目录

Contents

前言
Introduction

承蒙客户长期以来对KSS产品的惠顾，在此深表谢意。
近几年来，随着机电一体化设备的飞速发展，
对各种机械装置也同样提出了高精度化、小型化的要求。
本公司自1960年成立以来，
以在螺纹量规（标准）生产中培育起来的超精密仪器领域制造技术为基础，
将生产范围扩大到了精密进给丝杠、微型精密滚珠丝杠的生产。
随后，又率先把握时代需求，进一步将生产领域扩大到了微型标准滚珠丝杠的生产。
这正是本公司对超精密技术不懈追求的精神与社会需求不谋而合，孜孜以求的结果。

Thank you for your interest in KSS products.
With the recent rapid development of mechatronics products, there is an ever-increasing demand for greater precision and reduced size for a wide range of mechanisms.
Since its founding in 1960, KSS has widened its manufacturing scope from a base of manufacturing technology in the ultra-precision field. Beginning with thread gauges, our product line has grown to include Precision Lead Screws, Precision Miniature Ball Screws, as well as Standard Miniature Ball Screws, that have anticipated later demand.
We are confident that such developments have resulted from our diligence in the field of ultra precision technology, which has fulfilled the needs of society.

本次，我们全新编写了KSS综合产品目录。
除了对以往标准库存品进行升级换代以外，
还增加了一些新的产品型号，并介绍了进给丝杠、树脂导程丝杠、成套产品等，
大幅提高了客户的使用便利性。

希望您能够从这些丰富多彩的产品中找到最适合您使用的产品，
也希望这些产品能够帮助您实现满足时代需求的高精密定位、驱动技术的小型化和降低成本，
并为您各种产品的设计和开发助一臂之力！

今后，为了满足客户更高的需求，
本公司将一如既往，不断积累各种技术、充分利用各种经验专长，
为开发新技术和新产品而奋勇向前。
欢迎广大客户惠顾！

With the release of this new Catalog, both standardized & customized new models have been added.
In addition, Lead Screws, Resin Lead Screws have been combined as well as Unit-products.
This catalogue is focused on the usability by including index table over the whole series.

We trust that you will be able to find all of the products you require among the comprehensive range of KSS products in this catalog, and we are sure that these products will play a vital role in meeting today's needs in precision positioning, further miniaturization in drive technology, cost reductions, and assisting in the design and development of a wide variety of products.

We will continue to apply our expertise and technology to the development of new technology and new products, as we work to satisfy our customers' most advanced needs.
We hope you find our new catalog, featuring the latest products from KSS, be helpful.

公司标志的三条边表示：

制造部门
专业技术（Know How）
卓越品质（Super Quality）
安全运作（Safety Motion）

营业部门
热情（Kindness）
速度（Speed）
服务（Service）

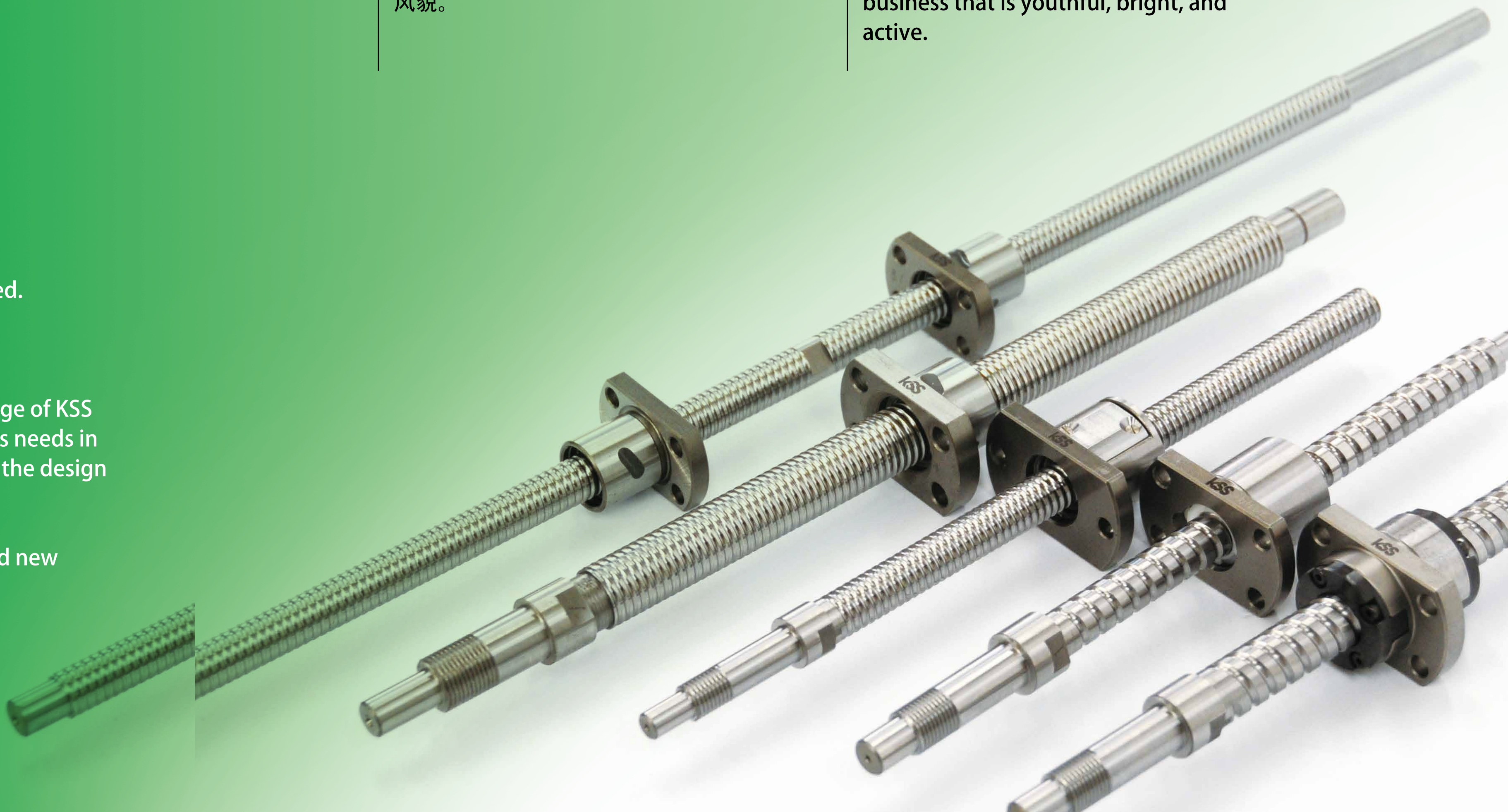
KSS这三个字母凸出三角形之外，
寓意打破陈规、锐意创新。
企业标准色为绿色，
体现了年轻、活泼、朝气蓬勃的企业的风貌。

What dose the KSS logo signify?

Manufacturing Division：
Know-How
Superior Quality
Safety Motion

Sales Division：
Kindness
Speed
Service

The letters KSS extend out from the triangular logo, symbolizing our constant technological breakthroughs.
The green corporate color signifies a business that is youthful, bright, and active.



KSS产品简介
Outline of KSS Products

■滚珠丝杠 / Ball Screws

标准库存品
精密滚珠丝杠 / 冷轧滚珠丝杠（A101～）
Standurd products
Precision Ball Screws / Rolled Ball Screws（A101～）

齐备有标准滚珠丝杠(SG、SD、SR、SSR、SRT、SSRT)，只需对轴端进行加工，即可按所需形状在短期内供货。
轴端形状也根据安装方式而不同而实现了标准化。

These series are KSS standard Ball Screws, called SG, SR, SSR, SRT, SSRT. These types of products can be delivered shortly with end-journal machining.
End-journal profile is also standardized.

接单生产
精密滚珠丝杠 / 冷轧滚珠丝杠（A501～）
Customized products
Precision Ball Screws / Rolled Ball Screws（A501～）

为了满足客户的各种设计需求，除标准品以外，本公司还承接接单生产。为节省客户的设计时间，我们对各种螺母类型进行了标准化。

In order to meet the needs of customer's requested design, we offer customized products.
To reduce design process at customer, each Nut type is standardized.

■油脂 / Grease

微型滚珠丝杠专用油脂（B101～）
Original Grease for Miniature Ball Screws（B101～）

无损微型滚珠丝杠的动作性、润滑性能卓越的原装油脂。还备有无尘室专用油脂。

This grease has high lubrication performance without deteriorating Ball Screw function.
The original Grease for Clean room usage is also available.

■精密进给丝杠 / Precision Lead Screws

精密进给丝杠（C301～）
Plecision Lead Screws（C301～）

可选择进给丝杠特有的小间距产品。螺纹面采用精密加工技术，是一款表面粗糙度低、导程误差小，低扭矩和低磨损的三角丝杠。

Ultra Small Pitch is available, which only Lead Screws achieve. With precise grinding technology on flank surface, fine surface roughness and low wobble become reality. This is the triangular Screw with low torque and less wear.

■树脂螺母滑动丝杠 / Lead Screws with Plastic Nuts

树脂导程丝杠（D101～）
Resin Lead Screws（D101～）

该系列采用不锈钢轴与树脂螺母的组合，实现了卓越的耐腐蚀性。
是最适于轻负载搬运的经济型产品。

This series have good corrosion resistance by a combination of Stainless Shaft and Plastic Nut. It is reasonable price and suitable for transport with light Load.

■电机直连型滚珠丝杠（滑动丝杠）/ Direct Motor Drive Ball Screws（Lead Screws）

魔博系列（MB）（F101～）
MoBo series（MB）（F101～）

是在驱动丝杠(滚珠丝杠或滑动丝杠)的轴端直接连接步进电机、不需要联轴器的紧凑型直线执行元件。

This is the compact liner Actuator without Coupling.
Drive Screw（Ball Screw or Lead Screw）Shaft is mounted directly onto Motor Shaft, which leads to save total length.

■微型执行器 / Miniature Actuator

灵活可选执行器（G101～）
Flex Actuator（G101～）

通过组合不同精度(进给丝杠)、速度(导程)、移动距离(行程)、负载(电机)的产品，可广泛用于各种用途。

There are many variety of choices among accuracy（Screw type）, speed（Screw Lead）, travel length and power（Motor type）.

■组合产品 / Multi-purpose products

微型滚珠丝杠花键（J101～）
Miniature Ball Screw with Ball Spline（J101～）

仅使用单件产品，即可实现直动(Z)、旋转(θ)、吸附动作的组合产品。
通过小径滚珠丝杠和小径滚珠花键的重叠，最大限度地实现了小型化。

This is a combined product which is possible for linear and rotational movement as well as suction at the same time with one unit.
Achieved developing very compact product as "Overlap type" using Miniature Ball Screws and Miniature Ball Splines.

■外围设备 / Attachements related KSS products

滚珠丝杠支架组件（E101～）
Ball Screw Support Units（E101～）

KSS推出了最适合微型滚珠丝杠轴端的支架组件系列产品。请务必与滚珠丝杠配合使用。

KSS Support Units are suitable for Miniature Ball Screw end journal.
Several types of Support Units are available with Ball Screws.

步进电机驱动器（H101）
Stepping Motor Driver（H101）

是最适合KSS成套产品的步进电机驱动器。

These are recommended Stepping Motor Driver, which can be used for KSS Unit Products.

滚珠丝杠　轴径与导程速查表
Table of Shaft dia. and Lead combination

【表中各符号的含义／Description】

Shaft dia／轴径(㎜)	Lead／导程(mm) 0.5	
1.8		A505 FBS
3	A205 SG	A505 FBS

Standard Products in stock／标准库存品
Customized Products／接单生产
Model No.／型号
page／刊载页码

按螺母形状分类的精密滚珠丝杠及冷轧滚珠丝杠的型号一览表／Nut style list for Precision Ball Screws & Rolled Ball Screws.

Nut style/螺母形状	Precision Ball Screws/精密滚珠丝杠 Standard Products/标准库存品	Precision Ball Screws/精密滚珠丝杠 Customized Products/接单生产	Precision Rolled Ball Screws 精密冷轧滚珠丝杠 Standard Products/标准库存品	Rolled Ball Screws/冷轧滚珠丝杠 Standard Products/标准库存品	Rolled Ball Screws/冷轧滚珠丝杠 Customized Products/接单生产
Single Nut with Flange/带法兰单螺母	SG	FKB　FBS　FDB　FEB	PSR　PSRT	SR　SSR　SRT　SSRT	MRB
Sleeve type Single Nut/套筒型单螺母	—	BS		—	BSR
Single Nut with M-thread/带公制螺纹单螺母	—	MS		—	MSR
Square type Single Nut/方型单螺母	—	KS		—	—
Bi-directional Nut with Flange/双向螺母	SD	FBS*　FKB*		—	—

※标准库存品的详情请参照第A201页。　注）*表示双向螺母。
※Please refer to page A201 regarding the detail of Standard Products　Note) * means Bi-directional Nut with Flange.

轴径-导程速查表（按型号分类）／Table of Shaft dia. and Lead combination（Model distinction）

Shaft dia／轴径(㎜) \ Lead／导程(mm)	0.5		1		1.5	2		2.5		3	4		5		6		8		10		12		15		20		30
1.8		A505 FBS																									
3	A207 SG	A505 FBS	A208 SG	A505 FBS A529 BS																							
4		A505 FBS	A209 SG A239 SD A247 SR A248 SR(K) A289 SRT A290 SRT(K) A323 PSR A324 PSRT A325 PSR(K) A326 PSRT(K)	A505 FKB A505 FBS A529 BS A539 MS A545 FKB* A551 MRB A551 MRB(K) A559 BSR A563 MSR		A210 SG A249 SR A291 SRT	A505 FBS A529 BS A551 MRB A559 BSR					A505 FEB						A505 FEB									
5		A507 FBS		A507 FKB A507 FBS A529 BS A545 FKB*							A211 SG A250 SR A292 SRT	A507 FBS A529 BS A551 MRB A559 BSR															
6		A509 FBS	A212 SG A240 SD A251 SR A252 SR(K) A281 SSR A293 SRT A294 SRT(K) A315 SSRT A327 PSR A328 PSRT A329 PSR(K) A330 PSRT(K)	A509 FKB A509 FBS A529 BS A543 KS A545 FKB* A551 MRB A551 MRB(K) A559 BSR	A509 FBS A529 BS	A213 SG A253 SR A295 SRT	A509 FBS A529 BS A539 MS A543 KS A551 MRB A559 BSR	A214 SG	A509 FBS A529 BS						A215 SG A254 SR A296 SRT	A509 FEB A551 MRB			A216 SG A255 SR A297 SRT	A509 FEB A551 MRB		A509 FEB					
8		A511 FBS	A217 SG A241 SD A256 SR A257 SR(K) A282 SSR A298 SRT A299 SRT(K) A316 SSRT A331 PSR A332 PSRT A333 PSR(K) A334 PSRT(K)	A511 FKB A511 FBS A531 BS A543 KS A545 FKB* A553 MRB A553 MRB(K) A559 BSR	A511 FKB A511 FBS A531 BS A539 MS A545 FKB*	A218 SG A242 SD A258 SR A259 SR(K) A283 SSR A300 SRT A301 SRT(K) A317 SSRT A335 PSR A336 PSRT A337 PSR(K) A338 PSRT(K)	A511 FKB A511 FBS A531 BS A539 MS A543 KS A545 FKB* A553 MRB A553 MRB(K) A559 BSR A563 MSR	A219 SG A260 SR A302 SRT	A513 FDB A513 FBS A531 BS A539 MS A553 MRB A559 BSR A563 MSR	A513 FBS A531 BS A539 MS	A220 SG	A513 FBS A531 BS A539 MS	A221 SG A261 SR A303 SRT	A513 FBS A531 BS A539 MS A553 MRB A559 BSR A563 MSR			A222 SG A262 SR A304 SRT	A513 FEB A553 MRB	A263 SR	A513 FEB A553 MRB	A223 SG A264 SR A305 SRT A339 PSR A340 PSRT	A513 FEB A553 MRB					
10			A224 SG	A515 FKB A515 FBS A533 BS A543 KS A545 FKB*	A515 FKB A515 FBS A533 BS A545 FKB*	A225 SG A243 SD A265 SR A266 SR(K) A284 SSR A306 SRT A307 SR(K) A318 SSRT A341 PSR(K) A342 PSRT(K)	A515 FKB A515 FBS A533 BS A541 MS A543 KS A545 FKB* A555 MRB A555 MRB(K) A561 BSR A563 MSR		A515 FKB A515 FBS A533 BS A545 FKB*	A517 FBS A533 BS A545 FBS* A555 MRB A561 BSR A563 MSR	A226 SG A267 SR	A517 FBS A533 BS A545 FBS* A555 MRB A561 BSR	A227 SG A268 SR A308 SRT	A517 FDB A517 FBS A533 BS A545 FBS* A555 MRB A561 BSR		A555 MRB A561 BSR			A228 SG A269 SR A309 SRT	A517 FEB A555 MRB		A555 MRB	A229 SG A270 SR A310 SRT	A517 FEB A555 MRB	A271 SR A311 SRT	A517 FEB A555 MRB	A517 FEB
12				A519 FKB A519 FBS A535 BS A547 FKB*		A230 SG A244 SD A272 SR A273 SR(K) A312 SRT A313 SRT(K) A343 PSR(K) A344 PSRT(K)	A519 FKB A519 FBS A535 BS A541 MS A547 FKB* A555 MRB A555 MRB(K) A561 BSR A563 MSR		A519 FKB A519 FBS A535 BS A547 FKB*	A519 FKB A519 FBS A535 BS A547 FKB*		A519 FBS A535 BS A541 MS A547 FBS*		A519 FBS A535 BS					A231 SG A274 SR A314 SRT	A521 FEB A521 FBS A555 MRB							
13																						A521 FEB A557 MRB		A521 FEB A557 MRB		A521 FEB A557 MRB	
14				A523 FBS A535 BS A547 FBS*		A232 SG A275 SR	A523 FKB A523 FBS A535 BS A541 MS A547 FKB* A557 MRB A561 BSR A563 MSR		A523 FKB A523 FBS A535 BS A547 FKB*	A523 FKB A523 FBS A535 BS A547 FKB*	A233 SG A276 SR	A523 FKB A523 FBS A535 BS A541 MS A547 FKB* A547 MRB A561 BSR A563 MSR		A523 FBS A535 BS A547 FBS*													
15												A525 FBS	A234 SG A277 SR	A525 FEB A525 FBS A557 MRB					A235 SG A278 SR	A525 FEB A525 FBS A557 MRB					A236 SG A279 SR	A525 FEB A525 FBS A557 MRB	A525 FEB
16				A527 FBS A537 BS A549 FBS*			A527 FKB A527 FBS A537 BS A549 FKB*			A527 FKB A527 FBS A537 BS A549 FKB*		A527 FKB A527 FBS A537 BS A549 FKB*		A527 FBS A537 BS A549 FBS*													

滚珠丝杠篇　Ball Screws

序言
Outline

自1978年开始生产、销售滚珠丝杠以来，作为微型滚珠丝杠行业的先锋，本公司一直积极致力于各种产品的开发。此外，本公司还致力于使用了滚珠丝杠的成套产品的开发，将迄今为止开发的产品整合到了一本产品目录中。

Since KSS started production and sales of Ball Screw in 1978, we have been working on product development as a pioneer of Miniature Ball Screws. In addition, we developed Unit Products related Ball Screw. At this time, we have combined developed products until now into one catalogue for more usability.

●KSS滚珠丝杠的分类

为了让您进一步深入了解KSS滚珠丝杠，以下对本公司滚珠丝杠的种类和分类进行了说明。

●Classification of KSS Ball Screws

For better understanding of KSS Ball Screws, kinds and classification of KSS Ball Screws are as follows.

Standard products：标准库存品

Classification by series
按系列分类

- Precision Ball Screws SG series：精密滚珠丝杠 SG系列
- Bi-directional Ball Screws SD series：双向滚珠丝杠 SD系列
- Rolled Ball Screws SR/SSR series：冷轧滚珠丝杠 SR/SSR系列
- Integrated Rolled Ball Screws SRT/SSRT series：台阶型冷轧滚珠丝杠 SRT/SSRT系列
- Precision Rolled Ball Screws PSR/PSRT series：精密冷轧滚珠丝杠 PSR/PSRT系列

Customized Products：接单生产

Classification by accuracy/production method
按精度/生产方法分类

- Precision Ball Screws：精密滚珠丝杠
- Rolled Ball Screws：冷轧滚珠丝杠

Classification by Nut styles
按螺母类型分类

- Single Nut with Flange：带法兰单螺母
- Sleeve type Single Nut：套筒型单螺母
- Single Nut with M-thread：带公制螺纹单螺母
- Square type Single Nut：方型单螺母
- Bi-directional Nut with Flange：双向单螺母

图A-11：滚珠丝杠的分类
Fig. A-11：Classification of KSS Ball Screws

●标准库存品

为满足客户要求，实现短期交货，本公司备有特定型号的标准库存品。
轴端形状实现了标准化，可有效缩减客户的设计时间。
此外，凭借本公司独有的追加加工技术，可对轴端进行高精度加工。
如图A-11所示，标准库存品种类繁多，精密滚珠丝杠、冷轧滚珠丝杠均可从中选择。

●Standard Products

To meet customer's request of quick delivery, KSS has specified model type in stock.
The end-journal configuration is standardized and it is possible to reduce numbers of design process by customer. Moreover, since we have end machining knowhow, high accurate end machining is possible.
Standard products can be chosen from many kinds of Precision Ball Screws and Rolled Ball Screws shown in Fig. A-11.

●接单生产

对于标准库存品以外的型号，本公司承接各种接单生产。
为减少客户在设计方面花费的时间，螺母尺寸按照图A-11所示的螺母类型，实现了不同型号尺寸的标准化。
对于非标准化的型号、形状、尺寸，如果您有需求，可随时咨询洽谈。
此外，本公司还提供不锈钢、特殊材料的产品及表面处理等，欢迎垂询。

●Customized products

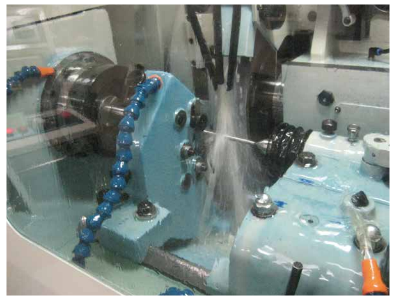
Products other than standardized model are customized products. To reduce numbers of design process by customer, dimensions of each model are standardized as Nut type shown in Fig. A-11
Please consult KSS if you need products which are not standardized model, configuration, dimension are requested.
Please also inquire KSS when stainless steel products, special material, surface treatment are needed.

●精密滚珠丝杠和冷轧滚珠丝杠

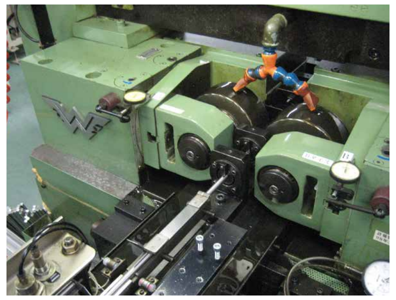
本公司的滚珠丝杠生产工序因客户的精度要求而异。大体可分为采用研磨加工制成的高精度精密滚珠丝杠和采用滚丝模形成螺纹槽的冷轧滚珠丝杠。
C5以上精度等级的滚珠丝杠一般采用研磨加工（精密滚珠丝杠），C7、C10级的滚珠丝杠则采用冷轧加工。
对于无滚丝模（冷轧加工模具）的型号，也可采用研磨加工生产C7、C10级产品。

●Precision Ball Screws and Rolled Ball Screws

Production procedures vary by accuracy requested from customers. Precision Ball Screws with high accuracy by Grinding process and Rolled Ball Screws with formed groove by Rolling dies (Tooling for Rolling process) can be classified.
Generally, C5 or higher grade is manufactured by Grinding process and accuracy of C7, C10 are manufactured by Rolling process. It is also possible to produce C7, C10 by Grinding when Rolling dies do not exist.



通过螺纹磨床进行的高精度螺纹槽加工
High accurate shaft groove process by Grinding machine



通过滚丝模进行的冷轧加工
Rolling process by Rolling dies

●质量和环保活动　Approach of quality and environment

ISO 9001
JQA-QM4131
（小千谷工厂）

KSS滚珠丝杠包括设计、制造在内，通过了ISO-9001认证，并具备完善的出厂检查、可追溯性等质量管理体制，可放心使用。
KSS Ball Screws including design, production are qualified by ISO-9001. Since quality management system such as shipping inspection, traceability is organized, KSS products can be used with safety.

ISO 14001
JQA-EM4583
（小千谷工厂）

在环境方面，本公司不仅通过了ISO-14001认证，还积极使用符合RoHS指令的零件，致力于环保型设计和削减CO_2排量。
For environmental side, KSS is qualified by ISO-14001. We make an effort to reduce CO_2 and take care of environmentally friendly design by using parts, which conform to RoHS regulation.

●出口管理

本公司的产品、技术出口均以遵守外汇法、外贸法及其他相关法令为基本方针。因此，本公司谢绝以军事用途（大规模杀伤武器、武器与兵器相关领域）为目的的产品出口。
关于本公司产品是否属于出口管理法中管制物品清单的管制对象，请登录KSS网站查看。
http://www.kssballscrew.com/cn/index.htm
此外，希望获取KSS受管与否判断资料时，请在KSS网站上填写受管与否判断委托书后与本公司联系。

●Export administration

Our policy is to comply with Foreign Exchange, Foreign Trade Act, and other related lows when KSS products and technologies are exported. Therefore if the purpose of using our products is military use (weapon of mass destruction, things related with arms), we decline to export our products. Please refer to KSS homepage regarding list regulation by Export administration.
http://www.kssballscrew.com

标准库存品
Standard Products

KSS滚珠丝杠标准库存品分为以下几类。如选择这些标准库存品，即可在短期内供货。

KSS has several varieties of standard products as follows. It is possible to make quick delivery to customers by using standard products.

●精密滚珠丝杠　Precision Ball Screws

SG系列（精密滚珠丝杠）
SG series（Precision Ball Screws）

- 通过将固定侧轴端形状标准化、支撑侧轴端自由化，设定标准行程。
- 支撑侧轴端未进行加工，因此可根据所需行程进行追加加工。
- 分为C3（轴向间隙为0）、C5（轴向间隙为5μm以下）两种。

- Configuration of fixed side end-journal is standardized, supported side end-journal is free type and standard travel is set up.
- Since supported side end-journal is unfinished, it is possible to do additional end machining with your requested thread length.
- There are C3（Axial play 0）, C5（Axial play 5μm or less） available.

SD系列（精密双向滚珠丝杠）
SD series（Bi-directional Ball Screws）

- 可单轴左右开闭的经济型滚珠丝杠。
- 库存品的固定侧、支撑侧轴端均未进行加工，提高了设计自由度。
- 分为C3（轴向间隙为0）、C5（轴向间隙为5μm以下）两种。

- These are economical Ball Screws because a shaft has bi-directional thread.
- Since fixed and supported side end-journal are unfinished, design flexibility is enlarged.
- There are C3（Axial play 0）, C5（Axial play 5μm or less） available.

●冷轧滚珠丝杠　Rolled Ball Screws

SR系列（冷轧滚珠丝杠）/SSR系列（不锈钢冷轧滚珠丝杠）
SR series（Rolled Ball Screws）/SSR series（Stainless Rolled Ball Screws）

- 通过槽冷轧加工制成的经济型库存品。
- 库存品的固定侧、支撑侧轴端均未进行加工，提高了设计自由度。
- 分为Ct7（轴向间隙20μm以下）、Ct10（轴向间隙50μm以下）两种。
- 不锈钢材质的冷轧滚珠丝杠（SSR系列）也备有的标准库存品。

- Standard and reasonable price products by Rolling formed process.
- Since fixed and supported side end-journal are unfinished, design flexibility is enlarged.
- There are Ct7（Axial play 20μm or less）, Ct7（Axial play 50μm or less） available.
- There are also Rolled Ball Screws made of stainless steel（SSR series） in stock.

SRT

SSRT

SRT系列（台阶型冷轧滚珠丝杠）/SSRT系列（台阶型不锈钢冷轧滚珠丝杠）
SRT series（Integrated Rolled Ball Screws）
SSRT series（Integrated stainless Rolled Ball Screws）

- 冷轧滚珠丝杠库存品的固定侧轴端较粗，未进行加工。
- 与传统冷轧滚珠丝杠相比，进一步提高了设计自由度。
- 轴端形状采用可与SG系列兼容的设计。
- 备有台阶型不锈钢冷轧滚珠丝杠（SSRT系列）的标准库存品。

- Fixed side end-journal is set up bigger than Shaft nominal diameter and unfinished.
- More design flexibility compared to current Rolled Ball screws.
- It is possible to design end-journal configuration compatible with SG series.
- There are also Integrated Rolled Ball Screws made of stainless steel（SSRT series） in stock.

●精密冷轧滚珠丝杠　Precision Rolled Ball Screws

PSR系列（精密冷轧滚珠丝杠）/PSRT系列（精密冷轧滚珠丝杠满）
PSR series（Precision Rolled Ball Screws）
PSRT series（Integrated Precision Rolled Ball Screws）

- 以前的冷轧加工只能加工到Ct7、Ct10的普通级，现在已经实现了精密级（JIS C5）加工。
- 轴端加工产品PSR系列和对轴端进行了加粗的台阶型（PSRT）系列均备有库存，进一步提高了客户设计的自由度。
- 轴向间隙设定在5μm以下，但可根据客户需求消除轴向间隙（预压）。
- 台阶型的固定侧轴端已实现标准化，可直接安装KSS支架组件。

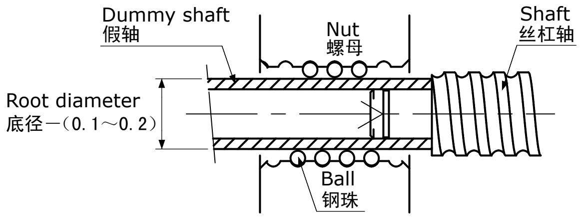
- KSS newly developed the high grade accuracy（JIS C5） Rolled Ball Screws, which surpasses the conventional type of Ct7 or Ct10 grade.
- PSR series with unfinished end-journal and PSRT series with integrated end-journal are in stock, so wide variety of design choices are available.
- The axial play is set at 5um or less, but zero backlash is possible by your request.
- For integrated type, fixed side end-journal is standardized and finished, KSS Compact Support Unit can be installed.

●轴端追加加工

凭借本公司独有的追加加工技术，可进行无精度劣化的轴端加工。如需轴端追加加工，请与本公司联系。追加加工时的注意事项如下所示。

1）建议由本公司进行轴端追加加工。如果由其他公司进行轴端追加加工，本公司将不能保证追加加工后的精度，敬请谅解。
2）对于产品目录中所示标准形状以外的追加加工，请附上追加加工指示图（示意图）进行指示。
3）由于不进行螺母的追加加工，因此请对照尺寸表设计法兰形状等。
4）润滑
使用滚珠丝杠时，请务必涂抹润滑剂。
KSS标准库存品以长期存放为前提，因此在涂抹防锈油后进行了真空包装。
如果在委托追加加工时指定了润滑剂，交货时将在滚珠丝杠上涂抹该指定润滑剂。
此外，防锈油并非润滑剂，使用前请用精制煤油等清洗滚珠丝杠，去除防锈油后涂抹润滑剂（油脂或润滑油）。
请每隔2～3个月检查一次油脂。使用过程中油脂变脏时，请擦去旧的油脂后涂抹新油脂。
5）螺母的自重下落
以间隙规格使用滚珠丝杠时，螺母会因自重而下落，敬请注意。
6）由客户进行的追加加工
对于客户自行进行的追加加工，本公司将不予保证精度。不得已而由客户自行进行追加加工时，除上述注意事项外，还应注意以下各点。
・防止粉尘进入螺母内部
追加加工时，请注意防止粉尘进入螺母内部。
不拆下螺母而直接对丝杠轴进行追加加工时，请用塑料袋等包住螺母、或用胶带密封螺母两端，切实保护螺母。
・拆下螺母时
拆下螺母时，请按照图A-21所示使用假轴。假轴根据客户要求提供。
通过假轴拆卸或重新组装螺母时，请在确认钢珠与螺纹槽啮合的同时，
沉着缓慢地进行操作。
・追加加工后的清洗
追加加工后，请用清洁的精制煤油将附着在滚珠丝杠上的脏物清洗干净。
・涂抹润滑剂
使用追加加工后的产品之前，请先涂抹润滑剂。
・存放
追加加工后需长期存放时，请切实进行防锈处理。

图A-21：拆卸假轴和螺母

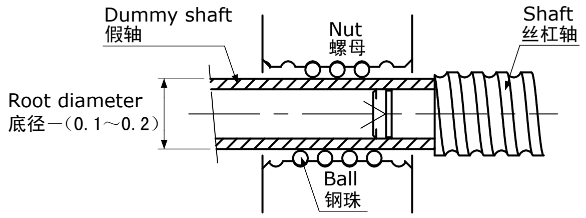


●Additional end-journal machining

Technology of KSS end-journal machining enables to keep high accuracy of Ball Screws after re-works. Please ask for end-journal machining to us. Precautions of end-journal machining are as follows.

1) We recommend additional end-journal machining is done by KSS. We do not guarantee accuracy after re-works done by other than KSS.
2) When additional end-journal machining other than standard configuration in catalogue is requested, please send us drawing with end-journal profile on it.
3) Additional machining is not applied to the Nut. Please design flange configuration according to our dimension table.
4) Lubrication
In Ball Screws use, lubricant should be applied on them.
KSS Ball Screws are in vacuum wrapping with anti-rust oil due to purpose for long term stock.
If you need specified lubricant, we will supply Ball Screws with lubricant you requested when requesting additional end-journal machining.
Since anti-rust oil is not lubricant, Ball Screws should be washed off anti-rust oil with clean Kerosene and apply lubricant（Grease or lubricating oil）.
Please check the lubricant condition every 2 or 3months. If grease is contaminated, remove old grease, and replace with the new one.
5) Ball Nut falling by weight
If Ball Screw is not preloaded, Ball Nut will fall down due to its own weight. Care must be taken.
6) Additional end-journal machining by customer
Additional end-journal machining done by customer is out of our guarantee, but in case of unavoidably conducting, please take caution regarding above precautions as well as following points.
・Invasion of dust inside Nut
Care must be taken regarding invasion of dust inside Nut when additional end-journal machining.
If additional end-journal machining is being done to the Shaft with Ball Nut, wrap the Nut with vinyl, sealing up both ends and surely protect it from dust.
・Nut removal
In case of Nut removal, please use dummy shaft shown in Fig. A-21. We can supply dummy shaft with products if you request.
Make sure Balls and Screw Shaft groove are meshing correctly and remove the Nut slowly as well as re-assembling.
・Cleaning after additional end-journal machining
After additional end-journal machining, Ball Screws should be washed dust off with clean Kerosene.
・Applying lubrication
After additional end-journal machining, apply lubricant before using Ball Screw.
・Storage
After additional end-journal machining, surely conduct anti-rust treatment when Ball Screws are in long term stock.

Fig. A-21：Dummy shaft and Nut removal



Ball Scresw 滚珠丝杠
Standard products in stock Outline 标准库存品 序言

SG系列　精密滚珠丝杠标准库存品
SG series Standardized Precision Ball Screws

齐备有C3级、C5级精密滚珠丝杠，固定侧轴端事先经过标准化加工。
只要对支撑侧轴端进行加工，便可按所需形状在短期内供货。

Precision Ball Screws which are accuracy C3, C5 and have machined shaft end at fixed side in advance are available. Short delivery is available by machining supported end in accordance with customer's request.

●丝杠轴公称外径与导程的组合　Combination of Shaft nominal dia. & Lead

Unit（单位）：mm

Shaft dia. 公称外径 ＼ Lead 导程	0.5	1	2	2.5	4	5	6	8	10	12	15	20
3	A207	A208										
4		A209	A210									
5					A211							
6		A212	A213	A214			A215		A216			
8		A217	A218	A219	A220	A221		A222		A223		
10		A224	A225		A226	A227			A228		A229	
12			A230						A231			
14			A232		A233							
15						A234			A235			A236

注1）表中的数字表示产品刊载页码。
Note 1）The numbers in a table：showing a page in this catalogue.

●精度等级和轴向间隙

SG系列（精密滚珠丝杠标准库存品）的精度等级有JIS C3和JIS C5两种。轴向间隙根据精度等级不同备有0mm（预压：C3）和0.005mm以下（C5）两种。

●Accuracy Grade & Axial play

Accuracy grade of SG series（Standardized Precision Ball Screws）are based on JIS C3 and JIS C5. According to accuracy grade, Axial play 0（Preload：C3）and 0.005mm or less（C5）are in stock.

●材质和表面硬度

SG系列（精密滚珠丝杠标准库存品）的丝杠轴和螺母均采用SCM415（渗碳淬火），滚珠丝杠部分的表面硬度为HRC58～62。

●Material & Surface hardness

SG series（Standardized Precision Ball Screws）consists of Shaft and Nut materials SCM415（Carburizing and quenching）and Surface hardness is HRC58～62.

●润 滑

为防止生锈，未对轴端进行加工的SG系列（精密滚珠丝杠标准库存品）产品均涂抹有防锈油。由于防锈油不具备润滑性，因此在使用前请另行涂抹润滑剂。
如无特殊指定，建议使用KSS原装润滑油脂（MSG No.2）。

●Lubrication

SG series（Standardized Precision Ball Screws）without end-journal machining will be applied with anti-rust oil for rust prevention.
Anti-rust oil does not have lubricating function so that please apply Grease or lubrication oil when using the Ball Screws.
If there is no specific instruction, KSS would recommend our original Grease（MSG No.2）as standard lubricant.
Please feel free to contact us.

●接单生产

上述标准品以外的产品均为接单生产。详情请垂询本公司。

●Customized products

It will be a customized product other than the above. Please ask KSS.

●公称型号的构成

希望对SG系列进行追加加工时，请用以下公称型号进行指示。

●Model number notation

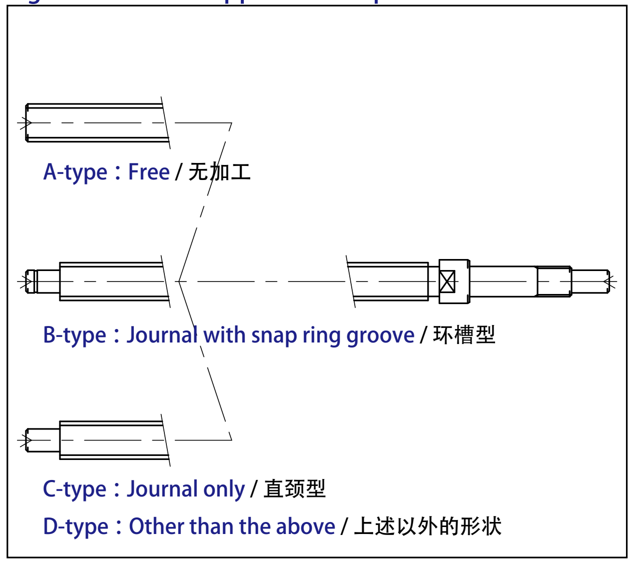
Please use model number below when additional end-journal machining is requested.

SG	04	01	—	046	R	085	C3	B	1	X
1	2	3		4	5	6	7	8	9	⑩

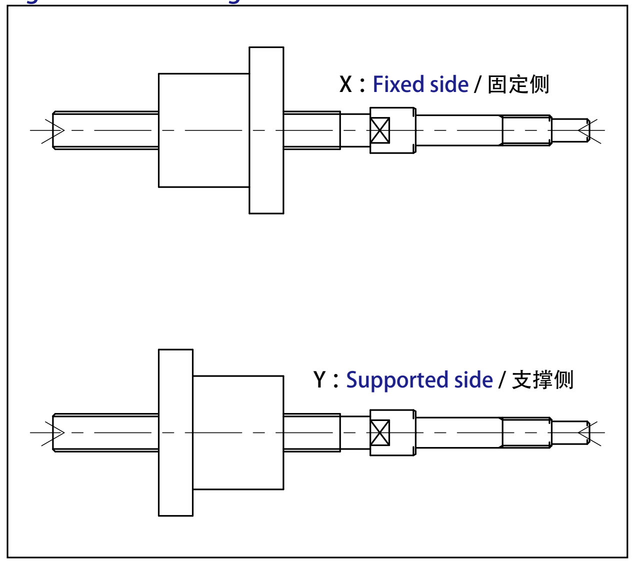
1系列符号
2丝杠轴公称外径（mm）
3导程（mm）
4螺纹部长度（mm）
（追加加工后以1mm为单位指定）
5螺纹旋向（R=右旋）
6丝杠轴总长（mm）
（以1mm为单位指定）
7精度等级（C3或C5）
8支撑侧轴端加工型
（参照图A-22：A型、B型、C型、D型（其他））
9涂抹的油脂
0：本公司推荐的润滑脂（MSG No.2）
1：防锈油（Non Ruster PZ2）
2：Multemp PS2
3：其他
⑩螺母法兰朝向（参照图A-23）

1Ball Screws Series No.
2Screw Shaft nominal diameter（mm）
3Lead（mm）
4Screw thread length（mm）
（Specify in 1mm units after end-journal machining）
5Thread direction（R=Right-hand）
6Screw Shaft total length（mm）
（Specify in 1mm units）
7Accuracy grade（C3 or C5）
8Shaft supported end profile
（Refer to Fig. A-22 below：A-type,B-type,C-type,D-type（other））
9Anti-rust oil or Lubricant
0：KSS grease（MSG No.2）
1：Anti-rust oil（Non Ruster PZ2）
2：Multemp PS2 grease
3：Other
⑩Nut Flange direction（Refer to Fig. A-23 below）

图A-22：支撑侧轴端加工型
Fig. A-22：Shaft supported end profile



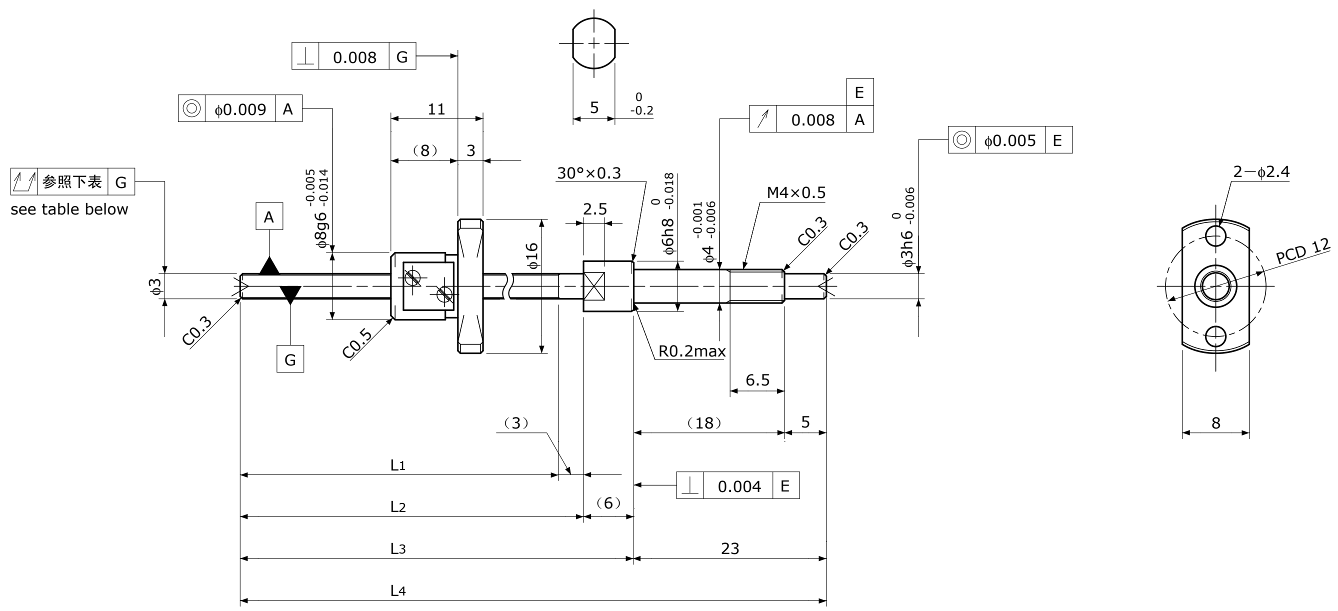
图A-23：螺母法兰朝向
Fig. A-23：Nut Flange direction



●注释
1）各种规格的轴端形状在各页中有详细介绍。
2）不受理螺母的追加工。
3）本规格若有变更，恕不另行通告。
4）希望进行A、B、C以外的轴端加工时，请垂询本公司。

●Note
1）The detail of end-journal dimension for each size is shown from next page.
2）KSS does not make additional Nut machining.
3）The specification is subject to change without notice.
4）If the other configuration except（A,B,C）is requested, please contact KSS.

SG0300.5 | Shaft dia.(轴径)φ3 Lead(导程)0.5mm | C3

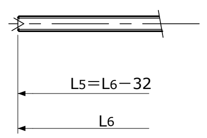


Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.4
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ2.6
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Supported-side end-journal profile 支撑侧轴端加工形状

A-type



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	—
Fixed-side 固定侧 :	MSU-4C/4G, EK4

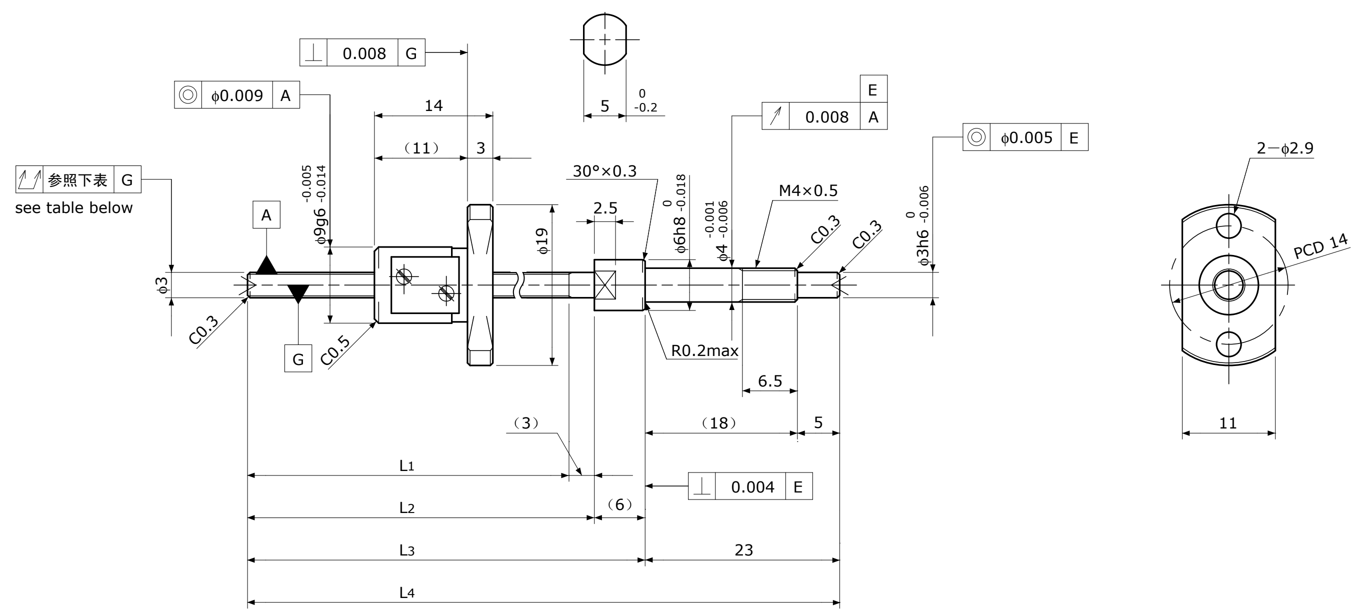
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0300.5-038R070C3	25	C3	38	41	47	70	±0.008	0.008	0.025	～0.005	—	150	220

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

SG0301 | Shaft dia.(轴径)φ3 Lead(导程)1mm | C3

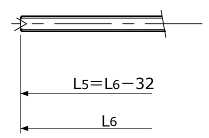


Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.6
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ2.4
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Supported-side end-journal profile 支撑侧轴端加工形状

A-type



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	—
Fixed-side 固定侧 :	MSU-4C/4G, EK4

D-type : Other than the above. 上述以外的形状

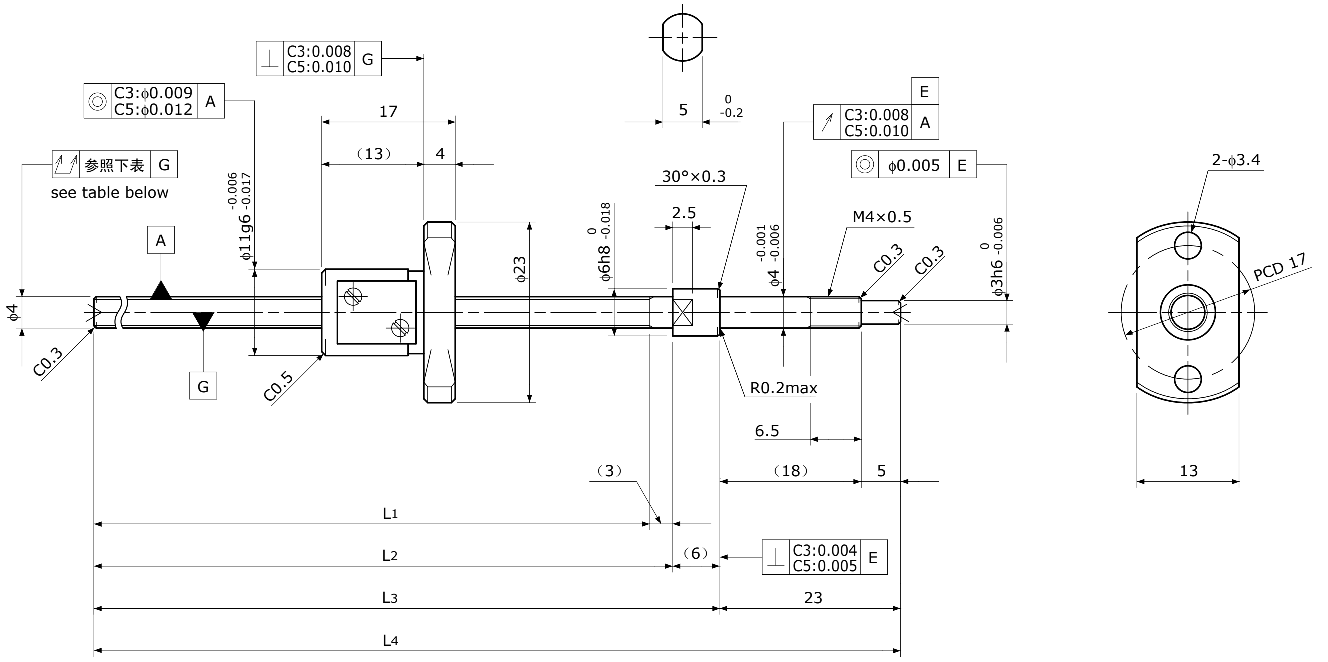
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0301-038R070C3	20	C3	38	41	47	70	±0.008	0.008	0.025	～0.005	—	330	440

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

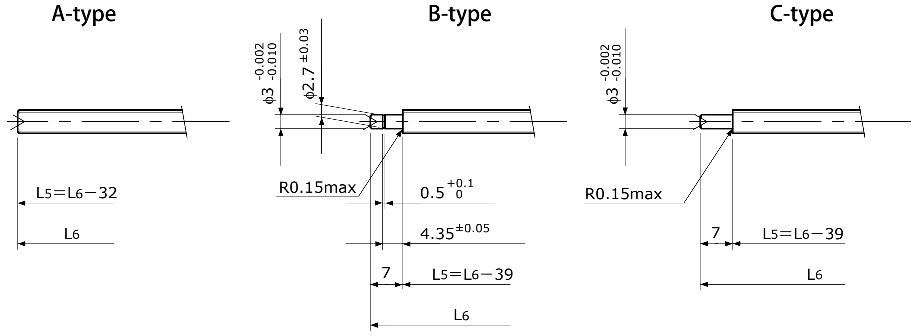
SG0401 | Shaft dia.(轴径)φ4　Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ3.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-4CS/4GS, SUP03-S
Fixed-side 固定侧	:	MSU-4C/4G, EK4

D-type : Other than the above.　上述以外的形状

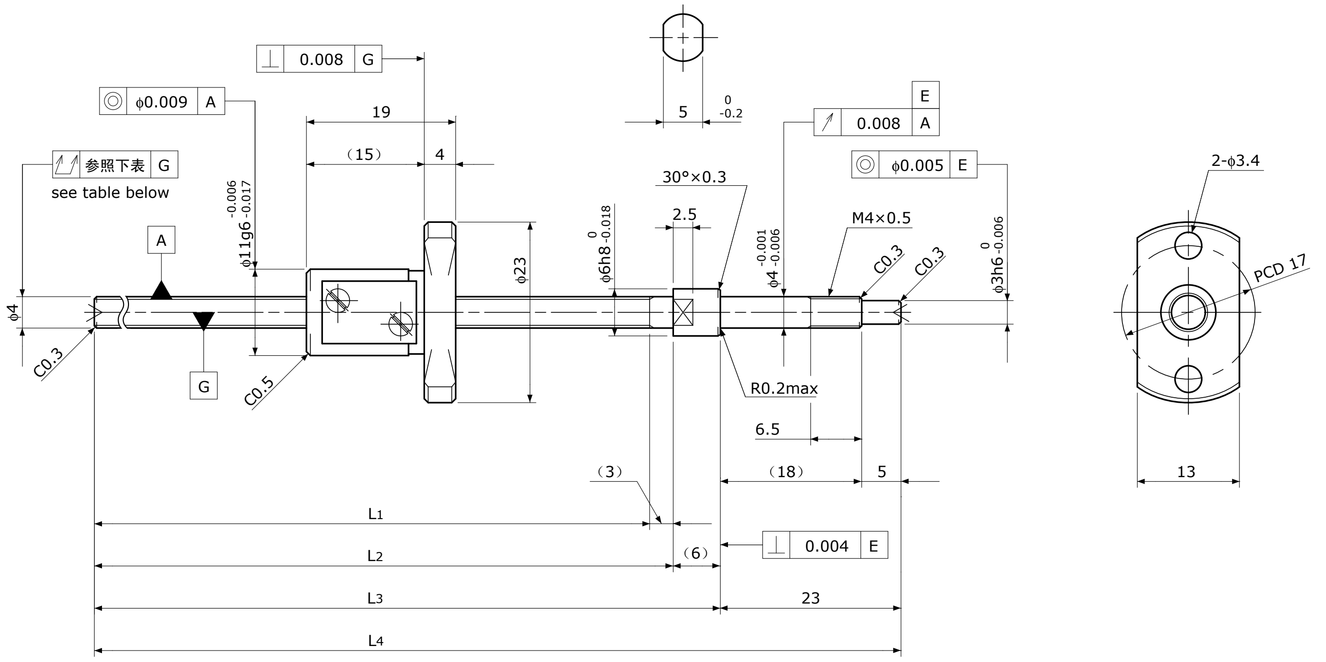
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0401-063R095C3	45	C3	63	66	72	95	±0.008	0.008	0.025	0 Spacer Ball 间隔钢珠 (1:1)	～0.004	350	400
SG0401-083R115C3	65	C3	83	86	92	115	±0.008	0.008	0.025				
SG0401-103R135C3	85	C3	103	106	112	135	±0.010	0.008	0.035				
SG0401-063R095C5	45	C5	63	66	72	95	±0.018	0.018	0.035	～0.005	—	560	790
SG0401-083R115C5	65	C5	83	86	92	115	±0.018	0.018	0.035				
SG0401-103R135C5	85	C5	103	106	112	135	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

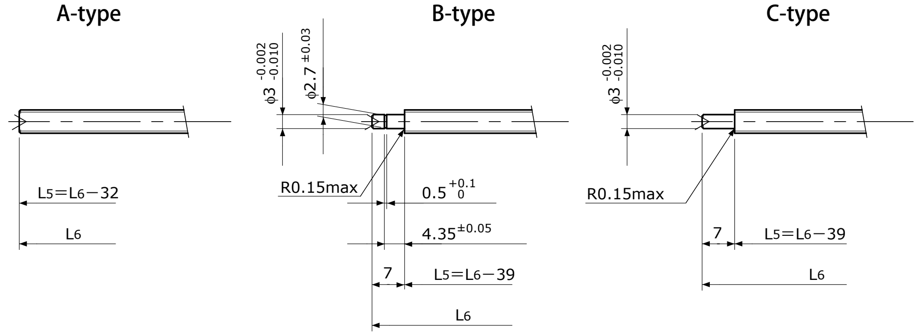
SG0402 | Shaft dia.(轴径)φ4　Lead(导程)2mm | C3



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ3.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-4CS/4GS, SUP03-S
Fixed-side 固定侧	:	MSU-4C/4G, EK4

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

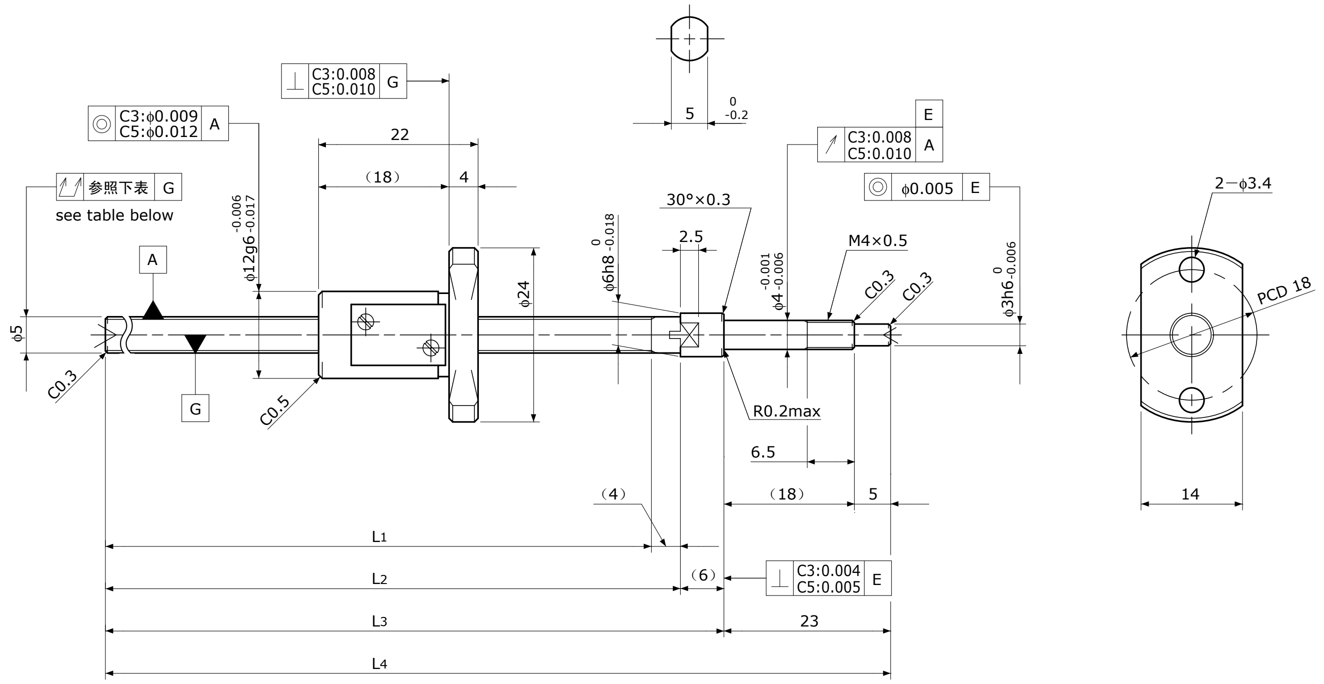
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0402-103R135C3	80	C3	103	106	112	135	±0.010	0.008	0.035	～0.005	—	420	570

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Ball Screw 滚珠丝杠
Standard products in stock SG series 标准库存品 SG系列

Standard products in stock SG series
标准库存品 SG系列

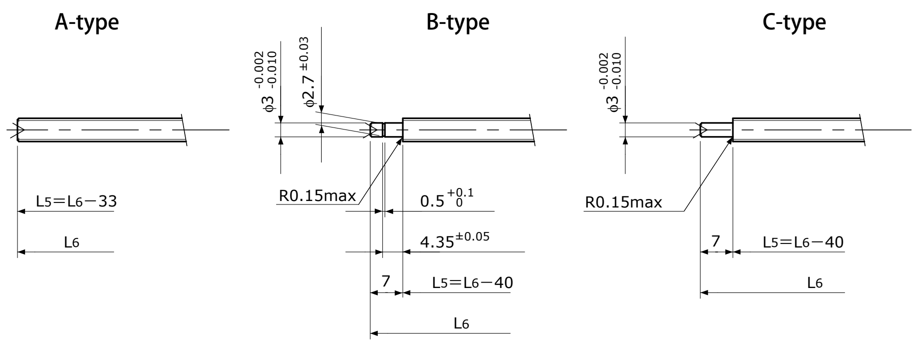
SG0504 | Shaft dia.(轴径)φ5 Lead(导程)4mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ4.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-4CS/4GS, SUP03-S
	Fixed-side 固定侧 :	MSU-4C/4G, EK4

D-type : Other than the above. 上述以外的形状

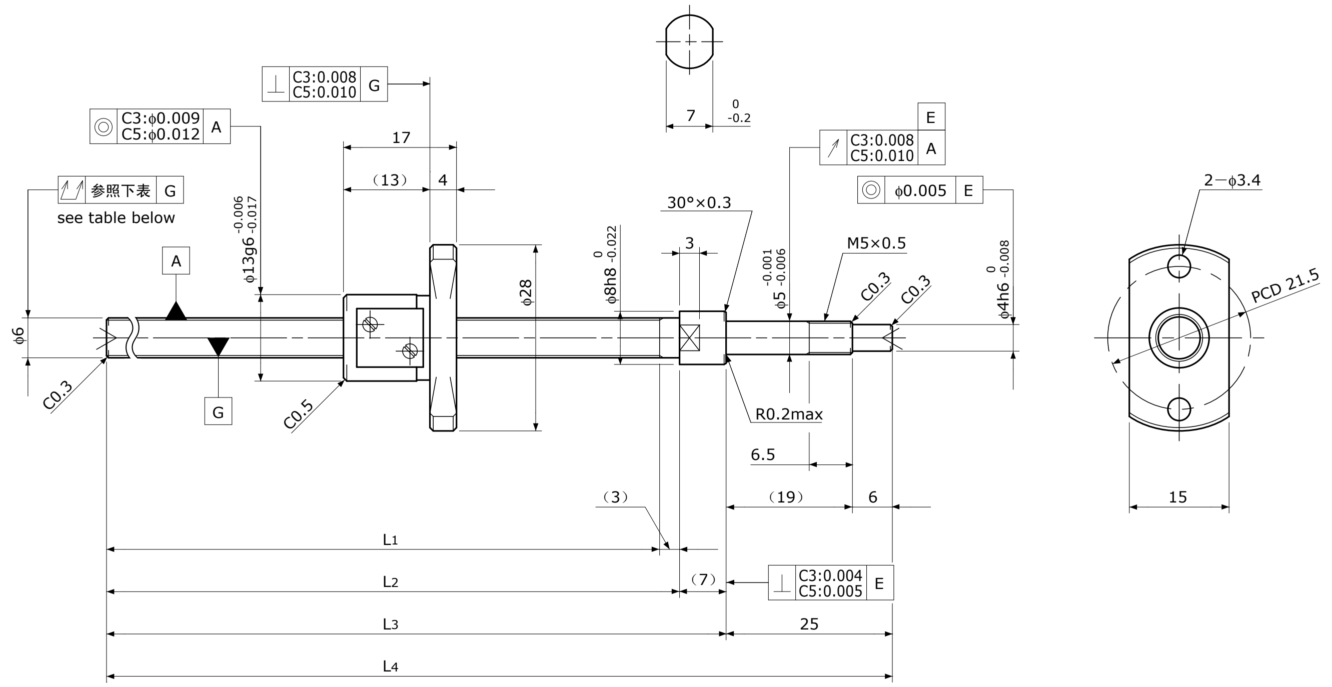
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0504-062R095C3	40	C3	62	66	72	95	±0.008	0.008	0.025	0 Spacer Ball 间隔钢珠 (1:1)	～0.005	300	360
SG0504-112R145C3	90	C3	112	116	122	145	±0.010	0.008	0.035				
SG0504-062R095C5	40	C5	62	66	72	95	±0.018	0.018	0.035	～0.005	—	470	720
SG0504-112R145C5	90	C5	112	116	122	145	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

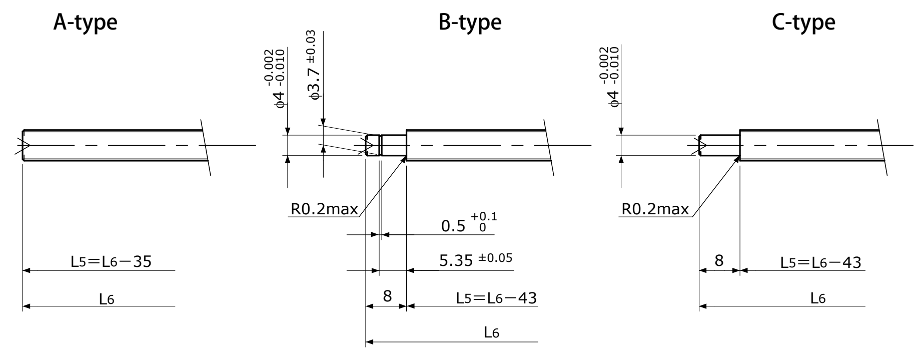
SG0601 | Shaft dia.(轴径)φ6 Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

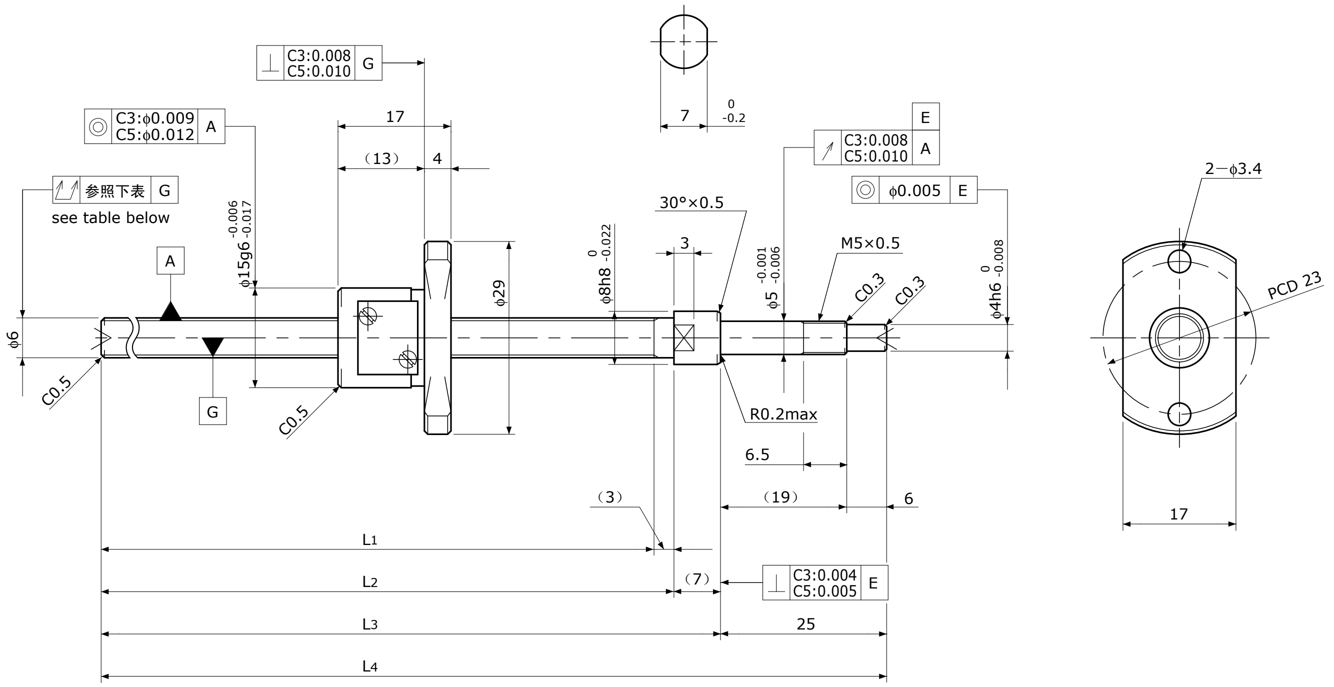
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0601-085R120C3	65	C3	85	88	95	120	±0.008	0.008	0.025	0 Spacer Ball 间隔钢珠 (1:1)	～0.006	430	610
SG0601-110R145C3	90	C3	110	113	120	145	±0.010	0.008	0.035				
SG0601-135R170C3	115	C3	135	138	145	170	±0.010	0.008	0.035				
SG0601-085R120C5	65	C5	85	88	95	120	±0.018	0.018	0.035	～0.005	—	680	1200
SG0601-110R145C5	90	C5	110	113	120	145	±0.020	0.018	0.050				
SG0601-135R170C5	115	C5	135	138	145	170	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

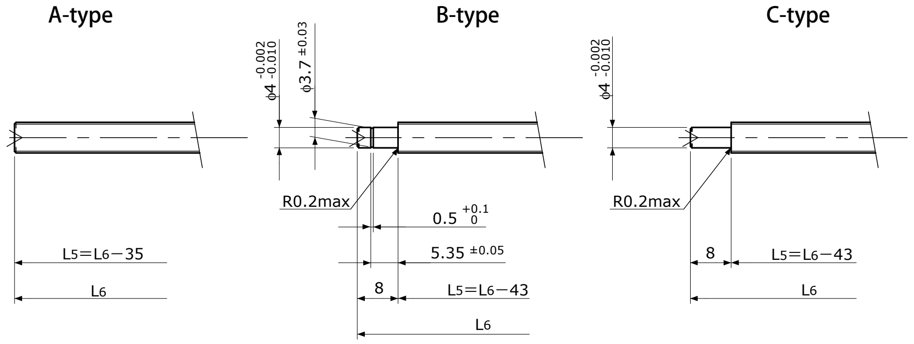
SG0602 | Shaft dia.(轴径)φ6 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.1
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

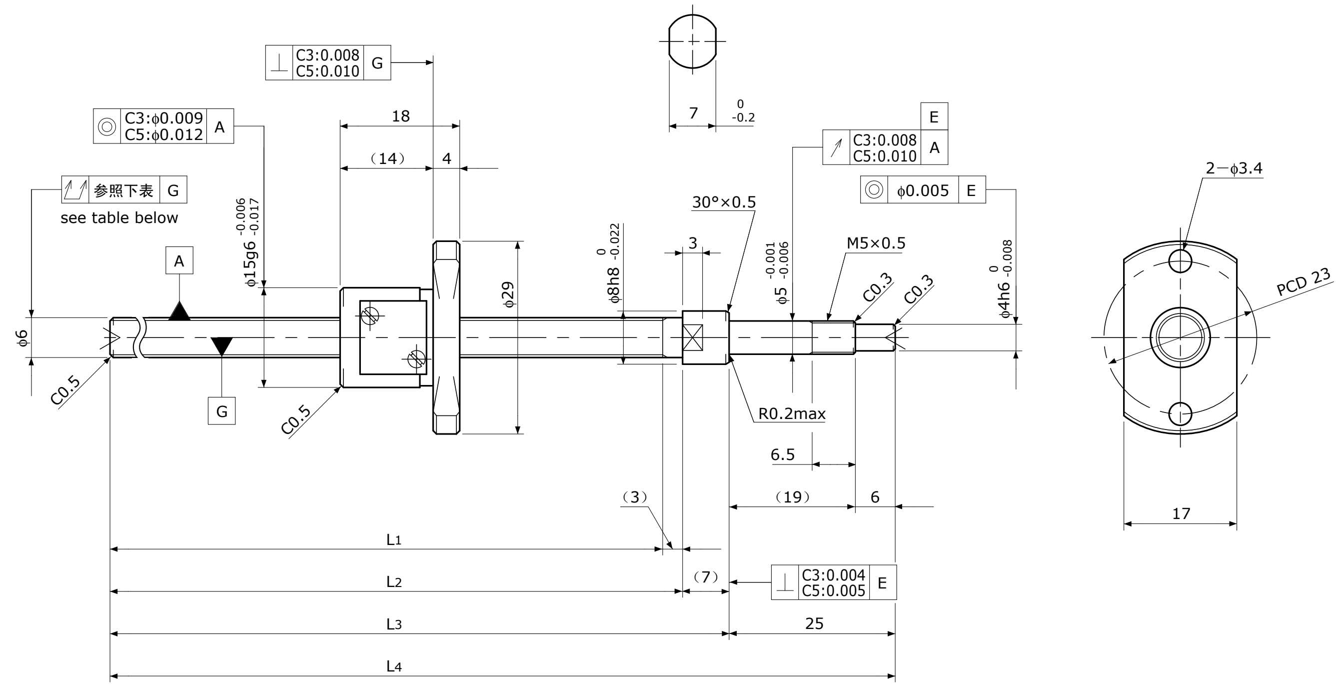
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0602-085R120C3	65	C3	85	88	95	120	±0.008	0.008	0.025	0 Spacer Ball 间隔钢珠 (1:1)	0.003～0.007	470	590
SG0602-135R170C3	115	C3	135	138	145	170	±0.010	0.008	0.035				
SG0602-085R120C5	65	C5	85	88	95	120	±0.018	0.018	0.035	～0.005	—	750	1200
SG0602-135R170C5	115	C5	135	138	145	170	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

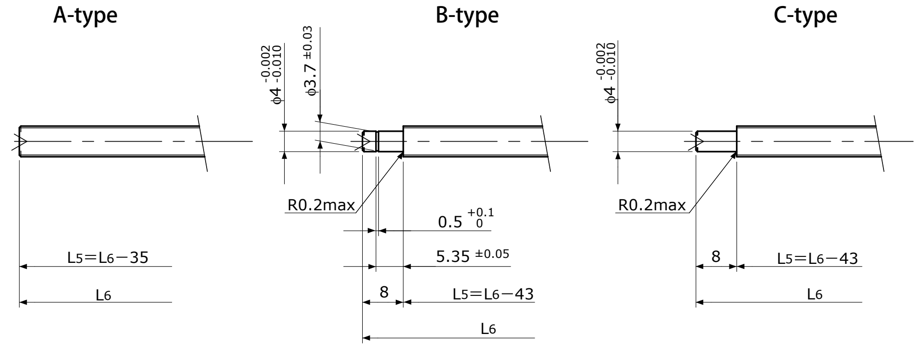
SG0602.5 | Shaft dia.(轴径)φ6 Lead(导程)2.5mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.1
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

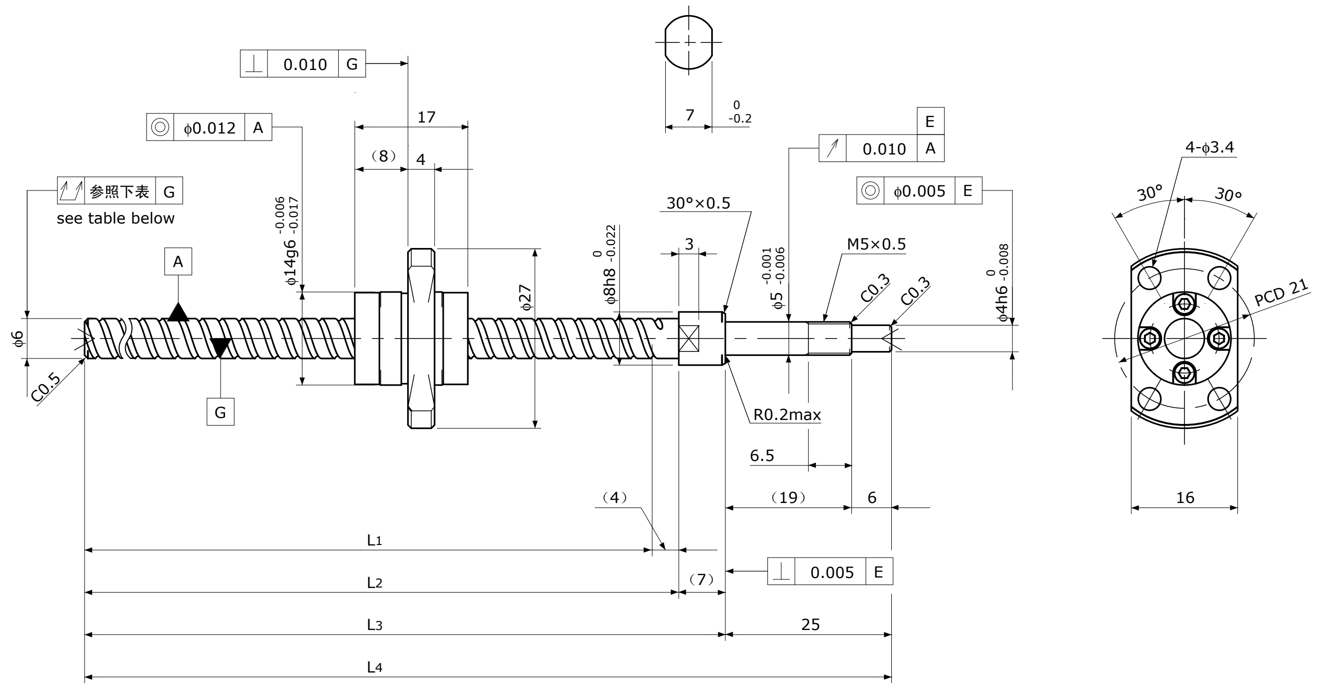
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0602.5-085R120C3	65	C3	85	88	95	120	±0.008	0.008	0.025	0 Spacer Ball 间隔钢珠 (1:1)	0.003～0.007	470	590
SG0602.5-135R170C3	115	C3	135	138	145	170	±0.010	0.008	0.035				
SG0602.5-085R120C5	65	C5	85	88	95	120	±0.018	0.018	0.035	～0.005	—	750	1200
SG0602.5-135R170C5	115	C5	135	138	145	170	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

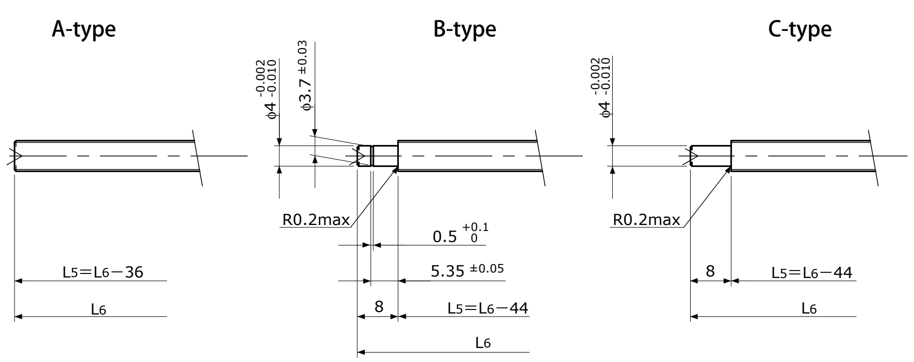
SG0606 | Shaft dia.(轴径)φ6 Lead(导程)6mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.2
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

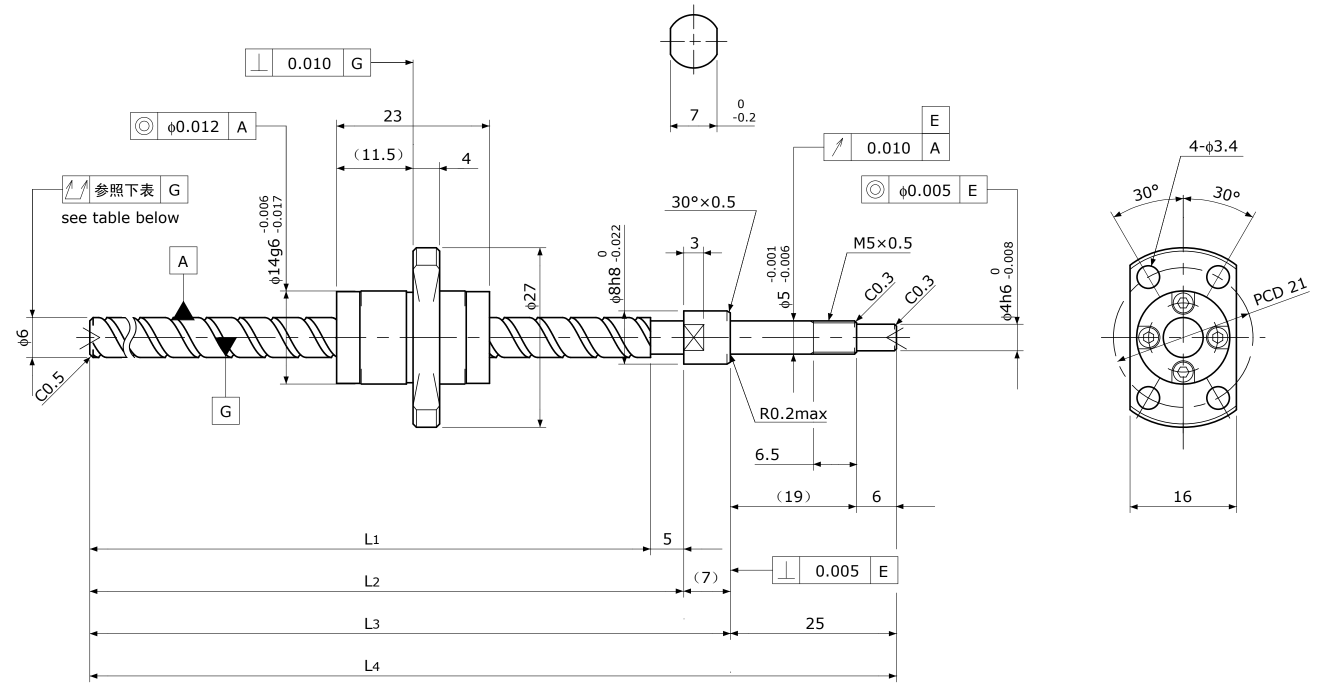
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0606-084R120C5	65	C5	84	88	95	120	±0.018	0.018	0.035	～0.005	—	870	1450
SG0606-134R170C5	115	C5	134	138	145	170	±0.020	0.018	0.050				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

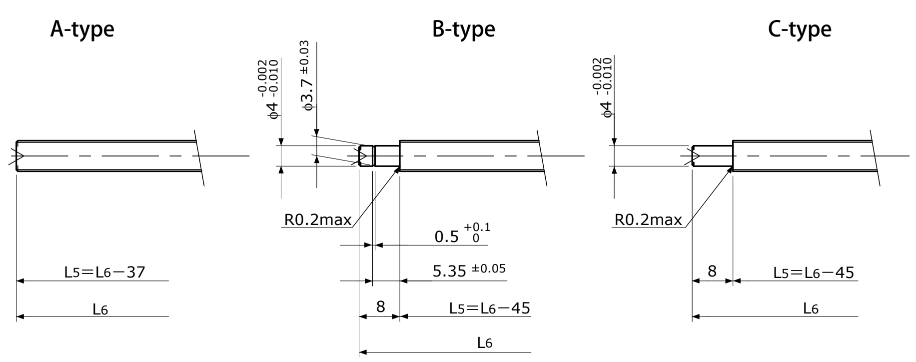
SG0610 | Shaft dia.(轴径)φ6 Lead(导程)10mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.2
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.0
Number of circuit 循环数	1.2×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

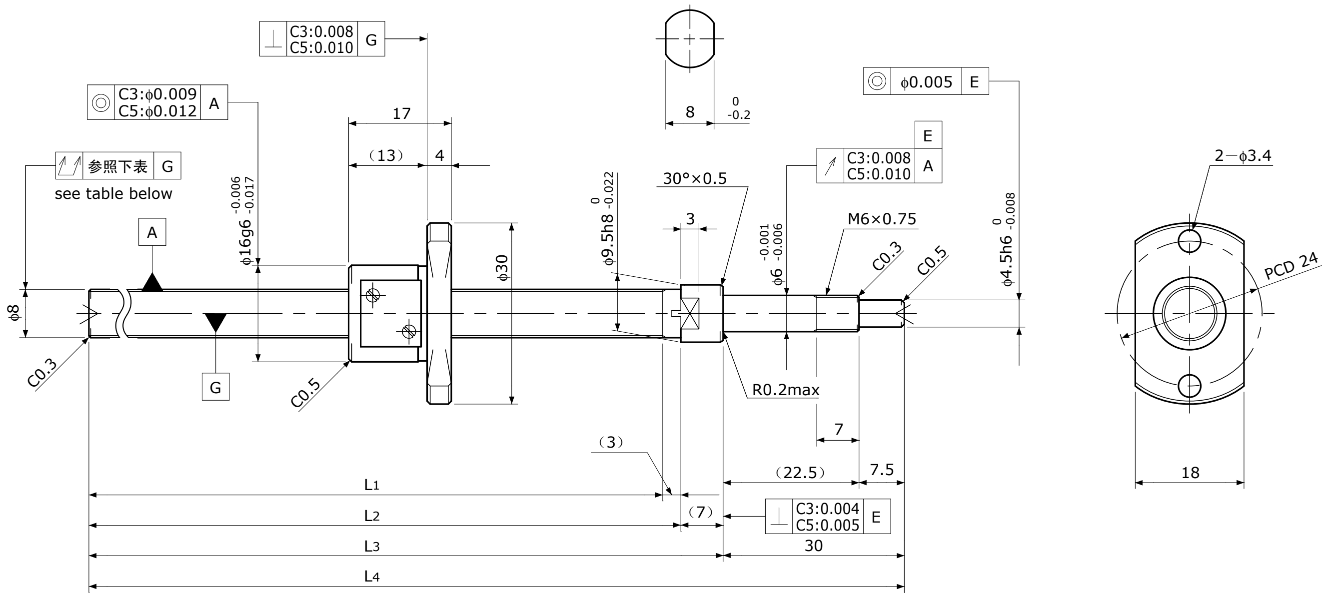
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0610-133R170C5	110	C5	133	138	145	170	±0.020	0.018	0.050	～0.005	—	950	1600

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Ball Scresw 滚珠丝杠
Standard products in stock SG series 标准库存品 SG系列

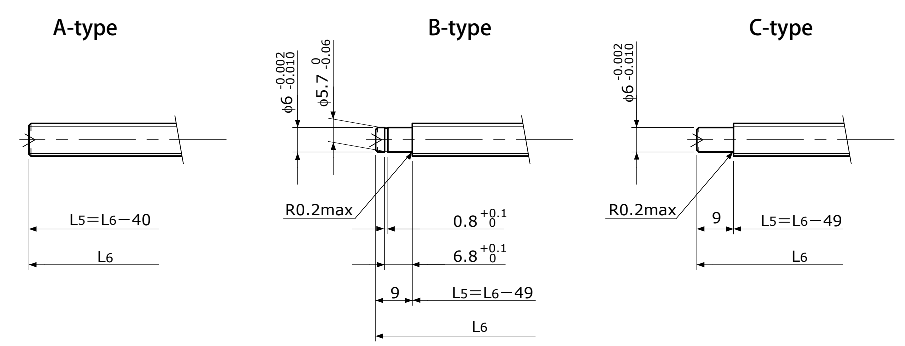
SG0801 | Shaft dia.(轴径)φ8 Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ7.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

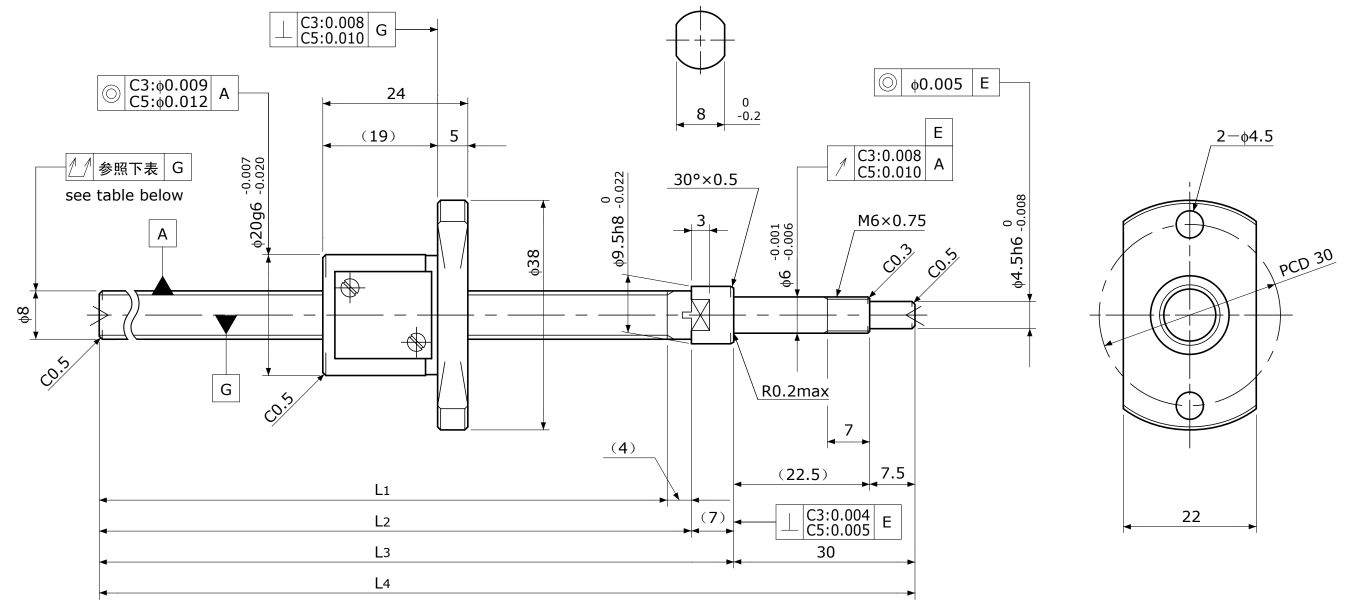
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0801-100R140C3	80	C3	100	103	110	140	±0.008	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.002～0.008	490	820
SG0801-130R170C3	110	C3	130	133	140	170	±0.010	0.008	0.035				
SG0801-160R200C3	140	C3	160	163	170	200	±0.010	0.008	0.035				
SG0801-210R250C3	190	C3	210	213	220	250	±0.012	0.008	0.050				
SG0801-100R140C5	80	C5	100	103	110	140	±0.018	0.018	0.050	～0.005	—	780	1650
SG0801-130R170C5	110	C5	130	133	140	170	±0.020	0.018	0.050				
SG0801-160R200C5	140	C5	160	163	170	200	±0.020	0.018	0.050				
SG0801-210R250C5	190	C5	210	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

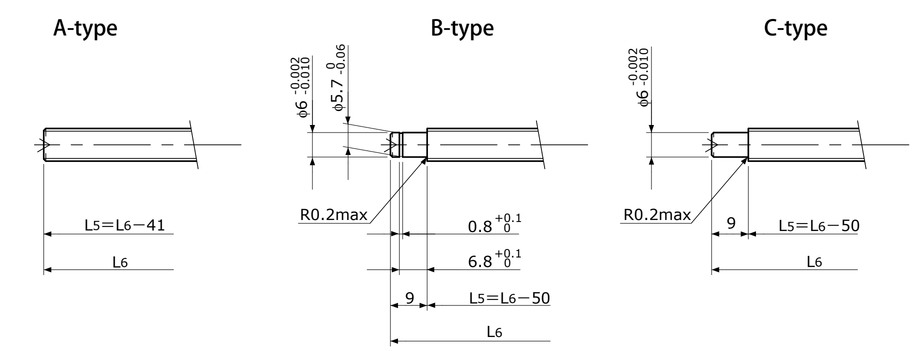
SG0802 | Shaft dia.(轴径)φ8 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

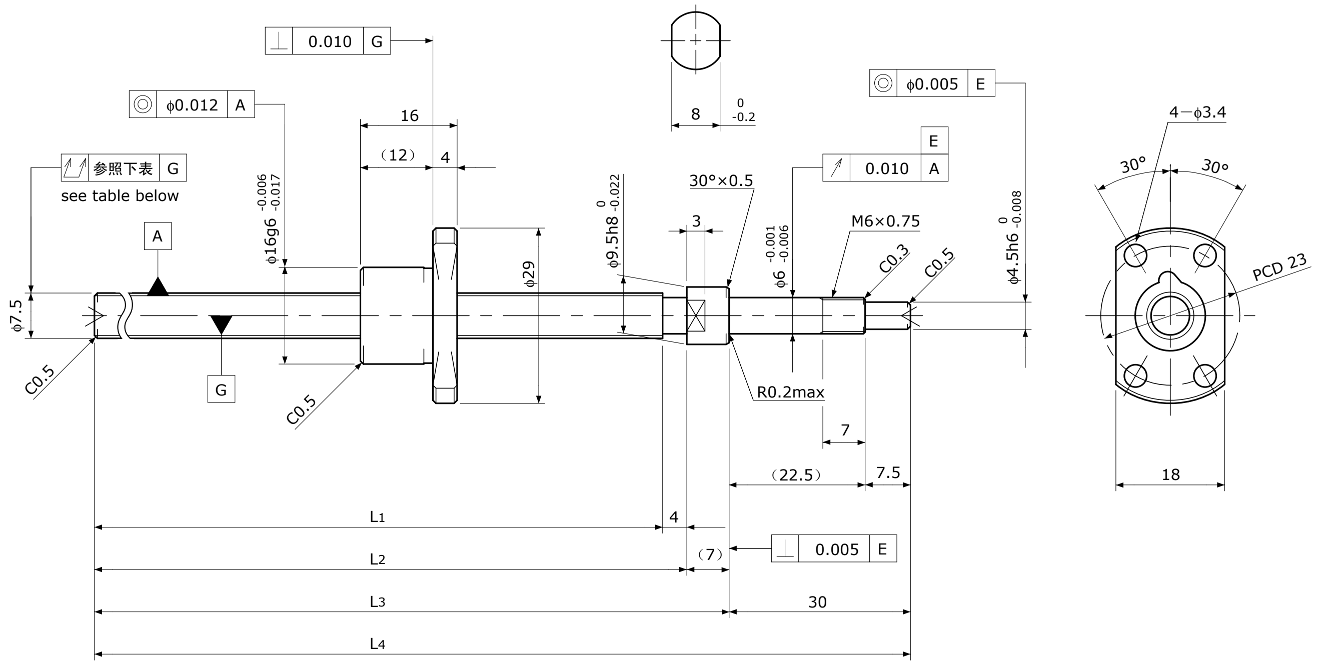
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0802-099R140C3	75	C3	99	103	110	140	±0.008	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.004～0.020	1550	2100
SG0802-129R170C3	105	C3	129	133	140	170	±0.010	0.008	0.035				
SG0802-159R200C3	135	C3	159	163	170	200	±0.010	0.008	0.035				
SG0802-209R250C3	185	C3	209	213	220	250	±0.012	0.008	0.050				
SG0802-099R140C5	75	C5	99	103	110	140	±0.018	0.018	0.050	～0.005	—	2400	4100
SG0802-129R170C5	105	C5	129	133	140	170	±0.020	0.018	0.050				
SG0802-159R200C5	135	C5	159	163	170	200	±0.020	0.018	0.050				
SG0802-209R250C5	185	C5	209	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

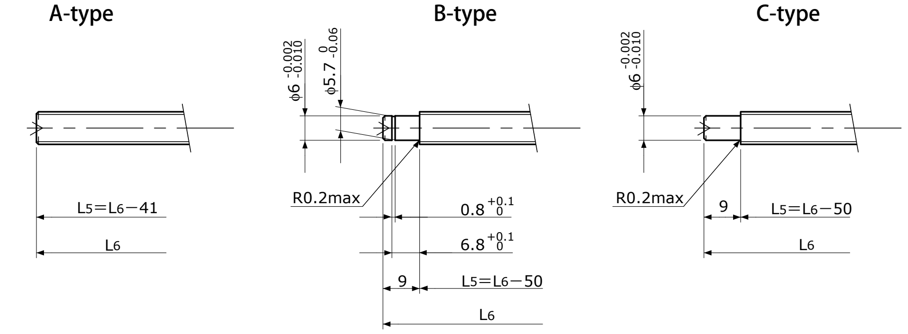
SG0802.5 | Shaft dia.(轴径)φ8 Lead(导程)2.5mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢球直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

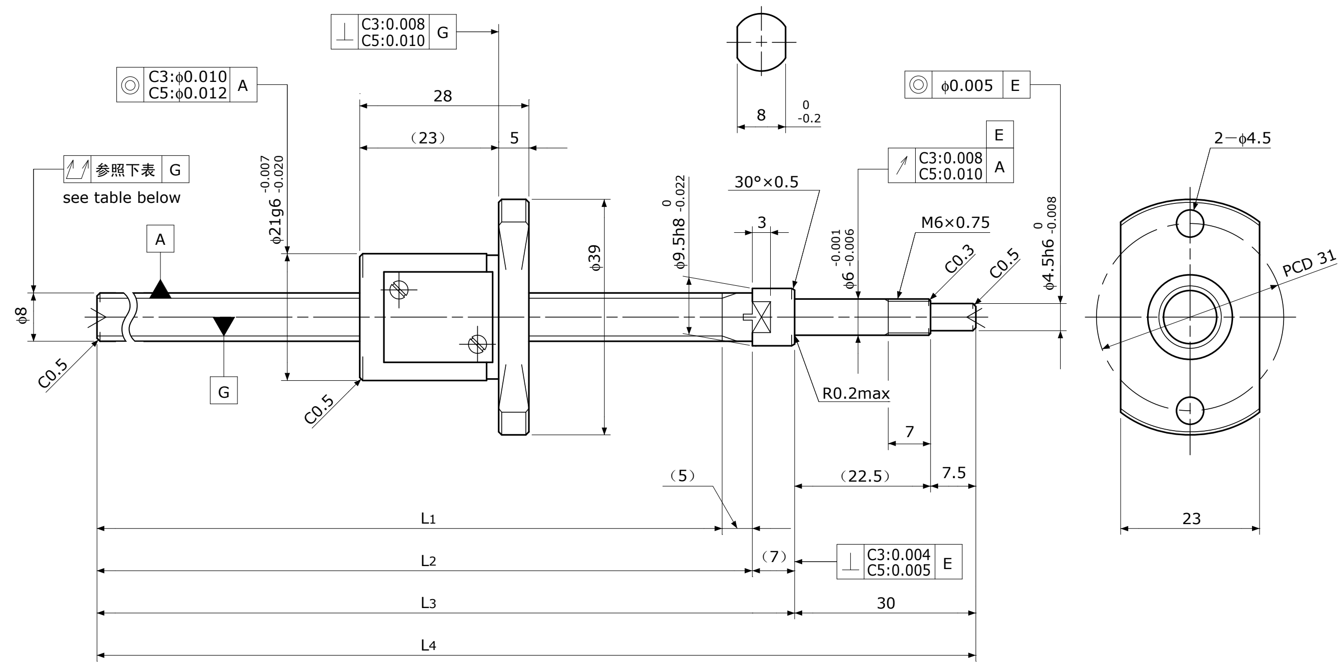
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0802.5-129R170C5	110	C5	129	133	140	170	±0.020	0.018	0.050	～0.005	—	1850	3000
SG0802.5-209R250C5	190	C5	209	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

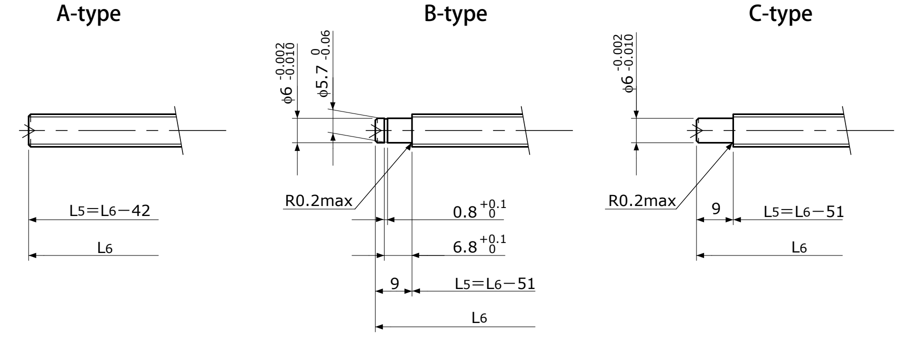
SG0804 | Shaft dia.(轴径)φ8 Lead(导程)4mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢球直径	φ2.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.2
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

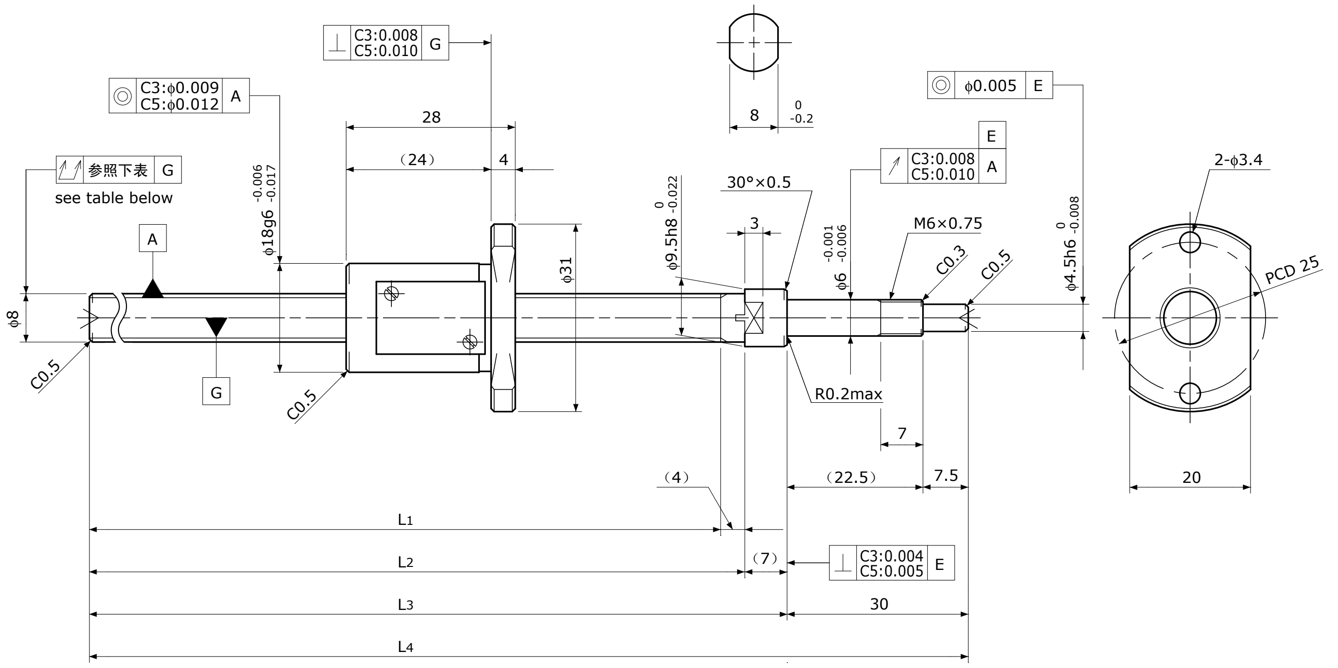
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0804-098R140C3	70	C3	98	103	110	140	±0.008	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	～0.015	1650	2100
SG0804-208R250C3	180	C3	208	213	220	250	±0.012	0.008	0.050				
SG0804-098R140C5	70	C5	98	103	110	140	±0.018	0.018	0.050	～0.005	—	2600	4200
SG0804-208R250C5	180	C5	208	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

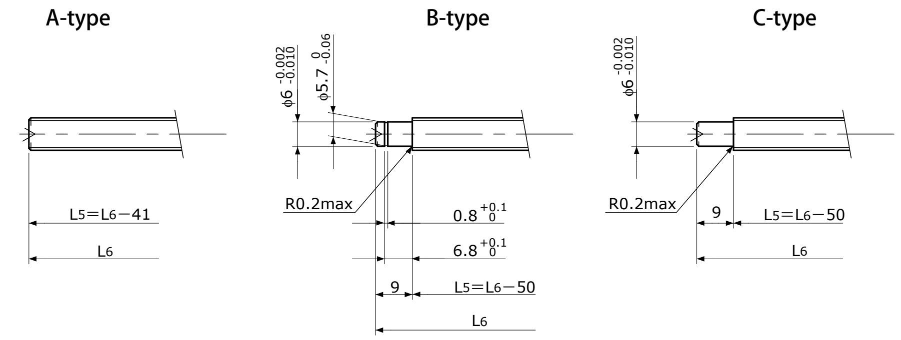
SG0805 | Shaft dia.(轴径)φ8 Lead(导程)5mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.6
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

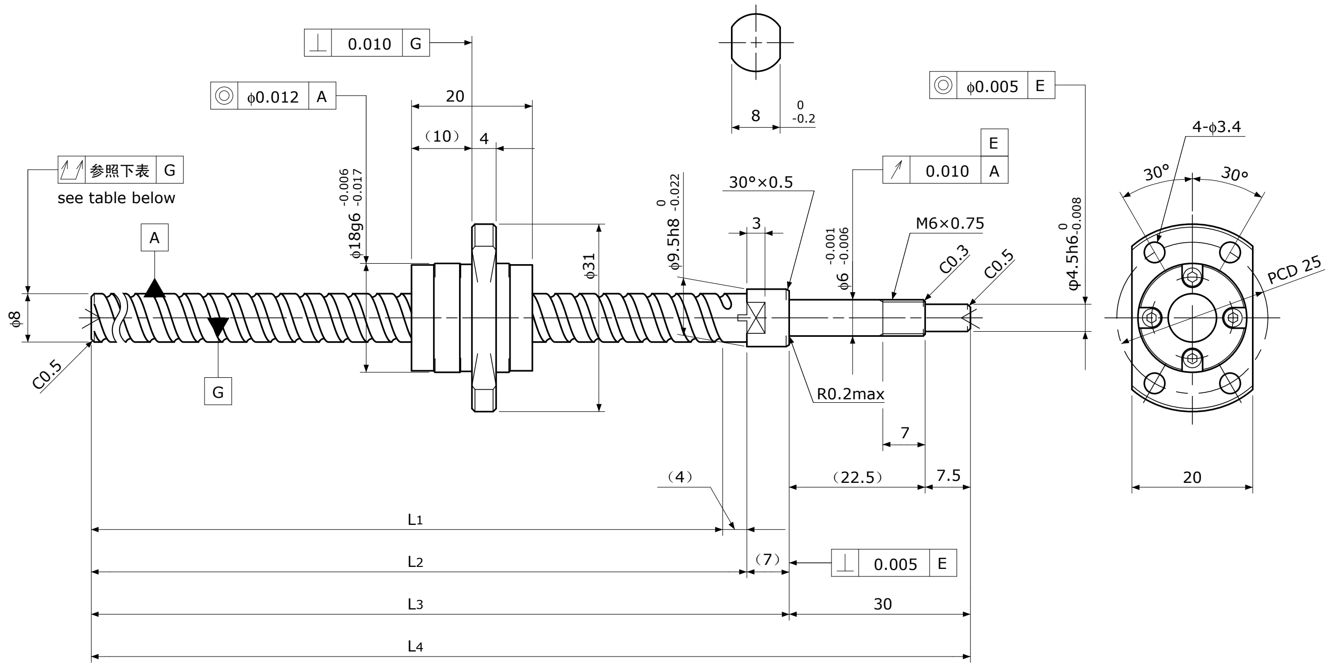
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0805-099R140C3	70	C3	99	103	110	140	±0.008	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	～0.015	1150	1500
SG0805-209R250C3	180	C3	209	213	220	250	±0.012	0.008	0.050				
SG0805-099R140C5	70	C5	99	103	110	140	±0.018	0.018	0.050	～0.005	—	1850	3000
SG0805-209R250C5	180	C5	209	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

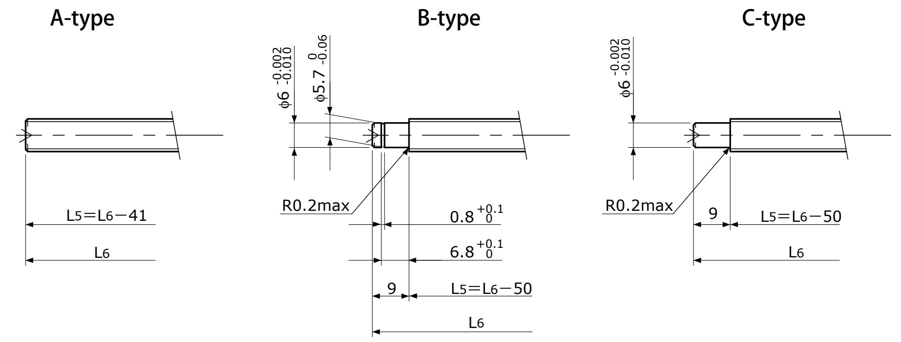
SG0808 | Shaft dia.(轴径)φ8 Lead(导程)8mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.7
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

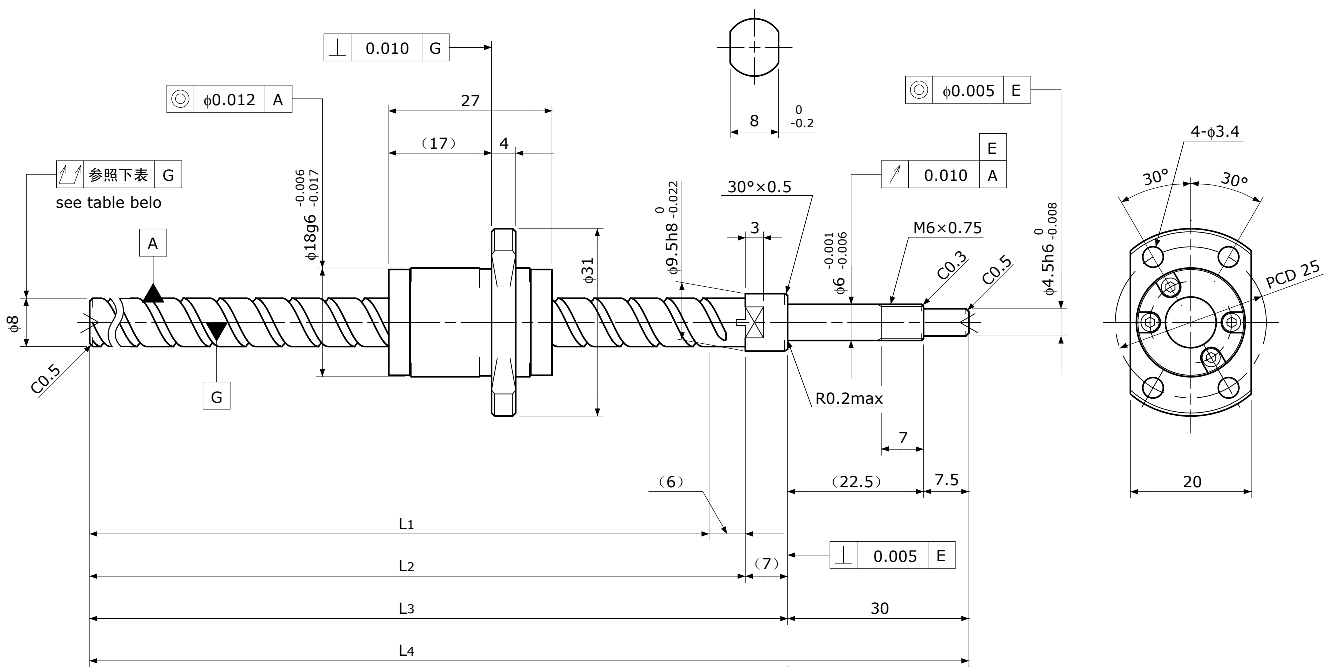
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0808-099R140C5	75	C5	99	103	110	140	±0.018	0.018	0.050	～0.005	—	2200	3800
SG0808-209R250C5	185	C5	209	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

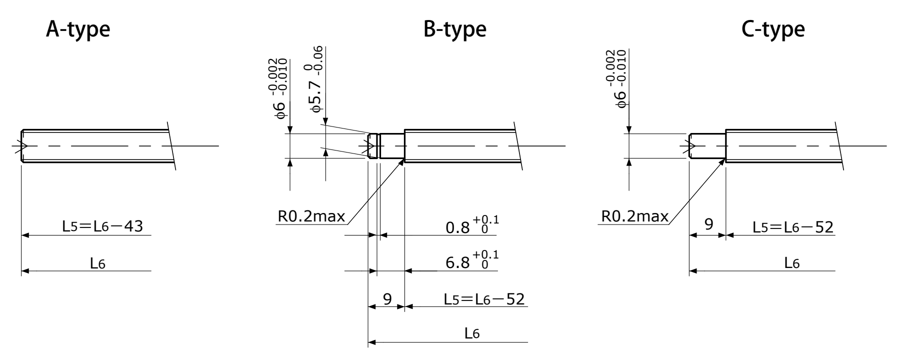
SG0812 | Shaft dia.(轴径)φ8　Lead(导程)12mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.7
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧	MSU-6CS/6GS, EF6
	Fixed-side 固定侧	MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

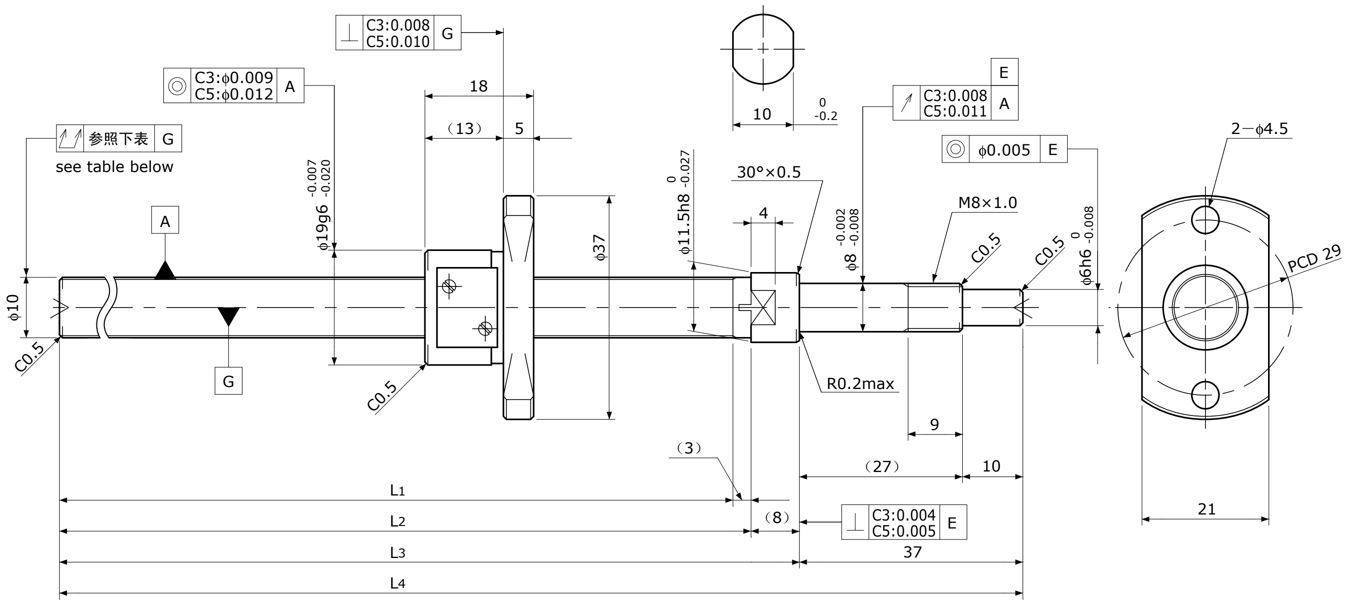
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG0812-097R140C5	70	C5	97	103	110	140	±0.018	0.018	0.050	～0.005	—	2200	4000
SG0812-207R250C5	180	C5	207	213	220	250	±0.023	0.018	0.065				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

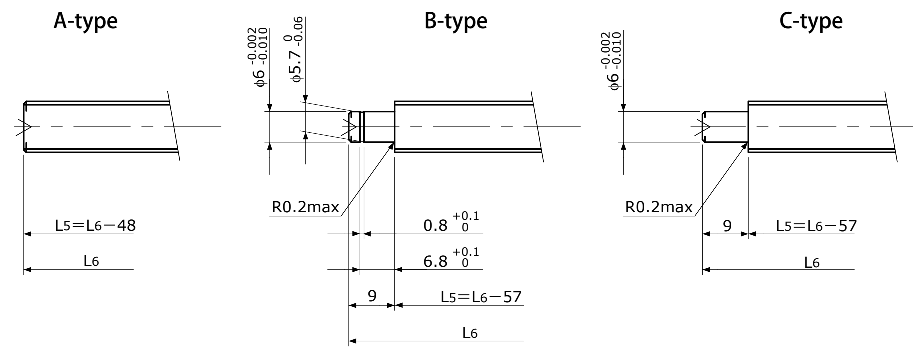
SG1001 | Shaft dia.(轴径)φ10　Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ9.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧	MSU-8CS/8GS, EF8
	Fixed-side 固定侧	MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

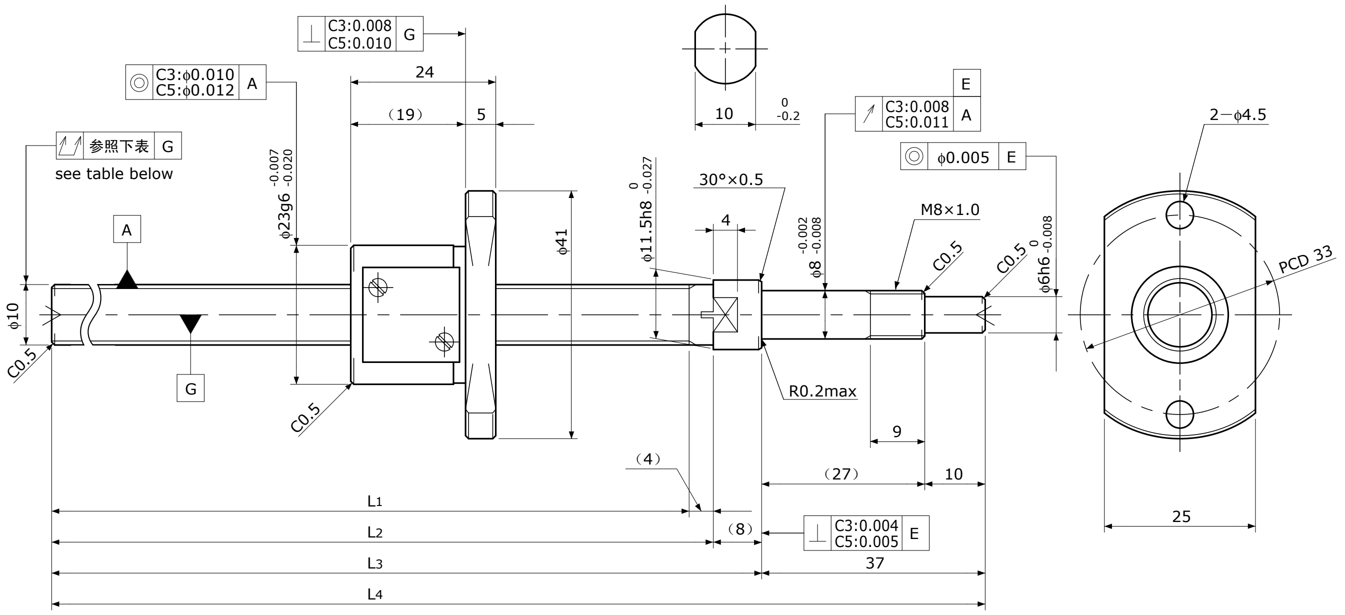
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1001-112R160C3	90	C3	112	115	123	160	±0.010	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	～0.020	530	1000
SG1001-162R210C3	140	C3	162	165	173	210	±0.010	0.008	0.040				
SG1001-212R260C3	190	C3	212	215	223	260	±0.012	0.008	0.040				
SG1001-262R310C3	240	C3	262	265	273	310	±0.012	0.008	0.040				
SG1001-112R160C5	90	C5	112	115	123	160	±0.020	0.018	0.040	～0.005	—	840	2000
SG1001-162R210C5	140	C5	162	165	173	210	±0.020	0.018	0.055				
SG1001-212R260C5	190	C5	212	215	223	260	±0.023	0.018	0.055				
SG1001-262R310C5	240	C5	262	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

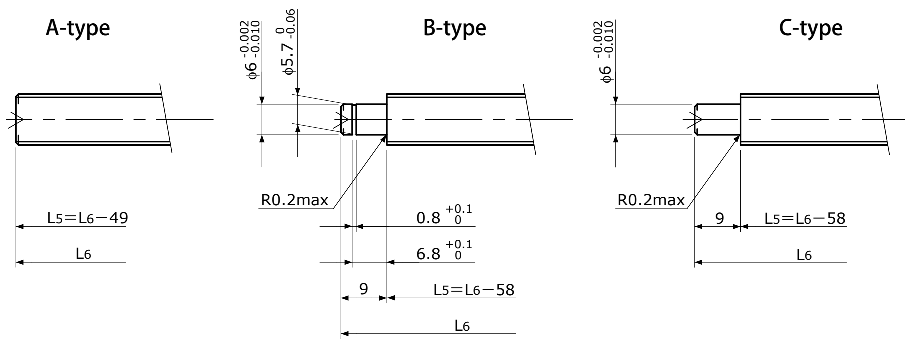
SG1002 | Shaft dia.(轴径)φ10 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type : Other than the above. 上述以外的形状

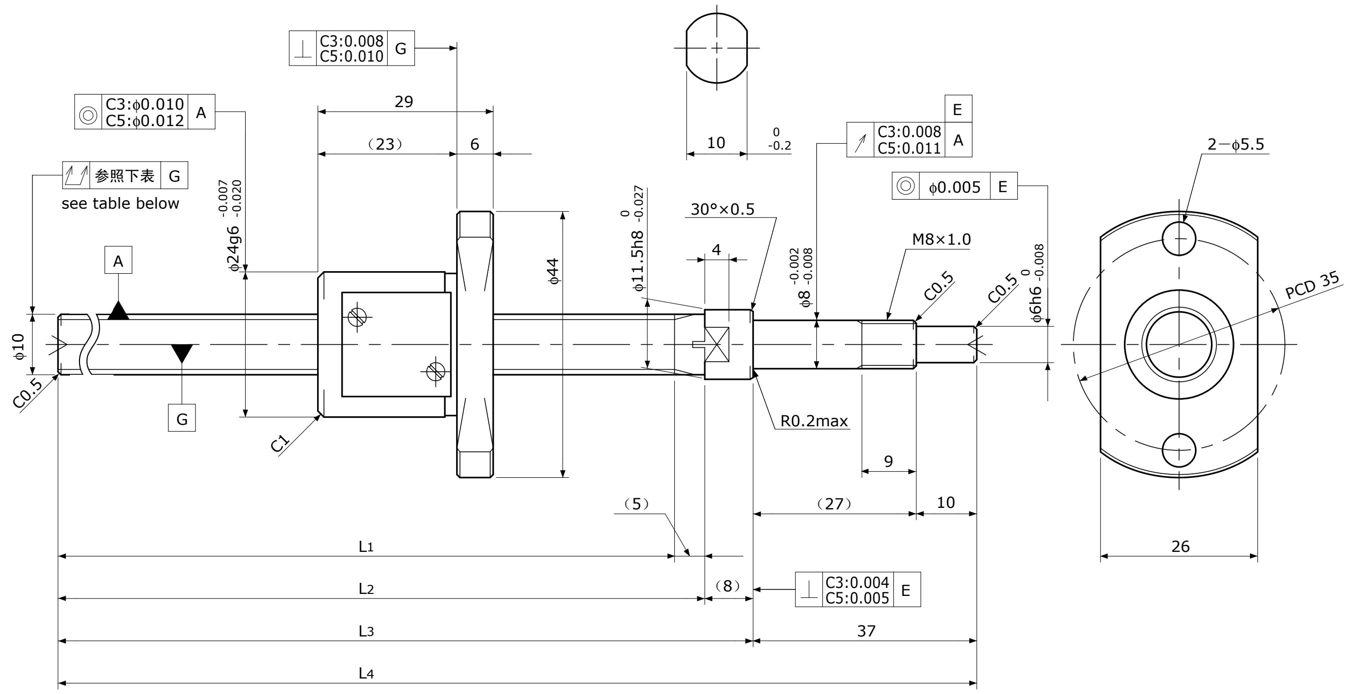
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1002-111R160C3	85	C3	111	115	123	160	±0.010	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.006～0.030	1750	2700
SG1002-161R210C3	135	C3	161	165	173	210	±0.010	0.008	0.040				
SG1002-211R260C3	185	C3	211	215	223	260	±0.012	0.008	0.040				
SG1002-261R310C3	235	C3	261	265	273	310	±0.012	0.008	0.040				
SG1002-111R160C5	85	C5	111	115	123	160	±0.020	0.018	0.040	～0.005	—	2700	5300
SG1002-161R210C5	135	C5	161	165	173	210	±0.020	0.018	0.055				
SG1002-211R260C5	185	C5	211	215	223	260	±0.023	0.018	0.055				
SG1002-261R310C5	235	C5	261	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

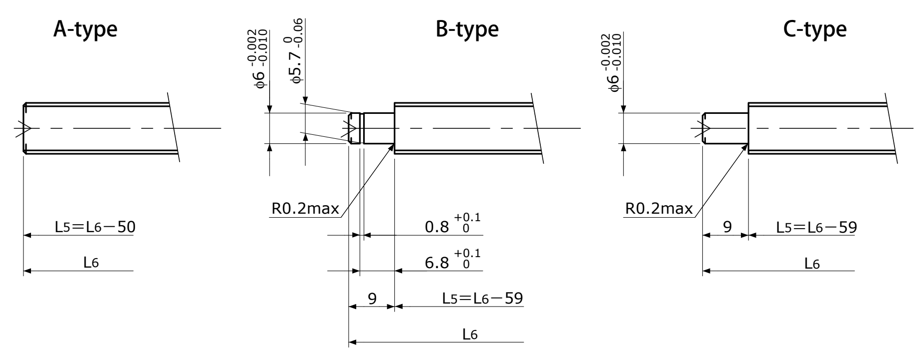
SG1004 | Shaft dia.(轴径)φ10 Lead(导程)4mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.2
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type : Other than the above. 上述以外的形状

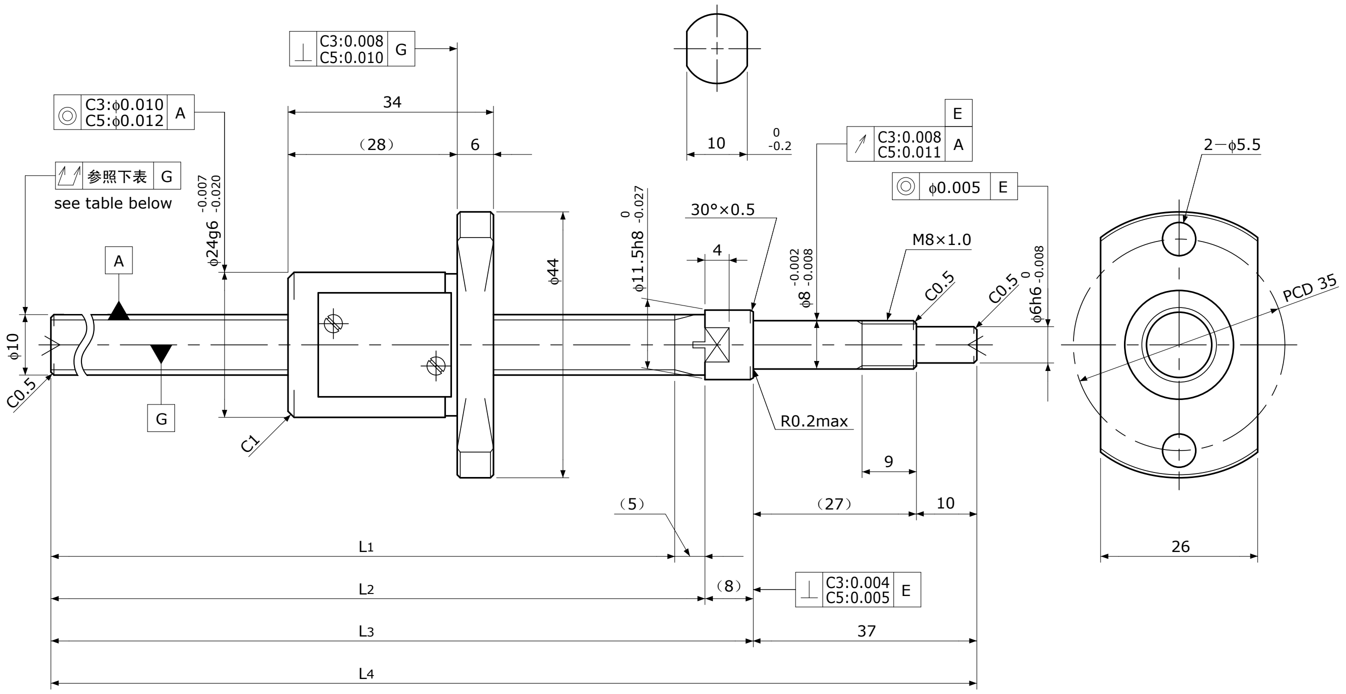
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1004-110R160C3	80	C3	110	115	123	160	±0.010	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.005～0.040	1800	2600
SG1004-260R310C3	230	C3	260	265	273	310	±0.012	0.008	0.040				
SG1004-110R160C5	80	C5	110	115	123	160	±0.020	0.018	0.040	～0.005	—	3000	5200
SG1004-260R310C5	230	C5	260	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

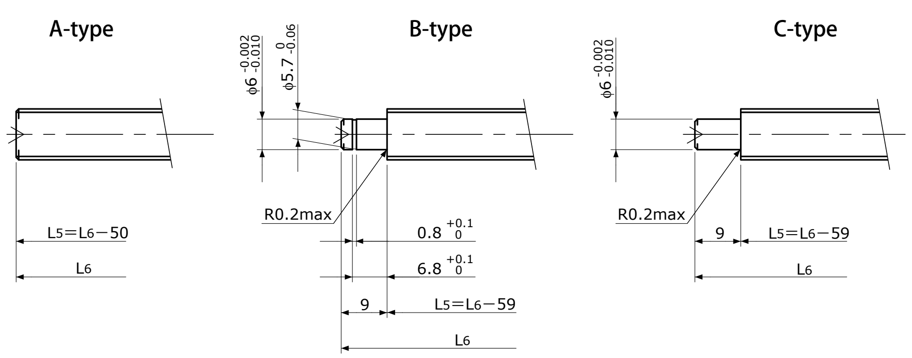
SG1005 | Shaft dia.(轴径)φ10　Lead(导程)5mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.2
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

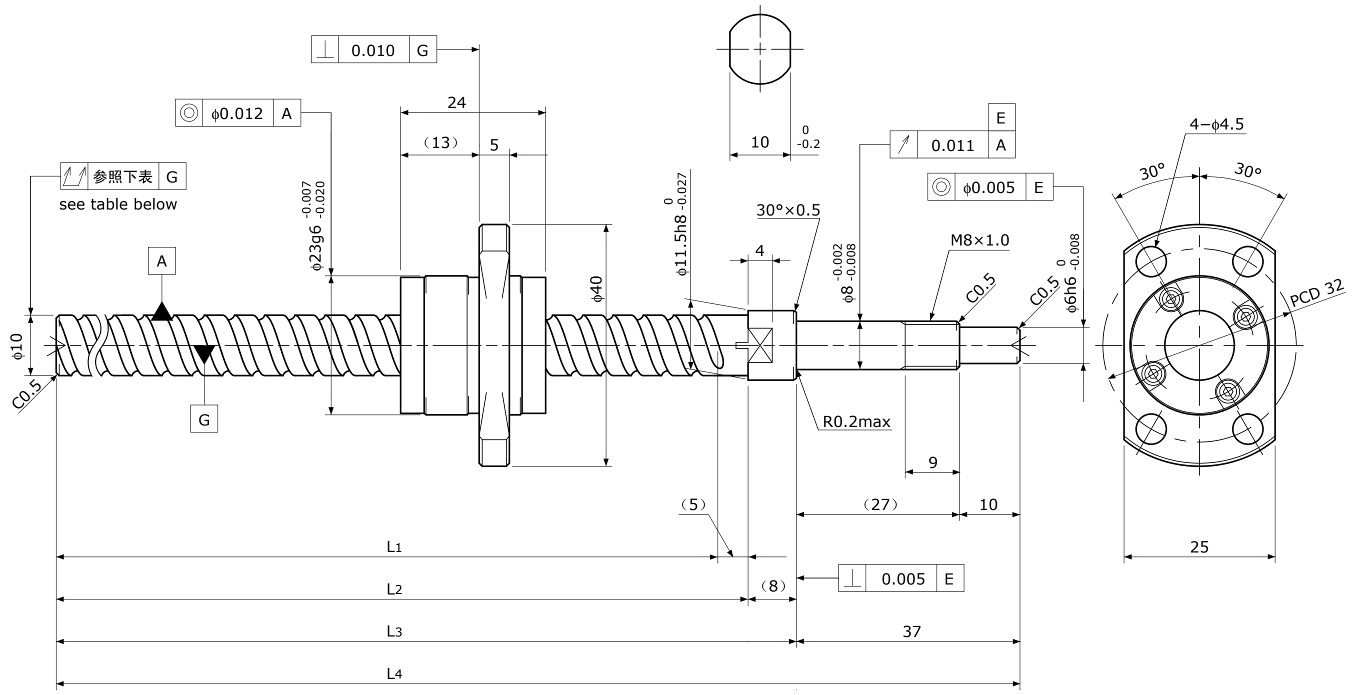
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1005-110R160C3	75	C3	110	115	123	160	±0.010	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.005～0.040	1800	2600
SG1005-260R310C3	225	C3	260	265	273	310	±0.012	0.008	0.040				
SG1005-110R160C5	75	C5	110	115	123	160	±0.020	0.018	0.040	～0.005	—	3000	5200
SG1005-260R310C5	225	C5	260	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

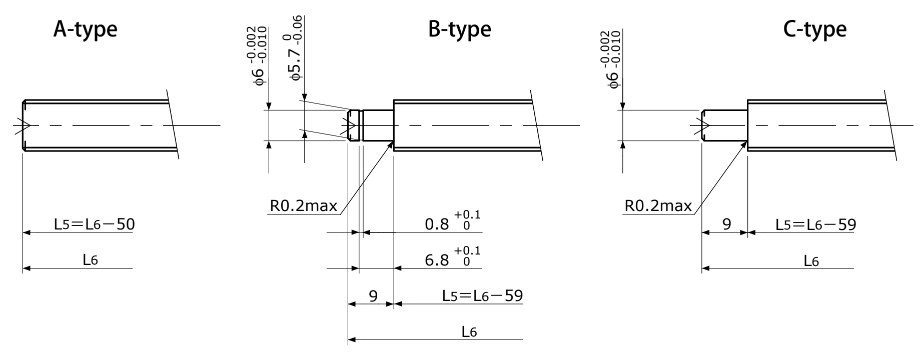
SG1010 | Shaft dia.(轴径)φ10　Lead(导程)10mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.4
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

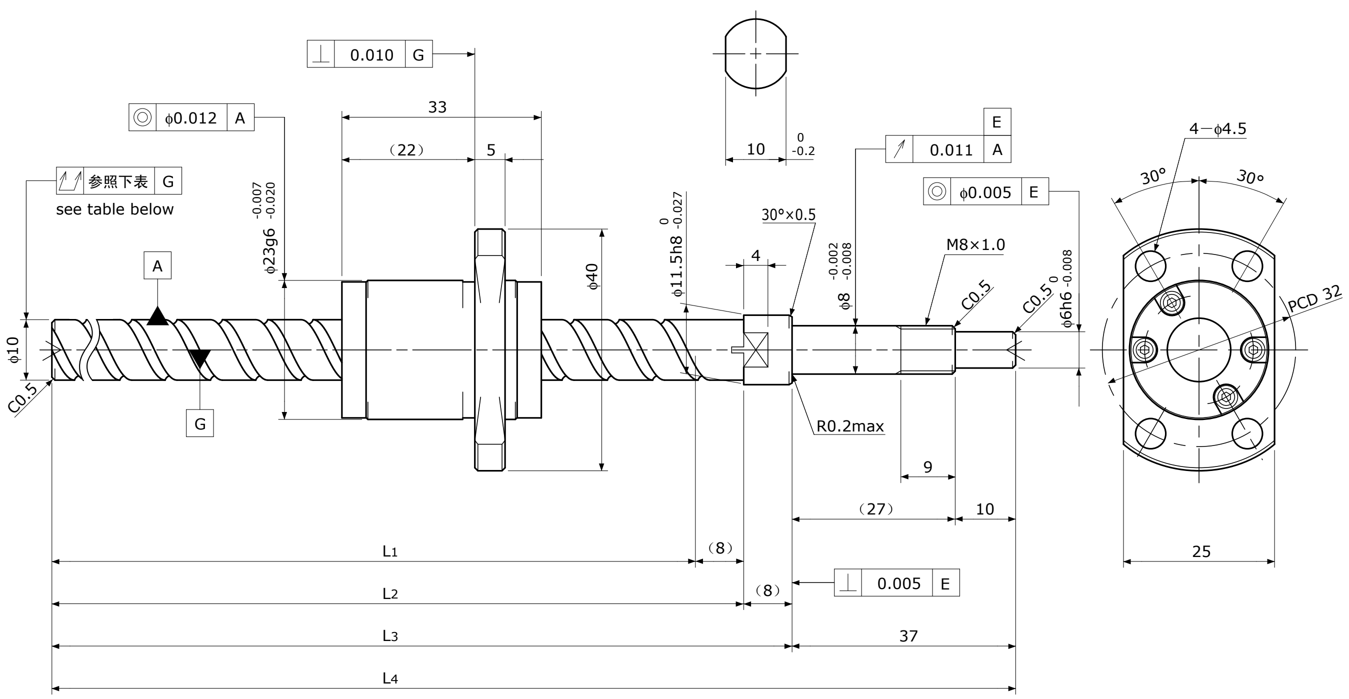
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1010-110R160C5	85	C5	110	115	123	160	±0.020	0.018	0.040	～0.005	—	3300	5900
SG1010-260R310C5	235	C5	260	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

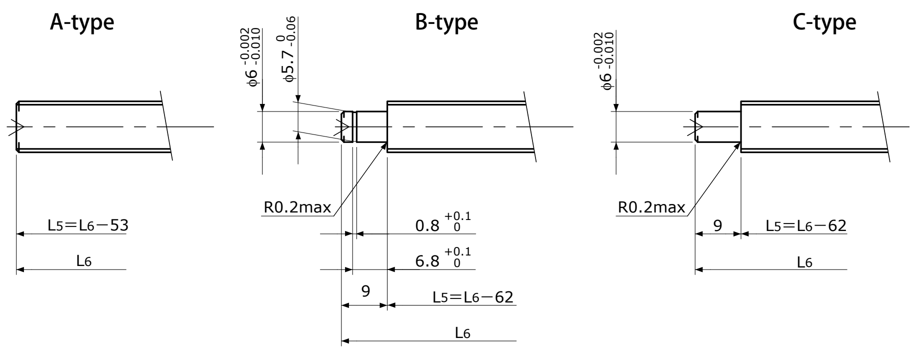
SG1015 | Shaft dia.(轴径)φ10 Lead(导程)15mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.4
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-8CS/8GS, EF8
Fixed-side 固定侧 :	MSU-8C/8G, EK8

D-type : Other than the above. 上述以外的形状

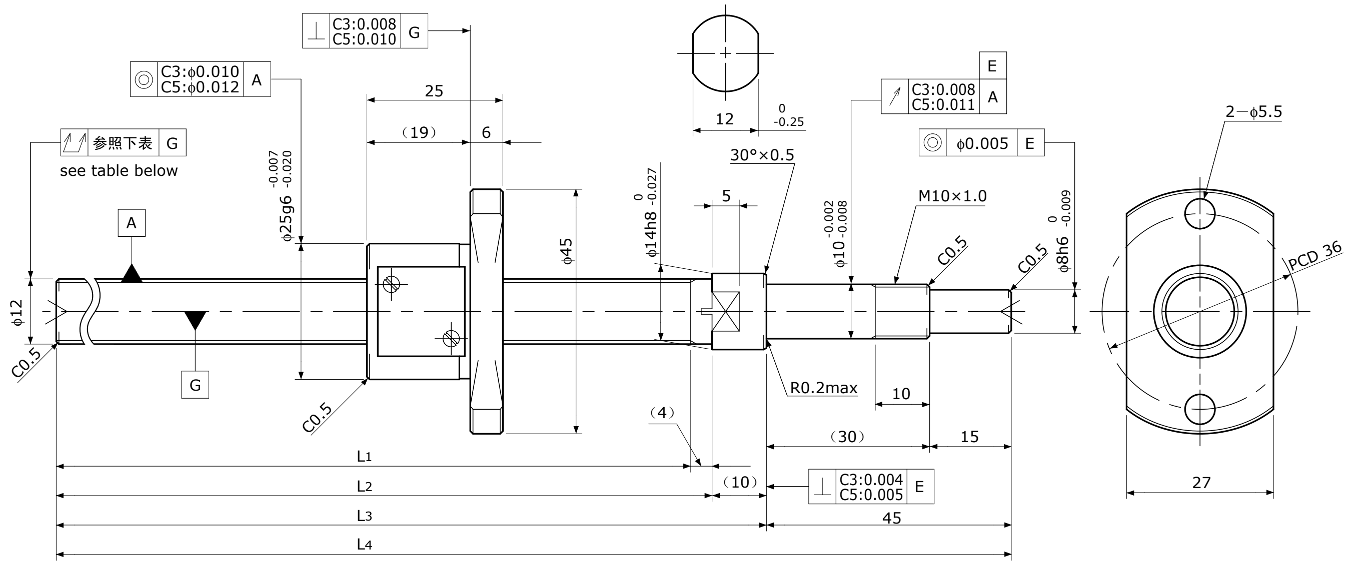
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1015-107R160C5	70	C5	107	115	123	160	±0.020	0.018	0.040	～0.005	—	3300	6400
SG1015-257R310C5	220	C5	257	265	273	310	±0.023	0.018	0.055				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

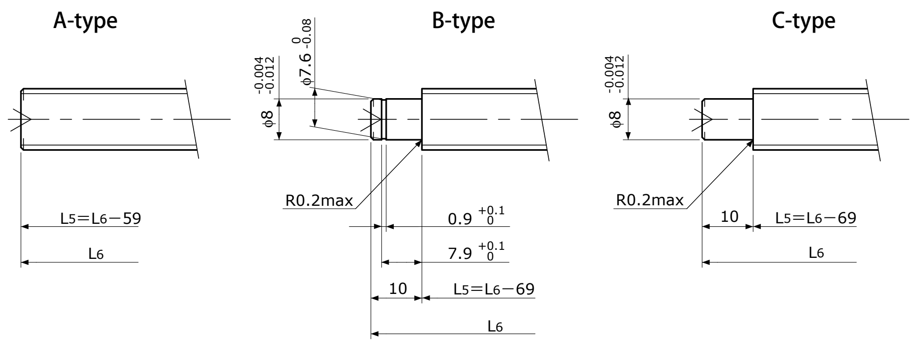
SG1202 | Shaft dia.(轴径)φ12 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ10.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	EF10
Fixed-side 固定侧 :	EK10

D-type : Other than the above. 上述以外的形状

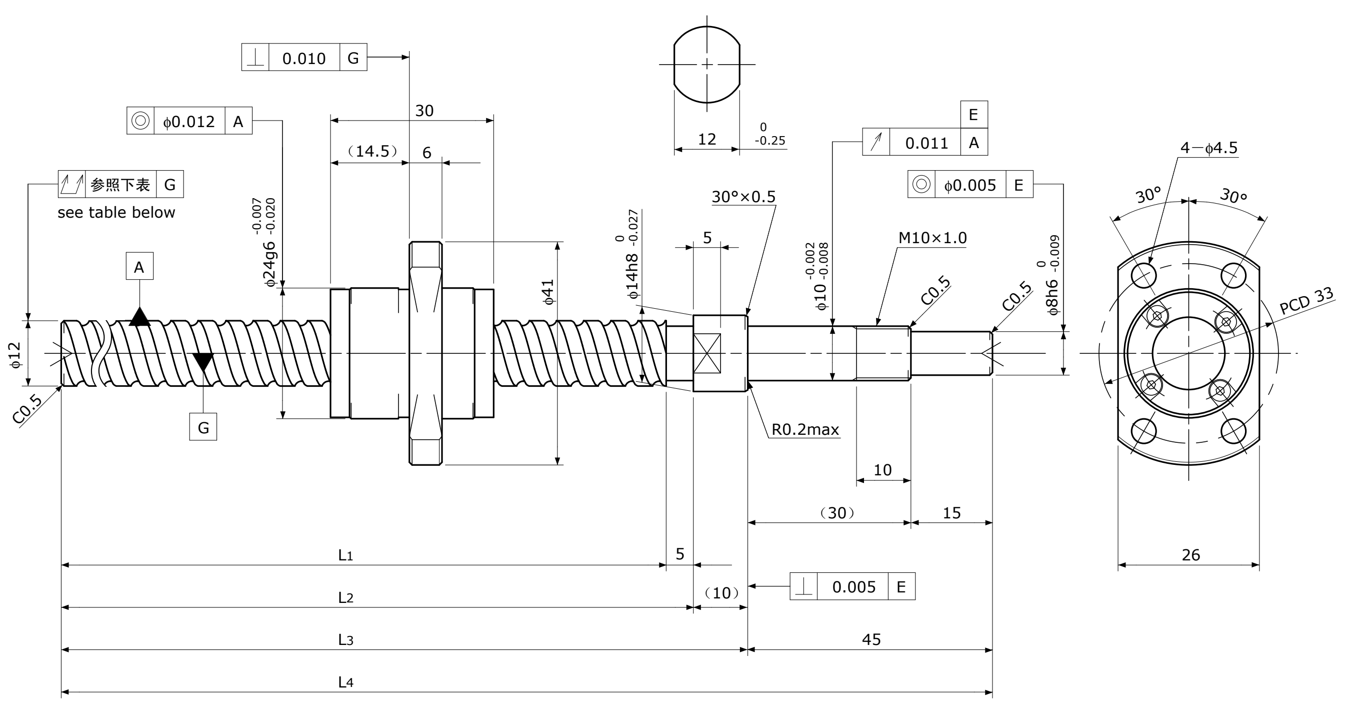
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1202-141R200C3	115	C3	141	145	155	200	±0.010	0.008	0.035	0 Spacer Ball 间隔钢珠 (1:1)	0.008～0.040	1900	3200
SG1202-191R250C3	165	C3	191	195	205	250	±0.010	0.008	0.040				
SG1202-241R300C3	215	C3	241	245	255	300	±0.012	0.008	0.040				
SG1202-291R350C3	265	C3	291	295	305	350	±0.012	0.008	0.050				
SG1202-341R400C3	315	C3	341	345	355	400	±0.013	0.010	0.050				
SG1202-141R200C5	115	C5	141	145	155	200	±0.020	0.018	0.040	～0.005	—	3000	6400
SG1202-191R250C5	165	C5	191	195	205	250	±0.020	0.018	0.055				
SG1202-241R300C5	215	C5	241	245	255	300	±0.023	0.018	0.055				
SG1202-291R350C5	265	C5	291	295	305	350	±0.023	0.018	0.065				
SG1202-341R400C5	315	C5	341	345	355	400	±0.025	0.020	0.065				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品 SG系列

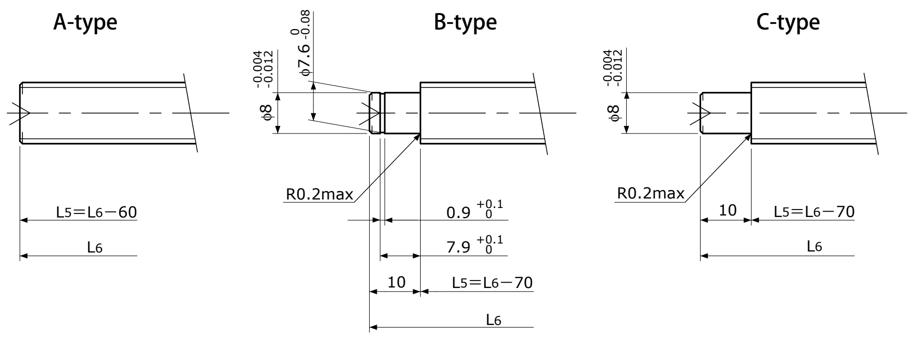
SG1210 | Shaft dia.(轴径)φ12 Lead(导程)10mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.381
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ10.2
Number of circuit 循环数	1.7×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 : EF10
	Fixed-side 固定侧 : EK10

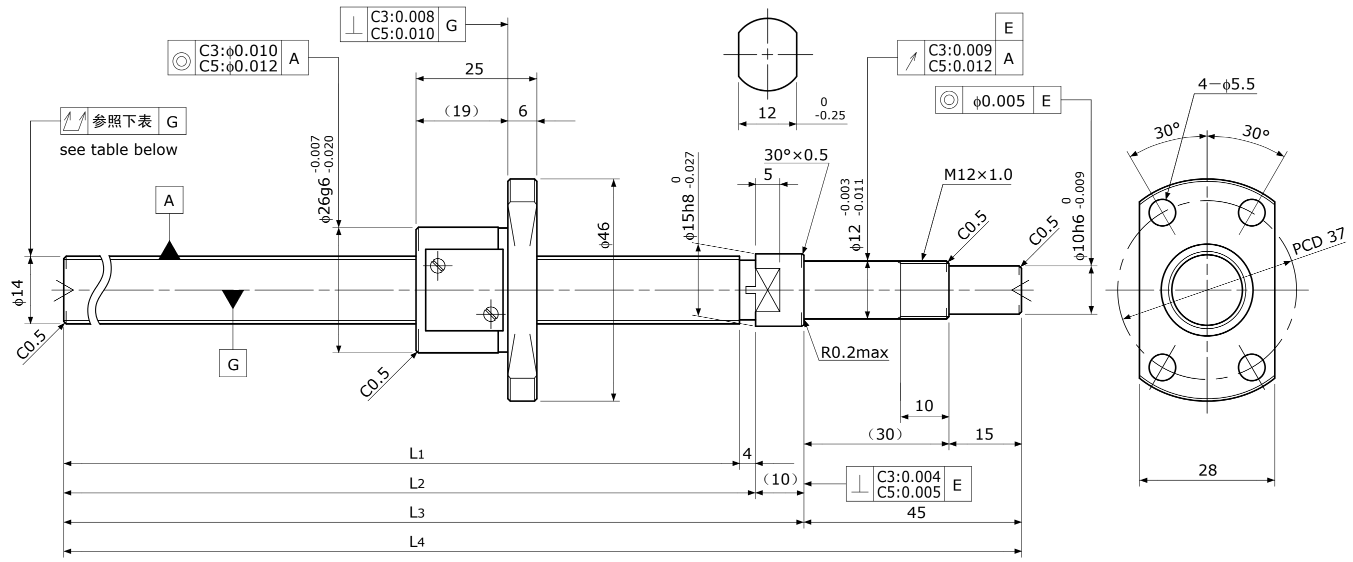
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1210-240R300C5	210	C5	240	245	255	300	±0.023	0.018	0.055	~0.005	—	5100	9800
SG1210-340R400C5	310	C5	340	345	355	400	±0.025	0.020	0.065				

Note)Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

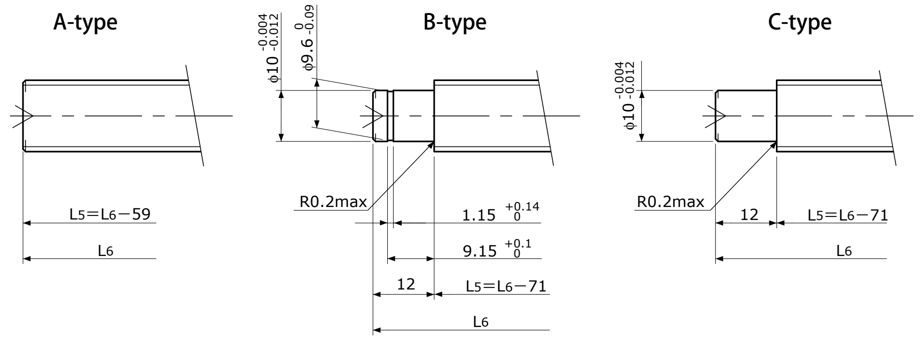
SG1402 | Shaft dia.(轴径)φ14 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ12.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 : EF12
	Fixed-side 固定侧 : EK12

D-type : Other than the above. 上述以外的形状

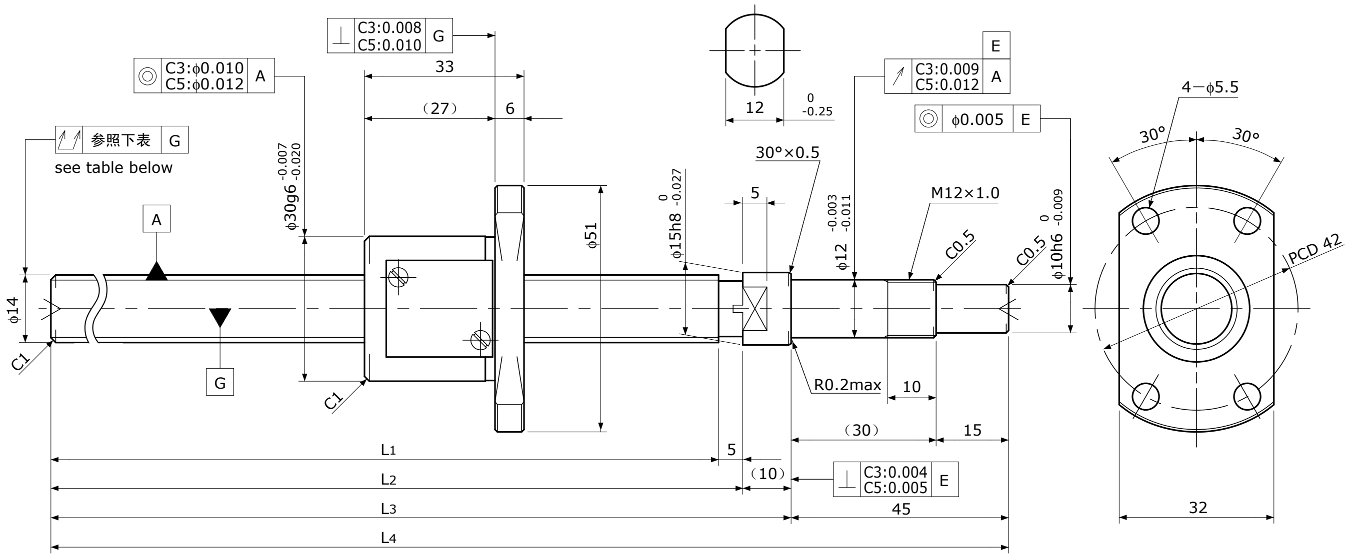
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1402-141R200C3	115	C3	141	145	155	200	±0.010	0.008	0.025				
SG1402-191R250C3	165	C3	191	195	205	250	±0.010	0.008	0.030				
SG1402-241R300C3	215	C3	241	245	255	300	±0.012	0.008	0.030	0 Spacer Ball 间隔钢珠 (1:1)	0.010~0.050	2000	3800
SG1402-291R350C3	265	C3	291	295	305	350	±0.012	0.008	0.040				
SG1402-391R450C3	365	C3	391	395	405	450	±0.013	0.010	0.050				
SG1402-141R200C5	115	C5	141	145	155	200	±0.020	0.018	0.040				
SG1402-191R250C5	165	C5	191	195	205	250	±0.020	0.018	0.045				
SG1402-241R300C5	215	C5	241	245	255	300	±0.023	0.018	0.045	~0.005	—	3200	7500
SG1402-291R350C5	265	C5	291	295	305	350	±0.023	0.018	0.055				
SG1402-391R450C5	365	C5	391	395	405	450	±0.025	0.020	0.060				

Note)Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

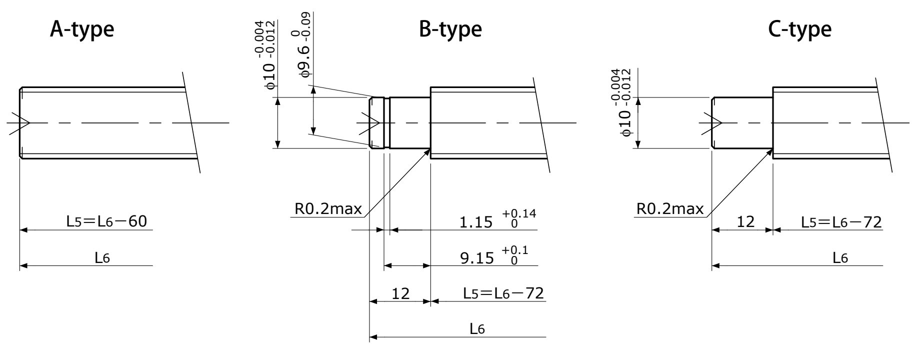
SG1404 | Shaft dia.(轴径)φ14　Lead(导程)4mm | C3&C5



Unit(单位):mm

Ball Screw Specifications	主要技术参数
Ball size　钢珠直径	φ2.381
Number of thread　螺纹条数	1
Thread direction　螺纹旋向	Right　右旋
Shaft root dia.　丝杠轴底径	φ11.8
Number of circuit　循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation　推荐的支架组件	
Supported-side　支撑侧	EF12
Fixed-side　固定侧	EK12

D-type : Other than the above.　上述以外的形状

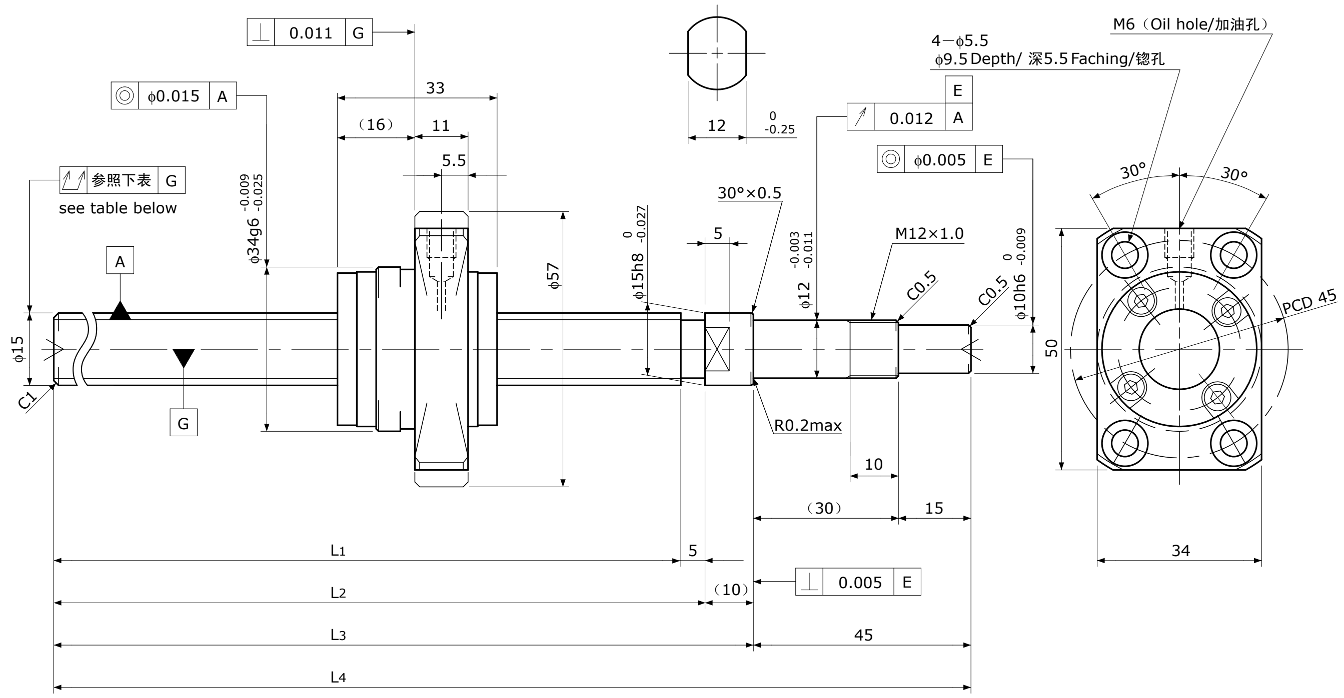
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1404-190R250C3	155	C3	190	195	205	250	±0.010	0.008	0.030	0 Spacer Ball 间隔钢珠 (1:1)	0.020～0.070	3600	5800
SG1404-240R300C3	205	C3	240	245	255	300	±0.012	0.008	0.030				
SG1404-290R350C3	255	C3	290	295	305	350	±0.012	0.008	0.040				
SG1404-390R450C3	355	C3	390	395	405	450	±0.013	0.010	0.050				
SG1404-490R550C3	455	C3	490	495	505	550	±0.015	0.010	0.055				
SG1404-190R250C5	155	C5	190	195	205	250	±0.020	0.018	0.045	～0.005	—	5700	11600
SG1404-240R300C5	205	C5	240	245	255	300	±0.023	0.018	0.045				
SG1404-290R350C5	255	C5	290	295	305	350	±0.023	0.018	0.055				
SG1404-390R450C5	355	C5	390	395	405	450	±0.025	0.020	0.060				
SG1404-490R550C5	455	C5	490	495	505	550	±0.027	0.020	0.075				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

Standard products in stock SG series
标准库存品　SG系列

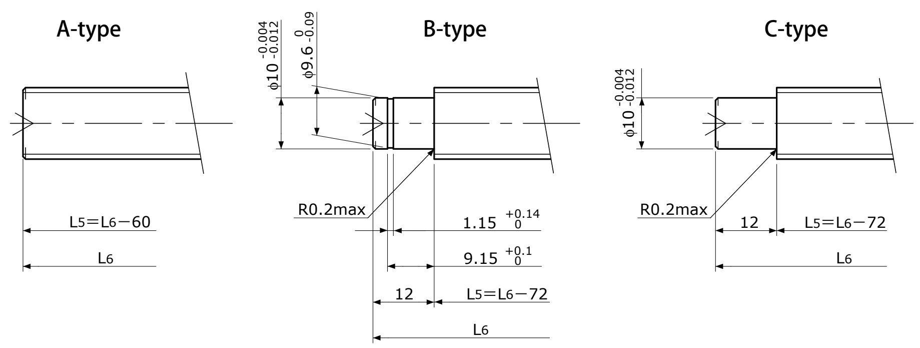
SG1505 | Shaft dia.(轴径)φ15　Lead(导程)5mm | C5



Unit(单位):mm

Ball Screw Specifications	主要技术参数
Ball size　钢珠直径	φ3.175
Number of thread　螺纹条数	1
Thread direction　螺纹旋向	Right　右旋
Shaft root dia.　丝杠轴底径	φ12.2
Number of circuit　循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation　推荐的支架组件	
Supported-side　支撑侧	EF12
Fixed-side　固定侧	EK12

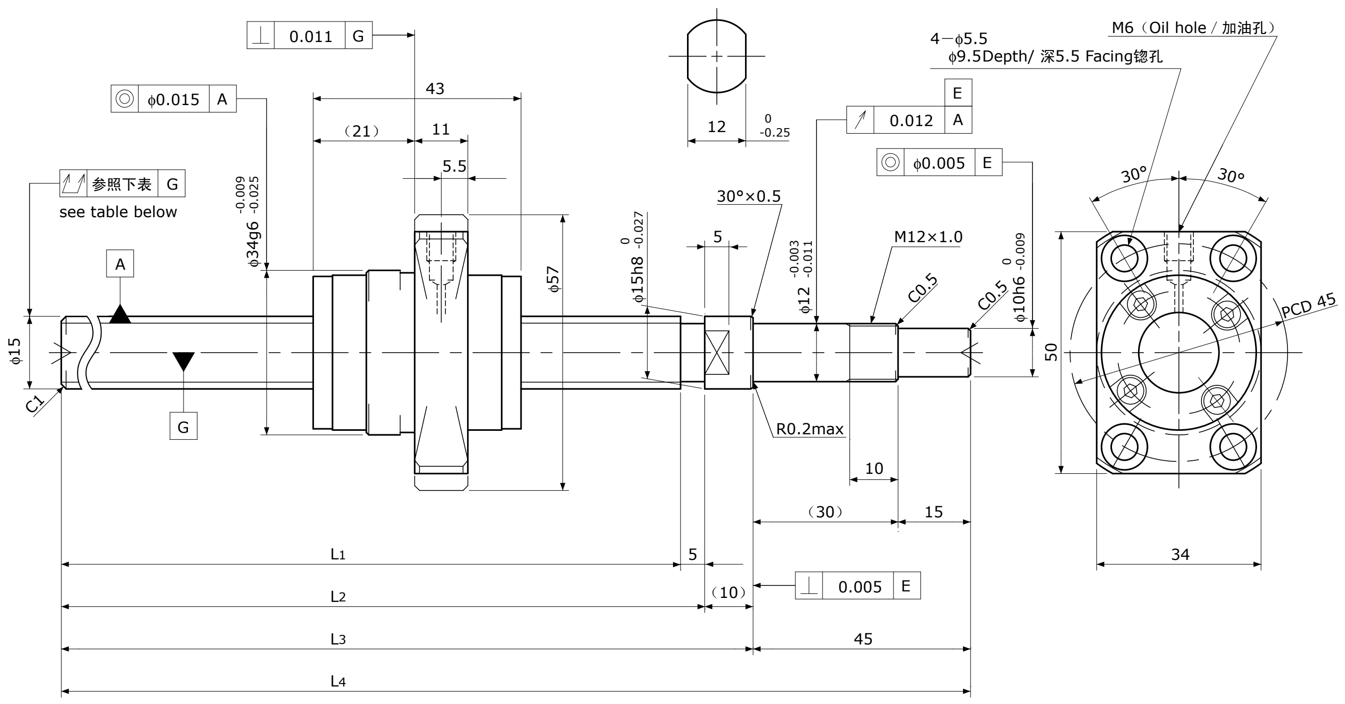
D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	L_4	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1505-340R400C5	305	C5	340	345	355	400	±0.025	0.020	0.055	～0.005	—	8900	17000
SG1505-540R600C5	505	C5	540	545	555	600	±0.030	0.023	0.075				

Note) Please refer to p-A206 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A206。

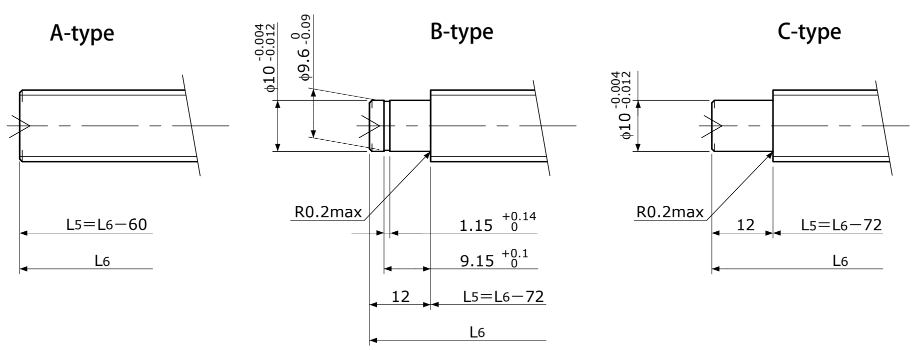
SG1510 | Shaft dia.(轴径)φ15 Lead(导程)10mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ3.175
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ12.2
Number of circuit 循环数	2.7×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	EF12
Fixed-side 固定侧	EK12

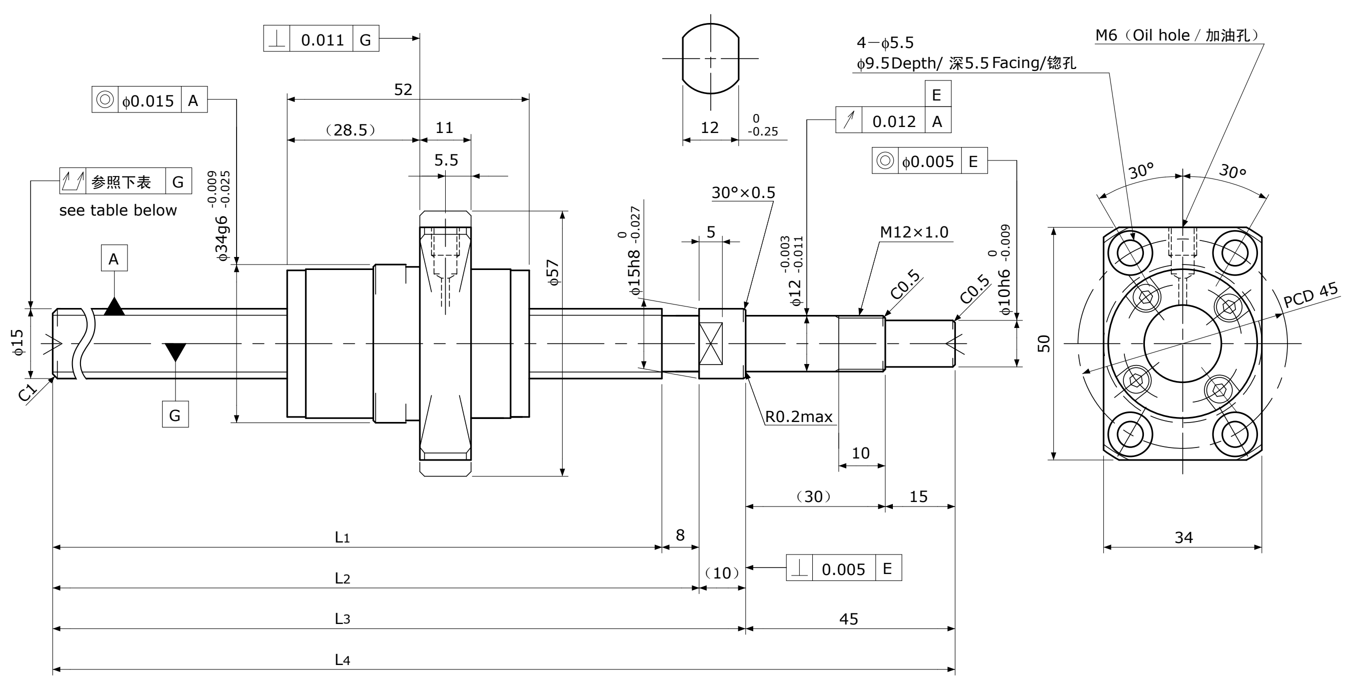
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 Vu	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1510-340R400C5	295	C5	340	345	355	400	±0.025	0.020	0.055	～0.005	—	12000	25000
SG1510-540R600C5	495	C5	540	545	555	600	±0.030	0.023	0.075				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

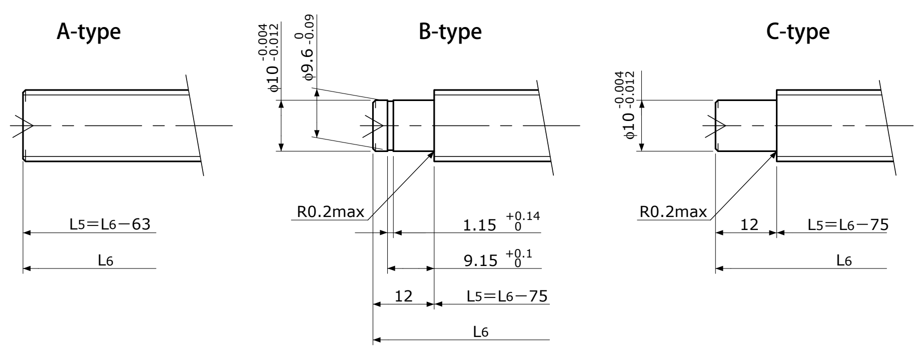
SG1520 | Shaft dia.(轴径)φ15 Lead(导程)20mm | C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ3.175
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ12.4
Number of circuit 循环数	1.7×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Supported-side end-journal profile 支撑侧轴端加工形状



L5:Thread length after end-journal machining. 追加加工后的螺纹部长度
L6:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	EF12
Fixed-side 固定侧	EK12

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	L4	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 Vu	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SG1520-337R400C5	285	C5	337	345	355	400	±0.025	0.020	0.055	～0.005	—	8000	16000
SG1520-537R600C5	485	C5	537	545	555	600	±0.030	0.023	0.075				

Note) Please refer to p-A206 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A206。

SD系列　精密双向滚珠丝杠标准库存品
SD series　Standardized Bi-directional Ball Screws

通过单轴即可进行左右开闭、定心、精密定位的经济型滚珠丝杠。
齐备有C3级、C5级研磨滚珠丝杠。

SD series are economical Ball Screws which moves bi-directionally with a shaft, and perform centering, precise positioning. There are Precision Ball Screws C3, C5 grade.

●丝杠轴公称外径与导程的组合
Combination of Shaft nominal dia. & Lead

Unit(单位):mm

Shaft dia. 公称外径 \ Lead 导程	1	2
4	A239	
6	A240	
8	A241	A242
10		A243
12		A244

注1)表中的数字表示产品刊载页码。
Note 1)The numbers in a table: showing a page in this catalogue.

●精度等级和轴向间隙

SD系列(精密双向滚珠丝杠标准库存品)的精度等级有JIS C3和JIS C5两种。
轴向间隙根据精度等级不同备有0mm(预压:C3)和0.005mm以下(C5)两种。

●Accuracy Grade & Axial play

Accuracy grades of SD series (Standardized Bi-directional Precision Ball Screws) are 2 kinds, JIS C3 and JIS C5. Axial play are 0(Preload : C3)and 0.005mm or less(C5) corresponding to accuracy grades in stock.

●材质和表面硬度

SD系列(精密双向滚珠丝杠标准库存品)的丝杠轴和螺母均采用SCM415(渗碳淬火),滚珠丝杠部分的表面硬度为HRC58～62。

●Material & Surface hardness

Shafts and Nuts of SD series(Standardized Bi-directional Precision Ball Screws) adopts SCM415 (carburizing and quenching), surface hardness of Ball Screw part is HRC58-62.

●润滑

为防止生锈,未对轴端进行加工的SD系列(精密双向滚珠丝杠标准库存品)产品均涂抹有防锈油。由于防锈油不具备润滑性,因此在使用前请另行涂抹润滑剂。
如无特殊指定,建议使用KSS原装润滑油脂(MSG No.2)。

●Lubrication

SD series(Standardized Bi-directional Precision Ball Screws) are applied with anti-rust oil for rust prevention when unfinished end journal. Since anti-rust oil is not lubricant, apply Grease or lubrication oil before using Ball Screws.
If there is no specific instruction, KSS would recommend our original Grease (MSG No.2) as standard lubricant.
Please feel free to contact us.

●轴端形状

SD系列(精密双向滚珠丝杠标准库存品)的轴端形状未进行标准化。
委托KSS进行追加加工时,请附上指示轴端形状的图纸。

●End-journal profile

End-journal configuration of SD series (Standardized Bi-directional Precision Ball Screws) is not standardized. Please ask for KSS regarding additional machining with a drawing which shows end-journal profile.

●公称型号的构成

SD系列(精密双向滚珠丝杠标准库存品)的公称型号构成如下所示。

●Model number notation

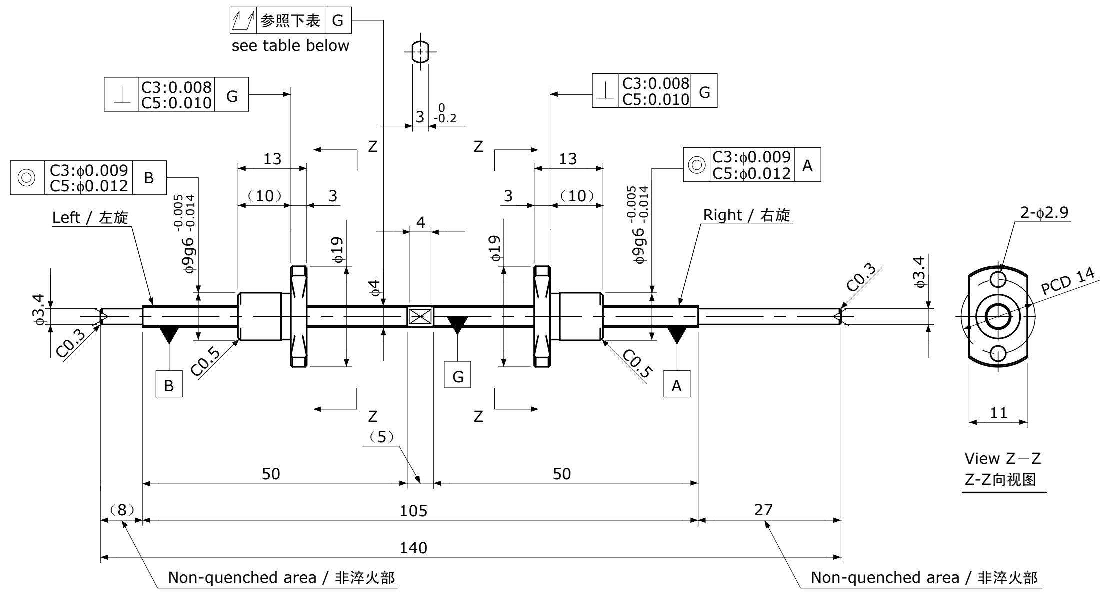
Model number notation of SD series(Standardized Bi-directional Precision Ball Screws) is as follows.

SD	08	01	—	120	L	120	R	300	C5
1	2	3		4	5	6	7	8	9

1双向滚珠丝杠的系列符号
2丝杠轴公称外径(mm)
3导程(mm)
4左旋螺纹部长度(mm)
5左旋符号
6右旋螺纹部长度(mm)
7右旋符号
8丝杠轴总长(mm)
9精度等级(C3或C5)

1Bi-directional Ball Screws series No.
2Screw Shaft nominal diameter(mm)
3Lead(mm)
4Left-side thread length(mm)
5Left-hand
6Right-side thread length(mm)
7Right-hand
8Screw Shaft total length(mm)
9Accuracy grade(C3 or C5)

SD0401 | Shaft dia.(轴径)φ4 Lead(导程)1mm | C3&C5



Unit(单位):mm

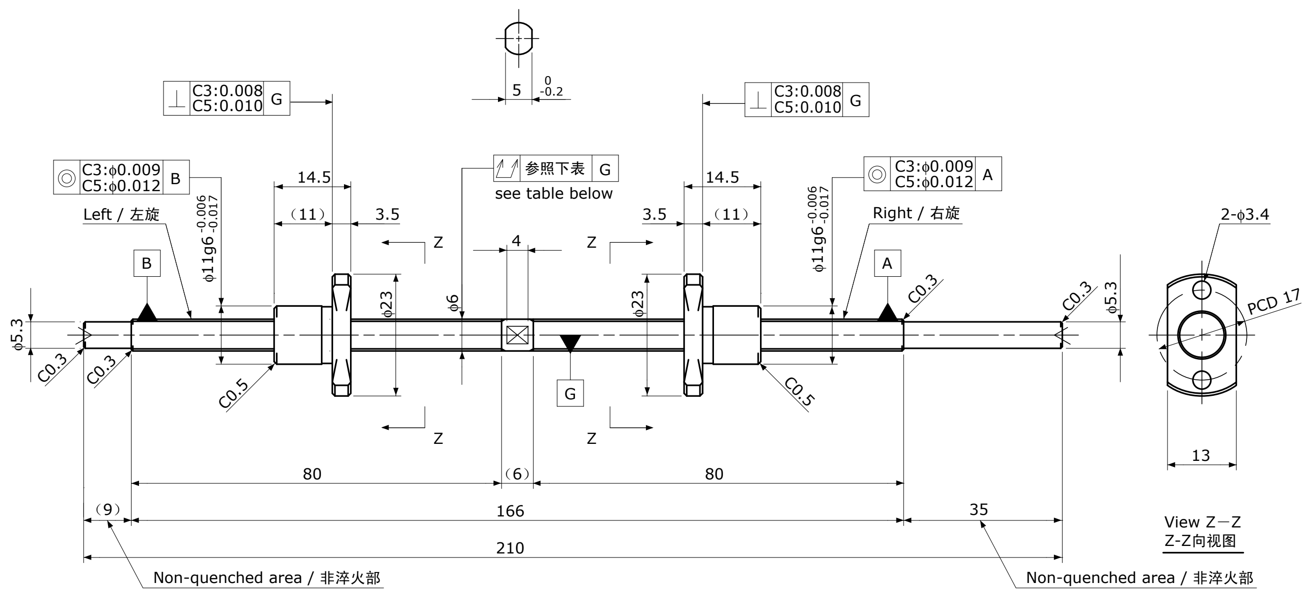
Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.6
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ3.4
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			Travel deviation 代表移动量误差 e_p	Variation 波动 V_u				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SD0401-50L50R140C3	35	C3	±0.008	0.008	0.035	0	～0.010	300	430
SD0401-50L50R140C5	35	C5	±0.018	0.018	0.050	～0.005	—		

Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.
注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

SD0601 | Shaft dia.(轴径)φ6 Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ5.3
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

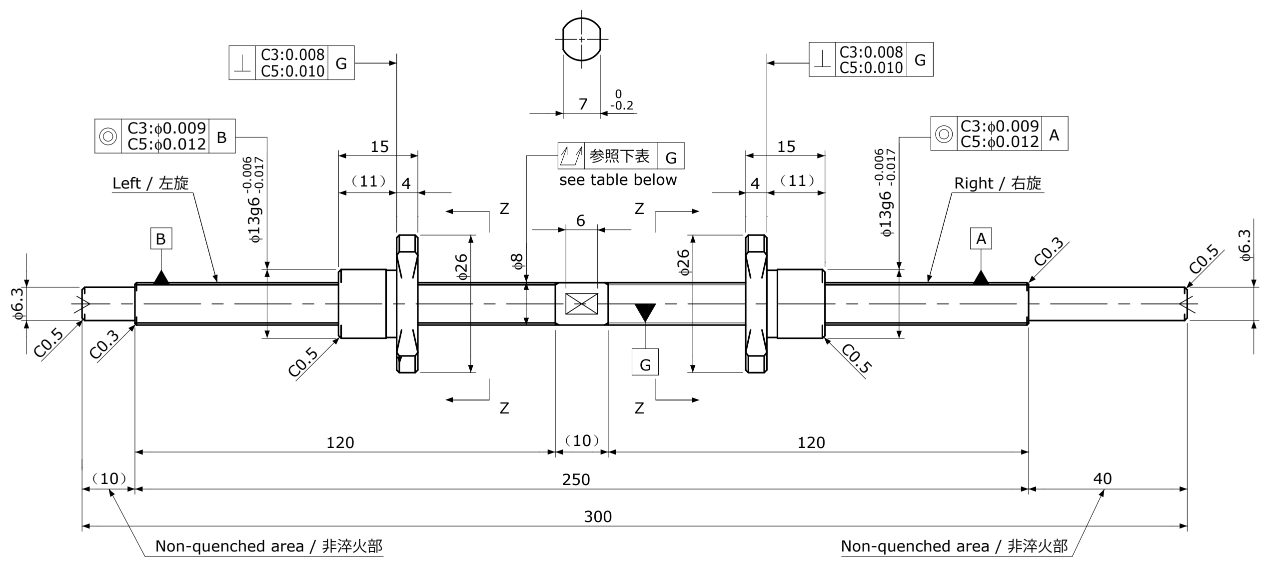
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			Travel deviation 代表移动量误差 e_p	Variation 波动 V_u				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SD0601-80L80R210C3	65	C3	±0.008	0.008	0.050	0	～0.013	550	1000
SD0601-80L80R210C5	65	C5	±0.018	0.018	0.065	～0.005	—		

Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.
注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

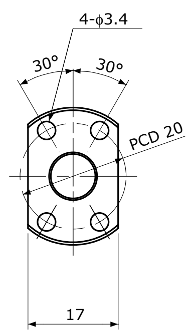
Standard products in stock SD series
标准库存品 SD系列

SD0801 | Shaft dia.(轴径)φ8 Lead(导程)1mm | C3&C5



Unit(单位):mm

Ball Screw Specifications	主要技术参数
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ7.3
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油



View Z−Z
Z-Z向视图

Unit(单位):mm

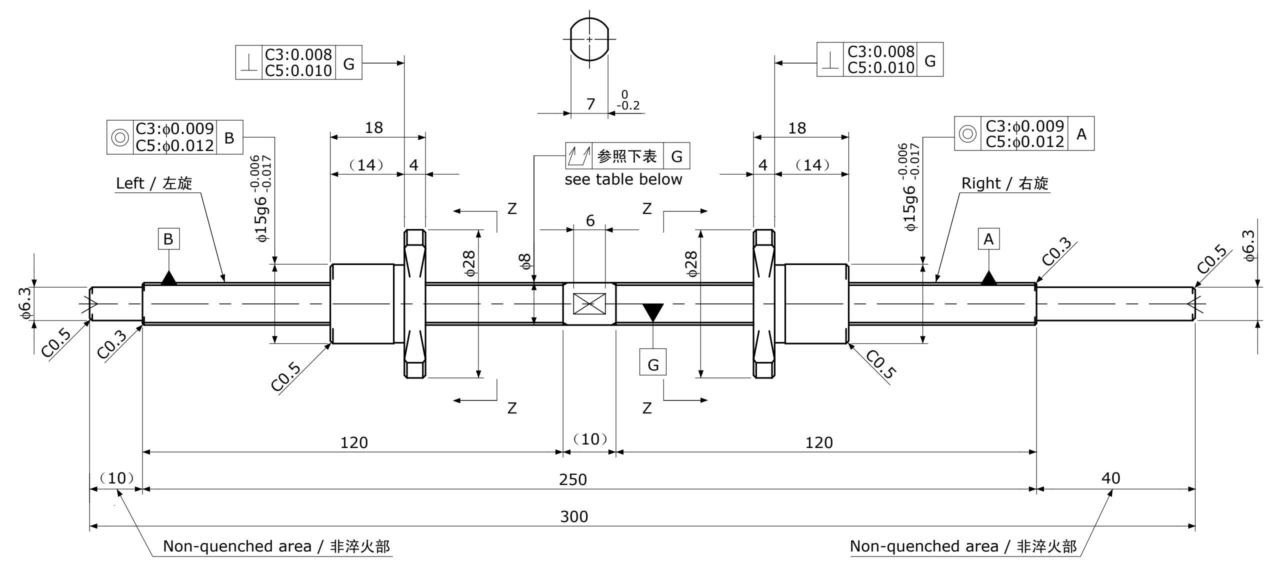
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			Travel deviation 代表移动量误差 e_p	Variation 波动 V_u				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SD0801-120L120R300C3	105	C3	±0.010	0.008	0.050	0	~0.018	650	1300
SD0801-120L120R300C5	105	C5	±0.020	0.018	0.065	~0.005	—		

Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.

