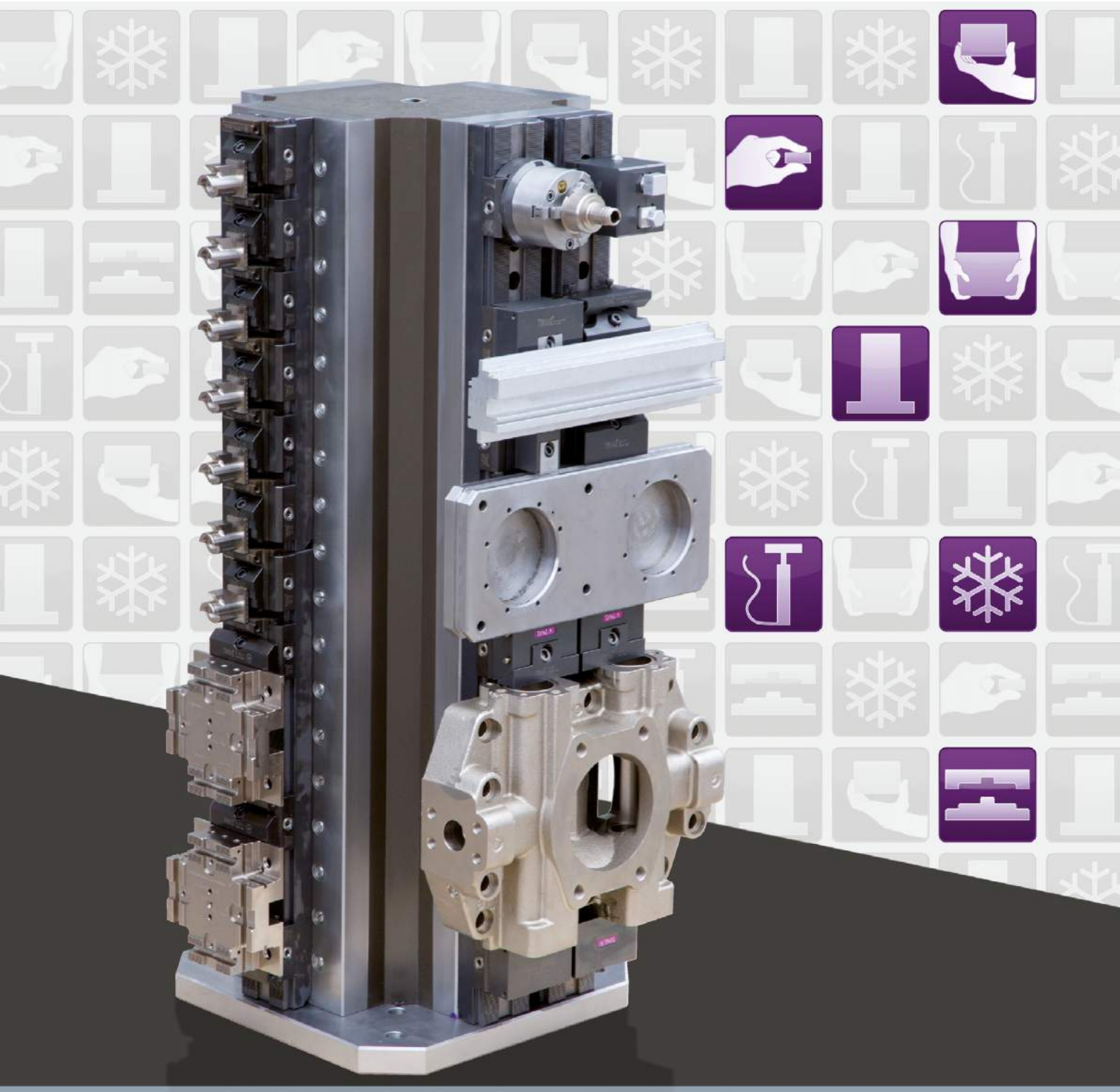
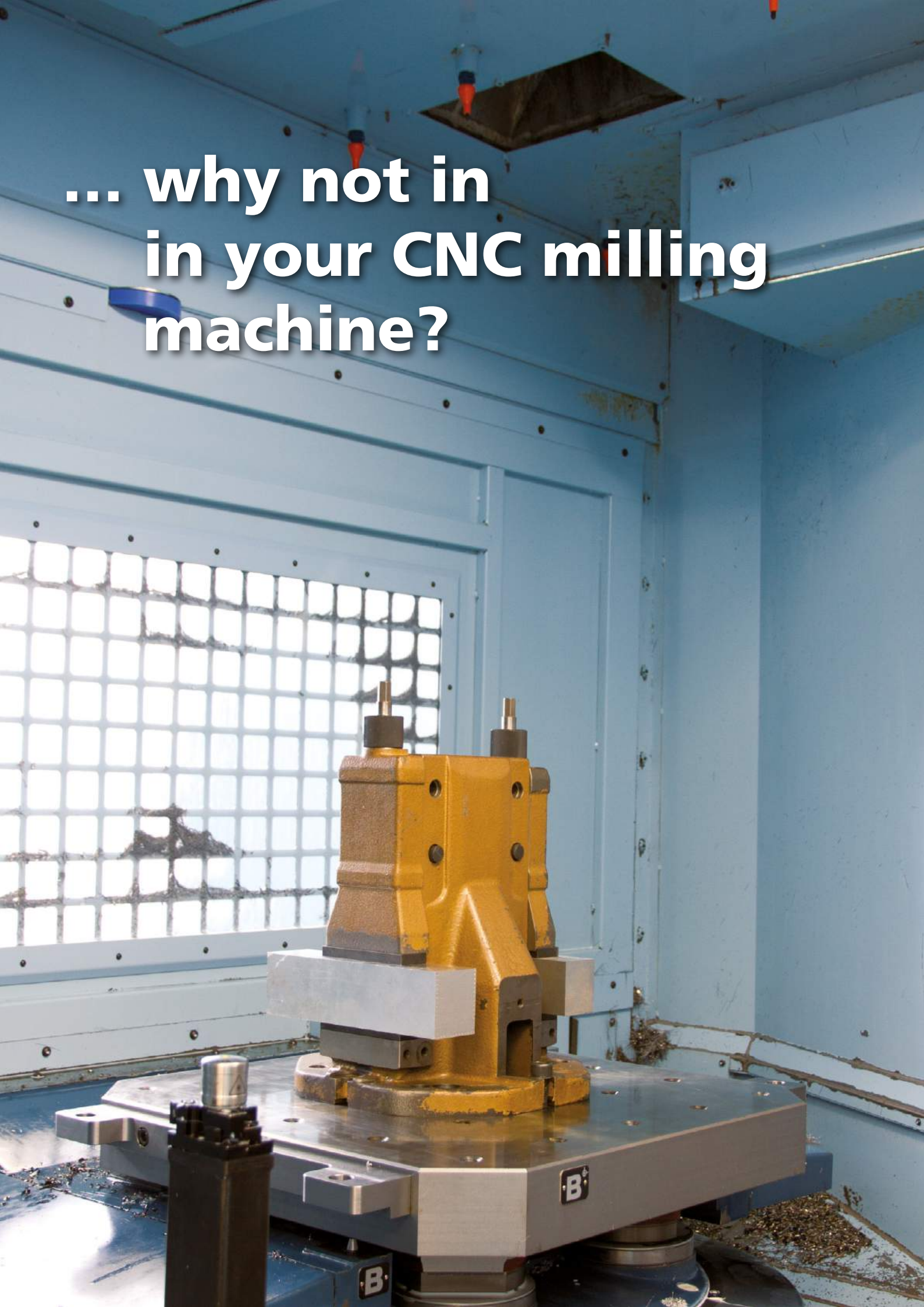
MADE SWISS

INTERNATIONAL TRIAG



# Workholding solutions

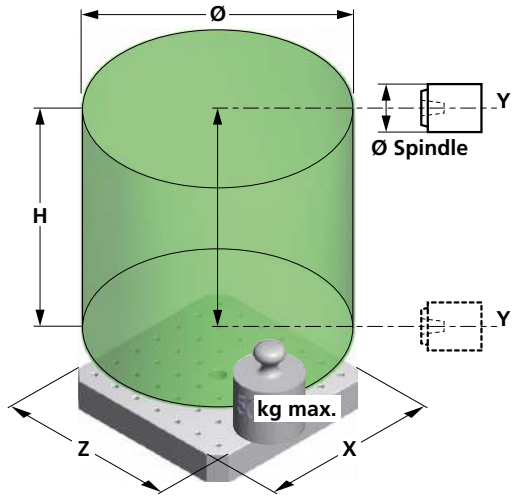

Don´t you rent out all flats in your building?
So...



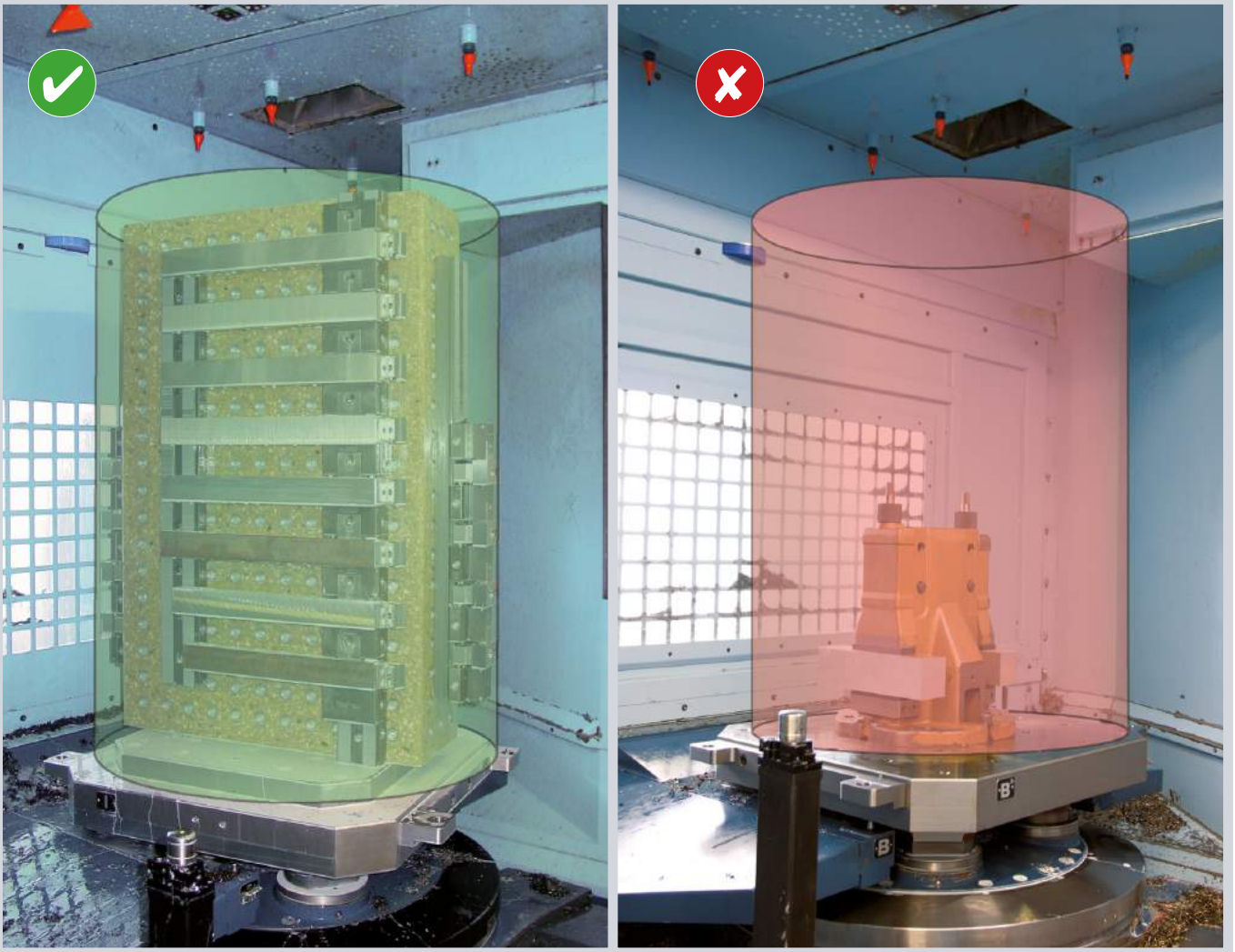
# … why not in in your CNC milling machine?

# 80% of all machines are not fully used.

Max working area




***The solution: modular workholding!***

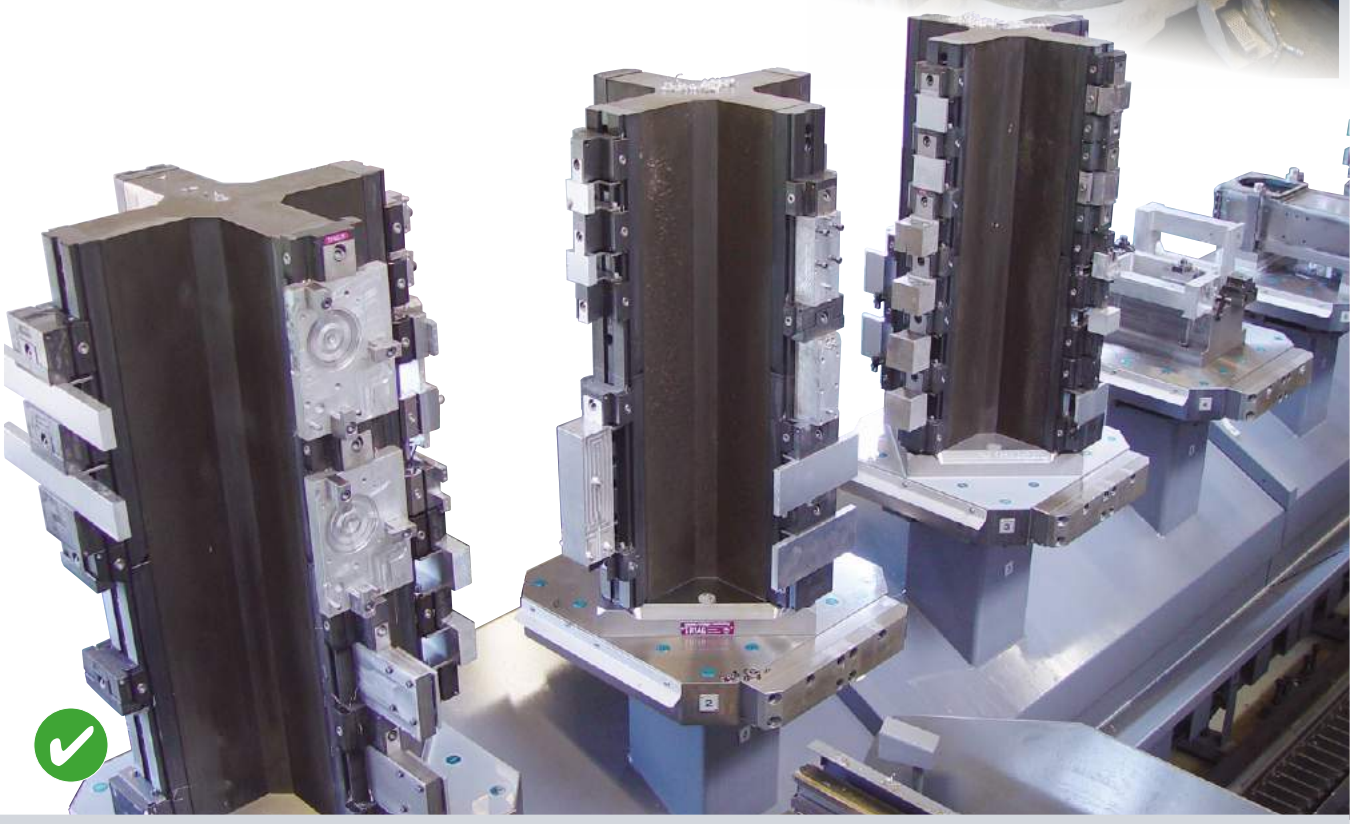


With modular clamping devices you change fast and adapt to work piece and machine!
You can clamp many parts not only one or two.

# «Modular» means:
## adapting to workpiece and machine situation

### *Advantage from modular workholding:*

- fast workpiece change
- flexibility because of different components bases mechanical hydraulic
- simple to set up
- cost effective
- easy to replace spare parts
- long unmanned production
- less tool changes
- the machines are used in the whole working area
- competitive price to standart vises
- simple to be purchased and used on different machines as always used
- high density you clamp more parts

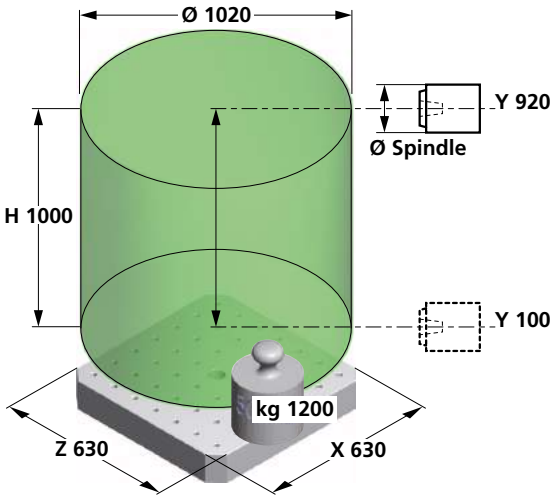


Mixed set up on a Mazak horizontal machine with 18 pallets.
This is used for unmanned production of small quantities of different materials.

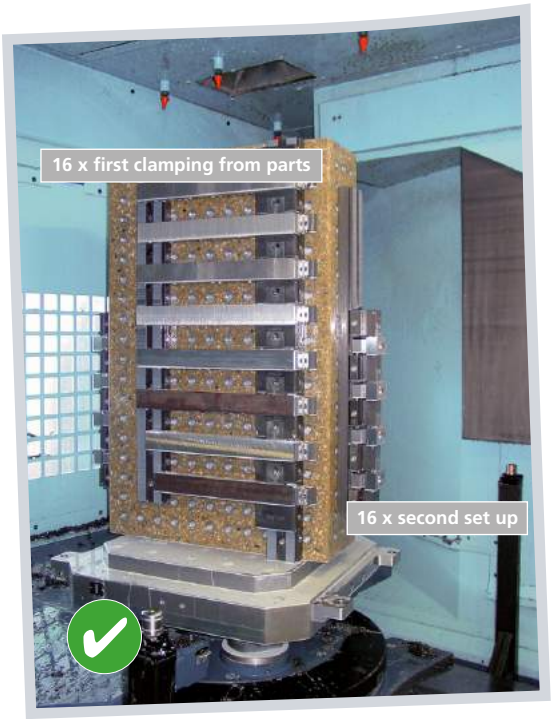
# One system for all

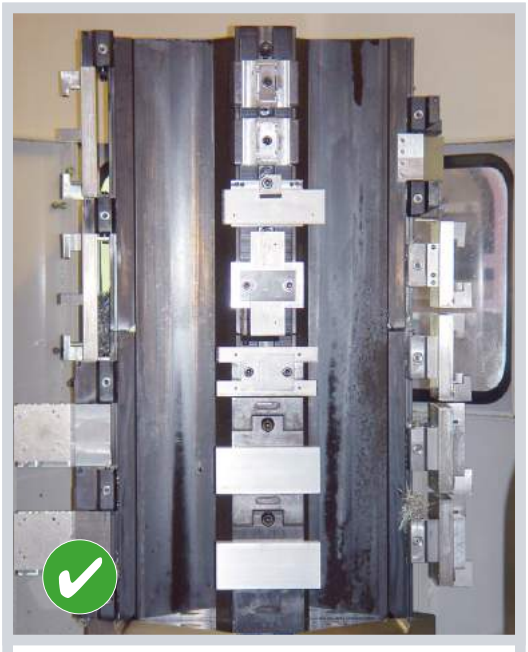
## ➥ *Horizontal*

**Max working area**




Perfect used, much bigger parts won´t fit!



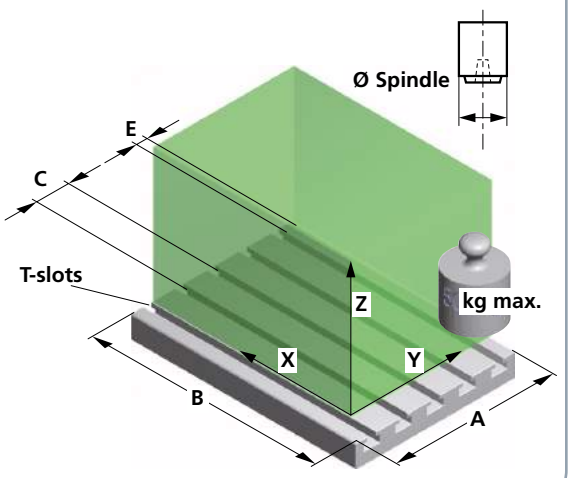
Full used working area mixed set up

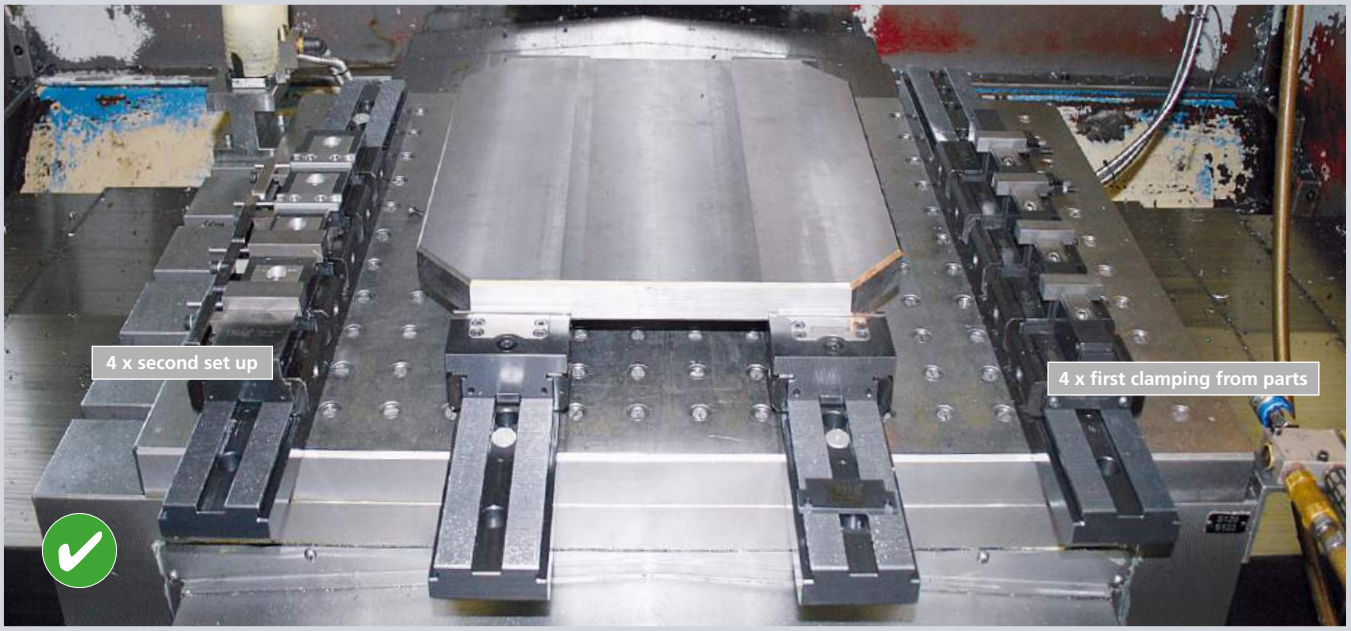

Hydraulic parts produced on epoxy tombe stone with modular workholding system Power Clamp

