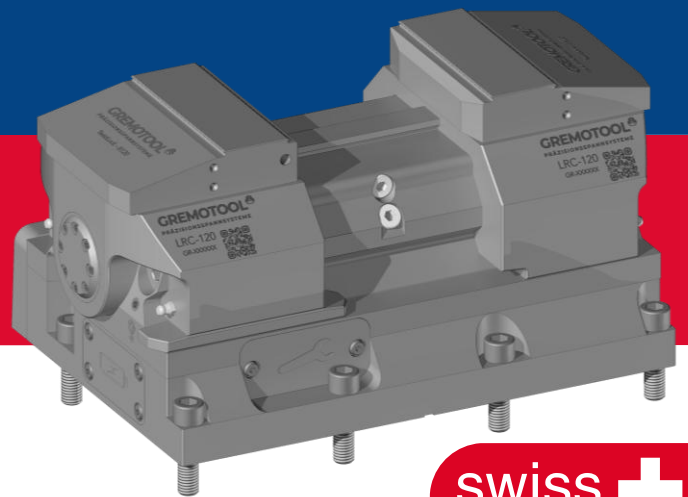


LRC-series



swiss 
made



Overview

LRC-series

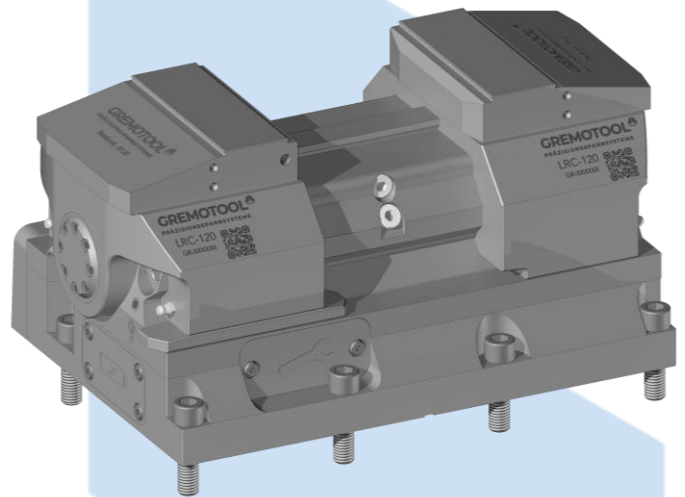
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Product presentation

LRC-series

The LRC series has been developed to meet the requirements of modern, automated manufacturing processes. With a jaw stroke of 110 mm, 40 kN clamping force per jaw and quick-change jaws that can be automated, the LRC series enables fully automated changeovers to different workpieces, carried out directly by the robot.

The integrated sensor technology monitors the clamping system in real time and transmits all relevant status data to the machine control system. The interplay of mechanical, hydraulic and sensor technology ensures the highest process stability, maximum availability and efficient, future-proof automation.



Product presentation

Advantages LRC-series

Hydraulic Long-Stroke Clamping Device

The 110 mm central jaw stroke enables workpieces of varying dimensions to be clamped without manual intervention. This flexibility on the machine table makes it possible to manufacture workpieces, even in small batch sizes, automatically between larger production runs without the need for further set-up work.

Clamping Safety

The integrated safety system ensures that the workpiece remains securely clamped even in the event of a drop in pressure. Check valves prevent the hydraulic oil from flowing back, whilst the jaw mechanism is secured against unintended movements. As a result, the clamping force is maintained even when the vice is removed from the machine, and the vice can be safely removed with the workpiece still clamped without the workpiece coming loose. The clamping system is only released by the deliberate pressurisation of the release line.

Clamping Force

The hydraulically adjustable clamping force allows for optimum adaptation to different workpieces and machining processes. With a hydraulic pressure of 180 bar, the LRC series achieves a clamping force of up to 40 kN. The double-acting cylinder system enables flexible external and internal clamping for secure and precise workpiece fixation.

Centre Accuracy

The robust construction of the LRC series ensures precise workpiece centring to within ± 0.02 mm. The high repeatability eliminates the need to re-probe the zero point and reduces non-productive time.

Jaw Change

The automatable interchangeable jaws enable a fast, workpiece-specific changeover process carried out by the robot. Combined with the large jaw stroke, the LRC series offers maximum flexibility and enables the efficient, automated production of small batch sizes with minimal set-up effort.

Low Maintenance

The chip- and water-repellent design of the LRC series prevents foreign particles from entering the mechanism. This ensures that lubrication is maintained and extends maintenance intervals. Care has been taken in the design to ensure there are no recesses in which chips and water can accumulate. This allows the long-stroke centre chuck to be easily cleaned using an air or water gun.

Sensor Technology

The integrated sensor technology enables continuous monitoring of the clamping system and provides precise information on jaw position, clamping force and battery status. This allows the machining centre to detect incorrect clamping conditions and respond automatically.