注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

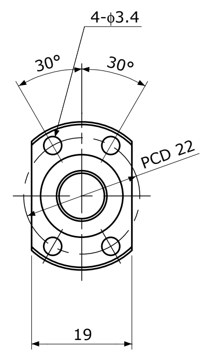
Standard products in stock SD series
标准库存品 SD系列

SD0802 | Shaft dia.(轴径)φ8 Lead(导程)2mm | C3&C5



Unit(单位):mm

Ball Screw Specifications	主要技术参数
Ball size 钢珠直径	φ1.2
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ7.0
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油



Vies Z-Z
Z-Z向视图

Unit(单位):mm

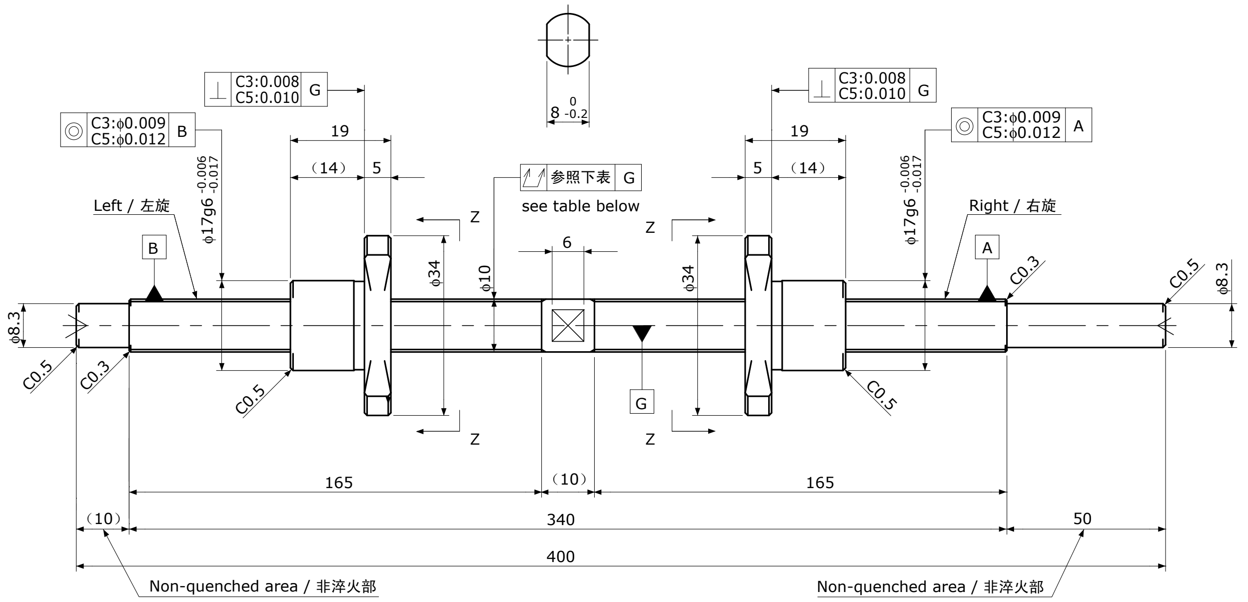
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			Travel deviation 代表移动量误差 e_p	Variation 波动 V_u				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SD0802-120L120R300C3	100	C3	±0.010	0.008	0.050	0	~0.020	1300	2300
SD0802-120L120R300C5	100	C5	±0.020	0.018	0.065	~0.005	—		

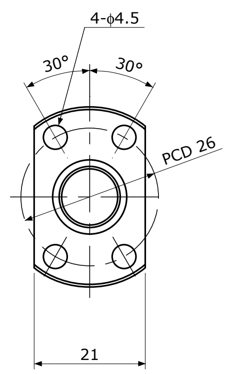
Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.

注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

Standard products in stock SD series
标准库存品 SD系列

SD1002 | Shaft dia.(轴径)φ10 Lead(导程)2mm | C3&C5





View Z-Z
Z-Z向视图

Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.2
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ9.0
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

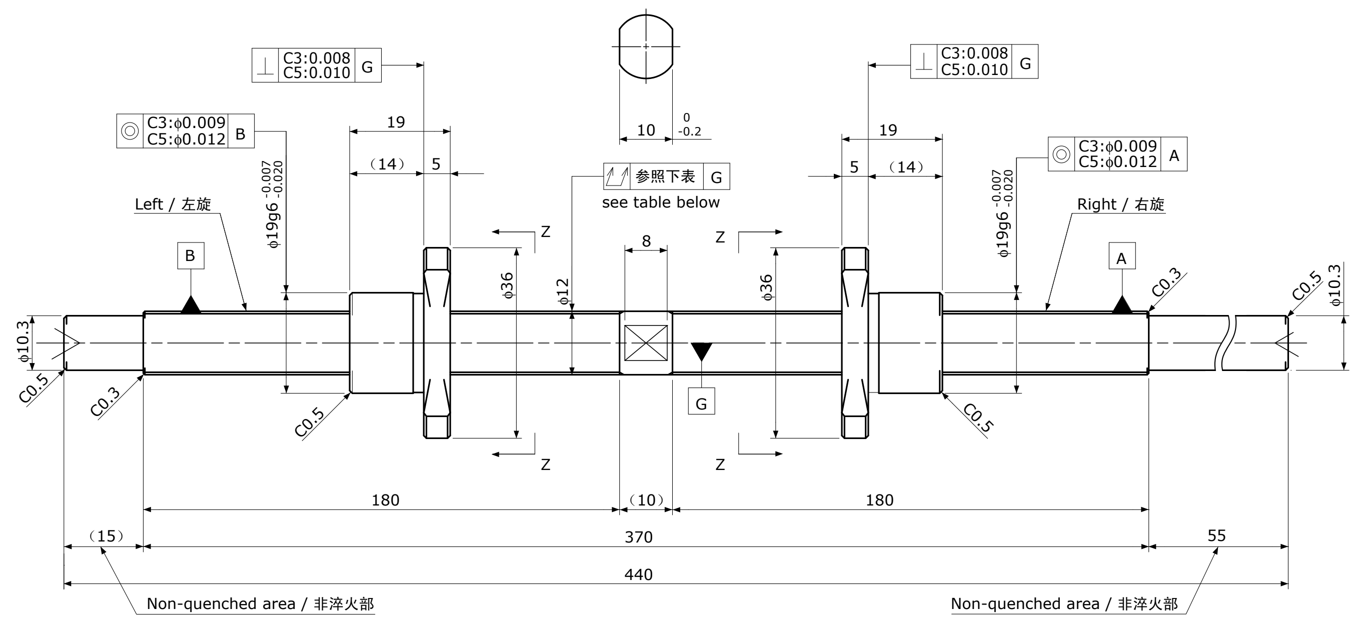
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SD1002-165L165R400C3	145	C3	±0.010	0.008	0.050	0	～0.025	1450	3000
SD1002-165L165R400C5	145	C5	±0.020	0.018	0.065	～0.005	—		

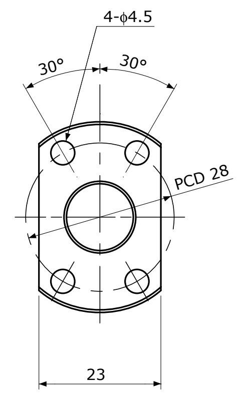
Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.

注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

Standard products in stock SD series
标准库存品 SD系列

SD1202 | Shaft dia.(轴径)φ12 Lead(导程)2mm | C3&C5





View Z-Z
Z-Z向视图

Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.2
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Left&Right 左右
Shaft root dia. 丝杠轴底径	φ11.0
Number of circuit 循环数	1×3
Shaft,Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_u	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SD1202-180L180R440C3	160	C3	±0.010	0.008	0.065	0	～0.035	1600	3700
SD1202-180L180R440C5	160	C5	±0.020	0.018	0.080	～0.005	—		

Note 1) Please designate end-journal profile with your sketch.
Note 2) Absolute position of both Nuts related to the Screw Shaft is not under the control.

注1)轴端的追加加工请结合图纸进行指示。
注2)未规定左右螺母相对于丝杠轴的绝对位置。

SR/SSR系列　冷轧滚珠丝杠标准库存品
SR/SSR series　Standardized Rolled Ball Screws

齐备有Ct7级、Ct10级冷轧滚珠丝杠的标准库存品。最适用于经济型设计，只需对轴端进行加工，即可在短期内供货。
此外，还可选用不锈钢冷轧滚珠丝杠系列。

Rolled Ball Screws with accuracy Ct7 and Ct10 are available in stock. It is suitable for low cost design. Rolled Ball Screws with end-journal machining are available for short delivery.
Stainless Rolled Ball Screws are also available.

●丝杠轴公称外径与导程的组合 Combination of Shaft nominal dia. & Lead

Unit（单位）:mm

Shaft dia. 公称外径 \ Lead 导程	1	2	2.5	4	5	6	8	10	12	15	20
4	A247 A248	A249									
5				A250							
6	A251 A252 A281	A253				A254		A255			
8	A256 A257 A282	A258 A259 A283	A260		A261		A262	A263	A264		
10		A265 A266 A284		A267	A268			A269		A270	A271
12		A272 A273						A274			
14		A275		A276							
15					A277			A278			A279

注1）用红色标示的型号可提供不锈钢冷轧滚珠丝杠。
注2）表中的数字表示产品刊载页码。
Note 1）The models marked red are available for Stainless Rolled Ball Screws.
Note 2）The numbers in a table：showing a page in this catalogue.

●公称型号的构成 Model number notation

SR　06　01　K　—　200　R　200　C7
1　2　3　4　　5　6　7　8

1系列符号
SR：冷轧滚珠丝杠
SSR：不锈钢冷轧滚珠丝杠
2丝杠轴公称外径（mm）
3导程（mm）
4螺母类型
无符号：普通型
K：紧凑型
5螺纹部长度（mm）
6螺纹旋向（R=右旋）
7丝杠轴总长（mm）
8精度等级（C7或C10）

1Rolled Ball Screws Series No.
SR：Rolled Ball Screws
SSR：Stainless Rolled Ball Screws
2Screw Shaft nominal diameter（mm）
3Lead（mm）
4Ball Nut type
None：Standard
K：Compact type
5Screw thread length（mm）
6Thread direction（R=Right-hand）
7Screw Shaft total length（mm）
8Accuracy grade（C7 or C10）

●精度等级和轴向间隙

SR系列（冷轧滚珠丝杠标准库存品）及SSR系列（不锈钢冷轧滚珠丝杠标准库存品）的精度等级有JIS Ct7和JIS Ct10两种。轴向间隙根据精度等级不同备有0.020mm以下（Ct7）及0.050mm以下（Ct10）两种。

●Accuracy Grade & Axial play

Accuracy grade of SR series（Standardized Rolled Ball Screws）and SSR series（Standardized Stainless Rolled Ball Screws）are based on JIS Ct7 and JIS Ct10. According to accuracy grade, Axial play 0.020mm or less（Ct7）and 0.050mm or less（Ct10） are in stock.

●材质和表面硬度

SR系列（冷轧滚珠丝杠标准库存品）及SSR系列（不锈钢冷轧滚珠丝杠标准库存品）的材质和表面硬度如下所示。

●Material & Surface hardness

Materials and Surface hardness of SR series（Standardized Rolled Ball Screws）and SSR series（Standardized Stainless Rolled Ball Screws）are as follows.

Products 产品类别	Material 材质	Heat treatment 热处理	Surface hardness 丝杠部分的表面硬度
Rolled Ball Screws（SR series） 普通冷轧（SR系列）	Shaft/丝杠轴： SCM415 S55C SUJ2	Carburizing 渗碳淬火 Induction Hardening 高频淬火 Quench & Temper 淬火回火	HRC58 or more HRC58以上
	Nut / 螺母：SCM415	Carburizing and Quenching 渗碳淬火	
Stainless Rolled Ball Screws （SSR series） 不锈钢冷轧（SSR系列）	Shaft/丝杠轴：SUS440C	Induction hardening 高频淬火	HRC55 or more HRC55以上
	Nut / 螺母：SUS440C	Vacuum hardening 真空淬火	

●润 滑

为防止生锈，未对轴端进行加工的SR系列（冷轧滚珠丝杠标准库存品）及SSR系列（不锈钢冷轧滚珠丝杠标准库存品）产品均涂抹有防锈油。由于防锈油不具备润滑性，因此在使用前请另行涂抹润滑剂。
如无特殊指定，建议使用KSS原装润滑油脂（MSG No.2）。

●Lubrication

SR series（Standardized Rolled Ball Screws）and SSR series（Standardized Stainless Rolled Ball Screws）without end-journal machining are applied with anti-rust oil for rust prevention.
Anti-rust oil does not have lubricating function so that please apply the Grease or lubrication oil when using the Ball Screws.
If there is no specific instruction, KSS would recommend our original Grease（MSG No.2）as standard lubricant.
Please feel free to contact us.

●精密冷轧滚珠丝杠

也可生产实现了高精度（JIS C5）的冷轧滚珠丝杠（PSR/PSRT系列）。请参照A319页。

●Precision Rolled Ball Screws

High accuracy（JIS C5）can be produced by Rolled process, what we call Precision Rolled Ball Screws（PSR/PSRT series）.Please see page A319.

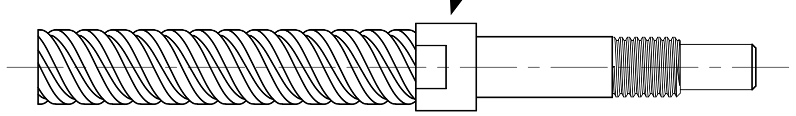
●其他

SR系列（冷轧滚珠丝杠标准库存品）及SSR系列（不锈钢冷轧滚珠丝杠标准库存品）的轴端形状未进行标准化。联系本公司进行追加加工时，请客户提供规格图。
此外，固定侧轴端可设计得大于丝杠轴外径的“台阶型冷轧滚珠丝杠”（参照下图）也实现了产品系列化，详情请参照第A285页或垂询本公司。

●Others

End-journal configuration of SR series（Standardized Rolled Ball Screws）and SSR series（Standardized stainless Rolled Ball Screws）are not standardized. When you request additional machining, please send us a drawing with end-journal profile.
Rolled Ball Screws with Integrated end-journal, which is bigger Bearing face than supported seat, are available（SRT/SSRT series）as shown below.
Please refer to page A285 or ask KSS.

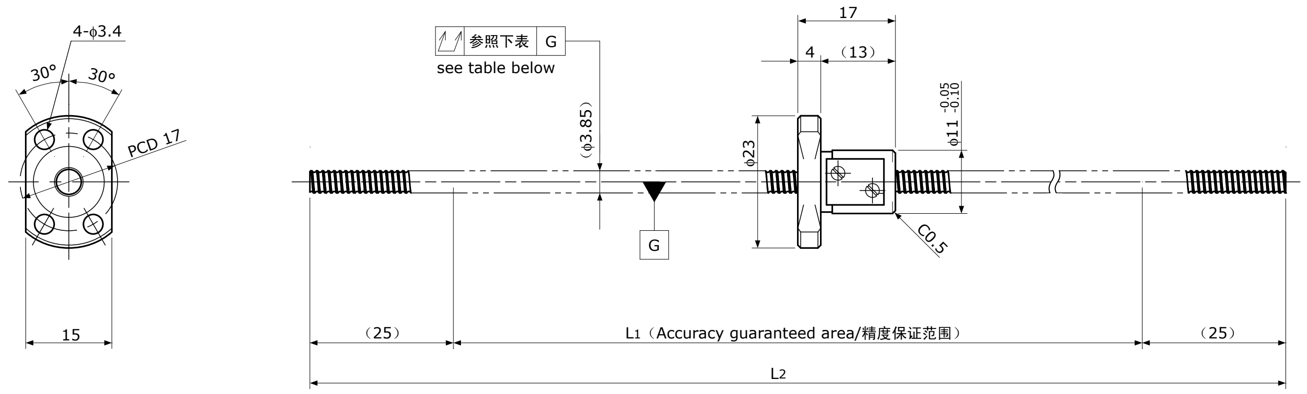
台阶部尺寸可设定得大于滚珠丝杠外径
Flanged end-journal for Bearing seat.



Standard products in stock SR series
标准库存品 SR系列

SR0401

Shaft dia.(轴径)φ4 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ3.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0401-250R250C7	180	Ct7	200	250	±0.03	—	0.200	～0.020	—	560	790
SR0401-250R250C10	180	Ct10	200	250	±0.14	—	0.400	～0.050			

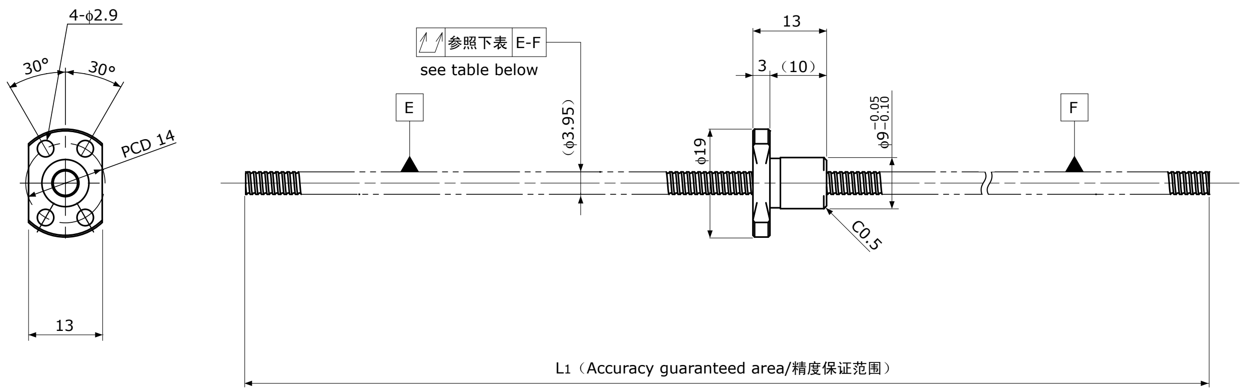
Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0401K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ4 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.6
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ3.4
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

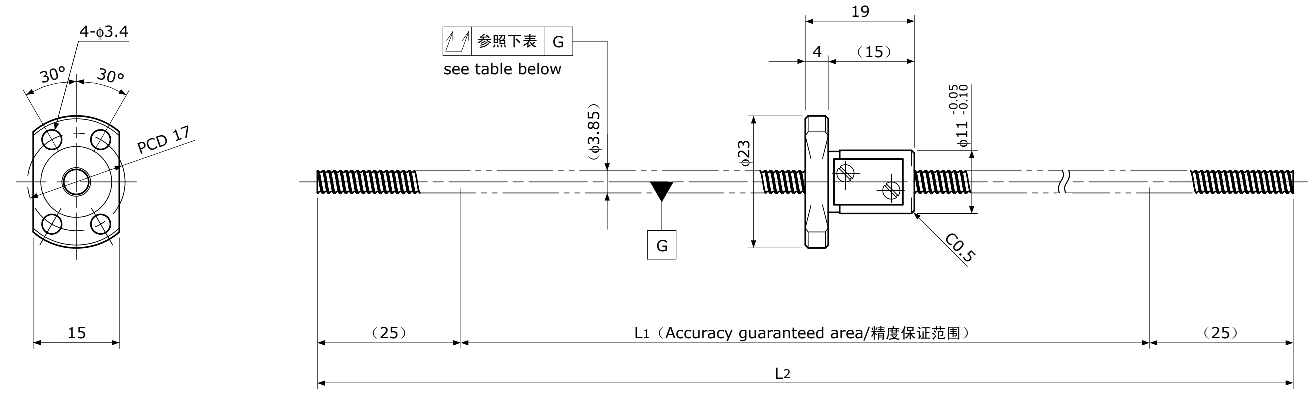
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0401K-100R100C7	80	Ct7	100	—	±0.02	—	0.080	～0.020	—	300	430
SR0401K-100R100C10	80	Ct10	100	—	±0.07	—	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

SR0402

Shaft dia.(轴径)φ4 Lead(导程)2mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ3.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

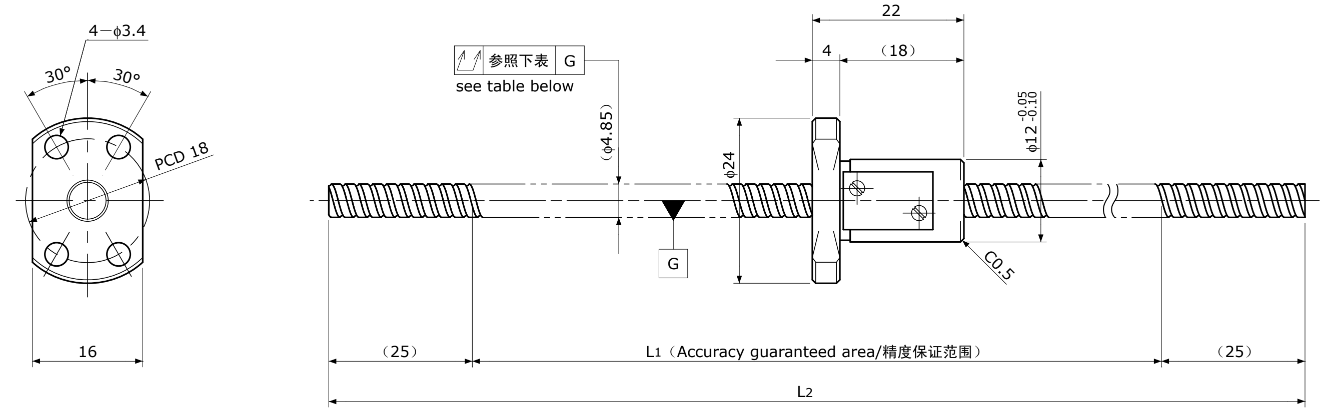
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0402-250R250C7	180	Ct7	200	250	±0.03	—	0.200	～0.020	—	420	570
SR0402-250R250C10	180	Ct10	200	250	±0.14	—	0.400	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0504

Shaft dia.(轴径)φ5 Lead(导程)4mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ4.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

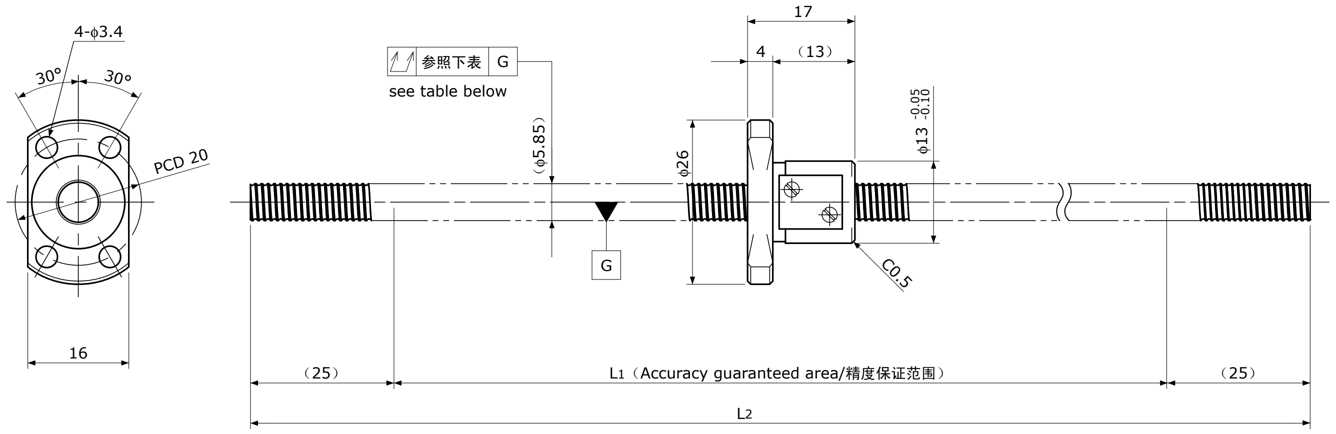
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0504-250R250C7	175	Ct7	200	250	±0.03	—	0.120	～0.020	—	470	720
SR0504-250R250C10	175	Ct10	200	250	±0.14	—	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0601

Shaft dia.(轴径)φ6 Lead(导程)1mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0601-300R300C7	230	Ct7	250	300	±0.04	—	0.120	~0.020	—	680	1200
SR0601-300R300C10	230	Ct10	250	300	±0.17	—	0.240	~0.050			

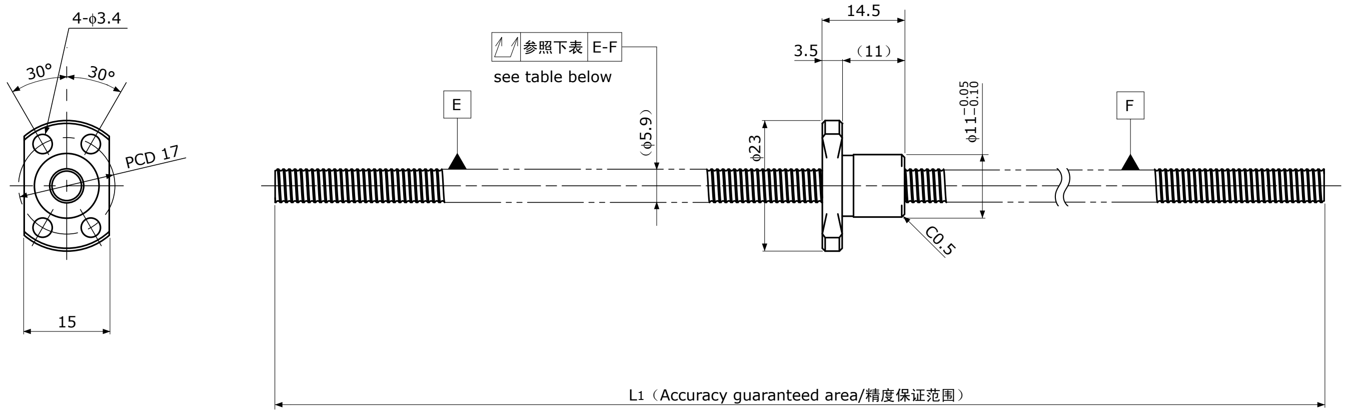
Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0601K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ6 Lead(导程)1mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.3
Number of circuit 循环数		1×3
material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58~ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

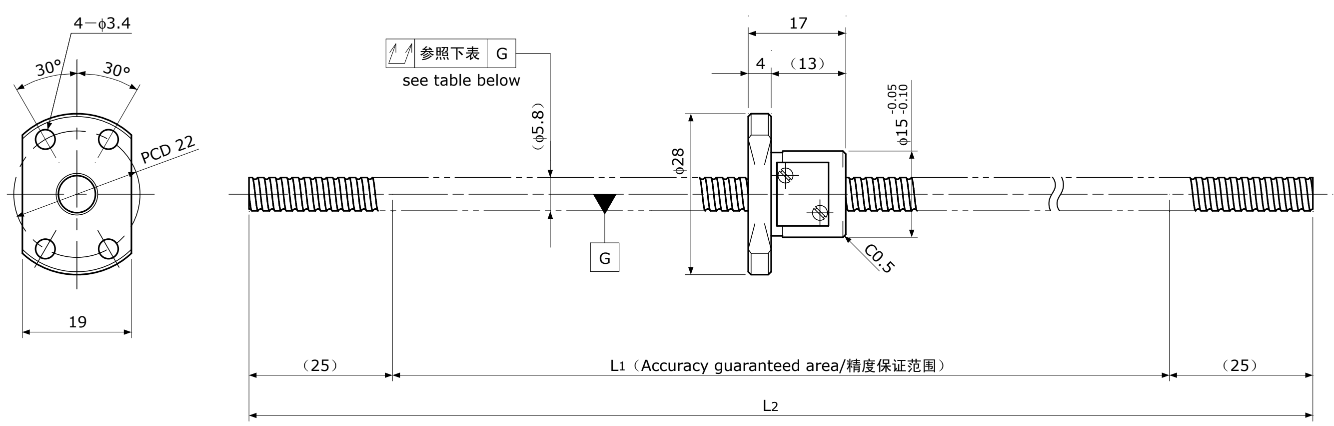
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0601K-200R200C7	175	Ct7	200	—	±0.03	—	0.080	~0.020	—	560	950
SR0601K-200R200C10	175	Ct10	200	—	±0.14	—	0.160	~0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series 标准库存品 SR系列

SR0602 | Shaft dia.(轴径)φ6 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.1
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

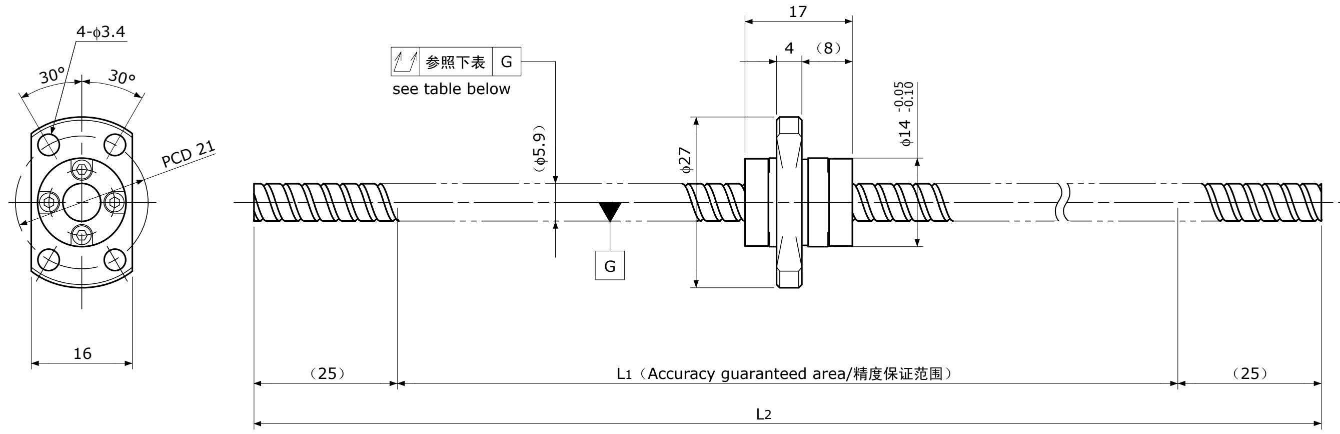
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度 Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0602-300R300C7	230	Ct7	250	300	±0.04	—	0.120	～0.020	—	750	1200
SR0602-300R300C10	230	Ct10	250	300	±0.17	—	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series 标准库存品 SR系列

SR0606 | Shaft dia.(轴径)φ6 Lead(导程)6mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.2
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

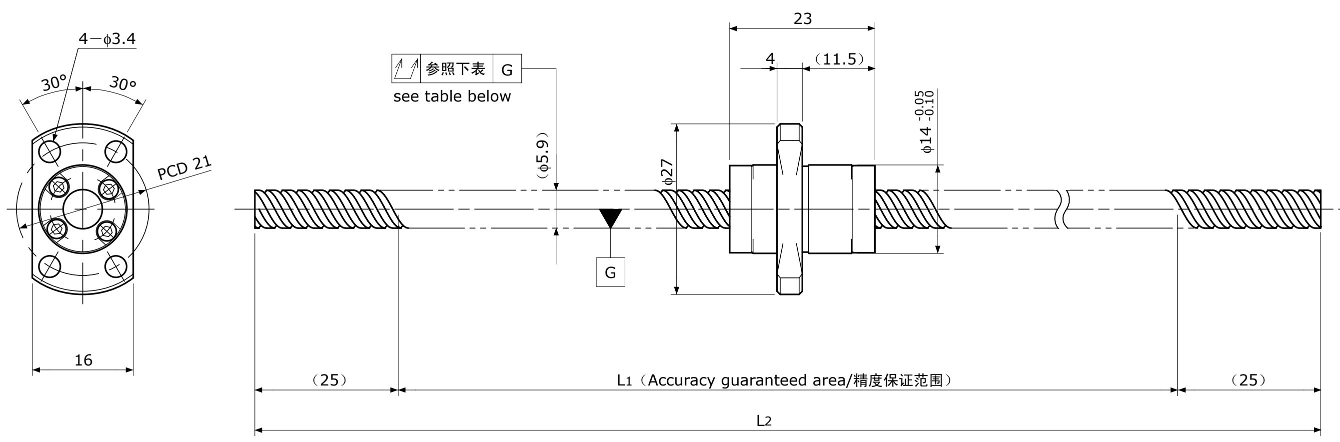
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度 Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0606-300R300C7	230	Ct7	250	300	±0.04	—	0.120	～0.020	—	870	1450
SR0606-300R300C10	230	Ct10	250	300	±0.17	—	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0610

Shaft dia.(轴径)φ6 Lead(导程)10mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.2
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.0
Number of circuit 循环数	1.2×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

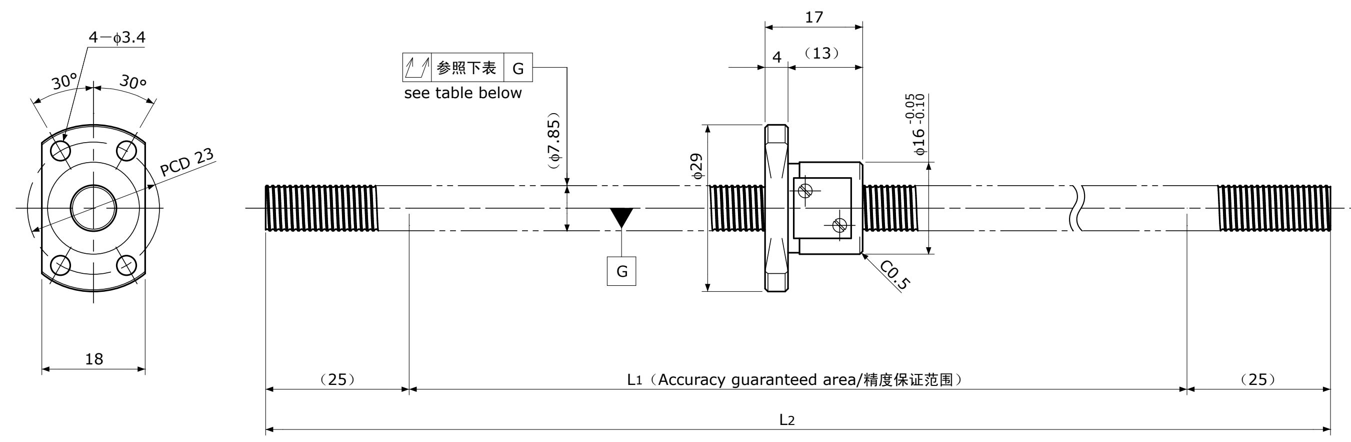
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0610-300R300C7	225	Ct7	250	300	±0.04	—	0.120	～0.020	—	950	1600
SR0610-300R300C10	225	Ct10	250	300	±0.17	—	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0801

Shaft dia.(轴径)φ8 Lead(导程)1mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ7.3
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0801-400R400C7	330	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	780	1650
SR0801-400R400C10	330	Ct10	350	400	±0.24	0.21	0.240	～0.050			

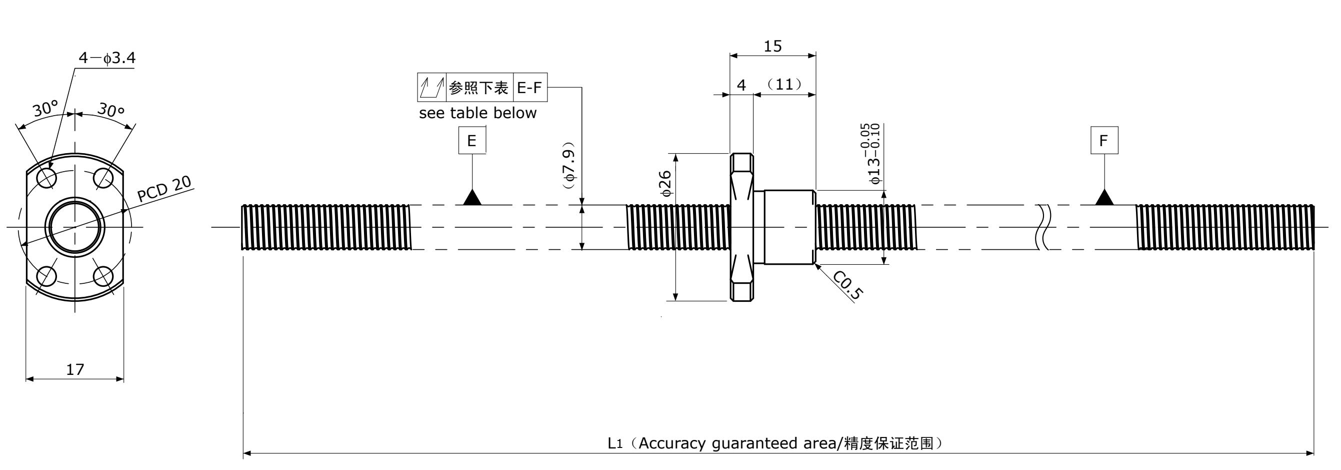
Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series 标准库存品 SR系列

SR0801K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ8 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.3
Number of circuit 循环数		1×3
material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

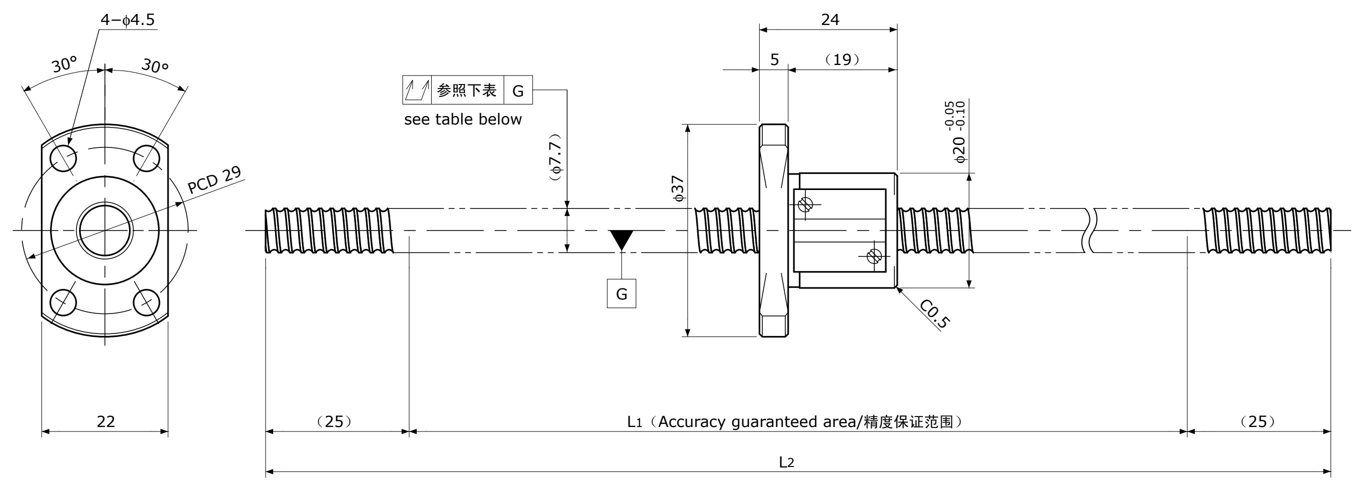
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0801K-230R230C7	200	Ct7	230	—	±0.03	—	0.080	～0.020	—	650	1300
SR0801K-230R230C10	200	Ct10	230	—	±0.16	—	0.160	～0.050			

Note)Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

SR0802

Shaft dia.(轴径)φ8 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0802-400R400C7	325	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	2400	4100
SR0802-400R400C10	325	Ct10	350	400	±0.24	0.21	0.240	～0.050			

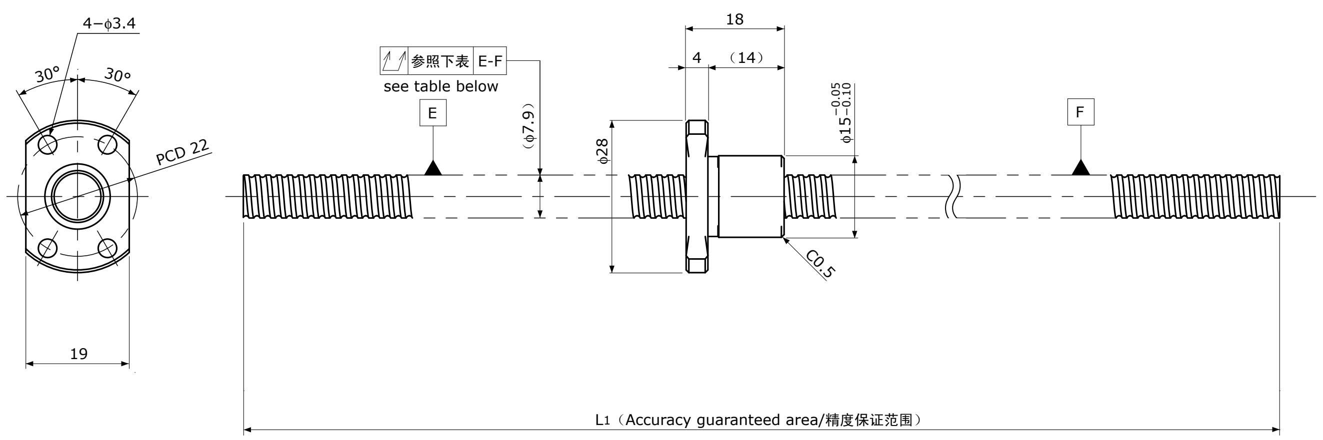
Note)Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0802K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ8 Lead(导程)2mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

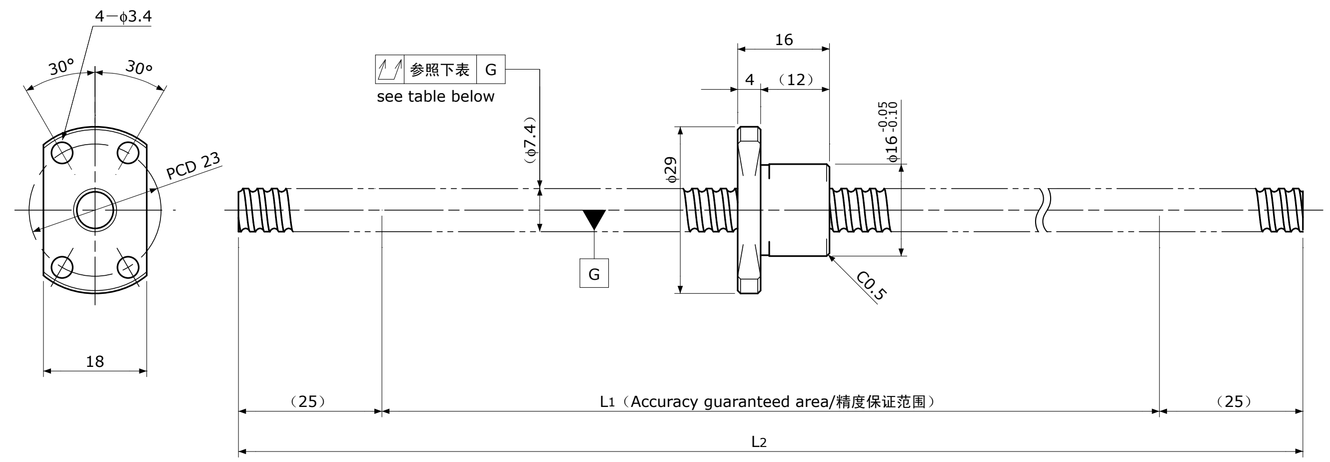
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0802K-230R230C7	200	Ct7	230	—	±0.03	—	0.080	～0.020	—	1300	2300
SR0802K-230R230C10	200	Ct10	230	—	±0.16	—	0.160	～0.050			

Note)Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0802.5

Shaft dia.(轴径)φ8 Lead(导程)2.5mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.3
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

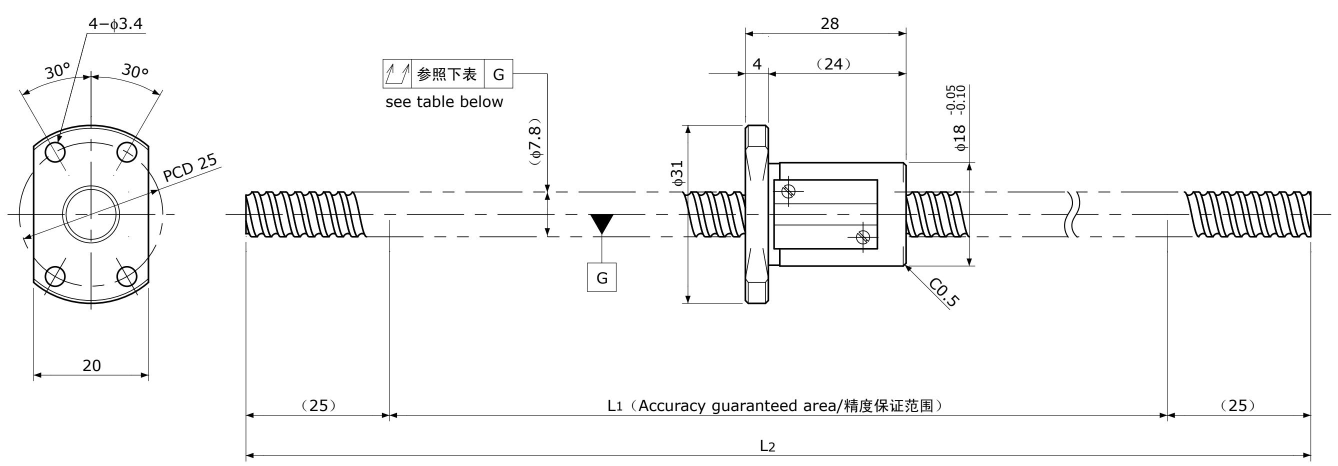
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0802.5-400R400C7	330	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	1850	3000
SR0802.5-400R400C10	330	Ct10	350	400	±0.24	0.21	0.240	～0.050			

Note)Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0805 | Shaft dia.(轴径)φ8 Lead(导程)5mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.6
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

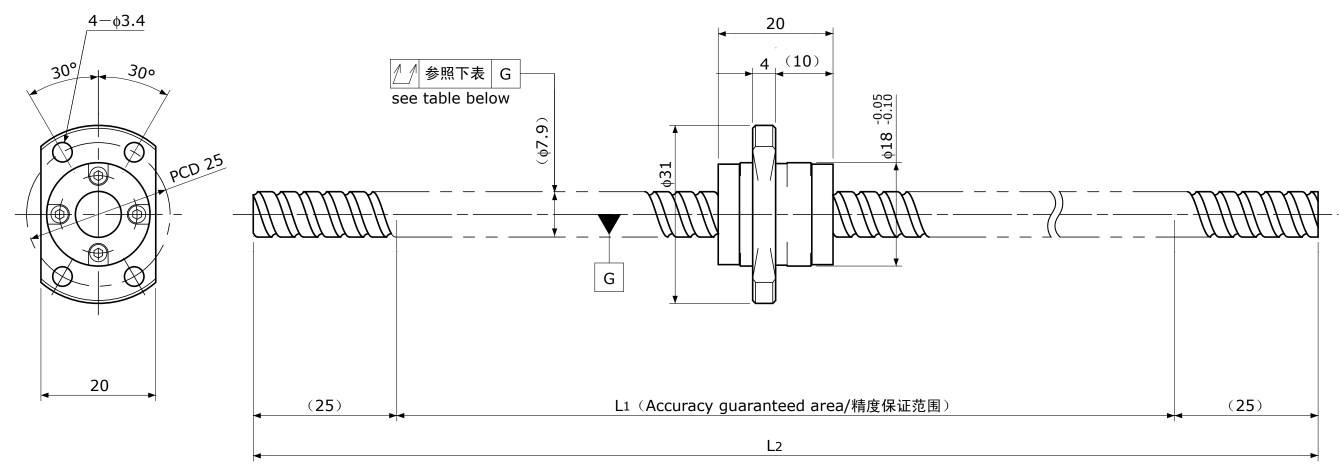
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L1	L2	Travel deviation 代表移动量误差 ep	Variation 波动 V300				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0805-400R400C7	320	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	1850	3000
SR0805-400R400C10	320	Ct10	350	400	±0.24	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR0808 | Shaft dia.(轴径)φ8 Lead(导程)8mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.7
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

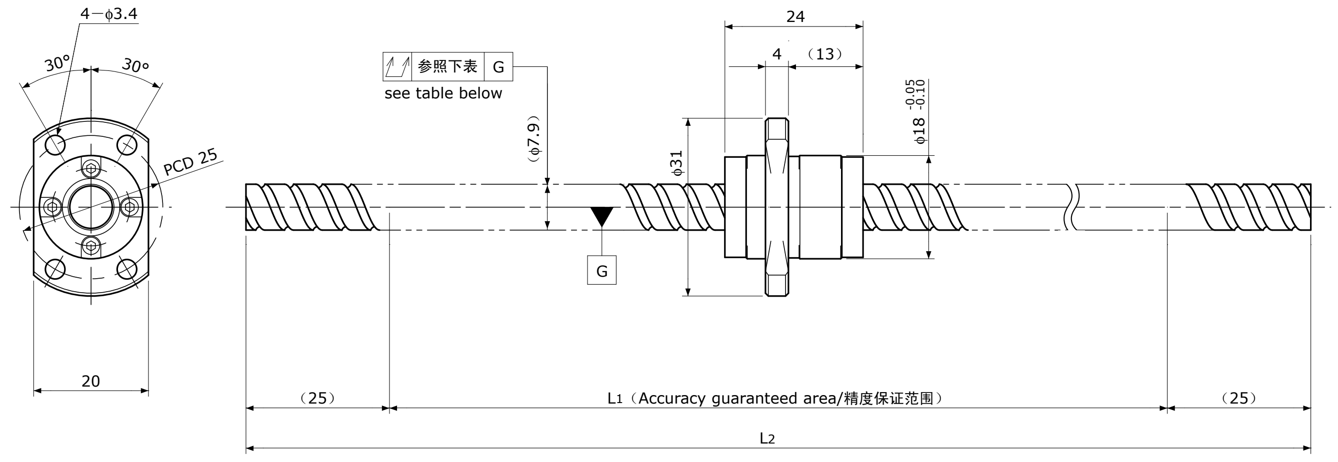
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L1	L2	Travel deviation 代表移动量误差 ep	Variation 波动 V300				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR0808-400R400C7	330	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	2200	3800
SR0808-400R400C10	330	Ct10	350	400	±0.24	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Ball Scresw
滚珠丝杠
Standard products in stock SR/SSR series
标准库存品 SR/SSR系列

SR0810 | Shaft dia.(轴径)φ8 Lead(导程)10mm | Ct7&Ct10



Unit(单位):mm

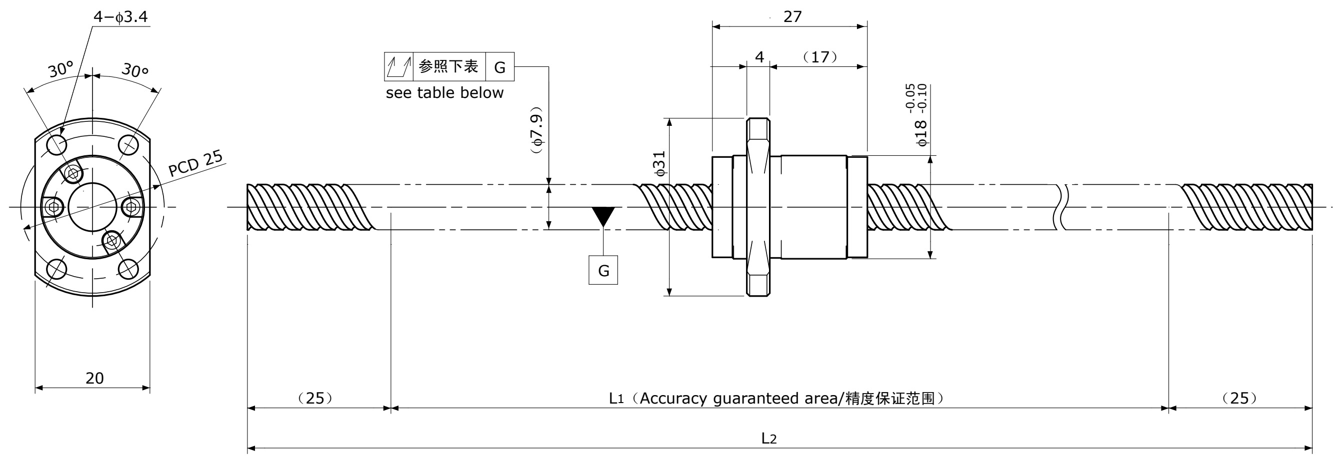
Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.7
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0810-400R400C7	325	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	2200	3800
SR0810-400R400C10	325	Ct10	350	400	±0.24	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

SR0812 | Shaft dia.(轴径)φ8 Lead(导程)12mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.7
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

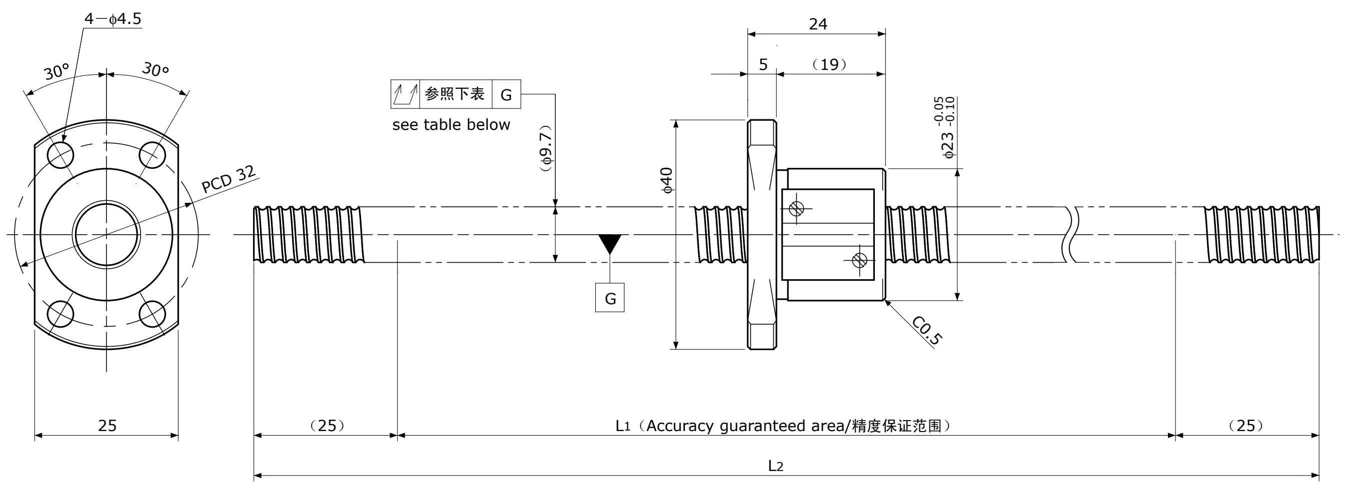
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR0812-400R400C7	320	Ct7	350	400	±0.06	0.05	0.120	～0.020	—	2200	4000
SR0812-400R400C10	320	Ct10	350	400	±0.24	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series 标准库存品 SR系列

SR1002 | Shaft dia.(轴径)φ10 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

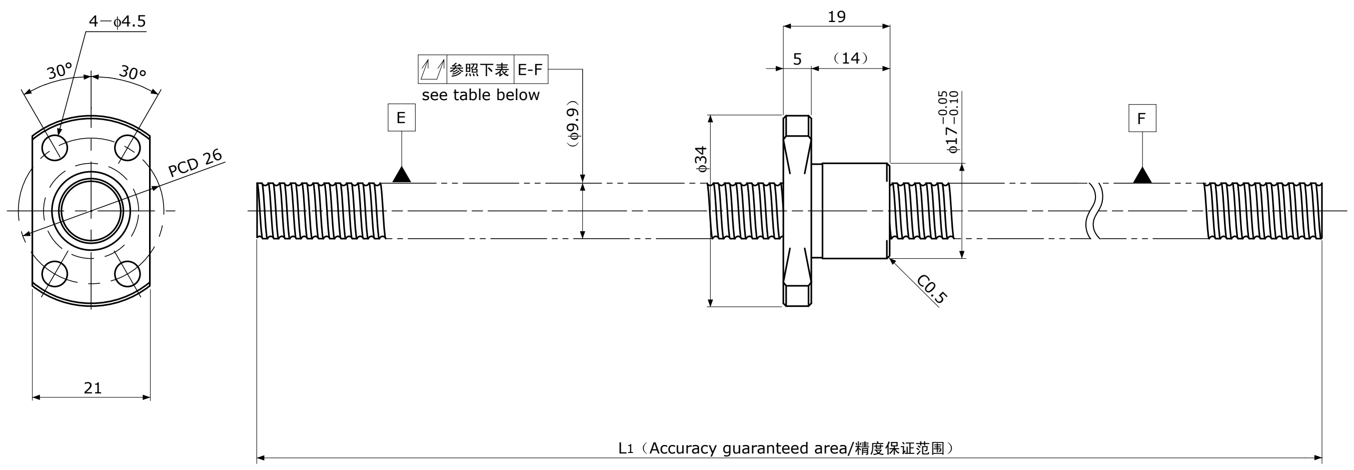
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1002-400R400C7	325	Ct7	350	400	±0.05	0.05	0.080	～0.020	—	2700	5300
SR1002-400R400C10	325	Ct10	350	400	±0.24	0.21	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series 标准库存品 SR系列

SR1002K | Compact Nut / 紧凑型螺母 Shaft dia.(轴径)φ10 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ9.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

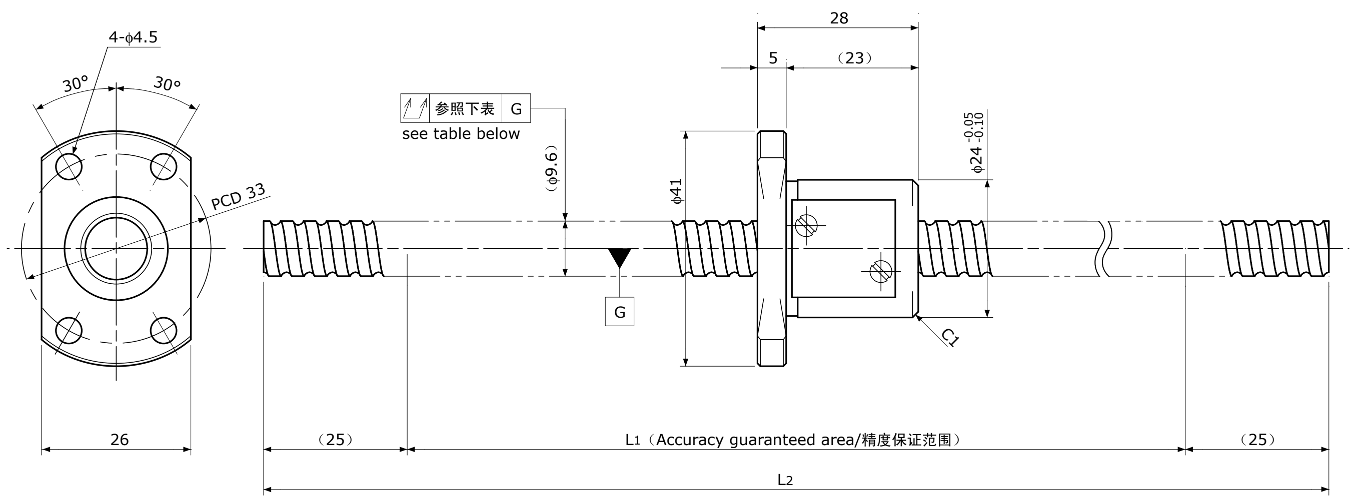
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1002K-230R230C7	200	Ct7	230	—	±0.03	—	0.080	～0.020	—	1450	3000
SR1002K-230R230C10	200	Ct10	230	—	±0.16	—	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1004 | Shaft dia.(轴径)φ10 Lead(导程)4mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.2
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

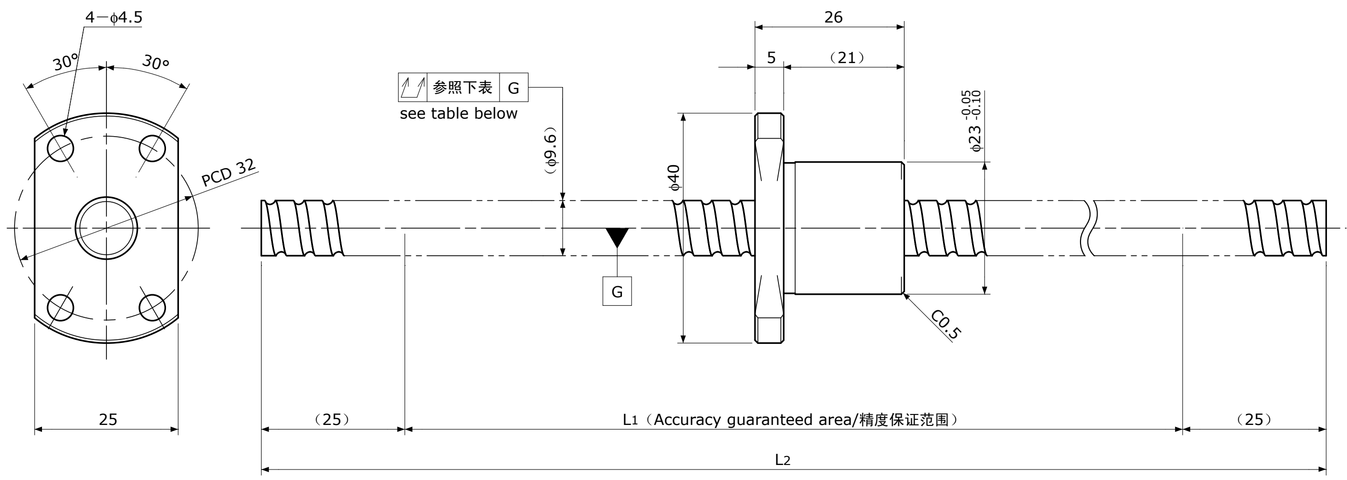
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L1	L2	Travel deviation 代表移动量误差 ep	Variation 波动 V300				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR1004-450R450C7	370	Ct7	400	450	±0.06	0.05	0.120	～0.020	—	3000	5200
SR1004-450R450C10	370	Ct10	400	450	±0.28	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1005 | Shaft dia.(轴径)φ10 Lead(导程)5mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.2
Number of circuit 循环数	2.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

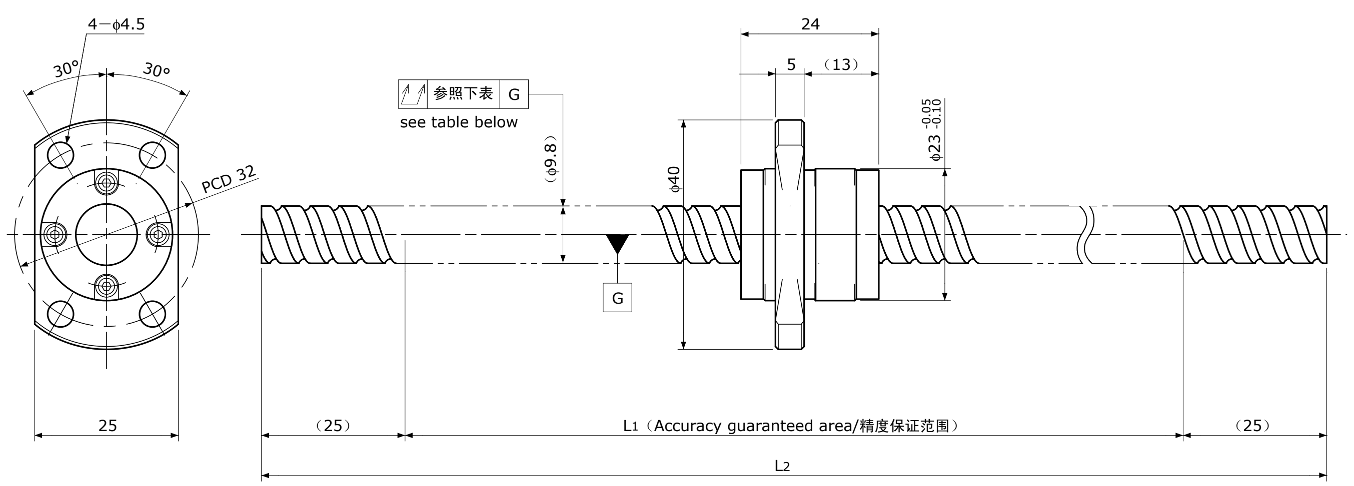
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L1	L2	Travel deviation 代表移动量误差 ep	Variation 波动 V300				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR1005-450R450C7	370	Ct7	400	450	±0.06	0.05	0.120	～0.020	—	3000	5200
SR1005-450R450C10	370	Ct10	400	450	±0.28	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1010 | Shaft dia.(轴径)φ10 Lead(导程)10mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.4
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

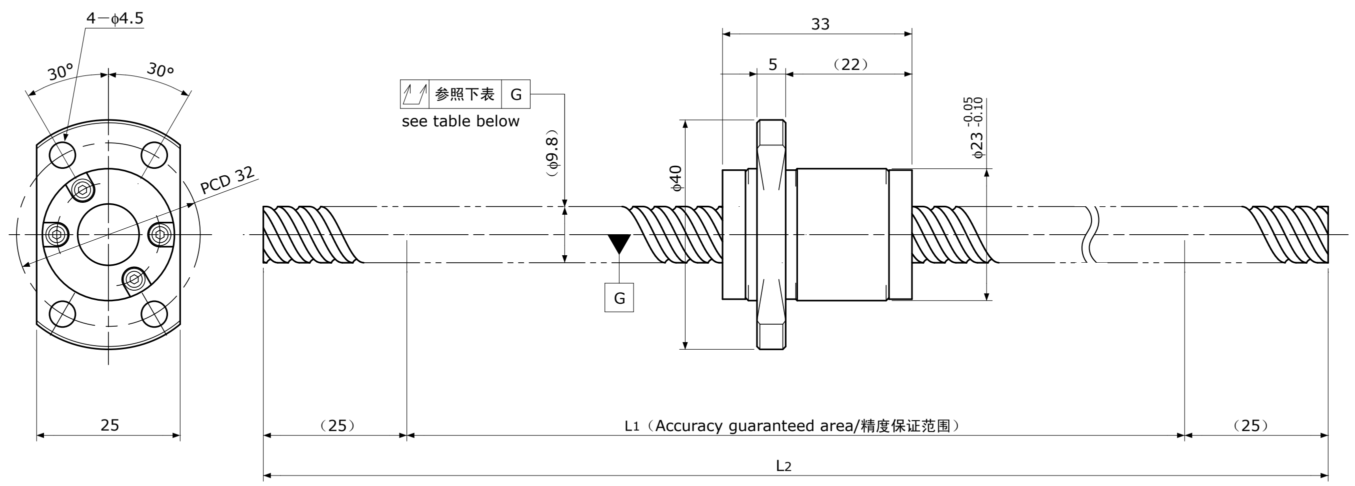
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SR1010-450R450C7	375	Ct7	400	450	±0.06	0.05	0.120	～0.020	—	3300	5900
SR1010-450R450C10	375	Ct10	400	450	±0.28	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注）轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1015 | Shaft dia.(轴径)φ10 Lead(导程)15mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.0
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.4
Number of circuit 循环数	1.6×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

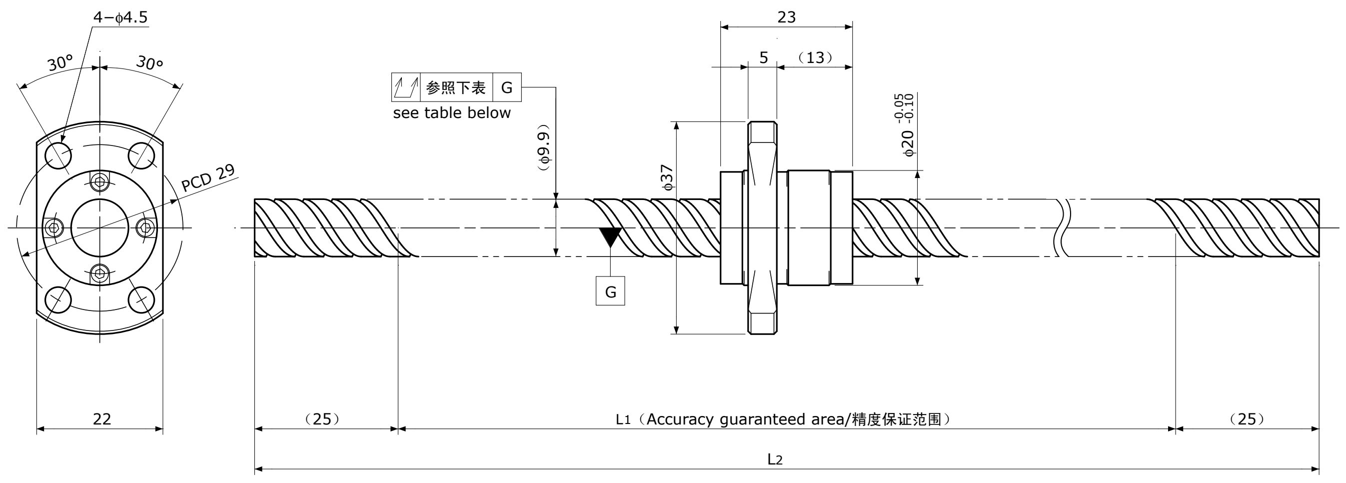
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SR1015-450R450C7	365	Ct7	400	450	±0.06	0.05	0.120	～0.020	—	3300	6400
SR1015-450R450C10	365	Ct10	400	450	±0.28	0.21	0.240	～0.050			

Note) Please designate end-journal profile with your sketch. 注）轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1020 | Shaft dia.(轴径)φ10 Lead(导程)20mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	4
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.7
Number of circuit 循环数	0.7×4
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

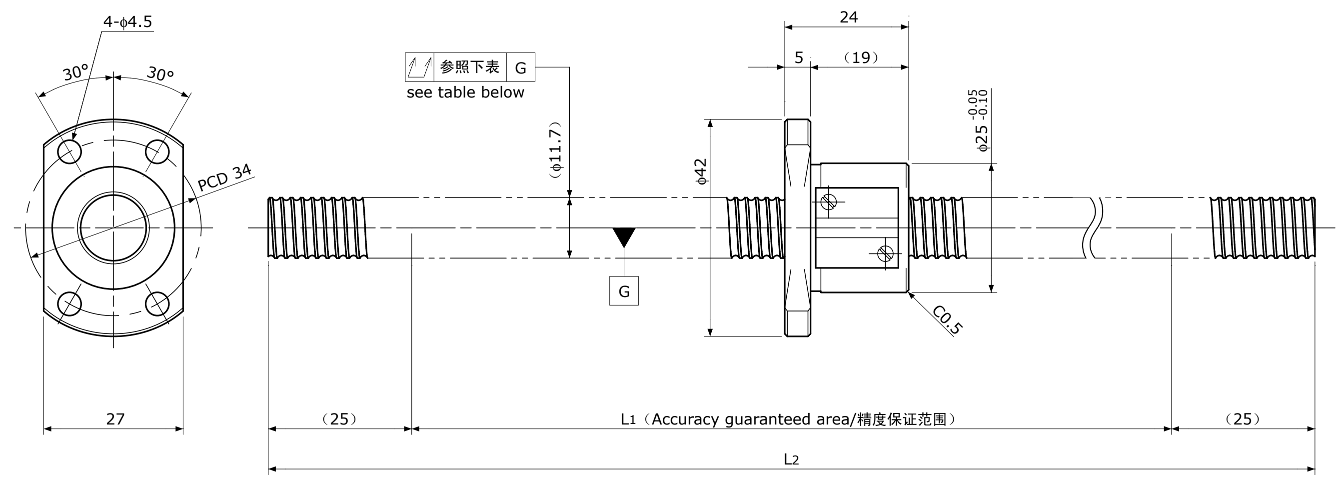
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR1020-450R450C7	375	Ct7	400	450	±0.06	0.05	0.120	~0.020	—	2100	4000
SR1020-450R450C10	375	Ct10	400	450	±0.28	0.21	0.240	~0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1202 | Shaft dia.(轴径)φ12 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ10.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58~62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR1202-450R450C7	375	Ct7	400	450	±0.06	0.05	0.080	~0.020	—	3000	6400
SR1202-450R450C10	375	Ct10	400	450	±0.28	0.21	0.160	~0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

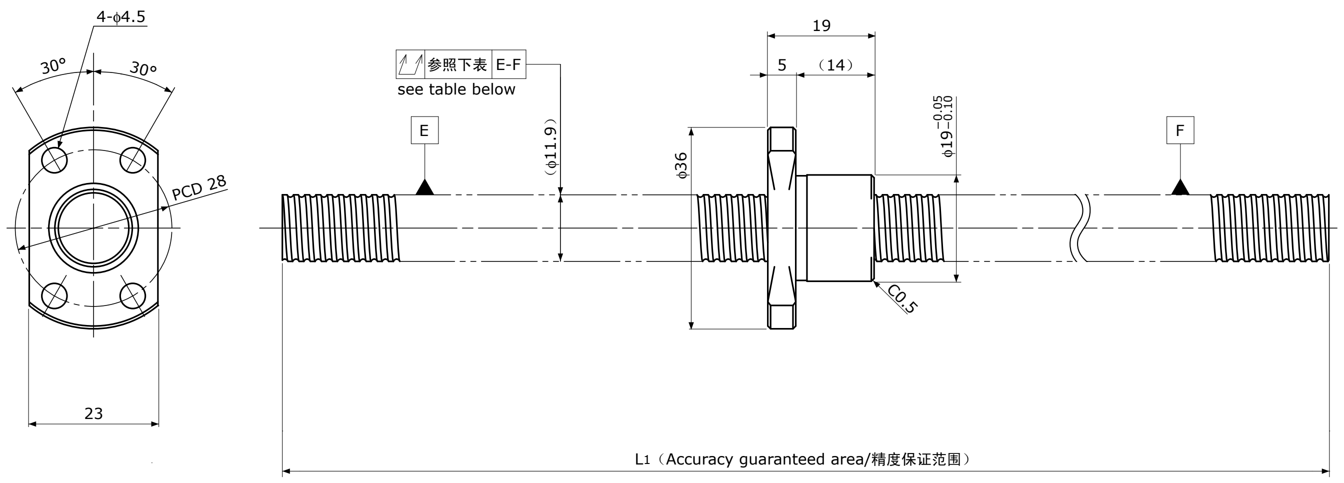
Ball Scresw
滚珠丝杠
Standard products in stock SR/SSR series
标准库存品 SR/SSR系列

Standard products in stock SR series
标准库存品 SR系列

SR1202K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ12 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ11.0
Number of circuit 循环数		1×3
material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

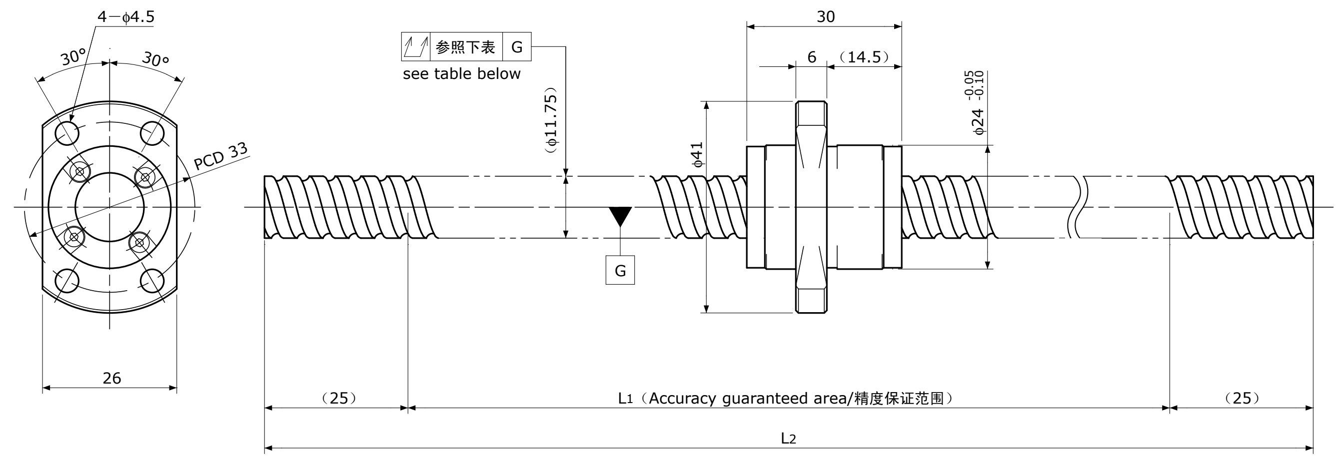
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度: Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度: Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SR1202K-280R280C7	250	Ct7	280	—	±0.04	—	0.080	～0.020	—	1600	3700
SR1202K-280R280C10	250	Ct10	280	—	±0.19	—	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1210

Shaft dia.(轴径)φ12 Lead(导程)10mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.381
Number of thread 螺纹条数	2
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ10.2
Number of circuit 循环数	1.7×2
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

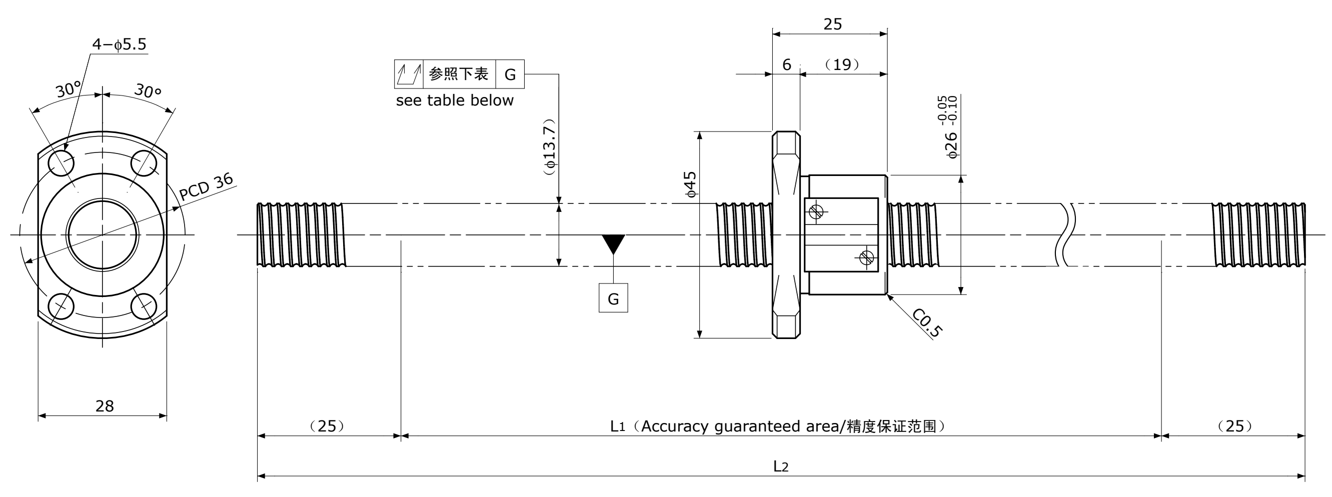
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度: Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度: Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SR1210-450R450C7	370	Ct7	400	450	±0.06	0.05	0.080	～0.020	—	5100	9800
SR1210-450R450C10	370	Ct10	400	450	±0.28	0.21	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1402 | Shaft dia.(轴径)φ14 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ12.6
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

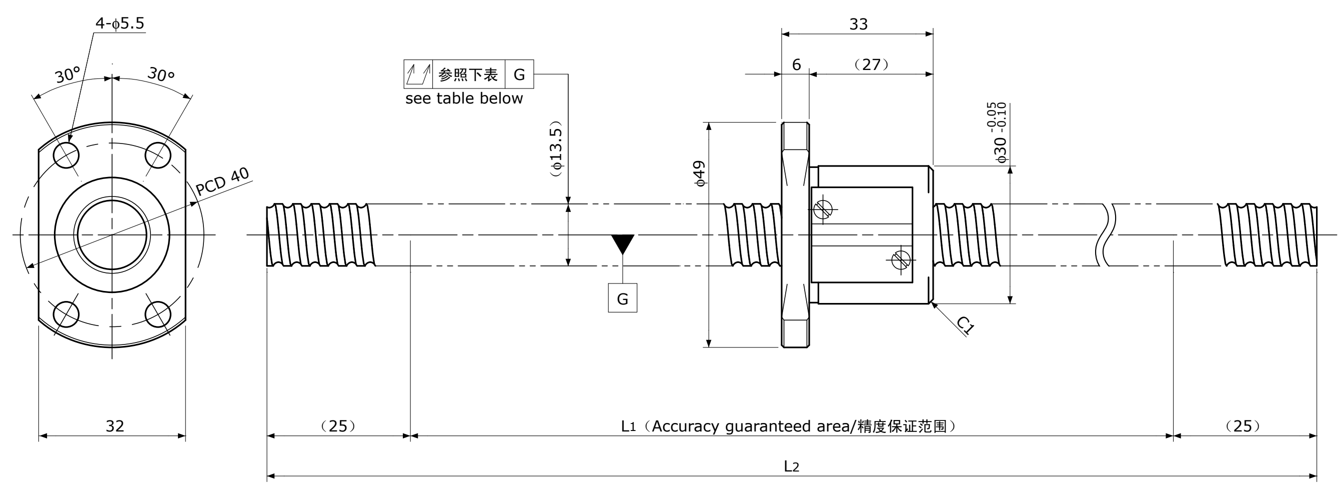
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1402-500R500C7	425	Ct7	450	500	±0.07	0.05	0.080	～0.020	—	3200	7500
SR1402-500R500C10	425	Ct10	450	500	±0.31	0.21	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1404 | Shaft dia.(轴径)φ14 Lead(导程)4mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ2.381
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ11.8
Number of circuit 循环数	3.7×1
Shaft, Nut material 轴、螺母材质	SCM415H
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

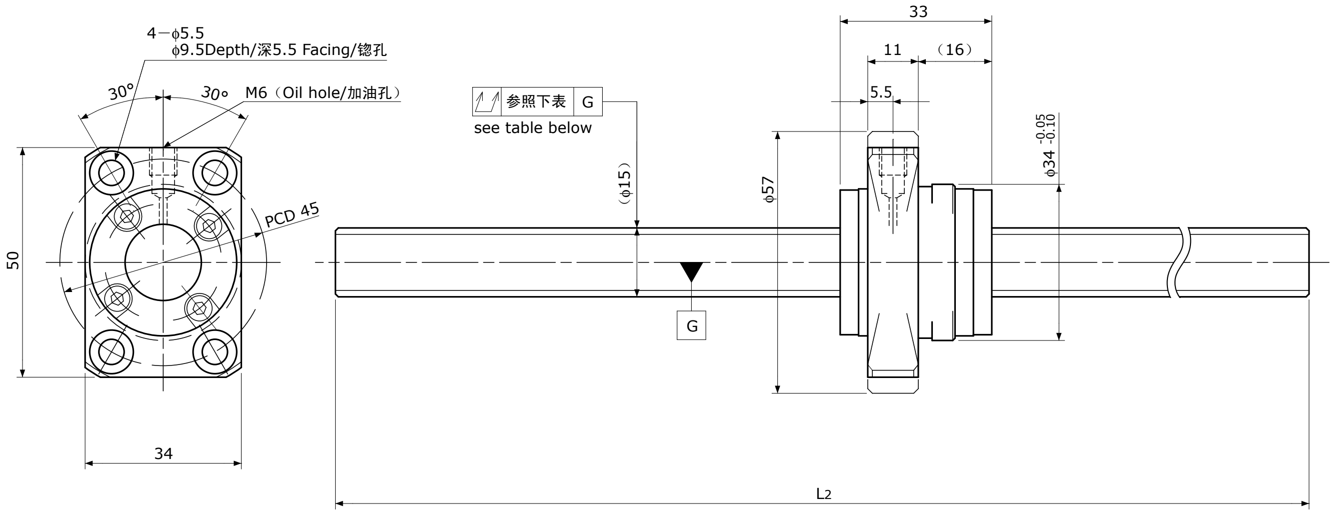
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1404-500R500C7	415	Ct7	450	500	±0.07	0.05	0.080	～0.020	—	5700	11600
SR1404-500R500C10	415	Ct10	450	500	±0.31	0.21	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1505 | Shaft dia.(轴径)φ15 Lead(导程)5mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ3.175
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ12.2
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SUJ2
	Nut 螺母	SCM415
Surface hardness 螺纹部表面硬度		HRC58～62 (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

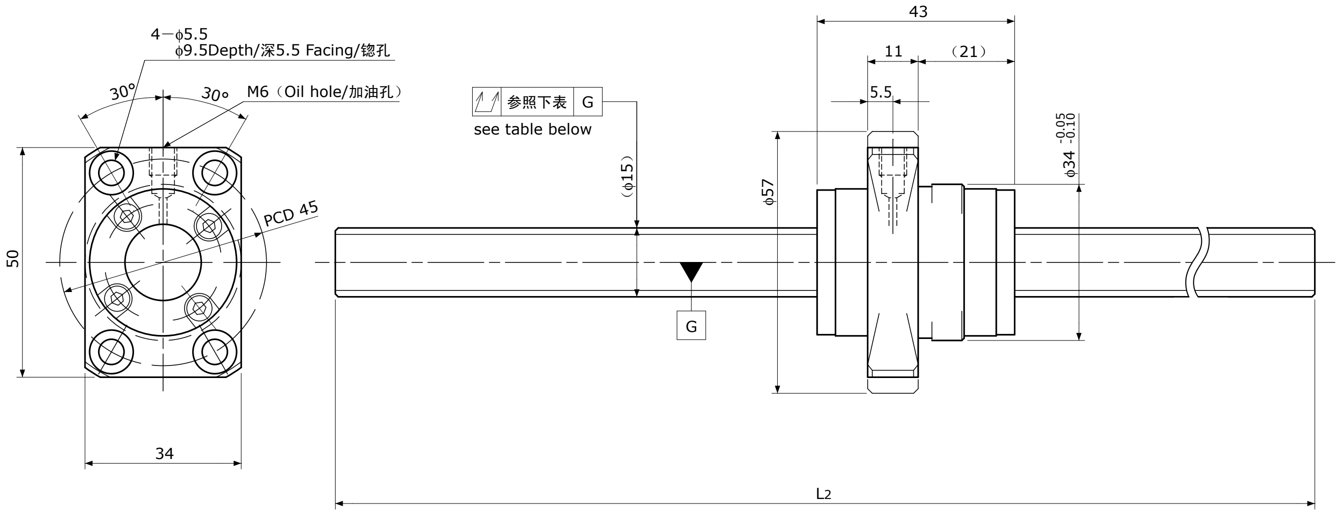
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度 Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1505-1000R1000C7	965	Ct7	—	1000	±0.17	0.05	0.200	～0.020	—	8900	17000
SR1505-1000R1000C10	965	Ct10	—	1000	±0.7	0.21	0.400	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SR series
标准库存品 SR系列

SR1510 | Shaft dia.(轴径)φ15 Lead(导程)10mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ3.175
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ12.2
Number of circuit 循环数		2.7×2
Material 材质	Shaft 轴	SUJ2
	Nut 螺母	SCM415
Surface hardness 螺纹部表面硬度		HRC58～62 (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

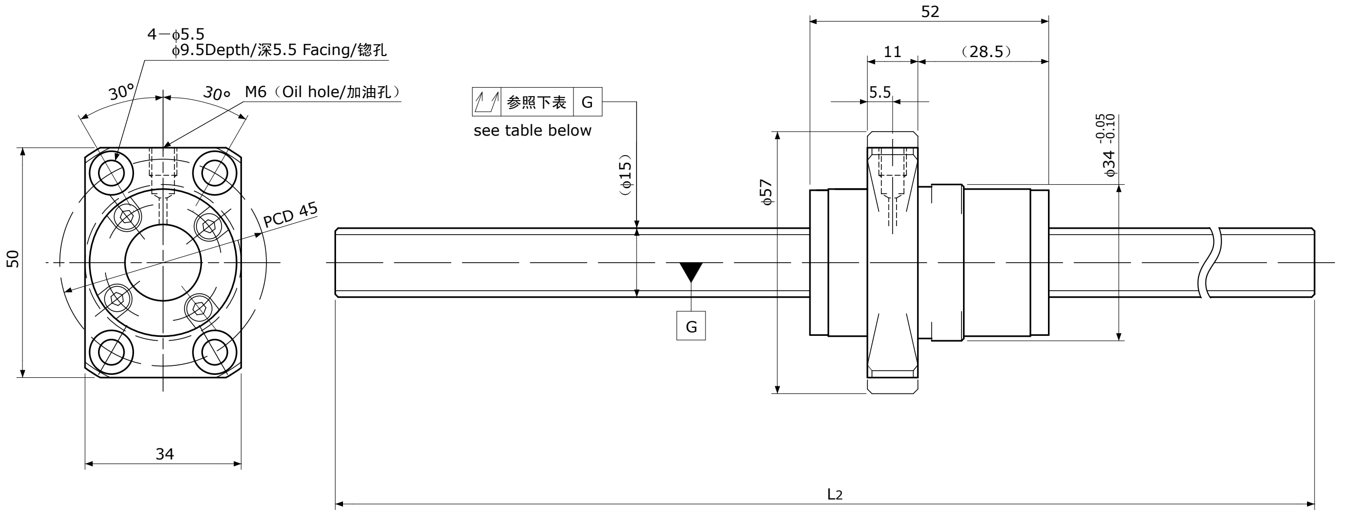
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度 Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SR1510-1000R1000C7	955	Ct7	—	1000	±0.17	0.05	0.200	～0.020	—	12000	25000
SR1510-1000R1000C10	955	Ct10	—	1000	±0.7	0.21	0.400	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Ball Screw
滚珠丝杠
Standard products in stock SR/SSR series
标准库存品 SR/SSR系列

Standard products in stock SR series
标准库存品 SR系列

SR1520 | Shaft dia.(轴径)φ15 Lead(导程)20mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications	主要技术参数	
Ball size 钢珠直径		φ3.175
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ12.7
Number of circuit 循环数		1.7×2
Material 材质	Shaft 轴	SUJ2
	Nut 螺母	SCM415
Surface hardness 螺纹部表面硬度		HRC58～62 (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

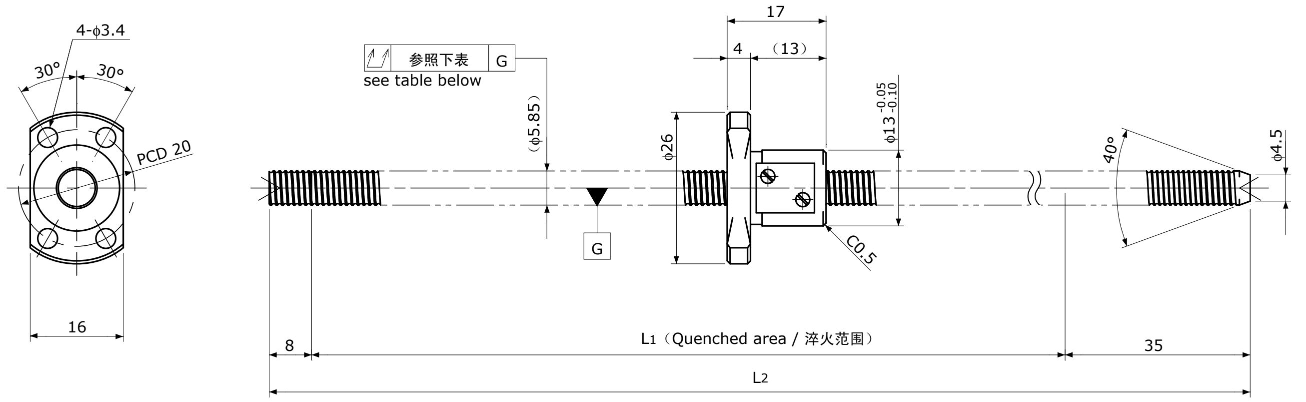
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度		Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SR1520-1000R1000C7	945	Ct7	—	1000	±0.17	0.05	0.200	～0.020	—	8000	16000
SR1520-1000R1000C10	945	Ct10	—	1000	±0.7	0.21	0.400	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SSR series
标准库存品 SSR系列

SSR0601

Stainless 不锈钢
Shaft dia.(轴径)φ6 Lead(导程)1mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ5.3
Number of circuit 循环数	3.7×1
Shaft,Nut material 轴、螺母材质	SUS440C
Surface hardness 螺纹部表面硬度	HRC55~ (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

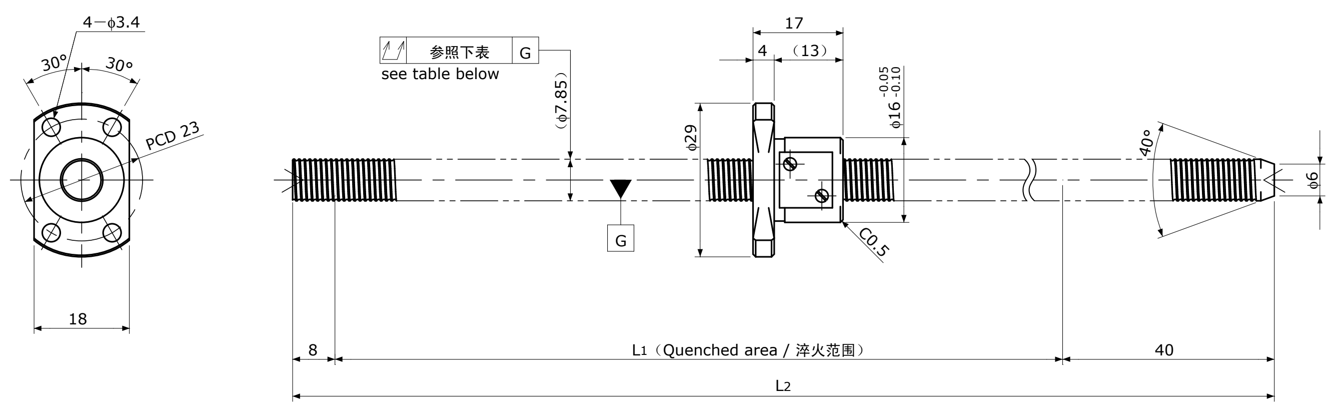
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SSR0601-300C7	240	Ct7	257	300	±0.04	0.05	0.120	~0.020	—	560	900
SSR0601-300C10	240	Ct10	257	300	±0.17	0.21	0.240	~0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SSR series
标准库存品 SSR系列

SSR0801

Stainless 不锈钢
Shaft dia.(轴径)φ8 Lead(导程)1mm Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ0.8
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ7.3
Number of circuit 循环数	3.7×1
Shaft,Nut material 轴、螺母材质	SUS440C
Surface hardness 螺纹部表面硬度	HRC55~ (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Lead accuracy 导程精度 Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
SSR0801-400C7	335	Ct7	352	400	±0.06	0.05	0.120	~0.020	—	630	1250
SSR0801-400C10	335	Ct10	352	400	±0.24	0.21	0.240	~0.050			

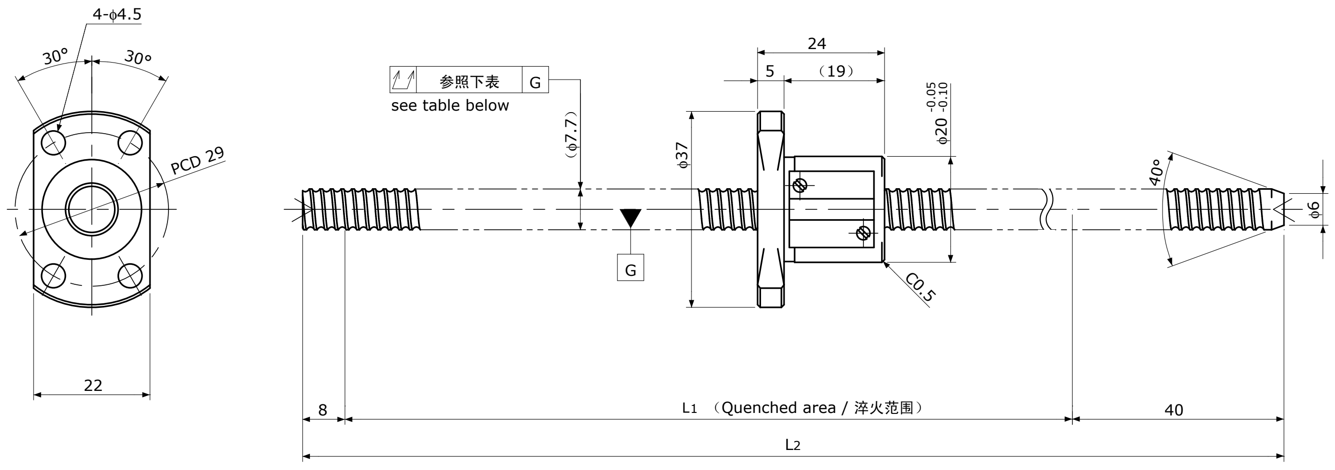
Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SSR series
标准库存品 SSR系列

SSR0802

Stainless 不锈钢

Shaft dia.(轴径)φ8 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ6.6
Number of circuit 循环数	3.7×1
Shaft,Nut material 轴、螺母材质	SUS440C
Surface hardness 螺纹部表面硬度	HRC55～ (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L₁	Shaft length 丝杠轴长度 L₂	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SSR0802-400C7	325	Ct7	352	400	±0.06	0.05	0.120	～0.020	—	1950	3100
SSR0802-400C10	325	Ct10	352	400	±0.24	0.21	0.240	～0.050			

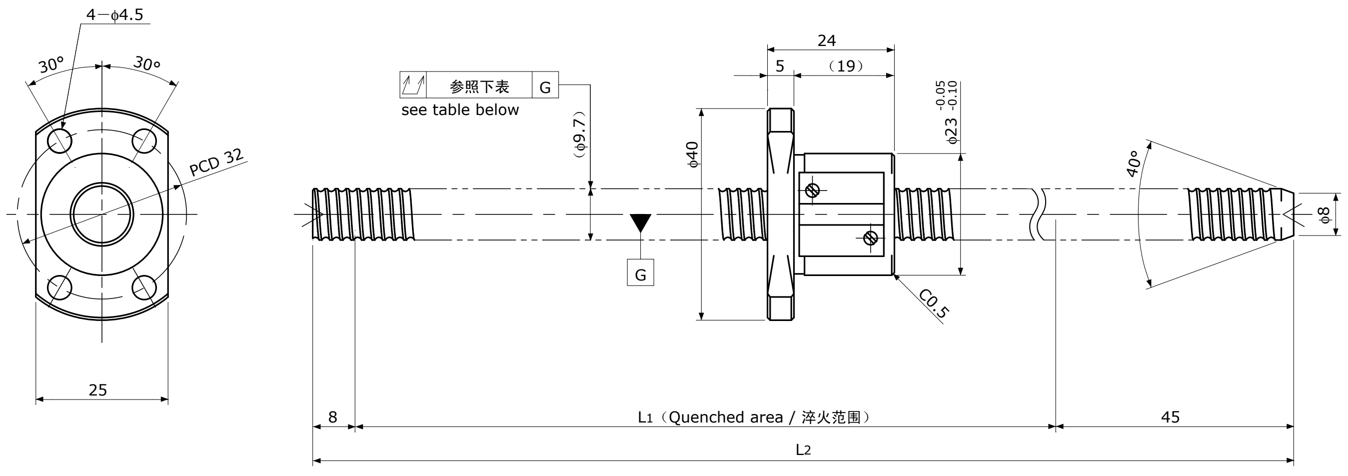
Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

Standard products in stock SSR series
标准库存品 SSR系列

SSR1002

Stainless 不锈钢

Shaft dia.(轴径)φ10 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数	
Ball size 钢珠直径	φ1.5875
Number of thread 螺纹条数	1
Thread direction 螺纹旋向	Right 右旋
Shaft root dia. 丝杠轴底径	φ8.6
Number of circuit 循环数	3.7×1
Shaft,Nut material 轴、螺母材质	SUS440C
Surface hardness 螺纹部表面硬度	HRC55～ (Thread area)
Anti-rust treatment 防锈处理	Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L₁	Shaft length 丝杠轴长度 L₂	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Lead accuracy 导程精度: Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa
SSR1002-400C7	320	Ct7	347	400	±0.06	0.05	0.080	～0.020	—	2200	4000
SSR1002-400C10	320	Ct10	347	400	±0.24	0.21	0.160	～0.050			

Note) Please designate end-journal profile with your sketch. 注)轴端的追加加工请结合图纸进行指示。

SRT/SSRT系列 台阶型冷轧滚珠丝杠标准库存品

SRT/SSRT series
Standardized Rolled Ball Screws with Integrated end-journal

由于加工上的关系，传统的冷轧滚珠丝杠在加工时需要缩小轴端直径。但通过采用本公司的特殊技术，可以像切削加工品一样，将单侧（固定侧）设定得比滚珠丝杠部大。

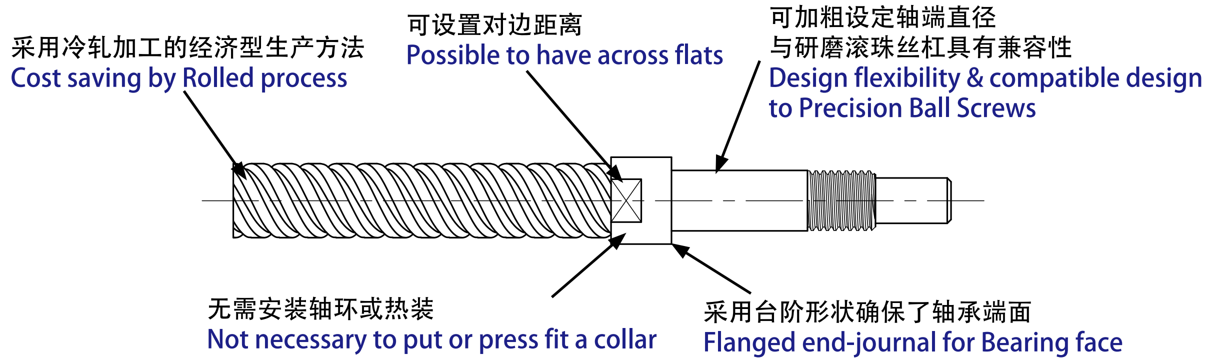
For production reason, Rolled Ball Screws are normally necessary to have smaller end-journal, but as KSS have adopted special technology, it enables fixed end-journal bigger than Shaft diameter alike solid Ball Screws. This technology enables stable and more flexible on end-journal design.

●特点

- 轴端直径可进行加粗设计，因此可使用台阶形或具有通用性的轴承。
- 与精密滚珠丝杠（切削加工品）的标准轴端形状具有兼容性。
- 与插入轴环及热装相比，稳定性更高。
- 由于不加工轴端而进行库存管理，提高了设计自由度。
- 也可提供具有防锈功能的不锈钢滚珠丝杠。

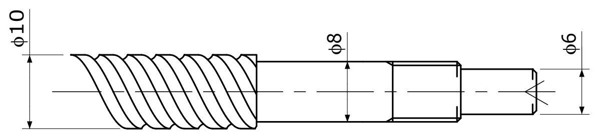
●Features

- Design flexibility and wide use of Bearings on end-journal.
- Compatible end-journal to Precision Ball Screws.
- No need to insert or press fit collar as Bearing shoulder.
- Quick delivery due to unfinished end-journal stock.
- Stainless Rolled Ball Screws are also available.

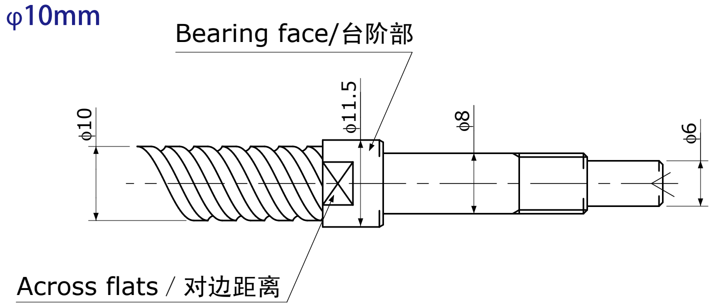


●与传统产品的比较 Comparison with current model

***轴径φ10mm产品的比较/ Shaft nominal diameter：φ10mm



传统产品的轴端形状/ Current model design



新产品的轴端形状/New model design

●丝杠轴公称外径与导程的组合 Combination of Shaft nominal dia. & Lead

Unit（单位）:mm

Shaft dia. 公称外径 \ Lead 导程	1	2	2.5	4	5	6	8	10	12	15	20
4	A289 A290	A291									
5				A292							
6	A293 A294 A315	A295				A296		A297			
8	A298 A299 A316	A300 A301 A317	A302		A303		A304		A305		
10		A306 A307 A318			A308			A309		A310	A311
12		A312 A313						A314			

注1）用黄色标示的型号可提供不锈钢滚珠丝杠。
注2）表中的数字表示产品刊载页码。

Note 1) Yellow cells are available for Stainless Shaft and Nut.
Note 2) The numbers in a table :showing a page in this catalogue

●精度等级和轴向间隙

SRT/SSRT系列（台阶型冷轧/台阶型不锈钢冷轧滚珠丝杠标准库存品）的精度等级为Ct7或Ct10（JIS B-1192）。轴向间隙根据精度等级不同备有0.020mm以下（Ct7）及0.050mm以下（Ct10）两种。

●Accuracy Grade & Axial play

The grade of SRT/SSRT series（Standardized Rolled & Stainless Rolled Ball Screws with Integrated end-journal）are Ct7 or Ct10（JIS B-1192）. According to accuracy grade, Axial play 0.020mm or less（Ct7）and 0.050mm or less（Ct10）are in stock.

●材质和表面硬度

SRT/SSRT系列（台阶型冷轧/台阶型不锈钢冷轧滚珠丝杠标准库存品）的材质和表面硬度如下所示。

●Material & Surface hardness

The material and hardness of SRT/SSRT series（Standardized Rolled & Stainless Rolled Ball Screws with Integrated end-journal）are as follows.

Products 产品类别	Material of thread area 滚珠丝杠部材质	Heat treatment 热处理	Surface hardness 滚珠丝杠部的表面硬度
Rolled Ball Screws（SRT series）普通冷轧（SRT系列）	Shaft/丝杠轴：SCM415 S55C	Carburizing and Quenching 渗碳淬火 Induction hardening 高频淬火	HRC58 or more HRC58以上
	Nut/螺母：SCM415		
Stainless Rolled Ball Screws（SSRT series）不锈钢冷轧（SSRT系列）	Shaft/丝杠轴：SUS440C	Induction hardening 高频淬火	HRC55 or more HRC55以上
	Nut/螺母：SUS440C	Vacuum hardening 真空淬火	

●润滑

为了防锈，未对轴端进行加工的SRT/SSRT系列（台阶型冷轧/台阶型不锈钢冷轧滚珠丝杠标准库存品）产品均涂抹有防锈油。

由于防锈油不具备润滑性，因此在使用前请另行涂抹润滑剂。如无特殊指定，建议使用KSS原装润滑油脂（MSG No.2）。

●Lubrication

SRT/SSRT series（Standardized Rolled & Stainless Rolled Ball Screws with Integrated end-journal）will be supplied with anti-rust oil.

This oil is not lubricant, when Ball Screw operates, lubricant should be applied.

If there is no specific instruction, KSS would recommend our original Grease（MSG No.2）as standard lubricant. Please feel free to contact us.

●精密冷轧滚珠丝杠

也可生产实现了高精度（JIS C5）的冷轧滚珠丝杠（PSR/PSRT系列）。请参照A319页。

●Precision Rolled Ball Screws

High accuracy（JIS C5）can be produced by Rolled process, what we call Precision Rolled Ball Screws（PSR/PSRT series）.Please see page -A319.

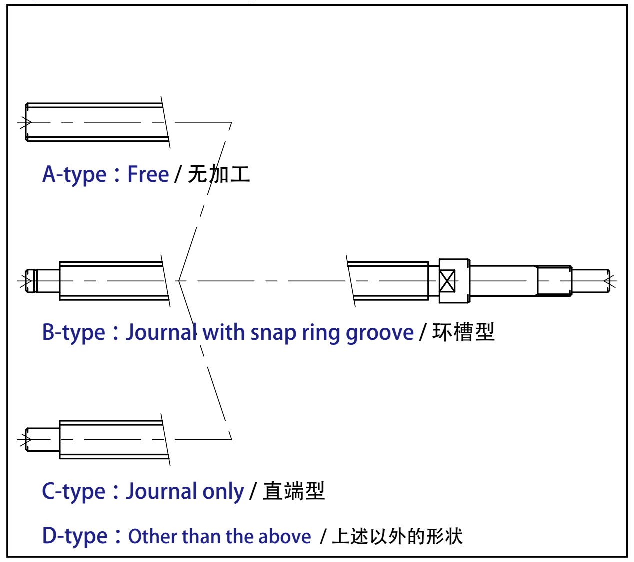
●公称型号的构成 Model number notation

SRT	04	01	K	—	086	R	126	C7	B	1	X
1	2	3	4		5	6	7	8	9	⑩	⑪

1系列符号
 SRT ：台阶型冷轧滚珠丝杠
 SSRT：台阶型不锈钢冷轧滚珠丝杠
2丝杠轴公称外径（mm）
3导程（mm）
4螺母类型
 无符号：普通型
 K：紧凑型
5螺纹部长度（mm）
 （追加加工后以1mm为单位指定）
6螺纹旋向（R=右旋）
7丝杠轴总长（mm）
 （以1mm为单位指定）
8精度等级（C7或C10）
9轴端加工类型
 （参照图A-24：A-型、B-型、C-型）
⑩涂抹的油脂
 0：KSS推荐的润滑脂（MSG No.2）
 1：防锈油（Non Ruster PZ2）
 2：Multemp PS2
 3：其他
⑪螺母法兰朝向（参照图A-25）

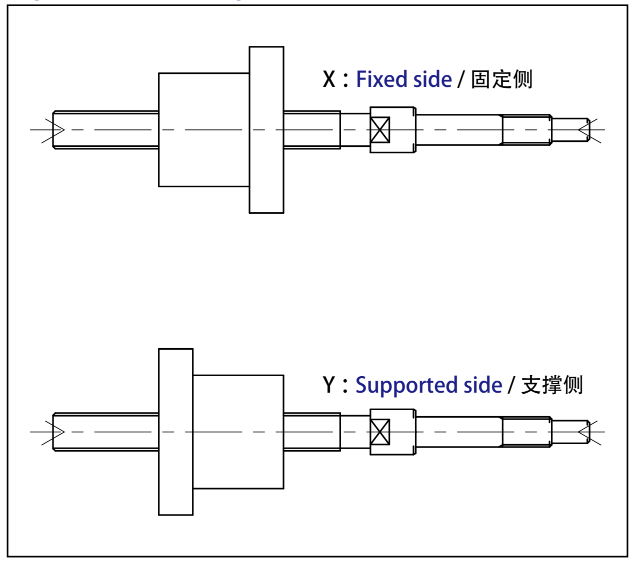
1Rolled Ball Screws Series No.
 SRT ：Rolled Ball Screws with Integrated end-journal
 SSRT：Stainless Rolled Ball Screws with Integrated end-journal
2Screw Shaft nominal diameter（mm）
3Lead（mm）
4Ball Nut type
 None：Standard
 K：Compact type
5Screw thread length（mm）
 （Specify in 1mm units after end-journal machining）
6Thread direction（R=Right-hand）
7Screw Shaft total length（mm）
 （Specify in 1mm units）
8Accuracy grade（C7 or C10）
9Shaft end-journal profile
 （Refer to Fig. A-24 below：A-type,B-type,C-type）
⑩Anti-rust oil or Lubricant
 0：KSS grease（MSG No.2）
 1：Anti-rust oil（Non Ruster PZ2）
 2：Multemp PS2 grease
 3：Other
⑪Nut Flange direction（Refer to Fig. A-25 below）

图A-24：轴端加工类型
Fig. A-24：Shaft end-journal profile



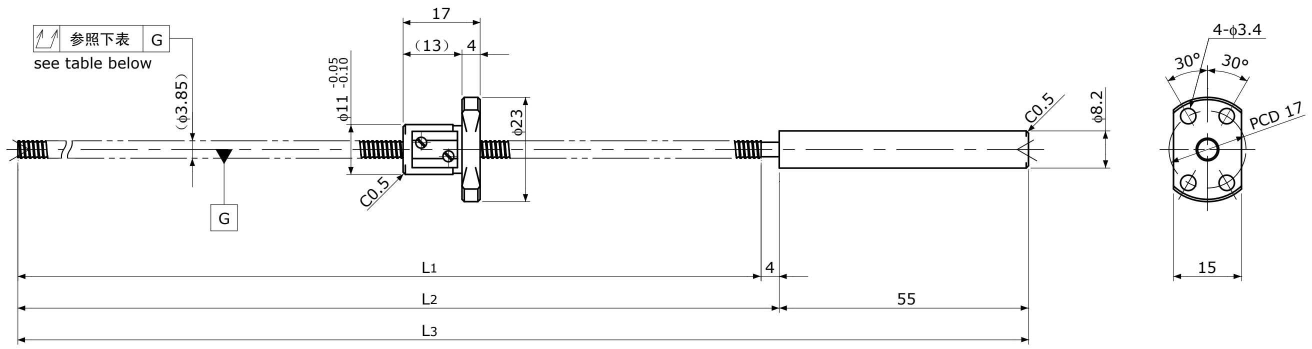
注1）关于轴端的详细尺寸，请参照各页。
注2）本公司不进行螺母的追加加工。
注3）产品规格若有变更，恕不另行通告。
注4）若需要非标准的轴端形状（A、B、C），请垂询本公司。

图A-25：螺母法兰朝向
Fig. A-25：Nut Flange direction



Note 1）The detail of end-journal dimension for each size is shown from next page.
Note 2）KSS does not make additional Nut machining.
Note 3）The specification is subject to change without notice.
Note 4）If the other configuration except（A,B,C）is requested, please contact KSS.

SRT0401 | Shaft dia.(轴径)φ4 Lead(导程)1mm | Ct7&Ct10

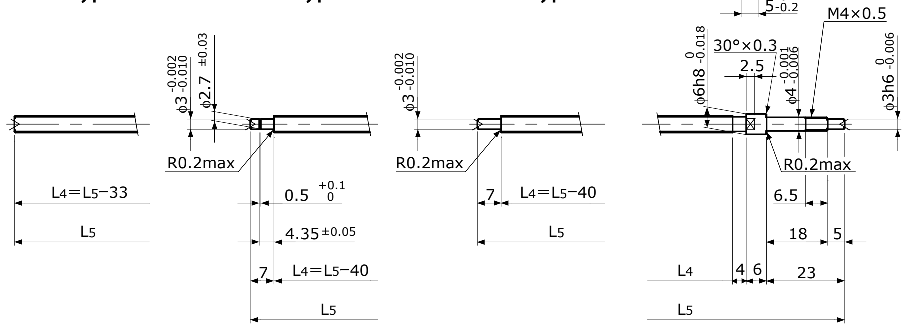


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ3.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-4CS/4GS, SUP03-S
	Fixed-side 固定侧 :	MSU-4C/4G, EK4

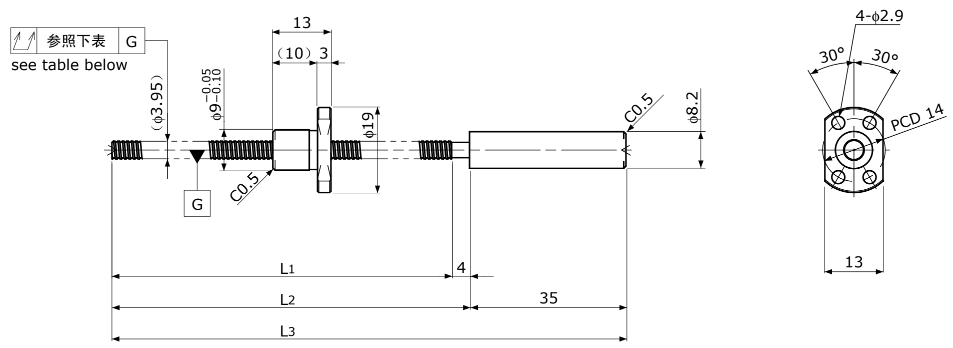
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度			Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	L_3	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0401-096R155C7	75	Ct7	96	100	155	±0.02	—	0.080	～0.020	—	560	790
SRT0401-216R275C7	195	Ct7	216	220	275	±0.03	—	0.120				
SRT0401-096R155C10	75	Ct10	96	100	155	±0.06	—	0.160	～0.050			
SRT0401-216R275C10	195	Ct10	216	220	275	±0.15	—	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

SRT0401K | Compact Nut / 紧凑型螺母 Shaft dia.(轴径)φ4 Lead(导程)1mm | Ct7&Ct10

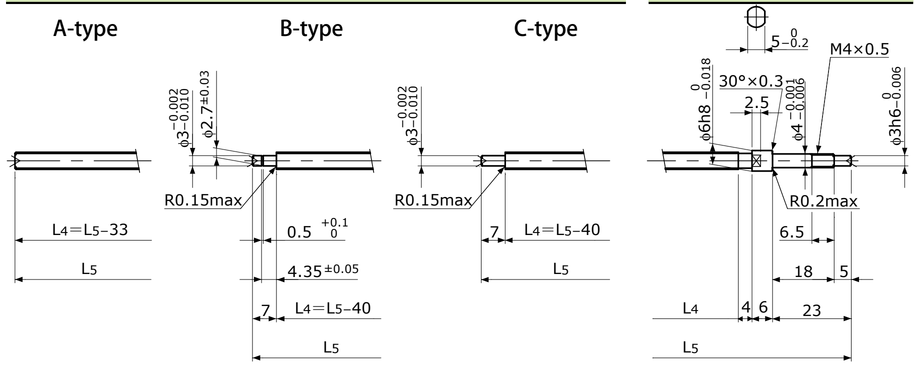


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ0.6
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ3.4
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-4CS/4GS, SUP03-S
	Fixed-side 固定侧 :	MSU-4C/4G, EK4

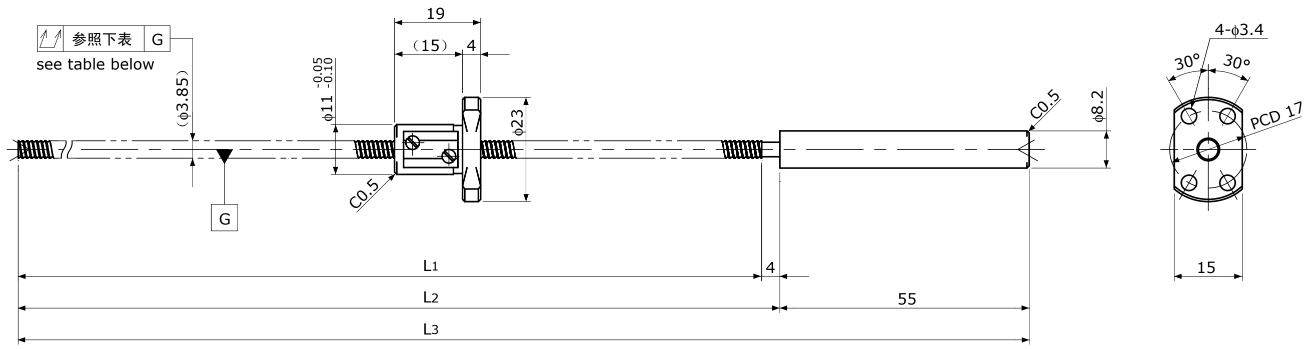
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度			Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	L_3	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0401K-76R115C7	60	Ct7	76	80	115	±0.02	—	0.080	～0.020	—	300	430
SRT0401K-76R115C10	60	Ct10	76	80	115	±0.05	—	0.160	～0.050			

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

SRT0402 | Shaft dia.(轴径)φ4 Lead(导程)2mm | Ct7&Ct10

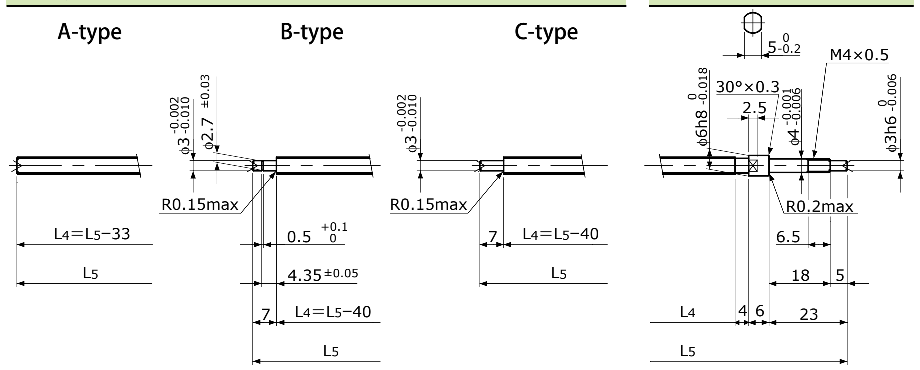


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ3.3
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-4CS/4GS, SUP03-S
Fixed-side 固定侧	:	MSU-4C/4G, EK4

D-type : Other than the above. 上述以外的形状

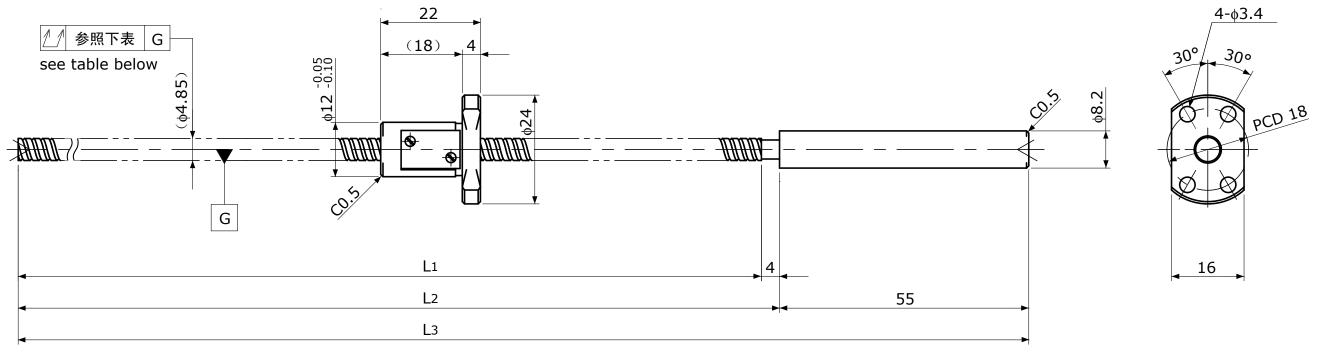
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0402-096R155C7	75	Ct7	96	100	155	±0.02	—	0.080	～0.020	—	420	570
SRT0402-216R275C7	195	Ct7	216	220	275	±0.03	—	0.120				
SRT0402-096R155C10	75	Ct10	96	100	155	±0.06	—	0.160	～0.050			
SRT0402-216R275C10	195	Ct10	216	220	275	±0.15	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT0504 | Shaft dia.(轴径)φ5 Lead(导程)4mm | Ct7&Ct10

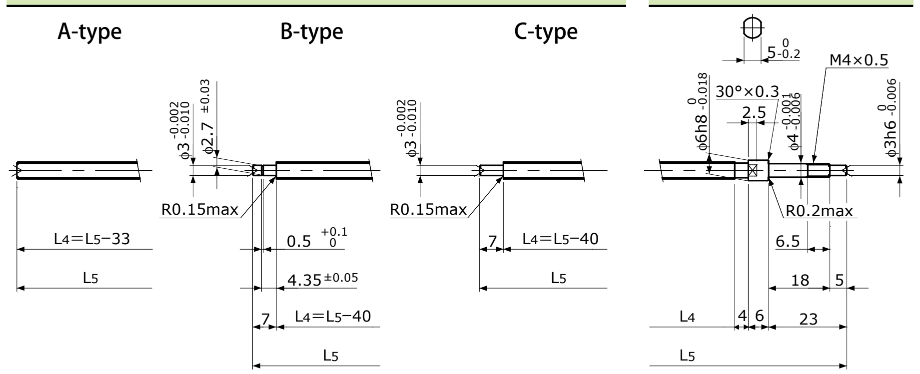


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ4.3
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-4CS/4GS, SUP03-S
Fixed-side 固定侧	:	MSU-4C/4G, EK4

D-type : Other than the above. 上述以外的形状

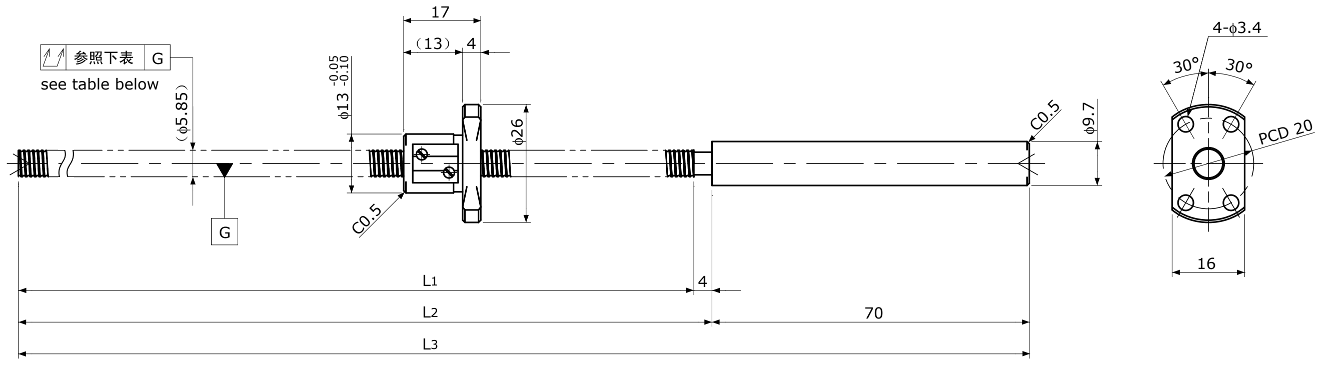
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0504-096R155C7	70	Ct7	96	100	155	±0.02	—	0.080	～0.020	—	470	720
SRT0504-216R275C7	190	Ct7	216	220	275	±0.03	—	0.120				
SRT0504-096R155C10	70	Ct10	96	100	155	±0.06	—	0.160	～0.050			
SRT0504-216R275C10	190	Ct10	216	220	275	±0.15	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT0601 | Shaft dia.(轴径)φ6 Lead(导程)1mm | Ct7&Ct10

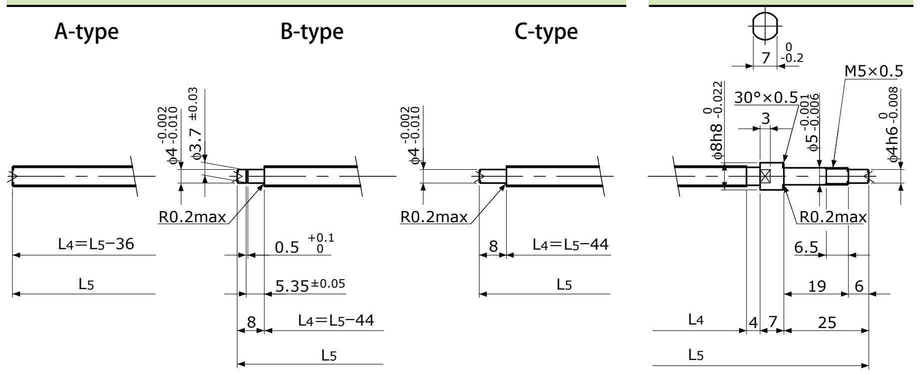


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

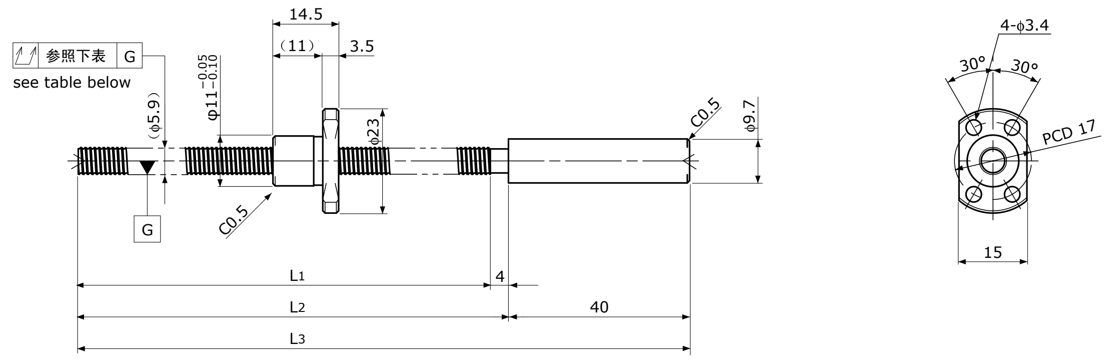
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0601-146R220C7	125	Ct7	146	150	220	±0.02	—	0.080	～0.020	—	680	1200
SRT0601-261R335C7	240	Ct7	261	265	335	±0.04	—	0.120				
SRT0601-146R220C10	125	Ct10	146	150	220	±0.10	—	0.160	～0.050			
SRT0601-261R335C10	240	Ct10	261	265	335	±0.18	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT0601K | Compact Nut / 紧凑型螺母 | Shaft dia.(轴径)φ6 Lead(导程)1mm | Ct7&Ct10

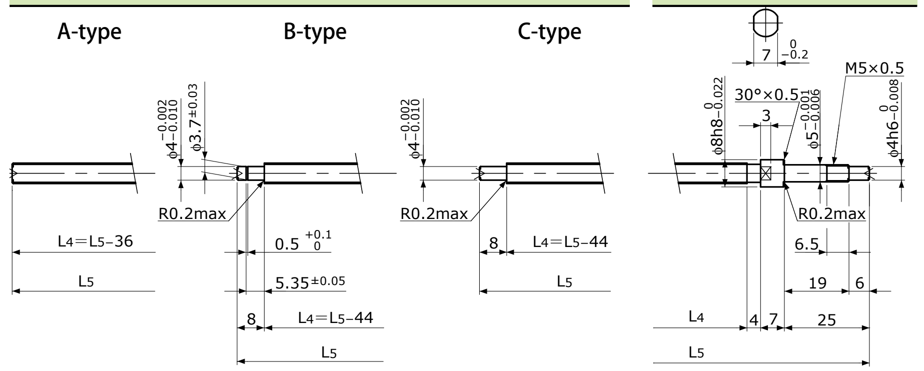


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.3
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

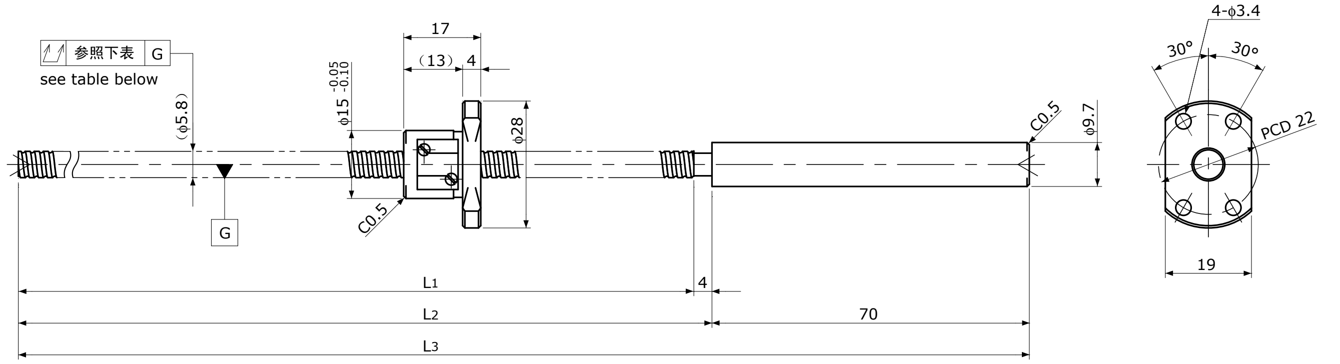
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0601K-91R135C7	70	Ct7	91	95	135	±0.02	—	0.080	～0.020	—	560	950
SRT0601K-91R135C10	70	Ct10	91	95	135	±0.06	—	0.160	～0.050			

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

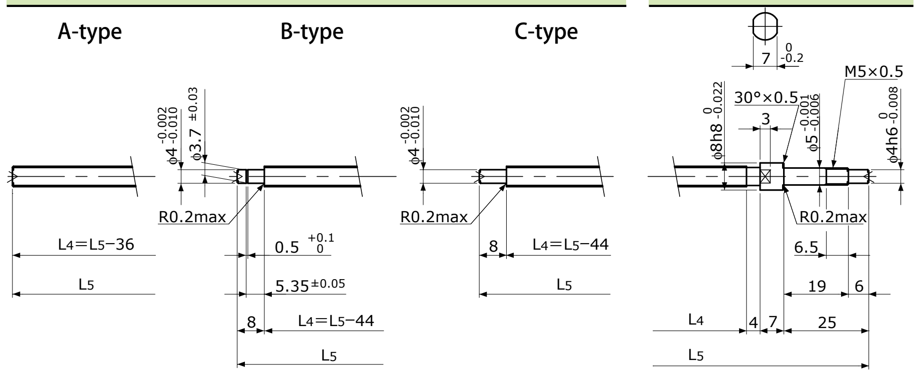
SRT0602 | Shaft dia.(轴径)φ6 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ1.0
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.1
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

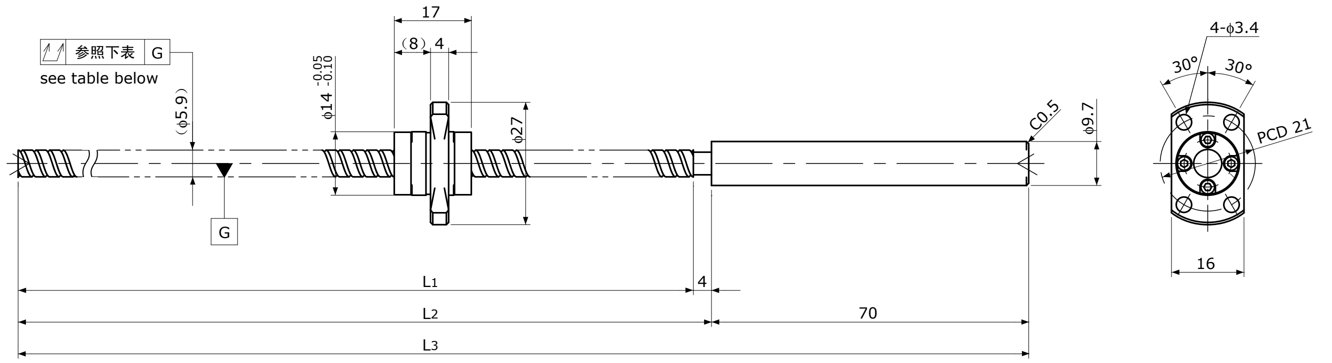
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度			Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	L_3	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0602-146R220C7	125	Ct7	146	150	220	±0.02	—	0.080	～0.020	—	750	1200
SRT0602-261R335C7	240	Ct7	261	265	335	±0.04	—	0.120				
SRT0602-146R220C10	125	Ct10	146	150	220	±0.10	—	0.160	～0.050			
SRT0602-261R335C10	240	Ct10	261	265	335	±0.18	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

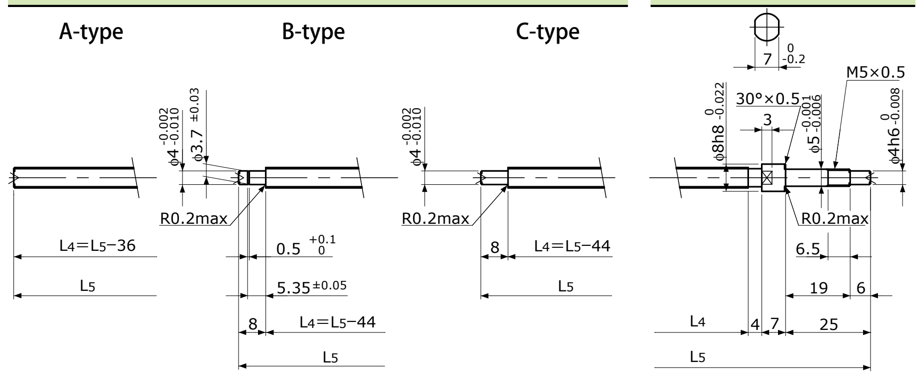
SRT0606 | Shaft dia.(轴径)φ6 Lead(导程)6mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ1.0
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.2
Number of circuit 循环数		1.6×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

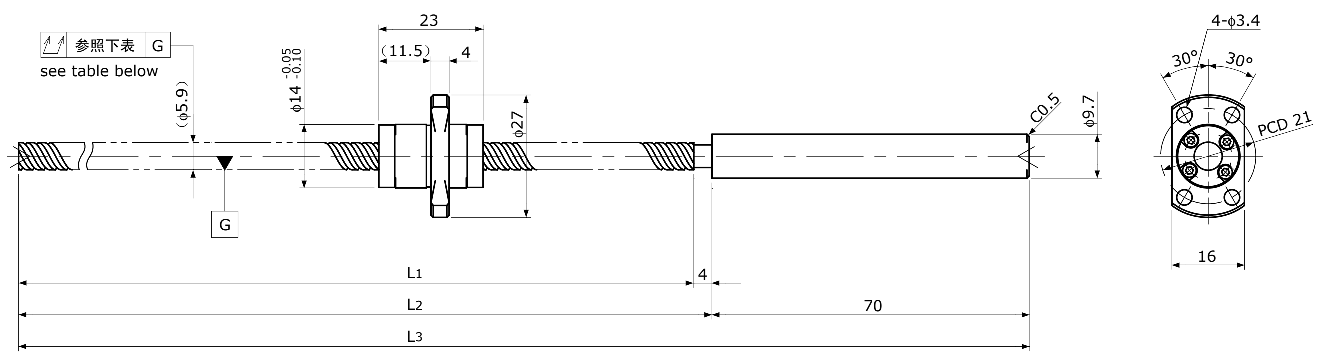
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度			Lead accuracy 导程精度		Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N	
			L_1	L_2	L_3	Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}				Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0606-146R220C7	125	Ct7	146	150	220	±0.02	—	0.080	～0.020	—	870	1450
SRT0606-261R335C7	240	Ct7	261	265	335	±0.04	—	0.120				
SRT0606-146R220C10	125	Ct10	146	150	220	±0.10	—	0.160	～0.050			
SRT0606-261R335C10	240	Ct10	261	265	335	±0.18	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

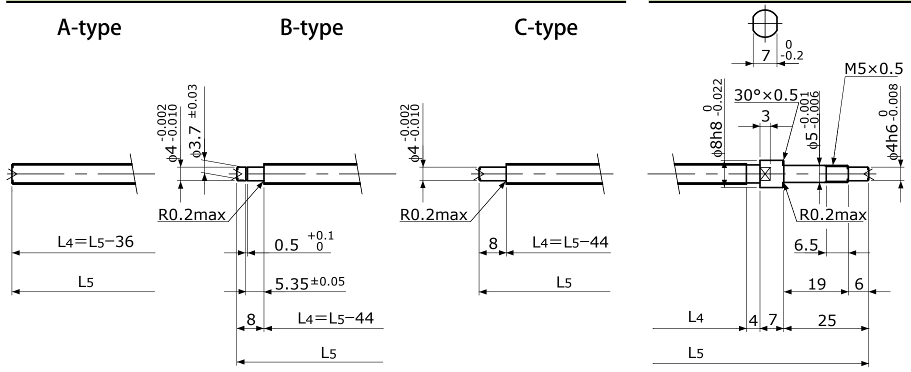
SRT0610 | Shaft dia.(轴径)φ6 Lead(导程)10mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.0
Number of circuit 循环数		1.2×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 Fixed-side 固定侧



L4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-5CS/5GS, SUP04-S
Fixed-side 固定侧	:	MSU-5C/5G, EK5

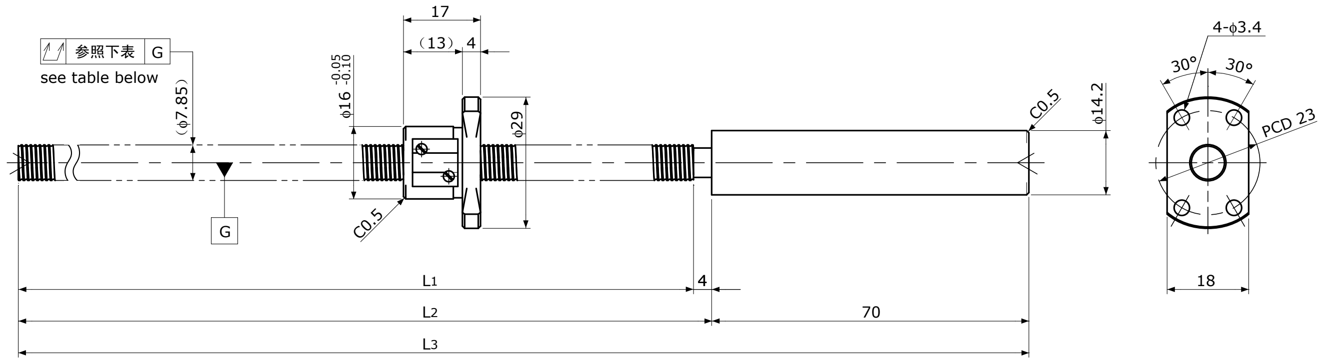
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0610-146R220C7	120	Ct7	146	150	220	±0.02	—	0.080	～0.020	—	950	1600
SRT0610-261R335C7	235	Ct7	261	265	335	±0.04	—	0.120				
SRT0610-146R220C10	120	Ct10	146	150	220	±0.10	—	0.160	～0.050			
SRT0610-261R335C10	235	Ct10	261	265	335	±0.18	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

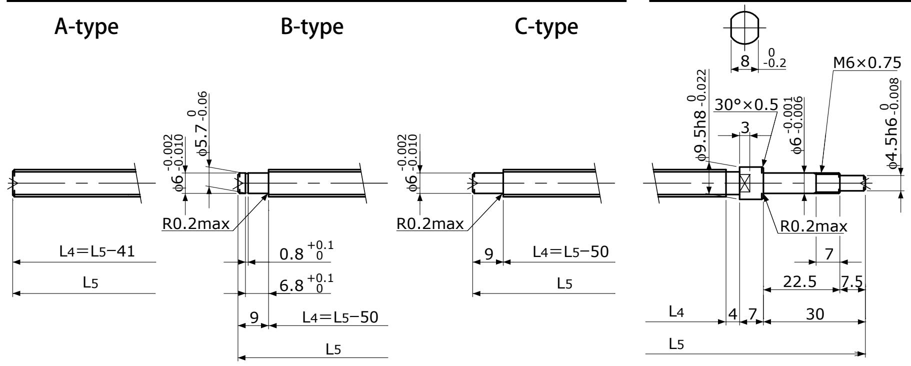
SRT0801 | Shaft dia.(轴径)φ8 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 Fixed-side 固定侧



L4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-6CS/6GS, EF6
Fixed-side 固定侧	:	MSU-6C/6G, EK6

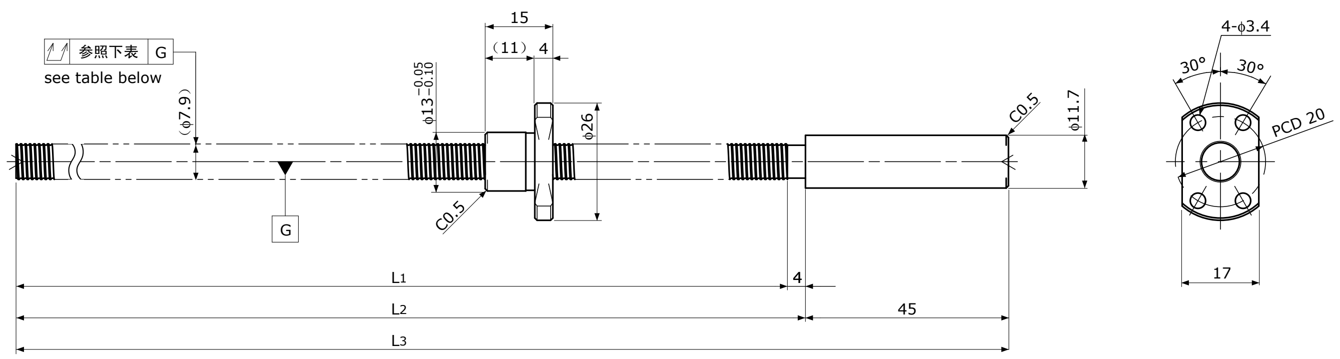
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0801-196R270C7	175	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	780	1650
SRT0801-356R430C7	335	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0801-196R270C10	175	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0801-356R430C10	335	Ct10	356	360	430	±0.24	0.21	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

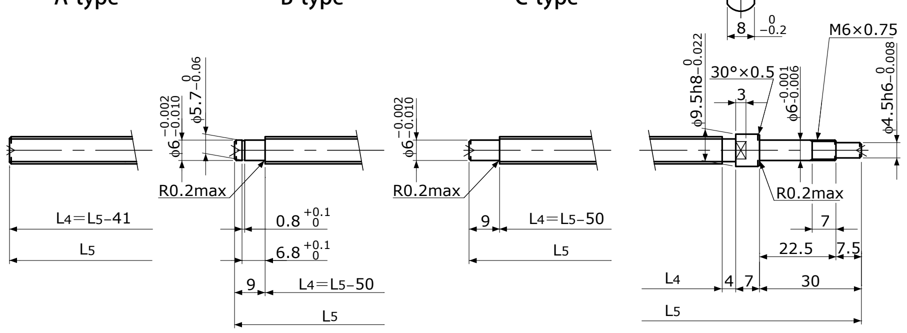
SRT0801K | Compact Nut / 紧凑型螺母 Shaft dia.(轴径)φ8 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.3
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L₄:Thread length after end-journal machining. 追加加工后的螺纹部长度
L₅:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	MSU-6CS/6GS, EF6
Fixed-side 固定侧	MSU-6C/6G, EK6

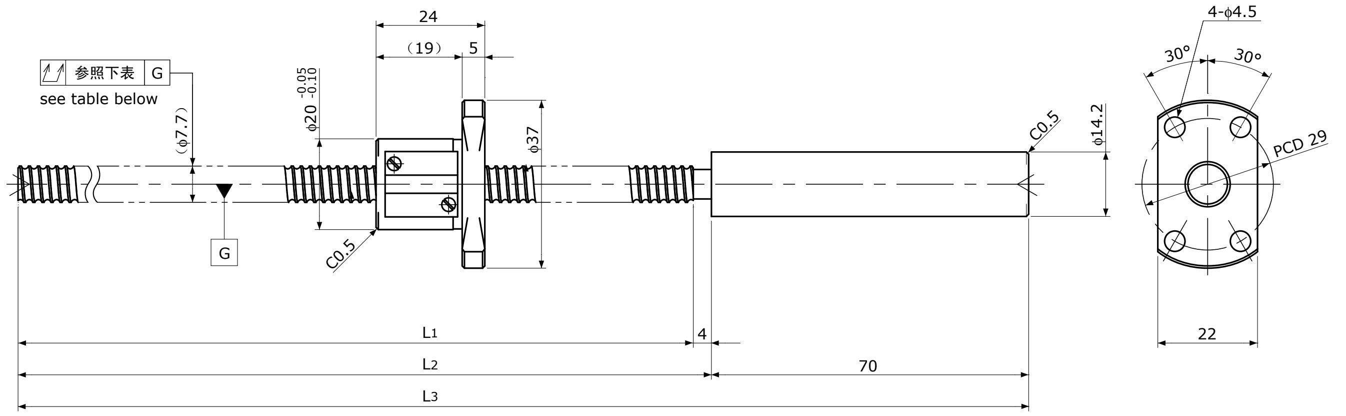
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L₁	L₂	L₃	Lead accuracy 导程精度 Travel deviation 代表移动量误差 eₚ	Variation 波动 V₃₀₀	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0801K-171R220C7	150	Ct7	171	175	220	±0.03	—	0.080	～0.020	—	650	1300
SRT0801K-171R220C10	150	Ct10	171	175	220	±0.11	—	0.160	～0.050			

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

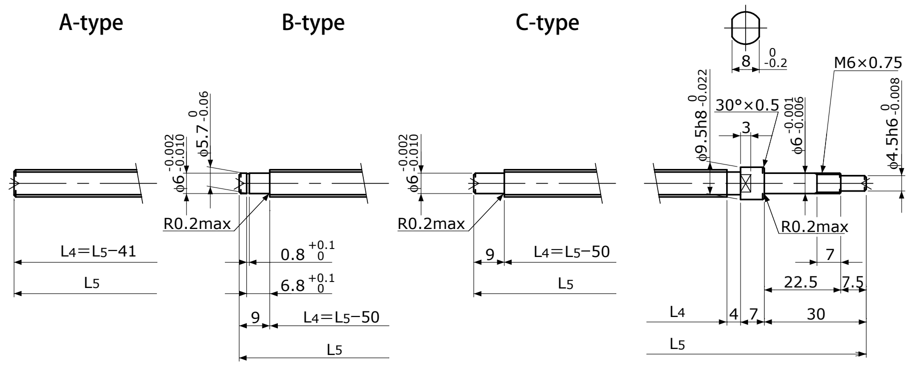
SRT0802 | Shaft dia.(轴径)φ8 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.6
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L₄:Thread length after end-journal machining. 追加加工后的螺纹部长度
L₅:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	MSU-6CS/6GS, EF6
Fixed-side 固定侧	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

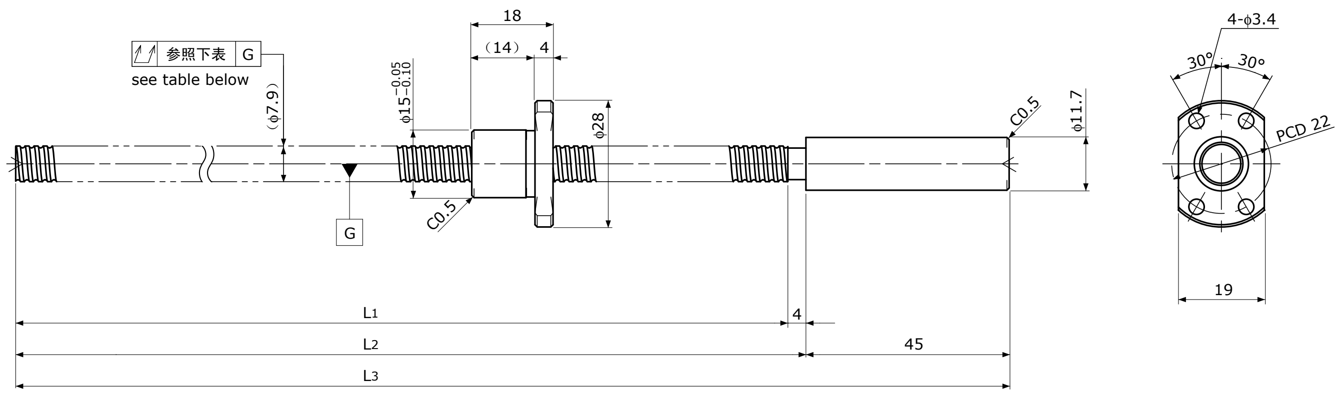
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L₁	L₂	L₃	Lead accuracy 导程精度 Travel deviation 代表移动量误差 eₚ	Variation 波动 V₃₀₀	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0802-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2400	4100
SRT0802-356R430C7	330	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0802-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0802-356R430C10	330	Ct10	356	360	430	±0.24	0.21	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

SRT0802K

Compact Nut / 紧凑型螺母

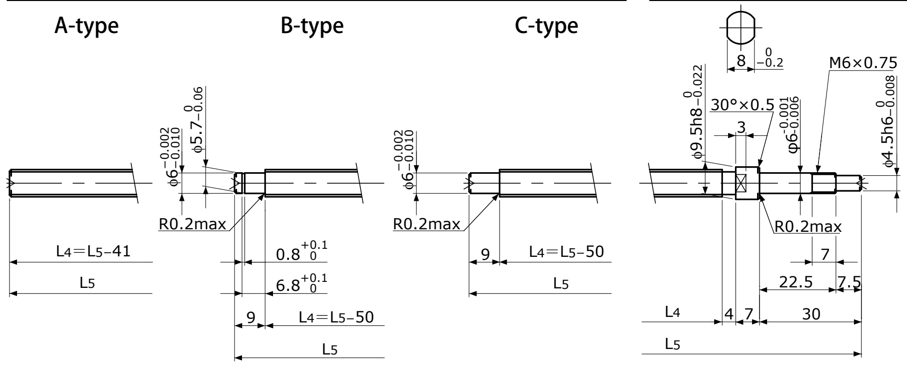
Shaft dia.(轴径)φ8 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

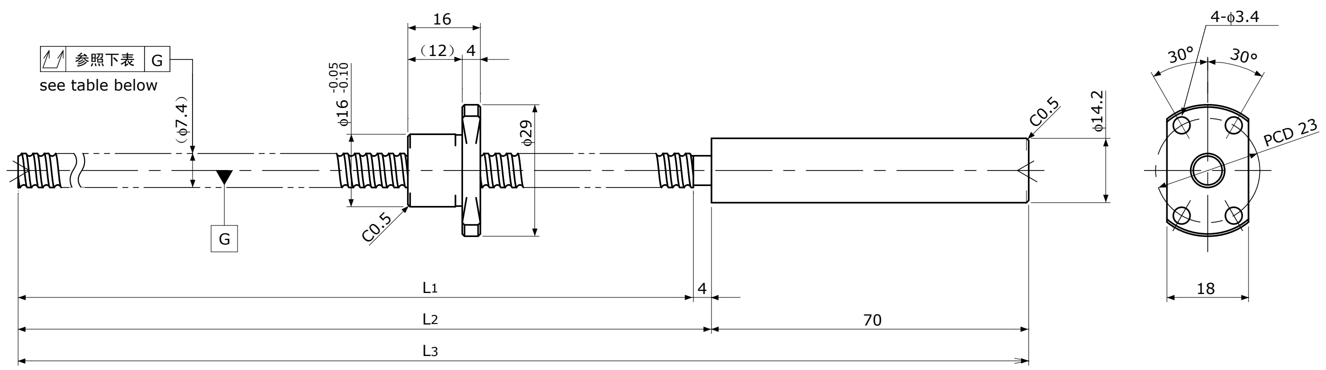
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0802K-171R220C7	145	Ct7	171	175	220	±0.03	—	0.080	～0.020	—	1300	2300
SRT0802K-171R220C10	145	Ct10	171	175	220	±0.11	—	0.160	～0.050			

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

SRT0802.5

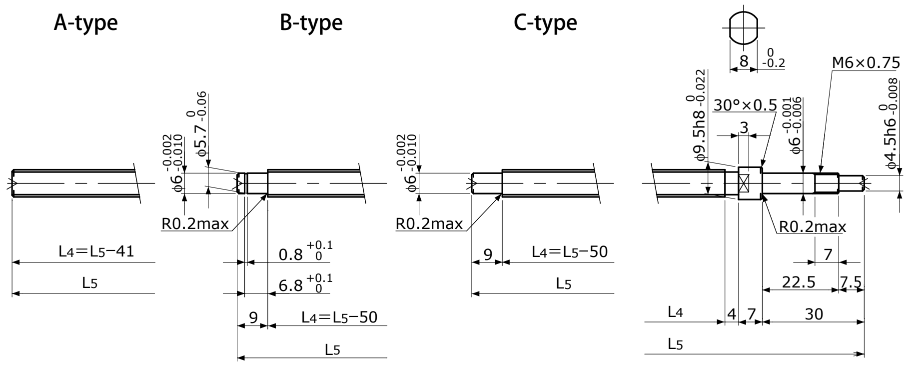
Shaft dia.(轴径)φ8 Lead(导程)2.5mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.3
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

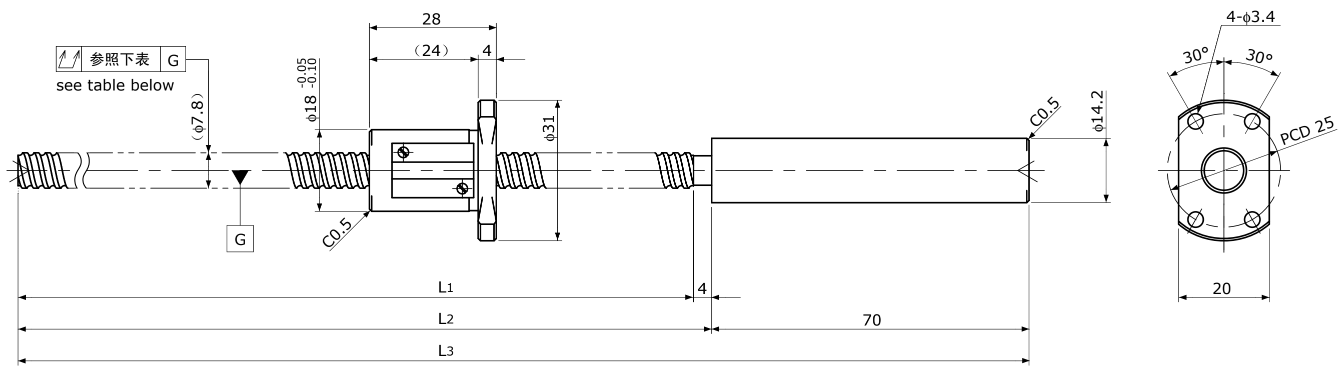
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0802.5-196R270C7	180	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	1850	3000
SRT0802.5-356R430C7	340	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0802.5-196R270C10	180	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0802.5-356R430C10	340	Ct10	356	360	430	±0.24	0.21	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

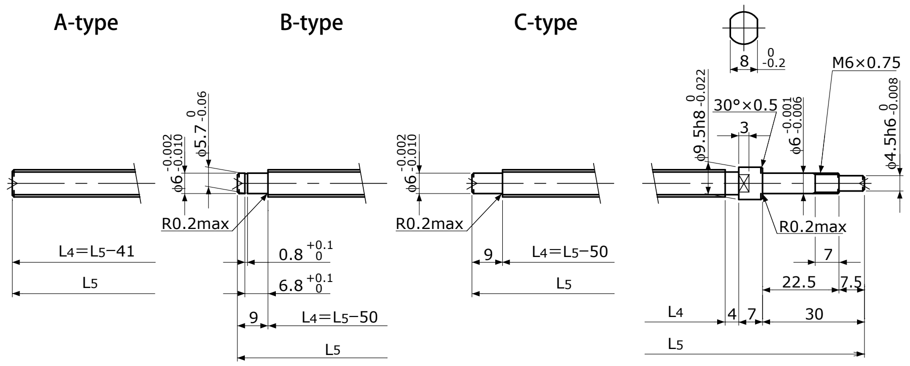
SRT0805 | Shaft dia.(轴径)φ8 Lead(导程)5mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.6
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

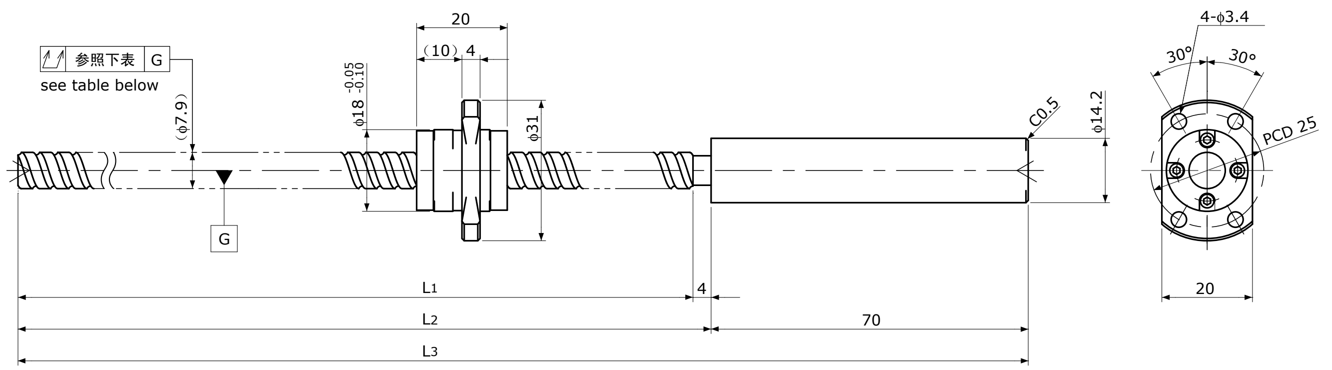
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0805-196R270C7	165	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	1850	3000
SRT0805-356R430C7	325	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0805-196R270C10	165	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0805-356R430C10	325	Ct10	356	360	430	±0.24	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

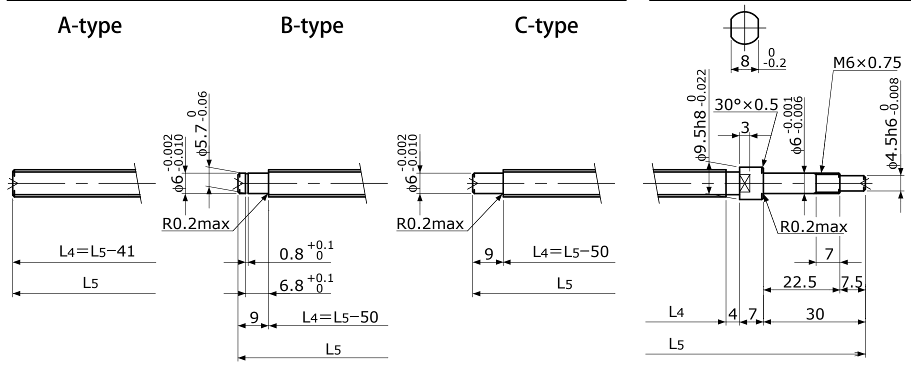
SRT0808 | Shaft dia.(轴径)φ8 Lead(导程)8mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.7
Number of circuit 循环数		1.6×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

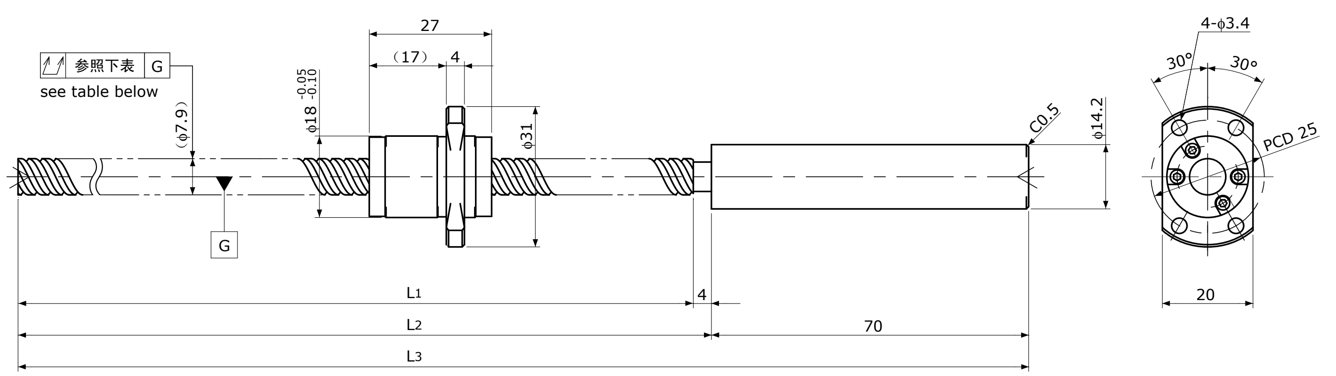
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0808-196R270C7	175	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2200	3800
SRT0808-356R430C7	335	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0808-196R270C10	175	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0808-356R430C10	335	Ct10	356	360	430	±0.24	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series 标准库存品 SRT系列

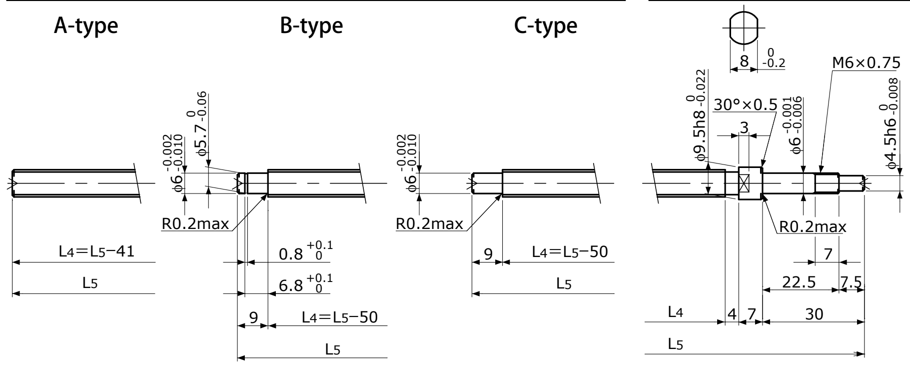
SRT0812 | Shaft dia.(轴径)φ8 Lead(导程)12mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.7
Number of circuit 循环数		1.6×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

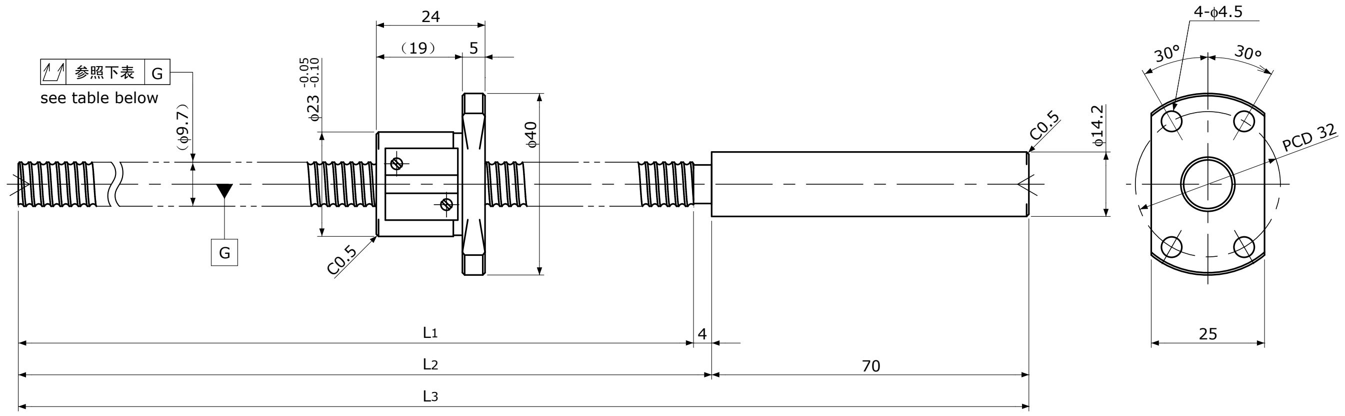
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT0812-196R270C7	165	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2200	4000
SRT0812-356R430C7	325	Ct7	356	360	430	±0.06	0.05	0.120				
SRT0812-196R270C10	165	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT0812-356R430C10	325	Ct10	356	360	430	±0.24	0.21	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series 标准库存品 SRT系列

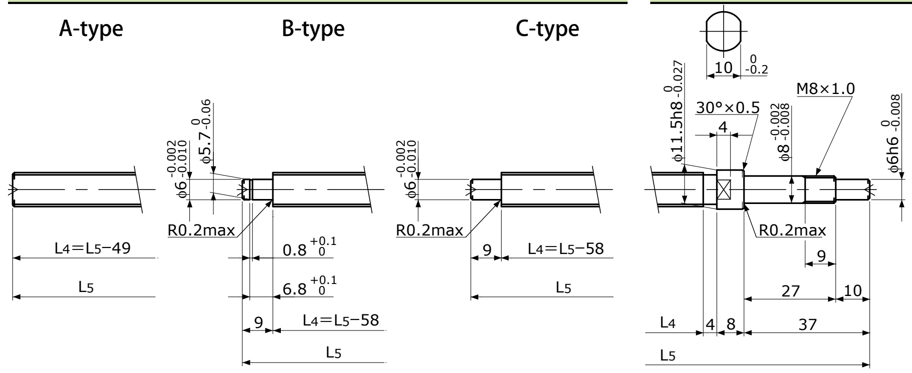
SRT1002 | Shaft dia.(轴径)φ10 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.6
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
	Supported-side 支撑侧 :	MSU-8CS/8GS, EF8
	Fixed-side 固定侧 :	MSU-8C/8G, EK8

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

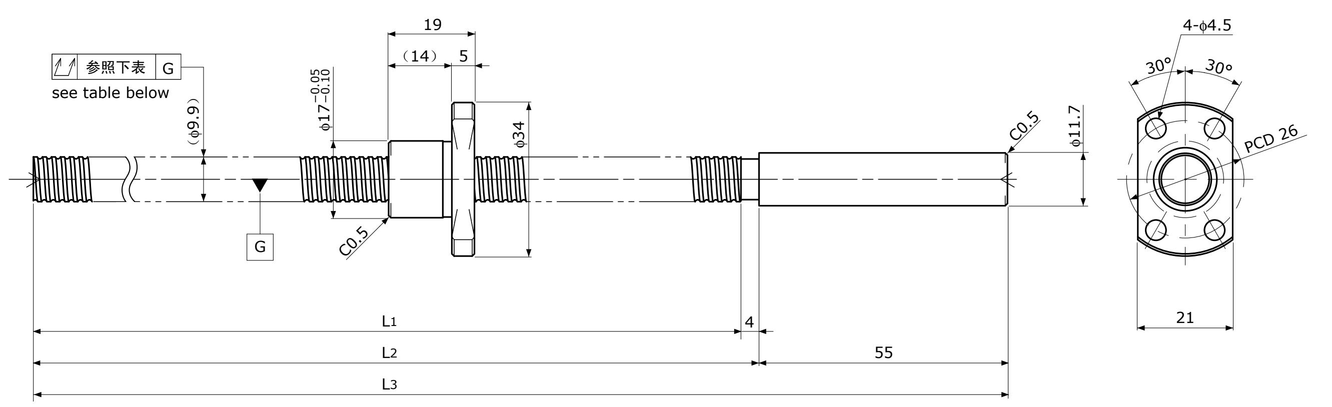
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	Lead accuracy 导程精度: Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1002-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2700	5300
SRT1002-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.120				
SRT1002-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1002-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

SRT1002K

Compact Nut / 紧凑型螺母

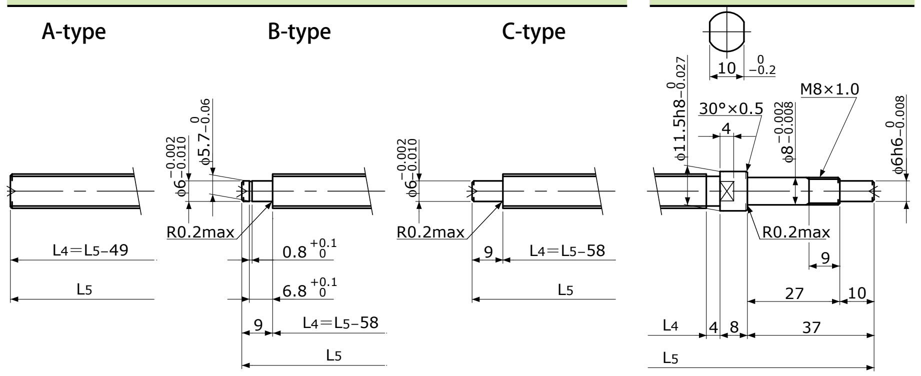
Shaft dia.(轴径)φ10　Lead(导程)2mm　Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ9.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状　Supported-side 支撑侧　Fixed-side 固定侧



L4:Thread length after end-journal machining.　追加加工后的螺纹部长度
L5:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 : MSU-8CS/8GS, EF8
	Fixed-side 固定侧 : MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

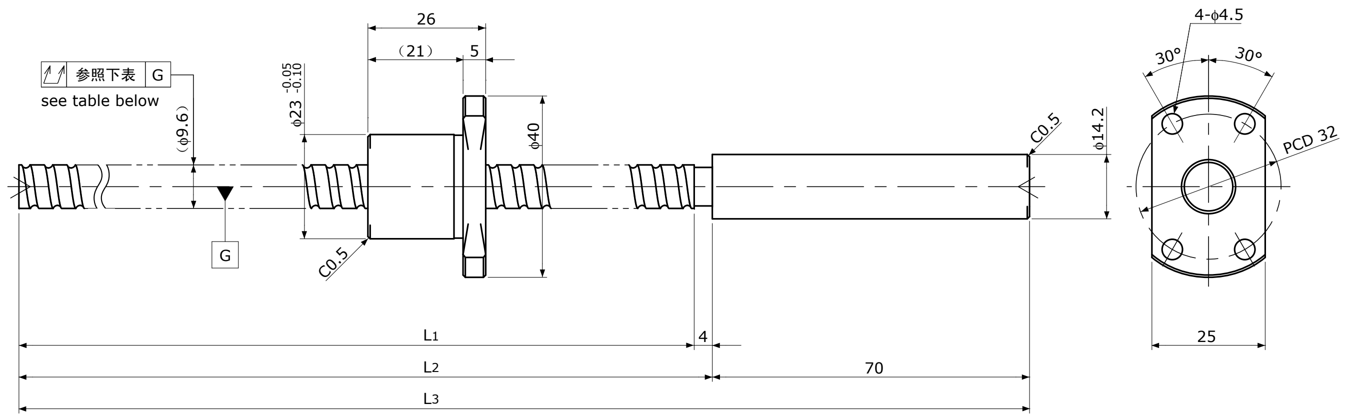
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1002K-201R260C7	175	Ct7	201	205	260	±0.03	—	0.080	～0.020	—	1450	3000
SRT1002K-201R260C10	175	Ct10	201	205	260	±0.14	—	0.160	～0.050			

Note) Please refer to p-A287 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A287。

SRT1005

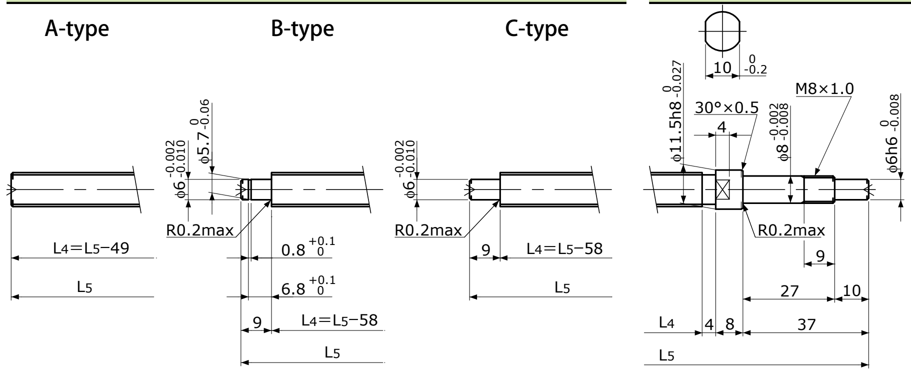
Shaft dia.(轴径)φ10　Lead(导程)5mm　Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ2.0
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.2
Number of circuit 循环数		2.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状　Supported-side 支撑侧　Fixed-side 固定侧



L4:Thread length after end-journal machining.　追加加工后的螺纹部长度
L5:Total length after end-journal machining.　追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 : MSU-8CS/8GS, EF8
	Fixed-side 固定侧 : MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

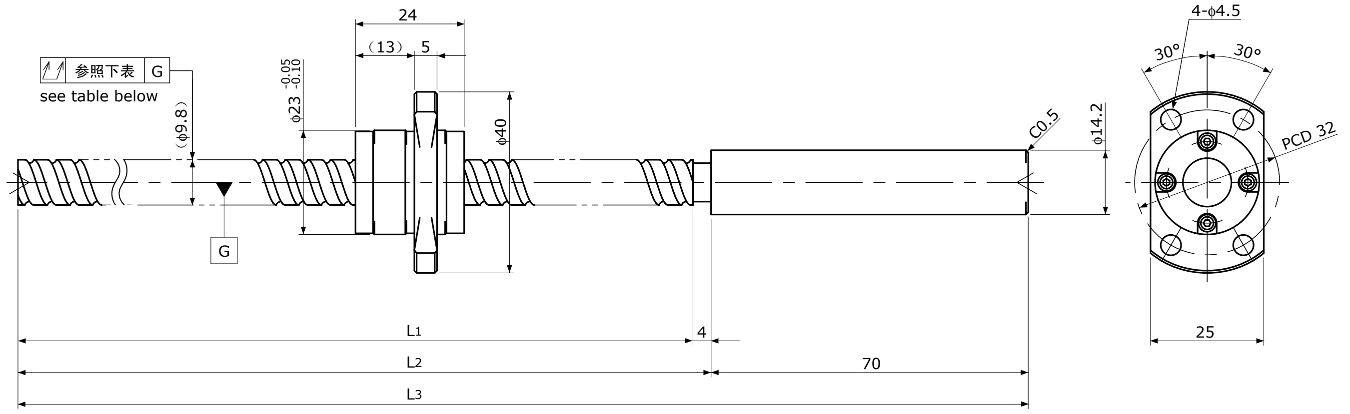
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1005-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	3000	5200
SRT1005-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.120				
SRT1005-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1005-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining.　注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT1010 | Shaft dia.(轴径)φ10 Lead(导程)10mm | Ct7&Ct10

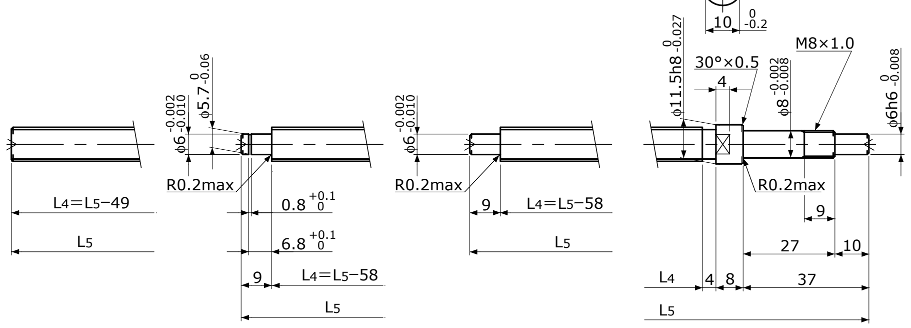


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ2.0
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.4
Number of circuit 循环数		1.6×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4: Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5: Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type: Other than the above. 上述以外的形状

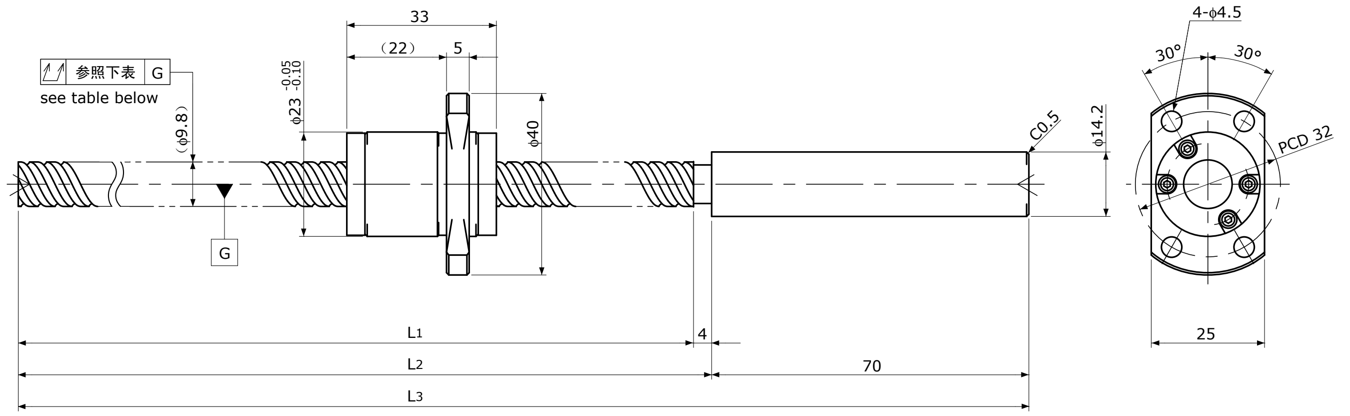
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1010-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	3300	5900
SRT1010-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.120				
SRT1010-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1010-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT1015 | Shaft dia.(轴径)φ10 Lead(导程)15mm | Ct7&Ct10

