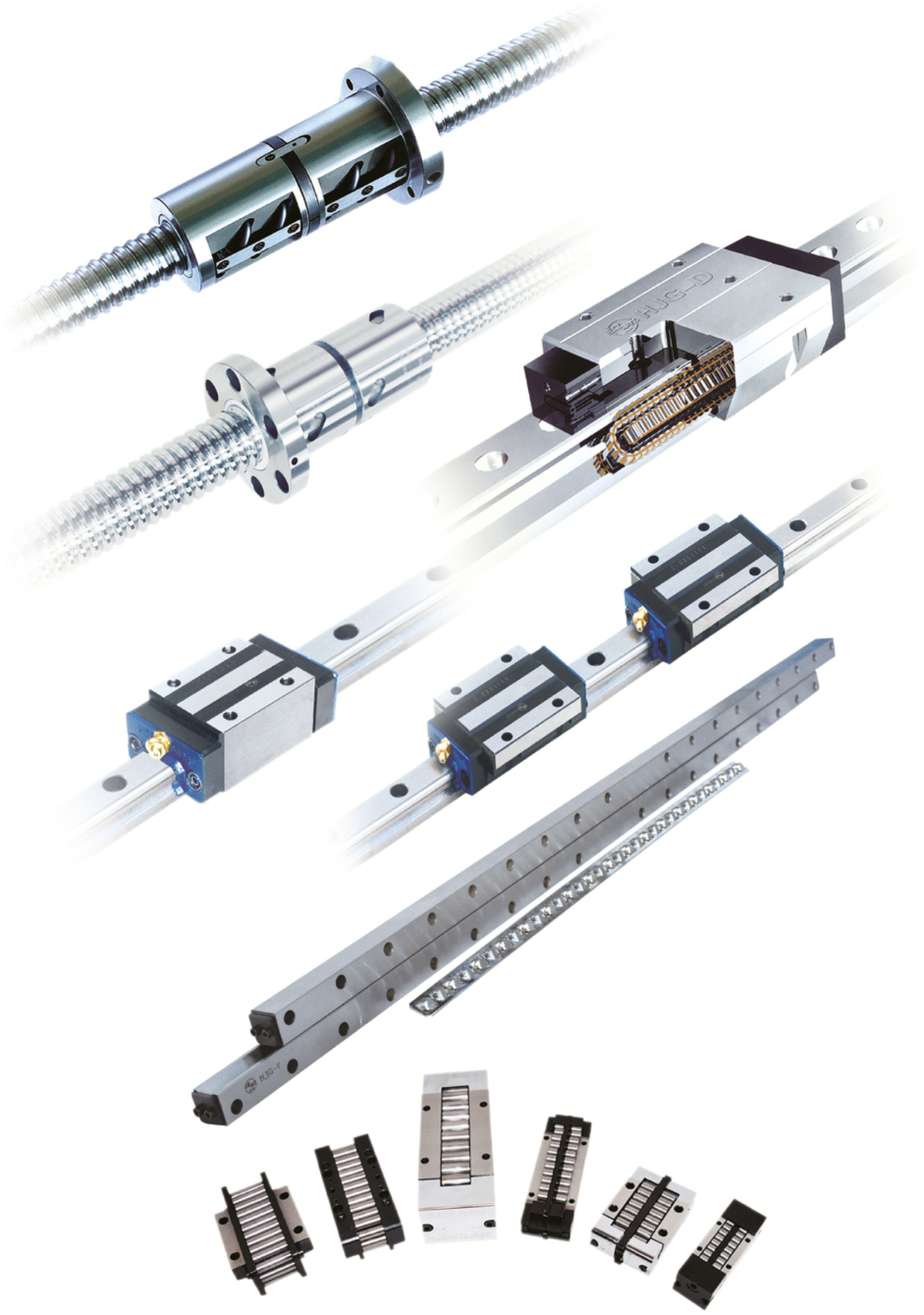
LINEAR MOTION

Linear Guideways & Ball Screws



精密螺纹加工成套设备制造基地
Manufacturer of Precaution Thread Processing Equipment
滚动功能部件产业化生产基地
Industrial Production Base of Rolling Components

LUOYANG SONGJU SCIENCE AND TECHNOLOGY CO., LTD.

High-precision CNC machine tool components · Since 2012

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ABOUT SONGJU *Company Profile*

2012	22,000 m²	ISO 9001	10+
Founded	Facility	Certified	Countries

Company Overview

Founded in 2012 and headquartered in Luoyang, Henan — one of China's most historic bearing and machinery industrial hubs — Luoyang Songju Science and Technology Co., Ltd. specializes in the R&D, manufacturing and sales of high-precision core components for CNC machine tools.

Our manufacturing scope covers electric (motorized) spindles, precision bearings, precision ball screws and precision linear guideways. Components are engineered for machining centers, grinding machines, CNC lathes, milling machines and industrial automation, with electric spindles achieving 0.001 mm runout accuracy.

Songju operates a 22,000 m² production facility with advanced CNC machining, precision grinding, dynamic balancing and multi-stage inspection under an ISO 9001:2015 quality management system. A team of 60+ employees, including 10 senior engineers, supports OEM / ODM projects and customized spindle systems from application review through delivery and service.

Key Customers & Partners

Region	Customers / Partners
Belarus	JSC STANKOGOMEL; JSC Machine Tool Plant "Krasny Borets"; MTW Group
Russia	STAN Group; Vologda Bearing Plant; Ok-Loza and related customers

From component selection and technical communication to application-focused solutions, Songju delivers reliable precision products trusted by long-term clients in more than 10 countries.

PRODUCT PORTFOLIO *Core Components*

01 LINEAR GUIDEWAYS

P / H / SP precision grades, 15–65 mm rail sizes, ball and roller types. Interchangeable mounting dimensions with major international brands for CNC equipment and industrial automation.

02 BALL SCREWS

Ground C3 / C5 and rolled C7 accuracy, diameters 8–100 mm, single and double nut designs per DIN 69051. High-efficiency rotary-to-linear transmission for precise axis positioning.

03 MOTORIZED SPINDLES

Electric spindles from 0.5–100 kW with up to 0.001 mm runout. Solutions for milling, drilling, grinding and special-purpose machine tools — including OEM / ODM and custom designs.

04 PRECISION BEARINGS

P4 / P2 (ABEC-7 / 9) angular contact and cylindrical roller bearings, bore range 10–500 mm. Optimized for machine-tool spindle assemblies with controlled preload and high rigidity.

APPLICATION SUPPORT

From Inquiry to Delivery

01

Tell us your application

Share the equipment type, working conditions, installation space and target market requirements.

02

Define the requirements

Provide drawings, load, speed, stroke, accuracy, lubrication and environmental conditions.

03

Confirm the configuration

Discuss the model, dimensions, interfaces, preload / accuracy grade and any custom requirements.

04

Coordinate delivery and service

Confirm technical details and commercial terms. Pre-shipment inspection reports and 24-hour technical response available.

Global Cooperation

Songju works year-round with leading machine-tool manufacturers in Belarus and Russia — including STANKOGOMEL, Krasny Borets, MTW Group, STAN Group, Vologda Bearing Plant and Ok-Loza customers — supplying precision linear motion and spindle components for production equipment.

HJG-S

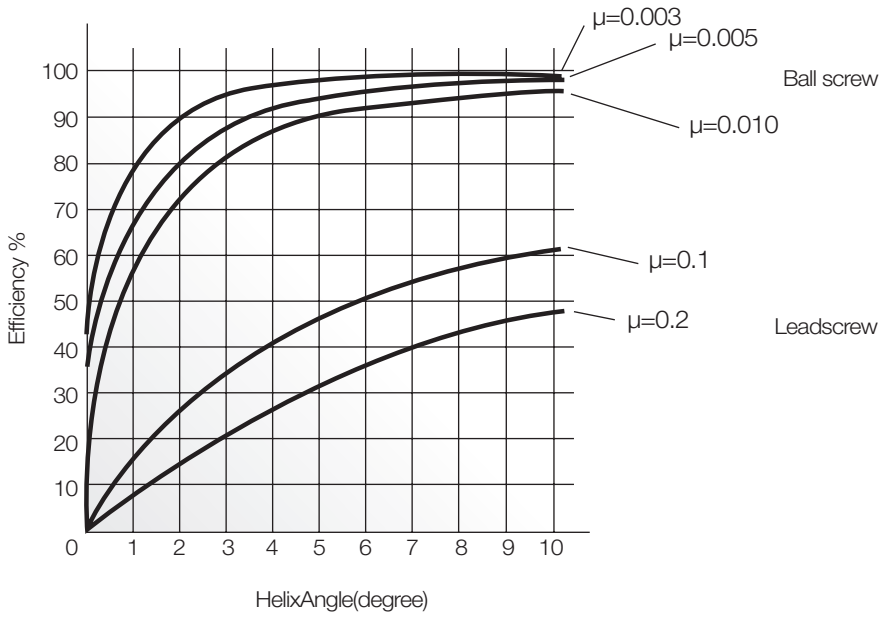
Characteristics of HJG-S Precision Ball Screws

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)

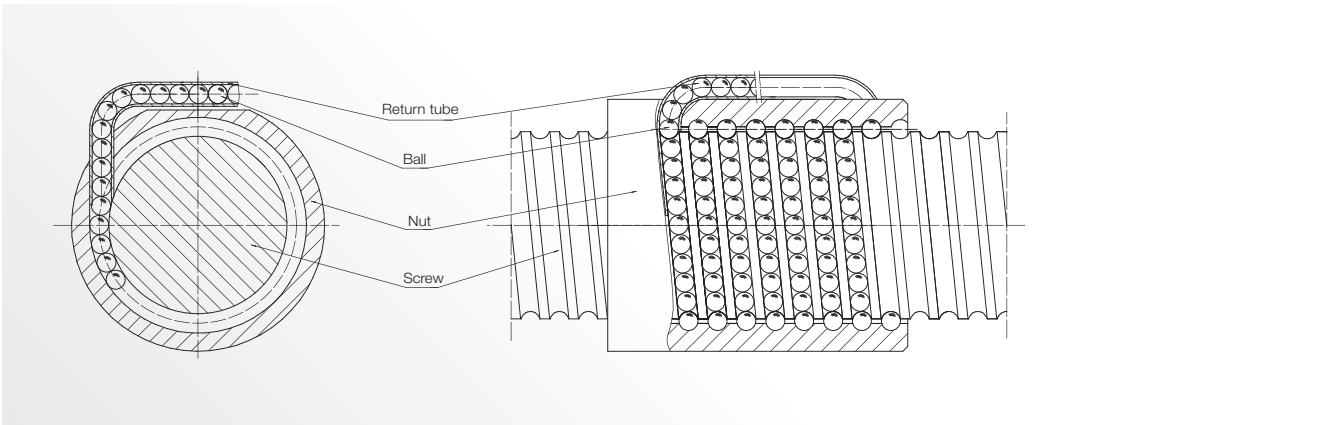
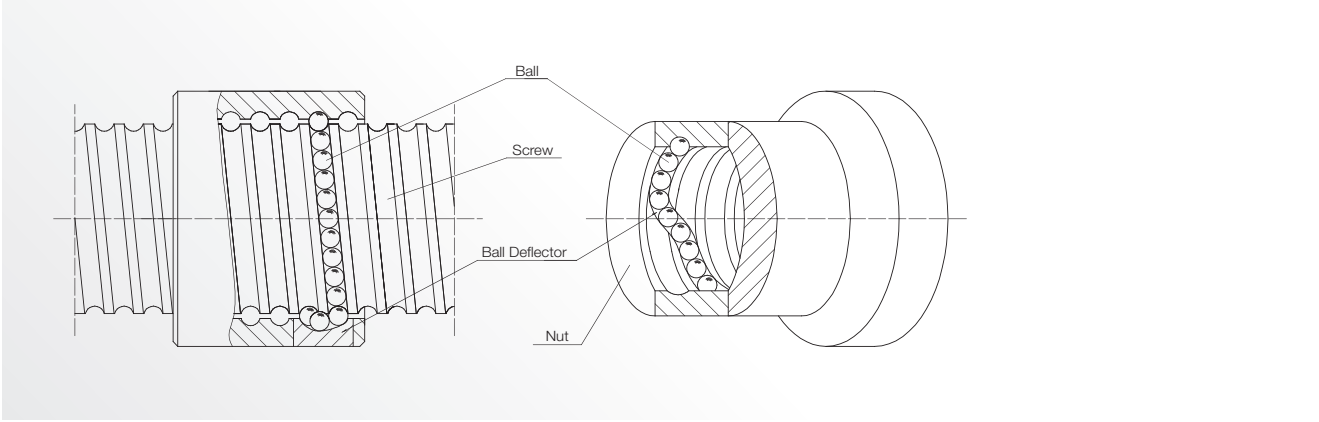


Fig.3 Internal deflector type (N type)



HJG-S

Characteristics of HJG-S Precision Ball Screws

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

Table

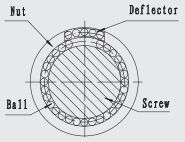
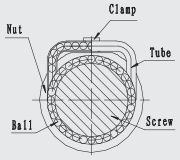
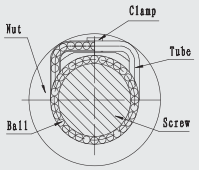
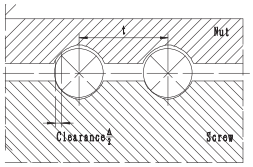
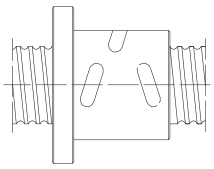
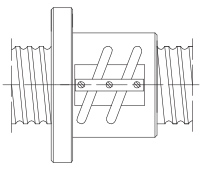
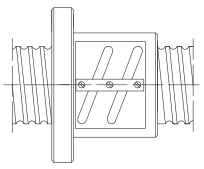
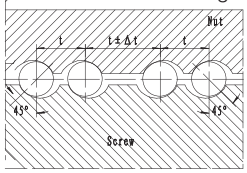
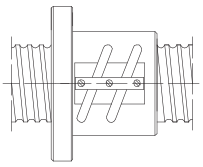
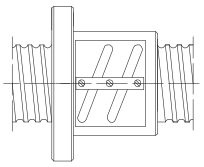
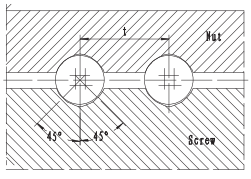
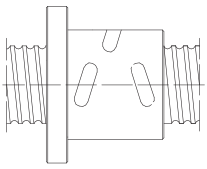
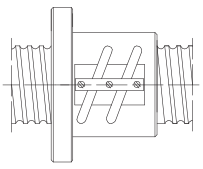
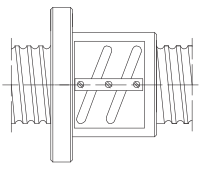
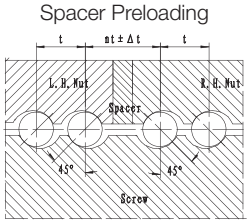
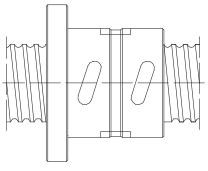
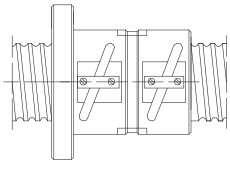
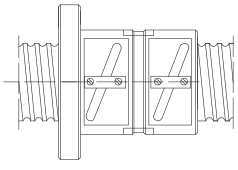
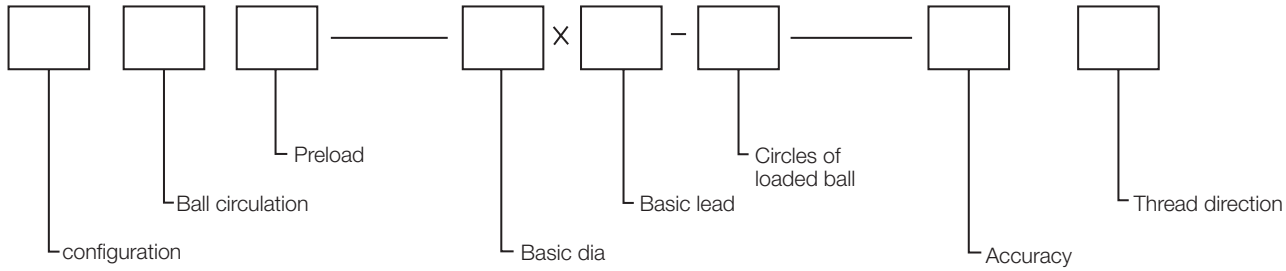
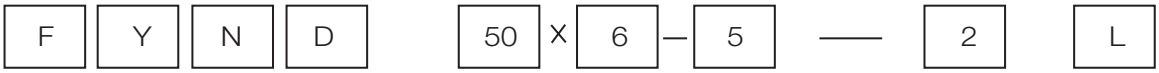
Recycle / Structure / Preload	N: Curved Deflector Type	C_1: Exposed Tube Type	C_1: Enclosed Tube Type
			
No-preloading(△: 0.005-0.30) 	FN 	FC_1 	FC_2 
Offset Lead Preloading 		FC_1B 	FC_2B 
Over-size ball preloading 	FN(Z) 	$FC_1(Z)$ 	$FC_2(Z)$ 
Spacer Preloading 	FYND 	FYC_1D 	FYC_2D 

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:



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.

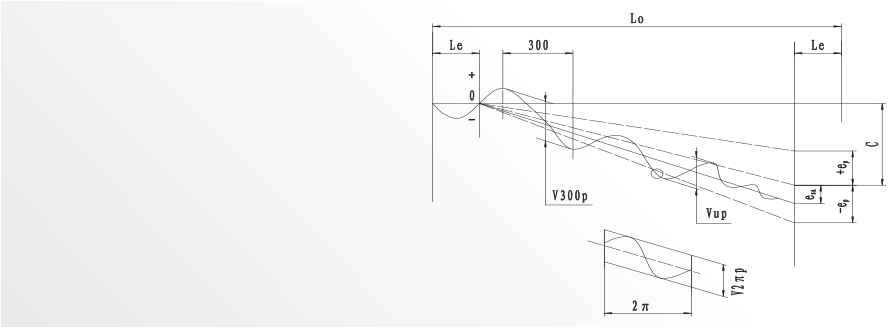
6)The factory is willing to provide the customers with various special ball screws, including heavy typed,nonstandard,etc.

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

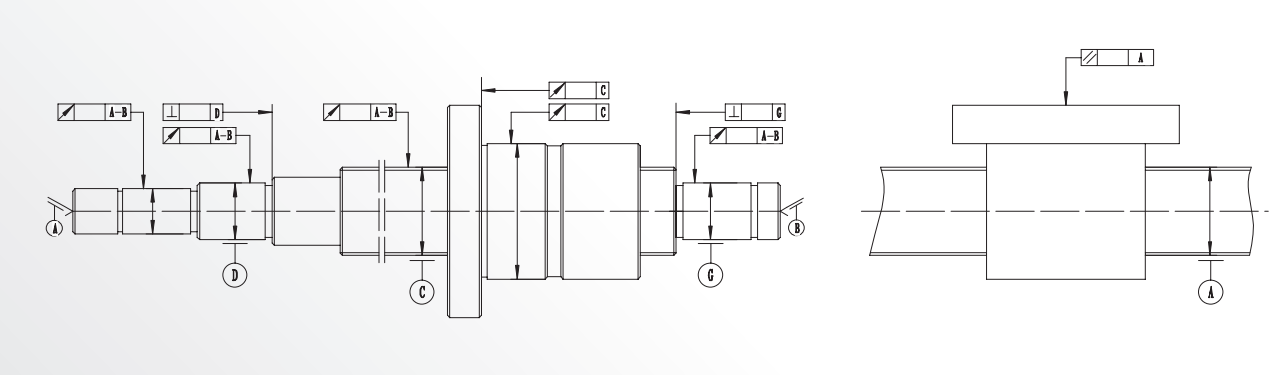
Note: When calculating the effective travel, the following equation is to applied:

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

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

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

HJG-S

Main Charateristic of HJG-S Ball Screws

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℃~3℃ is taken usually

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

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

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℃ to 3℃ 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.

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)

HJG-S

Main charateristic of HJG-S Ball Screws

(2).Friction torque T_D caused by preload:

$$T_D = \frac{F_P \cdot L}{2\pi} \cdot \frac{1-\eta^2}{\eta^2} \text{ N·m}$$

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

η----Effectiveness of preloaded ball screws(0.85-0.9) l----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 $K_1 = \frac{4A \cdot E}{L} \cdot 10^{-3}$

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Main charateristic of HJG-S Ball Screws

(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.

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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.

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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.

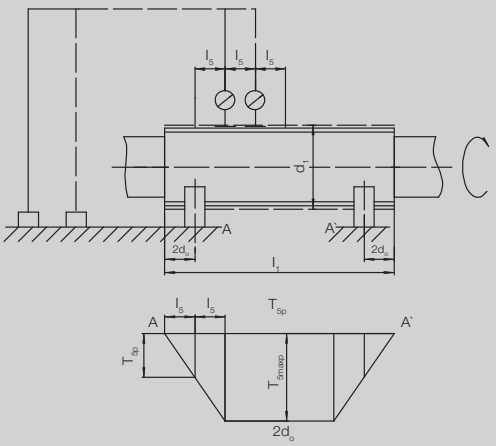
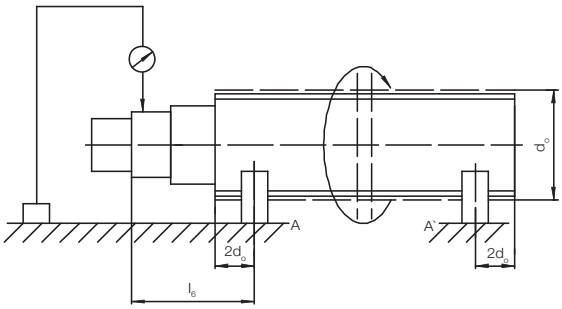
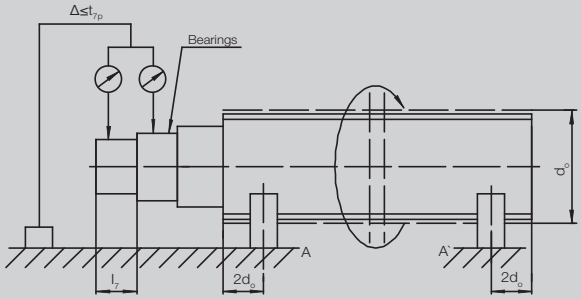
12.The ball screws should be assembled and repaired by technician. If necessary, please contact us.

