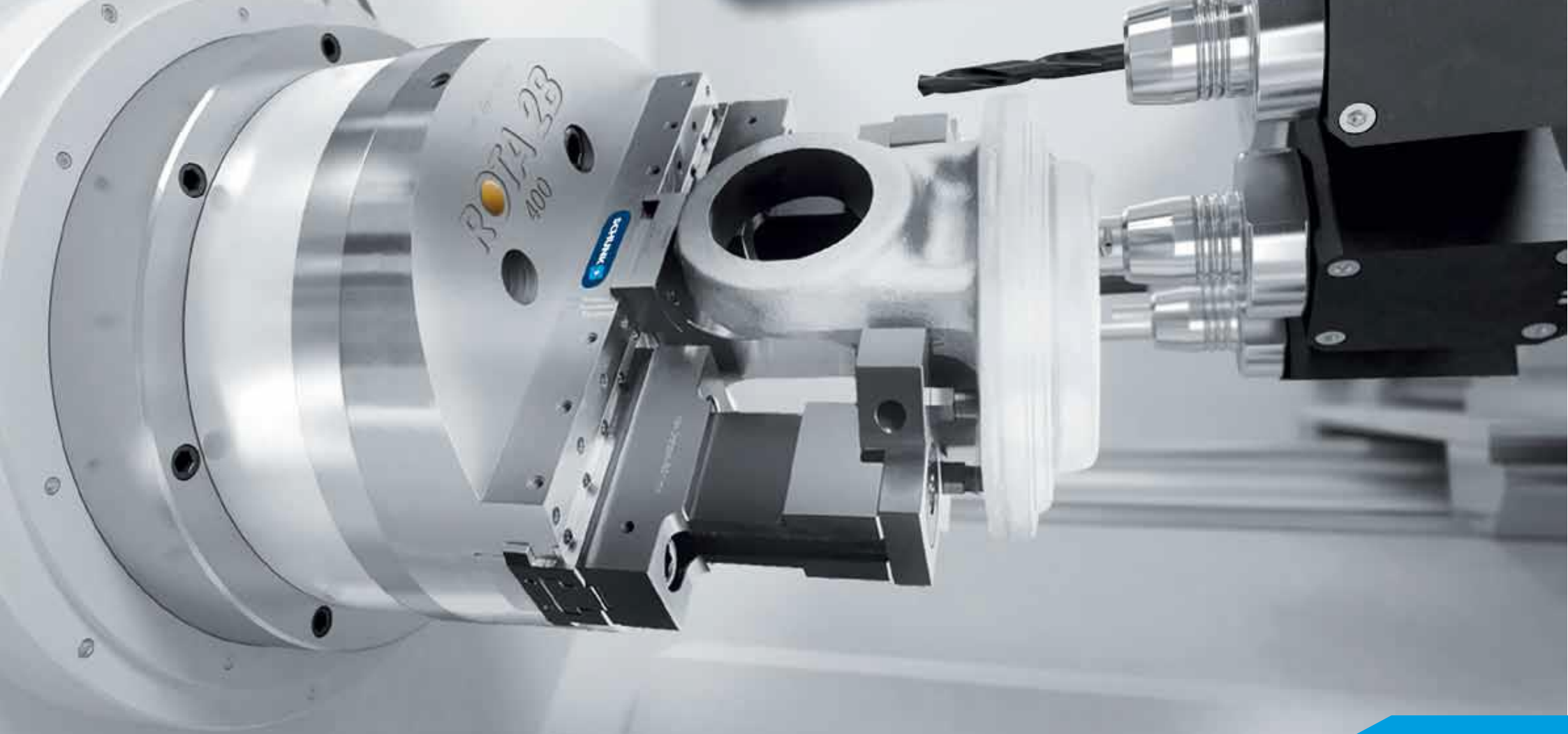


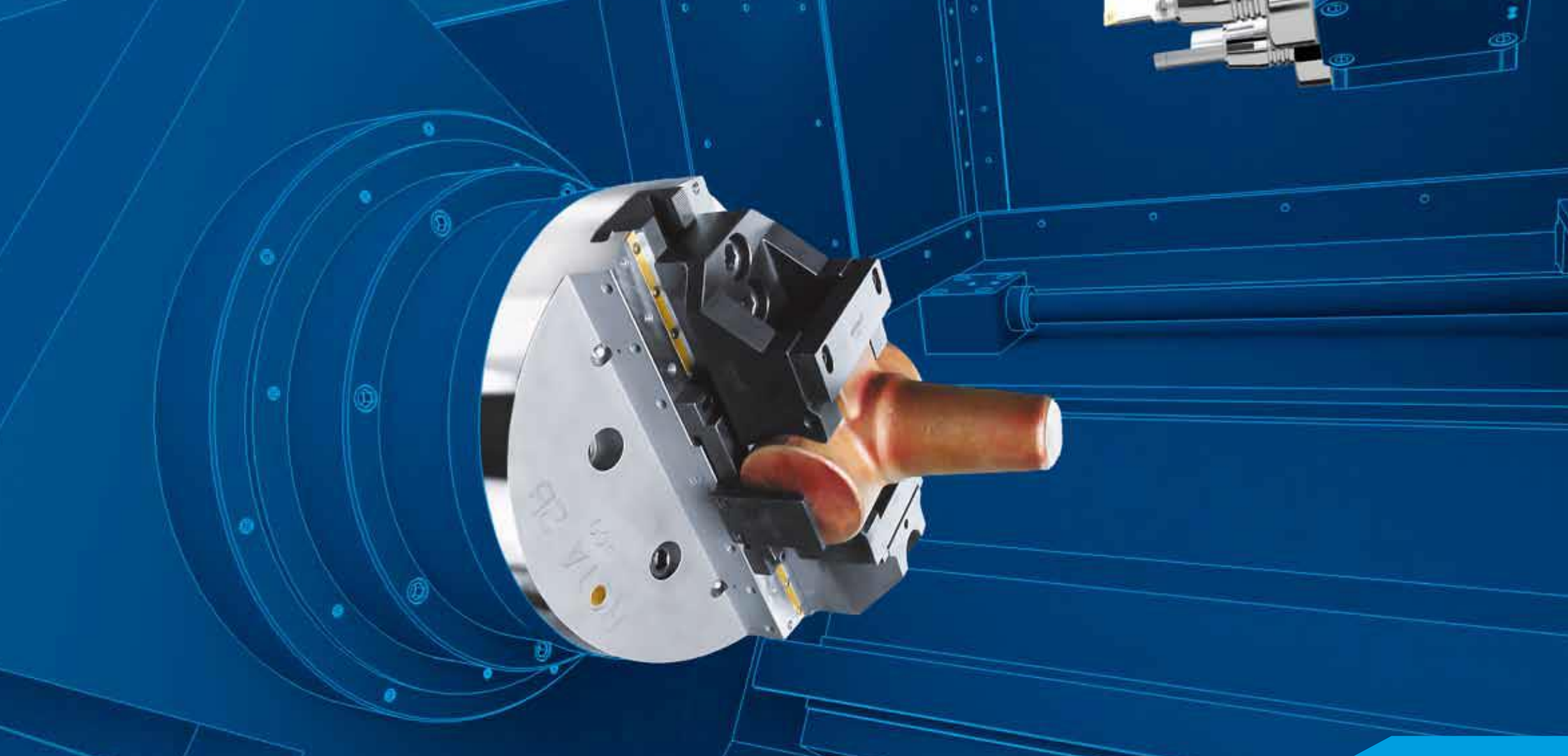


Customer-specific chuck jaw solutions

For 50 years custom clamping technique
with maximum reliability

Superior Clamping and Gripping





Superior Clamping and Gripping – It is the time to use potentials!

With superior components we wake reserves where no one expected. In your machine. Synergy SCHUNK - the perfectly coordinated interplay of clamping technology and gripping systems make our customers champion in terms of productivity.

Superior Clamping and Gripping



Customized Chuck-jaws from SCHUNK

We manufacture according to your needs

Taylor-made solutions. For an optimum clamping solution.

Benefit from the expertise of world's largest provider of chuck jaws.

It doesn't matter what specific requirements your workpiece has, our concepts will give you a competitive advantage.

Formulate your needs. We will develop an adapted solution to your workpiece and your machining process. You benefit from greater productivity.

Most complicated clamping problems. Solved over 60.000 times.

Put your trust in the No.1 solution. For a variety of industries and most complex requirements, SCHUNK realized more than 60.000 custom jaw solutions so far.

SCHUNK Service. Personally and competent.

We will guide you from the first meeting to the delivery of the finished clamping element with competent and quick project management including short delivery times and an unique price-performance ratio.



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1. Modified standard chuck jaws



SFA-SM



UVB



SWB



SFA



SMB

Requirement:

With 1200 jaw types, SCHUNK offers the largest range of standard chuck jaws worldwide.

Nevertheless, the dimensions (height, length, width) of our standard chuck jaws do not always cover the intended application.

For example, you may require an SFA-SM segment jaw that permits a greater clamping depth.

Solution:

Modify the height of the standard chuck jaws

Available types:

Almost all standard chuck jaws in SCHUNK's extensive product catalog can be modified.

Besides jaw blanks, claw jaws, monoblock and segment jaws, this also includes stepped and pendulum jaws.

Advantages:

The individual requirements of the clamping situation can be met by modifying the jaw blanks: greater clamping depths thanks to an adapted jaw height, lower centrifugal forces through the use of aluminum, or even wider jaws to increase the wraparound angle.

2. Intermediate jaws



SZB-A

Fine serration on both sides.
Serration, slot width and height according to technical feasibility, with T-nuts to mount the top jaw



SZB-C

Fine serration on both sides.
Serration, slot width and height according to technical feasibility. Elongated hole to accept jaws with various hole distances.



SZB-D

Tongue and groove on chuck side, fine serration on jaw side, tongue and groove according to chuck. Fine serration, slot width and total height according to technical feasibility.



SZB-E

Fine serration on chuck side, tongue and groove on jaw side.
Total height according to technical feasibility.

Requirement:

When purchasing a new lathe chuck, it should also be possible to continue using existing chuck jaws on the new chuck. However, these jaws are designed for a different interface between the base jaw and top jaw.

Solution:

Use of intermediate jaws as an adapter between the base jaw and top jaw.

Customer benefit:

The existing chuck jaws can still be used, so that costly new purchases are not necessary.

It goes without saying that T-nuts required in individual cases are also available.

!Please note: When using intermediate jaws, the speed of rotation must be adapted because of the increased weight of the clamping system.

3. Customized T-nuts
3. Customized T-nuts



Customized single T-nut NS 21/17



Customized single T-nut NS 17/21



Customized double T-nut NS 21/17



Customized double T-nut NS 17/21

Requirement:

Universal usage of existing chuck jaws on various lathe chucks that have the same jaw interface but a different groove width.

Solution:

T-nuts manufactured as per customer's specifications.

Customer benefit:

Low-cost solution permitting the use of existing chuck jaws on several different lathe chucks.

4. Base jaws
4. Base jaws



STB



STN

Requirement:

Low-cost solution, so that soft jaws do not have to be bored out on an expensive NC machine. In addition, it must be possible to use fine-serrated top jaws on manual chucks as well.

Solution:

By employing a base jaw with fine serration, the fine-serrated top jaws can be used on a wedge-bar power chuck as well.

Advantages:

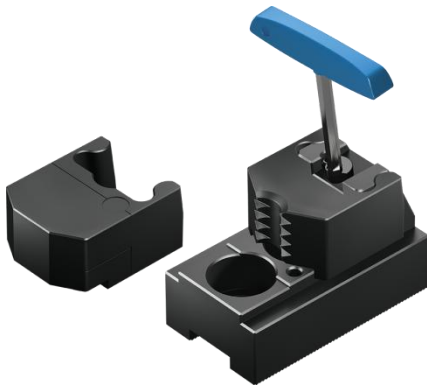
Permits soft top jaws with fine serration to be bored out quickly and cost-effectively on a conventional machine with a wedge-bar power chuck. Furthermore, there are two different base jaws to choose from for different applications:

- The STB base jaw is extremely flexible to use because of its continuous guide groove with individual T-nuts.
- The STN base jaw is designed in particular for absorbing high clamping forces due to its especially robust construction, and is therefore ideally suited to production.

5. Quick jaw changes

5.1 Pronto

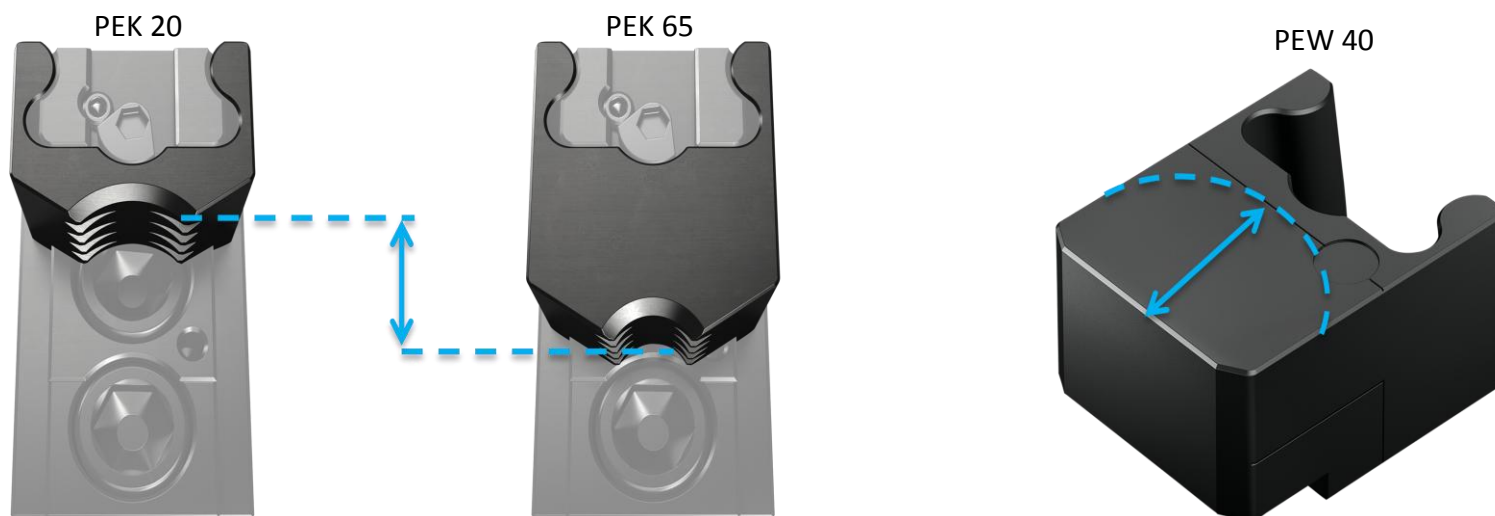
Release the lock, remove jaw, insert new jaw – finished in less than 5 seconds.



