



## AUTOMATION

PERHAPS  
THE MOST FLEXIBLE  
LOADING ROBOT AROUND



ZERO CLAMP®  
Experience precision

## INCREASE IN PRODUCTION CAPACITIES

### ▶ INVESTMENT IN NEW MACHINES

- High investment costs

### ▶ INVESTMENT IN ADDITIONAL QUALIFIED PERSONNEL

- Shortage of skilled personnel
- Training requirements

### ▶ TOOL OPTIMIZATION

- Only profitable in high quantities
- > Usually low gain in capacity

### ▶ OUTSOURCING IN SAME COUNTRY

- Know-how transfer
- Dependency / delivery performance

### ▶ OUTSOURCING ABROAD

- Possible quality issues
- Long replenishment times
- Medium-term price increase
- Currency fluctuations

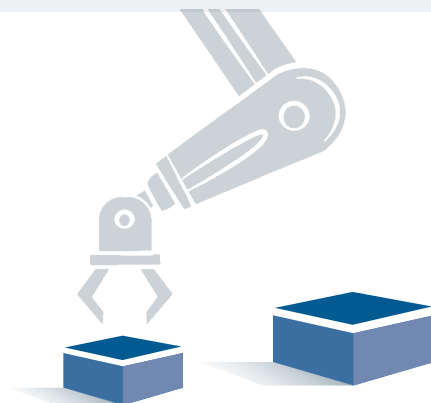
OR

### STEP 1



REDUCE MACHINE TABLE SETUP TIMES BY UP TO 90 % WITH THE **ZERO CLAMP® ZERO POINT CLAMPING SYSTEM.**

### STEP 2



**AUTOMATION**

## WHAT DOES AUTOMATION MEAN?

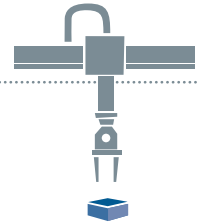
Manufacture components efficiently, that is to say with the lowest staffing levels possible, and reliably. Significantly increase spindle operating times throughout the day, night, and at weekends.

## WHAT ARE THE CLASSIC AUTOMATION SOLUTIONS?

### • PORTAL LOADING

Purely horizontal workpiece storage, loading from above.

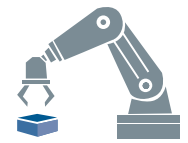
- > Workpiece geometry modified (length / width) following machining.
- > Gripper jaw adapted for each blank and finished part.



### • ARTICULATED ROBOT

Gripper specific to the component with gripper jaw adapted for each blank and finished part (modified workpiece geometry).

Relatively complex programming due to six programmable axes.



### • PALLET LOADING

A pallet and a special fixture specific to the component is needed for each component.

Each component is manually pre-loaded and removed again.



## WHICH COMPONENTS WAS CLASSIC AUTOMATION DEVELOPED FOR?

Serial parts with production rates (due to high costs specific to the component and time spent during setup).

Therefore, components with:



**Fixed sizes** (system decision for certain component sizes)



**Fixed load capacity** (system decision, higher loads from approx. 35 kg / 77 lbs are mostly cost-intensive)



**Long operating times** or **complex fixtures** with modular clamping

## OUR DEMAND FOR INNOVATIVE, FLEXIBLE AUTOMATION

Automated part production even for mini-series (from approx. 5 units).

High component density for maximum machine utilization.

Requires only a small space; automation can be carried out in the most confined of spaces.

High load capacity (100 kg / 220 lbs), for maximum flexibility.

Easy to program.

### FLEXIBLE HOLDING OPTIONS FOR A WIDE RANGE OF COMPONENT SIZES

· Replace **large components** pre-equipped on pallets.

· Directly replace components pre-equipped in centering clamping fixtures, **without additional pallets and increases.**

### THE HIGHLIGHT:

Automatically replace saw blank parts directly, **without additional clamping fixtures.**

> All possibilities can be combined into one workpiece storage system!

## USER REPORTS

When complex components need to be manufactured economically and with high precision, **MICROART e.K.** from Roding, Germany, is always at the forefront as a high-tech and innovative supplier to industries including medical technology, aeronautics, and many others.

For Michael Kerscher, authorized representative and Technical Director, it is microart's mission to be one of the best in the industry. Mr. Kerscher is aware that this goal can only be achieved with the appropriate high-tech equipment and motivated employees.

**Driven by its own mission, microart came across ZERO CLAMP® in 2011.**

From the beginning, Hermle was the first choice for machine supplier. ZERO CLAMP® got the nod in terms of clamping systems and helped to drastically reduce setup times. According to Michael Kerscher, the exceptional benefits of the ZERO CLAMP® systems are their modular design, robustness, and thermal symmetry, which plays a significant role in the precision involved in machining. **In 2015, the next step toward automation followed in the form of a Hermle C30.**

This was also with the aim of minimizing setup times. The transition from one automatic order to the next was realized for small and medium quantities within a very short space of time. **How do you achieve minimal setup times between completely different orders, even when automation is involved?**

Workpiece storage, based on racks in this case, can be set to the required workpiece size in just a few steps. Thanks to the zero point clamping system, grippers and fixtures are equipped in a few minutes. The program is then loaded. Even if the program

needs to be recreated, this takes just a few minutes thanks to the teach-in function.

**The third ZERO CLAMP® system went into operation as early as June 2016.**

This was a logical step for Michael Kerscher to increase machine operating times and relieve skilled workers of routine work. He believes that with ZERO CLAMP® he has found a partner who will engage in continual development with him and who is also open to new ideas.

„Präzision in Innovation. Ihr Nutzen, wenn Sie mit uns arbeiten:“



**Persönlich, kompetent, verbindlich**

Durch die hohe technische Kompetenz und persönliche Kundenzuordnung im Projektmanagement werden unsere Kunden persönlich, kompetent und verbindlich betreut.

**Atmende Kapazität**

Alle Prozesse sind digitalisiert, alle Maschinen miteinander vernetzt. Wir fertigen papierlos. Durch unseren Digitalisierungsgrad sind wir transparent, termintreu und haben vom ersten Teil an reproduzierbare Prozesse.

**Präzisionsbauteile und -systeme**

**Wirtschaftlich**

Wir betreiben unsere Anlagen konsequent in drei Schichten mit Mehrmaschinenbedienung. Unsere automatisierten Anlagen laufen 24/7.

**Termintreu, transparent, prozesssicher**

Durch unseren redundanten Maschinenpark sind wir in der Lage, kurzfristig auf unvorhergesehenes oder auf Nachfrageschwankungen zu reagieren, ohne Termine zu schieben oder Qualitätskompromisse einzugehen. Wir fertigen Prototypen in kurzen Lieferzeiten.

**Which aspects of ZERO CLAMP® automation impressed you the most?**

In particular, it was the perfectly coordinated interplay of easy-to-operate robotics software, gripper technology, and active clamping devices.

The newly developed "Pneumatic Drive" centering clamping fixture from ZERO CLAMP® also offers a multitude of options for dispensing with expensive bench vises or complicated fixtures where possible. This reduces the handling costs per workpiece to a minimum.

The price-performance ratio is therefore unique within the market.

**3 x HERMLE (1 x C22, 2 x C30)**





The toll manufacturer **KASTNER & SEITZ GmbH** from the south of Munich has been an exemplary customer since ZERO CLAMP® was founded. The ideal partner for the production of individual parts and prototypes, as well as for small-scale and mass production since 1993. The company primarily works as a supplier for the aircraft construction, medical technology (robotics), and electromechanics industries.

According to company directors Peter Kastner and Jürgen Seitz, high precision in manufacturing is based on constant investment in state-of-the-art CNC machines, machining centers, and the most advanced equipment to guarantee consistently high quality in terms of production.

**Production is oriented exclusively towards ZERO CLAMP®.**

**Mr. Seitz explains how this came about:**

We were already a partner of ZERO CLAMP® in 2007, because we, as practitioners, were impressed by this system and still are.

We had previously been thinking about reducing setup times, but did not find

the ideal system partner until we discovered ZERO CLAMP®.

**Kastner & Seitz manufactures almost exclusively on Mazak machining centers using ZERO CLAMP® products.**

**At the beginning of 2015, it opted for the ZERO CLAMP® automation concept:**

It was an obvious step to use the innovative loading robot system as well. From the beginning, we were impressed by the maximum flexibility with high capacities of 100 kg. An innovative, ingenious system, just like the zero point clamping system, according to Jürgen Seitz.

**Two Mazak Variaxis J-600 machines have already been automated by ZERO CLAMP®.**

**Which components and quantities do you use automation for?**

We automate both steel as well as aluminum components. Small-scale batches are also automated. The systems run unmanned for the whole weekend.

