $X=\frac{L}{2}$, then $K_1 = \frac{4A\cdot E}{L} \cdot 10^{-3}$

(2) Axial rigidity of nut K_2

a) Axial rigidity of nut un-preloaded

The axial rigidity K can be obtained with the elastic deformations of thread and balls (value specified in this catalog) when the axial load equals to 30 percent of the dynamic load. Usually, the 80 percent of value of K specified in the tables is employed. When the axial load is lower than 30 percent of the rated dynamic one, the rigidity can be calculated with the following expression:

$$K_2 = 0.8K\left(\frac{F_a}{0.3C_a}\right)^{\frac{1}{3}}$$

where, K----the rigidity in the table of size in this catalog (kgf/μm),

Fa----axial load (kgf),

Ca----rated dynamic load (kgf)

b) Pre-loaded nut stiffness

Stiffness K can be calculated by using the deformation quantity of elasticity between raceways and balls when a preload as much as 10% of rated dynamic load is applied to nuts. The values shown in the catalogue or 80% of the values shown in the table are our recommended K values.

When pre-load Fa0 is under 10% of rated dynamic load, stiffness K can adopts the following

$$K_2=0.8K\left(\frac{F_p}{0.1C_a}\right)^{\frac{1}{3}}$$

K----rigidity(kgf/μm) Fp----pre-load(kgf)

(3) Axial rigidity of supporting bearings K_3

In the precise machinery, the ball screws are almost supported by combined thrust angular contact ball bearings, of which the rigidity are calculated by

$$K_3 = \frac{3F_{ao}}{\delta_{ao}}$$

where, δ_{ao}----axial elastic deformation when applying preload,

F_{ao}----preload applying to bearings

$$\delta_{ao} = \frac{0.44}{\sin\alpha}\left(\frac{Q^2}{D_W}\right)^{\frac{1}{3}} \qquad Q = \frac{F_{ao}}{Z\sin\alpha}$$

where, α----contact angle between balls and groove of bearings,

D_w----Diameter of ball,

Q----Load applying to a ball,

Z----Number of balls

(4) Axial rigidity of nut rest and bearings rest K_4

The rests should be designed with a high rigidity, but it is neglected in calculation of ball screws usually.

HJG-S

Main charateristic of HJG-S Ball Screws

Length / Accuracy / Nominal diameter	≤500	500-1000	1000-1500	1500-2000	2000-2500	2500-3000	3000-3500	3500-4000	4000-5000	5000-6000	6000-10000
12	3,4,5										
16	1,2										
20	1,2	3,4,5,7									
25	1,2	3,4,5									
32	1,2		3,4,5	7,10							
40	1,2			3,4,5		4,5,7,10					
50	1,2					3,4,5					
63	1,2				3				5		
80	1,2				3				5		
100	1,2				3				5		
125	1,2				3				5		
160	1,2				3				5		

HJG-S

DUST Protection and Lubrication of HJG-S ball screws

The dust protection devices such as spiral spring protective sleeve,folding protective sleeve,etc. should be mounted on the ball screw shaft to avoid entrance of dust and other impurities. The dust-proof washers or spacers have been applied on the two ends of the ball nut before shipment in order to protect the ball screw from damage.

Full grease or lubricating oil should be used to lubricate the ball screws in order to keep them in fine conditions for increasing working life.For HJG-S ball screws, a special lubrication screw hole is provided on the ball nut flange.For middle -loaded and middle running speed ball screws,the lubricating oil No.20 or No.30 or lithium-based lubricating grease can be used.For heavy-loaded and high running speed ball screws,the high speed lubricatin oil NBU15,turbine oil No.90 or No.180 can be used. For those ball screws that require strict temperature control,the oil mist spraying and recycle lubrication are recom mended.For those ball screws which are to be operated under high temperature or severe cold ,the high temperature-resistant or the severe cold-resistant lubricating greases or oils are recommended in order to keep normal operations of the ball screws under those special conditions.

HJG-S

Notes to Usage of HJG-S Ball Screws

1.When installing HJG-S ball screws, the bores of bearings and nut seat should be regulated precisely at the same axis and the ball screws can not be installed forcedly in abnormal cases. Meanwhile, keep the screw shaft and the spindle of the motor at the same axis to prevent any abnormal radial torque.

2.When installing or using the ball screws, the nut must be avoided separating from the ball race. Otherwise, the ball screws can not work even cause accident of the equipment employing them.

3.For [N] typed ball screws, if it is necessary to remove the nut from the screw shaft, mount an additional sleeve with an outside diameter smaller than the minor diameter of the screw on the ball screw so that the nut together with the steel balls can be removed. When installing [C1] & [C2] typed ball screws, forbid to knock and disassemble the tube, or the ball may block the tube; the best orient of the nut is set the tube on its top.

4.The ball screws can only be applied with axial load, so any radial force or bending torque generated during installation and using can result abnormal contact stress in the ball screws to hurt the screws. The axis of the ball screws must be parallel to that of the reference guide fitted to.

5.Please pay special attention to that the nut doesn’t remove from screw shaft due to low friction when placing screws vertically during installation & transportation. Equip self-locking device if necessary.

6.In order to run the ball screws smartly and prolong its life, please use it in a clean environment, avoiding dust, dirt coming into ball screw assembly. Otherwise, the performance and life of the screws will reduce greatly and even cause an equipment accident such as damage of the screws and even removal of worktable from a machine.

7.Lubrication is absolutely necessary to ensure the normal running of the ball screws to improve the flexibility and prolong the running life. Please clean and coat the thread on the screw shaft with new lubricant when there is obviously dirt lubricant in the thread groove after have used the screws 30 to 90 days. Please renew lubricant in periodically in accordance with the using condition.

8.Please don’t adjust the preload freely, because the ball screws is a precise transmission element and its preload has relationship with its accuracy and life. Please propose all requirements during the commercial negotiation.

9.Any hurt in the deflector, or tubes and threads of the ball screws results abnormal running of the screws. If any hurt is found during using, please contact us.

10.The ball screws are designed to be used at a temperature lower than 80℃. Please tell us during the commercial negotiation, if you want to use the screws at a temperature beyond that limit.

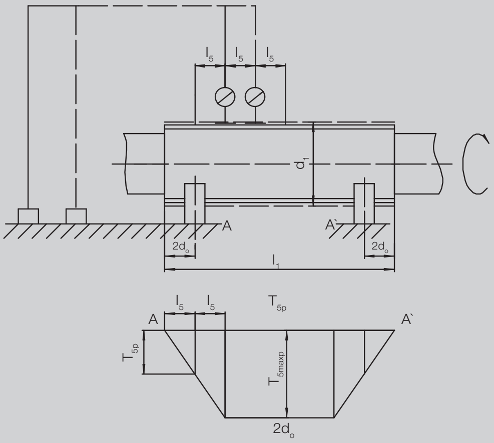
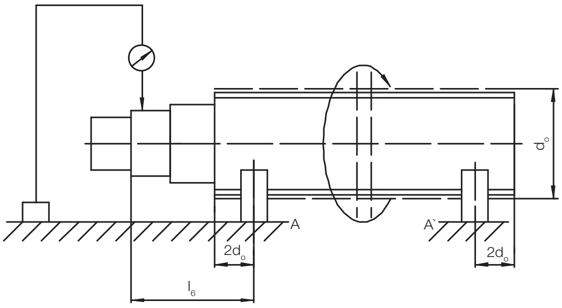
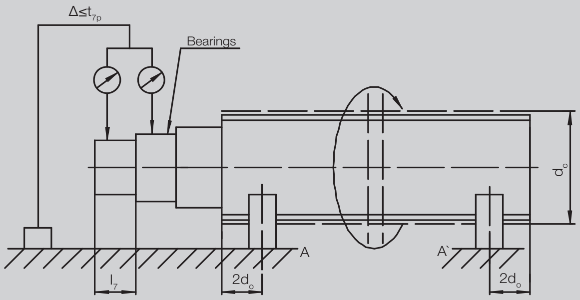
11.Please place the ball screws with their original packages horizontally under a clean condition for store.

12.The ball screws should be assembled and repaired by technician. If necessary, please contact us.

HJG-S Accuracy inspection

Accuracy test of HJG-S Ball Screws

The accurate testing items are listed below, and the values are as per the standard GB/T17587.3-1998.

No.	Illustration	Testing Item
1		True runs t_5 of screw at the major diameter over a length of n l_5 (n=1,2,3,…) for the straightness related to AA’.
2		True run of supporting journal over a length of nl_6 (n=1,2,3,…) related to AA’ The error is t_6 If $l_6 \le l$, and the effective error is $t_{6a} \le t_{6p}\frac{l_6}{l}$ if $l_6 > l$
3		The true run of the journal related to supporting journal The error is t_7 if $l_7 \le l$, and the effective error is $t_{7a} \le t_{7p}\frac{l_7}{l}$ if $l_7 > l$

HJG-S

Accuracy inspection

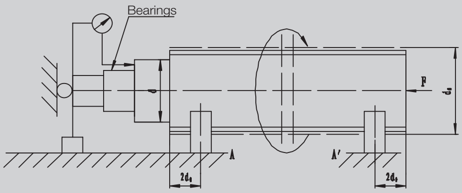
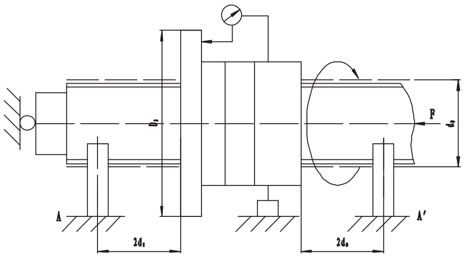
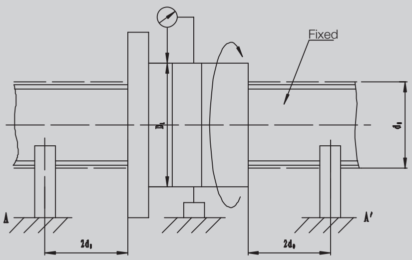
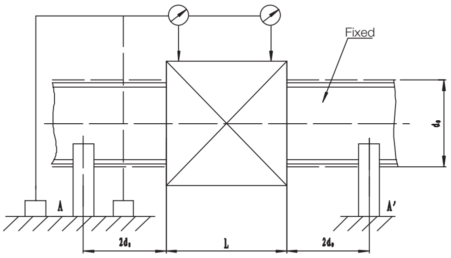
<table>
<tr><th></th><th>Permissible Errors</th><th>Testing Tool</th><th>Testing Method</th></tr>
<tr><td></td><td>
<table>
<tr><td colspan="9">Positioning or drive ball screws</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_0$mm</td><td rowspan="3">l_5 mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{5p} µm over a length of l_5</td></tr>
<tr><td>≥6~12</td><td>80</td><td rowspan="5">20</td><td rowspan="5">22</td><td rowspan="5">25</td><td rowspan="5">28</td><td rowspan="5">28</td><td rowspan="5">40</td><td rowspan="5">80</td></tr>
<tr><td>>12~25</td><td>160</td></tr>
<tr><td>>25~50</td><td>315</td></tr>
<tr><td>>50~100</td><td>630</td></tr>
<tr><td>>100~200</td><td>1250</td></tr>
<tr><td colspan="2">ratio l_5/d_0</td><td colspan="7">t_{5maxp}, µm over a length of $l_1 \geq 4l_5$</td></tr>
<tr><td colspan="2">≤40</td><td>40</td><td>45</td><td>50</td><td>57</td><td>64</td><td>80</td><td>160</td></tr>
<tr><td colspan="2">> 40~60</td><td>60</td><td>67</td><td>75</td><td>85</td><td>96</td><td>120</td><td>240</td></tr>
<tr><td colspan="2">> 60~80</td><td>100</td><td>112</td><td>125</td><td>142</td><td>160</td><td>200</td><td>240</td></tr>
<tr><td colspan="2">> 80~100</td><td>160</td><td>180</td><td>200</td><td>225</td><td>256</td><td>320</td><td>640</td></tr>
</table>
</td><td>Dial indicator, Vee-shaped rests with the same height</td><td>5.612.2
Place the screw on two same Vee-shaped rests located at A & A’ respectively. Mount a dial indicator with its feeler touching the cylindrical surface of the screw in the vertical plane l_5 away from A. Record the differences obtained from the indicator, with slow rotation of the screw. Repeat the test once after the distance between A and the place where the feeler touched, has been increased by l_5.
Note:
1. The test can be done between centers after negotiation. Then l_1 equals to the length of the screw.
2. The test can be done at the middle place of the screw, if $l_1<2l_5$.</td></tr>
<tr><td></td><td>
<table>
<tr><td colspan="9">Positioning or drive ball screws</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_0$mm</td><td rowspan="3">l mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{6p} µm over a length of l</td></tr>
<tr><td>≥6~20</td><td>80</td><td>10</td><td>11</td><td>12</td><td>16</td><td>20</td><td>40</td><td>63</td></tr>
<tr><td>>20~50</td><td>125</td><td>12</td><td>14</td><td>16</td><td>20</td><td>25</td><td>50</td><td>80</td></tr>
<tr><td>>50~125</td><td>200</td><td>16</td><td>18</td><td>20</td><td>26</td><td>32</td><td>63</td><td>100</td></tr>
<tr><td>>125~200</td><td>315</td><td></td><td></td><td>25</td><td>32</td><td>40</td><td>80</td><td>125</td></tr>
</table>
</td><td>Dial indicator, Vee-shaped rests with the same height</td><td>5.612.2
Place the screw on two same Vee-shaped rests located at A & A’ respectively. Mount a dial indicator with its feeler normally touching the cylindrical surface of supporting journal (the end is l_6 away from A) of the screw in the vertical plane. Record the differences obtained from the indicator, with slow rotation of the screw.
Note:
The test can be done between centers after negotiation. Then l_6 is the distance between the testing position and the end of the shaft.</td></tr>
<tr><td></td><td>
<table>
<tr><td colspan="9">Positioning or drive ball screws</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_0$mm</td><td rowspan="3">l mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{7p} µm over a length of l</td></tr>
<tr><td>≥6~20</td><td>80</td><td>5</td><td>6</td><td>6</td><td>7</td><td>8</td><td>12</td><td>16</td></tr>
<tr><td>>20~50</td><td>125</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>16</td><td>20</td></tr>
<tr><td>>50~125</td><td>200</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>20</td><td>25</td></tr>
<tr><td>>125~200</td><td>315</td><td></td><td></td><td>12</td><td>14</td><td>16</td><td>25</td><td>32</td></tr>
</table>
</td><td>Dial indicator, Vee-shaped rests with the same height</td><td>5.612.2
Place the screw on two same Vee-shaped rests located at A & A’ respectively. Mount two dial indicators with their feelers normally touching the cylindrical surfaces of the journal with a length of l_7 and the supporting journal of screw in the vertical plane respectively. Record the readings obtained from the indicators respectively, with slow rotation of the screw. The max. difference of the records is taken as the error tested.
Note:
The test can be done between centers after negotiation. Then l_6 is the distance between the testing position and the end of the shaft.</td></tr>
</table>

HJG-S

Accuracy inspection

Accuracy test of HJG-S Ball Screws

The accurate testing items are listed below, and the values are as per the standard GB/T17587.3-1998.