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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>
Positioning or drive ball screws
<table>
<tr><td rowspan="2">Nominal Diameter $d_0$mm</td><td rowspan="2">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></td><td></td><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>ratio l_5/d_0</td><td colspan="8">t_{5maxp}, μm over a length of $l_1 \geq 4l_5$</td></tr>
<tr><td>≤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>> 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>> 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>> 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>
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Positioning or drive ball screws
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<tr><td></td><td></td><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>
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Positioning or drive ball screws
<table>
<tr><td rowspan="2">Nominal Diameter $d_0$mm</td><td rowspan="2">l mm</td><td colspan="7">Standard grade</td></tr>
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<tr><td></td><td></td><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>
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</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:

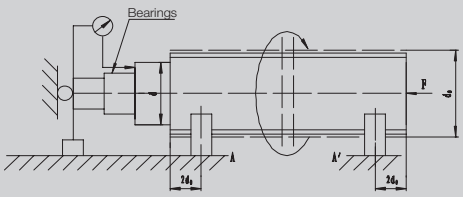
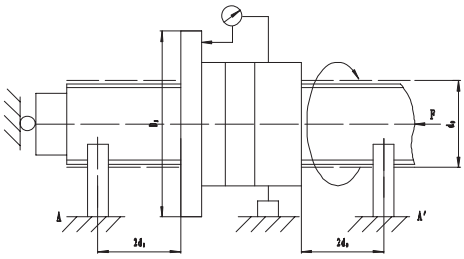
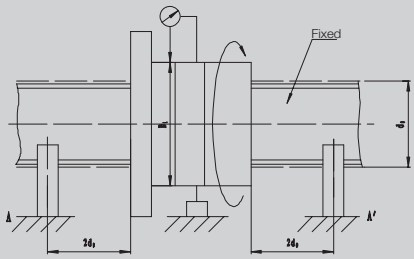
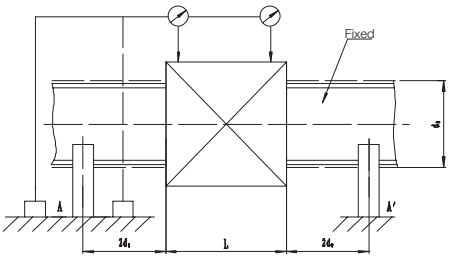
The test can be done between centers after negotiation. Then l_6 is the distance between the testing position and the end of the shaft.</td></tr>
</table>

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'	

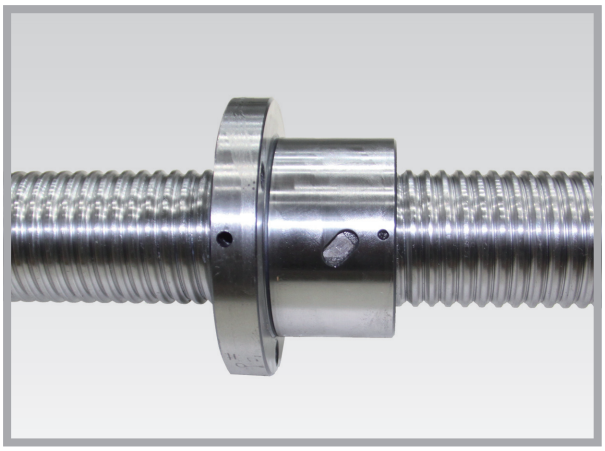
HJG-S

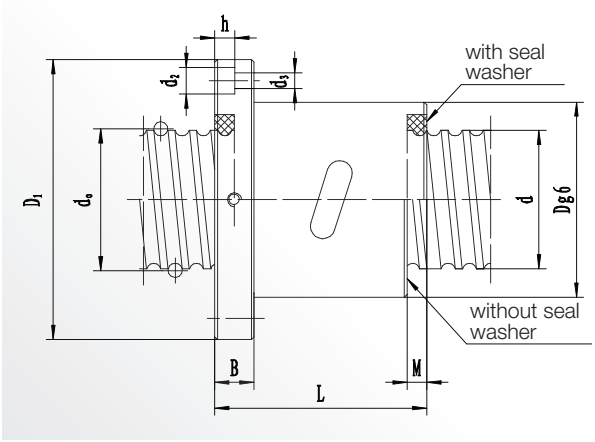
Accuracy inspection

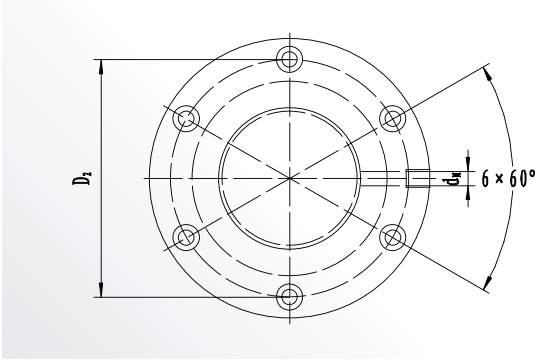
Permissible Errors								Testing Tool	Testing Method
Positioning or drive ball screws								Dial indicator, Vee-shaped rests with the same height	5.632 Place the screw on two same Vee-shaped rests located at A & A' respectively. In order to prevent screw from displacing axially, a steel ball can be 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.)
Nominal Diameter $d_0$mm	Standard grade								
	1	2	3	4	5	7	10		
	t_{8p} μm								
≥6~63	3	4	4	5	5	6	10		
>63~125	4	5	5	6	6	8	12		
>125~200	-	6	6	7	8	10	16		
Positioning or drive ball screws								Dial indicator, Vee-shaped rests with the same height	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.)
Nominal Diameter $d_3$mm	Standard grade								
	1	2	3	4	5	7	10		
	t_{9p} μm								
≥16~32	10	11	12	14	16	20	-		
>32~63	12	14	16	18	20	25	-		
>63~125	16	18	20	22	25	32	-		
>125~250	20	22	25	28	32	40	-		
>250~500	-	-	32	36	40	50	-		
Positioning or drive ball screws								Dial indicator, Vee-shaped rests with the same height	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.
Nominal Diameter $d_1$mm	Standard grade								
	1	2	3	4	5	7	10		
	t_{19p} μm								
≥16~32	10	11	12	14	16	20	-		
>32~63	12	14	16	18	20	25	-		
>63~125	16	18	20	22	25	32	-		
>125~250	20	22	25	28	32	40	-		
>250~500	-	-	32	36	40	50	-		
Positioning or drive ball screws								Dial indicator, Vee-shaped rests with the same height	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.
Standard grade									
1	2	3	4	5	7	10			
t_p over the length of 100mm, μm									
16	18	20	22	25	32	-			

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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					

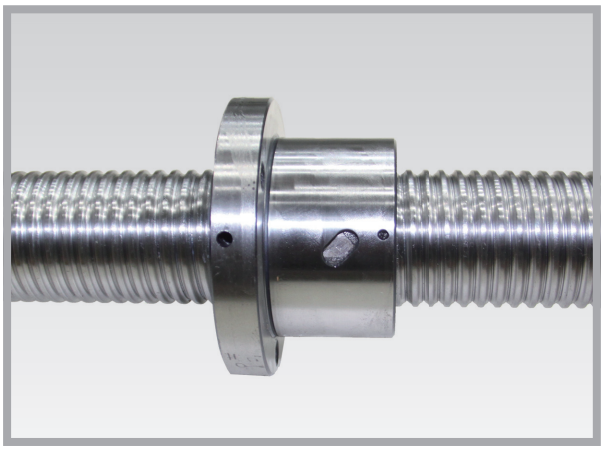
	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
	3°39'	3	36	60	48	11	4	10	5.8	6	M6	40	5295	11474	660
		4	36	60	48	11	4	10	5.8	6	M6	44	6766	15298	865
	4°33'	3	36	60	48	11	4	10	5.8	6	M6	46	9022	17456	720
		4	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

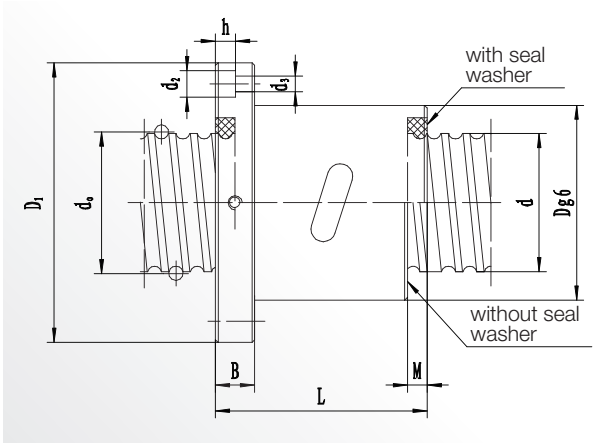
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

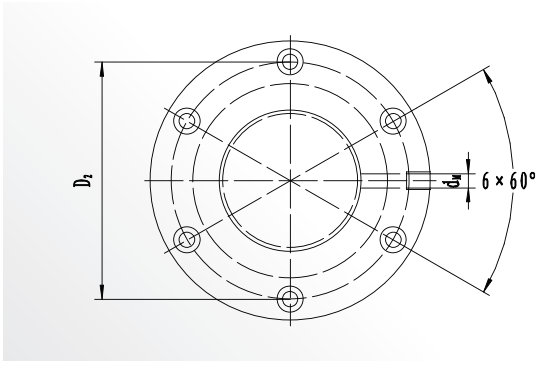
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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

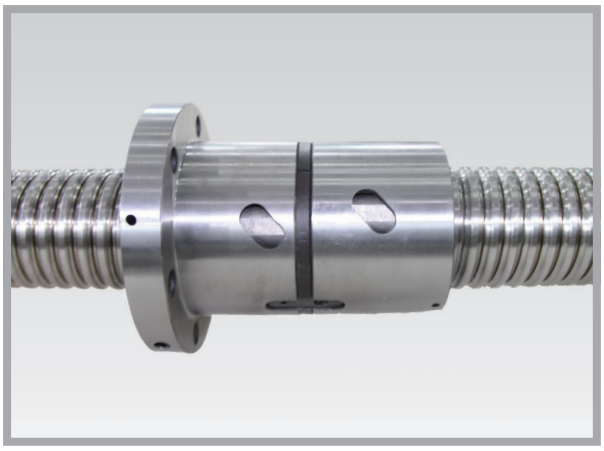
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
2°11'	3	71	110	90	15	4	15	9	9	M8X1	58	19417	61293	1560
	4	71	110	90	15	4	15	9	9	M8X1	64	23772	81594	2055
2°55'	3	75	118	95	18	6	18	11	11	M8X1	70	24419	70904	1590
	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

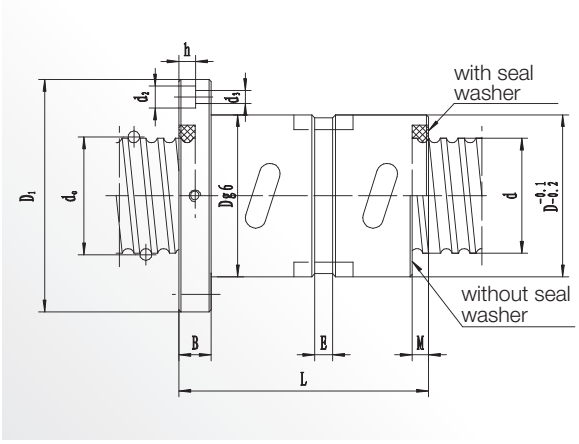
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

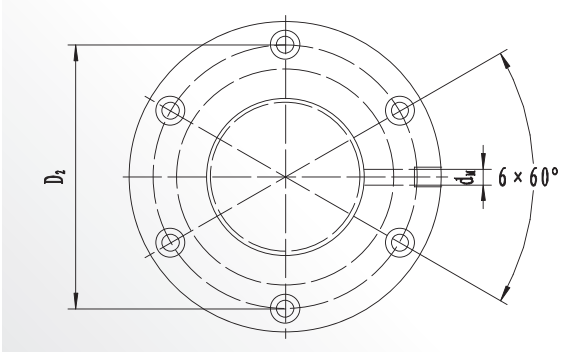
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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

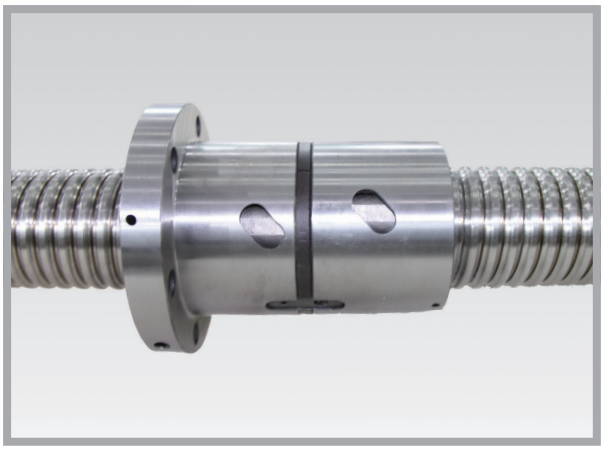
	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
	3°39'	3+3	36	60	48	11	4	10	5.8	6	M6	71	5295	11474	660
		4+4	36	60	48	11	4	10	5.8	6	M6	78	6766	15298	865
	4°33'	3+3	36	60	48	11	4	10	5.8	6	M6	81	9022	17456	720
		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

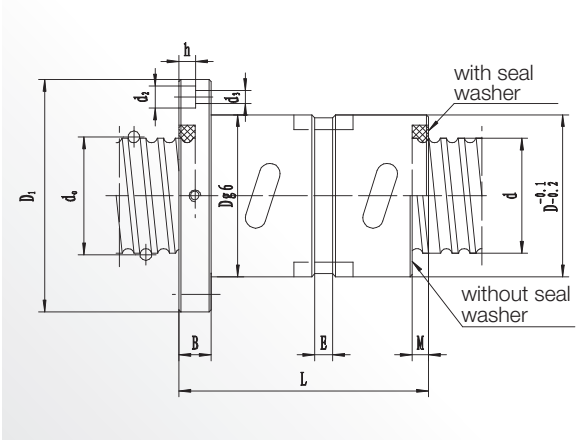
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

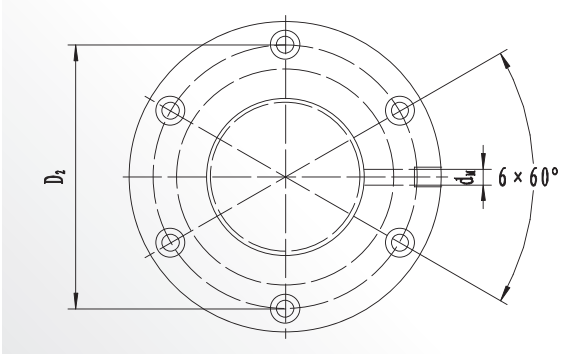
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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

Ball Screws

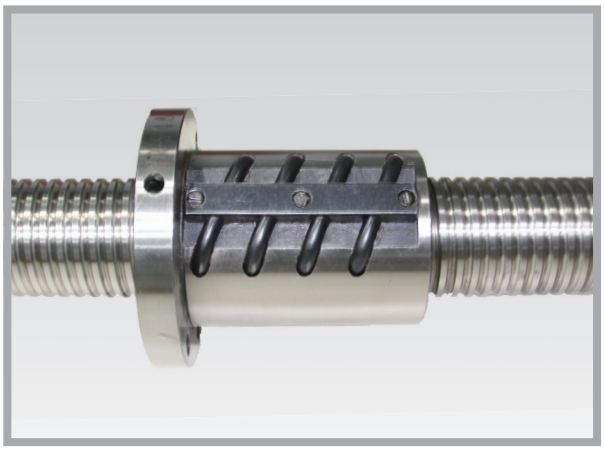
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
2°11'	3+3	71	110	90	15	4	15	9	9	M8X1	100	19417	61293	1560
	4+4	71	110	90	15	4	15	9	9	M8X1	112	23772	81594	2055
2°55'	3+3	75	118	95	18	6	18	11	11	M8X1	121	24419	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

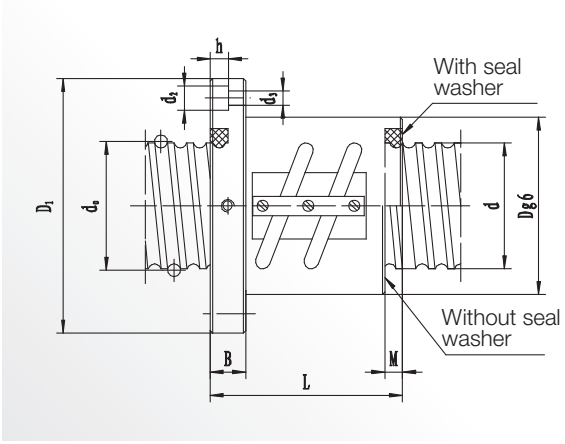
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

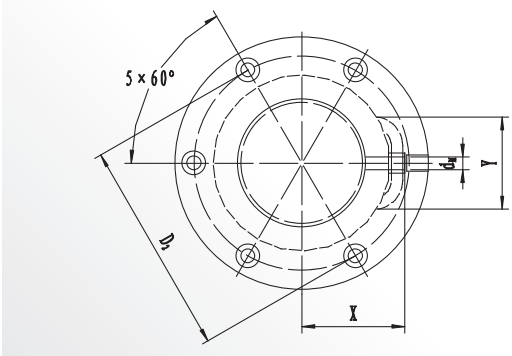
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

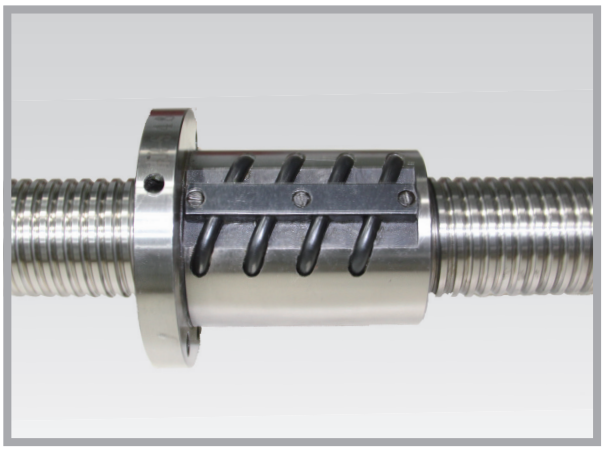
Helix angle β	Cycle turns	Dimension of Nut											Length of nut		Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	FC_1 FC_1(N)	FC_1B	Dynamic	Static	
3°39'	1X2.5	36	60	48	11	4	10	5.8	6	M6	24	23	39	55	5393	12651	555
	2X2.5	36	60	48	11	4	10	5.8	6	M6	24	23	55	86	9807	25302	1080
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

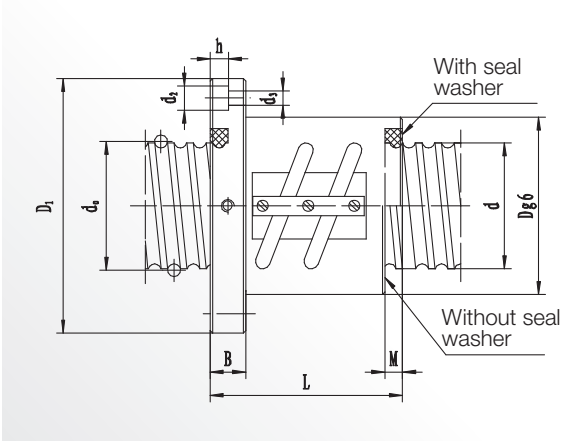
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

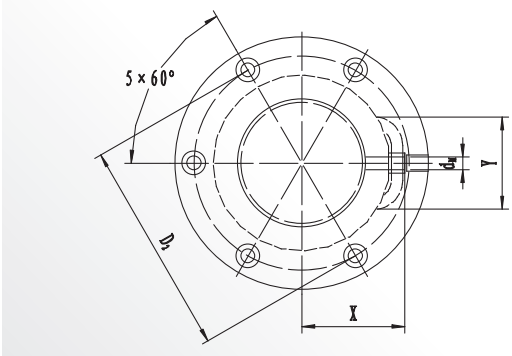
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

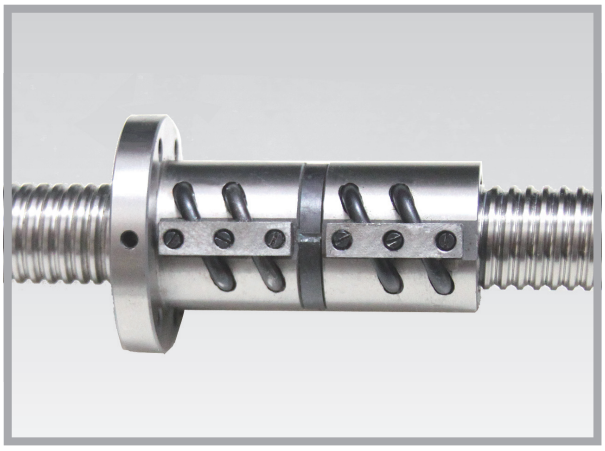
	Helix angle β	Cycle turns	Dimension of Nut											Length of nut		Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	FC_1 FC_1(N)	FC_1B	Dynamic	Static	
	1°49'	2X1.5	71	110	90	15	4	15	9	9	M8X1	43	54	58	83	15495	58351	1515
		2X2.5	71	110	90	15	4	15	9	9	M8X1	43	54	66	101	23144	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

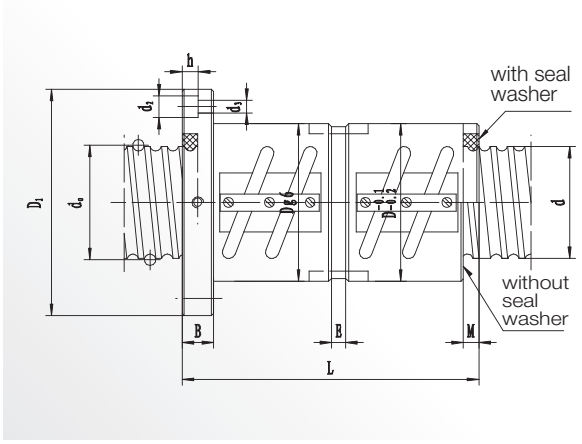
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

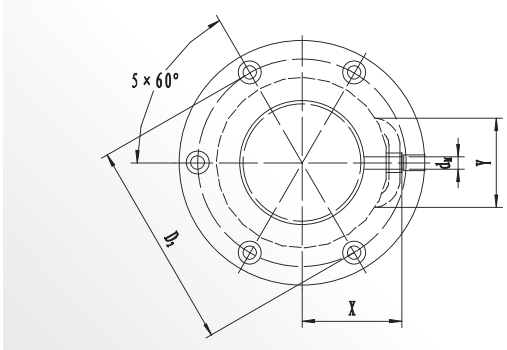
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

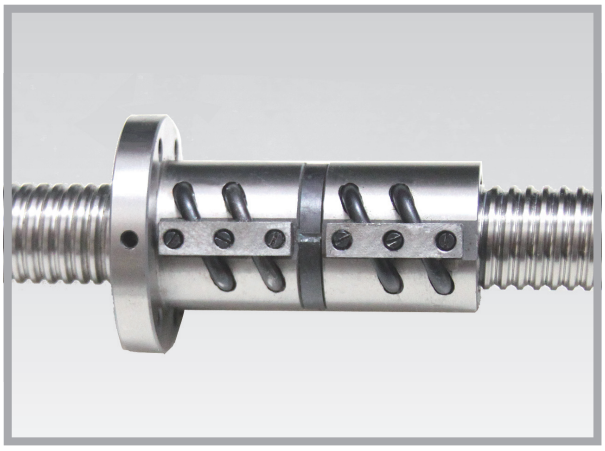
	Helix angle β	Cycle turns	Dimension of Nut												Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	L	Dynamic	Static	
	3°39'	1×2.5+1×2.5	36	60	48	11	4	10	5.8	6	M6	24	23	72	5393	12651	555
		2×2.5+2×2.5	36	60	48	11	4	10	5.8	6	M6	24	23	102	9807	25302	1080
	4°33'	1×2.5+1×2.5	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

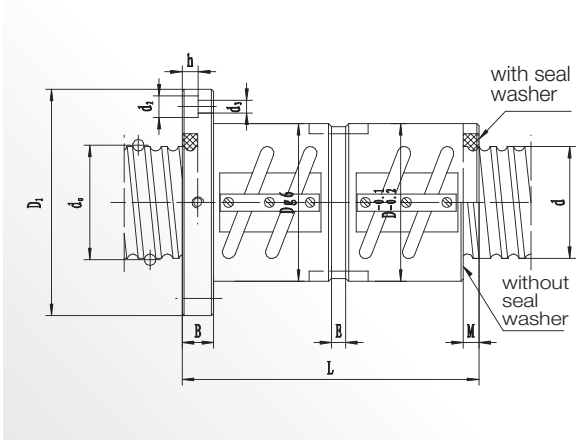
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

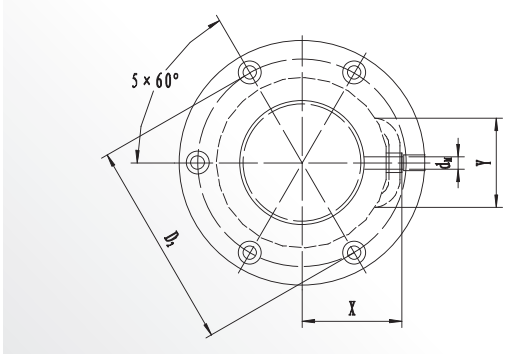
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