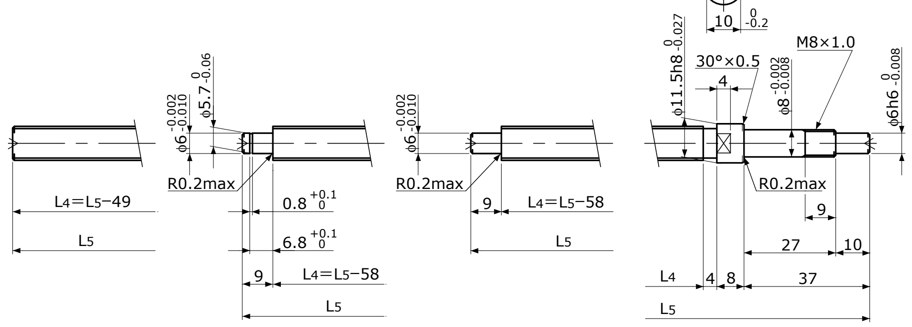


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ2.0
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.4
Number of circuit 循环数		1.6×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4: Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5: Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

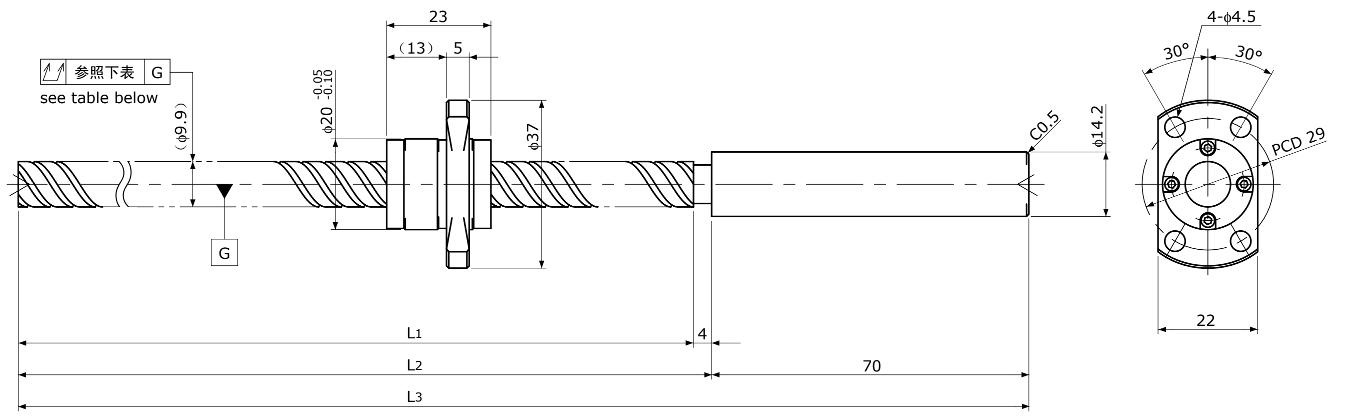
D-type: Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1015-196R270C7	160	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	3300	6400
SRT1015-396R470C7	360	Ct7	396	400	470	±0.06	0.05	0.120				
SRT1015-196R270C10	160	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1015-396R470C10	360	Ct10	396	400	470	±0.27	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

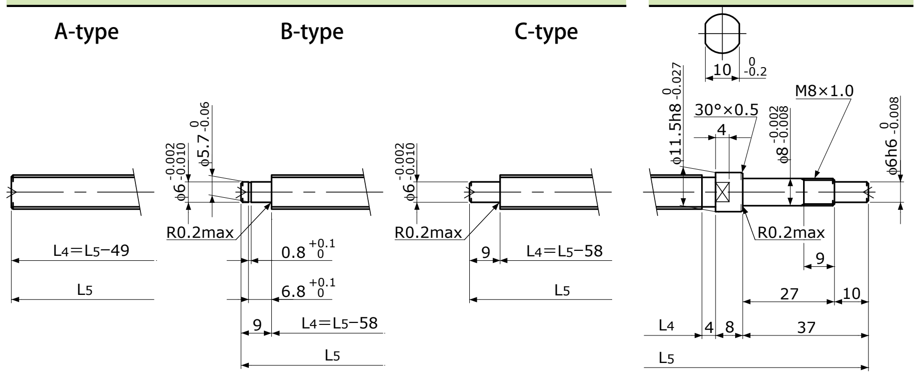
SRT1020 | Shaft dia.(轴径)φ10 Lead(导程)20mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		4
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.7
Number of circuit 循环数		0.7×4
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	MSU-8CS/8GS, EF8
Fixed-side 固定侧 :	MSU-8C/8G, EK8

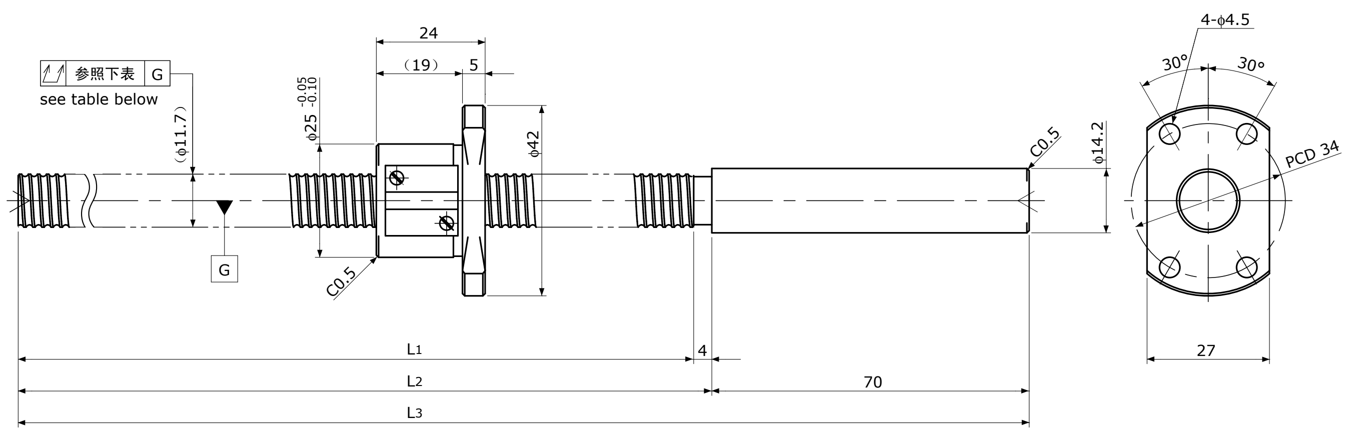
D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1020-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2100	4000
SRT1020-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.120				
SRT1020-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1020-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

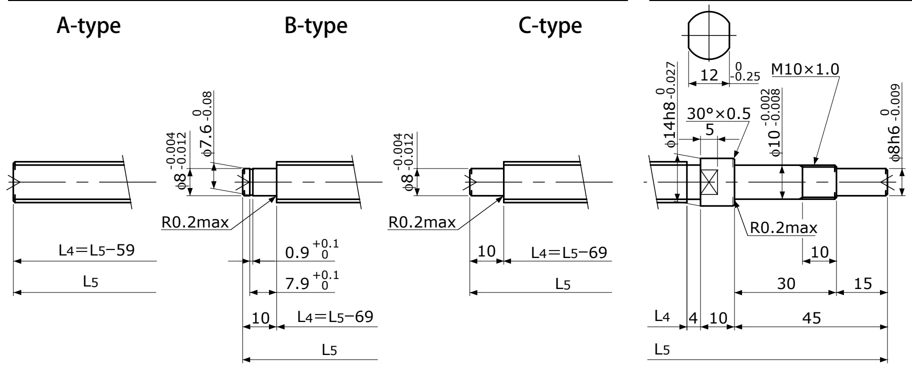
SRT1202 | Shaft dia.(轴径)φ12 Lead(导程)2mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ10.6
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧 :	EF10
Fixed-side 固定侧 :	EK10

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1202-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	3000	6400
SRT1202-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.080				
SRT1202-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SRT1202-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.160				

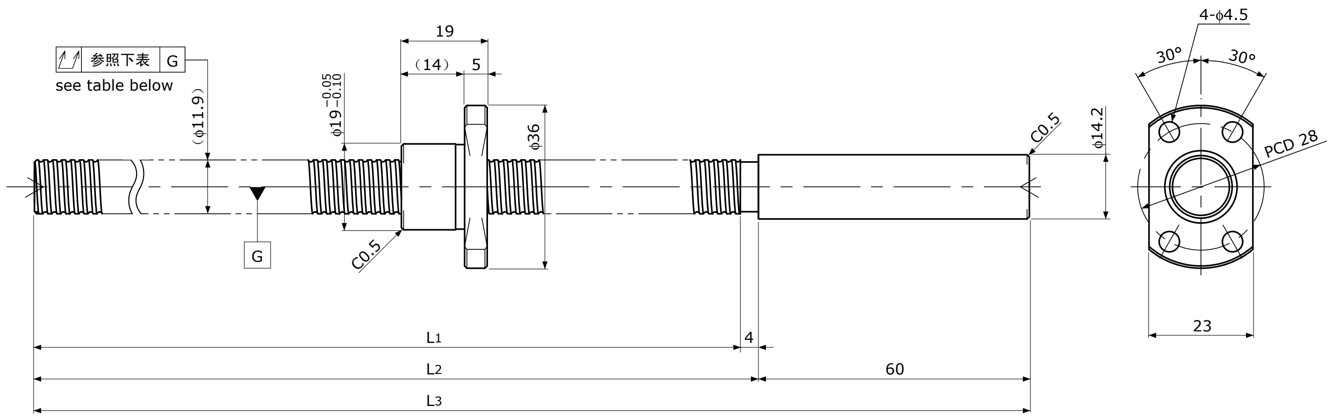
Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT1202K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ12 Lead(导程)2mm Ct7&Ct10

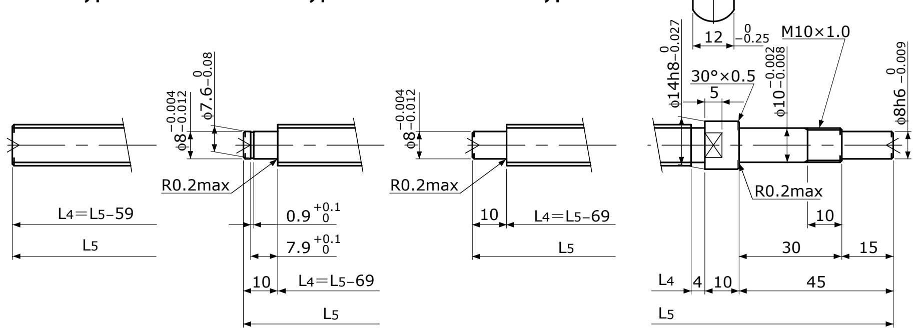


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ11.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58~ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	: EF10
Fixed-side 固定侧	: EK10

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

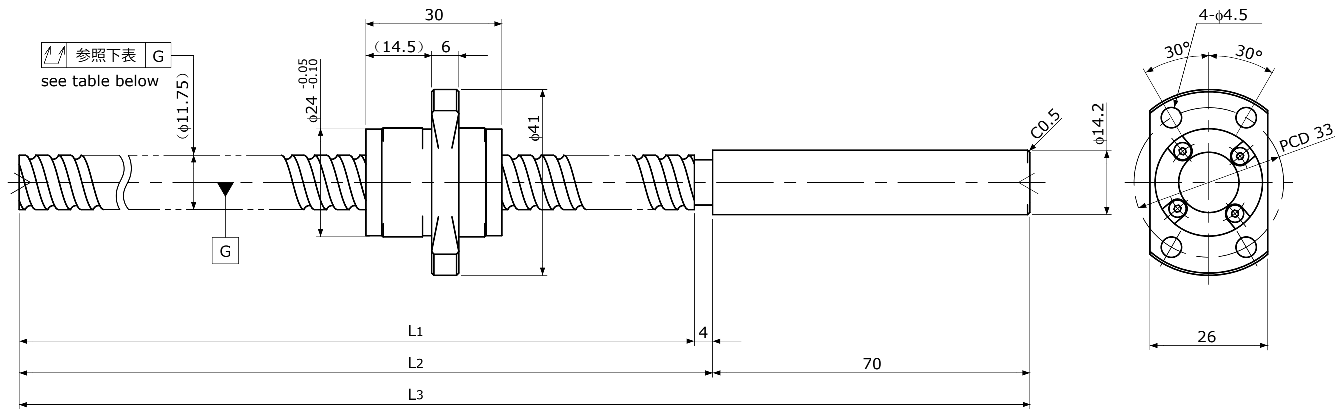
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1202K-271R335C7	245	Ct7	271	275	335	±0.04	—	0.080	~0.020	—	1600	3700
SRT1202K-271R335C10	245	Ct10	271	275	335	±0.19	—	0.160	~0.050			

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SRT series
标准库存品 SRT系列

SRT1210

Shaft dia.(轴径)φ12 Lead(导程)10mm Ct7&Ct10

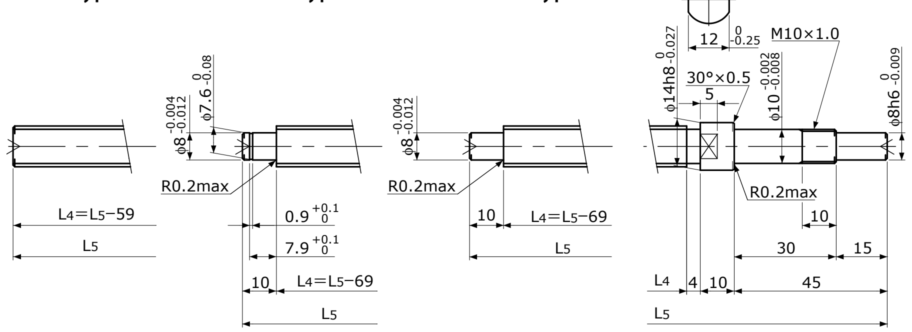


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ2.381
Number of thread 螺纹条数		2
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ10.2
Number of circuit 循环数		1.7×2
Material 材质	Shaft 轴	SCM415H+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58~ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	
Supported-side 支撑侧	: EF10
Fixed-side 固定侧	: EK10

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

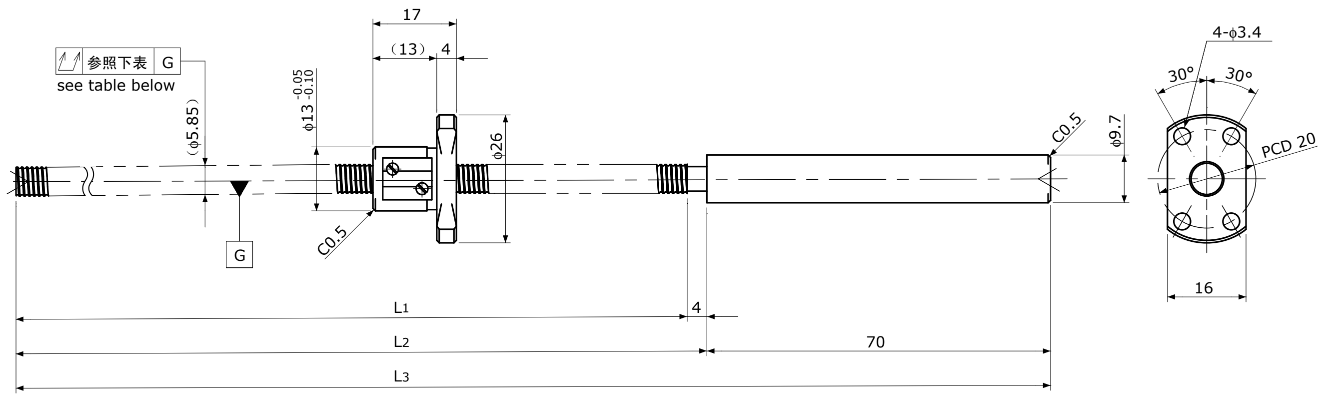
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SRT1210-196R270C7	165	Ct7	196	200	270	±0.03	—	0.080	~0.020	—	5100	9800
SRT1210-396R470C7	365	Ct7	396	400	470	±0.06	0.05	0.080				
SRT1210-196R270C10	165	Ct10	196	200	270	±0.13	—	0.160	~0.050			
SRT1210-396R470C10	365	Ct10	396	400	470	±0.27	0.21	0.160				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SSRT series
标准库存品 SSRT系列

SSRT0601

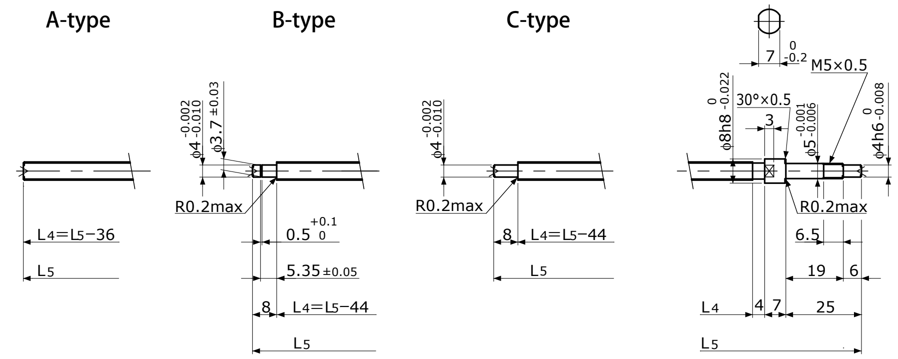
Stainless 不锈钢
Shaft dia.(轴径)φ6 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ5.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SUS440C+SUS303
	Nut 螺母	SUS440C
Surface hardness 螺纹部表面硬度		HRC55～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-5CS/5GS, SUP04-S
	Fixed-side 固定侧 :	MSU-5C/5G, EK5

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

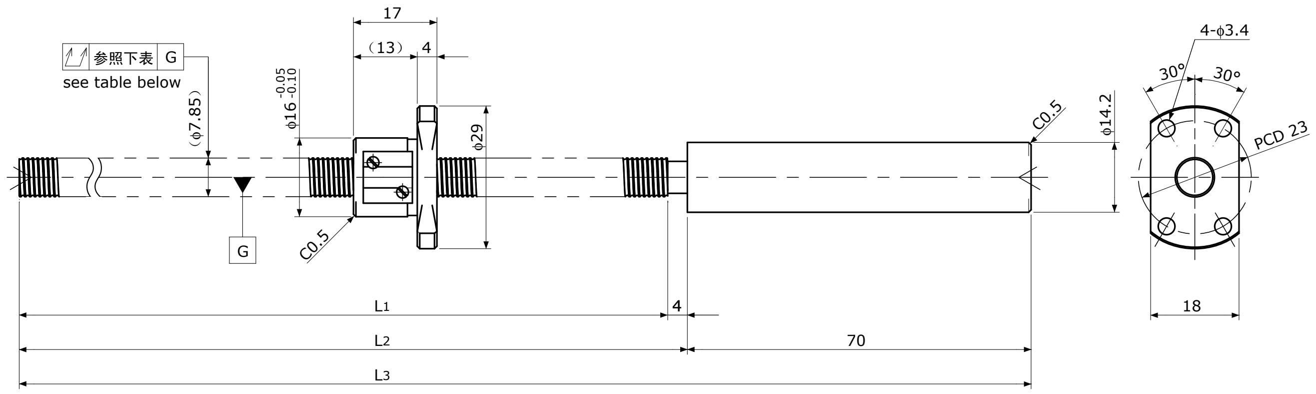
Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SSRT0601-146R220C7	125	Ct7	146	150	220	±0.02	—	0.080	～0.020	—	560	900
SSRT0601-261R335C7	240	Ct7	261	265	335	±0.04	—	0.120				
SSRT0601-146R220C10	125	Ct10	146	150	220	±0.10	—	0.160	～0.050			
SSRT0601-261R335C10	240	Ct10	261	265	335	±0.18	—	0.240				

Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SSRT series
标准库存品 SSRT系列

SSRT0801

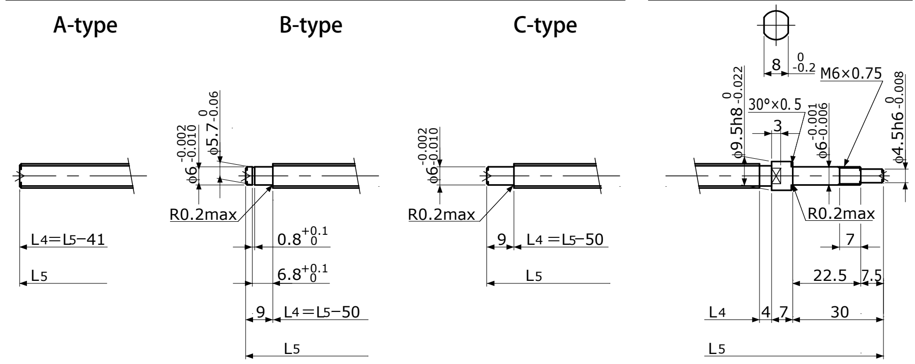
Stainless 不锈钢
Shaft dia.(轴径)φ8 Lead(导程)1mm | Ct7&Ct10



Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢球直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ7.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SUS440C+SUS303
	Nut 螺母	SUS440C
Surface hardness 螺纹部表面硬度		HRC55～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件	Supported-side 支撑侧 :	MSU-6CS/6GS, EF6
	Fixed-side 固定侧 :	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L1	L2	L3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 ep	Variation 波动 V300	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SSRT0801-196R270C7	175	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	630	1250
SSRT0801-356R430C7	335	Ct7	356	360	430	±0.06	0.05	0.120				
SSRT0801-196R270C10	175	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SSRT0801-356R430C10	335	Ct10	356	360	430	±0.24	0.21	0.240				

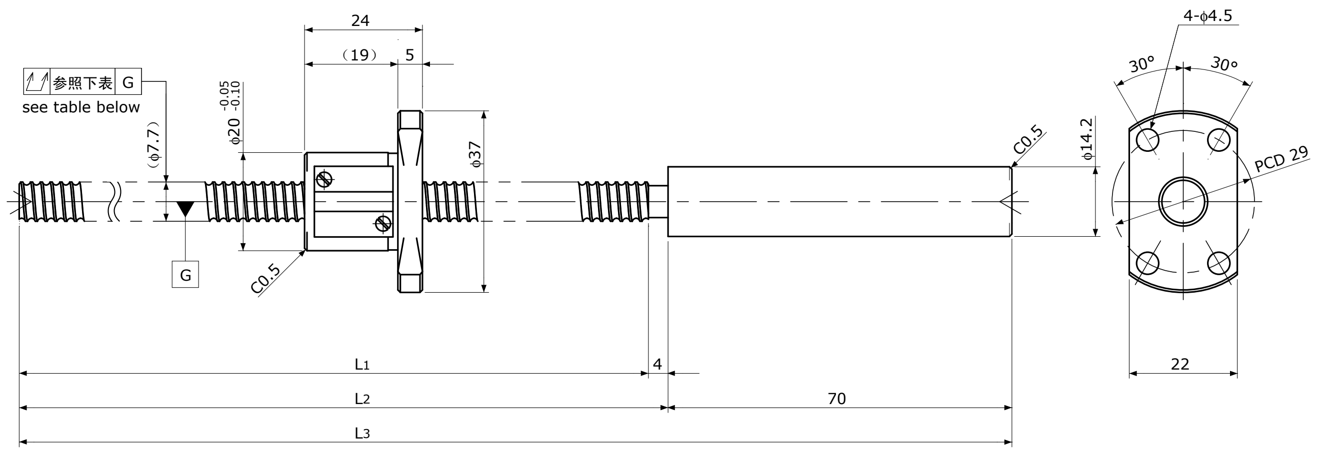
Note)Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SSRT series
标准库存品 SSRT系列

SSRT0802

Stainless 不锈钢

Shaft dia.(轴径)φ8 Lead(导程)2mm | Ct7&Ct10

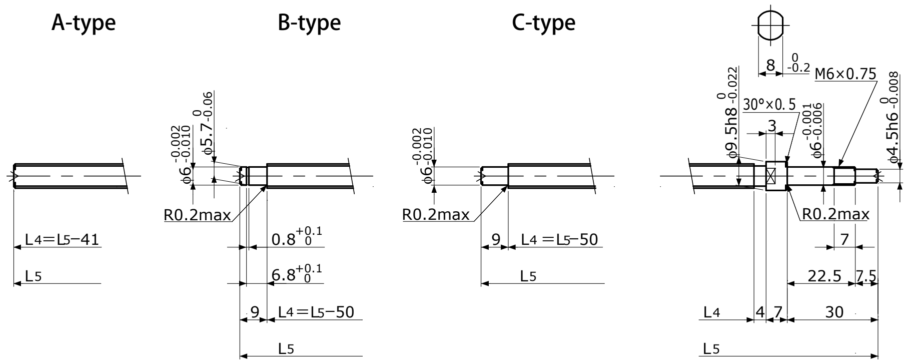


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ6.6
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SUS440C+SUS303
	Nut 螺母	SUS440C
Surface hardness 螺纹部表面硬度		HRC55～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-6CS/6GS, EF6
Fixed-side 固定侧	:	MSU-6C/6G, EK6

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SSRT0802-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	1950	3100
SSRT0802-356R430C7	330	Ct7	356	360	430	±0.06	0.05	0.120				
SSRT0802-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SSRT0802-356R430C10	330	Ct10	356	360	430	±0.24	0.21	0.240				

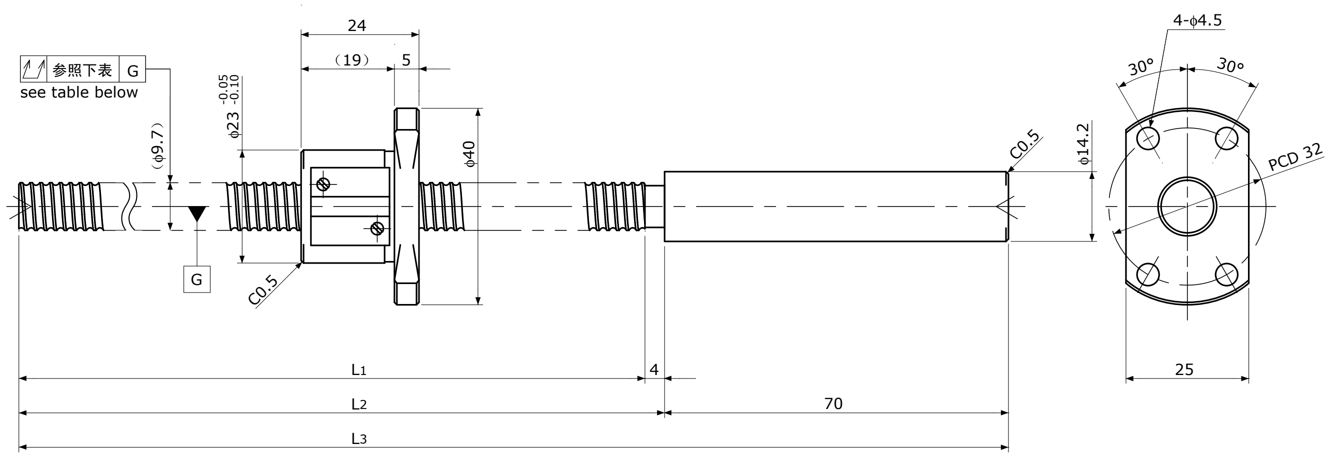
Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

Standard products in stock SSRT series
标准库存品 SSRT系列

SSRT1002

Stainless 不锈钢

Shaft dia.(轴径)φ10 Lead(导程)2mm | Ct7&Ct10

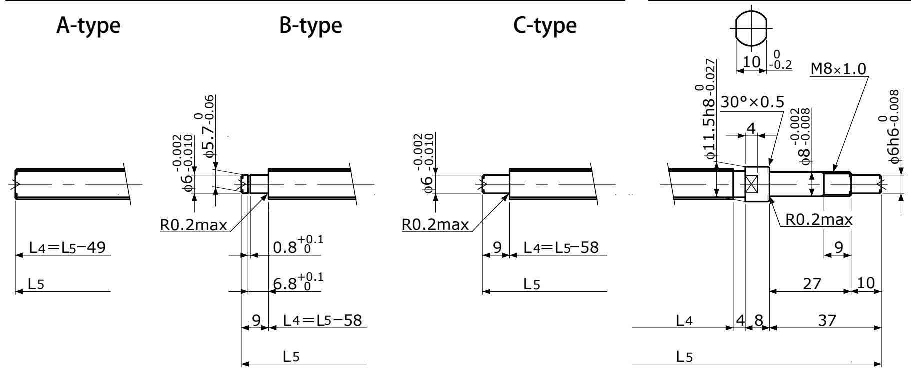


Unit(单位):mm

Ball Screw Specifications 主要技术参数		
Ball size 钢珠直径		φ1.5875
Number of thread 螺纹条数		1
Thread direction 螺纹旋向		Right 右旋
Shaft root dia. 丝杠轴底径		φ8.6
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	SUS440C+SUS303
	Nut 螺母	SUS440C
Surface hardness 螺纹部表面硬度		HRC55～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

End-journal profile 轴端加工形状 Supported-side 支撑侧 | Fixed-side 固定侧

A-type B-type C-type



L_4:Thread length after end-journal machining. 追加加工后的螺纹部长度
L_5:Total length after end-journal machining. 追加加工后的总长

Support-unit Recommendation 推荐的支架组件		
Supported-side 支撑侧	:	MSU-8CS/8GS, EF8
Fixed-side 固定侧	:	MSU-8C/8G, EK8

D-type : Other than the above. 上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Grade 精度	Shaft length 丝杠轴长度 L_1	L_2	L_3	Lead accuracy 导程精度 Travel deviation 代表移动量误差 e_p	Variation 波动 V_{300}	Total Run-out 全跳动	Axial play 轴向间隙	Preload Torque 预压扭矩 Nm	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
SSRT1002-196R270C7	170	Ct7	196	200	270	±0.03	—	0.080	～0.020	—	2200	4000
SSRT1002-396R470C7	370	Ct7	396	400	470	±0.06	0.05	0.120				
SSRT1002-196R270C10	170	Ct10	196	200	270	±0.13	—	0.160	～0.050			
SSRT1002-396R470C10	370	Ct10	396	400	470	±0.27	0.21	0.240				

Note) Please refer to p-A287 for order code of end-journal machining. 注)追加加工的公称型号指定方式请参照p-A287。

PSR/PSRT 系列　精密冷轧滚珠丝杠 标准库存品
PSR/PSRT series　Precision Rolled Ball Screws

PSR/PSRT 系列 精密冷轧滚珠丝杠 标准库存品。
冷轧加工的滚珠丝杠实现了精密级(JIS C5)的精度。
为以往的冷轧滚珠丝杠无法满足精度要求的装置提供性价比优越的产品。

High accuracy (JIS C5) has been achieved by Rolled Ball Screw. We provide Rolled Ball Screws with high precision & better cost performance, which can be replaced with conventional Ground Ball Screw with C5 grade.

●特征

- 以往只能达到Ct7, Ct10 精度的冷轧加工, 我司实现了精密级(JIS C5)的精度。
- 备有轴端比丝杠轴粗的台阶型和全螺纹未加工型2种, 给客户提供更多的设计自由度。
- 台阶型轴端比丝杠轴粗, 无需另配轴环, 热套。
- 标准化固定端轴端形状和尺寸, 可直接装配KSS支撑单元。
- 支撑端未加工, 可按客户规格要求自由调节长度。
- 可按实际要求对应标准以外的轴端形状。
- 全螺纹未加工型具有优越的性价比, 可按客户要求追加工轴端。
- 轴向间隙设定为5um以下, 也可按客户要求提供无轴向间隙的产品。

●Features

- The conventional type of Rolled Ball Screws can reach the Accuracy grade of Ct10 or Ct7. KSS newly developed the high grade accuracy of Rolled Ball Screw, which can achieve JIS C5 grade.
- We have 2 types of Precision Rolled Ball Screws, which are Integrated type with larger journal and whole threaded type. So it provides wide variety of design choices.
- For Integrated end-journal type, Fixed side end-journal can be set larger than nominal diameter of Screw Shaft, so there is no need to use Collar by press fit.
- Fixed side End-journal profile and dimension are standardized, so KSS Compact Support-Unit can be installed.
- Since supported-side end-journal is unfinished, it is possible to do additional end machining with your requested thread length.
- Special end-journal profile can be available as customized order.
- Whole threaded type is a high cost performance type and end-journal machining is available in accordance with your request.
- The Axial play is set at 5um or less, but Zero backlash is possible based on your request.

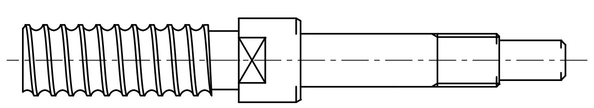
●种类

精密轧制滚珠丝杠有轴端比丝杠轴粗的台阶型(PSRT)和全螺纹未加工型2种(PSR)

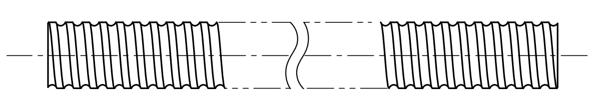
●Variation

We have 2 types of Precision Rolled Ball Screws, which are Integrated type with larger journal (PSRT) and whole threaded length type (PSR).

【台阶型/ Integrated journal type】



【全螺纹未加工型/ whole threaded type】



●丝杠轴公称外径和导程组合　Combination of Shaft nominal dia. & Lead

Unit(单位):mm

Shaft dia. 公称外径 \ Lead 导程	1	2	12
4	A323 A325 A324 A326		
6	A327 A329 A328 A330		
8	A331 A333 A332 A334	A335 A337 A336 A338	A339 A340
10		A341 A342	
12		A343 A344	

注1)表中数字:刊载页码

Note 1) The numbers in a table : showing a page in this catalogue

●精度等级和轴向间隙

PSR/PSRT系列(精密冷轧滚珠丝杠标准库存品)的精度等级为, C5(JIS B-1192)。
轴向间隙为0.005mm以下, 可按实际要求提供无轴向间隙(预压)的产品。

●Accuracy Grade & Axial play

The grade of PSR/PSRT series (Standardized Precision Rolled Ball Screws) is C5 (JIS B-1192).
Axial play of this series is 0.005mm or less, but zero backlash (pre-load) type is available by your request.

●材质和表面硬度

PSR/PSRT系列(精密冷轧滚珠丝杠标准库存品)的材质和表面硬度如下。

●Material & Surface hardness

The material and hardness of PSR/PSRT series (Standardized Precision Rolled Ball Screws) are as follows.

Products 产品种类	Material of thread area 滚珠丝杠部材质	Heat treatment 热处理	Surface hardness 滚珠丝杠部表面硬度
Precision Rolled Ball Screws (PSR series) 精密冷轧滚珠丝杠 (PSR系列)	Shaft / 丝杠轴 : S55C	Induction hardening 高频热处理	HRC58 or more HRC58以上
	Nut / 螺母 : SCM415	Carburizing and Quenching 浸碳热处理	
Precidion Rolled Ball Screws with Integrated end-journal (PSRT series) 台阶性精密冷轧滚珠丝杠 (PSRT系列)	Shaft / 丝杠轴 : S55C	Induction hardening 高频热处理	HRC58 or more HRC58以上
	Nut / 螺母 : SCM415	Carburizing and Quenching 浸碳热处理	

●润滑

精密冷轧滚珠丝杠全螺纹未加工型(PSR系列)库存用防锈油做好了防锈处理。防锈油无润滑作用, 使用时请另行涂布润滑脂。无特别指示, 将推荐KSS特制润滑脂(MSG No.2)

●Lubrication

Standardized Precision Rolled Ball Screws whole threaded length type (PSR Series) will be supplied with anti-rust oil.
This oil is not lubricant, when Ball Screw operates, lubricant should be applied.
If there is no specific instruction, KSS would recommend our original grease (MSG No.2) as standard lubricant. Please feel free to contact us.

●其他

PSR/PSRT系列(精密冷轧滚珠丝杠标准库存品), 除了标准螺母(回路板式以及端盖式)以外, 还备有紧凑型螺母(陀螺式)。可按实际用途选用。

●Others

PSR/PSRT series (Standardized Precision Rolled Ball Screws) provide 3 types of Ball Nut profile.
Return-plate style and End-cap style are our standard. In addition Internal-Deflector style as Compact Ball Nut is also in stock. So you can pick one of them based on your design.

●公称型号的构成　Model number notation

【台阶型/ Integrated journal type】

如需台阶型追加工，请按以下公称型号指示长度，轴端形状，螺母方向（红字部分）。
In case of PSRT type (Integrated journal type), please designate length, end-journal profile, lubricant and Nut direction (in red ink below)　according to the Model number notation below.

PSRT	08	01	K	—	155	R	204	C5	B	0	X
1	2	3	4		5	6	7	8	9	⑩	⑪

1精密冷轧滚珠丝杠记号
　PSRT : 台阶型
2丝杠轴工程外径 (mm)
3导程 (mm)
4螺母形式
　无记号：一般
　K：紧凑型
5螺纹部长度 (mm)
　（追加工后按1mm单位指定）
6螺纹方向 (R=右旋)
7丝杠轴总长 (mm)
　（按1mm单位指定）
8精度等级 (JIS C5级)
9轴端加工型
　参照图 A-26：A-type,B-type,C-type,
　　　　　D-type（其他）
⑩涂布
　0：KSS推荐润滑脂 (MSG No.2)
　1：防锈油 (Non Ruster PZ2)
　2：Multemp PS2
　3：其他
⑪螺母法兰方向（参照图 A-27）

1Precision Rolled Ball Screws Series No.
　PSRT : Integrated journal type
2Screw Shaft nominal diameter (mm)
3Lead (mm)
4Ball Nut type
　None：Standard
　K：Compact type
5Screw thread length (mm)
　(Specify in 1mm unit after end-journal machining)
6Thread direction (R=Right-hand)
7Screw Shaft total length (mm)
　(Specify in 1mm unit)
8Accuracy grade (JIS C5)
9Shaft end-journal profile
　Refer to Fig. A-26 below：A-type,B-type,C-type,
　　　　　D-type (Othes)
⑩Anti-rust oil or Lubricant
　0：KSS grease (MSG No.2)
　1：Anti-rust oil (Non Ruster PZ2)
　2：Multemp PS2 grease
　3：Other
⑪Nut Flange direction (Refer to Fig. A-27 below)

图 A-26：轴端加工型
Fig. A-26：Shaft end-journal profile

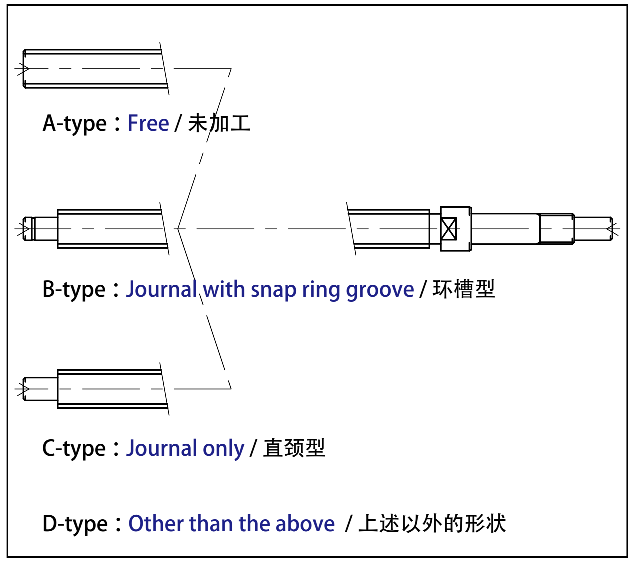
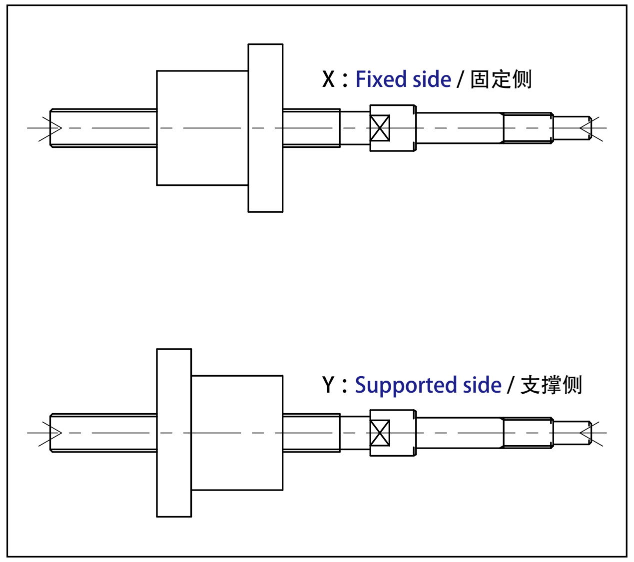


图 A-27：螺母法兰方向
Fig. A-27：Nut Flange direction



●备注
1) 轴端详细尺寸请参照各页内容。
2) KSS不受理螺母的追加工。
3) 规格如有更改恕不另行通知。
4) 如需标准轴端 (A,B,C) 以外的形状，请垂询KSS。
5) 客户自行追加工不予品质保证。

●Note
1) The detail of end-journal dimension for each size is shown from next page.
2) KSS does not make additional Nut machining.
3) The specification is subject to change without notice.
4) If the other configuration except (A,B,C) is requested, please contact KSS.
5) KSS will not be responsible for quality, in case re-work is done by other than KSS.

【全螺纹未加工型/ Whole threaded type】

全螺纹未加工的公称型号的构成如下。
轴端追加工，请提供图纸。
Model number notation of PSR type (whole threaded type) is as follows. Please designate end-journal profile with your simple sketch.

PSR	08	01	K	—	230	R	230	C5
1	2	3	4		5	6	7	8

1精密冷轧滚珠丝杠记号
　PSR : 全螺纹未加工型
2丝杠轴工程外径 (mm)
3导程 (mm)
4螺母形式
　无记号：一般
　K：紧凑型
5螺纹部长度 (mm)
　（追加工后按1mm单位指定）
6螺纹方向 (R=右旋)
7丝杠轴总长 (mm)
　（按1mm单位指定）
8精度等级 (JIS C5级)

1Precision Rolled Ball Screws Series No.
　PSR : Whole threaded type
2Screw Shaft nominal diameter (mm)
3Lead (mm)
4Ball Nut type
　None：Standard
　K：Compact type
5Screw thread length (mm)
　(Specify in 1mm unit after end-journal machining)
6Thread direction (R=Right-hand)
7Screw Shaft total length (mm)
　(Specify in 1mm unit)
8Accuracy grade (Class JIS C5)

●特殊规格品
可接单生产以下内容的特殊设计，请垂询KSS。
1) 不同于标准的轴端形状，尺寸。
2) 不同于标准的螺母形状，尺寸。
3) 轴向间隙为零（预压规格）的产品。
4) 大于标准长度的产品。

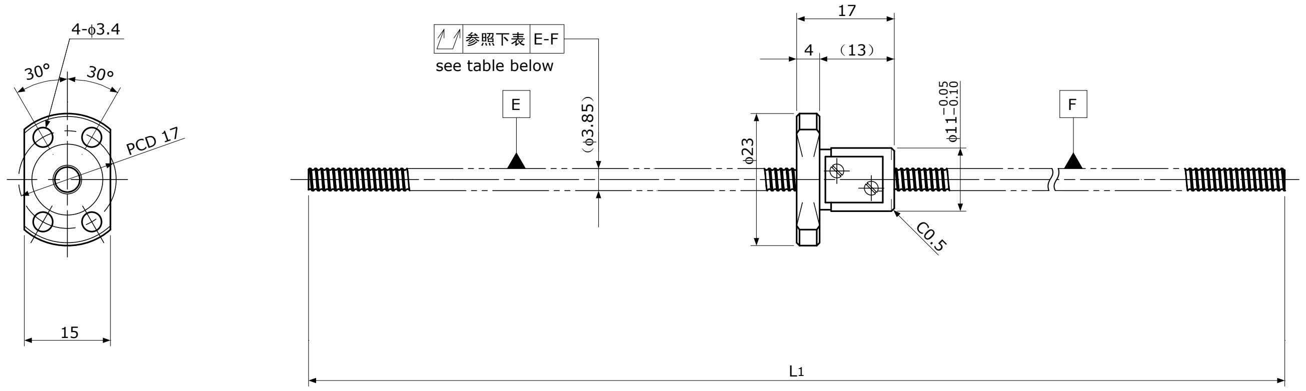
●Customized Design
It will be the customized if you need special specifications like below, please ask KSS representative.
1) Non-standard profile or dimension on Shaft end-journal.
2) Non-standard profile or dimension on Ball Nut or Flange.
3) Zero backlash (Pre - loaded) type Ball Screw.
4) Longer length of Ball Screw Shaft than standard product.

●备注
1) 按要求可提供无轴向间隙（预压）的产品，请垂询KSS。
2) 推荐KSS进行轴端追加工。
　KSS以外进行的追加工，加工后的精度不予保证。
3) 追加工时请提供追加工指示图（简易图）。
4) 不予受理螺母追加工，请按法兰形状等标准形状进行设计。
5) 滚珠丝杠必须涂布润滑脂使用。
　请注意防锈油无润滑作用。

●Note
1) Zero backlash is possible by your request, please ask KSS representative.
2) We recommend additional end-journal machining is done by KSS. We do not guarantee accuracy after re-works done by other than KSS.
3) Please send us drawing with end-journal profile when you request end-journal maching.
4) Additional machining is not applied to the Nut. Please design flange configuration according to our standard dimension.
5) In Ball Screws use, lubricant should be applied on them. Please note that anti-rust oil is not lubricant.

Standard products in stock PSR series
标准库存品　PSR系列

PSR0401 | Shaft dia.(轴径)φ4　Lead(导程)1mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ3.3
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

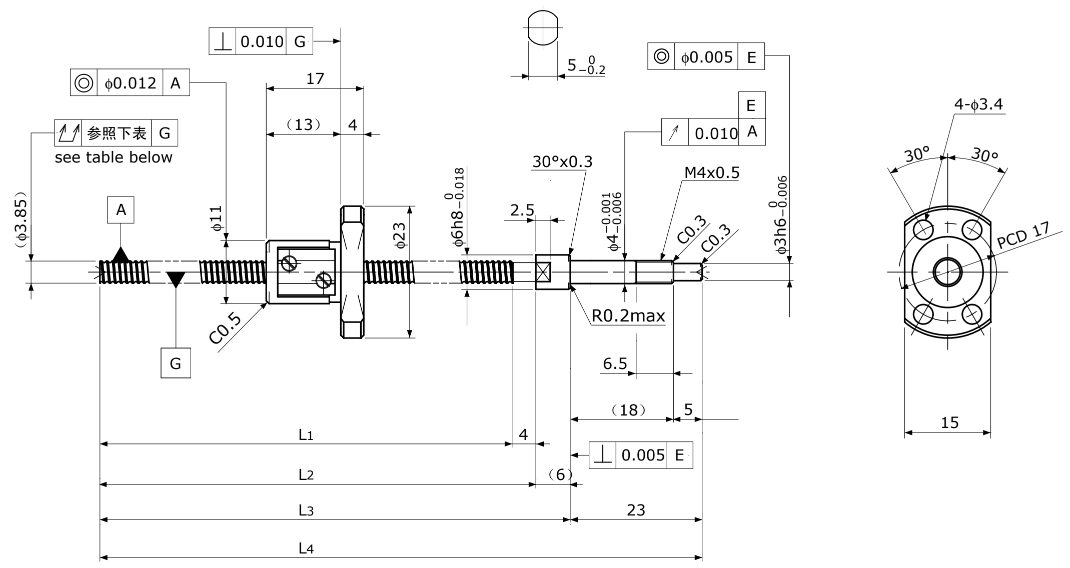
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0401-100R100C5	75	100	±0.018	0.035	～0.005	560	790

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0401 | Shaft dia.(轴径)φ4　Lead(导程)1mm | C5

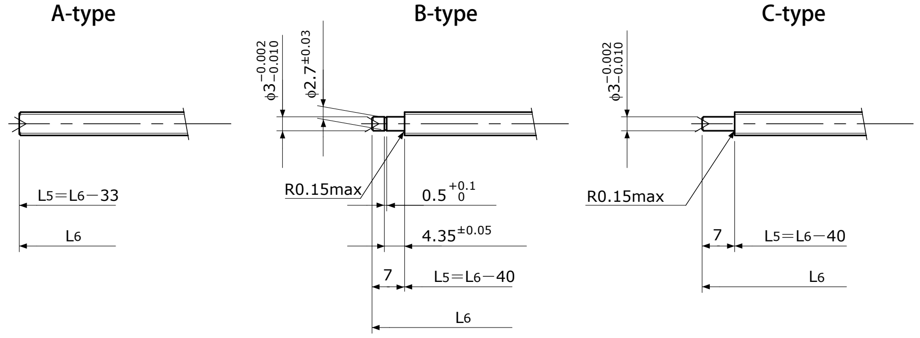


Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ3.3
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状

A-type　B-type　C-type



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧　:	MSU-4CS/4GS, SUP03-S
	Fixed-side　固定侧　:	MSU-4C/4G, EK4

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	L2	L3	L4	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0401-72R105C5	50	72	76	82	105	±0.018	0.035	～0.005	560	790

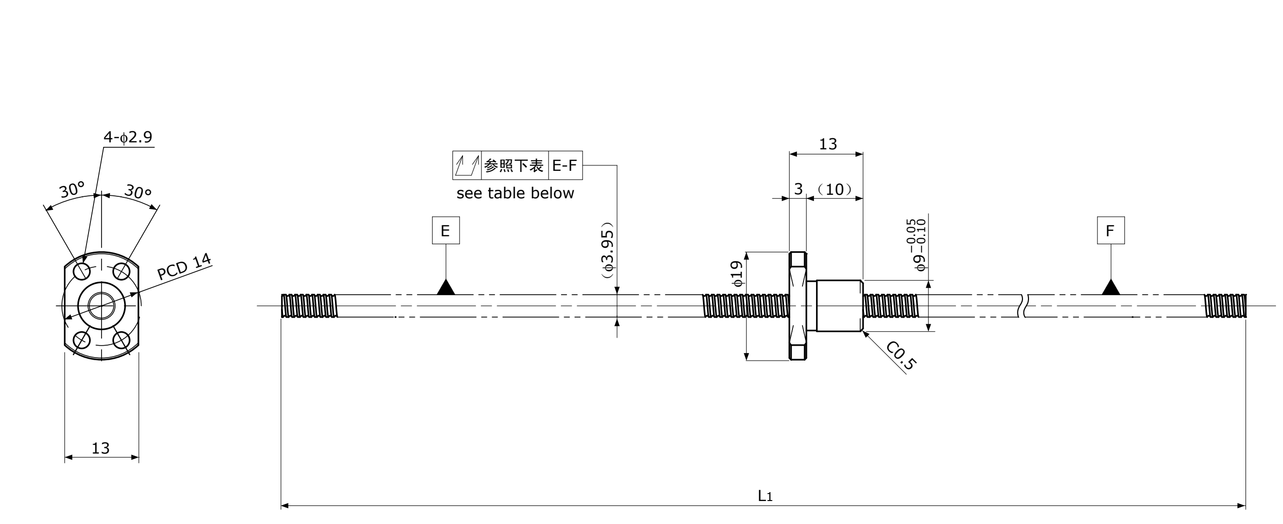
Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0401K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ4　Lead(导程)1mm　**C5**



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢球直径		φ0.6
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ3.4
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
PSR0401K-100R100C5	80	100	±0.018	0.035	～0.005	300	430

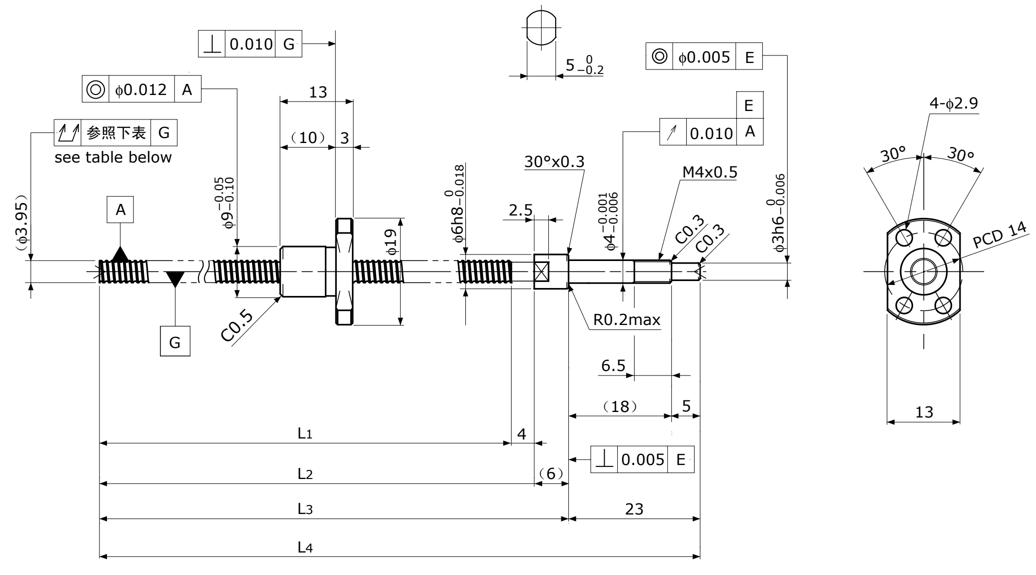
Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0401K

Compact Nut / 紧凑型螺母

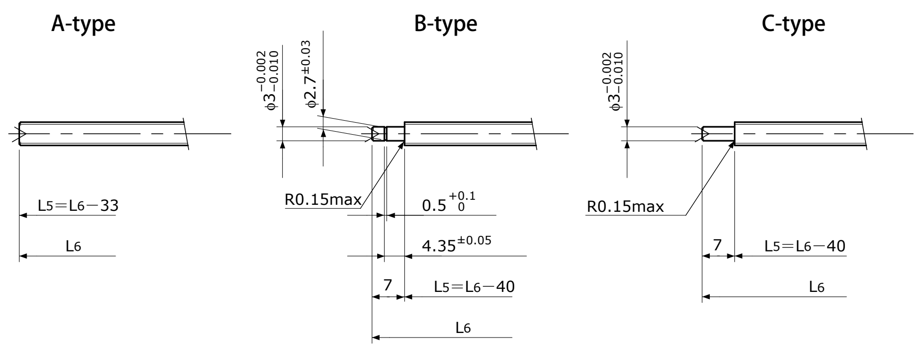
Shaft dia.(轴径)φ4　Lead(导程)1mm　**C5**



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢球直径		φ0.6
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ3.4
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L5:Thread length after end-journal machining.　追加工后的螺纹部长度
L6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧	MSU-4CS/4GS, SUP03-S
	Fixed-side　固定侧	MSU-4C/4G, EK4

D-type : Other than the above.　上述以外的形状

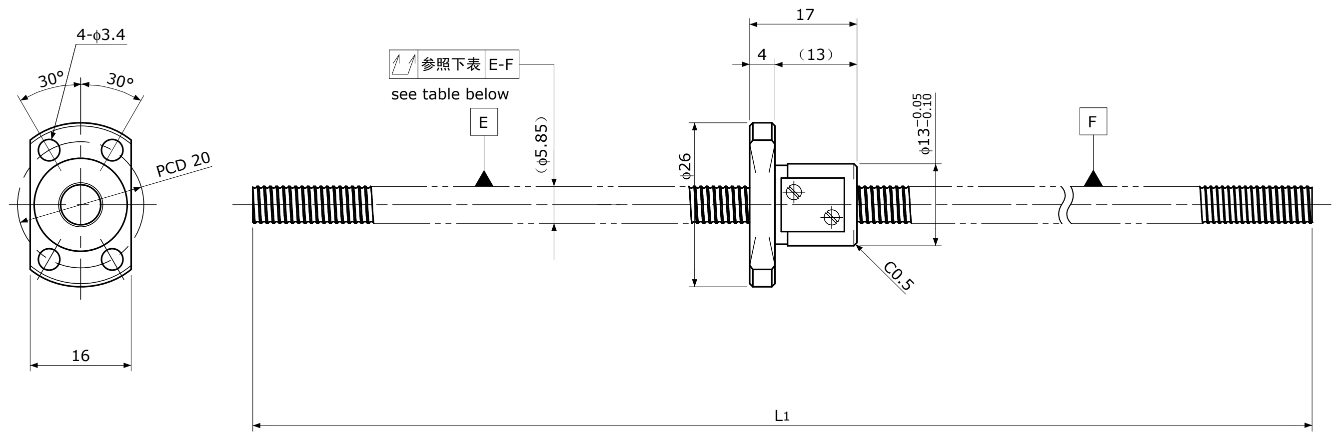
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	L2	L3	L4	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Static 额定静负载 Coa
PSRT0401K-72R105C5	50	72	76	82	105	±0.018	0.035	～0.005	300	430

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0601 | Shaft dia.(轴径)φ6　Lead(导程)1mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ5.3
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

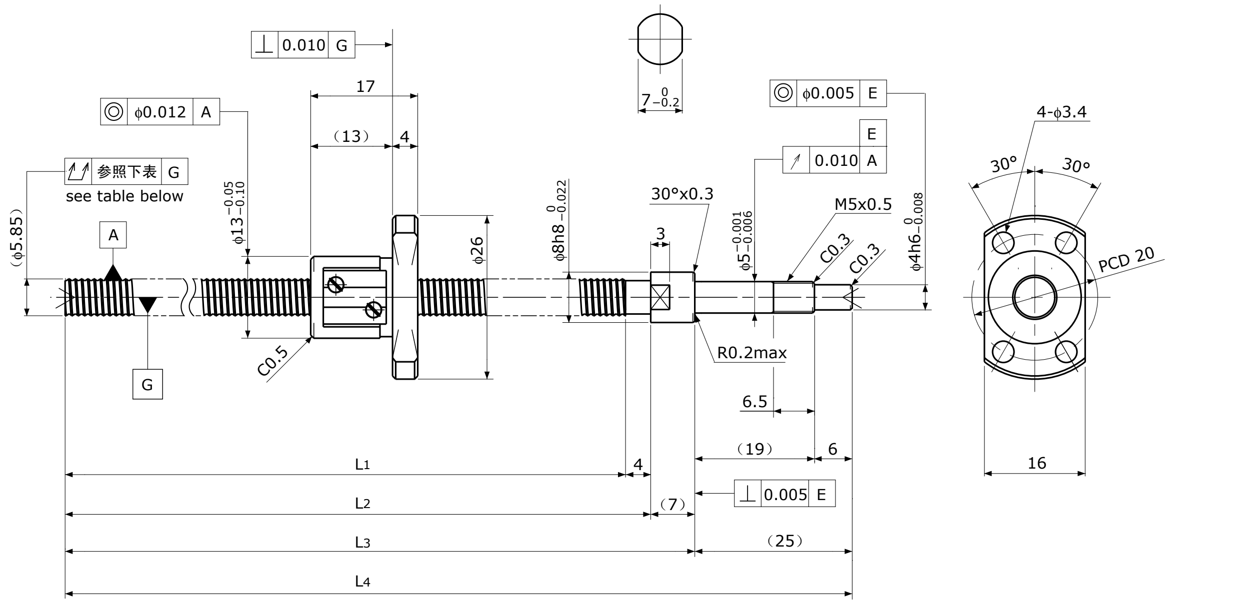
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L₁	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0601-200R200C5	175	200	±0.020	0.050	～0.005	680	1200

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

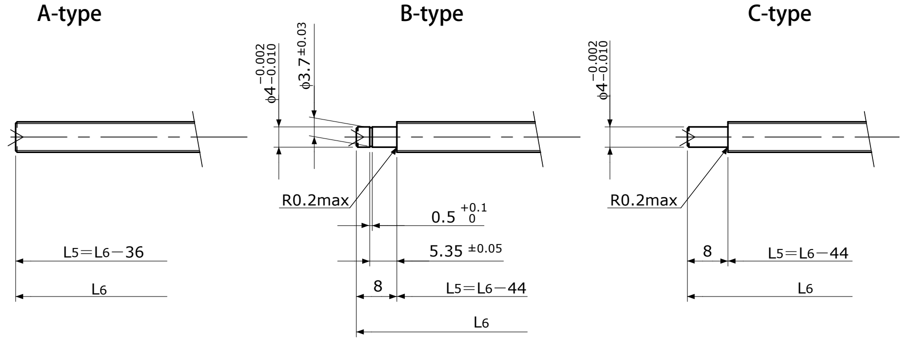
PSRT0601 | Shaft dia.(轴径)φ6　Lead(导程)1mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ5.3
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧　:	MSU-5CS/5GS, SUP04-S
	Fixed-side　固定侧　:	MSU-5C/5G, EK5

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L₁	L₂	L₃	L₄	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0601-89R125C5	65	89	93	100	125	±0.018	0.035	～0.005	680	1200

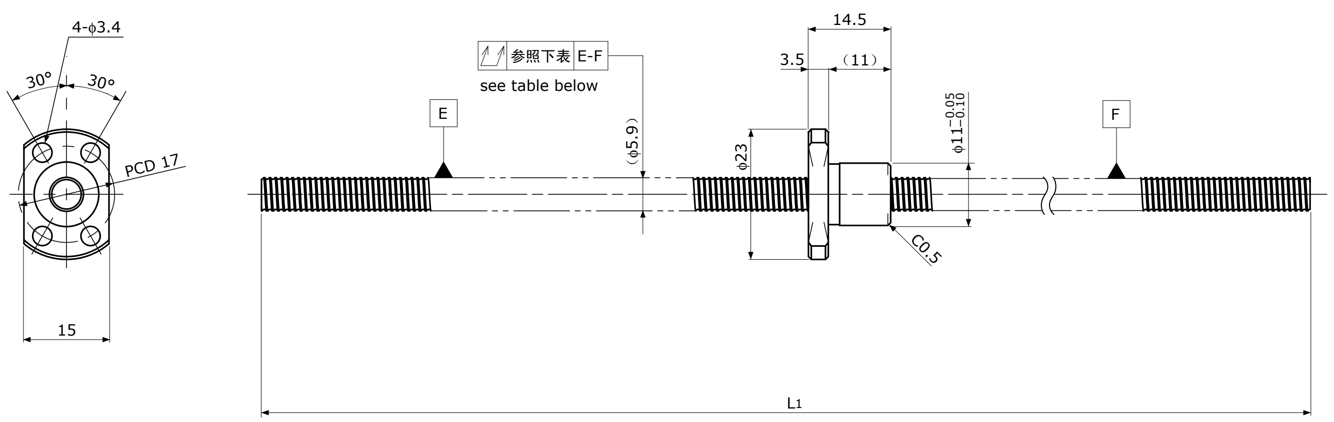
Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法，请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0601K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ6　Lead(导程)1mm　　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ5.3
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0601K-200R2000C5	180	200	±0.020	0.050	～0.005	560	950

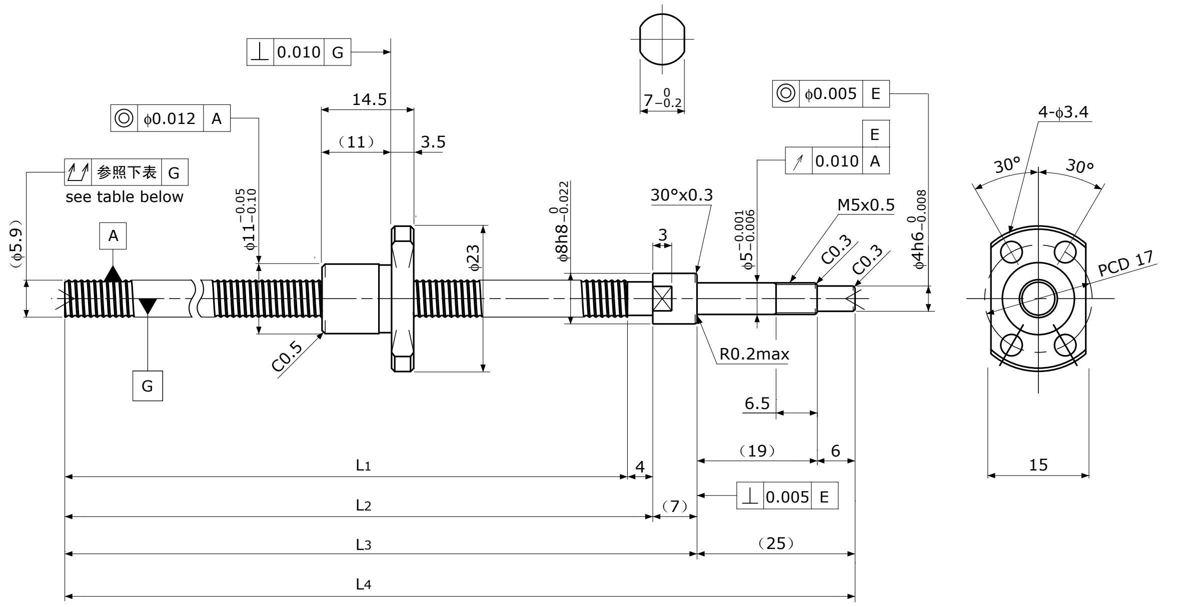
Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0601K

Compact Nut / 紧凑型螺母

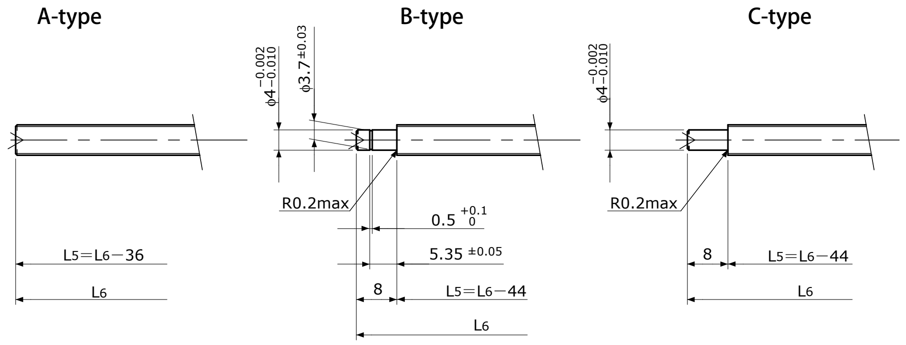
Shaft dia.(轴径)φ6　Lead(导程)1mm　　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ5.3
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C＋SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	
Supported-side　支撑侧	MSU-5CS/5GS, SUP04-S
Fixed-side　固定侧	MSU-5C/5G, EK5

D-type : Other than the above.　上述以外的形状

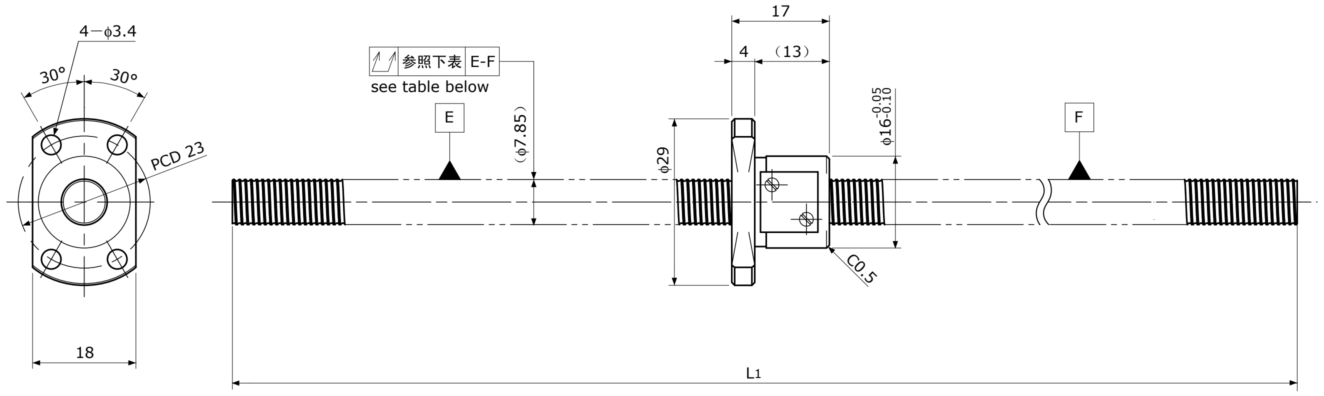
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	L2	L3	L4	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0601K-89R125C5	65	89	93	100	125	±0.018	0.035	～0.005	560	950

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品 PSR系列

PSR0801 | Shaft dia.(轴径)φ8 Lead(导程)1mm | C5



Unit(单位):mm

Ball Screw Specifications 规格		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹方向		Right 右
Shaft root dia. 丝杠轴低径		φ7.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

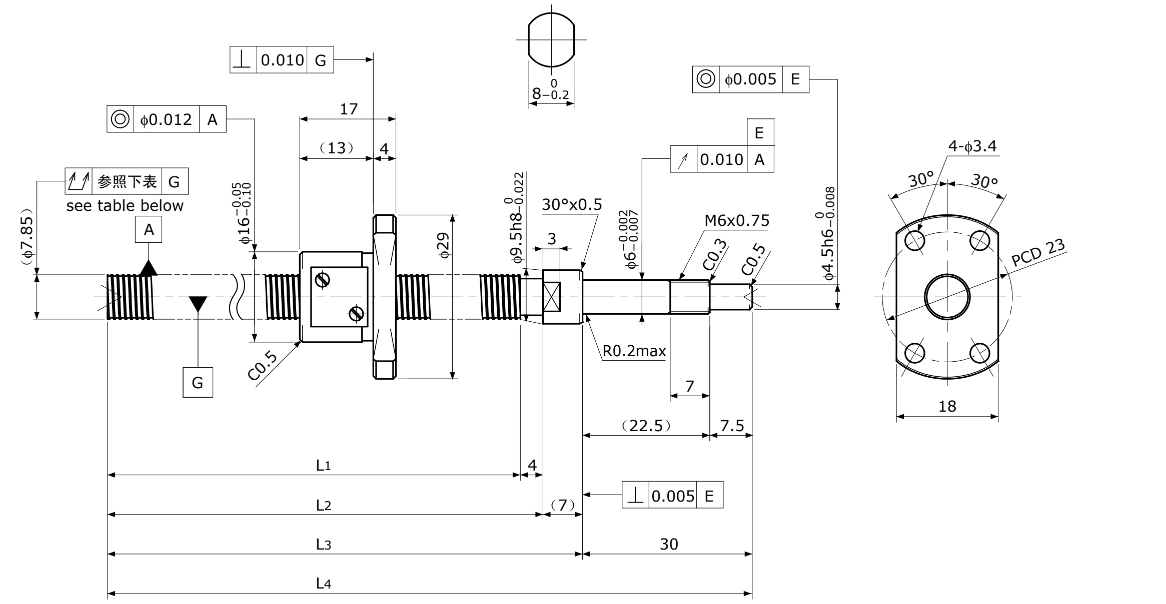
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L₁	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0801-230R230C5	205	230	±0.023	0.065	～0.005	780	1650

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品 PSRT系列

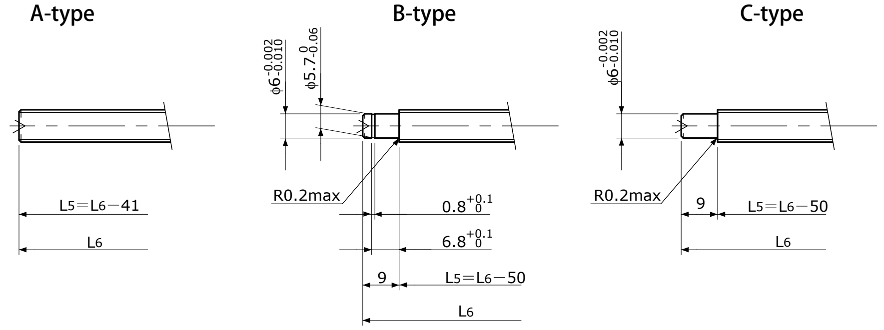
PSRT0801 | Shaft dia.(轴径)φ8 Lead(导程)1mm | C5



Unit(单位):mm

Ball Screw Specifications 规格		
Ball size 钢珠直径		φ0.8
Number of thread 螺纹条数		1
Thread direction 螺纹方向		Right 右
Shaft root dia. 丝杠轴低径		φ7.3
Number of circuit 循环数		3.7×1
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile 支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元		
	Supported-side 支撑侧	: MSU-6CS/6GS, EF6
	Fixed-side 固定侧	: MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L₁	L₂	L₃	L₄	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0801-169R210C5	145	169	173	180	210	±0.020	0.065	～0.005	780	1650

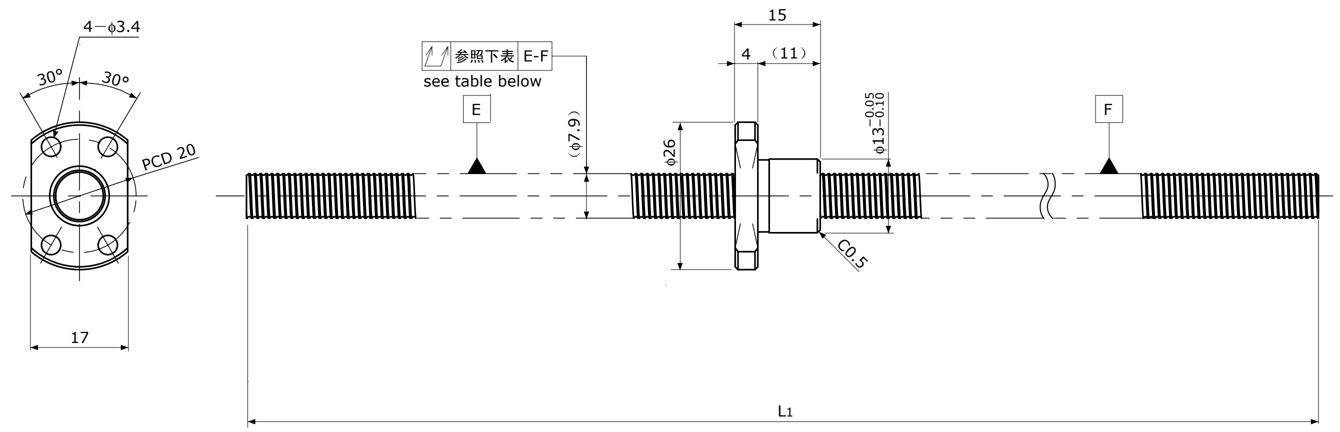
Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0801K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ8　Lead(导程)1mm　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ7.3
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0801K-230R230C5	210	230	±0.023	0.065	～0.005	650	1300

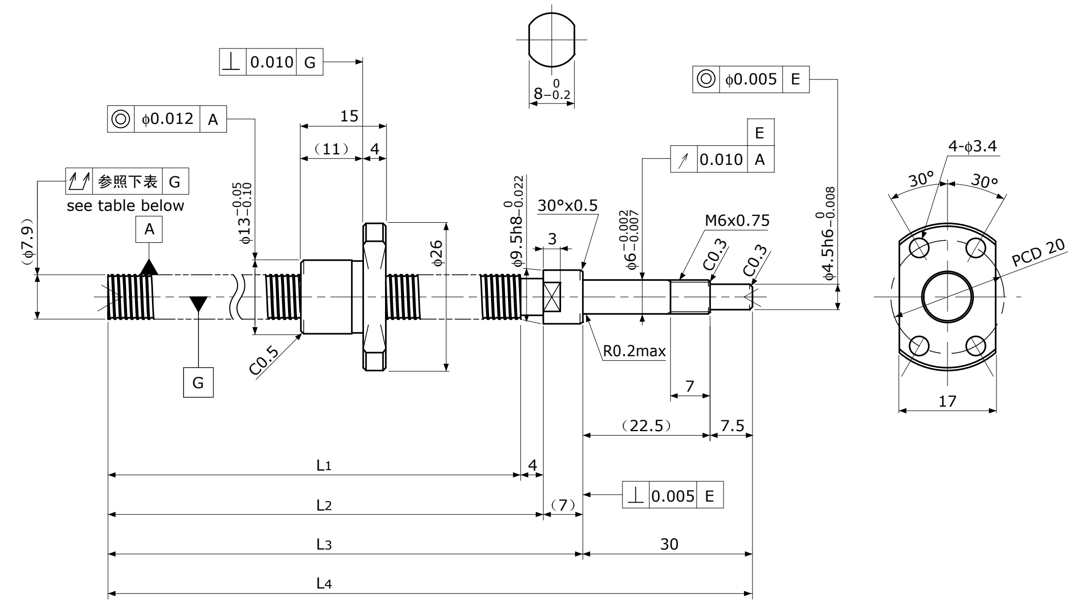
Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0801K

Compact Nut / 紧凑型螺母

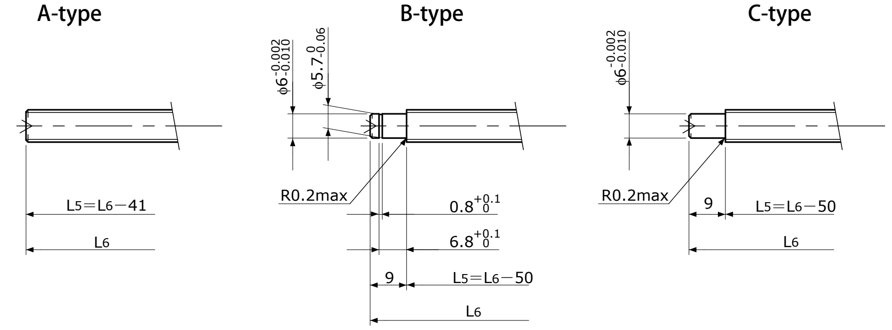
Shaft dia.(轴径)φ8　Lead(导程)1mm　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ0.8
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ7.3
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧	MSU-6CS/6GS, EF6
	Fixed-side　固定侧	MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

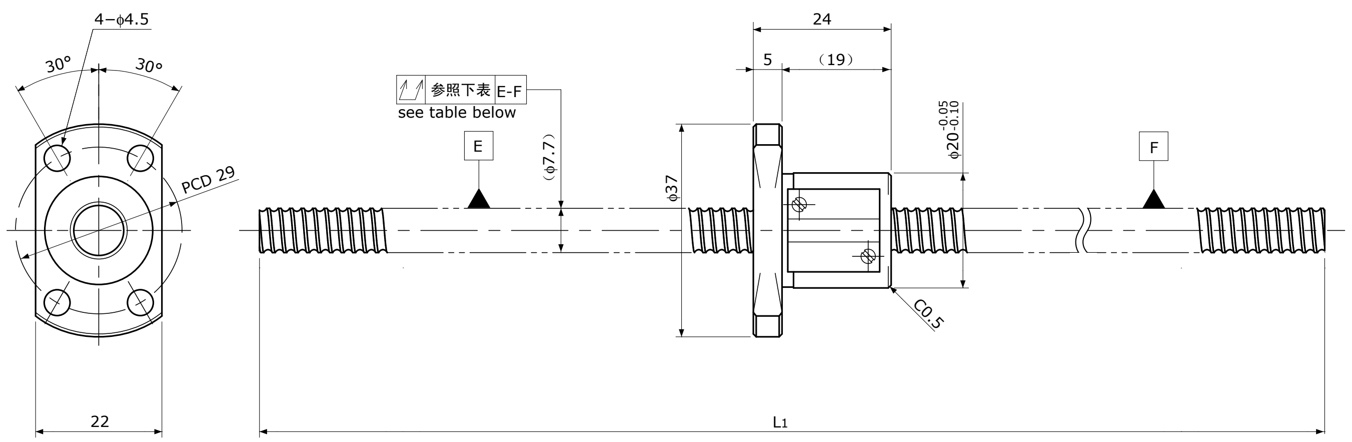
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	L2	L3	L4	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0801K-169R210C5	145	169	173	180	210	±0.020	0.065	～0.005	650	1300

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0802 | Shaft dia.(轴径)φ8　Lead(导程)2mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.5875
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ6.6
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

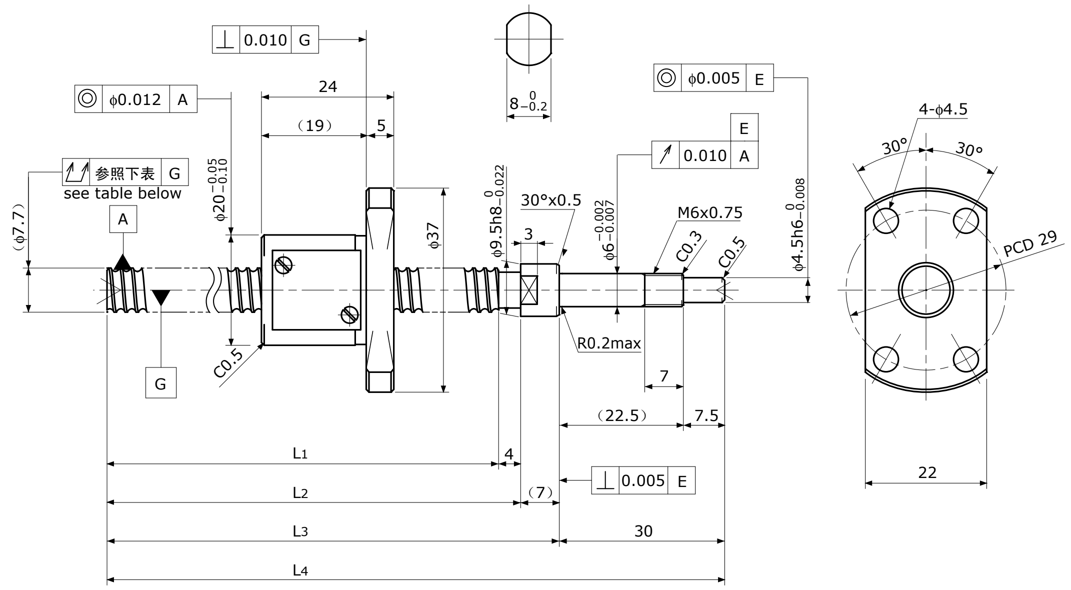
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L_1	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0802-230R230C5	200	230	±0.023	0.065	～0.005	2400	4100

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0802 | Shaft dia.(轴径)φ8　Lead(导程)2mm | C5

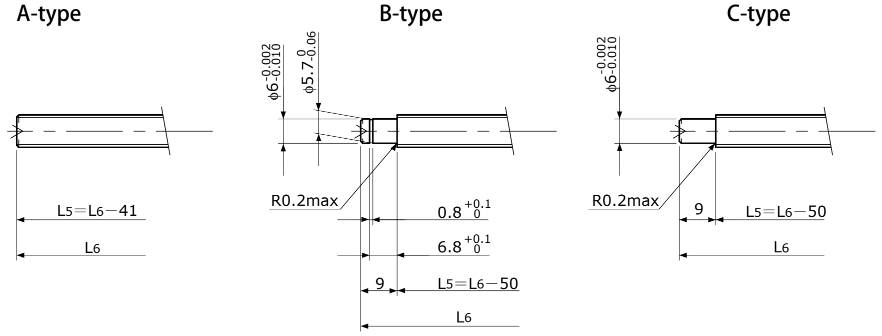


Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.5875
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ6.6
Number of circuit　循环数		3.7×1
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状

A-type　B-type　C-type



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧　:	MSU-6CS/6GS, EF6
	Fixed-side　固定侧　:	MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L_1	Shaft length 丝杠轴长度 L_2	Shaft length 丝杠轴长度 L_3	Shaft length 丝杠轴长度 L_4	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0802-169R210C5	140	169	173	180	210	±0.020	0.065	～0.005	2400	4100

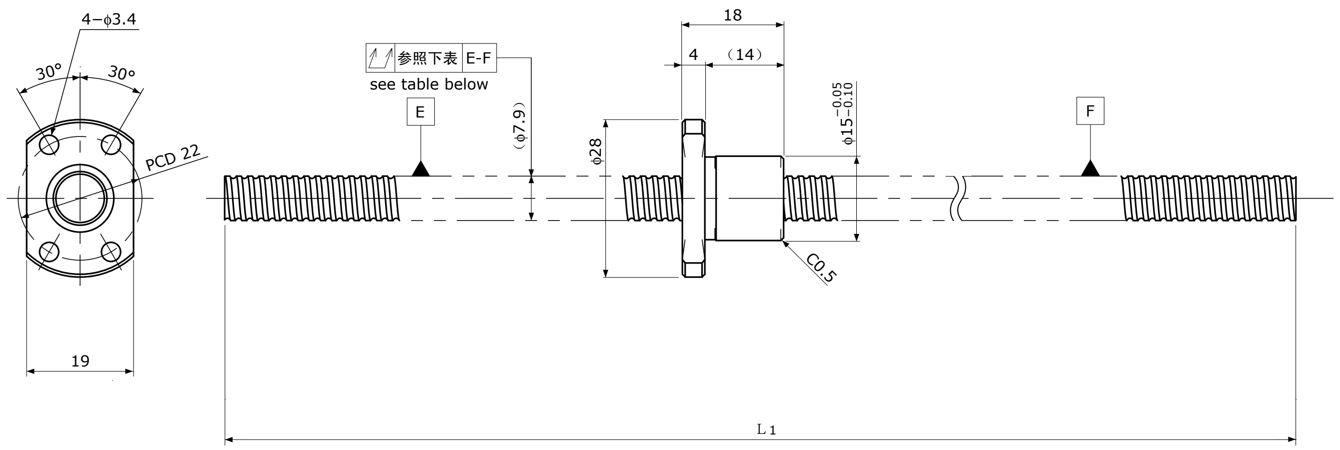
Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0802K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ8　Lead(导程)2mm　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.2
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ7.0
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR0802K-230R230C5	205	230	±0.023	0.065	～0.005	1300	2300

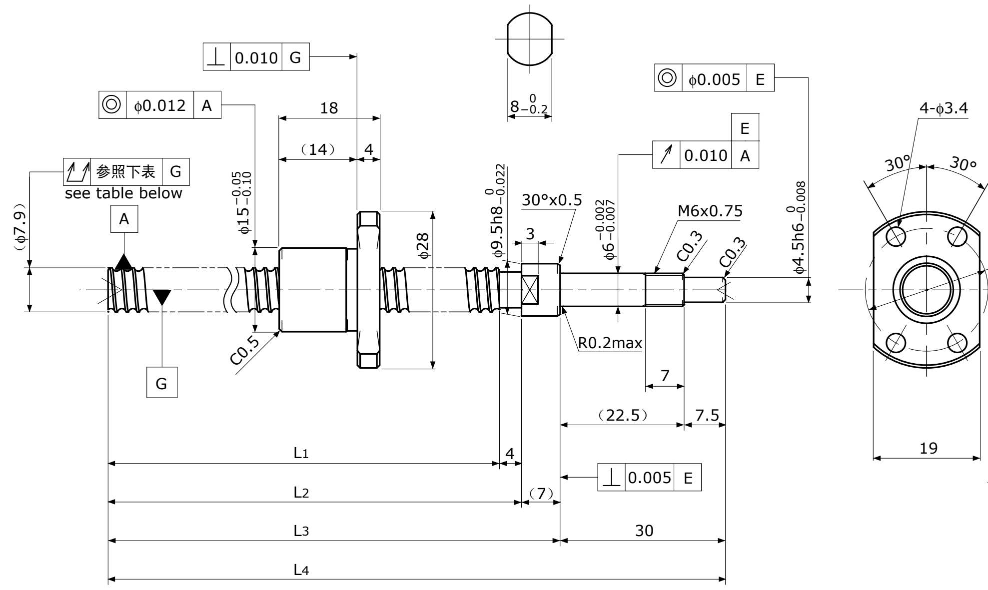
Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT0802K

Compact Nut / 紧凑型螺母

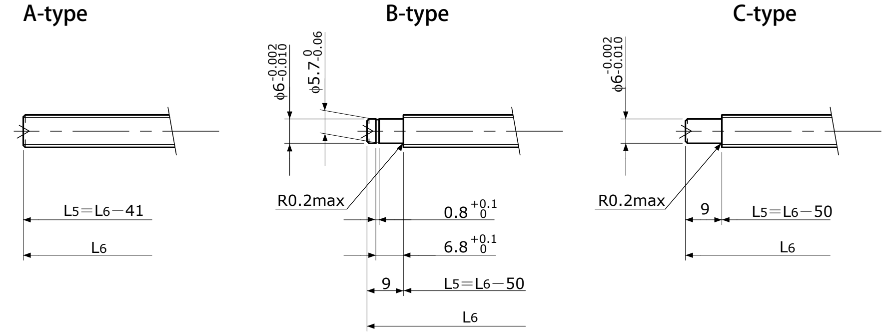
Shaft dia.(轴径)φ8　Lead(导程)2mm　C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.2
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ7.0
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～(Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元		
	Supported-side　支撑侧	MSU-6CS/6GS, EF6
	Fixed-side　固定侧	MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

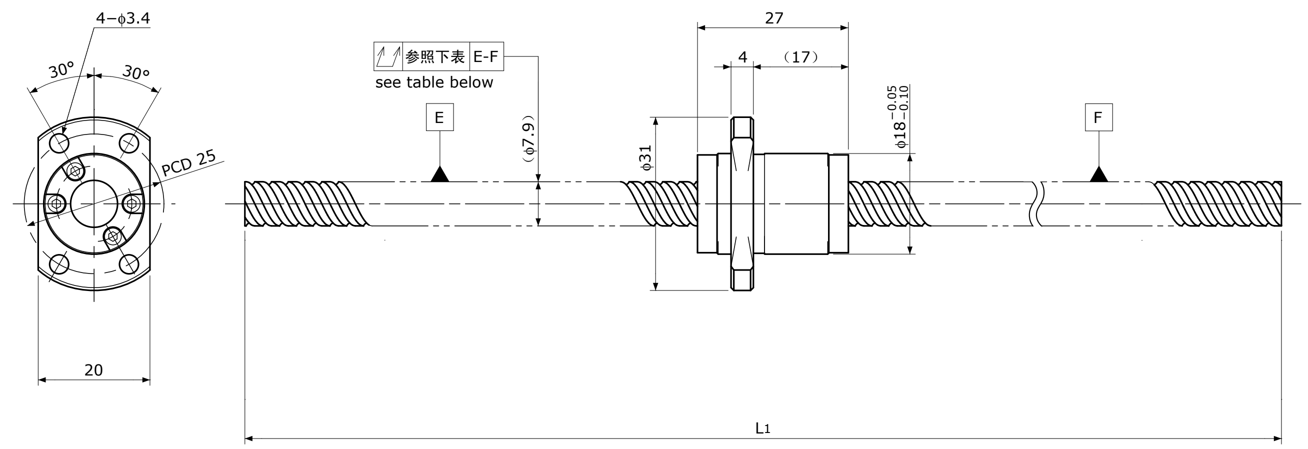
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Shaft length L2	Shaft length L3	Shaft length L4	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT0802K-169R210C5	145	169	173	180	210	±0.020	0.065	～0.005	1300	2300

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR0812 | Shaft dia.(轴径)φ8　Lead(导程)12mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.5875
Number of thread　螺纹条数		2
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ6.7
Number of circuit　循环数		1.6×2
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58〜 (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

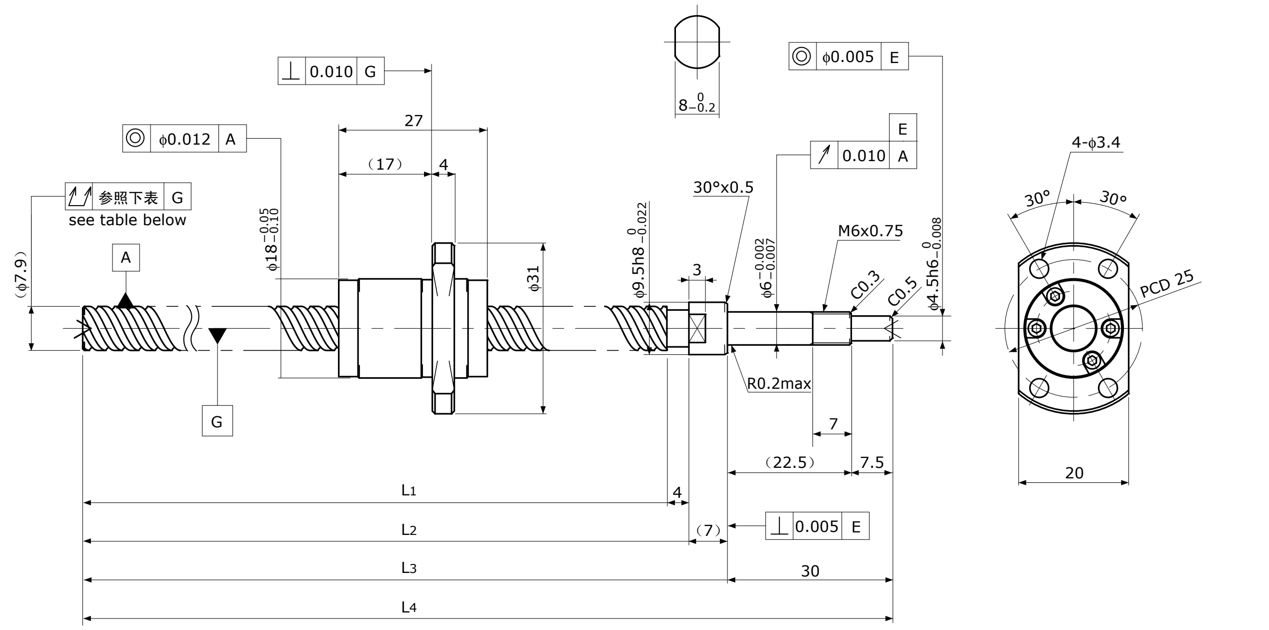
Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度	Travel deviation 代表移动量误差	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载　N	
		L_1	e_p			Dynamic 额定动负载 Ca	Static 额定静负载 Coa
PSR0812-230R230C5	195	230	±0.023	0.065	〜0.005	2200	4000

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

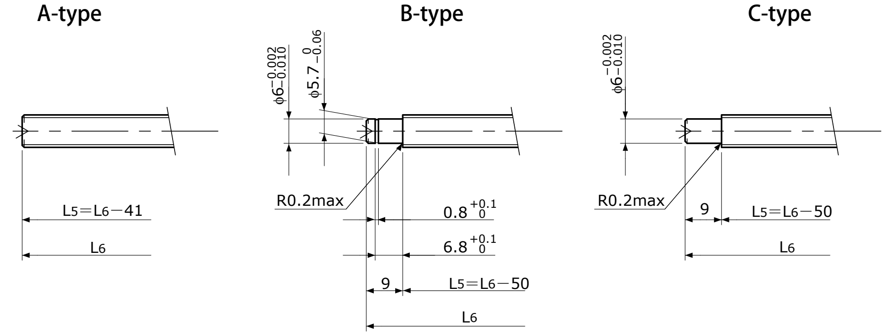
PSRT0812 | Shaft dia.(轴径)φ8　Lead(导程)12mm | C5



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.5875
Number of thread　螺纹条数		2
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ6.7
Number of circuit　循环数		1.6×2
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58〜 (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧　:	MSU-6CS/6GS, EF6
	Fixed-side　固定侧　:	MSU-6C/6G, EK6

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度				Travel deviation 代表移动量误差	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载　N	
		L_1	L_2	L_3	L_4	e_p			Dynamic 额定动负载 Ca	Static 额定静负载 Coa
PSRT0812-169R210C5	135	169	173	180	210	±0.020	0.065	〜0.005	2200	4000

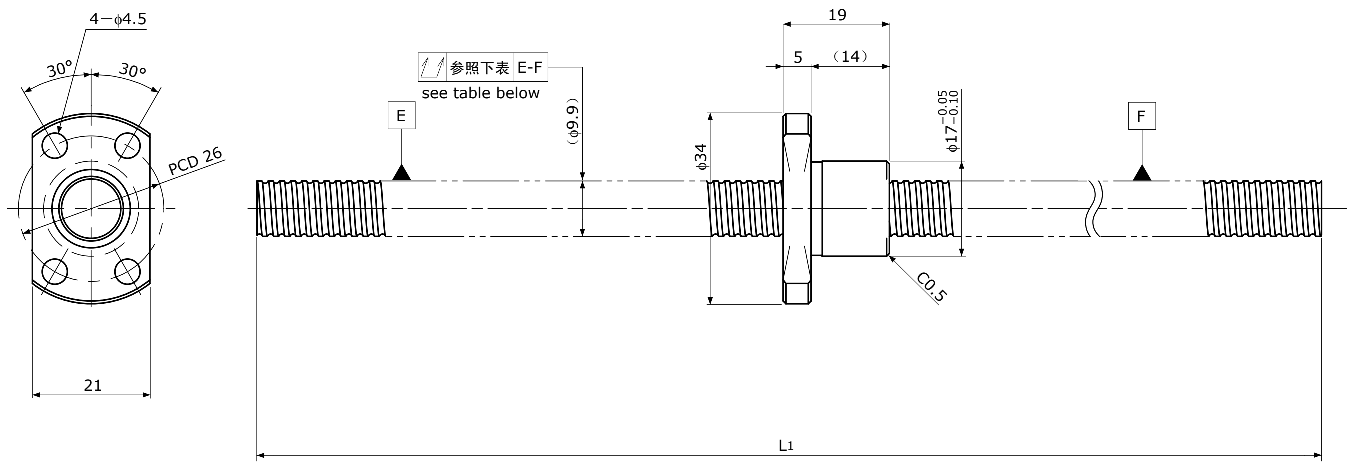
Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR1002K

Compact Nut / 紧凑型螺母

Shaft dia.(轴径)φ10　Lead(导程)2mm　C5



Unit(单位):mm

Ball Screw Specifications 规格		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹方向		Right 右
Shaft root dia. 丝杠轴低径		φ9.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR1002K-230R230C5	205	230	±0.023	0.055	～0.005	1450	3000

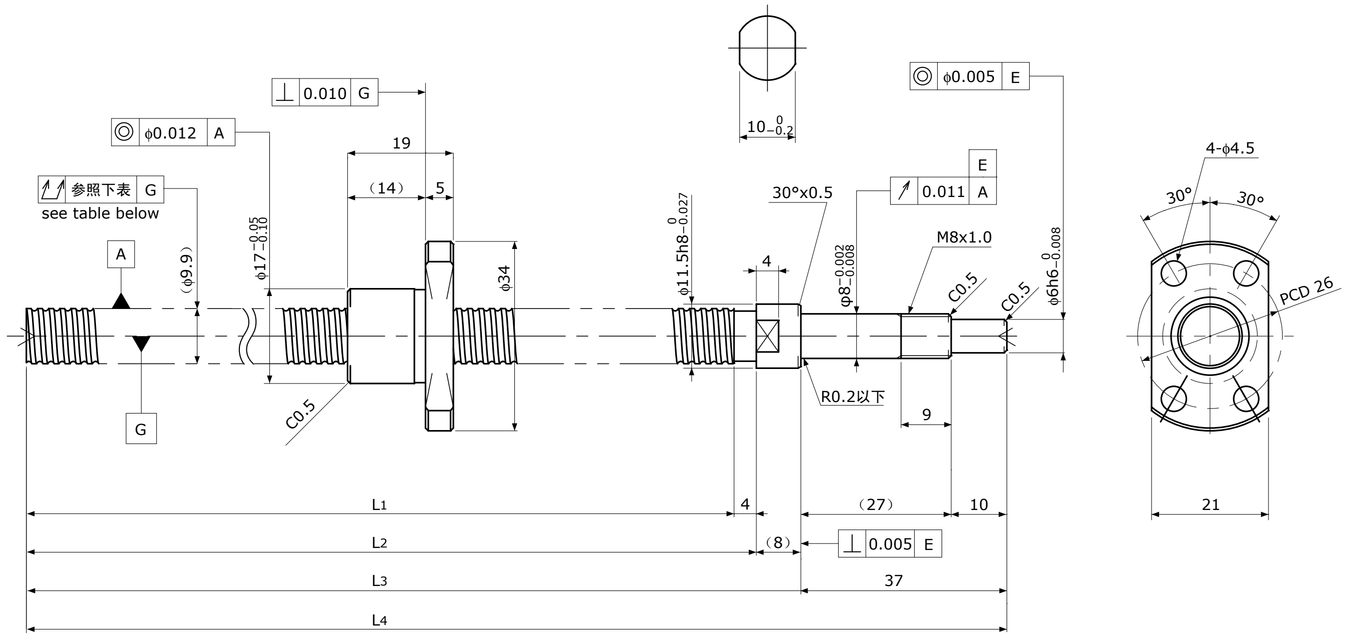
Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT1002K

Compact Nut / 紧凑型螺母

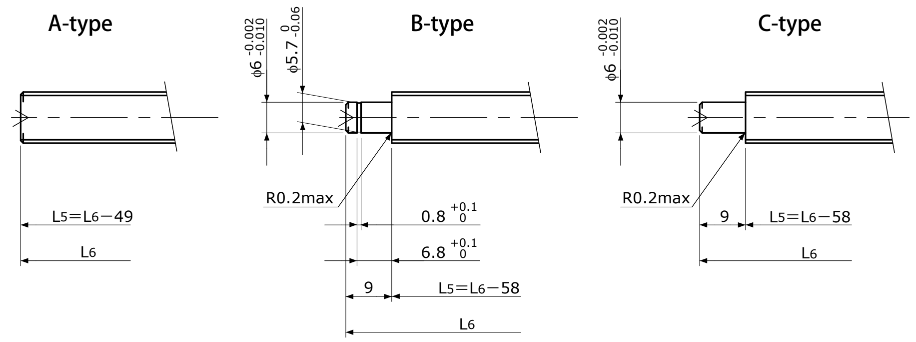
Shaft dia.(轴径)φ10　Lead(导程)2mm　C5



Unit(单位):mm

Ball Screw Specifications 规格		
Ball size 钢珠直径		φ1.2
Number of thread 螺纹条数		1
Thread direction 螺纹方向		Right 右
Shaft root dia. 丝杠轴低径		φ9.0
Number of circuit 循环数		1×3
Material 材质	Shaft 轴	S55C+SUS303
	Nut 螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	
Supported-side 支撑侧	MSU-8CS/8GS, EF8
Fixed-side 固定侧	MSU-8C/8G, EK8

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

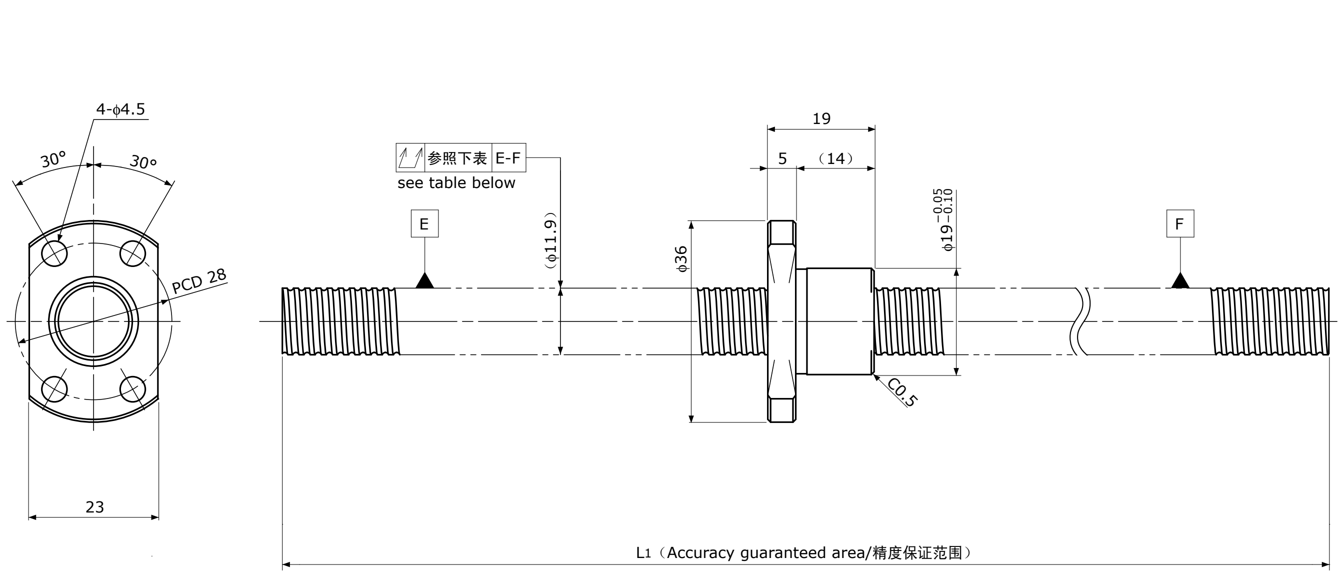
Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Shaft length 丝杠轴长度 L2	Shaft length 丝杠轴长度 L3	Shaft length 丝杠轴长度 L4	Travel deviation 代表移动量误差 e_p	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT1002K-201R250C5	175	201	205	213	250	±0.023	0.055	～0.005	1450	3000

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

Standard products in stock PSR series
标准库存品　PSR系列

PSR1202K

Compact Nut / 紧凑型螺母
Shaft dia.(轴径)φ12　Lead(导程)2mm　**C5**



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.2
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ11.0
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Anti-rust treatment 防锈处理		Anti-rust oil 防锈油

Unit(单位):mm

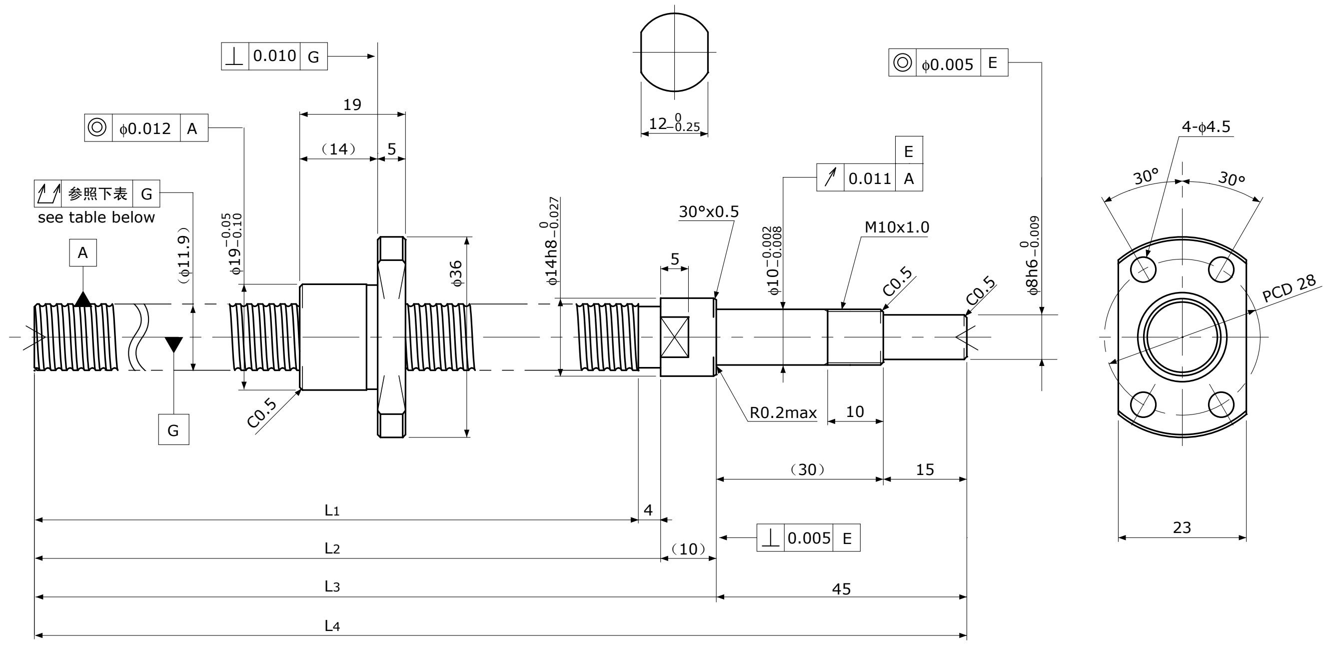
Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSR1202K-280R280C5	255	280	±0.023	0.055	～0.005	1600	3700

Note) Please dsignate end-journal profile with your sketch.　注)轴端追加工请提供图纸。

Standard products in stock PSRT series
标准库存品　PSRT系列

PSRT1202K

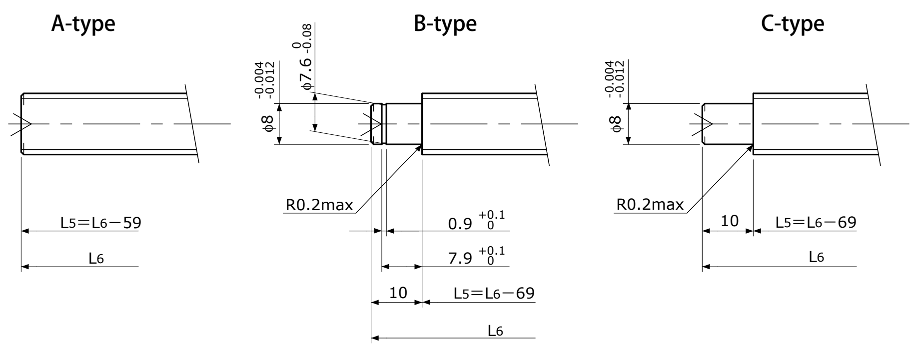
Compact Nut / 紧凑型螺母
Shaft dia.(轴径)φ12　Lead(导程)2mm　**C5**



Unit(单位):mm

Ball Screw Specifications　规格		
Ball size　钢珠直径		φ1.2
Number of thread　螺纹条数		1
Thread direction　螺纹方向		Right　右
Shaft root dia.　丝杠轴低径		φ11.0
Number of circuit　循环数		1×3
Material 材质	Shaft　轴	S55C+SUS303
	Nut　螺母	SCM415H
Surface hardness 螺纹部表面硬度		HRC58～ (Thread area)
Lubrication 润滑剂		KSS Original Grease MSG No.2

Supported-side end-journal profile　支撑侧轴端加工形状



L_5:Thread length after end-journal machining.　追加工后的螺纹部长度
L_6:Total length after end-journal machining.　追加工后的总长

Support-unit Recommendation 推荐的支撑单元	Supported-side　支撑侧　:	EF10
	Fixed-side　固定侧　:	EK10

D-type : Other than the above.　上述以外的形状

Unit(单位):mm

Ball Screw Model 滚珠丝杠型号	Travel 行程	Shaft length 丝杠轴长度 L1	L2	L3	L4	Travel deviation 代表移动量误差 ep	Total Run-out 全跳动	Axial play 轴向间隙	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa
PSRT1202K-271R330C5	245	271	275	285	330	±0.023	0.065	～0.005	1600	3700

Note) Please refer to page A-321 for order code of end-journal machining.　注)追加工的公称型号指定方法,请参照A-321页

接单生产
Customized products

为了满足客户的各种设计需求，除标准库存品以外，本公司还承接接单生产。
为节省客户的设计时间，我们对各种螺母类型进行了标准化。

In order to meet the needs of customer's requested design, we offer customized products.
To reduce design process at customer, each Nut type is standardized.

●接单生产的种类

接单生产品选择我司推荐螺母可大幅节省设计工时及成本。
各个型号的详细技术参数，请垂询我司或我司代理商

●Variety of Customized products

Customized Precision Ball Screws and Rolled Ball Screws are both standardized in Ball Nut dimension only. Please refer to following description about Standardized Ball Nut type. If you need special Ball Nut other than below, feel free to ask KSS.
KSS will provide with required Ball Nut as a special order.

●按轴径和导程分类的型号一览 Table of Shaft dia. and Lead combination

注）*表示双向螺母。
Note）* means Bi-directional Nut with Flange.

Shaft dia. / 轴径（mm） \ Lead / 导程（mm）	0.5	1	1.5	2	2.5	3	4	5	6	8	10	12	15	20	25	30
1.8	FBS															
3	FBS	FBS BS														
4	FBS	FKB FBS BS MS FKB* FBS* MRB BSR MSR		FBS BS MRB BSR		FBS BS	FEB									
5	FBS	FKB FBS BS FKB* FBS*					FBS BS MRB BSR									
6	FBS	FKB FBS BS KS FKB* FBS* MRB BSR	FBS BS	FBS BS MS KS MRB BSR	FBS BS				FEB MRB		FEB MRB	FEB				
8	FBS	FKB FBS BS KS FKB* FBS* MRB BSR	FKB FBS BS MS FKB* FBS*	FKB FBS BS MS KS FKB* FBS* MRB BSR MSR	FDB FBS BS MS MRB BSR MSR	FBS BS MS	FBS BS MS	FBS BS MS MRB BSR MSR		FEB MRB	FEB MRB	FEB MRB				
10		FKB FBS BS KS FKB* FBS*	FKB FBS BS FKB* FBS*	FKB FBS BS MS KS FKB* FBS* MRB BSR MSR	FKB FBS BS FKB* FBS*	FBS BS FBS*	FBS BS FBS* MRB BSR	FDB FBS BS FBS* MRB BSR	MRB BSR		FEB MRB	FEB MRB	FEB MRB	FEB MRB	FEB	FEB
12		FKB FBS BS FKB* FBS*		FKB FBS BS MS FKB* FBS* MRB BSR MSR	FKB FBS BS FKB* FBS*	FKB FBS BS FKB* FBS*	FBS BS MS FBS*	FBS BS			FEB MRB					
13												FEB MRB	FEB MRB	FEB MRB		
14		FBS BS FBS*		FKB FBS BS MS FKB* FBS* MRB BSR MSR	FKB FBS BS FKB* FBS*	FKB FBS BS FKB* FBS*	FKB FBS BS MS FKB* FBS* MRB BSR MSR	FBS BS FBS*								
15							FBS	FEB FBS MRB			FEB FBS MRB			FEB FBS MRB		FEB
16		FBS BS FBS*		FKB FBS BS FKB* FBS*	FKB FBS BS FKB* FBS*	FKB FBS BS FKB* FBS*	FKB FBS BS FKB* FBS*	FBS BS FBS*								
20								FBS			FBS					

●按螺母种类分类的型号一览 Nut style list

Nut type 螺母形状	Precision Ball Screws 精密滚珠丝杠	Rolled Ball Screws 冷轧滚珠丝杠
Single Nut with Flange 带法兰单螺母	FKB FBS FDB FEB	MRB
Sleeve type Single Nut 套筒型单螺母	BS	BSR
Single Nut with M-thread 带公制螺纹单螺母	MS	MSR
Square type Single Nut 方型单螺母	KS	—
Bi-directional Nut with Flange 双向螺母	FBS* FKB*	—

注）*表示双向螺母。
Note）* means Bi-directional Nut with Flange.

●滚珠丝杆的生产范围 Maximum limit of overall lengths

Unit（单位）：mm

Accuracy grade 精密等级 / Shaft nominal dia. 轴径	C0	C1	C3	C5	C7 & C10（Rolled Ball Screw / 冷轧）
4	90	120	160	170	240
5	90	120	160	170	300
6	140	180	240	250	350
8	200	250	330	350	450
10	260	320	420	450	650
12	320	390	510	550	700
13	320	390	510	550	700
14	380	460	600	660	700
15	380	460	600	660	1000
16	450	540	700	770	—

●带法兰单螺母（FBS,FKB,FDB,FEB,MRB系列） Single Nut with Flange

用法兰部螺栓孔安装螺母的最简单的单螺母丝杠。
有复式回路板循环方式（FBS, MRB系列），陀螺式循环方式（FKB系列），偏转器式循环方式（FDB系列）以及端盖式循环方式（FEB系列）等的多种产品供您选择。

It is the most simple Single Nut type. Normally Ball Screws are used with small Axial play, but using oversized Balls allows for the application of light preloading and eliminates backlash (only Precision grade). Nut should be mounted using bolt holes in Flange. FBS, MRB (Return-plate), FKB (Internal-deflector), FDB (End-deflector), FEB (End-cap) circulation system can be distinguished. Please refer to dimension table.

●套筒型单螺母（BS,BSR系列）Sleeve type Single Nut

采用圆筒型单螺母实现了径向紧凑化。
可用圆筒面键槽和螺母端面安装螺母。

It is Cylindrical Single Nut which is compact. Alike Single Nut with Flange, Axial play can be eliminated (only Precision grade). The Nut should be mounted by clamping on the key way on the Nut outer and Nut end surface.

●带公制螺纹单螺母（MS,MSR系列）Single Nut with M-thread

圆筒型螺母端面设有公制螺纹用于直接安装螺母。
最适用于气缸，电动杠等用途。

The Cylindrical type with M-thread at the Nut end. The Nut should be mounted using M-thread. It is suitable for mounting with cylinder.

●方型单螺母（KS系列）Square type Single Nut

平行于螺母中心设有较宽安装面的方形螺母丝杠。
螺母与支座一体，可实现紧凑型设计。

The Square Nut is finished with a large mounting face parallel to the Nut center. Nut itself has Housing function. This allows for a more compact design compared to Flange type.

●双向单螺母（FKB,FBS系列）Bi-directional Nut with Flange

单轴同时加工左旋和右旋螺纹，实现双向丝杠，左右相位控制等的功能。

Since there are both Right-handed thread and Left-handed thread on a Shaft, it has Bi-directional function.
Single Nut with Flange type is standardized, but it is also possible to manufacture Sleeve type Nut. In addtion, absolute positon control for both Nut is available.

●其他 Others

作为特殊规格，也生产双螺母产品，需要时请垂询本公司。

KSS can provide Double Nut style as one of choices for pre-loaded Ball Screws as special customized products.
Please ask KSS representative if necessary.

●公称型号的构成 Model number notation

FBS	04	01	B	—	100	R	120	C3	—	05
1	2	3	4		5	6	7	8		9

1螺母类型符号
精密滚珠丝杠：
FBS ：带法兰单螺母
BS ：套筒型单螺母
MS ：带公制螺纹单螺母
KS ：方型单螺母
冷轧滚珠丝杠
MRB ：带法兰单螺母
BSR ：套筒型单螺母
MSR ：带公制螺纹单螺母
2丝杠轴公称外径（mm）
3导程（mm）
4循环数符号（详情参照尺寸表）
5螺纹部长度（mm）
6螺纹旋向（R=右旋，L=左旋）
7丝杠轴总长（mm）
8精度等级（C0、C1、C3、C5、C7、C10）
9轴向间隙（μm）

1Ball Nut type No.
Precision Ball Screws
FBS : Single Nut with Flange
BS : Sleeve type Single Nut
MS : Single Nut with M-thread
KS : Square type Single Nut
Rolled Ball Screws
MRB : Single Nut with Flange
BSR : Sleeve type Single Nut
MSR : Single Nut with M-thread
2Screw Shaft nominal diameter (mm)
3Lead (mm)
4Re-circulation number (In detail refer to dimension table)
5Screw thread length (mm)
6Thread direction (R=Right-hand, L=Left-hand)
7Screw shaft total length (mm)
8Accuracy grade (C0,C1,C3,C5,C7,C10)
9Axial play (μm)

●注意事项

- 有关具体尺寸、额定负载、刚性等，请参照各型号相应的尺寸表。
- 有关精度、轴向间隙、材质、生产范围等详情，请参照技术解说p-A801。
- 接单生产时，丝杠轴的形状、尺寸未进行标准化。本公司可根据客户需求，制作KSS规格图。
- 设计丝杠轴时，由于组装螺母的关系，请注意使丝杠轴的其中一端（双向丝杠及冷轧滚珠丝杠时应为两端）不超过底径。
- 有关其它注意事项，请参照“存放、操作及使用注意事项”p-A901。

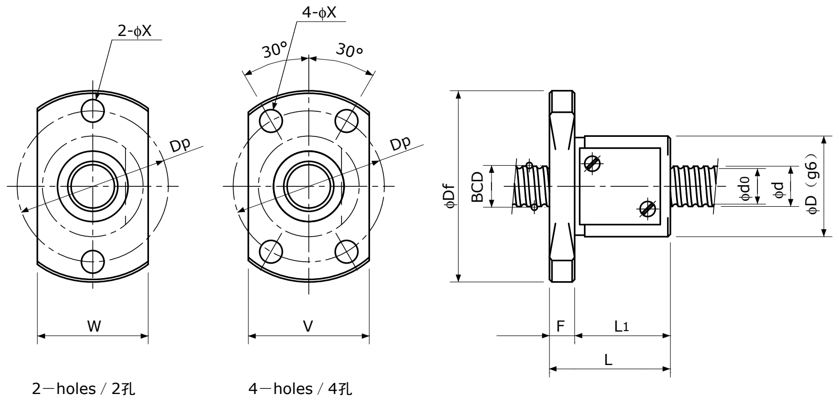
●Precaution

- Please refer to dimension table of each model regarding dimension, Load Rating, Rigidity.
- Please refer to Technical Description in p-A801 regarding Accuracy, Axial play, Material, production range and so on.
- Shaft configuration, Shaft dimension of Customized products are not standardized. KSS will create a Drawing based on customer's specifications.
- When designing Shaft configuration, fixed end or supported end (in case of Bi-directional Ball Screws and Rolled Ball Screw, both ends) should be smaller than Shaft Root diameter due to Nut assemble.
- Please refer to「Precaution of storage, handling, and operating」in p-A901 in detail other than the above.

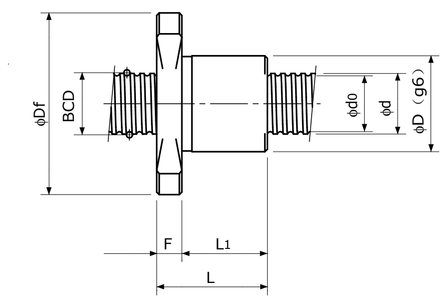
Precision Ball Screws 精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

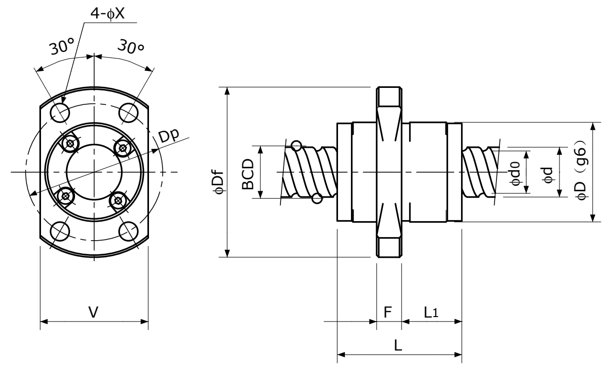
Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 01800.5 A	1.8	0.5	0.4	1.95	4°40′	1.5	2.7×1	110 / —	130 / —	19 / —	1	6	14	8.5	7	1.5	8	—	10	2.4	FBS 01800.5 A
FBS 0300.5 A	3	0.5	0.4	3.10	2°56′	2.6	2.7×1	150 / —	220 / —	29 / —	1	8	16	11	8	3	8	—	12	2.4	FBS 0300.5 A
FBS 0301 B	3	1	0.6	3.18	5°43′	2.4	3.7×1	330 / —	440 / —	42 / —	1	9	19	14	11	3	11	—	14	2.9	FBS 0301 B
FBS 0400.5 A	4	0.5	0.4	4.10	2°13′	3.6	2.7×1	160 / —	290 / —	36 / —	1	10	20	13	10	3	12	—	15	2.9	FBS 0400.5 A
FKB 0401 A	4	1	0.6	4.15	4°23′	3.4	1×3	300 / 300	430 / 430	38 / 59	2	9	19	13	10	3	11	13	14	2.9	FKB 0401 A
FBS 0401 A	4	1	0.8	4.15	4°23′	3.3	2.7×1	420 / 270	570 / 290	40 / 34	1	10	20	12	9	3	12	14	15	2.9	FBS 0401 A
FBS 0401 B	4	1	0.8	4.15	4°23′	3.3	3.7×1	560 / 350	790 / 400	54 / 45	1	11	23	17	13	4	13	15	17	3.4	FBS 0401 B
FBS 0402 A	4	2	0.8	4.15	8°43′	3.3	2.7×1	420 / 260	570 / 290	39 / 33	1	11	23	19	15	4	13	15	17	3.4	FBS 0402 A
FEB 0404 A	4	4	0.8	4.2	16°51′	3.3	2.6×2	750 / —	1150 / —	73 / —	3	11	23	17.5	11	3	—	15	17	3.4	FEB 0404 A
FEB 0408 A	4	8	0.6	4.15	31°32′	3.4	1.7×4	590 / —	1110 / —	78 / —	3	11	23	20	12	3	—	15	17	3.4	FEB 0408 A

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。
需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
某些型号的螺母不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

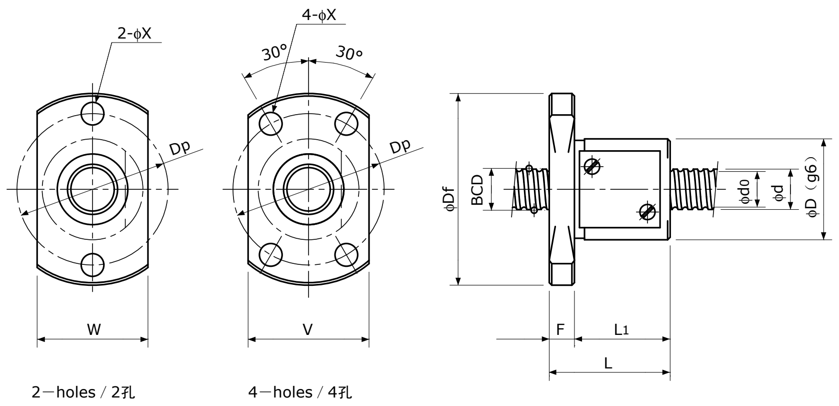
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

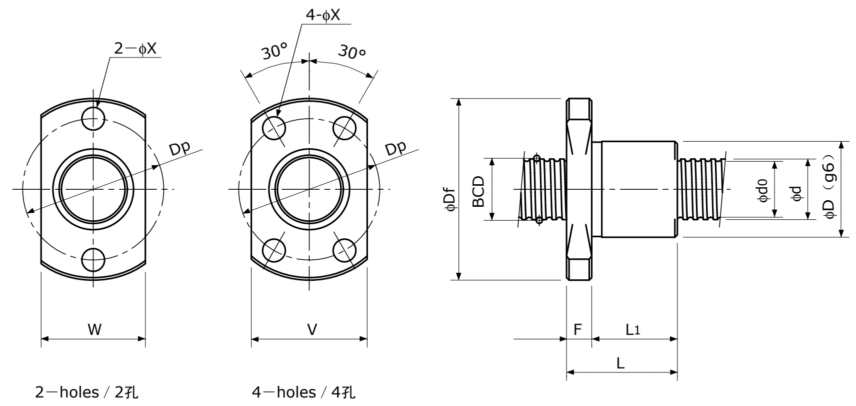
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m		Nut dimension 螺母尺寸 Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 0500.5 A	5	0.5	0.4	5.10	1°47′	4.6	2.7×1	180 / —	370 / —	44 / —		1	11	23	13	10	3	13	—	17	3.4	FBS 0500.5 A
FKB 0501 A	5	1	0.6	5.15	3°32′	4.4	1×3	330 / 330	560 / 560	45 / 70		2	10	20	13	10	3	12	14	15	2.9	FKB 0501 A
FBS 0501 B	5	1	0.8	5.15	3°32′	4.3	3.7×1	630 / 400	1000 / 500	65 / 55		1	12	24	17	13	4	14	15	18	3.4	FBS 0501 B
FBS 0504 A	5	4	0.8	5.15	13°53′	4.3	2.7×1	470 / 300	720 / 360	47 / 39		1	12	24	22	18	4	14	15	18	3.4	FBS 0504 A

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。
需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
某些型号的螺母不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

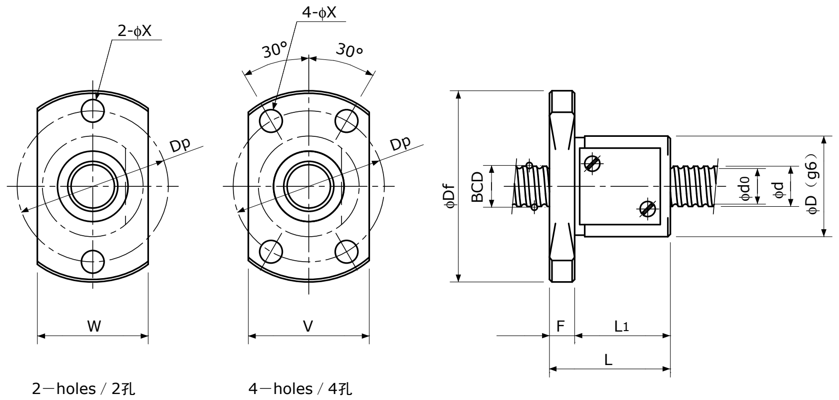
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

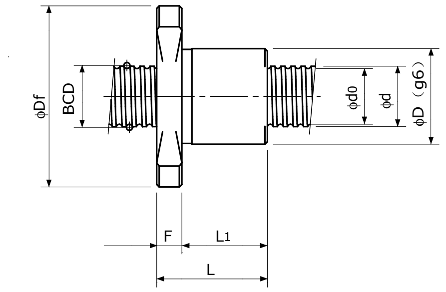
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

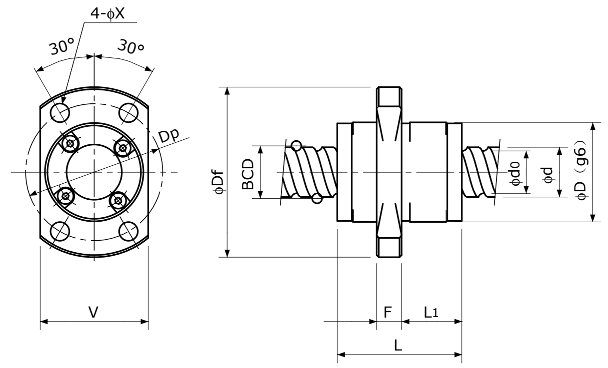
Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit (单位) : mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d₀	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L₁	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 0600.5 A	6	0.5	0.4	6.10	1°30′	5.6	2.7×1	190 / —	440 / —	50 / —	1	12	25	13	10	3	14	—	19	3.4	FBS 0600.5 A
FKB 0601 A	6	1	0.8	6.20	2°56′	5.3	1×3	560 / 560	950 / 950	55 / 86	2	11	23	14.5	11	3.5	13	15	17	3.4	FKB 0601 A
FBS 0601 B	6	1	0.8	6.15	2°58′	5.3	3.7×1	680 / 430	1200 / 610	75 / 63	1	13	28	17	13	4	15	17	21.5	3.4	FBS 0601 B
FBS 0601.5 B	6	1.5	1.0	6.20	4°24′	5.1	3.7×1	980 / 620	1600 / 800	79 / 67	1	14	28	19	15	4	16	17	22	3.4	FBS 0601.5 B
FBS 0602 A	6	2	1.0	6.20	5°52′	5.1	2.7×1	750 / 470	1200 / 590	58 / 49	1	15	29	17	13	4	17	18	23	3.4	FBS 0602 A
FBS 0602.5 A	6	2.5	1.0	6.20	7°19′	5.1	2.7×1	750 / 470	1200 / 590	59 / 49	1	15	29	18	14	4	17	18	23	3.4	FBS 0602.5 A
FEB 0606 A	6	6	1.0	6.30	16°52′	5.2	1.6×2	870 / —	1450 / —	67 / —	3	14	27	17	8	4	—	16	21	3.4	FEB 0606 A
FEB 0610 A	6	10	1.2	6.30	26°48′	5.0	1.2×2	950 / —	1600 / —	50 / —	3	14	27	23	11.5	4	—	16	21	3.4	FEB 0610 A
FEB 0612 A	6	12	1.2	6.30	31°13′	5.0	0.7×2	600 / —	950 / —	29 / —	3	14	27	16	8.3	4	—	16	21	3.4	FEB 0612 A

注1) 设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2) 标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3) 表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4) 标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5) 基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

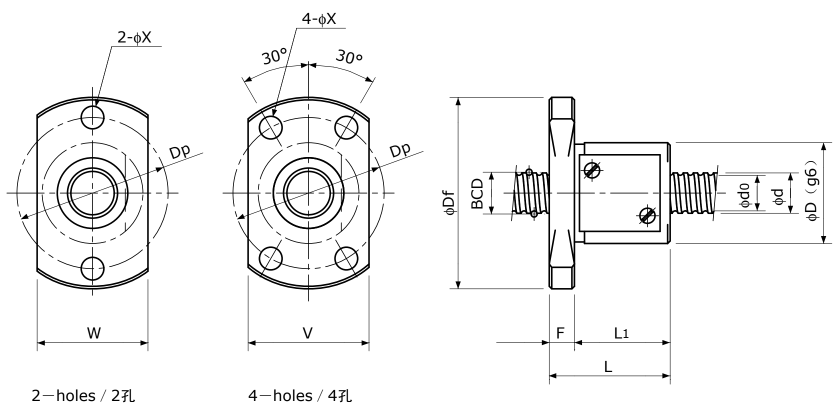
Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

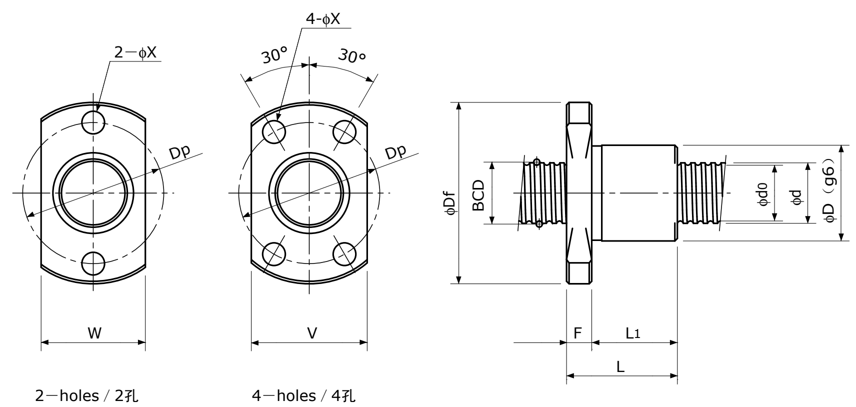
Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m		Nut dimension 螺母尺寸 Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 0800.5 A	8	0.5	0.4	8.10	1°08′	7.6	2.7×1	220 / —	590 / —	64 / —		1	14	27	13	10	3	16	—	21	3.4	FBS 0800.5 A
FKB 0801 A	8	1	0.8	8.20	2°13′	7.3	1×3	650 / 650	1300 / 1300	70 / 109		2	13	26	15	11	4	15	17	20	3.4	FKB 0801 A
FBS 0801 B	8	1	0.8	8.15	2°15′	7.3	3.7×1	780 / 490	1650 / 820	95 / 80		1	16	30	17	13	4	18	18	24	3.4	FBS 0801 B
FKB 0801.5 A	8	1.5	1.0	8.30	3°18′	7.2	1×3	890 / 890	1650 / 1650	73 / 113		2	15	28	20	16	4	17	19	22	3.4	FKB 0801.5 A
FBS 0801.5 B	8	1.5	1.0	8.20	3°20′	7.1	3.7×1	1100 / 700	2200 / 1100	99 / 83		1	16	30	19	15	4	18	18	24	3.4	FBS 0801.5 B
FKB 0802 A	8	2	1.2	8.30	4°23′	7.0	1×3	1300 / 1300	2300 / 2300	77 / 121		2	15	28	18	14	4	17	19	22	3.4	FKB 0802 A
FBS 0802 B(1)	8	2	1.0	8.20	4°26′	7.1	3.7×1	1100 / 700	2200 / 1100	99 / 83		1	16	30	21	17	4	18	18	24	3.4	FBS 0802 B(1)
FBS 0802 B(2)	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400 / 1550	4100 / 2100	111 / 94		1	20	38	24	19	5	22	23	30	4.5	FBS 0802 B(2)

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。
需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
某些型号的螺母不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

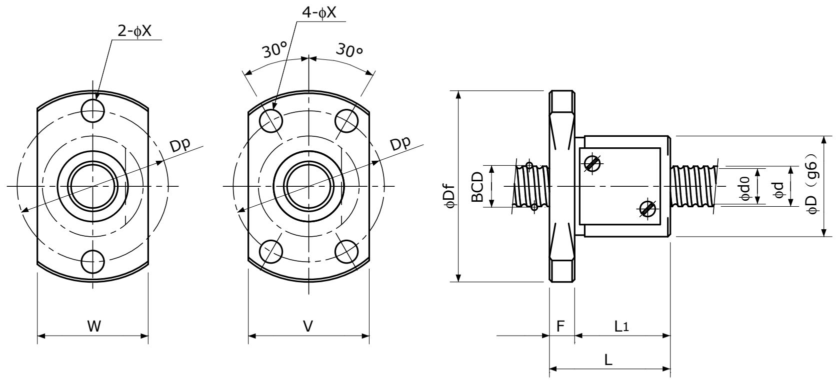
Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

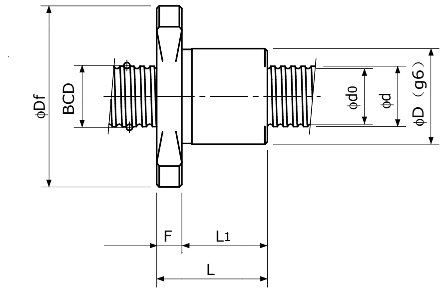
Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Single Nut with Flange
带法兰单螺母

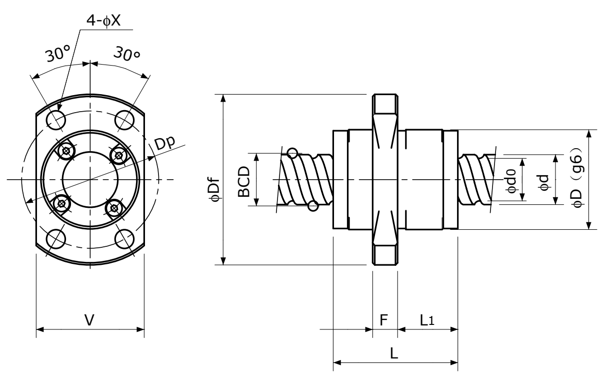
Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FDB 0802.5 A	8	2.5	1.5875	8.00	5°41′	6.3	2.7×1	1850 / —	3000 / —	80 / —	2	16	29	16	12	4	—	18	23	3.4	FDB 0802.5 A
FBS 0802.5 B	8	2.5	1.5875	8.30	5°29′	6.6	3.7×1	2400 / 1550	4100 / 2100	111 / 93	1	20	38	26	21	5	22	23	30	4.5	FBS 0802.5 B
FBS 0803 A	8	3	2.0	8.30	6°34′	6.2	2.7×1	2600 / 1650	4200 / 2100	85 / 70	1	20	38	25	20	5	22	23	30	4.5	FBS 0803 A
FBS 0804 A	8	4	2.0	8.30	8°43′	6.2	2.7×1	2600 / 1650	4200 / 2100	84 / 70	1	21	39	28	23	5	23	23	31	4.5	FBS 0804 A
FBS 0805 A	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850 / 1150	3000 / 1500	82 / 67	1	18	31	28	24	4	20	20	25	3.4	FBS 0805 A
FEB 0808 A	8	8	1.5875	8.40	16°52′	6.7	1.6×2	2200 / —	3800 / —	95 / —	3	18	31	20	10	4	—	20	25	3.4	FEB 0808 A
FEB 0810 A	8	10	1.5875	8.40	20°45′	6.7	1.6×2	2200 / —	3900 / —	92 / —	3	18	31	24	13	4	—	20	25	3.4	FEB 0810 A
FEB 0812 A	8	12	1.5875	8.40	24°27′	6.7	1.6×2	2200 / —	4000 / —	90 / —	3	18	31	27	17	4	—	20	25	3.4	FEB 0812 A

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
预压型：施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

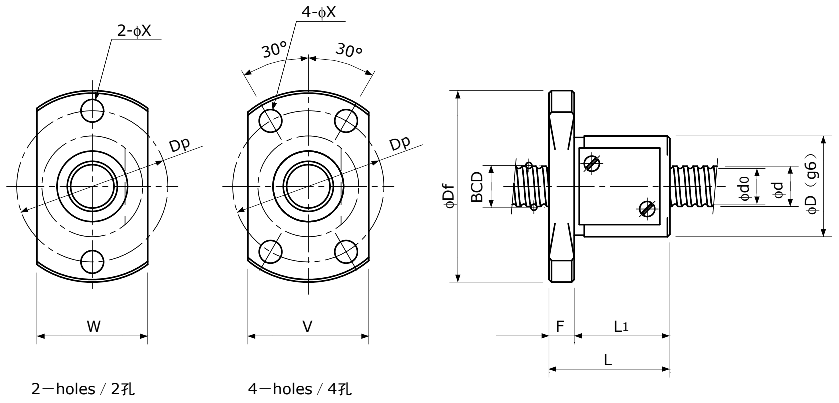
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

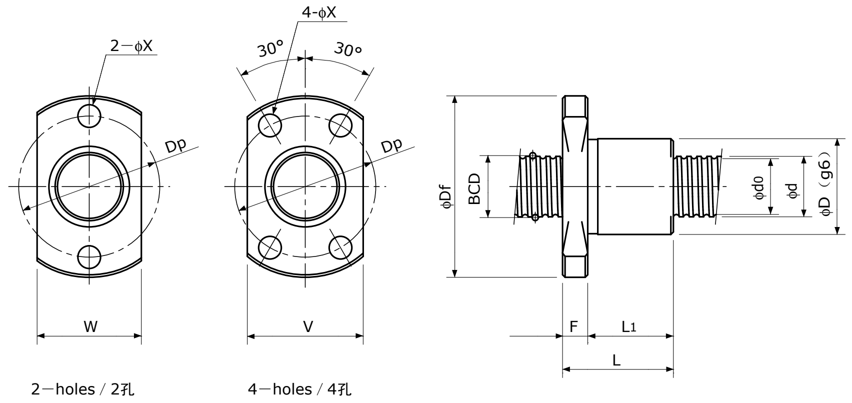
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式

Unit（单位）: mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FKB 1001 A	10	1	0.8	10.20	1°47′	9.3	1×3	720 / 720	1650 / 1650	84 / 131	2	15	28	15	11	4	17	19	22	3.4	FKB 1001 A
FBS 1001 B	10	1	0.8	10.15	1°48′	9.3	3.7×1	840 / 530	2000 / 1000	113 / 95	1	19	37	18	13	5	21	22	29	4.5	FBS 1001 B
FKB 1001.5 A	10	1.5	1.0	10.30	2°39′	9.2	1×3	990 / 990	2100 / 2100	87 / 136	2	17	34	21	16	5	19	21	26	4.5	FKB 1001.5 A
FBS 1001.5 B	10	1.5	1.0	10.20	2°41′	9.1	3.7×1	1250 / 790	2800 / 1400	120 / 101	1	19	37	20	15	5	21	22	29	4.5	FBS 1001.5 B
FKB 1002 A	10	2	1.2	10.30	3°32′	9.0	1×3	1450 / 1450	3000 / 3000	93 / 144	2	17	34	19	14	5	19	21	26	4.5	FKB 1002 A
FBS 1002 B	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700 / 1750	5300 / 2700	134 / 112	1	23	41	24	19	5	25	25	33	4.5	FBS 1002 B
FKB 1002.5 A	10	2.5	1.5875	10.40	4°23′	8.7	1×3	2100 / 2100	3800 / 3800	96 / 150	2	18	35	21	16	5	20	22	27	4.5	FKB 1002.5 A
FBS 1002.5 B	10	2.5	1.5875	10.30	4°25′	8.6	3.7×1	2700 / 1750	5300 / 2700	133 / 112	1	24	44	27	21	6	26	27	35	5.5	FBS 1002.5 B

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

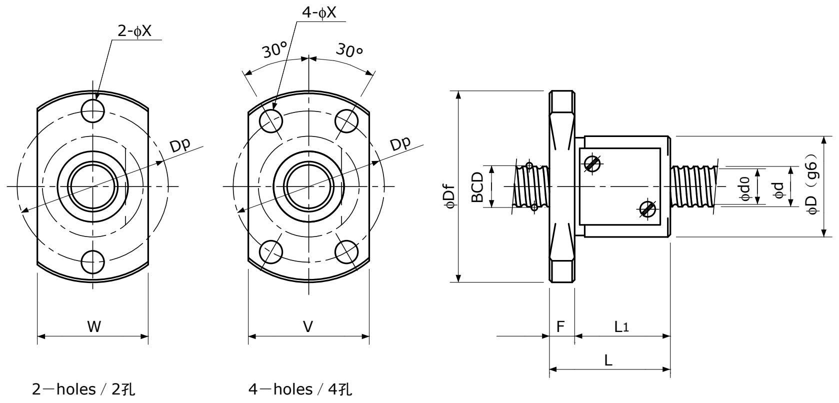
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

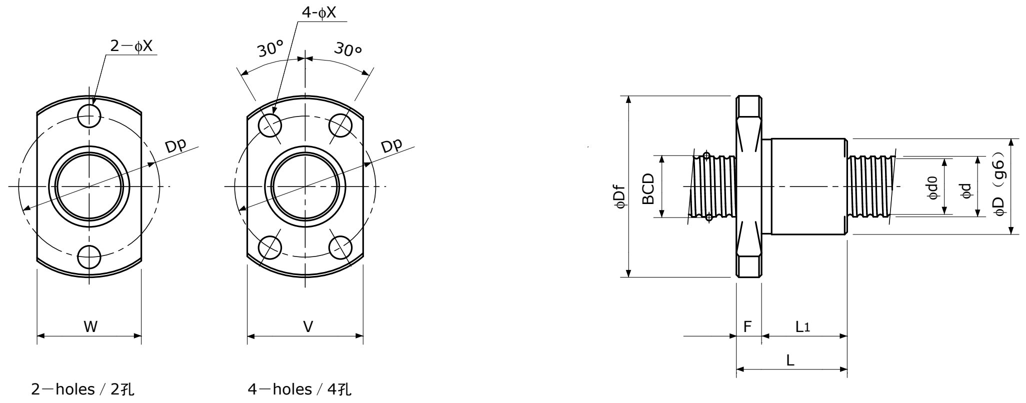
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

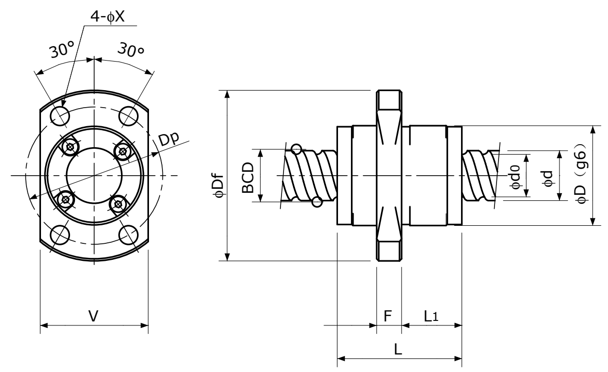
Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or
End-deflector type
陀螺式循环方式或偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit（单位）：mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m	Nut dimension 螺母尺寸 Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 1003 B	10	3	2.0	10.30	5°18′	8.2	3.7×1	3900 / 2500	7200 / 3600	140 / 118	1	24	44	30	24	6	26	27	35	5.5	FBS 1003 B
FBS 1004 A	10	4	2.0	10.30	7°03′	8.2	2.7×1	3000 / 1800	5200 / 2600	104 / 86	1	24	44	29	23	6	26	27	35	5.5	FBS 1004 A
FDB 1005 A	10	5	2.0	10.30	8°47′	8.2	2.7×1	3000 / —	5200 / —	103 / —	2	23	40	26	21	5	—	25	32	4.5	FDB 1005 A
FBS 1005 A	10	5	2.0	10.30	8°47′	8.2	2.7×1	3000 / 1800	5200 / 2600	103 / 85	1	24	44	34	28	6	26	27	35	5.5	FBS 1005 A
FEB 1010 A	10	10	2.0	10.50	16°52′	8.4	1.6×2	3300 / —	5900 / —	117 / —	3	23	40	24	13	5	—	25	32	4.5	FEB 1010 A
FEB 1015 A	10	15	2.0	10.50	24°27′	8.4	1.6×2	3300 / —	6400 / —	110 / —	3	23	40	33	22	5	—	25	32	4.5	FEB 1015 A
FEB 1020 A	10	20	1.5875	10.40	31°28′	8.7	0.7×4	2100 / —	4000 / —	88 / —	3	20	37	23	13	5	—	22	29	4.5	FEB 1020 A
FEB 1030 A	10	30	1.5875	10.40	42°33′	8.7	0.7×4	2100 / —	4000 / —	76 / —	3	20	37	31.5	21.7	5	—	22	29	4.5	FEB 1030 A

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

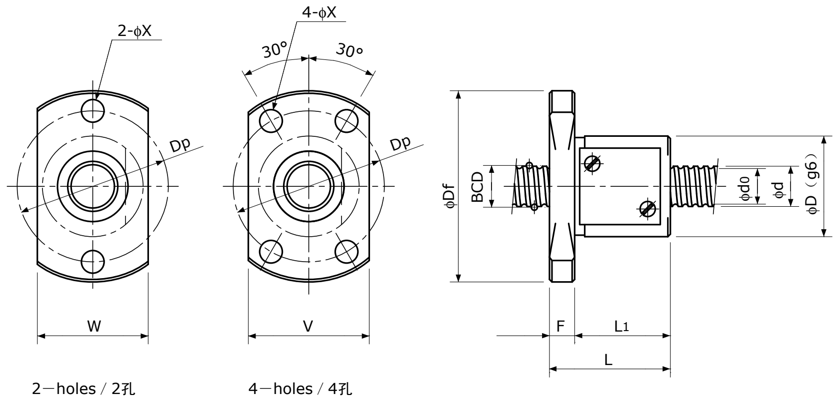
Preload type
预压型
Backlash type
齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

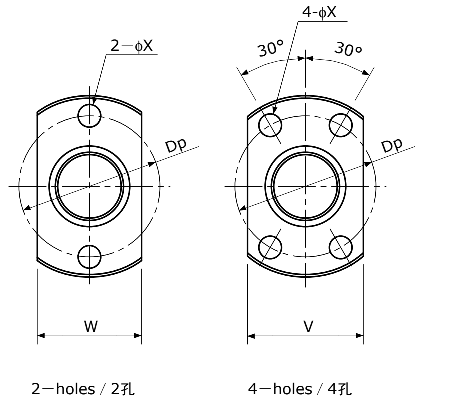
Precision Ball Screws　精密滚珠丝杠

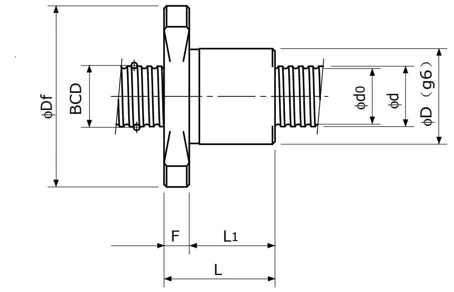
Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型

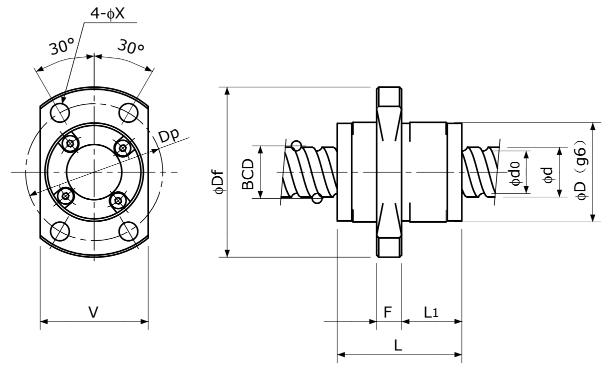


Type-1:Return-plate type
复式回路板循环方式





Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸 Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FKB 1201 A	12	1	0.8	12.20	1°30′	11.3	1×3	780 / 780	2000 / 2000	97 / 152	2	17	34	16	11	5	19	21	26	4.5	FKB 1201 A
FBS 1201 B	12	1	0.8	12.15	1°30′	11.3	3.7×1	910 / 570	2400 / 1200	131 / 110	1	22	40	18	13	5	24	24	32	4.5	FBS 1201 B
FKB 1202 A	12	2	1.2	12.30	2°58′	11.0	1×3	1600 / 1600	3700 / 3700	109 / 169	2	19	36	19	14	5	21	23	28	4.5	FKB 1202 A
FBS 1202 B	12	2	1.5875	12.30	2°58′	10.6	3.7×1	3000 / 1900	6400 / 3200	156 / 132	1	25	45	25	19	6	27	27	36	5.5	FBS 1202 B
FKB 1202.5 A	12	2.5	1.5875	12.40	3°41′	10.7	1×3	2300 / 2300	4700 / 4700	112 / 174	2	20	37	21	16	5	22	24	29	4.5	FKB 1202.5 A
FBS 1202.5 B	12	2.5	1.5875	12.30	3°42′	10.6	3.7×1	3000 / 1850	6400 / 3200	156 / 130	1	26	46	27	21	6	28	28	37	5.5	FBS 1202.5 B
FKB 1203 A	12	3	2.0	12.50	4°22′	10.4	1×3	3100 / 3100	5700 / 5700	115 / 179	2	22	41	32	26	6	24	26	32	5.5	FKB 1203 A
FBS 1203 B	12	3	2.0	12.30	4°26′	10.2	3.7×1	4300 / 2800	8700 / 4300	162 / 137	1	28	48	30	24	6	30	30	39	5.5	FBS 1203 B
FBS 1204 B	12	4	2.381	12.30	5°55′	9.8	3.7×1	5400 / 3400	10200 / 5100	165 / 139	1	28	48	33	27	6	30	30	39	5.5	FBS 1204 B
FBS 1205 A	12	5	2.381	12.30	7°22′	9.8	2.7×1	4100 / 2500	7400 / 3700	122 / 101	1	28	48	33	27	6	30	30	39	5.5	FBS 1205 A

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。
需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
某些型号的螺母不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

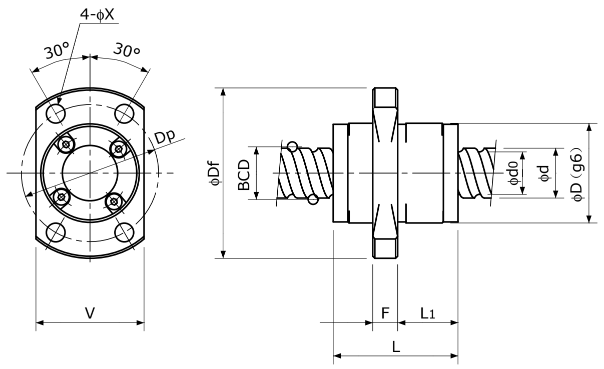
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

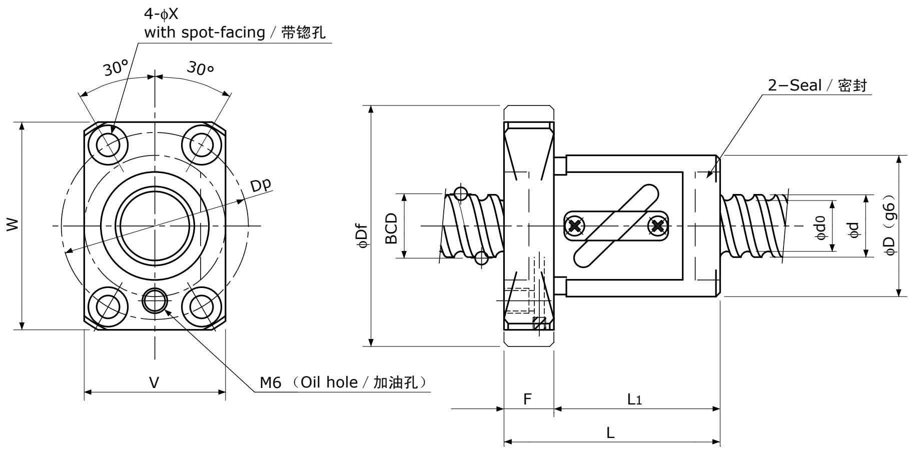
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange 带法兰单螺母

Backlash type/Preload type 齿侧间隙型/预压型



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式



Type-4:Return-tube type
回路管循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm		Nut dimension 螺母尺寸 Nut type 螺母类型	D	Df	L	L1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FEB 1210 A	12	10	2.381	12.65	14°07′	10.2	1.7×2	5100 / −	9800 / −	152 / −		3	24	41	30	14.5	6	−	26	33	4.5	FEB 1210 A
FBS 1210 T	12	10	2.381	12.65	14°07′	10.2	2.5×1	3800 / 2350	7100 / 3350	113 / 93		4	30	50	50	40	10	45	32	40	4.5	FBS 1210 T
FEB 1312 A	13	12	2.381	13.50	15°48′	11.0	1.6×2	5000 / —	9900 / —	151 / —		3	28	45	30	17	5	—	30	37	4.5	FEB 1312 A
FEB 1315 A	13	15	2.381	13.50	19°29′	11.0	1.6×2	5000 / —	10300 / —	147 / —		3	28	45	35	22	5	—	30	37	4.5	FEB 1315 A
FEB 1320 A	13	20	2.381	13.50	25°15′	11.0	1.6×2	5000 / —	10700 / —	142 / —		3	28	45	43	29	5	—	30	37	4.5	FEB 1320 A

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

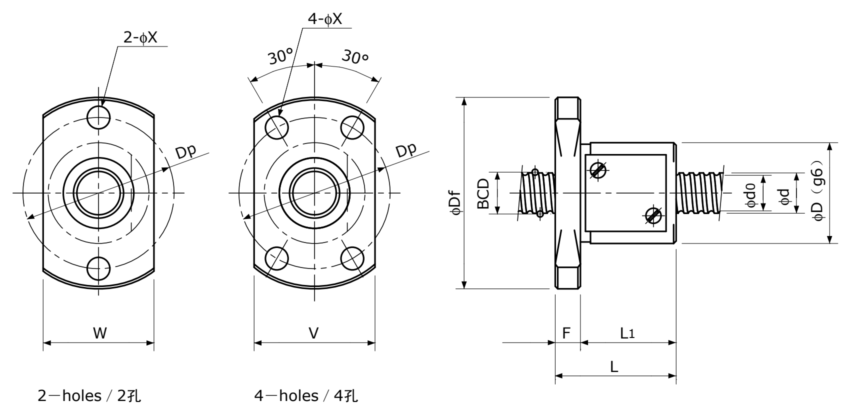
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

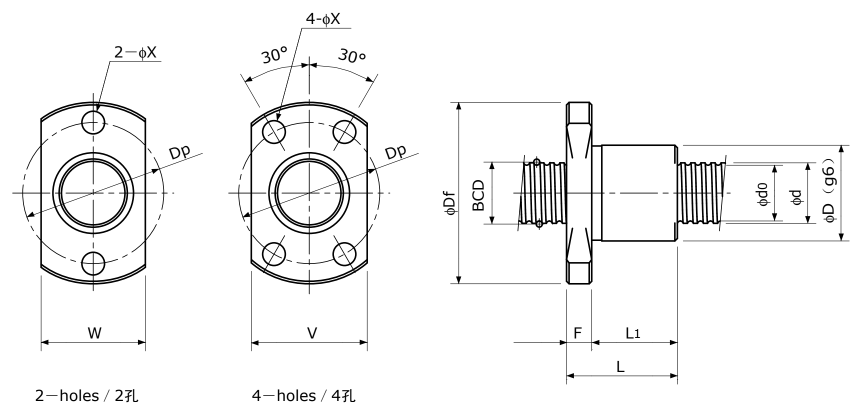
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or End-deflector type
陀螺式循环方式或偏转器式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 1401 B	14	1	0.8	14.15	1°17′	13.3	3.7×1	960 / 610	2900 / 1450	148 / 124	1	26	46	21	15	6	28	28	37	5.5	FBS 1401 B
FKB 1402 A	14	2	1.2	14.30	2°33′	13.0	1×3	1700 / 1700	4300 / 4300	122 / 190	2	21	40	20	14	6	23	26	31	5.5	FKB 1402 A
FBS 1402 B	14	2	1.5875	14.30	2°33′	12.6	3.7×1	3200 / 2000	7500 / 3800	176 / 148	1	26	46	25	19	6	28	28	37	5.5	FBS 1402 B
FKB 1402.5 A	14	2.5	1.5875	14.40	3°10′	12.7	1×3	2500 / 2500	5600 / 5600	127 / 197	2	22	41	22	16	6	24	26	32	5.5	FKB 1402.5 A
FBS 1402.5 B	14	2.5	1.5875	14.30	3°11′	12.6	3.7×1	3200 / 2000	7500 / 3700	176 / 148	1	28	48	27	21	6	30	30	39	5.5	FBS 1402.5 B
FKB 1403 A	14	3	2.0	14.50	3°46′	12.4	1×3	3400 / 3400	6800 / 6800	131 / 204	2	24	43	32	26	6	26	27	34	5.5	FKB 1403 A
FBS 1403 B	14	3	2.0	14.30	3°49′	12.2	3.7×1	4600 / 2900	10100 / 5000	184 / 154	1	30	51	30	24	6	32	32	42	5.5	FBS 1403 B
FKB 1404 A	14	4	2.381	14.65	4°58′	12.2	1×3	4500 / 4500	8600 / 8600	136 / 212	2	26	45	29	23	6	28	28	36	5.5	FKB 1404 A
FBS 1404 B	14	4	2.381	14.30	5°05′	11.8	3.7×1	5700 / 3600	11600 / 5800	187 / 157	1	30	51	33	27	6	32	32	42	5.5	FBS 1404 B
FBS 1405 B	14	5	2.381	14.30	6°21′	11.8	3.7×1	5700 / 3600	11600 / 5800	186 / 157	1	30	51	39	33	6	32	32	42	5.5	FBS 1405 B

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

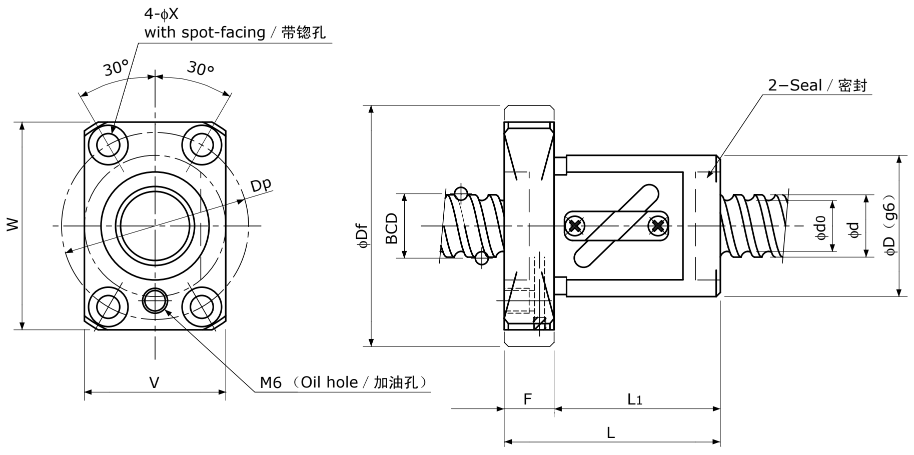
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

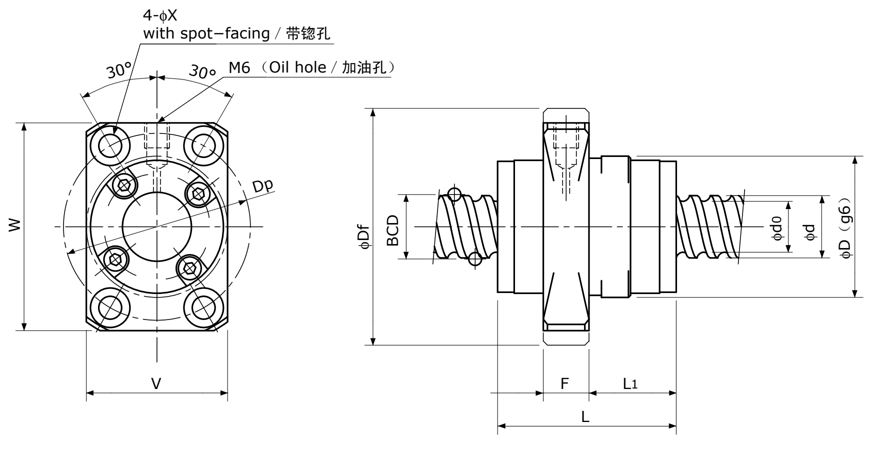
Precision Ball Screws 精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-4:Return-tube type
回路管循环方式



Type-5:End-deflector type
偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
FBS 1504 T	15	4	2.381	15.50	4°42′	13.0	2.5×1	4100 / 2580	8550 / 4300	136 / 112	4	32	56	41	31	10	48	32	43	5.5	FBS 1504 T
FEB 1505 A	15	5	3.175	15.50	5°41′	12.2	3.7×1	8900 / —	17000 / —	208 / —	5	34	57	33	16	11	50	34	45	5.5	FEB 1505 A
FBS 1505 T	15	5	3.175	15.80	5°45′	12.4	2.5×1	6900 / 4350	12500 / 6250	148 / 122	4	34	58	44	34	10	50	34	45	5.5	FBS 1505 T
FEB 1510 A	15	10	3.175	15.50	11°36′	12.2	2.7×2	12000 / —	25000 / —	289 / —	5	34	57	43	21	11	50	34	45	5.5	FEB 1510 A
FBS 1510 T	15	10	3.175	15.80	11°23′	12.4	1.5×1	4400 / 2540	7900 / 3450	87 / 69	4	34	58	52	40	12	50	34	45	6.0	FBS 1510 T
FEB 1520 A	15	20	3.175	15.75	22°01′	12.4	1.7×2	8000 / —	16000 / —	178 / —	5	34	57	52	28.5	11	50	34	45	5.5	FEB 1520 A
FBS 1520 T	15	20	3.175	15.80	21°56′	12.4	1.5×1	4400 / 2540	7900 / 3450	84 / 67	4	34	58	62	50	12	50	34	45	6.0	FBS 1520 T
FEB 1530 A	15	30	3.175	15.75	31°14′	12.4	1.7×2	8000 / —	16000 / —	163 / —	5	34	57	71	45.5	11	50	34	45	5.5	FEB 1530 A

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注2)标准螺母不带密封。
需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
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齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

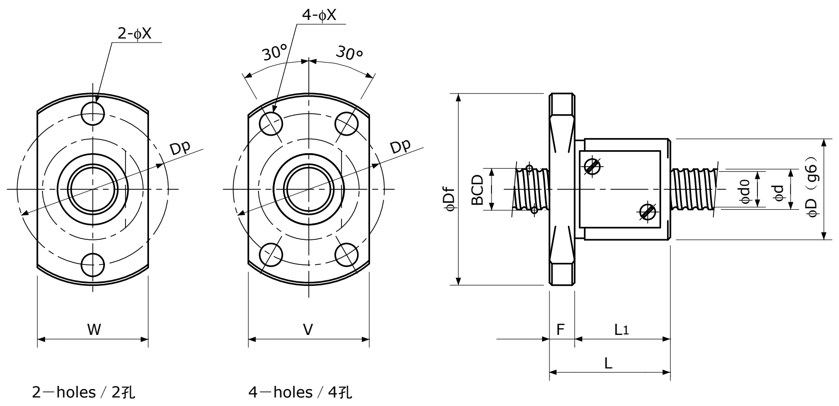
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

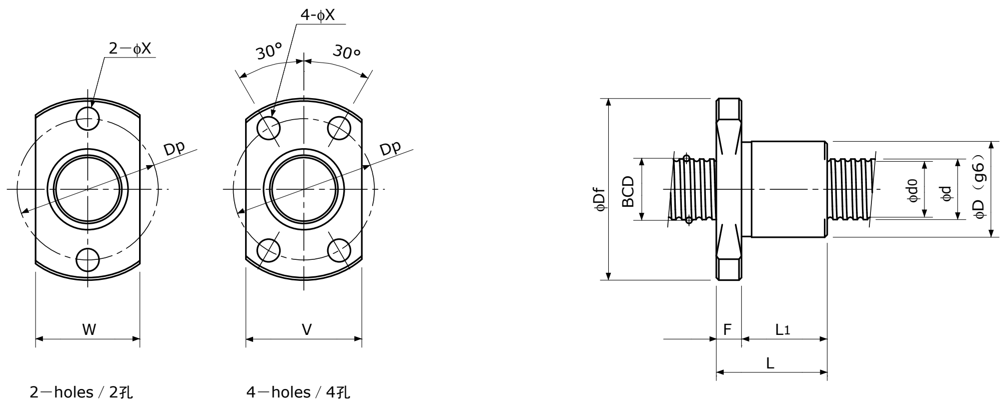
Precision Ball Screws　精密滚珠丝杠

Single Nut with Flange
带法兰单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type or
End-deflector type
陀螺式循环方式或偏转器式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N		Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸										Ball Nut Model number 螺母型号
								Dynamic 额定动负载 Ca	Static 额定静负载 Coa		Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	
FBS 1601 B	16	1	0.8	16.15	1°08′	15.3	3.7×1	1000 / 640	3300 / 1650	164 / 138	1	28	48	21	15	6	30	30	39	5.5	FBS 1601 B
FKB 1602 A	16	2	1.2	16.30	2°14′	15.0	1×3	1850 / 1850	5000 / 5000	137 / 213	2	24	43	20	14	6	26	27	34	5.5	FKB 1602 A
FBS 1602 B	16	2	1.5875	16.30	2°14′	14.6	3.7×1	3400 / 2100	8600 / 4300	197 / 163	1	28	48	25	19	6	30	30	39	5.5	FBS 1602 B
FKB 1603 A	16	3	2.0	16.50	3°19′	14.4	1×3	3600 / 3600	8000 / 8000	146 / 227	2	26	45	32	26	6	28	28	36	5.5	FKB 1603 A
FBS 1603 B	16	3	2.0	16.30	3°21′	14.2	3.7×1	4900 / 3100	11600 / 5800	205 / 172	1	32	53	30	24	6	34	34	44	5.5	FBS 1603 B
FKB 1604 A	16	4	2.381	16.65	4°22′	13.9	1×3	4800 / 4800	10000 / 10000	152 / 237	2	28	47	29	23	6	30	30	38	5.5	FKB 1604 A
FBS 1604 B	16	4	2.381	16.30	4°28′	13.8	3.7×1	6200 / 3900	13600 / 6800	209 / 174	1	34	54	34	28	6	36	36	45	5.5	FBS 1604 B
FBS 1605 B	16	5	3.175	16.50	5°31′	13.2	3.7×1	9100 / 5700	18200 / 9100	217 / 182	1	38	57	42	36	6	40	40	48	5.5	FBS 1605 B

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N		Nut Rigidity 螺母刚性 N/⊠m
Dynamic 额定动负载 Ca	Static 额定静负载 Coa	
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
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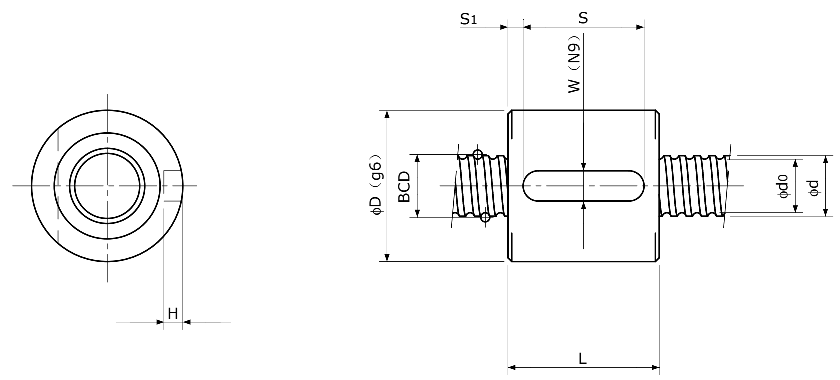
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws 精密滚珠丝杠

Sleeve type Single Nut
套筒型单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m		Nut dimension 螺母尺寸: D	L	W	H	S	S_1	Ball Nut Model number 螺母型号
BS 0301 B	3	1	0.6	3.18	5°43′	2.4	3.7×1	330 / —	440 / —	42 / —		9	12	2	1.2	8	2	BS 0301 B
BS 0401 A	4	1	0.8	4.15	4°23′	3.3	2.7×1	420 / 270	570 / 290	40 / 34		10	12	2	1.2	8	2	BS 0401 A
BS 0401 B	4	1	0.8	4.15	4°23′	3.3	3.7×1	560 / 350	790 / 400	54 / 45		11	14	3	1.8	8	3	BS 0401 B
BS 0402 A	4	2	0.8	4.15	8°43′	3.3	2.7×1	420 / 260	570 / 290	39 / 33		11	16	3	1.8	8	4	BS 0402 A
BS 0501 B	5	1	0.8	5.15	3°32′	4.3	3.7×1	630 / 400	1000 / 500	65 / 55		12	14	3	1.8	8	3	BS 0501 B
BS 0504 A	5	4	0.8	5.15	13°53′	4.3	2.7×1	470 / 300	720 / 360	47 / 39		12	22	3	1.8	12	5	BS 0504 A
BS 0601 B	6	1	0.8	6.15	2°58′	5.3	3.7×1	680 / 430	1200 / 610	75 / 63		13	14	3	1.8	10	2	BS 0601 B
BS 0601.5 B	6	1.5	1.0	6.20	4°24′	5.1	3.7×1	980 / 620	1600 / 800	79 / 67		14	16	3	1.8	10	3	BS 0601.5 B
BS 0602 A	6	2	1.0	6.20	5°52′	5.1	2.7×1	750 / 470	1200 / 590	58 / 49		15	15	3	1.8	10	2.5	BS 0602 A
BS 0602.5 A	6	2.5	1.0	6.20	7°19′	5.1	2.7×1	750 / 470	1200 / 590	59 / 49		15	16	3	1.8	10	3	BS 0602.5 A

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。
　　需要密封时,螺母的尺寸将发生变化,详情请垂询本公司。
　　某些型号的螺母不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型:施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
　　需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

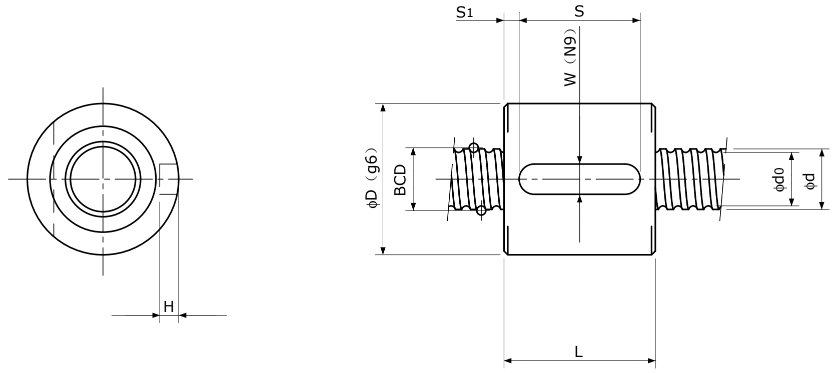
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws 精密滚珠丝杠

Sleeve type Single Nut 套筒型单螺母

Backlash type/Preload type 齿侧间隙型/预压型



Unit（单位）: mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸 D	L	W	H	S	S_1	Ball Nut Model number 螺母型号
BS 0801 B	8	1	0.8	8.15	2°15′	7.3	3.7×1	780 / 490	1650 / 820	95 / 80	16	14	3	1.8	10	2	BS 0801 B
BS 0801.5 B	8	1.5	1.0	8.20	3°20′	7.1	3.7×1	1100 / 700	2200 / 1100	99 / 83	16	16	3	1.8	10	3	BS 0801.5 B
BS 0802 B(1)	8	2	1.0	8.20	4°26′	7.1	3.7×1	1100 / 700	2200 / 1100	99 / 83	16	18	3	1.8	12	3	BS 0802 B(1)
BS 0802 B(2)	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400 / 1550	4100 / 2100	111 / 94	20	20	4	2.5	16	2	BS 0802 B(2)
BS 0802.5 A	8	2.5	1.5875	8.00	5°41′	6.3	2.7×1	1850 / —	3000 / —	80 / —	16	16	3	1.8	8	4	BS 0802.5 A
BS 0802.5 B	8	2.5	1.5875	8.30	5°29′	6.6	3.7×1	2400 / 1550	4100 / 2100	111 / 93	20	22	4	2.5	16	3	BS 0802.5 B
BS 0803 A	8	3	2.0	8.30	6°34′	6.2	2.7×1	2600 / 1650	4200 / 2100	85 / 70	20	22	4	2.5	16	3	BS 0803 A
BS 0804 A	8	4	2.0	8.30	8°43′	6.2	2.7×1	2600 / 1650	4200 / 2100	84 / 70	21	26	4	2.5	20	3	BS 0804 A
BS 0805 A	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850 / 1150	3000 / 1500	82 / 67	18	28	4	2.5	20	4	BS 0805 A

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注2）标准螺母不带密封。
需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
预压型：施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

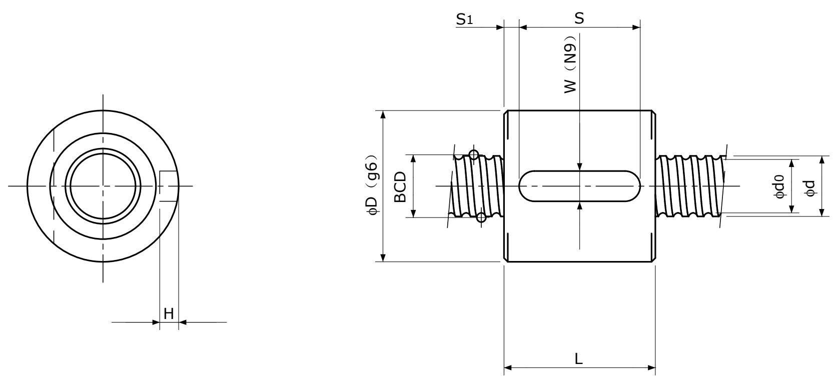
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calclulated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above,
see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws 精密滚珠丝杠

Sleeve type Single Nut 套筒型单螺母

Backlash type/Preload type 齿侧间隙型/预压型



Unit（单位）：mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m		Nut dimension 螺母尺寸: D	L	W	H	S	S₁	Ball Nut Model number 螺母型号
BS 1001 B	10	1	0.8	10.15	1°48′	9.3	3.7×1	840 / 530	2000 / 1000	113 / 95		19	14	3	1.8	10	2	BS 1001 B
BS 1001.5 B	10	1.5	1.0	10.20	2°41′	9.1	3.7×1	1250 / 790	2800 / 1400	120 / 101		19	16	3	1.8	10	3	BS 1001.5 B
BS 1002 B	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700 / 1750	5300 / 2700	134 / 112		23	20	5	3	16	2	BS 1002 B
BS 1002.5 B	10	2.5	1.5875	10.30	4°25′	8.6	3.7×1	2700 / 1750	5300 / 2700	133 / 112		24	22	5	3	16	3	BS 1002.5 B
BS 1003 B	10	3	2.0	10.30	5°18′	8.2	3.7×1	3900 / 2500	7200 / 3600	140 / 118		24	26	5	3	20	3	BS 1003 B
BS 1004 A	10	4	2.0	10.30	7°03′	8.2	2.7×1	3000 / 1800	5200 / 2600	104 / 86		24	26	5	3	20	3	BS 1004 A
BS 1005 A（1）	10	5	2.0	10.30	8°47′	8.2	2.7×1	3000 / —	5200 / —	103 / —		23	26	5	3	16	5	BS 1005 A（1）
BS 1005 A（2）	10	5	2.0	10.30	8°47′	8.2	2.7×1	3000 / 1800	5200 / 2600	103 / 85		24	34	5	3	28	3	BS 1005 A（2）

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注2）标准螺母不带密封。
需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
预压型：施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

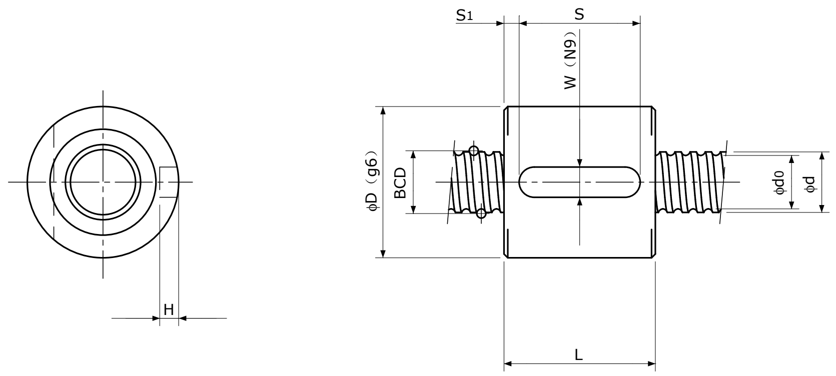
Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above,
see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Sleeve type Single Nut
套筒型单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m		Nut dimension 螺母尺寸 D	L	W	H	S	S_1	Ball Nut Model number 螺母型号
BS 1201 B	12	1	0.8	12.15	1°30′	11.3	3.7×1	910 / 570	2400 / 1200	131 / 110		22	14	4	2.5	10	2	BS 1201 B
BS 1202 B	12	2	1.5875	12.30	2°58′	10.6	3.7×1	3000 / 1900	6400 / 3200	156 / 132		25	20	5	3	16	2	BS 1202 B
BS 1202.5 B	12	2.5	1.5875	12.30	3°42′	10.6	3.7×1	3000 / 1850	6400 / 3200	156 / 130		26	22	5	3	16	3	BS 1202.5 B
BS 1203 B	12	3	2.0	12.30	4°26′	10.2	3.7×1	4300 / 2800	8700 / 4300	162 / 137		28	26	5	3	20	3	BS 1203 B
BS 1204 B	12	4	2.381	12.30	5°55′	9.8	3.7×1	5400 / 3400	10200 / 5100	165 / 139		28	31	5	3	25	3	BS 1204 B
BS 1205 A	12	5	2.381	12.30	7°22′	9.8	2.7×1	4100 / 2500	7400 / 3700	122 / 101		28	31	5	3	25	3	BS 1205 A
BS 1401 B	14	1	0.8	14.15	1°17′	13.3	3.7×1	960 / 610	2900 / 1450	148 / 124		26	16	5	3	10	3	BS 1401 B
BS 1402 B	14	2	1.5875	14.30	2°33′	12.6	3.7×1	3200 / 2000	7500 / 3800	176 / 148		26	20	5	3	16	2	BS 1402 B
BS 1402.5 B	14	2.5	1.5875	14.30	3°11′	12.6	3.7×1	3200 / 2000	7500 / 3700	176 / 148		28	22	5	3	16	3	BS 1402.5 B
BS 1403 B	14	3	2.0	14.30	3°49′	12.2	3.7×1	4600 / 2900	10100 / 5000	184 / 154		30	26	5	3	20	3	BS 1403 B
BS 1404 B	14	4	2.381	14.30	5°05′	11.8	3.7×1	5700 / 3600	11600 / 5800	187 / 157		30	31	5	3	25	3	BS 1404 B
BS 1405 B	14	5	2.381	14.30	6°21′	11.8	3.7×1	5700 / 3600	11600 / 5800	186 / 157		30	38	5	3	28	5	BS 1405 B

