HOLD TIGHT AND RELEASE.
REACTION-FREE AND SECURE.
Clamp what is round

This is how it sometimes is with great ideas: Their triumphant success begins in a garage. In this case, it was located in Stuttgart-Botnang in the Swabian region of Germany and was used by the engineer Peter A. Kostyrka to make his vision a reality. It involved developing an adherence-actuated shaft-hub joint that effectively supports the operation cycle of modern machines.

The road to success

As early as 1969, Peter A. Kostyrka developed clamping elements with the goal of being able to transmit great forces, open and close with lightning speed, as well as being as compact as possible. Hydraulic oil presented itself as the ideal pressure medium. The load transmission element was to be a flexible metallic cylinder. Unfortunately, a solid metal design turned out to be too inflexible and a plastic jacket alone was not resistant enough. Only the combination of a suitable synthetic material with a longitudinally slitted metal cylinder resulted in the desired success - the KOSTYRKA® clamping sleeve.

The prototype clamping sleeve from 1969. Engineer Peter A. Kostyrka’s hand-sketched drawing.
To succeed and ensure success

Today, the original KOSTYRKA® clamping sleeve has a market share of 75% in mechanical engineering. They are used for both standard requirements and individual solutions. These individual solutions are developed by the KOSTYRKA engineers together with the customers and implemented right up to commissioning. Partnership, trust and goal-oriented creativity are the values that have defined the company and ensured its success from the outset.

The development continues

The KOSTYRKA principle is employed today in a broad range of solutions. KOSTYRKA brand cylindrical clamping sleeves, flange type clamping sleeves, expanding sleeves, clamping rings, clamping strips and clamping discs ensure worldwide that moving parts are held in place and released again securely and reaction-free.

KOSTYRKA achieved another milestone in development with the KOSTYRKA® Universal Holding Fixture (UHF). The Universal Holding Fixture adjusts itself very flexibly to diverse components and enables huge savings during design and production, as well as reducing storage, set-up and logistics costs. Further information is provided on the following pages.
The principle: Brilliantly simple, simply brilliant

The main items of every KOSTYRKA® clamping sleeve are flexible bushes made from a metal-plastic composite. They are axially held in housings and surround the part and clamp it by applying pressure oil to the sleeve jacket. Especially interesting: The oil pressure is converted loss- and reaction-free into a radially acting clamping force. The sleeves spring back elastically to their starting position after the oil pressure is removed, and the previously clamped part is released again. The surfaces of the clamped parts are not damaged with this adherence-actuated form of power transmission.
The development of modern machine tools was decisively influenced by the use of the KOSTYRKA® clamping sleeve. It enables extremely high holding forces, is designed for overall program-controlling, opens and closes at lightning speed and supports the designer with its unique compact concept. No wonder KOSTYRKA has delivered hundreds of thousands of clamping sleeves to machine and fixture manufacturers worldwide until today.

**Precise and non-wearing**

Precision and longevity of the KOSTYRKA® clamping sleeves are a prerequisite for smooth manufacturing. It’s just not that easy to disassemble and reassemble a 2500 tons press overnight for repairs. The high customer expectations for product quality ensure the use of modern manufacturing and control procedures. Then they can depend on reliable operation day after day and year after year.

**Diameter from 6 to over 1500 mm, pressure up to 600 bar**

KOSTYRKA® clamping sleeves are available with an inner diameter ranging from 6 to over 1500 mm and lengths up to 900 mm and more for operating pressures up to 600 bar. In addition, KOSTYRKA likes to move together with the customers in further dimensions.

A clamping fixture for engine production from the company Röhm. The four KOSTYRKA® clamping sleeves work independently of one another, enabling different engine sizes to be flexibly adapted.

Many KOSTYRKA® clamping sleeves of different sizes are in use for each of the Heller machining centres – very little installation space is available.

Numerous KOSTYRKA® clamps provide for the smooth implementation of short cycle times with little installation space in INDEX machine tools.

