



powRgrip® for Aerospace manufacturing

Superior toolholding strength and accuracy

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Introduction

powRgrip® soars in aerospace manufacturing

Extraordinary reliability and outstanding quality.

Machining challenges As an aerospace shop, you face a barrage of tough machining challenges on a daily basis. And whether those are difficult-to-machine materials, aggressive metal removal requirements or long, awkward tool overhangs, your toolholding system must be able to handle them and provide the utmost in precision, performance and reliability.

Optimized machining operations Yours is an industry where you can't afford to scrap parts. Only the REGO-FIX powRgrip® (PG) toolholding system can optimize all of your aerospace/defense part machining operations, maximize your productivity, lower your cost per part and shorten your machining cycle times. But most importantly, powRgrip® gives you confidence and peace of mind in knowing that you run the best and most advanced toolholders ever made.



Swiss quality standard Our products marked Swiss made are manufactured at our headquarters in Tenniken, Switzerland.



Features and benefits

powRgrip® toolholding outperforms all other tooling systems

Developed especially for high-speed cutting and high-performance cutting strategies, powRgrip® optimizes productivity and improves precision for fast machining of high-quality parts.

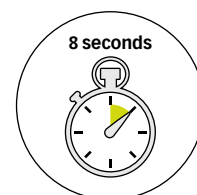
Here is what makes powRgrip® the best.

Speed/ease of use Tool change outs in less than 8 seconds and easy Z-height adjustments in any standard presetter without the need for expensive adjustment tools.

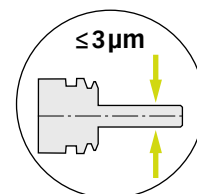
Precision Precisely engineered and balanced by design, powRgrip® delivers TIR of $3\text{ }\mu\text{m}$ ($<0.0001''$), along with precise length adjustment repeatability of $10\text{ }\mu\text{m}$ ($<0.0004''$).

Quality Swiss-made and with all perfectly matched components for optimal fit, accuracy and long tool life.

Performance Toolholder-to-collet and collet-to-tool shank interfaces deliver superior clamping force, high-vibration dampening and extreme precision.



Tool ready for use in less than 8 seconds



Total system runout
TIR $\leq 3\text{ }\mu\text{m}$ at $3 \times D$



Strength Industry's highest clamping torque rating of up to 1,100 Nm.

Reliability Accuracy and gripping forces that continue to meet or exceed original values even after extensive cycling.

Versatility Accommodates all types of tool shanks and materials in h6 tolerance and sizes from Ø 0.2 – 25.4 mm (0.0079" – 1.0") with the same system to reduce tooling inventory. *(REGO PLUS licensed BIG PLUS® dual-contact holders also available.)

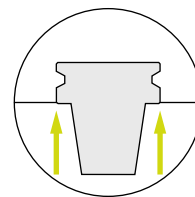
Safety Complete user safety without risk of injury from heat or pinch zones.

Warranty REGO-FIX guarantees the TIR of a properly maintained powRgrip® holder and collet will not exceed 3 µm and the impregnated surface treatment will not erode for five years or 20,000 cycles.

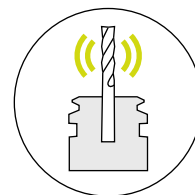
*THE BIG PLUS SYSTEM—licensed by BIG Daishowa—is manufactured at REGO-FIX in Switzerland under license according to BIG PLUS specifications.

REGO-FIX CAPTO—licensed by Sandvik Coromant—is manufactured at REGO-FIX in Switzerland under license according to CAPTO specifications.

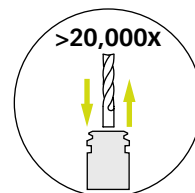
Key advantages



Higher toolholder stiffness due to taper (AT1) and face contact with REGO-PLUS holders.*



Excellent vibration dampening



Maximum clamping force and low runout, even after 20,000 tool changes

How powRgrip® works

powRgrip® is a unique collet-holding system that consists of three main components – press fit assembly mounting units, collets and holders – all of which work in harmony. The result is the distinctive powRgrip® toolholder-to-collet/collet-to-tool shank interfaces that give the system its extraordinary performance and holding capabilities.

Press-fit assembly mounting units Tabletop mounting units – either hydraulic manual pump style or automated – quickly press powRgrip® collets into or remove them from system toolholders with up to nine tons of force.

Collets powRgrip® collets feature high-precision tapers and a unique wear-resistant surface treatment that results in an extremely hard surface for unmatched longevity and repeatability.

Holders With equally precise tapers that match those of the collets, powRgrip® factory-balanced toolholders deliver superior runout and vibration dampening as well as provide either coolant-through or peripheral cooling capabilities.



