

PD250 Micro Cylinder Guidelines

The model PD250 Micro-Cylinders are being used for many different applications including Robotics, Automation, Stamping, Plastics and Metal Forming, Racing, Aerospace Defense and more. I will do my best to outline below the factors that are important for proper installation and usage of the micro cylinders.

1. Alignment. - Although infrequent, most all of the problems reported with our quick-change devices have been solved after addressing proper alignment. Correct installation of our quick-change system is critical to the functionality of the devices. The slightest degree of misalignment between the knobs and their corresponding cylinders could cause a major malfunction. I have attached some installation guidelines for the cylinder locks. As they are required to be mounted flush with their mounting plate, they must also be aligned with their respective knobs within .002", or the knobs could be forced to bend or fatigue.
2. Excessive installation torque. - The micro knobs can be bent or weakened upon their initial installation into their mounting plate or tool. The knobs are designed to be tightened with the Segen Socket Set until snug, while using Loc-Tite to prevent them from backing out. Our recommended maximum torque spec for the PD250 micro knobs is 60 inch-pounds. More information on the Socket Set can be found on the website: <https://toolingtechgroup.com/product/skt-segen-sockets/>
3. Tap depth for the mounting holes. - If the knobs are not installed all the way down into the mounting surface, this could place excess torque strain on the narrow diameter of the threaded stud. Ideally, the locating boss should take on the majority of the torque strain as the knob bottoms out into its mounting hole. The length of the stud and locating boss is .50", so, you really should tap the mounting holes to a minimum depth of .625" to allow the stud and locating boss to be fully seated as designed. This is also noted on the knob spec sheet.
4. Air pressure. - Although air pressure is not required to hold the cylinders in locked position, sufficient, air pressure is essential for complete cylinder actuation. The absolute minimum air pressure required to fully actuate the PD250 is 65 PSI. If the cylinders are not allowed to cycle fully, the knobs could fail to release resulting in stress on the knobs. Furthermore, if each cylinder does not receive adequate air at the same time, it is possible that one cylinder could engage its mating knob differently than the other cylinders. This could result in greater amounts of stress on one knob versus another. I suggest using a manifold to help regulate the air to the cylinder locks. This will help ensure that the first cylinder in line receives the same amount of air as the last one in line. When locking the cylinders, you also must ensure that all air pressure is removed from the air lines, or the balls could remain in the unlocked position until the air slowly bleeds off. (Another reason why a manifold is a good idea.)
5. PDIT250 Installation Tool. - Our Micro Cylinders must be installed using our installation tool. The tool looks like a "Torx Bit". The tool fits into a 1/4 socket drive. The barbs of the bit slide down into the conical surface of the cylinder lock, between the balls, enabling you to screw the cylinder into the mounting plate. The micro cylinder locks are a two-piece design, snapped together with a bead and groove. Screwing the cylinder lock into its mounting plate with vice-grips, pliers, or any other means could break the cylinder body loose from its precise connection with the flanged cap, resulting in misalignment or malfunction. We recommend using a brand-new tap when making the threaded installation pockets for your micro cylinders. This will aid in proper mating thread alignment, reduce torque pressure and prolong the life of your installation tool.
6. Maintenance. - The maintenance frequency of our quick-change cylinders depends on the conditions in which they are used. A cylinder that operates under wet, dirty or high-temperature environments will need more frequent maintenance or replacement.

Our cylinders are engineered to be used without lubricant. When you pick up a Segen cylinder and shake it, you should be able to hear the steel balls rattle inside. Grease can attract dust and debris, causing the balls to seize up in the ball track, resulting in a failure to instantly lock. For regular maintenance, we suggest cleaning out the cylinders with a fine wire brush and a few blasts from an air hose. A small amount of light viscosity canned spray lubricant probably would not hurt every once in a while. Special care should be taken to blow the conical area of the cylinder clean before every tool is engaged as small particles left inside the cone of the cylinder could prevent the knob from seating fully.

The Segen Knobs are very strong, but can incur damage if used improperly. 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 should be replaced if they become bent, dented, cracked or twisted as a result of machine or operator error. If the machine operator or maintenance specialist is unsure if a knob has been damaged beyond usability, they should replace the knob anyway. The replacement knobs are the lowest cost part of the system and cost much less than having to replace a cylinder or re-build a damaged tool or machine.

Following these guidelines will help assure you of a trouble-free transition to the Segen Quick-Change system.