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需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
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注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
预压型：施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
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Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
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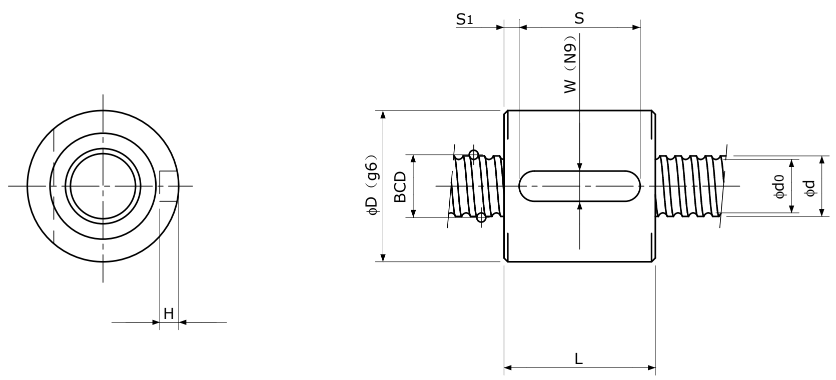
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above,
see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws　精密滚珠丝杠

Sleeve type Single Nut
套筒型单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Unit（单位）：mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d₀	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm		Nut dimension 螺母尺寸: D	L	W	H	S	S₁	Ball Nut Model number 螺母型号
BS 1601 B	16	1	0.8	16.15	1°08′	15.3	3.7×1	1000 / 640	3300 / 1650	164 / 138		28	16	5	3	10	3	BS 1601 B
BS 1602 B	16	2	1.5875	16.30	2°14′	14.6	3.7×1	3400 / 2100	8600 / 4300	197 / 163		28	20	5	3	16	2	BS 1602 B
BS 1603 B	16	3	2.0	16.30	3°21′	14.2	3.7×1	4900 / 3100	11600 / 5800	205 / 172		32	26	5	3	20	3	BS 1603 B
BS 1604 B	16	4	2.381	16.30	4°28′	13.8	3.7×1	6200 / 3900	13600 / 6800	209 / 174		34	32	5	3	25	3.5	BS 1604 B
BS 1605 B	16	5	3.175	16.50	5°31′	13.2	3.7×1	9100 / 5700	18200 / 9100	217 / 182		38	38	5	3	28	5	BS 1605 B

注1）设计时，请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）标准螺纹旋向为右旋。
　　需要左旋时，请垂询本公司。
注5）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

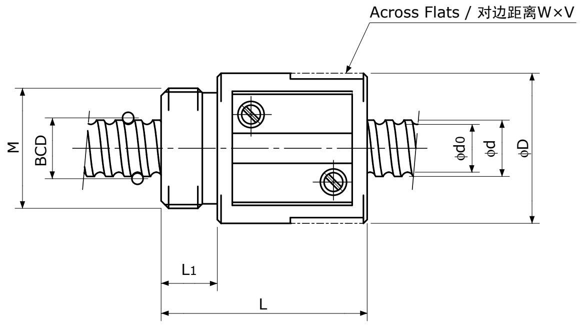
Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

Preload type
预压型
Backlash type
齿侧间隙型

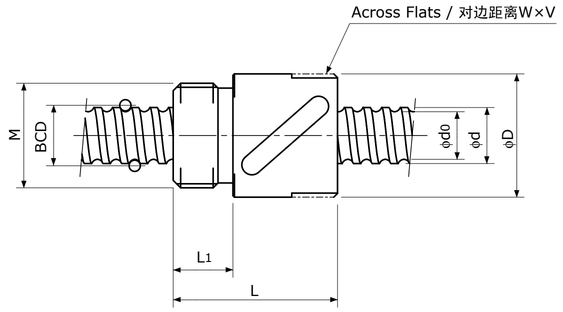
Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above,
see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Single Nut with M-thread
带公制螺纹单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Return-tube type
回路管循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	L	L_1	Across Flats width 对边距离 W	Across Flats length 对边距离长度 V	M	Ball Nut Model number 螺母型号
MS 0401 B	4	1	0.8	4.15	4°23′	3.3	3.7×1	560 / 350	790 / 400	54 / 45	1	11	17	4	10	6	M9×0.75	MS 0401 B
MS 0602 A	6	2	1.0	6.20	5°52′	5.1	2.7×1	750 / 470	1200 / 590	58 / 49	1	16.5	22	8	14	4	M14×1.0	MS 0602 A
MS 0801.5 B	8	1.5	1.0	8.20	3°20′	7.1	3.7×1	1100 / 700	2200 / 1100	99 / 83	1	16.5	24	8	14	5	M14×1.0	MS 0801.5 B
MS 0802 B	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400 / 1550	4100 / 2100	111 / 94	1	20	27.5	7.5	18	5	M16×1.0	MS 0802 B
MS 0802.5 T(1)	8	2.5	1.5875	8.00	5°41′	6.3	3.5×1	2300 / —	3900 / —	102 / —	2	16.5	22	8	14	4	M14×1.0	MS 0802.5 T(1)
MS 0802.5 T(2)	8	2.5	1.5875	8.00	5°41′	6.3	3.5×1	2300 /—	3900 / —	102 / —	2	17.5	25.5	7.5	15	4	M15×1.0	MS 0802.5 T(2)
MS 0803 A	8	3	2.0	8.30	6°34′	6.2	2.7×1	2600 / 1650	4200 / 2100	85 / 70	1	20	28.5	7.5	18	5	M16×1.0	MS 0803 A
MS 0804 T	8	4	1.5875	8.00	9°03′	5.9	2.5×1	1750 / —	2800 / —	75 / —	2	16.5	24	8	14	4	M14×1.0	MS 0804 T
MS 0805 A	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850 / 1150	3000 / 1500	82 / 67	1	18	32.5	7.5	16	5	M15×1.0	MS 0805 A

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)为了便于安装配合零件而需要对螺母外径进行对边距离加工或开孔加工时,
请垂询本公司。
注6)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

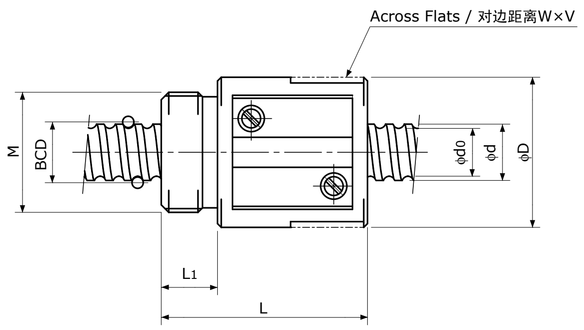
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Across Flats or drill hole is available on the Ball Nut for the convenience of assembly. Please ask KSS representative.
Note 6) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

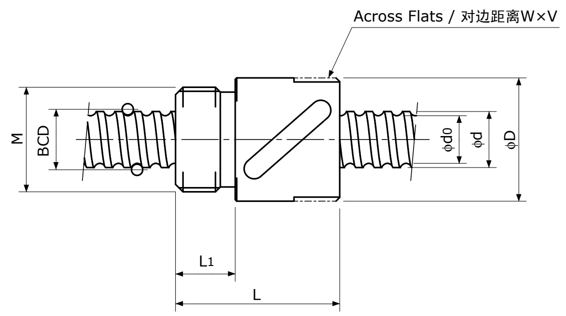
Precision Ball Screws 精密滚珠丝杠

Single Nut with M-thread 带公制螺纹单螺母

Backlash type/Preload type 齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Return-tube type
回路管循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m		Nut dimension 螺母尺寸: Nut type 螺母类型	D	L	L_1	Across Flats width 对边距离 W	Across Flats length 对边距离长度 V	M	Ball Nut Model number 螺母型号
MS 1002 B	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700 / 1750	5300 / 2700	134 / 112		1	23	27.5	7.5	21	5	M17×1.0	MS 1002 B
MS 1202 B	12	2	1.5875	12.30	2°58′	10.6	3.7×1	3000 / 1900	6400 / 3200	156 / 132		1	25	30	10	23	5	M20×1.0	MS 1202 B
MS 1204 T	12	4	2.381	12.30	5°55′	9.8	2.5×1	3900 / —	7000 / —	113 / —		2	25.5	34	10	23	5	M20×1.0	MS 1204 T
MS 1402 B	14	2	1.5875	14.30	2°33′	12.6	3.7×1	3200 / 2000	7500 / 3800	176 / 148		1	26	30	10	23	5	M22×1.5	MS 1402 B
MS 1404 B	14	4	2.381	14.30	5°05′	11.8	3.7×1	5700 / 3600	11600 / 5800	187 / 157		1	30	38	10	27	8	M25×1.0	MS 1404 B

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)为了便于安装配合零件而需要对螺母外径进行对边距离加工或开孔加工时,
请垂询本公司。
注6)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m
1000 / 640	3300 / 1650	164 / 138

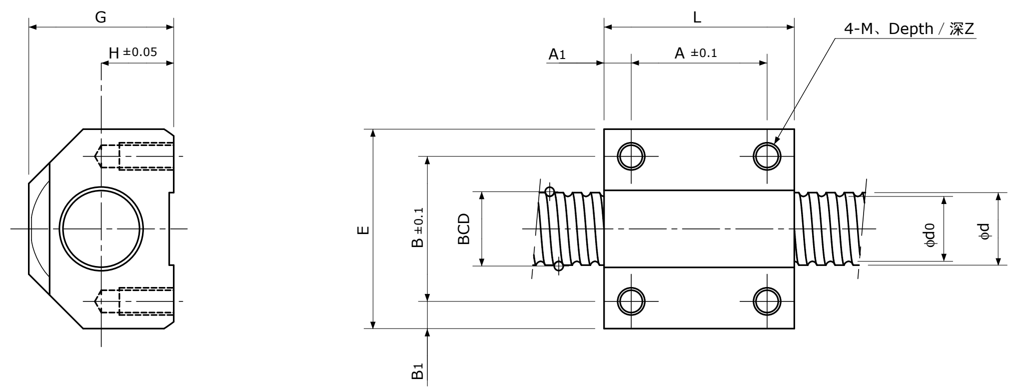
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Across Flats or drill hole is available on the Ball Nut for the convenience of assembly. Please ask KSS representative.
Note 6) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws　精密滚珠丝杠

Square type Single Nut
方型单螺母

Backlash type/Preload type
齿侧间隙型/预压型



Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: L	E	G	H	A	A_1	B	B_1	M	Z	Ball Nut Model number 螺母型号
KS 0601 B	6	1	0.8	6.15	2°58′	5.3	3.7×1	680 / 430	1200 / 610	75 / 63	20	20	14	7	14	3	14	3	M3	6	KS 0601 B
KS 0602 A	6	2	1.0	6.20	5°52′	5.1	2.7×1	750 / 470	1200 / 590	58 / 49	20	20	14	7	14	3	14	3	M3	6	KS 0602 A
KS 0801 B	8	1	0.8	8.15	2°15′	7.3	3.7×1	780 / 490	1650 / 820	95 / 80	21	22	16	8	15	3	16	3	M3	6	KS 0801 B
KS 0802 A	8	2	1.0	8.20	4°26′	7.1	2.7×1	850 / 540	1600 / 800	74 / 61	21	22	16	8	15	3	16	3	M3	6	KS 0802 A
KS 1001 B	10	1	0.8	10.15	1°48′	9.3	3.7×1	840 / 530	2000 / 1000	113 / 95	26	28	22	12	18	4	20	4	M4	7	KS 1001 B
KS 1002 B	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700 / 1750	5300 / 2700	134 / 112	26	28	23.5	12	18	4	20	4	M4	7	KS 1002 B

注1)设计时,请注意使滚珠丝杠轴端的其中一端不超过丝杠轴底径。
如果两个轴端设计得大于底径,则将无法组装螺母。
注2)标准螺母不带密封。不能安装密封,敬请注意。
注3)表中的刚性值为螺母的刚性值,是在以下条件下,根据轴向弹性位移量计算得出的理论值。
齿侧间隙型:相当于基本额定动负载Ca的30%的轴向负载作用时
预压型:施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时,可通过p-A823的公式计算。
注4)标准螺纹旋向为右旋。
需要左旋时,请垂询本公司。
注5)基本额定负载和刚性值(齿侧间隙型和预压型的刚性值可能会有不同)一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

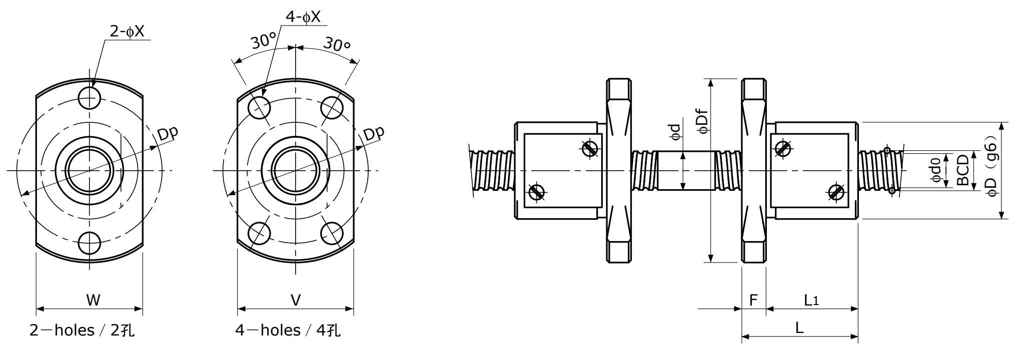
Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of one of the Screw Shaft ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) All models are Right-hand Screw. If Left-hand Screw is required, please ask KSS representative.
Note 5) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws　精密滚珠丝杠

Bi-directional Nut with Flange
双向法兰螺母

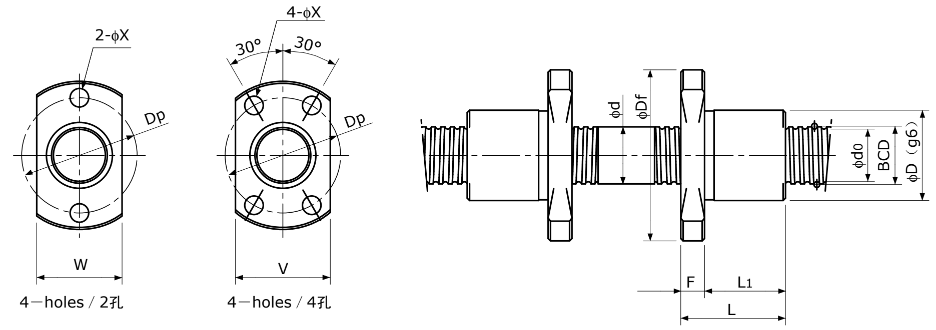
Backlash type/Preload type
齿侧间隙型/预压型



Flange type P
法兰型 P

Flange type Q
法兰型 Q

Type-1:Return-plate type
复式回路板循环方式



Flange type P
法兰型 P

Flange type Q
法兰型 Q

Type-2:Internal-deflector type
陀螺式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m		Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Flange Type 法兰类型	Ball Nut Model number 螺母型号
FKB 0401 A	4	1	0.6	4.15	4° 23′	3.4	1×3	300 / 300	430 / 430	38 / 59		2	9	19	13	10	3	11	13	14	2.9	P,Q	FKB 0401 A
FKB 0501 A	5	1	0.6	5.15	3° 32′	4.4	1×3	330 / 330	560 / 560	45 / 70		2	10	20	13	10	3	12	14	15	2.9	P,Q	FKB 0501 A
FKB 0601 A	6	1	0.8	6.20	2° 56′	5.3	1×3	560 / 560	950 / 950	55 / 86		2	11	23	14.5	11	3.5	13	15	17	3.4	P,Q	FKB 0601 A
FKB 0801 A	8	1	0.8	8.20	2° 13′	7.3	1×3	650 / 650	1300 / 1300	70 / 109		2	13	26	15	11	4	15	17	20	3.4	P,Q	FKB 0801 A
FKB 0801.5 A	8	1.5	1.0	8.30	3° 18′	7.2	1×3	890 / 890	1650 / 1650	73 / 113		2	15	28	20	16	4	17	19	22	3.4	P,Q	FKB 0801.5 A
FKB 0802 A	8	2	1.2	8.30	4° 23′	7.0	1×3	1300 / 1300	2300 / 2300	77 / 121		2	15	28	18	14	4	17	19	22	3.4	P,Q	FKB 0802 A
FKB 1001 A	10	1	0.8	10.20	1° 47′	9.3	1×3	720 / 720	1650 / 1650	84 / 131		2	15	28	15	11	4	17	19	22	3.4	P,Q	FKB 1001 A
FKB 1001.5 A	10	1.5	1.0	10.30	2° 39′	9.2	1×3	990 / 990	2100 / 2100	87 / 136		2	17	34	21	16	5	19	21	26	4.5	P,Q	FKB 1001.5 A
FKB 1002 A	10	2	1.2	10.30	3° 32′	9.0	1×3	1450 / 1450	3000 / 3000	93 / 144		2	17	34	19	14	5	19	21	26	4.5	P,Q	FKB 1002 A
FKB 1002.5 A	10	2.5	1.5875	10.40	4° 23′	8.7	1×3	2100 / 2100	3800 / 3800	96 / 150		2	18	35	21	16	5	20	22	27	4.5	P,Q	FKB 1002.5 A
FBS 1003 B	10	3	2.0	10.30	5° 18′	8.2	3.7×1	3900 / 2500	7200 / 3600	140 / 118		1	24	44	30	24	6	26	27	35	5.5	P,Q	FBS 1003 B
FBS 1004 A	10	4	2.0	10.30	7° 03′	8.2	2.7×1	3000 / 1800	5200 / 2600	104 / 86		1	24	44	29	23	6	26	27	35	5.5	P,Q	FBS 1004 A
FBS 1005 A	10	5	2.0	10.30	8° 47′	8.2	2.7×1	3000 / 1800	5200 / 2600	103 / 85		1	24	44	34	28	6	26	27	35	5.5	P,Q	FBS 1005 A

注1）设计时，请注意使两个轴端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

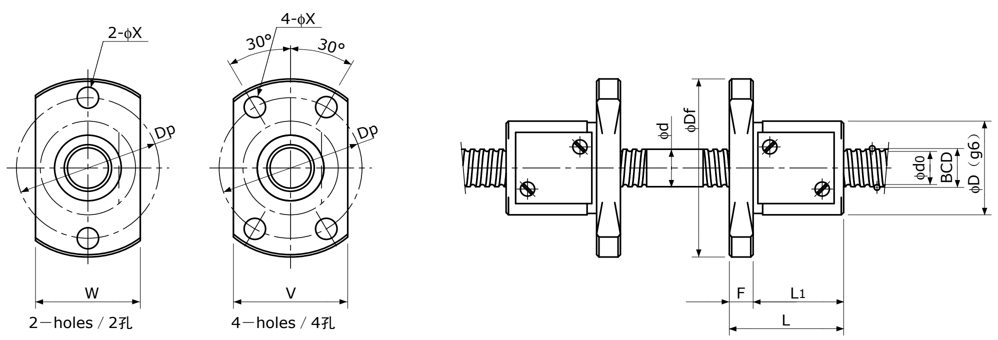
Backlash type 齿侧间隙型 ／ Preload type 预压型

Note 1) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws　精密滚珠丝杠

Bi-directional Nut with Flange
双向法兰螺母

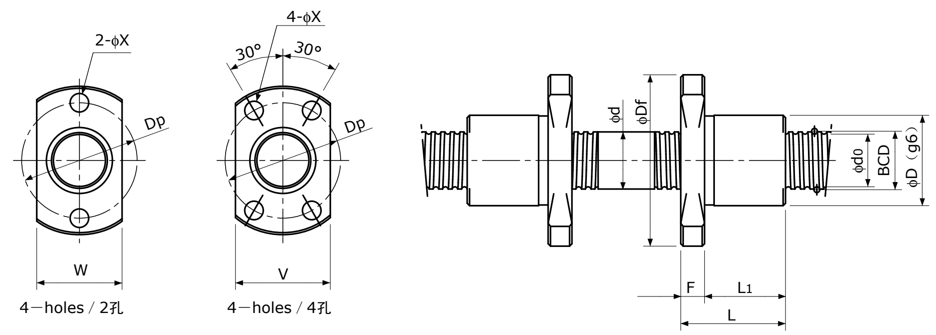
Backlash type/Preload type
齿侧间隙型/预压型



Flange type P
法兰型 P

Flange type Q
法兰型 Q

Type-1:Return-plate type
复式回路板循环方式



Flange type P
法兰型 P

Flange type Q
法兰型 Q

Type-2:Internal-deflector type
陀螺式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L1	F	W	V	Dp	Bolt Hole 安装孔 X	Flange Type 法兰类型	Ball Nut Model number 螺母型号
FKB 1201 A	12	1	0.8	12.20	1° 30′	11.3	1×3	780 / 780	2000 / 2000	97 / 152	2	17	34	16	11	5	19	21	26	4.5	P,Q	FKB 1201 A
FKB 1202 A	12	2	1.2	12.30	2° 58′	11.0	1×3	1600 / 1600	3700 / 3700	109 / 169	2	19	36	19	14	5	21	23	28	4.5	P,Q	FKB 1202 A
FKB 1202.5 A	12	2.5	1.5875	12.40	3° 41′	10.7	1×3	2300 / 2300	4700 / 4700	112 / 174	2	20	37	21	16	5	22	24	29	4.5	P,Q	FKB 1202.5 A
FKB 1203 A	12	3	2.0	12.50	4° 22′	10.4	1×3	3100 / 3100	5700 / 5700	115 / 179	2	22	41	32	26	6	24	26	32	5.5	P,Q	FKB 1203 A
FBS 1204 B	12	4	2.381	12.30	5° 55′	9.8	3.7×1	5400 / 3400	10200 / 5100	165 / 139	1	28	48	33	27	6	30	30	39	5.5	P,Q	FBS 1204 B
FBS 1401 B	14	1	0.8	14.15	1° 17′	13.3	3.7×1	960 / 610	2900 / 1450	148 / 124	1	26	46	21	15	6	28	28	37	5.5	P,Q	FBS 1401 B
FKB 1402 A	14	2	1.2	14.30	2° 33′	13.0	1×3	1700 / 1700	4300 / 4300	122 / 190	2	21	40	20	14	6	23	26	31	5.5	P,Q	FKB 1402 A
FKB 1402.5 A	14	2.5	1.5875	14.40	3° 10′	12.7	1×3	2500 / 2500	5600 / 5600	127 / 197	2	22	41	22	16	6	24	26	32	5.5	P,Q	FKB 1402.5 A
FKB 1403 A	14	3	2.0	14.50	3° 46′	12.4	1×3	3400 / 3400	6800 / 6800	131 / 204	2	24	43	32	26	6	26	27	34	5.5	P,Q	FKB 1403 A
FKB 1404 A	14	4	2.381	14.65	4° 58′	11.9	1×3	4500 / 4500	8600 / 8600	136 / 212	2	26	45	29	23	6	28	28	36	5.5	P,Q	FKB 1404 A
FBS 1405 B	14	5	2.381	14.30	6° 21′	11.8	3.7×1	5700 / 3600	11600 / 5800	186 / 157	1	30	51	39	33	6	32	32	42	5.5	P,Q	FBS 1405 B

注1）设计时，请注意使两个轴端不超过丝杠轴底径。
　　如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
　　需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
　　某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
　　齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
　　预压型：施加了相当于基本额定动负载Ca的5%的预压时
　　轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

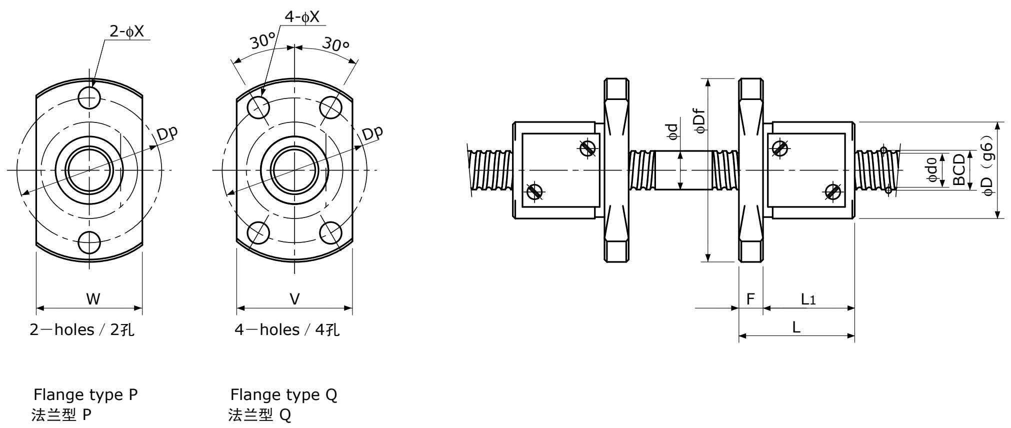
Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

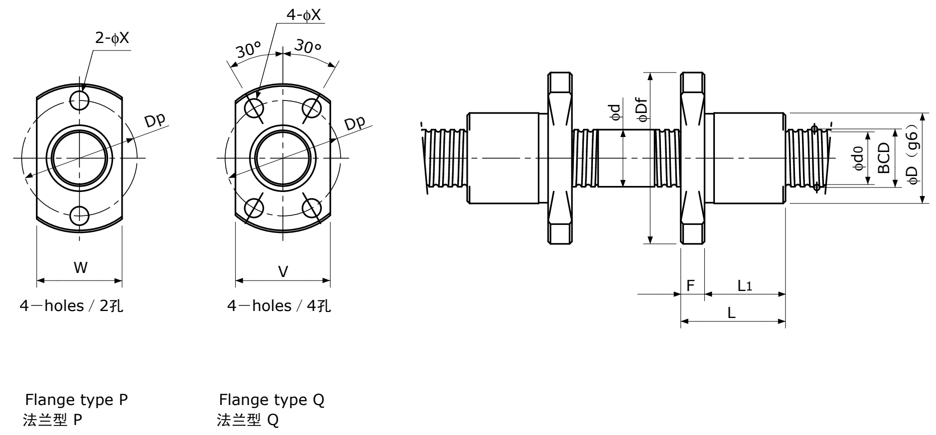
Note 1) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

Precision Ball Screws　精密滚珠丝杠

Bi-directional Nut with Flange　Backlash type/Preload type
双向法兰螺母　齿侧间隙型/预压型



Type-1:Return-plate type
复式回路板循环方式



Type-2:Internal-deflector type
陀螺式循环方式

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm		Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L1	F	W	V	Dp	Bolt Hole 安装孔 X	Flange Type 法兰类型	Ball Nut Model number 螺母型号
FBS 1601 B	16	1	0.8	16.15	1°08′	15.3	3.7×1	1000 / 640	3300 / 1650	164 / 138		1	28	48	21	15	6	30	30	39	5.5	P,Q	FBS 1601 B
FKB 1602 A	16	2	1.2	16.30	2°15′	15.0	1×3	1850 / 1850	5000 / 5000	137 / 213		2	24	43	20	14	6	26	27	34	5.5	P,Q	FKB 1602 A
FKB 1603 A	16	3	2.0	16.50	3°19′	14.4	1×3	3600 / 3600	8000 / 8000	146 / 227		2	26	45	32	26	6	28	28	36	5.5	P,Q	FKB 1603 A
FKB 1604 A	16	4	2.381	16.65	4°22′	13.9	1×3	4800 / 4800	10000 / 10000	152 / 237		2	28	47	29	23	6	30	30	38	5.5	P,Q	FKB 1604 A
FBS 1605 B	16	5	3.175	16.50	5°31′	13.2	3.7×1	9100 / 5700	18200 / 9100	217 / 182		1	38	57	42	36	6	40	40	48	5.5	P,Q	FBS 1605 B

注1）设计时，请注意使两个轴端不超过丝杠轴底径。
如果两个轴端设计得大于底径，则将无法组装螺母。
注2）标准螺母不带密封。
需要密封时，螺母的尺寸将发生变化，详情请垂询本公司。
某些型号的螺母不能安装密封，敬请注意。
注3）表中的刚性值为螺母的刚性值，是在以下条件下，根据轴向弹性位移量计算得出的理论值。
齿侧间隙型：相当于基本额定动负载Ca的30%的轴向负载作用时
预压型：施加了相当于基本额定动负载Ca的5%的预压时
轴向负载及预压量与上述条件不同时，可通过p-A823的公式计算。
注4）基本额定负载和刚性值（齿侧间隙型和预压型的刚性值可能会有不同）一并标示在上表中。

Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm
1000 / 640	3300 / 1650	164 / 138

Preload type 预压型
Backlash type 齿侧间隙型

Note 1) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter, otherwise Ball Nut cannot be installed.
Note 2) Ball Nut dimension is without seal at the both ends.
If the seals are required, Ball Nut dimension should be changed, in that case, please ask KSS.
Some type of Ball Nuts cannot equip with seals, please ask KSS representative.
Note 3) The Rigidity values shown in the table are theoretical values of Ball Nut Rigidity calculated from the amount of Elastic Displacement under the following conditions.
Backlash type ; Apply the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
Preload type ; Apply the Preload equivalent to 5% of the Basic Dynamic Load Rating Ca.
For Axial load or Preload condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 4) Basic Load Rating and Rigidity for Backlash type and Preload type are described in the same cell.

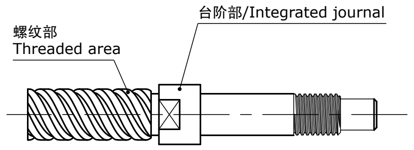
Rolled Ball Screws 冷轧滚珠丝杠

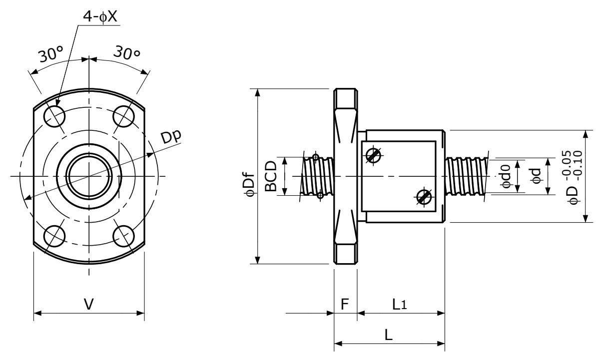
Single Nut with Flange 带法兰单螺母

Backlash type 齿侧间隙型

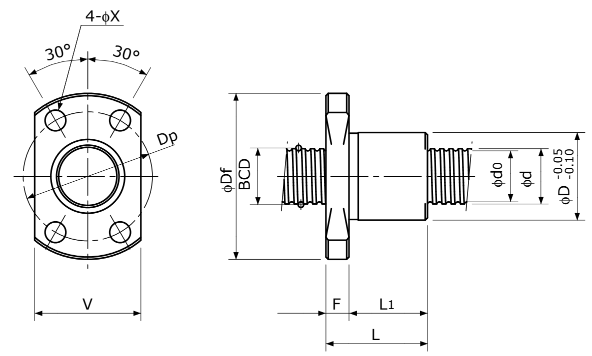
■ 也可生产对轴端直径进行了加粗设计的台阶型冷轧加工（下图），详情请垂询本公司。（轴端直径φ12以下）

■ Rolled Ball Screws with integrated journal are available (φ12 or less only), which have larger diameter than threaded area shown below.

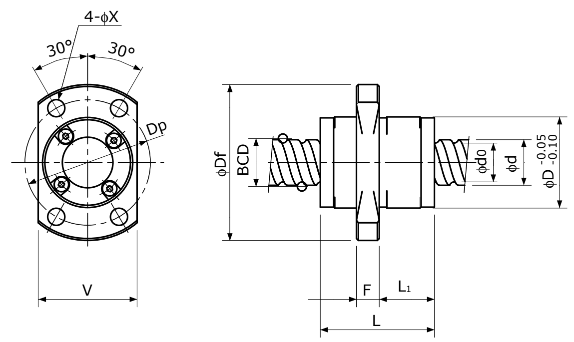




Type-1:Return-plate type
复式回路板循环方式



Type-2:End-deflector type
偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N		Nut Rigidity 螺母刚性 N/⊠m		Nut dimension 螺母尺寸										Ball Nut Model number 螺母型号
								Dynamic 额定动负载 Ca	Static 额定静负载 Coa			Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	
MRB 0401	4	1	0.8	4.15	4° 23′	3.3	3.7×1	560	790	54		1	11	23	17	13	4	—	15	17	3.4	MRB 0401
MRB 0401K	4	1	0.6	4.15	4° 23′	3.4	1×3	300	430	38		2	9	19	13	10	3	—	13	14	2.9	MRB 0401K
MRB 0402	4	2	0.8	4.15	8° 43′	3.3	2.7×1	420	570	39		1	11	23	19	15	4	—	15	17	3.4	MRB 0402
MRB 0504	5	4	0.8	5.15	13° 53′	4.3	2.7×1	470	720	47		1	12	24	22	18	4	—	16	18	3.4	MRB 0504
MRB 0601 **	6	1	0.8	6.15	2° 58′	5.3	3.7×1	680	1200	75		1	13	26	17	13	4	—	16	20	3.4	MRB 0601 **
MRB 0601K	6	1	0.8	6.20	2° 56′	5.3	1×3	560	950	55		2	11	23	14.5	11	3.5	—	15	17	3.4	MRB 0601K
MRB 0602	6	2	1.0	6.20	5° 52′	5.1	2.7×1	750	1200	58		1	15	28	17	13	4	—	19	22	3.4	MRB 0602
MRB 0606	6	6	1.0	6.30	16° 52′	5.2	1.6×2	870	1450	67		3	14	27	17	8	4	—	16	21	3.4	MRB 0606
MRB 0610	6	10	1.2	6.30	26° 48′	5.0	1.2×2	950	1600	50		3	14	27	23	11.5	4	—	16	21	3.4	MRB 0610

注1)标准螺纹旋向为右旋。
注2)设计时,由于生产及组装螺母的关系,请使滚珠丝杠的两个轴端不超过丝杠轴底径。
需要单侧台阶型时,请垂询本公司。
注3)标准螺母不带密封。
不能安装密封,敬请注意。
注4)刚性
表中的刚性值,是在相当于基本额定动负载Ca的30%的轴向负载作用时,根据轴向弹性位移量计算的理论值。
轴向负载与上述条件不同时,可通过p-A823的公式计算。
注5)不锈钢冷轧滚珠丝杠
螺母型号后带**者可提供不锈钢冷轧滚珠丝杠。

Note 1) All models are Right-hand screw.
Note 2) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter,
because of productlon and Nut assembly reason. If bigger end-journal than Shaft diameter is required, please consult KSS.
Note 3) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 4) Rigidity
The Rigidity values shown in the table are theoretical values calculated from the amount of Elastic Displacement under the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
For Axial load condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 5) Stainless Rolled Ball Screw
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

Ball Scresw 滚珠丝杠

Customized products Rolled Ball Screws 接单生产 冷轧滚珠丝杠

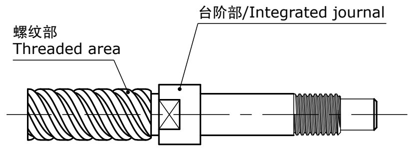
Rolled Ball Screws 冷轧滚珠丝杠

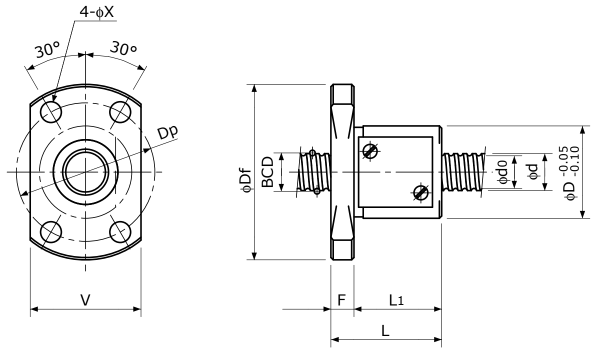
Single Nut with Flange 带法兰单螺母

Backlash type 齿侧间隙型

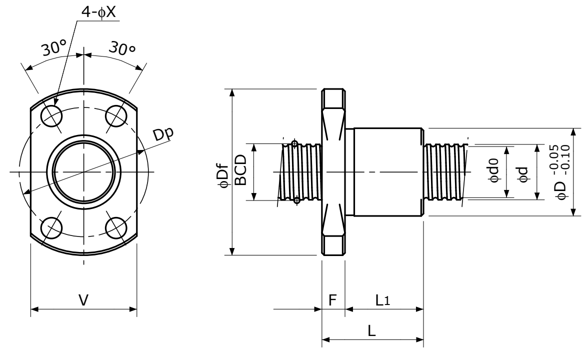
■ 也可生产对轴端直径进行了加粗设计的台阶型冷轧加工（下图），详情请垂询本公司。（轴端直径φ12以下）

■ Rolled Ball Screws with integrated journal are available (φ12 or less only), which have larger diameter than threaded area shown below.

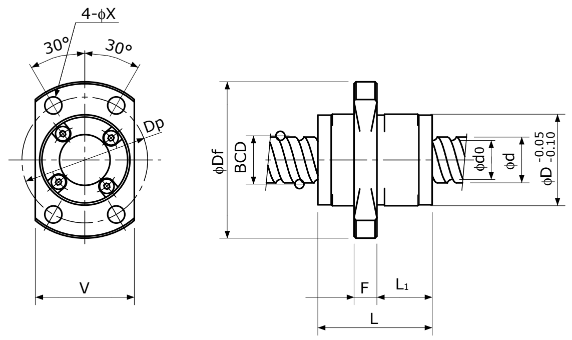




Type-1:Return-plate type
复式回路板循环方式



Type-2:End-deflector type
偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N		Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸										Ball Nut Model number 螺母型号
								Dynamic 额定动负载 Ca	Static 额定静负载 Coa		Nut type 螺母类型	D	Df	L	L1	F	W	V	Dp	Bolt Hole 安装孔 X	
MRB 0801 **	8	1	0.8	8.15	2°15′	7.3	3.7×1	780	1650	95	1	16	29	17	13	4	—	18	23	3.4	MRB 0801 **
MRB 0801K	8	1	0.8	8.20	2°13′	7.3	1×3	650	1300	70	2	13	26	15	11	4	—	17	20	3.4	MRB 0801K
MRB 0802 **	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400	4100	111	1	20	37	24	19	5	—	22	29	4.5	MRB 0802 **
MRB 0802K	8	2	1.2	8.30	4°23′	7.0	1×3	1300	2300	77	2	15	28	18	14	4	—	19	22	3.4	MRB 0802K
MRB 0802.5	8	2.5	1.5875	8.00	5°41′	6.3	2.7×1	1850	3000	80	2	16	29	16	12	4	—	18	23	3.4	MRB 0802.5
MRB 0805	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850	3000	82	1	18	31	28	24	4	—	20	25	3.4	MRB 0805
MRB 0808	8	8	1.5875	8.40	16°52′	6.7	1.6×2	2200	3800	95	3	18	31	20	10	4	—	20	25	3.4	MRB 0808
MRB 0810	8	10	1.5875	8.40	20°45′	6.7	1.6×2	2200	3800	92	3	18	31	24	13	4	—	20	25	3.4	MRB 0810
MRB 0812	8	12	1.5875	8.40	24°27′	6.7	1.6×2	2200	4000	90	3	18	31	27	17	4	—	20	25	3.4	MRB 0812

注1)标准螺纹旋向为右旋。
注2)设计时，由于生产及组装螺母的关系，请使滚珠丝杠的两个轴端不超过丝杠轴底径。
需要单侧台阶型时，请垂询本公司。
注3)标准螺母不带密封。
不能安装密封，敬请注意。
注4)刚性
表中的刚性值，是在相当于基本额定动负载Ca的30%的轴向负载作用时，根据轴向弹性位移量计算的理论值。
轴向负载与上述条件不同时，可通过p-A823的公式计算。
注5)不锈钢冷轧滚珠丝杠
螺母型号后带**者可提供不锈钢冷轧滚珠丝杠。

Note 1) All models are Right-hand screw.
Note 2) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter, because of productlon and Nut assembly reason. If bigger end-journal than Shaft diameter is required, please consult KSS.
Note 3) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 4) Rigidity
The Rigidity values shown in the table are theoretical values calculated from the amount of Elastic Displacement under the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
For Axial load condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 5) Stainless Rolled Ball Screw
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

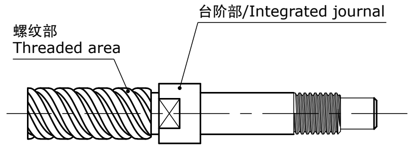
Rolled Ball Screws 冷轧滚珠丝杠

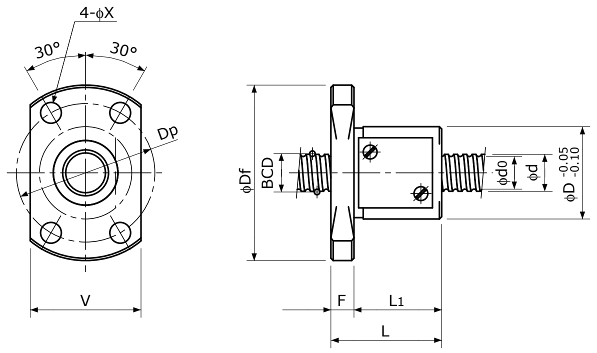
Single Nut with Flange
带法兰单螺母

Backlash type
齿侧间隙型

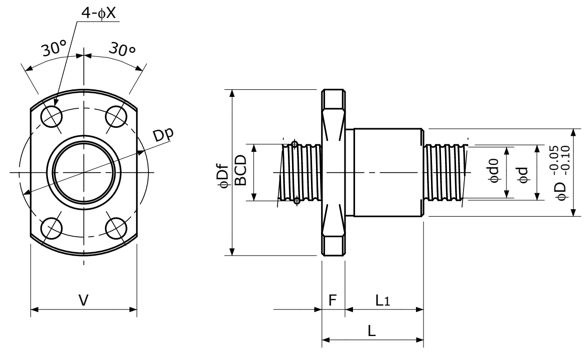
■ 也可生产对轴端直径进行了加粗设计的台阶型冷轧加工（下图），详情请垂询本公司。（轴端直径φ12以下）

■ Rolled Ball Screws with integrated journal are available (φ12 or less only), which have larger diameter than threaded area shown below.

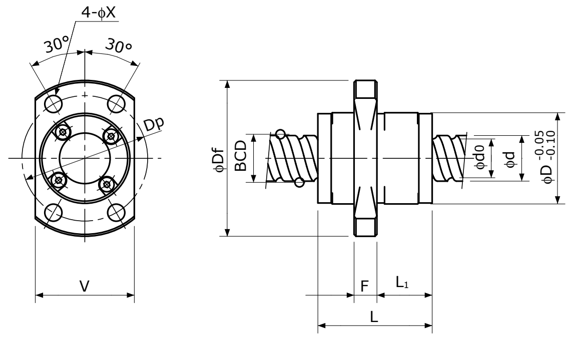




Type-1:Return-plate type
复式回路板循环方式



Type-2:End-deflector type
偏转器式循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式

Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N: Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N: Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/☒m	Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
MRB 1002 **	10	2	1.5875	10.30	3° 32′	8.6	3.7×1	2700	5300	134	1	23	40	24	19	5	—	25	32	4.5	MRB 1002 **
MRB 1002K	10	2	1.2	10.30	3° 32′	9.0	1×3	1450	3000	93	2	17	34	19	14	5	—	21	26	4.5	MRB 1002K
MRB 1003	10	3	2.0	10.30	5° 18′	8.2	3.7×1	3900	7200	140	1	24	41	29	24	5	—	26	33	4.5	MRB 1003
MRB 1004	10	4	2.0	10.30	7° 03′	8.2	2.7 ×1	3000	5200	104	1	24	41	28	23	5	—	26	33	4.5	MRB 1004
MRB 1005	10	5	2.0	10.30	8° 47′	8.2	2.7 ×1	3000	5200	103	2	23	40	26	21	5	—	25	32	4.5	MRB 1005
MRB 1006	10	6	2.0	10.30	10° 30′	8.2	2.7 ×1	3000	5000	102	1	26	42	33	28	5	—	28	34	4.5	MRB 1006
MRB 1010	10	10	2.0	10.50	16° 52′	8.4	1.6×2	3300	5900	117	3	23	40	24	13	5	—	25	32	4.5	MRB 1010
MRB 1012	10	12	2.0	10.50	19° 59′	8.4	1.6×2	3300	6200	115	3	23	40	28	17	5	—	25	32	4.5	MRB 1012
MRB 1015	10	15	2.0	10.50	24° 27′	8.4	1.6×2	3300	6400	110	3	23	40	33	22	5	—	25	32	4.5	MRB 1015
MRB 1020	10	20	1.5875	10.40	31° 28′	8.7	0.7×4	2100	4000	88	3	20	37	23	13	5	—	22	29	4.5	MRB 1020
MRB 1202	12	2	1.5875	12.30	2° 58′	10.6	3.7×1	3000	6400	156	1	25	42	24	19	5	—	27	34	4.5	MRB 1202
MRB 1202K	12	2	1.2	12.30	2° 58′	11.0	1×3	1600	3700	109	2	19	36	19	14	5	—	23	28	4.5	MRB 1202K
MRB 1210	12	10	2.381	12.65	14° 07′	10.2	1.7×2	5100	9800	152	3	24	41	30	14.5	6	—	26	33	4.5	MRB 1210

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螺母型号后带**者可提供不锈钢冷轧滚珠丝杠。

Note 1) All models are Right-hand screw.
Note 2) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter,
because of productlon and Nut assembly reason. If bigger end-journal than Shaft diameter is required, please consult KSS.
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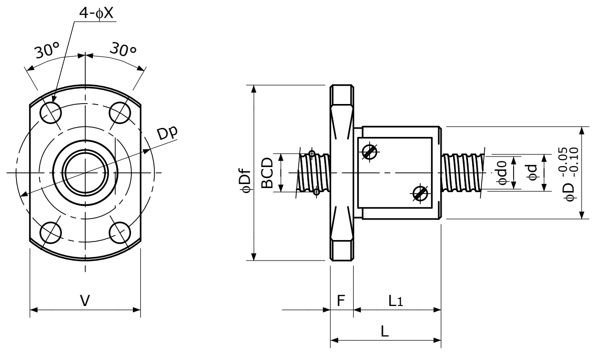
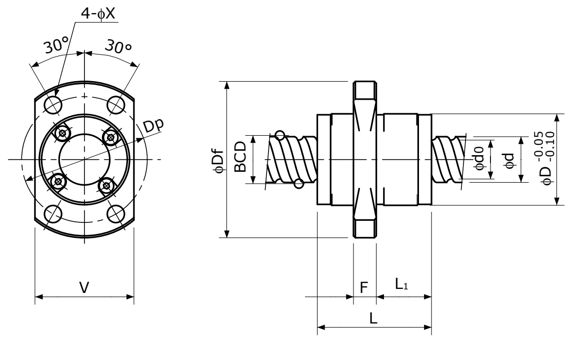
Note 5) Stainless Rolled Ball Screw
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

Rolled Ball Screws　冷轧滚珠丝杠

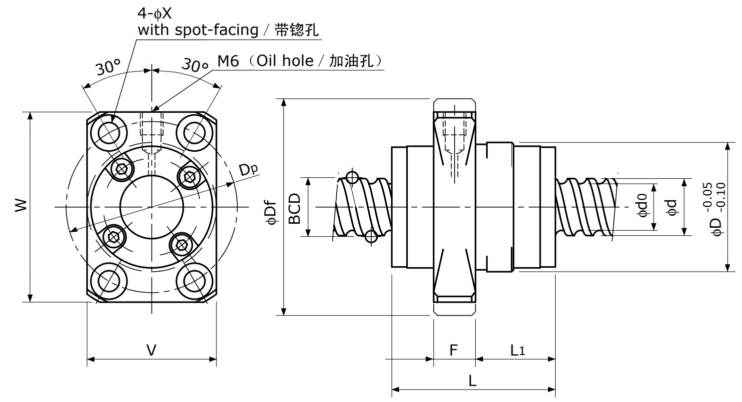
Single Nut with Flange　　Backlash type
带法兰单螺母　　齿侧间隙型



Type-1:Return-plate type
复式回路板循环方式



Type-3:End-cap type or End-deflector type
端盖循环方式或偏转器式循环方式



Type-4:End-deflector type
偏转器式循环方式

Unit（单位）：mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m		Nut dimension 螺母尺寸: Nut type 螺母类型	D	Df	L	L_1	F	W	V	Dp	Bolt Hole 安装孔 X	Ball Nut Model number 螺母型号
MRB 1312	13	12	2.381	13.50	15° 48′	11.0	1.6×2	5000	9900	151		3	28	45	30	17	5	—	30	37	4.5	MRB 1312
MRB 1315	13	15	2.381	13.50	19° 29′	11.0	1.6×2	5000	10300	147		3	28	45	35	22	5	—	30	37	4.5	MRB 1315
MRB 1320	13	20	2.381	13.50	25° 15′	11.0	1.6×2	5000	10700	142		3	28	45	43	29	5	—	30	37	4.5	MRB 1320
MRB 1402	14	2	1.5875	14.30	2° 33′	12.6	3.7×1	3200	7500	176		1	26	45	25	19	6	—	28	36	5.5	MRB 1402
MRB 1404	14	4	2.381	14.30	5° 05′	11.8	3.7×1	5700	11600	187		1	30	49	33	27	6	—	32	40	5.5	MRB 1404
MRB 1505	15	5	3.175	15.50	5° 41′	12.2	3.7×1	8900	17000	208		4	34	57	33	16	11	50	34	45	5.5	MRB 1505
MRB 1510	15	10	3.175	15.50	11° 36′	12.2	2.7×2	12000	25000	289		4	34	57	43	21	11	50	34	45	5.5	MRB 1510
MRB 1520	15	20	3.175	15.75	22° 01′	12.7	1.7×2	8000	16000	178		4	34	57	52	28.5	11	50	34	45	5.5	MRB 1520

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Note 5) Stainless Rolled Ball Screw
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

Rolled Ball Screws 冷轧滚珠丝杠

Sleeve type Single Nut
套筒型单螺母

Backlash type
齿侧间隙型

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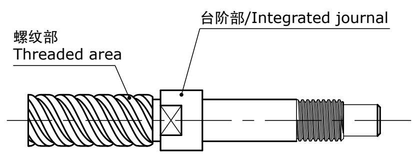

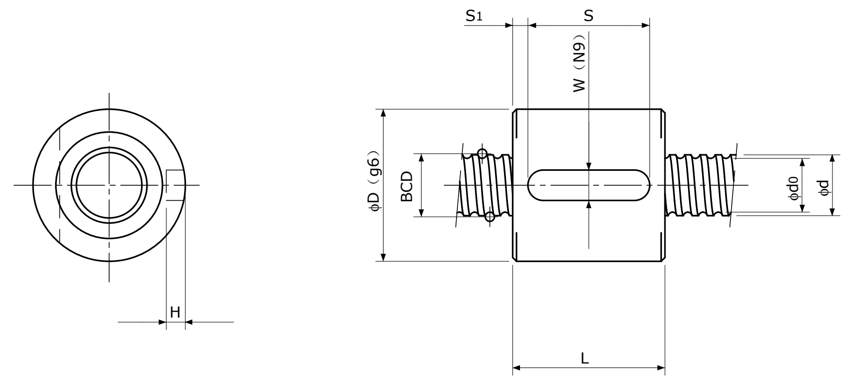

Unit（单位）：mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm	Nut dimension 螺母尺寸 D	L	W	H	S	S_1	Ball Nut Model number 螺母型号
BSR 0401	4	1	0.8	4.15	4°23′	3.3	3.7×1	560	790	54	11	14	3	1.8	8	3	BSR 0401
BSR 0402	4	2	0.8	4.15	8°43′	3.3	2.7×1	420	570	39	11	16	3	1.8	8	4	BSR 0402
BSR 0504	5	4	0.8	5.15	13°53′	4.3	2.7×1	470	720	47	12	22	3	1.8	12	5	BSR 0504
BSR 0601 **	6	1	0.8	6.15	2°58′	5.3	3.7×1	680	1200	75	13	14	3	1.8	10	2	BSR 0601 **
BSR 0602	6	2	1.0	6.20	5°52′	5.1	2.7×1	750	1200	58	15	15	3	1.8	10	2.5	BSR 0602
BSR 0801 **	8	1	0.8	8.15	2°15′	7.3	3.7×1	780	1650	95	16	14	3	1.8	10	2	BSR 0801 **
BSR 0802 **	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400	4100	111	20	20	4	2.5	16	2	BSR 0802 **
BSR 0802.5	8	2.5	1.5875	8.00	5°41′	6.3	2.7×1	1850	3000	80	16	16	3	1.8	8	4	BSR 0802.5
BSR 0805	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850	3000	82	18	28	4	2.5	20	4	BSR 0805

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Rolled Ball Screws 冷轧滚珠丝杠

Sleeve type Single Nut 套筒型单螺母

Backlash type 齿侧间隙型

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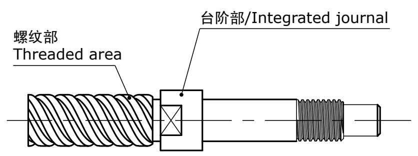

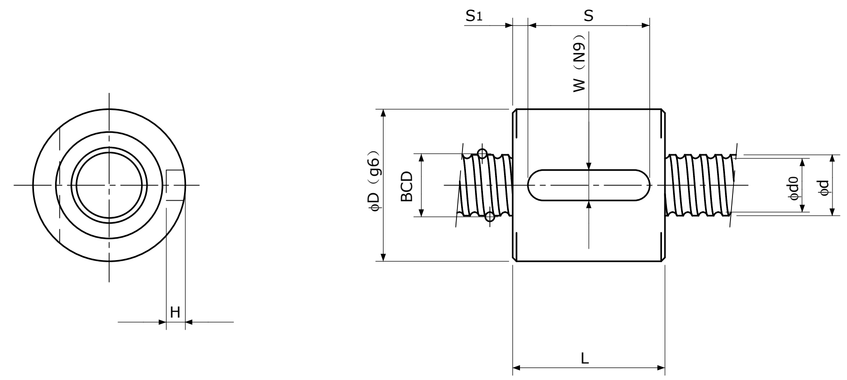

Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/⊠m		Nut dimension 螺母尺寸 D	L	W	H	S	S_1	Ball Nut Model number 螺母型号
BSR 1002 **	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700	5300	134		23	20	5	3	16	2.0	BSR 1002 **
BSR 1003	10	3	2.0	10.30	5°18′	8.2	3.7×1	3900	7200	140		24	26	5	3	20	3	BSR 1003
BSR 1004	10	4	2.0	10.30	7°03′	8.2	2.7×1	3000	5200	104		24	26	5	3	20	3	BSR 1004
BSR 1005	10	5	2.0	10.30	8°47′	8.2	2.7×1	3000	5200	103		23	26	5	3	16	5	BSR 1005
BSR 1006	10	6	2.0	10.30	10°30′	8.2	2.7×1	3000	5000	102		26	31	5	3	20	5.5	BSR 1006
BSR 1202	12	2	1.5875	12.30	2°58′	10.6	3.7×1	3000	6400	156		25	20	5	3	16	2	BSR 1202
BSR 1402	14	2	1.5875	14.30	2°33′	12.6	3.7×1	3200	7500	176		26	20	5	3	16	2	BSR 1402
BSR 1404	14	4	2.381	14.30	5°05′	11.8	3.7×1	5700	11600	187		30	31	5	3	25	3	BSR 1404

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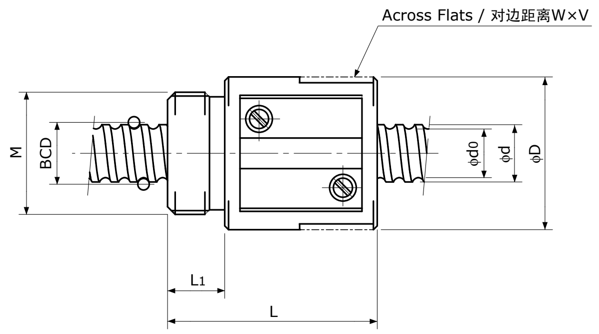
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

Ball Scresw 滚珠丝杠

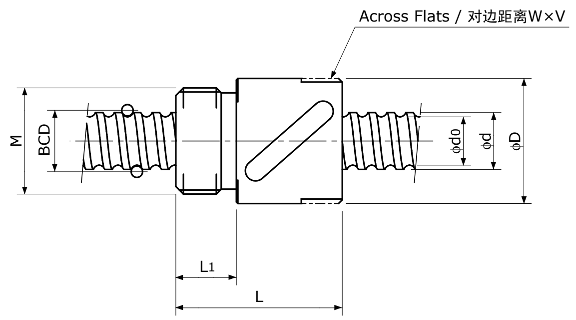
Rolled Ball Screws 冷轧滚珠丝杠

Single Nut with M-thread
带公制螺纹单螺母

Backlash type
齿侧间隙型

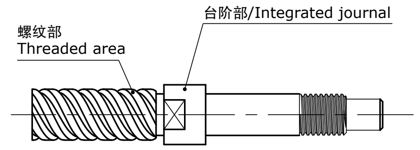


Type-1:Return-plate type
复式回路板循环方式



Type-2:Return-tube type
回路管循环方式

■ 也可生产对轴端直径进行了加粗设计的台阶型冷轧加工（下图），详情请垂询本公司。（轴端直径φ12以下）
■ Rolled Ball Screws with integrated journal are available（φ12 or less only）, which have larger diameter than threaded area shown below.



Unit（单位）:mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Lead 导程	Ball size 丝杠直径	BCD 钢珠中心直径	Lead angle 导程角	Root dia. 底径 d_0	Number of Circuit 循环数	Basic Load Rating 基本额定负载 N Dynamic 额定动负载 Ca	Basic Load Rating 基本额定负载 N Static 额定静负载 Coa	Nut Rigidity 螺母刚性 N/μm		Nut dimension 螺母尺寸 Nut type 螺母类型	D	L	L_1	Across Flats width 对边距离 W	Across Flats length 对边距离长度 V	M	Ball Nut Model number 螺母型号
MSR 0401 B	4	1	0.8	4.15	4°23′	3.3	3.7×1	560	790	54		1	11	17	4	10	6	M9×0.75	MSR 0401 B
MSR 0802 B **	8	2	1.5875	8.30	4°23′	6.6	3.7×1	2400	4100	111		1	20	27.5	7.5	18	5	M16×1.0	MSR 0802 B **
MSR 0802.5 T(1)	8	2.5	1.5875	8.00	5°41′	6.3	3.5×1	2300	3900	102		2	16.5	22	8	14	4	M14×1.0	MSR 0802.5 T(1)
MSR 0802.5 T(2)	8	2.5	1.5875	8.00	5°41′	6.3	3.5×1	2300	3900	102		2	17.5	25.5	7.5	15	4	M15×1.0	MSR 0802.5 T(2)
MSR 0805 A	8	5	1.5875	8.30	10°51′	6.6	2.7×1	1850	3000	82		1	18	32.5	7.5	16	5	M15×1.0	MSR 0805 A
MSR 1002 B **	10	2	1.5875	10.30	3°32′	8.6	3.7×1	2700	5300	134		1	23	27.5	7.5	21	5	M17×1.0	MSR 1002 B **
MSR 1003 B	10	3	2.0	10.30	5°18′	8.2	3.7×1	3900	7200	140		1	24	32	8	22	5	M18×1.0	MSR 1003 B
MSR 1202 B	12	2	1.5875	12.30	2°58′	10.6	3.7×1	3000	6400	156		1	25	30	10	23	5	M20×1.0	MSR 1202 B
MSR 1402 B	14	2	1.5875	14.30	2°33′	12.6	3.7×1	3200	7500	176		1	26	30	10	23	5	M22×1.5	MSR 1402 B
MSR 1404 B	14	4	2.381	14.30	5°05′	11.8	3.7×1	5700	11600	187		1	30	38	10	27	8	M25×1.0	MSR 1404 B

注1）标准螺纹旋向为右旋。
注2）设计时，由于生产及组装螺母的关系，请使滚珠丝杠的两个轴端不超过丝杠轴底径。
需要单侧台阶型时，请垂询本公司。
注3）标准螺母不带密封。
不能安装密封，敬请注意。
注4）刚性
表中的刚性值，是在相当于基本额定动负载Ca的30%的轴向负载作用时，根据轴向弹性位移量计算的理论值。
轴向负载与上述条件不同时，可通过p-A823的公式计算。
注5）不锈钢冷轧滚珠丝杠
螺母型号后带**者可提供不锈钢冷轧滚珠丝杠。

Note 1) All models are Right-hand screw.
Note 2) The diameter of the Screw Shaft both ends must be less than the Screw Shaft Root diameter, because of productlon and Nut assembly reason. If bigger end-journal than Shaft diameter is required, please consult KSS.
Note 3) Ball Nut dimension is without seal at the both ends. All type of Ball Nuts cannot equip with seals.
Note 4) Rigidity
The Rigidity values shown in the table are theoretical values calculated from the amount of Elastic Displacement under the Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca.
For Axial load condition other than the above, see the formula in p-A823, you can calculate Rigidity using this formula.
Note 5) Stainless Rolled Ball Screw
Stainless Rolled Ball Screw is available for Ball Nut Model Number marked **.

Customized products Rolled Ball Screws 接单生产 冷轧滚珠丝杠

滚珠丝杠的技术解说　Ball Screw Technical Description

滚珠丝杠的特点
Feature of Ball Screws

●机械效率高

KSS滚珠丝杠在丝杠轴与螺母之间插入钢珠形成滚动接触，使机械效率高达90%以上，而所需扭矩则在传统进给丝杠的1/3以下。此外，还可轻松地将直线运动转换为回转运动（逆动作）（图A-81）。

●High mechanical efficiency

KSS Ball Screws are fitted with steel Balls, providing rolling contact between the Nut and Screw Shaft, allowing for mechanical efficiency of over 90% and reducing the required Torque to less than one-third that of conventional Lead Screws. The design of the KSS Ball Screws also allows linear motion to be converted into rotary motion easily（Fig. A-81）.

●轴向间隙

对于传统的三角丝杠及梯形丝杠等，如果缩小其轴向间隙，则会因滑动摩擦而使旋转扭矩增大。KSS滚珠丝杠即使在消除轴向间隙的状态下也能非常轻快地转动。另外，通过采用双螺母，还可进一步提高刚性。

●Axial play

With conventional Triangular and Trapezoidal Screw threads, reducing the Axial play increases the rotational Torque due to the sliding friction.
KSS Ball Screws, on the other hand, are very easily rotated, even with no Axial play. The use of Double Nuts also provides increased Rigidity.

●精度高

KSS滚珠丝杠是在恒温控制下，采用超精密进给丝杠及螺纹量规加工技术加工、组装而成，并进行了严格的检查。其精度高，在准确定位方面具有高度可靠性。

●High precision

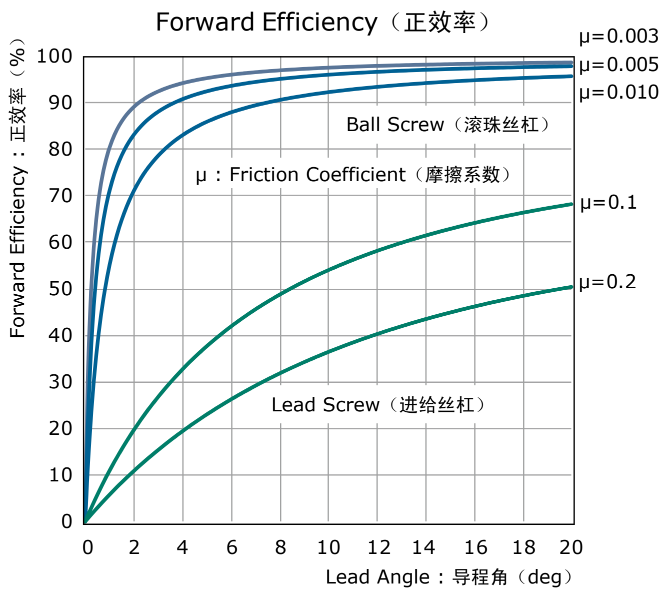
KSS Ball Screws are machined, assembled, and inspected using the technology of ultra-precision Lead Screw and Screw Gauge machining, under the temperature controlled room. High precision and accurate positioning ensure high reliability in use.

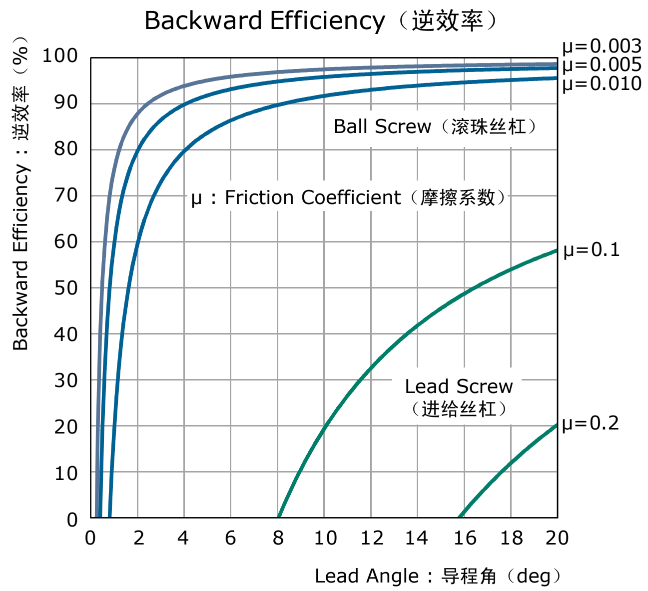
●寿命长

KSS滚珠丝杠采用经过热处理的适当材料加工而成，由于进行滚动接触运动，因此摩擦阻力极小，几乎不会发生磨损，可长期保持很高的精度。

●Long service life

The Ball Screw movement results in virtually no wear, as the rolling-contact design, combined with the use of carefully selected heat-treated materials, results in an extremely low friction. This is the reason that high precision can be kept over long period.





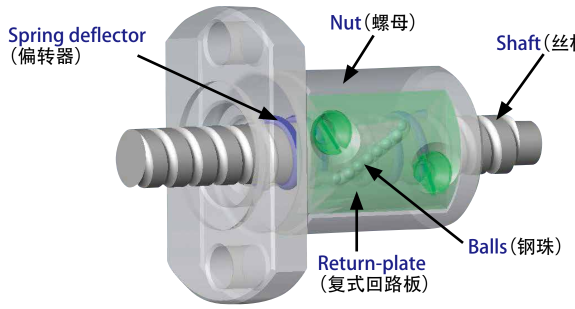
图A-81：机械效率
Fig. A-81：Mechanical Efficiency

滚珠丝杠的构造
Construction of Ball Screws

●复式回路板循环方式　Return-plate system

复式回路板循环方式，是通过安装在螺母内部的螺旋型偏转器将钢球抛出，使其沿着复式回路板的槽进行循环运动的方式。与回路管循环方式相比，具有可以缩小螺母外径的优点。在设备上安装时，如果将复式回路板部分安装在上方，则可使回转动作更加顺畅。

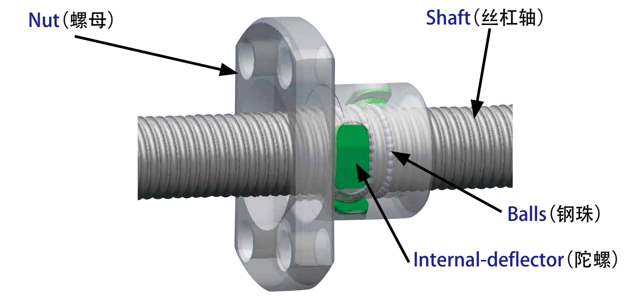
The Return-plate system uses coil-type deflectors incorporated inside the Nut to pick up the steel Balls and circulate them via the Return-plate channel. This system has the advantage of allowing the use of a Nut that is smaller in diameter than those employed in Return-tube systems. In addition, the upward-angle installation of the Return-plate ensures even smoother rotation.



●陀螺式循环方式　Internal-deflector system

陀螺式循环方式最大限度地缩小了螺母的外径及长度，使微型滚珠丝杠的结构更紧凑、更轻量。钢珠在承受轴向负载的同时，在丝杠轴及螺母的钢珠滚动槽中滚动时，沿着螺母内部的陀螺槽进入相邻的滚动槽，然后再次返回负载区，进行无限滚动循环。

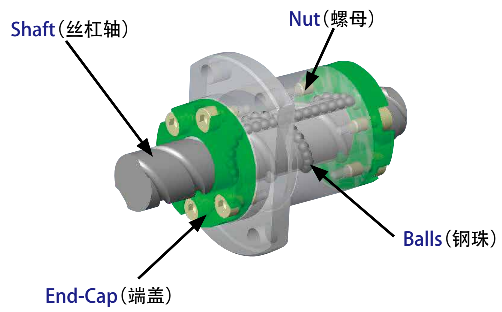
The Internal-deflector system employs a lightweight Miniature Ball Screw, which enables the Nut diameter and length to be reduced to the smallest possible size. The Balls bear the load while rolling along the screw groove between the Shaft and the Nut. The Balls are continuously circulated, transferred to the adjacent groove in the screw via the Internal-deflector channel and then back to the loaded groove area.



●端盖式循环方式　End-cap system

端盖式循环方式，是指钢珠沿着丝杠轴与螺母之间的槽滚动前行，从安装在螺母两端的循环部件（端盖）上的通路穿过螺母上的通孔，返回原位的循环方式。

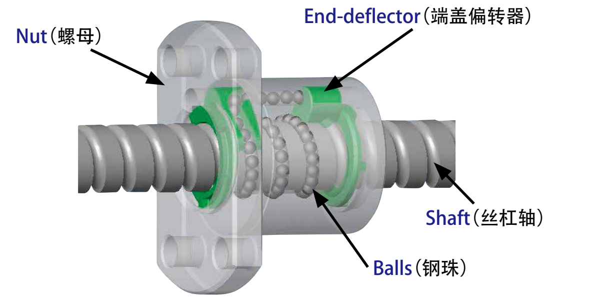
The End-cap system is a recirculating system in which the Balls advance by rolling through the screw groove between the Nut and the Screw Shaft. The Balls are then returned via the holes in the Nut and the channels in the recirculating sections of the End-caps on either end of the Nut.



●偏转器式循环方式　End-deflector system

偏转器式循环方式，是指钢珠从设置于螺母内部或外部的端盖偏转器，穿过螺母通孔，在原来的滚动槽内循环的方式。与复式回路板循环方式相比，可缩小螺母的外径，是一种最适用于中导程的循环方式。

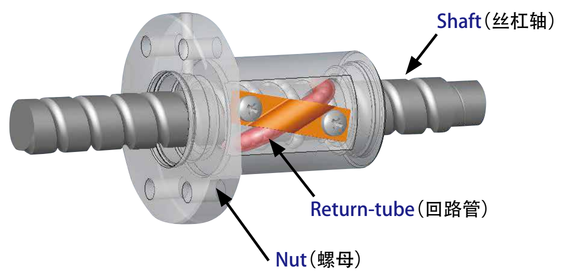
The Balls are circulated from End-deflector incorporated inside the Nut or outside the Nut through the hole in the Nut and the channels in the recirculating sections. Ball Nut diameter can be smaller than Return-plate system. This is suitable for the middle lead Ball Screws.



●回路管循环方式　Return-tube system

回路管循环方式，是指通过插入螺母中的回路管的前端，将正沿着丝杠轴与螺母之间的槽滚动的钢珠取出，使其穿过回路管后，再次返回螺纹槽的循环方式。

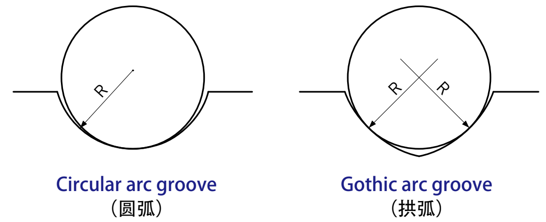
In the Return-tube system, Balls rolling between the Nut and the Shaft are picked up from the screw groove by the end of the Return-tube built into the Nut. Then, they flow back through the Return-tube to the screw groove.



●螺纹槽形状　Thread Groove profile

滚珠丝杠分为由1个弧形形成的圆弧和由2个弧形形成的拱弧两种类型。KSS滚珠丝杠采用拱弧型。

Ball screws may have either a circular arc profile, formed of a single arc, or a gothic arc profile, formed from two arcs.
KSS Ball Screws feature a gothic arc profile.



滚珠丝杠的生产范围
The range of manufacturing for Ball Screws

按丝杠轴公称外径划分，KSS滚珠丝杠的生产范围为φ1.8～φ16mm。以下介绍了不同精度等级的丝杠轴的参考极限长度。具体长度会因轴端形状、材质及丝杠轴系列而异，详情请垂询本公司。

The range of manufacturing for KSS Ball Screws is from φ1.8 to φ16mm as Shaft nominal diameter. Maximum limit of overall lengths are shown below. Maximum limit of overall lengths will vary depending on the Shaft end configuration, materials and KSS series. Please inquire KSS for details.

●精密滚珠丝杠的生产极限长度（全长） Maximum limit of overall lengths for Precision Ball Screws

Unit（单位）:mm

Shaft nominal diameter 丝杠轴公称外径 \ Accuracy grade 精度等级	C0	C1	C3	C5
4	90	120	160	170
6	140	180	240	250
8	200	250	330	350
10	260	320	420	450
12	320	390	510	550
14	380	460	600	660
16	450	540	700	770

注1）超出生产极限长度时，请垂询本公司。
Note 1）If required length exceeds the number in table above, please ask KSS representative.

●冷轧滚珠丝杠（Ct7＆Ct10）的生产极限长度
Maximum limit of overall lengths for Rolled Ball Screws（Ct7 & Ct10）

Unit（单位）:mm

Shaft nominal diameter 丝杠轴公称外径	Maximum length 极限长度
4	240
5	300
6	350
8	450
10	650
12	700
13	700
14	700
15	1000

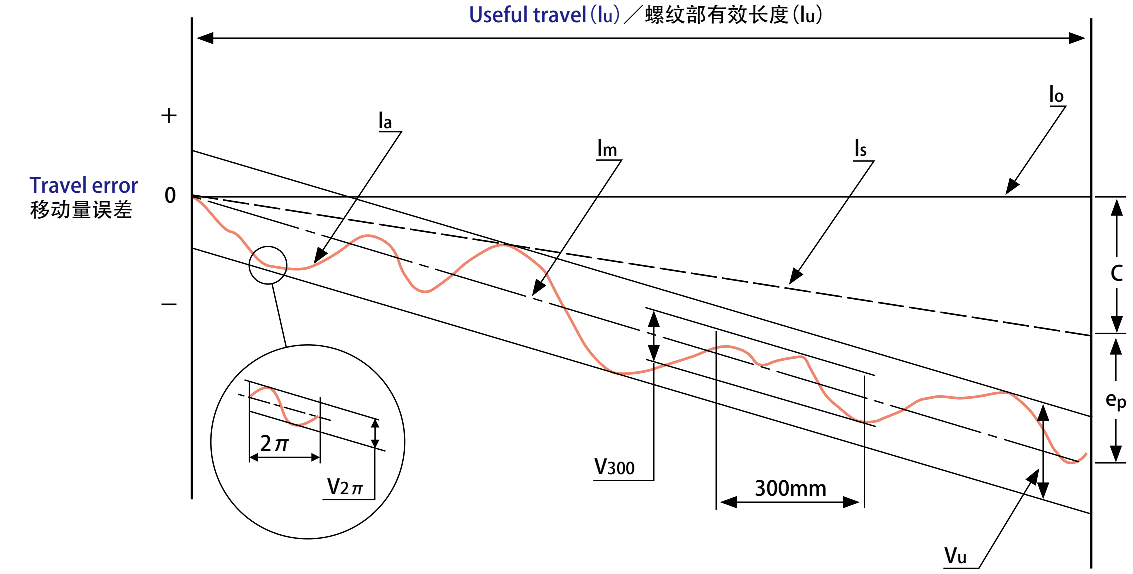
注1）超出生产极限长度时，请垂询本公司。
注2）冷轧滚珠丝杠的极限长度值中包括丝杠两端各25mm的不完全螺纹部分。
Note 1）If required length exceeds the number in table above, please ask KSS representative.
Note 2）Maximum limit of overall length for Rolled Ball Screws includes 25mm of incomplete thread area at both end.

滚珠丝杠的导程精度
Lead accuracy of Ball Screws

JIS B1192中规定，滚珠丝杠的导程精度是指，相对于螺母有效移动量或丝杠轴螺纹部有效长度的代表移动量误差及波动，以及相对于螺纹部有效长度中任意300mm及1圈（2π rad）的波动。
表A-83、84、85中列出了不同精度等级的各种特性的公差。

Ball Screw lead accuracy conforming to JIS B1192 is specified by the tolerance of actual mean travel error over the Nut effective travel amount, or Screw Shaft effective length, travel variation and travel variation within arbitrary 300mm, travel variation within arbitrary 1 revolution（2π rad）over the Screw Shaft effective length. Tolerance of each accuracy grades are shown in the Table A-83, 84, 85.

图A-82：移动量误差线图
Fig. A-82：Travel deviation diagram



公称移动量（lo）：按照公称导程旋转任意圈数时的轴向移动量。
标准导程（Phs）：预测因温度上升及负载而引起的变形量，对公称导程进行了若干补偿的导程。
代表移动量的目标值（c）：预先将标准移动量设定为正或负时的目标值。
标准移动量（ls）：按照标准导程旋转任意圈数时的移动量。
实际移动量（la）：相对于任意丝杠轴旋转角的螺母实际轴向移动量。
代表移动量（lm）：代表实际移动量倾向的直线。根据表示相对于滚珠丝杠有效移动量或螺纹部有效长度的实际移动量曲线，通过最小二乘法或类似的近似法求出。
代表移动量误差（ep）：与螺母的有效移动量或丝杠轴的螺纹部有效长度相应的代表移动量与标准移动量之差。
波动（Vu）：平行于代表移动量的两条线间的实际移动量最大幅度。
波动（V300）：相对于螺纹部有效长度中任意300mm的实际移动量最大幅度.
波动（V2π）：相对于螺纹部有效长度中任意1圈（2π rad）的实际移动量最大幅度。

Nominal travel（lo）：Travel in axial direction when rotated arbitrary number of revolution according to the Nominal lead
Specified Lead（Phs）：Lead given some amount of correction to the Nominal lead in order to compensate the deformation generated due to the temperature rise or the load.
Travel compensation（c）：Difference between the Specified travel and the Nominal travel within the valid travel.
Specified travel（ls）：Travel in axial direction when rotated arbitrary number of revolution according to the Specified lead.
Actual travel（la）：Actual travel of Ball Nut in axial direction in respect to an arbitrary angle of rotation of Ball Screw Shaft.
Actual mean travel（lm）：Straight line which represents the tendency of Actual travel. It is obtained by the least square method or a simple and appropriate approximation method from the curve indicating the Valid travel of Ball Nut.
Tolerance on specified travel（ep）：Difference between the Actual mean travel and the Specified travel corresponding to the Valid travel of Ball Nut or the Useful travel of Ball Screw Shaft.
Travel variation（Vu）：Maximum width of the Actual travel curve between the two straight lines put in parallel to the Actual mean travel line, that corresponding to Valid travel of Ball Nut or Useful travel of Ball Screw Shaft.
Travel variation（V300）：Maximum width of the Actual travel curve between the two straight lines put in parallel to the Actual mean travel line, that corresponding to arbitrary 300mm taken within Useful travel of Ball Screw Shaft.
Travel variation（V2π）：Maximum width of the Actual travel curve between the two straight lines put in parallel to the Actual mean travel line, that corresponding to arbitrary one revolution（2πrad）within Useful travel of Ball Screw Shaft.

表 A-83：精密滚珠丝杠(定位用：C系列)的代表移动量误差($\pm e_p$)和波动(Vu)许用值
Table A-83：Tolerance on actual mean travel deviation ($\pm e_p$) and permissible variation of precision Ball Screws (for positioning：C series)

Unit(单位):⊠m

Accuracy Grade 精度等级			C0		C1		C3		C5	
	Over 超过	Up to 以下	$\pm e_p$	Vu	$\pm e_p$	Vu	$\pm e_p$	Vu	$\pm e_p$	Vu
Effective screw length (mm) 螺纹部有效长度 (mm)	—	100	3	3	3.5	5	8	8	18	18
	100	200	3.5	3	4.5	5	10	8	20	18
	200	315	4	3.5	6	5	12	8	23	18
	315	400	5	3.5	7	5	13	10	25	20
	400	500	6	4	8	5	15	10	27	20
	500	630	6	4	9	6	16	12	30	23
	630	800	7	5	10	7	18	13	35	25
	800	1000	8	6	11	8	21	15	40	27

表 A-84：精密滚珠丝杠(定位用：C系列)每300mm及1圈的波动(V_{300})、($V_{2\pi}$)许用值
Table A-84：Permissible travel variation V_{300}, $V_{2\pi}$ (for positioning：C series)

Unit(单位):⊠m

Accuracy grade 精度等级	C0		C1		C3		C5	
Item 项目	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$	V_{300}	$V_{2\pi}$
Permissible value 许用值	3.5	3	5	4	8	6	18	8

表 A-85：相对于300mm的Ct系列(7、10级)的波动(V_{300})
Table A-85：Permissible travel variation V_{300} for Ct series (7,10 grade)

Unit(单位):⊠m

Accuracy grade 精度等级	Ct7	Ct10
V_{300}	52	210

Ct系列(7级、10级)的代表移动量误差由下式求出。
Tolerance on actual mean travel deviation (e_p) is calculated as follows.

$$e_p = \pm \frac{lu}{300} \times V_{300}$$

lu：螺纹部有效长度(mm)
Useful travel (mm)

为了与ISO保持一致，滚珠丝杠的日本工业标准(JIS B1192)于1997年、2013进行了修订。修订后的标准制定了C系列(原JIS标准 C0、1、3、5)和Cp、Ct系列(与ISO统一的标准)的精度等级。本公司根据JIS B 1192-2013，对0、1、3、5级采用了C系列，对7、10级采用了Cp、Ct系列。

Japan Industrial Standard of Ball Screw (JIS B1192) was revised in 1997 and 2013 in order to correspond to ISO. Regarding accuracy grade, C series (current JIS C0, 1, 3, 5) and Cp, Ct series (standard corresponding to ISO) are established. KSS conforms to JIS B1192-2013 and adopts C series for 0,1,3,5 grade, Cp, Ct series for 7,10 grade.

滚珠丝杠的安装部精度
Ball Screw Run-out and location tolerances

为了与ISO保持一致，滚珠丝杠的日本工业标准(JIS B1192)于1997年、2013进行了修订。修订后的标准制定了C系列(原JIS标准 C0、1、3、5)和Cp、Ct系列(与ISO统一的标准)的精度等级。C系列和Cp、Ct系列在安装部精度的标示方法和标准值上略有不同，本公司将其统一为下图(图A-86)中的标示方法和标准值(C系列)，7级、10级参考了Cp、Ct系列的标准。

Japan Industrial Standard of Ball Screw (JIS B1192) was revised in 1997 and 2013 in order to correspond to ISO. Regarding accuracy grade, C series (current JIS C0, 1, 3, 5) and Cp, Ct series (standard corresponding to ISO) are established. There are some differences between C series and Cp, Ct series in notation and tolerances for accuracy of Ball Screw mounting section. KSS uses notation of Fig. A-86 below and standard tolerance value, which conforms to C series standard, and KSS refers to Cp, Ct series standard in case of 7 and 10 grade.

图A-86：安装部精度的填写示例
Fig. A-86：Description of Run-out and location tolerances for Ball Screws

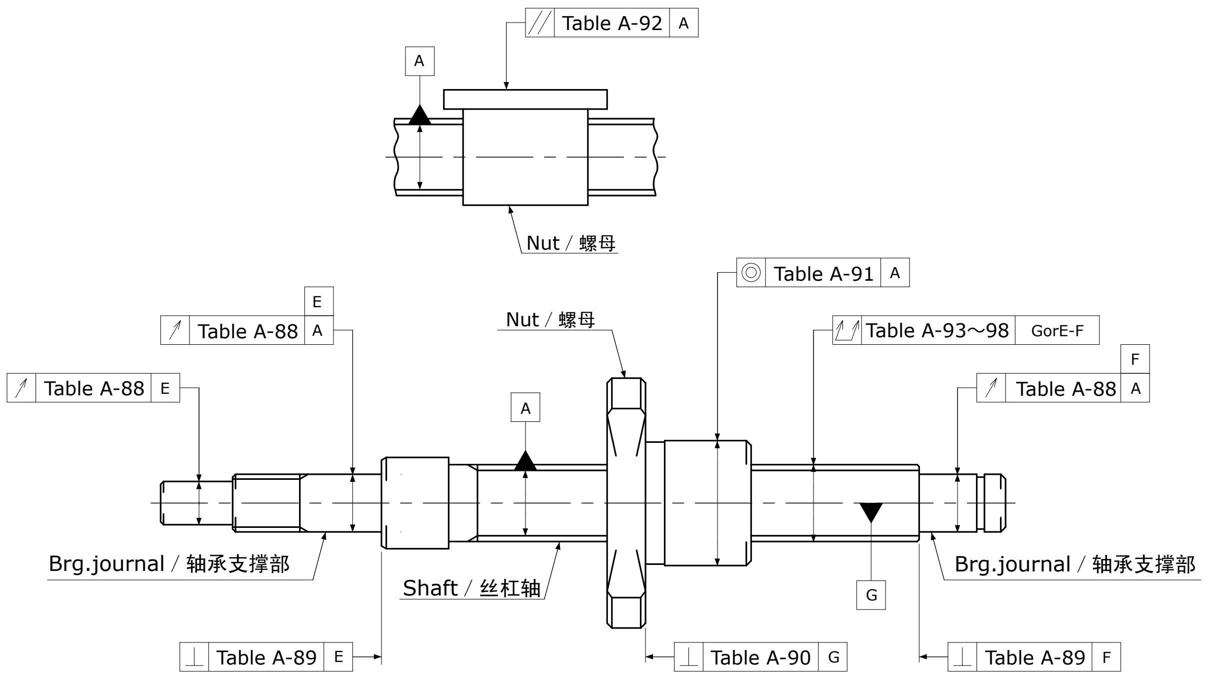


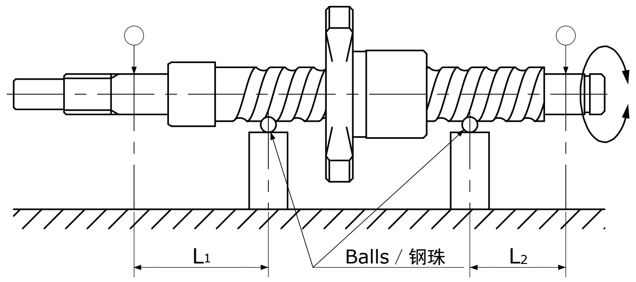
表 A-88：相对于丝杠轴螺纹槽面的支撑部外径的半径方向圆跳动
以及相对于丝杠轴支撑部轴线的零件安装部的半径方向圆跳动
Table A-88：Radial Run-out of Bearing seat related to the centerline of screw groove
and Radial Run-out of journal diameter related to the Bearing seat

Unit(单位):⊠m

Shaft nominal diameter (mm) 丝杠轴公称外径（mm）		Permissible deviation of Radial Run-out 跳动公差（最大）					
Over 超过	Up to 以下	C0	C1	C3	C5	C7	C10
—	8	3	5	8	10	14	40
8	12	4	5	8	11	14	40
12	20	4	6	9	12	14	40

在测量该项目时，由于受丝杠轴轴线全跳动的影响，因此需要进行补偿。补偿方法为，根据丝杠轴总长与支点到测量点的距离(L_1,L_2)的比值(参照图A-87)，利用第A809～A811页的表A-93～98的丝杠轴轴线的全跳动公差，求出补偿值(参照下式)，然后加上表A-88中的公差。

This measurement item is affected by Total Run-out of the Screw Shaft, and so it must be corrected as follows. Find the corrected value from the Total Run-out tolerances given in Tables A-93～98 on page A809～A811 using the ratio of the total Shaft length to the distance between the supporting point and the measuring point (L_1,L_2) (see Fig. A-87), and add the values obtained to the tolerance given in Table A-88.



图A-87：圆跳动的补正
Fig. A-87：Compensation of Radial Run-out

$$\text{圆跳动的补正} = \frac{\text{全跳动公差（表 A-93～98）}}{\text{总长}} \times \text{测量间距}(L_1\text{或}L_2)$$

$$\text{Compensation Value of Run-out} = \frac{\text{Tolerance of total Run-out (Table A-93～98)}}{\text{Total shaft length}} \times (L_1 \text{ or } L_2)$$

L_1 ,L_2：支点到测量点的距离(mm)
Distance btw supporting pt & measuring pt(mm)

表 A-89：相对于丝杠轴支撑部轴线的支撑部端面的垂直度
Table A-89：Axial Run-out (Perpendicularity) of Shaft (Bearing) face
related to the centerline of the Bearing seat

Unit(单位):⊠m

Shaft nominal diameter (mm) 丝杠轴公称外径（mm）		Permissible deviations of Axial Run-out (Perpendicularity) 垂直度公差（最大）					
Over 超过	Up to 以下	C0	C1	C3	C5	C7	C10
—	8	2	3	4	5	7	10
8	12	2	3	4	5	7	10
12	20	2	3	4	5	7	10

表 A-90：相对于丝杠轴轴线的螺母基准端面或法兰安装面的垂直度
Table A-90：Axial Run-out (Perpendicularity) of Ball Nut location face related to the centerline of Screw Shaft

Unit(单位):⊠m

Nut outside diameter (mm) 螺母外径		Permissible deviations of Axial Run-out (Perpendicularity) 垂直度公差（最大）					
Over 超过	Up to 以下	C0	C1	C3	C5	C7	C10
—	20	5	6	8	10	14	20
20	32	5	6	8	10	14	20
32	50	6	7	8	11	18	30

表 A-91：相对于丝杠轴轴线的螺母外周面(圆柱形时)的半径方向圆跳动
Table A-91：Radial Run-out of Ball Nut location diameter related to the centerline of Screw Shaft

Unit(单位):⊠m

Nut outside diameter (mm) 螺母外径		Permissible deviations of Radial Run-out 跳动公差（最大）					
Over 超过	Up to 以下	C0	C1	C3	C5	C7	C10
—	20	5	6	9	12	20	40
20	32	6	7	10	12	20	40
32	50	7	8	12	15	30	60

表 A-92：相对于丝杠轴轴线的螺母外周面(平面安装时)的平行度
Table A-92：Parallelism of rectangular Ball Nut related to the centerline of Screw Shaft

Unit(单位):⊠m

Mounting length (mm) 标准安装长度（mm）		Permissible deviations of Parallelism 平行度公差（最大）					
Over 超过	Up to 以下	C0	C1	C3	C5	C7	C10
—	50	5	6	8	10	17	30
50	100	7	8	10	13	17	30

表 A-93：丝杠轴轴线的半径方向全跳动(C0)
Table A-93：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C0)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.015	0.015	0.015
125	200	0.025	0.020	0.020
200	315	0.035	0.025	0.020
315	400	—	0.035	0.025
400	500	—	0.045	0.035
500	630	—	0.050	0.040
630	800	—	—	0.050
800	1000	—	—	0.065

表 A-94：丝杠轴轴线的半径方向全跳动(C1)
Table A-94：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C1)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.020	0.020	0.015
125	200	0.030	0.025	0.020
200	315	0.040	0.030	0.025
315	400	0.045	0.040	0.030
400	500	—	0.050	0.040
500	630	—	0.060	0.045
630	800	—	—	0.060
800	1000	—	—	0.075

表 A-95：丝杠轴轴线的半径方向全跳动(C3)
Table A-95：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C3)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.025	0.025	0.020
125	200	0.035	0.035	0.025
200	315	0.050	0.040	0.030
315	400	0.060	0.050	0.040
400	500	—	0.065	0.050
500	630	—	0.070	0.055
630	800	—	—	0.070
800	1000	—	—	0.095

表 A-96：丝杠轴轴线的半径方向全跳动(C5)
Table A-96：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C5)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.035	0.035	0.035
125	200	0.050	0.040	0.040
200	315	0.065	0.055	0.045
315	400	0.075	0.065	0.055
400	500	—	0.080	0.060
500	630	—	0.090	0.075
630	800	—	—	0.090
800	1000	—	—	0.120

Ball Scresw
滚珠丝杠
Technical description
滚珠丝杠的技术解说

表 A-97：丝杠轴轴线的半径方向全跳动(C7)
Table A-97：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C7)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.060	0.055	0.055
125	200	0.075	0.065	0.060
200	315	0.100	0.080	0.070
315	400	—	0.100	0.080
400	500	—	0.120	0.095
500	630	—	0.150	0.110
630	800	—	—	0.140
800	1000	—	—	0.170

表 A-98：丝杠轴轴线的半径方向全跳动(C10)
Table A-98：Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft(C10)

Unit(单位):mm

Shaft total length 丝杠轴总长		Shaft nominal diameter 丝杠轴公称外径		
	Over/超过	—	8	12
	Up to/以下	8	12	20
Over 超过	Up to 以下	Permissible deviations of total Run-out in radial direction 跳动公差（最大）		
—	125	0.100	0.095	0.090
125	200	0.140	0.120	0.110
200	315	0.210	0.160	0.130
315	400	—	0.210	0.160
400	500	—	0.270	0.200
500	630	—	0.350	0.250
630	800	—	0.460	0.320
800	1000	—	—	0.420

注)Ct7、Ct10规格时，有时会根据JIS B1192-2013标准，采用基于细长比的全跳动规格(下表)。

Note) In case of Ct7, Ct10 grade, KSS may use the standard of Total Run-out based on slenderness ratio, which conforms to JIS B1192-2013.

Slenderness ratio 细长比		Total Run-out 全跳动	
Over / 超过	Up to / 以下	Ct7	Ct10
—	40	0.080	0.160
40	60	0.120	0.240
60	80	0.200	0.400
80	100	0.320	0.640

细长比 / Slenderness ratio= lu/do

lu：螺纹部有效长度 / Useful travel(mm)
do: 丝杠轴公称外径 / Nominal diametor of Ball Screw(mm)

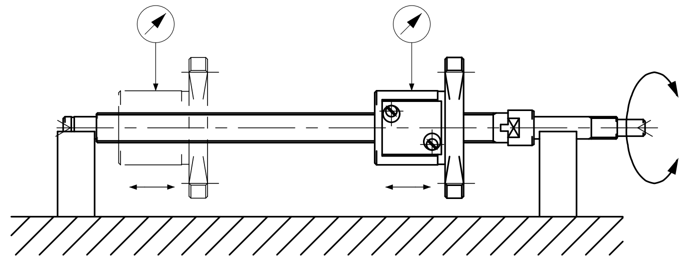
滚珠丝杠安装部精度的测量方法
Measuring method of Ball Screw Run-out and location tolerances

●相对于丝杠轴螺纹槽面的支撑部外径的半径方向圆跳动（表 A-88）

用V形块支撑丝杠轴两端，一边使丝杠轴旋转，一边读取测量头接触螺母外周面的千分表刻度。测量作业在支撑部附近的2处进行。此外，直接用千分表测量支撑部外径时，用两个中心孔支撑丝杠轴进行测量。

●Radial Run-out of Bearing seat related to the centerline of screw groove（Table A-88）

Place the Ball Screw in identical V-blocks at both Bearing seat. Place the dial gauge perpendicular to the Nut cylindrical surface. Rotate Screw Shaft slowly and record the dial gauge readings. Measurement should be done at near both ends of threaded part. Some cases, this measurement will be done by both centerhole support, and directly measured on Bearing seat.

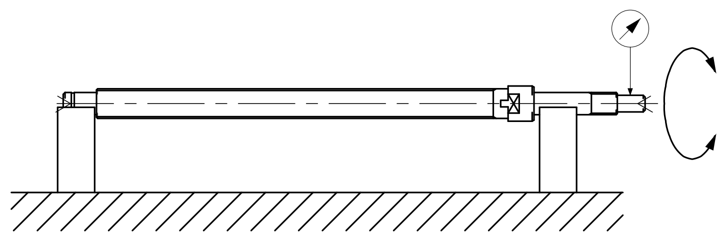


●相对于丝杠轴支撑部轴线的零件安装部的半径方向圆跳动（表A-88）

用V形块支撑丝杠轴两端，一边使丝杠轴旋转，一边读取测量头接触零件安装部的千分表刻度。

●Radial Run-out of journal diameter related to the Bearing seat（Table A-88）

Place the Ball Screw in identical V-blocks at both Bearing seats. Place the dial gauge perpendicular to the journal cylindrical surface. Rotate the Screw Shaft slowly and record the dial gauge readings.



●相对于丝杠轴支撑部轴线的支撑部端面的垂直度（表 A-89）

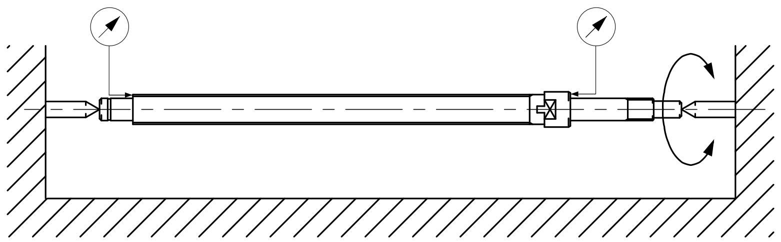
用两个中心孔支撑丝杠轴两端，一边使丝杠轴旋转，一边读取测量头接触支撑部端面的千分表刻度。

**图纸中的标示以支撑部外周面为基准，但由于支撑部外周面以中心孔为基准进行了加工，因此与用V形块支撑支撑部外周面时相同。

●Axial Run-out（Perpendicularity）of shaft（Bearing）face related to the centerline of the Bearing seat（Table A-89）

Support a Screw Shaft at both centers. Place the dial gauge perpendicular to the end face of the journal. Rotate the Screw Shaft slowly and record the dial gauge readings.

**This method is equivalent to the one, which is supported at both Bearing seats, because Bearing seats are ground related to both centers.

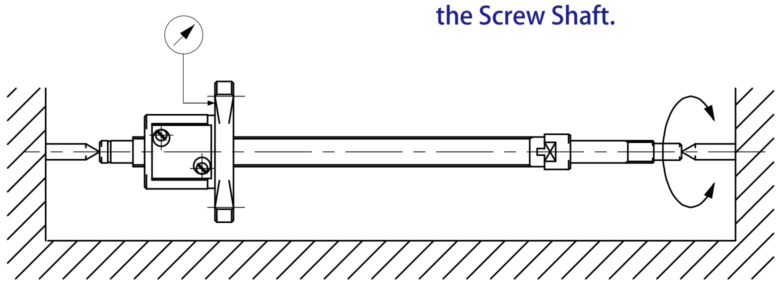


●相对于丝杠轴轴线的螺母基准端面或法兰安装面的垂直度（表 A-90）

用两个中心孔支撑丝杠轴两端，一边使轴与螺母一起旋转，一边读取测量头接触螺母法兰端面的千分表刻度。

●Axial Run-out (Perpendicularity) of Ball Nut location face related to the centerline of Screw Shaft (Table A-90)

Support the Ball Screw at both centers. Place the dial gauge perpendicular to the flange face. Rotate the Screw Shaft with Ball Nut slowly and record the dial gauge readings. Secure the Ball Nut against rotation on the Screw Shaft.

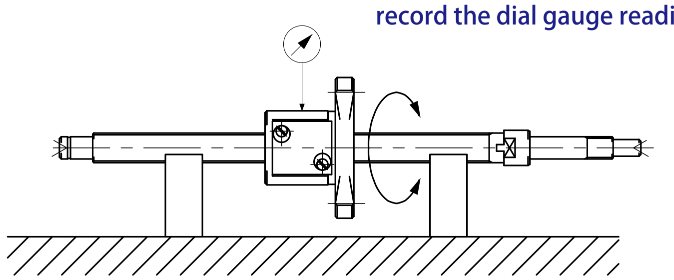


●相对于丝杠轴轴线的螺母外周面的半径方向圆跳动（表 A-91）

用V形块支撑丝杠轴螺母附近的外周面，一边使螺母旋转，一边读取测量头接触螺母外周面的千分表刻度。

●Radial Run-out of Ball Nut location diameter related to the centerline of Screw Shaft (Table A-91)

Place the Ball Screw on V-blocks at adjacent sides of the Ball Nut. Place the dial gauge perpendicular to the cylindrical surface of Ball Nut. Secure the Screw Shaft against rotation of Ball Nut. Rotate Ball Nut slowly and record the dial gauge readings.

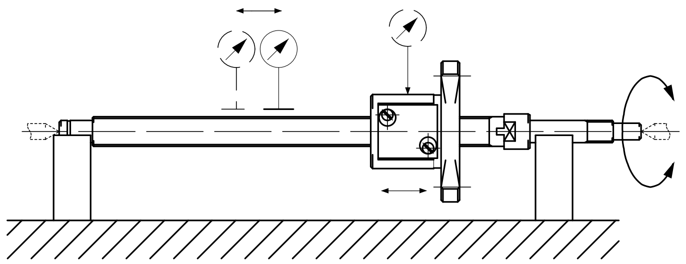


●丝杠轴轴线的半径方向全跳动（表 A-93～98）

用两个中心孔或V形块支撑丝杠轴两端，一边使丝杠轴旋转，一边读取测量头接触丝杠轴外周面或螺母外周面的千分表刻度。测量作业含整个范围，选多处进行。

●Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft (Table A-93～98)

Place the Ball Screw in identical V-blocks at both Bearing seats, or support the Ball Screw at both centers. Place the dial gauge with measuring shoe at the several points over the full thread length.Rotate the Screw Shaft slowly and record the dial gauge readings. Maximum value of measurement should be the Total Run-out.



材质和热处理、硬度
Material and Heat treatment, Surface hardness

KSS滚珠丝杠的标准材质、热处理和硬度如表A-99、100所示。表中数值可能会因系列及型号不同而略有差异，请参照本公司出示的规格图。

Standard material of KSS Ball Screws, Heat treatment and Surface hardness are shown in table A-99, 100. However, they vary depending on series or model number. Please refer to KSS drawings.

表 A-99：一般产品的材质和热处理、硬度
Table A-99：Material, Heat treatment & Surface hardness for regular items

	Material 材质	Heat treatment 热处理	Surface hardness 表面硬度
Screw Shaft 丝杠轴	SCM415	Carburizing and quenching 渗碳淬火	HRC 58-62
Nut 螺母	SCM415	Carburizing and quenching 渗碳淬火	HRC 58-62

注）表中所示硬度为滚珠丝杠部的表面硬度。
Note）Hardness on table shows surface hardness of thread part.

表 A-100：不锈钢产品的材质和热处理、硬度
Table A-100：Material, Heat treatment & Surface hardness for stainless steel items

	Material 材质	Heat treatment 热处理	Surface hardness 表面硬度
Screw Shaft 丝杠轴	SUS440C	Quenching and tempering 淬火、回火	HRC min.55 HRC 55以上
Nut 螺母	SUS440C	Quenching and tempering 淬火、回火	HRC min.55 HRC 55以上

注）表中所示硬度为滚珠丝杠部的表面硬度。
Note）Hardness on table shows surface hardness of thread part.

许用轴向负载
Permissible Axial load

建议尽量在有拉伸负载作用于丝杠轴的条件下使用。但根据使用条件，可能会有压缩负载作用，此时应避免丝杠轴发生压曲。
尤其在安装间距较小时，无论采用何种安装方法，都会受到许用拉伸应力或压缩负载及基本额定静负载Coa的限制。
压曲负载、许用拉伸和许用压缩负载可用下式求出。

It is recommended that Ball Screw Shafts be used almost exclusively under tension load conditions. However, in some applications, compression loads may exist, and under such conditions it must be determined that Shaft buckling will not occur.
Also, when the mounting span distance is short, there is a restriction on the permissible tension or compression load and the Basic Static Load Rating Coa unrelated to mounting.
Buckling load, permissible tension and permissible compression load can be calculated below.

●相对于压曲的许用压缩负载的计算公式
Permissible compression load calculation for buckling

$$P = \alpha \times \frac{n\pi^2 E \cdot I}{L^2} \quad N\{kgf\}$$ 欧拉公式（Formula for Oiler）

α：安全系数（Safety Factor）0.5
E：杨氏模量（Young's modulus） 2.08×10^5 N/mm²（MPa）{21,200kgf/mm²}
I：丝杠轴截面的最小惯性矩（Screw Shaft minimum moment of inertia of area）

$$I = \frac{\pi}{64} d^4 \quad mm^4$$

d：丝杠轴底径（Screw Shaft Root diameter） mm
L：安装间距（Mounting span distance） mm
n：取决于滚珠丝杠安装方法的系数（Factor for Ball Screw mounting method）

支撑-支撑（Supported－Supported）	n=1
固定-支撑（Fixed－Supported）	n=2
固定-固定（Fixed－Fixed）	n=4
固定-自由（Fixed－Free）	n=1/4

●相对于丝杠轴屈服应力的许用拉伸、压缩负载的计算公式
Permissible tension, compression load calculation for Screw Shaft yield stress

$$P = \sigma \times A \quad N\{kgf\}$$

σ：许用应力（Permissible stress） 98N/mm²（MPa）{10kgf/mm²}
A：丝杠轴的最小截面积（Screw Shaft minimum section area）

$$A = \frac{\pi}{4} d^2 \quad mm^2$$

d：丝杠轴底径（Screw Shaft Root diameter） mm

许用转速
Permissible speed

丝杠轴的安装方法决定了旋转丝杠轴的极限转速。转速接近极限值时会引起共振，导致丝杠轴无法运行。
此外，无论采用何种安装方法，滚珠丝杠都存在会导致循环部损坏的极限转速。

For Screw Shaft rotation, the mounting method determines the established rotation limits. When this value is approached, resonance phenomenon can occur, and operation becomes impossible. There is also rotation limit which causes damages to recirculating parts. This limit is unrelated to mounting methods.

●相对于临界速度的许用转速的计算公式
Permissible speed calculation for critical speed

$$N = \beta \times \frac{60 \cdot \lambda^2}{2\pi} \times \sqrt{\frac{E \cdot I \cdot g}{\gamma \cdot A \cdot L^4}} \quad min^{-1}\{rpm\}$$

β：安全系数（Safety Factor）0.8
E：杨氏模量（Young's modulus） 2.08×10^5 N/mm²（MPa）{21,200kgf/mm²}
I：丝杠轴截面的最小惯性矩（Screw Shaft minimum moment of inertia of area）

$$I = \frac{\pi}{64} d^4 \quad mm^4$$

d：丝杠轴底径（Screw Shaft Root diameter） mm
g：重力加速度（Gravity acceleration） 9.8×10^3 mm/sec²
γ：材料的比重（Material specific gravity） 7.7×10^{-5} N/mm³ {7.85×10^{-6}kgf/mm³}
L：安装间距（Mounting span distance） mm
A：丝杠轴的最小截面积（Screw Shaft minimum section area）

$$A = \frac{\pi}{4} d^2 \quad mm^2$$

λ：取决于滚珠丝杠安装方法的系数（Factor for Ball Screw mounting method）

支撑-支撑（Supported－Supported）	λ = π
固定-支撑（Fixed－Supported）	λ = 3.927
固定-固定（Fixed－Fixed）	λ = 4.730
固定-自由（Fixed－Free）	λ = 1.875

●相对于循环部损坏的极限转速

关于相对于循环部损坏的极限转速，一般多根据滚珠丝杠的钢珠速度dn值（丝杠轴公称外径×转速）来设定上限值，但对于像KSS滚珠丝杠这样的微型滚珠丝杠，dn值则不适用。KSS滚珠丝杠的循环部损坏极限转速为3,500～4,000rpm左右。该数值会因使用条件及环境而异，详情请垂询本公司。

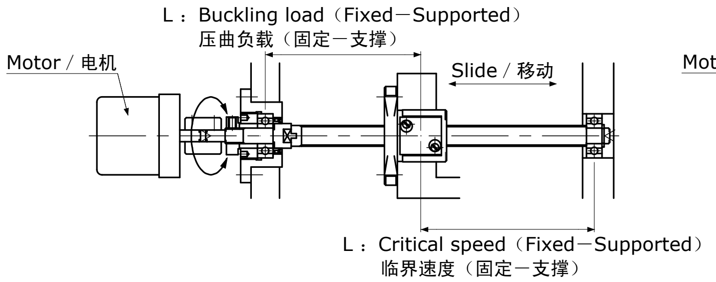
●Rotation limits for damage on recirculating parts

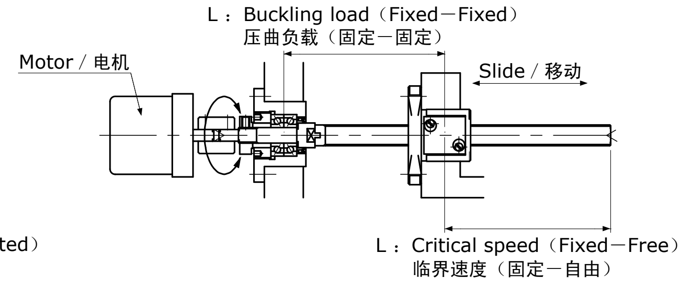
Generally, regarding critical speed for damage on recirculating parts, limitation is established by dn value, which is multiplied Shaft nominal diameter of revolution, but dn value cannot be applied to Miniature Ball Screws. For KSS Ball Screws, please consider rotation limits by damage on recirculating parts as 3,500 to 4,000rpm. This value varies depending on operating conditions and environment. Please inquire KSS for details.

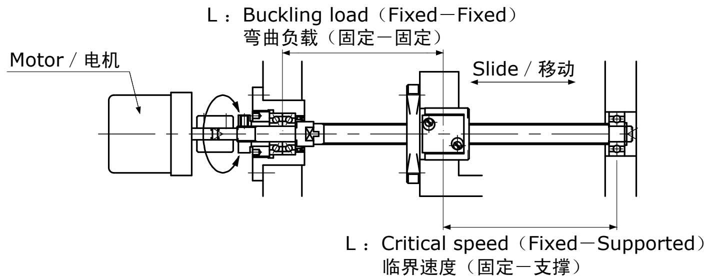
滚珠丝杠的安装方法
Ball Screw mounting methods

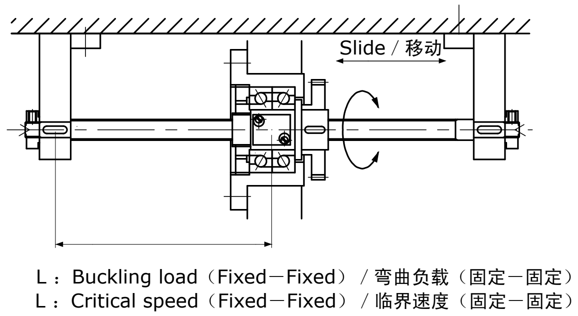
滚珠丝杠的典型安装方法如图A-101所示。由于安装方法会影响相对于压曲负载、以及相对于临界速度的许用转速，因此请在设计强度和转速时予以考虑。

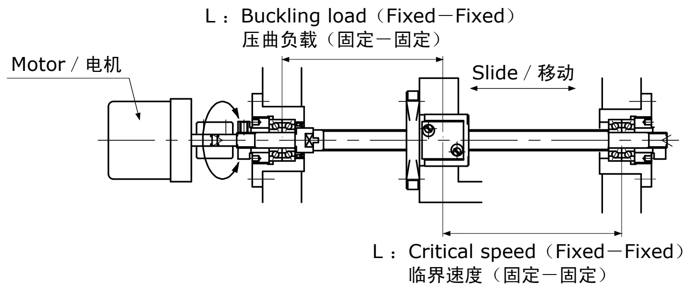
Typical Ball Screw's mounting methods are shown in Fig. A-101. Mounting configuration affects permissible Axial load in relation to buckling, as well as permissible speed in relation to critical speed. Please refer to below when studying strength and speed.

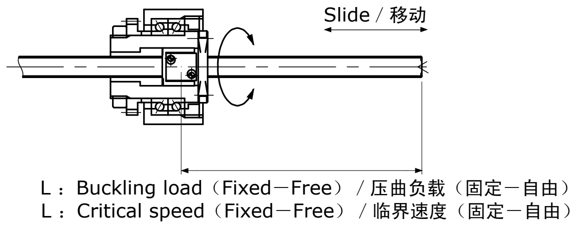


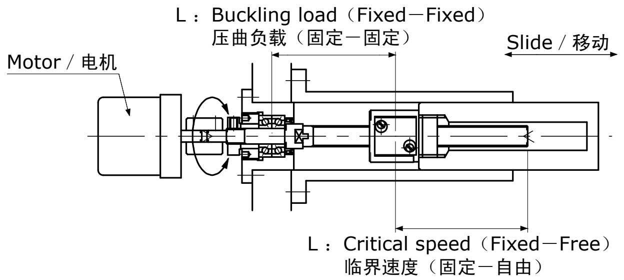












图A-101：滚珠丝杠的安装方法
Fig. A-101：Ball Screw mounting methods

轴向间隙和预压
Axial play and Preload

通常，普通的单螺母滚珠丝杠的丝杠轴和螺母之间存在微小的轴向间隙。因此，当单螺母滚珠丝杠上有轴向负载作用时，上述轴向间隙和轴向负载所产生的弹性位移量的和就会导致间隙变大，形成齿隙。为消除这样的齿隙，应使滚珠丝杠的轴向间隙为负，即采用预先向丝杠轴和螺母间施加弹性变形，也就是"预压"的方法。

For standard Single Nut Ball Screws under normal conditions, a slight Axial play exists between the Screw Shaft and Nut. Consequently, when Axial loads act on Single Nut Ball Screws, total amount of Axial play and Elastic displacement due to Axial load becomes backlash. In order to prevent this backlash in Ball Screws, the Axial play can be reduced to a negative value. That is what we call "Preload", which is the method of causing Elastic deformation to the Balls between the Screw Shaft and Nut in advance.

●轴向间隙

KSS滚珠丝杠的间隙符号和轴向间隙的许用值如表A-102所示。
滚珠丝杠的精度等级和间隙符号的组合如表A-103所示。

●Axial play

Symbol and permissible value for Axial play are shown in Table A-102.
Combination of accuracy grade and symbol are shown in Table A-103.

表 A-102：间隙符号和轴向间隙的许用值
Table A-102：Symbol and permissible value for Axial play

Unit（单位）：mm

Symbol 间隙符号	0	02	05	20	50
Axial play 轴向间隙	0 （Preloading） 0（预压）	0.002 max. 0.002以下	0.005 max. 0.005以下	0.02 max. 0.02以下	0.05 max. 0.05以下

表 A-103：精度等级和间隙符号的组合
Table A-103：Combination of accuracy grade and Axial play

Symbol 间隙符号 / Accuracy grade 精度等级	0	02	05	20	50
C0	C0-0	—	—	—	—
C1	C1-0	C1-02	—	—	—
C3	C3-0	C3-02	C3-05	C3-20	C3-50
C5	—	—	C5-05	C5-20	C5-50
C7	—	—	—	C7-20	C7-50
C10	—	—	—	C10-20	C10-50

注）希望采用上述以外的组合时，请垂询本公司。
Note）When combinations other than the above are requested, please inquire KSS.

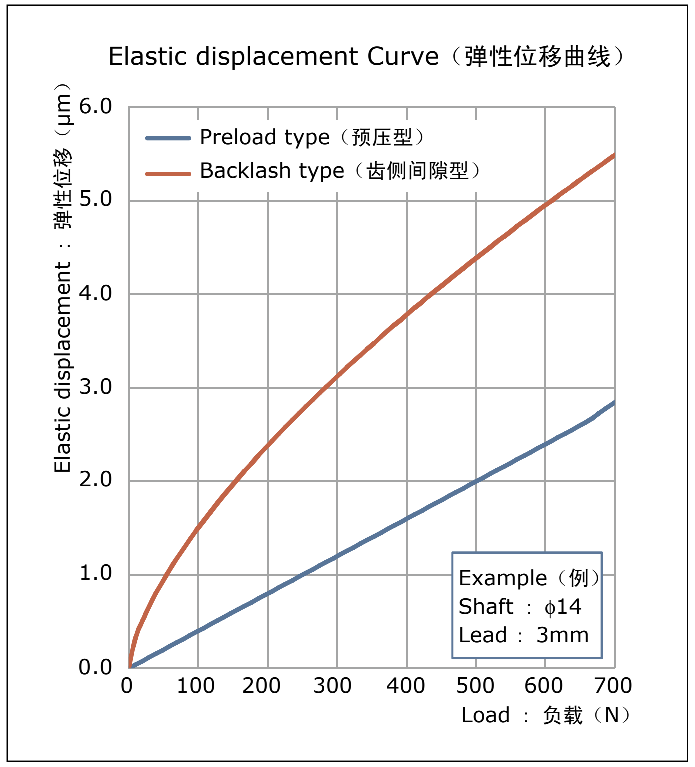
●预压的效果

使用预压，不仅可以消除滚珠丝杠的轴向间隙，还可减少由轴向负载引起的轴向位移量，提高刚性。
图A-104表示间隙规格滚珠丝杠和预压（无间隙）规格滚珠丝杠的轴向负载引起的弹性位移量的不同（理论值）。可以看出，通过预压，可减少（刚性提高）弹性位移量。

●Preload effect

Preload is not only used for removing Axial play, it also has the effect of reducing the amount of Axial displacement due to Axial load, and improving the Rigidity in Ball Screws. Fig. A-104 shows the difference of the amount of Elastic displacement (theoretical value) regarding Ball Screw with Axial play and Ball Screw with Preload under the Axial load.

图A-104：间隙规格和预压规格的弹性位移曲线
Fig. A-104：Elastic displacement curve comparison between Backlash type and Preload type



●适当的预压量

预压量应该由所需刚性或许用齿侧间隙决定，但施加预压后，可能会产生以下影响：
1）动扭矩增大
2）因发热、温度上升而导致定位精度降低
3）缩短使用寿命
因此，应尽可能设定较低的预压量。

●Proper amount of Preload

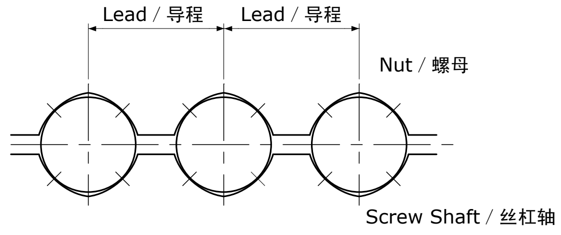
Although the amount of Preload should be determined by the required Rigidity and the permissible amount of backlash, when setting Preload, there are some concerning issues as follows.
1）Increased Dynamic Drag Torque
2）Heat generation lowering of positioning accuracy due to the temperature rise.
3）Shortened life
Therefore, it is advisable to establish the amount of Preload at the lowest possible limits.

●预压的方法

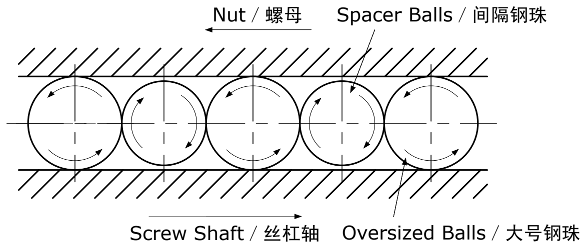
滚珠丝杠一般采用在2个螺母之间插入隔片（填隙片）的预压方法，即双螺母预压法。KSS滚珠丝杠充分发挥微型滚珠丝杠的特点，采用插入略微大于丝杠轴和螺母间隙的钢珠的预压方法、即"大号钢珠预压"法。利用该方法，只需1个螺母即可完全消除间隙，可保持紧凑结构。另外，通过每隔一处使用间隔钢珠（略小于施加预压的大号钢珠），避免了动作性能下降。

●Preload methods

Generally, a method of Double Nut Preload by inserting a spacer between two Nuts is adopted. KSS Ball Screw adopts「Oversized Ball Preload」by inserting Balls slightly bigger than space between Screw Shaft and Nut. As a result, it can eliminate Axial play even with a Single Nut and it is possible to maintain compact. Moreover, operating performance will never be deteriorated by using spacer Balls (Balls with slightly smaller diameter than those of the oversize Balls) alternatively with oversize Balls.



图A-105：使用大号钢珠的预压状态
Fig. A-105：Preload by oversized Balls



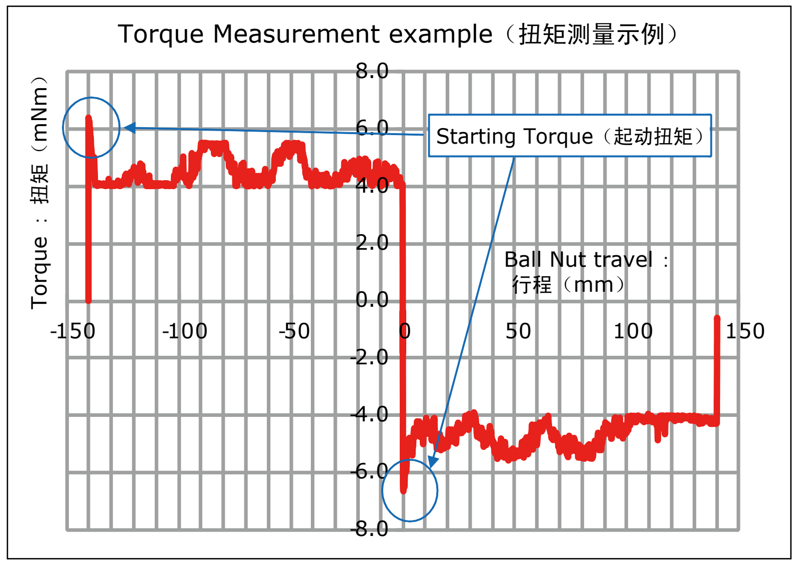
图A-106：间隔钢珠
Fig. A-106：Spacer Balls

●预压的管理方法

直接测量并管理滚珠丝杠的预压量相当困难。因此，通常将滚珠丝杠的预压换算成预压动扭矩，通过测量该动扭矩来管理预压。预压动扭矩的值标示在规格图中，与客户协商决定。为了管理预压量（轴向间隙必须为0），预压动扭矩始终在一定的条件下进行测量。因此，润滑条件及使用条件的不同的机械会导致动扭矩产生差异，敬请注意。此外，起动扭矩（驱动滚珠丝杠时的扭矩）会略大于动扭矩，敬请注意。

●Preload control

It is difficult to control Preload amount by measuring. Therefore, Preload of Ball Screw is controlled by measuring Preload Dynamic Drag Torque, which is converted from Preload amount. Amount of Preload Dynamic Drag Torque is decided with customers by specification drawing. Preload Dynamic Drag Torque is measured under specific condition to verify the amount of Axial play is 0. Dynamic Drag Torque installed actual machine will vary depending on lubricating condition, load condition and so on. Starting torque (Torque for starting Ball Screw) is slightly bigger than Dynamic Drag Torque.



*为便于说明，图中所示的扭矩波动比实际有所夸大。
*Torque wave in this diagram is exaggerated for explanation.

图A-107：动扭矩测量示例
Fig. A-107：Dynamic Drag Torpue measurement

进给丝杠轴系统的刚性
Rigidity in feed screw system

在精密机械中，为了提高进给丝杠的定位精度、增强抗负载刚性，必须对进给丝杠轴系统整体的刚性进行探讨。
进给丝杠轴系统的刚性如下所示。

In precision machinery, to improve positioning accuracy of the feed screws or to increase Rigidity for load, the Rigidity of the entire feed screw system must be examined. Feed screw system Rigidity is as follows.

$$\frac{1}{K} = \frac{1}{K_1} + \frac{1}{K_2} + \frac{1}{K_3} + \frac{1}{K_4} \qquad \mu m/N\ \{\mu m/kgf\}$$

K ：进给丝杠轴系统整体的刚性(Total Rigidity of feed screw system)　N/μm {kgf/μm}
K_1 ：丝杠轴的刚性(Screw Shaft Rigidity)　N/μm {kgf/μm}
K_2 ：螺母的刚性(Nut Rigidity)　N/μm {kgf/μm}
K_3 ：支撑轴承的刚性(Support Bearing Rigidity)　N/μm {kgf/μm}
K_4 ：螺母和轴承安装部的刚性(Nut, Bearing fitting part Rigidity)　N/μm {kgf/μm}

●进给丝杠轴系统整体的刚性　Total Rigidity of feed screw system　K

$$K = \frac{Fa}{\delta} \qquad N/\mu m\ \{kgf/\mu m\}$$

Fa ：进给丝杠轴系统承受的轴向负载　N {kgf}
(Axial load applied to feed screw system)
δ ：进给丝杠轴系统的弹性位移量　μm
(Elastic displacement of feed screw system)

●丝杠轴的刚性　Screw Shaft Rigidity　K_1

(1) 普通安装时(轴向为固定—自由时)(图A-108)
In case of general mounting (Fixed-Free in axial direction) (Fig. A-108)

$$K_1 = \frac{A \cdot E}{r} \times 10^{-3} \qquad N/\mu m\ \{kgf/\mu m\}$$

(2) 两端固定时(图A-109)
In case of Fixed-Fixed mounting in axial direction (Fig. A-109)

$$K_1 = \frac{A \cdot E \cdot L}{r\ (L-r)} \times 10^{-3} \qquad N/\mu m\ \{kgf/\mu m\}$$

r＝L/2时将产生最大轴向位移，刚性如下所示。
The max. axial displacement occurs when r ＝ L/2. The formula is as follows.

$$K_1 = \frac{4 \cdot A \cdot E}{L} \times 10^{-3} \qquad N/\mu m\ \{kgf/\mu m\}$$

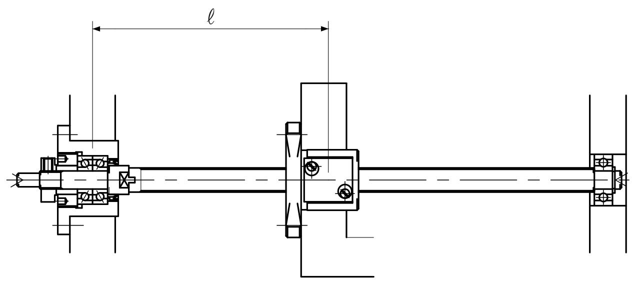
A：丝杠轴的最小截面积(Screw Shaft minimum section area)

$$A = \frac{\pi}{4} d^2 \quad mm^2$$

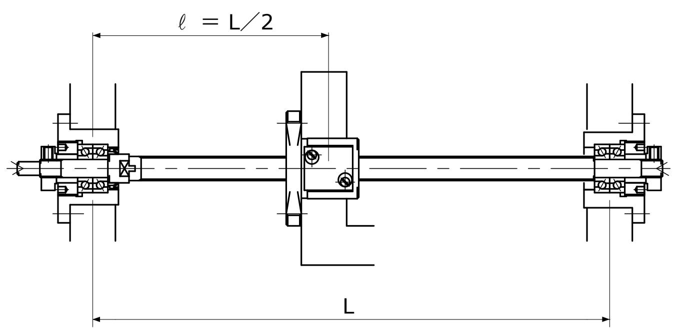
d：丝杠轴底径(Screw Shaft Root diameter)　mm
E：杨氏模量(Young 's modulus)　2.08×10^5 N/mm² (MPa) {21,200kgf/mm²}
l：轴向固定点和螺母中央的距离(Axial distance between fixed point & Nut center)　mm
L：安装间距(Mounting span distance)　mm

因此，因轴向负载Fa引起的丝杠轴弹性位移量δ可由下式求出。
Accordingly, the amount of Screw Shaft Elastic displacement δ due to Axial load Fa is as follows.

$$\delta = \frac{Fa}{K_1} \qquad \mu m$$



图A-108：轴向为固定—自由时
Fig. A-108：Fixed-Free in axial direction



图A-109：两端固定时
Fig. A-109：Fixed-Fixed in axial direction

●螺母的刚性　K_2

（1）单螺母间隙规格的刚性

基本额定动负载Ca的30%的轴向负载作用时，螺母的理论静刚性值K_2请见“尺寸表”。轴向负载非基本额定动负载Ca的30%时，请用下式计算。关于尺寸表中未标出的型号的理论静刚性值，请垂询本公司。

●Nut Rigidity　K_2

(1) Rigidity of Single Nut with backlash

The theoretical static Rigidity K_2 of the Nut under an Axial load equivalent to 30% of the Basic Dynamic Load Rating Ca is described in dimension table. For Axial loads which are not 30% of the Basic Dynamic Load Rating Ca, please use the following formula. Please inquire KSS regarding theoretical Static Rigidity of model types which are not in dimension table.

$$K'_2 = K_2 \times \left(\frac{Fa}{0.3Ca}\right)^{1/3} \quad \mathrm{N/\mu m\ \{kgf/\mu m\}}$$

K_2：尺寸表中标出的螺母刚性值（Nut Rigidity in dimension table）　N/μm {kgf/μm}
Fa：轴向负载（Axial load）　N {kgf}
Ca：基本额定动负载（Basic Dynamic Load Rating）　N {kgf}

（2）预压规格（零间隙规格）的刚性

施加相当于基本额定动负载Ca的5%（双螺母为10%）的预压负载时的螺母理论静刚性值K_2请见“尺寸表”。预压负载与上述不同时，可用下式计算，预压规格（零间隙规格）时，刚性值还会因预压动扭矩而变化。详情请垂询本公司。如有需要，本公司可为您计算尺寸表中未标出的型号的理论静刚性值。

(2) Rigidity of preloaded Ball Nut

The theoretical static Rigidity K_2 under a Preload equivalent to 5% (10% for Double Nut) of the Basic Dynamic Load Rating Ca is described in dimension table. For Preload amounts other than the above, please use the following formula. In case of Preload type Ball Screws, Rigidity varies depending on the dispersion of Preload Dynamic Drag Torque. Therefore, please inquire KSS for details. KSS will calculate theoretical Static Rigidity of required Nut models, which are not in the dimension table.

单螺母预压规格（Single Nut with oversized Ball Preload）

$$K'_2 = K_2 \times \left(\frac{Ga}{0.05Ca}\right)^{1/3} \quad \mathrm{N/\mu m\ \{kgf/\mu m\}}$$

K_2：尺寸表中标出的螺母刚性值（Nut Rigidity in dimension table）　N/μm {kgf/μm}
Ga：预压负载（Preload amount）　N {kgf}
Ca：基本额定动负载（Basic Dynamic Load Rating）　N {kgf}

●支撑轴承的刚性　K_3

支撑轴承的刚性因所用轴承及其预压量而异，详情请洽询轴承制造商。

●Support Bearing Rigidity　K_3

Support Bearing Rigidity varies depending on the type of Bearing and amount of Preload. Please inquire Bearing manufacturers.

●螺母和轴承安装部的刚性　K_4

螺母安装部及轴承安装部等的刚性因装置的结构和设计而异，本公司未作具体规定，请尽量采用高刚性设计。

●Nut, Bearing fitting part Rigidity　K_4

Rigidity of Nut mounting part and Bearing mounting part vary depending on machine structure and design. KSS cannot mention the details but a design of high Rigidity must be considered.

●丝杠轴的扭曲刚性

与轴向位移相比，扭曲造成的定位误差值很小，需要考虑时，可由下式求出。

●Screw Shaft torsion Rigidity

For positioning error due to torsion, this error is a relatively small compared to axial displacement. However, if investigation is required, the following formula may be used for calculation.

$$\theta = \frac{32TL}{\pi G d^4} \times \frac{180}{\pi} \times 10 \quad \mathrm{deg}$$

θ：扭力矩引起的扭曲角（Torsion angle due to torsion moment）　deg
T：扭力矩（Torsion moment）　N•cm {kgf•cm}
L：螺母与轴端支撑部的距离（Distance between Nut & Shaft end support）　mm
G：切变模量（Modulus of Rigidity）　8.3×10^4 N/mm² (MPa) {8,500 kgf/mm²}
d：丝杠轴底径（Screw Shaft Root diameter）　mm

因扭曲角而引起的轴向位移量δa如下所示。

Amount of axial displacement δa due to torsion angle is as follows.

$$\delta a = r \times \frac{\theta}{360} \times 10^3 \quad \mathrm{\mu m}$$

r：导程（Lead）　mm

基本额定负载和基本额定寿命
Basic Load Rating and Basic Rating Life

●基本额定动负载Ca与基本额定寿命

滚珠丝杠的额定寿命是指一组相同的滚珠丝杠在相同的条件下运行时，其中90%的滚珠丝杠的滚珠槽及滚珠表面没有因滚动接触而导致疲劳剥落的状态下的总转数。基本额定动负载Ca是指额定寿命为100万转的轴向负载，该值以Ca标记在尺寸表中。滚珠丝杠的额定寿命L_{10}可利用该基本额定动负载Ca的值，通过下式推算。

●Basic Dynamic Load Rating Ca and Basic Rating Life

The Basic Rating Life of Ball Screws means the total number of revolutions which 90% of the Ball Screws can endure. Failure is indicated by flaking caused by rolling fatigue on the surface of grooves or Balls. These figures are valid when a group of the same type Ball Screws are operated individually under the same conditions. The Basic Dynamic Load Rating Ca is the Axial load for which the Basic Rating Life is 1,000,000 revolutions. These values are listed under Ca in the dimension tables. Ball Screw's Basic Rating Life L_{10} can be estimated using Basic Dynamic Load Rating Ca in the following formula.

$$L_{10}=\left(\frac{Ca}{f\cdot Fa}\right)^3\times10^6\quad \text{rev}$$

不用总转数而用时间L_{10h}或行走距离L_{10d}来表示额定寿命时，可通过以下公式计算。

Also, in place of the total number of revolutions, the Basic Rating Life can be expressed in hours：L_{10h} or traveled distance：L_{10d}, and these can be calculated through the following formulas.

$$L_{10h}=\left(\frac{1}{60\cdot N}\right)\times L_{10}\quad \text{时间(hours)}$$

$$L_{10d}=\left(\frac{r}{10^6}\right)\times L_{10}\quad \text{km}$$

Ca：基本额定动负载(Basic Dynamic Load Rating) N{kgf}
Fa：轴向负载(Axial load) N{kgf}
N ：转速(Revolution) min^{-1} {rpm}
r：导程(Lead) mm
f ：负载系数(Load factor)
f=1.0～1.2　几乎无振动、无冲击时
(for almost no vibration, no shock condition)
f=1.2～1.5　稍有振动、冲击时
(for slight vibration, shock condition)
f=1.5～3.0　有强烈振动、冲击时
(for severe vibration, shock condition)

一般情况下，作用于设备的轴向负载并不固定，其运行方式可分为几种。此时，可通过下式求出平均轴向负载Fam、平均转速N_m，然后算出额定寿命。

Generally, Axial load on the most machine is not constant and it can be divided into several operating pattern. In this case, Basic Rating Life can be calculated to figure up average Axial load Fam, average Revolution N_m in the following formula.

Axial load 轴向负载 N{kgf}	Revolution 转速 min^{-1} {rpm}	Working time 使用时间 %
Fa_1	N_1	t_1
Fa_2	N_2	t_2
Fa_3	N_3	t_3

$$Fam=\left(\frac{Fa_1^3\cdot N_1\cdot t_1+Fa_2^3\cdot N_2\cdot t_2+Fa_3^3\cdot N_3\cdot t_3}{N_1\cdot t_1+N_2\cdot t_2+N_3\cdot t_3}\right)^{1/3}\quad N\{kgf\}$$

$$N_m=\frac{N_1\cdot t_1+N_2\cdot t_2+N_3\cdot t_3}{t_1+t_2+t_3}\quad min^{-1}\ \{rpm\}$$

此外，轴向负载呈直线变化时的平均轴向负载Fam也可通过下式近似求出。

Also, for Axial loads which vary linearly, the average Axial load Fam can be calculated approximately using the following formula.

$$Fam=\frac{Fa\ min+2\cdot Fa\ max}{3}\quad N\{kgf\}$$

Fa min：最小轴向负载(Minimum Axial load)　N {kgf}
Fa max：最大轴向负载(Maximum Axial load)　N {kgf}

注)滚珠丝杠寿命的计算公式以润滑状态良好、无异物混入为前提，且是在无力矩负载以及径向负载作用的纯轴向负载下的计算公式。

Note) As the Basic Rating Life varies due to lubricating conditions, and contaminations, Moment load or Radial load, etc., this should be considered a rough estimate only.

●基本额定静负载Coa

基本额定静负载Coa是指在承受最大应力的接触部，使钢珠的滚动面和钢珠的永久变形量的和为钢珠直径的1/10000的轴向静止负载。该值以Coa标记于尺寸表中。该基本额定静负载Coa的值用于探讨静止状态或转速非常低(10rpm以下)时的负载条件。上述的永久变形量在多数情况下不影响使用。此时，螺纹槽部的最大许用负载Fa max可由下式求出。

●Basic Static Load Rating Coa

The Basic Static Load Rating Coa is the Axial Static load at which the amount of permanent deformation (Ball + Raceway) occurring at the maximum stress contact point between the Ball and Raceway surfaces is 1/10,000 times the Ball diameter. These values are listed under Coa in the dimension tables. The Basic Static Load Rating Coa values apply to investigation of stationary state or extremely low Revolution load conditions (less than 10 rpm). However, in most cases the amount of permanent deformation causes absolutely no problems under the general conditions. The maximum permissible load Fa max for the screw groove can be found by using the following formula.

$$Fa\ max=\frac{Coa}{fs}\quad N\{kgf\}$$

fs：静态安全系数(Static safety factor)
fs=1～2　正常运行时 (for normal operation)
fs=2～3　有振动、冲击时(for vibration, shock)

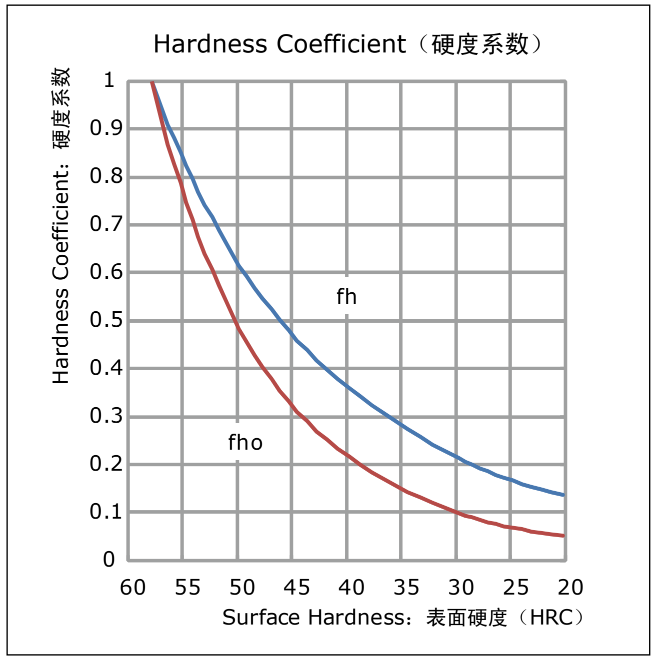
●硬度系数　Hardness coefficient

表面硬度小于HRC58时，需要对基本额定动负载Ca和基本额定静负载Coa进行补偿。通过下式进行补偿。

For Surface hardness of less than HRC58, the Basic Dynamic Load Rating Ca and the Basic Static Load Rating Coa must be adjusted. Adjustment is made by the following formula.

$$Ca'=fh\cdot Ca\quad (N)$$
$$Coa'=fho\cdot Coa\quad (N)$$

fh, fho：硬度系数(右图)
Hardness coefficient(See graph right)



驱动扭矩
Driving Torque

进给丝杠系统的驱动扭矩T由下式求出。

The feed screw system Driving Torque T is expressed according to the following formula.

$$T=T_1+T_2+T_3+T_4 \quad N\cdot m\{kgf\cdot cm\}$$

- T_1：加速产生的扭矩(Acceleration Torque) N•m{kgf•cm}
- T_2：负载扭矩(Load Torque) N•m{kgf•cm}
- T_3：预压动扭矩(Preload Dynamic Drag Torque) N•m{kgf•cm}
- T_4：其他扭矩(Additional Torque) N•m{kgf•cm}

选择电机时需考虑进给丝杠系统产生的扭矩。
T_1～T_3可由下式求出。

When Motor selection, the feed screw system Driving Torque is needed.
T_1～T_3 can be calculated by the following formula

●加速产生的扭矩　Acceleration Torque　T_1

$$T_1=\alpha\cdot I \quad N\cdot m$$

$$\alpha=\frac{2\pi N}{60\cdot t} \quad rad/sec^2$$

$$I=Iw\cdot A^2+Is\cdot A^2+I_A\cdot A^2+I_B \quad kg\cdot m^2$$

$$Iw=m_W\times\left(\frac{r}{2\pi}\right)^2 \quad kg\cdot m^2$$

$$Is=m_S\times\left(\frac{d^2}{8}\right) \quad kg\cdot m^2$$

$$m_S=\pi\left(\frac{d}{2}\right)^2\times L\times\gamma \quad kg$$

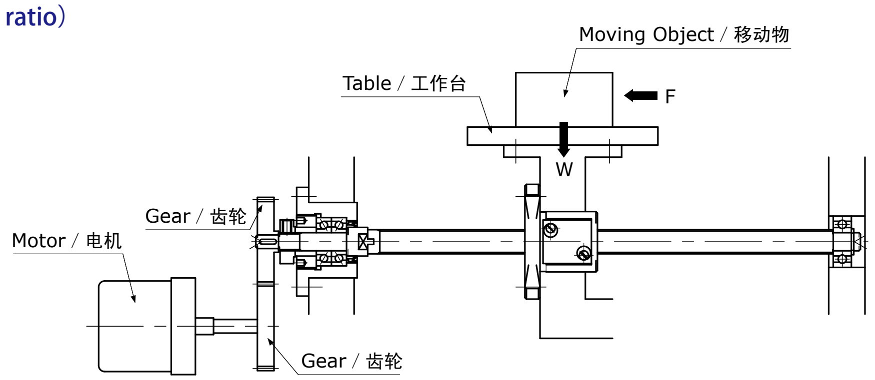
α	：角加速度(Angular acceleration)	rad/sec²
I	：惯性矩(Inertia moment)	kg•m²
Iw	：移动物的电机轴换算的惯性矩 (Inertia moment of moving object by Motor axial conversion)	kg•m²
Is	：丝杠轴的惯性矩(Inertia moment of Screw Shaft)	kg•m²
I_A	：丝杠轴侧的齿轮等的惯性矩(Inertia moment of gears on screw side)	kg•m²
I_B	：电机侧的齿轮等的惯性矩(Inertia moment of gears on motor side)	kg•m²
m_W	：移动物质量(Mass of moving object)	kg
m_S	：丝杠轴质量(Mass of Screw Shaft)	kg
r	：导程(Lead)	m
d	：丝杠轴外径(Screw Shaft diameter)	m
L	：丝杠轴长度(Ball Screw length)	m
γ	：比重(Specific gravity)	7,850 kg/m³
A	：减速比(Reduction ratio)	
N	：电机转速(Motor speed)	min⁻¹
t	：加速时间(Acceleration time)	sec

●负载扭矩　Load Torque　T_2

$$T_2=\frac{P\cdot r\cdot A}{2\pi\eta}\times10^{-3}=\frac{(F+☒W)}{2\pi\eta}\cdot r\cdot A\times10^{-3} \quad N\cdot m$$

$$T_2=\frac{P\cdot r\cdot A}{2\pi\eta}\times10^{-1}=\frac{(F+☒W)}{2\pi\eta}\cdot r\cdot A\times10^{-1} \quad kgf\cdot cm$$

P	：轴向负载(Axial load)	N{kgf}
F	：负载(Load)	N{kgf}
W	：移动物重量(Weight of moving object)	N{kgf}
r	：导程(Lead)	mm
☒	：滑动面摩擦系数(Sliding surface friction coefficient)	
η	：效率(Efficiency)0.9	
A	：减速比(Reduction ratio)	



●预压动扭矩　Preload Dynamic Drag Torque　T_3

$$T_3=0.05\times(\tan\beta)^{-0.5}\times\frac{Fa\cdot r}{2\pi}\times10^{-3} \quad N\cdot m$$

$$T_3=0.05\times(\tan\beta)^{-0.5}\times\frac{Fa\cdot r}{2\pi}\times10^{-1} \quad kgf\cdot cm$$

β	：导程角(Lead angle)	deg
Fa	：预压负载(Preload)	N{kgf}
r	：导程(Lead)	mm

●其他扭矩　Additional Torque　T_4

指上述以外时产生的扭矩。例如支撑轴承的摩擦扭矩及油封滑动阻力产生的扭矩等。

Described as Torque which occurs in addition to those listed above. For example, support Bearing friction Torque, oil seal resistance Torque, etc.

防锈与润滑
Rust prevention and Lubrication

●防锈处理

KSS滚珠丝杠以长期存放为前提，涂抹有防锈油。使用前请用清洁的精制煤油将其洗净，并涂抹润滑油或油脂。根据客户的需求，也可在出厂前涂抹油脂，但长期存放时可能会导致丝杠生锈，敬请注意。

注）KSS涂抹的防锈油侧重于防锈性能，并不具备润滑性能。因此，如果在涂有防锈油的状态下直接使用，可能会缩短丝杠寿命、导致扭矩变大、异常发热等问题。

●Rust prevention

KSS Ball Screws are applied anti-rust oil when shipping in case of no specific instruction. This oil should be removed before use. Wash Ball Screws with cleaned Kerosine and apply lubricant (Grease or Oil) on Ball Screws. As customer's request, specified Grease or Oil can be applied, but it should be noted that they are not suitable for long term storage purpose and rust might occur.

Note) Anti-rust oil is focused on anti-rust performance and it does not have lubricating function. Therefore, when using Ball Screws with anti-rust oil coating, the problems such as shortened Life, increase of Torque and abnormal heat generation occurs.

●润滑

使用滚珠丝杠时，必须涂抹润滑剂。否则会造成扭矩变大或缩短丝杠使用寿命等问题。涂抹润滑剂可以抑制因摩擦而导致的升温、机械效率下降，以及因磨损而导致的精度下降。滚珠丝杠的润滑方式分为油脂润滑和油润滑。使用油脂润滑时，一般建议使用锂皂基油脂；使用油润滑时，建议使用ISO VG32～68（透平油）。此外，根据用途选择润滑剂也非常重要。特别是微型滚珠丝杠，油脂的搅拌阻力可能会引起扭矩变大等不良情况。本公司备有可在维持滚珠丝杠动作特性的同时，发挥优异润滑性能的KSS原装油脂。用于注重动作特性的低速定位时，备有MSG No.1（稠度 1号）油脂；用于高速、一般用途时，备有MSG No.2（稠度 2号）油脂。详情请参照目录第B101页的“微型滚珠丝杠专用油脂”。

●Lubrication

In Ball Screw use, lubricant should be required. If lubricant is not applied with, the problem such as increase of Torque and shortened Life occurs. Applying lubricant can minimize temperature increases, decline of mechanical efficiency due to friction, and deterioration of accuracy caused by wear.
Ball Screw lubrication is divided into Greasing and Oiling. A regular lithium-soap-based Grease and ISO VG32-68 Oil (turbine Oil #1 to #3) are recommended.
It is highly important to choose lubricant depending on customer's usage. Especially in case of Miniature Ball Screws, malfunction such as increase of Torque are caused by the stir resistance. KSS original Greases which maintains Ball Screw's smooth movement and have high lubricating performance are prepared. MSG No.1 is appropriate for high smooth requirement and high positioning usage (consistency 1). MSG No.2 is suitable for high speed and general usage (consistency 2). Please refer to catalogue page B101「Original Grease for Miniature Ball Screws」.

一般使用条件下的润滑剂示例
Recommended lubricants for normal operating conditions

Lubricant 润滑剂	Type 种类	Product name 产品名称
Grease 油脂	Lithium-based Grease 锂基油脂	KSS original Grease MSG No.2 KSS原装油脂 MSG No.2
Lubricating Oil 润滑油	Sliding surface Oil or turbine Oil 滑动面油或透平油	Super Multi 68 Super Multi68

●检查和补充

使用油脂润滑时，大致检查时间为每2～3个月，使用油润滑时为每隔1周。检查时，请检查油量及有无脏污，并根据需要加油。

●Inspection and replenishment

Grease inspection should be performed once every two to three months, and Oil inspection should be performed approximately weekly. Check the Oil or Grease amount and contamination at each inspection and replenish if needed.

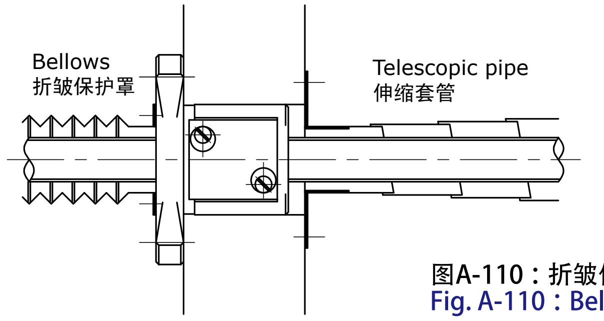
润滑剂的检查和补充时间间隔
Inspection and replenishment Interval of lubricant

Lubrication 润滑方法	Inspection frequency 检查时间间隔	Inspection Items 检点项目	Replenishment and replacement frequency 补充或更换时间间隔
Automatic intermittent lubrication 自动间歇加油	Weekly 每隔1周	Oil level, contamination 油量、脏污等	Replenish at each inspection, depending on tank capacity 根据油箱容量，在每次检查时适量补充。
Grease 油脂	Every 2 to 3 months initially 运行初期2～3个月	Contamination, swarf contamination 脏物、切屑的混入等	Replenish annually or as necessary, depending on Inspection results 通常每1年补充一次，但应根据检查结果适量补充。
Oil bath 油浴	Daily before operation 每天开工前	Oil suface check 油面管理	Set a rule for replenishment as necessary, depending on amount of wear. 根据消耗情况适当规定。

防尘
Dust prevention

滚珠丝杠的螺母内如果混入脏物或异物，可能会导致过早磨损、螺纹槽损伤、钢珠破裂和循环部损坏等，从而使滚珠丝杠无法工作。如果可能有上述情形发生，建议采取折皱保护罩和伸缩套管等防尘措施，以避免丝杠部外露。

In Ball Screws, if dust or other contaminations intrude into the Ball Nut, wear is accelerated, the screw groove will be damaged, circulation will be obstructed due to Ball fracture, damage of recirculation parts and so on. Eventually, the Ball Screws will cease to function. Where the possibility of dust or other contaminant exists, the screw thread section cannot be left exposed, and dust prevention measure such as a bellows or Telescopic pipe must be taken.



图A-110：折皱保护罩和伸缩套管
Fig. A-110：Bellows & Telescopic pipe

KSS滚珠丝杠充分发挥微型滚珠丝杠的特点，重视小型化设计。因此，目录中介绍的型号均为不带密封的尺寸。需要密封时，请垂询本公司。螺母尺寸可能会因安装密封而发生变化，敬请注意。此外，某些型号不能安装密封，敬请谅解。

KSS Ball Screws are concentrated on compact design for a feature of Miniature Ball Screw. Therefore, all models in the catalogue are the dimension without seals. Please inquire KSS if seals are required. Please note that Nut dimension may change due to seal installation. Some models cannot install the seals.

表面处理
Surface treatment

出于防锈目的，本公司可对滚珠丝杠实施表面处理。本公司的防锈表面处理以黑铬处理为标准。需要其他表面处理时，请垂询本公司。

Surface treatment can be possible for the purpose of rust prevention. Black Chrome treatment（BCr） is KSS standard surface treatment for the purpose of rust prevention. Please inquire KSS if other surface treatments are needed.

●KSS黑铬处理滚珠丝杠的特点

- 涂层薄（2～3☒m），可安装配合零件。
- 在严格的工序管理下，涂膜的厚度均一，不会影响滚珠丝杠的动作特性。
- 覆膜密接性良好，具有优异的防锈能力。
- 是MIL标准（MIL-DTL-14538D）公认的表面处理品。
- 需提高滑动特性时，可一并进行氟树脂涂层。

●Feature of KSS Ball Screws with Black Chrome （BCr） coating

- Due to thin film thickness（2～3☒m）, mating part can be applicable with BCr.
- Due to strict production management, film thickness can be treated equally and smoothness is kept.
- High anti-rust ability is possible.
- The surface treatment is officially authorized by MIL standard （MIL-DTL-14538D）
- To improve sliding characteristics, BCr＋fluorine resin coating is also available.

照片 A-111：黑铬处理品
Photo A-111：Black Chrome coating

●防锈能力试验数据　Examination data of anti-rust ability

根据盐水喷雾试验，使用标准试样进行的防锈能力评估结果如下所示。

Based on the salt spray corrosion test（JIS Z2371）, anti-rust ability has been evaluated, as follows.

- 标准试样 / Standard test piece：70mm×150mm×1mm（SPCC材/ material＝SPCC ）
- 数据 / Data：盐水喷雾试验24小时后的外观和评价数法的评估结果（数值越小，腐蚀越严重）
  Evaluated by appearance and rating number method
  after 24 hours of salt spray corrosion test.（The less number, the more corrosion）

	Rating number（Average） 评价数（平均值）
Sample A（BCr coating） 试样A（BCr处理）	9.3
Sample B（R coating） 试样B（R处理）	9～8
Sample C（M coating） 试样C（M处理）	3～4


Sample A
试样A


Sample B
试样B


Sample C
试样C

●RoHS指令的符合性　About RoHS compliance

KSS黑铬处理后的滚珠丝杠的Cr^{+6}量低于RoHS指令规定的阈值，完全符合RoHS指令。

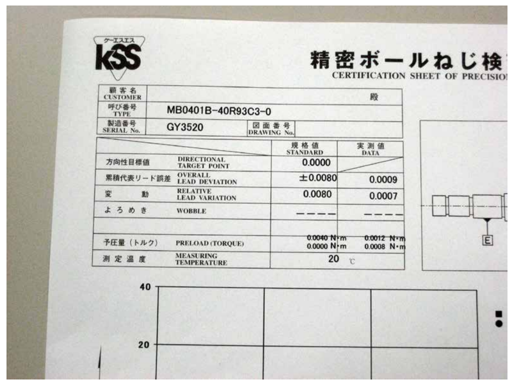
The Cr^{+6} amount of KSS Black Chrome（BCr） coating is less value than the based on RoHS regulation.

可追溯性
Traceability

KSS滚珠丝杠的生产采用严格精选的材料，使用先进的生产的设备，在严格的温度管理下进行，从各生产工序到产品检查、出厂，采用一条龙的生产管理体。
如照片A-112所示，出厂检查合格的滚珠丝杠会发放合格证。如有需要，也可提供检查结果表（照片 A-113）。
本公司生产的滚珠丝杠在螺母上标有生产编号（照片 A-114）。与生产编号相应的出厂检查记录及生产记录由本公司保管，通过查询生产编号，可找出所有出厂检查数据。

KSS Ball Screws are manufactured from rigidly selected materials in our temperature controlled factory. They are manufactured using the latest production equipment, with consistent quality control supervision ranging from the production process to inspection and shipping.
Certificate of inspection, Photo A-112, will be attached with the Ball Screws which pass shipping inspection.
Inspection report can be handed in as customer's request shown in Photo A-113.
The Ball Screws produced by KSS have a serial number which is marked on the Nut (refer to the Photo A-114).
Record of inspection and production trail which is in correspondence to a production number, are stored in KSS and inspection data can be retrieved by inquiry of a serial number.

照片 A-112：合格证 Photo A-112：Certificate of Inspection



照片 A-113：检查结果表
Photo A-113：Inspection report

照片 A-114：生产编号
Photo A-114：Serial Number

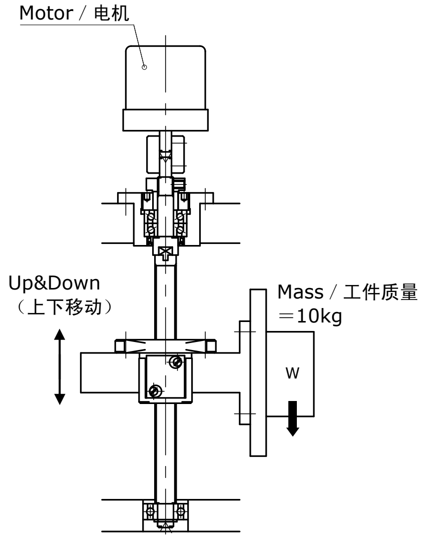
滚珠丝杠各种特性的计算示例
Calculation example of characteristic for Ball Screws.

滚珠丝杠各种特性的计算示例如下所示。以下均为模型算式，可能与实际情况有出入，敬请注意。

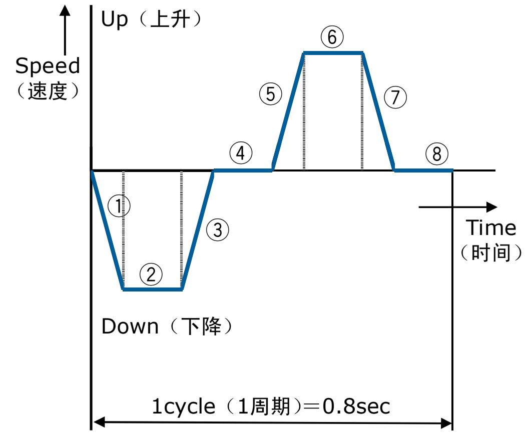
Calculation example of characteristic for Ball Screws are mentioned as follows. Each calculation example is modeled so that there is a case which is unrealistic.

例1：竖轴规格 Pick&Place
Example 1：Vertical Pick&Place

滚珠丝杠的型号和使用条件
Ball Screw model and operating condition



Operating pattern（运行周期线图）



滚珠丝杠的主要技术参数	Ball Screw spec.
轴径＝φ10mm	Shaft dia.＝φ10mm
导程＝10mm	Lead＝10mm
基本额定动负载Ca＝3,300N	Dynamic Capacity Ca＝3,300N
滚珠丝杠总长＝180mm	Total length＝180mm
轴向间隙＝20μm以下	Axial play＝20μm or less

运行条件	Operating Pattern
最高速度＝0.4m/sec	Max Speed＝0.4m/sec
**导程10mm时2,400 min^{-1}	** 2,400 min^{-1} because of Lead 10mm
加减速时间＝0.05sec	Acceleration & Deceleration time＝0.05sec
**图中1357	**1357 in diagram above
等速时间＝0.1sec	Constant speed time＝0.1sec
**图中26	**26 in diagram above
停止时间＝0.2sec	Halt time＝0.2sec
**图中48	**48 in diagram above
1周期＝0.8sec	Cycle time＝0.8sec

基本额定寿命的计算
Calculation of Basic Rating Life

基本额定寿命按以下步骤计算得出。
Basic Rating Life is calculated in the following procedure.

各种运行方式下的负载条件的计算 Calculation of Load condition for each operating pattern	→	各种运行方式下的速度条件的计算 Calculation of Speed condition for each operating pattern	→	平均负载 平均转速的计算 Calculation of average Load and Revolution	→	额定寿命的计算 Calculation of Basic Rating Life

1) 负载条件的计算
带编号的各种运行方式的负载条件如下所示。

1下降加速及7上升减速：
$F_1 = mg - ma$
2、6等速：
$F_2 = mg$
3下降减速及5上升加速：
$F_3 = mg + ma$
式中，
m ：移动物质量＝10kg
g ：重力加速度＝9.807m/sec^2
α ：加速度
达到0.4m/sec前的加速度
$a = 0.4/0.05 = 8\text{m/sec}^2$

1) Calculation of Load condition
Load condition of each operation pattern which is numbered is as follows.

1Down&Acceleration、7Up&Deceleration：
$F_1 = mg - ma$
2、6Constant Speed area：
$F_2 = mg$
3Down&Deceleration、5Up&Acceleration：
$F_3 = mg + ma$

m ：Mass＝10kg
g ：Gravity Acceleration＝9.807m/sec^2
α ：Acceleration
Acceleration up to 0.4m/sec
$a = 0.4/0.05 = 8\text{m/sec}^2$

2) 速度条件的计算
带编号的各种运行方式的转速如下所示。

等速时（2、6）：
0.4 m/sec＝0.4×60 m/min＝24m/min
＝2,400 min^{-1}（导程10mm时）
加减速时（1、3、5、7）：
上述的平均转速为2,400/2＝1,200 min^{-1}

2) Calculation of Speed condition
Revolution of each operation pattern which is numbered is as follows.

Constant speed area（2、6）：
0.4 m/sec＝0.4×60m/min＝24m/min
＝2,400min^{-1}（Lead 10mm）
Acceleration and deceleration area（1、3、5、7）：
as above average revolution, 2,400/2＝1,200 min^{-1}

3) 平均负载、平均转速的计算
总结上述计算结果，算出目录p-A825中所示的平均负载Fam和平均转速N_m。

3) Calculation of average Load, average Revolution
Calculation based on the above, calculate the average Load Fam shown in catalogue p-A825 and the average Revolution N_m.

$$Fam = \left(\frac{Fa_1^3 \cdot N_1 \cdot t_1 + Fa_2^3 \cdot N_2 \cdot t_2 + Fa_3^3 \cdot N_3 \cdot t_3}{N_1 \cdot t_1 + N_2 \cdot t_2 + N_3 \cdot t_3}\right)^{1/3} \quad N$$

$$N_m = \frac{N_1 \cdot t_1 + N_2 \cdot t_2 + N_3 \cdot t_3}{t_1 + t_2 + t_3} \quad \text{min}^{-1}$$

Operating Pattern 条件	Axial load 轴向负载 N	Revolution 转速 min^{-1}	time 使用时间 sec
1、7	$Fa_1 = 18.1$	$N_1 = 1{,}200$	$t_1 = 0.05 \times 2 = 0.1$
2、6	$Fa_2 = 98.1$	$N_2 = 2{,}400$	$t_2 = 0.1 \times 2 = 0.2$
3、5	$Fa_3 = 178.1$	$N_3 = 1{,}200$	$t_3 = 0.05 \times 2 = 0.1$
Average 平均	Fam＝116.3	$N_m = 1{,}800$	Total（合计）0.4sec 1 cycle（1周期）：t＝0.8sec Halt time（停止）：0.4sec（50%）

4) 基本额定寿命的计算
使用平均负载、平均转速的值，根据目录第A825页计算基本额定寿命。

4) Calculation of Basic Rating Life
Using average Load and average Revolution, Basic Rating Life is calculated according to the catalogue page A825.

基本额定寿命 / Basic Rating Life $L_{10h} = \{10^6/(60 \cdot N_m)\} \times \{Ca/(f \cdot Fam)\}^3$ 小时 / hours

$L_{10h} = 96{,}280$ 小时/hours

f ：负载系数 / Load coefficient（假设为1.3/Assumption 1.3）
Ca：基本额定动负载/Basic Dynamic Load Rating（3,300N）

停止时间为50%，因此运行时间为96,280/0.5＝192,560小时。
在24小时运行的情况下，192,560/24＝8,023天，因此可确保足够的使用寿命。

Due to halt time is 50%,
96,280/0.5＝192,560 hours operation.
If 24 hours operation is premised.
192,560/24＝8,023 days, it shows that enough life is kept.

进给丝杠系统的驱动扭矩的计算

根据目录第A827页计算进给丝杠系统的驱动扭矩。这在选择电机时非常重要。

上述示例并非预压规格的滚珠丝杠，所以不产生预压动扭矩。因此只计算加速扭矩T_1、负载扭矩T_2。

Calculation of Driving Torque for feed screw system

Calculate Driving Torque for feed screw system according to the catalogue page A827. It is important when motor selection. In the above case, due to backlash type Ball Screw, Preload Dynamic Drag Torque does not occur. Therefore, calculate acceleration Torque T_1 and Load Torque T_2.

$T = T_1 + T_2 + T_3 + T_4$　　N•m

T_1：加速产生的扭矩（Acceleration Torque）　N•m
T_2：负载扭矩（Load Torque）　N•m
T_3：预压动扭矩（Preload Dynamic Drag Torque）　N•m
T_4：其他扭矩（Additional Torque）　N•m

1）加速扭矩T_1的计算（Calculation of acceleration Torque T_1）

$T_1 = \alpha \cdot I = \alpha\,(Iw + Is)$ N•m

α　：角加速度（Angular acceleration）　rad/sec²
I　：惯性矩（Inertia moment）　kg•m²
Iw：移动物的电机轴换算的惯性矩（Inertia moment of moving object by motor axial conversion）　kg•m²
Is　：丝杠轴的惯性矩（Inertia moment of Screw Shaft）　kg•m²

$Iw = m_W \times (r/2\pi)^2 = 2.53 \times 10^{-5}$　kg•m²
m_W：移动物质量（Mass of moving object）＝10kg
r　：滚珠丝杠导程（Ball Screw Lead）＝0.01m

$Is = m_S \times (d^2/8) = (d/2)^2 \pi \gamma \times L \times (d^2/8) = 0.139 \times 10^{-5}$　kg•m²
m_S：丝杠轴质量（Mass of Screw Shaft）kg
γ　：丝杠轴比重（Specific gravity of Screw Shaft）＝7,850kg/m³
d　：丝杠轴外径（Shaft dia.）＝0.01m
L　：丝杠轴长度（Shaft length）＝0.18m

$\alpha = (2\pi N)/60t = 5{,}026.5$ rad/sec²
N：最高速度（Max speed）＝ 2,400min⁻¹
t：加速时间（Acceleration time）＝0.05sec

$T_1 = 5{,}026.5 \times (2.53 + 0.139) \times 10^{-5} = 0.134$ N•m

2）负载扭矩T_2的计算（Calculation of Load Torque T_2）

$T_2 = mgr/(2\pi\eta) = 0.173$ N•m
m：移动物质量（Mass of moving object）＝10kg
g：重力加速度（Gravity Acceleration）＝9.807m/sec²
r　：滚珠丝杠导程（Ball Screw Lead）＝0.01m
η：滚珠丝杠效率（Ball Screw efficiency）＝0.9

3）进给丝杠系统的驱动扭矩T的计算

根据以上计算，在不考虑支撑轴承等产生的扭矩时，滚珠丝杠轴系统的驱动扭矩如下所示。

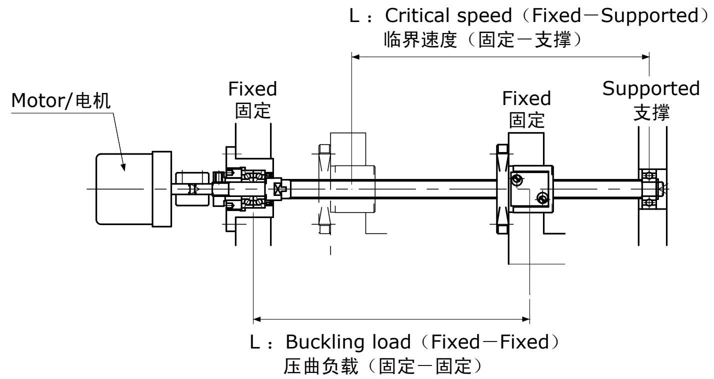
3）Calculation of Driving Torque T for feed screw system

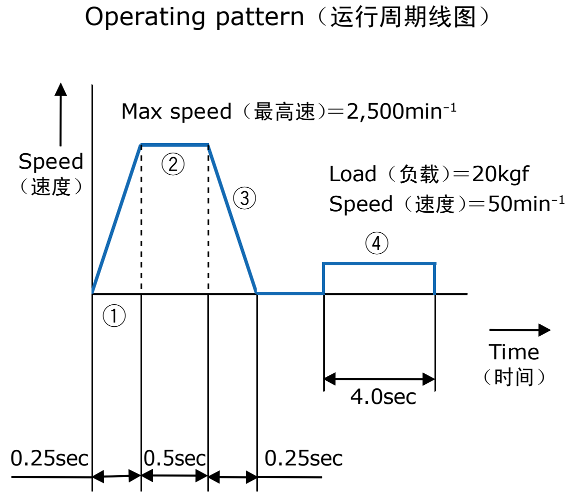
In case without consideration of Torque by support Bearings, Driving Torque of Ball Screw is as follows.

$T = T_1 + T_2 = 0.134$ N•m $+ 0.173$ N•m $= 0.307$ N•m

例2：横轴规格 小型车床
Example 2：Horizontal Small lathe

滚珠丝杠的型号和使用条件
Ball Screw model and operating condition





滚珠丝杠的主要技术参数	Ball Screw spec.
轴径＝φ12mm	Shaft dia.＝φ12mm
导程＝2mm	Lead＝2mm
丝杠轴底径 d＝φ10.6mm	Shaft Root dia. d＝φ10.6mm
基本额定动负载Ca＝1,900N	Dynamic Capacity Ca＝1,900N
安装间距L＝400mm	Mounting span L＝400mm
轴向间隙＝0⊠m以下	Axial play＝0⊠m or less
移动物重量 W＝500kgf	Weight of moving object W＝500kgf
滑动面摩擦系数 ⊠＝0.01	Sliding surface friction coefficient ⊠＝0.01

运行条件	Operating Pattern
最高速度＝5m/min	Max Speed＝5m/min
**导程2mm时2,500 min⁻¹	** 2,500 min⁻¹ because of Lead 2mm
周期线图：参照上图	Operating pattern：see diagram above
1加速＝0.25sec	1Acceleration＝0.25sec
2等速＝0.5sec	2Constant speed＝0.5sec
3减速＝0.25sec	3Deceleration＝0.25sec
4负载作用时＝4.0sec	4Working＝4.0sec
负载＝20kgf	Load＝ 20 kgf
切削时进给＝50min⁻¹	Revolution at turning＝50 min⁻¹

许用轴向负载的计算

1）弯曲负载的探讨

根据目录第A815页的计算公式来计算压曲负载。

Calculation of permissible Axial load

1) Study of Buckling load

Calculate Buckling load according to the following formula in Catalogue page A815.

$$P = \alpha \times \frac{n\pi^2 E \cdot I}{L^2} \quad N \qquad I = \frac{\pi}{64} d^4 \quad mm^4$$

将安全系数 $\alpha = 0.5$、
杨氏模量 $E = 2.08 \times 10^5 N/mm^2$（MPa）
底径 d＝10.6mm、固定—固定的安装系数 n＝4、
安装间距 L＝400mm代入上式。

Substitute safety factor $\alpha = 0.5$,
Young's modulus $E = 2.08 \times 10^5 N/mm^2$（MPa）
Root diameter d＝10.6mm,
Fixed—Fixed mounting factor n＝4,
mounting span distance L＝400mm in formula above.

P＝15,900N

P ＝ 15,900N

该值远大于使用负载，因此没有问题。

It is more than maximum Load so that there is no problem.

2）相对于屈服应力的许用负载的探讨

根据目录第A815页的计算公式计算。

2) Study of permissible Load for yield stress

Calculate permissible Load for yield stress based on catalogue page A815.

$$P = \sigma \times A \quad N \qquad A = \frac{\pi}{4} d^2 \quad mm^2$$

将许用应力$\sigma = 98N/mm^2$（MPa）、
底径 d＝10.6mm代入上式。

Substitute permissible stress $\sigma = 98N/mm^2$（MPa）,
Root diameter d＝10.6mm in the formula above.

P ＝ 8,650　N

P ＝ 8,650　N

该值远大于使用负载，因此没有问题。

It is more than maximum Load and there is no problem.

许用转速的计算

根据目录第A816页的计算公式计算。

Calculation of permissible Revolution

Calculate permissible Revolution based on the catalogue page A816

$$N = \beta \times \frac{60 \cdot \lambda^2}{2\pi} \times \sqrt{\frac{E \cdot I \cdot g}{\gamma \cdot A \cdot L^4}} \quad min^{-1} \{rpm\}$$

$$I = \frac{\pi}{64} d^4 \quad mm^4 \qquad A = \frac{\pi}{4} d^2 \quad mm^2$$

将安全系数$\beta = 0.8$、
杨氏模量 $E = 2.08 \times 10^5 N/mm^2$（MPa）、
重力加速度 $g = 9.8 \times 10^3 mm/sec^2$
比重 $\gamma = 7.7 \times 10^{-5} N/mm^3$、
底径 d＝10.6mm、
固定—支撑的安装系数 $\lambda = 3.927$、
安装间距L＝400mm代入上式。

Substitute safety factor $\beta = 0.8$,
Young's modulus $E = 2.08 \times 10^5 N/mm^2$（MPa）,
gravity acceleration $g = 9.8 \times 10^3$ mm/sec^2,
material specific gravity $\gamma = 7.7 \times 10^{-5} N/mm^3$,
Root diameter d＝10.6mm,
Fixed—Support mounting factor $\lambda = 3.927$,
mounting span distance L＝400mm in formula above.

$N = 10{,}000 min^{-1}$

$N = 10{,}000 min^{-1}$

该值远大于最高转速，因此没有问题。

Therefore, it is more than maximum Revolution and there is no problem.

基本额定寿命的计算　Calculation of Basic Rating Life

1) 根据周期线图计算负载条件

Calculation of Load condition according to the operating pattern diagram

速度(Speed) V＝5m/min ＝83.3mm/sec
加速度(Acceleration) α ＝83.3/0.25＝333 mm/sec^2＝0.333 m/sec^2
加速产生的负载(Load due to Acceleration)　F＝mα＝500×0.333＝167 N
移动时的负载(Load of moving object)＝等速时的负载(Load during constant speed)　F_1＝μmg＝49N
恒速时的转速(Revolution at constant speed)　N_1＝2,500 min^{-1}
加速时的负载(Load during acceleration)　F_2＝F＋F_1＝216N
加速时的转速(Revolution at acceleration) N_2＝2,500 /2＝1,250 min^{-1}
切削时的负载(Load during turning)　F_4＝200N＋F_1＝249N
切削时的转速(Revolution at turning)　N_4＝50 min^{-1}

总结上述结果，如下表所示。
Sum up calculation results above, results are as follows.

Operating Pattern 条件	Axial load (F) 负载 (F) N	Revolution 转速 min^{-1}	time (t) 使用時間 (t) sec	Percentage 使用頻度 %
1 Acceleration (加速)	216	1,250	0.25	5
2 Constant Speed (等速)	49	2,500	0.5	10
3 Deceleration (减速)	216	1,250	0.25	5
4 Turning (切削)	249	50	4.0	80

2) 平均负载、平均转速的计算

根据目录第A825页计算平均负载。

2) Calculation of average Load, average Revolution

According to catalogue page A825, average Load Fam is as follows.

$$Fam=\left(\frac{F_1^3N_1t_1+F_2^3N_2t_2+F_3^3N_3t_3+F_4^3N_4t_4}{N_1t_1+N_2t_2+N_3t_3+N_4t_4}\right)^{1/3}\quad N$$

将上表中的数值代入后得出，Fam＝166N

Substitute each number in table in the formula above, Fam＝166N

此外，将上表的数值代入目录第A825页的公式，得出平均转速 N_m＝415 min^{-1}。

In case of the average Revolution, substitute each number in table in the following formula, N_m＝415 min^{-1}

$$N_m=\left(\frac{N_1t_1+N_2t_2+N_3t_3+N_4t_4}{t_1+t_2+t_3+t_4}\right)=415\text{min}^{-1}$$

3) 基本额定寿命的计算

将平均负载Fam和平均转速N_m代入目录第A825页的寿命计算公式中，可得出以下结果。

3) Calculation of Basic Rating Life

Substitute the average Load Fam and Revolution N_m in the following formula, page A825 in catalogue.

$$L_{10h}=\left(\frac{10^6}{60\cdot N_m}\right)\times\left(\frac{Ca}{f\cdot Fam}\right)^3=3.48\times10^4\ \text{小时(hours)}$$

其中，假设基本额定动负载Ca＝1900N、负载系数 f＝1.2。

Here, Basic Dynamic Load Rating Ca＝1900N, Load factor f＝1.2.

存放、操作及使用注意事项

●滚珠丝杠操作注意事项

滚珠丝杠属于精密零件，请遵照下述事项谨慎操作。

存放

存放时，请保持本公司原装包装状态。请勿随意开包或弄破内部包装。
否则会有异物进入或生锈，从而导致产品性能下降 。

操作

1.严禁拆分产品。否则会导致异物进入、精度下降或引发事故。
2.重新组装时，如果组装错误，可能会导致滚珠丝杠的功能丧失。因此，客户请勿自行重新组装。请将产品送回本公司，我们将有偿为您维修并重新组装。
3.滚珠丝杠的轴和螺母可能会因自重而掉落，请注意避免受伤。如果掉落，可能会因循环部件受损而导致性能下降，因此请务必委托本公司进行检查。请务必将产品送回本公司。我们将有偿为您检查。
4.如果滚珠丝杠掉落，循环部件、轴的外径以及钢珠等可能会划伤、损坏。这可能会导致产品功能丧失，如回转不良等。

●滚珠丝杠使用注意事项

防尘

请在清洁环境下使用滚珠丝杠。请同时使用防尘罩等防止异物、切屑等进入滚珠丝杠中。如果因防尘不当而导致异物、切屑等进入滚珠丝杠，可能会降低滚珠丝杠的性能或损坏循环部件，从而导致产品锁死。

润滑

请在使用前确认润滑状况。如果润滑不良，可能会导致滚珠丝杠在短期内丧失功能。
此外，防锈油并非润滑剂，使用前请用精制煤油等清洗滚珠丝杠，去除防锈油后涂上润滑剂（油脂或润滑油）。在常规用途下使用时，请每2～3个月检查一次油脂。使用过程中油脂变脏时，请擦去旧的油脂后涂抹新油脂。

许用转速和许用轴向负载

根据尺寸、材质及安装方式等不同，滚珠丝杠会受到轴向负载和转速的限制。建议在产品的设计阶段就使用条件与本公司充分协商。关于使用条件，请充分利用卷末的技术数据表。

超程

滚珠丝杠螺母发生超程时，可能导致钢珠脱落、循环部件受损或钢珠槽产生压痕等，从而引起动作不良。如果在该状态下继续使用，还可能导致早期磨损或循环部件损坏。因此请务必避免超程。
发生超程时，请与本公司联系检查事宜。我们将有偿为您检查。

使用温度

使用温度的极限通常设计在80°C以下。超过该温度使用时，可能会产生如下现象：
- 钢珠循环性能下降；
- 循环部件损伤或损坏；
- 相对于热处理部位的硬度降低。

如需在超过80°C的条件下使用，请垂询本公司。

偏负载

滚珠丝杠是一种产生轴向推力的机械元件，其结构不能承受径向负载和力矩负载。请注意避免对螺母部施加径向负载和力矩负载。如果滚珠丝杠承受径向负载或力矩负载，将会导致滚珠负载不均，从而显著缩短产品的使用寿命。
另外，安装滚珠丝杠时，轴承部与螺母托架之间的偏心也会导致偏负载，敬请注意。

摇摆运动

让滚珠丝杠做摇摆运动（重复进行短行程＋正反转）时，由于滚珠的相互挤压，动扭矩有逐渐增大的倾向。这个问题可通过定期使用假行程（全行程）来解决。

Precaution of storage, handling and operating

●Handling precaution for Ball Screws

Ball screws are precision components, and must be handled carefully in accordance with the instruction below.

Storage

Ball Screws should be stored unopened in their original KSS packaging. Avoid opening the package or breaking the inner package unnecessarily. This may result in contamination or rusting, and may degrade operating performance.

Handling

1.Never disassemble Ball Screws. This will cause contamination, reduce accuracy, and lead to accidents.
2.Customers should not attempt to reassemble Ball Screws themselves. Incorrect reassembly can easily result in malfunction. Ball Screws should be returned to KSS, where they will be repaired and reassembled for a fee.
3.Take care to avoid injuries due to falling Ball Screw Shafts or Nuts. If dropped, performance may be adversely affected by damage to the recirculating component. Ball Screws must therefore be inspected by KSS for a fee. Please make sure you return dropped Shafts or Nuts.
4.Dropping Ball Screws may cause scratching or impact damage to recirculating components, Shaft outside diameters, Balls, or screw grooves, which may cause malfunction, such as incorrect rotation.

●Precaution of Ball Screw for operating

Dust proof

Ball Screws must be used in a clean environment. They should be used with a dustproof cover to prevent contamination from dust or swarf. Dust or swarf contamination due to insufficient dust protection may reduce the Ball Screw performance, cause damage to recirculating components, which lead to locking.

Lubrication

Check lubrication before use. Insufficient lubrication will rapidly deteriorate the operating performance of the Ball Screw. Since anti-rust oil is not lubricant(Grease/ Oil), Ball Screws should be washed off anti-rust oil with clean Kerosene and apply lubricant before using Ball Screws. Please check the lubricant condition every 2 to 3months. If Grease is contaminated, remove old Grease, and replace with new Grease.

Critical speed and Axial load

Ball Screws have the maximum limit of speed and Axial load depending on its size, material, mounting method etc. when design Ball Screws, KSS would recommend that you consult with KSS engineering about the operating condition and model selection. To release your operating condition, please use Technical Data Sheet at the end of this catalogue.

Over-run

Allowing Ball Screw Nuts to overrun may result in malfunctioning due to Balls escaping, damage to recirculation components, and indentation of the Ball grooves. Continued use in this state will lead to rapid wear and damage to recirculation components. Ball Screw Nuts must therefore never be allowed to overrun. If overrunning occurs, contact KSS for an inspection for a fee.

Temperature

Ball Screws are designed to be used at operating temperatures up to 80°C. Avoid use at higher temperatures. This may result in the following problems .
- Reduced performance of Ball recirculation, and smooth movement.
- Damage to recirculation components.
- Reduced hardness of heat treated components.

If it is necessary to work beyond the recommended temperatures, please consult with KSS first as we may be able to provide a solution.

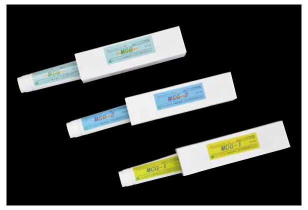
Moment load or Radial load

Ball Screws primarily generate thrusts in the axial direction, and are not designed to withstand Radial loads and Moment loads. Care must be taken not to apply Radial loads and Moment loads to the Nut. If there loads act on the Ball Screws, Ball load uniformity is lost, and the life of Ball Screws is drastically reduced. When installing Ball Screws, misalignment between Ball Screw and Support Bearings or Nut Bracket causes the unbalanced load on Ball Screw, care must be taken.

Oscillation

Under the oscillation (short stroke + back & forth operation) of Ball Screws, Drag Torque tends to increase gradually due to the stuck of Balls inside Ball Nut. Dummy stroke (preferably full length stroke) would be effective to release this phenomenon.