The automatic “Pneumatic-Drive” centering clamping fixture, which grips blank parts directly, is especially brilliant at quickly automating the smallest of batches. We use our own pallets for larger components or to replace modular clamping. This is easy enough, because the workpiece storage offers flexibility.

We combine all these options and switch automatically, for example, from blank to pallet handling.

**Do you have any tips for automation?**

During the day, new components are usually fed in by our skilled workers. In the evenings and at weekends, the automated machining centers run unmanned.

The software is easy to operate, which means that even if an employee is ill, automated operation can always be sustained. To handle work that causes a lot of chips to accumulate, we have recently purchased a briquette press.

The best automation technology is of no use if you can't keep your processes under control during automated operation.

## MAZAK VARIAXIS I-600



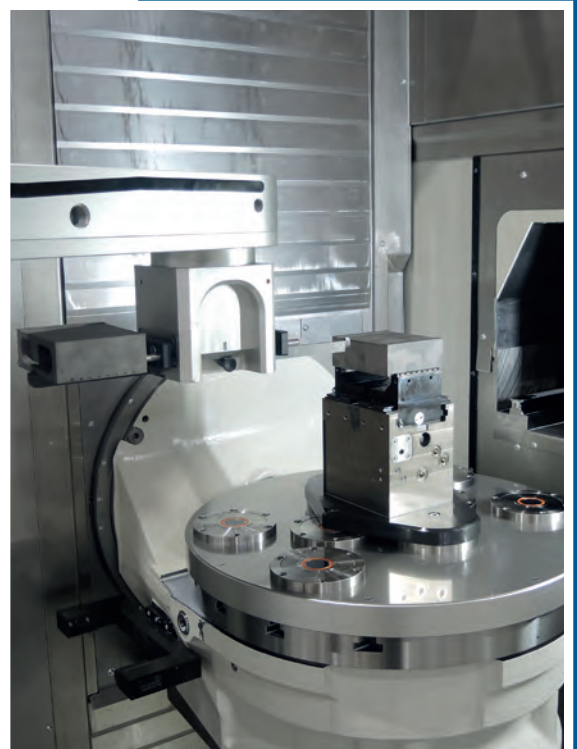
# ZEROBOT 100 - V





### **The perfect interplay**

Combination of a precise universal machine and highly flexible automation.



## USER REPORTS

Lüdenscheid, in the northwestern part of Germany's Sauerland region, is home to **KS-Norm GmbH**, a specialist manufacturer of standard components for tool and mold making purposes. The product range includes standardized guide elements, fine centering devices, slides, and custom-made products.

Managing Director Björn Schröder knows what it takes to produce quality, with highly trained skilled workers specializing in the creation of high-precision standard parts. Precise milling, grinding, and measuring machines from well-known manufacturers are used in production. The automation is provided by ZERO CLAMP®.

**The automation only involves the automatic centering clamping fixture; i.e. the saw cuts are handled with an active gripper.**

Because we grip the components directly and automatically clamp them in the machine, we did not need to purchase any additional bench vises.

This means racks can be set up individually and manual bench vises are no longer required.

**KS-Norm uses up to three racks at the same time, which ensures considerable storage space for components.**

Because we can set up racks individually and completely dispense with manual bench vises, we are able to turn over a lot of components. And this means machines can run unmanned for long periods without any problem.

**Have you changed your processes as a result of automation?**

We have brought together various blank parts to form a single family with the same basis. So components with similar dimensions now have the same saw cut.

This means we only need one loading program for each raw material size. The only thing selected is the individual machining program for the milling machine.

A large part of our standard product range is therefore covered by just a few blank part sizes, which are milled on a fully automatic basis.

Also, the mounting brackets for the respective saw cut widths have different colors. So it does not take long during filling to see which material size needs to be placed in which rack.

**Do you also use automation for custom-made products and small batch sizes?**

We use automation for batches of ten units and above – depending on the run time for the component.

With custom-made products, raw material sizes may, of course, still deviate from standard sizes as before. But here too, it takes just a few steps to adjust grippers and mounting brackets to the individual component. It only takes about 5-10 minutes to create the program.

We can also respond quickly to changes in production volumes. As I said, the effort involved in adjustments is reduced to a minimum.

**How do you use this automation, which is still quite new?**

We have been using Zero Clamp automation for around 3 months now. We were particularly surprised and pleased with the significant increase in daily productivity, because the continuous and immediate switching of workpieces represents a significant improvement on the previous solution based on one employee for every two machines.

The unmanned periods (nights and weekends) have delivered great process reliability and efficiency. We are very satisfied with the results and are already thinking about purchasing a second system.

**Hurco VMX24**







**metallmanufaktur GmbH** is an innovative company which produces complex five-axis milled parts for various industries in small and medium-sized runs.

The company also provides a showroom for Haas Factory Outlet Süddeutschland. Haas machine tools are showcased under production conditions here, and training courses and workshops relating to CAD-CAM, clamping technology, and production optimization are also offered.

The still relatively young company is based near Lake Constance, not far from the Swiss border.

We try and keep our stock of machinery up to date and are looking to improve our internal processes so we can provide cost-effective and reliable products (explains Managing Director Jochen Schumacher). This includes modern production control, a lean CAD-CAM solution, state-of-the-art clamping technology, and automated production.

**Innovative clamping technology such as the zero point clamping system and the clamping rail system from ZERO CLAMP® has been used in production from quite an early stage. The first automation took place in 2015.**

It was a major step for a small company with eight employees to initiate an automation solution, because this is often very time-intensive and ties up a lot of a company's resources, particularly during the initial phase.

This was not the case with the solution from ZERO CLAMP®. Thanks to intuitive operation, learning requirements are reduced to a minimum. There is also no need for extensive training in robotics or programming.

**Why did you opt for automation with ZERO CLAMP®?**

We were particularly impressed with the compact design, which takes up so little room (explains Jochen Schumacher). This is the ideal solution for a company where space is at a premium. We manage to turn over a lot of components, however, even though we decided to have just the one rack.

We only produce runs on the automated machine and even use automation for quantities of fewer than ten units.

**What successes have you achieved during a year of operation?**

If we only compare the spindle run times for our new automated machine with those for an older, non-automated machine with the same design, the spindle run time for the automated machine is twice as fast.

Our qualified and skilled workers have also been able to concentrate on CAD-CAM programming. This requires real expertise and both makes more sense and is more economical than tying people up with the simple tasks of changing and replacing parts.

**What have you planned for the future?**

From the start, automation has only involved pre-clamped components in Centering Clamping Fixture 80 models.

In future, the idea is to grip components directly, if at all possible, without pre-clamping them on individual centering clamping fixtures. This will also enable us to turn over even more components and allow us to accommodate even larger runs in just one rack without any problems.

In order to achieve this, we only need the Pneumatic-Drive as an active clamping device, as well as an active gripper, which also belongs to the standard ZERO CLAMP® range.

We will soon be using a second automation solution for a Haas UMC-750SS, which we hope will improve our productivity even further.

[www.metallmanufaktur.info](http://www.metallmanufaktur.info)

**Haas UMC-750**



# Zerobot® 100-P

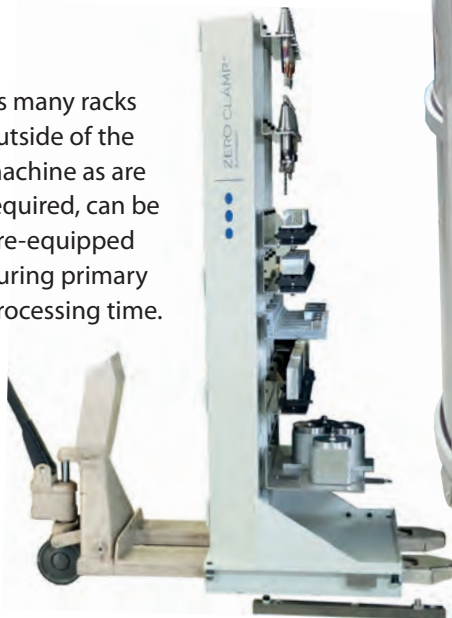
## THE PREMIUM SYSTEM

High load capacity of up to 100 kg (220 lbs).  
Handles workpieces, clamping devices, and tools.

Large workpiece and tool storage  
(with up to three racks).

Three racks provide up to 7.5 m<sup>2</sup> (80 ft<sup>2</sup>)  
of storage space for maximum  
part diversity.

As many racks  
outside of the  
machine as are  
required, can be  
pre-equipped  
during primary  
processing time.



Racks are easy to handle  
using a pallet truck.

Grippers can be replaced  
automatically.