KOSTYRKA® clamping sleeves are specially made – they can therefore be adapted for any installation space.
Linear or rotary:
Everything is clamped

KOSTYRKA® clamping sleeves are available in a wide variety of versions. Cylindrical clamping sleeves can absorb forces in the longitudinal direction. Torques that occur on spindles and shafts, for example, require clamping sleeves with an integrated flange ring. KOSTYRKA® expanding sleeves and table clamps are used for clamping turntables and dividing heads.

KOSTYRKA® flange type clamping sleeves

Flange type clamping sleeves absorb axial and tangential forces. Otherwise, the method of operation, materials used, operating conditions and tolerances correspond to classic cylindrical clamping sleeves. This means they clamp the parts without axial movement and they develop extremely high forces in a very small space. KOSTYRKA® flange type clamping sleeves are always made to meet particular customer requirements. KOSTYRKA currently makes over 3,000 versions.

THE KOSTYRKA PRINCIPLE.
CLAMPING ELEMENTS FOR CIRCULAR GUIDES.
KOSTYRKA® expanding sleeves and table clamps

Expanding sleeves are based on the inverse of the clamping sleeves’ operating principle. The expanding sleeves’ slitted jacket is expanded by oil pressure. As a result, the surrounding table is, for example, securely and tightly clamped from the inside. KOSTYRKA® expanding sleeves and table clamps are individually designed and manufactured according to the required load capacity and the application conditions of the customer.

KOSTYRKA® flange type clamping sleeves meet the strictest criteria for torsional stiffness and reaction-free clamping in Hofmann indexing tables.

KOSTYRKA® clamping sleeves with a diameter up to 1,500 mm are used in Bültmann peeling machines. They provide for the reduction of vibrations during the machining operation.

KOSTYRKA® expansive sleeves and table clamps

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THE KOSTYRKA PRINCIPLE.

CLAMPING ELEMENTS FOR SLIDEWAYS.

KOSTYRKA® clamping strips and cassettes for holding and releasing, e.g. slides.

KOSTYRKA® clamping discs for holding and releasing, e.g. tailstocks.

KOSTYRKA® clamping rings for holding and releasing, e.g. rotary tables.

Instantaneously acting and powerful holding

KOSTYRKA® clamping elements for clamping flat guides in mechanical engineering, such as bridges, pallets, slides, stands, supports, tailstocks, capstans and much more. They offer convincing arguments with very high clamping forces, lightning-quick reaction times, an unusually compact design and virtually no maintenance requirement. In short: KOSTYRKA® clamping strips, discs and cassettes are ideal for use in modern, particularly high-performance machine tools.
**KOSTYRKA® clamping strips and cassettes**

Clamping strips are forced out of their housing like a piston when pressure is applied. They contact the component to be clamped and then clamp it securely, as dictated by the amount of oil pressure. In the process, the O-ring is strongly press-fitted as the sealing part. The O-ring takes its original form again after the oil pressure is removed, and the clamping strip disengages from the clamping surface. The main advantages of this principle: Clamping strips respond immediately, clamp with more force and accommodate the designer with their exceptionally small space requirement.

Clamping strips are parts integrated into the clamping cassettes. They also offer solutions for space limitations that make the direct installation of tightening and clamping elements difficult.

**KOSTYRKA® clamping discs**

The functionality of clamping discs corresponds primarily to that of the clamping strips. However, the clamping discs “spring” back approx. 0.01 mm after the removal of oil pressure. The seal in the location hole is not moved in the process. The convincing result: Practically no wear and tear and a nearly unlimited life time.