Cutting tool



powRgrip® collet



powRgrip® toolholder



Automatic clamping unit PGU



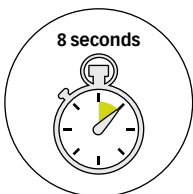
Manual clamping unit PGC



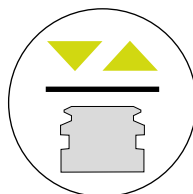
reddot award
honourable mention industrial design



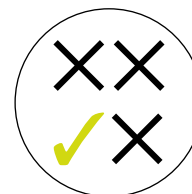
Key advantages



Clamp the tool safely and securely by pushing just one button. The clamping will take 8 seconds, without the use of heat.



Clamp tools with maximum clamping force and best runout in the powRgrip® collet and toolholder.



Smart System — no setting of parameters required. Clamping pressure is controlled by the insertion of the respective clamping insert (APG). There are five clamping inserts available for the clamping of different collet sizes.

powRgrip® for aerospace manufacturing

Tackle any machining challenge

Remarkable versatility Whether you machine structural, engine, landing gear or systems control parts from heat resistant super alloys, aluminum or stainless steels, the powRgrip® product line offers special ancillary technologies and accessories as well as specific sizes that will further optimize your aerospace and defense part machining operations.

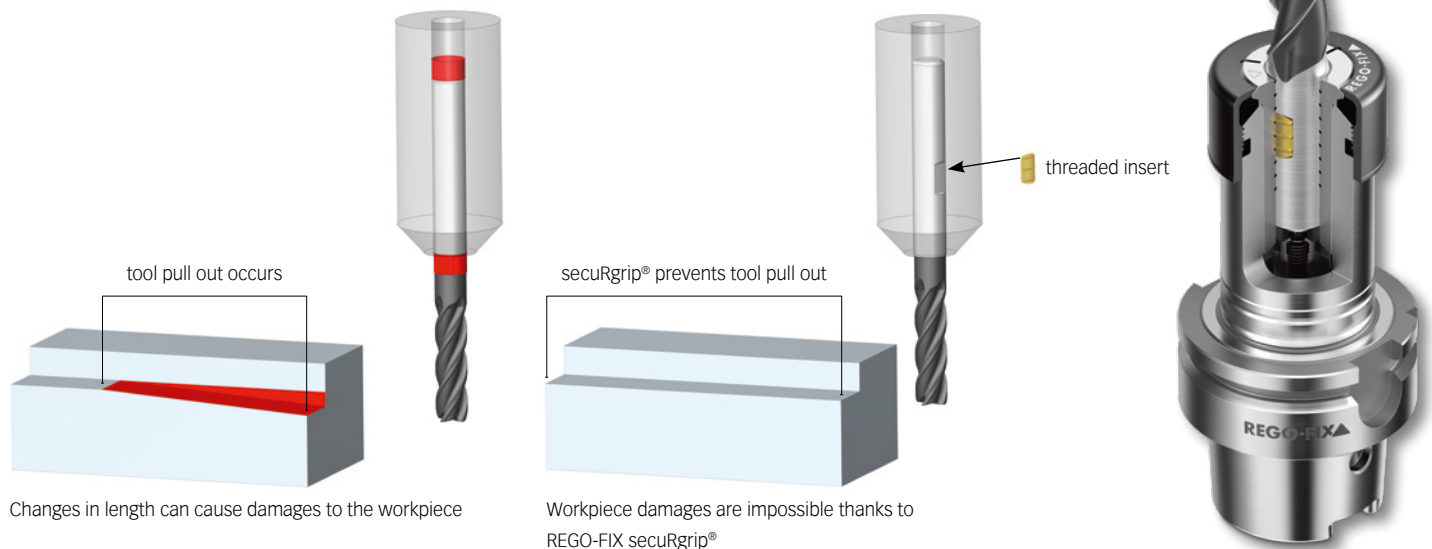
Add REGO-FIX's secuRgrip® technology, Xtended Length Toolholders and PG 32 collets to your powRgrip® system and tackle any machining challenge from heavy roughing in tough materials, to high-speed machining aluminum parts, to precision profiling and finishing of composite materials, to milling of hardened steels, as well as small diameter precision drilling and reaming operations in any material.

secuRgrip® System for powRgrip®

100% process safe standard solution against tool pull out

Full protection where you need The secuRgrip® threaded insert is designed to fit in any tool with a Weldon flat. This way you can use the tool of your choice. In combination with our PG secuRgrip® collet, we offer the ultimate tool pullout protection at a competitive price. Avoiding length alterations caused by tool pullout results in improved process reliability and ultimately improves your overall machining productivity. Our secuRgrip® solution is available for PG 15, PG 25 and PG 32 – just the right sizes when it comes to rough machining.