### Why premium?

Maximum design flexibility thanks to mobile racks.  
Maximum storage space during automated operation with up to three racks.

Machine freely accessible when automatic loading is not in operation.



Can be integrated in almost all production environments (required space <math>< 5 \text{ m}^2 / 53 \text{ ft}^2</math>).

## THE ZEROBOT SYSTEM



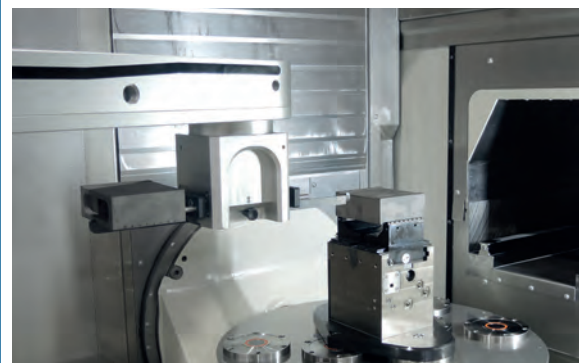
Can handle **a huge range of pallet sizes**.



**Automated setup** of all components.



Handles **centering clamping fixtures** directly, **without additional pallets**.



**Grip and replace blank parts directly**, using the active gripper and clamping device.

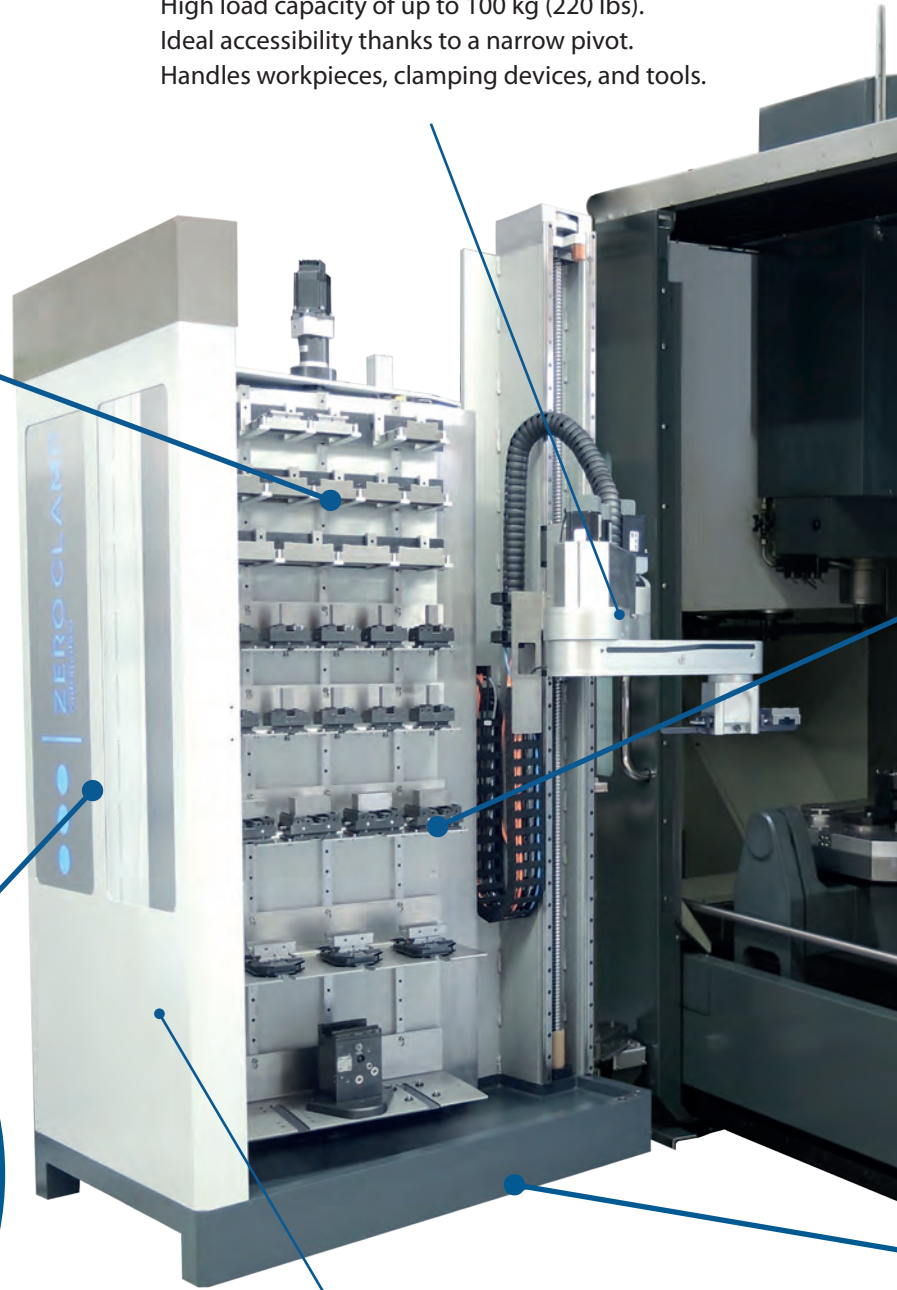
# Zerobot® 100-V

## THE VARIABLE SYSTEM

Optimum use of space thanks to a rotating double rack.



High load capacity of up to 100 kg (220 lbs).  
Ideal accessibility thanks to a narrow pivot.  
Handles workpieces, clamping devices, and tools.



The current operation status is displayed on the side LED display.

Integrated industrial PC with large memory space for loading programs.



## Why variable?

Variable automation on several tool machines.



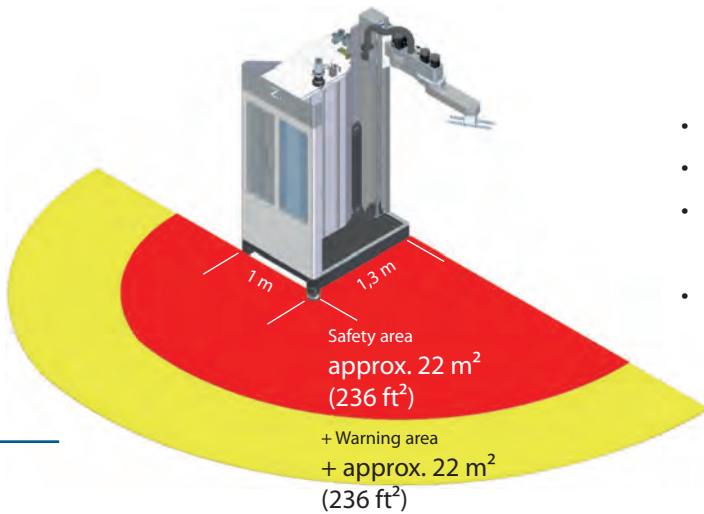
Double rack (can be loaded on the front and reverse side) for minimum spatial requirement with generous storage space (up to 4 m<sup>2</sup> / 43 ft<sup>2</sup>).

The loading robot can be easily operated thanks to the innovative teach-in function. The machine is freely accessible during manual operation.

The complete automation system is compatible with a pallet truck and can be replaced quickly. Ideal for automating several machines.

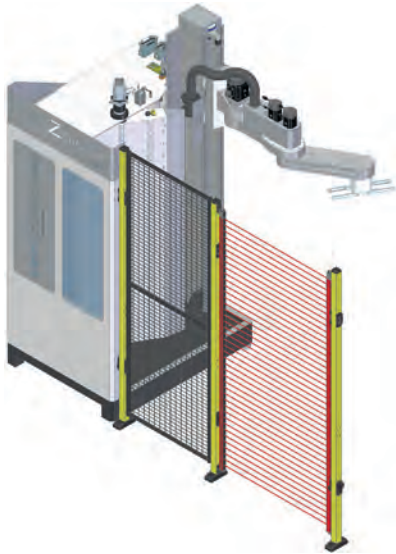
## PROTECTIVE HOUSING 100-V

### LASER PROTECTION



- Separate warning and safety areas.
- High user acceptance.
- Faster machine switches, only one safety device for several connections.
- No need to install a guard.

### PROTECTIVE HOUSING COMBINED WITH LASER SCANNER



- Little space needed.
- Safety area clearly demarcated in visual terms.
- User-friendly access via a light curtain.
- Adjustable passage width.

### PROTECTIVE HOUSING WITH DOOR OPENING



- Very little space needed (approx. 3 m<sup>2</sup> / 32 ft<sup>2</sup>).
- Safety area clearly demarcated in visual terms.
- Maintenance-free protection system.

# PNEUMATIC CENTRIC CLAMPING

Pneumatic clamping of blank parts from 1 bar (14.5 psi) of compressed air with a clamping force of up to 45 kN (10,115 lbf.)

