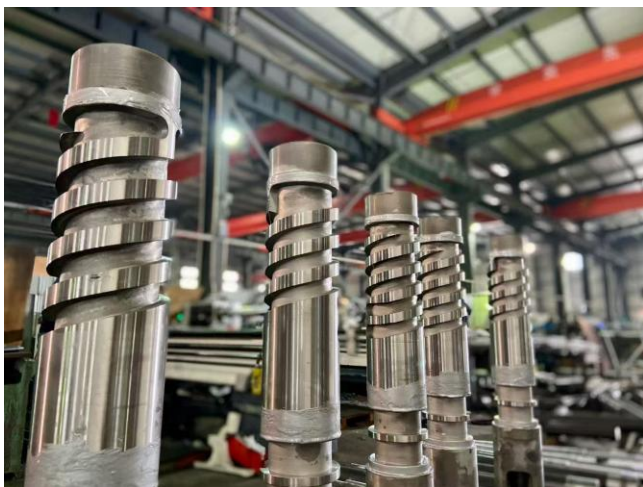


# ◇ 射出成形金型用スクリュー部品加工

[global@arktechnica.com](mailto:global@arktechnica.com) : 見積 & 製作 依頼窓口

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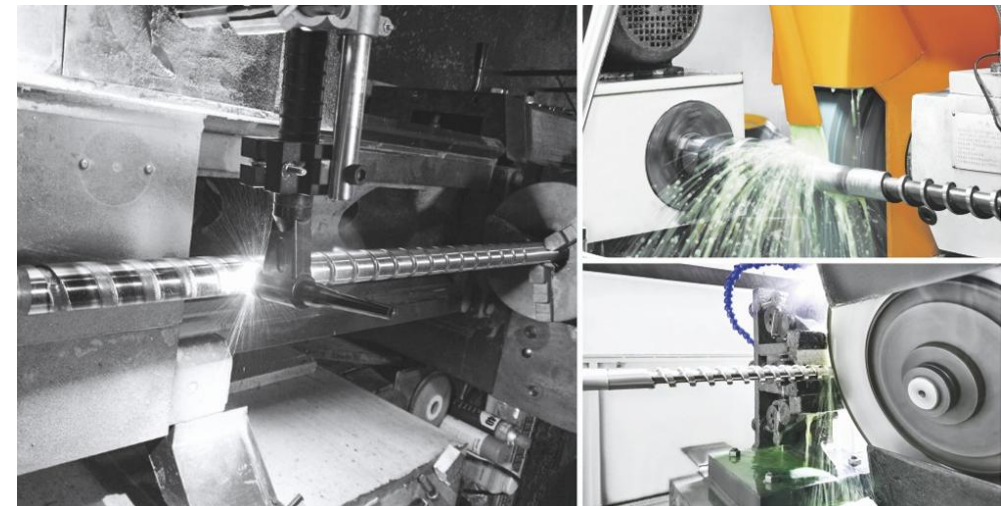
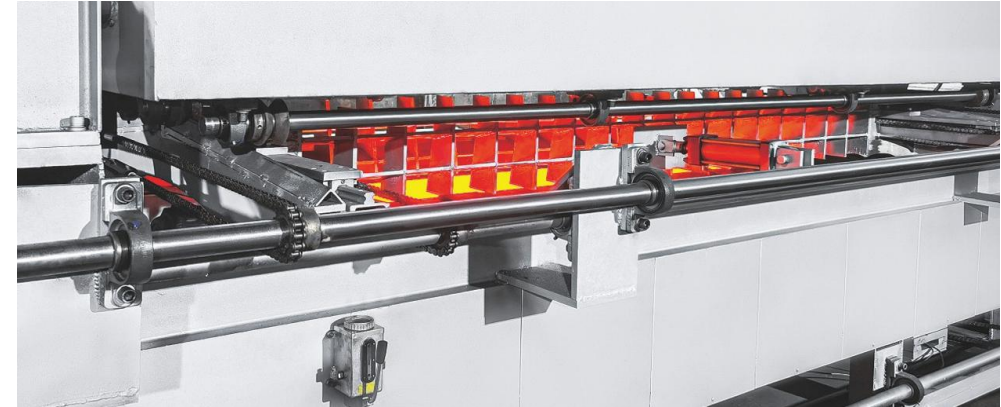
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## PRODUCTION PROCESS