Various operations and diameters without changing the supporting jaw

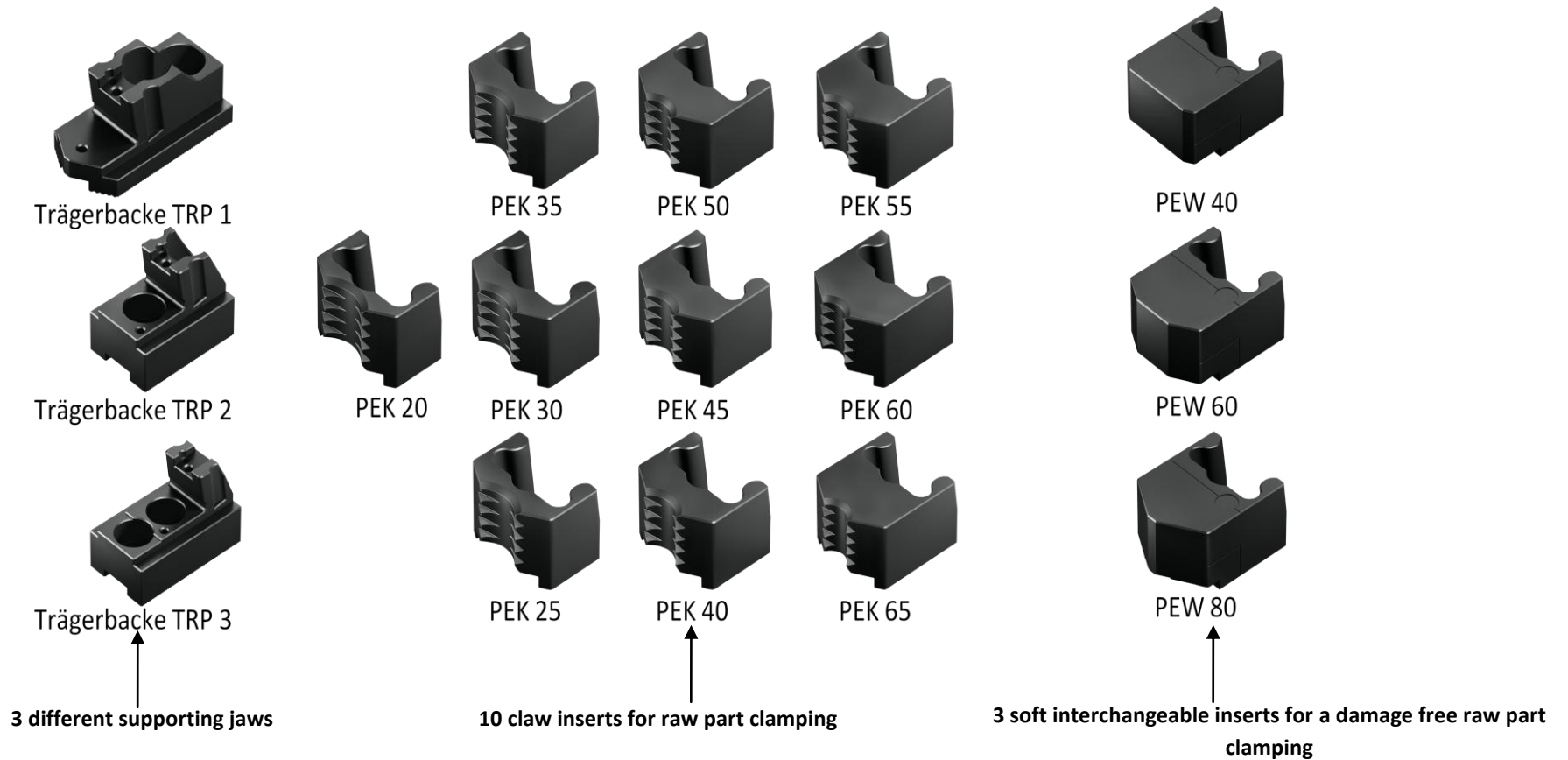
Raw part clamping: Clamping range of $\varnothing$ 45mm for the same supporting jaw position

Finished part clamping: Clamping range of $\varnothing$ 55mm for the same supporting jaw position



Pronto construction kit

Highly flexible raw- and finished part clamping with the same supporting jaw



5.2 Wedge-hook quick-change system/Siemens



Soft top jaws for boring out a specific diameter



Changing jaw with claw attachment



Version as an intermediate jaw for top jaws with fine serration

Anwendungsbeispiel



Use of the clamping solution on an INDEX G300Flex

Requirement:

Our customer had to minimize jaw change set-up times for different workpieces, so that small batch sizes could be manufactured economically. Moreover, the soft top jaws used on the required quick-change jaw system are to be used on different lathe chucks without reboring. For this reason a true running of 0.02 mm for the corresponding chuck jaws must be maintained following jaw changes.

Solution:

The SCHUNK quick-change jaw system with wedge hook permits a rapid jaw change with a change accuracy of the interface of just 0.005 mm, thanks to the form-fit clamping of the top jaw on the base jaw.

In conjunction with the lathe chuck, this yields to a repeat accuracy of 0.02 mm in total, which is why it is no longer necessary to bore out the soft jaws after they have been changed.

More possible applications:

Also available as an intermediate jaw for mounting fine serration; the speed of rotation must be adapted because of the resulting centrifugal forces.



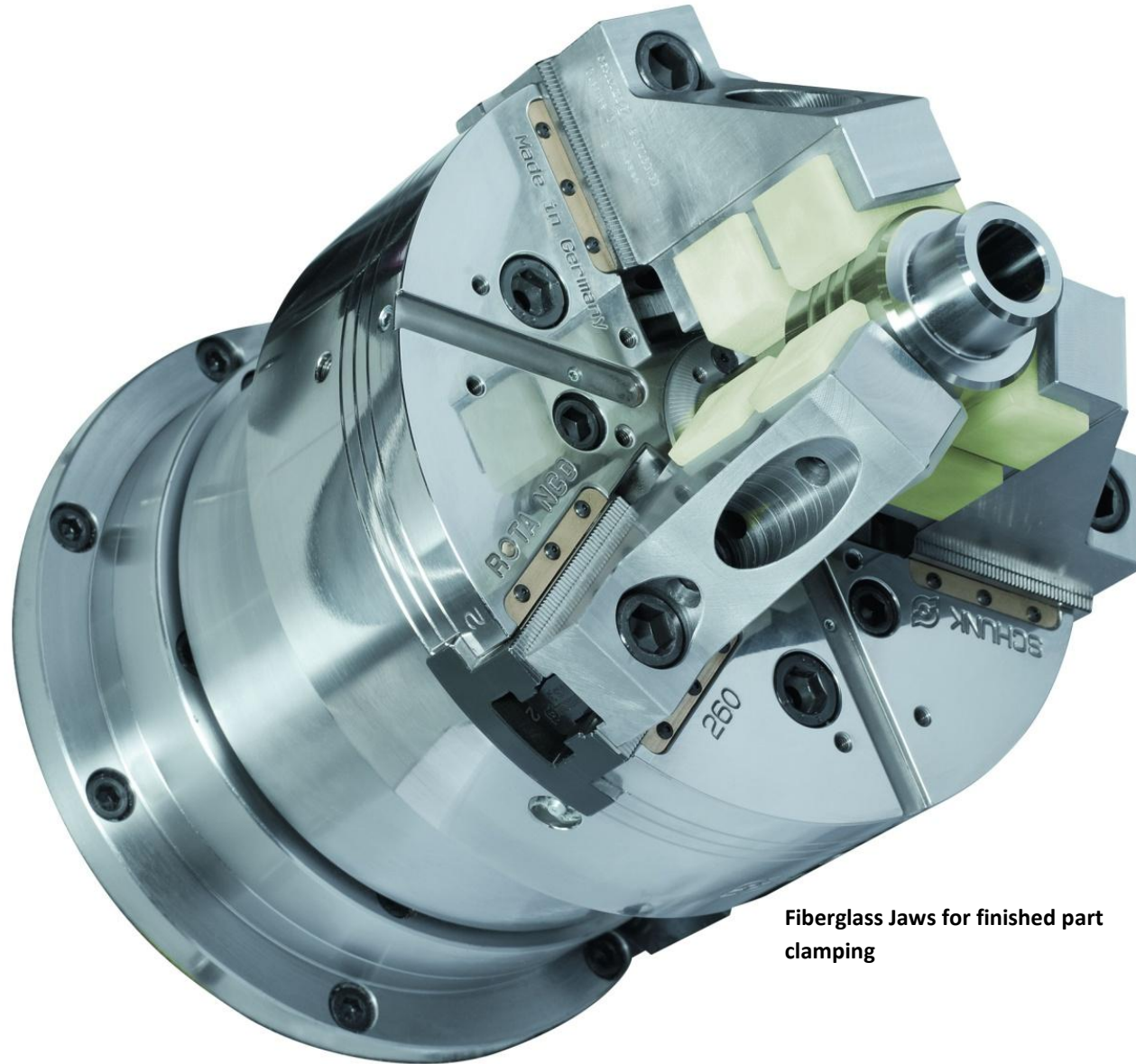
Quentes Fiberglass Jaws



Quentes 10
Fiberglass Jaws
ID No. 150 100 (without supporting jaws)



Quentes 20
Fiberglass Jaws
ID No. 150 200 (without supporting jaws)



Fiberglass Jaws for finished part clamping

Requirement:

Tubes are to be machined during the second clamping operation with a minimum clamping depth of 80 mm, and in this case no clamping marks at all are permitted on the workpiece surface.

Solution:

Customized aluminum supporting jaws for mounting Quentes 20 inserts, which clamp the component on two levels located behind one other, enabling the required clamping depth to be achieved.

Through the high coefficients of friction of the Quentes inserts of 0.3 – 0.4, high torques can be transmitted at the same time despite the low clamping force and resulting low component deformation.

The use of standard components also make it possible to economically replace the clamping inserts if worn.

The lightweight design of the aluminum supporting jaws and the use of fiber-glass inserts produce only low centrifugal forces compared with conventional clamping solutions, which is why high machining speeds are also possible.

Advantages:

- High coefficient of friction (approx. 0.3 – 0.4)
- No clamping marks
- Low-cost system due to replaceable (standard) clamping inserts
- Comprehensive workpiece clamping possible
- Perfectly suitable for ground or surface treated parts
- Very Stable due to aluminum supporting jaws
- Lightweight and Stable Design for very high RPM

Tip:

The Quentes supporting jaws and matching inserts are available from the warehouse in two different versions, in the standard sizes Ø160, 200 and 250 in fine serration as well as tongue and groove.

Other sizes are available as customized chuck jaws on request.

More possible applications

Quentes + Quick jaw changes

Requirement:

I.D. clamping of different housing sizes in a clamping process that takes the minimum amount of time.

As the clamping faces have already been machined, no clamping marks at all are permissible.

Solution:

Combination of BWT/BWW quick-change system and Quentes 20 inserts.

The component is aligned by workpiece bolts, on which the finished housing flange is positioned.

Clamping takes place using three chuck jaws in the upper area inside the housing.

A BWT customized jaw was constructed as the supporting jaw, and this can be used directly in the SCHUNK ROTA-S plus wedge-bar power chuck without a further base jaw.

The use of Quentes 20 plastic inserts means that low clamping forces are sufficient for machining because of the high coefficient of friction of 0.3 – 0.4.

Clamping marks on the component are avoided entirely.

Advantages:

This solution makes it possible to machine a wide range of components.

By using standard components available from the warehouse, this clamping solution can also be quickly converted for work with other components.

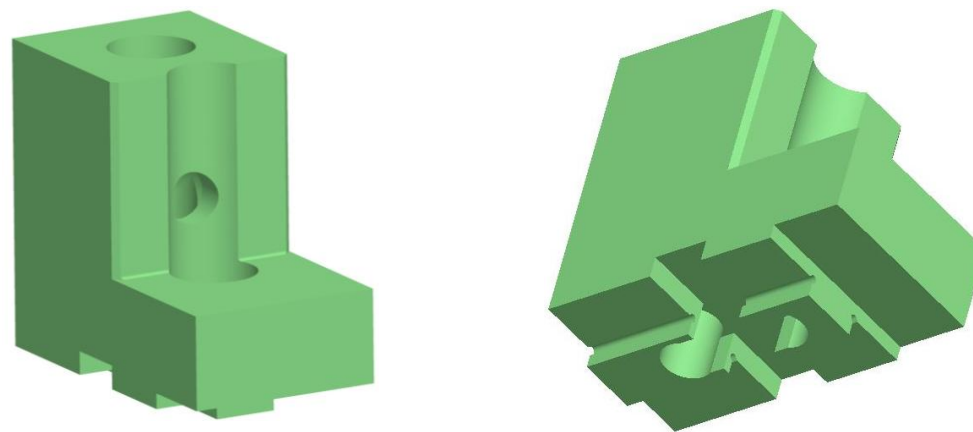
Furthermore, the BWT system permits the clamping inserts to be changed within seconds with a high repeat accuracy.