**Workpieces are exchanged and replaced directly with only one active gripper into the clamping device.**



## IDEAL WORKPIECE HANDLING

Workpieces are exchanged and replaced directly with only one active gripper into the clamping device.

## POWERFUL

Clamping forces continuously adjustable from 6 - 45 kN\* (1,350–10,115 lbf).

## RANGE OF VARIABLE JAWS

Cost-effective extensions for ideal blank part machining (clamping area 10–200 mm / 0.4–7.8 inch; adjustable stroke 3–14 mm / 0.1–0.6 inch).

## PRECISE

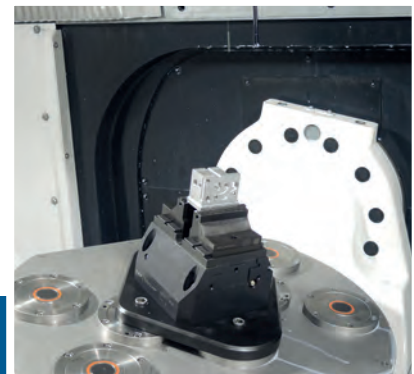
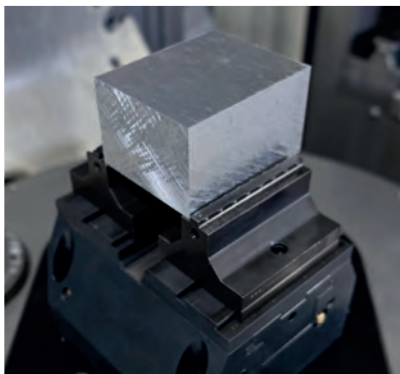
Variable centering  $\pm 0.02$  mm (0.0007 inch). Resistant thanks to full enclosure (no free spindles, no risk of entrapment).

## PROVEN BASIS

Adaptable to ZERO CLAMP® zero point clamping system as well as to common base plates. Operation via lateral air connections, 4-channel clamping pots or special interfaces.

## SAFETY AND SECURITY

Due to the preload of about 600 N, there is no danger of component loss, e.g. with shuttle tables.



\*Clamping force is the arithmetic sum of the individual forces acting on the clamping jaws.

## A Comparison of Zerobot® 100-P and Zerobot® 100-V



ZEROBOT® 100-P

### FLEXIBLE STORAGE SPACE

As the racks are compatible with pallet trucks, they can be used throughout the entire process chain. For example, racks can be moved from storage and production, right up to mounting.



### FREE DESIGN

Depending on the machine type, robots and racks can be placed freely, the spatial requirement is less than 5 m<sup>2</sup> (53 ft<sup>2</sup>).



### LARGE WORKPIECE STORAGE SYSTEM

Thanks to the use of up to three possible racks, a large number of workpieces (up to 1,200 units) are available to the automation system. Further racks can be fitted during primary processing time. Max. component size 600 x 400 mm (23 x 16 inch).\*



### INDIVIDUAL PROTECTIVE HOUSING

The automation system can be fitted with a rotating door or a space-saving fence that can be freely designed, which ensures a high level of accessibility.



\* Can also be bigger depending on the specific application





ZEROBOT® 100-V



#### MOBILE AUTOMATION

The automation system can be transported as one unit via a pallet truck. It is ideal as a mobile automation system between several machines in production, as it can be commissioned quickly.



#### LOW SPACE REQUIREMENTS

Space-saving and compact design. Rotating double rack, robot, and protective housing are built on an area of 1 m x 1.3 m (3.3 ft x 4.3 ft).



#### COMPACT DOUBLE RACK

Generous workpiece storage in the most confined of spaces thanks to a rotating double rack, which holds workpieces on both sides and can therefore be loaded during primary processing time. Max. component size 640 x 245 / 400 x 320 mm (25 x 7 / 16 x 13 inch).\*



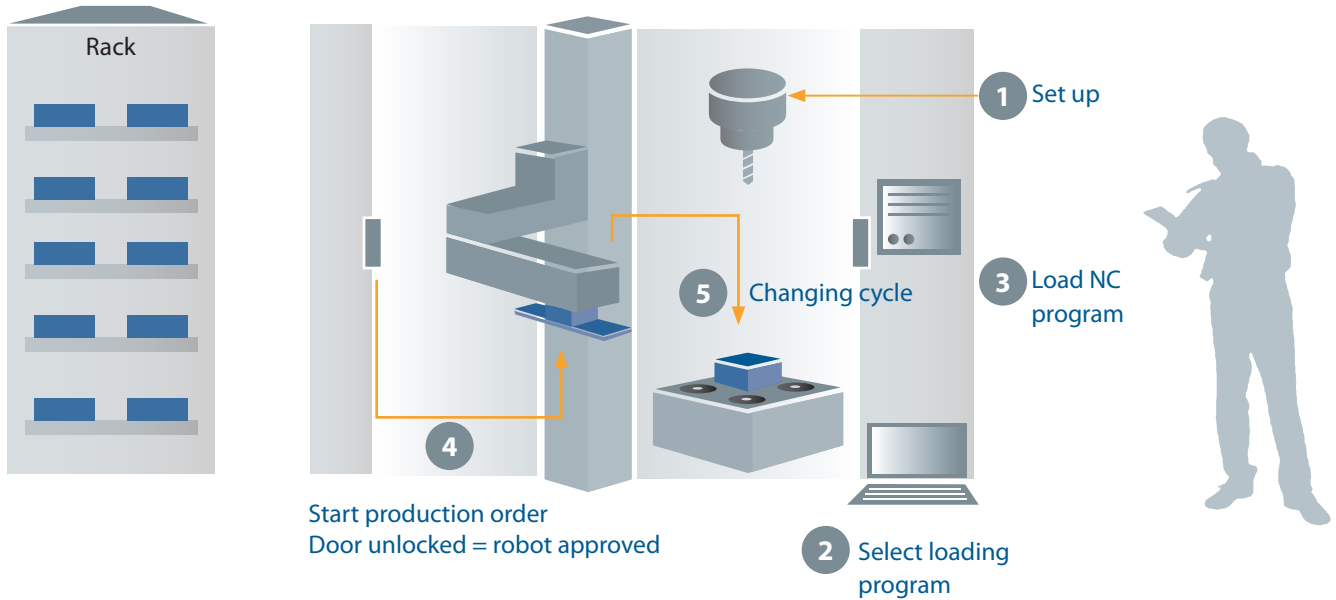
#### DEFINED PROTECTIVE HOUSING

The automation system has an integrated protective device with status display, optionally with laser monitoring or protective fence.

\* Can also be bigger depending on the specific application

# Play

## AUTOMATION LEVEL 1



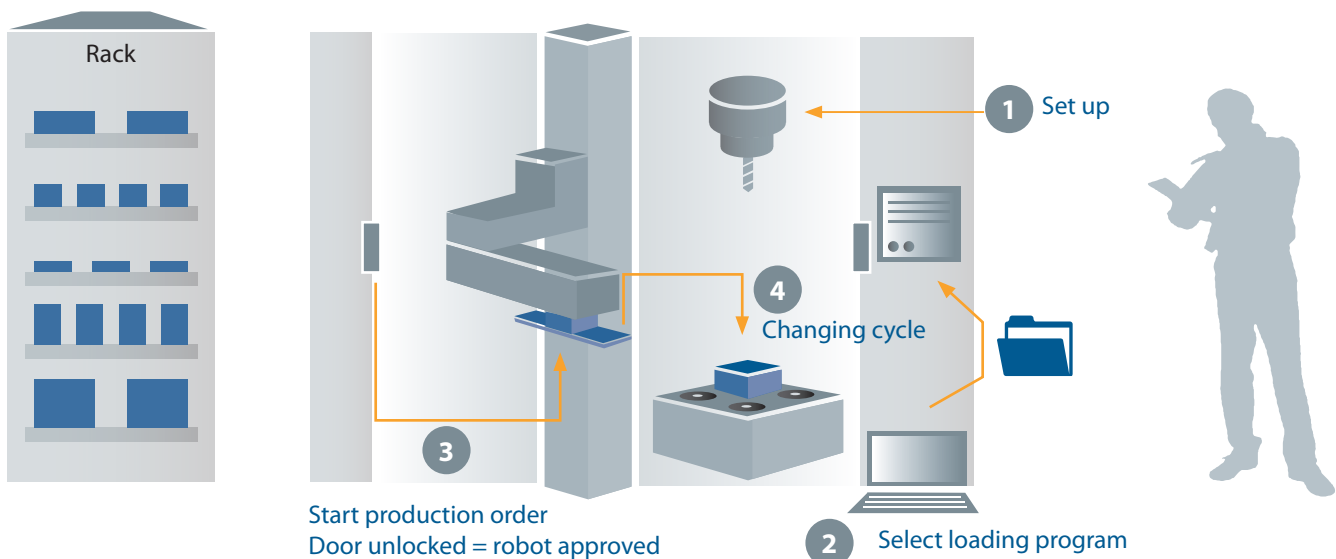
### LOADING / UNLOADING **A WORKPIECE TYPE\***

Robot functions as a machine operator > exchange and replace workpieces.