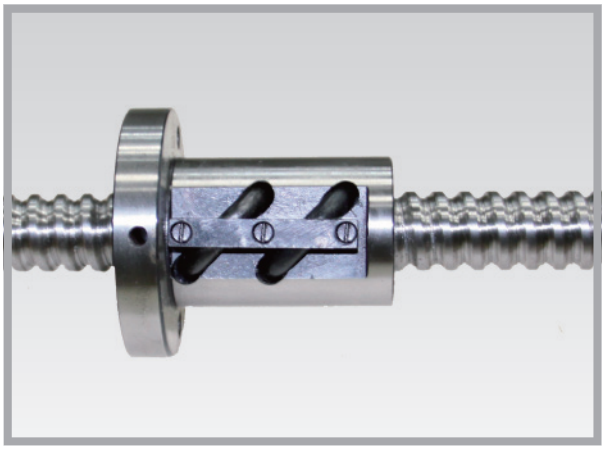
Helix angle β	Cycle turns	Dimension of Nut												Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	X	Y	L	Dynamic	Static	
1°49'	2×1.5+2×1.5	71	110	90	15	4	15	9	9	M8X1	43	54	108	15495	58351	1515
	2×2.5+2×2.5	71	110	90	15	4	15	9	9	M8X1	43	54	124	23144	93460	2460
2°11'	2×1.5+2×1.5	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

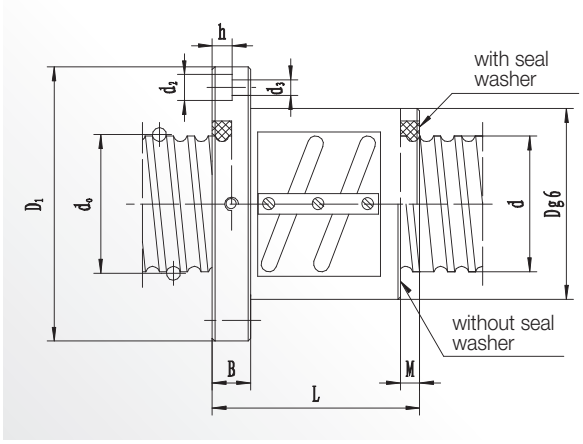
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

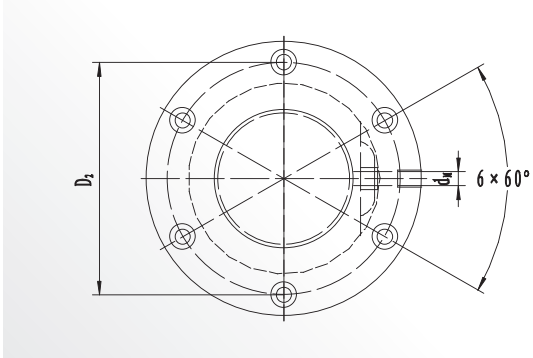
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

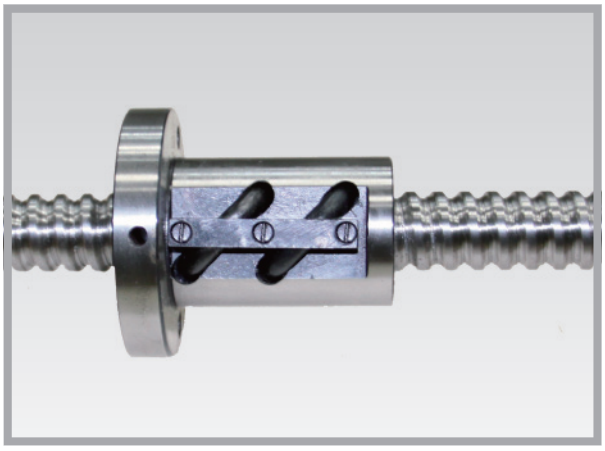
	Helix angle β	Cycle turns	Dimension of Nut									Length of nut		Rated load (N)		Contact rigidity (N/μm)
			Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	FC_2 $FC_2(Z)$	FC_2B	Dynamic	Static	
	3°39'	1×2.5	40	66	53	11	4	10	5.8	6	M6	39	55	5393	12651	555
		2×2.5	40	66	53	11	4	10	5.8	6	M6	55	86	9807	25302	1080
	4°33'	1×2.5	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

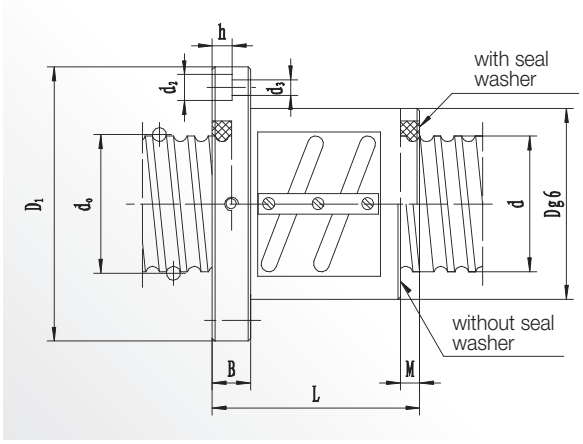
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

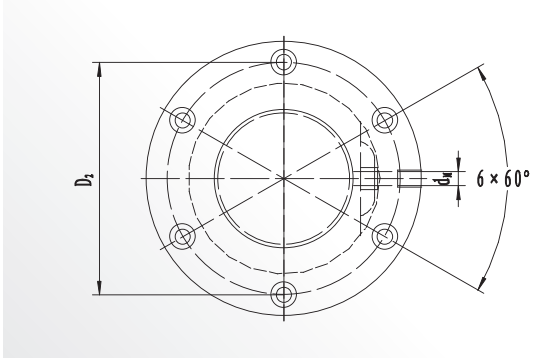
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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_2B	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

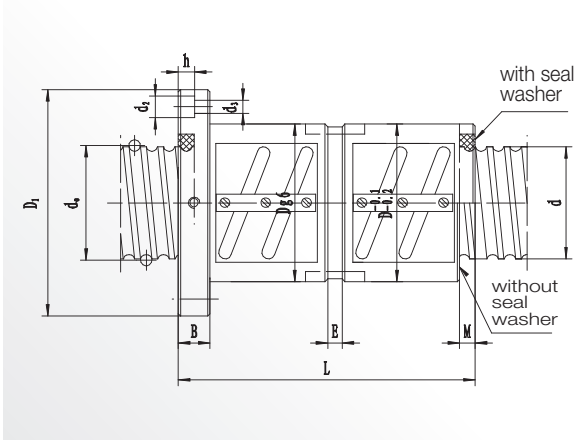
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then $R'=R.far[Fp/0.1Ca]^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

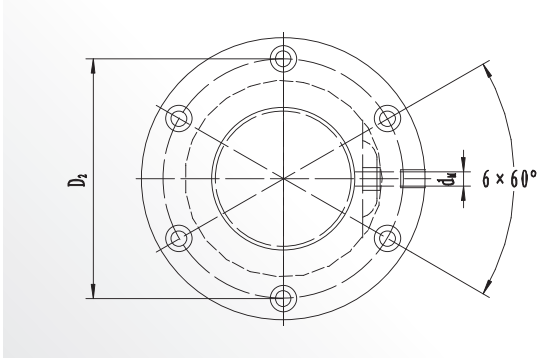
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

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

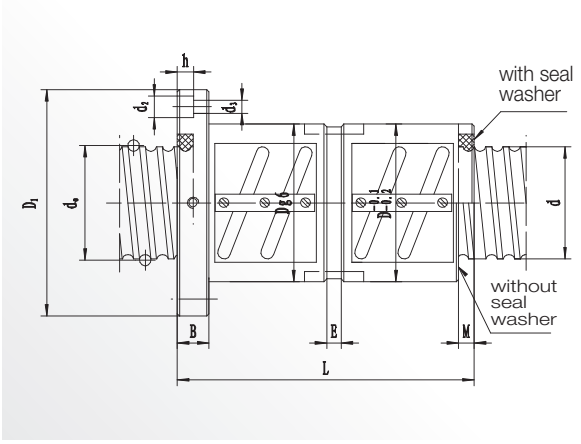
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

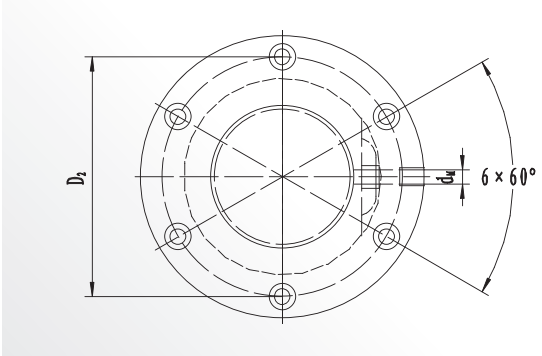
Accuracy class	1	2&3	4&5
far	0.60	0.55	0.50

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					

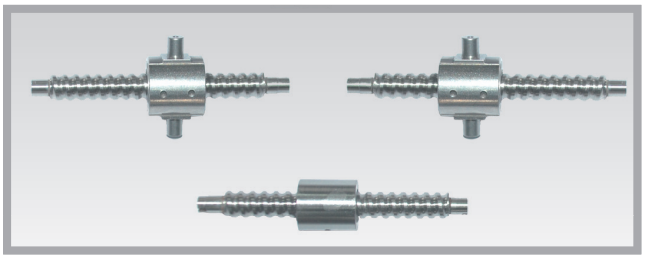
Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)		Contact rigidity (N/μm)
		Dg6	D_1	D_2	B	M	d_2	d_3	h	d_M	L	Dynamic	Static	
1°49'	2x1.5+2x1.5	80	114	95	15	4	15	9	9	M8X1	108	15495	58351	1515
	2x2.5+2x2.5	80	114	95	15	4	15	9	9	M8X1	124	23144	93460	2460
2°11'	2x1.5+2x1.5	85	120	100	15	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

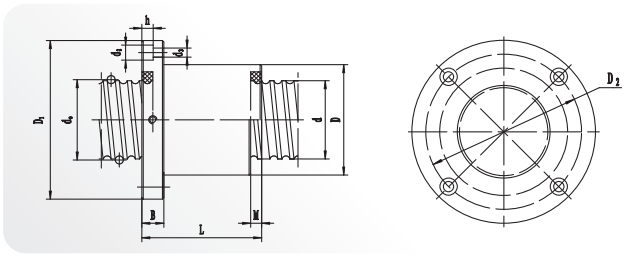
Note:R — axial contact rigidity between race way and ball and the rigidity is a calculated theoretical value according to that Fp=0.1 Ca and axial working load ≤30%Ca. if Fp≠0.1Ca, then R'=R.far[Fp/0.1Ca]$^{1/3}$, where far is the different value in accordance with the different accuracy class as shown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

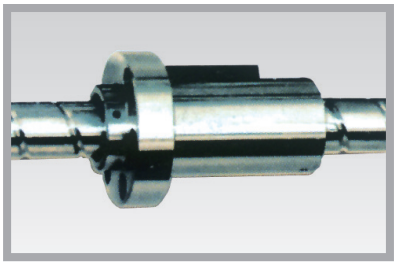


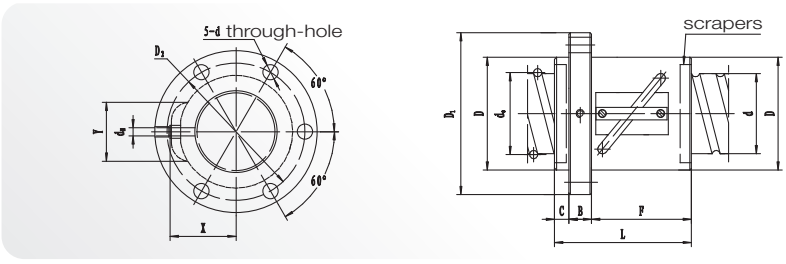


Series No	Nominal dia d_o	Basic lead L_o	Outside dia.of screw d	Helix angle β	Cycle turns	Dimension of Nut									Rated load (N)	
						Dg6	D_1	D_2	B	M	d_2	d_3	h	L	Dynamic	Static
0802-3	8	2	7.7	4°33'	3X1	20	37	27	7	3	8	4.8	4.5	28	1323	2205
1002-3	10	2	9.7	3°39'	3X1	22	42	31	7	3	8	4.8	4.5	29	1470	2842
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

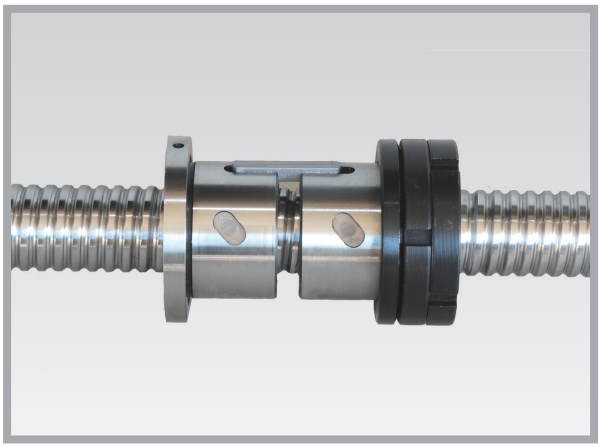


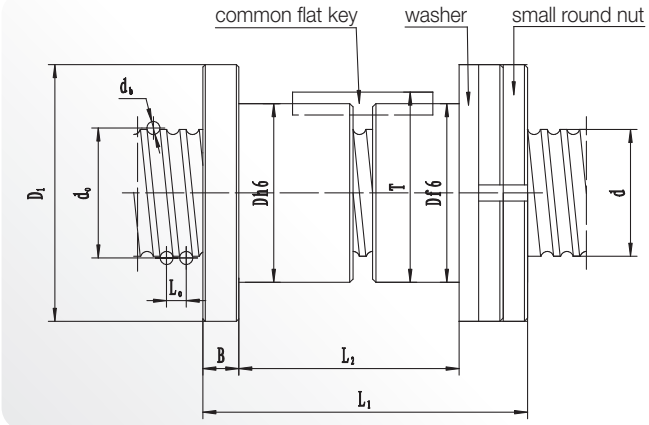


Series No	Nominal dia d_o	Basic lead L_o	Outside dia.of screw d	Dia.of ball d_b	Helix angle β	Cycle turns	Dimension of Nut										Rated load (N)	
							Dg6	D_1	D_2	B	d	M	d_M	X	Y	L	Dynamic	Static
2016-1.5	20	16	19.5	3.175	14°17'	1X1.5	36	60	48	13	7	8	M6	24	26	74	7164	13537
2020-1.5		20	19.5	3.175	17°39'	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

HJG-D

Structure and Characteristics of HJG-D Linear Guides

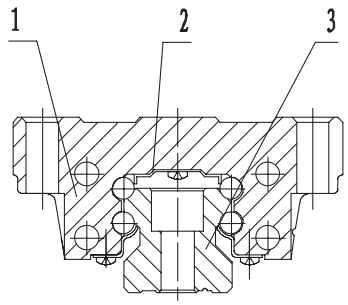
HJG-D linear guide adopts a structure of 4-row circular arc contact type.It has the characteristics of lower differential slide,fine self-adjustment,high bearing load,etc...

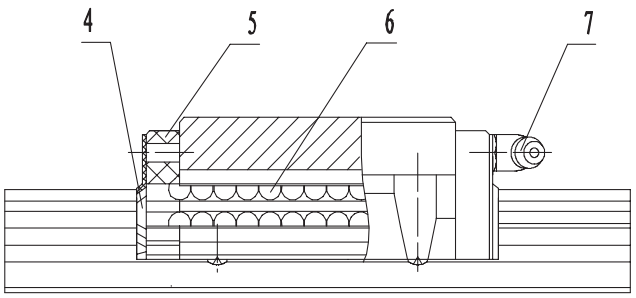
The rail and slider of HJG-D linear guide are made of quality alloy and ground by the special-purposed grinding machines.The rollers set between the rail & slider are kept by the steel retainers to avoid scattering in disassembly. The sealed caps on the ends and scrapers are designed for preventing dust and impurity from coming in.The oil cup and the flow tunnel are also provided for lubrication.

At present, we have HJG-DA, HJG-DB, HJG-DZ series of linear guides for choosing.

HJG-DA, HJG-DB series adopt a structure of 4-row circular arc contact type, characterized by low differential slippage, high self-adjustability, heavy bearing capacity.

HJG-DZ series adopt rollers as rolling elements, characterized by high contact rigidity, super vibration-absorbing, over-load bearing capacity.





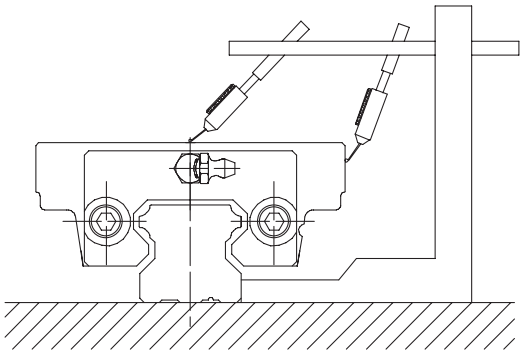
1—sliding block 2—retainer 3—lead rail 4—sealed cups 5—reflector 6—rolling element 7—oil cup

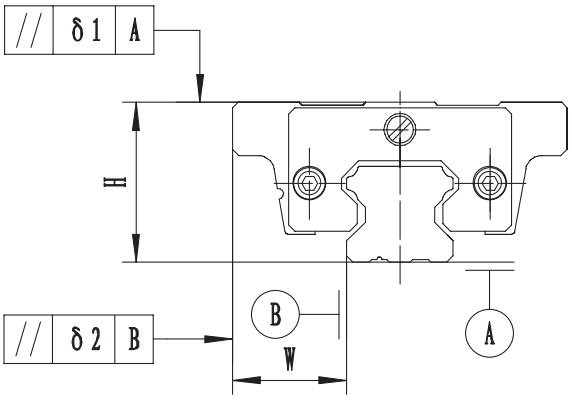
HJG-D

Accuracy of HJG-D Linear Guides

By the standard JB/T7175.4-2006 formulated by the Machinery Industry of the People's Republic of China, accuracy of HJG-D linear rolling guides series are categorized into motion accuracy and overall accuracy.

Measuring methods are shown in the following fige.





HJG-D

Accuracy of HJG-D Linear Guides

■ Motion accuracy

Motion accuracy refers to the parallelism error between lead rail and reference surface of sliding block, measured when the lead rail is fastened by screw bolts on a reference surface, and have the sliding block move along the total length of the lead rail.

length (mm)	accuracy grade					
	1	2	3	4	5	6
	δ1,δ2 (μm)					
≤500	2	4	8	14	20	28
>500~1000	3	6	10	17	25	34
>1000~1500	4	8	13	20	30	40
>1500~2000	5	9	15	22	32	46
>2000~2500	6	11	17	24	34	54
>2500~3000	7	12	18	26	36	62
>3000~3500	8	13	20	28	38	70
>3500~4000	9	15	22	30	40	80

▶ δ2 is only applicable to reference lead rails and not to non-reference ones.

■ Overall accuracy

Variation in height (H for short) in the same group means differences between max. & min. height value of each block mounted in the same plane

Variation in width (W for short) in the same group means differences between max. & min. width value of each block mounted in the same plane

Note: 1. When more than 2 rails are used in the same plane, variation in the width is only applicable to reference rail marked with the letter “J”, following the serial numbers printed on the reference rail.

2. H and W shall be obtained by measuring the block center in the middle of the rail when the linear guide has been fixed on platform.

item	accuracy grade					
	1	2	3	4	5	6
	(μm)					
tolerance of H	±5	±12	±25	±50	±100	±200
variation in height	3	5	7	20	40	60
tolerance of W	±8	±15	±30	±60	±150	±240
variation in width	5	7	10	25	70	100

▶ W is only applicable to reference rail and not to non—reference ones.

HJG-D

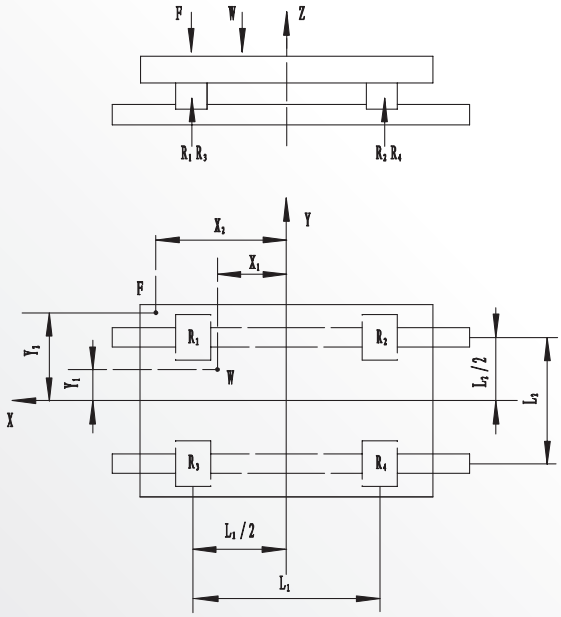
Load Calculation for HJG-D Linear Guides

The load borne on linear guides is influenced by the following factors: setting forms (horizontal, vertical, crosswise, etc.), gravity center of moving parts, force-bearing point, the point of application of tractive force, starting and stopping inertias, cutting force, etc.

When deciding on the size and quantity of linear guides, firstly the load shall be calculated by theories on Engineering Mechanics, and then in accordance with the space layout, suitable size and quantity can be defined.