微型滚珠丝杠专用油脂
Original Grease for Miniature Ball Screws



1 MSG No.1（45cc, 380cc）：定位用 / Positioning usage
2 MSG No.2（45cc, 380cc）：常规用途 / General usage
3 MCG No.1（45cc）：无尘室专用 / Clean room usage

滚珠丝杠的动作特性一般会受到油脂特性的影响。尤其是微型滚珠丝杠会受到很大的油脂稠度引起的搅拌阻力的影响，在涂抹油脂后丝杠扭矩可能会增大。因此，油脂的选择极为重要。
作为微型滚珠丝杠的专业厂商，本公司发挥多年积淀的技术专长，研发出了无损微型滚珠丝杠动作特性、且润滑性能优异的油脂。同时还备有起尘量极少的无尘室专用油脂。
客户可根据用途选择最适用的专用油脂。

In general, it is known that the operation characteristic of the Ball Screws is influenced by properties of Grease. Especially, the stir resistance of Grease influences Ball Screw torque after applying Grease. Selection of Grease is extremely important in the Miniature Ball Screws. KSS has developed Ball Screw excellent Grease, which has high lubrication performance without deteriorating Ball Screw operation.
KSS has also developed its exclusive Grease, which keeps smooth feeling and less contamination under clean room environment.
We think the best special Grease is prepared respectively according to customer's usage.

●特点

摩擦系数小、粘附性良好、润滑性优异，是最适于微型滚珠丝杠的油脂。
根据用户的不同用途，本公司备有常规环境下使用的稠度1号、稠度2号以及在无尘室使用的稠度1号油脂。

●Features

It is the best Grease for the Miniature Ball Screws, which has low coefficient of friction, good adhesion characteristic, excellent lubricity.

●用途

常规环境用	MSG No.1：精密定位用途 最适于特别注重动作特性的用途。 MSG No.2：常规用途 较高转速下粘附性也很优异。
无尘室专用	MCG No.1：用于无尘室内的低速定位， 注重低起尘和动作特性。

●Application

General use	MSG No.1：High positioning usage appropriate for high smoothness requirement. MSG No.2：General usage appropriate for high speed.
Clean room use	MCG No.1：High positioning usage in clean room focused on less contamination, high smoothness.

●基本规格　Specifications

	MSG No.1	MSG No.2	MCG No.1
Application / 用途	General use / 一般规格	General use / 一般规格	Clean room use / 无尘室规格
Thickener / 增稠剂	Lithium / 锂皂	Lithium / 锂皂	Lithium / 锂皂
Base-oil / 基油	Synthetic oil / 合成油	Synthetic oil / 合成油	Synthetic oil / 合成油
Appearance / 外观	Light brown / 浅褐色	Light brown / 浅褐色	Beige / 米色
Consistency / 混合稠度	310～340	265～295	310～340
Temp.range / 使用温度范围	−60～120°C	−60～120°C	−30～120°C
Type / 型号	MSG-1-380, MSG-1-45	MSG-2-380, MSG-2-45	MCG-1-45

注1）型号末尾的数字表示封入量。
（380：380cc装、45：45cc装）
注2）在常温以外的环境下使用KSS原装油脂时，请垂询本公司。

Note 1) 380：380cc contained, 45：45cc contained
Note 2) In case of the usage of this grease under other than room temperature, please consult KSS.

●油脂摩擦试验机（MSG No.1、MSG No.2）

1）试验装置
- 销盘式摩擦磨损试验机（照片 B-11）
- 销：3/16 英寸钢珠（SUJ2　HRC60～62）
- 负载：50N　250N或350N（10N递增方式）
- 圆盘材料：SCM415（表面粗糙度＝0.8s）渗碳淬火（HRC58～62）

●Grease Friction Test（MSG No.1、MSG No.2）

1) Testing device
- Pin-on Disk test machine（Photo B-11）
- Pin：3/16 inch Steel Ball（SUJ2　HRC60～62）
- Load：50N　250N or 350N（Step up each 10N）
- Disk material：SCM415（surface roughness＝0.8s）Case hardening（HRC58～62）

照片 B-11：销盘式摩擦磨损试验机
Photo B-11：Pin-on Disk test machine

2）其他油脂与MSG的比较数据
参照图B-12、B-13
试样A、B、D：锂基油脂
试样C：脲基油脂

2) Comparison data to other Grease
See Fig. B-12, B-13
Sample A,B,D：Lithium based Grease,
Sample C：Urea based Grease

从图中可以看出，MSG No.1几乎没有摩擦系数增大现象，有利于滚珠丝杠发挥其动作特性。

MSG No.1 hardly increase coefficient of friction.
It has an advantage for smooth operation.

Disk rev.（圆盘转速）＝100min⁻¹

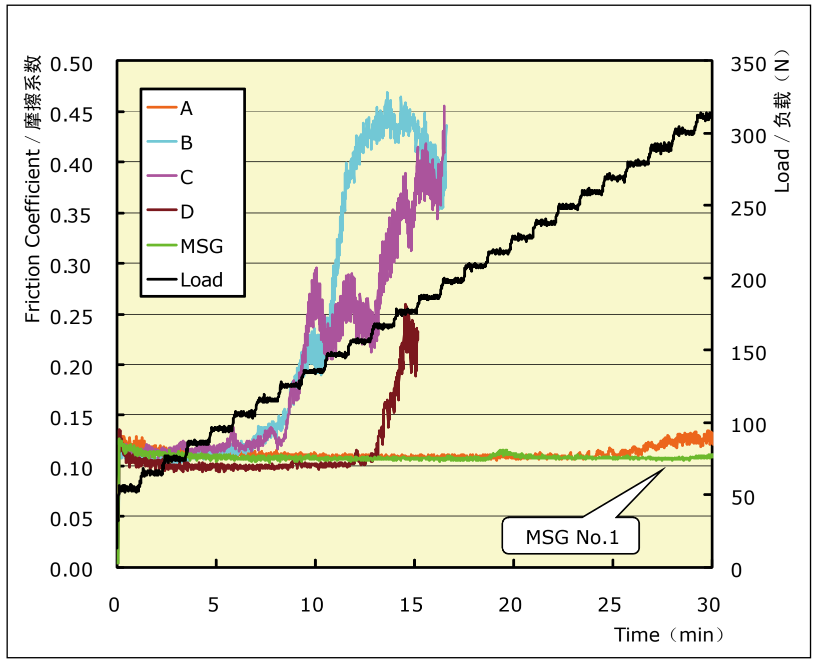


图 B-12：MSG No.1与其他油脂的比较图
Fig. B-12：Comparison btw MSG No.1 & others

Disk rev.（圆盘转速）＝500min⁻¹

MSG No.2即使在较高转速下，摩擦系数的增大也很少，可维持丝杠的动作特性。

MSG No.2 does not increase coefficient of friction under the relatively high speed.

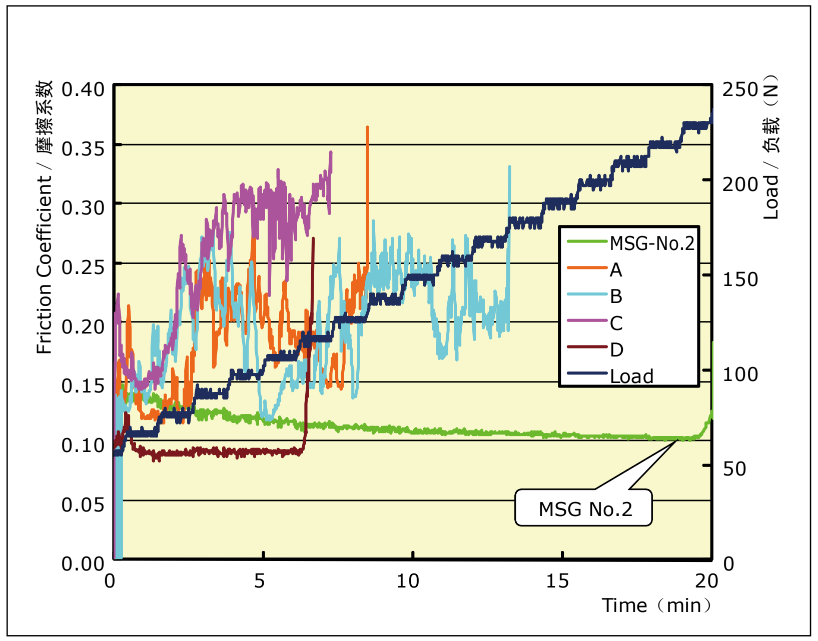


图 B-13：MSG No.2与其他油脂的比较图
Fig. B-13：Comparison btw MSG No.2 & others

●油脂承载能力测量

1）测量装置和测量方法

- 测量装置：
  曾田式四球磨损试验机（照片 B-14）
- 测量方法：
  750 min^{-1} 阶跃载荷方式（3/4 inch Ball）***

***注）阶跃载荷方式

将试样设置在试验机上，从0.5kgf/cm²（0.049MPa）起，每1分中增加0.5kgf/cm²的压力进行试验，产生烧结时的压力减去0.5kgf/cm²的值即为承载能力。数值越大，油脂越不易烧结。

●Grease Load Test（MSG No.1、MSG No.2）

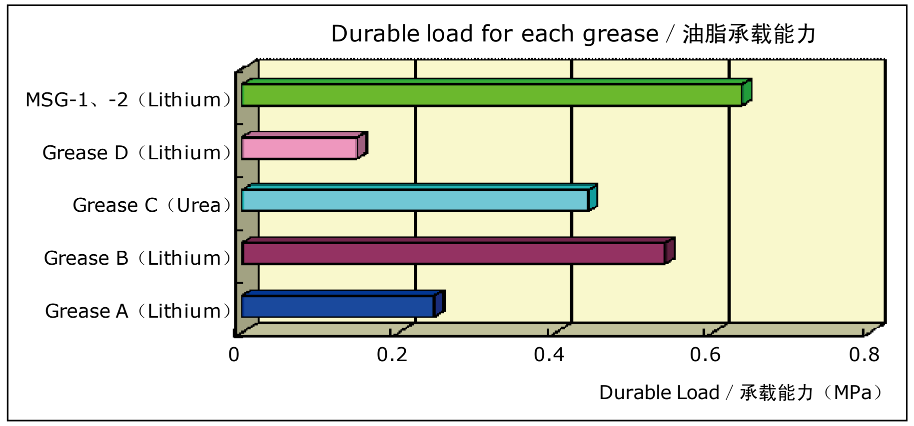
1）Testing device and method

- Testing device and method：
  SOTA-4-Ball test machine（Photo B-14）
- Testing method：
  750 min^{-1} Step load method
  （3/4 inch Ball）***

***Note）Step load method

Pressure is added by each 0.5kgf/cm²（0.049MPa） from the first 0.5kgf/cm² in every one minutes.
Durable load are defined when discoloration occur.

2）测量结果　Test results



照片 B-14：曾田式四球磨损试验机
Photo B-14：SOTA-4-Ball wear test machine

●油脂起尘试验（MCG No.1）

1）测量装置和测量方法

- 测量装置：照片 B-15
- 滚珠丝杠尺寸：φ10mm / 导程 15mm
- 测得的转速：500min^{-1}

比较本公司生产的常规用途油脂（MSG No.2）与其他公司生产的常规用途油脂后可以发现，本公司生产的KSS无尘室规格油脂MCG No.1即使经过运行时间后起尘量也很少。

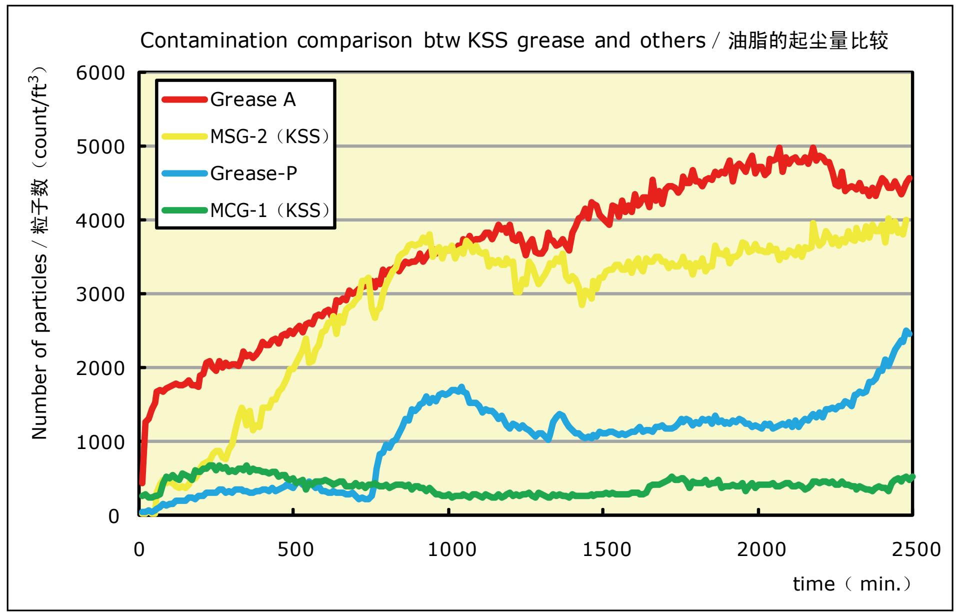
●Grease Contamination Test（MCG No.1）

1）Testing device and method

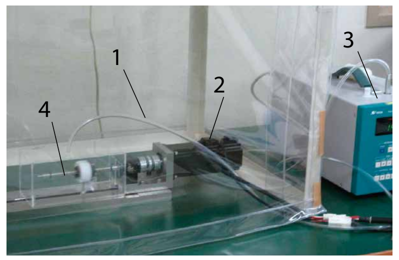
- Measurement device：see Photo B-15
- Ball Screw size：φ10mm / Lead 15mm
- Revolution：500min^{-1}

KSS clean room Grease（MCG No.1）has less contamination compared to other Grease such as KSS general use Grease（MSG No.2）and other competitor's（Grease-A,-P）as the time passed.

2）测量结果（0.5μm粉尘）　Test result（0.5μm particle）



1Suction / 吸引泵
2Servo Motor / 伺服电机
3Particle Counter / 计数器
4Sample / 试样



照片 B-15：清洁台
Photo B-15：Clean bench

操作注意事项

操作注意事项

- 如果油脂误入眼中，可能会引发炎症。
  操作时请佩戴护目镜等防护用品，以免油脂误入眼中。
- 油脂如果触及皮肤，可能会引发皮肤炎。
  操作时请佩戴保护手套等防护用品，以免油脂触及皮肤。
- 请勿饮用或食用。
  （如果吞入腹中，可能会引起腹泻或呕吐。）
- 请将油脂放置于儿童用手够不到的场所。

应急处理

- 油脂一旦误入眼中，请用清水冲洗15分钟，并立即接受医生治疗。
- 油脂触及皮肤时，请用肥皂水充分清洗。
- 油脂吞入腹中时，请勿强行催吐，应立即接受医生治疗。

废油和废容器的处理

- 相关法令对油脂的处理方法作了明确规定。请依照法令正确处理。
- 不了解处理方法时，请咨询经销商后再处理。

存放方法

- 请用密封塞对油脂进行密封，以防脏物或水分等混入。
- 请避开直射阳光，存放于阴暗之处。

Handling instruction

Handling Precaution

- It might be inflammatory when entering eyes.
  Wear glasses when you handle it.
- When it touches the skin, it might be inflammatory.
  Wear globes when you handle it.
- Do not eat or drink it.
  It is likely to have loose bowels, and to vomit when drinking.
- Put the Grease on the place where child's hand does not reach.

First aid

- Wash for 15 minutes by clean water, and receive the doctor's diagnosis when it enters eyes.
- Wash enough with water and soap when it touches your skin.
- Receive the doctor's diagnosis without forcibly vomiting when drinking.

Disposal

- Dispose properly according to the law.
- Consult manufacturer about an uncertain point.

Storage

- Seal up to avoid mixing garbage and moisture.
- Avoid direct sunlight, and keep it in darkness.

精密进给丝杠篇　Precision Lead Screws

接单生产 MG系列
Customized products MG series

本公司除了生产滚珠丝杠外，还生产精密进给丝杠。
精密进给丝杠具有滚珠丝杠所没有的小节距，可用于精度要求不高的场合。

KSS manufactures not only Ball Screws but also Precision Lead Screws.
It can be used as small Pitch which Ball Screws do not have, and it can be achievable when less precise products are needed.

●特点

可选择小节距
可选择难以用滚珠丝杠设定的小节距。

产品种类齐全
本公司以JIS规定的公制细牙螺纹、公制粗牙螺纹为标准，也可以提供梯形螺纹、统一协定螺纹、ACME螺纹、特殊节距、多条螺纹等。

低扭矩
充分发挥螺纹量规生产的技术专长，利用高超的研磨技术和镜面加工技术制造而成的丝杠产品，螺纹加工面表面粗糙度低、导程误差小，实现了低扭矩和低磨损。

螺母形状的自由度
螺母无形状限制，可根据客户设计制成各种形状。

●Features

Possible to select small Pitch
It is possible to select small Pitch which Ball Screws do not have.

Wide variety of size
Metric Fine Thread and Metric Coarse Thread based on JIS (Japanese Industrial Standard) are standardized but we also manufacture Trapezoidal Thread, Unified Screw Thread, ACME Screw Thread, special Pitch, and multiple start Thread.

Low torque
With knowhow of screw gauge, we make use of grinding technique, and lapping technique, so fine surface roughness and low wobble become reality, which lead low torque and less wear.

Flexibility of Nut configuration
Nut configuration is not restricted and it is possible to manufacture in accordance with customer's design.

●公称型号的构成　Model number notation

MG	6	P=0.5	(2N)	—	120	R	150
1	2	3	4		5	6	7

1进给丝杠符号
　MG：精密进给丝杠
　M：普通进给丝杠
　**非公制螺纹时符号不同。
2丝杠轴外径(mm)
3节距(mm)
4螺纹条数
　2N=2条，1条时省略
5螺纹部长度(mm)
6螺纹旋向　R=右旋，L=左旋
7丝杠轴总长(mm)

1Lead Screws series No.
　MG：Precision Lead Screws
　M：General Lead Screws
　**Sign differs other than M-thread Screw.
2Screw Shaft outside diameter(mm)
3Pitch(mm)
4Number of Thread
　2N=double-start thread、No identified for single-start thread
5Screw thread length(mm)
6Thread direction　R=Right-hand, L=Left-hand
7Screw Shaft total length(mm)

注1)型号列于本公司出示的"规格表"中。
注2)精度等级、轴向间隙未列入公称型号。
Note 1) Model number is mentioned in specification document that we hand in.
Note 2) Accuracy, Axial play are not mentioned in Model number notation.

●材质和表面硬度　Material & Surface hardness

Components / 零件	Material / 材质	Surface hardness / 表面硬度
Shaft / 丝杠轴	SKS3、SCM415、SUS440C	HRC50 or more　(HRC50以上)
	SUS303	N/A (无规定)
Nut / 螺母	BC6、C5191B	N/A (无规定)

注1)本公司也可承接满足RoHS标准的无铅铜合金(AQ30)产品的生产。
Note1) Leadless Copper alloy (AQ30) which conforms to RoHS regulation is available.

●丝杠轴外径与节距的组合　Combination of Shaft dia. & Pitch

Unit(单位)：mm

Shaft dia. 轴径 \ Pitch 节距	0.25	0.35	0.4	0.45	0.5	0.7	0.75	0.8	1.0	1.25	1.5	2.0
2	◎		○									
2.5		◎		○								
3		◎			○							
4					◎	○						
5					◎			○				
6					◎		◎		○			
7					◎		◎		○			
8					◎		◎		◎	○	□	
9					◎		◎		◎		○	□
10					◎		◎		◎		○	□

◎　含公制细牙螺纹在内的推荐型号
○　公制粗牙螺纹
□　公制梯形螺纹
　***空栏部分请垂询本公司。

◎　Recommended model including Metric Fine Pitch Thread.
○　Metric Coarse Pitch Thread.
□　Metric Trapezoidal Thread.
　***Blank：Can be manufactured, but please inquire KSS.

●超小节距(0.1mm)进给丝杠 / Ultra Fine Pitch (0.1mm) Lead Screws

虽然上表中没有列出，但本公司通过多年来累积起来的加工技术，
生产出了超小节距(0.1mm)产品。
如需超小节距产品，请垂询本公司。

0.1mm Pitch is not shown on the table above, but with our machining technique, we have experiences to manufacture 0.1mm Ultra Fine Pitch Lead Screws. If 0.1mm pitch is needed, please inquire KSS.

●轴向间隙推荐值 Recommended Axial play

Unit(单位):mm

Axial play 轴向间隙	max. 0.005 0.005以下	0.005～0.010	0.010～0.020	0.015～0.030	0.020～0.050

●制造极限长度 Maximum Length

Unit(单位):mm

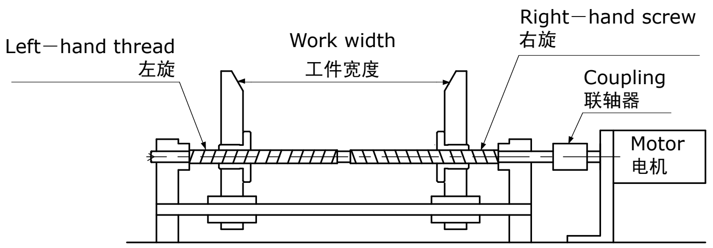
Shaft dia. 丝杠轴外径 / Grade 精度	2	2.5	3	4	5	6	7	8	9	10
Precision type 精密级	25	30	80	120	160	200	250	300	350	400
Normal type 普通级	25	40	90	140	180	250	300	350	400	450

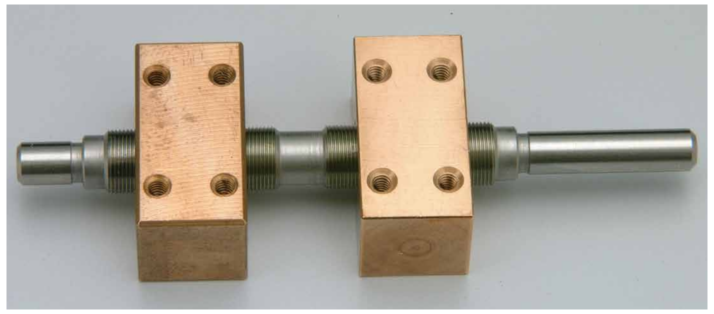
●双向进给丝杠

是在一根轴上同时加工左右旋螺纹，再分别安装螺母的开闭式进给丝杠。
由1台电机控制左右螺母的开闭运动，进行精密定位、确定宽度。
可生产任意形状的螺母。

●Bi-directional Lead Screws

Bi-directional Lead Screws which are machined Left handed and Right handed thread on a Shaft, and Nuts are mounted on each thread. Both Right and Left Nuts move symmetrically, precise positioning, and width adjustment by single motor. Nut configuration is designed freely to suit customer's requirements



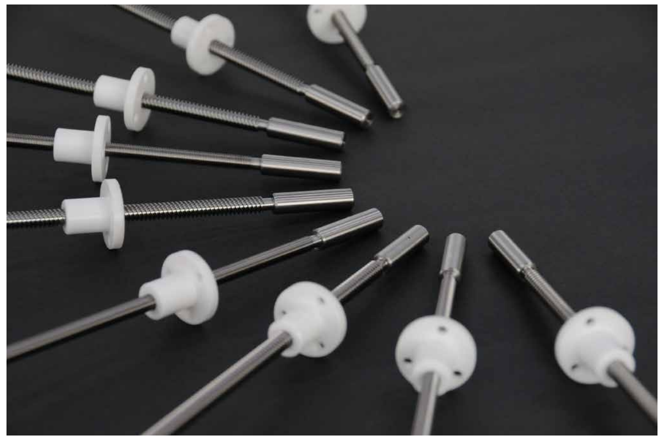


●特种进给丝杠

由于本公司的进给丝杠经过了研磨处理，因此将其称为精密进给丝杠。
如果客户需要，也可提供仅经过切削加工的经济型进给丝杠。大批量生产时，也可通过冷轧加工来生产丝杠轴。本公司还可生产采用树脂螺母的特种进给丝杠。该类产品的大批量生产也采用模具注塑成型。

●Special Lead Screws

KSS Lead Screws are defined as precision Lead Screws due to making use of grinding technique. According to customer's request, we manufacture Lead Screws which are done only machining process as a low price version. Moreover, when mass-production, it is possible to manufacture Screw Shaft by Rolling process.
The Lead Screws which have plastic Nuts are also available as special Lead Screws. In mass-production case, plastic Nuts are produced by injection mold.



●进给丝杠设计及使用注意事项

1) 建议丝杠轴与螺母采用不同材质。
2) 请注意避免螺纹面的表面压力和相对速度变高。
3) 对于在螺纹面呈滑动接触的进给丝杠，润滑极其重要。请注意避免润滑不足现象。

●Precaution for design and use of Lead Screws

1) We recommend Shaft and Nut are made from different materials.
2) Make sure not to raise surface pressure and relative velocity on thread surface.
3) Lubricating is highly important for Lead Screws due to sliding contact by Flank surface. Make sure not to be lack of lubricant.

树脂螺母进给丝杠篇　Lead Screws with Plastic Nuts

树脂进给丝杠
Resin Lead Screws

●特点
- 由于丝杠轴上使用了SUS304（或SUS303），因此耐腐蚀性强。
- 轴径与导程的组合丰富多彩，选择范围广泛。
- MRH（标准材质）含有润滑剂，不加油也可使用。涂抹润滑剂后使用可使运行更顺畅。
- 采用与滚珠丝杠相同的拱弧槽，传动平滑。
- 以MRH型为标准，但可根据用途变更螺母材质。
- 也可通过选择无齿侧间隙型，将轴向齿隙设置为O。

●Features
- The Shaft is manufactured from SUS304 (or SUS303), which gives excellent corrosion resistance.
- Wide range of combination of Shaft dia. and Lead are available.
- MRH incorporates a lubricating agent so it can be used without oiling. It is possible to obtain smooth movement with lubricant.
- Uses the same gothic arc grooves as Ball Screws, ensuring smooth transmission.
- MRH is standard in stock, but Nut material can be changed to order, based on the environmental condition.
- Selecting backlash free type, Axial play can be 0.

●种类　●Type

标准库存品
MRH-A、B系列：KSS产品
MRH标准库存品的螺母采用滑动性能良好的聚酰胺类树脂材质。该材质含有润滑剂，即使不加油也可使用。此外，其他材质也可作为选购件提供。

Standard products in stock
MRH-A,B series：KSS products
A Polyamide type Resin with good sliding properties is employed in the standard MRH Nut material. And because a lubricating agent is incorporated in the material, it can be used without oiling. Additionally, other Nut materials are available as options.

接单生产
MRH-BP2系列：KSS产品
采用滑动性能良好的聚酰胺类树脂，可通过双螺母＋中间弹簧组成无齿侧间隙构造。

Customized products
MRH-BP2 series：KSS products
A Polyamide type Resin with good sliding properties is employed.
Backlash free construction made possible with Double Nuts and a Spring in between.

接单生产
R-MSS(Y)系列：NTN精密树脂产品
具有耐腐蚀性、耐热性等性能，适用于多种环境，同时还备有高导程型（轴径的3倍）。

Customized products
R-MSS(Y) series：NTN Engineering plastics Corp. products
Corresponding to a wide range of environment and having corrosion resistance, heat resistance. High lead types (3 times as dia.) are available.

●丝杠轴公称外径与导程的组合　Combination of Shaft nominal dia. & Lead

Unit(单位)：mm

Shaft dia. 公称外径 \ Lead 导程	1	2	5	6	8	9	10	12	15	18	20	24	30	36
4	D109	D109												
6	D109	D105 D106 D109		D105 D106		D105 D106 D109				D109				
8	D109	D105 D106 D109	D105 D106		D105 D106			D105 D106 D109				D109		
10		D105 D106 D109		D105 D106			D105 D106		D105 D106 D109		D105 D106		D109	
12		D105 D106 D109		D105 D106			D105 D106			D109	D105 D106		D105 D106	D109

注1)表中的数字表示产品刊载页码，D105和D109为齿侧间隙型的刊载页码，D106为无齿侧间隙型的刊载页码。
Note1) The numbers in each cell show pages in the catalogue. D105 and D109 are for back lash type, D106 is for backlash free type.

●规格
精度等级和间隙
KSS树脂导程丝杠的精度等级以滚珠丝杠的JIS Ct10为准，代表移动量误差按下式计算。
此外，轴向间隙为0.05～0.10mm（无齿侧间隙型除外）。

●Specifications
Accuracy grade and Axial play
Accuracy grade of KSS Resin Lead Screws is based on JIS Ct10. Actual mean travel deviation is calculated by following formula.
Axial play is 0.05 to 0.10mm (except Backlash free type).

代表移动量误差 / Actual mean travel deviation　ep:　$ep = \pm \frac{ru}{300} \times 0.21$ (mm)

ru：螺纹部有效长度 / Effective Screw thread length (mm)

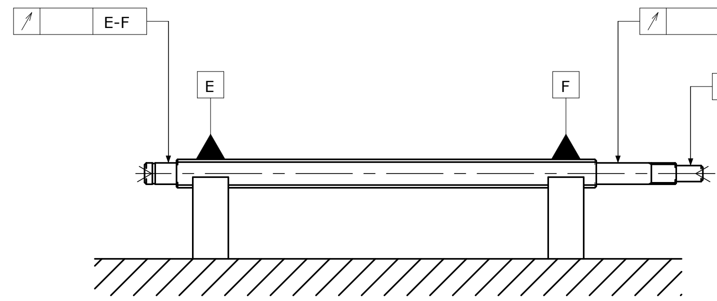
材　质　Material

Parts / 零　件	Material / 材质
Shaft / 丝杠轴	SUS304 or SUS303
Nut / 螺母	MC nylon (MC703HL) Nippon POLYPENCO LTD MC尼龙（MC703HL）日本POLYPENCO公司

注1)适用于特殊环境的螺母材质请参照p-D104。
注2)需要上述以外的材质时，请垂询本公司。
Note 1) Please refer to p-D104 for Nut material suitable for special environment.
Note 2) If material other than the table is requested, please inquire KSS

丝杠轴安装精度
KSS树脂导程丝杠的丝杠轴安装部精度按下图进行标示、管理。
各部位的跳动精度标准以滚珠丝杠JIS Ct10为准。

Description of Run-out and location tolerance
Description of Run-out and location tolerance for KSS Resin Lead Screws is as follows.
Each part of Run-out tolerance is based on JIS Ct10 of Ball Screws.



●技术数据

螺纹槽形状

螺纹槽采用拱弧形状。与本公司滚珠丝杠所使用的槽形状基本相同。

机械效率

KSS树脂导程丝杠的机械效率η(%)可按下式计算。根据实测值统计得出的机械效率期待值为20～50%。一般情况下，导程越大，机械效率就越大。请以此为参考标准。

●Technical Data

Thread groove profile

The thread grooves are of a gothic arc design. This is basically the same as those used in our Ball Screws.

Mechanical efficiency

Mechanical efficiency of KSS Resin Lead Screws η (%) can be calculated by the following formula. The expected "Mechanical efficiency" calculated from measurements is 20%-50%. Generally, as the Lead increases, "Mechanical efficiency" tends to be high. Please use this number as a reference.

$$\eta = \frac{Fa \times r}{T \times 2\pi} \times 100 \quad (\%)$$

Fa：轴向负载 / Axial load (N)
r：丝杠导程 / Screw Lead (m)
T：旋转扭矩 / Rotational torque (Nm)

使用界限FV值和耐久数据

・使用界限FV值

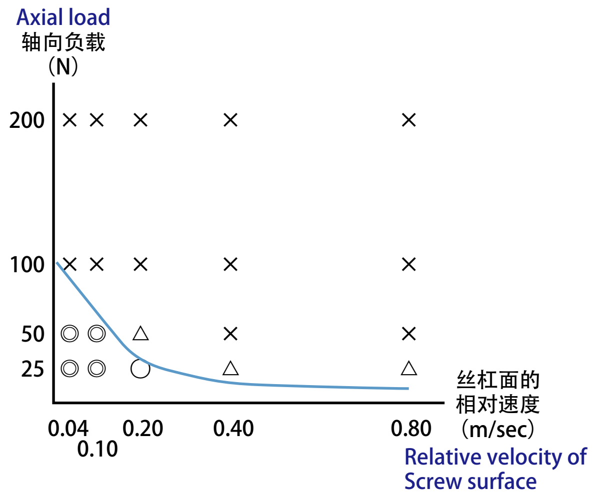
KSS树脂导程丝杠将轴向负载(F)与丝杠面相对速度(V)的乘积定义为FV值，是判断KSS树脂导程丝杠是否可用的大致标准。图D-11表示以MRH(材质：MC703HL)为螺母材料时，可进行无润滑运转的使用界限FV值。使用时，请用作参考。此外，可通过涂抹润滑剂改善运行条件。

FV value limits on use and endurance data

・FV value limits on use

For KSS Resin Lead Screws, the product of Axial Load and relative velocity of Screw surface is defined as FV, and this definition is reference to check if it is usable or not. Fig. D-11 is maximum FV which can be operated without lubricants in case of using Nut material MRH (Material：MC703HL).
Please use it as one of the reference. It is expected to improve operational condition by applying lubricants.

图D-11：使用界限FV值
Fig. D-11：FV value limits



实验型号 / Model：MRH0805　　润　　滑 / Lubricant：无 / None
运行评价 / Evaluation：
◎可长时间保持稳定的运行状态。
Stable operational conditions were maintained for the long term.
○运行状态良好，但螺母处有磨损。
Operation were good, but some wears were seen on the Nuts.
△较短时间内即出现运行困难。
Operations became difficult in a relatively short time.
×很快出现运行困难。
Operations became difficult in the short time.

结果显示，FV＜5(N・m/s)时运行较为稳定。
FV＞10 (N・m/s)时，难以稳定运行。
轴向负载的上限设定应比相对速度更为严格。

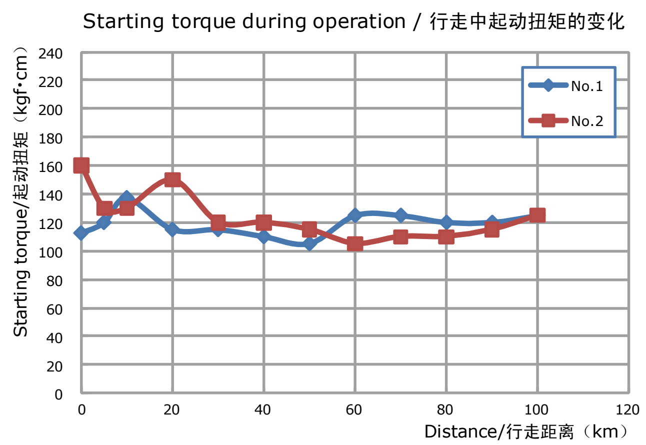
In case of FV＜5(N・m/s), stable operations were maintained.
Operations under FV＞10 (N・m/s), maintaining stability was difficult.
Axial Load should be treated more carefully as to upper limits rather than relative speed.

・预压品(BP2型)的耐久试验数据

Endurance test data of Preloaded products (BP2 type)

型　　号 / Model	：φ10mm、导程 / Lead ＝ 6mm
负　　载 / Load	：空载 / None
速　　度 / Speed	：1000rpm
行　　程 / Travel	：400mm(往复 / 2-way)
润　　滑 / Lubricant	：无 / None
耐久结果 / Result	：行走100km后无异常 After running 100km, operation were good.

起动扭矩变化 / Starting Torque monitor：参照右表 see Diagram right



●特殊品

KSS树脂导程丝杠除标准材质MC尼龙(MC703HL)外，也可采用下述螺母材质。

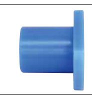
螺纹槽也可采用梯形螺纹、ACME螺纹等特殊形状，详情请垂询本公司。

大批量订购时，选择以注塑为前提的材料可降低螺母成本。

●Special products

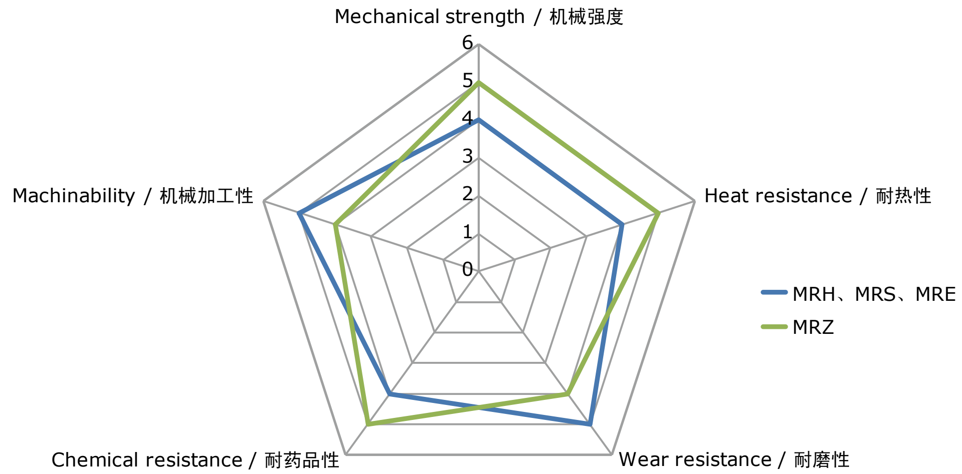
Regarding KSS Resin Lead Screws, the standard material of Nut is MC nylon (MC703HL), but we also provide with the following Nut materials.
Please inquire KSS if Trapezoidal thread and ACME thread are needed.
In case of bulk order, it is possible to save the price to select material which is manufactured by injection molding.

表D-12：各种产品性能比较表　Table D-12：Product performance comparison

Product 产品名称	MRH	MRS	MRE	MRZ
Classification 产品类别	Standard 标准库存品	Customized 接单生产		
Operating environment 使用环境	Standard environment 常规环境			Special environment 特殊环境
Nut apperarnce 螺母外观				
Material 材质	Polyamide type 聚酰胺类			Polyether ether ketone type 聚醚醚酮类
Features 特点	Balanced performance 平衡特性			Flame resistance, heat/water resistance 阻燃性　耐热水性
Other 其他	Good sliding properties 滑动特性良好	—	Good electrical conductivity 导电性良好	Food hygiene, chemical resistance 食品卫生性　耐热性
Mechanical strength 机械强度	○	○	○	◎
Heat resistance 耐热性	○	○	○	◎
Wear resistance 耐磨损性	◎	◎	◎	○
Chemical resistance 耐药品性	○	○	○	◎
Machinability 机械加工性	◎	◎	◎	○

◎ 优异 / superior
○ 可用 / usable
△ 略差 / relatively inferior
▲ 较差 / Inferior

图D-13：各种材料评价　Fig. D-13：Evaluation each material



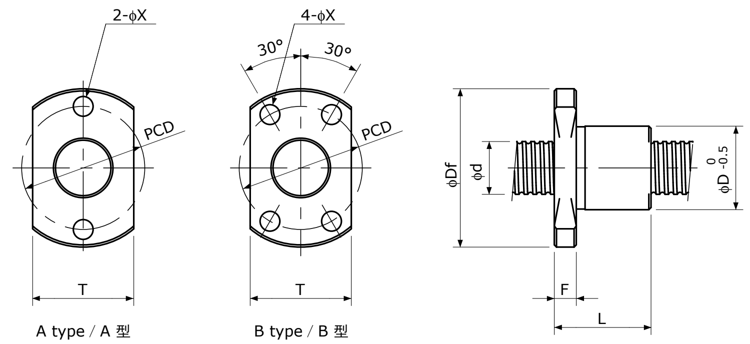
MRH-A、B系列（标准库存品）
MRH-A,B series（Standard Products）

●尺寸表　Dimension table

公称型号的构成　Model number notation

MRH　06　02　A　—　300　R　300　N2
1　2　3　4　5　6　7　8

1螺母类型符号	1Nut model
2丝杠轴公称外径（mm）	2Screw Shaft nominal diameter（mm）
3导程（mm）	3Lead（mm）
4法兰形状	4Flange configuration
A：2孔 …… 仅φ6mm产品	A：2 holes …… Only products with φ6mm
B：4孔	B：4 holes
5螺纹部长度（mm）	5Screw thread length（mm）
6螺纹旋向（仅右旋）	6Thread direction（Right-hand only）
7丝杠轴总长（mm）	7Screw Shaft total length（mm）
8螺母个数	8Number of Nut
（例：N2表示带2个螺母　带1个螺母时无符号）	（Example：N2 means 2 Nuts on a Shaft. There is no notation when 1 Nut.）



A type / A 型　　B type / B 型

Unit（单位）：mm

Model 型号	Screw Shaft 丝杠轴 Dia. 公称直径 d	Lead 导程	Root dia. 底径	No. of threads 螺纹条数	Nut 螺母 D	L	Df	F	P.C.D	X	Nut type 螺母类型	T	Standard Shaft length 标准轴长
MRH0602A	6	2	5.1	1	10	14	20	3	15	3.1	A	10	300
MRH0606A		6	5.2	2									
MRH0609A		9	5.3	4									
MRH0802B	8	2	6.6	1	13	16	26	4	20	3.6	B	17	400
MRH0805B		5	6.6	2									
MRH0808B		8	6.7	2									
MRH0812B		12	6.7	4									
MRH1002B	10	2	8.6	1	15	20	28		22			19	500
MRH1006B		6	8.4	2									
MRH1010B		10	8.4	2									
MRH1015B		15	8.4	4									
MRH1020B		20	8.7	4									
MRH1202B	12	2	10.6	1	18	24	31		25			20	600
MRH1206B		6	10.4	2									
MRH1210B		10	10.4	2									
MRH1220B		20	10.4	6									
MRH1230B		30	10.4	8									

注1）建议由本公司进行丝杠轴的追加加工。
　　如果由其他公司进行追加加工，本公司将不能保证追加加工后的精度，敬请谅解。
注2）如果由其他公司进行追加加工，加工时请将螺母从丝杠轴上拆下，并在加工后用清洁的精制煤油将附着在丝杠轴上的污垢等清洗干净。
注3）请将丝杠轴的轴端直径指定为不超过丝杠轴底径，并以1mm为单位指定丝杠长度。
注4）螺纹旋向仅为右旋。
注5）丝杠轴、螺母不单售。

Note 1）Additional machining of Screw Shafts should be performed by KSS. Note that accuracy cannot be guaranteed if additional machining is performed by someone other than KSS.
Note 2）When additional end-journal machining is performed by someone other than KSS, always remove the Nut from the Screw Shaft. After machining, wash away any debris on the Screw Shaft with clean refined kerosene or similar material.
Note 3）The Shaft end diameter should be smaller than the Screw Shaft Root diameter, and the Screw thread length should be specified in 1mm.
Note 4）Only Right-hand thread is available.
Note 5）Screw Shafts and Nuts are not sold separately.

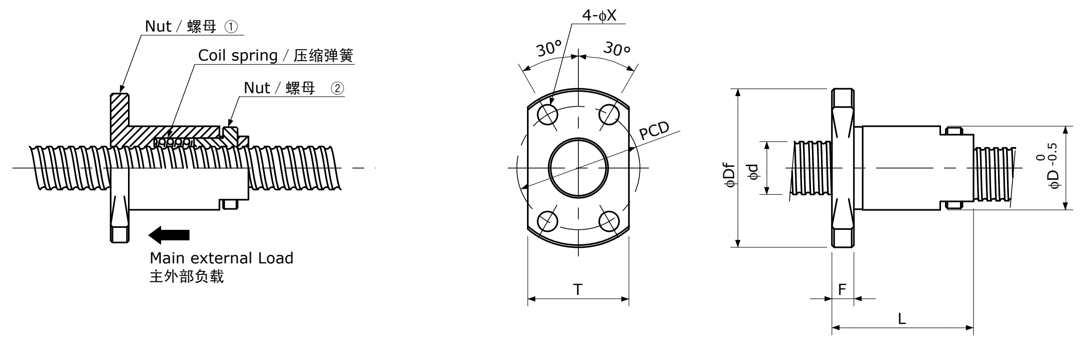
MRH-BP2系列（接单生产）
MRH-BP2 series（Customized Products）

●尺寸表　Dimension table

公称型号的构成　Model number notation

MRH　06　02　B　P2　—　300　R　300
1　2　3　4　5　6　7　8

1螺母类型符号	1Nut model
2丝杠轴公称外径（mm）	2Screw Shaft nominal diameter（mm）
3导程（mm）	3Lead（mm）
4法兰形状	4Flange configuration
B：双面切割（4孔）	B：2 flat faces（4 holes）
5无齿隙符号	5Backlash free mark
P2：标准设定	P2：Standard Preload
6螺纹部长度（mm）	6Screw thread length（mm）
7螺纹旋向（仅右旋）	7Thread direction（Right-hand only）
8丝杠轴总长（mm）	8Screw Shaft total length（mm）



Unit（单位）：mm

Model 型号	Screw Shaft 丝杠轴 Dia. 公称直径 d	Lead 导程	Root dia. 底径	No. of threads 螺纹条数	Nut 螺母 D	L	Df	F	P.C.D	X	T	Standard Shaft length 标准轴长
MRH0602BP2	6	2	5.1	1	13	20	26	4	20	3.6	17	300
MRH0606BP2		6	5.2	2								
MRH0609BP2		9	5.3	4								
MRH0802BP2	8	2	6.6	1	15	23	28		22		19	400
MRH0805BP2		5	6.6	2								
MRH0808BP2		8	6.7	2								
MRH0812BP2		12	6.7	4								
MRH1002BP2	10	2	8.6	1	18	30	31		25		20	500
MRH1006BP2		6	8.4	2								
MRH1010BP2		10	8.4	2								
MRH1015BP2		15	8.4	4								
MRH1020BP2		20	8.7	4								
MRH1202BP2	12	2	10.6	1	23	38	41	5	33	4.8	25	600
MRH1206BP2		6	10.4	2								
MRH1210BP2		10	10.4	2								
MRH1220BP2		20	10.4	6								
MRH1230BP2		30	10.4	8								

注1）建议由本公司进行丝杠轴的追加加工。
　　如果由其他公司进行追加加工，本公司将不能保证追加加工后的精度，敬请谅解。
注2）请将丝杠轴的轴端直径指定为不超过丝杠轴底径，并以1mm为单位指定丝杠长度。
注3）螺纹旋向仅为右旋。
注4）丝杠轴、螺母不单售。
注5）希望变更弹簧压力（小于或大于标准）时，请另行联系。
注6）建议按上图箭头所示方向使用主外部负载。

Note 1）Additional machining of Screw Shafts should be performed by KSS. Note that accuracy cannot be guaranteed if additional machining is performed by someone other than KSS.
Note 2）The Shaft end diameter should be smaller than the Screw Shaft Root diameter, and the Screw thread length should be specified in 1mm units.
Note 3）Only Right-hand thread is available.
Note 4）Screw Shafts and Nuts are not sold separately.
Note 5）Please inquire regarding spring tension（lower or higher than standard is available）.
Note 6）It is recommended that the main external load is in the direction as indicated by the arrow in the Figure above.

●注意事项

1)润滑

- MRH系列螺母的标准材质MC尼龙虽然含油，但根据不同的使用条件，可能会产生噪音和早期磨损。可能出现这种情况时，建议同时使用可提高滑动性的表面处理（丝杠轴）和油脂。

2)轴端追加加工

- 建议由本公司进行丝杠轴的追加加工。如果由其他公司进行追加加工，本公司将不能保证追加加工后的精度，敬请谅解。
- 如果由其他公司进行追加加工，加工时请将螺母从丝杠轴上拆下，并在加工后用清洁的精制煤油将附着在丝杠轴上的污垢等清洗干净。此外，如果将无齿侧间隙型螺母从丝杠轴上拆下，将会导致难以恢复预压，因此请联系本公司进行追加加工。

3)操作、使用注意事项

- 本产品为精密零件，请勿对其施加冲击。
- 严禁拆分无齿侧间隙型螺母。
- 存放时，请保持本公司原装包装状态。请勿随意开包或弄破内部包装。否则会因异物进入而导致产品性能下降。
- 产品掉落时，可能会因零件损伤而导致产品性能下降，因此请务必委托本公司进行检查。请将产品送回本公司，我们将为您提供有偿检查。
- 产品的使用极限温度设计在80°C以下。超过该温度使用时，请垂询本公司。
- 树脂导程丝杠是一种产生轴向推力的机械元件，其结构不能承受径向负载。如果承受径向负载，可能会导致早期磨损及损伤，因此请勿在树脂导程丝杠与其它直动设备连用时对其施加径向负载。
- 支撑丝杠轴的轴承部、安装螺母的支架的嵌合、偏心、螺母安装面的垂直度等各安装部位的精度如果不良，将对树脂导程丝杠造成不良影响。因此，请充分注意相关零件的尺寸精度、形状精度及组装精度。

●Caution

1)Lubrication

- MC Nylon which is standard Nut material of MRH series includes oil, but depending on operating condition, abnormal noise or wearing at early stage might occur. In that case, surface treatment on shaft or grease applying are recommended.

2)Additional end-journal machining

- Additional machining of Screw Shaft should be performed by KSS. Note that accuracy cannot be guaranteed if additional end-journal machining is performed by someone other than KSS.
- When additional machining is performed by other than KSS, always remove the Nut from the Screw Shaft for additional machining.
  After machining, wash away any debris on the Screw Shaft with clean refined kerosene or similar material. For Backlash free type, it is difficult to reproduce Preload if Nut is removed. We will do additional machining when needed.

3)Handling and use precaution.

- Do not subject to sudden impact, as this is a precision part.
- Do not disassemble Backlash free type Nut.
- When storing the products, please store in the original wrapping. Do not open the wrapping or tear the inner wrapping until ready to use. Dust may get inside the wrapper and may cause a decline in functionality.
- If the products falls, loss of functionality due to damage to component parts may result. Please send products back to KSS so that we can check the products. There will be a charge for this service.
- This product has been designed for normal use in temperatures under 80°C. In case of exceeding 80°C, please ask KSS.
- Resin Lead Screws are mechanical components that produces thrust toward the axis. It is not constructed to accept Radial Load (Radial direction). This may result in wear and damage at an early stage. Therefore, there should be no Radial Load on the Resin Nut parts, take care to set up with other linear equipment for Radial Load.
- Coarse mounting accuracy such as misalignment of Nut bracket and Support Bearing, perpendicularity of Nut mounting face, will affect Resin Lead Screws performance, so be careful with the mounting accuracy.

R-MSS（Y）系列
R-MSS（Y）Series

NTN
NTN株式会社

●BEAREE为NTN的注册商标。
BEAREE product is NTN registered trademark.

●特点

与BEAREE AS5000（PPS树脂：聚苯硫醚）制螺母和不锈钢（SUS304）制丝杠轴组合相比，是适用环境更广的低噪音滑动丝杠。

●Features

BEAREE AS5000 (PPS Resign: Poly Phenylene Sulfide) Nuts and Stainless (SUS304) Shafts are employed. This Lead Screw with low operating noise is able to be used as wide use.

- 适用于多种环境。
  丝杠面平滑且导程较长，易于反向动作。
- 与滚珠丝杠相比，噪音较小。
- 与低磨损的树脂螺母相比，丝杠效率更高。

- Wide use：Because Screw surfaces are smooth and its lead is high, the reversed operation can be easy.
- Low operation noise compared with Ball Screws.
- Due to the Nuts with low friction, the Screw efficiency is high.

●规格　Specifications

Type / 类型	Single Nut with Flange／带法兰单螺母
Nut material / 材质	BEAREE AS5000 / BEAREE AS5000
Shaft material / 丝杠轴	SUS304
Axial play / 轴向间隙	50μm or less（lead 1mm, 2mm）/ 50μm以下（导程1mm、2mm） 100μm or less（more than lead 2mm）/ 100μm以下（导程超过2mm）
Accuracy grade / 精度等级	C10（JISB1192）
Cumulative lead error / 累积导程误差	±0.21/300mm

●材料特性表　Material characteristics

	AS5000
Specific gravity / 比重	1.53
Hardness / 硬度	80 Durometer / Durometer
Tensile strength / 抗拉强度	51Mpa
Elongation / 延伸率	3%
Bending strength / 弯曲强度	61Mpa
Water absorption rate / 吸水率	0.05%
Linear Expansion coefficient / 线膨胀系数	8.1×10^{-5} / °C
Maximum temperature / 使用极限温度	230°C

●尺寸表　Dimension table

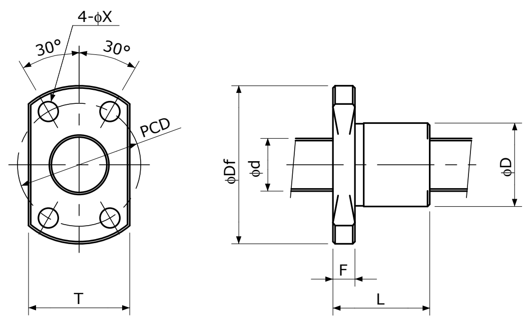
公称型号的构成　Model number notation

R — MSS 04 01 Y — 200 R 200

1　2　3　4　5　6　7　8

1NTN公司产品
2微型树脂滑动丝杠
3丝杠轴公称外径(mm)
4导程(mm)
5螺母材质符号：BEAREE AS5000
6螺纹部长度(mm)
7螺纹旋向(仅右旋)
8丝杠轴总长(mm)

1NTN products
2Miniature Plastic Lead Screws
3Shaft nominal diameter(mm)
4Lead(mm)
5Nut symbol：BEAREE AS5000
6Screw thread length(mm)
7Thread direction(Right-hand only)
8Screw Shaft total length(mm)



Unit(单位):mm

Model 型号	Shaft 丝杠轴			Nut 螺母							Shaft length 标准轴长
	Dia. 公称直径 d	Lead 导程	Number of thread 螺纹条数	D	L	Df	F	P.C.D	X	T	
R-MSS0401Y	4	1	1	10	11.5	23	3.5	15	2.9	15	200
R-MSS0402Y		2	2								
R-MSS0601Y	6	1	1	12	14.5	26		18	3.4	17	300
R-MSS0602Y		2									
R-MSS0609Y		9	4								
R-MSS0618Y		18									
R-MSS0801Y	8	1	1	14	18	29	4	21		18	300
R-MSS0802Y		2									
R-MSS0812Y		12	4								400
R-MSS0824Y		24	6								
R-MSS1002Y	10	2	1	16	22	33	5	24	4.5	21	300
R-MSS1015Y		15	4								450
R-MSS1030Y		30	6								
R-MSS1202Y	12	2	1	18	25	35		26		22	300
R-MSS1218Y		18	6								500
R-MSS1236Y		36									

注1)标准丝杠轴的轴端未进行加工。本公司可提供轴端加工，如有需要敬请指示。

Note 1) End-journal is not machined. Please inquire, if end-journal machining is required.

●技术数据　Technical data

Model 型号	Shaft 丝杠轴		Permissible Axial Load 许用轴向负载 [2]	Permissible Revolution 许用转速 [2]	Tightening Torque(max) 紧固扭矩(最大) [3]	Efficiency 丝杠效率 [1]
	Dia. 公称直径 mm	Lead 导程 mm	N	rpm	N·mm	%
R-MSS0401Y	4	1	50	2000	180	45
R-MSS0402Y		2	60			70
R-MSS0601Y	6	1	120	2000	400	40
R-MSS0602Y		2	60			55
R-MSS0609Y		9	90			85
R-MSS0618Y		18	110			85
R-MSS0801Y	8	1	200	2000		30
R-MSS0802Y		2	290			45
R-MSS0812Y		12	210			80
R-MSS0824Y		24	210			85
R-MSS1002Y	10	2	460	1500	500	40
R-MSS1015Y		15	410			80
R-MSS1030Y		30	440			85
R-MSS1202Y	12	2	660	1000		35
R-MSS1218Y		18	750			75
R-MSS1236Y		36	540			80

许用判断标准：使用R-MSS0824Y在轴向负载100N、转速2000rpm的条件下进行移动距离200km的试验，确认无任何异常磨损。其他均由计算得出。

1丝杠效率是在测得丝杠轴在承受轴向负载且使树脂螺母旋转时的旋转扭矩后，由下式求出。

$$\eta = \frac{R \cdot Q \cdot \tan\beta}{M} \times 100\ (\%) \qquad \tan\beta = \frac{Lead}{2\pi R}$$

η：丝杠效率
R：螺纹有效半径
Q：轴向负载
β：导程角
M：旋转扭矩

2许用轴向负载和许用转速是在下列试验条件下测得的值。
1)试验机：NTN滑动丝杠耐久试验机
2)条件：室温、无润滑剂、丝杠轴旋转、100mm行程往复(200mm/周期)
或200mm往复(400mm/周期)
3)许用值判断标准：按照上表的许用轴向负载和许用转速的组合条件运行10^3个周期或
6×10^3个周期，确认丝杠面无变形和异常磨损。

3将树脂螺母固定于配合零件上时的安装螺丝紧固扭矩。

Criteria：MSS0824Y, verification of no remarkable wear after 200km running test under 100N of Axial Load and 2,000rpm of Speed. Other than that are obtained by calculation.

1 Efficiency η is calculated by following formula based on measurement results of rotational torque (M) under the Axial Load (Q).

$$\eta = \frac{R \cdot Q \cdot \tan\beta}{M} \times 100\ (\%) \qquad \tan\beta = \frac{Lead}{2\pi R}$$

η：Efficiency
R：Pitch circle radius
Q：Axial Load
β：Lead angle
M：Rotational torque

2 Permissible Axial Load and Permissible Revolution are based on the test results under the following condition.
1) Test machine：NTN Lead Screw Durability test machine
2) Condition：Room temperature, no lubricant, 100mm travel (200mm/ cycle)
or 200mm travel (400mm/cycle)
3) Criteria：No remarkable damage or wear on Screw surface under the Permissible Load and Revolution in the table above.

3 This number means when Plastic Nut is fixed onto the Bracket.

滚珠丝杠支架组件篇　Ball Screw Support Units

序言
Outline

KSS推出了最适合微型滚珠丝杠轴端的支架组件系列产品。特别是MSU系列(紧凑型),在以往的支架组件的基础上大幅度减轻了重量,实现了小型化。所有产品均设计为可以安装到KSS滚珠丝杠的标准形状轴端上。请务必与滚珠丝杠配合使用。

KSS provides the customer with suitable Support Units for end journal of Miniature Ball Screws.
Especially, MSU series, which is called Compact type, has feature of light weight & compact compared to existing series. All of our Support Units fit the standard end journal profile of KSS Ball Screws.
Please try and use them as well as Ball Screws.

●系列与分类 / Series classification

各系列均备有固定侧组件和支撑侧组件。
Each series can provide both of fixed-side and supported-side Support Units.

- KSS支架组件 / KSS Support Units
  - MSU系列 (紧凑型) / MSU series (Compact type)
    - 枕型 / Pillow type
    - 法兰型 / Flange type
  - SUP和EK、EF系列 / SUP & EK, EF series
    - 块型 / Block type

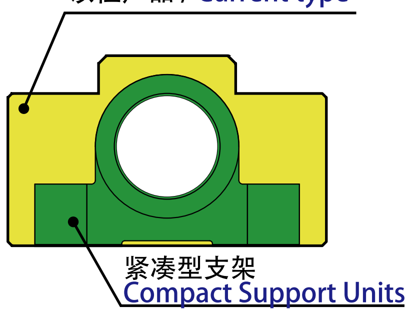
[MSU系列 / MSU Series]

与以往产品相比,重量减轻50%以上

Light weight (more than 50% down)

与本公司产品相比 / Comparison to our current model

紧凑型支架组件
Compact Support Units



在以往支架组件的基础上最大限度地减小外形尺寸,实现了轻量小型化,最适合于微型滚珠丝杠。
This type of Support Unit has features of light-weight & compact profile compared to our conventional Support Units. KSS believes this type is suitable for Miniature Ball Screws.

●特点

- 去除了以往产品中累赘的部分,最大限度缩小了安装孔距,重量更轻、外形更紧凑。
- 安装有进行了预压管理的微型角接触球轴承,确保了轴向的高刚性。
- 角接触球轴承采用双封闭型,防尘性能佳、零件数量少,大大降低了成本。
- 轴承采用不锈钢材质,封入有低起尘润滑脂,也可在无尘环境中使用
- 系列中新增加超小尺寸(f3)产品,推出超小型滚珠丝杠的支架组件
- 将枕型和法兰型两种(固定侧、支撑侧)产品标准化,扩大了用户的选择范围

●Features

- By eliminating extra shape of Housing, and minimizing pitch of mounting holes, light-weight & compact design Support Units became reality.
- Pre-load controlled Angular Contact Bearings are installed, so Rigidity can be kept high.
- Reasonable price has been achieved with reducing number of components, because oil seals have been eliminated by using shielded type Angular Contact Bearings.
- Angular Contact Bearings are made from stainless steel and low contamination Grease is applied, so Support Units can be used in clean-environment.
- Ultra-compact size (f3) is standardized, it would be suitable for Ultra Miniature Ball Screws.
- Pillow & Flange type are standardized for both fixed & supported side, so wide variety of choices are available.

●种类 / Variation

紧凑型支架组件(MSU系列)备有枕型和法兰型两种类型,可满足用户不同的安装状态。两种类型的固定侧、支撑侧组件均已实现标准化。枕型产品与以往产品相比,重量大幅度减轻,外形更紧凑。以往产品(块型)也在继续销售。

Compact Support Units (MSU series) provide 2 choices of Housing type, which are Pillow type and Flange type. Fixed side and supported side Units are standardized for each type. In case of Pillow type, it became light-weight & more compact compared to our conventional type. Our conventional models, which are Block type Support Units, are still available.

枕型 / Pillow type

法兰型 / Flange type

●规格 / Specifications

紧凑型支架组件(MSU系列)中安装的角接触球轴承使用不锈钢材质,封入有低起尘润滑脂。其他零件也采用不锈钢材质、或经过了发黑处理,也可应用于无尘环境。还可提供轴承钢(SUJ2)材质+封入了耐微动磨损润滑脂的产品,详情请向KSS咨询。

Angular Contact Bearings built in Compact Support Units (MSU series) are made from stainless steel and low contamination Grease is applied. Other components of Support Units are also made form stainless steel or are coated by black finishing. These series can be used in clean-environment.

[MSU系列使用的轴承 / Ball Bearings for MSU Series]

角接触球轴承 / Angular Contact Ball Bearings

用于紧凑型支架组件(MSU系列)固定侧的角接触球轴承。
根据用户需求,以轴承单体(组装好的状态)的形式销售。(参照E115-E116页)

This series is the Angular Contact Ball Bearings built in fixed side of Compact Support Units (MSU series).
This can be provided as a set of DF or DB configuration only.
(Refer to dimension table in page E115-E116)

深沟球轴承 / Deep Groove Bearings

用于紧凑型支架组件(MSU系列)支撑侧的深沟球轴承。
根据用户需求,以轴承单体的形式销售。
(参照E117-E118页)

This series is the Deep Groove Ball Bearings built in supported side of Compact Support Units (MSU series).
This type can be provided as a Bearing itself.
(Refer to dimension table in page E117-E118)

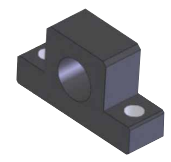
[EK、EF系列 / EK, EF Series]

固定侧
Fixed end

EK型 / EK type

支撑侧
Supported end

EF型 / EF type



SUP型 / SUP type

●特点

- 备有固定侧组件和支撑侧组件,固定侧组件中组装有角接触球轴承(已调整预压),通用性广;支撑侧组件中安装有深沟球轴承和止动环。
- 固定侧组件在两侧(单侧)内置有密封,因此在常规环境下无需采取特殊防尘措施。

●Features

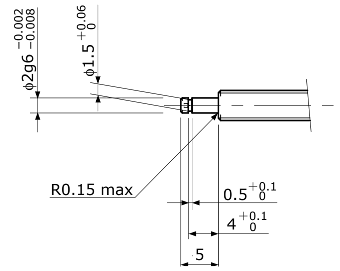
- Multi-use Angular Contact Ball Bearings (with pre-load) are built in Fixed side Support Units, and Deep Groove Bearing is attached in supported side Unit with stop ring.
- Fixed-side Support Unit has seals at both end (or one end), so special dust protection is not necessary under normal circumstance.

●标准库存品 / Standardized end-journal profile

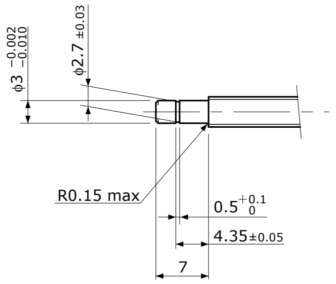
KSS支架组件均设计为可以安装到KSS微型滚珠丝杠的标准形状轴端上。KSS标准轴端形状及其对应的KSS支架组件的一览表如下所示。

KSS Support Units are designed to fit standard end-journal profile of KSS Miniature Ball Screws. Table below shows KSS Support Units list corresponding to standard end-journal profile.

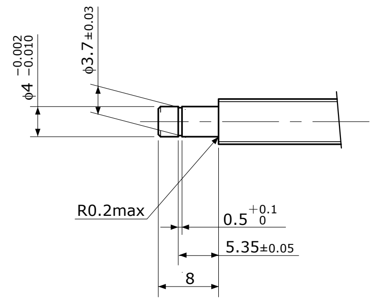
【支撑侧 / Supported side】



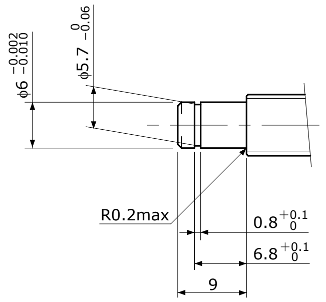
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f2	MSU-3CS / MSU-3GS



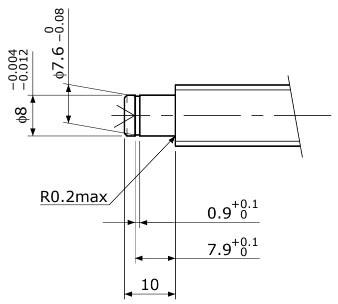
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f3	MSU-4CS / MSU-4GS , SUP03-S



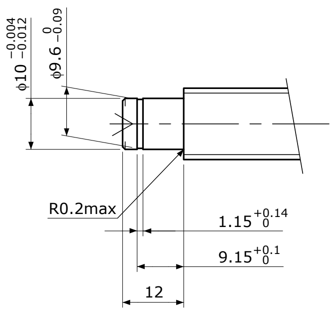
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f4	MSU-5CS / MSU-5GS , SUP04-S



Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f6	MSU-6CS / MSU-6GS , EF6 MSU-8CS / MSU-8GS , EF8

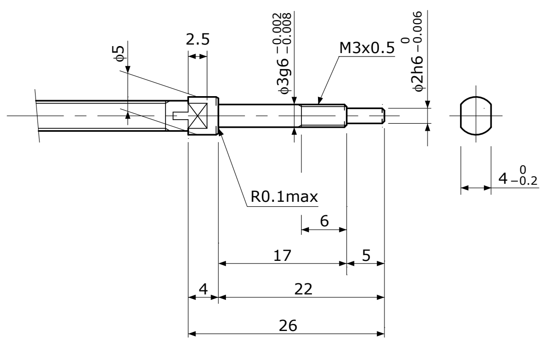


Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f8	EF10

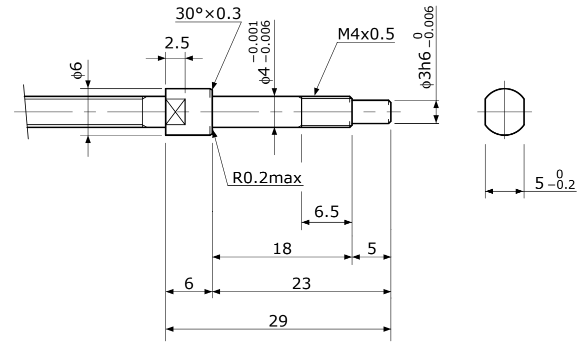


Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f10	EF12

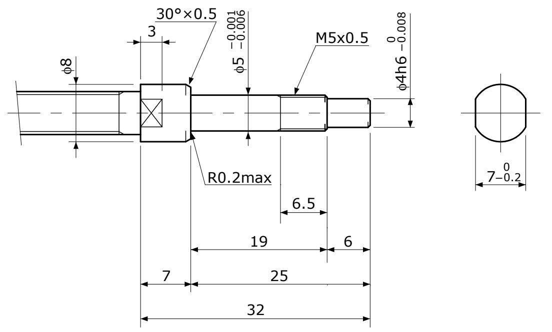
【固定侧 / Fixed side】



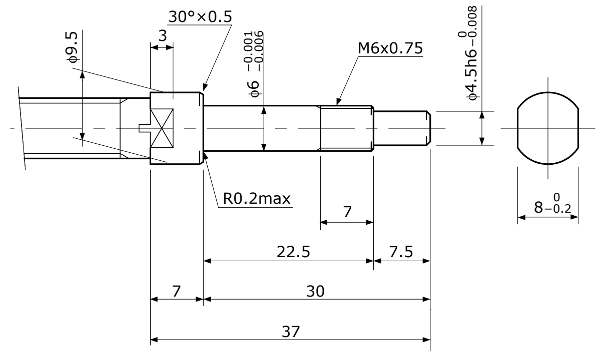
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f3	MSU-3C / MSU-3G



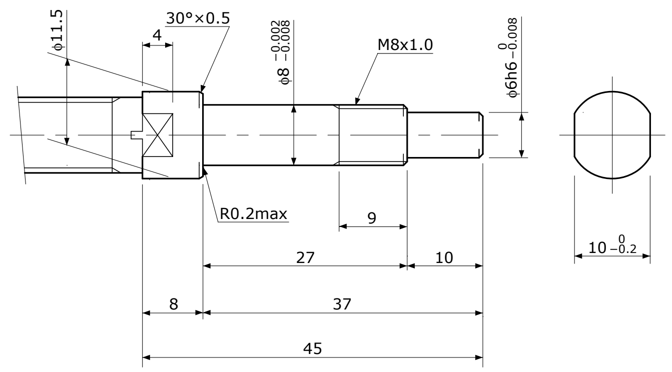
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f4	MSU-4C / MSU-4G , EK4



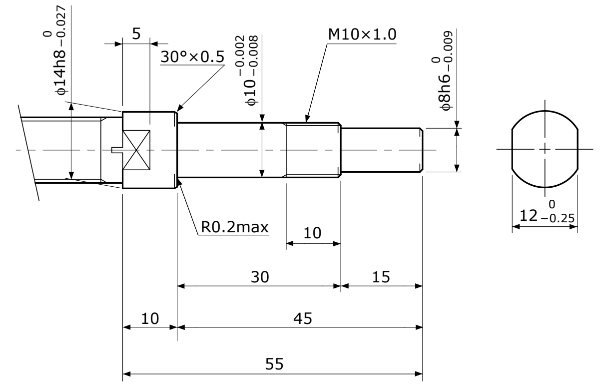
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f5	MSU-5C / MSU-5G , EK5



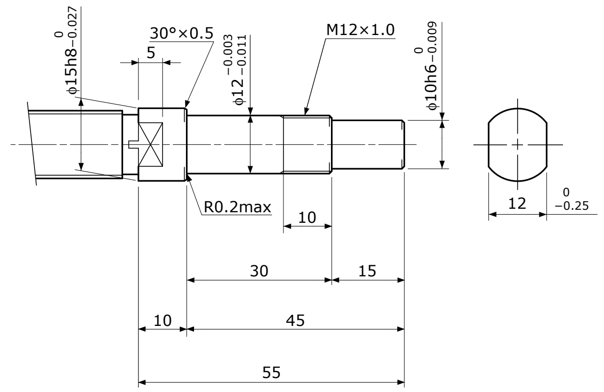
Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f6	MSU-6C / MSU-6G , EK6



Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f8	MSU-8C / MSU-8G , EK8



Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f10	EK10



Brg. Inner dia. 轴承内径	Support Unit model 适用的支架组件
f12	EK12

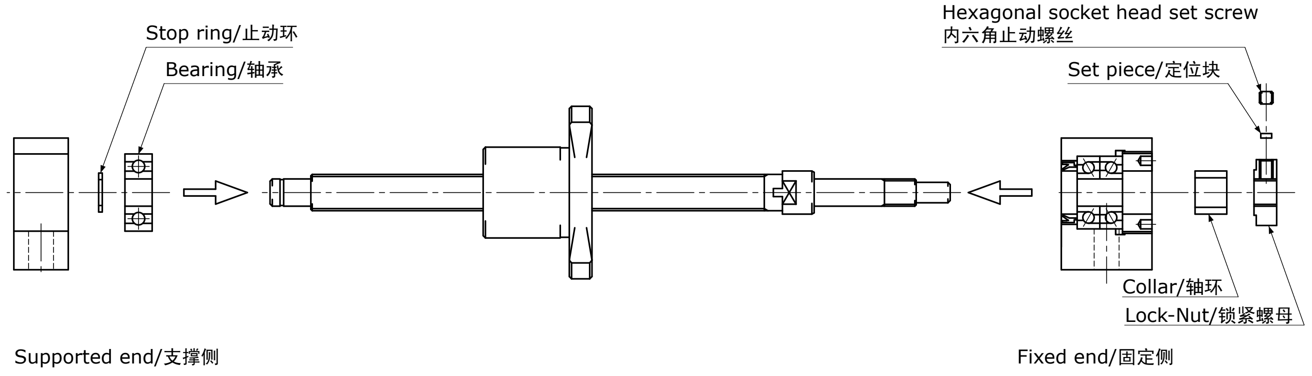
●安装步骤 / Mounting procedure

1.支架组件的组装

1) 将固定侧支架组件组装在滚珠丝杠上。
   注1) 请勿拆分支架组件。
   注2) 将轴插入支架组件后，请用锁紧螺母进行紧固，避免定位块翘起。
2) 插入固定侧支架组件后，用锁紧螺母进行紧固，并通过定位块、内六角止动螺丝进行固定。
3) 组装支撑侧轴承，用止动环固定后装入外壳。

1.Assembling Support Unit

1) Mount the fixed end Support Unit onto the Ball Screw.
   Note 1) Do not disassemble the Support Unit.
   Note 2) Tighten the Lock-Nut after inserting the Shaft into the Support Unit, and make sure that the set piece is not allowed to curl.
2) Tighten the Lock-Nut after inserting into the fixed end Support Unit, and secure using the set piece and hexagonal socket head set screw.
3) Mount the supported end Bearing, secure with the stop ring, and fit into the Housing.

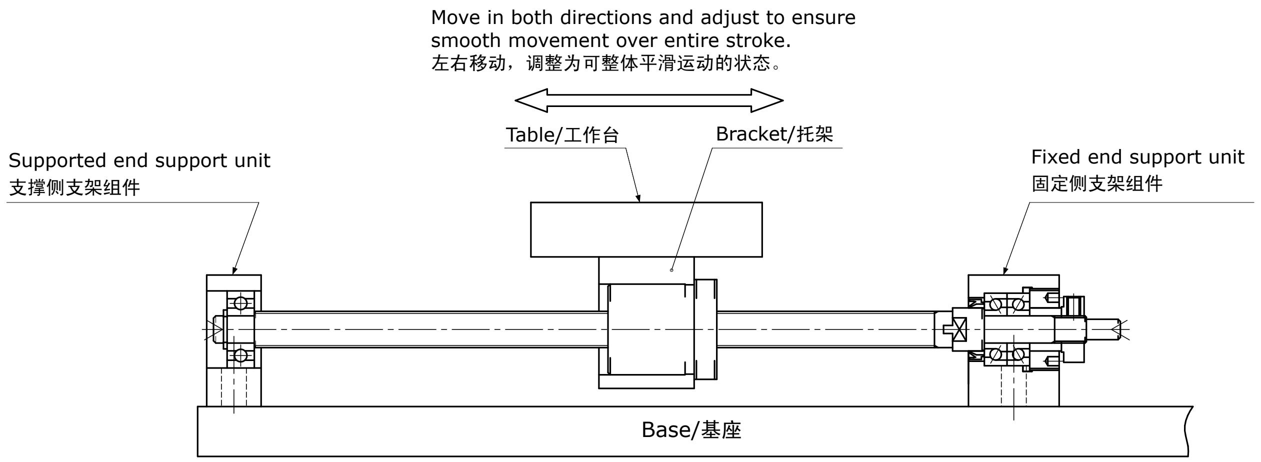


2.工作台和滚珠丝杠螺母的组装以及组件和基座的安装

1) 将滚珠丝杠螺母插入工作台(使用托架时插入托架)后临时固定。
2) 将固定侧支架组件临时固定到基座上。
   注1) 此时，请将工作台靠近支架组件侧进行定心，并将工作台调整到可平滑移动的状态。

2.Mounting the table on the Ball Screw Nut and mounting the Support Unit on the base

1) Insert the Ball Screw Nut into the table, or, when using Brackets to attach the table to the Ball Screw Nut, insert into the Bracket, and loosely tighten.
2) Loosely secure the fixed end Support Unit to the base.
   Note 1) Move the table toward the Support Unit and center it. Adjust to ensure that the table moves smoothly.

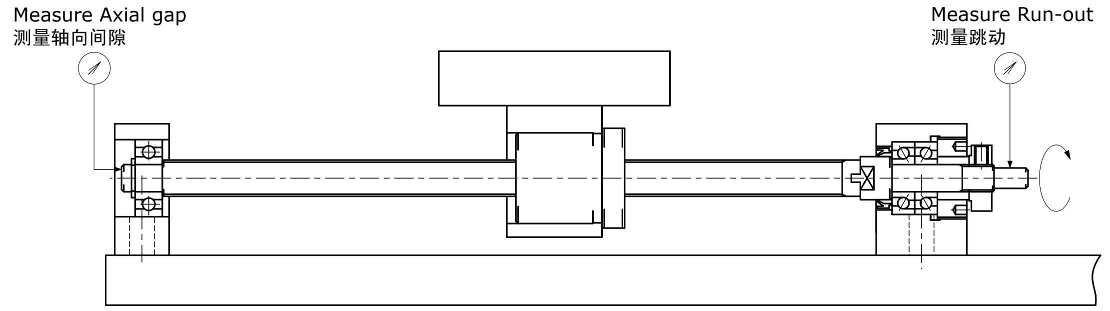


3.支撑侧外壳和基座的安装及精度确认

1) 将工作台靠近支撑侧外壳并进行定心，然后使工作台往复运动，将其调整到整体可平滑运动的状态，然后临时固定到基座上。
2) 通过千分表确认滚珠丝杠轴端的跳动、轴向间隙，同时切实紧固螺母、固定侧支架组件及支撑侧外壳。

3.Mounting the supported end Housing on the base and checking accuracy

1) Move the table toward the supported end Housing and center it. Move the table in both directions and adjust to ensure smooth movement over entire length. Secure loosely to the base.
2) Check the Run-out and Axial gap at the Ball Screw Shaft end using a dial gauge, and fully tighten the Nut, fixed end Support Unit and supported end Housing.

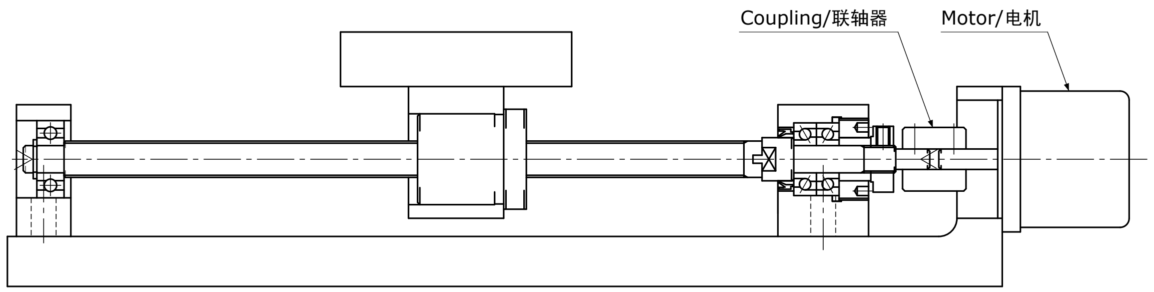


4.与电机的连接

1) 将电机固定到主体上。
2) 通过联轴器连接电机和滚珠丝杠。
3) 请进行充分的磨合运行。

4.Connecting to the Motor

1) Secure the Motor to the main Unit.
2) Connect the Motor to the Ball Screw using the coupling.
3) Run in thoroughly.

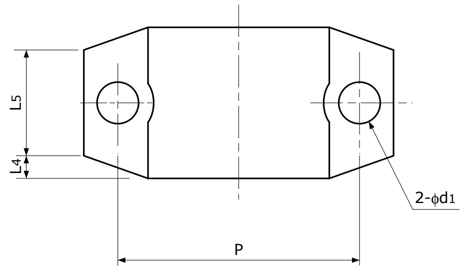


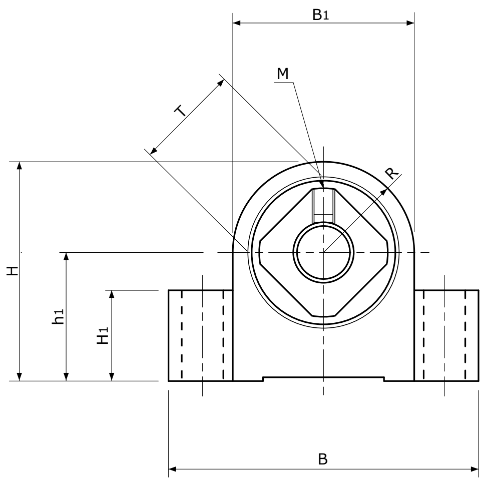
注) 上述内容为枕型、块型的安装步骤，法兰型也请按相同要领进行安装。

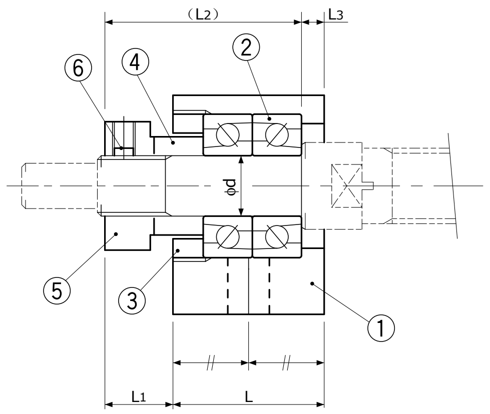
Note) Instruction above is for Pillow type and Block type Support Units, In case of Flange type Support Units, the same procedure can be applicable.

MSU Series
MSU系列

Pillow type（Fixed side）
枕型（固定侧）







●公称型号的构成 / Model number notation

MSU — 5 C S
1　　2 3 4

1系列符号
MSU：KSS紧凑型支架组件系列
2公称型号
3形状符号
C：枕型
G：法兰型
4轴端符号
无符号：固定侧
S：支撑侧

1Series No.
MSU：KSS Compact Support Unit Series
2Nominal number
3Housing type
C：Pillow type
G：Flange type
4End-journal type
None：fixed side
S：supported side

注）支撑侧支架组件的公称型号可能与轴承内径不一致，敬请注意。
Note）In some cases, nominal number is not the same as Bearing Inner diameter.

Parts List / 零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳（Black Chrome coating / 黑铬处理）	1
2	Bearings / 轴承（with Shields / 带护板）	1 set
3	Pressure Nut / 压紧螺母	1
4	Collar / 轴环	1
5	Lock Nut / 锁紧螺母	1
6	Hexagonal socket head set screw / 内六角止动螺丝 （with set piece / 带定位块）	1 set

Unit（单位）：mm

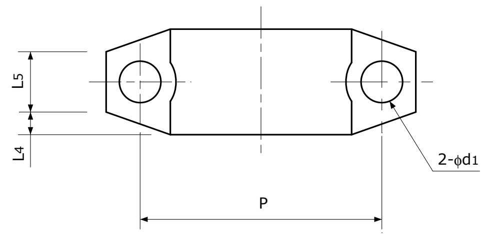
Type 型号	Brg. Inner dia. 轴承内径 d 0 −0.005	L	L_1	L_2	L_3	L_4	L_5	B	H	h_1 0 −0.03	B_1		H_1	R	P	d_1	M	T	Lock Nut 锁紧螺母	Tightening torque of Lock Nut 锁紧螺母的紧固扭矩 N•cm	Bearing 使用的轴承	Mass 重量 g	Type 型号
MSU-3C	3	12.5	5.5	16.5	1.5	2	8.5	24	14.5	9	11		5	5.5	18	3.5	M3	8	M3×0.5	80	MTA03-08HP5DF	16.5	MSU-3C
MSU-4C	4	14	5.5	17.5	2	2.5	9	27	17	10	14		6	7	21	3.5	M3	10	M4×0.5	100	MTA04-11HP5DF	27	MSU-4C
MSU-5C	5	15	5.5	18.5	2	2	11	30.5	19.5	11	17		6	8.5	23	4.5	M3	11	M5×0.5	140	MTA05-13HP5DF	35	MSU-5C
MSU-6C	6	17	7.5	22	2.5	2.5	12	35	22.5	13	19		8	9.5	26	5.5	M3	12	M6×0.75	190	MTA06-15HP5DF	50	MSU-6C
MSU-8C	8	20	9	26	3	3	14	41	29	17	24		12	12	32	5.5	M3	14	M8×1.0	200	MTA08-19HP5DF	96	MSU-8C

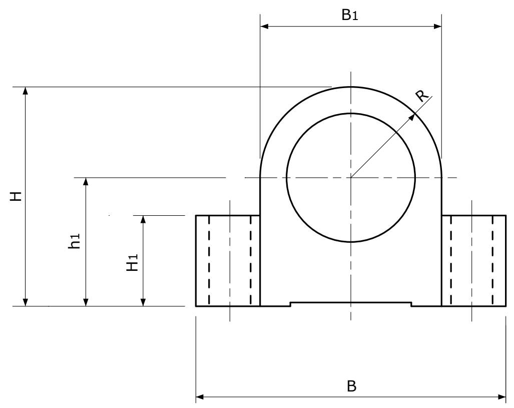
注1）角接触球轴承（ISC制）采用不锈钢材质，并注入有低起尘润滑脂（NSK LG2），是无尘规格的轴承。
注2）压紧螺母、轴环、锁紧螺母均经过了发黑处理。
注3）支架组件已经过预压调整，请勿进行拆分。

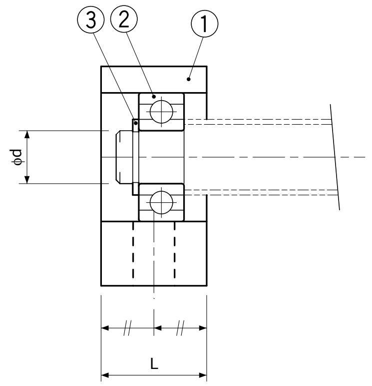
Note 1）Angular Contact Ball Bearings（manufactured by ISC）are designed for clean room use, they are made of Stainless steel with low contamination grease（NSK LG2）packed.
Note 2）Pressure Nut, Collar and Lock Nut are coated with Black finishing.
Note 3）Do not disassemble Support Unit, as they are pre-loaded and pre-adjusted.

MSU Series
MSU系列

Pillow type (Supported side)
枕型（支撑侧）







●公称型号的构成 / Model number notation

MSU — 5 C S

1　2　3　4

1系列符号	1Series No.
MSU : KSS紧凑型支架组件系列	MSU : KSS Compact Support Unit Series
2公称型号	2Nominal number
3形状符号	3Housing type
C : 枕型	C : Pillow type
G : 法兰型	G : Flange type
4轴端符号	4End-journal type
无符号 : 固定侧	None : fixed side
S : 支撑侧	S : supported side

注）支撑侧支架组件的公称型号可能与轴承内径不一致，敬请注意。
Note) In some cases, nominal number is not the same as Bearing Inner diameter.

Parts List / 零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳（Black Chrome coating / 黑铬处理）	1
2	Bearing / 轴承（with Shields / 带护板）	1
3	Stop ring / 止动环	1

Unit（单位）: mm

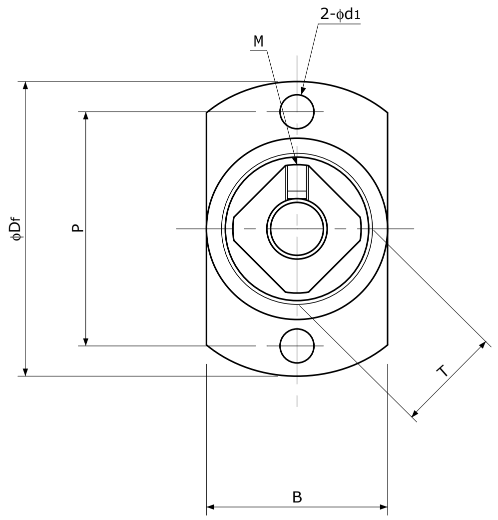
Type 型号	Brg. Inner dia. 轴承内径 d 0 −0.005	L	L_4	L_5	B	H	h_1 0 −0.03	B_1		H_1	R	P	d_1	Bearing 使用的轴承	Stop ring 使用的止动环	Mass 重量 g	Type 型号
MSU-3CS	2	8	2	4	24	14.5	9	11		5	5.5	18	3.5	602HZZ	ETW-1.5（OCHIAI / 落合）	8.5	MSU-3CS
MSU-4CS	3	10	2.5	5	27	17	10	14		6	7	21	3.5	623HZZ	G-3（IWATA / 磐田电工）	16	MSU-4CS
MSU-5CS	4	10	2	6	30.5	19.5	11	17		6	8.5	23	4.5	624HZZ	G-4（IWATA / 磐田电工）	21	MSU-5CS
MSU-6CS	6	12	2.5	7	35	22.5	13	19		8	9.5	26	5.5	B6-113HZZ1	STW-6（OCHIAI / 落合）	32	MSU-6CS
MSU-8CS	6	14	3	8	41	29	17	24		12	12	32	5.5	606HZZ1	STW-6（OCHIAI / 落合）	60	MSU-8CS

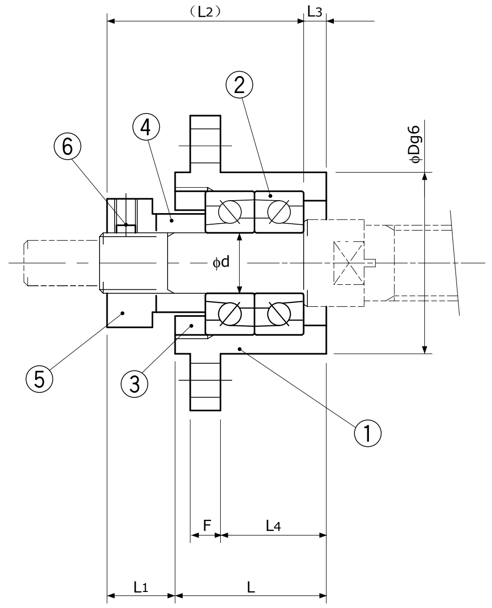
注1）深沟球轴承（ISC制）采用不锈钢材质，并注入有低起尘润滑脂（NSK LG2），是无尘规格的轴承。
注2）交货时使用的止动环可能会是同等规格的其他产品。

Note 1）Deep Groove Ball Bearing（manufactured by ISC）is designed for clean room use, it is made of Stainless steel with low contamination grease（NSK LG2）packed.
Note 2）Stop ring may be the equivalent one described in the table above.

MSU Series
MSU系列

Flange type (Fixed side)
法兰型（固定侧）





●公称型号的构成 / Model number notation

MSU — 5 G S

1 2 3 4

1系列符号
MSU：KSS紧凑型支架组件系列
2公称型号
3形状符号
C：枕型
G：法兰型
4轴端符号
无符号：固定侧
S：支撑侧

1Series No.
MSU : KSS Compact Support Unit Series
2Nominal number
3Housing type
C : Pillow type
G : Flange type
4End-journal type
None : fixed side
S : supported side

注）支撑侧支架组件的公称型号可能与轴承内径不一致，敬请注意。
Note) In some cases, nominal number is not the same as Bearing Inner diameter.

Parts List / 零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳（Black Chrome coating / 黑铬处理）	1
2	Bearings / 轴承（with Shields / 带护板）	1 set
3	Pressure Nut / 压紧螺母	1
4	Collar / 轴环	1
5	Lock Nut / 锁紧螺母	1
6	Hexagonal socket head set screw / 内六角止动螺丝（with set piece / 带定位块）	1 set

Unit（单位）：mm

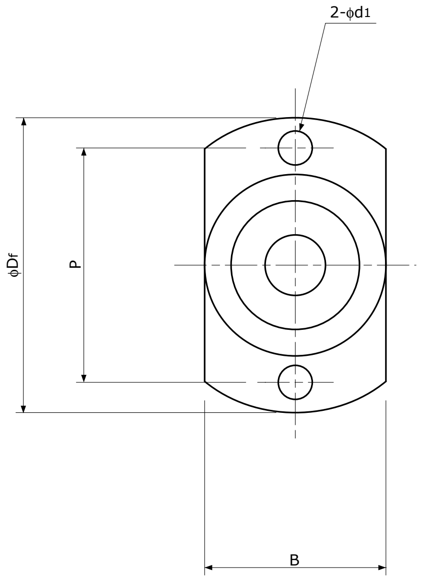
Type 型号	Brg. Inner dia. 轴承内径 d 0 −0.005	L	L1	L2	L3	F	L4	B	Df		D	P	d1	M	T	Lock Nut 锁紧螺母	Tightening torque of Lock Nut 锁紧螺母的紧固扭矩 N•cm	Bearing 使用的轴承	Mass 重量 g	Type 型号
MSU-3G	3	12.5	5.5	16.5	1.5	3	7.5	11	23		11	17	3.5	M3	8	M3×0.5	80	MTA03-08HP5DF	12.5	MSU-3G
MSU-4G	4	13.5	5.5	17.5	1.5	3	8.5	14	26		14	20	3.5	M3	10	M4×0.5	100	MTA04-11HP5DF	20	MSU-4G
MSU-5G	5	15	5.5	18.5	2	3	10	17	29		17	23	3.5	M3	11	M5×0.5	140	MTA05-13HP5DF	30	MSU-5G
MSU-6G	6	17	7.5	22	2.5	4	12	19	34		19	26	4.5	M3	12	M6×0.75	190	MTA06-15HP5DF	42	MSU-6G
MSU-8G	8	20	9	26	3	4	16	24	39		24	31	4.5	M3	14	M8×1.0	200	MTA08-19HP5DF	70	MSU-8G

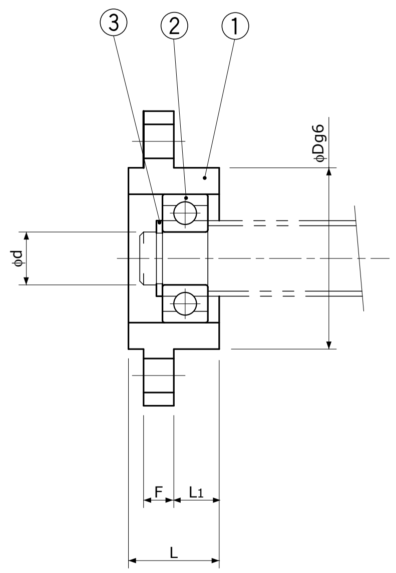
注1）角接触球轴承（ISC制）采用不锈钢材质，并注入有低起尘润滑脂（NSK LG2），是无尘规格的轴承。
注2）压紧螺母、轴环、锁紧螺母均经过了发黑处理。
注3）支架组件已经过预压调整，请勿进行拆分。

Note 1) Angular Contact Ball Bearings (manufactured by ISC) are designed for clean room use, they are made of Stainless steel with low contamination grease (NSK LG2) packed.
Note 2) Pressure Nut, Collar and Lock Nut are coated with Black finishing.
Note 3) Do not disassemble Support Unit, as they are pre-loaded and pre-adjusted.

MSU Series
MSU系列

Flange type (Supported side)
法兰型（支撑侧）





●公称型号的构成 / Model number notation

MSU — 5 G S
1 2 3 4

1系列符号
MSU : KSS紧凑型支架组件系列
2公称型号
3形状符号
C : 枕型
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4轴端符号
无符号 : 固定侧
S : 支撑侧

1Series No.
MSU : KSS Compact Support Unit Series
2Nominal number
3Housing type
C : Pillow type
G : Flange type
4End-journal type
None : fixed side
S : supported side

注）支撑侧支架组件的公称型号可能与轴承内径不一致，敬请注意。
Note) In some cases, nominal number is not the same as Bearing Inner diameter.

Parts List / 零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳（Black Chrome coating / 黑铬处理）	1
2	Bearing / 轴承（with Shields / 带护板）	1
3	Stop ring / 止动环	1

Unit（单位）: mm

Type 型号	Brg. Inner dia. 轴承内径 d 0 −0.005	L	F	L1	B	Df		D	P	d1	Bearing 使用的轴承	Stop ring 使用的止动环	Mass 重量 g	Type 型号
MSU-3GS	2	8	3	3	11	23		11	17	3.5	602HZZ	ETW-1.5 (OCHIAI / 落合)	7.5	MSU-3GS
MSU-4GS	3	10	3	5	14	26		14	20	3.5	623HZZ	G-3 (IWATA / 磐田电工)	12	MSU-4GS
MSU-5GS	4	10	3	5	17	29		17	23	3.5	624HZZ	G-4 (IWATA / 磐田电工)	16	MSU-5GS
MSU-6GS	6	10	4	5	19	34		19	26	4.5	B6-113HZZ1	STW-6 (OCHIAI / 落合)	24	MSU-6GS
MSU-8GS	6	10	4	6	24	39		24	31	4.5	606HZZ1	STW-6 (OCHIAI / 落合)	40	MSU-8GS

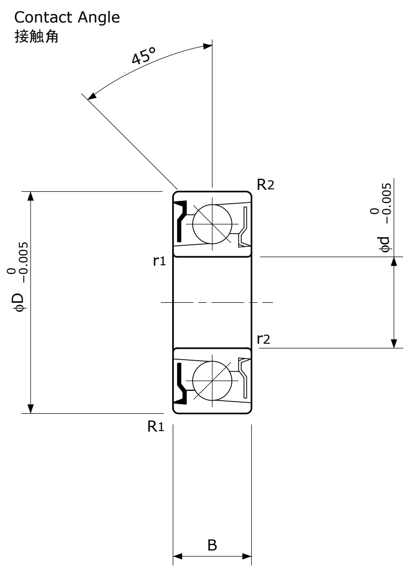
注1）深沟球轴承（ISC制）采用不锈钢材质，并注入有低起尘润滑脂（NSK LG2），是无尘规格的轴承。
注2）交货时使用的止动环可能会是同等规格的其他产品。

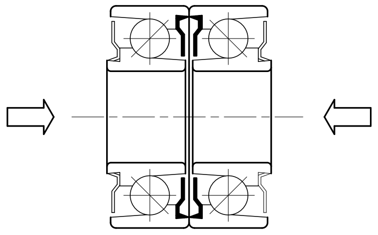
Note 1）Deep Groove Ball Bearing（manufactured by ISC）is designed for clean room use, it is made of Stainless steel with low contamination grease（NSK LG2）packed.
Note 2）Stop ring may be the equivalent one described in the table above.

Support Unit 支架组件

Fixed side Ball Bearings for MSU series
MSU系列/固定侧轴承

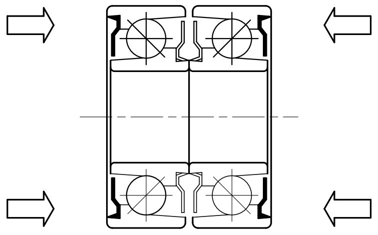
Angular Contact Ball Bearings (Stainless type)
角接触球轴承(不锈钢规格)





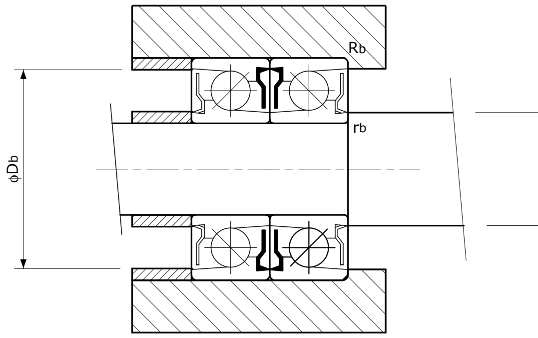
DB Type
(内圈预压)
对准青铜色

DB type
(Inner ring pre-load type)
**Silver colored shields are outside

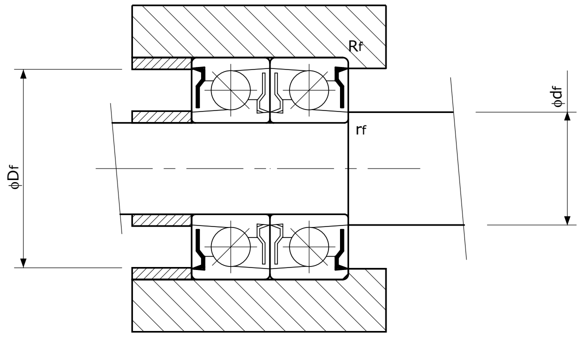


DF Type
(外圈预压)
对准银色

DF type
(Outer ring pre-load type)
**Bronze colored shields are outside



DB Configuration
DB组合



DF Configuration
DF组合

●公称型号的构成 / Model number notation

MTA 08 − 19 H P5 DF

1 2 3 4 5 6

1系列符号
2轴承内径(mm)
3轴承外径(mm)
4材料符号
  H :不锈钢
  T :轴承钢
5精度等级
  相当于P5
6组合类型
  DF:正面组合
  DB:背面组合

1Series No.
2Inner diameter of Bearing (mm)
3Outer diameter of Bearing (mm)
4Material
  H :Stainless Steel
  T :Bearing Steel
5Accuracy grade
  Equivalent to P5
6Duplex type
  DF: Face to Face duplex
  DB: Back to Back duplex

推荐的紧固扭矩 / Recommended tightening torque

Unit(单位):N•cm (kgf•cm)

Type / 型号	DF type DF型	DB type DB型
MTA02-06HP5DF/DB	19.6(2.0)	9.8(1.0)
MTA03-08HP5DF/DB	19.6(2.0)	14.7(1.5)
MTA04-11HP5DF/DB	49(5.0)	19.6(2.0)
MTA05-13HP5DF/DB	49(5.0)	24.5(2.5)
MTA06-15HP5DF/DB	78.4(8.0)	29.4(3.0)
MTA08-19HP5DF/DB	78.4(8.0)	39.2(4.0)

Unit(单位):mm

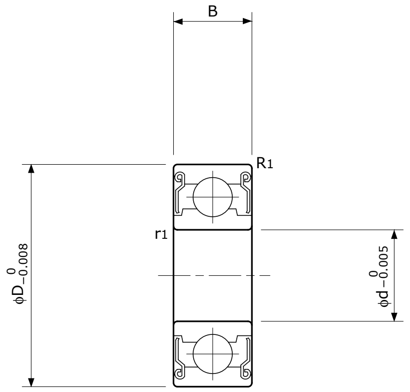
Type 型号	Dimension / 主要尺寸							Basic Load Rating 基本额定负载		Limit Speed 许用转速	Abutment & Fillet / 推荐的安装尺寸								Mass 重量	Type 型号
	I.D. 内径 fd	O.D. 外径 fD	Width 宽度 B	Chamfer (min.) / 倒角尺寸(最小)							DF type / DF型				DB type / DB型					
				r1	r2	R1	R2	Ca (N)	Coa (N)	min⁻¹	Df max. 最大	df min. 最小	Rf max. 最大	rf max. 最大	Db max. 最大	db min. 最小	Rb max. 最大	rb max. 最大		
MTA02-06HP5DF/DB	2	6	3	0.10	0.10	0.10	0.04	470	360	26,000	5.0	2.8	0.10	0.10	5.3	3.0	0.04	0.10	0.8	MTA02-06HP5DF/DB
MTA03-08HP5DF/DB	3	8	4	0.10	0.10	0.15	0.03	820	670	22,000	6.7	3.9	0.15	0.10	7.2	4.4	0.03	0.10	1.8	MTA03-08HP5DF/DB
MTA04-11HP5DF/DB	4	11	4.5	0.20	0.20	0.20	0.10	1250	1130	17,000	8.9	5.1	0.20	0.20	9.5	6.2	0.10	0.20	3.8	MTA04-11HP5DF/DB
MTA05-13HP5DF/DB	5	13	5	0.20	0.20	0.20	0.10	1780	1740	16,000	10.8	6.1	0.20	0.20	11.3	7.2	0.10	0.20	5.6	MTA05-13HP5DF/DB
MTA06-15HP5DF/DB	6	15	5.5	0.20	0.20	0.20	0.20	2350	2360	14,000	12.5	7.2	0.20	0.20	13.2	8.6	0.20	0.20	7.8	MTA06-15HP5DF/DB
MTA08-19HP5DF/DB	8	19	6.5	0.20	0.20	0.30	0.30	3400	3480	13,000	15.8	9.4	0.30	0.20	16.8	11.4	0.30	0.20	14.5	MTA08-19HP5DF/DB

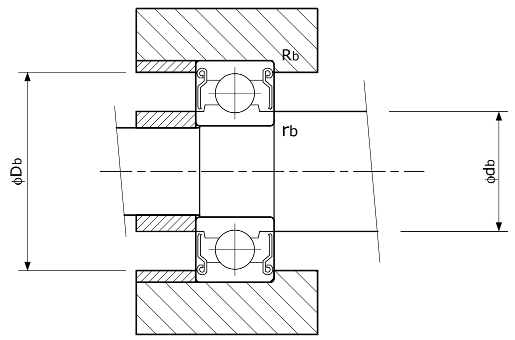
注1) 角接触球轴承(ISC制)采用不锈钢材质,并注入有低起尘润滑脂(NSK LG2),是无尘规格的轴承。如有需要,也可提供普通材质(SUJ2)、加注有耐微动磨损润滑脂的产品。
注2) 组合轴承时,请通过护板的颜色区分DF型或DB型(参照上图)。
注3) 订货时,请指定组合类型(DF型或DB型)。
注4) 仅销售组合轴承,不销售单品,敬请谅解!

Note 1) Angular Contact Ball Bearings (manufactured by ISC) are designed for clean room use, they are made of Stainless steel with low contamination grease (NSK LG2) packed.
If necessary, Bearing steel type Angular Contact Ball Bearings with anti-fretting grease can be also provided.
Note 2) Bearing duplex can be distinguished by the color of shield plate for each duplex, please refer to figure above.
Note 3) Please designate duplex number (DF or DB), when you place order.
Note 4) This series can be provided as sets of DF or DB configuration only.

Supported side Ball Bearings for MSU series
MSU系列/支撑侧轴承

Deep Groove Bearings（Stainless type）
深沟球轴承（不锈钢规格）





Unit（单位）：mm

Type 型号	Dimension / 主要尺寸					Basic Load Rating 基本额定负载			Limit Speed 许用转速	Abutment & Fillet / 推荐的安装尺寸				Mass 重量 (g)	Type 型号
	I.D. 内径 fd	O.D. 外径 fD	Width 宽度 B	Chamfer（min.）/ 倒角尺寸（最小） r1	R1	Cr (N)	Cor (N)		min⁻¹	Db max. 最大	db min. 最小	Rb max. 最大	rb max. 最大		
602HZZ	2	7	3.5	0.15	0.15	320	102		63,000	6.25	3.85	0.15	0.15	0.6	602HZZ
623HZZ	3	10	4	0.15	0.15	535	175		50,000	7.98	4.35	0.15	0.15	1.7	623HZZ
624HZZ	4	13	5	0.20	0.20	1110	390		40,000	11.35	6.0	0.20	0.20	3.1	624HZZ
B6-113HZZ1	6	15	6	0.20	0.20	1470	535		40,000	13.3	7.9	0.20	0.20	4.3	B6-113HZZ1
606HZZ1	6	17	6	0.30	0.30	1920	670		38,000	14.8	8.2	0.30	0.30	6.1	606HZZ1

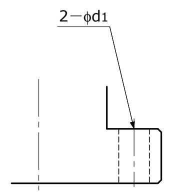
注1）深沟球轴承（ISC制）采用不锈钢材质，并注入有低起尘润滑脂（NSK LG2），是无尘规格的轴承。

Note 1）Deep Groove Ball Bearings（manufactured by ISC）are designed for clean room use, they are made of Stainless steel with low contamination grease（NSK LG2）packed.

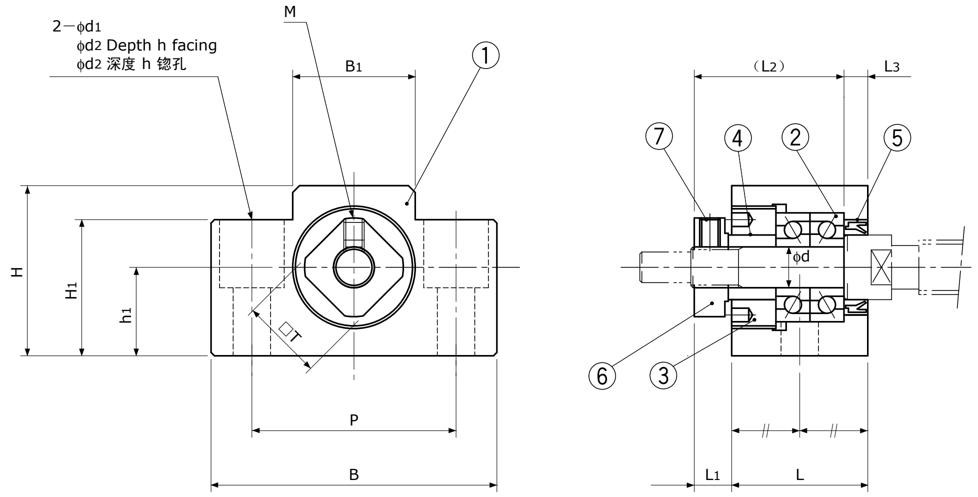
Support Unit 支架组件

EK series
EK系列

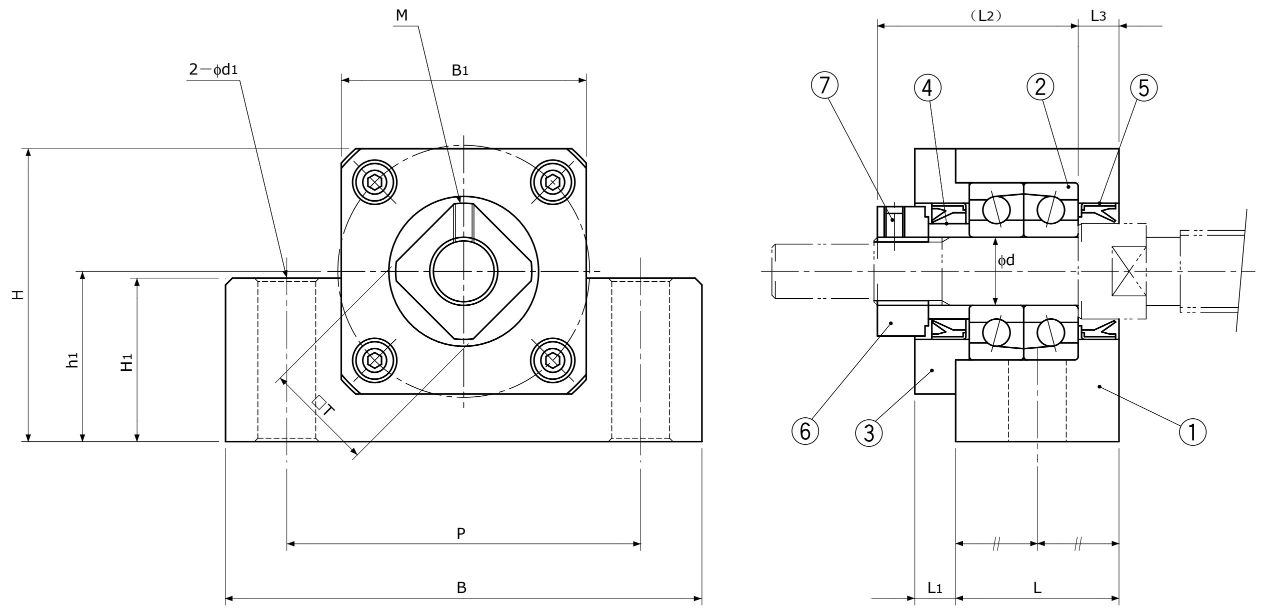
Block type (Fixed side)
块型(固定侧)



Mounting hole for EK4、EK5
EK4、EK5安装孔



EK4～EK8 type
EK4～EK8型



EK10～EK12 type
EK10～EK12型

EK4～EK8　Parts List　零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳	1
2	Bearing / 轴承	1 set
3	Pressure Nut / 压紧螺母	1
4	Collar / 轴环	1
5	Seal / 密封	1
6	Lock-Nut / 锁紧螺母	1
7	Hexagonal socket head set screw / 内六角止动螺丝 (with set piece / 带定位块)	1

●公称型号的构成 / Model number notation

EK 8
1 2

1系列符号/Series No.
2轴承内径/Inner diameter of Bearing (mm)

EK10～EK12　Parts List　零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳	1
2	Bearing / 轴承	1 set
3	Pressure cover / 压紧盖	1
4	Collar / 轴环	1
5	Seal / 密封	2
6	Lock-Nut / 锁紧螺母	1
7	Hexagonal socket head set screw / 内六角止动螺丝 (with set piece / 带定位块)	1

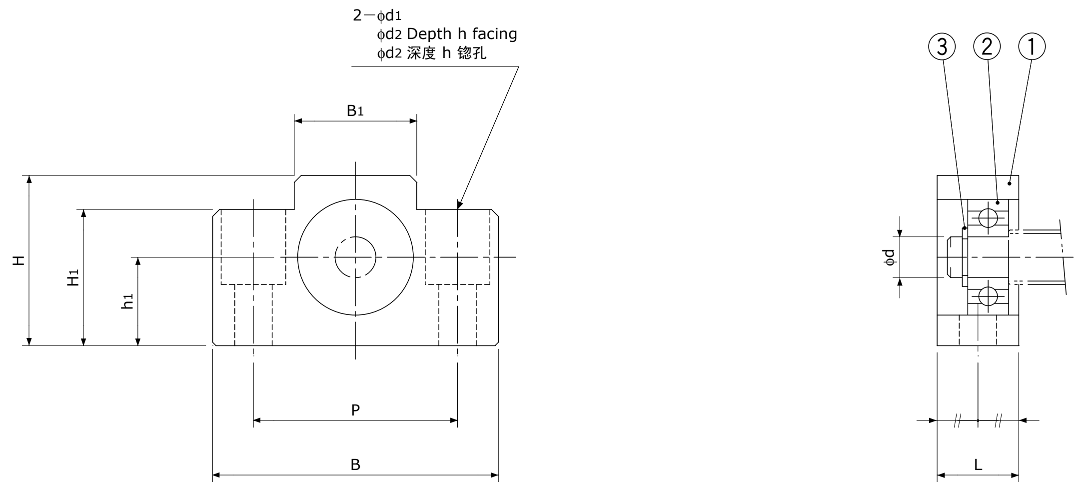
Unit (单位) : mm

Type 型号	Brg. Inner dia. 轴承内径 d	L	L_1	L_2	L_3	B	H	h_1 ±0.02	B_1		H_1	P	d_1	d_2	h	M	T	Bearing 使用的轴承	Mass 重量 g	Type 型号
EK 4	4	15	5.5	17.5	3	34	19	10	18		7	26	4.5	—	—	M2.6	10	AC4-12P5	60	EK 4
EK 5	5	16.5	5.5	18.5	3.5	36	21	11	20		8	28	4.5	—	—	M2.6	11	AC5-14P5	80	EK 5
EK 6	6	20	5.5	22	3.5	42	25	13	18		20	30	5.5	9.5	11	M3	12	AC6-16P5	140	EK 6
EK 8	8	23	7	26	4	52	32	17	25		26	38	6.6	11	12	M3	14	AC8-18P5	240	EK 8
EK 10	10	24	6	29.5	6	70	43	25	36		24	52	9	—	—	M3	16	7000DFGMP5	460	EK 10
EK 12	12	24	6	29.5	6	70	43	25	36		24	52	9	—	—	M3	19	7001DFGMP5	440	EK 12

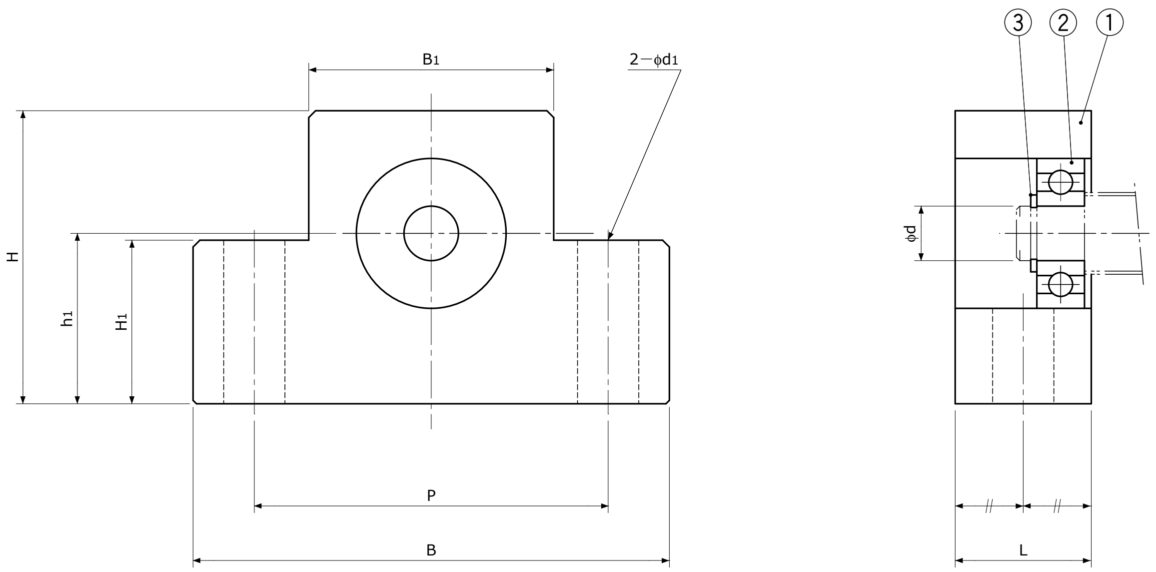
注)支架组件已经过预压调整，请勿进行拆分。
Note) Do not disassamble Support Unit, as they are pre-loaded and pre-adjusted.

SUP and EF series
SUP和EF系列

Block type (Supported side)
块型(支撑侧)



EF6、EF8 type / EF6、EF8型



SUP and EF10～EF12 type
SUP和EF10～EF12型

Parts List 零件表

Part No. 零件号	Part name 零件名称	Qty 数量
1	Housing / 外壳	1
2	Bearing / 轴承	1
3	Stop ring / 止动环	1

●公称型号的构成 / Model number notation

SUP 03 — S　　EF 8
1 2 3　　1 2

1系列符号/Series No.
2公称型号/Nominal number
3支撑侧符号/Supported side No.

注)EF型的公称型号可能与轴承内径不一致，敬请注意。
Note) In EF Series nominal No. may not be the same as Bearing Inner diameter.

Unit(单位):mm

Type 型号	Brg. Inner dia. 轴承内径 d	L	B	H	h_1 ±0.02	B_1	H_1		P	d_1	d_2	h	Bearing 使用的轴承	Stop ring 使用的止动环	Mass 重量 g	Type 型号
SUP03-S	3	10	34	19	10	18	7		26	4.5	—	—	623ZZ	G-3	35	SUP03-S
SUP04-S	4	10	36	21	11	20	8		28	4.5	—	—	624ZZ	G-4	40	SUP04-S
EF 6	6	12	42	25	13	18	20		30	5.5	9.5	11	606ZZ	C6	70	EF 6
EF 8	6	14	52	32	17	25	26		38	6.6	11	12	606ZZ	C6	130	EF 8
EF 10	8	20	70	43	25	36	24		52	9	—	—	608ZZ	C8	330	EF 10
EF 12	10	20	70	43	25	36	24		52	9	—	—	6000ZZ	C10	320	EF 12

电机直连型滚珠丝杠 / 滑动丝杠篇
Direct Motor Drive Ball Screws / Lead Screws

系列 / Series

是在驱动丝杠（滚珠丝杠或滑动丝杠）的轴端直接连接步进电机、不需要联轴器的紧凑型直线执行元件。

It's a Compact Linear Actuator series, what we call MoBo.
The MoBo is the combined product that Stepping Motor Shaft is directly mounted onto Drive Screw Shaft, and eliminated Coupling accordingly.

KSS以小型化为微型滚珠丝杠制造商的使命，不懈地追求产品的轻量小型化。
其代表产品MoBo（电机直连型滚珠丝杠/滑动丝杠），是将电机轴与滚珠丝杠轴合二为一的组合产品，不需要联轴器，从而缩短了长边方向的尺寸。
KSS自2001年推出MoBo以来，不断增加进给丝杠和电机的种类，为用户提供更多的选择。
本次，我们将电机直连型滚珠丝杠及滑动丝杠的各种产品汇集在一本产品目录中进行介绍，希望能加深用户对本公司MoBo系列产品的了解。
今后，我们将一如既往尽最大的努力满足用户的需求，开发出更多更好的产品，欢迎大家惠顾。

In KSS, we always pursue the downsizing of our products that is the mission of the Miniature Ball Screw manufacturer.
MoBo (Direct Motor Drive Ball Screws / Lead Screws) is one of our representative product, which combines a Motor Shaft and a Ball Screw / Lead Screw Shaft. MoBo is the combined product that can achieve shortening the longitudinal dimension by eliminating the Coupling.
Since KSS launched the first version of MoBo in 2001, we continued to add various type of MoBo on our line-up and provides the variety of choices to our customer.
This time KSS integrated all of our MoBo line-up into one catalogue to offer better understanding for the customer.
Now KSS will continue to meet the demand of the customer as much as possible, and will develop a better product in the future, thanking you in advance.

MoBo系列是驱动丝杠（滚珠丝杠 / 滑动丝杠）和步进电机（2相 / 5相）一体化的组合型产品，备有多种产品可供选择（表 F-1、表 F-2）。

MoBo series can offer many variety of choices, based on its combination of Stepping Motor type (2-phase or 5-phase) and Drive Screw type (Ball Screw or Lead Screw).
Please refer Table F-1 and Table F-2.

表 F-1：驱动丝杠和电机的组合 / Table F-1 ; Combination of Drive Screw and Stepping Motor

Type 种 类	Drive Screw type / 驱动丝杠		Stepping Motor 步进电机		Additional Function 附属装置
	Precision Ball Screw 精密滚珠丝杠	Rolled Ball Screw 冷轧滚珠丝杠	2-phase 2相	5-phase 5相	
MB Precision type 精密型	○ JIS C3			○	
TMB Rolled type 冷轧型		○ JIS Ct7		○	
2TMB 2-phase Rolled type 2相冷轧型		○ JIS Ct7 equivalent 相当于JIS Ct7	○		
SiMB Hybrid type 混合型	○ JIS C3 /C5		○		Encoder Memory chip 编码器 存储芯片

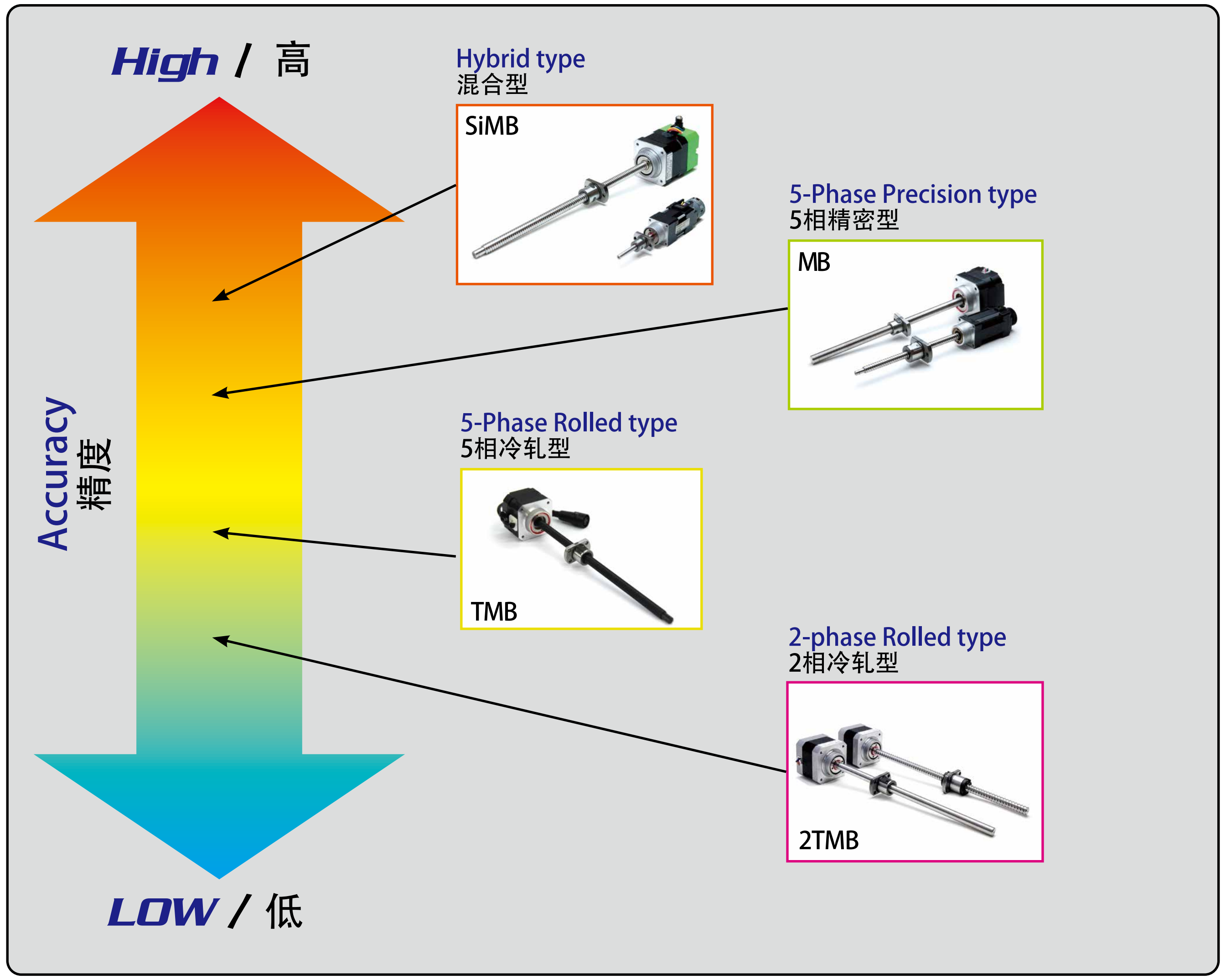
表 F-2：丝杠轴公称外径与导程的组合/ Table F-2 ; Combination of Shaft Nominal dia. & Lead

Unit（单位）: mm

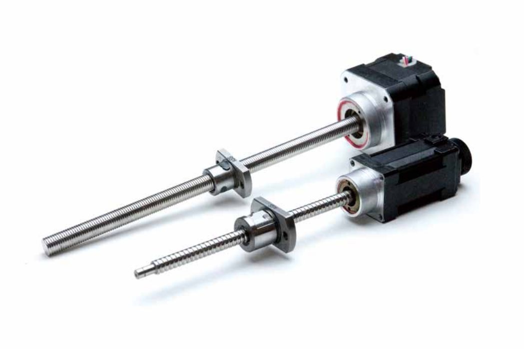
Lead / 导程 Shaft Nominal dia. / 轴径	0.5	1.0	2	4	5	6	12
4	MB	MB TMB SiMB					
5				TMB			
6		MB TMB	MB TMB			TMB	
8		MB TMB 2TMB SiMB	MB TMB 2TMB RM SiMB		TMB 2TMB RM SiMB		TMB 2TMB SiMB

MoBo系列根据用户的精度要求，备有从高精度到通用品的各种类型的产品。

The MoBo series provides various types of combination for Screw & Motor ranging from high precision to multipurpose type depending on the customer requirement.



【精密滚珠丝杠型 / Precision Ball Screw type（MB）】



魔博
MoBo

采用精密滚珠丝杠＋5相步进电机，是可实现高性能和精密定位的驱动组件。
精密滚珠丝杠的标准精度等级为C3。

This series is high performance, high accurate positioning drive unit with Precision Ball Screw and 5-phase Stepping Motor. C3 class Precision Ball Screws are adopted for this series.

【冷轧滚珠丝杠型 / Rolled Ball Screw type（TMB）】

冷轧魔博
Rolled MoBo

采用冷轧滚珠丝杠＋5相步进电机组合，可实现一般精度的定位。
使用精度等级为Ct7的冷轧滚珠丝杠。

This series is all-round performance drive unit with Rolled Ball Screw and 5-Phase Stepping Motor.
Ct7 class Rolled Ball Screws are built in this series.

【2相冷轧滚珠丝杠型 / 2-phase Motor & Rolled Ball Screw type（2TMB）】

2相冷轧魔博
2-phase Rolled MoBo

是将精度等级为Ct7的冷轧滚珠丝杠组装到2相步进电机的通用型产品。

Ct7 class Rolled Ball Screw is installed into 2-phase Stepping Motor.
This type can achieve low cost and multiuse for various fields.

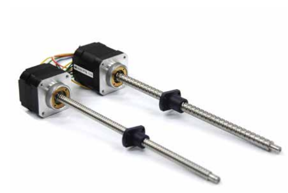
【混合型 / Hybrid type（SiMB）】

Si-魔博
Si- MoBo

采用精密滚珠丝杠＋Si-servo的混合型产品，可实现“完全等间距定位”、“无振动”、“无失调”。
精密滚珠丝杠的标准精度等级为C3。

This series have high accurate positioning, ultra smooth drive.
and closed loop operation by using Precision Ball Screw with C3 accuracy and Si-servo Motor.

【其他/ Others】

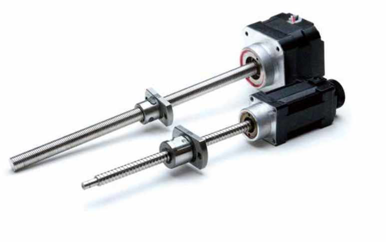


根据客户需求，也可生产性价比优越的树脂螺母滑动丝杠（树脂导程丝杠型）。

We can provide Resin Lead Screw type as customized product, which has high cost performance.

精密滚珠丝杠型（MB）
Precision Ball Screw type（MB）

魔博 / MoBo



●特点

- 是将5相步进电机直接组装到精密滚珠丝杠（C3级）轴端上的产品，最适合高精度定位。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用，不仅缩短长边方向尺寸，还能减少空转。
- 还备有推荐的5相步进电机用驱动器。
- 螺母块、电机板等附件也很齐全。

●Features

- A 5-pahse Stepping Motor is mounted directly onto the shaft end of a C3 grade precision Ball Screw, which is suitable for high accurate positioning system.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, low lost-motion can be achieved.
- Recommended Driver for 5-phase Stepping Motor is available.
- Accessories are also provided as mounting kit, such as Nut Block and Motor plate.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 重量 (g)
MB04005A	f4	0.5	20	1	10	84
MB0401A	f4	1	30	2	20	84
MB0401	f4	1	30	2	50	100
MB0601	f6	1	75	2	100	170
MB0602	f6	2	75	4	50	180
MB0801	f8	1	150	2	300	310
MB0802	f8	2	150	4	150	320

Repeatability（reference） 重复定位精度（参考值）	max. ±0.005mm
Lost Motion（reference） 空转（参考值）	max. 0.005mm

※重复定位精度及空转值是安装在本公司标准滑台上时测得的值。实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion represents when the MoBo built into KSS original actuator. Please make a contact to KSS for actual value.

注1）关于详细尺寸，请参照F107页以后的规格图。
注2）1脉冲的移动量为整步时的值。
注3）加减速速率的参考值为20ms/kHz以上。
注4）参考推力根据不同条件会有很大变化，请垂询本公司。

Note 1) Detail specifications & dimensions are shown in drawings from page F107.
Note 2) Travel per pulse represents the value for full step.
Note 3) Acceleration & Deceleration Rate should be 20ms/kHz or more.
Note 4) Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

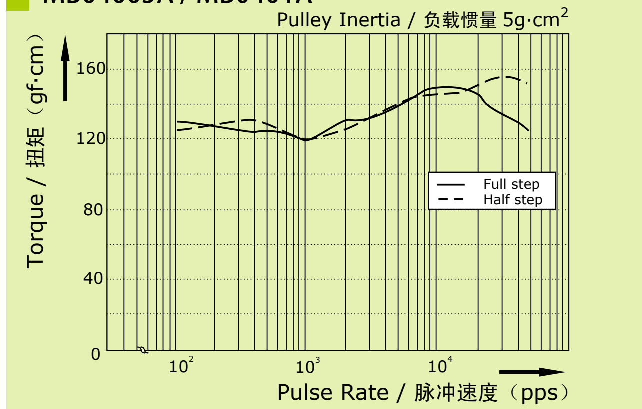
Model 型号	Motor size 电机规格 (mm)	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 (g・cm²)
MB04005A	□20	DC 1.05	0.75	1.4	0.010	3.9
MB0401A	□20	DC 1.05	0.75	1.4	0.010	3.9
MB0401	□24	DC 0.83	0.75	1.1	0.018	4.2
MB0601	□24	DC 1.28	0.75	1.7	0.028	8.9
MB0602	□24	DC 1.28	0.75	1.7	0.028	8.9
MB0801	□42	DC 1.28	0.75	1.7	0.128	41
MB0802	□42	DC 1.28	0.75	1.7	0.128	41

注1）基本步进角为0.72°。
注2）转子惯量为包含滚珠丝杠轴的值。

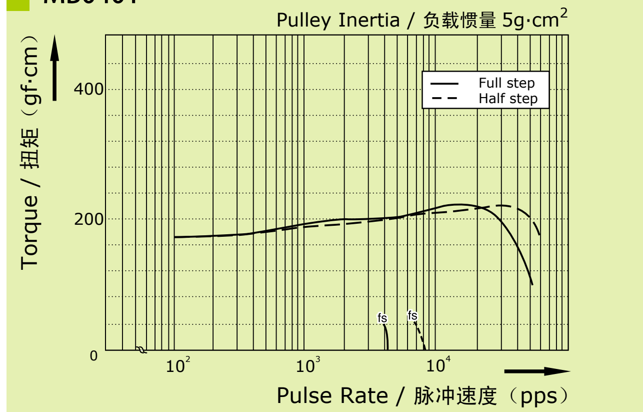
Note 1) Basic step angle is 0.72°
Note 2) Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic

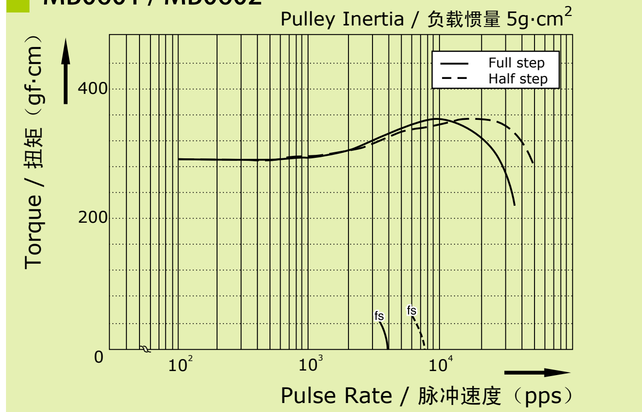
MB04005A / MB0401A



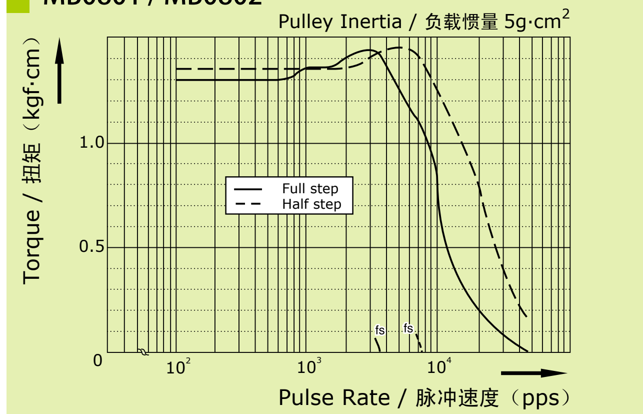
MB0401



MB0601 / MB0602



MB0801 / MB0802



■Test Condition / 测试条件

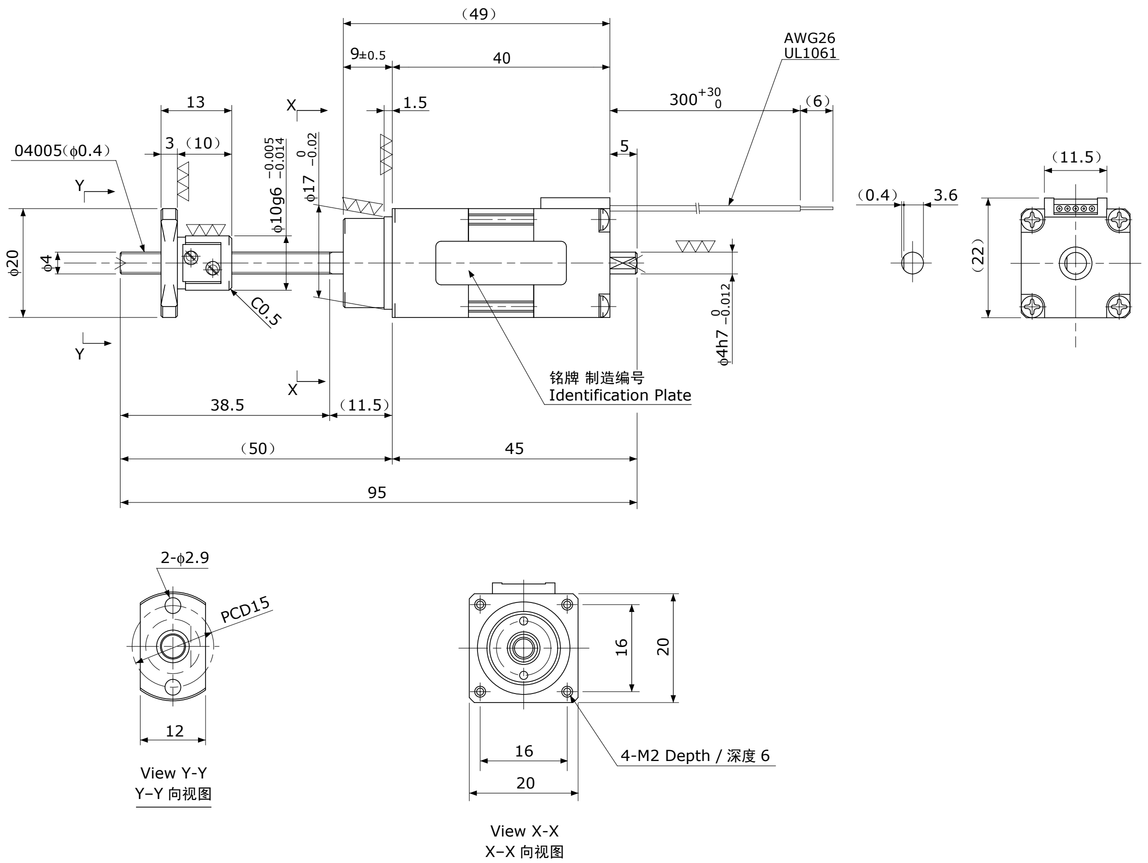
Driver / 驱动器: Maker Standard / 厂家标准机
Input Voltage / 电源电压: DC24V
Phase Current / 设定电流: 0.75A

注）电机特性因驱动器、运行条件而异。
Note）Motor characteristic will vary depending on Driver type, operating conditions.

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

MB04005A

Shaft dia.(轴径)f4　Lead(导程)0.5mm
Travel(行程)20mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-20A or MP-20B
	Supported side Bracket / 支撑侧托架	—
	Nut Block / 螺母块	NB-04005

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.005mm or less 0.005mm以下
Reference Thrust 参考推力	10N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.05 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.4Ω
Holding Torque 保持扭矩	0.010Nm
Rotor inertia 转子惯量	3.9g・cm²
Operating temperature 使用温度范围	−20°C～50°C

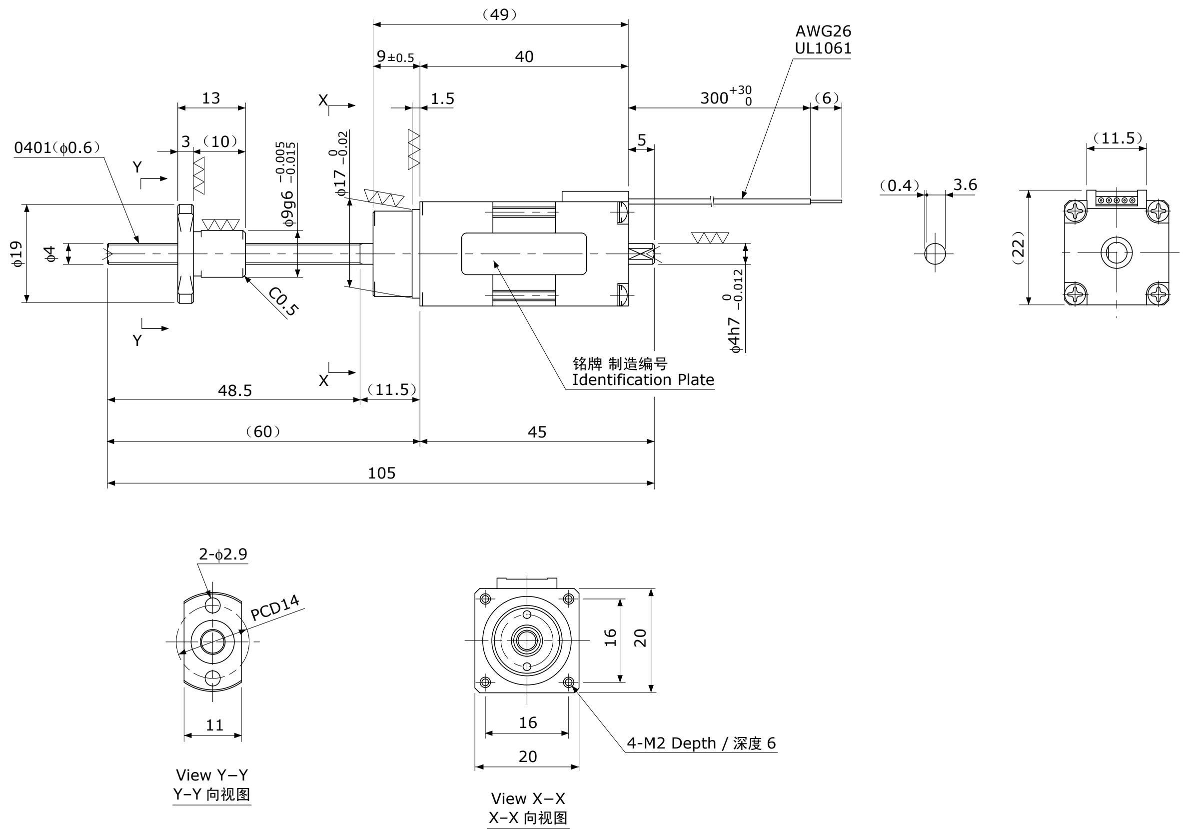
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

Standard products in stock MB series
标准库存品　MB系列
Dimensions & Specifications
规格及参数

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

MB0401A

Shaft dia.(轴径)f4　Lead(导程)1mm
Travel(行程)30mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-20A or MP-20B
	Supported side Bracket / 支撑侧托架	—
	Nut Block / 螺母块	NB-0401A

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	20N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

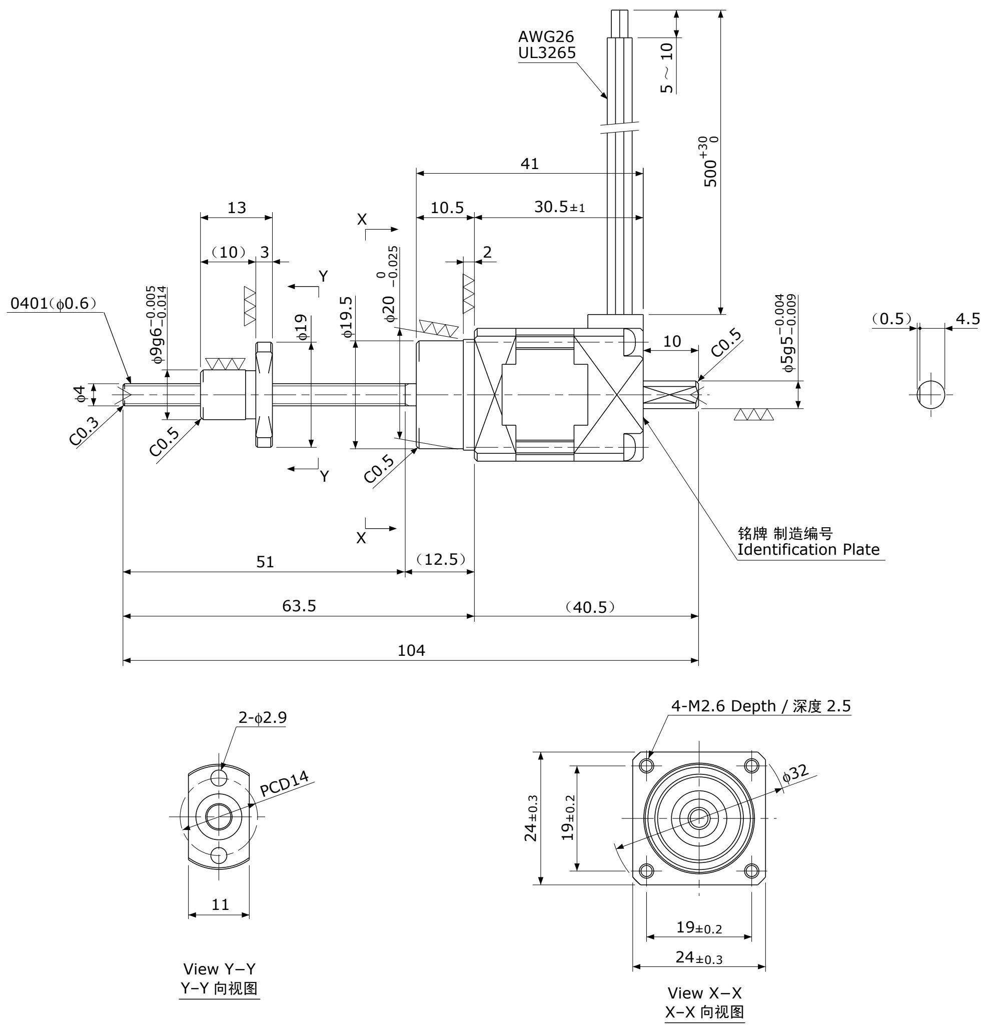
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.05 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.4Ω
Holding Torque 保持扭矩	0.010Nm
Rotor inertia 转子惯量	3.9g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

MB0401

Shaft dia.(轴径)f4　Lead(导程)1mm
Travel(行程)30mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	—
	Nut Block / 螺母块	NB-0401

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	50N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

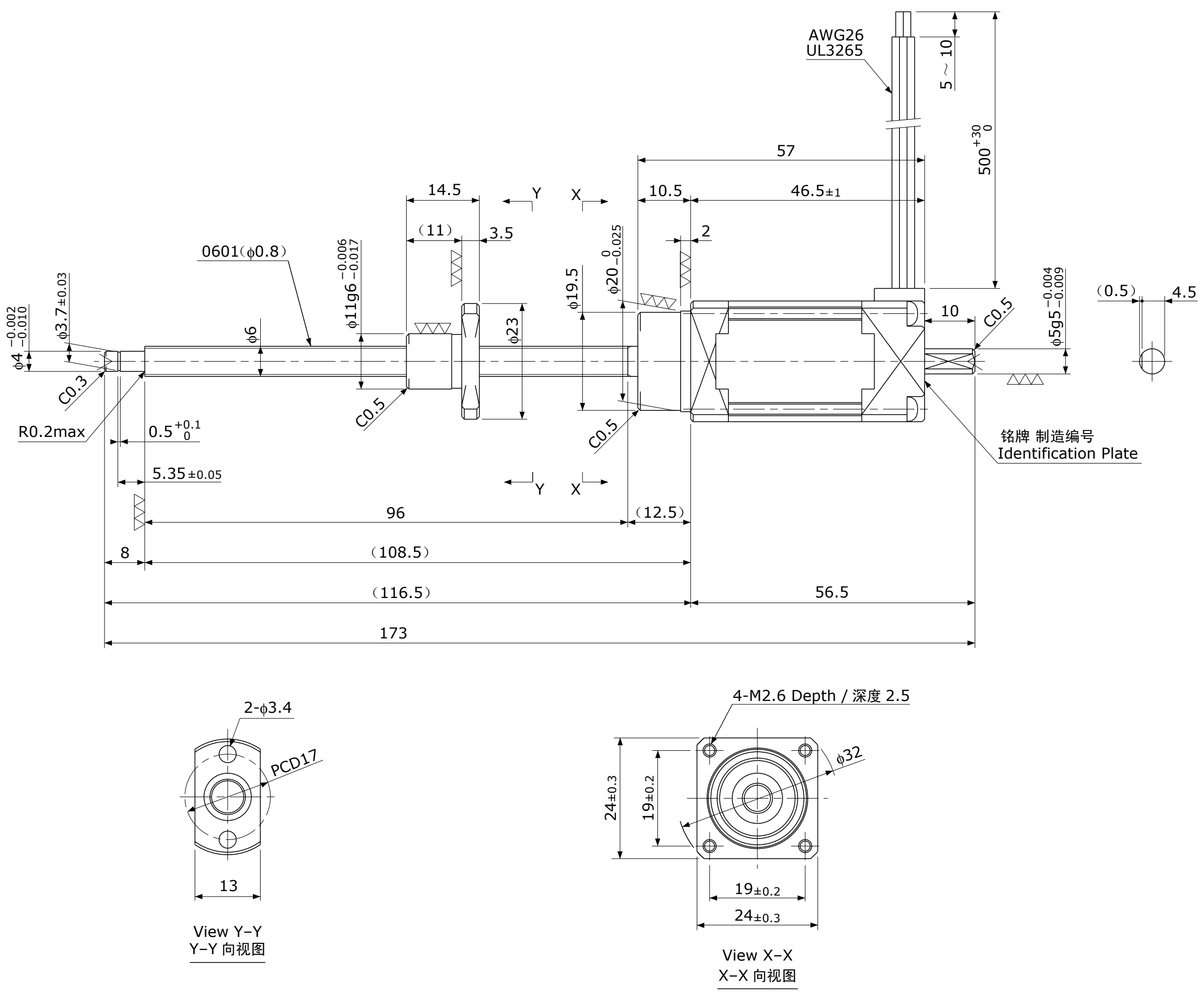
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 0.83 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.018Nm
Rotor inertia 转子惯量	4.2g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

MB0601

Shaft dia.(轴径)f6　Lead(导程)1mm
Travel(行程)75mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-24
	Nut Block / 螺母块	NB-0601

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	100N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

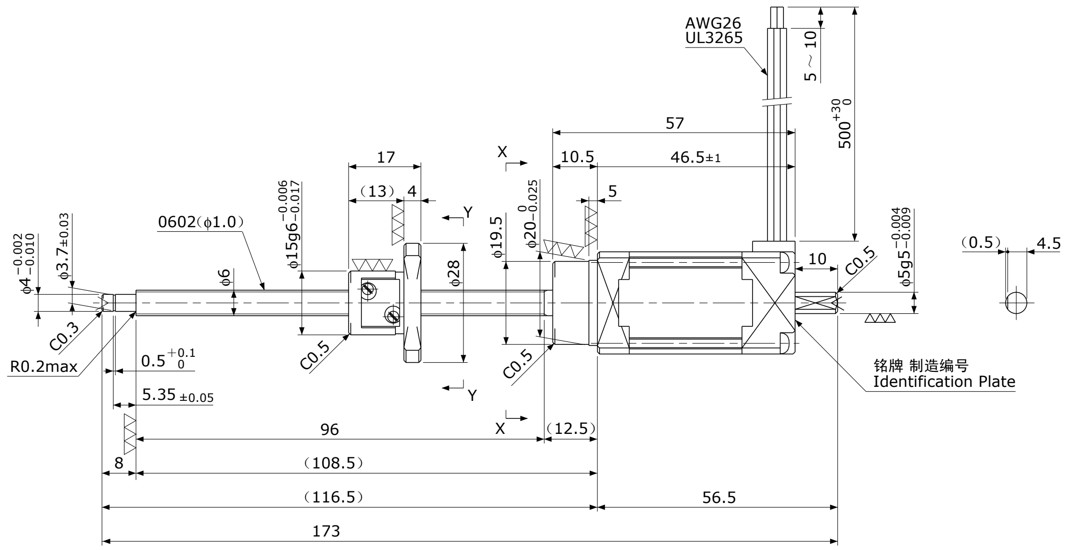
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.9g・cm²
Operating temperature 使用温度范围	−20°C～50°C

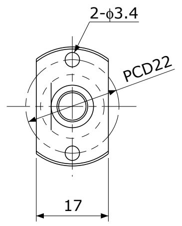
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

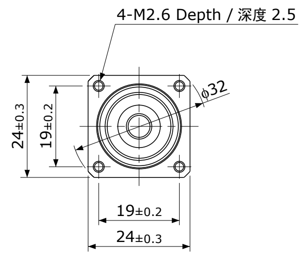
MB0602

Shaft dia.(轴径) f6　Lead(导程) 2mm
Travel(行程) 75mm





View Y−Y
Y−Y 向视图



View X−X
X−X 向视图

Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-20A or MP-20B
	Supported side Bracket / 支撑侧托架	SP-24
	Nut Block / 螺母块	NB-0602

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	50N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.9g・cm²
Operating temperature 使用温度范围	−20°C～50°C

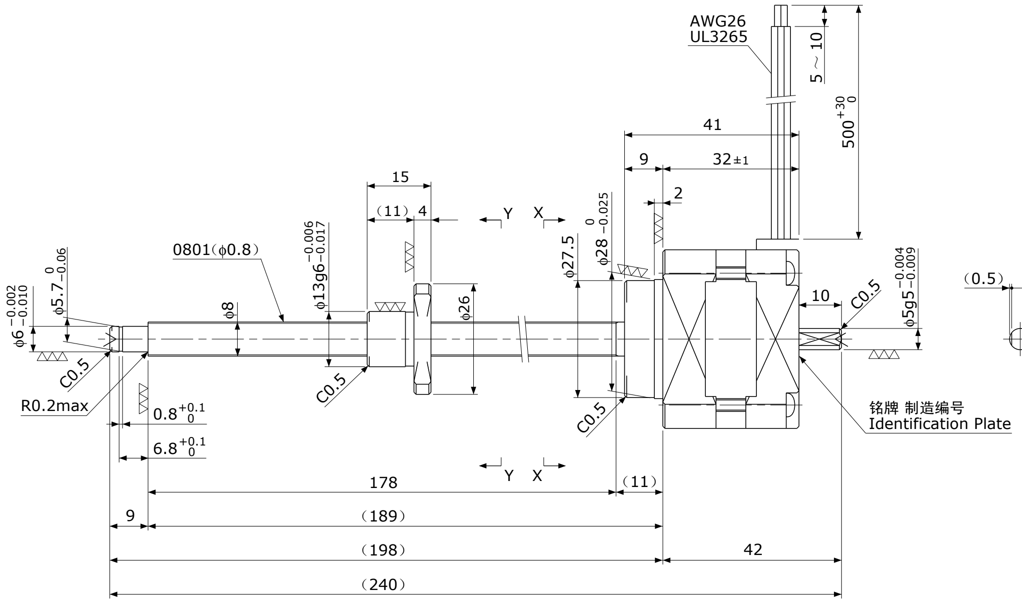
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

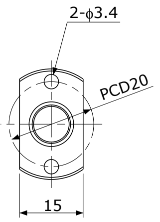
Standard products in stock MB series
标准库存品　MB系列
Dimensions & Specifications
规格及参数

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

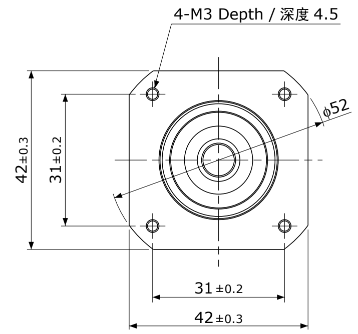
MB0801

Shaft dia.(轴径) f8　Lead(导程) 1mm
Travel(行程) 150mm





View Y−Y
Y−Y 向视图



View X−X
X−X 向视图

Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0801

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	300N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

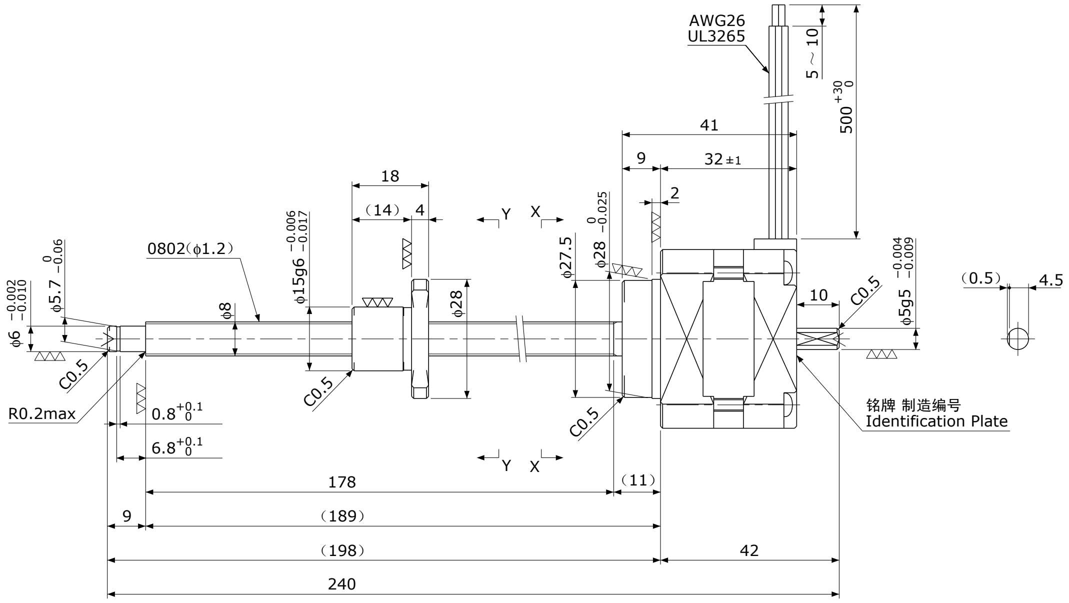
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	41g・cm²
Operating temperature 使用温度范围	−20°C～50°C

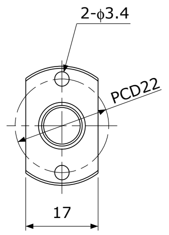
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

精密滚珠丝杠＋5相步进电机 / Precision Ball Screw ＋ 5-phase Stepping Motor

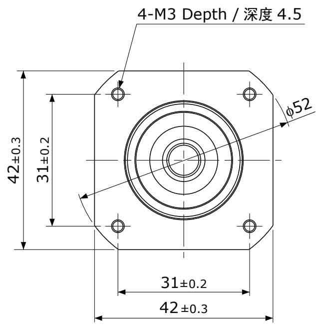
MB0802

Shaft dia.（轴径）f8　Lead（导程）2mm
Travel（行程）150mm





View Y−Y
Y−Y 向视图



View X−X
X−X 向视图

Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0802

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0mm
Reference Thrust 参考推力	150N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	41g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠型（TMB）
Rolled Ball Screw type（TMB）

MoBo

冷轧魔博 / Rolled MoBo

●特点

- 是将5相步进电机直接组装到精密等级为Ct7的冷轧滚珠丝杠轴端上的产品，一般定位性能优异。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用，不仅缩短长边方向尺寸，还能减少作业工时。
- 还备有推荐的5相步进电机用驱动器。
- 螺母块、电机板等附件也很齐全。

●Features

- A 5-phase Stepping Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which is all-round performance drive unit.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Recommended Driver for 5-phase Stepping Motor is available.
- Accessories are also provided as mounting kit, such as Nut block and Motor plate.

●基本规格 / Specifications

Model 型 号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 重量 (g)
TMB0401	f4	1	30	2	50	100
TMB0504	f5	4	75	8	25	180
TMB0601	f6	1	75	2	100	180
TMB0602	f6	2	75	4	50	180
TMB0606	f6	6	75	12	15	180
TMB0801	f8	1	150	2	300	320
TMB0802	f8	2	150	4	150	320
TMB0805	f8	5	150	10	120	450
TMB0812	f8	12	150	24	50	450

Repeatability（reference）重复定位精度（参考值）	max. ±0.01mm
Lost Motion（reference）空转（参考值）	max. 0.01mm

※重复定位精度及空转值是安装在本公司标准滑台上时测得的值。实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion represents when the MoBo built into KSS original actuator. Please make a contact to KSS for actual value.

注1）关于详细尺寸，请参照F117页以后的规格图。
注2）1脉冲的移动量为整步时的值。
注3）加减速速率的参考值为20ms/kHz以上。
注4）参考推力根据不同条件会有很大变化，请垂询本公司。

Note 1）Detail specifications & dimensions are shown in drawings from page F117.
Note 2）Travel per pulse represents the value for full step.
Note 3）Acceleration & Deceleration Rate should be 20ms/kHz or more.
Note 4）Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

●电机规格 / Motor Specifications

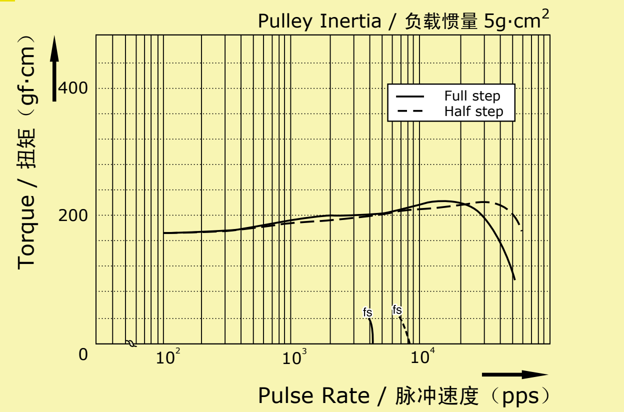
Model 型 号	Motor size 电机规格 (mm)	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 (g・cm²)
TMB0401	□24	DC 0.83	0.75	1.1	0.018	4.2
TMB0504	□24	DC 1.28	0.75	1.7	0.028	8.3
TMB0601	□24	DC 1.28	0.75	1.7	0.028	8.8
TMB0602	□24	DC 1.28	0.75	1.7	0.028	8.7
TMB0606	□24	DC 1.28	0.75	1.7	0.028	8.8
TMB0801	□42	DC 1.28	0.75	1.7	0.128	40
TMB0802	□42	DC 1.28	0.75	1.7	0.128	40
TMB0805	□42	DC 1.65	0.75	2.2	0.236	74
TMB0812	□42	DC 1.65	0.75	2.2	0.236	74

注1）基本步进角为0.72°。
注2）转子惯量为包含滚珠丝杠轴的值。

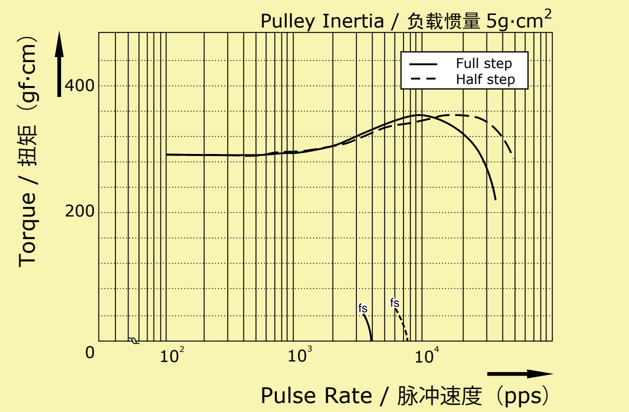
Note 1）Basic step angle is 0.72°
Note 2）Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic

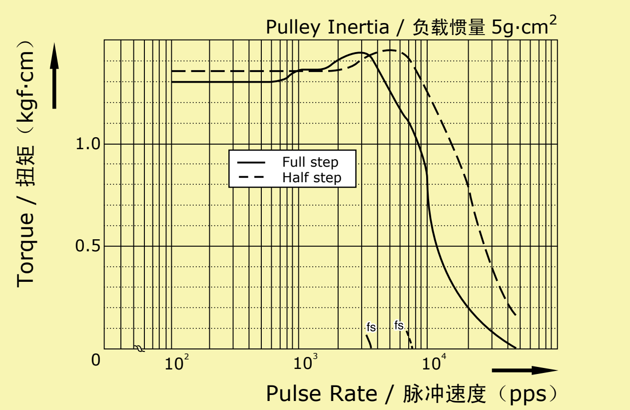
TMB0401



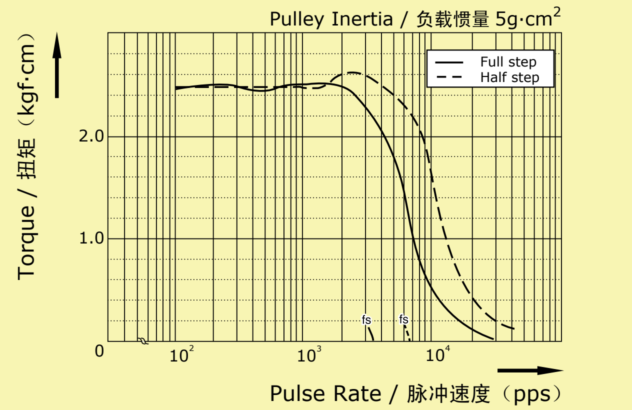
TMB0504 / TMB0601 / TMB0602 / TMB0606



TMB0801 / TMB0802



TMB0805 / TMB0812



■Test condition / 测试条件

Driver / 驱动器: Maker Standard / 厂家标准机
Input Voltage / 电源电压: DC24V
Phase Current / 设定电流: 0.75A

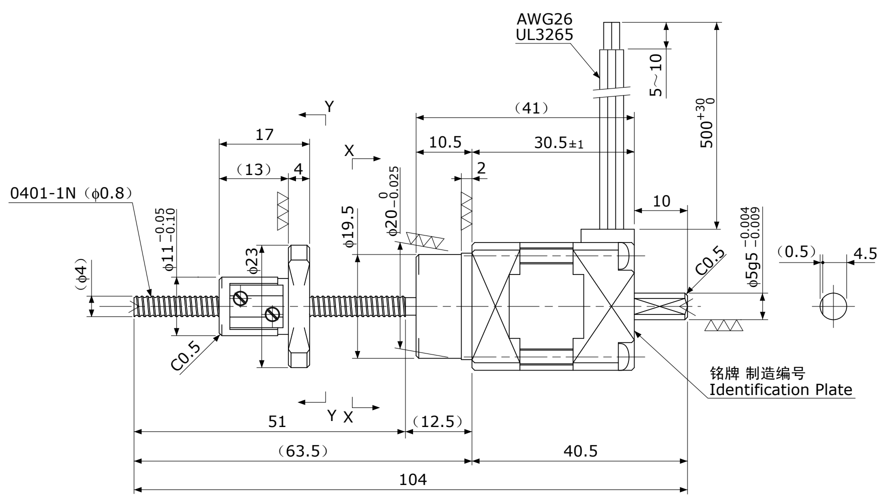
注）电机特性因驱动器、运行条件而异。
Note）Motor characteristic will vary depending on Driver type, operating conditions.

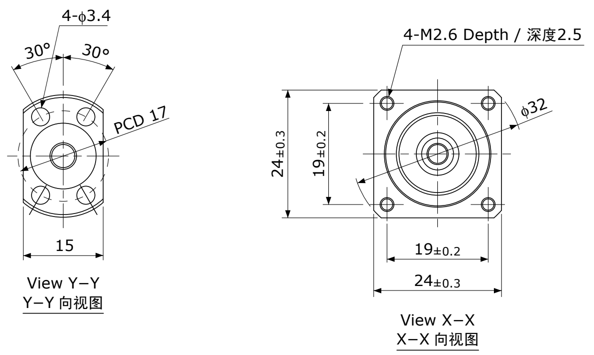
MoBo Series
MoBo（魔博）系列
Rolled Ball Screw type
冷轧滚珠丝杠型

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0401

Shaft dia.（轴径）f4　Lead（导程）1mm
Travel（行程）30mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）	

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	—
	Nut Block / 螺母块	NB-0401R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	50N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 0.83 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.018Nm
Rotor inertia 转子惯量	4.2g・cm²
Operating temperature 使用温度范围	−20°C～50°C

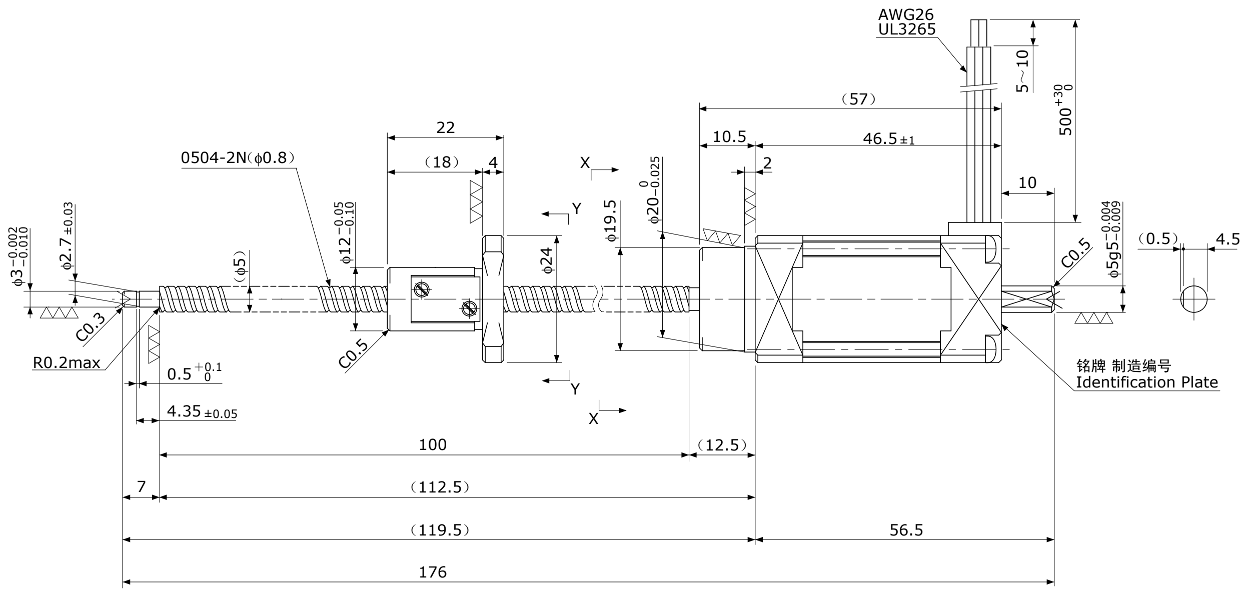
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

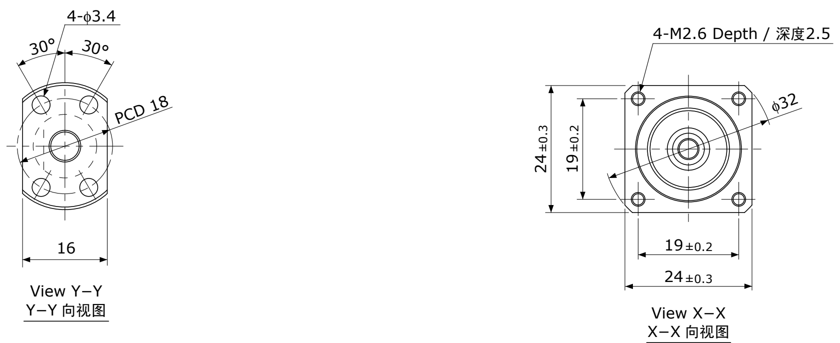
Standard products in stock TMB series
标准库存品　TMB系列
Dimensions & Specifications
规格及参数

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0504

Shaft dia.（轴径）f5　Lead（导程）4mm
Travel（行程）75mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）	

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-24A
	Nut Block / 螺母块	NB-0504R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	25N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

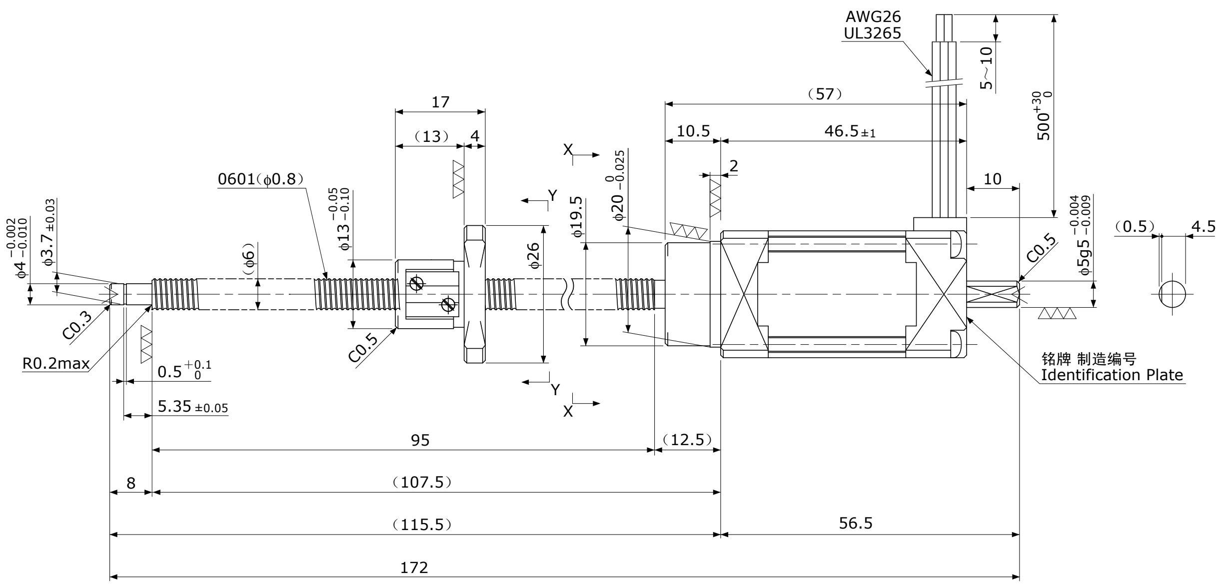
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.3g・cm²
Operating temperature 使用温度范围	−20°C～50°C

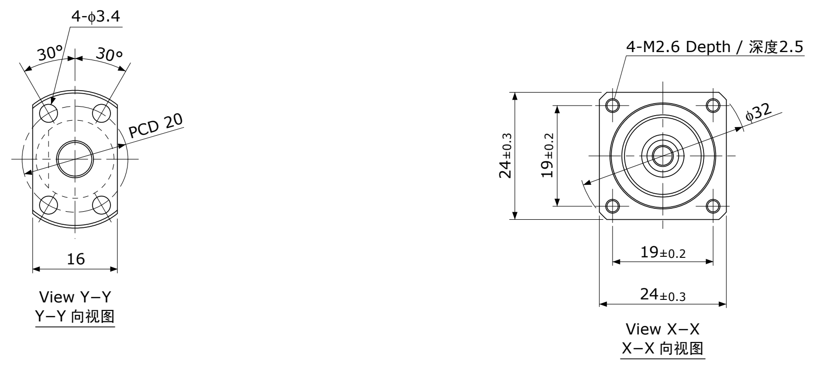
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0601

Shaft dia.（轴径）f6　Lead（导程）1mm
Travel（行程）75mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-24
	Nut Block / 螺母块	NB-0601R

Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	100N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

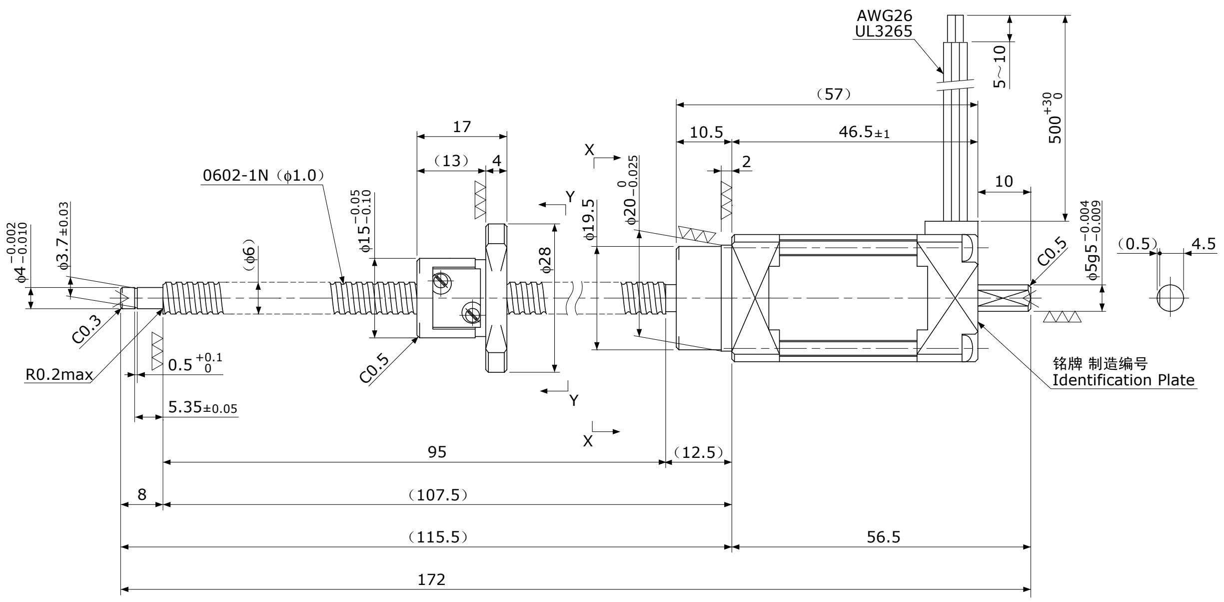
Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.8g・cm²
Operating temperature 使用温度范围	−20°C～50°C

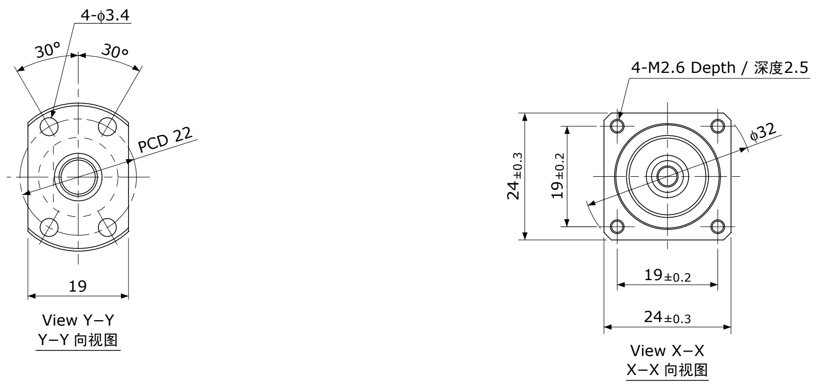
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0602

Shaft dia.（轴径）f6　Lead（导程）2mm
Travel（行程）75mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-24
	Nut Block / 螺母块	NB-0602R

Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	50N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

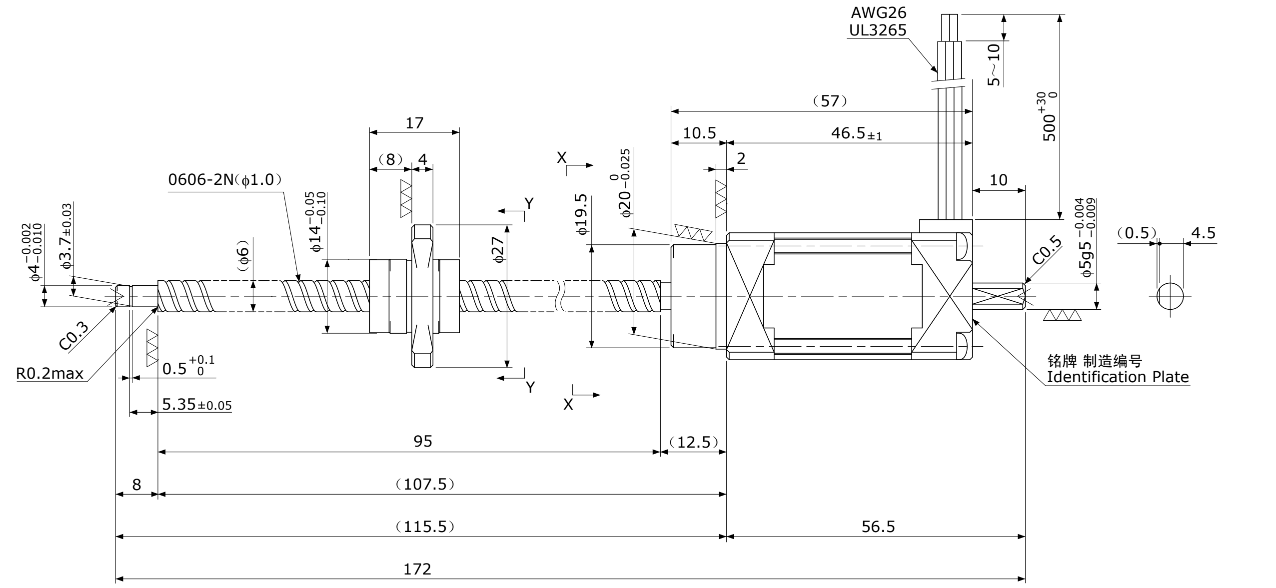
Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.7g・cm²
Operating temperature 使用温度范围	−20°C～50°C

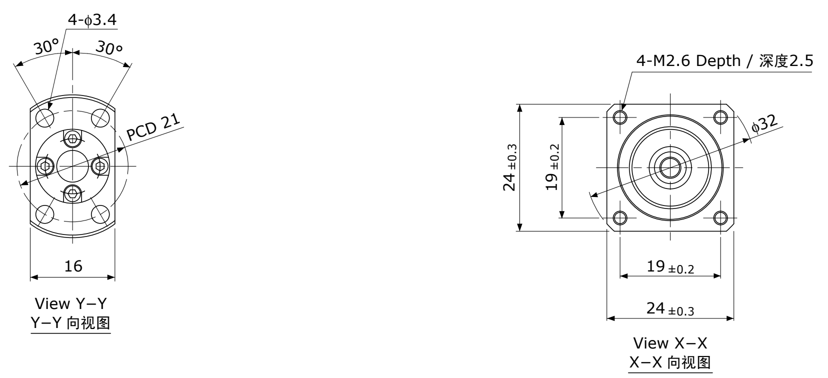
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0606

Shaft dia.（轴径）f6　Lead（导程）6mm　Travel（行程）75mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-24
	Nut Block / 螺母块	NB-0606R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	15N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.028Nm
Rotor inertia 转子惯量	8.8g・cm²
Operating temperature 使用温度范围	−20°C～50°C

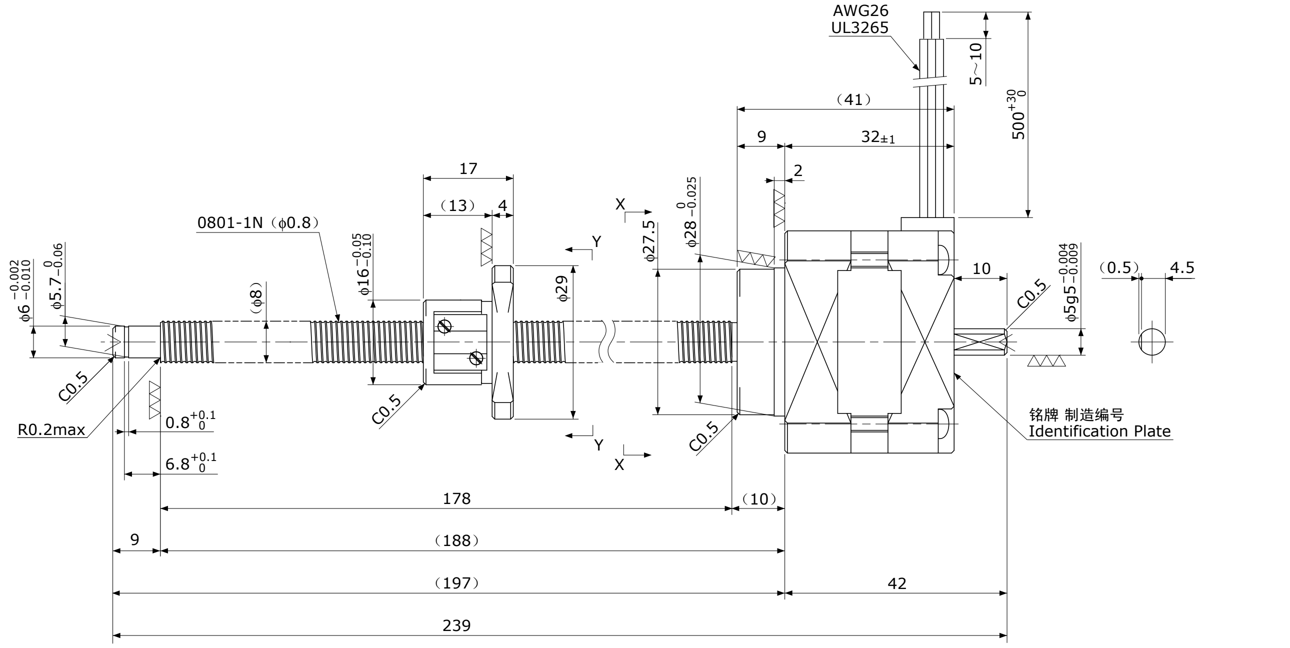
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

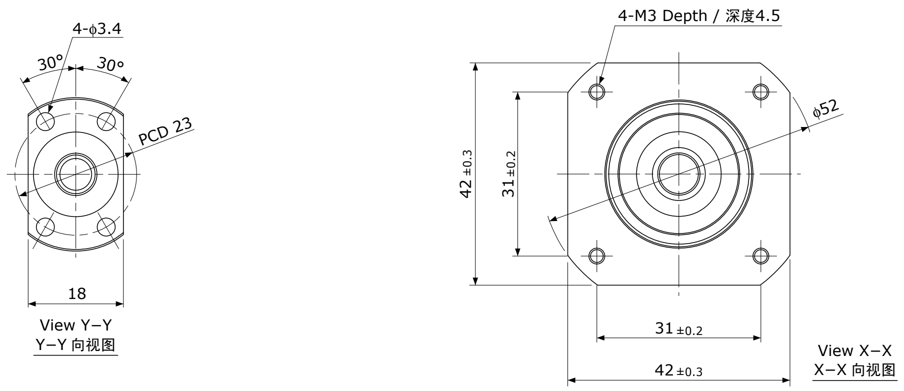
Standard products in stock TMB series
标准库存品　TMB系列
Dimensions & Specifications
规格及参数

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0801

Shaft dia.（轴径）f8　Lead（导程）1mm　Travel（行程）150mm





Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-24A or MP-24B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0801R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	300N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

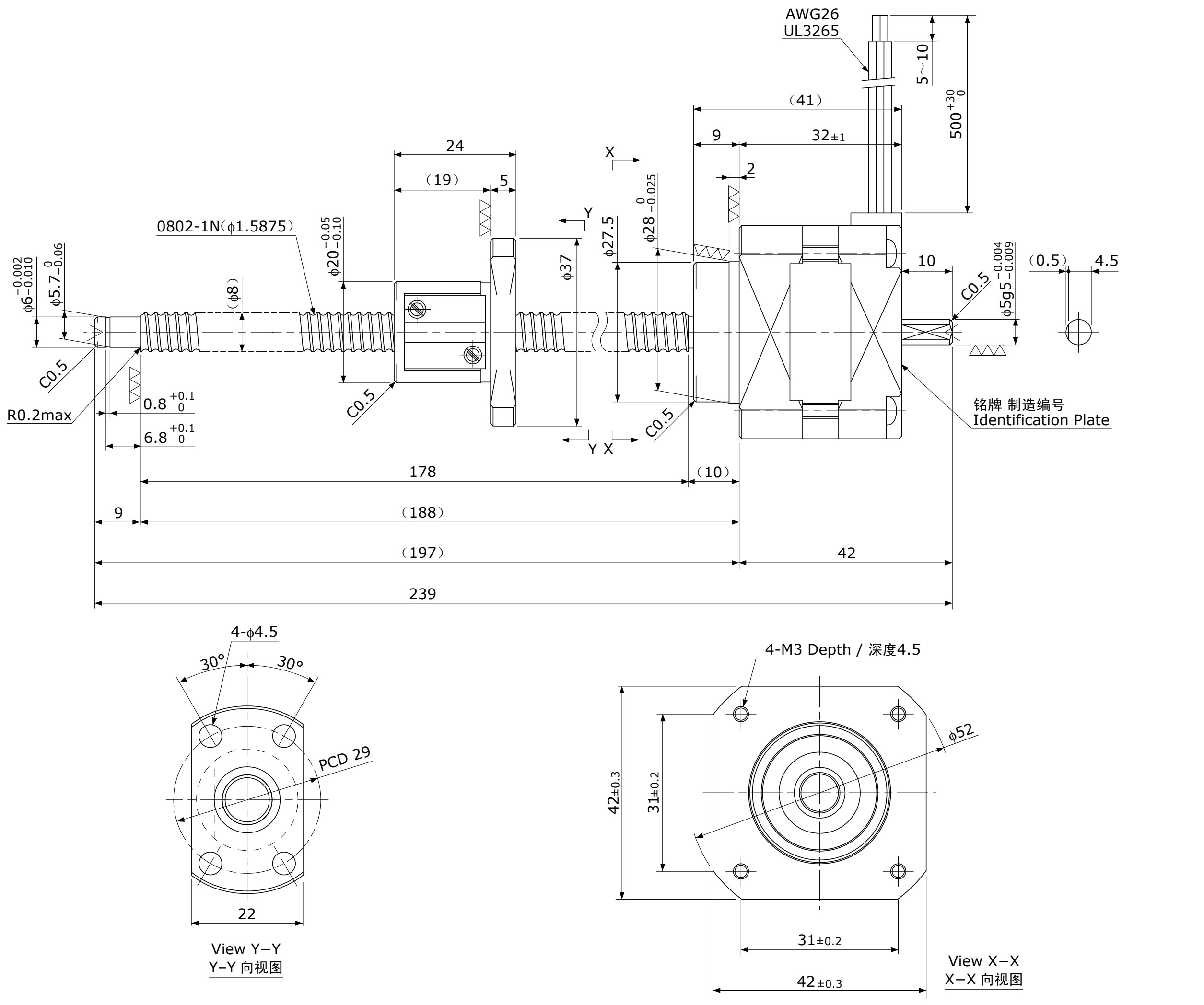
Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	40g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0802

Shaft dia.（轴径）f8 Lead（导程）2mm
Travel（行程）150mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0802R

Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	150N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

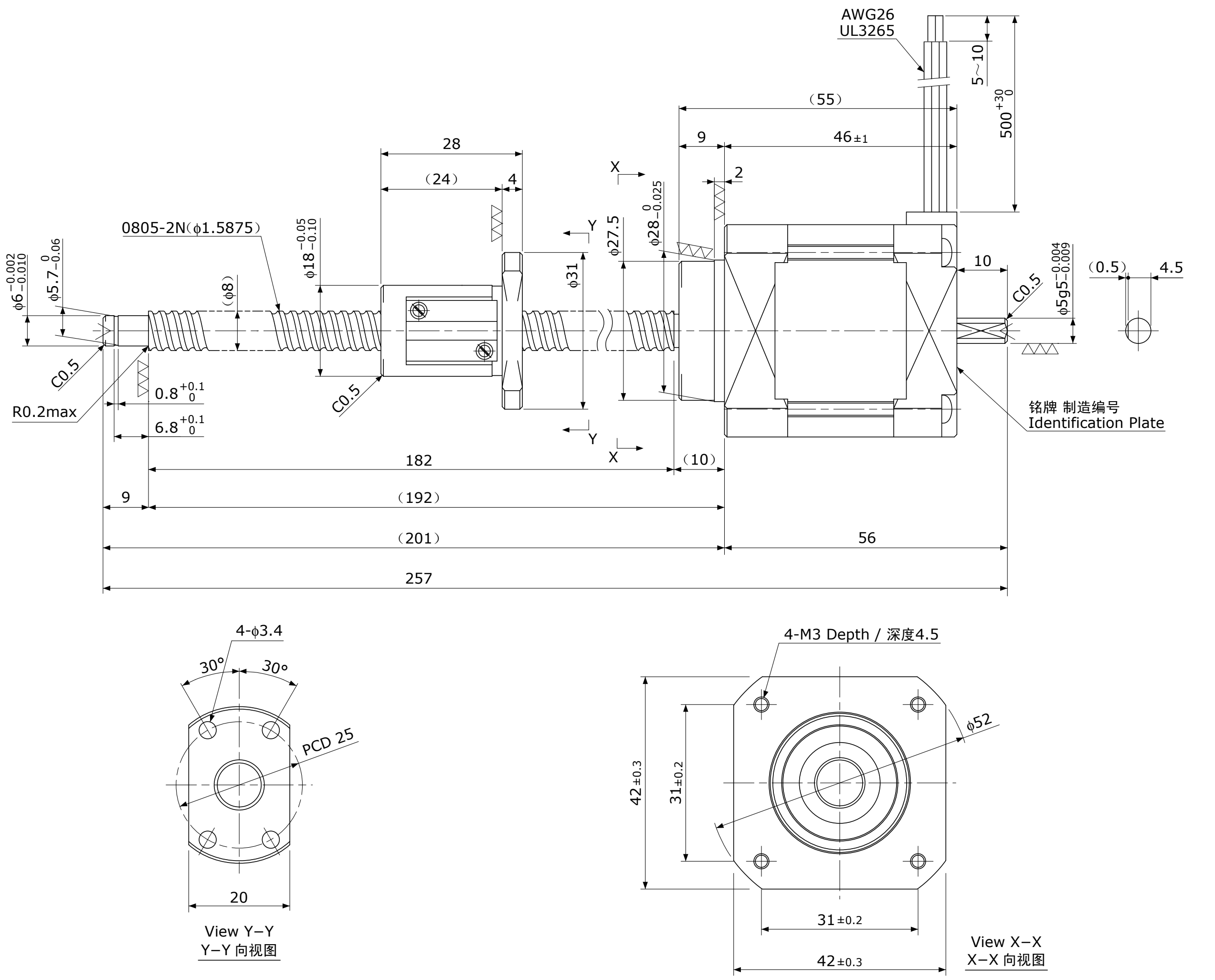
Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.28 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	1.7Ω
Holding Torque 保持扭矩	0.128Nm
Rotor inertia 转子惯量	40g · cm²
Operating temperature 使用温度范围	−20° C～50° C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0805

Shaft dia.（轴径）f8 Lead（导程）5mm
Travel（行程）150mm



Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC（Micro step） KR-A535M（Micro step / AC-100～220V）

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0805R

Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right 右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	120N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

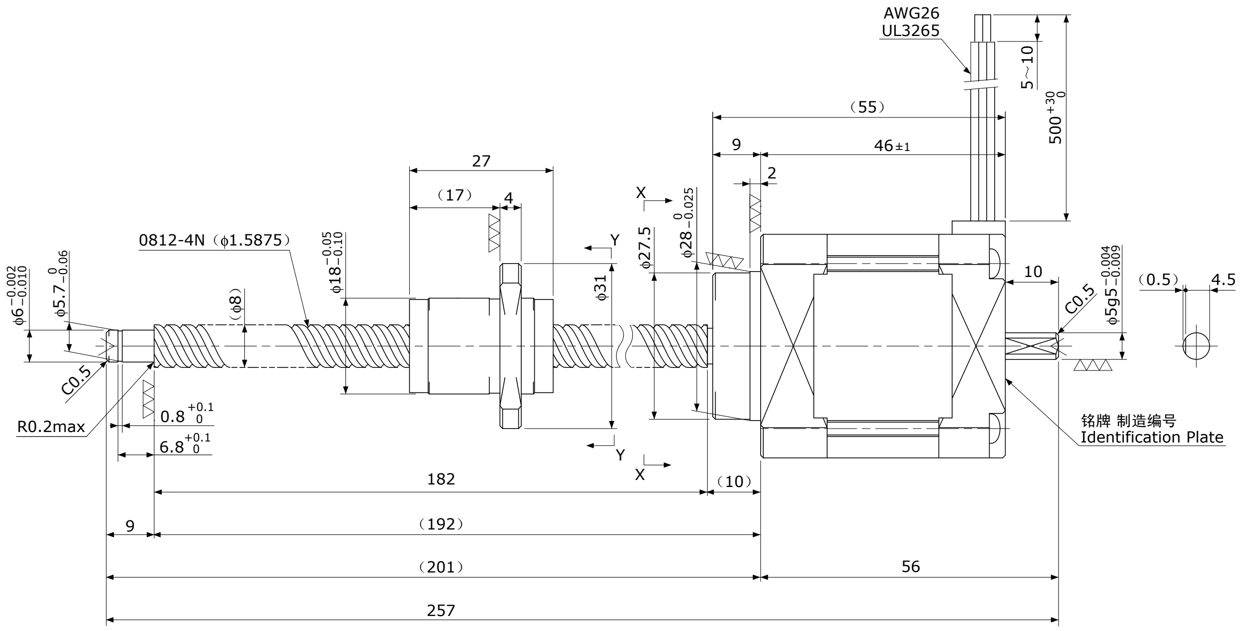
Motor Specifications 电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.65 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	2.2Ω
Holding Torque 保持扭矩	0.236Nm
Rotor inertia 转子惯量	74g · cm²
Operating temperature 使用温度范围	−20° C～50° C

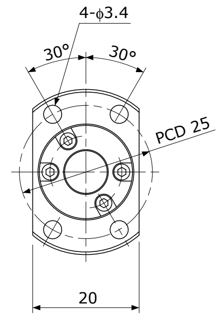
注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

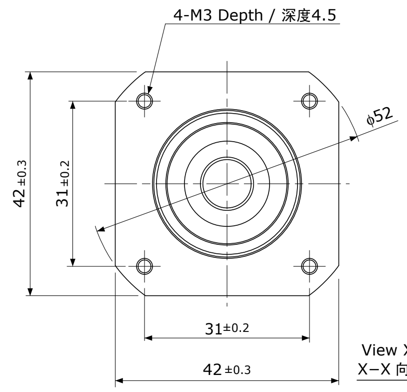
冷轧滚珠丝杠＋5相步进电机 / Rolled Ball Screw ＋ 5-phase Stepping Motor

TMB0812

Shaft dia.(轴径)f8　Lead(导程)12mm
Travel(行程)150mm




View Y−Y
Y−Y 向视图


View X−X
X−X 向视图

Recommended Drivers 推荐的驱动器	KR-A5CC KR-A55MC(Micro step) KR-A535M(Micro step / AC-100～220V)

注）有关与推荐驱动器的接线，请参照F159、F160页。
Note）Refer to page F159, F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0812R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.020mm or less 0.020mm以下
Reference Thrust 参考推力	50N
Shaft & Nut material 丝杠轴、螺母材质	Chrome-molybdenum steel 铬钼钢
Surface Coating 表面处理	Black Chrome coating on Shaft 丝杠轴采用黑铬处理
Surface hardness 螺纹部表面硬度	HRC58～62 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	0.72°
Rated Voltage 额定电压	DC 1.65 V
Rated current 额定电流	0.75A/phase 0.75A/相
Winding resistance 绕组电阻	2.2Ω
Holding Torque 保持扭矩	0.236Nm
Rotor inertia 转子惯量	74g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）只能裁切轴端。
其他轴端形状为定制产品。
Note）Only shaft end cutting is available.
Other than that, it would be customized order.