No.	Illustration	Testing Item	
4		Axial slip t8 of end surface of supporting journal	
5		Axial slip of ball nut t_9 (only for the preloaded one)	
6		Ball nut runs true t_{10}(only for the preloaded and rotary one)	
7		Prismatic nut parallels with axis of the Vee-shaped rests AA'	

<table>
<tr><th colspan="8">Permissible Errors</th><th>Testing Tool</th><th>Testing Method</th></tr>
<tr><td colspan="8">Positioning or drive ball screws</td><td rowspan="7">Dial indicator, Vee-shaped rests with the same height</td><td rowspan="7">5.632
Place the screw on two same Vee-shaped rests located at A & A’ respectively. In order to prevent screw from displacing axially, a steel ball can be placed between the fixing surface and the central hole of the screw shaft. Mount a dial indicator with its feeler normally touching the end surface of the journal. With slow rotation of the screw, record the readings obtained from the indicator. (Note: the test can be done between centers after negotiation.)</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_0$mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{8p} μm</td></tr>
<tr><td>≥6~63</td><td>3</td><td>4</td><td>4</td><td>5</td><td>5</td><td>6</td><td>10</td></tr>
<tr><td>>63~125</td><td>4</td><td>5</td><td>5</td><td>6</td><td>6</td><td>8</td><td>12</td></tr>
<tr><td>>125~200</td><td>-</td><td>6</td><td>6</td><td>7</td><td>8</td><td>10</td><td>16</td></tr>
<tr><td colspan="8">Positioning or drive ball screws</td><td rowspan="9">Dial indicator, Vee-shaped rests with the same height</td><td rowspan="9">6.632
Place the screw on two same Vee-shaped rests located at A & A’ respectively. In order to prevent screw from displacing axially, a steel ball can be placed between the fixing surface and the central hole of the screw shaft. Mount a dial indicator with its feeler normally touching the out edge at the mounting surface (with a diameter of D3) of the nut. With slow rotation of the screw, record the readings obtained from the indicator. (Note: The test can be done between centers after negotiation.)</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_3$mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{9p} μm</td></tr>
<tr><td>≥16~32</td><td>10</td><td>11</td><td>12</td><td>14</td><td>16</td><td>20</td><td>-</td></tr>
<tr><td>>32~63</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>25</td><td>-</td></tr>
<tr><td>>63~125</td><td>16</td><td>18</td><td>20</td><td>22</td><td>25</td><td>32</td><td>-</td></tr>
<tr><td>>125~250</td><td>20</td><td>22</td><td>25</td><td>28</td><td>32</td><td>40</td><td>-</td></tr>
<tr><td>>250~500</td><td>-</td><td>-</td><td>32</td><td>36</td><td>40</td><td>50</td><td>-</td></tr>
<tr><td colspan="8">Positioning or drive ball screws</td><td rowspan="9">Dial indicator, Vee-shaped rests with the same height</td><td rowspan="9">5.612.2
Place the screw on two same Vee-shaped rests located at A & A’ respectively. In order to prevent screw from displacing axially, a steel ball can be placed between the fixing surface and the central hole of the screw shaft. Mount a dial indicator with its feeler normally touching the cylindrical surface with a diameter of D_1 of the nut. Move the nut slowly without turning the screw, and record the reading obtained from the indicator.</td></tr>
<tr><td rowspan="3">Nominal Diameter $d_1$mm</td><td colspan="7">Standard grade</td></tr>
<tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="7">t_{19p} μm</td></tr>
<tr><td>≥16~32</td><td>10</td><td>11</td><td>12</td><td>14</td><td>16</td><td>20</td><td>-</td></tr>
<tr><td>>32~63</td><td>12</td><td>14</td><td>16</td><td>18</td><td>20</td><td>25</td><td>-</td></tr>
<tr><td>>63~125</td><td>16</td><td>18</td><td>20</td><td>22</td><td>25</td><td>32</td><td>-</td></tr>
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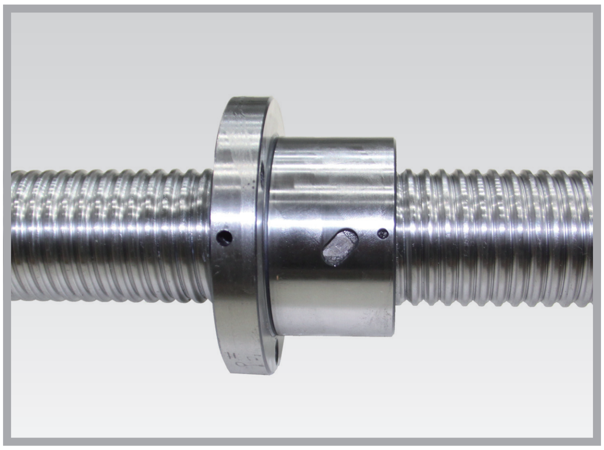
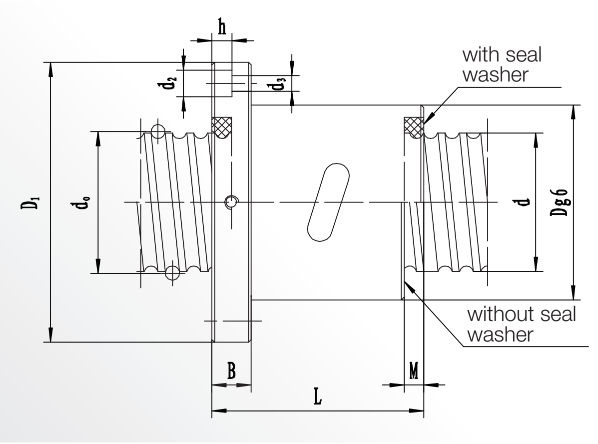
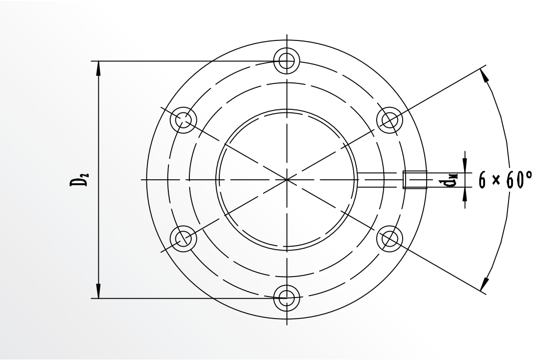
<tr><td>>250~500</td><td>-</td><td>-</td><td>32</td><td>36</td><td>40</td><td>50</td><td>-</td></tr>
<tr><td colspan="8"></td><td rowspan="7">Dial indicator, Vee-shaped rests with the same height</td><td rowspan="7">5.412.2
Place the screw on two same Vee-shaped rests located at A & A’ respectively. Mount a dial indicator with its feeler normally touching surface to be tested on the nut. Record the reading obtained from the indicator over the length specified.</td></tr>
<tr><td colspan="8">Positioning or drive ball screws</td></tr>
<tr><td colspan="8">Standard grade</td></tr>
<tr><td colspan="2">1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>7</td><td>10</td></tr>
<tr><td colspan="8">t_p over the length of 100mm, μm</td></tr>
<tr><td colspan="2">16</td><td>18</td><td>20</td><td>22</td><td>25</td><td>32</td><td>-</td></tr>
<tr><td colspan="8"></td></tr>
</table>

HJG-S

Specifications of HJG-S ball screws







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
2004-3	20	4	19.5	2.381
2004-4				
2005-3	20	5	19.5	3.175
2005-4				
2006-3	20	6	19.5	3.175
2006-4				
2504-3	25	4	24.5	2.381
2504-4				
2505-3	25	5	24.5	3.175
2505-4				
2506-3	25	6	24.5	3.175
2506-4				
3204-3	32	4	31.5	2.381
3204-4				
3205-3	32	5	31.5	3.175
3205-4				
3205-6				
3206-3	32	6	31.5	3.175
3206-4				
3208-3	32	8	31	4.763
3208-4				
3210-3	32	10	31	5.953
3210-4				
4005-3	40	5	39.5	3.175
4005-4				
4005-6				
4006-3	40	6	39.5	3.969
4006-4				
4008-3	40	8	39	4.763
4008-4				
4010-3	40	10	39	5.953
4010-4				
4010-6				
5005-3	50	5	49.5	3.175
5005-4				
5005-6				

Single nut internal recylce: FN&FN(Z)

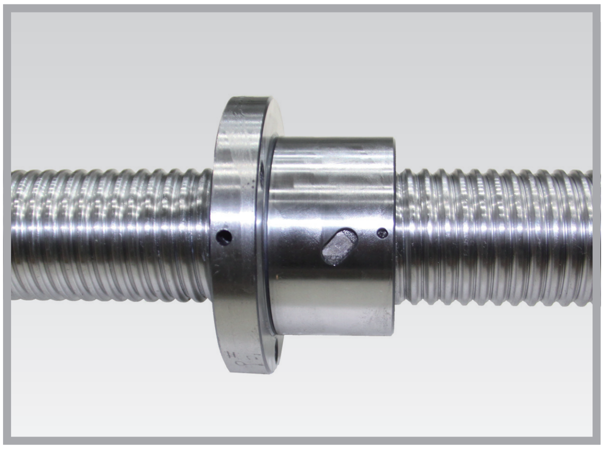
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
3°39'	3	36	60	48	11	4	10	5.8	6	M6	40	5295	11474	660
	4	36	60	48	11	4	10	5.8	6	M6	44	6766	15298	865
4°33'	3	36	60	48	11	4	10	5.8	6	M6	46	9022	17456	720
	4	36	60	48	11	4	10	5.8	6	M6	51	11082	23340	955
5°27'	3	36	60	48	11	4	10	5.8	6	M6	52	9022	17456	750
	4	36	60	48	11	4	10	5.8	6	M6	60	11082	23340	980
2°55'	3	40	66	53	11	4	10	5.8	6	M6	40	6080	16279	780
	4	40	66	53	11	4	10	5.8	6	M6	44	7747	21673	1020
3°39'	3	40	66	53	11	4	10	5.8	6	M6	46	9807	22850	870
	4	40	66	53	11	4	10	5.8	6	M6	51	12553	30499	1145
4°22'	3	40	66	53	11	4	10	5.8	6	M6	52	11180	29028	900
	4	40	66	53	11	4	10	5.8	6	M6	60	14318	38639	1175
2°17'	3	50	76	63	11	4	10	5.8	6	M6	40	6766	23438	960
	4	50	76	63	11	4	10	5.8	6	M6	44	8630	31284	1265
2°51'	3	50	82	67	13	4	12	7	7	M6	48	12945	30401	1050
	4	50	82	67	13	4	12	7	7	M6	53	16573	40699	1390
	6	50	82	67	13	4	12	7	7	M6	63	20202	60803	2025
3°25'	3	50	82	67	13	4	12	7	7	M6	54	12945	30401	1095
	4	50	82	67	13	4	12	7	7	M6	62	16573	40699	1445
4°33'	3	53	90	71	15	6	15	9	9	M6	67	18339	41875	1110
	4	53	90	71	15	6	15	9	9	M6	76	23536	55801	1465
5°41'	3	53	90	71	15	8	15	9	9	M6	80	25988	52565	1155
	4	53	90	71	15	8	15	9	9	M6	90	33343	70218	1530
2°17'	3	60	94	75	15	4	15	9	9	M6	50	13487	39129	1275
	4	60	94	75	15	4	15	9	9	M6	55	16887	52271	1680
	6	60	94	75	15	4	15	9	9	M6	65	22458	78456	2460
2°44'	3	60	94	75	15	4	15	9	9	M6	58	16672	47465	1305
	4	60	94	75	15	4	15	9	9	M6	64	21379	63451	1710
3°39'	3	63	100	80	15	6	15	9	9	M6	67	20692	54136	1320
	4	63	100	80	15	6	15	9	9	M6	76	26576	71983	1730
4°33'	3	63	108	85	18	8	18	11	11	M6	83	30107	69923	1395
	4	63	108	85	18	8	18	11	11	M6	93	38639	93166	1840
	6	63	108	85	18	8	18	11	11	M6	113	54723	139455	2690
1°49'	3	71	110	90	15	4	15	9	9	M8x1	50	14122	50113	1515
	4	71	110	90	15	4	15	9	9	M8x1	55	17456	66785	1995
	6	71	110	90	15	4	15	9	9	M8x1	65	24811	99933	2930

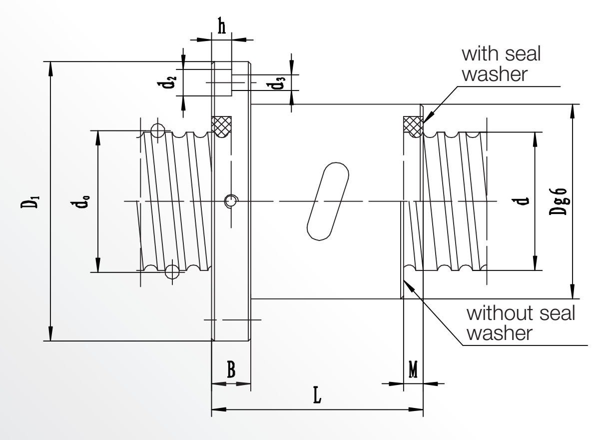
■ Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

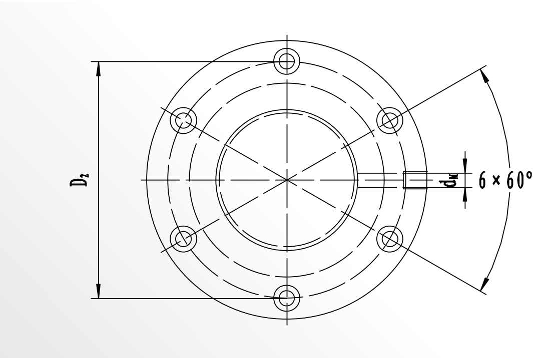
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Single nut internal recylce: FN&FN(Z)







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5006-3	50	6	49.5	3.969
5006-4				
5008-3	50	8	49	4.763
5008-4				
5010-3	50	10	49	5.953
5010-4				
5010-6				
5012-3	50	12	49	7.144
5012-4				
5012-6				
6308-3	63	8	62	4.763
6308-4				
6310-3	63	10	62	5.953
6310-4				
6310-6				
6312-3	63	12	62	7.144
6312-4				
6312-6				
8010-3	80	10	79	5.953
8010-4				
8010-6				
8012-3	80	12	79	7.144
8012-4				
8012-6				
8016-3	80	16	78.5	9.525
8016-4				
10010-3	100	10	99	5.953
10010-4				
10010-6				
10012-3	100	12	99	7.144
10012-4				
10012-6				
10016-3	100	16	98.5	9.525
10016-4				
10020-3	100	20	98.5	12.7
10020-4				
12516-4	125	16	123.5	9.525
12516-5				
12520-4	125	20	123.5	12.7
12520-5				

