

Fastener Solution Provider

最专业的紧固件及技术研发供应商

以科技谋发展，以质量谋生存
专业、创新、严谨、发展



深圳市中金科五金制造有限公司

ShenZhen Zhongjinke Hardware Manufacturing Co.,Ltd



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1. Precision Micro Screws

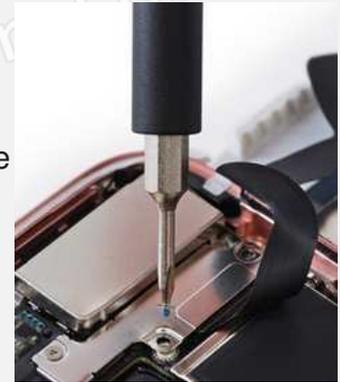


Precision screws are referred to as small screws, also called small screws/micro screws (M0.8-M2.0), which are tiny fasteners that connect the product components. The types of precision small screws are very broad, and the standards of different products are different. The material of precision screws is generally made of carbon steel (C1018, C1022, 10B21...), stainless steel (SUS410...) and stainless steel (SUS302, SUS304, SUS316...).

The cold heading process produces more and faster in terms of quantity and speed, and the cost is lower. Especially when producing small precision screws, the cold heading process is more cost-effective than the turning process.

Application areas:

Precision screws generally refer to screws under M2.0. For example, precision miniature screws used in digital products, DVDs, cameras, glasses, watches, mobile phones, electronics, etc.



1. Precision Micro Screws

Precision Micro Screws Production Process



**Raw
Material**



Heading



**Thread
Forming**



**Heat
Treatment**



Plating



**Nylon
Patch**



Inspection



Packaging



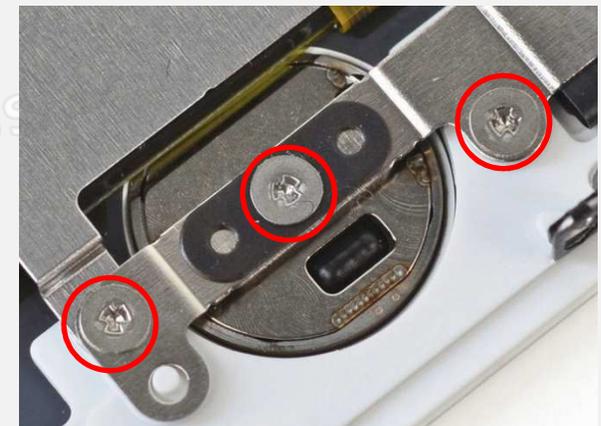
Shipping

2. "Y" Recess Screws



In the ever-changing electronics industry such as mobile phones, smart watches, and tablet computers, today's thinner and lighter models are becoming a trend of development, ensuring a basic locking function of the screws and a good driving effect. "Y" recess screw, the thinnest screw head thickness has reached 0.10mm.

The "Y" recess screw can prevent the opening from various existing screwdrivers, and it can be used to fasten the outer casing and related parts of the product, which can prohibit others from disassembling and prevent the leakage of new product technology. It is commonly used in the fixing and dismantling of public facilities, and the fastening of components that are deemed secured. It can play an important role in safety protection.





3. CD Finish Cosmetic Screws

The CD pattern is also known as the sun pattern, the glossy pattern, and colorful pattern. The CD-grain screw is brighter than ordinary screws, and has a luster like a CD-patterned ray in the sun or under the light.

Production Process:



Raw Material



Heading



Thread Forming



Heat Treatment



Pattern Machining



PVD Finish



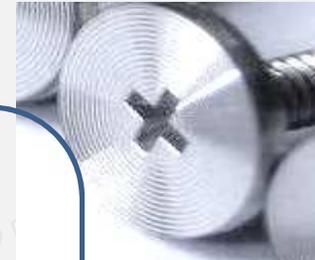
Inspection



Packaging



Shipping



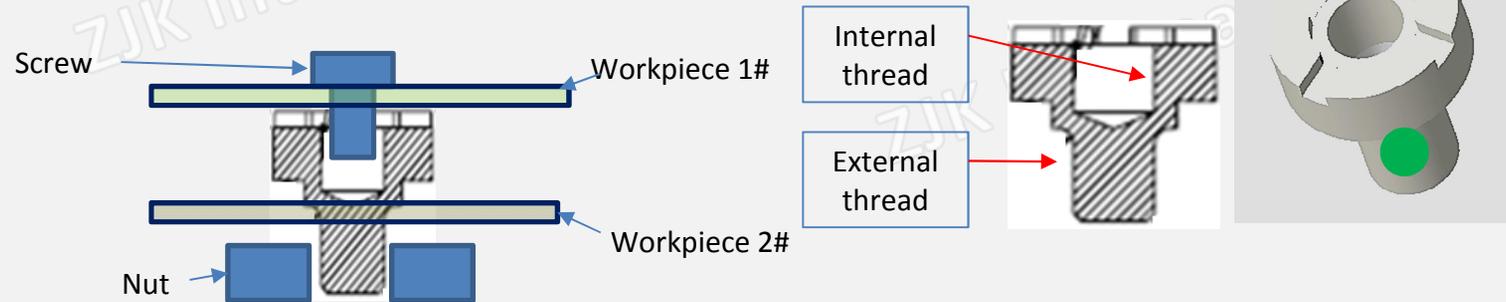
The requirements of the CD-shaped screw: 410, 302, 304 stainless steel screws are more suitable for processing CD patterns. The heat treatment process is used to change the properties of the material, then the CD pattern can be processed, otherwise there is no CD grain gloss and the color will be dark.

Remarks: Generally the 300 series stainless steel screws has weak magnetic property, they are not easily use in assembly line, but 400 series has good magnetic property, and the screw assembly efficiency is much higher than 300 series stainless steel.

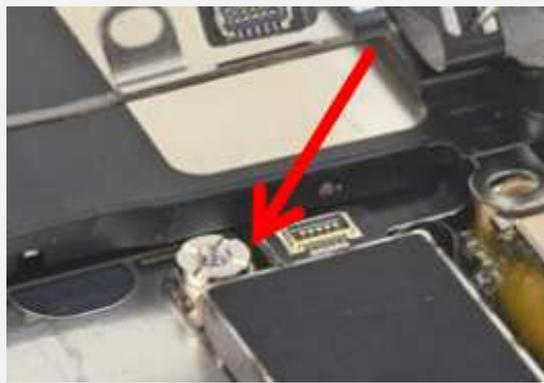
4. Super screws



Super screw: contain both internal and external threads. The external thread of the lower end is used to first fix the workpiece to the nut of the product, and then the internal thread of the super screw can still be locked onto another screw to assemble another workpiece.



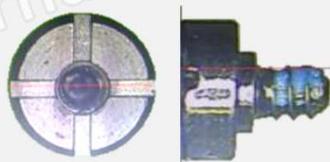
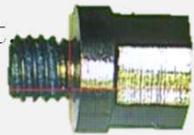
Application on wearable products (Watch) and mobile phones:



4. Super screws



Machine: Special modification on standard auto lathes are made to manufacture the product

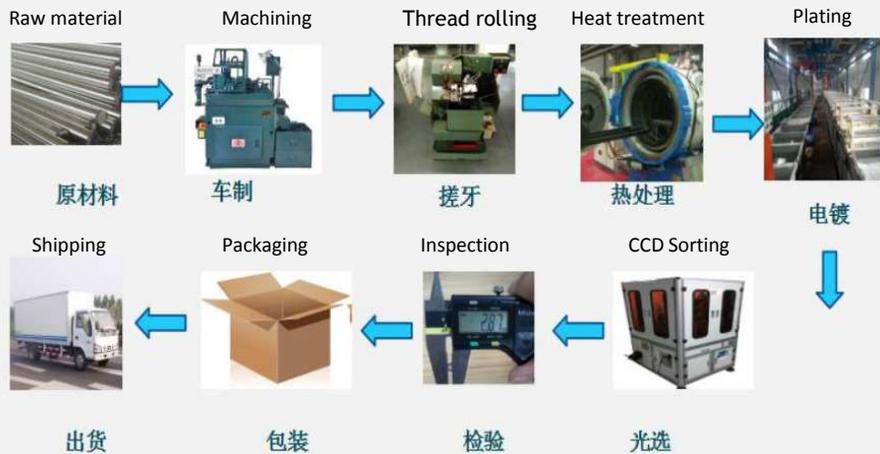


The automatic lathe is equipped with a milling hex device, which can be directly milled out on the machine to reduce the repetitive machining of the screw.

The automatic lathe spindle is equipped with a servo motor, so that the spindle can be indexed by 90 degrees, so that a slotted/phillip recess can be done on the machine.