### 生产流程



表面粗糙度 Surface roughness GB1031-1983	Ra	0.012	0.025	0.05	0.1	0.2	0.4	0.8	1.6	3.2	6.3	13	25	50	100
表面光洁度 Surface finish GB1031-1983	Ra	0.01	0.02	0.04	0.08	0.16	0.32	0.6	1.3	2.5	5	10	20	40	80
表面状态 Surface condition	等级 Grade	▲14	▲13	▲12	▲11	▲10	▲9	▲8	▲7	▲6	▲5	▲4	▲3	▲2	▲1
雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror	雾状镜面 Foggy mirror



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## DESIGN CLASSIFICATION OF COMMON PLASTIC RAW MATERIALS

### 常见的塑胶原料的设计分类

#### 通用螺杆 / General gun barrel screw

通用螺杆: 为了避免不同塑料更换螺杆; 压缩段长度介于渐变螺杆、突变螺杆之间(3-4D)。

- 适用于PP、PE、PS、ABS、SPVC等产品;
- 产品质量有较高要求, 对温度和剪切敏感;
- 注塑机标准螺杆, 压缩比2.7-3.3: 1;
- 三段比例为50%: 20%: 30%。

General gun barrel screw, in order to avoid different plastic change of gun barrel screw; is gradually variable pitch screw and suddenly between the variable pitch screw compression length (3-d).

- suitable for PP, PE, PS, ABS, SPVC products such as;
- the quality of the products have higher requirements, is sensitive to temperature and shear.
- standard screw injection molding, compression ratio, 2.7-3.3:1;
- three ration is 50%:20%:30%.

#### 低剪切螺杆 / Low shear screw

- 适用于PC、PMMA、TPU等(粘度较高, 熔融塑化较难的材料)产品;
- 产品质量有较高要求, 对温度和剪切敏感;
- 压缩比2: 1-2.5: 1;
- 三段比例45%: 30%: 25%;
- 螺槽深度较浅、加料段相对PA专用螺杆较短。

- Suitable for PC, PMMA, TPU and other products (materials with higher viscosity and difficult to melt and plasticize);
- The product quality has high requirements and is sensitive to temperature and shear;
- Compression ratio 2: 1-2.5:1;
- The proportion of three stages is 45%: 30%: 25%;
- The depth of the screw groove is shallower, and the feeding section is shorter than that of the PA special screw.

#### Pa专用螺杆 / The PA material of gun barrel screw injection molding machine

- Pa材料低黏结晶性材料, 对产品质量有较高要求;
- 螺杆压缩比2.6: 1(较大), 压缩比一般选取2.5-3.2, 其中防止过热分解H3: 0.067-0.089D;
- 螺杆三段比例: 65%: 11%: 24%,
- 粘度低, 故止逆环与机筒间隙就尽量小约0.03-0.05, 螺杆与机筒间隙0.05-0.10.
- 喷嘴采用弹簧自锁式射咀。

- Pa material is a low-viscosity crystalline material, which has higher requirements for product quality;
- The screw compression ratio is 2.6:1 (larger), and the compression ratio is generally 2.5-3.2, among which to prevent overheating decomposition H3: 0.067-0.089D;
- The proportion of the three-stage screw: 65%: 11%: 24%,
- The viscosity is low, so the gap between the check ring and the barrel is as small as possible about 0.03-0.05, and the gap between the screw and the barrel is 0.05-0.10.
- The nozzle adopts a spring self-locking nozzle.

#### 顾客至上、锻造精品、诚信经营、持续改善

Customer First, Forged Quality Products,  
Integrity Management, Continuous Improvement.

#### UPVC专用螺杆 / The UPVC material special gun barrel screw

- UPVC材料, 增塑剂含量少, 易降解, 难加工; 腐蚀性强;
- 要求: a. 不对材料产生高的剪切;  
b. 不应有死角存料, 避免降解;  
c. 材料缓慢熔融塑化。

不采用止逆环

- 压缩比为1.95: 1;
- 三段比例: 28%: 52%: 20%;
- 螺杆和螺杆末端要电镀或采用双金属材料。

- UPVC material, plasticizer content is less, easy degradation, difficult processing; strong corrosion;
- required: a. materials does not produce high shear;  
b. There should be no dead ends to store materials to avoid degradation  
c. material plasticizing slowly.
- Do not use the check ring
- compression ratio of 1.95:1;
- three parts: 28%: 52%: 20%;
- The screw and screw end should be electroplated or made of bimetallic material.