■ **The following Figure shows how to calculate the load that each sliding block bears under different conditions:**

table with 4 sliders



W: table weight

F: external load

R: reacting force of slider

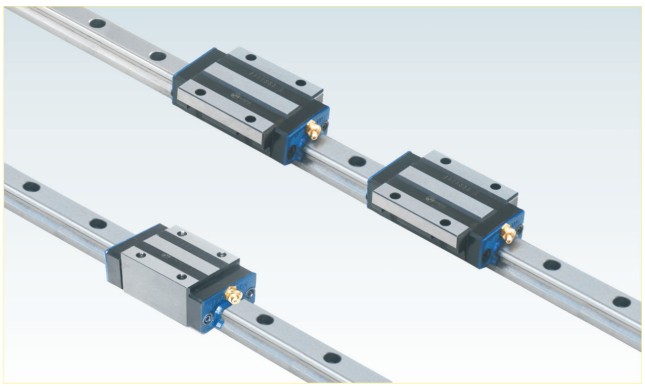
$$R_1 = \frac{F+W}{4} + \frac{WY_1+FY_2}{2L_2} + \frac{WX_1+FX_2}{2L_1}$$

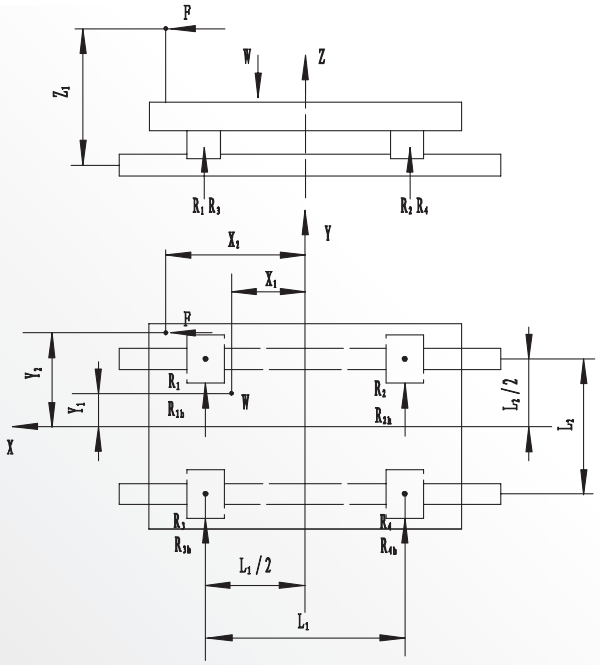
$$R_2 = \frac{F+W}{4} + \frac{WY_1+FY_2}{2L_2} - \frac{WX_1+FX_2}{2L_1}$$

$$R_3 = \frac{F+W}{4} - \frac{WY_1+FY_2}{2L_2} + \frac{WX_1+FX_2}{2L_1}$$

$$R_4 = \frac{F+W}{4} - \frac{WY_1+FY_2}{2L_2} - \frac{WX_1+FX_2}{2L_1}$$







$$R_1 = \frac{W}{4} + \frac{WY_1}{2L_2} + \frac{WX_1 + FZ_2}{2L_1}$$

$$R_2 = \frac{W}{4} + \frac{WY_1}{2L_2} - \frac{WX_1 + FZ_2}{2L_1}$$

$$R_3 = \frac{W}{4} - \frac{WY_1}{2L_2} + \frac{WX_1 + FZ_2}{2L_1}$$

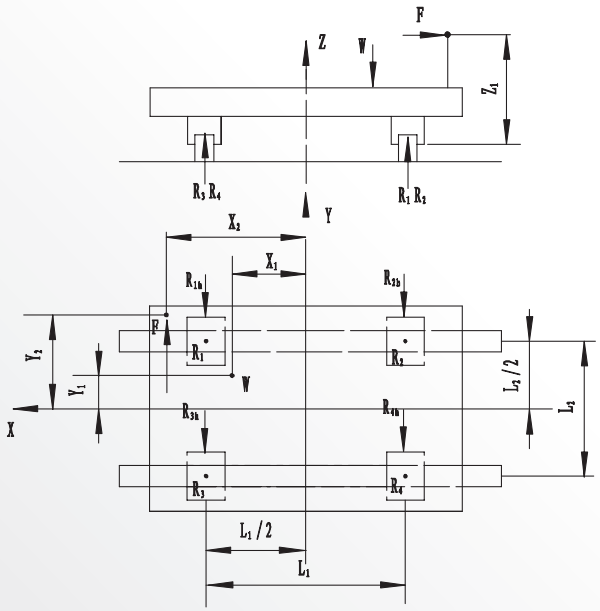
$$R_4 = \frac{W}{4} - \frac{WY_1}{2L_2} - \frac{WX_1 + FZ_2}{2L_1}$$

$$R_{1h} = \frac{FY_2}{2L_1}$$

$$R_{2h} = -\frac{FY_2}{2L_1}$$

$$R_{3h} = \frac{FY_2}{2L_1}$$

$$R_{4h} = -\frac{FY_2}{2L_1}$$



$$R_1 = \frac{W}{4} + \frac{WX_1}{2L_1} + \frac{WY_1 + FZ_1}{2L_2}$$

$$R_2 = \frac{W}{4} - \frac{WX_1}{2L_1} + \frac{WY_1 + FZ_1}{2L_2}$$

$$R_3 = \frac{W}{4} + \frac{WX_1}{2L_1} - \frac{WY_1 + FZ_1}{2L_2}$$

$$R_4 = \frac{W}{4} - \frac{WX_1}{2L_1} - \frac{WY_1 + FZ_1}{2L_2}$$

$$R_{1h} = \frac{F}{4} + \frac{FX_2}{2L_1}$$

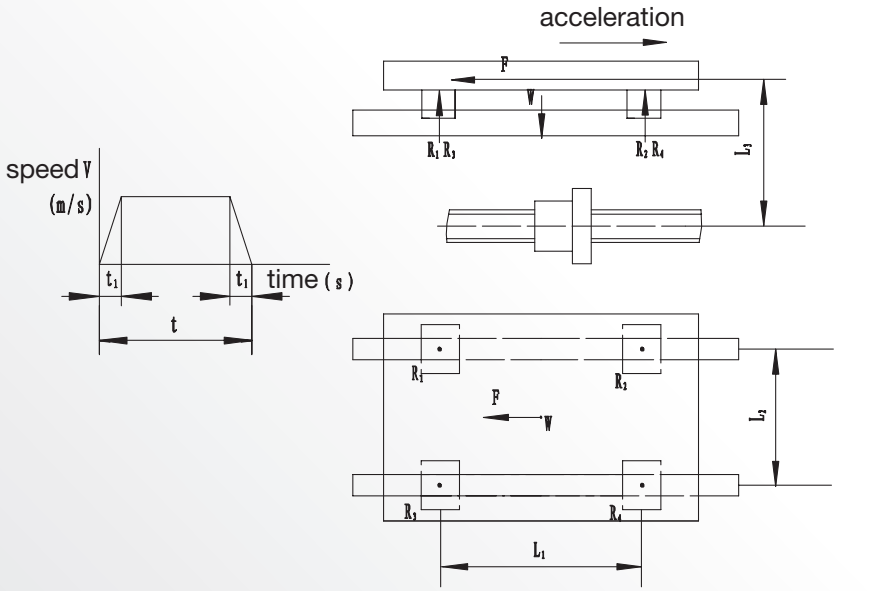
$$R_{2h} = \frac{F}{4} - \frac{FX_2}{2L_1}$$

$$R_{3h} = \frac{F}{4} + \frac{FX_2}{2L_1}$$

$$R_{4h} = \frac{F}{4} - \frac{FX_2}{2L_1}$$

HJG-D

Load Calculation for HJG-D Linear Guides



g: gravity acceleration

V: speed

L_3: distance between ball screw and F

$$R_2 = R_4 = \frac{W}{4} - \frac{L_3}{2L_1}\frac{V}{g\,t_1}W$$

$$R_1 = R_3 = \frac{W}{4} + \frac{L_3}{2L_1}\frac{V}{g\,t_1}W$$

when uniform motion

$$R_1 = R_2 = R_3 = R_4 = \frac{W}{4}$$

■ **If the load is varying over the total traverse, design load ought to be defined according to the following formulas.**

1. for the design load varying in segments fashion:

When rolling elements are balls, $P_C = \sqrt[3]{(P_1^3L_1 + P_2^3L_2 + \ldots + P_n^3L_n)/L}$

When rolling elements are rollers, $P_C = \sqrt[10/3]{(P_1^{10/3}L_1 + P_2^{10/3}L_2 + \ldots + P_n^{10/3}L_n)/L}$

P_n-load corresponding to the segmental traverse (KN); L_n-segmental traverse (KM); L-total traverse and equals ΣL_n

2. for the design load varying in linear fashion:

$P_c=(P_{min}+2P_{max})/3$ (KN)

3. for the design load varying in full-sine wave fashion

$P_c = 0.65\ P_{max}$ (KN)

4. for the design load varying in semi-sine wave fashion

$Pc = 0.75\ P_{max}$ (KN)

5. for the design load bearing both vertical (Pv) and horizontal (P_h) directions at the same time

$\vec{P}_C=\vec{P}_V+\vec{P}_h$ (KN)

6. for the design load bearing torque M at the same time

$P_C=P_O+C_O\frac{M}{M_t}$ (KN)

P_O----external load (KN); c_o----rated static load (KN); M----torque for external load (N.m);

M_t----rated torque, referring to M_A,M_B,M_C

HJG-D

Load Calculation for HJG-D Linear Guides

■ **Rated life calculation of linear guides:**

Ball-type linear guides: $$L = 50 \left(\frac{f_h f_t f_c f_a}{f_w} \frac{C}{P_C} \right)^3 (Km)$$

Roller-type linear guides: $$L = 100 \left(\frac{f_h f_t f_c f_a}{f_w} \frac{C}{P_C} \right)^{10/3} (Km)$$

Where: L----rated life (Km); C----rated dynamic load (KN);

P_c ----design load (KN); f_t-temperature coefficient (see table 1);

f_c----contact coefficient (see table 2);

f_a----quality coefficient (see table 3);

f_w----load coefficient (see table 4);

f_h----hardness coefficient

$$f_h = \left(\frac{\text{actual hardness of ball track HRC}}{58} \right)^{3.6}$$

In general, according to the technical stipulations, f_h=1 as ball track of HJG-D linear rolling guides should not be less than HRC58.

■ **Life time calculation**

When traverse is defined, rated life (time measured in hours):

$$L_h = \frac{L \times 10^3}{2 \times l \times n \times 60} \approx \frac{8.3\, L}{l \times n} (h)$$

Where: l----traverse length (m); n----reciprocating times per minute; L----rated life (Km); L_h----life time (h).

Temperature coefficient f_t (table 1)

work temperature(℃)	≤100	100~150	150~200	200~250
f_t	1.00	0.90	0.73	0.60

Contact coefficient f_c (table 2)

sliding block number on every rail	1	2	3	4	5
f_c	1.00	0.81	0.72	0.66	0.61

Accuracy factor f_a (table 3)

Grade	1	2	3	4	5
f_a	1.0	1.0	1.0	0.9	0.9

Load coefficient fw (table 4)

work condition	f_w
in low speed operation without external impact or vibration, V≤15m/mim	1~1.5
in middle speed operation without obvious external impact or vibration, 15<V≤60m/mim	1.5~2
in high speed operation with external impact or vibration, V>60m/mim	2~3.5

HJG-D

Setting up of Linear Guides

■ Setting up of linear rolling guides:

Trim the tiny deformations and de-burr on the erection datum plane for the rails by oilstone and then clean the reference surface of rails.

Clean rust-proof grease on the rail and identify profile datum planes of the rail (the side close to the small arc on the bottom and the side with small arc or marked with words on the block), then align the bottom surface and profile datum planes of the rail with the erection datum plane, pre-tighten the rail by the locking screws. The tightening force shall not be too much and make sure the bottom surface and the profile datum plane of the rail must be completely fit with the erection datum plane.

Having finished all the above mentioned, tighten gradually, from the middle to the two ends in a crossed manner, all the locking screws, and then check accuracy and begin setting up the next linear guide by the same way.

■ Clamping:

Fig. 1 shows the most common way of clamping.

The working surface of the clamping plate is under-cut into two parts, any of which is to be trimmed according to actual situation so that the rail or the slider can be tightly pressed by the clamping plate. If the clamping manner shown in Fig.1 is not used, the clamping manner shown in Fig. 2 or other auxiliary means must be adopted to ensure a close bonding of the profile datum plane and the erection datum plane; otherwise smartness of linear movement may be influenced.

In addition to above mentioned clamping manners, users can, according to concrete condition, design or decide other manners of clamping on their own. Fig. 3 is our recommendation for users' reference.

Fig.1 / Fig.2

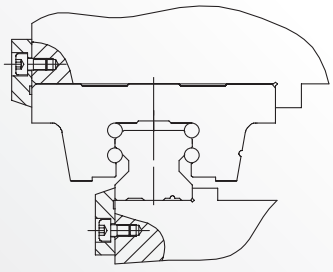


Fig. 1

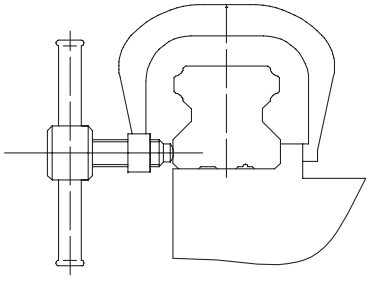
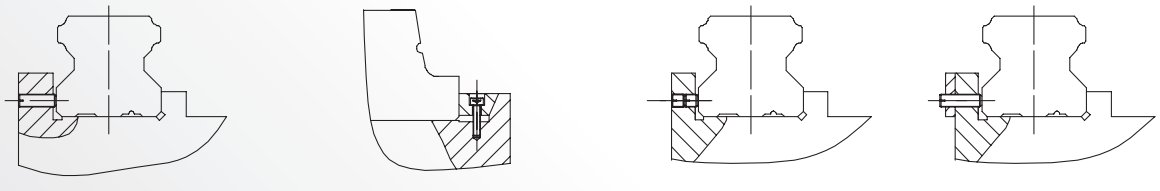


Fig. 2

Fig.3



■ Notice to setting up & design

HJG-D Linear Guide is of constraint structure, able to bear loads from up, down, right and left directions. Therefore, it is important to design an optimal structure fit for mechanism and load bearing direction.

1.When two rails are mounted in the same plane, and the bearing load is impact load while high accuracy is required, then locating surfaces on both sides of rails and sliders shall be given. See Fig. 1 shown as under:

Fig.1

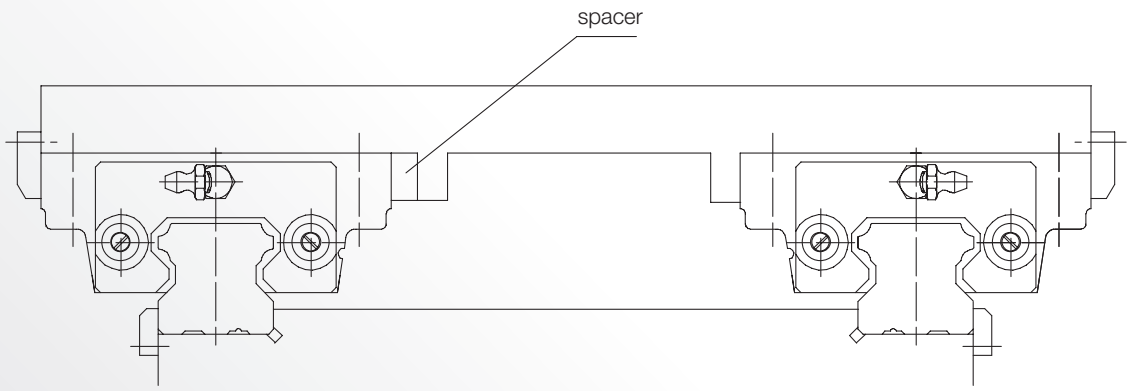


Fig. 2 and Fig.3 show the most common mounting manners.

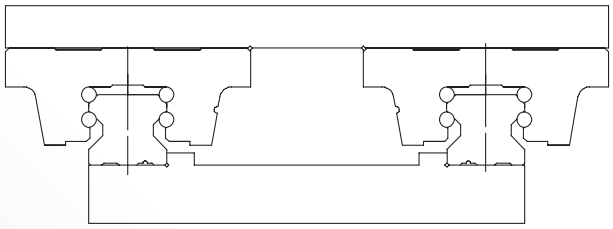


Fig. 2

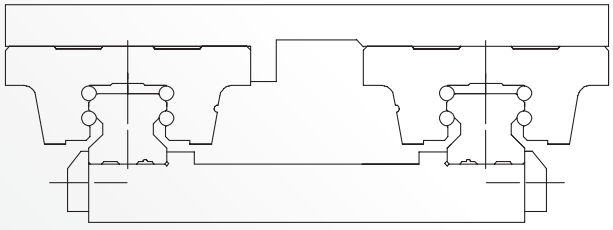
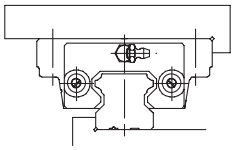


Fig. 3

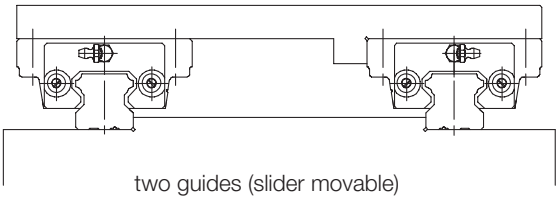
HJG-D

HJG-D Linear Guides Setting up

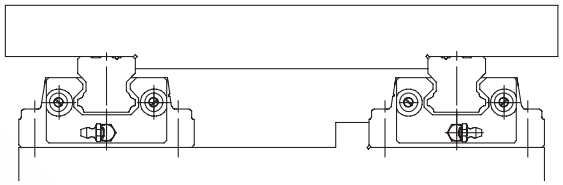
3. Other mounting manners:



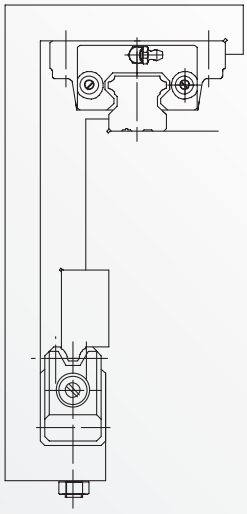
one guide



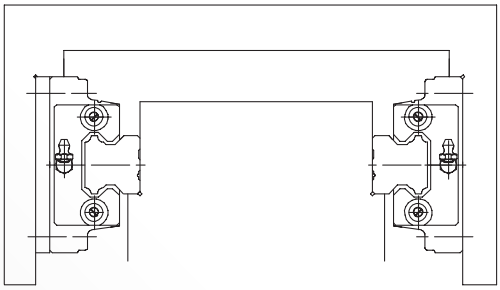
two guides (slider movable)



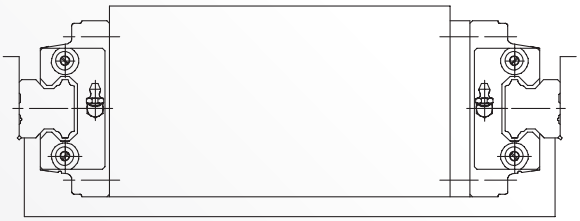
two guides (guides movable)



combination of common type
with single-row type (1)

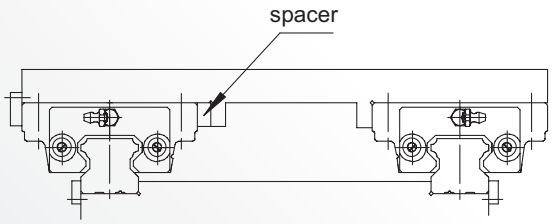


two guides opposite (1)



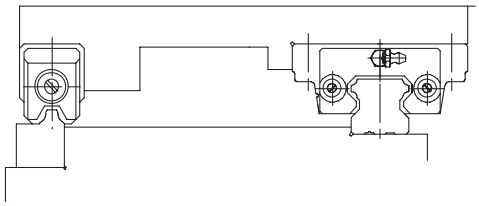
two guides opposite (2)

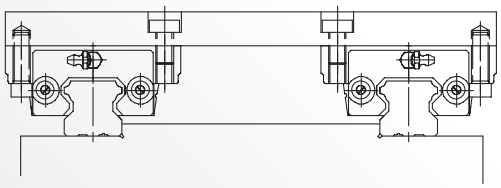
Examples of special assembly



all-fixed assembly

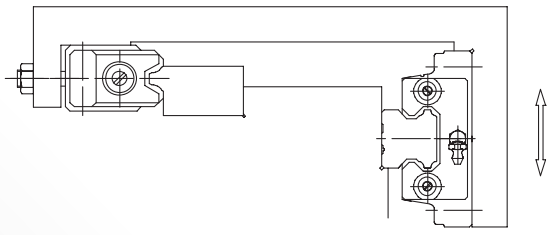
combination of common type with single-row type (wide platform)





locking bolts of sliders are from up and down directions

combination of common type with single-row type (cantilever load)



HJG-D

HJG-D Linear Guides Setting up

■ Notice to setting-up and application

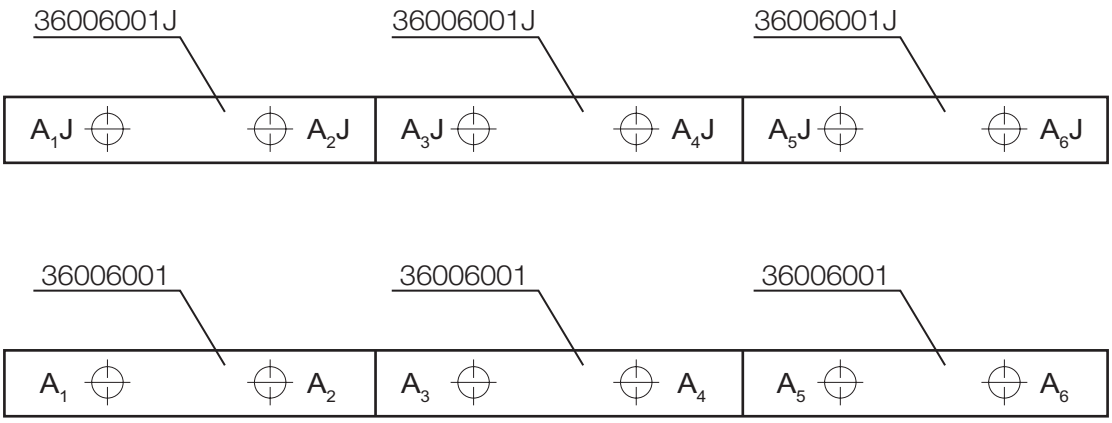
1. When mounting linear guides used in pairs, attention shall be paid to their pair numbers. The linear guide with a letter "J" marked at the end of number is the reference guide.

   For example: 36006009J (a reference guide)

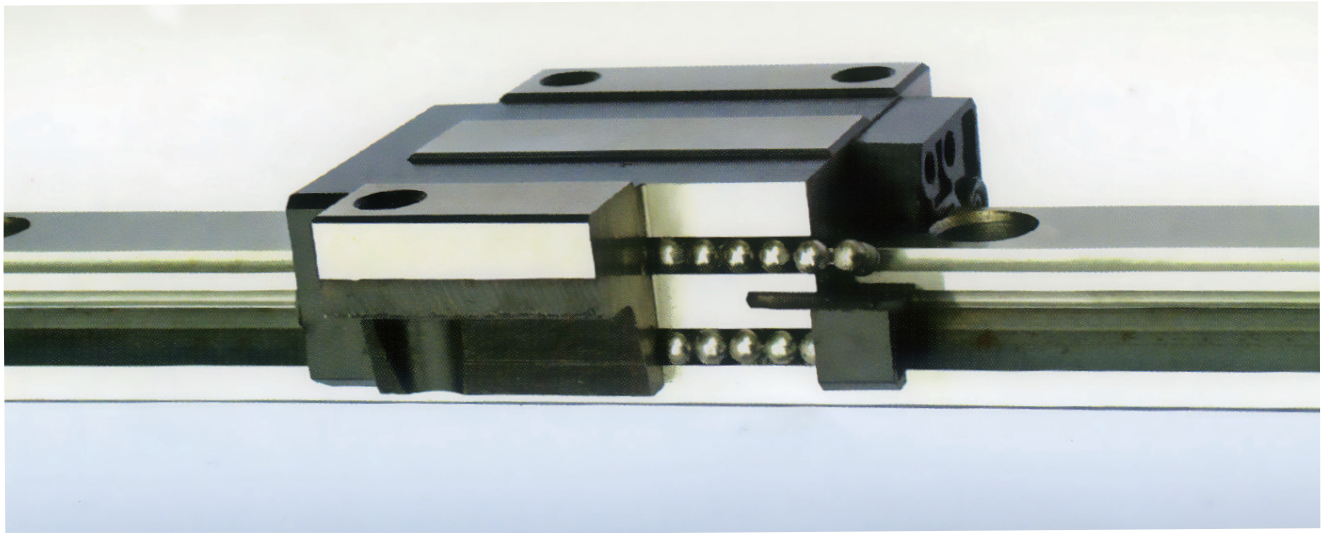
   36006009 (a non-reference guide)

2. When mounting extension linear guides used in pairs, attention shall be paid to their serial numbers.

   For example:

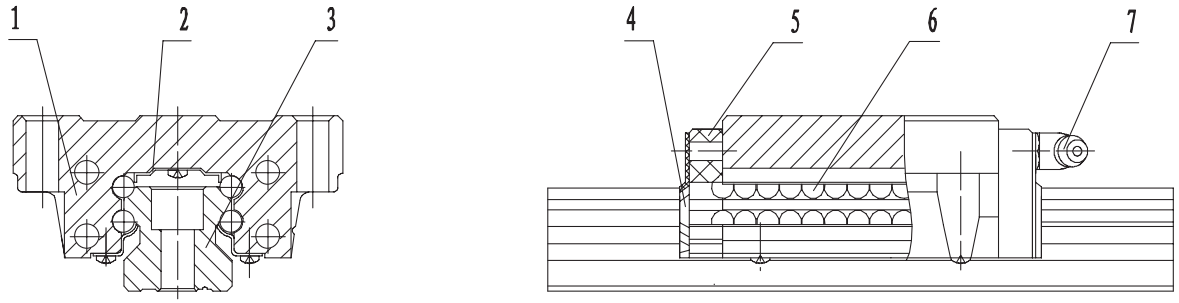


3. As a type of precision rolling components, HJG-D linear guides have been carried out performance test before delivery. Therefore, the users are not recommended to dismantle them on their own in case of losing original accuracy and flexibility. If the users have to do it under special circumstances, please contact the factory to ask for "transition guide" to entry of foreign impurity.