Internal circulation, single nut type

Ball Screws

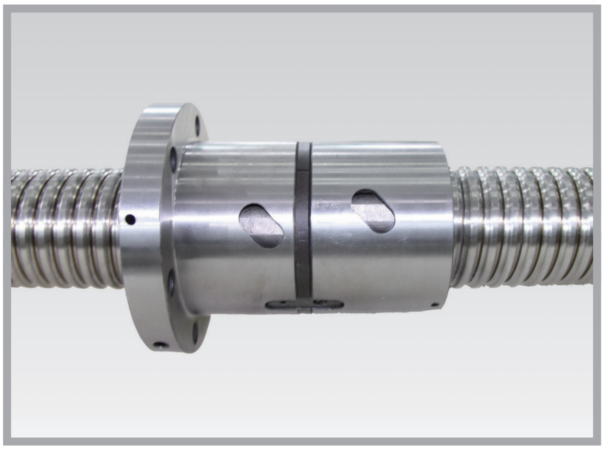
	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
	2°11'	3	71	110	90	15	4	15	9	9	M8X1	58	19417	61293	1560
		4	71	110	90	15	4	15	9	9	M8X1	64	23772	81594	2055
	2°55'	3	75	118	95	18	6	18	11	11	M8X1	70	24419	70904	1590
		4	75	118	95	18	6	18	11	11	M8X1	79	30107	94637	2095
	3°39'	3	75	118	95	18	8	18	11	11	M8X1	83	34226	91499	1665
		4	75	118	95	18	8	18	11	11	M8X1	93	43837	122097	2190
		6	75	118	95	18	8	18	11	11	M8X1	114	62078	183194	3225
	4°22'	3	80	132	105	22	10	22	13.5	13	M8X1	99	44916	109348	1725
		4	80	132	105	22	10	22	13.5	13	M8X1	111	57567	145633	2270
		6	80	132	105	22	10	22	13.5	13	M8X1	136	105032	218892	3330
	2°19'	3	90	132	110	18	6	18	11	11	M8X1	70	27263	92970	1920
		4	90	132	110	18	6	18	11	11	M8X1	79	33539	124156	2515
	2°54'	3	90	138	112	22	8	22	13.5	13	M8X1	87	38051	117193	1995
		4	90	138	112	22	8	22	13.5	13	M8X1	97	48740	156912	2615
		6	90	138	112	22	8	22	13.5	13	M8X1	118	69041	234681	3870
	3°28'	3	90	138	112	22	10	22	13.5	13	M8X1	99	53055	143574	2070
		4	90	138	112	22	10	22	13.5	13	M8X1	111	65314	191040	2710
		6	90	138	112	22	10	22	13.5	13	M8X1	136	92578	286364	3995
	2°17'	3	105	156	130	22	8	22	13.5	13	M8X1	87	42856	168680	2430
		4	105	156	130	22	8	22	13.5	13	M8X1	97	55115	208791	3180
		6	105	156	130	22	8	22	13.5	13	M8X1	118	78161	313725	4690
	2°44'	3	110	158	132	22	10	22	13.5	13	M8X1	99	60313	190451	2505
		4	110	158	132	22	10	22	13.5	13	M8X1	111	74337	254099	3280
		6	110	158	132	22	10	22	13.5	13	M8X1	136	105229	381602	4835
	3°39'	3	118	168	140	28	14	22	13.5	13	M8X1	128	79044	210752	2820
		4	118	168	140	28	14	22	13.5	13	M8X1	144	99541	278322	3695
	1°49'	3	125	176	150	25	8	22	13.5	13	M8X1	90	47269	215263	2895
		4	125	176	150	25	8	22	13.5	13	M8X1	100	60806	266554	3790
		6	125	176	150	25	8	22	13.5	13	M8X1	121	86203	400517	5595
	2°11'	3	130	192	160	25	10	28	17.5	17	M8X1	103	64824	251255	2985
		4	130	192	160	25	10	28	17.5	17	M8X1	115	81986	337457	3910
		6	130	192	160	25	10	28	17.5	17	M8X1	139	116801	489957	5760
	2°55'	3	140	202	170	28	14	28	17.5	17	M8X1	128	82673	306174	3345
		4	140	202	170	28	14	28	17.5	17	M8X1	144	104346	379040	4380
	3°39'	3	140	202	170	28	18	28	17.5	17	M8X1	151	105428	345171	3345
		4	140	202	170	28	18	28	17.5	17	M8X1	171	128948	460228	4380
	2°19'	4	170	251	210	32	14	32	22	22	M10X1	140	145150	663481	3597
		5	170	251	210	32	14	32	22	22	M10X1	163	175857	826351	4450
	2°54'	4	170	251	210	32	18	32	22	22	M10X1	168	210986	932498	4570
		5	170	251	210	32	18	32	22	22	M10X1	196	246656	1165622	5655

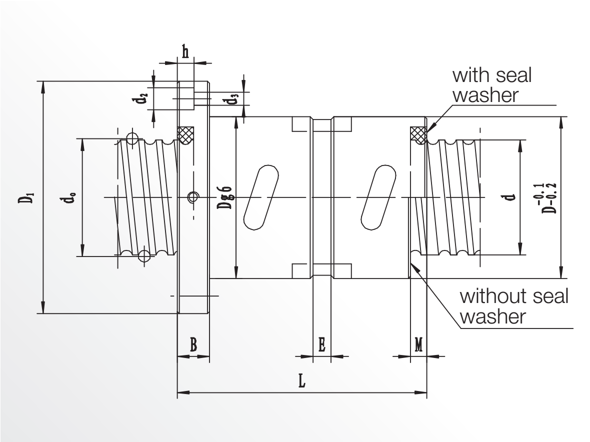
🟥 Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far$[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

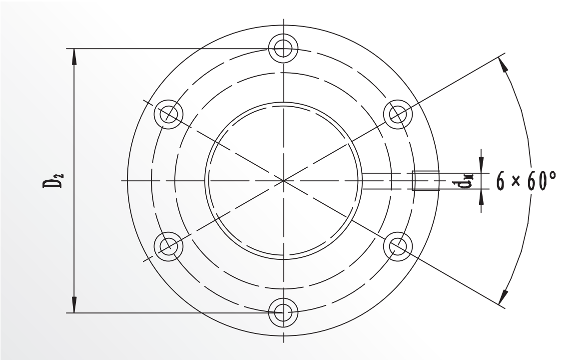
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S ball screws







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
2004-3	20	4	19.5	2.381
2004-4				
2005-3	20	5	19.5	3.175
2005-4				
2006-3	20	6	19.5	3.175
2006-4				
2504-3	25	4	24.5	2.381
2504-4				
2505-3	25	5	24.5	3.175
2505-4				
2506-3	25	6	24.5	3.175
2506-4				
3204-3	32	4	31.5	2.381
3204-4				
3205-3	32	5	31.5	3.175
3205-4				
3205-6				
3206-3	32	6	31.5	3.175
3206-4				
3208-3	32	8	31	4.763
3208-4				
3210-3	32	10	31	5.953
3210-4				
4005-3	40	5	39.5	3.175
4005-4				
4005-6				
4006-3	40	6	39.5	3.969
4006-4				
4008-3	40	8	39	4.763
4008-4				
4010-3	40	10	39	5.953
4010-4				
4010-6				
5005-3	50	5	49.5	3.175
5005-4				
5005-6				

Double nut internal recycle: FYND

Ball Screws

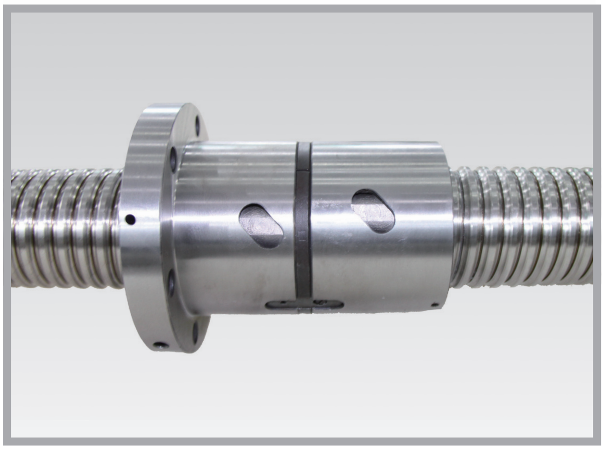
	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
	3°39'	3+3	36	60	48	11	4	10	5.8	6	M6	71	5295	11474	660
		4+4	36	60	48	11	4	10	5.8	6	M6	78	6766	15298	865
	4°33'	3+3	36	60	48	11	4	10	5.8	6	M6	81	9022	17456	720
		4+4	36	60	48	11	4	10	5.8	6	M6	92	11082	23340	955
	5°27'	3+3	36	60	48	11	4	10	5.8	6	M6	93	9022	17456	750
		4+4	36	60	48	11	4	10	5.8	6	M6	108	11082	23340	980
	2°55'	3+3	40	66	53	11	4	10	5.8	6	M6	71	6080	16279	780
		4+4	40	66	53	11	4	10	5.8	6	M6	78	7747	21673	1020
	3°39'	3+3	40	66	53	11	4	10	5.8	6	M6	81	9807	22850	870
		4+4	40	66	53	11	4	10	5.8	6	M6	92	12553	30499	1145
	4°22'	3+3	40	66	53	11	4	10	5.8	6	M6	93	11180	29028	900
		4+4	40	66	53	11	4	10	5.8	6	M6	108	14318	38639	1175
	2°17'	3+3	50	76	63	11	4	10	5.8	6	M6	71	6766	23438	960
		4+4	50	76	63	11	4	10	5.8	6	M6	78	8630	31284	1265
	2°51'	3+3	50	82	67	13	4	12	7	7	M6	83	12945	30401	1050
		4+4	50	82	67	13	4	12	7	7	M6	94	16573	40699	1390
		6+6	50	82	67	13	4	12	7	7	M6	113	20202	60803	2025
	3°25'	3+3	50	82	67	13	4	12	7	7	M6	95	12945	30401	1095
		4+4	50	82	67	13	4	12	7	7	M6	110	16573	40699	1445
	4°33'	3+3	53	90	71	15	6	15	9	9	M6	116	18339	41875	1110
		4+4	53	90	71	15	6	15	9	9	M6	135	23536	55801	1465
	5°41'	3+3	53	90	71	15	8	15	9	9	M6	140	25988	52565	1155
		4+4	53	90	71	15	8	15	9	9	M6	160	33343	70218	1530
	2°17'	3+3	60	94	75	15	4	15	9	9	M6	85	13487	39129	1275
		4+4	60	94	75	15	4	15	9	9	M6	95	16887	52271	1680
		6+6	60	94	75	15	4	15	9	9	M6	116	22458	78456	2460
	2°44'	3+3	60	94	75	15	4	15	9	9	M6	100	16672	47465	1305
		4+4	60	94	75	15	4	15	9	9	M6	112	21379	63451	1710
	3°39'	3+3	63	100	80	15	6	15	9	9	M6	116	20692	54136	1320
		4+4	63	100	80	15	6	15	9	9	M6	134	26576	71983	1730
	4°33'	3+3	63	108	85	18	8	18	11	11	M6	143	30107	69923	1395
		4+4	63	108	85	18	8	18	11	11	M6	163	38639	93166	1840
		6+6	63	108	85	18	8	18	11	11	M6	203	54723	139455	2690
	1°49'	3+3	71	110	90	15	4	15	9	9	M8x1	85	14122	50113	1515
		4+4	71	110	90	15	4	15	9	9	M8x1	95	17456	66785	1995
		6+6	71	110	90	15	4	15	9	9	M8x1	115	24811	99933	2930

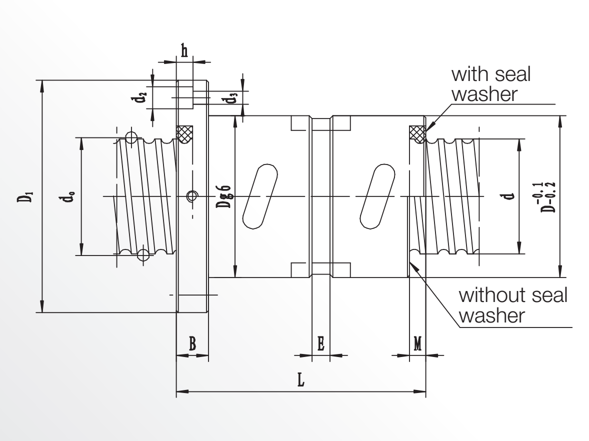
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far$[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

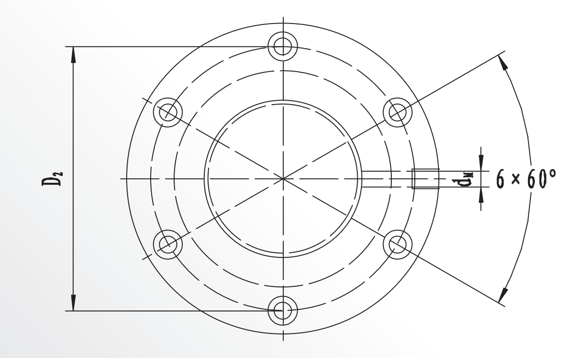
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S ball screws







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5006-3	50	6	49.5	3.969
5006-4				
5008-3	50	8	49	4.763
5008-4				
5010-3	50	10	49	5.953
5010-4				
5010-6				
5012-3	50	12	49	7.144
5012-4				
5012-6				
6308-3	63	8	62	4.763
6308-4				
6310-3	63	10	62	5.953
6310-4				
6310-6				
6312-3	63	12	62	7.144
6312-4				
6312-6				
8010-3	80	10	79	5.953
8010-4				
8010-6				
8012-3	80	12	79	7.144
8012-4				
8012-6				
8016-3	80	16	78.5	9.525
8016-4				
10010-3	100	10	99	5.953
10010-4				
10010-6				
10012-3	100	12	99	7.144
10012-4				
10012-6				
10016-3	100	16	98.5	9.525
10016-4				
10020-3	100	20	98.5	12.7
10020-4				
12516-4	125	16	123.5	9.525
12516-5				
12520-4	125	20	123.5	12.7
12520-5				