2相冷轧滚珠丝杠型（2TMB）
2-phase Motor & Rolled Ball Screw type（2TMB）

2相冷轧魔博 / 2-phase Rolled MoBo

●特点

- 是将2相步进电机直接组装到精密等级为Ct7的冷轧滚珠丝杠轴端上的产品，外形紧凑、通用性强。
- 具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
- 直连结构省去了联轴器的使用，不仅缩短长边方向尺寸，还能减少作业工时。
- 还备有推荐的2相步进电机用驱动器。
- 通过轴端的追加加工，可灵活对应多种行程。
- 采用专用支架组件，可实现支撑侧的稳定安装。
- 螺母块、电机板等附件也很齐全。

●Features

- A 2-phase Stepping Motor is mounted directly onto the shaft end of a Ct7 grade Rolled Ball Screw, which means compact and multipurpose type product.
- Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
- Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
- Recommended Driver for 2-phase Stepping Motor is available.
- Flexible length can be provided by the end journal turning.
- Stable mounting is secured by the exclusive Support Unit.
- Accessories are also provided as mounting kit, such as Nut block and Motor plate.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 重量 (g)
2TMB0801	f8	1	150	5	75	350
2TMB0802	f8	2	150	10	100	400
2TMB0805	f8	5	150	25	50	400
2TMB0812	f8	12	150	60	25	400

Repeatability（reference）重复定位精度（参考值）	max. ±0.01mm
Lost Motion（reference）空转（参考值）	max. 0.01mm

※重复定位精度及空转值是安装在本公司标准滑台上时测得的值。实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion represents when the MoBo built into KSS original actuator. Please make a contact to KSS for actual value.

注1）关于详细尺寸，请参照F129页以后的规格图。
注2）1脉冲的移动量为整步时的值。
注3）加减速速率的参考值为50ms/kHz以上。
注4）参考推力根据不同条件会有很大变化，请垂询本公司。

Note1）Detail specifications & dimensions are shown in drawings from page F129.
Note2）Travel per pulse represents the value for full step.
Note3）Acceleration & Deceleration Rate should be 50ms/kHz or more.
Note4）Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

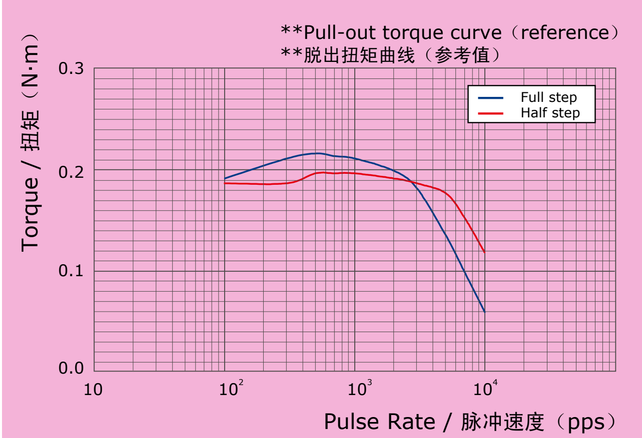
●电机规格 / Motor Specifications

Model 型号	Motor size 电机规格 (mm)	Rated voltage 额定电压 (V)	Rated current 额定电流 (A/phase) (A/相)	Winding resistance 绕组电阻 (Ω)	Holding torque 保持扭矩 (Nm)	Rotor Inertia 转子惯量 (g・cm^2)
2TMB0801	□42	DC 2.2	2.0	1.1	0.24	42
2TMB0802	□42	DC 2.2	2.0	1.1	0.24	42
2TMB0805	□42	DC 2.2	2.0	1.1	0.24	42
2TMB0812	□42	DC 2.2	2.0	1.1	0.24	42

Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Basic step angle 基本步进角	1.8°

注）转子惯量为包含滚珠丝杠轴的值。
Note）Rotor Inertia includes Ball Screw Shaft.

●电机特性 / Motor Characteristic

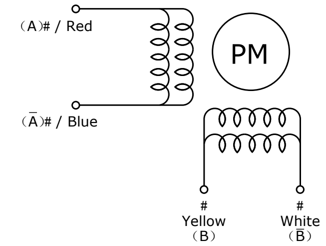


■Test condition / 测试条件

Driver / 驱动器: Maker Standard / 厂家标准机
Input Voltage / 电源电压: DC24V
Phase Current / 设定电流: 2.0A

注）电机特性因驱动器、运行条件而异。
Note）Motor characteristic will vary depending on Driver type, operating conditions.

●接线图/Schematic



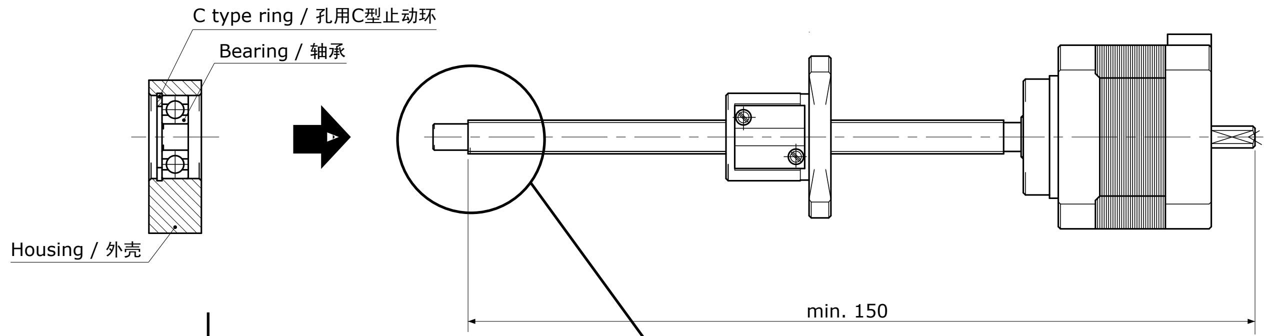
按以下励磁顺序，从输出轴侧看到的CW旋转
Swiching sequence for CW rotation viewed from shaft end.

STEP	红色 /Red（A）	黄色 /Yellow（B）	蓝色 /Blue（Ā）	白色 /White（B̄）
0	+	+	–	–
1	–	+	+	–
2	–	–	+	+
3	+	–	–	+
0	+	+	–	–

●轴端的追加加工和专用支架组件 / End-journal turning & Exclusive Support Unit

KSS 2相冷轧MoBo备有标准库存品，但为了满足各种行程（全长）的需求，可对轴端进行追加加工。追加加工包括裁切及轴承支撑形状的加工。（照片）
对轴承支撑形状进行追加加工时，不加工止动环槽。此时请通过孔用止动环进行轴承支撑。
KSS备有使用了孔用止动环的专用支架组件，欢迎选购。

All of KSS 2-phase Rolled MoBo are in stock. In order to meet the request of flexible length, Shaft end journal turning is available. Please note that re-work is only for cutting and turning down.（see photo below）
KSS does not process Ring groove machining on the end of Shaft. Exclusive Support Unit with Brg. & Retaining ring for hole is provided by KSS.



轴端追加加工例
End-journal turning

可进行追加加工的长度为自轴端起150mm（追加加工部除外）。
长度短于150mm时，单侧可作为自由端使用。
需要带止动环槽的支撑形状、以及短于150mm（追加加工部除外）的支撑侧形状时，本公司提供定制服务。

Please note that minimum re-work length is 150mm（except re-work portion）as shown in figure above.
Total length shorter than 150mm（except re-work portion）should be used as cantilever.
If supported journal with ring groove or total length of less than 150mm is required, it will be available as a customized order.

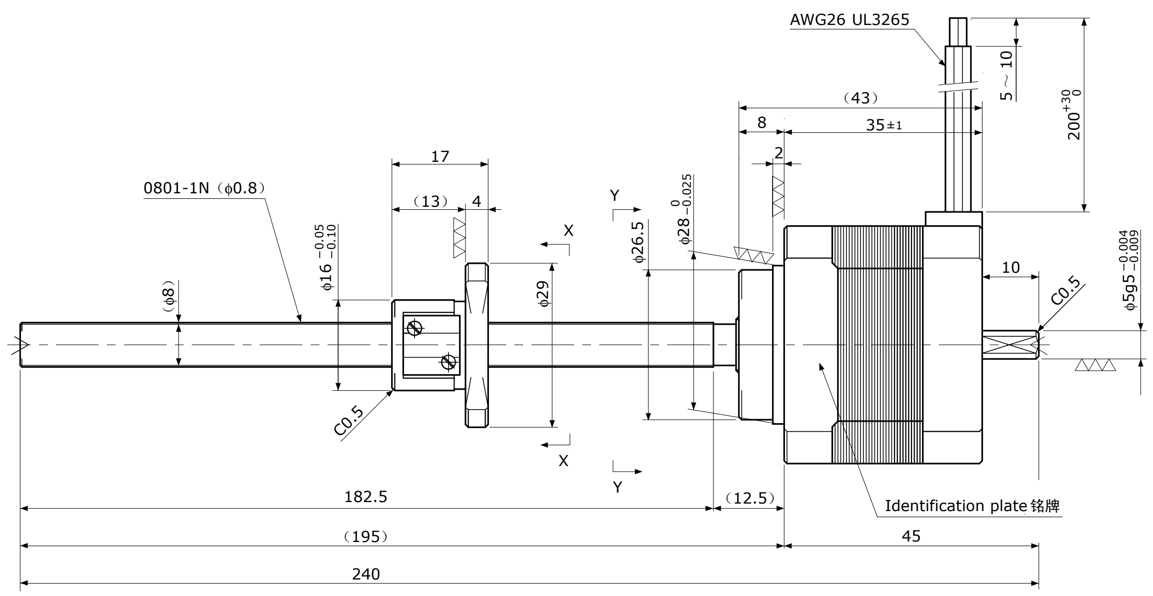
关于专用支架组件的形状及尺寸，请参照F156（SP-42S）页。
如需特殊的专用支架组件，请垂询本公司。

KSS Exclusive Support Unit for 2-phase Rolled MoBo, please see page F156（SP-42S）.
Special profile of Support Unit is required, please ask KSS representative.

冷轧滚珠丝杠＋2相步进电机 / Rolled Ball Screw ＋ 2-phase Stepping Motor

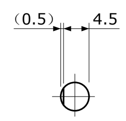
2TMB0801

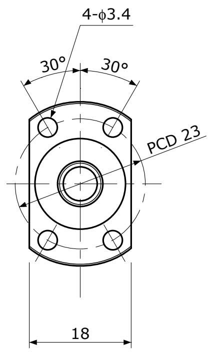
Shaft dia.（轴径）f8　Lead（导程）1mm
Travel（行程）150mm

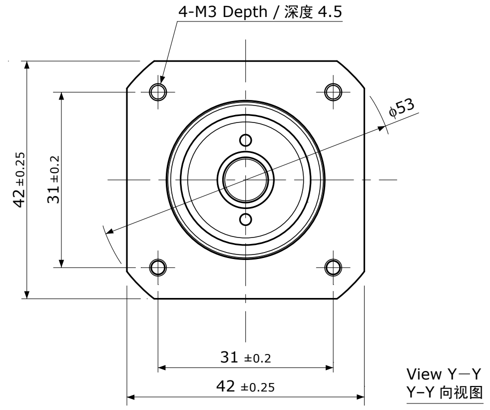


Motor wire / 电机线

A	Red / 红色
Ā	Blue / 蓝色
B	Yellow / 黄色
B̄	White / 白色







Recommended Drivers 推荐的驱动器	SD4030B2

注）有关与推荐驱动器的接线，请参照F160页。
Note）Refer to page F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Exclusive Support Unit / 支撑侧专用支架组件	SP-42S
	Nut Block / 螺母块	NB-0801R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	Equivalent to JIS Ct7 相当于Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.03mm or less 0.03mm以下
Reference Thrust 参考推力	75N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A
Rotor inertia 转子惯量	42g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）关于追加加工，请参照F128页。
Note）Please refer to page F128 about end-journal turning.

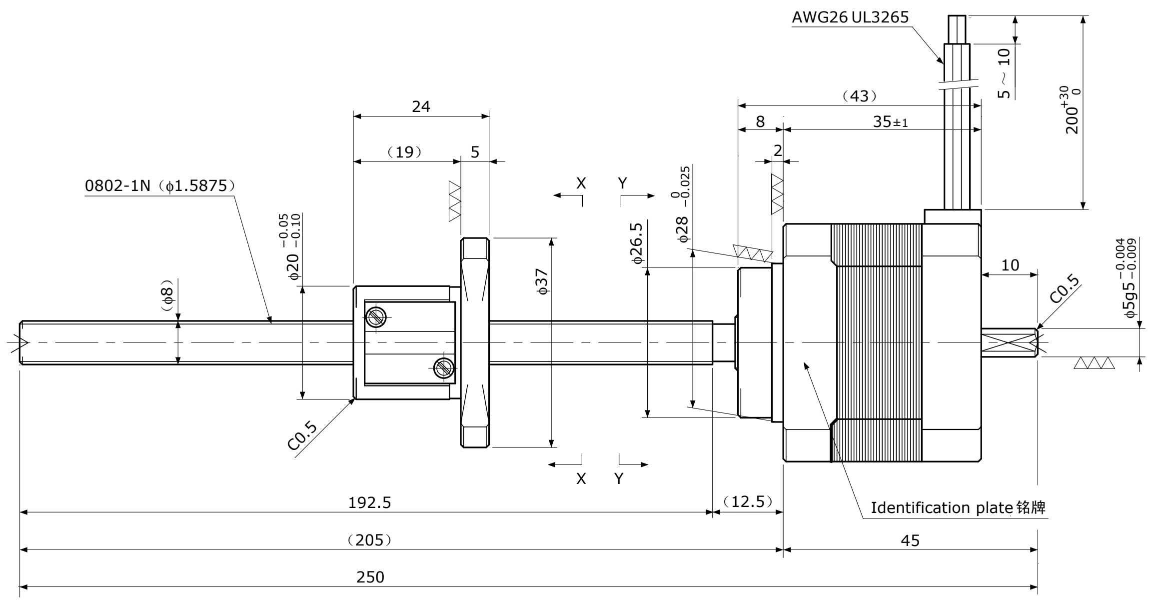
Standard products in stock 2TMB series
标准库存品　2TMB系列
Dimensions & Specifications
规格及参数

MoBo Series
MoBo（魔博）系列
2-phase Motor & Rolled Ball Screw type
2相冷轧滚珠丝杠型

冷轧滚珠丝杠＋2相步进电机 / Rolled Ball Screw ＋ 2-phase Stepping Motor

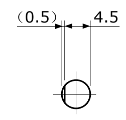
2TMB0802

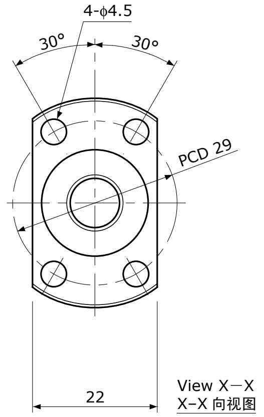
Shaft dia.（轴径）f8　Lead（导程）2mm
Travel（行程）150mm

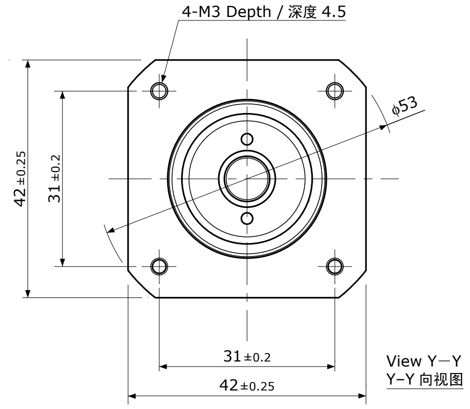


Motor wire / 电机线

A	Red / 红色
Ā	Blue / 蓝色
B	Yellow / 黄色
B̄	White / 白色







Recommended Drivers 推荐的驱动器	SD4030B2

注）有关与推荐驱动器的接线，请参照F160页。
Note）Refer to page F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Exclusive Support Unit / 支撑侧专用支架组件	SP-42S
	Nut Block / 螺母块	NB-0802R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	Equivalent to JIS Ct7 相当于Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.03mm or less 0.03mm以下
Reference Thrust 参考推力	100N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 （Thread area）
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

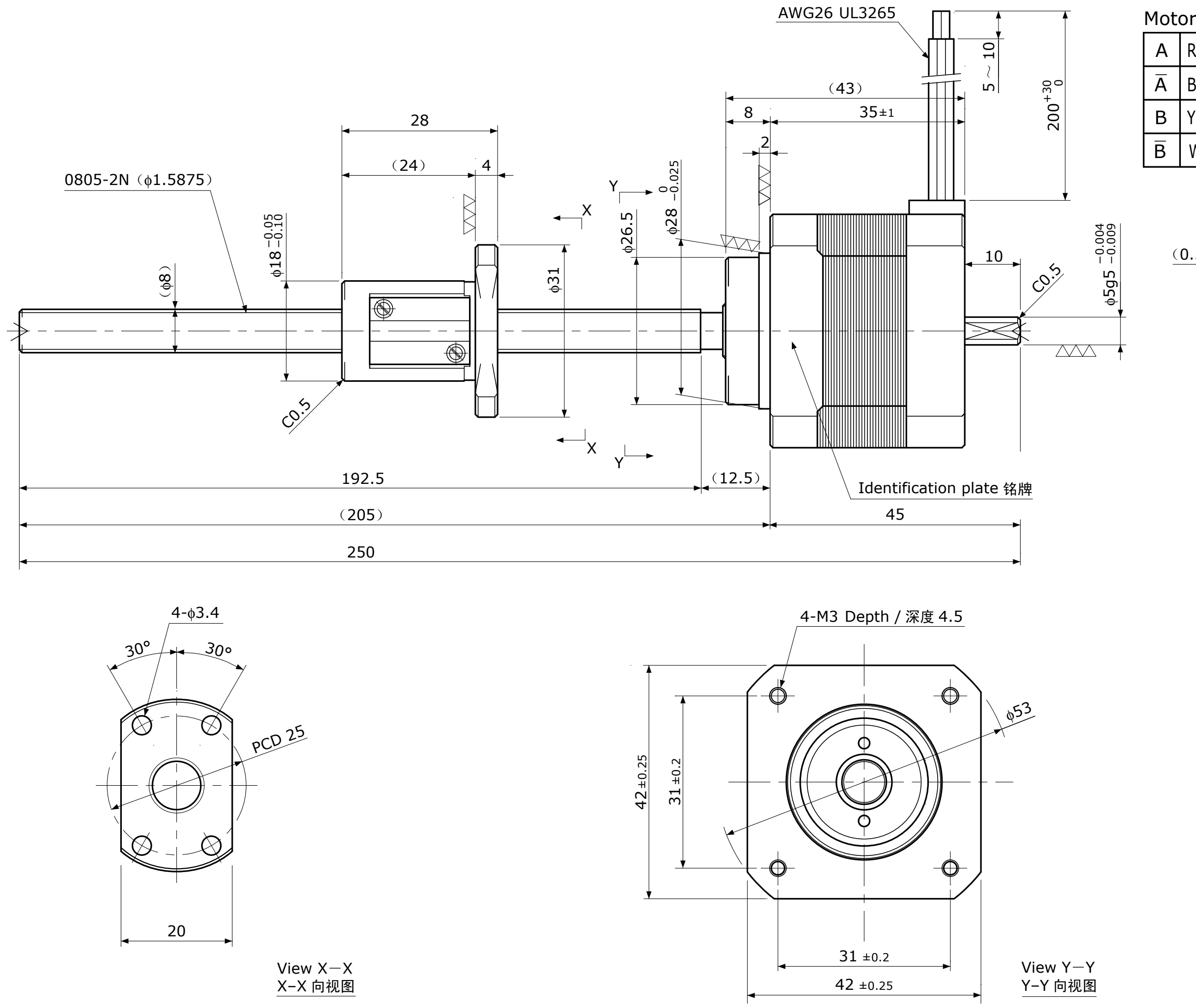
Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A
Rotor inertia 转子惯量	42g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）关于追加加工，请参照F128页。
Note）Please refer to page F128 about end-journal turning.

冷轧滚珠丝杠＋2相步进电机 / Rolled Ball Screw ＋ 2-phase Stepping Motor

2TMB0805

Shaft dia.（轴径）f8　Lead（导程）5mm　Travel（行程）150mm



Motor wire / 电机线

A	Red / 红色
$\bar{A}$	Blue / 蓝色
B	Yellow / 黄色
$\bar{B}$	White / 白色

Recommended Drivers 推荐的驱动器	SD4030B2

注）有关与推荐驱动器的接线，请参照F160页。
Note）Refer to page F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Exclusive Support Unit / 支撑侧专用支架组件	SP-42S
	Nut Block / 螺母块	NB-0805R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	Equivalent to JIS Ct7 相当于Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.03mm or less 0.03mm以下
Reference Thrust 参考推力	50N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55（Thread area）
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

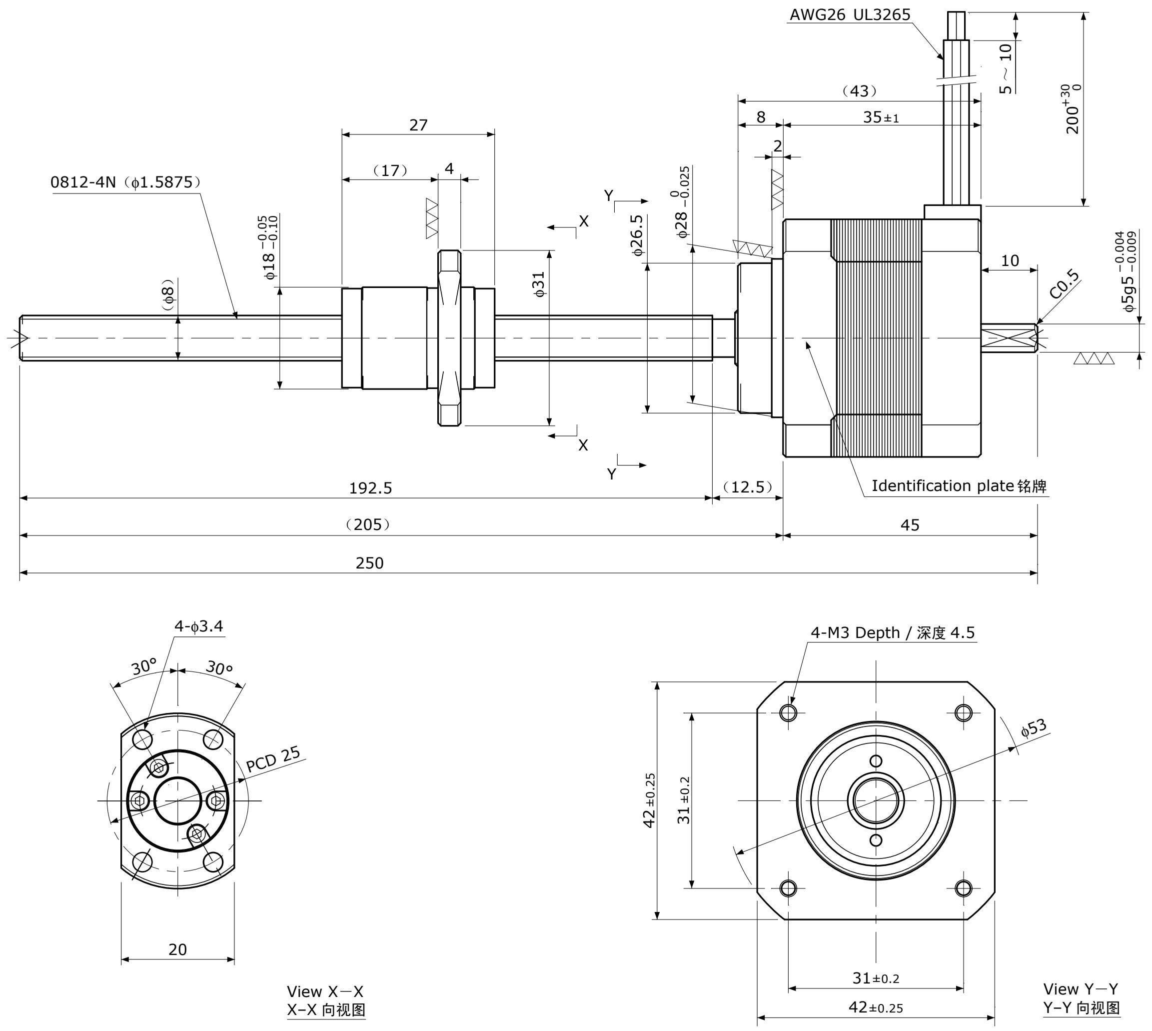
Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A
Rotor inertia 转子惯量	42g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）关于追加加工，请参照F128页。
Note）Please refer to page F128 about end-journal turning.

冷轧滚珠丝杠＋2相步进电机 / Rolled Ball Screw ＋ 2-phase Stepping Motor

2TMB0812

Shaft dia.（轴径）f8　Lead（导程）12mm　Travel（行程）150mm



Motor wire / 电机线

A	Red / 红色
$\bar{A}$	Blue / 蓝色
B	Yellow / 黄色
$\bar{B}$	White / 白色

Recommended Drivers 推荐的驱动器	SD4030B2

注）有关与推荐驱动器的接线，请参照F160页。
Note）Refer to page F160 for connection diagram of recommended Drivers.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Exclusive Support Unit / 支撑侧专用支架组件	SP-42S
	Nut Block / 螺母块	NB-0812R

Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	Equivalent to JIS Ct7 相当于Ct7
Thread direction 旋向	Right　右
Axial play 轴向间隙	0.03mm or less 0.03mm以下
Reference Thrust 参考推力	25N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55（Thread area）
Lubricant 润滑剂	KSS original grease MSG No.2 KSS原装油脂 MSG No.2

Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0 A
Rotor inertia 转子惯量	42g・cm²
Operating temperature 使用温度范围	−20°C～50°C

注）关于追加加工，请参照F128页。
Note）Please refer to page F128 about end-journal turning.

混合型(SiMB)
Hybrid type(SiMB)

Si-魔博 / Si-MoBo

●特点
・是将步进电机直接组装到精密滚珠丝杠的轴端上的产品，分辨率高、定位精度优越。
・在电机后部安装有编码器和存储元件，实现了完全等间距定位、无振动、无失调。
・具有将滚珠丝杠轴心作为电机旋转轴心的理想结构。
・直连结构省去了联轴器的使用，不仅缩短长边方向尺寸，还能减少作业工时。
・还备有专用控制器驱动器、专用电缆。
・螺母块、电机板等附件也很齐全。

●Features
・A Stepping Servo Motor, what we call Si-servo Motor, is mounted directly onto the Shaft end of a Precision Ball Screw, which is high resolution and precise positioning unit.
・An Encoder and a Memory chip are installed at the end of Motor, high accurate positioning, ultra smooth drive, and closed loop function have been achieved.
・Ball Screw Shaft is ideally constructed to form the Motor Rotor Shaft.
・Since combining the Motor Shaft and Ball Screw Shaft, Coupling-less, saving total length, and reducing labor cost can be achieved.
・Exclusive Driver, and Cable are provided for Si-servo Motor.
・Accessories are also provided as mounting kit, such as Nut block and Motor plate.

电机直连型滚珠丝杠
Direct motor drive Ball Screw

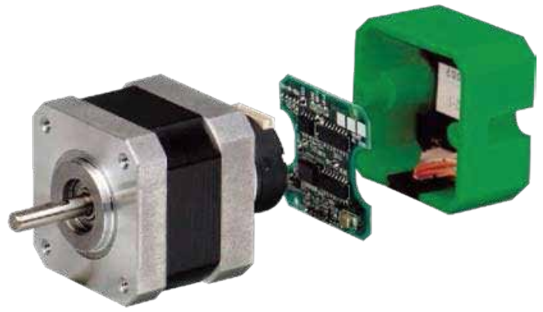
节省空间
无需联轴器
减少组装工序
Less space needed
No Couplings
Assembly process reduced

＋

超级步进
Super stepping

完全等间距定位
无振动运行
无失调
High accuracy positioning
Ultra smooth drive
Closed loop operation

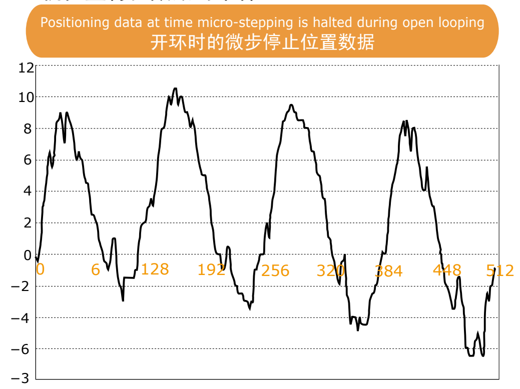
Si MoBo



数据库补偿控制
Si伺服的控制方式并非单一的微型步进控制。电机后部装备有编码器和存储元件，以每圈400脉冲分辨率的编码器位置信息和电流反馈为基础。另外，出厂时已将电机固有数据保存在存储器中，电机驱动时通过进行补偿、抑制的精密数据库补偿型控制方式，实现了对目标位置的高速、高精度定位。

Database compensation control
Control mechanism of the Si servo is not simply the micro-step control. Both an Encoder and a Memory chip are installed, and the Encoder position for 400pulse resolution per revolution as well as electrical current feedback are standard. Furthermore, data inherent to the Motor is recorded in the Memory at time of shipping from the factory so that high speed and high precision positioning to designated positions can be realized using a precise database revision control method of compensation and control when the Motor starts.

Sampling of Motor's Positioning Characteristic
电机位置特性数据的采样



Position of the Motor 1 rotation is divided into 25,600 and the stop position of a Motor is formed into database
将电机旋转1圈的量分为25600步，以将电机的停止位置数据库化。

对电机特性数据采样
因电机的加工、组装精度而引起的齿槽转矩和转矩脉动是影响低振动、高精度定位的重要原因。Si伺服可准确测量、掌握这些影响控制的电机固有数据和微型步进控制时的定位精度，并将其作为最佳电流波形进行数据库化。

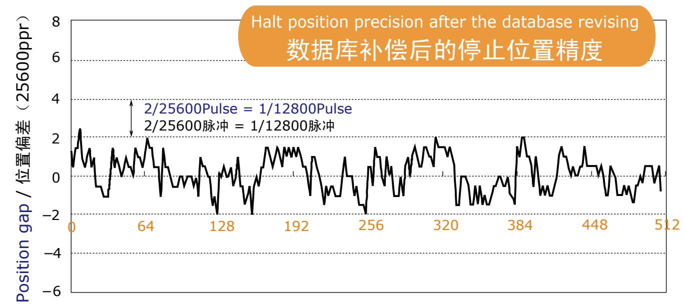
Sampling motor characteristics
Cogging Torque and Torque ripples originate from Motor processing and assembly precision, big factors that can hinder a low vibration, high accuracy positioning. The Si servo, by accurately measuring and storing individual Motor characteristics data inherit to the Motor, we can create a database of the optimal electrical current wave forms for the highest possible rotary precision.

向存储器保存数据
采样数据被保存在电机内的存储器中，接通电源时通过编码器电缆被传送至驱动器。由此可实现驱动器和电机的任意组合。

Storing data in memory
The data gained from sampling is stored in Memory within the Motor, which can be transferred to a Driver by using an Encoder cable at the time power is supplied. This makes it possible for the Driver and the Motor to work as an optimal combination.

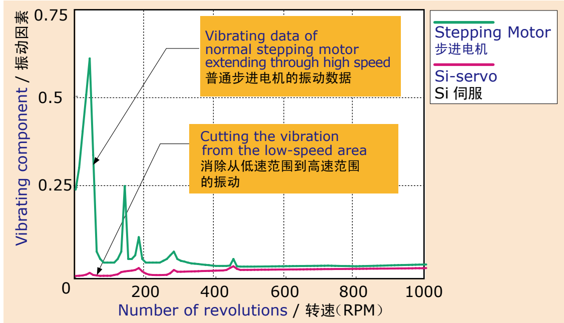
高精度定位
不仅像微型步进控制那样对指令分辨率进行了细化，还将实际停止精度提高到了相当于10000脉冲编码器的水平。此外，还可实现微型步进控制无法达到的脉冲单位的等间距定位。
(*以电机输出扭矩足够高于负载阻力为必要条件。)

High precision positioning
This is not just a simple command analysis as with Micro-step controls. It raises the actual precision of halting to a proper 10000 pulse encoder. Furthermore uniform pitch positioning to the pulse, which can not be achieved by Micro-step, has been realized.
(*As one condition, the output Torque of the Motor needs to sufficiently exceed load resistance.)



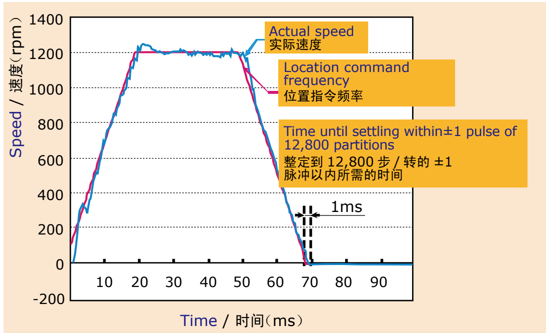
实现了低振动运行
电机动作时，通过高速施加最佳补偿电流指令，可大大消除电机的振动因素。与步进电机相同，在电机停止时不会产生像伺服电机那样的微小振动。

Low vibrations
Vibrating elements in the Motor have been largely removed thanks to the optimal high-speed revision current commands while the Motor is in operation. Also unlike a standard Servo Motor, there is no searching between Encoder counts when the Motor stops.



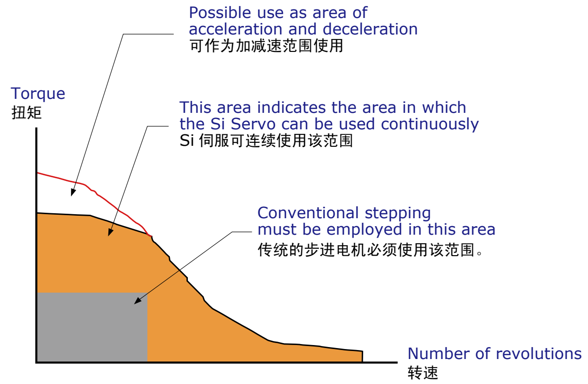
整定时间
Si伺服灵活运用步进电机的优点，对指令脉冲具有极高的模拟性。
整定到12800步/转的±1脉冲以内只需1ms。
在要求高节奏运行的用途中能发挥卓越的性能。

Settling time
The Si Servo makes the most of the stepping motor's advantages including its ability to closely follow the command pulse train
The amount of time until setting within ±1 pulse of 12,800 partitions is only 1ms. Providing superior performance in high response systems.



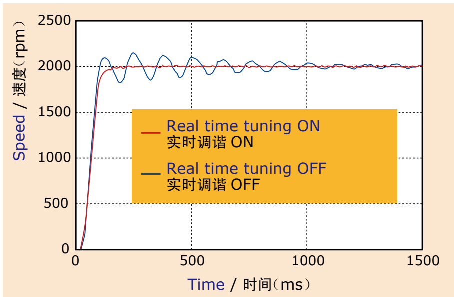
扭矩余量充足
无失调，可以100%负载连续运行。
无需像步进电机那样考虑扭矩余量。

Surplus Torque
Because the Si Servo is never step out, it is possible to operate continuously at 100% capacity. There is no need to consider the Torque margin as with the Stepping Motor.



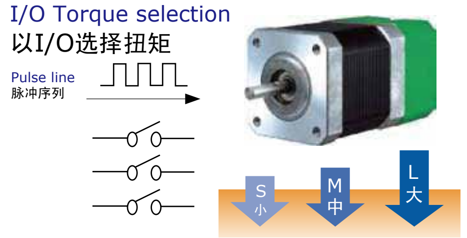
实时自动调谐
即使以传统的调谐方式无法平滑驱动的机械，也可利用实时自动调谐功能自动模拟惯量和刚性的变动，始终保持最佳响应性和稳定性。

Real-time auto-tuning
Even machinery that could not operate smoothly with conventional tuning methods will automatically imitate Inertia and Rigidity, always able to realize the optimal responsive and stable tuning.



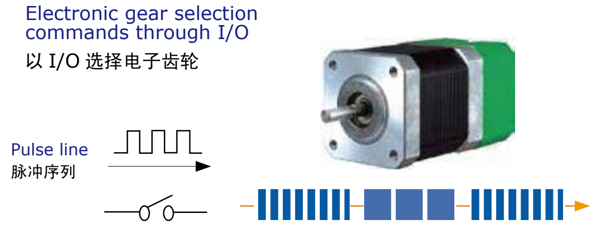
以步进方式控制扭矩
可在位置控制的同时进行5级扭矩控制。
Point Table运行时，可设定任意的扭矩值。可自由切换并使用位置控制和扭矩控制，因此可实现自由度很高的控制。即使在扭矩控制中也会在内部进行偏差管理，因此不会发生位置偏移。

Torque controls through stepping
Five steps of Torque control are performed during position control. Optional Torque value settings are possible during the point table operations. A high degree of freedom in control is possible thanks to being able to switch back and forth between position control and torque control. Even during Torque control, differential controls are still being performed internally, so positions will not deviate.



外部电子齿轮切换
可通过外部I/O信号或通信指令对2级电子齿轮设定进行切换。即使是只能输出低频指令脉冲的控制器，也能以高分辨率进行从低速运行到高速运行的大范围控制。

External electronic gear transfer
Using external I/O signals and/or communication commands, switching the electronicgear setting in two steps possible. Even controller that cannot output except on command pulses with low frequencies can be highly functional in a wide range from low speed to high speed operations.
*Switching can be performed while the motor is halted.



本产品不适于在某些条件下使用，建议就产品规格与本公司充分协商。
Depends on the condition, this product will not be suitable for your specifications.
Please always consult with KSS due to the inquiry.

●基本规格 / Specifications

Model 型号	Shaft Nominal Dia. 丝杠轴公称外径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Travel per pulse 1脉冲移动量 (μm)	Reference Thrust 参考推力 (N)	Mass 重量 (g)
SiMB0401	f4	1	30	1/25,600	30	114
SiMB0801	f8	1	100	1/25,600	300	130
SiMB0802	f8	2	160	2/25,600	150	165
SiMB0805	f8	5	150	5/25,600	80	200

Repeatability（reference） 重复定位精度（参考值）	max. ±0.001mm
Lost Motion（reference） 空转（参考值）	max. 0.001mm

※重复定位精度及空转值是安装在本公司标准滑台上时测得的值。
实际值请洽询本公司。

※The reference value about Repeatability and Lost Motion represents when the MoBo built into KSS original actuator.
Please make a contact to KSS for actual value.

注1）关于详细尺寸，请参照F147页以后的规格图。
注2）加减速速率的参考值为0.5ms/kHz（电机单体性能）以上。
注3）参考推力根据不同条件会有很大变化，请垂询本公司。

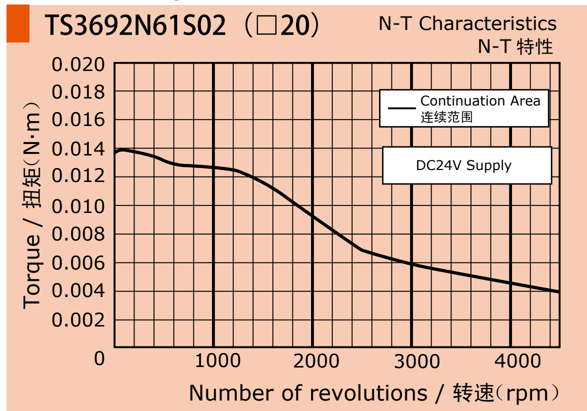
Note1）Detail specifications & dimensions are shown in drawings from page F147.
Note2）Acceleration & Deceleration Rate should be recommended by 0.5ms/kHz or more.（Ability as a Motor itself）
Note3）Reference Thrust may vary depending on the operating condition, please ask KSS for more detail.

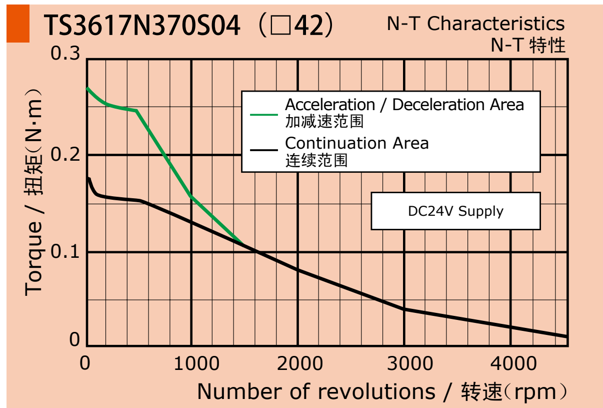
●电机规格 / Motor Specifications

Model 型 号		TS3692N61S02（SiMB0401）	TS3617N370S04（SiMB08xx）
Maximum output torque 最大输出扭矩	N・m	0.017	0.24
Maximum rotating speed 最大转速	rpm	4500	4500
Rated current 额定电流	A0-p	0.35	2.0
Rated voltage 额定电压	V	3.0	2.2
Coil resistance 绕组电阻	Ω	8.5±15%	1.1±15%
Rotor inductance 绕组电感	mH	3.4±20%	1.4±20%
Rotor inertia 转子惯量	10^{-7}kg・m²	1.9	35
Shaft run out 轴跳动	mm T.I.R	0.05	0.05
Thrust play 轴向游隙	mm max.	0.01	0.01
Coil Method 绕组方式	—	2-phase hybrid stepping motor Bipolar coil 2相混合步进电机 双极绕组	
Insulation class 绝缘等级	—	CLASS B	
Insulation resistance 绝缘电阻	MΩ min.	100（at DC500V）	
Dielectric strength 绝缘耐压	V	500（at AC 1MIN）	
Operating temperature range 使用温度范围	゜C	−20～+50	
Operating humidity range 使用相对湿度范围	%RH	5～95	
Storage temperature range 存放温度范围	゜C	−40～+70	

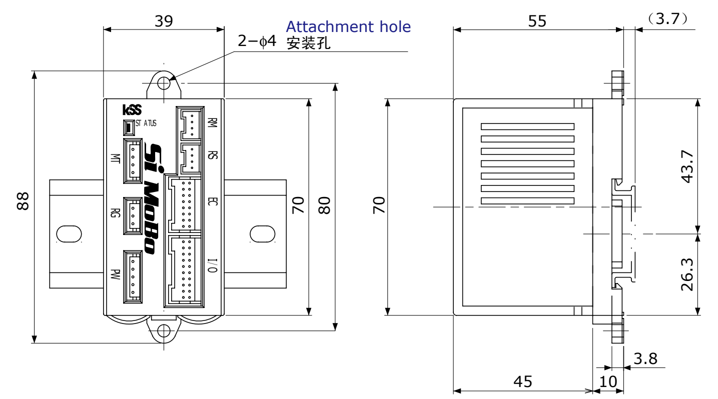
注）转子惯量为包含滚珠丝杠轴的值。 Note）Rotor Inertia includes Ball Screw Shaft.

●扭矩特性 / Torque Characteristics





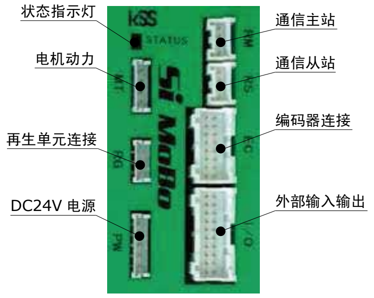
●驱动器外形尺寸 / Driver Outer Dimensions

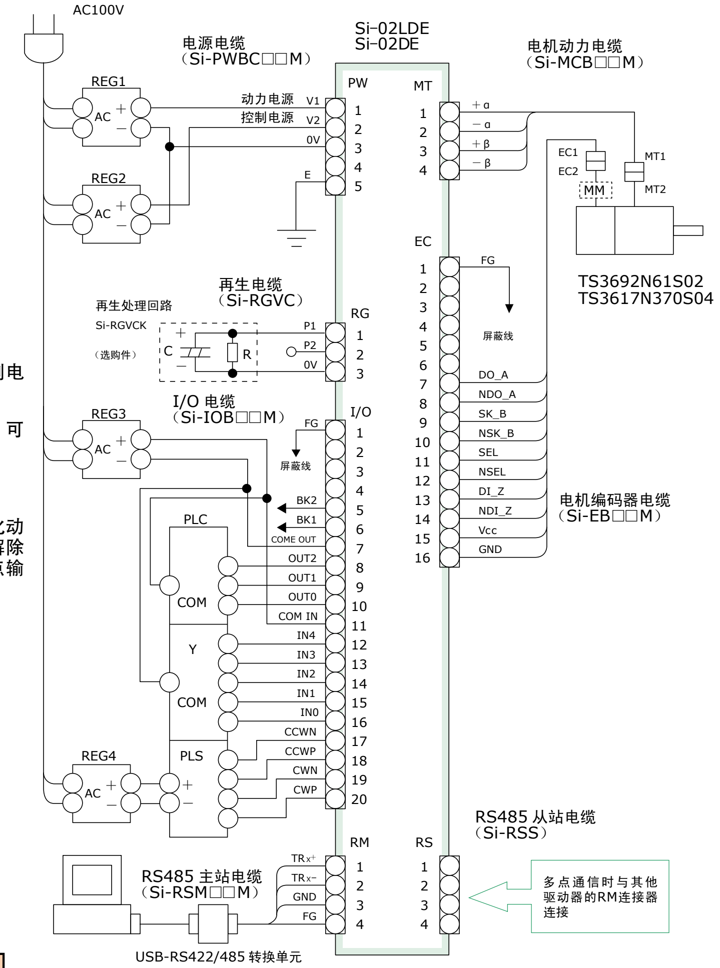


●驱动器规格 / Driver Specifications

Model 型 号			Si-02LDE（SiMB0401）	Si-02DE（SiMB08xx）
Applicable Motor Model 适用的电机型号			TS3692N61S02	TS3617N370S04
Rated Output Current（A0-p） 额定输出电流（A0-p）			0.35	2.0
Maximum Output Current（A0-p） 最大输出电流（A0-p）			1.0	4.5
Controlling Method 控制方式			Transistor PWM（Sine Wave Drive） 晶体管PWM（正弦波驱动）	
Feedback 反馈			Incremental Encoder 200 ppr 增量型编码器200ppr	Increnebtal Encoder 400 ppr 增量型编码器400ppr
Power supply 电源	Voltage 电源电压 (V)	Power supply 动力电源	DC24V±10% or DC36V±10%	
		Control power supply 控制电源	DC24V±10%	
	Power Supply Current（A） 电源电流（A）		2	
Position Command Method 位置指令方式			Communication and Control Input through 3 Mode Pulse Lines and RS485 通过3模式脉冲序列、RS485进行通信、控制输入、Point Table存储的方式	
Conditions for Use 使用条件	Temperature for Use 使用温度		0～+50゜C	
	Storage Temperature 存放温度		−20～+85゜C	
	Humidity for Use or Storage 使用、存放湿度		Under 90%RH（no condensation） 90%RH以下（无结露）	
	Resistance Vibrations 抗振性		0.5G	
	Impact Resistance 抗冲击强度		2G	
Standard Functions 内置功能	Dynamic Braking 动态制动器功能		None 无	
	Regenerative Function 再生功能		Able to connect to external regeneration processing circuit 可在外部连接再生处理回路	
	Over Travel Prevention 超程防止功能		Hard OT, Soft OT（Select ON or OFF parameters） 硬件OT、软件OT（通过参数选择有效/无效）	
	Internal Speed Setting 内部速度设定功能		Point Table Transfer Speed, Jog Speed, Reset Speed Point Table移动速度、点动速度、原点复位速度	
	Display 显示功能		1- LED（Alarm Display, Servo ON Conditions） LED指示灯1点（警告显示、伺服ON状态）	
Input/Output 输入/输出	Input 输入	Control Input 控制输入	5 points（Select function parameters） 5点（通过参数选择功能）	
		Command Pulse Input 指令脉冲输入	CW / CCW、PULSE / SIGN、A / B Phase Input（Select parameters） Maximum response waves : 750kpps CW/CCW、PULSE/SIGN、A/B相输入（通过参数选择） 最高响应频率750kpps	
	Output 输出	Control output 控制输出	3 points（Select parameters）, Brake Release Signal 3点（通过参数选择）、制动解除信号	
Protection Functions 保护功能			EEPROM abnormalities, Encoder abnormalities, System abnormalities, Over Currents, Driver overheating, Excessive location deviation, Motor current abnormalities, Control Current abnormalities EEPROM异常、编码器异常、系统异常、过电流、驱动器过热、位置偏差过大、电机电源异常、控制电源异常	
Zero Return Mode 原点复位方法			Zero LS Signal input or using mechanical stopper（Set parameters of 7 methods） 输入原点LS信号或使用机械挡块（通过参数选择7种方式）	
Multi-axis 多轴连接功能			Multi-drops of up to 15 axis with RS485 通过RS485最多可连接15个轴	
Settings 设定方式			Parameters are set through use of a computer（RS485 converter required） 使用电脑进行参数设定（需RS485转换器）	
Standard, Environmental, and Protection Grades 标准、环保、保护等级			UL conformance / CE（self-declaration）/ Corresponds to RoHS / IP40 符合UL标准、CE标准（自我宣言）、RoHS指令、保护等级为IP40	

●连接



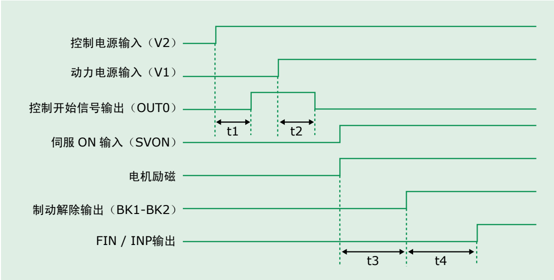


■动力电源接通时间

动力电源（V1）和控制电源（V2）分别使用不同的电源时，请先接通控制电源。接通控制电源后，作为控制开始信号，OUT0信号被置为ON。
请在确认该信号的输出后再接通动力电源。
动力电源和控制电源使用相同的电源（将电源并连在V1、V2端子上）时，可同时接通。

■接通电源时的初始化动作

请以接通动力电源、OUT0信号的时间发出伺服ON指令。注3
定位至电机励磁原点（机械角每7.2°）后，输出FIN/INP信号，完成初始化动作。注2 该初始化动作前输入的脉冲序列指令及其他指令均被忽略。制动解除信号请务必使用计算了与电机励磁动作时间的本装置的无电压继电器触点输出BK1-BK2。



※REG1是主回路电源用稳压电源，使用DC24V或DC36V。使用DC24V时可与REG2通用。
※REG2是控制回路用稳压电源，使用DC24V。
※REG3是I/O用稳压电源，使用DC24V。
※REG4是指令脉冲串开路集电极输出时的稳压电源，使用DC5V(或以上)。
※BK1、2为无电压继电器触点输出
※MM是电机存储组件，仅TS3692N61S02、TS3641N61S02安装在电缆内。

■电源接通时间

（不考虑控制电源、动力电源启动时间的值）

符号	含义	时间	单位
t1	控制电源接通后，在t1后输出OUT0信号	1000	ms
t2	接通动力电源、在t2后电机变为可励磁状态注3	50	
t3	伺服ON指令后电机开始励磁，定位至最近的电机励磁原点（机械角每7.2°）。注1 同时输出制动解除信号。	500	
t4	输出制动解除信号后，在t4后输出FIN/INP信号，完成初始化动作。注2	参数53的值	

注1）位于机械端、或者机械的摩擦阻力大时，在FIN/INP信号输出时若电机转子无法正确定位至励磁原点，则有可能发生振动或无法输出规定的扭矩。此时，请将参数53“启动时励磁保持时间”适当设定为的较大值，或者将参数56“机械端检测顺序”设定为1。
注2）将参数58“机械端检测顺序”设定为1时，t4结束后即开始机械端检测动作，检测结束后输出FIN/INP信号。
注3）自动伺服ON功能有效时，在控制开始信号（OUT0）输出OFF的同时电机开始励磁。

控制输入选择一览表

选择功能	代码	内容	选择功能	代码	内容
SVON	01	伺服ON	SBK	18	单块
PJOG	02	正转JOG	EXIN	1C	输入分支
NJOG	03	反转JOG	EMCE	20	紧急停止(控制制动)
ARST	04	警报复位	EMCF	21	紧急停止(伺服自由运行)
STR	05	开始	EXIN2	23	输入分支2
ZSTR	06	原点开始	EXIN3	24	输入分支3
DEC	07	原点减速	STRP	25	开始(单触输入)
HOLD	08	保持	ZSTRP	26	原点开始(单触输入)
PO_IN	09	定点编号输入	ERST	27	清除偏差
P1_IN	0A		MFIN	28	M完成
P2_IN	0B		SENS	29	传感器定位
P3_IN	30		STP	2A	停止
P4_IN	31		RSEL	38	分辨率选择
P5_IN	32		TSEL0	39	扭矩选择输入
P6_IN	33		TSEL1	3A	
P7_IN	34		TSEL2	3B	
TDIN	0C	示教	TSEL3	3C	
POT	12	正转OT	TSEL4	3D	
NOT	13	反转OT	VDIR	2E	旋转方向选择输入

向参数60、61指定上述代码。

参数60	IN3	IN2	IN1	IN0
参数61				IN4

控制输出选择一览表

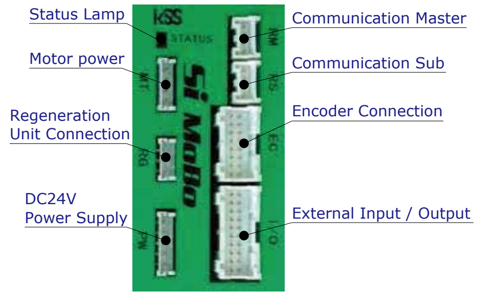
选择功能	代码	内容	选择功能	代码	内容
RDY	01	伺服准备就绪	P0_OUT	04	当前定点输出
INP	02	就位	P1_OUT	05	
ALM	03	警报	P2_OUT	06	
PRG	11	程序执行中	P3_OUT	20	
FIN	12	完成	P4_OUT	21	
VCMP	1A	速度一致	P5_OUT	22	
VZR	1B	零速	P6_OUT	23	
TFIN	1C	扭矩完成	P7_OUT	24	
FIN+TFIN	1D	完成＋扭矩完成	P0_FIN	14	定点完成输出
M0	30	M输出	P1_FIN	15	
M1	31		P2_FIN	16	
M2	32		P3_FIN	28	
TLMT	38	扭矩限制	P4_FIN	29	
SLMT	39	速度限制	P5_FIN	2A	
POTOUT	3A	正转驱动禁止中	P6_FIN	2B	
NOTOUT	3B	反转驱动禁止中	P7_FIN	2C	
ZFIN	3C	原点完成	ZPLS	3E	Z相信号输出
ZERO	3D	原点位置输出	—	—	—

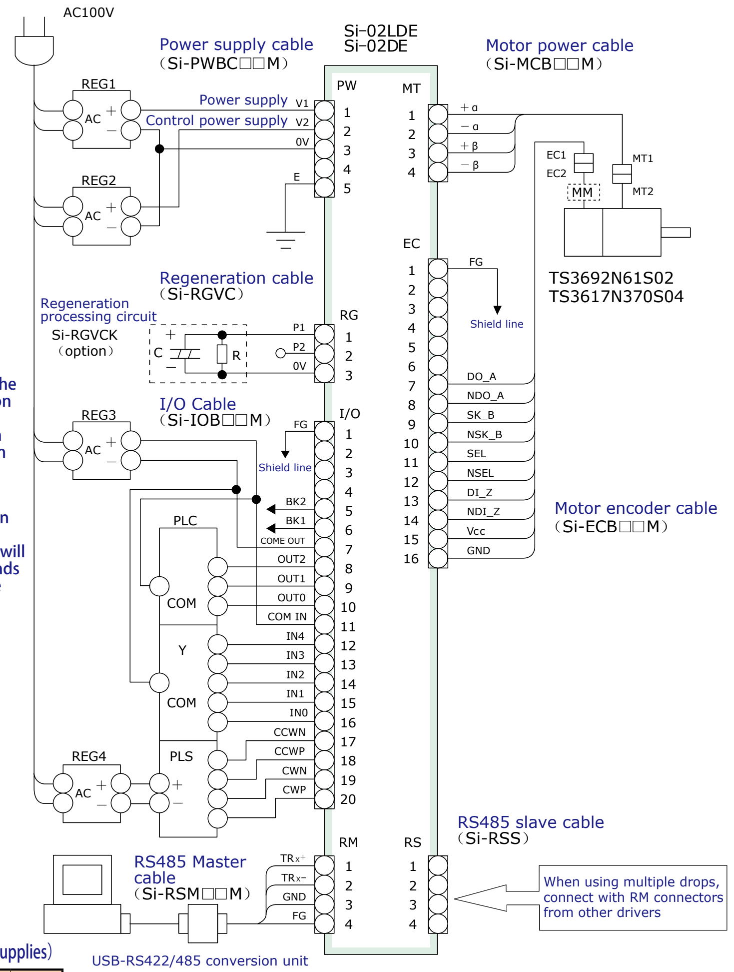
向参数63指定上述代码。

参数63		OUT2	OUT1	OUT0

※参数No.60、61、63作为32位的HEX数据，以8位为间隔设定各输入输出功能。设定功能后，相应的端子将被分配所设的功能。
※多个输入端子上分配了同一功能时，任意一个有输入的端子将执行该功能。
※多个输出端子上分配了同一功能时，该功能对所设定的所有端子均输出。

●Connections



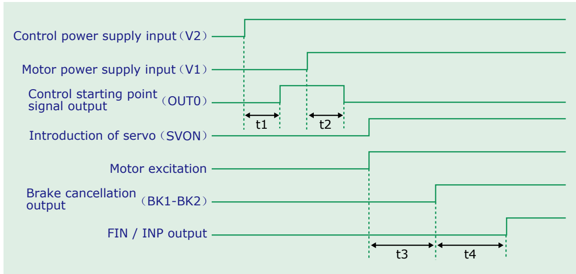


■Timing the introduction of activation power supply

If using separate power supplies from activation（V1） and control（V2）, introduce the control power supply first. When the control is supplied, the OUT0 signal is turned on as a signal that control has begun. Introduce the activation power supply only after confiming the output from this signal. If using the same power supply for activation and control （connecting the power supply to parallel V1 and V2 terminals）, you can introduce them at the same time.

■Initialization action when introducing power supply

Give the command to turn on the servo timed with the introduction of the activation power supply and the OUT0 signal.*3 When the positioning of the motor excitation starting point（every 7.2° from the machine angle）is complate, the FIN/INP signal will be output and initialization actions are complete.*2 All pulse line and other commands input before these initialization actions will be ignored. Furthermore, be sure to use non-voltage relay connection output BK1-BK2 on this device, where the brake cancellation signal measures timing with the motor excitation activation.



*REG1 uses either DC24V or DC36V for stabilizing power supply to the main circuit power supply. When DC24V is used, REG2 may be shared.
*REG2 uses DC24V for stabilizing power supply to the control circuit.
*REG3 uses DC24V for stabilizing power supply to I/O.
*REG4 uses DC5V（or higher） for stabilizing power supply when the command pulse line outputs an open collector.
*BK1 and 2 have no voltage relay connector output.
*MM refers to motor memory unit, and is packaged only in cables TS3692N61S02 and TS3641N61S02.

■Power Supply Introduction Timing

（These value do not take into consideration times for starting control and activation power supplies）

Symbol	Meaning	Time	Unit
t1	Introduce control power supply, after t1 OUT0 signal is output.	1000	ms
t2	Introduce control power supply, after t2 conditions are set for motor excitation*3	50	
t3	After the command to turn on servo, motor excitation begins and positioning of the motor excitation starting point（every 7.2° from the machine angle）is perfomed.*1 The brake cancellation signal is output at the same time.	500	
t4	After the brake cancellation signal is output and t4, the FIN/INP signal is output and initialization actions are complete *2	Value of Parameter 53	

*1） If the motor rotor cannot accurately position the excitation starting point when the FIN/INP signal is output because it is on the edge of the machine or because the machine has a strong resistance to friction, this is a possibility that vibrations may occur or that the prescribed torque cannot be output. In this case, either set parameter 53, "Time to Hold Excitation at start Time," to an appropriately large value, or set parameter 56, "Machine Edge Detection Sequence," to "1".
*2） If parameter 58, "Machine Edge Detection Sequence", is set to "1", after t4 is completed, machine edge detection activities will begin and the FIN/INP signal will be output upon completion.
*3） If the automatic servo on function is in effect, motor excitation will begin at the same time the control start signal（OUT0）output goes off.

Control Input Selection Table

Selection Function	Code	Contents	Selection Function	Code	Contents
SVON	01	Servo ON	SBK	18	Single block
PJOG	02	CW JOG	EXIN	1C	Input branching
NJOG	03	CCW JOG	EMCE	20	Emergency stop (control movement)
ARST	04	Reset alarm	EMCF	21	Emergen stop (servo-free)
STR	05	Start	EXIN2	23	Input branching 2
ZSTR	06	Zero start	EXIN3	24	Input branching 3
DEC	07	Deceleration	STRP	25	Start (One-shot Input)
HOLD	08	Hold	ZSTRP	26	Zero start (one-shot Input)
PO_IN	09	Point number input	ERST	27	Clear deviation
P1_IN	0A		MFIN	28	M Completion
P2_IN	0B		SENS	29	Sensor positioning
P3_IN	30		STP	2A	Stop
P4_IN	31		RSEL	38	Select resolution function
P5_IN	32		TSEL0	39	Torque selection input
P6_IN	33		TSEL1	3A	
P7_IN	34		TSEL2	3B	
TDIN	0C	Teaching	TSEL3	3C	
POT	12	CW OT	TSEL4	3D	
NOT	13	CCW OT	VDIR	2E	Input selection for revolution direction

Parameters 60 and 61 refer to the above codes.

Parameter 60	IN3	IN2	IN1	IN0
Parameter 61				IN4

Control Output Selection Table

Selection Function	Code	Contents	Selection Function	Code	Contents
RDY	01	Servo ready	P0_OUT	04	Current point output
INP	02	In position	P1_OUT	05	
ALM	03	Alarm	P2_OUT	06	
PRG	11	Program in operation	P3_OUT	20	
FIN	12	Completed	P4_OUT	21	
VCMP	1A	Velocity agreement	P5_OUT	22	
VZR	1B	Zero velocity	P6_OUT	23	
TFIN	1C	Torque completed	P7_OUT	24	
FIN+TFIN	1D	Completed and torque completed	P0_FIN	14	Point completion output
M0	30	M output	P1_FIN	15	
M1	31		P2_FIN	16	
M2	32		P3_FIN	28	
TLMT	38	Torque limit	P4_FIN	29	
SLMT	39	Speed limit	P5_FIN	2A	
POTOUT	3A	Positive drive prohibited	P6_FIN	2B	
NOTOUT	3B	Negative drive prohibited	P7_FIN	2C	
ZFIN	3C	Zero complete	ZPLS	3E	Z phase signal output
ZERO	3D	Zero position output	—	—	—

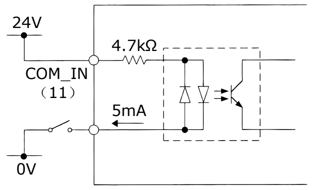
Parameters 63 refer to the above codes.

Parameter 63		OUT2	OUT1	OUT0

*Parameter number 60, 61, and 63 are 32-bit hexadecimal data, and are divided into 8 bits each, set through the input and output functions. When functions are set, the corresponding terminals are assigned to the set functions.
*When multiple input terminals are assigned to the same function,the one with input perfoms that function.
*When multiple output terminals are assigned to the same function,the output from that function will be perfomed at all assigend terminals.

●控制信号 / Control Signals

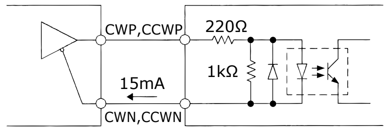
输入回路 / Input Circuit



Please prepare a separate input circuitry power source of DC24V±10%
（Current used：About 5mA/circuit）

请另行准备DC24V±10%的输入回路电源
（消耗电流 约5mA/回路）

脉冲指令（5V线路驱动器） Pulse Command（5V Line Driver）



Applied line driver TI AM26C31 or equivalent

适用的线路驱动器为TI制AM26C31的等同品

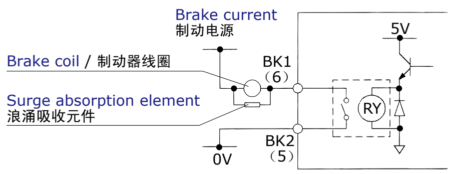
Use twists on P side and N side.

请对P侧和N侧进行绞接处理。

Current used is about 15mA/circuit. Please use a separate common current for control input and output.

消耗电流约15mA/回路
请采用与控制输入输出不同的电源遥控器。

制动信号 / Brake Signals



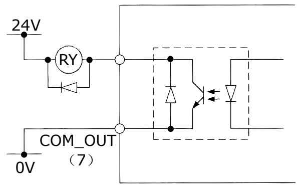
A non voltage contact output（1a）is used as the braking cancellation signal.
The area between BK1 and BK2 shorts circuits when the motor is electrified.
The applied voltage of the output terminal and the volume of electrified current are as follows.

- Applied voltage：Under AC 125V, DC 60V
- Electrified current：Under 1A
- Please be sure to use a surge absorption unit of a varistor type that meets the specifications of the brake coil being used. Not inserting one may cause damage to the relay contact.

作为制动解除信号，备有无电压触点输出（1a）。
电机通电时 BK1-BK2 间短路。
输出端子的施加电压、通电电流的容量如下所示。

- 施加电压　AC125V、DC60V 以下
- 通电电流　1A 以下
- 制动线圈上必须插入与制动线圈规格匹配的可变电阻等浪涌吸收元件。否则会导致继电器触点故障。

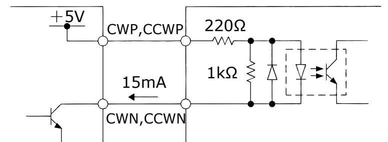
输出回路 / Output Circuit



Applied voltage：≤30V
Electrified current：≤50mA

施加电压≤30V
通电电流≤50mA

脉冲指令（5V开路集电极） Pulse Command（5V Open Collector）



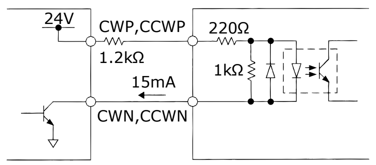
Use twists on P side and N side.

请对P侧和N侧进行绞接处理。

Pulse command（5V Open collector）
Current used is about 15mA/circuit.

脉冲指令（5V开路集电极）
消耗电流约15mA/回路

脉冲指令（24V开路集电极） Pulse Command（24V Open Collector）



Use twists on P side and N side.

请对P侧和N侧进行绞接处理。

When connected to an open collector output with current over 5V, please attach a resister and restrict the current to 15mA.

与使用5V以上电源的开路集电极输出连接时，请附加限流电阻，将电流限制到15mA。

通信规格

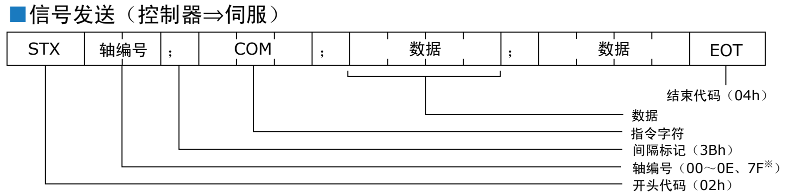
适用标准	2线式RS485
通信方式	同步起止式
	字符式
	半双工通信
波特率	9600～115200bps
起始位	1 bit
数据格式	8 bit
	ASCII码
	HEX
奇偶校验	1 bit（偶数）
停止位	1 bit
和数校验	无
最大接线长度	20m
连接轴数	15轴（No.0～E）

Communication Specifications

Conforming Standards	2 line model RS485
Communication Methods	Synchronous type
	Character method
	Half-duplex communication
Baud Rate	9600～115200bps
Start bit	1 bit
Data form	8 bit
	ASCII code
	HEX
Parity	1 bit (even)
Stop bit	1 bit
Thumb check	None
Maximum Cord Length	20m
Number of Connections	15 axis（No.0～E）

通信协议

■信号发送（控制器⇒伺服）



※轴编号中指定“7F”时，对所连接的所有Si servo发送指令。
此时，将停止所有从Si servo向上位控制器的回应，并且不进行含通信错误在内的任何输出。

■回应（伺服⇒控制器）

返回数据时

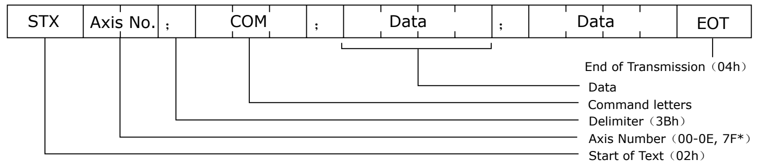
STX	轴No	;	COM	;	数据	EOT

不返回数据时

STX	轴No	;	COM	EOT

Communication Protocol

■Sending（Controller⇒Servo）



* When the axis number is designated as 7F, commands are sent to all connected Si servos. In this case, replies from the Si servo, including communication errors, to the upper controller will not be performed at all.

■Replies（Servo⇒Controller）

When data is returned

STX	Axis No.	;	COM	;	Data	EOT

When data is not returned

STX	Axis No.	;	COM	EOT

●通信指令一览表

功能	指令	功能	指令	功能	指令	功能	指令
参数读取	PRMR	原点开始ON	ZSTRON	扩展输入ON	EXINON	扭矩选择3 ON	TSEL3ON
参数写入	PRMW	原点开始OFF	ZSTROFF	扩展输入OFF	EXINOFF	扭矩选择4 ON	TSEL4ON
Point Table读取	TR	原点开始ON边沿	ZSTRP	扩展输入1 ON	EXIN1ON	定点编号指定	PNT
Point Table输出	TW	原点减速ON	DECOM	扩展输入1 OFF	EXIN1OFF	记录清除	HCL
EEPROM写入	FLASH	原点减速OFF	DECOFF	扩展输入2 ON	EXIN2ON	扭矩峰值复位	TRST
伺服ON	SVON	步进	STEPON	扩展输入2 OFF	EXIN2OFF	机械原点改写	ZSET
伺服OFF	SVOFF	步进停止	STEPOFF	扩展输入3 ON	EXIN3ON	复位	RESET
紧急停止ON	EMCON	步进0	STEP0ON	扩展输入3 OFF	EXIN3OFF	偏差计数器设定	ESET
紧急停止OFF	EMCOFF	步进1	STEP1ON	电子齿轮选择	RSELON	示教	TDIN
警报复位	ARST	步进2	STEP2ON		RSELOFF	正转JOG	PJOG
开始ON	STRON	步进3	STEP3ON	扭矩选择	TSELON	反转JOG	NJOG
开始OFF	STROFF	暂停ON	HOLDON	扭矩选择OFF	TSELOFF	JOG停止	JOGOFF
开始ON边沿	STRP	暂停OFF	HOLDOFF	扭矩选择0 ON	TSEL0ON	I/O监视器	IO
动作停止	STOP	单块ON	SBKON	扭矩选择1 ON	TSEL1ON	I/O监视器2	IO2
数值监视	MON	单块OFF	SBKOFF	扭矩选择2 ON	TSEL2ON	警报发生状况	ALM

●Communication Command Table

Function	Command	Function	Command	Function	Command	Function	Command
Read parameter	PRMR	Initial start ON	ZSTRON	Expansion Input ON	EXINON	Torque selectsion 3 ON	TSEL3ON
Write parameter	PRMW	Initial start OFF	ZSTROFF	Expansion Input OFF	EXINOFF	Torque selecsion 4 ON	TSEL4ON
Read point table	TR	Initial start on edge	ZSTRP	Expansion Input 1 ON	EXIN1ON	Designate point number	PNT
Write point table	TW	Initial deceleration ON	DECOM	Expansion Input 1 OFF	EXIN1OFF	Clear history	HCL
Write EEPROM	FLASH	Initial deceleration OFF	DECOFF	Expansion Input 2 ON	EXIN2ON	Reset torque selection	TRST
Servo on	SVON	Step ON	STEPON	Expansion Input 2 OFF	EXIN2OFF	Rewrite machine start point	ZSET
Servo off	SVOFF	Step OFF	STEPOFF	Expansion Input 3 ON	EXIN3ON	Reset	RESET
Emergency stop ON	EMCON	Step 0 ON	STEP0ON	Expansion Input 3 OFF	EXIN3OFF	Set deviation counter	ESET
Emargency stop OFF	EMCOFF	Step 1 ON	STEP1ON	Electronic gear selection	RSELON	Teaching	TDIN
Reset alarm	ARST	Step 2 ON	STEP2ON		RSELOFF	CW JOG	PJOG
Start ON	STRON	Step 3 ON	STEP3ON	Torque selection	TSELON	CCW JOG	NJOG
Start OFF	STROFF	Hold ON	HOLDON	Torque selection OFF	TSELOFF	JOG OFF	JOGOFF
Start on edge	STRP	Hold OFF	HOLDOFF	Torque selection 0 ON	TSEL0ON	I/O Monitor	IO
Stop operations	STOP	Single block ON	SBKON	Torque selection 1 ON	TSEL1ON	I/O monitor 2	IO2
Numerical monitor	MON	Single block OFF	SBKOFF	Torque selecsion 2 ON	TSEL2ON	Alarm conditions	ALM

●参数一览表

No.	参数名称	重启	单位	出厂值
00	轴编号	○	—	0
01	控制输入功能预设设定	○	—	0
02	分辨率分子	○	脉冲	12800
03	分辨率分母	○	脉冲	1
04	脉冲序列指令倍增	○	—	4
06	正转软限超调		脉冲	0
07	反转软限超调		脉冲	0
08	电流下降电流		mA	2000※1
09	电流下降时限		ms	100
10	预设伺服增益选择		—	1
11	位置比例增益		—	50
12	位置前馈系数		—	0
13	速度比例增益		—	10
14	速度微分增益		—	20
15	速度积分增益		—	100
16	保持状态下的积分动作		—	1
17	位置偏差最大值		脉冲	6000
18	就位范围		脉冲	2
19	扭矩完成/VZR输出范围		rpm	0
20	输入脉冲序列种类	○	—	0
21	JOG速度		rpm	300
22	JOG加减速时间常数		ms	10
23	步进脉冲0		脉冲	0
24	步进脉冲1		脉冲	0
25	步进脉冲2		脉冲	0
26	步进脉冲3		脉冲	0
27	原点复位方式	○	—	0
28	原点复位方向	○	—	0
29	原点复位高速速度		rpm	300
30	原点复位低速速度		rpm	180
31	原点复位加减速时间常数		ms	500
32	原点复位最终行走距离		脉冲	12800
33	原点复位顶压扭矩		%	50
34	扭矩限制时限制速度		rpm	4500
35	扭矩限制解除时限制速度		rpm	4500
36	限制速度加减速时间常数		ms	10
37	扭矩指令增减时间常数		ms	100
38	运行模式切换	○	—	0
39	警报输出时间常数		ms	100
40	Z相输出时间		ms	10
41	控制输入滤波时间常数		ms	5
42	指令脉冲平滑滤波时间常数		ms	0
43	通信格式选择（bit）	○	—	0h
44	回应等待时间		ms	50
45	输入方式选择（bit）	○	—	0h
47	伺服自由运行延迟时间		ms	0
48	旋转方向选择	○	—	0
49	电机电源电压	○	V	24
50	开环最高速度		rpm	15
51	开环最大位置偏差		编码器脉冲	4
52	就位输出采样时间		ms	0
53	启动时励磁保持时间		ms	500
54	定点选择倍增		—	0
55	VCMP输出范围		rpm	10
56	自动调谐		—	0
57	旋转坐标系脉冲数	○	脉冲	0
58	机械端检测顺序	○	—	1
59	网格掩膜脉冲数		编码器脉冲	0
60	扩展输入设定1（bit）	○	—	3B3A3938h
61	扩展输入设定2（bit）	○	—	27h
63	扩展输出设定1（bit）	○	—	3E031Dh
65	控制输入逻辑设定（bit）	○	—	0h
66	控制输出逻辑设定（bit）	○	—	0h
68	警报输出保护		—	0h
70	扭矩选择0		%	300
71	扭矩选择1		%	300
72	扭矩选择2		%	300
73	扭矩选择3		%	300
74	扭矩选择4		%	300
75,76	正/反扭矩限制※2		%	0

※1）为Si-02DE的出厂值。（Si-02LDE时为350mA。）
※2）75、76的值为0，与300%含义相同。

注）"重启"栏里有〇符号的参数的设定变更在电源重新接通后生效。

●Parameter Table

No.	Parameter Name	Restart	Unit	Default setting
00	Axis number	○	—	0
01	Preset control input function setting	○	—	0
02	Resolution numerator	○	Pulse	12800
03	Resolution denominator	○	Pulse	1
04	Pulse command multi-play	○	—	4
06	CW soft OT		Pulse	0
07	CCW soft OT		Pulse	0
08	Current down		mA	2000*1
09	Current down time limit		ms	100
10	Preset servo gain selection		—	1
11	Proportional position gain		—	50
12	Position feed forword coefficient		—	0
13	Proportional speed gain		—	10
14	Differentiated speed gain		—	20
15	Integral speed gain		—	100
16	Integral operations in hold condition		—	1
17	Maximum position deviation		Pulse	6000
18	In position area		Pulse	2
19	Torque complete / VZR output range		rpm	0
20	Input pulse differentiation	○	—	0
21	JOG speed		rpm	300
22	JOG acceleration / deceleration time constants		ms	10
23	Step pulse 0		Pulse	0
24	Step pulse 1		Pulse	0
25	Step pulse 2		Pulse	0
26	Step pulse 3		Pulse	0
27	Zero return method	○	—	0
28	Zero return direction	○	—	0
29	High-speed zero return		rpm	300
30	Low speed zero return		rpm	180
31	Zero return acceleration / deceleration constants		ms	500
32	Zero return final distance		Pulse	12800
33	Zero return pressing torque		%	50
34	Torque control time and speed		rpm	4500
35	Torque control cancellation time and speed		rpm	4500
36	Control speed acceleration / deceleration constants		ms	10
37	Torque command acceleration / deceleration constants		ms	100
38	Switch drive modes	○	—	0
39	Alarm output time constants		ms	100
40	Z-phase output time		ms	10
41	Control input filter time constants		ms	5
42	Command pulse smoothing filter time constants		ms	0
43	Communication format selection(bit)	○	—	0h
44	Reply wait time		ms	50
45	Input method selection (bit)	○	—	0h
47	Servo free delay time		ms	0
48	Select revolution direction	○	—	0
49	Motor voltage	○	V	24
50	Open loop maximum speed		rpm	15
51	Open loop maximum position deviation		Encoder Pulse	4
52	In-position output sampling time		ms	0
53	Magnetizations hold time at start		ms	500
54	Multi-play point selection		—	0
55	VCMP output range		rpm	10
56	Auto tuning		—	0
57	Revolution coordinate system pulse number	○	Pulse	0
58	Machine terminal detection sequence	○	—	1
59	Number of grid mask pulses		Encoder Pulse	0
60	Expansion input setting 1 (bit)	○	—	3B3A3938h
61	Expansion input setting 2 (bit)	○	—	27h
63	Expansion output setting 1 (bit)	○	—	3E031Dh
65	Control input logic setting (bit)	○	—	0h
66	Control output logic setting (bit)	○	—	0h
68	Protect alarm output		—	0h
70	Torque selection 0		%	300
71	Torque selection 1		%	300
72	Torque selection 2		%	300
73	Torque selection 3		%	300
74	Torque selection 4		%	300
75,76	CW / CCW torque limit*2		%	0

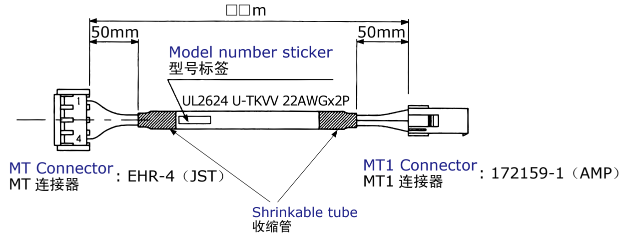
*1）Value for Si-02DE.（It is 350mA for Si-02LDE.）
*2）Values for 75 and 76 are 0, but hold the same meaning as 300%.

Note）Setting changes to parameters with a circle in the"Restart" column are effective after the power supply is restored.

●电缆规格 / Cable Specifications

■电机电缆 / Motor cable : Si-MCB□□M

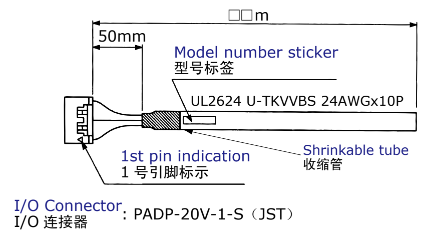
Si-02DE用、Si-02LDE用 / For Si-02DE, Si-02LDE



连接器名	MT		连接器名	MT1	
端子号	信号名	线颜色	端子号	信号名	线颜色
1	＋α	黑	1	＋α	黑
2	－α	黑 / 白	2	－α	黑 / 白
3	＋β	红	3	＋β	红
4	－β	红 / 白	4	－β	红 / 白

Connector Name	MT		Connector Name	MT1	
Terminal	Signal	Color	Terminal	Signal	Color
1	＋α	Black	1	＋α	Black
2	－α	Black / White	2	－α	Black / White
3	＋β	Red	3	＋β	Red
4	－β	Red / White	4	－β	Red / White

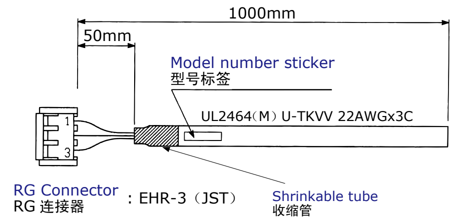
■I/O电缆 / I/O cable : Si-IOB□□M



连接器名	I/O		连接器名	I/O	
端子号	信号名	线颜色	端子号	信号名	线颜色
1	FG	屏蔽	12	IN5	黄 / 白
2～4	空白	—	13	IN4	褐
5	BK2	黑	14	IN3	褐 / 白
6	BK1	黑 / 白	15	IN2	蓝
7	COM-OUT	红	16	IN1	蓝 / 白
8	ZPLS	红 / 白	17	CCWN	灰
9	ALM	绿	18	CCWP	灰 / 白
10	FIN/TSTBL	绿 / 白	19	CWN	橙
11	COM-IN	黄	20	CWP	橙 / 白

Connector Name	I/O		Connector Name	I/O	
Terminal	Signal	Color	Terminal	Signal	Color
1	FG	shield	12	IN5	Yellow / White
2～4	Open	—	13	IN4	Brown
5	BK2	Black	14	IN3	Brown / White
6	BK1	Black / White	15	IN2	Blue
7	COM-OUT	Red	16	IN1	Blue / White
8	ZPLS	Red / White	17	CCWN	Gray
9	ALM	Green	18	CCWP	Gray / White
10	FIN/TSTBL	Green / White	19	CWN	Orange
11	COM-IN	Yellow	20	CWP	Orange / White

■再生电缆 / Regeneration cable : Si-RGVC



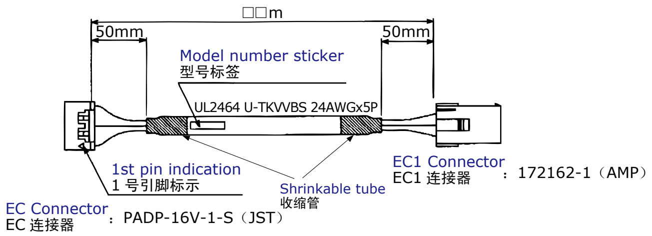
连接器名	RM	
端子号	信号名	线颜色
1	P1	红
2	P2	白
3	0V	黑

※请充分注意电源的极性。
若弄反极性，可能会导致控制器损坏。
※使用Si-RGV电缆时，接线颜色有所不同，详情请咨询本公司。

Connector Name	RM	
Terminal	Signal	Color
1	P1	Red
2	P2	White
3	0V	Black

*Please note the polarity of the power supply.
Mistakes may result in damege to the controller.
*If using the Si-RGV style cable, the wiring color will be different. Please inquire.

■编码器电缆 / Encoder cable : Si-ECB□□M

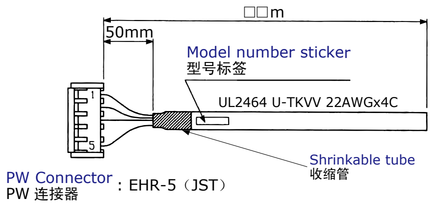


连接器名	EC		连接器名	EC1	
端子号	信号名	线颜色	端子号	信号名	线颜色
1	FG	屏蔽	1	FG	屏蔽
2～6	空白	—	2	空白	—
7	DO-A	黑	3	DO-A	黑
8	NDO-A	黑 / 白	4	NDO-A	黑 / 白
9	SK-B	红	5	SK-B	红
10	NSK-B	红 / 白	6	NSK-B	红 / 白
11	SEL	绿	7	SEL	绿
12	NSEL	绿 / 白	8	NSEL	绿 / 白
13	DI-X	黄	9	DI-Z	黄
14	NDI-Z	黄 / 白	10	NDI-Z	黄 / 白
15	Vcc	褐	11	Vcc	褐
16	GND	褐 / 白	12	GND	褐 / 白

Connector Name	EC		Connector Name	EC1	
Terminal	Signal	Color	Terminal	Signal	Color
1	FG	Shield	1	FG	Shield
2～6	—	—	2	—	—
7	DO-A	Black	3	DO-A	Black
8	NDO-A	Black / White	4	NDO-A	Black / White
9	SK-B	Red	5	SK-B	Red
10	NSK-B	Red / White	6	NSK-B	Red / White
11	SEL	Green	7	SEL	Green
12	NSEL	Green / White	8	NSEL	Green / White
13	DI-Z	Yellow	9	DI-Z	Yellow
14	NDI-Z	Yellow / White	10	NDI-Z	Yellow / White
15	Vcc	Brown	11	Vcc	Brown
16	GND	Brown / White	12	GND	Brown / White

■电源电缆 / Power Supply cable : Si-PWBC□□M

Si-02DE用、Si-02LDE用
For Si-02DE, Si-02LDE



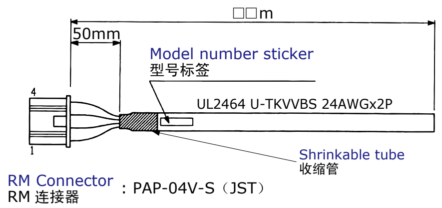
连接器名	PW	
端子号	信号名	线颜色
1	V1	红
2	V2	白
3	0V	黑
4	空白	—
5	E	绿

※请充分注意电源的极性。若弄反极性，可能会导致控制器损坏。
※使用Si-PWB□□M电缆时，接线颜色有所不同，详情请咨询本公司。

Connector Name	PW	
Terminal	Signal	Color
1	V1	Red
2	V2	White
3	0V	Black
4	—	—
5	E	Green

*Please note the polarity of the power supply.
Mistakes may result in damage to the controller.
*If using the Si-PWB□□M style cable, the wiring color will be different. Please inquire.

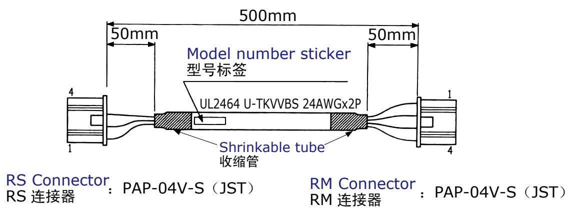
■RS485主站电缆 / RS485 Master cable : Si-RSM□□M



连接器名	RM	
端子号	信号名	线颜色
1	TRX＋	黑
2	TRX—	黑 / 白
3	GND	红
4	FG	屏蔽

Connector Name	RM	
Terminal	Signal	Color
1	TRX＋	Black
2	TRX—	Black / White
3	GND	Red
4	FG	Shield

■RS485从站电缆 / RS485 Slave cable : Si-RSS



连接器名	RS		连接器名	RM	
端子号	信号名	线颜色	端子号	信号名	线颜色
1	TRX＋	黑	1	TRX＋	黑
2	TRX—	黑 / 白	2	TRX—	黑 / 白
3	GND	红	3	GND	红
4	FG	屏蔽	4	FG	屏蔽

Connector Name	RS		Connector Name	RM	
Terminal	Signal	Color	Terminal	Signal	Color
1	TRX＋	Black	1	TRX＋	Black
2	TRX—	Black / White	2	TRX—	Black / White
3	GND	Red	3	GND	Red
4	FG	Shield	4	FG	Shield

●Point Table / Point Table

Point Table / Point Table

q绝对值/相对值
设定“位置/移动量”项目的设定值为绝对位置还是相对移动量。设为0时以绝对位置动作，设为1时以相对移动量动作。

w位置/移动量
以指令单位脉冲设定位置/移动量。

e速度数据
以电机的转速rpm来设定移动速度。

r加减速数据
设定加减速时间。是指达到3000rpm所需的时间。

t等待时间
以ms为单位设定到开始下一定点动作所需的等待时间。连续动作有效或PRG结束时，该设定被忽略。

y连续动作
指定该动作时，将不等到定位到该定点而立即开始输出下一个分支目标指令脉冲。

u常规分支
选择定点定位完成后下一个执行的定点编号。

iS字曲线
将定点定位的加减速速度曲线指定为Sin曲线（S字曲线）。

o输入分支1～3
指定外部输入EXIN（1～3）的状态为ON时的分支目标。

!0循环次数（1～99次）
可根据分支目标的设定，指定重复运行的次数。

!1循环后分支
可指定执行循环次数中设定的次数后的分支目标。

!2扭矩设定
设定移动到该定点时的扭矩（%）。（0～300%）

!3传感器
在进行传感器位置基准的定位时进行此项设定。移动量的设定值即从传感器开始移动的距离。

!4M代码
可以以3位（1～7）指定向外部输出的代码。可以指定定位开始、定位完成时的输出时间。

!5循环清除
将循环计数器清零时进行该设定。

qAbusolute Value / Relative Value
The set value for "Position / Amount Moved" determines whether this is an absolute position or the amount of relative movement. "0"represents absolute location and "1" represents amount of relative movement.

wPosition / Amount Moved
This sets the location and amount of movement with the command unit pulse

eSpeed Data
This sets the motor's revolution speed（rpm）for movement.

rAcceleration / Deceleration Data
This sets the time for acceleration and deceleration. It is time until 3000 rpm is achieved.

tWait Time
This sets the wait time until the next point's operation begins in units of ms. This is ignored in cases of continual operation or when the program is completed.

yContinual Operation
When this setting is on, output of the command pulse for the next branch begins immediately, without waiting for positioning of that point to be completed.

uNormal Branching
This selects the next point number to run upon completion of the move.

iS Curve
This designates the speed curve's acceleration or deceleration for point positioning to the S in curve（S curve）.

oInput Branch 1-3
This designates the branch for when outer input EXIN（1-3）are ON.

!0Number of Loops（1-99）
The number of loops can be designated according to branch settings when repeated operations are perfomed.

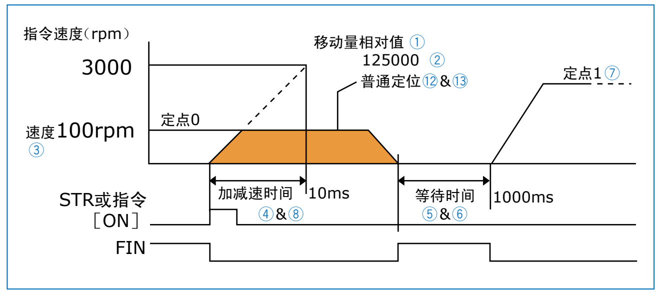
!1Branching after Loops
The branch location can be designated after the set number of loops has completed the loop cycle.

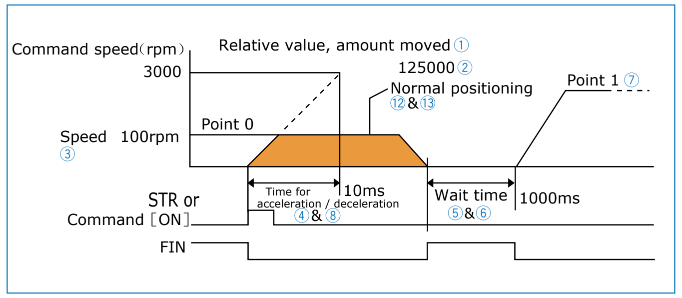
!2Torque Setting
This performs the torque setting（%）when moving to this point.（0-300%）

!3Sensor
This sets the positioning for sensor position standard when perfoming positioning. The value set for amount of movement is the distance moved from the sensor.

!4M code
An external output code can be designated in 3 bits（1-7）.
The output timing for when positioning begins and finishes can be designated.

!5Clear Loops
Set when the loop counter is cleared to 0.

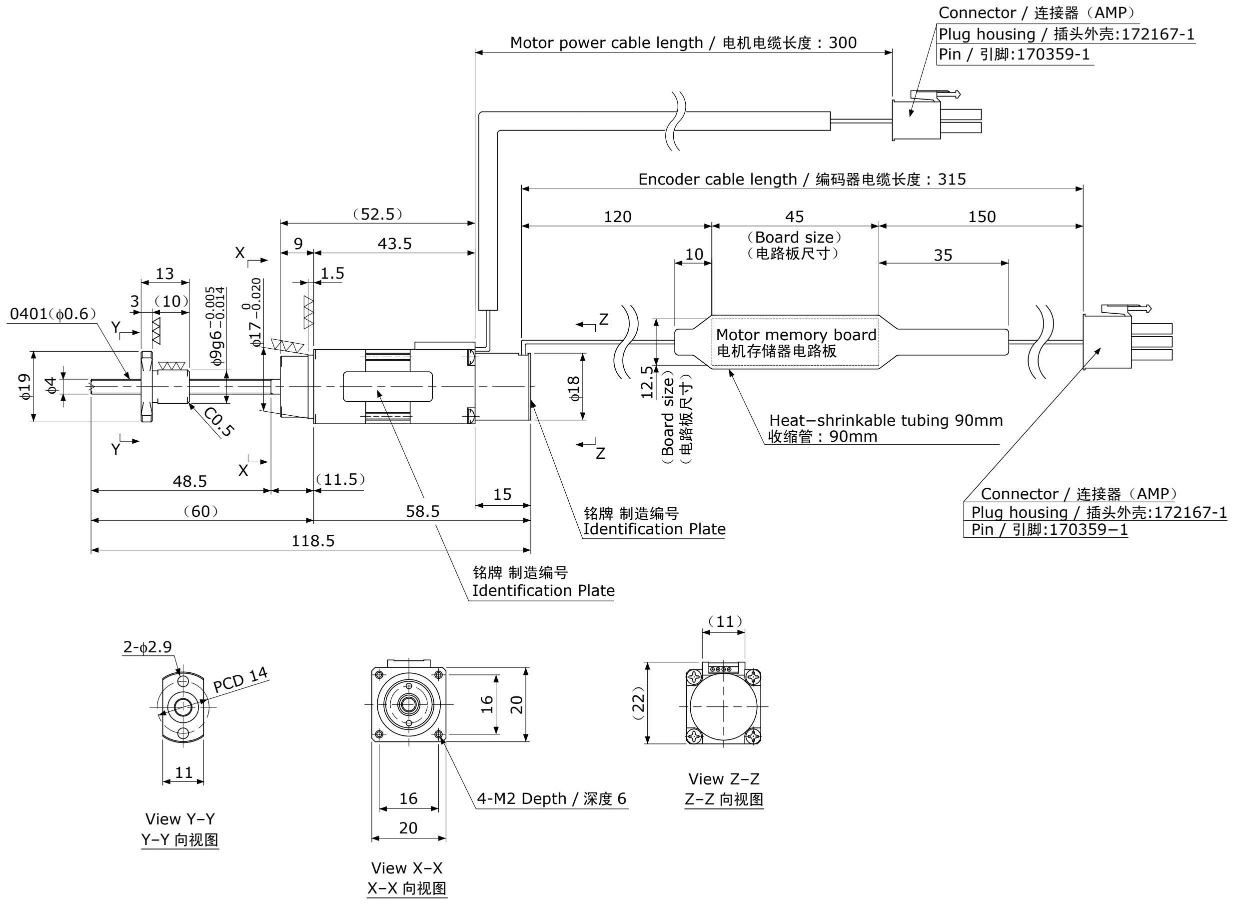




精密滚珠丝杠＋带编码器2相步进电机 / Precision Ball Screw ＋ 2-phase Stepping Motor with Encoder

SiMB0401

Shaft dia.(轴径)f4　Lead(导程)1mm
Travel(行程)30mm



注1）Si-MB需要专用驱动器（Si-02LDE）。
Note1）Exclusive Driver（Si-02LDE）is required this type.

注2）只能裁切轴端。其他轴端形状为定制产品。
Note2）Only shaft end cutting is available. Other than that, it would be customized order.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-20A or MP-20B
	Supported side Bracket / 支撑侧托架	—
	Nut Block / 螺母块	NB-0401A

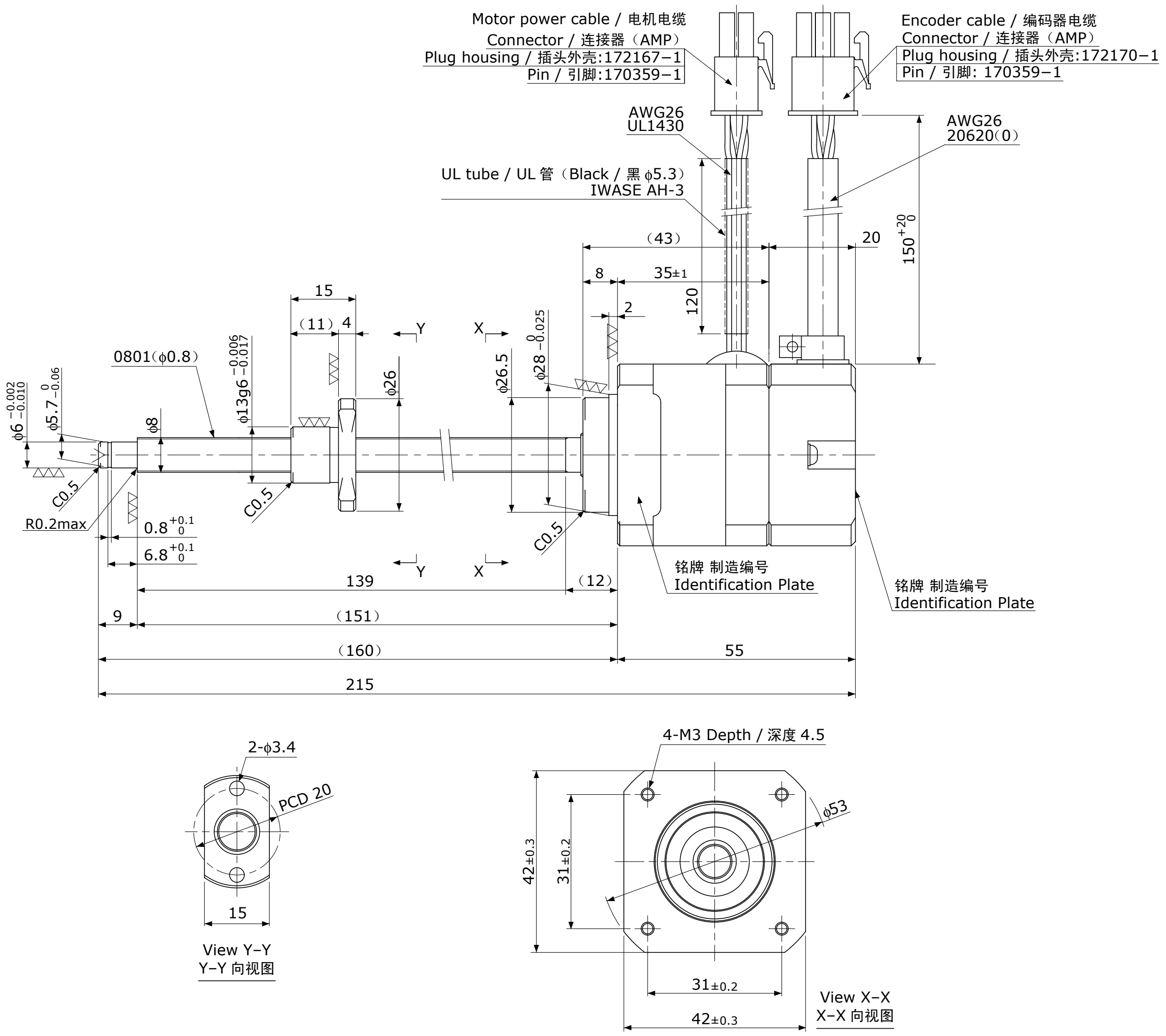
Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0
Reference Thrust 参考推力	30N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	KSS original grease MSG No.1 KSS原装油脂 MSG No.1

Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 3.0 V
Rated current 额定电流	DC 0.35A
Winding resistance 绕组电阻	8.5Ω
Holding Torque 保持扭矩	0.017Nm
Rotor inertia 转子惯量	1.9g・cm²
Operating temperature 使用温度范围	−20°C～50°C
Encoder 编码器	Incremental 200ppr 增量型 200ppr

精密滚珠丝杠＋带编码器2相步进电机 / Precision Ball Screw ＋ 2-phase Stepping Motor with Encoder

SiMB0801

Shaft dia.(轴径)f8　Lead(导程)1mm
Travel(行程)100mm



注1）Si-MB需要专用驱动器（Si-02LDE）。
Note1）Exclusive Driver（Si-02LDE）is required this type.

注2）只能裁切轴端。其他轴端形状为定制产品。
Note2）Only shaft end cutting is available. Other than that, it would be customized order.

Recommended accessories 推荐的配件		
	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0801

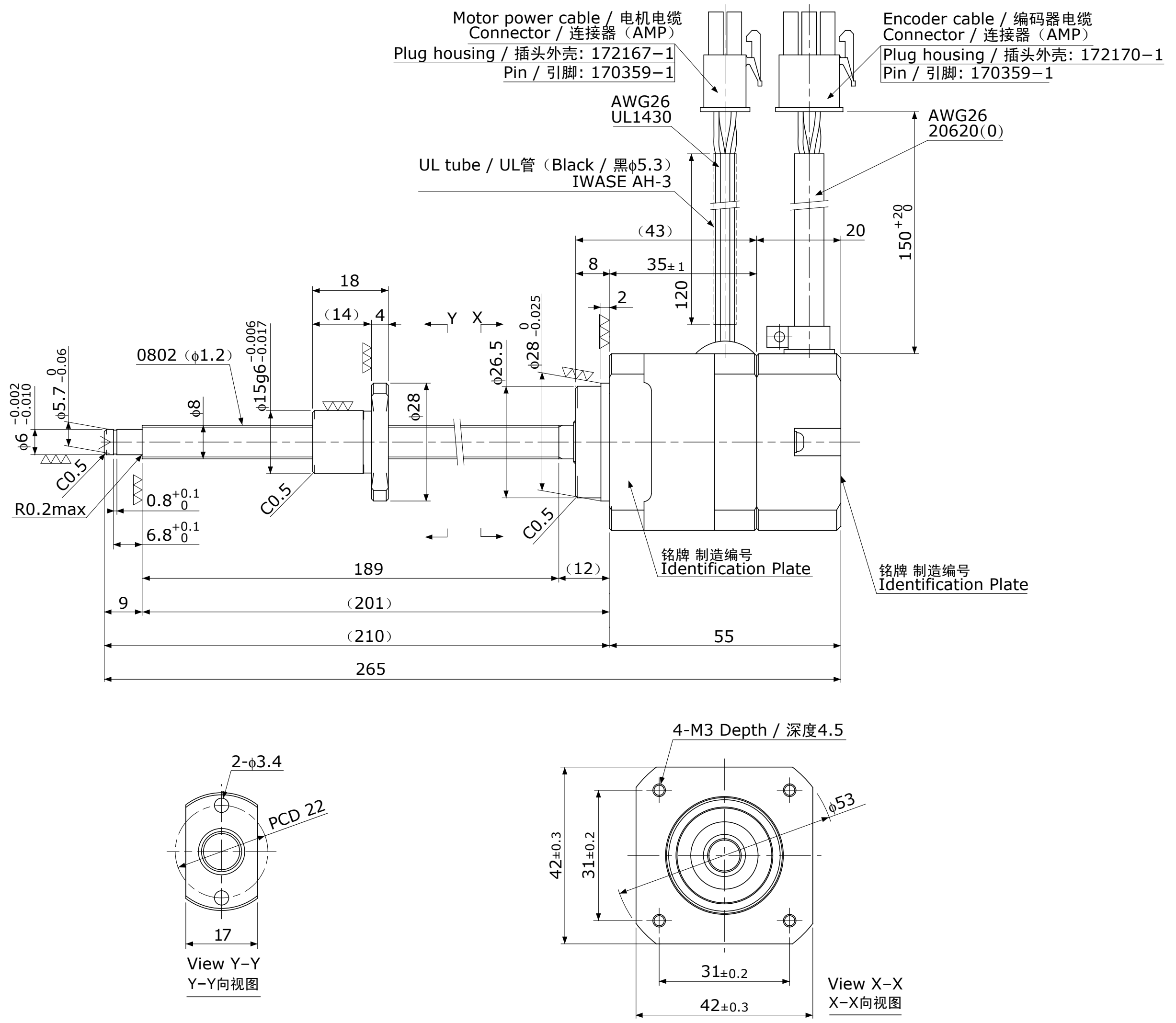
Ball Screw Specifications　主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right　右
Axial play 轴向间隙	0
Reference Thrust 参考推力	300N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	Multemp PS-2 Multemp PS-2

Motor Specifications　电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0A
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.24Nm
Rotor inertia 转子惯量	35g・cm²
Operating temperature 使用温度范围	−20°C～50°C
Encoder 编码器	Incremental 400ppr 增量型 400ppr

精密滚珠丝杠＋带编码器2相步进电机 / Precision Ball Screw ＋ 2-phase Stepping Motor with Encoder

SiMB0802

Shaft dia.(轴径)f8 Lead(导程)2mm
Travel(行程)160mm



注1）Si-MB需要专用驱动器（Si-02LDE）。
Note1）Exclusive Driver（Si-02LDE）is required this type.

注2）只能裁切轴端。其他轴端形状为定制产品。
Note2）Only shaft end cutting is available. Other than that, it would be customized order.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0802

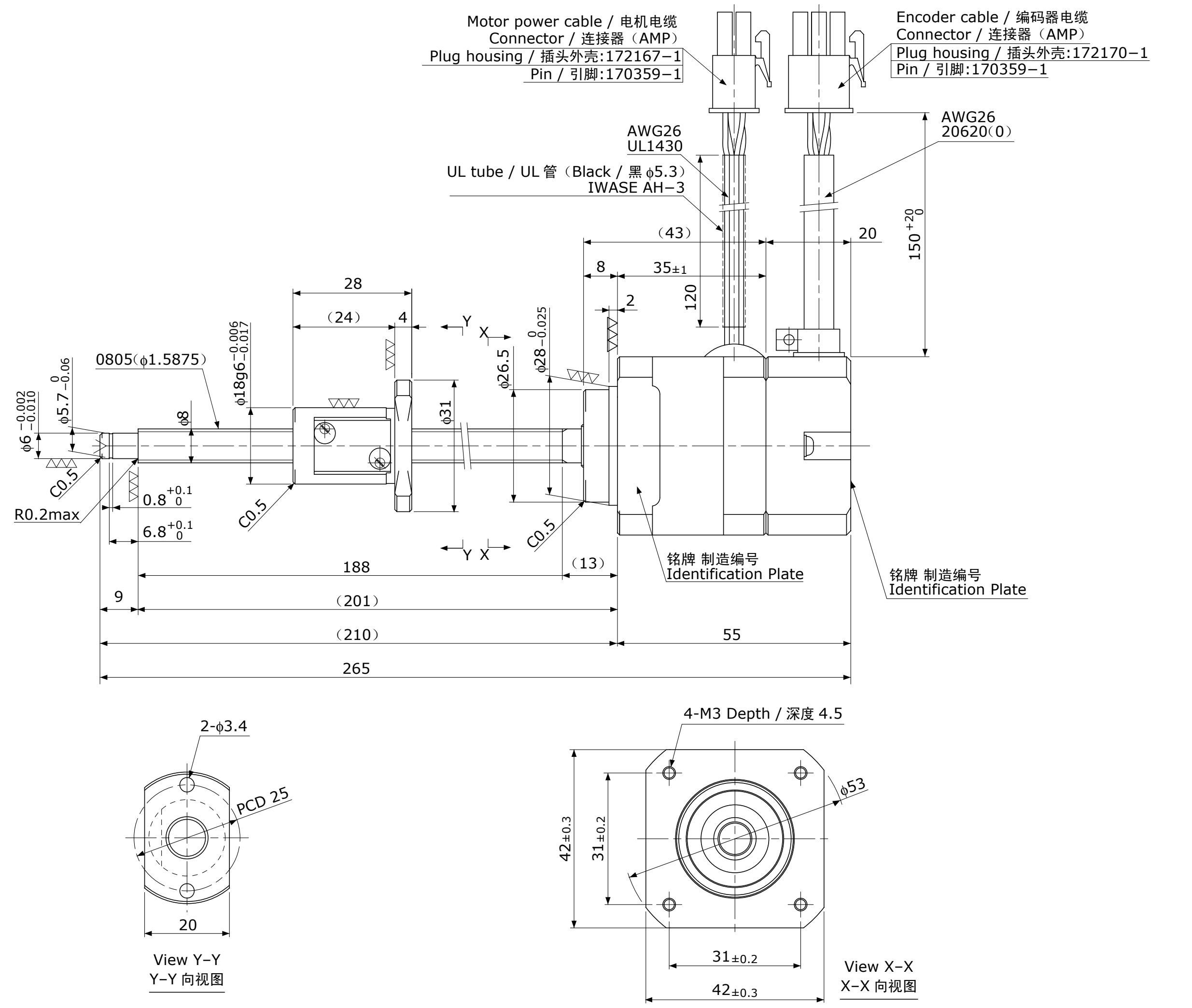
Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0
Reference Thrust 参考推力	150N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	Multemp PS-2 Multemp PS-2

Motor Specifications 电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0A
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.24Nm
Rotor inertia 转子惯量	35g・cm²
Operating temperature 使用温度范围	−20°C～50°C
Encoder 编码器	Incremental 400ppr 增量型 400ppr

精密滚珠丝杠＋带编码器2相步进电机 / Precision Ball Screw ＋ 2-phase Stepping Motor with Encoder

SiMB0805

Shaft dia.(轴径)f8 Lead(导程)5mm
Travel(行程)150mm



注1）Si-MB需要专用驱动器（Si-02LDE）。
Note1）Exclusive Driver（Si-02LDE）is required this type.

注2）只能裁切轴端。其他轴端形状为定制产品。
Note2）Only shaft end cutting is available. Other than that, it would be customized order.

Recommended accessories 推荐的配件	Motor side Supporting plate / 电机侧支架板	MP-42A or MP-42B
	Supported side Bracket / 支撑侧托架	SP-42
	Nut Block / 螺母块	NB-0805

Ball Screw Specifications 主要技术参数	
Accuracy grade 精度等级	JIS C3
Thread direction 旋向	Right 右
Axial play 轴向间隙	0
Reference Thrust 参考推力	80N
Shaft material 丝杠轴材质	Stainless steel 不锈钢
Nut material 螺母材质	Chrome-molybdenum steel 铬钼钢
Surface hardness 螺纹部表面硬度	Min. HRC55 (Thread area)
Lubricant 润滑剂	Multemp PS-2 Multemp PS-2

Motor Specifications 电机参数	
Basic step angle 基本步进角	1.8°
Driving method 励磁方式	2-phase Bi-polar 2相双极方式
Rated Voltage 额定电压	DC 2.2 V
Rated current 额定电流	DC 2.0A
Winding resistance 绕组电阻	1.1Ω
Holding Torque 保持扭矩	0.24Nm
Rotor inertia 转子惯量	35g・cm²
Operating temperature 使用温度范围	−20°C～50°C
Encoder 编码器	Incremental 400ppr 增量型 400ppr

●使用注意事项

■驱动器注意事项

- 请注意冷却方法、安装、箱体的大小等，避免控制柜内部温度（包括内置装置引起的温度上升）超过规定温度。
- 附近有震动源时，请通过安装减震器等手段将传递到驱动器的振动控制到规定值以下。
- 将2台以上的驱动器并排安装时，两侧应隔开20mm以上，上下应隔开50mm以上。若无法隔开足够的距离，请使用风扇等进行强制风冷。
- 若要重新接通驱动器电源，请在关闭电源后确认驱动器电源LED完全熄灭，然后再重新接通电源。若在短时间内连续重新接通电源，则可能损坏编码器内存中的数据。

■有关电机的注意事项

- 请勿抓住导线提起产品。否则会导致设备故障或受伤。
- 所有导线均用于固定。请勿将其用于活动用途。
- 请勿敲击丝杠轴，或者向其施加超过规定值的轴向负载、径向负载。否则可能导致故障。
- 电机的结构不防水、不防油。不能在直接接触水、油的场所以及有油雾的环境下使用。
- 请勿在存在有害气体、液体或者湿度过大、水蒸气过多的环境中使用。另外，还应充分注意避免振动和冲击。
- 导线的某些部分可能会因静电而破损（防静电措施标记部）。对于这些部分应当采取防静电措施，并且对操作人员采取除静电措施。

■有关接线的注意事项

- 接线时应使用尺寸、种类适当的电线，最大接线长度不能超过规定值。
- 作为抗干扰措施，请注意以下事项。
  1）继电器、电磁接触器、螺线管等的线圈上请务必安装浪涌吸收回路。
  2）动力线（AC线、电机线等）和信号线接线时应距离30cm以上。
     请勿将线束铺设在同一根导管内，也不能捆扎在一起。
  3）电焊机、电火花加工机等请勿使用同一电源。即使使用不同的电源，若附近有高频噪音发生源，请在电源及输入回路上安装噪音滤波器。
  4）驱动器使用开关放大器，可能会对信号线产生干扰。
- 本驱动器没有采取抗无线电干扰的措施，如果是在民居附近或者有无线电干扰的场所使用，请在电源线上安装线路滤波器。
- 信号线使用的电缆很细，只有0.08～0.2mm²，因此请勿弯曲电缆，也不要使电缆承受张力。

●Handling precautions for Si-MoBo

■Cautions concerning Drivers

- Please arrange for cooling methods, locations, box size, etc., so that the standard temperature is not exceeded, including temperature rises by equipment that has an internal temperature control panel.
- If located near a source of vibration, please arrange it so that vibrations transmitted to the driver do not exceed standard values by attaching shock absorbers or the like.
- If two or more drivers are located together, please attach them with at least 20mm space on either side and at least 50mm space vertically. If there is not enough space, please cool the area by using a fan or the like.
- When reinserting the power supply to the driver, please make the reinsertion after turning off the power supply and checking that the power supply LED has completely gone out. If the power supply is restarted continuously over a short period of time, the data in the encoder memory may be corrupted.

■Cautions concerning Motors

- Do not lift the merchandise by grabbing the lead wires. This may result in damage or injury.
- All lead wires are to be fixed. Do not use them as mobile objects.
- Do not hit the screw axis or increase the thrust load or radial load beyond standards.
  This may result in damage or injury.
- The motor is not a structure that is either waterproof or oil proof. You cannot use it in a location where water or oil may directly get on the motor or under oil bath conditions.
- Do not use near toxic gases or liquids, or in excessively humid or steamy conditions.
  Also, please take sufficient care against vibrations or shocks.
- There is a part of the lead wire that is susceptible to damage by static electricity (the part marked for measures against static electricity).
  Please take measures to prevent static electricity or measures to eliminate static charges by workers.

■Cautions concerning wiring

- Please wire so that appropriate electric wire sizes, types and maximum wire length do not exceed standard values.
- Please take note of the following as measures against noise.
  1) Be sure to attach surge absorption circuits to coils such as relays, electromagnet contact devices and solenoid.
  2) Separate power lines (AC lines, motor lines, etc) and signal lines by 30cm or more.
     Do not have them pass through the same duct or bunch them together.
  3) Do not use with the same power supply as electrical welding machinery, electrical discharge machinery or the like. Attach a noise filter to the power supply and the input circuits if a source of high frequency noise is close by, even if the same power supply is not used.
  4) Noise may occur in the signal line because the driver uses a switching amp.
- If problems occur near houses or with radios because this driver does not employ measures against radio interference, insert a line filter into the power supply line.
- The cable used in signal lines is a thin 0.08-0.2mm², so do not bend the wire or apply tension to it.

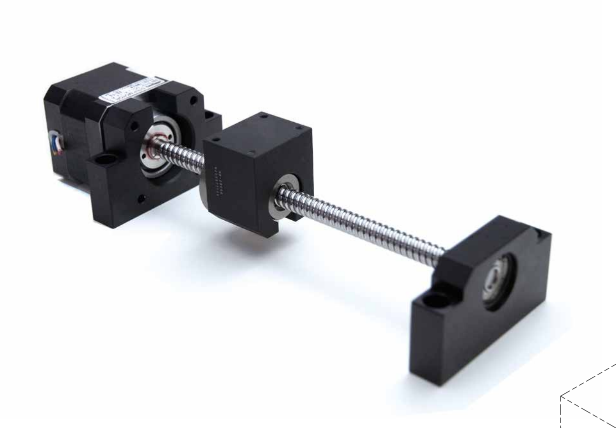
MoBo配件
MoBo Accessories

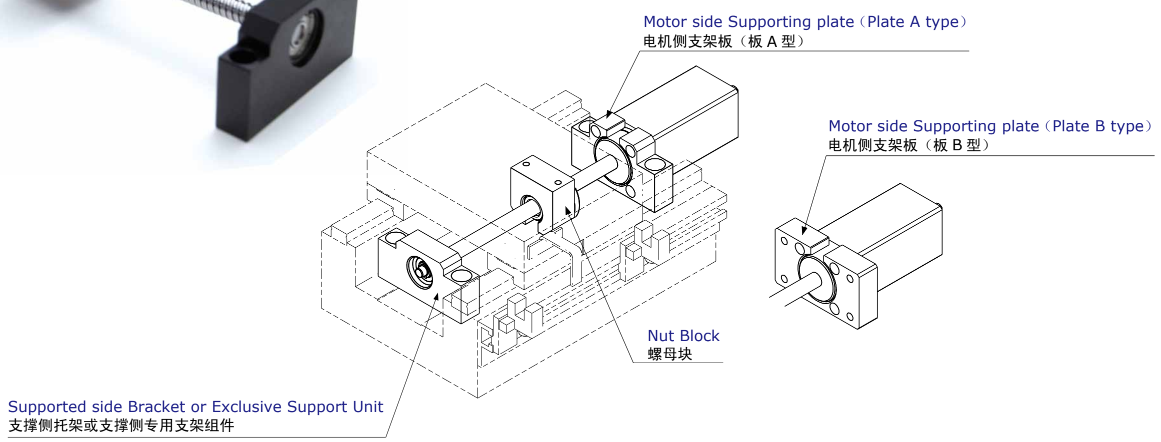
MoBo
配件 / Accessories

● 特点 / Features

- 本公司备有电机直连型滚珠丝杠安装配件的标准库存品。
- 配件包括电机侧支架板（A型、B型）、支撑侧托架、支撑侧专用支架组件和螺母块。

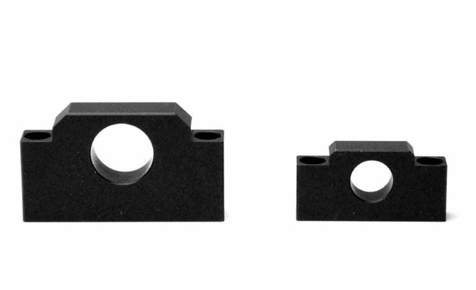
- Assembling parts of "MoBo series", Direct Motor Drive Ball Screws / Lead Screws series are set up as standard stock.
- Accessories consists of Motor side supporting plate（A-type, B-type）, Supported side Bracket or Exclusive Support Unit, and Nut Block.





【电机侧支架板】
【Motor side Supporting plate】

【螺母块】
【Nut Block】



【支撑侧托架】
【Supported side Bracket】
（2相冷轧魔博用 / for 2-phase Rolled MoBo only）

【支撑侧专用支架组件】
【Exclusive Support Unit】

详细尺寸请参照配件尺寸表。
Please refer to Accessories dimension table for more detail.

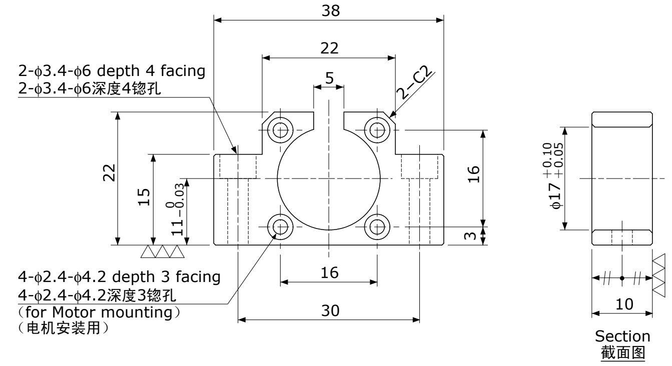
电机侧支架板 A型
Motor side Supporting plate A type

Material 材质	Aluminum alloy A5052 铝 A5052
Surface coating 表面处理	Black anodizing 黑色铝阳极氧化处理

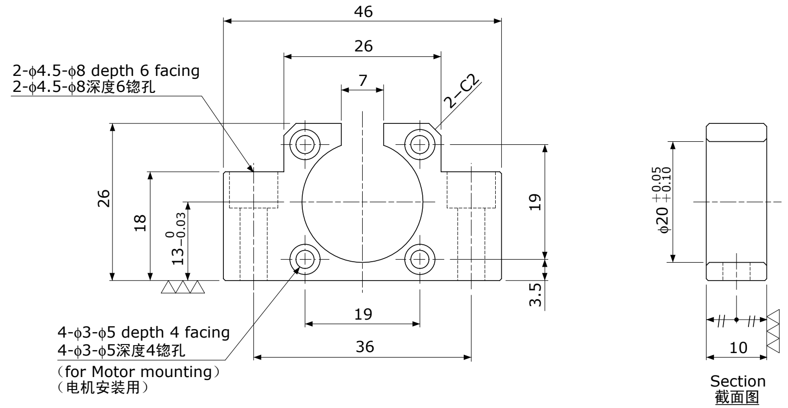
注）请适当调整并固定电机侧支架板，使滚珠丝杠在整个行程范围内均能顺畅活动。

Note）Motor side Supporting plate should be fixed after adjusting to ensure smooth movement over entire tavel.

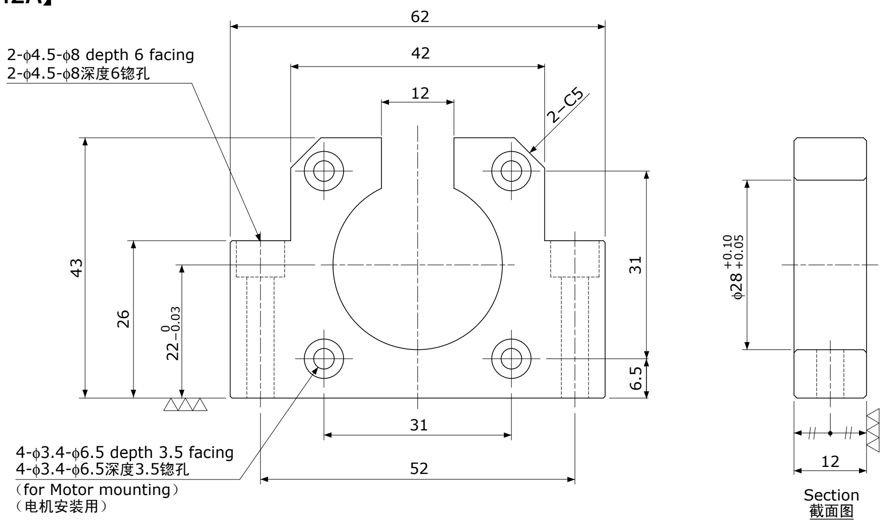
【MP-20A】



【MP-24A】



【MP-42A】



● 适用机型/ Applicable Model

**可以使用电机侧支架板A型的MoBo系列一览表
**Applicable MoBo series for Motor side supporting plate A type

Model 型号	Applicable MoBo series / 对象系列			
	Precision（MB） 精密（MB）	Rolled（TMB） 冷轧（TMB）	2-phase Rolled（2TMB） 2相冷轧（2TMB）	Hybrid（SiMB） 混合（Si-MB）
MP-20A	MB04005A MB0401A			SiMB0401
MP-24A	MB0401 MB06xx	TMB0401 TMB0504 TMB06xx		
MP-42A	MB08xx MB10xx	TMB08xx	2TMB08xx	SiMB08xx

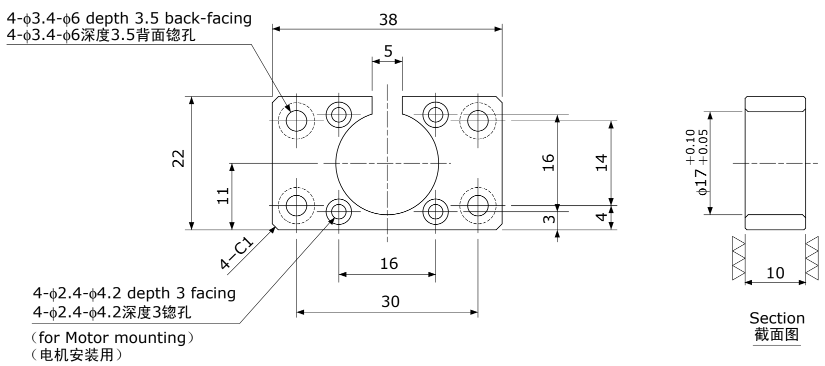
电机侧支架板 B型
Motor side Supporting plate B type

Material 材质	Aluminum alloy A5052 铝 A5052
Surface coating 表面处理	Black anodizing 黑色铝阳极氧化处理

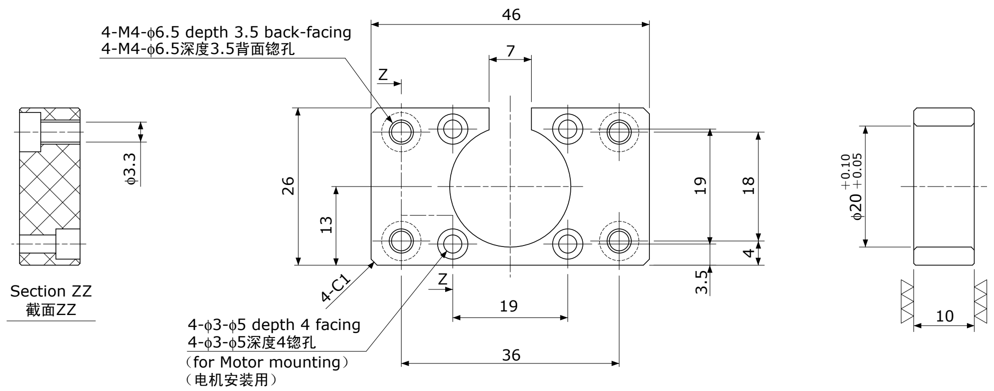
注）请适当调整并固定电机侧支架板，使滚珠丝杠在整个行程范围内均能顺畅活动。

Note）Motor side Supporting plate should be fixed after adjusting to ensure smooth movement over entire tavel.

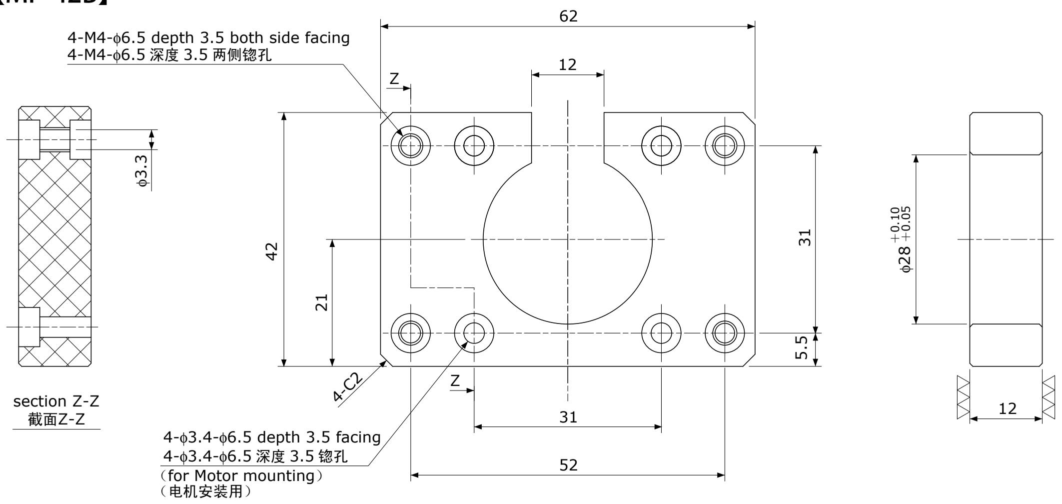
【MP-20B】



【MP-24B】



【MP-42B】



● 适用机型/ Applicable Model

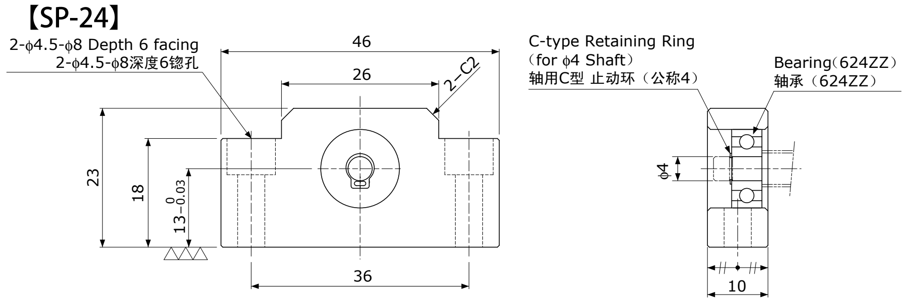
**可以使用电机侧支架板B型的MoBo系列一览表
**Applicable MoBo series for Motor side supporting plate B type

Model 型 号	Applicable MoBo series / 对象系列			
	Precision（MB） 精密（MB）	Rolled（TMB） 冷轧（TMB）	2-phase Rolled（2TMB） 2相冷轧（2TMB）	Hybrid（SiMB） 混合（Si-MB）
MP-20B	MB04005A MB0401A			SiMB0401
MP-24B	MB0401 MB06xx	TMB0401 TMB0504 TMB06xx		
MP-42B	MB08xx MB10xx	TMB08xx	2TMB08xx	SiMB08xx

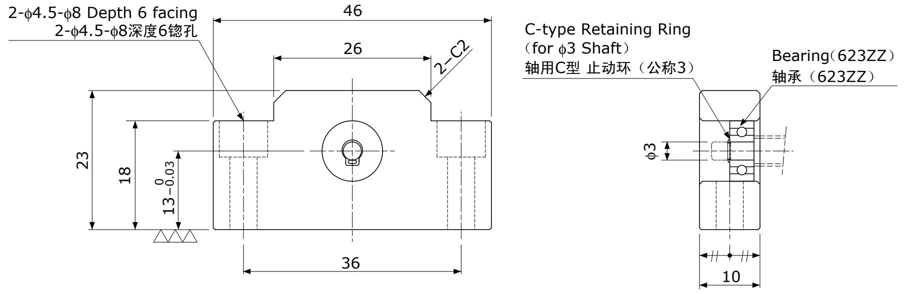
支撑侧托架 / 支撑侧专用支架
Supported side Bracket or Exclusive Support Unit

Material 材质	Aluminum alloy A5052 铝 A5052
Surface coating 表面处理	Black anodizing 黑色铝阳极氧化处理

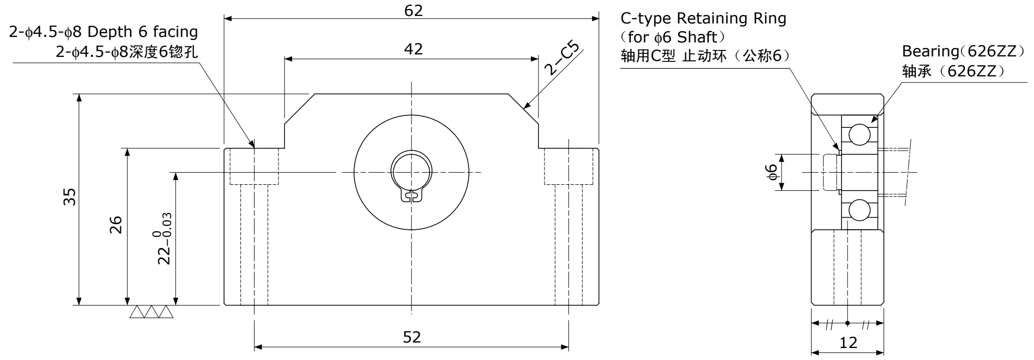
【SP-24】



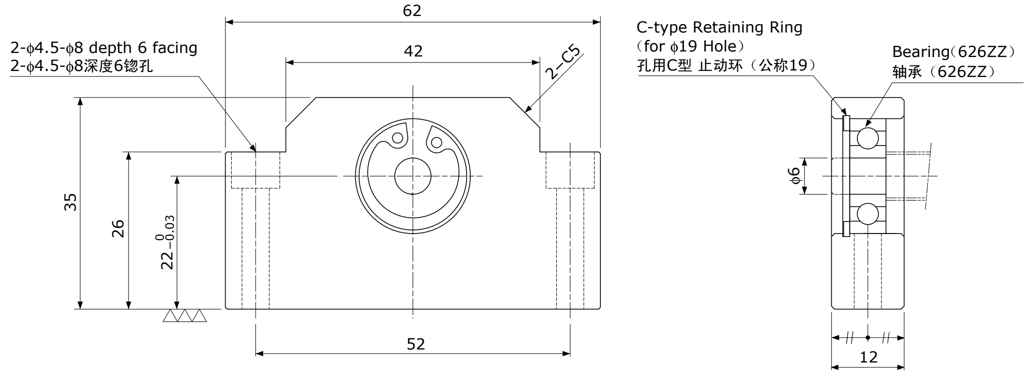
【SP-24A】



【SP-42】



【SP-42S】

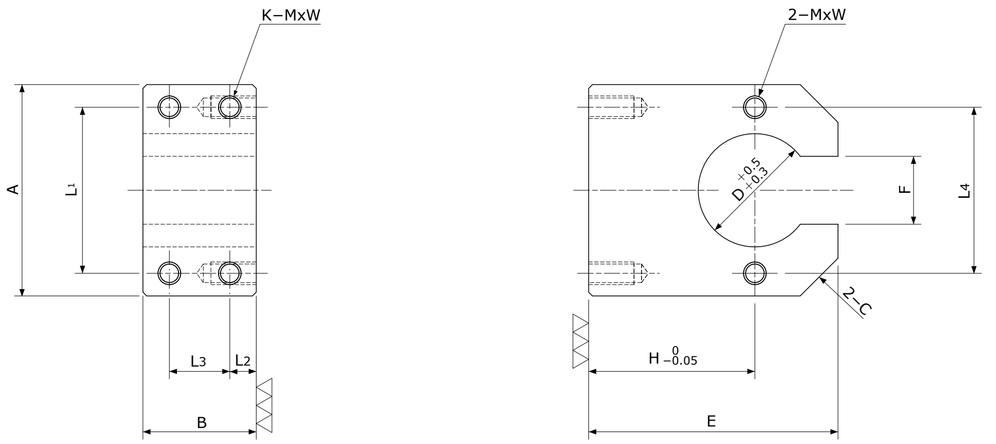


● 适用机型/ Applicable Model

**可以使用支撑侧托架/支撑侧支架组件的MoBo系列一览表
**Applicable MoBo series for Supported side Bracket or Exclusive Support Unit.

Model 型 号	Applicable MoBo series / 对象系列			
	Precision（MB） 精密（MB）	Rolled（TMB） 冷轧（TMB）	2-phase Rolled（2TMB） 2相冷轧（2TMB）	Hybrid（SiMB） 混合（Si-MB）
SP-24	MB06xx	TMB06xx		
SP-24A		TMB0504		
SP-42	MB08xx MB10xx	TMB08xx		SiMB08xx
SP-42S			2TMB08xx	

螺母块 2孔型
Nut Block with 2 holes



Material 材质	Aluminum alloy A5052 铝 A5052
Surface coating 表面处理	Black anodizing 黑色铝阳极氧化处理

【尺寸表】

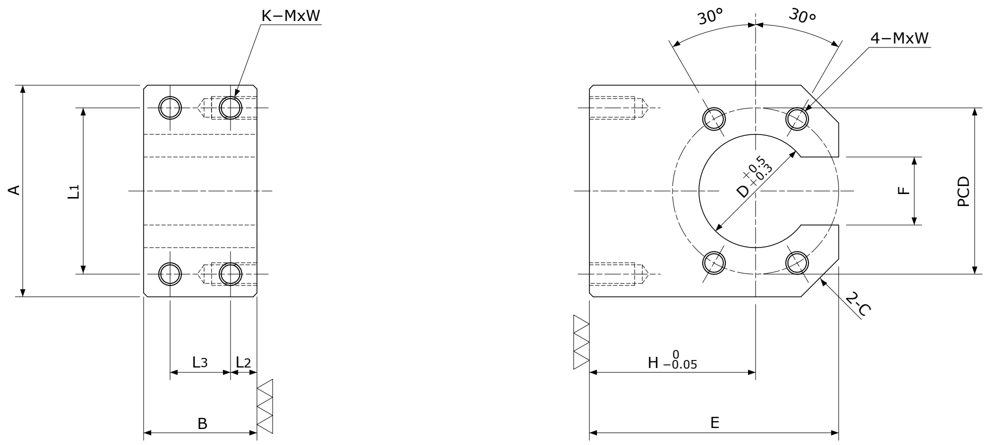
Model 型号	A	B	E	F	D	H	L_1	L_2	L_3	L_4	K	MxW	C
NB-04005	20	11	18	5	10	12	14	5.5	-	15	2	M2.6x6	2
NB-0401A	19	11	18	5	9	12	14	5.5	-	14	2	M2.6x6	2
NB-0401	19	11	22	5	9	14	14	5.5	-	14	2	M2.6x6	4
NB-0601	23	12	23	7	11	14	17	6	-	17	2	M3x6	5
NB-0602	28	14	25	7	15	14	22	3	8	22	4	M3x6	5
NB-0801	26	12	32	9	13	22	20	6	-	20	2	M3x6	5
NB-0802	28	15	33	9	15	22	22	3.5	8	22	4	M3x6	5
NB-0805	31	25	34	9	18	22	25	4	17	25	4	M3x6	5
NB-1002	34	15	34	12	17	22	26	7.5	-	26	2	M4x8	5
NB-1004	41	24	37	12	24	22	32	5	14	32	4	M4x8	6

● 适用机型/ Applicable Model

**可以使用2孔型螺母块的MoBo系列一览表
**Applicable MoBo series for Nut Block with 2 hole type.

Model 型号	Applicable MoBo series / 对象系列			
	Precision（MB） 精密（MB）	Rolled（TMB） 冷轧（TMB）	2-phase Rolled（2TMB） 2相冷轧（2TMB）	Hybrid（SiMB） 混合（Si-MB）
NB-04005	MB04005A			
NB-0401A	MB0401A			
NB-0401	MB0401			SiMB0401
NB-0601	MB0601			
NB-0602	MB0602			
NB-0801	MB0801			SiMB0801
NB-0802	MB0802			SiMB0802
NB-0805				SiMB0805

螺母块 4孔型
Nut Block with 4 holes



Material 材质	Aluminum alloy A5052 铝 A5052
Surface coating 表面处理	Black anodizing 黑色铝阳极氧化处理

【尺寸表】

Model 型号	A	B	E	F	D	H	L_1	L_2	L_3	PCD	K	MxW	C
NB-0401R	23	14	23	5	11	14	17	7	-	17	2	M3x6	4
NB-0504R	24	19	23	6	12	14	18	4	11	18	4	M3x6	4
NB-0601R	26	14	24	7	13	14	20	7	-	20	2	M3x6	4
NB-0602R	28	14	25	7	15	14	22	7	-	22	2	M3x6	4
NB-0606R	27	9	24	7	14	14	21	4.5	-	21	2	M3x6	4
NB-0801R	29	14	33	9	16	22	23	7	-	23	2	M3x6	4
NB-0802R	37	20	35	9	20	22	29	5	10	29	4	M4x8	5
NB-0805R	31	25	34	9	18	22	25	4	17	25	4	M3x6	5
NB-0812R	31	18	34	9	18	22	25	4	10	25	4	M3x6	5

● 适用机型/ Applicable Model

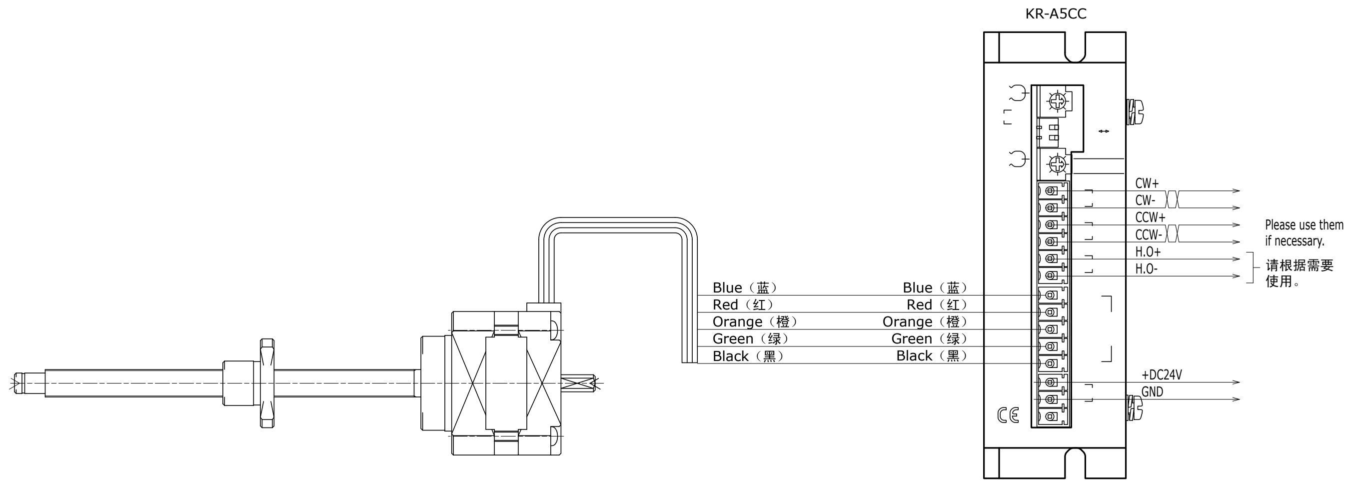
**可以使用4孔型螺母块的MoBo系列一览表
**Applicable MoBo series for Nut Block with 4 hole type.

Model 型号	Applicable MoBo series / 对象系列			
	Precision（MB） 精密（MB）	Rolled（TMB） 冷轧（TMB）	2-phase Rolled（2TMB） 2相冷轧（2TMB）	Hybrid（SiMB） 混合（Si-MB）
NB-0401R		TMB0401		
NB-0504R		TMB0504		
NB-0601R		TMB0601		
NB-0602R		TMB0602		
NB-0606R		TMB0606		
NB-0801R		TMB0801	2TMB0801	
NB-0802R		TMB0802	2TMB0802	
NB-0805R		TMB0805	2TMB0805	
NB-0812R		TMB0812	2TMB0812	

●接线图 / Connection diagrams

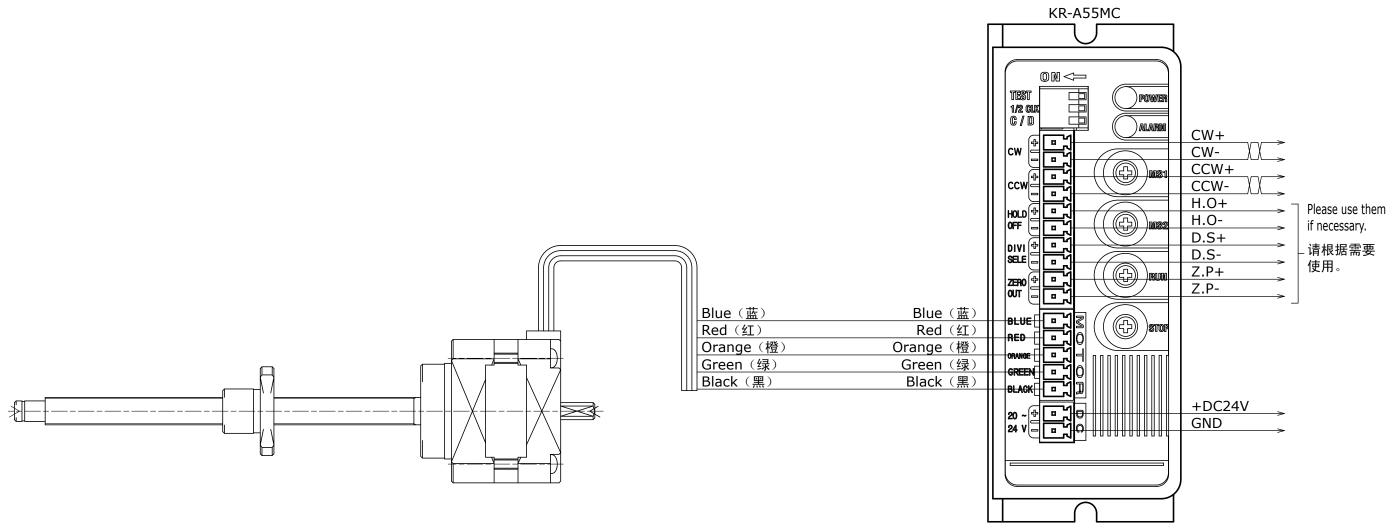
[KR-A5CC]

■对象系列 / Applicable MoBo series
精密滚珠丝杠型（MB）/ Precision Ball Screw type（MB）
冷轧滚珠丝杠型（TMB）/ Rolled Ball Screw type（TMB）



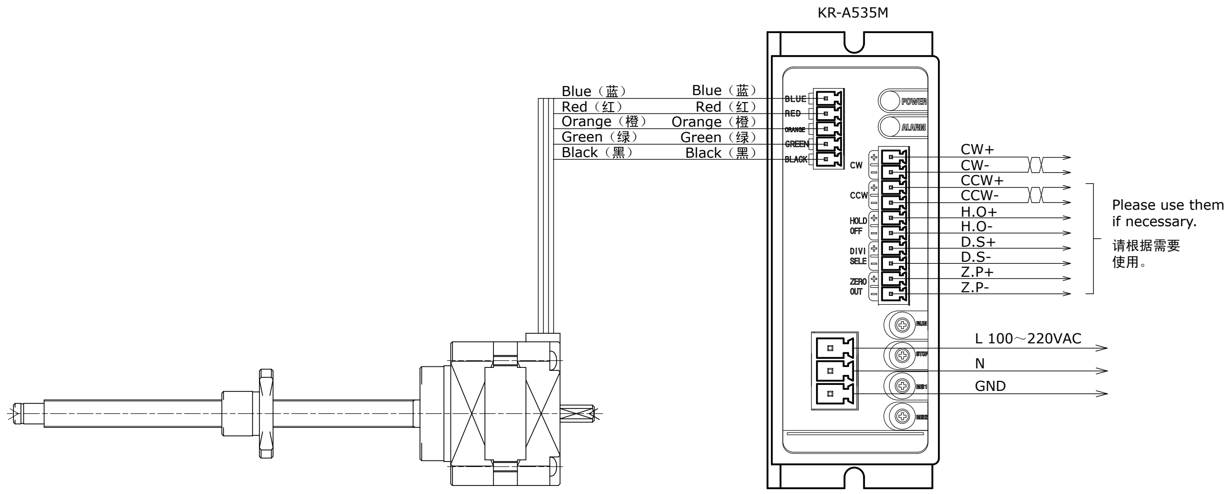
[KR-A55MC]

■对象系列 / Applicable MoBo series
精密滚珠丝杠型（MB）/ Precision Ball Screw type（MB）
冷轧滚珠丝杠型（TMB）/ Rolled Ball Screw type（TMB）



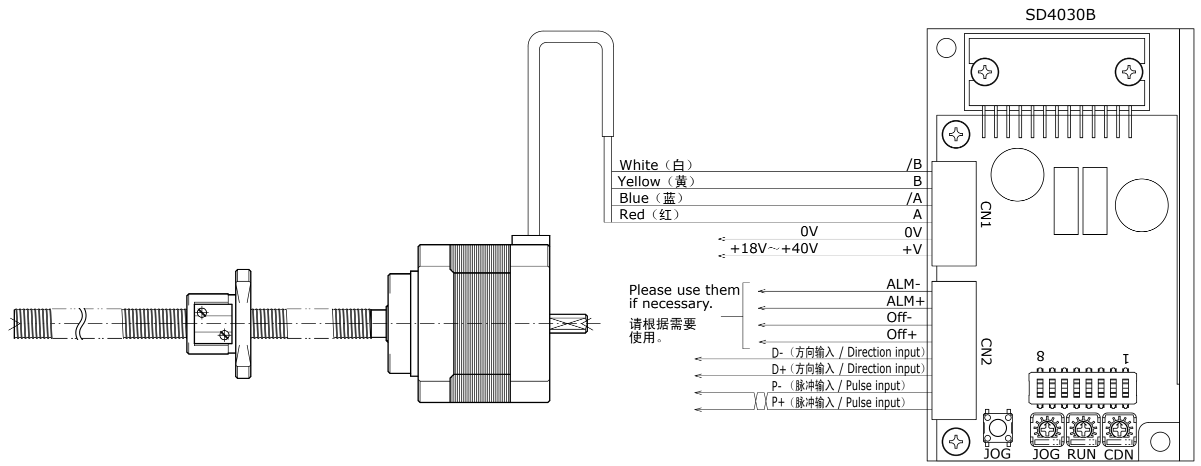
[KR-A535M]

■对象系列 / Applicable MoBo series
精密滚珠丝杠型（MB）/ Precision Ball Screw type（MB）
冷轧滚珠丝杠型（TMB）/ Rolled Ball Screw type（TMB）



[SD4030B]

■对象系列 / Applicable MoBo series
2相冷轧滚珠丝杠型（TMB）/ 2-phase Rolled Ball Screw type（2TMB）



※只有单脉冲（PULSE/dir）方式。
※1-pulse mode（PULSE/dir）only.

●操作、使用注意事项

※MoBo系列是电机轴与丝杠轴一体型结构，因此无论是丝杠轴还是电机轴任意一方损坏，都不能维修。敬请谅解。

★使用注意事项

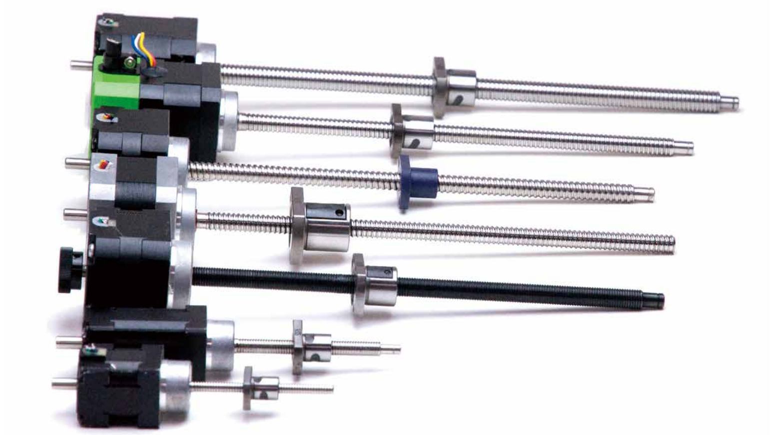
1. 使用时请仔细阅读使用说明书，充分理解说明书内容，并务必严格遵守安全注意事项。
2. 敲击本产品、将产品掉落或对其施加超过规定值的轴向负载、径向负载，将会导致产品损坏，请谨慎操作。
3. 开封后请检查产品是否有异常，是否与所订购的产品一致。
4. 若分解各部位，可能会导致异物进入及各部位组装精度降低，因此请勿分解本产品。
5. 若异物进入，将会导致滚珠循环部件损坏、缩短产品寿命或导致功能失效等，因此请切实防止垃圾、切屑等异物进入。
6. 使用滚珠丝杠时，请务必涂抹润滑剂。
   在常规用途下使用时，请每2～3个月检查一次油脂，并补充油脂。
   使用过程中油脂变脏时，请擦去旧的油脂后涂抹新的指定油脂。
7. 请勿在超过本公司规定的负载、许用转速等规格值的状态下使用。
8. 设计时，请避免径向负载及力矩负载直接作用于滚珠丝杠上。
   否则将显著缩短滚珠丝杠的寿命。此外，发生安装偏心时，将会产生偏负载作用，导致精度降低及寿命缩短。
9. 滚珠丝杠螺母发生超程时，可能会导致钢珠脱落、循环部件受损或钢珠槽产生压痕等，从而引起动作不良。
   螺母发生超程时，本公司将提供有偿维修。
10. 加减速速率请参照各系列的推荐值。
11. 请勿拉扯电机导线。另外电机导线用于固定。请勿将其用于活动用途。
12. 请勿靠近磁性存储媒体。
13. 负载条件及使用驱动器不同，电机转矩速率的规格值也将不同。
14. 在规格范围内，步进电机拥有共振点。请避开共振点使用。

★安全注意事项

1. 发生异味、异常声音、冒烟、异常发热、振动等时，请立即停止运行，切断电源。
2. 使用的电流不能超过额定电流。
3. 电机可能因负载条件及使用的驱动器而异常发热。
   使用时，请将电机表面温度控制在80°C以下。
4. 请确认接线方式、驱动方式以及相序。错误接线将会导致电机异常动作。
5. 请务必进行接地。
6. 请勿强行弯曲、拉扯、夹住电机导线。
7. 动作中请勿触摸活动部位。
8. 进行电机耐压试验及绝缘电阻测试时，请断开与控制机的连接。
9. 维护检查前，请切断驱动器的输入电源。

★使用环境

1. 请勿在环境温度超过0～40°C、环境湿度超过20～80%RH、有结露、腐蚀性气体、易燃气体的场所使用。
2. 请勿在产生强电场、强磁场的场所使用。
3. 请勿在有铁粉等粉体、尘埃、油雾、切削液、水分、盐分、有机溶剂发生或飞散的场所使用。
4. 请勿在经常发生振动的场所以及有冲击、真空等特殊环境下使用。



●Precaution of handling and operating

※Since MoBo series is the product which integrated the Motor Shaft and the Screw Shaft, repair is not possible, if either Motor or Ball Screw is damaged.

★Precaution for operating

1. Before use, please read instruction manuals and follow the precautions below.
2. Do not hit or drop the Shaft, do not apply Axial load or Radial load exceeding specifications, it may cause malfunction.
3. Before use, please check that the product has no defect, and product is the same as your order.
4. Do not disassemble each component, dust may get inside the product. It may deteriorate accuracy.
5. Please prevent contamination from dust or swarf. Dust or swarf may cause damage to Ball Screw, which lead to deteriorating the function.
6. Lubrication is required under the Ball Screw operation. Lubricant condition should be checked every 2 to 3 months. If Grease is contaminated, remove old Grease and replace with new one.
7. Do not use MoBo exceeding our specifications in Load or Speed.
8. Care must be taken not to apply Radial load or Moment load directly on Ball Screw. This will lead to shorten the Ball Screw life remarkably. In addition, misalignment between Ball Screw and other components will lead to deterioration of function, such as accuracy, life and so on.
9. Allowing Ball Screw Nut to over-run may result in malfunctioning due to Balls escaping, damage to recirculation parts, and indentation on the raceways. Continued use in this state will lead to rapid wear and damage to recirculation parts. Therefore Ball Screw Nut must never be allowed to over-run. If over-running occurs, contact KSS for an inspection with charge.
10. Acceleration & Deceleration rate should be followed by recommended number described in each series.
11. Do not hold the Motor lead wire. Motor lead wire is for fixation, do not use the Motor lead wire as movabilities.
12. Keep away from Magnetic memory device.
13. The Motor torque and speed characteristics may vary from the specifications, depending on the load conditions or Driver used. Please adjust as appropriate.
14. The Motor has a resonant point within the specifications. Please avoid the resonant point when in use.

★Precaution for safety

1. If abnormal odor, noise, smoke, overheating, or vibration occurs, stop operation immediately and turn the power off.
2. Do not use MoBo exceeding rated current.
3. The Motor may overheat depending on the load condition or Driver used. Make sure that the Motor surface temperature does not exceed 80°C when in use.
4. Check the wire connection type, Drive system, and phase sequence. Inappropriate connection leads to malfunction.
5. A ground connection must be used.
6. Do not bend, pull or pinch the Motor lead wire.
7. Do not touch moving parts during operation.
8. Disconnect from the Controller before performing dielectric withstanding voltage test of the Motor or megger test.
9. Please switch off the Driver, when inspection or maintenance.

★Operating environment

1. Operating environment should be 0~40°C in temperature and 20~80%RH in humidity. Do not use MoBo under dew condensation, corrosive gas or inflammable gas environment.
2. Do not use MoBo under strong electric field, strong magnetic field.
3. Please prevent from swarf, oil mist, cutting fluid, water/moisture, salt spray, organic solvent and other contamination.
4. MoBo cannot be used under the vibration, impact, vacuum, and other special environment.

灵活可选执行器系列
Flex Actuator Series

精度(进给丝杠)、速度(导程)、移动距离(行程)、负载(电机)的组合打造了丰富的产品系列的KSS灵活可选执行器系列!!!

Many variation of KSS Flex Actuator became reality. Various choices among accuracy(Lead Screw type), speed(Screw Lead), Travel length and power(Motor type) are available.

●特点

・最大限度地发挥微型滚珠丝杠厂商的特点,设计出了终极紧凑型执行器。

・根据执行器上所使用的进给丝杠的种类,可在广范围内选择定位相关的精度。

・每件进给丝杠上配备了几种导程和行程,可在广范围内选择进给速度。

・以无电机型为标准品,准备了几种电机作为可选方案。从而能够安装符合使用规格的电机。

・能够与最适合所选电机的标准驱动配套采购。

・具有充实的外装光电传感器及刹车单元等可选功能。

●Features

・We make full use of features of Miniature Ball Screw manufacturer and super compact design Actuator can be achieved.

・Depending on kinds of Lead Screws, wide range of choices related to positioning accuracy are available.

・Several variations of Screw Lead & Travel for each Screw type are standardized. So wide variety of choice for speed is available.

・Motor-less type is our standard, but a couple of Motors are in stock as an option. Suitable Motor and Actuator would be assembled in accordance with your specifications.

・Recommended Motor Drivers for each Motors are also in stock.

・Accessories can be provided as special design, such as outside photo-sensor, Brake unit and so on.

丰富的产品系列
Wide range of choices

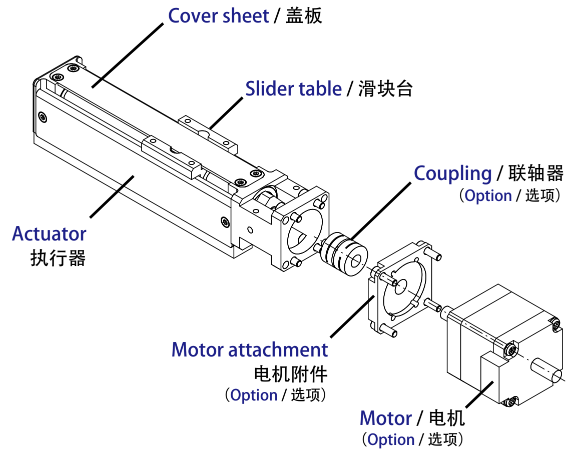
无电机型的标准品
Motor-less is standard

众多丝杠产品
Wide variety of Drive Screw type

●构造 / Structure

KSS灵活可选执行器系列是组合了小径的进给丝杠和导程的台面型执行器。
以无电机型作为标准形状,被设计成为根据使用条件能够安装最适合的电机。

KSS Flex Actuator is the slider type Actuator, which is built in small size Lead Screw / Ball Screw and Slide Guide in it.
KSS Flex Actuator series are standardized without Motor. It is designed to set the appropriate Motor easily based on the required specifications.



●种类与特点

根据所使用的进给丝杠,KSS灵活可选执行器系列有以下种类。
请根据所要求的精度选择进给丝杠的种类。
详情请参照规格一览表(第G106页)。

1) 树脂螺母滑动丝杠型
采用了低廉的树脂导程丝杠(含油型),
因此能够在通常的使用环境下无须维护而长期使用。
2) 冷轧滚珠丝杠型
采用了冷轧滚珠丝杠,因此确保了合理的价格和精度。
3) 精密滚珠丝杠型
采用了精密滚珠丝杠,因此重复定位精度和空转都实现了高精度。

●Variation & Features

There are several kinds of KSS Flex Actuators shown below. Each Actuator has a different kinds of Ball Screw / Lead Screw inside. Please choose appropriate type depending on your required accuracy. For further information, please refer to Table G-3 in page G106.

1) Resin Lead Screw type
High cost performance type Actuator installed Resin Lead Screw. It can be used without oiling in normal environment for long term, because lubricating agent is incorporated in Resin Nut.
2) Rolled Ball Screw type
Reasonable price and accuracy have been achieved by using Rolled Ball Screw.
3) Precision Ball Screw type
High accuracy in both Repeatability and Lost motion by using Precision Ball Screw.

表G-1 : 进给丝杠的定位精度
Table G-1 : Positioning accuracy for each Drive Screw

Drive Screw type / 驱动丝杠种类	Repeatability 重复定位精度 (mm)	Lost motion 空转 (mm)
Resin Lead Screw / 树脂螺母滑动丝杠	±0.05 max.	0.05 max.
Rolled Ball Screw / 冷轧滚珠丝杠	±0.01 max.	0.01 max.
Precision Ball Screw / 精密滚珠丝杠	±0.005 max.	0.005 max.

注) 使用标准电机时的参考值。
Note) These numbers are obtained with standard Motor.

作为电机选项为KSS灵活可选执行器系列准备了以下选择方案。
执行器和电机组合时的详细规格请参照第G106页。

There are several choices of Motor as option shown below. Specifications for each combination of Actuator and Motor are shown in page G106.

Motor type 电机种类	Manufacturer 电机厂商	Model number 电机型号	Rated Current 额定电流
2-phase / 2相 □25	Minebea Motor 美蓓亚电机	10PM-K202B Single shaft / 单轴	0.7A / Phase 0.7A / 相
2-phase / 2相 □28	TAMAGAWA SEIKI 多摩川精机	TS3641N11E2 Double shaft / 双轴	0.95A / Phase 0.95A / 相
5-phase / 2相 □28	Oriental Motor 东方马达	PK523HPB Double shaft / 双轴	0.75A / Phase 0.75A / 相

●公称型号的构成 / Model number notation

FA S — G 020 — 080 M N R SBU

1 2 3 4 5 6 7 8 9

1系列编号
FA: KSS灵活可选执行器系列
2构造编号
S ：滑块型
3进给丝杠种类
Re: 树脂螺母滑动丝杠
R ：冷轧滚珠丝杠
G ：精密滚珠丝杠
4导程 / 间距（mm）：020表示为2mm
5行程（mm）：080表示为80mm
6电机类型
无编号：无电机（标准品）
M：美蓓亚电机制造 2相步进电机
（□25＆0.7A / 相）
T：多摩川精机制造 2相步进电机
（□28＆0.95A / 相）
E：东方马达制造 5相步进电机
（□28＆0.75A / 相）
S：其它
7连接器类型
N：裸线
H：广濑RP17
E：EI连接器（Tyco Electronics制造）
8导线方向
R：右侧引线（从轴侧看是右侧）
L：左侧引线
9选项编号
无编号：无选项
S：外装光电传感器
B：电磁刹车单元
U：电机周边套件

1Series No.
FA: KSS Flex Actuator Series
2Actuator type
S : Slider type
3Lead Screw / Ball Screw type
Re: Resin Lead Screw
R : Rolled Ball Screw
G : Precision Ball Screw
4Lead / Pitch（mm）: 020 means 2mm
5Travel（mm）: 080 means 80mm
6Motor type
None : No Motor（Standard）
M : Minebea Motor 2-phase Stepping Motor
（□25＆0.7A / phase）
T : TAMAGAWA SEIKI 2-phase Stepping Motor
（□28＆0.95A / phase）
E : Oriental Motor 5-phase Stepping Motor
（□28＆0.75A / phase）
S : Other
7Connector type
N : No connector（Bare）
H : HIROSE RP17
E : EI connector（Tyco Electronics）
8Direction of Motor leads
R : Right（from Shaft end side）
L : Left
9Option
None : no optional design
S : Photo micro Sensor outside
B : Solenoid Brake Unit
U : Side Motor mounting kit

●组合与规格

KSS灵活可选执行器能够组合选择进给丝杠的种类（定位精度）、丝杠导程以及行程。
无电机型为标准品，但是作为选项准备了3种电机。
由于这些组合，扩大了客户的选择余地，从而能够选定符合使用条件的执行器。
进给丝杠的种类与电机选择（选项）请参照以下组合一览表（表G-2）。
决定组合后，详细的尺寸与规格请参照各自刊登的页面。
需要表G-2以外组合的执行器时，请咨询KSS。

●Combination & Specifications

KSS Flex Actuator has a lot of combinations with Lead screws（positioning accuracy）, Screw Lead, and travel length. Motor-less type is our standard, but 3 types of Motor can be provided as an optional order. Standard combination and Motor choices make design flexibility enlarge widely based on your specifications. Combination of Lead screw and Motor are shown in Table G-2.
The detail specifications and dimensions are described in each dimension table.
If other combination in Table G-2 is required, please ask KSS representative.

标准规格的组合 / Standard Combination

Choice of Drive Screw
选择进给丝杠

×

Choice of Travel
选择行程

×

Choice of Screw Lead
选择丝杠导程

定位相关精度因进给丝杠的种类而有所不同。
每个进给丝杠都规定了导程、行程的标准组合。

Positioning accuracy will vary depending on the kind of Lead screw. Lead and travel length are standardized for each Lead Screw.

表G-3　参照
Refer to Table G-3

×

电机选项 / Motor Option

Option Motor 1 / 可选电机 1
2-phase Stepping Motor（□25＆0.7A / phase）
2相步进电机（□25＆0.7A / 相）

Option Motor 2 / 可选电机 2
2-phase Stepping Motor（□28＆0.95A / phase）
2相步进电机（□28＆0.95A / 相）

Option Motor 3 / 可选电机 3
5-phase Stepping Motor（□28＆0.75A / phase）
5相步进电机（□28＆0.75A / 相）

容许速度或者可搬负载因所选的电机而有所不同。

Permissible speed and Load Capacity are determined by Motor choice.

决定组合后，详细尺寸请参照各自的页面。
刊登页面一览请参照表G-2。

The detail specifications for each combination are shown in dimension Table. Page index is shown in Table below.