- // No additional costs for replacing damaged tools, thanks to PG secuRgrip®
- // No modification of the tool shank is required
- // Extra protection for worry-free machining, especially with expensive work pieces

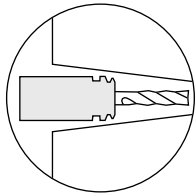


XL vibration dampening

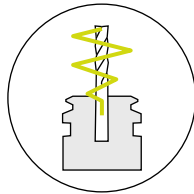
Optimize your surface finish and extend tool life by minimizing occurring vibrations during machining

Minimize tool vibrations The MICRO-FRICTION DAMPENING™ (MFD) technology (pat. pend.) by REGO-FIX allows our XL collets to dissipate vibrations faster than standard long-reach collets. Dampening the vibrations faster means that your cutting tool, part and spindle will see less vibrations resulting in better surface finishes, longer tool life and less spindle wear. All REGO-FIX XL collets are balanced to G 2.5 @ 5,000 rpm.

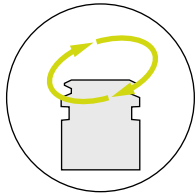
Key advantages



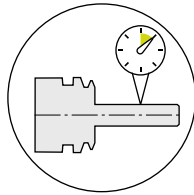
Minimal outside dimensions:
long and slim design



Exclusive vibration-
dampening design



Balanced by design



Total system runout
TIR ≤ 10 µm at 3 x D



Heavy Duty secuRgrip® toolholders

The perfect solution for machining large Aerospace parts

HD-SG PG holders Heavy Duty secuRgrip® toolholders are up to two times more rigid than standard holders. And, they include secuRgrip® design for 100% protection against tool pullout.

Features

- // Includes secuRgrip® design to prevent pullout
- // Most designs retain the use of balance rings
- // Fits existing powRgrip® clamping units

Key Advantages

- // Up to 2 times more rigid than standard holders
- // Increases feed rates to maximize tooling efficiency
- // Better surface finish with less deflection





powRgrip® solutions

Sizes and specifications for aerospace manufacturing

powRgrip® is available in a wide selection of holder types, lengths and diameters, including those larger toolholder-spindle interface tapers and styles typically required for aerospace applications.

powRgrip® toolholders

Sizes and styles include:

HSK 63, 80, 100 and 125	CAT 40 and 50
HSK-FP 80	CAT+ 40 and 50*
BT 30, 40 and 50	CAPTO C3, C4, C5, C6
BT+ 30, 40 and 50*	and C8**
SK 30, 40 and 50	

REGO-FIX Q System PG toolholders are balanced by design to G2.5 @ 25,000 rpm for steep taper holders and up to 90,000 rpm for HSK holders. Type H toolholders are ready to accept the Hi-Q balancing system rings which allow precision balancing of the system up to 80,000 rpm, depending on the balancing rings used.

powRgrip® collets

All powRgrip® collets are precisely engineered to exact tolerances. Regardless of size or type, the collets clamp all h6 tool shanks – Cylindrical, Weldon and Whitle-Notch – in all shank materials, including Solid Carbide and High-speed Steel (HSS).

Popular sizes are:

PG 6
PG 10
PG 15
PG 25
PG 32

PG collets are available in Standard, Coolant Flush and secuRgrip® versions.

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Accessories

Enhance your tool life with the correct accessories for safe tool clamping.

Presetting Tool The powRgrip® presetting tool accepts the powRgrip® collets and is inserted into the toolholder. The tool has a small thumb wheel for precise tool length adjustments and allows maximum repeatability in the toolholder assembly.

PGU Automatic Presetter Unit Ideal for aerospace production environments, the REGO-FIX fully automated powRgrip® tool presetting and measuring system virtually eliminates the need for any operator intervention and, thus, significantly increases tool presetting speed, precision and repeatability. The system provides users with safe, fast presetting and measuring of tools of all types, as well as for the clamping/unclamping, measuring and presetting of powRgrip® tools.

Within 8 Seconds, the automated presetter clamps the tool then measures its height, determines the machining offsets and sets the tool in the powRgrip® toolholder – in as little as one minute. The system works for all PG size collets and up to a 25.4mm (1”) diameter tool shank and all standard taper types (HSK, SK, BT, CAT, CAPTO), forms, sizes and gage lengths.

Toolholder Taper Cleaner Special taper cleaner brush quickly and easily removes dirt and light rust from powRgrip® holder bores before insertion of a tool/collet.

Cleaning Paper Set Soft, absorbent paper specifically prepared to clean the powRgrip® holder bore. The paper is lint free, chemically neutral and for one time use only. It is packaged in containers of 250 sheets.



User report

Excellent concentricity and reliability

In aviation, maximum safety is considered the most important criterion for all procedures and processes. That's why Lufthansa Technik's repair engineers in Hamburg use the powRgrip® tool clamping system from REGO-FIX to process engine components.