HJG-DA,DB HJG-DA, DB Series of Linear Guides

HJG-DA, DB linear rolling guides are comprised of lead rail, sliding block, steel balls, reflector, retainer, sealing device, etc. Between lead rail and sliding block, both made of superior alloy steel and ground by special-purposed grinding machine, installs rolling elements that are held by retainers to prevent scattering when disassembling. On the ends sealed caps and scrapers are designed to prevent dust and impurity from entering; oil cups and flow tunnel are also provided for lubrication.



1—sliding block 2—retainer 3—lead rail 4—sealed cups 5—reflector 6—steel balls 7—oil cup

HJG-DA,DB

Features of HJG-DA, DB Series of Linear Guides

- **Equal load from 4 directions**

  The contact angle of 45 degree between elements and groove renders equal loads from radial, anti-radial and horizontal direction.

- **High rigidity and high load**

  The 4-row-circular-groove design increases contacting area, hence a big load-bearing capacity, improvement in contact and system stiffness in comparison with 2-row-circular-groove design.

- **High accuracy**

  Multi-surface grinding synchronously by special CNC machine, together with laser measuring means, ensures manufacturing accuracy.

- **Smooth running, low noise and free-pollution**

  The design of special returning system, reflecting and guiding system made of special synthetic resin, guarantee linear movement with smoothness and low noise.

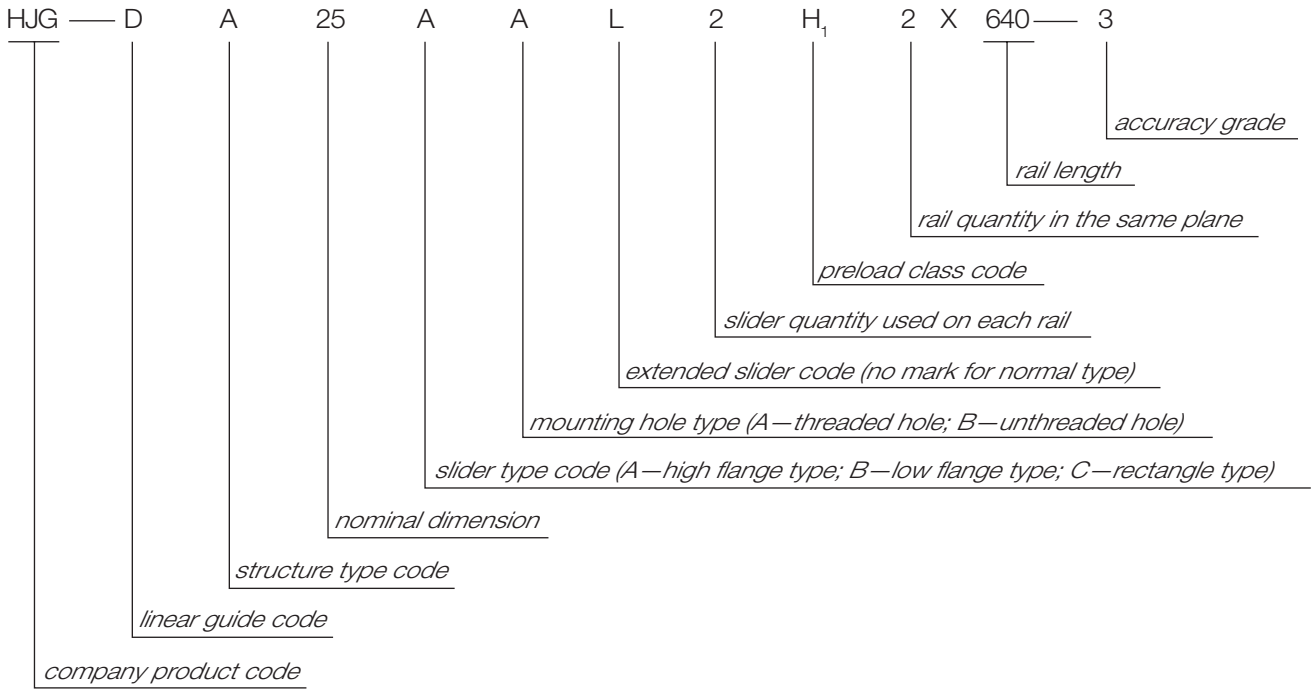
- **Compact structure**

  Small size and high rigidity ensure a compact structure of the machine.

- **Easy mounting**

  HJG-DA, DB series linear rolling guides have no harsh requirements for users setting up.

HJG-DA,DB Definition list of HJG-DA, DB Linear Guides



HJG-DA,DB

Preload of HJG-DA, DB Linear Guides

■ **The selecting of preload is mainly accordance with different impact, vibration and accuracy.**

The following table is given for reference when selecting preload:

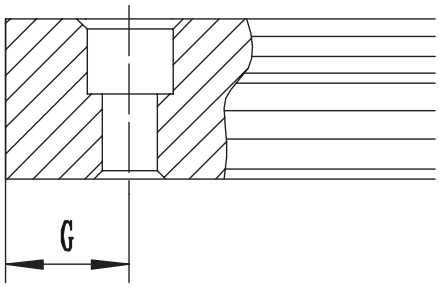
preload classification	working condition	recommended applications
micro pre-loadH_0	1. non-impact load 2. more guides in juxtaposition	1. welding machines, packing machines and other machines without high accuracy demands 2. material supply devices
light pre-loadH_1	1. load direction fixed, impact, small vibration 2. used as auxiliary gudie 3. light load with high precision, non—reference guide	1. devices bearing light load and high precision 2. common machines 3. non—reference on precision machines
medium pre-loadH_2	1. overhanging or subversion load 2. only one block 3. small load with high precision reference guide	1. machine hands or robots 2. CNC machines, EDM machine tools, wire-cut machines, precision worktable
heavy pre-loadH_3	1. high rigidity, impact, heavy vibration 2. machines bearing strong cutting force	1. all kinds of machine tools or machining centers 2. lathes, milling and boring machines, CNC machines

HJG-DA,DB *Recommended range of G value for HJG-DA, DB Linear Guides*

When G value is undersized, machining of the flat-scrapped hole on the end of guide will be effected;

When G value is oversized, reliability and accuracy on the end of guide will be undermined

The following recommended G values are given for reference



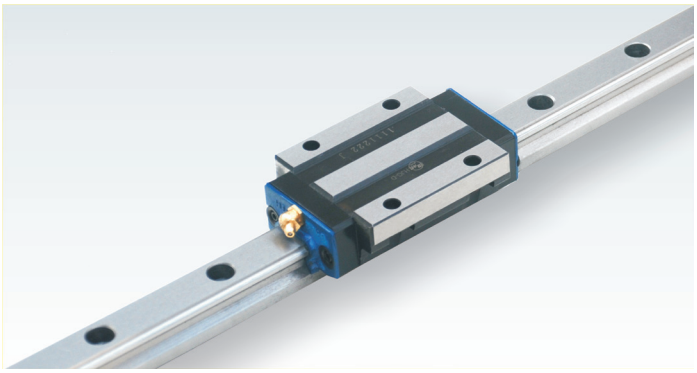
G	minimum value	maximum value	recommended value
DA15	6	30	20
DA20	8	30	20
DA25	9	30	20
DA30	10	40	20
DA35	10	40	20
DA45	13	50	25
DB45	13	52.5	25
DA55	16	60	30
DB55	15	60	30
DA65	16	75	35
DA85	21	90	45

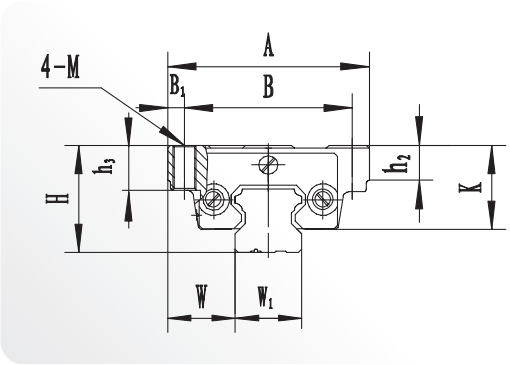




HJG-DA

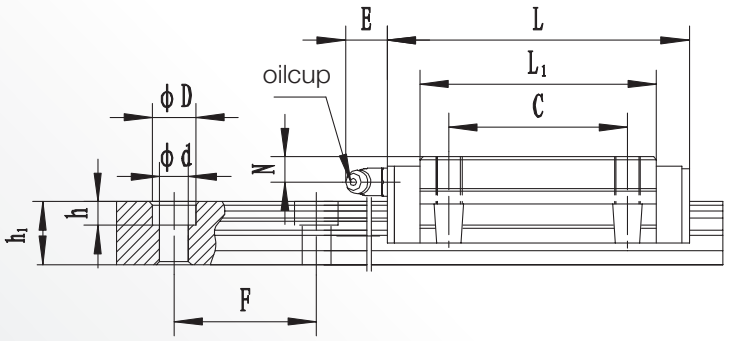
HJG-DA Specifications (threaded-hole type of slider)



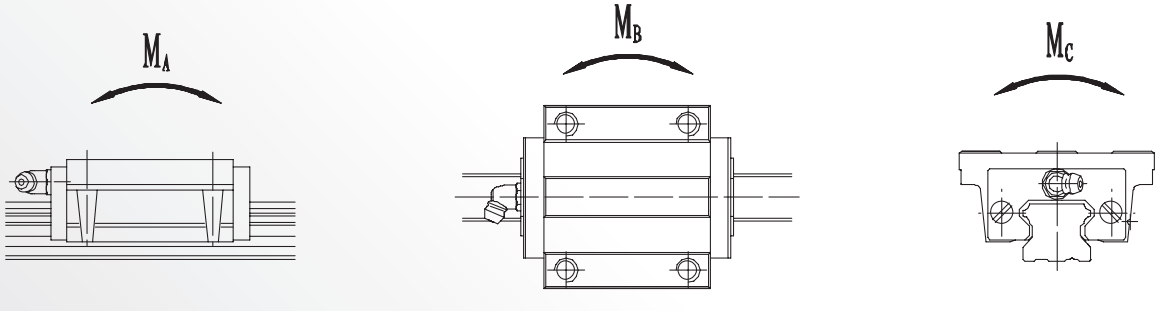


nominal model	module size		slider dimension												
	H	W	A	B	B_1	K	C	h_2	h_3	L_1	L	N	E	M	
DA15AA	24	16	47	38	4.5	19.4	30	7	11	38.2	58.2	4.5	5.5	M5	
DA20AA DA20AAL	30	21.5	63	53	5	25	40	10	10	50 66	76 92	5	12	M6	
DA25AA DA25AAL	37	23.5	70	57	6.5	30	45	12	16	59 78	86 105	6	12	M8	
DA25BA DA25BAL	36	23.5	70	57	6.5	29	45	12	16	59 78	86 105	5	12	M8	
DA30AA DA30AAL	42	31	90	72	9	34	52	10	18	70 92	103 125	7	12	M10	
DA35AA DA35AAL	50	33	100	82	9	40.5	62	13	21	80 105	109 134	8	12	M10	
DA35BA DA35BAL	48	33	100	82	9	38.5	62	13	21	80 105	109 134	6	12	M10	
DA45AA DA45AAL	62	37.5	120	100	10	51	80	15	25	98 130	138 170	9	16	M12	
DA45BA DA45BAL	60	37.5	120	100	10	49	80	15	25	98 130	138 170	7	16	M12	
DA55AA DA55AAL	72	43.5	140	116	12	58	95	17	30	118 156	161 199	11	16	M16	
DA55BA DA55BAL	70	43.5	140	116	12	56	95	17	30	118 156	161 199	9	16	M14	
DA65AA DA65AAL	90	53.5	170	142	14	76	110	23	37	147 207	198 258	16	16	M16	
DA85AA DA85AAL	110	65	215	185	15	94	140	30	55	179 236	241 298	16	16	M20	

Linear Guide

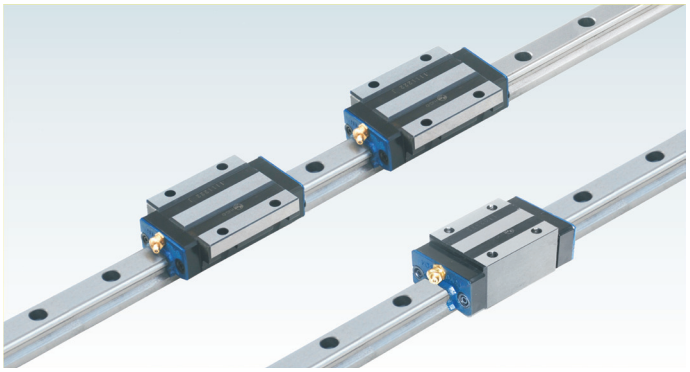


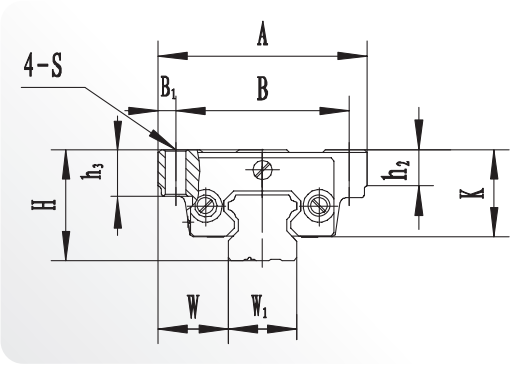
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	15	15	4.5×7.5×5.3	60	6.8	12.1	66	66	90	0.2	1.5
	20	18	6×9.5×8.5	60	12.6 19.5	21.8 29.1	143 248	143 248	213 284	0.35 0.47	2.3
	23	22	7×11×9	60	18.2 24.9	31.5 42.1	248 421	248 421	360 466	0.6 0.76	3.3
	23	22	7×11×9	60	18.2 24.9	31.5 42.1	248 421	248 421	360 466	0.57 0.72	3.3
	28	26	9×14×12	80	25.7 34.2	42.9 57.3	394 670	394 670	592 789	1.1 1.3	4.6
	34	29	9×14×12	80	34.2 46	56 74.7	589 1000	589 1000	942 1259	1.7 2.1	6.2
	34	29	9×14×12	80	34.2 46	56 74.7	589 1000	589 1000	942 1259	1.6 1.9	6.2
	45	38	14×20×16	100	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	3 3.5	11.1
	45	38	14×20×16	100	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.8 3.3	11.1
	53	44	18×26×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.7 6	14.9
	53	44	18×26×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.4 5.7	14.9
	63	53	18×26×22	150	129.6 176.4	197.1 262.8	3876 6590	3876 6590	6090 8133	8.5 10.7	21.7
	85	65	24×35×28	180	210 282	310 412	9850 11800	9850 11800	10630 13570	17 23	36.1



HJG-DA

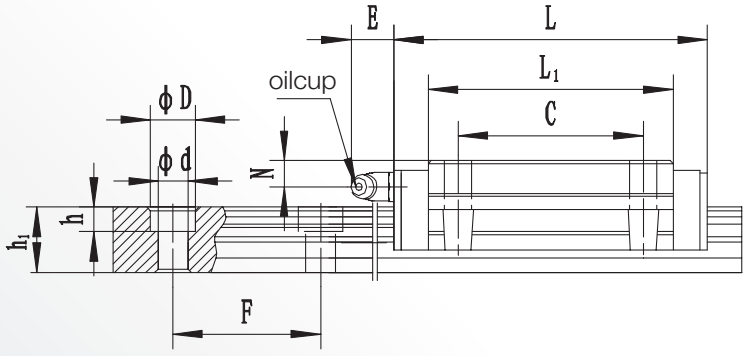
HJG-DA Specifications (unthreaded-hole type of slider)



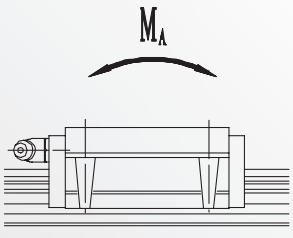


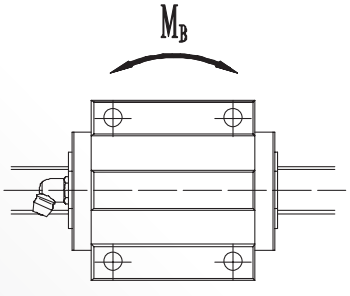
nominal model	module size		slider dimension												
	H	W	A	B	B_1	K	C	h_2	h_3	L_1	L	N	E	S	
DA15AB	24	16	47	38	4.5	19.4	30	7	11	38.2	58.2	4.5	5.5	Φ4.5	
DA20AB DA20ABL	30	21.5	63	53	5	25	40	10	10	50 66	76 92	5	12	Φ6	
DA25AB DA25ABL	37	23.5	70	57	6.5	30	45	12	16	59 78	86 105	6	12	Φ7	
DA25BB DA25BBL	36	23.5	70	57	6.5	29	45	12	16	59 78	86 105	5	12	Φ7	
DA30AB DA30ABL	42	31	90	72	9	34	52	10	18	70 92	103 125	7	12	Φ9	
DA35AB DA35ABL	50	33	100	82	9	40.5	62	13	21	80 105	109 134	8	12	Φ11	
DA35BB DA35BBL	48	33	100	82	9	38.5	62	13	21	80 105	109 134	6	12	Φ9	
DA45AB DA45ABL	62	37.5	120	100	10	51	80	15	25	98 130	138 170	9	16	Φ11	
DA45BB DA45BBL	60	37.5	120	100	10	49	80	15	25	98 130	138 170	7	16	Φ11	
DA55AB DA55ABL	72	43.5	140	116	12	58	95	17	30	118 156	161 199	11	16	Φ13	
DA55BB DA55BBL	70	43.5	140	116	12	56	95	17	30	118 156	161 199	9	16	Φ14	
DA65AB DA65ABL	90	53.5	170	142	14	76	110	23	37	147 207	198 258	16	16	Φ16	
DA85AB DA85ABL	110	65	215	185	15	94	140	30	55	179 236	241 298	16	16	Φ18	

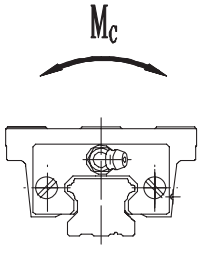
Linear Guide



	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	15	15	4.5×7.5×5.3	60	6.8	12.1	66	66	90	0.2	1.5
	20	18	6×9.5×8.5	60	12.6 19.5	21.8 29.1	143 248	143 248	213 284	0.35 0.47	2.3
	23	22	7×11×9	60	18.2 24.9	31.5 42.1	248 421	248 421	360 466	0.6 0.76	3.3
	23	22	7×11×9	60	18.2 24.9	31.5 42.1	248 421	248 421	360 466	0.57 0.72	3.3
	28	26	9×14×12	80	25.7 34.2	42.9 57.3	394 670	394 670	592 789	1.1 1.3	4.6
	34	29	9×14×12	80	34.2 46	56 74.7	589 1000	589 1000	942 1259	1.7 2.1	6.2
	34	29	9×14×12	80	34.2 46	56 74.7	589 1000	589 1000	942 1259	1.6 1.9	6.2
	45	38	14×20×16	100	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	3 3.5	11.1
	45	38	14×20×16	100	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.8 3.3	11.1
	53	44	18×26×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.7 6	14.9
	53	44	18×26×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.4 5.7	14.9
	63	53	18×26×22	150	129.6 176.4	197.1 262.8	3876 6590	3876 6590	6090 8133	8.5 10.7	21.7
	85	65	24×35×28	180	210 282	310 412	9850 11800	9850 11800	10630 13570	17 23	36.1

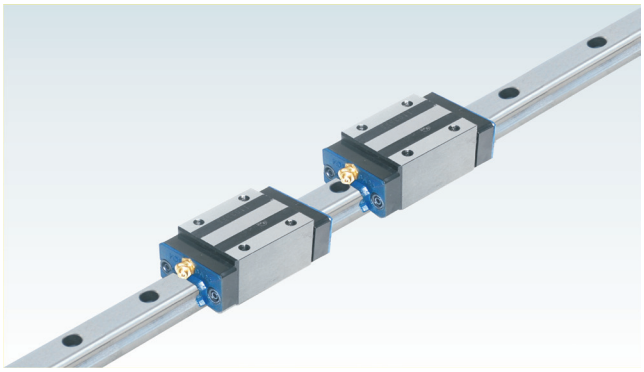


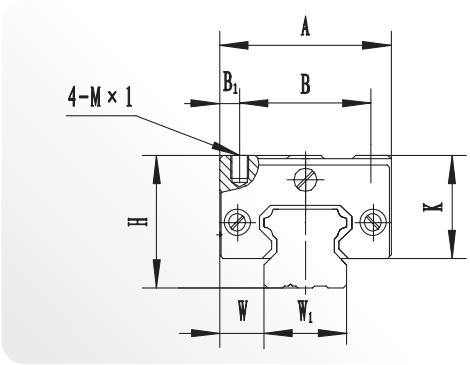




HJG-DA

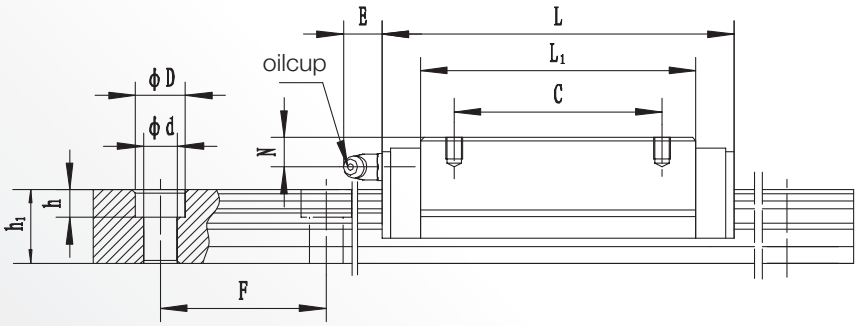
HJG-DA Specifications (rectangle type of slider)



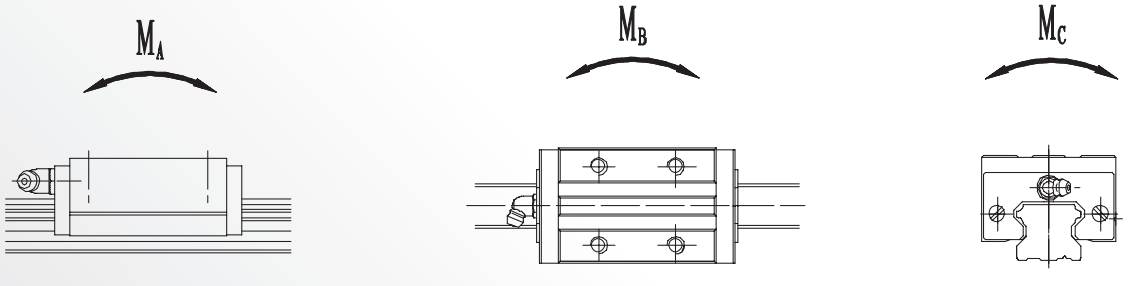


nominal model	module size		slider dimension										
	H	W	A	B	B_1	K	C	L_1	L	N	E	M×1	
DA15C	28	9.5	34	26	4	23.4	26	38.2	58.2	8.5	5.5	M4×5	
DA20C DA20CL	30	12	44	32	6	25	36 50	50 66	76 92	5	12	M5×6	
DA25C DA25CL	40	12.5	48	35	6.5	33	35 50	59 78	86 105	10	12	M6×8	
DA30C DA30CL	45	16	60	40	10	37	40 60	70 92	103 125	10	12	M8×10	
DA35C DA35CL	55	18	70	50	10	47	50 72	80 105	109 134	15	12	M8×12	
DA45C DA45CL	70	20.5	86	60	13	60	60 80	98 130	138 170	20	16	M10×17	
DA55C DA55CL	80	23.5	100	75	12.5	67	75 95	118 156	161 199	21	16	M12×18	
DA65C DA65CL	90	31.5	126	76	25	76	70 120	147 207	198 258	16	16	M16×20	
DA85C DA85CL	110	35.5	156	100	28	94	80 140	179 236	241 298	16	16	M18×25	

