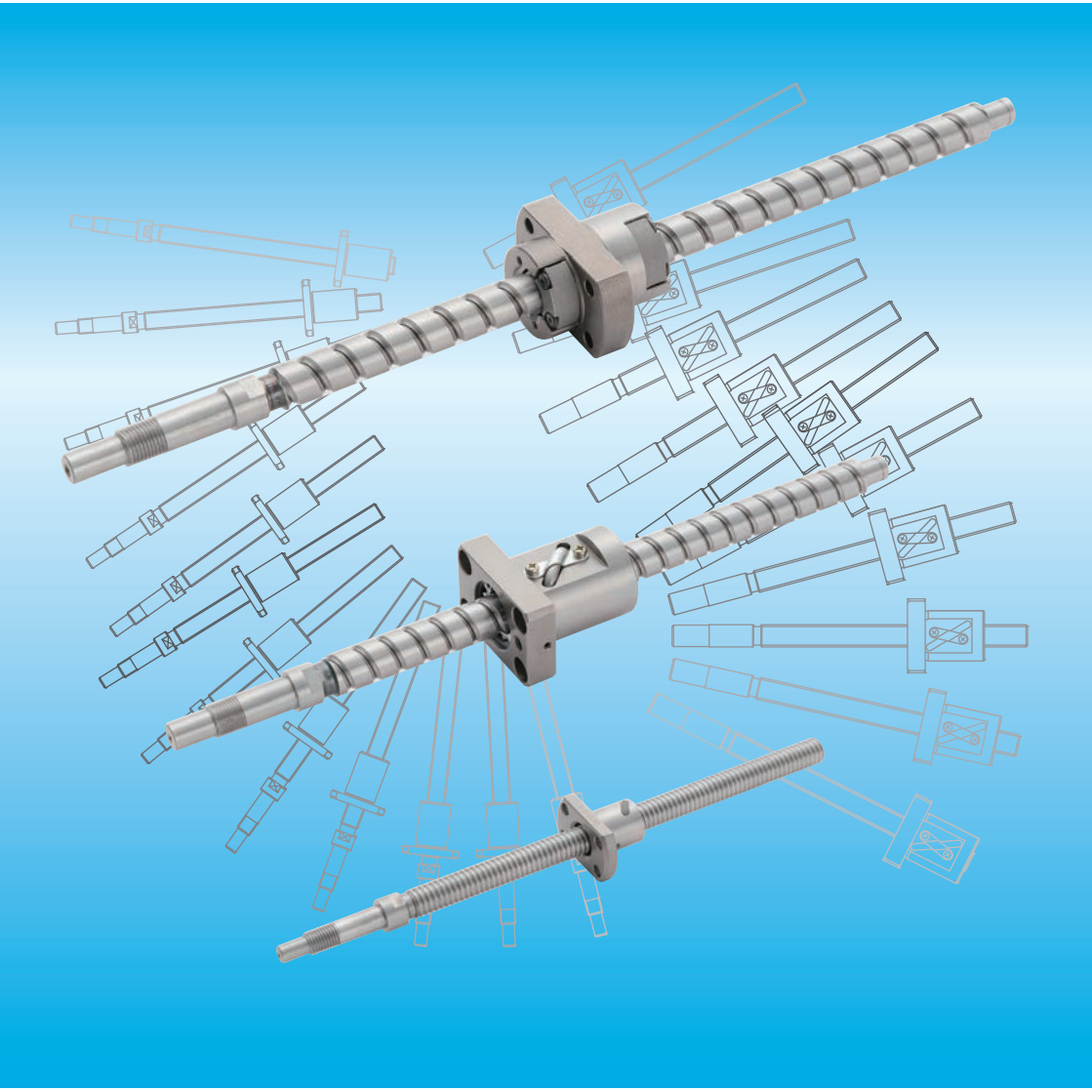
KURODA
JENATEC

BALL SCREW CATALOG



KURODA PRECISION INDUSTRIES LTD.

BALL SCREWS CATALOG
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Supporting industries across the world through precision technology

Achieving "the precision infinitely close to zero error" to fulfill customers' requirements for high accuracy and high productivity in every field of industry is the basic and primary focus of product manufacturing at KURODA.

● Precision machining technology

KURODA, based on its strong commitment to precision and its craftsman's DNA that dictates it "make the things it needs using its own faculties", has developed a large number of underlying technologies originating from its legacy as a gauge manufacturer ranging from measurement techniques to machine tools such as proprietary surface grinding machines and in-house-developed thread grinding machines. KURODA's products manufactured from these underlying technologies have become essential in a wide range of fields, such as machines, cars, medical care, and semiconductors.

● More than 90 years of history

Since its foundation in 1925, KURODA has continuously supported many industries with reliable technologies related to "precision". The relationships, trust, mutual technologies, and know-how KURODA has accumulated over these 90 years of history make it a highly credible company.

● Global network

In recent years, KURODA has accelerated its global expansion to support industrial advancement all over the world through precision technology.
As part of this effort, KURODA has entered into partnerships including the acquisition of the JENATEC group and will continue to expand its overseas sales organization to make the KURODA brand and KURODA-JENATEC brand better known in the world.

"Always challenging what is new, and creating new value"

● Ball screw related manufacturing locations

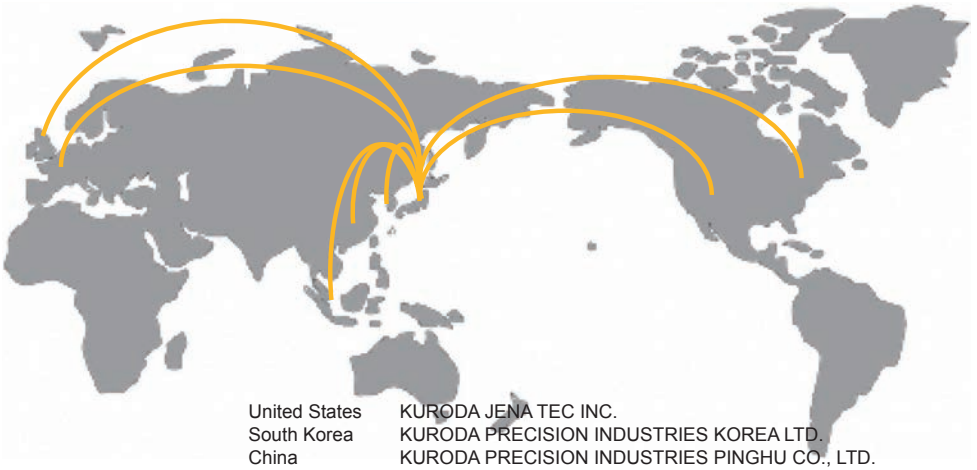
Kazusa Akademia Plant (Chiba)
· Precision Ball Screws
· Support Units

Asahi Plant (Chiba)
· Rolled Ball Screws
· Ballscrew Actuators

Futtsu Plant (Chiba)
· Ball Screw-Related Components

JENAER GEWINDETECHNIK GmbH (Germany)
· Precision Ball Screws

● Overseas locations



United States	KURODA JENA TEC INC.
South Korea	KURODA PRECISION INDUSTRIES KOREA LTD.
China	KURODA PRECISION INDUSTRIES PINGHU CO., LTD.
	KURODA JENA TEC PRECISION INDUSTRIES PINGHU CO., LTD.
Malaysia	KURODA PRECISION INDUSTRIES(M) SDN.BHD.
Germany	JENAER GEWINDETECHNIK GmbH

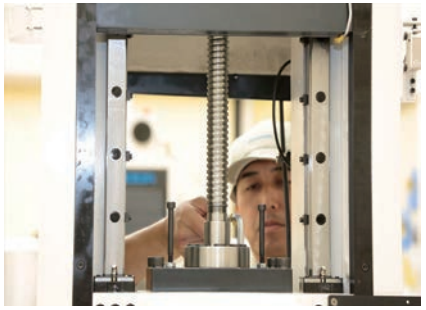
KURODA aspires to the principle of “CHALLENGE & CREATE”, making linear motion systems based on expertise in gauge manufacturing.

KURODA’s Ball Screws

KURODA’s Ball Screws are an outgrowth of a legacy in gauge manufacturing.
In order to obtain characteristically advantageous features such as high efficiency in motion control, KURODA’s ball screws are utilized as an essential element in the control mechanism of a wide variety of automatic machines including machining tools, precision positioning tables, industrial robots, and semiconductor fabrication devices.

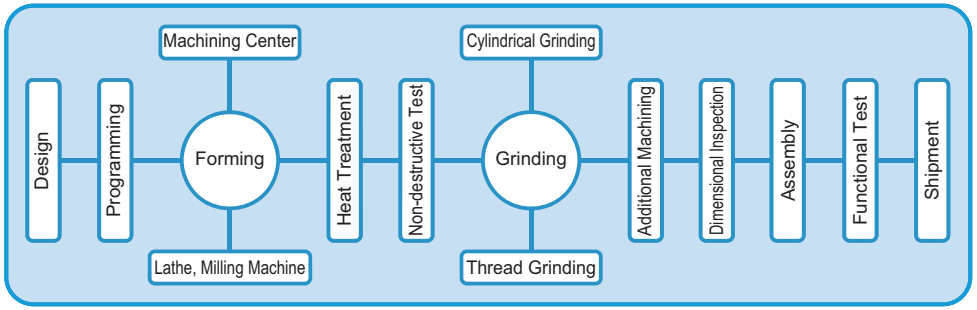
High Quality Standards

In recent years, the technical development of various machines for higher accuracy and higher speed has been increasingly accelerated and the users’ needs are much more diversified than ever. On the strength of our traditional precision machining technology and our unceasing research into ideal ball screws, we are supplying high quality ball screws that are manufactured from carefully selected materials especially in terms of quality with our advanced grinding technologies and under our extremely tight quality control using the most modern test and measuring equipment.



Research and Development

Responding to rapid diversification of needs, KURODA has been pursuing more research and development on ball screws by looking ahead to the advancement of precision engineering technology for the next generation. We are conducting intensive studies into the basics of ideal ball screws jointly with academic laboratories to accumulate and analyze comprehensive test data on the accuracy, hardness, service life, and other vital factors of ball screws, and have established various evaluation systems.



KURODA supports high precision applications using materials and equipment that can achieve JIS lead accuracy grade C0.

Materials and Heat Treatment

KURODA makes it a rule to purchase dedicated ball screw materials based on detailed specifications intended for our company and internally control the heat treatment processes such as carburizing, quenching and induction hardening, of which records are carefully kept to assure traceability.

Grinding

KURODA uses high precision thread grinders dedicated for ball screws developed and manufactured uniquely by KURODA based on its screw gauge manufacturing know-how. These are carefully maintained at KURODA to enable ball screw manufacturing with JIS C0 grade high accuracy. These machines realize the world’s highest level of machining precision due to the combination of a vast machining database built up over a half-century with KURODA’s highly proficient technicians.

Assembly

The ball screw shafts, nuts, and recirculation parts that were machined to a high accuracy are meticulously assembled and finished through excellent work by experienced workers. The axial clearance and preloading are strictly administered to realize a smooth operability and high positioning accuracy that satisfies the requirements of a variety of machines and equipment.

Inspection

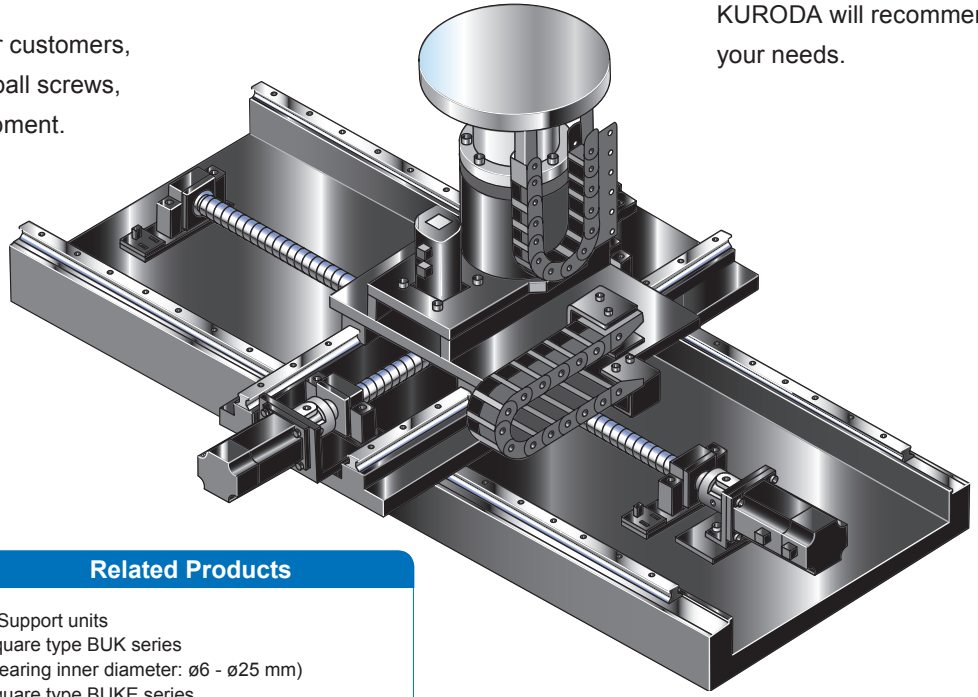
In order to assure stable measurement at JIS C0 grade lead accuracy, we have established a structure including our proprietary lead measuring machine installed in a strictly controlled thermostatic chamber as well as measuring machines classified by applications so as to satisfy any needs for various applications and measurement accuracies covering all processes from development to mass production.

KURODA JENATEC

BALL SCREWS AND LINEAR MOTION PRODUCTS

KURODA products can support your linear motion systems.

To fulfill a variety of needs and requirements of our customers, we provide a wide selection of products including ball screws, linear motion products, and related tools and equipment.



KURODA will recommend the optimal linear motion system which satisfies your needs.

Standard Precision Ball Screws

■ Ball screws with C3 accuracy grade
GP series (ø8 - ø20 mm)
DP series (ø6 - ø14 mm)

■ Ball screws with C5 accuracy grade
GG series (ø8 - ø32 mm)
FG series (ø10 - ø25 mm)
HG series (ø8 - ø20 mm)

■ Ball screws with C7 accuracy grade
GE series (ø8 - ø32 mm)
FE series (ø10 - ø25 mm)
GW series (ø8 - ø25 mm, with rolled screw shaft)
RW series (ø8 mm, resin nut)

■ Ball screws with C10 accuracy grade
GY series (ø8 - ø40 mm, with rolled screw shaft)

Custom Precision Ball Screws

■ Ball screws with C0-C10 accuracy grades
GR series (ø5 - ø125 mm)
DR series (ø6 - ø50 mm)

■ Ball screws with C3-C7 accuracy grades
FR series (ø10 - ø40 mm)

Related Products

■ Support units
Square type BUK series
(Bearing inner diameter: ø6 - ø25 mm)
Square type BUKE series
(Bearing inner diameter: ø6 - ø12 mm)
Round type BUM series
(Bearing inner diameter: ø6 - ø25 mm)
Round type BUT series
(Bearing inner diameter: ø20 - ø40 mm)

■ Low particle generating grease
KURODA C-Grease (Clean grease)
KURODA S-Grease (Clean and oscillation-proof grease)

■ Lubricating unit for ball screws
LUBSEAL (Applicable shaft diameter: ø10 - ø25 mm)

■ Slide screws with resin nuts
PW series (Accuracy grade C7, ø10, ø12 mm)
PY series (Accuracy grade C10, ø10, ø12 mm)

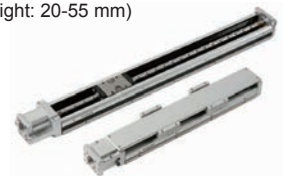
Couplings and Other Related Products

■ Couplings
Miki Pulley Co., Ltd.
http://www.mikipulley.co.jp/JP/
Sakai Manufacturing Co., Ltd.
http://www.sakai-mfg.com/
ISEL Co., Ltd.
http://isel.jp/

Ballscrew Actuators

A ballscrew actuator is a product in which ball screws and linear motion guides are integrated in one unit.
Please refer to KURODA's ballscrew actuator catalog.

■ Actuators with repeated positioning accuracy of ±1 µm (P grade) and ±3 µm (H grade)
SG series (Mounting height: 20-55 mm)

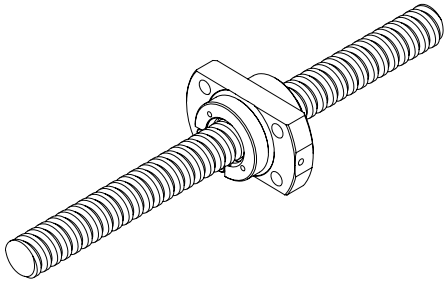


■ Actuators with repeated positioning accuracy of ±3 µm (H grade), ± 5µm (U grade) and ±10 µm (W grade)
SE series (Mounting height: 15-45 mm)

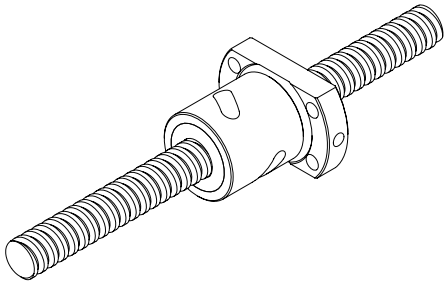
■ Full-cover type actuators
SC series (Mounting height: 23-45 mm)
(Repeated positioning accuracy: ±3 µm (H grade), ±5 µm (U grade) and ±10 µm (W grade))

Ball Screws Product Range

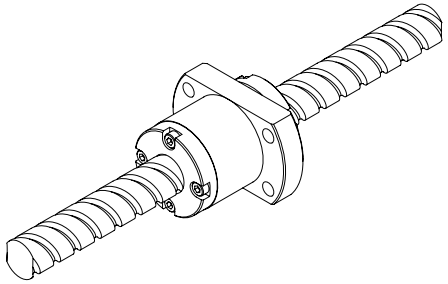
Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· High rotational speed · Low noise · Compact · Long service life	F series	FG series	Single nut	C5	ø10 to ø25	Unfinished shaft ends	Standard product
		FE series		C7			
		FR series	Single nut	C3 to C7	ø10 to ø40	Free design	Custom product
			Double nut	C3 to C5	ø32 to ø40		



Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· Compact · Fine-pitch positioning	D series	DP series	Single nut	C3	ø6 to ø14	One end finished	Standard product
		DR series	Single nut	C0 to C7	ø6 to ø50	Free design	Custom product
			Integral nut	C0 to C5	ø16 to ø50		



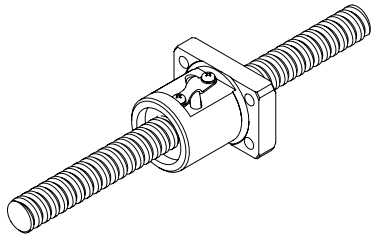
Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· High speed conveyance · Large lead	H series	HG series	Single nut	C5	ø8 to ø20	Unfinished shaft ends	Standard product



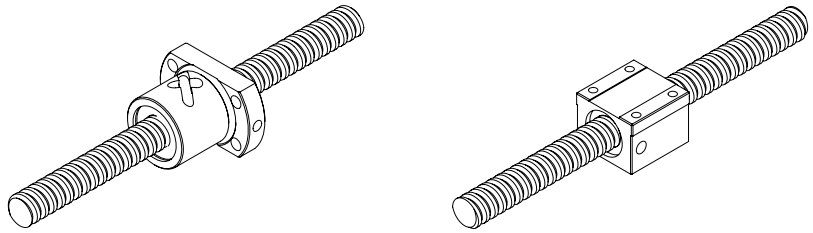
KURODA JENATEC

Ball Screws Product Range

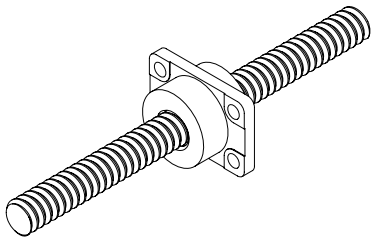
Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· Wide variety of shaft diameters · Wide variety of lead sizes · For positioning · For transfer	G series	GP series	Single nut	C3	ø8 to ø20	One end finished	Standard product
		GG series		C5	ø8 to ø32	Unfinished shaft ends	
		GE series		C7			
		GR series	Single nut	C0 to C7	ø5 to ø125	Free design	Custom product
			Integral nut	C0 to C5	ø20 to ø63		
			Double nut	C0 to C5	ø8 to ø125		



Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· For transfer · Wide variety of nut types (round and square types)	Rolled G series	GW series	Single nut	C7	ø8 to ø25	Unfinished shaft ends	Standard rolled product
		GY series		C10	ø8 to ø40		



Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· For transfer · For lighter load applications	R series	RW series	Single nut	C7	ø8	Unfinished shaft ends	Standard rolled product



Products Related to Ball Screws

Support units

Features and keywords	Series		Bearing type	Bearing combination	Accuracy grade of bearing	Bearing inner diameter
· Compact body · Fit for any mounting configurations · Built-in locking function	Square type	BUK series	Combined angular ball bearing	DF (face-to-face)	P5 grade (P0 grade for deep groove ball bearing)	ø6 to ø25
	Round type	BUM series				
	Round type	BUT series	High-thrust angular ball bearing	DF (face-to-face)	P4 grade	ø20 to ø40
	Square type	BUKE series	Radial ball bearing	---	P0 grade	ø6 to ø12

BUK (Square type)
BUKE (Square type)
BUM (Round type)

BUT (Round type)

Low particle generating grease

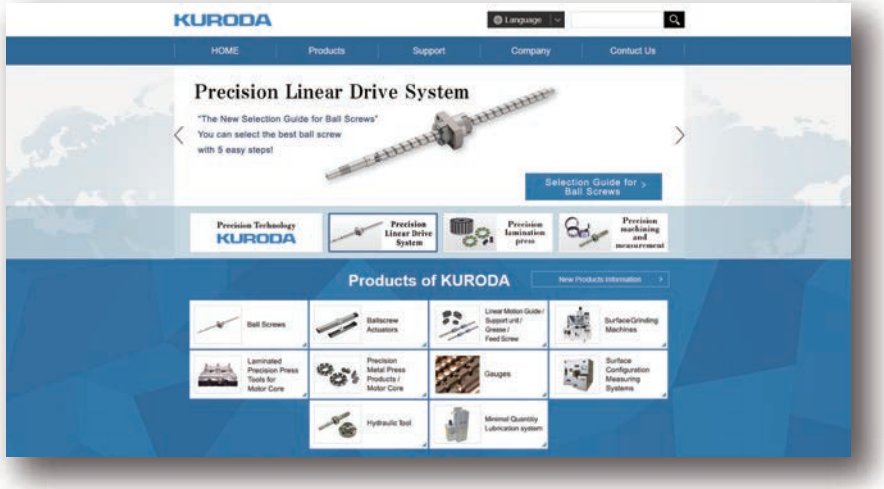
Features and keywords	Series	Operating temperature range	Thickener	Model number
· For clean environment · Excellent lubricating performance · Excellent torque performance · High rust prevention performance	KURODA C-Grease	-30 to +150°C	Urea	C1-080G-J (Supplied in a 80 g bellows-shaped container)
				C1-400G-J (Supplied in a 400 g bellows-shaped container)
	KURODA S-Grease	-20 to +150°C	Urea	S1-080G-J (Supplied in a 80 g bellows-shaped container)
				S1-400G-J (Supplied in a 400 g bellows-shaped container)

Slide screws with resin nuts

Features and keywords	Series		Nut combination	Accuracy grade	Shaft diameter	Screw shaft type	Product line
· Precise resin nut · Excellent mechanical property · Chemical-proof performance · Compact · Low price	Slide screw	PW series	Single nut	C7	ø10, ø12	Unfinished shaft ends	Standard product
		PY series		C10			

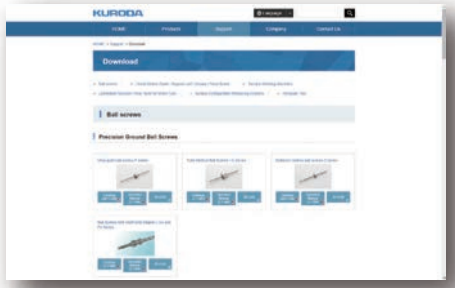
Data including product information, technical information, catalogs, and CAD data of linear motion products such as ball screws and ballscrew actuators can also be viewed from the KURODA website.

www. kuroda-precision.co.jp



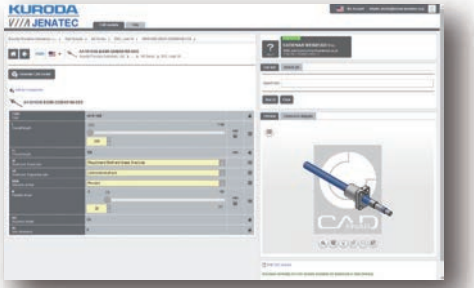
2D CAD data

2D CAD data (DXF format) can be downloaded free of charge from the KURODA website.



3D CAD data

3D CAD data can be downloaded free of charge from the PARTcommunity CAD data downloading service.



Catalogs

The catalogs of ball screws, ball screw linear motion products, ballscrew actuators and other products can be downloaded from the KURODA website.
For pamphlets, please contact your nearest sales location.

KURODA Ball Screws Catalog

Proper usage for safety ——— A- 2 to 4
Features of KURODA ball screws ——— A- 5
Construction, materials and heat treatment ——— A- 6
Types of nuts and flanges ——— A- 7
Custom products ——— A- 8 to 9
Ordering instructions (How to interpret ball screw model numbers) A-10 to 13

Overview of ball screws

Proper usage for safety

Be sure to read the following instructions before use.
For general instructions, refer to the text of this catalog.

The following safety precautions recommend the correct usage of our products to prevent an injury and damage.
These precautions are classified into 3 categories: "**DANGER**", "**WARNING**" and "**CAUTION**" according to the degree of possible injury or damage and the degree of impendence of such injury or damage.
Be sure to follow all these precautions, as they contain important matters regarding safety.

DANGER	WARNING	CAUTION
Indicates an impending hazardous situation that may arise due to improper handling or operation and could result in a serious injury or death.	Indicates a potentially hazardous situation that may arise due to improper handling or operation and could result in a serious injury or death.	Indicates a potentially hazardous situation that may arise due to improper handling or operation and could result in an injury or property damage only.

Be sure to obey "Industrial Safety and Health Act" and other safety rules and regulations in addition to these precautions.
There are some situations that may lead to a serious result according to circumstances, even if it is mentioned in the category of "**CAUTION**". Be sure to follow these precautions, as they contain important matters.

WARNING

- **Select a ball screw properly.**
  As operating conditions for products mentioned in this catalog are diverse, the applicability of ball screw to the intended system should be determined by the total system designer or the person who determined specifications for such system after conducting analysis and testing as necessary.
  The person who determined the applicability of the system shall be responsible for assuring the intended system's performance and safety. When configuring a system, the system designer should thoroughly examine all specifications for such a system by referring to the latest product catalog and data, and also take into consideration the possibility of equipment-related issues.
- **The ball screw should be handled by persons who have sufficient knowledge and experience.**
  · Thoroughly read this catalog and operation manual before use.
  · Never disassemble the ball screw. Dust may enter inside, degrading the accuracy of the ball screw and may lead to an accident. When the ball screw has been disassembled from necessity, return it to KURODA for repair and reassembling. (Fees will be incured.)
  · When mounting a ball screw to a machine and dismounting it from the machine, check that a means of fall prevention has been put in place and that the moving part of the machine has been fixed beforehand.
- **The products listed here are primarily for industrial use. When using the ball screw in the following conditions or environments, take the proper safety measures and consult KURODA beforehand.**
  · Conditions and environments other than specified and outdoor use.
  · Applications to nuclear power equipment, railroads aircraft, vehicles, medical equipment, equipment contacting food and drink, and the like.
  · Applications which require extreme safety and will also greatly affect persons and property.
- **During operation, make sure to keep your hands away from screws and ends of ball screw shafts, which are rotating parts, to prevent your hands from being caught.**
- **Pay adequate attention not to allow the products to be used for military purpose including for arms and weapons.**

Ball screw/General instructions (1)

Be sure to read the following instructions before use.
Also refer to “Proper usage for safety”.

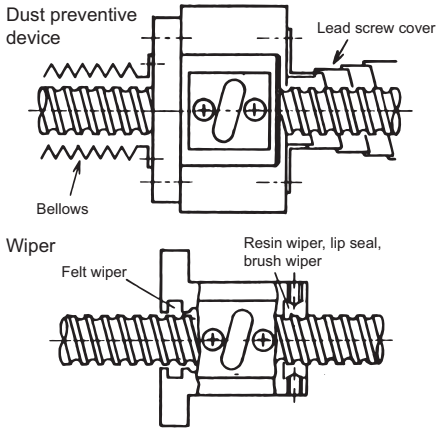
Caution for design

⚠ WARNING

- **Rotational speed**
  Referring to the section describing permissible rotational speed in this catalog, use a ball screw at or lower than the listed permissible rotational speed. Using the product at or above the permissible rotational speed could cause damage of its recirculation components and result in inoperable conditions. When using a vertical shaft, the damage may lead to dangerous accidents such as falling balls or parts.

⚠ CAUTION

- **Dust preventive cover**
  If it is likely that dust or other contaminant may enter inside the ball screw, be sure to attach a dust preventive cover, such as bellows or lead screw cover (steel bellows). Attaching a wiper at both ends of a nut will be more effective for dust prevention.
  The dust or contaminant caught in the ball screw could cause various defects including malfunction, abnormal noise, excessive vibration, accelerated wear-out, and early chipping.



- **Imbalanced load**
  In your system design, ensure that a radial or moment load is not directly loaded to the ball screw. Otherwise, it may result in shorter product service life due to concentrated load to a certain portion of balls in the screw.

- **Mounting of the ball screw**
  When mounting of the ball screw to a machine, the system design should allow its screw shaft to be mounted without taking off the nut. Removing and attaching the nut may cause some balls to drop outside of their recirculation path, which may result in damage of recirculation components. If such removal of a nut is inevitable, consult KURODA beforehand.

Caution for mounting and use

⚠ WARNING

- **Do not overrun the product.**
  If a nut of the ball screw is overrun and receives an impact at a stroke end, a resulting impression created on a screw groove could cause malfunction. If an end of the screw groove has a portion with no flute, such overturn could damage ball recirculation components, which may result in inoperable conditions.
  If a ball screw nut has been allowed to overrun, please contact KURODA to have it repaired at charge.
- **Pay adequate attention to the accuracy grade.**
  A moment load caused by misalignment of a ball screw, bearing, guide, nut, and housing and improper angularity may result in malfunction, abnormal noise, excessive vibration, shorter product service life as well as breakage of screw shafts due to rotating bending fatigue. Be careful with such defects because they may lead to a serious accident.
- **Be careful with falling off of components due to their own weight.**
  Since a ball screw has a low friction factor, its shaft or nut could potentially fall off due to its own weight. Be careful not to have your hand or fingers be caught under the fallen component.
- **Take care not to injure yourself.**
  The shafts and nut corners may have sharp edges for structural reasons, and there may be a risk of injuries such as cuts.
  In order to prevent injuries, take adequate care when handling products and wear protective equipment such as gloves during work.

⚠ CAUTION

- **Do not remove the nut.**
  When balls have dropped out of the nut or the nut has been removed from a shaft, do not attempt to reassemble them yourself. Return them to KURODA for repair. (Fees will be incured.)
  KURODA’s standard precision ball screws have unfinished shaft ends. The unfinished products are provided with a sleeve for separating the nut.

Ball screw/General instructions (2)

Be sure to read the following instructions before use.
Also refer to “Proper usage for safety”.

Overview of ball screws

- **Be careful of any dust or contaminants.**
  While a machine is assembled, put a cover to prevent the screw shaft from catching any dust or contaminants. Such contamination could cause malfunction of the machine.
- **When a component such as bearing, gear, or pulley is attached to a screw shaft, handle them with care so that there is no damage from impact.**
  Such impact could cause the screw shaft to bend.
  If an impact is accidentally applied to the shaft, check it first to see if it is not bent by checking the coupling of the screw shaft with a dial gauge, before assembling the additional components.
- **Use the product within the operating temperature limit.**
  Ball screws are designed to have a normal operating temperature limit of 60°C or below. Using them in an environment exceeding the temperature limit may result in a damaged lubrication or sealing components. If you need to use the screw in a special environment, consult with KURODA beforehand.

Lubricants

⚠ CAUTION

- **Type of lubricant**
  Unless specified, Alvania Grease S2 or Maltemp PS No.2 is contained in the nut as lubricant. Since rust preventive oil applied to the screw shaft also serves as lubricant, the ball screw can be used without additional application.
  Do not replace the initially applied lubricant with any product not listed below. Do not remove the rust preventive oil, either.

Grease

Application	Product name	Manufacturer
General purpose	Alvania Grease S2	SHOWA SHELL SEKIYU K.K.
	Multemp PS No. 2 Grease	KYODO YUSHI CO., LTD.
For dust prevention	KURODA C-Grease	KURODA PRECISION INDUSTSRIES LTD.
	KURODA S-Grease (Support for oscillation resistance)	KURODA PRECISION INDUSTSRIES LTD.

Lubricating oil

Application	Product name	Manufacturer
General purpose	Daphne Mechanic Oil	IDEMITSU KOSAN CO., LTD.
	Mobil Vactra Oil	EXXON MOBIL CORPORATION

Note) All product names of greases and oils are registered trademarks of their respective companies.

Storage

⚠ CAUTION

- **Storage method**
  Store the ball screws in an indoor place where temperature difference is as small as possible, avoiding high and low temperatures and high humidity.
  It should be stored in a horizontal state in the packaging originally sent by KURODA. In order to prevent unnecessary contamination by dust or rusting of the ball screws, do not open the outer packaging or any of the internal packaging unless necessary.

Checkup and caution

⚠ CAUTION

- **Checking the lubricant status and application of grease**
  For the sake of usability and dust prevention, lubricant for ball screws is, in general, contained only in the nut. When specified or required for overseas export, lubricant may be applied to the screw shaft.
  Depending on the screw size and screw shaft length, the amount of grease in the nut may not be sufficient. After running the nut back and forth the length of the shaft, check to see if the rolling side of the screw groove has enough grease on it. If the amount is not enough, apply additional grease to the screw shaft.
- **Checkup and reapplication of lubricant**
  Check the lubricant 2 to 3 months after the ball screw is used for the first time. If it is extremely dirty, it is recommend that you wipe off old grease and apply new grease. Then, check and supply the lubricant once every year as a general rule. However, as the service life of lubricants varies according to operating conditions and environment, adjust the intervals properly.

When reapplying additional lubricant, use the same brand of lubricant as was initially included.
For a ball screw model provided with a nut which does not have a grease filler hole, supply a sufficient amount of grease directly to the screw shaft and screw groove, carefully applying it over the components until the grease goes into the nut. For a model provided with a nut having a filler hole, supply a necessary amount of grease from the filler hole or a feeder (grease nipple, etc).
After applying additional grease, run the work for a full stroke to ensure the proper coverage of the grease on all components. Wipe off excess grease attached on the end of the screw shaft.
For more details on the size of the filler hole, refer to dimensions of each ball screws size.

KURODA ball screws

Excellent reliability and high accuracy

KURODA ball screws provide high accuracy as well as excellent reliability, as a result of our grinding, assembly, and inspection operations implemented in our plants under a strict temperature control, which is built on our gauge production expertise accumulated over many years.

High transmission efficiency

Ball screws have outstanding transmission efficiency of over 90%, incomparably higher than slide screws. Their required torque is just less than a third of what slide screws require. Therefore, it is easier to transfer linear motion into rotary motion.

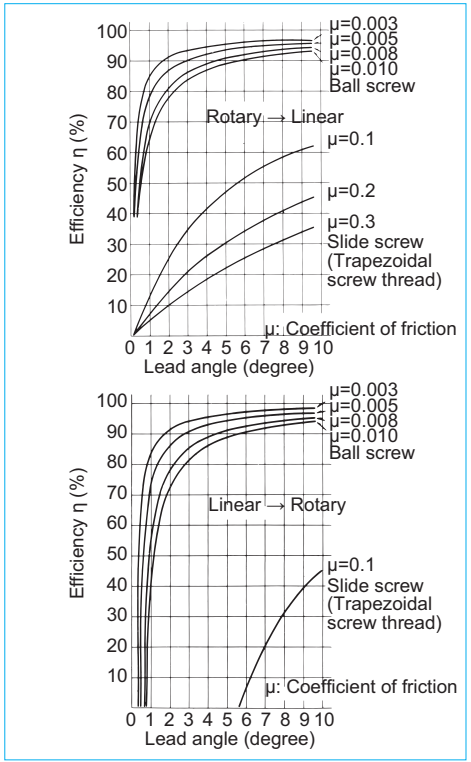


Figure 1: Mechanical efficiency of ball screws

Excellent durability

KURODA ball screws maintain excellent durability achieved by carefully selected materials, proper heat treatment, and machining with advanced product technologies.

Small axial clearance

Since KURODA ball screws adopt a gothic-arch groove profile, its axial clearance can be finely adjusted and rotated with minimal force. In addition, by applying preload to the screw, the axial clearance could be adjusted to 0 to achieve advanced rigidity.

Figure 2: Ball screw groove profile

Fine feeding

Due to rolling contacts made by balls, the ball screws can accurately provide fine feeding, even with extremely small starting friction at low speed, without exhibiting the stick slip tendency of slide screws.

High-speed operation

With high transmission efficiency and a low rate of self heat generation, KURODA ball screws can provide a high speed rotation.

Easy maintenance

Due to rolling contacts made by balls, no special maintenance other than regular supply of grease is required under normal operating conditions.

Wide variation

In order to fulfill a diverse range of customer requirements there are a wide variety of series and models of KURODA ball screws made available. Products include miniature ball screws, super large lead ball screws, high rotational speed ball screws, standard precision ball screws and more.

Construction

Ball screws are configured to have steel balls enclosed between a screw shaft and a nut, wherein steel balls rotate while they recirculate in the device.
KURODA ball screws are designed to adopt one of the following four standard recirculation systems.

■ Tube Method

This is a standard recirculation system for ball screws, using a curved tube as a recirculation part. In this system, steel balls are guided into the tube, make 1.5, 2.5, or 3.5 turns along the screw groove to return to the starting point, forming a circuit.
To enhance the load capacity of the screw, the number of circuits can be increased.

■ End Cap Method

This recirculation system has end caps attached to both ends of the nut, which are capable of scooping up the steel balls and forwarding them back to the starting point. A through hole is provided in the body of the nut to allow the steel balls to pass through. This system is adopted by ball screws with large leads (e.g. screw lead with twice or three times as large as the screw shaft diameter).

■ Deflector Method

This system is compact and has the most optimal rotational balance among the recirculation systems listed in this catalog. Steel balls rolling between a screw shaft and a nut are guided by a deflector inserted in the nut to make one recirculation per lead, forming a circuit.

■ End Deflector Method

This system has end deflectors incorporated into both ends of the nut, which are capable of scooping up steel balls and forwarding them back to the starting point. A through hole is provided in the body of the nut to allow the steel balls to pass through. The system is designed for a smooth flow of the steel balls. This structure realized higher rotational speed and low-noise operation in a compact nut body.

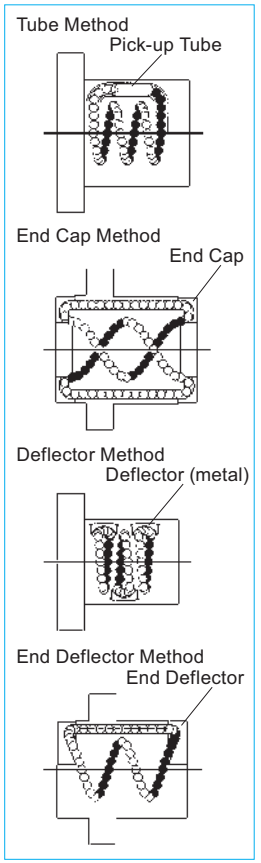


Figure 3: Recirculation system

Materials and heat treatment

The hardness of the screw groove surface is a critical factor for the service life of a ball screw. The rigidity of the shaft must satisfy the requirements of a shaft for transmission of loads. In order to fulfill such needs, KURODA ball screws are generally manufactured to maintain the minimum standard hardness of 58 HRC with the materials listed in Table 1. The screws also go through a surface hardening process to enhance their hardness to attain 58 to 62 HRC. Additionally, for some products which required heat resistance and/or corrosion resistance, stainless steel may be used to achieve hardness of 56 to 59 HRC through a surface hardening process.

Table 1: Materials and heat treatment

● Ground ball screws

	Material	Heat treatment	Hardness
Nut	Chromium-molybdenum steel SCM420	Carburizing and quenching	58 to 62 HRC
Screw shaft	Chromium-molybdenum steel SCM415 SCM420	Carburizing and quenching	58 to 62 HRC
	Chromium-molybdenum steel AISI4150HV	Induction quenching	58 to 62 HRC

● Rolled ball screws

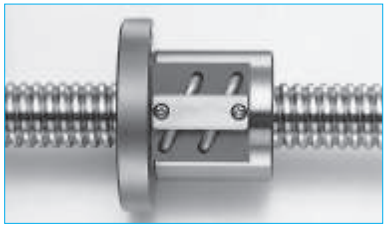
	Material	Heat treatment	Hardness
Screw shaft	S45C S55C	Induction quenching	56 to 62HRC
Nut	SCM420	Steel balls	58 to 62HRC
Steel ball	SUJ2	Quenching	60 HRC or above

Types

■ Nut combination types

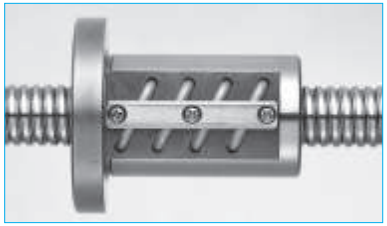
Single Nut

This is the simplest configuration. It is usually used with a small axial clearance. In order to improve the positioning accuracy, axial clearance can be eliminated and a preload can be applied by loading oversized balls. The single nut type with a preload is suitable for machines requiring small to medium loads and light to normal preloading, including semiconductor fabrication devices, assembling robots, precision instruments, and small NC machine tools, which require very high positioning accuracy.



Integral Nut

This type of nut has a screw portion separated into a load side and preload side via a pitch shift. The nut is offset according to the desired amount of preload. It provides the features of having a load side and preload side of a double nut integrated in one component. The integration into one body enables the nut to be shorter while maintaining stable rigidity and excellent operational performance.
The integral nut is suitable for all types of machines and equipment requiring medium to higher loads and normal to higher preloading.

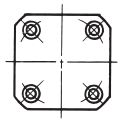
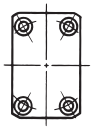
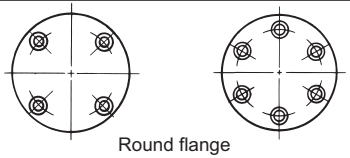


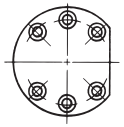
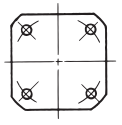
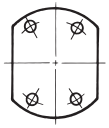
Double Nut

Two separate nuts, one designated as the load side and the other as the preload side are joined. They are rotated in opposite directions and fixed in tension by a pin inserted between them. A double nut is available in wider variety of sizes than integral nuts, and is suitable for applications with medium to higher preloading and with medium to higher loads, such as machines or equipment requiring highly precise positioning as well as high rigidity.

■ Flange types

The type of a flange is represented by a symbol provided for each nominal size as shown below.

Type symbol	A	B	C
Flange type	 Square flange	 Rectangle flange	 Round flange

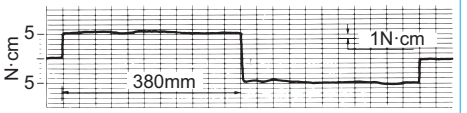
Type symbol	D	E	H
Flange type	 Single side cut, round flange	 Square (without spot facing)	 Double side cut, round flange

Custom products

In order to fulfill the diversified needs of our customer in various industries such as mounting/placement machines, semiconductor fabrication equipment, liquid crystal (LC) manufacturing machines, clean robots, SEM equipment, small machine tools, medical instruments, automotive production facilities, etc., KURODA provides, upon your request, various customized ball screws with special specifications. Our custom products include super precision ball screws (C0 grade or above), high rotational speed ball screws, stainless ball screws for special environments, low maintenance ball screws, and ball screws compliant with various environmental requirements.

■ Super precision ball screws (capable of fine pitch forwarding by a scale of 0.1 μm/pulse)

When a machine requires fine feeding with high accuracy, torque variation contributes to accuracy degradation. With a laser scanner, SEM instrument, and test/analysis equipment, torque variation causes fluctuations in the transfer speed of the machine. Under such conditions, a highly accurate continuous operation may not be achieved. However, building upon precision processing expertise acquired through years of gauge production business, KURODA has successfully developed in-house screw grinders to control the profile of the screw groove, circularity, and cylindricality in a highly accurate manner. With the reduced torque variation achieved by this precise control, we have realized ball screws capable of fine feeding by to a degree of 0.1 μm/pulse.



Shaft diameter: 15
Lead: 5
Rotational speed for measurement: 50 min^{-1}
Lubricant: Turbine oil #2
(ISO VG68)

■ Super precision ball screw (entire deflection of a screw shaft is 1/4 to 1/3 of C0 grade screw)

As long as the deflection of the screw shaft is within the permissible range and the shaft is kept straight though a typical mounting arrangement where rigid linear bearings are set at both ends of the ball screw, there is usually limited influence on operational accuracy. However, in such cases that a simplified guiding system has been put in place for weight or size considerations, bending of the ball screw may adversely impact operational accuracy, resulting in pitching or yawing errors. To prevent such issues, KURODA provides customized ball screws manufactured through our unique processing method, with which the deflection of the screw shaft center is mitigated to 1/4 to 1/3 of permissible deflection for C0 grade screws. For more information, please contact KURODA.

■ High rotational speed ball screw

KURODA provides special ball screws capable of fulfilling our customers' needs for rotational speed with a DmN of over 70,000. These ball screws are suitable for use in machine tools, robots, and other applications requiring high rotational speed. The F series is the standard product line designed for high rotational speed and low noise. Custom products in the G series can also be designed to meet the DmN requirements of high speed applications.
For more information, please contact KURODA.

■ Ball screw compliant with special environmental requirements

● All-stainless steel ball screw

Stainless steel ball screws which can be used in vacuum atmospheric conditions, clean room conditions, or an environment with special requirements such as chemical resistance, are also available. The stainless steel screws demonstrate minimal outgassing and excellent corrosion resistance.

For more information, please contact KURODA.

Materials of all-stainless steel screws

· Screw shaft, nut, and balls	Martensitic stainless steel
· Recirculation components	Austenitic stainless steel, precipitation hardening stainless steel, etc.
· Small screws and parts	Austenitic stainless steel

● Customized surface treatment

If you intend to use a ball screw in an environment where corrosion resistance is necessary, we can accommodate your needs by applying an additional anticorrosive black coating for rust-proofing. The black coating has a thickness of 1-2 μm. Some of the coating may be partially removed from areas subjected to consistent ball contact during the initial period after commencement of operation, but rust prevention will be maintained thereafter. If you need more advanced corrosion resistance, further additional fluorine coating on top of the anticorrosive black coating can be applied. Other types of surface treatment will also be provided upon request.

For more information, please contact KURODA.

■ Ball screws with lubricating unit

LUBSEAL is a lubricating unit attached to the ball screw nut which supplies a proper amount of grease to the screw groove. Recommended for use in semiconductor fabrication equipment, liquid crystal manufacturing machines, testing instruments, food processing machines, medical instruments, machine tools, and automobile manufacturing equipment. By adding LUBSEAL to compatible ball screws, the maintainance interval between grease applications can be greatly increased.

■ Various types of grease

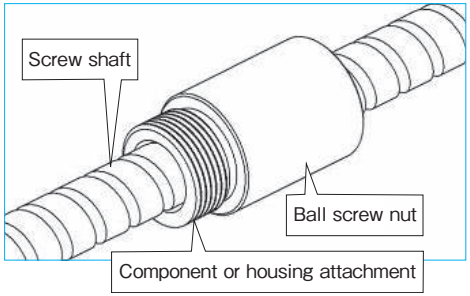
KURODA also provides a wide range of grease which fulfills your requirements, including clean room compliance, anti-fretting corrosion, extreme pressure, low temperature, and wide temperature range. For more information, please contact KURODA.

■ Examples of other custom ball screws with special dimensions and rating requirements

KURODA also provides custom ball screws with dimensions or specifications which are not listed as standard products in the catalog.

Various ball screws which require special profiles and dimensions to accommodate right-handed and left-handed screws, leads in imperial/US units (i.e. inches), hollow screw shafts, square nuts and others are available. Ball screws which are configured with a screw shaft having a gear, spline, serration or the like, or are capable of withstanding heavy loads can also be made upon request. For more information, please contact KURODA.

● Example of custom nut dimensions



Ordering instructions (How to interpret ball screw model numbers)

Model number	Series	Shaft Diameter	Lead	Number of Circuits	Nut Type	–	Flange Type	Ball Re-circulation System	Wiper Material	Thread Direction	–	Overall Screw Shaft Length	Shaft End Type	Thread Length	–	Accuracy Grade	Axial Clearance
	FE	15	10	P	S		H	P	N	R		1500	X	1440		C5	F
	(1)	(2)	(3)	(4)	(5)		(6)	(7)	(8)	(9)		(10)	(11)	(12)		(13)	(14)

(1) Ball Screw Series

Series	Standard series	Order-made series	Remarks
F Series	FE/C7 grade, FG/C5 grade	FR, FM, FZ/C3-C7 grades	* Order-made Ball Screws are indicated with □R, □M, and □Z which designate the following: □R: Order-made Ball Screws with established KURODA specifications and design. Details are listed in this catalog. □M: Customized Order-made Ball Screws with established KURODA specifications and design, but with a customized flange. □Z: Customized Order-made Ball Screws with specifications and design other than the above. GT indicates customized rolled ball screws.
D Series	DP/C3 grade	DR, DM, DZ/C0-C7 grades	
G Series	GE/C7 grade, GG/C5 grade, GP/C3 grade	GR, GM, GZ/C0-C10 grades	
	GY/C10 grade (rolled screw), GW/C7 grade (rolled screw)	GT/C7 or C10 grade (rolled screw)	
H Series	HG/C5 grade	–	
R Series	RW/C7 grade	–	

(2) Screw Shaft Diameter (unit: mm)
Indicated by a two-digit number or a number-alphabet combination.
· To show a screw shaft diameter with a 1-digit number, 0 needs to be added in front of the diameter to make it a two-digit code.
(Example) Screw shaft diameter 5 mm → 05
· Screw shaft diameters with 3-digits are indicated as follows:
100 mm → A0, 125 mm → C5

(3) Ball Screw Lead
Indicated by a two-digit number or a number-alphabet combination.
· To show a lead with a 1-digit number, 0 needs to be added in front to make it a two-digit code.
(Example) Lead of 1 mm → 01
· Leads whose actual value is not a whole number (i.e. including an increment of 0.5 mm) are represented with the letter F as indicated below. 1.5 mm → 1F, 2.5 mm → 2F

(4) Number of Circuits of the Ball Screw Nut

Symbol	Number of circuits	Applicable recirculation system
A	1.5 turns, 1 circuit	Tube method
B	1.5 turns, 2 circuits	
C	1.5 turns, 3 circuits	
D	2.5 turns, 1 circuit	
E	2.5 turns, 2 circuits	
F	2.5 turns, 3 circuits	
G	3.5 turns, 1 circuit	
R	3.5 turns, 2 circuits	

Symbol	Number of circuits	Applicable recirculation system
H	1 turn, 2 circuits	Deflector method
J	1 turn, 3 circuits	
K	1 turn, 4 circuits	
L	1 turn, 5 circuits	
M	1 turn, 6 circuits	
P	See specifications.	End deflector method
Q	See specifications.	End cap method
Z	Other	Not listed above (including ball screw shafts sold separately)

(5) Nut Type

Symbol	Nut type
S	Single nut
T	Integral nut
D	Double nut (pin type)
E	Double nut (spacer type)
F	Flange double nut (spacer type)
Z	Other (including ball screw shafts sold separately)

(6) Flange Type

Symbol	Flange type
A, B, C, D, E, H	Refer to page A-7.
N	No flange (e.g. square nut)
Z	Other: shapes and dimensions not listed in the catalog (including ball screw shafts sold separately)

(7) Ball Recirculation System (nut body shape)

Symbol	Ball recirculation system
A	Round type (tube method)
T	Protruded tube type (tube method)
U	Inlaid tube type (tube method)
K	Square type (tube method)
D	Deflector method
G	Guide plate method
E	End cap method
P	End deflector method

(8) Wiper Material

Symbol	Wiper material
P	Plastic wiper
L	Lip seal
F	Felt wiper
B	Brush wiper
N	No wiper
S	LUBSEAL™
Z	Other (including ball screw shafts sold separately)

(9) Thread Direction

Symbol	Description
R	Right-hand thread
L	Left-hand thread
Z	Other (including ball screw shafts sold separately)

(10) Overall Screw Shaft Length (indicated by a 4-digit number)
· The shaft length is indicated in the metric system (unit: mm), rounded down to the nearest whole number.

(11) Shaft End Configuration

Symbol	Description	Product line
A	Both ends unfinished	Standard product line
B	One end finished	Standard product line
X	Both ends finished	Standard product line, order-made product line
D	Both ends unfinished	For ordering GY series screw shafts without ball screw nuts
Y	Both ends finished	

(12) Thread Length (indicated by a 4-digit number)
· The length is indicated in the metric system (unit: mm), rounded down to the nearest whole number.

(13) Accuracy Grade
· The accuracy grade is indicated by C0, C1, C2, C3, C4, C5, and C7. Because accuracy grade C10 is 3-digits long, "CA" is used instead.

(14) Axial Clearance

Symbol	Axial clearance
S	0 mm (preloaded)
F	0.005 mm or less
H	0.010 mm or less
M	0.030 mm or less
L	0.200 mm or less
Y	Axial clearance for rolled ball screws (Refer to the specifications of the GY/GW series.)
Z	Other

■ Ordering instructions for standard precision ball screws

Unfinished shaft ends

■ GE, GG, FE, or FG series ball screws

● For screws without additional end machining

<Example>

GE/FE □□□□ - □□□□ - Overall screw shaft length A

GG/FG □□□□ - □□□□ - Overall screw shaft length A

Model Number

● With additional machining

Enter the overall screw shaft length followed by X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

GE/FE □□□□ - □□□□ - Overall screw shaft length X Thread length - C7M

GG/FG □□□□ - □□□□ - Overall screw shaft length X Thread length - C5F

■ HG series ball screws

● For screws without additional end machining

<Example>

HG □□□□ - □□□□ - Overall screw shaft length A

Model Number

● With additional machining

Enter the overall screw shaft length followed by X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

<Example>

HG □□□□ - □□□□ - Overall screw shaft length X Thread length - C5$^{F}_{H}$

One shaft end finished

■ GP/DP series ball screws

● For screws without additional end machining

<Example>

GP □□□□ - □□□□ - Overall screw shaft length B - C3$^{S}_{P}$

DP □□□□ - □□□□ - Overall screw shaft length B - C3$^{S}_{P}$

Model Number

● With additional machining

Enter the overall screw shaft length followed by X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

GP □□□□ - □□□□ - Overall screw shaft length X Thread length - C3$^{S}_{F}$

DP □□□□ - □□□□ - Overall screw shaft length X Thread length - C3$^{S}_{F}$

■ Ordering instructions for rolled ball screws

Unfinished shaft ends

■ GY series ball screws

[For ball screws with both a shaft and nut]

● For screws without additional end machining

<Example>

GY □□□□ - □□□□ - Overall screw shaft length A

Model Number

● With additional machining

Enter the overall screw shaft length followed by X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

GY □□□□ - □□□□ - Overall screw shaft length X Thread length - CAY

[Nut only]

Fill in the information up to “Thread Direction”. There is no need to fill in the overall screw shaft length etc. because there is no shaft.

<Example>

GY □□□□ - □□□□

[Shaft only]

● For screws without additional end machining

Enter D as a symbol for the shaft end type.

<Example>

GY □□ZZ - ZZZZ - Overall screw shaft length D

● With additional machining

Enter the overall screw shaft length followed by Y (the symbol for GY Series shafts sold separately with finished shaft ends), thread length, accuracy grade, and axial clearance.

<Example>

GY □□ZZ - ZZZZ - Overall screw shaft length Y Thread length - CAY

Note) GY Series screw shafts with the same diameter and lead size are compatible regardless of nut type.

Unfinished shaft ends

■ GW series ball screws

[For ball screws with both a shaft and nut]

● For screws without additional end machining

<Example>

GW □□□□ - □□□□ - Overall screw shaft length A

Model Number

● With additional machining

Enter the overall screw shaft length followed by X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

GW □□□□ - □□□□ - Overall screw shaft length X Thread length - C7Y

■ Ordering instructions for order-made ball screws

■ For order-made ball screws with nut specifications and design listed in this catalog

Simply enter the overall screw shaft length, X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance after the listed Model Number information.

<Example>

GR/DR/FR □□□□ - □□□□ - Overall screw shaft length X Thread length - Accuracy grade Axial clearance

Model Number

■ For order-made ball screws with a custom flange, but otherwise listed nut specifications and design

Enter GM/DM/FM followed by shaft diameter, lead, number of circuits, and nut type. Select the applicable the flange type (either N for no flange or Z for flange types other than those listed). Enter the ball recirculation system, wiper material, thread direction, and finally overall screw shaft length, X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

<Example>

GM/DM/FM □□□□ - Z □□□ - Overall screw shaft length X Thread length - Accuracy grade Axial clearance

Model Number

■ For customized order-made ball screws with specifications and design other than the above

Enter GZ/DZ/FZ followed by shaft diameter, lead, number of circuits, and nut type. Enter Z for flange type. Enter the ball recirculation system, wiper material, thread direction, and finally overall screw shaft length, X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

<Example>

GZ/DZ/FZ □□□□ - Z □□□ - Overall screw shaft length X Thread length - Accuracy grade Axial clearance

Model Number

■ Ordering instructions for customized rolled ball screws

■ For rolled ball screws with specifications and design other than the those listed in this catalog

Enter GT followed by shaft diameter, lead, number of circuits, and nut type. Enter Z for flange type. Enter the ball recirculation system, wiper material, thread direction, and finally overall screw shaft length, X (the symbol for finished shaft ends), thread length, accuracy grade, and axial clearance.

<Example>

GT □□□□ - Z □□□ - Overall screw shaft length X Thread length - Accuracy grade Axial clearance

Model Number

Standard precision ball screws

Page

Features and specifications of standard precision ball screws — B- 2

Ordering instructions, size reference chart — B- 3

6 mm shaft diameter — B- 4 to 5

8 mm shaft diameter — B- 6 to 17

10 mm shaft diameter — B- 18 to 29

12 mm shaft diameter — B- 30 to 53

14 mm shaft diameter — B- 54 to 55

15 mm shaft diameter — B- 56 to 85

16 mm shaft diameter — B- 86 to 89

20 mm shaft diameter — B- 90 to 113

25 mm shaft diameter — B-114 to 127

32 mm shaft diameter — B-128 to 131

Standard precision ball screws

Features

● GP, GG, GE series: Various screw shaft diameters, leads, and accuracy grades available for your selection

• An optimal size can be selected from a variety of screw shaft diameters, leads, and accuracy grades eliminating unnecessary compromise in product selection.

● FG, FE series: High rotational speed

• Delivers higher rotational speed up to 5,000 min^{-1} through our unique recirculation system.
• In consideration of the load rating, the products have higher specifications than previous KURODA products.

● DP series: The industry's smallest compact nut class

• Utilizes a deflector recirculation system which realizes minimal nut dimensions.
• With leads from 1 mm, the DP series is suitable for machines and equipment that requires fine pitch forwarding and precise positioning.

● HG series: Optimal for high-speed conveyance achieved by larger leads

• Larger leads enable a higher feed rate at a low rotational speed.
• With the adoption of multi-start thread, we have achieved a more compact nut with an improved load rating.

□ Summary of the specifications

Screw shaft diameter	ø6 to ø32 mm
Lead	1 to 60 mm
Accuracy grade	C3 grade: GP, DP C5 grade: FG, GG, HG C7 grade: FE, GE
Axial clearance	Refer to each product specification table.
Shaft end type	One shaft end finished (C3 grade: GP, DP) Unfinished shaft ends
Product line	Standard product

□ Options available

Series	Additional shaft-end machining	Surface treatment	Change of grease type	Change of nut direction	LUBSEAL
GP, DP FG, GG, HG FE, GE	○	○	○	○	See the notes below.

• The GP and DP series have one shaft end finished.
• The surface treatment is anticorrosive black coating (coating thickness: 1 to 2 µm).
• Contact KURODA regarding the inclusion of grease types other than the standard grease.
• Please refer to the LUBSEAL series and size reference chart or the option specifications on each product's page to determine whether or not LUBSEAL is supported.

□ Model numbers of each series

Example model numbers

Series	Shaft diameter	Lead	Number of circuits	Combination		Flange type	Ball recirculation system	Wiper material	Thread direction		Overall screw shaft length	Shaft end type	Thread length		Accuracy grade	Axial clearance
FG	15	10	P	S	–	H	P	N	R	–	0900	X	0840	–	C5	F
DP	6 to 14	1 to 4	J			H	D	N			To be shown with a 4-digit number in metric units (mm)	B, X	To be shown with a 4-digit number in metric units (mm)		C3	F, S
FG	10 to 25	5 to 25	P			H	P	N				A, X			C5	F
FE															C7	M
GG	8 to 32	2 to 25	See specifications.	S	–	See specifications.	See specifications.	See specifications.	R	–		A, X		–	C5	F
GE															C7	M
GP	8 to 20	2 to 5					A					B, X			C3	F, S
HG		12 to 60	Q				Q					A, X			C5	F, H

• For more details, refer to the specifications and data for each size.

□ Screw shaft diameter and lead combinations

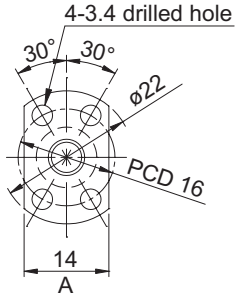
Screw shaft diameter (mm)	Lead (mm) 1	2	3	4	5	10	12	15	16	20	25	30	32	40	60
6	○														
8	○	● ○		●			□								
10		● ○		●		● ♦									
12		● ○	○	●	●	● ♦				● ♦		□			
14				○											
15		●		●	● ♦	● ♦		●		● □ ♦				□	
16									●				□		
20				●	●	● ♦				● □ ♦		□		□	□
25					● ♦	● ♦				●	● ♦				
32					●	●									

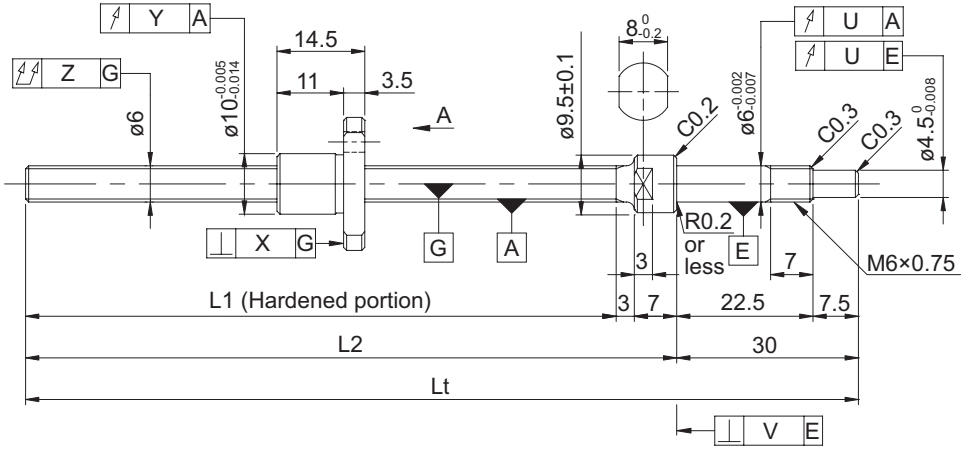
●: GP, GG, GE series
○: DP series (small lead)
□: HG series (large lead)
♦: FG, FE series (high rotational speed)

DP series (Accuracy grade C3)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	6 - 1	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	0.8	
Root diameter (mm)	5.3	
Series	DP	
Basic dynamic load rating C (N)	550	
Basic static load rating C0 (N)	1150	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	Up to 1.3	Up to 0.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	None	
Lubricant	Multemp PS2	





Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP0601JS-HDNR-0130B-C3S	90	100	130	75	0.012	0.008	0.008
DP0601JS-HDNR-0130B-C3F							
DP0601JS-HDNR-0210B-C3S	170	180	210	155	0.012	0.008	0.008
DP0601JS-HDNR-0210B-C3F							

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.008	0.025	0.008	0.0025	Up to 1.3	----	0.04
					----	Up to 0.5	
0.008	0.008	0.035	0.008	0.0025	Up to 1.3	----	0.05
					----	Up to 0.5	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, KURODA's recommended shaft end finish types are not available. Regarding additional machining of the overall length, please contact KURODA with your orders.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
DP0601JS-HDNR-0210B-C3F → DP0601JS-HDNR-0210X0170-C3F
(0210: Overall screw shaft length, 0170: Thread length)

Applicable supported end support unit	Applicable fixed end support unit
----	BUK-6 (Square type)
	BUM-6, BUM-6F (Round type)

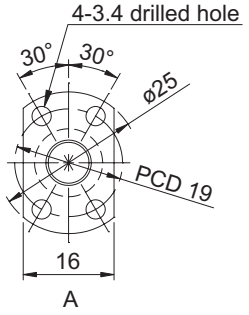
● Optional specifications

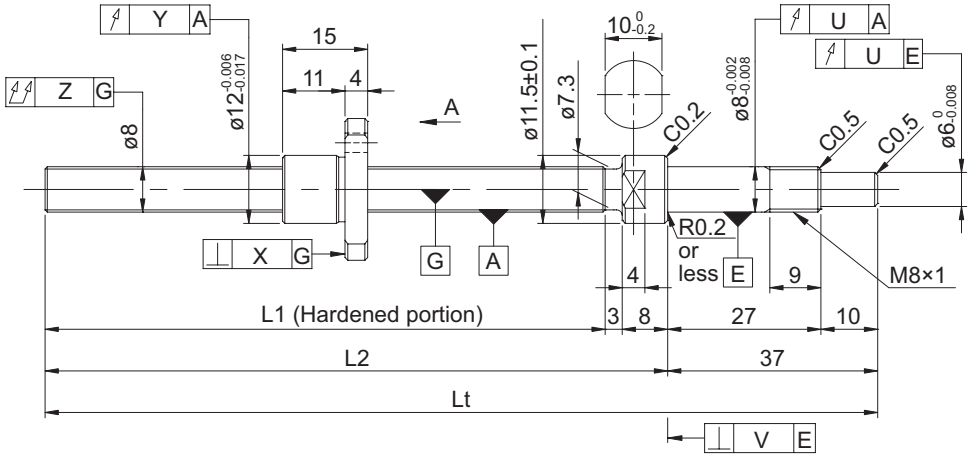
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Screw shaft diameter ø8

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 1	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	0.8	
Root diameter (mm)	7.3	
Series	DP	
Basic dynamic load rating C (N)	650	
Basic static load rating C0 (N)	1600	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	Up to 1.8	Up to 0.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	None	
Lubricant	Multemp PS2	





• Shaft end finish type

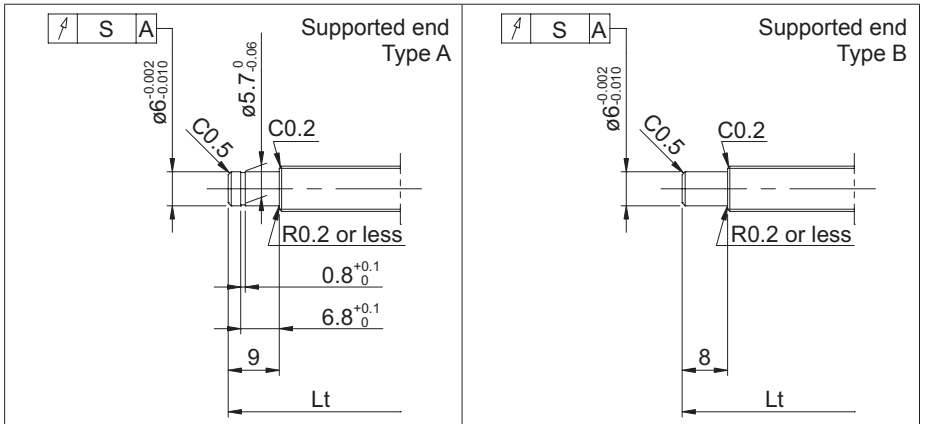
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

DP0801JS-HDNR-0260B-C3F → DP0801JS-HDNR-0260X0203-C3F

(0260: Overall screw shaft length, 0203: Thread length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Model No. (One shaft end finished)	Screw shaft length			Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	L2	Lt		±E_c	e_c	e_{300}
DP0801JS-HDNR-0180B-C3S	132	143	180	117	0.010	0.008	0.008
DP0801JS-HDNR-0180B-C3F							
DP0801JS-HDNR-0260B-C3S	212	223	260	197	0.010	0.008	0.008
DP0801JS-HDNR-0260B-C3F							

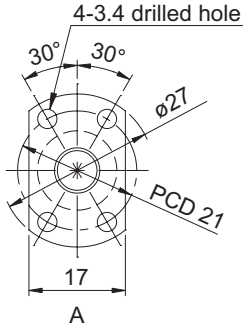
Accuracy of each part						Preload torque (N·cm)		Mass (kg)
X	Y	Z	S	U	V	Without clearance	With clearance	
0.008	0.008	0.030	0.010	0.008	0.0025	Up to 1.8	----	0.08
						----	Up to 0.5	
0.008	0.008	0.035	0.010	0.008	0.0025	Up to 1.8	----	0.11
						----	Up to 0.5	

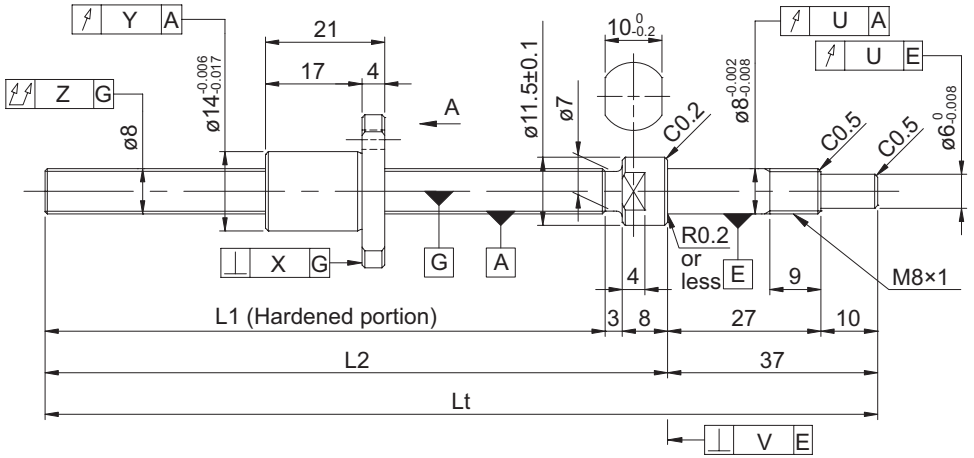
• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø8

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 2	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	1.2	
Root diameter (mm)	7.0	
Series	DP	
Basic dynamic load rating C (N)	1350	
Basic static load rating C0 (N)	2300	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	Up to 2.0	Up to 0.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	None	
Lubricant	Multemp PS2	





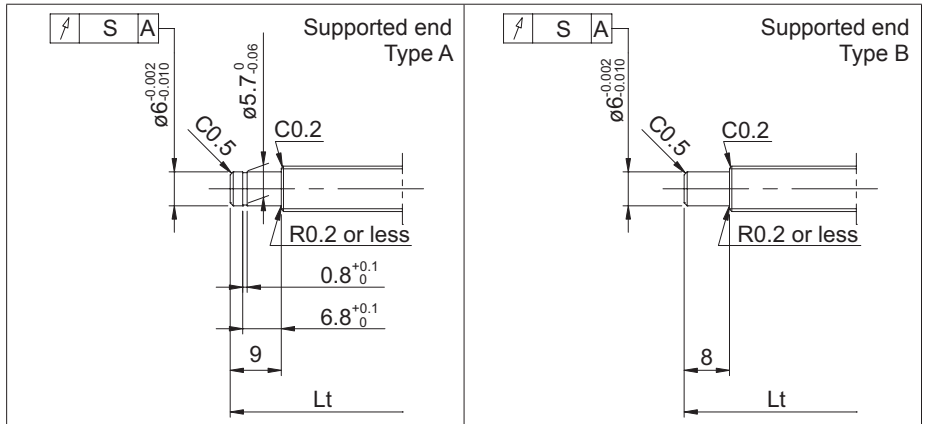
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP0802JS-HDNR-0180B-C3S	132	143	180	111	0.012	0.008	0.008
DP0802JS-HDNR-0180B-C3F							
DP0802JS-HDNR-0260B-C3S	212	223	260	191	0.012	0.008	0.008
DP0802JS-HDNR-0260B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
DP0802JS-HDNR-0260B-C3F → DP0802JS-HDNR-0260X0203-C3F
0260: Overall screw shaft length
0203: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

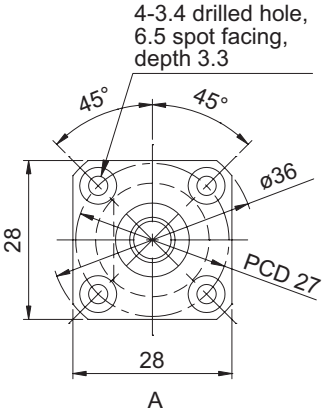
Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.009	0.030	0.010	0.008	0.0025	Up to 2.0	----	0.09
						----	Up to 0.5	
0.008	0.009	0.035	0.010	0.008	0.0025	Up to 2.0	----	0.11
						----	Up to 0.5	

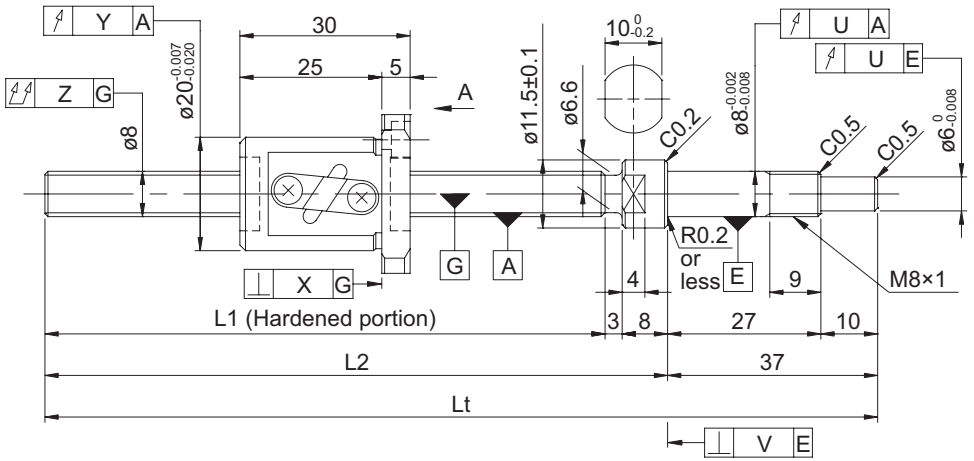
KURODA JENATEC

Screw shaft diameter ø8

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 2	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	1.5875	
Root diameter (mm)	6.6	
Series	GP	
Basic dynamic load rating C (N)	1220	1950
Basic static load rating C0 (N)	1300	2600
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.3 to 2.0	Up to 0.5
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Felt	
Lubricant	Alvania Grease S2	





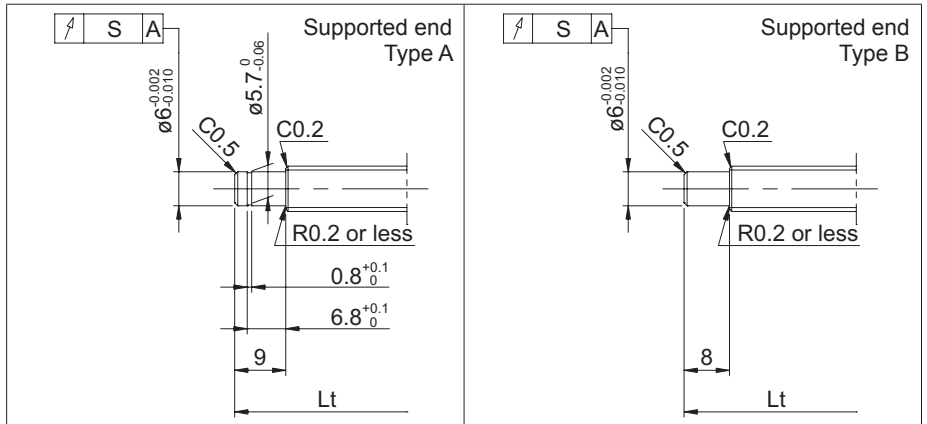
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP0802DS-AAFR-0170B-C3S	122	133	170	92	0.010	0.008	0.008
GP0802DS-AAFR-0170B-C3F							
GP0802DS-AAFR-0250B-C3S	202	213	250	172	0.012	0.008	0.008
GP0802DS-AAFR-0250B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
GP0802DS-AAFR-0250B-C3F → GP0802DS-AAFR-0250X0193-C3F
↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

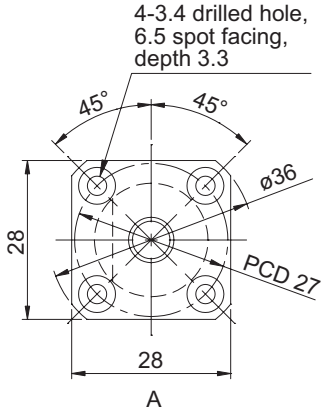
Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.008	0.030	0.010	0.008	0.0025	0.3 to 2.0	----	0.13
						----	Up to 0.5	
0.008	0.008	0.035	0.010	0.008	0.0025	0.3 to 2.0	----	0.15
						----	Up to 0.5	

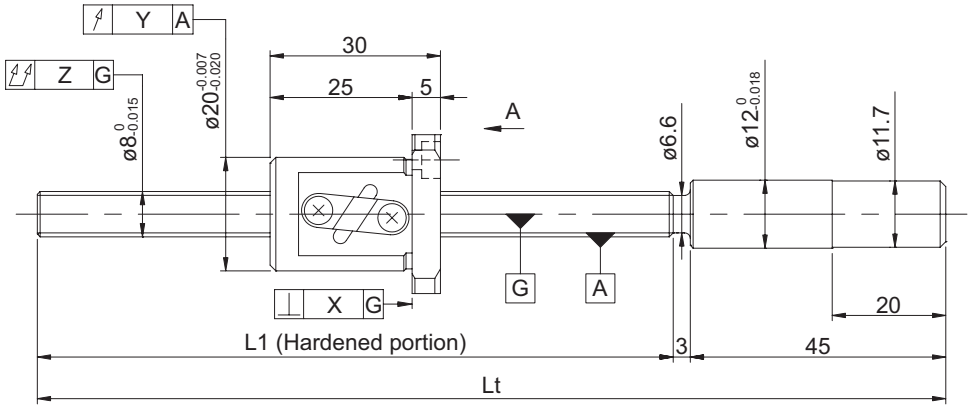
KURODA JENATEC

Screw shaft diameter ø8

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 2		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	1.5875		
Root diameter (mm)	6.6		
Series	GG		GE
Basic dynamic load rating C (N)	1950		
Basic static load rating C0 (N)	2600		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	Up to 2.1	Up to 0.5	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG0802DS-AANR-0215A	167	215	137	0.023	0.018	0.018
GE0802DS-AANR-0215A				0.05/300	----	----

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

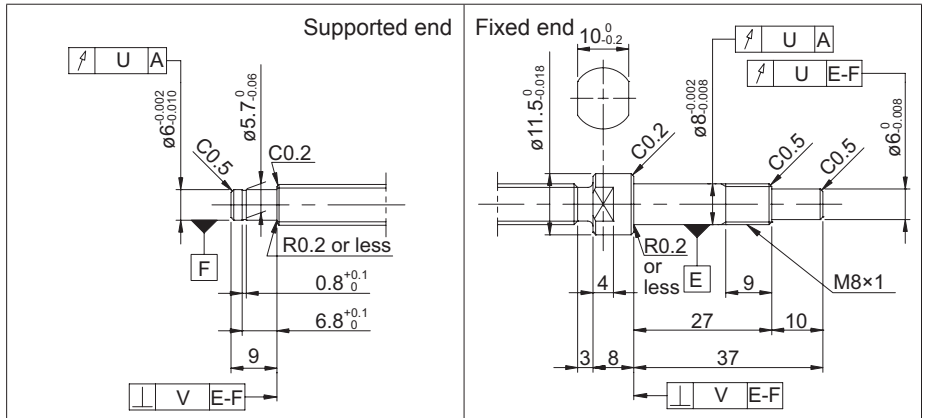
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG0802DS-AANR-0215A → GG0802DS-AANR-0215X0158-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

● Optional specifications

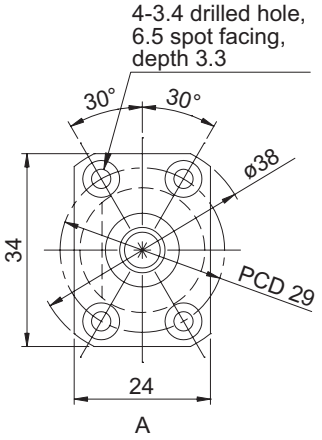
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

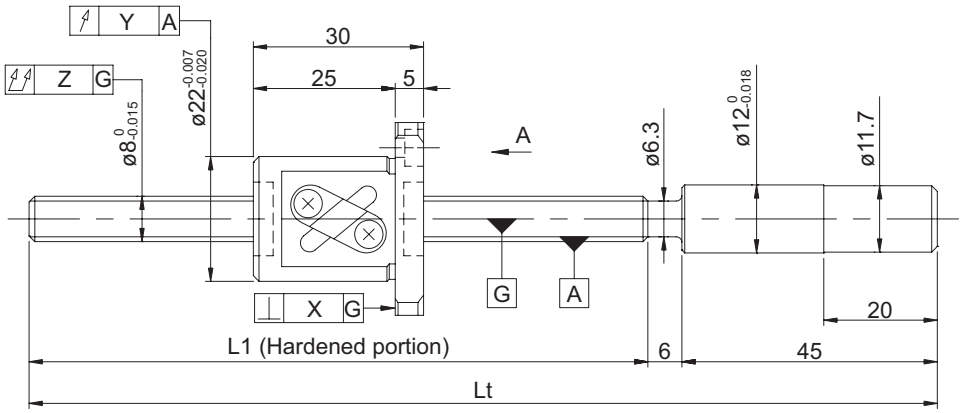
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.065	0.010	0.005	Up to 2.1	Up to 0.5	0.13
0.014	0.020	0.100	----	----	----	----	

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 4		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.000		
Root diameter (mm)	6.3		
Series	GG		GE
Basic dynamic load rating C (N)	2350		
Basic static load rating C0 (N)	3300		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.2 to 2.9	Up to 0.5	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Felt wiper		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG0804DS-BAFR-0215A	164	215	134	0.023	0.018	0.018
GG0804DS-BAFR-0340A	289	340	259			
GE0804DS-BAFR-0215A	164	215	134	0.05/300	----	----
GE0804DS-BAFR-0340A	289	340	259			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

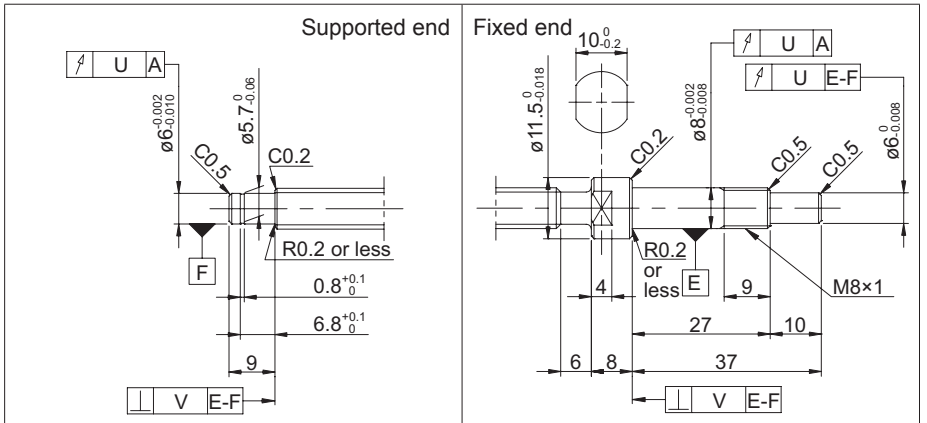
• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG0804DS-BAFR-0340A → GG0804DS-BAFR-0340X0280-C5F
(0340 → Thread length, 0280 → Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

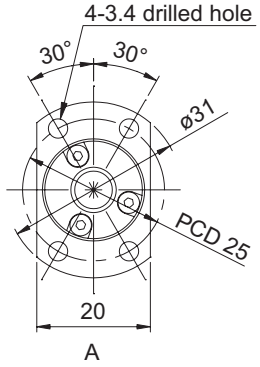
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.065	0.010	0.005	0.2 to 2.9	Up to 0.5	0.18
		0.075					0.22
0.014	0.020	0.100	----	----	----	----	0.18
							0.22

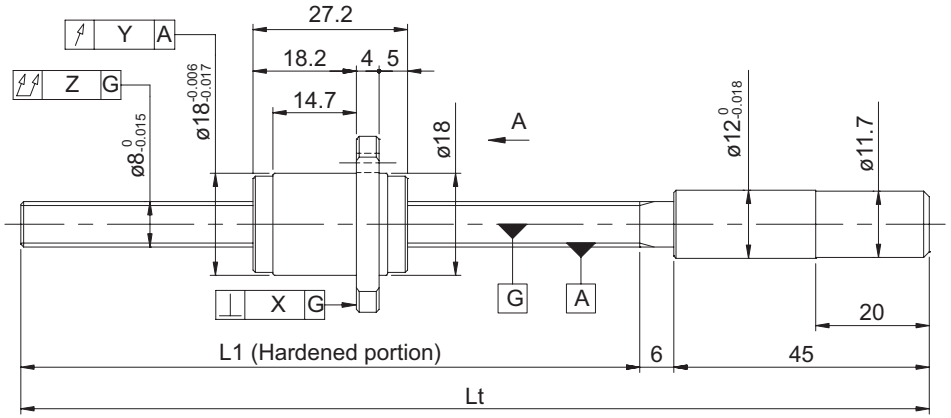
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø8

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 12
Number of circuits / Thread direction	1.67 turns 2 circuits (2 threads) / Right-hand
Ball diameter (mm)	1.5875
Root diameter (mm)	6.6
Series	HG
Basic dynamic load rating C (N)	2490
Basic static load rating C0 (N)	3460
Accuracy grade / Axial clearance symbol	C5 / H
Axial clearance (mm)	0.010 or less
Preload torque (N·cm)	----
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Multemp PS2





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
HG0812QS-HEZR-0340A	289	340	261	0.023	0.018	0.018

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

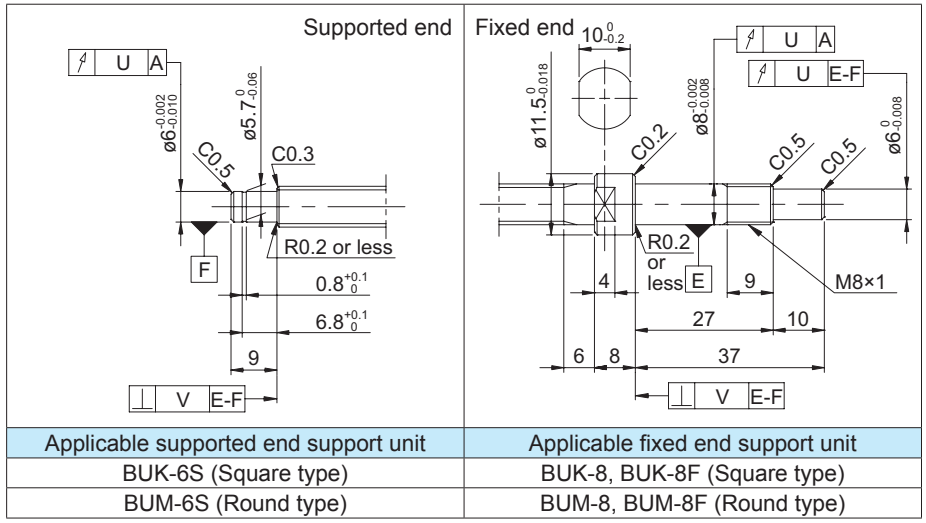
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG0812QS-HEZR-0340A → HG0812QS-HEZR-0340X0280-C5H

0340: Thread length
0280: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

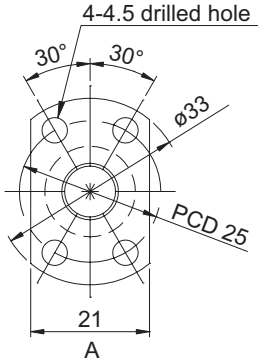
● Optional specifications

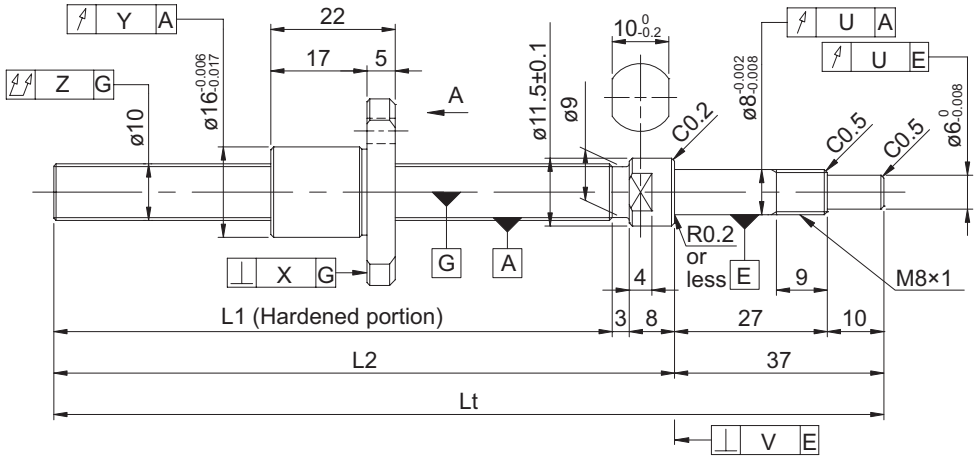
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part					Preload torque (N·cm)	Mass (kg)
X	Y	Z	U	V		
0.010	0.012	0.075	0.010	0.005	----	0.20

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 2	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	1.2	
Root diameter (mm)	9.0	
Series	DP	
Basic dynamic load rating C (N)	1550	
Basic static load rating C0 (N)	3000	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.1 to 2.4	Up to 0.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	None	
Lubricant	Multemp PS2	





Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP1002JS-HDNR-0220B-C3S	172	183	220	150	0.010	0.008	0.008
DP1002JS-HDNR-0220B-C3F							
DP1002JS-HDNR-0320B-C3S	272	283	320	250	0.012	0.008	0.008
DP1002JS-HDNR-0320B-C3F							

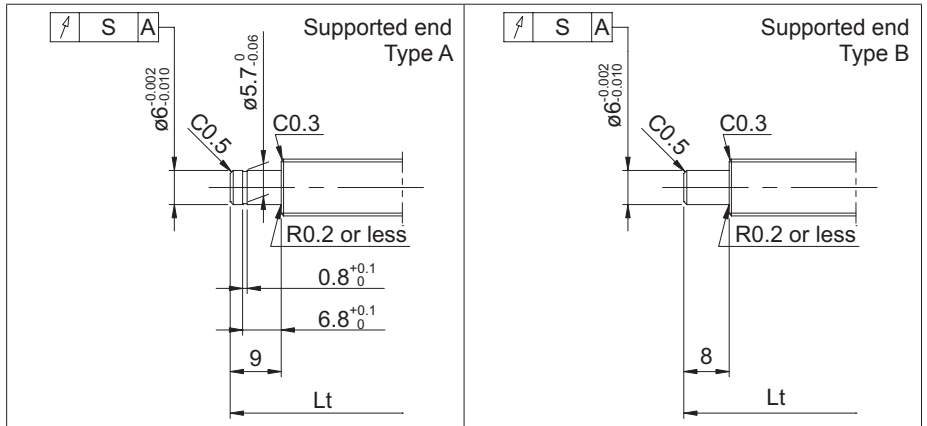
Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.009	0.030	0.011	0.007	0.0025	0.1 to 2.4	----	0.15
						----	Up to 0.5	
0.008	0.009	0.040	0.011	0.007	0.0025	0.1 to 2.4	----	0.20
						----	Up to 0.5	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
DP1002JS-HDNR-0320B-C3F → DP1002JS-HDNR-0320X0263-C3F
(0320: Thread length, 0263: Overall screw shaft length)



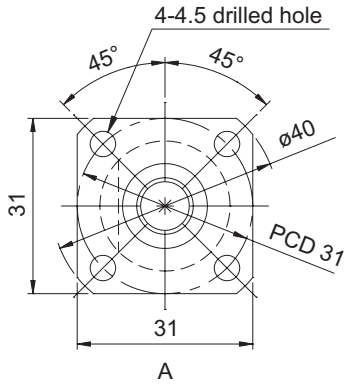
Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

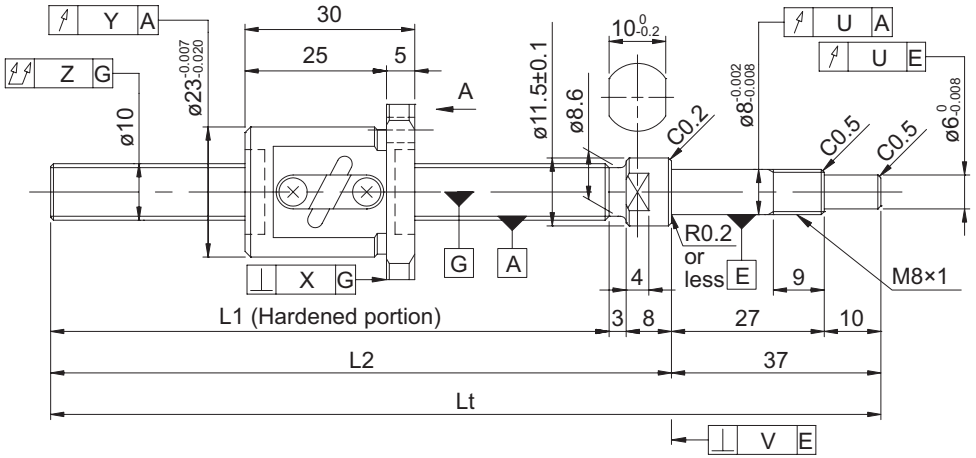
• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 2	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	1.5875	
Root diameter (mm)	8.6	
Series	GP	
Basic dynamic load rating C (N)	1410	2250
Basic static load rating C0 (N)	1650	3300
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.3 to 2.5	Up to 0.5
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Felt	
Lubricant	Alvania Grease S2	





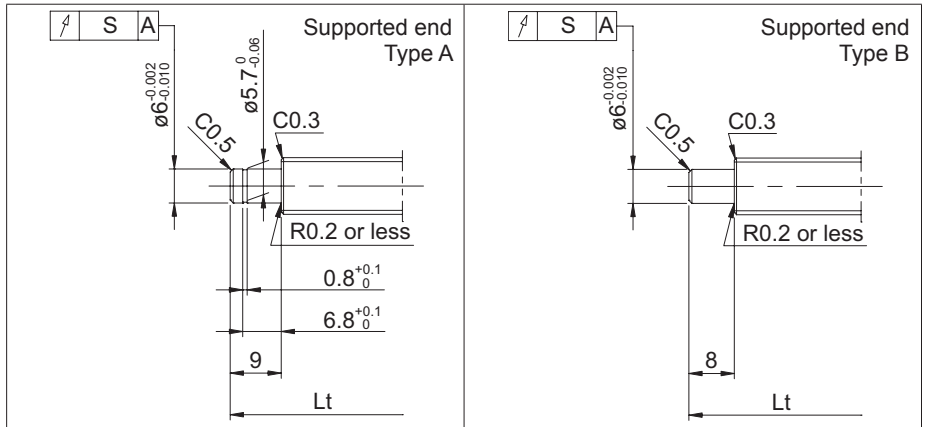
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP1002DS-EAFR-0210B-C3S	162	173	210	132	0.010	0.008	0.008
GP1002DS-EAFR-0210B-C3F							
GP1002DS-EAFR-0320B-C3S	272	283	320	242	0.012	0.008	0.008
GP1002DS-EAFR-0320B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
GP1002DS-EAFR-0320B-C3F → GP1002DS-EAFR-0320X0263-C3F
Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

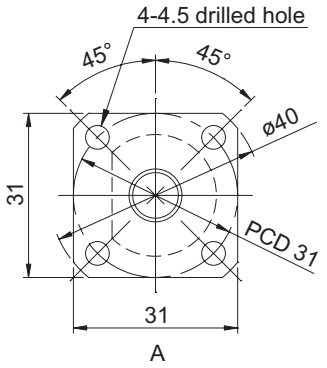
• Optional specifications

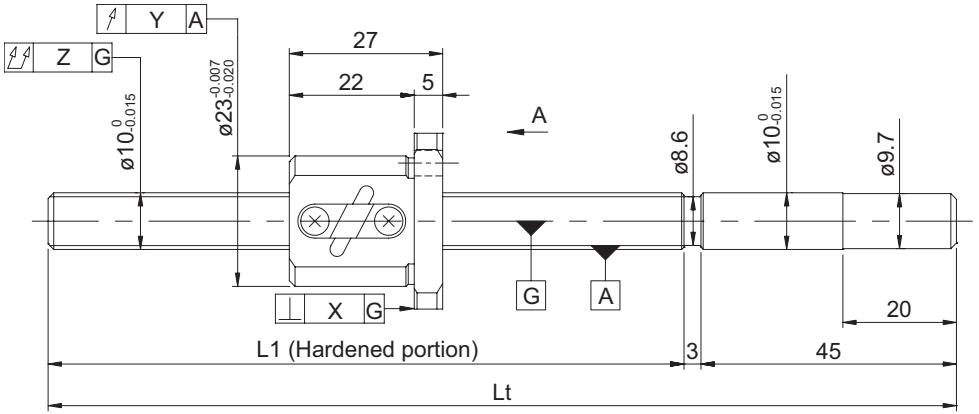
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.010	0.030	0.011	0.007	0.0025	0.3 to 2.5	----	0.19
						----	Up to 0.5	
0.008	0.010	0.040	0.011	0.007	0.0025	0.3 to 2.5	----	0.25
						----	Up to 0.5	

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 2		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	1.5875		
Root diameter (mm)	8.6		
Series	GG		GE
Basic dynamic load rating C (N)	2250		
Basic static load rating C0 (N)	3300		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.1 to 2.5	Up to 0.5	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1002DS-EANR-0250A	202	250	175	0.023	0.018	0.018
GG1002DS-EANR-0320A	272	320	245			
GE1002DS-EANR-0250A	202	250	175	0.05/300	----	----
GE1002DS-EANR-0320A	272	320	245			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

• Shaft end finish type

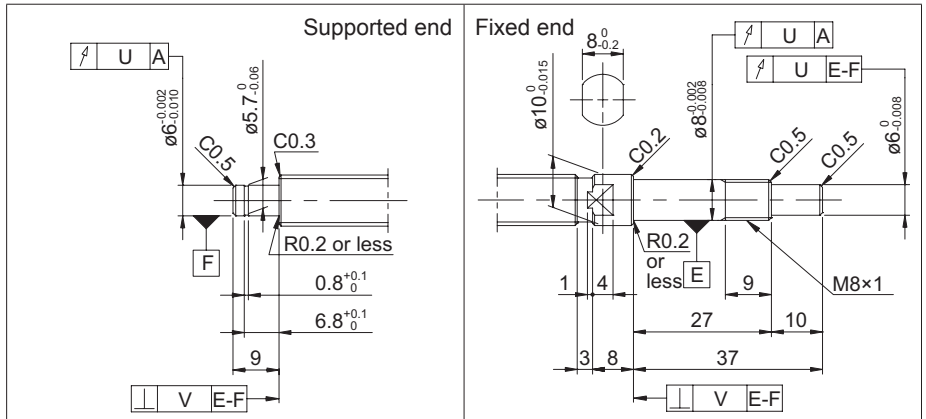
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1002DS-EANR-0320A → GG1002DS-EANR-0320X0263-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

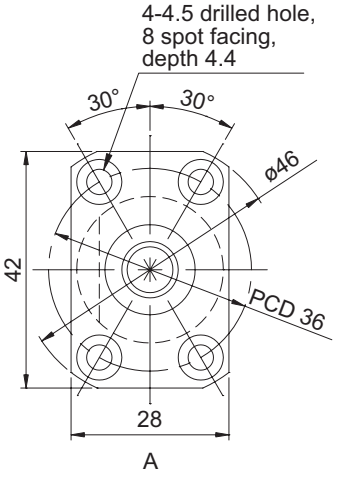
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

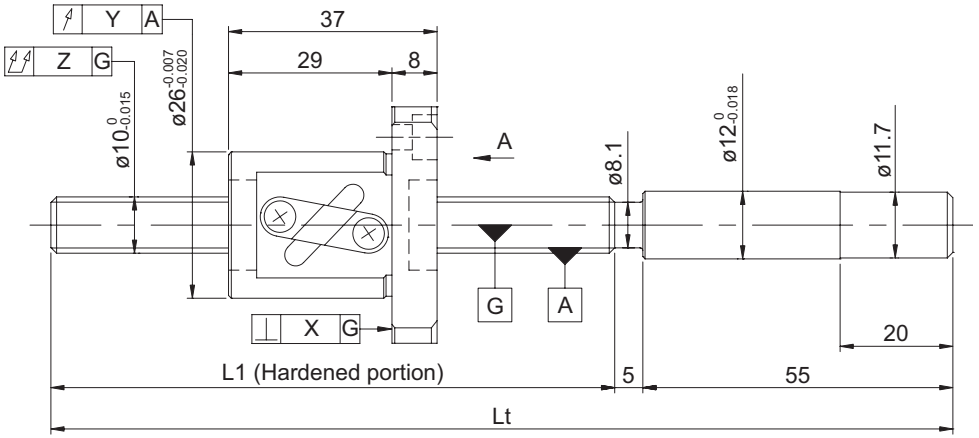
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.055	0.011	0.005	0.1 to 2.5	Up to 0.5	0.22
		0.065					0.26
0.014	0.020	0.080	----	----	----	----	0.22
		0.100					0.26

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 4		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	8.1		
Series	GG		GE
Basic dynamic load rating C (N)	3350		
Basic static load rating C0 (N)	5900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.3 to 4.0	Up to 1.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Plastic wiper		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG1004DS-BAPR-0255A	195	255	158	0.023	0.018	0.018
GG1004DS-BAPR-0385A	325	385	288	0.025	0.020	
GG1004DS-BAPR-0455A	395	455	358			
GE1004DS-BAPR-0255A	195	255	158	0.05/300	----	----
GE1004DS-BAPR-0385A	325	385	288			
GE1004DS-BAPR-0455A	395	455	358			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

• Shaft end finish type

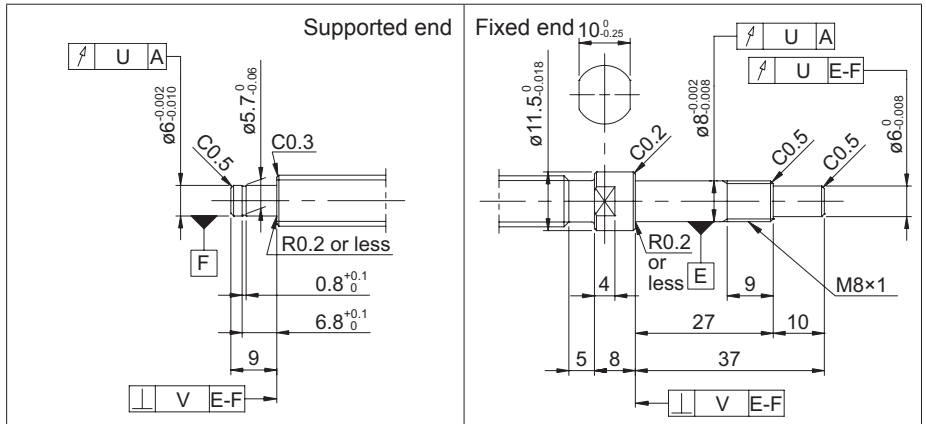
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1004DS-BAPR-0455A → GG1004DS-BAPR-0445X0386-C5F

0445: Thread length
0386: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

• Optional specifications

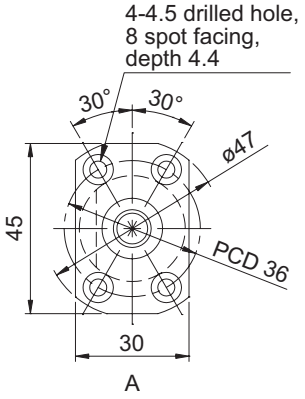
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

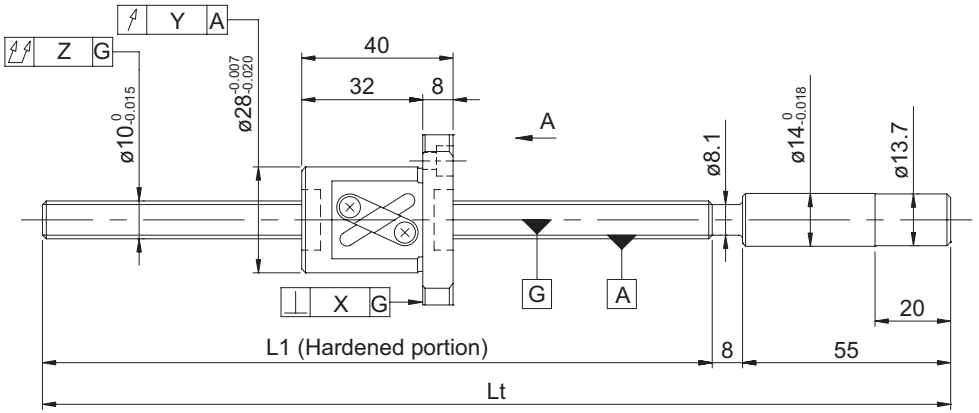
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.010	0.012	0.055	0.011	0.005	0.3 to 4.0	Up to 1.0	0.30
		0.065					0.36
		0.080					0.39
0.014	0.020	0.080	----	----	----	----	0.30
		0.100					0.36
		0.120					0.39

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 10		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	8.1		
Series	GG		GE
Basic dynamic load rating C (N)	2200		
Basic static load rating C0 (N)	3500		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.4 to 3.9	Up to 1.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Plastic wiper		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG1010AS-BAPR-0255A	192	255	152	0.023	0.018	0.018
GG1010AS-BAPR-0455A	392	455	352	0.025	0.020	
GE1010AS-BAPR-0255A	192	255	152	0.05/300	----	----
GE1010AS-BAPR-0455A	392	455	352			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

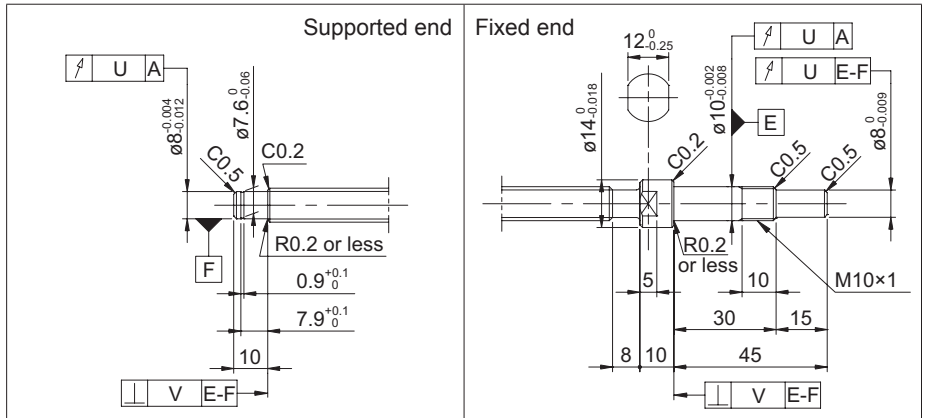
• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1010AS-BAPR-0455A → GG1010AS-BAPR-0455X0382-C5F
- 0382: Thread length
- 0455: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

• Optional specifications

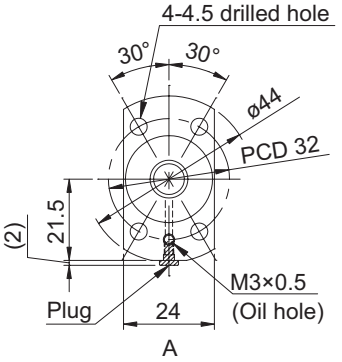
• Anticorrosive black coating (coating thickness: 1 to 2 µm) is available.