# One system for all

## ➥ *vertical*

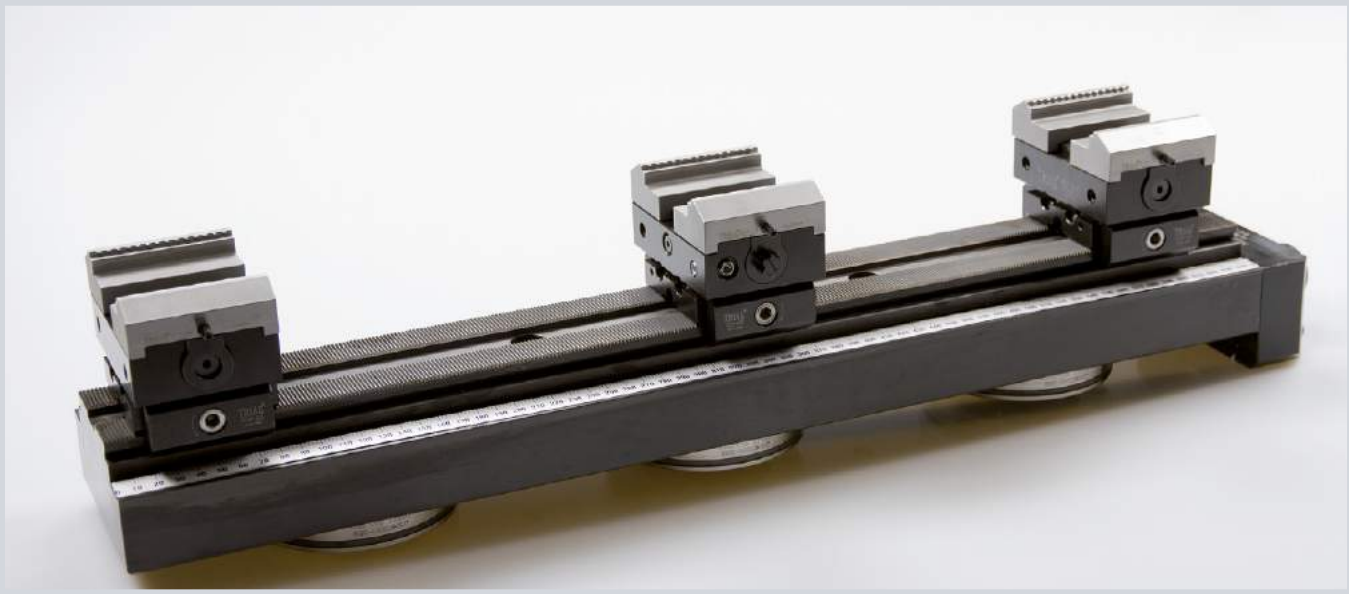
**Max working area**



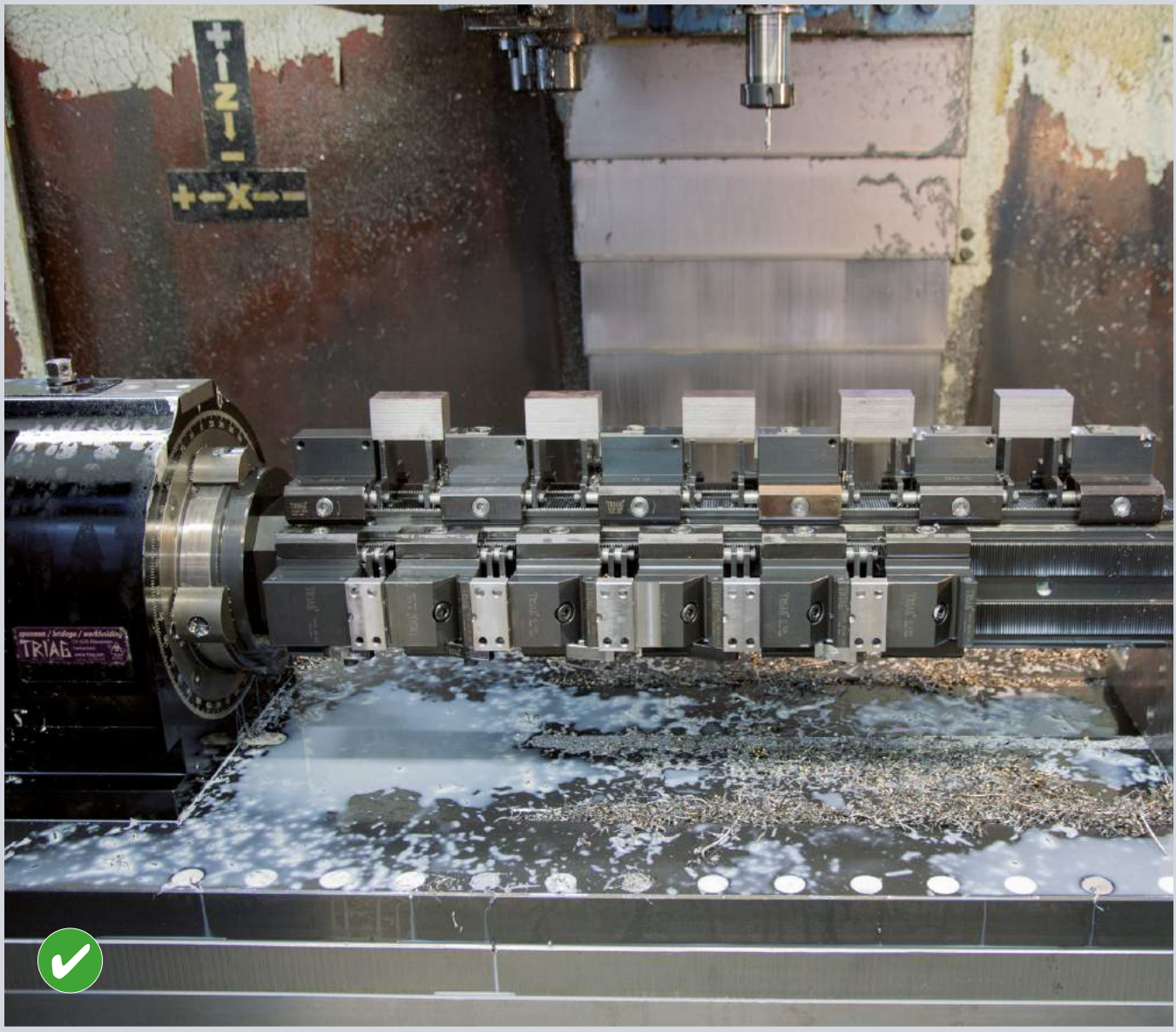




Express work in the middle of the table where on the left and right side a set up a medium series is running

Not bad used but probably he would make even more parts maybe there were no more clamp modules available?
This is the older Compacht Clamp in operation.



Base rails with integrated zero point system 3R self centering vise, which can be moved sidewards in 2 mm steps to adapt to the workpiece length, are equipped with stamping jaws.

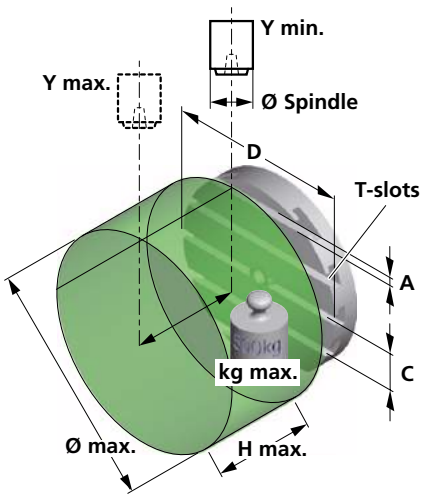


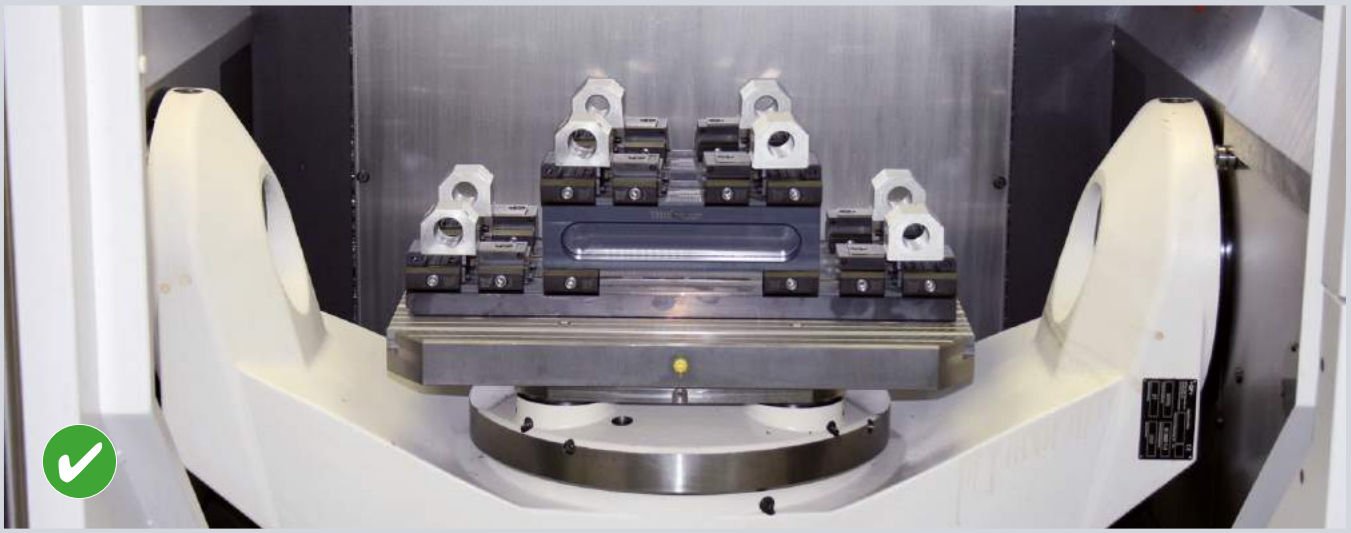

Power Clamp monobloc cube on a vertical machining for 5 finished parts.

# One system for all

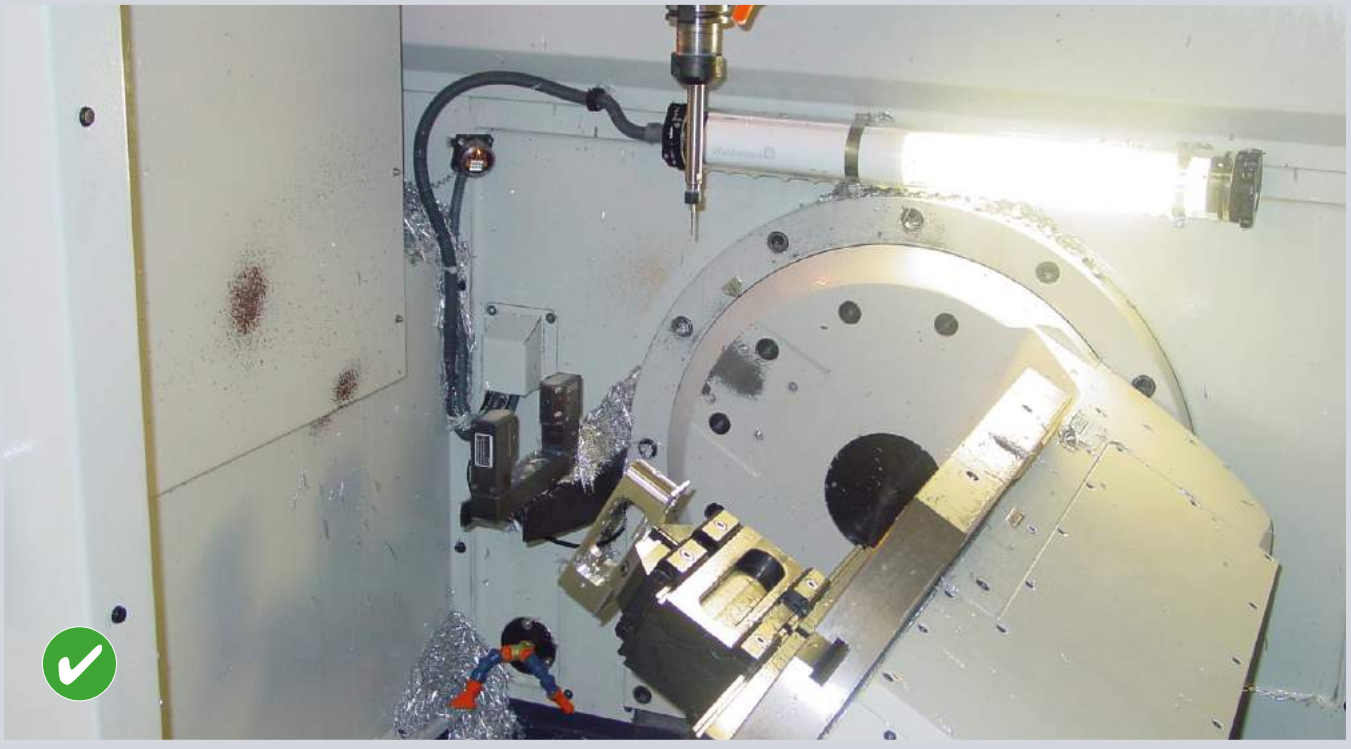
## ➥ *5 axes*

**Max working area**



8 parts all machined on 3 faces.

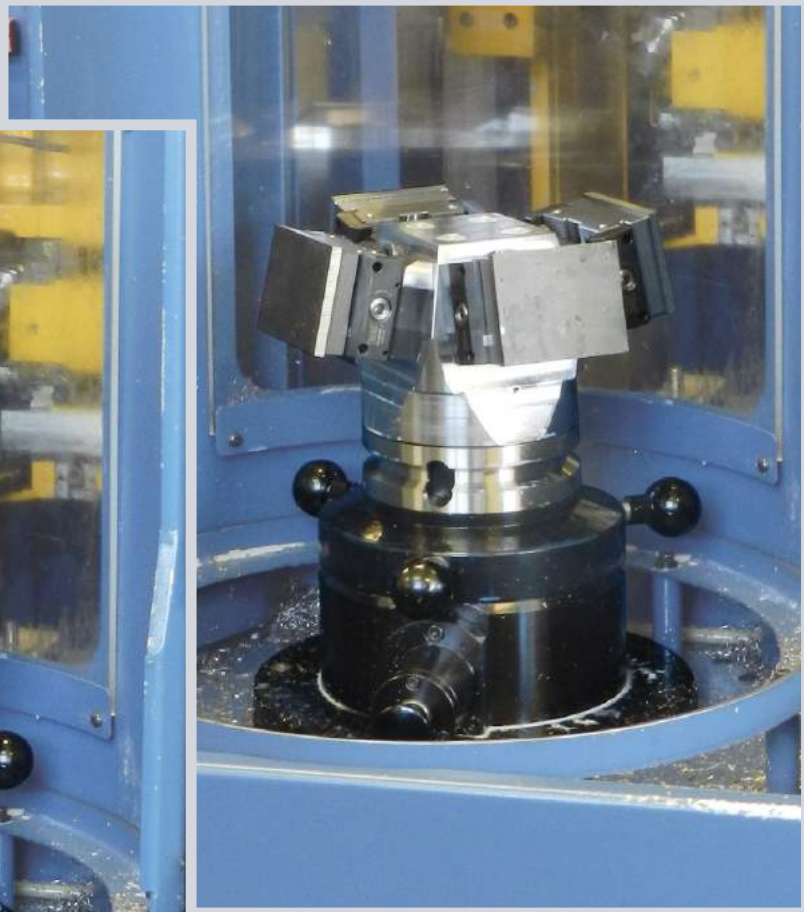


5 face machining with good access to the workpiece.


Also larger parts can be clamped.

Collet chuck ER32 in operation.

Multiple workholding in high density on 5-axis machine with micro clamp modules.

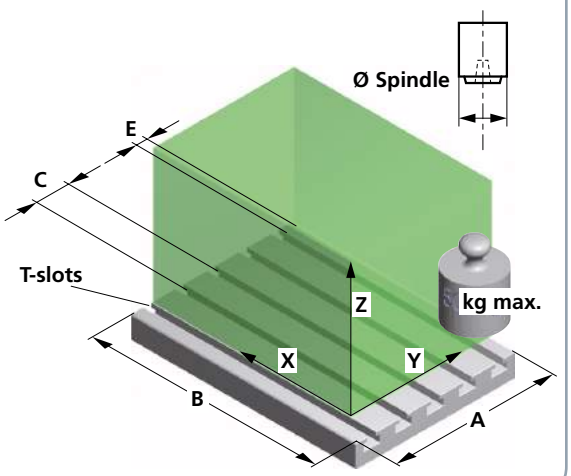


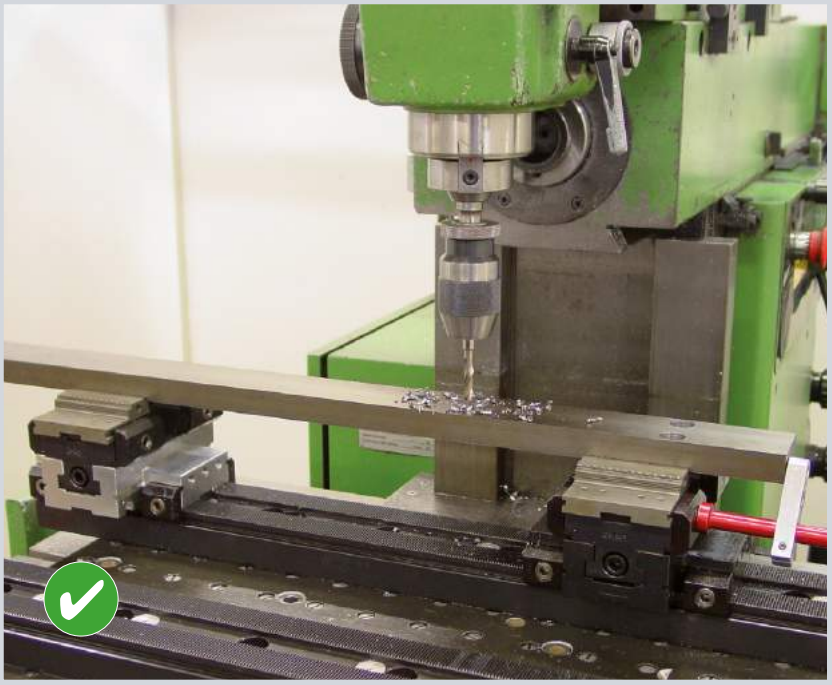
Angle tower for 5 axis multiple workholding.

# One system for all

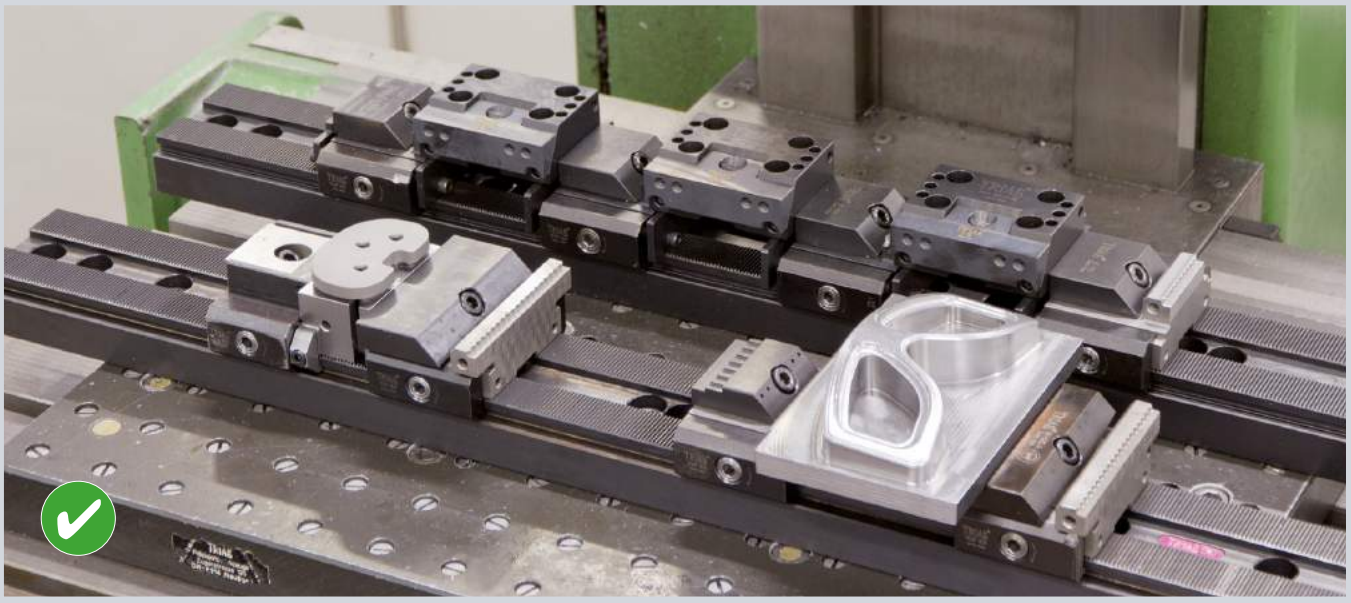
## ➥ *Conventional*

**Max working area**



Surface milling making two faces parallel… … after drilling a steel bar the self centric vises can moved sidewards in 2 mm steps.



Express orders (front) can be made without moving the running order on the back.

# Vise? Dedicated fixture? Or modular vise?

The classic machine vise is for some application still a good option, on the other hand can you set up the same with a modular clamp system at not higher costs! Because of always increasing demand and high competition you see more modular systems at endusers places, to keep up with productivity.

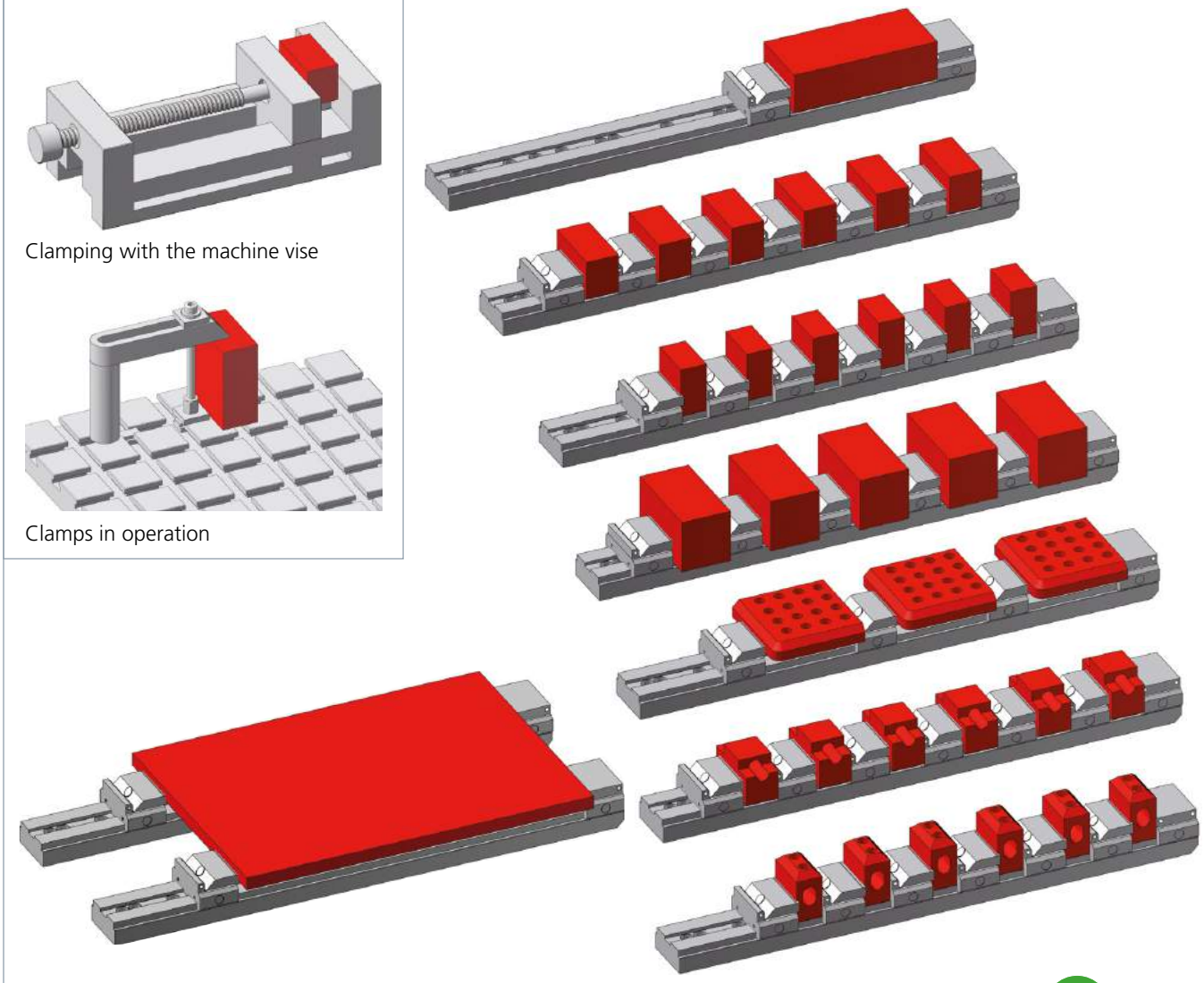


Clamping with the machine vise



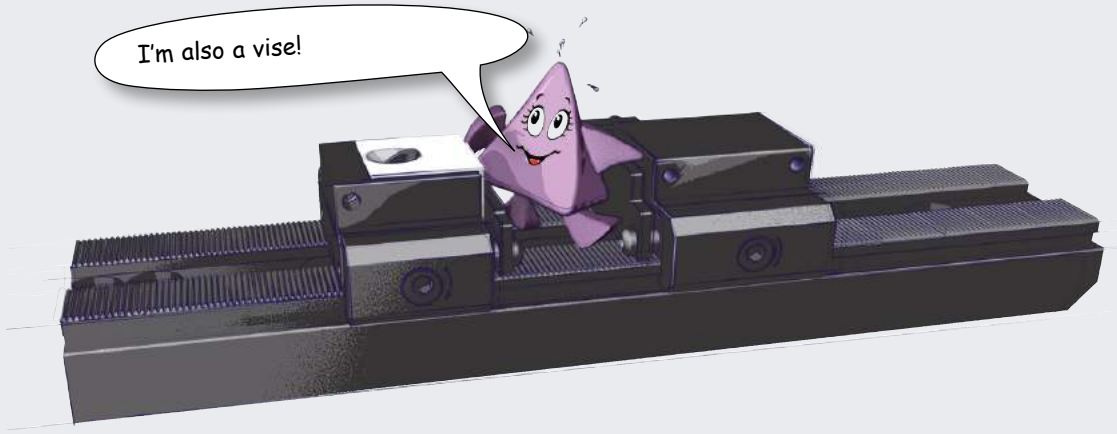
Clamps in operation

With modular clamp system you achieve a high flexebility and also high density of holding workpieces. This brings you big advantages also by producing single parts or small quantities! Compared to dedicated fixtures you can use this vises for many different applications.