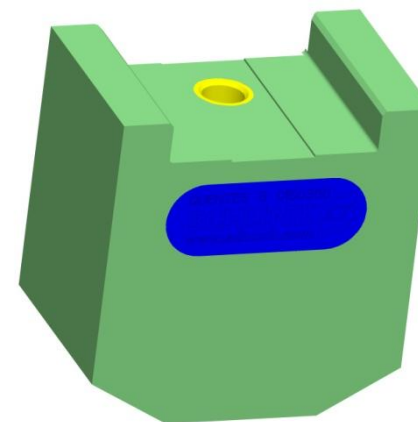
Design of the clamping solution

Example supporting jaw for Quentes insert:

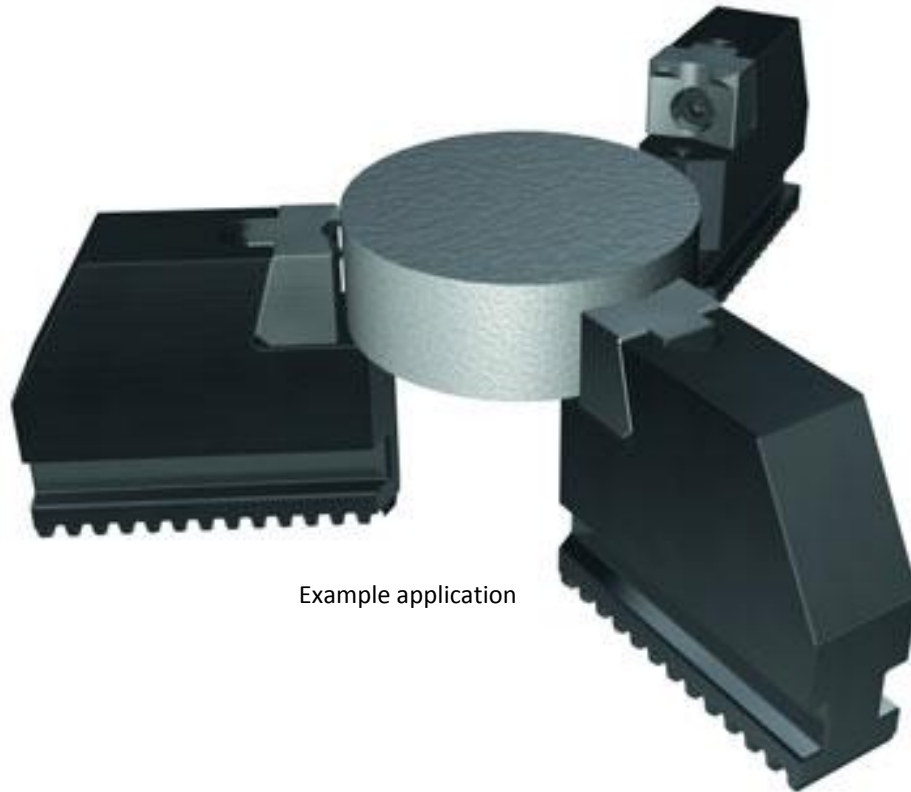
Contact ID: **Hans Deininger**
 Contact AD: **Sotirios Vlachos**
 ID-No. : **10047282**
 Drawing No. : **14459711300**
 Recommended Price: **453€ for 1 set**
 Customer: **Scharrenbroich (874)**
 Branch: **Precision cutting**
 Chuck: **Röhm KFD 125/3**

**Suitable Quentes insert**

Contact ID: **Standard**
 Contact AD:
 ID-No. : **0150300**
 Drawing No. : **0150300**
 Recommended Price: **108,76 € for 1 set**
 Customer: **SCHUNK Lauffen**
 Branch:
 Chuck:



7. System jaws SG-FR



Example application



System jaw without clamping insert

Requirement:

Supporting jaw that can be used for I.D. and O.D. clamping through the use of hard, serrated inserts.

Solution:

System jaws from SCHUNK permit secure raw part clamping by the inner or outer diameter through the use of suitable gripping inserts.

The exchangeable inserts can be replaced quickly and economically if worn and are also available in a soft version and in different standard widths.

All you need to do is bore them out to the required clamping diameter.

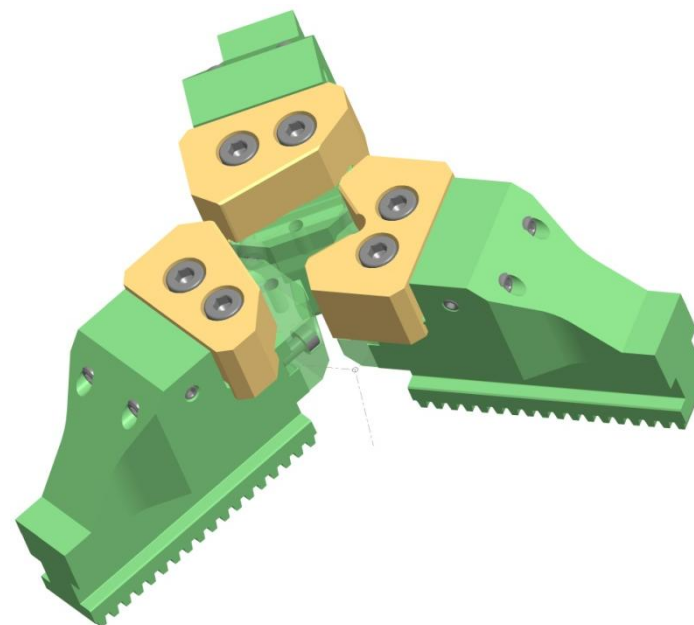
The loss of clamping force is reduced as a result of the lighter jaw weight, due to the combination of a base jaw and top jaw.

This enables higher speeds to be achieved.

Available from the warehouse for chuck sizes 160 to 500 mm for SCHUNK, Forkardt, Röhms and SMW/Autoblok quick-change chucks.

System jaws with soft clamping inserts

Contact ID:	Hans Deininger
Contact AD:	Oliver Rasch
ID-No.:	10041181
Drawing No.:	14132800116
Recommended Price:	Total amount 3975,06€ for 2 set
Customer:	Norgren (123810)
Branch:	Drive technology
Chuck:	SCHUNK Rota THW PLUS 260



8. Low deformation clamping
8. Low deformation clamping

8.1. Pendulum jaws



6-point pendulum



24-point pendulum



12-point pendulum

6-point pendulum

6-point pendulum jaws are used to clamp thin-walled workpieces. Deformation of the workpiece is significantly reduced by the uniform arrangement of the clamping points on the perimeter (6 x 60°).

Comparison Example:

Pipe section, material: Steel,

External Ø 150 mm, Internal Ø 120 mm,

Length 20 mm. Clamping force: 6000 daN.

The mathematically determined value of the deformation is 0.008 mm by using 6-point pendulum jaws.

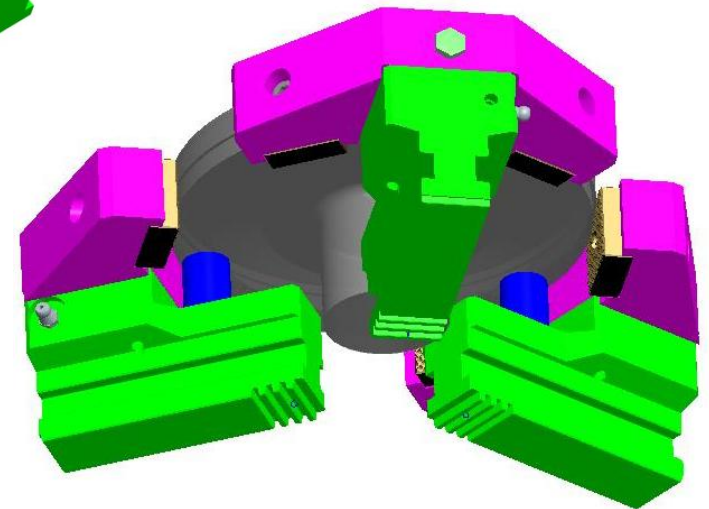
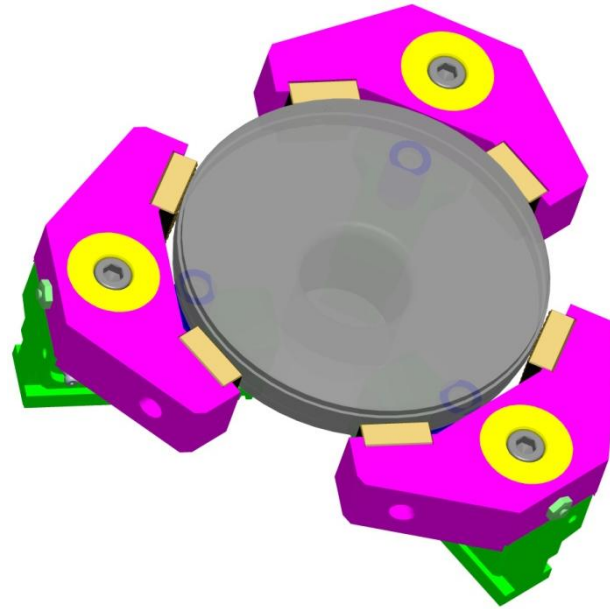
3-point clamping with traditional standard jaws would result in deformation of 0.14 mm.

The 6-point standard pendulum jaws will shortly be available ex stock.



Example 6-point pendulum

Contact ID: **GB**
Contact AD: **Business customer**
ID-No.: **10015677**
Drawing No.: **13027300216**
Recommended Price: **11638,98 € for 6 set**
Customer: **SCHUNK USA**
Chuck: **SCHUNK THW 265**



12-point pendulum:

Clamping a thin-walled ring by the outer diameter with a maximum permitted out-of-roundness of 0.015 mm.

Customer benefit:

Machining can take place conventionally in a 3-jaw power chuck. The use of pendulum jaws not only reduces component deformation, but also compensates for deviations from the specified form.

More possible applications:

Example

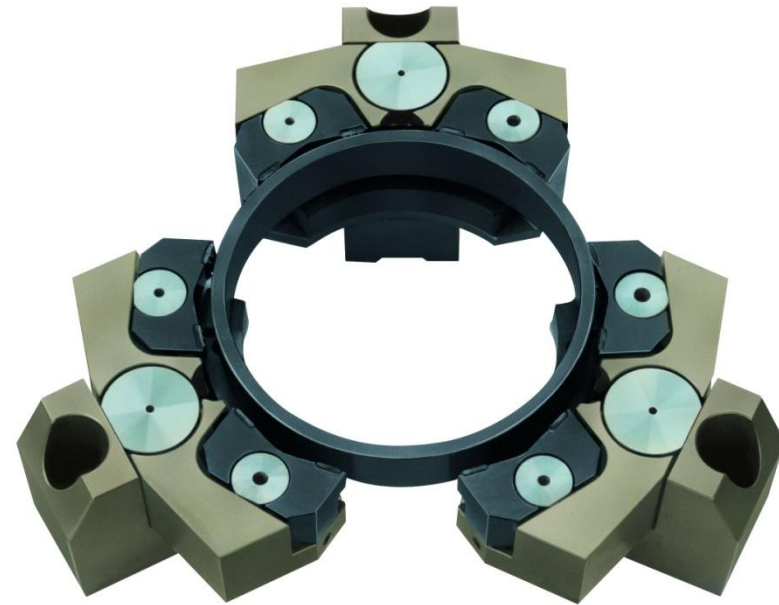
Low deformation clamping of thin walled forged rings.
Permitted roundness error max. 0.03mm

SCHUNK solution

12-point pendulum jaws with changeable clamping inserts

Advantage

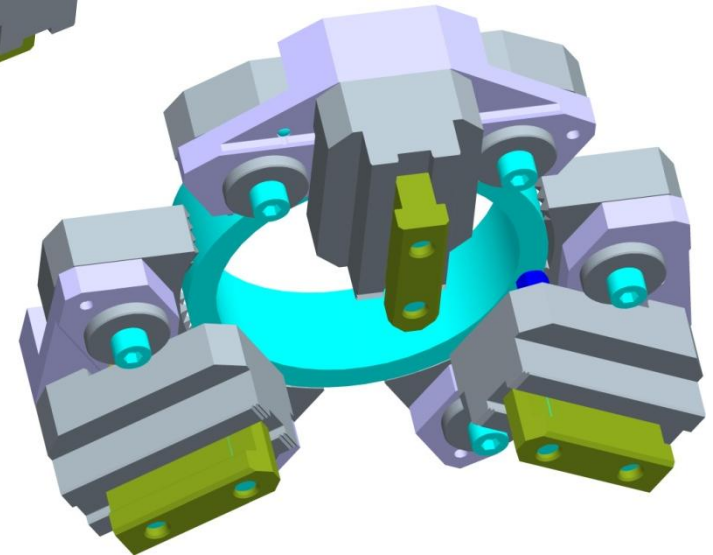
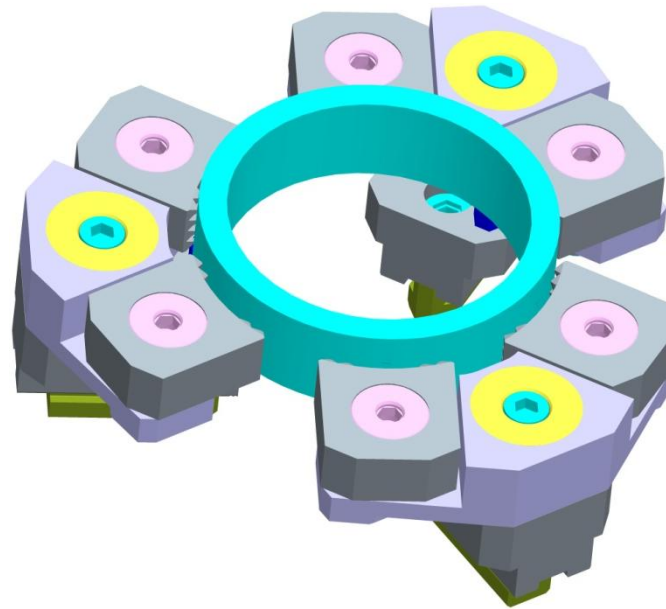
A roundness of 0.01 – 0.02mm was reached. At the 3-point clamping the roundness for the same tension can be up to 0.08 mm.