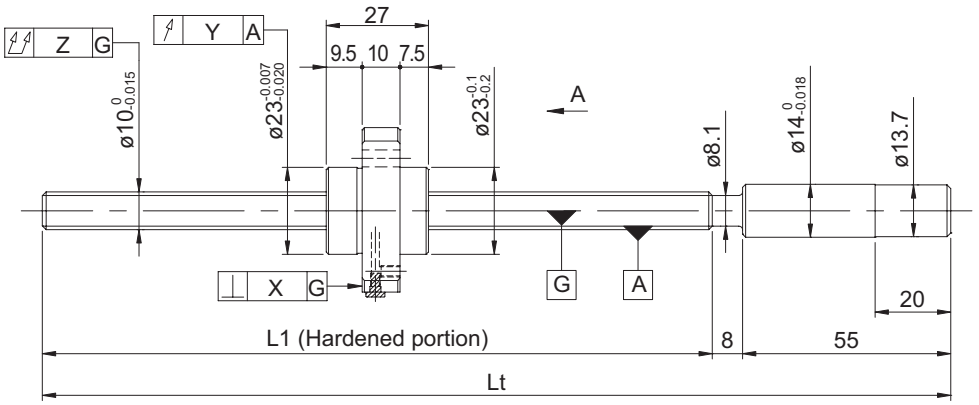
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.010	0.012	0.055	0.011	0.005	0.4 to 3.9	Up to 1.0	0.38
		0.080					0.49
0.014	0.020	0.080	----	----	----	----	0.38
		0.120					0.49

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 10		
Number of circuits / Thread direction	1.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	8.1		
Series	FG		FE
Basic dynamic load rating C (N)	2600		
Basic static load rating C0 (N)	3800		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.1 to 3.6	Up to 1.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG1010PS-HPNR-0255A	192	255	165	0.023	0.018	0.018
FG1010PS-HPNR-0455A	392	455	365	0.025	0.020	
FE1010PS-HPNR-0255A	192	255	165	0.05/300	----	----
FE1010PS-HPNR-0455A	392	455	365			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

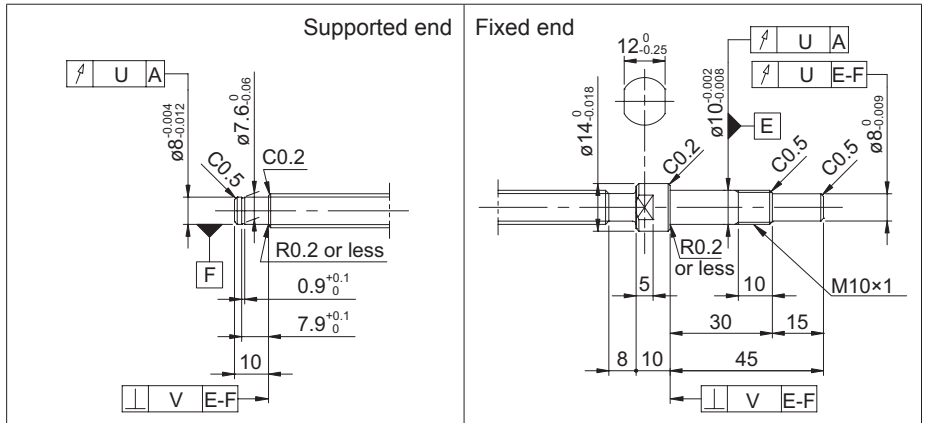
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1010PS-HPNR-0455A → FG1010PS-HPNR-0455X0382-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

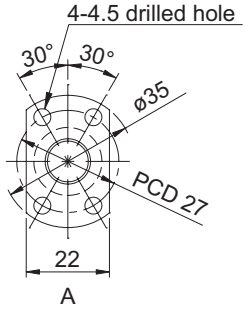
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

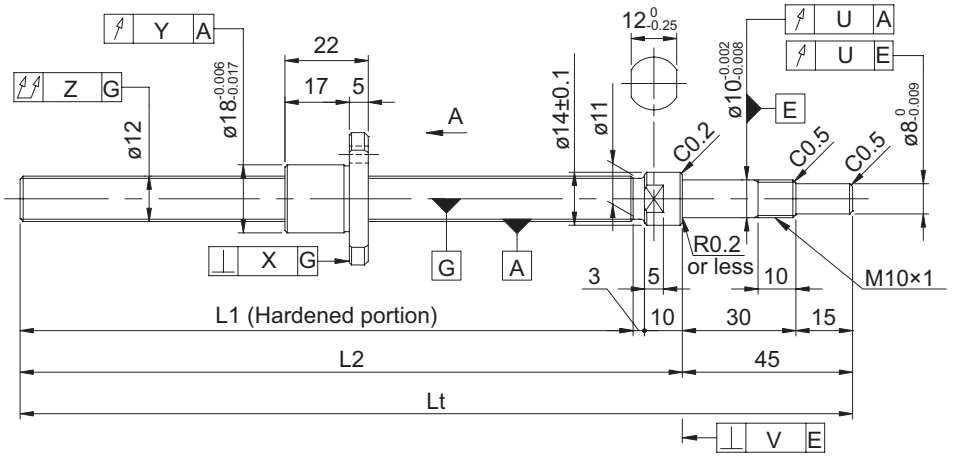
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.055	0.011	0.005	0.1 to 3.6	Up to 1.0	0.29
		0.080					0.40
0.014	0.020	0.080	----	----	----	----	0.29
		0.120					0.40

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 2	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	1.2	
Root diameter (mm)	11.0	
Series	DP	
Basic dynamic load rating C (N)	1650	
Basic static load rating C0 (N)	3600	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.4 to 3.4	Up to 0.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	None	
Lubricant	Multemp PS2	





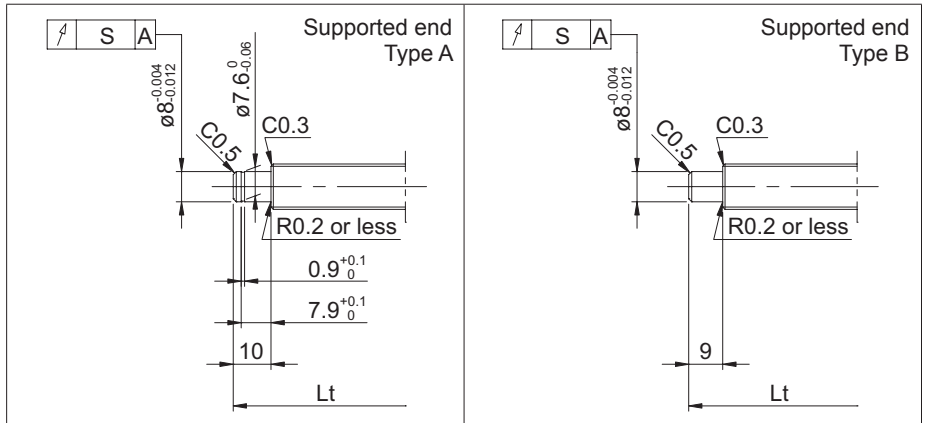
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP1202JS-HDNR-0300B-C3S	242	255	300	220	0.012	0.008	0.008
DP1202JS-HDNR-0300B-C3F							
DP1202JS-HDNR-0400B-C3S	342	355	400	320	0.013	0.010	0.008
DP1202JS-HDNR-0400B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
DP1202JS-HDNR-0400B-C3F → DP1202JS-HDNR-0400X0332-C3F
0400: Overall screw shaft length
0332: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

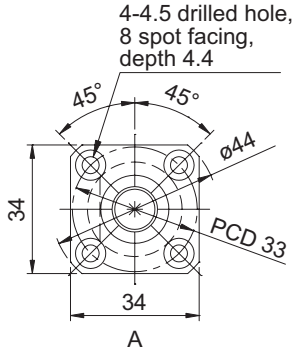
• Optional specifications

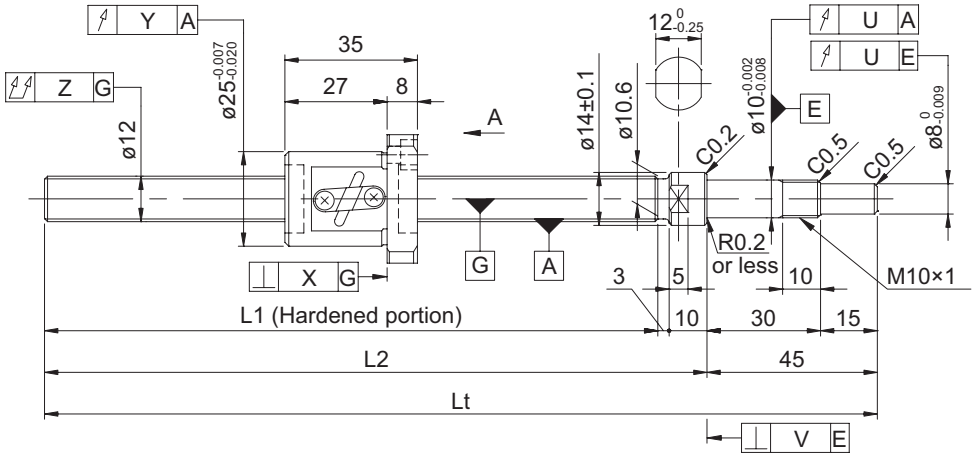
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.009	0.030	0.011	0.007	0.003	0.4 to 3.4	----	0.28
						----	Up to 0.5	
0.008	0.009	0.040	0.011	0.007	0.003	0.4 to 3.4	----	0.36
						----	Up to 0.5	

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 2	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	1.5875	
Root diameter (mm)	10.6	
Series	GP	
Basic dynamic load rating C (N)	1540	2450
Basic static load rating C0 (N)	2050	4100
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.4 to 3.2	Up to 1.0
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Plastic wiper	
Lubricant	Alvania Grease S2	





• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

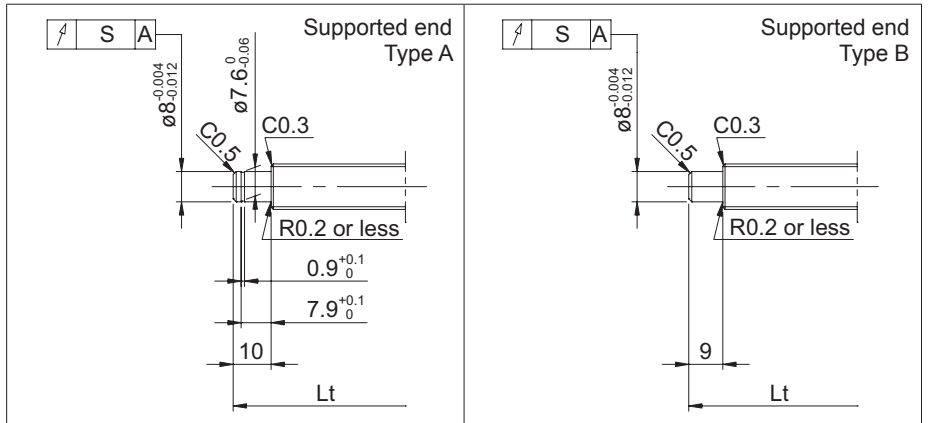
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

GP1202DS-AAPR-0400B-C3F → GP1202DS-AAPR-0400X0332-C3F

Thread length

Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

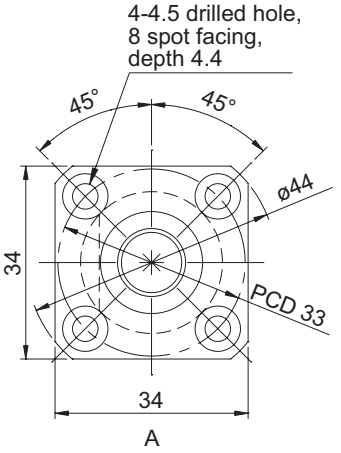
Model No. (One shaft end finished)	Screw shaft length			Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	L2	Lt		$\pm E_c$	e_c	e_{300}
GP1202DS-AAPR-0300B-C3S	242	255	300	207	0.012	0.008	0.008
GP1202DS-AAPR-0300B-C3F							
GP1202DS-AAPR-0400B-C3S	342	355	400	307	0.013	0.010	0.008
GP1202DS-AAPR-0400B-C3F							

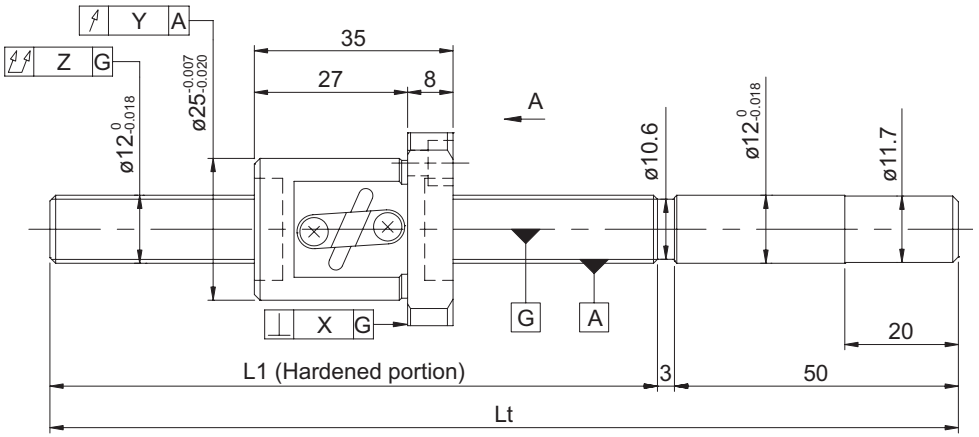
Accuracy of each part						Preload torque (N·cm)		Mass (kg)
X	Y	Z	S	U	V	Without clearance	With clearance	
0.008	0.010	0.030	0.011	0.007	0.003	0.4 to 3.2	----	0.35
						----	Up to 1.0	
0.008	0.010	0.040	0.011	0.007	0.003	0.4 to 3.2	----	0.43
						----	Up to 1.0	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 2		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	1.5875		
Root diameter (mm)	10.6		
Series	GG		GE
Basic dynamic load rating C (N)	2450		
Basic static load rating C0 (N)	4100		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.2 to 3.4	Up to 1.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Plastic wiper		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1202DS-AAPR-0300A	247	300	212	0.023	0.018	0.018
GG1202DS-AAPR-0455A	402	455	367	0.027	0.020	
GE1202DS-AAPR-0300A	247	300	212	0.05/300	----	----
GE1202DS-AAPR-0455A	402	455	367			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

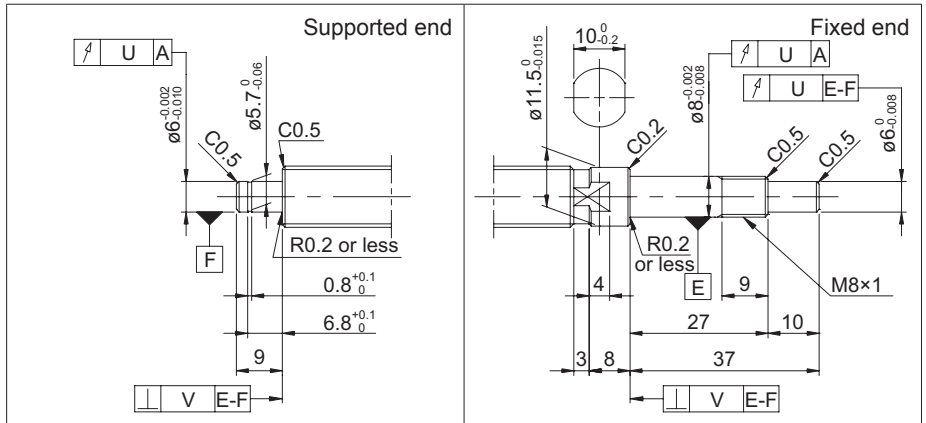
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1202DS-AAPR-0455A → GG1202DS-AAPR-0450X0393-C5F

0450: Overall screw shaft length
0393: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

● Optional specifications

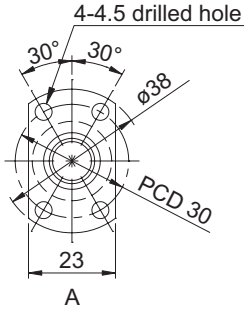
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

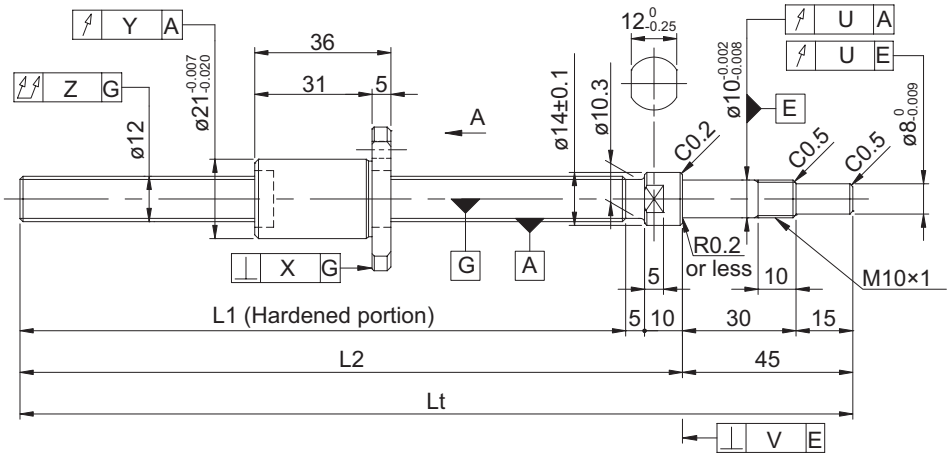
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.055	0.011	0.005	0.2 to 3.4	Up to 1.0	0.36
		0.080					0.48
0.014	0.020	0.080	----	----	----	----	0.36
		0.120					0.48

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 3	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	2	
Root diameter (mm)	10.3	
Series	DP	
Basic dynamic load rating C (N)	3450	
Basic static load rating C0 (N)	6100	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.4 to 3.4	Up to 1.0
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	Plastic wiper	
Lubricant	Multemp PS2	





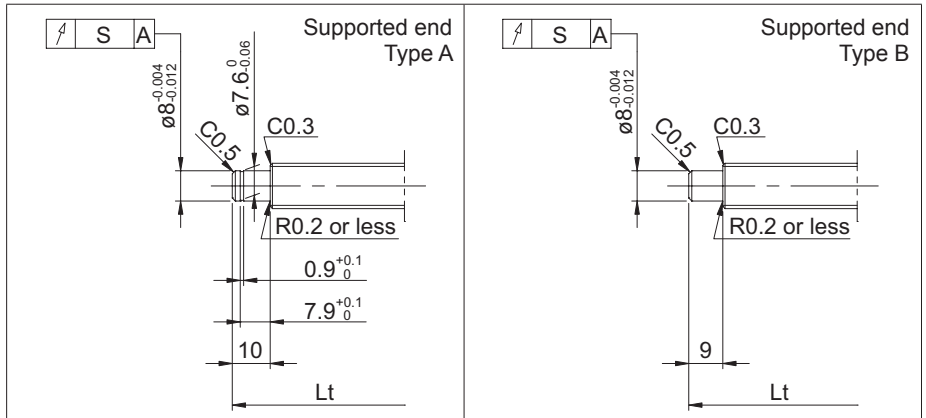
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP1203JS-HDPR-0300B-C3S	240	255	300	204	0.012	0.008	0.008
DP1203JS-HDPR-0300B-C3F							
DP1203JS-HDPR-0400B-C3S	340	355	400	304	0.013	0.010	0.008
DP1203JS-HDPR-0400B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
DP1203JS-HDPR-0400B-C3F → DP1203JS-HDPR-0400X0330-C3F
0400: Overall screw shaft length
0330: Thread length



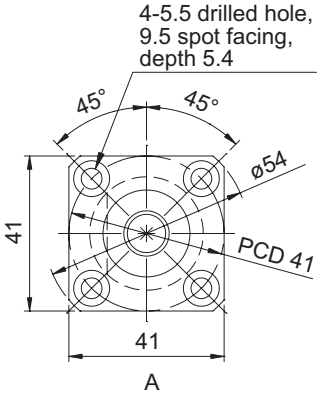
Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

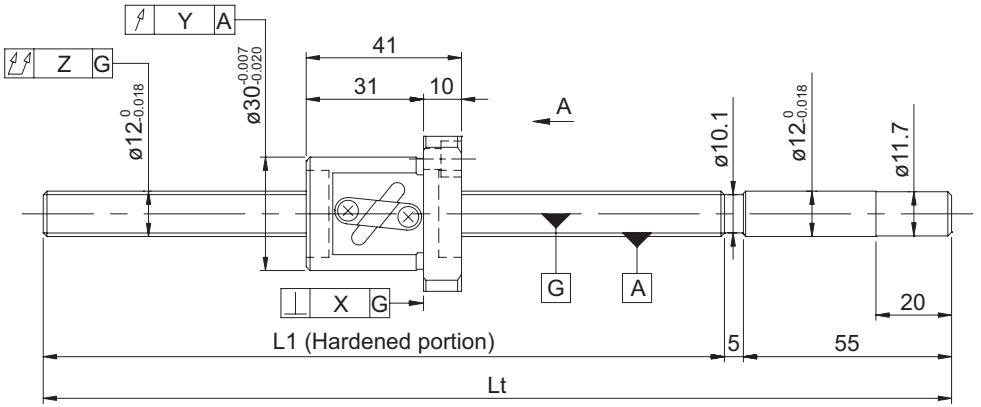
• Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 4		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	10.1		
Series	GG		GE
Basic dynamic load rating C (N)	3600		
Basic static load rating C0 (N)	6750		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.2 to 4.7	Up to 1.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1204DS-AALR-0405A	345	405	304	0.025	0.020	0.018
GG1204DS-AALR-0605A	545	605	504	0.030	0.023	
GE1204DS-AALR-0405A	345	405	304	0.05/300	----	----
GE1204DS-AALR-0605A	545	605	504			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

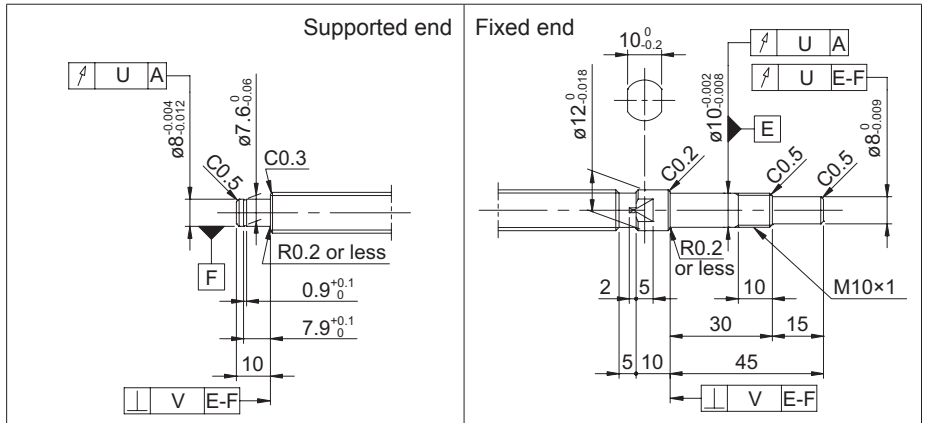
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1204DS-AALR-0605A → GG1204DS-AALR-0605X0535-C5F

0605: Thread length
0535: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

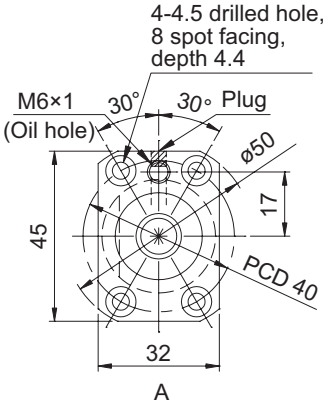
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

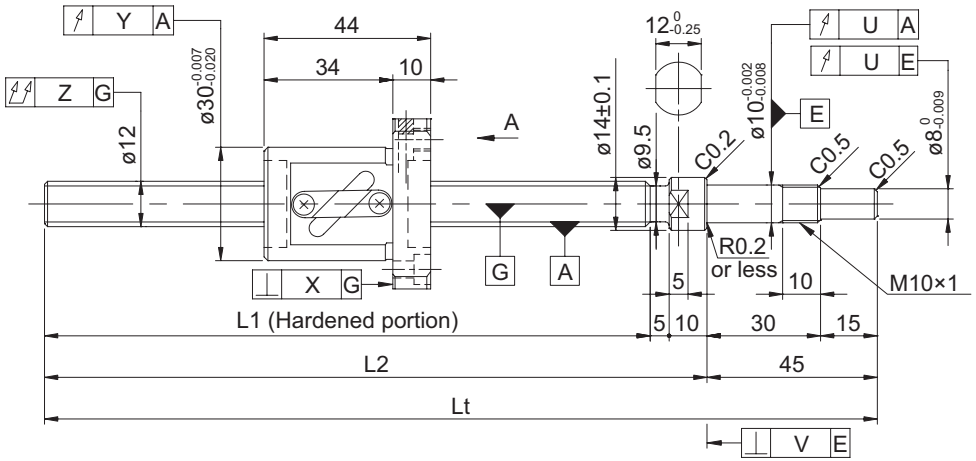
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.080	0.011	0.005	0.2 to 4.7	Up to 1.0	0.56
		0.090					0.70
0.014	0.020	0.120	----	----	----	----	0.56
		0.150					0.70

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	9.5	
Series	GP	
Basic dynamic load rating C (N)	3740	5950
Basic static load rating C0 (N)	4900	9800
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	1.5 to 5.0	Up to 1.0
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	





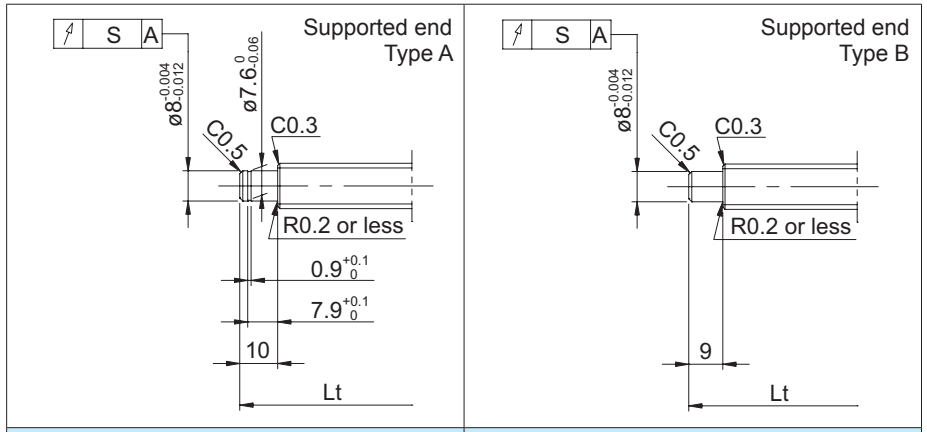
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP1205DS-BALR-0300B-C3S	240	255	300	196	0.012	0.008	0.008
GP1205DS-BALR-0300B-C3F							
GP1205DS-BALR-0450B-C3S	390	405	450	346	0.013	0.010	0.008
GP1205DS-BALR-0450B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
GP1205DS-BALR-0450B-C3F → GP1205DS-BALR-0450X0380-C3F
Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

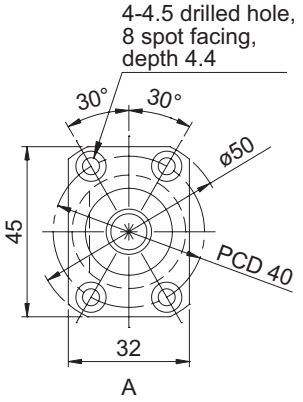
● Optional specifications

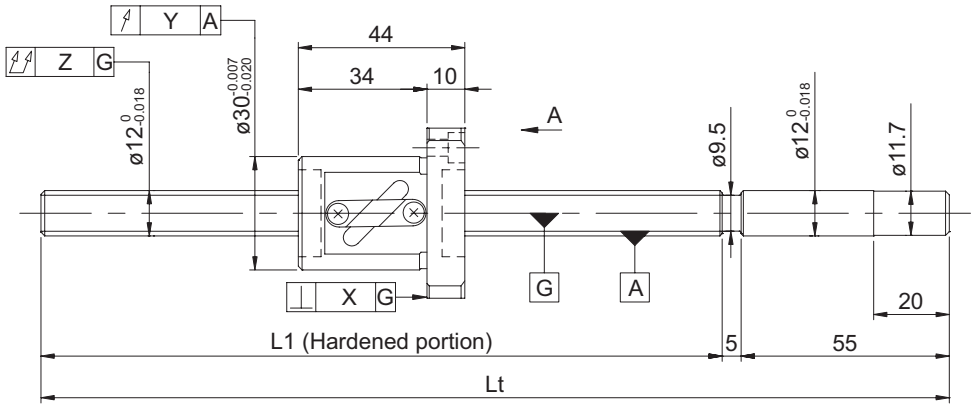
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.010	0.030	0.011	0.007	0.003	1.5 to 5.0	----	0.43
						----	Up to 1.0	
0.008	0.010	0.050	0.011	0.007	0.003	1.5 to 5.0	----	0.53
						----	Up to 1.0	

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 5		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	9.5		
Series	GG		GE
Basic dynamic load rating C (N)	5950		
Basic static load rating C0 (N)	9800		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.5 to 7.0	Up to 1.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1205DS-BALR-0305A	245	305	201	0.023	0.018	0.018
GG1205DS-BALR-0455A	395	455	351	0.025	0.020	
GE1205DS-BALR-0305A	245	305	201	0.05/300	----	----
GE1205DS-BALR-0455A	395	455	351			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

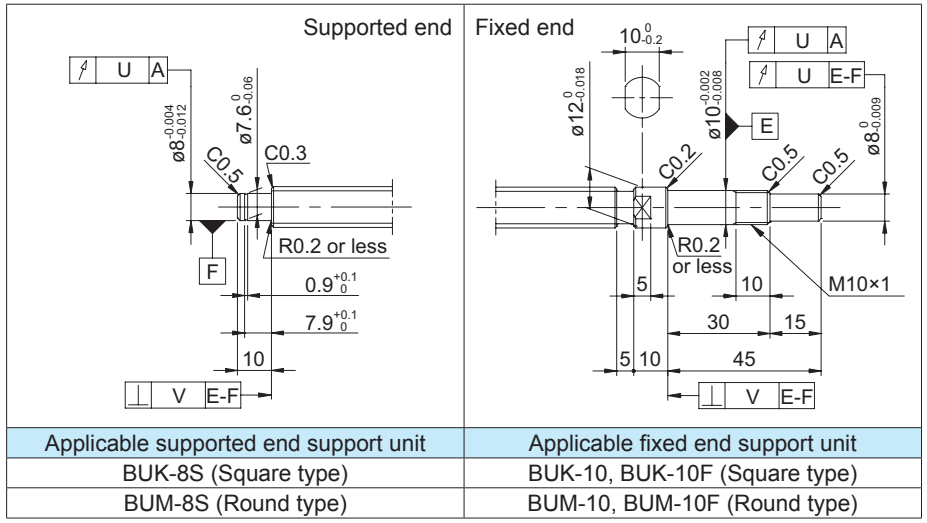
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1205DS-BALR-0455A → GG1205DS-BALR-0455X0385-C5F

0455: Thread length
0385: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

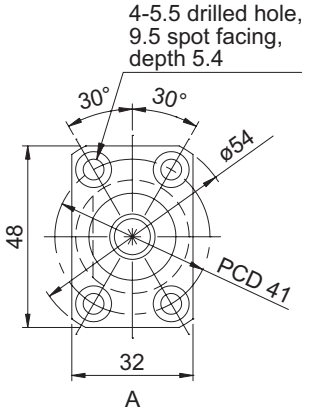
• Anticorrosive black coating (coating thickness: 1 to 2 µm) is available.

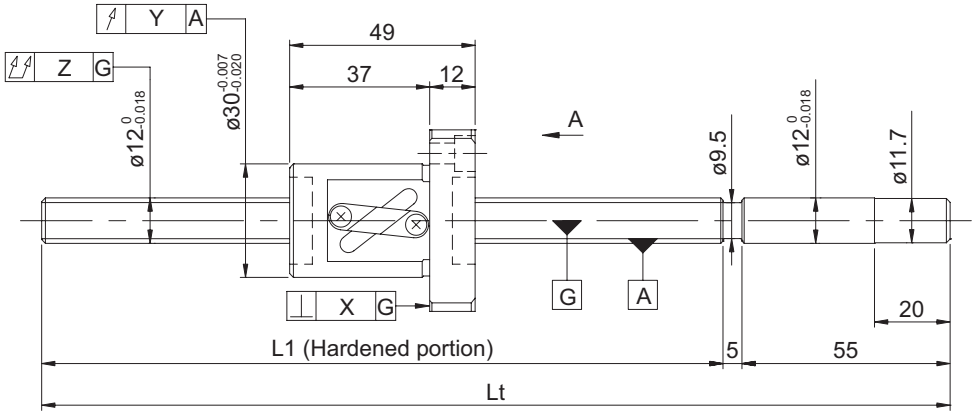
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.055	0.011	0.005	1.5 to 7.0	Up to 1.0	0.44
		0.080					0.54
0.014	0.020	0.080	----	----	----	----	0.44
		0.120					0.54

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 10		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	9.5		
Series	GG		GE
Basic dynamic load rating C (N)	3850		
Basic static load rating C0 (N)	5900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 5.5	Up to 2.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1210AS-BALR-0455A	395	455	346	0.025	0.020	0.018
GG1210AS-BALR-0605A	545	605	496	0.030	0.023	
GE1210AS-BALR-0455A	395	455	346	0.05/300	----	----
GE1210AS-BALR-0605A	545	605	496			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

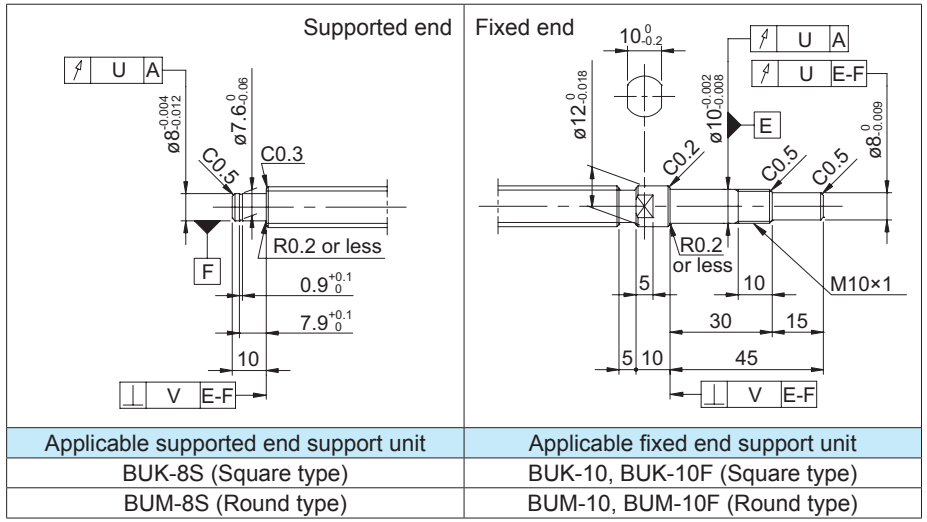
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1210AS-BALR-0605A → GG1210AS-BALR-0605X0535-C5F

0605: Thread length
0535: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

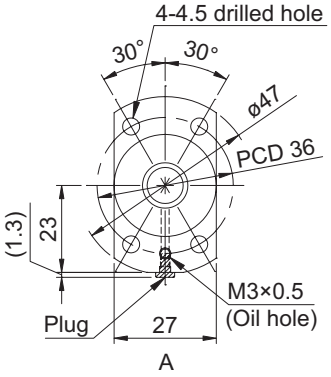
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

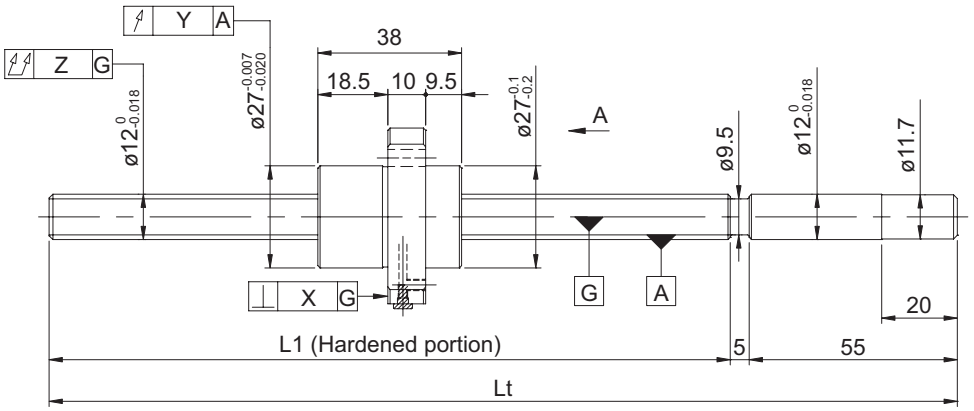
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.080	0.011	0.005	1.0 to 5.5	Up to 2.0	0.63
		0.090					0.75
0.014	0.020	0.120	----	----	----	----	0.63
		0.150					0.75

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 10		
Number of circuits / Thread direction	2.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	9.5		
Series	FG		FE
Basic dynamic load rating C (N)	6700		
Basic static load rating C0 (N)	10700		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.5 to 9.3	Up to 2.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG1210PS-HPNR-0455A	395	455	357	0.025	0.020	0.018
FG1210PS-HPNR-0605A	545	605	507	0.030	0.023	
FE1210PS-HPNR-0455A	395	455	357	0.05/300	----	----
FE1210PS-HPNR-0605A	545	605	507			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

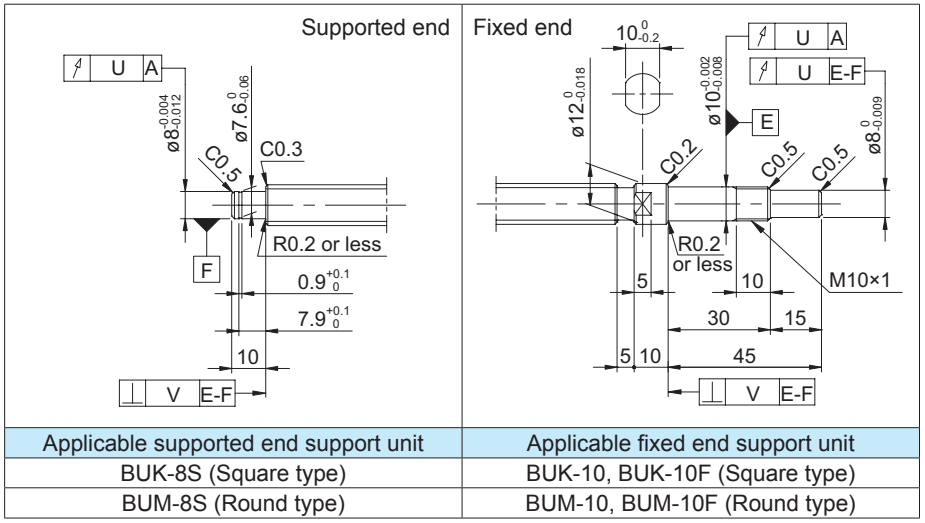
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1210PS-HPNR-0605A → FG1210PS-HPNR-0605X0535-C5F
- 0605: Thread length
- 0535: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG1210PS-HPSR-0605X0535-C5F
- S: LUBSEAL (Wiper material)

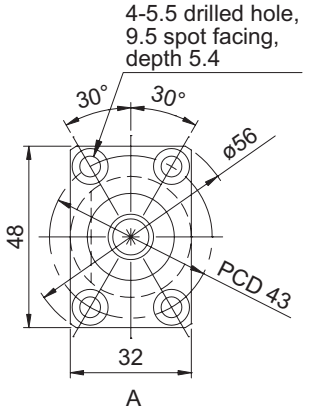
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

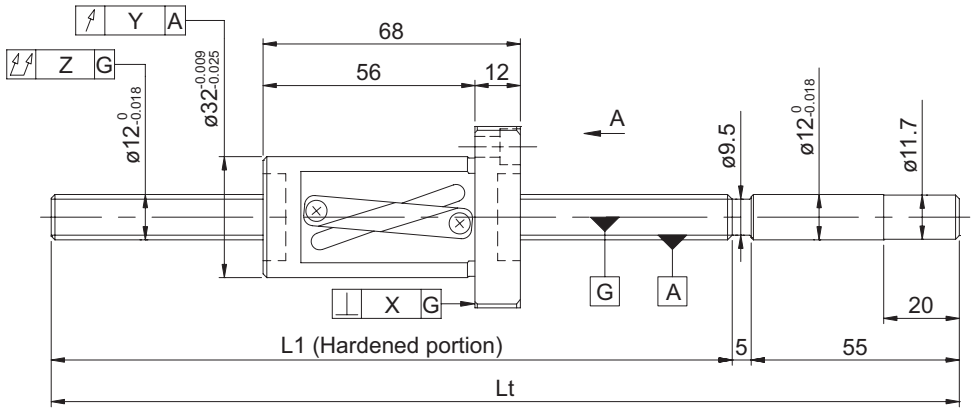
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.080	0.011	0.005	1.5 to 9.3	Up to 2.0	0.53
		0.090					0.65
0.014	0.020	0.120	----	----	----	----	0.53
		0.150					0.65

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 20		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	9.5		
Series	GG		GE
Basic dynamic load rating C (N)	3850		
Basic static load rating C0 (N)	5900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 7.5	Up to 2.5	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1220AS-BALR-0405A	345	405	277	0.025	0.020	0.018
GG1220AS-BALR-0605A	545	605	477	0.030	0.023	
GE1220AS-BALR-0405A	345	405	277	0.05/300	----	----
GE1220AS-BALR-0605A	545	605	477			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

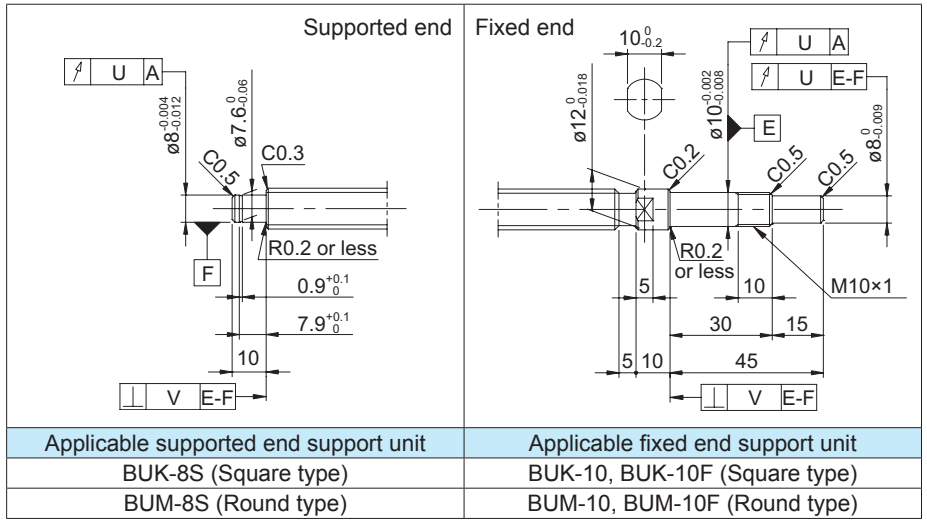
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1220AS-BALR-0605A → GG1220AS-BALR-0605X0535-C5F
(0605: Thread length, 0535: Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

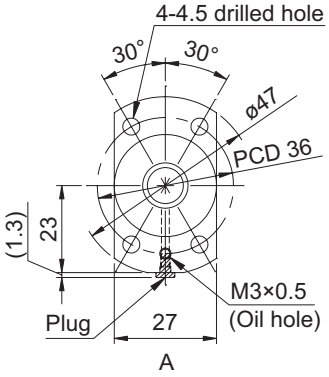
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

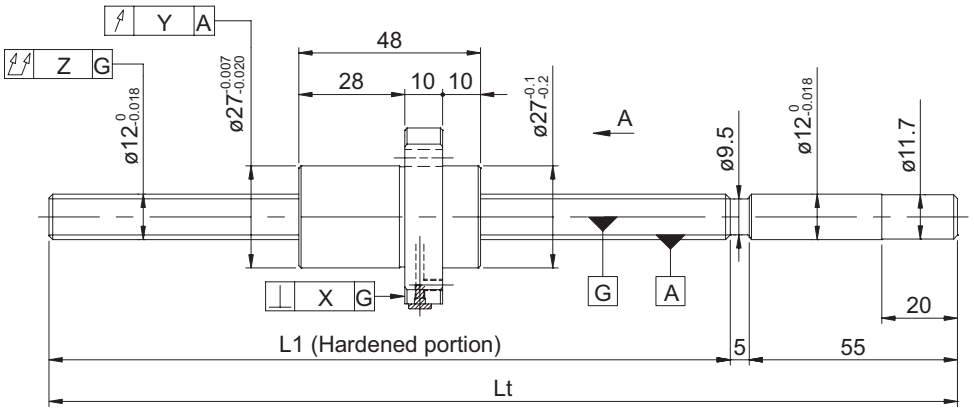
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.080	0.011	0.005	1.0 to 7.5	Up to 2.5	0.73
		0.090					0.90
0.018	0.030	0.120	----	----	----	----	0.73
		0.150					0.90

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 20		
Number of circuits / Thread direction	1.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	9.5		
Series	FG		FE
Basic dynamic load rating C (N)	4300		
Basic static load rating C0 (N)	6700		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.2 to 8.4	Up to 2.5	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG1220PS-HPNR-0405A	345	405	297	0.025	0.020	0.018
FG1220PS-HPNR-0605A	545	605	497	0.030	0.023	
FE1220PS-HPNR-0405A	345	405	297	0.05/300	----	----
FE1220PS-HPNR-0605A	545	605	497			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

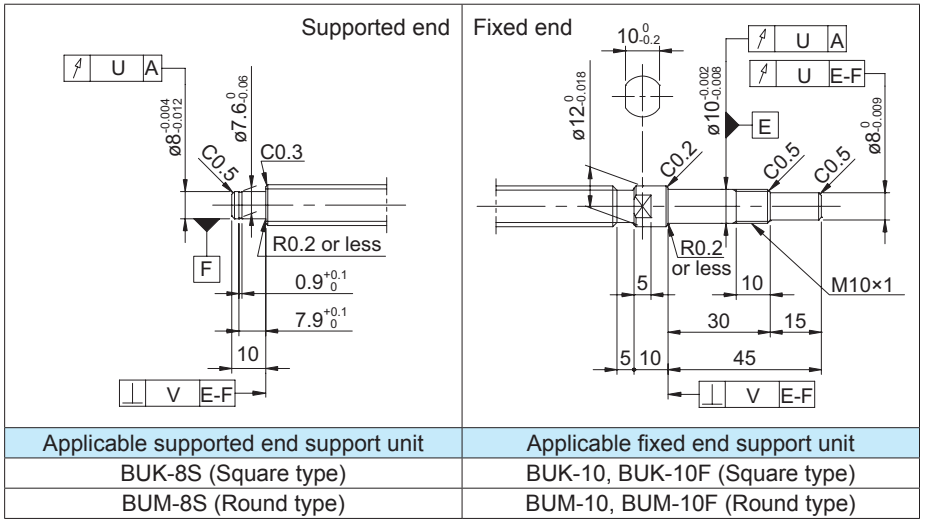
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1220PS-HPNR-0605A → FG1220PS-HPNR-0605X0535-C5F
- 0605: Thread length
- 0535: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG1220PS-HPSR-0605X0535-C5F
- S: Wiper material S: LUBSEAL

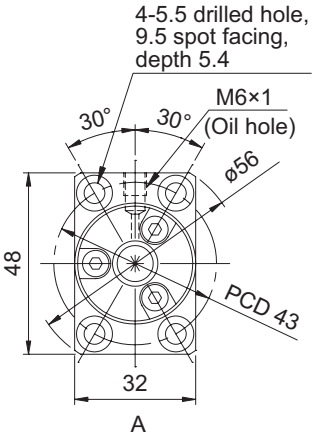
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

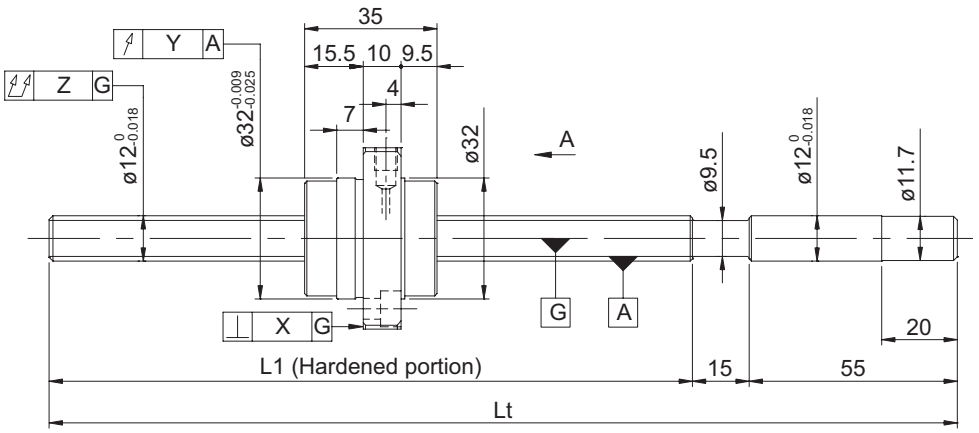
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.080	0.011	0.005	1.2 to 8.4	Up to 2.5	0.54
		0.090					0.71
0.018	0.030	0.120	----	----	----	----	0.54
		0.150					0.71

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 30
Number of circuits / Thread direction	0.67 turns 3 circuits (3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	9.5
Series	HG
Basic dynamic load rating C (N)	4800
Basic static load rating C0 (N)	6650
Accuracy grade / Axial clearance symbol	C5 / H
Axial clearance (mm)	0.010 or less
Preload torque (N·cm)	----
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG1230QS-BEZR-0500A	430	500	395	0.027	0.020	0.018
HG1230QS-BEZR-0800A	730	800	695	0.035	0.025	

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

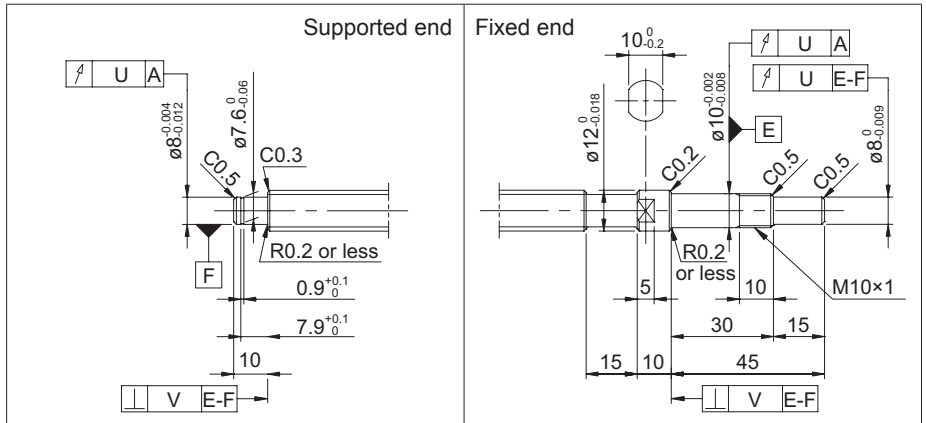
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG1230QS-BEZR-0800A → HG1230QS-BEZR-0800X0720-C5H

0800: Overall screw shaft length
0720: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

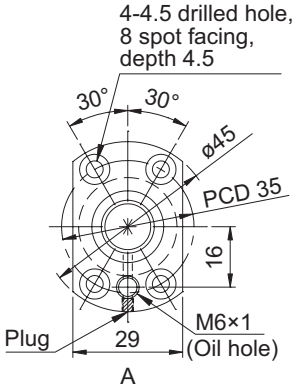
● Optional specifications

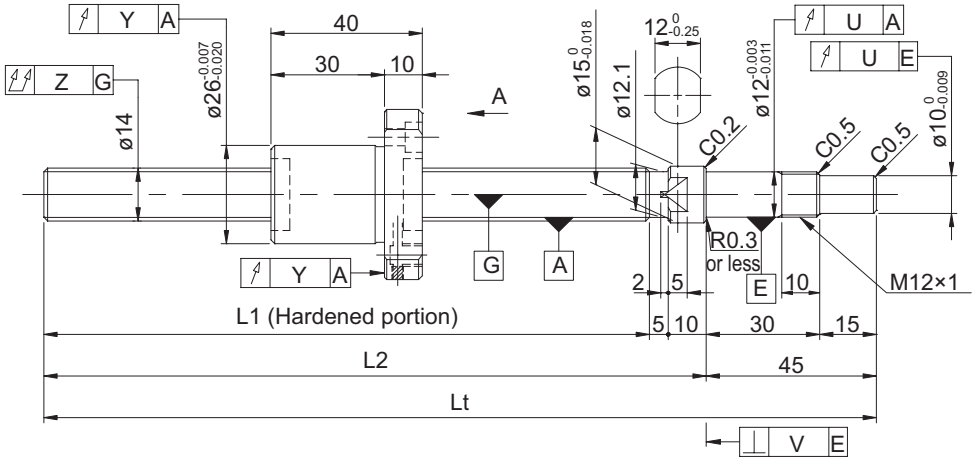
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.010	0.012	0.080	0.011	0.005	----	0.62
		0.090				0.85

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	14 - 4	
Number of circuits / Thread direction	1 turn 3 circuits / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	12.1	
Series	DP	
Basic dynamic load rating C (N)	4600	
Basic static load rating C0 (N)	8600	
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	1.0 to 6.9	Up to 1.5
Spacer ball	None	
Recirculation system	Deflector method	
Wiper	Plastic wiper	
Lubricant	Multemp PS2	





Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
DP1404JS-HDPR-0330B-C3S	270	285	330	230	0.012	0.008	0.008
DP1404JS-HDPR-0330B-C3F							
DP1404JS-HDPR-0530B-C3S	470	485	530	430	0.015	0.010	0.008
DP1404JS-HDPR-0530B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

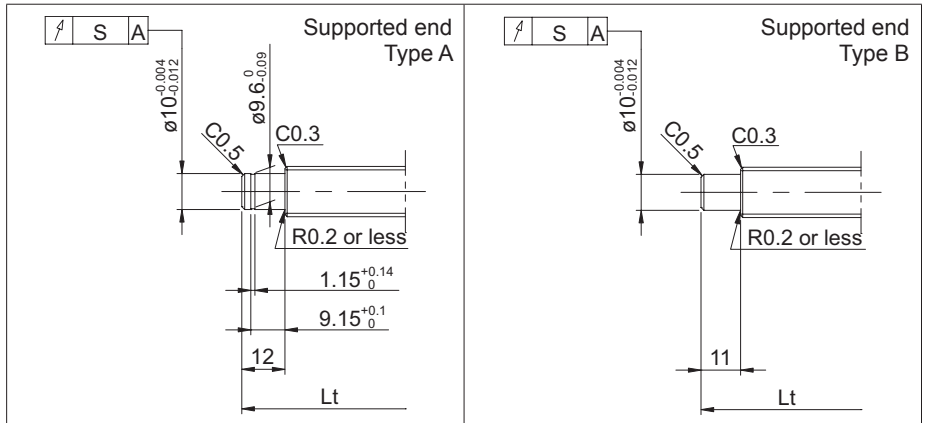
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

DP1404JS-HDPR-0530B-C3F → DP1404JS-HDPR-0530X0458-C3F

Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

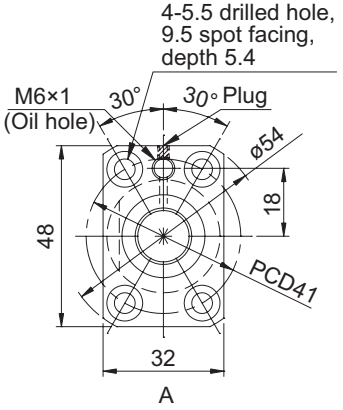
● Optional specifications

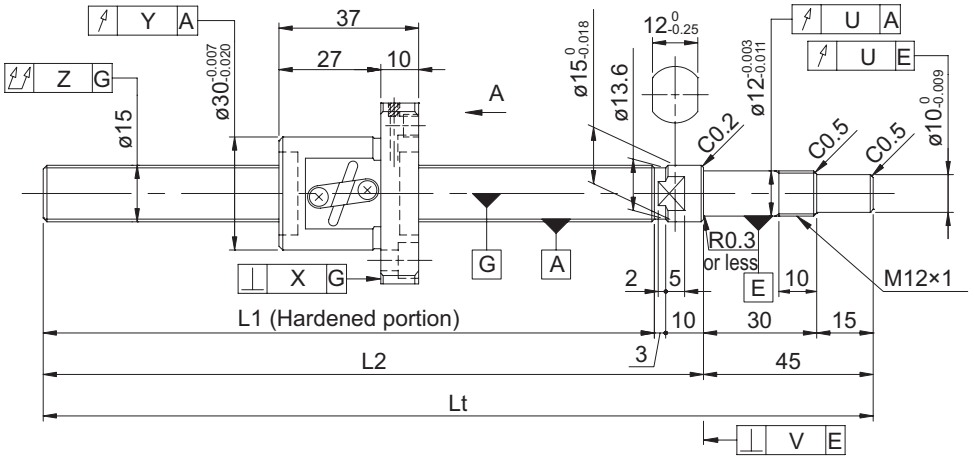
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.010	0.030	0.012	0.009	0.004	1.0 to 6.9	----	0.48
						----	Up to 1.5	
0.008	0.010	0.045	0.012	0.009	0.004	1.0 to 6.9	----	0.69
						----	Up to 1.5	

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 2	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	1.5875	
Root diameter (mm)	13.6	
Series	GP	
Basic dynamic load rating C (N)	1700	2700
Basic static load rating C0 (N)	2750	5500
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.5 to 4.5	Up to 1.5
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Plastic wiper	
Lubricant	Alvania Grease S2	





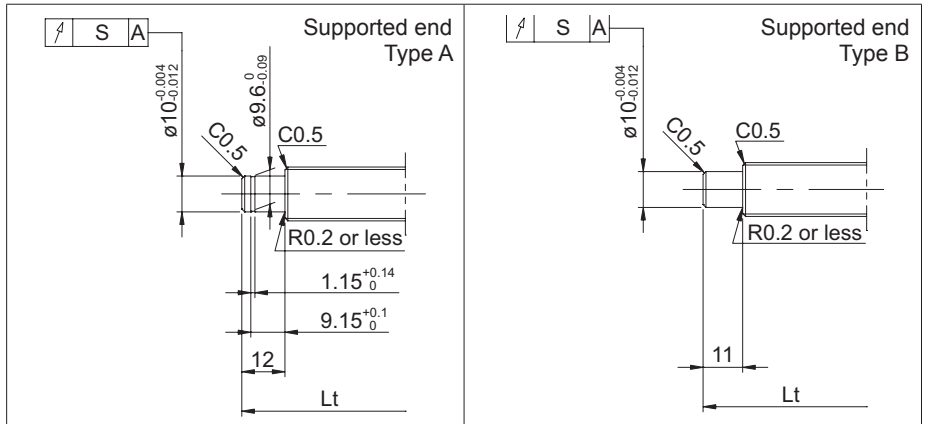
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP1502DS-BAPR-0300B-C3S	242	255	300	205	0.012	0.008	0.008
GP1502DS-BAPR-0300B-C3F							
GP1502DS-BAPR-0600B-C3S	542	555	600	505	0.016	0.012	0.008
GP1502DS-BAPR-0600B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
GP1502DS-BAPR-0600B-C3F → GP1502DS-BAPR-0600X0530-C3F
Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

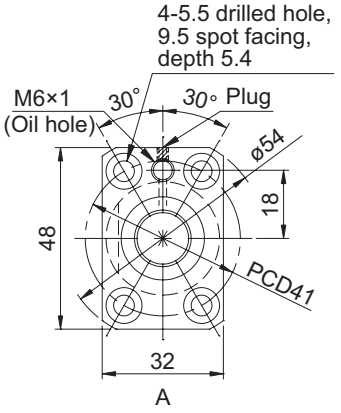
● Optional specifications

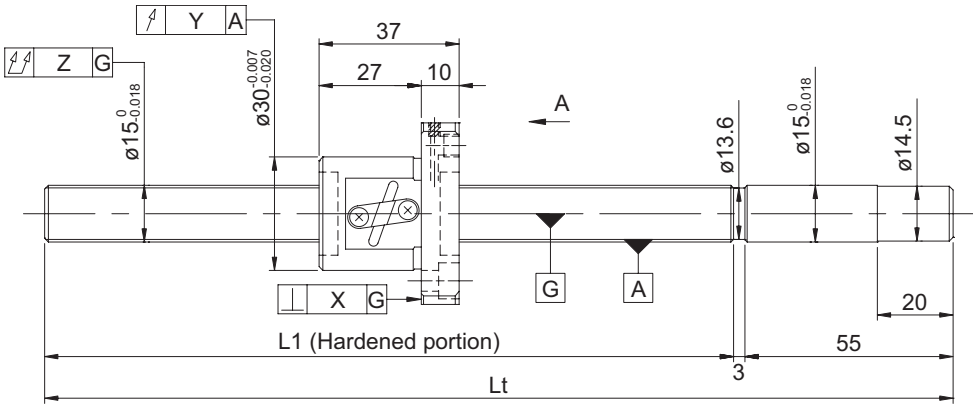
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.010	0.025	0.012	0.009	0.004	0.5 to 4.5	----	0.55
						----	Up to 1.5	
0.008	0.010	0.045	0.012	0.009	0.004	0.5 to 4.5	----	0.92
						----	Up to 1.5	

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 2		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	1.5875		
Root diameter (mm)	13.6		
Series	GG		GE
Basic dynamic load rating C (N)	2700		
Basic static load rating C0 (N)	5500		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	0.2 to 4.7	Up to 2.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Plastic wiper		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1502DS-BAPR-0300A	242	300	205	0.023	0.018	0.018
GG1502DS-BAPR-0600A	542	600	505	0.030	0.023	
GE1502DS-BAPR-0300A	242	300	205	0.05/300	----	----
GE1502DS-BAPR-0600A	542	600	505			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

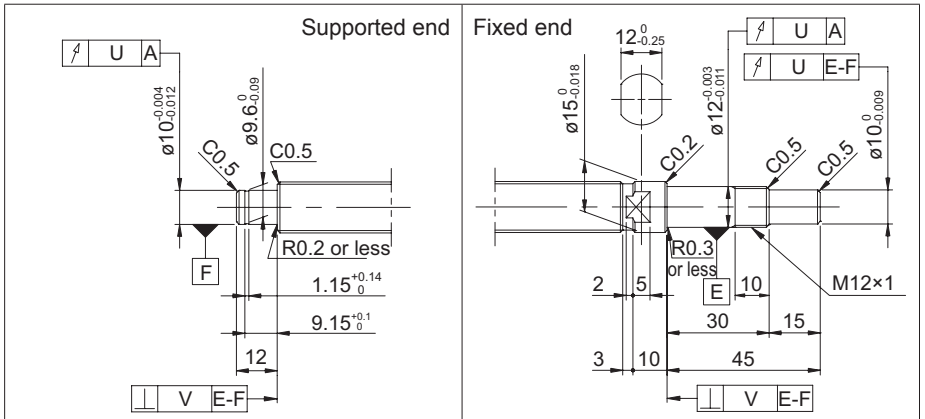
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1502DS-BAPR-0600A → GG1502DS-BAPR-0600X0530-C5F
- 0600: Thread length
- 0530: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

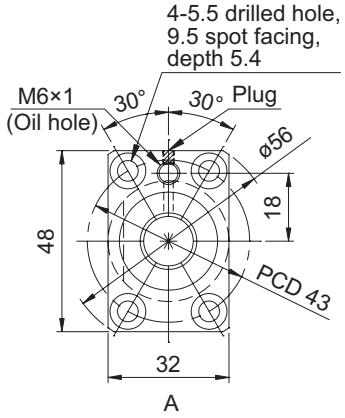
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

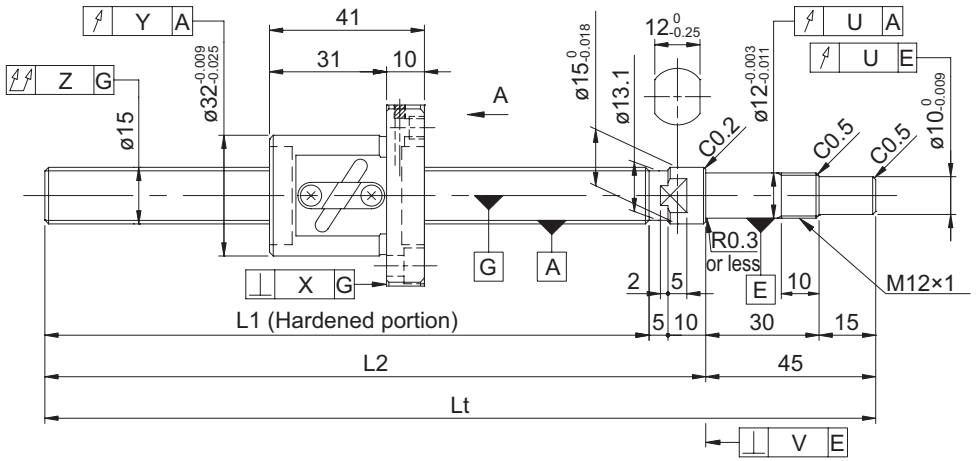
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.045	0.012	0.005	0.2 to 4.7	Up to 2.0	0.58
		0.075					0.94
0.014	0.020	0.070	----	----	----	----	0.58
		0.110					0.94

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 4	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	13.1	
Series	GP	
Basic dynamic load rating C (N)	2580	4100
Basic static load rating C0 (N)	4270	8550
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	1.0 to 5.0	Up to 1.5
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	





Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP1504DS-BALR-0400B-C3S	340	355	400	299	0.013	0.010	0.008
GP1504DS-BALR-0400B-C3F							
GP1504DS-BALR-0600B-C3S	540	555	600	499	0.016	0.012	0.008
GP1504DS-BALR-0600B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

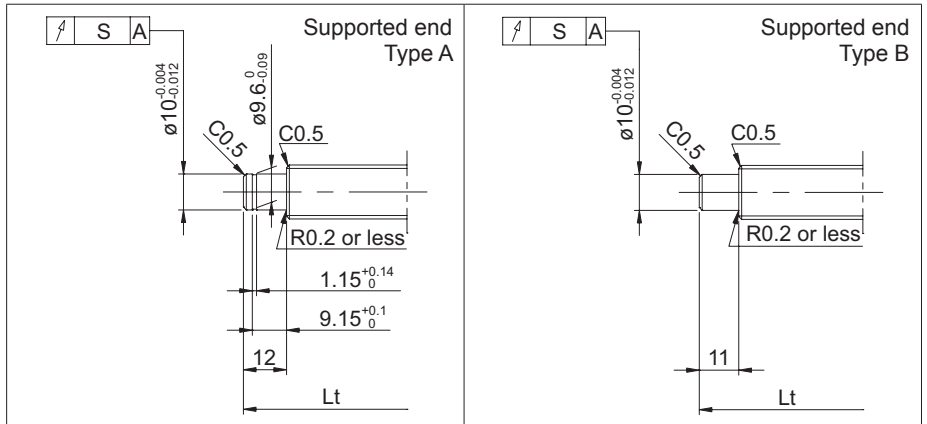
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

GP1504DS-BALR-0600B-C3F → GP1504DS-BALR-0600X0528-C3F

Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

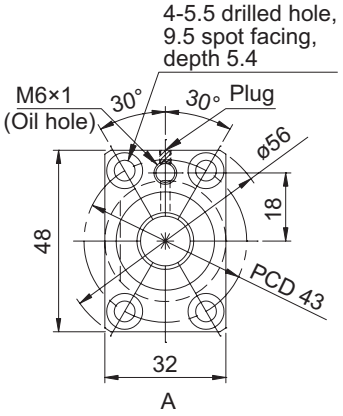
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

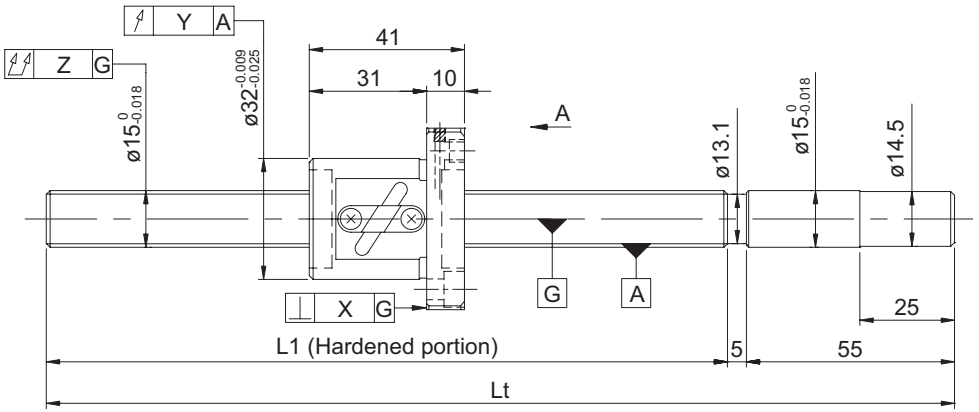
Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.010	0.035	0.012	0.009	0.004	1.0 to 5.0	----	0.70
						----	Up to 1.5	
0.008	0.010	0.045	0.012	0.009	0.004	1.0 to 5.0	----	0.94
						----	Up to 1.5	

Screw shaft diameter ø15

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 4		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	13.1		
Series	GG		GE
Basic dynamic load rating C (N)	4100		
Basic static load rating C0 (N)	8550		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 8.0	Up to 2.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1504DS-BALR-0600A	540	600	499	0.030	0.023	0.018
GG1504DS-BALR-1100A	1040	1100	999	0.046	0.030	
GE1504DS-BALR-0600A	540	600	499	0.05/300	----	----
GE1504DS-BALR-1100A	1040	1100	999			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

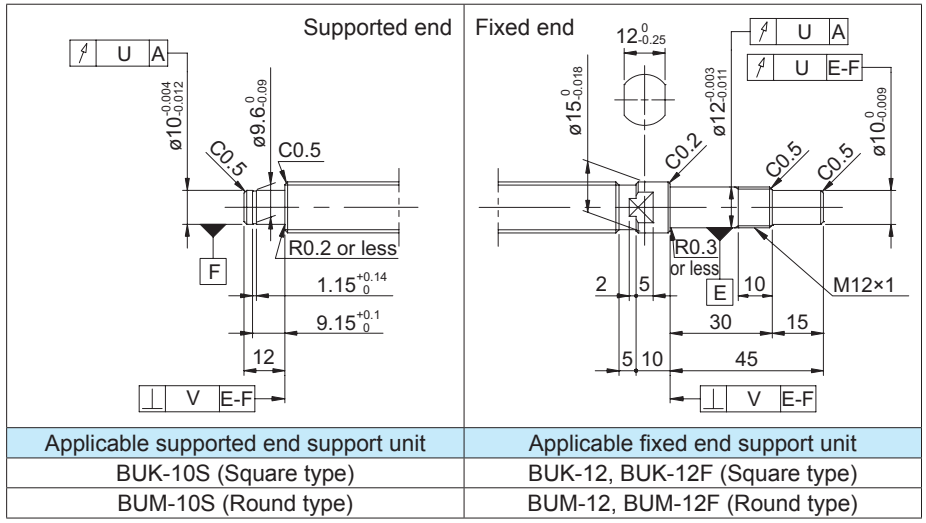
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1504DS-BAPR-1100A → GG1504DS-BAPR-1100X1028-C5F
- 1100: Overall screw shaft length
- 1028: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

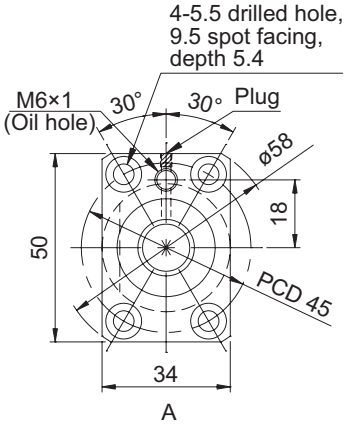
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

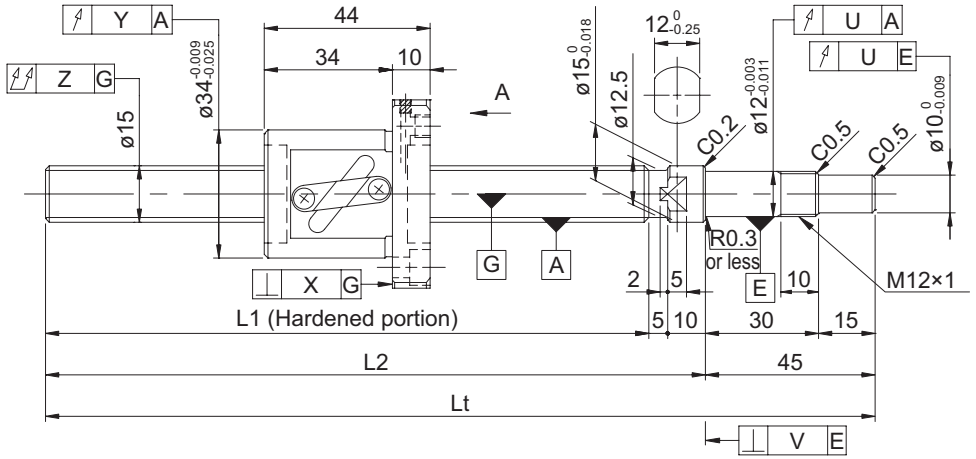
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.075	0.012	0.005	1.0 to 6.0	Up to 2.0	0.96
		0.150			1.0 to 8.0		1.56
0.018	0.030	0.110	----	----	----	----	0.96
		0.210					1.56

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GP	
Basic dynamic load rating C (N)	4340	6900
Basic static load rating C0 (N)	6250	12500
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	1.5 to 6.0	Up to 2.0
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	





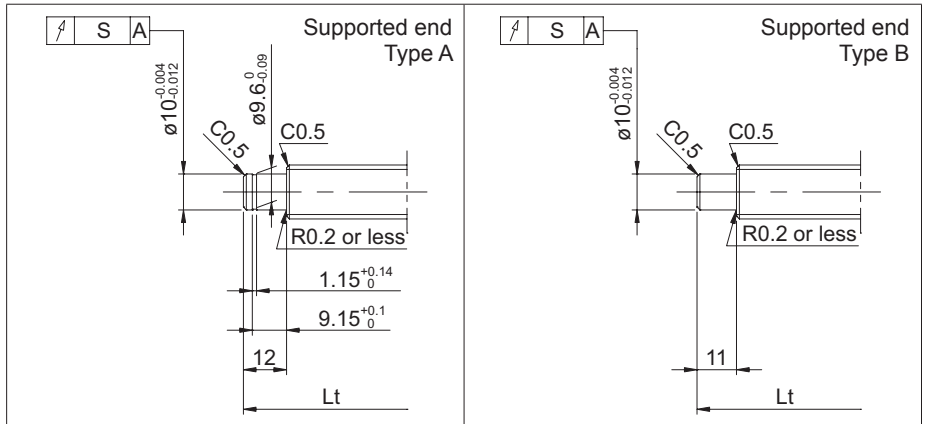
Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP1505DS-BALR-0400B-C3S	340	355	400	296	0.013	0.010	0.008
GP1505DS-BALR-0400B-C3F							
GP1505DS-BALR-0600B-C3S	540	555	600	496	0.016	0.012	0.008
GP1505DS-BALR-0600B-C3F							

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.
Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished
GP1505DS-BALR-0600B-C3F → GP1505DS-BALR-0600X0528-C3F
Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

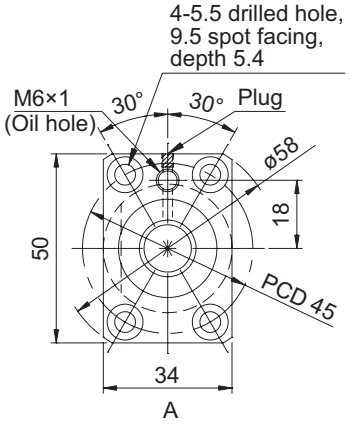
• Ball screw lubricating unit LUBSEAL can be equipped.
Model example: GP1505DS-BASR-0600X0528-C3F
Wiper material S: LUBSEAL

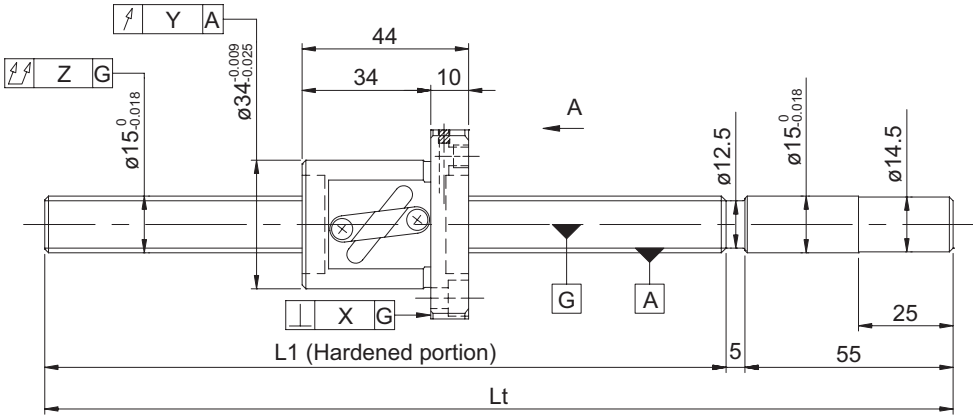
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.012	0.035	0.012	0.009	0.004	1.5 to 6.0	----	0.71
						----	Up to 2.0	
0.008	0.012	0.045	0.012	0.009	0.004	1.5 to 6.0	----	0.94
						----	Up to 2.0	

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 5		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	GG		GE
Basic dynamic load rating C (N)	6900		
Basic static load rating C0 (N)	12500		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.5 to 11.0	Up to 2.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG1505DS-BALR-0600A	540	600	496	0.030	0.023	0.018
GG1505DS-BALR-1100A	1040	1100	996	0.046	0.030	
GE1505DS-BALR-0600A	540	600	496	0.05/300	----	----
GE1505DS-BALR-1100A	1040	1100	996			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

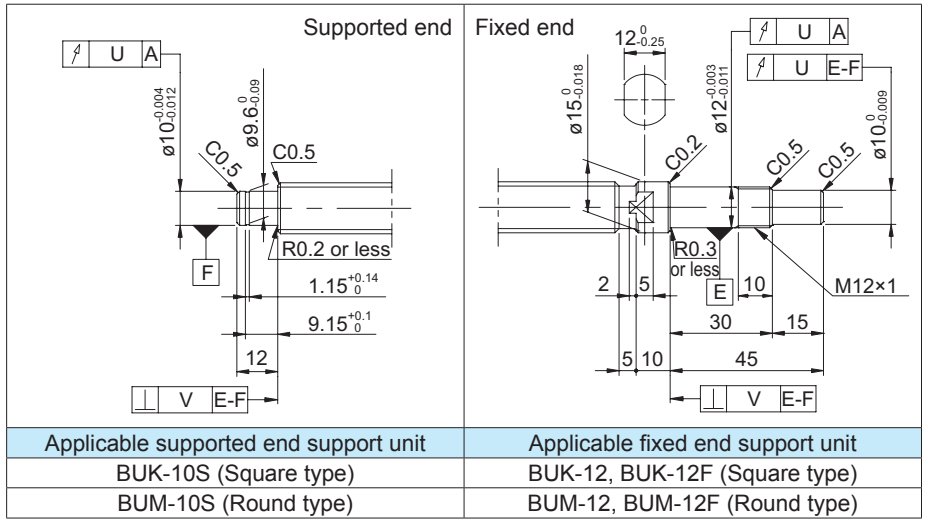
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1505DS-BALR-1100A → GG1505DS-BALR-1100X1028-C5F
- 1100: Thread length
- 1028: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG1505DS-BASR-1100X1028-C5F
- S: Wiper material S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

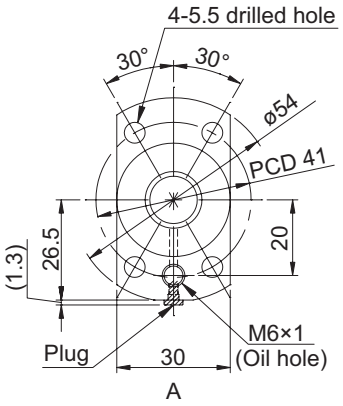
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.011	0.015	0.075	0.012	0.005	1.5 to 9.0	Up to 2.0	0.96
		0.150			1.5 to 11.0		1.52
0.018	0.030	0.110	----	----	----	----	0.96
		0.210					1.52

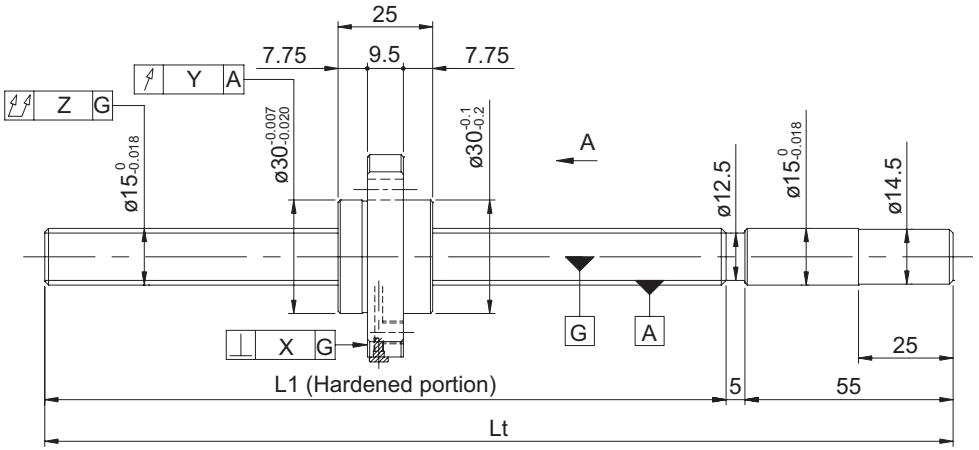
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø15

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 5		
Number of circuits / Thread direction	2.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	FG		FE
Basic dynamic load rating C (N)	7400		
Basic static load rating C0 (N)	12900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 11.0	Up to 2.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





● Shaft end finish type

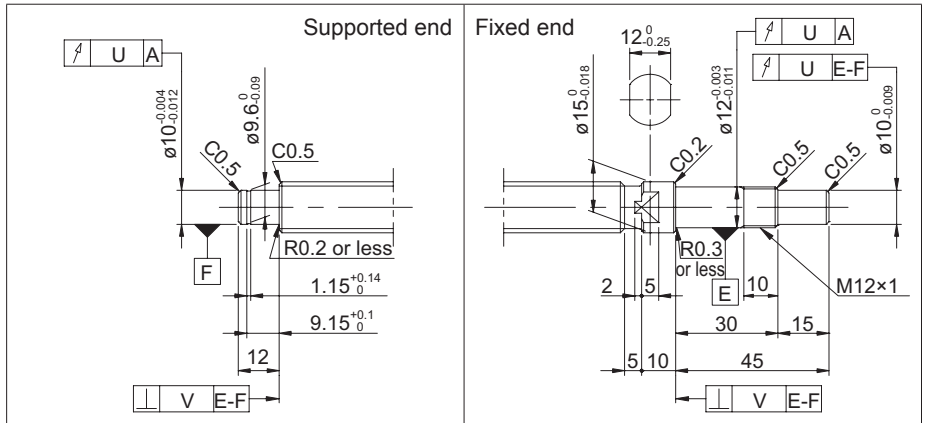
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1505PS-HPNR-1100A → FG1505PS-HPNR-1100X1028-C5F

1100: Thread length
1028: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG1505PS-HPSR-1100X1028-C5F

S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		$\pm E_c$	e_c	e_{300}
FG1505PS-HPNR-0600A	540	600	515	0.030	0.023	0.018
FG1505PS-HPNR-1100A	1040	1100	1015	0.046	0.030	
FE1505PS-HPNR-0600A	540	600	515	0.05/300	----	----
FE1505PS-HPNR-1100A	1040	1100	1015			

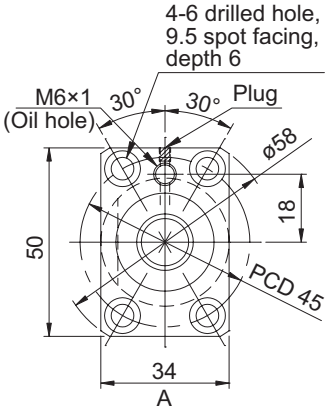
• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

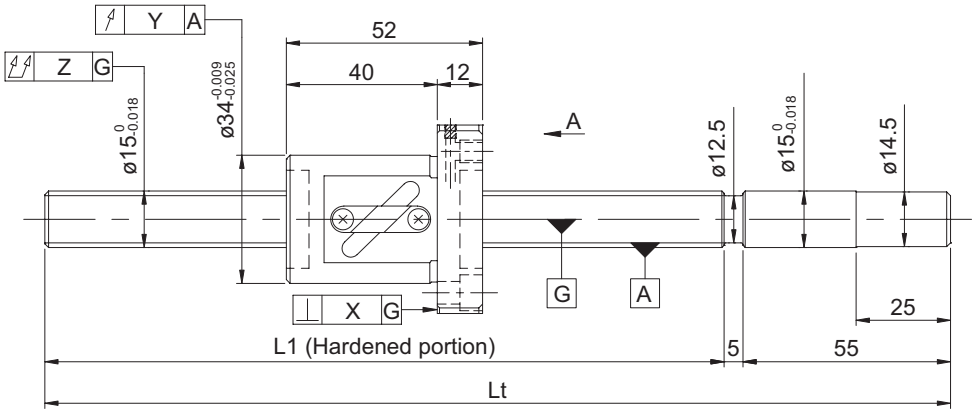
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.010	0.012	0.075	0.012	0.005	1.0 to 8.5	Up to 2.0	0.83
		0.150			1.0 to 11.0		1.39
0.014	0.020	0.110	----	----	----	----	0.83
		0.210					1.39

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	GG		GE
Basic dynamic load rating C (N)	4400		
Basic static load rating C0 (N)	7900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 8.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1510AS-BALR-0600A	540	600	488	0.030	0.023	0.018
GG1510AS-BALR-0900A	840	900	788	0.040	0.027	
GG1510AS-BALR-1100A	1040	1100	988	0.046	0.030	
GE1510AS-BALR-0600A	540	600	488	0.05/300	----	----
GE1510AS-BALR-0900A	840	900	788			
GE1510AS-BALR-1100A	1040	1100	988			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

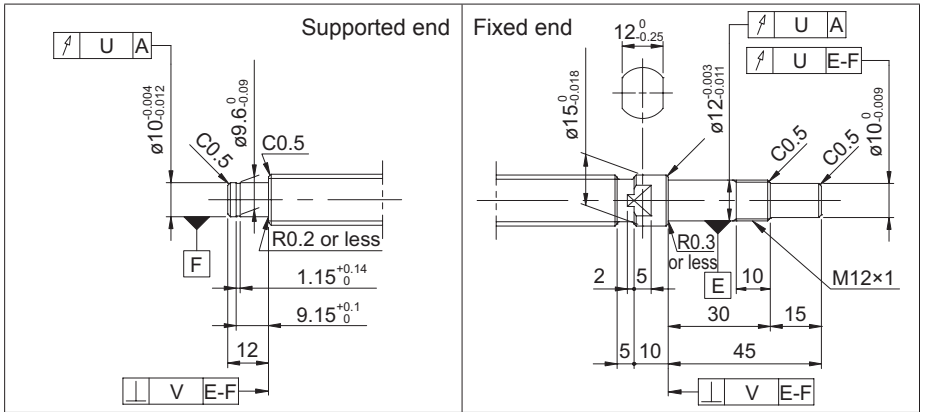
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1510AS-BALR-1100A → GG1510AS-BALR-1100X1028-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG1510AS-BASR-1100X1028-C5F

↳Wiper material S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

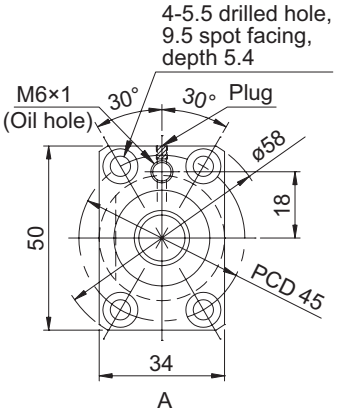
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	1.0 to 7.0	Up to 3.0	1.09
		0.120					1.47
		0.150			1.0 to 8.0		1.72
0.018	0.030	0.110	----	----	----	----	1.09
		0.170					1.47
		0.210					1.72

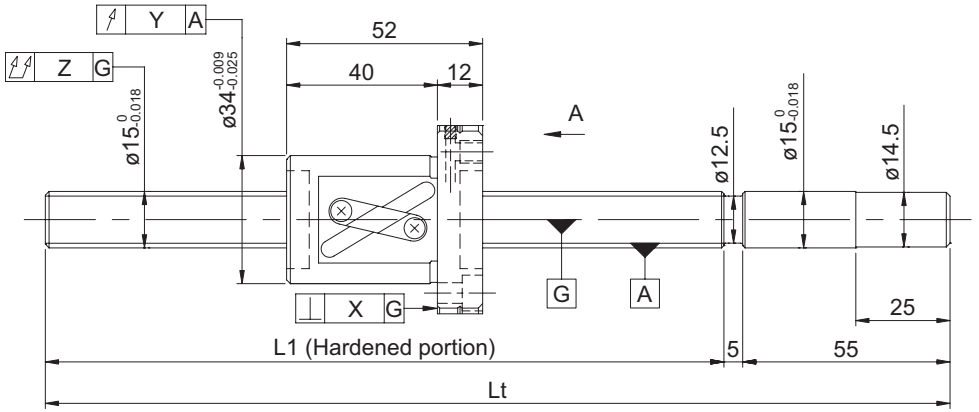
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø15

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	GG		GE
Basic dynamic load rating C (N)	6900		
Basic static load rating C0 (N)	12500		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 8.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG1510DS-BALR-0600A	540	600	488	0.030	0.023	0.018
GG1510DS-BALR-0900A	840	900	788	0.040	0.027	
GG1510DS-BALR-1100A	1040	1100	988	0.046	0.030	
GE1510DS-BALR-0600A	540	600	488	0.05/300	----	----
GE1510DS-BALR-0900A	840	900	788			
GE1510DS-BALR-1100A	1040	1100	988			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

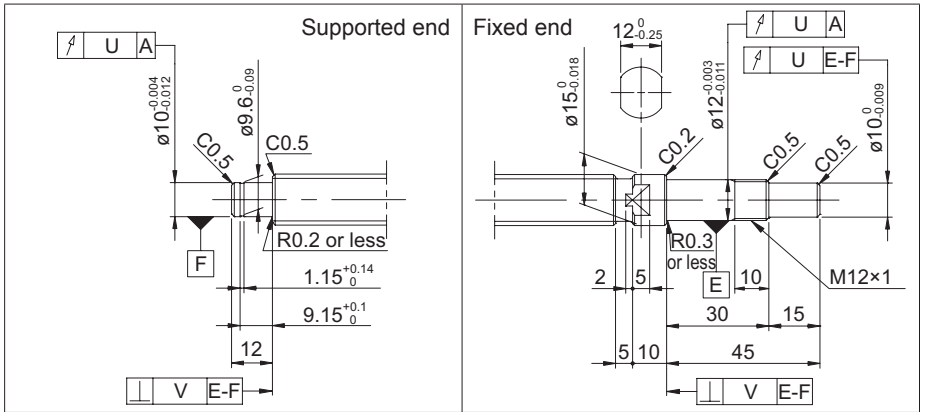
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1510DS-BALR-1100A → GG1510DS-BALR-1100X1028-C5F

1100: Overall screw shaft length
1028: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG1510DS-BASR-1100X1028-C5F

S: Wiper material S: LUBSEAL

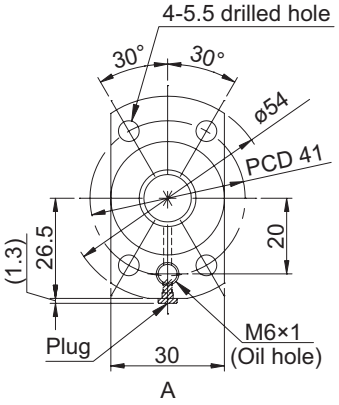
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

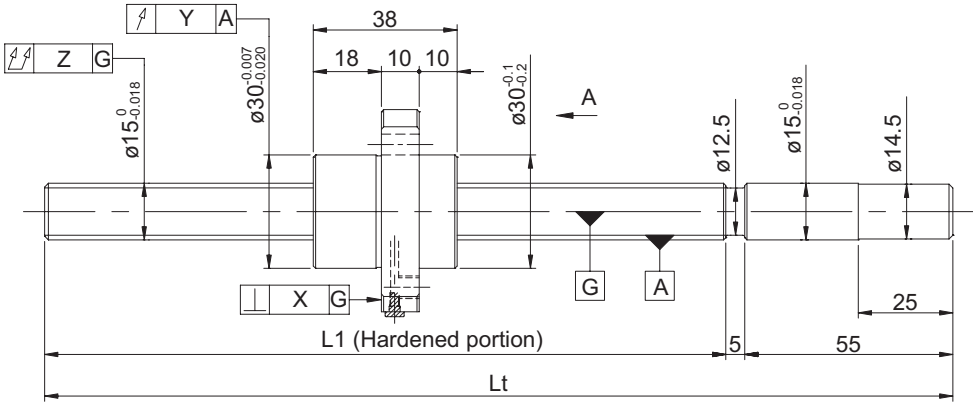
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.011	0.015	0.075	0.012	0.005	1.0 to 7.0	Up to 3.0	1.09
		0.120					1.47
		0.150			1.0 to 8.0		1.72
0.018	0.030	0.110	----	----	----	----	1.09
		0.170					1.47
		0.210					1.72

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10		
Number of circuits / Thread direction	2.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	FG		FE
Basic dynamic load rating C (N)	7400		
Basic static load rating C0 (N)	12900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 12.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG1510PS-HPNR-0600A	540	600	502	0.030	0.023	0.018
FG1510PS-HPNR-0900A	840	900	802	0.040	0.027	
FG1510PS-HPNR-1100A	1040	1100	1002	0.046	0.030	
FE1510PS-HPNR-0600A	540	600	502	0.05/300	----	----
FE1510PS-HPNR-0900A	840	900	802			
FE1510PS-HPNR-1100A	1040	1100	1002			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

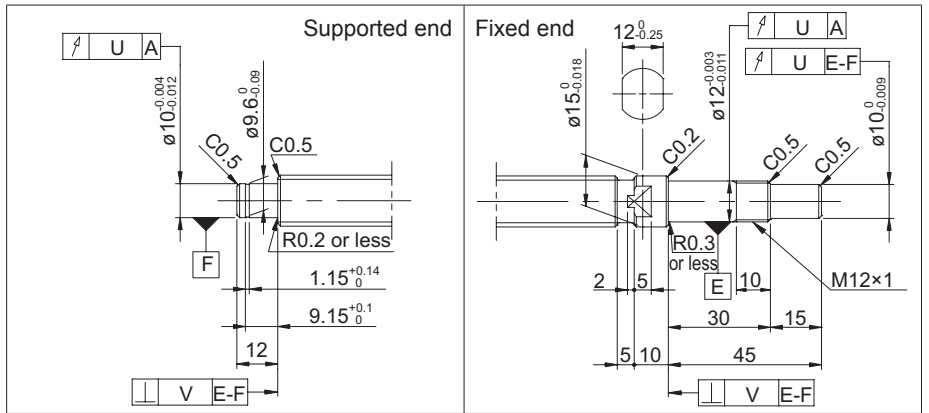
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1510PS-HPNR-1100A → FG1510PS-HPNR-1100X1028-C5F

1100: Overall screw shaft length
1028: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG1510PS-HPSR-1100X1028-C5F

S: LUBSEAL (Wiper material)

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

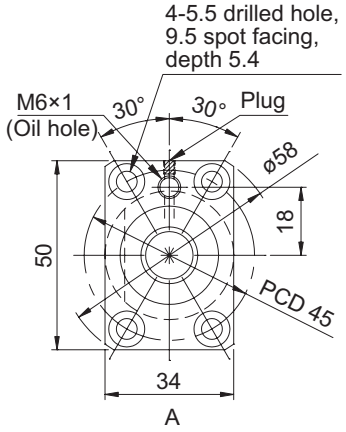
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.010	0.012	0.075	0.012	0.005	1.5 to 12.0	Up to 3.0	0.96
		0.120			1.5 to 12.0		1.34
		0.150			1.0 to 12.0		1.59
0.014	0.020	0.110	----	----	----	----	0.96
		0.170					1.34
		0.210					1.59

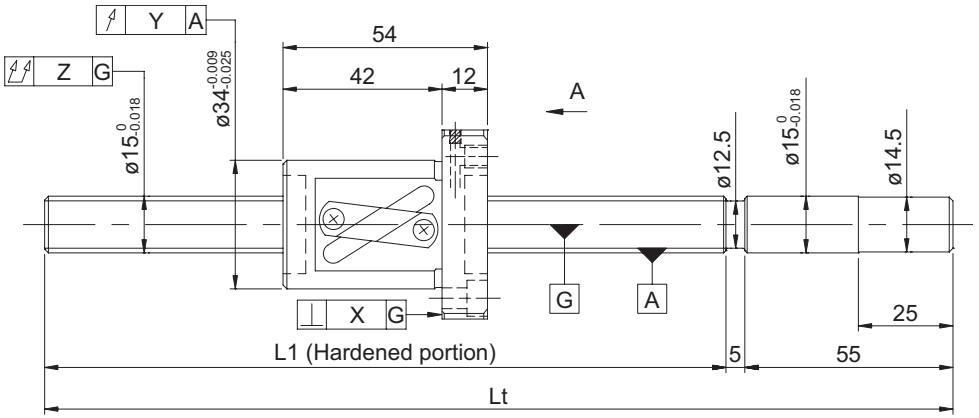
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø15

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 15		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	GG		GE
Basic dynamic load rating C (N)	4400		
Basic static load rating C0 (N)	7900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 10.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1515AS-BALR-0600A	540	600	486	0.030	0.023	0.018
GG1515AS-BALR-0900A	840	900	786	0.040	0.027	
GG1515AS-BALR-1100A	1040	1100	986	0.046	0.030	
GE1515AS-BALR-0600A	540	600	486	0.05/300	----	----
GE1515AS-BALR-0900A	840	900	786			
GE1515AS-BALR-1100A	1040	1100	986			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

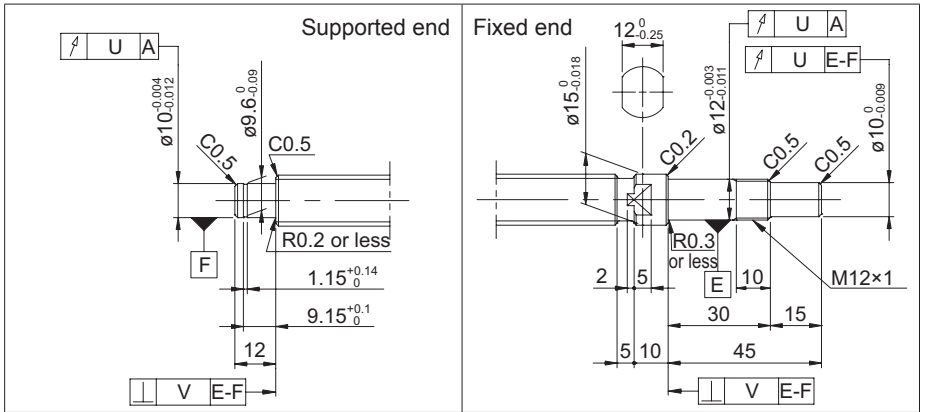
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1515AS-BALR-1100A → GG1515AS-BALR-1100X1028-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG1515AS-BASR-1100X1028-C5F

↳Wiper material S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

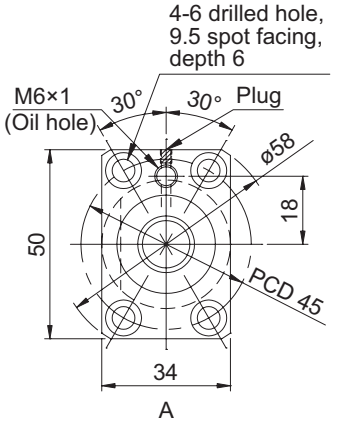
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	1.0 to 9.0	Up to 3.0	1.13
		0.120					1.52
		0.150			1.0 to 10.0		1.78
0.018	0.030	0.110	----	----	----	----	1.13
		0.170					1.52
		0.210					1.78

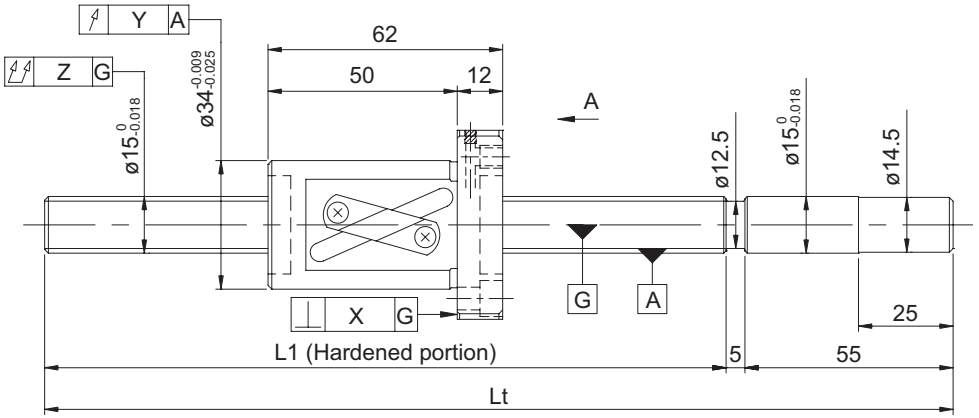
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø15

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 20		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	GG		GE
Basic dynamic load rating C (N)	4400		
Basic static load rating C0 (N)	7900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 11.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1520AS-BALR-0600A	540	600	478	0.030	0.023	0.018
GG1520AS-BALR-0900A	840	900	778	0.040	0.027	
GG1520AS-BALR-1100A	1040	1100	978	0.046	0.030	
GE1520AS-BALR-0600A	540	600	478	0.05/300	----	----
GE1520AS-BALR-0900A	840	900	778			
GE1520AS-BALR-1100A	1040	1100	978			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

● Shaft end finish type

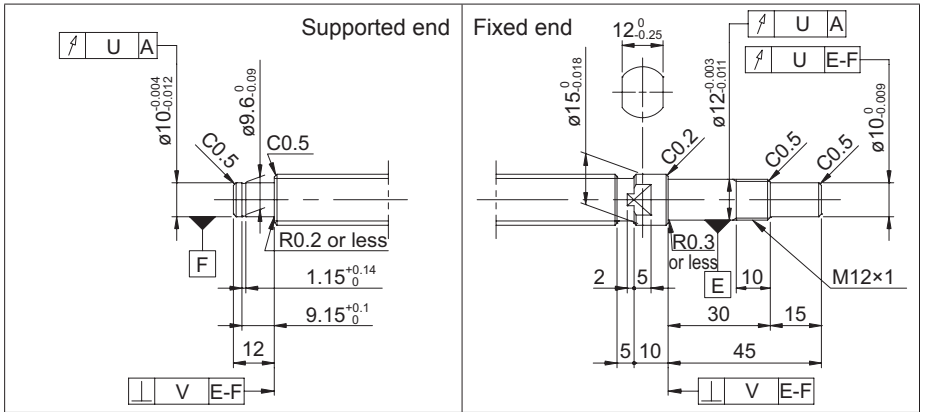
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1520AS-BALR-1100A → GG1520AS-BALR-1100X1028-C5F

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG1520AS-BASR-1100X1028-C5F

↳Wiper material S: LUBSEAL

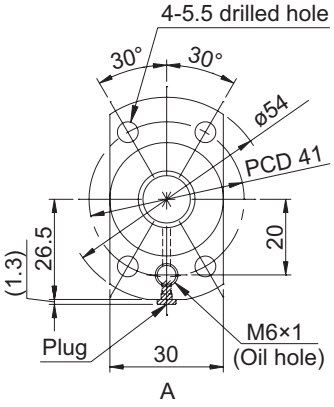
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

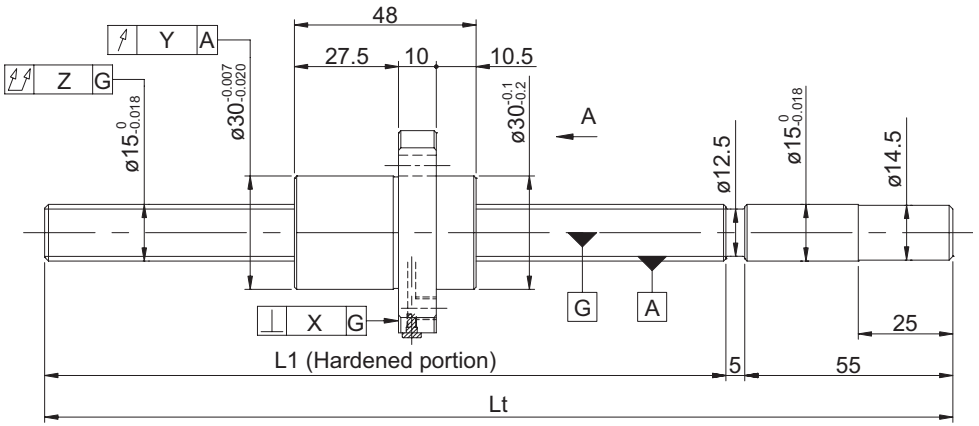
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	1.0 to 10.0	Up to 3.0	1.18
		0.120					1.58
		0.150			1.0 to 11.0		1.85
0.018	0.030	0.110	----	----	----	----	1.18
		0.170					1.58
		0.210					1.85

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 20		
Number of circuits / Thread direction	1.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	12.5		
Series	FG		FE
Basic dynamic load rating C (N)	4800		
Basic static load rating C0 (N)	8200		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 11.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





● Shaft end finish type

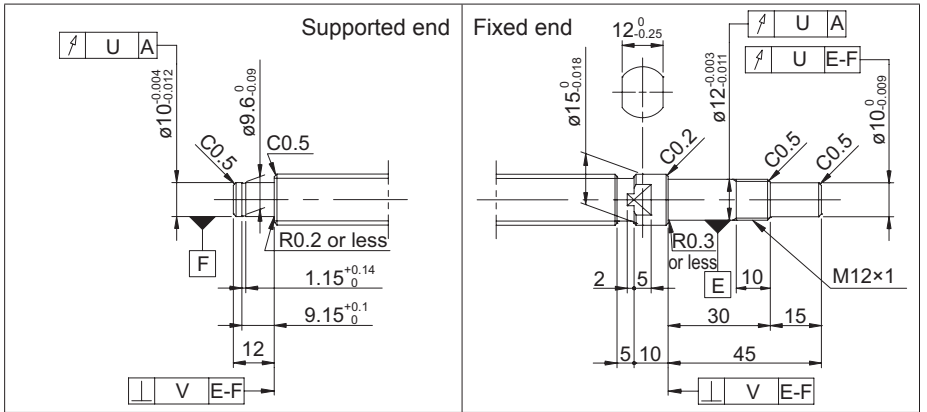
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG1520PS-HPNR-1100A → FG1520PS-HPNR-1100X1028-C5F

1100: Thread length
1028: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG1520PS-HPSR-1100X1028-C5F

S: LUBSEAL (Wiper material)

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
FG1520PS-HPNR-0600A	540	600	492	0.030	0.023	0.018
FG1520PS-HPNR-0900A	840	900	792	0.040	0.027	
FG1520PS-HPNR-1100A	1040	1100	992	0.046	0.030	
FE1520PS-HPNR-0600A	540	600	492	0.05/300	----	----
FE1520PS-HPNR-0900A	840	900	792			
FE1520PS-HPNR-1100A	1040	1100	992			

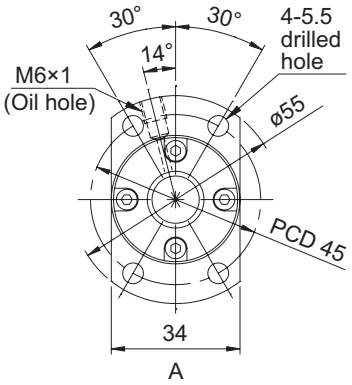
• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

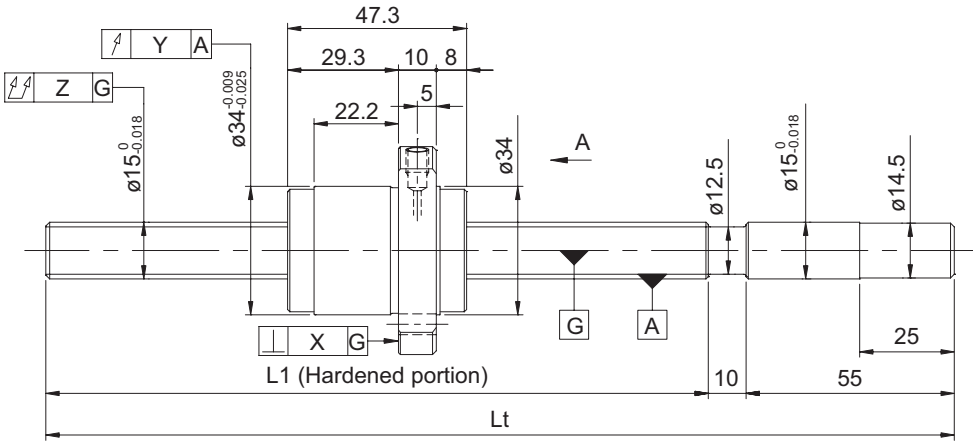
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.010	0.012	0.075	0.012	0.005	1.0 to 11.0	Up to 3.0	1.04
		0.120					1.44
		0.150					1.71
0.014	0.020	0.110	----	----	----	----	1.04
		0.170					1.44
		0.210					1.71

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 20
Number of circuits / Thread direction	1.67 turns 2 circuits (2 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	12.5
Series	HG
Basic dynamic load rating C (N)	8740
Basic static load rating C0 (N)	17550
Accuracy grade / Axial clearance symbol	C5 / F
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 6.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG1520QS-HEZR-0600A	535	600	487	0.030	0.023	0.018
HG1520QS-HEZR-1100A	1035	1100	987	0.046	0.030	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

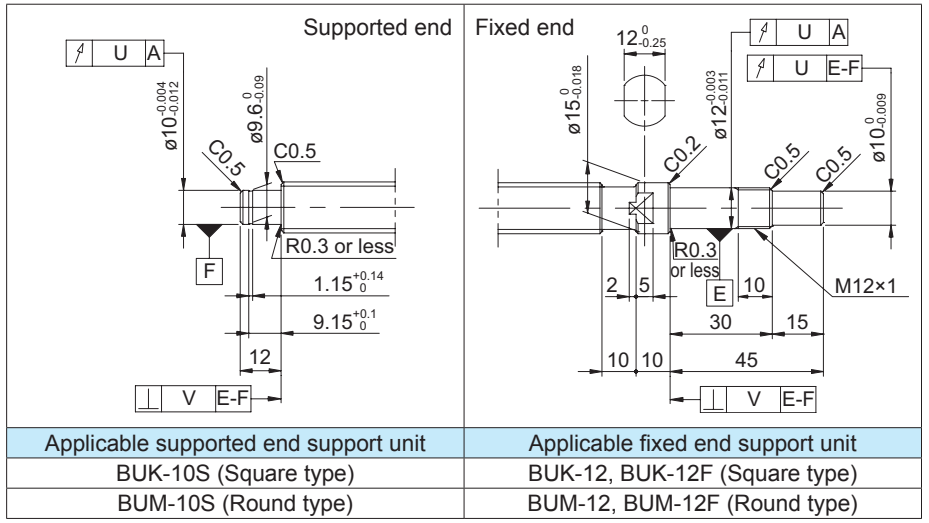
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG1520QS-HEZR-1100A → HG1520QS-HEZR-1100X1023-C5F
(1100: Thread length, 1023: Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

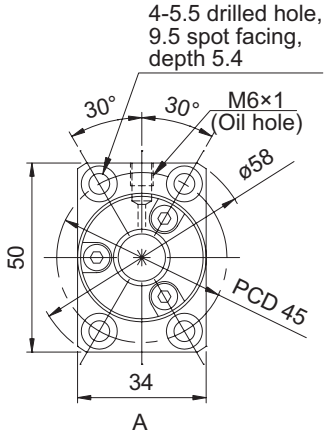
● Optional specifications

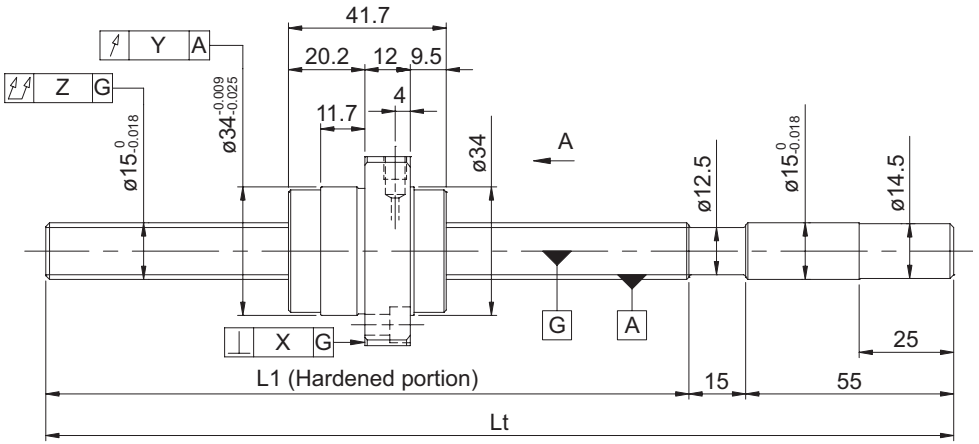
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.075	0.012	0.005	Up to 6.0	1.07
		0.150				1.70

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 40
Number of circuits / Thread direction	0.67 turns 3 circuits (3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	12.5
Series	HG
Basic dynamic load rating C (N)	5600
Basic static load rating C0 (N)	8600
Accuracy grade / Axial clearance symbol	C5 / H
Axial clearance (mm)	0.010 or less
Preload torque (N·cm)	----
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
HG1540QS-BEZR-0600A	530	600	488	0.030	0.023	0.018
HG1540QS-BEZR-1100A	1030	1100	988	0.046	0.030	

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

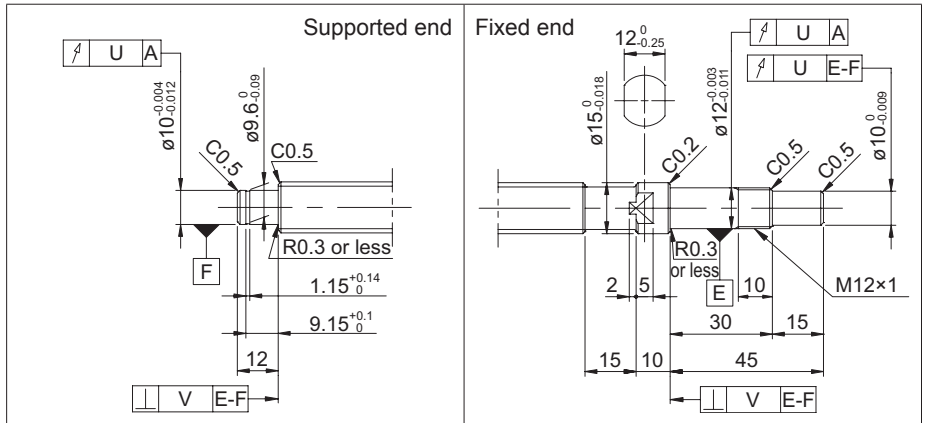
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG1540QS-BEZR-1100A → HG1540QS-BEZR-1100X1018-C5H

