

Yingfeng Zhichengjia Newly Customized Spring-Loaded Position

Background: With over twenty years of deep cultivation in the precision fastener sector, Yingfeng Zhichengjia has leveraged its rich technical expertise in ball spring plungers (ball screws) to engineer a modified, custom-developed **Spring-Loaded Positioning Pin for Bearing Fixation**. Specifically tailored to meet the rigorous OEM supply chain requirements of a **Top 5 domestic automotive manufacturer**, this product directly addresses the real-world pain points found in a automotive bearing assembly and operation, delivering a major leap in product performance.



I. Core Functions & Working Principles

1. Pin Extension: Anti-Rotation Locking



Upon installation, the extended pin head accurately engages the locating slot or retaining groove on the bearing's outer ring. This provides a robust mechanical stop that prevents the outer ring from spinning (*creeping*), eliminating common failures such as premature wear, loss of precision, and abnormal noise caused by outer ring rotation during operation.

2. Pin Retraction: High-Clearance Assembly Optimization

Automotive bearings often leave zero axial clearance once fully assembled. During the initial staging phase, the pin can be pushed flush back into the plunger body, allowing smooth, unobstructed pre-assembly of the bearing. As soon as the bearing's outer ring rotates and aligns with the retaining groove, the internal spring automatically drives the pin forward to snap securely into place. This perfectly

accommodates zero-axial-clearance assembly constraints, striking an ideal balance between installation efficiency and locking reliability.

II. Material Upgrades for Premium Performance

Moving away from the low-carbon steels typically found in standard commercial ball spring plungers, this specialized positioning pin features a comprehensive upgrade to **high-grade Alloy Steel**:

Mechanical Integrity: Delivers heavily increased tensile strength, wear resistance, and fatigue life. It is purpose-built to withstand frequent cycle retractions and continuous, heavy-duty shear loads common in automotive environments.

Environmental Resilience: Offers superior thermal stability and corrosion resistance, ensuring a long, maintenance-free service life under the extreme temperature fluctuations, high humidity, and oil/fluid exposure typical of vehicle engine bays and drivetrains.

III. Key Technical Advantages

Iterative Design Evolution: Re-engineered from a proven ball spring plunger baseline, this design optimizes both the retraction stroke and the spring rate (engagement force), specifically calibrated for bearing retention scenarios.

OEM-Grade Quality Control: Developed in strict accordance with the rigorous quality standards of a top-tier automotive OEM. Having undergone multiple rounds of simulated and real-world durability testing, it delivers the high reliability and batch-to-batch consistency demanded by the automotive supply chain.

Production & Operational Balance: The retractable mechanism simplifies assembly-line workflows while guaranteeing permanent anti-rotation locking during vehicle operation, driving up factory throughput without sacrificing field stability.

IV. Targeted Application Scenarios

While primarily engineered for **automotive OEM bearing outer-ring locking and retention**, this high-performance positioning pin is highly scalable. It can be widely integrated into industrial equipment manufacturing and automation systems where bearings require zero-axial-clearance installation paired with robust anti-creep protection. Custom parameter configurations (spring force, stroke, and dimensions) are fully supported based on unique application requirements.

About Us

Yingfeng Zhichengjia Precision Hardware (Shenzhen) Co., Ltd.

d. always aligns its R&D direction with the real-world operational challenges faced by our clients, transforming baseline precision fasteners into bespoke engineering solutions. This Spring-Loaded Positioning Pin marks another milestone in our automotive precision component portfolio, and we stand ready to provide high-compatibility hardware positioning solutions for global industrial and automotive sectors.