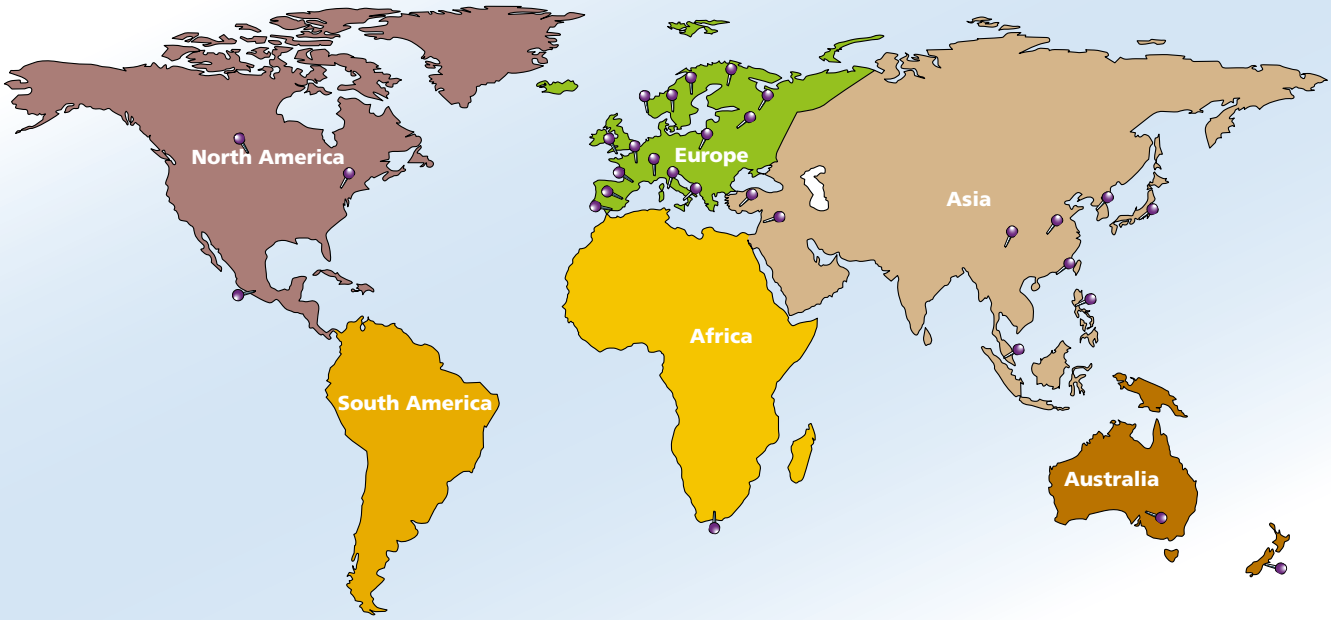
**Modular multiple workholding: Always a new life**

**And:**

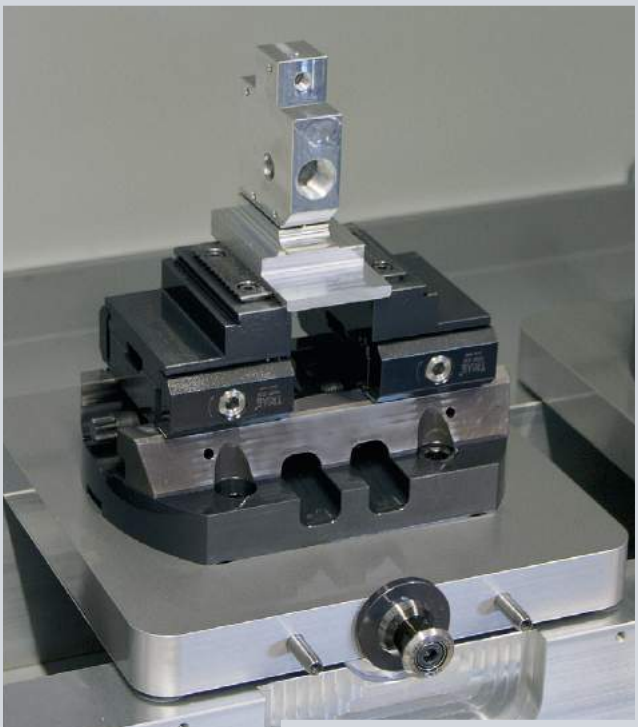


INTERNATIONAL TRIAG

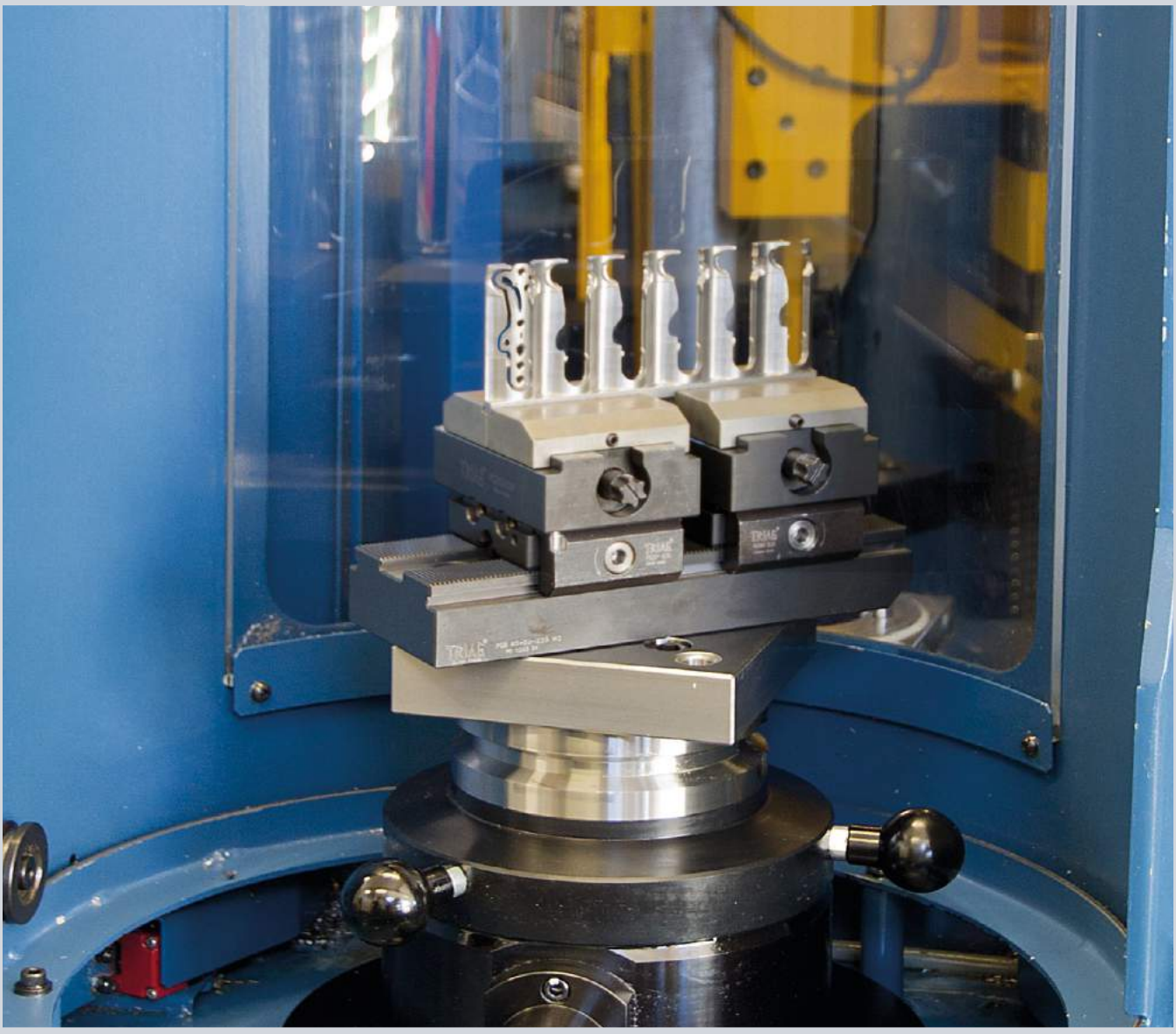
# the pioneer in modular workholding




Triag is perfect for application in automation



Self centering vises with direct stamping jaws



The two self centring vices can be moved side words in 2 mm steps

# Modular workholding

## from Triag International

**We offers two different modular workholding systems with two different base systems.**

### powerCLAMP

With Power Clamp Triag has developed a produkt which includes the advantages of a classical vise and has the features of an advanced modular system. It can be used to clamp single parts (small and big) or multiple workholding as well as difficult to clamp parts.

### aptoCLAMP

Apto Clamp is the consequent development and includes the benefits from Power Clamp but in high end clamping force up to 7´000 daN (15´000 lb)

➥ *Page 26*

## Quickness


*losen*


*lift and change position*


*fasten one screw*

powerCLAMP

With only one bolt screw (left and right hand thread) the clamp modules can be lifted and change position in 2 mm steps.

This patented system is unique and fast, as well as accurate.

## Low weight

***= Easy handling***

The clamp module can be moved by two fingers.

thats why we have chosen this symbol:

## Easy cleaning

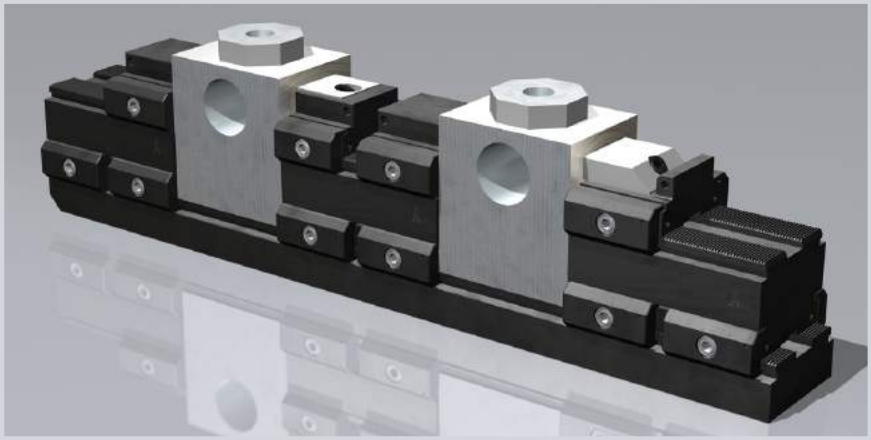

No chip catching T slots (opposite of many competitors). The base rails are rigid and can be used modular in length width and hight. The serration is accurate and checked for each base rail.
Many different clamp modules can be used on only one type base rail (step 2mm)

# Base rail

## Ups 35 / 60 / 80 / 175



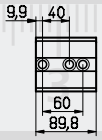
## 3D- Modular



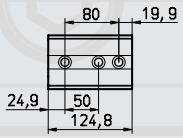
There are different sizes of riser blocks to increase the hight of the clamp modules. This way you can get from 34 to a clamp hight of 94 or 109 depending on the clamp module you choose. This riser blocks makes the power clamp system 3D-modular!

***more on Page 18***

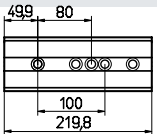
90 mm



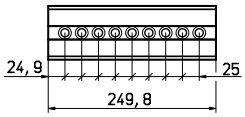

125 mm



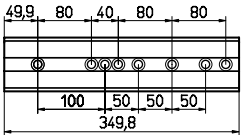

220 mm



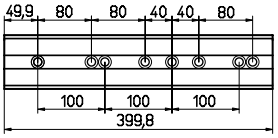

250 mm



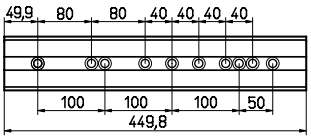

350 mm



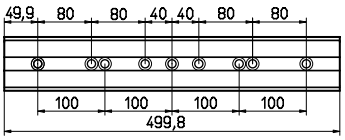

400 mm



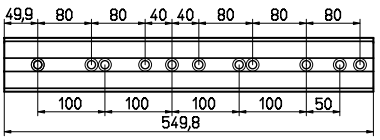

450 mm



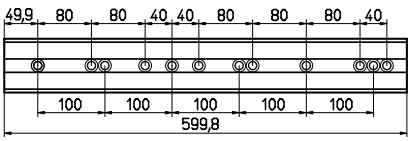

500 mm



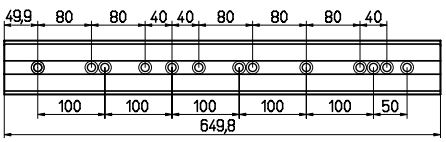

550 mm



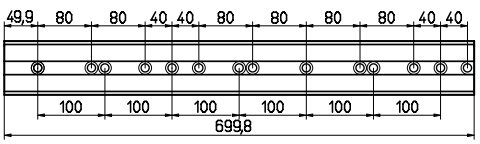

600 mm



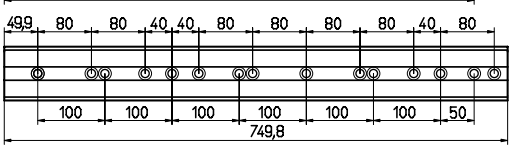

650 mm



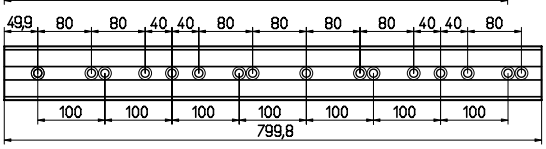

700 mm



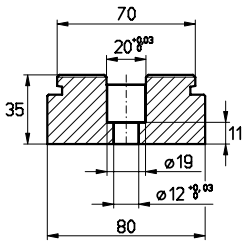

750 mm




800 mm




Drawing shows H = 35 mm




Rails are in following ups available:

- 35 mm
- 60 mm
- 80 mm
- 175 mm

Not all length as standard available

## Base-rail

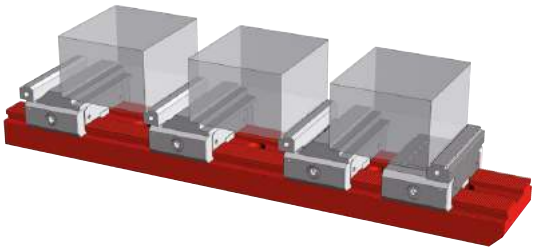
The base rail is the basic element of the Tri-ag modular clamp system. We offer them in different lengths and heights and more than a hundred different standard clamp modules will fit onto the base rails.

Holding force which the clamp modules are clamped to the base rail is 15´000 daN (15t). The precision serration in 2mm pich allows to fit the clamps fast and accurate.

All three dimension are modular!
You can double or triple the length with coupling the rails or you can use them side words in a row. Also the height is modular (please see next page)

## US market

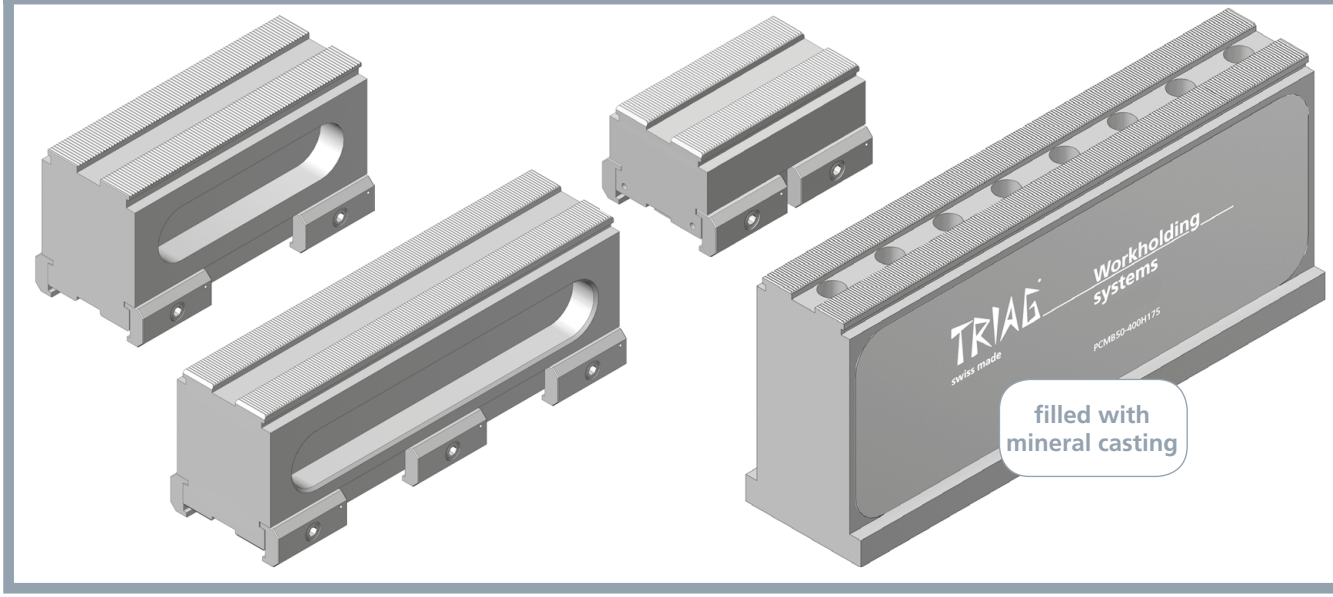
Base rail in inch" version

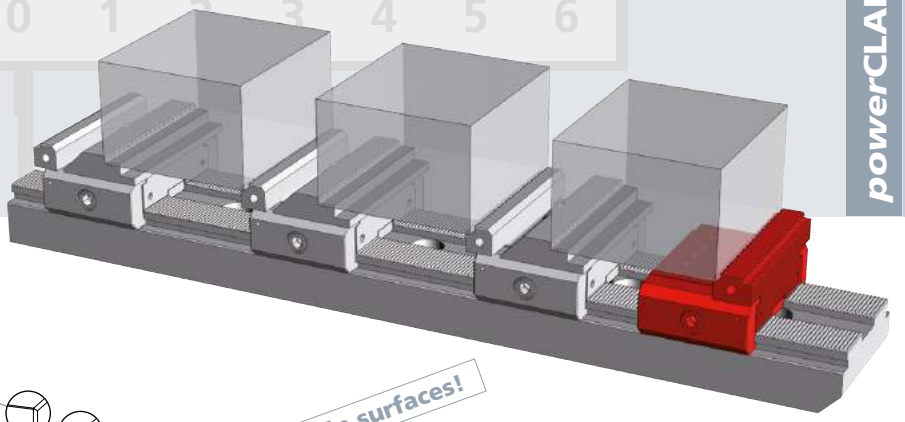


# 3D–Modular (length width and height)

Round blank Ø 350 mm clamped with Power Clamp modules and riser base rails.

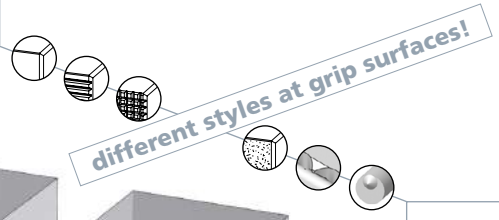
## The working position can be moved in the height

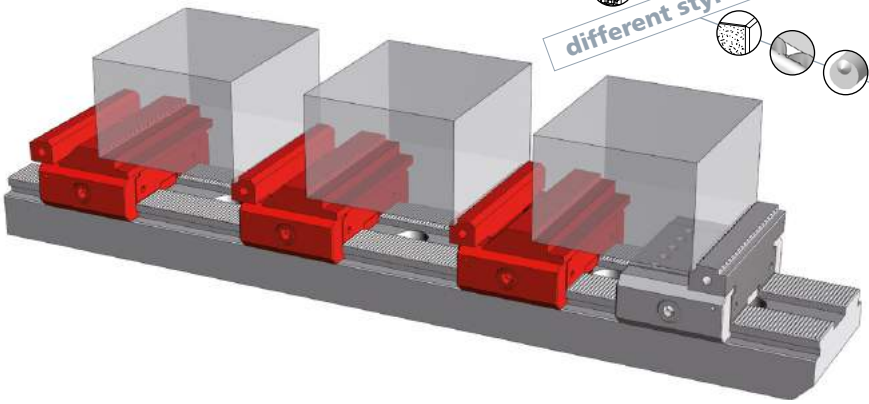




## End modules

In a row of parts there is usually one end module followed by the clamp modules. For all the different clamp situation we offer a wide range of different end modules from 19 to 125 mm.



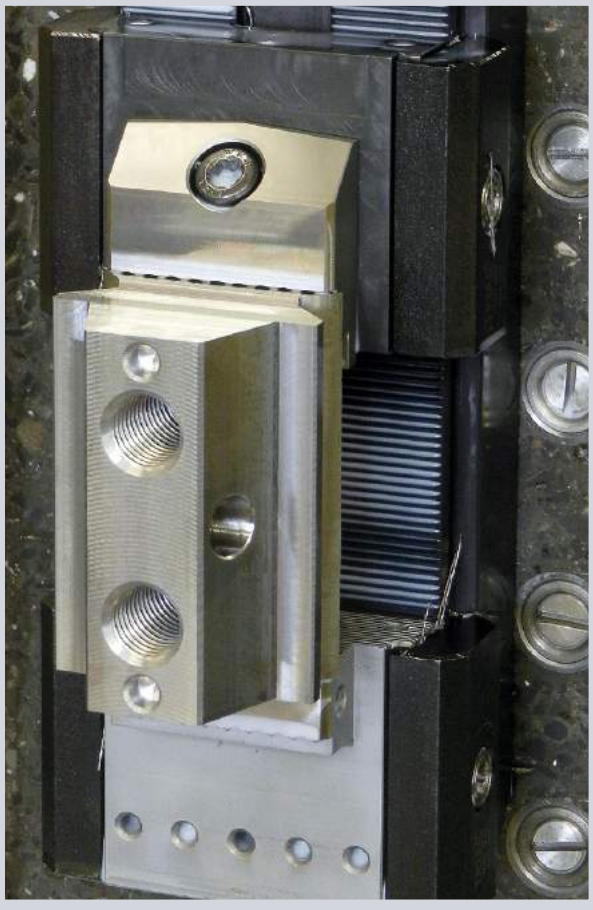
## Clamp modules

Usually you have one side of the datum face flat and the opposite double serrated so you have two options in one. Also direct stamping end modules with a workholding step of 3 mm are available.

There are mainly two diffrent types of clamp modules. Linear and pull down jaws both with integrated datum face for the next workpiece. Datum face can normally be double serrated or flat.

The movable jaws you can get in various versions such as hardened flat, carbide coated soft jaws double serrated, linear pull down, direct stamping dovating and more. The width of the clamps modules starts from 19 mm up to 125 mm.

Clamping force goes to a maximum of 2800 daN (2,8t).

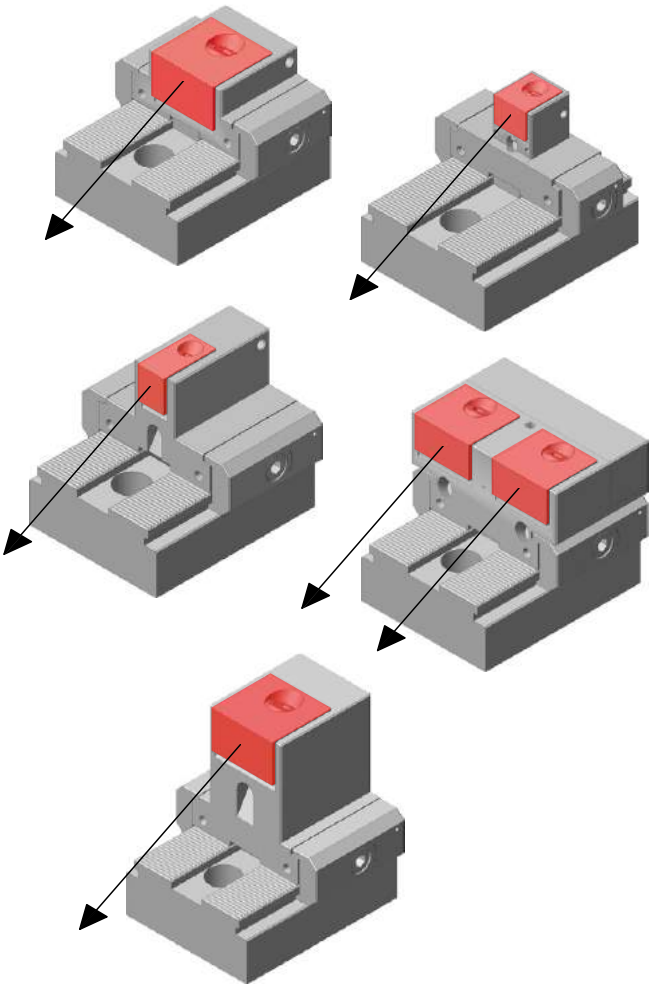


Linear direct stamping module.