表G-2：各组合的刊登页面一览
Table G-2 : Page index for each combination

Motor / 电机			Resin Lead Screw 树脂螺母滑动丝杠	Rolled Ball Screw 冷轧滚珠丝杠	Precision Ball Screw 精密滚珠丝杠
Standard 标准		Motor : None　无	See page G107～G108 参照第G107～G108页	See page G109～G110 参照第G109～G110页	See page G111～G112 参照第G111～G112页
Option 选项	M	Minebea Motor / 美蓓亚电机制造 2-phase Stepping Motor（□25＆0.7A / phase） 2相步进电机（□25＆0.7A / 相） Bi-polar type / 双极	See page G113～G114 参照第G113～G114页	See page G115～G116 参照第G115～G116页	See page G117～G118 参照第G117～G118页
	T	TAMAGAWA SEIKI / 多摩川精机製 2-phase Stepping Motor（□28＆0.95A / phase） 2相步进电机（□28＆0.95A / 相） Uni-polar type / 单极	See page G119～G120 参照第G119～G120页	See page G121～G122 参照第G121～G122页	See page G123～G124 参照第G123～G124页
	E	Oriental Motor / 东方马达制造 5-phase Stepping Motor（□28＆0.75A / phase） 5相步进电机（□28＆0.75A / 相）	See page G125～G126 参照第G125～G126页	See page G127～G128 参照第G127～G128页	See page G129～G130 参照第G129～G130页

●选定的标准

KSS灵活可选执行器的进给丝杠的种类、丝杠导程、行程、电机的种类等组合特别丰富。
鉴于此，有时选定合理的组合的流程会变得复杂。为了让客户便于选定执行器，在此刊登了从各种选择方案中选定的标准。

●Selection guide

KSS Flex Actuator has a lot of combinations with Drive screws, Screw Lead, Travel length and Motor as an option.
Therefore, when you try to select the suitable combination, its procedure may be complicated.
KSS shows the selection guide below from the various approach of choices.

Drive Screw selection guide 选定进给丝杠的标准	Positioning related accuracy 定位相关精度	Price 价格
Resin Lead Screws 树脂螺母滑动丝杠	Low 低	Less expensive 低价
Rolled Ball Screws 冷轧滚珠丝杠	Middle 中	Reasonable 一般
Precision Ball Screws 精密滚珠丝杠	High 高	Costly 高价

Screw Lead selection guide 选定导程的标准	Speed 进给速度	Resolution 分解度	Load Capacity 可搬负载
1mm	Slow 慢	High 高	High 高
2mm			
6mm			
9mm or 10mm	Fast 快	Low 低	Low 低

Motor selection guide 选定电机的标准	Fine step 微小进给	Acceleration 加速性	Rotational speed 转速	Price 价格
2-phase □25 2相 □25	Middle 中	Middle 中	Middle 中	Less expensive 低价
2-phase □28 2相 □28	Middle 中	Middle 中	Relatively low speed is available 涵盖相对较低的速度	Reasonable 一般
5-phase □28 5相 □28	Fine 微小	High 高	Low & high speed 涵盖低速和高速	Costly 高价

与KSS执行器相连时的性能。并非是电机单体的性能。详情请参照下一页的规格一览表。
The table above shows the functional comments when the Motor is built in KSS Flex Actuators.
Please note that the table above is not the function of Motor itself. For more detail, please see the table of specifications in next page.

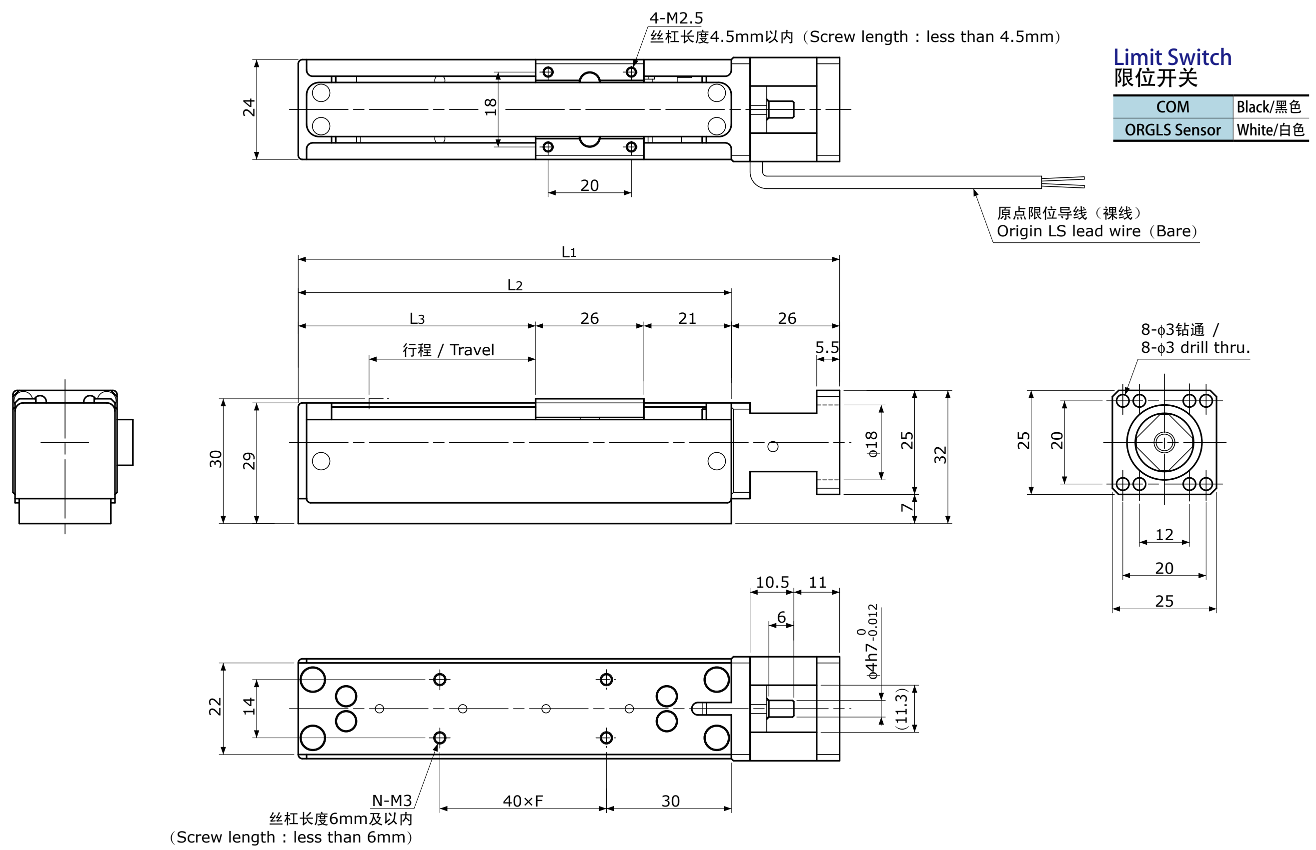
表G-3：规格一览表
Table G-3 : Specifications for each combination

Drive Screw type / 驱动丝杠种类	Resin Lead Screw 树脂螺母滑动丝杠	Rolled Ball Screw 冷轧滚珠丝杠	Precision Ball Screw 精密滚珠丝杠
Repeatability / 重复定位精度（mm）	±0.05 max.	±0.01 max.	±0.005 max.
Lost motion / 空转（mm）	0.05 max.	0.01 max.	0.005 max.
Permissible Moment /容许负荷力矩（Nm） Mp（Pitching / 俯仰）	0.10 ** In case of no load in My & Mr direction **My、Mr方向没有负荷时		
Permissible Moment / 容许负荷力矩（Nm） My（Yawing / 偏转）	0.09 ** In case of no load in Mp & Mr direction **Mp、Mr方向没有负荷时		
Permissible Moment / 容许负荷力矩（Nm） Mr（Rolling / 滚压）	0.23 ** In case of no load in Mp & My direction **Mp、My方向没有负荷时		

Spec. for each Motor / 按电机规格一览			Resin Lead Screw 树脂螺母滑动丝杠			Rolled Ball Screw 冷轧滚珠丝杠				Precision Ball Screw 精密滚珠丝杠			
Motor 电机	Lead / 导程（mm） H:Horizontal / 水平 V:Vertical / 垂直		2	6	9	1	2	6	10	1	2	6	10
Standard 标准 Motor-less 无电机	Max. Load Capacity（N） 最大可搬负载（N）	H	9.8	9.8	9.8	29.4	29.4	19.6	19.6	29.4	29.4	19.6	19.6
		V	4.9	4.9	4.9	19.6	19.6	9.8	4.9	19.6	19.6	9.8	4.9
	Permissible speed（mm / sec） 容许速度（mm / sec）		0～30	0～90	0～135	0～25	0～50	0～150	0～250	0～25	0～50	0～150	0～250
Motor : M 2-phase / 2相 □25 0.7A / phase	Max. Load Capacity（N） 最大可搬负载（N）	H	9.8	9.8	9.8	29.4	29.4	19.6	19.6	29.4	29.4	19.6	19.6
		V	2.94	2.94	2.94	19.6	19.6	2.94	2.94	19.6	19.6	2.94	2.94
	Permissible speed（mm / sec） 容许速度（mm / sec）		6～20	18～60	30～90	3～20	6～40	18～120	30～200	3～20	6～40	18～120	30～200
Motor : T 2-phase / 2相 □28 0.95A / phase	Max. Load Capacity（N） 最大可搬负载（N）	H	9.8	9.8	9.8	29.4	29.4	19.6	19.6	29.4	29.4	19.6	19.6
		V	4.9	4.9	4.9	19.6	19.6	9.8	4.9	19.6	19.6	9.8	4.9
	Permissible speed（mm / sec） 容许速度（mm / sec）		4～30	12～90	20～135	2～25	4～50	12～150	20～250	2～25	4～50	12～150	20～250
Motor : E 5-phase / 5相 □28 0.75A / phase	Max. Load Capacity（N） 最大可搬负载（N）	H	9.8	9.8	9.8	29.4	29.4	19.6	19.6	29.4	29.4	19.6	19.6
		V	4.9	4.9	4.9	19.6	19.6	4.9	4.9	19.6	19.6	4.9	4.9
	Permissible speed（mm / sec） 容许速度（mm / sec）		0～30	0～90	0～135	0～25	0～50	0～150	0～250	0～25	0～50	0～150	0～250
**Motor mounting is option **带电机为选项。	Travel / 行程（mm）	20				○				○			
		40	○	○	○	○	○	○	○	○	○	○	○
		80	○	○	○	○	○	○	○	○	○	○	○
		120		○	○			○	○			○	○
		160		○	○			○	○			○	○
		200		○	○			○	○			○	○

注1）无电机时重复定位精度、空转为参考值；容许速度、可搬负载为推荐值。
注2）详情请参照尺寸表。
Note 1）In case of Standard（Motor-less）, Repeatability & Lost motion are reference value, Permissible speed & Load Capacity are recommended value.
Note 2）For more detail, please refer to dimension table.

Motor-less type（Standard） 无电机型（标准品）
Resin Lead Screw type Actuator 树脂螺母滑动丝杠型执行器



注释
1）使用时不得出现结露现象。
2）容许力矩是其它方向没有负荷时的值。
3）扭矩值为参考值。
4）无电机时，重复定位精度及空转为参考值。
5）无电机时，容许速度及可搬负载为推荐值。
6）必要扭矩为最大垂直可搬负载作用时的所需扭矩。
7）推荐联轴器
・酒井制作所：LAS-12C-4×（3 or 4 or 5）
・锅屋BITECH：MWS-12C-4×（4 or 5）
・锅屋BITECH：MOS-12C-4×（3 or 4 or 5）
・MISUMI：CPSCN12-4×（4 or 5）

Note
1）There should be no condensation when using.
2）Permissible Moment is the number when no load in other direction.
3）Please consider Torque as reference number.
4）In case of Motor-less type, Repeatability & Lost motion are reference number.
5）In case of Motor-less type, Permissible speed & Load Capacity are recommended number.
6）Required Torque is under maximum vertical Load Capacity.
7）Recommended Coupling
・SAKAI SEISAKUSYO：LAS-12C-4×（3 or 4 or 5）
・NBK：MWS-12C-4×（4 or 5）
・NBK：MOS-12C-4×（3 or 4 or 5）
・MISUMI：CPSCN12-4 ×（4 or 5）

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Motor Required Torque 电机所需扭矩 (Nm)	Length 长度尺寸 (mm) L1	L2	L3	F	N		Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-Re020-040	40	2	0.008	130	104	57	1	4		9.8	4.9	0～30	155
FAS-Re060-040		6	0.010							9.8	4.9	0～90	
FAS-Re090-040		9	0.015							9.8	4.9	0～135	
FAS-Re020-080	80	2	0.008	170	144	97	2	6		9.8	4.9	0～30	200
FAS-Re060-080		6	0.010							9.8	4.9	0～90	
FAS-Re090-080		9	0.015							9.8	4.9	0～135	
FAS-Re060-120	120	6	0.010	210	184	137	3	8		9.8	4.9	0～90	240
FAS-Re090-120		9	0.015							9.8	4.9	0～135	
FAS-Re060-160	160	6	0.010	250	224	177	4	10		9.8	4.9	0～90	285
FAS-Re090-160		9	0.015							9.8	4.9	0～135	
FAS-Re060-200	200	6	0.010	290	264	217	5	12		9.8	4.9	0～90	325
FAS-Re090-200		9	0.015							9.8	4.9	0～135	

注）树脂螺母滑动丝杠型的润滑规定是滑动丝杠部为Sumitec Liquid H20，导杆部为油脂MSG No.2。
Note）In case of Resin Lead Screw type, Lubrication is Sumitec Liquid H20 on Resin Lead Screw, Grease MSG No.2 on Guide.

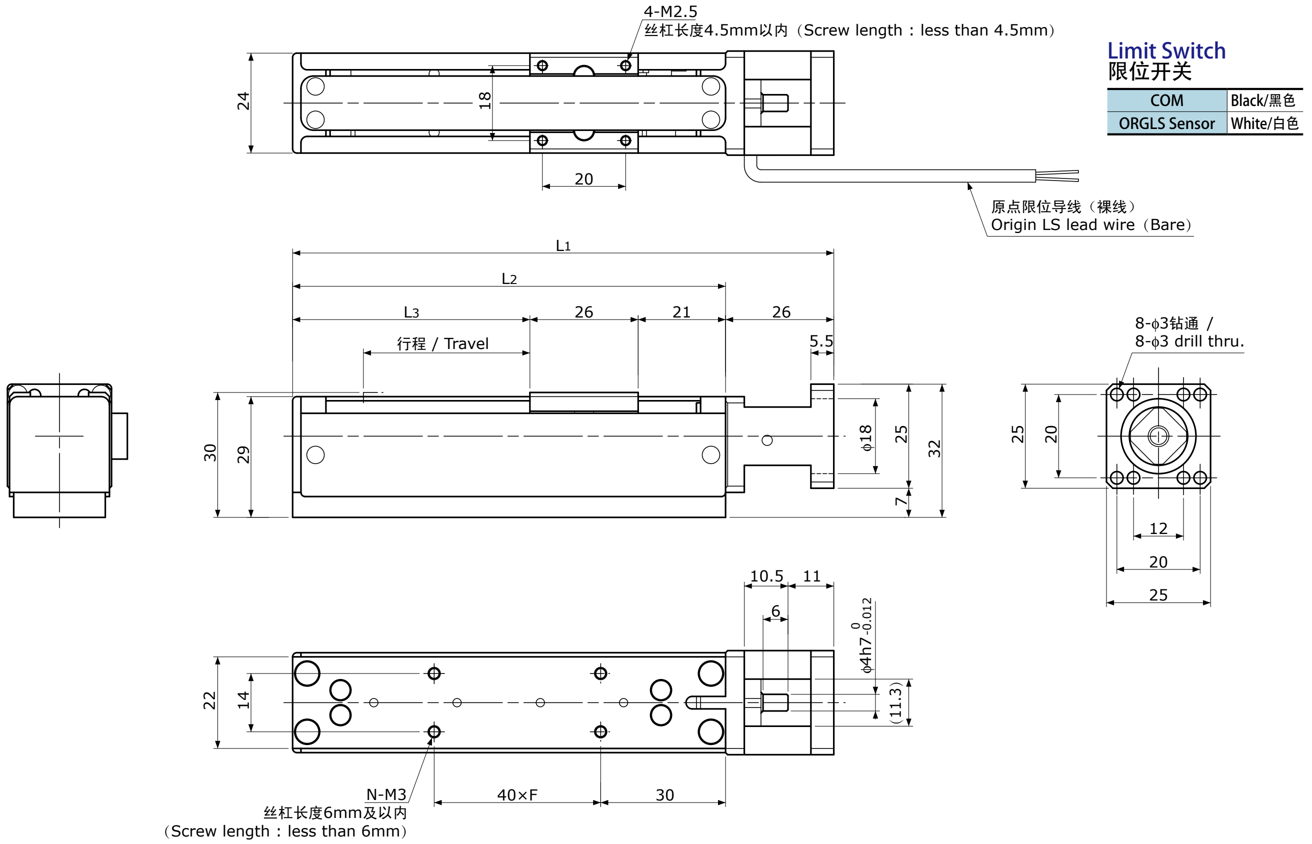
Common Specifications 通用规格	
Repeatability 重复定位精度	Max. ±0.05mm
Lost Motion 空转	Max. 0.05mm
Body Material 本体材质	Aluminum 铝
Sliding guide 导向结构	Slide Guide rail 滑动导轨（1列）
Sensor 传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.05mm
Acceleration & Deceleration Rate 加减速率	—

Permissible Moment 容许力矩	
Pitching 俯仰 Mp	0.10Nm
Yawing 偏转 My	0.09Nm
Rolling 滚压 Mr	0.23Nm

Lubrication 润滑	See Note 参照注释
Operating Temp. 使用温度范围	0～40°C

Miniature Actuator 微型执行器篇

Motor-less type（Standard） 无电机型（标准品）
Rolled Ball Screw type Actuator 冷轧滚珠丝杠型执行器



注释
1）使用时不得出现结露现象。
2）容许力矩是其它方向没有负荷时的值。
3）扭矩值为参考值。
4）无电机时，重复定位精度及空转为参考值。
5）无电机时，容许速度及可搬负载为推荐值。
6）必要扭矩为最大垂直可搬负载作用时的所需扭矩。
7）推荐联轴器
- 酒井制作所：LAS-12C-4×（3 or 4 or 5）
- 锅屋BITECH：MWS-12C-4×（4 or 5）
- 锅屋BITECH：MOS-12C-4×（3 or 4 or 5）
- MISUMI：CPSCN12-4×（4 or 5）

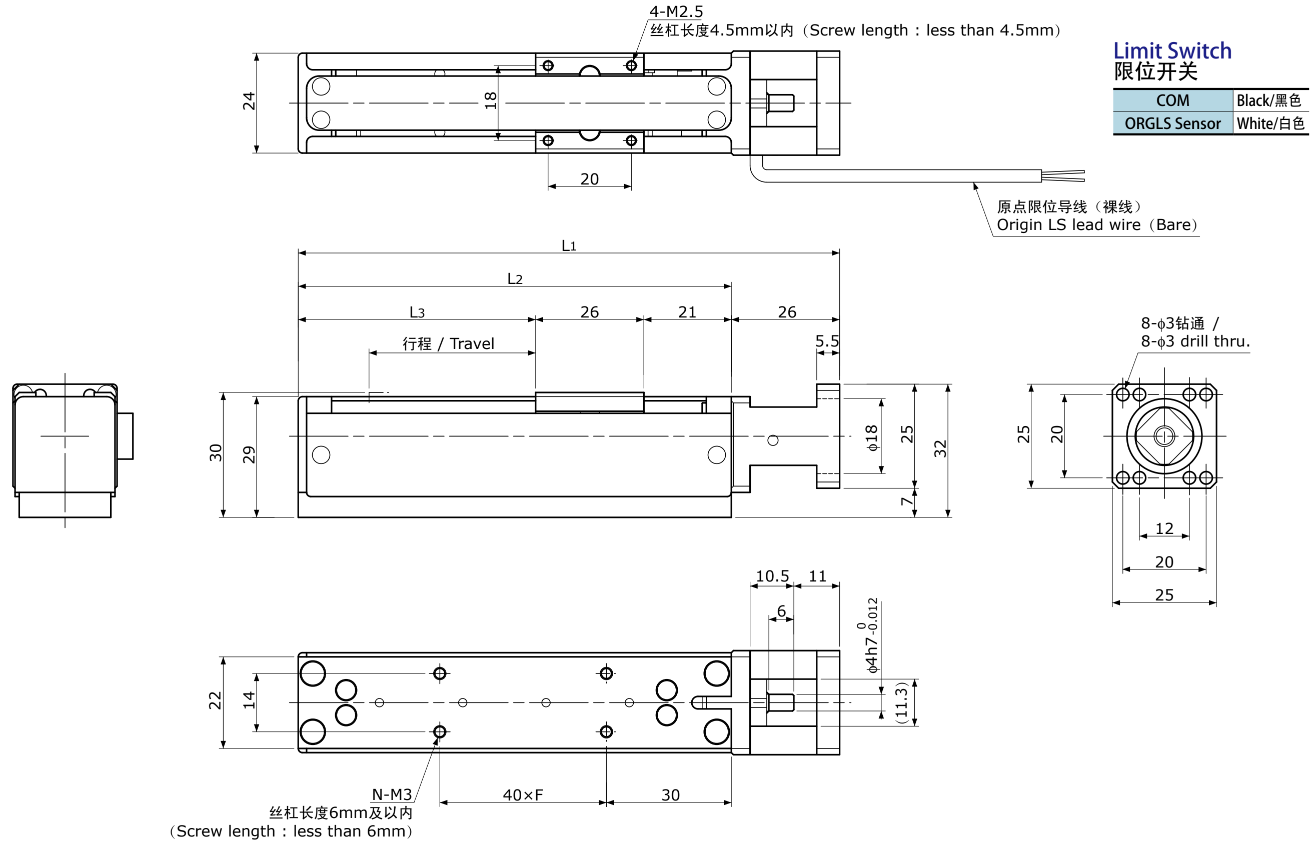
Note
1）There should be no condensation when using.
2）Permissible Moment is the number when no load in other direction.
3）Please consider Torque as reference number.
4）In case of Motor-less type, Repeatability & Lost motion are reference number.
5）In case of Motor-less type, Permissible speed & Load Capacity are recommended number.
6）Required Torque is under maximum vertical Load Capacity.
7）Recommended Coupling
- SAKAI SEISAKUSYO：LAS-12C-4×（3 or 4 or 5）
- NBK：MWS-12C-4×（4 or 5）
- NBK：MOS-12C-4×（3 or 4 or 5）
- MISUMI：CPSCN12-4×（4 or 5）

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Motor Required Torque 电机所需扭矩 (Nm)	Length 长度尺寸 (mm) L1	L2	L3	F	N		Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-R010-020	20	1	0.009	110	84	37	1	4		29.4	19.6	0～25	160
FAS-R010-040	40	1	0.009	130	104	57	1	4		29.4	19.6	0～25	180
FAS-R020-040		2	0.011							29.4	19.6	0～50	
FAS-R060-040		6	0.017							19.6	9.8	0～150	
FAS-R100-040		10	0.015							19.6	4.9	0～250	
FAS-R010-080	80	1	0.009	170	144	97	2	6		29.4	19.6	0～25	225
FAS-R020-080		2	0.011							29.4	19.6	0～50	
FAS-R060-080		6	0.017							19.6	9.8	0～150	
FAS-R100-080		10	0.015							19.6	4.9	0～250	
FAS-R060-120	120	6	0.017	210	184	137	3	8		19.6	9.8	0～150	265
FAS-R100-120		10	0.015							19.6	4.9	0～250	
FAS-R060-160	160	6	0.017	250	224	177	4	10		19.6	9.8	0～150	310
FAS-R100-160		10	0.015							19.6	4.9	0～250	
FAS-R060-200	200	6	0.017	290	264	217	5	12		19.6	9.8	0～150	350
FAS-R100-200		10	0.015							19.6	4.9	0～250	

Common Specifications 通用规格	
Repeatability 重复定位精度	Max. ±0.01mm
Lost Motion 空转	Max. 0.01mm
Body Material 本体材质	Aluminum 铝
Sliding guide 导向结构	Slide Guide rail 滑动导轨（1列）
Sensor 传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	—
Permissible Moment 容许力矩	
Pitching 俯仰 Mp	0.10Nm
Yawing 偏转 My	0.09Nm
Rolling 滚压 Mr	0.23Nm
Lubrication 润滑	Grease 油脂 MSG No.2（KSS）
Operating Temp. 使用温度范围	0～40° C

Motor-less type (Standard)
Precision Ball Screw type Actuator

无电机型(标准品)
精密滚珠丝杠型执行器



注释
1) 使用时不得出现结露现象。
2) 容许力矩是其它方向没有负荷时的值。
3) 扭矩值为参考值。
4) 无电机时，重复定位精度及空转为参考值。
5) 无电机时，容许速度及可搬负载为推荐值。
6) 必要扭矩为最大垂直可搬负载作用时的所需扭矩。
7) 推荐联轴器
- 酒井制作所 : LAS-12C-4×(3 or 4 or 5)
- 锅屋BITECH : MWS-12C-4×(4 or 5)
- 锅屋BITECH : MOS-12C-4×(3 or 4 or 5)
- MISUMI : CPSCN12-4×(4 or 5)

Note
1) There should be no condensation when using.
2) Permissible Moment is the number when no load in other direction.
3) Please consider Torque as reference number.
4) In case of Motor-less type, Repeatability & Lost motion are reference number.
5) In case of Motor-less type, Permissible speed & Load Capacity are recommended number.
6) Required Torque is under maximum vertical Load Capacity.
7) Recommended Coupling
- SAKAI SEISAKUSYO : LAS-12C-4×(3 or 4 or 5)
- NBK : MWS-12C-4×(4 or 5)
- NBK : MOS-12C-4×(3 or 4 or 5)
- MISUMI : CPSCN12-4×(4 or 5)

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Motor Required Torque 电机所需扭矩 (Nm)	Length 长度尺寸 (mm)						Max. Load Capacity 最大可搬负载 (N)		Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
				L1	L2	L3	F	N		Hor. 水平	Vert. 垂直		
FAS-G010-020	20	1	0.009	110	84	37	1	4		29.4	19.6	0～25	160
FAS-G010-040	40	1	0.009	130	104	57	1	4		29.4	19.6	0～25	180
FAS-G020-040		2	0.011							29.4	19.6	0～50	
FAS-G060-040		6	0.017							19.6	9.8	0～150	
FAS-G100-040		10	0.015							19.6	4.9	0～250	
FAS-G010-080	80	1	0.009	170	144	97	2	6		29.4	19.6	0～25	225
FAS-G020-080		2	0.011							29.4	19.6	0～50	
FAS-G060-080		6	0.017							19.6	9.8	0～150	
FAS-G100-080		10	0.015							19.6	4.9	0～250	
FAS-G060-120	120	6	0.017	210	184	137	3	8		19.6	9.8	0～150	265
FAS-G100-120		10	0.015							19.6	4.9	0～250	
FAS-G060-160	160	6	0.017	250	224	177	4	10		19.6	9.8	0～150	310
FAS-G100-160		10	0.015							19.6	4.9	0～250	
FAS-G060-200	200	6	0.017	290	264	217	5	12		19.6	9.8	0～150	350
FAS-G100-200		10	0.015							19.6	4.9	0～250	

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.005mm
Lost Motion　空转	Max. 0.005mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨(1列)
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	—

Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

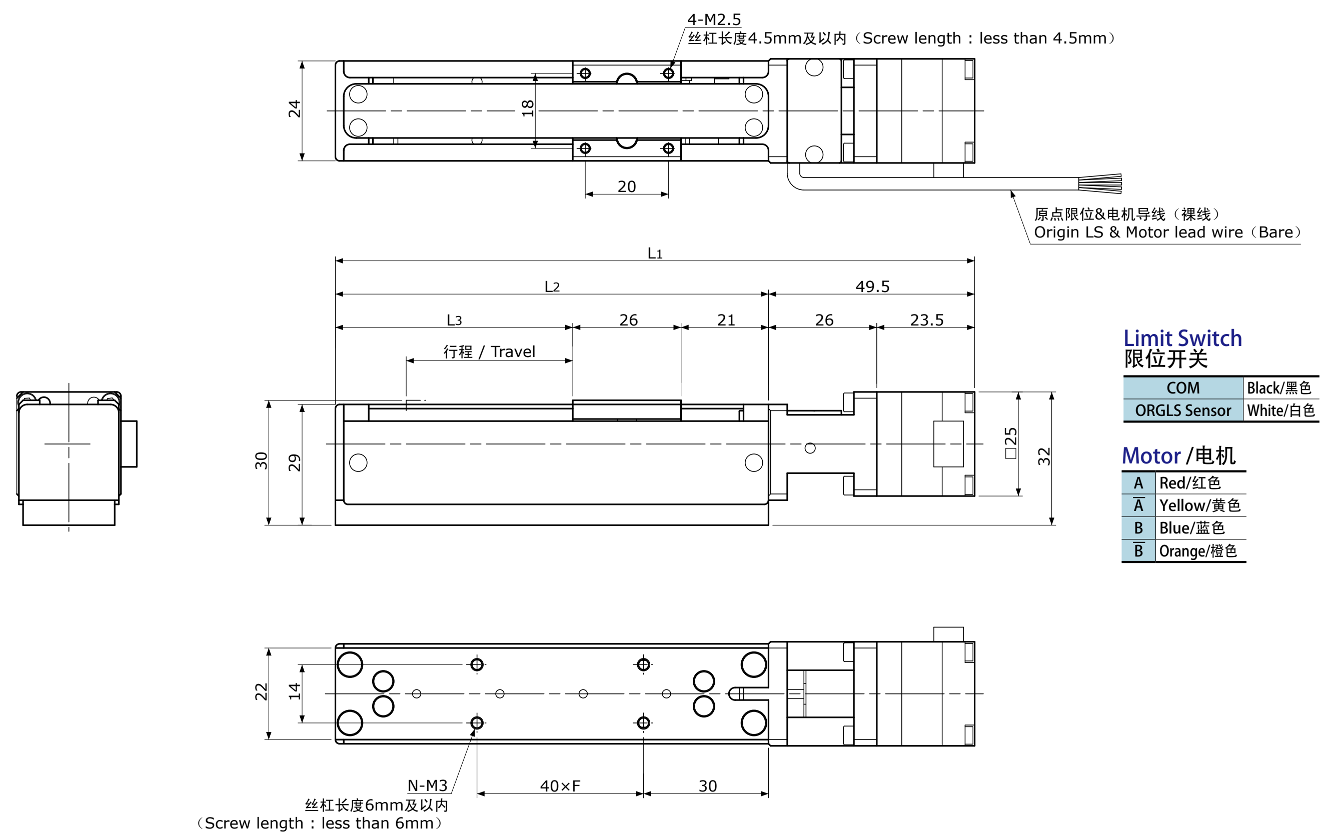
Lubrication　润滑	Grease 油脂　MSG No.2(KSS)
Operating Temp.　使用温度范围	0～40°C

Miniature Actuator 微型执行器篇

2-phase Stepping Motor (Bi-polar 0.7A / phase & □25) with Resin Lead Screw type Actuator

附带2相 步进电机（双极 0.7A / 相　□25）的树脂螺母滑动丝杠型执行器

Motor Model / 电机型号：10PM-K202B（Single shaft / 单轴）
Minebea Motor / 美蓓亚电机
推荐驱动 / Driver recommendation：SD4030B



Limit Switch
限位开关

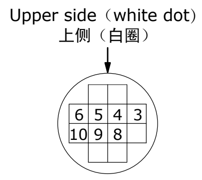
COM	Black/黑色
ORGLS Sensor	White/白色

Motor /电机

A	Red/红色
$\overline{A}$	Yellow/黄色
B	Blue/蓝色
$\overline{B}$	Orange/橙色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1）裸线
2）广濑RP17-13J-12SC
3）EI连接器（Tyco Electronics制造）
6芯（172211-6、电机）+4芯（172211-4、传感器）

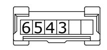
Connector choice
Please designate connector type below.
No connector if there is no designation.
1）None（Bare）
2）RP17-13J-12SC（HIROSE）
3）EI-Connector（Tyco Electronics）
（172211-6 pins for Motor + 172211-4 pins for Sensor）



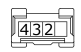
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP17连接器规格

1	None　无
2	None　无
3	Stepping Motor A（Red/红色）
4	Stepping Motor $\overline{A}$（Yellow/黄色）
5	Stepping Motor B（Blue/蓝色）
6	Stepping Motor $\overline{B}$（Orange/橙色）
7	None　无
8	COM（Black/黑色）
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC（White/白色）
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	None　无
2	None　无
3	Stepping Motor A（Red/红色）
4	Stepping Motor $\overline{A}$（Yellow/黄色）
5	Stepping Motor B（Blue/蓝色）
6	Stepping Motor $\overline{B}$（Orange/橙色）

1	None　无
2	COM（Black/黑色）
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC（White/白色）

注释
1）加减速率为推荐值。
2）使用时不得出现结露现象。
3）容许力矩是其它方向没有负荷时的值。
4）分解度为整步时的值。
5）导线为裸线及右出时的型号。
6）低速时，原点恢复的过程中的振动可能会有些偏大。

Note
1）Acceleration & deceleration rate is our recommendation.
2）There should be no condensation when using.
3）Permissible Moment is the number when no load in other direction.
4）Resolution represents the values for full step.
5）Model number is for no-connector and lead wire is set on right side on Motor.
6）Vibration may increase at low speed or zero return.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N		Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-Re020-040MNR	40	2	10	153.5	104	57	1	4		9.8	2.94	6~20	205
FAS-Re060-040MNR		6	30							9.8	2.94	18~60	
FAS-Re090-040MNR		9	45							9.8	2.94	30~90	
FAS-Re020-080MNR	80	2	10	193.5	144	97	2	6		9.8	2.94	6~20	250
FAS-Re060-080MNR		6	30							9.8	2.94	18~60	
FAS-Re090-080MNR		9	45							9.8	2.94	30~90	
FAS-Re060-120MNR	120	6	30	233.5	184	137	3	8		9.8	2.94	18~60	290
FAS-Re090-120MNR		9	45							9.8	2.94	30~90	
FAS-Re060-160MNR	160	6	30	273.5	224	177	4	10		9.8	2.94	18~60	335
FAS-Re090-160MNR		9	45							9.8	2.94	30~90	
FAS-Re060-200MNR	200	6	30	313.5	264	217	5	12		9.8	2.94	18~60	375
FAS-Re090-200MNR		9	45							9.8	2.94	30~90	

注1）树脂螺母滑动丝杠型的润滑规定是滑动丝杠部为Sumitec Liquid H20，导杆部为油脂MSG No.2。
注2）有关与推荐的驱动器（SD4030B）的接线，请参照第G133页。
Note 1）In case of Resin Lead Screw type, Lubrication is Sumitec Liquid H20 on Resin Lead Screw, Grease MSG No.2 on Guide.
Note 2）Refer to page G133 for connection diagram of recommended Driver（SD4030B）.

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.05mm
Lost Motion　空转	Max. 0.05mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨（1列）
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.05mm
Acceleration & Deceleration Rate 加减速率	Min. 100ms / kHz 100ms / kHz 及以上

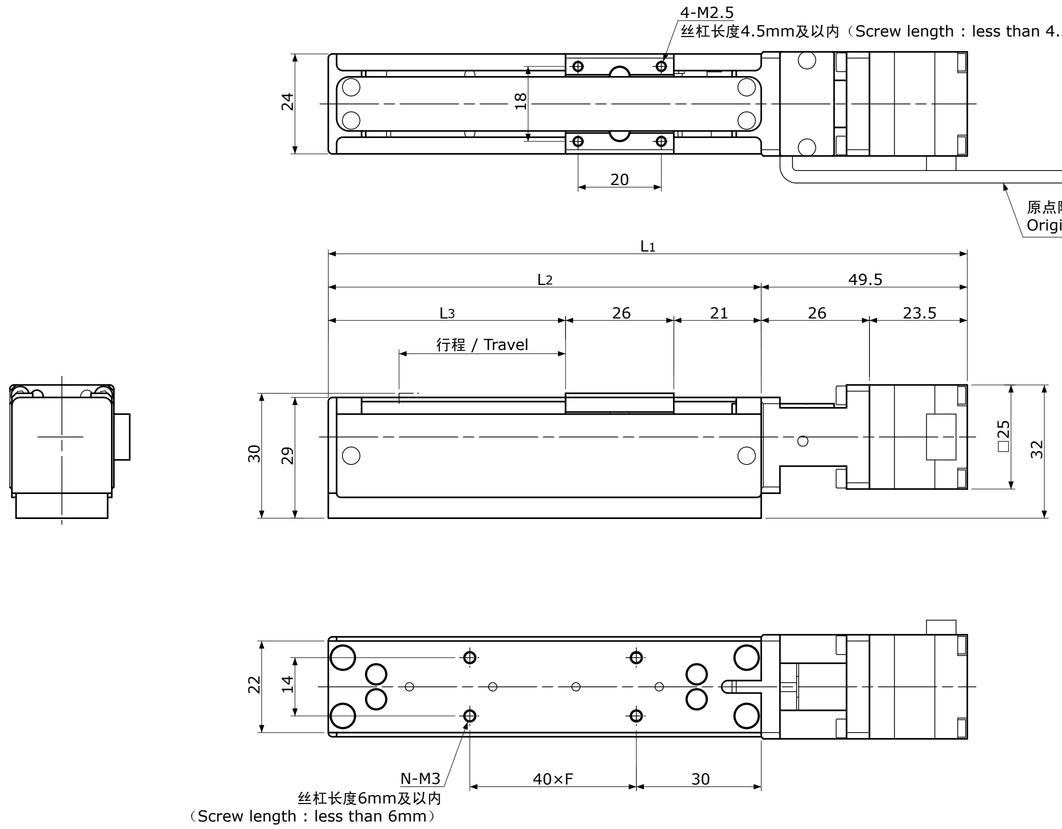
Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

Lubrication　润滑	See Note　参照注释
Operating Temp.　使用温度范围	0~40° C

2-phase Stepping Motor (Bi-polar 0.7A / phase & □25) with Rolled Ball Screw type Actuator

附带2相 步进电机（双极 0.7A / 相　□25）的冷轧滚珠丝杠型执行器

Motor Model / 电机型号：10PM-K202B（Single shaft / 单轴）
Minebea Motor / 美蓓亚电机
推荐驱动 / Driver recommendation : SD4030B



Limit Switch
限位开关

COM	Black/黑色
ORGLS Sensor	White/白色

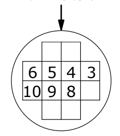
Motor /电机

A	Red/红色
$\overline{A}$	Yellow/黄色
B	Blue/蓝色
$\overline{B}$	Orange/橙色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1）裸线
2）广濑RP17-13J-12SC
3）EI连接器（Tyco Electronics制造）
6芯（172211-6、电机）+4芯（172211-4、传感器）

Connector choice
Please designate connector type below.
No connector if there is no designation.
1）None（Bare）
2）RP17-13J-12SC（HIROSE）
3）EI-Connector（Tyco Electronics）
（172211-6 pins for Motor + 172211-4 pins for Sensor）

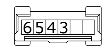
Upper side（white dot）
上侧（白圈）



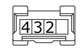
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP17连接器规格

1	None　无
2	None　无
3	Stepping Motor A（Red/红色）
4	Stepping Motor $\overline{A}$（Yellow/黄色）
5	Stepping Motor B（Blue/蓝色）
6	Stepping Motor $\overline{B}$（Orange/橙色）
7	None　无
8	COM（Black/黑色）
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC（White/白色）
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	None　无
2	None　无
3	Stepping Motor A（Red/红色）
4	Stepping Motor $\overline{A}$（Yellow/黄色）
5	Stepping Motor B（Blue/蓝色）
6	Stepping Motor $\overline{B}$（Orange/橙色）

1	None　无
2	COM（Black/黑色）
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC（White/白色）

注释
1）加减速率为推荐值。
2）使用时不得出现结露现象。
3）容许力矩是其它方向没有负荷时的值。
4）分解度为整步时的值。
5）导线为裸线及右出时的型号。
6）低速时，原点恢复的过程中的振动可能会有些偏大。

Note
1）Acceleration & deceleration rate is our recommendation.
2）There should be no condensation when using.
3）Permissible Moment is the number when no load in other direction.
4）Resolution represents the values for full step.
5）Model number is for no-connector and lead wire is set on right side on Motor.
6）Vibration may increase at low speed or zero return.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N	Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-R010-020MNR	20	1	5	133.5	84	37	1	4	29.4	19.6	3～20	210
FAS-R010-040MNR	40	1	5	153.5	104	57	1	4	29.4	19.6	3～20	230
FAS-R020-040MNR		2	10						29.4	19.6	6～40	
FAS-R060-040MNR		6	30						19.6	2.94	18～120	
FAS-R100-040MNR		10	50						19.6	2.94	30～200	
FAS-R010-080MNR	80	1	5	193.5	144	97	2	6	29.4	19.6	3～20	275
FAS-R020-080MNR		2	10						29.4	19.6	6～40	
FAS-R060-080MNR		6	30						19.6	2.94	18～120	
FAS-R100-080MNR		10	50						19.6	2.94	30～200	
FAS-R060-120MNR	120	6	30	233.5	184	137	3	8	19.6	2.94	18～120	315
FAS-R100-120MNR		10	50						19.6	2.94	30～200	
FAS-R060-160MNR	160	6	30	273.5	224	177	4	10	19.6	2.94	18～120	360
FAS-R100-160MNR		10	50						19.6	2.94	30～200	
FAS-R060-200MNR	200	6	30	313.5	264	217	5	12	19.6	2.94	18～120	400
FAS-R100-200MNR		10	50						19.6	2.94	30～200	

注）有关与推荐的驱动器（SD4030B）的接线，请参照第G133页。
Note）Refer to page G133 for connection diagram of recommended Driver（SD4030B）.

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.01mm
Lost Motion　空转	Max. 0.01mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨（1列）
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min. 50ms / kHz 50ms / kHz 及以上

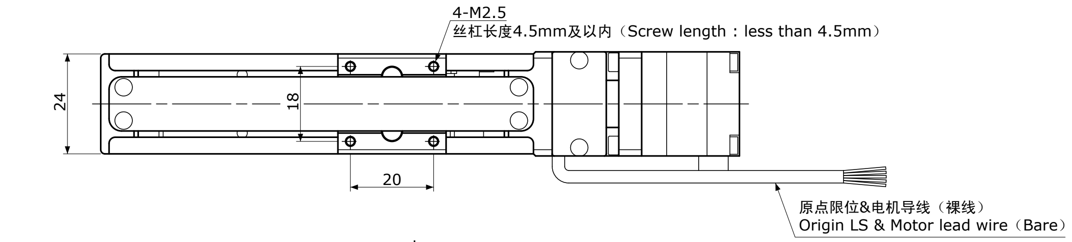
Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

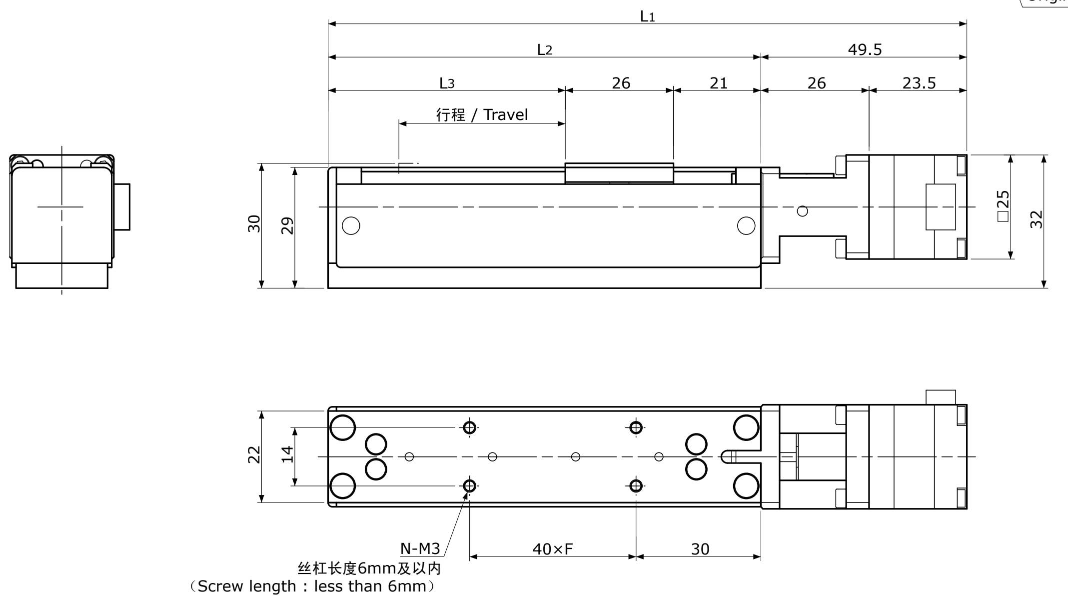
Lubrication　润滑	Grease 油脂　MSG No.2（KSS）
Operating Temp.　使用温度范围	0～40° C

2-phase Stepping Motor (Bi-polar 0.7A / phase & □25) with Precision Ball Screw type Actuator

附带2相 步进电机(双极 0.7A / 相 □25)的 精密滚珠丝杠型执行器

Motor Model / 电机型号：10PM-K202B (Single shaft / 单轴)
Minebea Motor / 美蓓亚电机
推荐驱动 / Driver recommendation : SD4030B





Limit Switch
限位开关

COM	Black/黑色
ORGLS Sensor	White/白色

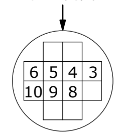
Motor /电机

A	Red/红色
$\overline{A}$	Yellow/黄色
B	Blue/蓝色
$\overline{B}$	Orange/橙色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1) 裸线
2) 广濑RP17-13J-12SC
3) EI连接器(Tyco Electronics制造)
6芯(172211-6、电机)+4芯(172211-4、传感器)

Connector choice
Please designate connector type below.
No connector if there is no designation.
1) None (Bare)
2) RP17-13J-12SC (HIROSE)
3) EI-Connector (Tyco Electronics)
(172211-6 pins for Motor + 172211-4 pins for Sensor)

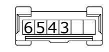
Upper side（white dot）
上侧（白圈）



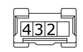
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP17连接器规格

1	None 无
2	None 无
3	Stepping Motor A (Red/红色)
4	Stepping Motor $\overline{A}$ (Yellow/黄色)
5	Stepping Motor B (Blue/蓝色)
6	Stepping Motor $\overline{B}$ (Orange/橙色)
7	None 无
8	COM (Black/黑色)
9	Short circuit with No.8 与8号短路
10	ORGLS Senser/传感器 NC (White/白色)
11	None 无
12	None 无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	None 无
2	None 无
3	Stepping Motor A (Red/红色)
4	Stepping Motor $\overline{A}$ (Yellow/黄色)
5	Stepping Motor B (Blue/蓝色)
6	Stepping Motor $\overline{B}$ (Orange/橙色)

1	None 无
2	COM (Black/黑色)
3	Short circuit with No.2 与2号短路
4	ORGLS Senser/传感器 NC (White/白色)

注释
1) 加减速率为推荐值。
2) 使用时不得出现结露现象。
3) 容许力矩是其它方向没有负荷时的值。
4) 分解度为整步时的值。
5) 导线为裸线及右出时的型号。
6) 低速时，原点恢复的过程中的振动可能会有些偏大。

Note
1) Acceleration & deceleration rate is our recommendation.
2) There should be no condensation when using.
3) Permissible Moment is the number when no load in other direction.
4) Resolution represents the values for full step.
5) Model number is for no-connector and lead wire is set on right side on Motor.
6) Vibration may increase at low speed or zero return.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N	Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-G010-020MNR	20	1	5	133.5	84	37	1	4	29.4	19.6	3～20	210
FAS-G010-040MNR	40	1	5	153.5	104	57	1	4	29.4	19.6	3～20	230
FAS-G020-040MNR		2	10						29.4	19.6	6～40	
FAS-G060-040MNR		6	30						19.6	2.94	18～120	
FAS-G100-040MNR		10	50						19.6	2.94	30～200	
FAS-G010-080MNR	80	1	5	193.5	144	97	2	6	29.4	19.6	3～20	275
FAS-G020-080MNR		2	10						29.4	19.6	6～40	
FAS-G060-080MNR		6	30						19.6	2.94	18～120	
FAS-G100-080MNR		10	50						19.6	2.94	30～200	
FAS-G060-120MNR	120	6	30	233.5	184	137	3	8	19.6	2.94	18～120	315
FAS-G100-120MNR		10	50						19.6	2.94	30～200	
FAS-G060-160MNR	160	6	30	273.5	224	177	4	10	19.6	2.94	18～120	360
FAS-G100-160MNR		10	50						19.6	2.94	30～200	
FAS-G060-200MNR	200	6	30	313.5	264	217	5	12	19.6	2.94	18～120	400
FAS-G100-200MNR		10	50						19.6	2.94	30～200	

注)有关与推荐的驱动器(SD4030B)的接线，请参照第G133页。
Note) Refer to page G133 for connection diagram of recommended Driver (SD4030B).

Common Specifications 通用规格	
Repeatability 重复定位精度	Max. ±0.005mm
Lost Motion 空转	Max. 0.005 mm
Body Material 本体材质	Aluminum 铝
Sliding guide 导向结构	Slide Guide rail 滑动导轨(1列)
Sensor 传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min. 50ms / kHz 50ms / kHz 及以上

Permissible Moment 容许力矩	
Pitching 俯仰 Mp	0.10Nm
Yawing 偏转 My	0.09Nm
Rolling 滚压 Mr	0.23Nm

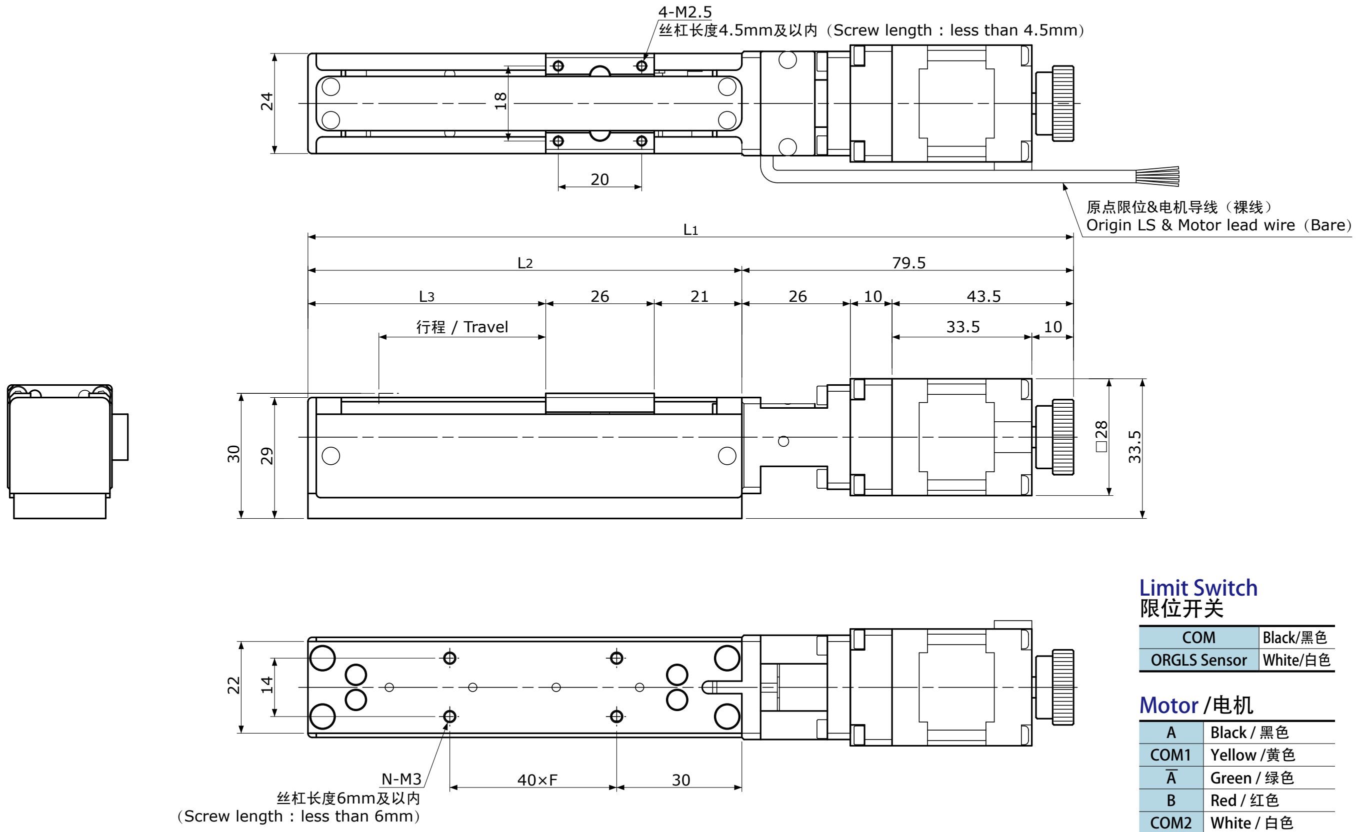
Lubrication 润滑	Grease 油脂 MSG No.2 (KSS)
Operating Temp. 使用温度范围	0～40°C

Miniature Actuator 微型执行器篇

2-phase Stepping Motor (Uni-polar 0.95A / phase & □28) with Resin Lead Screw type Actuator

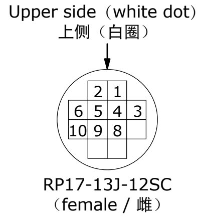
附带2相 步进电机(单极 0.95A / 相　□28)的树脂螺母滑动丝杠型执行器

Motor Model / 电机型号：TS3641N11E2 (Double shaft / 双轴)
TAMAGAWA SEIKI / 多摩川精机
推荐驱动/Driver recommendation : KS9110



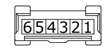
连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1) 裸线
2) 广濑RP17-13J-12SC
3) EI连接器(Tyco Electronics制造)
6芯(172211-6、电机)+4芯(172211-4、传感器)

Connector choice
Please designate connector type below.
No connector if there is no designation.
1) None (Bare)
2) RP17-13J-12SC (HIROSE)
3) EI-Connector (Tyco Electronics)
(172211-6 pins for Motor + 172211-4 pins for Sensor)

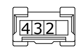


HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor COM1 (Yellow/黄色)
2	Stepping Motor COM2 (White/白色)
3	Stepping Motor A (Black/黑色)
4	Stepping Motor $\overline{A}$ (Green/绿色)
5	Stepping Motor B (Red/红色)
6	Stepping Motor $\overline{B}$ (Blue/蓝色)
7	None　无
8	COM (Black/黑色)
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC (White/白色)
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	Stepping Motor COM1 (Yellow/黄色)
2	Stepping Motor COM2 (White/白色)
3	Stepping Motor A (Black/黑色)
4	Stepping Motor $\overline{A}$ (Green/绿色)
5	Stepping Motor B (Red/红色)
6	Stepping Motor $\overline{B}$ (Blue/蓝色)

1	None　无
2	COM (Black/黑色)
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC (White/白色)

Limit Switch
限位开关

COM	Black/黑色
ORGLS Sensor	White/白色

Motor /电机

A	Black / 黑色
COM1	Yellow /黄色
$\overline{A}$	Green / 绿色
B	Red / 红色
COM2	White / 白色
$\overline{B}$	Blue / 蓝色

注释
1) 加减速率为推荐值。
2) 使用时不得出现结露现象。
3) 容许力矩是其它方向没有负荷时的值。
4) 分解度为整步时的值。
5) 导线为裸线及右出时的型号。

Note
1) Acceleration & deceleration rate is our recommendation.
2) There should be no condensation when using.
3) Permissible Moment is the number when no load in other direction.
4) Resolution represents the values for full step.
5) Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N	Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-Re020-040TNR	40	2	10	183.5	104	57	1	4	9.8	4.9	4～30	270
FAS-Re060-040TNR		6	30						9.8	4.9	12～90	
FAS-Re090-040TNR		9	45						9.8	4.9	20～135	
FAS-Re020-080TNR	80	2	10	223.5	144	97	2	6	9.8	4.9	4～30	315
FAS-Re060-080TNR		6	30						9.8	4.9	12～90	
FAS-Re090-080TNR		9	45						9.8	4.9	20～135	
FAS-Re060-120TNR	120	6	30	263.5	184	137	3	8	9.8	4.9	12～90	355
FAS-Re090-120TNR		9	45						9.8	4.9	20～135	
FAS-Re060-160TNR	160	6	30	303.5	224	177	4	10	9.8	4.9	12～90	400
FAS-Re090-160TNR		9	45						9.8	4.9	20～135	
FAS-Re060-200TNR	200	6	30	343.5	264	217	5	12	9.8	4.9	12～90	440
FAS-Re090-200TNR		9	45						9.8	4.9	20～135	

注1) 树脂螺母滑动丝杠型的润滑规定是滑动丝杠部为Sumitec Liquid H20，导杆部为油脂MSG No.2。
注2) 有关与推荐的驱动器(KS9110)的接线，请参照第G134页。
Note 1) In case of Resin Lead Screw type, Lubrication is Sumitec Liquid H20 on Resin Lead Screw, Grease MSG No.2 on Guide.
Note 2) Refer to page G134 for connection diagram of recommended Driver (KS9110).

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.05mm
Lost Motion　空转	Max. 0.05mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨(1列)
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.05mm
Acceleration & Deceleration Rate 加减速率	Min. 100ms / kHz 100ms / kHz 及以上

Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

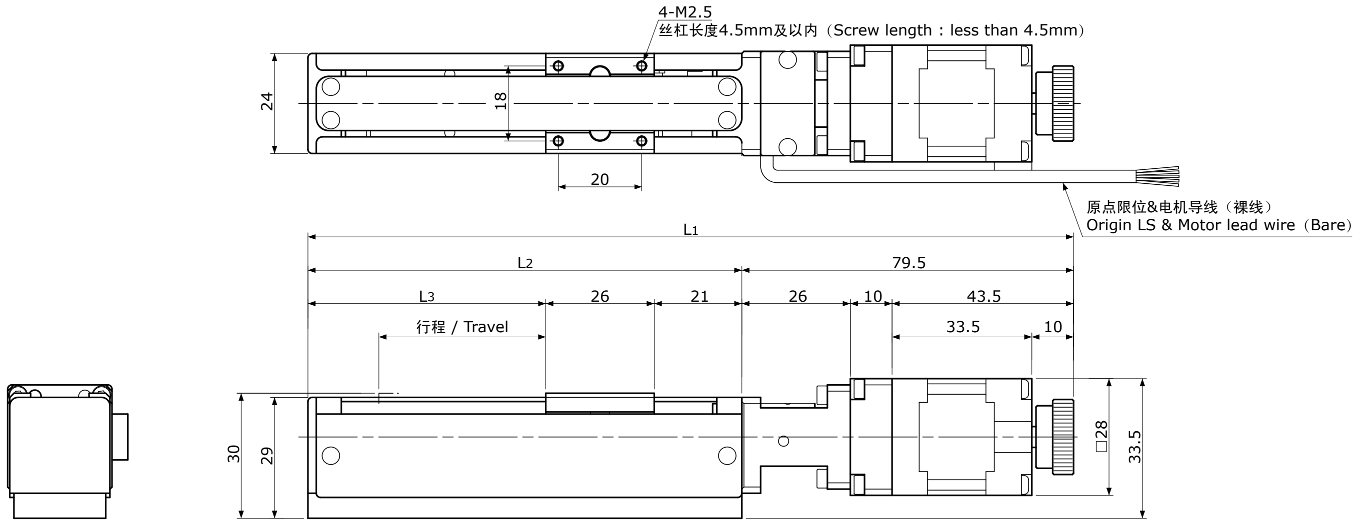
Lubrication　润滑	See Note　参照注释
Operating Temp.　使用温度范围	0～40゜C

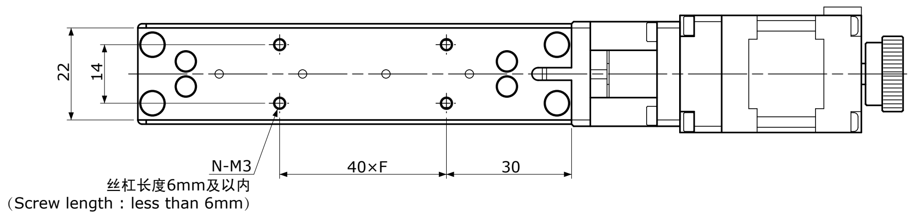
Miniature Actuator 微型执行器篇

2-phase Stepping Motor (Uni-polar 0.95A / phase & □28) with Rolled Ball Screw type Actuator

附带2相 步进电机（单极 0.95A / 相　□28）的冷轧滚珠丝杠型执行器

Motor Model / 电机型号：TS3641N11E2（Double shaft / 双轴）
TAMAGAWA SEIKI / 多摩川精机
推荐驱动 / Driver recommendation：KS9110





Limit Switch
限位开关

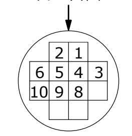
COM	Black/黑色
ORGLS Sensor	White/白色

Motor /电机

A	Black / 黑色
COM1	Yellow / 黄色
$\bar{A}$	Green / 绿色
B	Red / 红色
COM2	White / 白色
$\bar{B}$	Blue / 蓝色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1）裸线
2）广濑RP17-13J-12SC
3）EI连接器（Tyco Electronics制造）
6芯（172211-6、电机）+4芯（172211-4、传感器）

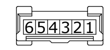
Connector choice
Please designate connector type below.
No connector if there is no designation.
1）None（Bare）
2）RP17-13J-12SC（HIROSE）
3）EI-Connector（Tyco Electronics）
（172211-6 pins for Motor +
172211-4 pins for Sensor）



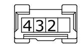
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor COM1（Yellow/黄色）
2	Stepping Motor COM2（White/白色）
3	Stepping Motor A（Black/黑色）
4	Stepping Motor $\bar{A}$（Green/绿色）
5	Stepping Motor B（Red/红色）
6	Stepping Motor $\bar{B}$（Blue/蓝色）
7	None　无
8	COM（Black/黑色）
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC（White/白色）
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	Stepping Motor COM1（Yellow/黄色）
2	Stepping Motor COM2（White/白色）
3	Stepping Motor A（Black/黑色）
4	Stepping Motor $\bar{A}$（Green/绿色）
5	Stepping Motor B（Red/红色）
6	Stepping Motor $\bar{B}$（Blue/蓝色）

1	None　无
2	COM（Black/黑色）
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC（White/白色）

注释
1）加减速率为推荐值。
2）使用时不得出现结露现象。
3）容许力矩是其它方向没有负荷时的值。
4）分解度为整步时的值。
5）导线为裸线及右出时的型号。

Note
1）Acceleration & deceleration rate is our recommendation.
2）There should be no condensation when using.
3）Permissible Moment is the number when no load in other direction.
4）Resolution represents the values for full step.
5）Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N	Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-R010-020TNR	20	1	5	163.5	84	37	1	4	29.4	19.6	2～25	275
FAS-R010-040TNR	40	1	5	183.5	104	57	1	4	29.4	19.6	2～25	295
FAS-R020-040TNR		2	10						29.4	19.6	4～50	
FAS-R060-040TNR		6	30						19.6	9.8	12～150	
FAS-R100-040TNR		10	50						19.6	4.9	20～250	
FAS-R010-080TNR	80	1	5	223.5	144	97	2	6	29.4	19.6	2～25	340
FAS-R020-080TNR		2	10						29.4	19.6	4～50	
FAS-R060-080TNR		6	30						19.6	9.8	12～150	
FAS-R100-080TNR		10	50						19.6	4.9	20～250	
FAS-R060-120TNR	120	6	30	263.5	184	137	3	8	19.6	9.8	12～150	380
FAS-R100-120TNR		10	50						19.6	4.9	20～250	
FAS-R060-160TNR	160	6	30	303.5	224	177	4	10	19.6	9.8	12～150	425
FAS-R100-160TNR		10	50						19.6	4.9	20～250	
FAS-R060-200TNR	200	6	30	343.5	264	217	5	12	19.6	9.8	12～150	465
FAS-R100-200TNR		10	50						19.6	4.9	20～250	

注）有关与推荐的驱动器（KS9110）的接线，请参照第G134页。
Note）Refer to page G134 for connection diagram of recommended Driver（KS9110）.

Common Specifications 通用规格	
Repeatability 重复定位精度	Max. ±0.01mm
Lost Motion 空转	Max. 0.01mm
Body Material 本体材质	Aluminum 铝
Sliding guide 导向结构	Slide Guide rail 滑动导轨（1列）
Sensor 传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min. 50ms / kHz 50ms / kHz 及以上

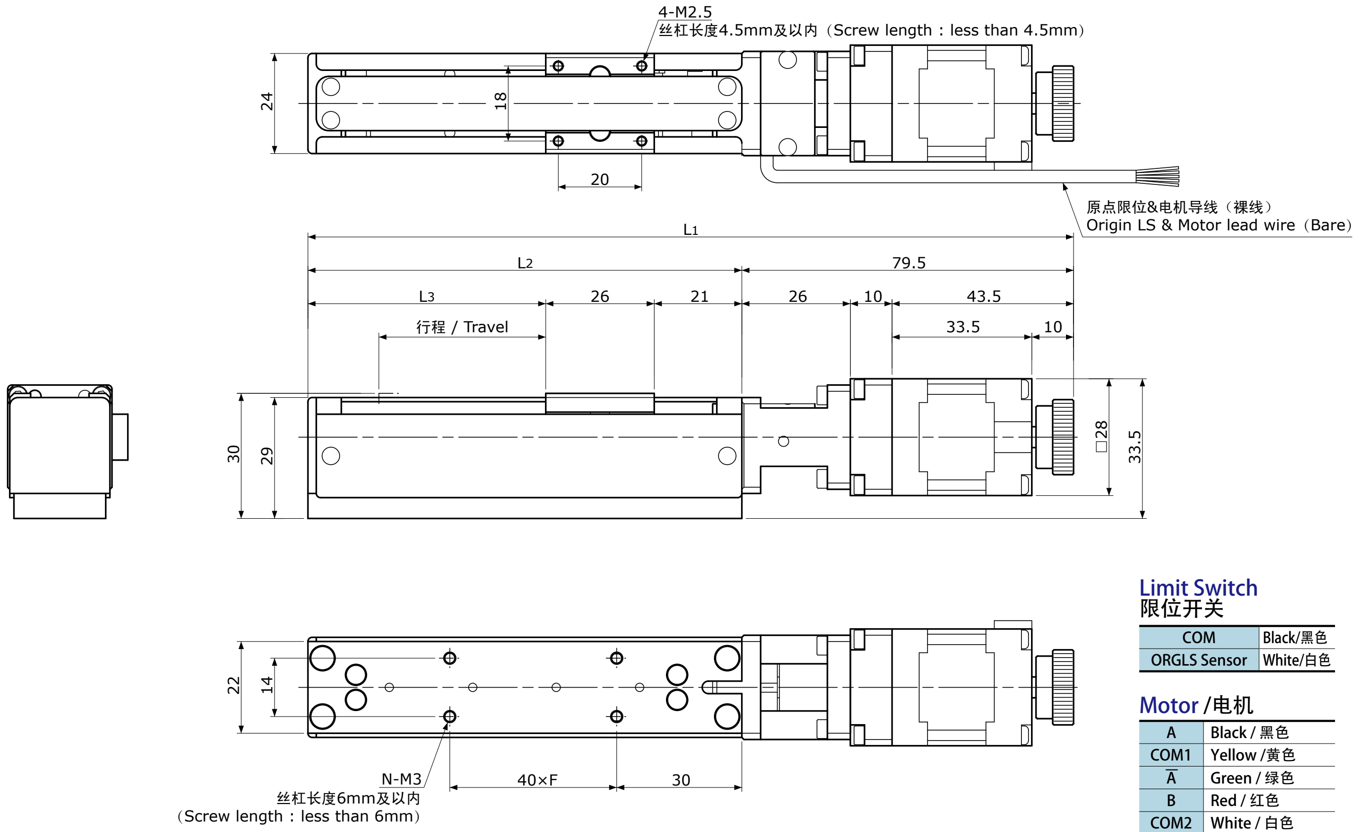
Permissible Moment 容许力矩	
Pitching 俯仰 Mp	0.10Nm
Yawing 偏转 My	0.09Nm
Rolling 滚压 Mr	0.23Nm

Lubrication 润滑	Grease 油脂 MSG No.2（KSS）
Operating Temp. 使用温度范围	0～40°C

2-phase Stepping Motor (Uni-polar 0.95A / phase & □28) with Precision Ball Screw type Actuator

附带2相 步进电机（单极 0.95A / 相 □28）的精密滚珠丝杠型执行器

Motor Model / 电机型号：TS3641N11E2（Double shaft / 双轴）
TAMAGAWA SEIKI / 多摩川精机
推荐驱动/Driver recommendation：KS9110



Limit Switch
限位开关

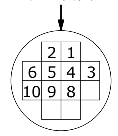
COM	Black/黑色
ORGLS Sensor	White/白色

Motor /电机

A	Black / 黑色
COM1	Yellow / 黄色
$\bar{A}$	Green / 绿色
B	Red / 红色
COM2	White / 白色
$\bar{B}$	Blue / 蓝色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1）裸线
2）广濑RP17-13J-12SC
3）EI连接器（Tyco Electronics制造）
6芯（172211-6、电机）+4芯（172211-4、传感器）

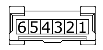
Connector choice
Please designate connector type below.
No connector if there is no designation.
1）None（Bare）
2）RP17-13J-12SC（HIROSE）
3）EI-Connector（Tyco Electronics）
（172211-6 pins for Motor + 172211-4 pins for Sensor）



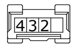
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor COM1（Yellow/黄色）
2	Stepping Motor COM2（White/白色）
3	Stepping Motor A（Black/黑色）
4	Stepping Motor $\bar{A}$（Green/绿色）
5	Stepping Motor B（Red/红色）
6	Stepping Motor $\bar{B}$（Blue/蓝色）
7	None 无
8	COM（Black/黑色）
9	Short circuit with No.8 与8号短路
10	ORGLS Senser/传感器 NC（White/白色）
11	None 无
12	None 无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	Stepping Motor COM1（Yellow/黄色）
2	Stepping Motor COM2（White/白色）
3	Stepping Motor A（Black/黑色）
4	Stepping Motor $\bar{A}$（Green/绿色）
5	Stepping Motor B（Red/红色）
6	Stepping Motor $\bar{B}$（Blue/蓝色）

1	None 无
2	COM（Black/黑色）
3	Short circuit with No.2 与2号短路
4	ORGLS Senser/传感器 NC（White/白色）

注释
1）加减速率为推荐值。
2）使用时不得出现结露现象。
3）容许力矩是其它方向没有负荷时的值。
4）分解度为整步时的值。
5）导线为裸线及右出时的型号。

Note
1）Acceleration & deceleration rate is our recommendation.
2）There should be no condensation when using.
3）Permissible Moment is the number when no load in other direction.
4）Resolution represents the values for full step.
5）Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N		Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-G010-020TNR	20	1	5	163.5	84	37	1	4		29.4	19.6	2～25	275
FAS-G010-040TNR	40	1	5	183.5	104	57	1	4		29.4	19.6	2～25	295
FAS-G020-040TNR		2	10							29.4	19.6	4～50	
FAS-G060-040TNR		6	30							19.6	9.8	12～150	
FAS-G100-040TNR		10	50							19.6	4.9	20～250	
FAS-G010-080TNR	80	1	5	223.5	144	97	2	6		29.4	19.6	2～25	340
FAS-G020-080TNR		2	10							29.4	19.6	4～50	
FAS-G060-080TNR		6	30							19.6	9.8	12～150	
FAS-G100-080TNR		10	50							19.6	4.9	20～250	
FAS-G060-120TNR	120	6	30	263.5	184	137	3	8		19.6	9.8	12～150	380
FAS-G100-120TNR		10	50							19.6	4.9	20～250	
FAS-G060-160TNR	160	6	30	303.5	224	177	4	10		19.6	9.8	12～150	425
FAS-G100-160TNR		10	50							19.6	4.9	20～250	
FAS-G060-200TNR	200	6	30	343.5	264	217	5	12		19.6	9.8	12～150	465
FAS-G100-200TNR		10	50							19.6	4.9	20～250	

注）有关与推荐的驱动器（KS9110）的接线，请参照第G134页。
Note）Refer to page G134 for connection diagram of recommended Driver（KS9110）.

Common Specifications 通用规格	
Repeatability 重复定位精度	Max. ±0.005mm
Lost Motion 空转	Max. 0.005mm
Body Material 本体材质	Aluminum 铝
Sliding guide 导向结构	Slide Guide rail 滑动导轨（1列）
Sensor 传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min. 50ms / kHz 50ms / kHz 及以上

Permissible Moment 容许力矩	
Pitching 俯仰 Mp	0.10Nm
Yawing 偏转 My	0.09Nm
Rolling 滚压 Mr	0.23Nm

Lubrication 润滑	Grease 油脂 MSG No.2（KSS）
Operating Temp. 使用温度范围	0～40°C

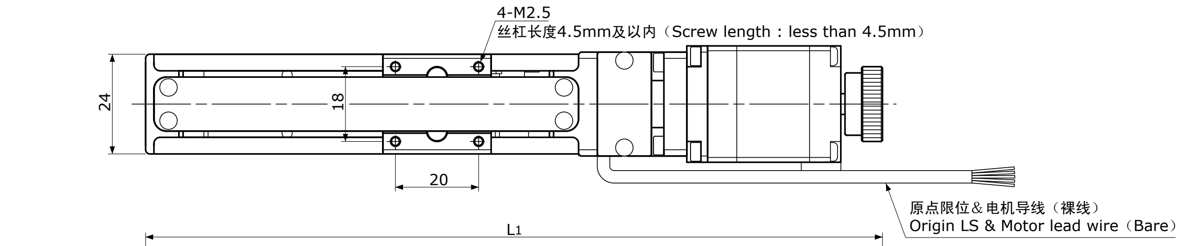
Miniature Actuator 微型执行器篇

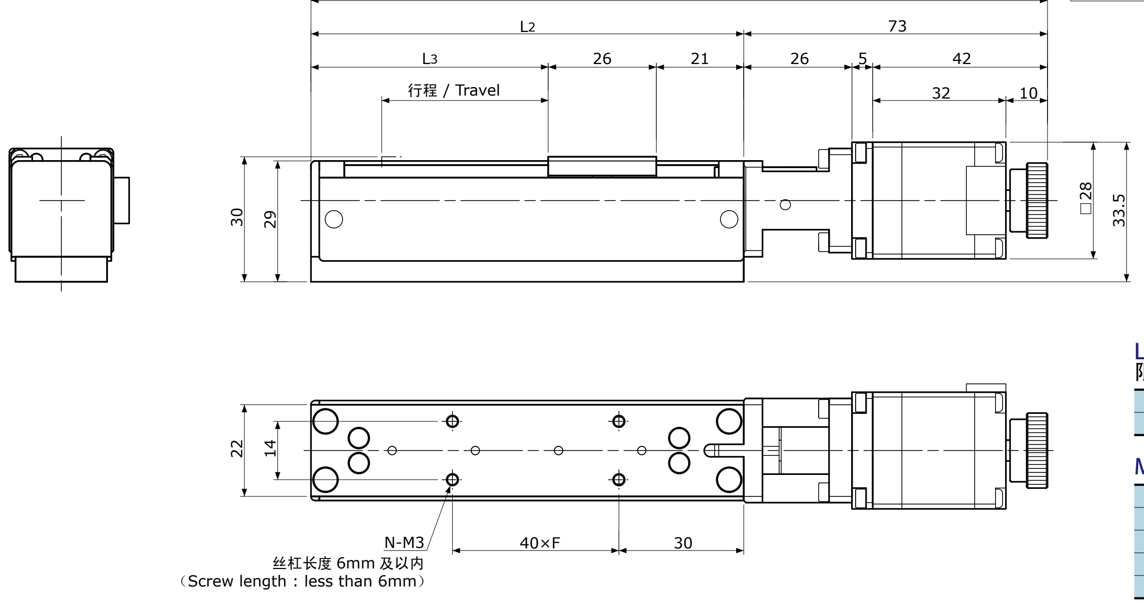
Miniature Actuator 微型执行器篇

5-phase Stepping Motor (0.75A / phase & □28) with Resin Lead Screw type Actuator

附带5相 步进电机(0.75A / 相　□28)的 树脂螺母滑动丝杠型执行器

Motor Model / 电机型号：PK523HPB (Double shaft / 双轴)
Oriental Motor / 东方马达
推荐驱动 / Driver recommendation : KR-A5CC KR-A55MC





Limit Switch
限位开关

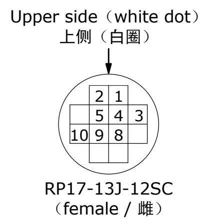
COM	Black/黑色
ORGLS Sensor	White/白色

Motor /电机

1	Blue / 蓝色
2	Red / 红色
3	Orange / 橙色
4	Green / 绿色
5	Black / 黑色

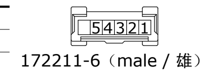
连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1) 裸线
2) 广濑RP17-13J-12SC
3) EI连接器(Tyco Electronics制造)
6芯(172211-6、电机)+4芯(172211-4、传感器)

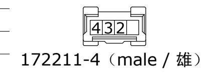
Connector choice
Please designate connector type below.
No connector if there is no designation.
1) None (Bare)
2) RP17-13J-12SC (HIROSE)
3) EI-Connector (Tyco Electronics)
(172211-6 pins for Motor + 172211-4 pins for Sensor)



HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor (Blue/蓝色)
2	Stepping Motor (Red/红色)
3	Stepping Motor (Orange/橙色)
4	Stepping Motor (Green/绿色)
5	Stepping Motor (Black/黑色)
6	None　无
7	None　无
8	COM (Black/黑色)
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC (White/白色)
11	None　无
12	None　无





EI Connector
EI连接器规格

1	Stepping Motor (Blue/蓝色)
2	Stepping Motor (Red/红色)
3	Stepping Motor (Orange/橙色)
4	Stepping Motor (Green/绿色)
5	Stepping Motor (Black/黑色)
6	None　无

1	None　无
2	COM (Black/黑色)
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC (White/白色)

注释
1) 加减速率为推荐值。
2) 使用时不得出现结露现象。
3) 容许力矩是其它方向没有负荷时的值。
4) 分解度为整步时的值。
5) 导线为裸线及右出时的型号。

Note
1) Acceleration & deceleration rate is our recommendation.
2) There should be no condensation when using.
3) Permissible Moment is the number when no load in other direction.
4) Resolution represents the values for full step.
5) Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N		Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-Re020-040ENR	40	2	4	177	104	57	1	4		9.8	4.9	0～30	260
FAS-Re060-040ENR		6	12							9.8	4.9	0～90	
FAS-Re090-040ENR		9	18							9.8	4.9	0～135	
FAS-Re020-080ENR	80	2	4	217	144	97	2	6		9.8	4.9	0～30	305
FAS-Re060-080ENR		6	12							9.8	4.9	0～90	
FAS-Re090-080ENR		9	18							9.8	4.9	0～135	
FAS-Re060-120ENR	120	6	12	257	184	137	3	8		9.8	4.9	0～90	345
FAS-Re090-120ENR		9	18							9.8	4.9	0～135	
FAS-Re060-160ENR	160	6	12	297	224	177	4	10		9.8	4.9	0～90	390
FAS-Re090-160ENR		9	18							9.8	4.9	0～135	
FAS-Re060-200ENR	200	6	12	337	264	217	5	12		9.8	4.9	0～90	430
FAS-Re090-200ENR		9	18							9.8	4.9	0～135	

注1) 树脂螺母滑动丝杠型的润滑规定是滑动丝杠部为Sumitec Liquid H20，导杆部为油脂MSG No.2。
注2) 有关与推荐的驱动器(KR-A5CC、KR-A55MC)的接线，请参照第G135、G136页。
Note 1) In case of Resin Lead Screw type, Lubrication is Sumitec Liquid H20 on Resin Lead Screw, Grease MSG No.2 on Guide.
Note 2) Refer to page G135 or G136 for connection diagrams of recommended Driver (KR-A5CC, KR-A55MC).

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.05mm
Lost Motion　空转	Max. 0.05mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨(1列)
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.05mm
Acceleration & Deceleration Rate 加减速率	Min. 40ms / kHz 40ms / kHz 及以上

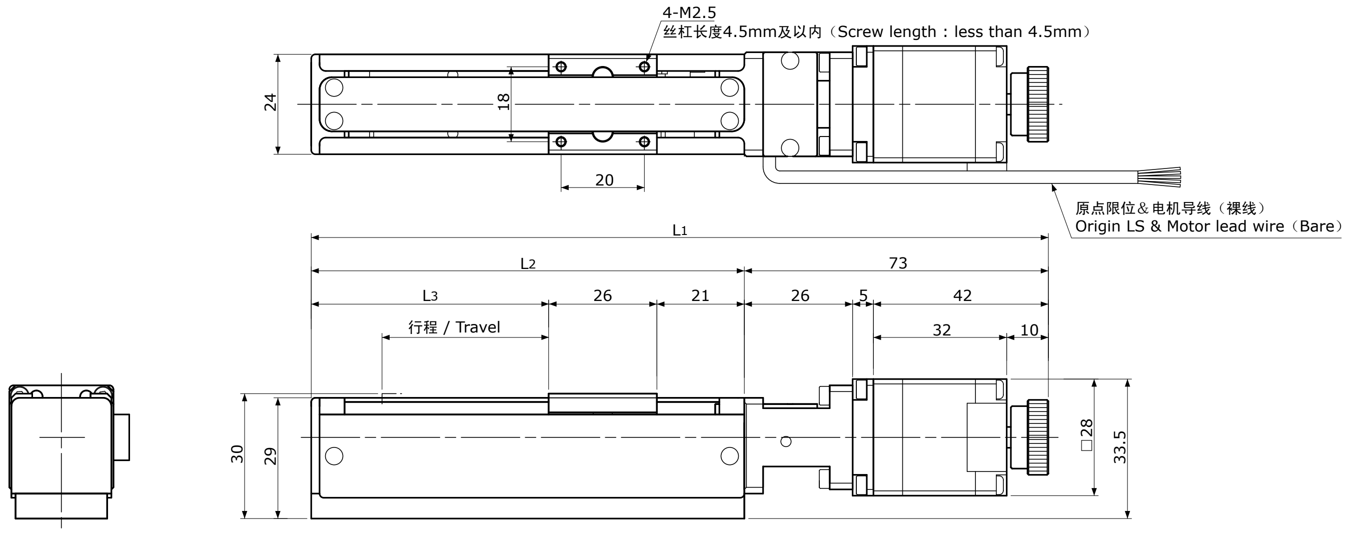
Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

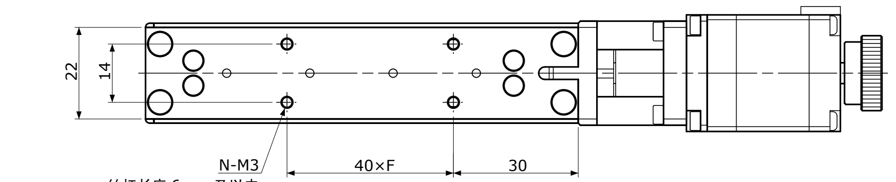
Lubrication　润滑	See Note　参照注释
Operating Temp.　使用温度范围	0～40° C

5-phase Stepping Motor (0.75A / phase & □28) with Rolled Ball Screw type Actuator

附带5相 步进电机(0.75A / 相　□28)的冷轧滚珠丝杠型执行器

Motor Model / 电机型号：PK523HPB (Double shaft / 双轴)
Oriental Motor / 东方马达
推荐驱动 / Driver recommendation：KR-A5CC KR-A55MC





Limit Switch
限位开关

COM	Black/黑色
ORGLS Sensor	White/白色

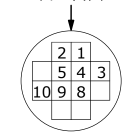
Motor /电机

1	Blue / 蓝色
2	Red / 红色
3	Orange / 橙色
4	Green / 绿色
5	Black / 黑色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1) 裸线
2) 广濑RP17-13J-12SC
3) EI连接器(Tyco Electronics制造)
6芯(172211-6、电机)+4芯(172211-4、传感器)

Connector choice
Please designate connector type below.
No connector if there is no designation.
1) None (Bare)
2) RP17-13J-12SC (HIROSE)
3) EI-Connector (Tyco Electronics)
(172211-6 pins for Motor + 172211-4 pins for Sensor)

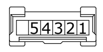
Upper side（white dot）
上侧（白圈）



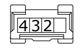
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor (Blue/蓝色)
2	Stepping Motor (Red/红色)
3	Stepping Motor (Orange/橙色)
4	Stepping Motor (Green/绿色)
5	Stepping Motor (Black/黑色)
6	None　无
7	None　无
8	COM (Black/黑色)
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC (White/白色)
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	Stepping Motor (Blue/蓝色)
2	Stepping Motor (Red/红色)
3	Stepping Motor (Orange/橙色)
4	Stepping Motor (Green/绿色)
5	Stepping Motor (Black/黑色)
6	None　无

1	None　无
2	COM (Black/黑色)
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC (White/白色)

注释
1) 加减速率为推荐值。
2) 使用时不得出现结露现象。
3) 容许力矩是其它方向没有负荷时的值。
4) 分解度为整步时的值。
5) 导线为裸线及右出时的型号。

Note
1) Acceleration & deceleration rate is our recommendation.
2) There should be no condensation when using.
3) Permissible Moment is the number when no load in other direction.
4) Resolution represents the values for full step.
5) Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm)						Max. Load Capacity 最大可搬负载 (N)		Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
				L1	L2	L3	F	N		Hor. 水平	Vert. 垂直		
FAS-R010-020ENR	20	1	2	157	84	37	1	4		29.4	19.6	0～25	265
FAS-R010-040ENR	40	1	2	177	104	57	1	4		29.4	19.6	0～25	285
FAS-R020-040ENR		2	4							29.4	19.6	0～50	
FAS-R060-040ENR		6	12							19.6	4.9	0～150	
FAS-R100-040ENR		10	20							19.6	4.9	0～250	
FAS-R010-080ENR	80	1	2	217	144	97	2	6		29.4	19.6	0～25	330
FAS-R020-080ENR		2	4							29.4	19.6	0～50	
FAS-R060-080ENR		6	12							19.6	4.9	0～150	
FAS-R100-080ENR		10	20							19.6	4.9	0～250	
FAS-R060-120ENR	120	6	12	257	184	137	3	8		19.6	4.9	0～150	370
FAS-R100-120ENR		10	20							19.6	4.9	0～250	
FAS-R060-160ENR	160	6	12	297	224	177	4	10		19.6	4.9	0～150	415
FAS-R100-160ENR		10	20							19.6	4.9	0～250	
FAS-R060-200ENR	200	6	12	337	264	217	5	12		19.6	4.9	0～150	455
FAS-R100-200ENR		10	20							19.6	4.9	0～250	

注)有关与推荐的驱动器(KR-A5CC、KR-A55MC)的接线，请参照第G135、G136页。
Note) Refer to page G135 or G136 for connection diagrams of recommended Driver (KR-A5CC, KR-A55MC).

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.01mm
Lost Motion　空转	Max. 0.01mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨(1列)
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min.20ms / kHz 20ms / kHz 以上

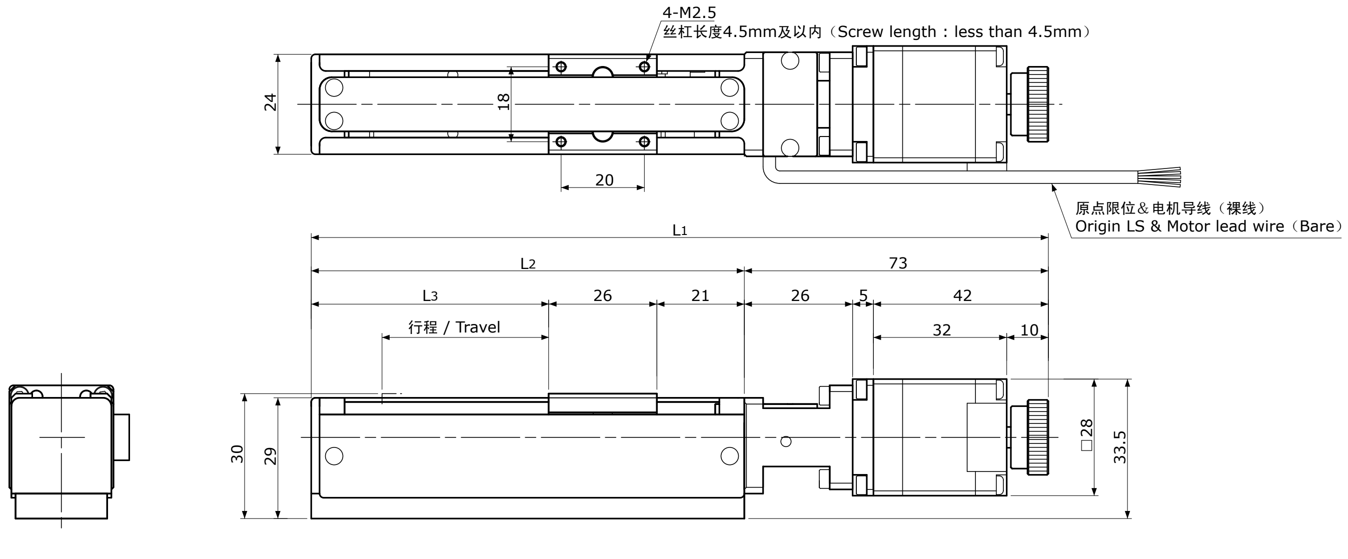
Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

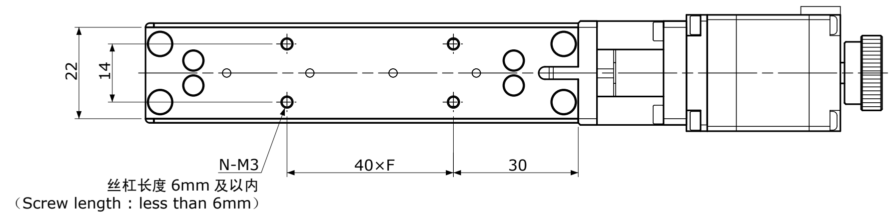
Lubrication　润滑	Grease 油脂	MSG No.2 (KSS)
Operating Temp.　使用温度范围	0～40°C	

5-phase Stepping Motor (0.75A / phase & □28) with Precision Ball Screw type Actuator

附带5相 步进电机（0.75A / 相　□28）的精密滚珠丝杠型执行器

Motor Model / 电机型号：PK523HPB（Double shaft / 双轴）
Oriental Motor / 东方马达
推荐驱动 / Driver recommendation：KR-A5CC KR-A55MC





Limit Switch
限位开关

COM	Black/黑色
ORGLS Sensor	White/白色

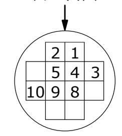
Motor /电机

1	Blue / 蓝色
2	Red / 红色
3	Orange / 橙色
4	Green / 绿色
5	Black / 黑色

连接器选择方案
请从下面指定连接器类型。
没有指示的采用裸线。
1）裸线
2）广濑RP17-13J-12SC
3）EI连接器（Tyco Electronics制造）
6芯（172211-6、电机）+4芯（172211-4、传感器）

Connector choice
Please designate connector type below.
No connector if there is no designation.
1）None（Bare）
2）RP17-13J-12SC（HIROSE）
3）EI-Connector（Tyco Electronics）
（172211-6 pins for Motor + 172211-4 pins for Sensor）

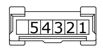
Upper side（white dot）
上側（白圈）



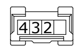
RP17-13J-12SC
（female / 雌）

HIROSE RP17 Connector
广濑RP 17连接器规格

1	Stepping Motor（Blue/蓝色）
2	Stepping Motor（Red/红色）
3	Stepping Motor（Orange/橙色）
4	Stepping Motor（Green/绿色）
5	Stepping Motor（Black/黑色）
6	None　无
7	None　无
8	COM（Black/黑色）
9	Short circuit with No.8　与8号短路
10	ORGLS Senser/传感器 NC（White/白色）
11	None　无
12	None　无



172211-6（male / 雄）



172211-4（male / 雄）

EI Connector
EI连接器规格

1	Stepping Motor（Blue/蓝色）
2	Stepping Motor（Red/红色）
3	Stepping Motor（Orange/橙色）
4	Stepping Motor（Green/绿色）
5	Stepping Motor（Black/黑色）
6	None　无

1	None　无
2	COM（Black/黑色）
3	Short circuit with No.2　与2号短路
4	ORGLS Senser/传感器 NC（White/白色）

注释
1）加减速率为推荐值。
2）使用时不得出现结露现象。
3）容许力矩是其它方向没有负荷时的值。
4）分解度为整步时的值。
5）导线为裸线及右出时的型号。

Note
1）Acceleration & deceleration rate is our recommendation.
2）There should be no condensation when using.
3）Permissible Moment is the number when no load in other direction.
4）Resolution represents the values for full step.
5）Model number is for no-connector and lead wire is set on right side on Motor.

Model Number 执行器型号	Travel 行程 (mm)	Screw Lead 丝杠导程 (mm)	Resolution 分解度 (μm)	Length 长度尺寸 (mm) L1	L2	L3	F	N	Max. Load Capacity 最大可搬负载 (N) Hor. 水平	Vert. 垂直	Permissible speed 容许速度 (mm / sec)	Mass 质量 (g)
FAS-G010-020ENR	20	1	2	157	84	37	1	4	29.4	19.6	0～25	265
FAS-G010-040ENR	40	1	2	177	104	57	1	4	29.4	19.6	0～25	285
FAS-G020-040ENR		2	4						29.4	19.6	0～50	
FAS-G060-040ENR		6	12						19.6	4.9	0～150	
FAS-G100-040ENR		10	20						19.6	4.9	0～250	
FAS-G010-080ENR	80	1	2	217	144	97	2	6	29.4	19.6	0～25	330
FAS-G020-080ENR		2	4						29.4	19.6	0～50	
FAS-G060-080ENR		6	12						19.6	4.9	0～150	
FAS-G100-080ENR		10	20						19.6	4.9	0～250	
FAS-G060-120ENR	120	6	12	257	184	137	3	8	19.6	4.9	0～150	370
FAS-G100-120ENR		10	20						19.6	4.9	0～250	
FAS-G060-160ENR	160	6	12	297	224	177	4	10	19.6	4.9	0～150	415
FAS-G100-160ENR		10	20						19.6	4.9	0～250	
FAS-G060-200ENR	200	6	12	337	264	217	5	12	19.6	4.9	0～150	455
FAS-G100-200ENR		10	20						19.6	4.9	0～250	

注）有关与推荐的驱动器（KR-A5CC、KR-A55MC）的接线，请参照第G135、G136页。
Note）Refer to page G135 or G136 for connection diagrams of recommended Driver（KR-A5CC，KR-A55MC）.

Common Specifications 通用规格	
Repeatability　重复定位精度	Max. ±0.005mm
Lost Motion　空转	Max. 0.005mm
Body Material　本体材质	Aluminum　铝
Sliding guide　导向结构	Slide Guide rail 滑动导轨（1列）
Sensor　传感器	Limit switch 限位开关
Accuracy of Zero pt. return 原点恢复精度	Max. ±0.01mm
Acceleration & Deceleration Rate 加减速率	Min. 20ms / kHz 20ms / kHz 及以上

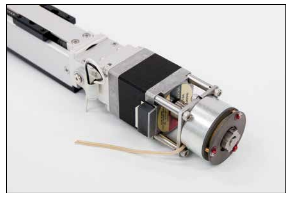
Permissible Moment 容许力矩	
Pitching　俯仰　Mp	0.10Nm
Yawing　偏转　My	0.09Nm
Rolling　滚压　Mr	0.23Nm

Lubrication　润滑	Grease 油脂　MSG No.2（KSS）
Operating Temp.　使用温度范围	0～40° C

●选项 / Option

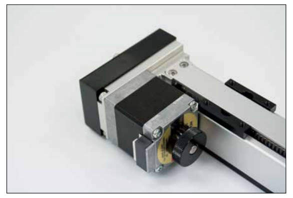
[电磁刹车单元 / Solenoid Brake Unit]

在纵轴上使用时，当切断电源后滚珠丝杠或者滑动丝杠有可能因为自重而掉落。
与电磁刹车单元并用可保持中间位置。
If Flex Actuators are operated in vertical position, Ball Screw / Lead Screw may fall down when its power is off. Solenoid Brake Unit is effective to maintain intermediate position.



[电机周边套件 / Motor side mounting kit]

想要缩短纵向尺寸时，可使用周边套件。这是由电机座、正时带轮、正时齿带、固定螺丝等组成的套件。由KSS提供安装服务。
This kit can shorten the Actuator length with side mounting Motor shown in Photo right. Motor mount, timing pulley, timing belt and set screws are included in this kit. KSS can assemble in accordance with your request.



[外装光电传感器 / Photo-micro sensor]

执行器上能够安装外装光电传感器。这是由传感设备、传感器导轨、光电传感器、安装盘、固定螺丝等组成的套件。由KSS提供安装服务。
Sensor accessories for the purpose of putting sensor outside Actuator. Sensor dog, sensor rail, photo sensor, sensor plate and set screws are included in this kit.
KSS can assemble in accordance with your request.

[油脂 / Grease]

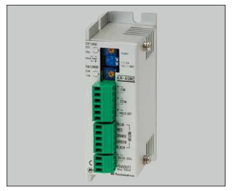
执行器(不含滑动丝杠型)上使用的KSS的原创油脂(MSGNo.2)。不会损伤微型滚珠丝杠的运作性，且润滑性能出色的油脂。请在油脂维护时使用。
KSS original Grease (MSG No.2) is used for KSS Flex Actuator series, except Lead Screw type. This Grease has high lubrication performance without deteriorating Ball Screw smooth movement. It would be useful for Grease maintenance to keep long term operation.

●配件 / Attachment

为了更加容易使用灵活可选执行器，KSS准备了标准驱动、中继电缆等配件。
KSS provides Standard Stepping Motor Driver and Extension Cable for Flex Actuators in order to make it easy to use.

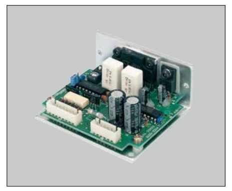
[标准驱动 / Stepping Motor Driver]

KR-A5CC
DC24V用5相步进电机用驱动。能够实现整步、半步切换。兼备了自动电流关闭功能。(第V102页)
This Driver is for 5-phase Stepping Motor operated by DC24V power supply. It has automatic current reduction circuits. You can choose full-step or half step function. (page V102)

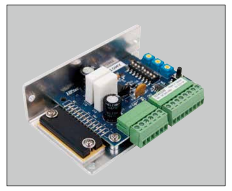


KR-A55MC
DC24V用5相步进电机用驱动。能够设定16种步进角，最大分割数为250分割的微步驱动。(第V103页)
Micro-Step Driver for 5-phase Stepping Motor with DC24V power supply. 16 step angle types can be set with up to 250 divisions. (page V103)

KS9110
多摩川精机制造的(2相 □28)步进电机用推荐驱动。通过变光开关能够实现整步、半步切换。(第V107页)
This is recommended 2-phase stepping Motor Driver for TAMAGAWA SEIKI with □28 size. It can be selected for Full-step or Half-step by Dip switch. (page V107)



SD4030B
美蓓亚电机制造的(2相 □25)步进电机用推荐驱动。能够设定8种步进角。(第V108页)
This is recommended 2-phase stepping Motor Driver for Minebea Motor with □25 size.
It has Micro-Step function with 8-step angle. (page V108)



[中继电缆]

KSS灵活可选执行器和KSS推荐驱动的专用电缆。
请按照下面的例子指定电缆种类，电缆长度和连接器形态。单侧为裸线，敬请注意。

[Extension Cable]

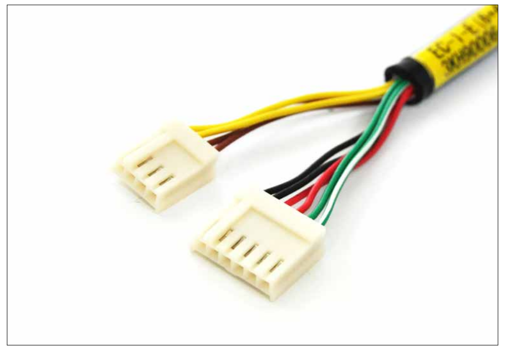
Extension Cable between KSS Flex Actuators and KSS recommended Stepping Motor Driver.
Please designate Cable type, Cable length and Connector type in accordance with the example below.
Please note that one side of Extension Cable is cut endge only (no connector).

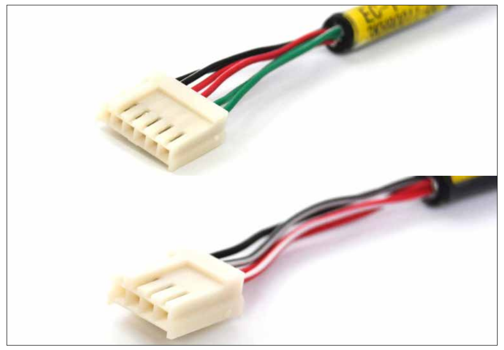
EC　R — 2 — E(6)
1　2　　3　　4

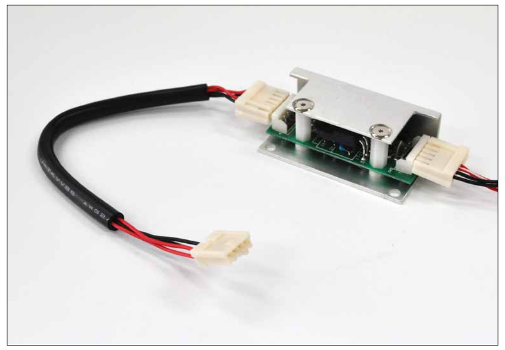
1 中继电缆符号
2 电缆种类
　无符号：普通电缆
　R　　：耐弯曲电缆
3 电缆长度(m)
4 连接器形态
　N　　　　　：裸线
　H　　　　　：广濑RP17
　E(6)　　　 ：EI 连接器 6芯(电机用)
　E(4)　　　 ：EI 连接器 4芯(传感器用)
　E(6+4)　　 ：EI 连接器 6+4芯(电机+传感器用)
　E(4)+SP4461：EI连接器4芯(传感器用)
　　　　　　　　+传感器放大器电路板(受光时ON)

1 Extension Cable
2 Cable type
　None　Normal type
　R　:Robot cable type
3 Cable length (m)
4 Connector type at both end
　N　: No connector (Cut only)
　H　: HIROSE RP17
　E(6)　: EI connector 6-pins (for Motor only)
　E(4)　: EI connector 4-pins (for Sensor only)
　E(6+4)　: EI connector 6+4-pins (for Motor & Sensor)
　E(4)+SP4461　: EI connector 4-pins (for Sensor) +Sensor Amplifier Board (Light-on)

H : HIROSE RP17 / 广濑RP17


E(6+4) : EI connector 6+4-pins / EI连接器 (6+4芯)


E(6) : EI connector 6-pins / EI连接器6芯
E(4) : EI connector 4-pins / EI连接器4芯


E(4) +SP4461 :
EI connector -4pins & Sensor Amplifier Board
EI连接器4芯+传感器放大器电路板

注)使用24V的传感器时，需要使用传感器放大器电路板。
Note) Sensor Amplifier Board is necessary, if you use sensor at 24V.

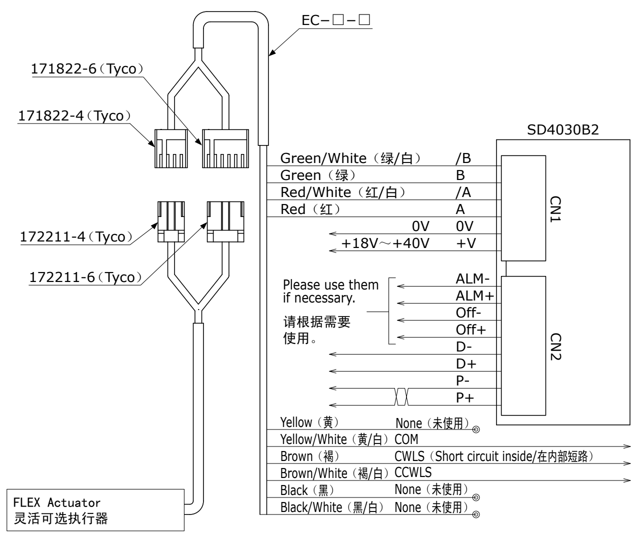
●驱动器接线图 / Connection diagrams

[SD4030B2接线图 / SD4030B2 Connection diagrams]

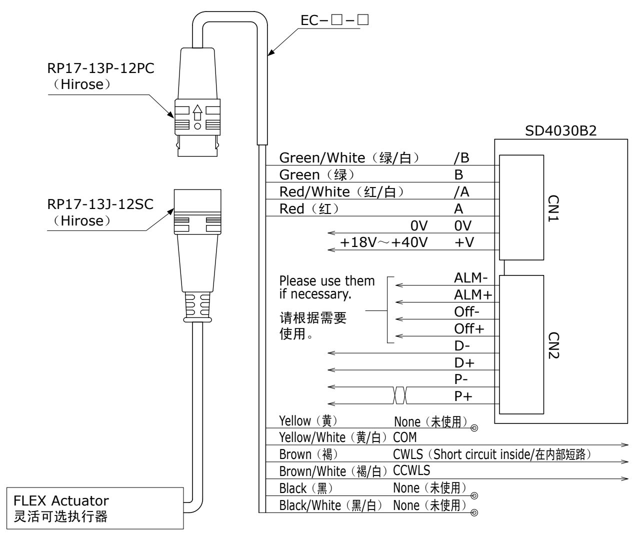
适用电机 / Applicable Motor
美蓓亚电机公司　10PM-K202B
Minebea Moter　10PM-K202B

■普通电缆 / Nomal Cable

[EI连接器/EI connector]

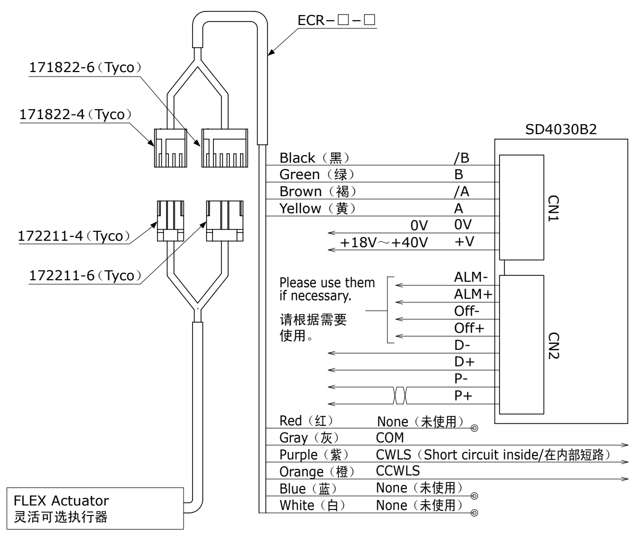


[广濑连接器/HIROSE connector]

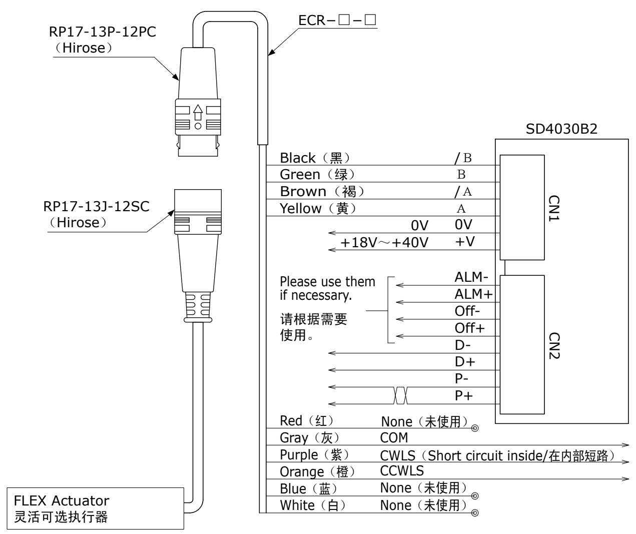


■机械手电缆 / Robot Cable

[EI连接器/EI connector]



[广濑连接器/HIROSE connector]

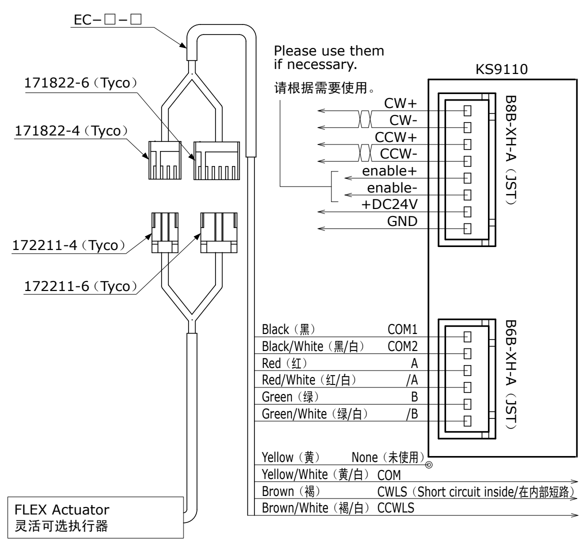


[KS9110接线图 / KS9110 Connection diagrams]

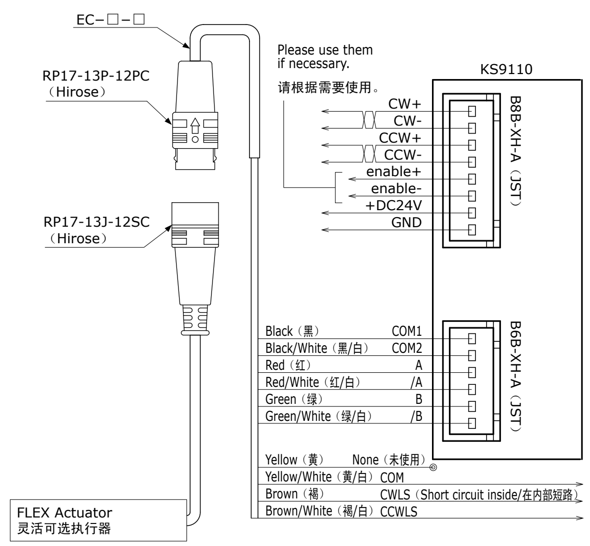
适用电机 / Applicable Motor
多摩川精机　TS3641N11E2
TAMAGAWA SEIKI　TS3641N11E2

■普通电缆 / Nomal Cable

[EI连接器/EI connector]

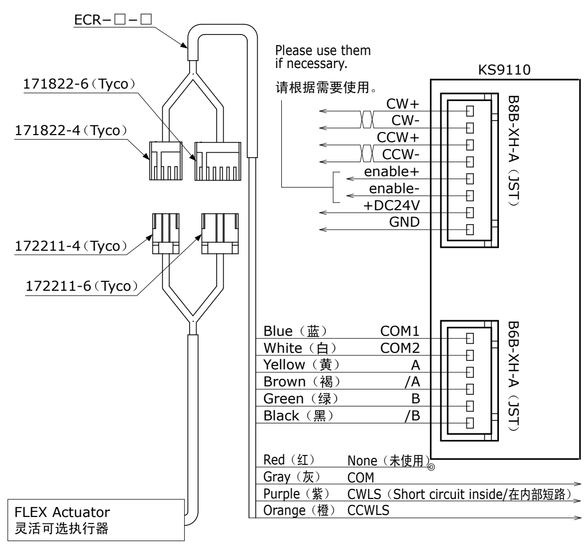


[广濑连接器/HIROSE connector]

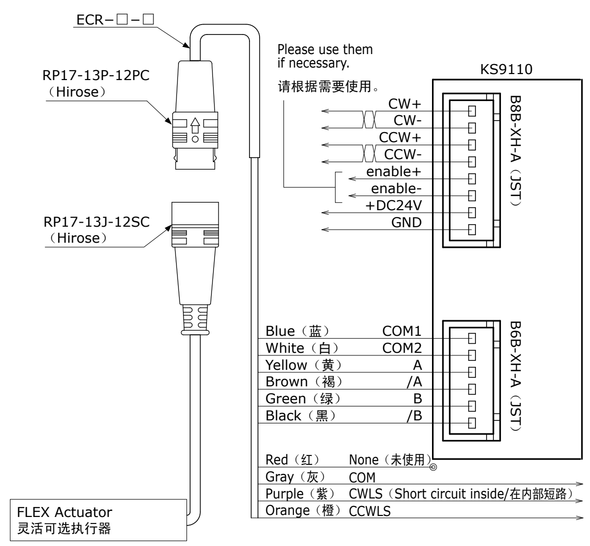


■机械手电缆 / Robot Cable

[EI连接器/EI connector]



[广濑连接器/HIROSE connector]



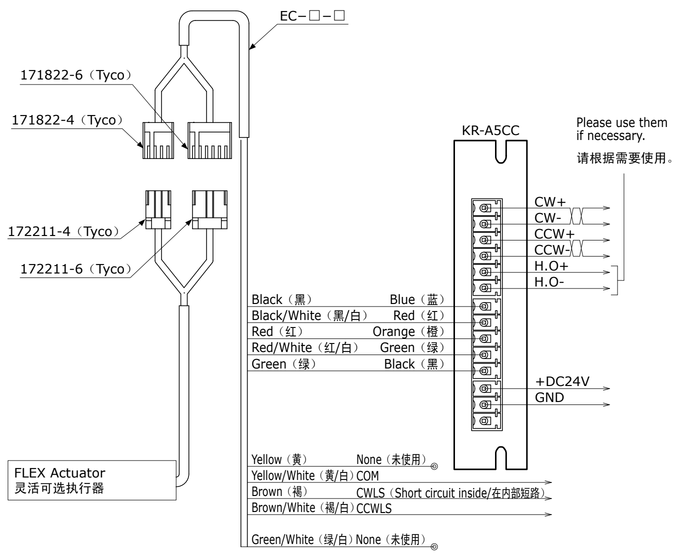
Miniature Actuator 微型执行器篇

[KR-A5CC接线图 / KR-A5CC Connection diagrams]

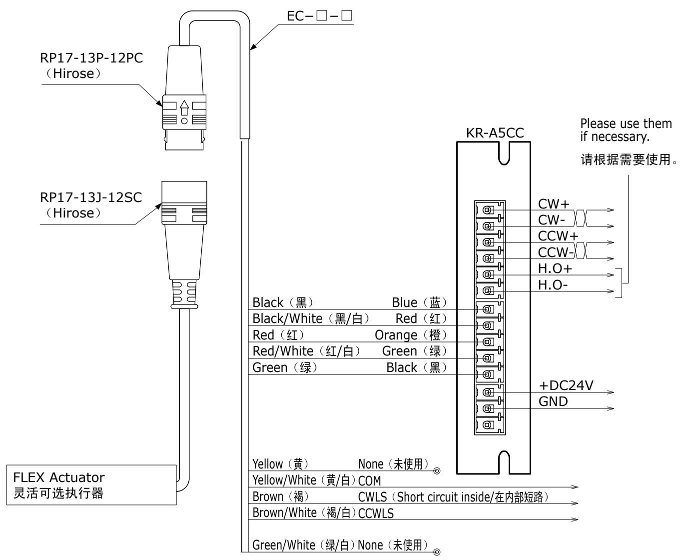
适用电机 / Applicable Motor
东方马达公司 PK523HPB
Oriental Moter PK523HPB

■普通电缆 / Nomal Cable

[EI连接器/EI connector]

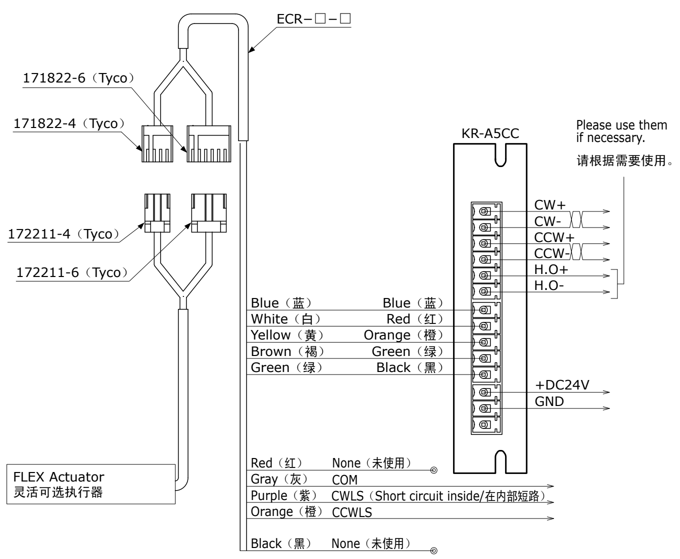


[广濑连接器/HIROSE connector]

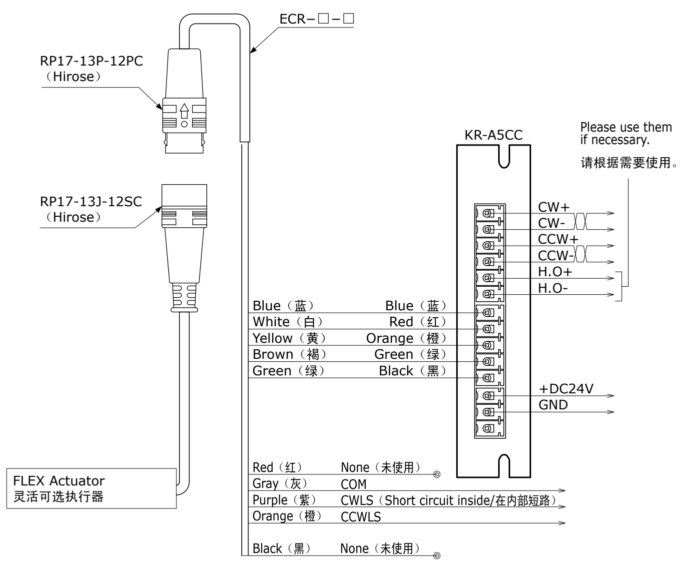


■机械手电缆 / Robot Cable

[EI连接器/EI connector]



[广濑连接器/HIROSE connector]



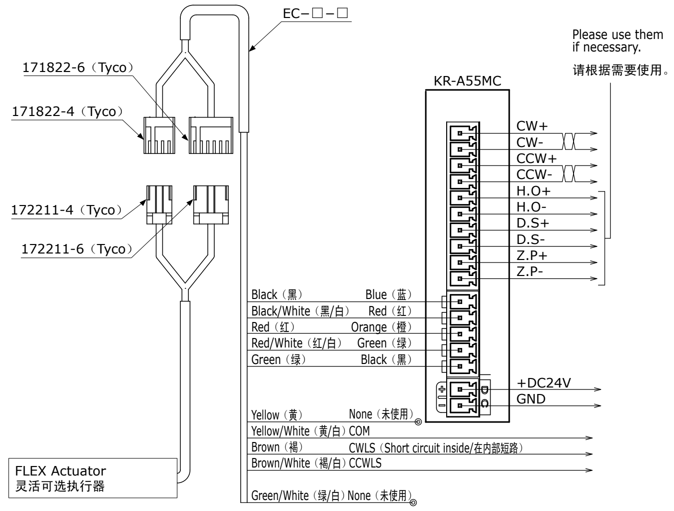
Miniature Actuator
微型执行器篇

[KR-A55MC接线图 / KR-A55MC Connection diagrams]

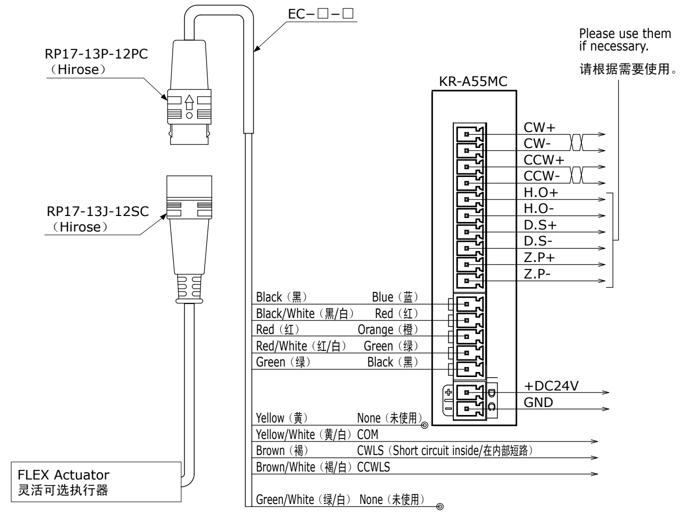
适用电机 / Applicable Motor
东方马达公司 PK523HPB
Oriental Moter PK523HPB

■普通电缆 / Nomal Cable

[EI连接器/EI connector]

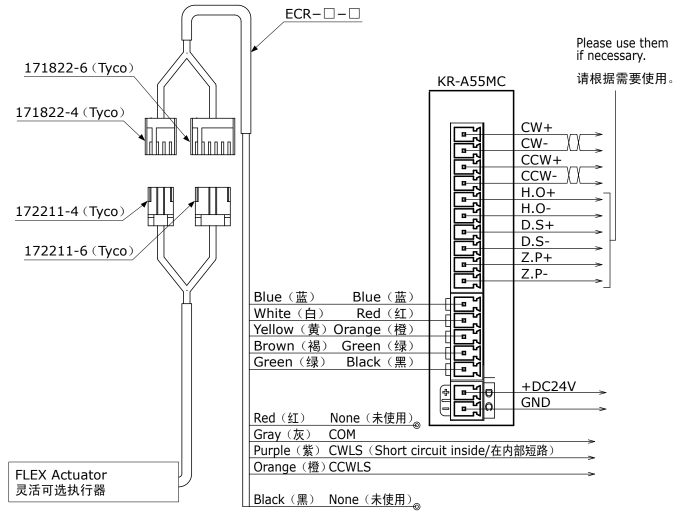


[广濑连接器/HIROSE connector]

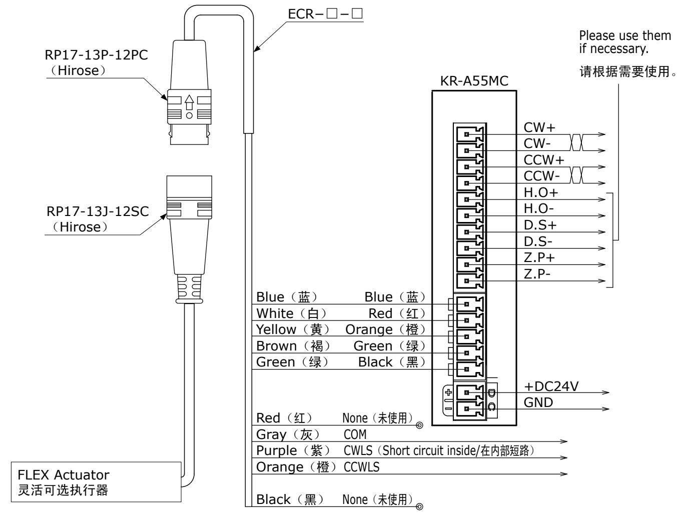


■机械手电缆 / Robot Cable

[EI连接器/EI connector]



[广濑连接器/HIROSE connector]



Miniature Actuator
微型执行器篇

●处理及使用注意事项

[使用注意事项]

1) 使用前请仔细阅读使用说明书，务必在充分理解内容且严守安全注意事项的基础上使用。
2) 敲打、掉落及施加超过规定的推力负载和径向负载有可能导致破损，因此处理本产品时应格外注意。
3) 确认开包的产品有无异常或者是否为订购产品。
4) 禁止分解各部配件，否则会引起污渍侵入或者各部装配精度下降。
5) 防止污渍及碎粉侵入，否则异物侵入后会引起滚珠循环配件破损或缩短寿命、功能损失。
6) 在使用滚珠丝杠/滑动丝杠的过程中，遵照油脂维护周期每2～3个月注入1次润滑剂。
   使用过程中如果发现油脂被弄脏，请先擦干旧油脂后注入指定的油脂。
7) 负载或容许转数等，不得超过本公司规格使用。
8) 禁止手持电机线和传感器线。切实固定后运转。
9) 远离磁性存储设备。

[安全注意事项]

1)如果出现异味、噪音、烟雾、过热或振动，请立即停止操作并关闭电源。
2)禁止使用超过额定电流的电源。
3)根据负载条件或所使用的驱动电机可能会过热。应确保电机表面温度不超过80°C。
4)禁止弯曲、拉拽、夹住导线。
5)开动过程中禁止触摸传动件。
6)维修、检查之前切断驱动器的输入电源。

[使用环境]

1)在周围温度超过0～40°C的范围、周围湿度超过20～80%RH的范围以及出现结露、腐蚀性气体或者可燃性气体的场所
   禁止使用。
2)禁止在出现强电场或强磁场的场所使用。
3)禁止在金属屑、粉尘、油雾、切削液、水分、盐、有机溶剂出现或飞散的场所使用。
4)禁止在有振动的场所或者冲击、真空等特殊环境下使用。

●Precaution of handling and operating

[Precaution for operating]

1) Before using these products, please read instruction manuals and follow the precautions below.
2) Do not hit or drop the Shaft, do not apply Axial or Radial load exceeding specifications, it may cause malfunction.
3) Before using, please check that the product has no defect, and product is the same as your order.
4) Do not disassemble each component, dust may get inside the product. It may deteriorate accuracy.
5) Please prevent contamination from dust or swarf. Dust or swarf may cause damage to Ball Screw / Lead Screw, which lead to deteriorating the function.
6) Flex Actuators should be checked the lubricant condition every 2 to 3 months. If Grease is contaminated, remove old Grease and replace with new one.
   Grease should be the same as the original Grease, which is described in specification table.
7) Do not use Flex Actuators exceeding our specifications in Load or Speed.
8) Do not hold the Motor leads and Motor shaft, this may result in damage to the device or injury. The Motor lead wire should be fixed securely.
9) Keep away from Magnetic memory device.

[Precaution for safety]

1) If abnormal odor, noise, smoke overheating, or vibration occurs, stop operation immediately and turn the power off.
2) Do not use exceeding rated current.
3) The motor may overheat depending on the load conditions or driver used. Make sure that the motor surface temperature does not exceed 80°C when in use.
4) Do not bend, pull or pinch the Motor lead wire.
5) Do not touch moving parts during operation.
6) Please switch off the Driver, when inspection or maintenance.

[Operating environment]

1) Operating environment should be 0～40°C in temperature and 20～80%RH in humidity.
   Do not use these products under dew condensation, corrosive gas or inflammable gas environment.
2) Do not use these products under strong electric field, strong magnetic field.
3) Please prevent from swarf, oil mist, cutting fluid, Water / moisture, salt spray, organic solvent and other contamination.
4) Flex Actuators cannot be used under the vibration, impact, vacuum, and other special environment.

Miniature Actuator 微型执行器篇

组合产品篇　Multi-purpose products

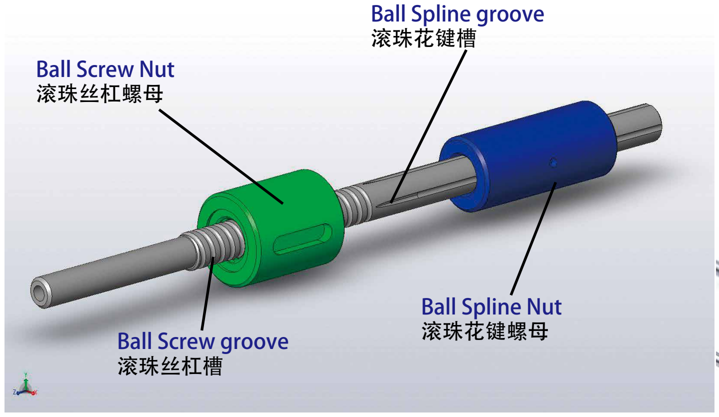
微型滚珠丝杠花键
Miniature Ball Screw with Ball Spline

由滚珠丝杠厂商和滚珠花键厂商联手打造的混合、紧凑、轻量型组合产品。
Ball Screw manufacturing company (KSS) and Ball Spline manufacturing company (HEPHAIST) collaborated for developing new product which is focused on Hybrid, Compact and lightweight.

●特点
- 仅使用单件产品，即可实现直动(Z)、旋转(θ)、吸附动作的组合产品。
- 通过小径滚珠丝杠和小径滚珠花键的重叠，最大限度地实现了小型化。

●Features
- This is a combined product which is possible for linear and rotational movement as well as suction at the same time with one unit.
- Achieved developing very compact product as "Overlap type" using Miniature Ball Screws and Miniature Ball Splines .

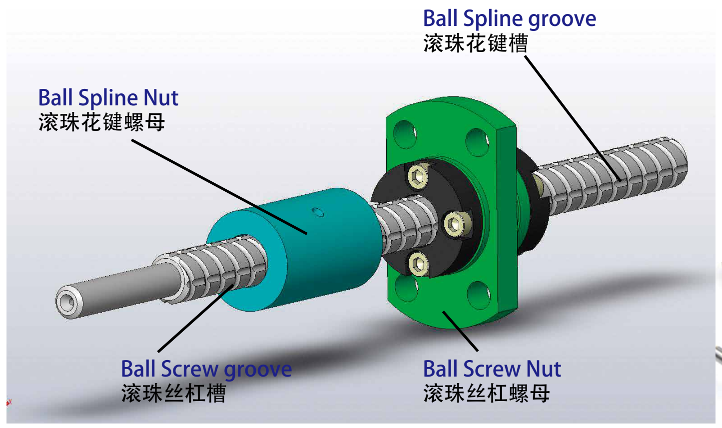
BSSP分离型
BSSP Separated type



将滚珠丝杠和滚珠花键加工在同一根轴上的组合产品。

It's a combined products, which has Ball Screw and Ball Spline processed on the same Shaft.

BSSP重叠型
BSSP Overlap type

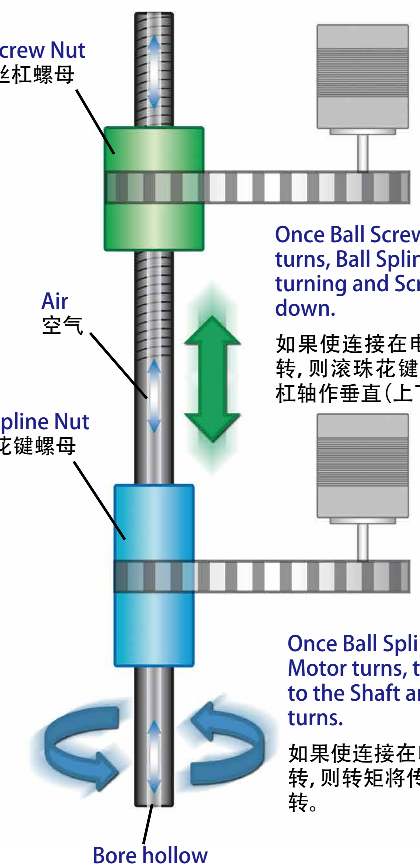


通过将滚珠丝杠和滚珠花键设置在相同的部位，可实现小型化和长行程。

By processing Ball Screw and Ball Spline on one place makes product have longer travel and compact.

●使用例　Usage example

皮带驱动 Belt Drive

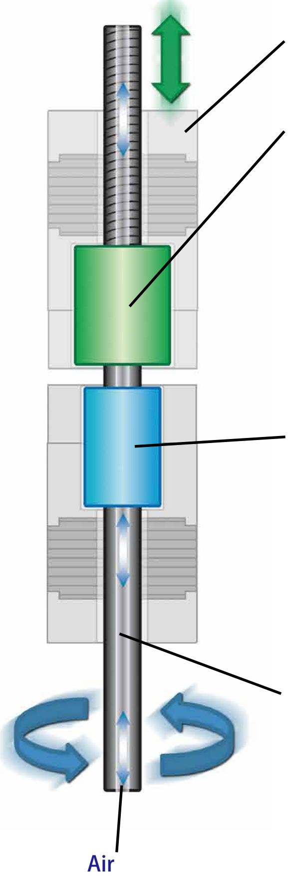


Once Ball Screw Nut directed to Motor turns, Ball Spline Nut will sustain not turning and Screw Shaft moves up and down.
如果使连接在电机上的滚珠丝杠螺母旋转，则滚珠花键螺母将变为止转机构，丝杠轴作垂直(上下)运动。

Once Ball Spline Nut directed to the Motor turns, the Torque will transmit to the Shaft and Screw Shaft will turns.
如果使连接在电机上的滚珠花键螺母旋转，则转矩将传至丝杠轴，带动丝杠轴旋转。

Bore hollow can be multi uses. For example vacuum and blow function.
可利用设在丝杠轴上的中空孔，提供正压、负压。

中空轴电机驱动 Hollow Motor Drive



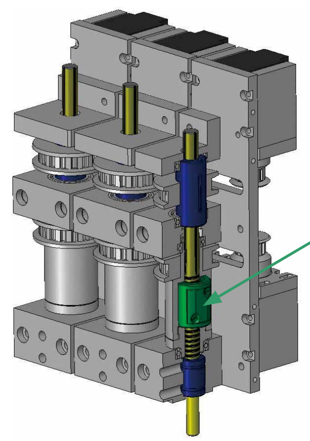
Hollow Motor
中空轴电机

Ball Screw Nut
滚珠丝杠螺母
Once Ball Screw Nut directed to Motor turns, Ball Spline Nut will sustain not turning and Screw Shaft moves up and down.
如果使连接在电机上的滚珠丝杠螺母旋转，则滚珠花键螺母将变为止转机构，丝杠轴作垂直(上下)运动。

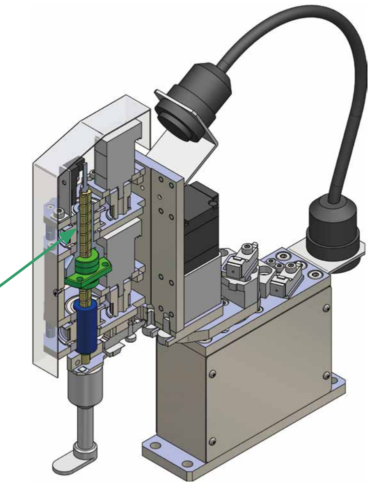
Ball Spline Nut
滚珠花键螺母
Once Ball Spline Nut directed to the Motor turns, the Torque will transmit to the Shaft and Screw Shaft will turns.
如果使连接在电机上的滚珠花键螺母旋转，则转矩将传至丝杠轴，带动丝杠轴旋转。

Bore hollow
中空孔
Bore hollow can be multi uses.
For example vacuum and blow function.
可利用设在丝杠轴上的中空孔，提供正压、负压。

●适用例　Application Example



BSSP separated type
BSSP分离型



BSSP overlap type
BSSP重叠型

使用分离型，可大大节省空间。 最适用于贴片机等用途。

Using "Separated type" of Ball Screw Spline is suitable for downsizing devices and equipment. Suitable for Chip-Mounter application etc.

使用重叠型，可确保长行程并实现小型化设计。最适用于小型Scalar机器人的前端部组件等。

Using "Overlap type" can save Shaft length and makes devise as minimized as possible. For example, suitable for Miniature Scalar Robot, especially for the head part.

●规格 Specifications

1）精度等级和间隙

微型滚珠丝杠花键（BSSP）的精度等级和间隙（轴向间隙、径向间隙）如下表所示。

1）Accuracy Grade & Axial/Radial play

Accuracy grade and Axial/Radial play for BSSP are shown in Table below.

Unit（单位）: mm

Type 类型	Part 部位	C3 (Maximum / 最大)	C5 (Maximum / 最大)
Separated type 分离型	Ball Screw / 滚珠丝杠 (Axial play / 轴向间隙)	0 or 0.005	0.005
	Ball Spline / 滚珠花键 (Radial play / 径向间隙)	0	
Overlap type 重叠型	Ball Screw / 滚珠丝杠 (Axial play / 轴向间隙)	0.005	
	Ball Spline / 滚珠花键 (Radial play / 径向间隙)	0.002	

2）滚珠丝杠花键安装部的精度

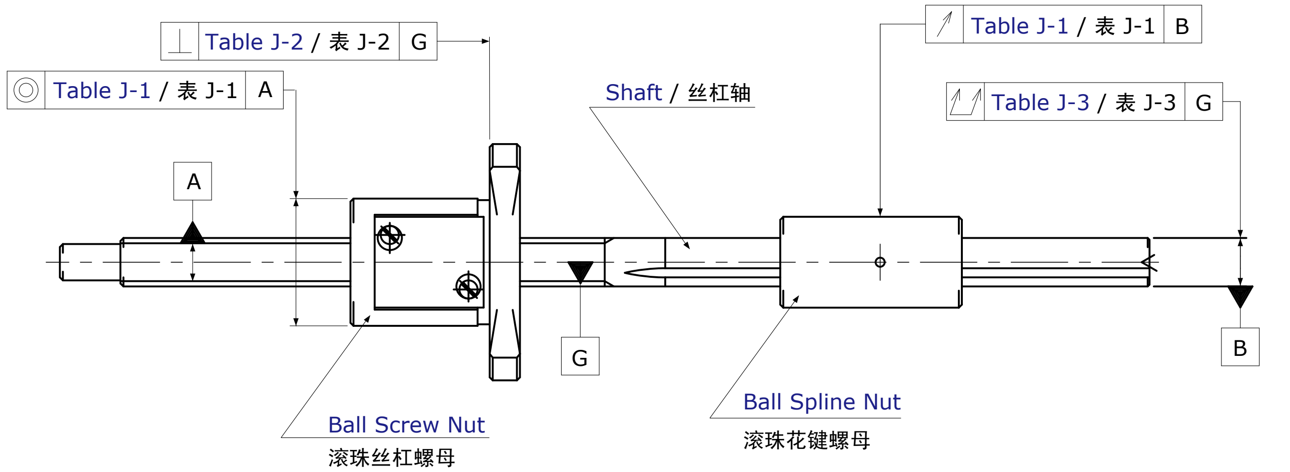
微型滚珠丝杠花键（BSSP）的安装部精度依据JIS B-1192（滚珠丝杠）、JIS B-1193（滚珠花键），按以下标示方法和规格制造。

2）Run-out and location tolerances for BSSP

Run-out and location tolerances for BSSP are based on JIS B-1192（Ball Screw），JIS B-1193（Ball Spline）.

Tolerance for each part and description are as follows.

【分离型 / Separated type】



【重叠型 / Overlap type】

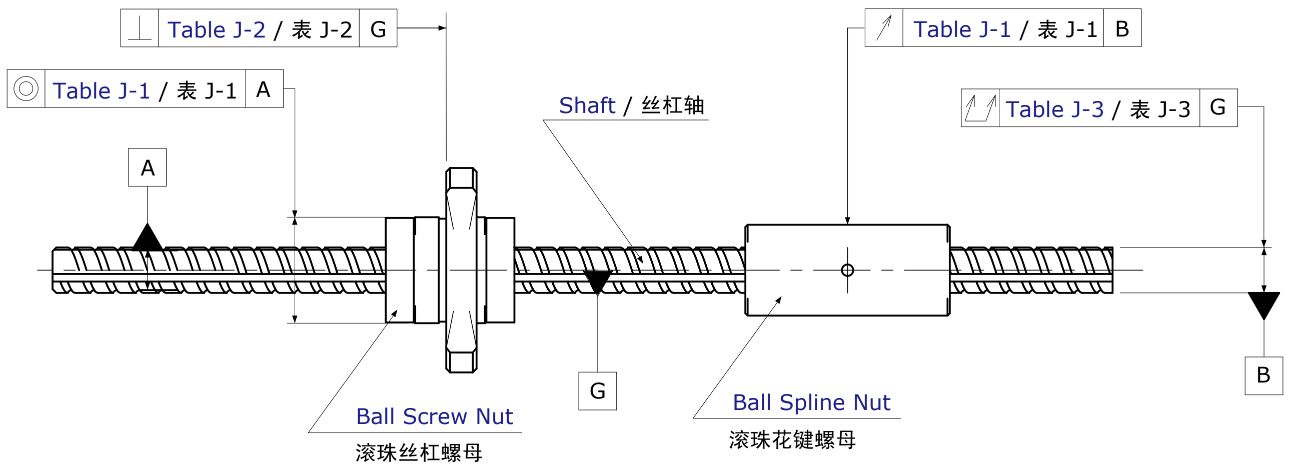


表 J-1 : 相对于丝杠轴轴线的螺母外周面的半径方向圆跳动

Table J-1 : Radial Run-out of Ball Nut location diameter related to the centerline of Screw Shaft

Unit（单位）: μm

Nut outside diameter 螺母外径 (mm)		Permissible deviation of Radial Run-out 跳动公差（最大）		
Over 超过	Up to 以下	Ball Screw Nut / 滚珠丝杠螺母		Ball Spline Nut 滚珠花键螺母
		C3	C5	
—	20	9	12	11
20	32	10	12	—

表 J-2 : 相对于丝杠轴轴线的滚珠丝杠螺母基准端面或法兰安装面的垂直度

Table J-2 : Axial Run-out（Perpendicularity）of Ball Nut location face related to the centerline of Screw Shaft

Unit（单位）: μm

Nut outside diameter 螺母外径 (mm)		Permissible deviations of Axial Run-out（Perpendicularity）垂直度公差（最大）	
Over 超过	Up to 以下	Ball Screw Nut / 滚珠丝杠螺母	
		C3	C5
—	20	8	10
20	32	8	10

表 J-3 : 丝杠轴轴线的半径方向全跳动

Table J-3 : Total Run-out in radial direction of Screw Shaft related to the centerline of Screw Shaft

Unit（单位）: μm

Shaft total length 丝杠轴总长 (mm)		Permissible deviations of total Run-out in radial direction 跳动公差（最大）	
Over 超过	Up to 以下	C3	C5
—	125	25	35
125	200	35	50
200	315	50	65

3）滚珠丝杠部的导程精度 / Lead accuracy of Ball Screws

滚珠丝杠的导程精度根据相对于螺纹部有效长度的代表移动量误差（±e_p）及波动（V_u）来确定。

不同精度等级的许用值详见表J-4。

Ball Screw lead accuracy is specified by the tolerance of actual mean travel error（±e_p）and travel variation（V_u）over the Screw Shaft effective length.

Tolerance of each accuracy grades are shown in the Table J-4.

表 J-4 : 滚珠丝杠的代表移动量误差（±e_p）和波动（V_u）许用值

Table J-4 : Tolerance on actual mean travel deviation（±e_p） and permissible variation of Ball Screws.

Unit（单位）: μm

Accuracy Grade 精度等级			C3		C5	
Effective screw length 螺纹部有效长度 (mm)	Over 超过	Up to 以下	±e_p	V_u	±e_p	V_u
	—	100	8	8	18	18
	100	200	10	8	20	18
	200	315	12	8	23	18

Multi-purpose products 组合产品

4）材质和热处理、硬度

微型滚珠丝杠花键（BSSP）的标准材质、热处理和硬度如表J-5所示。
表中数值可能会因轴、螺母的形状不同而略有差异，详情请参照本公司出示的规格图。

4）Material & Heat treatment, Surface hardness

Standard material of BSSP, Heat treatment and Surface hardness are shown in Table J-5.
However, they vary depending on profile of Shaft or Nut. Please refer to KSS drawings.

表 J-5；一般产品的材质和热处理、硬度
Table J-5 ；Material, Heat treatment & Surface hardness

		Material 材质	Heat treatment 热处理	Surface hardness 表面硬度
Screw Shaft 丝杠轴	Solid Shaft 实心轴	SCM415	Carburizing and quenching 渗碳淬火	HRC 58-62
	Hollow Shaft 空心轴	SUJ2	Induction hardening 高频淬火	
Nut / 螺母		SCM415	Carburizing and quenching 渗碳淬火	HRC 58-62

5）润 滑

使用滚珠丝杠花键（BSSP）时，必须涂抹润滑剂。否则会造成扭矩变大或缩短丝杠使用寿命等问题。涂抹润滑剂可以抑制因摩擦而导致的升温、机械效率下降，以及因磨损而导致的精度下降。使用油脂润滑BSSP时，一般建议使用锂皂基油脂；使用油润滑时，建议使用ISO VG32～68（透平油）。
如无特别指定，滚珠丝杠花键（BSSP）在交货时会涂上防锈油。由于防锈油不具备润滑性，因此在使用前请另行涂抹润滑剂。如无特殊要求，建议使用KSS原装润滑油脂（MSG No.2）。也可在出厂时涂抹用户要求的油脂。

5）Lubrication

In Ball Screw with Ball Spline（BSSP）use, lubricant should be required. If lubricant is not applied with, the problem such as increase of Torque and shortened Life occurs. Applying lubricant can minimize temperature increases, decline of mechanical efficiency due to friction, and deterioration of accuracy caused by wear.
For lubrication of BSSP, regular lithium-soap-based Grease and ISO VG32-68 Oil（turbine Oil #1 to #3）are recommended.
BSSP are applied with anti-rust oil for rust prevention, if there is no designation when shipping. Since anti-rust oil is not lubricant, apply Grease or Lubrication oil before using BSSP.
If there is no specific request, KSS would recommend our original grease（MSG No.2）as standard lubricant.
We can apply designated Grease before shipping, please ask KSS representative.

表 J-6：一般使用条件下的润滑剂示例
Table J-6 : Recommended lubricants for normal operating conditions

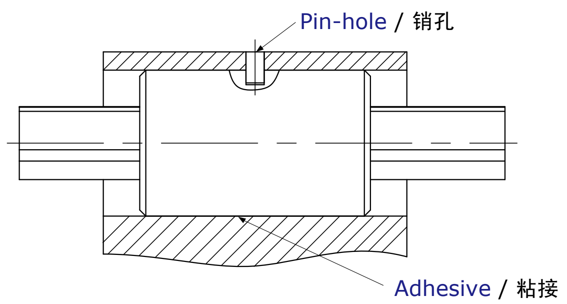
Lubricant 润滑剂	Type 种类	Product name 产品名称
Grease 油脂	Lithium-based Grease 锂基油脂	KSS original Grease MSG No.2 KSS原装油脂 MSG No.2
Lubricating Oil 润滑油	Sliding surface Oil or turbine Oil 滑动面油或透平油	Super Multi 68 Super Multi68

6）花键螺母的安装

利用设在螺母外周的销孔以及粘接剂来安装滚珠花键螺母。
使用销孔安装时，请注意不要使花键螺母承受负载。

6）Mounting of Ball Spline Nut

Ball Spline Nut should be mounted using pin-hole located on Nut outer, and adhesive.
Please make sure that no load would be applied on pin when using pin-hole.



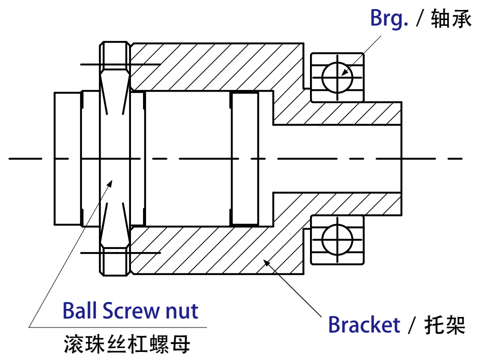
7）滚珠丝杠螺母的安装

通过螺母旋转的方式来使用滚珠丝杠时，可以通过托架将轴承安装到螺母上、也可以将轴承直接组装到螺母外径上。
可根据用户的安装需求变更滚珠丝杠螺母的设计，详情请垂询本公司。

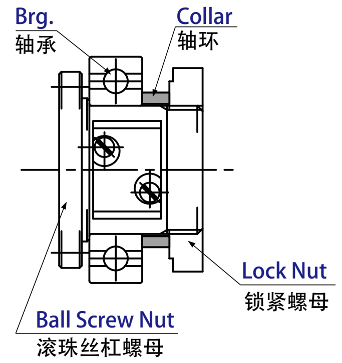
7）Mounting of Ball Screw Nut

There would be a couple of ways to install Bearings onto Ball Screw Nut, such as using Bracket as Bearing shaft, direct mounting on Ball Screw Nut.
KSS designs special profile of Ball Screw Nut in accordance with customer's mounting request.
Please ask KSS representative for further information.

通过托架安装轴承
Brg. install with Bracket



将轴承直接安装到螺母外径上
Direct install of Brg. onto Nut outer



●公称型号的构成 Model number notation

【分离型 / Separated type】

BSSP 06 10 / 06 - 080 R 070 S 200 C5 T

BSSP	06	10	/	06	-	080	R	070	S	200	C5	T
①	②	③		④		⑤	⑦	⑧	⑨	⑩	⑪	⑫

【重叠型 / Overlap type】

BSSP 06 10 - 150 R 180 C5 T

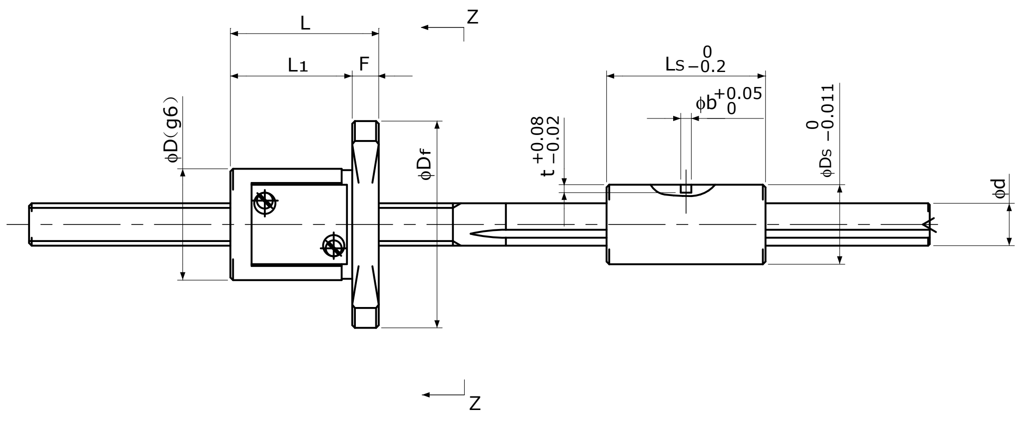
BSSP	06	10	-	150	R	180	C5	T
①	②	③		⑥	⑦	⑩	⑪	⑫

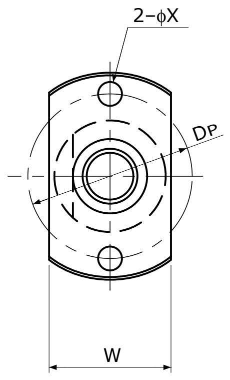
1系列符号　BSSP：滚珠丝杠花键
2丝杠轴公称外径（mm）
3导程（mm）
4花键轴径（mm）
5滚珠丝杠部有效长度（mm）
6滚珠丝杠／滚珠花键有效长度（mm）
7滚珠丝杠旋向（R=右旋，L=左旋）
8滚珠花键部有效长度（mm）
9滚珠花键部的符号
⑩丝杠轴总长（mm）
⑪精度等级
⑫轴形状　无符号：实心轴，T：空心轴

1Ball Screw with Ball Spline series No.
BSSP : Ball Screw with Ball Spline
2Screw Shaft nominal diameter（mm）
3Lead（mm）
4Ball Spline Shaft nominal diameter（mm）
5Screw thread length（mm）
6Screw thread & Spline length（mm）
7Thread direction（R=Right-hand, L=Left-hand）
8Spline length（mm）
9S means Ball Spline part
⑩Total length（mm）
⑪Accuracy grade
⑫Shaft option : No indication=solid shaft, T=Hollow shaft

Ball Screw with Ball Spline 滚珠丝杠花键

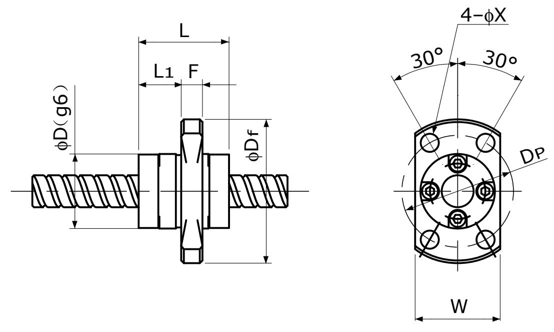
Separated type
分离型



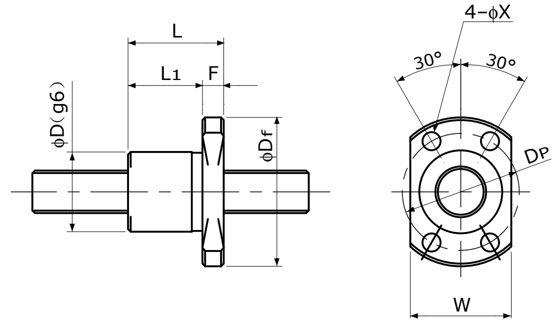


View Z-Z
向视图 Z-Z

Type-1 : Return-plate type（Ball Screw Nut）
复式回路板循环方式（滚珠丝杠螺母）



Type-2 : End-cap type（Ball Screw Nut）
端盖式循环方式（滚珠丝杠螺母）



Type-3 : Internal-deflector type（Ball Screw Nut）
陀螺式循环方式（滚珠丝杠螺母）

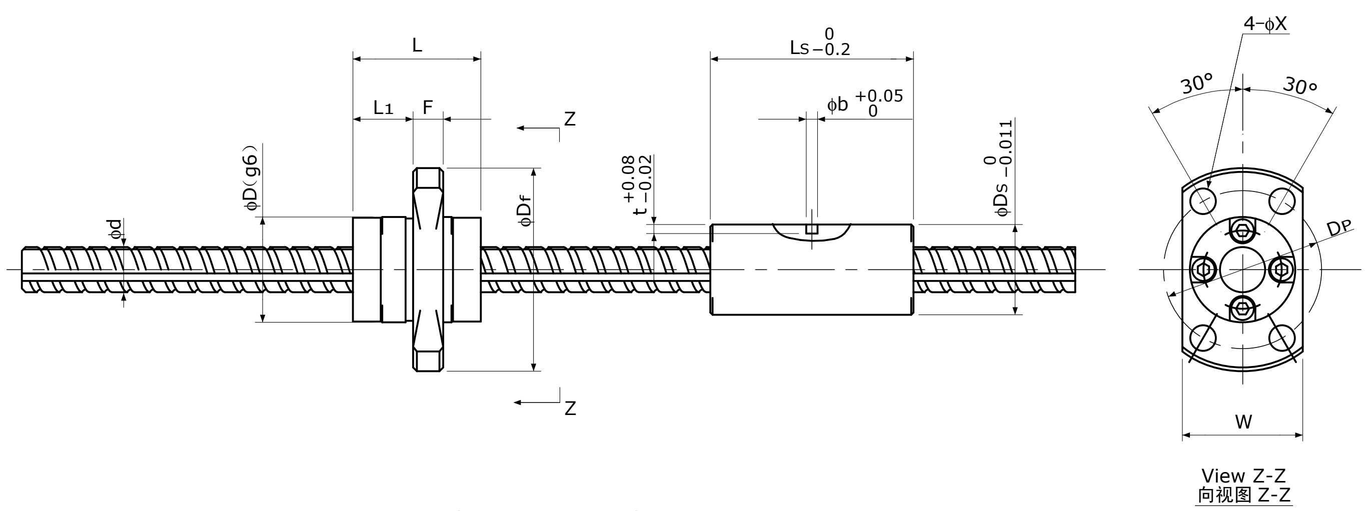
Unit(单位):mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Ball Screw part / 滚珠丝杠部														Ball Spline part / 滚珠花键槽										Bore hollow 中空孔	Shaft Inertia 丝杠轴惯量	Ball Nut Model number 螺母型号
		Lead 导程	Basic Load Rating 基本额定负载（Reference）（参考值）		Nut dimension / 螺母尺寸											Basic Load Rating 基本额定负载（Reference）（参考值）		Basic Torque Rating 基本额定扭矩（Reference）（参考值）		Permissible Moment 许用扭矩（Ref.）（参考值）Mo	Nut dimension / 螺母尺寸							
			Ca	Coa	Nut type 螺母类型	Nut mass 螺母重量	D	Dr	L	L1	F	W	Dp	Bolt Hole 安装孔 X		Cr	Cor	Ct	Cot		Nut mass 螺母重量	OD. 外径 DS	Length 长度 LS	Pin hole 销孔 b	t			
			N	N		g										N	N	Nm	Nm	Nm	g						Kgm²/mm	
BSSP 0602/06		2	(750)	(1200)	1	25	15	29	17	13	4	17	23	3.4														BSSP 0602/06
BSSP 0606/06	6	6	(870)	(1450)	2	20	14	27	17	8	4	16	21	3.4		(860)	(1400)	(2.2)	(1.6)	(3.0)	14	12	27	1.5	1.2	2	9.99×10⁻¹⁰	BSSP 0606/06
BSSP 0610/06		10	(950)	(1600)	2	20	14	27	23	11.5	4	16	21	3.4														BSSP 0610/06
BSSP 0802/08(1)		2	(850)	(1600)	1	25	16	30	17	13	4	18	24	3.4														BSSP 0802/08(1)
BSSP 0802/08(2)		2	(2400)	(4000)	1	60	20	38	24	19	5	22	30	4.5														BSSP 0802/08(2)
BSSP 0802/08(3)	8	2	(1300)	(2300)	3	25	15	28	18	14	4	17	22	3.4		(1200)	(1900)	(4.1)	(3.1)	(4.1)	22	15	30	2.0	1.5	3	31.6×10⁻¹⁰	BSSP 0802/08(3)
BSSP 0804/08		4	(2600)	(4200)	1	75	21	39	28	23	5	23	31	4.5														BSSP 0804/08
BSSP 0812/08		12	(2200)	(4000)	2	40	18	31	27	17	4	20	25	3.4														BSSP 0812/08

注1）中空孔为选购件。根据丝杠轴的长度，也可能不适用。
注2）需要特殊的螺母形状时，请垂询本公司。
注3）基本额定负载、基本额定扭矩、许用扭矩是根据有效负载滚珠数量计算出的理论值。
根据不同的使用条件会发生很大变化，请仅作为参考。
注4）本产品是承受径向负载的滚珠花键和承受轴向负载的滚珠丝杠的组合产品，很难预估其理论寿命。
建议使用实机进行评估，或根据本公司的实验数据来判断是否适用。
注5）可生产的最大长度为max.150mm（f6）、max.200mm（f8）。
需要超过上述长度的产品时，请垂询本公司。

Note 1）Please note that Bore hollow is an option, not a standard.
In some cases Bore hollow is not available due to Shaft length.
Note 2）If special profile of Ball Screw Nut / Ball Spline Nut, please ask KSS representative.
Note 3）Basic Load Rating, Basic Torque Rating and Permissible Moment are theoretical number based on effective number of Balls. They may vary drastically depending on operating condition. Please consider them just reference.
Note 4）It is difficult to estimate theoretical life, because of combined products with Ball Spline which withstands Radial Load and Ball Screw for Axial Load. We would recommend that final decision should be based on your evaluation on actual machine or our experimental data.
Note 5）Maximum limit of Shaft length is 150mm (for f6), 200mm (for f8).
Please ask KSS in case of exceeding limit length.

Overlap type
重叠型



Type-2 : End-cap type（Ball Screw Nut）
端盖式循环方式（滚珠丝杠螺母）

Unit（单位）: mm

Ball Nut Model number 螺母型号	Shaft nominal dia. 丝杠轴公称外径 d	Ball Screw part / 滚珠丝杠部 Lead 导程	Basic Load Rating 基本额定负载（Reference）（参考值） Ca N	Coa N	Nut dimension / 螺母尺寸 Nut type 螺母类型	Nut mass 螺母重量 g	D	Df	L	L1	F	W	Dp	Bolt Hole 安装孔 X		Ball Spline part / 滚珠花键槽 Basic Load Rating 基本额定负载（Reference）（参考值） Cr N	Cor N	Basic Torque Rating 基本额定扭矩（Reference）（参考值） Ct Nm	Cot Nm	Permissible Moment 许用扭矩（Ref.）（参考值） Mo Nm	Nut dimension / 螺母尺寸 Nut mass 螺母重量 g	OD. 外径 DS	Length 长度 LS	Pin hole 销孔 b	t	Bore hollow 中空孔	Shaft Inertia 丝杠轴惯量 Kgm²/mm	Ball Nut Model number 螺母型号
BSSP 0606	6	6	(600)	(900)	2	20	14	27	17	8	4	16	21	3.4		(650)	(1000)	(1.7)	(1.2)	(2.2)	14	12	27	1.5	1.2	2	9.99×10^{-10}	BSSP 0606
BSSP 0610		10	(650)	(900)	2	20	14	27	23	11.5	4	16	21	3.4		(750)	(1200)	(1.9)	(1.3)	(2.4)								BSSP 0610
BSSP 0812	8	12	(1400)	(2000)	2	40	18	31	27	17	4	20	25	3.4		(1100)	(1700)	(3.8)	(2.8)	(2.7)	22	15	30	2.0	1.5	3	31.6×10^{-10}	BSSP 0812

注1）中空孔为选购件。根据丝杠轴的长度，也可能不适用。
注2）需要特殊的螺母形状时，请垂询本公司。
注3）基本额定负载、基本额定扭矩、许用扭矩是根据有效负载滚珠数量计算出的理论值。
根据不同的使用条件会发生很大变化，请仅作为参考。
注4）本产品是承受径向负载的滚珠花键和承受轴向负载的滚珠丝杠的组合产品，很难预估其理论寿命。
建议使用实机进行评估，或根据本公司的实验数据来判断是否适用。
注5）作为参考，本产品的可传送重量最大为10N。
注6）可生产的最大长度为max.150mm（f6）、max.200mm（f8）。
需要超过上述长度的产品时，请垂询本公司。

Note 1）Please note that Bore hollow is an option, not a standard.
In some cases Bore hollow is not available due to Shaft length.
Note 2）If special profile of Ball Screw Nut / Ball Spline Nut, please ask KSS representative.
Note 3）Basic Load Rating, Basic Torque Rating and Permissible Moment are theoretical number based on effective number of Balls. They may vary drastically depending on operating condition. Please consider them just reference.
Note 4）It is difficult to estimate theoretical life, because of combined products with Ball Spline which withstands Radial Load and Ball Screw for Axial Load. We would recommend that final decision should be based on your evaluation on actual machine or our experimental data.
Note 5）Maximum Load Capacity should be considered 10N.
Note 6）Maximum limit of Shaft length is 150mm (for f6), 200mm (for f8).
Please ask KSS in case of exceeding limit length.

Multi-purpose products 组合产品

●存放、操作及使用注意事项

・操作注意事项

BSSP属于精密零件，请遵照下述事项谨慎操作。

存放

存放时，请保持本公司原装包装状态。
请勿随意开包或弄破内部包装。
否则会有异物进入或生锈，从而导致产品性能下降 。
请避免将产品保管在80°C以上、−20°C以下、湿度为80%以上的潮湿环境中，应在不会结露的环境中以水平状态保管。

操作

1. 严禁拆分产品。否则会导致异物进入、精度下降或引发事故。
2. 重新组装时，如果组装错误，可能会导致滚珠丝杠的功能丧失。因此，客户请勿自行重新组装。请将产品送回本公司，我们将有偿为您维修并重新组装。
3. BSSP的轴和螺母可能会因自重而掉落，请注意避免受伤。
4. 如果BSSP掉落，循环部件、轴的外径以及钢珠等可能会划伤、损坏。这可能会导致产品功能丧失，如回转不良等。若BSSP掉落，必须由本公司进行检查。
   请务必将产品送回本公司。我们将有偿为您检查。

・使用注意事项

防尘

请在清洁环境下使用BSSP。
请同时使用防尘罩等防止异物、切屑等进入BSSP中。
如果因防尘不当而导致异物、切屑等进入BSSP，可能会降低滚珠丝杠的性能或损坏循环部件，从而导致产品锁死。

润滑

请在使用前确认润滑状况。如果润滑不良，可能会导致BSSP在短期内丧失功能。
防锈油并非润滑剂，使用前请用精制煤油等清洗滚珠丝杠，去除防锈油后涂上润滑剂（油脂或润滑油）。在常规用途下使用时，请每2～3个月检查一次油脂。使用过程中油脂变脏时，请擦去旧的油脂后涂抹新油脂。

许用转速和许用径向负载

根据尺寸、材质及安装方式等不同，BSSP会受到轴向负载和转速的限制。建议在产品的设计阶段就使用条件与本公司充分协商。

超程

滚珠丝杠螺母发生超程时，可能导致钢珠脱落、循环部件受损或钢珠槽产生压痕等，从而引起动作不良。如果在该状态下继续使用，还可能导致早期磨损或循环部件损坏。因此请务必避免超程。
发生超程时，请与本公司联系检查事宜。我们将有偿为您检查。

使用温度

使用温度的极限通常设计在−20°C以上、80°C以下；湿度为80%以下。
超过该温度使用时，可能会产生如下现象：
- BSSP循环性能下降；
- 循环部件损伤或损坏；
- 相对于热处理部位的硬度降低；
- BSSP各部件的腐蚀。

如需在超过上述条件的环境下使用，请垂询本公司。

偏负载

滚珠丝杠螺母是一种产生轴向推力的机械元件，其结构不能承受径向负载和力矩负载。如果滚珠丝杠承受径向负载或力矩负载，将会导致滚珠负载不均，从而显著缩短产品的使用寿命。请注意避免对滚珠丝杠螺母部施加径向负载和力矩负载。

●Precaution of storage, handling and operating

・Precaution for handling

BSSP is precision components, and must be handled carefully in accordance with the instruction below.

Storage

BSSP should be stored unopened in their original KSS packaging. Avoid opening the package or breaking the inner package unnecessarily. This may result in contamination or rusting, and may degrade operating performance.
Please store BSSP under −20°C～80°C, less than 80%RH humidity without any dew condensation.

Handling

1. Never disassemble BSSP. This will cause contamination, reduce accuracy, and lead to accidents.
2. Customers should not attempt to reassemble BSSP. Incorrect reassembly can easily result in malfunction.
   BSSP should be returned to KSS, where it will be repaired and reassembled for a fee.
3. Take care to avoid injuries due to falling BSSP Shaft or Nut.
4. Dropping BSSP may cause scratching or impact damage to recirculating components, Shaft outside diameters, Balls, or Screw & Spline grooves, which may cause malfunction, such as incorrect rotation.
   If dropped, BSSP must be inspected by KSS for a fee. Please make sure you return dropped Shaft or Nut.

・Precaution for operating

Dust proof

Ball Screws must be used in a clean environment. They should be used with a dustproof cover to prevent contamination from dust or swarf. Dust or swarf contamination due to insufficient dust protection may reduce the BSSP performance, cause damage to recirculating components, which lead to locking.

Lubrication

Check lubrication before use. Insufficient lubrication will rapidly deteriorate the operating performance of BSSP.
Since anti-rust oil is not lubricant（Grease / Oil）, Anti-rust oil on BSSP should be washed off with clean Kerosene and apply lubricant before using BSSP.
Please check the lubricant condition every 2 to 3months. If Grease is contaminated, remove old Grease, and replace with new Grease.

Critical speed and Permissible Axial load

BSSP has the maximum limit of speed and Axial load depending on its size, material, mounting method etc. When design BSSP, KSS would recommend that you consult with KSS engineering about the operating condition and model selection.

Over-run

Allowing Nuts to overrun may result in malfunctioning due to Balls escaping, damage to recirculation components, and indentation of the Ball grooves. Continued use in this state will lead to rapid wear and damage to recirculation components. Ball Screw Nut and Ball Spline Nut must therefore never be allowed to overrun. If overrunning occurs, contact KSS for an inspection for a fee.

Temperature

BSSP should be used under the temperature of −20°C～80°C, and humidity of less than 80%RH.
Avoid use BSSP under lower / higher temperatures and higher humidity.
This may result in the following problems.
- Reduced performance of Ball recirculation, and smooth movement.
- Damage to recirculation components.
- Reduced hardness of heat treated components.
- Rust on BSSP components.

If it is necessary to work beyond the recommended temperatures, please consult with KSS first as we may be able to provide a solution.

Moment load or Radial load

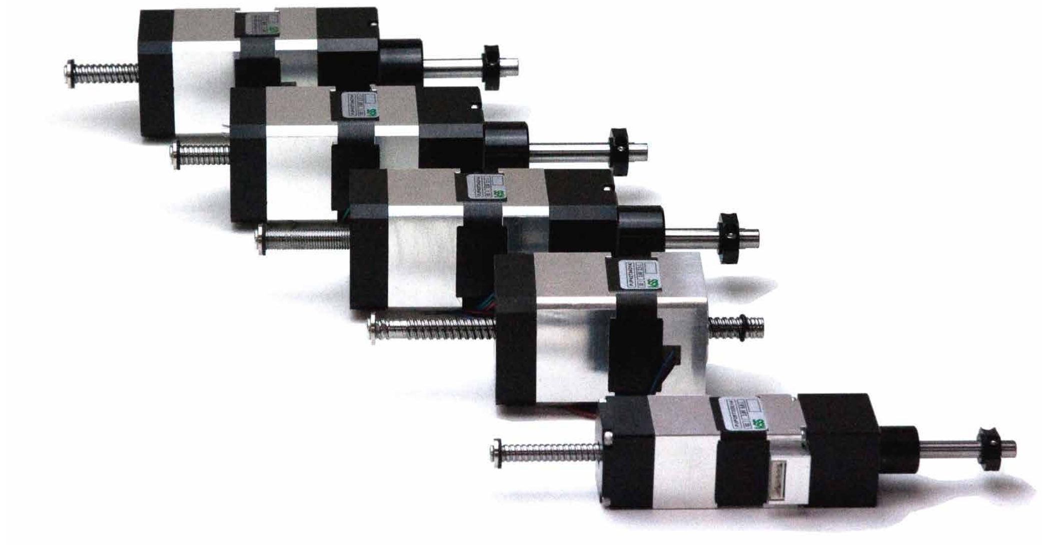
Ball Screw Nut primarily generate thrusts in the axial direction, and are not designed to withstand Radial loads and Moment loads. Care must be taken not to apply Radial loads and Moment loads to the Ball Screw Nut. If these kinds of loads act on the Ball Screws, Ball load uniformity is lost, and the life of Ball Screws is drastically reduced.

Multi-purpose products 组合产品

微型电动缸编
Miniature Electric cylinder

AR / CL 系列
AR / CL Series

2相中空步进电机和滚珠丝杠一体化的紧凑型电动缸
Compact Cylinder with 2-phase Hollow Stepping Motor integrated with Ball Screw or Ball Screw with Ball Spline (BSSP).



●特征
・电机尺寸有□28，□42 两种，且每种电机都有止转结构内藏型（AR系列）和无止转结构型（CL型）。
・按搭载的驱动丝杠种类和导程，精度和推力选项丰富。

●Features
・The new Cylinder type Actuator comes with 2 Motor sizes, □28 & □42. AR type with anti-rotating device or CL type without anti-rotating device can be selected in each Motor size as standard.
・Variety of Shaft diameter & Lead combination allows wider selection of Accuracy and Thrust Force.

●种类
AR电动缸(Captive)
搭载KSS微型滚珠丝杠花键（BSSP）用于止转结构

CL电动缸(Non-Captive)
滚珠丝杠和中空电机相结合的简易结构，实现了轻量且紧凑型外形。

●Types
AR Cylinder(Captive)
KSS miniature Ball Screw with Ball Spline (BSSP) is used for an anti-rotating device.

CL Cylinder(Non-Captive)
Simple combination of the Hollow Motor and the Ball Screw contributes to lightweight and compact body.

●种类 / Variation

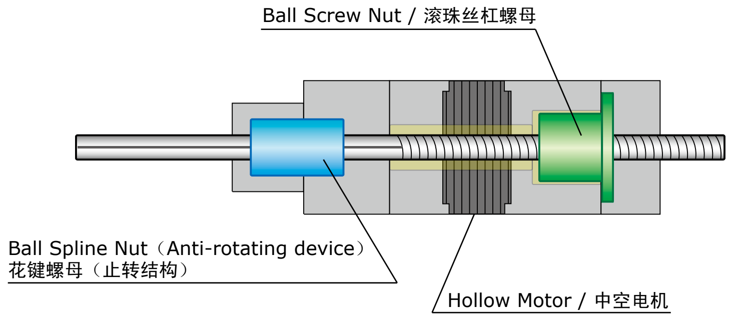
Unit(单位): mm

	Drive Screw 驱动丝杠	Notation 记号	NEMA11 (□28) Lead / 导程	NEMA11 (□28) Travel / 行程	NEMA17 (□42) Lead / 导程	NEMA17 (□42) Travel / 行程
AR type AR 系列	Precision Ball Screw 精密滚珠丝杠	G	1,2	40	2,5	50
CL type CL 系列	Precision Ball Screw 精密滚珠丝杠	G	1,2	40,80	2,5	50,100
	Rolled Ball Screw 轧制滚珠丝杠	R	1,2	40,80	2,5	50,100
	Resin Lead Screw 树脂螺母进给丝杠	Re	2,6	40,80	2,5	50,100

注）如需上述以外的导程，请垂询KSS。
Note) If the Lead other than the above is required, please ask KSS representative.

取得实用新案 / Utility model resisterd

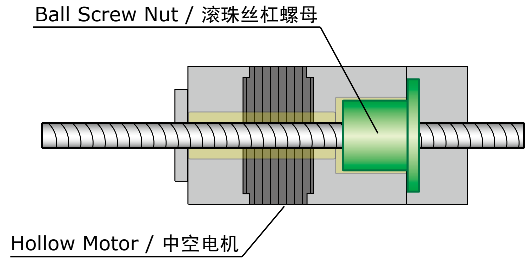
●结构 / Internal Structure
AR 电动缸 / AR Cylinder(Captive)



搭载BSSP，花键螺母用于止转结构
客户无需装配止转结构，实现更加紧凑的外形尺寸。

Ball Spline Nut in BSSP plays a role of anti-rotating device. No need to set up anti-rotating design outside the Actuator.
Our unique BSSP enable a compact and slim body by using Ball Spline Nut as an anti-rotating device.

CL 电动缸 / CL Cylinder(Non-Captive)



中空电机内藏驱动丝杠的简易结构
客户使用时，可利用轴端内螺纹装配止转结构

Simple design of Screw Shaft in Hollow Motor.
External anti-rotating device should be set up when usage.

●公称型号 / Model number notation

DDA AR 42 — G 05 050 N
1 2 3 4 5 6 7

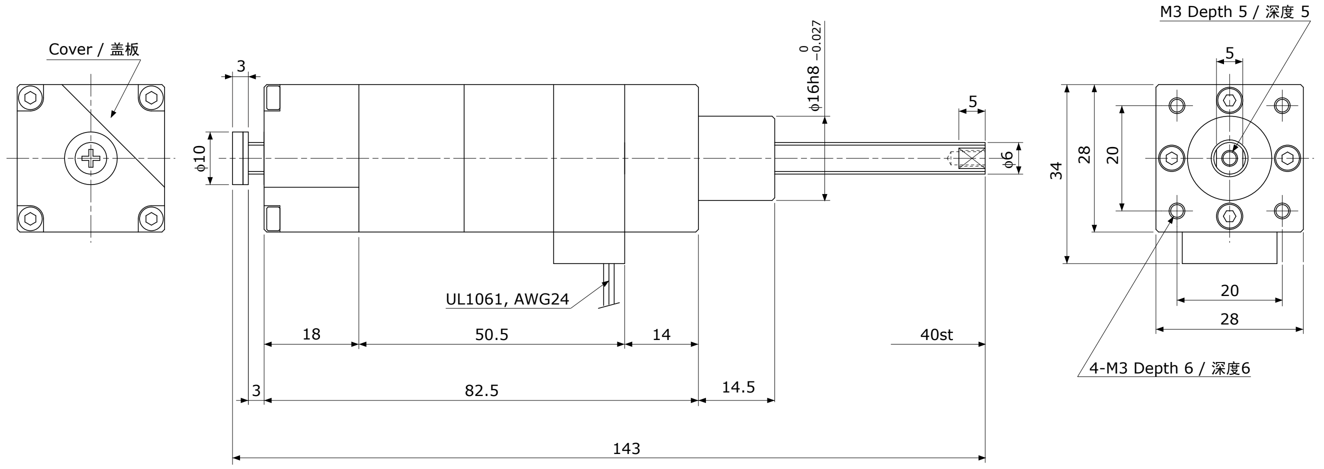
1系列号
DDA : 直接驱动执行器系列
2电动缸型
AR : Captive type(带止转结构)
CL : Non-Captive type(无止转结构)
3电机尺寸
42 : 42角步进电机(NEMA17)
28 : 28角步进电机(NEMA11)
4驱动丝杠种类
G : 精密滚珠丝杠
R : 轧制滚珠丝杠
Re : 树脂螺母进给丝杠
5导程 / 节距（mm）: 05表示5mm
6行程（mm）: 050表示50mm
7连接器种类
N : 散线
E : El连接器（Tyco Electronics制）

1Series No.
DDA : Direct Drive Actuator Series
2Clynder type
AR : Captive type(anti-rotating device)
CL : Non-Captive type(without anti-rotating device)
3Motor size
42 : □42 Stepping Motor(NEMA17)
28 : □28 Stepping Motor(NEMA11)
4Lead Screw / Ball Screw type
G : Precision Ball Screw
R : Rolled Ball Screw
Re : Resin Lead Screw
5Lead / Pitch（mm）: 05 means 5mm
6Travel (mm) : 050 means 500mm
7Connector type
N : No connector (Bare)
E : El connector (Tyco Electronics)

Miniature Electric Cylinder 微型电动缸

DDAAR28-G01 040

Lead（导程）1mm
Travel（行程）40mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	1mm
Travel 行程	40mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	20mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	50N
Mass 重量	270g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

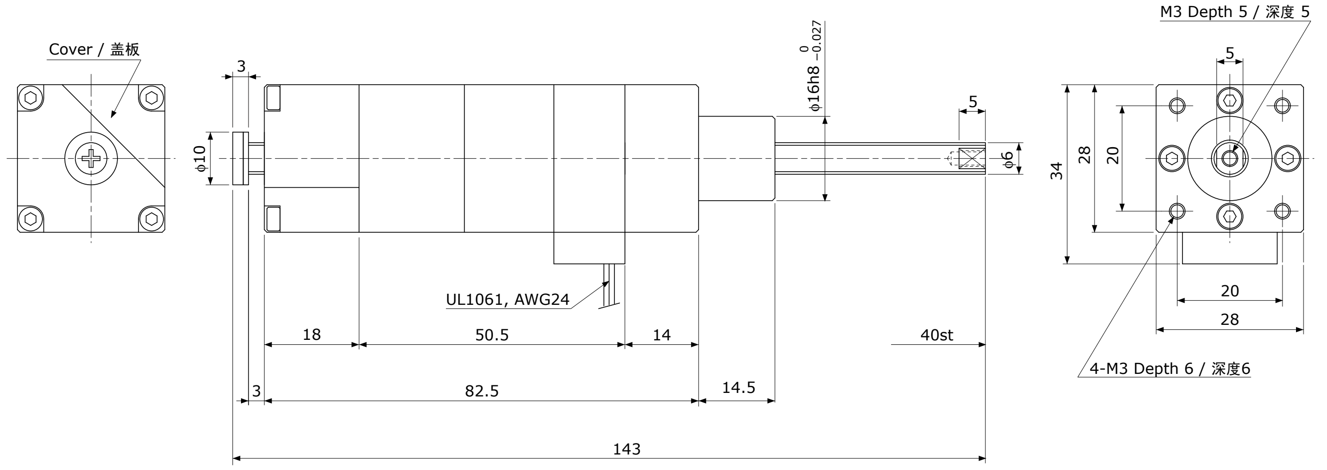
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- AR型不能受径向负载
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
如有需要，请垂询KSS。

Precautions
- Radial load is not able to apply on AR type
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
Please ask KSS if necessary.

DDAAR28-G02 040

Lead（导程）2mm
Travel（行程）40mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	40mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	25N
Mass 重量	270g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

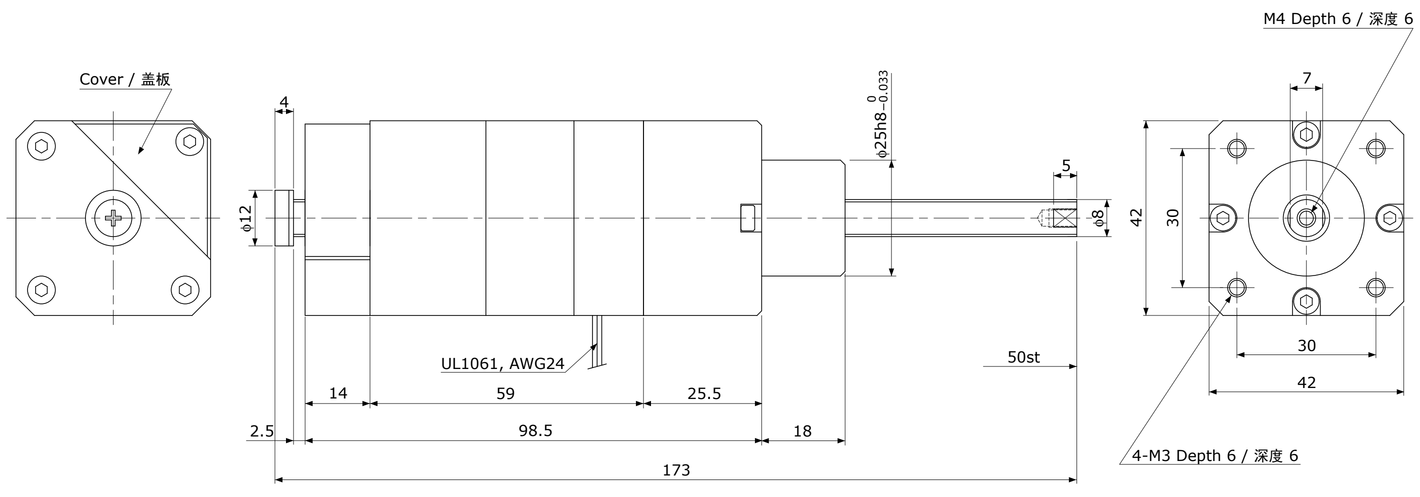
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- AR型不能受径向负载
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
如有需要，请垂询KSS。

Precautions
- Radial load is not able to apply on AR type
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
Please ask KSS if necessary.