1100: Thread length
1018: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

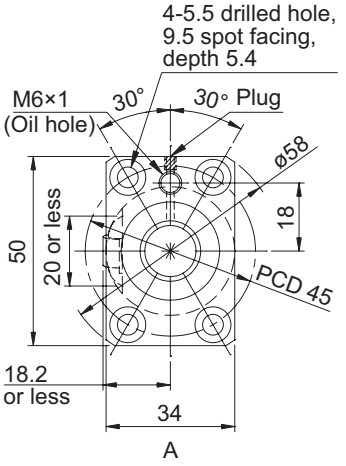
● Optional specifications

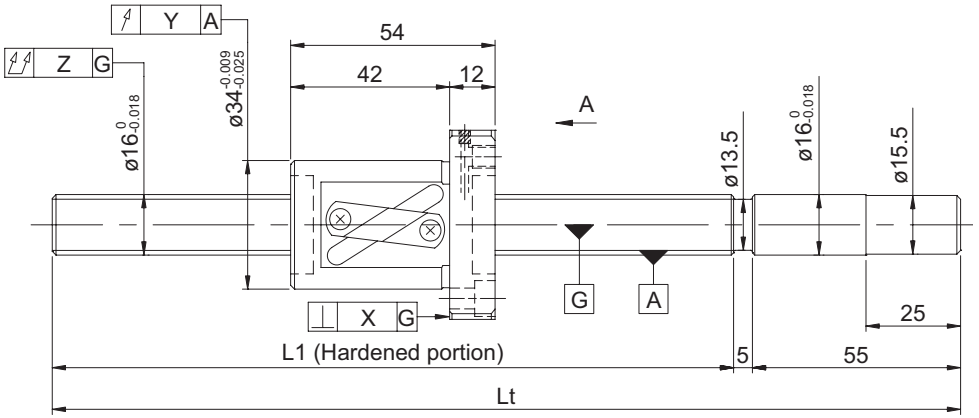
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part					Preload torque (N·cm)	Mass (kg)
X	Y	Z	U	V		
0.011	0.015	0.075	0.012	0.005	----	1.06
		0.150				1.70

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	16 - 16		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	13.5		
Series	GG		GE
Basic dynamic load rating C (N)	4750		
Basic static load rating C0 (N)	8300		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.0 to 10.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG1616AS-BTLR-0600A	540	600	486	0.030	0.023	0.018
GG1616AS-BTLR-0900A	840	900	786	0.040	0.027	
GE1616AS-BTLR-0600A	540	600	486	0.05/300	----	----
GE1616AS-BTLR-0900A	840	900	786			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

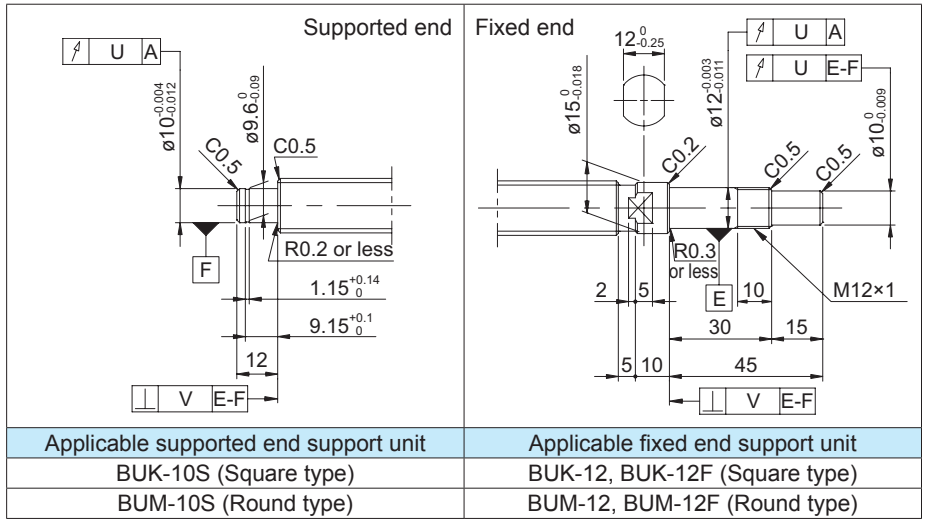
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG1616AS-BTLR-0900A → GG1616AS-BTLR-0900X0828-C5F
- 0900: Overall screw shaft length
- 0828: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

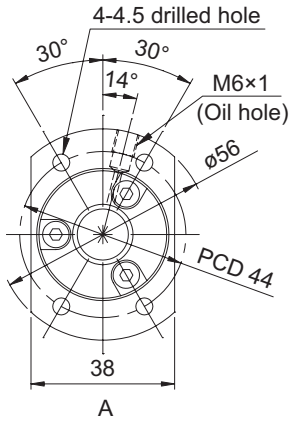
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

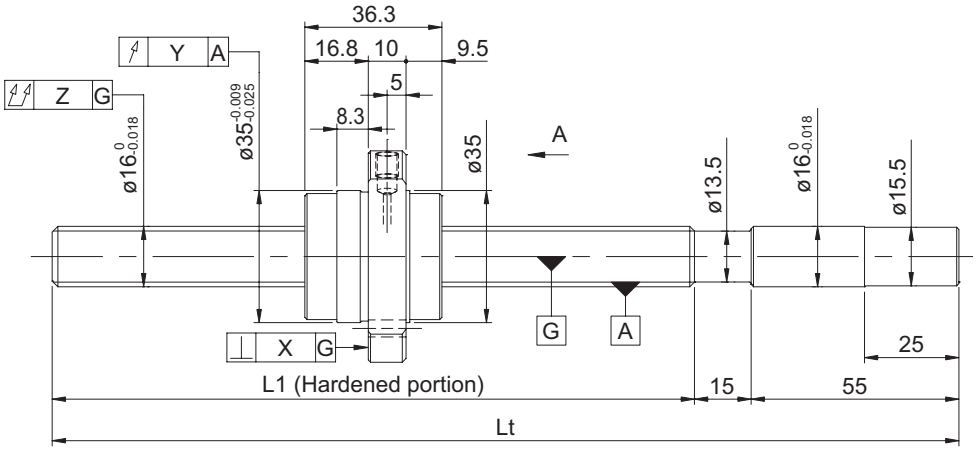
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	1.0 to 10.0	Up to 3.0	1.21
		0.120					1.67
0.018	0.030	0.110	----	----	----	----	1.21
		0.170					1.67

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	16 - 32
Number of circuits / Thread direction	0.67 turns 3 circuits (3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	13.5
Series	HG
Basic dynamic load rating C (N)	6100
Basic static load rating C0 (N)	9100
Accuracy grade / Axial clearance symbol	C5 / F
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 6.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG1632QS-HEZR-0600A	530	600	493	0.030	0.023	0.018
HG1632QS-HEZR-1100A	1030	1100	993	0.046	0.030	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

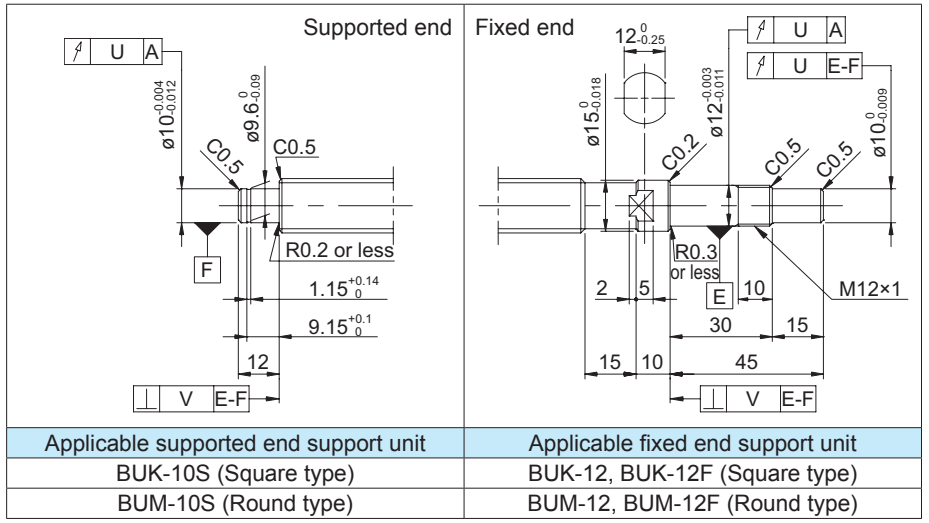
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG1632QS-HEZR-1100A → HG1632QS-HEZR-1100X1023-C5F

1100: Thread length
1023: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

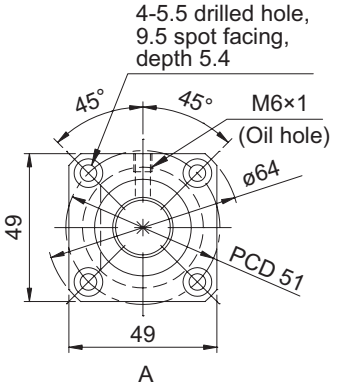
● Optional specifications

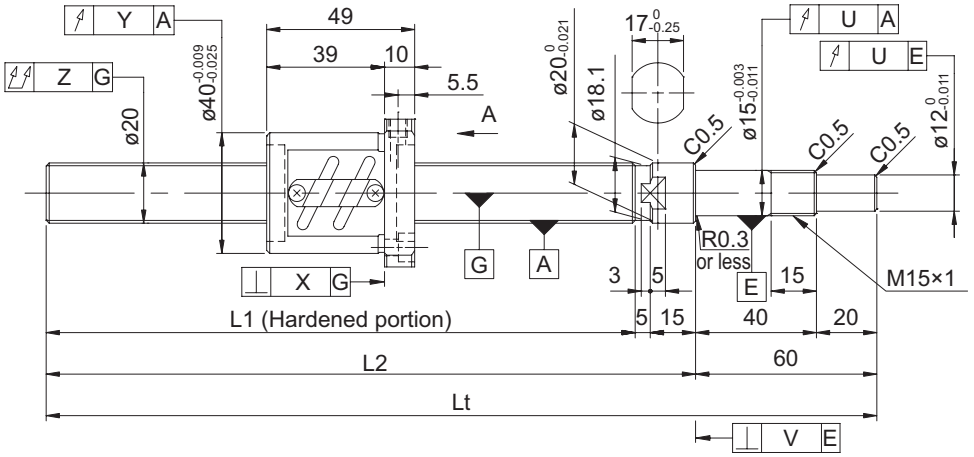
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.075	0.012	0.005	Up to 6.0	1.14
		0.150				1.86

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 4	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	18.1	
Series	GP	
Basic dynamic load rating C (N)	5410	8600
Basic static load rating C0 (N)	11700	23400
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	0.4 to 13.0	Up to 3.0
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	





Model No. (One shaft end finished)	Screw shaft length			Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	L2	Lt		±E_c	e_c	e_{300}
GP2004ES-AALR-0605B-C3S	525	545	605	476	0.016	0.012	0.008
GP2004ES-AALR-0605B-C3F							

- **Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.**
- **Preload torque is a value before applying grease.**
- **At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.**

● Shaft end finish type

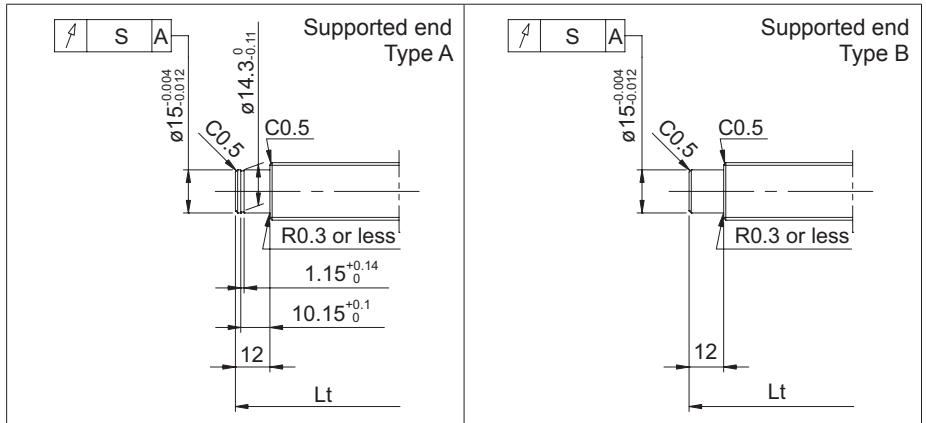
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

GP2004ES-AALR-0605B-C3F → GP2004ES-AALR-0605X0513-C3F

X: Thread length
0513: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

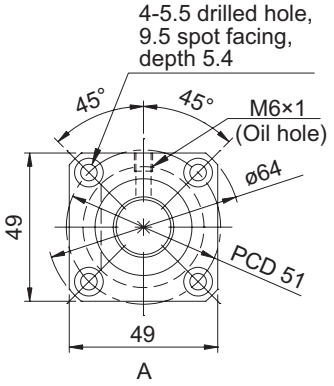
● Optional specifications

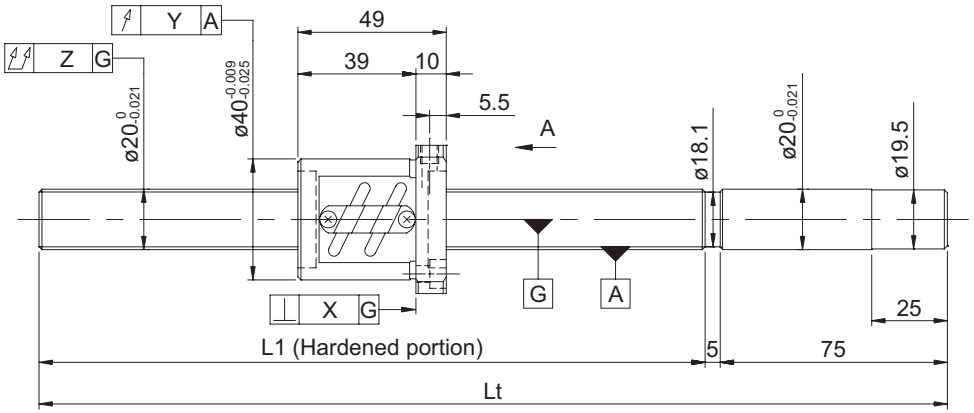
- Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part						Preload torque (N·cm)		Mass (kg)
X	Y	Z	S	U	V	Without clearance	With clearance	
0.008	0.012	0.050	0.012	0.009	0.004	0.4 to 13.0	----	1.70
						----	Up to 3.0	

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 4		
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand		
Ball diameter (mm)	2.3812		
Root diameter (mm)	18.1		
Series	GG		GE
Basic dynamic load rating C (N)	8600		
Basic static load rating C0 (N)	23400		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	1.5 to 20.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG2004ES-AALR-0605A	525	605	476	0.030	0.023	0.018
GE2004ES-AALR-0605A				0.05/300	----	----

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

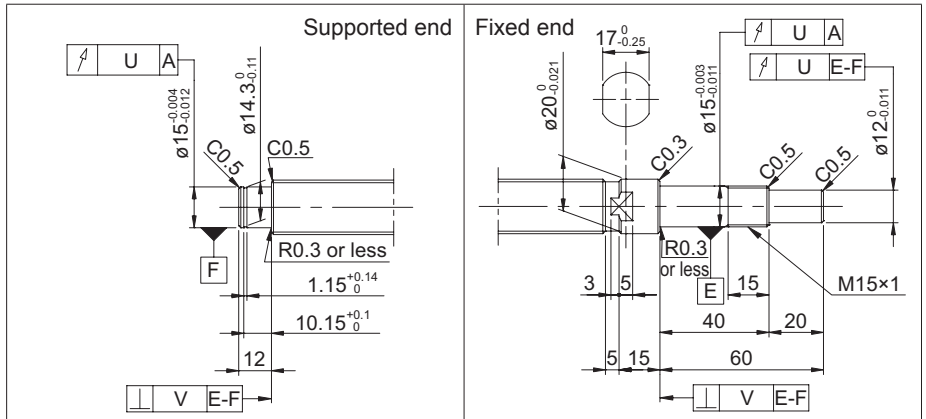
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2004ES-AALR-0605A → GG2004ES-AALR-0605X0513-C5F
- 0605: Overall screw shaft length
- 0513: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

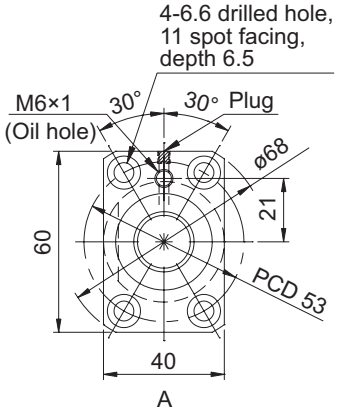
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

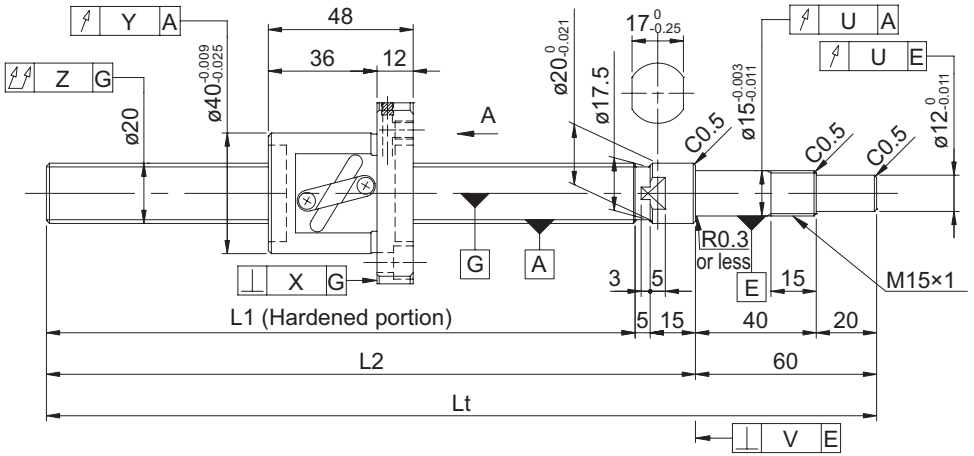
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.011	0.015	0.075	0.012	0.005	1.5 to 20.0	Up to 3.0	1.78
0.018	0.030	0.110	----	----	----	----	

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GP	
Basic dynamic load rating C (N)	5260	8350
Basic static load rating C0 (N)	8750	17500
Accuracy grade / Axial clearance symbol	C3 / S	C3 / F
Axial clearance (mm)	0	0.005 or less
Preload torque (N·cm)	3.0 to 10.0	Up to 3.0
Spacer ball	1 : 1	None
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	





Model No. (One shaft end finished)	Screw shaft length L1	L2	Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	e_c	e_{300}
GP2005DS-BALR-0605B-C3S	525	545	605	477	0.016	0.012	0.008
GP2005DS-BALR-0605B-C3F							

- **Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.**
- **Preload torque is a value before applying grease.**
- **At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.**

● Shaft end finish type

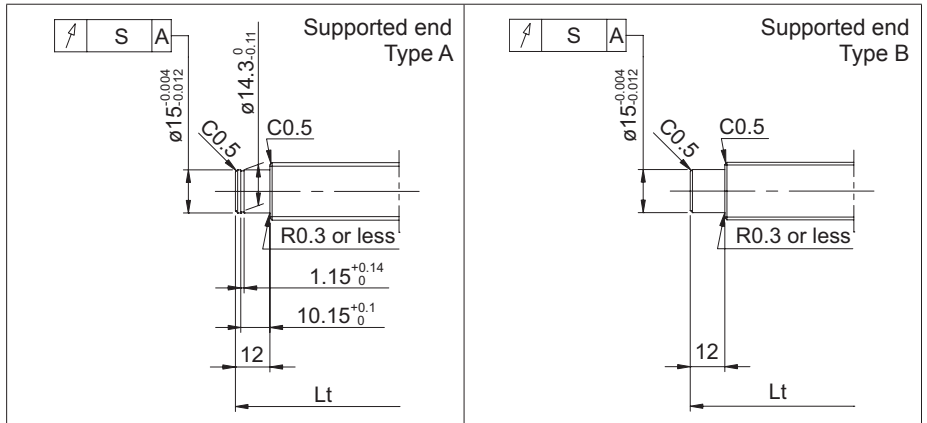
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size. The fixed end type is finished beforehand.

Regarding the supported shaft end, additional machining to KURODA's recommended shaft end finish type described below is available. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Finished fixed end (See left figure) → Both shaft ends finished

GP2005DS-BALR-0605B-C3F → GP2005DS-BALR-0605X0513-C3F

Thread length
Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

- Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GP2005DS-BASR-0605X0513-C3F

Wiper material S: LUBSEAL

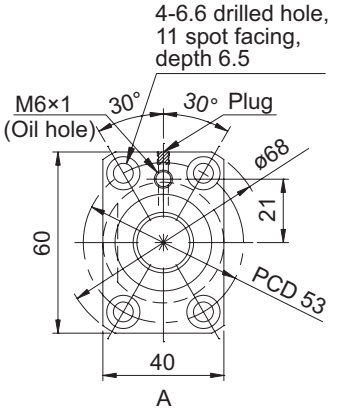
- Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

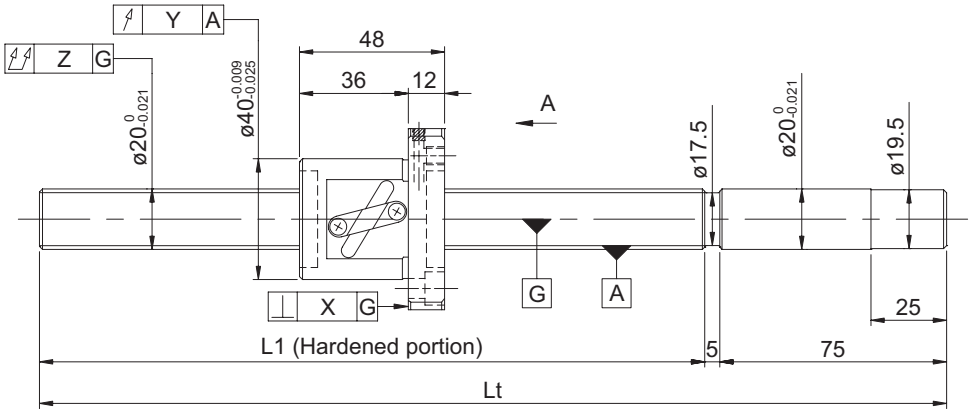
Accuracy of each part X	Y	Z	S	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.008	0.012	0.050	0.012	0.009	0.004	3.0 to 10.0	----	1.64
						----	Up to 3.0	

Screw shaft diameter ø20

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 5		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	17.5		
Series	GG		GE
Basic dynamic load rating C (N)	8350		
Basic static load rating C0 (N)	17500		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	2.0 to 14.0	Up to 3.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG2005DS-BALR-0605A	525	605	477	0.030	0.023	0.018
GG2005DS-BALR-1005A	925	1005	877	0.040	0.027	
GE2005DS-BALR-0605A	525	605	477	0.05/300	----	----
GE2005DS-BALR-1005A	925	1005	877			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

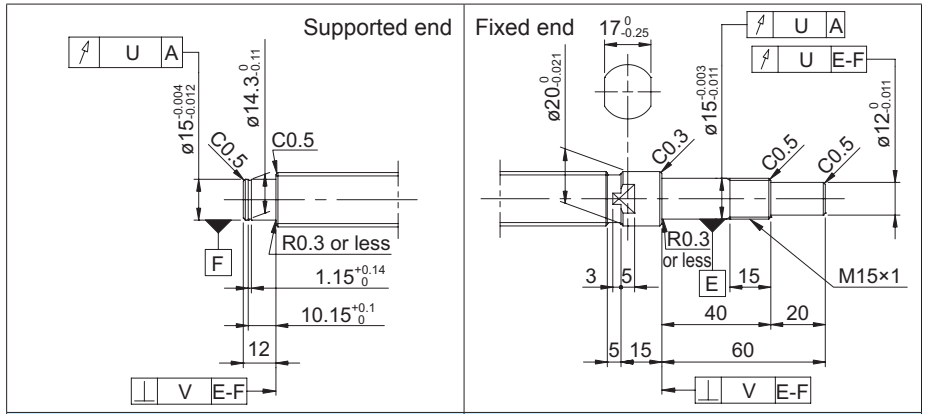
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2005DS-BALR-1005A → GG2005DS-BALR-1005X0913-C5F
- 1005: Thread length
- 0913: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2005DS-BASR-1005X0913-C5F
- S: LUBSEAL

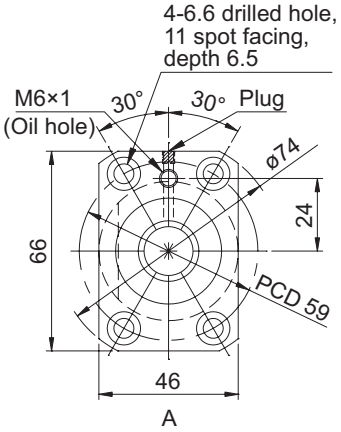
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

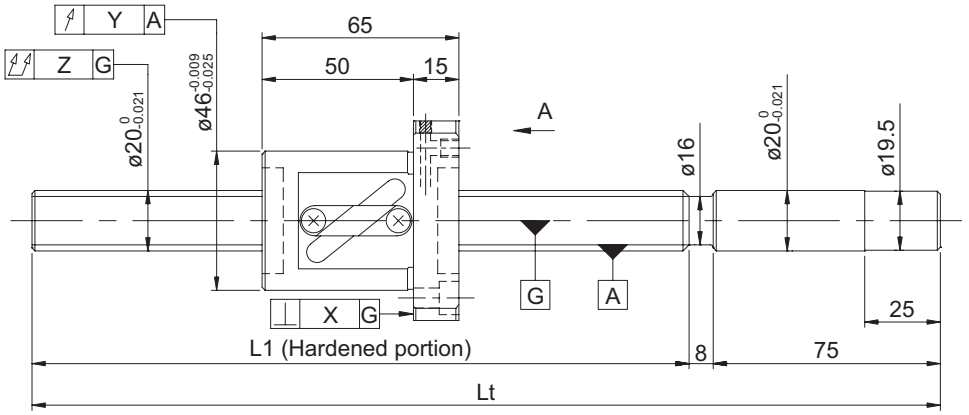
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	2.0 to 14.0	Up to 3.0	1.71
		0.150					2.56
0.018	0.030	0.110	----	----	----	----	1.71
		0.210					2.56

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 10		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	16.0		
Series	GG		GE
Basic dynamic load rating C (N)	13500		
Basic static load rating C0 (N)	25100		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	7.0 to 29.0	Up to 4.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG2010DS-BALR-0605A	522	605	457	0.030	0.023	0.018
GG2010DS-BALR-1005A	922	1005	857	0.040	0.027	
GG2010DS-BALR-1505A	1422	1505	1357	0.054	0.035	
GE2010DS-BALR-0605A	522	605	457	0.05/300	----	----
GE2010DS-BALR-1005A	922	1005	857			
GE2010DS-BALR-1505A	1422	1505	1357			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

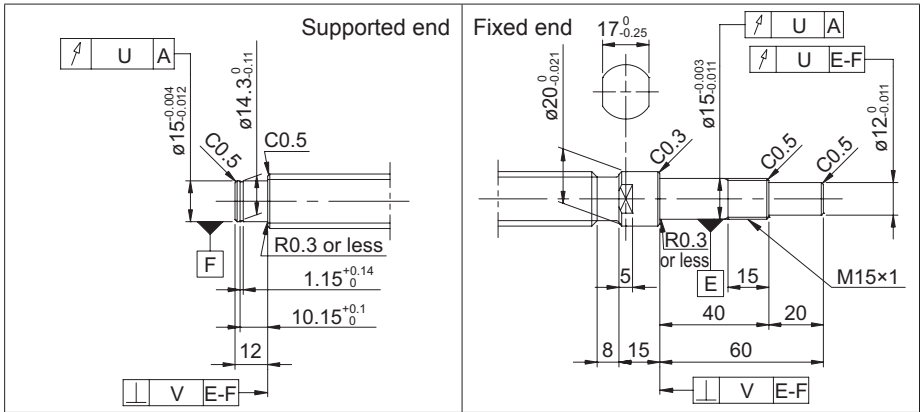
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2010DS-BALR-1505A → GG2010DS-BALR-1505X1410-C5F
- 1410: Overall screw shaft length
- 1505: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2010DS-BASR-1505X1410-C5F
- S: LUBSEAL

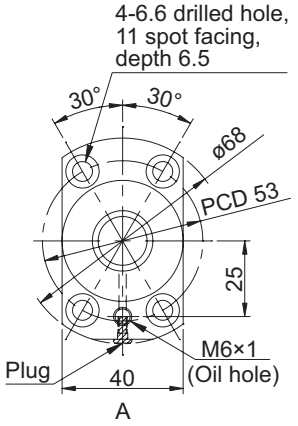
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

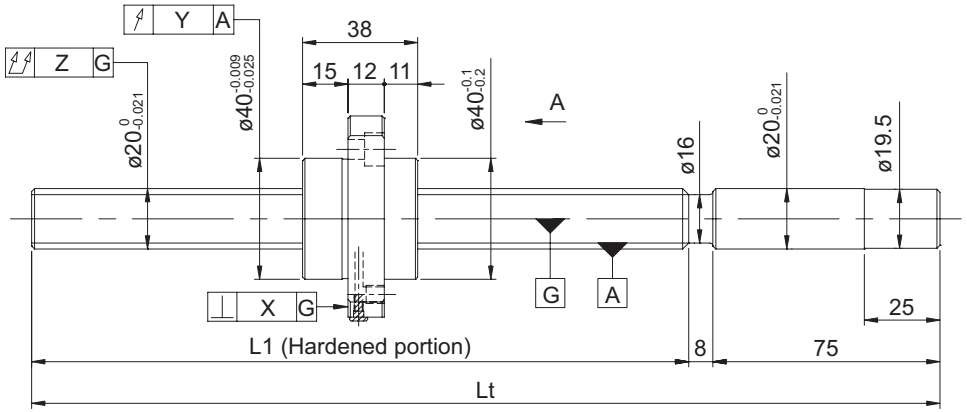
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	8.0 to 29.0	Up to 4.0	2.01
		0.150			7.0 to 29.0		2.84
		0.190					3.87
0.018	0.030	0.110	----	----	----	----	2.01
		0.210					2.84
		0.270					3.87

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 10		
Number of circuits / Thread direction	2.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	16.0		
Series	FG		FE
Basic dynamic load rating C (N)	18000		
Basic static load rating C0 (N)	33900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	6.5 to 30.0	Up to 4.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG2010PS-HPNR-0605A	522	605	484	0.030	0.023	0.018
FG2010PS-HPNR-1005A	922	1005	884	0.040	0.027	
FG2010PS-HPNR-1505A	1422	1505	1384	0.054	0.035	
FE2010PS-HPNR-0605A	522	605	484	0.05/300	----	----
FE2010PS-HPNR-1005A	922	1005	884			
FE2010PS-HPNR-1505A	1422	1505	1384			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

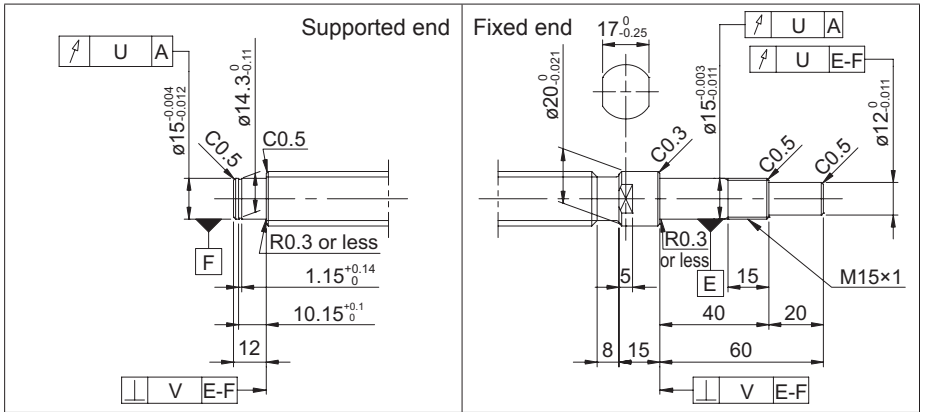
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG2010PS-HPNR-1505A → FG2010PS-HPNR-1505X1410-C5F
- 1410: Overall screw shaft length
- 1505: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG2010PS-HPSR-1505X1410-C5F
- S: LUBSEAL

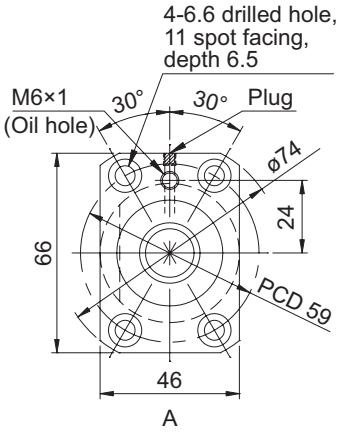
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

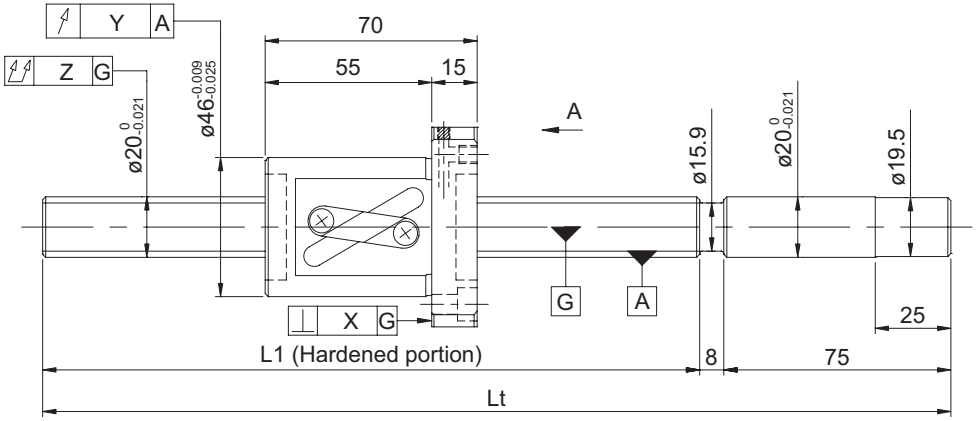
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.075	0.012	0.005	7.0 to 30.0	Up to 4.0	1.63
		0.150			6.5 to 30.0		2.46
		0.190			6.5 to 30.0		3.49
0.018	0.030	0.110	----	----	----	----	1.63
		0.210					2.46
		0.270					3.49

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 20		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	15.9		
Series	GG		GE
Basic dynamic load rating C (N)	9200		
Basic static load rating C0 (N)	16200		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	5.0 to 22.0	Up to 4.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG2020AS-BALR-1005A	922	1005	852	0.040	0.027	0.018
GG2020AS-BALR-1505A	1422	1505	1352	0.054	0.035	
GE2020AS-BALR-1005A	922	1005	852	0.05/300	----	----
GE2020AS-BALR-1505A	1422	1505	1352			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

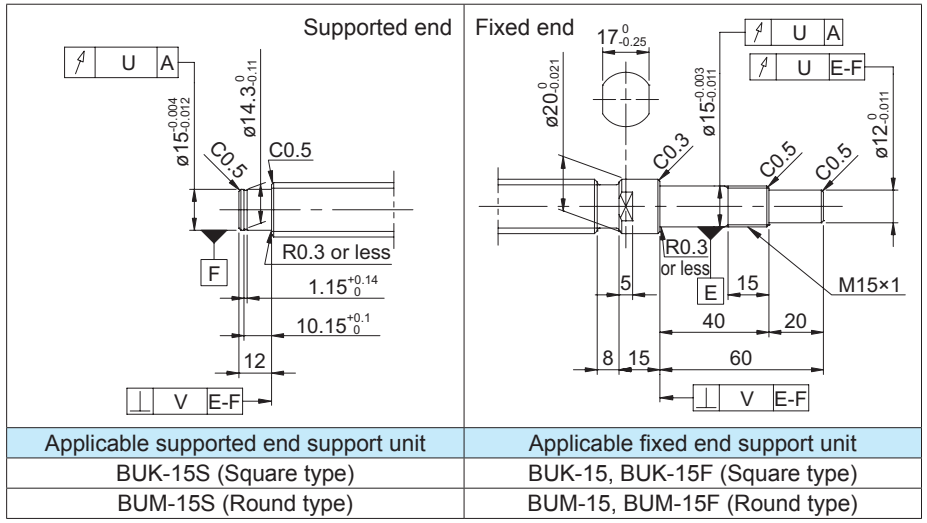
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2020AS-BALR-1505A → GG2020AS-BALR-1505X1410-C5F
- 1505: Overall screw shaft length
- X1410: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2020AS-BASR-1505X1410-C5F
- S: LUBSEAL (Wiper material)

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

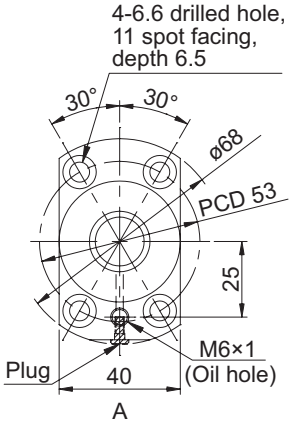
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.011	0.015	0.150	0.012	0.005	6.0 to 20.0	Up to 4.0	3.08
		0.190			5.0 to 22.0		4.22
0.018	0.030	0.210	----	----	----	----	3.08
		0.270					4.22

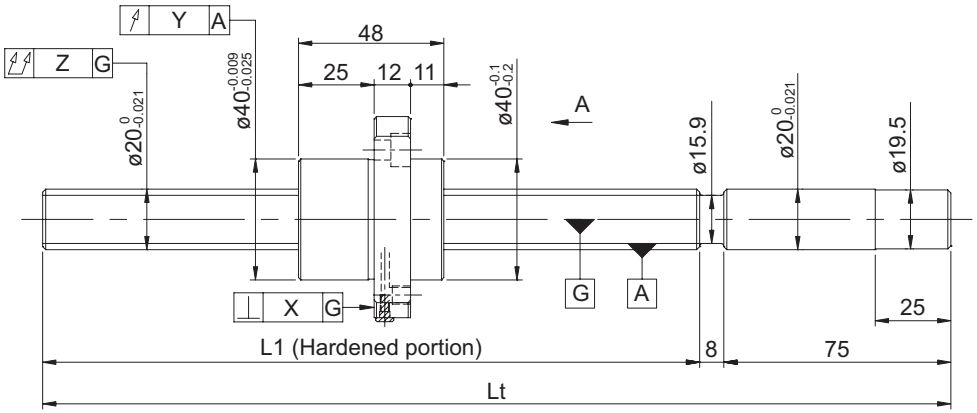
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø20

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 20		
Number of circuits / Thread direction	1.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	15.9		
Series	FG		FE
Basic dynamic load rating C (N)	11600		
Basic static load rating C0 (N)	20600		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	4.5 to 22.5	Up to 4.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG2020PS-HPNR-1005A	922	1005	874	0.040	0.027	0.018
FG2020PS-HPNR-1505A	1422	1505	1374	0.054	0.035	
FE2020PS-HPNR-1005A	922	1005	874	0.05/300	----	----
FE2020PS-HPNR-1505A	1422	1505	1374			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

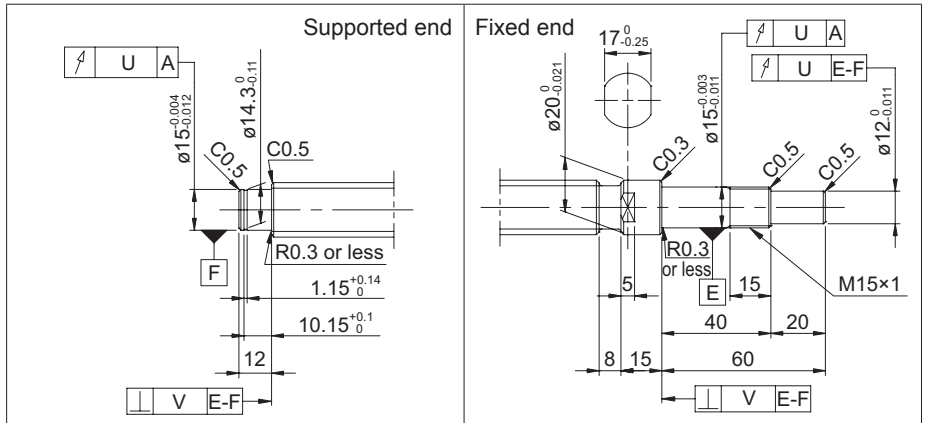
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG2020PS-HPNR-1505A → FG2020PS-HPNR-1505X1410-C5F
- 1505: Overall screw shaft length
- 1410: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG2020PS-HPSR-1505X1410-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

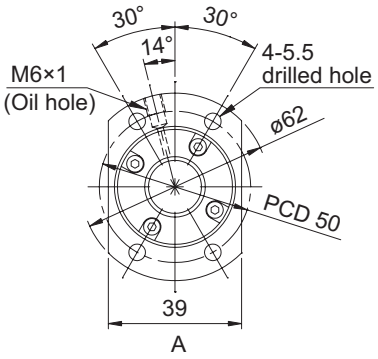
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.150	0.012	0.005	5.5 to 21.0	Up to 4.0	2.73
		0.190			4.5 to 22.5		3.87
0.018	0.030	0.210	----	----	----	----	2.73
		0.270					3.87

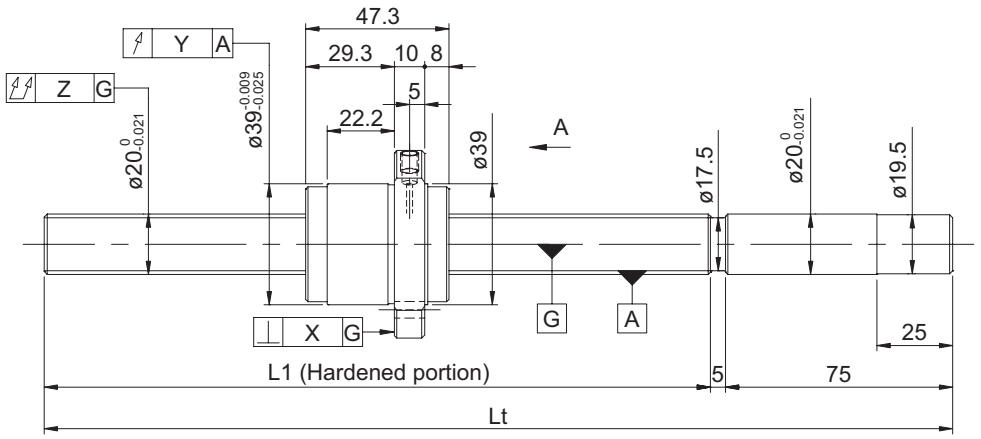
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø20

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 20
Number of circuits / Thread direction	1.67 turns 2 circuits (2 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	10690
Basic static load rating C0 (N)	23330
Accuracy grade / Axial clearance symbol	C5 / F
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 7.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG2020QS-HEZR-1000A	920	1000	872	0.040	0.027	0.018
HG2020QS-HEZR-1500A	1420	1500	1372	0.054	0.035	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

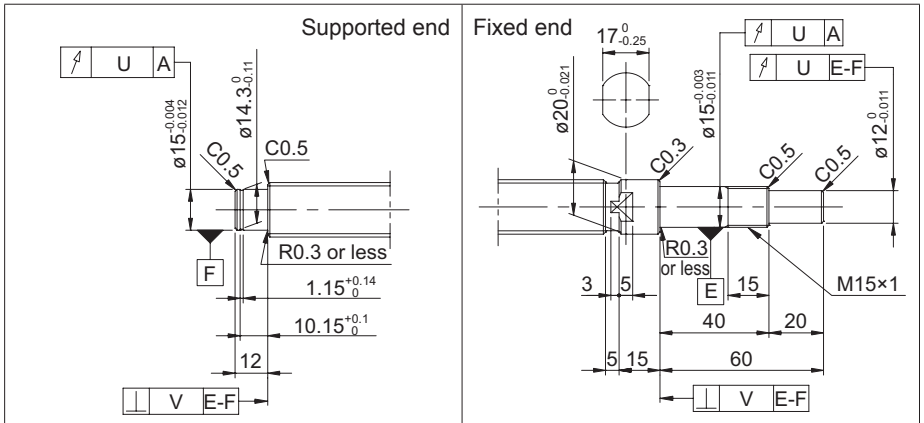
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG2020QS-HEZR-1500A → HG2020QS-HEZR-1500X1408-C5F
(1408: Thread length, 1500: Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

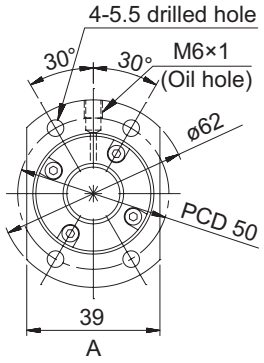
● Optional specifications

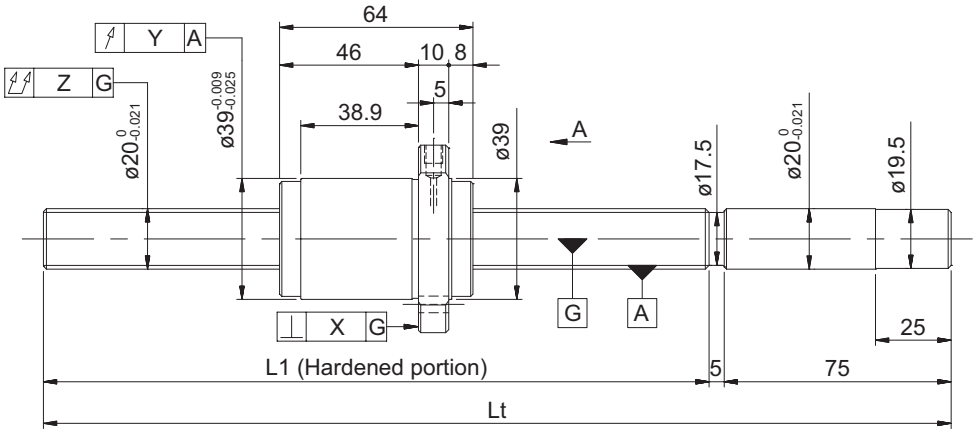
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.120	0.012	0.005	Up to 7.0	2.71
		0.190				3.86

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 30
Number of circuits / Thread direction	1.67 turns 2 circuits (2 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	10690
Basic static load rating C0 (N)	23330
Accuracy grade / Axial clearance symbol	C5 / F
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 9.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG2030QS-HEZR-1000A	920	1000	856	0.040	0.027	0.018
HG2030QS-HEZR-1500A	1420	1500	1356	0.054	0.035	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

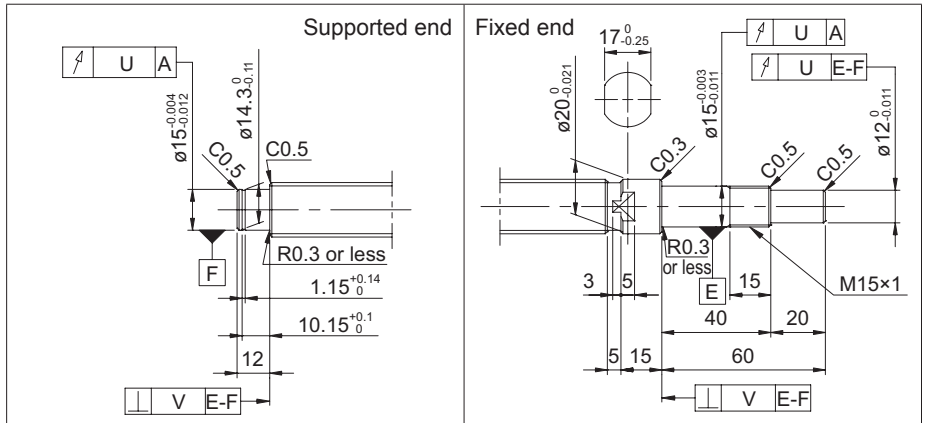
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG2030QS-HEZR-1500A → HG2030QS-HEZR-1500X1408-C5F

1500: Overall screw shaft length
1408: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

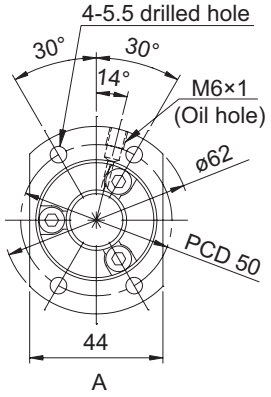
● Optional specifications

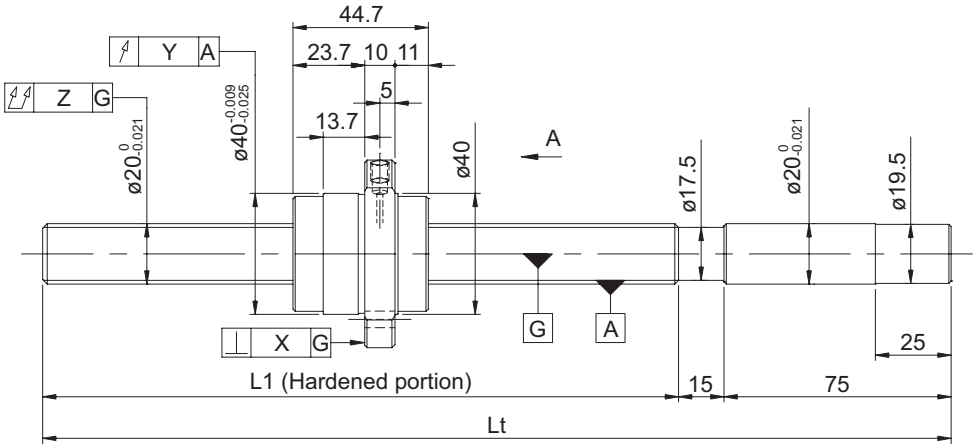
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.120	0.012	0.005	Up to 9.0	2.87
		0.190				4.06

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 40
Number of circuits / Thread direction	0.67 turns 3 circuits (3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	6800
Basic static load rating C0 (N)	12100
Accuracy grade / Axial clearance symbol	C5 / F
Axial clearance (mm)	0.005 or less
Preload torque (N·cm)	Up to 7.0
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±Ec	Lead accuracy ec	Lead accuracy e300
HG2040QS-HEZR-1000A	910	1000	865	0.040	0.027	0.018
HG2040QS-HEZR-1500A	1410	1500	1365	0.054	0.035	

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

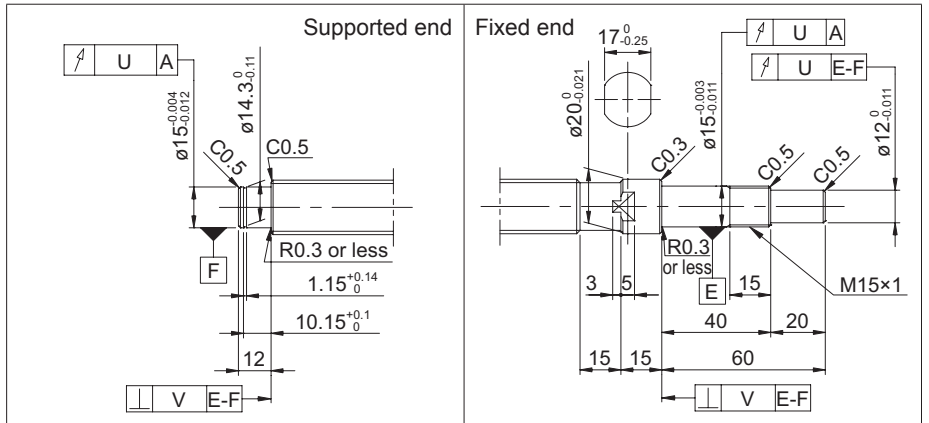
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG2040QS-HEZR-1500A → HG2040QS-HEZR-1500X1398-C5F
(1500: Thread length, 1398: Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

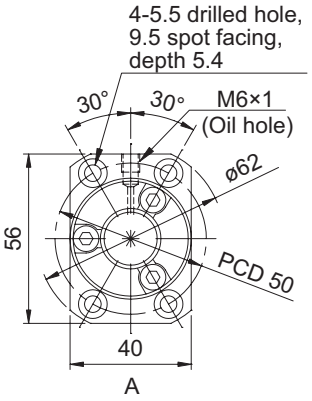
● Optional specifications

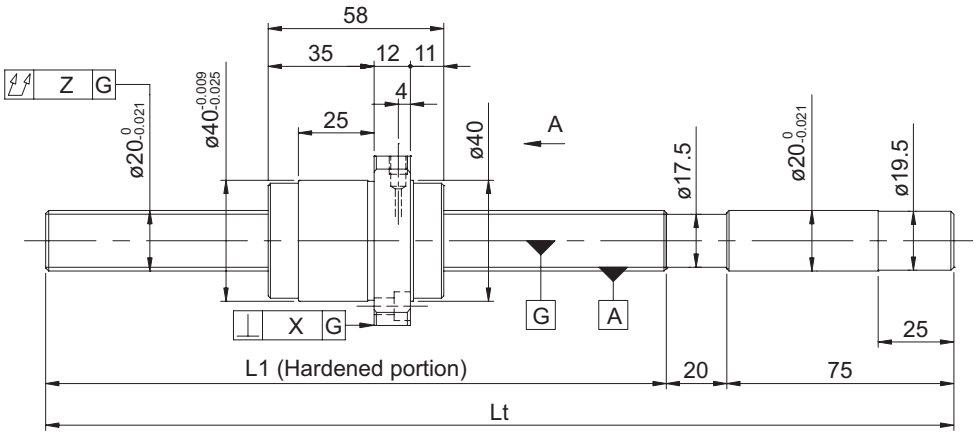
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.120	0.012	0.005	Up to 7.0	2.73
		0.190				3.90

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 60
Number of circuits / Thread direction	0.67 turns 3 circuits (3 threads) / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	17.5
Series	HG
Basic dynamic load rating C (N)	6800
Basic static load rating C0 (N)	12100
Accuracy grade / Axial clearance symbol	C5 / H
Axial clearance (mm)	0.010 or less
Preload torque (N·cm)	----
Spacer ball	None
Recirculation system	End cap method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
HG2060QS-BEZR-1000A	905	1000	847	0.040	0.027	0.018
HG2060QS-BEZR-1500A	1405	1500	1347	0.054	0.035	

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

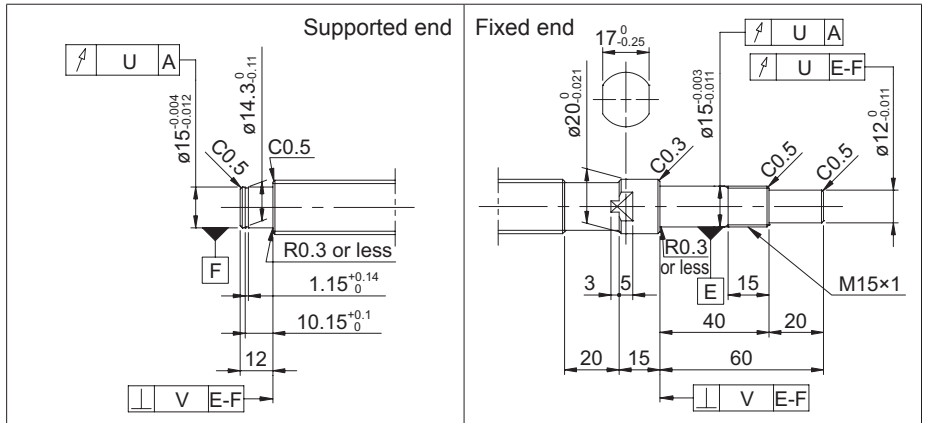
Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

HG2060QS-BEZR-1500A → HG2060QS-BEZR-1500X1393-C5H

1500: Thread length
1393: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

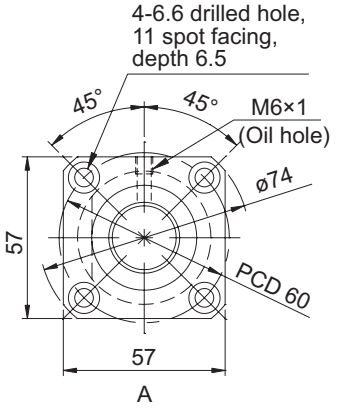
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

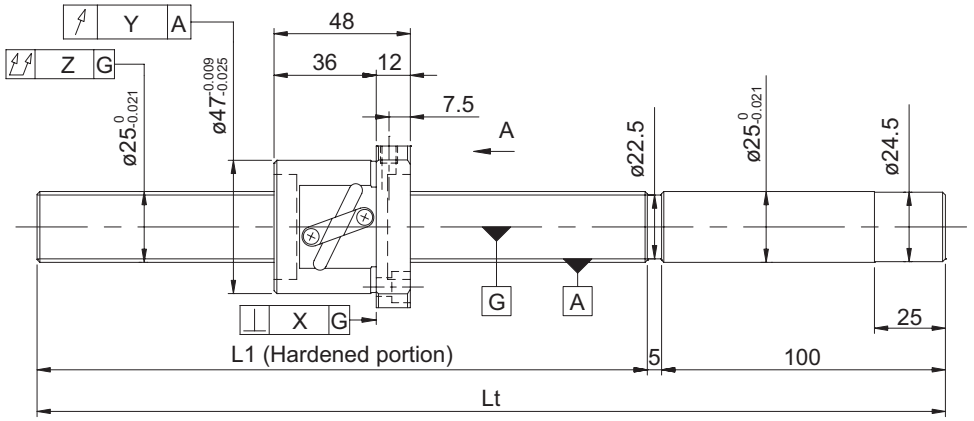
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm)	Mass (kg)
0.011	0.015	0.120	0.012	0.005	----	2.87
		0.190				4.06

GG series (Accuracy grade C5) / GE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 5		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	22.5		
Series	GG		GE
Basic dynamic load rating C (N)	9400		
Basic static load rating C0 (N)	22200		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	2.0 to 18.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG2505DS-AALR-0600A	495	600	447	0.027	0.020	0.018
GG2505DS-AALR-1000A	895	1000	847	0.040	0.027	
GG2505DS-AALR-1505A	1400	1505	1352	0.054	0.035	
GE2505DS-AALR-0600A	495	600	447	0.05/300	----	----
GE2505DS-AALR-1000A	895	1000	847			
GE2505DS-AALR-1505A	1400	1505	1352			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

Screw shaft diameter ø25

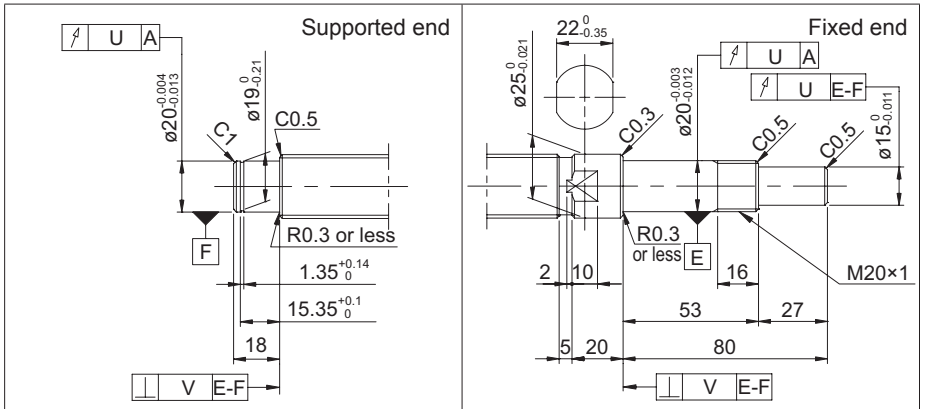
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2505DS-AALR-1505A → GG2505DS-AALR-1505X1382-C5F
- 1505: Overall screw shaft length
- 1382: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2505DS-AASR-1505X1382-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

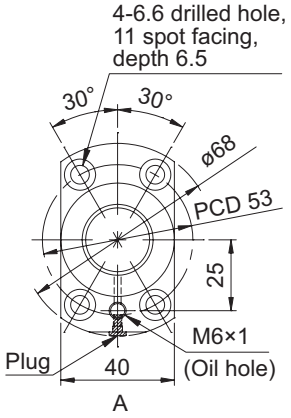
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.060	0.013	0.005	2.0 to 18.0	Up to 6.0	2.64
		0.085					4.01
		0.130					5.74
0.018	0.030	0.090	----	----	----	----	2.64
		0.130					4.01
		0.190					5.74

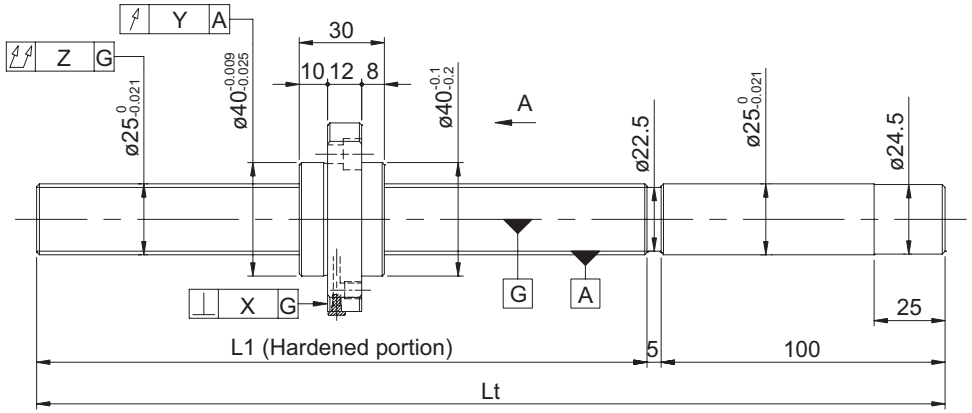
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

FG series (Accuracy grade C5) / FE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 5		
Number of circuits / Thread direction	3.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	22.5		
Series	FG		FE
Basic dynamic load rating C (N)	13100		
Basic static load rating C0 (N)	31800		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	2.0 to 25.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG2505PS-HPNR-0600A	495	600	465	0.027	0.020	0.018
FG2505PS-HPNR-1000A	895	1000	865	0.040	0.027	
FG2505PS-HPNR-1505A	1400	1505	1370	0.054	0.035	
FE2505PS-HPNR-0600A	495	600	465	0.05/300	----	----
FE2505PS-HPNR-1000A	895	1000	865			
FE2505PS-HPNR-1505A	1400	1505	1370			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

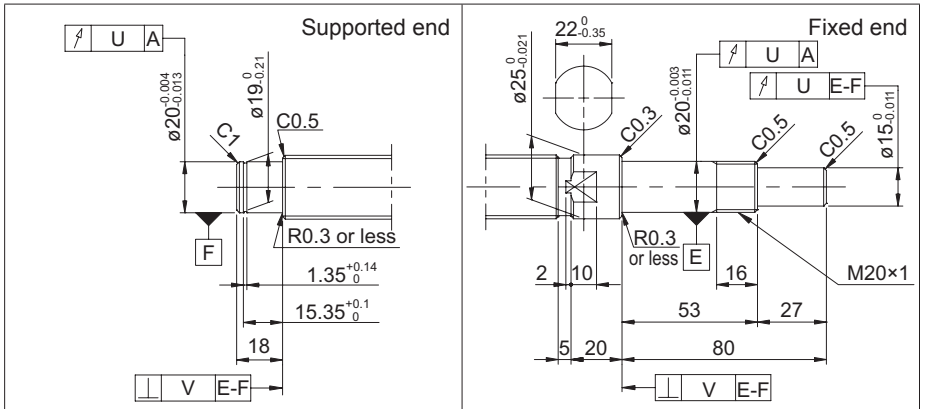
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG2505PS-HPNR-1505A → FG2505PS-HPNR-1505X1382-C5F
- 1505: Overall screw shaft length
- 1382: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG2505PS-HPSR-1505X1382-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

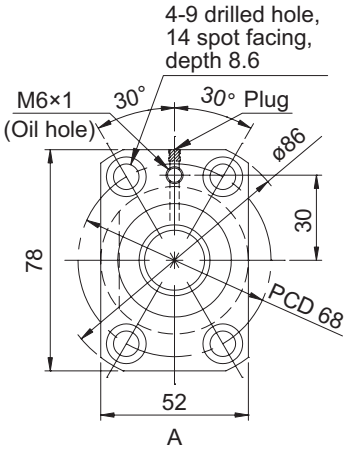
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.060	0.013	0.005	2.0 to 25.0	Up to 6.0	2.37
		0.085					3.74
		0.130					5.47
0.018	0.030	0.090	----	----	----	----	2.37
		0.130					3.74
		0.190					5.47

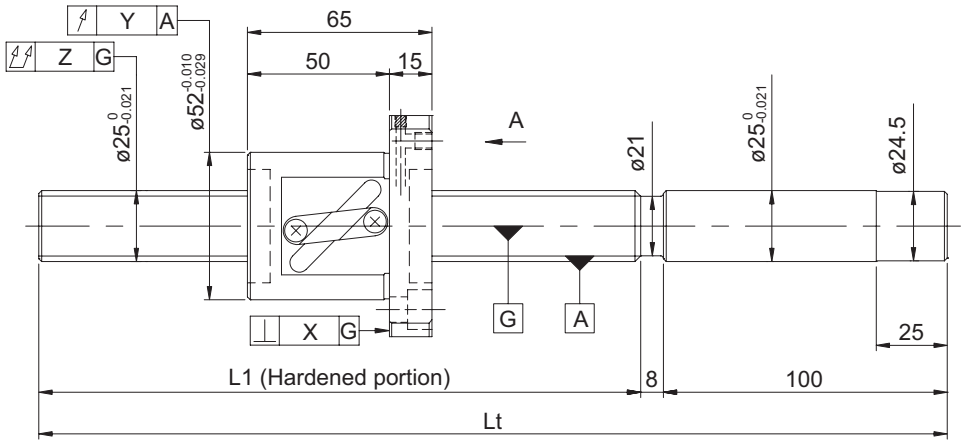
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

GG series (Accuracy grade C5) / GE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 10		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	21.0		
Series	GG		GE
Basic dynamic load rating C (N)	16100		
Basic static load rating C0 (N)	33400		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	10.0 to 38.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG2510DS-BALR-1020A	912	1020	847	0.040	0.027	0.018
GG2510DS-BALR-1520A	1412	1520	1347	0.054	0.035	
GE2510DS-BALR-1020A	912	1020	847	0.05/300	----	----
GE2510DS-BALR-1520A	1412	1520	1347			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

Screw shaft diameter ø25, Lead 10

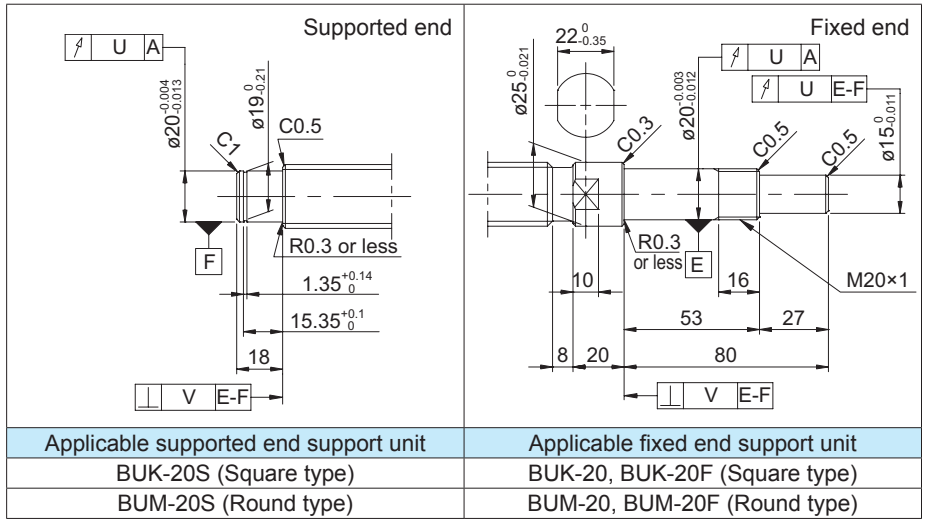
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2510DS-BALR-1520A → GG2510DS-BALR-1520X1394-C5F
- 1520: Thread length
- 1394: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2510DS-BASR-1520X1394-C5F
- S: Wiper material S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

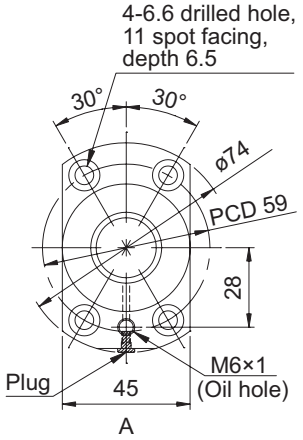
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.013	0.019	0.100	0.013	0.005	10.0 to 38.0	Up to 4.0	4.40
		0.130				Up to 6.0	6.08
0.018	0.030	0.150	----	----	----	----	4.40
		0.190					6.08

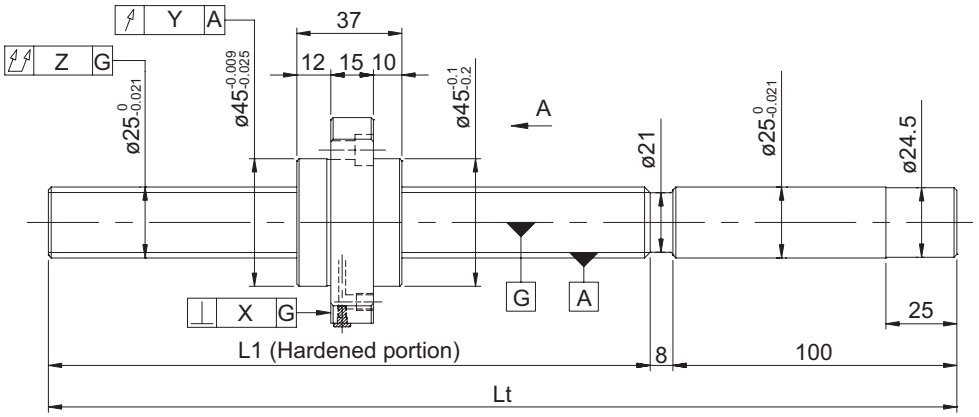
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

FG series (Accuracy grade C5) / FE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 10		
Number of circuits / Thread direction	2.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	21.0		
Series	FG		FE
Basic dynamic load rating C (N)	20400		
Basic static load rating C0 (N)	42600		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	9.0 to 38.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG2510PS-HPNR-1020A	912	1020	875	0.040	0.027	0.018
FG2510PS-HPNR-1520A	1412	1520	1375	0.054	0.035	
FE2510PS-HPNR-1020A	912	1020	875	0.05/300	----	----
FE2510PS-HPNR-1520A	1412	1520	1375			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

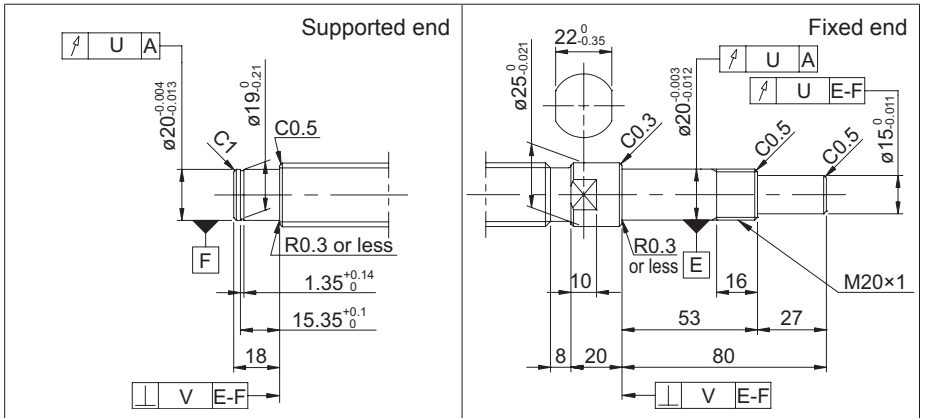
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG2510PS-HPNR-1520A → FG2510PS-HPNR-1520X1394-C5F
(1394: Thread length; 1520: Overall screw shaft length)



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG2510PS-HPSR-1520X1394-C5F
(S: Wiper material LUBSEAL)

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

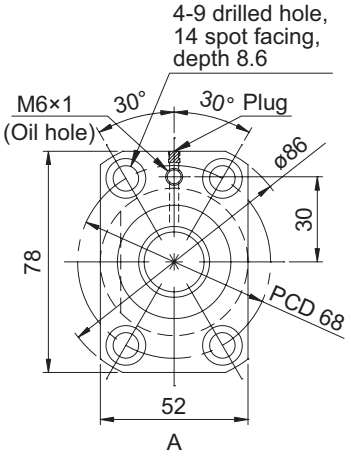
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.100	0.013	0.005	9.0 to 38.0	Up to 6.0	3.92
		0.130					5.60
0.018	0.030	0.150	----	----	----	----	3.92
		0.190					5.60

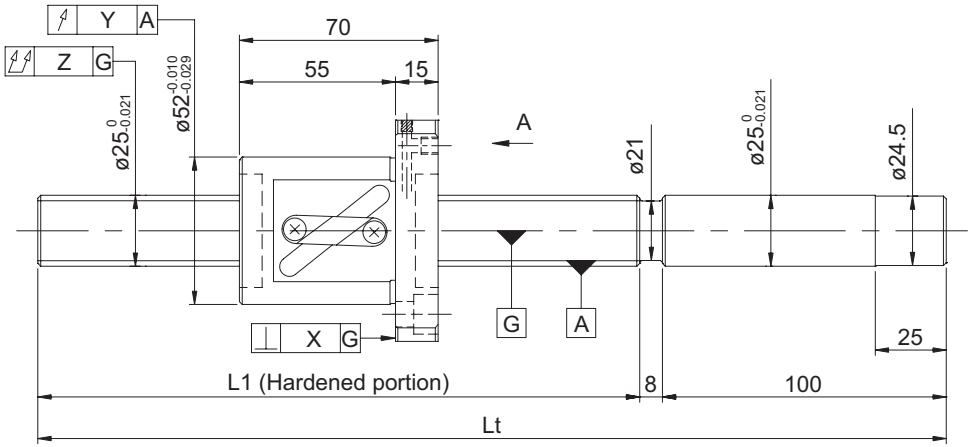
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

GG series (Accuracy grade C5) / GE series (Accuracy grade C7)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 20		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	21.0		
Series	GG		GE
Basic dynamic load rating C (N)	10400		
Basic static load rating C0 (N)	20100		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	6.0 to 28.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG2520AS-BALR-1020A	912	1020	842	0.040	0.027	0.018
GG2520AS-BALR-1520A	1412	1520	1342	0.054	0.035	
GE2520AS-BALR-1020A	912	1020	842	0.05/300	----	----
GE2520AS-BALR-1520A	1412	1520	1342			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

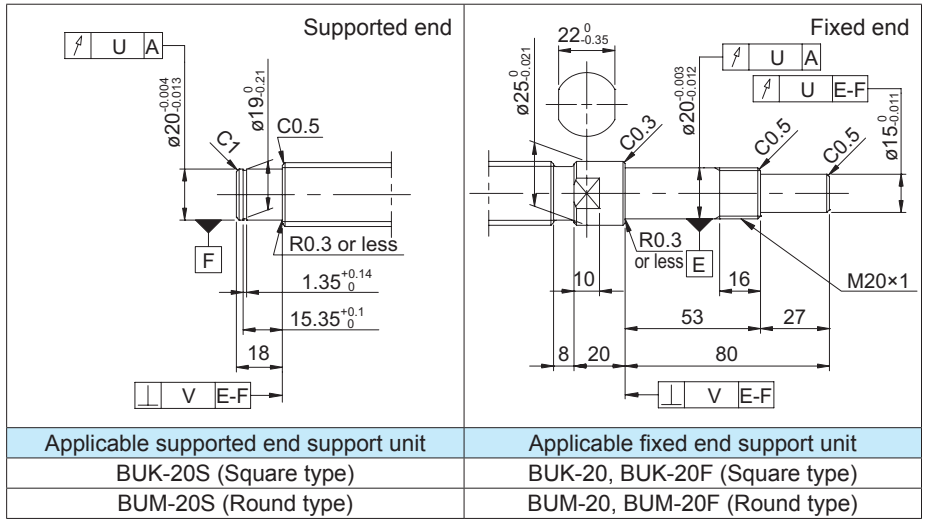
• Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2520AS-BALR-1520A → GG2520AS-BALR-1520X1394-C5F
- 1394: Overall screw shaft length
- 1520: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

• Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2520AS-BASR-1520X1394-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

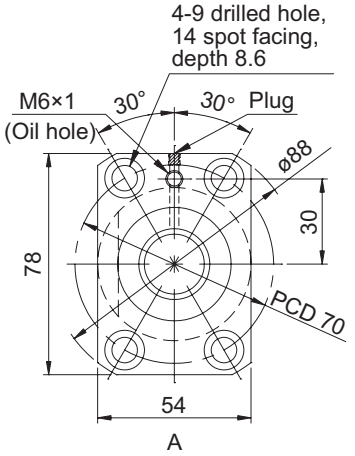
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.013	0.019	0.100	0.013	0.005	6.0 to 28.0	Up to 4.0	4.71
		0.130				Up to 6.0	6.53
0.018	0.030	0.150	----	----	----	----	4.71
		0.190					6.53

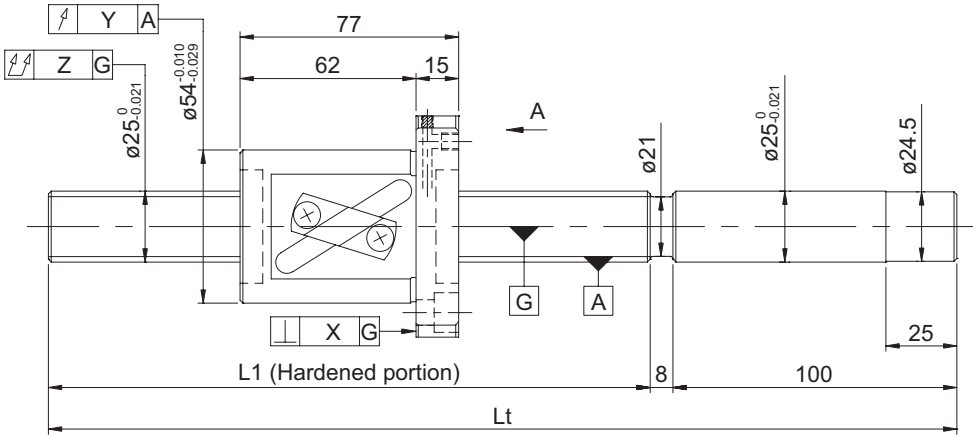
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

GG series (Accuracy grade C5) / GE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 25		
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	21.0		
Series	GG		GE
Basic dynamic load rating C (N)	10400		
Basic static load rating C0 (N)	20100		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	7.0 to 31.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG2525AS-BALR-1020A	912	1020	835	0.040	0.027	0.018
GG2525AS-BALR-1520A	1412	1520	1335	0.054	0.035	
GE2525AS-BALR-1020A	912	1020	835	0.05/300	----	----
GE2525AS-BALR-1520A	1412	1520	1335			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

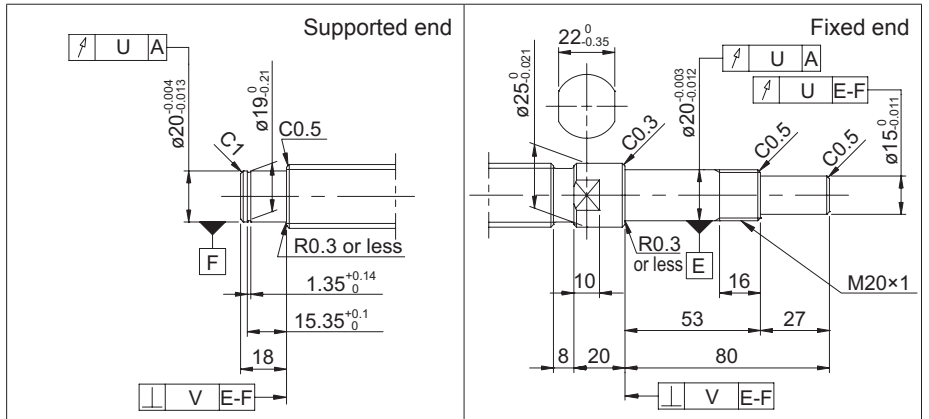
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG2525AS-BALR-1520A → GG2525AS-BALR-1520X1394-C5F
- 1520: Overall screw shaft length
- 1394: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG2525AS-BASR-1520X1394-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

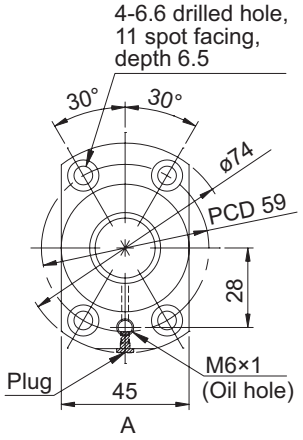
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.013	0.019	0.100	0.013	0.005	7.0 to 31.0	Up to 4.0	4.93
		0.130				Up to 6.0	6.77
0.018	0.030	0.150	----	----	----	----	4.93
		0.190					6.77

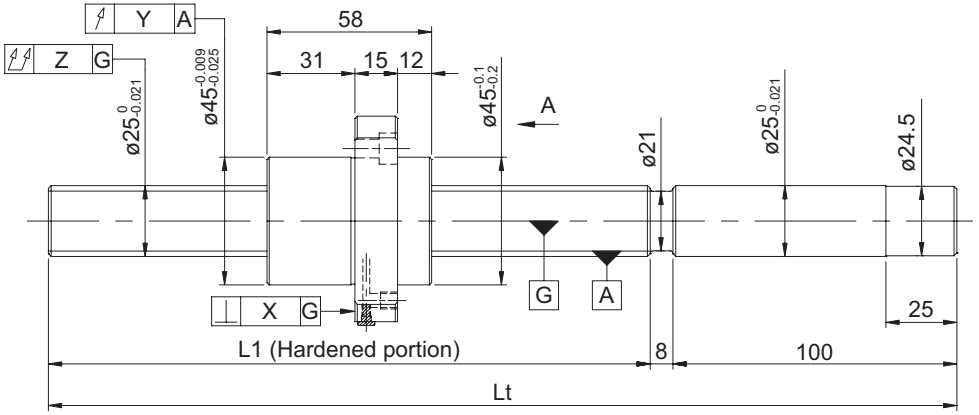
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

FG series (Accuracy grade C5) / FE series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 25		
Number of circuits / Thread direction	1.7 turns 1 circuit / Right-hand		
Ball diameter (mm)	4.7625		
Root diameter (mm)	21.0		
Series	FG		FE
Basic dynamic load rating C (N)	13100		
Basic static load rating C0 (N)	25900		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	6.0 to 32.0	Up to 6.0	----
Spacer ball	None		
Recirculation system	End deflector method		
Wiper	None		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
FG2525PS-HPNR-1020A	912	1020	854	0.040	0.027	0.018
FG2525PS-HPNR-1520A	1412	1520	1354	0.054	0.035	
FE2525PS-HPNR-1020A	912	1020	854	0.05/300	----	----
FE2525PS-HPNR-1520A	1412	1520	1354			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

Screw shaft diameter ø25, Lead 25

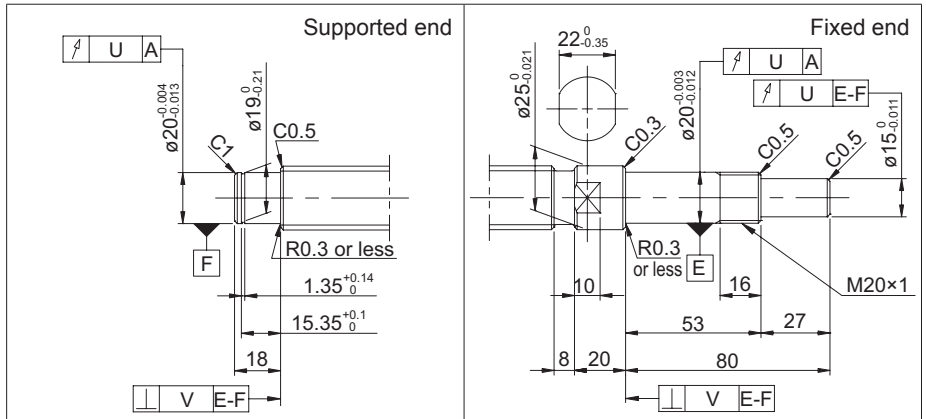
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

FG2525PS-HPNR-1520A → FG2525PS-HPNR-1520X1394-C5F
- 1520: Thread length
- 1394: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped. The overall nut length will be 11 mm longer.

Model example: FG2525PS-HPSR-1520X1394-C5F
- S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

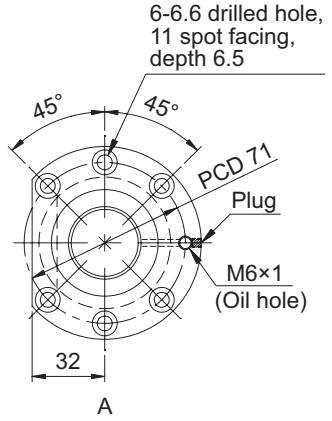
Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.011	0.015	0.100	0.013	0.005	6.0 to 32.0	Up to 6.0	4.39
		0.130			6.0 to 32.0		6.23
0.018	0.030	0.150	----	----	----	----	4.39
		0.190					6.23

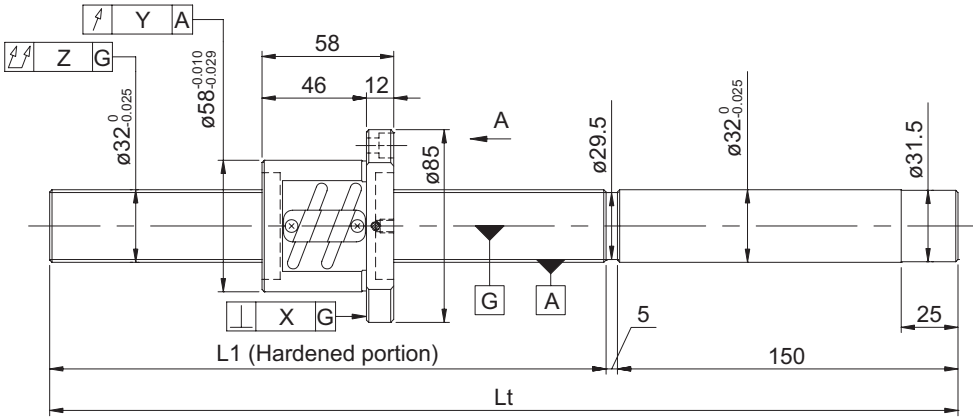
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø32

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	32 - 5		
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand		
Ball diameter (mm)	3.175		
Root diameter (mm)	29.5		
Series	GG		GE
Basic dynamic load rating C (N)	19000		
Basic static load rating C0 (N)	57200		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	3.0 to 43.0	Up to 7.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length		Maximum stroke (L1 - nut length)	Lead accuracy		
	L1	Lt		±E_c	e_c	e_{300}
GG3205ES-DALR-0600A	445	600	387	0.027	0.020	0.018
GG3205ES-DALR-1000A	845	1000	787	0.040	0.027	
GE3205ES-DALR-0600A	445	600	387	0.05/300	----	----
GE3205ES-DALR-1000A	845	1000	787			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

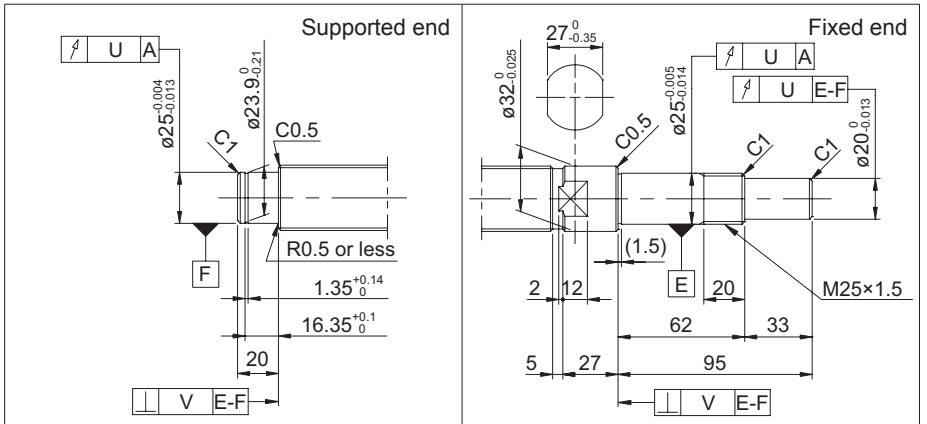
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG3205ES-DALR-1000A → GG3205ES-DALR-0972X0825-C5F
- 0825: Overall screw shaft length
- 0972: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-25S (Square type)	BUK-25, BUK-25F (Square type)
	BUM-25, BUM-25F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG3205ES-DASR-0972X0825-C5F
- S: Wiper material LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

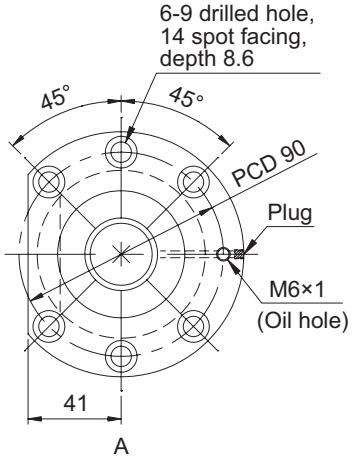
Accuracy of each part					Preload torque (N·cm)		Mass (kg)
X	Y	Z	U	V	Without clearance	With clearance	
0.013	0.019	0.060	0.013	0.005	3.0 to 43.0	Up to 5.0	4.36
		0.085				Up to 7.0	6.68
0.018	0.030	0.090	----	----	----	----	4.36
		0.130					6.68

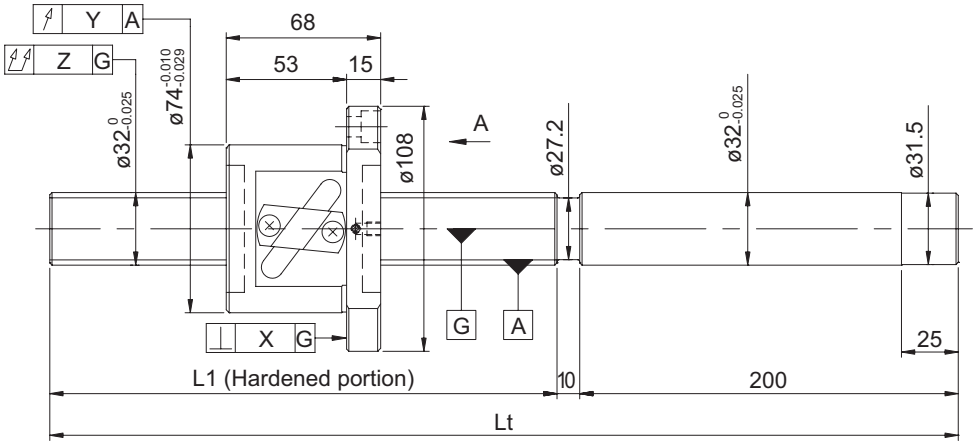
• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Screw shaft diameter ø32

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	32 - 10		
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand		
Ball diameter (mm)	6.350		
Root diameter (mm)	27.2		
Series	GG		GE
Basic dynamic load rating C (N)	25800		
Basic static load rating C0 (N)	55600		
Accuracy grade / Axial clearance symbol	C5 / S	C5 / F	C7 / M
Axial clearance (mm)	0	0.005 or less	0.030 or less
Preload torque (N·cm)	25.0 to 65.0	Up to 7.0	----
Spacer ball	None		
Recirculation system	Tube method		
Wiper	Lip seal		
Lubricant	Alvania Grease S2		





Model No. (Unfinished shaft ends)	Screw shaft length L1	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy ±E_c	Lead accuracy e_c	Lead accuracy e_{300}
GG3210DS-DALR-1000A	790	1000	722	0.035	0.025	0.018
GG3210DS-DALR-1600A	1390	1600	1322	0.054	0.035	
GG3210DS-DALR-2000A	1790	2000	1722	0.065	0.040	
GE3210DS-DALR-1000A	790	1000	722	0.05/300	----	----
GE3210DS-DALR-1600A	1390	1600	1322			
GE3210DS-DALR-2000A	1790	2000	1722			

• Product with axial clearance of 0.005 or less (F) shown may be partially preloaded.
• Preload torque is a value before applying grease.

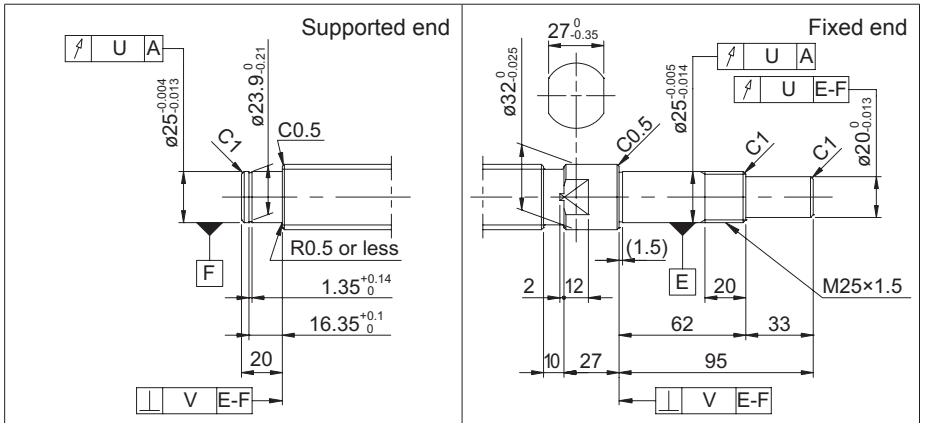
● Shaft end finish type

Standard precision ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GG3210DS-DALR-2000A → GG3210DS-DALR-1922X1770-C5F
- 1922: Thread length
- 1770: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-25S (Square type)	BUK-25, BUK-25F (Square type)
	BUM-25, BUM-25F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GG3210DS-DASR-1922X1770-C5F
- S: Wiper material S: LUBSEAL

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Accuracy of each part X	Y	Z	U	V	Preload torque (N·cm) Without clearance	With clearance	Mass (kg)
0.013	0.019	0.085	0.013	0.005	28.0 to 62.0	Up to 5.0	7.50
		0.130			25.0 to 65.0	Up to 7.0	10.59
		0.170					12.65
0.018	0.030	0.100	----	----	----	----	7.50
		0.140					10.59
		0.180					12.65

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.
• For models with lead accuracy grade of C3 or higher and unfinished shaft ends, consult KURODA.

Custom ball screws

Page

Features and specifications of custom ball screws — C- 2
Ordering instructions, size reference chart — C- 3

DR series
Single nut
6 to 50 mm shaft diameter — C- 4 to 5
Integral nut
16 to 50 mm shaft diameterr — C- 6
GR series
Single nut
5 to 125 mm shaft diameter — C- 7 to 30
Integral nut
20 to 63 mm shaft diameterr — C- 31 to 35
Double nut
8 to 125 mm shaft diameterr — C- 36 to 55
FR series
Single nut
10 to 40 mm shaft diameter — C- 56 to 57
Double nut
32 to 40 mm shaft diameterr — C- 58

Custom ball screws

Features

● Various screw shaft diameters and leads are available for your selection

• An optimal size can be selected from a variety of standardized screw shaft diameters and leads, eliminating unnecessary compromise in size selection.

● Nut types suited for the mounting configuration are available for your selection

• Nut types such as the flange type and square type are available for your selection.

● The preloading methods according to the equipment specifications are available for your selection

• The preloading methods can be selected from nut types including single nuts, integral nuts, and double nuts.

□ Summary of the specifications

Screw shaft diameter	ø5 to ø125 mm
Lead	1 to 50 mm
Accuracy grade	C0-C10 grade
Axial clearance	0 to 0.2 mm
Screw shaft type	Free design Consult KURODA regarding your desired specifications.
Surface treatment	Consult KURODA regarding anticorrosive black coating and various coating types.
Material	Consult KURODA regarding standard materials and stainless steel materials.
Product line	Custom product

□ Model numbers of each series

	Series	Shaft diameter	Lead	Number of circuits	Combination		Flange type	Ball recirculation system	Wiper material	Thread direction		Overall screw shaft length	Shaft end type	Thread length		Accuracy grade	Axial clearance
Example model numbers	FR	15	10	P	S	–	H	P	N	R	–	0900	X	0840	–	C5	F
	FR	10 to 40	5 to 16	See specifications.	See specifications.	–	See specifications.	See specifications.	See specifications.	See specifications.	–	To be shown with a 4-digit number in metric units (mm)	X	To be shown with a 4-digit number in metric units (mm)	–	See specifications.	See specifications.
	GR	5 to 125	1 to 50										X				
	DR	6 to 50	1 to 10										X				

• For more details, refer to the specifications and data for each size.

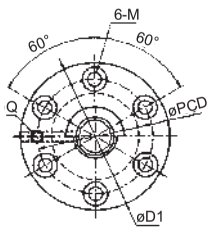
□ Screw shaft diameter and lead combinations

Size line-up of custom ball screws

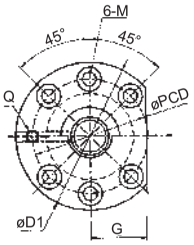
		Lead (mm)																			
		1	1.5	2	2.5	3	4	5	6	8	10	12	15	16	20	24	25	30	32	40	50
Screw shaft diameter (mm)	5	G																			
	6	D																			
	8	D	G	DG	G	G	G		G	G											
	10	G	G	DG	G	G	G	G			FG										
	12			DG	G	DG	G	G	G		FG				FG						
	14						D														
	15			G	G	G	G	FG	G	G	FG		G	G	FG		G	F			
	16						G	DG	G					G								
	20				G		G	DG	G	G	DFG				FG		G		G		
	25						G	FG	G	FG	FG				G		FG			G	
	28							G			G				G						
	32						G	FG	G	FG	FG	FG		F	G				G		
	36							G	G	G	G	FG		F	G	G					
	40							G	G	FG	FG	FG		FG	G				G	G	
	45							G	G	G	G	G			G						
	50							G	G	G	G	G		G	G					G	G
	55									G	G	G		G	G						
	63								G	G	G	G		G	G						
	70										G	G		G	G						
	80										G	G		G	G						
	100											G		G	G						
	125													G	G						

D: D series (Compact, deflector recirculation method)
G: G series (General, tube recirculation method)
F: F series (High rotational speed, end deflector recirculation method)
* Combinations of shaft diameters and leads not described here are also available for the G series. Consult KURODA for more information.