Linear Guide

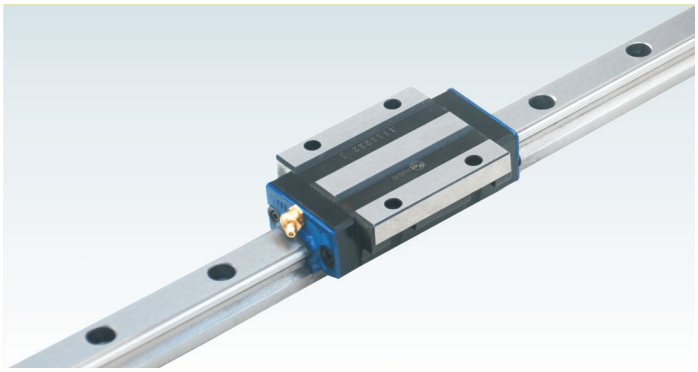


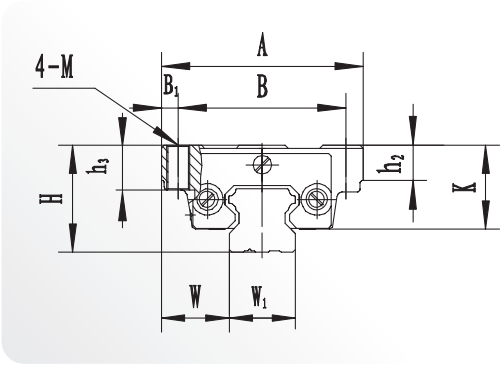
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	15	15	4.5×7.5×5.3	60	6.8	12.1	66	66	90	0.18	1.5
	20	18	6×9.5×8.5	60	12.6 19.5	21.8 29.1	143 248	143 248	213 284	0.25 0.35	2.3
	23	22	7×11×9	60	18.2 24.9	31.5 42.1	248 421	248 421	360 466	0.54 0.67	3.3
	28	26	9×14×12	80	25.7 34.2	42.9 57.3	394 670	394 670	592 789	0.9 1.1	4.6
	34	29	9×14×12	80	34.2 46	56 74.7	589 1000	589 1000	942 1259	1.5 2	6.2
	45	38	14×20×16	100	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.6 3.1	11.1
	53	44	18×26×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.3 5.4	14.9
	63	53	18×26×22	150	129.6 176.4	197.1 262.8	3876 6590	3876 6590	6090 8133	7.3 9.3	21.7
	85	65	24×35×28	180	210 282	310 412	9850 11800	9850 11800	10630 13570	13 16	36.1



HJG-DB

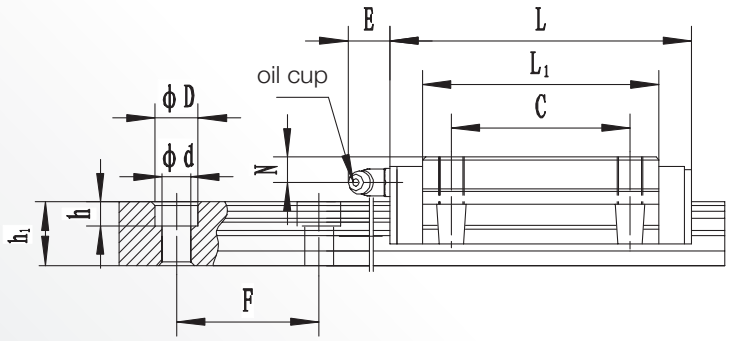
HJG-DB Specifications (threaded-hole type of slider)



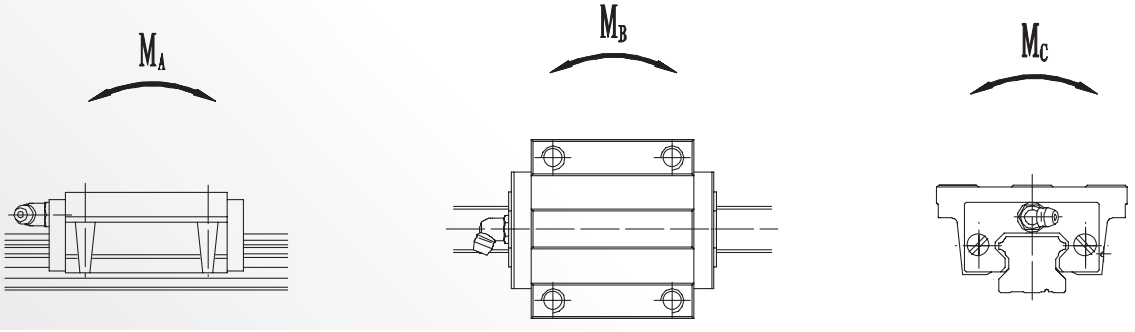


nominal model	module size		slider dimension											
	H	W	A	B	B_1	K	C	h_2	h_3	L_1	L	N	E	M
DB45AA DB45AAL	62	37.5	120	100	10	51	80	15	25	98 130	138 170	9	16	M12
DB45BA DB45BAL	60	37.5	120	100	10	49	80	15	25	98 130	138 170	7	16	M12
DB55AA DB55AAL	72	43.5	140	116	12	58	95	17	30	118 156	161 199	11	16	M16
DB55BA DB55BAL	70	43.5	140	116	12	56	95	17	30	118 156	161 199	9	16	M14

Linear Guide

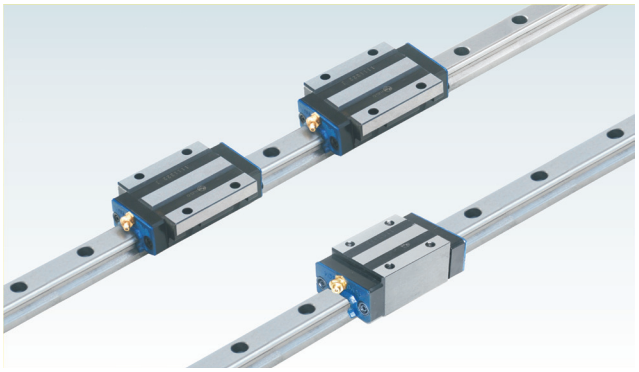


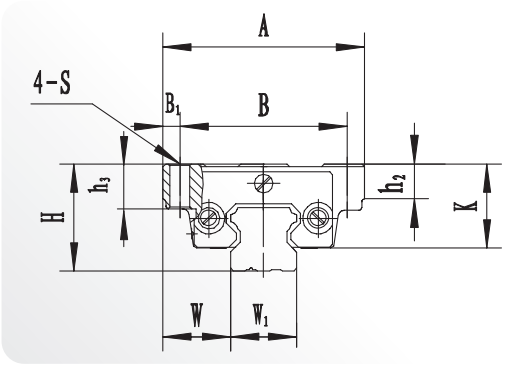
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	45	38	14×20×16	105	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	3 3.5	11.1
	45	38	14×20×16	105	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.8 3.3	11.1
	53	44	16×23×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.7 6	15.2
	53	44	16×23×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.4 5.7	15.2



HJG-DB

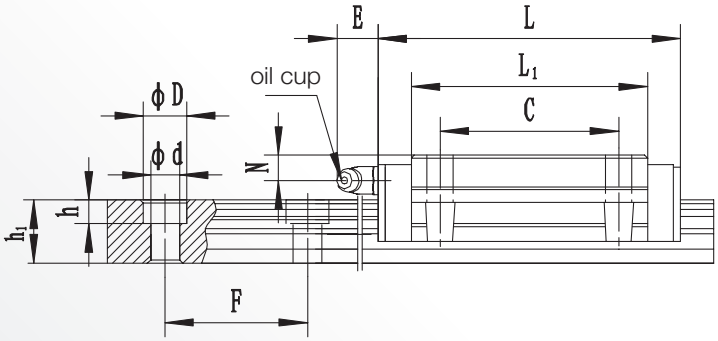
HJG-DB Specifications (threaded-hole type of slider)



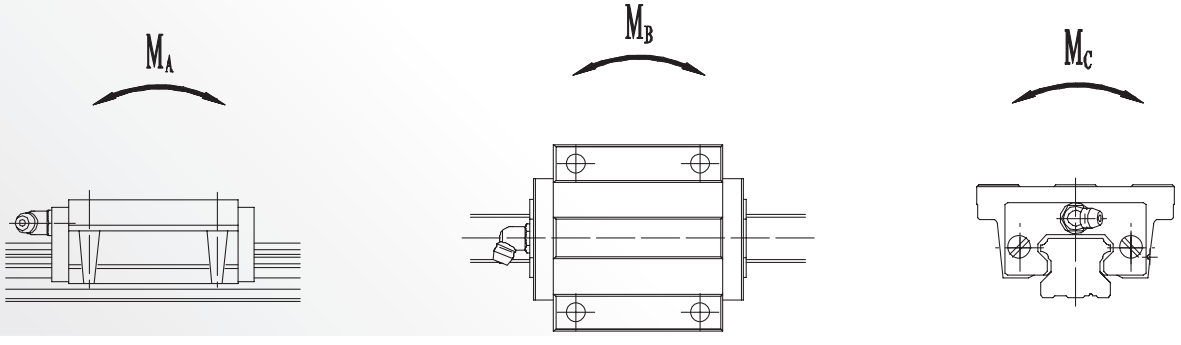


nominal model	module size		slider dimension											
	H	W	A	B	B_1	K	C	h_2	h_3	L_1	L	N	E	S
DB45AB DB45ABL	62	37.5	120	100	10	51	80	15	25	98 130	138 170	9	16	Φ11
DB45BB DB45BBL	60	37.5	120	100	10	49	80	15	25	98 130	138 170	7	16	Φ11
DB55AB DB55ABL	72	43.5	140	116	12	58	95	17	30	118 156	161 199	11	16	Φ13
DB55BB DB55BBL	70	43.5	140	116	12	56	95	17	30	118 156	161 199	9	16	Φ14

Linear Guide

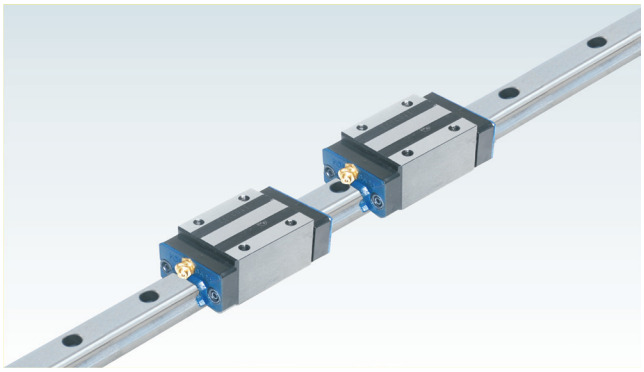


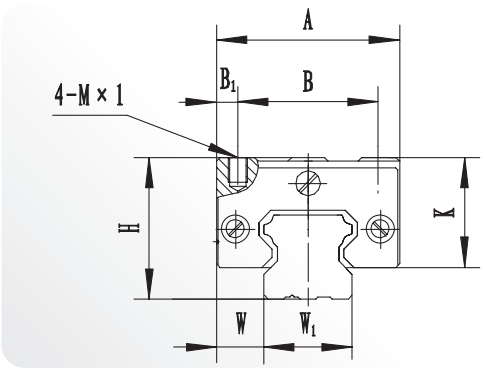
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	45	38	14×20×16	105	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	3 3.5	11.1
	45	38	14×20×16	105	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.8 3.3	11.1
	53	44	16×23×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.7 6	15.2
	53	44	16×23×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.4 5.7	15.2



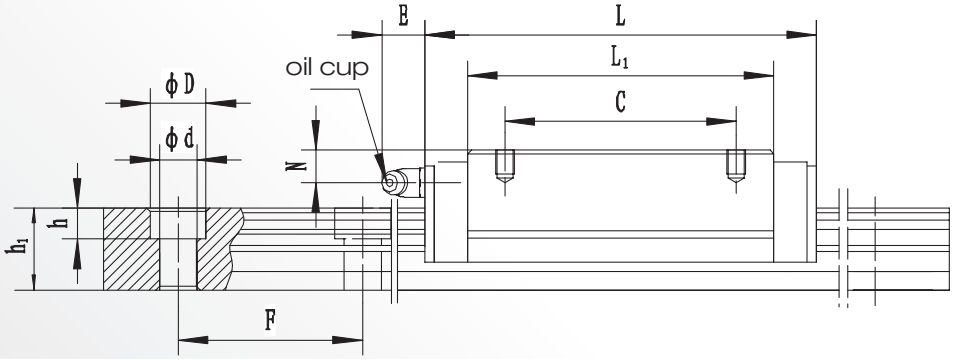
HJG-DB

HJG-DB Specifications (rectangle type of slider)

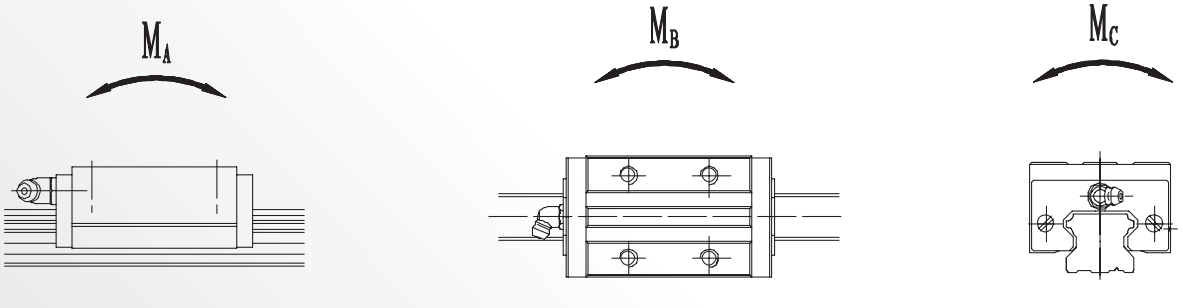




nominal model	module size		slider dimension										
	H	W	A	B	B_1	K	C	L_1	L	N	E	Mx1	
DB45C DB45CL	70	20.5	86	60	13	60	60 80	98 130	138 170	20	16	M10×17	
DB55C DB55CL	80	23.5	100	75	12.5	67	75 95	118 156	161 199	21	16	M12×18	



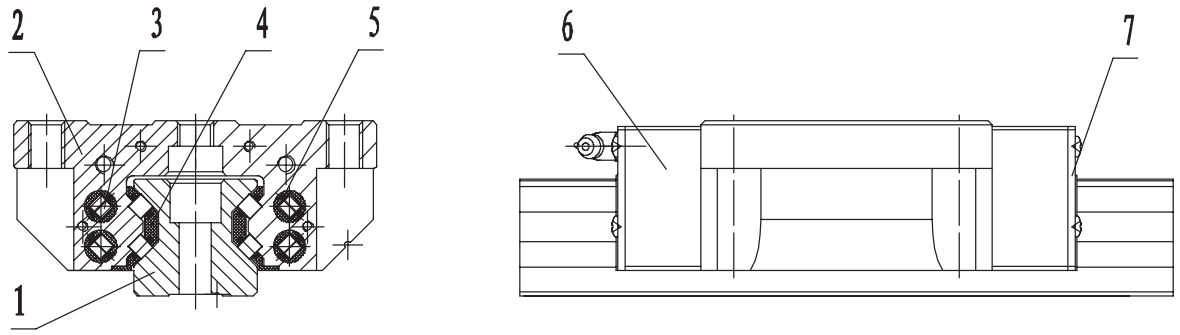
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	45	38	14×20×16	105	55 73.8	87.7 117	1148 1954	1148 1954	1919 2557	2.6 3.1	11.1
	53	44	16×23×20	120	81.2 108.9	126 168.3	1985 3375	1985 3375	3331 4451	4.3 5.4	15.2



HJG-DZ

HJG-DZ Series of Linear Guides

■ **HJG-DZ linear rolling guides are comprised of lead rail (1), sliding block (2), rollers (3), retainer (4), roller chain(5), reflector (6), sealing cap (7), etc.**



HJG-DZ

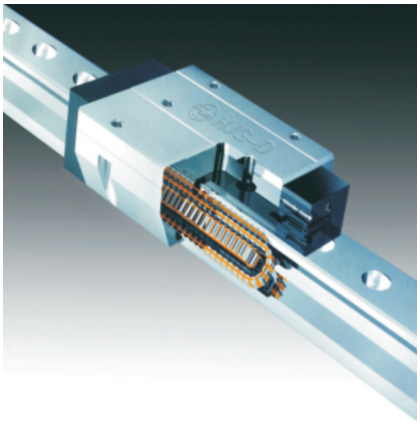
HJG-DZ Features of Linear Guide Series

HJD-DZ series of linear rolling guides are characterized of equal load on four directions, super rigidity, super capability of bearing heavy loads, which make them widely used on heavy-duty cutting machines.

- Equal load on four directions----due to a 45 degree of contact angle formed between roller and raceway, four directions (left, right, up and down) have the same load-bearing capacity.
- Super rigidity and load-bearing capacity----by using the finite element analysis, the rolling elements can realize a smooth return, high speed and accurate running.
- Low noise, long-term free maintenance----separation of rolling elements by keep chain enables them to avoid contact and collision, thus reducing noise. There is grease storage bin inside the keep chain, and oil film is forms between rolling elements and keep chain, so that long-term free maintenance is to be achieved.

HJG-DZ

HJG-DZ Code Definition



HJG—D Z 45 Z A L 2 H1 2 X 640—3

- HJG: company product code
- D: linear guide code
- Z: structure type code
- 45: nominal dimension
- Z: slider type code (Z—flange type; ZC—rectangle type)
- A: mounting hole type (A—threaded hole; B—unthreaded hole)
- L: extended slider code (no mark for normal type)
- 2: slider quantity used on each rail
- H1: preload class code
- 2 X: rail quantity in the same plane
- 640: rail length
- 3: accuracy grade

HJG-DZ

HJG-DA Pre-load

■ **In determining pre-load, impact, vibration and accuracy are its decisive factors.**

The following table can be used for references:

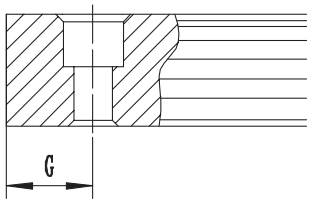
preload classification	working condition
light pre-loadH_1	load direction fixed, impact and small vibration; non—reference guides used in juxtaposition
medium pre-loadH_2	overhanging or subversion load; using only one sliding block small load with high precision reference guide
heavy pre-loadH_3	high rigidity; impact, heavy vibration; machines bearing strong cutting force

HJG-DZ

HJG-DZ recommended ranges

If G value is too small, strickling hole is to be harder

If G value is too big, accuracy and stability is to be undermined

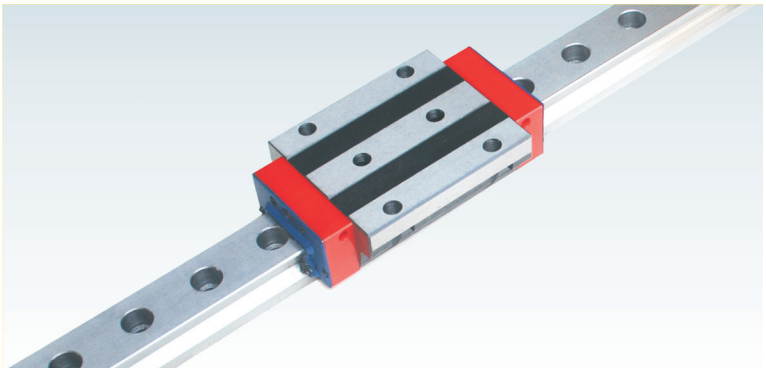


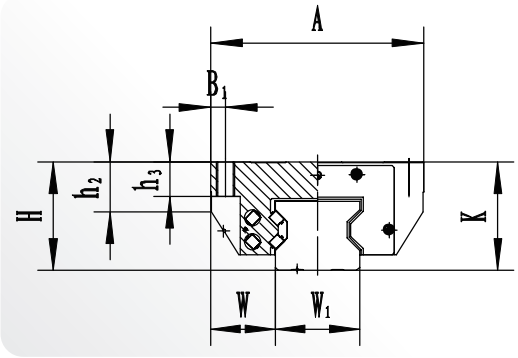
Based on actual application, the following table is recommended

Model	Value of "G"		
	Min.	Max.	Recommended
DZ35	10	30	20
DZ45	13	41	25
DZ55	15	47	28.5
DZ65	16	61	36
DZ85	21	71	43.5
DZ100	23	82.5	51

HJG-DZ

Specifications of HJG-DZ Series (slider with threaded hole)





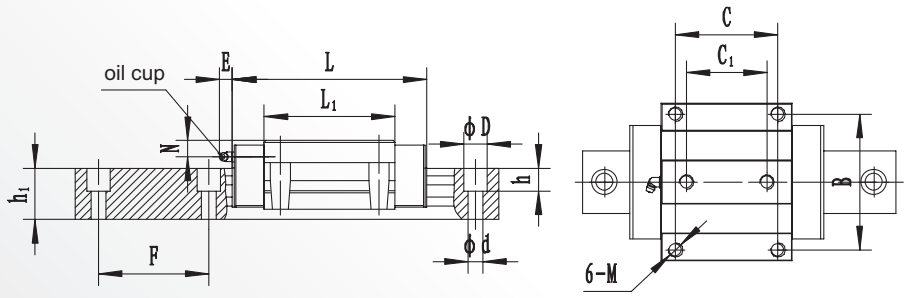
nominal model	module size		slider dimension													
	H	W	A	B	B_1	K	C	C_1	h_2	h_3	L_1	L	N	E	M	
DZ35ZA DZ35ZAL	48	33	100	82	9	41	62	52	13	27	80 105	129 154	7	14	M10	
DZ45ZA DZ45ZAL	60	37.5	120	100	10	52	80	60	15	35.5	98 130	148 180	10.5	16	M12	
DZ55ZA DZ55ZAL	70	43.5	140	116	12	60	95	70	18	41	118 156	179 217	11	16	M14	
DZ65ZA DZ65ZAL	90	53.5	170	142	14	76	110	82	22	56	147 207	220 280	16	16	M16	
DZ85ZA DZ85ZAL	110	65	215	185	15	95	140	110	30	66.5	179 236	266 323	16	16	M20	
D100ZA	120	75	250	220	15	104	200	200	30	80	265	377	23	16	M20	

▶ Remarks:

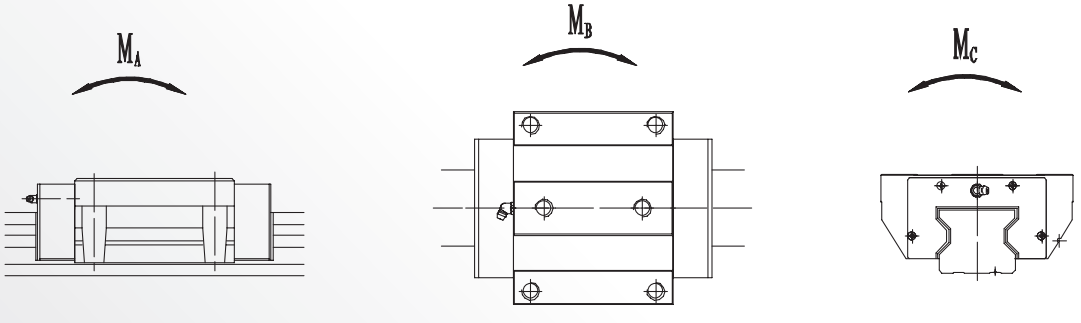
1.There are mounting holes symmetrically distributed in 3 rows (9 in total) on the surface of B and C of DZ100ZA.

