



Special Workholding Devices



Company Portrait



The SWT Tools GmbH is developing and manufacturing customized clamping devices for various scopes in mechanical engineering, automotive industry, gearing technology, electrical engineering etc.

Designing

Our Staff is using modern 3D CAD-Systems to design and solve the many different requirements for customized clamping systems. The development of high-precision and wear-resistant clamping devices, which will increase your efficiency and your flexibility as well, is based on more than 3 decades of experience.

Production

By working with a highly modern machine park, we are able to combine many different kinds of production processes. We are using CNC lathes, 5-axis milling machines, internally CNC grinding machines, external CNC grinding machines, flat grinding machines, honing machines, wire and vertical eroding machines, a vulcanizing press and a 3D measuring machine.

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Sleeve-Mandrels

- Power-actuated or manual-actuated
- With morse cone or flange for retain between the peaks
- With or without axial pull actuation
- Inclusive drawbar, workpiece-stop and sleeve
- With air-control, internal flush fluid, sealing air

FEATURES

- For clamping of \varnothing 8 – 400 mm
- Simple to change quick
- Large clamping range of the sleeves
- High dimensional accuracy and machining quality of the workpieces
- Maximum true running and repeat accuracy



Special mandrels we offer according to your requirements of demanding and universal precision machining.

Sleeve-Mandrels, actuated by grinded thread

The clamping process effects by a movement of the grinded thread between the sleeve and the mandrel.

This workholding is used in all kinds of production engineering with a requirement of a high runout, particularly in gear grinding processes, measurings and quality assurances.

The runout represents 3 μ .



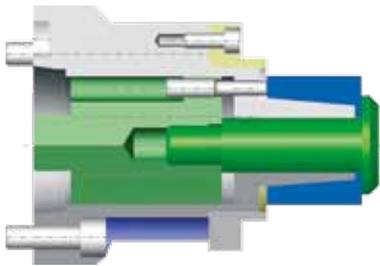
*Special mandrels we offer
according to your requirements
of demanding and universal
precision machining.*

Segmented Mandrels

We are also designing and manufacturing Segmented Mandrels in customized special-purpose solutions according to your requirements. Ask our experts.



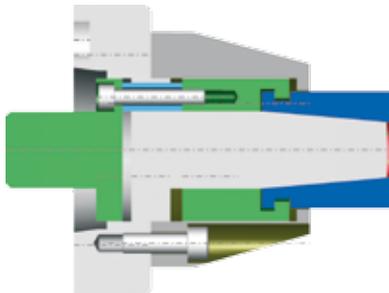
Segmented Mandrels



MAX Z1

This variant is based on the simplest and most common system. Using a central draw tube, the segmented clamping bushing is mounted on the solid clamping taper. The positive opening will be made by the spacing pins.

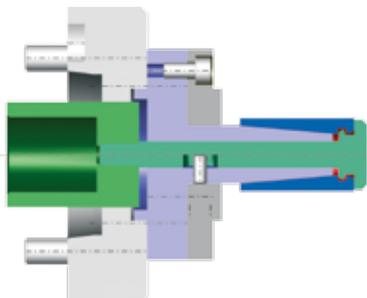
Minimum clamping diameter is 20 mm.



MAX Z2

This variant allows optimum clamping length with blind bores. The segmented clamping bushing moves axially on the stationary mandrel taper, with this type of mandrel. It is therefore possible to use an inner front endstop.

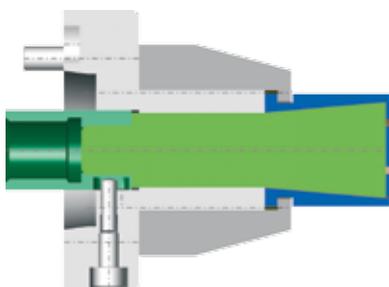
Minimum clamping diameter is 20 mm.



MAX Z3

This system is quite similar to that of type MAX Z1. The opening of the segmented clamping bushing is achieved via the lip on the clamping bolt. The segmented clamping bushing are supplied together with the clamping bolt.

Suitable for smaller clamping ranges of approx. 18 to 40 mm.

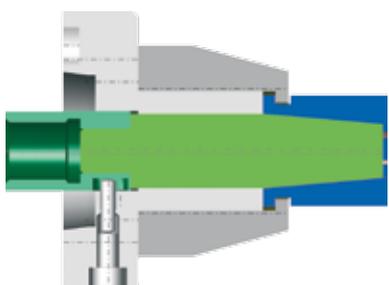


MAX FZ1

with axially fixed clamping bushing

Application e.g. with relatively short workpieces that can easily be deformed. Minimum clamping diameter is 25 mm.

The mandrel is activated by the draw tube.



MAX FD1

with axially fixed clamping bushing

Suitable for light-duty machining for smaller ranges.

Minimum clamping diameter is 25 mm. The mandrel is activated by pressure.