**KOSTYRKA® clamping rings**

Clamping rings are made of bronze with particularly good elastic properties. Their special form enables their expansion by oil pressure. When the pressure is released, the clamping ring returns to its original position. Clamping rings are highly efficient and extremely compact constructional clamping elements.
**KOSTYRKA® HYDRAULIC PRESSURE GENERATOR.**
**FOR PRECISE PRESSURE SUPPLY.**

### High pressure for clamping and supporting

In many cases, machine tools feature a hydraulic pressure that is not sufficient for clamping devices for circular and flat guides, or for clamping and support elements used in hydraulically actuated devices. In some cases no hydraulic supply is available at all, but instead only compressed air.

### Whether it’s air-oil or oil-oil: There’s a solution for everything

The solution to all pressure problems is the KOSTYRKA® hydraulic pressure generator. With a wide range of air-oil and oil-oil hydraulic pressure intensifiers and the different transmission ratios, it ensures that high-pressure oil is available wherever it’s needed. And all this at low costs and without additional maintenance expenses. The KOSTYRKA® hydraulic pressure generator’s compact design also enables installation where space is limited.
KOSTYRKA® SUPPORT ELEMENTS.
SAFELY MACHINE UNSTABLE COMPONENTS.

As flexible as the job demands

KOSTYRKA® support elements have been used reliably since 1969. They stabilise components during machining and contribute to minimising vibrations. The greater running smoothness means an increase in product quality.

KOSTYRKA® support elements are available as hydraulic support units in a wide range of versions. Hydraulic support units in compact cartridge form enable direct installation in a fixture frame. Standard hydraulic support units have supporting bolts with diameters from 10 to 40 mm, can withstand axial forces up to 28 kN and work with pressures from 50 to 450 bar.

Their operation is absolutely reliable

The main item of every KOSTYRKA® support element is the KOSTYRKA® clamping sleeve. It guarantees that the clamped supporting bolt is not axially displaced or twisted during the clamping operation. And regardless of whether the engagement of the supporting bolt to the component is pneumatic, hydraulic or via spring force: The special design of the KOSTYRKA® hydraulic support units always allows secure positive locking and adherence-actuated connection from the clamped supporting bolt into the mounting plate.

KOSTYRKA® support element in cartridge form

Universal version of KOSTYRKA® support element

KOSTYRKA® clamping sleeves in GABO QUALIMETER test control units are operated with KOSTYRKA® air-oil hydraulic pressure intensifiers, custom-built for this application.
KOSTYRKA® UNIVERSAL HOLDING FIXTURE.
THE HIGHLY FLEXIBLE WAY TO REDUCE COSTS.

KOSTYRKA® Universal Holding Fixture.
The principle

The individual elements of the fixture are composed of an axially adjustable piston rod in a housing. The rod can be clamped in any position via a KOSTYRKA® clamping sleeve. Depending on the drive concept for moving the piston rod, a distinction is made for the UHF (Universal Holding Fixture) elements between active (with drive) and passive elements. Diameter from 50 mm and stroke length up to 800 mm and over. The layout of the dimensions takes place through close teamwork with the customer in order to meet his desired criteria.

Component-dependent or universal:
Not a question for calculators

When manufacturing free form parts, workpiece-dependent fixtures are often in used today. This means the complete fixture must be changed each time the workpiece is changed. This is in turn involves new design and production of the fixture, as well as storage, set-up and logistics costs. These are costs that can be saved in most cases. With a KOSTYRKA® UHF: The part is changed – the fixture remains.

*During a component change the fixture is adapted flexibly to the geometry of the new component.*
**Repeatable precision within a few µm**

During a component change, the KOSTYRKA® Universal Holding Fixture is adjusted to the new part by repositioning its support and clamping elements. Depending on the size and structure of the component, hundreds of individual customisable component supports can be used for positioning and clamping. The absolute precision of the Universal Holding Fixture is especially impressive. It allows the positioning of the individual UHF elements with a precision to within 0.005 mm and repeating accuracy to within 0.002 mm.