2.If side lubrication needed, it shall be especially noted by the user.

Linear Guide

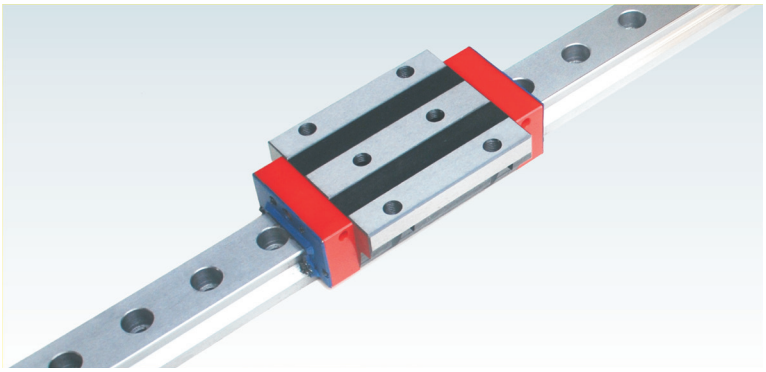


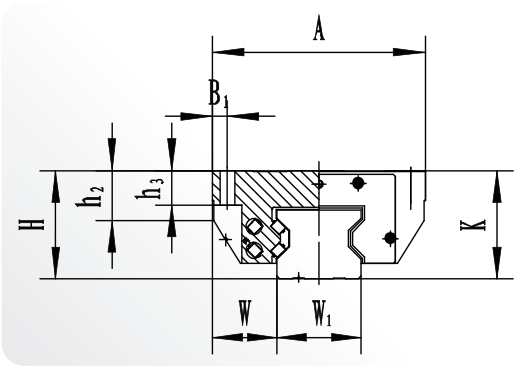
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail (kg/m)
	34	32	9×14×12	40	58 70	135 178	1626 2780	1626 2780	2538 3349	1.47 1.9	6.2
	45	38	14×20×16	52.5	88 105	193 257	2995 5342	2995 5342	4557 6453	2.6 3.9	10
	53	44	16×23×20	60	130.4 163.5	313 397	4936 9175	4936 9175	7668 11436	4.8 6.4	13.7
	63	55	18×26×22	75	214 271	463 602	10225 19447	10225 19447	16651 21455	9 13	21
	85	70	24×35×28	90	371 503	793 1204	33586 42617	33586 42617	43630 48056	18.3 26.6	36.8
	100	80	26×39×32	105	563	1430	45372	45372	52633	34.2	47.5



HJG-DZ

Specifications of HJG-DZ Series (slider with unthreaded hole)



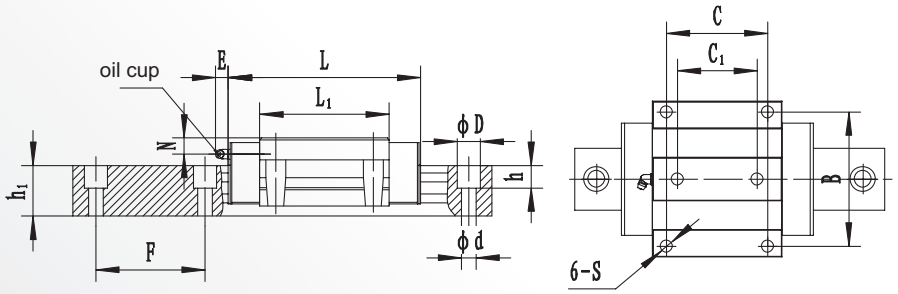


nominal model	module size		slider dimension													
	H	W	A	B	B_1	K	C	C_1	h_2	h_3	L_1	L	N	E	S	
DZ35ZB DZ35ZBL	48	33	100	82	9	41	62	52	13	27	80 105	129 154	7	14	Φ9	
DZ45ZB DZ45ZBL	60	37.5	120	100	10	52	80	60	15	35.5	98 130	148 180	10.5	16	Φ11	
DZ55ZB DZ55ZBL	70	43.5	140	116	12	60	95	70	18	41	118 156	179 217	11	16	Φ14	
DZ65ZB DZ65ZBL	90	53.5	170	142	14	76	110	82	22	56	147 207	220 280	16	16	Φ16	
DZ85ZB DZ85ZBL	110	65	215	185	15	95	140	110	30	66.5	179 236	266 323	16	16	Φ18	
D100ZB	120	75	250	220	15	104	200	200	30	80	265	377	23	16	Φ20	

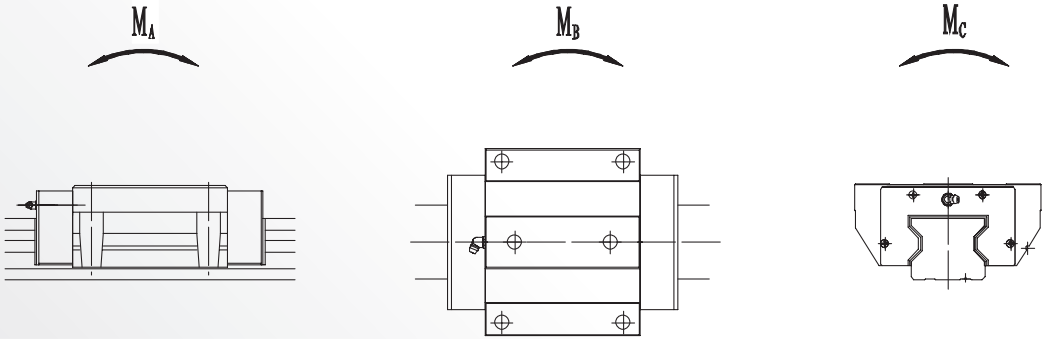
▶ Remarks:

1. There are mounting holes symmetrically distributed in 3 rows (9 in total) on the surface of B and C of DZ100ZB.
2. If side lubrication needed, it shall be especially noted by the user.

Linear Guide

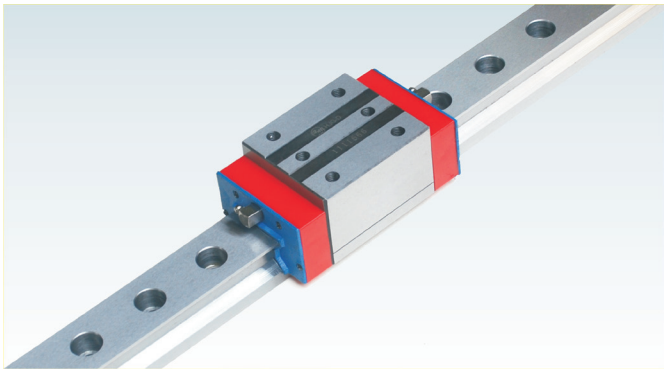


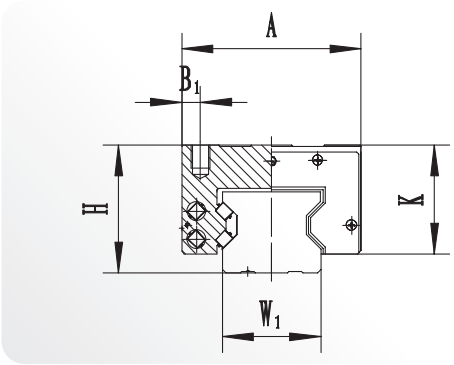
	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail (kg/m)
	34	32	9×14×12	40	58 70	135 178	1626 2780	1626 2780	2538 3349	1.47 1.9	6.2
	45	38	14×20×16	52.5	88 105	193 257	2995 5342	2995 5342	4557 6453	2.6 3.9	10
	53	44	16×23×20	60	130.4 163.5	313 397	4936 9175	4936 9175	7668 11436	4.8 6.4	13.7
	63	55	18×26×22	75	214 271	463 602	10225 19447	10225 19447	16651 21455	9 13	21
	85	70	24×35×28	90	371 503	793 1204	33586 42617	33586 42617	43630 48056	18.3 26.6	36.8
	100	80	26×39×32	105	563	1430	45372	45372	52633	34.2	47.5



HJG-DZ

Specifications of HJG-DZ Series (rectangle slider)



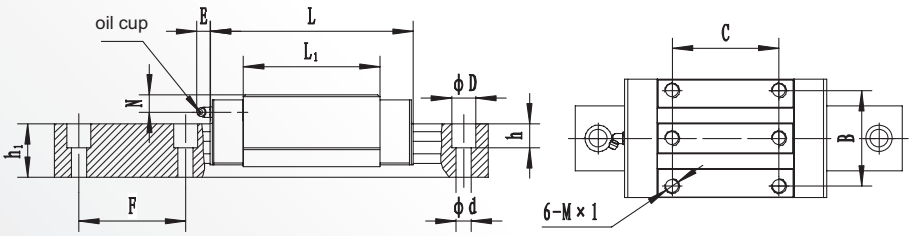


nominal model	module size		slider dimension										
	H	W	A	B	B_1	K	C	L_1	L	N	E	Mx1	
DZ35ZC DZ35ZCL	55	18	70	50	10	48	50 72	80 105	129 154	14	14	M8×12	
DZ45ZC DZ45ZCL	70	20.5	86	60	13	62	60 80	98 130	148 180	20.5	16	M10×16	
DZ55ZC DZ55ZCL	80	23.5	100	75	12.5	70	75 95	118 156	179 217	21	16	M12×18	
DZ65ZC DZ65ZCL	90	31.5	126	76	25	76	70 120	147 207	220 280	16	16	M16×16	
DZ85ZC DZ85ZCL	110	35.5	156	100	28	95	80 140	179 236	266 323	16	16	M18×25	
DZ100ZC	120	50	200	130	35	104	200	265	377	23	16	M20×27	

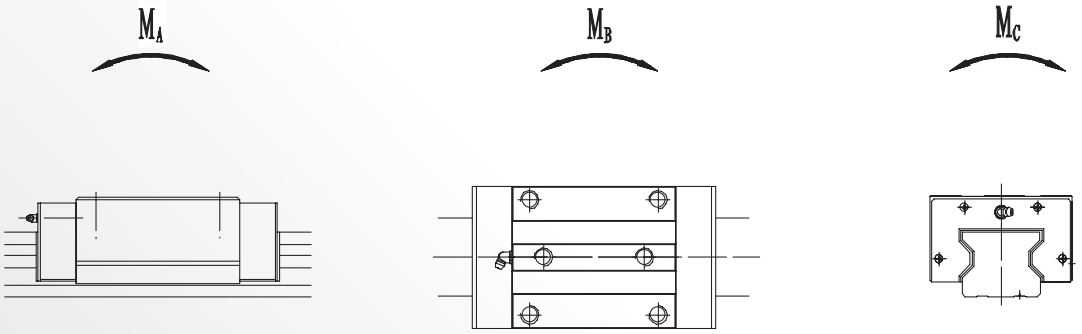
▶ Remarks:

1. There are mounting holes symmetrically distributed in 3 rows (9 in total) on the surface of B and C of DZ100ZC.
2. If side lubrication needed, it shall be especially noted by the user.

Linear Guide

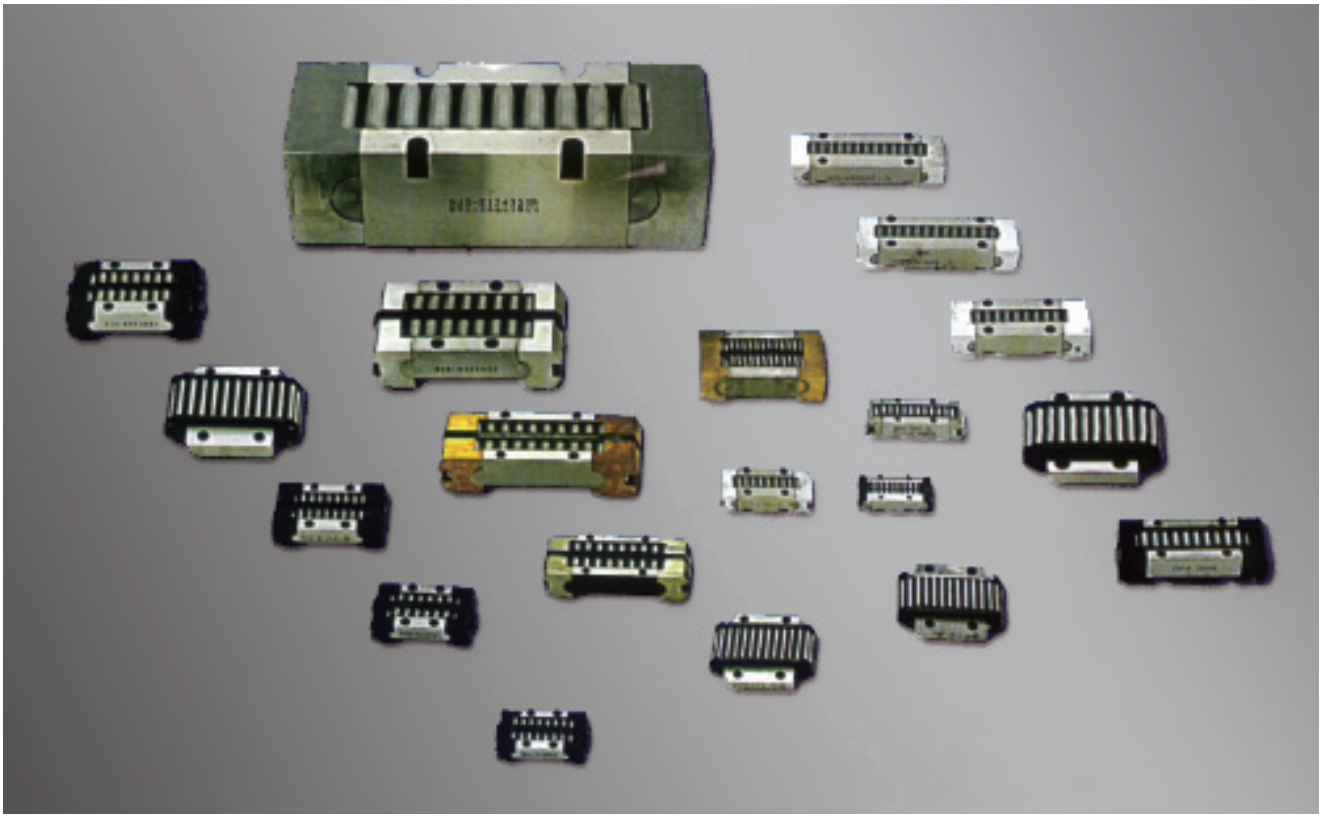


	rail dimension				rated load (KN)		allowable static torque (N.m)			weight	
	W_1	h_1	d×D×h	F	dynamicC	staticC_0	M_A	M_B	M_C	slider (kg)	rail
	34	32	9×14×12	40	58 70	135 178	1626 2780	1626 2780	2538 3349	1.3 1.7	6.2
	45	38	14×20×16	52.5	88 105	193 257	2995 5342	2995 5342	4557 6453	1.9 2.5	10
	53	44	16×23×20	60	130.4 163.5	313 397	4936 9175	4936 9175	7668 11436	3 4	13.7
	63	55	18×26×22	75	214 271	463 602	10225 19447	10225 19447	16651 21455	6.5 9.1	21
	85	70	24×35×28	90	371 503	793 1204	33586 42617	33586 42617	43630 48056	12.8 16.9	36.8
	100	80	26×39×32	105	563	1430	45372	45372	52633	27.3	47.5



HJG-K

HJG-K linear bearing blocks



■ Description in brief

1.HJG-K linear bearing block is designed on the principle of roller bearings, having plenty of the advantages such as high loading capacity, low difference between dynamic friction and static friction,less machinery weight and cost under the working condition where the start, action, stop & restart take place frequently.

2.By the use of HJG-K the machinery can obtain high movement sensitiveness and linearism to make excellent control with smart travel but without creep during reciprocating movement at a low speed.

3.With low friction factor, the rollers have good leading effect and self-centred capacity to raise the following and positioning accuracies of machinery.

4.The numbers and the specifications of linear bearing blocks can be defined or selected in accordance with the stipulations given in HJG-K series products and can not be limited by the length of machine bed .For linear bearing blocks, the loading capacity is over 10 times as much as of conventional rolling bearings.

5.HJG-Klinear bearing block are made fo GCr15 bearing steel which has experienced strict heat treatment. Therefore, high accuracies can be kept after long time recprocating movement due to less wear.

6.HJG-K linear bearing blocks are of compact lubricating system so that the lubrication and maintenace can be made easily.

7.The assembly or dismantle is very easy due to high reference accuracy of HJG-K products.

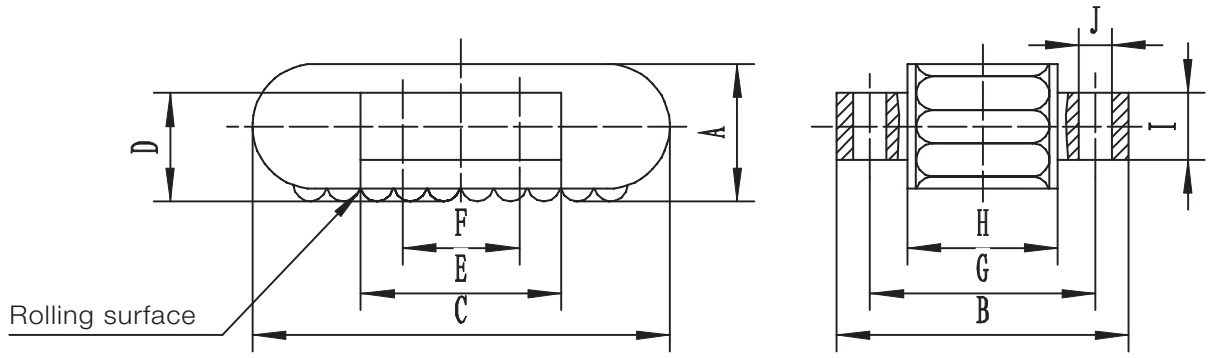
8.HJG-K linear bearing blicks are suitable for NC or CNC machine tools most and also can be used on eavy-duty machine tools, precision measuring instruments.etc.

HJG-K

Specifications of HJG-DZ Series (rectangle slider)

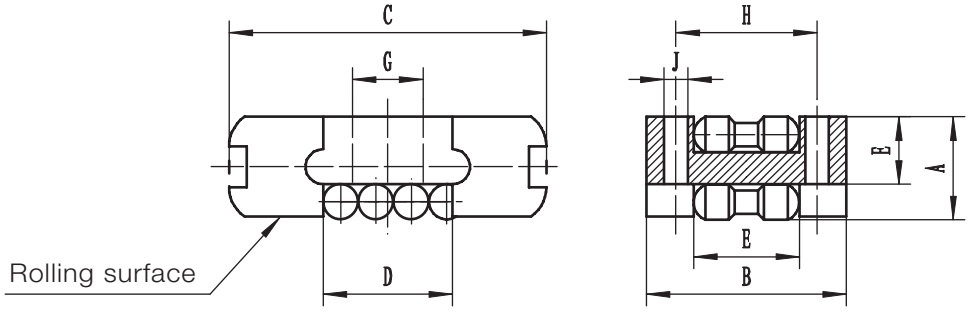
■ Crawler-typed linear bearing blocks

model HJG-k	specifications (mm)											Rated load(kg)	
	A	B	C	D	E	F	G	H	I	J		dynamic	static
										T	L		
3040A	15	30	38.5	11	20	12	23	15	7	Φ3.6	M4	1110	2110
3650A	16	36	48.5	12	30	18	29	20	8	Φ3.6	M4	1950	4420
4560A	19	45	58.4	14	35	20	36	25	9	Φ4.8	M4	2900	6800
5570A	20	55	67.9	15	45	27	44	32	10	Φ5.8	M5	4600	12000
6890A	28	68	87	21	55	35	54	40	14	Φ7	M6	7100	18910
82125A	40	82	123.5	30	78	50	66	50	20	Φ9	M8	11200	33300



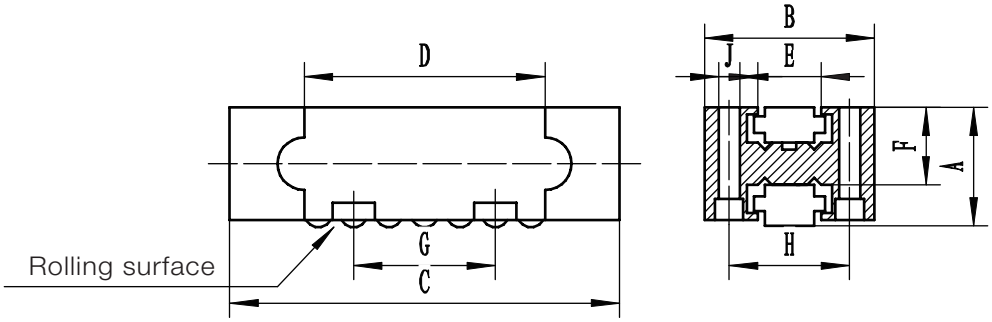
■ Roll-typed linear bearing blocks

model HJG-k	specifications (mm)										Rated load(kg)	
	A	$B^{0}_{-0.2}$	C	$D^{0}_{-0.2}$	E	F	G	H	J		dynamic	static
									T	L		
3050	16.5	30	50.6	20.6	16	11	12	23	Φ3.6	M4	1550	1800
3662	17.5	36	62.6	32.6	21	12	18	29	Φ4.8	M4	2660	3860
4575	21	45	75	37	25	14	20	36	Φ5.8	M5	4120	6230
5585	21.5	55	85	45	32	15	27	44	Φ5.8	M5	5350	9280
68105	30	68	107	57	40	21	35	54	Φ7	M6	8620	14300
82145	42	82	144	78	50	30	40	66	Φ9	M8	15200	26000



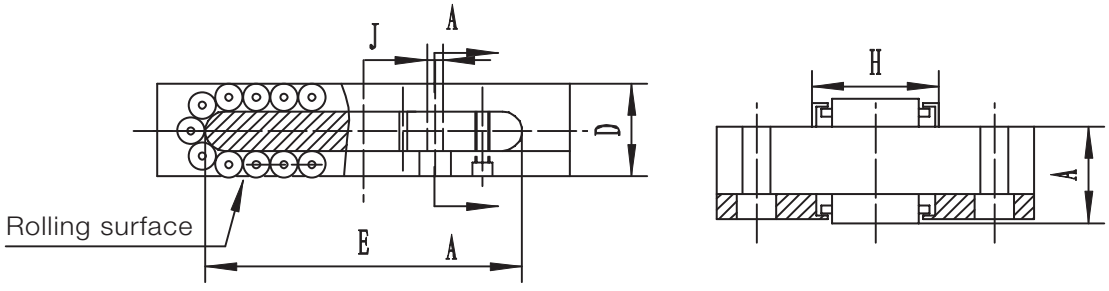
■ Dovetail-typed linear bearing blocks

model HJG-k	specifications (mm)										Rated load(kg)	
	A	B	C	D	E	F	G±0.10	H±0.10	J		dynamic	static
									T	L		
2560B	17	25	60	35	10	13	20	19.5	Φ3.3	M4	2660	3860
2670B	19.05	25.4	69.4	41.4	9.1	14	25.5	20.6	Φ3.4		3750	4400
2764B	19	27	64	39	10.3	14	25.5	20.5	Φ3.3	M4	4120	6320
3070B	20	30	68.5	42.5	12.3	15	26	23	Φ3.3	M4	5350	7200
3896B	28.57	38.1	96	57.2	16.2	21	38	31	Φ4.5		8600	10700
40100B	26	40	101	62	13.5	19	44	30	Φ5	M6	8620	11200
40125B	26	40	125.5	87.5	13.5	19	68	30	Φ5	M6	11600	15100
52140B	38	52	139.5	92.5	19.8	29	51	41	Φ7		12000	16000
52203B	38	52	202.5	155.5	19.8	29	102	41	Φ6.8	M8	20200	27400
76198B	57.15	76.2	198	123.6	30.2	42	76.2	62	Φ6.8	M8	30000	40000
124333B	100	124	333	212	60.3	73	120	102.5	Φ11		80000	100000



■ Crawler (C-type) linear bearing blocks

model HJG-k	specifications (mm)									Rated load(kg)	
	A	B	C	D	E	F±0.1	G±0.10	H	J	dynamic	static
3475C	12.7	34	75	18.7	57	27.7	27	23.7	Φ3	3300	3600
47104C	20	47	104	28	85	39	38	30	Φ5	6800	8850
64140C	27	64	140	37	115	49	51	37	Φ5.5	11000	14000



HJG-K

Notice to Purchase of HJG-K Linear Bearing Blocks

■ Accuracles of HJG-K linear blocks(mm)

Grade	Tolerance	Tolerances in gtroup				
		I	II	III	IV	V
F	0.01	-	-	-	-	-
E	0.005	+0.02 +0.015	+0.015 +0.010	-	-	-
D	0.003	+0.02 +0.017	+0.017 +0.014	+0.014 +0.011	+0.011 +0.008	-
C	0.002	+0.02 +0.018	+0.018 +0.016	+0.016 +0.014	+0.014 +0.012	+0.012 +0.010

■ Remarks:

1.The length and the widty of the linear bearing block are used as the major parameters in models. Taking HJG-K3040AT, as an example, 30 means width and 40 means length.

