

## **Micro Screws, Macro Solutions: Toprecision**

In today's consumer electronics landscape, where devices are increasingly thinner, lighter, and more highly integrated, a precision screw with a diameter of less than 2mm plays a critical role. Its assembly precision not only determines the device's feel and functionality but also directly impacts brand reputation and product quality. Toprecision, through its deep expertise in micro precision screw technology, provides indispensable fastening solutions for smart hardware, automotive electronics, medical devices, and beyond.

### **Precision Micro Screws: The "Invisible Hero" Inside Electronic Devices**

When we disassemble a smartphone or open up a drone, what catches our eye is the highly integrated circuit board, precision camera modules, and compact metal frames. Holding these expensive and fragile components firmly in place are precisely these unassuming precision micro screws.

Industry data shows that micro screws used in consumer electronics often have diameters smaller than 1.5mm, with torque requirements as low as 0.1N·m. Leveraging its parent company's over 20 years of experience in fastener design and manufacturing, Toprecision reliably delivers micro screws covering specifications from M0.6 to M2.0. Its products offer the following core advantages:

- ◆ **Micro Precision:** Capable of producing threads as small as M0.6, with head thickness precisely controlled within 0.13-0.17mm, perfectly meeting the small-hole requirements of precision instruments.
- ◆ **Non-Magnetic/Low Interference:** For 5G communications and high-end audio equipment, Toprecision offers non-magnetic or low-magnetic materials such as titanium (TA2) and SUS302HQ to eliminate electromagnetic interference affecting signal quality.
- ◆ **High Strength & Vibration Resistance:** Through heat treatment processes and the application of locking adhesives (microcapsule/nylon), screws are ensured not to loosen or fall off under vibrating conditions.

### **Beyond Just "Tightening": Professional Solutions for Complex Applications**

Facing different assembly scenarios, choosing the wrong screw type often leads to thread stripping, plastic cracking, or structural failure. Toprecision's fastening solutions cover two major needs in consumer electronics manufacturing:

1. **Machine Screws (M-Type):** Designed for precise positioning and repeated assembly/disassembly.

◆ Applications: Phone mid-frames, motherboard mounting, thermal modules, hinge shafts.

◆ Technical Highlights: High thread precision, requiring mating with heat-set nuts or copper inserts. Most electronic-grade machine screws come with pre-applied locking adhesive, offering high clamping force and stable torque, resisting thread stripping even after multiple repairs and disassemblies.

2. Self-Tapping Screws (B-Type/ST-Type): Designed to improve assembly efficiency and reduce costs.

◆ Applications: Plastic housings, battery covers, router casings, light-load plastic brackets.

◆ Technical Highlights: No pre-tapping required; they form their own mating threads when driven into prepared pilot holes. Self-tapping screws below M2 typically use carbon steel with a carburizing process to enhance surface hardness and wear resistance, offering extremely high assembly efficiency.

Surface Finishing & Locking Technologies: Dual Protection for Demanding Environments

In high-end applications such as consumer electronics and automotive electronics, screws must not only "hold" but also "withstand."

Toprecision offers a comprehensive range of surface finishing processes, including electroplated zinc (blue-white, black, color zinc), nickel plating, zinc-nickel alloy, and PVD vacuum coating. For instance, PVD coatings not only provide an aesthetic finish comparable to decorative parts (e.g., CD pattern, black titanium, rose gold) but also offer ultra-high hardness, wear resistance, and scratch resistance, with an extremely thin film that does not affect thread precision.

For locking requirements, the company offers pre-applied locking treatments:

◆ Microcapsule Type (Anaerobic Adhesive): Capsules rupture and cure when the screw is driven in, achieving permanent locking.

◆ Nylon Patch Type: The nylon patch undergoes elastic deformation under pressure, creating frictional resistance that allows for repeated removal and reinstallation.

Toprecision: The Total Cost Optimization Fastening Expert

Under today's "15-85 Rule" industry challenge, companies often focus excessively on the visible procurement cost of screws (15%), while overlooking the hidden costs

(85%) arising from poor design, low assembly efficiency, and post-sale failures.

Toprecision is committed to being a total cost optimization expert from prototype design to after-sales service. By providing professional design consultation, rapid engineering samples (as fast as 1-day delivery), professional testing, and continuous process optimization, we help clients lock in the optimal solution at the front-end of design, significantly improving R&D efficiency and reducing overall manufacturing costs.

Toprecision — Making Connections More Reliable, Making Manufacturing More Efficient.