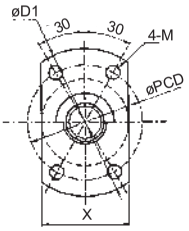
Custom Ball Screw: DEFLECTOR METHOD SINGLE NUT (Accuracy grade C0-C10)



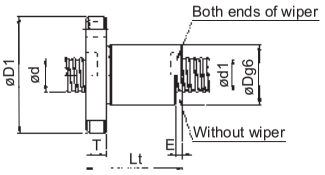
Flange type C



Flange type D



Flange type H



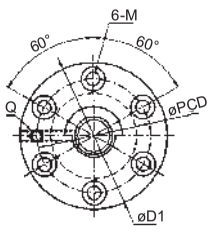
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/µm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
DR0601JS-HDNR	6	1	0.8000	5.3	1×3	550	1150	50	10	14.5	N	—	3.5	22	H	—	14	—	—	—	—	—	16	3.4	—	—	0.01	0.02
DR0801JS-HDNR	8	1	0.8000	7.3	1×3	650	1600	60	12	15	N	—	4	25	H	—	16	—	—	—	—	—	19	3.4	—	—	0.01	0.04
DR0802JS-HDNR	8	2	1.2000	7	1×3	1350	2300	60	14	21	N	—	4	27	H	—	17	—	—	—	—	—	21	3.4	—	—	0.02	0.04
DR1002JS-HDNR	10	2	1.2000	9	1×3	1550	3000	70	16	22	N	—	5	33	H	—	21	—	—	—	—	—	25	4.5	—	—	0.03	0.06
DR1202JS-HDNR	12	2	1.2000	11	1×3	1650	3600	85	18	22	N	—	5	35	H	—	22	—	—	—	—	—	27	4.5	—	—	0.04	0.09
DR1203JS-HDPR	12	3	2.0000	10.3	1×3	3450	6100	100	21	36	P	3	5	38	H	—	23	—	—	—	—	—	30	4.5	—	—	0.07	0.09
DR1404JS-HDPR	14	4	2.3812	12.1	1×3	4600	8600	110	26	40	P	3	10	45	H	—	29	—	—	16	—	M6	35	4.5	8	4.5	0.15	0.12
DR1605JS-CDPR	16	5	3.1750	13.5	1×3	7700	14600	120	28	47	P	3	10	47	C	—	—	—	—	—	—	—	37	4.5	8	4.4	0.20	0.16
DR1605JS-DDPR	16	5	3.1750	13.5	1×3	7700	14600	120	28	47	P	3	10	47	D	—	—	—	—	—	18.5	—	37	4.5	8	4.4	0.19	0.16
DR2005JS-CDPR	20	5	3.1750	17.5	1×3	8900	18900	150	35	46	P	3	11	58	C	—	—	—	—	—	—	M6	46	5.5	9.5	5.4	0.33	0.25
DR2005JS-DDPR	20	5	3.1750	17.5	1×3	8900	18900	150	35	46	P	3	11	58	D	—	—	—	—	—	22.5	M6	46	5.5	9.5	5.4	0.31	0.25
DR2005KS-CDPR	20	5	3.1750	17.5	1×4	11400	25200	200	35	51	P	3	11	58	C	—	—	—	—	—	—	M6	46	5.5	9.5	5.4	0.35	0.25
DR2005KS-DDPR	20	5	3.1750	17.5	1×4	11400	25200	200	35	51	P	3	11	58	D	—	—	—	—	—	22.5	M6	46	5.5	9.5	5.4	0.33	0.25
DR2010JS-CDPR	20	10	3.9688	16.6	1×3	10000	19000	150	35	63	P	3	11	58	C	—	—	—	—	—	—	M6	46	5.5	9.5	5.4	0.38	0.25
DR2010JS-DDPR	20	10	3.9688	16.6	1×3	10000	19000	150	35	63	P	3	11	58	D	—	—	—	—	—	22.5	M6	46	5.5	9.5	5.4	0.36	0.25

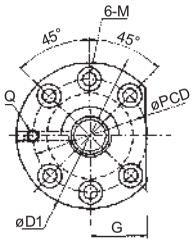
Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material N: Without wiper, P: Plastic wiper

DR series
Screw shaft diameter ø6-ø20

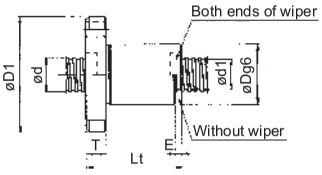
Custom Ball Screw: DEFLECTOR METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D

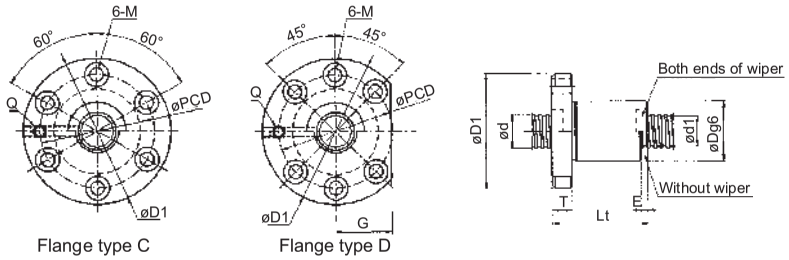


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/µm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
DR2505JS-CDPR	25	5	3.1750	22.5	1×3	9850	23450	180	40	46	P	3	11	63	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.37	0.38
DR2505JS-DDPR	25	5	3.1750	22.5	1×3	9850	23450	180	40	46	P	3	11	63	D	—	—	—	—	—	24	M6	51	5.5	9.5	5.4	0.35	0.38
DR2510JS-CDPR	25	10	3.9688	21.6	1×3	12000	25800	190	40	63	P	3	11	63	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.43	0.38
DR2510JS-DDPR	25	10	3.9688	21.6	1×3	12000	25800	190	40	63	P	3	11	63	D	—	—	—	—	—	24	M6	51	5.5	9.5	5.4	0.41	0.38
DR3205JS-CDPR	32	5	3.1750	29.5	1×3	11300	31100	220	48	47	P	3	12	75	C	—	—	—	—	—	—	M6	61	6.6	11	6.5	0.53	0.63
DR3205JS-DDPR	32	5	3.1750	29.5	1×3	11300	31100	220	48	47	P	3	12	75	D	—	—	—	—	—	29	M6	61	6.6	11	6.5	0.51	0.63
DR3205KS-CDPR	32	5	3.1750	29.5	1×4	14500	41500	290	48	52	P	3	12	75	C	—	—	—	—	—	—	M6	61	6.6	11	6.5	0.56	0.63
DR3205KS-DDPR	32	5	3.1750	29.5	1×4	14500	41500	290	48	52	P	3	12	75	D	—	—	—	—	—	29	M6	61	6.6	11	6.5	0.54	0.63
DR3210JS-CDPR	32	10	6.3500	27.2	1×3	26900	58400	250	50	78	P	8	15	84	C	—	—	—	—	—	—	M6	66	9	14	8.6	0.84	0.63
DR3210JS-DDPR	32	10	6.3500	27.2	1×3	26900	58400	250	50	78	P	8	15	84	D	—	—	—	—	—	33	M6	66	9	14	8.6	0.80	0.63
DR4010JS-CDPR	40	10	6.3500	35.2	1×3	31300	80300	300	62	83	P	8	18	104	C	—	—	—	—	—	—	Rc1/8	82	11	17.5	10.8	1.54	0.98
DR4010JS-DDPR	40	10	6.3500	35.2	1×3	31300	80300	300	62	83	P	8	18	104	D	—	—	—	—	—	40	Rc1/8	82	11	17.5	10.8	1.46	0.98
DR4010KS-CDPR	40	10	6.3500	35.2	1×4	40100	100000	400	62	93	P	8	18	104	C	—	—	—	—	—	—	Rc1/8	82	11	17.5	10.8	1.63	0.98
DR4010KS-DDPR	40	10	6.3500	35.2	1×4	40100	100000	400	62	93	P	8	18	104	D	—	—	—	—	—	40	Rc1/8	82	11	17.5	10.8	1.55	0.98
DR5010JS-CDPR	50	10	6.3500	45.2	1×3	35700	98150	370	72	83	P	8	18	114	C	—	—	—	—	—	—	Rc1/8	92	11	17.5	10.8	1.77	1.53
DR5010JS-DDPR	50	10	6.3500	45.2	1×3	35700	98150	370	72	83	P	8	18	114	D	—	—	—	—	—	44	Rc1/8	92	11	17.5	10.8	1.68	1.53
DR5010KS-CDPR	50	10	6.3500	45.2	1×4	45700	130000	490	72	93	P	8	18	114	C	—	—	—	—	—	—	Rc1/8	92	11	17.5	10.8	1.88	1.53
DR5010KS-DDPR	50	10	6.3500	45.2	1×4	45700	130000	490	72	93	P	8	18	114	D	—	—	—	—	—	44	Rc1/8	92	11	17.5	10.8	1.79	1.53

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

Custom Ball Screw: DEFLECTOR METHOD INTEGRAL NUT (Accuracy grade C0-C5)

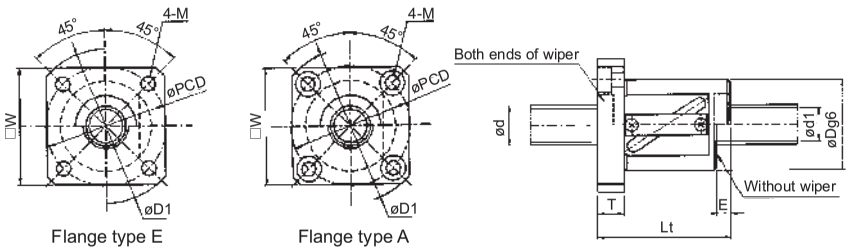


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{WW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
DR1605JT-CDPR	16	5	3.1750	13.5	1×3	7700	14600	230	28	67	P	3	10	47	C	—	—	—	—	—	—	—	37	4.5	8	4.4	0.24	0.16
DR1605JT-DDPR	16	5	3.1750	13.5	1×3	7700	14600	230	28	67	P	3	10	47	D	—	—	—	—	—	18.5	—	37	4.5	8	4.4	0.24	0.16
DR2005JT-CDPR	20	5	3.1750	17.5	1×3	8900	18900	280	35	66	P	3	11	58	C	—	—	—	—	—	—	M6	46	5.5	9.5	5.4	0.41	0.25
DR2005JT-DDPR	20	5	3.1750	17.5	1×3	8900	18900	280	35	66	P	3	11	58	D	—	—	—	—	—	22.5	M6	46	5.5	9.5	5.4	0.39	0.25
DR2005KT-CDPR	20	5	3.1750	17.5	1×4	11400	25200	370	35	76	P	3	11	58	C	—	—	—	—	—	—	M6	46	5.5	9.5	5.4	0.44	0.25
DR2005KT-DDPR	20	5	3.1750	17.5	1×4	11400	25200	370	35	76	P	3	11	58	D	—	—	—	—	—	22.5	M6	46	5.5	9.5	5.4	0.43	0.25
DR2505JT-CDPR	25	5	3.1750	22.5	1×3	9850	23450	340	40	66	P	3	11	63	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.46	0.38
DR2505JT-DDPR	25	5	3.1750	22.5	1×3	9850	23450	340	40	66	P	3	11	63	D	—	—	—	—	—	24	M6	51	5.5	9.5	5.4	0.45	0.38
DR3205JT-CDPR	32	5	3.1750	29.5	1×3	11300	31100	420	48	67	P	3	12	75	C	—	—	—	—	—	—	M6	61	6.6	11	6.5	0.66	0.63
DR3205JT-DDPR	32	5	3.1750	29.5	1×3	11300	31100	420	48	67	P	3	12	75	D	—	—	—	—	—	29	M6	61	6.6	11	6.5	0.63	0.63
DR3205KT-CDPR	32	5	3.1750	29.5	1×4	14500	41500	560	48	77	P	3	12	75	C	—	—	—	—	—	—	M6	61	6.6	11	6.5	0.72	0.63
DR3205KT-DDPR	32	5	3.1750	29.5	1×4	14500	41500	560	48	77	P	3	12	75	D	—	—	—	—	—	29	M6	61	6.6	11	6.5	0.69	0.63
DR3210JT-CDPR	32	10	6.3500	27.2	1×3	26900	58400	430	50	118	P	8	15	84	C	—	—	—	—	—	—	M6	66	9	14	8.6	1.05	0.63
DR3210JT-DDPR	32	10	6.3500	27.2	1×3	26900	58400	430	50	118	P	8	15	84	D	—	—	—	—	—	33	M6	66	9	14	8.6	1.02	0.63
DR4010JT-CDPR	40	10	6.3500	35.2	1×3	31300	80300	530	62	123	P	8	18	104	C	—	—	—	—	—	—	Rc1/8	82	11	17.5	10.8	1.91	0.98
DR4010JT-DDPR	40	10	6.3500	35.2	1×3	31300	80300	530	62	123	P	8	18	104	D	—	—	—	—	—	40	Rc1/8	82	11	17.5	10.8	1.83	0.98
DR4010KT-CDPR	40	10	6.3500	35.2	1×4	40100	100000	690	62	143	P	8	18	104	C	—	—	—	—	—	—	Rc1/8	82	11	17.5	10.8	2.09	0.98
DR4010KT-DDPR	40	10	6.3500	35.2	1×4	40100	100000	690	62	143	P	8	18	104	D	—	—	—	—	—	40	Rc1/8	82	11	17.5	10.8	2.02	0.98
DR5010JT-CDPR	50	10	6.3500	45.2	1×3	35700	98150	640	72	123	P	8	18	114	C	—	—	—	—	—	—	Rc1/8	92	11	17.5	10.8	2.21	1.53
DR5010JT-DDPR	50	10	6.3500	45.2	1×3	35700	98150	640	72	123	P	8	18	114	D	—	—	—	—	—	44	Rc1/8	92	11	17.5	10.8	2.12	1.53
DR5010KT-CDPR	50	10	6.3500	45.2	1×4	45700	130000	850	72	143	P	8	18	114	C	—	—	—	—	—	—	Rc1/8	92	11	17.5	10.8	2.43	1.53
DR5010KT-DDPR	50	10	6.3500	45.2	1×4	45700	130000	850	72	143	P	8	18	114	D	—	—	—	—	—	44	Rc1/8	92	11	17.5	10.8	2.34	1.53

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wipermaterial P: Plastic wiper

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)

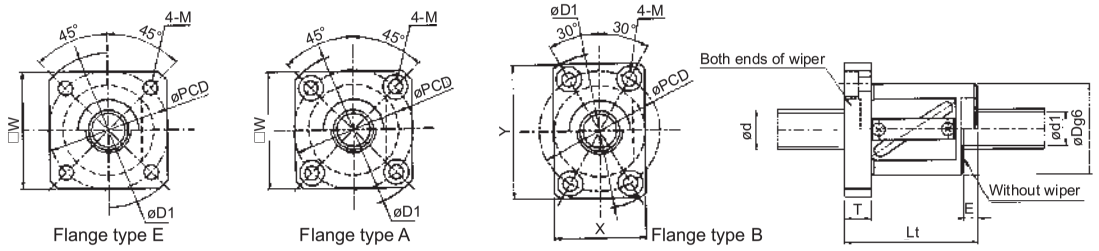


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR0501GS-EGNR	5	1	0.8000	4.3	3.5×1	600	1100	50	12	16	N	—	3	25	E	19	—	—	—	—	—	—	18	2.8	—	—	0.02	0.02
GR081FDS-AAFR	8	1.5	1.0000	7.1	2.5×1	850	1900	50	16	24	F	5	5	32	A	25	—	—	—	—	—	—	23	3.4	6.5	3.3	0.04	0.04
GR0802DS-AAFR	8	2	1.5875	6.6	2.5×1	1950	2600	60	20	30	F	3	5	36	A	28	—	—	—	—	—	—	27	3.4	6.5	3.3	0.07	0.04
GR082FDS-AAFR	8	2.5	2.0000	6.3	2.5×1	2350	3300	60	22	29	F	2	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.08	0.04
GR0803DS-AAFR	8	3	2.0000	6.3	2.5×1	2350	3300	60	22	30	F	3	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.09	0.04
GR0804DS-AAFR	8	4	2.0000	6.3	2.5×1	2350	3300	60	22	30	F	3	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.09	0.04
GR0806AS-AAFR	8	6	2.0000	6.3	1.5×1	1550	2000	40	22	29	F	3	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.08	0.04
GR0808AS-AAFR	8	8	2.0000	6.3	1.5×1	1550	2000	40	23	29	F	3	5	39	A	30	—	—	—	—	—	—	30	3.4	6.5	3.3	0.09	0.04

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material F: Felt wiper, N: Without wiper

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)

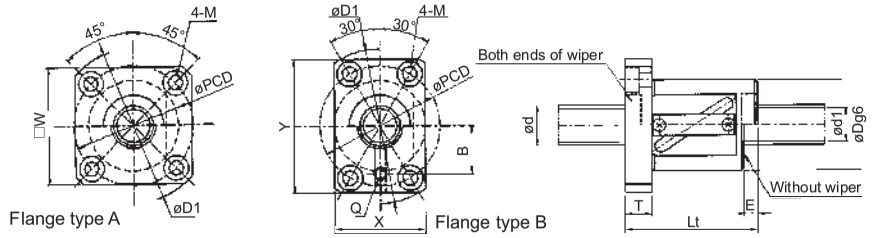


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR1001JS-EDNR	10	1	0.8000	9.3	1×3	750	1750	70	19	22	N	—	5	36	E	29	—	—	—	—	—	—	27	4.5	—	—	0.05	0.06
GR101FDS-EAFR	10	1.5	1.0000	9.1	2.5×1	850	2300	60	19	24	F	5	5	36	E	29	—	—	—	—	—	—	27	4.5	—	—	0.06	0.06
GR1002DS-EAFR	10	2	1.5875	8.6	2.5×1	2250	3300	70	23	30	F	3	5	40	E	31	—	—	—	—	—	—	31	4.5	—	—	0.09	0.06
GR102FDS-AAFR	10	2.5	2.0000	8.3	2.5×1	2700	4200	70	24	35	F	5	8	43	A	33	—	—	—	—	—	—	32	4.5	8	4.4	0.13	0.06
GR1003DS-AAPR	10	3	2.0000	8.3	2.5×1	2700	4200	70	24	36	P	6	8	43	A	33	—	—	—	—	—	—	32	4.5	8	4.4	0.13	0.06
GR1004DS-AAPR	10	4	2.3812	8.1	2.5×1	3350	5900	75	26	37	P	3	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.16	0.06
GR1004DS-BAPR	10	4	2.3812	8.1	2.5×1	3350	5900	75	26	37	P	3	8	46	B	—	28	42	—	—	—	—	36	4.5	8	4.4	0.15	0.06
GR1005DS-AAPR	10	5	2.3812	8.1	2.5×1	3350	5900	75	26	40	P	5	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.17	0.06
GR1005DS-BAPR	10	5	2.3812	8.1	2.5×1	3350	5900	75	26	40	P	5	8	46	B	—	28	42	—	—	—	—	36	4.5	8	4.4	0.16	0.06
GR1010AS-AAPR	10	10	2.3812	8.1	1.5×1	2200	3500	50	28	40	P	6	8	47	A	36	—	—	—	—	—	—	36	4.5	8	4.4	0.19	0.06
GR1010AS-BAPR	10	10	2.3812	8.1	1.5×1	2200	3500	50	28	40	P	6	8	47	B	—	30	45	—	—	—	—	36	4.5	8	4.4	0.20	0.06
GR1202DS-AAPR	12	2	1.5875	10.6	2.5×1	2450	4100	85	25	35	P	5	8	44	A	34	—	—	—	—	—	—	33	4.5	8	4.4	0.13	0.09
GR122FDS-AAPR	12	2.5	2.0000	10.3	2.5×1	2950	5100	85	26	34	P	4	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.14	0.09
GR1203DS-AAPR	12	3	2.0000	10.3	2.5×1	2950	5100	85	26	35	P	5	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.14	0.09
GR1204DS-AALR	12	4	2.3812	10.1	2.5×1	3600	6750	85	30	41	L	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.25	0.09
GR1205DS-AALR	12	5	3.1750	9.5	2.5×1	5950	9800	90	30	44	L	3	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.25	0.09
GR1205DS-BALR	12	5	3.1750	9.5	2.5×1	5950	9800	90	30	44	L	3	10	50	B	—	32	45	—	—	—	—	40	4.5	8	4.4	0.23	0.09
GR1206DS-AAPR	12	6	3.1750	9.5	2.5×1	5950	9800	90	30	45	P	3	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.25	0.09
GR1206DS-BAPR	12	6	3.1750	9.5	2.5×1	5950	9800	90	30	45	P	3	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.24	0.09
GR1210AS-AALR	12	10	3.1750	9.5	1.5×1	3850	5900	60	30	49	L	7	12	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.28	0.09
GR1210AS-BALR	12	10	3.1750	9.5	1.5×1	3850	5900	60	30	49	L	7	12	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.27	0.09
GR1220AS-AALR	12	20	3.1750	9.5	1.5×1	3850	5900	60	32	68	L	7	12	56	A	43	—	—	—	—	—	—	43	5.5	9.5	5.4	0.42	0.09
GR1220AS-BALR	12	20	3.1750	9.5	1.5×1	3850	5900	60	32	68	L	7	12	56	B	—	32	48	—	—	—	—	43	5.5	9.5	5.4	0.39	0.09

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material F: Felt wiper, P: Plastic wiper, L: Lip seal, N: Without wiper

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



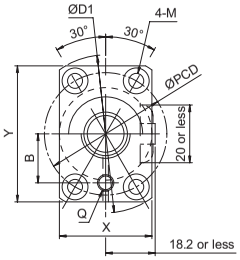
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR1502DS-AAPR	15	2	1.5875	13.6	2.5×1	2700	5500	100	30	37	P	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.21	0.14
GR1502DS-BAPR	15	2	1.5875	13.6	2.5×1	2700	5500	100	30	37	P	5	10	54	B	—	32	48	—	18	—	M6	41	5.5	9.5	5.4	0.20	0.14
GR152FDS-AAPR	15	2.5	2.0000	13.3	2.5×1	3400	6500	100	30	36	P	4	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.21	0.14
GR152FDS-BAPR	15	2.5	2.0000	13.3	2.5×1	3400	6500	100	30	36	P	4	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.20	0.14
GR1503DS-AAPR	15	3	2.0000	13.3	2.5×1	3400	6500	100	30	37	P	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.21	0.14
GR1503DS-BAPR	15	3	2.0000	13.3	2.5×1	3400	6500	100	30	37	P	5	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.20	0.14
GR1504DS-AALR	15	4	2.3812	13.1	2.5×1	4100	8550	100	32	41	L	3	10	56	A	43	—	—	—	—	—	—	43	5.5	9.5	5.4	0.26	0.14
GR1504DS-BALR	15	4	2.3812	13.1	2.5×1	4100	8550	100	32	41	L	3	10	56	B	—	32	48	—	18	—	M6	43	5.5	9.5	5.4	0.23	0.14
GR1505DS-AALR	15	5	3.1750	12.5	2.5×1	6900	12500	110	34	44	L	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.29	0.14
GR1505DS-BALR	15	5	3.1750	12.5	2.5×1	6900	12500	110	34	44	L	3	10	58	B	—	34	50	—	18	—	M6	45	5.5	9.5	5.4	0.28	0.14
GR1506DS-AAPR	15	6	3.1750	12.5	2.5×1	6900	12500	110	34	45	P	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.30	0.14
GR1506DS-BAPR	15	6	3.1750	12.5	2.5×1	6900	12500	110	34	45	P	3	10	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.28	0.14
GR1508DS-AAFR	15	8	3.1750	12.5	2.5×1	6900	12500	110	34	52	F	7	12	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.35	0.14
GR1508DS-BAFR	15	8	3.1750	12.5	2.5×1	6900	12500	110	34	52	F	7	12	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.33	0.14
GR1510AS-AALR	15	10	3.1750	12.5	1.5×1	4400	7900	70	34	52	L	7	12	58	A	44	—	—	—	—	—	—	45	6	9.5	6	0.35	0.14
GR1510AS-BALR	15	10	3.1750	12.5	1.5×1	4400	7900	70	34	52	L	7	12	58	B	—	34	50	—	18	—	M6	45	6	9.5	6	0.33	0.14
GR1510DS-AALR	15	10	3.1750	12.5	2.5×1	6900	12500	110	34	52	L	5	12	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.35	0.14
GR1510DS-BALR	15	10	3.1750	12.5	2.5×1	6900	12500	110	34	52	L	5	12	58	B	—	34	50	—	18	—	M6	45	5.5	9.5	5.4	0.33	0.14
GR1515AS-AALR	15	15	3.1750	12.5	1.5×1	4400	7900	70	34	54	L	5	12	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.36	0.14
GR1515AS-BALR	15	15	3.1750	12.5	1.5×1	4400	7900	70	34	54	L	5	12	58	B	—	34	50	—	18	—	M6	45	5.5	9.5	5.4	0.34	0.14
GR1516AS-AAFR	15	16	3.1750	12.5	1.5×1	4400	7900	70	34	56	F	7	12	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.37	0.14
GR1516AS-BAFR	15	16	3.1750	12.5	1.5×1	4400	7900	70	34	56	F	7	12	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.35	0.14
GR1520AS-AALR	15	20	3.1750	12.5	1.5×1	4400	7900	70	34	62	L	7	12	58	A	44	—	—	—	—	—	—	45	6	9.5	6	0.40	0.14
GR1520AS-BALR	15	20	3.1750	12.5	1.5×1	4400	7900	70	34	62	L	7	12	58	B	—	34	50	—	18	—	M6	45	6	9.5	6	0.38	0.14
GR1525AS-AALR	15	25	3.1750	12.5	1.5×1	4400	7900	70	36	76	L	7	12	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.54	0.14
GR1525AS-BALR	15	25	3.1750	12.5	1.5×1	4400	7900	70	36	76	L	7	12	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.52	0.14

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material F: Felt wiper, P: Plastic wiper, L: Lip seal

Screw shaft diameter ø16

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



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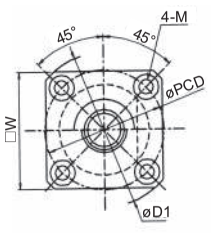
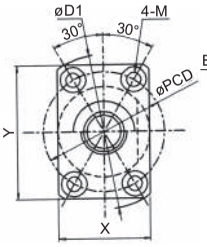
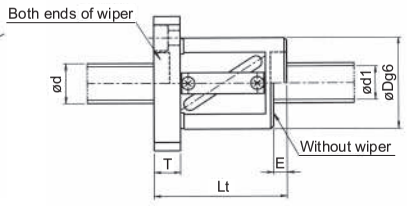


Flange type A



Flange type B

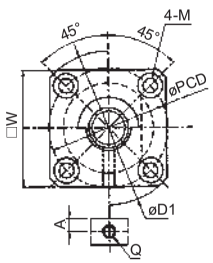


(Unit: mm)

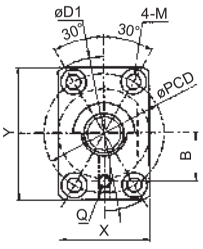
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR1604DS-AAPR	16	4	2.3812	14.1	2.5×1	4200	9000	110	34	41	P	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.28	0.16
GR1604DS-BAPR	16	4	2.3812	14.1	2.5×1	4200	9000	110	34	41	P	3	10	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.26	0.16
GR1605DS-AALR	16	5	3.1750	13.5	2.5×1	7400	13900	110	36	44	L	3	10	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.33	0.16
GR1605DS-BALR	16	5	3.1750	13.5	2.5×1	7400	13900	110	36	44	L	3	10	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.31	0.16
GR1606DS-AAPR	16	6	3.1750	13.5	2.5×1	7400	13900	110	36	45	P	3	10	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.33	0.16
GR1606DS-BAPR	16	6	3.1750	13.5	2.5×1	7400	13900	110	36	45	P	3	10	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.32	0.16
GR1616AS-AALR	16	16	3.1750	13.5	1.5×1	4750	8300	80	36	54	L	3	12	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.40	0.16
GR1616AS-BALR	16	16	3.1750	13.5	1.5×1	4750	8300	80	36	54	L	3	12	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.38	0.16
GR1616AS-BTLR	16	16	3.1750	13.5	1.5×1	4750	8300	80	34	54	L	3	12	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.31	0.16

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

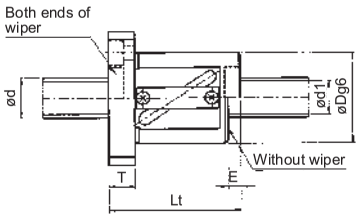
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)

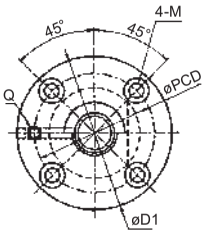


Flange type A

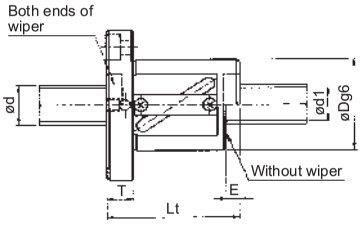


Flange type B





Flange type C



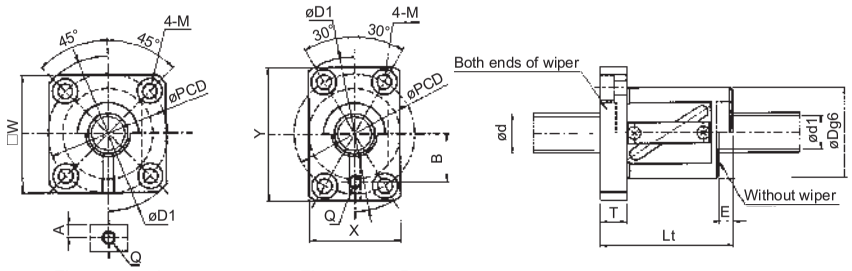
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR202FDS-AAPR	20	2.5	2.0000	18.3	2.5×1	3800	8800	130	38	36	P	4	10	62	A	47	—	—	5	—	—	M6	49	5.5	9.5	5.4	0.29	0.25
GR202FDS-CAPR	20	2.5	2.0000	18.3	2.5×1	3800	8800	130	38	36	P	4	10	62	C	—	—	—	—	—	—	M6	49	5.5	9.5	5.4	0.35	0.25
GR2004DS-AALR	20	4	2.3812	18.1	2.5×1	4700	11700	140	40	41	L	3	10	64	A	49	—	—	5.5	—	—	M6	51	5.5	9.5	5.4	0.36	0.25
GR2004DS-CALR	20	4	2.3812	18.1	2.5×1	4700	11700	140	40	41	L	3	10	64	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.42	0.25
GR2004ES-AALR	20	4	2.3812	18.1	2.5×2	8600	23400	250	40	49	L	3	10	64	A	49	—	—	5.5	—	—	M6	51	5.5	9.5	5.4	0.41	0.25
GR2004ES-CALR	20	4	2.3812	18.1	2.5×2	8600	23400	250	40	49	L	3	10	64	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.47	0.25
GR2005BS-AALR	20	5	3.1750	17.5	1.5×2	9800	21000	170	40	53	L	5	12	68	A	52	—	—	7	—	—	M6	53	6.6	11	6.5	0.47	0.25
GR2005BS-CALR	20	5	3.1750	17.5	1.5×2	9800	21000	170	40	53	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.55	0.25
GR2005DS-BALR	20	5	3.1750	17.5	2.5×1	8350	17500	140	40	48	L	5	12	68	B	—	40	60	—	21	—	M6	53	6.6	11	6.5	0.41	0.25
GR2005DS-CALR	20	5	3.1750	17.5	2.5×1	8350	17500	140	40	48	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.52	0.25
GR2005ES-AALR	20	5	3.1750	17.5	2.5×2	15150	35000	260	40	58	L	5	12	68	A	52	—	—	7	—	—	M6	53	6.6	11	6.5	0.50	0.25
GR2005ES-CALR	20	5	3.1750	17.5	2.5×2	15150	35000	260	40	58	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.58	0.25
GR2006BS-AAPR	20	6	3.9688	16.6	1.5×2	12900	25600	170	44	61	P	5	12	72	A	55	—	—	7	—	—	M6	57	6.6	11	6.5	0.63	0.25
GR2006BS-CAPR	20	6	3.9688	16.6	1.5×2	12900	25600	170	44	61	P	5	12	72	C	—	—	—	—	—	—	M6	57	6.6	11	6.5	0.73	0.25
GR2006DS-AAPR	20	6	3.9688	16.6	2.5×1	11000	21300	140	44	49	P	5	12	72	A	55	—	—	7.5	—	—	M6	57	6.6	11	6.5	0.54	0.25
GR2006DS-CAPR	20	6	3.9688	16.6	2.5×1	11000	21300	140	44	49	P	5	12	72	C	—	—	—	—	—	—	M6	57	6.6	11	6.5	0.63	0.25
GR2008DS-AAPR	20	8	4.7625	16	2.5×1	13500	25100	140	46	63	P	5	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	0.73	0.25
GR2008DS-CAPR	20	8	4.7625	16	2.5×1	13500	25100	140	46	63	P	5	15	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	0.87	0.25

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

Screw shaft diameter ø20

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



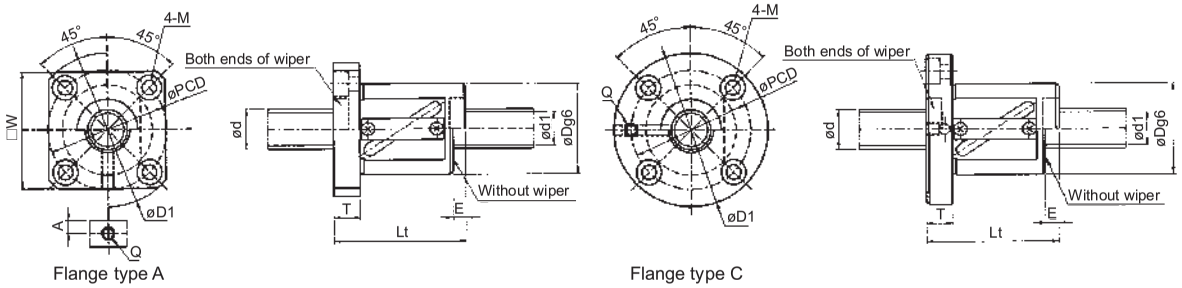
Flange type A　　Flange type B

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2010AS-AALR	20	10	4.7625	16	1.5×1	9200	16200	90	46	57	L	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	0.68	0.25
GR2010AS-BALR	20	10	4.7625	16	1.5×1	9200	16200	90	46	57	L	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	0.67	0.25
GR2010DS-AALR	20	10	4.7625	16	2.5×1	13500	25100	140	46	65	L	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	0.75	0.25
GR2010DS-BALR	20	10	4.7625	16	2.5×1	13500	25100	140	46	65	L	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	0.74	0.25
GR2020AS-AALR	20	20	4.7625	15.9	1.5×1	9200	16200	90	46	70	L	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	0.79	0.25
GR2020AS-BALR	20	20	4.7625	15.9	1.5×1	9200	16200	90	46	70	L	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	0.78	0.25
GR2025AS-AAPR	20	25	4.7625	16	1.5×1	9200	16200	90	46	77	P	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	0.86	0.25
GR2025AS-BAPR	20	25	4.7625	16	1.5×1	9200	16200	90	46	77	P	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	0.84	0.25
GR2032AS-AAPR	20	32	4.7625	16	1.5×1	9200	16200	90	46	96	P	8	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	1.02	0.25
GR2032AS-BAPR	20	32	4.7625	16	1.5×1	9200	16200	90	46	96	P	8	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	1.01	0.25

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



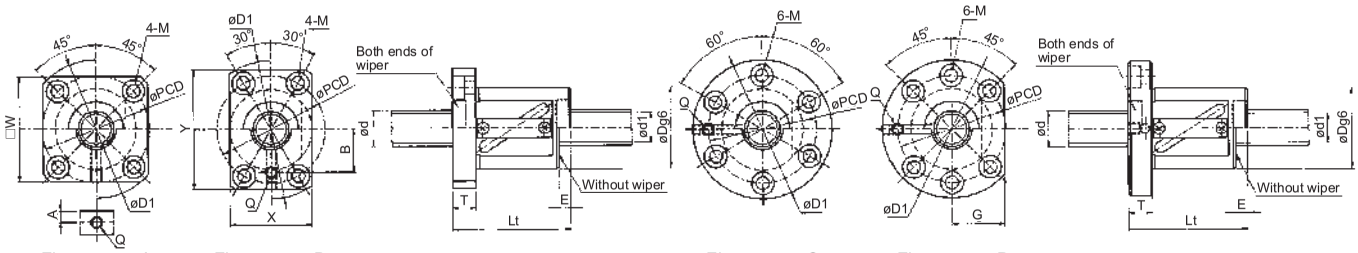
Flange type A　　Flange type C

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2504DS-AAPR	25	4	2.3812	23.1	2.5×1	5200	14400	160	46	43	P	3	12	74	A	56	—	—	7.5	—	—	M6	59	6.6	11	6.5	0.49	0.38
GR2504DS-CAPR	25	4	2.3812	23.1	2.5×1	5200	14400	160	46	43	P	3	12	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	0.60	0.38
GR2504ES-AAPR	25	4	2.3812	23.1	2.5×2	9400	28800	300	46	55	P	3	12	74	A	56	—	—	7	—	—	M6	59	6.6	11	6.5	0.59	0.38
GR2504ES-CAPR	25	4	2.3812	23.1	2.5×2	9400	28800	300	46	55	P	3	12	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	0.69	0.38
GR2505BS-AALR	25	5	3.1750	22.5	1.5×2	11000	26600	210	47	53	L	5	12	74	A	57	—	—	7	—	—	M6	60	6.6	11	6.5	0.58	0.38
GR2505BS-CALR	25	5	3.1750	22.5	1.5×2	11000	26600	210	47	53	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	0.68	0.38
GR2505DS-AALR	25	5	3.1750	22.5	2.5×1	9400	22200	170	47	48	L	5	12	74	A	57	—	—	7.5	—	—	M6	60	6.6	11	6.5	0.54	0.38
GR2505DS-CALR	25	5	3.1750	22.5	2.5×1	9400	22200	170	47	48	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	0.64	0.38
GR2505ES-AALR	25	5	3.1750	22.5	2.5×2	17000	44400	320	47	58	L	5	12	74	A	57	—	—	7.5	—	—	M6	60	6.6	11	6.5	0.63	0.38
GR2505ES-CALR	25	5	3.1750	22.5	2.5×2	17000	44400	320	47	58	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	0.72	0.38
GR2506BS-AALR	25	6	3.9688	21.6	1.5×2	14700	32400	210	50	61	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	0.74	0.38
GR2506BS-CALR	25	6	3.9688	21.6	1.5×2	14700	32400	210	50	61	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	0.86	0.38
GR2506DS-AALR	25	6	3.9688	21.6	2.5×1	12500	27000	180	50	49	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	0.62	0.38
GR2506DS-CALR	25	6	3.9688	21.6	2.5×1	12500	27000	180	50	49	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	0.75	0.38
GR2506ES-AALR	25	6	3.9688	21.6	2.5×2	22700	54000	330	50	67	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	0.80	0.38
GR2506ES-CALR	25	6	3.9688	21.6	2.5×2	22700	54000	330	50	67	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	0.92	0.38
GR2508DS-AAPR	25	8	4.7625	21	2.5×1	16100	33400	180	52	63	P	5	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	0.94	0.38
GR2508DS-CAPR	25	8	4.7625	21	2.5×1	16100	33400	180	52	63	P	5	15	86	C	—	—	—	—	—	—	M6	68	9	14	8.6	1.11	0.38
GR2508GS-AAPR	25	8	4.7625	21	3.5×1	21400	46800	240	52	65	P	6	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	0.96	0.38
GR2508GS-CAPR	25	8	4.7625	21	3.5×1	21400	46800	240	52	65	P	6	15	86	C	—	—	—	—	—	—	M6	68	9	14	8.6	1.13	0.38

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



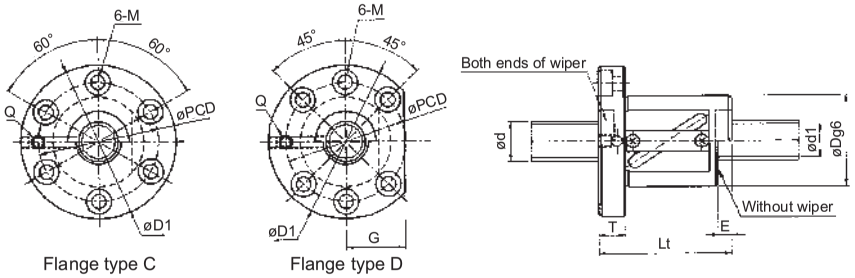
Flange type A　Flange type B　Flange type C　Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2510DS-AALR	25	10	4.7625	21	2.5×1	16100	33400	180	52	65	L	5	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	0.96	0.38
GR2510DS-BALR	25	10	4.7625	21	2.5×1	16100	33400	180	52	65	L	5	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	0.92	0.38
GR2510GS-AALR	25	10	4.7625	21	3.5×1	21400	46800	240	52	75	L	5	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.07	0.38
GR2510GS-BALR	25	10	4.7625	21	3.5×1	21400	46800	240	52	75	L	5	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	1.03	0.38
GR2520AS-AALR	25	20	4.7625	21	1.5×1	10400	20100	110	52	70	L	8	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.01	0.38
GR2520AS-BALR	25	20	4.7625	21	1.5×1	10400	20100	110	52	70	L	8	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	0.98	0.38
GR2520DS-AALR	25	20	4.7625	21	2.5×1	16100	33400	180	52	90	L	8	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.23	0.38
GR2520DS-BALR	25	20	4.7625	21	2.5×1	16100	33400	180	52	90	L	8	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	1.19	0.38
GR2525AS-AALR	25	25	4.7625	21	1.5×1	10400	20100	110	54	77	L	7	15	88	A	67	—	—	10	—	—	M6	70	9	14	8.6	1.18	0.38
GR2525AS-BALR	25	25	4.7625	21	1.5×1	10400	20100	110	54	77	L	7	15	88	B	—	54	78	—	30	—	M6	70	9	14	8.6	1.15	0.38
GR2525DS-AALR	25	25	4.7625	21	2.5×1	16100	33400	180	54	102	L	7	15	88	A	67	—	—	10	—	—	M6	70	9	14	8.6	1.48	0.38
GR2525DS-BALR	25	25	4.7625	21	2.5×1	16100	33400	180	54	102	L	7	15	88	B	—	54	78	—	30	—	M6	70	9	14	8.6	1.45	0.38
GR2540AS-AAPR	25	40	4.7625	21	1.5×1	10400	20100	110	54	111	P	8	15	88	A	67	—	—	10	—	—	M6	70	9	14	8.6	1.59	0.38
GR2540AS-BAPR	25	40	4.7625	21	1.5×1	10400	20100	110	54	111	P	8	15	88	B	—	54	78	—	30	—	M6	70	9	14	8.6	1.56	0.38
GR2805DS-CAPR	28	5	3.1750	25.5	2.5×1	9800	24900	190	54	43	P	5	12	82	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	0.78	0.48
GR2805DS-DAPR	28	5	3.1750	25.5	2.5×1	9800	24900	190	54	43	P	5	12	82	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	0.74	0.48
GR2805ES-CAPR	28	5	3.1750	25.5	2.5×2	17900	49800	360	54	58	P	5	12	82	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	0.95	0.48
GR2805ES-DAPR	28	5	3.1750	25.5	2.5×2	17900	49800	360	54	58	P	5	12	82	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	0.92	0.48
GR2810DS-CAPR	28	10	4.7625	24	2.5×1	17000	37600	200	56	65	P	5	15	84	C	—	—	—	—	—	—	M6	69	6.6	11	6.5	1.15	0.48
GR2810DS-DAPR	28	10	4.7625	24	2.5×1	17000	37600	200	56	65	P	5	15	84	D	—	—	—	—	—	32	M6	69	6.6	11	6.5	1.11	0.48
GR2820DS-CAPR	28	20	4.7625	24	2.5×1	17000	37600	200	56	89	P	6	15	84	C	—	—	—	—	—	—	M6	69	6.6	11	6.5	1.45	0.48
GR2820DS-DAPR	28	20	4.7625	24	2.5×1	17000	37600	200	56	89	P	6	15	84	D	—	—	—	—	—	32	M6	69	6.6	11	6.5	1.40	0.48

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



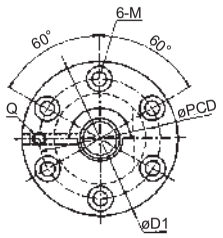
Flange type C　Flange type D

(Unit: mm)

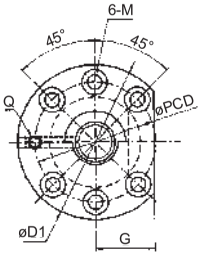
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3204DS-CAPR	32	4	2.3812	30.1	2.5×1	5800	18900	200	54	43	P	3	12	81	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	0.71	0.63
GR3204DS-DAPR	32	4	2.3812	30.1	2.5×1	5800	18900	200	54	43	P	3	12	81	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	0.68	0.63
GR3204ES-CAPR	32	4	2.3812	30.1	2.5×2	10500	37800	370	54	51	P	3	12	81	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	0.79	0.63
GR3204ES-DAPR	32	4	2.3812	30.1	2.5×2	10500	37800	370	54	51	P	3	12	81	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	0.76	0.63
GR3205DS-CALR	32	5	3.1750	29.5	2.5×1	10500	28600	220	58	43	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	0.83	0.63
GR3205DS-DALR	32	5	3.1750	29.5	2.5×1	10500	28600	220	58	43	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	0.79	0.63
GR3205ES-CALR	32	5	3.1750	29.5	2.5×2	19000	57200	400	58	58	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	1.02	0.63
GR3205ES-DALR	32	5	3.1750	29.5	2.5×2	19000	57200	400	58	58	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	0.98	0.63
GR3205FS-CALR	32	5	3.1750	29.5	2.5×3	26900	85800	570	58	73	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	1.21	0.63
GR3205FS-DALR	32	5	3.1750	29.5	2.5×3	26900	85800	570	58	73	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	1.17	0.63
GR3206DS-CALR	32	6	3.9688	28.6	2.5×1	14400	35500	220	62	49	L	5	12	89	C	—	—	—	—	—	—	M6	75	6.6	11	6.5	1.05	0.63
GR3206DS-DALR	32	6	3.9688	28.6	2.5×1	14400	35500	220	62	49	L	5	12	89	D	—	—	—	—	—	34	M6	75	6.6	11	6.5	1.01	0.63
GR3206ES-CALR	32	6	3.9688	28.6	2.5×2	26000	71000	410	62	67	L	5	12	89	C	—	—	—	—	—	—	M6	75	6.6	11	6.5	1.32	0.63
GR3206ES-DALR	32	6	3.9688	28.6	2.5×2	26000	71000	410	62	67	L	5	12	89	D	—	—	—	—	—	34	M6	75	6.6	11	6.5	1.28	0.63
GR3208BS-CALR	32	8	4.7625	28	1.5×2	20900	50000	250	66	73	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.83	0.63
GR3208BS-DALR	32	8	4.7625	28	1.5×2	20900	50000	250	66	73	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.76	0.63
GR3208DS-CALR	32	8	4.7625	28	2.5×1	17800	41700	220	66	57	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.54	0.63
GR3208DS-DALR	32	8	4.7625	28	2.5×1	17800	41700	220	66	57	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.48	0.63
GR3208ES-CALR	32	8	4.7625	28	2.5×2	32300	83400	350	66	81	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.97	0.63
GR3208ES-DALR	32	8	4.7625	28	2.5×2	32300	83400	350	66	81	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.91	0.63

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

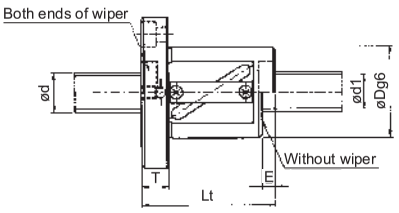
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D

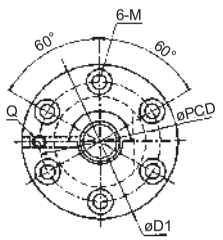


(Unit: mm)

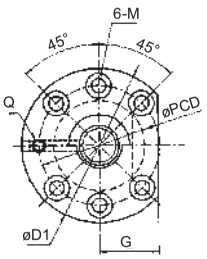
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3210BS-CALR	32	10	6.3500	27.2	1.5×2	30300	66700	260	74	88	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.65	0.63
GR3210BS-DALR	32	10	6.3500	27.2	1.5×2	30300	66700	260	74	88	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.57	0.63
GR3210DS-CALR	32	10	6.3500	27.2	2.5×1	25800	55600	230	74	68	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.17	0.63
GR3210DS-DALR	32	10	6.3500	27.2	2.5×1	25800	55600	230	74	68	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.10	0.63
GR3210ES-CALR	32	10	6.3500	27.2	2.5×2	46900	111200	410	74	98	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.88	0.63
GR3210ES-DALR	32	10	6.3500	27.2	2.5×2	46900	111200	410	74	98	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.81	0.63
GR3212DS-CAPR	32	12	6.3500	27.2	2.5×1	25800	55600	240	74	81	P	8	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.59	0.63
GR3212DS-DAPR	32	12	6.3500	27.2	2.5×1	25800	55600	240	74	81	P	8	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.51	0.63
GR3212GS-CAPR	32	12	6.3500	27.2	3.5×1	34500	77800	330	74	93	P	8	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.88	0.63
GR3212GS-DAPR	32	12	6.3500	27.2	3.5×1	34500	77800	330	74	93	P	8	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.79	0.63
GR3220DS-CALR	32	20	6.3500	27.2	2.5×1	25800	55600	250	72	96	L	9	18	106	C	—	—	—	—	—	—	M6	88	9	14	8.6	2.76	0.63
GR3220DS-DALR	32	20	6.3500	27.2	2.5×1	25800	55600	250	72	96	L	9	18	106	D	—	—	—	—	—	40	M6	88	9	14	8.6	2.68	0.63
GR3232AS-CAPR	32	32	4.7625	28	1.5×1	11500	26300	150	64	95	P	9	18	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	2.16	0.63
GR3232AS-DAPR	32	32	4.7625	28	1.5×1	11500	26300	150	64	95	P	9	18	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	2.09	0.63
GR3232DS-CAPR	32	32	4.7625	28	2.5×1	17800	43900	230	64	127	P	9	18	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	2.68	0.63
GR3232DS-DAPR	32	32	4.7625	28	2.5×1	17800	43900	230	64	127	P	9	18	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	2.61	0.63

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

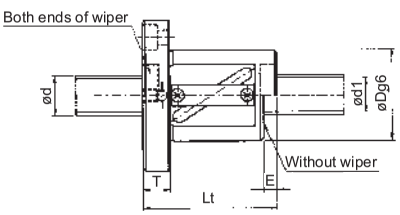
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D



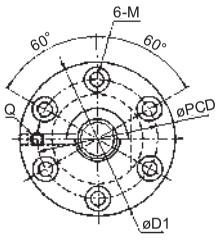
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3605DS-CAPR	36	5	3.1750	33.5	2.5×1	11000	32300	240	64	46	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	1.21	0.79
GR3605DS-DAPR	36	5	3.1750	33.5	2.5×1	11000	32300	240	64	46	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	1.15	0.79
GR3605ES-CAPR	36	5	3.1750	33.5	2.5×2	20100	64600	440	64	61	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	1.44	0.79
GR3605ES-DAPR	36	5	3.1750	33.5	2.5×2	20100	64600	440	64	61	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	1.38	0.79
GR3605FS-CAPR	36	5	3.1750	33.5	2.5×3	28300	96900	630	64	76	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	1.67	0.79
GR3605FS-DAPR	36	5	3.1750	33.5	2.5×3	28300	96900	630	64	76	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	1.61	0.79
GR3606DS-CAPR	36	6	3.9688	32.6	2.5×1	15100	39800	240	66	52	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.37	0.79
GR3606DS-DAPR	36	6	3.9688	32.6	2.5×1	15100	39800	240	66	52	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.31	0.79
GR3606ES-CAPR	36	6	3.9688	32.6	2.5×2	27200	79600	450	66	70	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.67	0.79
GR3606ES-DAPR	36	6	3.9688	32.6	2.5×2	27200	79600	450	66	70	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.61	0.79
GR3606FS-CAPR	36	6	3.9688	32.6	2.5×3	38500	119400	660	66	88	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.97	0.79
GR3606FS-DAPR	36	6	3.9688	32.6	2.5×3	38500	119400	660	66	88	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.90	0.79
GR3608DS-CAPR	36	8	4.7625	32	2.5×1	19200	47900	240	70	57	P	6	15	104	C	—	—	—	—	—	—	M6	86	9	14	8.6	1.64	0.79
GR3608DS-DAPR	36	8	4.7625	32	2.5×1	19200	47900	240	70	57	P	6	15	104	D	—	—	—	—	—	40	M6	86	9	14	8.6	1.58	0.79
GR3608ES-CAPR	36	8	4.7625	32	2.5×2	34700	95800	460	70	81	P	6	15	104	C	—	—	—	—	—	—	M6	86	9	14	8.6	2.11	0.79
GR3608ES-DAPR	36	8	4.7625	32	2.5×2	34700	95800	460	70	81	P	6	15	104	D	—	—	—	—	—	40	M6	86	9	14	8.6	2.04	0.79

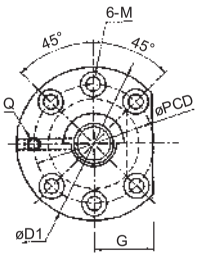
Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

Screw shaft diameter ø36

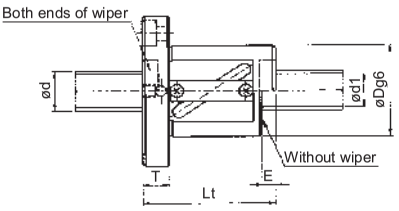
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D

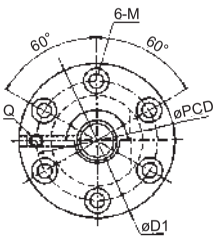


(Unit: mm)

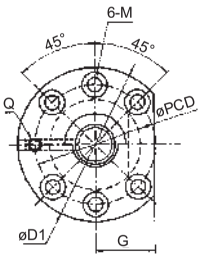
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3610DS-CALR	36	10	6.3500	31.2	2.5×1	27600	63000	240	76	68	L	8	15	110	C	—	—	—	—	—	—	M6	92	9	14	8.6	2.17	0.79
GR3610DS-DALR	36	10	6.3500	31.2	2.5×1	27600	63000	240	76	68	L	8	15	110	D	—	—	—	—	—	42	M6	92	9	14	8.6	2.10	0.79
GR3610ES-CALR	36	10	6.3500	31.2	2.5×2	50100	126000	460	76	98	L	8	15	110	C	—	—	—	—	—	—	M6	92	9	14	8.6	2.87	0.79
GR3610ES-DALR	36	10	6.3500	31.2	2.5×2	50100	126000	460	76	98	L	8	15	110	D	—	—	—	—	—	42	M6	92	9	14	8.6	2.80	0.79
GR3612DS-CAPR	36	12	7.1438	30.6	2.5×1	32800	69700	250	81	81	P	8	18	123	C	—	—	—	—	—	—	M6	101	11	17.5	10.8	3.18	0.79
GR3612DS-DAPR	36	12	7.1438	30.6	2.5×1	32800	69700	250	81	81	P	8	18	123	D	—	—	—	—	—	47	M6	101	11	17.5	10.8	3.07	0.79
GR3612GS-CAPR	36	12	7.1438	30.6	3.5×1	43700	97600	350	81	93	P	8	18	123	C	—	—	—	—	—	—	M6	101	11	17.5	10.8	3.52	0.79
GR3612GS-DAPR	36	12	7.1438	30.6	3.5×1	43700	97600	350	81	93	P	8	18	123	D	—	—	—	—	—	47	M6	101	11	17.5	10.8	3.41	0.79
GR3620DS-CALR	36	20	6.3500	31.2	2.5×1	27600	63000	240	74	96	L	9	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.75	0.79
GR3620DS-DALR	36	20	6.3500	31.2	2.5×1	27600	63000	240	74	96	L	9	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.66	0.79
GR3624DS-CAPR	36	24	6.3500	31.2	2.5×1	27600	63000	280	74	107	P	9	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	2.99	0.79
GR3624DS-DAPR	36	24	6.3500	31.2	2.5×1	27600	63000	280	74	107	P	9	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	2.90	0.79

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

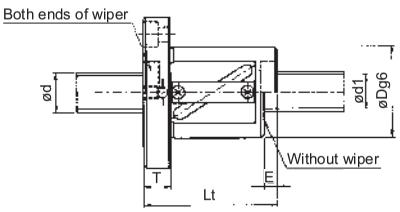
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D



(Unit: mm)

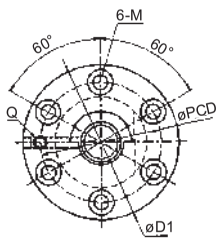
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4005DS-CAPR	40	5	3.1750	37.5	2.5×1	11600	36000	260	67	46	P	5	15	101	C	—	—	—	—	—	—	Rc1/8	83	9	14	8.6	1.24	0.98
GR4005DS-DAPR	40	5	3.1750	37.5	2.5×1	11600	36000	260	67	46	P	5	15	101	D	—	—	—	—	—	39	Rc1/8	83	9	14	8.6	1.18	0.98
GR4005ES-CAPR	40	5	3.1750	37.5	2.5×2	21000	72000	480	67	61	P	5	15	101	C	—	—	—	—	—	—	Rc1/8	83	9	14	8.6	1.48	0.98
GR4005ES-DAPR	40	5	3.1750	37.5	2.5×2	21000	72000	480	67	61	P	5	15	101	D	—	—	—	—	—	39	Rc1/8	83	9	14	8.6	1.42	0.98
GR4005FS-CAPR	40	5	3.1750	37.5	2.5×3	29800	108000	700	67	76	P	5	15	101	C	—	—	—	—	—	—	Rc1/8	83	9	14	8.6	1.71	0.98
GR4005FS-DAPR	40	5	3.1750	37.5	2.5×3	29800	108000	700	67	76	P	5	15	101	D	—	—	—	—	—	39	Rc1/8	83	9	14	8.6	1.65	0.98
GR4006BS-CAPR	40	6	3.9688	36.6	1.5×2	18200	52800	310	70	64	P	5	15	104	C	—	—	—	—	—	—	Rc1/8	86	9	14	8.6	1.67	0.98
GR4006BS-DAPR	40	6	3.9688	36.6	1.5×2	18200	52800	310	70	64	P	5	15	104	D	—	—	—	—	—	40	Rc1/8	86	9	14	8.6	1.61	0.98
GR4006ES-CAPR	40	6	3.9688	36.6	2.5×2	28300	88000	490	70	70	P	5	15	104	C	—	—	—	—	—	—	Rc1/8	86	9	14	8.6	1.78	0.98
GR4006ES-DAPR	40	6	3.9688	36.6	2.5×2	28300	88000	490	70	70	P	5	15	104	D	—	—	—	—	—	40	Rc1/8	86	9	14	8.6	1.72	0.98
GR4006FS-CAPR	40	6	3.9688	36.6	2.5×3	40200	132000	710	70	88	P	5	15	104	C	—	—	—	—	—	—	Rc1/8	86	9	14	8.6	2.10	0.98
GR4006FS-DAPR	40	6	3.9688	36.6	2.5×3	40200	132000	710	70	88	P	5	15	104	D	—	—	—	—	—	40	Rc1/8	86	9	14	8.6	2.04	0.98
GR4008DS-CALR	40	8	4.7625	36	2.5×1	19600	54200	270	74	57	L	6	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	1.75	0.98
GR4008DS-DALR	40	8	4.7625	36	2.5×1	19600	54200	270	74	57	L	6	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	1.67	0.98
GR4008ES-CALR	40	8	4.7625	36	2.5×2	35600	108400	510	74	81	L	6	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	2.24	0.98
GR4008ES-DALR	40	8	4.7625	36	2.5×2	35600	108400	510	74	81	L	6	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	2.17	0.98

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

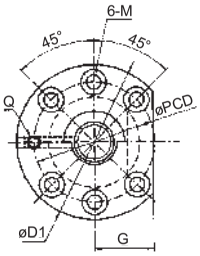
Screw shaft diameter ø40

Screw shaft diameter ø40

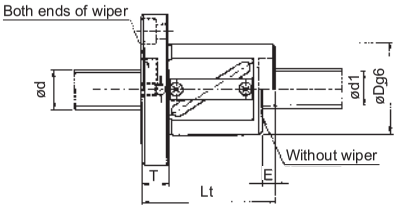
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D

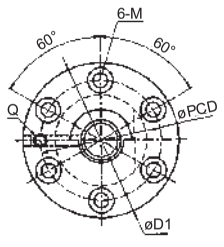


(Unit: mm)

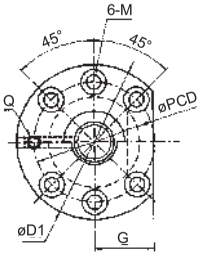
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_1	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4010BS-CALR	40	10	6.3500	35.2	1.5×2	34200	89200	320	82	91	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	3.40	0.98
GR4010BS-DALR	40	10	6.3500	35.2	1.5×2	34200	89200	320	82	91	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	3.29	0.98
GR4010DS-CALR	40	10	6.3500	35.2	2.5×1	29300	74300	270	82	71	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	2.87	0.98
GR4010DS-DALR	40	10	6.3500	35.2	2.5×1	29300	74300	270	82	71	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	2.75	0.98
GR4010ES-CALR	40	10	6.3500	35.2	2.5×2	53000	140800	510	82	101	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	3.67	0.98
GR4010ES-DALR	40	10	6.3500	35.2	2.5×2	53000	140800	510	82	101	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	3.56	0.98
GR4012DS-CALR	40	12	7.1438	34.6	2.5×1	35100	79000	290	86	81	L	8	18	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	3.46	0.98
GR4012DS-DALR	40	12	7.1438	34.6	2.5×1	35100	79000	290	86	81	L	8	18	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	3.33	0.98
GR4012ES-CALR	40	12	7.1438	34.6	2.5×2	63700	158000	560	86	117	L	8	18	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	4.55	0.98
GR4012ES-DALR	40	12	7.1438	34.6	2.5×2	63700	158000	560	86	117	L	8	18	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	4.42	0.98
GR4016DS-CAPR	40	16	7.1438	34.6	2.5×1	35100	79000	290	86	91	P	9	22	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	3.98	0.98
GR4016DS-DAPR	40	16	7.1438	34.6	2.5×1	35100	79000	290	86	91	P	9	22	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	3.82	0.98
GR4016GS-CALR	40	16	7.1438	34.6	3.5×1	46800	110600	400	86	107	L	9	22	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	4.47	0.98
GR4016GS-DALR	40	16	7.1438	34.6	3.5×1	46800	110600	400	86	107	L	9	22	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	4.31	0.98
GR4020DS-CAPR	40	20	7.1438	34.6	2.5×1	35100	79000	290	86	105	P	9	22	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	4.41	0.98
GR4020DS-DAPR	40	20	7.1438	34.6	2.5×1	35100	79000	290	86	105	P	9	22	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	4.25	0.98
GR4020GS-CAPR	40	20	7.1438	34.6	3.5×1	46800	110600	400	86	125	P	9	22	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	5.02	0.98
GR4020GS-DAPR	40	20	7.1438	34.6	3.5×1	46800	110600	400	86	125	P	9	22	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	4.86	0.98
GR4032DS-CAPR	40	32	6.3500	35.2	2.5×1	29300	74300	310	78	133	P	8	22	120	C	—	—	—	—	—	—	Rc1/8	98	11	17.5	10.8	4.18	0.98
GR4032DS-DAPR	40	32	6.3500	35.2	2.5×1	29300	74300	310	78	133	P	8	22	120	D	—	—	—	—	—	46	Rc1/8	98	11	17.5	10.8	4.05	0.98
GR4040AS-CAPR	40	40	6.3500	35.2	1.5×1	18800	44600	200	78	114	P	8	22	120	C	—	—	—	—	—	—	Rc1/8	98	11	17.5	10.8	3.74	0.98
GR4040AS-DAPR	40	40	6.3500	35.2	1.5×1	18800	44600	200	78	114	P	8	22	120	D	—	—	—	—	—	46	Rc1/8	98	11	17.5	10.8	3.62	0.98

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

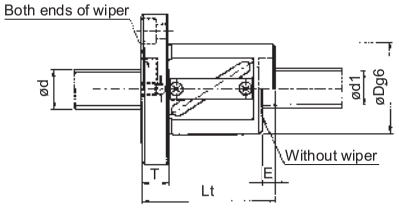
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D



(Unit: mm)

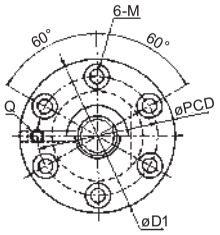
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_1	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4505BS-CAPR	45	5	3.1750	42.5	1.5×2	14100	48600	330	74	56	P	5	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	1.62	1.24
GR4505BS-DAPR	45	5	3.1750	42.5	1.5×2	14100	48600	330	74	56	P	5	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	1.55	1.24
GR4505CS-CAPR	45	5	3.1750	42.5	1.5×3	20100	72900	480	74	66	P	5	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	1.81	1.24
GR4505CS-DAPR	45	5	3.1750	42.5	1.5×3	20100	72900	480	74	66	P	5	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	1.74	1.24
GR4506BS-CAPR	45	6	3.9688	41.6	1.5×2	19300	59700	340	78	64	P	5	15	112	C	—	—	—	—	—	—	Rc1/8	94	9	14	8.6	2.00	1.24
GR4506BS-DAPR	45	6	3.9688	41.6	1.5×2	19300	59700	340	78	64	P	5	15	112	D	—	—	—	—	—	43	Rc1/8	94	9	14	8.6	1.93	1.24
GR4506ES-CAPR	45	6	3.9688	41.6	2.5×2	30000	99500	550	78	70	P	5	15	112	C	—	—	—	—	—	—	Rc1/8	94	9	14	8.6	2.14	1.24
GR4506ES-DAPR	45	6	3.9688	41.6	2.5×2	30000	99500	550	78	70	P	5	15	112	D	—	—	—	—	—	43	Rc1/8	94	9	14	8.6	2.06	1.24
GR4506FS-CAPR	45	6	3.9688	41.6	2.5×3	42500	149300	780	78	88	P	5	15	112	C	—	—	—	—	—	—	Rc1/8	94	9	14	8.6	2.53	1.24
GR4506FS-DAPR	45	6	3.9688	41.6	2.5×3	42500	149300	780	78	88	P	5	15	112	D	—	—	—	—	—	43	Rc1/8	94	9	14	8.6	2.46	1.24
GR4508BS-CAPR	45	8	4.7625	41	1.5×2	24000	72600	350	82	76	P	6	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	2.88	1.24
GR4508BS-DAPR	45	8	4.7625	41	1.5×2	24000	72600	350	82	76	P	6	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	2.76	1.24
GR4508ES-CAPR	45	8	4.7625	41	2.5×2	37300	121000	560	82	84	P	6	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	3.08	1.24
GR4508ES-DAPR	45	8	4.7625	41	2.5×2	37300	121000	560	82	84	P	6	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	2.97	1.24
GR4508FS-CAPR	45	8	4.7625	41	2.5×3	52700	181500	790	82	108	P	6	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	3.69	1.24
GR4508FS-DAPR	45	8	4.7625	41	2.5×3	52700	181500	790	82	108	P	6	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	3.58	1.24

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

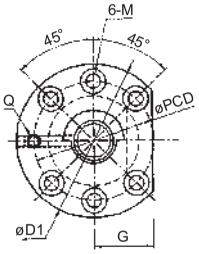
Screw shaft diameter ø45

Screw shaft diameter ø45

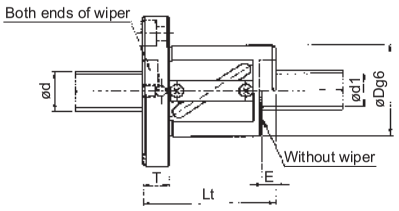
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D

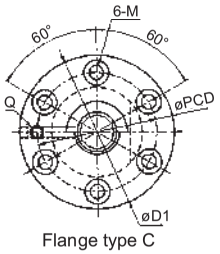


(Unit: mm)

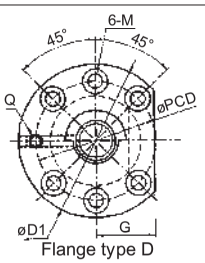
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4510BS-CALR	45	10	6.3500	40.2	1.5×2	36800	97800	370	86	91	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	3.53	1.24
GR4510BS-DALR	45	10	6.3500	40.2	1.5×2	36800	97800	370	86	91	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	3.40	1.24
GR4510DS-CALR	45	10	6.3500	40.2	2.5×1	31500	81500	310	86	71	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	2.97	1.24
GR4510DS-DALR	45	10	6.3500	40.2	2.5×1	31500	81500	310	86	71	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	2.84	1.24
GR4510ES-CALR	45	10	6.3500	40.2	2.5×2	57200	163000	570	86	101	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	3.81	1.24
GR4510ES-DALR	45	10	6.3500	40.2	2.5×2	57200	163000	570	86	101	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	3.68	1.24
GR4510FS-CALR	45	10	6.3500	40.2	2.5×3	81000	244500	830	86	131	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	4.65	1.24
GR4510FS-DALR	45	10	6.3500	40.2	2.5×3	81000	244500	830	86	131	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	4.52	1.24
GR4512DS-CALR	45	12	7.9375	38.8	2.5×1	41200	98500	300	94	83	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	4.40	1.24
GR4512DS-DALR	45	12	7.9375	38.8	2.5×1	41200	98500	300	94	83	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	4.22	1.24
GR4512ES-CALR	45	12	7.9375	38.8	2.5×2	74900	197000	570	94	119	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	5.68	1.24
GR4512ES-DALR	45	12	7.9375	38.8	2.5×2	74900	197000	570	94	119	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	5.50	1.24
GR4512FS-CALR	45	12	7.9375	38.8	2.5×3	106200	295500	870	94	155	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	6.96	1.24
GR4512FS-DALR	45	12	7.9375	38.8	2.5×3	106200	295500	870	94	155	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	6.78	1.24
GR4520DS-CAPR	45	20	7.1438	39.7	2.5×1	37600	86200	520	105	105	P	8	22	155	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	6.95	1.24
GR4520DS-DAPR	45	20	7.1438	39.7	2.5×1	37600	86200	520	105	105	P	8	22	155	D	–	–	–	–	–	60	Rc1/8	130	14	20	13	6.75	1.24
GR4520GS-CAPR	45	20	7.1438	39.7	3.5×1	49400	120600	720	105	125	P	8	22	155	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	7.94	1.24
GR4520GS-DAPR	45	20	7.1438	39.7	3.5×1	49400	120600	720	105	125	P	8	22	155	D	–	–	–	–	–	60	Rc1/8	130	14	20	13	7.74	1.24

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

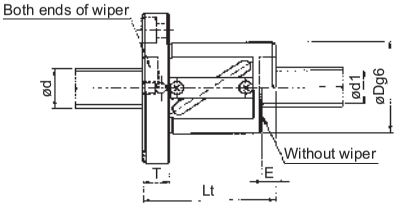
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



Flange type C



Flange type D



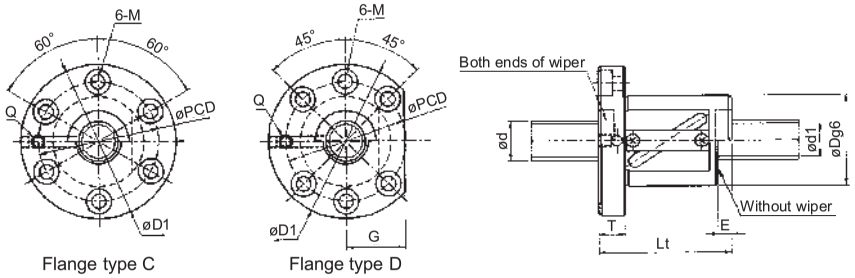
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR5005BS-CAPR	50	5	3.1750	47.5	1.5×2	14800	54200	370	80	56	P	5	15	114	C	–	–	–	–	–	–	Rc1/8	96	9	14	8.6	1.80	1.53
GR5005BS-DAPR	50	5	3.1750	47.5	1.5×2	14800	54200	370	80	56	P	5	15	114	D	–	–	–	–	–	43	Rc1/8	96	9	14	8.6	1.71	1.53
GR5005CS-CAPR	50	5	3.1750	47.5	1.5×3	21000	81300	530	80	66	P	5	15	114	C	–	–	–	–	–	–	Rc1/8	96	9	14	8.6	2.01	1.53
GR5005CS-DAPR	50	5	3.1750	47.5	1.5×3	21000	81300	530	80	66	P	5	15	114	D	–	–	–	–	–	43	Rc1/8	96	9	14	8.6	1.93	1.53
GR5006BS-CAPR	50	6	3.9688	46.6	1.5×2	20100	66500	380	84	64	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	2.22	1.53
GR5006BS-DAPR	50	6	3.9688	46.6	1.5×2	20100	66500	380	84	64	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	2.13	1.53
GR5006ES-CAPR	50	6	3.9688	46.6	2.5×2	31300	110800	590	84	70	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	2.36	1.53
GR5006ES-DAPR	50	6	3.9688	46.6	2.5×2	31300	110800	590	84	70	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	2.28	1.53
GR5006FS-CAPR	50	6	3.9688	46.6	2.5×3	44300	166200	860	84	88	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	2.81	1.53
GR5006FS-DAPR	50	6	3.9688	46.6	2.5×3	44300	166200	860	84	88	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	2.73	1.53
GR5008BS-CAPR	50	8	4.7625	46	1.5×2	24900	80100	380	87	76	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	3.07	1.53
GR5008BS-DAPR	50	8	4.7625	46	1.5×2	24900	80100	380	87	76	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	2.95	1.53
GR5008ES-CAPR	50	8	4.7625	46	2.5×2	38700	133400	590	87	84	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	3.29	1.53
GR5008ES-DAPR	50	8	4.7625	46	2.5×2	38700	133400	590	87	84	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	3.16	1.53
GR5008FS-CAPR	50	8	4.7625	46	2.5×3	55000	200100	860	87	108	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	3.94	1.53
GR5008FS-DAPR	50	8	4.7625	46	2.5×3	55000	200100	860	87	108	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	3.82	1.53
GR5010BS-CALR	50	10	6.3500	45.2	1.5×2	38300	106700	390	93	91	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	3.98	1.53
GR5010BS-DALR	50	10	6.3500	45.2	1.5×2	38300	106700	390	93	91	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	3.84	1.53
GR5010DS-CALR	50	10	6.3500	45.2	2.5×1	32800	88900	330	93	71	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	3.34	1.53
GR5010DS-DALR	50	10	6.3500	45.2	2.5×1	32800	88900	330	93	71	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	3.20	1.53
GR5010ES-CALR	50	10	6.3500	45.2	2.5×2	59400	177800	620	93	101	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	4.31	1.53
GR5010ES-DALR	50	10	6.3500	45.2	2.5×2	59400	177800	620	93	101	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	4.17	1.53
GR5010FS-CALR	50	10	6.3500	45.2	2.5×3	84100	266700	890	93	131	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	5.27	1.53
GR5010FS-DALR	50	10	6.3500	45.2	2.5×3	84100	266700	890	93	131	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	5.13	1.53

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

Screw shaft diameter ø50

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



(Unit: mm)

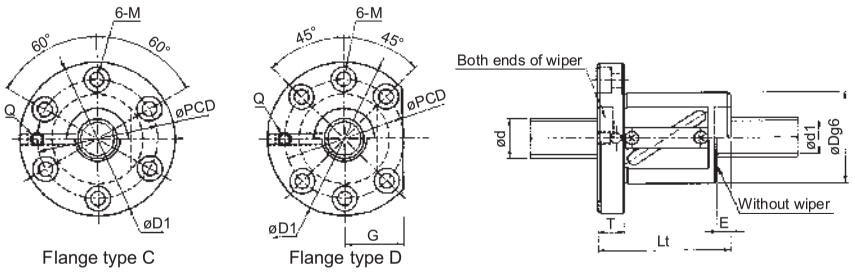
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR5012DS-CALR	50	12	7.9375	43.8	2.5×1	42600	110000	340	100	83	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	4.78	1.53
GR5012DS-DALR	50	12	7.9375	43.8	2.5×1	42600	110000	340	100	83	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	4.57	1.53
GR5012ES-CALR	50	12	7.9375	43.8	2.5×2	77400	220000	630	100	119	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	6.19	1.53
GR5012ES-DALR	50	12	7.9375	43.8	2.5×2	77400	220000	630	100	119	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	5.98	1.53
GR5012FS-CALR	50	12	7.9375	43.8	2.5×3	109600	330000	900	100	155	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	7.60	1.53
GR5012FS-DALR	50	12	7.9375	43.8	2.5×3	109600	330000	900	100	155	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	7.39	1.53
GR5016DS-CAPR	50	16	7.9375	43.8	2.5×1	42600	110000	340	100	103	P	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	5.56	1.53
GR5016DS-DAPR	50	16	7.9375	43.8	2.5×1	42600	110000	340	100	103	P	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	5.36	1.53
GR5016ES-CAPR	50	16	7.9375	43.8	2.5×2	77400	220000	630	100	151	P	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	7.44	1.53
GR5016ES-DAPR	50	16	7.9375	43.8	2.5×2	77400	220000	630	100	151	P	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	7.24	1.53
GR5020DS-CAPR	50	20	7.9375	43.8	2.5×1	42600	110000	380	100	109	P	7	28	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	6.21	1.53
GR5020DS-DAPR	50	20	7.9375	43.8	2.5×1	42600	110000	380	100	109	P	7	28	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	5.95	1.53
GR5020ES-CAPR	50	20	7.9375	43.8	2.5×2	77400	220000	710	100	169	P	7	28	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	8.56	1.53
GR5020ES-DAPR	50	20	7.9375	43.8	2.5×2	77400	220000	710	100	169	P	7	28	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	8.30	1.53
GR5040AS-CAPR	50	40	6.3500	45.2	1.5×1	20300	51300	350	93	109	P	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	4.56	1.53
GR5040AS-DAPR	50	40	6.3500	45.2	1.5×1	20300	51300	350	93	109	P	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	4.42	1.53
GR5050AS-CAPR	50	50	6.3500	45.2	1.5×1	20300	51300	350	93	126	P	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	5.11	1.53
GR5050AS-DAPR	50	50	6.3500	45.2	1.5×1	20300	51300	350	93	126	P	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	4.97	1.53

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

GR series

Screw shaft diameter ø55

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)



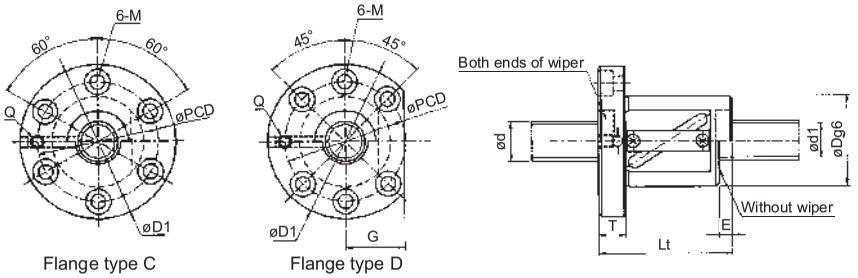
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR5508ES-CAPR	55	8	4.7625	51	2.5×2	40100	145900	640	92	86	P	5	22	138	C	–	–	–	–	–	–	Rc1/8	114	14	20	13	3.93	1.85
GR5508ES-DAPR	55	8	4.7625	51	2.5×2	40100	145900	640	92	86	P	5	22	138	D	–	–	–	–	–	53	Rc1/8	114	14	20	13	3.77	1.85
GR5508FS-CAPR	55	8	4.7625	51	2.5×3	56900	218900	920	92	110	P	5	22	138	C	–	–	–	–	–	–	Rc1/8	114	14	20	13	4.63	1.85
GR5508FS-DAPR	55	8	4.7625	51	2.5×3	56900	218900	920	92	110	P	5	22	138	D	–	–	–	–	–	53	Rc1/8	114	14	20	13	4.47	1.85
GR5510BS-CALR	55	10	6.3500	50.2	1.5×2	40400	120100	450	100	95	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	5.02	1.85
GR5510BS-DALR	55	10	6.3500	50.2	1.5×2	40400	120100	450	100	95	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	4.81	1.85
GR5510ES-CALR	55	10	6.3500	50.2	2.5×2	62700	200200	680	100	105	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	5.38	1.85
GR5510ES-DALR	55	10	6.3500	50.2	2.5×2	62700	200200	680	100	105	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	5.18	1.85
GR5510FS-CALR	55	10	6.3500	50.2	2.5×3	89000	300300	980	100	135	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	6.48	1.85
GR5510FS-DALR	55	10	6.3500	50.2	2.5×3	89000	300300	980	100	135	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	6.28	1.85
GR5512ES-CAPR	55	12	7.9375	48.8	2.5×2	81200	243300	690	108	119	P	7	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	7.04	1.85
GR5512ES-DAPR	55	12	7.9375	48.8	2.5×2	81200	243300	690	108	119	P	7	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	6.82	1.85
GR5512FS-CAPR	55	12	7.9375	48.8	2.5×3	115100	365000	980	108	155	P	7	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	8.68	1.85
GR5512FS-DAPR	55	12	7.9375	48.8	2.5×3	115100	365000	980	108	155	P	7	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	8.46	1.85
GR5516DS-CAPR	55	16	9.5250	47.6	2.5×1	76700	207800	400	112	115	P	13	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	8.60	1.85
GR5516DS-DAPR	55	16	9.5250	47.6	2.5×1	76700	207800	400	112	115	P	13	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	8.27	1.85
GR5516ES-CAPR	55	16	9.5250	47.6	2.5×2	139100	415600	750	112	163	P	13	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	10.96	1.85
GR5516ES-DAPR	55	16	9.5250	47.6	2.5×2	139100	415600	750	112	163	P	13	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	10.63	1.85
GR5520DS-CALR	55	20	9.5250	47.6	2.5×1	76700	207800	420	112	115	L	12.5	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	8.60	1.85
GR5520DS-DALR	55	20	9.5250	47.6	2.5×1	76700	207800	420	112	115	L	12.5	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	8.27	1.85
GR5520ES-CALR	55	20	9.5250	47.6	2.5×2	139100	415600	780	112	175	L	12.5	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	11.56	1.85
GR5520ES-DALR	55	20	9.5250	47.6	2.5×2	139100	415600	780	112	175	L	12.5	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	11.23	1.85

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper, L: Lip seal

KURODA JENATEC

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)

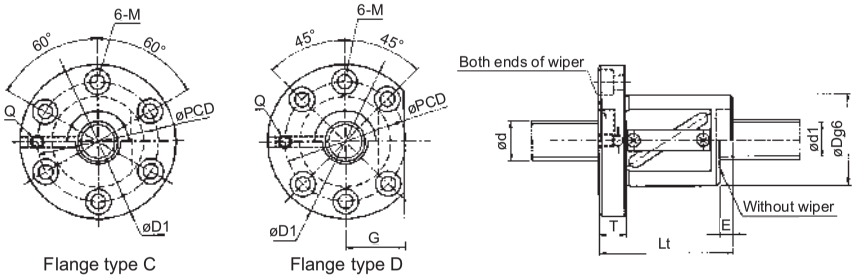


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR6306BS-CAPR	63	6	3.9688	59.6	1.5×2	22100	83500	450	100	65	P	4	18	142	C	—	—	—	—	—	—	Rc1/8	120	11	17.5	10.8	3.27	2.43
GR6306BS-DAPR	63	6	3.9688	59.6	1.5×2	22100	83500	450	100	65	P	4	18	142	D	—	—	—	—	—	53	Rc1/8	120	11	17.5	10.8	3.10	2.43
GR6306CS-CAPR	63	6	3.9688	59.6	1.5×3	31300	125300	650	100	77	P	4	18	142	C	—	—	—	—	—	—	Rc1/8	120	11	17.5	10.8	3.66	2.43
GR6306CS-DAPR	63	6	3.9688	59.6	1.5×3	31300	125300	650	100	77	P	4	18	142	D	—	—	—	—	—	53	Rc1/8	120	11	17.5	10.8	3.50	2.43
GR6308BS-CAPR	63	8	4.7625	59	1.5×2	27800	102500	460	104	78	P	5	22	150	C	—	—	—	—	—	—	Rc1/8	126	14	20	13	4.48	2.43
GR6308BS-DAPR	63	8	4.7625	59	1.5×2	27800	102500	460	104	78	P	5	22	150	D	—	—	—	—	—	57	Rc1/8	126	14	20	13	4.27	2.43
GR6308CS-CAPR	63	8	4.7625	59	1.5×3	39300	153800	660	104	94	P	5	22	150	C	—	—	—	—	—	—	Rc1/8	126	14	20	13	5.07	2.43
GR6308CS-DAPR	63	8	4.7625	59	1.5×3	39300	153800	660	104	94	P	5	22	150	D	—	—	—	—	—	57	Rc1/8	126	14	20	13	4.87	2.43

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C0-C10)

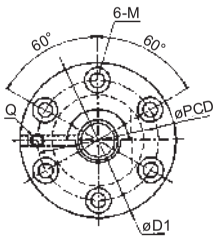


(Unit: mm)

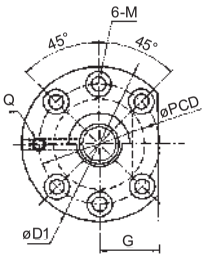
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR6310DS-CAPR	63	10	6.3500	58.2	2.5×1	36800	114900	400	108	75	P	8	22	154	C	—	—	—	—	—	—	Rc1/8	130	14	20	13	4.65	2.43
GR6310DS-DAPR	63	10	6.3500	58.2	2.5×1	36800	114900	400	108	75	P	8	22	154	D	—	—	—	—	—	58	Rc1/8	130	14	20	13	4.42	2.43
GR6310ES-CAPR	63	10	6.3500	58.2	2.5×2	66600	229800	760	108	105	P	8	22	154	C	—	—	—	—	—	—	Rc1/8	130	14	20	13	5.86	2.43
GR6310ES-DAPR	63	10	6.3500	58.2	2.5×2	66600	229800	760	108	105	P	8	22	154	D	—	—	—	—	—	58	Rc1/8	130	14	20	13	5.63	2.43
GR6310FS-CAPR	63	10	6.3500	58.2	2.5×3	94400	344700	1100	108	135	P	8	22	154	C	—	—	—	—	—	—	Rc1/8	130	14	20	13	7.07	2.43
GR6310FS-DAPR	63	10	6.3500	58.2	2.5×3	94400	344700	1100	108	135	P	8	22	154	D	—	—	—	—	—	58	Rc1/8	130	14	20	13	6.84	2.43
GR6312DS-CAPR	63	12	7.9375	56.8	2.5×1	48700	139000	400	115	83	P	7	22	161	C	—	—	—	—	—	—	Rc1/8	137	14	20	13	5.72	2.43
GR6312DS-DAPR	63	12	7.9375	56.8	2.5×1	48700	139000	400	115	83	P	7	22	161	D	—	—	—	—	—	61	Rc1/8	137	14	20	13	5.48	2.43
GR6312ES-CAPR	63	12	7.9375	56.8	2.5×2	88500	278000	760	115	119	P	7	22	161	C	—	—	—	—	—	—	Rc1/8	137	14	20	13	7.46	2.43
GR6312ES-DAPR	63	12	7.9375	56.8	2.5×2	88500	278000	760	115	119	P	7	22	161	D	—	—	—	—	—	61	Rc1/8	137	14	20	13	7.22	2.43
GR6312FS-CAPR	63	12	7.9375	56.8	2.5×3	125500	417000	1100	115	155	P	7	22	161	C	—	—	—	—	—	—	Rc1/8	137	14	20	13	9.20	2.43
GR6312FS-DAPR	63	12	7.9375	56.8	2.5×3	125500	417000	1100	115	155	P	7	22	161	D	—	—	—	—	—	61	Rc1/8	137	14	20	13	8.96	2.43
GR6316DS-CAPR	63	16	9.5250	55.6	2.5×1	80300	231000	450	122	115	P	13	28	180	C	—	—	—	—	—	—	Rc1/8	150	18	26	17.5	9.53	2.43
GR6316DS-DAPR	63	16	9.5250	55.6	2.5×1	80300	231000	450	122	115	P	13	28	180	D	—	—	—	—	—	69	Rc1/8	150	18	26	17.5	9.16	2.43
GR6316ES-CAPR	63	16	9.5250	55.6	2.5×2	145800	462000	850	122	163	P	13	28	180	C	—	—	—	—	—	—	Rc1/8	150	18	26	17.5	12.25	2.43
GR6316ES-DAPR	63	16	9.5250	55.6	2.5×2	145800	462000	850	122	163	P	13	28	180	D	—	—	—	—	—	69	Rc1/8	150	18	26	17.5	11.88	2.43
GR6320DS-CAPR	63	20	9.5250	55.6	2.5×1	80300	231000	460	122	115	P	13	28	180	C	—	—	—	—	—	—	Rc1/8	150	18	26	17.5	9.53	2.43
GR6320DS-DAPR	63	20	9.5250	55.6	2.5×1	80300	231000	460	122	115	P	13	28	180	D	—	—	—	—	—	69	Rc1/8	150	18	26	17.5	9.16	2.43
GR6320ES-CAPR	63	20	9.5250	55.6	2.5×2	145800	462000	860	122	175	P	13	28	180	C	—	—	—	—	—	—	Rc1/8	150	18	26	17.5	12.93	2.43
GR6320ES-DAPR	63	20	9.5250	55.6	2.5×2	145800	462000	860	122	175	P	13	28	180	D	—	—	—	—	—	69	Rc1/8	150	18	26	17.5	12.57	2.43

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

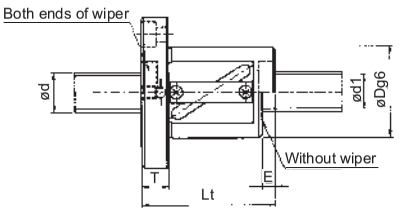
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C1-C10)



Flange type C



Flange type D

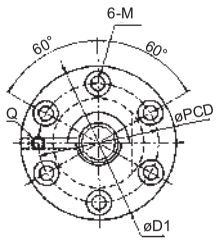


(Unit: mm)

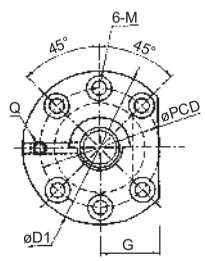
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions																Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR7010ES-CAPR	70	10	6.3500	65.2	2.5×2	69100	252100	820	120	103	P	7	22	166	C	–	–	–	–	–	–	Rc1/8	142	14	20	13	6.99	3.00
GR7010ES-DAPR	70	10	6.3500	65.2	2.5×2	69100	252100	820	120	103	P	7	22	166	D	–	–	–	–	–	63	Rc1/8	142	14	20	13	6.74	3.00
GR7010FS-CAPR	70	10	6.3500	65.2	2.5×3	97900	378200	1190	120	133	P	7	22	166	C	–	–	–	–	–	–	Rc1/8	142	14	20	13	8.51	3.00
GR7010FS-DAPR	70	10	6.3500	65.2	2.5×3	97900	378200	1190	120	133	P	7	22	166	D	–	–	–	–	–	63	Rc1/8	142	14	20	13	8.26	3.00
GR7012ES-CAPR	70	12	7.9375	63.8	2.5×2	93400	312700	840	124	119	P	7	22	170	C	–	–	–	–	–	–	Rc1/8	146	14	20	13	8.36	3.00
GR7012ES-DAPR	70	12	7.9375	63.8	2.5×2	93400	312700	840	124	119	P	7	22	170	D	–	–	–	–	–	64	Rc1/8	146	14	20	13	8.08	3.00
GR7012FS-CAPR	70	12	7.9375	63.8	2.5×3	132400	469100	1200	124	155	P	7	22	170	C	–	–	–	–	–	–	Rc1/8	146	14	20	13	10.34	3.00
GR7012FS-DAPR	70	12	7.9375	63.8	2.5×3	132400	469100	1200	124	155	P	7	22	170	D	–	–	–	–	–	64	Rc1/8	146	14	20	13	10.06	3.00
GR7016ES-CAPR	70	16	9.5250	62.6	2.5×2	152100	508000	920	130	163	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	13.45	3.00
GR7016ES-DAPR	70	16	9.5250	62.6	2.5×2	152100	508000	920	130	163	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	13.03	3.00
GR7016FS-CAPR	70	16	9.5250	62.6	2.5×3	215600	762000	1410	130	211	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	16.44	3.00
GR7016FS-DAPR	70	16	9.5250	62.6	2.5×3	215600	762000	1410	130	211	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	16.02	3.00
GR7020ES-CAPR	70	20	9.5250	62.6	2.5×2	152100	508000	920	130	175	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	14.20	3.00
GR7020ES-DAPR	70	20	9.5250	62.6	2.5×2	152100	508000	920	130	175	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	13.77	3.00
GR7020FS-CAPR	70	20	9.5250	62.6	2.5×3	215600	762000	1410	130	235	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	17.94	3.00
GR7020FS-DAPR	70	20	9.5250	62.6	2.5×3	215600	762000	1410	130	235	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	17.51	3.00

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

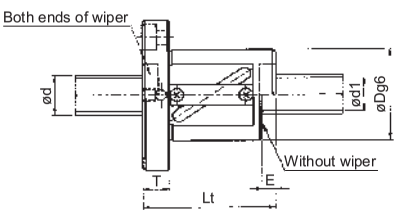
Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C1-C10)



Flange type C



Flange type D

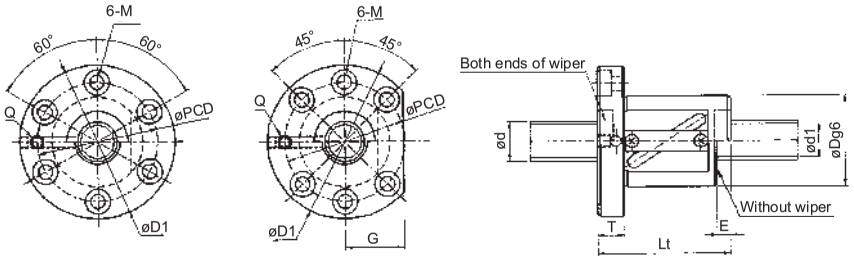


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions																Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR8010ES-CAPR	80	10	6.3500	75.2	2.5×2	73100	289100	910	130	103	P	7	22	176	C	–	–	–	–	–	–	Rc1/8	152	14	20	13	7.64	3.92
GR8010ES-DAPR	80	10	6.3500	75.2	2.5×2	73100	289100	910	130	103	P	7	22	176	D	–	–	–	–	–	66	Rc1/8	152	14	20	13	7.34	3.92
GR8010FS-CAPR	80	10	6.3500	75.2	2.5×3	103700	433700	1320	130	133	P	7	22	176	C	–	–	–	–	–	–	Rc1/8	152	14	20	13	9.32	3.92
GR8010FS-DAPR	80	10	6.3500	75.2	2.5×3	103700	433700	1320	130	133	P	7	22	176	D	–	–	–	–	–	66	Rc1/8	152	14	20	13	9.02	3.92
GR8012ES-CAPR	80	12	7.9375	73.8	2.5×2	99400	359100	940	136	119	P	7	22	182	C	–	–	–	–	–	–	Rc1/8	158	14	20	13	9.54	3.92
GR8012ES-DAPR	80	12	7.9375	73.8	2.5×2	99400	359100	940	136	119	P	7	22	182	D	–	–	–	–	–	68	Rc1/8	158	14	20	13	9.22	3.92
GR8012FS-CAPR	80	12	7.9375	73.8	2.5×3	140700	538700	1350	136	155	P	7	22	182	C	–	–	–	–	–	–	Rc1/8	158	14	20	13	11.83	3.92
GR8012FS-DAPR	80	12	7.9375	73.8	2.5×3	140700	538700	1350	136	155	P	7	22	182	D	–	–	–	–	–	68	Rc1/8	158	14	20	13	11.51	3.92
GR8016ES-CAPR	80	16	9.5250	72.6	2.5×2	165200	600500	1050	143	161	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	15.45	3.92
GR8016ES-DAPR	80	16	9.5250	72.6	2.5×2	165200	600500	1050	143	161	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	14.95	3.92
GR8016FS-CAPR	80	16	9.5250	72.6	2.5×3	234100	900800	1520	143	209	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	18.97	3.92
GR8016FS-DAPR	80	16	9.5250	72.6	2.5×3	234100	900800	1520	143	209	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	18.47	3.92
GR8020ES-CAPR	80	20	9.5250	72.6	2.5×2	165200	600500	1050	143	173	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	16.33	3.92
GR8020ES-DAPR	80	20	9.5250	72.6	2.5×2	165200	600500	1050	143	173	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	15.83	3.92
GR8020FS-CAPR	80	20	9.5250	72.6	2.5×3	234100	900800	1620	143	233	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	20.73	3.92
GR8020FS-DAPR	80	20	9.5250	72.6	2.5×3	234100	900800	1620	143	233	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	20.23	3.92

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD SINGLE NUT (Accuracy grade C1-C10)



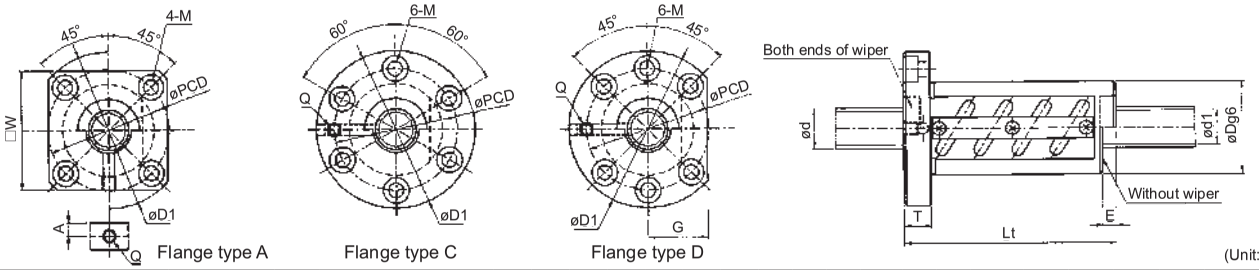
Flange type C　　Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NS} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GRA012ES-CAPR	100	12	7.9375	93.8	2.5×2	109450	451800	1130	160	123	P	6	28	220	C	–	–	–	–	–	–	Rc1/8	188	18	26	17.5	14.07	6.13
GRA012ES-DAPR	100	12	7.9375	93.8	2.5×2	109450	451800	1130	160	123	P	6	28	220	D	–	–	–	–	–	82	Rc1/8	188	18	26	17.5	13.46	6.13
GRA012FS-CAPR	100	12	7.9375	93.8	2.5×3	155000	677700	1630	160	159	P	6	28	220	C	–	–	–	–	–	–	Rc1/8	188	18	26	17.5	17.05	6.13
GRA012FS-DAPR	100	12	7.9375	93.8	2.5×3	155000	677700	1630	160	159	P	6	28	220	D	–	–	–	–	–	82	Rc1/8	188	18	26	17.5	16.43	6.13
GRA016ES-CAPR	100	16	9.5250	92.6	2.5×2	180000	739000	1250	170	165	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	22.44	6.13
GRA016ES-DAPR	100	16	9.5250	92.6	2.5×2	180000	739000	1250	170	165	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	21.60	6.13
GRA016FS-CAPR	100	16	9.5250	92.6	2.5×3	255000	1108500	1800	170	213	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	27.25	6.13
GRA016FS-DAPR	100	16	9.5250	92.6	2.5×3	255000	1108500	1800	170	213	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	26.41	6.13
GRA020ES-CAPR	100	20	9.5250	92.6	2.5×2	180000	739000	1250	170	177	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	23.64	6.13
GRA020ES-DAPR	100	20	9.5250	92.6	2.5×2	180000	739000	1250	170	177	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	22.80	6.13
GRA020FS-CAPR	100	20	9.5250	92.6	2.5×3	255000	1108500	1910	170	237	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	29.65	6.13
GRA020FS-DAPR	100	20	9.5250	92.6	2.5×3	255000	1108500	1910	170	237	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	28.81	6.13
GRC516ES-CAPR	125	16	9.5250	117.6	2.5×2	200400	946900	1520	200	169	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	31.70	9.57
GRC516ES-DAPR	125	16	9.5250	117.6	2.5×2	200400	946900	1520	200	169	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	30.38	9.57
GRC516FS-CAPR	125	16	9.5250	117.6	2.5×3	284100	1420400	2190	200	217	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	37.94	9.57
GRC516FS-DAPR	125	16	9.5250	117.6	2.5×3	284100	1420400	2190	200	217	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	36.62	9.57
GRC520ES-CAPR	125	20	9.5250	117.6	2.5×2	200400	946900	1520	200	181	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	33.26	9.57
GRC520ES-DAPR	125	20	9.5250	117.6	2.5×2	200400	946900	1520	200	181	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	31.94	9.57
GRC520FS-CAPR	125	20	9.5250	117.6	2.5×3	284100	1420400	2190	200	241	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	41.06	9.57
GRC520FS-DAPR	125	20	9.5250	117.6	2.5×3	284100	1420400	2190	200	241	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	39.74	9.57

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD INTEGRAL NUT (Accuracy grade C0-C5)



Flange type A　　Flange type C　　Flange type D

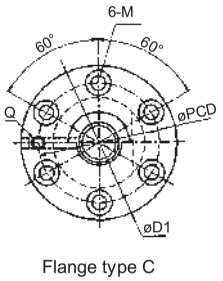
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2004DT-AALR	20	4	2.3812	18.1	2.5×1	4700	11700	240	40	49	L	3	10	64	A	49	–	–	5.5	–	–	M6	51	5.5	9.5	5.4	0.41	0.25
GR2004DT-CALR	20	4	2.3812	18.1	2.5×1	4700	11700	240	40	49	L	3	10	64	C	–	–	–	–	–	–	M6	51	5.5	9.5	5.4	0.47	0.25
GR2004ET-AALR	20	4	2.3812	18.1	2.5×2	8600	23400	440	40	73	L	3	10	64	A	49	–	–	5.5	–	–	M6	51	5.5	9.5	5.4	0.57	0.25
GR2004ET-CALR	20	4	2.3812	18.1	2.5×2	8600	23400	440	40	73	L	3	10	64	C	–	–	–	–	–	–	M6	51	5.5	9.5	5.4	0.63	0.25
GR2005DT-AALR	20	5	3.1750	17.5	2.5×1	8350	17500	240	40	58	L	5	12	68	A	52	–	–	7	–	–	M6	53	6.6	11	6.5	0.50	0.25
GR2005DT-CALR	20	5	3.1750	17.5	2.5×1	8350	17500	240	40	58	L	5	12	68	C	–	–	–	–	–	–	M6	53	6.6	11	6.5	0.58	0.25
GR2005ET-AALR	20	5	3.1750	17.5	2.5×2	15150	35000	460	40	88	L	5	12	68	A	52	–	–	7	–	–	M6	53	6.6	11	6.5	0.69	0.25
GR2005ET-CALR	20	5	3.1750	17.5	2.5×2	15150	35000	460	40	88	L	5	12	68	C	–	–	–	–	–	–	M6	53	6.6	11	6.5	0.77	0.25
GR2504DT-AAPR	25	4	2.3812	23.1	2.5×1	5200	14400	280	46	55	P	3	12	74	A	56	–	–	7.5	–	–	M6	59	6.6	11	6.5	0.59	0.38
GR2504DT-CAPR	25	4	2.3812	23.1	2.5×1	5200	14400	280	46	55	P	3	12	74	C	–	–	–	–	–	–	M6	59	6.6	11	6.5	0.69	0.38
GR2504ET-AAPR	25	4	2.3812	23.1	2.5×2	9400	28800	520	46	79	P	3	12	74	A	56	–	–	7.5	–	–	M6	59	6.6	11	6.5	0.78	0.38
GR2504ET-CAPR	25	4	2.3812	23.1	2.5×2	9400	28800	520	46	79	P	3	12	74	C	–	–	–	–	–	–	M6	59	6.6	11	6.5	0.89	0.38
GR2505DT-AALR	25	5	3.1750	22.5	2.5×1	9400	22200	300	47	58	L	5	12	74	A	57	–	–	7.5	–	–	M6	60	6.6	11	6.5	0.63	0.38
GR2505DT-CALR	25	5	3.1750	22.5	2.5×1	9400	22200	300	47	58	L	5	12	74	C	–	–	–	–	–	–	M6	60	6.6	11	6.5	0.72	0.38
GR2505ET-AALR	25	5	3.1750	22.5	2.5×2	17000	44400	560	47	88	L	5	12	74	A	57	–	–	7.5	–	–	M6	60	6.6	11	6.5	0.88	0.38
GR2505ET-CALR	25	5	3.1750	22.5	2.5×2	17000	44400	560	47	88	L	5	12	74	C	–	–	–	–	–	–	M6	60	6.6	11	6.5	0.98	0.38
GR2508DT-AAPR	25	8	4.7625	21	2.5×1	16100	33400	310	52	81	P	6	15	86	A	66	–	–	10	–	–	M6	68	9	14	8.6	1.13	0.38
GR2508DT-CAPR	25	8	4.7625	21	2.5×1	16100	33400	310	52	81	P	6	15	86	C	–	–	–	–	–	–	M6	68	9	14	8.6	1.30	0.38
GR2805DT-CAPR	28	5	3.1750	25.5	2.5×1	9800	24900	330	54	58	P	5	12	82	C	–	–	–	–	–	–	M6	67	6.6	11	6.5	0.95	0.48
GR2805DT-DAPR	28	5	3.1750	25.5	2.5×1	9800	24900	330	54	58	P	5	12	82	D	–	–	–	–	–	31	M6	67	6.6	11	6.5	0.92	0.48
GR2805ET-CAPR	28	5	3.1750	25.5	2.5×2	17900	49800	610	54	88	P	5	12	82	C	–	–	–	–	–	–	M6	67	6.6	11	6.5	1.30	0.48
GR2805ET-DAPR	28	5	3.1750	25.5	2.5×2	17900	49800	610	54	88	P	5	12	82	D	–	–	–	–	–	31	M6	67	6.6	11	6.5	1.26	0.48
GR2810DT-CAPR	28	10	4.7625	24	2.5×1	17000	37600	340	56	95	P	5	15	84	C	–	–	–	–	–	–	M6	69	6.6	11	6.5	1.52	0.48
GR2810DT-DAPR	28	10	4.7625	24	2.5×1	17000	37600	340	56	95	P	5	15	84	D	–	–	–	–	–	32	M6	69	6.6	11	6.5	1.47	0.48

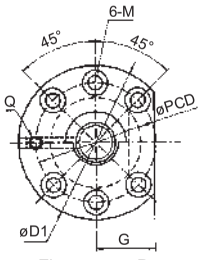
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

Screw shaft diameter ø32

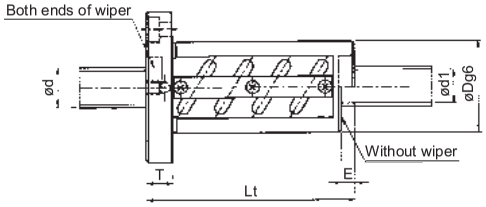
Custom Ball Screw: TUBE METHOD INTEGRAL NUT (Accuracy grade C0-C5)



Flange type C



Flange type D

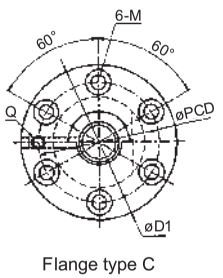


(Unit: mm)

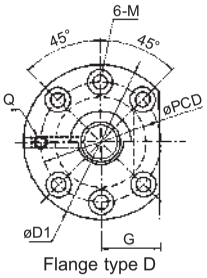
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3205DT-CALR	32	5	3.1750	29.5	2.5×1	10500	28600	370	58	58	L	5	12	85	C	–	–	–	–	–	–	M6	71	6.6	11	6.5	1.02	0.63
GR3205DT-DALR	32	5	3.1750	29.5	2.5×1	10500	28600	370	58	58	L	5	12	85	D	–	–	–	–	–	32	M6	71	6.6	11	6.5	0.98	0.63
GR3205ET-CALR	32	5	3.1750	29.5	2.5×2	19000	57200	690	58	88	L	5	12	85	C	–	–	–	–	–	–	M6	71	6.6	11	6.5	1.40	0.63
GR3205ET-DALR	32	5	3.1750	29.5	2.5×2	19000	57200	690	58	88	L	5	12	85	D	–	–	–	–	–	32	M6	71	6.6	11	6.5	1.36	0.63
GR3206DT-CALR	32	6	3.9688	28.6	2.5×1	14400	35500	380	62	67	L	5	12	89	C	–	–	–	–	–	–	M6	75	6.6	11	6.5	1.32	0.63
GR3206DT-DALR	32	6	3.9688	28.6	2.5×1	14400	35500	380	62	67	L	5	12	89	D	–	–	–	–	–	34	M6	75	6.6	11	6.5	1.28	0.63
GR3206ET-CALR	32	6	3.9688	28.6	2.5×2	26000	71000	710	62	103	L	5	12	89	C	–	–	–	–	–	–	M6	75	6.6	11	6.5	1.87	0.63
GR3206ET-DALR	32	6	3.9688	28.6	2.5×2	26000	71000	710	62	103	L	5	12	89	D	–	–	–	–	–	34	M6	75	6.6	11	6.5	1.83	0.63
GR3208DT-CALR	32	8	4.7625	28	2.5×1	17800	41700	380	66	81	L	6	15	100	C	–	–	–	–	–	–	M6	82	9	14	8.6	1.97	0.63
GR3208DT-DALR	32	8	4.7625	28	2.5×1	17800	41700	380	66	81	L	6	15	100	D	–	–	–	–	–	38	M6	82	9	14	8.6	1.91	0.63
GR3208BT-CALR	32	8	4.7625	28	1.5×2	20900	50000	440	66	105	L	6	15	100	C	–	–	–	–	–	–	M6	82	9	14	8.6	2.40	0.63
GR3208BT-DALR	32	8	4.7625	28	1.5×2	20900	50000	440	66	105	L	6	15	100	D	–	–	–	–	–	38	M6	82	9	14	8.6	2.34	0.63
GR3210AT-CALR	32	10	6.3500	27.2	1.5×1	16600	33400	230	74	88	L	8	15	108	C	–	–	–	–	–	–	M6	90	9	14	8.6	2.65	0.63
GR3210AT-DALR	32	10	6.3500	27.2	1.5×1	16600	33400	230	74	88	L	8	15	108	D	–	–	–	–	–	41	M6	90	9	14	8.6	2.57	0.63
GR3210DT-CALR	32	10	6.3500	27.2	2.5×1	25800	55600	380	74	98	L	8	15	108	C	–	–	–	–	–	–	M6	90	9	14	8.6	2.88	0.63
GR3210DT-DALR	32	10	6.3500	27.2	2.5×1	25800	55600	380	74	98	L	8	15	108	D	–	–	–	–	–	41	M6	90	9	14	8.6	2.81	0.63

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material L: Lip seal

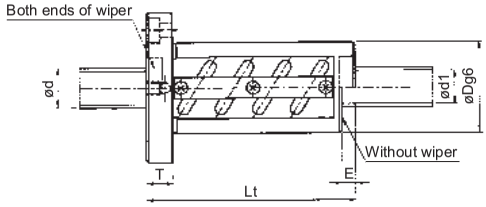
Custom Ball Screw: TUBE METHOD INTEGRAL NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



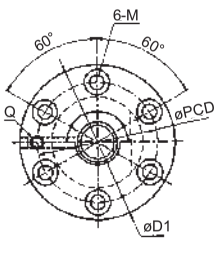
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3605DT-CAPR	36	5	3.1750	33.5	2.5×1	11000	32300	400	64	61	P	5	15	98	C	–	–	–	–	–	–	M6	80	9	14	8.6	1.44	0.79
GR3605DT-DAPR	36	5	3.1750	33.5	2.5×1	11000	32300	400	64	61	P	5	15	98	D	–	–	–	–	–	38	M6	80	9	14	8.6	1.38	0.79
GR3605ET-CAPR	36	5	3.1750	33.5	2.5×2	20100	64600	750	64	91	P	5	15	98	C	–	–	–	–	–	–	M6	80	9	14	8.6	1.89	0.79
GR3605ET-DAPR	36	5	3.1750	33.5	2.5×2	20100	64600	750	64	91	P	5	15	98	D	–	–	–	–	–	38	M6	80	9	14	8.6	1.84	0.79
GR3606DT-CAPR	36	6	3.9688	32.6	2.5×1	15100	39800	410	66	70	P	5	15	100	C	–	–	–	–	–	–	M6	82	9	14	8.6	1.67	0.79
GR3606DT-DAPR	36	6	3.9688	32.6	2.5×1	15100	39800	410	66	70	P	5	15	100	D	–	–	–	–	–	38	M6	82	9	14	8.6	1.61	0.79
GR3606ET-CAPR	36	6	3.9688	32.6	2.5×2	27200	79600	770	66	106	P	5	15	100	C	–	–	–	–	–	–	M6	82	9	14	8.6	2.26	0.79
GR3606ET-DAPR	36	6	3.9688	32.6	2.5×2	27200	79600	770	66	106	P	5	15	100	D	–	–	–	–	–	38	M6	82	9	14	8.6	2.20	0.79
GR3610AT-CAPR	36	10	6.3500	31.2	1.5×1	17800	37800	260	76	88	P	8	15	110	C	–	–	–	–	–	–	M6	92	9	14	8.6	2.64	0.79
GR3610AT-DAPR	36	10	6.3500	31.2	1.5×1	17800	37800	260	76	88	P	8	15	110	D	–	–	–	–	–	42	M6	92	9	14	8.6	2.56	0.79
GR3610DT-CAPR	36	10	6.3500	31.2	2.5×1	27600	63000	420	76	98	P	8	15	110	C	–	–	–	–	–	–	M6	92	9	14	8.6	2.87	0.79
GR3610DT-DAPR	36	10	6.3500	31.2	2.5×1	27600	63000	420	76	98	P	8	15	110	D	–	–	–	–	–	42	M6	92	9	14	8.6	2.80	0.79
GR3610GT-CAPR	36	10	6.3500	31.2	3.5×1	36900	88200	580	76	118	P	8	15	110	C	–	–	–	–	–	–	M6	92	9	14	8.6	3.34	0.79
GR3610GT-DAPR	36	10	6.3500	31.2	3.5×1	36900	88200	580	76	118	P	8	15	110	D	–	–	–	–	–	42	M6	92	9	14	8.6	3.27	0.79

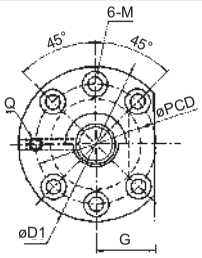
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

Screw shaft diameter ø36

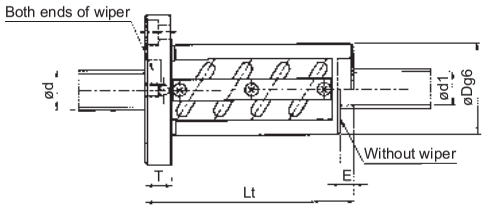
Custom Ball Screw: TUBE METHOD INTEGRAL NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



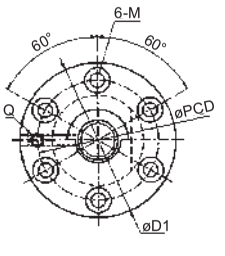
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{ww} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_1	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4006DT-CAPR	40	6	3.9688	36.6	2.5×1	14200	44000	430	70	70	P	5	15	104	C	—	—	—	—	—	—	Rc1/8	86	9	14	8.6	1.78	0.98
GR4006DT-DAPR	40	6	3.9688	36.6	2.5×1	14200	44000	430	70	70	P	5	15	104	D	—	—	—	—	—	40	Rc1/8	86	9	14	8.6	1.72	0.98
GR4006ET-CAPR	40	6	3.9688	36.6	2.5×2	28300	88000	850	70	106	P	5	15	104	C	—	—	—	—	—	—	Rc1/8	86	9	14	8.6	2.42	0.98
GR4006ET-DAPR	40	6	3.9688	36.6	2.5×2	28300	88000	850	70	106	P	5	15	104	D	—	—	—	—	—	40	Rc1/8	86	9	14	8.6	2.35	0.98
GR4008DT-CALR	40	8	4.7625	36	2.5×1	19600	54200	460	74	81	L	6	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	2.24	0.98
GR4008DT-DALR	40	8	4.7625	36	2.5×1	19600	54200	460	74	81	L	6	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	2.17	0.98
GR4008ET-CALR	40	8	4.7625	36	2.5×2	35600	108400	870	74	129	L	6	15	108	C	—	—	—	—	—	—	Rc1/8	90	9	14	8.6	3.23	0.98
GR4008ET-DALR	40	8	4.7625	36	2.5×2	35600	108400	870	74	129	L	6	15	108	D	—	—	—	—	—	41	Rc1/8	90	9	14	8.6	3.16	0.98
GR4010DT-CALR	40	10	6.3500	35.2	2.5×1	29300	74300	460	82	101	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	3.67	0.98
GR4010DT-DALR	40	10	6.3500	35.2	2.5×1	29300	74300	460	82	101	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	3.56	0.98
GR4010BT-CALR	40	10	6.3500	35.2	1.5×2	34200	89200	560	82	131	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	4.48	0.98
GR4010BT-DALR	40	10	6.3500	35.2	1.5×2	34200	89200	560	82	131	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	4.36	0.98
GR4010GT-CALR	40	10	6.3500	35.2	3.5×1	39100	104000	640	82	121	L	8	18	124	C	—	—	—	—	—	—	Rc1/8	102	11	17.5	10.8	4.21	0.98
GR4010GT-DALR	40	10	6.3500	35.2	3.5×1	39100	104000	640	82	121	L	8	18	124	D	—	—	—	—	—	47	Rc1/8	102	11	17.5	10.8	4.09	0.98
GR4012DT-CALR	40	12	7.1438	34.6	2.5×1	35100	79000	490	86	117	L	8	18	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	4.55	0.98
GR4012DT-DALR	40	12	7.1438	34.6	2.5×1	35100	79000	490	86	117	L	8	18	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	4.42	0.98
GR4510DT-CALR	45	10	6.3500	40.2	2.5×1	31500	81500	530	86	101	L	8	18	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	3.81	1.24
GR4510DT-DALR	45	10	6.3500	40.2	2.5×1	31500	81500	530	86	101	L	8	18	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	3.68	1.24
GR4510ET-CALR	45	10	6.3500	40.2	2.5×2	57200	163000	990	86	161	L	8	18	128	C	—	—	—	—	—	—	Rc1/8	106	11	17.5	10.8	5.49	1.24
GR4510ET-DALR	45	10	6.3500	40.2	2.5×2	57200	163000	990	86	161	L	8	18	128	D	—	—	—	—	—	48	Rc1/8	106	11	17.5	10.8	5.36	1.24
GR4512DT-CALR	45	12	7.9375	38.8	2.5×1	41200	98500	520	94	119	L	7	22	140	C	—	—	—	—	—	—	Rc1/8	116	14	20	13	5.68	1.24
GR4512DT-DALR	45	12	7.9375	38.8	2.5×1	41200	98500	520	94	119	L	7	22	140	D	—	—	—	—	—	53	Rc1/8	116	14	20	13	5.50	1.24

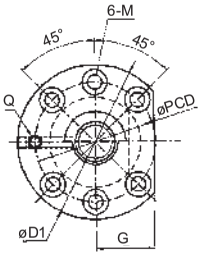
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

GR series
Screw shaft diameter ø50-ø63

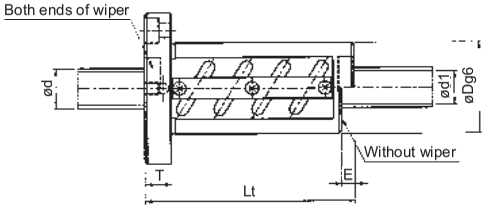
Custom Ball Screw: TUBE METHOD INTEGRAL NUT (Accuracy grade C0-C5)



Flange type C



Flange type D

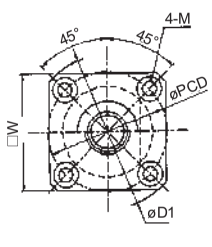


(Unit: mm)

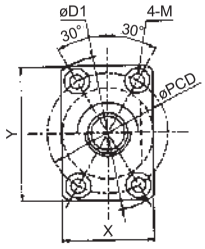
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{ww} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_1	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR5010DT-CALR	50	10	6.3500	45.2	2.5×1	32800	88900	560	93	101	L	8	18	135	C	—	—	—	—	—	—	Rc1/8	113	11	17.5	10.8	4.31	1.53
GR5010DT-DALR	50	10	6.3500	45.2	2.5×1	32800	88900	560	93	101	L	8	18	135	D	—	—	—	—	—	51	Rc1/8	113	11	17.5	10.8	4.17	1.53
GR5010ET-CALR	50	10	6.3500	45.2	2.5×2	59400	177800	1060	93	161	L	8	18	135	C	—	—	—	—	—	—	Rc1/8	113	11	17.5	10.8	6.24	1.53
GR5010ET-DALR	50	10	6.3500	45.2	2.5×2	59400	177800	1060	93	161	L	8	18	135	D	—	—	—	—	—	51	Rc1/8	113	11	17.5	10.8	6.10	1.53
GR5012DT-CALR	50	12	7.9375	43.8	2.5×1	42600	110000	560	100	119	L	7	22	146	C	—	—	—	—	—	—	Rc1/8	122	14	20	13	6.19	1.53
GR5012DT-DALR	50	12	7.9375	43.8	2.5×1	42600	110000	560	100	119	L	7	22	146	D	—	—	—	—	—	55	Rc1/8	122	14	20	13	5.98	1.53
GR5510DT-CALR	55	10	6.3500	50.2	2.5×1	31400	100100	600	100	105	L	8	22	146	C	—	—	—	—	—	—	Rc1/8	122	14	20	13	5.38	1.85
GR5510DT-DALR	55	10	6.3500	50.2	2.5×1	31400	100100	600	100	105	L	8	22	146	D	—	—	—	—	—	55	Rc1/8	122	14	20	13	5.18	1.85
GR5510ET-CALR	55	10	6.3500	50.2	2.5×2	62700	200200	1170	100	165	L	8	22	146	C	—	—	—	—	—	—	Rc1/8	122	14	20	13	7.59	1.85
GR5510ET-DALR	55	10	6.3500	50.2	2.5×2	62700	200200	1170	100	165	L	8	22	146	D	—	—	—	—	—	55	Rc1/8	122	14	20	13	7.38	1.85
GR6310DT-CAPR	63	10	6.3500	58.2	2.5×1	36800	114900	700	108	105	P	8	22	154	C	—	—	—	—	—	—	Rc1/8	130	14	20	13	5.86	2.43
GR6310DT-DAPR	63	10	6.3500	58.2	2.5×1	36800	114900	700	108	105	P	8	22	154	D	—	—	—	—	—	58	Rc1/8	130	14	20	13	5.63	2.43
GR6310ET-CAPR	63	10	6.3500	58.2	2.5×2	66600	229800	1310	108	165	P	8	22	154	C	—	—	—	—	—	—	Rc1/8	130	14	20	13	8.28	2.43
GR6310ET-DAPR	63	10	6.3500	58.2	2.5×2	66600	229800	1310	108	165	P	8	22	154	D	—	—	—	—	—	58	Rc1/8	130	14	20	13	8.05	2.43
GR6312DT-CAPR	63	12	7.9375	56.8	2.5×1	48700	139000	700	115	119	P	7	22	161	C	—	—	—	—	—	—	Rc1/8	137	14	20	13	7.46	2.43
GR6312DT-DAPR	63	12	7.9375	56.8	2.5×1	48700	139000	700	115	119	P	7	22	161	D	—	—	—	—	—	61	Rc1/8	137	14	20	13	7.22	2.43

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

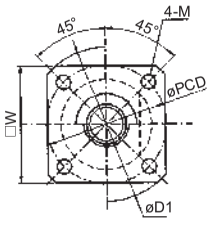
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



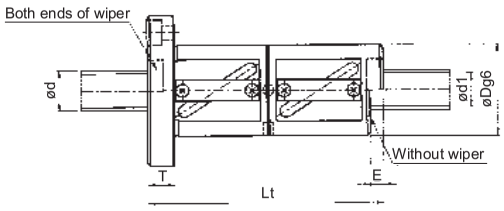
Flange type A



Flange type B



Flange type E

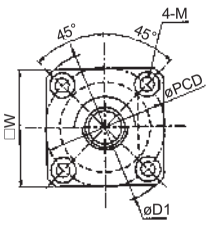


(Unit: mm)