2.A few example for HJG-K models:

HJG-K3040AT, where A----crawler-typed

HJG-K2560BL, where B----dovetail-typed

HJG-K3050T, It means roll-typed only without the letter A or B

In the above three examples, the letter T means the connecting holes are non-threaded and letter L means the connecting holes are threaded.

3.In the table"Accuracies of HJG-K linear bearing blocks" the tolerances(0.01, 0.005, 0.003, 0.002) are used for selecting the respective accuracy grades of linear bearing block such as F, E, D or C. The tole-rances in group are used as the tolerances controlled by the manufacturer. For accuracy grades F & E,the tolerances are within the tolerance of the same group. For accuracy grades D & C, the tolerances of the same group are 0.003mm and 0.002mm respectively.

The manufacturer can produce the linear bearing blocks according to the tolerances in groups.

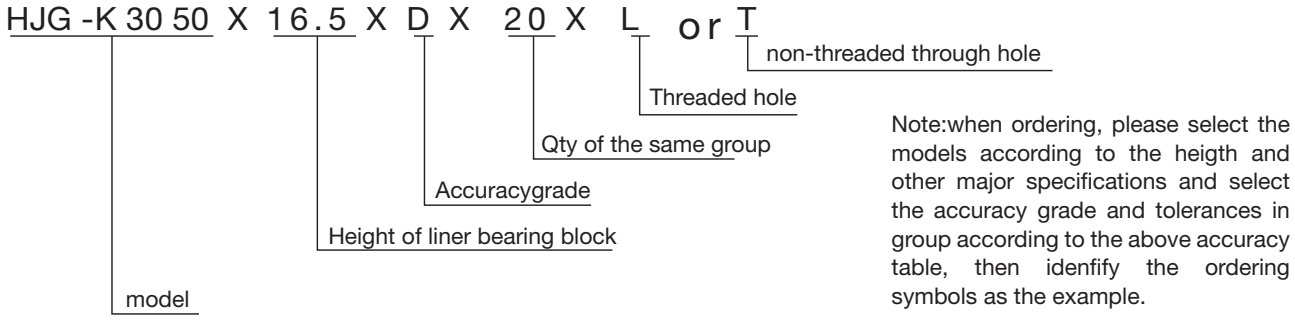
■ Ordering notice:

1.When ordering, please identify the accuracy grades and the qty. of bearing blocks in the same group.

2.When ordering, please identify the connecting hole structure.i.e. either threaded hole or non-threaded hole.

3.For special specifications and special needs please don't hesitate to contact us.

■ Example for ordering



Note:when ordering, please select the models according to the heigth and other major specifications and select the accuracy grade and tolerances in group according to the above accuracy table, then idenfify the ordering symbols as the example.

HKG-J

HKG-J Spline Pairs

■ Important

1.A great attention should be paid to the selection of the reference. One side of the bearing block should be taken as reference for measurement and the other side should be kept parallel each other. The bearing block in the same group should be in the same plane.

2.The roller retainers can not be specially reinforced because the rollers of the bearing blocks have not contact with the sides of retainers. So, for the retainers, it is enough to be fixed by locking screws or other special locking fittings.

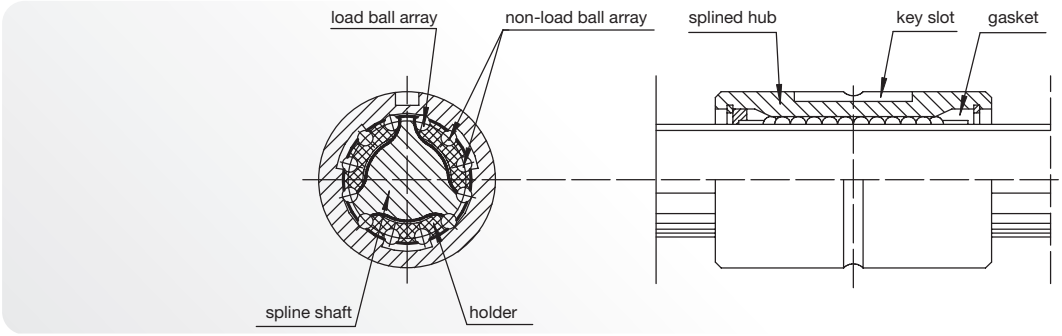
3.If the machine bed guide-way surfaces should be hardened up to HRC 58~64, the hardeing surface depth must be 1 to 2mm so that the linear bearing blocks can get the best functions.

■ Construction & Character

Rolling splines which consist of a spline shaft, sleeves, retainers and sealing washers etc., is a linear moving system in which the balls inserted in the sleeve roll smoothly in the groove of splines ground precisely and transmit torque at the same time (as shown in fig. 1). There are three teeth distributed evenly (i.e. the angle between the neighboring two teeth is 120 centigrade) on the spline shaft, so the balls in the sleeves can roll at both sides of a tooth, forming six rows of loading balls.

Every groove in the spline shaft has been ground precisely to a block of arc with a radius approximating to that of a ball, thus the balls can run smoothly in the grooves. When the torque applied to the spline shaft is to be transmitted to the sleeves, or when it is to be transmitted from the sleeves to the shaft, the three rows of loaded balls will do the job evenly and stably. When the torque is applied in the opposite direction, the transmission will be done by the other three rows of loaded balls. When the sleeves move along the shaft, the splines will circulate the balls through their retainers in the sleeves. The balls can not go out of a sleeve even if the sleeve has been removed from the spline.

Fig.1



■ definition list

HKGJ F 50 - P - F - 2 x 500 x 250

- length of spline (mm)
- length of spline shaft (mm)
- number of sleeves
- preloading grade （F、F1、F2）
- accuracy grade (Ecnoical E, Normal H, Precise P)
- nominal diameter do (diameter of the circle where ball centers are)
- configuration
- rolling spline series

HKG-J

HKG-J Spline Pairs

■ Accuracy Grade

The rolling splines are classified into economical, normal and precise grades by their accuracy. All items are shown in Fig. 2. The requirements on shape and position for the journals at both ends of the spline shaft are only recommended to our customers for reference.

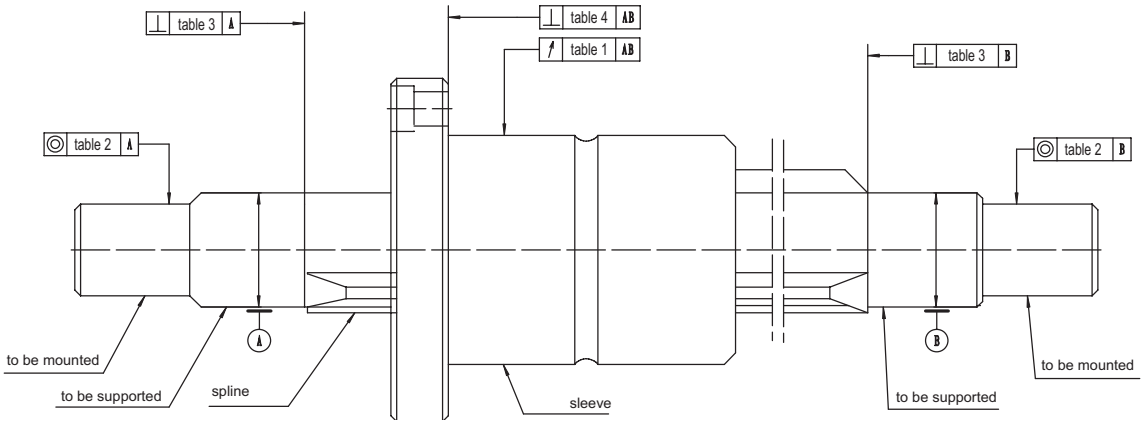


Table-1 Cylinder of Sleeve Runs True (μm)

Nominal Dis (mm) / Accuracy / Length of spline shaft(mm)	15			20			25			30			40			50			60			70		
	P	H	E	P	H	E	P	H	E	P	H	E	P	H	E	P	H	E	P	H	E	P	H	E
< 200	18	34	56	18	32	53	16	32	53	16	30	51												
200~315	25	45	71	21	39	58	19	36	58	17	34	55												
315~400	31	53	83	25	44	70	21	39	63	19	36	58												
400~500	38	62	95	29	50	78	24	43	68	21	38	61												
500~630	-	-	12	34	57	88	27	47	74	23	41	65												
630~800	-	-	-	42	68	103	32	54	84	26	45	71												
800~1000				-	33	124	38	63	97	30	51	79												
1000~1250					-	-	47	76	114	35	59	90												
1250~1600							-	93	139	43	70	106												

Table-2 Concentricity of the journals to be mounted and to be supported in the spline shaft (μm)

Nominal Diameter (mm) / Accuracy Grade		Precision level P	Normal H	Economy E
15	20	12	19	46
25	30	13	22	53
40	50	15	25	62
60	70	17	29	73

Table-3 Outside of spline perpendicular to the journals to be supported in the spline shaft (μm)

Nominal Diameter (mm) / Accuracy Grade		Precision level P	Normal H	Economy E
15	20	8	11	27
25	30	9	13	33
40	50	11	16	39
60	70	13	19	46

Table-4 Monnting surface of sleeve perpendicular to the journals to be supported in the spline shaft (μm)

Nominal Diameter (mm) / Accuracy Grade		Precision level P	Normal H	Economy E
15	20	9	13	33
25	30	11	16	39
40	50	13	19	46
60	70	15	22	54

■ Run life rated

The motion of splines are two kinds in accordance with the load applied, i.e. , the motion applied torque and the motion applied radial load. Therefore, the run life rated is calculated in the following two ways:

When torque applying $L=[\frac{f_T \cdot f_c}{f_w} \cdot \frac{C_T}{T_c}]^3 \cdot 50$ or when radial load applying $L=[\frac{f_T \cdot f_c}{f_w} \cdot \frac{C_T}{P_c}]^3 \cdot 50$

L----run life rated (hour)

C_T----basic dynamic torque rated (kgf-m),

T_C----torque calculated (kgf-m),

f_w----load factor (see table 7),

f_c----contact factor (see table 8),

C----basic dynamic load rated (kgf),

f_T----temperature factor (see table 9),

P_c----radial load calculated (kgf)

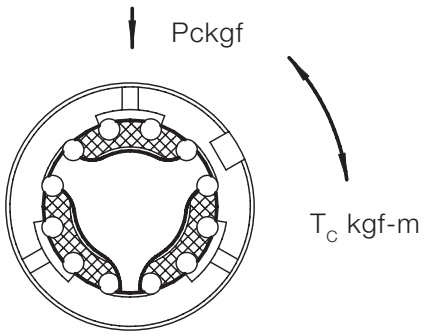


Table-7 Load Factor f_w

Impact & Vibration	Velocity	f_W
without impact or vibration	V≤15m/min	1.0-1.5
a little impact and vibration	15m/min<V≤60m/min	1.5-2.0
much impact and vibration	V > 60 m/min	2.0-3.5

Table-8 Contact Factor f_c

Number of Sleeves	f_C
1	1.00
2	0.81
3	0.72
4	0.66
5	0.61

Table-9 Temperature Factor f_t

Temperature (˚C)	≤100	100~150	150~200
Temperature factor f_t	1	1-0.9	0.9-0.75

▶ Note: Please contact us, if other temperature requirements are needed.

When torque and radial load applying the splines at the same time, the run life (hour) can be calculated after the equivalent radial load has been calculated with the following formula:

$$P_E = P_C + \frac{4 \cdot T \times 10^3}{3 \cdot dp \cdot \cos \alpha}$$

where, P_E----equivalent radial load (kgf) ,

α----contact angle (α=45°)

dp----diameter of the circle where ball centers are.

When the travel of the sleeves is constant, the run life rated in hour can be calculated by:

$$Ln = \frac{L \times 10^3}{2 \times Lg \times n1 \times 60} = \frac{8.3L}{Lg \times n1}$$

where, Ls---travel of sleeves (m),

n1---reciprocating times of sleeves per minute,

Ls---run life rated (hour),

Ln---run time (hour)

HKG-J

HKG-J Spline Pairs

■ Preloading and selection

There are three kinds of preloading, i.e., the light, the middle & the heavy, to meet the requirements of clearance of splines, in order to satisfying our customers' needs in both specifications & precision. The clearances and the relevant preloading are listed in the table 5.

How the preloading of rolling splines is selected depends on the load vibration & precision required. When selecting a pair of rolling splines, please make reference table 6.

Table-5 Rotation clearance (μm) & Preloading

Accuracy / Nominal Diameter	Light Preloading F	Medium Preloading F1	Heavy Preloading F2
15	±3	-3~-9	-9~-15
30 25 20	±4	-4~-12	-12~-20
60 50 40	±6	-6~-18	-18~-30
70	±8	-8~-24	-24~-40

Note: "+" means clearance, "-" means interference.

Table-6

Preloading Type	Working Condition	Usage Recommended
Light preloading F	Bearing some swivel torque, can be rotated with slight force.	Spindle of all kinds of measuring instruments, auto-drawing instruments, coiler, packing machine and plate bending machine, etc.
Middle preloading F1	Light vibration, titling moment, small cantilever and torque changing	Arms of industrial robot, spindles of auto-unloading machines & auto-coating machines.
Heavy preloading F2	High rigidity, vibration, impact and cantilever applied with titling moment	Spindles of welding machines & tool-holders and indexing (swing) spindles.

■ Model & Specifications

Dimensions of HKGJ-F rolling splines

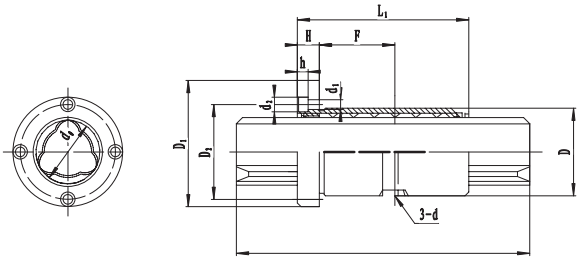


Table-10

model	Nominal Diameter d_o	Outer Diameter D(he)	Length L1 of Sleeve	Max. length L of Spline shaft	Diameter D_1 of Flange	Diameter D_2 of Center of Mounting hole	Thickness H of flange	Depth h of Counterbore	Diameter d of Oil Hole	Diameter d2 of Counterbore	Diameter D1 of Min. Mounting Space Required	Position F of oil hole	Basic torque rated	
													Dynamic CT	Static CoT N-m
HKGJ-F15	15	0 23-0.013	0 40-0.2	500	0 43-0.2	32	7	4	2	8	4.8	13	27	45
HKGJ-F20	20	0 30-0.016	0 50-0.2	500	0 49-0.2	38	7	4	3	8	4.8	18	66	96
HKGJ-F25	25	0 38-0.016	0 60-0.3	700	0 60-0.2	47	9	5	3	10	5.8	21	134	184
HKGJ-F30	30	0 45-0.016	0 70-0.3	1000	0 70-0.2	54	10	6	3	11	7	25	238	317
HKGJ-F40	40	0 57-0.016	0 90-0.3	1200	0 90-0.2	70	14	6	4	14	9	31	523	670
HKGJ-F50	50	0 70-0.019	0 110-0.3	1500	0 108-0.3	88	16	10	4	17	11	34	956	1146
HKGJ-F60	60	0 85-0.019	0 127-0.3	1500	0 124-0.3	102	18	10	4	17	11	45.5	1631	2262
HKGJ-F70	70	0 95-0.022	0 110-0.3	1500	0 143-0.3	117	20	12	4	20	13	35	1944	2293

Sping Shaet

Dimensions of HKGJ-F splines

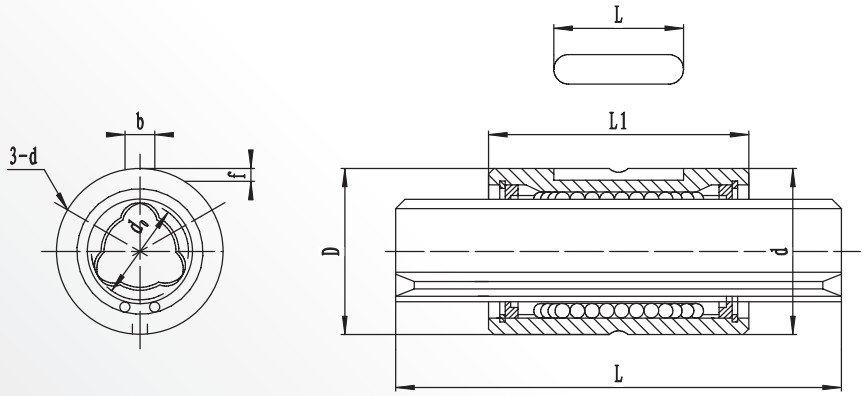


Table-11

model	Nominal Diameter d_o	Outer Diameter D(he)	Length L_1 of Sleeve	Length L of Spline Shaft	Width b(HB) of Key Slot	Depth $F_0^{+0.1}$ of Key Slot	Length L of Key Slot	Diameter d of Oil Hole	Basic torque rated	
									Dynamic torque CT	Static torque CoT
HKGJ-Z15	15	0 23-0.013	0 40-0.2	500	3.5	2	20	2	27	45
HKGJ-Z20	20	0 30-0.013	0 50-0.2	500	4	2.5	26	3	66	96
HKGJ-ZZ20	20	0 30-0 .013	0 60-0.2	500	4	2.5	26	3	80	128
HKGJ-Z25	25	0 38-0.016	0 60-0.3	700	5	3	36	3	134	184
HKGJ-ZZ25	25	0 38-0.016	0 70-0.3	700	5	3	36	3	152	225
HKGJ-Z30	30	0 45-0.016	0 70-0.3	1000	6	3.5	40	3	238	317
HKGJ-ZZ30	30	0 45-0.016	0 80-0.3	1000	8	4	40	3	238	317
HKGJ-Z40	40	0 60-0.019	0 90-0.3	1200	10	5	56	4	523	670
HKGJ-ZZ40	40	0 60-0.019	0 100-0.3	1200	10	5	56	4	607	837
HKGJ-Z50	50	0 75-0.019	0 100-0.3	1500	14	5.5	60	4	956	1146
HKGJ-ZZ50	50	0 75-0.019	0 112-0.3	1500	14	5.5	60	4	1130	1473
HKGJ-Z60	60	0 90-0.022	0 127-0.32	1500	16	6	68	4	1631	2262
HKGJ-Z70	70	0 100- 0.022	0 110-0.3	1500	18	6	68	4	1944	2293
HKGJ-ZZ70	70	0 100-0.022	0 135-0.3	1500	18	6	68	4	2670	3670

HKG-J

HKG-J Spline Pairs

■ Important Notice for Using HKGJ Rolling Splines

1.Requirements for Construction of shaft ends

The sectional profile of the spline shaft is shown in the Fig. 7. When axial machining is needed, d1<d (refers to table 12); when a big diameter of spline is needed, sufficient relief length S, which is related to the minor diameter d of the spline (refers to table 12) has to be kept.

As shown in Fig. 6, the length S of relief can be calculated as

$S \geq 1.2\sqrt{R(Da-d)}$, S≈100–120

2.Construction of sleeve and assembling

a) When assembling a sleeve on its spline shaft, please keep the mounting holes or key slots horizontally. One of the key slots in a sleeve of HKJ-Z and HKGJ-ZZ rolling splines should to just above two rows of loaded balls when assembling (as shown in Fig.7 (a)).

In assembling, please align one of the four mounting holes to one of the tooth of the spline as Fig. 7 (b). Please contact us if you have any other requirement to the assignment.

b) Please employ special tool to assemble the sleeve onto the spline shaft as Fig. 8 without forced assemble, when assembling a pair of rolling splines. The tool has been chamfered 2×30°at the front end.

Table-12

Nominal Diameter d_0	d	D
15	11.7	14.5
20	15.3	19.7
25	19	24
30	22.5	29.2
40	30.5	38.5
50	38.5	48.5
60	48	57.5
70	54.5	66

Fig. 5 / Fig. 6 / Fig. 7

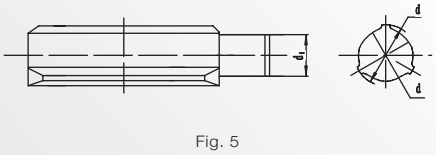


Fig. 5

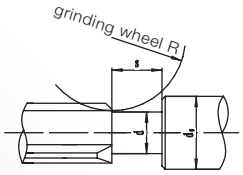
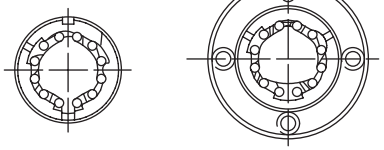


Fig. 6



a. Position of key slot in the sleeve when assembling

b. Position of mounting holes in the flange when assembling

Fig. 7

Table 13 Dimension of Special Tool for Splines Assembling (mm)

Nominal Dia. d_0	15	20	25	30	40	50	60	70
D	23	30	38	45	60	75	85	100
di(h9)	12.5	16.1	21	25	33.65	42.85	50.74	58.5

c) Assembling the rolling splines

Special care should be taken to ensure that the mark for assembling is at the top of the shaft. Forced assembly may hurt the sleeve and the spline shaft. Please coat grease on the shaft and place the shaft as Fig. 9.

Fig. 8 / Fig. 9

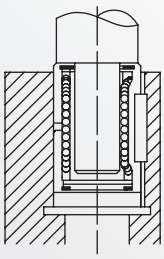


Fig. 8

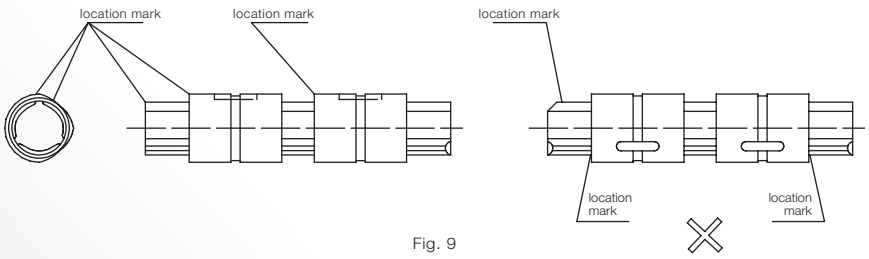


Fig. 9

CONTACT *Songju*

Company

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Notes

Parent company only. For product selection, drawings, quotations and after-sales support, please contact us by email or WhatsApp. Technical response available within 24 hours on working days.