# The world widest clamp module variation:



## Pull down clamp modules

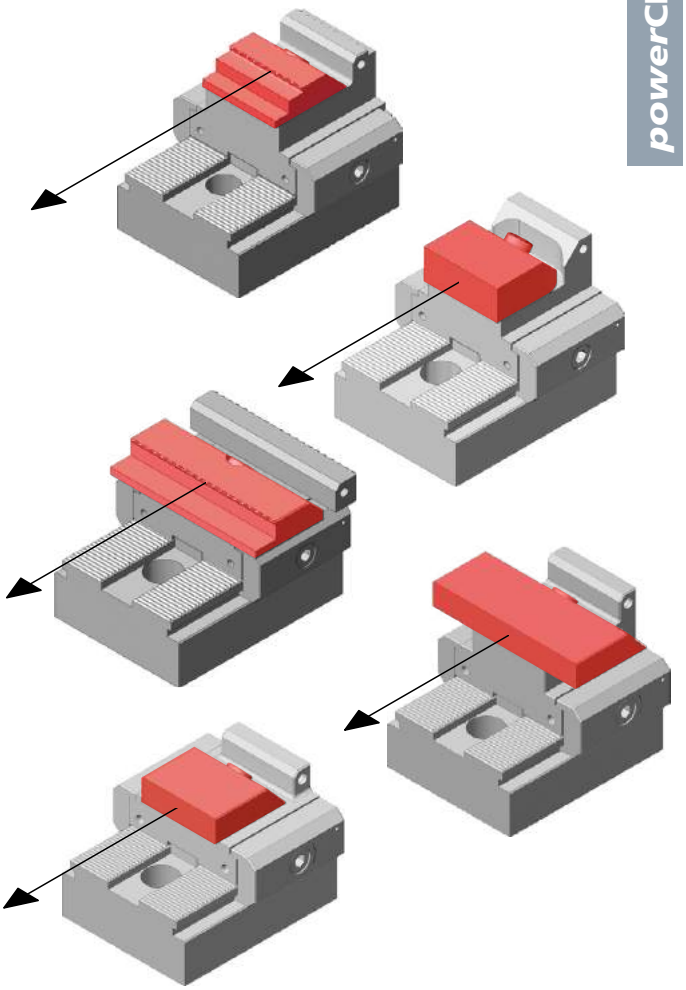


**Facts for pull down clamp modules**

Jaw range: 0- 4,1 mm
Clamping force: up to 2´800 daN

**Adwanteages pull down jaws:**
- Higher holding force
- With linear adaptable jaws
- Also with pull down jaws for the stop side available
- With adapter set can be changed to linear
- Also pull down jaws for datum face

## Linear clamp modules



**Facts for linear clamp modules**

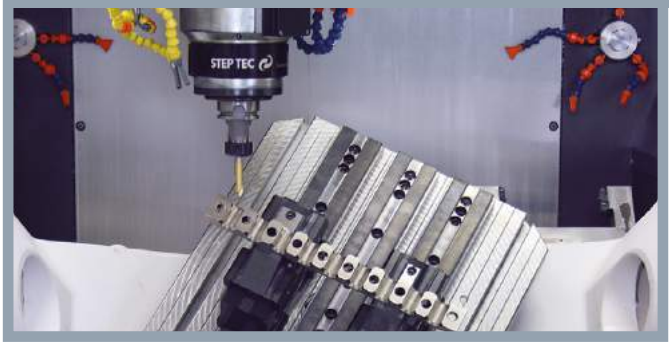
Jaw range: 0- 5,0 mm
Clamping force: up to 1´600 daN

**Adwanteages linear jaws:**
- Similar clamp as conventional vise
- Good for shaped jaws
- Secure clamped with direct stamping jaws
- Higher accuracy

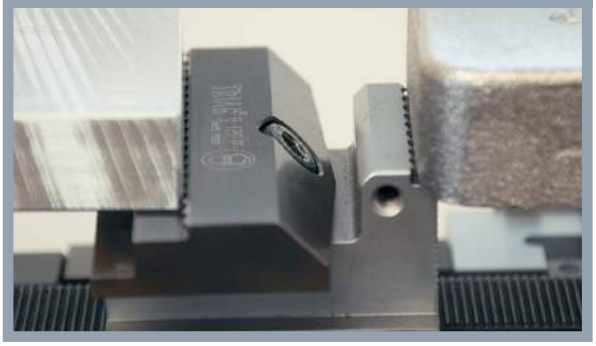
## Collet chuck modules (ER 32 / ER 40 / W20)

## Three jaw chuck

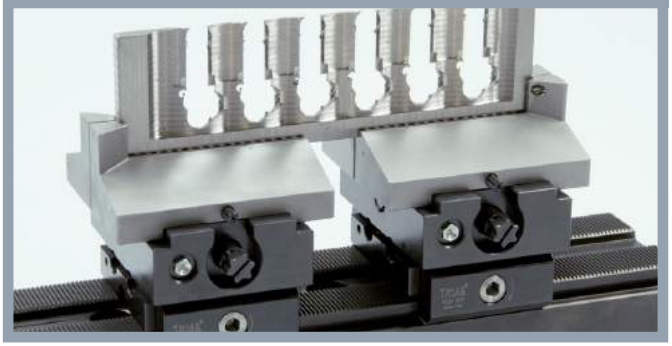
## 5 axis modules



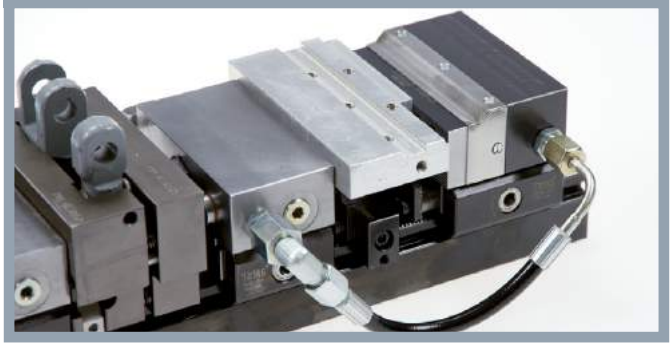

## Direct stamping modules



## Self centering vise



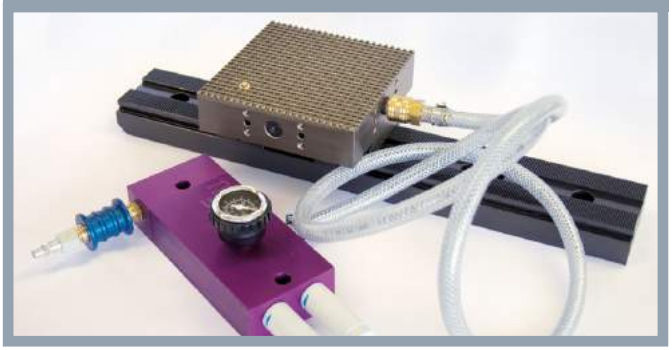
## Hydraulic modules



## Blank modules

## Vertical clamp modules

## Vacuum modules



## Magnet

# Hydraulic clamping module for the Power Clamp



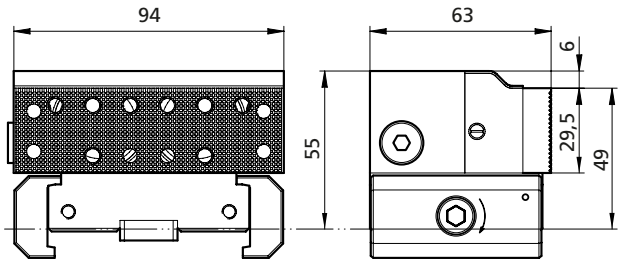
## PSH1X94L55-300
## with 90 ° serrated jaw B301

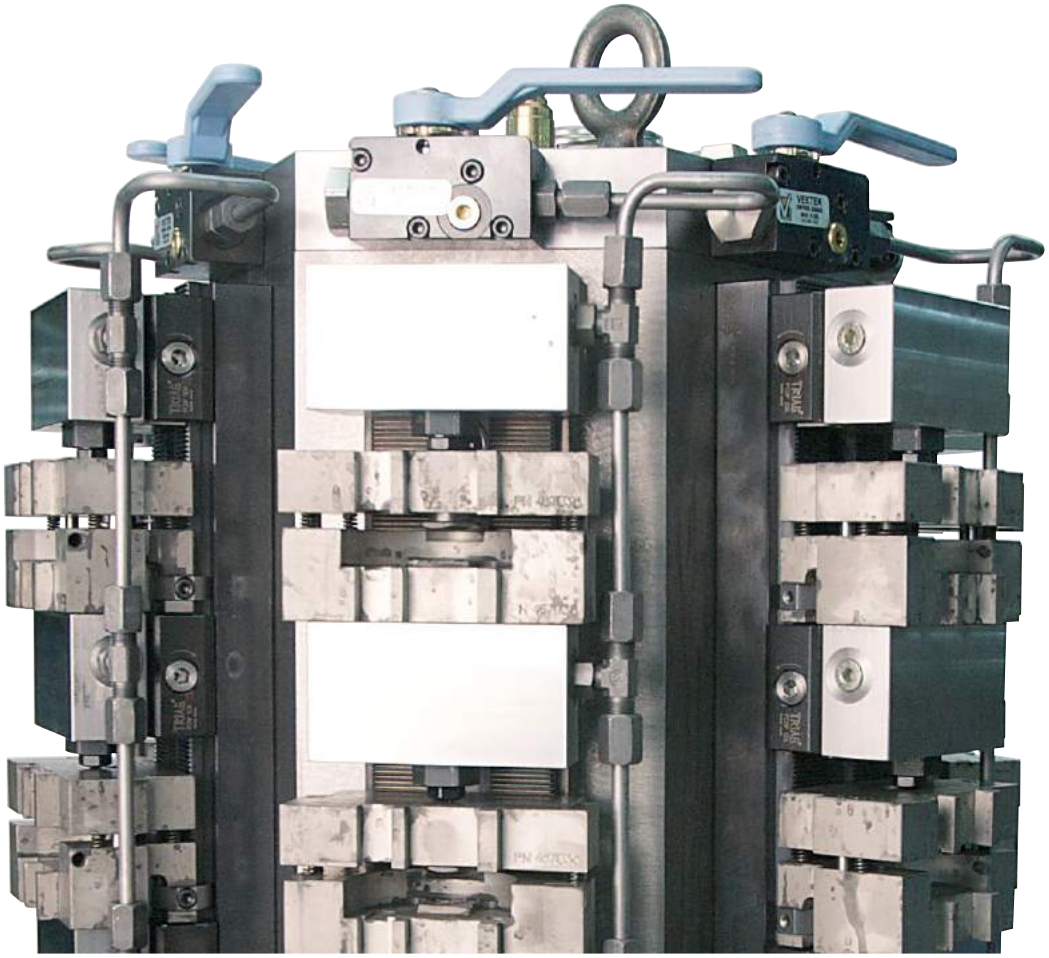
This hydraulic clamp module can be used on the standard base rail and can be moved in 2 mm steps. It is great in use with a robot load for unmanned production.

It can be used for single workpiece holding as well as for multiple workholding! Using max 250 bar pressure you get ~ 2,4 t clamping force and a maximum stroke of 5 mm.

The standard jaw B 301 is double serrated but can be used to mount carbide grippers. Soft jaws can be ordered as well.

### 94 x 55 x 63 mm / 5 mm stroke



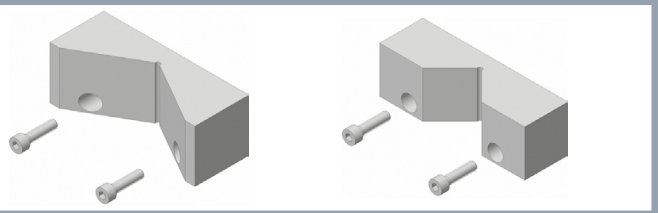



# Wide range of accessories

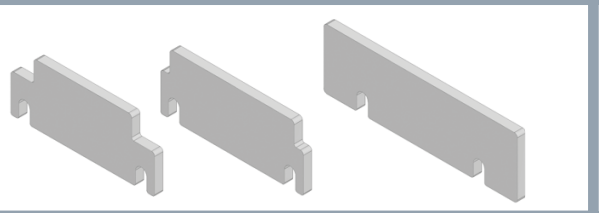
For cast iron parts and workpieces with shaped edges you need a wide range of accessories to adapt to you special need!

Triag offers you a wide variation of soft clamp jaws as well as jaws for the datum face. Prismatic jaws and carbide in enormous serts steel parallels blanks pull down jaws and linear adapters belong also to this enormous stock offer!

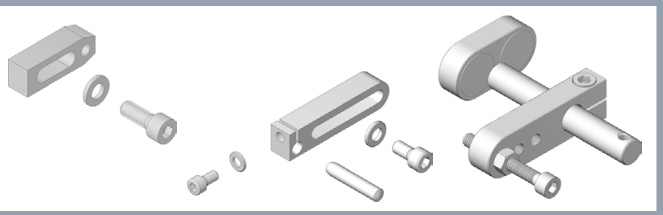
## Prismatic jaw



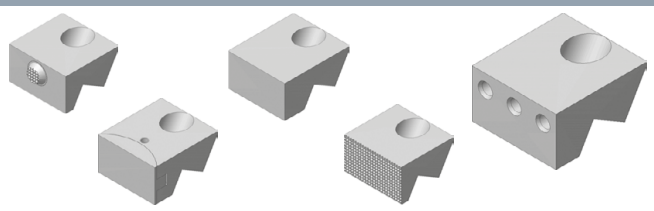
## Parallel base



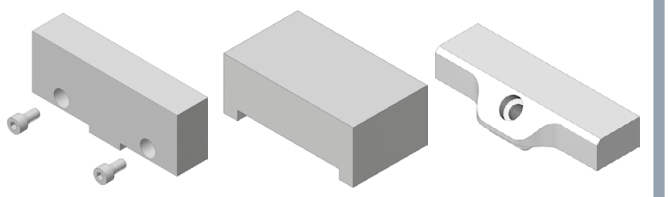
## Stops and magnet stops



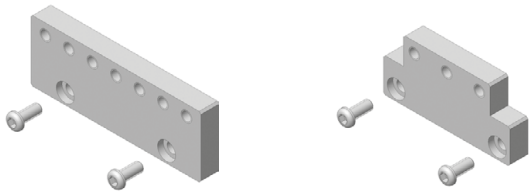
## Huge offer of clamp jaws



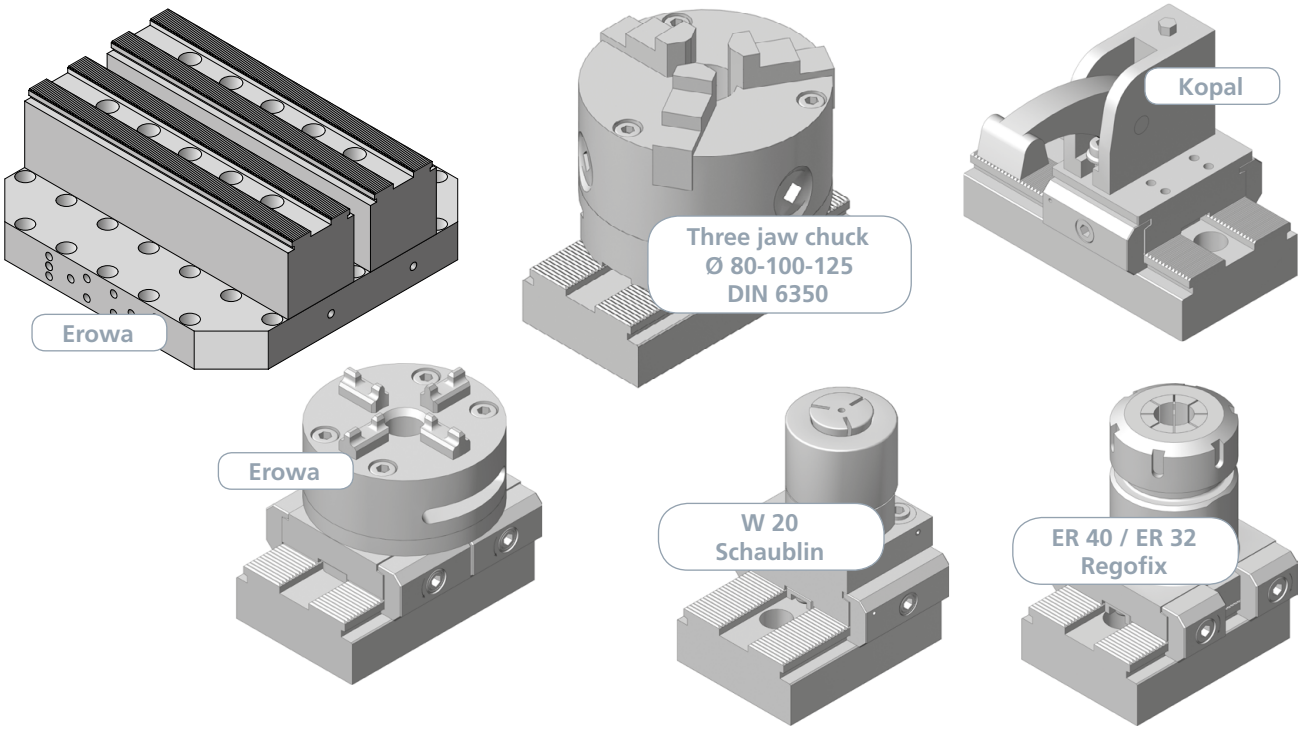
## Soft jaw



## Universal jaws



## Combination to other products



# Heavy machining aptoCLAMP

**You achieve maximum rigidity with our Apto Clamp modular system! Even if your workpiece is thousands of kilogramms you don't have to worry to clamp big parts and big plates.**

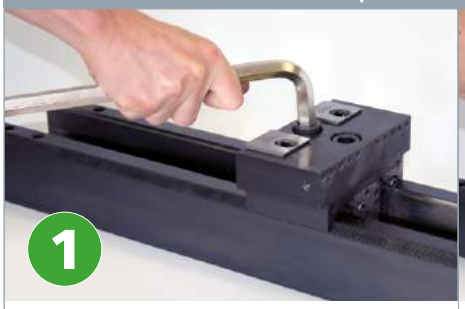
## Powerful and user-friendly elephant

That's why we have this icon selected:

### – The aptoCLAMP

For positioning the clamp modules on the base rails, has the Apto Clamp system next to a positioning serration a horizontal anchor system for locking with enormes force produced by two M 16 screws. The end modules have additionaly 4 M 12 screws to give extra rigidity.

## Quickness



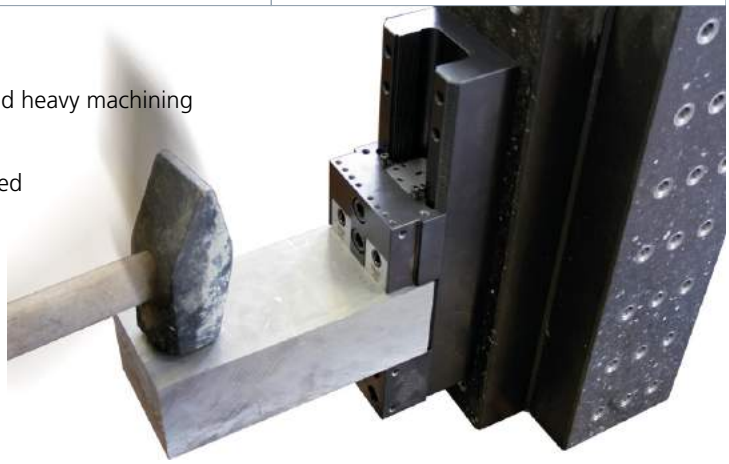

Loosen two screws

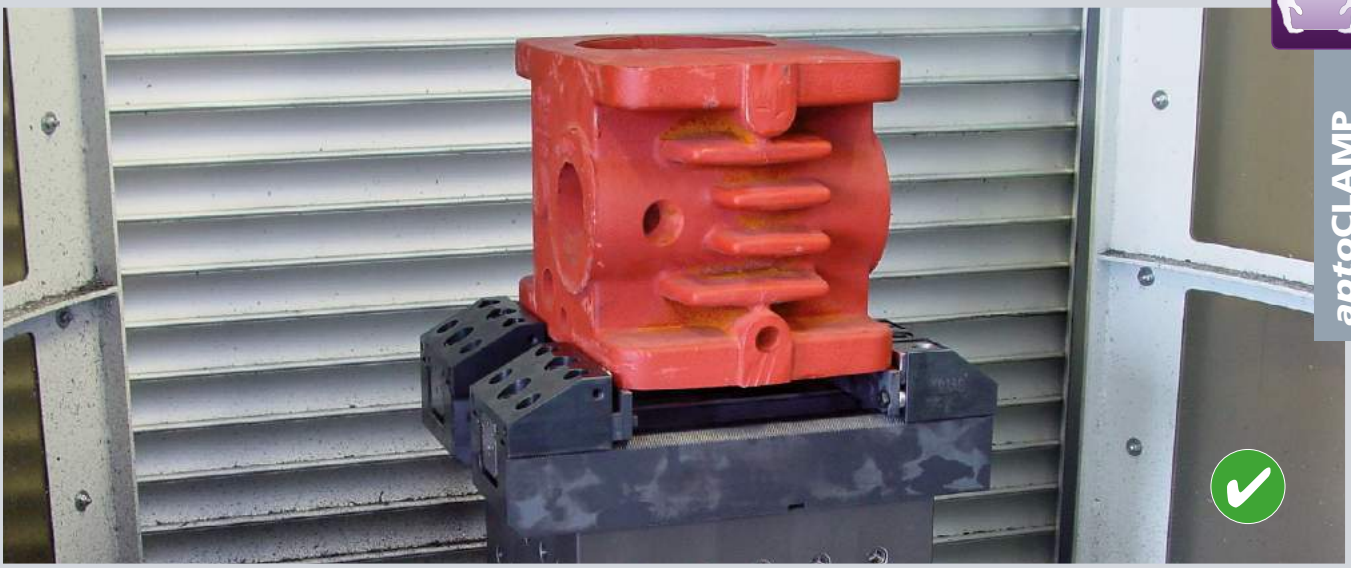

Lift and change position


Fasten two screws

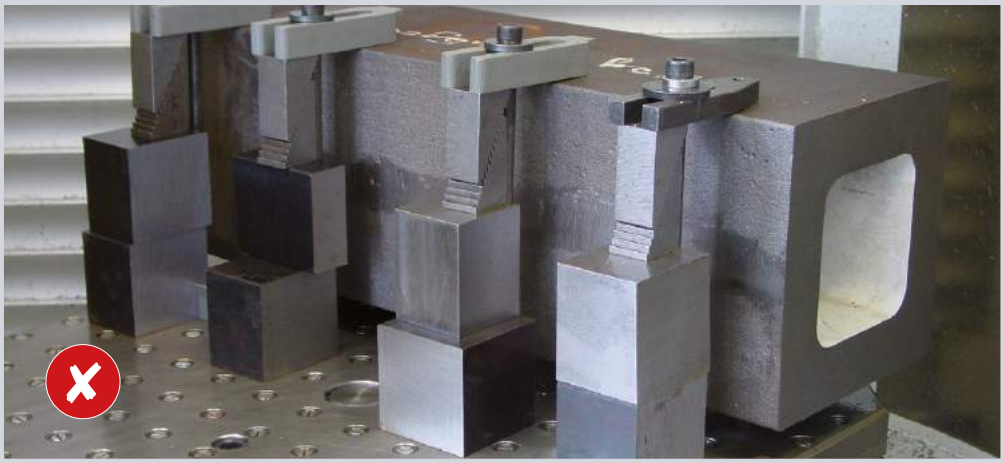
***Benefits at a glance:***

- Very stable, robust design allows high precision and heavy machining
- Modules can be lifted up, no extension needed
- No chip loading T-slots grooves: Positively positioned
- The teeth are not exposed to the workpiece
- Pull-down and linear clamping possible
- Clamping force up to 7000 daN per module





Perfect approach on 5 axis machines 7 tonnes with two times



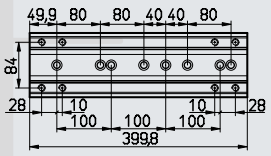
Difficult approach and unsecure clamp

Fast setup fast clamping and perfect for short tool holders!