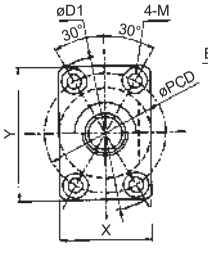
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR0802DD-AAFR	8	2	1.5875	6.6	2.5×1	1950	2600	100	20	54	F	3	5	36	A	28	—	—	—	—	—	—	27	3.4	6.5	3.3	0.12	0.04
GR082FDD-AAFR	8	2.5	2.0000	6.3	2.5×1	2350	3300	100	22	54	F	2	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.14	0.04
GR0803DD-AAFR	8	3	2.0000	6.3	2.5×1	2350	3300	100	22	54	F	3	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.14	0.04
GR0804DD-AAFR	8	4	2.0000	6.3	2.5×1	2350	3300	100	22	54	F	3	5	38	A	29	—	—	—	—	—	—	29	3.4	6.5	3.3	0.14	0.04
GR1002DD-EAFR	10	2	1.5875	8.6	2.5×1	2250	3300	120	23	54	F	3	5	40	E	31	—	—	—	—	—	—	31	4.5	—	—	0.15	0.06
GR102FDD-AAFR	10	2.5	2.0000	8.3	2.5×1	2700	4200	120	24	60	F	5	8	43	A	33	—	—	—	—	—	—	32	4.5	8	4.4	0.19	0.06
GR1003DD-AAPR	10	3	2.0000	8.3	2.5×1	2700	4200	120	24	60	P	6	8	43	A	33	—	—	—	—	—	—	32	4.5	8	4.4	0.19	0.06
GR1004DD-AAPR	10	4	2.3812	8.1	2.5×1	3350	5900	120	26	65	P	3	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.24	0.06
GR1004DD-BAPR	10	4	2.3812	8.1	2.5×1	3350	5900	120	26	65	P	3	8	46	B	—	28	42	—	—	—	—	36	4.5	8	4.4	0.24	0.06
GR1005DD-AAPR	10	5	2.3812	8.1	2.5×1	3350	5900	120	26	70	P	5	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.26	0.06
GR1005DD-BAPR	10	5	2.3812	8.1	2.5×1	3350	5900	120	26	70	P	5	8	46	B	—	28	42	—	—	—	—	36	4.5	8	4.4	0.26	0.06
GR1202DD-AAPR	12	2	1.5875	10.6	2.5×1	2450	4100	140	25	59	P	5	8	44	A	34	—	—	—	—	—	—	33	4.5	8	4.4	0.20	0.09
GR122FDD-AAPR	12	2.5	2.0000	10.3	2.5×1	2950	5100	140	26	59	P	4	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.21	0.09
GR1203DD-AAPR	12	3	2.0000	10.3	2.5×1	2950	5100	140	26	59	P	5	8	45	A	35	—	—	—	—	—	—	34	4.5	8	4.4	0.21	0.09
GR1204DD-AALR	12	4	2.3812	10.1	2.5×1	3600	6750	140	30	69	L	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.36	0.09
GR1205DD-AALR	12	5	3.1750	9.5	2.5×1	5950	9800	150	30	79	L	3	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.39	0.09
GR1205DD-BALR	12	5	3.1750	9.5	2.5×1	5950	9800	150	30	79	L	3	10	50	B	—	32	45	—	—	—	—	40	4.5	8	4.4	0.37	0.09
GR1206DD-AAPR	12	6	3.1750	9.5	2.5×1	5950	9800	150	30	81	P	3	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.39	0.09
GR1206DD-BAPR	12	6	3.1750	9.5	2.5×1	5950	9800	150	30	81	P	3	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.38	0.09

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material F: Felt wiper, P: Plastic wiper, L: Lip seal

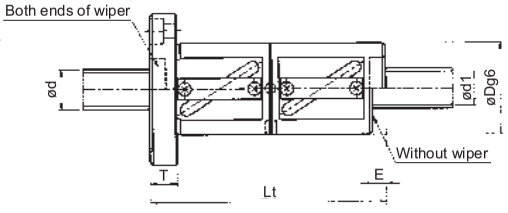
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type A



Flange type B

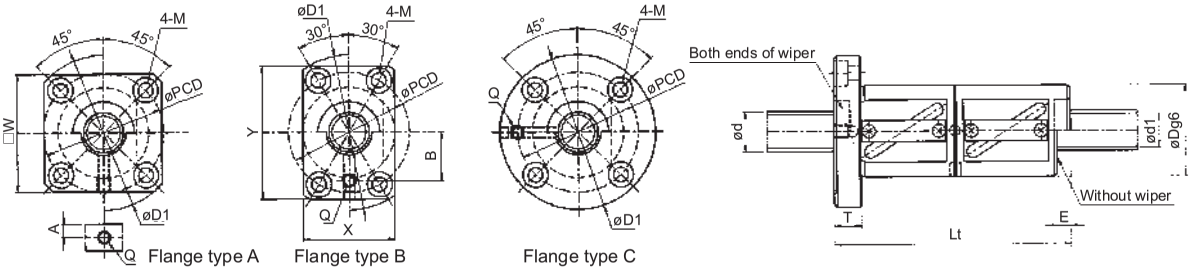


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR1502DD-AAPR	15	2	1.5875	13.6	2.5×1	2700	5500	180	30	61	P	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.30	0.14
GR1502DD-BAPR	15	2	1.5875	13.6	2.5×1	2700	5500	180	30	61	P	5	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.29	0.14
GR152FDD-AAPR	15	2.5	2.0000	13.3	2.5×1	3400	6500	180	30	61	P	4	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.30	0.14
GR152FDD-BAPR	15	2.5	2.0000	13.3	2.5×1	3400	6500	180	30	61	P	4	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.29	0.14
GR1503DD-AAPR	15	3	2.0000	13.3	2.5×1	3400	6500	180	30	61	P	5	10	54	A	41	—	—	—	—	—	—	41	5.5	9.5	5.4	0.30	0.14
GR1503DD-BAPR	15	3	2.0000	13.3	2.5×1	3400	6500	180	30	61	P	5	10	54	B	—	32	48	—	—	—	—	41	5.5	9.5	5.4	0.29	0.14
GR1504DD-AALR	15	4	2.3812	13.1	2.5×1	4100	8550	180	32	73	L	3	10	56	A	43	—	—	—	—	—	—	43	5.5	9.5	5.4	0.39	0.14
GR1504DD-BALR	15	4	2.3812	13.1	2.5×1	4100	8550	180	32	73	L	3	10	56	B	—	32	48	—	—	—	—	43	5.5	9.5	5.4	0.37	0.14
GR1505DD-AALR	15	5	3.1750	12.5	2.5×1	6900	12500	190	34	79	L	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.46	0.14
GR1505DD-BALR	15	5	3.1750	12.5	2.5×1	6900	12500	190	34	79	L	3	10	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.45	0.14
GR1506DD-AAPR	15	6	3.1750	12.5	2.5×1	6900	12500	190	34	81	P	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.47	0.14
GR1506DD-BAPR	15	6	3.1750	12.5	2.5×1	6900	12500	190	34	81	P	3	10	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.45	0.14
GR1604DD-AAPR	16	4	2.3812	14.1	2.5×1	4200	9000	190	34	73	P	3	10	58	A	44	—	—	—	—	—	—	45	5.5	9.5	5.4	0.43	0.16
GR1604DD-BAPR	16	4	2.3812	14.1	2.5×1	4200	9000	190	34	73	P	3	10	58	B	—	34	50	—	—	—	—	45	5.5	9.5	5.4	0.42	0.16
GR1605DD-AALR	16	5	3.1750	13.5	2.5×1	7400	13900	200	36	79	L	3	10	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.52	0.16
GR1605DD-BALR	16	5	3.1750	13.5	2.5×1	7400	13900	200	36	79	L	3	10	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.50	0.16
GR1606DD-AAPR	16	6	3.1750	13.5	2.5×1	7400	13900	200	36	81	P	3	10	59	A	46	—	—	—	—	—	—	47	5.5	9.5	5.4	0.53	0.16
GR1606DD-BAPR	16	6	3.1750	13.5	2.5×1	7400	13900	200	36	81	P	3	10	59	B	—	36	53	—	—	—	—	47	5.5	9.5	5.4	0.51	0.16

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)

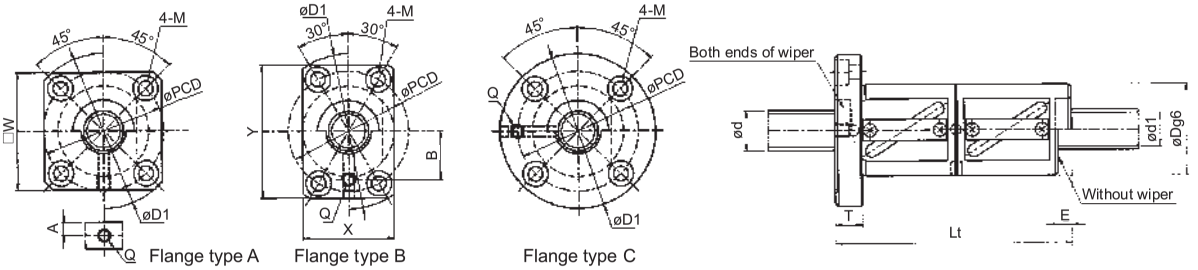


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{sw} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR202FDD-AAPR	20	2.5	2.0000	18.3	2.5×1	3800	8800	230	38	61	P	4	10	62	A	47	—	—	5	—	—	M6	49	5.5	9.5	5.4	0.43	0.25
GR202FDD-CAPR	20	2.5	2.0000	18.3	2.5×1	3800	8800	230	38	61	P	4	10	62	C	—	—	—	—	—	—	M6	49	5.5	9.5	5.4	0.50	0.25
GR2004DD-AALR	20	4	2.3812	18.1	2.5×1	4700	11700	240	40	73	L	3	10	64	A	49	—	—	5.5	—	—	M6	51	5.5	9.5	5.4	0.57	0.25
GR2004DD-CALR	20	4	2.3812	18.1	2.5×1	4700	11700	240	40	73	L	3	10	64	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.63	0.25
GR2004ED-AALR	20	4	2.3812	18.1	2.5×2	8600	23400	440	40	89	L	3	10	64	A	49	—	—	5.5	—	—	M6	51	5.5	9.5	5.4	0.67	0.25
GR2004ED-CALR	20	4	2.3812	18.1	2.5×2	8600	23400	440	40	89	L	3	10	64	C	—	—	—	—	—	—	M6	51	5.5	9.5	5.4	0.74	0.25
GR2005BD-AALR	20	5	3.1750	17.5	1.5×2	9800	21000	290	40	93	L	5	12	68	A	52	—	—	7	—	—	M6	53	6.6	11	6.5	0.72	0.25
GR2005BD-CALR	20	5	3.1750	17.5	1.5×2	9800	21000	290	40	93	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.80	0.25
GR2005DD-BALR	20	5	3.1750	17.5	2.5×1	8350	17500	240	40	83	L	5	12	68	B	—	40	60	—	21	—	M6	53	6.6	11	6.5	0.63	0.25
GR2005DD-CALR	20	5	3.1750	17.5	2.5×1	8350	17500	240	40	83	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.74	0.25
GR2005ED-AALR	20	5	3.1750	17.5	2.5×2	15150	35000	460	40	103	L	5	12	68	A	52	—	—	7	—	—	M6	53	6.6	11	6.5	0.78	0.25
GR2005ED-CALR	20	5	3.1750	17.5	2.5×2	15150	35000	460	40	103	L	5	12	68	C	—	—	—	—	—	—	M6	53	6.6	11	6.5	0.87	0.25
GR2006BD-AAPR	20	6	3.9688	16.6	1.5×2	12900	25600	290	44	109	P	5	12	72	A	55	—	—	7	—	—	M6	57	6.6	11	6.5	1.02	0.25
GR2006BD-CAPR	20	6	3.9688	16.6	1.5×2	12900	25600	290	44	109	P	5	12	72	C	—	—	—	—	—	—	M6	57	6.6	11	6.5	1.12	0.25
GR2006DD-AAPR	20	6	3.9688	16.6	2.5×1	11000	21300	240	44	85	P	5	12	72	A	55	—	—	7.5	—	—	M6	57	6.6	11	6.5	0.83	0.25
GR2006DD-CAPR	20	6	3.9688	16.6	2.5×1	11000	21300	240	44	85	P	5	12	72	C	—	—	—	—	—	—	M6	57	6.6	11	6.5	0.92	0.25
GR2008DD-AAPR	20	8	4.7625	16	2.5×1	13500	25100	240	46	111	P	5	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	1.16	0.25
GR2008DD-CAPR	20	8	4.7625	16	2.5×1	13500	25100	240	46	111	P	5	15	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	1.29	0.25
GR2010AD-AALR	20	10	4.7625	16	1.5×1	9200	16200	160	46	97	L	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	1.03	0.25
GR2010AD-BALR	20	10	4.7625	16	1.5×1	9200	16200	160	46	97	L	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	1.02	0.25
GR2010DD-AALR	20	10	4.7625	16	2.5×1	13500	25100	240	46	115	L	6	15	74	A	56	—	—	10	—	—	M6	59	6.6	11	6.5	1.19	0.25
GR2010DD-BALR	20	10	4.7625	16	2.5×1	13500	25100	240	46	115	L	6	15	74	B	—	46	66	—	24	—	M6	59	6.6	11	6.5	1.18	0.25

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



(Unit: mm)

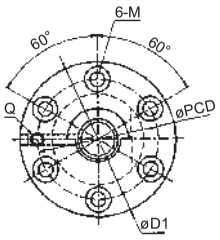
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_1	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{sw} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2504DD-AAPR	25	4	2.3812	23.1	2.5×1	5200	14400	280	46	75	P	3	12	74	A	56	—	—	7.5	—	—	M6	59	6.6	11	6.5	0.75	0.38
GR2504DD-CAPR	25	4	2.3812	23.1	2.5×1	5200	14400	280	46	75	P	3	12	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	0.86	0.38
GR2504ED-AAPR	25	4	2.3812	23.1	2.5×2	9400	28800	520	46	99	P	3	12	74	A	56	—	—	7	—	—	M6	59	6.6	11	6.5	0.94	0.38
GR2504ED-CAPR	25	4	2.3812	23.1	2.5×2	9400	28800	520	46	99	P	3	12	74	C	—	—	—	—	—	—	M6	59	6.6	11	6.5	1.05	0.38
GR2505BD-AALR	25	5	3.1750	22.5	1.5×2	11000	26600	350	47	93	L	5	12	74	A	57	—	—	7	—	—	M6	60	6.6	11	6.5	0.92	0.38
GR2505BD-CALR	25	5	3.1750	22.5	1.5×2	11000	26600	350	47	93	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	1.02	0.38
GR2505DD-AALR	25	5	3.1750	22.5	2.5×1	9400	22200	300	47	83	L	5	12	74	A	57	—	—	7.5	—	—	M6	60	6.6	11	6.5	0.84	0.38
GR2505DD-CALR	25	5	3.1750	22.5	2.5×1	9400	22200	300	47	83	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	0.93	0.38
GR2505ED-AALR	25	5	3.1750	22.5	2.5×2	17000	44400	560	47	103	L	5	12	74	A	57	—	—	7.5	—	—	M6	60	6.6	11	6.5	1.00	0.38
GR2505ED-CALR	25	5	3.1750	22.5	2.5×2	17000	44400	560	47	103	L	5	12	74	C	—	—	—	—	—	—	M6	60	6.6	11	6.5	1.10	0.38
GR2506BD-AALR	25	6	3.9688	21.6	1.5×2	14700	32400	360	50	109	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	1.21	0.38
GR2506BD-CALR	25	6	3.9688	21.6	1.5×2	14700	32400	360	50	109	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	1.34	0.38
GR2506DD-AALR	25	6	3.9688	21.6	2.5×1	12500	27000	300	50	85	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	0.98	0.38
GR2506DD-CALR	25	6	3.9688	21.6	2.5×1	12500	27000	300	50	85	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	1.10	0.38
GR2506ED-AALR	25	6	3.9688	21.6	2.5×2	22700	54000	560	50	121	L	5	12	78	A	59	—	—	7.5	—	—	M6	63	6.6	11	6.5	1.33	0.38
GR2506ED-CALR	25	6	3.9688	21.6	2.5×2	22700	54000	560	50	121	L	5	12	78	C	—	—	—	—	—	—	M6	63	6.6	11	6.5	1.45	0.38
GR2508DD-AAPR	25	8	4.7625	21	2.5×1	16100	33400	310	52	111	P	5	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.45	0.38
GR2508DD-CAPR	25	8	4.7625	21	2.5×1	16100	33400	310	52	111	P	5	15	86	C	—	—	—	—	—	—	M6	68	9	14	8.6	1.62	0.38
GR2508GD-AAPR	25	8	4.7625	21	3.5×1	21400	46800	420	52	113	P	6	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.47	0.38
GR2508GD-CAPR	25	8	4.7625	21	3.5×1	21400	46800	420	52	113	P	6	15	86	C	—	—	—	—	—	—	M6	68	9	14	8.6	1.64	0.38
GR2510DD-AALR	25	10	4.7625	21	2.5×1	16100	33400	310	52	115	L	6	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.50	0.38
GR2510DD-BALR	25	10	4.7625	21	2.5×1	16100	33400	310	52	115	L	6	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	1.46	0.38
GR2510GD-AALR	25	10	4.7625	21	3.5×1	21400	46800	420	52	135	L	6	15	86	A	66	—	—	10	—	—	M6	68	9	14	8.6	1.71	0.38
GR2510GD-BALR	25	10	4.7625	21	3.5×1	21400	46800	420	52	135	L	6	15	86	B	—	52	78	—	30	—	M6	68	9	14	8.6	1.68	0.38

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

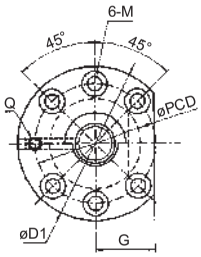
GR series
Screw shaft diameter ø25

Screw shaft diameter ø28

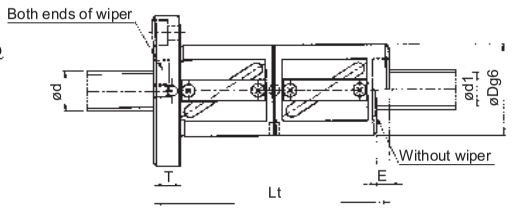
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



(Unit: mm)

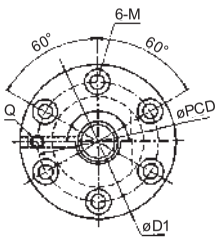
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR2805DD-CAPR	28	5	3.1750	25.5	2.5×1	9800	24900	330	54	73	P	5	12	82	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	1.12	0.48
GR2805DD-DAPR	28	5	3.1750	25.5	2.5×1	9800	24900	330	54	73	P	5	12	82	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	1.09	0.48
GR2805ED-CAPR	28	5	3.1750	25.5	2.5×2	17900	49800	610	54	103	P	5	12	82	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	1.47	0.48
GR2805ED-DAPR	28	5	3.1750	25.5	2.5×2	17900	49800	610	54	103	P	5	12	82	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	1.44	0.48
GR2810DD-CAPR	28	10	4.7625	24	2.5×1	17000	37600	340	56	115	P	5	15	84	C	—	—	—	—	—	—	M6	69	6.6	11	6.5	1.76	0.48
GR2810DD-DAPR	28	10	4.7625	24	2.5×1	17000	37600	340	56	115	P	5	15	84	D	—	—	—	—	—	32	M6	69	6.6	11	6.5	1.72	0.48

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

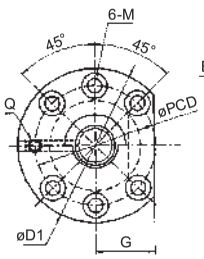
GR series

Screw shaft diameter ø28

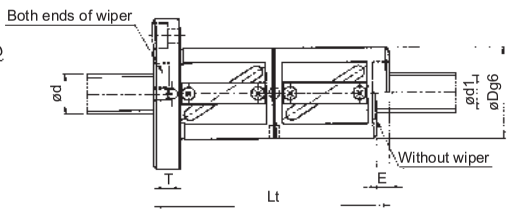
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3204DD-CAPR	32	4	2.3812	30.1	2.5×1	5800	18900	330	54	75	P	3	12	81	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	1.04	0.63
GR3204DD-DAPR	32	4	2.3812	30.1	2.5×1	5800	18900	330	54	75	P	3	12	81	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	1.01	0.63
GR3204ED-CAPR	32	4	2.3812	30.1	2.5×2	10500	37800	610	54	91	P	3	12	81	C	—	—	—	—	—	—	M6	67	6.6	11	6.5	1.21	0.63
GR3204ED-DAPR	32	4	2.3812	30.1	2.5×2	10500	37800	610	54	91	P	3	12	81	D	—	—	—	—	—	31	M6	67	6.6	11	6.5	1.18	0.63
GR3205DD-CALR	32	5	3.1750	29.5	2.5×1	10500	28600	370	58	73	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	1.21	0.63
GR3205DD-DALR	32	5	3.1750	29.5	2.5×1	10500	28600	370	58	73	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	1.17	0.63
GR3205ED-CALR	32	5	3.1750	29.5	2.5×2	19000	57200	690	58	103	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	1.59	0.63
GR3205ED-DALR	32	5	3.1750	29.5	2.5×2	19000	57200	690	58	103	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	1.55	0.63
GR3205FD-CALR	32	5	3.1750	29.5	2.5×3	26900	85800	990	58	133	L	5	12	85	C	—	—	—	—	—	—	M6	71	6.6	11	6.5	1.96	0.63
GR3205FD-DALR	32	5	3.1750	29.5	2.5×3	26900	85800	990	58	133	L	5	12	85	D	—	—	—	—	—	32	M6	71	6.6	11	6.5	1.93	0.63
GR3206DD-CALR	32	6	3.9688	28.6	2.5×1	14400	35500	380	62	85	L	5	12	89	C	—	—	—	—	—	—	M6	75	6.6	11	6.5	1.59	0.63
GR3206DD-DALR	32	6	3.9688	28.6	2.5×1	14400	35500	380	62	85	L	5	12	89	D	—	—	—	—	—	34	M6	75	6.6	11	6.5	1.55	0.63
GR3206ED-CALR	32	6	3.9688	28.6	2.5×2	26000	71000	710	62	121	L	5	12	89	C	—	—	—	—	—	—	M6	75	6.6	11	6.5	2.14	0.63
GR3206ED-DALR	32	6	3.9688	28.6	2.5×2	26000	71000	710	62	121	L	5	12	89	D	—	—	—	—	—	34	M6	75	6.6	11	6.5	2.10	0.63
GR3208BD-CALR	32	8	4.7625	28	1.5×2	20900	50000	440	66	129	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	2.83	0.63
GR3208BD-DALR	32	8	4.7625	28	1.5×2	20900	50000	440	66	129	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	2.77	0.63
GR3208DD-CALR	32	8	4.7625	28	2.5×1	17800	41700	380	66	97	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	2.26	0.63
GR3208DD-DALR	32	8	4.7625	28	2.5×1	17800	41700	380	66	97	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	2.19	0.63
GR3208ED-CALR	32	8	4.7625	28	2.5×2	32300	83400	590	66	145	L	6	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	3.12	0.63
GR3208ED-DALR	32	8	4.7625	28	2.5×2	32300	83400	590	66	145	L	6	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	3.05	0.63

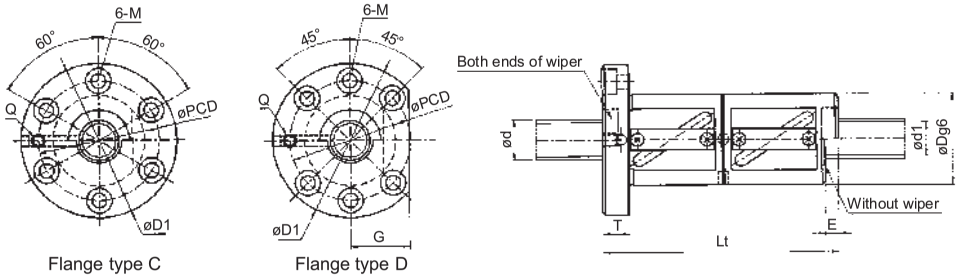
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

GR series

Screw shaft diameter ø32

Screw shaft diameter ø32

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



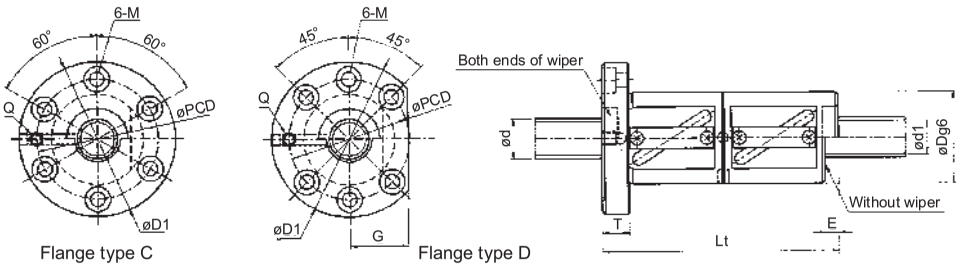
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/µm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3210BD-CALR	32	10	6.3500	27.2	1.5×2	30300	66700	450	74	158	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	4.30	0.63
GR3210BD-DALR	32	10	6.3500	27.2	1.5×2	30300	66700	450	74	158	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	4.23	0.63
GR3210DD-CALR	32	10	6.3500	27.2	2.5×1	25800	55600	380	74	118	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	3.35	0.63
GR3210DD-DALR	32	10	6.3500	27.2	2.5×1	25800	55600	380	74	118	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	3.28	0.63
GR3210ED-CALR	32	10	6.3500	27.2	2.5×2	46900	111200	720	74	178	L	8	15	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	4.77	0.63
GR3210ED-DALR	32	10	6.3500	27.2	2.5×2	46900	111200	720	74	178	L	8	15	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	4.70	0.63
GR3212DD-CAPR	32	12	6.3500	27.2	2.5×1	25800	55600	420	74	141	P	8	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	4.01	0.63
GR3212DD-DAPR	32	12	6.3500	27.2	2.5×1	25800	55600	420	74	141	P	8	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	3.92	0.63
GR3212GD-CAPR	32	12	6.3500	27.2	3.5×1	34500	77800	570	74	165	P	8	18	108	C	—	—	—	—	—	—	M6	90	9	14	8.6	4.58	0.63
GR3212GD-DAPR	32	12	6.3500	27.2	3.5×1	34500	77800	570	74	165	P	8	18	108	D	—	—	—	—	—	41	M6	90	9	14	8.6	4.49	0.63

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

GR series
Screw shaft diameter ø36

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)

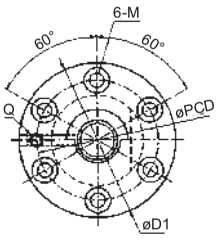


(Unit: mm)

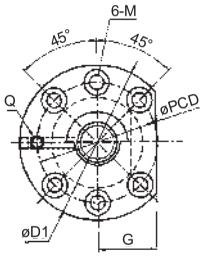
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/µm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR3605DD-CAPR	36	5	3.1750	33.5	2.5×1	11000	32300	400	64	76	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	1.67	0.79
GR3605DD-DAPR	36	5	3.1750	33.5	2.5×1	11000	32300	400	64	76	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	1.61	0.79
GR3605ED-CAPR	36	5	3.1750	33.5	2.5×2	20100	64600	750	64	106	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	2.12	0.79
GR3605ED-DAPR	36	5	3.1750	33.5	2.5×2	20100	64600	750	64	106	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	2.07	0.79
GR3605FD-CAPR	36	5	3.1750	33.5	2.5×3	28300	96900	1080	64	136	P	5	15	98	C	—	—	—	—	—	—	M6	80	9	14	8.6	2.58	0.79
GR3605FD-DAPR	36	5	3.1750	33.5	2.5×3	28300	96900	1080	64	136	P	5	15	98	D	—	—	—	—	—	38	M6	80	9	14	8.6	2.53	0.79
GR3606DD-CAPR	36	6	3.9688	32.6	2.5×1	15100	39800	410	66	88	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	1.97	0.79
GR3606DD-DAPR	36	6	3.9688	32.6	2.5×1	15100	39800	410	66	88	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	1.90	0.79
GR3606ED-CAPR	36	6	3.9688	32.6	2.5×2	27200	79600	770	66	124	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	2.56	0.79
GR3606ED-DAPR	36	6	3.9688	32.6	2.5×2	27200	79600	770	66	124	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	2.49	0.79
GR3606FD-CAPR	36	6	3.9688	32.6	2.5×3	38500	119400	1090	66	160	P	5	15	100	C	—	—	—	—	—	—	M6	82	9	14	8.6	3.15	0.79
GR3606FD-DAPR	36	6	3.9688	32.6	2.5×3	38500	119400	1090	66	160	P	5	15	100	D	—	—	—	—	—	38	M6	82	9	14	8.6	3.09	0.79
GR3608DD-CAPR	36	8	4.7625	32	2.5×1	19200	47900	410	70	97	P	6	15	104	C	—	—	—	—	—	—	M6	86	9	14	8.6	2.41	0.79
GR3608DD-DAPR	36	8	4.7625	32	2.5×1	19200	47900	410	70	97	P	6	15	104	D	—	—	—	—	—	40	M6	86	9	14	8.6	2.35	0.79
GR3608ED-CAPR	36	8	4.7625	32	2.5×2	34700	95800	780	70	145	P	6	15	104	C	—	—	—	—	—	—	M6	86	9	14	8.6	3.34	0.79
GR3608ED-DAPR	36	8	4.7625	32	2.5×2	34700	95800	780	70	145	P	6	15	104	D	—	—	—	—	—	40	M6	86	9	14	8.6	3.28	0.79
GR3610DD-CALR	36	10	6.3500	31.2	2.5×1	27600	63000	420	76	118	L	8	15	110	C	—	—	—	—	—	—	M6	92	9	14	8.6	3.34	0.79
GR3610DD-DALR	36	10	6.3500	31.2	2.5×1	27600	63000	420	76	118	L	8	15	110	D	—	—	—	—	—	42	M6	92	9	14	8.6	3.27	0.79
GR3610ED-CALR	36	10	6.3500	31.2	2.5×2	50100	126000	800	76	178	L	8	15	110	C	—	—	—	—	—	—	M6	92	9	14	8.6	4.74	0.79
GR3610ED-DALR	36	10	6.3500	31.2	2.5×2	50100	126000	800	76	178	L	8	15	110	D	—	—	—	—	—	42	M6	92	9	14	8.6	4.67	0.79
GR3612DD-CAPR	36	12	7.1438	30.6	2.5×1	32800	69700	440	81	141	P	8	18	123	C	—	—	—	—	—	—	M6	101	11	17.5	10.8	4.84	0.79
GR3612DD-DAPR	36	12	7.1438	30.6	2.5×1	32800	69700	440	81	141	P	8	18	123	D	—	—	—	—	—	47	M6	101	11	17.5	10.8	4.73	0.79
GR3612GD-CAPR	36	12	7.1438	30.6	3.5×1	43700	97600	600	81	165	P	8	18	123	C	—	—	—	—	—	—	M6	101	11	17.5	10.8	5.51	0.79
GR3612GD-DAPR	36	12	7.1438	30.6	3.5×1	43700	97600	600	81	165	P	8	18	123	D	—	—	—	—	—	47	M6	101	11	17.5	10.8	5.40	0.79

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

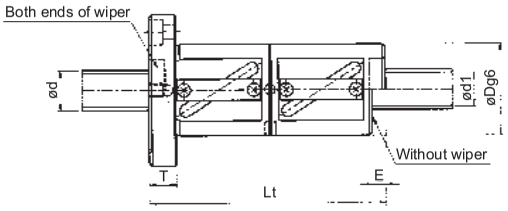
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



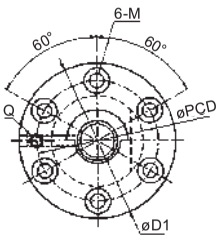
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NM} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4005DD-CAPR	40	5	3.1750	37.5	2.5×1	11600	36000	430	67	76	P	5	15	101	C	–	–	–	–	–	–	Rc1/8	83	9	14	8.6	1.71	0.98
GR4005DD-DAPR	40	5	3.1750	37.5	2.5×1	11600	36000	430	67	76	P	5	15	101	D	–	–	–	–	–	39	Rc1/8	83	9	14	8.6	1.65	0.98
GR4005ED-CAPR	40	5	3.1750	37.5	2.5×2	21000	72000	800	67	106	P	5	15	101	C	–	–	–	–	–	–	Rc1/8	83	9	14	8.6	2.18	0.98
GR4005ED-DAPR	40	5	3.1750	37.5	2.5×2	21000	72000	800	67	106	P	5	15	101	D	–	–	–	–	–	39	Rc1/8	83	9	14	8.6	2.12	0.98
GR4005FD-CAPR	40	5	3.1750	37.5	2.5×3	29800	108000	1150	67	136	P	5	15	101	C	–	–	–	–	–	–	Rc1/8	83	9	14	8.6	2.65	0.98
GR4005FD-DAPR	40	5	3.1750	37.5	2.5×3	29800	108000	1150	67	136	P	5	15	101	D	–	–	–	–	–	39	Rc1/8	83	9	14	8.6	2.59	0.98
GR4006BD-CAPR	40	6	3.9688	36.6	1.5×2	18200	52800	540	70	112	P	5	15	104	C	–	–	–	–	–	–	Rc1/8	86	9	14	8.6	2.52	0.98
GR4006BD-DAPR	40	6	3.9688	36.6	1.5×2	18200	52800	540	70	112	P	5	15	104	D	–	–	–	–	–	40	Rc1/8	86	9	14	8.6	2.46	0.98
GR4006ED-CAPR	40	6	3.9688	36.6	2.5×2	28300	88000	850	70	124	P	5	15	104	C	–	–	–	–	–	–	Rc1/8	86	9	14	8.6	2.74	0.98
GR4006ED-DAPR	40	6	3.9688	36.6	2.5×2	28300	88000	850	70	124	P	5	15	104	D	–	–	–	–	–	40	Rc1/8	86	9	14	8.6	2.67	0.98
GR4006FD-CAPR	40	6	3.9688	36.6	2.5×3	40200	132000	1200	70	160	P	5	15	104	C	–	–	–	–	–	–	Rc1/8	86	9	14	8.6	3.37	0.98
GR4006FD-DAPR	40	6	3.9688	36.6	2.5×3	40200	132000	1200	70	160	P	5	15	104	D	–	–	–	–	–	40	Rc1/8	86	9	14	8.6	3.31	0.98
GR4008DD-CALR	40	8	4.7625	36	2.5×1	19600	54200	460	74	97	L	6	15	108	C	–	–	–	–	–	–	Rc1/8	90	9	14	8.6	2.57	0.98
GR4008DD-DALR	40	8	4.7625	36	2.5×1	19600	54200	460	74	97	L	6	15	108	D	–	–	–	–	–	41	Rc1/8	90	9	14	8.6	2.50	0.98
GR4008ED-CALR	40	8	4.7625	36	2.5×2	35600	108400	870	74	145	L	6	15	108	C	–	–	–	–	–	–	Rc1/8	90	9	14	8.6	3.57	0.98
GR4008ED-DALR	40	8	4.7625	36	2.5×2	35600	108400	870	74	145	L	6	15	108	D	–	–	–	–	–	41	Rc1/8	90	9	14	8.6	3.49	0.98

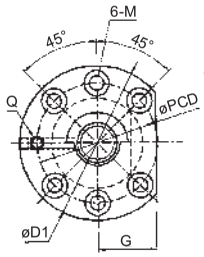
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

GR series
Screw shaft diameter ø40

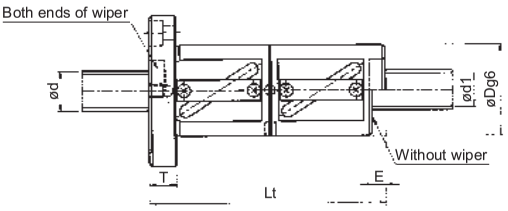
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



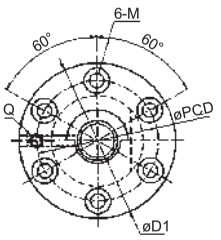
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NM} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR4010BD-CALR	40	10	6.3500	35.2	1.5×2	34200	89200	560	82	161	L	8	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	5.29	0.98
GR4010BD-DALR	40	10	6.3500	35.2	1.5×2	34200	89200	560	82	161	L	8	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	5.17	0.98
GR4010DD-CALR	40	10	6.3500	35.2	2.5×1	29300	74300	460	82	121	L	8	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	4.21	0.98
GR4010DD-DALR	40	10	6.3500	35.2	2.5×1	29300	74300	460	82	121	L	8	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	4.09	0.98
GR4010ED-CALR	40	10	6.3500	35.2	2.5×2	53000	140800	880	82	181	L	8	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	5.83	0.98
GR4010ED-DALR	40	10	6.3500	35.2	2.5×2	53000	140800	880	82	181	L	8	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	5.71	0.98
GR4012DD-CALR	40	12	7.1438	34.6	2.5×1	35100	79000	490	86	141	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	5.28	0.98
GR4012DD-DALR	40	12	7.1438	34.6	2.5×1	35100	79000	490	86	141	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	5.15	0.98
GR4012ED-CALR	40	12	7.1438	34.6	2.5×2	63700	158000	930	86	213	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	7.48	0.98
GR4012ED-DALR	40	12	7.1438	34.6	2.5×2	63700	158000	930	86	213	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	7.35	0.98
GR4016DD-CAPR	40	16	7.1438	34.6	2.5×1	35100	79000	490	86	155	P	9	22	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	5.93	0.98
GR4016DD-DAPR	40	16	7.1438	34.6	2.5×1	35100	79000	490	86	155	P	9	22	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	5.77	0.98
GR4016GD-CALR	40	16	7.1438	34.6	3.5×1	46800	110600	670	86	187	L	9	22	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	6.91	0.98
GR4016GD-DALR	40	16	7.1438	34.6	3.5×1	46800	110600	670	86	187	L	9	22	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	6.75	0.98
GR4020DD-CAPR	40	20	7.1438	34.6	2.5×1	35100	79000	490	86	185	P	9	22	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	6.84	0.98
GR4020DD-DAPR	40	20	7.1438	34.6	2.5×1	35100	79000	490	86	185	P	9	22	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	6.69	0.98
GR4020GD-CAPR	40	20	7.1438	34.6	3.5×1	46800	110600	670	86	225	P	9	22	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	8.06	0.98
GR4020GD-DAPR	40	20	7.1438	34.6	3.5×1	46800	110600	670	86	225	P	9	22	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	7.90	0.98

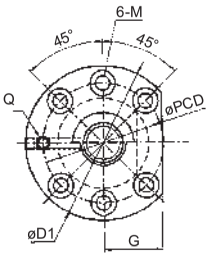
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

Screw shaft diameter ø40

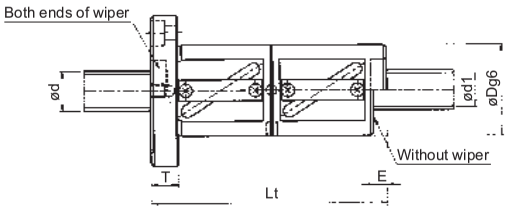
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



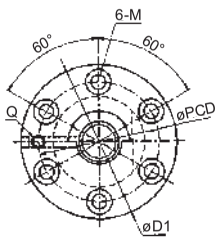
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions									Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR4505BD-CAPR	45	5	3.1750	42.5	1.5×2	14100	48600	570	74	96	P	5	15	108	C	–	–	–	–	–	–	Rc1/8	90	9	14	8.6	2.37	1.24
GR4505BD-DAPR	45	5	3.1750	42.5	1.5×2	14100	48600	570	74	96	P	5	15	108	D	–	–	–	–	–	41	Rc1/8	90	9	14	8.6	2.30	1.24
GR4505CD-CAPR	45	5	3.1750	42.5	1.5×3	20100	72900	830	74	116	P	5	15	108	C	–	–	–	–	–	–	Rc1/8	90	9	14	8.6	2.75	1.24
GR4505CD-DAPR	45	5	3.1750	42.5	1.5×3	20100	72900	830	74	116	P	5	15	108	D	–	–	–	–	–	41	Rc1/8	90	9	14	8.6	2.68	1.24
GR4506BD-CAPR	45	6	3.9688	41.6	1.5×2	19300	59700	580	78	112	P	5	15	112	C	–	–	–	–	–	–	Rc1/8	94	9	14	8.6	3.06	1.24
GR4506BD-DAPR	45	6	3.9688	41.6	1.5×2	19300	59700	580	78	112	P	5	15	112	D	–	–	–	–	–	43	Rc1/8	94	9	14	8.6	2.99	1.24
GR4506ED-CAPR	45	6	3.9688	41.6	2.5×2	30000	99500	910	78	124	P	5	15	112	C	–	–	–	–	–	–	Rc1/8	94	9	14	8.6	3.32	1.24
GR4506ED-DAPR	45	6	3.9688	41.6	2.5×2	30000	99500	910	78	124	P	5	15	112	D	–	–	–	–	–	43	Rc1/8	94	9	14	8.6	3.25	1.24
GR4506FD-CAPR	45	6	3.9688	41.6	2.5×3	42500	149300	1300	78	160	P	5	15	112	C	–	–	–	–	–	–	Rc1/8	94	9	14	8.6	4.12	1.24
GR4506FD-DAPR	45	6	3.9688	41.6	2.5×3	42500	149300	1300	78	160	P	5	15	112	D	–	–	–	–	–	43	Rc1/8	94	9	14	8.6	4.04	1.24
GR4508BD-CAPR	45	8	4.7625	41	1.5×2	24000	72600	590	82	132	P	6	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	4.30	1.24
GR4508BD-DAPR	45	8	4.7625	41	1.5×2	24000	72600	590	82	132	P	6	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	4.18	1.24
GR4508ED-CAPR	45	8	4.7625	41	2.5×2	37300	121000	950	82	148	P	6	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	4.71	1.24
GR4508ED-DAPR	45	8	4.7625	41	2.5×2	37300	121000	950	82	148	P	6	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	4.59	1.24
GR4508FD-CAPR	45	8	4.7625	41	2.5×3	52700	181500	1310	82	196	P	6	18	124	C	–	–	–	–	–	–	Rc1/8	102	11	17.5	10.8	5.92	1.24
GR4508FD-DAPR	45	8	4.7625	41	2.5×3	52700	181500	1310	82	196	P	6	18	124	D	–	–	–	–	–	47	Rc1/8	102	11	17.5	10.8	5.81	1.24

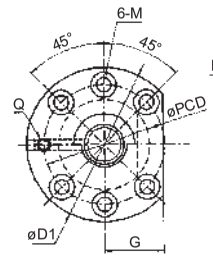
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

GR series
Screw shaft diameter ø45

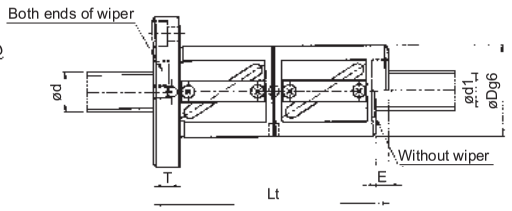
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



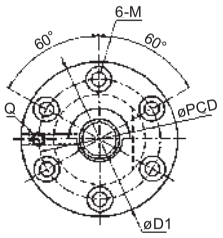
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions									Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR4510BD-CALR	45	10	6.3500	40.2	1.5×2	36800	97800	620	86	161	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	5.49	1.24
GR4510BD-DALR	45	10	6.3500	40.2	1.5×2	36800	97800	620	86	161	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	5.36	1.24
GR4510DD-CALR	45	10	6.3500	40.2	2.5×1	31500	81500	530	86	121	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	4.37	1.24
GR4510DD-DALR	45	10	6.3500	40.2	2.5×1	31500	81500	530	86	121	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	4.24	1.24
GR4510ED-CALR	45	10	6.3500	40.2	2.5×2	57200	163000	990	86	181	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	6.05	1.24
GR4510ED-DALR	45	10	6.3500	40.2	2.5×2	57200	163000	990	86	181	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	5.91	1.24
GR4510FD-CALR	45	10	6.3500	40.2	2.5×3	81000	244500	1420	86	241	L	8	18	128	C	–	–	–	–	–	–	Rc1/8	106	11	17.5	10.8	7.72	1.24
GR4510FD-DALR	45	10	6.3500	40.2	2.5×3	81000	244500	1420	86	241	L	8	18	128	D	–	–	–	–	–	48	Rc1/8	106	11	17.5	10.8	7.59	1.24
GR4512DD-CALR	45	12	7.9375	38.8	2.5×1	41200	98500	520	94	143	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	6.54	1.24
GR4512DD-DALR	45	12	7.9375	38.8	2.5×1	41200	98500	520	94	143	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	6.35	1.24
GR4512ED-CALR	45	12	7.9375	38.8	2.5×2	74900	197000	980	94	215	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	9.10	1.24
GR4512ED-DALR	45	12	7.9375	38.8	2.5×2	74900	197000	980	94	215	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	8.91	1.24
GR4512FD-CALR	45	12	7.9375	38.8	2.5×3	106200	295500	1410	94	287	L	7	22	140	C	–	–	–	–	–	–	Rc1/8	116	14	20	13	11.66	1.24
GR4512FD-DALR	45	12	7.9375	38.8	2.5×3	106200	295500	1410	94	287	L	7	22	140	D	–	–	–	–	–	53	Rc1/8	116	14	20	13	11.47	1.24

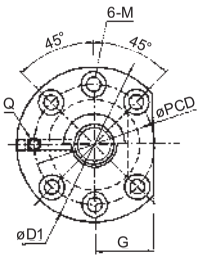
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material L: Lip seal

Screw shaft diameter ø45

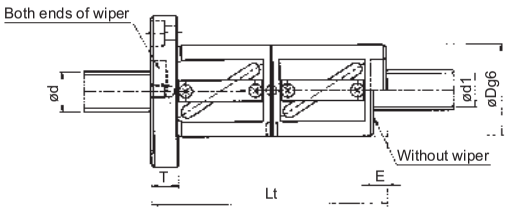
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



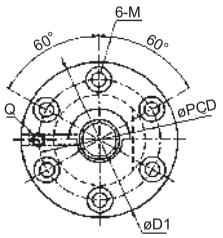
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions									Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR5005BD-CAPR	50	5	3.1750	47.5	1.5×2	14800	54200	620	80	96	P	5	15	114	C	–	–	–	–	–	–	Rc1/8	96	9	14	8.6	2.65	1.53
GR5005BD-DAPR	50	5	3.1750	47.5	1.5×2	14800	54200	620	80	96	P	5	15	114	D	–	–	–	–	–	43	Rc1/8	96	9	14	8.6	2.57	1.53
GR5005CD-CAPR	50	5	3.1750	47.5	1.5×3	21000	81300	890	80	116	P	5	15	114	C	–	–	–	–	–	–	Rc1/8	96	9	14	8.6	3.08	1.53
GR5005CD-DAPR	50	5	3.1750	47.5	1.5×3	21000	81300	890	80	116	P	5	15	114	D	–	–	–	–	–	43	Rc1/8	96	9	14	8.6	2.99	1.53
GR5006BD-CAPR	50	6	3.9688	46.6	1.5×2	20100	66500	640	84	112	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	3.41	1.53
GR5006BD-DAPR	50	6	3.9688	46.6	1.5×2	20100	66500	640	84	112	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	3.32	1.53
GR5006ED-CAPR	50	6	3.9688	46.6	2.5×2	31300	110800	990	84	124	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	3.70	1.53
GR5006ED-DAPR	50	6	3.9688	46.6	2.5×2	31300	110800	990	84	124	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	3.62	1.53
GR5006FD-CAPR	50	6	3.9688	46.6	2.5×3	44300	166200	1420	84	160	P	5	15	118	C	–	–	–	–	–	–	Rc1/8	100	9	14	8.6	4.59	1.53
GR5006FD-DAPR	50	6	3.9688	46.6	2.5×3	44300	166200	1420	84	160	P	5	15	118	D	–	–	–	–	–	45	Rc1/8	100	9	14	8.6	4.51	1.53
GR5008BD-CAPR	50	8	4.7625	46	1.5×2	24900	80100	650	87	132	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	4.60	1.53
GR5008BD-DAPR	50	8	4.7625	46	1.5×2	24900	80100	650	87	132	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	4.47	1.53
GR5008ED-CAPR	50	8	4.7625	46	2.5×2	38700	133400	1030	87	148	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	5.03	1.53
GR5008ED-DAPR	50	8	4.7625	46	2.5×2	38700	133400	1030	87	148	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	4.91	1.53
GR5008FD-CAPR	50	8	4.7625	46	2.5×3	55000	200100	1480	87	196	P	6	18	129	C	–	–	–	–	–	–	Rc1/8	107	11	17.5	10.8	6.34	1.53
GR5008FD-DAPR	50	8	4.7625	46	2.5×3	55000	200100	1480	87	196	P	6	18	129	D	–	–	–	–	–	49	Rc1/8	107	11	17.5	10.8	6.22	1.53

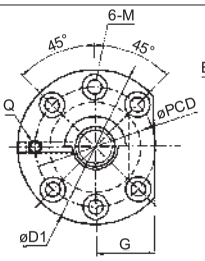
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

GR series
Screw shaft diameter ø50

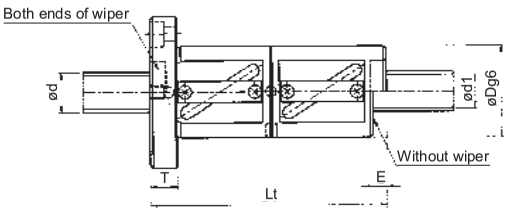
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D

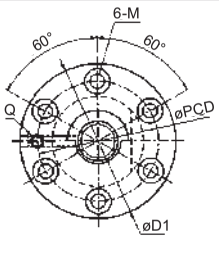


(Unit: mm)

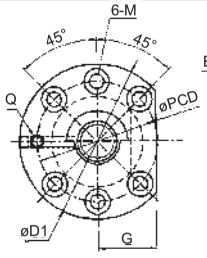
Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions									Mass	
									Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions W	X	Y	A	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
GR5010BD-CALR	50	10	6.3500	45.2	1.5×2	38300	106700	670	93	161	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	6.24	1.53
GR5010BD-DALR	50	10	6.3500	45.2	1.5×2	38300	106700	670	93	161	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	6.10	1.53
GR5010DD-CALR	50	10	6.3500	45.2	2.5×1	32800	88900	560	93	121	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	4.95	1.53
GR5010DD-DALR	50	10	6.3500	45.2	2.5×1	32800	88900	560	93	121	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	4.81	1.53
GR5010ED-CALR	50	10	6.3500	45.2	2.5×2	59400	177800	1060	93	181	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	6.88	1.53
GR5010ED-DALR	50	10	6.3500	45.2	2.5×2	59400	177800	1060	93	181	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	6.74	1.53
GR5010FD-CALR	50	10	6.3500	45.2	2.5×3	84100	266700	1520	93	241	L	8	18	135	C	–	–	–	–	–	–	Rc1/8	113	11	17.5	10.8	8.81	1.53
GR5010FD-DALR	50	10	6.3500	45.2	2.5×3	84100	266700	1520	93	241	L	8	18	135	D	–	–	–	–	–	51	Rc1/8	113	11	17.5	10.8	8.67	1.53
GR5012DD-CALR	50	12	7.9375	43.8	2.5×1	42600	110000	570	100	143	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	7.13	1.53
GR5012DD-DALR	50	12	7.9375	43.8	2.5×1	42600	110000	570	100	143	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	6.92	1.53
GR5012ED-CALR	50	12	7.9375	43.8	2.5×2	77400	220000	1070	100	215	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	9.95	1.53
GR5012ED-DALR	50	12	7.9375	43.8	2.5×2	77400	220000	1070	100	215	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	9.74	1.53
GR5012FD-CALR	50	12	7.9375	43.8	2.5×3	109600	330000	1540	100	287	L	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	12.77	1.53
GR5012FD-DALR	50	12	7.9375	43.8	2.5×3	109600	330000	1540	100	287	L	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	12.56	1.53
GR5016DD-CAPR	50	16	7.9375	43.8	2.5×1	42600	110000	570	100	183	P	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	8.69	1.53
GR5016DD-DAPR	50	16	7.9375	43.8	2.5×1	42600	110000	570	100	183	P	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	8.49	1.53
GR5016ED-CAPR	50	16	7.9375	43.8	2.5×2	77400	220000	1080	100	279	P	7	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	12.45	1.53
GR5016ED-DAPR	50	16	7.9375	43.8	2.5×2	77400	220000	1080	100	279	P	7	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	12.25	1.53
GR5020DD-CAPR	50	20	7.9375	43.8	2.5×1	42600	110000	650	100	189	P	7	28	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	9.34	1.53
GR5020DD-DAPR	50	20	7.9375	43.8	2.5×1	42600	110000	650	100	189	P	7	28	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	9.09	1.53
GR5020ED-CAPR	50	20	7.9375	43.8	2.5×2	77400	220000	1210	100	309	P	7	28	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	14.04	1.53
GR5020ED-DAPR	50	20	7.9375	43.8	2.5×2	77400	220000	1210	100	309	P	7	28	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	13.79	1.53

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

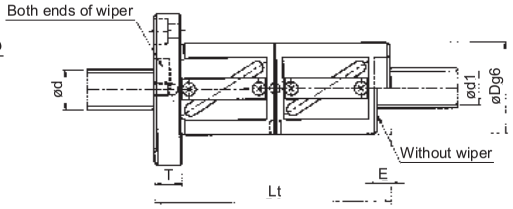
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D



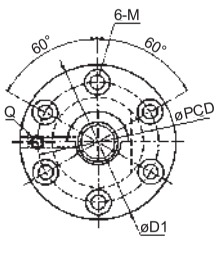
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR5508ED-CAPR	55	8	4.7625	51	2.5×2	40100	145900	1100	92	150	P	5	22	138	C	–	–	–	–	–	–	Rc1/8	114	14	20	13	5.80	1.85
GR5508ED-DAPR	55	8	4.7625	51	2.5×2	40100	145900	1100	92	150	P	5	22	138	D	–	–	–	–	–	53	Rc1/8	114	14	20	13	5.63	1.85
GR5508FD-CAPR	55	8	4.7625	51	2.5×3	56900	218900	1580	92	198	P	5	22	138	C	–	–	–	–	–	–	Rc1/8	114	14	20	13	7.20	1.85
GR5508FD-DAPR	55	8	4.7625	51	2.5×3	56900	218900	1580	92	198	P	5	22	138	D	–	–	–	–	–	53	Rc1/8	114	14	20	13	7.03	1.85
GR5510BD-CALR	55	10	6.3500	50.2	1.5×2	40400	120100	760	100	165	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	7.59	1.85
GR5510BD-DALR	55	10	6.3500	50.2	1.5×2	40400	120100	760	100	165	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	7.38	1.85
GR5510ED-CALR	55	10	6.3500	50.2	2.5×2	62700	200200	1170	100	185	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	8.32	1.85
GR5510ED-DALR	55	10	6.3500	50.2	2.5×2	62700	200200	1170	100	185	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	8.12	1.85
GR5510FD-CALR	55	10	6.3500	50.2	2.5×3	89000	300300	1690	100	245	L	8	22	146	C	–	–	–	–	–	–	Rc1/8	122	14	20	13	10.53	1.85
GR5510FD-DALR	55	10	6.3500	50.2	2.5×3	89000	300300	1690	100	245	L	8	22	146	D	–	–	–	–	–	55	Rc1/8	122	14	20	13	10.32	1.85
GR5512ED-CAPR	55	12	7.9375	48.8	2.5×2	81200	243300	1170	108	215	P	7	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	11.41	1.85
GR5512ED-DAPR	55	12	7.9375	48.8	2.5×2	81200	243300	1170	108	215	P	7	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	11.19	1.85
GR5512FD-CAPR	55	12	7.9375	48.8	2.5×3	115100	365000	1680	108	287	P	7	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	14.69	1.85
GR5512FD-DAPR	55	12	7.9375	48.8	2.5×3	115100	365000	1680	108	287	P	7	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	14.46	1.85
GR5516DD-CAPR	55	16	9.5250	47.6	2.5×1	76700	207800	690	112	195	P	13	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	12.54	1.85
GR5516DD-DAPR	55	16	9.5250	47.6	2.5×1	76700	207800	690	112	195	P	13	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	12.21	1.85
GR5516ED-CAPR	55	16	9.5250	47.6	2.5×2	139100	415600	1080	112	291	P	13	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	17.28	1.85
GR5516ED-DAPR	55	16	9.5250	47.6	2.5×2	139100	415600	1080	112	291	P	13	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	16.95	1.85
GR5520DD-CALR	55	20	9.5250	47.6	2.5×1	76700	207800	720	112	195	L	12.5	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	12.54	1.85
GR5520DD-DALR	55	20	9.5250	47.6	2.5×1	76700	207800	720	112	195	L	12.5	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	12.21	1.85
GR5520ED-CALR	55	20	9.5250	47.6	2.5×2	139100	415600	1340	112	315	L	12.5	28	172	C	–	–	–	–	–	–	Rc1/8	140	18	26	17.5	18.46	1.85
GR5520ED-DALR	55	20	9.5250	47.6	2.5×2	139100	415600	1340	112	315	L	12.5	28	172	D	–	–	–	–	–	66	Rc1/8	140	18	26	17.5	18.13	1.85

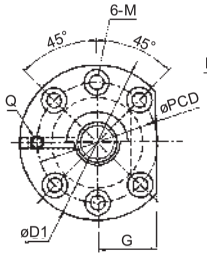
Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper, L: Lip seal

GR series
Screw shaft diameter ø63

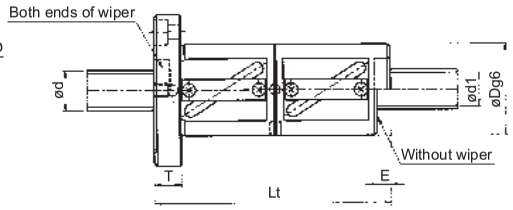
Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)



Flange type C



Flange type D

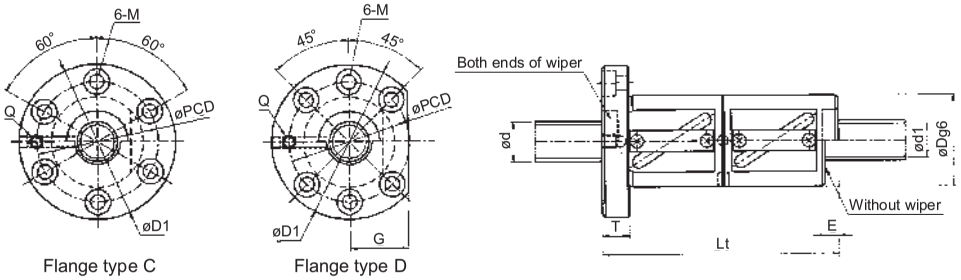


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR6306BD-CAPR	63	6	3.9688	59.6	1.5×2	22100	83500	850	100	113	P	4	18	142	C	–	–	–	–	–	–	Rc1/8	120	11	17.5	10.8	4.85	2.43
GR6306BD-DAPR	63	6	3.9688	59.6	1.5×2	22100	83500	850	100	113	P	4	18	142	D	–	–	–	–	–	53	Rc1/8	120	11	17.5	10.8	4.69	2.43
GR6306CD-CAPR	63	6	3.9688	59.6	1.5×3	31300	125300	1100	100	137	P	4	18	142	C	–	–	–	–	–	–	Rc1/8	120	11	17.5	10.8	5.65	2.43
GR6306CD-DAPR	63	6	3.9688	59.6	1.5×3	31300	125300	1100	100	137	P	4	18	142	D	–	–	–	–	–	53	Rc1/8	120	11	17.5	10.8	5.48	2.43
GR6308BD-CAPR	63	8	4.7625	59	1.5×2	27800	102500	790	104	134	P	5	22	150	C	–	–	–	–	–	–	Rc1/8	126	14	20	13	6.56	2.43
GR6308BD-DAPR	63	8	4.7625	59	1.5×2	27800	102500	790	104	134	P	5	22	150	D	–	–	–	–	–	57	Rc1/8	126	14	20	13	6.36	2.43
GR6308CD-CAPR	63	8	4.7625	59	1.5×3	39300	153800	1140	104	166	P	5	22	150	C	–	–	–	–	–	–	Rc1/8	126	14	20	13	7.75	2.43
GR6308CD-DAPR	63	8	4.7625	59	1.5×3	39300	153800	1140	104	166	P	5	22	150	D	–	–	–	–	–	57	Rc1/8	126	14	20	13	7.55	2.43

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C0-C5)

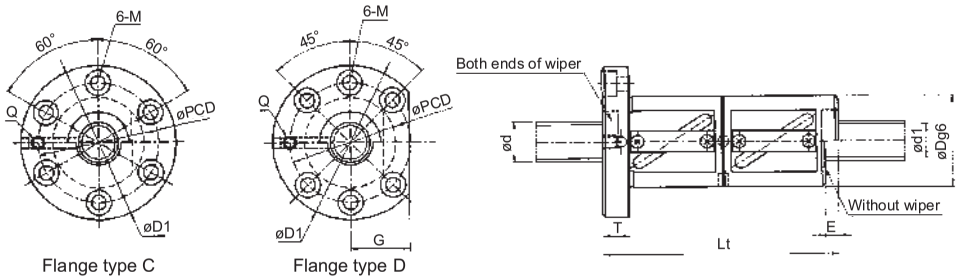


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR6310DD-CAPR	63	10	6.3500	58.2	2.5×1	36800	114900	700	108	125	P	8	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	6.67	2.43
GR6310DD-DAPR	63	10	6.3500	58.2	2.5×1	36800	114900	700	108	125	P	8	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	6.44	2.43
GR6310ED-CAPR	63	10	6.3500	58.2	2.5×2	66600	229800	1310	108	185	P	8	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	9.09	2.43
GR6310ED-DAPR	63	10	6.3500	58.2	2.5×2	66600	229800	1310	108	185	P	8	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	8.86	2.43
GR6310FD-CAPR	63	10	6.3500	58.2	2.5×3	94400	344700	1880	108	245	P	8	22	154	C	–	–	–	–	–	–	Rc1/8	130	14	20	13	11.51	2.43
GR6310FD-DAPR	63	10	6.3500	58.2	2.5×3	94400	344700	1880	108	245	P	8	22	154	D	–	–	–	–	–	58	Rc1/8	130	14	20	13	11.28	2.43
GR6312DD-CAPR	63	12	7.9375	56.8	2.5×1	48700	139000	700	115	143	P	7	22	161	C	–	–	–	–	–	–	Rc1/8	137	14	20	13	8.62	2.43
GR6312DD-DAPR	63	12	7.9375	56.8	2.5×1	48700	139000	700	115	143	P	7	22	161	D	–	–	–	–	–	61	Rc1/8	137	14	20	13	8.38	2.43
GR6312ED-CAPR	63	12	7.9375	56.8	2.5×2	88500	278000	1310	115	215	P	7	22	161	C	–	–	–	–	–	–	Rc1/8	137	14	20	13	12.10	2.43
GR6312ED-DAPR	63	12	7.9375	56.8	2.5×2	88500	278000	1310	115	215	P	7	22	161	D	–	–	–	–	–	61	Rc1/8	137	14	20	13	11.86	2.43
GR6312FD-CAPR	63	12	7.9375	56.8	2.5×3	125500	417000	1880	115	287	P	7	22	161	C	–	–	–	–	–	–	Rc1/8	137	14	20	13	15.58	2.43
GR6312FD-DAPR	63	12	7.9375	56.8	2.5×3	125500	417000	1880	115	287	P	7	22	161	D	–	–	–	–	–	61	Rc1/8	137	14	20	13	15.34	2.43
GR6316DD-CAPR	63	16	9.5250	55.6	2.5×1	80300	231000	780	122	195	P	13	28	180	C	–	–	–	–	–	–	Rc1/8	150	18	26	17.5	14.06	2.43
GR6316DD-DAPR	63	16	9.5250	55.6	2.5×1	80300	231000	780	122	195	P	13	28	180	D	–	–	–	–	–	69	Rc1/8	150	18	26	17.5	13.70	2.43
GR6316ED-CAPR	63	16	9.5250	55.6	2.5×2	145800	462000	1460	122	291	P	13	28	180	C	–	–	–	–	–	–	Rc1/8	150	18	26	17.5	19.51	2.43
GR6316ED-DAPR	63	16	9.5250	55.6	2.5×2	145800	462000	1460	122	291	P	13	28	180	D	–	–	–	–	–	69	Rc1/8	150	18	26	17.5	19.14	2.43
GR6320DD-CAPR	63	20	9.5250	55.6	2.5×1	80300	231000	780	122	195	P	13	28	180	C	–	–	–	–	–	–	Rc1/8	150	18	26	17.5	14.06	2.43
GR6320DD-DAPR	63	20	9.5250	55.6	2.5×1	80300	231000	780	122	195	P	13	28	180	D	–	–	–	–	–	69	Rc1/8	150	18	26	17.5	13.70	2.43
GR6320ED-CAPR	63	20	9.5250	55.6	2.5×2	145800	462000	1460	122	315	P	13	28	180	C	–	–	–	–	–	–	Rc1/8	150	18	26	17.5	20.87	2.43
GR6320ED-DAPR	63	20	9.5250	55.6	2.5×2	145800	462000	1460	122	315	P	13	28	180	D	–	–	–	–	–	69	Rc1/8	150	18	26	17.5	20.50	2.43

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C1-C5)

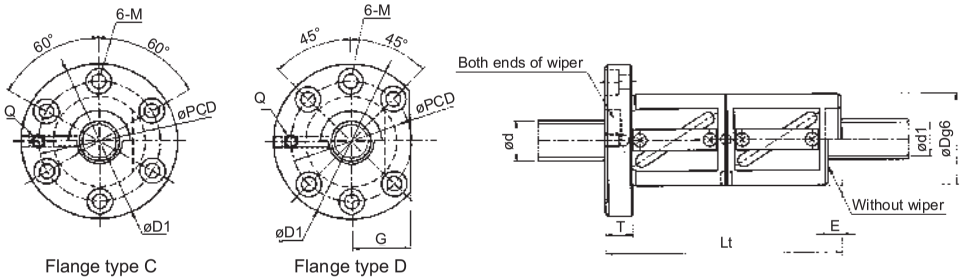


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR7010ED-CAPR	70	10	6.3500	65.2	2.5×2	69100	252100	1400	120	183	P	7	22	166	C	–	–	–	–	–	–	Rc1/8	142	14	20	13	11.05	3.00
GR7010ED-DAPR	70	10	6.3500	65.2	2.5×2	69100	252100	1400	120	183	P	7	22	166	D	–	–	–	–	–	63	Rc1/8	142	14	20	13	10.79	3.00
GR7010FD-CAPR	70	10	6.3500	65.2	2.5×3	97900	378200	2020	120	243	P	7	22	166	C	–	–	–	–	–	–	Rc1/8	142	14	20	13	14.09	3.00
GR7010FD-DAPR	70	10	6.3500	65.2	2.5×3	97900	378200	2020	120	243	P	7	22	166	D	–	–	–	–	–	63	Rc1/8	142	14	20	13	13.84	3.00
GR7012ED-CAPR	70	12	7.9375	63.8	2.5×2	93400	312700	1440	124	215	P	7	22	170	C	–	–	–	–	–	–	Rc1/8	146	14	20	13	13.63	3.00
GR7012ED-DAPR	70	12	7.9375	63.8	2.5×2	93400	312700	1440	124	215	P	7	22	170	D	–	–	–	–	–	64	Rc1/8	146	14	20	13	13.36	3.00
GR7012FD-CAPR	70	12	7.9375	63.8	2.5×3	132400	469100	2070	124	287	P	7	22	170	C	–	–	–	–	–	–	Rc1/8	146	14	20	13	17.59	3.00
GR7012FD-DAPR	70	12	7.9375	63.8	2.5×3	132400	469100	2070	124	287	P	7	22	170	D	–	–	–	–	–	64	Rc1/8	146	14	20	13	17.31	3.00
GR7016ED-CAPR	70	16	9.5250	62.6	2.5×2	152100	508000	1570	130	291	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	21.43	3.00
GR7016ED-DAPR	70	16	9.5250	62.6	2.5×2	152100	508000	1570	130	291	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	21.00	3.00
GR7016FD-CAPR	70	16	9.5250	62.6	2.5×3	215600	762000	2330	130	387	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	27.41	3.00
GR7016FD-DAPR	70	16	9.5250	62.6	2.5×3	215600	762000	2330	130	387	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	26.98	3.00
GR7020ED-CAPR	70	20	9.5250	62.6	2.5×2	152100	508000	1580	130	315	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	22.92	3.00
GR7020ED-DAPR	70	20	9.5250	62.6	2.5×2	152100	508000	1580	130	315	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	22.50	3.00
GR7020FD-CAPR	70	20	9.5250	62.6	2.5×3	215600	762000	2340	130	435	P	13	28	190	C	–	–	–	–	–	–	Rc1/8	158	18	26	17.5	30.40	3.00
GR7020FD-DAPR	70	20	9.5250	62.6	2.5×3	215600	762000	2340	130	435	P	13	28	190	D	–	–	–	–	–	72	Rc1/8	158	18	26	17.5	29.98	3.00

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C1-C5)



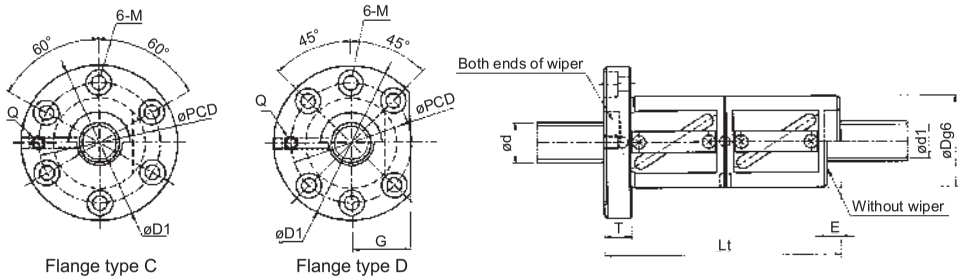
(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{UW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GR8010ED-CAPR	80	10	6.3500	75.2	2.5×2	73100	289100	1570	130	183	P	7	22	176	C	–	–	–	–	–	–	Rc1/8	152	14	20	13	12.11	3.92
GR8010ED-DAPR	80	10	6.3500	75.2	2.5×2	73100	289100	1570	130	183	P	7	22	176	D	–	–	–	–	–	66	Rc1/8	152	14	20	13	11.81	3.92
GR8010FD-CAPR	80	10	6.3500	75.2	2.5×3	103700	433700	2260	130	243	P	7	22	176	C	–	–	–	–	–	–	Rc1/8	152	14	20	13	15.46	3.92
GR8010FD-DAPR	80	10	6.3500	75.2	2.5×3	103700	433700	2260	130	243	P	7	22	176	D	–	–	–	–	–	66	Rc1/8	152	14	20	13	15.15	3.92
GR8012ED-CAPR	80	12	7.9375	73.8	2.5×2	99400	359100	1610	136	215	P	7	22	182	C	–	–	–	–	–	–	Rc1/8	158	14	20	13	15.65	3.92
GR8012ED-DAPR	80	12	7.9375	73.8	2.5×2	99400	359100	1610	136	215	P	7	22	182	D	–	–	–	–	–	68	Rc1/8	158	14	20	13	15.32	3.92
GR8012FD-CAPR	80	12	7.9375	73.8	2.5×3	140700	538700	2320	136	287	P	7	22	182	C	–	–	–	–	–	–	Rc1/8	158	14	20	13	20.23	3.92
GR8012FD-DAPR	80	12	7.9375	73.8	2.5×3	140700	538700	2320	136	287	P	7	22	182	D	–	–	–	–	–	68	Rc1/8	158	14	20	13	19.91	3.92
GR8016ED-CAPR	80	16	9.5250	72.6	2.5×2	165200	600500	1810	143	289	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	24.84	3.92
GR8016ED-DAPR	80	16	9.5250	72.6	2.5×2	165200	600500	1810	143	289	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	24.34	3.92
GR8016FD-CAPR	80	16	9.5250	72.6	2.5×3	234100	900800	2610	143	385	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	31.89	3.92
GR8016FD-DAPR	80	16	9.5250	72.6	2.5×3	234100	900800	2610	143	385	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	31.39	3.92
GR8020ED-CAPR	80	20	9.5250	72.6	2.5×2	165200	600500	1810	143	313	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	26.60	3.92
GR8020ED-DAPR	80	20	9.5250	72.6	2.5×2	165200	600500	1810	143	313	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	26.10	3.92
GR8020FD-CAPR	80	20	9.5250	72.6	2.5×3	234100	900800	2680	143	433	P	12	28	204	C	–	–	–	–	–	–	Rc1/8	172	18	26	17.5	35.41	3.92
GR8020FD-DAPR	80	20	9.5250	72.6	2.5×3	234100	900800	2680	143	433	P	12	28	204	D	–	–	–	–	–	77	Rc1/8	172	18	26	17.5	34.91	3.92

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

GR series
Screw shaft diameter ø80

Custom Ball Screw: TUBE METHOD DOUBLE NUT (Accuracy grade C1-C5)

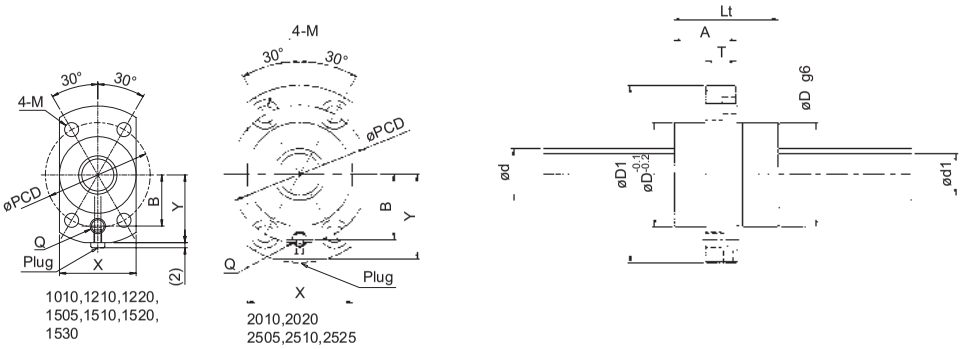


(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{UW} (N/μm)	Nut dimensions: Outer diameter D	Overall length L_t	Wiper material	Without wiper E	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: W	X	Y	A	B	G	Q	Mounting hole: PCD	M: Drill	Spot facing	Depth	Mass: Nut (kg)	Screw shaft (kg/100mm)
GRA012ED-CAPR	100	12	7.9375	93.8	2.5×2	109450	451800	1940	160	219	P	6	28	220	C	–	–	–	–	–	–	Rc1/8	188	18	26	17.5	22.01	6.13
GRA012ED-DAPR	100	12	7.9375	93.8	2.5×2	109450	451800	1940	160	219	P	6	28	220	D	–	–	–	–	–	82	Rc1/8	188	18	26	17.5	21.39	6.13
GRA012FD-CAPR	100	12	7.9375	93.8	2.5×3	155000	677700	2790	160	291	P	6	28	220	C	–	–	–	–	–	–	Rc1/8	188	18	26	17.5	27.96	6.13
GRA012FD-DAPR	100	12	7.9375	93.8	2.5×3	155000	677700	2790	160	291	P	6	28	220	D	–	–	–	–	–	82	Rc1/8	188	18	26	17.5	27.34	6.13
GRA016ED-CAPR	100	16	9.5250	92.6	2.5×2	180000	739000	2140	170	293	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	35.26	6.13
GRA016ED-DAPR	100	16	9.5250	92.6	2.5×2	180000	739000	2140	170	293	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	34.42	6.13
GRA016FD-CAPR	100	16	9.5250	92.6	2.5×3	255000	1108500	3080	170	389	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	44.88	6.13
GRA016FD-DAPR	100	16	9.5250	92.6	2.5×3	255000	1108500	3080	170	389	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	44.04	6.13
GRA020ED-CAPR	100	20	9.5250	92.5	2.5×2	180000	739000	2140	170	317	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	37.66	6.13
GRA020ED-DAPR	100	20	9.5250	92.5	2.5×2	180000	739000	2140	170	317	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	36.82	6.13
GRA020FD-CAPR	100	20	9.5250	92.5	2.5×3	255000	1108500	3170	170	437	P	12	32	243	C	–	–	–	–	–	–	Rc1/8	205	22	32	21.5	49.69	6.13
GRA020FD-DAPR	100	20	9.5250	92.5	2.5×3	255000	1108500	3170	170	437	P	12	32	243	D	–	–	–	–	–	91	Rc1/8	205	22	32	21.5	48.84	6.13
GRC516ED-CAPR	125	16	9.5250	117.6	2.5×2	200400	946900	2620	200	297	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	48.34	9.57
GRC516ED-DAPR	125	16	9.5250	117.6	2.5×2	200400	946900	2620	200	297	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	47.02	9.57
GRC516FD-CAPR	125	16	9.5250	117.6	2.5×3	284100	1420400	3720	200	393	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	60.83	9.57
GRC516FD-DAPR	125	16	9.5250	117.6	2.5×3	284100	1420400	3720	200	393	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	59.50	9.57
GRC520ED-CAPR	125	20	9.5250	117.6	2.5×2	200400	946900	2620	200	321	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	51.47	9.57
GRC520ED-DAPR	125	20	9.5250	117.6	2.5×2	200400	946900	2620	200	321	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	50.14	9.57
GRC520FD-CAPR	125	20	9.5250	117.6	2.5×3	284100	1420400	3760	200	441	P	12	36	290	C	–	–	–	–	–	–	Rc1/8	243	26	39	25.5	67.07	9.57
GRC520FD-DAPR	125	20	9.5250	117.6	2.5×3	284100	1420400	3760	200	441	P	12	36	290	D	–	–	–	–	–	109	Rc1/8	243	26	39	25.5	65.74	9.57

Note: • The rigidity indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/15 of basic dynamic load rating (C). It is the operational value based on the result of rigidity testing including the rigidity of the nut.
• Wiper material P: Plastic wiper

Custom Ball Screw: END DEFLECTOR METHOD SINGLE NUT (Accuracy grade C3-C7)



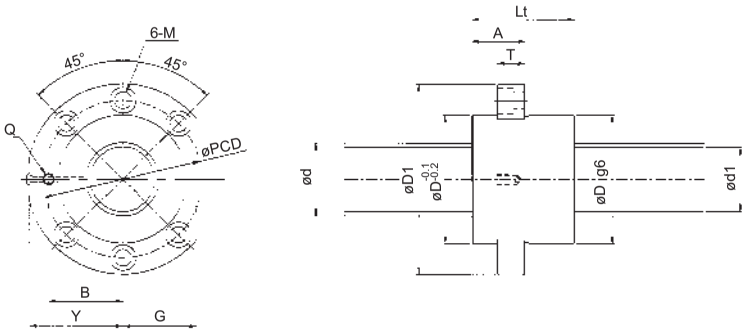
Flange type H

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{66} (N/μm)	Nut dimensions															Mass	
									Outer diameter D	Overall length L_t	Length A	Wiper material	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions X	Y	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
FR1010PS-HPNR	10	10	2.3812	8.1	1.7×1	2600	3800	60	23	27	17.5	N	10	44	H	24	21.5	16	—	M3	32	4.5	—	—	0.11	0.06
FR1210PS-HPNR	12	10	3.1750	9.5	2.7×1	6700	10700	110	27	38	19.5	N	10	47	H	27	23	18	—	M3	36	4.5	—	—	0.17	0.08
FR1220PS-HPNR	12	20	3.1750	9.5	1.7×1	4300	6700	70	27	48	20	N	10	47	H	27	23	18	—	M3	36	4.5	—	—	0.20	0.08
FR1505PS-HPNR	15	5	3.1750	12.5	2.7×1	7400	12900	120	30	25	17.3	N	9.5	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.15	0.11
FR1510PS-HPNR	15	10	3.1750	12.5	2.7×1	7400	12900	120	30	38	20	N	10	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.20	0.13
FR1520PS-HPNR	15	20	3.1750	12.5	1.7×1	4800	8200	80	30	48	20.5	N	10	54	H	30	26.5	20	—	M6	41	5.5	—	—	0.24	0.13
FR1530PS-HPNR	15	30	3.1750	12.5	1.7×1	4800	8200	80	32	65	20.5	N	10	56	H	32	27.5	21	—	M6	43	5.5	—	—	0.36	0.14
FR2010PS-HPNR	20	10	4.7625	16	2.7×1	18000	33900	160	40	38	23	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.36	0.21
FR2020PS-HPNR	20	20	4.7625	15.9	1.7×1	11600	20600	100	40	48	23	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.43	0.23
FR2505PS-HPNR	25	5	3.1750	22.5	3.7×1	13100	31800	240	40	30	20	N	12	68	H	40	32.5	25	—	M6	53	6.6	11	6.5	0.27	0.34
FR2508PS-HPNR	25	8	3.9688	21.6	3.7×1	17500	38800	250	45	41	25	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.49	0.34
FR2510PS-HPNR	25	10	4.7625	21	2.7×1	20400	42600	200	45	37	25	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.44	0.34
FR2525PS-HPNR	25	25	4.7625	21	1.7×1	13100	25900	130	45	58	27	N	15	74	H	45	35.5	28	—	M6	59	6.6	11	6.5	0.61	0.37

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material N: Without wiper

Custom Ball Screw: END DEFLECTOR METHOD SINGLE NUT (Accuracy grade C3-C7)



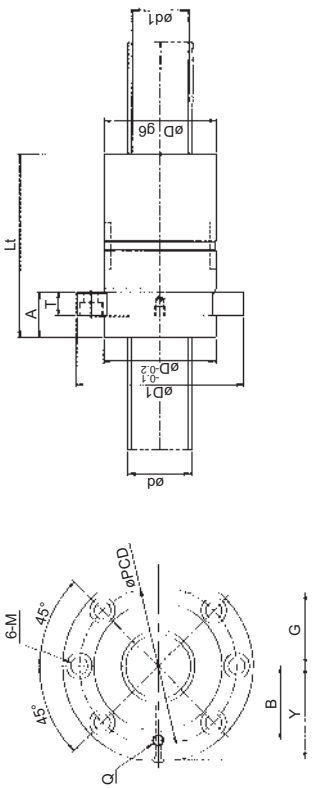
Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{66} (N/μm)	Nut dimensions															Mass	
									Outer diameter D	Overall length L_t	Length A	Wiper material	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions X	Y	B	G	Q	Mounting hole PCD	M Drill	Spot facing	Depth	Nut (kg)	Screw shaft (kg/100mm)
FR3205PS-DPNR	32	5	3.1750	29.5	3.7×1	14700	41600	300	52	30	20	N	12	82	D	—	39.5	32	31	M6	67	6.6	11	6.5	0.52	0.58
FR3208PS-DPNR	32	8	4.7625	28	3.7×1	30100	74600	330	56	42	25.5	N	15	84	D	—	40.5	34	32	M6	69	6.6	11	6.5	0.79	0.55
FR3210PS-DPNR	32	10	6.3500	27.2	3.7×1	43100	97000	370	62	55	28.5	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.17	0.52
FR3212PS-DPNR	32	12	6.3500	27.2	3.7×1	43100	97000	370	62	65	31	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.33	0.54
FR3216PS-DPNR	32	16	6.3500	27.2	3.7×1	43100	97000	370	62	78	30	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	1.54	0.56
FR3612PS-DPNR	36	12	7.1440	30.6	3.7×1	59500	140500	400	70	62	32.5	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	1.77	0.66
FR3616PS-DPNR	36	16	7.1440	30.6	3.7×1	59500	140500	400	70	80	35	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	2.14	0.70
FR4008PS-DPNR	40	8	4.7625	36	3.7×1	34400	98300	410	64	44	26	N	15	98	D	—	47.5	38	38	M6	80	9	14	8.6	1.01	0.89
FR4010PS-DPNR	40	10	6.3500	35.2	3.7×1	49400	125800	410	70	55	28.5	N	15	104	D	—	50.5	41	40	M6	86	9	14	8.6	1.43	0.85
FR4012PS-DPNR	40	12	7.1440	34.6	3.7×1	64000	160700	460	74	63	33	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	1.90	0.84
FR4016PS-DPNR	40	16	7.1440	34.6	3.7×1	64000	160700	460	74	78	34	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	2.23	0.88

Note: • The rigidity indicated with the *mark in the above list represents the operational value based on the result of rigidity testing. This value is calculated from the elastic displacement measured when the axial load equivalent to 30% of basic dynamic load rating (C) is applied between the screw thread and the balls.
• Wiper material N: Without wiper

Custom Ball Screw: END DEFLECTOR METHOD DOUBLE NUT (Accuracy grade C3-C5)



Flange type D

(Unit: mm)

Model No.	Screw shaft diameter d	Lead L	Ball diameter D_b	Root diameter d_r	Number of circuits Turn x Circuit	Basic dynamic load rating C (N)	Basic static load rating C_0 (N)	*Rigidity K_{NW} (N/µm)	Nut dimensions: Outer diameter D	Overall length L_1	Length A	Wiper material	Flange thickness T	Flange outer diameter D_1	Flange type	Flange dimensions: X	Y	B	G	Q	Mounting hole: PCD	M: Drill	M: Spot facing	M: Depth	Mass: Nut (kg)	Mass: Screw shaft (kg/10mm)
FR3208PE-DPNR	32	8	4.7625	28	3.7×1	30100	74600	570	56	90	25.5	N	15	84	D	—	40.5	34	32	M6	69	6.6	11	6.5	1.43	0.55
FR3210PE-DPNR	32	10	6.3500	27.2	3.7×1	43100	97000	580	62	115	28.5	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	2.18	0.52
FR3212PE-DPNR	32	12	6.3500	27.2	3.7×1	43100	97000	580	62	137	31	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	2.54	0.54
FR3216PE-DPNR	32	16	6.3500	27.2	3.7×1	43100	97000	580	62	174	30	N	15	89	D	—	43	37	34	M6	75	6.6	11	6.5	3.13	0.56
FR3612PE-DPNR	36	12	7.1440	30.6	3.7×1	59500	140500	670	70	134	32.5	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	3.34	0.66
FR3616PE-DPNR	36	16	7.1440	30.6	3.7×1	59500	140500	670	70	176	35	N	18	104	D	—	50.5	41	40	M6	86	9	14	8.6	4.21	0.70
FR4008PE-DPNR	40	8	4.7625	36	3.7×1	34400	98300	700	64	100	26	N	15	98	D	—	47.5	38	38	M6	80	9	14	8.6	1.91	0.89
FR4010PE-DPNR	40	10	6.3500	35.2	3.7×1	49400	125800	700	70	115	28.5	N	15	104	D	—	50.5	41	40	M6	86	9	14	8.6	2.64	0.85
FR4012PE-DPNR	40	12	7.1440	34.6	3.7×1	64000	160700	740	74	135	33	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	3.59	0.84
FR4016PE-DPNR	40	16	7.1440	34.6	3.7×1	64000	160700	740	74	174	34	N	18	108	D	—	52.5	43	41	M6	90	9	14	8.6	4.45	0.88

Note: • The rigidity K_{NW} indicated with the *mark in the above list represents the value applied to the axial load about 3 times or less of the preload, which is equivalent to 1/20 of basic dynamic load rating (C).
• Wiper material N: Without wiper

Rolled ball screws
GY/GW series

Page

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Ordering instructions, size reference chart —— D- 3

8 mm shaft diameter —— D- 4 to 11
10 mm shaft diameter —— D- 12 to 25
12 mm shaft diameter —— D- 26 to 35
15 mm shaft diameter —— D- 36 to 49
16 mm shaft diameter —— D- 50 to 51
20 mm shaft diameter —— D- 52 to 65
25 mm shaft diameter —— D- 66 to 79
28 mm shaft diameter —— D- 80 to 81
32 mm shaft diameter —— D- 82 to 87
36 mm shaft diameter —— D- 88 to 91
40 mm shaft diameter —— D- 92 to 97

Rolled ball screws GY/GW series

Features

● Various screw shaft diameters and leads are available for your selection

• An optimal size can be selected from a variety of screw shaft diameters and leads, eliminating unnecessary compromise in size selection.

● Nut types suited for the mounting configuration are available for your selection

• Nut types such as the flange type and square type are available for your selection.

● Free combination specification

• The GY series screw shafts and nuts are mutually compatible. KURODA is also accepting orders for each item separately.

□ Summary of the specifications

Screw shaft diameter	ø8 to ø40 mm
Lead	2 to 40 mm
Accuracy grade	GW series: C7 grade GY series: C10 grade
Axial clearance	Refer to each product specification table.
Shaft end type	Unfinished shaft ends
Product line	Standard product

□ Options available

Series	Additional shaft-end machining	Surface treatment (Anticorrosive black coating)	Change of grease type	Change of nut direction	LUBSEAL
GW series	○	○	○	○	Refer to each product page.
GY series	○	○	○	○	Refer to each product page.

• The surface treatment is anticorrosive black coating (coating thickness: 1 to 2 μm).
• Contact KURODA regarding the inclusion of grease types other than the standard grease.
• Please refer to the LUBSEAL series and size reference chart or the option specifications on each product's page to determine whether or not LUBSEAL is supported.

□ Model numbers of GY/GW series

	Series	Shaft diameter	Lead	Number of circuits	Combination		Flange type	Ball recirculation system	Wiper material	Thread direction		Overall screw shaft length	Shaft end type	Thread length		Accuracy grade	Axial clearance
Example model numbers	GY	40	40	B	S	–	H	U	B	R	–	4000	X	3500	–	CA	Y
	GY	8 to 40	2 to 40	See specifications.	S	–	See specifications.	See specifications.	See specifications.	R	–	To be shown with a 4-digit number in metric units (mm)	A, X	To be shown with a 4-digit number in metric units (mm)	–	CA	Y
	GW	8 to 25	2 to 40													C7	Y

• For more details, refer to the specifications and data for each size.

□ Screw shaft diameter and lead combinations

● GW series (Accuracy grade C7)

Screw shaft diameter (mm)	Lead (mm) 2	2.5	4	5	10	16	20	25	32	40
8	M									
10		M	M		M					
12			M		M					
15				M, K	M, K	M	M			
16									M	
20				M, K	M, K		M			M
25				M, K	M, K			M		

The symbols in the above table represent: M: round type nut, K: square type nut

● GY series (Accuracy grade C10)

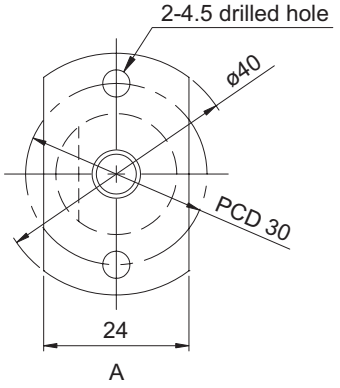
Screw shaft diameter (mm)	Lead (mm) 2	2.5	4	5	6	8	10	16	20	25	32	40
8	M		M	M		M						
10	M	M	M	M	M		M					
12	M		M			M	M					
15				M, K			M, K	M	M			
16											M	
20				M, K			M, K		M			M
25				M, K			M, K			M		
28					M							
32							M, K				M	
36							M		M			
40							M		M			M

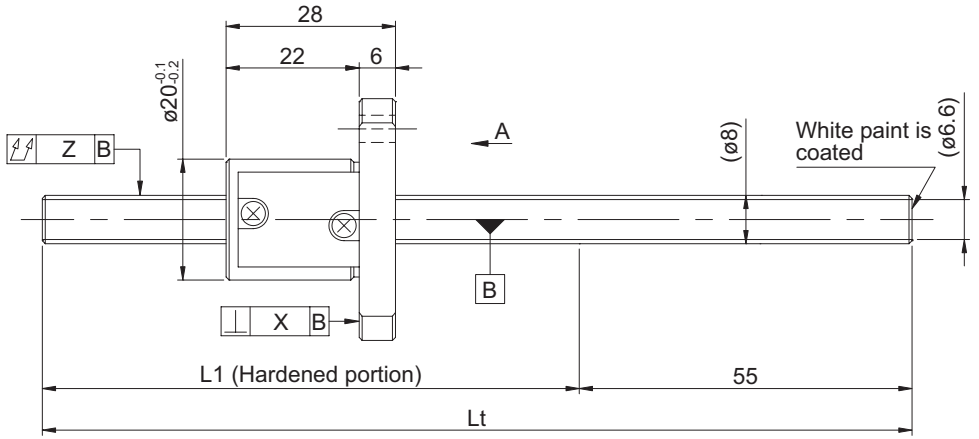
The symbols in the above table represent: M: round type nut, K: square type nut

GW series (Accuracy grade C7) / GY series (Accuracy grade C10)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 2	
Number of circuits / Thread direction	3.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	1.5875	
Root diameter (mm)	6.6	
Series	GW	GY
Basic dynamic load rating C (N)	1800	
Basic static load rating C0 (N)	3200	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Guide plate method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW0802GS-HGNR-0200A	145	200	117
GW0802GS-HGNR-0400A	345	400	317
GY0802GS-HGNR-0200A	145	200	117
GY0802GS-HGNR-0400A	345	400	317

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø8, Lead 2 (Round nut)

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

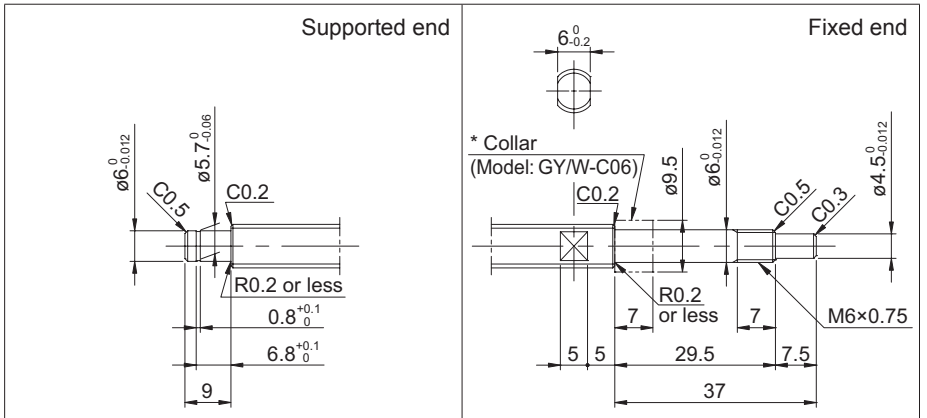
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GW0802GS-HGNR-0400A → GW0802GS-HGNR-0382X0336-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-6 (Square type)
BUM-6S (Round type)	BUM-6, BUM-6F (Round type)

● Optional specifications

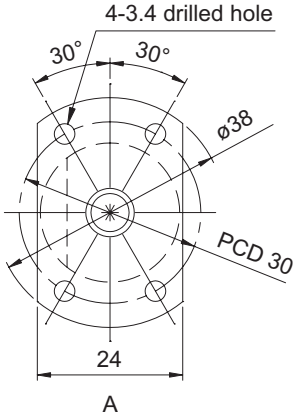
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

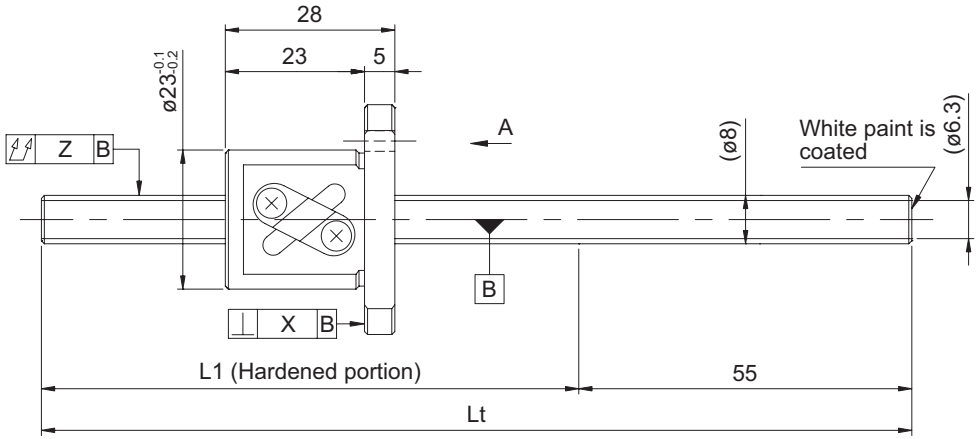
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.040	0.17
		0.120	0.25
0.21/300	---	0.080	0.17
		0.200	0.25

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 4
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.000
Root diameter (mm)	6.3
Series	GY
Basic dynamic load rating C (N)	1900
Basic static load rating C0 (N)	3100
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY0804DS-HANR-0200A	145	200	117
GY0804DS-HANR-0400A	345	400	317

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø8, Lead 4 (Round nut)

• Shaft end finish type

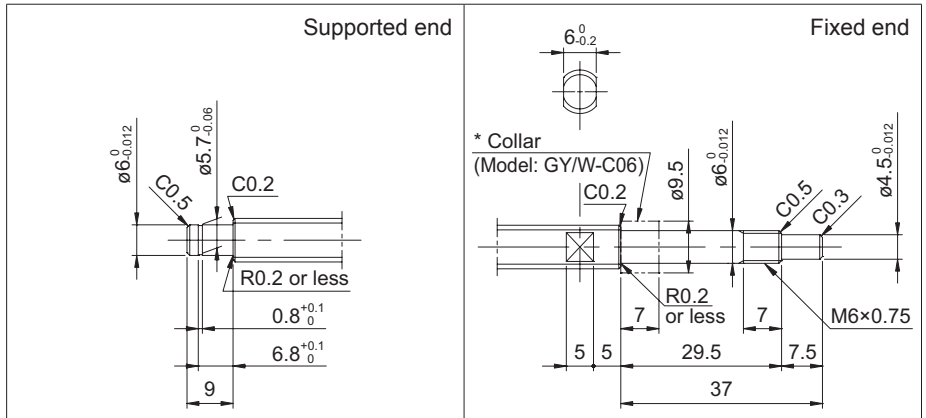
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY0804DS-HANR-0400A → GY0804DS-HANR-0382X0336-CAY

0382: Thread length
0336: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-6 (Square type)
BUM-6S (Round type)	BUM-6, BUM-6F (Round type)

• Optional specifications

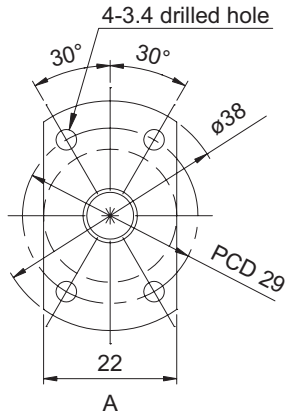
• Anticorrosive black coating (coating thickness: 1 to 2 µm) is available.