#### PET/PBT专用螺杆 / PTE/PBT, Special gun barrel screw

- 适用于PBT、PET等材料制品, 熔融温度较高(270-290℃), 结晶型, 剪切敏感;
- 压缩比2.5-2.7: 1;
- 三段比例: 50%: 25%: 25%。

- products suitable for PBT and PET materials, high melting temperature (270-290℃), crystal type, shear sensitive;
- compression ratio of 2.5-2.7:1;
- three parts: 50%: 25%: 25%.

#### 加纤材料炮筒螺杆 / Gun barrel screw of adding glass fiber materials

- 加纤材料, 磨损严重, 要使用双金属螺杆, 或全硬钢螺杆, 螺杆具有耐磨性和耐腐蚀性, 提高使用寿命;
- 耐磨材料主要成份以碳化钨为主。

- Fiber reinforced materials are severely worn, and bimetal screw or all-hard steel screw must be used. The screw has abrasion resistance and corrosion resistance to increase the service life;
- wear-resisting material ingredient is given priority to with tungsten carbide.



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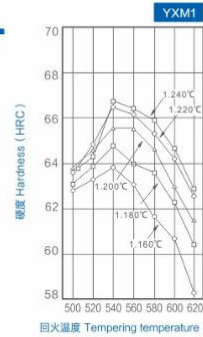
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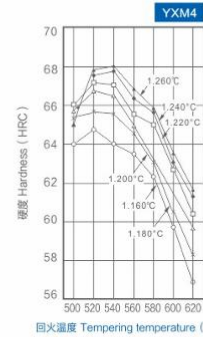
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## CONVENTIONAL HIGH SPEED TOOL STEELS

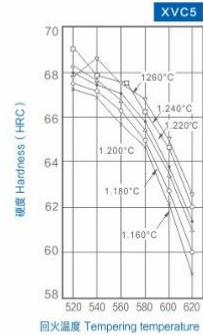
传统高速钢



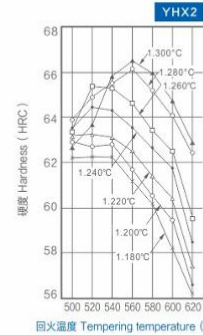
回火温度 Tempering temperature (°C)



回火温度 Tempering temperature (°C)



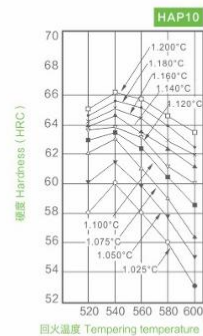
回火温度 Tempering temperature (°C)



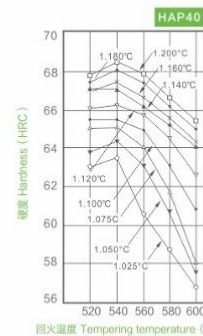
回火温度 Tempering temperature (°C)