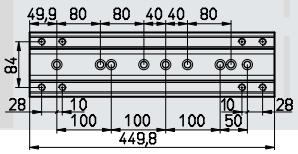
# The Base rail hight 70 mm



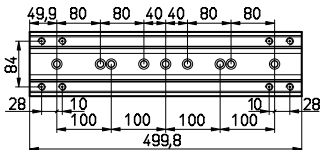
400 mm



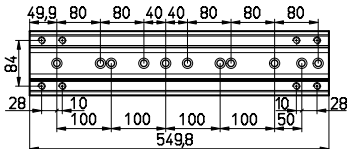

450 mm



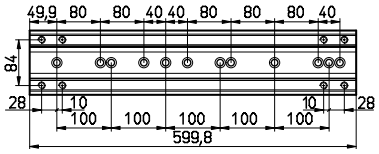

500 mm



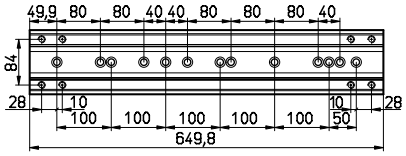

550 mm



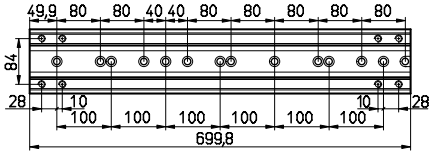

600 mm




650 mm



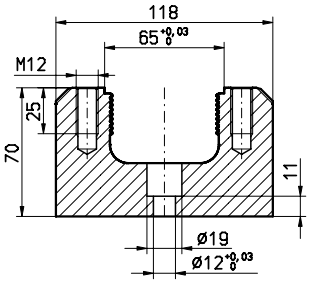

700 mm

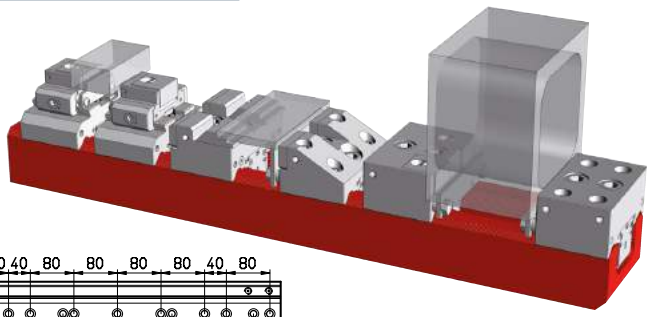



## Base rail

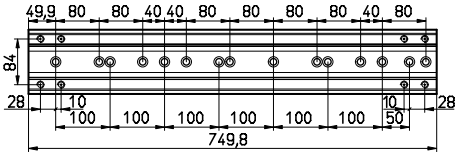
With the new Apto Clamp a serration of 2mm pitch on the base rail allows a rapid and accurate positioning of the modules. The outstanding development is that through elastic deformation of a lip, the engagement between the modules and the base rail is without play. Clamping and machining forces are absorbed on the upper surface of the base rail whereas the vice module is fixed to the rail by an expandable anchor which engages the round serration inside the base rail. The insertion of additional vice modules can be accomplished without problems. Apto Clamp is the logical development of Power Clamp to handle even larger work pieces.

Sectional view of the base rail

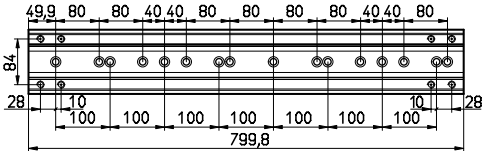


750 mm



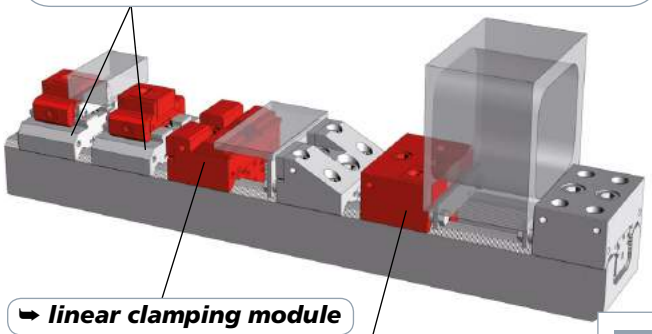

800 mm




# Clamp modules 16 standard modules

***powerCLAMP ➥ aptoCLAMP***

The adapter module enables users of Apto clamp system access to over 110 different clamp modules from the program by the Power Clamp such as collet chucks, vacuum clamping, magnetic chucks, linear clamping modules and much more.

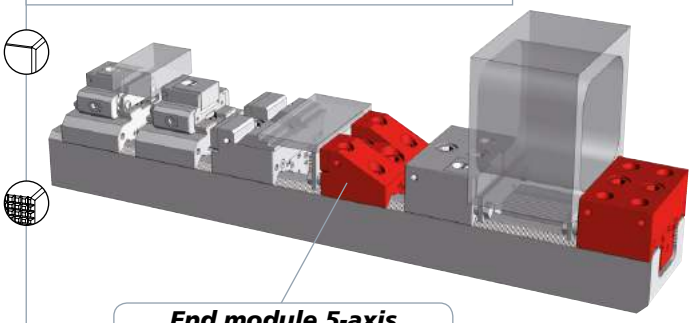


➥ ***linear clamping module***

➥ ***pull down clamping module***

## End modules

In general, only a stop module is required as a „fixed jaw."



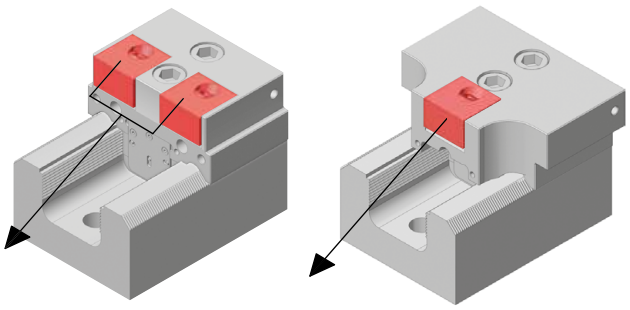
***End module 5-axis***

## Clamp modules

Clampe modules have movable jaws (linear or pull down) in the front to clamp the part and on the back there is the datum face for the next work piece stop. Positioning step on the base rail is 2 mm every.

# Clamp modules diversity

## Pull down clamp modules

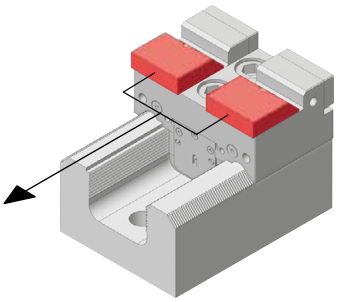


**Facts for pull down clamp modules**

Jaw range: 0- 3,8 mm
Clamping force: up to 7´000 daN

**Adwanteages pull down jaws:**
- Higher holding force
- With linear adaptable jaws
- Also with pull down jaws for the stop side available

## Linear clamp modules

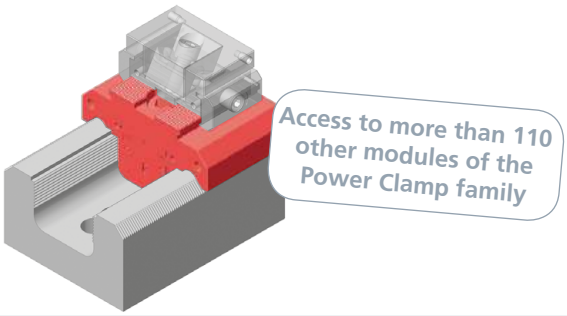


**Facts for linear clamp modules**

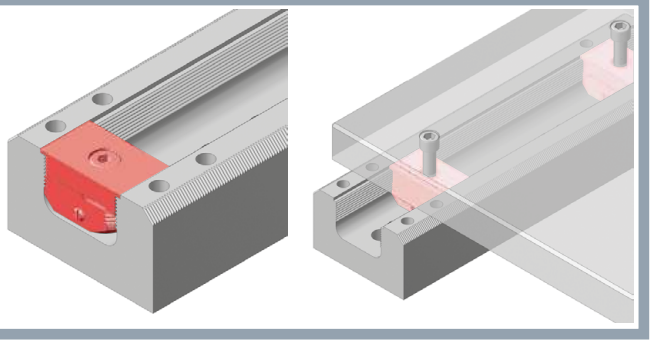
Jaw range: 0- 5,0 mm
Clamping force: up to 1´600 daN

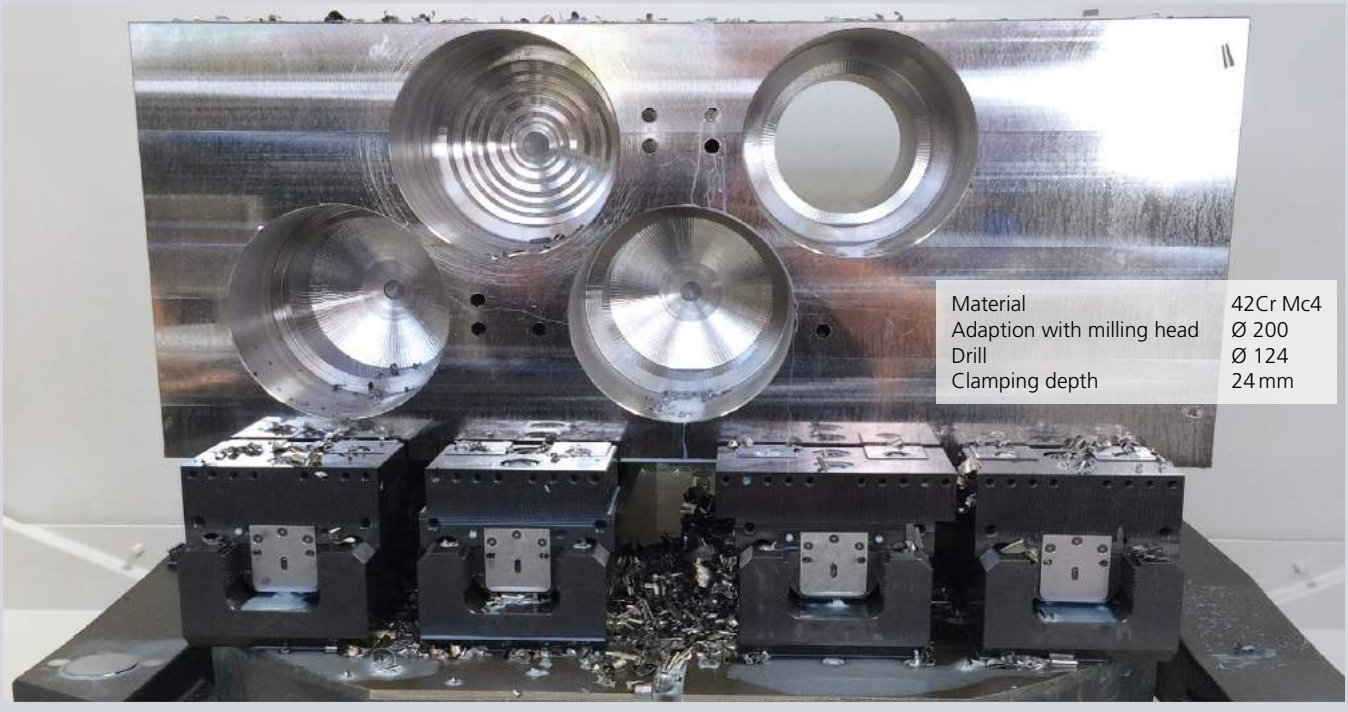
**Adwanteages linear jaws:**
- Similar clamp as conventional vise
- Good for shaped jaws
- Secure clamped with direct stamping jaws
- Higher accuracy

## Adapter module



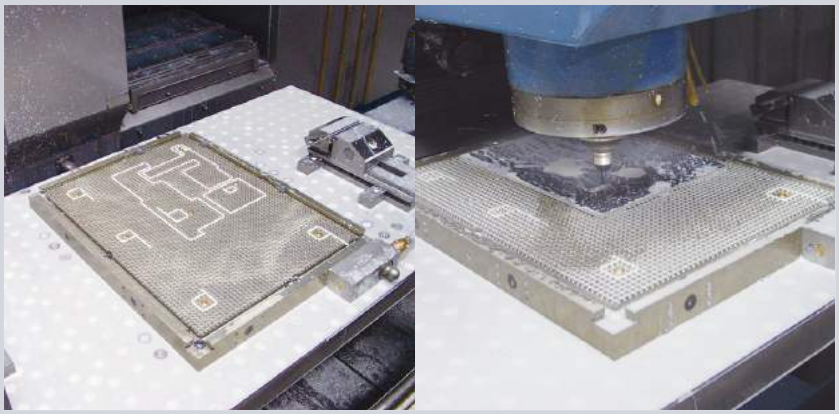

## Universal nut






Apto Clamp for heavy duty machining on a 5-axis machine.

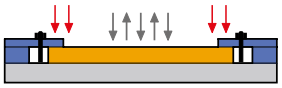
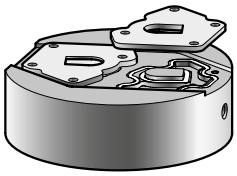
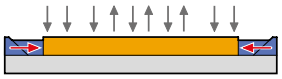
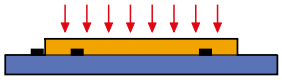
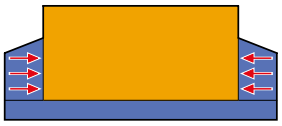
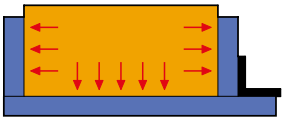
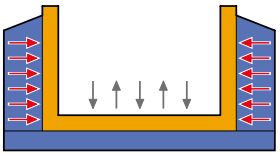
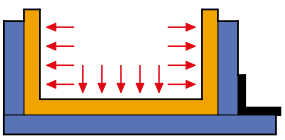
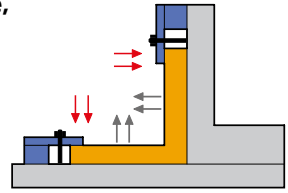
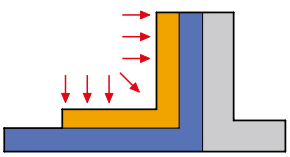
# Vacuum clamping



Vacuum clamped plates on a milling machine.

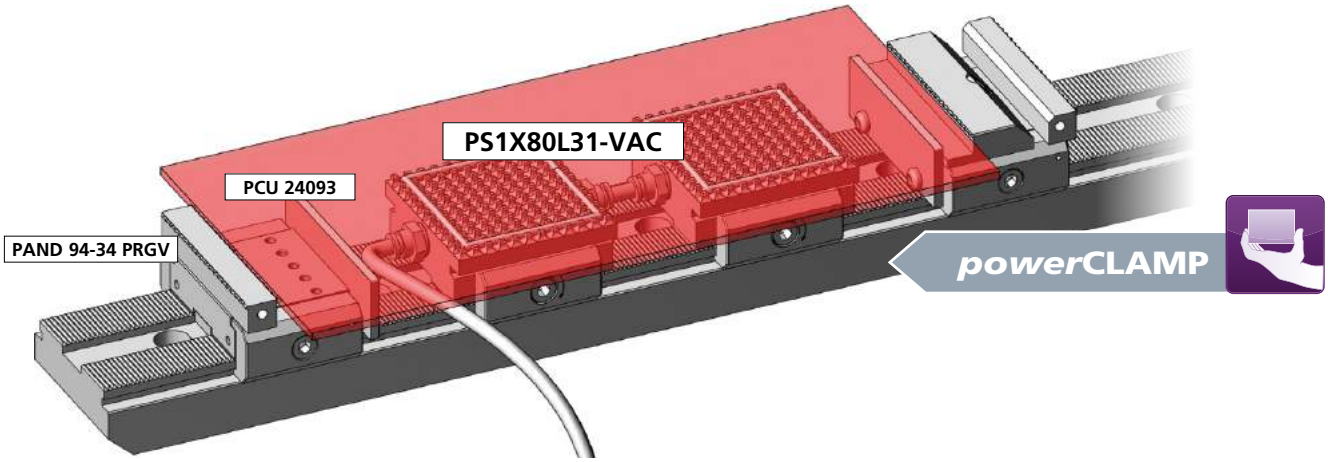
## trivaCLAMP

Mechanical clamping, as described before, has disadvantages. High specific forces on the workpiece can cause pressure marks and distortions. And, particularly on large parts, there is a risk that the workpiece will vibrate.
In vacuum clamping the clamping force is not applied to the work piece mechanically, but is provided by the surrounding atmosphere. This means that the work piece is gently and evenly pulled down over the whole supporting surface, so that vibration is minimized. As there are no obstructing brackets, clamps or workholding modules in the working and loading area, there are fewer chances for collisions with the tool. This clamping method is particularly suitable for large surface, thin-walled and also non magnetic work pieces.

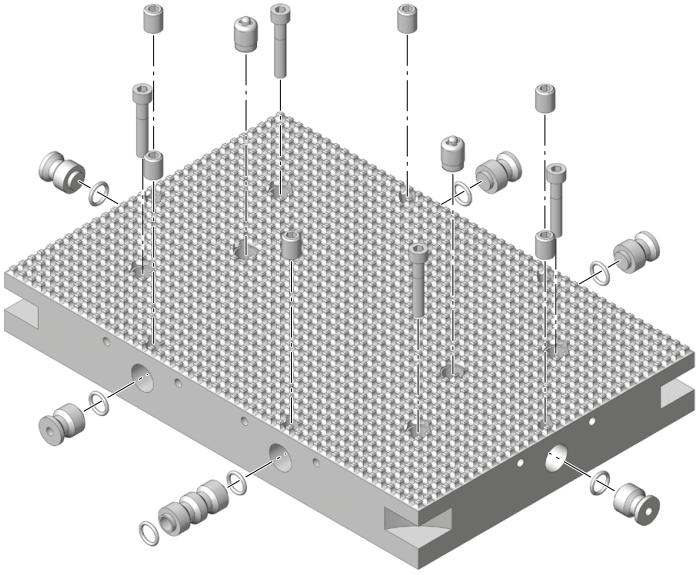
| Mechanical clamping | Vacuum clamping |
|---|---|
| **Clamping of plates, using clamps**<br>edges fixed only - Vibrations in center of workpiece - Subsequent operations required.<br>  | **Holding of bulky workpieces using custom vacuum device**<br>We build special devices for workpieces with bulky outlines and through bore-holes.<br>  |
| **Clamping of plates, using clamping jaws**<br>Also high pressure applied to workpiece, holding effect at the edges - Risk of deformation and vibrations.<br>  | **Holding of plates, using vacuum-plate**<br>Holding force equally spread all over the workpiece holding area - No vibrations - Free processing area.<br>  |
| **Clamping of cubic-shaped items, using vise**<br>Stress applied - Risk of pressure marks in workpiece.<br>  | **Holding of cubic-shaped item, using vacuum-plate and vertical vacuum-walls**<br>Workpiece held from 3 (up to 5) directions. No stress applied - No stress applied - No pressure marks.<br>  |
| **Clamping of U-profile, using vise**<br>Risk of deformation and vibrations during processing.<br>  | **Holding of U-profile, using vacuum-plate and 2 vertical vacuum-walls.**<br>Uniform, stressfree holding from 3 directions - No risk of deformations or vibrations during processing.<br>  |
| **Clamping of angled workpiece, using clamps**<br>Bothersome clamps, vibrations, subsequent operation.<br>  | **Holding of angled workpiece, using vacuum-plate and 1 vertical vacuum-wall**<br>Uniform stressfree holding - No risk of vibrations - No clamps, free, clear work area for easier, faster loading and processing.<br>  |

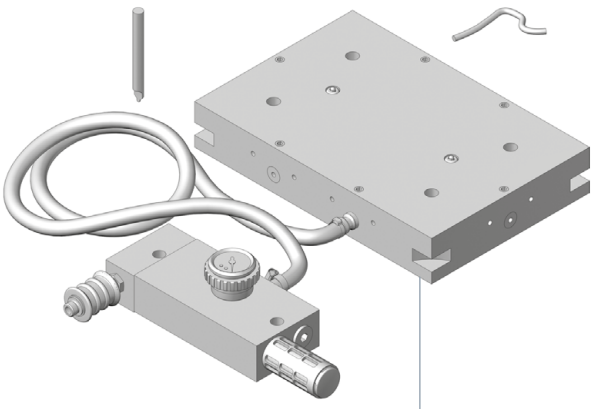
Red arrows (→) show the holding force direction, gray arrows (→) show vibration forces


Also on grinding machines fast and secure clamped.




## Modular vacuum plates / Starter kits with venturi pumps (pressed air operated)





***Die plates***

For special work pieces that are unsuitable for clamping on the standard plates, we have developed raw plates that can be milled again up to 3 times. This way, up to 3 different work pieces can be machined one after the other.

# Micro Clamp modules for dedicated fixtures

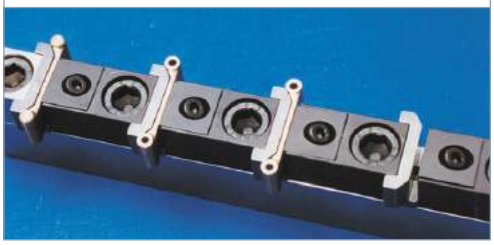
## High workholding density

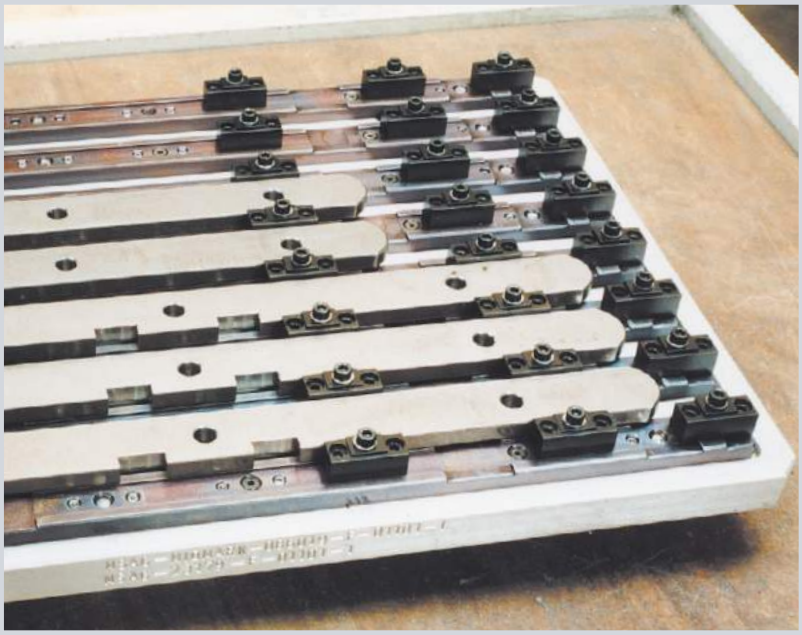
These clamping modules have a clamping jaw on the front, while rear is precisely ground with reference to the fixing holes. This means that it can be used as a datum face for the following workpiece. This arrangement allows very high clamping densities. Only 15 mm clamping clearance is needed between workpieces using the smallest Micro Clamp module.

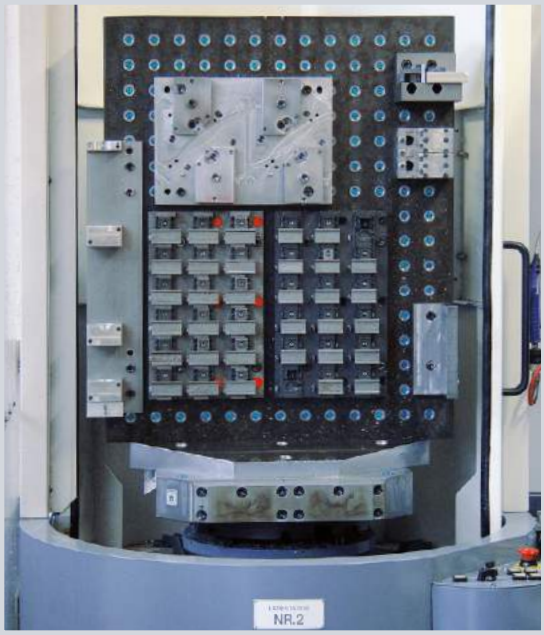
- Clamping force up to 2,8t (28'000N)
- Space between workpieces only 15 mm
- Stroke of jaw from 1,5 mm
- Precise positioning by ground shoulder screws or dowel pins

**microCLAMP**

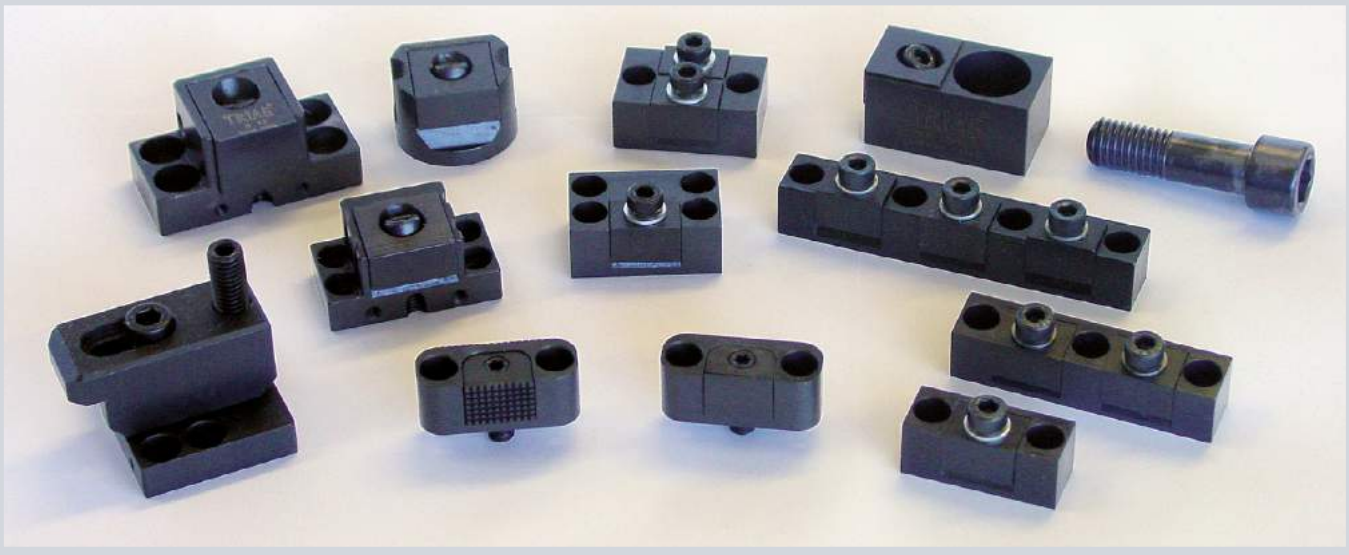
Clams for dedicated fixtures for high density to get your best output from your machine. Clamping modules in diffrent sizes and shapes and jaws with serrations also flat and carbide coated are available.