Double nut internal recycle: FYND

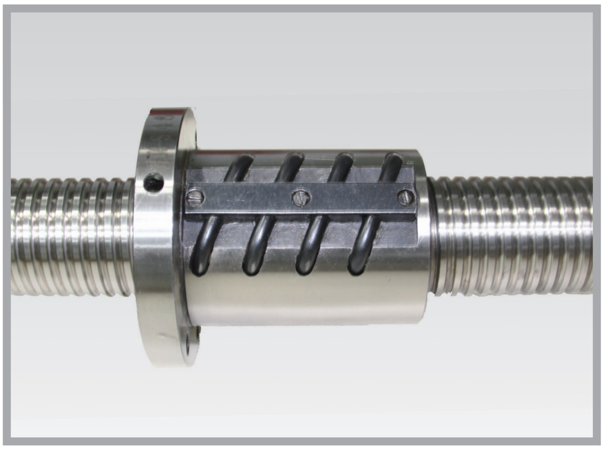
	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
	2°11'	3+3	71	110	90	15	4	15	9	9	M8X1	100	19417	61293	1560
		4+4	71	110	90	15	4	15	9	9	M8X1	112	23772	81594	2055
	2°55'	3+3	75	118	95	18	6	18	11	11	M8X1	121	24419	70904	1590
		4+4	75	118	95	18	6	18	11	11	M8X1	137	30107	94637	2095
	3°39'	3+3	75	118	95	18	8	18	11	11	M8X1	143	34226	91499	1665
		4+4	75	118	95	18	8	18	11	11	M8X1	163	43837	122097	2190
		6+6	75	118	95	18	8	18	11	11	M8X1	205	62078	183194	3225
	4°22'	3+3	80	132	105	22	10	22	13.5	13	M8X1	171	44916	109348	1725
		4+4	80	132	105	22	10	22	13.5	13	M8X1	195	57567	145633	2270
		6+6	80	132	105	22	10	22	13.5	13	M8X1	245	105032	218892	3330
	2°19'	3+3	90	132	110	18	6	18	11	11	M8X1	123	27263	92970	1920
		4+4	90	132	110	18	6	18	11	11	M8X1	141	33539	124156	2515
	2°54'	3+3	90	138	112	22	8	22	13.5	13	M8X1	152	38051	117193	1995
		4+4	90	138	112	22	8	22	13.5	13	M8X1	172	48740	156912	2615
		6+6	90	138	112	22	8	22	13.5	13	M8X1	214	69041	234681	3870
	3°28'	3+3	90	138	112	22	10	22	13.5	13	M8X1	174	53055	143574	2070
		4+4	90	138	112	22	10	22	13.5	13	M8X1	198	65314	191040	2710
		6+6	90	138	112	22	10	22	13.5	13	M8X1	248	92578	286364	3995
	2°17'	3+3	105	156	130	22	8	22	13.5	13	M8X1	152	42856	168680	2430
		4+4	105	156	130	22	8	22	13.5	13	M8X1	172	55115	208791	3180
		6+6	105	156	130	22	8	22	13.5	13	M8X1	214	78161	313725	4690
	2°44'	3+3	110	158	132	22	10	22	13.5	13	M8X1	174	60313	190451	2505
		4+4	110	158	132	22	10	22	13.5	13	M8X1	198	74337	254099	3280
		6+6	110	158	132	22	10	22	13.5	13	M8X1	248	105229	381602	4835
	3°39'	3+3	118	168	140	28	14	22	13.5	13	M8X1	221	79044	210752	2820
		4+4	118	168	140	28	14	22	13.5	13	M8X1	254	99541	278322	3695
	1°49'	3+3	125	176	150	25	8	22	13.5	13	M8X1	155	47269	215263	2895
		4+4	125	176	150	25	8	22	13.5	13	M8X1	175	60806	266554	3790
		6+6	125	176	150	25	8	22	13.5	13	M8X1	217	86203	400517	5595
	2°11'	3+3	130	192	160	25	10	28	17.5	17	M8X1	179	64824	251255	2985
		4+4	130	192	160	25	10	28	17.5	17	M8X1	203	81986	337457	3910
		6+6	130	192	160	25	10	28	17.5	17	M8X1	251	116801	489957	5760
	2°55'	3+3	140	202	170	28	14	28	17.5	17	M8X1	222	82673	306174	3345
		4+4	140	202	170	28	14	28	17.5	17	M8X1	254	104346	379040	4380
	3°39'	3+3	140	202	170	28	18	28	17.5	17	M8X1	260	105428	345171	3345
		4+4	140	202	170	28	18	28	17.5	17	M8X1	305	128948	460228	4380
	2°19'	4+4	170	251	210	32	14	32	22	22	M10X1	274	145150	663481	3597
		5+5	170	251	210	32	14	32	22	22	M10X1	298	175857	826351	4450
	2°54'	4+4	170	251	210	32	18	32	22	22	M10X1	338	210986	932498	4570
		5+5	170	251	210	32	18	32	22	22	M10X1	379	246656	1165622	5655

🟥 Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

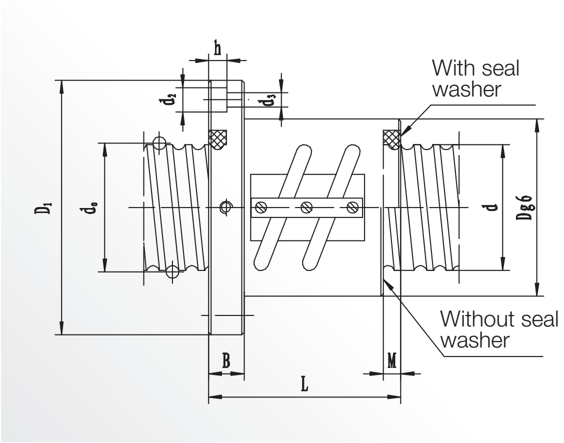
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

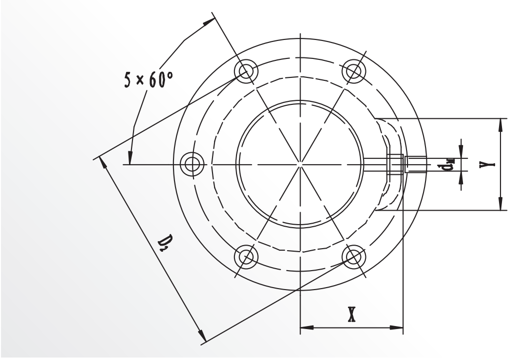
HJG-S

Specifications of HJG-S Ball Screws Single Nut



Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
2004-2.5	20	4	19.5	2.381
2004-5				
2005-2.5	20	5	19.5	3.175
2005-5				
2006-2.5	20	6	19.5	3.175
2006-5				
2504-2.5	25	4	24.5	2.381
2504-5				
2505-2.5	25	5	24.5	3.175
2505-3				
2505-5				
2506-2.5	25	6	24.5	3.175
2506-5				
2508-2.5	25	8	24	4.763
2508-5				
3204-2.5	32	4	31.5	2.381
3204-5				
3205-2.5	32	5	31.5	3.175
3205-3				
3205-5				
3206-2.5	32	6	31.5	3.175
3206-5				
3208-2.5	32	8	31	4.763
3208-5				
3210-2.5	32	10	31	5.953
3210-5				
4005-2.5	40	5	39.5	3.175
4005-3				
4005-5				
4006-2.5	40	6	39.5	3.969
4006-5				
4008-2.5	40	8	39	4.763
4008-5				
4010-2.5	40	10	39	5.953
4010-3				
4010-5				





External Recylce with Exposed tube FC_1, FC_1(Z)&FC_1B

Ball Screws

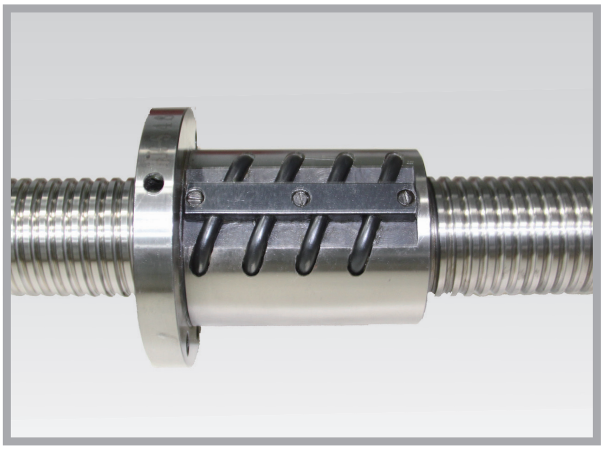
Helix angle β	Cycle turns	Dimension of Nut											Length of nut		Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	FC_1 FC_1(N)	FC_1B	Dynamic	Static	
3°39'	1X2.5	36	60	48	11	4	10	5.8	6	M6	24	23	39	55	5393	12651	555
	2X2.5	36	60	48	11	4	10	5.8	6	M6	24	23	55	86	9807	25302	1080
4°33'	1X2.5	36	60	48	11	4	10	5.8	6	M6	26	25	40	62	8630	18241	675
	2X2.5	36	60	48	11	4	10	5.8	6	M6	26	25	62	91	15789	36580	1185
5°27'	1X2.5	36	60	48	11	4	10	5.8	6	M6	26	26	44	64	8630	18241	630
	2X2.5	36	60	48	11	4	10	5.8	6	M6	26	26	64	98	15789	36580	1215
2°55'	1X2.5	40	66	53	11	4	10	5.8	6	M6	26	28	39	56	5982	16083	675
	2X2.5	40	66	53	11	4	10	5.8	6	M6	26	28	56	86	10983	32167	1290
3°39'	1X2.5	40	66	53	11	4	10	5.8	6	M6	28	30	40	62	9610	23340	735
	2X1.5	40	66	53	11	4	10	5.8	6	M6	28	30	50	76	11670	28538	870
	2X2.5	40	66	53	11	4	10	5.8	6	M6	28	30	62	91	17456	46583	1425
4°22'	1X2.5	40	66	53	11	4	10	5.8	6	M6	28	31	44	64	9610	23340	750
	2X2.5	40	66	53	11	4	10	5.8	6	M6	28	31	64	98	17456	46583	1455
5°49'	1X2.5	45	76	60	13	6	12	7	7	M6	32	32	52	76	16770	33834	765
	2X2.5	45	75	60	13	6	12	7	7	M6	32	32	77	124	30401	67766	1485
2°17'	1X2.5	50	76	63	11	4	10	5.8	6	M6	31	35	40	58	6668	20692	810
	2X2.5	50	76	63	11	4	10	5.8	6	M6	31	35	58	88	12160	41483	1575
2°51'	1X2.5	50	82	67	13	4	12	7	7	M6	33	37	42	62	10689	29911	900
	2X1.5	50	82	67	13	4	12	7	7	M6	33	37	52	78	12945	37364	1050
	2X2.5	50	82	67	13	4	12	7	7	M6	33	37	62	93	19417	59822	1740
3°25'	1X2.5	50	82	67	13	4	12	7	7	M6	33	37	46	66	10689	29911	915
	2X2.5	50	82	67	13	4	12	7	7	M6	33	37	68	100	19417	59822	1770
4°33'	1X2.5	53	90	71	15	6	15	9	9	M6	36	39	58	82	18437	43739	930
	2X2.5	53	90	71	15	6	15	9	9	M6	36	39	82	130	33343	87478	1815
5°41'	1X2.5	53	90	71	15	8	15	9	9	M6	39	41	70	100	26969	57665	975
	2X2.5	53	90	71	15	8	15	9	9	M6	39	41	100	160	48740	115330	1875
2°17'	1X2.5	60	94	75	15	4	15	9	9	M6	38	44	45	65	11670	37658	1065
	2X1.5	60	94	75	15	4	15	9	9	M6	38	44	55	80	14220	47073	1275
	2X2.5	60	94	75	15	4	15	9	9	M6	38	44	65	100	21183	75317	2070
2°44'	1X2.5	60	94	75	15	4	15	9	9	M6	38	45	48	66	16083	46779	1080
	2X2.5	60	94	75	15	4	15	9	9	M6	38	45	66	104	29126	93362	2115
3°38'	1X2.5	63	100	80	15	6	15	9	9	M6	41	47	58	82	20202	55213	1110
	2X2.5	63	100	80	15	6	15	9	9	M6	41	47	82	130	36874	109838	2160
4°33'	1X2.5	63	108	85	18	8	18	11	11	M6	44	49	72	102	30303	73062	1170
	2X1.5	63	108	85	18	8	18	11	11	M6	44	49	90	140	36678	91401	1395
	2X2.5	63	108	85	18	8	18	11	11	M6	44	49	102	163	55017	146418	2250

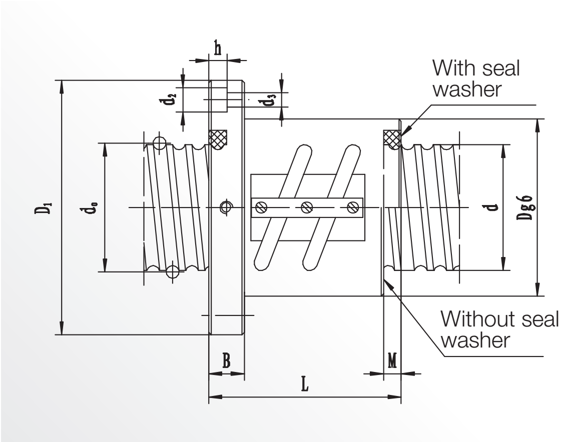
■ Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far$[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

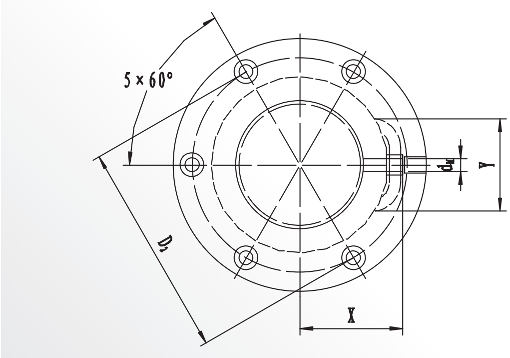
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws Single Nut







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5005-3	50	5	49.5	3.175
5005-5				
5006-3	50	6	49.5	3.969
5006-5				
5008-3	50	8	48	4.763
5008-5				
5010-3	50	10	49	5.953
5010-5				
5010-7				
5012-3	50	12	49	7.144
5012-5				
6308-3	63	8	62	4.763
6308-5				
6310-3	63	10	62	5.953
6310-5				
6310-7				
6312-3	63	12	62	7.144
6312-5				
6312-7				
8010-3	80	10	79	5.953
8010-5				
8010-7				
8012-3	80	12	79	7.144
8012-5				
8012-7				
8016-3	80	16	78.5	9.525
8016-5				
10010-5	100	10	99	5.953
10010-7				
10012-3	100	12	99	7.144
10012-5				
10012-7				
10016-3	100	16	98.5	9.525
10016-5				
10020-3	100	20	98.5	12.7
10020-5				
12516-3	125	16	123.5	9.525
12516-5				
12520-3	125	20	123.5	12.7
12520-5				
16032-5	160	20	158.5	15.081
16032-7				