**Top quality for quality**

This precision pays off. For the accuracy and quality of workpieces machined on a Universal Holding Fixture also reach a previously unknown level, as proved convincingly by example applications. This is also valid for thin-walled or unstable workpieces and for components that were previously difficult to clamp with conventional methods. KOSTYRKA® Universal Holding Fixtures are therefore especially well suited for the aircraft and aerospace industry, automobile construction when machining body parts and in many areas of metrology.

The KOSTYRKA® Universal Holding Fixture at Boeing for clamping wing elements impresses with highest repeatability at a length of 60 m and strokes of up to 800 mm. It can be flexibly adapted to other part geometries.

A KOSTYRKA® Universal Holding Fixture is used in the machining of unstable free-form parts in a Zimmermann machining centre.

UHF elements feature a modular design. Therefore, they can easily be adapted to customer-specific conditions. Housing diameter from 50 mm and strokes up to more than 800 mm.
THE KOSTYRKA QUALITY.

HOLD TIGHT AND RELEASE – DAY AFTER DAY, YEAR AFTER YEAR.

Unmistakably secure, securely unmistakable

There is a very simple formula for KOSTYRKA quality: Install it and forget it. All KOSTYRKA products are designed to exceed the life cycle of the machines in which they ensure smooth operation.

Consistent individual part inspection

The strict customer criteria for KOSTYRKA products are satisfied by the use of the most modern manufacturing and control procedures. As a result, KOSTYRKA can manufacture for tolerances up to 3 decimal places. And every part that leaves the machines is put to the acid test via an individual part inspection.
**Tested and distinguished**

Quality is traceable at KOSTYRKA. All important geometrical characteristics of the clamping elements are checked via a 3-D measuring machine and recorded in a test certificate. An additional microscopic test inspects the parts for burrs and chips. And a cast iron leak test makes sure that a part can also withstand pressures up to 600 bar securely and lasting. The end of the KOSTYRKA quality test is the labelling of every product. It’s the visible proof that the part has passed all tests to reliably fulfil its respective tasks for years to come. Just like hundreds of thousands of KOSTYRKA parts before it.

We’ll also be happy to arrange customer audits for customers who would like to verify KOSTYRKA quality management themselves.

**Better solutions through direct communication**

The interface to the customer at KOSTYRKA is the design area. This is where engineer meets engineer. And this is where a solution that fits is reached together with the customer. Regardless of whether they come from the standard product range or, as often, they must be developed from scratch.
Extract from the customer list

- ABB Robotics GmbH
- Boeing Company, USA
- Carl Zeiss AG
- DaimlerChrysler AG
- Deckel Maho Pfronten GmbH
- Dörries Scharmann Technologie GmbH
- Dr. Ing. h.c. F. Porsche AG
- F. Zimmermann GmbH
- Fibro GmbH
- Gebr. HELLER Maschinenfabrik GmbH
- General Electric Canada Inc., Kanada
- GKN Aerospace GmbH
- Hilti Aktiengesellschaft, Liechtenstein
- Hofmann Mess- u. Teiltechnik GmbH & Co. KG
- Hyundai Motor Company, Süd Korea
- INA Tooling Technique Pvt. Ltd., Indien
- INDEX-Werke GmbH & Co. KG Hahn & Tessky
- Israel Aerospace Industries Ltd., Israel
- Japan Machinery Company Ltd., Japan
- Lindauer DORNIER GmbH
- MAN Nutzfahrzeuge AG
- Maschinenfabrik Berthold Hermle AG
- Robert Bosch GmbH
- Romheld Australia Pty. Ltd., Australien
- Schott AG
- Siemens AG
- StarragHeckert GmbH
- Steinway & Sons Pianoforte-Fabrikanten
- Swarowski AG, Österreich
- ThyssenKrupp AG, Brasilien
- Traub Drehmaschinen GmbH & Co. KG
- TRUMPF GmbH + Co. KG
- WALDRICH SIEGEN Werkzeugmaschinen GmbH
- ZF Friedrichshafen AG