Example 12-point pendulum

Contact ID:
Contact AD:
ID-No.:
Drawing No.:
Recommended Price:
Customer:
Branch:
Chuck:

Michael Illing
10013246
12886900116
7224 DM for 1 set
Sachsenring (803966)
Automotive supplier
Berg KH 200



24-point pendulum

Our 24-point pendulum jaws are ideal for use with very tall, long and also thin-walled components. They enable even workpieces like this to be clamped with a high force yet with little deformation.

Customer benefit:

Achievement of high clamping forces while at the same time minimizing deformation of the component.

More possible applications:

Low deformation clamping of a thin-walled truck transmission housing made of nodular cast iron with a clamping diameter of 278mm and a wall thickness of 7mm on the chuck diameter 500. Permitted roundness of max. 0.03mm.

SCHUNK solution

24-point pendulum jaws, axial and radial oscillating

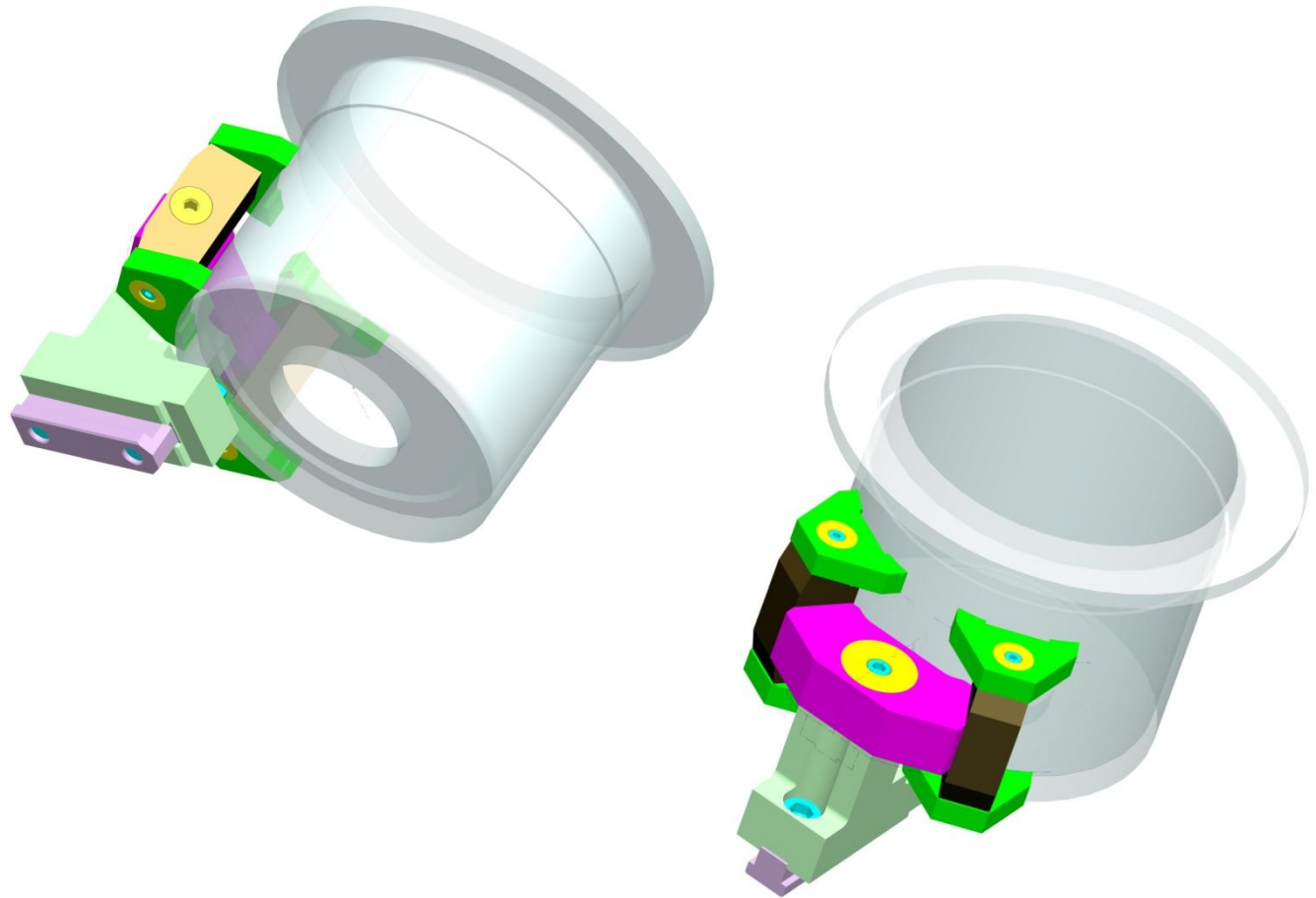
Advantage

The roundness of 0.03mm could be achieved with a clamping force of 100kN.



Example 24-point pendulum

Contact ID:
Contact AD: **Zhang, Fulai**
ID-No.: **10019173**
Drawing No.: **13158300016**
Recommended Price: **10420 € for 2 set**
Customer: **CNMTC (802317)**
Branch:
Chuck: **SCHUNK Rota NC**



Our experts will be happy to advise you...

... on whether a 6-point, 12-point or 24-point pendulum is most suitable for your application.

We will also carry out workpiece-specific calculations upon request.

PNS assembly**Pendulum jaws with fine serration**

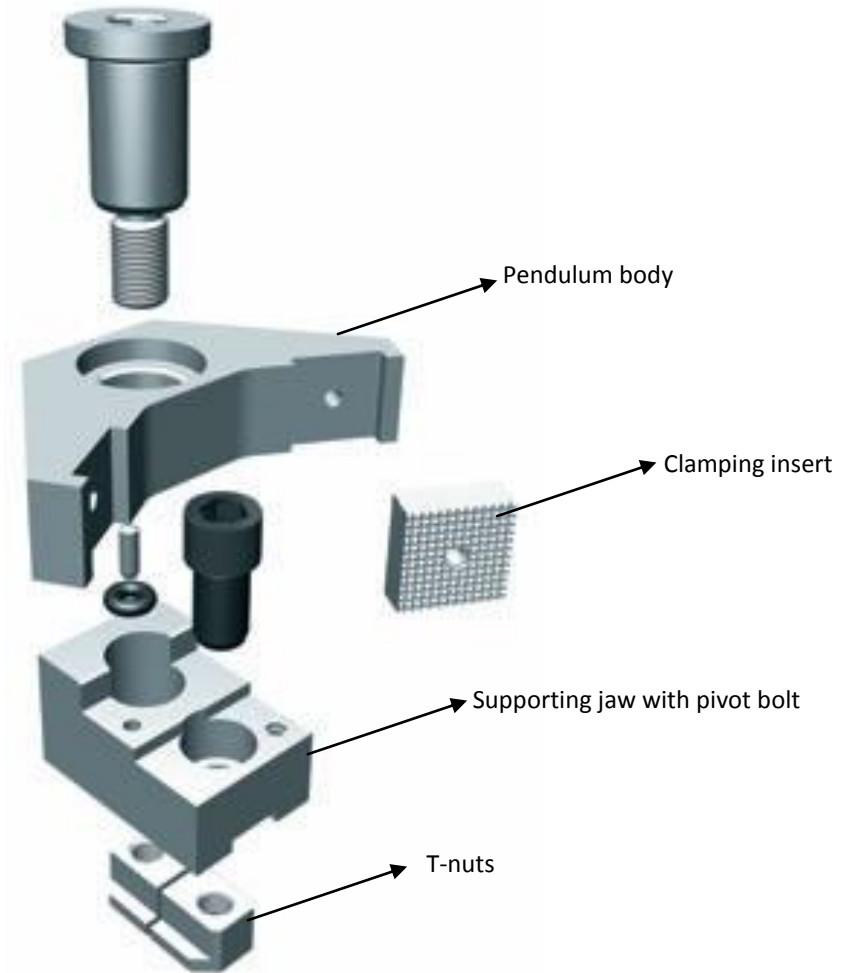
A complete PNS pendulum jaw consists of:

- Supporting jaw with pivot bolt
- Pendulum body
- Clamping inserts
- T-nuts

The pendulum jaw is as easily mounted on to the base jaw of your power chuck as a normal one-piece top jaw (e.g. SWB). The pivot bolt secures the pendulum body to the supporting jaw and the entire system to the chuck.

To clamp workpieces of different diameters, the pendulum bodies are simply exchanged.

The ability to substitute individual modules means that large clamping ranges can be covered cost-effectively.



PNK assembly**Pendulum jaws with wedge-bar serration**

A complete PNK pendulum jaw consists of:

- Supporting jaw with pivot bolt
- Pendulum body
- Clamping inserts

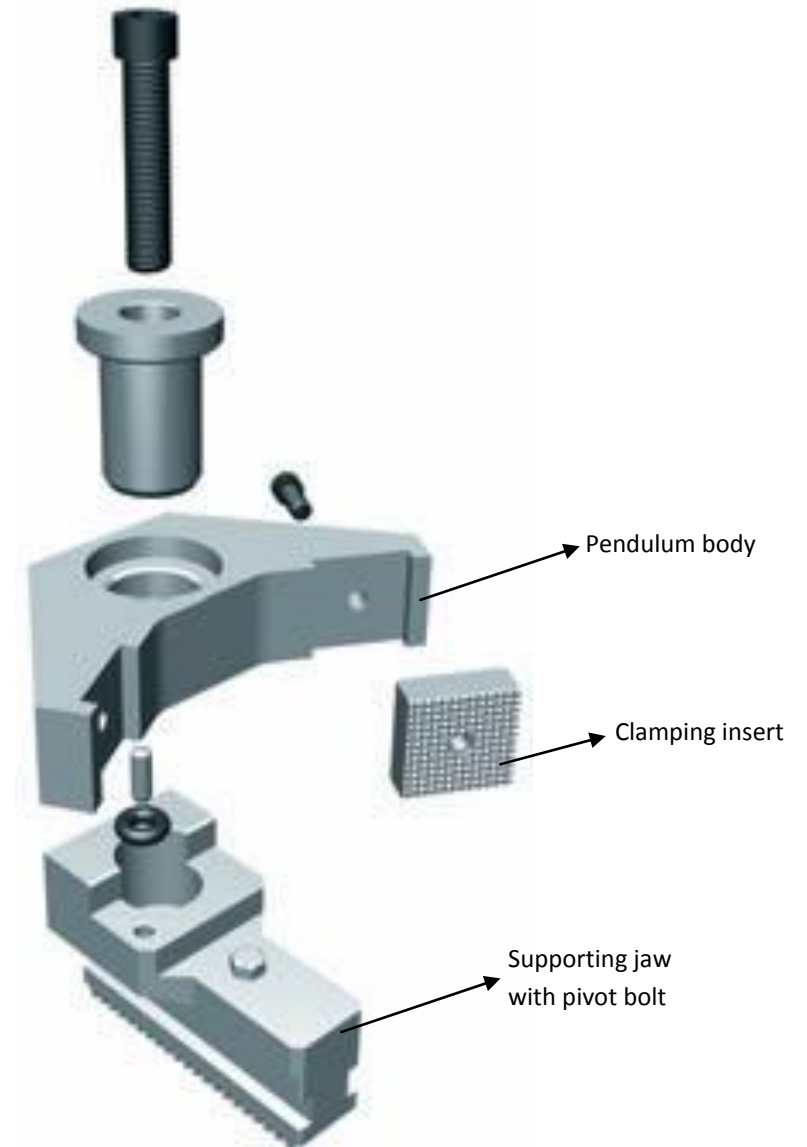
The PNK is a pendulum jaw for quick-jaw-change chucks and is therefore very easily and quickly inserted into the chuck.

To clamp workpieces of different diameters, the pendulum bodies are simply exchanged.