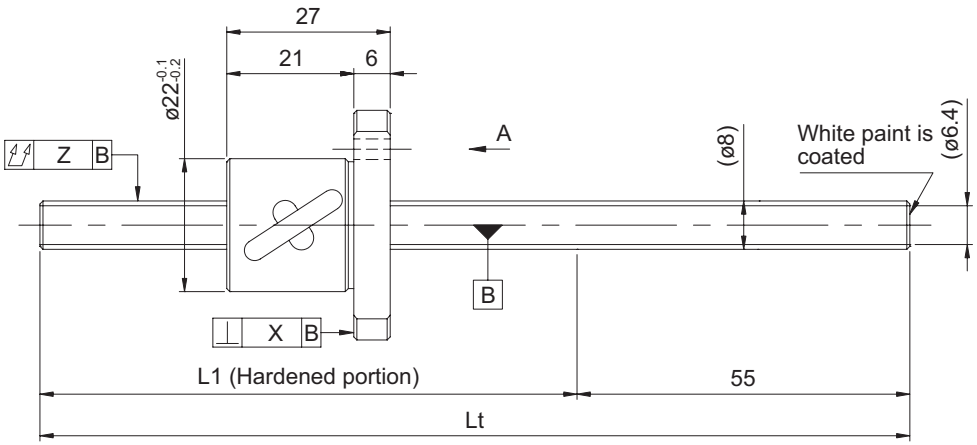
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.080	0.18
		0.200	0.26

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 5
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.000
Root diameter (mm)	6.4
Series	GY
Basic dynamic load rating C (N)	1900
Basic static load rating C0 (N)	3100
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY0805DS-HUNR-0200A	145	200	118
GY0805DS-HUNR-0400A	345	400	318

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø8, Lead 5 (Round nut)

• Shaft end finish type

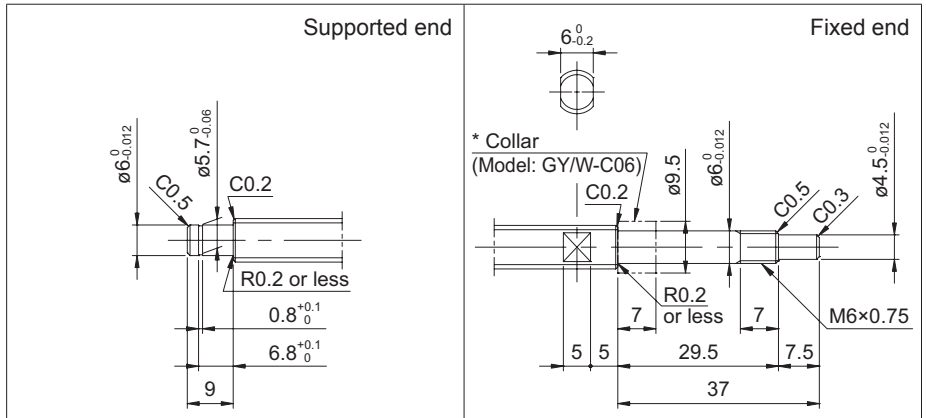
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY0805DS-HUNR-0400A → GY0805DS-HUNR-0382X0336-CAY

0382: Overall screw shaft length
0336: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-6 (Square type)
BUM-6S (Round type)	BUM-6, BUM-6F (Round type)

• Optional specifications

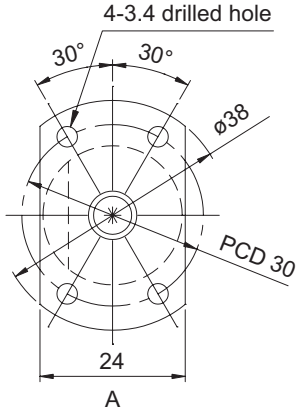
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

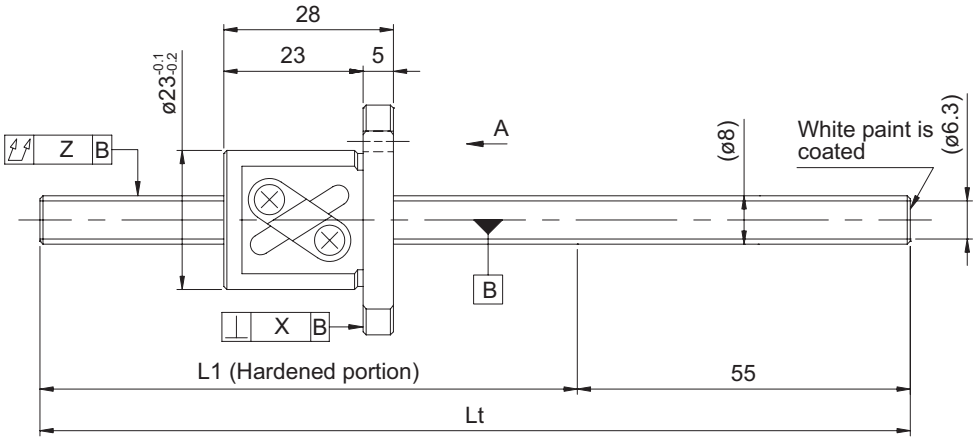
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.080	0.17
		0.200	0.25

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 8
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.000
Root diameter (mm)	6.3
Series	GY
Basic dynamic load rating C (N)	1200
Basic static load rating C0 (N)	1800
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY0808AS-HANR-0200A	145	200	117
GY0808AS-HANR-0400A	345	400	317

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø8, Lead 8 (Round nut)

• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

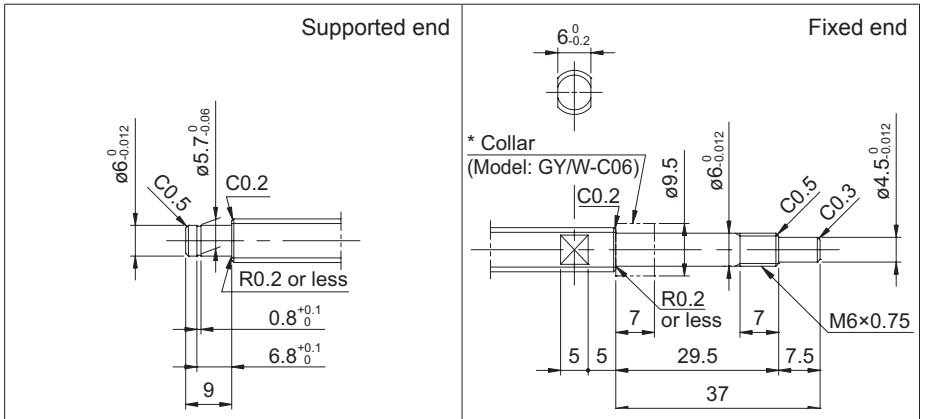
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY0808AS-HANR-0400A → GY0808AS-HANR-0382X0336-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-6 (Square type)
BUM-6S (Round type)	BUM-6, BUM-6F (Round type)

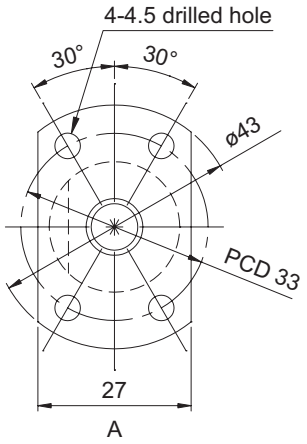
• Optional specifications

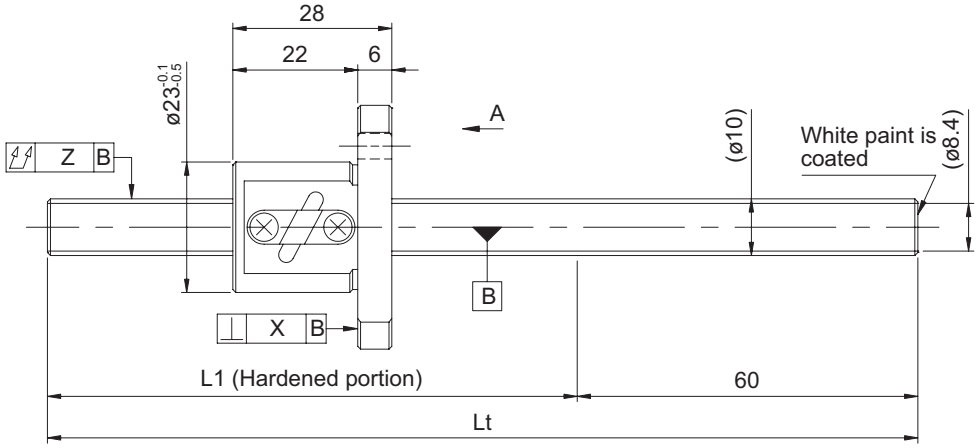
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.080	0.18
		0.200	0.26

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 2
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	1.5875
Root diameter (mm)	8.4
Series	GY
Basic dynamic load rating C (N)	1700
Basic static load rating C0 (N)	3000
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY1002DS-HANR-0400A	340	400	312
GY1002DS-HANR-0600A	540	600	512

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

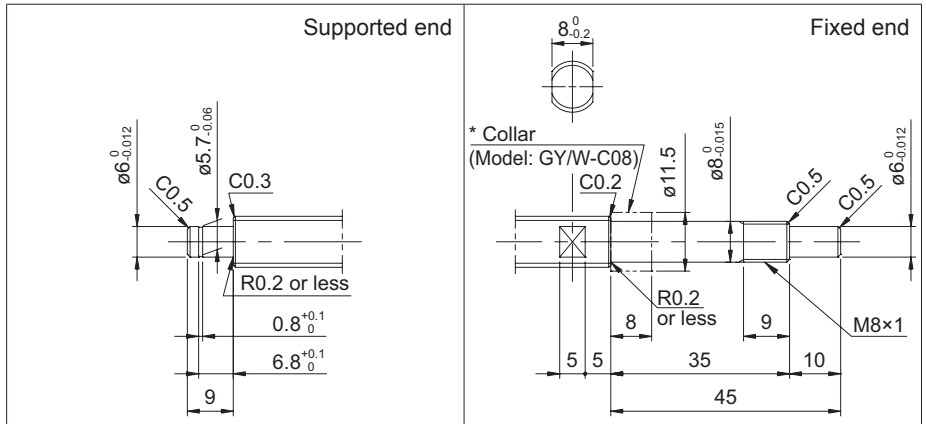
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1002DS-HANR-0600A → GY1002DS-HANR-0585X0531-CAY

0585: Thread length
0531: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

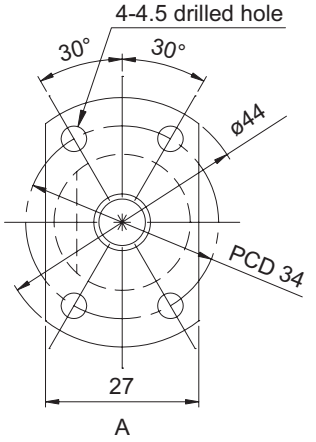
● Optional specifications

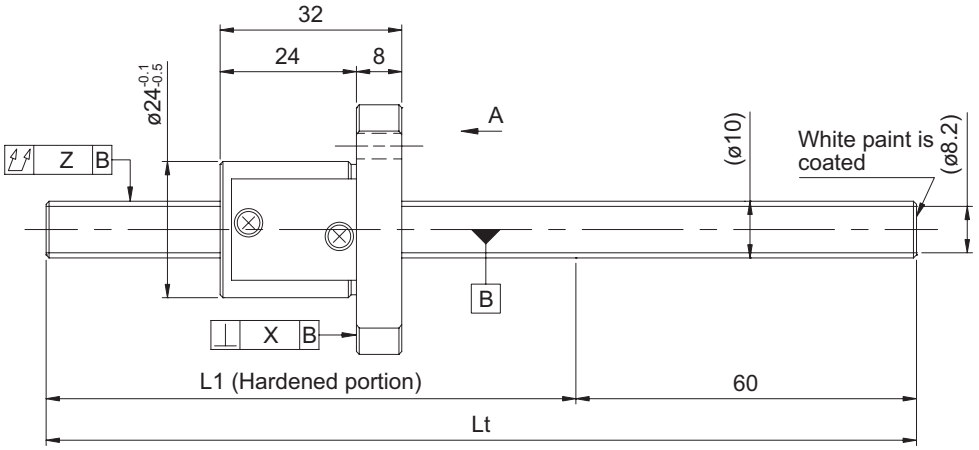
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.150	0.35
		0.240	0.48

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 2.5	
Number of circuits / Thread direction	3.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	2.000	
Root diameter (mm)	8.2	
Series	GW	GY
Basic dynamic load rating C (N)	2600	
Basic static load rating C0 (N)	5200	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Guide plate method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW102FGS-HGNR-0400A	340	400	308
GW102FGS-HGNR-0600A	540	600	508
GY102FGS-HGNR-0400A	340	400	308
GY102FGS-HGNR-0600A	540	600	508

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

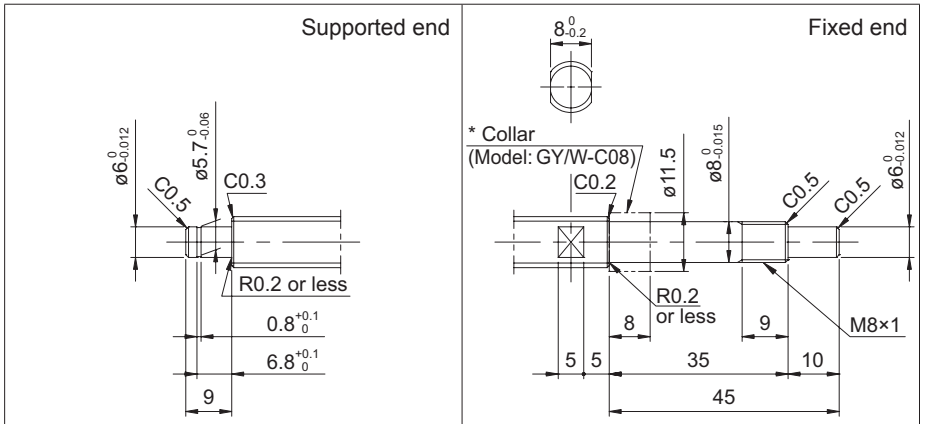
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY102FGS-HGNR-0600A → GY102FGS-HGNR-0585X0531-CAY
- 0585: Overall screw shaft length
- 0531: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

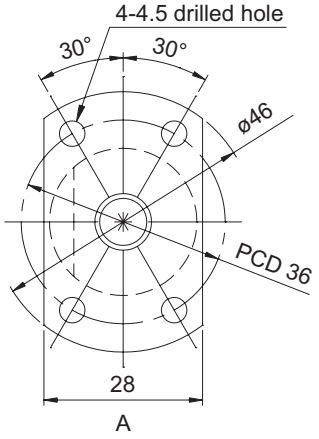
● Optional specifications

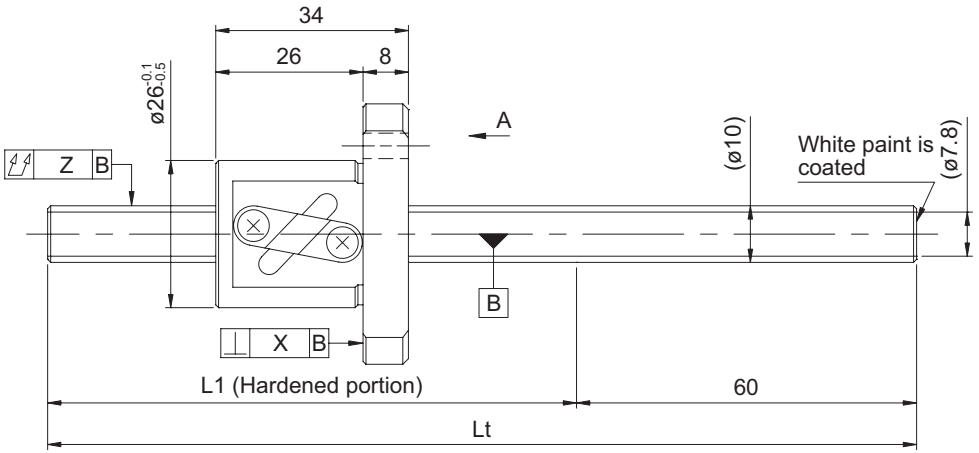
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.41
		0.120	0.53
0.21/300	---	0.150	0.41
		0.240	0.53

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 4	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	7.8	
Series	GW	GY
Basic dynamic load rating C (N)	2300	
Basic static load rating C0 (N)	4800	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1004DS-HANR-0400A	340	400	306
GW1004DS-HANR-0600A	540	600	506
GY1004DS-HANR-0400A	340	400	306
GY1004DS-HANR-0600A	540	600	506

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

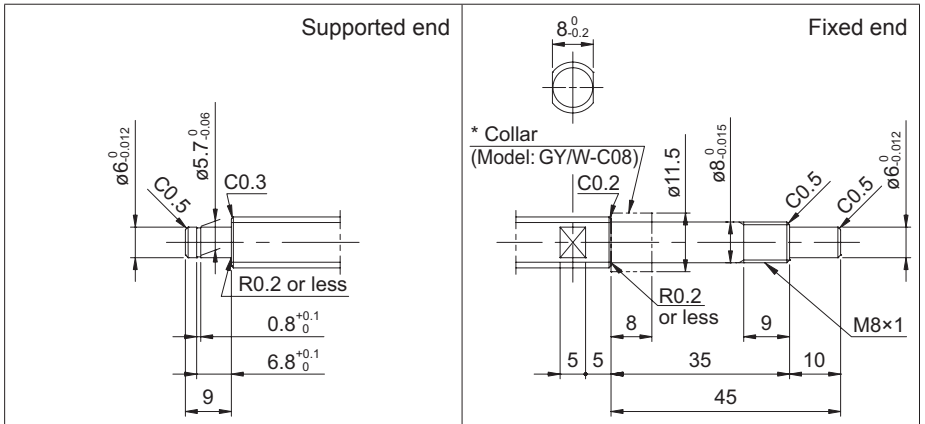
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1004DS-HANR-0600A → GY1004DS-HANR-0585X0531-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

● Optional specifications

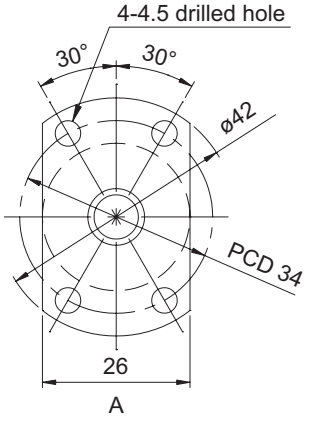
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

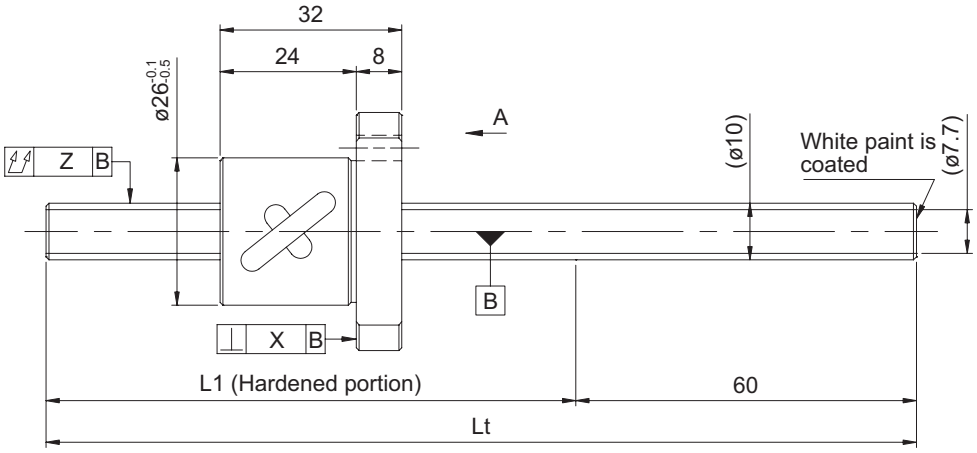
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.42
		0.120	0.54
0.21/300	---	0.150	0.42
		0.240	0.54

Screw shaft diameter ø10

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 5
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.3812
Root diameter (mm)	7.7
Series	GY
Basic dynamic load rating C (N)	2300
Basic static load rating C0 (N)	4800
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY1005DS-HUNR-0400A	340	400	308
GY1005DS-HUNR-0600A	540	600	508

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

• Shaft end finish type

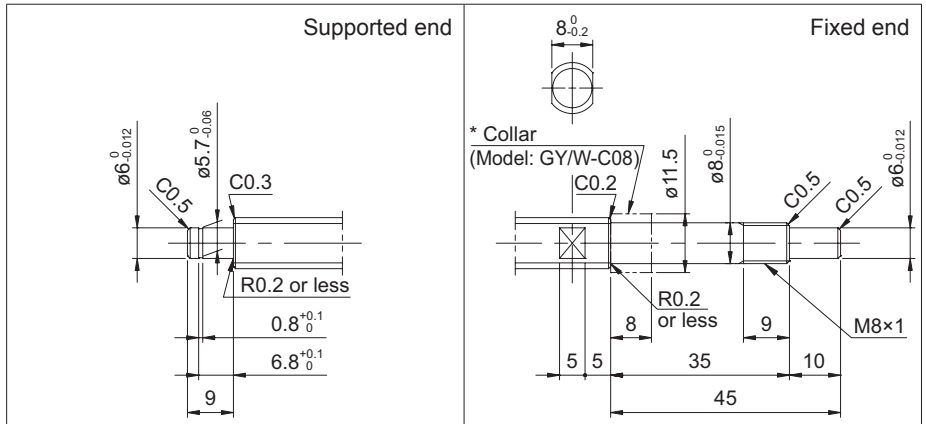
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1005DS-HUNR-0600A → GY1005DS-HUNR-0585X0531-CAY

0585: Thread length
0531: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

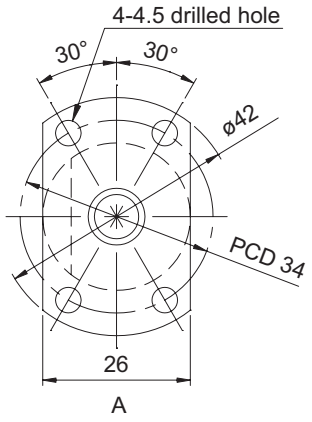
• Optional specifications

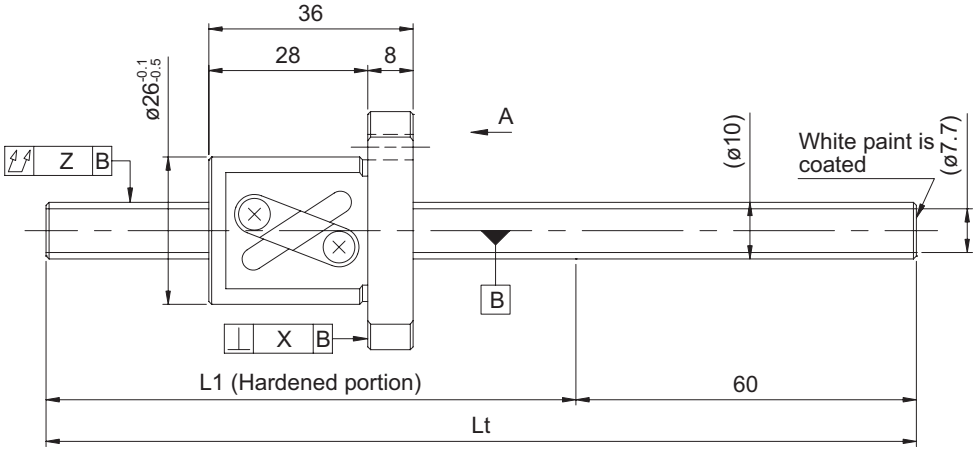
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.150	0.39
		0.240	0.52

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 6
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.3812
Root diameter (mm)	7.7
Series	GY
Basic dynamic load rating C (N)	2300
Basic static load rating C0 (N)	4800
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY1006DS-HANR-0400A	340	400	304
GY1006DS-HANR-0600A	540	600	504

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

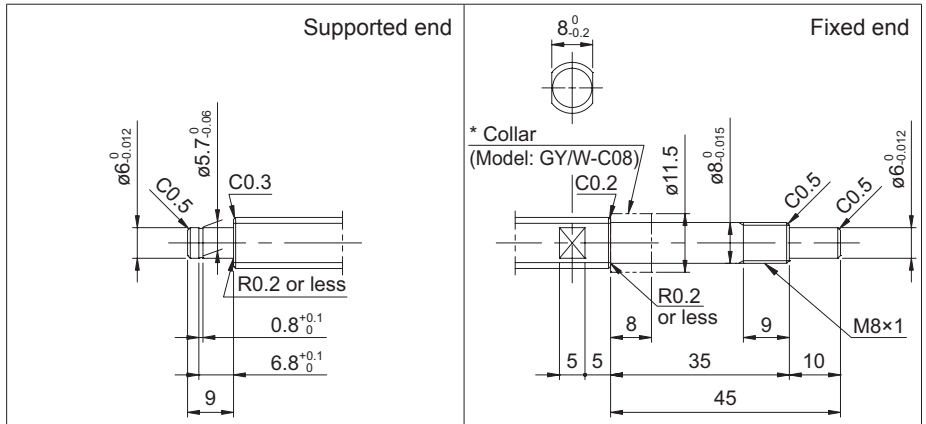
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1006DS-HANR-0600A → GY1006DS-HANR-0585X0531-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

● Optional specifications

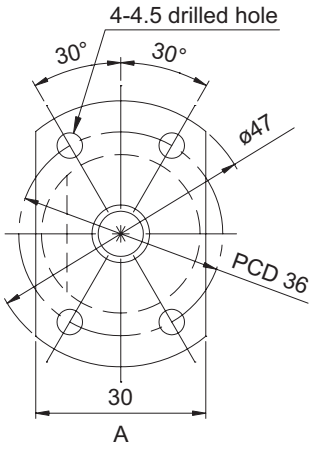
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

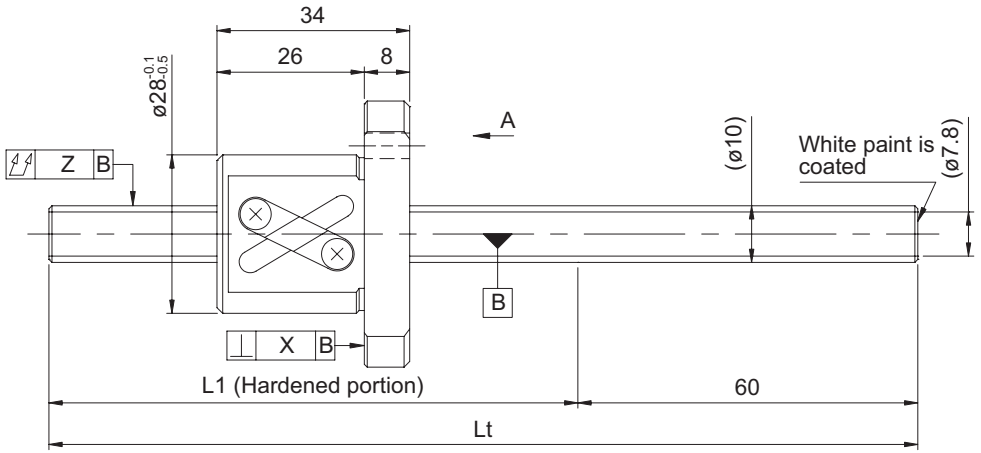
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.150	0.40
		0.240	0.52

GW series (Accuracy grade C7) / GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 10	
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	7.8	
Series	GW	GY
Basic dynamic load rating C (N)	1850	
Basic static load rating C0 (N)	3200	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1010AS-HANR-0400A	340	400	306
GW1010AS-HANR-0600A	540	600	506
GY1010AS-HANR-0400A	340	400	306
GY1010AS-HANR-0600A	540	600	506

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø10, Lead 10 (Round nut)

• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

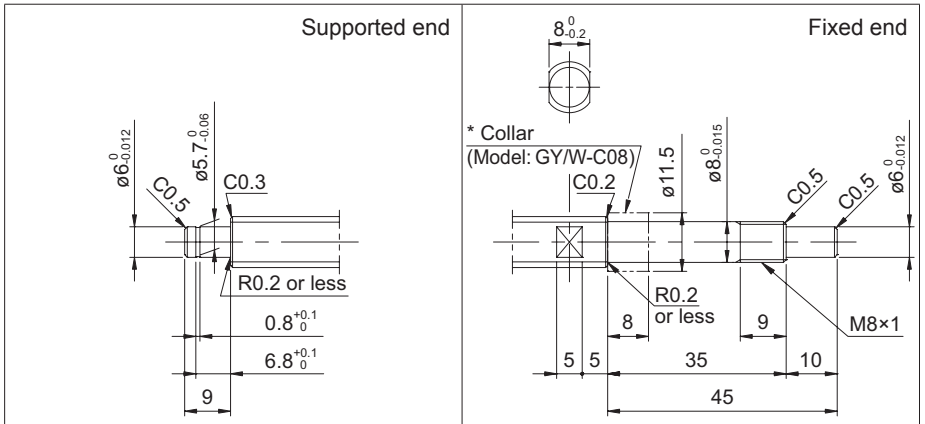
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1010AS-HANR-0600A → GY1010AS-HANR-0585X0531-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

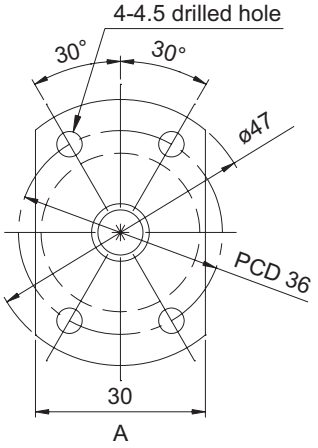
• Optional specifications

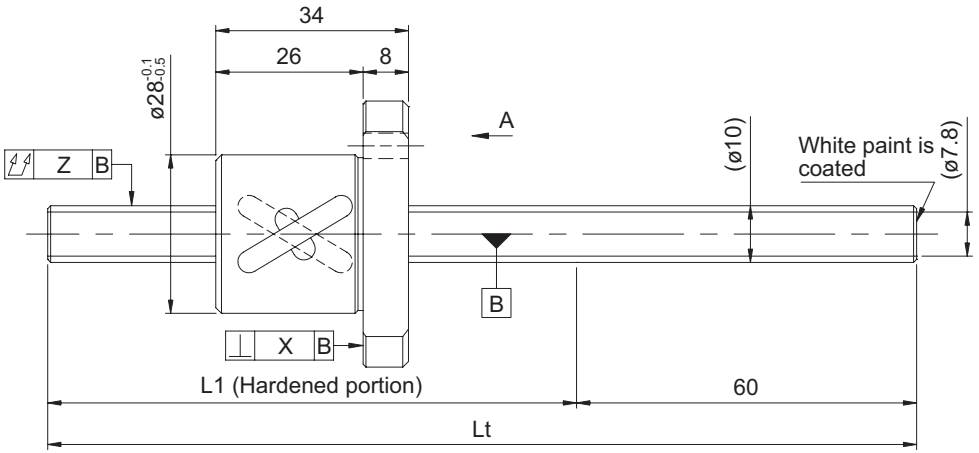
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.43
		0.120	0.55
0.21/300	---	0.150	0.43
		0.240	0.55

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	10 - 10	
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	7.8	
Series	GW	GY
Basic dynamic load rating C (N)	3300	
Basic static load rating C0 (N)	6400	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1010BS-HUNR-0400A	340	400	306
GW1010BS-HUNR-0600A	540	600	506
GY1010BS-HUNR-0400A	340	400	306
GY1010BS-HUNR-0600A	540	600	506

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

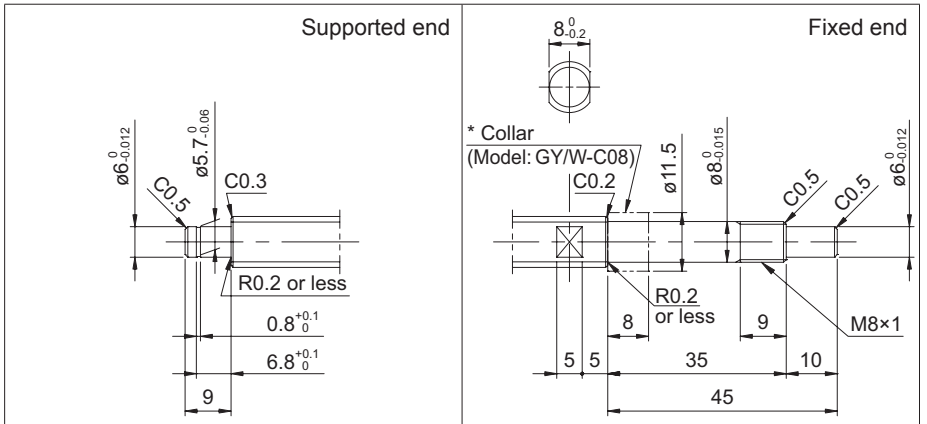
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1010BS-HUNR-0600A → GY1010BS-HUNR-0585X0531-CAY

- 0585: Overall screw shaft length
- 0531: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-8, BUK-8F (Square type)
BUM-6S (Round type)	BUM-8, BUM-8F (Round type)

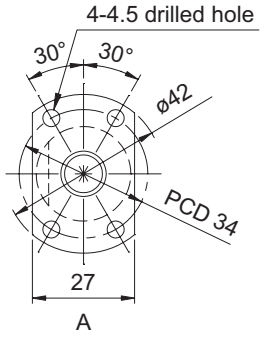
● Optional specifications

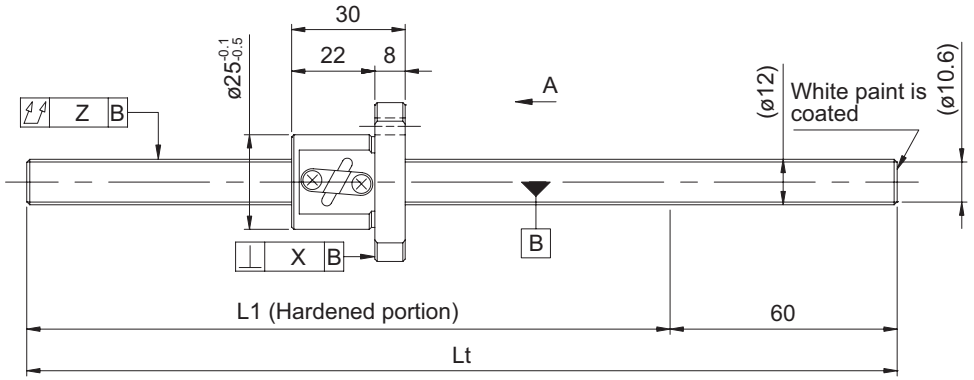
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.43
		0.120	0.55
0.21/300	---	0.150	0.43
		0.240	0.55

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 2
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	1.5875
Root diameter (mm)	10.6
Series	GY
Basic dynamic load rating C (N)	2000
Basic static load rating C0 (N)	3600
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY1202DS-HANR-0400A	340	400	310
GY1202DS-HANR-0800A	740	800	710

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

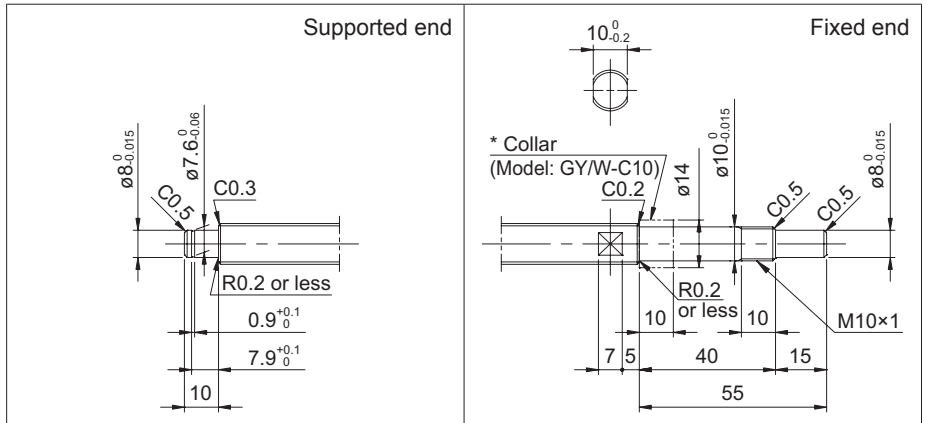
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1202DS-HANR-0800A → GY1202DS-HANR-0795X0730-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

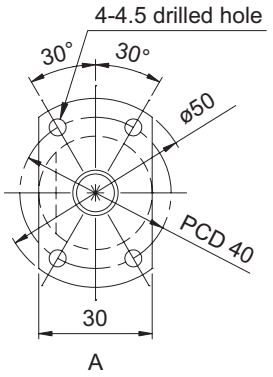
● Optional specifications

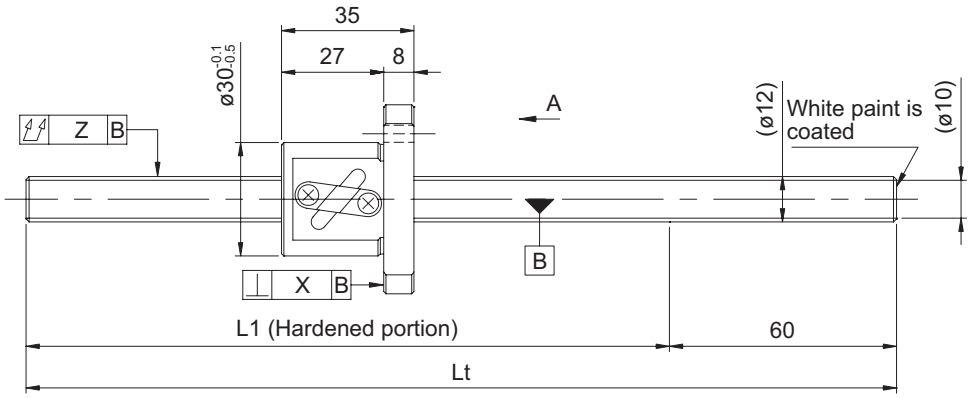
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass (kg)
Cumulative lead error	X	Z	
0.21/300	---	0.150	0.47
		0.320	0.83

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 4	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	2.3812	
Root diameter (mm)	10	
Series	GW	GY
Basic dynamic load rating C (N)	2600	
Basic static load rating C0 (N)	5800	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1204DS-HANR-0400A	340	400	305
GW1204DS-HANR-0800A	740	800	705
GY1204DS-HANR-0400A	340	400	305
GY1204DS-HANR-0800A	740	800	705

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

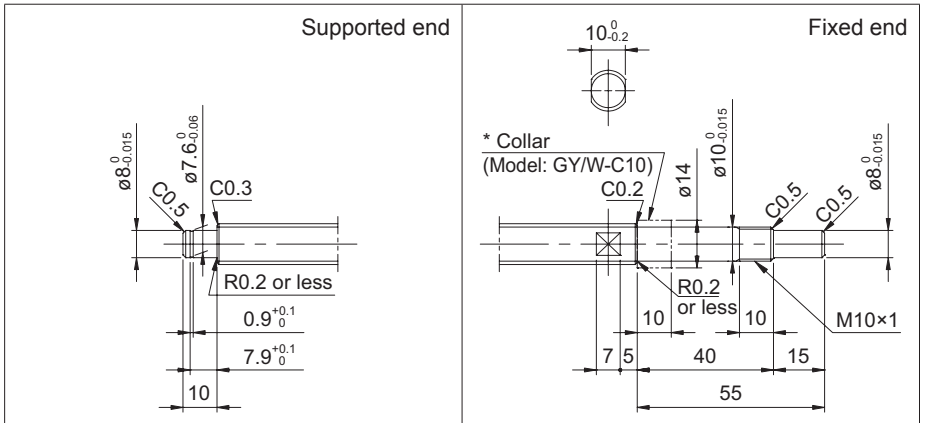
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1204DS-HANR-0800A → GY1204DS-HANR-0795X0730-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

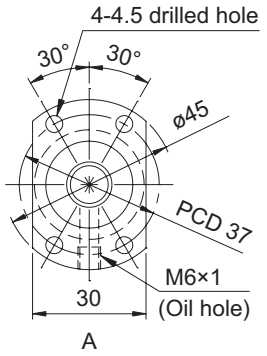
● Optional specifications

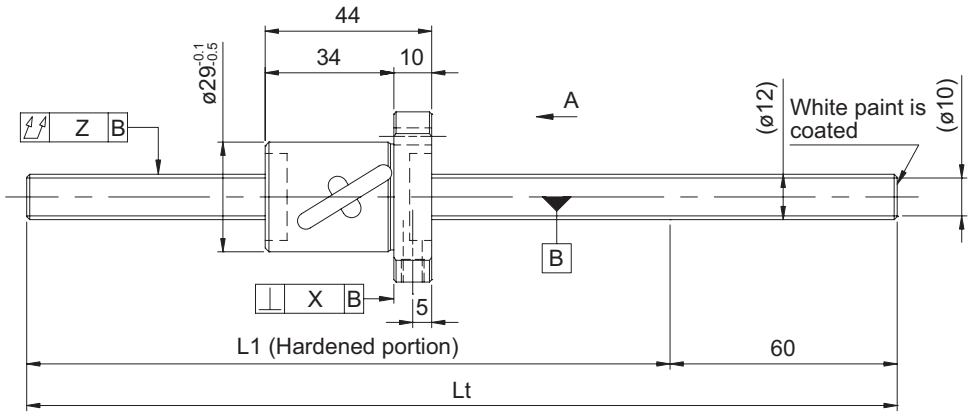
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass (kg)
Cumulative lead error	X	Z	
0.05/300	0.020	0.080	0.57
		0.200	0.92
0.21/300	---	0.150	0.57
		0.320	0.92

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 8
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand
Ball diameter (mm)	2.778
Root diameter (mm)	10
Series	GY
Basic dynamic load rating C (N)	3800
Basic static load rating C0 (N)	6700
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.050 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	None
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY1208DS-HULR-0400A	340	400	296
GY1208DS-HULR-0800A	740	800	696

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

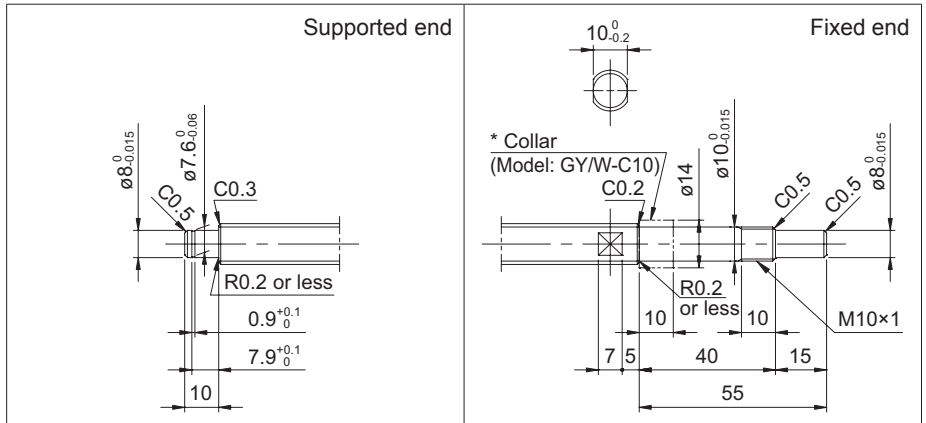
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1208DS-HANR-0800A → GY1208DS-HANR-0795X0730-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

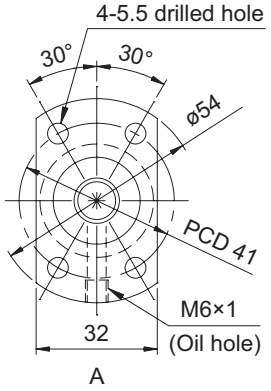
● Optional specifications

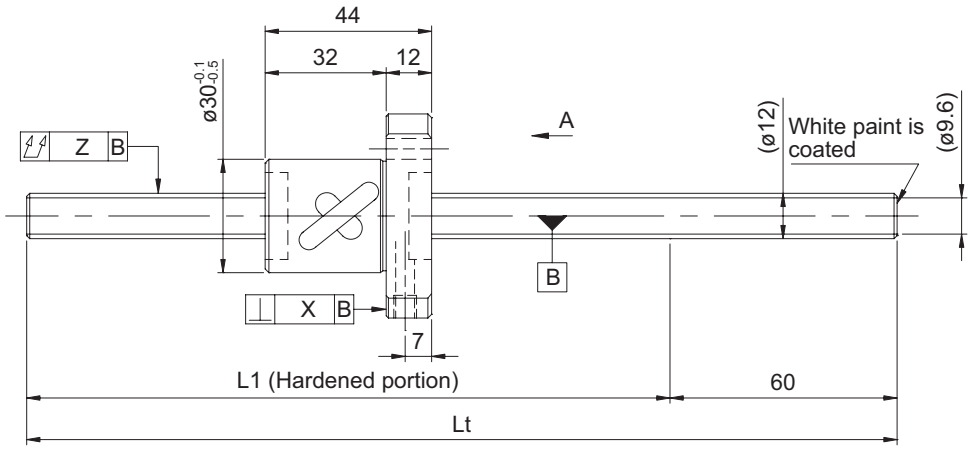
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.150	0.58
		0.320	0.94

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 10	
Number of circuits / Thread direction	1.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	9.6	
Series	GW	GY
Basic dynamic load rating C (N)	2850	
Basic static load rating C0 (N)	4950	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1210AS-HULR-0400A	340	400	296
GW1210AS-HULR-0800A	740	800	696
GY1210AS-HULR-0400A	340	400	296
GY1210AS-HULR-0800A	740	800	696

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

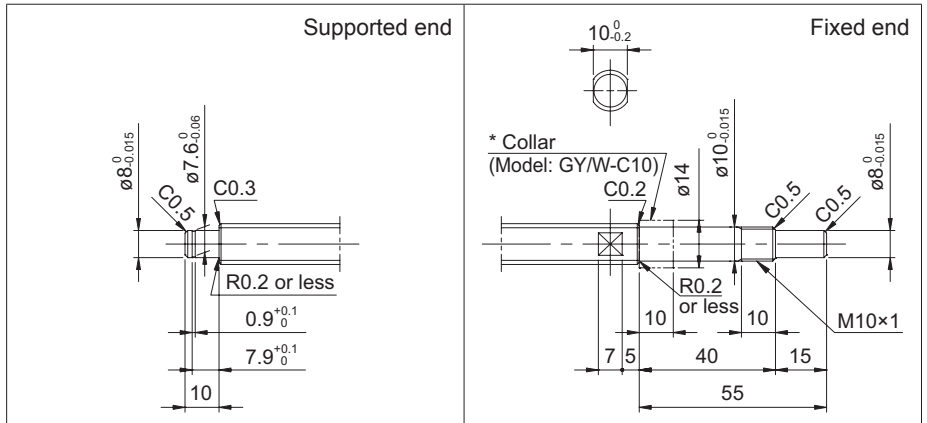
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1210AS-HULR-0800A → GY1210AS-HULR-0795X0730-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

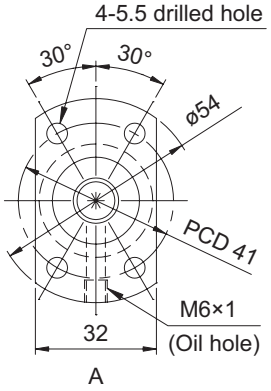
● Optional specifications

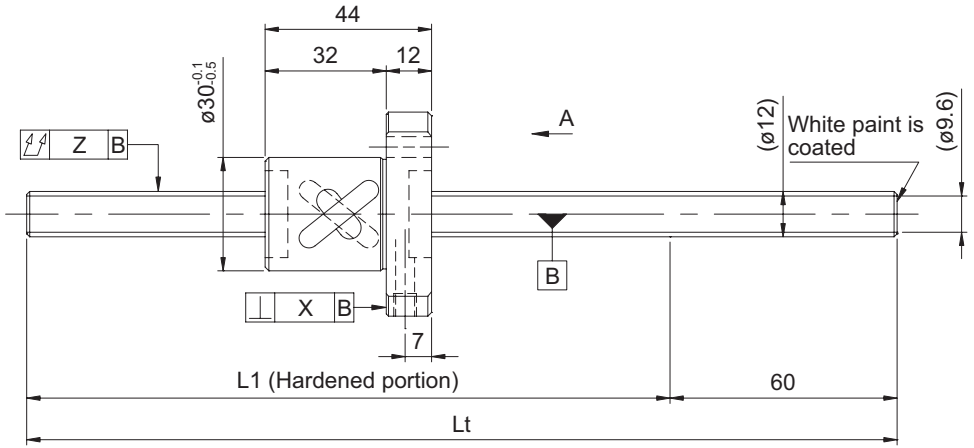
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.62
		0.200	0.98
0.21/300	---	0.150	0.62
		0.320	0.98

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	12 - 10	
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	9.6	
Series	GW	GY
Basic dynamic load rating C (N)	5100	
Basic static load rating C0 (N)	9900	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.050 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1210BS-HULR-0400A	340	400	296
GW1210BS-HULR-0800A	740	800	696
GY1210BS-HULR-0400A	340	400	296
GY1210BS-HULR-0800A	740	800	696

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

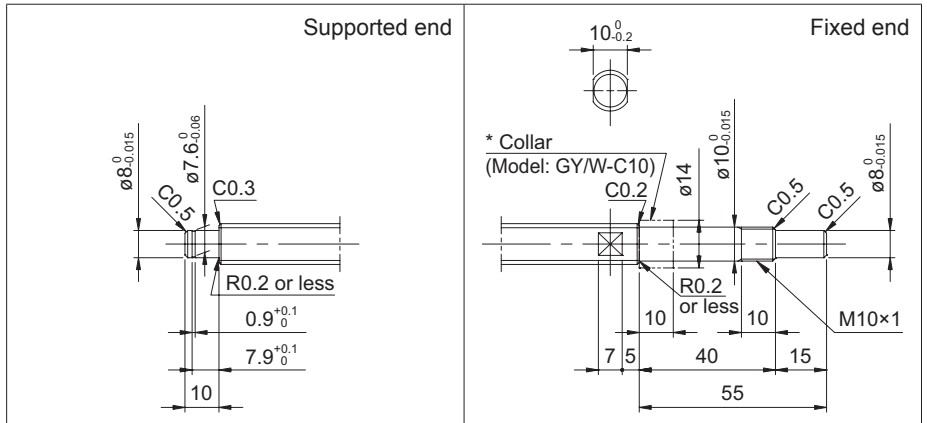
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1210BS-HULR-0800A → GY1210BS-HULR-0795X0730-CAY

Thread length

Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-8S (Square type)	BUK-10, BUK-10F (Square type)
BUM-8S (Round type)	BUM-10, BUM-10F (Round type)

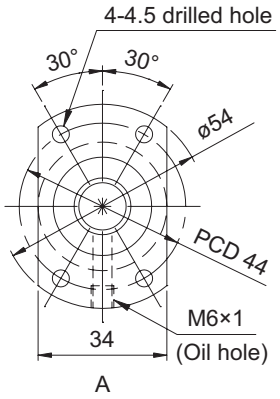
● Optional specifications

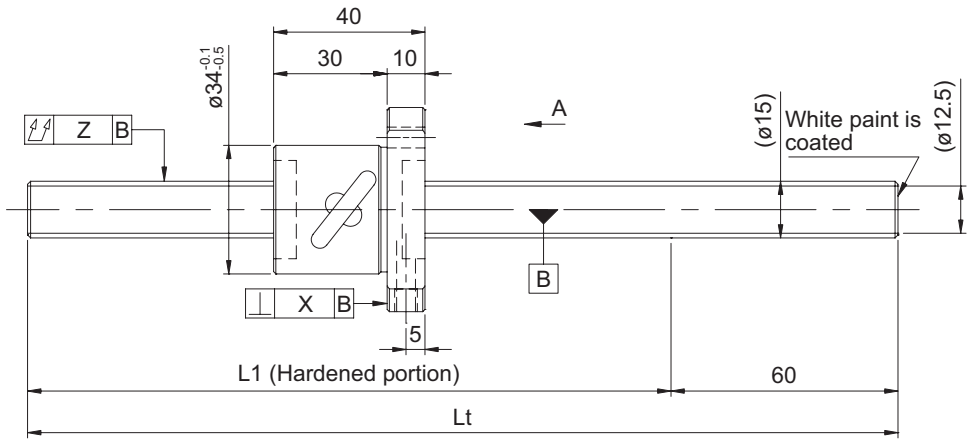
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.080	0.62
		0.200	0.98
0.21/300	---	0.150	0.62
		0.320	0.98

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	5100	
Basic static load rating C0 (N)	10500	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1505DS-HULR-0600A	540	600	500
GW1505DS-HULR-1200A	1140	1200	1100
GY1505DS-HULR-0600A	540	600	500
GY1505DS-HULR-1200A	1140	1200	1100

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

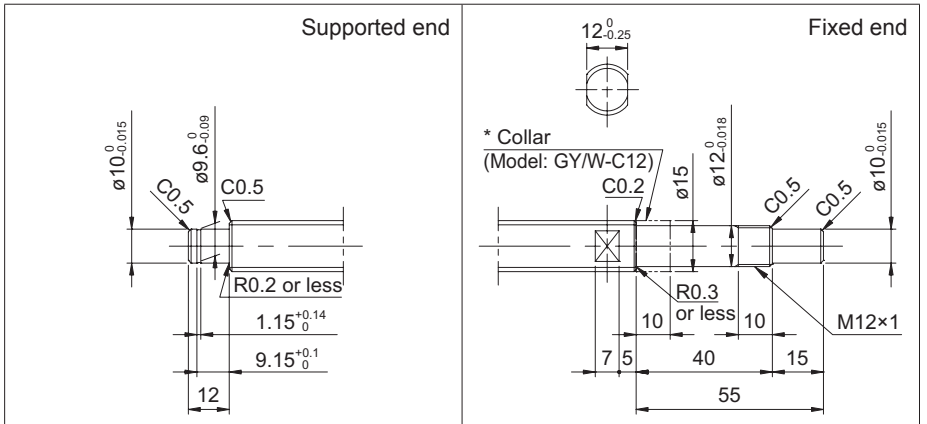
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1505DS-HULR-1200A → GY1505DS-HULR-1195X1128-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY1505DS-HUSR-1195X1128-CAY

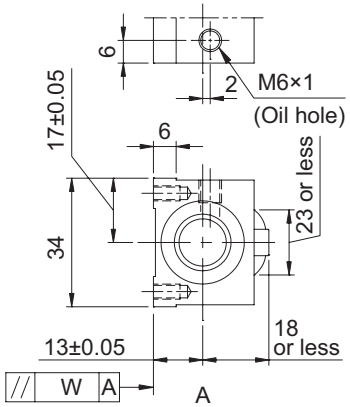
↳Wiper material S: LUBSEAL

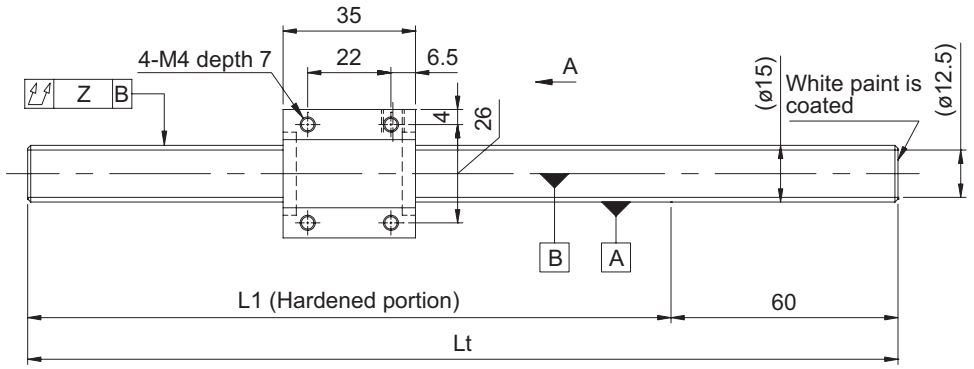
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.08
		0.170	1.91
0.21/300	---	0.140	1.08
		0.400	1.91

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	5100	
Basic static load rating C0 (N)	10500	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1505DS-NKLR-0600A	540	600	505
GW1505DS-NKLR-1200A	1140	1200	1105
GY1505DS-NKLR-0600A	540	600	505
GY1505DS-NKLR-1200A	1140	1200	1105

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

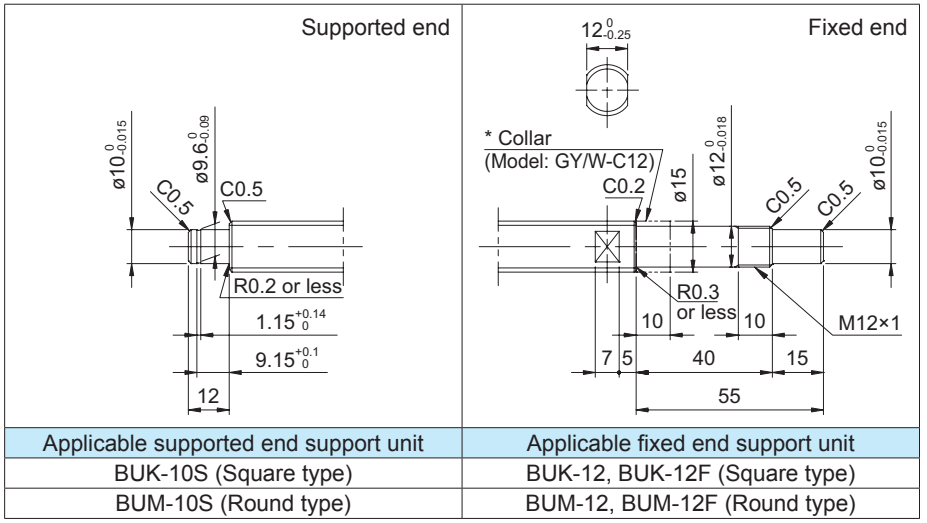
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1505DS-NKLR-1200A → GY1505DS-NKLR-1195X1128-CAY

1195: Thread length
1128: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

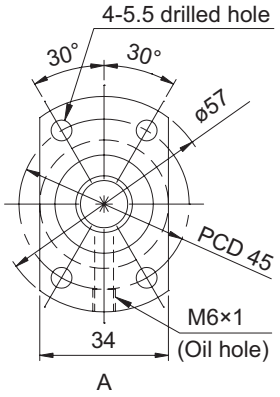
● Optional specifications

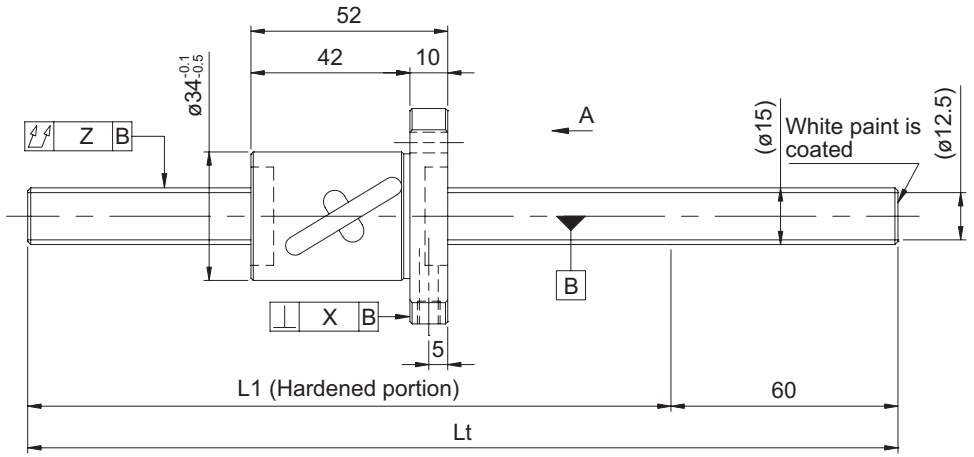
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	W	Z	(kg)
0.05/300	0.017	0.070	1.05
		0.170	1.88
0.21/300	---	0.140	1.05
		0.400	1.88

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	5100	
Basic static load rating C0 (N)	10500	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1510DS-HULR-0600A	540	600	488
GW1510DS-HULR-1200A	1140	1200	1088
GY1510DS-HULR-0600A	540	600	488
GY1510DS-HULR-1200A	1140	1200	1088

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

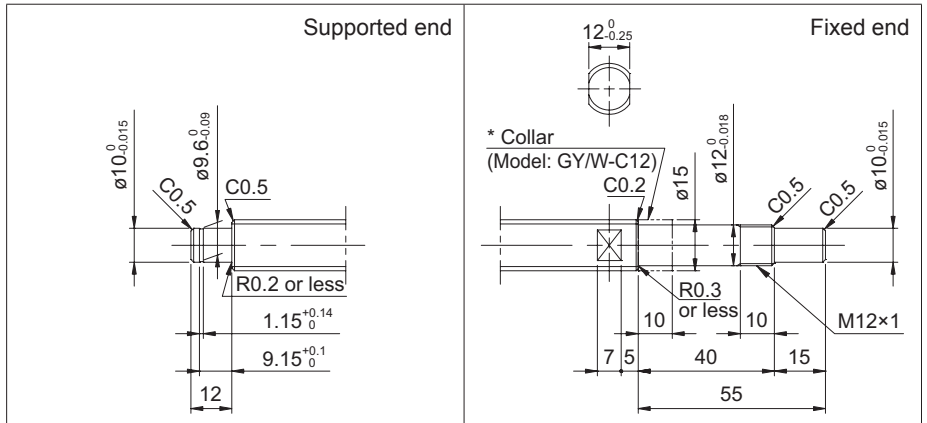
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1510DS-HULR-1200A → GY1510DS-HULR-1195X1128-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY1510DS-HUSR-1195X1128-CAY

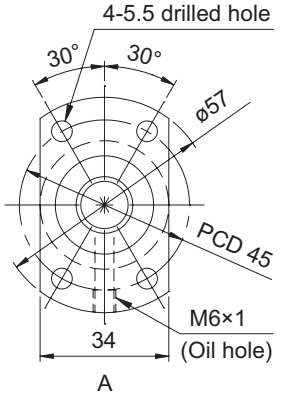
↳Wiper material S: LUBSEAL

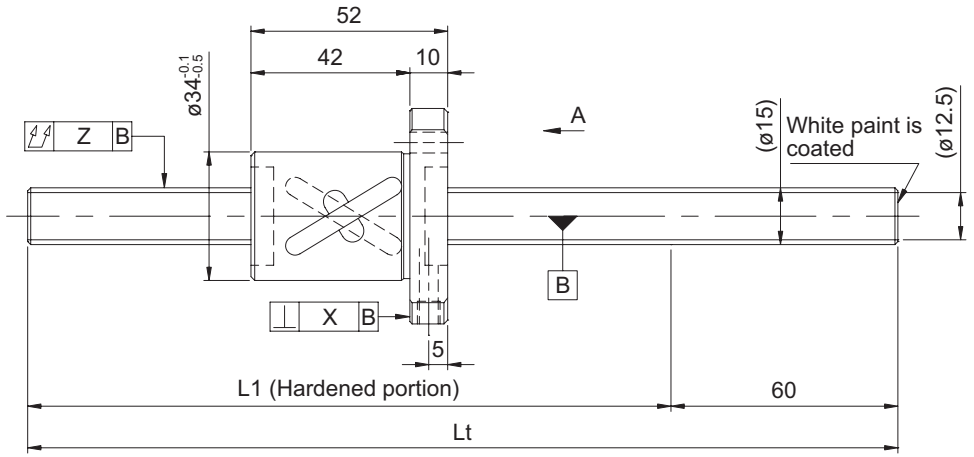
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.18
		0.170	2.01
0.21/300	---	0.140	1.18
		0.400	2.01

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	9200	
Basic static load rating C0 (N)	21000	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1510ES-HULR-0600A	540	600	488
GW1510ES-HULR-1200A	1140	1200	1088
GY1510ES-HULR-0600A	540	600	488
GY1510ES-HULR-1200A	1140	1200	1088

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

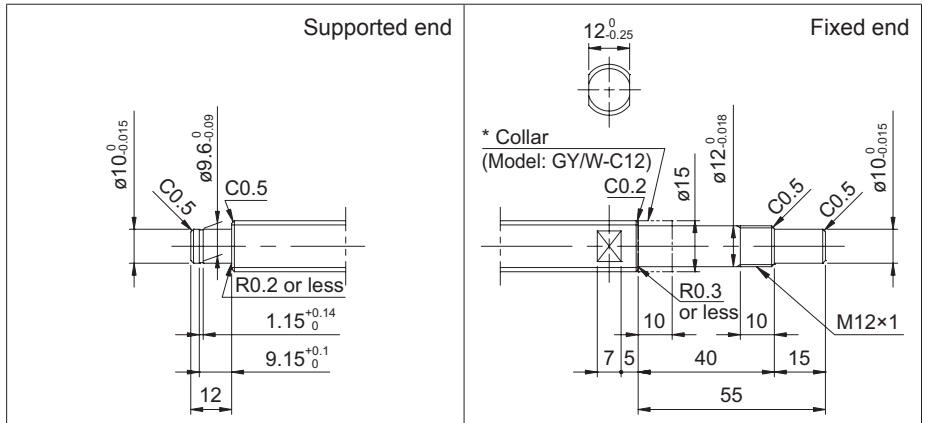
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1510ES-HULR-1200A → GY1510ES-HULR-1195X1128-CAY
- 1195: Thread length
- 1128: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

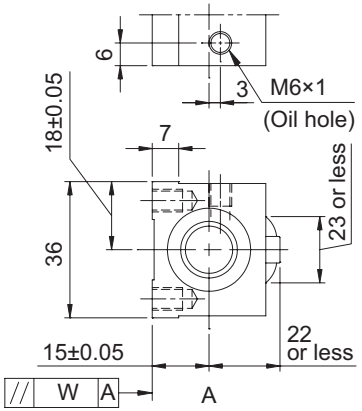
Model example: GY1510ES-HUSR-1195X1128-CAY
- S: LUBSEAL (Wiper material)

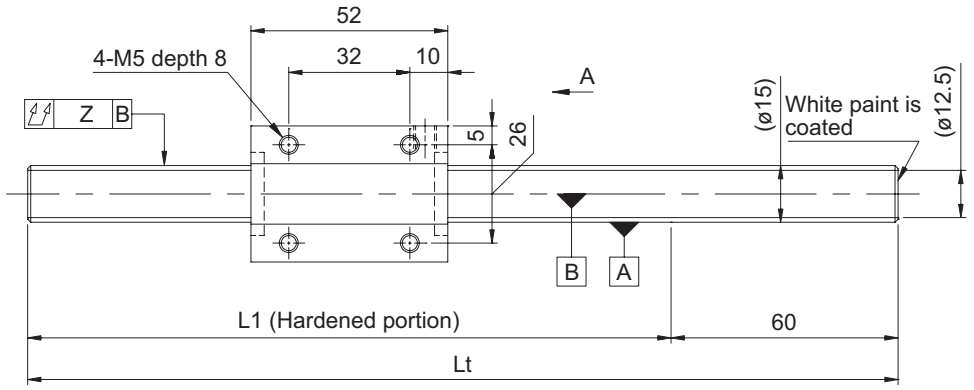
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.18
		0.170	2.01
0.21/300	---	0.140	1.18
		0.400	2.01

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 10	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	5100	
Basic static load rating C0 (N)	10500	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1510DS-NKLR-0600A	540	600	488
GW1510DS-NKLR-1200A	1140	1200	1088
GY1510DS-NKLR-0600A	540	600	488
GY1510DS-NKLR-1200A	1140	1200	1088

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

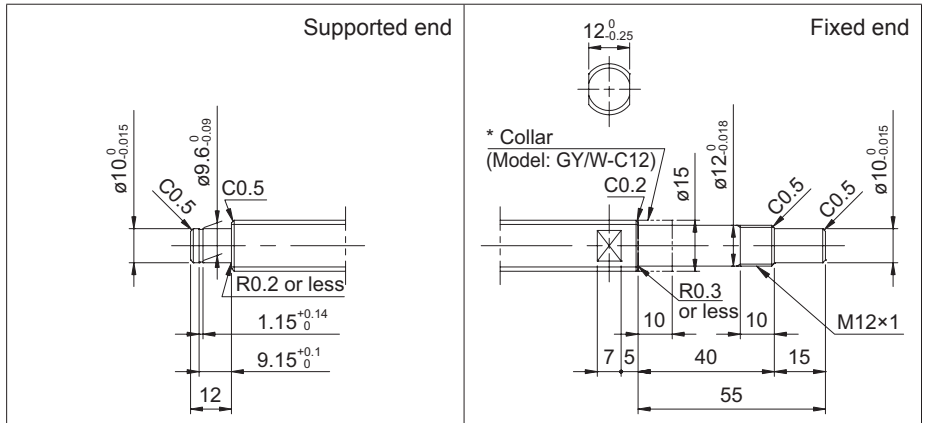
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1510DS-NKLR-1200A → GY1510DS-NKLR-1195X1128-CAY

1195: Thread length
1128: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

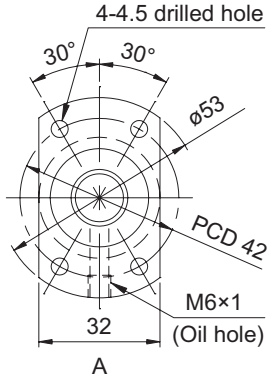
● Optional specifications

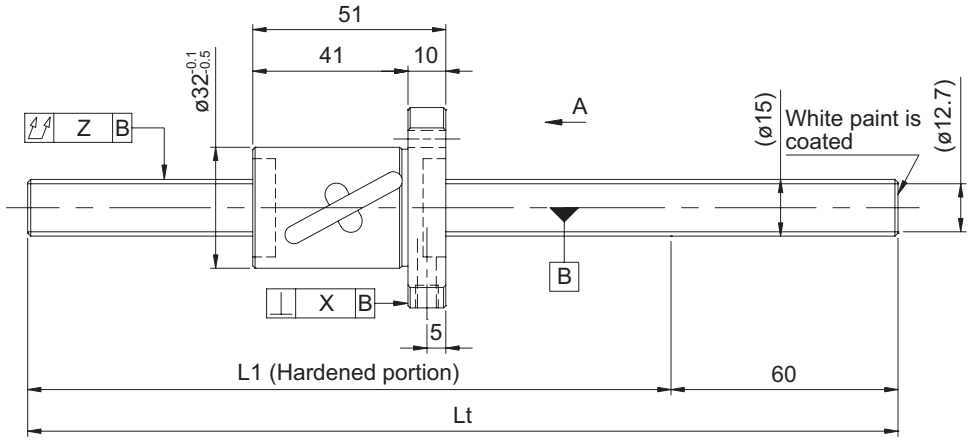
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	W	Z	(kg)
0.05/300	0.017	0.070	1.24
		0.170	2.07
0.21/300	---	0.140	1.24
		0.400	2.07

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 16	
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	2.778	
Root diameter (mm)	12.7	
Series	GW	GY
Basic dynamic load rating C (N)	4300	
Basic static load rating C0 (N)	10200	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1516BS-HULR-0600A	540	600	489
GW1516BS-HULR-1200A	1140	1200	1089
GY1516BS-HULR-0600A	540	600	489
GY1516BS-HULR-1200A	1140	1200	1089

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

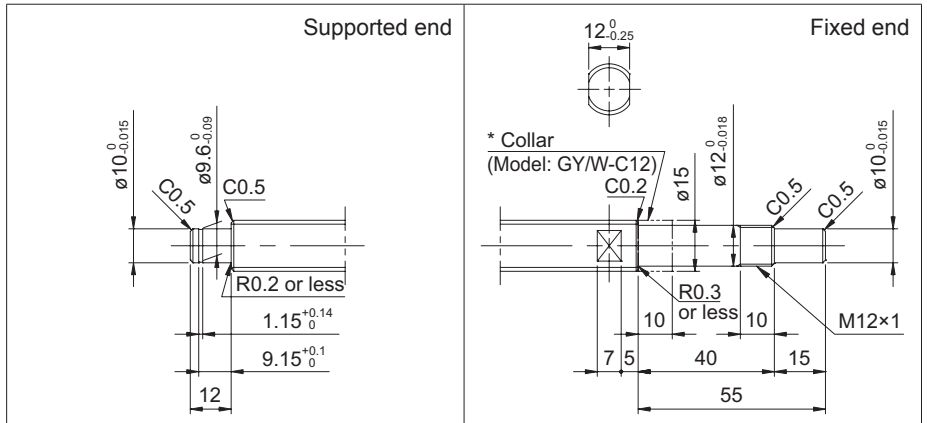
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1516BS-HULR-1200A → GY1516BS-HULR-1195X1128-CAY

1195: Overall screw shaft length; 1128: Thread length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

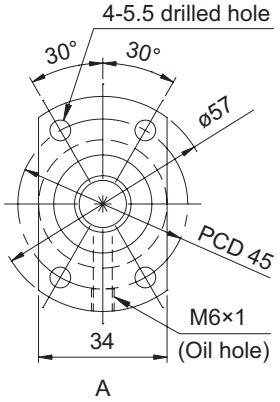
● Optional specifications

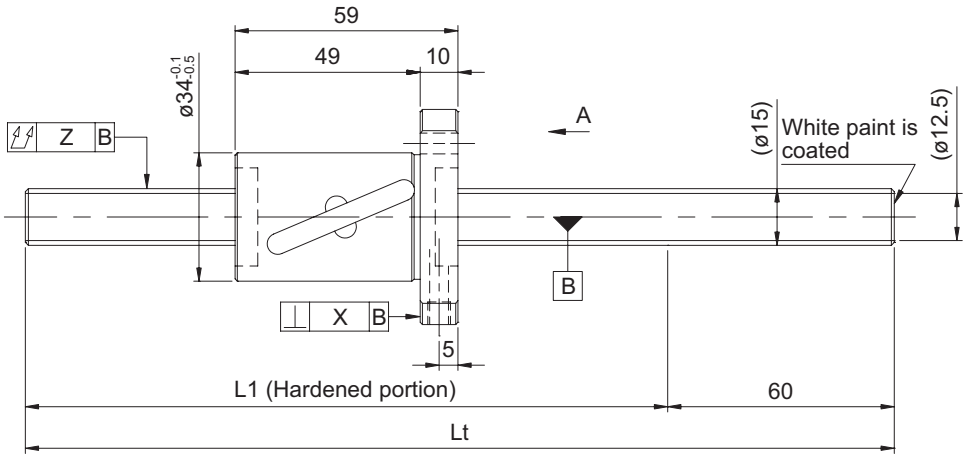
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.020	0.070	1.15
		0.170	1.98
0.21/300	---	0.140	1.15
		0.400	1.98

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	15 - 20	
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	12.5	
Series	GW	GY
Basic dynamic load rating C (N)	5800	
Basic static load rating C0 (N)	13300	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1520BS-HULR-0600A	540	600	481
GW1520BS-HULR-1200A	1140	1200	1081
GY1520BS-HULR-0600A	540	600	481
GY1520BS-HULR-1200A	1140	1200	1081

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

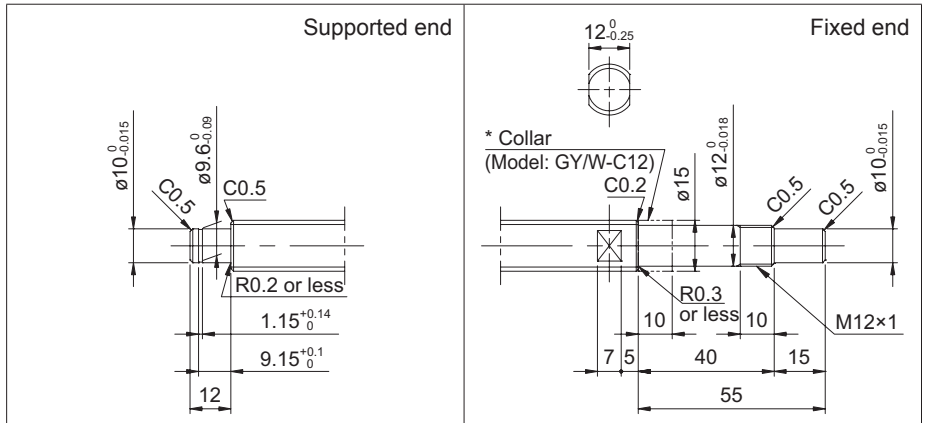
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1520BS-HULR-1200A → GY1520BS-HULR-1195X1128-CAY
- 1128: Thread length
- 1195: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

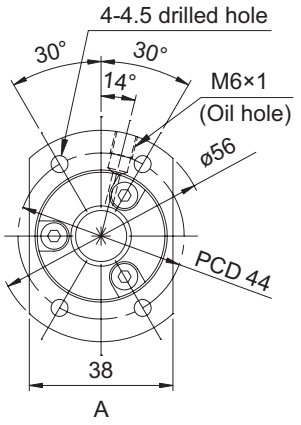
Model example: GY1520BS-HUSR-1195X1128-CAY
- S: LUBSEAL (Wiper material)

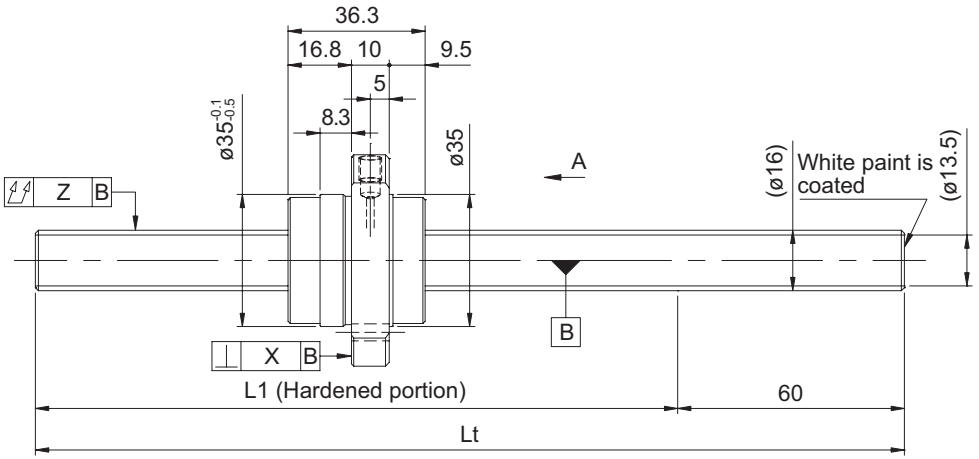
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.24
		0.170	2.07
0.21/300	---	0.140	1.24
		0.400	2.07

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	16 - 32	
Number of circuits / Thread direction	0.67 turns 3 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	13.5	
Series	GW	GY
Basic dynamic load rating C (N)	4200	
Basic static load rating C0 (N)	7700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	End cap method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW1632QS-HEZR-0600A	540	600	503
GW1632QS-HEZR-1200A	1140	1200	1103
GY1632QS-HEZR-0600A	540	600	503
GY1632QS-HEZR-1200A	1140	1200	1103

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

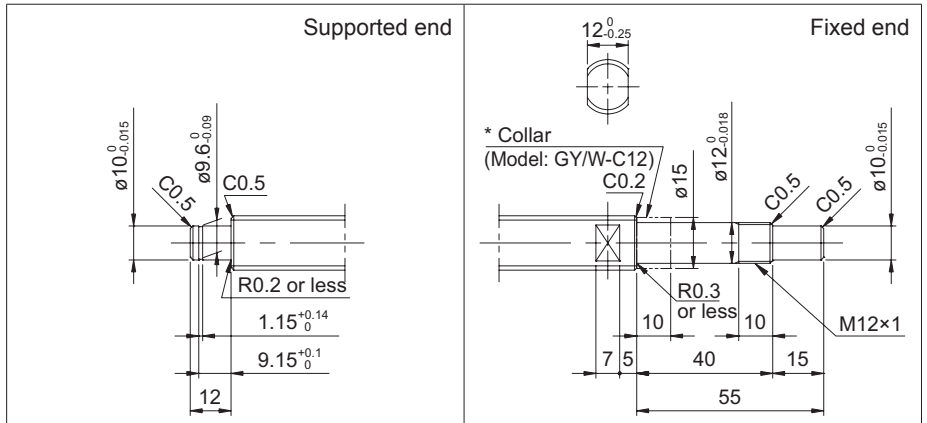
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY1632QS-HEZR-1200A → GY1632QS-HEZR-1195X1128-CAY

1128: Thread length
1195: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-10S (Square type)	BUK-12, BUK-12F (Square type)
BUM-10S (Round type)	BUM-12, BUM-12F (Round type)

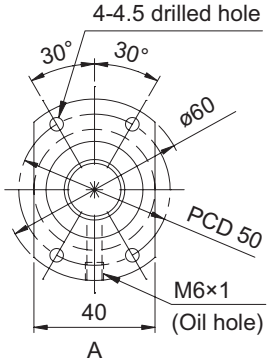
● Optional specifications

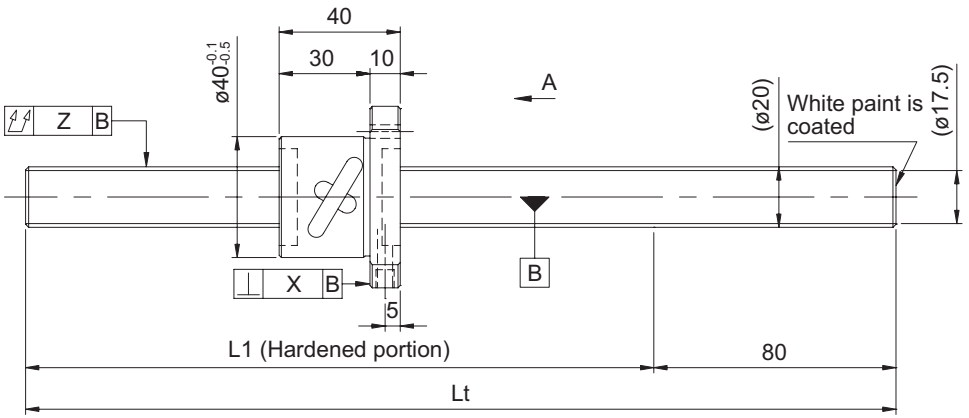
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.24
		0.170	2.19
0.21/300	---	0.140	1.24
		0.400	2.19

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GW	GY
Basic dynamic load rating C (N)	6200	
Basic static load rating C0 (N)	14700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2005DS-HULR-0600A	520	600	480
GW2005DS-HULR-1200A	1120	1200	1080
GW2005DS-HULR-2000A	1920	2000	1880
GY2005DS-HULR-0600A	520	600	480
GY2005DS-HULR-1200A	1120	1200	1080
GY2005DS-HULR-2000A	1920	2000	1880

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

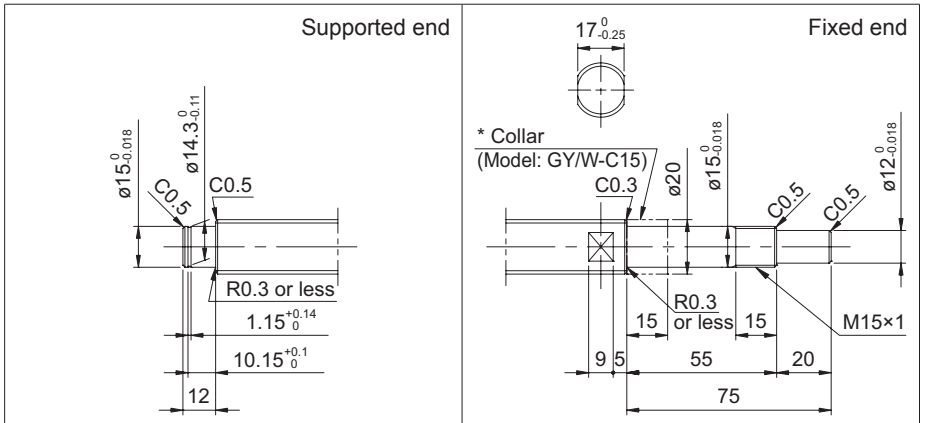
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2005DS-HULR-2000A → GY2005DS-HULR-1995X1908-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY2005DS-HUSR-1995X1908-CAY

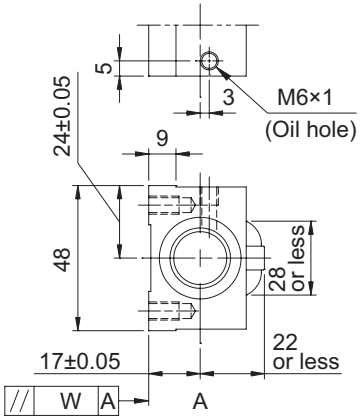
↳Wiper material S: LUBSEAL

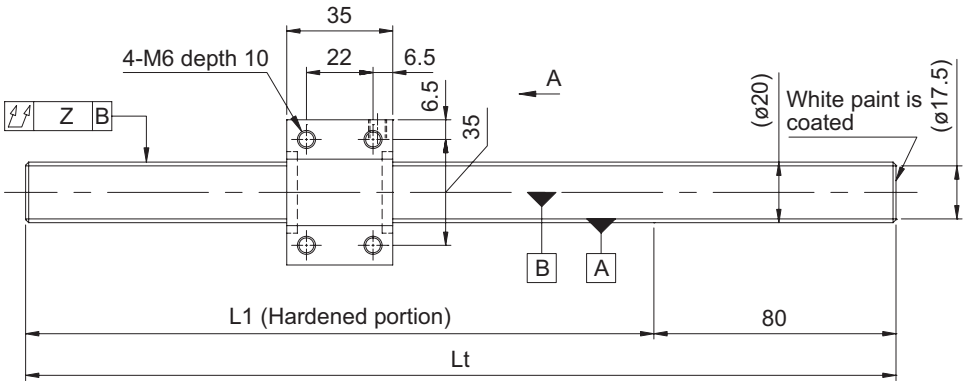
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.85
		0.120	3.33
		0.270	5.29
0.21/300	---	0.140	1.85
		0.240	3.33
		0.640	5.29

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GW	GY
Basic dynamic load rating C (N)	6200	
Basic static load rating C0 (N)	14700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2005DS-NKLR-0600A	520	600	485
GW2005DS-NKLR-1200A	1120	1200	1085
GW2005DS-NKLR-2000A	1920	2000	1885
GY2005DS-NKLR-0600A	520	600	485
GY2005DS-NKLR-1200A	1120	1200	1085
GY2005DS-NKLR-2000A	1920	2000	1885

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

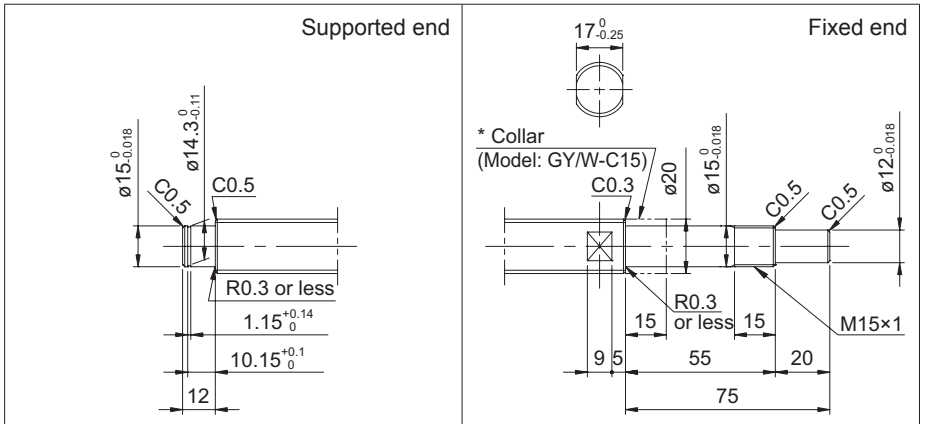
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2005DS-NKLR-2000A → GY2005DS-NKLR-1995X1908-CAY

1908 → Thread length

1995 → Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

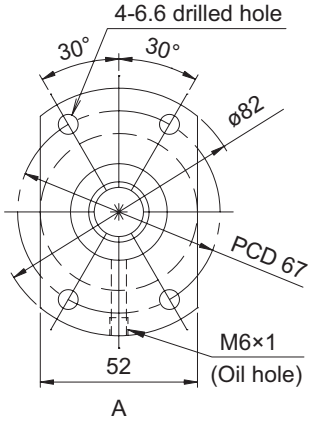
● Optional specifications

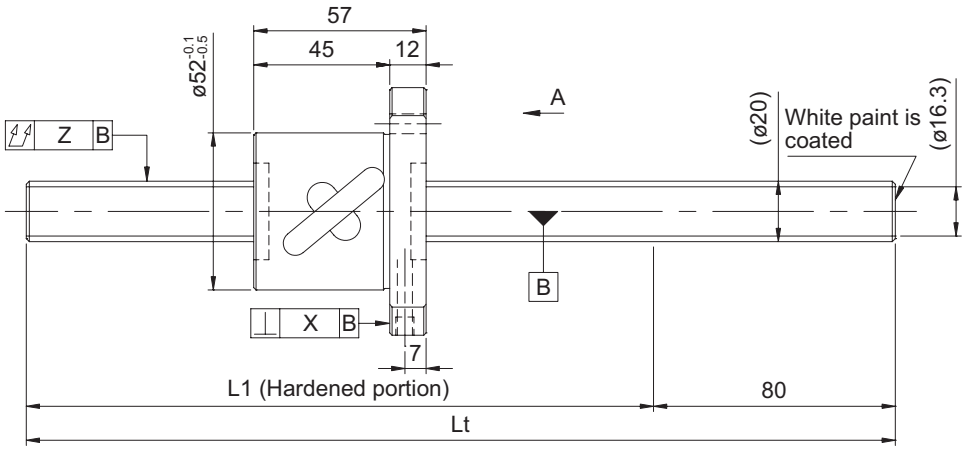
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass (kg)
Cumulative lead error	W	Z	
0.05/300	0.017	0.070	1.87
		0.120	3.34
		0.270	5.31
0.21/300	---	0.140	1.87
		0.240	3.34
		0.640	5.31

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 10	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	4.7625	
Root diameter (mm)	16.3	
Series	GW	GY
Basic dynamic load rating C (N)	10600	
Basic static load rating C0 (N)	22700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.050 or less	0.150 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2010DS-HULR-0600A	520	600	463
GW2010DS-HULR-1200A	1120	1200	1063
GW2010DS-HULR-2000A	1920	2000	1863
GY2010DS-HULR-0600A	520	600	463
GY2010DS-HULR-1200A	1120	1200	1063
GY2010DS-HULR-2000A	1920	2000	1863

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

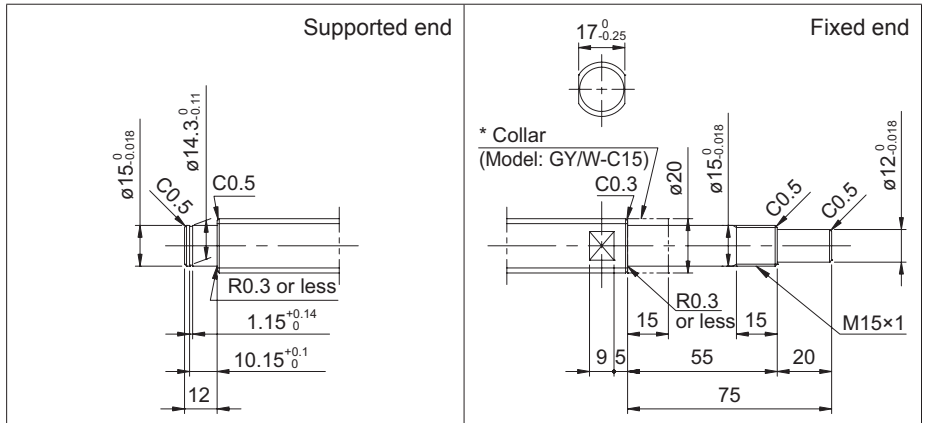
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2010DS-HULR-2000A → GY2010DS-HULR-1995X1908-CAY
- 1908 → Thread length
- 1995 → Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

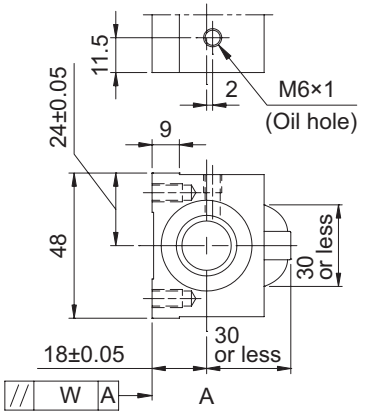
Model example: GY2010DS-HUSR-1995X1908-CAY
- CAY → Wiper material S: LUBSEAL

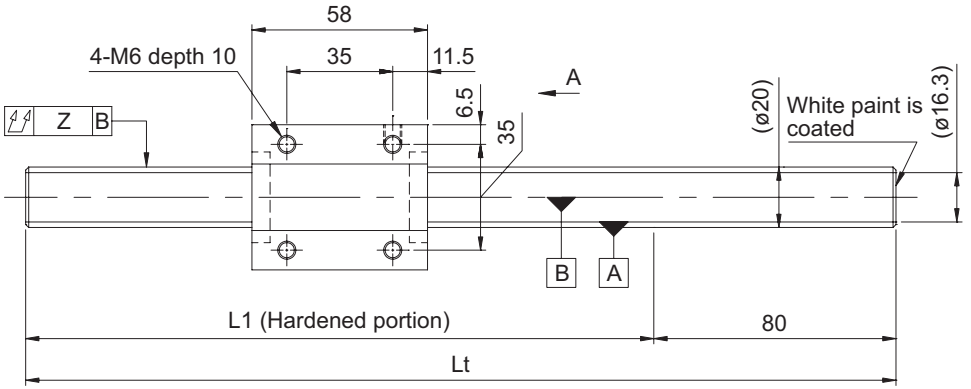
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	2.47
		0.120	3.95
		0.270	5.92
0.21/300	---	0.140	2.47
		0.240	3.95
		0.640	5.92

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 10	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	4.7625	
Root diameter (mm)	16.3	
Series	GW	GY
Basic dynamic load rating C (N)	10600	
Basic static load rating C0 (N)	22700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.050 or less	0.150 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2010DS-NKLR-0600A	520	600	462
GW2010DS-NKLR-1200A	1120	1200	1062
GW2010DS-NKLR-2000A	1920	2000	1862
GY2010DS-NKLR-0600A	520	600	462
GY2010DS-NKLR-1200A	1120	1200	1062
GY2010DS-NKLR-2000A	1920	2000	1862

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

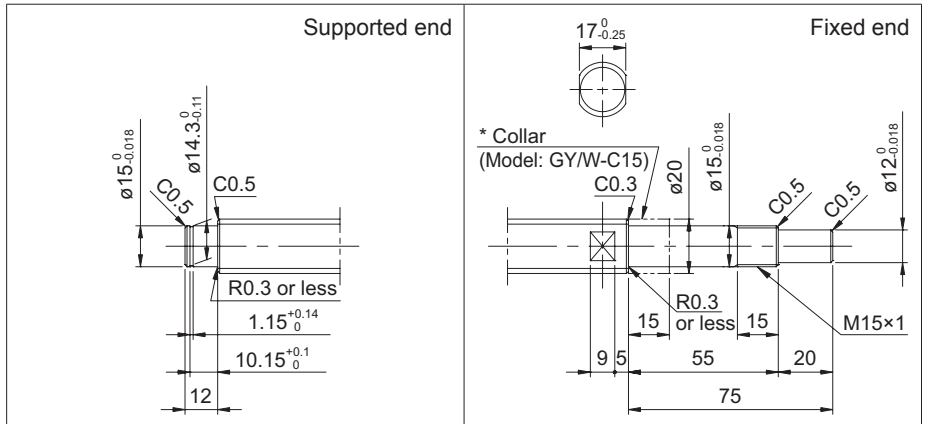
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2010DS-NKLR-2000A → GY2010DS-NKLR-1995X1908-CAY

1908: Thread length

1995: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

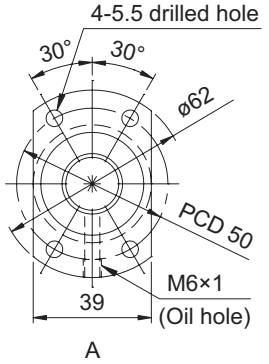
● Optional specifications

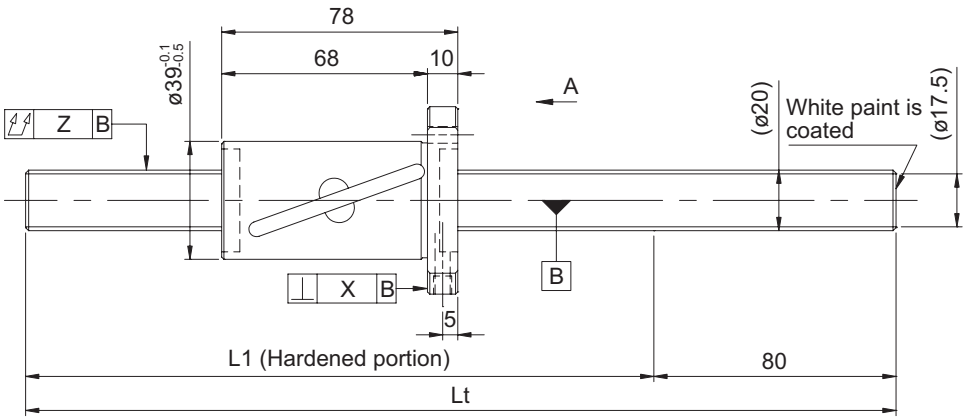
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass (kg)
Cumulative lead error	W	Z	
0.05/300	0.017	0.070	2.20
		0.120	3.67
		0.270	5.64
0.21/300	---	0.140	2.20
		0.240	3.67
		0.640	5.64

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 20	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GW	GY
Basic dynamic load rating C (N)	6200	
Basic static load rating C0 (N)	14700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2020DS-HULR-0600A	520	600	442
GW2020DS-HULR-1200A	1120	1200	1042
GW2020DS-HULR-2000A	1920	2000	1842
GY2020DS-HULR-0600A	520	600	442
GY2020DS-HULR-1200A	1120	1200	1042
GY2020DS-HULR-2000A	1920	2000	1842

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

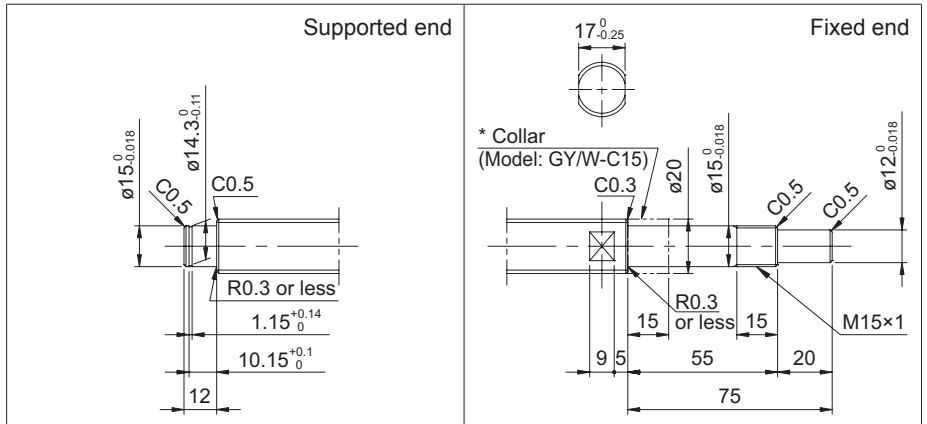
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2020DS-HULR-2000A → GY2020DS-HULR-1995X1908-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY2020DS-HUSR-1995X1908-CAY

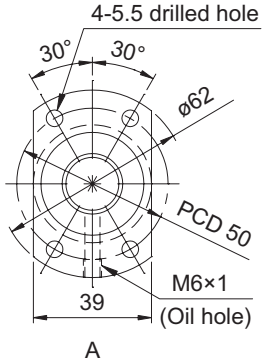
↳Wiper material S: LUBSEAL

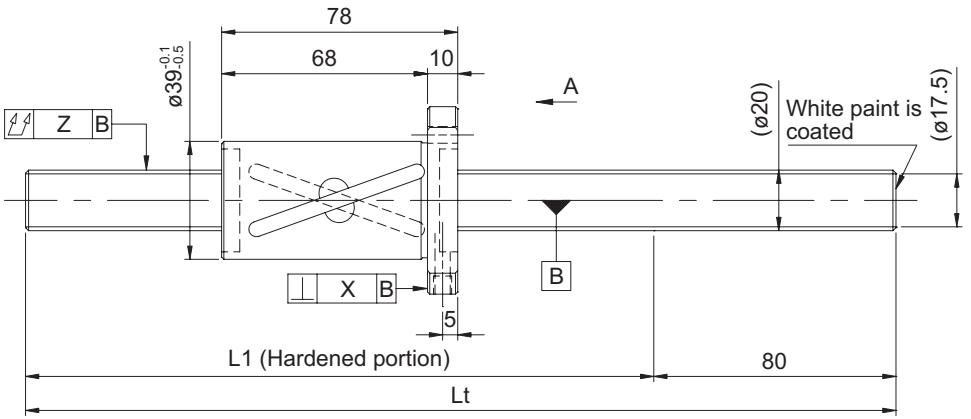
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	2.06
		0.120	3.53
		0.270	5.50
0.21/300	---	0.140	2.06
		0.240	3.53
		0.640	5.50

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 20	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GW	GY
Basic dynamic load rating C (N)	11200	
Basic static load rating C0 (N)	29400	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2020ES-HULR-0600A	520	600	442
GW2020ES-HULR-1200A	1120	1200	1042
GW2020ES-HULR-2000A	1920	2000	1842
GY2020ES-HULR-0600A	520	600	442
GY2020ES-HULR-1200A	1120	1200	1042
GY2020ES-HULR-2000A	1920	2000	1842

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

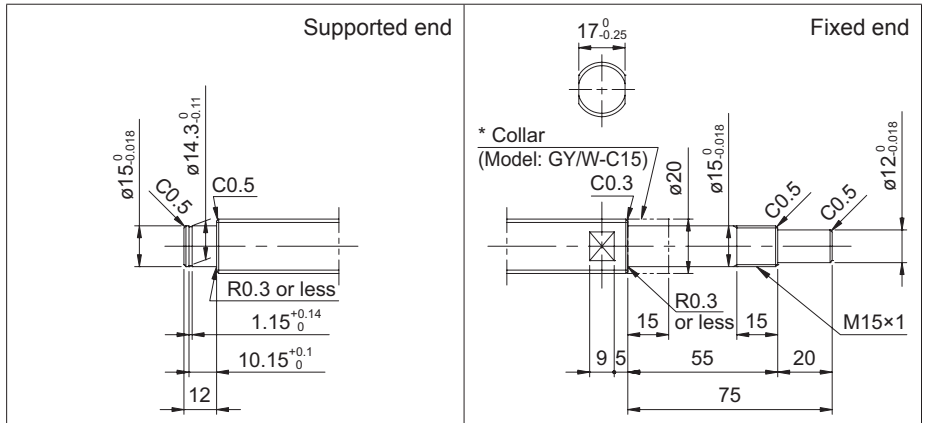
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2020ES-HULR-2000A → GY2020ES-HULR-1995X1908-CAY
- 1908: Thread length
- 1995: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

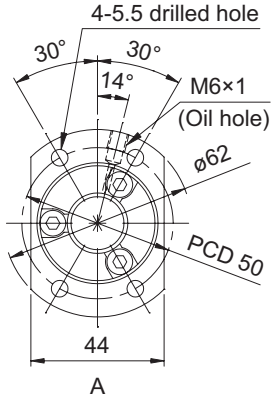
Model example: GY2020ES-HUSR-1995X1908-CAY
- S: LUBSEAL (Wiper material)

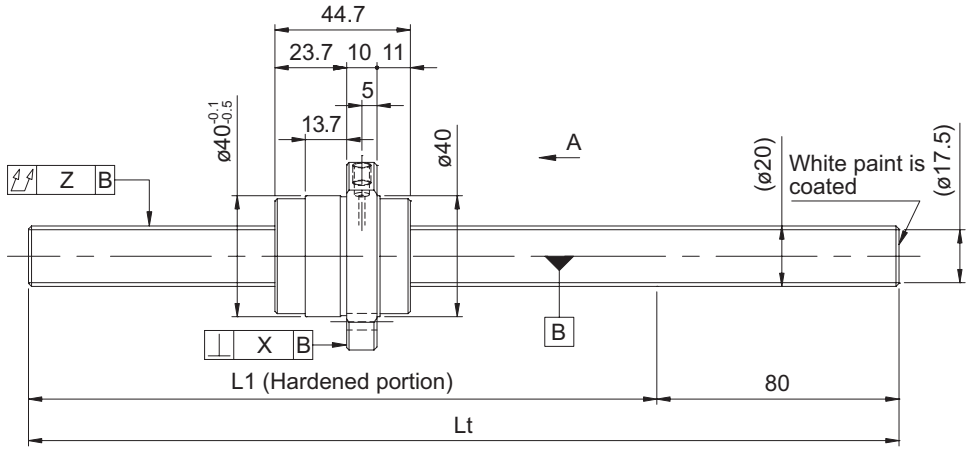
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	2.06
		0.120	3.53
		0.270	5.50
0.21/300	---	0.140	2.06
		0.240	3.53
		0.640	5.50

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	20 - 40	
Number of circuits / Thread direction	0.67 turns 3 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	17.5	
Series	GW	GY
Basic dynamic load rating C (N)	4700	
Basic static load rating C0 (N)	10300	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	End cap method	
Wiper	None	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2040QS-HEZR-0600A	520	600	475
GW2040QS-HEZR-1200A	1120	1200	1075
GW2040QS-HEZR-2000A	1920	2000	1875
GY2040QS-HEZR-0600A	520	600	475
GY2040QS-HEZR-1200A	1120	1200	1075
GY2040QS-HEZR-2000A	1920	2000	1875

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

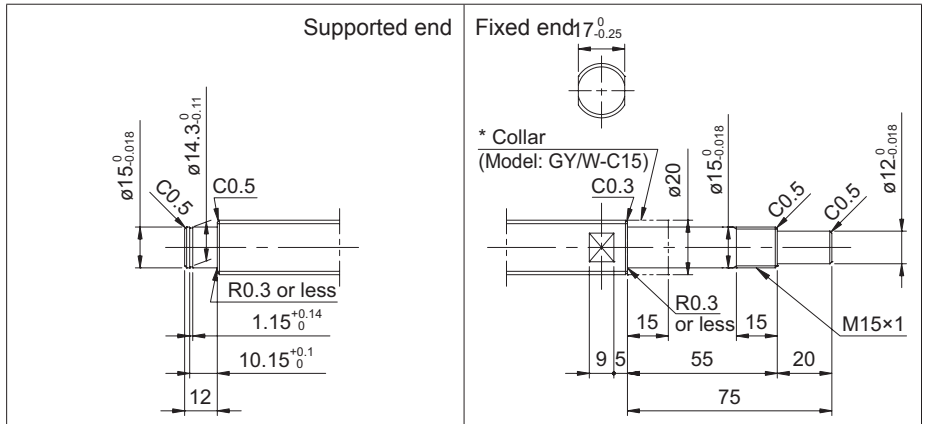
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2040QS-HEZR-2000A → GY2040QS-HEZR-1995X1908-CAY

1908: Thread length
1995: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-15S (Square type)	BUK-15, BUK-15F (Square type)
BUM-15S (Round type)	BUM-15, BUM-15F (Round type)

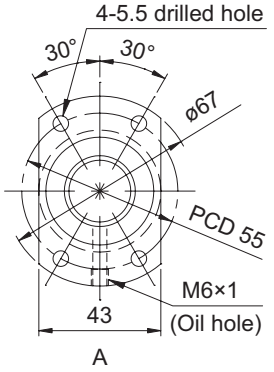
● Optional specifications

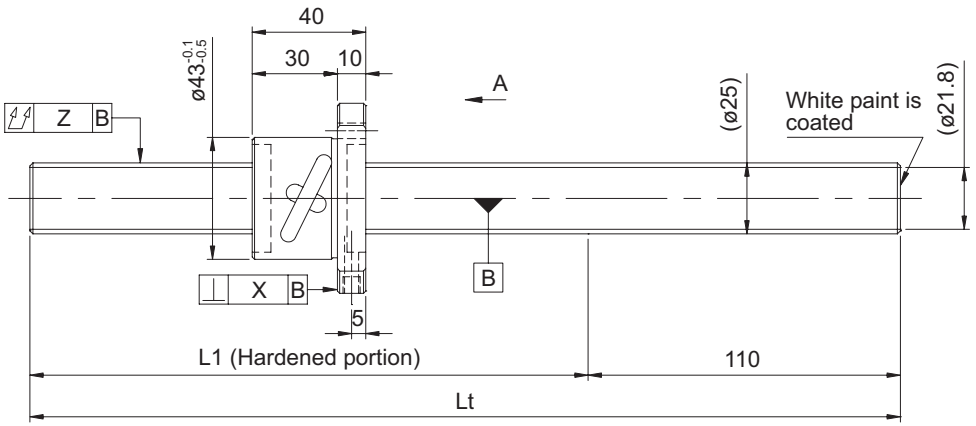
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.070	1.90
		0.120	3.37
		0.270	5.34
0.21/300	---	0.140	1.90
		0.240	3.37
		0.640	5.34

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	21.8	
Series	GW	GY
Basic dynamic load rating C (N)	6600	
Basic static load rating C0 (N)	18700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2505DS-HULR-1000A	890	1000	850
GW2505DS-HULR-2000A	1890	2000	1850
GW2505DS-HULR-2500A	2390	2500	2350
GY2505DS-HULR-1000A	890	1000	850
GY2505DS-HULR-2000A	1890	2000	1850
GY2505DS-HULR-2500A	2390	2500	2350

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

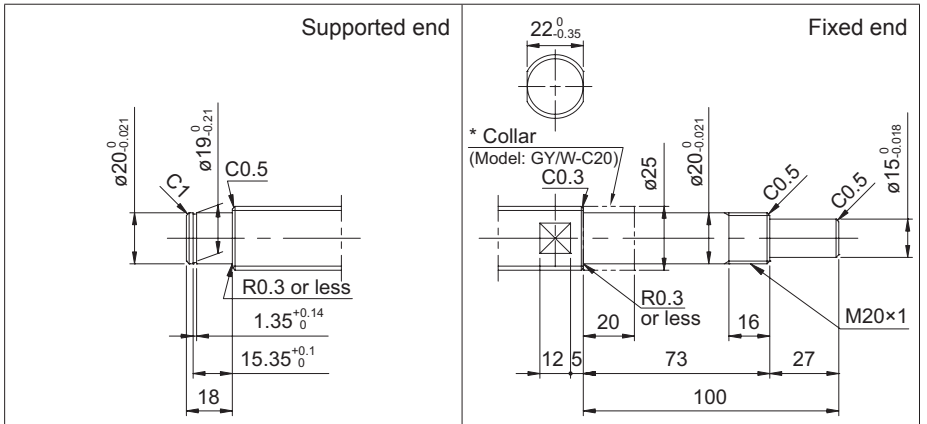
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2505DS-HULR-2500A → GY2505DS-HULR-2490X2372-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY2505DS-HUSR-2490X2372-CAY

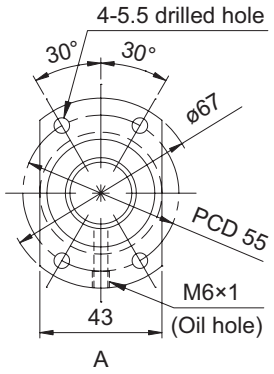
↳Wiper material S: LUBSEAL

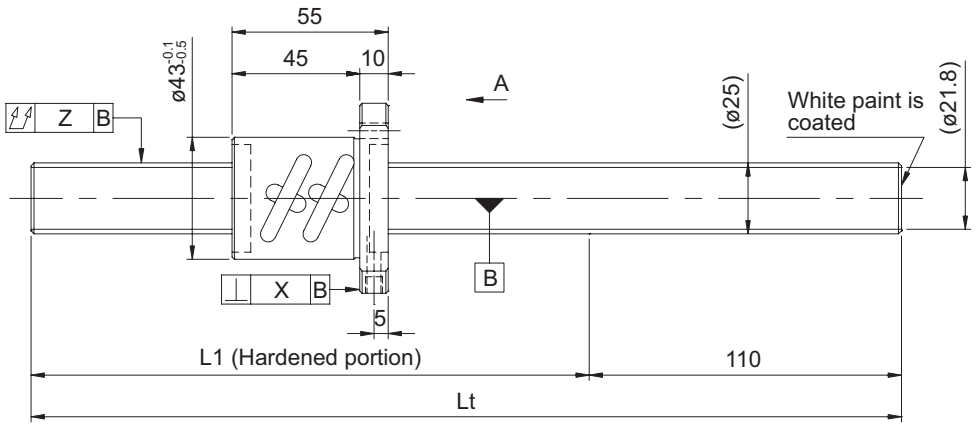
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.080	4.26
		0.200	8.10
		0.260	10.02
0.21/300	---	0.160	4.26
		0.400	8.10
		0.640	10.02

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 5	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	21.8	
Series	GW	GY
Basic dynamic load rating C (N)	11900	
Basic static load rating C0 (N)	37300	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2505ES-HULR-1000A	890	1000	835
GW2505ES-HULR-2000A	1890	2000	1835
GW2505ES-HULR-2500A	2390	2500	2335
GY2505ES-HULR-1000A	890	1000	835
GY2505ES-HULR-2000A	1890	2000	1835
GY2505ES-HULR-2500A	2390	2500	2335

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

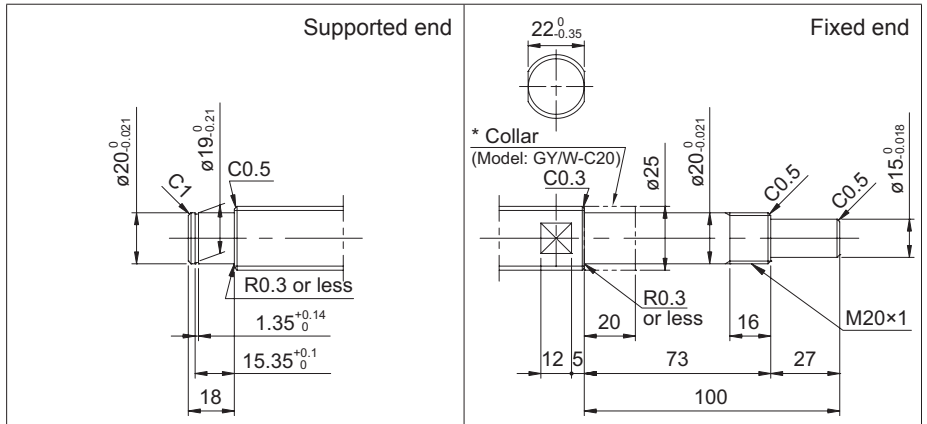
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2505ES-HULR-2500A → GY2505ES-HULR-2490X2372-CAY
- 2372: Thread length
- 2490: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY2505ES-HUSR-2490X2372-CAY
- S: LUBSEAL (Wiper material)

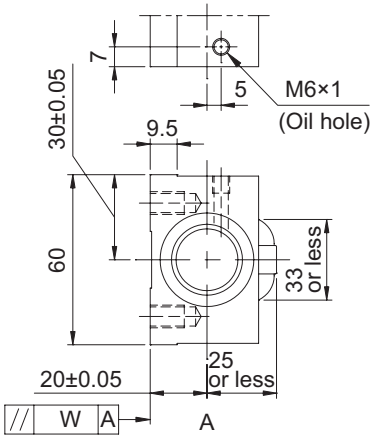
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

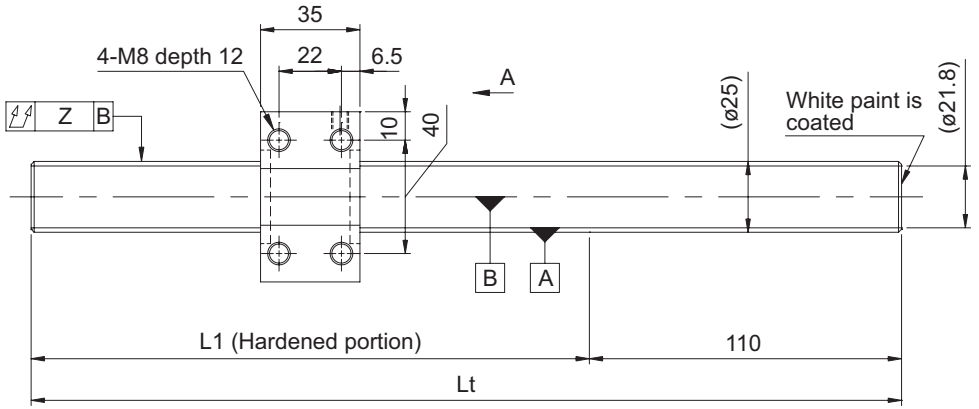
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.080	4.33
		0.200	8.18
		0.260	10.10
0.21/300	---	0.160	4.33
		0.400	8.18
		0.640	10.10

Screw shaft diameter ø25

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 5	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.175	
Root diameter (mm)	21.8	
Series	GW	GY
Basic dynamic load rating C (N)	6600	
Basic static load rating C0 (N)	18700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.030 or less	0.100 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2505DS-NKLR-1000A	890	1000	855
GW2505DS-NKLR-2000A	1890	2000	1855
GW2505DS-NKLR-2500A	2390	2500	2355
GY2505DS-NKLR-1000A	890	1000	855
GY2505DS-NKLR-2000A	1890	2000	1855
GY2505DS-NKLR-2500A	2390	2500	2355

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

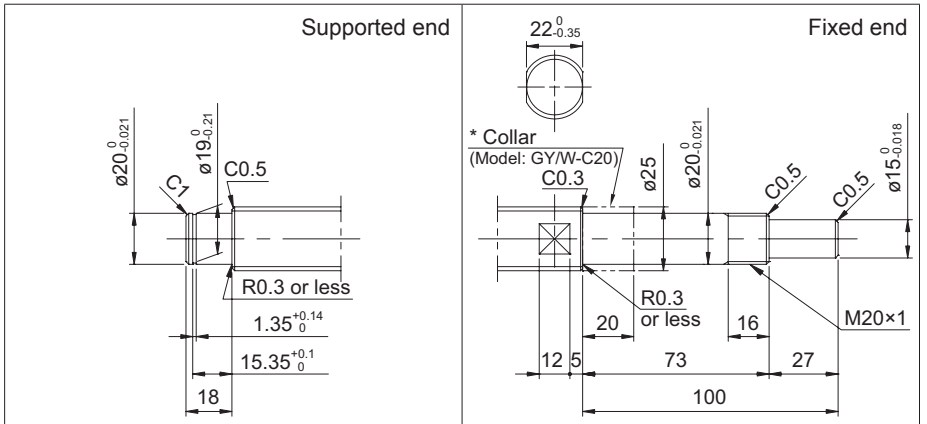
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2505DS-NKLR-2500A → GY2505DS-NKLR-2490X2372-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

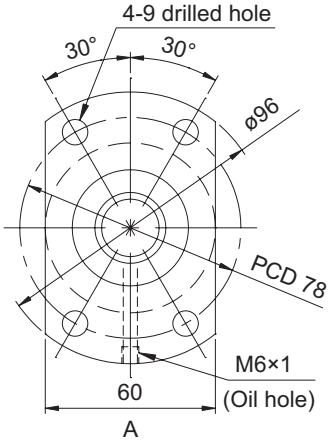
● Optional specifications

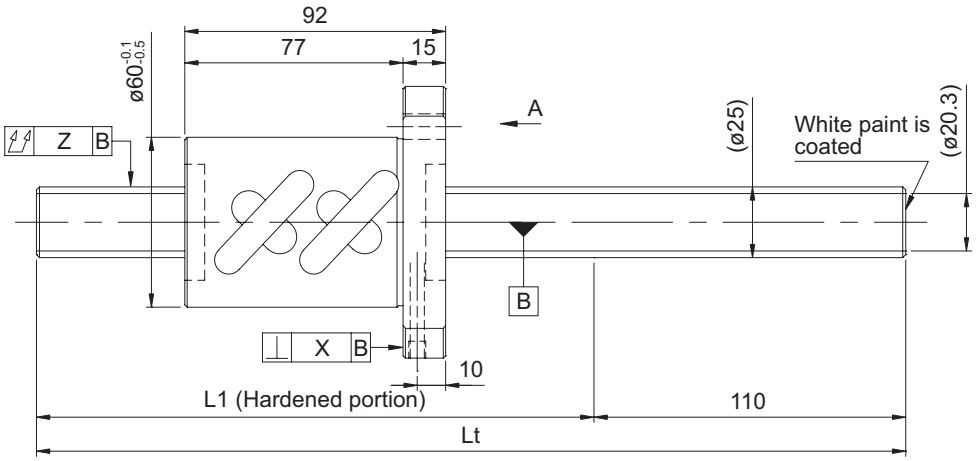
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	W	Z	(kg)
0.05/300	0.017	0.080	4.40
		0.200	8.24
		0.260	10.17
0.21/300	---	0.160	4.40
		0.400	8.24
		0.640	10.17

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 10	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	6.35	
Root diameter (mm)	20.3	
Series	GW	GY
Basic dynamic load rating C (N)	27500	
Basic static load rating C0 (N)	76300	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.070 or less	0.200 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2510ES-HULR-1000A	890	1000	798
GW2510ES-HULR-2000A	1890	2000	1798
GW2510ES-HULR-2500A	2390	2500	2298
GY2510ES-HULR-1000A	890	1000	798
GY2510ES-HULR-2000A	1890	2000	1798
GY2510ES-HULR-2500A	2390	2500	2298

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

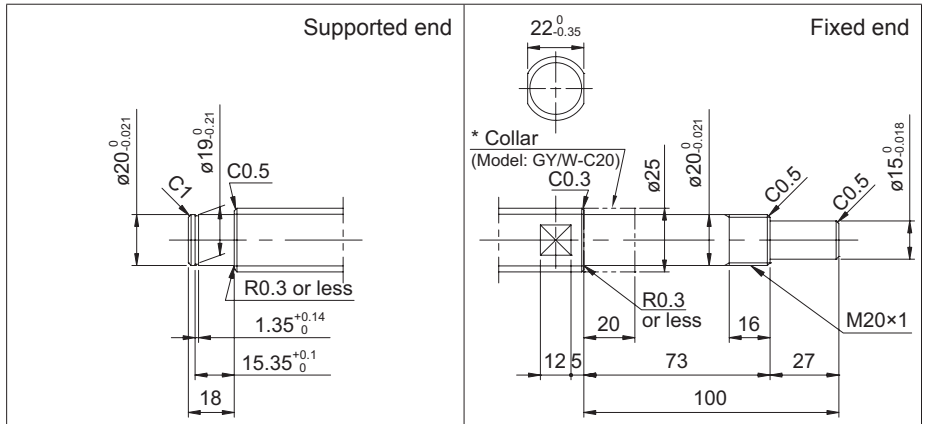
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2510ES-HULR-2500A → GY2510ES-HULR-2490X2372-CAY
- 2372: Thread length
- 2490: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

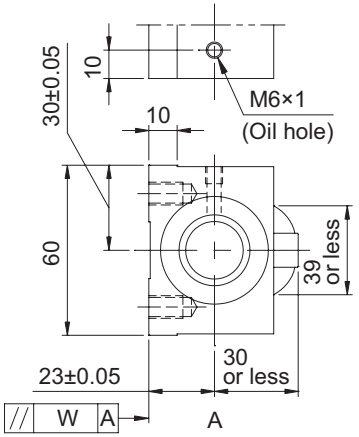
Model example: GY2510ES-HUSR-2490X2372-CAY
- S: Wiper material S: LUBSEAL

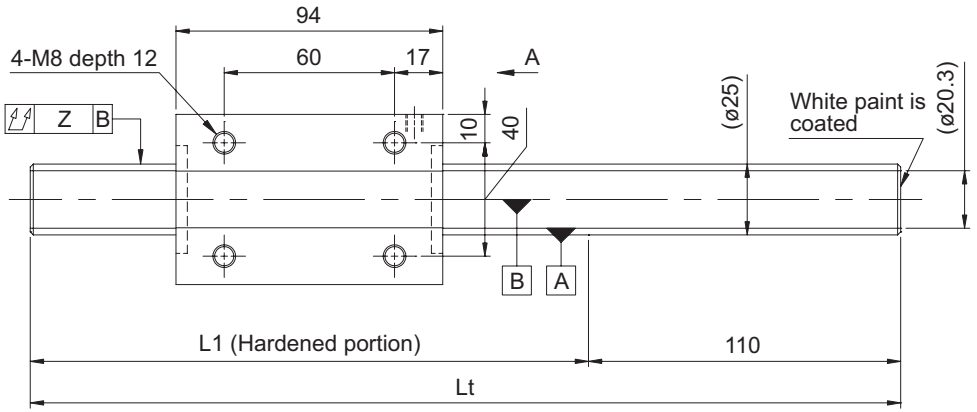
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.080	5.70
		0.200	9.54
		0.260	11.46
0.21/300	---	0.160	5.70
		0.400	9.54
		0.640	11.46

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 10	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	6.35	
Root diameter (mm)	20.3	
Series	GW	GY
Basic dynamic load rating C (N)	27500	
Basic static load rating C0 (N)	76300	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.070 or less	0.200 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2510ES-NKLR-1000A	890	1000	796
GW2510ES-NKLR-2000A	1890	2000	1796
GW2510ES-NKLR-2500A	2390	2500	2296
GY2510ES-NKLR-1000A	890	1000	796
GY2510ES-NKLR-2000A	1890	2000	1796
GY2510ES-NKLR-2500A	2390	2500	2296

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

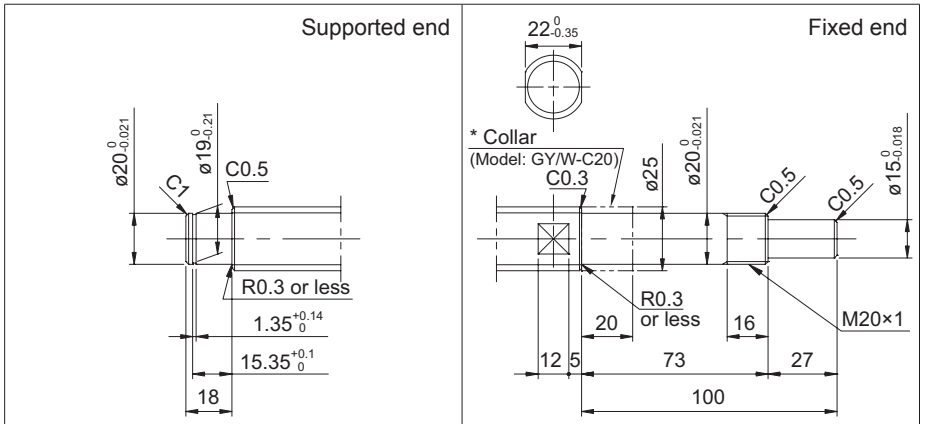
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2510ES-NKLR-2500A → GY2510ES-NKLR-2490X2372-CAY

Thread length

Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

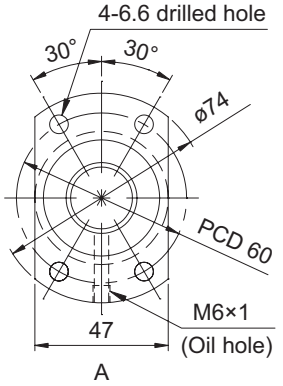
● Optional specifications

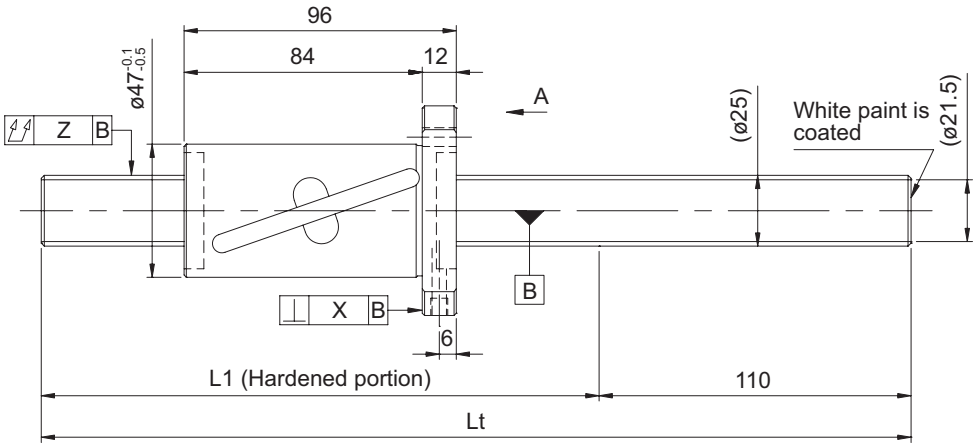
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	W	Z	(kg)
0.05/300	0.017	0.080	5.74
		0.200	9.59
		0.260	11.51
0.21/300	---	0.160	5.74
		0.400	9.59
		0.640	11.51

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 25	
Number of circuits / Thread direction	2.5 turns 1 circuit / Right-hand	
Ball diameter (mm)	3.9688	
Root diameter (mm)	21.5	
Series	GW	GY
Basic dynamic load rating C (N)	9300	
Basic static load rating C0 (N)	22700	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.050 or less	0.120 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2525DS-HULR-1000A	890	1000	794
GW2525DS-HULR-2000A	1890	2000	1794
GW2525DS-HULR-2500A	2390	2500	2294
GY2525DS-HULR-1000A	890	1000	794
GY2525DS-HULR-2000A	1890	2000	1794
GY2525DS-HULR-2500A	2390	2500	2294

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

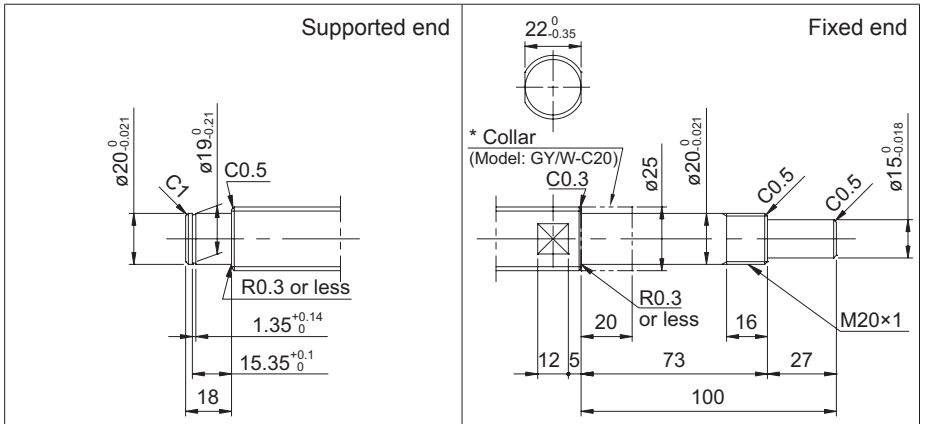
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2525DS-HULR-2500A → GY2525DS-HULR-2490X2372-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

Model example: GY2525DS-HUSR-2490X2372-CAY

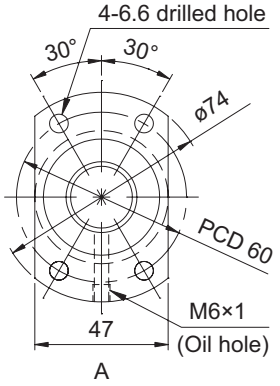
↳Wiper material S: LUBSEAL

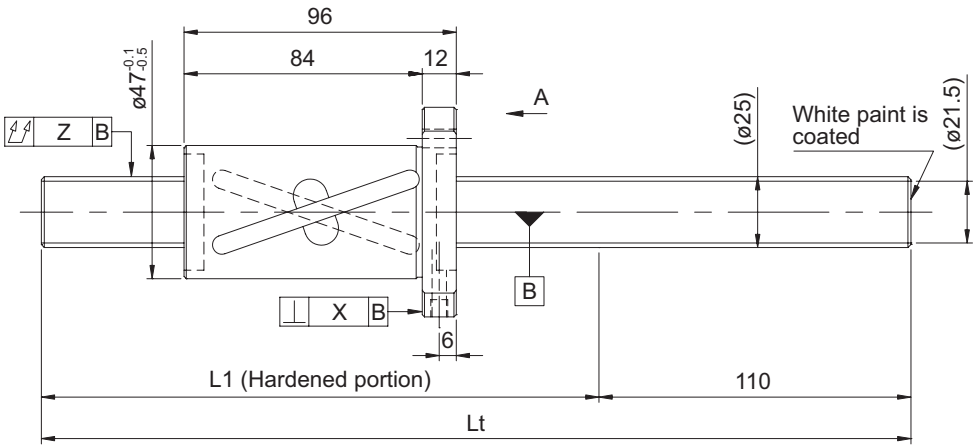
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.080	4.87
		0.200	8.71
		0.260	10.63
0.21/300	---	0.160	4.87
		0.400	8.71
		0.640	10.63

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	25 - 25	
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand	
Ball diameter (mm)	3.9688	
Root diameter (mm)	21.5	
Series	GW	GY
Basic dynamic load rating C (N)	16800	
Basic static load rating C0 (N)	45400	
Accuracy grade / Axial clearance symbol	C7 / Y	C10 / Y
Axial clearance (mm)	0.050 or less	0.120 or less
Preload torque (N·cm)	----	
Recirculation system	Tube method	
Wiper	Lip seal	
Lubricant	Alvania Grease S2	
Phosphate coating	Nut alone	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GW2525ES-HULR-1000A	890	1000	794
GW2525ES-HULR-2000A	1890	2000	1794
GW2525ES-HULR-2500A	2390	2500	2294
GY2525ES-HULR-1000A	890	1000	794
GY2525ES-HULR-2000A	1890	2000	1794
GY2525ES-HULR-2500A	2390	2500	2294

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

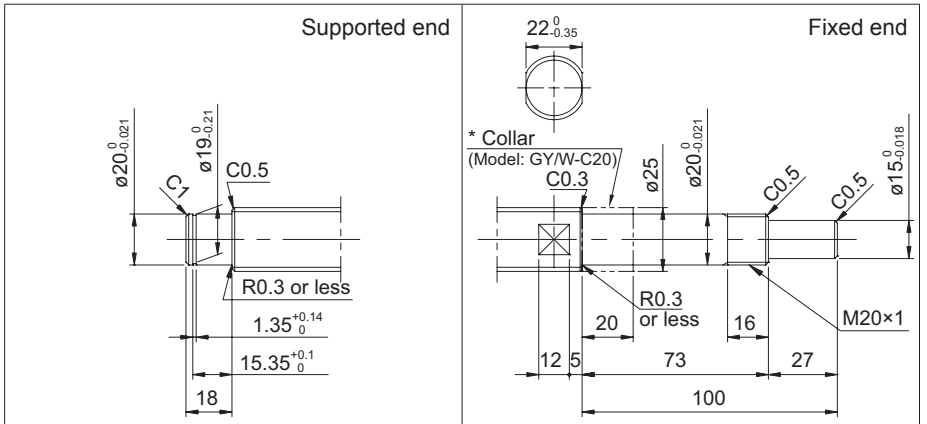
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2525ES-HULR-2500A → GY2525ES-HULR-2490X2372-CAY
- 2372: Thread length
- 2490: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

• Ball screw lubricating unit LUBSEAL can be equipped.