High density fixture plates for repeating orders in high quantities



A wide range of clamp modules in diffrent sizes are avaiable

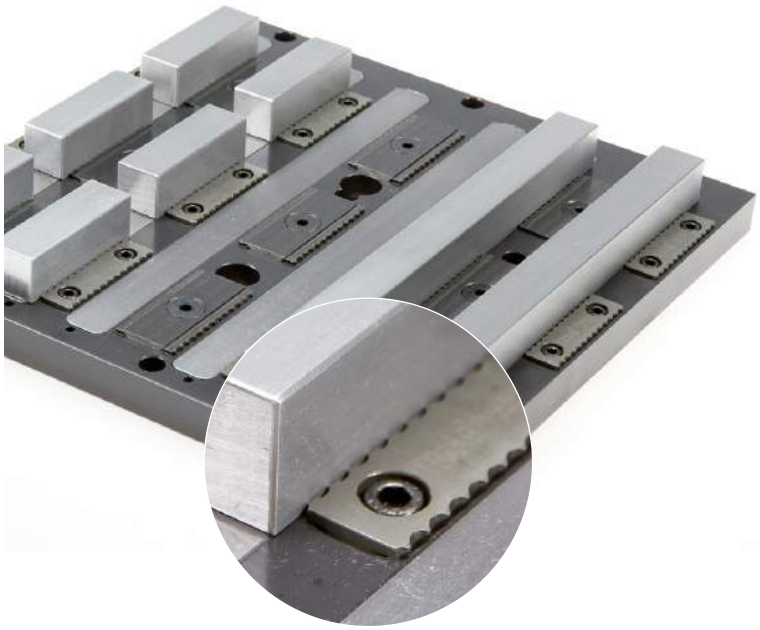
# Fixture construction – stamping module

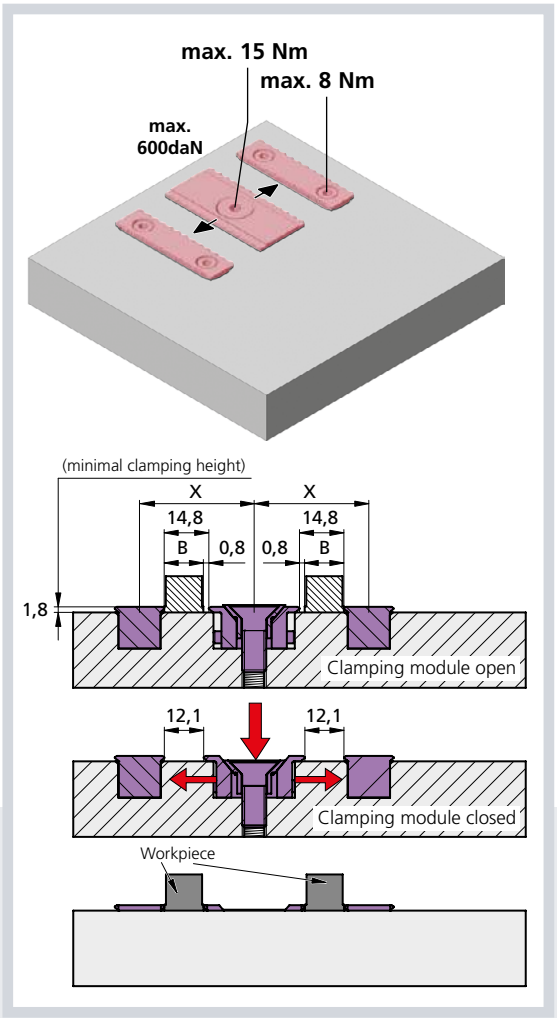
## MS2P58L14 PRG15 / MAND58-14PRG

The fixture modules are especially suitable for materials such as titanium, aluminum alloys, stainless steel, ferrous and non ferrous metals and plastics. The clamping module generates tension forces on both sides, this will at torque of 15 Nm producing approximately 600 daN per clamp side.

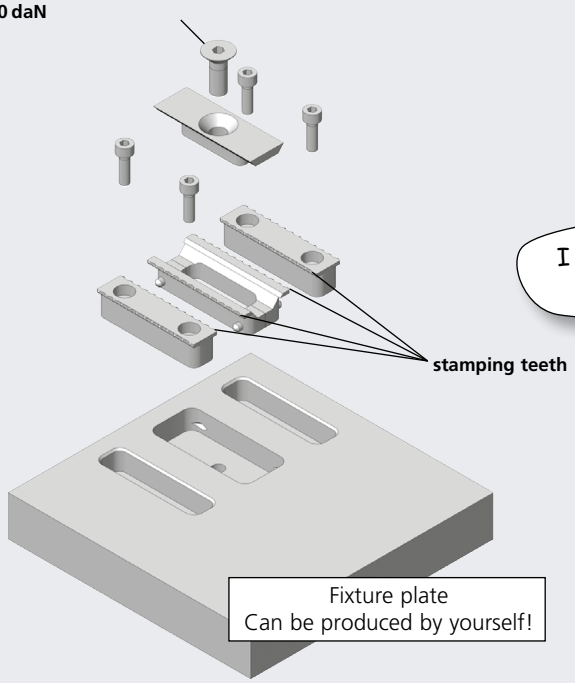
The stroke per jaw is 2,7 mm and the clamping depth of the workpiece is 1,8 mm.

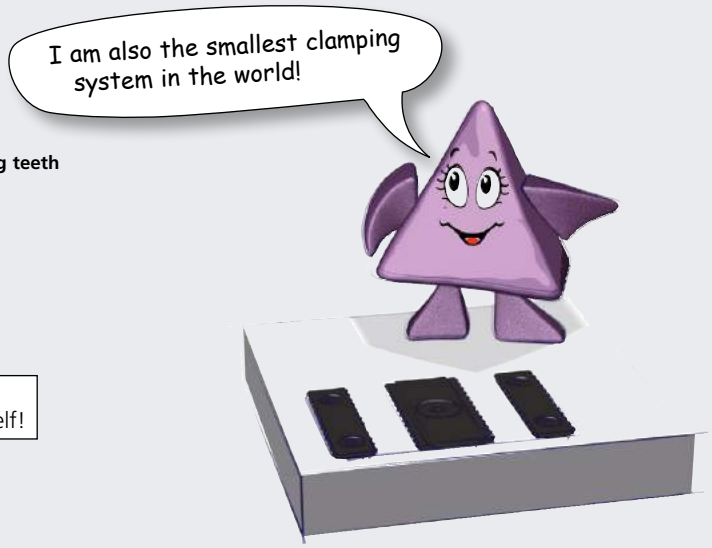
The fixture plate can be produced by the customer, or as special solution desingned and produced by TRIAG International.






**Maximum torque 15 Nm corresponding to a clamping force of 600 daN**



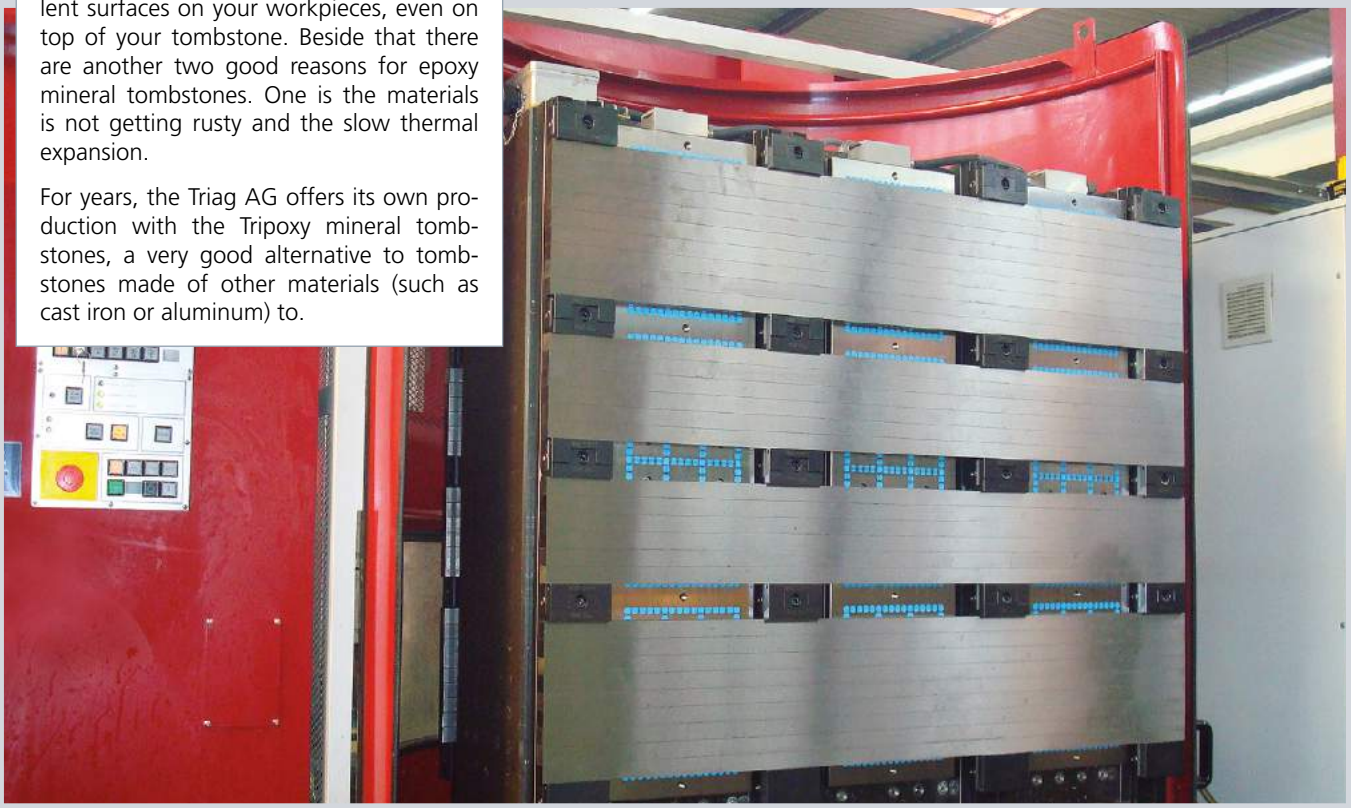
## tripoxyMINERAL

The weight reduction of the load is an important factor in the increasingly rapid horizontal machining centers. The tombstones of mineral casting have a lower specific weight than aluminum.

Another big advantage is the vibration clampening which helps to achieve excellent surfaces on your workpieces, even on top of your tombstone. Beside that there are another two good reasons for epoxy mineral tombstones. One is the materials is not getting rusty and the slow thermal expansion.

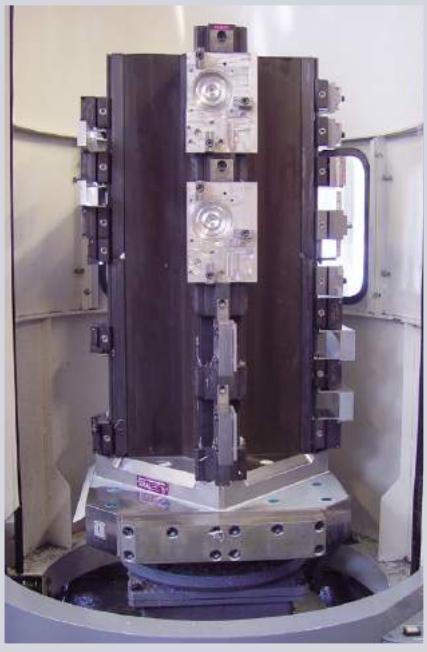
For years, the Triag AG offers its own production with the Tripoxy mineral tombstones, a very good alternative to tombstones made of other materials (such as cast iron or aluminum) to.

# Epoxy mineral tombstones including clamping system from one source!

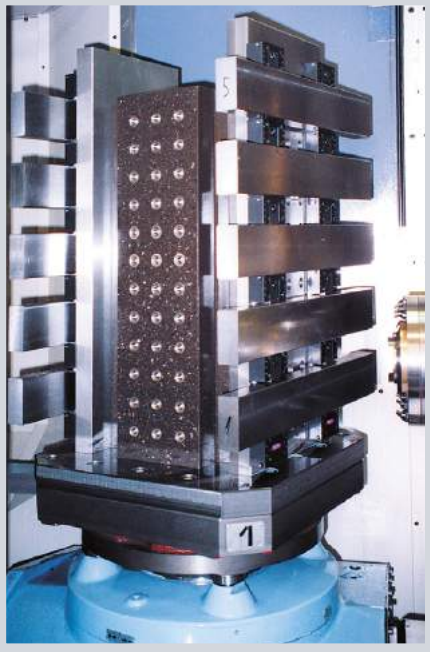


Epoxy cube equipped with magnet and Power Clamp

Large plates on epoxy tombstone



Mixed set up on cross epoxy tombstone



Dedicated fixture on epoxy tombstone

# Infobox epoxy mineral tombstones:



Mineral casting (also called polymer concrete) is a stone composed of quartz gravel, silica sand and crushed rock. The binder is a high quality epoxy resin. The mixed material is filled into molds.
During the casting process, the form, constantly vibrating.

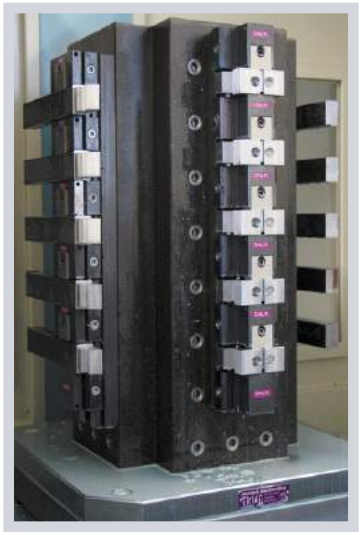
Is resulting in the compaction and extraction of the casting mass. The specific weight is 2,4 kg / dm 3 is lower than that of aluminum, and the vibration attenuation is 10 times better than that of cast iron. Besides the good damping properties, the temperature stability is to be mentioned (low thermal conductivity and high heat capacity).

The material is also chemically resistant to oils, alkalis, acids and the usual cooling lubricants.

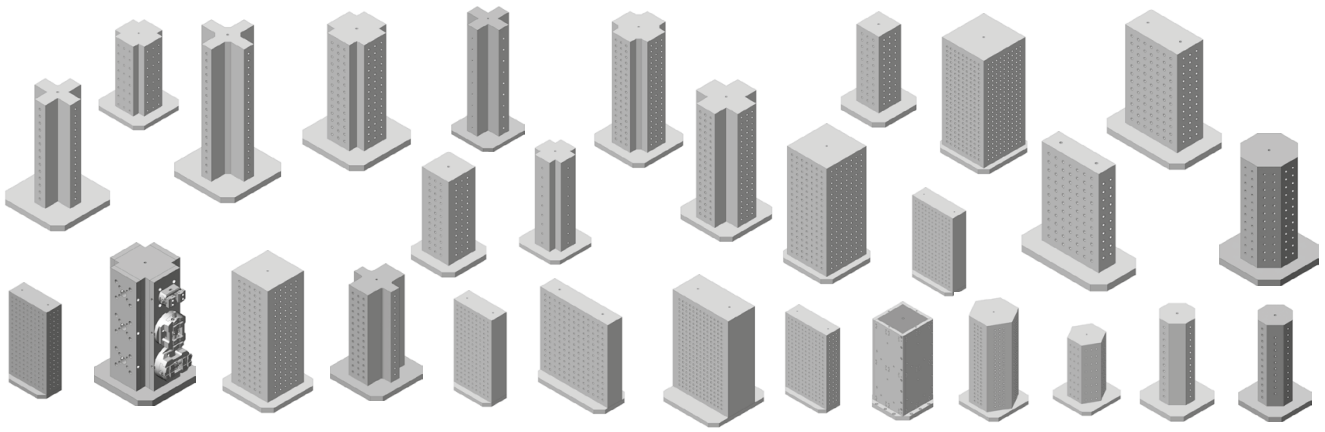
| | Epoxy mineral | GG20 | high density Alu |
|---|---|---|---|
| Density **[kg/dm³]** | ca. 2,4 | ca. 7,1 - 7,3 | ca. 2,76 |
| Logarithmic Decrement (damping) | 0,035 | 0,004 | 0,0004 |
| Coefficient of linear expansion **[1/K]** | ca. $12x10^{-6}$ | ca. $10x10^{-6}$ | ca. $23x10^{-6}$ |
| Tensile strength **[N/mm²]** | 15 - 20 | 200 - 400 | 470 - 520 |
| Thermal conductivity **[W/mK]** | ca. 2 | ca. 50 | ca. 140 |

**Cast mineral is among other things the following Applications used:**

- Machine beds
- Machine column and portals
- As an alternative to cast iron (cost, environmental friendliness)
- As an alternative to welded constructions
- As an alternative to natural stone applications (eg, measuring tables, clean room technology)
- General stiffness and strength-scale structural components
- Integrated functionality possible (hoses, valves, electrical, anchor load, etc.), and subsequent pouring possible
- Filling of mineral cast in metal shell constructions (eg, our steel rails with epoxy mineral cast base)



## There are a variety of standard forms.
## The epoxy mineral tombstones can be manufactured in almost any shape.



Other sizes, forms and grid which are not in the catalogue can be produced on customer's request.

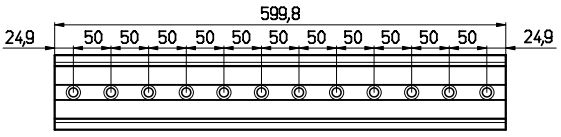
# Base-rail steel-expoxy mineral hight 175



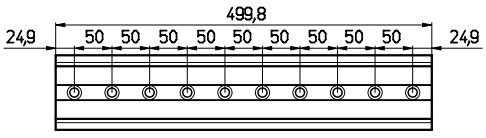
Specially for larger 5-axis machines which twist the spindle head and need a lot of clearence. TRIAG International has developed this riser base rails. Those are a combination of steel and epoxy mineral.
This is to reduce the weight and increase the clampening effect. So we got even better results in machining hardend parts on top of the base rail than clamped directly on the table.

Using 4 of this bases on a grid plate your workpiece limitation is what, your machine travel offers. Also small parts can easy be reached it using only one smaller base rail in the center.

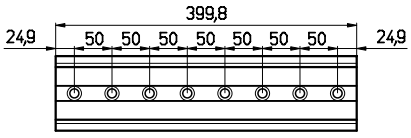
**600 mm**



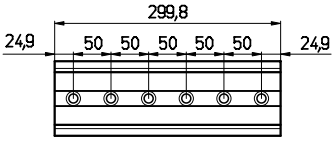

**500 mm**

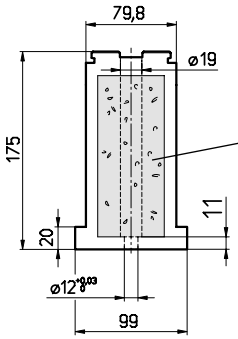



**400 mm**

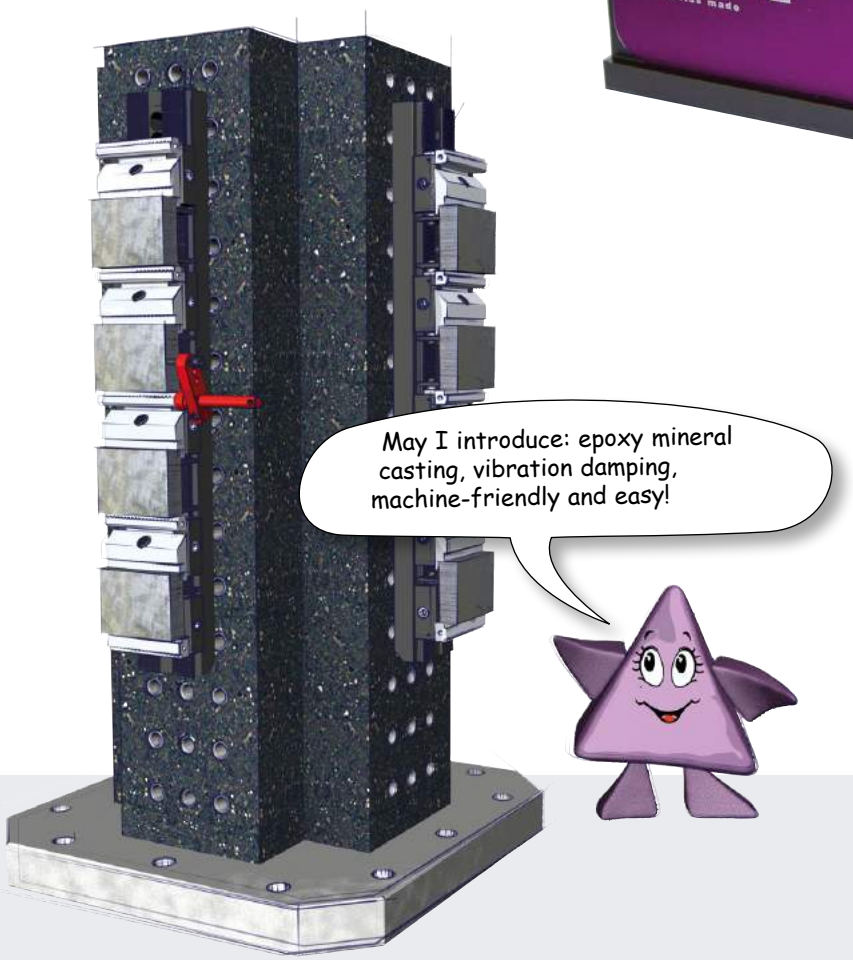



**300 mm**




**Epoxy mineral**
**for brilliant dampening effect**


Customers who have experienced the benefits of our mineral casting towers, just select Tripoxy.

*These towers are very durable.*
*Our first tombstones are more than 16 years in operation.*

# Steel-epoxy combinations since 2004! The ideal material for tombstones and ricer cubes



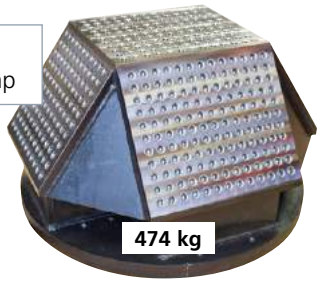
## Reduces machine wear due to low specific weight - can be produced in all sorts of shapes

As the rapid traverse on modern horizontal machining centres is constantly increasing, the weight of the payload becomes obviously an important point. Our tumbstones made of epoxy mineral casting are lighter in their specific weight than aluminium.

In addition, vibrations are greatly reduced in a way that even in the upper end of the tumbstone high accuracy is guaranteed. In certain cases, as for instance when the fixture is designed without the base rail, that means directly mounted on the cube, the tumbstone can be improved by a steel jacket.

Triag customers are employing successfully tombstones with steel jackets since 2004. In most cases optimal solutions can be found with standard Triag clamping devices.