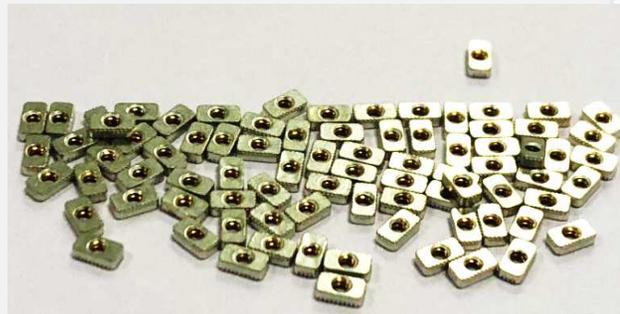
Auto Lathe



5. SMT Nuts



The SMT nut can be a flat body of various shapes, and is generally used in a large amount. It is widely used in the circuit boards of various mobile phones, tablet computers, notebook computers and other electronic devices. It is used by soldered to the motherboard on the SMT automatic line for fixing the motherboard and other components. The surface treatment generally is nickel-tin plating.



Tape and reel packaging

5. SMT Nuts



The SMT nut used to be a machining part! The basic flow of the original material is raw material - machining - embossing. Because the product is widely used in various SMT circuit board soldering, and the usage is very large, therefore, in order to increase productivity, quality and reduce Cost, the company invested tremendous research and development costs and successfully developed the use of stamping process. The SMT nut produced by the stamping process can solve the low productivity of machining and can reduce the embossing process (finishing once), and the quality level is more stable. The basic production process is raw material - stamping - tapping. Really achieve the purpose of increasing production capacity, increasing quality and reducing costs. We have provided Customers with good quality, excellent price, and on time delivery, where quickly replaced other vendors.



Production process:



Raw Material



Stamping



Plating



Tapping



Inspection



Tap and Reel Packaging



shipping

6. Insert nuts



The smallest insert nuts we can make is M0.8-M1.4 for mobile phone application.

1. Material : Copper, stainless steel, titanium, and aluminum
2. Bar stock : According to the shape, plane bar stock or knurled bar stock
3. Process : From drilling, tapping, diameter machining, make radius, knurling and cutting, all done on the machine.

Auto Lathe :

The automatic lathe is a high-performance, high-precision, low-noise automatic lathe. It is an automatic processing machine that controls the machining program through cams. It is used in instruments, watches, automobiles, motorcycles, bicycles, glasses, stationery, electronic parts, connectors, computers, mobile phones, electromechanical, military and other industries. It is highly efficient for complex parts



Production process:



6. Insert nuts

Different types of insert nuts:

一、Copper insert nuts :

1. Material is soft, high strength and even density. Processed parts has high gloss, and easy to form.
2. Good machining property, low cost, and mostly used in plastic cover. Heat stacking, ultrasonics, and molded-in process are used for assembly.

二、Titanium insert nuts :

Current mobile phone uses aluminum back cover normally. If the aluminum alloy is tapped with thread according the screw, and during the anodizing treatment, it will be electrolyzed more and the slippery teeth are prone to occur. Titanium has excellent chemical resistance, that is, it does not cause screw slip or breakage in the surface treatment process of the anodizing, etc., thereby improving the reliability of the screw locking of the whole machine.

三、Stainless steel insert nuts :

Stainless steel has high corrosion resistance, and high overall strength, direct press-in can be used.

Insert nuts application :

Insert nuts are widely used in the following fields: laptop computers, mobile phones, smart wearables, terminal communications and other electronic devices. Through heat stacking, ultrasonic press in, injection molding, rivet pressing and other processing techniques, the products are embedded in the outer casing or the inside of the product that is tightly engaged to lock and fasten the connecting screws.

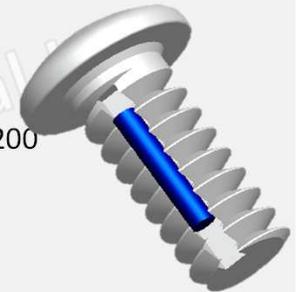


7. Embedded Rubber Screws



Main functions :

1. By using the NYLON PATCH and nylon inserts coated on the threads, the patch will be elastically deformed after being locked into the female part, and the squeeze into the gap generates a large frictional force to prevent the screw from coming loose.
2. Benefits : Adjustable and removable. Easy assembly with high efficiency, and high/low temperature tolerance (-50 — 200 degree celsius).
3. Application: electronics, glasses, bicycle, automotive, appliances, medical...etc.



Nylon patch compare to embedded rubber screw:

Nylon Patch

The most common anti-loose thread is coated with a layer of nylon glue on the surface of the thread. The production is relatively simple, but the anti-loose effect is poor, and the number of reusable times is small. Repeated disassembly and assembly, the nylon glue coated on the thread surface will fall off and lose the anti-loose effect.