External Recylce with Exposed tube FC$_1$, FC$_1$(Z)&FC$_1$B

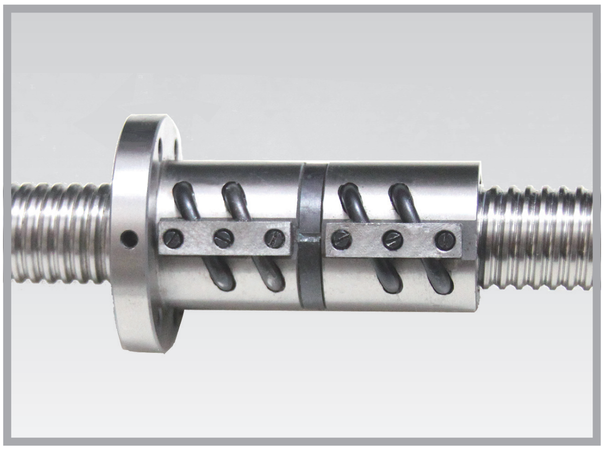
Helix angle β	Cycle turns	Dimension of Nut											Length of nut		Rated load (N)		Contact rigidity (N/μm)
		Dg6	D$_1$	D$_2$	B	M	d$_2$	d$_3$	h	d$_M$	X	Y	FC$_1$ FC$_1$(N)	FC$_1$B	Dynamic	Static	
1°49'	2X1.5	71	110	90	15	4	15	9	9	M8X1	43	54	58	83	15495	58351	1515
	2X2.5	71	110	90	15	4	15	9	9	M8X1	43	54	66	101	23144	93460	2460
2°11'	2X1.5	71	110	90	15	4	15	9	9	M8X1	44	55	62	90	21379	72277	1560
	2X2.5	71	110	90	15	4	15	9	9	M8X1	44	55	68	104	32068	115526	2535
2°55'	2X1.5	75	118	95	18	6	18	11	11	M8X1	47	56	74	114	27361	85909	1590
	2X2.5	75	118	95	18	6	18	11	11	M8X1	47	56	85	133	40993	140142	2595
3°29'	2X1.5	75	118	95	18	8	18	11	11	M8X1	50	58	90	130	40797	114397	1665
	2X2.5	75	118	95	18	8	18	11	11	M8X1	50	58	103	163	60999	186234	2715
	2X3.5	75	118	95	18	8	18	11	11	M8X1	50	58	123	---	81128	260727	3730
4°22'	2X1.5	80	132	105	22	10	22	13.5	13	M8X1	54	61	107	---	54821	142691	1725
	2X2.5	80	132	105	22	10	22	13.5	13	M8X1	54	61	123	---	82182	229091	2805
2°19'	2X1.5	90	132	110	18	6	18	11	11	M8X1	55	69	74	114	29715	110034	1920
	2X2.5	90	132	110	18	6	18	11	11	M8X1	55	69	85	133	44523	179370	3135
2°54'	2X1.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	94	134	44523	145928	1995
	2X2.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	107	167	66785	236446	3255
	2X3.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	126	---	88824	331024	4470
3°28'	2X1.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	107	---	60705	182998	2070
	2X2.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	123	---	91107	291954	3375
	2X3.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	147	---	118439	408735	4635
2°17'	2X1.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	94	134	49721	188490	2430
	2X2.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	107	167	74435	301369	3945
	2X3.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	126	---	96765	421916	5420
2°44'	2X1.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	107	---	67864	233112	2505
	2X2.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	123	---	101502	373548	4080
	2X3.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	147	---	131952	522967	5605
3°39'	2X1.5	118	166	140	28	14	22	13.5	13	M8X1	77	93	132	---	87968	355013	2820
	2X2.5	118	166	140	28	14	22	13.5	13	M8X1	77	93	160	---	116703	590381	4590
1°49'	2X2.5	125	176	150	25	8	22	13.5	13	M8X1	75	107	118	---	81575	372984	4690
	2X3.5	125	176	150	25	8	22	13.5	13	M8X1	75	107	138	---	106047	522178	6440
2°11'	2X1.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	110	---	74042	294210	2985
	2X2.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	126	---	110917	470834	4860
	2X3.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	150	---	144192	659167	6670
2°55'	2X1.5	140	202	170	28	14	28	17.5	17	M8X1	87	112	132	---	96108	437392	3345
	2X2.5	140	202	170	28	14	28	17.5	17	M8X1	87	112	160	---	137298	727679	5460
3°39'	1X2.5	140	202	170	28	16	28	17.5	17	M8X1	93	112	160	---	84634	363839	3345
	2X1.5	140	202	170	28	16	28	17.5	17	M8X1	93	112	200	---	96108	437392	5460
2°19'	2X1.5	170	251	210	32	14	32	22	22	M10X1	93.5	122	135	---	119734	504333	2900
	2X2.5	170	251	210	32	14	32	22	22	M10X1	93.5	122	164	---	185783	900554	4719
2°54'	2X1.5	170	251	210	32	18	32	22	22	M10X1	106	126	166	---	128081	566472	2916
	2X2.5	170	251	210	32	18	32	22	22	M10X1	146	126	225	---	198735	944120	4746
3°38'	2X2.5	240	321	280	36	18	32	22	22	M10X1	146	159	281	---	278175	1528083	8680
	2X3.5	240	321	280	36	18	32	22	22	M10X1	146	159	345	---	302710	1581326	13340

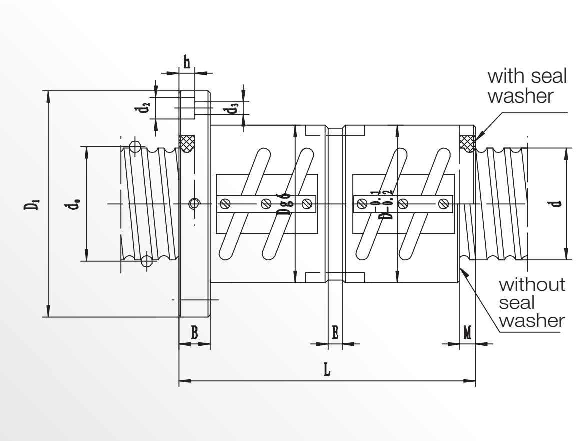
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

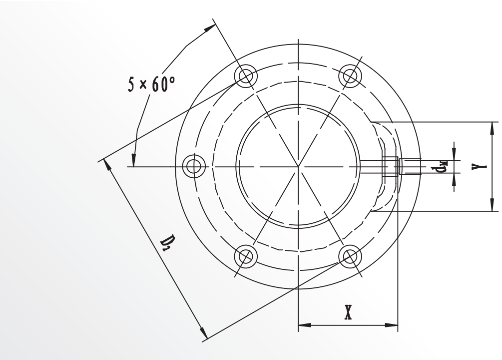
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b	
2004-2.5	20	4	19.5	2.381	
2004-5					
2005-2.5	20	5	19.5	3.175	
2005-5					
2006-2.5	20	6	19.5	3.175	
2006-5					
2504-2.5	25	4	24.5	2.381	
2504-5					
2505-2.5	25	5	24.5	3.175	
2505-3					
2505-5					
2506-2.5	25	6	24.5	3.175	
2506-5					
2508-2.5	25	8	24	4.763	
2508-5					
3204-2.5	32	4	31.5	2.381	
3204-5					
3205-2.5	32	5	31.5	3.175	
3205-3					
3205-5					
3206-2.5	32	6	31.5	3.175	
3206-5					
3208-2.5	32	8	31	4.763	
3208-5					
3210-2.5	32	10	31	5.953	
3210-5					
4005-2.5	40	5	39.5	3.175	
4005-3					
4005-5					
4006-2.5	40	6	39.5	3.969	
4006-5					
4008-2.5	40	8	39	4.763	
4008-5					
4010-2.5	40	10	39	5.953	
4010-3					
4010-5					

Double nut External Recycle with Exposed FYC$_1$D

Ball Screws

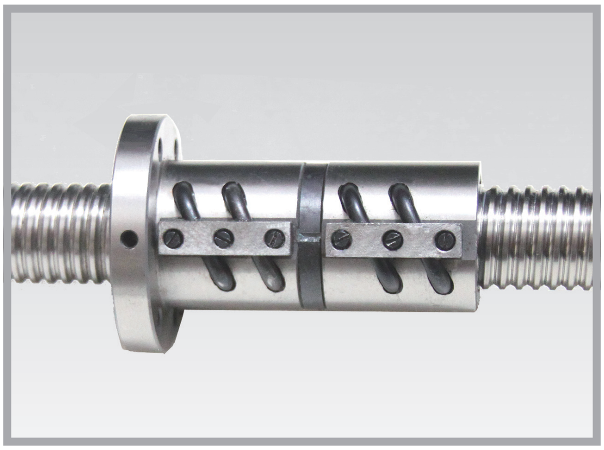
Helix angle β	Cycle turns	Dimension of Nut												Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	L	Dynamic	Static	
3°39'	1×2.5+1×2.5	36	60	48	11	4	10	5.8	6	M6	24	23	72	5393	12651	555
	2×2.5+2×2.5	36	60	48	11	4	10	5.8	6	M6	24	23	102	9807	25302	1080
4°33'	1×2.5+1×2.5	36	60	48	11	4	10	5.8	6	M6	26	25	76	8630	18241	675
	2×2.5+2×2.5	36	60	48	11	4	10	5.8	6	M6	26	25	110	15789	36580	1185
5°27'	1×2.5+1×2.5	36	60	48	11	4	10	5.8	6	M6	26	26	86	8630	18241	630
	2×2.5+2×2.5	36	60	48	11	4	10	5.8	6	M6	26	26	122	15789	36580	1215
2°55'	1×2.5+1×2.5	40	66	53	11	4	10	5.8	6	M6	26	28	72	5982	16083	675
	2×2.5+2×2.5	40	66	53	11	4	10	5.8	6	M6	26	28	102	10983	32167	1290
3°39'	1×2.5+1×2.5	40	66	53	11		10	5.8	6	M6	28	30	76	9610	23340	735
	2×2.5+2×2.5	40	66	53	11	4	10	5.8	6	M6	28	30	96	11670	28538	870
	2×2.5+2×2.5	40	66	53	11	4	10	5.8	6	M6	28	30	112	17456	46583	1425
4°22'	1×2.5+1×2.5	40	66	53	11	4	10	5.8	6	M6	28	31	86	9610	23340	750
	2×2.5+2×2.5	40	66	53	11	4	10	5.8	6	M6	28	31	123	17456	46583	1455
5°49'	1×2.5+1×2.5	45	75	60	13	6	12	7	7	M6	32	32	98	16770	33834	765
	2×2.5+2×2.5	45	75	60	13	6	12	7	7	M6	32	32	149	30401	67766	1485
2°17'	1×2.5+1×2.5	50	76	63	11	4	10	5.8	6	M6	31	35	74	6668	20962	810
	2×2.5+2×2.5	50	76	63	11	4	10	5.8	6	M6	31	35	104	12160	41483	1575
2°51'	1×2.5+1×2.5	50	82	67	13	4	12	7	7	M6	33	37	76	10689	29911	900
	2×2.5+2×2.5	50	82	67	13	4	12	7	7	M6	33	37	103	12945	37364	1050
	2×2.5+2×2.5	50	82	67	13	4	12	7	7	M6	33	37	115	19417	59822	1740
3°25'	1×2.5+1×2.5	50	82	67	13	4	12	7	7	M6	33	37	87	10689	29911	915
	2×2.5+2×2.5	50	82	67	13	4	12	7	7	M6	33	37	125	19417	59822	1770
4°33'	1×2.5+1×2.5	53	90	71	15	6	15	9	9	M6	36	39	106	18437	43739	930
	2×2.5+2×2.5	53	90	71	15	6	15	9	9	M6	36	39	154	33343	87478	1815
5°41'	1×2.5+1×2.5	53	90	71	15	8	15	9	9	M6	39	41	130	26969	57665	975
	2×2.5+2×2.5	53	90	71	15	8	15	9	9	M6	39	41	189	48740	115330	1875
2°17'	1×2.5+1×2.5	60	94	75	15	4	15	9	9	M6	38	44	85	11670	37658	1065
	2×2.5+2×2.5	60	94	75	15	4	15	9	9	M6	38	44	106	14220	47073	1275
	2×2.5+2×2.5	60	94	75	15	4	15	9	9	M6	38	44	124	21183	75317	2070
3°44'	1×2.5+1×2.5	60	94	75	15	4	15	9	9	M6	38	45	90	16083	46779	1080
	2×2.5+2×2.5	60	94	75	15	4	15	9	9	M6	38	45	127	29126	93362	2115
3°39'	1×2.5+1×2.5	63	100	80	15	6	15	9	9	M6	41	47	106	20202	55213	1110
	2×2.5+2×2.5	63	100	80	15	6	15	9	9	M6	41	47	155	36874	109838	2610
4°33'	1×2.5+1×2.5	63	108	85	18	8	18	11	11	M6	44	49	133	30303	73062	1170
	2×1.5+2×1.5	63	108	85	18	8	18	11	11	M6	44	49	170	36678	91401	1395
	2×2.5+2×2.5	63	108	85	18	8	18	11	11	M6	44	49	192	55017	146418	2250

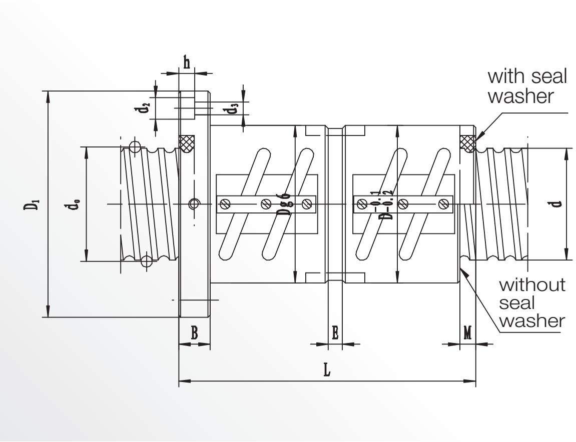
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

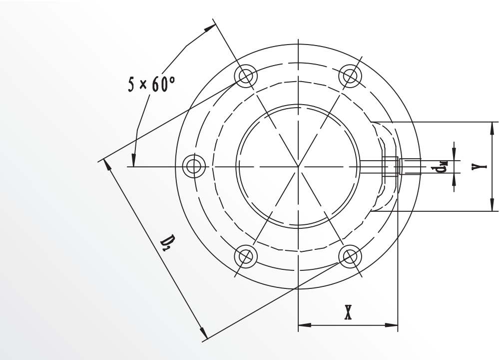
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5005-3	50	5	49.5	3.175
5005-5				
5006-3	50	6	49.5	3.969
5006-5				
5008-3	50	8	49	4.763
5008-5				
5010-3	50	10	49	5.953
5010-5				
5010-7				
5012-3	50	12	49	7.144
5012-5				
6308-3	63	8	62	4.763
6308-5				
6310-3	63	10	62	5.953
6310-5				
6310-7				
6312-3	63	12	62	7.144
6312-5				
6312-7				
8010-3	80	10	79	5.953
8010-5				
8010-7				
8012-3	80	12	79	7.144
8012-5				
8012-7				
8016-3	80	16	78.5	9.525
8016-5				
10010-5	100	10	99	9.953
10010-7				
10012-3	100	12	99	7.144
10012-5				
10012-7				
10016-3	100	16	98.5	9.525
10016-5				
10020-2.5	100	20	98.5	12.7
10020-3				
12516-3	125	16	123.5	9.525
12516-5				
12520-3	125	20	123.5	12.7
12520-5				

