

PowRgrip® Versus Shrink-Fit

1). **Method of inserting Tools:**

PowRgrip: A nine (9) ton automatic press, or manual 6-ton hand pump is used to press the slightly tapered collet into the toolholder. The automatic machine will press in all PG size collets (PG 10, 15, 25, or 32) and up to a 1" diameter tool shank. It will also accept all standard taper types (BT, CAT, HSK, CAPTO), forms, sizes, and gage lengths. The powRgrip Automatic press runs off standard 110V AC power.

Shrink: a heating device capable of **700 degree** or higher temperatures, induction, contact or air. Most systems require changing coil type and cooling mechanisms based on the holder dia. and size. Units typically require either 220V or 440V AC, and higher daily power consumption than PG.

2). **User safety:**

PowRgrip: We utilize an enclosed guarded platen area and interlocked doors to keep the operator safe from injury and pinch points. Intelligent die technology removes operator error. The dies tell the machine what pressure to use during the cycle not the operator.

Shrink-Fit: A *Super heated exposed toolholder* must be moved with Asbestos gloves (normally included with the shrink machine) to a cooling tower, cooling attachment or table top. Strict handling controls are required to assure isolation of hot holders as serious burns can result. Holders do not show any indications that they are dangerously hot, and can be picked up by anyone accidentally if not properly tagged or isolated. The operators have the ability to change the heat cycle on the shrink machines, which can lead to over heated holders and even higher temperatures being reached.

3). **Life Cycle of Tooling:**

PowRgrip: 20,000 cycles – guaranteed! Testing shows that the more a tool is pressed into a collet, the collet actually burnishes in the holder cavity making it even more accurate over time. Gripping forces met or exceeded original values after extensive cycling. A five year / 20,000 cycle guarantee is now offered by REGO-FIX.

Shrink-Fit: 50 - 5,000 cycles: Life cycle is very dependent on the size of a tool and the operator using the machine. The smaller the tool diameter - the lower the life cycle. The operator has control over the heating cycle and timer making the life cycle dependent on the operator using the tooling. Small diameters are more easily subject to overheating causing very short life cycles.

4). **Tooling Range:**

PowRgrip: 0.2mm- 25mm, 1/16" up to 1"

Shrink-Fit: typically 1/8" to 1" – up to 2" on larger systems

- 5). **Applications:**
PowRgrip: Drilling, Milling, Reaming, Roughing, Finishing and Tapping (with std taps) – Emuge SoftSynchro holders are available for std tap usage.
Shrink-Fit: Drilling, Milling, Reaming, Roughing and Finishing (Tapping will require special, expensive H6 quality tap shanks).
- 6). **Presetting Tool Height:**
PowRgrip: Has an adjustment screw on every PG collet. This allows easy z-height adjustment in any standard presetter with an inexpensive adjustment tool. Repeatable z of ***less than 10 microns***.
Shrink-Fit: Cannot preset z-height on standard shrink machines, as there is no adjustment once the tool is inserted. This would require a special induction/presetter combo machine that will typically cost from \$75,000 to \$125,000. This practice has demonstrated inconsistent results and more operator expertise is required.
- 7). **Balancing Options:**
PowRgrip: Most REGO-FIX PG holders have the option to accept Hi-Q balancing rings and can be upgraded to a balanceable holder at any time desired. This is the fastest system available to balance holder assemblies up to 42,000 rpm.
Shrink-Fit: You would need to either purchase a standard shrink holder, or balanceable version initially – no upgradeable options are available. Shrink balanceable holders typically involve a series of screws that need to be adjusted in or out by trial and error which is very difficult to get accurately balanced and a time consuming process. The other option is to hard drill the holder and assembly, which is a very slow process and requires metal to be removed from the holder and an added expense.
- 8). **Long Reach / Narrow Nose:**
PowRgrip: PG now offers four nose versions- PG 32, PG 25, PG 15 and PG 10. PG 10 is a very narrow nose option that is excellent for mold making and applications requiring longer reach and clearance issues for up to ¼” tool diameters. Extensions in PG 10 are also available to extend the reach of the PG system. Xtended length holders with lengths up to 14” are available in PG 10, PG 15 and PG 25.
Shrink-Fit: They offer long reach integral tooling options with narrower nose configurations. One must buy each holder and length specifically. Some extensions are available but are not as common and often difficult to remove due to similarity in material construction. If damage occurs during machining on the end of a holder the *entire holder* must be scrapped unlike a PG holder or PG extension where often only the collet will need to be replaced.
- 9). **Flexibility:**
PowRgrip: The collet system allows one holder to hold any collet diameter offered in that series eliminating the need for added holder inventory. It can interchange metric and inch collets for all series sizes.
Shrink-Fit: Shrink requires the purchase of one holder for each diameter required. If machining requires a change in diameters, you will need to purchase new holders and have these available.

- 10). **Coolant Through Capability:**
PowRgrip: Every collet comes with a coolant through adjustment screw and is coolant ready up to 2,000 psi. PG collets are also offered with coolant grooves (PG-CF) to allow for a coolant jet around the tool shank even when using solid, non-coolant through tooling.
Shrink-Fit: It is coolant through capable and available with coolant ports for CF spray.
- 11). **Weldon Shank Tools:**
PowRgrip: They may be used in the PG collets without any damage to the collet.
Shrink-Fit: Shrinking in tools with Weldon flats can cause damage to the bore diameter due to the flats and permanently deforming the ID or making it impossible to remove the tool from the holder.
- 12). **TIR Accuracy:**
PowRgrip: TIR of less than 0.00012" measured at 4 dia off the nose
Shrink-Fit: TIR of less than 0.00012" measured at 4 dia off the nose
- 13). **Clamping Force:**
PowRgrip: PowRgrip has the highest clamping torque due to the unique design of the system. The PG32 size can provide over 1,100 Nm of torque holding power for a 1" tool.
Shrink-Fit: Shrink-Fit has less clamping force than powRgrip. Typically in ½ and below diameters they have about 50% the clamping force of powRgrip and at 1' tool diameters; shrink will offer about 600 Nm of holding force, which is close to 45% less!
- 14). **Power Requirements**
PowRgrip: requires 120V and 9amps of power for operation, meaning it can be used at any normal wall receptacle. PowRgrip uses less electricity than Shrink based on amp draw, input voltage and cycle time.
Shrink-Fit: May require up to 480V and 30 amps of power. Some units use 240V, but cycle time and amp draw are still higher than powRgrip.