## P/M HIGH SPEED TOOL STEELS

粉末高速钢



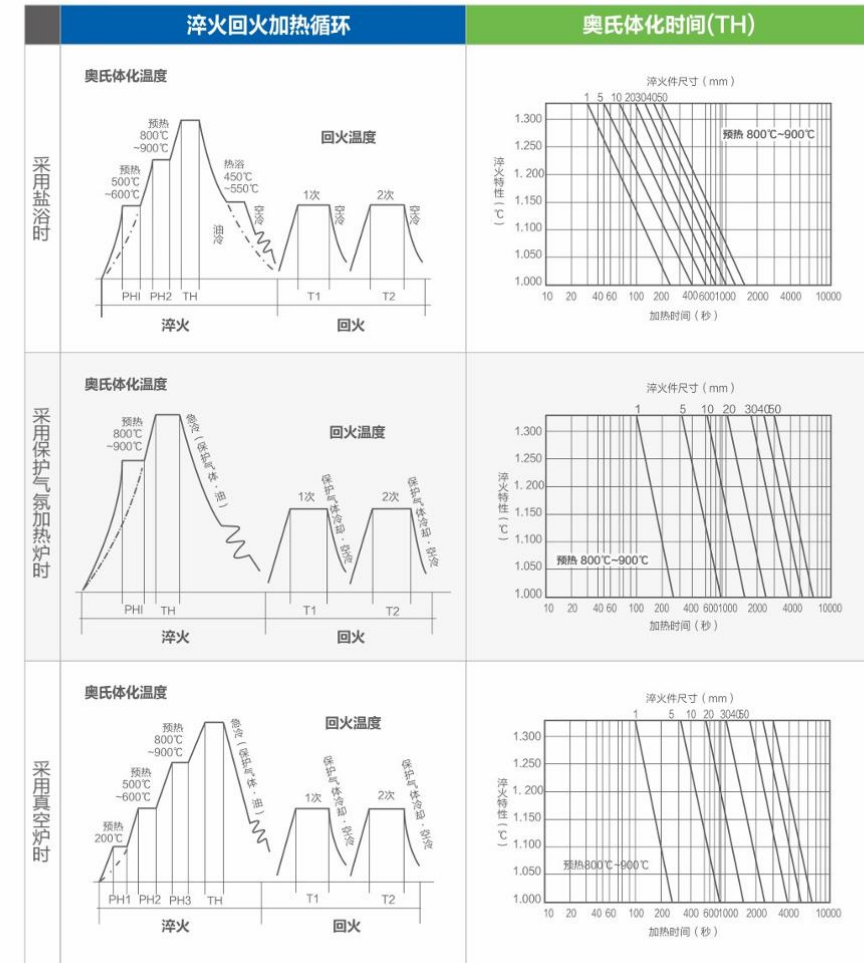
回火温度 Tempering temperature (°C)



回火温度 Tempering temperature (°C)

## QUENCHING AND TEMPERING PROCESS

淬火回火工艺



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# ◇ 射出成形金型用スクリー部品加工

## DUAL ALLOY SCREW

### 双合金螺杆

#### 产品说明 / Product description

选用38CrMoAL、进口SACM-645日本钢材做为基材。采用氧离子喷射技术将特殊的合金粉末平均喷射在基材表面，形成抗腐蚀、高耐磨的合金层。

choose 38 crmoa, Japan imported SACM - 645 steel, such as base material. Using oxygen ion jet technology to evenly spray special alloy powder onto the surface of the substrate, forming a corrosion-resistant and highly wear-resistant alloy layer.

#### 技术指标 / Product details

加工范围	Processing range	φ 16mm- φ 250mm
有效长度	Effective length	3500mm
合金硬度	Metal hardness	HRC58° - 62°
合金层厚度	Alloy laye thickness	2.0-3.0mm
表面光洁度	Surface finish	Ra0.4um
螺杆直线度	Screw the straightness	0.015m/m

#### 适用范围 / Scope of application

适用于各类添加玻璃纤维塑料，及电木粉、添加磁粉、铁粉等特殊工程料的造粒，管材，片材，板材，及注塑加工。

applicable to all kinds of adding glass fiber plastic, bakelite and add the magnetic powder, iron powder granulation, of the special projects, such as pipe, sheet, plate, and injection molding processing.



百塑机 MULTIPLAS

台中精机 VR VS VFL VE

## HALOGEN-FREE, SPECIAL SCREW

### 无卤专用螺杆

#### 产品说明 / Product description

在经过特殊选材的高性能螺杆表面采用超音速喷涂工艺，覆盖一层抗磨、抗腐蚀的无卤专用合金层，使螺杆具备良好的耐磨、耐腐蚀性。且不宜变性，不易脱落，延长螺杆的使用寿命，是普通双合金的三至五倍寿命。适用于加玻纤40%以上及无卤料。

On the surface of high-performance screws that have been specially selected, ultrasonic spraying technology is used to cover a layer of halogen-free special alloy that is wear-resistant and corrosion-resistant, giving the screw good wear and corrosion resistance. And it is not suitable for denaturation, not easy to fall off, and extends the service life of the screw, which is three to five times longer than that of ordinary double alloys. Suitable for adding over 40% fiberglass and halogen-free materials.

#### 技术指标 / Product details

硬度	Hardness	HRC58° - 63°
表面粗糙度	The surface roughness	Ra0.4
直线度	Straightness	0.015/m
加工范围	Processing range	φ 16mm- φ 50mm
有效长度	Effective length	2500mm

#### 适用范围 / Scope of application

PA4T、PA6T、PA9T、PA10T、PBT、PPA等无卤料添加GF40%以上；以及添加铁粉、陶瓷粉等极易磨损和腐蚀的原材料。

PA4T, PA6T, PA9T, PA10T, PBT, PPA, such as plastic add GF40% above; As well as add iron powder, ceramic powder etc. Easy to wear and corrosion of raw materials.