Double nut External Recycle with Exposed FYC$_1$D

Ball Screws

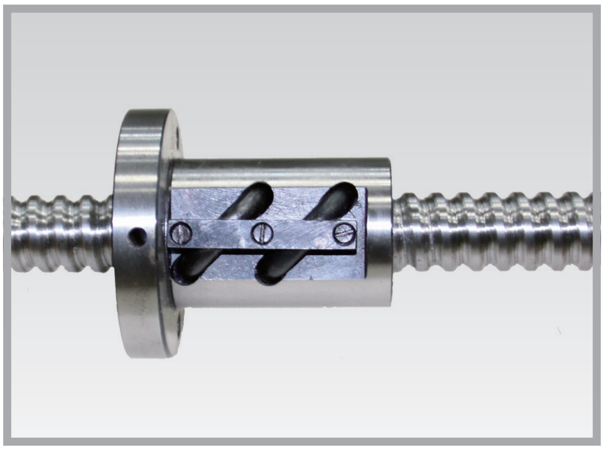
Helix angle β	Cycle turns	Dimension of Nut												Rated load (N)		Contact rigidity (N/μm)
		Dg6	D$_1$	D$_2$	B	M	d$_2$	d$_3$	h	d$_M$	X	Y	L	Dynamic	Static	
1°49'	2×1.5+2×1.5	71	110	90	15	4	15	9	9	M8X1	43	54	108	15495	58351	1515
	2×2.5+2×2.5	71	110	90	15	4	15	9	9	M8X1	43	54	124	23144	93460	2460
2°11'	2×1.5+2×1.5	71	110	90	15	4	15	9	9	M8X1	44	55	116	21379	72277	1560
	2×2.5+2×2.5	71	110	90	15	4	15	9	9	M8X1	44	55	131	32068	115526	2535
2°55'	2×1.5+2×1.5	75	118	95	18	6	18	11	11	M8X1	47	56	138	27361	85909	1590
	2×2.5+2×2.5	75	118	95	18	6	18	11	11	M8X1	47	56	157	40993	140142	1595
3°29'	2×1.5+2×1.5	75	118	95	18	8	18	11	11	M8X1	50	58	170	40797	114397	1665
	2×2.5+2×2.5	75	118	95	18	8	18	11	11	M8X1	50	58	193	60999	186234	2715
	2×3.5+2×3.5	75	118	95	18	8	18	11	11	M8X1	50	58	233	81128	260727	3730
4°22'	2×1.5+2×1.5	80	132	105	22	10	22	13.5	13	M8X1	54	61	203	54821	142691	1725
	2×2.5+2×2.5	80	132	105	22	10	22	13.5	13	M8X1	54	61	231	82128	229091	2805
2°19'	2×1.5+2×1.5	90	132	110	18	6	18	11	11	M8X1	55	69	138	29715	110034	1920
	2×2.5+2×2.5	90	132	110	18	6	18	11	11	M8X1	55	69	157	44523	179370	3135
2°54'	2×1.5+2×1.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	174	44523	145928	1995
	2×2.5+2×2.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	197	66785	236446	3255
	2×3.5+2×3.5	90	138	112	22	8	22	13.5	13	M8X1	57	71	236	88824	321024	4470
3°28'	2×1.5+2×1.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	201	60705	182998	2070
	2×2.5+2×2.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	229	91107	291954	3375
	2×3.5+2×3.5	90	138	112	22	10	22	13.5	13	M8X1	59	73	279	118439	408735	4635
2°17'	2×1.5+2×1.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	174	49721	188490	2430
	2×2.5+2×2.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	197	74435	301369	3945
	2×3.5+2×3.5	105	156	130	22	8	22	13.5	13	M8X1	65	87	236	96765	421916	5420
2°44'	2×1.5+2×1.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	203	67864	233112	2505
	2×2.5+2×2.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	231	101502	373548	4080
	2×3.5+2×3.5	110	158	132	22	10	22	13.5	13	M8X1	69	90	279	131952	522967	5605
3°39'	2×1.5+2×1.5	118	166	140	28	14	22	13.5	13	M8X1	77	93	242	87968	355013	2820
	2×2.5+2×2.5	118	166	140	28	14	22	13.5	13	M8X1	77	93	298	116703	590381	4590
1°49'	2×1.5+2×1.5	125	176	150	25	8	22	13.5	13	M8X1	75	107	218	81575	372984	4690
	2×2.5+2×2.5	125	176	150	25	8	22	13.5	13	M8X1	75	107	258	106047	522178	6440
2°11'	2×1.5+2×1.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	187	74042	294210	2985
	2×2.5+2×2.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	234	110917	470834	4860
	2×3.5+2×3.5	130	193	160	25	10	28	17.5	17	M8X1	79	109	282	144192	659167	6670
2°55'	2×1.5+2×1.5	140	202	170	28	14	28	17.5	17	M8X1	87	112	242	96108	437392	3345
	2×2.5+2×2.5	140	202	170	28	14	28	17.5	17	M8X1	87	112	298	137298	727679	5460
3°29'	2×1.5+2×1.5	140	202	170	28	16	28	17.5	17	M8X1	93	112	250	84634	363839	3345
	2×2.5+2×2.5	140	202	170	28	16	28	17.5	17	M8X1	93	112	290	96108	437392	5460
2°19'	2×1.5+2×1.5	170	251	210	32	14	32	22	22	M10X1	93.5	122	245	119734	504333	2900
	2×2.5+2×2.5	170	251	210	32	14	32	22	22	M10X1	93.5	122	310	185783	900554	4719
2°54'	2×1.5+2×1.5	170	251	210	32	18	32	22	22	M10X1	106	126	300	128081	566472	2916
	2×2.5+2×2.5	170	251	210	32	18	32	22	22	M10X1	106	126	360	198735	944120	4746

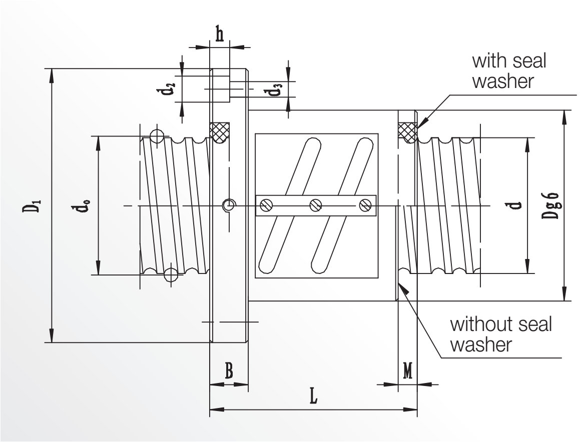
🟥 Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

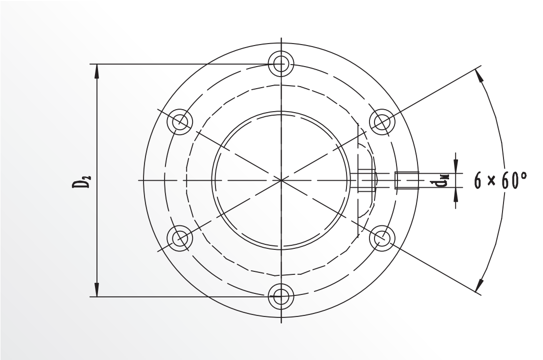
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws Single Nut







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
2004-2.5	20	4	19.5	2.381
2004-5				
2005-2.5	20	5	19.5	3.175
2005-5				
2006-2.5	20	6	19.5	3.175
2006-5				
2504-2.5	25	4	24.5	2.381
2504-5				
2505-2.5	25	5	24.5	3.175
2505-3				
2505-5				
2506-2.5	25	6	24.5	3.175
2506-5				
2508-2.5	25	8	24	4.763
2508-5				
3204-2.5	32	4	31.5	2.381
3204-5				
3205-2.5	32	5	31.5	3.175
3205-3				
3205-5				
3206-2.5	32	6	31.5	3.175
3206-5				
3208-2.5	32	8	31	4.763
3208-5				
3210-2.5	32	10	31	5.953
3210-5				
4005-2.5	40	5	39.5	3.175
4005-3				
4005-5				
4006-2.5	40	6	39.5	3.969
4006-5				
4008-2.5	40	8	39	4.763
4008-5				
4010-2.5	40	10	39	5.953
4010-3				
4010-5				

External Recycle with Exposed Tube FC_2,FC_2(Z)&FC_2B

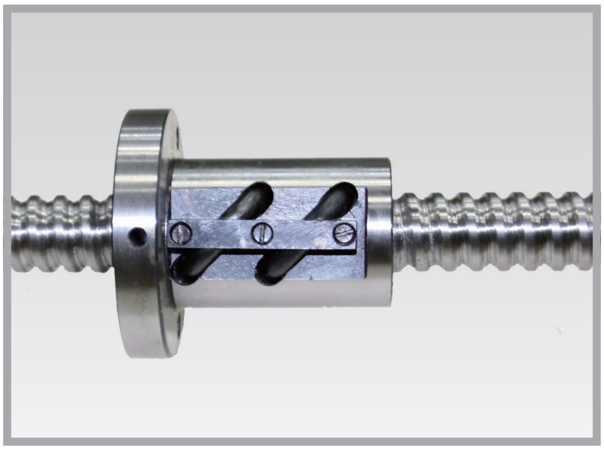
	Helix angle β	Cycle turns	Dimension of Nut									Length of nut		Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	FC_2 FC_2(Z)	FC_2B	Dynamic	Static	
	3°39'	1×2.5	40	66	53	11	4	10	5.8	6	M6	39	55	5393	12651	555
		2×2.5	40	66	53	11	4	10	5.8	6	M6	55	86	9807	25302	1080
	4°33'	1×2.5	45	70	56	11	4	10	5.8	6	M6	40	62	8630	18241	675
		2×2.5	45	70	56	11	4	10	5.8	6	M6	62	91	15789	36580	1185
	5°27'	1×2.5	45	70	56	11	4	10	5.8	6	M6	44	64	8630	18241	630
		2×2.5	45	70	56	11	4	10	5.8	6	M6	64	98	15789	36580	1215
	2°55'	1×2.5	50	76	63	11	4	10	5.8	6	M6	39	56	5982	16083	675
		2×2.5	50	76	63	11	4	10	5.8	6	M6	56	86	10983	32167	1290
	3°39'	1×2.5	50	76	63	11	4	10	5.8	6	M6	40	62	9610	23340	735
		2×1.5	50	76	63	11	4	10	5.8	6	M6	50	76	11670	28538	870
		1×2.5	50	76	63	11	4	10	5.8	6	M6	62	91	17456	46583	1425
	4°22'	1×2.5	50	76	63	11	4	10	5.8	6	M6	44	64	9610	23340	750
		2×2.5	50	76	63	11	4	10	5.8	6	M6	64	98	17456	46583	1455
	5°49'	1×2.5	56	86	71	13	6	12	7	7	M6	52	76	16770	33834	765
		2×2.5	56	86	71	13	6	12	7	7	M6	76	124	30401	67766	1485
	2°17'	1×2.5	56	84	71	11	4	10	5.8	6	M6	40	58	6668	20692	810
		2×2.5	56	84	71	11	4	10	5.8	6	M6	58	88	12160	41483	1575
	2°51'	1×2.5	60	90	75	13	4	12	7	7	M6	42	62	10689	29911	900
		2×1.5	60	90	75	13	4	12	7	7	M6	52	78	12945	37364	1050
		2×2.5	60	90	75	13	4	12	7	7	M6	62	93	19417	59822	1740
	3°25'	1×2.5	60	90	75	13	4	12	7	7	M6	46	66	10689	29911	915
		2×2.5	60	90	75	13	4	12	7	7	M6	66	100	19417	59822	1770
	4°33'	1×2.5	67	104	85	15	6	15	9	9	M6	58	82	18437	43739	930
		2×2.5	67	104	85	15	6	15	9	9	M6	82	130	33343	87478	1815
	5°41'	1×2.5	71	110	90	15	8	15	9	9	M6	70	100	26969	57665	975
		2×2.5	71	110	90	15	8	15	9	9	M6	100	160	48740	115330	1875
	2°17'	1×2.5	67	104	85	15	4	15	9	9	M6	45	65	11670	37658	1065
		2×1.5	67	104	85	15	4	15	9	9	M6	55	80	14220	47073	1275
		2×2.5	67	104	85	15	4	15	9	9	M6	65	100	21183	75317	2070
	2°44'	2×2.5	71	110	90	15	4	15	9	9	M6	48	66	16083	46779	1080
		1×2.5	71	110	90	15	4	15	9	9	M6	66	104	29126	93362	2115
	3°38'	1×2.5	75	110	90	15	6	15	9	9	M6	58	82	20202	55213	1110
		2×2.5	75	110	90	15	6	15	9	9	M6	82	130	36874	109838	2160
	4°33'	1×2.5	85	128	105	18	8	18	11	11	M6	72	102	30303	73062	1170
		2×1.5	85	128	105	18	8	18	11	11	M6	90	140	36678	91401	1395
		2×2.5	85	128	105	18	8	18	11	11	M6	103	163	55017	146418	2250

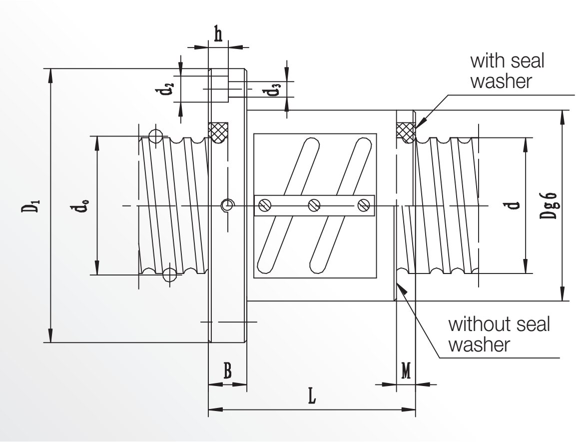
🟥 Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far$[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

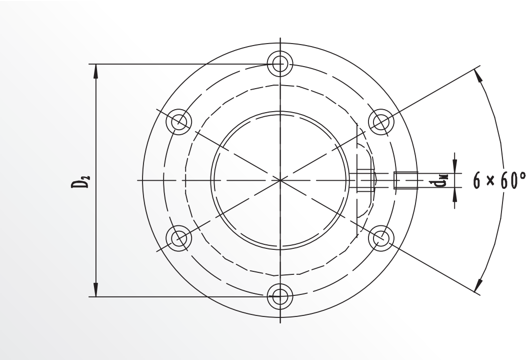
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws Single Nut







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5005-3	50	5	49.5	3.175
5005-5				
5006-3	50	6	49.5	3.969
5006-5				
5008-3	50	8	49	4.763
5008-5				
5010-3	50	10	49	5.953
5010-5				
5010-7				
5012-3	50	12	49	7.144
5012-5				
6308-3	63	8	62	4.763
6308-5				
6310-3	63	10	62	5.953
6310-5				
6310-7				
6312-3	63	12	62	7.144
6312-5				
6312-7				
8010-3	80	10	79	5.953
8010-5				
8010-7				
8012-3	80	12	79	7.144
8012-5				
8012-7				
8016-3	80	16	78.5	9.525
8016-5				
10010-5	100	10	99	5.953
10010-7				
10012-3	100	12	99	7.144
10012-5				
10012-7				
10016-3	100	16	98.5	9.525
10016-5				
10020-3	100	20	98.5	12.7
10020-5				
12516-3	125	16	123.5	9.525
12516-5				
12520-3	125	20	123.5	12.7
12520-5				