Maximum Diligence with Innovative Technology The high-quality, contemporary five-axis machining centers are particularly noticeable during a tour of the repairs. Johannes Büchner reports that investments are constantly being made to work with state-of-the-art innovative technologies. "In aviation, all production steps are precisely documented, and we have to adhere to verified procedures. This is the only way to ensure that the maintenance work meets the expected high level of quality," explains Johannes Büchner. This also means that the specialists in this workshop have an unusually calm and relaxed way of working. A hectic atmosphere is out of place here, as Johannes Büchner reports. A look at the consignment notes for individual components illustrates the good reasons for this prudent approach. For example, for a thin-walled magnesium-alloy housing measuring about 400 mm in diameter, the costs are estimated at over one million euros. "If you look at this value factor in addition to the safety aspect, everyone understands that we need to take the utmost care and provide the highest level of reliability during repairs," says Johannes Büchner.

Manufacture and Rework of Individual Pieces Stable, reliable processes are therefore particularly important when it comes to successful engine repairs. The components are predominantly made of exotic, difficult-to-machine metals, such as nickel-based, titanium, and cobalt-chrome alloys.

Some geometries on the components need to be reworked. Other contours, for example, are welded on with hard alloys that are resistant to mechanical and thermal wear and then reworked to the geometry that corresponds to the draft. "We can hardly plan our production in advance. When carrying out repairs, we first have to replace components at specified intervals, and secondly rework or remanufacture them depending on the level of wear and tear. As a result, it is always a question of flexible single-piece production. To ensure that we are sufficiently productive when processing a large number of jobs, we pay attention not only to process reliability, but also to short set-up times," reports Johannes Büchner.

Stable Machining Processes The crucial factor for reliability and flexibility is that the tools – drills, cutters, tap drills – work extremely reliably and with a high level of precision during machining. "We used to clamp the tools in shrink-fit chucks. However, the clamping and unclamping of the tools when they are changed several times a day takes too long due to the waiting times for heating up and cooling down. In addition, our experience has shown that after a few cycles, the concentricity and clamping force no longer correspond to the required values, especially in the case of small and slim chucks for tools with small diameters," reports Johannes Büchner. Clamping with conventional collet clamps has also not proved successful. These tool clamping systems primarily



lack the reliability that is needed. For example, when milling around a contour, large axial forces are exerted on an end mill. This is particularly true when machining very tough, heat-resistant materials and at high feed rates. If the clamping nuts of the collet are not tightened exactly according to the manufacturer's specifications, high axial forces can pull the cutter out of the tool-holder. This usually causes irreparable damage to the machined part. However, this has to be avoided at all costs. Scrap not only causes economic damage, but also delays processing times and delivery of components.

Automated Mechanical-Hydraulic Clamping of Tools This is why Johannes Büchner and his specialists decided to use the powRgrip® clamping system from REGO-FIX AG. The Swiss manufacturer's regional partner, MMI Meyer + Münster GmbH, Hermann Meyer, provided extensive advice and support. With this clamping system, the tools are mechanically and hydraulically clamped and unclamped on the PGU9800 automatic clamping unit. "We have had the best experience since then. The tools are reliably clamped in next to no time with the right clamping forces for the chuck and the tool diameter," says Johannes Büchner. With reliable repeatability, the PGU9800 clamping unit automatically clamps the tools into the respective tool-holders and collets independently of the operator using the inserted tool adapters. In the workshop in Hamburg, the production engineers mainly use HSK63 tool-holders for collets with diameters PG10 to PG32. As Johannes Büchner confirms, clamping tools with the powRgrip® clamping system has a further significant advantage over other clamping systems. "The high concentricity accuracy of less than 3 µm and the good damping ensure that our tools have a significantly longer service life. We particularly benefit from this when it comes to tools with long protruding small tool diameters," reports Johannes Büchner. To ensure that optimum concentricity is reliably maintained with every tool change, the specialists also clean the contact surfaces and cones of the tool-holders on a special brush

device provided by REGO-FIX. Johannes Büchner sums up the positive experiences: "With the powRgrip® clamping system from REGO-FIX, we not only benefit from high process reliability, but also have the pleasant economic effect of having to wear out and procure fewer tools." This helps the aircraft repair engineers in Hamburg conserve resources, consume less energy, and operate more sustainably.



"The powRgrip® System provides excellent runout, high vibration dampening as well as easy and secure handling."

Get in touch

We love to talk to you and share our toolholding expertise to maximize your productivity.



REGO-FIX AG is ISO certified:

ISO 9001 for quality management / since 1996

ISO 14001 for environmental management / since 2007

ISO 45001 for occupational health and safety / since 2019

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