发那克 FANUC



# ◇ 射出成形金型用スクリー部品加工

## PC PLASTIC SCREW

### PC专用螺杆

#### 产品说明 / Product description

选取材质：选用38CrMoA、进口SACM-645日本钢材，进口不锈钢为做为基材，依据PC透明度高、流动性差、粘度高（易发黄、易出黑点）等特点，特别选材和设计采用最新加工工艺加工而成，表面镀铬或镀钛后研磨处理，从而达到镜面效果。

Select material: choose 38 crmoa, Japan imported SACM-645 steel, imported stainless steel as base material, high transparency, poor liquidity, high viscosity based on PC (prone to yellow, easy out of the black spots) and other characteristics, special material and design using the latest processing technology, titanium or hard chrome plated surface after fine grinding processing so as to achieve the mirror effect.

#### 技术指标 / Product details

加工范围	Processing range	φ 16mm - φ 200mm
有效长度	Effective length	5500mm
表面硬度	Surface hardness	HRC55° - 58°
表面光洁度	Surface finish	Ra0.4um
螺杆直线度	Screw straightness	0.015m/m

#### 适用范围 / Scope of application

适用于PC、PMMA、PS、PVC、TPU、CA、PP等粘度高、流动性差、外观要求高的制品加工。

It is suitable for the processing of PC, PMMA, PS, PVC, TPU, CA, PP and other products with high viscosity, poor fluidity and high appearance requirements.



发那克/FANUC

## DOUBLE ALLOY GUN BARREL SCREW

### 双合金料管(机筒)

#### 产品说明 / Product description

应用高速离心浇铸设备，将调配好的合金粉末浇铸在机筒的内壁，再使用其它机械设备加工完成，其使用寿命较氮化机筒大大提高。

Using high-speed centrifugal casting equipment, the alloy powder is cast on the inner wall of the barrel, and then processed by other mechanical equipment, and its service life is greatly improved compared with the nitriding barrel.

#### 技术指标 / Product details

用途区分	USES	注塑机、挤出机、电木机 Injection molding machine, Extrusion machine, Bakelite machine.
内孔加工范围	Inner hole processing range	φ 14 - φ 200mm
有效长度	Effective length	5000mm
合金层硬度	Alloy layer hardness	HRC58° - 62°
合金层厚度	Alloy layer thickness	1.5 - 3.0mm
机筒直线度	Barrel straightness	0.015mm/M

#### 适用范围 / Scope of application

- K1 铁基合金 耐磨经济型(含碳化钨9.5%)。**  
Iron base alloy wear-resistant economy (including 9.5% tungsten carbide).  
电木粉、PE、PP、PC、AS、ABS、PEI、PPS、PEEK等一般工程塑料加25%以内玻璃纤维。  
bakelite, PE, PP, PC, AS, ABS, PEI, PPS, PEEK and other general engineering plastics with 25% glass fiber.
- K2 镍基合金耐磨、耐腐蚀型(含碳化钨25%)。**  
Nickel base alloy wear resistant, corrosion resistant type (including 25% tungsten carbide).  
PA、PPA、POM、PPO、PBT、LCP等一般工程塑料加45%以内玻璃纤维。  
PA, PPA, POM, PPO, PBT, LCP general engineering plastics with 45% glass fiber.
- K3 镍基合金超耐磨、耐高温(450°C以下)、耐腐蚀型(含碳化钨45%)。**  
Nickel base alloy super wear-resistant, high temperature resistant (below 450°C), corrosion type (including 45% tungsten carbide).  
无卤塑料、防火阻燃塑料、高温工程塑料、等特殊工程塑料加45%以上的玻璃纤维。  
Halogen free plastic to plastic, fire resistance, high temperature engineering plastics, special engineering plastics such as more than 45% of the glass fiber.
- K5 镍基合金超耐磨、耐高温(600°C以下)、耐高速、耐高压、耐腐蚀型。**  
Cobalt base alloy ultra wear-resisting, resistance to high temperature (below 600°C), high speed type, high pressure resistance, corrosion resistance.  
陶瓷粉、铝镁粉、磁粉、等粘性不大的特殊工程塑料。  
Ceramic powder, aluminum magnesium powder, magnetic powder, iron powder, copper powder, special engineering plastics such as viscosity is not big.