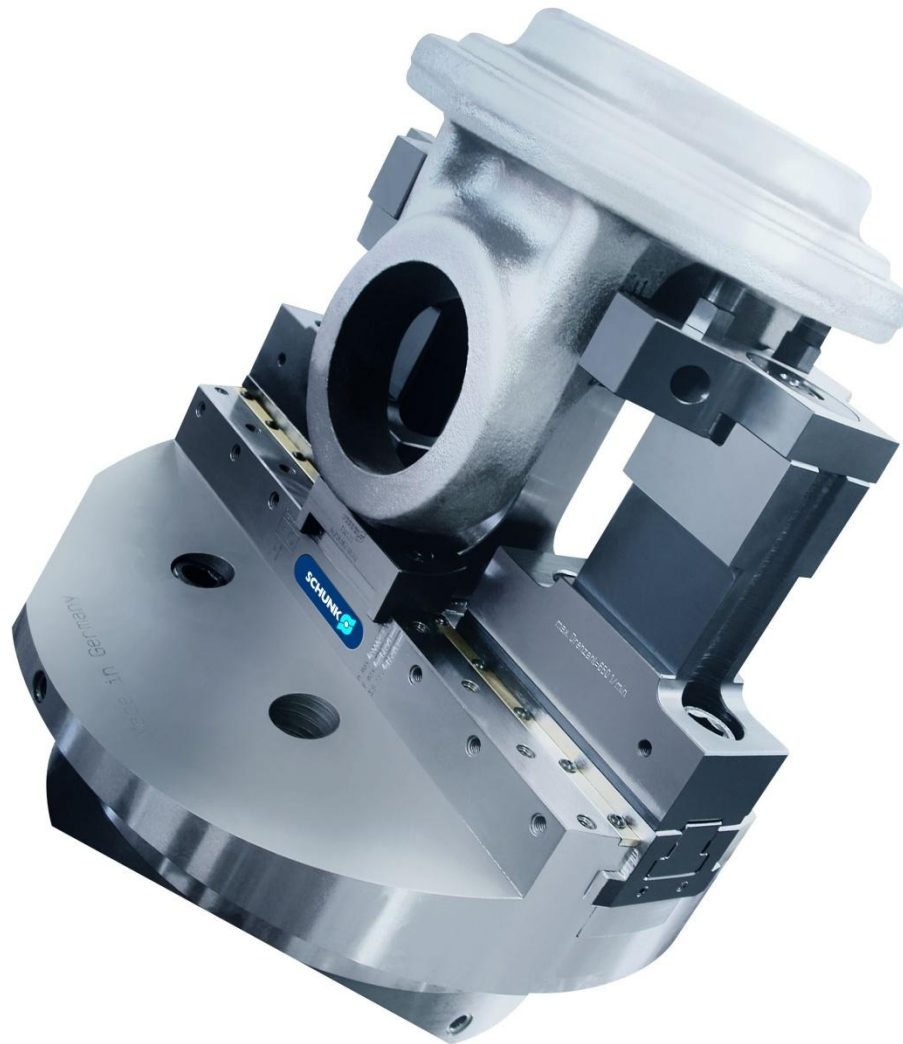
The ability to substitute individual modules means that large diameter ranges can be covered cost-effectively.

Clamping force:

Theoretically, the max. clamping force of the chuck can be utilized.



8.1.1. 4-point pendulum jaw in a 3-jaw power chuck



8.1.2. 6-point mini pendulum jaws



Test set-up



Requirement:

Low-deformation clamping of a thin-walled aluminum ring with a diameter of 80 mm.

In a clamp the inner diameter is to be manufactured as an H8 fitting, a circular groove is to be produced and the end surface is to be resurfaced at a machining speed of 4000 rpm and a clamping depth of 8 mm.

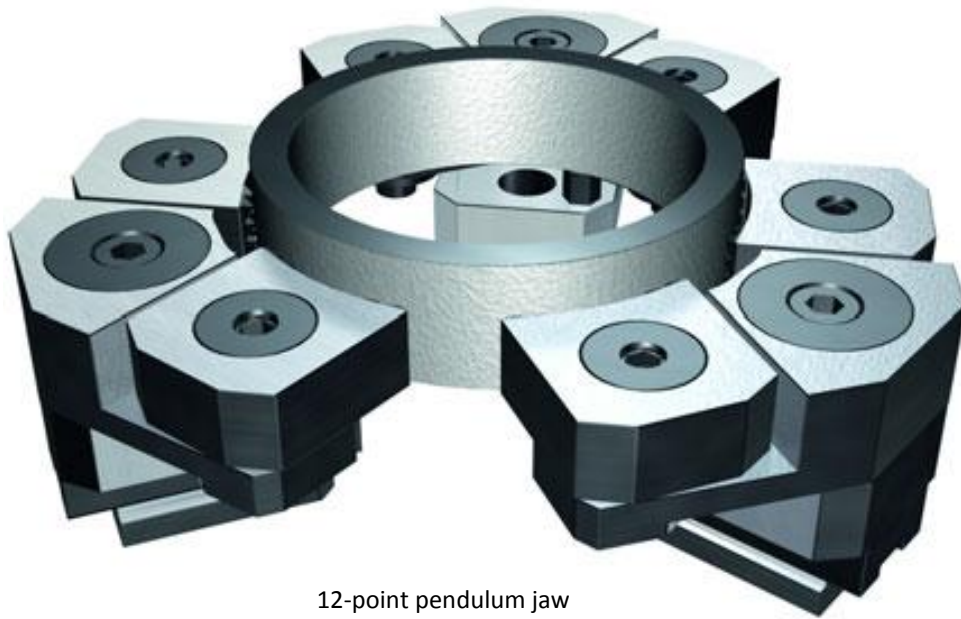
Solution:

Only by using pendulum jaws it is possible to achieve the required accuracies of the fitting to be manufactured for this workpiece.

For this reason 6-point mini pendulum jaws were constructed, that are provided with steel balls in the clamping faces on which the workpiece rests.

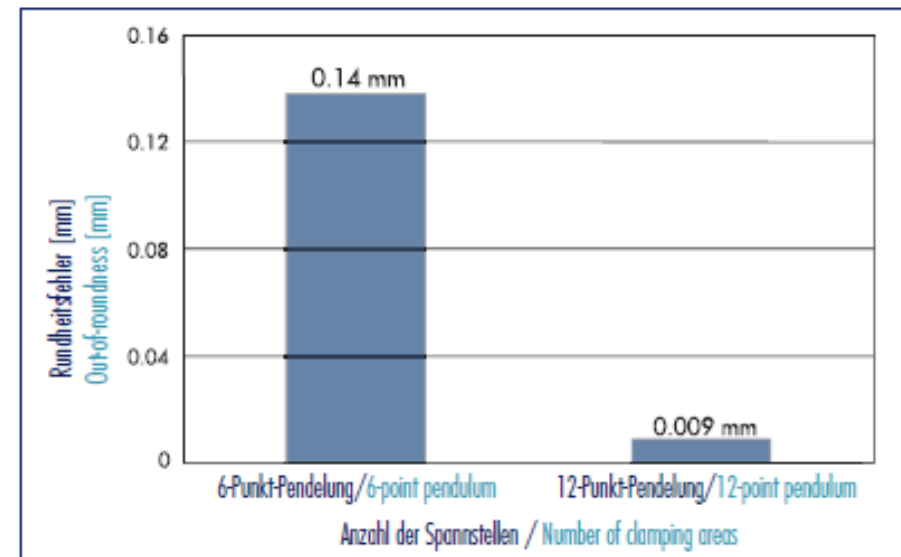
Any deviations from the specified workpiece form are compensated by the pendulum motion.

8.1.3. 12-point pendulum jaw for O.D. clamping



**Mathematical comparison of out-of-roundness
for 6-point and 12-point clamping**

Example: Steel ring with $\varnothing$ 160 mm,
wall thickness 10 mm, clamping force 100 kN



Requirements:

Clamping a thin-walled ring by the outer diameter with a maximum permitted out-of-roundness of 0.015 mm.

Solution:

Because of the maximum permitted out-of-roundness a 6-point clamping pendulum jaw is no longer adequate for this workpiece. This requirement is met by using 12-point pendulum jaws.

Advantages:

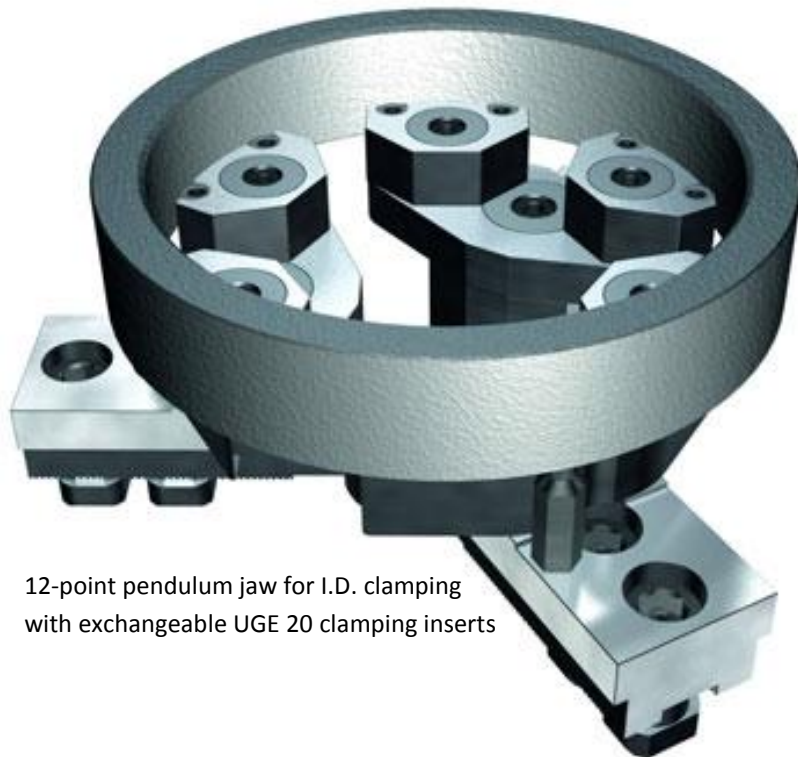
Machining can take place conventionally in a 3-jaw power chuck.

The use of pendulum jaws not only reduces component deformation, but also compensates deviations from the specified form.

Tip:

The use of 12-point clamping permits a mathematical roundness accuracy that is greater than that achieved with 6-point clamping by a factor of about 17.

8.1.4. 12-point pendulum jaw for I.D. clamping



12-point pendulum jaw for I.D. clamping
with exchangeable UGE 20 clamping inserts



Example application of a 12-point pendulum
jaw

Requirement:

Clamping a thin-walled ring by the inner diameter with a maximum permitted out-of-roundness of 0.02 mm.

Because of the high level of wear on the clamping faces, the customer requires a system with exchangeable clamping inserts.

Solution:

Because of the maximum permitted out-of-roundness, 6-point clamping using pendulum jaws is no longer adequate for this workpiece.

Consequently, a 12-point clamping system using pendulum jaws was constructed, which meets the necessary requirements. In addition, the pendulum jaws are equipped with exchangeable UGE 20 clamping inserts.

Customer benefit:

Machining can take place conventionally in a 3-jaw power chuck.

The use of pendulum jaws not only reduces component deformation, but also compensates for deviations from the specified form.

Tip:

The use of 12-point clamping permits a mathematical roundness accuracy that is greater than that achieved with 6-point clamping by a factor of about 17 with the same clamping force.

8. Low deformation clamping
8.1.5. 24-point pendulum jaw



12 clamping points on two clamping levels designed to permit an axial and radial alignment of the clamping system of the component

Use of a 24-point pendulum jaw for clamping a gearbox



Requirement:

Clamping a gearbox made from nodular cast iron with a wall thickness of 7 mm, a total height of 250 mm and a clamping diameter of 278 mm. The workpiece is to be clamped with a clamping force of 100 kN and a maximum permitted out-of-roundness of 0.03 mm.

Solution:

Because of the high roundness requirements for this large component, the use of a 12-point clamping solution is not adequate for this application.

For this reason a 24-point clamping solution was constructed, which clamps the component by 12 points each on two levels located one behind the other.

The pendulum jaws used on these levels grip the component in an axial and radial pendulum motion, enabling deviations from the specified form to be compensated and permitting the workpiece to rest against all clamping points.

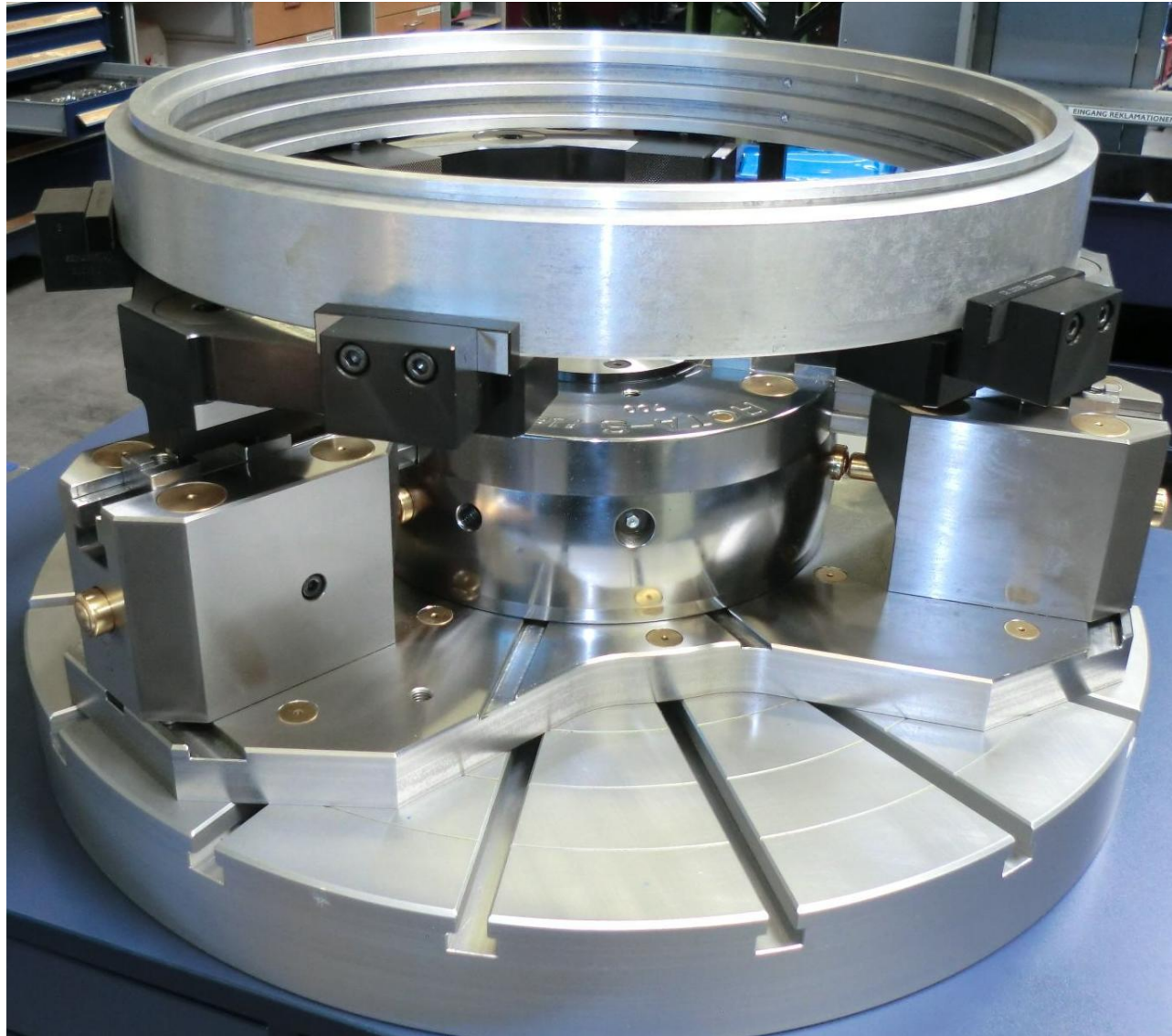
Advantages:

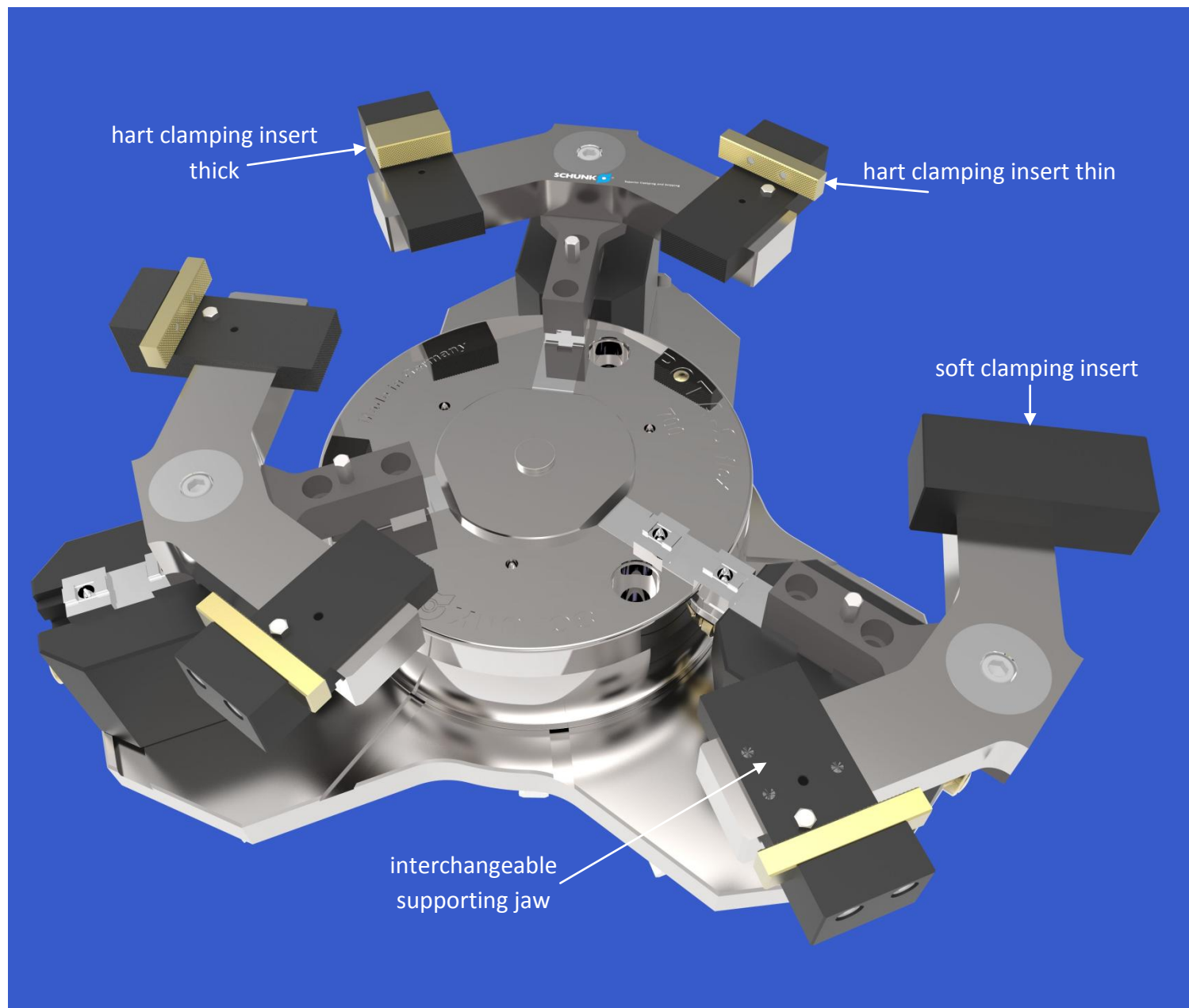
Achievement of high clamping forces while at the same time minimizing deformation of the component.

Tip:

The use of 24-point clamping permits a mathematical roundness accuracy that is greater than that achieved with 12-point clamping by a factor of about 17.

8.1.6. 6-point pendulum jaw for ROTA S-flex 700





Requirement:

Low deformation clamping and secure clamping of thin-walled rings on a SCHUNK ROTA-S flex 700, which is mounted on the machine table of a 5-axes milling and turning machine. These rings made of steel have a very large diameter bandwidth of 300-700mm outer diameter and an inside diameter of 300-600mm. It should be possible to clamp the whole bandwidth with just one set of pendulum jaws. First, the pre-turned blanks are clamped on the outside diameter with hard claw inserts to process the inside diameter and the flat surface. Then the second clamping process is clamped with soft, turned clamping inserts on the inside diameter so that the outer diameter and the second end surface can be processed.

SCHUNK-Solution:

A modular pendulum jaw system, which is based in its basic design to the SCHUNK standard pendulum jaws. In contrast to them the hard clamping inserts are not screwed directly into the pendulum body, but on a interchangeable support jaw. This measure was necessary in order to realize the very large clamping range. In addition the smaller diameters can be clamped directly with the support jaws without separate clamping inserts.

For the second clamping at the already machined inner diameter these supporting jaws are completely changed against the soft turnable clamping inserts. However these soft inserts can also be turned if necessary for the O.D. clamping.

Of course this solution can also be realized for other sizes.

Customer benefit:

- Highest flexibility
- Little deformation for sensitive workpieces
- Minor operation effort
- Significantly lower jaw weight in contrast to comparable systems (e.g. HWR InoZet)

Note:

Contact ID: Fabian Eiße; Siegfried Maulick

Contact AD: Andreas Göckel

ID-No. : 10056257; Drawing-No. : 150007

Recommended price: ca. 12.000 € for ROTA-S flex 700

Customer: Berthold Hermle AG Maschinenfabrik

Branch: Mechanical engineering

8. 2. Clamping jaw with an active pull down



Clamping jaw with an active pull down for a spread tension

Clamping jaw with an active pull down (Example)

Customer requirements:

Solution for clamping the work piece on a SCHUNK NCO165 chuck. The workpiece to be clamped is the size of a 1€ - coin and will be processed with a side rolling tool.

SCHUNK solution:

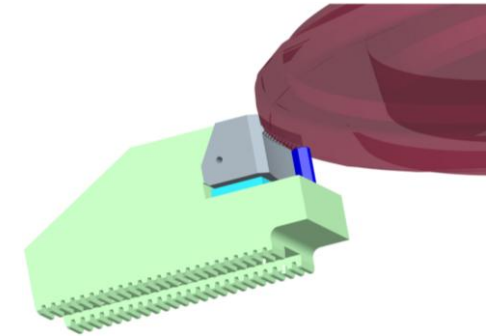
Because of the low clamping depth the clamping jaws are made with pull-down clamping inserts for an active pull-down. They provide an overarching tension against the pry out of the workpiece. In this special case the workpiece will be drawn against the bearing bolts for an axial stop.

Customer benefit:

Increased yields by automated loading and unloading and carrying out the production process in a double-spindle machine.

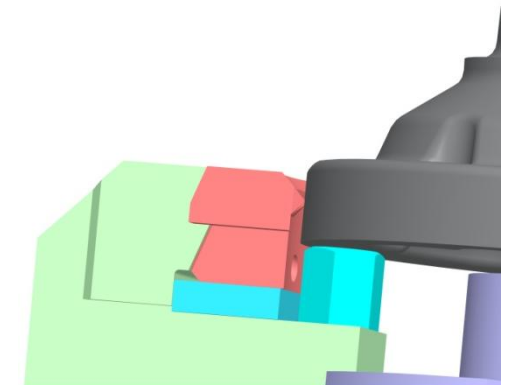
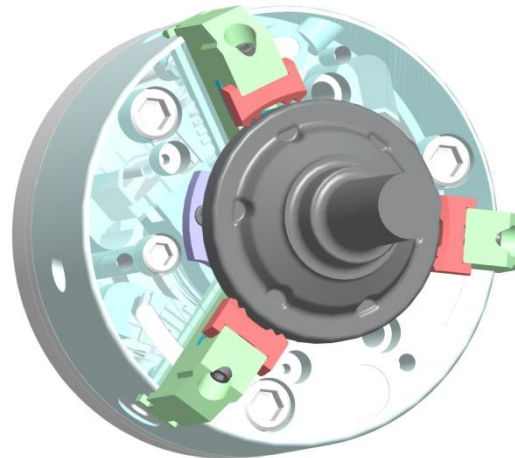
Clamping jaw with an active pull down

Contact ID: **Siegfried Maulick**
 Contact AD: **Ron Brinkmann**
 ID-No.: **10054755**
 Drawing No.: **14919800116**
 Recommended Price: **4620 € for 1 set**
 Customer: **Bosch Rexroth (69040)**
 Branch: **Drive technology**
 Chuck: **Röhme KFD 1250**



Block jaws with an active pull down

Contact ID: **Jürgen Parowka**
 Contact AD: **10026383**
 ID-No.: **13438500116**
 Recommended Price: **7260 DM for 2 set**
 Customer: **Gallade (217300)**
 Branch:
 Chuck: **SCHUNK THW Ø210**



8.3. Clamping jaw with soft clamping insert

Low deformation clamping in a 3-jaw power chuck with soft clamping inserts



Customer requirements:

Low deformation clamping for processing the flange and the inside in a 3-jaw power chuck.

SCHUNK solution:

The customized jaws clamp below the flanged shoulder on the ribs of the workpiece. The low deformation clamping is achieved by soft clamping inserts.

Customer benefit :

Implementation of an automation concept, reducing the deformation-induced committee or rework.

9. Clamping of connecting rods

9.1. 4-point clamping solution for connecting rods in a 2-jaw power chuck

Design of the clamping solution



Customized pendulum jaw for machining connecting rods in a 2-jaw power chuck

Requirement:

Machining a connecting rod top end and additionally drilling a fitting bore on the shank with driven tools, with the workpiece to be clamped on a SCHUNK ROTA NCF 2-jaw power chuck.

Solution:

4-point clamping solution that consists of one rigid and one moving pendulum jaw.

The workpiece is positioned with the rigid jaw at two clamping points and one locating surface for the shank.

The pendulum jaw clamps the component with little deformation by two further clamping points and also compensates for any deviations from the component's specified form.

Advantages:

This solution permits low-deformation clamping to be achieved and makes it possible to machine with driven tools.

Tip:

Clamping solutions can even be statically pre-balanced by our engineers on 3D models.

This requires workpiece data in IGES or STEP format, and the specification of the workpiece density.

9.2. 6-point clamping solution for connecting rods in a 3-jaw power chuck



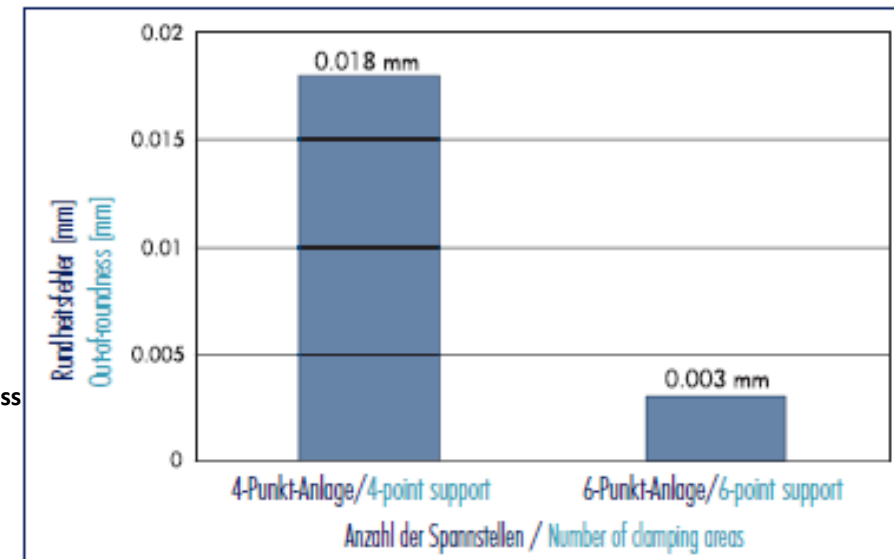
Design of the 6-point clamping solution



3-point connecting-rod clamping solution in a 3-jaw power chuck

Mathematical comparison of out-of-roundness for 4-point and 6-point clamping

Example: Connecting rod with $\varnothing$ 70 mm, wall thickness 10 mm, clamping force 100 kN



Requirement:

Machining a connecting rod top end and additionally drilling a fitting bore on the shank with driven tools, with the workpiece to be clamped on a SCHUNK ROTA NCD 3-jaw power chuck.

Solution:

The connecting rod is aligned using an adjustable guide mounted on the chuck.

The use of 6-point clamping with pendulum jaws permits deviations from the specified form to be compensated and a roundness accuracy that is greater than that achieved with 4-point clamping by a factor of about 6.