The robot and machine program must be reloaded manually for different workpiece types.

*Also possible for older machines; however, only one machine program can be actuated in a continuous loop.*

## AUTOMATION LEVEL 2



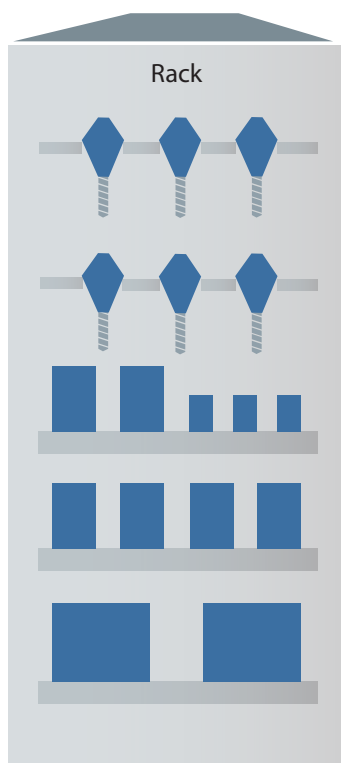
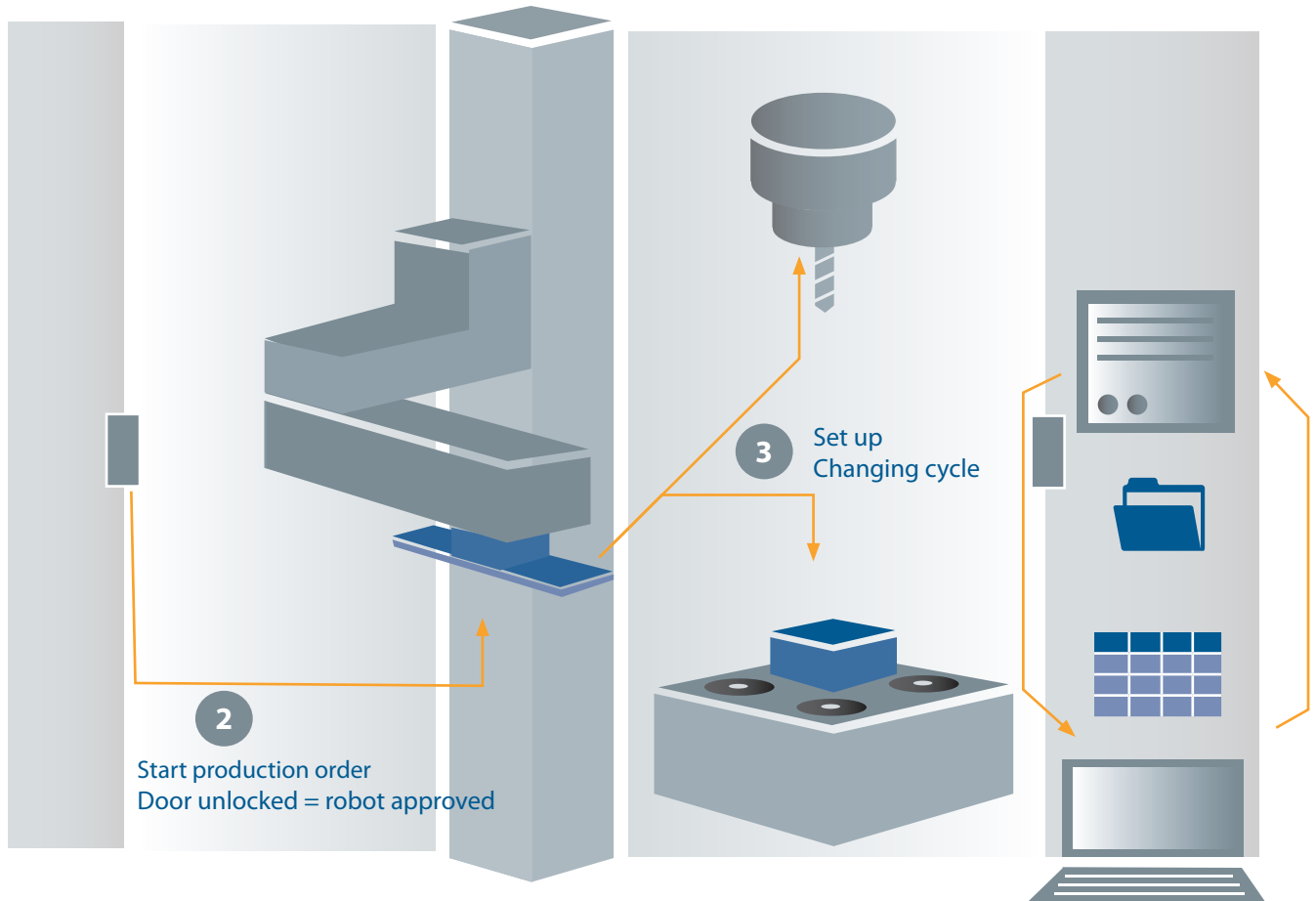
### LOADING / UNLOADING **OF DIFFERENT WORKPIECE TYPES\***

Robot transfers machine program number to the control.

*Different machine programs can be activated automatically in succession, communication via bus automation interface.*

\* Grippers and clamping devices can also be handled.

# AUTOMATION LEVEL 3



- 1 Select loading program  
Automated transfer of NC program number  
**Set up + transmission of tool data**  
Optional: Door activation, activation of automated clamping fixture, etc.

## LOADING / UNLOADING DIFFERENT WORKPIECE TYPES INCLUDING EQUIPPING / REMOVING TOOLS\*

Robot transfers tool data along with machine program number.  
> Machine setup is automatically assumed by the robot.

*Workshop control with central database possible,  
tool data is transmitted via tool management software.*

\* Grippers and clamping devices can also be handled.

**SYSTEMS PROVIDER**

## AN AUTOMATION SOLUTION FOR SMALL AND MEDIUM-SIZED RUNS?



**+ 60 %**

Machine capacity

**+ 30 %**

Time freed up for skilled workers

**- 50 %**

Reduction in machine hours

**< 1 YEAR**

To pay for itself

# THE ZERO POINT CLAMPING SYSTEM

The perfect partner for fully automated and even manual operation.

## FREE ACCESS TO THE MACHINE

The machine table is freely accessible during manual operation.

---

## FLEXIBLE BASIS

The user-friendly zero point clamping system is the perfect partner for every application.