DDAAR42-G02 050

Lead（导程）2mm
Travel（行程）50mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications　规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type　驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead　丝杠导程	2mm
Travel　行程	50mm
Repeatability 重复定位精度	±0.005mm
Lost Motion　空转	0.010mm
Maximum Speed　最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force　推力	80N
Mass　重量	660g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

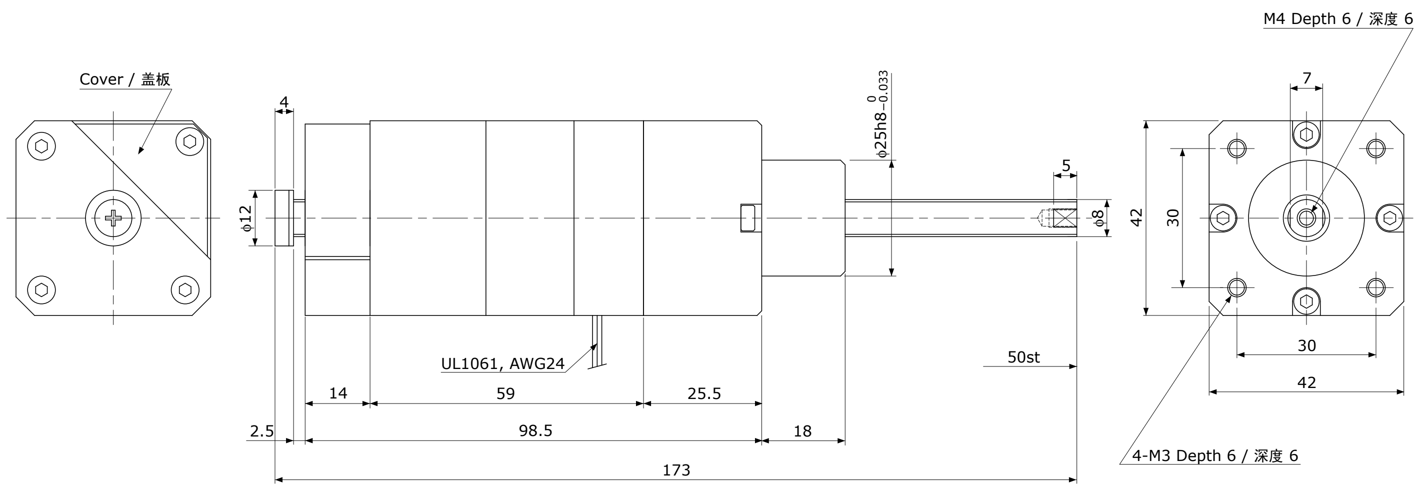
Motor Specifications　电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- AR型不能受径向负载
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- Radial load is not able to apply on AR type
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDAAR42-G05 050

Lead（导程）5mm
Travel（行程）50mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications　规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type　驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead　丝杠导程	5mm
Travel　行程	50mm
Repeatability 重复定位精度	±0.005mm
Lost Motion　空转	0.010mm
Maximum Speed　最高速度	100mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force　推力	30N
Mass　重量	660g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

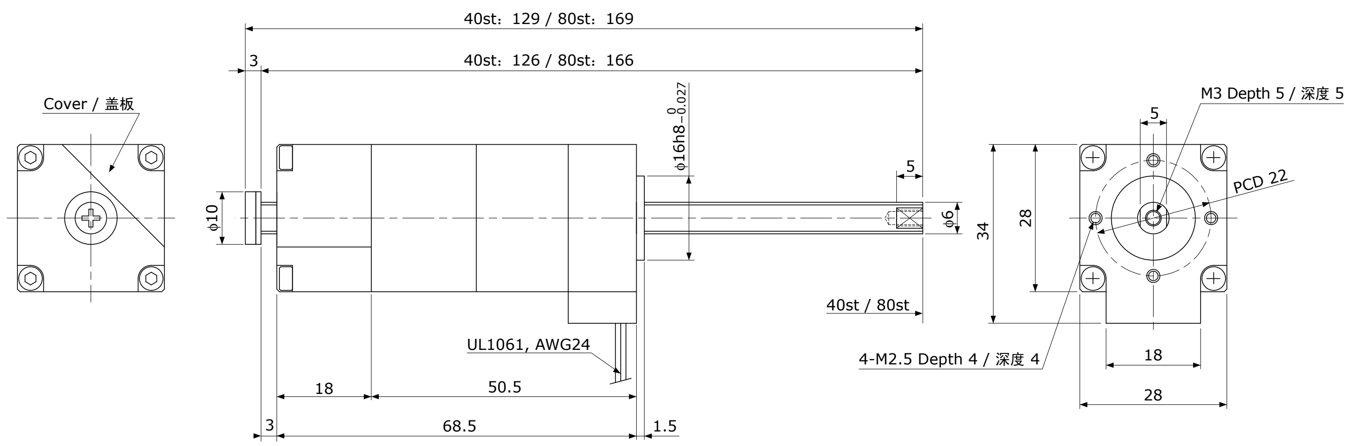
Motor Specifications　电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- AR型不能受径向负载
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- Radial load is not able to apply on AR type
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-G01 040/080

Lead（导程）1mm
Travel（行程）40/80mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	1mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	20mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	50N
Mass 重量	Travel 40mm/ 行程40mm : 230g Travel 80mm/ 行程80mm : 240g
Operating Temperature 使用温度范围	0～40℃ (No Condensation) 0～40℃（无结露）

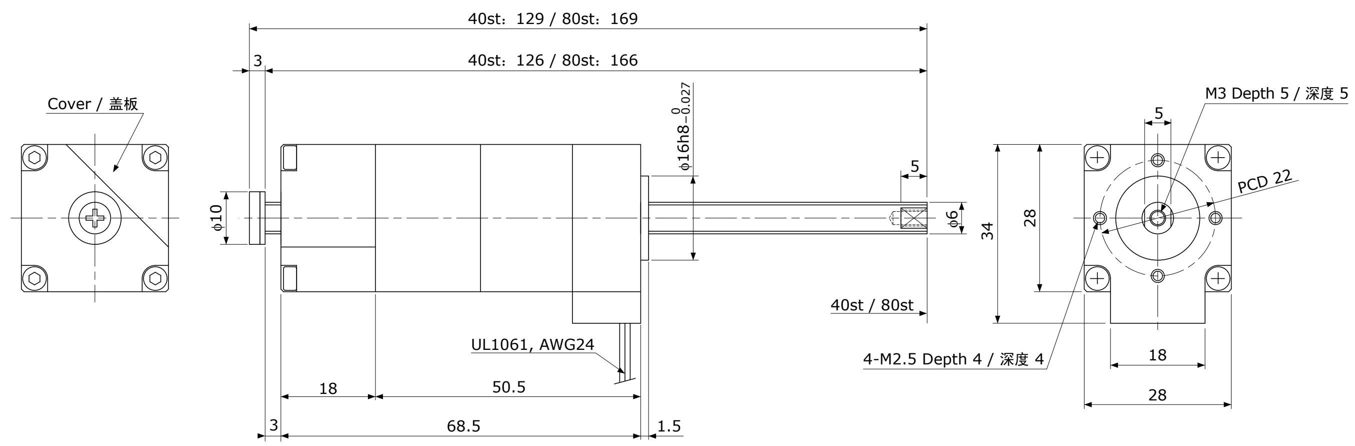
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V（DC）
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B（130℃） B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-G02 040/080

Lead（导程）2mm
Travel（行程）40/80mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	25N
Mass 重量	Travel 40mm/ 行程40mm : 230g Travel 80mm/ 行程80mm : 240g
Operating Temperature 使用温度范围	0～40℃ (No Condensation) 0～40℃（无结露）

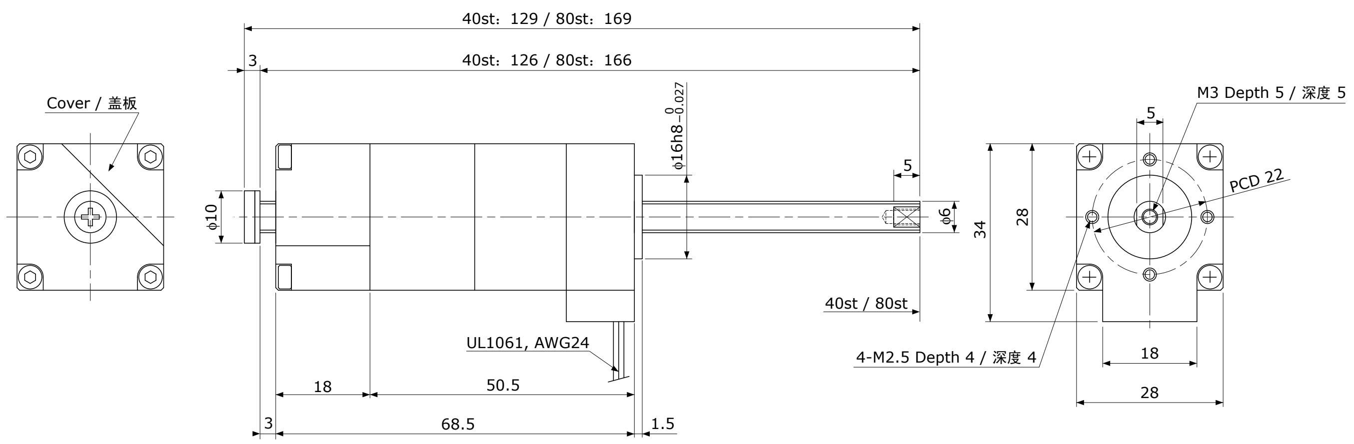
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V（DC）
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B（130℃） B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-R01 040/080

Lead(导程)1mm
Travel(行程)40/80mm



Motor lead wire /电机线(310mm)

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Rolled Ball Screw 轧制滚珠丝杠
Screw Lead 丝杠导程	1mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.010mm
Lost Motion 空转	0.020mm
Maximum Speed 最高速度	20mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	50N
Mass 重量	Travel 40mm/ 行程40mm : 230g Travel 80mm/ 行程80mm : 240g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

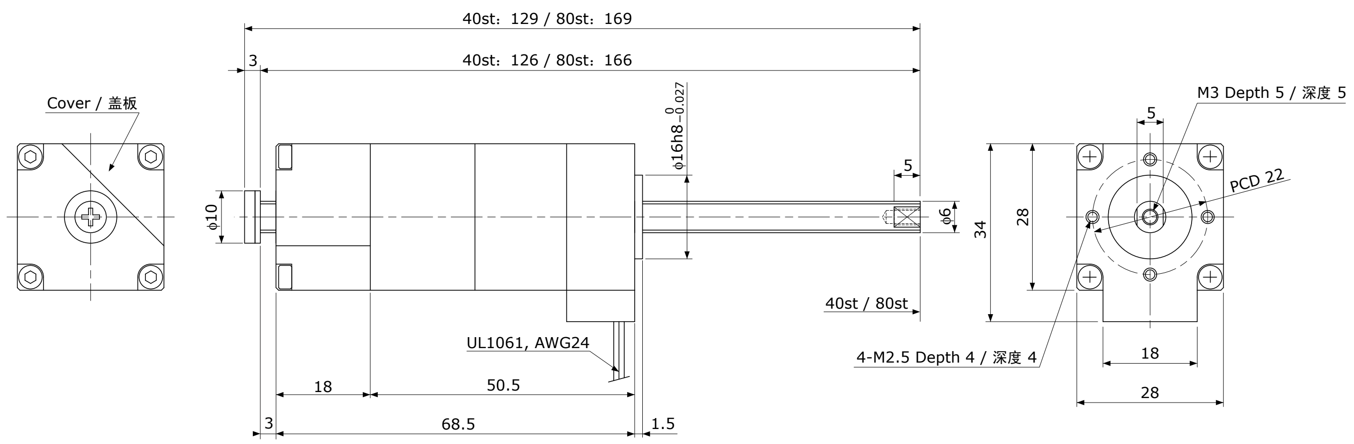
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-R02 040/080

Lead(导程)2mm
Travel(行程)40/80mm



Motor lead wire /电机线(310mm)

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Rolled Ball Screw 轧制滚珠丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.010mm
Lost Motion 空转	0.020mm
Maximum Speed 最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	25N
Mass 重量	Travel 40mm/ 行程40mm : 230g Travel 80mm/ 行程80mm : 240g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

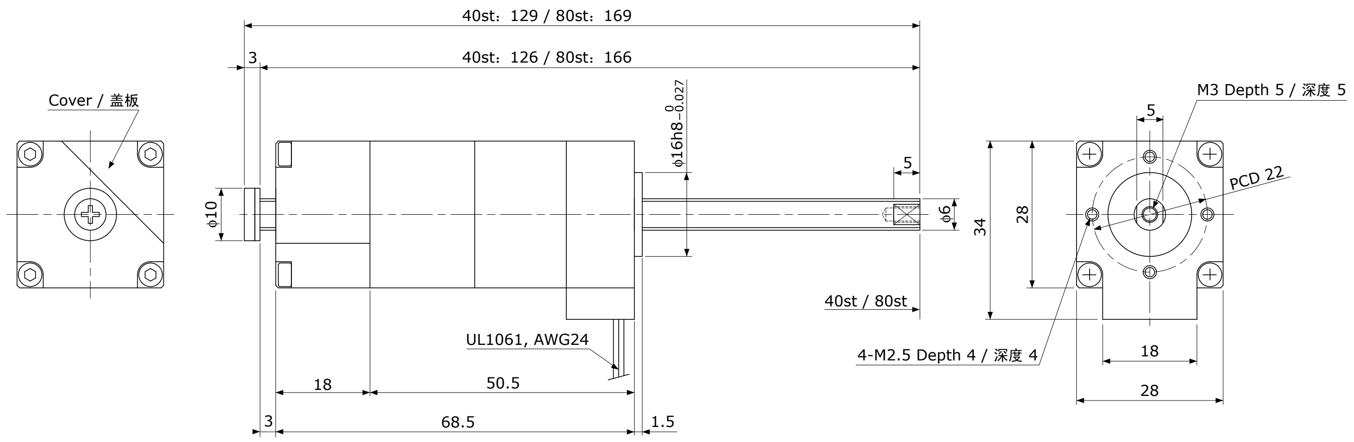
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-Re02 040/080

Lead(导程)2mm
Travel(行程)40/80mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Resin Lead Screw 树脂螺母进给丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.030mm
Lost Motion 空转	0.060mm
Maximum Speed 最高速度	20mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.4sec 0.4sec以上
Thrust Force 推力	10N
Mass 重量	Travel 40mm/ 行程40mm : 210g Travel 80mm/ 行程80mm : 220g
Operating Temperature 使用温度范围	0~40℃(No Condensation) 0~40℃(无结露)

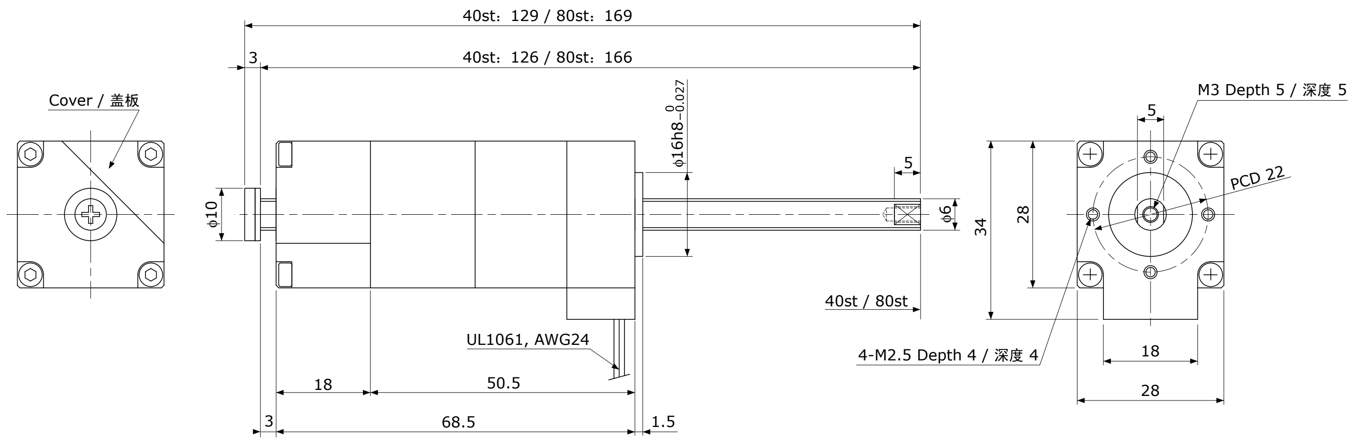
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL28-Re06 040/080

Lead(导程)6mm
Travel(行程)40/80mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA11 (□28)
Drive Screw type 驱动丝杠	Resin Lead Screw 树脂螺母进给丝杠
Screw Lead 丝杠导程	6mm
Travel 行程	40mm / 80mm
Repeatability 重复定位精度	±0.030mm
Lost Motion 空转	0.060mm
Maximum Speed 最高速度	60mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.4sec 0.4sec以上
Thrust Force 推力	2.5N
Mass 重量	Travel 40mm/ 行程40mm : 210g Travel 80mm/ 行程80mm : 220g
Operating Temperature 使用温度范围	0~40℃(No Condensation) 0~40℃(无结露)

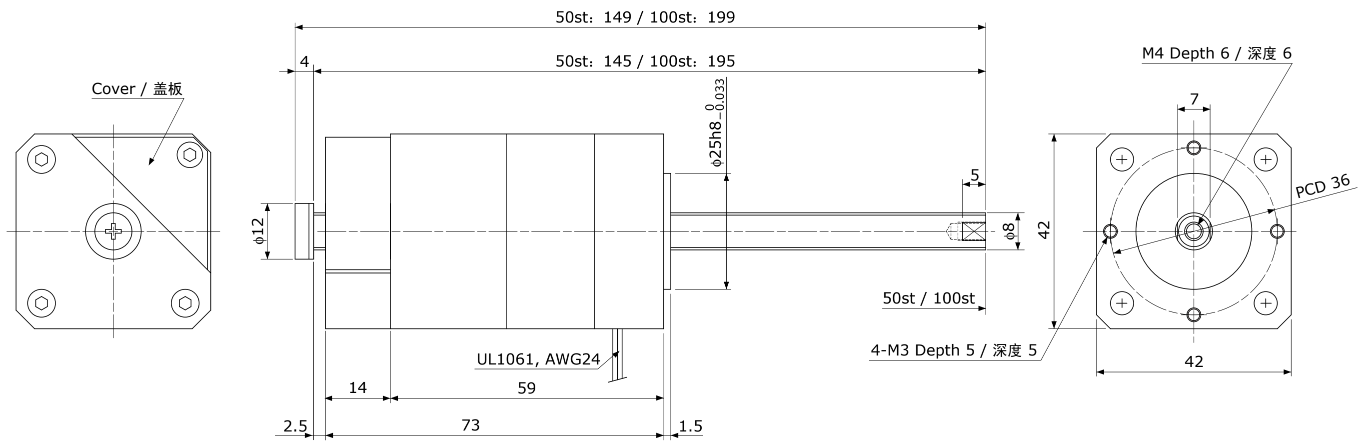
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	3.8V(DC)
Rated current 额定电流	0.67A/phase 0.67A/相
Winding resistance 绕线电阻	5.6Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-G02 050/100

Lead(导程)2mm
Travel(行程)50/100mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	50mm / 100mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	80N
Mass 重量	Travel 50mm/ 行程50mm : 530g Travel 100mm/ 行程100mm : 550g
Operating Temperature 使用温度范围	0～40℃ (No Condensation) 0～40℃ (无结露)

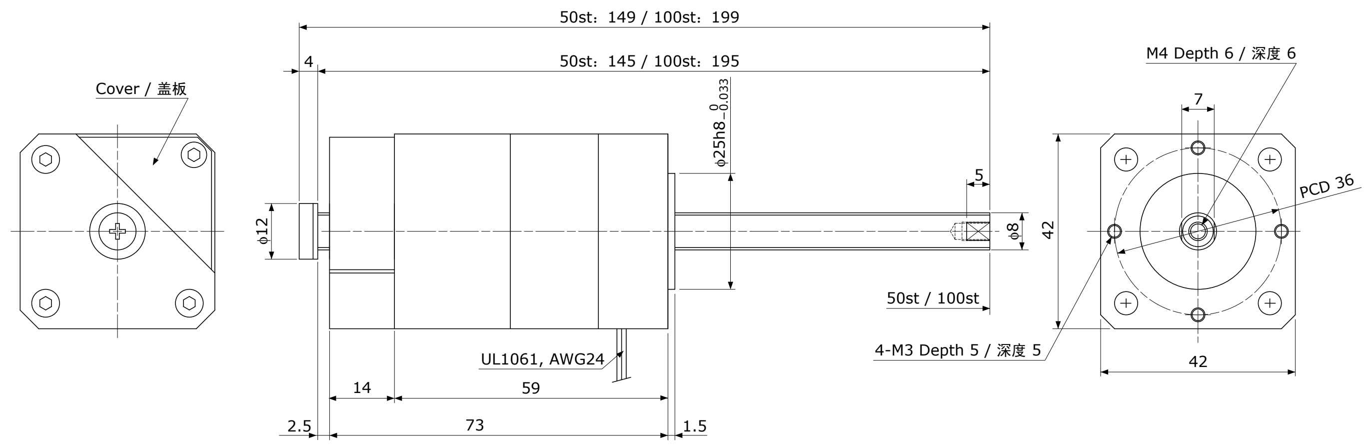
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V (DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B (130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-G05 050/100

Lead(导程)5mm
Travel(行程)50/100mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type 驱动丝杠	Precision Ball Screw 精密滚珠丝杠
Screw Lead 丝杠导程	5mm
Travel 行程	50mm / 100mm
Repeatability 重复定位精度	±0.005mm
Lost Motion 空转	0.010mm
Maximum Speed 最高速度	100mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force 推力	30N
Mass 重量	Travel 50mm/ 行程50mm : 530g Travel 100mm/ 行程100mm : 550g
Operating Temperature 使用温度范围	0～40℃ (No Condensation) 0～40℃ (无结露)

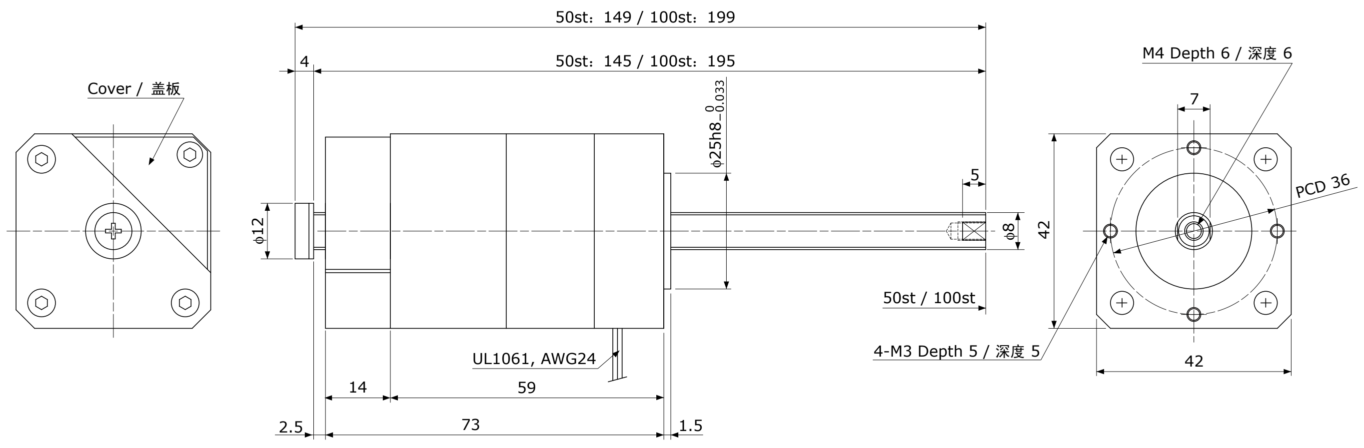
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V (DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B (130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-R02 050/100

Lead(导程)2mm
Travel(行程)50/100mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications　规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type　驱动丝杠	Rolled Ball Screw 轧制滚珠丝杠
Screw Lead　丝杠导程	2mm
Travel　行程	50mm / 100mm
Repeatability 重复定位精度	±0.010mm
Lost Motion　空转	0.020mm
Maximum Speed　最高速度	40mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force　推力	80N
Mass　重量	Travel 50mm/ 行程50mm : 530g Travel 100mm/ 行程100mm : 550g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

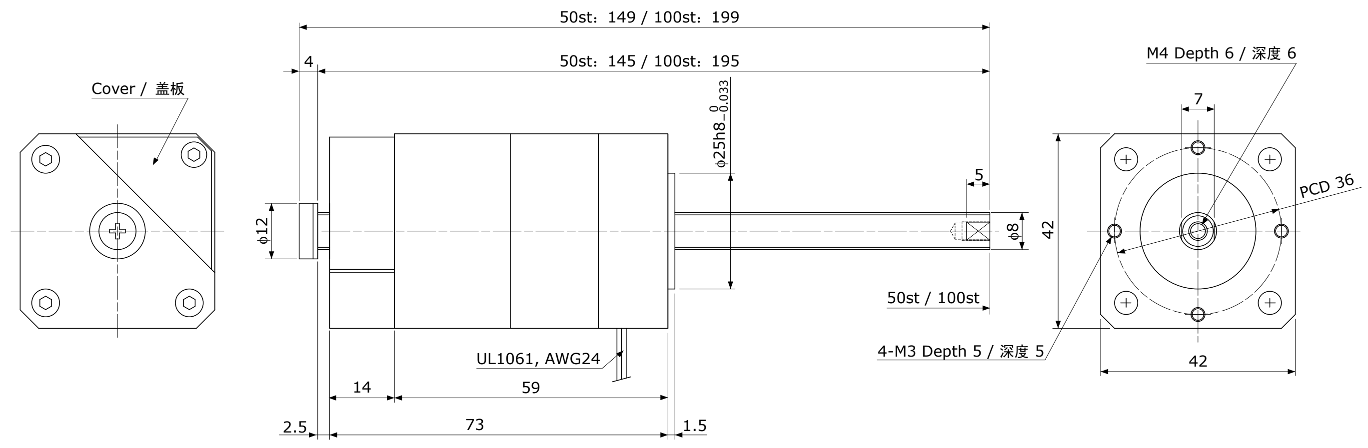
Motor Specifications　电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-R05 050/100

Lead(导程)5mm
Travel(行程)50/100mm



Motor lead wire /电机线（310mm）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

Specifications　规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type　驱动丝杠	Rolled Ball Screw 轧制滚珠丝杠
Screw Lead　丝杠导程	5mm
Travel　行程	50mm / 100mm
Repeatability 重复定位精度	±0.010mm
Lost Motion　空转	0.020mm
Maximum Speed　最高速度	100mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.2sec 0.2sec以上
Thrust Force　推力	30N
Mass　重量	Travel 50mm/ 行程50mm : 530g Travel 100mm/ 行程100mm : 550g
Operating Temperature 使用温度范围	0～40℃(No Condensation) 0～40℃(无结露)

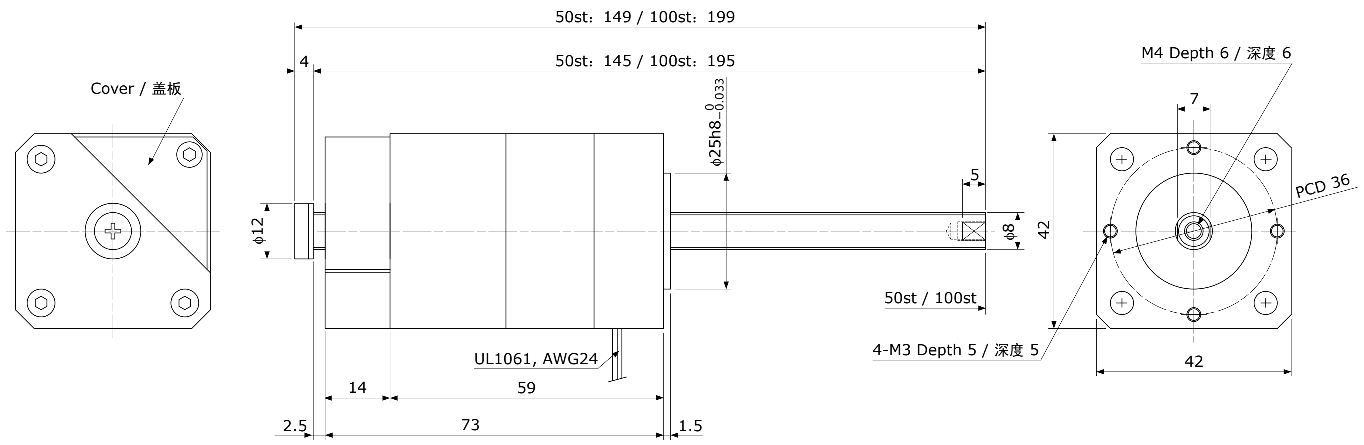
Motor Specifications　电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种（130℃）

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-Re02 050/100

Lead(导程)2mm
Travel(行程)50/100mm



Motor lead wire /电机线(310mm)

A	Black (黑)
Ā	Green (绿)
B	Red (红)
B̄	Blue (蓝)

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type 驱动丝杠	Resin Lead Screw 树脂螺母进给丝杠
Screw Lead 丝杠导程	2mm
Travel 行程	50mm / 100mm
Repeatability 重复定位精度	±0.030mm
Lost Motion 空转	0.060mm
Maximum Speed 最高速度	20mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.4ec 0.4sec以上
Thrust Force 推力	20N
Mass 重量	Travel 50mm/ 行程50mm : 490g Travel 100mm/ 行程100mm : 510g
Operating Temperature 使用温度范围	0~40℃(No Condensation) 0~40℃(无结露)

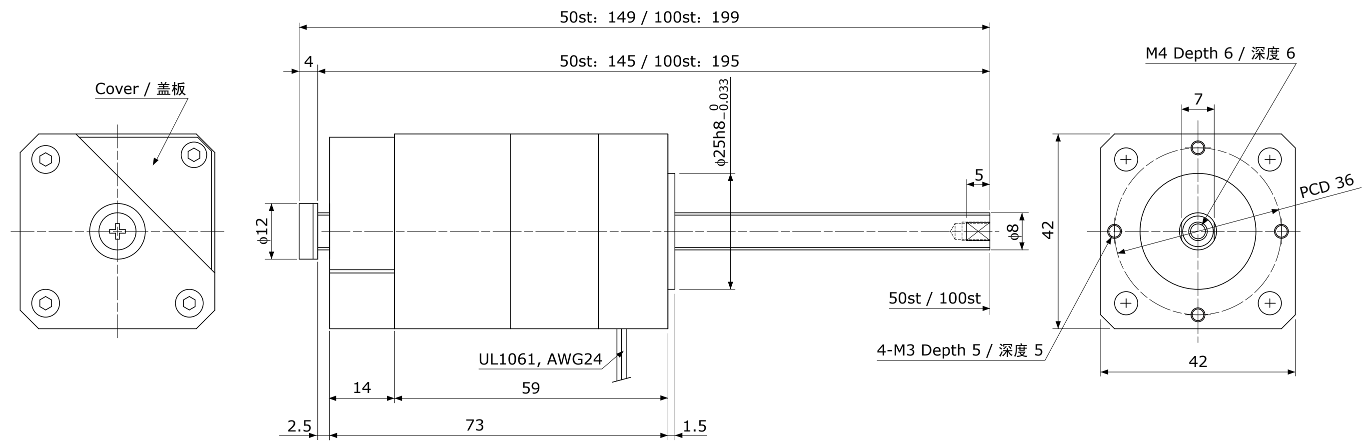
Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种 (130℃)

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

DDACL42-Re05 050/100

Lead(导程)5mm
Travel(行程)50/100mm



Motor lead wire /电机线(310mm)

A	Black (黑)
Ā	Green (绿)
B	Red (红)
B̄	Blue (蓝)

Specifications 规格	
Motor Frame Size 电机安装尺寸	NEMA17 (□42)
Drive Screw type 驱动丝杠	Resin Lead Screw 树脂螺母进给丝杠
Screw Lead 丝杠导程	5mm
Travel 行程	50mm / 100mm
Repeatability 重复定位精度	±0.030mm
Lost Motion 空转	0.060mm
Maximum Speed 最高速度	50mm/sec
Acceleration & Deceleration time 加减速时间	Min. 0.4sec 0.4sec以上
Thrust Force 推力	10N
Mass 重量	Travel 50mm/ 行程50mm : 490g Travel 100mm/ 行程100mm : 510g
Operating Temperature 使用温度范围	0~40℃(No Condensation) 0~40℃(无结露)

Motor Specifications 电机规格	
Driving method 励磁方式	2-phase Bi-polar 2相 双极方式
Rated Voltage 额定电压	2.5V(DC)
Rated current 额定电流	1.2A/phase 1.2A/相
Winding resistance 绕线电阻	2.1Ω
Insulation Class 绝缘等级	Class B(130℃) B种 (130℃)

注意事项
- CL型无止转结构
  客户使用时需另装止转结构。
- 上述规格为垂直状态且移动初期的参考值。
- 标准规格没有装配传感器。
  如有需要，请垂询KSS。

Precautions
- CL type does not have an anti-rotating device.
  External anti-rotating device should be set up when usage.
- Specifications above are reference value measured in vertical position at virgin condition.
- Sensor is not built in this standard design.
  Please ask KSS if necessary.

●选项 / Option

为了使用方便，我司备有AR/CL执行器的标准驱动器，连接线等附属品。

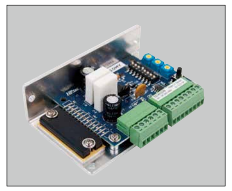
KSS provides Standard Stepping Motor Driver and Extension Cable for AR/CL Cylinder in order to make it easy to use.

［标准驱动器 / Stepping Motor Driver］

SD4030B2

2相步进电机用推荐驱动器。可设定8种步进角（V108页）。

This is recommended Driver for 2-phase stepping Motor.
It has Micro-Step function with 8-step angle.（page V108）



※注意事项

・SD4030B2的出货时电流设定为2A。
・使用前请确认电机额定电流之后， 再设定驱动器电流。
・请按驱动器附属使用说明书内容设定电流。

※Caution

・The factory setting of SD4030B2 is 2A.
・Please be sure to perform a current setup of Driver based on Motor Rated current before use.
・Please confirm with the operation manual attached to a Driver about current setup.

［连接线］

KSS AR/CL电动缸和KSS推荐驱动器专用连接线。
以下实例以外，可指定长度，连接器形状。
一端为散线。

［Extension Cable］

Extension Cable between KSS AR/CL Cylinder and KSS recommended Stepping Motor Driver.
Please designate Cable length and Connector type in accordance with the example below.
Please note that one side of Extension Cable is cut edge only（no connector）.

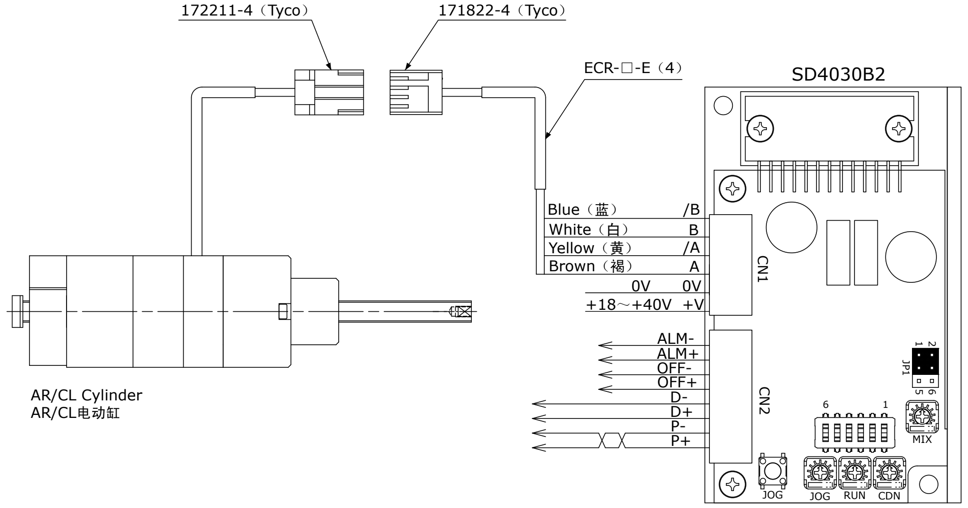
EC R — 2 — E(4)
1 2 3 4

1连接线记号
2连接线种类
R：耐屈曲线
3长度（m）
4连接器形状
N：散线
E（4）：EI连接器4芯

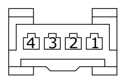
1Extension Cable
2Cable type
R : Robot Cable
3Cable length（m）
4Connector type
N : No connector（Cut only）
E（4）: EI connector 4-pins

Miniature Electric Cylinder
微型电动缸

●驱动器接线图 / Connection Diagram

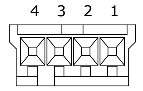


电机线172211-4（公头）/Motor cable 172211-4（male）



1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（Red/红）
3	Stepping Motor /A（Green/绿）
4	Stepping Motor A（Black/黑）

电机连接线171822-4（母端）/Motor Extension cable 171822-4（female）



1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（White/白）
3	Stepping Motor /A（Yellow/黄）
4	Stepping Motor A（Brown/褐）

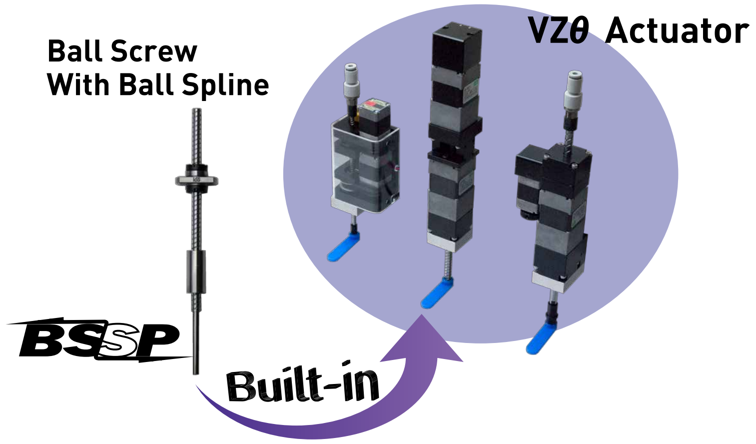
Miniature Electric Cylinder
微型电动缸

复合功能VZθ执行器篇
Multi-Functional VZθActuator

VZθ 系列
VZθ Series

应用KSS微型滚珠丝杆花键（BSSP），在同一产品里实现直线运动（z）,旋转（θ），吸附（Vacuum）功能的模组化产品。
The brand new products which applied the KSS miniature Ball Screw with Ball Spline（BSSP），and realized three functions, linear motion（Z），rotary motion（θ），and vacuum（V），with one product.

微型滚珠丝杠花键（BSSP）
Ball Screw with Ball Spline（BSSP）



●种类与特征 / Types and Features

KSS复合功能 VZθ执行器有，直接驱动型，混合驱动型，传送带驱动型3种类型。
可按实际用途及规格内容选用
KSS provides 3-types of multi-functional VZθ Actuator, which are Direct Drive type, Hybrid Drive type, and Belt-Drive type. It is possible to select one of them according to your specifications or application.

直接驱动型
Direct Drive type

混合驱动型
Hybrid Drive type

传送带驱动型
Belt Drive type

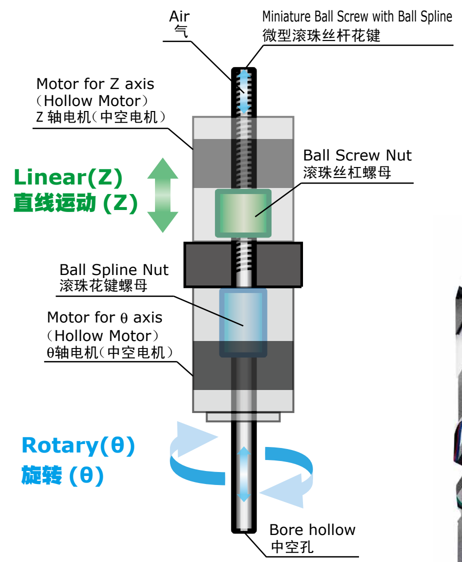
●规格 / Specifications

Model / 种类	Shaft dia. 直径 (mm)	Lead 导程 (mm)	Travel 行程 (mm)	Max. Speed (Z) 最高速度 (Z) (mm/sec)	Max. speed (θ) 最高速度 (θ) (rev/sec)	Thrust Force 推力 (N)	Max. Permissible Moment 最大允许负载力矩 (kg·m²)
Direct Drive type 塔型	φ6	6	50	72	3	7	0.15×10^{-4}
		10		120	3	5	
	φ8	5	50	100	3	50	0.15×10^{-3}
		10		200	3	25	
Hybrid Drive type 混合型	φ6	10	50	200	3	5	0.15×10^{-4}
Belt-Drive type 传送带驱动型	φ4	4	50	80	3	5	0.9×10^{-5}
	φ6	10	50, 100	200	3	10	0.5×10^{-4}
	φ8	10	150	200	3	10	0.5×10^{-4}

●构造 / Structures

【直接驱动型 / Direct Drive type】

中空电机直接驱动滚珠丝杠，滚珠花键螺母，从而实现紧凑型外观形状。
Slim form is realized by driving a Ball Screw and a Ball Spline Nut directly bult in a Hollow Motor.

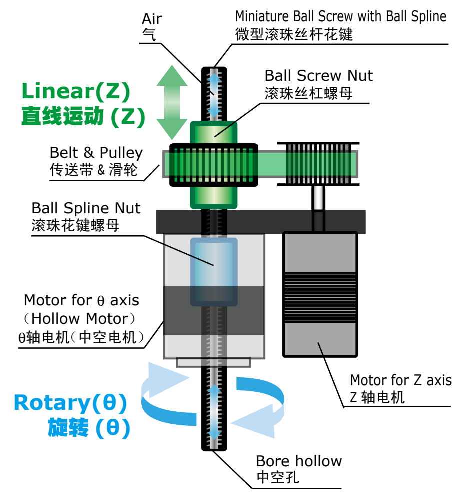


-动作原理-
直线运动
驱动Z轴电机旋转滚珠丝杠螺母，实现直线运动。
此时滚珠花键螺母起到丝杠轴的止转和导向结构的作用。
旋转
滚珠丝杠螺母和滚珠花键螺母同速同方向旋转，实现驱动轴原地旋转无上下直线运动。
吸附
利用丝杠轴的中空孔提供正压和负压

-Principle of operation-
Linear motion（Z）
Linear motion by driving a Z-axis Motor and rotating the Ball Screw Nut. At this time, the Ball Spline Nut plays a role of anti-rotating device and slide guide of a Screw Shaft.
Rotation（θ）
Turn the Ball Screw Nut and Ball Spline Nut at the same time, same speed and direction, the Shaft rotates without moving up & down.
Vacuum
Bore Hollow can be multi uses.
For example vacuum and blow function.

【混合驱动型/ Hybrid Drive type】

除了利用中空电机的直接驱动型以外，利用一般电机和传送带驱动相结合实现了轴向紧凑型设计。
Combination of the Hollow Motor and Normal Motor gives dramatically short length of Actuator Body.

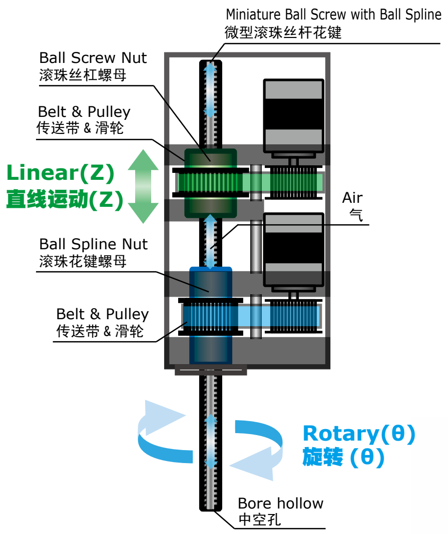


-动作原理-
直线运动
除了利用中空电机的直接驱动型以外，利用一般电机和传送带驱动相结合实现了轴向紧凑型设计。此时滚珠花键螺母起到丝杠轴的止转和导向结构作用。
旋转
滚珠丝杠螺母和滚珠花键螺母同速同方向旋转，实现驱动轴原地旋转无上下直线运动。
吸附
利用丝杠轴的中空孔提供正压和负压

-Principle of operation-
Linear motion（Z）
For linear motion, drive the Ball Screw Nut by Z-axis Motor through the Belt. In this case, Ball Spline Nut plays a role of slide guide & anti-rotating device.
Rotation（θ）
Turn the Ball Screw Nut and Ball Spline Nut at the same time, same speed and direction, the Shaft rotates without moving up & down.
Vacuum
Bore Hollow can be multi uses.
For example vacuum and blow function.

【传送带驱动型 / Belt Drive type】

传送带驱动实现电机泛用性，对应各种选项。
Wide variety of Motor can be set on this Actuator.
This means various options are available based on Motor Specifications.



-动作原理-
直线运动
驱动Z轴电机旋转滚珠丝杠螺母，实现直线运动。此时滚珠花键螺母起到丝杠轴的止转和导向结构的作用。
旋转
滚珠丝杠螺母和滚珠花键螺母同速同方向旋转，实现驱动轴原地旋转无上下直线运动。
吸附
利用丝杠轴的中空孔提供正压和负压

-Principle of operation-
Linear motion (Z)
For linear motion, drive the Ball Screw Nut by Z-axis Motor through the Belt. In this case, Ball Spline Nut plays a role of slide guide & anti-rotating device.
Rotation (θ)
Turn the Ball Screw Nut and Ball Spline Nut at the same time, same speed and direction, the Shaft rotates without moving up & down.
Vacuum
Bore Hollow can be multi uses.
For example vacuum and blow function.

●公称型号 / Model number notation

【直接驱动型 / Direct Drive type　混合驱动型 / Hybird Drive type】

DDA	VZ	42	—	G	05	050	TW	N	XXX
1	2	3		4	5	6	7	8	9

1系列号
DDA : 直接驱动执行器系列
2执行器种类记号
Z : Zθ执行器
VZ : VZθ执行器
3电机尺寸
42 : 42角步进电机
28 : 28角步进电机
4驱动丝杠种类
G : 精密级滚珠丝杠+滚珠花键
5导程/节距（mm）05表示5mm
6行程（mm）050表示50mm
7结构记号
TW : 直接驱动型
HB : 混合驱动型
8连接器种类
N : 散线
E : EI连接器（Tyco Electronics制）
9特记

1Series No.
DDA : Direct Drive Actuator Series
2Actuator type
Z : Zθ(Z-theta) Actuator
VZ : VZθ(VZ-theta) Actuator
3Motor size
42 : □42 Stepping Motor
28 : □28 Stepping Motor
4Lead Screw / Ball Screw type
G : Precision Ball Screw+Ball Spline
5Lead / Pitch (mm) : 05 means 5mm
6Travel(mm) : 050 means 50mm
7Structure type
TW : Direct Drive
HB : Hybrid Drive
8Connector type
N : No connector(Bare)
E : EI connector(Tyco Electronics)
9Extra notation

【传送带驱动型 / Belt Drive type】

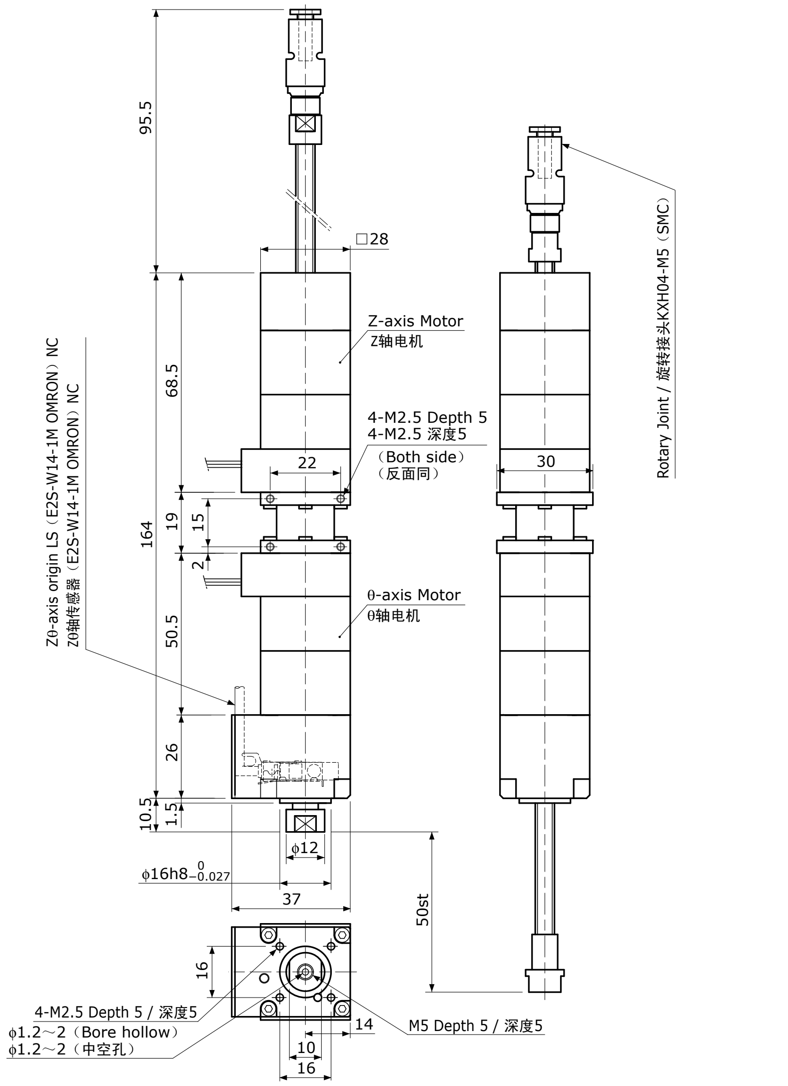
BD	VZ	06	—	G	10	050	N	01	XXX
1	2	3		4	5	6	7	8	9

1系列号
BD : 传送带驱动执行器系列
2执行器种类记号
Z : Zθ执行器
VZ : VZθ执行器
3驱动丝杠直径: 06表示6mm
4驱动丝杠种类
G : 精密级滚珠丝杠+滚珠花键
5导程/节距（mm）10表示10mm
6行程（mm）050表示50mm
7连接器种类
N : 散线
E : EI连接器（Tyco Electronics制）
8电机识别
01 : 20角步进电机
02 : 28角步进电机
9特记

1Series No.
BD : Belt Drive Actuator Series
2Actuator type
Z : Zθ(Z-theta) Actuator
VZ : VZθ(VZ-theta) Actuator
3Shaft Nominal diameter : 06 means 6mm
4Lead Screw / Ball Screw type
G : Precision Ball Screw+Ball Spline
5Lead / Pitch (mm) : 10 means 10mm
6Travel(mm) : 050 means 50mm
7Connector type
N : No connector(Bare)
E : EI connector(Tyco Electronics)
8Motor type
01 : □20 2-phase Stepping Motor
02 : □28 2-phase Stepping Motor
9Extra notation

DDA VZ 28 - G 06 050 TW N

□28 2-phase Stepping Motor（2相步进电机）
Lead（导程）6mm Travel（行程）50mm



Parts List 主要构成部件	
Motor 马达	□28 Hollow Stepping Motor 0.67A/phase □28 中空步进马达 0.67A/相
Drive Screw 驱动丝杠	Ball Screw φ6（Lead 6mm） 滚珠丝杠 φ6（导程 6mm）
Sliding Guide 滑动机构	Ball Spline φ6mm 滚珠花键 φ6mm
Sensor （Linear,Rotary） 传感器 （直动，旋转）	Proximity Sensor E2S-W14-1M（OMRON） 近距离传感器 E2S-W14-1M（欧姆龙）

Motor（Z,θ-axis）/电机（Z,θ轴）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

UL1061,AWG24（310mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.010mm	±0.03°
Resolution 分解度	30μm （Full Step / 全程）	1.8° （Full Step / 全程）
Maximum Speed 最高速度	72mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.12sec 0.12sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	7N	—
Maximun Permissible Moment 最大允许力矩	—	0.15×10⁻⁴kg・m²（※）
Mass 重量	540g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ20mm	340mm（300g）	120mm（300g）
φ30mm	65mm（130g）	25mm（130g）
φ40mm	20mm（75g）	7.5mm（75g）

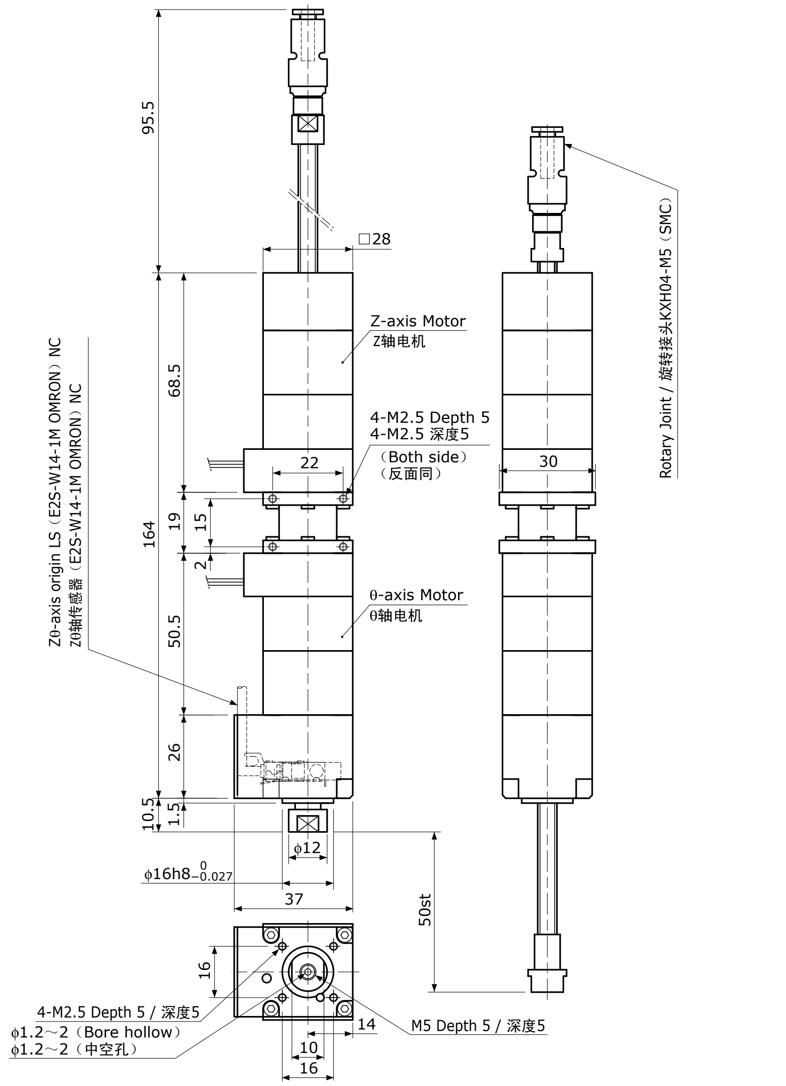
注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in case Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

※ θ轴最大允许负载力矩请参照【负载力矩参照表】。
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

DDA VZ 28 - G 10 050 TW N

□28 2-phase Stepping Motor（2相步进电机）
Lead（导程）10mm Travel（行程）50mm



Parts List 主要构成部件	
Motor 马达	□28 Hollow Stepping Motor 0.67A/phase □28 中空步进马达 0.67A/相
Drive Screw 驱动丝杠	Ball Screw φ6（Lead 10mm） 滚珠丝杠 φ6（导程10mm）
Sliding Guide 滑动机构	Ball Spline φ6mm 滚珠花键 φ6mm
Sensor （Linear,Rotary） 传感器 （直动，旋转）	Proximity Sensor E2S-W14-1M（OMRON） 近距离传感器 E2S-W14-1M（欧姆龙）

Motor（Z,θ-axis）/电机（Z,θ轴）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

UL1061,AWG24（310mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.010mm	±0.03°
Resolution 分解度	50μm （Full Step / 全程）	1.8° （Full Step / 全程）
Maximum Speed 最高速度	120mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.12sec 0.12sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	5N	—
Maximun Permissible Moment 最大允许力矩	—	0.15×10⁻⁴kg・m²（※）
Mass 重量	540g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ20mm	340mm（300g）	120mm（300g）
φ30mm	65mm（130g）	25mm（130g）
φ40mm	20mm（75g）	7.5mm（75g）

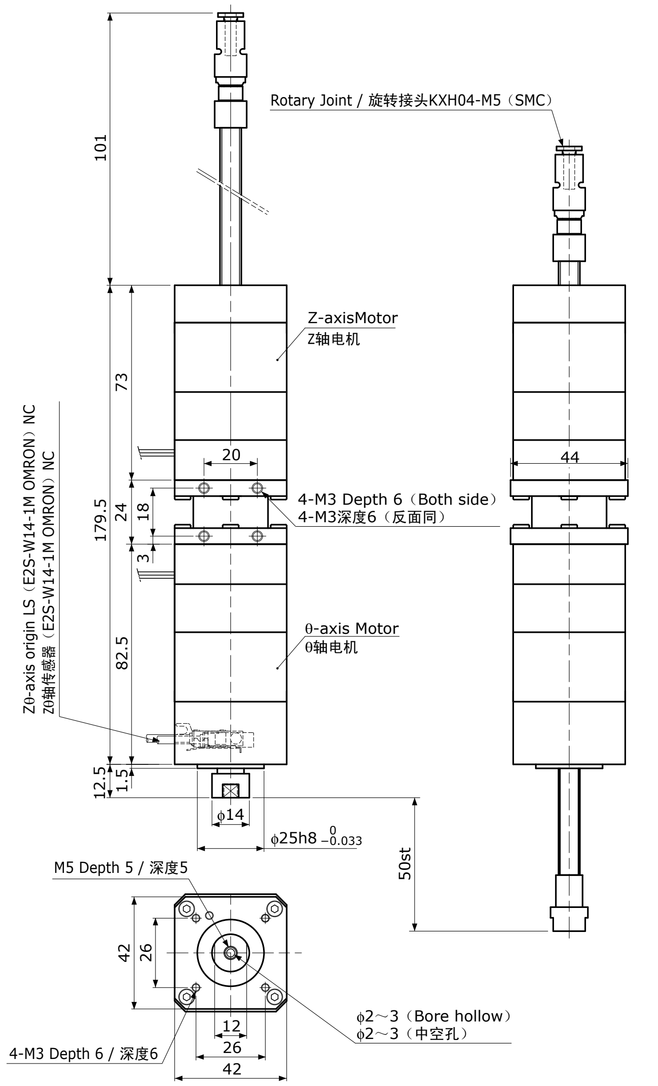
注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in case Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

※ θ轴最大允许负载力矩请参照【负载力矩参照表】。
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

DDA VZ 42 - G 05 050 TW N

□42 2-phase Stepping Motor（2相步进电机）
Lead（导程）5mm Travel（行程）50mm



Parts List 主要构成部件	
Motor 马达	□42 Hollow Stepping Motor 1.2A/phase □42 中空步进马达 1.2A/相
Drive Screw 驱动丝杠	Ball Screw φ8（Lead 5mm） 滚珠丝杠 φ8（导程 5mm）
Sliding Guide 滑动机构	Ball Spline φ8mm 滚珠花键 φ8mm
Sensor （Linear, Rotary） 传感器 （直动，旋转）	Proximity Sensor E2S-W14-1M（OMRON） 近距离传感器 E2S-W14-1M（欧姆龙）

Motor（Z,θ-axis）/电机（Z,θ轴）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

UL1061,AWG24（310mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.010mm	±0.03°
Resolution 分解度	25μm （Full Step / 全程）	1.8° （Full Step / 全程）
Maximum Speed 最高速度	100mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	50N	—
Maximun Permissible Moment 最大允许力矩	—	0.15×10⁻³kg· m²（※）
Mass 重量	1120g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

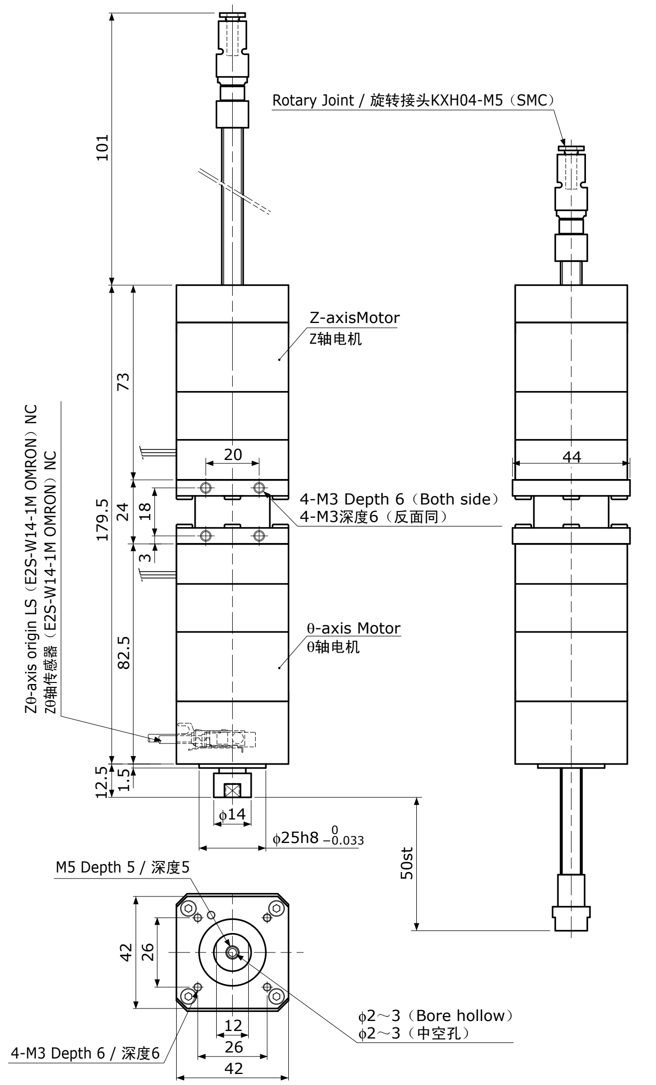
Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ30mm	670mm （1300g）	240mm （1300g）
φ50mm	85mm（460g）	30mm（460g）
φ100mm	5mm（110g）	1.5mm（90g）

注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in case Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

DDA VZ 42 - G 10 050 TW N

□42 2-phase Stepping Motor（2相步进电机）
Lead（导程）10mm Travel（行程）50mm



Parts List 主要构成部件	
Motor 马达	□42 Hollow Stepping Motor 1.2A/phase □42 中空步进马达 1.2A/相
Drive Screw 驱动丝杠	Ball Screw φ8（Lead 10mm） 滚珠丝杠 φ8（导程10mm）
Sliding Guide 滑动机构	Ball Spline φ8mm 滚珠花键 φ8mm
Sensor （Linear, Rotary） 传感器 （直动，旋转）	Proximity Sensor E2S-W14-1M（OMRON） 近距离传感器 E2S-W14-1M（欧姆龙）

Motor（Z,θ-axis）/电机（Z,θ轴）

A	Black（黑）
Ā	Green（绿）
B	Red（红）
B̄	Blue（蓝）

UL1061,AWG24（310mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.010mm	±0.03°
Resolution 分解度	50μm （Full Step / 全程）	1.8° （Full Step / 全程）
Maximum Speed 最高速度	200mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	25N	—
Maximun Permissible Moment 最大允许力矩	—	0.15×10⁻³kg· m²（※）
Mass 重量	1120g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

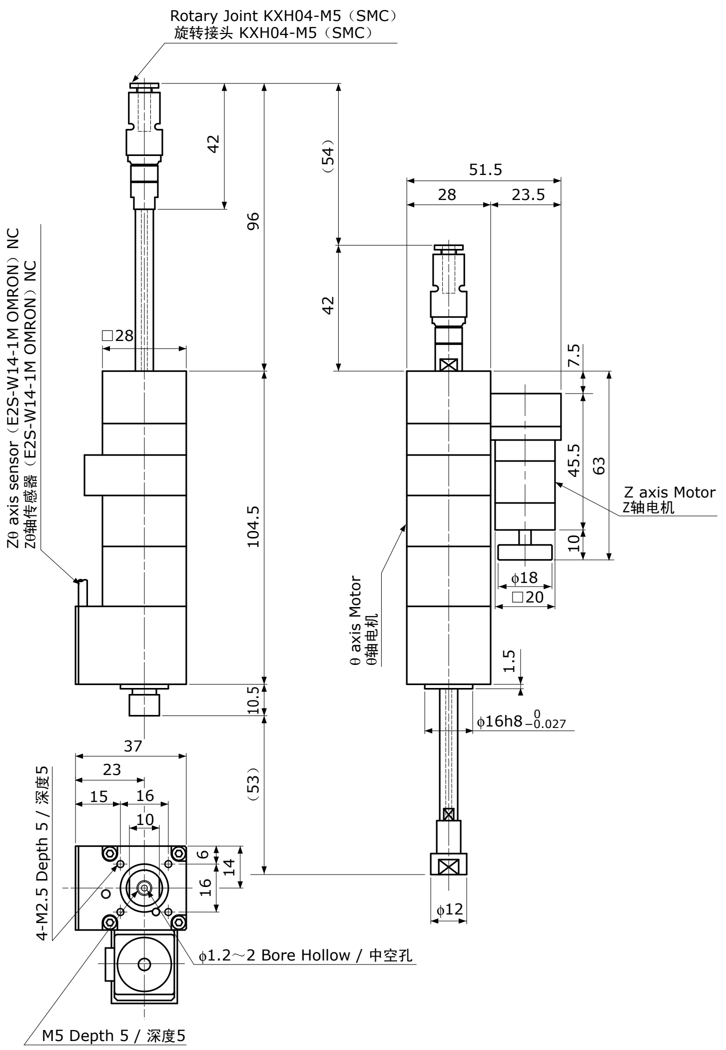
Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ30mm	670mm （1300g）	240mm （1300g）
φ50mm	85mm（460g）	30mm（460g）
φ100mm	5mm（110g）	1.5mm（90g）

注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in case Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

DDA VZ 28-G 10 050 HB N

□20/28 2-phase Stepping Motor（2相步进电机）
Lead（导程）10mm Travel（行程）50mm



Parts List 主要构成部件		
Motor 马达	Z	□20 Stepping Motor 0.5A/phase □20 步进电机 0.5A/相
	θ	□28 Hollow Stepping Motor 0.67A/phase □28 中空步进马达 0.67A/相
Drive Screw 驱动丝杠	Ball Screw φ6（Lead 10mm） 滚珠丝杠 φ6（导程 10mm）	
Sliding Guide 滑动机构	Ball Spline φ6mm 滚珠花键 φ6mm	
Sensor (Linear, Rotary) 传感器 （直动，旋转）	Proximity Sensor E2S-W14-1M（OMRON） 近距离传感器 E2S-W14-1M（欧姆龙）	

Z-axis Motor/Z 轴电机

A	Black（黑）
$\overline{A}$	Green（绿）
B	Red（红）
$\overline{B}$	Blue（蓝）

UL3265,AWG26（310mm）

θ-axis Motor/θ轴电机

A	Black（黑）
$\overline{A}$	Green（绿）
B	Red（红）
$\overline{B}$	Blue（蓝）

UL1061,AWG24（310mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.020mm	±0.03°
Resolution 分解度	25μm （Full Step / 全程）	1.8° （Full Step / 全程）
Maximum Speed 最高速度	200mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	5N	—
Maximun Permissible Moment 最大允许力矩	—	0.15×10^{-4}kg· m^2（※）
Reduction ratio 减速比	1/2	—
Mass 重量	410g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

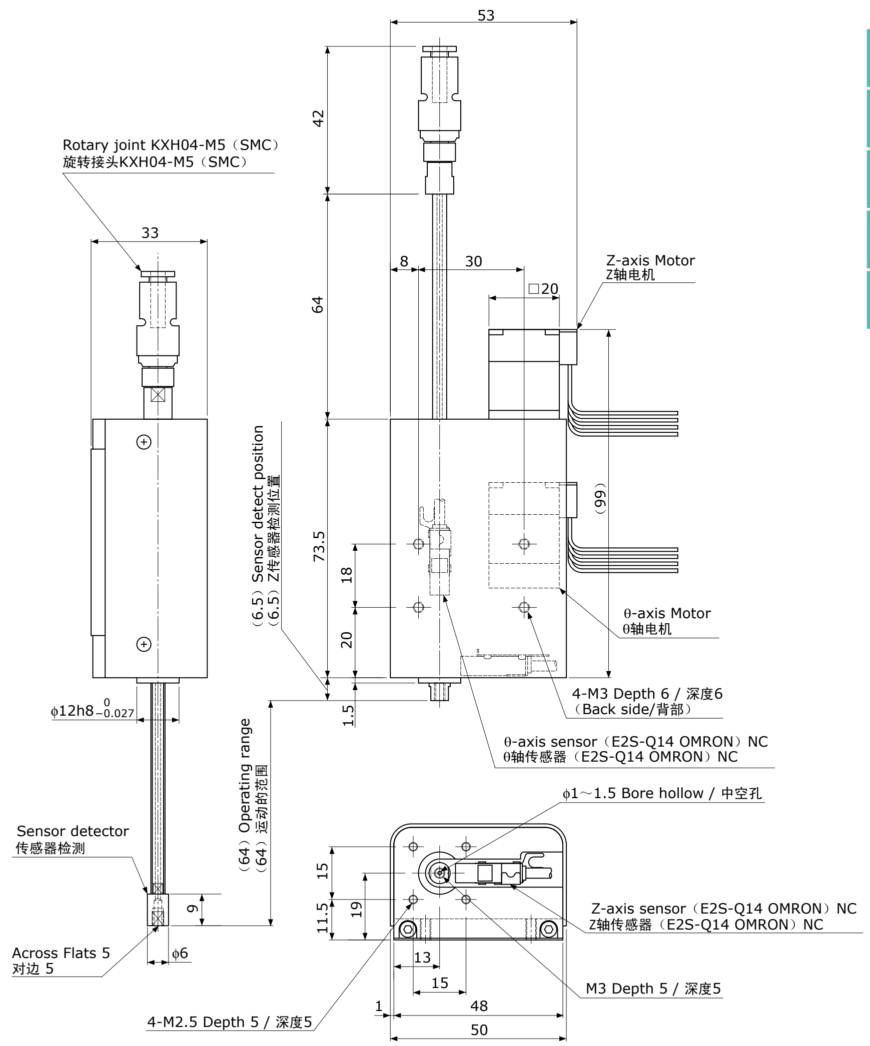
Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ20mm	340mm（300g）	120mm（300g）
φ30mm	65mm（130g）	25mm（130g）
φ40mm	20mm（75g）	7.5mm（75g）

注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

BD VZ 04-G 04 050 N 01

□20 2-phase Stepping Motor（2相步进电机）
Lead（导程）4mm Travel（行程）50mm



Parts List 主要构成部件	
Motor 马达	□20 Stepping Motor 0.5A/phase □20 步进电机 0.5A/相
Drive Screw 驱动丝杠	Ball Screw φ4（Lead 4mm） 滚珠丝杠 φ4（导程 4mm）
Sliding Guide 滑动机构	Ball Spline φ4mm 滚珠花键 φ4mm
Sensor 传感器	Proximity Sensor E2S-Q14（OMRON） 近距离传感器 E2S-Q14（欧姆龙）

Motor（Z,θ-axis）/电机（Z,θ轴）

A	Black（黑）
$\overline{A}$	Green（绿）
B	Red（红）
$\overline{B}$	Blue（蓝）

UL3265,AWG26（300mm）

Sensor（Z,θ-axis）/ 传感器（Z,θ轴）

+12～24V	Brown（褐）
LS	Black（黑）
GND	Blue（蓝）

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm	± 360°
Repeatability 重复定位精度	±0.020mm	±0.03°
Resolution 分解度	10μm （Full Step / 全程）	0.9° （Full Step / 全程）
Maximum Speed 最高速度	80mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min.0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	5N	—
Maximun Permissible Moment 最大允许力矩	—	0.9×10^{-5}kg· m^2（※）
Reduction ratio 减速比	1/2	1/2
Mass 重量	300g	
Operating Temperature 使用温度范围	0～40℃（No Condensation） 0～40℃（无结露）	

※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

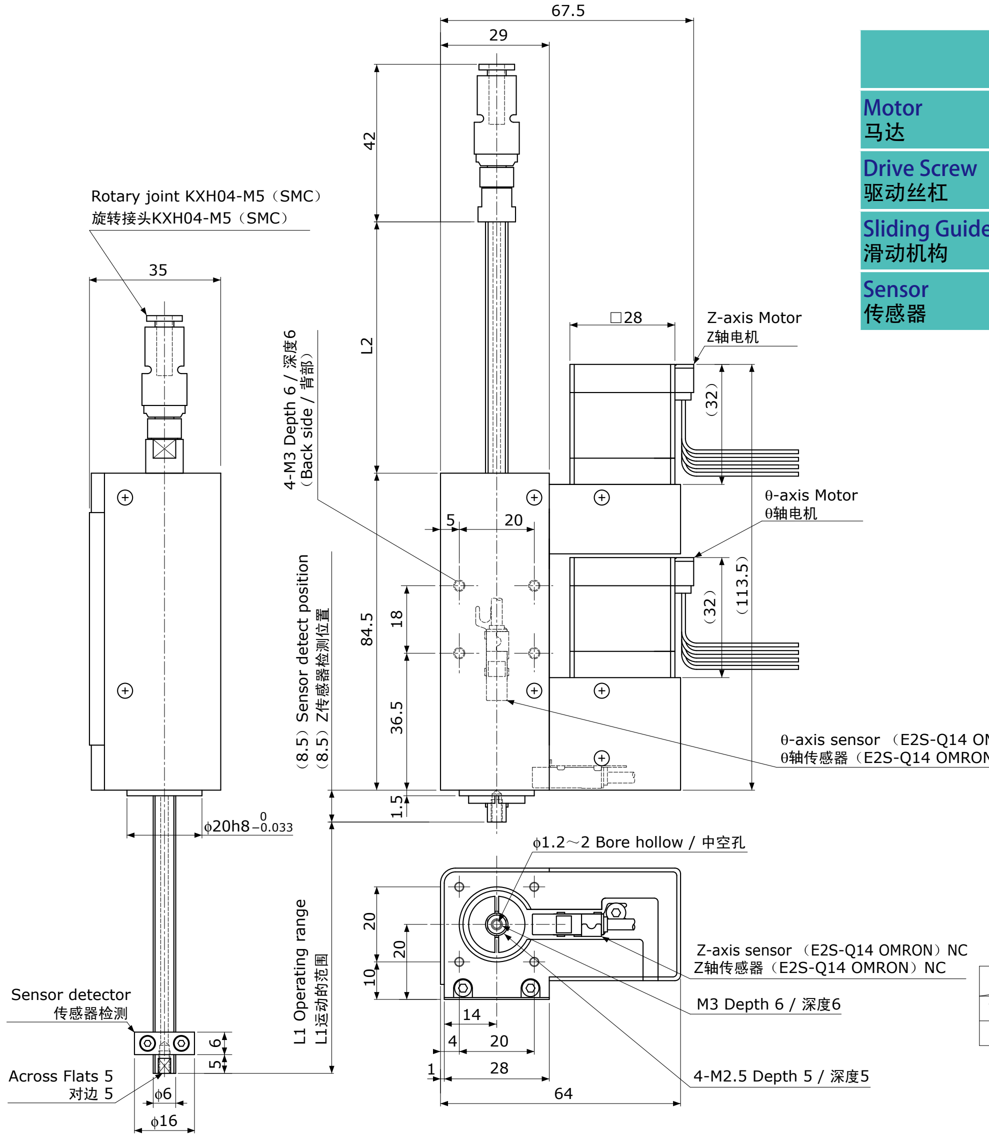
Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ20mm	205mm（180g）	73mm（180g）
φ30mm	40mm（80g）	14mm（80g）
φ40mm	13mm（45g）	4.5mm（45g）

注意事项
1）Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2）负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1）The Z-axis does not have brake device. Please be careful when the power supply is switched off in Z-axis may free-fall.
2）Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

BD VZ 06-G 10 050/100 N 02

□28 2-phase Stepping Motor(2相步进电机)
Lead(导程)10mm Travel(行程)50/100mm



	L1	L2
Travel /行程 50mm	67	67
Travel /行程100mm	117	117

Parts List 主要构成部件	
Motor 马达	□28 Stepping Motor 1.5A/phase □28 步进电机 1.5A/相
Drive Screw 驱动丝杠	Ball Screw φ6 (Lead 10mm) 滚珠丝杠 φ6 (导程 10mm)
Sliding Guide 滑动机构	Ball Spline φ6mm 滚珠花键 φ6mm
Sensor 传感器	Proximity Sensor E2S-Q14 (OMRON) 近距离传感器 E2S-Q14(欧姆龙)

Motor (Z,θ-axis) / 电机 (Z,θ轴)

A	Black (黑)
Ā	Green (绿)
B	Red (红)
B̄	Blue (蓝)

UL3265,AWG24 (600mm)

Sensor (Z,θ-axis) / 传感器 (Z,θ轴)

+12~24V	Brown (褐)
LS	Black (黑)
GND	Blue (蓝)

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	50mm / 100mm	± 360°
Repeatability 重复定位精度	±0.020mm	±0.03°
Resolution 分解度	25μm (Full Step / 全程)	0.9° (Full Step / 全程)
Maximum Speed 最高速度	200mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	10N	—
Maximun Permissible Moment 最大允许力矩	—	0.5×10^{-4}kg· m² (※)
Reduction ratio 减速比	1/2	1/2
Mass 重量	480g (50 travel), 490g (100 travel) 480g (50行程), 490g (100行程)	
Operating Temperature 使用温度范围	0~40℃ (No Condensation) 0~40℃(无结露)	

Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ30mm	225mm(445g)	80mm(445g)
φ40mm	71mm(250g)	25mm(250g)
φ50mm	29mm(160g)	10mm(160g)

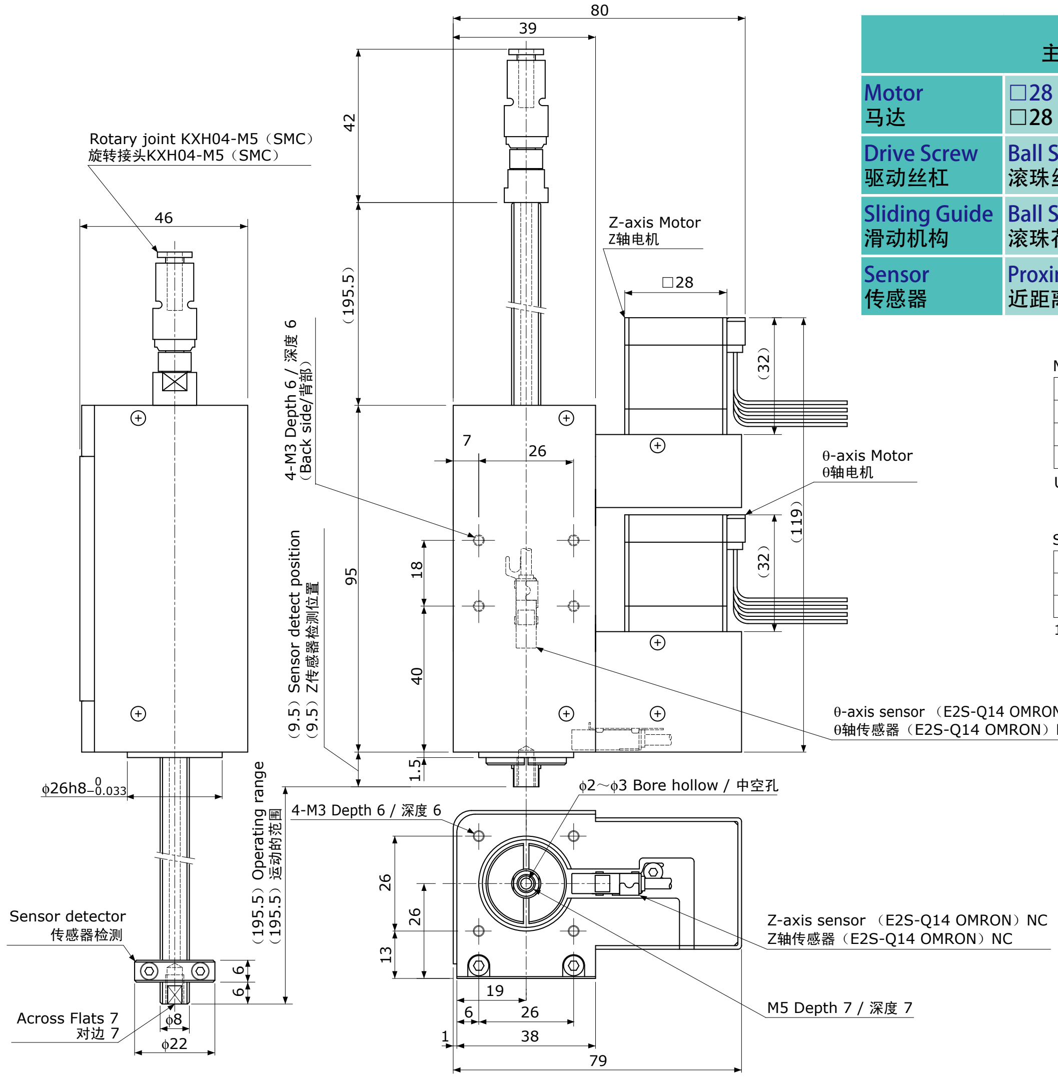
注意事项
1) Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2) 负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1) The Z-axis does not have brake device. Please be careful when the power supply is switched off in case of Z-axis may free-fall.
2) Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

BD VZ 08-G 10 150 N 02

□28 2-phase Stepping Motor(2相步进电机)
Lead(导程)10mm Travel(行程)150mm



Parts List 主要构成部件	
Motor 马达	□28 Stepping Motor 1.5A/phase □28 步进电机 1.5A/相
Drive Screw 驱动丝杠	Ball Screw φ8 (Lead 10mm) 滚珠丝杠 φ8 (导程 10mm)
Sliding Guide 滑动机构	Ball Spline φ8mm 滚珠花键 φ8mm
Sensor 传感器	Proximity Sensor E2S-Q14 (OMRON) 近距离传感器 E2S-Q14(欧姆龙)

Motor (Z,θ-axis) / 电机 (Z,θ轴)

A	Black (黑)
Ā	Green (绿)
B	Red (红)
B̄	Blue (蓝)

UL3265,AWG24 (600mm)

Sensor (Z,θ-axis) / 传感器 (Z,θ轴)

+12~24V	Brown (褐)
LS	Black (黑)
GND	Blue (蓝)

1000mm

●规格 / Speccifications

※以下为参考值，具体内容以式样图为准。
※The numbers in table below are reference. Detail dimmensions will be provided by drawing.

Items 项目	Z Axis Z轴	θ Axis θ轴
Movable Range 运作范围	150mm	± 360°
Repeatability 重复定位精度	±0.020mm	±0.03°
Resolution 分解度	25μm (Full Step / 全程)	0.9° (Full Step / 全程)
Maximum Speed 最高速度	200mm / sec	1080° / sec
Acceleration & Deceleration time 加减速比率	Min. 0.2sec 0.2sec以上	Min. 0.04sec 0.04sec以上
Reference Thrust Force 参考推力	10N	—
Maximun Permissible Moment 最大允许力矩	—	0.5×10^{-4}kg· m² (※)
Reduction ratio 减速比	1/2	1/2
Mass 重量	730g	
Operating Temperature 使用温度范围	0~40℃ (No Condensation) 0~40℃(无结露)	

Reference of Moment of Inertia 负载力矩参照表		
Dia. / 径	Height / 高度	
	Aluminum 铝材	Steel 钢材
φ30mm	225mm(445g)	80mm(445g)
φ40mm	71mm(250g)	25mm(250g)
φ50mm	29mm(160g)	10mm(160g)

注意事项
1) Z轴无制动装置，关闭电源Z轴有可能会落下。请注意。
2) 负载力矩参照表为理论值。建议使用之前在实际负载力矩上确认运作状况。

Precautions
1) The Z-axis does not have brake device. Please be careful when the power supply is switched off in case of Z-axis may free-fall.
2) Reference of Moment of Inertia table shows the theoretical values. KSS recommends that you should apply actual moment to the machine and confirm the safety operation before use.

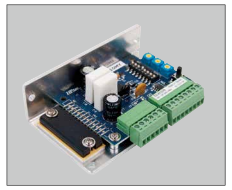
※ θ轴最大允许负载力矩请参照【负载力矩参照表】
※ For the Maximum Permissible Moment, see "Reference of Moment of Inertia" table above.

●选项 / Option

为了使用方便，我司备有VZθ执行器的标准驱动器，连接线等附属品。
KSS provides Standard Stepping Motor Driver and Extension Cable for VZθ Actuators in order to make it easy to use.

[标准驱动器/ Stepping Motor Driver]

SD4030B2
2相步进电机用推荐驱动器
可设定8种步进角（V108页）
This is recommended Driver for 2-phase stepping Motor.
It has Micro-Step function with 8-step angle.(page V108)



※注意事项
・SD4030B2的出货时电流设定为2A
・使用前请确认电机额定电流之后，再设定驱动器电流。
・请按驱动器附属使用说明书内容设定电流。

※Caution
・The factory setting of SD4030B2 is 2A.
・Please be sure to perform a current setup of Driver based on Motor Rated current before use.
・Please confirm the operation manual attached to a Driver about current setup.

[连接线]

KSS VZθ执行器和KSS推荐驱动器专用连接线。
以下实例以外，可指定长度，连接器形状。
一端为散线。

[Extension Cable]

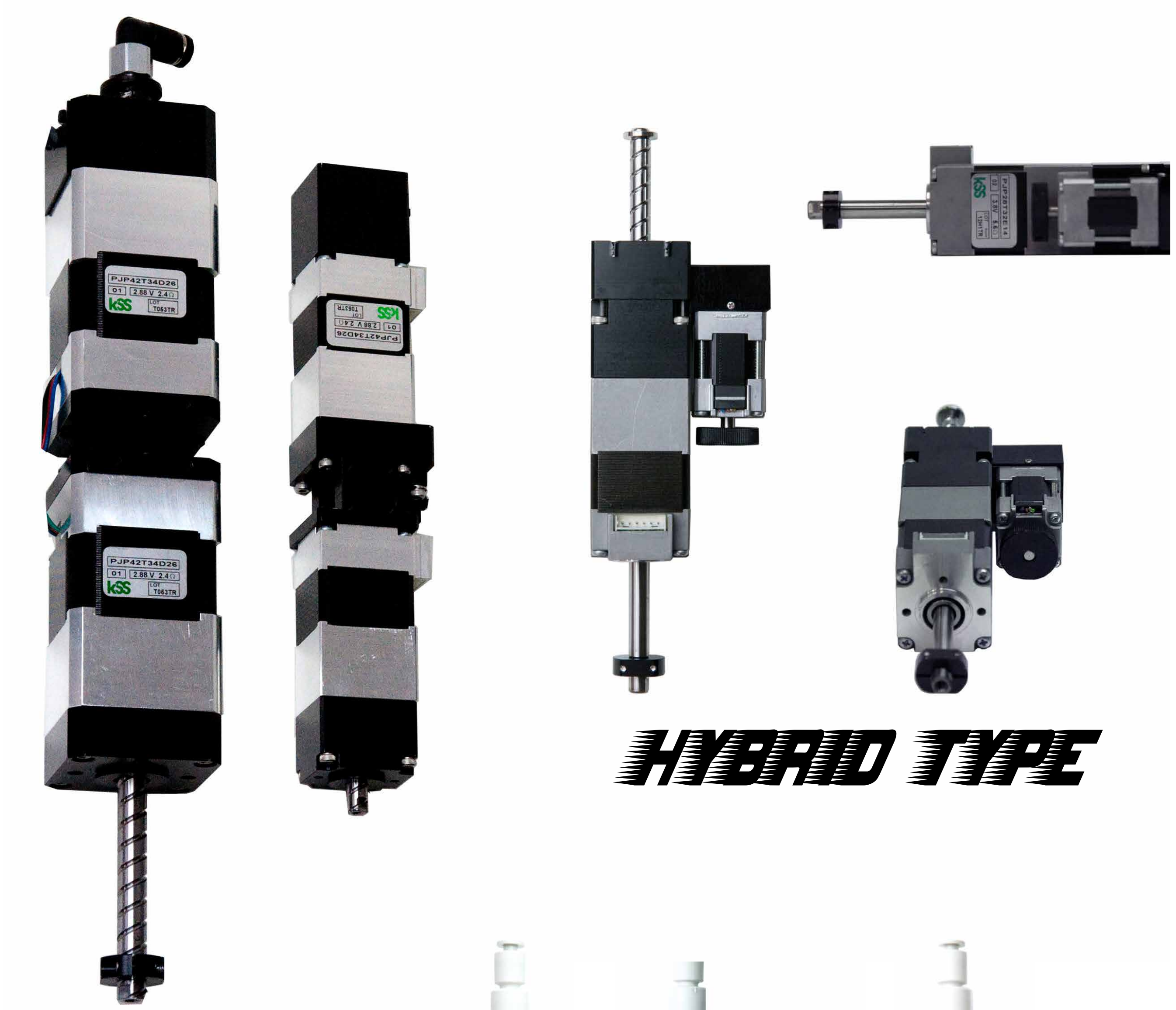
Extension Cable between VZθ Actuators and KSS recommended Stepping Motor Driver.
Please designate Cable length and Connector type in accordance with the example below.
Please note that one side of Extension Cable is cut end only (no connector).

EC R — 2 — E(4)
1 2 3 4

1连接线记号
2种类
R：耐屈曲线
3长度（m）
4连接器形状
N：散线
E（4）：EI连接器4芯

1Extension Cable
2Cable type
R：Robot Cable
3Cable length (m)
4Connector type
N：No commector
E（4）：EI connector 4-pins

DIRECT DRIVE TYPE

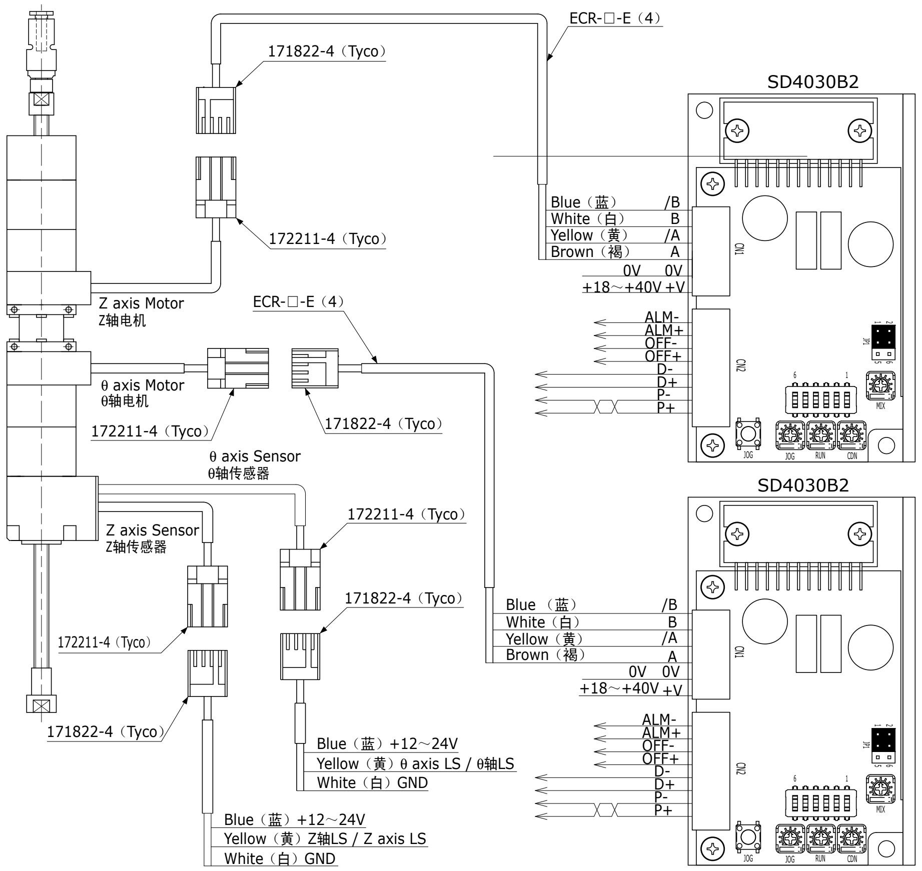


Belt Drive type

Multi-Functional VZθ Actuator
复合功能VZθ执行器

●驱动器接线图 / Connection Diagram

【□28直接驱动型 / □28 Direct Drive type】



Motor cable 172211-4（male）
电机线172211-4（公头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（Red/红）
3	Stepping Motor /A（Green/绿）
4	Stepping Motor A（Black/黑）

Motor Extension cable171822-4（female）
电机连接线171822-4（母头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（White/白）
3	Stepping Motor /A（Yellow/黄）
4	Stepping Motor A（Brown/褐）

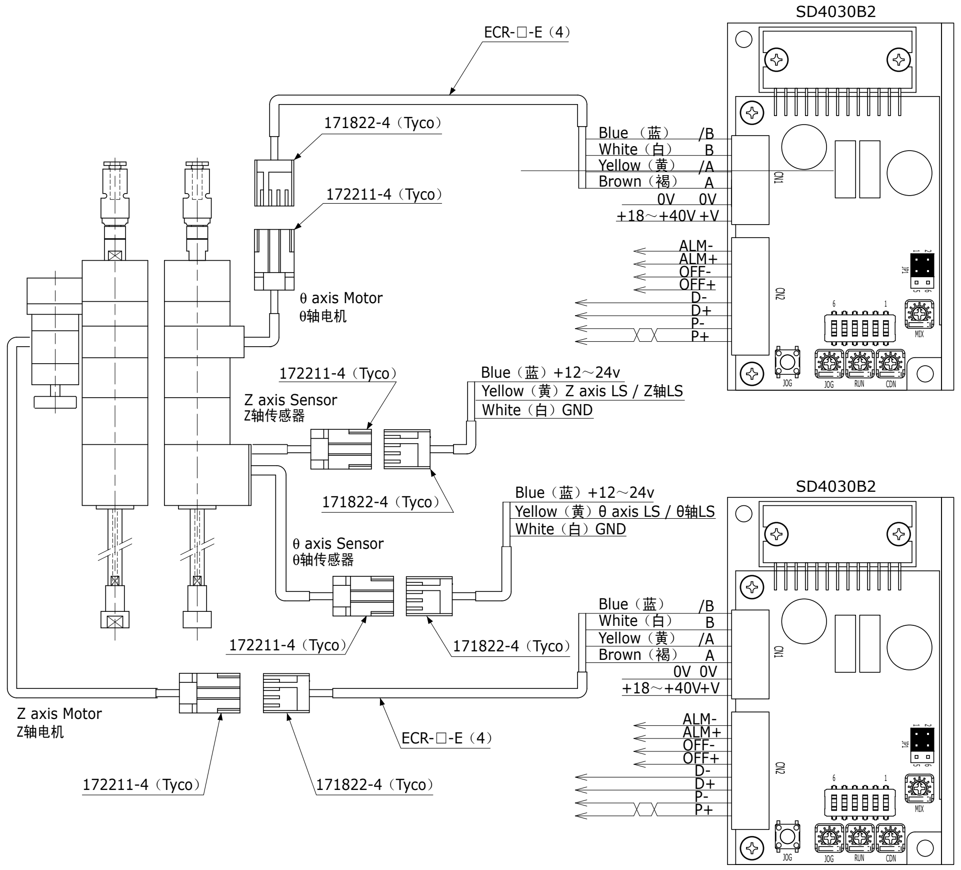
Sensor cable 172211-4（male）
传感器线172211-4（公头）

1	+12V～24（Brown/褐）
2	GND（Blue/蓝）
3	LS（Black/黑）
4	None 备用

Sensor Extension cable171822-4（female）
传感器连接线171822-4（母头）

1	+12V～24（Blue/蓝）
2	GND（White/白）
3	LS（Yellow/黄）
4	None 备用

【混合驱动型 / Hybrid Drive type】



Motor cable 172211-4（male）
电机线172211-4（公头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（Red/红）
3	Stepping Motor /A（Green/绿）
4	Stepping Motor A（Black/黑）

Motor Extension cable171822-4（female）
电机连接线171822-4（母头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（White/白）
3	Stepping Motor /A（Yellow/黄）
4	Stepping Motor A（Brown/褐）

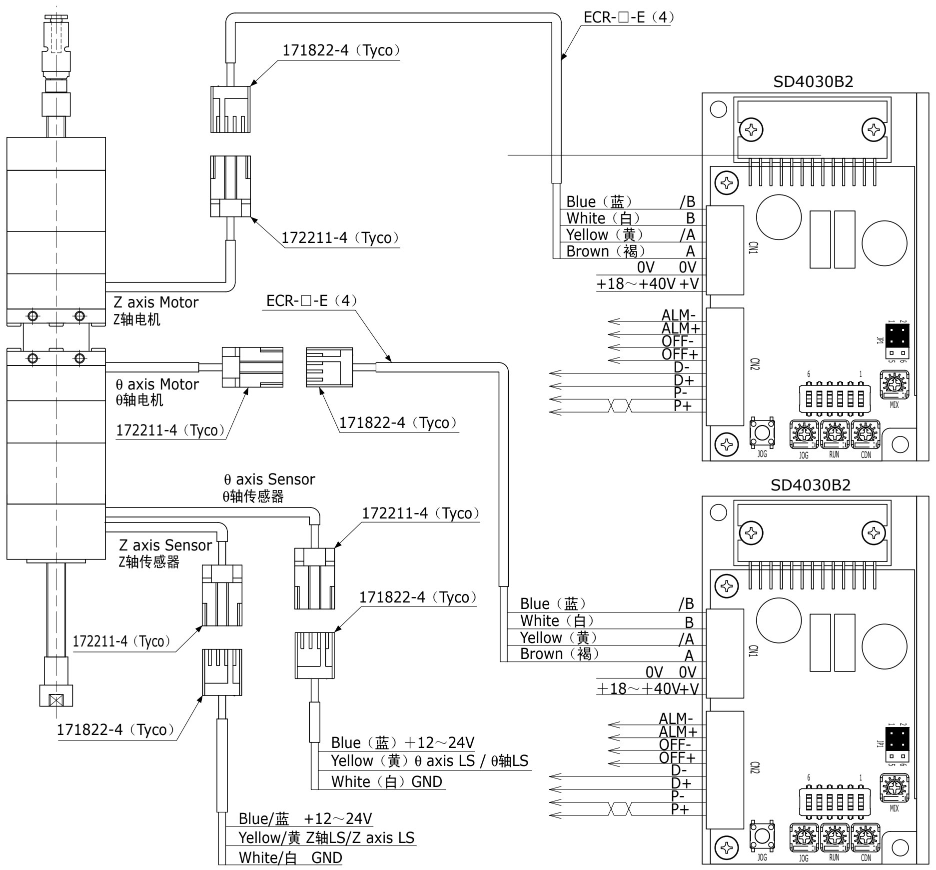
Sensor cable 172211-4（male）
传感器线172211-4（公头）

1	+12V～24（Brown/褐）
2	GND（Blue/蓝）
3	LS（Black/黑）
4	None 备用

Sensor Extension cable171822-4（female）
传感器连接线171822-4（母头）

1	+12V～24（Blue/蓝）
2	GND（White/白）
3	LS（Yellow/黄）
4	None 备用

【□42直接驱动型 / □42 Direct Drive type】



Motor cable 172211-4（male）
电机线172211-4（公头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（Red/红）
3	Stepping Motor /A（Green/绿）
4	Stepping Motor A（Black/黑）

Motor Extension cable171822-4（female）
电机连接线171822-4（母头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（White/白）
3	Stepping Motor /A（Yellow/黄）
4	Stepping Motor A（Brown/褐）

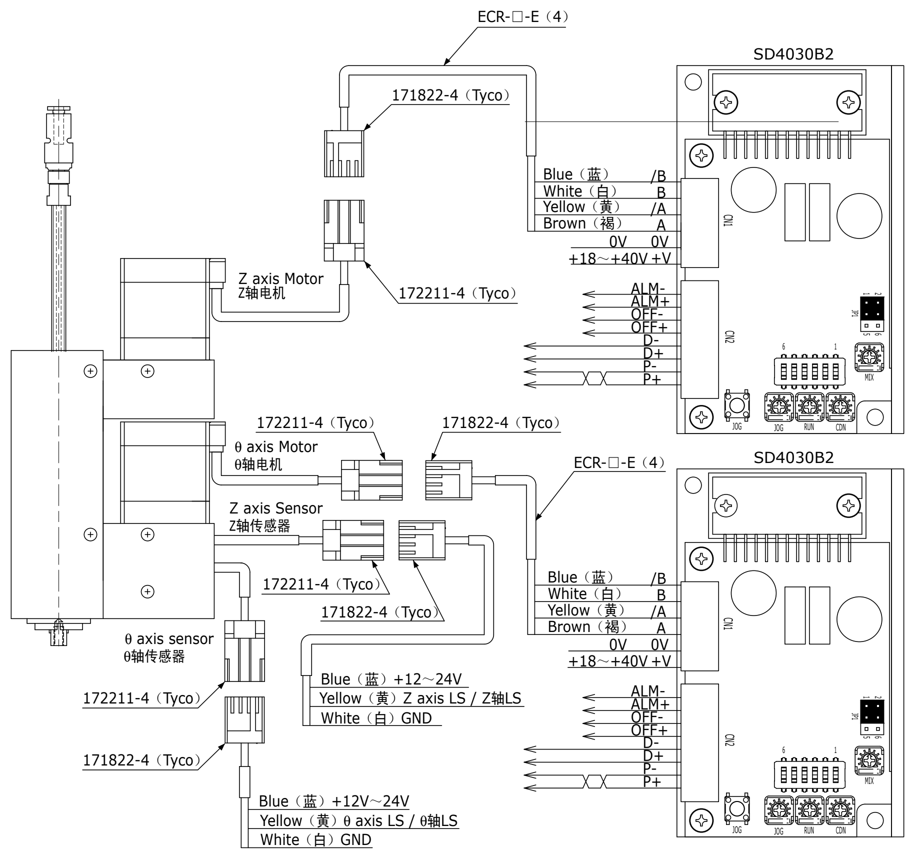
Sensor cable 172211-4（male）
传感器线172211-4（公头）

1	+12V～24（Brown/褐）
2	GND（Blue/蓝）
3	LS（Black/黑）
4	None 备用

Sensor Extension cable171822-4（female）
传感器连接线171822-4（母头）

1	+12V～24（Blue/蓝）
2	GND（White/白）
3	LS（Yellow/黄）
4	None 备用

【传送带驱动型 / Belt Drive type】



Motor cable 172211-4（male）
电机线172211-4（公头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（Red/红）
3	Stepping Motor /A（Green/绿）
4	Stepping Motor A（Black/黑）

Motor Extension cable171822-4（female）
电机连接线171822-4（母头）

1	Stepping Motor /B（Blue/蓝）
2	Stepping Motor B（White/白）
3	Stepping Motor /A（Yellow/黄）
4	Stepping Motor A（Brown/褐）

Sensor cable 172211-4（male）
传感器线172211-4（公头）

1	+12V～24（Brown/褐）
2	GND（Blue/蓝）
3	LS（Black/黑）
4	None 备用

Sensor Extension cable171822-4（female）
传感器连接线171822-4（母头）

1	+12V～24（Blue/蓝）
2	GND（White/白）
3	LS（Yellow/黄）
4	None 备用

Multi-Functional VZθ Actuator 复合功能VZθ执行器

步进电机驱动器篇　Stepping Motor Driver

推荐的步进电机驱动器
Stepping Motor Driver recommendation

为使用户更方便地使用MoBo系列及微型执行器系列，作为附件，本公司备有推荐的驱动器。
KSS provides recommended Stepping Motor Driver for MoBo series and Miniature Actuator series in order to make it easy to use.

●标准驱动器/ Standard Stepping Motor Driver

KR-A5CC

DC24V 5相步进电机用驱动器。可以进行整步、半步切换。兼具电流自动下降功能。
This Driver is for 5-phase Stepping Motor operated by DC24V power supply. It has automatic current reduction circuits. You can choose full-step or half step function.

KR-A55MC

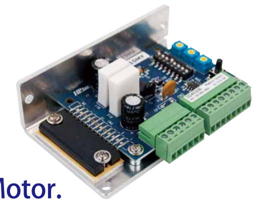
DC24V 5相步进电机用驱动器。可设定16种步进角，最大分割数为250的微型步进驱动器。
Micro-Step Driver for 5-phase Stepping Motor with DC24V power supply. 16 step angle types can be set with up to 250 divisions.

KR-A535M

可使用AC100～220V电源的5相步进电机用微型步进驱动器。
最大分割数可达250。
Micro-Step Driver for 5-phase Stepping Motor, Which can be used with AC100～220V power supply. 16 step angle types can be set with up to 250 divisions.

KS9110

建议用于树脂MoBo（树脂螺母滑动丝杠型）及多摩川精机制（2相 □28）带步进电机的微型执行器系列的2相步进电机用驱动器。可通过拨动开关进行整步、半步切换。
This is recommended 2-phase stepping Motor Driver for Resin MoBo type, which is Resin Lead Screw with Motor and Miniature Actuator series with □28 size 2-phase Stepping Motor made by TAMAGAWA SEIKI. It can be selected for Full-step or Half-step by Dip switch.



SD4030B2

推荐用于2相冷轧MoBo（双极）及Minebea Motor制造的（2相 □25）带步进电机的微型执行器的驱动器。可进行8种步进角设定。
This is recommended 2-phase stepping Motor Driver for 2-phase Rolled MoBo (Bi-polar) and Miniature Actuator series with □25 size 2-phase Stepping Motor made by Minebea Motor. It has Micro-Step function with 8-step angle.

各推荐驱动器的规格和外形图请见下页以后。
Outer dimensions and specifications of KSS recommended Driver are shown from next page.

KR-A5CC
DC24V输入 5相步进电机驱动器
DC24V Input 5-phase Stepping Motor Driver

DC24V | 适用于0.1～0.9A / 相 0.1～0.9A / phase | 整步、半步 Full / Half-Step | 箱型 Case type

■规 格　Specifications

CE RoHS

项目　Items	规格值　Specifications
电源　Power supply	DC20-35V（-10%,+20%）max.3A
驱动电流　Output current （出厂时 0.35A/相） （0.35A/phase at shipping）	额定电流0.1～0.9A / 相 Rated current：0.1～0.9A/phase
驱动方式　Driving Type	双极恒流五角驱动方式　Bipolar pentagon constant current drive

输入信号回路 Input signal circuit

信号名 Signal name	功能说明	Functional description	输入电阻　Input resistance
CW+ CW-	1时钟模式时的脉冲信号输入 2时钟模式时的正转信号输入	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	390Ω
CCW+ CCW-	1时钟模式时的转向指示输入 2时钟模式时的反转信号输入	Rotational direction input for 1 clock CCW rotation input for 2 clock	390Ω
H.O.+ H.O.-	电机励磁OFF控制信号 “H”时电机励磁OFF	Motor exciting OFF control signal "H" for motor exciting OFF	390Ω

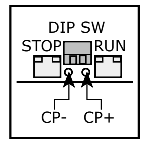
输入信号回路 Input signal circuit	
脉冲宽度 0.5μsec以上、上升下降时间 1μsec以下 脉冲间隔 0.5μsec以上、脉冲频率 50kpps以下 脉冲电压“H”：4～8V “L”：0～0.5V 光电耦合器的电流从OFF（逻辑L）到ON（逻辑H）时动作 在1时钟模式下，CCW输入为“L”时进行CCW旋转	Pulse width : 0.5μs min., Rising-up time : 1μs max. Pulse interval : 0.5μs min., Pulse frequency : 50kpps max. Pulse voltage : "H" for 4～8V & "L" for 0～0.5V Triggered at the edge of OFF（Logic"L"）to ON（Logic"H"）of photo-coupler current CCW rotation with CCW input of "L" in 1-clock system

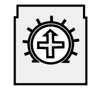
驱动电流值设定 Setting of driving current

设定驱动电流时，将电压表连接至CP+ CP-，并旋转RUN旋钮，将电压设定为下式得出的电压值。
To change the RUN current, connect the CP+ to the（+） terminal of the voltmeter and the CP- to the （-） terminal of the voltmeter then adjust RUN CURRENT volume.

$$驱动电流（A）= \frac{CP电压（V）}{4} \qquad Setting\ current（A）= \frac{CP\ voltage（V）}{4}$$

设定例）驱动电流设定为0.35A/相时，将CP电压调整至1.4V
Setting example）When drive current is set to 0.35A/phase, the CP voltage is adjusted to 1.4V.

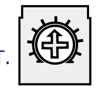


RUN CURRENT


注）须在电机旋转的状态下设定驱动电流。
Note） Run current should be changed during the operating of motor.

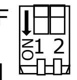
电流下降值设定 Setting of Stop current

设定电机停止时的电流值。通过STOP旋钮设定
电流下降值以相对于驱动电流值的百分比（%）来设定
In order to reduce the heat adjusting the current, change it using STOP CURRENT volume.
The setting value of STOP CURRENT volume is a percentage of the setting volume of RUN CURRENT.
设定例）驱动电流值设定为1.4A、STOP旋钮设定为50%时，电机停止时的电流为0.7A/相。
Ex） After setting 1.4A for Run current then put STOP CURRENT volume at 50%, the stop current will be 0.7A.

STOP CURRENT

25%　75%

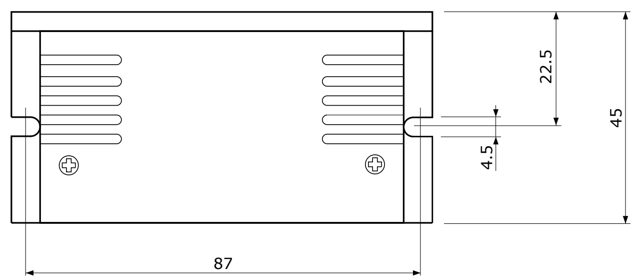
拨动开关设定（出厂时的设定均为OFF） Setting of Dip-switches（All off at shipping）

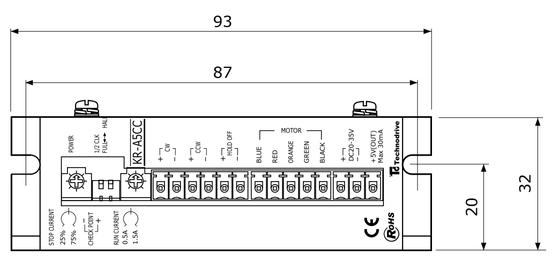
No.	显示 Symbol	功能　Function	ON	OFF
1	1/2 CLK	时钟模式切换 Switching of clock	1时钟模式 1 clock mode	2时钟模式 2 clock mode
2	Full / Half	插值数设定 Setting of Interpolation	整步（0.72°） Full-step（0.72°）	半步（0.36°） Half-step（0.36°）

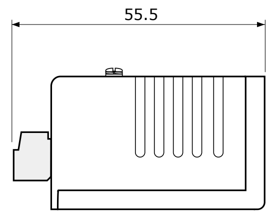
OFF ↓ ON


工作环境温度、湿度 Operating temperature & humidity	0～40℃　85%RH以下（无结露） 0～40℃　85%RH max. without any dew condensation.
存放环境温度、湿度 Storage temperature & humidity	-10～70℃　85%RH以下（无结露） -10～70℃　85%RH max. without any dew condensation.
重量 Mass	约130g Approximately 130g

●驱动器外形尺寸 / Driver Outer Dimensions







KR-A55MC
DC24V输入　微型步进驱动器
DC24V Input Microstep Driver

DC24V | 适用于0.4～1.4A / 相 0.4～1.4A / phase | 微型步进 Micro-step | 箱型 Case type

■规 格　Specifications

项目　Items	规格值　Specifications
电源　Power supply	DC20-35V（-10%,+20%）max.3A
驱动电流　Output current （出厂时 0.75A/相） （0.75A/phase at shipping）	额定电流0.4～1.4A/相　Rated current：0.4～1.4A/phase 可利用数字开关[RUN]在0.4～1.4A/相的范围内设定。 Capable of setting the current to 0.4～1.4A/phase by the digital switch "RUN"
驱动方式　Driving Type	双极恒流五角驱动方式　Bipolar pentagon constant current drive

输入信号回路 Input signal circuit	信号名 Signal name	功能说明	Functional description	输入电阻　Input resistance
	CW+ CW-	1时钟模式时的脉冲信号输入 2时钟模式时的正转信号输入	Pulse signal input for 1 clock mode CW rotation input for 2 clock mode	270Ω
	CCW+ CCW-	1时钟模式时的转向指示输入 2时钟模式时的反转信号输入	Rotational direction input for 1 clock CCW rotation input for 2 clock	270Ω
	H.O.+ H.O.-	电机励磁OFF控制信号 “H”时电机励磁OFF	Motor excitation OFF control signal "H" for motor exciting OFF	390Ω
	D.S.+ D.S.-	微步插值选择信号 “L”时选择MS1、“H”时选择MS2	Micro-step interpolation selection "L" for MS1 & "H" for MS2	390Ω

脉冲宽度 0.25μsec以上、上升下降时间 1μsec以下　Pulse width：0.25μs min., Rising-up time：1μs max.
脉冲间隔 0.25μsec以上、脉冲频率 500kpps以下　Pulse interval：0.25μs min., Pulse frequency：500kpps max.
脉冲电压“H”：4～8V“L”：0～0.5V　Pulse voltage："H" for 4～8V & "L" for 0～0.5V
光电耦合器的电流从OFF（逻辑L）到ON（逻辑H）时动作　Triggered at the edge of OFF（Logic"L"）to ON（Logic"H"）of photo-coupler current
在1时钟模式下，CCW输入为“L”时进行CCW旋转　CCW rotation with CCW input of "L" in 1-clock system

输出信号回路 Output signal Circuit	信号名 Signal name	功能说明	Functional description	输出容量 Output capacity
	Z.P.+ Z.P.-	原点励磁信号输出 原点励磁时ON	Origin exciting output signal Switched ON while origin is being excited	DC30V max. 50mA max.

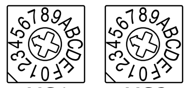
励磁顺序为[0]时ON，使用0.72°电机时每7.2度输出。接通电源时，若切换步进角则可能无法输出。
This signal is ON at the exciting sequence of [0] and is transmitted at each 7.2 degrees for the Step Motor with 0.72°steps. When micro-step angle is changed after the power supply is turned on, it may not be transmitted.

微步插值设定（出厂时MS1：5、MS2：0）Setting of micro-step Interpolation（MS1：5, MS2：0 at shipping）

仅采用1种微步驱动时，通过数字开关MS1设定插值数。
采用2种微步驱动时（在往复运动的前进、返回过程中改变速度时），通过数字开关MS1、MS2设定各插值数。
For micro-step driving of one type only, set the number interpolation using the digital SW MS1.
For micro-step driving of two types.（i.e. when changing speed for going and returning in reciprocating motion）
set respective numbers of interpolation using the digital SW MS1 and MS2.

设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
插值数　Interpolation	1	2	4	5	8	10	16	20	25	40
	A	B	C	D	E	F				
	50	80	100	125	200	250				

注1）Note 1）

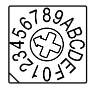


微步插值的设定编号选择0.1时，内部将发生1/4插值的低振动驱动。
When the setting of micro-step interpolating No. is "0.1", 1/4-interpolate low-frequency driving takes place inside.

驱动电流的设定（出厂设定：5）Setting of driving current（Setting "5" at shipping）

根据下表选择电机旋转时的电流，并通过数字开关RUN进行设定。
The output current to the motor in rotation is set by the digital switch "RUN" to select from the table below.

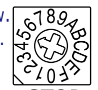
设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
电流（A）Current（A）	0.4	0.5	0.57	0.63	0.71	0.77	0.84	0.9	0.96	1.02
	A	B	C	D	E	F				
	1.09	1.15	1.22	1.27	1.33	1.4				



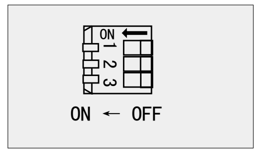
电流自动下降的设定（出厂设定：5）Automatic current-down（Setting "5" at shipping）

根据下表选择电机停止时的电流，并通过数字开关STOP进行设定。
该数值为相对于RUN电流的百分比。最终脉冲输入约后500ms，电流开始减少。
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current. The current decreases at approx. 500ms after the last pulse.

设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
百分比（%）	27	31	36	40	45	50	54	58	62	66
	A	B	C	D	E	F				
	70	74	78	82	86	90				



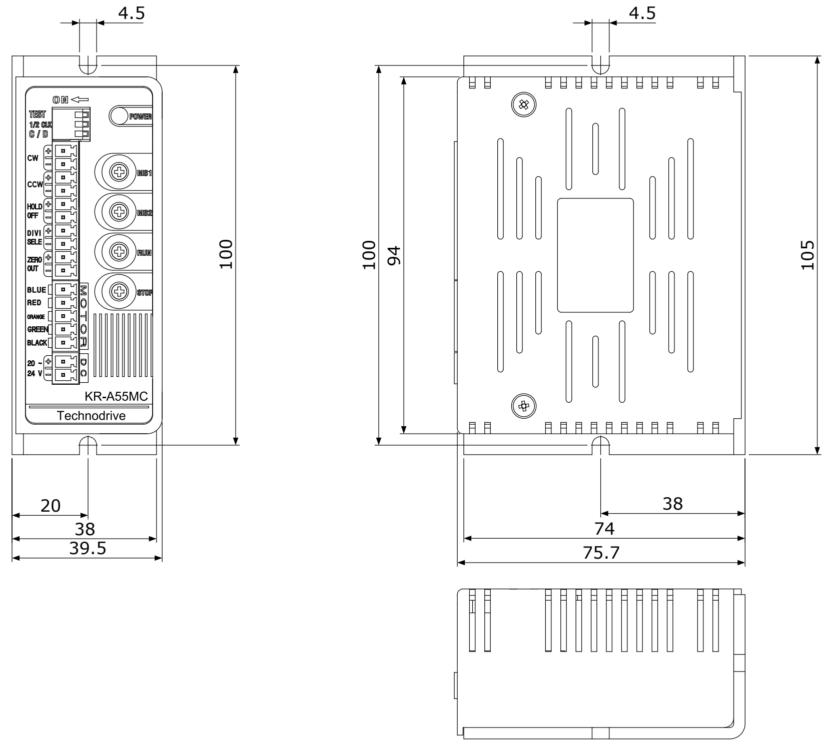
项目　Items	规格值　Specifications				
拨动开关设定（出厂时的设定均为OFF）Setting of dip-switches（All off at shipping）	No.	显示 symbol	功能 Function	ON	OFF
	1	TEST	自测功能 Self test function	约250pps时旋转 Rotating at 250pps	常规动作 Normal operation
	2	1 / 2 CLK	时钟模式切换 Switching of clock	1时钟模式 1 clock mode	2时钟模式 2 clock mode
	3	C / D	电流自动下降 Automatic current-down	不使用 Invalid	使用 Valid
工作环境温度、湿度 Operating temperature & humidity	0～40°C　85%RH以下（无结露） 0～40°C　85%RH Max. without any condensation.				
存放环境温度、湿度 Storage temperature & humidity	-10～70°C　85%RH以下（无结露） -10～70°C　85%RH Max. without any dew condensation.				
重量 Mass	约220g Approximately 220g				



注2（Note2）

注1）1脉冲的微步角度＝基本步进角 / 插值数
注2）无论插值数的设定如何，在内部发生约250pps，拨动开关No.2 ON时进行CCW旋转，OFF时进行CW旋转。
Note 1）Micro-step angle for 1 pulse=Basic step angle / Number of interpolation
Note 2）Approx. 250pps is generated inside, regardless of splits setting ; CCW rotation when the dip switch NO.2 is ON, and CW rotation when the dip switch NO.2 is OFF.

●驱动器外形尺寸 / Driver Outer Dimensions



Stepping Motor Driver 步进电机驱动器

KR-A535M
AC100-220V输入　微型步进驱动器
AC100-220V Input Microstep Driver

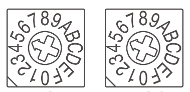
AC100-220V | 适用于0.4～1.4A / 相 0.4～1.4A / phase | 微型步进 Micro-step | 全连接型 Full connector

CE RoHS

■规　格　Specifications

项目　Items		规格值　Specifications		
电源　Power supply		AC100-220V（±10%）max.3A 50/60Hz		
驱动电流　Output current（出厂时 0.75A/相）（0.75A/phase at shipping）		额定电流0.4～1.4A/相　Rated current : 0.4～1.4A/phase 可利用数字开关[RUN]在0.4～1.4A/相的范围内设定。 Capable of setting the current to 0.4～1.4A/phase by the digital switch "RUN"		
驱动方式　Driving Type		双极恒流五角驱动方式　Bipolar pentagon constant current drive		
输入信号回路 Input signal circuit	信号名 Signal name	功能说明	Functional description	输入电阻　Input resistance
	CW+	1时钟模式时的脉冲信号输入	Pulse signal input for 1 clock mode	270Ω
	CW-	2时钟模式时的正转信号输入	CW rotation input for 2 clock mode	
	CCW+	1时钟模式时的转向指示输入	Rotational direction input for 1 crock	270Ω
	CCW-	2时钟模式时的反转信号输入	CCW rotation input for 2 clock	
	H.O.+	电机励磁OFF控制信号	Motor exciting OFF control signal	390Ω
	H.O.-	“H”时电机励磁OFF	"H" for motor exciting OFF	
	D.S.+	微步插值选择信号	Micro-step interpolation selection	390Ω
	D.S.-	“L”时选择MS1、“H”时选择MS2	"L" for MS1 & "H" for MS2	
		脉冲宽度 0.25μsec以上、上升下降时间 1μsec以下 脉冲间隔 0.25μsec以上、脉冲频率 500kpps以下 脉冲电压“H”：4～8V “L”：0～0.5V 光电耦合器的电流从OFF（逻辑L）到ON（逻辑H）时动作 在1时钟模式下，CCW输入为“L”时进行CCW旋转	Pulse width : 0.25μs min., Rising-up time : 1μs max. Pulse interval : 0.25μs min., Pulse frequency : 500kpps max. Pulse voltage : "H" for 4～8V & "L" for 0～0.5V Triggered at the edge of OFF（Logic"L"）to ON（Logic"H"）of photo-coupler current CCW rotation with CCW input of "L" in 1-clock system	
输出信号回路 Output signal Circuit	信号名 Signal name	功能说明	Functional description	输出容量 Output capacity
	Z.P.+	原点励磁信号输出	Origin exciting output signal	DC30V max.
	Z.P.-	原点励磁时ON	Switched ON while origin is being excited	50mA max.
		励磁顺序为[0]时ON，使用0.72°电机时每7.2度输出。接通电源时，若切换步进角则可能无法输出。 This signal is ON at the exciting sequence of [0] and is transmitted at each 7.2 degrees for the Step Motor with 0.72°steps. When micro-step angle is changed after the power supply is turned on, it may not be transmitted.		
微步插值设定（出厂时MS1：5、MS2：0）Setting of micro-step interpolation（MS1：5, MS2：0 at shipping）		仅采用1种微步驱动时，通过数字开关MS1设定插值数。 采用2种微步驱动时（在往复运动的前进、返回过程中改变速度时），通过数字开关MS1、MS2设定各插值数。 For micro-step driving of one type only, set the number interpolation using the digital SW MS1. For micro-step driving of two types.（i.e. when changing speed for going and returning in reciprocating motion）set respective numbers of interpolation using the digital SW MS1 and MS2.		

设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
插值数　Interpolation	1	2	4	5	8	10	16	20	25	40
	A	B	C	D	E	F				
	50	80	100	125	200	250				

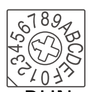


注）微步插值的设定编号选择0.1时，内部将发生4插值的低振动驱动。
Note）When the setting of micro-step interpolating No. is "0.1", 1/4-interpolate low-frequency driving takes place inside.

驱动电流的设定（出厂设定：5）Setting of driving current（Setting "5" at shipping）

根据下表选择电机旋转时的电流，并通过数字开关RUN进行设定。
The output current to the motor in rotation is set by the digital switch "RUN" to select from the table below.

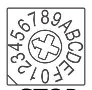
设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
电流（A）　Current（A）	0.4	0.5	0.57	0.63	0.71	0.77	0.84	0.9	0.96	1.02
	A	B	C	D	E	F				
	1.09	1.15	1.22	1.27	1.33	1.4				



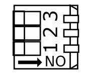
电流自动下降的设定（出厂设定：5）Automatic current-down（Setting "5" at shipping）

根据下表选择电机停止时的电流，并通过数字开关STOP进行设定。
该数值为相对于RUN电流的百分比。最终脉冲输入约后500ms，电流开始减少。
The output current to the motor at stationary is set by the digital switch "STOP" to select from the table below.
The value is set by the percent to "RUN" current. The current decreases at approx. 500ms after the last pulse.

设定编号　Set No.	0	1	2	3	4	5	6	7	8	9
百分比（%）	27	31	36	40	45	50	54	58	62	66
	A	B	C	D	E	F				
	70	74	78	82	86	90				

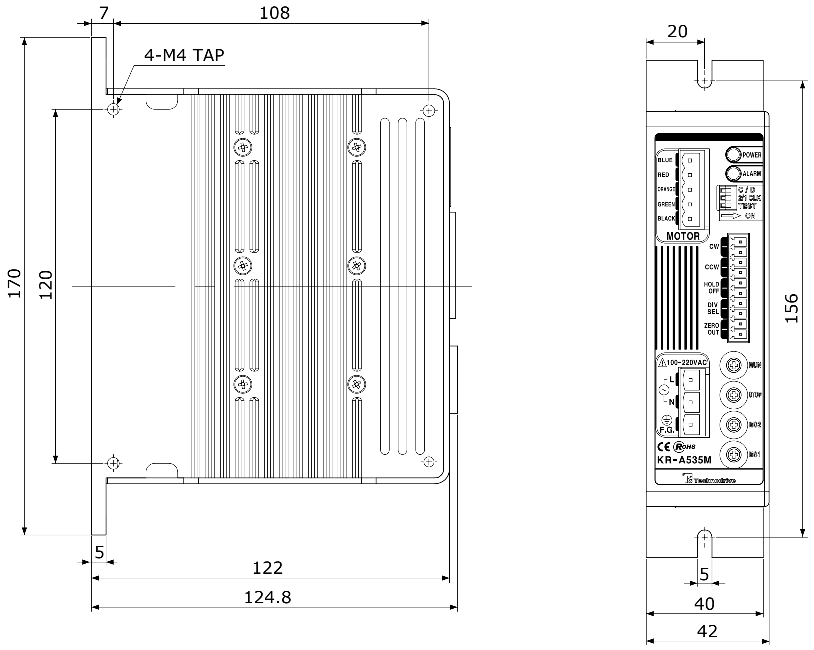


项目　Items	规格值　Specifications					
拨动开关设定（出厂时的设定均为OFF）Setting of dip-switches（All off at shipping）	No.	显示 symbol	功能 Function	ON	OFF	
	1	TEST	自测功能 Self test function	约250pps时旋转 Rotating at 250pps	常规动作 Normal operation	
	2	1 / 2 CLK	时钟模式切换 Switching of clock	1时钟模式 1 clock mode	2时钟模式 2 clock mode	OFF → ON 注2（note2）
	3	C / D	电流自动下降 Automatic current-down	不使用 Invaild	使用 Vaild	
工作环境温度、湿度 Operating temperature & humidity	0～40°C　85%RH以下（无结露） 0～40°C　85%RH Max. without any condensation.					
存放环境温度、湿度 Storage temperature & humidity	-10～70°C　85%RH以下（无结露） -10～70°C　85%RH Max. without any dew condensation.					
重量 Mass	约660g Approximately 660g					



注1）1脉冲的微步角度＝基本步进角 / 插值数
注2）无论插值数的设定如何，在内部发生约250pps，拨动开关No.2 ON时进行CCW旋转，OFF时进行CW旋转。
Note 1）Micro-step angle for 1 pulse=Basic step angle / Number of interpolation
Note 2）Approx. 250pps is generated inside, regardless of splits setting ; CCW rotation when the dip switch NO.2 is ON, and CW rotation when the dip switch NO.2 is OFF.

●驱动器外形尺寸 / Driver Outer Dimensions



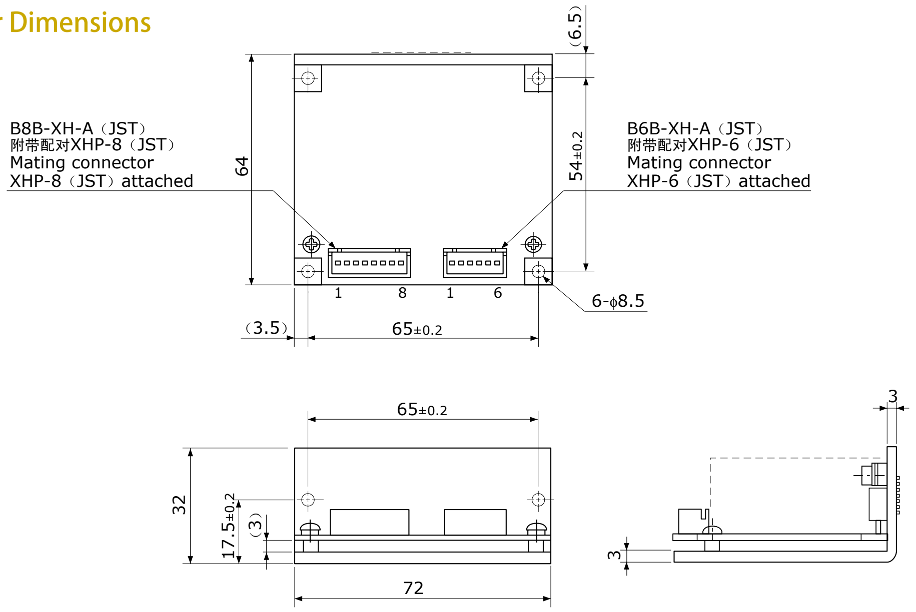
KS9110
DC24V输入 2相步进电机驱动器
DC24V Input 2-phase Stepping Motor Driver

DC24V | 0.35～2A / 相 0.35～2A / phase | 整步、半步 Full / half step | 电路板类型 Board type

■规 格 Specifications

项 目 Items		规格值 Specification
电 源 Power supply		DC+24V ±10% 3A Max.(总消耗电流) (total current consumed)
输出电流 Output current		0.35～2A Max / 相 通过可变电阻VR设定(出厂时 1A / 相) 0.35～2A Max. / phase Variable resistor (VR) setting (Set to 1 A / phase when shipped)
驱动方式 Drive method		单极恒电流斩波方式 Chopper mode by Uni-polar constant current
励磁方式(出厂时2相励磁) Excitation method (2 phase excitation at shipment) 整步 / 半步 Full / half		1相励磁 1-phase excitation 拨动开关 Dip switch (2 3 ON OFF) 1-2相励磁 (半步/half step) 1-2 phase excitation 拨动开关 Dip switch (2 3 ON OFF) 2相励磁 (整步/full step) 2 phase excitation 拨动开关 Dip switch (2 3 ON OFF)
输入信号回路 Input signal circuit		光电耦合器TLP521(东芝) 输入电阻220Ω Photo coupler TLP521 (Toshiba), Input resistance 200Ω 光电耦合器的输入电流10mA以上20mA以下 Photo coupler input current, over 10mA, below 20mA
输入信号 Input signal	1个脉冲输入 1-pulse input PULSE DIR	跨接开关 Jumper switch (2 1) DIR信号的光电耦合器的电流与旋转方向 DIR signal's photo coupler current and rotation direction ON: CW旋转 rotation OFF: CCW旋转 rotation
	2个脉冲输入 2-pulse input CW CCW	跨接开关 Jumper switch (2 1) 注:CW输入时, CCW输入的光电耦合器电流须为OFF;CCW输入时, CW输入的光电耦合器电流须为OFF。同时, 不得向CW、CCW中输入输入脉冲。 Note : Make sure that CCW input photo coupler current is OFF during CW input and CW input photo coupler current is OFF during CCW input. Never input pulse to both CW and CCW at the same time.
	有效 ENABLE	光电耦合器的电流为ON时, 电机不励磁;光电耦合器的电流为OFF时, 电机励磁。 When photo coupler current is ON, motor is not excitable. When photo coupler current is OFF, motor is excitable.
(出厂时输入1个脉冲) (Set to 1 pulse input at shipment)		脉冲宽度为5μsec以上, 上升下降时间为2μsec以下, 光电耦合器的电流从ON转为OFF后工作 Pulse duration is 5μsec or more, rise / fall time is 2μsec or less. Operation starts when photo coupler current is switched from ON to OFF.
输出信号 Output signal	CKOUT(CKO)	输入脉冲确认用焊盘(Land): TTL输出 Land for checking input pulse : TTL output
	电源设定端子(IS) Current terminal (IS)	输出电流确认用端子: 0.23(V)=1(A / 相) Terminal for checking output current : 0.23(V)=1(A/phase)
电流自动下降 (出厂时动作设定) Automatic current down (Set ON at shipment)		工作时 When in operation 拨动开关 Dip switch (1 ON OFF) 输入脉冲上升约1sec后, 输出电流下降至约50%。 Approximately 1 sec after turning on input pulse, output current drops approximately 50%. 不工作时 When not in operation 拨动开关 Dip switch (1 ON OFF)
环境温湿度 Surrounding environment	动作时 / Driving Type	0～40°C 90%RH以下(无结露) 0～40°C under 90% RH (no condensation)
	存放时 / Stand-by	-10～70°C 90%RH以下(无结露) -10～70°C under 90% RH (no condensation)
附件 Accessories		连接器外壳XHP-6(JST)1个、XHP-8(JST)1个、接触器BXH-001T-P0.6(JST)14个 Connector housing 1pc XHP-6(JST), 1pc XHP-8(JST), 14pcs contacts BXH-001T-P0.6 (JST)
重量 Mass		106g

●驱动器外形尺寸 / Driver Outer Dimensions



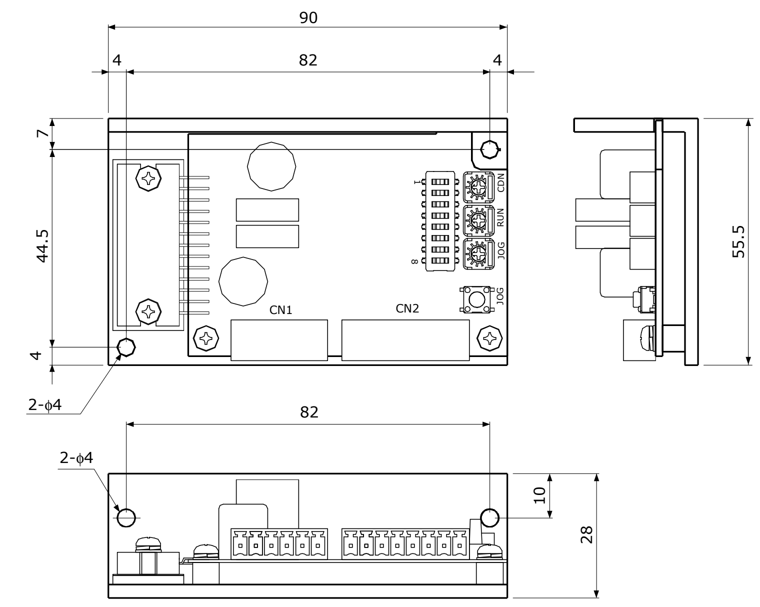
SD4030B2
DC24V输入 2相微步驱动器
DC24V Input 2-phase Microstep Driver

DC24V | 0.5～3 / 相 0.5～3A / phase | 微型步进 Micro-step | 电路板类型 Board type

■规 格 Specifications

项 目 Items		内容 Description	备注 Note
输入电源电压 Input voltage		DC+18V～40V	
输出电流 Output current		0.5～3Apeak(±5%)/相 0.5～3Apeak(±5%)/phase	电源超过24V时会降额 Being lower rated output current beyond Power Supply 24V
驱动方式 Drive method		双极恒电流斩波方式 Chopper mode by Bipolar constant current	也可使用单极型 It can be used for uni-polar type.
电流下降功能 Current down function		电流自动下降 脉冲停止约0.7秒后, 电流下降至CDN旋钮设定的电流 Auto Current down Adjusting to set lower current of CND volume after 0.7 second after pulse stop	可通过开关选择功能 Selectable by switch.
最大输入脉冲频率 Maximum input pulse cycle		100Kpps	
调整功能 Adjusting	RUN	励磁电流设定用(0.5～3A) For excitation current	出厂时设定为2A The default factory setting is 2A.
	STOP	用于设定电流下降时的电流 For current down value on current down mode.	RUN电流的10%～60% Selectable between 10% to 60% of RUN current.
	MIX	用于设定混合衰减率(0%、20%、40%、60%、80%) Mixed Decay ratio (0%、20%、40%、60%、80%)	出厂时设定为80% The default factory setting is 80%
	JOG	用于设定JOG速度 For JOG speed setting.	300pps～14Kpps
选择功能 Select function	SW-1,2,3	插值数选择 Select of Resolutions	1/2, 1/8, 1/10, 1/16, 1/20, 1/32, 1/40, 1/64
	SW-4	自动电流下降有效/无效选择 ON/OFF for function of auto current down mode.	开关ON时有效、OFF时无效, 出厂时设为"有效" Switch ON is active and OFF is no active. The default factory setting is ON.
	SW-5,6	JOG选择功能 Select of JOG function	SW-5ON时JOG有效。SW-6 ON:CW, OFF:CCW SW-5 ON is active for JOG, SW6 ON is CW, OFF is CCW
输入信号 Input signals	P+,P-	指令脉冲 Pulse Command	指令脉冲可选择1脉冲或2脉冲。 Selection of 1 pulse an 2 pulse for pulse command. 通过光电耦合器进行输入绝缘 Isolated by photo coupler
	D+,D-	指令方向 Direction Command	
	OFF+,OFF-	励磁OFF No excitation	
输出信号 Output signals	ALM+,ALM-	警报(检测出功率元件过热) 功率元件内的温度达到170°C(Typ.)时输出 Alarm (Prospecting of over-heat for Power device) Output at over 170°C(Typ.) of power device	通过光电耦合器绝缘, 正常时为ON、报警时为OFF Photo Isolation, ON is active, OFF is no active (ALARM).
外形尺寸 Dimension		W90×D55.5×H28	
工作环境温度、湿度 Operating Temperature and Humidity		0～40°C、35～80% RH	无结露 No condensation
存放环境温度、湿度 Storage Temperature and Humidity		-20～+85°C、35～80% RH	无结露 No condensation
重量 Mass		约106g Approximately106g	

●驱动器外形尺寸 / Driver Outer Dimensions



其他产品　Others

混合步进电机
Hybrid Stepping Motor

Si-servo, the smallest servo system in this field.

Si-MoBo使用的Si伺服电机可另售。
Si伺服是为实现低成本、高性能的伺服运行而开发的全新步进伺服系统。
Si伺服可通过平滑、安静的动作进行高精度定位。此外，也可在要求灵敏、快节奏动作的用途中充分发挥性能。

Si-servo built in Si-MoBo can be sold as a Motor itself.
Si-servo is the totally new stepping servo system, which was developed to achieve high-performance servo driving at the lowest cost.
Si-servo can perform highly precise positioning with smooth and quiet movement.
In addition, Si-servo has enough function for a use in high response systems.

Si servo为三明公司的注册商标。
Si servo products is sanmei co.,ltd registered trademark.

●特点

可实现传统的步进电机所无法实现的
- 完全等间距定位
- 无振动运行
- 无失调

●Features

High accuracy positioning, vibration free operations, never step out function, which were not achieved in the past, become reality.

Motor Model / 电机型号(TS36・・・)		92N61S02 (0.01N)	41N61S02 (0.05N)	17N370S04 (0.2N)	17N371S04 (0.4N)	53N324S04 (0.9N)	53N325S04 (1.2N)	53N327S04 (2.0N)
Max Output Torque 最大输出扭矩	N・m	0.017	0.062	0.24	0.44	0.87	1.8	2.3
Max Rotational Speed 最大转速	rpm	4500	4500	4500	3000	2000	800/2000※1	2000
Rated Current 额定电流	AO-p	0.35	1.5	2.0	2.0	2.0	2.0	5.0
Rated Voltage 额定电压	V	3.0	1.0	2.2	2.8	2.1	4.5	2.2
Coil resistance 绕组电阻	Ω	8.5±15%	0.7±15%	1.1±15%	1.4±15%	1.05±15%	1.7±15%	0.44±15%
Rotor inductance 绕组电感	mH	3.4±20%	0.55±20%	1.4±20%	2.4±20%	1.5±20%	5.8±20%	1.4±20%
Rotor Inertia 转子惯量	10^{-7}kg・m²	1.9	8	35	68	260	430	520
Shaft Run-out 轴跳动	mm T.I.R	0.05						
Radial play 径向间隙	mm max.	0.03	0.02					
Thrust play 轴向间隙	mm max.	0.075						
Allowable overhang load 许用悬挂负载	N	17.6	21.6	20.6		52.9		
Allowable thrust load 许用轴向负载	N	2.9	4.9	9.8		19.6		
Coil method 绕组方式	—	2-phase hybrid Stepping Motor　Bipolar coil 2相混合步进电机 双极绕组						
Insulation class 绝缘等级	—	CLASS B						
Insulation resistance 绝缘电阻	MΩmin	100(at DC500V)						
Dielectric strength 绝缘耐压	V	500(at AC 1MIN)						
Operating temperature range 使用温度范围	°C	-20～+50						
Operating humidity range 使用相对湿度范围	%RH	5～95						
Storage temperature range 存放温度范围	°C	-40～+70						
Mass 重量	kg	0.08	0.14	0.27	0.40	0.72	1.08	1.38

※1)使用Si-05DE驱动器时为2000rpm，使用Si-02DE驱动器时为800rpm。
2000rpm for Si-05DE Driver, 800rpm for Si-02DE Driver.

●驱动器规格　Driver Specifications

Model / 型号			Si-02LDE	Si-02DE	Si-05LDE	Si-05DE
Applicable Motor model 适用的电机型号			TS3692N61S02	TS3641N61S02 TS3617N370S04 TS3617N371S04 TS3653N324S04 TS3653N325S04	TS3653N325S04	TS3653N327S04
Rated Output Current(AO-p) 额定输出电流(AO-p)			0.35	2.0	2.0	5.0
Maximum Output Current(AO-p) 最大输出电流(AO-p)			1.0	4.5	6.0	13.0
Controlling method 控制方式			Transistor PWM (Sine wave drive) 晶体管PWM(正弦波驱动)			
Permitted load Inertia 许用负载惯量			20 times the Motor Inertia 电机惯量的20倍			
Feedback 反馈			Incremental Encoder 200ppr(The motor model end S02) Incremental Encoder 400ppr(The motor model end S04) 增量型编码器200ppr(电机型号末尾为S02) 增量型编码器400ppr(电机型号末尾为S04)			
Overall dimension(mm) 外形尺寸(mm)			39(W)×70(H)×55(D)		58.2(W)×76(H)×98(D)	
Ballpark Mass(kg) 毛重(kg)			0.18		0.34	
Power supply 电源	Voltage(V) 电源电压(V)	Power supply 动力电源	DC24V±10% or DC36V±10%			
		Control power supply 控制电源	DC24V±10%			
	Power supply Current(A) 电源电流(A)		2		5	
Position command method 位置指令方式			Communication and Control Input through 3 mode pulse lines and RS485 通过3模式脉冲序列、RS485进行通信、控制输入、Point Table存储的方式			
Conditions for use 使用条件	Temperature for use 使用温度		0～+50°C			
	Storage temperature 存放温度		-20～+85°C			
	Humidity for use or storage 使用、存放湿度		Under 90%RH (No condensation) 90%RH以下(无结露)			
	Resistance Vibration 抗振性		0.5G			
	Impact resistance 抗冲击强度		2G			
Standard functions 内置功能	Dynamic braking 动态制动器功能		None / 无			
	Regenerative function 再生功能		Able to connect to external regeneration processing circuit 可在外部连接再生处理回路			
	Over travel prevention 超程防止功能		Hard OT, Soft OT (select ON or OFF parameters) 硬件OT、软件OT(通过参数选择有效/无效)			
	Command pulse resolution 脉冲指令分辨率		1/65,535～65,535			
	Internal speed setting 内部速度设定功能		Point table transfer speed, Jog speed, Reset speed Point Table 移动速度、点动速度、原点复位速度			
	Display 显示功能		1-LED(alarm display, Servo ON conditions) LED指示灯1点(警告显示、伺服ON状态)			
Input/Output 输入/输出	Input 输入	Control Input 控制输入	5-points (select function parameters) 5点(通过参数选择功能)			
		Command pulse Input 指令脉冲输入	CW/CCW, PULSE/SIGN, A/B phase Input(select parameters) CW/CCW、PULSE/SIGN、A/B相输入(通过参数选择) Maximum response waves 750 kpps/最高响应频率750kpps			
	Output 输出	Control Output 控制输出	3-points(select parameters), Brake release Signal 3点(通过参数选择)、制动解除信号			
Protection functions 保护功能			EEPROM abnormalities, Encoder abnormalities, system abnormalities, over Currents, Driver overheating, excessive location deviation, Motor Current abnormalities, Control Current abnormalities EEPROM异常、编码器异常、系统异常、过电流、驱动器过热、位置偏差过大、电机电源异常、控制电源异常			
Zero return mode 原点复位方法			Zero LS signal Input or using mechanical stopper (set parameters of 7 methods) 输入原点LS信号或使用机械挡块(通过参数选择7种方式)			
Multi-axis 多轴连接功能			Multi-drops of up to 15 axis with RS485 通过RS485最多可连接15个轴			
Settings 设定方式			Parameters are set through use of a computer (RS485 converter required) 使用电脑进行参数设定(需RS485转换器)			
Standard, Environmental and Protection grades 标准、环保、保护等级			UL conformance/ CE(self-declaration)/RoHS conformance/IP40 符合UL标准、/ CE标准(自我宣言)、RoHS指令、保护等级为IP40			
Options 选购件			Cable (PG, 3m,5m,10m for power supply, 3m for other cable) Software for monitor, Reduction unit, Regeneration kit 电缆(3m、5m、10m的PG、动力电缆为标准库存品，其他标准库存品为3m规格) 监视用软件、减速机、再生套件			

本产品不适于在某些条件下使用，建议就产品规格与本公司充分协商。

Depends on the condition, this product will not be suitable for your specifications. Please always consult with KSS due to the inquiry.

Others 其他产品

树脂滚珠丝杠
Plastic Ball Screws

为了满足客户需求，本公司还采用各种材料，生产出了可在传统的钢材无法使用的特殊环境下使用的滚珠丝杠。树脂滚珠丝杠可在轻负载的前提下使用。

For customer's requests, KSS manufactures Ball Screws using several materials, because there are special environment which current steel cannot be adapted to. These products can be used under light load condition.

●特点

- 重量轻、惯性矩小。
- 不会生锈，可在水中使用。
- 无需润滑剂。
- 噪音低。
- 可通过注塑成型大批量生产。
- 根据所选材质，也可用于特殊环境（非磁性、无尘环境、耐热）。
- 可在需避免因磨损而产生细微金属粉末的环境中使用。

●Features

- Since it is lightweight, Inertia moment is small.
- It can be used in the water due to anti-rust.
- It can be used without a Grease.
- Less noises.
- Mass production is possible due to injection molding.
- It can be applicable to special environment (non magnetism, clean environment, heat resistance) by selecting materials.
- No metal wear powder come out of Ball Screws.

塑料滚珠丝杠
Plastic Ball Screw
指导：静冈理工科大学
机械工学科 大塚二郎教授
Collaboration with Otsuka laboratory
Shizuoka Institute of Science and Technology

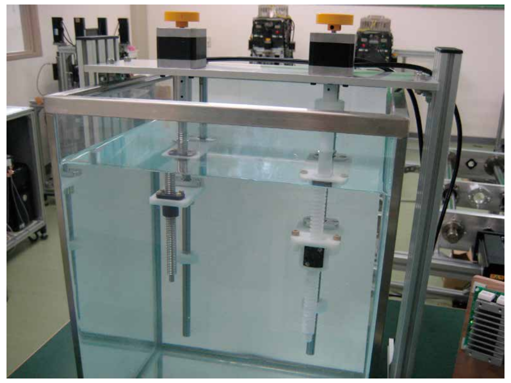
Vespel®滚珠丝杠
Ball Screw made from Vespel®
Vespel为杜邦公司的注册商标。
Vespel is Dupont resistered trade mark.

需要经济型塑料滚珠丝杠时，可使用聚酰胺类树脂（PA）和聚缩醛（POM）进行制作。

If inexpensive Plastic Ball Screw is requested, Ball Screws can be manufactured from Polyamide (PA) or Polyacetal (POM).

注）订购树脂滚珠丝杠时，请指定所需材料。
我们将确认能否制作。

Note) Please designate specific material when inquiring Plastic Ball Screws.
KSS will investigate the possibility of production.



在水中的使用示例
Usage of Plastic Ball Screws in water

附　表　Appendix

公制单位换算表
SI unit conversion table

●前缀　SI-Prefixes

	SI-Prefixes 前缀			SI-Prefixes 前缀			SI-Prefixes 前缀	
	Prefix 名称	Symbol 符号		Prefix 名称	Symbol 符号		Prefix 名称	Symbol 符号
10^{18}	exa（艾）	E	10^{2}	hecto（百）	h	10^{-9}	nano（毫微）	n
10^{15}	peta（贝朕）	P	10^{1}	deca（十）	da	10^{-12}	pico（皮）	p
10^{12}	tera（兆兆）	T	10^{-1}	deci（十分之一）	d	10^{-15}	femto（千万亿分之一）	f
10^{9}	giga（千兆）	G	10^{-2}	centi（厘）	c	10^{-18}	atto（微微微）	a
10^{6}	mega（兆）	M	10^{-3}	milli（毫）	m			
10^{3}	kilo（千）	k	10^{-6}	micro（微）	μ			

●力、重量　Force, Weight

N（牛顿） kg·m/s²	dyn（达因） g·cm/s²	kgf（重量：千克力）	lbf（重量：磅）
1	10^{5}	0.101972	0.224809
10^{-5}	1	1.01972×10^{-6}	0.224809×10^{-6}
9.80665	9.80665×10^{5}	1	2.20462
4.44822	4.44822×10^{5}	0.453592	1

注）带底色的单元格为公制单位。　Note）Highlighted cells show SI unit.

●质量　mass

kg（千克）	g（克）	lb（磅）	t（吨）	oz（盎司）
1	10^{3}	2.20462	10^{-3}	35.274
10^{-3}	1	2.20462×10^{-3}	10^{-6}	0.035274
0.453592	453.592	1	0.453592×10^{-3}	16
1000	10^{6}	2204.62	1	3.5274×10^{4}
0.0283495	28.3495	0.06250	2.83495×10^{-5}	1

注）带底色的单元格为公制单位。　Note）Highlighted cells show SI unit.

●应力　Stress

Pa（帕） N/m²	MPa（兆帕） N/mm²	kgf/mm²	kgf/cm²
1	1×10^{-6}	1.01972×10^{-7}	1.01972×10^{-5}
1×10^{6}	1	1.01972×10^{-1}	1.01972×10
9.80665×10^{6}	9.80665	1	1×10^{2}
9.80665×10^{4}	9.80665×10^{-2}	1×10^{-2}	1

注）带底色的单元格为公制单位。　Note）Highlighted cells show SI unit.

●压力　Pressure

Pa（帕） N/m²	MPa（兆帕） N/mm²	bar	kgf/cm²	atm	mmH₂O	mmHg Torr
1	1×10^{-6}	1×10^{-5}	1.01972×10^{-5}	9.86923×10^{-6}	1.01972×10^{-1}	7.50062×10^{-3}
1×10^{3}	1×10^{-3}	1×10^{-2}	1.01972×10^{-2}	9.86923×10^{-3}	1.01972×10^{2}	7.50062
1×10^{6}	1	1×10	1.01972×10	9.86923	1.01972×10^{5}	7.50062×10^{3}
1×10^{5}	1×10^{-1}	1	1.01972	9.86923×10^{-1}	1.01972×10^{4}	7.50062×10^{2}
9.80665×10^{4}	9.80665×10^{-2}	9.80665×10^{-1}	1	9.67841×10^{-1}	1×10^{4}	7.35559×10^{2}
1.01325×10^{5}	1.01325×10^{-1}	1.01325	1.03323	1	1.03323×10^{4}	7.60000×10^{2}
9.80665	9.80665×10^{-6}	9.80665×10^{-5}	1×10^{-4}	9.67841×10^{-5}	1	7.35559×10^{-2}
1.33322×10^{2}	1.33322×10^{-4}	1.33322×10^{-3}	1.35951×10^{-3}	1.31579×10^{-3}	1.35951×10	1

注）带底色的单元格为公制单位。　Note）Highlighted cells show SI unit.

●动粘度　Kinematic Viscosity

m²/s	cSt mm²/s	St cm²/s
1	1×10^{6}	1×10^{4}
1×10^{-6}	1	1×10^{-2}
1×10^{-4}	1×10^{2}	1

注）带底色的单元格为公制单位。　Note）Highlighted cells show SI unit.

Appended table 附表

●速度　Velocity

m/s	m/min	km/h	ft/s	ft/min	mile/h
1	60	3.6	3.28084	196.850	2.23693
0.0166667	1	0.06	0.0546807	3.2808	0.0372823
0.277778	16.667	1	0.911344	54.6807	0.621371
0.30480	18.288	1.09728	1	60	0.681818
5.0800×10^{-3}	0.30480	0.018288	0.0166667	1	0.0113636
0.447041	26.8224	1.60934	1.46667	88	1

●长度　Length

m （米）	cm （厘米）	mm （毫米）	μm （微米）	nm （毫微米）	⊠ （埃）	in （英寸）	ft （英尺）
1	100	1000	10^{6}	10^{9}	10^{10}	39.3701	3.28084
0.01	1	10	10^{4}	10^{7}	10^{8}	0.393701	0.0328084
0.001	0.1	1	10^{3}	10^{6}	10^{7}	0.0393701	3.28084×10^{-3}
10^{-6}	10^{-4}	10^{-3}	1	10^{3}	10^{4}	39.3701×10^{-6}	3.28084×10^{-6}
10^{-9}	10^{-7}	10^{-6}	10^{-3}	1	10	39.3701×10^{-9}	3.28084×10^{-9}
10^{-10}	10^{-8}	10^{-7}	10^{-4}	0.1	1	39.3701×10^{-10}	3.28084×10^{-10}
0.0254	2.54	25.4	25.4×10^{3}	25.4×10^{6}	25.4×10^{7}	1	0.0833333
0.3048	30.48	304.8	304.8×10^{3}	304.8×10^{6}	304.8×10^{7}	12	1

硬度换算表
Conversion Table for Hardness

Rockwell hardness C-scale 洛氏硬度 标尺C	Vickers hardness 维氏硬度	Brinell hardness 布氏硬度		Rockwell hardness 洛氏硬度		Shore hardness 肖氏硬度
		Standard Ball 标准球	Tungsten Carbide Ball 碳化钨球	A-Scale Load;600N barle Pressure Piece 标尺A 负载:600N barle压头	B-Scale Load;1000N 1/16-in dia.Ball 标尺B 负载:1000N 1/16in球	
HRC	Hv	HB	HB	HRA	HRB	Hs
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

Appended table 附表

材料的化学成分
Material Chemical Composition

Category 材料类别	Std. No. 标准号	Designation 符号	Chemical Composition(化学成分) %									
			C	Si	Mn	P	S	Ni	Cr	Mo	Al	others 其他
Carbon Steels for machine structural use 机械结构用碳素钢	JIS G 4051	S40C	0.37~0.43	0.15~0.35	0.60~0.90	≤0.030	≤0.035	≤0.20	≤0.20			Cu≤0.30 Ni+Cr≤0.35
		S45C	0.42~0.48	0.15~0.35	0.60~0.90	≤0.030	≤0.035	≤0.20	≤0.20			Cu≤0.30 Ni+Cr≤0.35
		S50C	0.47~0.53	0.15~0.35	0.60~0.90	≤0.030	≤0.035	≤0.20	≤0.20			Cu≤0.30 Ni+Cr≤0.35
		S53C	0.50~0.56	0.15~0.35	0.60~0.90	≤0.030	≤0.035	≤0.20	≤0.20			Cu≤0.30 Ni+Cr≤0.35
		S55C	0.52~0.58	0.15~0.35	0.60~0.90	≤0.030	≤0.035	≤0.20	≤0.20			Cu≤0.30 Ni+Cr≤0.35
Structural Steels with specified hardenability bands 保证淬透性结构钢	JIS G 4052	SCM415H	0.12~0.18	0.15~0.35	0.55~0.95	≤0.030	≤0.030	≤0.25	0.85~1.25	0.15~0.30		
		SCM420H	0.17~0.23	0.15~0.35	0.55~0.95	≤0.030	≤0.030	≤0.25	0.85~1.25	0.15~0.30		
		SCM435H	0.32~0.39	0.15~0.35	0.55~0.95	≤0.030	≤0.030	≤0.25	0.85~1.25	0.15~0.35		
		SCM440H	0.37~0.44	0.15~0.35	0.55~0.95	≤0.030	≤0.030	≤0.25	0.85~1.25	0.15~0.35		
		SCM445H	0.42~0.49	0.15~0.35	0.55~0.95	≤0.030	≤0.030	≤0.25	0.85~1.25	0.15~0.35		
Chrome-molybdenum Steel 铬钼钢	JIS G 4105	SCM415	0.13~0.18	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM418	0.16~0.21	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM420	0.18~0.23	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM430	0.28~0.33	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM435	0.35~0.38	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM440	0.38~0.43	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30
		SCM445	0.43~0.48	0.15~0.35	0.60~0.85	≤0.030	≤0.030	≤0.25	0.90~1.20	0.15~0.30		Cu≤0.30

Category 材料类别	Std. No. 标准号	Designation 符号	Chemical Composition(化学成分) %								
			C	Si	Mn	P	S	Ni	Cr	Mo	others 其他
Stainless Steels 不锈钢	JIS G 4303 ~ JIS G 4305	SUS303	≤0.15	≤1.00	≤2.00	≤0.20	≥0.15	8.00~10.00	17.00~19.00	≤0.60	
		SUS304	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	8.00~10.50	18.00~20.00		
		SUS316	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	10.00~14.00	16.00~18.00	2.00~3.00	
		SUS317	≤0.08	≤1.00	≤2.00	≤0.045	≤0.030	11.00~15.00	18.00~20.00	3.00~4.00	
		SUS440A	0.60~0.75	≤1.00	≤1.00	≤0.040	≤0.040		16.00~18.00	≤0.75	
		SUS440B	0.75~0.95	≤1.00	≤1.00	≤0.040	≤0.030		16.00~18.00	≤0.75	
		SUS440C	0.95~1.20	≤1.00	≤1.00	≤0.040	≤0.030		16.00~18.00	≤0.75	
		SUS630	≤0.07	≤1.00	≤1.00	≤0.040	≤0.030	3.00~5.00	15.50~17.50		
		SUS631	≤0.09	≤1.00	≤1.00	≤0.040	≤0.030	6.5~7.75	16.00~18.00		

Category 材料类别	Std. No. 标准号	Designation 符号	Chemical Composition(化学成分) %									
			C	Si	Mn	P	S	Pb	Cr	Mo	W	others 其他
Alloy Tool Steels 合金工具钢	JIS G 4404	SKS 2	1.00~1.10	≤0.35	≤0.80	≤0.030	≤0.030		0.50~1.00		1.00~1.50	
		SKS 3	0.90~1.00	≤0.35	0.90~1.20	≤0.030	≤0.030		0.50~1.00		0.50~1.00	
		SKS 4	0.45~0.55	≤0.35	≤0.50	≤0.030	≤0.030		0.50~1.00		0.50~1.00	
High Carbon Chromium Bearing Steels 高碳铬轴承钢	JIS G 4805	SUJ 1	0.95~1.10	0.15~0.35	≤0.50	≤0.025	≤0.025		0.90~1.20	≤0.08		
		SUJ 2	0.95~1.10	0.15~0.35	≤0.50	≤0.025	≤0.025		1.30~1.60	≤0.08		
		SUJ 3	0.95~1.10	0.40~0.70	0.90~1.15	≤0.025	≤0.025		0.90~1.20	≤0.08		
		SUJ 4	0.95~1.10	0.15~0.35	≤0.50	≤0.025	≤0.025		1.30~1.60	0.10~0.25		

Category 材料类别	Std. No. 标准号	Designation 符号	Chemical Composition(化学成分) %							
			Cu	Pb	Fe	Sn	Zn	Mn	Ni	others 其他
Copper alloy 铜合金	JIS H 3270	C5191B				5.5~7.0				P;0.03~0.35 Cu+Sn+P≥99.5
	JIS H 3260	C3604W	57.0~61.0	1.8~3.7	≤0.50		Remains 剩余部分			Fe+Sn≤1.2

Category 材料类别	Std. No. 标准号	Designation 符号	Chemical Composition(化学成分) %									
			Cu	Zn	Al	Mn	Ni	Pb	Sn	Fe	Si	others 其他
Copper alloy 铜合金	JIS H 5111	BC6	82.0~87.0	4.0~6.0	≤0.01		≤1.0	4.0~6.0	4.0~6.0	≤0.3	≤0.01	

Appended table 附表

与材料有关的JIS标准和相关国外标准

Comparison with other country's standard for material

Japan Industrial Standard;JIS 日本工业标准			ISO（国际标准）	USA（美国）	UK（英国）	Germany（德国）	France（法国）
Category 材料类别	Std. No. 标准号	Designation 符号					
Carbon Steels for Machine structural use 机械结构用碳素钢	JIS G 4051	S40C	C40/C40E4/C40M2	AISI 1040	EN-C40,C40E,C40R		
		S45C	C45/C45E4/C45M2	AISI 1045	EN-C45,C45E,C45R		
		S50C	C50/C50E4/C50M2	AISI 1049	EN-C50,C50E,C50R		
		S53C	—	AISI 1053	—	—	—
		S55C	C55/C55E4/C55M2	AISI 1055	EN-C55,C55E,C55R		
Structural Steels with specified hardenability bands 保证淬透性结构钢	JIS G 4052	SCM415H	—	—	—	—	—
		SCM420H	—	—	708H20	—	—
		SCM435H	34CrMo4/34CrMoS4	AISI 4137H	—	—	—
		SCM440H	42CrMo4/42CrMoS4	AISI 4140H	EN-42CrMo4/42CrMoS4		
		SCM445H	—	AISI 4147H	—	—	—
Chrome-molybdenum Steel 铬钼钢	JIS G 4105	SCM415	—	—	—	—	—
		SCM418	18CrMo4/18CrMoS4	—	—	—	—
		SCM420	—	—	708M20	—	—
		SCM430	—	AISI 4130	—	—	—
		SCM435	34CrMo4/34CrMoS4	AISI 4137	—	—	—
		SCM440	42CrMo4/42CrMoS4	AISI 4140	EN-42CrMo4/42CrMoS4		
		SCM445	—	AISI 4147	—	—	—

Japan Industrial Standard;JIS 日本工业标准			ISO（国际标准）	USA（美国）	UK（英国）	Germany（德国）	France（法国）
Category 材料类别	Std. No. 标准号	Designation 符号					
Stainless Steels 不锈钢	JIS G 4303 ~ JIS G 4305	SUS303	TR15510(1997)-13	ASTM-S 30300	303 S 31	X10CrNiS 189	Z8 CNF 18.09
		SUS304	TR15510(1997)-6	ASTM-S 30400	304 S 31	X5CrNi 1810	Z7CN 18.09
		SUS316	TR15510(1997)-26	ASTM-S 31600	316 S 31	X5CrNiMo17122	Z7CND 17.11-02
		SUS317	—	ASTM-S 31700	317 S 16	—	—
		SUS440A	—	ASTM-S 44002	EN-1.4109		
		SUS440B	—	ASTM-S 44003	—	—	—
		SUS440C	—	ASTM-S 44004	EN-1.4125		Z100CD17
		SUS630	TR15510(1997)-58	ASTM-S 17400	—	—	Z7CNU 17.04
		SUS631	TR15510(1997)-59	ASTM-S 17700	—	X7CrNiAl 177	Z9CNA 17.07
Alloy Tool Steels 合金工具钢	JIS G 4404	SKS 2	105WCr1	—	—	105WCr6	105WCr5
		SKS 3	—	—	—	—	—
		SKS 4	—	—	—	—	—
High Carbon Chromium Bearing Steels 高碳铬轴承钢	JIS G 4805	SUJ 1	—	ASTM 51100	—	—	—
		SUJ 2	100Cr6	ASTM 52100	—	100Cr6	100Cr6
		SUJ 3	100CrMnSi4-4	ASTM A 485 Grade1	—	—	—
Copper alloy 铜合金	JIS H 3270	C5191B	CuSn6	—	PB103	CuSn6	—
	JIS H 3260	C3604W	CuZn 39 PB 3	—	—	CuZn 39 PB 3	—
	JIS H 5111	BC6	—	ASTM-C 83600	LG2	CuSn 5 ZnPb	—

常用配合尺寸公差
Fits tolerances for frequent use　JIS B 0401

●孔用尺寸公差　Fit tolerances of normal holes

Unit（单位）: μm

Dimensional division 基准尺寸的分类		Fit tolerance grade for holes 孔的公差带															
over 超过	up to 以下	D8	D9	D10	E7	E8	E9	F6	F7	F8	G6	G7	H6	H7	H8	H9	H10
—	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	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
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
10 14	14 18	+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
18 24	24 30	+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
30 40	40 50	+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
50 65	65 80	+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
80 100	100 120	+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

Unit（单位）: μm

Dimensional division 基准尺寸的分类		Fit tolerance grade for holes 孔的公差带															
over 超过	up to 以下	JS6	JS7	K6	K7	M6	M7	N6	N7	N8	N9	P6	P7	P8	P9	R7	S7
—	3	±3	±5	0 -6	0 -10	-2 -8	-2 -12	-4 -10	-4 -14	-4 -18	-4 -29	-6 -12	-6 -16	-6 -20	-6 -31	-10 -20	-14 -24
3	6	±4	±6	+2 -6	+3 -9	-1 -9	0 -12	-5 -13	-4 -16	-2 -20	0 -30	-9 -17	-8 -20	-12 -30	-12 -42	-11 -23	-15 -27
6	10	±4.5	±7.5	+2 -7	+5 -10	-3 -12	0 -15	-7 -16	-4 -19	-3 -25	0 -36	-12 -21	-9 -24	-15 -37	-15 -51	-13 -28	-17 -32
10 14	14 18	±5.5	±9	+2 -9	+6 -12	-4 -15	0 -18	-9 -20	-5 -23	-3 -30	0 -43	-15 -26	-11 -29	-18 -45	-18 -61	-16 -34	-21 -39
18 24	24 30	±6.5	±10.5	+2 -11	+6 -15	-4 -17	0 -21	-11 -24	-7 -28	-3 -36	0 -52	-18 -31	-14 -35	-22 -55	-22 -74	-20 -41	-27 -48
30 40	40 50	±8	±12.5	+3 -13	+7 -18	-4 -20	0 -25	-12 -28	-8 -33	-3 -42	0 -62	-21 -37	-17 -42	-26 -65	-26 -88	-25 -50	-34 -59
50	65	±9.5	±15	+4 -15	+9 -21	-5 -24	0 -30	-14 -33	-9 -39	-4 -50	0 -74	-26 -45	-21 -51	-32 -78	-32 -106	-30 -60	-42 -72
65	80															-32 -62	-48 -78
80	100	±11	±17.5	+4 -18	+10 -25	-6 -28	0 -35	-16 -38	-10 -45	-4 -58	0 -87	-30 -52	-24 -59	-37 -91	-37 -124	-38 -73	-58 -93
100	120															-41 -76	-66 -101

●轴用尺寸公差　Fit tolerances of normal shafts

Unit（单位）: μm

Dimensional division 基准尺寸的分类		Fit tolerance grade for shafts 轴的公差带															
over 超过	up to 以下	d8	d9	e7	e8	e9	f6	f7	f8	g5	g6	g7	h5	h6	h7	h8	h9
—	3	-20 -34	-20 -45	-14 -24	-14 -28	-14 -39	-6 -12	-6 -16	-6 -20	-2 -6	-2 -8	-2 -12	0 -4	0 -6	0 -10	0 -14	0 -25
3	6	-30 -48	-30 -60	-20 -32	-20 -38	-20 -50	-10 -18	-10 -22	-10 -28	-4 -9	-4 -12	-4 -16	0 -5	0 -8	0 -12	0 -18	0 -30
6	10	-40 -62	-40 -76	-25 -40	-25 -47	-25 -61	-13 -22	-13 -28	-13 -35	-5 -11	-5 -14	-5 -20	0 -6	0 -9	0 -15	0 -22	0 -36
10 14	14 18	-50 -77	-50 -93	-32 -50	-32 -59	-32 -75	-16 -27	-16 -34	-16 -43	-6 -14	-6 -17	-6 -24	0 -8	0 -11	0 -18	0 -27	0 -43
18 24	24 30	-65 -98	-65 -117	-40 -61	-40 -73	-40 -92	-20 -33	-20 -41	-20 -53	-7 -16	-7 -20	-7 -28	0 -9	0 -13	0 -21	0 -33	0 -52
30 40	40 50	-80 -119	-80 -142	-50 -75	-50 -89	-50 -112	-25 -41	-25 -50	-25 -64	-9 -20	-9 -25	-9 -34	0 -11	0 -16	0 -25	0 -39	0 -62
50 65	65 80	-100 -146	-100 -174	-60 -90	-60 -106	-60 -134	-30 -49	-30 -60	-30 -76	-10 -23	-10 -29	-10 -40	0 -13	0 -19	0 -30	0 -46	0 -74
80 100	100 120	-120 -174	-120 -207	-72 -107	-72 -126	-72 -159	-36 -58	-36 -71	-36 -90	-12 -27	-12 -34	-12 -47	0 -15	0 -22	0 -35	0 -54	0 -87

Unit（单位）: μm

Dimensional division 基准尺寸的分类		Fit tolerance grade for shafts 轴的公差带														
over 超过	up to 以下	js5	js6	js7	k5	k6	k7	m5	m6	n6	p6	r6	s6	t6	u6	x6
—	3	±2	±3	±5	+4 0	+6 0	+10 0	+6 +2	+8 +2	+10 +4	+12 +6	+16 +10	+20 +14	—	+24 +18	+26 +20
3	6	±2.5	±4	±6	+6 +1	+9 +1	+13 +1	+9 +4	+12 +4	+16 +8	+20 +12	+23 +15	+27 +19	—	+31 +23	+36 +28
6	10	±3	±4.5	±7.5	+7 +1	+10 +1	+16 +1	+12 +6	+15 +6	+19 +10	+24 +15	+28 +19	+32 +23	—	+37 +28	+43 +34
10	14	±4	±5.5	±9	+9 +1	+12 +1	+19 +1	+15 +7	+18 +7	+23 +12	+29 +18	+34 +23	+39 +28	—	+44 +33	+51 +40
14	18													—		+56 +45
18	24	±4.5	±6.5	±10.5	+11 +2	+15 +2	+23 +2	+17 +8	+21 +8	+28 +15	+35 +22	+41 +28	+48 +35	—	+54 +41	+67 +54
24	30													+54 +41	+61 +48	+77 +64
30	40	±5.5	±8	±12.5	+13 +2	+18 +2	+27 +2	+20 +9	+25 +9	+33 +17	+42 +26	+50 +34	+59 +43	+64 +48	+76 +60	—
40	50													+70 +54	+86 +70	—
50	65	±6.5	±9.5	±15	+15 +2	+21 +2	+32 +2	+24 +11	+30 +11	+39 +20	+51 +32	+60 +41	+72 +53	+85 +66	+106 +87	—
65	80											+62 +43	+78 +59	+94 +75	+121 +102	—
80	100	±7.5	±11	±17.5	+18 +3	+25 +3	+38 +3	+28 +13	+35 +13	+45 +23	+59 +37	+73 +51	+93 +71	+113 +91	+146 +124	—
100	120											+76 +54	+101 +79	+126 +104	+166 +144	—

加工尺寸的普通公差
General tolerances

●切削加工尺寸的普通公差　General tolerances for linear dimensions　JIS B 0405

Unit(单位):mm

Tolerance grade 公差等级		Dimensional division 基准尺寸的分类					
Symbol 符号	Remark 说明	0.5 or over up to 3 0.5以上 3以下	over 3 up to 6 超过3 6以下	over 6 up to 30 超过6 30以下	over 30 up to 120 超过30 120以下	over 120 up to 400 超过120 400以下	over 400 up to 1000 超过400 1000以下
f	Fine 精密级	±0.05	±0.05	±0.1	±0.15	±0.2	±0.3
m	Medium 中级	±0.1	±0.1	±0.2	±0.3	±0.5	±0.8
c	Coarse 普通级	±0.2	±0.3	±0.5	±0.8	±1.2	±2
v	Very coarse 极普通级	—	±0.5	±1	±1.5	±2.5	±4

●倒角部长度尺寸的公差　General tolerances for chamfer dimensions　JIS B 0405

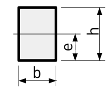
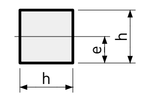
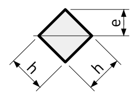
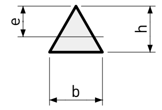
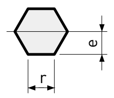
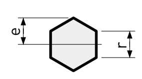
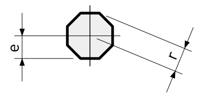
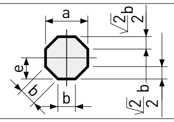
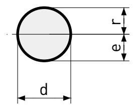
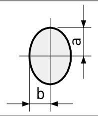
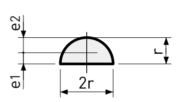
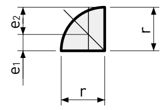
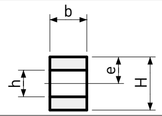
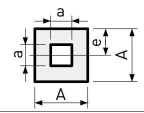
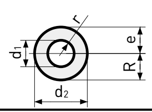
Unit(单位):mm

Tolerance grade 公差等级		Dimensional division 基准尺寸的分类		
Symbol 符号	Remark 说明	0.5 or over up to 3 0.5以上 3以下	over 3 up to 6 超过3 6以下	over 6 超过6
f	Fine 精密级	±0.2	±0.5	±1
m	Medium 中级	±0.2	±0.5	±1
c	Coarse 普通级	±0.4	±1	±2
v	Very coarse 极普通级	±0.4	±1	±2

●角度尺寸的公差　General tolerances for angular dimensions　JIS B 0405

Tolerance grade 公差等级		Length division of shorter side formed angle(mm) 适用角度的短边边长分类(mm)				
Symbol 符号	Remark 说明	up to 10 10以下	over 10 up to 50 超过10 50以下	over 50 up to 120 超过50 120以下	over 120 up to 400 超过120 400以下	over 400 超过400
f	Fine 精密级	±1°	±30′	±20′	±10′	±5′
m	Medium 中级	±1°	±30′	±20′	±10′	±5′
c	Coarse 普通级	±1°30′	±1°	±30′	±15′	±10′
v	Very coarse 极普通级	±3°	±2°	±1°	±30′	±20′

面积、重心、截面惯性矩
Area•Center of gravity•Moment of Inertia of area

Cross section 截面	Sectional area 截面积 A	Distance to center of gravity 重心距离 e	Moment of Inertia of area 截面惯性矩 I	Section modulus 截面模量 Z=I/e
	bh	$\frac{h}{2}$	$\frac{bh^3}{12}$	$\frac{bh^2}{6}$
	h^2	$\frac{h}{2}$	$\frac{h^4}{12}$	$\frac{h^3}{6}$
	h^2	$\frac{h}{2}\sqrt{2}$	$\frac{h^4}{12}$	$0.1179h^3=\frac{\sqrt{2}}{12}h^3$
	$\frac{bh}{12}$	$\frac{2}{3}h$	$\frac{bh^3}{36}$	$\frac{bh^2}{24}$
	$\frac{3\sqrt{3}}{2}r^2$	$\sqrt{\frac{3}{4}}r$	$\frac{5\sqrt{3}}{16}r^4$	$\frac{5}{8}r^3$
		r		$\frac{5\sqrt{3}}{16}r^3$
	$2.828r^2$	$0.924r^2$	$\frac{1+2\sqrt{2}}{6}r^4$	$0.6906r^3$
	$0.8284a^2$	$b=\frac{a}{1+\sqrt{2}}$	$0.0547a^4$	$0.1095a^3$
	$\pi r^2=\frac{\pi d^2}{4}$	$\frac{d}{2}$	$\frac{\pi d^4}{64}=\frac{\pi r^4}{4}$	$\frac{\pi d^3}{32}=\frac{\pi r^3}{4}$
	πab	a	$\frac{\pi}{4}ba^3$	$\frac{\pi}{4}ba^2$
	$\frac{\pi}{2}r^2$	$e_1=0.4244r$ $e_2=0.5756r$	$\left(\frac{\pi}{8}-\frac{8}{9\pi}\right)r^4$	$z_1=0.2587r^3$ $z_2=0.1908r^3$
	$\frac{\pi}{4}r^2$	$e_1=0.4244r$ $e_2=0.5756r$	$0.055r^4$	$z_1=0.1296r^3$ $z_2=0.0956r^3$
	$b\ (H-h)$	$\frac{H}{2}$	$\frac{b}{12}(H^3-h^3)$	$\frac{b}{6H}(H^3-h^3)$
	A^2-a^2	$\frac{A}{2}$	$\frac{A^4-a^4}{12}$	$\frac{1}{6}\ \frac{A^4-a^4}{A}$
	$\frac{\pi}{4}(d_2^2-d_1^2)$	$\frac{d_2}{2}$	$\frac{\pi}{64}(d_2^4-d_1^4)=\frac{\pi}{4}(R^4-r^4)$	$\frac{\pi}{32}\left(\frac{d_2^4-d_1^4}{d_2}\right)=\frac{\pi}{4}\frac{R^4-r^4}{R}$

技术数据表

本公司可根据客户的需求选择滚珠丝杠。选择滚珠丝杠时，请尽可能详细告知使用条件，以便我们更准确地选型。
使用以下技术数据表，可方便您快速选型。

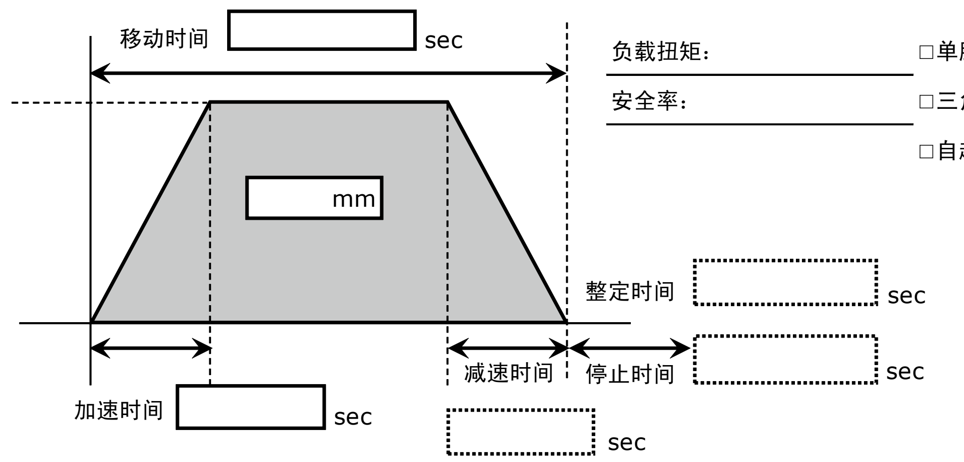
技术数据表

日期和时间	/ /		联系人姓名				
贵公司名称							
TEL			E-mail				
行业	□半导体 □液晶 □测量仪器 □滑台 □光学仪器 □食品机械 □医疗器械 □航空、宇宙相关 □汽车 □军事 □其他（ ）						
产品种类	□滚珠丝杠 □进给丝杠 □树脂导程丝杠 □带电机滚珠丝杠 □执行器 □其他（ ）						
使用条件	装置名称		轴径（mm）		导程（mm）		
	使用位置		精度等级		间隙（μm）		
	设置姿态	□水平 □垂直 □（ ）度	行程（mm）		润滑		
	环境温度	□常温 □其他（ ）度	负载（最大·常用）		速度（最高·常用）		
	特别事项						
精度要求	绝对定位 μm		重复定位 μm		空转 μm		

●运行曲线 / 速度线图●

必备项目

可选项



负载扭矩：

安全率：

□单脉冲进给运行（ μm）

□三角驱动

□自起动运行

记录			
□滚珠丝杠寿命计算委托 □滚珠丝杠选型委托 □电机选型委托 □其他（ ）			
计算寿命	（小时 · 日 · 年）	推荐的滚珠丝杠 / 电机	
受理号			

kSS CO.,LTD. kSS 株式会社

Technical Data Sheet

As customer's request, KSS selects Ball Screws. For selection of Ball Screws, please let us know detail of usage condition as much as possible and it enables precise selection.
Prompt selection can be possible by using technical data sheet below.

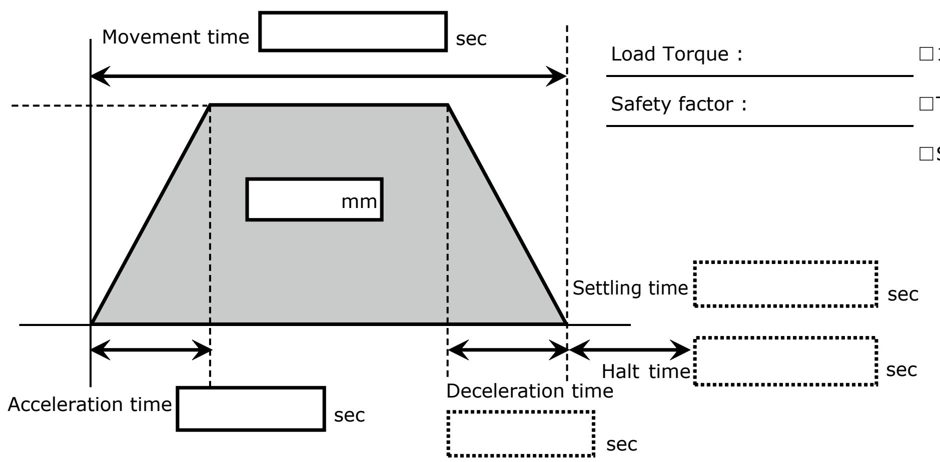
Technical data sheet

Date	/ /		Person in charge				
Company Name							
Telephone No.			E-mail address				
Industry Field	□ Semiconductor □ LCD □ Measuring Equipment □ Stage □ Optical □ Food □ Medical □ Aero space □ Automobile □ Military affairs □ Others（ ）						
Products	□Ball Screw □ Lead Screw □ Resin Lead Screw □ Direct Motor Drive Ball Screw □Actuator □ Others（ ）						
Operating Condition	Machine Name		Shaft dia.（mm）		Lead（mm）		
	Application		Accuracy Grade		Axial play（μm）		
	Position	□ Hor. □ Vert.□（ ）deg	Travel（mm）		Lubrication		
	Operating Temp.	□Room Temp. □Others（ ）deg	Load（max/mean）		Speed（max/mean）		
	Remarks						
Reqd. accuracy	Absolute Positioning μm		Repeatability μm		Lost motion μm		

● Operating Pattern ●

Crucial items

Optional Items



Load Torque :

Safety factor :

□1 pulse feed operation（μm）

□Triangle drive motion

□Starting operation

Memorandum			
Request items	□Ball Screw life time □ Ball Screw Model selection □ Motor Model selection □ Others（ ）		
Calculated Ball Screw Life	（hours/days/years）	Recommended Ball Screw/Motor	
Resistered No.			

kSS CO.,LTD.

Appended table 附表