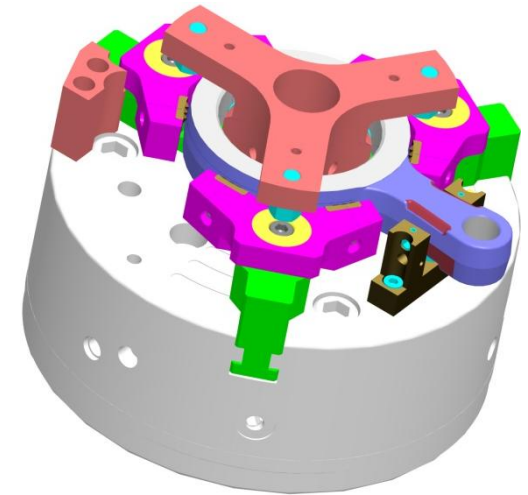
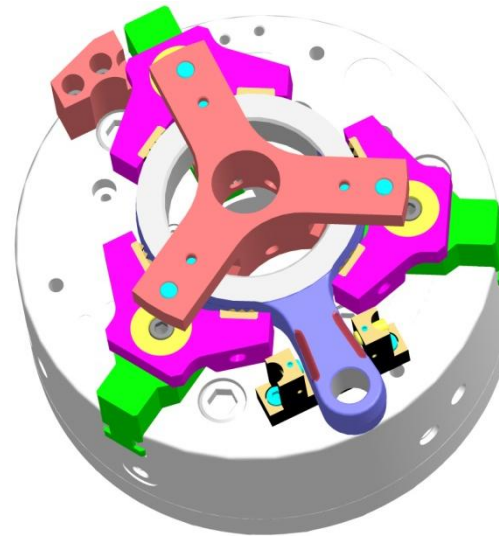
Tip:

The clamping solution can be pre-balanced beforehand by our engineers in CAD.

This requires workpiece data in IGES or STEP format, and the specification of the workpiece density.

6-point clamping solution for connecting rods in a 3-jaw power chuck

Contact ID:
 Contact AD:
 ID-No.: **10026333**
 Drawing No.: **13435800016**
 Recommended Price: **3680€ for 1 set**
 Customer: **Bran + Lübbe (112330)**
 Branch: **Dosing pumps**
 Chuck: **SCHUNK THW Ø315**



10. Axial pendulum
10. Axial pendulum



Design of the clamping solution



Sectional view: Workpiece support on workpiece bolts

Requirement:

Clamping a flange provided with a conical pin on a SCHUNK 3-jaw power chuck.

The workpiece is to be positioned on the flange and clamped by the workpiece pin.

Solution:

The component is aligned by positioning the flange against three bolts, thereby achieving the required axial run-out.

The inclination of the pin can be compensated by an axial pendulum motion of the chuck jaws, which are provided with integral clamping teeth to make sure clamping is secure.

More possible applications

Example for axial pendulum

Customer requirement:

Solution for clamping of the workpiece on a 6-jaw power chuck from SCHUNK

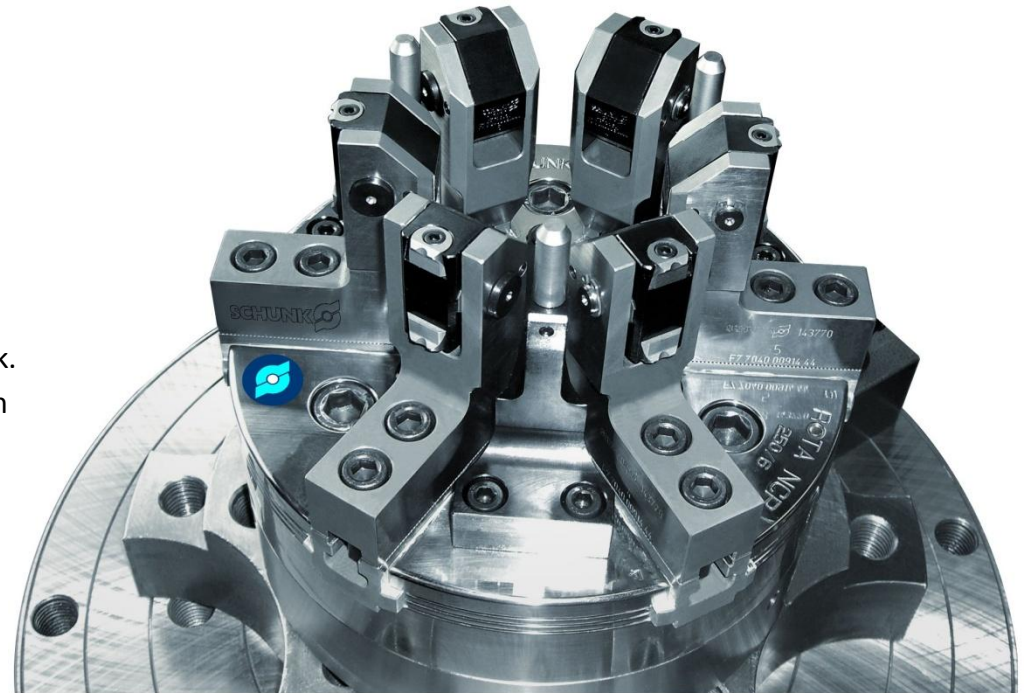
SCHUNK solution:

The inserted jaws are axially oscillating and in case of wear low cost in exchange due to exchangeable clamping inserts UGE 20.

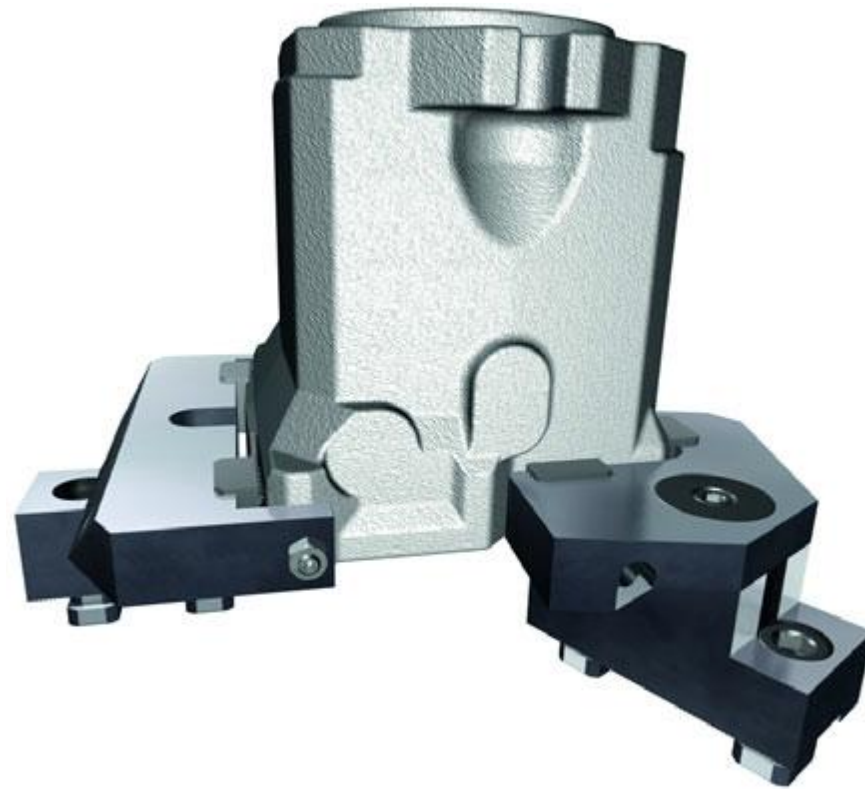
Axial stops have an supporting effect and are permanently attached to the chuck. Thin-walled workpieces can be reliably produced through these low deformation clamping solution with the required workpiece tolerances of 0.03 mm.

Customer benefit:

Implementation of an automated loading and unloading, significantly reduced waste and decreasing test cycles necessity.



11. Square pendulum
11. Square pendulum



Requirement:

Low-deformation and secure clamping of an asymmetrical gearbox by the square component flange.

The end surface then has to be resurfaced and an H7 bore drilled in the upper area of the workpiece.

In addition, pin bores are to be drilled in the flange and a radial threaded bore is to be drilled between the clamping areas of the pendulum jaws using driven tools.

Solution:

Use of a rigid jaw as well as two pendulum jaws.

The workpiece is clamped using the rigid, straight jaw.

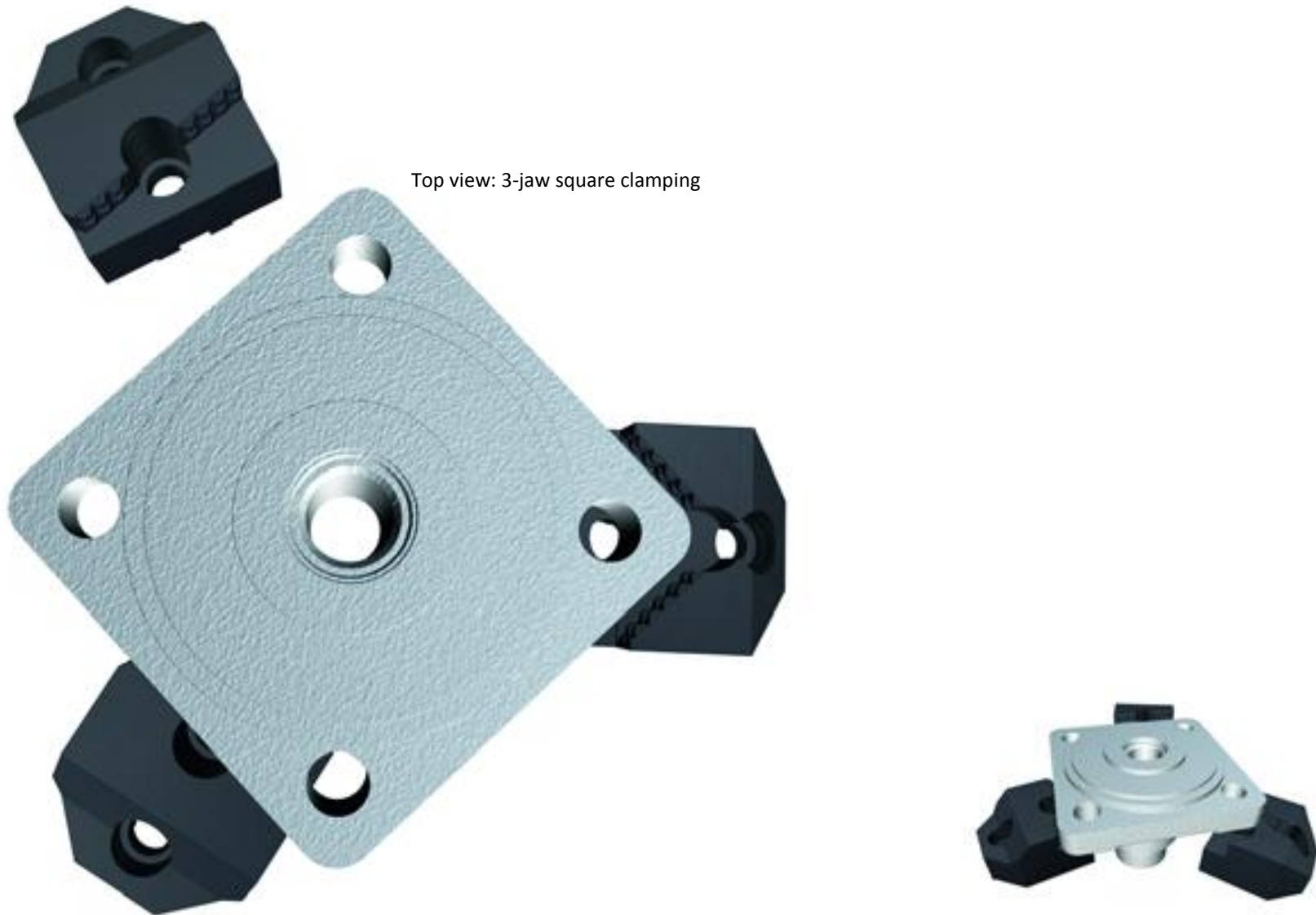
This is equipped with laterally adjustable threaded pins for individual alignment to the cast body.

Deviations from the specified form are compensated by means of the two oscillating chuck jaws, which are used for clamping via the corners of the flange.

The jaws are then positioned in such a way that there is sufficient space between them to introduce the required radial bore.

12. Square clamping

12.1. Square clamping in a 3-jaw power chuck



Requirement:

Clamping a square flange in a 3-jaw power chuck. Turning a central H7 fitting and drilling four bores at the corners of the flange with a driven tool.

Solution:

Claw-serrated customized construction comprising a 90° prism jaw and two chuck jaws each chamfered to 15°.

Example for square clamping in a 3-jaw power chuck:

Contact ID:
Contact AD: **Christian Dietz**
ID-No.: -
Drawing No.: **12908700300**
Recommended Price: **1074DM for 1 set**
Customer: **Fehrenbach (769008)**
Branch: **Shape turning parts**
Chuck: **Mario Pinto GL 165/43**



12.2. Square clamping in a 2-jaw power chuck



Top view: 2-jaw square clamping



Requirement:

Clamping an asymmetrical square in a 2-jaw power chuck for machining the end surface and drilling radial bores with a driven tool.

Solution:

Two prism jaws with recesses and angles adapted to the workpiece for machining the side bore.

The clamping solution has been dynamically balanced for machining at higher speeds.

Tip:

Different component diameters can be bridged in the 2-jaw power chuck, within a certain clamping range.

13.1 Turning fixture with clamping inserts



Design of the clamping solution



Clamping solution with workpiece

Requirement:

Low-deformation clamping of asymmetrical, thin-walled components on a conventional 3-jaw power chuck to machine the end surface and the central bore.

The asymmetrical workpieces have so far been clamped on an axial chuck because of the narrow fit tolerances.

However, as the lathe chuck has to be replaced more frequently for small batch sizes, this method meant that the manufacture of the workpieces was not cost-effective.