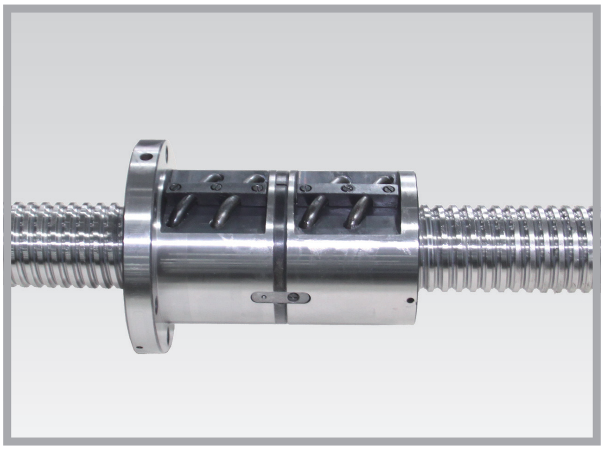
Helix angle β	Cycle turns	Dimension of Nut									Length of nut		Rated load (N)		Contact rigidity (N/μm)
		Dg6	D$_1$	D$_2$	B	M	d$_2$	d$_3$	h	d$_M$	FC$_2$ FC$_2$(Z)	FC$_2$B	Dynamic	Static	
1°49'	2×1.5	80	114	95	15	4	15	9	9	M8X1	58	83	15495	58351	1515
	2×2.5	80	114	95	15	4	15	9	9	M8X1	66	101	23144	93460	2460
2°11'	2×1.5	85	120	100	15	4	15	9	9	M8X1	62	90	21379	72277	1560
	2×2.5	85	120	100	15	4	15	9	9	M8X1	68	104	32068	115526	2535
2°55'	2×1.5	85	128	105	18	6	18	11	11	M8X1	74	114	27361	85909	1590
	2×2.5	85	128	105	18	6	18	11	11	M8X1	85	133	40993	140142	2595
3°29'	2×1.5	95	140	118	18	8	18	11	11	M8X1	90	130	40797	114397	1665
	2×2.5	95	140	118	18	8	18	11	11	M8X1	103	163	60999	186234	1715
	2×3.5	95	140	118	18	8	18	11	11	M8X1	123	---	81128	260727	3730
4°22'	2×1.5	100	152	125	22	10	22	13.5	13	M8X1	107	---	54821	142691	1725
	2×2.5	100	152	125	22	10	22	13.5	13	M8X1	123	---	82128	229091	2805
2°19'	2×1.5	105	148	125	18	6	18	11	11	M8X1	74	114	29715	110034	1920
	2×2.5	105	148	125	18	6	18	11	11	M8X1	85	133	44523	179370	3135
2°54'	2×1.5	110	158	132	22	8	22	13.5	13	M8X1	94	134	44523	145928	1995
	2×2.5	110	158	132	22	8	22	13.5	13	M8X1	107	167	66785	236446	3255
	2×3.5	110	158	132	22	8	22	13.5	13	M8X1	126	---	88824	331024	4470
3°28'	2×1.5	118	166	140	22	10	22	13.5	13	M8X1	107	---	60705	182998	2070
	2×2.5	118	166	140	22	10	22	13.5	13	M8X1	123	---	91107	291954	3375
	2×3.5	118	166	140	22	10	22	13.5	13	M8X1	147	---	118439	408735	4635
2°17'	2×1.5	130	186	160	22	8	22	13.5	13	M8X1	94	134	49721	188490	2430
	2×2.5	130	186	160	22	8	22	13.5	13	M8X1	107	167	74435	301369	3945
	2×3.5	130	186	160	22	8	22	13.5	13	M8X1	126	---	96765	421916	5420
2°44'	2×1.5	140	196	170	22	10	22	13.5	13	M8X1	107	---	67864	233112	2505
	2×2.5	140	196	170	22	10	22	13.5	13	M8X1	123	---	101502	373548	4080
	2×3.5	140	196	170	22	10	22	13.5	13	M8X1	147	---	131952	522967	5605
3°39'	2×1.5	150	206	180	28	14	22	13.5	13	M8X1	132	---	87968	355013	2820
	2×2.5	150	206	180	28	14	22	13.5	13	M8X1	160	---	116703	590381	4590
1°49'	2×1.5	160	216	190	25	8	22	13.5	13	M8X1	118	---	81575	372984	4690
	2×2.5	160	216	190	25	8	22	13.5	13	M8X1	138	---	106047	522178	6440
2°11'	2×1.5	160	224	190	25	10	28	17.5	17	M8X1	110	---	74042	294210	2985
	2×2.5	160	224	190	25	10	28	17.5	17	M8X1	126	---	110917	470834	4860
	2×3.5	160	224	190	25	10	28	17.5	17	M8X1	150	---	144192	659167	6670
2°55'	2×1.5	170	234	200	28	14	28	17.5	17	M8X1	132	---	96108	437392	3345
	2×2.5	170	234	200	28	14	28	17.5	17	M8X1	160	---	137298	727679	5460
3°39'	2×1.5	190	254	220	28	16	28	17.5	17	M8X1	160	---	84634	363839	3345
	2×2.5	190	254	220	28	16	28	17.5	17	M8X1	200	---	96108	437392	5460
2°19'	2×1.5	200	281	240	32	14	32	22	22	M10X1	135	---	119734	504333	2900
	2×2.5	200	281	240	32	14	32	22	22	M10X1	164	---	185783	900554	4719
2°54'	2×1.5	220	300	260	32	18	32	22	22	M10X1	166	---	128081	566472	2916
	2×2.5	220	300	260	32	18	32	22	22	M10X1	225	---	198735	944120	4746

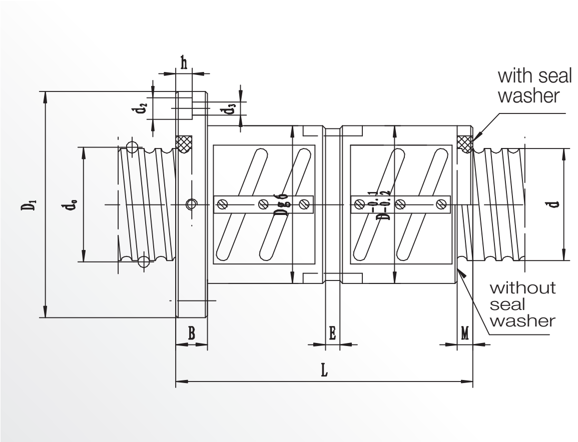
■ Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

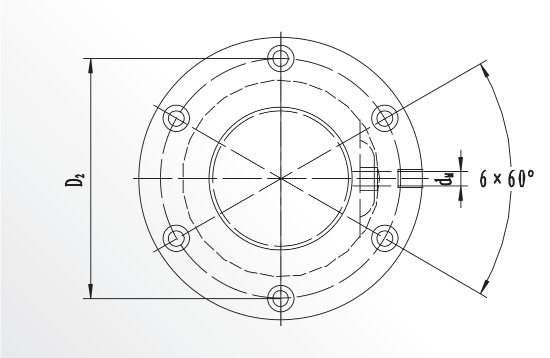
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws Double Nut







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
2004-2.5	20	4	19.5	2.381
2004-5				
2005-2.5	20	5	19.5	3.175
2005-5				
2006-2.5	20	6	19.5	3.175
2006-5				
2504-2.5	25	4	24.5	2.381
2504-5				
2505-2.5	25	5	24.5	3.175
2505-3				
2505-5				
2506-2.5	25	6	24.5	3.175
2506-5				
2508-2.5	25	8	24	4.763
2508-5				
3204-2.5	32	4	31.5	2.381
3204-5				
3205-2.5	32	5	31.5	3.175
3205-3				
3205-5				
3206-2.5	32	6	31.5	3.175
3206-5				
3208-2.5	32	8	31	4.763
3208-5				
3210-2.5	32	10	31	5.953
3210-5				
4005-2.5	40	5	39.5	3.175
4005-3				
4005-5				
4006-2.5	40	6	39.5	3.969
4006-5				
4008-2.5	40	8	39	4.763
4008-5				
4010-2.5	40	10	39	5.953
4010-3				
4010-5				

External Recycle with Enclused Tube FYC$_2$D

Ball Screws

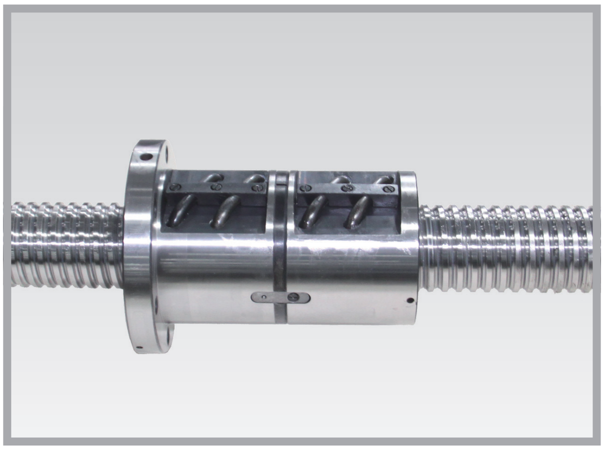
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
3°39'	1×2.5+1×2.5	40	66	53	11	4	10	5.8	6	M6	72	5393	12651	555
	2×2.5+2×2.5	40	66	53	11	4	10	5.8	6	M6	102	9807	25302	1080
4°33'	1×2.5+1×2.5	45	70	56	11	4	10	5.8	6	M6	76	8630	18241	675
	2×2.5+2×2.5	45	70	56	11	4	10	5.8	6	M6	110	15789	36580	1185
5°27'	1×2.5+1×2.5	45	70	56	11	4	10	5.8	6	M6	86	8630	18241	630
	2×2.5+2×2.5	45	70	56	11	4	10	5.8	6	M6	122	15789	36580	1215
2°55'	1×2.5+1×2.5	50	76	63	11	4	10	5.8	6	M6	72	5982	16083	675
	2×2.5+2×2.5	50	76	63	11	4	10	5.8	6	M6	102	10983	32167	1290
3°39'	1×2.5+1×2.5	50	76	63	11	4	10	5.8	6	M6	76	9610	13340	735
	2×1.5+2×1.5	50	76	63	11	4	10	5.8	6	M6	96	11670	28538	870
	2×2.5+2×2.5	50	76	63	11	4	10	5.8	6	M6	112	17456	46583	1425
4°22'	1×2.5+1×2.5	50	76	63	11	4	10	5.8	6	M6	86	9610	23340	750
	2×2.5+2×2.5	50	76	63	11	4	10	5.8	7	M6	123	17456	46583	1455
5°49'	1×2.5+1×2.5	56	86	71	13	6	12	7	7	M6	98	16770	33834	765
	2×2.5+2×2.5	56	86	71	13	6	12	7	6	M6	149	30401	67766	1485
2°17'	1×2.5+1×2.5	56	84	71	11	4	10	5.8	6	M6	74	6668	20692	810
	2×2.5+2×2.5	56	84	71	11	4	10	5.8	7	M6	104	12160	41483	1575
2°51'	1×2.5+1×2.5	60	90	75	13	4	12	7	7	M6	76	10689	29911	900
	2×1.5+2×1.5	60	90	75	13	4	12	7	7	M6	103	12945	37364	1050
	2×2.5+2×2.5	60	90	75	13	4	12	7	7	M6	115	19417	59822	1740
3°25'	1×2.5+1×2.5	60	90	75	13	4	12	7	7	M6	87	10689	29911	915
	2×2.5+2×2.5	60	90	75	13	4	12	7	9	M6	125	19417	59822	1770
4°33'	1×2.5+1×2.5	67	104	85	15	6	15	9	9	M6	106	18437	43739	930
	2×2.5+2×2.5	67	104	85	15	6	15	9	9	M6	154	33343	87478	1815
5°41'	1×2.5+1×2.5	71	110	90	15	8	15	9	9	M6	130	26969	57665	975
	2×2.5+2×2.5	71	110	90	15	8	15	9	9	M6	189	48740	115330	1875
2°17'	1×2.5+1×2.5	67	104	85	15	4	15	9	9	M6	85	11670	37658	1065
	2×1.5+2×1.5	67	104	85	15	4	15	9	9	M6	106	14220	47073	1275
	2×2.5+2×2.5	67	104	85	15	4	15	9	9	M6	124	21183	75317	2070
2°44'	1×2.5+1×2.5	71	110	90	15	4	15	9	9	M6	90	16083	46779	1080
	2×2.5+2×2.5	71	110	90	15	4	15	9	9	M6	127	29126	93362	2115
3°39'	1×2.5+1×2.5	75	110	90	15	6	15	9	9	M6	106	20202	55213	1110
	2×2.5+2×2.5	75	110	90	15	6	15	9	11	M6	155	36874	109838	2160
4°33'	1×2.5+1×2.5	85	128	105	18	8	18	11	11	M6	133	30303	73062	1170
	2×1.5+2×1.5	85	128	105	18	8	18	11	11	M6	170	36678	91401	1395
	2×2.5+2×2.5	85	128	105	18	8	18	11	17	M6	192	55017	146418	2250

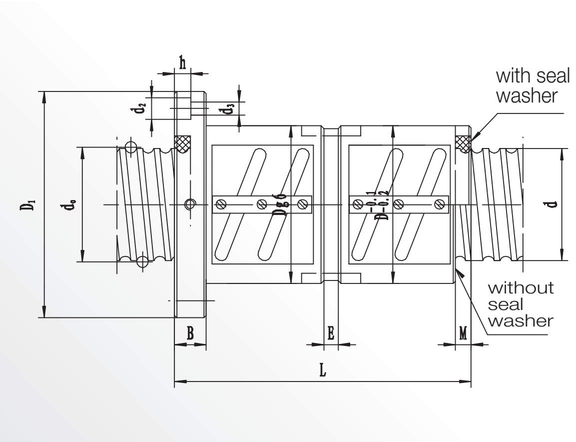
■ Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

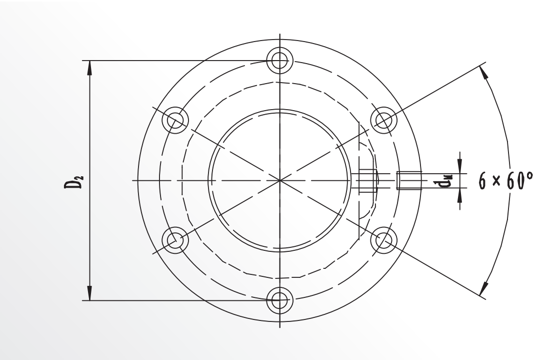
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S Ball Screws Double Nut







Series No	Nominal dia d_o	Basic lead L_o	Outside dia. of screw d	Dia.of ball d_b
5005-3	50	5	49.5	3.175
5005-5				
5006-3	50	6	49.5	3.969
5006-5				
5008-3	50	8	49	4.763
5008-5				
5010-3	50	10	49	5.953
5010-5				
5010-7				
5012-3	50	12	49	7.144
5012-5				
6308-3	63	8	62	4.763
6308-5				
6310-3	63	10	62	5.953
6310-5				
6310-7				
6312-3	63	12	62	7.144
6312-5				
6312-7				
8010-3	80	10	79	5.953
8010-5				
8010-7				
8012-3	80	12	79	7.144
8012-5				
8012-7				
8016-3	80	16	78.5	9.525
8016-5				
10010-5	100	10	99	5.953
10010-7				
10012-3	100	12	99	7.144
10012-5				
10012-7				
10016-3	100	16	98.5	9.525
10016-5				
10020-2.5	100	20	98.5	12.7
10020-3				
12516-3	125	16	123.5	9.525
12516-5				
12520-3	125	20	123.5	12.7
12520-5				