Embedded Rubber screw

The embedded rubber screw is a screw with a nylon strip embedded in the thread. Compared with the traditional spraying, the anti-loose effect is good. The re-use effect is high, and the nylon strip will not be reduced at any time. The anti-loose effect is very good.



8. Embedded Rubber Set Screws



Main functions :

1. The set screw is the screw used to fix the relative position. When in use, the set screw is screwed into the screw hole to be fixed, so that the end of the screw is pressed against the other piece.
2. The rubber head fastens the rubber end of the screw to avoid scratching or damaging the fixed parts, especially when the fixed parts are plastic or electric wires.
3. Mainly used in equipments, communications, lighting products, electronics.



Set screws and embedded rubber set screws comparison

Set Screws

Ordinary set screws (as shown) have a pointed end or a flat end. When used, the end of the screw is directly in contact with the fixed part. As the number of uses increases, even the steel will be scratched to produce burrs.



Embedded Rubber Set Screws

When the rubber head fixing screw (as shown) is used, the rubber head of the tail end is in contact with the fixed part. With the characteristics of the plastic head, damage to the fixed part will not be caused, especially if the fixed part is plastic or electric wire.



9. Rubber Ring Screws



Main functions :

1. Generally used in waterproof and dustproof products. The nylon/silicone ring under the head are squeezed tightly and attached to the gap between the two parts.
2. The screw can be reused. When nylon/silicone ring lost its property, only the ring needed to be replaced, and it is not necessary to replace the whole screw.
3. Application in electronics, equipments, communication, lightings, medical, appliances.



Normal Nyseal and Rubber Ring screw comparison

Normal Nyseal screws

The temperature has a big impact on the Nyseal. In the long run, when the number of uses increases, the Nyseal under the head will gradually fall off, resulting in weakened dustproof and waterproof effect, replacement of new screws is needed.



Rubber Ring Screws

With the rubber ring screw, after assembly, the head of the screw is in close contact with the locked part, and the nylon/silicon is squeezed between the head of the screw and the part to be locked, which can achieve waterproof and dustproof effect. Only the ring needed to be replaced when the nylon/silicon is aged.



10. Mobile Phone Sheetmetal



Sheetmetal parts for mobile phone :

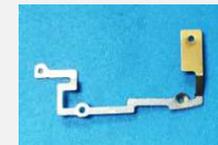
- 1、Stamping with progressive dies.
- 2、Custom made.
- 3、Life cycle tests requirements by customer.

Material:

0.05~0.5MM stainless steel or copper because of high flexibility to increase the life cycle.

Life cycle requirement:

Type of material, thickness of the material, grain direction of the material should all be taking into considered when designing the parts.



Production process:



Raw Material



Stamping



Inspection



Packaging



Shipping



10. Mobile Phone Sheetmetal



Mobile phone shielding cover :

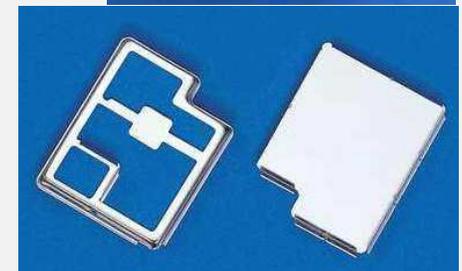
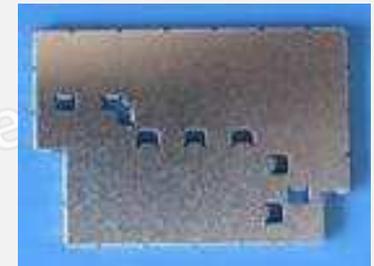
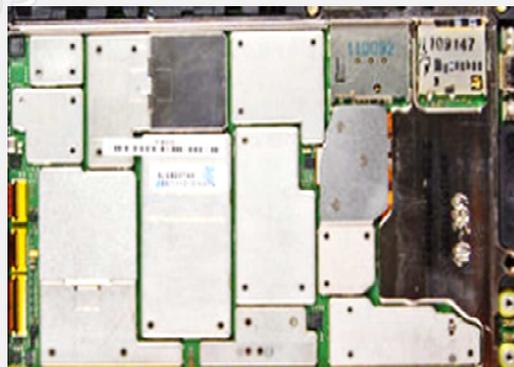
- 1、 Shape : 1. Four sides drawn formed, 2. Four sides bending
- 2、 Process : 1. Progressive deep drawn die, complicated method
2. Progressive folding die, simple method.
- 3、 Custom design by customer, and flatness of the part is the normally the key requirement.
(within 0.05mm)

Material:

Normally, stainless steel or copper-copper-nickel alloy with 0.1-0.2mm thickness are used. Both material has great soldering property after surface treatment.