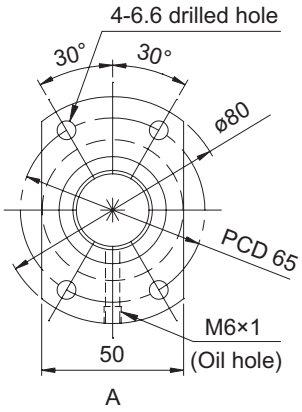
Model example: GY2525ES-HUSR-2490X2372-CAY
- S: LUBSEAL (Wiper material)

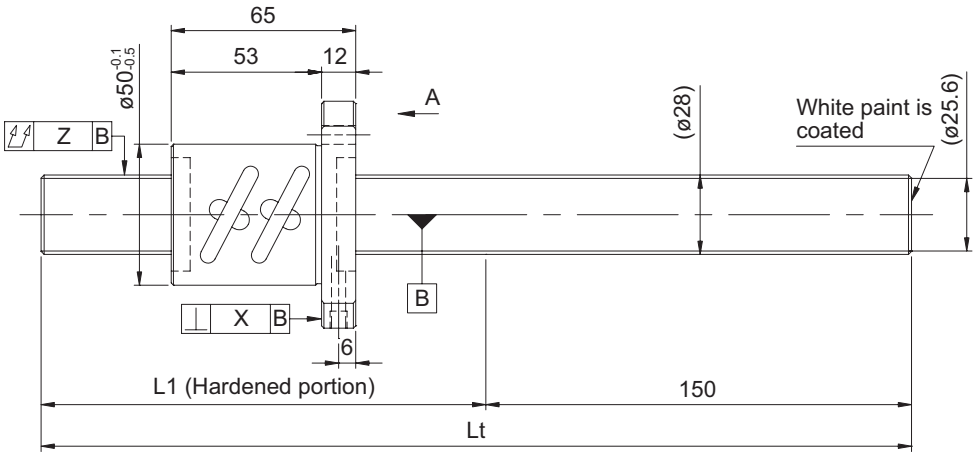
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.05/300	0.025	0.080	4.87
		0.200	8.71
		0.260	10.63
0.21/300	---	0.160	4.87
		0.400	8.71
		0.640	10.63

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	28 - 6
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	3.175
Root diameter (mm)	25.6
Series	GY
Basic dynamic load rating C (N)	12100
Basic static load rating C0 (N)	42300
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.100 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY2806ES-HUBR-1000A	850	1000	785
GY2806ES-HUBR-2000A	1850	2000	1785
GY2806ES-HUBR-2500A	2350	2500	2285

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

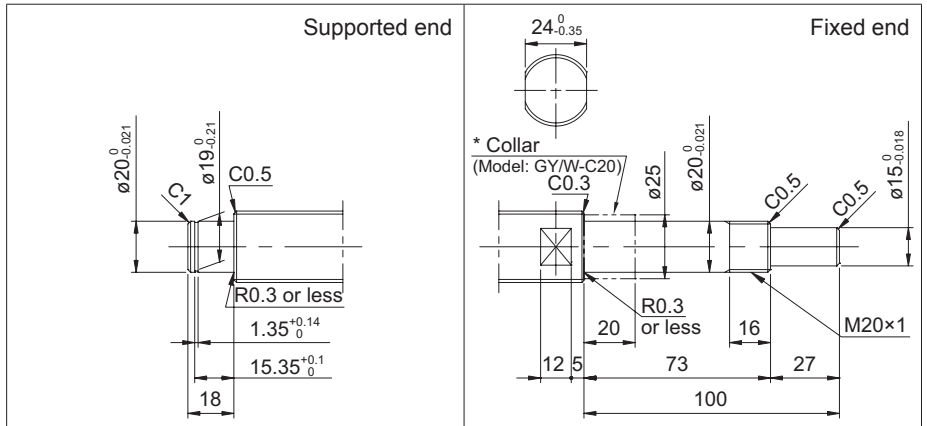
● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY2806ES-HUBR-2500A → GY2806ES-HUBR-2450X2332-CAY
- 2332: Thread length
- 2450: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-20S (Square type)	BUK-20, BUK-20F (Square type)
BUM-20S (Round type)	BUM-20, BUM-20F (Round type)

● Optional specifications

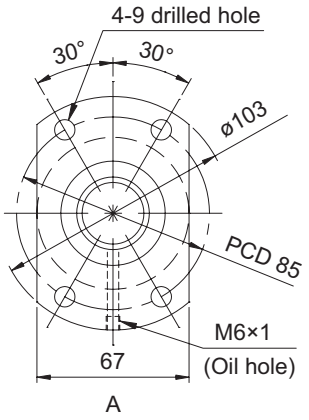
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

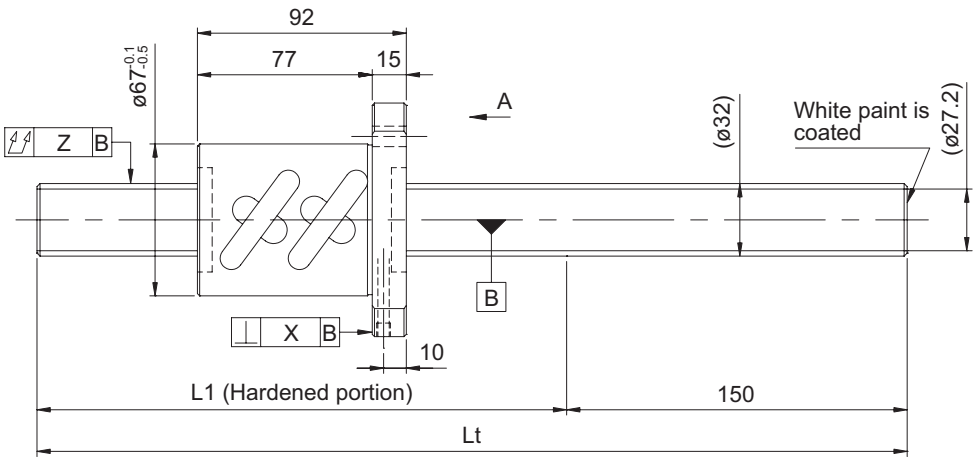
Lead accuracy	Accuracy of each part		Mass (kg)
Cumulative lead error	X	Z	
0.21/300	---	0.120	5.63
		0.240	10.45
		0.640	12.86

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	32 - 10
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.35
Root diameter (mm)	27.2
Series	GY
Basic dynamic load rating C (N)	32800
Basic static load rating C0 (N)	86700
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY3210ES-HUBR-1000A	850	1000	758
GY3210ES-HUBR-2000A	1850	2000	1758
GY3210ES-HUBR-3000A	2850	3000	2758

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø32, Lead 10 (Round nut)

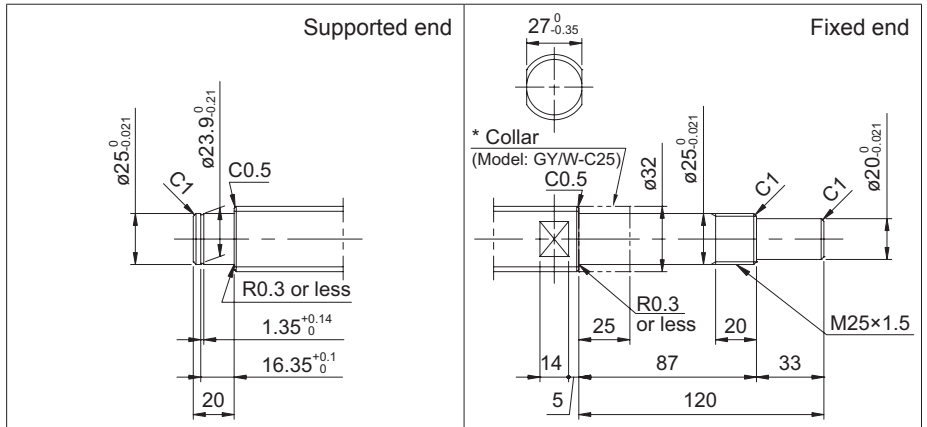
• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY3210ES-HUBR-3000A → GY3210ES-HUBR-2970X2830-CAY
- 2970: Thread length
- 2830: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-25S (Square type)	BUK-25, BUK-25F (Square type)
	BUM-25, BUM-25F (Round type)

• Optional specifications

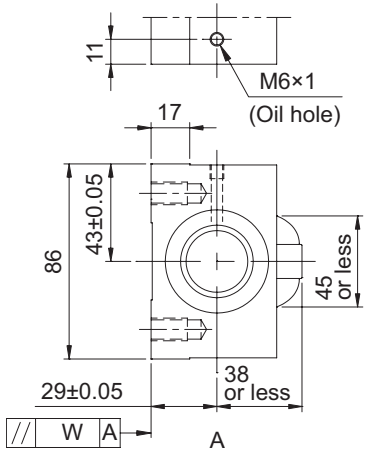
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

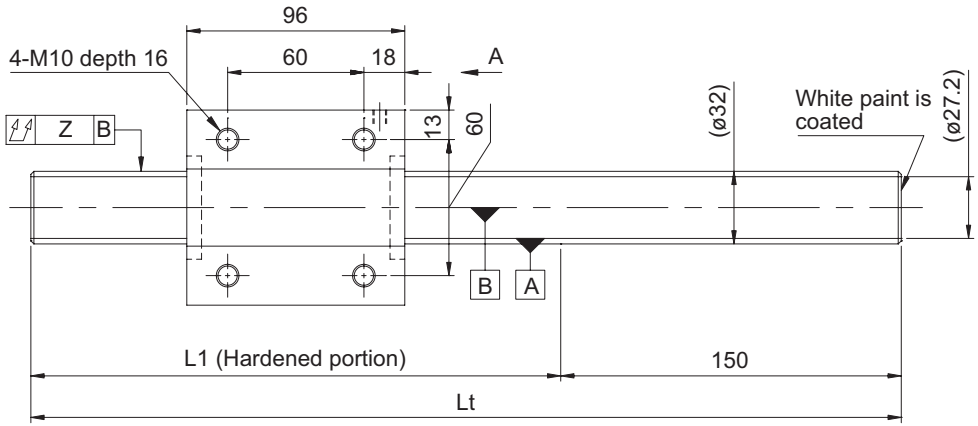
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.120	8.44
		0.240	14.73
		0.640	21.03

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	32 - 10
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.35
Root diameter (mm)	27.2
Series	GY
Basic dynamic load rating C (N)	32800
Basic static load rating C0 (N)	86700
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY3210ES-NKBR-1000A	850	1000	754
GY3210ES-NKBR-2000A	1850	2000	1754
GY3210ES-NKBR-3000A	2850	3000	2754

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø32, Lead 10 (Square nut)

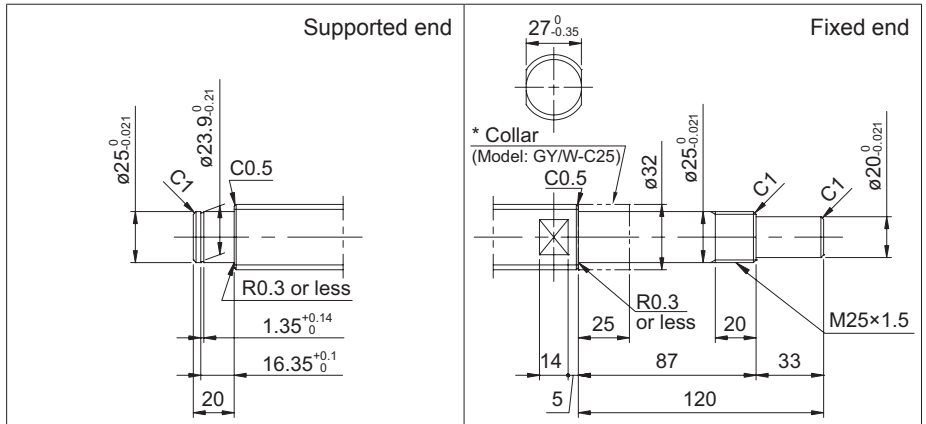
• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY3210ES-NKBR-3000A → GY3210ES-NKBR-2970X2830-CAY
- 2830 → Thread length
- 2970 → Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-25S (Square type)	BUK-25, BUK-25F (Square type)
	BUM-25, BUM-25F (Round type)

• Optional specifications

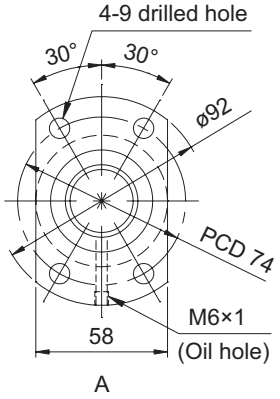
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

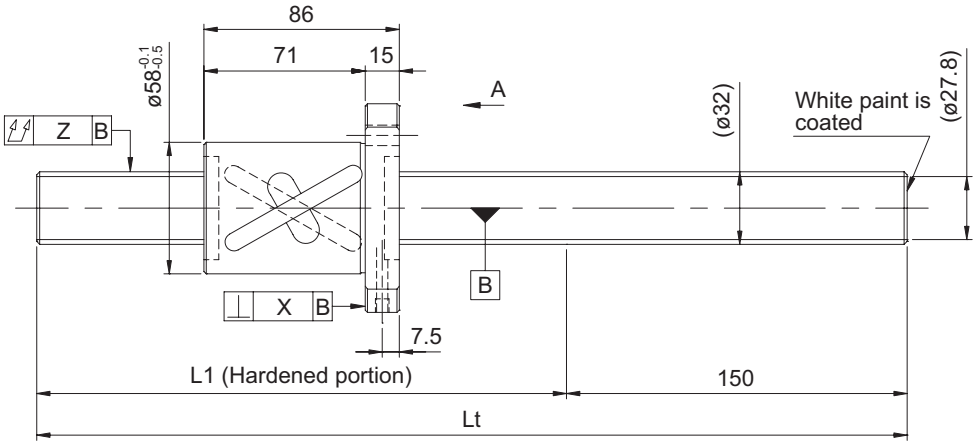
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.120	9.79
		0.240	16.08
		0.640	22.38

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	32 - 32
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand
Ball diameter (mm)	4.7625
Root diameter (mm)	27.8
Series	GY
Basic dynamic load rating C (N)	14600
Basic static load rating C0 (N)	38900
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.150 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY3232BS-HUBR-1000A	850	1000	764
GY3232BS-HUBR-2000A	1850	2000	1764
GY3232BS-HUBR-3000A	2850	3000	2764

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø32, Lead 32 (Round nut)

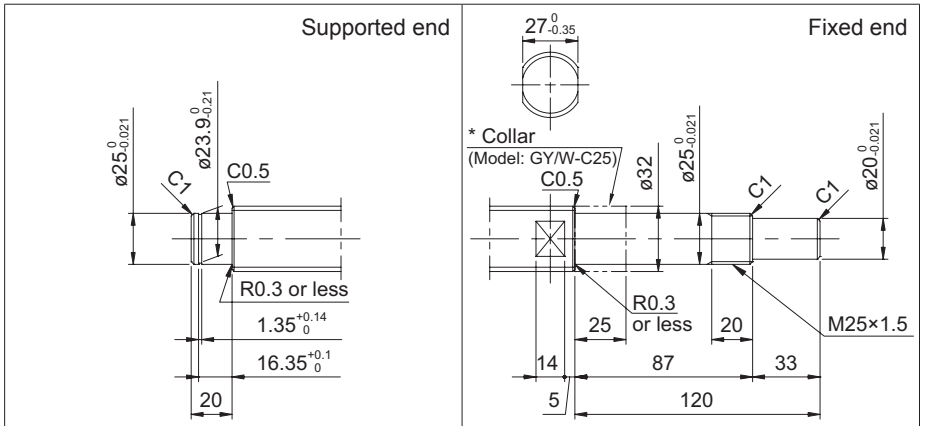
• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY3232BS-HUBR-3000A → GY3232BS-HUBR-2970X2830-CAY
- 2970: Thread length
- 2830: Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-25S (Square type)	BUK-25, BUK-25F (Square type)
	BUM-25, BUM-25F (Round type)

• Optional specifications

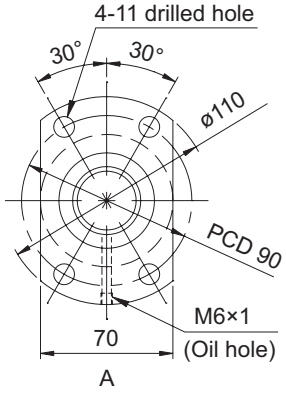
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

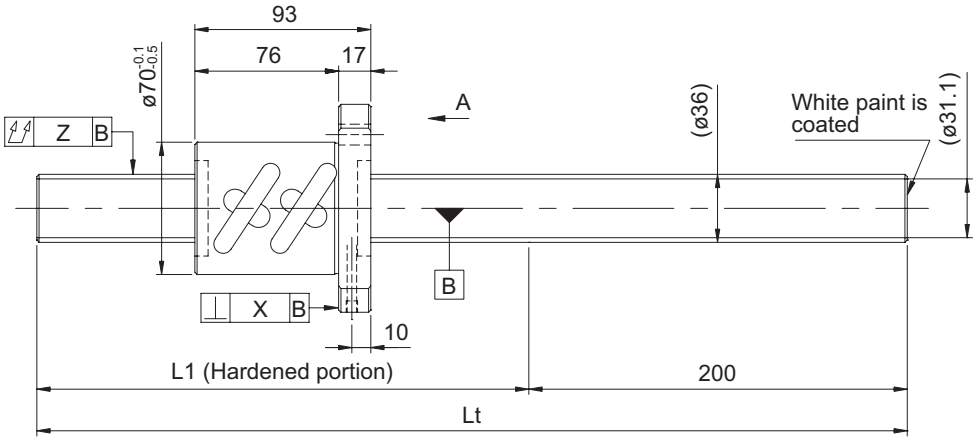
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.120	7.72
		0.240	14.01
		0.640	20.31

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	36 - 10
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.350
Root diameter (mm)	31.1
Series	GY
Basic dynamic load rating C (N)	35100
Basic static load rating C0 (N)	98200
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY3610ES-HUBR-1000A	800	1000	707
GY3610ES-HUBR-2000A	1800	2000	1707
GY3610ES-HUBR-3000A	2800	3000	2707

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø36, Lead 10 (Round nut)

• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

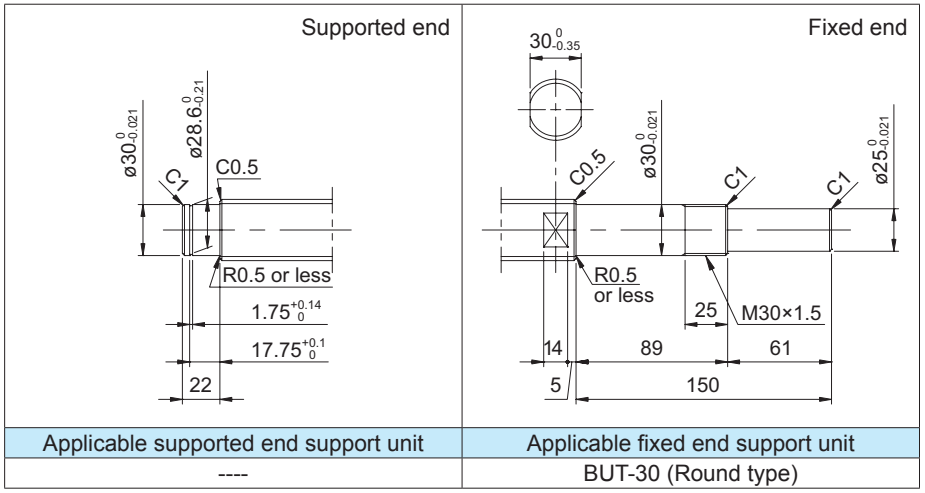
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY3610ES-HUBR-3000A → GY3610ES-HUBR-2970X2830-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
----	BUT-30 (Round type)

• Optional specifications

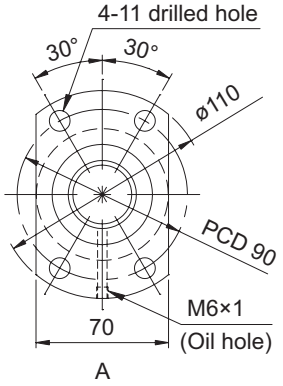
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

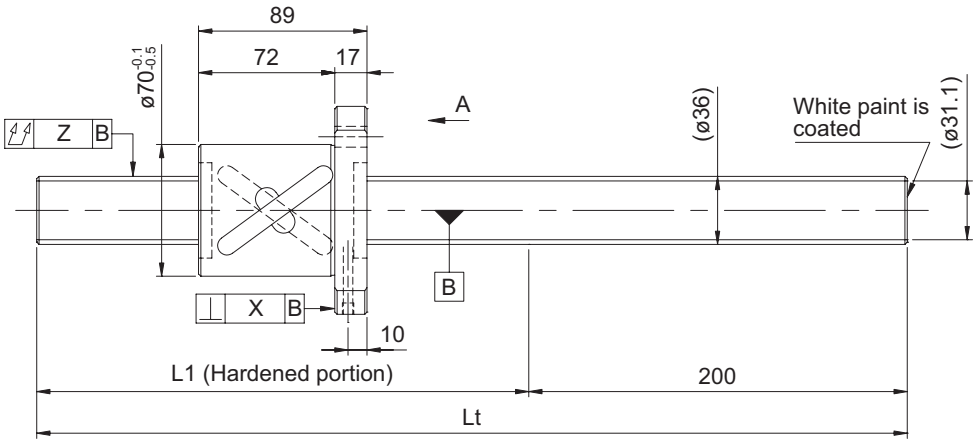
Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.120	10.28
		0.240	18.25
		0.640	26.22

GY series (Accuracy grade C10)

• Ball screw specifications

Shaft diameter (mm) - Lead (mm)	36 - 20
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.350
Root diameter (mm)	31.1
Series	GY
Basic dynamic load rating C (N)	35100
Basic static load rating C0 (N)	98200
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY3620ES-HUBR-1000A	800	1000	711
GY3620ES-HUBR-2000A	1800	2000	1711
GY3620ES-HUBR-3000A	2800	3000	2711

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Screw shaft diameter ø36, Lead 20 (Round nut)

• Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

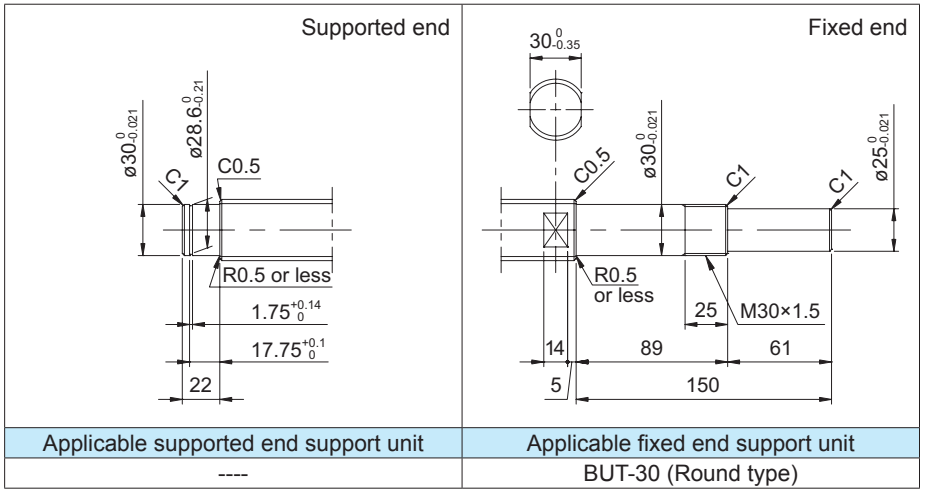
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY3620ES-HUBR-3000A → GY3620ES-HUBR-2970X2830-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
----	BUT-30 (Round type)

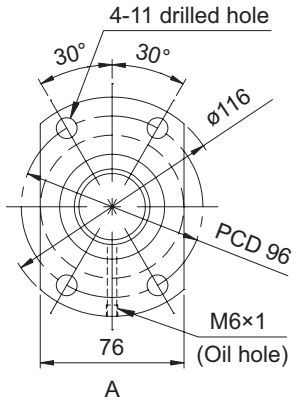
• Optional specifications

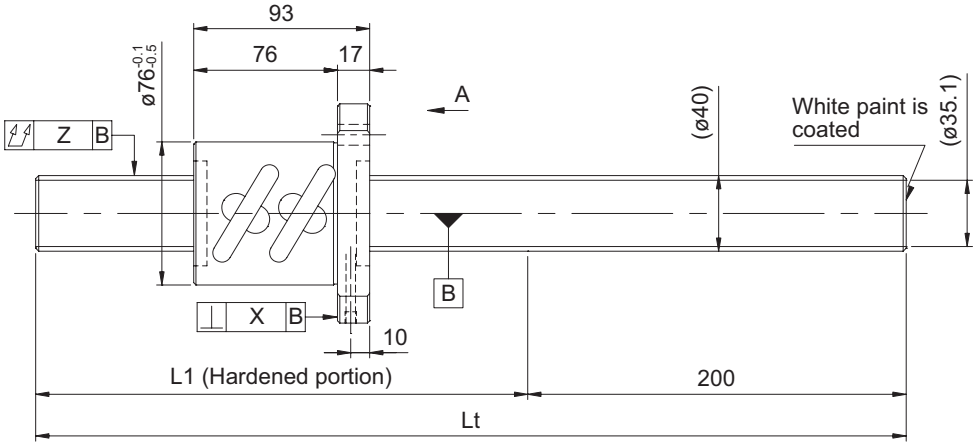
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.120	10.20
		0.240	18.17
		0.640	29.14

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	40 - 10
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.350
Root diameter (mm)	35.1
Series	GY
Basic dynamic load rating C (N)	37100
Basic static load rating C0 (N)	105600
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY4010ES-HUBR-2000A	1800	2000	1707
GY4010ES-HUBR-3000A	2800	3000	2707
GY4010ES-HUBR-4000A	3800	4000	3707

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

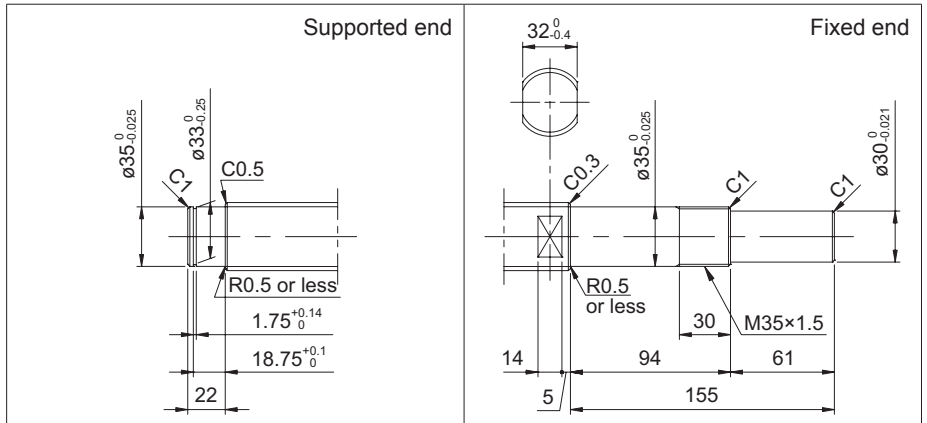
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY4010ES-HUBR-4000A → GY4010ES-HUBR-3930X3753-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
----	BUT-35 (Round type)

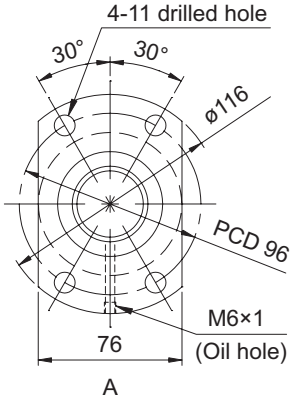
● Optional specifications

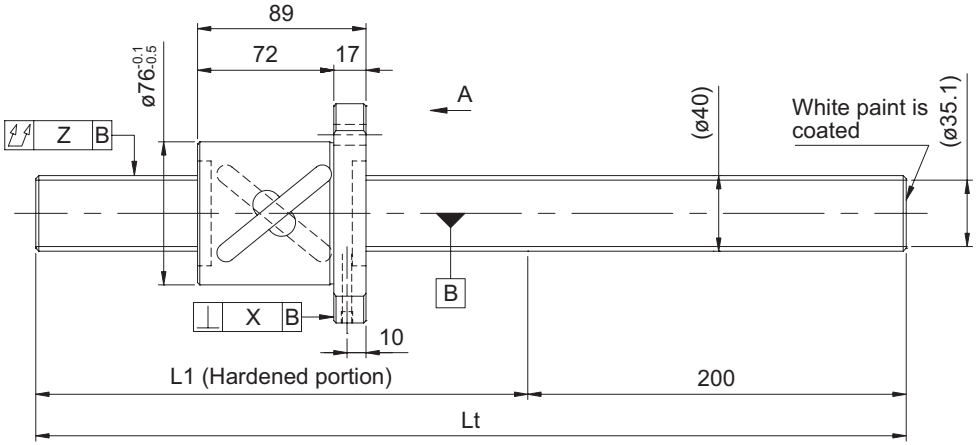
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.240	22.34
		0.400	32.18
		0.640	42.02

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	40 - 20
Number of circuits / Thread direction	2.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.350
Root diameter (mm)	35.1
Series	GY
Basic dynamic load rating C (N)	37100
Basic static load rating C0 (N)	105600
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY4020ES-HUBR-2000A	1800	2000	1711
GY4020ES-HUBR-3000A	2800	3000	2711
GY4020ES-HUBR-4000A	3800	4000	3711

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

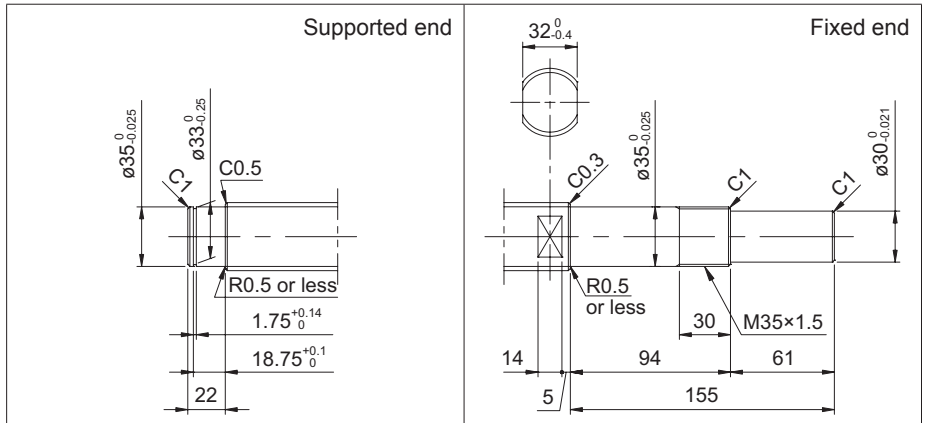
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY4020ES-HUBR-4000A → GY4020ES-HUBR-3930X3753-CAY

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
----	BUT-35 (Round type)

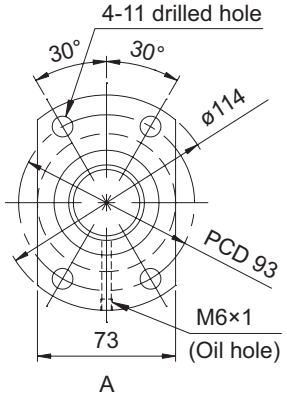
● Optional specifications

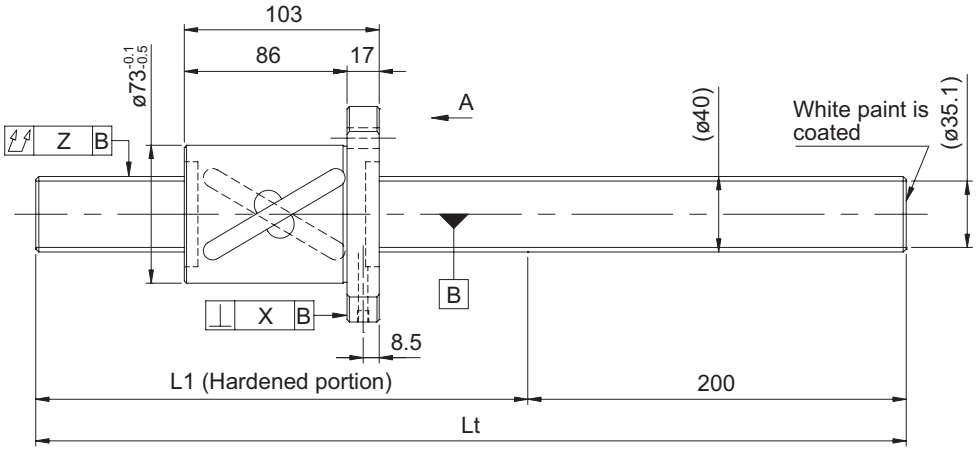
• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.240	22.25
		0.400	32.09
		0.640	41.93

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	40 - 40
Number of circuits / Thread direction	1.5 turns 2 circuits / Right-hand
Ball diameter (mm)	6.350
Root diameter (mm)	35.1
Series	GY
Basic dynamic load rating C (N)	23900
Basic static load rating C0 (N)	66900
Accuracy grade / Axial clearance symbol	C10 / Y
Axial clearance (mm)	0.200 or less
Preload torque (N·cm)	----
Recirculation system	Tube method
Wiper	Brush wiper
Lubricant	Alvania Grease S2
Phosphate coating	Screw shaft, nut





Model No. (Unfinished shaft ends)	L1	Lt	Maximum stroke (L1 - nut length)
GY4040BS-HUBR-2000A	1800	2000	1697
GY4040BS-HUBR-3000A	2800	3000	2697
GY4040BS-HUBR-4000A	3800	4000	3697

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

● Shaft end finish type

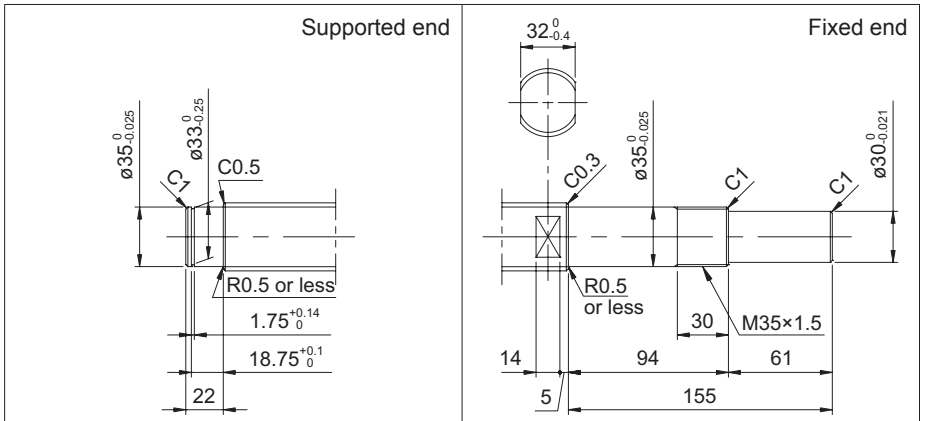
Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

GY4040BS-HUBR-4000A → GY4040BS-HUBR-3930X3753-CAY

↳Thread length
↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
----	BUT-35 (Round type)

● Optional specifications

• Anticorrosive black coating (coating thickness: 1 to 2 μm) is available.

Lead accuracy	Accuracy of each part		Mass
Cumulative lead error	X	Z	(kg)
0.21/300	---	0.240	22.29
		0.400	32.13
		0.640	41.97

Ball screw related products

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Low particle generating grease
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KURODA S-Grease — E-32
LUBSEAL™ — E-34

R series: Resin nut ball screws

Features

● Introducing compact nut dimensions

- Having redesigned the structure of the ball recirculation component found in conventional end deflector type ball screw nuts, KURODA has achieved greater size reduction.
- By fitting the compact ball recirculation component in the ends of the nut and implementing an internal recirculation structure, the overall length and body diameter of the nut have been made more compact.

● Utilizing materials with excellent chemical and corrosion resistance

- Ball screw shafts and balls made of stainless steel with excellent corrosion resistance are now the standard offering.
- Resin with excellent chemical resistance has been chosen as the material for the R series ball screw nuts.

● Lightweight resin ball screws with longer service life have been developed

- With the introduction of resin components, the R series ball screws can contribute to the lightweight requirements of tabletop applications.

□ Summary of the specifications

Screw shaft diameter	ø8 mm
Lead	2 mm
Accuracy grade	C7 grade
Nut combination type	Single nut
Shaft end type	Unfinished shaft ends
Product line	Standard product

□ Options available

Series	Additional shaft-end machining	Surface treatment (Anticorrosive black coating)	Change of grease type	Change of nut direction
RW series	○	---	○	○

Ball screw related products

□ Model numbers of RW series

	Series	Shaft diameter	Lead	Number of circuits	Combination	–	Flange type	Ball recirculation system	Wiper material	Thread direction	–	Overall screw shaft length	Shaft end type	Thread length	–	Accuracy grade	Axial clearance
Example model number	RW	08	02	P	S	–	B	P	N	R	–	0400	X	0300	–	C7	M
	RW	08	02	P	S	–	B	P	N	R	–	To be shown with a 4-digit number in metric units (mm)	A, X	To be shown with a 4-digit number in metric units (mm)	–	C7	M

• For more details, refer to the specifications and data for each size.

□ Materials

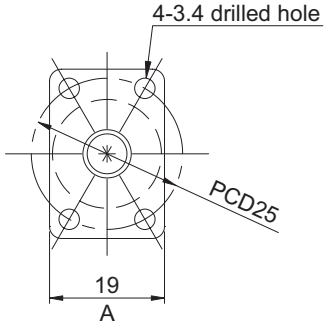
R series ball screw shafts use SUS304, the balls use SUS440C; both of which are grades of stainless steel with excellent corrosion resistance. The ball screw nuts use PPS super engineering plastic with excellent resistance to form-deterioration and chemical agents.

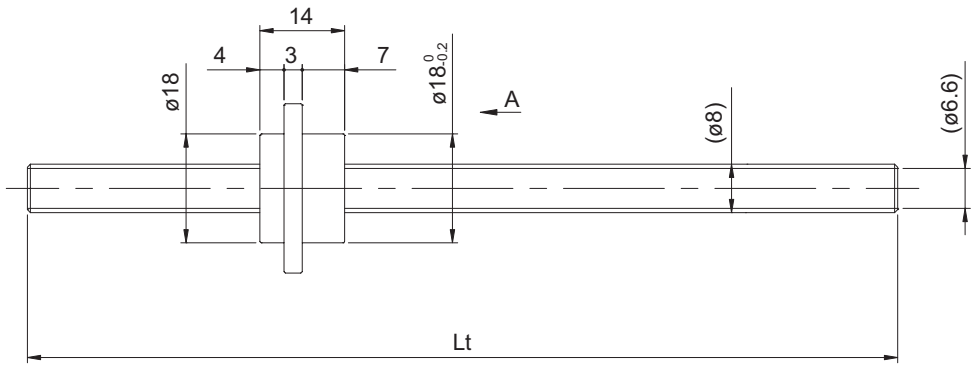
Part name	Material	Heat treatment
Screw shaft	Stainless steel SUS304	---
Nut	Super engineering plastic PPS	---
Ball	Stainless steel SUS440C	Hardening

RW series (Accuracy grade C7)

● Ball screw specifications

Shaft diameter (mm) - Lead (mm)	8 - 2
Number of circuits / Thread direction	3.7 turns 1 circuit / Right-hand
Ball diameter (mm)	1.5875
Root diameter (mm)	7.1
Series	RW
Permissible axial load (N)	40
Permissible rotational speed (min^{-1})	3000
Accuracy grade / Axial clearance symbol	C7 / M
Axial clearance (mm)	0.030 or less
Preload torque (N·cm)	----
Spacer ball	None
Recirculation system	End deflector method
Wiper	None
Lubricant	Alvania Grease S2





Model No. (Unfinished shaft ends)	Screw shaft length Lt	Maximum stroke (L1 - nut length)	Lead accuracy Cumulative lead error	Mass (kg)
RW0802PS-BPNR-0200A	400	386	0.05/300	0.08
RW0802PS-BPNR-0400A				0.14

• At the time of delivery, grease is inserted inside of the nut, with rust-preventive oil also applied. Before and during use, apply lubricant where appropriate.

Ball screw related products

● Shaft end finish type

Standard rolled ball screws are available with KURODA's recommended shaft end finish types for each size.

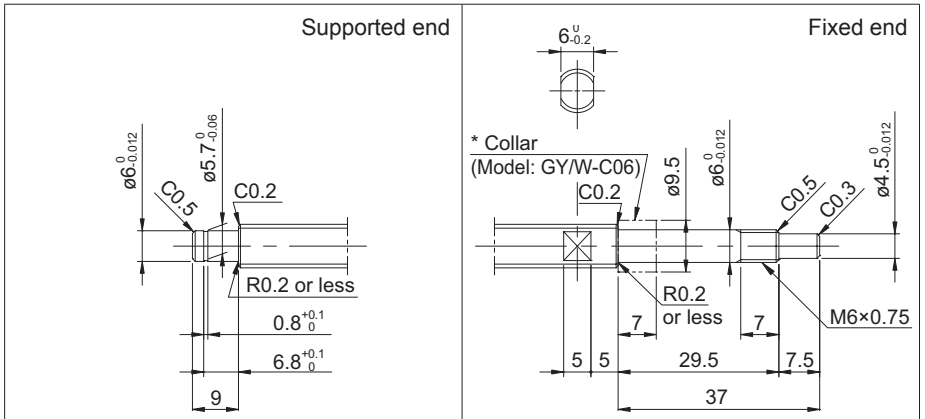
Other than KURODA's recommended shaft end finish types described below, additional machining including keyways, tapped holes, and D-cut processing are also available if requested. Please contact KURODA with your orders. Model examples for finished shaft ends are described below.

Model example: Unfinished shaft ends (See left figure) → Finished shaft ends

RW0802PS-BPNR-0400A → RW0802PS-BPNR-0400X0354-C7M

↳Thread length

↳Overall screw shaft length



Applicable supported end support unit	Applicable fixed end support unit
BUK-6S (Square type)	BUK-6 (Square type)
BUM-6S (Round type)	BUM-8, BUM-6F (Round type)

Slide screws with resin nuts PY/PW series

Features

- **Developed by drawing upon KURODA's technical expertise in manufacturing high accuracy ball screws**
  - Screw shafts are manufactured according to the same degree of lead accuracy used for ball screws and have achieved high precision positioning.

- **Utilizing materials with excellent chemical and corrosion resistance**
  - Screw shafts can also be selected in stainless steel that has excellent corrosion resistance.
  - For nuts, resin with excellent chemical resistance is employed.

- **Lightweight resin lead screws with longer service life have been achieved**
  - With the introduction of resin components, the PY/PW series screws can contribute to the lightweight requirements of tabletop applications.

□ Summary of the specifications

Screw shaft diameter	ø8 mm
Lead	2 mm
Accuracy grade	PW series: C7 grade PY series: C10 grade
Shaft end type	Unfinished shaft ends
Product line	Standard product

□ Options available

Series	Additional shaft-end machining	Surface treatment (Anticorrosive black coating)	Change of grease type	Change of nut direction
P series	○	---	○	○

□ Model numbers of P series

	Series	Shaft diameter	Lead	Shaft material	Nut material	Thread direction		Overall screw shaft length	Shaft end type	Thread length		Accuracy grade	Axial clearance
Example model number	PW	10	04	G	P	R	–	0400	X	0300	–	C7	Y
	PW	10 or 12	04 or 10	G or S	P	R	–	To be shown with a 4-digit number in metric units (mm)	A, X	To be shown with a 4-digit number in metric units (mm)	–	C7	Y
		10	04	G or S		L							
	PY	10 or 12	04 or 10	G or S	P	R						CA	
		10	04	G or S		L							

- For more details, refer to the specifications and data for each size.

□ Materials

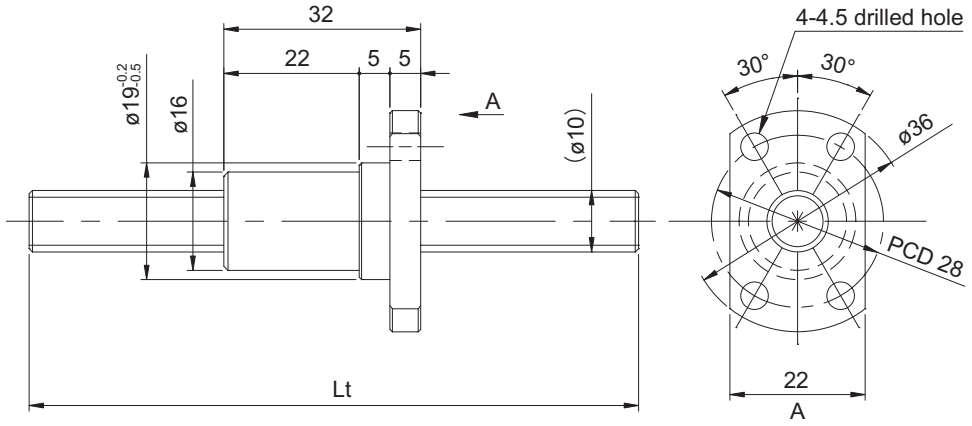
Part name	Material
Screw shaft	G: S45C S: SUS304
Nut	High rigidity engineering plastic (PPS) for sliding

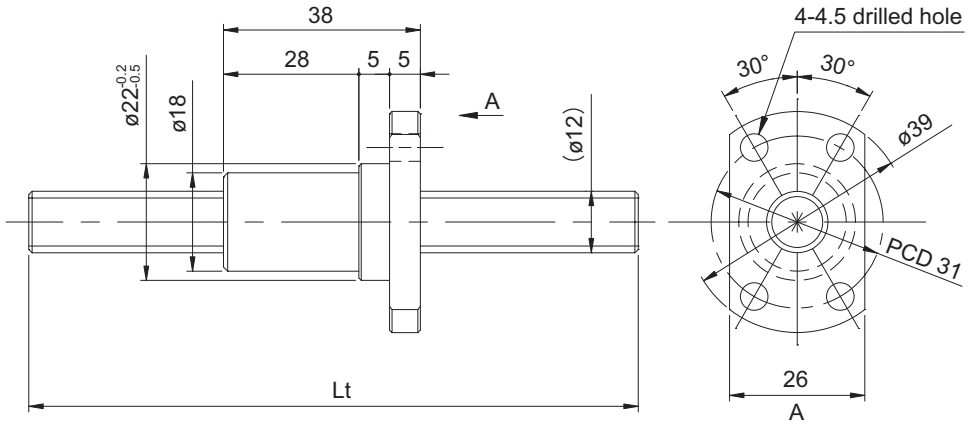
□ Permissible axial load and rotational speed

Screw shaft diameter (mm)	Lead (mm)	Permissible axial load (practical index) (N)	Permissible rotational speed (min^{-1})
ø10	4	70	3000
	10		
ø12	4	100	3000
	10		

Ball screw related products

Slide screws with resin nuts (Accuracy grade C7, C10)





Screw shaft diameter ø10, ø12

(Unit: mm)

Model No.	Shaft diameter d	Lead L	Thread direction	Screw shaft: Overall length Lt	Screw shaft: Root diameter d1	Accuracy grade	Lead accuracy Cumulative lead error	Axial clearance
PW1004*PR-0400A	10	4	Right-hand	400	(7.8)	C7	0.05/300	0.05 or less
PW1004*PR-0600A				600				
PW1004*PL-0400A			Left-hand	400				
PW1004*PL-0600A				600				
PW1010*PR-0400A		10	Right-hand	400				
PW1010*PR-0600A				600				
PY1004*PR-0400A	10	4	Right-hand	400	(7.8)	C10	0.21/300	0.10 or less
PY1004*PR-0600A				600				
PY1004*PL-0400A			Left-hand	400				
PY1004*PL-0600A				600				
PY1010*PR-0400A		10	Right-hand	400				
PY1010*PR-0600A				600				

- Alvania Grease S2 is applied as the lubricant.
- The recommended tightening torque for the mounting screw (M4) when fixing the resin nut in the nut housing is 80 N·cm.
- The asterisk * will be replaced by the material symbol G or S.

(Unit: mm)

Model No.	Shaft diameter d	Lead L	Thread direction	Screw shaft: Overall length Lt	Screw shaft: Root diameter d1	Accuracy grade	Lead accuracy Cumulative lead error	Axial clearance
PW1204*PR-0400A	12	4	Right-hand	400	(10.0)	C7	0.05/300	0.05 or less
PW1204*PR-0800A				600				
PW1210*PR-0400A		10	Right-hand	400	(9.6)			
PW1210*PR-0800A				600				
PY1204*PR-0400A	12	4	Right-hand	400	(10.0)	C10	0.21/300	0.10 or less
PY1204*PR-0800A				800				
PY1210*PR-0400A		10	Right-hand	400	(9.6)			
PY1210*PR-0800A				800				

- Alvania Grease S2 is applied as the lubricant.
- The recommended tightening torque for the mounting screw (M4) when fixing the resin nut in the nut housing is 80 N·cm.
- The asterisk * will be replaced by the material symbol G or S.

KURODA JENATEC

Ball screw related products

Support units

BUKE (square type), BUK (square type), BUM (round type), BUT (round type)

Features

● Support units suited to various mounting configurations are available for your selection

- The support unit types include square types (BUKE series, BUK series) and round types (BUM series, BUT series). They can be selected according to mounting configuration requirements.

● Providing bearings optimized for ball screws

- BUKE series (Square type) adopts radial ball bearings with the accuracy grade of P0. They are best suited for accuracy grade C7 or C10 ball screws in light load, conveyance applications.
- BUK series (square type) and BUM series (round type) employ a DF type combined angular contact ball bearings with an accuracy grade of P5 and a contact angle of 30°.
- BBUT series (round type) employs a DF type high-thrust angular contact ball bearings with an accuracy grade of P4 and a contact angle of 60°.

● Built-in locking function

- By employing a lock nut made specifically for bearings with a built-in locking function, optimal perpendicularity in assembly can be achieved.

□ Notation of the model number of the support unit

Example model number

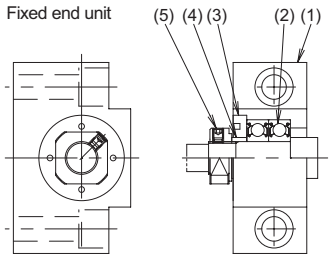
Type		–	Inner diameter of bearing (mm)	Combination
BUK		–	15	F
Square type	: BUKE		Inner diameter of fixed end bearing 6, 8, 10, 12	F: Fixed end unit
Square type	: BUK		Inner diameter of fixed end bearing 6, 8, 10, 12, 15, 20, 25 Inner diameter of supported end bearing 6, 8, 10, 15, 20, 25	F: Fixed end unit
				S: Supported end unit
				No mark: F + Support bearing
Round type	: BUM			
Round type	: BUT		Inner diameter of fixed end bearing 20, 25, 30, 35, 40	* For BUT, only the fixed end unit is available.

□ Table of ball screw compatibility

Model number	Inner diameter of fixed end bearing (mm)	Inner diameter of supported end bearing (mm)	Applicable series						
			FE/FG	DP	HG	GP	GE/GG	GW	GY
BUK BUM	6	6	–	0601	–	–	–	0802	08□
BUK BUM	8	6	–	08□ 1002	0812	08□ 10□	08□ 10□* 12□	10□	10□
BUK BUM	10	8	1010 12□*	12□	1230	12□	1010 12□*	12□	12□
BUK BUM	12	10	15□	1404	15□ 1632	15□	15□ 16□	15□ 1632	15□ 1632
BUK BUM	15	15	20□	–	20□	20□	20□	20□ 2040	20□ 2040
BUK BUM	20	20	25□	–	–	–	25□	25□	25□ 2806
BUK BUM	25	25	–	–	–	–	32□	–	32□
BUT	30	–	–	–	–	–	–	–	36□
BUT	35	–	–	–	–	–	–	–	40□

□ Main parts and materials

Square type: BUKE series

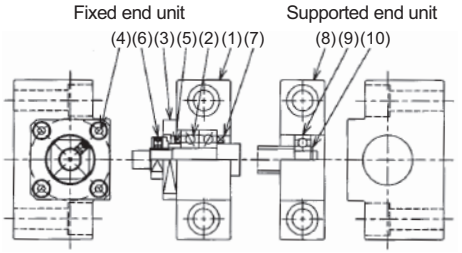


BUKE series Fixed end unit Main parts and materials

No.	Description	Material	Q'ty	Remark
1	Bearing housing	Structural steel	1	Blackening
2	Radial bearing		1 set	
3	Cover flange	Structural steel	1	Blackening
4	Spacer	Structural steel	1	Blackening
5	Lock nut (with a set piece)	Structural steel (brass set piece)	1	Blackening

- When the above parts are used in combination with a rolled ball screw, a collar (Material: structural steel, blackening) is required.
- Because the radial bearing is suitably preloaded during assembly, do not disassemble Part Numbers 1, 2, and 3.

Square type: BUK series

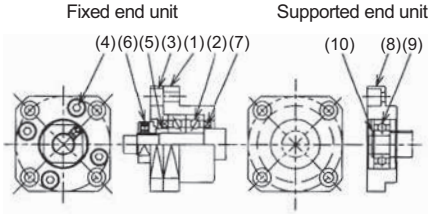


BUK/BUM series Fixed end unit Main parts and materials

No.	Description	Material	Q'ty	Remark
1	Bearing housing	Structural steel	1	Blackening
2	Bearing		1 set	
3	Cover flange	Structural steel	1	Blackening
4	Head cap screw with hexagonal socket		4	
5	Spacer	Structural steel	1	Blackening
6	Lock nut (with a set piece)	Structural steel (brass set piece)	1	Blackening
7	Oil seal	Synthetic rubber	2	

- When the above parts are used in combination with a rolled ball screw, a collar (Material: structural steel, blackening) is required.
- Round type: For BUM (fixed end unit), no blackening treatment is applied on the housing and the mounting surface of the outer face.
- To maintain appropriate preload do not disassemble Part Numbers 1, 2, 3, and 7.

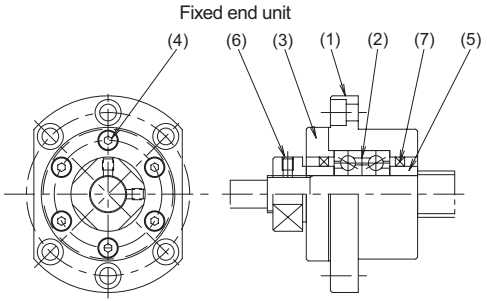
Round type: BUM series



BUK/BUM series Supported end unit Main parts and materials

No.	Description	Material	Q'ty	Remark
8	Bearing housing	Structural steel	1	Blackening
9	Bearing		1	
10	Clip washer		1	

Round type: BUT series



BUT series Fixed end unit Main parts and materials

No.	Description	Material	Q'ty	Remark
1	Bearing housing	Structural steel	1	Anticorrosive black coating
2	Bearing		1 set	
3	Cover flange	Structural steel	1	Anticorrosive black coating
4	Head cap screw with hexagonal socket		6 or 8	
5	Spacer	Structural steel	2	Anticorrosive black coating
6	Lock nut (with a set piece)	Structural steel (brass set piece)	1	Anticorrosive black coating
7	Oil seal	Synthetic rubber	2	

- Round type: For BUT (fixed end unit), no anticorrosive black coating is applied on the housing and the mounting surface of the outer face.
- To maintain appropriate preload do not disassemble Part Numbers 1, 2 and 3.

Ball screw related products

□ Bearing data

● BUK/BUM series　Fixed end bearing (Combined angular contact ball bearing)

Model No. of support unit	Model No. of bearing	Axial force			Maximum starting torque (N·cm)
		Basic dynamic load rating (N)	Preload (N)	Rigidity (N/μm)	
BUK-6, BUM-6	706ADFP5	2670	30	38	0.5
BUK-8, BUM-8	708ADFP5	4400	49	52	0.8
BUK-10, BUM-10	7000ADFP5	6170	120	95	2.0
BUK-12, BUM-12	7001ADFP5	6770	140	100	2.2
BUK-15, BUM-15	7002ADFP5	7740	170	120	2.3
BUK-20, BUM-20	7204ADFP5	18200	350	193	5.5
BUK-25, BUM-25	7205ADFP5	20600	500	230	7.5

● BUK/BUM series　Supported end bearing (Deep groove ball bearing)

Model No. of support unit	Model No. of bearing	Basic dynamic load rating (N)
BUK-6S	606ZZ	1720
BUK-8S, BUM-8S	608ZZ	2620
BUK-10S, BUM-10S	6000ZZ	3600
BUK-15S, BUM-15S	6002ZZ	4400
BUK-20S, BUM-20S	6204ZZ	10100
BUK-25S	6205ZZ	11000

● BUT series　Fixed end bearing (High-thrust angular contact ball bearing)

Model No. of support unit	Model No. of bearing Inner diameter × Outer diameter × Width/Combination/ Accuracy symbol (Width when combined)	Axial force			Maximum starting torque (N·cm)
		Basic dynamic load rating (N)	Critical load (N)	Rigidity (N/μm)	
BUT-20	20×47×30-DFP4	25900	32000	735	10
BUT-25	25×62×30-DFP4	29900	46400	981	15
BUT-30	30×62×30-DFP4	29900	46400	981	15
BUT-35	35×72×30-DFP4	32500	54300	1230	20
BUT-40	40×72×30-DFP4	32500	54300	1230	20

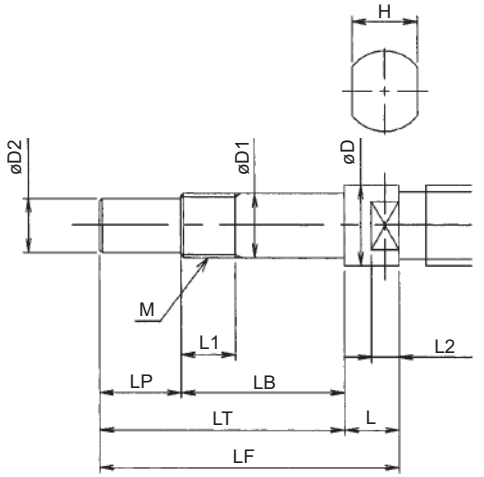
* Model No. of bearing: Inner diameter × Outer diameter × Width/Combination/Accuracy symbol (Width when combined)

● BUKE series　Fixed end bearing

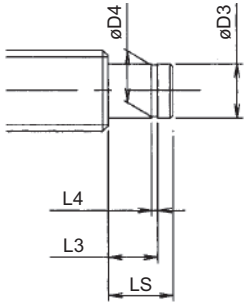
Model No. of support unit	Model No. of bearing	Maximum starting torque (N·cm)
BUKE-6	606	2.5
BUKE-8	608	2.5
BUKE-10	6000	2.5
BUKE-12	6001	2.5

□ Recommended screw shaft end dimensions

Fixed end　Screw shaft end dimensions



Supported end　Screw shaft end dimensions



○ Recommended dimensions of screw shaft ends for Square type: BUK and Round type: BUM

(Unit: mm)

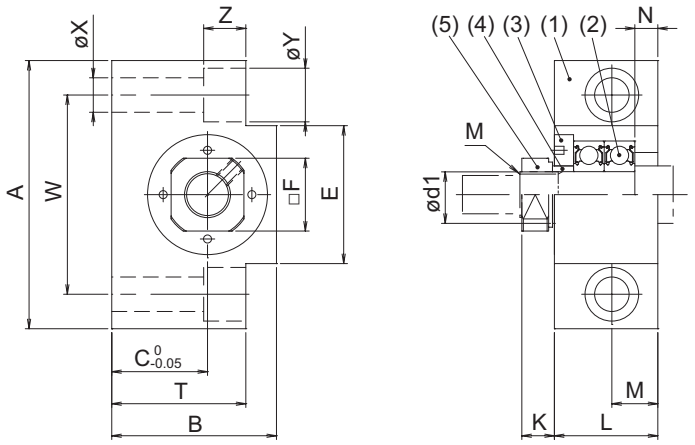
Model No. (Fixed end)	LP	øD2 (Tolerance)	LB	øD1 (Tolerance)	LT	L	øD	LF	L2	H (Tolerance)	L1	M
BUK-6 BUKE-6 BUM-6	7.5	4.5 0 −0.008	22.5	6 −0.002 −0.007	30	7	9.5	37	3	8 0 −0.2	7	M6 X0.75
BUK-8 BUKE-8 BUM-8	10	6	27	8 −0.002 −0.008	37	8	11.5	45	4	10	9	M8 X1
BUK-10 BUKE-10 BUM-10	15	8 0 −0.009	30	10	45	10	14	55	5	12	10	M10 X1
BUK-12 BUKE-12 BUM-12	15	10	30	12 −0.003 −0.011	45	10	15	55	5	12 0 −0.25	10	M12 X1
BUK-15 BUM-15	20	12 0 −0.011	40	15	60	15	20	75	5	17	15	M15 X1
BUK-20 BUM-20	27	15	53	20 −0.003 −0.012	80	20	25	100	10	22 0 −0.35	16	M20 X1
BUK-25 BUM-25	33	20 0 −0.013	62	25 −0.005 −0.014	95	27	32	122	12	27	20	M25 X1.5

Model No. (Supported end)	LS	L3 (Tolerance)		øD3 (Tolerance)		L4 (Tolerance)		øD4 (Tolerance)	
-	-	-	-	-	-	-	-	-	-
BUK-6S	9	6.8	+0.1 0	6 −0.002 −0.010	0.8	+0.1 0	5.7	0 −0.06	
BUM-6S									
BUK-8S BUM-8S	10	7.9		8 −0.004 −0.012	0.9		7.6		
BUK-10S	12	9.15		10 −0.004 −0.012	1.15	+0.14 0	9.6	0 −0.09	
BUM-10S									
BUK-15S BUM-15S	12	10.15		15 −0.004 −0.012			14.3	0 −0.11	
BUK-20S	18	15.35		20 −0.004 −0.013	1.35		19	0 −0.21	
BUM-20S									
BUK-25S	20	16.35		25 −0.004 −0.013			23.9		

(Note) Dimensions may differ from those recommended, depending on the type of the unfinished shaft of standard products.

Ball screw related products

BUKE series



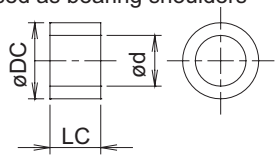
Model No.	ød1	A	B	C	T	E	□F	K	L	R	N
BUKE-6	6	42	25	13	20	18	12	6	20	10	3.5
BUKE-8F	8	52	32	17	26	25	14	7	23	11.5	4
BUKE-10F	10	70	43	25	35	36	17	8.5	27	12	6
BUKE-12F	12	70	43	25	35	36	19	8.5	27	12	6

(Note 1) The above is the net weight and does not include that of the packing material.

● Dimensions of rolled ball screws collars

Model No.	ød	øDC (Tolerance)		LC
GY/W-C06	6	9.5	±0.1	7
GY/W-C08	8	11.5		8
GY/W-C10	10	14		10
GY/W-C12	12	15		10

Rolled ball screws collars to be used as bearing shoulders

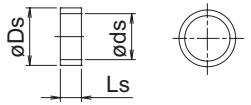


(Note 1) When the above parts are used with the rolled ball screw, a bearing shoulder-functioning collar is required.

(Note 2) The collar is not included in the standard parts of the support unit. When using with rolled ball screws, the optional collar is available on request.

Ball screw related products

Spacer

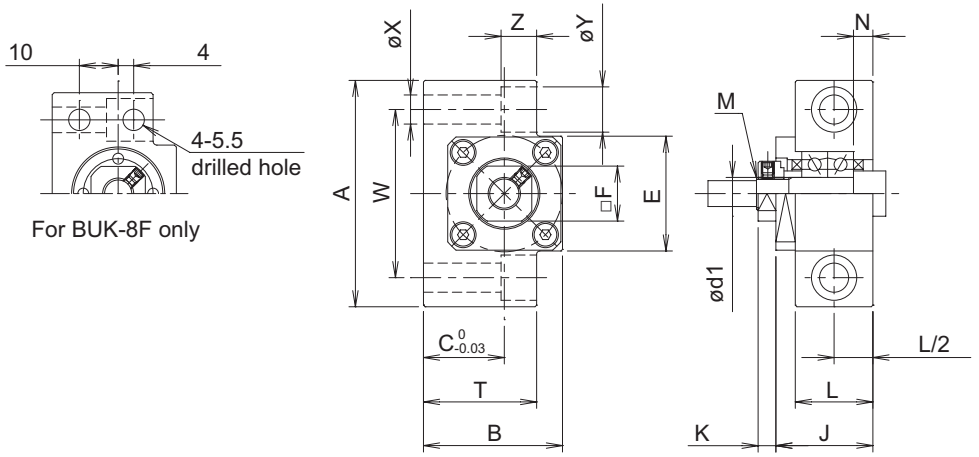


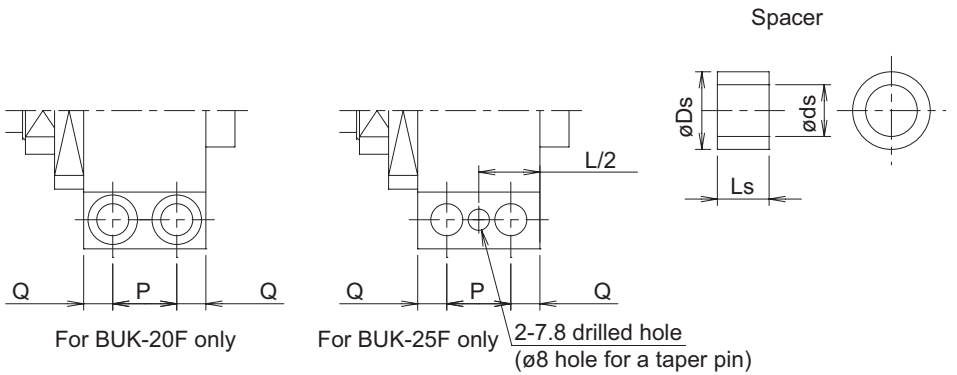
(Unit: mm)

W	øX	øY	Z	M	øds	øDs	Ls	Mass (kg)
30	5.5	9.5	11	M6×0.75	6	9.5	5	0.10
38	6.6	11	11	M8×1	8	11.5	5.5	0.23
52	9	14	11	M10×1	10	14	5.5	0.49
52	9	14	11	M12×1	12	15	5.5	0.50

BUK series

Ball screw related products





(Unit: mm)

Model No.	ød1	A	B	C	T	E	□F	J	K	L	N
BUK-6	6	42	25	13	20	18	12	20	5.5	20	3.5
BUK-8F	8	52	32	17	26	25	14	23	7	23	4
BUK-10F	10	70	43	25	35	35.5	17	30	5.5	24	6
BUK-12F	12	70	43	25	35	35.5	19	30	5.5	24	6
BUK-15F	15	80	50	30	40	41	22	31	12	25	5
BUK-20F	20	95	58	30	45	56	30	52	10	42	10
BUK-25F	25	105	68	35	25	66	36	61	13	48	14

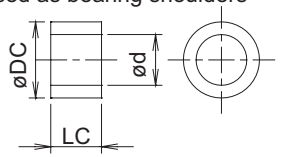
P	Q	W	X	Y	Z	M	øds	øDs	Ls	Mass (kg)
-	-	30	5.5	9.5	11	M6×0.75	6	9.5	5	0.10
-	-	38	6.6	11	12	M8×1	8	11.5	5.5	0.23
-	-	52	9	14	11	M10×1	10	14	5.5	0.49
-	-	52	9	14	11	M12×1	12	15	5.5	0.50
-	-	60	11	17	15	M15×1	15	20	10	0.65
22	10	75	11	17	15	M20×1	20	25	11	1.48
30	9	85	11	-	-	M25×1.5	25	31	14	1.90

(Note 1) The above is the net weight and does not include that of the packing material.

● Dimensions of rolled ball screws collars

Model No.	ød	øDC (Tolerance)		LC
GY/W-C06	6	9.5	±0.1	7
GY/W-C08	8	11.5		8
GY/W-C10	10	14		10
GY/W-C12	12	15		10
GY/W-C15	15	20		15
GY/W-C20	20	25		20
GY/W-C25	25	32		25

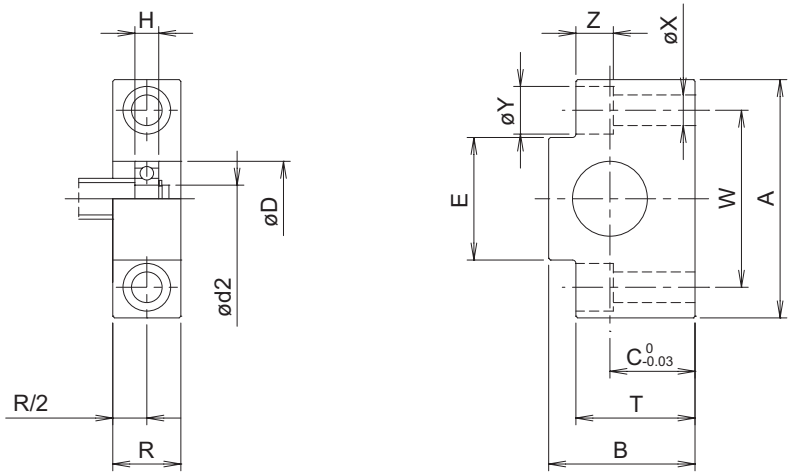
Rolled ball screws collars to be used as bearing shoulders



(Note 1) When the above parts are used with the rolled ball screw, a bearing shoulder-functioning collar is required.
(Note 2) The collar is not included in the standard parts of the support unit. When using with rolled ball screws, the optional collar is available on request.

BUK series

Ball screw related products



(Unit: mm)

Model No.	ød2	øD	H	R	A	B	C	T	E	W	X
BUK-6S	6	17	6	15	52	32	17	26	25	38	6.6
BUK-8S	8	22	7	20	70	43	25	35	35.5	52	9
BUK-10S	10	26	8	20	70	43	25	35	35.5	52	9
BUK-15S	15	32	9	20	80	50	30	40	41	60	11
BUK-20S	20	47	14	26	95	58	30	45	56	75	11
BUK-25S	25	52	15	30	105	68	35	25	66	85	11

(Note 1) The above is the net weight and does not include that of the packing material.

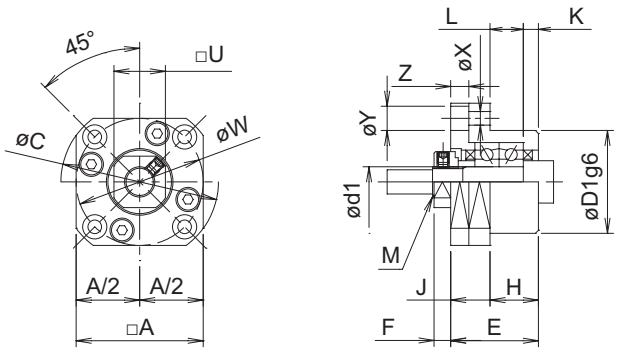
Y	Z	Snap ring	Mass (kg)
11	12	Nominal 6	0.17
14	11	Nominal 8	0.37
14	11	Nominal 10	0.36
17	15	Nominal 15	0.46
17	15	Nominal 20	0.76
-	-	Nominal 25	0.98

● Part numbers for matched pairs

Model No.	Model No.
BUK-6	---
BUK-8F	BUK-6S
BUK-10F	BUK-8S
BUK-12F	BUK-10S
BUK-15F	BUK-15S
BUK-20F	BUK-20S
BUK-25F	BUK-25S

BUM series

Figure_1



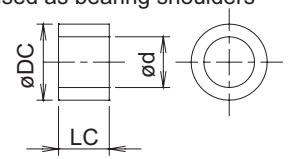
Model No.	ød1	□A	øC	øD1	E	F	H	J	K	L	N
BUM-6F	6	28	35	22	20	5.5	13	7	3.5	9.5	6.5
BUM-8F	8	35	43	28	23	7	14	9	4	10	8
BUM-10F	10	42	52	34	29	5.5	16	13	5	11	8.5
BUM-12F	12	44	54	36	29	5.5	16	13	5	11	8.5
BUM-15F	15	52	63	40	32	12	17	15	6	11	14
BUM-20F	20	68	85	57	52	10	30	22	10	20	14
BUM-25	25	79	98	63	57	13	30	27	10	20	20

(Note 1) The above is the net weight and does not include that of the packing material.

● Dimensions of rolled ball screws collars

Model No.	ød	øDC (Tolerance)		LC
GY/W-C06	6	9.5	±0.1	7
GY/W-C08	8	11.5		8
GY/W-C10	10	14		10
GY/W-C12	12	15		10
GY/W-C15	15	20		15
GY/W-C20	20	25		20
GY/W-C25	25	32		25

Rolled ball screws collars to be used as bearing shoulders

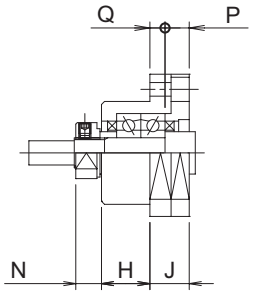


(Note 1) When the above parts are used with the rolled ball screw, a bearing shoulder-functioning collar is required.

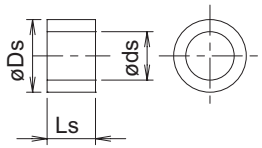
(Note 2) The collar is not included in the standard parts of the support unit. When using with rolled ball screws, the optional collar is available on request.

Ball screw related products

Figure_2



Spacer

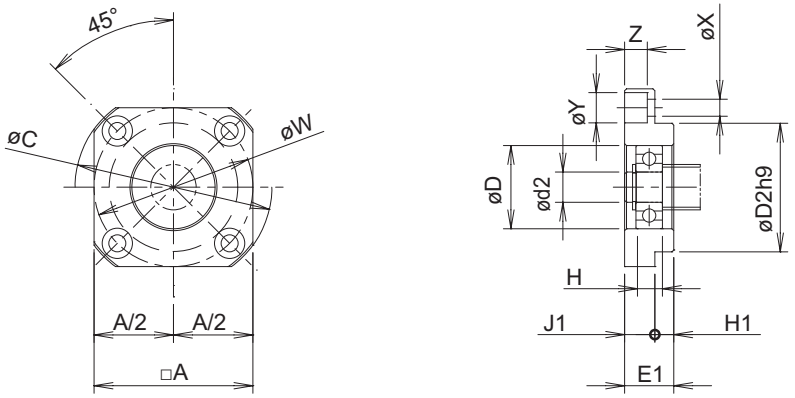


(Unit: mm)

P	Q	□U	øW	X	Y	Z	M	øds	øDs	Ls	Mass (kg)
4.5	2.5	12	28	2.9	5.5	3.5	M6×0.75	6	9.5	5	0.08
5	4	14	35	3.4	6.5	4	M8×1	8	11.5	5.5	0.18
8	5	17	42	4.5	8	6	M10×1	10	14	5.5	0.24
8	5	19	44	4.5	8	6	M12×1	12	15	5.5	0.26
8	7	22	50	5.5	9.5	6	M15×1	15	20	10	0.40
14	8	30	70	6.6	11	10	M20×1	20	25	11	1.09
17	10	36	80	9	15	13	M25×1.5	25	31	14	1.51

BUM series

Ball screw related products



Model No.	ød2	øD	H	□A	øC	øD2	E1	J1	H1	øW	X
BUM-6S	6	17	6	35	43	28	10	6	4	35	3.4
BUM-8S	8	22	7	42	52	34	13	8	5	42	4.5
BUM-10S	10	26	8	44	54	36	15	7	8	44	4.5
BUM-15S	15	32	9	52	63	40	17	9	8	50	5.5
BUM-20S	20	47	14	68	85	57	20	11	9	70	6.6

(Note 1) The above is the net weight and does not include that of the packing material.

(Unit: mm)

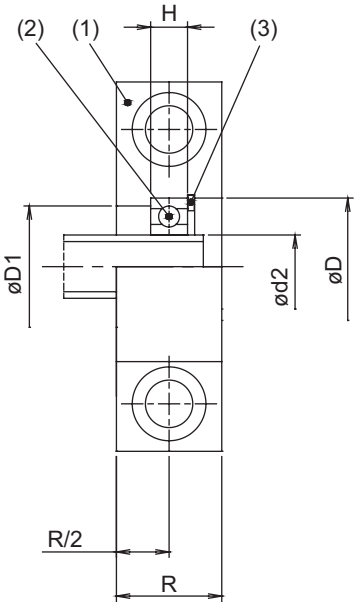
Y	Z	Snap ring	Mass (kg)
6.5	4	Nominal 6	0.06
8	6	Nominal 8	0.11
8	6	Nominal 10	0.12
9.5	6	Nominal 15	0.17
11	10	Nominal 20	0.38

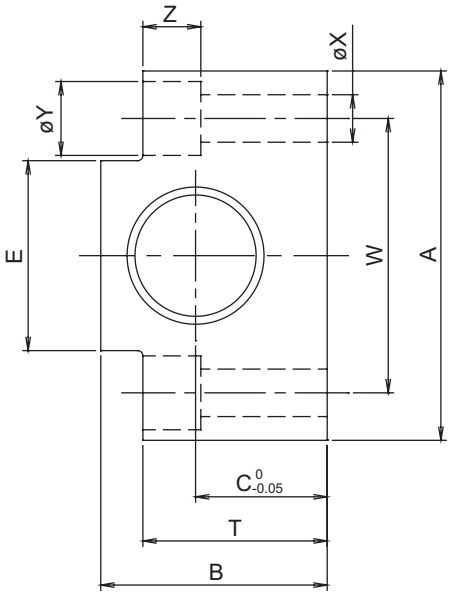
● Part numbers for matched pairs

Model No.	Model No.
BUM-6F	---
BUM-8F	BUM-6S
BUM-10F	BUM-8S
BUM-12F	BUM-10S
BUM-15F	BUM-15S
BUM-20F	BUM-20S
BUM-25F	---

BUK series

Ball screw related products





Model No.	ød2	øD	øD1	H	R	A	B	C	T	E	W
BUK-12T	12	28	24	8	20	70	43	25	35	35.5	52
BUK-15T	15	28	24	7	20	70	43	25	35	35.5	52

(Note 1) The above is the net weight and does not include that of the packing material.

● Main parts and materials

No.	Description	Material	Q'ty	Remark
1	Bearing housing	Structural steel	1	Blackening
2	Bearing		1	
3	Clip washer		1	10

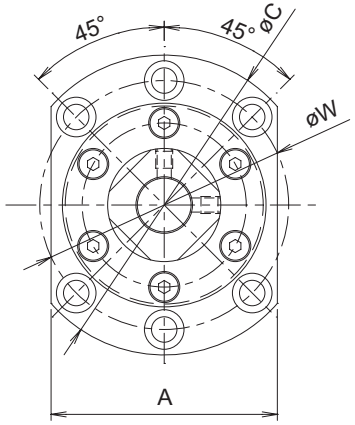
● Bearing specifications (deep groove ball bearing)

Model No. of support unit	Model No. of bearing	Basic dynamic load rating (N)
BUK-12T	6001ZZ	5100
BUK-15T	6902ZZ	4350

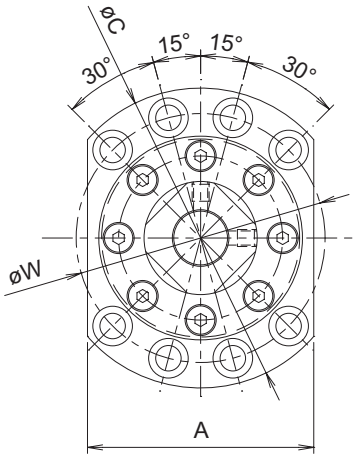
(Unit: mm)

X	Y	Z	Snap ring	Mass (kg)
9	14	11	Nominal 28	0.32
9	14	11	Nominal 28	0.31

BUT series



BUT-20, 25, 30

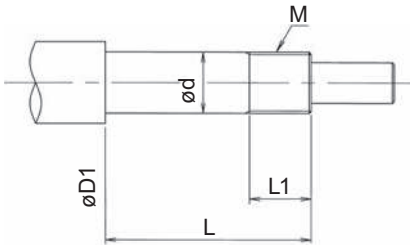


BUT-35, 40

Model No.	ød1	A	øC	øD1	E	F	H	J	T	øR	U
BUT-20	20	80	106	70	60	18	32	28	15	40	32
BUT-25	25	100	130	85	66	20	33	33	18	45	36
BUT-30	30	100	130	85	66	20	33	33	18	50	41
BUT-35	35	106	142	95	66	25	33	33	18	55	46
BUT-40	40	106	142	95	66	25	33	33	18	60	50

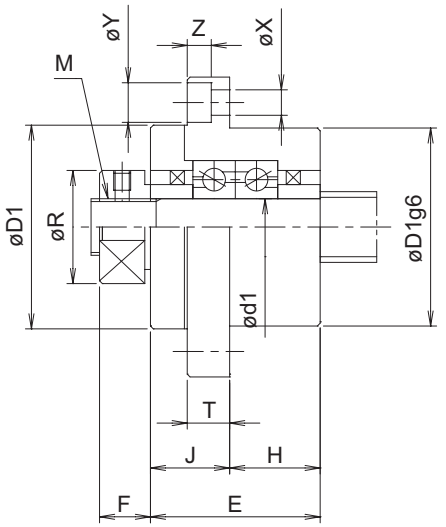
(Note 1) The above is the net weight and does not include that of the packing material.

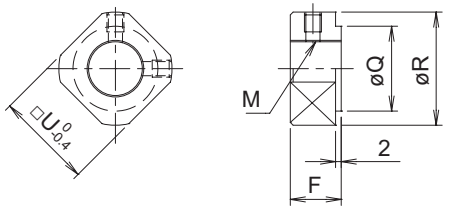
● BUT (round type) Dimensions of the fixed shaft end for bearing mounting (for reference)



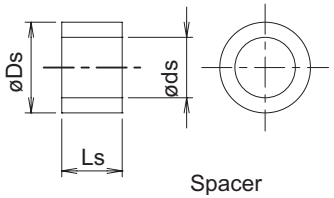
Model No.	Dimensions of the fixed shaft end for bearing mounting				
	øD1	ød1	L	L1	M
BUT-20	30	$20^{-0.003}_{-0.012}$	81	23	M20×1
BUT-25	40	$25^{-0.003}_{-0.012}$	89	25	M25×1.5
BUT-30	40	$30^{-0.003}_{-0.012}$	89	25	M30×1.5
BUT-35	50	$35^{-0.004}_{-0.015}$	94	30	M35×1.5
BUT-40	50	$40^{-0.004}_{-0.015}$	94	30	M40×1.5

Support unit for machine tools: ROUND TYPE FIXED END UNIT





Dimensions of the lock nut



Spacer

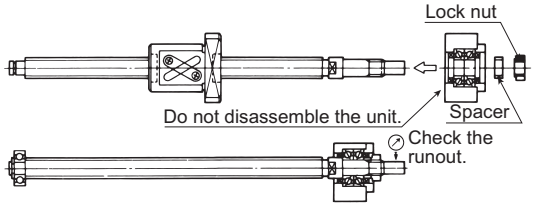
(Unit: mm)

øQ	øW	øX	øY	Z	M	øds	øDs	Ls	Mass (kg)
30	88	9	14	8.5	M20×1	20	30	15	2.0
40	110	11	17.5	11	M25×1.5	25	40	18	3.4
40	110	11	17.5	11	M30×1.5	30	40	18	3.3
50	121	11	17.5	11	M35×1.5	35	50	18	3.9
50	121	11	17.5	11	M40×1.5	40	50	18	3.8

How to assemble the square type support unit

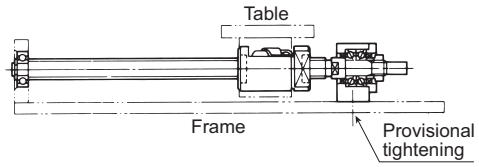
Support unit assembly

1) Fit the support unit to the ball screw.
   - Do not disassemble the bearing unit.
   - Exercise care to prevent the oil seal from peeling off.
   - When tightening the lock nut, be sure of the runout of the shaft end.
2) Sip the support bearing on the shaft and fix it in place with a snap ring.



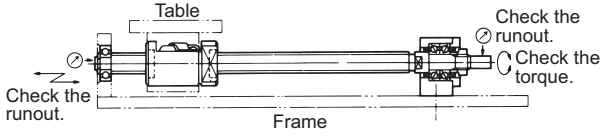
Support unit assembly

1) Lightly tighten the ball screw nut to the housing.
2) Lightly tighten the support unit to the frame. Move the table to the supported side and adjust the alignment of ball screw shaft to match the center of the bearing to achieve optimal movement:
   (1) Adjust the position of the square type support unit with an appropriate shim to match the nut housing.
   (2) Using the nut housing as a reference point, adjust to have a gap between the round type support unit and the frame.
   (3) Adjust the position of the nut housing with an appropriate shim to match the square type or round type support unit.
   (4) Using the support unit as a reference point, adjust to have a gap between the square type or round type support unit and the nut housing.



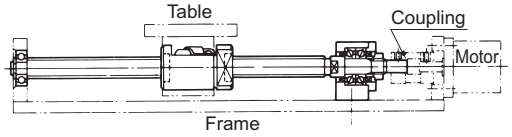
Be sure of that the supported end bearing is assembled correctly

1) Move the table to the supported end and center the ball screw. Lightly tighten the supported end bearing housing to the frame.
2) While moving the table back and forth, adjust to achieve smooth movement.
3) Tighten and fix the bearing housing while checking the alignment and runout of each part.



Assemble the ball screw shaft to the motor with a coupling

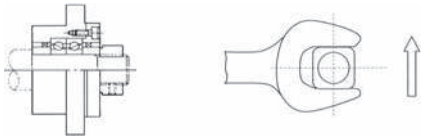
1) Assemble the motor bracket to the frame with proper positioning.
2) Join the motor and the ball screw with a coupling.
3) After assembly has been completed, manually run the actuator a few times back and forth to eliminate remaining misalignment.



How to assemble the round type support unit

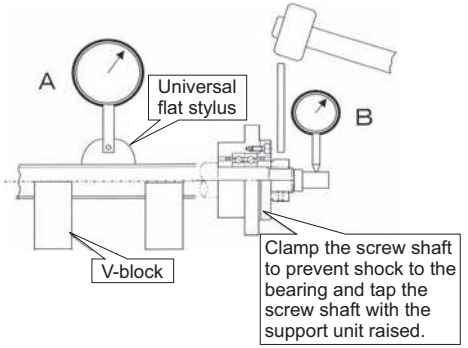
Fit the support unit to the ball screw

When the bearing lock nut is fixed with a spanner, the lock nut may shift in the direction of the indicated arrow due to the gap between the external thread and internal thread. This may cause misalignment and bending of the screw shaft.
Both poor alignment and operating a bent shaft may result in the reduction of feed accuracy and the shortening of service life. In addition, it may cause abnormal sounds, vibration, and other problems such as broken screw shafts.



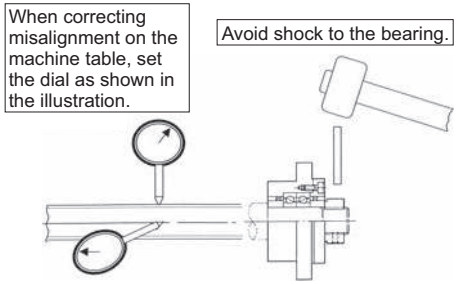
Things to note when tightening the bearing lock nut

(1) Lightly tighten the bearing lock nut.
(2) Support the screw shaft with a V-block, engage a dial gauge at A or B (shown in the illustration to the right) and find a position at which the deflection of the pointer is maximized while turning the screw shaft.
(3) Using a hammer as shown in the illustration, lightly tap the bearing lock nut at the above-mentioned backlash alignment position to reduce the deflection of the pointer.



Tighten the bearing lock nut after fixing the support unit to the machine table

(1) Set a dial gauge vertically and horizontally.
(2) Lightly tighten the bearing lock nut.
(3) As shown in the illustration, lightly tap the bearing lock nut with a hammer to reduce the deflection of the pointer. If the pointer of the dial gauge does not deflect when the bearing lock nut is lightly tap, loosen the lock nut and repeat the process to prevent shock to the bearing.



* For the recommenced tightening torque, consult KURODA.

Low particle generating KURODA C-Grease

C-Grease meets the needs for environments requiring low particle generation in equipment such as semiconductor manufacturing machines and electronic component devices.

Features

- Particle generation greatly reduced!
- Torque stabilization!
- Excellent lubrication performance!
- Rust prevention equivalent to that of lithium grease!

Model No.

C1-080G-J (supplied in a 80 g bellows-shaped container)
C1-400G-J (supplied in a 400 g bellows-shaped container)
* For the can (1 kg) and the syringe (50 cc), contact KURODA.
* The color of the bellows-shaped container for KURODA C-Grease is white.

Main properties

Appearance	Yellow white
Thickener	Urea
Base oil	Synthetic oil
Consistency	280 (No.2)
Operating temperature range	−30 to +150°C

⚠ Precautions when handling

Before using C-Grease, carefully read the precautions on the “Safety Data Sheet” (SDS) of the corresponding grease type. For the “Safety Data Sheet”, request to the distributor from whom you purchased the product.

Main applications	KURODA C-Grease
⚠ Caution Precautions when handling	♦ C-Grease is flammable (flash point: 220°C). Keep away from flame. ♦ Use protective glasses when handling. If it enters your eye, irritation may be occur. ♦ Use protective gloves when handling. If it touches your skin, irritation may be occur. ♦ Do not eat. (If you eat it, you will suffer from diarrhea and vomiting.) ♦ Keep away from children. ♦ After use, seal thoroughly to prevent intrusion of dirt or water.
Emergency measures	♦ If it enters your eye, wash the eye with clean water for over 15 minutes and consult a doctor. ♦ If it touches your skin, fully wash with soap and water. ♦ If swallowed, do not induce vomiting. Immediately consult a doctor.
Disposal of waste oil and waste container	♦ For disposal, take the appropriate measures according to the “Waste Management and Public Cleansing Act”.
Storage	♦ Avoid direct sunlight, keep away from fire or heat and store in a dark place.

Ball screw related products

Performance data

■ Reduced particle generation

Particles generated by the ball screw (particle size 0.13 μm or more)

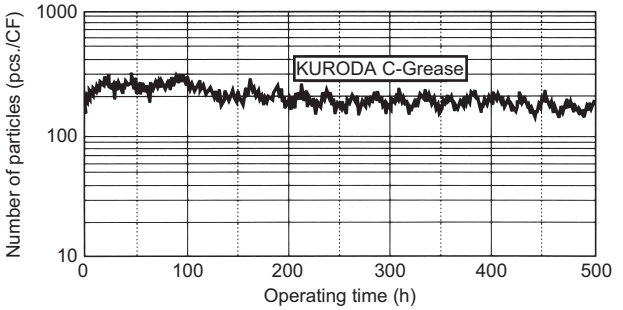


Fig. 1 Test conditions
Ball screw
Shaft diameter: 20 mm
Lead: 20 mm
Preload : 800 N
Rotational speed: 1200 min^{-1}
Stroke: 250 mm
Amount of grease: 1 cc
Measurement interval: 1 h

Particles generated by the ball screw (particle size 0.13 μm or more)

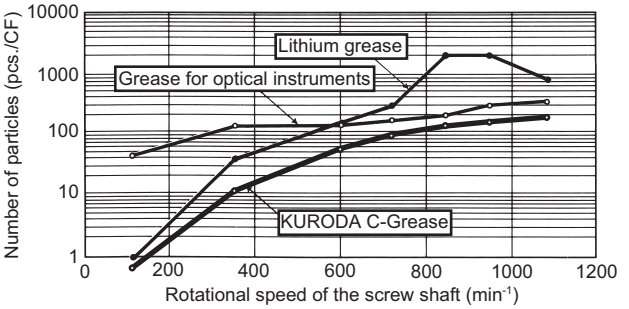
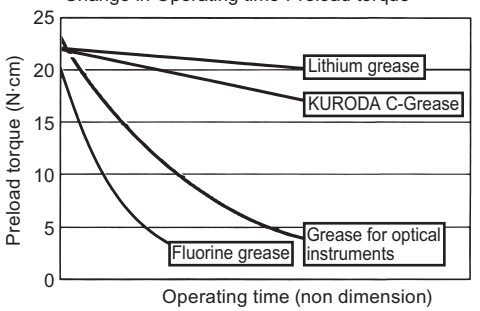


Fig. 2 Test conditions
Ball screw
Shaft diameter: 20 mm
Lead: 20 mm
Preload : 800 N
Stroke: 250 mm
Amount of grease: 1 cc
Measurement interval: 1 h
These values are mean values taken after 100 measurements of each rotational speed. The operating time of the ball screw during those measurements is about 240 hours.

■ Torque

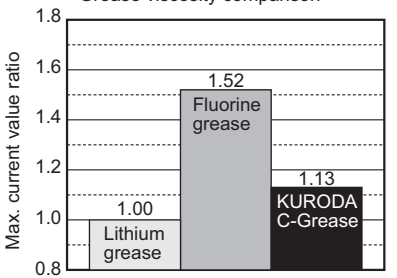
Change in Operating time-Preload torque



Test conditions are the same as those in Fig. 2.
The less preload torque, the better the lubrication performance.

■ Lubrication

Grease viscosity comparison



The above bars indicate the maximum current value ratio at 500 mm/s (1500 min^{-1}) for a single-axis robot.
The current value of the drive motor is proportional to the load torque.
Therefore, the larger the current value is, the larger the grease resistance becomes (smoothness is reduced).

Low particle generating KURODA S-Grease

S-Grease meets the needs for environments requiring low particle generation in equipment such as semiconductor manufacturing machines, liquid crystal devices and medical equipment.

Features

- Suitable for clean environments!
- Excellent lubrication performance!
- Torque stabilization!
- Excellent rust prevention!

Model No.

S1-080G-J (supplied in a 80 g bellows-shaped container)
S1-400G-J (supplied in a 400 g bellows-shaped container)
* For containers (cans, etc.) other than the above containers, contact KURODA.
* The color of the bellows-shaped container for KURODA S-Grease is chocolate brown.

Main properties

Appearance	Yellow white
Thickener	Urea
Base oil	Mineral oil
Consistency	280 (No.2)
Operating temperature range	−20 to +150°C

⚠ Precautions when handling

Before using C-Grease, carefully read the precautions on the “Safety Data Sheet” (SDS) of the corresponding grease type. For the “Safety Data Sheet”, request to the distributor from whom you purchased the product.

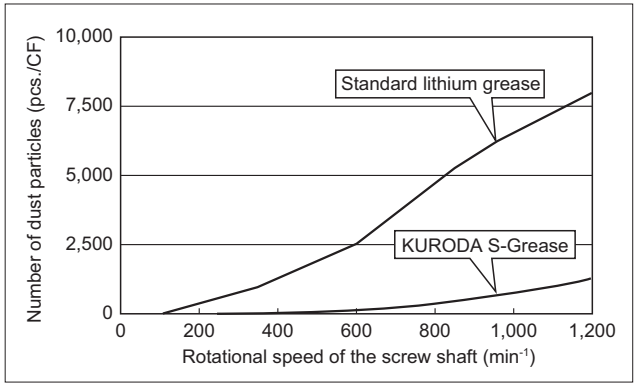
Main applications	KURODA S-Grease
⚠ Caution Precautions when handling	♦ S-Grease is flammable (flash point: 195°C). Keep away from flame. ♦ Use protective glasses when handling. If it enters your eye, irritation may be occur. ♦ Use protective gloves when handling. If it touches your skin, irritation may be occur. ♦ Do not eat. (If you eat it, you will suffer from diarrhea and vomiting.) ♦ Keep away from children. ♦ After use, seal thoroughly to prevent intrusion of dirt or water.
Emergency measures	♦ If it enters your eye, wash the eye with clean water for over 15 minutes and consult a doctor. ♦ If it touches your skin, fully wash with soap and water. ♦ If swallowed, do not induce vomiting. Immediately consult a doctor.
Disposal of waste oil and waste container	♦ For disposal, take the appropriate measures according to the “Waste Management and Public Cleansing Act”.
Storage	♦ Avoid direct sunlight, keep away from fire or heat and store in a dark place.

Ball screw related products

Performance data

■ Reduced particle generation

○ Compared to general lithium grease, S-Grease exhibits a superior dust prevention property.

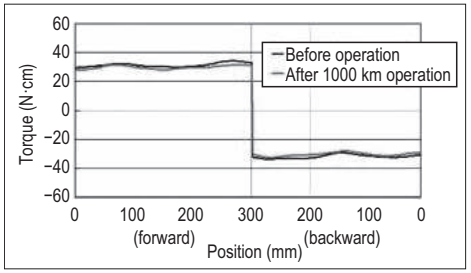


Test conditions	
Screw shaft diameter	ø20 mm
Lead	20 mm
Axial load	800 N

■ Lubrication performance: Comparison of changes in torque values before and after operation

Test conditions	
Screw shaft diameter	ø20 mm
Lead	20 mm
Preload torque	30 N·cm

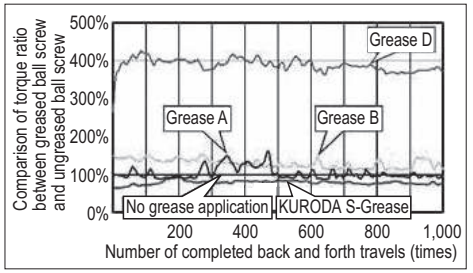
○ After 1000 km operation, no change of torque is found.



■ Torque: Comparison of torque values of low particle-generating grease types

Test conditions	
Screw shaft diameter	ø16 mm
Lead	2 mm
Operating stroke	0.5 mm

○ The torque stabilization feature is exhibited during oscillating operation.



■ Rust prevention

○ Received a #1 rating in rust prevention after conducting the bearing rust prevention test (52°C, 48 hours)
* #1 indicates that no rust formed under the above test conditions.

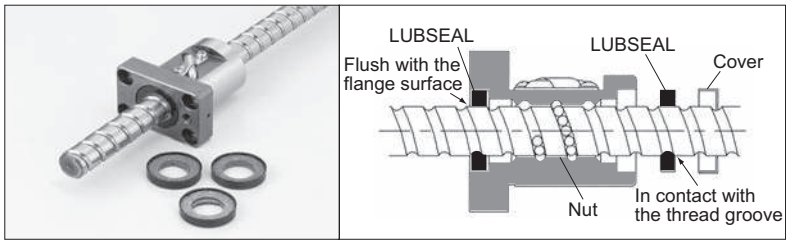
Lubrication unit for ball screws LUBSEAL™

LUBSEAL™ is a lubrication unit which contacts the ball rolling portion of the screw shaft groove and supplies an appropriate amount of lubricant (grease).
It can fit into the both ends of the ball screw nut in a compact manner.
Most suitable for semiconductor/liquid crystal manufacturing machines, detection devices, food machines, medical equipment, machine tools and automobile production facilities.

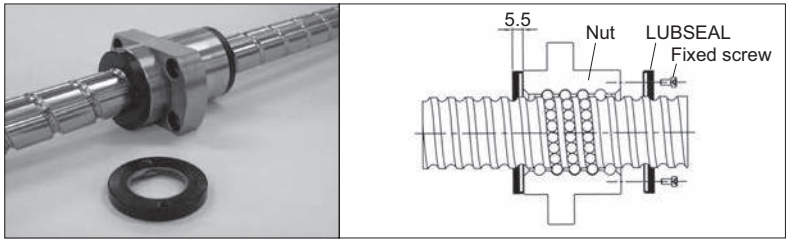
Features

- Assembled into the standard ball screw unit simply, neatly and in a compact manner!
- Clean and environmentally friendly!
- Maintenance period can be substantially extended!

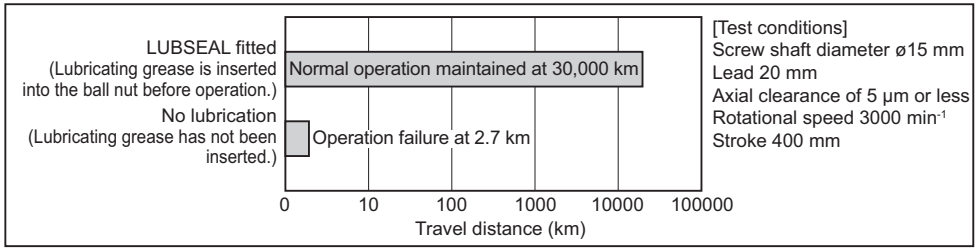
Cross section of G series (including rolled series) nut with LUBSEAL™



Cross section of F series nut with LUBSEAL™



Performance



Model number

GG	15	20	AS	–	B	A	S	R	–	Total length	X	Thread length	–	C5	F
FG	15	10	PS	–	H	P	S	R	–	Total length	X	Thread length	–	C5	F

↑ Series
↑ LUBSEAL fitted product

Series and size

Shaft diameter	Lead	Series to which LUBSEAL can be fitted			
		FE/FG	GE/GG	GP	GY/GW (Note 1)
10	10	○			
12	10	○			
	20	○			
15	5	○	○	○	○
	10	○	○		○
	15		○		
	20	○	○		○
20	5		○	○	○
	10	○	○		○
	20	○	○		○
25	5	○	○		○
	10	○	○		○
	20		○		
	25	○	○		○

(Note 1) LUBSEAL cannot be fitted to the GY/GW series square nut type.

⚠ Precautions when handling

(Note 1) For lubrication, grease with the same ingredients as those of Alvania Grease S2 is impregnated in the LUBSEAL. For use of other greases, consult KURODA.
(Note 2) For special requests to fit LUBSEAL on stainless ball screws, surface treated ball screws, and any ball screws other than the above series, consult KURODA.
(Note 3) The maximum operating temperature is 50°C. When using in an environment of 50°C or higher, consult KURODA.
(Note 4) Do not use organic solvent and illuminating kerosene.

Technical data of ball screws

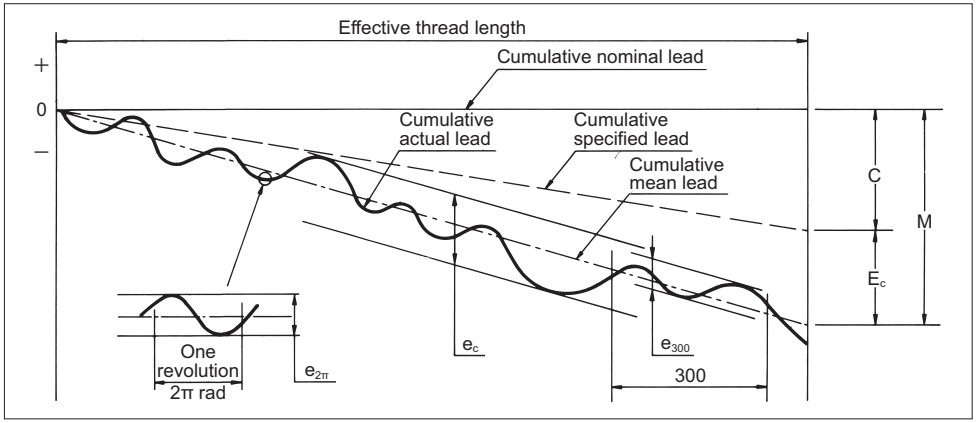
Page

Lead accuracy ——— F- 2 to 3
Mounting accuracy and tolerance ——— F- 4 to 7
Preload torque ——— F- 8
Screw shaft design ——— F- 9 to 12
Service life calculation ——— F-13 to 14
Ball screw design suitability ——— F-15 to 20
Torque ——— F-21 to 22
Guide for ball screw selection ——— F-23 to 29
Ball screw ordering information ——— F-30 to 31

Technical data of ball screws

Lead accuracy

The lead accuracy of ball screws is defined by the following characteristics in accordance with the JIS Standard. The permissible values are shown in Tables 2 and 3.



■ Terms and definitions

Specified lead

In most cases, the lead is the same as the nominal lead, but there are instances in which the nominal designation is adjusted when the application so requires.