Sliding Jaw Clamping Arbors

- With work stop assembly
- Flange and spindle arbor assembly
- Incl. arbor for pressure
- Possible with air control



FEATURES:

- For inner-clamping of thin-walled workpieces
- No infiltration of dirt or swarf
- Long service life
- High clamping force
- Without causing deformation on the workpiece

SWT offers solutions for nearly every customised case of application.



Hydro-Actuated Expansional Clamping

Whenever a proportioning, uniform distributed area clamping pressure and highest run-out accuracy is required, the versatile “Hydro-Actuated Expansional Clamping” technology will be used. The principle of the hydro-actuated expansional clamping technology is the uniform material protection of an uninterrupted internal or external sleeve, connected on both ends with the basic chuck or arbor through a metallurgical diffusion process. Between the basic chuck or arbor and the sleeve remains a small chamber, which is connected to the input channel. Both the chamber and channel are filled with degasified oil. Whenever the oil will be pressurized either mechanically or by a hydraulic unit the sleeve – mostly made from special steel – will be uniformly expanded.



As long as the elongation limit of the material – approximately 0,7 % of the clamping diameter – is not exceeded, the sleeve material will return to the original diameter if the unit is depressurized. The best long term results are given with an average elongation rate of 0,3 %, which means a clamping mandrel with 50 mm diameter will have a clamping tolerance of 0,15 mm (2 inch dia. with 0,006 inch tolerance). Due to the large area of the clamping sleeve the clamping grip will be extremely high without causing deformation on the work piece. Since the basic chuck is solidly connected to the sleeve and therefore seen as one unit, the runout accuracy is in the order of 1 – 3 μ m. The hydro – actuated expansional clamping technology is very favourable for all applications like cutting and measuring operations as well as clamping tooling or work pieces.

Hydraulic Expansion Mandrels

HYDRAULICAL EXPANSIONAL CLAMPING TECHNOLOGY FROM SWT IS DESIGNED BY:

- Maximum easy of use
- Setup within seconds
- Accurate length presetting axially or radially
- Maximum continuous run out and repeat accuracy of $< 0,003$
- No additional investments or maintenance efforts for components
- Versatile clamping ranges
- Insensible for dirt and swarfs
- Radial length presetting
- Balanced tools for high rpm
- Excellent vibration damping, improved surface quality
- Long service life
- Maintenance-free



Chucks for Clamping-Heads

We are designing and manufacturing Chucks for Clamping-Heads according to your requirements.

Push or pull actuated for all clamping head
Sizes from 32 to 200.



Collet-Chucks

We are designing and manufacturing special collet chucks according to your requirements.

Push or pull actuated, with air-control, internal flush fluid and sealing air.



Collet-Cucks, actuated by grinded thread

The clamping process effects by a movement of the grinded thread between the collet and the chuck.

This workholding is used in all kinds of production engineering with a requirement of a very high runout, particularly in gear grinding processes, measurements and quality assurances.

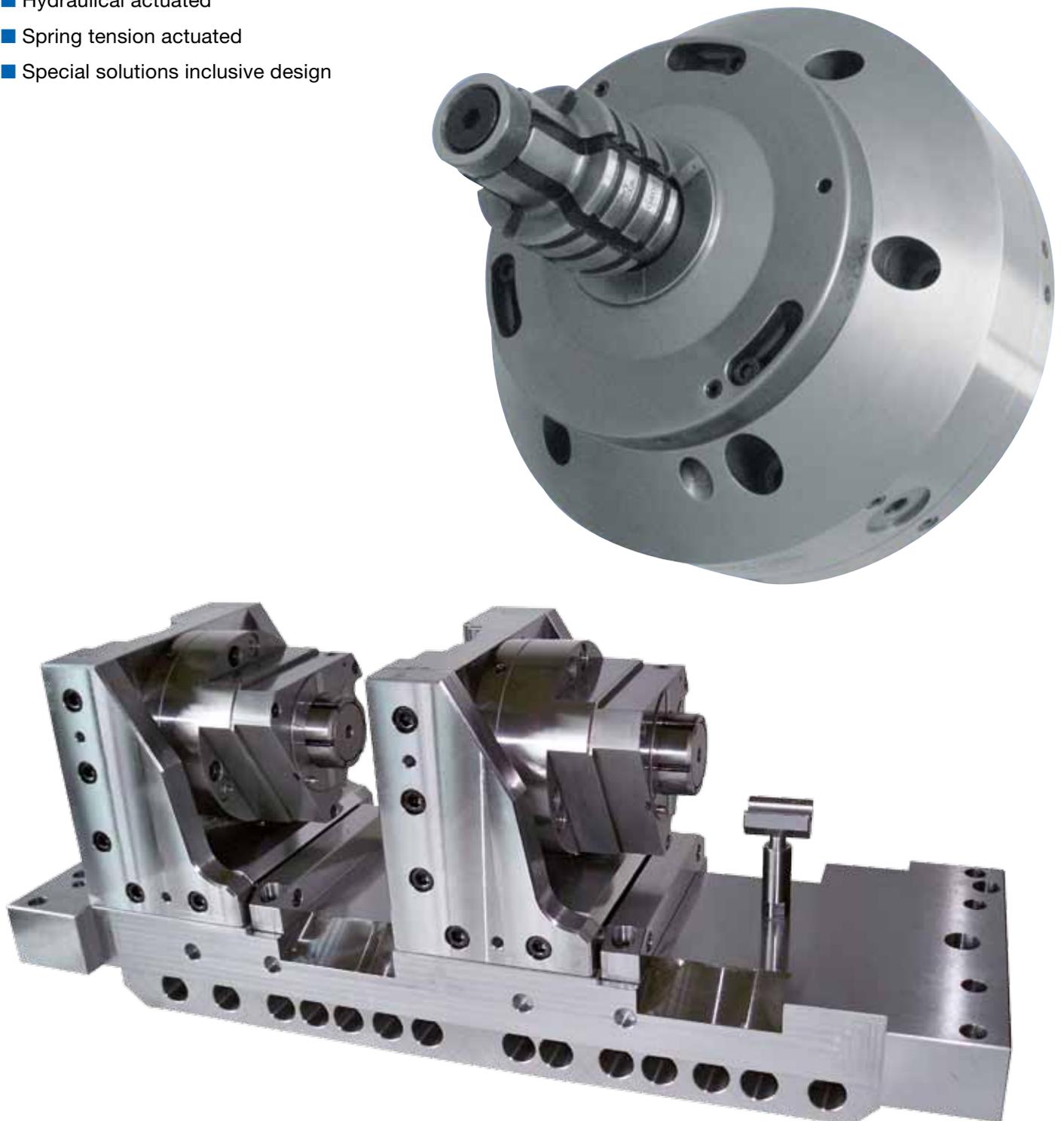
The runout represents 3 μ .