---

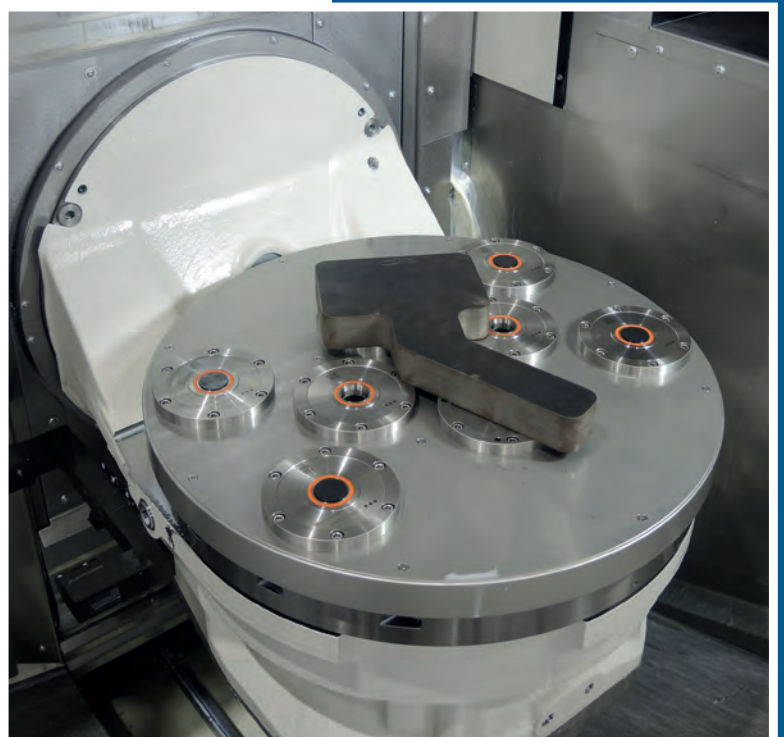
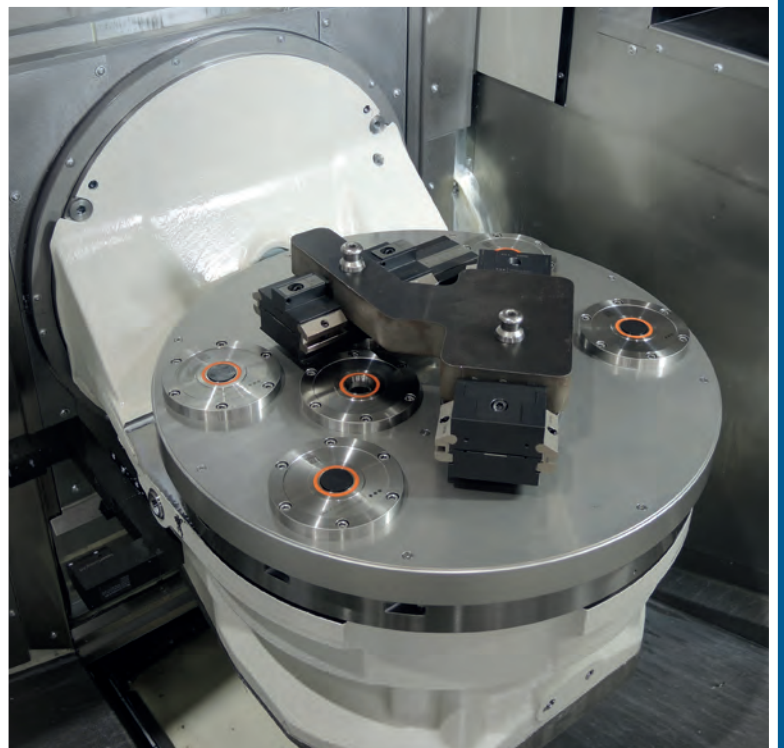
## MODULAR CLAMPING RAIL SYSTEM

Allows form-fit clamping of highly complex components such as flame cuts.

---

## DIRECT COMPONENT CLAMPING

Direct accommodation of component by means of clamping studs favors machining without tricky contours.



# ALL COMPONENTS FROM A SINGLE SOURCE



Gripper



Clamping device



Individual racks



LOADING ROBOT



Job management



Automation training



Zero point clamping system with compressed air supply (4 channels, 2 levels)



### HIGH LOAD CAPACITY AND RANGE

Load capacity of up to 100 kg (220 lbs), max. height 1,900 mm (74.8 inch), max. range:

Zerobot® 100 - P = 1,130 mm (44.5 inch)

Zerobot® 100 - V = 1,220 mm (48.0 inch)

(depending on gripper and application).

### TEACH MODE

You can save your desired start position with the touch of a button. The robot arm and gripper are adjustable by hand; the Z-axis is adjustable via a hand wheel.

### COMPATIBLE WITH A PALLET TRUCK

Loading robot can be transported quickly and easily. The Zerobot® 100-V is compatible with a pallet truck in one unit including the double rack.

### USER-FRIENDLY

Pre-programmed standard processes, such as automatic gripper changes.

### PASSIVE AND ACTIVE GRIPPERS

Up to 4 channels can be activated using active grippers.

### ONE ROBOT TYPE

Loading robot can be adapted to a wide range of tool machines (lathe, milling, grinding, or spark erosion machines).

### CRANE MODE

Can be used as a crane during manual operation.



The robot can be used as a crane **during manual operation** due to its high load capacity.

## RACKS WITH A FLEXIBLE DESIGN

System compatible with a pallet truck, freely configurable, with high shelf load capacity of 100 kg (220 lbs) (total load capacity 600 kg / 1,323 lbs).

### PALLETS



#### • DIFFERENT PALLET SIZES

(max. component size:

640 x 320 mm (25.2 x 12.6 inch) = Zerobot® 100-P

640 x 245 / 400 x 320 mm (25.2 x 9.6 / 15.8 x 12.6 inch)  
= Zerobot® 100-V)\*

### CENTERING CLAMPING FIXTURES



#### • INCREASED PACKING DENSITY

(max. component size 200 x 180 mm / 7.9 x 7.1 inch)\*

#### • MORE COST-EFFECTIVE

(pallet and clamping fixture in one)

#### • QUICK CHANGE

(thanks to double gripper)

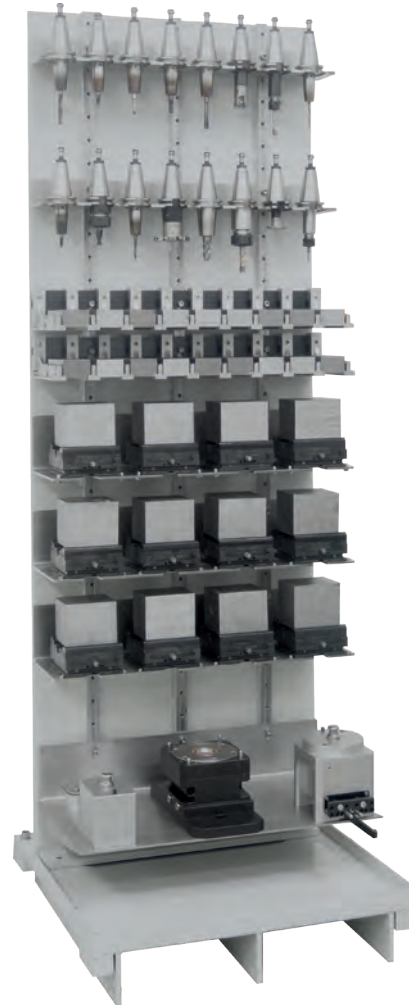


\* Can also be bigger depending on the specific application



**BLANK PARTS**

**COMBINATION**



- **HIGHEST PACKING DENSITY**  
(max. component size 150 x 250 x 130 mm / 5.9 x 9.8 x 5.1 inch)\*
- **OPTIMIZED COSTS**  
As blank parts, components can be directly replaced without additional clamping.
- **QUICK CHANGE**  
(thanks to double gripper)

- **ALL VARIANTS CAN BE FREELY COMBINED**  
Additional tool handling enables automated production according to the principle of "One rack – one job".

\* Can also be bigger depending on the specific application

## PALLETS



### INDIVIDUAL DESIGN

No connection to a fixed number of pallets, dependent on the positioning or pallet structure.

### DIFFERENT PALLET SIZES

No connection to a fixed pallet size and can therefore be designed freely.  
Maximum pallet dimensions 650 x 320 mm (25.6 x 12.6 inch).

### HIGH LOAD CAPACITY

Load capacity per shelf 100 kg (220 lbs), total load capacity 600 kg (1,323 lbs).

### COMPATIBLE WITH A PALLET TRUCK (for Zerobot® 100-P)

Loaded racks can be pre-equipped during primary processing time with minimal personnel effort and transported via a pallet truck.

### SPACE-SAVING

Requires only a small space, even when up to three racks are in use at the same time. The machine tool remains accessible.

### DOUBLE RACK (for Zerobot® 100-V)

The compact rotating double rack, which can incorporate workpieces on both sides, can be loaded during operating time.





## CENTERING CLAMPING FIXTURES



### HIGHER PACKING DENSITY

Thanks to the compact size of the centering clamping fixture, racks can hold even more components than simple pallet loading.

### MORE COST-EFFECTIVE

Centering clamping fixtures are held by a passive gripper and deposited onto an extension base. Additional pallets, increases, and clamping devices are not necessary.

### REDUCED EFFORT

Reduced preparation time as pallets do not need to be assembled with clamping devices.

### FLEXIBLE USE

Two different designs of centering clamping fixtures with a width of 80 (3.1) and 120 mm (4.7 inch). Comprehensive grip and carbide-coated top jaw sets.

### GRIPPER CHANGES NOT NECESSARY

Passive fork gripper holds both centering clamping fixture as well as the extension base.



## BLANK PARTS



### MAXIMUM PACKING DENSITY

Horizontal storage levels and variable positioning in X, Y, and Z lead to an even higher workpiece density of max. 400 units per rack.

### OPTIMIZED COSTS

Thanks to active grippers and automatic clamping devices, expensive bench vices, pallets, or other clamping devices can be avoided.

### MINIMUM EFFORT

The effort needed to pre-load each individual workpiece by hand is no longer necessary. Economical operation is possible for the smallest batches and components with short operating time.