住友/SUMITOMO



# ◇ 射出成形金型用スクリュー部品加工

## CIM SPECIAL SCREW MIM SPECIAL SCREW

陶瓷专用螺杆/粉末冶金专用螺杆

### 产品说明 / Product description

公司针对精密陶瓷、金属粉末注射成型发展需求,特推出耐磨系数大、加工精度高、下料效率高、注射质密度高的陶瓷专用螺杆、粉末冶金专用螺杆,有效延长了粉末成型螺杆的寿命,同时提高了粉末注射成型产品的良品率。

In response to the development needs of precision ceramics and metal powder injection molding, the company has specially introduced special ceramic screws and powder metallurgy special screws with large wear resistance coefficient, high processing accuracy, high blanking efficiency, and high injection density, which effectively prolongs powder molding. The life of the screw also increases the yield of powder injection molding products.

### 技术指标 / Product details

加工范围	Processing range	φ 14-φ 50mm
有效长度	Effective length	1500mm
整体硬度	Overall hardness	HRC58° ~62°
表面光洁度	Surface finish	Ra0.4um
螺杆直线度	Screw the straightness	0.015mm/M

### 适用范围 / Scope of application

汽车、机械、医疗器械、钟表零件、电子、日常生活用品、通讯、航空等行业,及各种磁性部件。

Automobiles, machinery, medical equipment, watch parts, electronics, daily necessities, communications, aviation and other industries, and various magnetic components.



日精/Nisse

日钢/JSW

## HV MATERIAL HARD ALL SERIES OF GUN BARREL SCREW

全硬螺杆(HV系列)

### (Hv系列) 螺杆参数表 / (HV series) screw parameter table

材料名称 The name of the material	硬度 (HRC) hardness	性能体现 Performa- nce is	适用范围 Scope of application	加工范围 Processing range
HV-300	55-58	耐磨损 Resistant to wear and tear	+GF30%	内径 Inner dia φ 14-150
HV-500	55-60	超耐磨损 Super wear resistance	+GF45%	外径 Outer dia φ 330
HV-700	60-62	极耐磨损 Extremely resistant to wear and tear	+GF60%	长度 Length 4000
HV-800	62-62	超耐磨耐腐 Very wear- resisting corosion	+GF60% 及无卤料 Halogen free plastic	

### 技术指标 / Product details

加工范围	Processing range	φ 14-φ 50mm
有效长度	Effective length	1500mm
整体硬度	Overall hardness	HRC55° ~63°
表面光洁度	Surface finish	Ra0.4um
螺杆直线度	Screw the straightness	0.015mm/M

### 适用范围 / Scope of application

#### HV-300 耐磨损 Wear resistance

PPE, PP, PC, AS, ABS, PET, PA等一般工程塑料加30%以内玻璃纤维。  
bakelite, PPE, PP, PC, AS, ABS, PET, Pandother general engineering plastics  
with 30% glass fiber.

#### HV-500 超耐磨、耐腐蚀型 Super durable, Corrosion resistant type

PA, PA6T, POM, PBT, PPO, LCP, PPA, PPS, PEEK等工程塑料加  
45%以内玻璃纤维。  
PA, PA6T, POM, PBT, PPO, LCP, PPA, PPS, PEEK general engineering plastics  
with 45% glass fiber.

#### HV-700 超耐磨、耐腐蚀、耐高温、耐高压、耐高速型

Super durable, corrosion resistance, resistance to high  
temperature, high pressure resistance, high speed type.  
陶瓷粉、磁粉、铁粉、铜粉、等特殊工程塑料加60%以内的玻璃纤维。  
Ceramic powder, magnetic powder, iron powder, copper powder, and other special  
engineering plastics with glass fiber content of up to 60%.

#### HV-800 超耐磨、耐腐蚀、耐高温、耐酸碱

Ultra wear-resistant, corrosion-resistant,  
high temperature resistant, acid and alkali resistant.  
PA4T, PA6T, PA9T, PA10T, 等工程塑料加60%以内玻璃纤维的无卤料。  
PA4T, PA6T, PA9T, PA10T Halogen-free material with glass fiber less than 60%  
added to iso-engineering plastics.

\* 以上HV全硬系列螺杆 Above HV Hard Series Screw



沙迪克机/Sodick

东洋机/TOYO