(Example: Nominal lead 10 mm → Specified lead 9.9995 mm)

Cumulative specified lead target value "C"

In cases in which expansion and contraction of the screw due to temperature change or influence from the external load can be anticipated, a target value of cumulative lead determined by testing or technical experience should be established in advance. For presetting procedures, see the cumulative specified lead setting procedures on page F-20.

Cumulative actual lead

Cumulative lead obtained by either continuous measurement of an actual ball screw or by measurement of a section including the axial center of the screw shaft.

Cumulative mean lead "M"

A straight line representing the trend of cumulative actual lead. It is obtained by the least-squares method or an approximation similar to this method using the curve representing the cumulative actual lead corresponding to the effective travel of a nut or the effective thread length of the screw shaft.

Cumulative mean lead error "Ec"

A value obtained by subtracting the cumulative specified lead target value (C) from the cumulative mean lead (M).

Variation

The maximum difference of the cumulative actual lead contained between two lines drawn parallel to the cumulative mean lead. It is prescribed by e_c, e_{300}, $e_{2\pi}$.

e_c : Variation for the effective travel of the nut or the effective thread length of the screw shaft.

e_{300} : Variation for a length of 300 mm arbitrarily taken within the effective thread length of the screw shaft.

$e_{2\pi}$: Variation for one revolution (2 π rad) made within the effective thread length of the screw shaft.

■ Cumulative mean lead error and permissible variation values

• Accuracy grades C0-C5

Table 2 Cumulative mean lead error ($\pm E_c$) and permissible variation values (e_c) (Unit: μm)

Effective thread length (mm) Over	Or less	C0 $\pm E_c$	C0 e_c	C1 $\pm E_c$	C1 e_c	C2 $\pm E_c$	C2 e_c	C3 $\pm E_c$	C3 e_c	C4 $\pm E_c$	C4 e_c	C5 $\pm E_c$	C5 e_c
–	315	4	3.5	6	5	9	6	12	8	15	11	23	18
315	400	5	3.5	7	5	10	7	13	10	17	13	25	20
400	500	6	4	8	5	11	7	15	10	19	13	27	20
500	630	6	4	9	6	12	9	16	12	20	16	30	23
630	800	7	5	10	7	14	10	18	13	24	17	35	25
800	1000	8	6	11	8	16	11	21	15	28	19	40	27
1000	1250	9	6	13	9	18	12	24	16	32	21	46	30
1250	1600	11	7	15	10	21	13	29	18	38	24	54	35
1600	2000			18	11	26	15	35	21	46	28	65	40
2000	2500			22	13	31	18	41	24	54	32	77	46
2500	3150			26	15	37	21	50	29	66	38	93	54
3150	4000			32	18	43	24	62	35	80	46	115	65
4000	5000							76	41	97	54	140	77
5000	6000											170	93

Table 3 Permissible variation values (Unit: mm)

Accuracy grade	C0		C1		C2		C3		C4		C5	
Item	e_{300}	$e_{2\pi}$	e_{300}	$e_{2\pi}$	e_{300}	$e_{2\pi}$	e_{300}	$e_{2\pi}$	e_{300}	$e_{2\pi}$	e_{300}	$e_{2\pi}$
Permissible value	3.5	3	5	4	6	5	8	6	11	7	18	8

• Accuracy grades C7 and C10

The cumulative lead error of C7 and C10 grade ball screws is prescribed by the permissible value for the lead error of a specified lead which had a length of 300 mm arbitrarily taken within the effective thread length of the screw shaft, in accordance with JIS Standard.

Table 4 Permissible values for cumulative lead error (Unit: μm)

Accuracy grade	C7	C10
Cumulative lead error	0.05/300	0.21/300

■ Accuracy grade and axial clearance

Possible combinations of accuracy grade and axial clearance are shown in Table 5.

Table 5 Accuracy grade and axial clearance

Symbol	Axial clearance (mm)	Nut combination	Accuracy grade C0	C1	C2	C3	C4	C5	C7	C10
S	0	Double nut	○	○	○	○	○	○	–	–
S	0	Single nut	○	○	○	○	○	○	–	–
F	0.005 or less		–	○	○	○	○	○	–	–
H	0.010 or less		–	–	–	–	○	○	○	–
M	0.030 or less		–	–	–	–	○	○	○	–
L	0.200 or less		–	–	–	–	–	–	○	○

* Integral Nuts have the same possible combinations of axial clearance and lead accuracy grade as Double Nuts.
* The above table is for ground ball screws only. For rolled ball screws in GY/GW series, refer to the pages describing rolled ball screws.
* For any combinations not listed above, consult KURODA.

■ Accuracy grade and manufacturable screw shaft length

When the slenderness ratio (shaft length against shaft diameter) is large, it is sometimes difficult to manufacture a ball screw with the desired accuracy. The following table shows the maximum length of screw shafts of each accuracy grade that can be reliably manufactured. When ball screws exceeding the manufacturable range are required, consult KURODA.

Table 6 Accuracy grade and manufacturable screw shaft length (Unit: mm)

Accuracy grade	Screw shaft diameter 5	6	8	10	12	15 · 16	20	25	28	32	36	40	45	50	55	63	70·80·100·125
C0	90	160	240	340	420	500	800	1100	1200	1600	1800	2000	2000	2000	2000	2000	–
C1	120	180	280	400	500	600	900	1300	1500	1800	2000	2200	2300	2800	3000	3000	3000
C2	120	180	280	400	500	600	1100	1600	1800	2200	2500	2800	3000	3600	4000	4500	4500
C3	140	210	340	480	600	700	1400	1800	2000	2500	2800	3200	3600	4000	5000	5000	5000
C4	140	210	340	480	600	800	1400	1800	2000	2500	2800	3200	3600	4000	5000	5000	5000
C5	140	210	340	655	900	1500	2000	2000	2200	2800	3100	3600	4100	4500	5000	5000	5000
C7	–	–	340	655	900	1500	2000	2300	2600	3200	3600	4600	5000	5000	5000	5000	5000
C10	–	–	–	–	–	1500	2000	2300	2600	3600	4000	4600	5000	5000	5000	5000	5000

(Note) When the lead is larger than the nominal screw shaft diameter, C0 and C1 accuracy grades are not manufacturable.

Technical data of ball screws

Mounting accuracy and tolerance

■ Accuracy of each part of the screw shaft

Tables 7 and 8 show the tolerance of the radial runout of the thread groove and mounting portions when measured against the axial line of the supported shaft end (7) and the perpendicularity of the outer face of the supported shaft end (8).

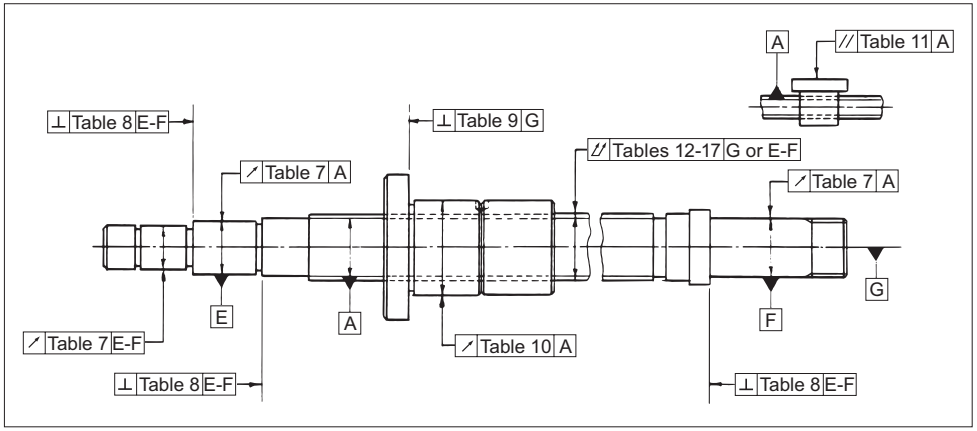


Figure 5 Mounting accuracy of the ball screw (Illustration)

Table 7 Radial runout of the thread groove and mounting portions when measured against the axial line of the supported shaft end (Unit: μm)

Nominal screw shaft diameter (mm)		Runout tolerance (maximum)					
Over	Or less	C0	C1	C2	C3	C4	C5
–	8	3	5	7	8	9	10
8	12	4	5	7	8	9	11
12	20	4	6	8	9	10	12
20	32	5	7	9	10	11	13
32	50	6	8	10	12	13	15
50	80	7	9	11	13	15	17
80	125	–	10	12	15	17	20

(Note) As the measurement of nominal screw shaft diameter takes into account the influence of the screw shaft axial runout, it is necessary to correct the measurements. Calculate the correction value by using the total runouts (tolerance) of the screw shaft axial runout shown in Tables 12 to 17 corresponding to the ratio of the overall screw shaft length to the distance between the supporting point and the measuring point (L1 and L2) and add it to the tolerance shown in the above table.

Table 8 Perpendicularity of the outer face of the supported shaft end when measured against the axial line of the supported shaft end (Unit: μm)

Nominal screw shaft diameter (mm)		Perpendicularity tolerance (axial runout) (maximum)					
Over	Or less	C0	C1	C2	C3	C4	C5
–	8	2	3	3	4	4	5
8	12	2	3	3	4	4	5
12	20	2	3	3	4	4	5
20	32	2	3	3	4	4	5
32	50	2	3	3	4	5	5
50	80	3	4	4	5	6	7
80	125	–	4	5	6	7	8

■ Accuracy of the nut mounting portion

Tables 9, 10 and 11 show the perpendicularity of the flange mounting surface and the outer diameter of the nut body (9), the radial runout of the outer diameter of the nut body (10), and the parallelism tolerance of the outer diameter of the nut body (11) when measured against the axial center of the screw shaft.

Table 9 Perpendicularity of the flange mounting surface and the outer diameter of the nut body when measured against the axial center of the screw shaft (Unit: μm)

Outer diameter of the nut (mm)		Perpendicularity tolerance (maximum)					
Over	Or less	C0	C1	C2	C3	C4	C5
–	20	5	6	7	8	9	10
20	32	5	6	7	8	9	10
32	50	6	7	8	8	10	11
50	80	7	8	9	10	11	13
80	125	7	9	10	12	13	15
125	160	8	10	11	13	15	17
160	200	–	11	12	14	16	18
200	250	–	12	13	15	17	20

Table 10 Radial runout of the outer diameter of the nut body (when cylindrical) when measured against the axial center of the screw shaft (Unit: μm)

Outer diameter of the nut (mm)		Runout tolerance (maximum)					
Over	Or less	C0	C1	C2	C3	C4	C5
–	20	5	6	7	9	10	12
20	32	6	7	8	10	11	12
32	50	7	8	10	12	13	15
50	80	8	10	12	15	17	19
80	125	9	12	16	20	23	27
125	160	10	13	17	22	26	30
160	200	–	16	20	25	29	34
200	250	–	18	23	28	33	38

Table 11 Parallelism tolerance of the outer diameter of the nut body (when planar) when measured against the axial center of the screw shaft (Unit: μm)

Basic mounting length (mm)		Parallelism tolerance (maximum)					
Over	Or less	C0	C1	C2	C3	C4	C5
–	50	5	6	7	8	9	10
50	100	7	8	9	10	11	13
100	200	–	10	11	13	15	17

■ Total runout of the axial center of the screw shaft

Tables 12 to 17 show the permissible values for total runout of the axial center of the screw shaft.

Table 12 Total runout of the axial center of the screw shaft [C0] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.015	0.015	0.015				
125	200			0.025	0.020	0.020	0.015			
200	315			0.035	0.025	0.020	0.020			
315	400				0.035	0.025	0.020	0.015		
400	500				0.045	0.035	0.025	0.020		
500	630				0.050	0.040	0.030	0.020	0.015	
630	800					0.050	0.035	0.025	0.020	
800	1000					0.065	0.045	0.030	0.025	
1000	1250					0.085	0.055	0.040	0.030	
1250	1600					0.110	0.070	0.050	0.040	
1600	2000						0.095	0.065	0.045	

Table 13 Total runout of the axial center of the screw shaft [C1] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.020	0.020	0.015				
125	200			0.030	0.025	0.020	0.020			
200	315			0.040	0.030	0.025	0.020			
315	400			0.045	0.040	0.030	0.025	0.020		
400	500				0.050	0.040	0.030	0.025		
500	630				0.060	0.045	0.035	0.025	0.020	
630	800					0.060	0.040	0.030	0.025	
800	1000					0.075	0.055	0.040	0.030	
1000	1250					0.095	0.065	0.045	0.035	0.030
1250	1600					0.130	0.085	0.060	0.045	0.035
1600	2000						0.120	0.080	0.055	0.040
2000	2500							0.100	0.070	0.050
2500	3150							0.130	0.090	0.060
3150	4000								0.120	0.080

Table 14 Total runout of the axial center of the screw shaft [C2] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.025	0.020	0.020				
125	200			0.035	0.030	0.020	0.025			
200	315			0.045	0.035	0.025	0.025			
315	400			0.050	0.045	0.035	0.030	0.025		
400	500				0.055	0.045	0.035	0.025		
500	630				0.065	0.050	0.040	0.030	0.025	
630	800					0.065	0.045	0.035	0.030	
800	1000					0.080	0.060	0.045	0.035	
1000	1250					0.105	0.070	0.050	0.040	0.030
1250	1600					0.140	0.095	0.065	0.050	0.035
1600	2000						0.130	0.090	0.065	0.045
2000	2500							0.110	0.080	0.055
2500	3150							0.140	0.100	0.065
3150	4000								0.130	0.090
4000	5000									0.110

Table 15 Total runout of the axial center of the screw shaft [C3] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.025	0.025	0.020				
125	200			0.035	0.035	0.025	0.020			
200	315			0.050	0.040	0.030	0.030			
315	400			0.060	0.050	0.040	0.035	0.025		
400	500				0.065	0.050	0.040	0.030		
500	630				0.080	0.055	0.045	0.035	0.030	
630	800					0.070	0.055	0.040	0.035	
800	1000					0.095	0.065	0.050	0.040	0.030
1000	1250					0.120	0.085	0.060	0.045	0.035
1250	1600					0.160	0.110	0.075	0.055	0.040
1600	2000						0.140	0.095	0.070	0.050
2000	2500							0.120	0.085	0.060
2500	3150							0.160	0.110	0.075
3150	4000							0.220	0.150	0.100
4000	5000								0.200	0.130

Table 16 Total runout of the axial center of the screw shaft [C4] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.030	0.030	0.030				
125	200			0.040	0.040	0.035	0.030			
200	315			0.055	0.050	0.040	0.035			
315	400			0.070	0.060	0.050	0.040	0.035		
400	500				0.075	0.055	0.050	0.040		
500	630				0.090	0.070	0.055	0.050	0.035	
630	800					0.080	0.065	0.055	0.040	
800	1000					0.100	0.070	0.060	0.050	0.035
1000	1250					0.130	0.090	0.070	0.055	0.040
1250	1600					0.170	0.120	0.080	0.060	0.045
1600	2000						0.150	0.110	0.080	0.060
2000	2500							0.130	0.100	0.070
2500	3150							0.180	0.130	0.090
3150	4000							0.240	0.170	0.120
4000	5000								0.220	0.150

Table 17 Total runout of the axial center of the screw shaft [C5] (Unit: mm)

Overall screw shaft length		Nominal screw shaft diameter	Over	–	8	12	20	32	50	80
			Or less	8	12	20	32	50	80	125
Over	Or less									
–	125			0.035	0.035	0.035				
125	200			0.050	0.040	0.040	0.035			
200	315			0.065	0.055	0.045	0.040			
315	400			0.075	0.065	0.055	0.045	0.035		
400	500				0.080	0.060	0.050	0.045		
500	630				0.090	0.075	0.060	0.050	0.040	
630	800					0.090	0.070	0.055	0.045	
800	1000					0.120	0.085	0.065	0.050	0.045
1000	1250					0.150	0.100	0.075	0.060	0.050
1250	1600					0.190	0.130	0.095	0.070	0.055
1600	2000						0.170	0.120	0.085	0.065
2000	2500							0.150	0.110	0.080
2500	3150							0.200	0.140	0.095
3150	4000							0.260	0.180	0.120
4000	5000								0.240	0.160
5000	6300								0.320	0.210

Technical data of ball screws

Preload torque

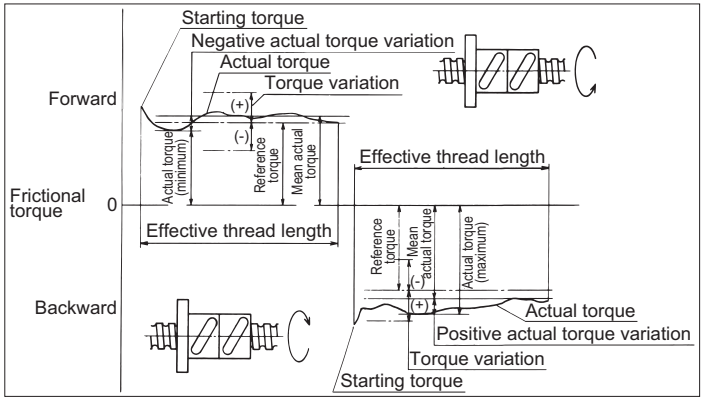


Figure 6 Characteristics of preload torque

■ Terms and definitions

Preload

A way to reduce the backlash or to increase the rigidity of ball screws. This is achieved by loading oversized steel balls or by inducing tension between a pair of nuts which are forced in opposite axial directions.

Preload torque

The torque required to continuously rotate the screw shaft or nut of a preloaded ball screw when no external load is applied.

Standard torque

The target preload torque value.

Torque variation value

The deviation in preload torque from the target preload torque. The value is described as a plus (+) or minus (-) value to the standard torque.

Torque variation ratio

A ratio of torque variation to the standard torque.

Actual torque

Preload torque measurement of an actual ball screw.

Mean actual torque

An arithmetic mean of the maximum and minimum values of the actual torque measured by running the nut back and forth over the effective thread length.

Actual torque variation

A maximum variation of actual torque measured by running the nut back and forth over the effective thread length. The value is described as a plus (+) or minus (-) value to the mean actual torque.

Actual torque variation ratio

A ratio of actual torque variation to mean actual torque.

■ Measuring conditions

Rotational speed for measurement: 100 min^{-1}

Viscosity of lubricant: ISO VG100

■ Permissible ratio of torque variation

Table 18 Permissible ratio of torque variation

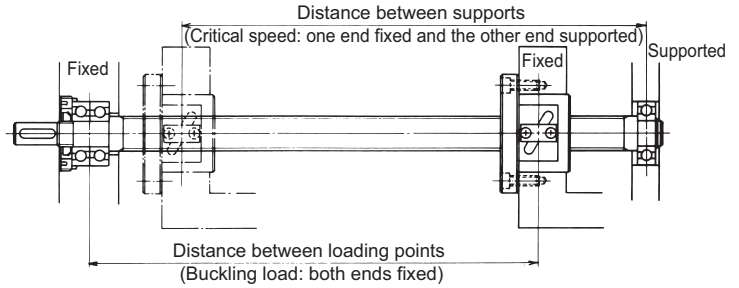
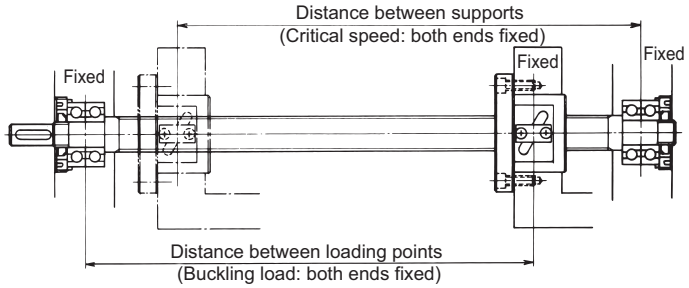
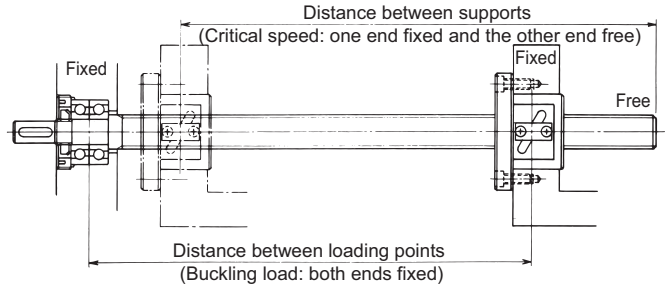
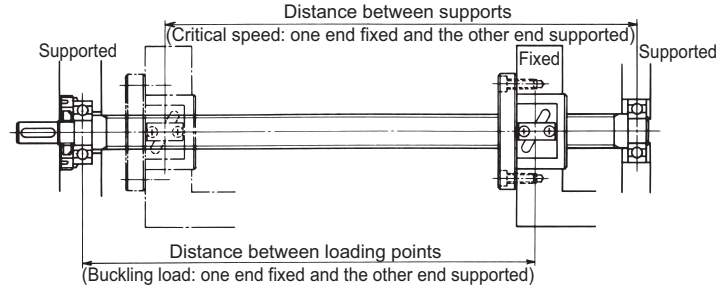
Reference torque (N·cm)		Effective thread length (mm)											
		4000 or less											
		Slenderness ratio: 40 or less						Slenderness ratio: 60 or less					
		Accuracy grade						Accuracy grade					
Over	Or less	C0	C1	C2	C3	C4	C5	C0	C1	C2	C3	C4	C5
20	40	±35%	±40%	±45%	±45%	±50%	±55%	±40%	±45%	±50%	±55%	±60%	±65%
40	60	±25	±30	±35	±35	±40	±45	±33	±38	±45	±45	±50	±50
60	100	±20	±25	±30	±30	±35	±35	±25	±30	±35	±35	±40	±40
100	250	±15	±20	±25	±25	±30	±30	±20	±25	±30	±30	±35	±35
250	630	±10	±15	±20	±20	±25	±25	±15	±20	±25	±25	±30	±30
630	1000	–	–	±15	±15	±20	±20	–	–	±20	±20	±25	±25

(Note) Slenderness ratio is the value obtained by dividing the thread length (mm) of the screw shaft by the nominal screw shaft diameter (mm).

Screw shaft design

■ Mounting and supporting methods for the screw shaft

There are four basic methods of mounting a screw shaft as shown below. Since the method of screw shaft support has a direct relationship to permissible axial load and permissible rotational speed at critical speed, sufficient consideration should be given, especially when the conditions of use require high accuracy or demanding performance.

Mounting method	Application example
	● Typical mounting method ● Medium to high speed range ● Medium accuracy to high accuracy
	● Medium speed ● High accuracy
	● Low speed ● Short shaft length ● Medium accuracy
	● Low to medium speed range ● Low accuracy to medium accuracy

■ Permissible axial load

A diagram of permissible axial load for selecting the minimum shaft diameter for the axial load is shown below.

(1) The diagonal line indicates the permissible axial load determined by the buckling of the screw shaft. Please refer to the scale that corresponds to the correct method of screw shaft support.

(2) The lines parallel to the line representing the distance between supports indicate the permissible tensile/compression load. Please refer to the Supported-Supported scale.

(3) The lines perpendicular to the line representing the distance between supports indicate the screw shaft lengths that can be manufactured by standard processes as KURODA. (See Table 6 on page F-3.)

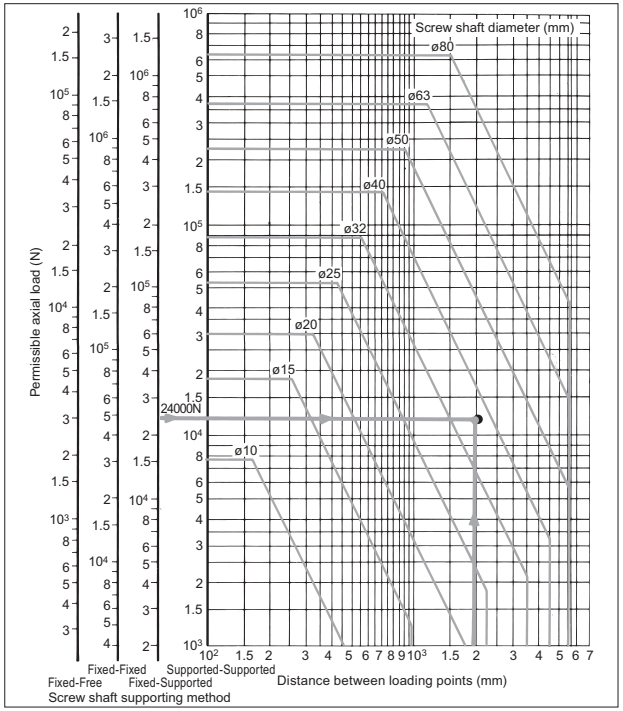


Figure 7 Diagram of permissible axial load

• Permissible axial load against buckling load: P

$$P = \alpha P_k \text{ (N)} \quad \cdots\cdots (1)$$

Where,

P_k: Buckling load (N)

α : Safety factor (α = 0.5)

It may be necessary to set the safety factor at a larger value according to the degree of safety required.

Generally, the buckling load of a long column can be calculated by Euler's Formula.

However, when the slenderness ratio/k (k: Second cross section) is 90 or less, use the Rankine Forumla or the Tetmajer Formula.

Example: Selection of the shaft diameter

How to determine an appropriate shaft diameter when the screw shaft is supported with the "Fixed-Supported" method and a compression load of 24000N (maximum axial load) is applied to a distance of 2000 mm between loading points:

1. Find out the intersecting point where the permissible axial compression load on the scale of "Fixed-Supported" is 24000N and the distance between loading points is 2000 mm as shown by a thick line in Figure 7.
2. Then, select a shaft diameter of 40 mm or more, represented by one of the diagonal lines located above the intersecting point.

• Buckling load calculated by Euler's Formula: P_k

$$P_k = \frac{n\pi^2 EI}{\ell^2} \text{ (N)} \quad \cdots\cdots (2)$$

Where,

P_k: Load at which buckling starts (N)

ℓ : Distance between loading points (mm)

E : Young's modulus (2.06×10^5 N/mm^2)

I : Minimum secondary moment of the screw shaft root cross section (mm^4)

$$I = \frac{\pi}{64} d^4$$

d : Screw shaft root diameter (mm)
Refer to dimension tables.

n : Coefficient to be determined by the supporting method of the ball screw
Supported-Supported n = 1
Fixed-Supported n = 2
Fixed-Fixed n = 4
Fixed-Free n = 0.25

■ Permissible rotational speed

The permissible rotational speed of ball screws is expressed by a DmN value which indicates the upper limit of the operating speed of recirculating balls in the nut and the critical speed of the rotary shaft.

The optimum shaft diameters for various rotational speeds are shown in Figure 8.

(1) The diagonal line indicates the rotational speed determined by the critical speed. Please refer to the scale that corresponds to the correct method of screw shaft support.

(2) The lines parallel to to the line representing the distance between supports indicate the limit of the permissible rotational speed obtained from the DmN value. Please refer to the scale that corresponds to the "Supported-Supported" method of screw shaft support.

(3) The lines perpendicular to the line representing the distance between supports indicate the screw shaft lengths that can be manufactured by standard processes as KURODA. (See Table 6 on page F-3.)

• DmN value

◦ GR, DR, GE/GG, GP, DP, and HG series
DmN ≤ 70000 ..... (3)

◦ GY and GW series
DmN ≤ 50000 ..... (3)

◦ FR and FE/FG series
DmN ≤ 135000

Where,

Dm: Screw shaft diameter (mm) + A (mm)

N : Maximum rotational speed (min^{-1})
N (max) ≤ 5000

Ball diameter	A	Ball diameter	A
0.8000	0.24	3.1750	0.80
1.0000	0.30	3.9688	0.80
1.2000	0.30	4.7625	1.00
1.5875	0.30	6.3500	1.80
2.0000	0.40	7.1438	2.00
2.3812	0.60	7.9375	2.00
2.7780	0.60	9.5250	2.40

Note) Consult KURODA if the number of revolutions on your application exceeds the DmN value above or N (max) 5000.

● **Critical speed: N_c**

$$N_c = f_a \frac{60\lambda^2}{2\pi\ell^2}\sqrt{\frac{EI \times 10^3}{\gamma A}} \ (min^{-1}) \quad \cdots\cdots (4)$$

Where,

ℓ : Distance between supports (mm)

fa : Safety factor (0.8)

E : Young's modulus (2.06 X 10^5 N/mm^2)

I : Minimum secondary moment of the screw shaft root cross section (mm^4)

$$I = \frac{\pi}{64} d^4$$

d : Screw shaft root diameter (mm)
Refer to dimension tables.

γ : Specific gravity (7.8 X 10^{-6} kg/mm^3)

A : Sectional area of the screw shaft root diameter (mm^2)

$$A = \frac{\pi}{4} d^2$$

λ : Coefficient to be determined by the method of ball screw support

Supported-Supported	λ = π
Fixed-Supported	λ = 3.927
Fixed-Fixed	λ = 4.730
Fixed-Free	λ = 1.875

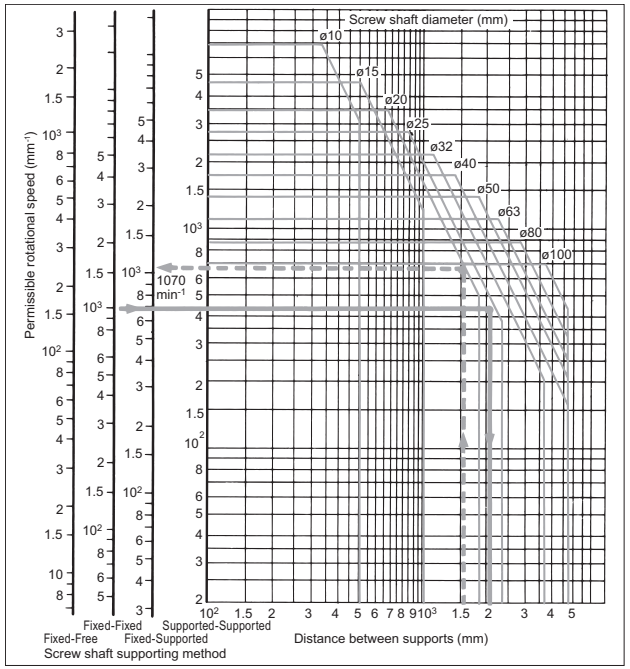


Figure 8 Diagram of the permissible rotational speed

Resonance phenomenon arising from the rotational speed of a ball screw and the characteristic frequency of the screw shaft is caused by the unbalance of deflection by the empty weight of the shaft at the distance "ℓ" between supports of the rotation system and the critical speed corresponding to the characteristic frequency increases the amplitude of the vibration.

When the ball screw is used, the nut serves as a mobile bearing, and therefore, the distance "ℓ" between supports always changes and the shaft deflection changes as well. Since the critical speed shown in Formula (4) is inconstant, consider the permissible rotational speed to assure safety.

Example 1: Determining the permissible rotational speed

How to determine permissible rotational speed when the screw shaft is supported with the "Fixed-Supported" method, the screw shaft diameter is 20 mm and the distance between supports is 1500 mm:

1. The vertical dotted line in Figure 8 shows that the distance between supports is 1500 mm. Find the point of intersection with the diagonal line representing the critical speed of a screw shaft with a diameter of 20 mm.
2. The scale for the "Supported-Supported" method of screw shaft support indicates that, in this case, the permissible rotational speed is 1076 min^{-1}.

Example 2: How to determine an appropriate shaft diameter

How to determine an appropriate shaft diameter that can meet a maximum rotational speed "1000 min^{-1}" when the screw shaft is supported with the "Fixed-Fixed" method and the distance between supports is 2000 mm:

1. The thick vertical line in Figure 8 shows that the distance between supports is 2000 mm. Find the point of intersection with the horizontal line representing the permissible rotational speed "1000 min^{-1}"on scale for the "Fixed-Fixed" method of screw shaft support.
2. Shaft diameters represented by the lines above the intersecting point have a permissible rotational speed of "1000 min^{-1}" or more. In this case, a shaft diameter of 25 mm is found to be sufficient.

Service life calculation

■ Service life of ball screws

The service life of a ball screw is defined as a total number of revolutions with which the screw can perform proper operation without causing operation-affecting wear (flaking) to the thread groove and/or balls. The flaking is caused by metal fatigue due to constant stress. The service life of a ball screw is determined by the basic dynamic load rating.

■ Service life

The service life of a ball screw is calculated by the following formula:

$$L_h = \frac{10^6}{60N_m}\left(\frac{C}{P_m f_w}\right)^3 \text{(hours)} \quad \cdots\cdots\cdots\cdots (5)$$

Where,

L_h : Service life (hours)

C : Basic dynamic load rating (N)
Refer to dimension tables.

P_m: Average axial load (N)

N_m: Average rotational speed (mm^{-1})

f_w : Load factor (coefficient by operating condition)

Smooth operation without concussive impact	f_w = 1.0 to 1.2
Normal operation	f_w = 1.2 to 1.5
Operation associated with concussive impact or vibration	f_w = 1.5 to 2.0

The basic dynamic load rating that satisfies the intended service life is obtained from the following formula:

$$C = \left(\frac{60L_hN_m}{10^6}\right)^{\frac{1}{3}} P_m f_W \text{ (N)}$$

If a ball screw is selected using overly conservative service life values, the size and cost of the resulting ball screw may increase unnecessarily. Some case examples of standard life requirements are given below for reference.

Machine tools	20000 hours
Industrial machinery	10000 hours
Automated control equipment	15000 hours
Measuring instruments	15000 hours

● **Basic static load rating: C_0**

The basic static load rating (C0) represents an axial load at at certain amount of static load in which the sum of the permanent deformities of the steel balls and the thread groove surface equal to 0.01 percent of the steel ball diameter.

In most cases, the permanent deformities will not cause operational issues. However, when high accuracy or very smooth operation are required, it is recommended that a ball screw having a C0 value notably larger than the static load be selected. For basic static load ratings, refer to the dimension tables listed in this calatog.

● **Basic dynamic load rating: C**

The basic dynamic load rating (C) is an axial load in which when a certain number of ball screws are run for 1 million revolutions (106 revolutions) and 90% of that group of ball screws does not experience operation-affecting wear (flaking). For basic dynamic load ratings, refer to the dimension tables listed in this calatog.

● **Average axial load "P_m" and average rotational speed "N_m"**

To select a suitable ball screw, determine the following values. It may be difficult to accurately predict these operating conditions, but it is advisable to gather accurate values because the service life is inversely proportional to the load value multiplied by a power of three. Accurate values will result in a greater selection of suitable ball screws.

($t_1 + t_2 + t_3 = 100\%$)

Axial load	Rotational speed	Operating time ratio
P_1N (maximum)	N_1 min^{-1}	t_1 %
P_2N (normal)	N_2 min^{-1}	t_2 %
P_3N (minimum)	N_3 min^{-1}	t_3 %

Technical data of ball screws

In the case of machine tools, the maximum load (P_1) is a “load applied at the time of heaviest cutting”. The normal load (P_2) is a “load applied during general cutting”. The minimum load (P_3) is a “load applied at the time of rapid feeding of the cutting tool before starting cutting and at the time of quick return after completion of cutting”. Once the above-mentioned values are determined, the average axial load (P_m) and the average rotational speed (N_m) can be obtained from the following formulas:

$$P_m = \left(\frac{P_1^3 N_1 t_1 + P_2^3 N_2 t_2 + P_3^3 N_3 t_3}{N_1 t_1 + N_2 t_2 + N_3 t_3} \right)^{\frac{1}{3}} \text{(N)} \quad \text{...(6)}$$

$$N_m = \frac{N_1 t_1 + N_2 t_2 + N_3 t_3}{t_1 + t_2 + t_3} \text{(min}^{-1}\text{)} \quad \text{.....(7)}$$

When the difference between the maximum axial load (P_1) and the minimum axial load (P_3) is small, or when the load exhibits linear change, an approximate value can be calculated from the following formula:

$$P_m \approx \frac{2P_1 + P_3}{3} \text{(N)} \quad \text{.....(8)}$$

■ Hardness and service life

When special materials for corrosion resistance, etc. are used, the thread groove cannot be hardened to HRC58-62. In such cases, the basic dynamic load rating and the basic static load rating decrease in proportion to the decreased hardness. When the hardness value is low, the basic dynamic load rating (C’) and the basic static load rating (C_0’) are calculated with the following formulas, assuming that the respective hardness factors are (f_H) and (f_H’).

$$C' = f_H C \quad \text{(N)} \quad \text{.....} \quad (10)$$

$$C_0' = f_H' C_0 \quad \text{(N)} \quad \text{.....} \quad (11)$$

Table 19 Hardness factors

Hardness HRC	58 or above	56	54	52	50	40	30	20	10
f_H	1.0	0.88	0.72	0.58	0.47	0.27	0.16	0.10	0.07
f_H'	1.0	0.83	0.61	0.45	0.32	0.14	0.07	0.03	0.02

■ Temperature and service life

When an operating a ball screw made of standard material (See Table 1 on page A-6) at a constant temperature of 100°C or above or when operating it at a extremely high temperature for a short period of time, the composition of the material changes; thus, the basic dynamic load rating and the basic static load rating decrease as the temperature increases. However, temperatures of up to 100°C will not adversely affect operation. When the ball screw operates at a temperature at 100°C or above, the basic dynamic load rating (C’’) and the basic static load rating (C_0’’) are calculated by the following formulas, assuming that the respective temperature factors are (f_t) and (f_t’).

$$C'' = f_t C \quad \text{(N)} \quad \text{.....} \quad (12)$$

$$C_0'' = f_t' C_0 \quad \text{(N)} \quad \text{.....} \quad (13)$$

Table 20 Temperature factors

Temperature (°C)	100 or below	125	150	175	200
f_t	1.0	0.95	0.90	0.85	0.75
f_t'	1.0	0.93	0.85	0.78	0.65

Ball screw design suitability

In order to work out an optimum design for machines, it is necessary to examine the rigidity of the feed screw system, the positioning accuracy and the driving torque in due consideration of the required function, performance and cost.

■ Rigidity of the feed screw system

To improve the positioning accuracy and responsiveness of precision machines and equipment when they are controlled, it is necessary to take into consideration the rigidity of each component of the feed screw system. The rigidity (K) of the feed screw system is calculated by the following formula:

$$K = \frac{P}{\delta} \text{(N/μm)} \quad \text{.....} \quad (14)$$

Where,
P : Axial load applied to the feed screw system (N)
δ : Axial elastic deformation of the feed screw system (μm)

The relationship between the rigidity of the feed screw system and that of each component is as follows:

$$\frac{1}{K} = \frac{1}{K_t} + \frac{1}{K_n} + \frac{1}{K_b} + \frac{1}{K_h} \quad \text{.....} \quad (15)$$

Where,
K_t : Rigidity of the screw shaft to tension and compression
K_n : Rigidity of the nut
K_b : Rigidity of the support bearing
K_h : Rigidity of the nut mounting portion and the bearing mounting portion

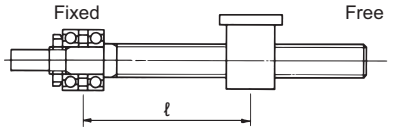
• Tension and compression strength of the screw shaft: K_ℓ

$$K_t = \frac{P}{\delta_t} \text{(N/μm)} \quad \text{.....} \quad (16)$$

Where,
P : Axial load (N)
δ_t : Amount of expansion or contraction of the screw shaft (μm)

When an external axial load is applied to the screw shaft, the axial expansion and contraction is calculated by the following formulas. The axial expansion and contraction come out directly as the backlash of the ball screw.

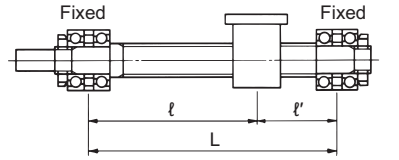
1. When the supporting method is “Fixed-Free”



$$\delta_t = \frac{4P\ell}{E\pi d^2} \times 10^3 \text{ (μm)} \quad \text{.....} \quad (17)$$

Where,
P : Axial load (N)
E : Young’s modulus (2.06 X 10^5 N/mm^2)
d : Screw shaft root diameter (mm)
ℓ : Distance between loading points (mm)

2. When the supporting method is “Fixed-Fixed”



$$\delta_t = \frac{4P\ell\ell'}{E\pi d^2 L} \times 10^3 \text{ (μm)} \quad \text{.....} \quad (18)$$

Where,
P : Axial load (N)
E : Young’s modulus (2.06 X 10^5 N/mm^2)
d : Screw shaft root diameter (mm)
ℓ, ℓ': Distance between loading points (mm)
L : Distance between supports (mm)

The maximum value is obtained from Formula (18) when $\ell = \ell' = \frac{L}{2}$.

$$\left(\delta_t = \frac{PL}{E\pi d^2} \times 10^3 \right)$$

Therefore, the maximum expansion and contraction of the screw shaft supported with the both ends fixed becomes 1/4 of those using the “Fixed-Free” method of screw shaft support.

● Rigidity of the nut: K_n

Rigidity of the single nut (non-preloaded): K_{ns}

When a ball screw receives an axial load, the steel balls and the thread groove will be deformed. The relationship between the axial load (P) and the axial elastic deformation (δ_{ns}) is calculated by the following formula:

$$\delta_{ns} = \frac{2.6}{\sin\alpha}\left(\frac{Q^2}{D_b}\times 10^{-2}\right)^{\frac{1}{3}} K\ (\mu m) \quad \cdots\cdots \quad (19)$$

Where,

α : Contact angle of steel balls with the thread groove (45°)

D_b: Steel ball diameter (mm)

K : Accuracy and structure coefficient (1.4-1.6)

Q : Load per steel ball (N)

$$Q = \frac{P}{Z\sin\alpha}$$

P : Axial load (N)

Z : Number of steel balls

Theoretical rigidity (K_{NS}) obtained from the amount of elastic deformation when an axial load equivalent to 30% of the basic dynamic load rating (C) is shown in the dimension table for each of the product series.

Rigidity (K_{nS}) corresponding to an arbitrary axial load (P) is calculated by the following formula:

$$K_{nS} = K_{NS}\left(\frac{P}{0.3C}\right)^{\frac{1}{3}} (N/\mu m) \cdots\cdots \quad (20)$$

Where,

C : Basic dynamic load rating (N)

P : Axial load (N)

(δ_{nS}) in Formula (19) is calculated by the following formula using the rigidity (K_{NS}) of the single nut and the basic dynamic load rating (C).

$$\delta_{nS} = \frac{(0.3C)^{\frac{1}{3}}P^{\frac{2}{3}}}{K_{NS}}\ (\mu m) \cdots\cdots \quad (21)$$

Where,

K_{NS}: Theoretical rigidity of the single nut (N/μm) Refer to the content for each series.

C : Basic dynamic load rating (N)

P : Axial load (N)

Rigidity of the preloaded nut: K_{nw}

The dimension table for each product series gives theoretical rigidity (K_{NW}) obtained from the amount of elastic deformation that will occur when a preload of 1/15 of the basic dynamic load rating (C) is applied to the nut and an axial load of about 3 times or less of the preload is applied. These values are of practical use, because they were calculated on the basis of the results of the rigidity test including the nut rigidity test. Rigidity (K_{nw}) corresponding to an arbitrary preload can be obtained from the following formula:

$$K_{nw} = K_{NW}\left(\frac{P_L}{\frac{1}{15}C}\right)^{\frac{1}{3}} (N/\mu m) \cdots\cdots \quad (22)$$

Where,

P_L: Preload (N)

C : Basic dynamic load rating (N)

Backlash and preload

The backlash of a ball screw is the sum of the axial clearance and the elastic deformation caused by the axial load at the contact point of the steel balls with the thread groove. The axial elastic deformation can be reduced to a great extent by setting a proper preload and thus, the rigidity can be increased.

Double nut preload effect

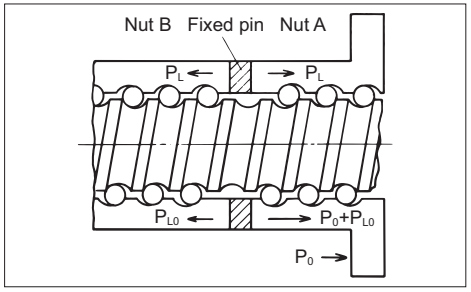


Figure 9 Double nut preload effect

In Figures 9 and 10, Nuts A and B undergo an elastic deformation of (δ_{nw0}) by preload (P_L) respectively. When external load (P_0) is applied to Nut A, the elastic deformation of Nuts A and B is:

$\delta_{nwA} = \delta_{nw0} + \delta_{nw1}$

$\delta_{nwB} = \delta_{nw0} - \delta_{nw1}$

The load applied to Nuts A and B is:

$P_A = P_L + P_0 - P_0' = P_0 + P_{L0}$

$P_B = P_L - P_0' = P_{L0}$

Therefore, an amount of (P_0') of the external load (P_0) is offset because the deformation of Nut B decreases. As a result, the elastic deformation of Nut A is reduced. This effect will continue until (δ_{nwB}) is zeroed, namely until the elastic deformation caused by the external load becomes (δ_{nw0}) and the preload applied to Nut B is completely released.

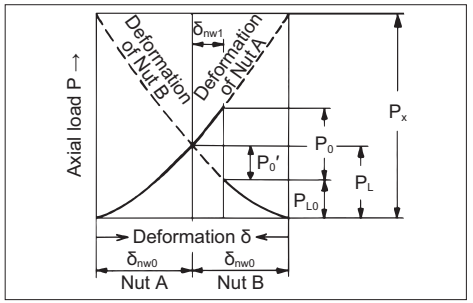


Figure 10 Preload diagram

Proper ball screw preload

The axial elastic deformation (δ_{nw0}) is proportional to a value obtained by raising the axial load (P) to two-thirds power according to the Hertz's law of point contact. Therefore, deformation caused by preloading is:

$\delta_{nw0} = C\cdot P_L^{\frac{2}{3}}$

Deformation caused by an external load when the preload applied to one nut is completely released is:

$2\delta_{nw0} = C\cdot P_x^{\frac{2}{3}}$

From the above two equations,

$$\left(\frac{P_X}{P_L}\right)^{\frac{2}{3}} = \frac{2\delta_{nw0}}{\delta_{nw0}} = 2$$

Therefore, the released preload is:

$$P_X = 2.8P_L \approx 3P_L \quad \cdots\cdots \quad (23)$$

Where,

P_x: Released preload (N) (External axial load when preload applied to one nut returns to zero)

P_L: Preload (N)

As shown in equation (23), the preload effect is about 3 times as much as the preload amount. Generally, therefore, the preload amount is set at 1/3 of the maximum axial load. On the other hand, taking into consideration the life and efficiency, the preload amount is usually set at 1/20 to 1/10 of the basic dynamic load rating.

Classification of preload

	Light preload	Normal preload	Medium preload	Heavy preload
Preload	$\frac{1}{20}$ C or less	$\frac{1}{20}$ to $\frac{1}{15}$ C	$\frac{1}{15}$ to $\frac{1}{10}$ C	$\frac{1}{10}$ C or more

C: Basic dynamic load rating (N)

Elastic displacement curve of the preloaded nut

Figure 11 shows elastic displacement curves of a single nut (non-preloaded) and a preloaded nut. Where an axial load (P_x), which is three times as large as the preload (P_L), is applied, the elastic displacement of the preloaded nut is just one half of the elastic displacement of the single nut (non-preloaded).

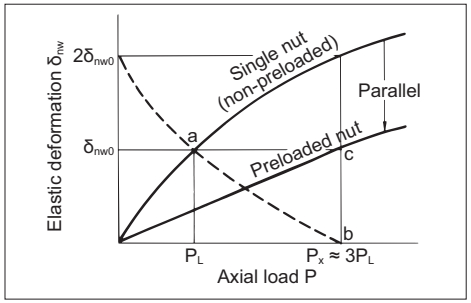


Figure 11 Elastic deformation curve of the nut

Double nut preloading methods

Preloading is to be applied, in general, to two nuts in tension (tension preloading) or in compression (compression preloading) using bolts.

KURODA's ball screws use tension preloading unless otherwise specified.

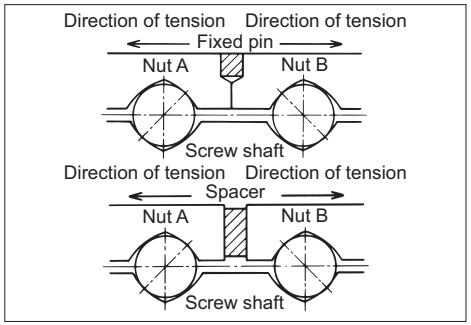


Figure 12 Tension preloading

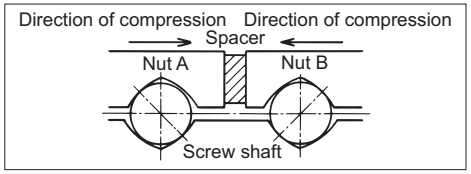


Figure 13 Compression preloading

● Preloaded with pin (standard method of KURODA)

This is the simplest and most effective tension preloading method. The required preload is attained and kept by inserting a pin between the two nuts.

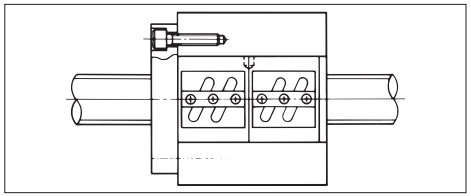


Figure 14 Preloaded with pin (I)

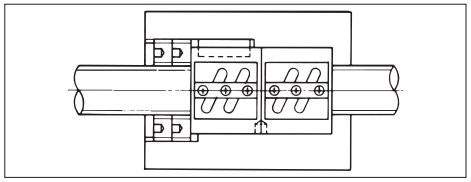


Figure 15 Preloaded with pin (II)

● Preloaded with spacer

In this method, preload is adjusted by the thickness of a spacer inserted between the two nuts. Both tension preloading and compression preloading are available.

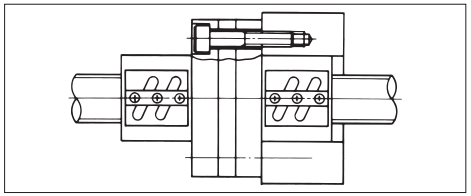


Figure 16 Preloaded with spacer (I)

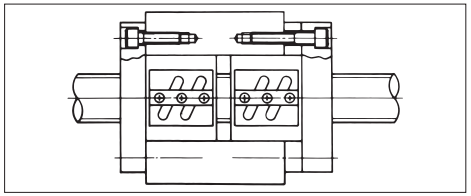


Figure 17 Preloaded with spacer (II)

Integral nut preloading method

In this method, a slightly offset lead at the center of a nut generates preload in the nut.

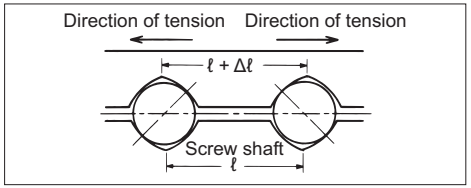


Figure 18 Integral nut preloading method

Single nut preloading method

In this method, a nut is preloaded by putting oversized steel balls between the thread groove of the screw shaft and that of the nut.

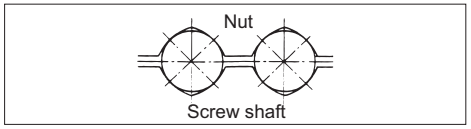


Figure 19 Single nut preloading method

● Rigidity of the support bearing: K_b

The rigidity of a bearing to which preload (P_L) is applied is calculated with the following formulas:

● Rigidity of the ball bearing

$$K_b = \frac{2.83P_L}{\delta_b} \text{ (N/μm)} \quad \cdots\cdots (24)$$

Where,
P_L: Preload (N)
δ_b: Axial elastic deformation to preload (μm)
Axial elastic deformation of the angular ball bearing is:

$$\delta_b = \frac{2}{\sin\alpha}\left(\frac{Q^2}{D_b}\right)^{\frac{1}{3}} \text{ (μm)} \quad \cdots\cdots (25)$$

$$Q = \frac{P}{Z\sin\alpha}$$

Axial elastic deformation of the thrust ball bearing is:

$$\delta_b = 2.4\left(\frac{Q^2}{D_b}\right)^{\frac{1}{3}} \text{ (μm)} \quad \cdots\cdots (26)$$

$$Q = \frac{P}{Z}$$

Where,
δ_b: Axial elastic deformation (μm)
α : Contact angle
D_b: Steel ball diameter (mm)
Q : Load per steel ball (N)
Z : Number of steel balls
P : Axial load (N)

● Rigidity of the roller bearing

$$K_b = \frac{2.16P_L}{\delta_b} \text{ (N/μm)} \quad \cdots\cdots (27)$$

Where,
P_L: Preload (N)
δ_b: Axial elastic deformation to preload (μm)
Axial elastic deformation of the tapered roller bearing is:

$$\delta_b = \frac{0.6}{\sin\alpha}\cdot\frac{Q^{0.9}}{\ell^{0.8}} \text{ (μm)} \quad \cdots\cdots (28)$$

$$Q = \frac{P}{Z\sin\alpha}$$

Where,
δ_b: Axial elastic deformation (μm)
α : Contact angle
Q : Load per roller (N)
Z : Number of rollers
P : Axial load (N)
ℓ : Effective contact length of the roller (mm)

● Rigidity of the nut mounting portion and the bearing mounting portion: K_h

In designing these portions, pay due regard to the thickness and the distance from the mounting surface to the ball screw shaft center, so that the rigidity of the nut bracket and the bearing box may be improved. When the distortion due to tension of the set bolt is not negligible, use the mounting method shown in Figure 17 on page F-18.

● Torsional rigidity of the screw shaft

The screw shaft is twisted around the axial line by the torsional moment (driving torque), resulting in rotational strain. The torsional deformation can be calculated as the axial deformation of the ball screw by the following formulas:

$$\delta_T = \ell\theta\frac{L}{2\pi} \quad \cdots\cdots (29)$$

$$\theta = \frac{32T}{\pi d^4 G} \quad \cdots\cdots (30)$$

Where,
δ_T: Axial deformation caused by torsion (cm)
ℓ : Distance between working points (cm)
θ : Angle of torsion (rad/cm)
L : Lead of the ball screw (cm)
T : Torsional moment (N·cm)
d : Root diameter of the screw shaft (cm)
G : Modulus of rigidity (83 X 10^5 N/cm^2)

If the angle of torsion for the driving shaft is excessively large, defections on the parts of the driving mechanism may be caused and result in torsional vibration of the shaft system. For ordinary driving shafts, the angle of torsion due to the maximum operating torsional moment should be set within 4.36 X 10^{-5} (rad/cm).

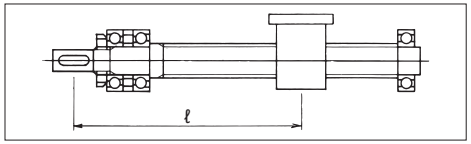


Figure 20

■ Notes for positioning accuracy

This paragraph deals with how to select the accuracy grade, how to determine the cumulative specified lead, and how to take effective measures against thermal strain, which will exert a great influence upon the positioning accuracy.

● Selection guide for the accuracy grade classified according to the type of the machine

Select the accuracy grade of the ball screw suited for the required positioning accuracy from Tables 2 and 3 on page F-3. KURODA recommends that you select the accuracy grade in accordance with the following table.

Table 21 Examples of the accuracy grade of the ball screw recommendable according to the type of the machine

Type of the machine			Accuracy grade
NC machine tools	Machining centers Milling machines	X, Y	C1 to C3
		Z	C2 to C5
	Lathes	X	C1 to C3
		Z	C3 to C5
	Grinding machines	X	C0 to C2
		Z	C1 to C3
	Electric discharge machines	X, Y	C1 to C3
		Z	C2 to C5
	Punching machines		C3 to C5
	Wood working machines (NC routers)		C5 to C7
Industrial robots	Cartesian coordinates type (assembly)		C1 to C5
	Vertical revolute type (assembly)		C2 to C5
	SCARA type (assembly)		C3 to C5
Semiconductor manufacturing equipment	Exposure system Drawing system		C0 to C1
	Etching equipment Ion implanting equipment		C3 to C7
	Wire bonders Die bonders		C1 to C2
	Wafer probers		C0 to C2
	Electrical parts charging apparatus, Insert machines		C2 to C7
Printing equipment	Electronic color separating apparatus		C0 to C2
	Electronic composing machines		C1 to C3
Business equipment	Color graphic printers		C1 to C3
	XY plotters Auto drawing machines		C1 to C3

● Determining the cumulative specified lead

In most cases, the lead is the same as the nominal lead, but there are instances in which the nominal designation is adjusted to account for expansion due to temperature increase during operation or the expansion or contraction of the screw shaft due to the external load. In such cases, inform KURODA of the target value of the cumulative lead. The typical target values of the cumulative lead classified according to the type of the machine are shown in Table 22 below. To correct the expansion, a tensile load may sometimes be applied to the screw shaft when mounting.

Table 22 Target values of the cumulative lead classified according to the machine type (Unit: mm)

Machine type	Axis	Target value of the cumulative lead (per meter)
NC lathes	X	-0.02 to -0.05
	Z	-0.02 to -0.03
Machining centers	X, Y	-0.03 to -0.04

● Measures to be taken for thermal displacement

As the ball screw is constructed so that its rolling motion involves a slight sliding motion, it inevitably suffers a thermal strain due to rising temperature. The temperature increase is closely related to operating conditions. The expansion of the thermal displacement can be calculated by the following formula:

$$\Delta\ell = \rho t \ell \text{ (mm)} \quad \cdots\cdots (31)$$

Where,
$\Delta\ell$: Axial thermal displacement (mm)
ρ : Coefficient of thermal expansion (11.7×10^{-6}°C^{-1})
t : Temperature increase of the screw shaft (°C)
ℓ : Effective thread length (mm)

Driving torque

Frictional characteristics of the ball screw and selection of the drive motor

■ Friction and efficiency

The efficiency "η" of a ball screw obtained by the analysis of a mechanical model of the screw can be calculated as follows, assuming that the coefficient of friction = μ and the screw lead angle = β.

● When converting the rotational force into the axial force (normal operation):

$$\eta = \frac{1 - \mu \tan\beta}{1 + \mu / \tan\beta} \quad \cdots\cdots (32)$$

● When converting the axial force into the rotational force (reverse operation):

$$\eta' = \frac{1 - \mu / \tan\beta}{1 + \mu \tan\beta} \quad \cdots\cdots (33)$$

■ Load torque

The load torque (constant-speed driving torque) required for designing a driving unit (motor, etc.) can be calculated as follows.

● Normal operation

When converting the rotational force into the axial force

$$T = \frac{PL}{2\pi\eta} \text{ (N·cm)} \quad \cdots\cdots (34)$$

Where,
T : Load torque (N·cm)
P : Axial external load (N)
L : Lead of the ball screw (cm)
η : Efficiency of the ball screw (0.9)

● Reverse operation

When converting the axial force into the rotational force

$$P = \frac{2\pi T}{\eta' L} \text{ (N)} \quad \cdots\cdots (35)$$

Where,
P : Axial external load (N)
T : Load torque (N·cm)
L : Lead of the ball screw (cm)
η' : Efficiency of the ball screw (0.9)

● Friction torque caused by preload

A torque produced by preloading. As the external load increases, the preload applied to the preloaded nut is gradually released and consequently, the friction torque caused by preload is also reduced.

Without load:

$$T_P = K\frac{P_L L}{2\pi} \text{ (N·cm)} \quad \cdots\cdots (36)$$

$$K = 0.05 (\tan\beta)^{-\frac{1}{2}}$$

Where,
P_L: Preload (N)
L : Lead of the ball screw (cm)
K : Coefficient of internal friction
β : Lead angle

$$\beta \approx \tan^{-1}\left(\frac{L}{\pi D}\right)$$

D : Screw shaft diameter (cm)

■ Selection of the drive motor

Select a drive motor which meets the following conditions.

1. The motor should be able to sufficiently bear the load torque applied to its output shaft.
2. The motor should be able to start and stop at the required pulse speed when the moment of inertia is applied to its output shaft.
3. The required acceleration constant and deceleration constant can be obtained when the moment of inertia is applied to the output shaft of the motor.

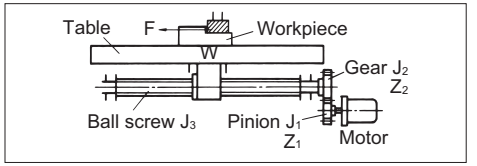


Figure 21

Technical data of ball screws

● Constant torque applied to the output shaft of a motor

A torque required for driving at a constant speed against an external load

$$T_1 = \left(\frac{PL}{2\pi\eta} + T_P\frac{(3P_L - P)}{3P_L}\right)\frac{Z_1}{Z_2}$$

(N·cm) … (37)

Where, $P \leq 3P_L$

T_1: Driving torque at a constant speed (N·cm)

P : Axial external load (N)

$P = F + \mu Mg$

F : Anti-thrust repulsive force by cutting force (N)

M : Weight of the table and work (kg)

μ : Coefficient of friction of the sliding surface

g : Acceleration of gravity (9.8 m/s^2)

L : Lead of the ball screw (cm)

η : Mechanical efficiency of the motor including the ball screw and the gear

T_P: Friction torque caused by preload (N·cm) Refer to Formula (36).

P : Preload (N)

Z_1: Number of teeth of the pinion

Z_2: Number of teeth of the gear

● Acceleration torque applied to the output shaft of a motor

A torque required for accelerative driving against an external load

$$T_2 = J_M\dot{\omega} = J_M \times \frac{2\pi N}{60t} \times 10^{-2}$$

(N·cm) … (38)

$$J_M = J_1 + J_4 + \left(\frac{Z_1}{Z_2}\right)^2 (J_2 + J_3 + J_5 + J_6)$$

($kg \cdot cm^2$) … (39)

Where,

T_2: Driving torque at the time of acceleration (N·m)

$\dot{\omega}$: Angular acceleration of the motor shaft (rad/s^2)

N : Rotational speed of the motor shaft (min^{-1})

t : Acceleration time (s)

J_M: Moment of inertia applied to the motor ($kg \cdot cm^2$)

J_1 : Moment of inertia of the pinion ($kg \cdot cm^2$)

J_2 : Moment of inertia of the gear ($kg \cdot cm^2$)

J_3 : Moment of inertia of the ball screw ($kg \cdot cm^2$)

J_4 : Moment of inertia of the motor rotor ($kg \cdot cm^2$)

J_5 : Moment of inertia of the moving object ($kg \cdot cm^2$)

J_6 : Moment of inertia of the coupling ($kg \cdot cm^2$)

M : Mass of the table and work (kg)

L : Lead of the ball screw (cm)

Moment of inertia of the cylinders such as the ball screw and the gear (Calculation of J_1-J_4 and J_6)

$$J = \frac{\pi\gamma}{32} D^4 \ell \ (kg \cdot cm^2) \quad \cdots\cdots\cdots\cdots\cdots \quad (40)$$

Where,

D : Outside diameter of the cylinder (cm)

ℓ : Length of the cylinder (cm)

γ : Specific gravity of the material

$\gamma = 7.8 \times 10^{-3}$ (kg/cm^3)

$$J_5 = M\left(\frac{L}{2\pi}\right)^2 (kg \cdot cm^2) \quad \cdots\cdots\cdots\cdots\cdots \quad (41)$$

● Total torque applied to the output shaft of a motor

The total torque can be calculated by adding the value of Formula (38) to that of Formula (37).

$$T_M = T_1 + T_2 \ (N \cdot cm) \quad \cdots\cdots\cdots\cdots\cdots \quad (42)$$

Where,

T_M: Total torque applied to the output shaft of the motor (N·cm)

T_1: Driving torque at a constant speed (N·cm)

T_2: Driving torque at the time of acceleration (N·cm)

After provisionally selecting a motor, check the motor for the following three items. The motor you select should satisfactorily meet the respective values.

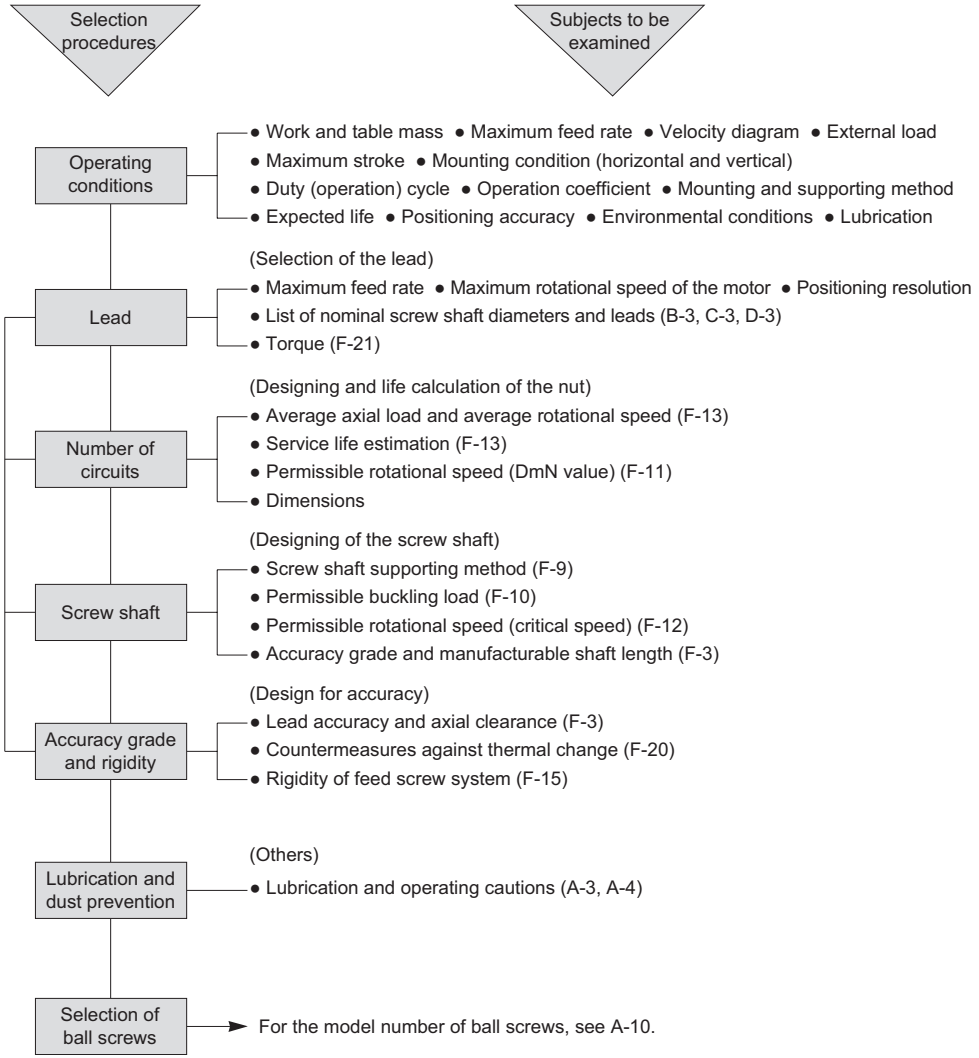
(1) Effective torque value

(2) Acceleration constant

(3) Over-load characteristics and tolerance to overheat of the motor at the time of repetitive starting and stopping

Guide for ball screw selection

When a ball screw is selected, a number of factors are examined from various points of view on the basis of the above-mentioned basic subjects by a process of trial and error. Therefore, the procedure cannot be categorically determined. An example of general procedures and main subjects for examination regarding each item and reference pages are mentioned below:



■ Example of ball screw selection

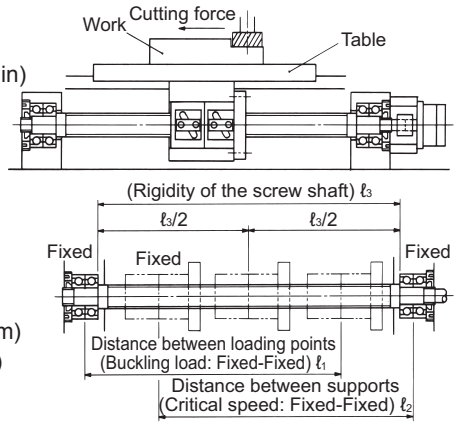
● Machine tool

<Specifications>

- Mass of the work and the table M = 1300 (kg)
- Maximum stroke S_{max} = 800 (mm)
- Rapid traverse speed V_{max} = 12000 (mm/min)
- Friction factor of the linear guide μ = 0.02
- Load condition

Classification	Axial load (N)	Feed speed (mm/min)	Operating time rate (%)
Rapid traverse speed	300	12000	25
Light/medium cutting	5000	600	55
Heavy cutting	9000	120	20

- Positioning accuracy ±0.04/800 (mm)
- Expected service life 25000 (hours)
- Drive motor N_{max} = 2000 (min^{-1})
- Shaft-end supporting method Fixed-Fixed



1. Lead (L)

According to the maximum rotational speed of the motor and the rapid traverse speed of the motor, the lead can be selected as follows:

$$L \geq \frac{V_{max}}{N_{max}} = 6 \text{ (mm)}$$

2. Nut design

Examination of the necessary basic dynamic load rating and the permissible rotational speed (DmN value)

<In the case of lead 6>

Load conditions

Classification	Axial load (N)	Rotational speed (min^{-1})	Operating time rate (%)
Rapid traverse speed	300	2000	25
Light/medium cutting	5000	100	55
Heavy cutting	9000	20	20

Calculating the axial average load (P_m) and the average rotational speed (N_m) from the load conditions (Formulas (6) and (7) on page F-14) results in the following formulas:

P_m = 2600 (N)

N_m = 559 (min^{-1})

To calculate the necessary basic dynamic load rating (C), transformation formula (5) shown on page F-13 is used assuming that the life (L_h) is 25000 hours and operation coefficient (f_w) is 1.2, as shown below.

$$C = \left(\frac{60L_nN_m}{10^6}\right)^{\frac{1}{3}} P_m f_w = 29420 \text{ (N)}$$

A nut in suitable size with the smallest diameter can be selected from page C-43 as follows:

Outside diameter 36, lead 6, and 2.5 turns with 3 circuits

Then, when the DmN value (Formula (3) on page F-11) is sought to find the permissible rotational speed, DmN = 36.8 X 2000 = 73600 is found as against the permissible DmN ≤ 70000, showing that it exceeds the permissible value. Consequently, this size is not suitable. Therefore, increase the lead to 8, make the maximum rotational speed lower, and take another examination.

<In the case of lead 8>

Load conditions

Classification	Axial load (N)	Rotational speed (min^{-1})	Operating time rate (%)
Rapid traverse speed	300	1500	25
Light/medium cutting	5000	75	55
Heavy cutting	9000	15	20

The necessary basic dynamic load rating (C) calculated in the same manner as in the case of lead 6 is:

P_m = 2600 (N)

N_m = 419 (min^{-1})

C = 26720 (N)

Accordingly, a nut in suitable size with the smallest diameter can be selected from page C-41 as follows:

Outside diameter 32, lead 8, and 2.5 turns with 2 circuits

Then, DmN value is found to be DmN = 33 X 1500 = 49500, showing that it satisfies the permissible value. Proceed with the following examination based on this size.

3. Screw shaft design

Examining the overall screw shaft length (ℓ), permissible axial load (P_0), and critical speed (N_c)

Assuming that: ℓ = Maximum stroke + nut length + allowance + size of both shaft ends = 800 + 145 + 80 + 175 = 1200

To obtain the permissible axial load, examine the buckling load assuming that the distance between loading points ℓ_1 = 930. The following formula can be obtained by Formulas (1) and (2) on pages F-10 and F-11:

P_0 = 141400 (N)

This can fully satisfy the operating conditions. The critical speed is calculated from Formula (4) on page F-12 as follows: N_c = 6490 (min^{-1})

Where, the distance between load working points ℓ_2 = 940.

This can fully satisfy the operating conditions.

4. Ball screw rigidity

Rigidity of the screw shaft (K_t)

Calculate at the position $\ell_3/2$ where the axial deflection is maximized, assuming that the distance between bearing end faces ℓ_3 = 1005.

The following formula is obtained by Formulas (16) and (18) on page F-15.

$$K_t = \frac{E\pi d^2}{\ell_3} \times 10^{-3} = 50 \text{ (N/μm)}$$

E : Young's modulus (2.06 X 10^5 N/mm^2)

d : Screw shaft root diameter (mm)

Rigidity of the nut (K_{nw})

Rigidity to an arbitrary preload amount assuming that 1/3 of the maximum axial load is preload (P_L) can be obtained using Formula (22) on page F-16.

$$K_{nw} = K_{NW}\left(\frac{P_L}{\frac{1}{15}C}\right)^{\frac{1}{3}}$$

$$= 590\left(\frac{3000}{\frac{1}{15} \times 32300}\right)^{\frac{1}{3}} = 660 \text{ (N/μm)}$$

As a result of the above-mentioned examination, the nut model number GR3208ED-DALR is selected from page C-41.

5. Accuracy

Select C5 (e_c = ±0.025) from the positioning accuracy ±0.04/800 and the permissible values for variation (e_c) on page F-3, assuming that the directivity of cumulative mean lead can be corrected on the control side.

6. Result of ball screw selection

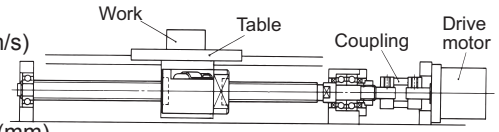
The model number of the selected ball screw is GR3208ED-DALR-1200X0985-C5S on page C-41.

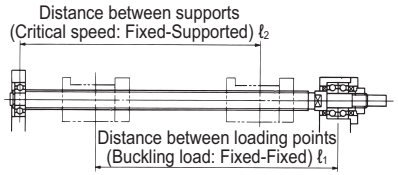
■ Example of ball screw selection

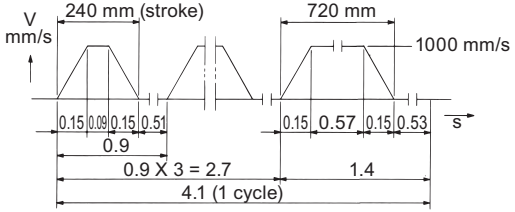
● X-axis of Cartesian robot (horizontal position)

<Specifications>

- Mass of the work and the table M = 50 (kg)
- Maximum stroke S_{max} = 720 (mm)
- Rapid traverse speed V_{max} = 1000 (mm/s)
- Acceleration/deceleration constant t = 0.15 (S)
- Positioning accuracy ±0.1/720 (mm)
- Repeat accuracy ±0.01 (mm)
- Expected life L_h = 30000 (hours)
- Friction factor of the linear guide μ = 0.02
- Drive motor N_{max} = 3000 (min^{-1})
- Duty cycle model diagram







1. Lead (L)

According to the maximum rotational speed and the rapid traverse speed of the motor, the lead can be selected as follows:

$$L \geq \frac{V_{max} \times 60}{N_{max}} = 20 \text{ (mm)}$$

2. Nut design

Examination of the necessary basic dynamic load rating and the permissible rotational speed (DmN value)

Calculation of the axial load in each pattern of operations:

(a) At the time of acceleration

$$\text{Acceleration } (\alpha) = \frac{V_{max}}{t} \times 10^{-3} = 6.67 \text{ (m/s}^2\text{)}$$

Axial load (P_a) = (Mα + μMg) = 343 (N)

(g: Gravitational acceleration 9.8 m/s^2)

(b) At the time of a constant speed

Axial load (P_b) = μMg = 10 (N)

(c) At the time of deceleration

Axial load (P_c) = (Mα - μMg) = 324 (N)

Operating time (s) during one cycle of each pattern

Operation pattern	(a)	(b)	(c)	Total operating time
Operating time	0.6	0.84	0.6	2.04

Load conditions at the time of lead 20

Operation pattern	(a)	(b)	(c)
Axial load	343N	10N	324N
Rotational speed	1500 min^{-1}	3000 min^{-1}	1500 min^{-1}
Operating time ratio	29.4%	41.2%	29.4%

Calculating the axial average load (P_m) and the average rotational speed (N_m) from the load conditions (Formulas (6) and (7) on page F-14) results in the following formulas:

P_m = 249 (N)

N_m = 2118 (min^{-1})

Calculation of the necessary basic dynamic load rating (C)

The net operation life (L_{h0}) excluding downtime based on the expected life is calculated as follows:

$$L_{h0} = 30000 \left(\frac{2.04}{4.1}\right) = 14927 \text{ (hours)}$$

Transformation formula (5) shown on page F-13 is used assuming that the operation coefficient f_w = 1.2, as shown below.

$$C = \left(\frac{60 L_{h0} N_m}{10^6}\right)^{\frac{1}{3}} \times P_m \times f_w = 3700 \text{ (N)}$$

A ball screw in suitable size can be selected from standard ball screw GE and GG series (page B-78, B-79) as follows:

Outside diameter 15, lead 20, and 1.5 turns with 1 circuit

When looking for a DmN value (Formula (3) on page F-11) as the permissible rotational speed, DmN = 15.8 X 3000 = 47400 is found as against the permissible DmN ≤ 70000, showing that it satisfies the permissible value. Proceed with the following examination based on this size.

3. Screw shaft design

Examining the overall screw shaft length (ℓ), critical speed (N_c), and buckling load (P_k)

ℓ = Maximum stroke + nut length + allowance + size of both shaft ends = 720 + 62 + 60 + 78 = 920 (mm)

To obtain the permissible axial load, examine the buckling load assuming that the distance between loading points ℓ_1 = 820. The following formula can be obtained by Formulas (1) and (2) on pages F-10 and F-11:

P_k = 7220 (N)

This fully satisfies the operating condition.

Assuming that the distance between supports ℓ_2 = 790, the critical speed can be obtained by Formula (4) (Fixed-Supported) on page F-12 as follows:

N_c = 3024 (min^{-1})

This satisfies the operating condition.

4. Accuracy

Examination of the accuracy grade and the axial clearance

The accuracy grade that can satisfy the positioning accuracy of ±0.1/750 mm is determined, from the permissible value of the lead accuracy (page F-3), to be C5 (cumulative mean lead error ±E_c = 0.035 and variation e_c = 0.025).

Axial clearance is set to 0.005 or less based on the repeated positioning accuracy ±0.01.

5. Result of ball screw and support unit selection

Provided that additional machining of standard ball screw GG series with unfinished shaft ends is performed, the following model number is selected from page B-78 and B-79:

GG1520AS-BALR-1100A

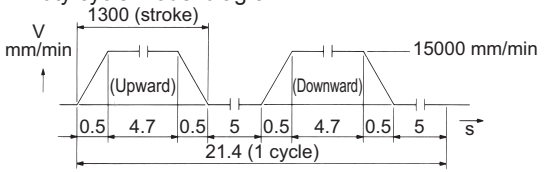
The model number of the suitable support unit selected from page E-16 and E-17 is BUK-12.

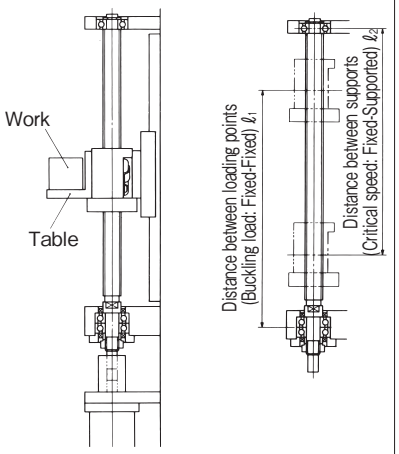
■ Example of ball screw selection

● Elevator (vertical position)

<Specifications>

- Mass of the work and the table M = 100 (kg)
- Maximum stroke S_{max} = 1300 (mm)
- Rapid traverse speed V_{max} = 15000 (mm/min)
- Acceleration/deceleration constant t = 0.5 (S)
- Repeat accuracy 0.5 (mm)
- Expected life L_h = 20000 (hours)
- Friction factor of the linear guide μ = 0.02
- Drive motor N_{max} = 1500 (min^{-1})
- Duty cycle model diagram





1. Lead (L)

According to the maximum rotational speed and the rapid traverse speed of the motor, the lead can be selected as follows:

$$L \geq \frac{V_{max}}{N_{max}} = 10$$

2. Nut design

Examination of the necessary basic dynamic load rating and the permissible rotational speed (DmN value)

Calculation of the axial load in each pattern of operations:

(a) At the time of upward acceleration and downward deceleration

$$\text{Acceleration } (\alpha) = \frac{V_{max}}{t \cdot 60} \times 10^{-3} = 0.5 \ (m/s^2)$$

Axial load (P_a) = (Mα + Mg) = 1030 (N)

(g: Gravitational acceleration 9.8 m/s^2)

(b) At the time of a constant speed

Axial load (P_b) = Mg = 980 (N)

(c) At the time of upward deceleration and downward acceleration

Axial load (P_c) = (Mg - Mα) = 930 (N)

Operating time (s) during one cycle of each pattern (s)

Operation pattern	(a)	(b)	(c)	Total operating time
Operating time	1	9.4	1	11.4

Load conditions at the time of lead 10

Operation pattern	(a)	(b)	(c)
Axial load	1030N	980N	930N
Rotational speed	750 min^{-1}	1500 min^{-1}	750 min^{-1}
Operating time ratio	8.8 %	82.4 %	8.8 %

Calculating the axial average load (P_m) and the average rotational speed (N_m) from the load conditions (Formulas (6) and (7) on page F-14) results in the following formulas:

P_m = 980 (N)

N_m = 1368 (min^{-1})

Calculation of the necessary basic dynamic load rating (C)

The net operation life (L_{h0}) excluding downtime based on the expected life is calculated as follows:

$$L_{h0} = L_h \left(\frac{11.4}{21.4}\right) = 10654 \text{ (hours)}$$

As the operation accompanied by vibration is anticipated, transformation formula (5) shown on page F-13 is used assuming that the operation coefficient f_w = 1.5, as shown below.

$$C = \left(\frac{60 L_{h0} N_m}{10^6}\right)^{\frac{1}{3}} \times P_m \cdot f_w = 14057 \text{ (N)}$$

A suitable nut size can be selected from rolled ball screw GY series (page D-72 and D-73) based on the repeat accuracy 0.5 as follows:

Outside diameter 25, lead 10, and 2.5 turns with 2 circuits

When looking for a DmN value (Formula (3) on page F-11) as the permissible rotational speed, DmN = 26.8 X 1500 = 40200 is found as against the permissible $D_{mN} \leq 50000$, showing that it satisfies the permissible value. Proceed with the following examination based on this size.

3. Screw shaft design

Examination of the overall screw shaft length (ℓ) and permissible axial load (P_k)

ℓ = Maximum stroke + nut length + safety stroke + size of both shaft ends

To obtain permissible axial load, examine the buckling load, assuming that distance between load working points ℓ_1 = 1440. The following formula can be obtained by Formulas (1) and (2) (Fixed-Fixed) on pages F-10 and F-11:

P_k = 16290 (N)

This satisfies the operating condition.

Assuming that distance between supports δ_2 = 1420, the following formula can be obtained by Formula (4) (Fixed-Supported) on page F-12:

N_c = 1520 (min^{-1})

This satisfies the operating condition.

4. Result of Ball Screw Selection

Provided that additional machining of rolled ball screw GY series is performed, the following model number is selected from page D-72 and D-73:

GY2510ES-HULR-2000A

Technical data of ball screws

Ballscrew specification data sheet

Date		Contact personnel	
Company name			
Department		TEL / FAX	

Conditions of use

Mass (weight) of table		Maximum table speed	mm/sec
Moving conditions	☐Shaft rotation ☐Nut rotation	Lubrication	☐Grease ☐Oil
Mount method	☐Horizontal ☐Vertical ☐Others (Description:)		
Mount/Support method	☐Fixed-support ☐Fixed-fixed ☐Fixed-free ☐Support-support		
Oscillation	☐No ☐Yes (stroke mm)		
Environmental conditions	Temp. (°C) ☐Clean room ☐Vacuum ☐Others ( )		
Expected life	Ex.: 8 hours/day, 240 days/year, 5 years		

Ballscrew specifications

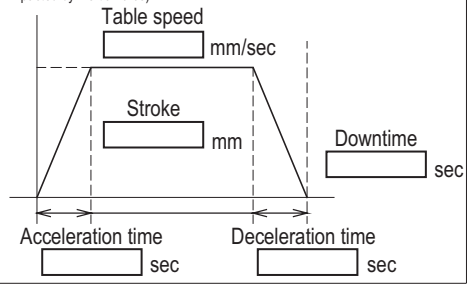
Screw shaft diameter		Thread direction		Axial clearance		Thread length	
Lead		Nuber of circuits		Accuracy grade		Overall length	
Nut type	☐Single nut ☐Double nut ☐Integral nut						

Operating conditions

☐Case A
(when axial load and table speed can be classified into several patterns, such as when using a pressing device)

No. of patterns	Axial load	Table speed	Usage time
1			
2			
3			
4			
5			
6			

☐Case B
(when only the speed changes, such as for transfer application, and when largely impacted by inertial force)



Others

Type of slide guide	☐Rolling (model number:) ☐Sliding
Name of motor	
Quantity of screw shafts used	Ex.: One per head, Four per table
Change control	☐No ☐Yes

Memo (Please draw a configuration diagram, etc.)

Request for KURODA	☐Request for selection of ball screws ☐Request for calculation of ball screw life
	Contact personnel:

Ballscrew specification data sheet (Sample)

Date		Contact personnel	
Company name	XYZ Industries, Co., Ltd.		
Department		TEL / FAX	

Conditions of use

Mass (weight) of table	50kg	Maximum table speed	250 mm/sec
Moving conditions	☑Shaft rotation ☐Nut rotation	Lubrication	☑Grease ☐Oil
Mount method	☑Horizontal ☐Vertical ☐Others (Description:)		
Mount/Support method	☑Fixed-support ☐Fixed-fixed ☐Fixed-free ☐Support-support		
Oscillation	☑No ☐Yes (stroke mm)		
Environmental conditions	Temp. (25 °C) ☐Clean room ☐Vacuum ☐Others ( )		
Expected life	20000 hours (including downtime) Ex.: 8 hours/day, 240 days/year, 5 years		

Ballscrew specifications

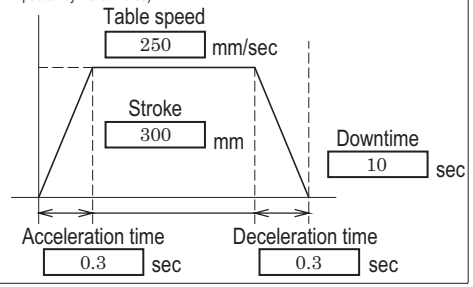
Screw shaft diameter		Thread direction		Axial clearance		Thread length	
Lead		Nuber of circuits		Accuracy grade		Overall length	
Nut type	☐Single nut ☐Double nut ☐Integral nut						

Operating conditions

☐Case A
(when axial load and table speed can be classified into several patterns, such as when using a pressing device)

No. of patterns	Axial load	Table speed	Usage time
1			
2			
3			
4			
5			
6			

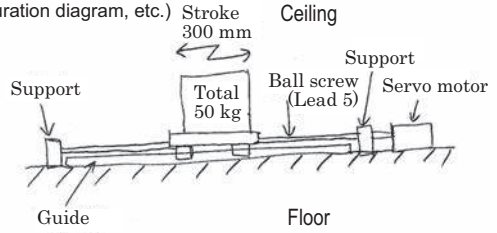
☐Case B
(when only the speed changes, such as for transfer application, and when largely impacted by inertial force)



Others

Type of slide guide	☐Rolling (model number:) ☐Sliding
Name of motor	
Quantity of screw shafts used	One per X-axis Ex.: One per head, Four per table
Change control	☐No ☐Yes

Memo (Please draw a configuration diagram, etc.)



Request for KURODA	☐Request for selection of ball screws ☐Request for calculation of ball screw life
	Contact personnel:

Technical data of ball screws

Reference data

Page

Table of standard tolerance grades and limit deviations for holes ——— Appendix-2
Table of standard tolerance grades and limit deviations for shafts ——— Appendix-3
Dimensions of C-shaped snap rings ——— Appendix-4
Dimensions of parallel keys and key grooves ——— Appendix-5
Hardness conversion chart ——— Appendix-6
Dimensions of the counterbore and internal thread for the hexagon-headed bolt ——— Appendix-7

Table 1: Standard tolerance grades and limit deviations for holes JIS B 0401-2:1998 (ISO 286-2:1988)

Unit: μm = 0.001 mm

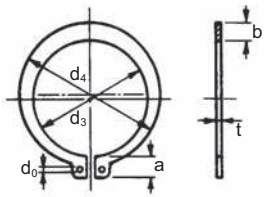
Range of standard dimensions (mm)		Tolerance grades for holes																							
Over	Or less	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10	JS6	JS7	K6	K7	M6	M7	N6	N7	P6	P7
-	3	+ 34 + 20	+ 45 + 20	+ 60 + 20	+ 24 + 14	+ 28 + 14	+ 39 + 14	+ 12 + 6	+ 16 + 6	+ 20 + 6	+ 8 + 2	+ 12 + 2	+ 6 0	+ 10 0	+ 14 0	+ 25 0	+ 40 0	± 3	± 5	0 - 6	0 - 10	- 2 - 8	- 2 - 12	- 4 - 10	- 4 - 14	- 6 - 12	- 6 - 16
3	6	+ 48 + 30	+ 60 + 30	+ 78 + 30	+ 32 + 20	+ 38 + 20	+ 50 + 20	+ 18 + 10	+ 22 + 10	+ 28 + 10	+ 12 + 4	+ 16 + 4	+ 8 0	+ 12 0	+ 18 0	+ 30 0	+ 48 0	± 4	± 6	+ 2 - 6	+ 3 - 9	- 1 - 9	0 - 12	- 5 - 13	- 4 - 16	- 9 - 17	- 8 - 20
6	10	+ 62 + 40	+ 76 + 40	+ 98 + 40	+ 40 + 25	+ 47 + 25	+ 61 + 25	+ 22 + 13	+ 28 + 13	+ 35 + 13	+ 14 + 5	+ 20 + 5	+ 9 0	+ 15 0	+ 22 0	+ 36 0	+ 58 0	± 4.5	± 7.5	+ 2 - 7	+ 5 - 10	- 3 - 12	0 - 15	- 7 - 16	- 4 - 19	- 12 - 21	- 9 - 24
10	14	+ 77 + 50	+ 93 + 50	+ 120 + 50	+ 50 + 32	+ 59 + 32	+ 75 + 32	+ 27 + 16	+ 34 + 16	+ 43 + 16	+ 17 + 6	+ 24 + 6	+ 11 0	+ 18 0	+ 27 0	+ 43 0	+ 70 0	± 5.5	± 9	+ 2 - 9	+ 6 - 12	- 4 - 15	0 - 18	- 9 - 20	- 5 - 23	- 15 - 26	- 11 - 29
14	18																										
18	24	+ 98 + 65	+ 117 + 65	+ 149 + 65	+ 61 + 40	+ 73 + 40	+ 92 + 40	+ 33 + 20	+ 41 + 20	+ 53 + 20	+ 20 + 7	+ 28 + 7	+ 13 0	+ 21 0	+ 33 0	+ 52 0	+ 84 0	± 6.5	± 10.5	+ 2 - 11	+ 6 - 15	- 4 - 17	0 - 21	- 11 - 24	- 7 - 28	- 18 - 31	- 14 - 35
24	30																										
30	40	+ 119 + 80	+ 142 + 80	+ 180 + 80	+ 75 + 50	+ 89 + 50	+ 112 + 50	+ 41 + 25	+ 50 + 25	+ 64 + 25	+ 25 + 9	+ 34 + 9	+ 16 0	+ 25 0	+ 39 0	+ 62 0	+ 100 0	± 8	± 12.5	+ 3 - 13	+ 7 - 18	- 4 - 20	0 - 25	- 12 - 28	- 8 - 33	- 21 - 37	- 17 - 42
40	50																										
50	65	+ 146 + 100	+ 174 + 100	+ 220 + 100	+ 90 + 60	+ 106 + 60	+ 134 + 60	+ 49 + 30	+ 60 + 30	+ 76 + 30	+ 29 + 10	+ 40 + 10	+ 19 0	+ 30 0	+ 46 0	+ 74 0	+ 120 0	± 9.5	± 15	+ 4 - 15	+ 9 - 21	- 5 - 24	0 - 30	- 14 - 33	- 9 - 39	- 26 - 45	- 21 - 51
65	80																										
80	100	+ 174 + 120	+ 207 + 120	+ 260 + 120	+ 107 + 72	+ 126 + 72	+ 159 + 72	+ 58 + 36	+ 71 + 36	+ 90 + 36	+ 34 + 12	+ 47 + 12	+ 22 0	+ 35 0	+ 54 0	+ 87 0	+ 140 0	± 11	± 17.5	+ 4 - 18	+ 10 - 25	- 6 - 28	0 - 35	- 16 - 38	- 10 - 45	- 30 - 52	- 24 - 59
100	120																										
120	140	+ 208 + 145	+ 245 + 145	+ 305 + 145	+ 125 + 85	+ 148 + 85	+ 185 + 85	+ 68 + 43	+ 83 + 43	+ 106 + 46	+ 39 + 14	+ 54 + 14	+ 25 0	+ 40 0	+ 63 0	+ 100 0	+ 160 0	± 12.5	± 20	+ 4 - 21	+ 12 - 28	- 8 - 33	0 - 40	- 20 - 45	- 12 - 52	- 36 - 61	- 28 - 68
140	160																										
160	180																										
180	200	+ 242 + 170	+ 285 + 170	+ 355 + 170	+ 146 + 100	+ 172 + 100	+ 215 + 100	+ 79 + 50	+ 96 + 50	+ 122 + 50	+ 44 + 15	+ 61 + 15	+ 29 0	+ 46 0	+ 72 0	+ 115 0	+ 185 0	± 14.5	± 23	+ 5 - 24	+ 13 - 33	- 8 - 37	0 - 46	- 22 - 51	- 14 - 60	- 41 - 70	- 33 - 79
200	225																										
225	250																										

Table 2: Standard tolerance grades and limit deviations for shafts JIS B 0401-2:1998 (ISO 286-2:1988)

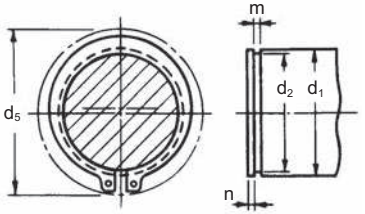
Unit: μm = 0.001 mm

Range of standard dimensions (mm)		Tolerance grades for shafts																							
Over	Or less	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	h5	h6	h7	h8	h9	js5	js6	js7	k5	k6	m5	m6	n6	p6
-	3	- 20 - 34	- 20 - 45	- 14 - 24	- 14 - 28	- 14 - 39	- 6 - 12	- 6 - 16	- 6 - 20	- 2 - 6	- 2 - 8	0 - 4	0 - 6	0 - 10	0 - 14	0 - 25	± 2	± 3	± 5	+ 4 0	+ 6 0	+ 6 + 2	+ 8 + 2	+ 10 + 4	+ 12 + 6
3	6	- 30 - 48	- 30 - 60	- 20 - 32	- 20 - 38	- 20 - 50	- 10 - 18	- 10 - 22	- 10 - 28	- 4 - 9	- 4 - 12	0 - 5	0 - 8	0 - 12	0 - 18	0 - 30	± 2.5	± 4	± 6	+ 6 + 1	+ 9 + 1	+ 9 + 4	+ 12 + 4	+ 16 + 8	+ 20 + 12
6	10	- 40 - 62	- 40 - 76	- 25 - 40	- 25 - 47	- 25 - 61	- 13 - 22	- 13 - 28	- 13 - 35	- 5 - 11	- 5 - 14	0 - 6	0 - 9	0 - 15	0 - 22	0 - 36	± 3	± 4.5	± 7.5	+ 7 + 1	+ 10 + 1	+ 12 + 6	+ 15 + 6	+ 19 + 10	+ 24 + 15
10	14	- 50 - 77	- 50 - 93	- 32 - 50	- 32 - 59	- 32 - 75	- 16 - 27	- 16 - 34	- 16 - 43	- 6 - 14	- 6 - 17	0 - 8	0 - 11	0 - 18	0 - 27	0 - 43	± 4	± 5.5	± 9	+ 9 + 1	+ 12 + 1	+ 15 + 7	+ 18 + 7	+ 23 + 12	+ 29 + 18
14	18																								
18	24	- 65 - 98	- 65 - 117	- 40 - 61	- 40 - 73	- 40 - 92	- 20 - 33	- 20 - 41	- 20 - 53	- 7 - 16	- 7 - 20	0 - 9	0 - 13	0 - 21	0 - 33	0 - 52	± 4.5	± 6.5	± 10.5	+ 11 + 2	+ 15 + 2	+ 17 + 8	+ 21 + 8	+ 28 + 15	+ 35 + 22
24	30																								
30	40	- 80 - 119	- 80 - 142	- 50 - 75	- 50 - 89	- 50 - 112	- 25 - 41	- 25 - 50	- 25 - 64	- 9 - 20	- 9 - 25	0 - 11	0 - 16	0 - 25	0 - 39	0 - 62	± 5.5	± 8	± 12.5	+ 13 + 2	+ 18 + 2	+ 20 + 9	+ 25 + 9	+ 33 + 17	+ 42 + 26
40	50																								
50	65	- 100 - 146	- 100 - 174	- 60 - 90	- 60 - 106	- 60 - 134	- 30 - 49	- 30 - 60	- 30 - 76	- 10 - 23	- 10 - 29	0 - 13	0 - 19	0 - 30	0 - 46	0 - 74	± 6.5	± 9.5	± 15	+ 15 + 2	+ 21 + 2	+ 24 + 11	+ 30 + 11	+ 39 + 20	+ 51 + 32
65	80																								
80	100	- 120 - 174	- 120 - 207	- 72 - 107	- 72 - 126	- 72 - 159	- 36 - 58	- 36 - 71	- 36 - 90	- 12 - 27	- 12 - 34	0 - 15	0 - 22	0 - 35	0 - 54	0 - 87	± 7.5	± 11	± 17.5	+ 18 + 3	+ 25 + 3	+ 28 + 13	+ 35 + 13	+ 45 + 23	+ 59 + 37
100	120																								
120	140	- 145 - 208	- 145 - 245	- 85 - 125	- 85 - 148	- 85 - 185	- 43 - 68	- 43 - 83	- 43 - 106	- 14 - 32	- 14 - 39	0 - 18	0 - 25	0 - 40	0 - 63	0 - 100	± 9	± 12.5	± 20	+ 21 + 3	+ 28 + 3	+ 33 + 15	+ 40 + 15	+ 52 + 27	+ 68 + 43
140	160																								
160	180																								
180	200	- 170 - 242	- 170 - 285	- 100 - 146	- 100 - 172	- 100 - 215	- 50 - 79	- 50 - 96	- 50 - 122	- 15 - 35	- 15 - 44	0 - 20	0 - 29	0 - 46	0 - 72	0 - 115	± 10	± 14.5	± 23	+ 24 + 4	+ 33 + 4	+ 37 + 17	+ 46 + 17	+ 60 + 31	+ 79 + 50
200	225																								
225	250																								

Table 3: C-Shaped Snap Rings JIS B 2804:2001



Position the holes at the neb of the snap ring (diameter d_0) so that they protrude out of the snap ring groove and are visible above the external diameter of the shaft end.



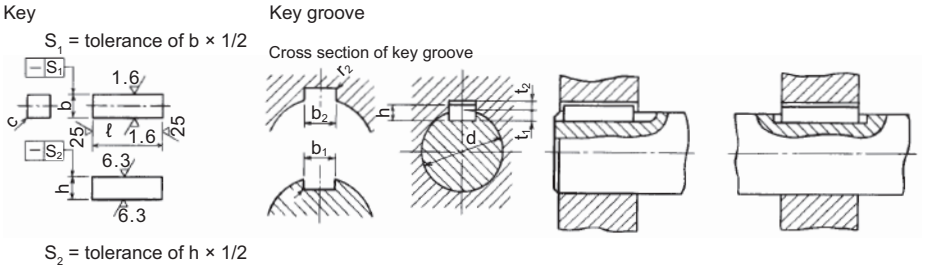
"d_5" represents the maximum circumferential diameter when the ring is snapped onto the shaft.

Unit: mm

Nominal size (1)		Snap ring							Corresponding shaft (for reference purpose only)						
		d_1		f		b	a	d_0	d_3	d_1	d_2		m		n
1	2	Standard dimensions	Tolerance	Standard dimensions	Tolerance	Approximate	Approximate	Minimum			Standard dimensions	Tolerance	Standard dimensions	Tolerance	Minimum
10		9.3	± 0.15	1	± 0.05	1.6	3.0	1.2	17	10	9.6	0 - 0.09	1.15	+ 0.14 0	1.5
	11	10.2				1.8	3.1		18	11	10.5	0 - 0.11			
12		11.1	± 0.18			1.8	3.2	1.5	19	12	11.5				
14		12.9				2.0	3.4	1.7	22	14	13.4				
15		13.8				2.1	3.5		23	15	14.3				
16		14.7				2.2	3.6		24	16	15.2				
17		15.7				2.2	3.7		25	17	16.2				
18		16.5		1.2	± 0.06	2.6	3.8	2	26	18	17.0	0 - 0.21	1.35		
	19	17.5				2.7	3.8		27	19	18.0				
20		18.5	± 0.20			2.7	3.9		28	20	19.0				
22		20.5				2.7	4.1		31	22	21.0				
	24	22.2				3.1	4.2		33	24	22.9				
25		23.2				3.1	4.3		34	25	23.9				
	26	24.2				3.1	4.4		35	26	24.9				
28		25.9		1.6 (2)		3.1	4.6		38	28	26.6		1.75 (2)		
30		27.9				3.5	4.8		40	30	28.6				
32		29.6				3.5	5.0	2.5	43	32	30.3	0 - 0.25	1.95		2
35		32.2				4.0	5.4		46	35	33.0				
	36	33.2	± 0.25	1.8	± 0.07	4.0	5.4		47	36	34.0				
	38	35.2				4.5	5.6		50	38	36.0				
40		37.0	± 0.40			4.5	5.8		53	40	38.0				
	42	38.5				4.5	6.2		55	42	39.5				
45		41.5				4.8	6.3		58	45	42.5				
	48	44.5				4.8	6.5		62	48	45.5				
50		45.8		2		5.0	6.7		64	50	47.0		2.2		
55		50.8	± 0.45			5.0	7.0		70	55	52.0	0 - 0.30			
	56	51.8				5.0	7.0		71	56	53.0				
60		55.8				5.5	7.2		75	60	57.0				
65		60.8		2.5	± 0.08	6.4	7.4		81	65	62.0		2.7		2.5
70		65.5				6.4	7.8		86	70	67.0				
75		70.5				7.0	7.9		92	75	72.0				
80		74.5				7.4	8.2		97	80	76.5				
85		79.5		3	± 0.09	8.0	8.4	3	103	85	81.5	0 - 0.35	3.2	+ 0.18 0	3
90		84.5	± 0.55			8.0	8.7		108	90	86.5				
95		89.5				8.6	9.1		114	95	91.5				
100		94.5				9.0	9.5		119	100	96.5				
	105	98.0		4		9.5	9.8		125	105	101.0	0 - 0.54	4.2		4
110		103.0				9.5	10.0		131	110	106.0				
120		113.0				10.3	10.9		143	120	116.0				

(Note 1) The nominal sizes in column "1" are preferable to the sizes in column "2". The latter may be used when needed.
(Note 2) The thickness (t) = 1.6 mm. Thickness of 1.5 mm is permissible until determined otherwise. In this case the value "m" is 1.65 mm.
(Remarks) 1. The minimum width of the annular part of the snap ring must not be smaller than the board thickness (t).
2. The corresponding shaft dimensions above are shown as recommended dimensions for reference purposes only.

Table 4: Dimensions of parallel keys and key grooves JIS B 1301:1996



Unit: mm

Nominal key size b × h	Dimensions of key						Dimensions of key groove						Ref.
	b		h		C	ℓ (1)	Standard dimensions of b1 and b2	Standard groove		r1 and r2	Standard dimensions of t1	Standard dimensions of t2	Tolerance of t1 and t2	Corresponding shaft diameter d
								b1	b2					
	Standard dimensions	Tolerance (h9)	Standard dimensions	Tolerance				Tolerance (N9)	Tolerance (JS9)					
2 × 2	2	0 - 0.025	2	0 - 0.025	h9	0.16 to 0.25	6 to 20	2	- 0.004 - 0.029	± 0.0125	0.08 to 0.16	1.2	1.0	+ 0.1 0	6 to 8
3 × 3	3		3				6 to 36	3				1.8	1.4		8 to 10
4 × 4	4	0 - 0.030	4	0 - 0.030			8 to 45	4	0 - 0.030	± 0.0150		2.5	1.8		10 to 12
5 × 5	5		5			0.25 to 0.40	10 to 56	5			0.16 to 0.25	3.0	2.3		12 to 17
6 × 6	6		6				14 to 70	6				3.5	2.8		17 to 22
(7 × 7)	7	0 - 0.036	7	0 - 0.030			16 to 80	7	0 - 0.036	± 0.0180		4.0	3.0		20 to 25
8 × 7	8		7	0 - 0.090	h11		18 to 90	8				4.0	3.3		22 to 30
10 × 8	10		8			0.40 to 0.60	22 to 110	10			0.25 to 0.40	5.0	3.3		30 to 38
12 × 8	12	0 - 0.043	8				28 to 140	12	0 - 0.043	± 0.0215		5.0	3.3		38 to 44
14 × 9	14		9				36 to 160	14				5.5	3.8		44 to 50
(15 × 10)	15		10				40 to 180	15				5.0	5.0		50 to 55
16 × 10	16		10				45 to 180	16				6.0	4.3	+ 0.2 0	50 to 58
18 × 11	18		11	0 - 0.110			50 to 200	18				7.0	4.4		58 to 65
20 × 12	20	0 - 0.052	12			0.60 to 0.80	56 to 220	20	0 - 0.052	± 0.0260	0.40 to 0.60	7.5	4.9		65 to 75
22 × 14	22		14				63 to 250	22				9.0	5.4		75 to 85
(24 × 16)	24		16				70 to 280	24				8.0	8.0		80 to 90
25 × 14	25		14				70 to 280	25				9.0	5.4		85 to 95
28 × 16	28		16				80 to 320	28				10.0	6.4		95 to 110
32 × 18	32		18				90 to 360	32				11.0	7.4		110 to 130
(35 × 22)	35	0 - 0.062	22	0 - 0.130		1.00 to 1.20	100 to 400	35	0 - 0.062	± 0.0310	0.70 to 1.00	11.0	11.0	+ 0.3 0	125 to 140
36 × 20	36		20				-	36				12.0	8.4		130 to 150
(38 × 24)	38		24				-	38				12.0	12.0		140 to 160
40 × 22	40		22				-	40				13.0	9.4		150 to 170
(42 × 26)	42		26				-	42				13.0	13.0		160 to 180
45 × 25	45		25				-	45				15.0	10.4		170 to 200
50 × 28	50		28				-	50				17.0	11.4		200 to 230
56 × 32	56	0 - 0.074	32	0 - 0.160		1.60 to 2.00	-	56	0 - 0.074	± 0.0370	1.20 to 1.60	20.0	12.4		230 to 260
63 × 32	63		32				-	63				20.0	12.4		260 to 290
70 × 36	70		36				-	70				22.0	14.4		290 to 330
80 × 40	80		40				-	80			2.00 to 2.50	25.0	15.4		330 to 380
90 × 45	90	0 - 0.087	45			2.50 to 3.00	-	90	0 - 0.087	± 0.0435		28.0	17.4		380 to 440
100 × 50	100		50				-	100				31.0	19.5		440 to 500

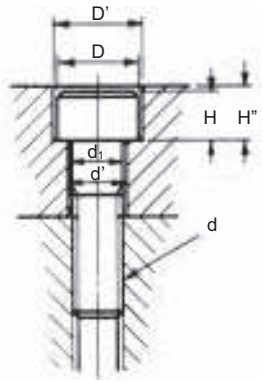
(Note 1) "ℓ" must be selected from the following values: 6, 8, 10, 12, 14, 16, 18, 20, 22, 25, 28, 32, 36, 40, 45, 50, 56, 63, 70, 80, 90, 100, 110, 125, 140, 160, 180, 200, 220, 250, 280, 320, 360, or 400.
The dimensional tolerance values for "ℓ" are generally h12 in accordance with JIS B 0401 (Dimensional tolerances and fit).
(Note 2) The corresponding shaft diameters should be determined in consideration of proper torque for key strength. The the above list indicates standard diameters for general use and is intended for reference purposes only.
(Remark) It is recommended that you avoid using the nominal sizes with parentheses whenever possible.
(Reference) When you need a key with a tolerance smaller than the key tolerance specified above, the tolerance for the key width (b) should be h7. In this case, a tolerance for height (h) should be h7 for nominal sizes of 7X7 or smaller and h11 for the sizes of 8X7 or larger.

Reference data

Table 5: Hardness Conversion Chart

Rockwell C-scale hardness (150 kgf)	Vickers hardness	Brinell hardness		Rockwell hardness		Shore hardness
		Standard balls	Tungsten carbide balls	A-scale 60 kgf load Brale penetrator	B-scale 100 kgf load Ball diameter: 1/16 inch	
68	940	-	-	85.6	-	97
67	900	-	-	85.0	-	95
66	865	-	-	84.5	-	92
65	832	-	739	83.9	-	91
64	800	-	722	83.4	-	88
63	772	-	705	82.8	-	87
62	746	-	688	82.3	-	85
61	720	-	670	81.8	-	83
60	697	-	654	81.2	-	81
59	674	-	634	80.7	-	80
58	653	-	615	80.1	-	78
57	633	-	595	79.6	-	76
56	613	-	577	79.0	-	75
55	595	-	560	78.5	-	74
54	577	-	543	78.0	-	72
53	560	-	525	77.4	-	71
52	544	500	512	76.8	-	69
51	528	487	496	76.3	-	68
50	513	475	481	75.9	-	67
49	498	464	469	75.2	-	66
48	484	451	455	74.7	-	64
47	471	442	443	74.1	-	63
46	458	432	432	73.6	-	62
45	446	421	421	73.1	-	60
44	434	409	409	72.5	-	58
43	423	400	400	72.0	-	57
42	412	390	390	71.5	-	56
41	402	381	381	70.9	-	55
40	392	371	371	70.4	-	54
39	382	362	362	69.9	-	52
38	372	353	353	69.4	-	51
37	363	344	344	68.9	-	50
36	354	336	336	68.4	(109.0)	49
35	345	327	327	67.9	(108.5)	48
34	336	319	319	67.4	(108.0)	47
33	327	311	311	66.8	(107.5)	46
32	318	301	301	66.3	(107.0)	44
31	310	294	294	65.8	(106.0)	43
30	302	286	286	65.3	(105.5)	42
29	294	279	279	64.7	(104.5)	41
28	286	271	271	64.3	(104.0)	41
27	279	264	264	63.8	(103.0)	40
26	272	258	258	63.3	(102.5)	38
25	266	253	253	62.8	(101.5)	38
24	260	247	247	62.4	(101.0)	37
23	254	243	243	62.0	100.0	36
22	248	237	237	61.5	99.0	35
21	243	231	231	61.0	98.5	35
20	238	226	226	60.5	97.8	34
(18)	230	219	219	-	96.7	33
(16)	222	212	212	-	95.5	32
(14)	213	203	203	-	93.9	31
(12)	204	194	194	-	92.3	29
(10)	196	187	187	-	90.7	28
(8)	188	179	179	-	89.5	27
(6)	180	171	171	-	87.1	26
(4)	173	165	165	-	85.5	25
(2)	166	158	158	-	83.5	24
(0)	160	152	152	-	81.7	24

Table 6: Dimensions of the counterbore and internal thread for the hexagon-headed bolt



Unit: mm

Nominal size (d)	M3	M4	M5	M6	M8	M10	M12	(M14)	M16	(M18)	M20	(M22)	M24	(M27)	M30
Thread pitch (P)	0.5	0.7	0.8	1	1.25	1.5	1.75	2	2	2.5	2.5	2.5	3	3	3.5
d_1	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
d'	3.4	4.5	5.5	6.6	9	11	14	16	18	20	22	24	26	30	33
D	5.5	7	8.5	10	13	16	18	21	24	27	30	33	36	40	45
D'	6.5	8	9.5	11	14	17.5	20	23	26	29	32	35	39	43	48
H	3	4	5	6	8	10	12	14	16	18	20	22	24	27	30
H"	3.3	4.4	5.4	6.5	8.6	10.8	13	15.2	17.5	19.5	21.5	23.5	25.5	29	32

(Remark) The bolt hole diameters (d') listed above are in accordance with bolt hole grade 2 in JIS B 1001 (Diameter of clearance holes and counterbores for bolts and screws).

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