### EASY TO OPERATE

The rack can easily be set with a few movements of the hand. The gripper is set to the component size using a quick adjustment mechanism.

### GRIPPER CHANGES NOT NECESSARY

Modifications to the geometry after machining do not affect the gripper, as components are held directly on the clamp edge from below.





## COMBINATION



### HANDLING TOOLS FOR SETUP

Tools can be provided for automatic setup in the rack. Additional or complete loading is possible.

### FLEXIBLE USE

Can be loaded with workpieces, clamping devices, grippers, and / or tools.

### “ONE RACK - ONE JOB”

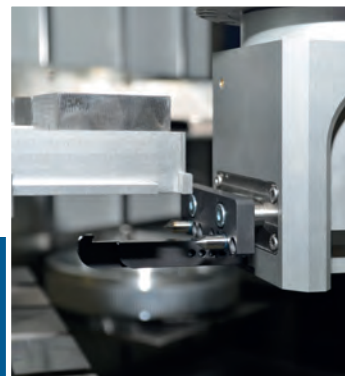
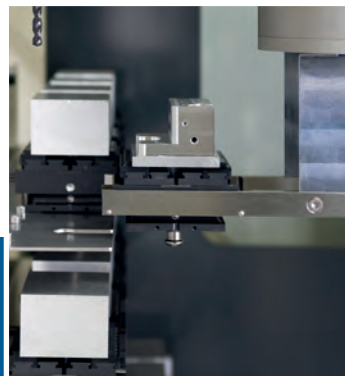
All components needed to machine an order in one rack. Racks can be pre-equipped outside of the machine at the right time.

### REDUCED PERSONNEL EFFORT

Machine completely sets itself up and loads itself. Once the order is complete, all previously equipped components are stored in the rack again automatically and the next order begins.

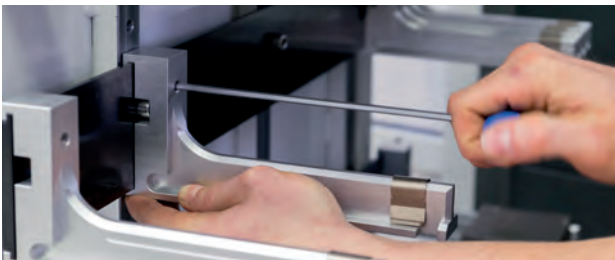
### UNIVERSAL ASSEMBLY KIT

Manual and automated clamping devices, grippers, and extension bases from a single source. Ensuring process reliability.

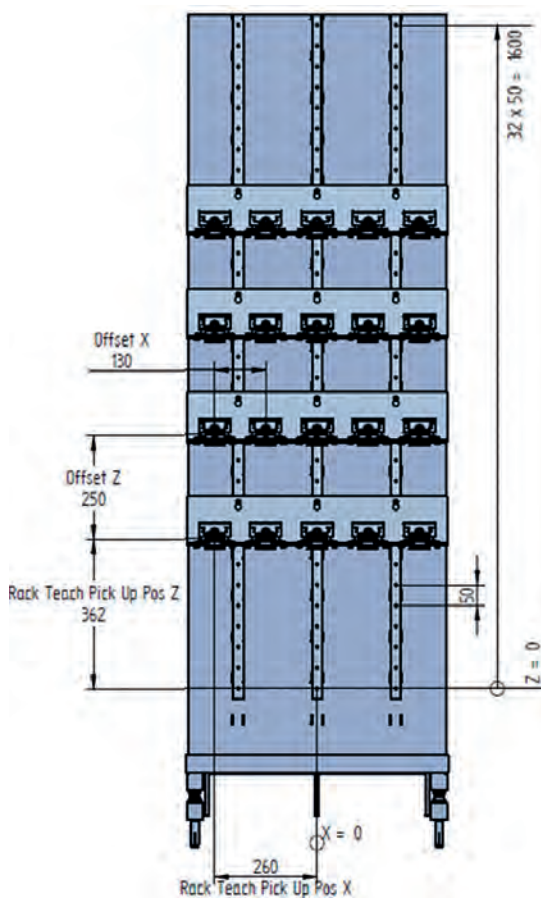


## CREATE A NEW PRODUCTION ORDER IN JUST A FEW STEPS

### SETUP THE MACHINE AND RACK



#### Free rack design and loading.

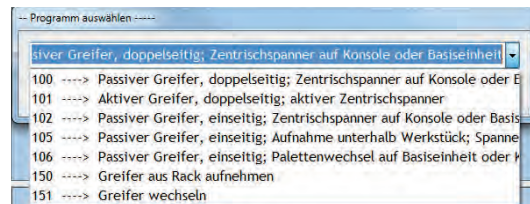


### CREATE A JOB



#### 1. Select from predefined programs

e.g., blank part or pallet handling.



#### 2. Select a suitable gripper with pre-defined parameters

e.g., double active gripper for blank part handling.

#### 3. Select clamping device with pre-defined parameters

e.g., pneumatic drive for blank part handling.

#### 4. Input total number and number of workpieces with distances in a row.

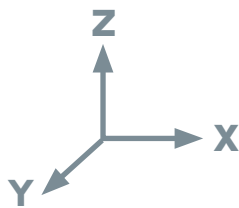
| Name           | Progr. Nummer | Rack Nummer | Gesamt Werkst. | Anzahl in X | Abstand in X |
|----------------|---------------|-------------|----------------|-------------|--------------|
| Gehäuse 21320  | 101           | 2           | 33             | 11          | 57           |
| Bauteil 773653 | 154           | 1           | 20             | 5           | 130          |



### SIMPLY TEACH THE ROBOT BY GUIDING IT MANUALLY



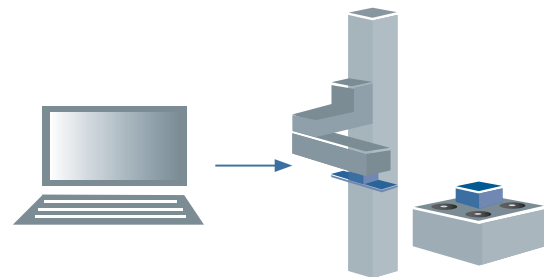
### START



When teaching the first workpiece, the loading robot calculates the remaining positions automatically.

| Rack Aufnahmeposition aufnehmen |                      |                      |                      |
|---------------------------------|----------------------|----------------------|----------------------|
| Rack Aufnahme Pos. X            | Rack Aufnahme Pos. Y | Rack Aufnahme Pos. Z | Rack Freifahren in Z |
| -250,427                        | -177,055             | 103,123              | 35                   |

Only the pick-up position, security position, and a maintenance position must be taught. **The robot automatically calculates the shortest path between the teach points.**



**Save and transfer job.**

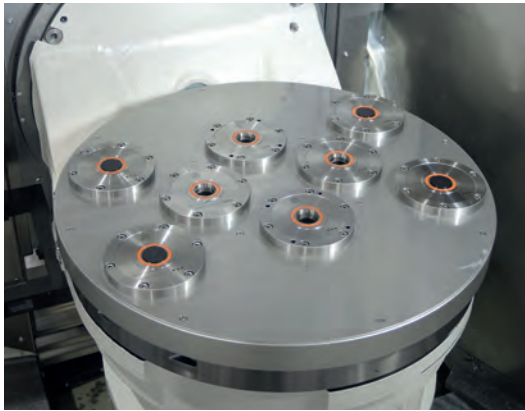


**Production order can be started.**

## ACCESSORIES



Products particularly suitable for automation!



### FOUR-CHANNEL CLAMPING POT

The four-channel clamping pot allows clamping devices to be used at the second level or above the base unit. The ideal basis for any automation solution!

Monitoring of dynamic pressure and automatic blowing out of clamping pot openings in advance also ensure the component is securely clamped in place.



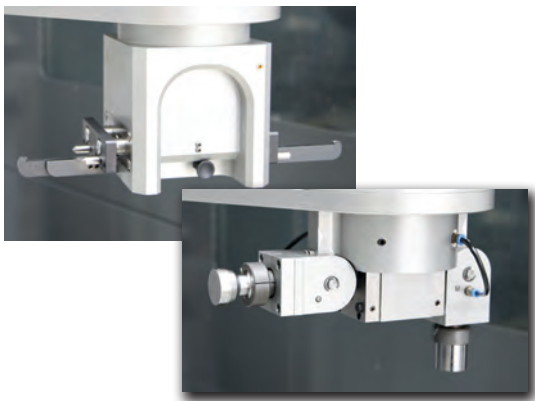
### AUTOMATED CENTERING CLAMPING FIXTURE

Centering clamping fixtures can be clamped directly onto the zero point clamping system thanks to clamping studs on the underside. A comprehensive range of clamping jaws supports clamping of blank and finished parts. The clamping range is 6-182 mm.