Special mandrels we offer according to your requirements of demanding and universal precision machining.

Segmented Mandrels, stationary

- Pneumatically actuated
- Hydraulically actuated
- Spring tension actuated
- Special solutions inclusive design



Clamping-Head Chuck, stationary

- Pneumatically actuated
- Hydraulically actuated
- Spring tension actuated
- For Clamping-Head Sizes 32 to 160

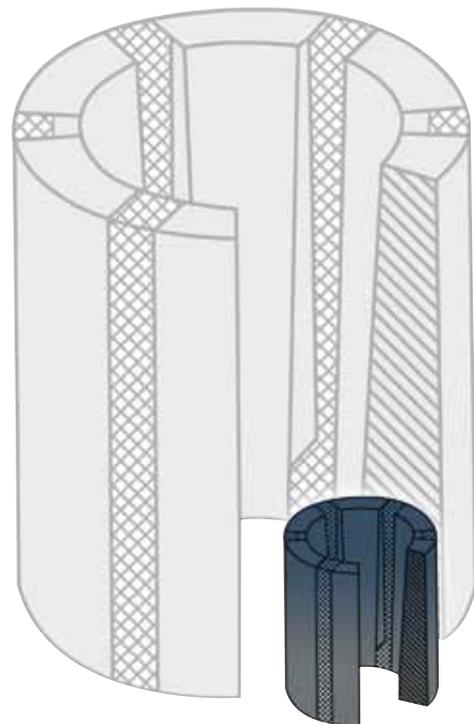


Segmented Bushes

Segmented Bushes are the key element of a Segmented Mandrel.

Compared to conventional sleeves, Segmented Bushes have a higher surface hardness and therefore a higher wear resistance with a high run-out accuracy.

The Segmented bush consists of separate single segments, which get hot vulcanized.



Clamping-Heads

We manufacture various Clamping-Head Sizes from 32 to 200 in standard versions and as well in special applications.



Special Collets

We manufacture Special Collets according to your drawings, your samples and our own design.

- SWT -WK Carbide-Coating
- Chromic Oxid Coating
- Plastic Coating
- Gear Tooth
- Oxide Ceramic Inserts
- Hot-Vulcanization
- Cold-Vulcanization
- Ribbing Surface



Modular Special Workholding

In combination of our two different clamping systems, we created a modular quick change system with an excellent runout.

This system consists of a hydraulical expansion Basic Chuck, which gets oriented on the spindle-nose or the spindle-surface of the machine and a mandrel with changeable sleeves.

The clamping is realized by a movement of the grinded thread between the sleeve and the mandrel.

With this system we realised a flexible, quick assemble and high precision workholding for machining also for small lot sizes and high quality requirements.





SWT TOOLS GmbH

Höfelstraße 10

D-72411 Bodelshausen

Tel.: 0 74 71/98 49 90-0

Fax: 0 74 71/98 49 90-90

E-Mail: info@swt-tools.de

Internet: www.swt-tools.de