Solution:

In this case Low-deformation clamping of the component using conventional chuck jaws is not possible because of the risk of deformation of the component geometry.

Therefore a clamping solution was designed that enables the workpiece to be used on a clamping device in bored-out chuck jaws on a lathe chuck.

On the clamping device, the use of two oscillating clamping inserts enables the component to be clamped axially to the fitting disk by the flange.

The component is positioned radially using a spring-loaded alignment disk.

To ensure the fitting disk is clamped securely with the clamped component on a lathe chuck, its outer diameter has been chamfered.

A pull-down effect against the chuck jaws is generated in this way in conjunction with the similarly chamfered chuck jaws.

The device is positioned in the lathe chuck via a pin in one of the chuck jaws.

This makes the devices quick to change without having to repeat the alignment.

This clamping solution permits the component to be clamped securely without any radial deformation.

13.2 Turning fixture with rotary clamp



Design of the clamping solution



Clamping solution with workpiece

Requirement:

Low-deformation clamping of symmetrical, thin-walled components on a conventional 3-jaw power chuck to machine the end surface and the central bore.

Solution:

Conventional chuck jaws cannot be used to clamp this component either due to the risk of deformation.

A clamping solution was developed that uses rotary clamps to clamp the workpiece to a fitting disk axially by the component flange.

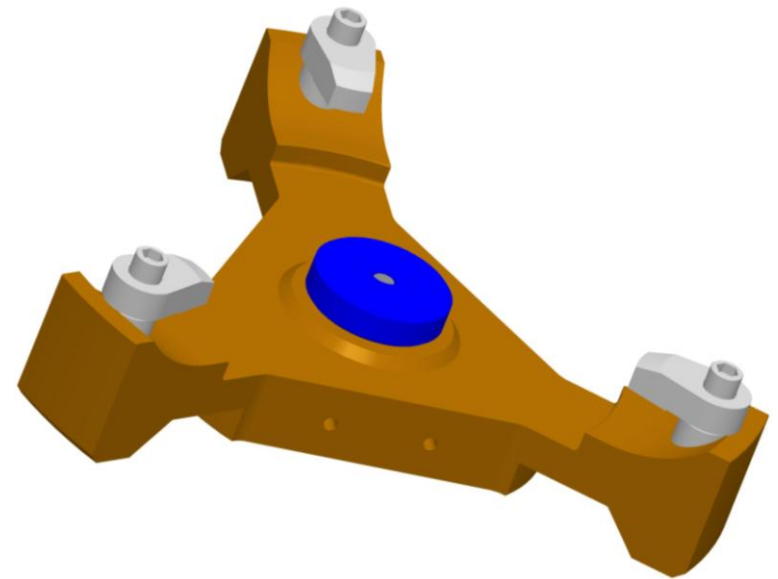
The component is centered on the fitting disk using two prism disks, and the entire device is positioned on the lathe chuck through one of the chuck jaws using a pin.

This enables rapid retooling without having to repeat the alignment.

This clamping solution permits the component to be clamped securely without any radial deformation.

Example turning fixture

Contact ID: Siegfried Maulick
Contact AD: Jürgen Parowka
ID-No.: 10051611
Drawing No.: 14724800117
Recommended Price: 3115 € for 1 piece
Customer: Rüter (228520)
Branch: Cast and machining of aluminium, brass and copper
Chuck:



14. Hook clamping
14. Hook clamping



Test set-up



Requirement:

Clamping a load hook on a SCHUNK ROTA 2B 315 2-jaw power chuck for machining the shank diameter.
Also a thread is to be cut in the following step.

Solution:

Design of a clamping system consisting of a fixed chuck jaw as well as a radially oscillating jaw.

Whereas the fixed chuck jaw is equipped with a pre-alignment bolt for mounting and positioning the hook, the pendulum jaw allows form tolerances of the component to be compensated.

The workpiece is axially aligned by means of a loading device.

The workpiece is then clamped against the fixed jaw using the pendulum jaw.

It is supported by means of a tail stock.

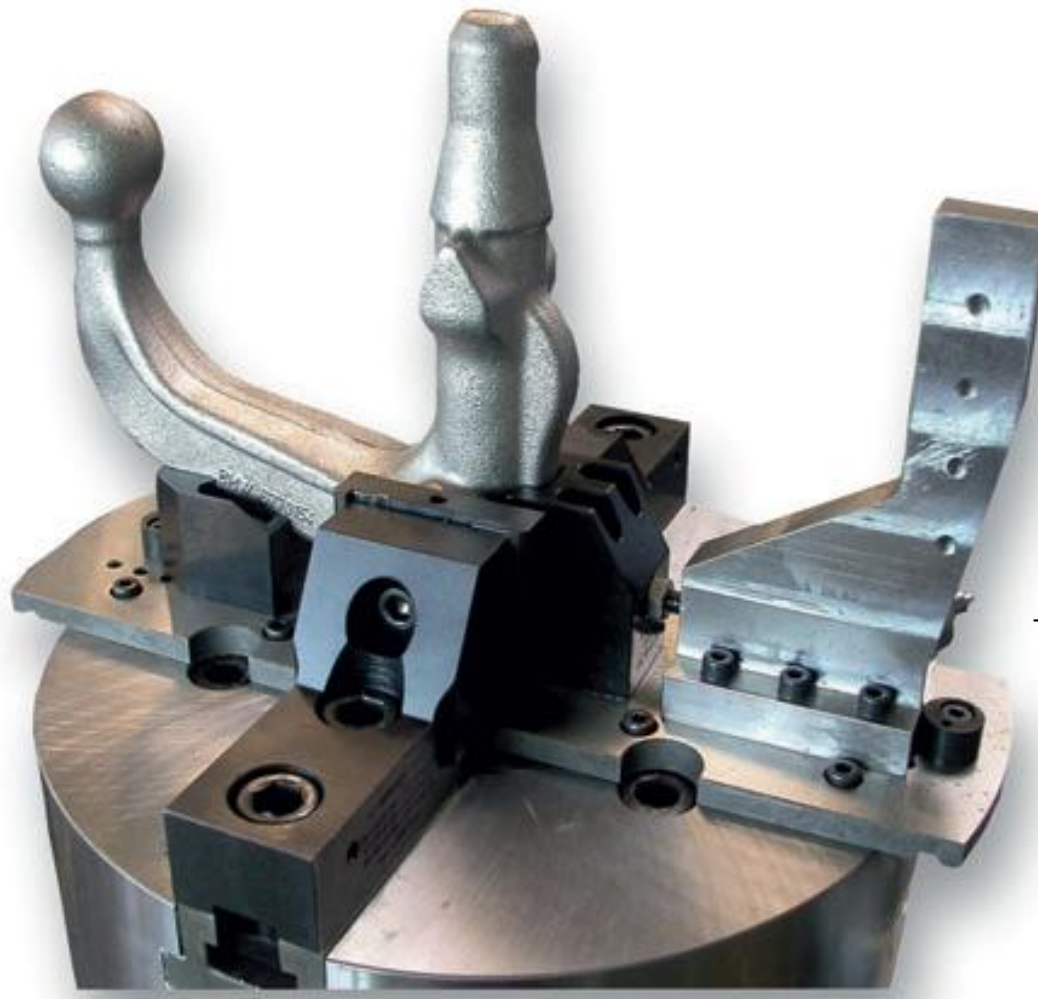


Mounting and positioning the hook using pre-centering bolt (shown tilted)



Oscillating clamping of the hook. Hook supported via tail stock.

15. Trailer hitch
15. Trailer hitch



Test set-up of the clamping solution

Requirement

Clamping a trailer hitch blank in a SCHUNK 2-jaw power chuck for machining the shank.

Solution

The workpiece is positioned by an alignment strip attached to the lathe chuck, with the strip acting on the shank and the brackets.

The centric clamping is performed using UGE 30 inserts and chuck jaws that provide a pull-down effect.

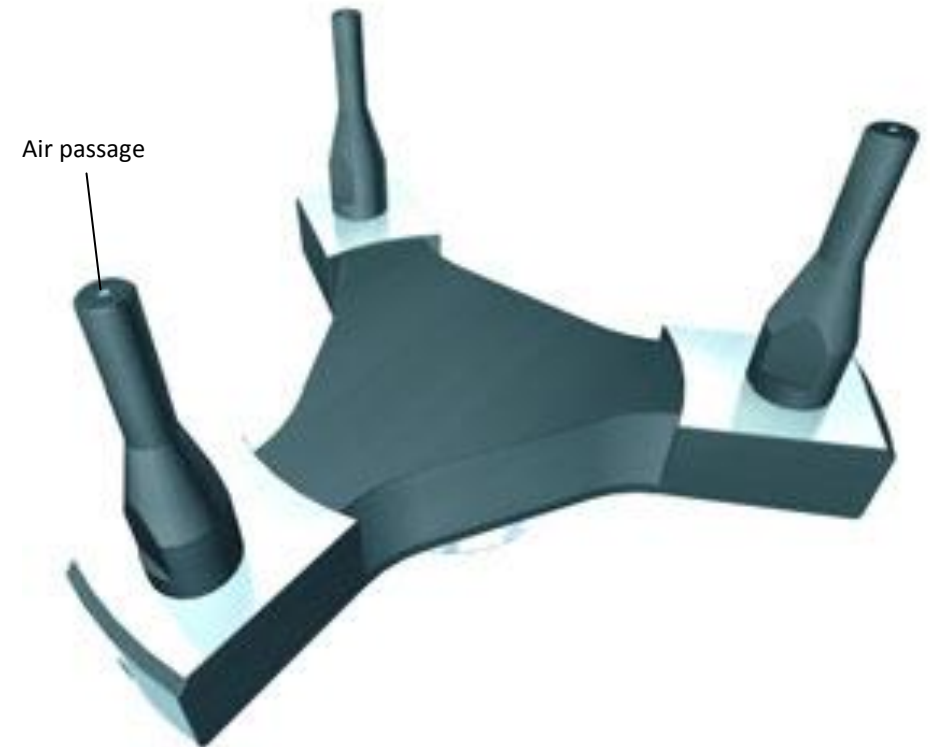
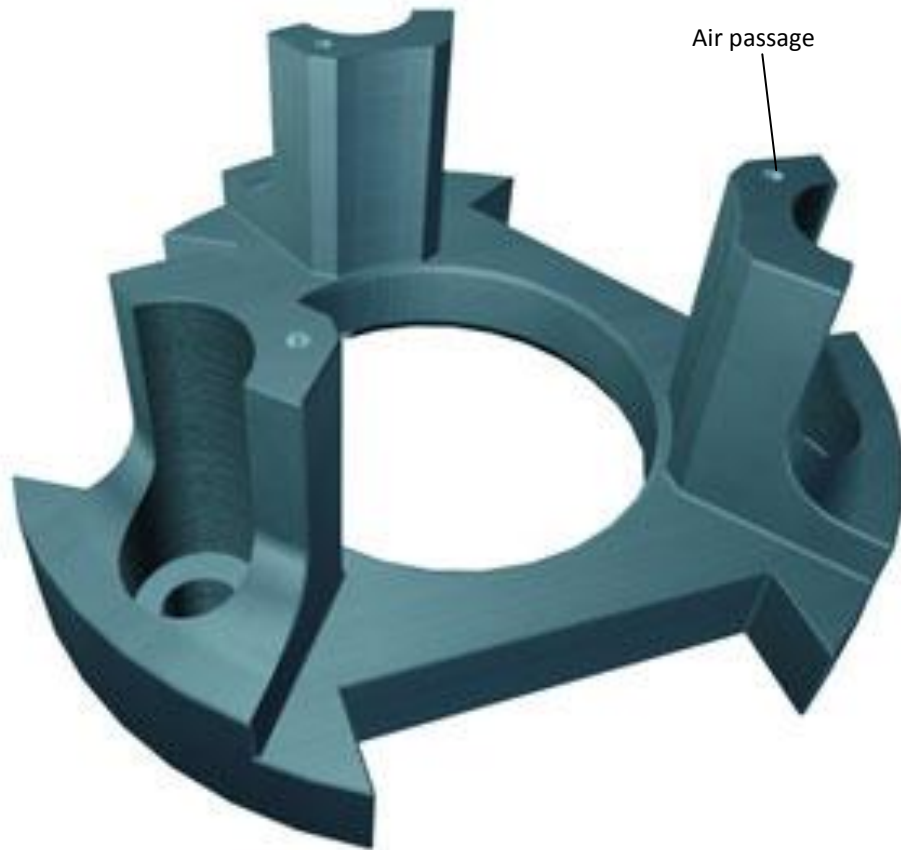
This ensures secure clamping of the workpiece on the alignment strip.

The clamping inserts can be replaced quickly and economically if worn.

The imbalance resulting from the rotation of the workpiece is compensated using a counter element.

This clamping solution has been dynamically balanced as per VDI guidelines for a speed of 1200 rpm.

16. Workpiece star
16. Workpiece star



Requirement:

Support monitoring of a workpiece using compressed air.

This monitoring prevents the machining device from approaching if the workpiece is not fully supported.

Solution:

Workpiece star manufactured specifically for the predefined chuck, whereby the star is provided with three pins as the component support, each of which is provided with an air feed-through of $\varnothing$ 1 mm.

The workpiece support is checked by means of pressure fluctuations.

If not supported correctly, the lathe is prevented from approaching.

Recesses in the workpiece star prevent the latter from colliding with the chuck jaws.

Tip:

Using exchangeable workpiece bolts, fitted with an O-ring, the workpiece star can be used for different workpieces.

Example workpiece star:

Contact ID:	Marco Herbst
Contact AD:	Heinz-Jürgen Frick
ID-No.:	10030802
Drawing No.:	F7 7049 05299 56
Recommended Price:	864,50€ for 1 set
Customer:	Daimler Chrysler AG
Branch:	Automotive supplier
Futter:	Röhm KFD-HS 315