### EXTENSION BASES

Ideal for five-axis machining centers in combination with centering clamping fixtures. The media supply point on the underside of the extension base supports a blow-out function for automatic cleaning of the clamping point and monitoring of dynamic pressure for maximum process stability.



### GRIPPERS

A high degree of flexibility is achieved with just a few standard grippers. It is easy for people to make individual grippers themselves, since these are accommodated by means of a clamping pot based on a clamping stud. A standardized interface for the future, too.



## ZEROBOT 100-V FOR EXISTING MACHINES

# HEIDENHAIN

**PARTNER AUTOMATION**

### NETWORKED AND AUTOMATED MANUFACTURING

With the HEIDENHAIN Partner Automation program, HEIDENHAIN and ZERO CLAMP support their customers in the deeper integration of milling and turning controls into automated production. Customer projects are tailored to individual conditions and implemented with the shortest possible implementation timeline - for higher productivity and process efficiency in the digital production environment.

## THE ZEROBOT ADVANTAGE



Increase the potential of your existing machine tool with the Zerobot 100-V.

## COST BENEFITS



### **HANDLING OF EXISTING CLAMPING DEVICES**

No new purchases necessary when using existing clamping devices.

### **AIR TRANSFER BY MEANS OF GRIPPERS**

Cost-effective and process-safe alternative to the refitting of a rotary transmission.

### **DOOR OPENING**

Automatic door opening available for many models.

# MANUAL CENTRIC CLAMPING DEVICES

Direct handling of centric clamps, without additional pallet.

**Components can be clamped in the centric clamping device without pre-stamping.**



## ACCESSIBILITY

Slim clamping device with a high clamping width enables trouble-free access even with small tools.

## POWERFUL

Clamping forces up to 25.5 kN (5,730 lbf).

## VARIABLE RANGE OF JAWS

Cost-effective extensions. Thanks to jaw adapters, clamping ranges from 6 to 208 mm (0.3 to 8.1 inch) can be achieved.

## PRECISE

Variable centre setting  $\pm 0.02$  mm (0.0007 inch). Insensitive thanks to complete encapsulation (no free spindle, no risk of jamming).

## SAFETY AND SECURITY

Thanks to 4 clamping bolts, the centric clamping device offers extra safety even in heavy-duty machining. Holding forces of up to 50 kN (11,240 lbf.) are achieved.





## ADVISORY SERVICE

### Are you ready for automation?

- Which requirements need to be considered when automating existing machines (retrofitting)?
- What should be considered when buying a new machine for automation?
- Which workpieces do I start with in automation?

> **Tailor-made automation and clamping solutions**



## TRAINING

**Intensive training is the cornerstone for optimum usage in your production process. We will start at your current level of knowledge and make you fit for automation.**

Practical training tailored to your requirements, including:

- Which machining strategies are recommended?
- Are my processes even set up for automated operation?
- What do I need bear in mind if I would like to work automatically for 8, 12, 24, or even 48 hours?

> **Quality beyond the products**



## AFTER SALES

**We will continue to support you even after commissioning:**

- Customer-oriented sales force.
- Maintenance and maintenance contracts (including software, maintenance, and update service contracts).
- Fast responses to questions or problems (remote diagnosis is also possible).



# EXAMPLE APPLICATIONS

**DMG DMU 50**



**DMG DMU 80 EVO**



**GROB G 350**



**HAAS UMC-750**



**HERMLE C250**



**HERMLE C30**

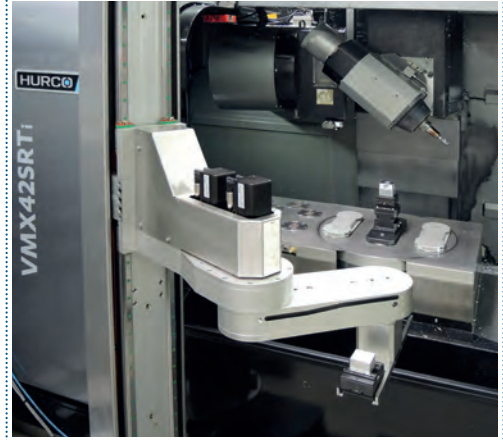




HURCO VMX24



HURCO VMX42SRT1



MAZAK VARIAXIS J-600



EMCOTURN E65

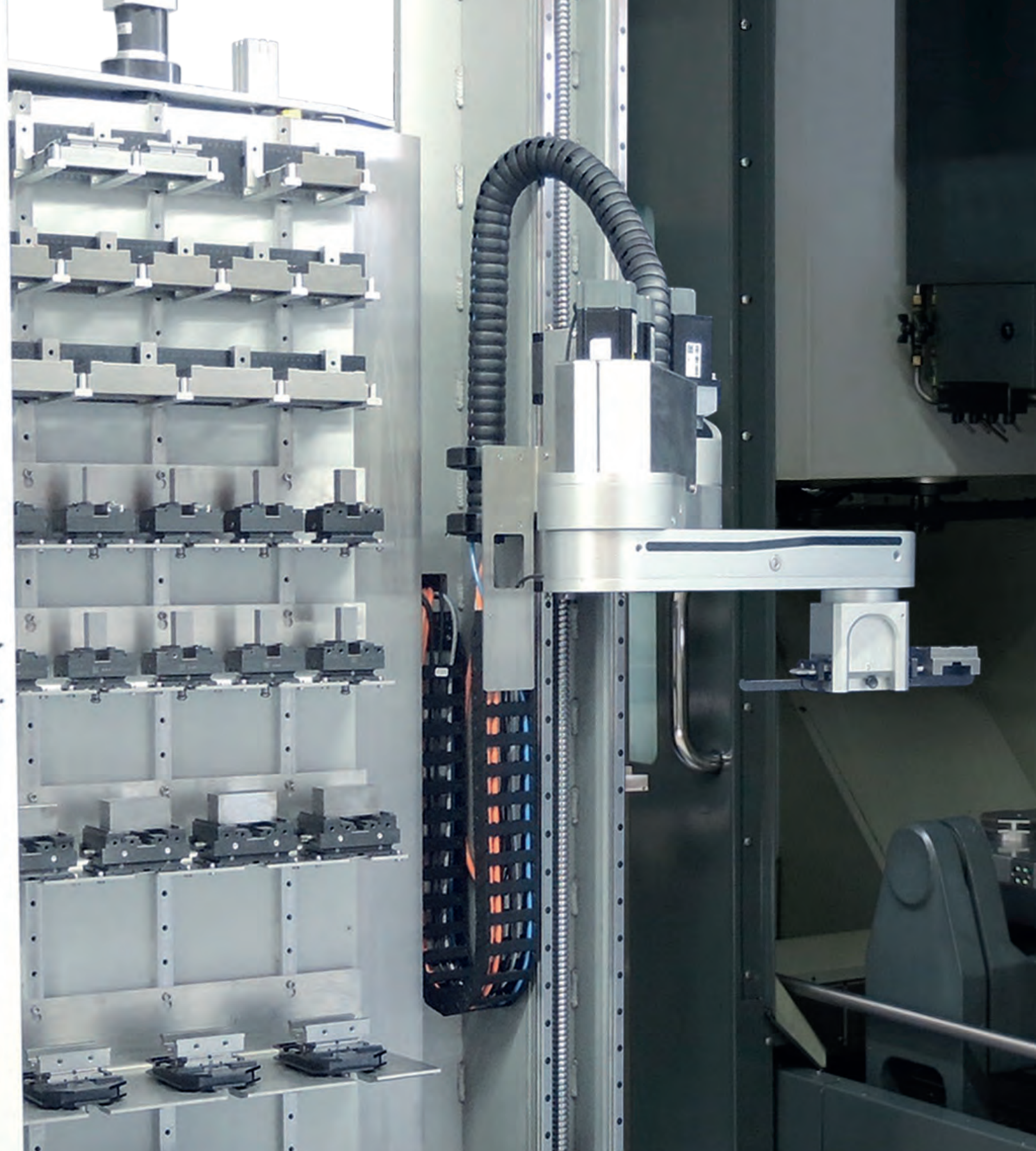


HAAS ST-10Y



MAZAK INTEGREGX 200-III





ZERO CLAMP GMBH  
Albert-Mayer-Straße 13  
D-83052 Bruckmühl

Tel.: +49 8062 72948-0  
Fax: +49 8062 72948-199  
E-mail: [info@zeroclamp.com](mailto:info@zeroclamp.com)  
Web: [www.zeroclamp.com](http://www.zeroclamp.com)



ZERO CLAMP®