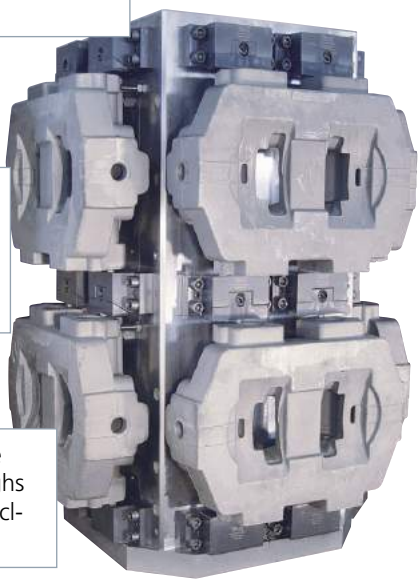
Steel epoxy pyramid stomp



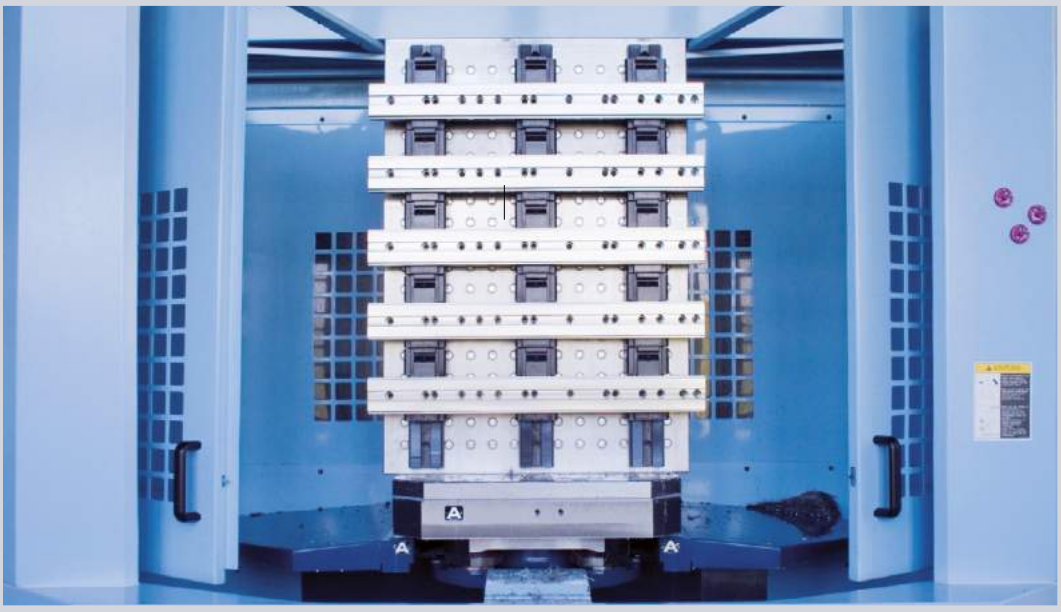

Steel epoxy tombstone for perfect vibration dampening

Max pallet load on this Mazak application = 600 kg

Complete load weighs 600 kg incl-parts




Steel epoxy frames machining wing parts on a Makino machine

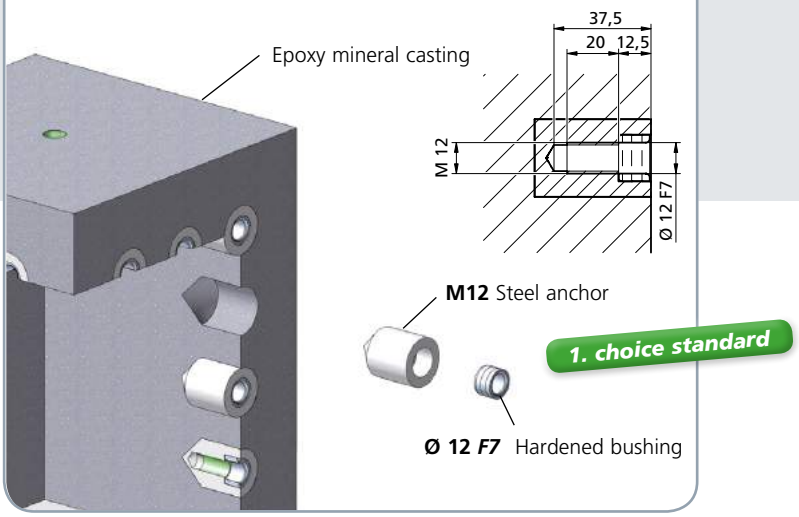


Steel epoxy tombstone with Power Clamp 10 pcs of tool steel are machined (running time 5,3 hours)

Steel epoxy triangle cube

# Standard Interfaces

## M Epoxy mineral with steel anchor

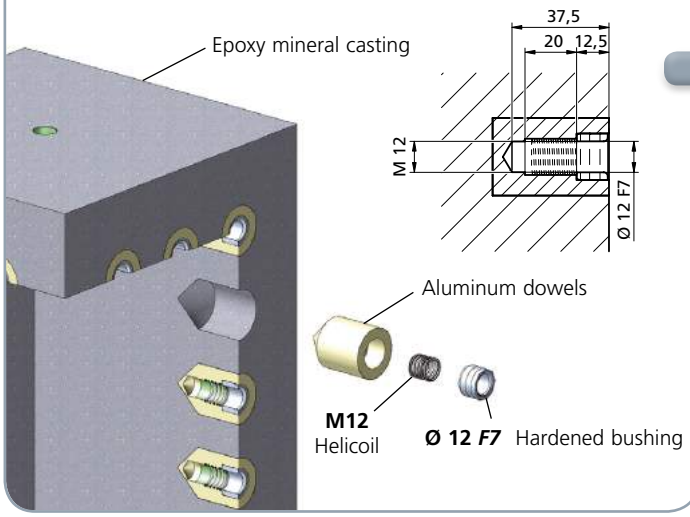


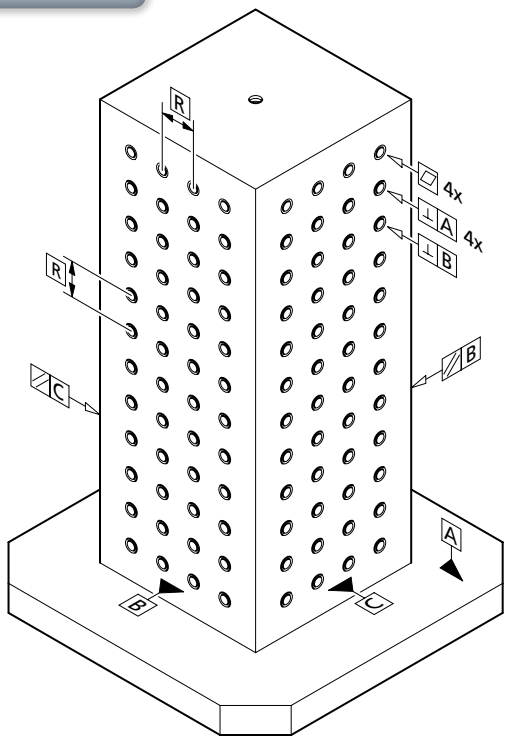

1. choice standard

## AM Epoxy mineral with aluminium anchors and helicoil

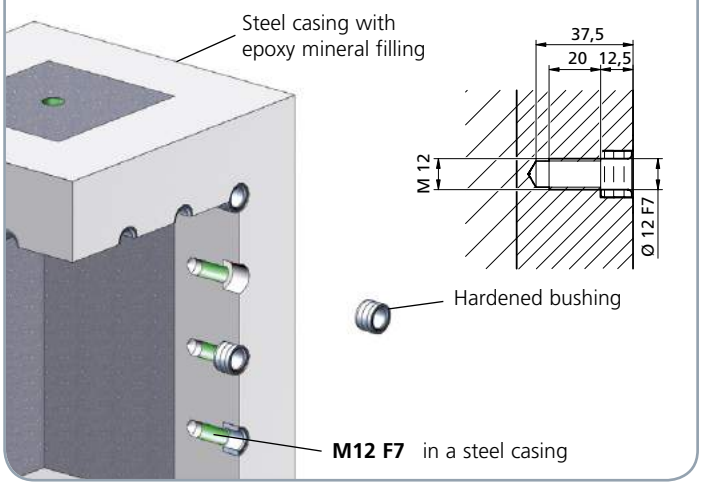
This is only used for extreme weight problems (semi standard).

semi-Standard



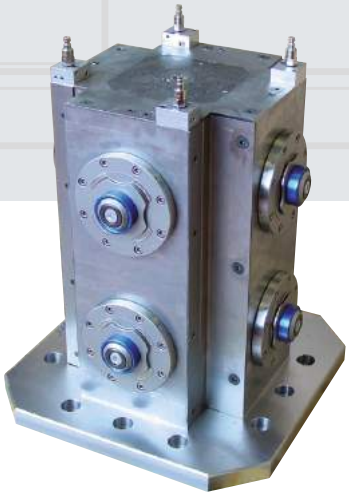




## SM Steel-epoxy mineral tombstones for highest request on tensile strength and vibration dampening




| | | |
|---|---|---|
| Positioning tolerance of the holes | R | **0 - 500 mm ± 0,01**<br>**501 - 1000 mm ± 0,02** |
| Flatness | ▱ | **0,01 mm / 300 mm** |
| Parallelism | // | **0,01 mm / 300 mm** |
| Deviation of angle | ⊥ | **0,01 mm / 200 mm** |

# Zero point system



## *opp*System

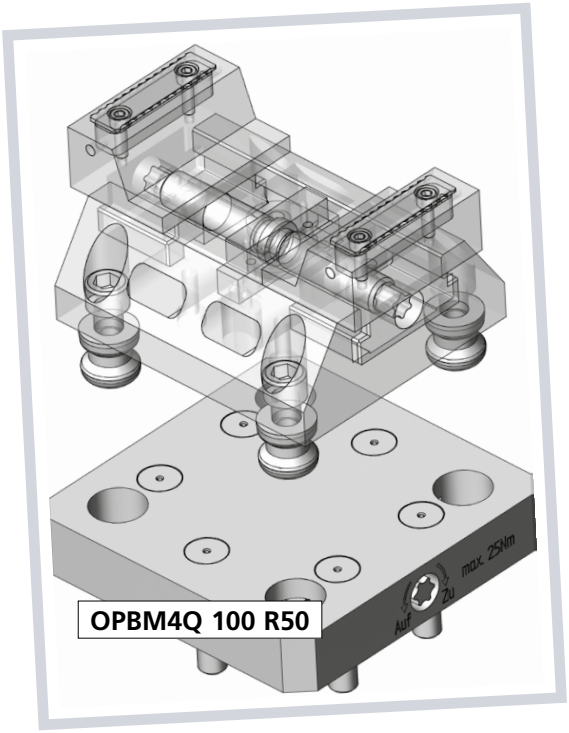
Together the modular system with zero point pallets, give a great performance! Fast changing and accurate!

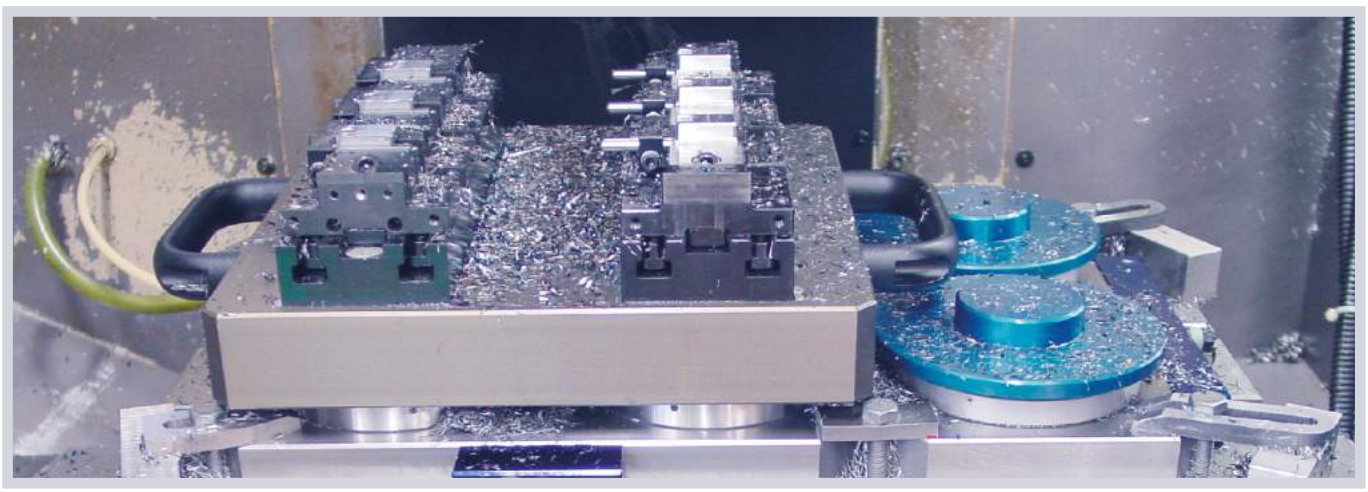
### Self centering vise with integrated zero point adaptation OPP

Because of its compact build body this self centering vise gives a perfect performance to automated 5 axis machines!

The index zero point system is built into the body of the vise, a sub paltet as you normally mount the vises!

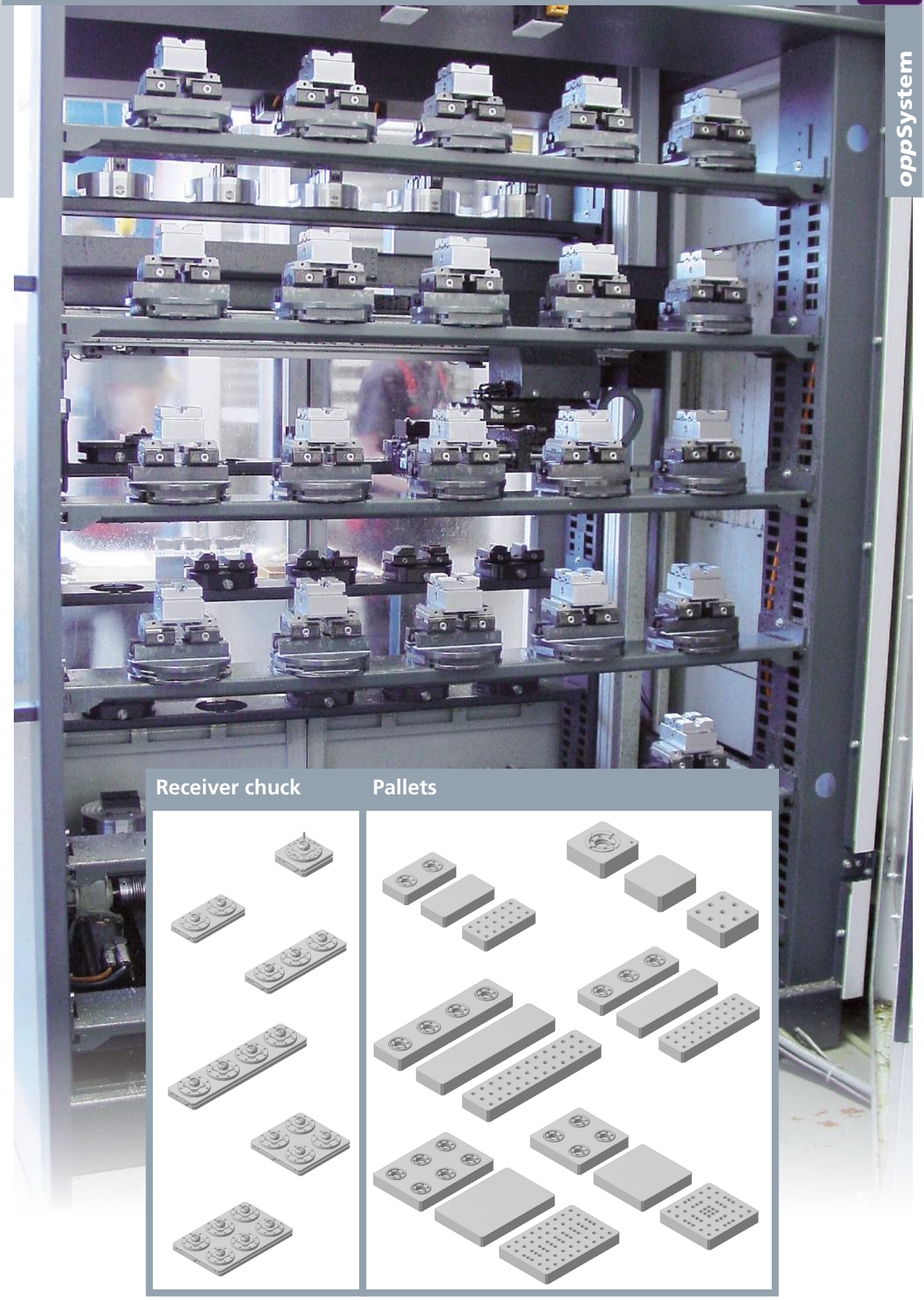
The OPP system is a very accurate system reliable and durable! We guarantee 150´000 changes within ± 0,002 mm



# 60 Pallet automated system with self centering vice





**Receiver chuck**

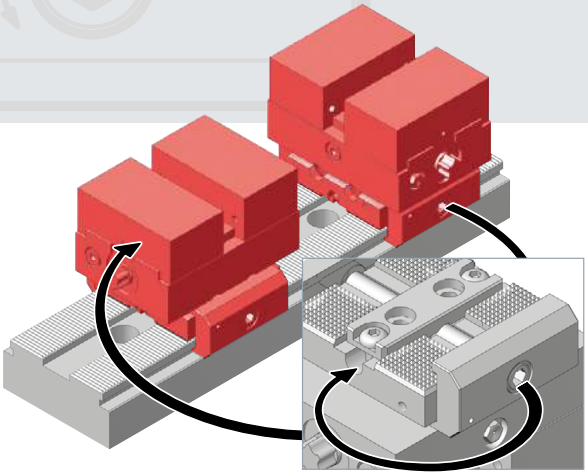


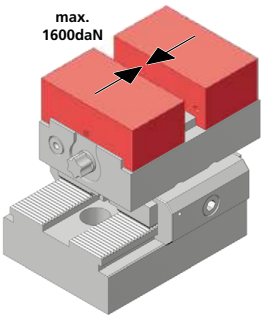
**Pallets**

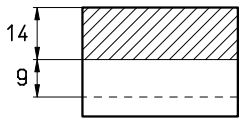
# Self centric clamping module PCZ 100 L50

This self centric clamping module can be rotated by 90 degrees to match a variety of workholding requirements.

Like all other power Clamp workholding modules, it can be positioned in increments of 2 mm along the base rail. Quick changeable jaws are available as soft machinable blanks, or in a hardened execution. Imprinting jaws with hardened teeth may also be ordered. The jaw symmetry is adjustable by the user. A further feature is its compact design not easily being clogged up by swarf.



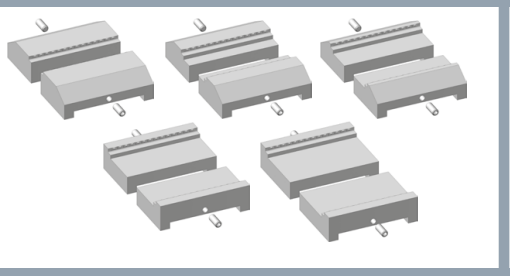


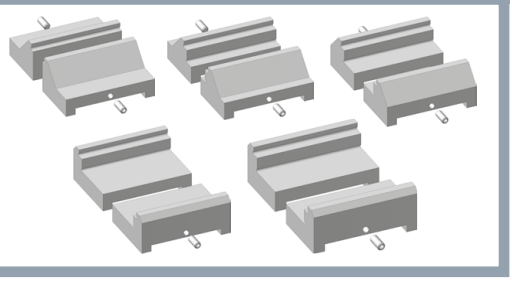

**If a dedicated jaw is being machined:**

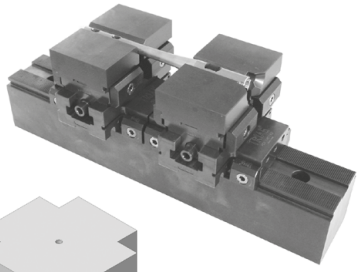
This sketch will be of help regarding the workpiece penetration depth

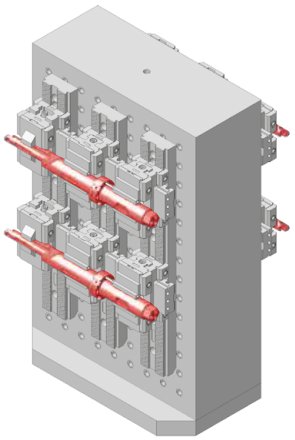
## Stamping jaws

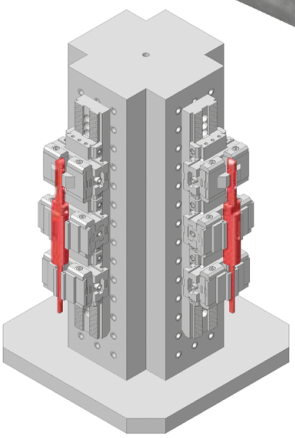


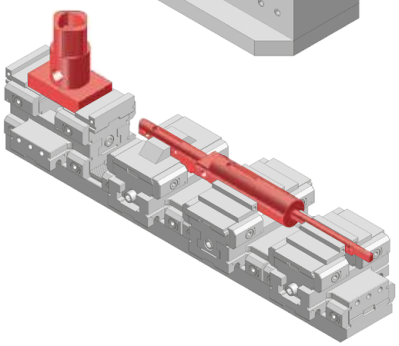
## Stepped jaws

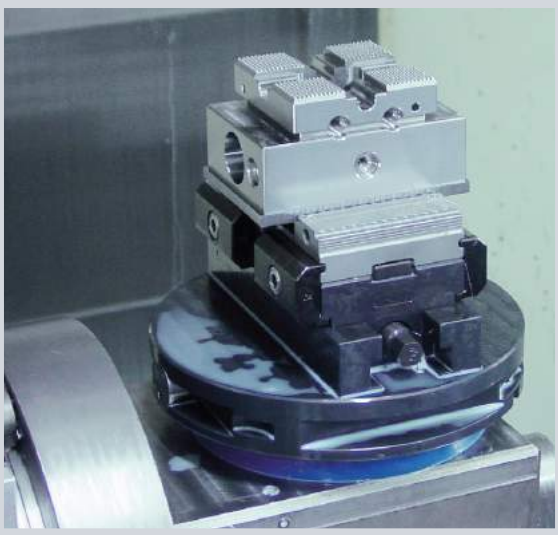












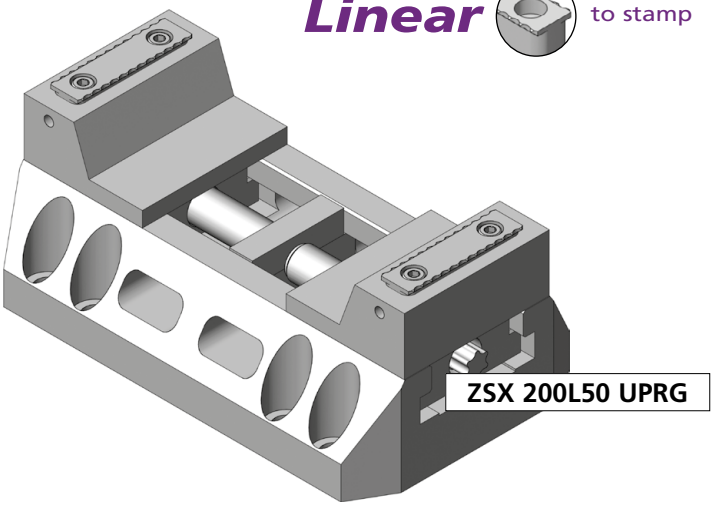
Self centering vise can be moved side words in 2mm steps! Pictures shows 3 x direct stamping jaws

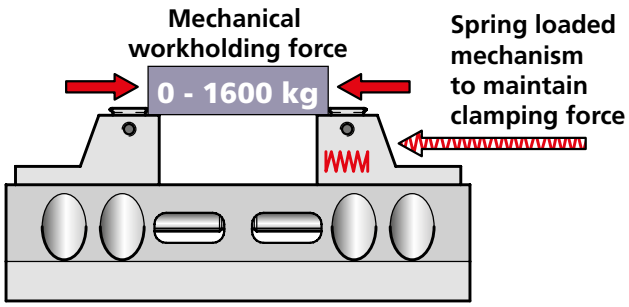
# Centric clamping module ZSX 200 L50 UPRG

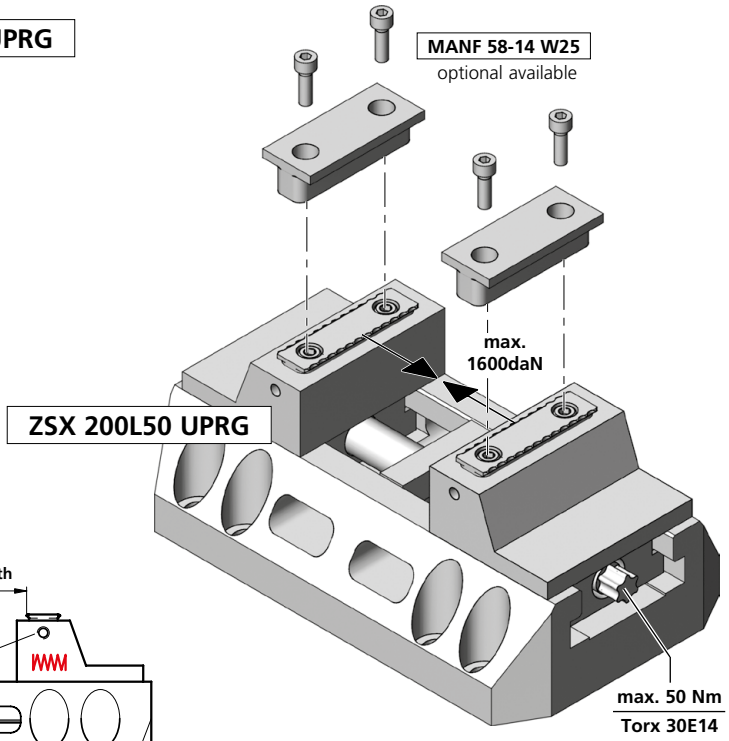
This patent pending self centring vise is unique, as it can be used for direct stamping the blanks. It is different to others as the teeth bite into the raw material and even under vibrations, one of the two jaws will continuously move forward. This will hold the workpiece with the same force and strength as in the beginning.