Packaging:

Most customer uses SMT assembly line now, therefore, tape and reel is the mostly required packaging method.



11. CNC Machining Parts



CNC (CNC machine) is the abbreviation of Computer Numerical Control (Computer Numerical Control), which is an automatic machine tool with a program control system. The control system can logically process and decode the program with control code or other symbolic instructions to cause the machine to operate and machine the part.

CNC main functions :

- 1•High processing precision and stable processing quality;
- 2•Multi-coordinate linkage for machining complex parts;
- 3•Only need to change the NC program when machining different product, time saving;
- 4•High precision and rigidity machine with 3~5 times higher productivity than traditional;
- 5• High degree of automation that reduces labor intensity;



Shafts



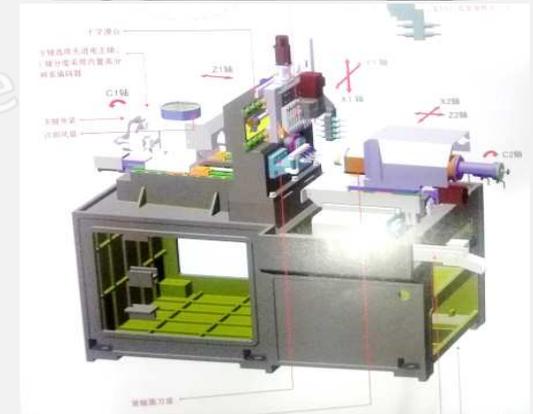
Worm Gear



Medical



Complex components



12. PVD Surface treatment

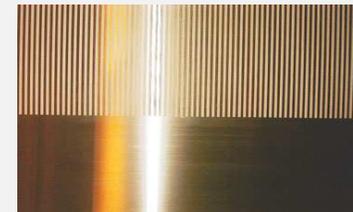


The reason why vacuum coating industry has risen is due to the implementation of EU's RoHS and various countries' legislation on environmental protection rules. The traditional high-polluting electroplating industry has not met the environmental protection requirements and will be replaced by emerging environmental processes. The vacuum coating has no pollution such as waste water and gas, which will be the trend in the near future.

PVD is the abbreviation of English Physical Vapor Deposition, which refers to the use of low-voltage, high-current arc discharge technology under vacuum conditions to vaporize the target by gas discharge and ionize the vaporized substance and gas. The accelerated action of the electric field is used to deposit the evaporated substance and its reaction product on the workpiece. Coating technology is mainly divided into three categories, vacuum evaporation coating, vacuum sputtering plating and vacuum ion plating.

PVD main characteristics :

- 1.Can be used for coatings with various special mechanical properties and physicochemical properties (such as: high hardness, high heat resistance, high thermal conductivity, high corrosion resistance, oxidation resistance, insulation, etc.). Not only can applied on metal for alloy coatings, but also on wide variety of other compounds. such as non-metallic semiconductors, single and multi-layer coatings of ceramics and organics.
- 2.Meteorological deposition technology produces high hardness, high heat resistance, high thermal conductivity, high corrosion resistance, oxidation resistance, insulation coating, special performance electrical, optical functional coating, decorative coating, has been widely used in machinery, Aerospace, construction, hardware decoration, electronic products, auto parts and other industries.



12. PVD Surface treatment



Applications:



13. Optical Sorting Capability



CCD machine is a fully automatic optical detection and screening instrument developed on the basis of image detection technology system. It detects such as shape, size, appearance quality, color, burr, positioning, and presence or absence of items. 100% high-speed full inspection, to replace human eye inspection. It is the necessary equipment to improve product quality, save labor costs, reduce material loss, improve process control. Fully automatic photoelectric detection screening system can be installed on the production line to avoid the defects moving from one stage to the next.



1. High inspection efficiency with 20K~40K/hour rate;
2. High recognition accuracy, partial dimensions can achieve zero defects;
3. Wide range of applications, screws, nuts, standard or non-standard parts;
4. Eliminate human inspection with minimum cost.

CCD Mechanisms



Vibrating Plate



Auto Feeding



Cameras



Detection Turntable

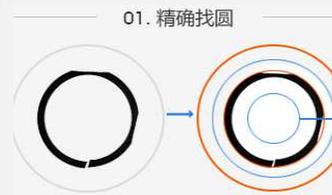
13. Optical Sorting Capability



CCD Operating Interface:



Circle inspection



Off centre detection



Positioning inspection



Burrs inspection



Examples :





Thank You!



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