

PD250 Micro-Cylinders

Model PD250 Micro-Cylinders — Installation & Usage Guidelines

Model PD250 Micro-Cylinders are used across a wide range of applications, including robotics, automation, stamping, plastics and metal forming, racing, aerospace, defense, and more. This guide outlines the key factors governing proper installation and use of the micro-cylinders.

1. Alignment

Although infrequent, the majority of reported issues with quick-change devices have been resolved by addressing proper alignment. Correct installation of the quick-change system is critical to device performance; even a slight degree of misalignment between the knobs and their corresponding cylinders can result in a major malfunction.

Installation guidelines for the cylinder locks are available for download on the Segen website: toolingtechgroup.com/segen-quick-change.

Alignment Tolerance

Cylinder locks must be mounted flush with the mounting plate and aligned with their respective knobs within 0.002". Exceeding this tolerance can cause the knobs to bend or fatigue prematurely.

2. Excessive Installation Torque

Micro knobs can be bent or weakened during initial installation into their mounting plate or tool. Knobs are designed to be tightened with the Segen Socket Set to a snug fit, using thread-locking compound (Loc-Tite) to prevent loosening.

Maximum Torque Specification

The recommended maximum torque for PD250 micro knobs is 60 inch-pounds.

More information on the Socket Set is available at: toolingtechgroup.com/product/skt-segen-sockets.

3. Tap Depth for Mounting Holes

If a knob is not installed fully into the mounting surface, excess torque strain can be placed on the narrow diameter of the threaded stud. Ideally, the locating boss should carry the majority of the torque strain as the knob bottoms out into its mounting hole.

⚠ Minimum Tap Depth

The combined length of the stud and locating boss is 0.50". Mounting holes should be tapped to a minimum depth of 0.625" to allow the stud and locating boss to seat fully as designed. This specification is also noted on the knob spec sheet.

4. Air Pressure

Although air pressure is not required to hold the cylinders in the locked position, sufficient air pressure is essential for complete cylinder actuation.

ℹ Recommended Air Supply

Minimum supply pressure: 70 PSI • Recommended operating pressure: 80–90 PSI

If a cylinder is not permitted to cycle fully, the knob may fail to release, subjecting it to additional stress. If cylinders do not receive air simultaneously, one cylinder may engage its mating knob differently than the others, producing uneven stress across the knob set. Use of a manifold to regulate air delivery to the cylinder locks is recommended, ensuring the first cylinder in line receives the same air volume as the last.

When locking the cylinders, confirm that all air pressure has been removed from the air lines; residual pressure can allow the locking balls to remain in the unlocked position until it bleeds off. A manifold helps ensure pressure is released uniformly and on command.

5. PDIT250 Installation Tool

Micro-cylinders must be installed using the Segen installation tool, which resembles a Torx bit and fits into a 1/4" socket drive. The barbs of the bit slide into the conical surface of the cylinder lock, between the balls, allowing the cylinder to be screwed into the mounting plate.

⚠ Do Not Use Vice-Grips or Pliers

The micro-cylinder lock is a two-piece design, snapped together with a bead-and-groove joint. Screwing the cylinder lock into its mounting plate with vice-grips, pliers, or similar tools can break the cylinder body loose from its precise connection with the flanged cap, resulting in misalignment or malfunction.

A brand-new tap is recommended when forming the threaded installation pockets for micro-cylinders. This supports proper mating-thread alignment, reduces torque pressure, and extends the service life of the installation tool.

6. Maintenance

Maintenance frequency for quick-change cylinders depends on the operating environment. Cylinders operating in wet, dirty, or high-temperature conditions require more frequent maintenance or replacement.

Lubrication & Cleaning

Segen cylinders are engineered to operate without lubricant. A properly functioning cylinder will produce an audible rattle from the internal steel balls when shaken. Grease attracts dust and debris, which can cause the balls to seize within the ball track and result in a failure to lock instantly.

For routine maintenance, clean the cylinders with a fine wire brush and several short bursts of compressed air. An occasional light application of low-viscosity spray lubricant is acceptable but not required. Particular care should be taken to clear the conical area of the cylinder before each tool engagement, as residual particles inside the cone can prevent the knob from seating fully.

Unlock Before Engaging

The cylinder locks must be unlocked (energized with air) before engaging the male knobs. Forcing the knobs into the cylinders before unlocking them will break the cylinders and knobs.

Segen knobs are engineered for durability but can be damaged through improper use. Knobs should be replaced if they become bent, dented, cracked, or twisted as a result of machine or operator error. When a machine operator or maintenance specialist is uncertain whether a knob remains serviceable, replace it as a precaution; replacement knobs represent the lowest-cost component in the system and are considerably less expensive than replacing a cylinder or repairing a damaged tool or machine.

In Summary

Adherence to these guidelines will help ensure a reliable, trouble-free transition to the Segen Quick-Change system.