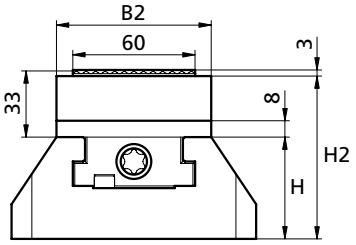
The problem in the past was that the other systems in the market were getting loose after heavy machining and accuracy was difficult to achieve.
Especially in soft materials such as alu and soft steels it has a great performance. Usually the workpiece is clamped only 3 mm but this hight can be changed from 1,8 to 6 mm if necessary.

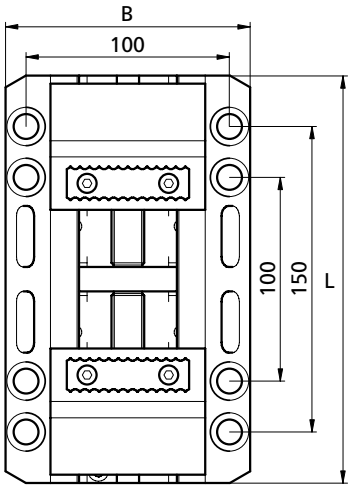
## Linear to stamp

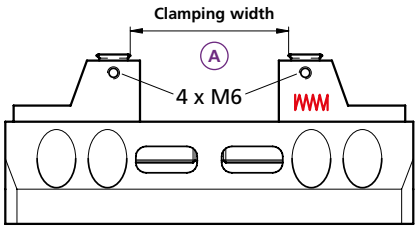


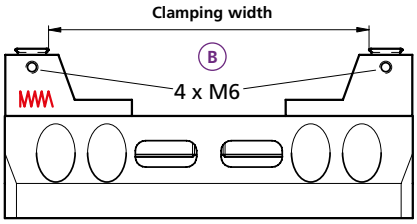



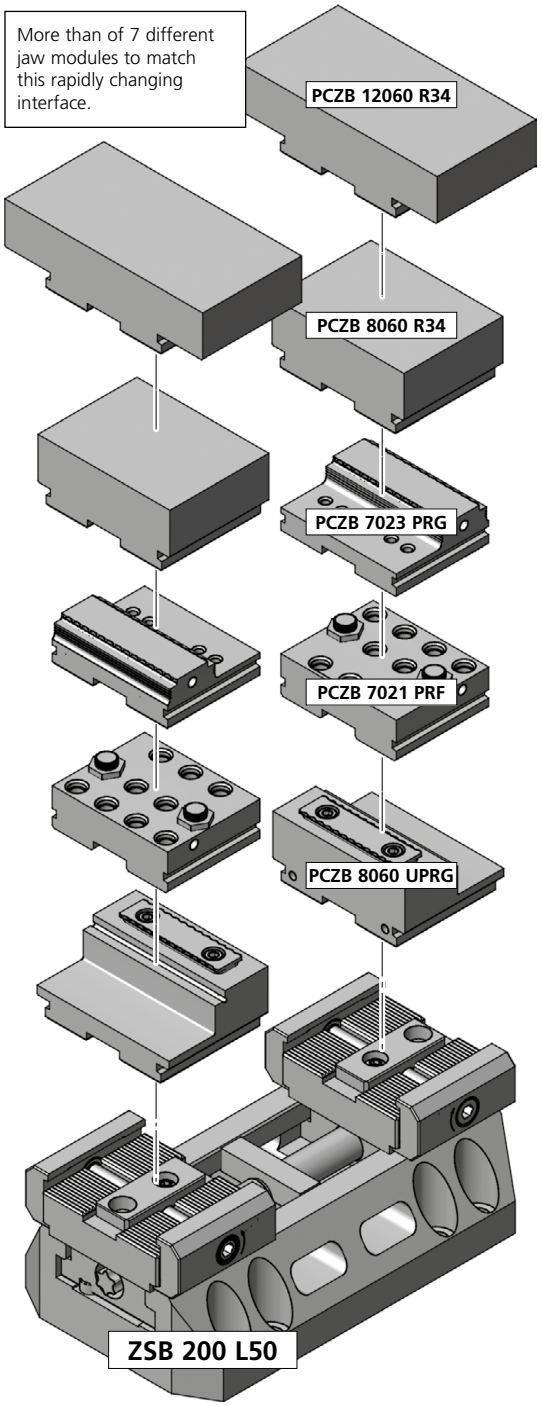

| Torque | | | Workholding force |
|---|---|---|---|
| 10 Nm | lb-ft 7,4 | = 0,2 t | 200 daN |
| 20 Nm | lb-ft 14,8 | = 0,5 t | 500 daN |
| 30 Nm | lb-ft 22,2 | = 1,0 t | 1'000 daN |
| 40 Nm | lb-ft 29,6 | = 1,3 t | 1'300 daN |
| 50 Nm | lb-ft 37,0 | = 1,6 t | 1'600 daN |

| Order number | Dimension | | | | | | Clamping width | | kg |
|---|---|---|---|---|---|---|---|---|---|
| | B | B2 | L | H | H1 | H2 | | | |
| ZSX 140L 50 UPRG | 120 | 76 | 140 | 50 | 33 | 80 | A | 10 - 65 | 6,0 |
| | | | | | | | D | 65 - 120 | |
| ZSX 160L 50 UPRG | 120 | 76 | 160 | 50 | 33 | 80 | A | 10 - 85 | 6,7 |
| | | | | | | | D | 65 - 140 | |
| ZSX 180L 50 UPRG | 120 | 76 | 180 | 50 | 33 | 80 | A | 10 - 105 | 7,1 |
| | | | | | | | D | 65 - 160 | |
| ZSX 200L 50 UPRG | 120 | 76 | 200 | 50 | 33 | 80 | A | 10 - 125 | 7,7 |
| | | | | | | | D | 65 - 180 | |

**Ordering example: ZSX 200 L50 UPRG**

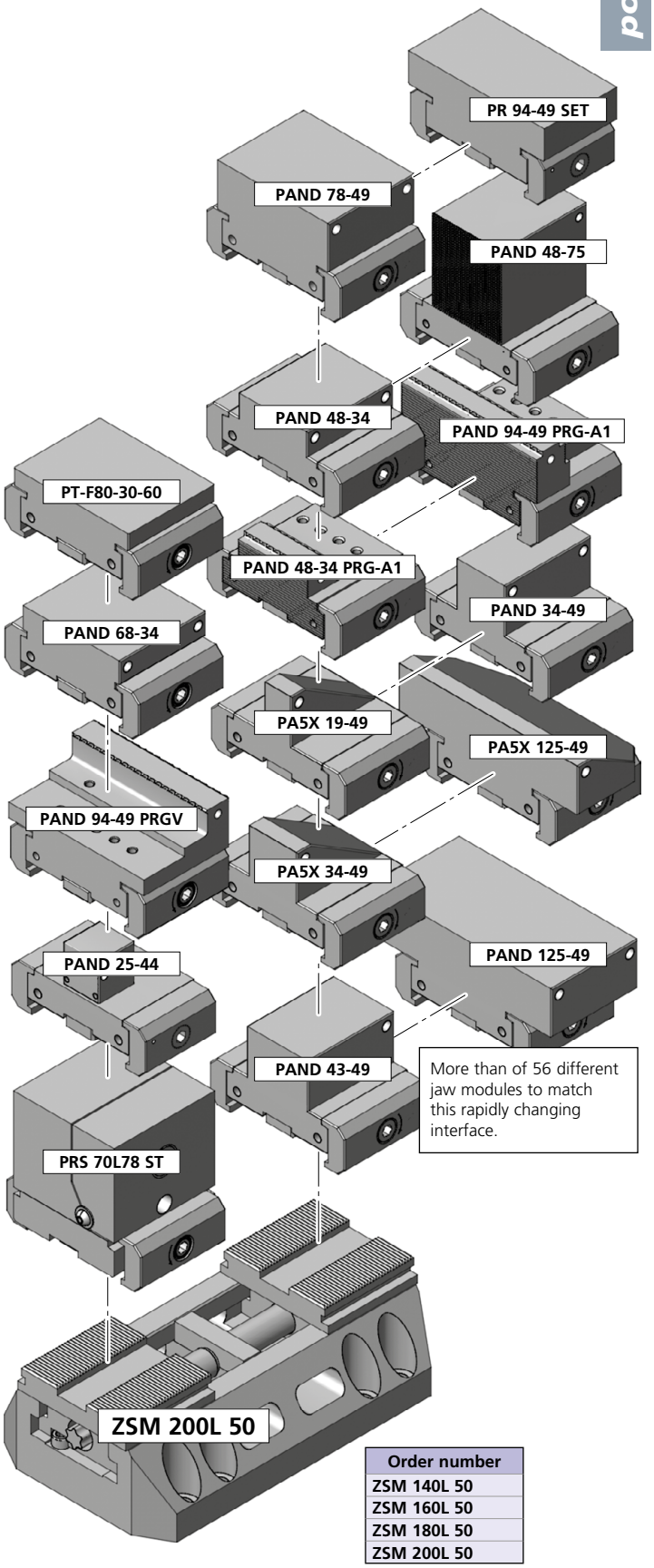
# Modular centric clamping module

## „B"

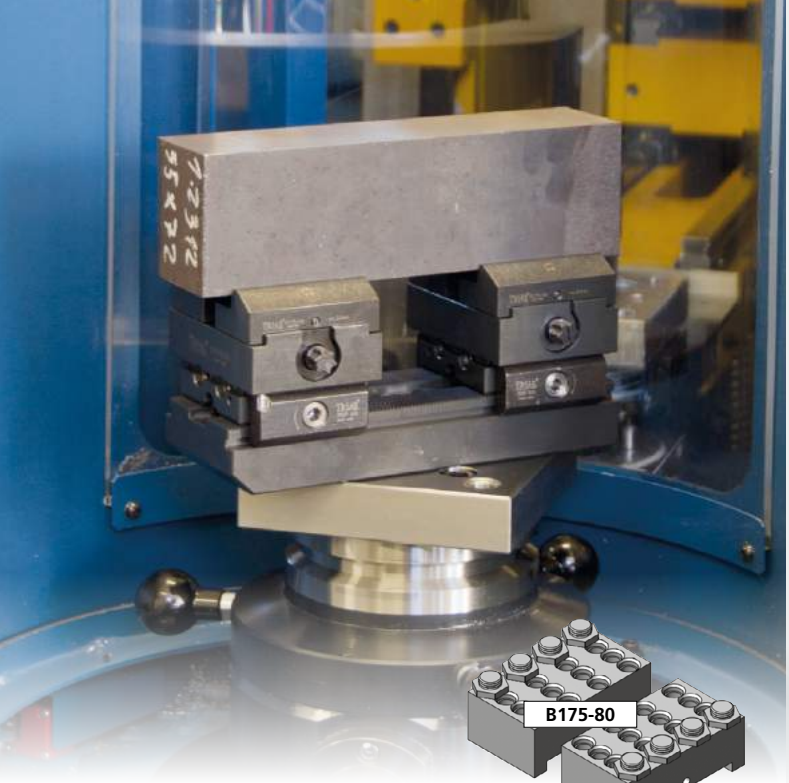


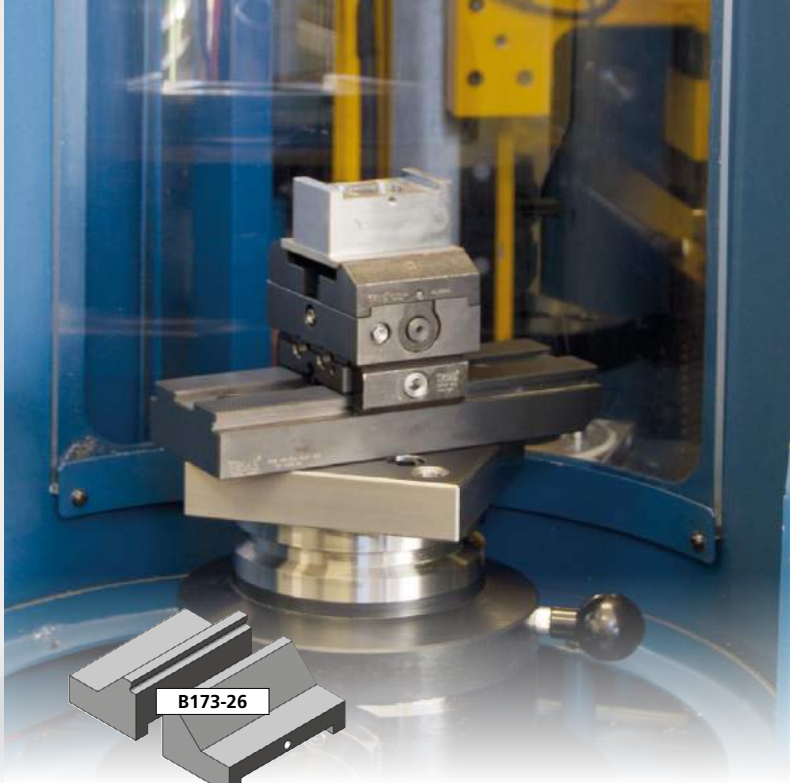

| Order number |
|---|
| ZSB 140L 50 |
| ZSB 160L 50 |
| ZSB 180L 50 |
| ZSB 200L 50 |

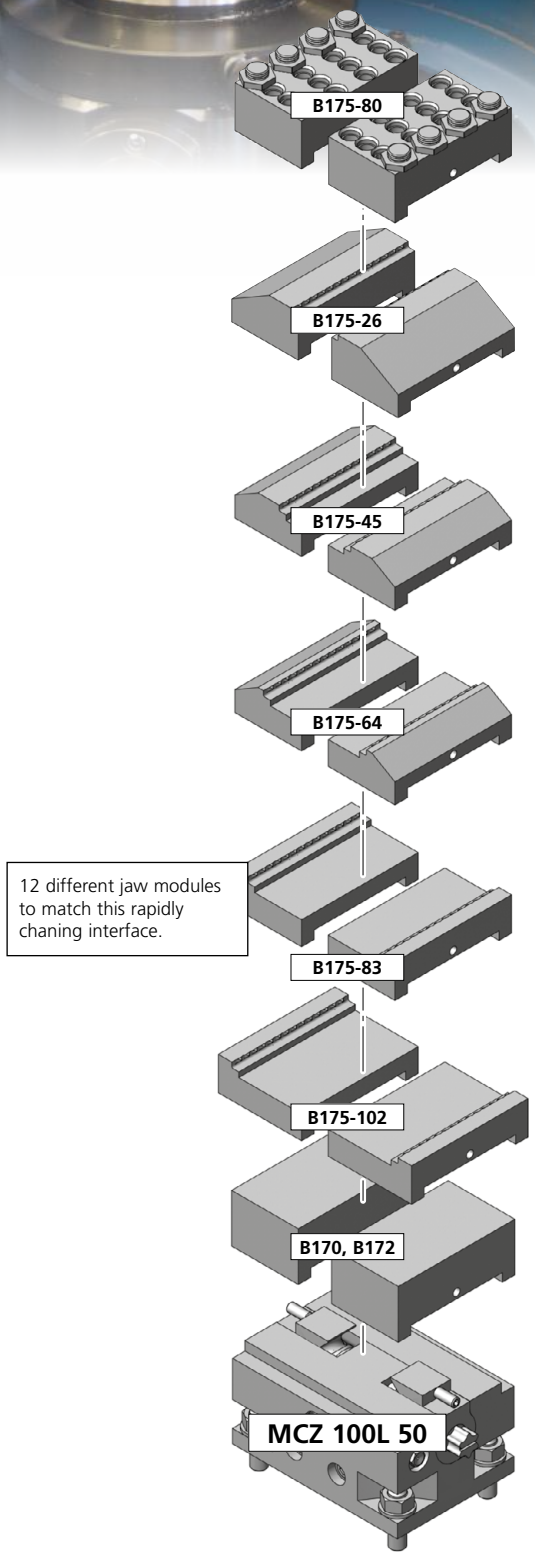
## „M"



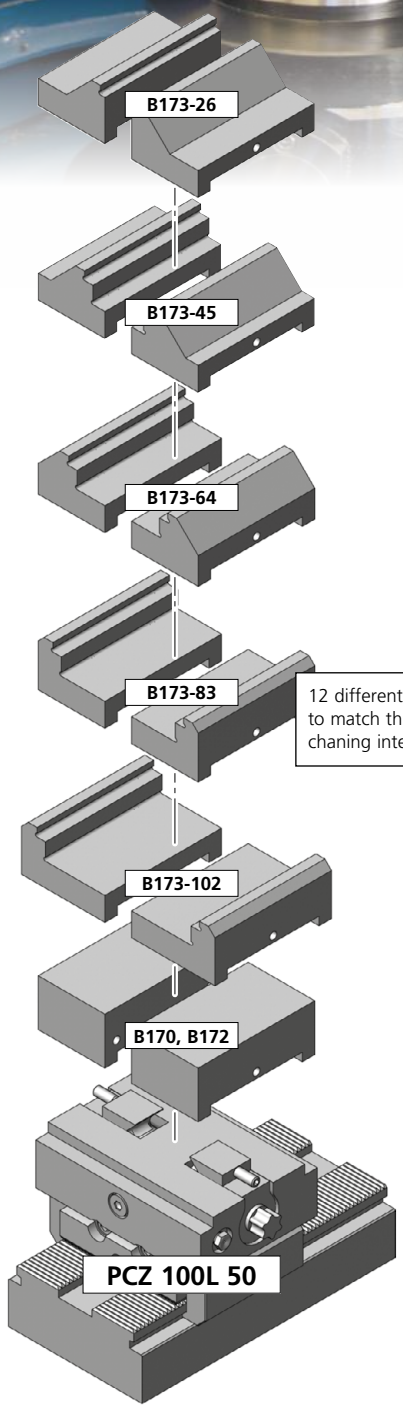

| Order number |
|---|
| ZSM 140L 50 |
| ZSM 160L 50 |
| ZSM 180L 50 |
| ZSM 200L 50 |





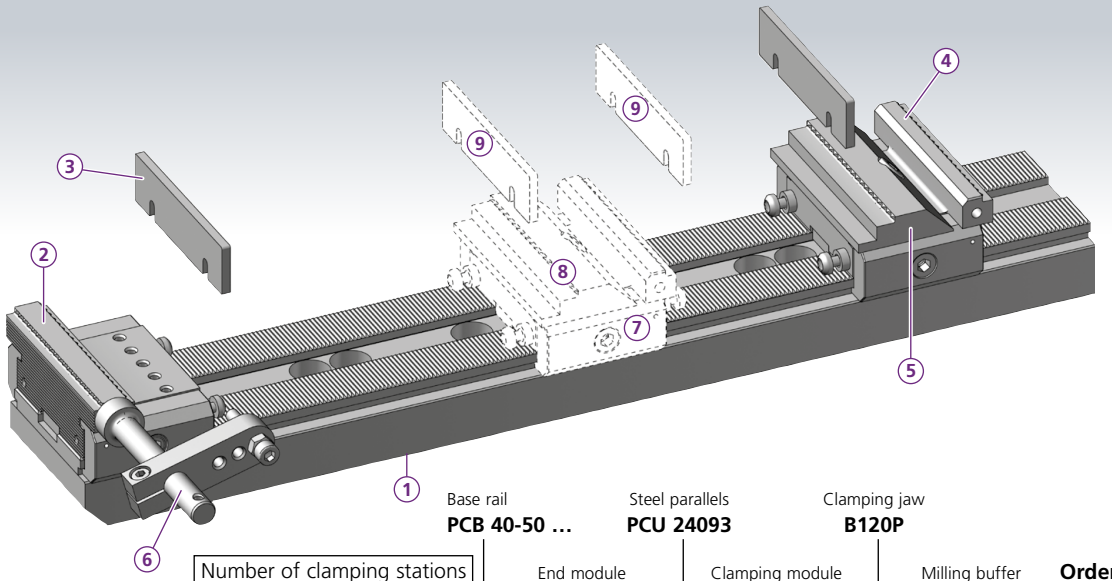



12 different jaw modules to match this rapidly chaning interface.




12 different jaw modules to match this rapidly chaning interface.

# Power Clamp Starter sets




## Stamping-set linear

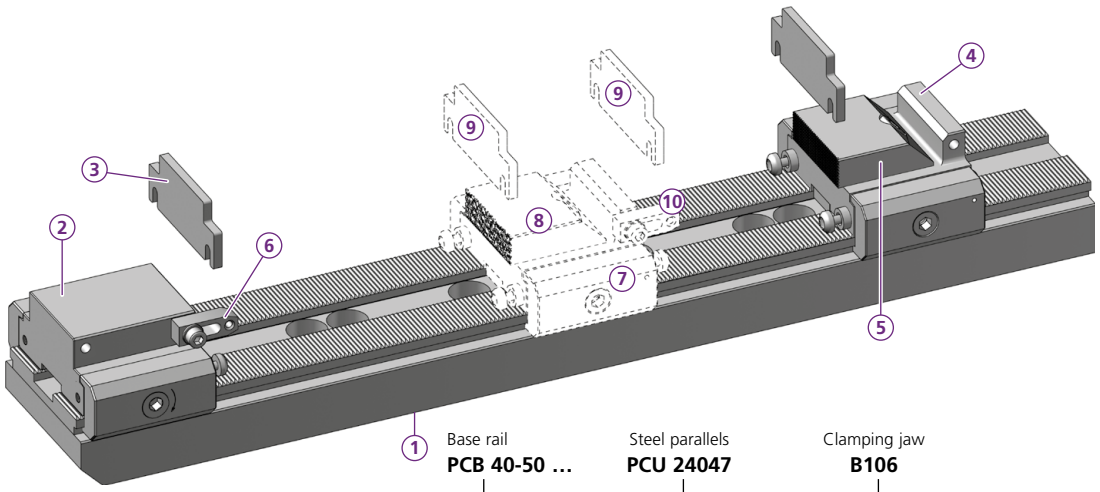
| Length of base rail | Number of clamping stations | 1 Base rail PCB 40-50 … | 2 End module PAND94-34PRG-A1 | 3 Steel parallels PCU 24093 | 4 Clamping module PS1P94L34-105 | 5 Clamping jaw B120P | 6 Milling buffer FAUM 2070 | Ordering example: PC 15 - 300 SET PRG |
|---|---|---|---|---|---|---|---|---|
| PC 15 - **350** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **400** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **450** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **500** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **550** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **600** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **650** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **700** SET PRG | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |

RG13

For all Starter sets ask for our offers

**Additional clamping unit**

| | 7 Clamping module | 8 Clamping jaw | 9 Steel parallels |
|---|---|---|---|
| PC15 PS1P94L34 B120P | **1x PS1P94L34-105** | **1x B120P** | **2x PCU 24093** |




## Linear Set

| Length of base rail | Number of clamping stations | 1 Base rail PCB 40-50 … | 2 End module PAND48-34 | 3 Steel parallels PCU 24047 | 4 Clamping module PS1R48L34-105 | 5 Clamping jaw B106 | 6 Milling buffer FA 1240 | Ordering example: PC 15 - 300 SET LR |
|---|---|---|---|---|---|---|---|---|
| PC 15 - **350** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **400** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **450** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **500** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **550** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **600** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **650** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |
| PC 15 - **700** SET LR | **1** | 1x | 1x | 2x | 1x | 1x | 1x | |

RG13

For all Starter sets ask for our offers

**Additional clamping unit**

| | 7 Clamping module | 8 Clamping jaw | 9 Steel parallels | 10 Milling buffer |
|---|---|---|---|---|
| PC15 PS1R48L34 B106 | **1x PS1R48L34-105** | **1x B106** | **2x PCU 24047** | **1x FA 1240** |

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## TRIAG International AG

Since the formation of TRIAG 1990 we have developed and produced clamping system for the world market. Beside that we sold cutting tools also for the swiss market. With the new company TRIAG International AG we concentrate on clamping system for the world market. Our goal is to develop, produce and distribute solutions for all application in the metall cutting machinery.

Our motivation is to give our customers the best support to achieve the highest output of their investments in machine tools. We offer modular vise systems as standard and dedicated solutions for the highest output. The modular systems find it´s application from conventional machines to high end 5-axis automated systems as well as many time on horizontal machines. Naturally we use for our production our own clamp systems so we have our own practical experience.

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