External Recycle with Enclused Tube FYC$_2$D

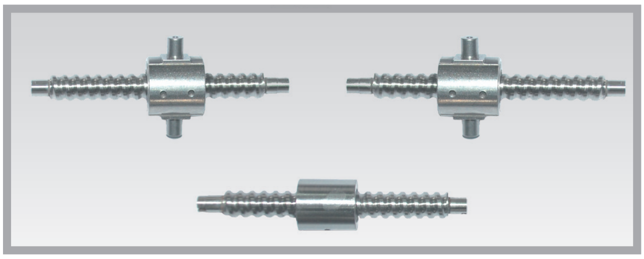
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
1°49'	2x1.5+2x1.5	80	114	95	15	4	15	9	9	M8X1	108	15495	58351	1515
	2x2.5+2x2.5	80	114	95	15	4	15	9	9	M8X1	124	23144	93460	2460
2°11'	2x1.5+2x1.5	85	120	100	15	4	15	9	9	M8X1	116	21379	72277	1560
	2x2.5+2x2.5	85	120	100	15	4	15	9	9	M8X1	131	32068	115526	2535
2°55'	2x1.5+2x1.5	85	128	105	18	6	18	11	11	M8X1	138	27361	85909	1590
	2x2.5+2x2.5	85	128	105	18	6	18	11	11	M8X1	157	40993	140142	2595
3°29'	2x1.5+2x1.5	95	140	118	18	8	18	11	11	M8X1	170	40797	114397	1665
	2x2.5+2x2.5	95	140	118	18	8	18	11	11	M8X1	193	60999	186234	2715
	2x3.5+2x3.5	95	140	118	18	8	18	11	11	M8X1	233	81128	260727	3730
4°22'	2x1.5+2x1.5	100	152	125	22	10	22	13.5	13	M8X1	203	54821	142691	1725
	2x2.5+2x2.5	100	152	125	22	10	22	13.5	13	M8X1	231	82218	229091	2805
2°19'	2x1.5+2x1.5	105	148	125	18	6	18	11	13	M8X1	138	29715	110034	1920
	2x2.5+2x2.5	105	148	125	18	6	18	11	13	M8X1	157	44523	179370	3135
2°54'	2x1.5+2x1.5	110	158	132	22	8	22	13.5	13	M8X1	174	44523	145928	1995
	2x2.5+2x2.5	110	158	132	22	8	22	13.5	13	M8X1	197	66785	236446	3255
	2x3.5+2x3.5	110	158	132	22	8	22	13.5	13	M8X1	236	88824	331024	4470
3°28'	2x1.5+2x1.5	118	166	140	22	10	22	13.5	13	M8X1	201	60705	182998	2070
	2x2.5+2x2.5	118	166	140	22	10	22	13.5	13	M8X1	229	91107	291954	3375
	2x3.5+2x3.5	118	166	140	22	10	22	13.5	13	M8X1	279	118439	408735	4635
2°17'	2x1.5+2x1.5	130	186	160	22	14	22	13.5	13	M8X1	174	49721	188490	2430
	2x2.5+2x2.5	130	186	160	22	14	22	13.5	13	M8X1	197	74435	301369	3945
	2x3.5+2x3.5	130	186	160	22	8	22	13.5	13	M8X1	236	96765	421916	5420
2°44'	2x1.5+2x1.5	140	196	170	22	8	22	13.5	13	M8X1	203	67864	233112	2505
	2x2.5+2x2.5	140	196	170	22	10	22	13.5	13	M8X1	231	1010502	373548	4080
	2x3.5+2x3.5	140	196	170	22	10	22	13.5	13	M8X1	279	131952	522967	5605
3°39'	2x1.5+2x1.5	150	206	180	28	10	22	13.5	13	M8X1	242	87968	355013	2820
	2x2.5+2x2.5	150	206	180	28	14	22	13.5	13	M8X1	298	116703	590381	4590
1°49'	2x1.5+2x1.5	160	216	190	25	14	22	13.5	13	M8X1	218	81575	372984	4690
	2x2.5+2x2.5	160	216	190	25	8	22	13.5	13	M8X1	258	106047	522178	6440
2°11'	2x1.5+2x1.5	160	224	190	25	8	22	13.5	17	M8X1	187	74042	294210	2985
	2x2.5+2x2.5	160	224	190	25	10	28	17.5	17	M8X1	234	110917	470834	4860
	2x3.5+2x3.5	160	224	190	25	10	28	17.5	17	M8X1	282	144192	659167	6670
2°55'	2x1.5+2x1.5	170	234	200	28	14	28	17.5	17	M8X1	242	96108	437392	3345
	2x2.5+2x2.5	170	234	200	28	14	28	17.5	17	M8X1	298	137298	727679	5460
3°39'	1x1.5+1x2.5	190	254	220	28	16	28	17.5	17	M8X1	258	84634	363839	3345
	2x1.5+2x1.5	190	254	220	28	16	28	17.5	17	M8X1	290	96108	437392	5460
2°19'	1x1.5+1x2.5	200	281	240	32	14	32	22	22	M10X1	245	119734	504333	2900
	2x1.5+2x2.5	200	281	240	32	14	32	22	22	M10X1	310	185783	900554	4719
2°54'	1x1.5+1x2.5	220	300	260	32	18	32	22	22	M10X1	300	128081	566472	2916
	2x1.5+2x2.5	220	300	260	32	18	32	22	22	M10X1	360	198735	944120	4746

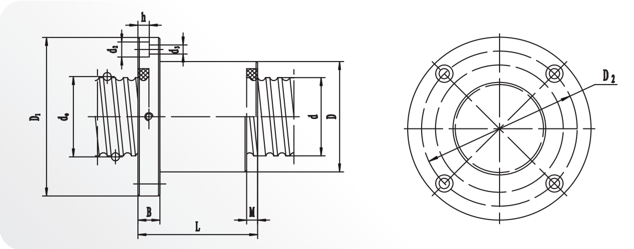
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown in the following table:

Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

HJG-S

Specifications of HJG-S ball screws: micro type FV

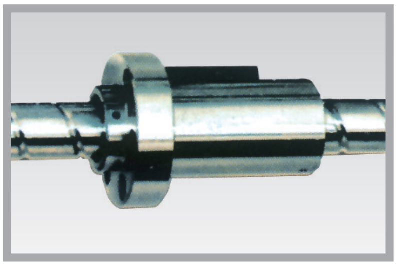


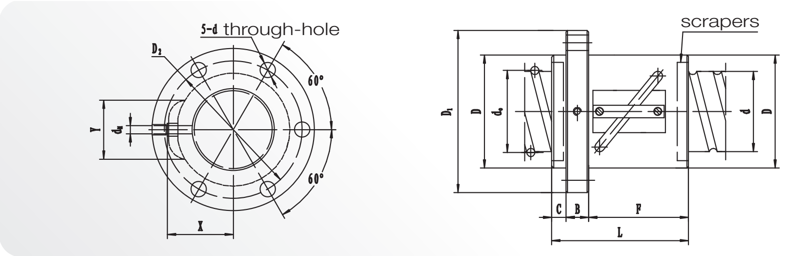


Series No	Nominal dia d_o	Basic lead L_o	Outside dia.of screw d	Helix angle β	Cycle turns	Dimension of Nut									Rated load (N)	
						Dg6	D_1	D_2	B	M	d_2	d_3	h	L	Dynamic	Static
0802-3	8	2	7.7	4°33'	3X1	20	37	27	7	3	8	4.8	4.5	28	1323	2205
1002-3	10	2	9.7	3°39'	3X1	22	42	31	7	3	8	4.8	4.5	29	1470	2842
1002.5-3	10	2.5	9.6	4°33'	3X1	22	42	31	7	4	8	4.8	4.5	33	2107	3626
1202-3	12	2	11.7	3°2'	3X1	25	45	34	8	3	8	4.8	4.5	31	1666	3571
1202.5-3	12	2.5	11.6	3°48'	3X1	25	45	34	8	4	8	4.8	4.5	35	2352	4557
1203-3	12	3	11.6	4°33'	3X1	25	45	34	8	4	8	4.8	4.5	39	3136	5390
1402-3	14	2	13.7	2°36'	3X1	28	50	38	9	3	10	5.8	6	32	1764	4263
1402.5-3	14	2.5	13.6	3°15'	3X1	28	50	38	9	4	10	5.8	6	36	2572	5365
1403-3	14	3	13.6	3°54'	3X1	28	50	38	9	4	10	5.8	6	40	3381	6468
1602-3	16	2	15.7	2°17'	3X1	30	52	40	10	3	10	5.8	6	34	2940	7023
1602.5-3	16	2.5	15.6	2°51'	3X1	30	52	40	10	4	10	5.8	6	38	3528	8428
1603-3	16	3	15.6	3°25'	3X1	30	52	40	10	4	10	5.8	6	42	4410	10538

HJG-S

Specifications of HJG-S ball screws:Bigger lead type FDL

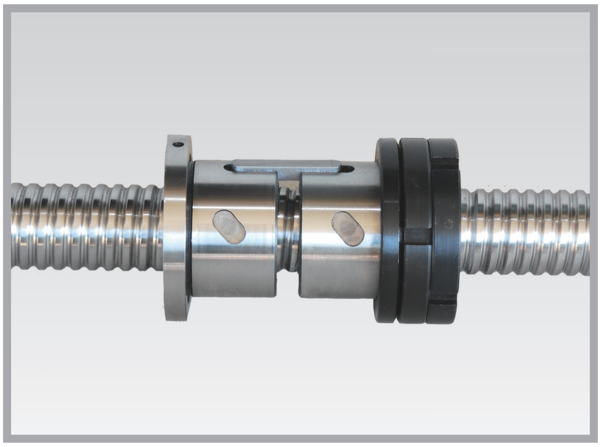


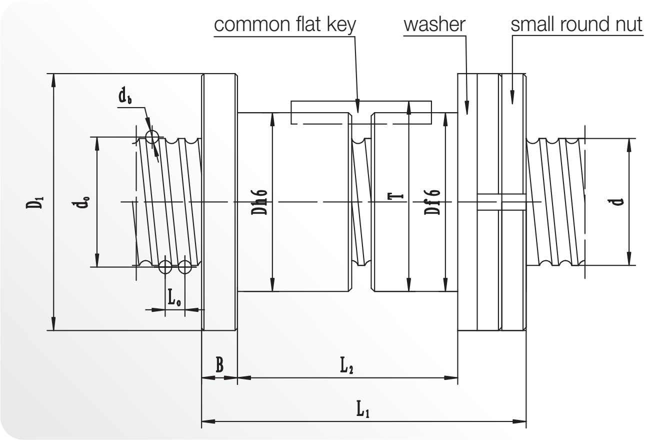


Series No	Nominal dia d_o	Basic lead L_o	Outside dia.of screw d	Dia.of ball d_b	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)	
							Dg6	D_1	D_2	B	d	M	d_M	X	Y	L	Dynamic	Static
2016-1.5	20	16	19.5	3.175	14°17'	1X1.5	36	60	48	13	7	8	M6	24	26	74	7164	13537
2020-1.5		20	19.5	3.175	17°39'	1X1.5	36	60	48	13	7	10	M6	24	26	88	7564	14008
2520-1.5	25	20	24.5	3.969	14°17'	1X1.5	40	66	53	13	7	10	M6	29	30	88	10707	21154
2525-1.5		25	24.5	3.969	17°39'	1X1.5	40	66	53	13	7	10	M6	29	30	103	11207	21154
3225-1.5	32	25	31	4.763	13°57'	1X1.5	50	82	67	15	9	10	M6	34	38	103	15761	33804
3232-1.5		32	31	4.763	17°39'	1X1.5	50	82	67	15	9	10	M6	34	38	126	16160	34106
4032-1.5	40	32	39	5.953	14°17'	1X1.5	63	108	85	18	11	10	M8X1	42	48	129	23546	52806
4040-1.5		40	39	5.953	17°39'	1X1.5	63	108	85	18	11	10	M8X1	42	48	152	24246	53406

HJG-S

Specifications of HJG-S ball screws: micro type FNYN





Series No	Nominal dia d_o	Basic lead L_o	Outside dia.of screw d	Dia.of ball d_b	Helix angle β	Cycle turns	Dimension of Nut						GB/ T810-88	GB/T1096-79	Rated load (N)		Contact rigidity (N/μm)
							D (h6)	D_1	B	L_1	L_2	T			Dynamic	Static	
FNYN2004-3	20	4	19.5	2.381	3°39'	3+3	30	45	6	70	44	32	M30x1.5	4x4x30	5295	11474	660
FNYN2005-3	20	5	19.5	3.175	4°33'	3+3	34	48	6	81	55	36.5	M30x1.5	5x5x40	9022	17456	720
FNYN2505-3	25	5	24.5	3.175	3°39'	3+3	42	58	8	84	55	44.5	M30x1.5	5x5x40	9807	22850	870
FNYN2506-3	25	6	24.5	3.175	4°22'	3+3	45	62	8	95	66	48	M30x1.5	6x6x45	12945	29028	900
FNYN3205-3	32	5	31.5	3.175	2°51'	3+3	50	68	8	88	55	52.5	M30x1.5	5x5x40	11180	30401	1050
FNYN3206-3	32	6	31.5	3.175	3°25'	3+3	50	68	8	99	66	53	M30x1.5	6x6x45	11180	30401	1095
FNYN3206-4	32	6	31.5	3.175	3°25'	4+4	50	68	8	120	88	53	M30x1.5	6x6x45	14318	40699	1445
FNYN4006-3	40	6	39.5	3.969	2°44'	3+3	60	80	10	115	66	63	M60x2	6x6x45	16672	47465	1305
FNYN4006-4	40	6	39.5	3.969	2°44'	4+4	60	80	10	123	85	63	M60x2	6x6x45	21379	63451	1710
FNYN4008-3	40	8	39	4.763	3°39'	3+3	60	80	10	123	84	63	M60x2	8x7x55	20692	54136	1320
FNYN4010-3	40	10	39	5.953	4°33'	3+3	65	85	13	140	102	68	M60x2	6x6x60	30107	69923	1395
FNYN5006-4	50	6	49.5	3.969	2°11'	4+4	72	95	10	123	82	75.5	M60x2	8x7x55	23772	81594	2055
FNYN5008-4	50	8	49	4.763	2°55'	4+4	75	95	12	144	102	79	M60x2	12x8x80	30107	94637	2095
FNYN5010-4	50	10	49	5.953	3°29'	4+4	75	95	12	168	124	79	M60x2	12x8x100	43837	122097	2190
FNYN5012-4	50	12	49	7.144	4°22'	4+4	75	95	15	191	146	79	M60x2	12x8x120	57567	145633	2270
FNYN6308-4	63	8	62	4.963	2°19'	4+4	85	110	12	145	102	89	M60x2	12x8x80	33539	124156	2515
FNYN6310-4	63	10	62	5.953	2°54'	4+4	90	115	15	176	131	95	M60x2	16x10x100	48740	156912	2615
FNYN6312-3	63	12	62	7.144	3°24'	3+3	90	115	15	195	150	95	M60x2	16x10x100	53055	143574	2070
FNYN8010-4	80	10	79	5.953	2°17'	4+4	110	135	15	180	132	116	M110x2	20x12x100	55115	208791	3180
FNYN8012-4	80	12	79	7.144	2°44'	4+4	110	135	15	206	154	116	M110x2	20x12x100	74337	254099	3280