Data Transmission

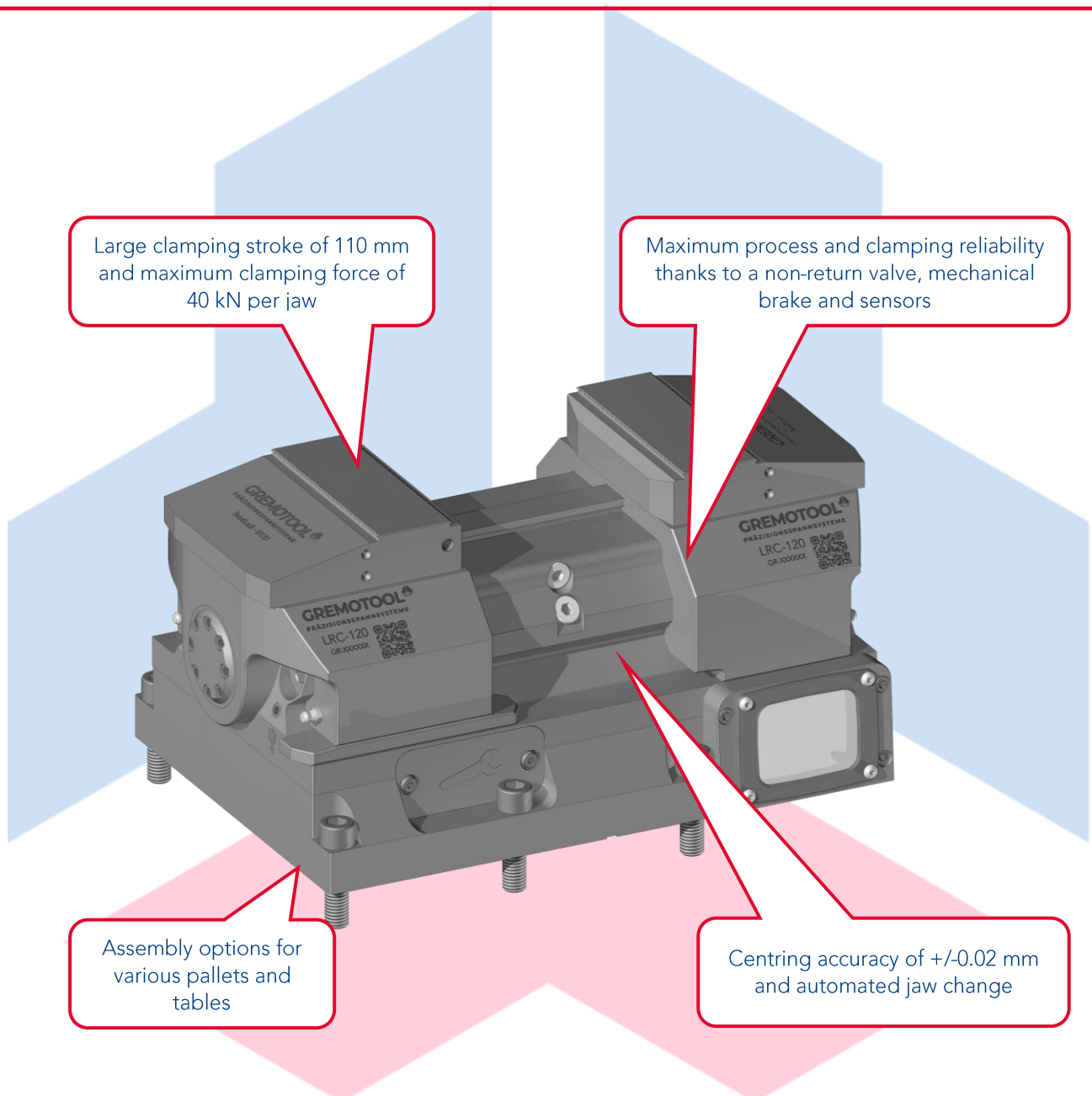
Wireless data transmission from the Blum Novotest MG81 to the RC66 probe receiver enables simple integration of the sensor system without the need for complex cabling. The captured data can be processed directly in the PLC and accessed in the machine's NC programme. The high-capacity battery enables operation for several weeks and can optionally be supplemented with an inductive charging solution.

Mounting Options

The LRC series can be flexibly adapted to different machine interfaces. The standard base features a mounting grid for 50 mm perforated plates with M12 threads. In addition, zero-point clamping systems from various manufacturers can be integrated. This version is ideally suited for use on pallets with a surface area of 318×318 mm.

Product presentation

Advantages LRC-series

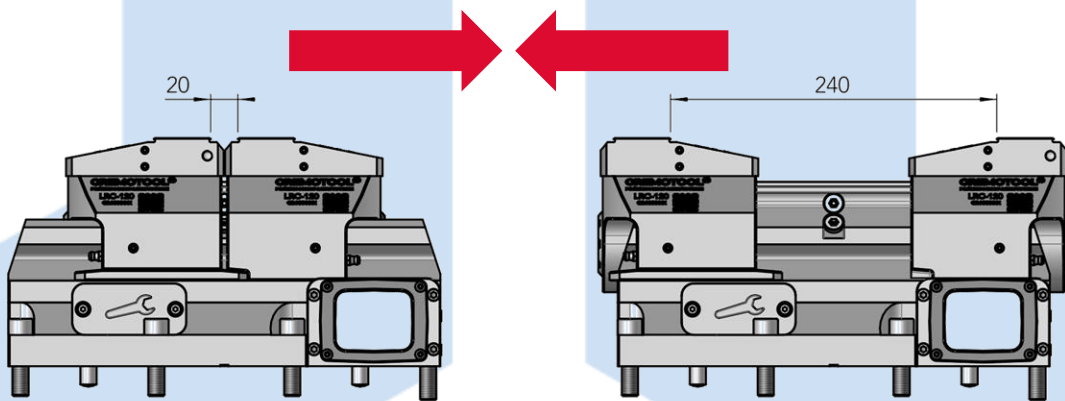


Product presentation

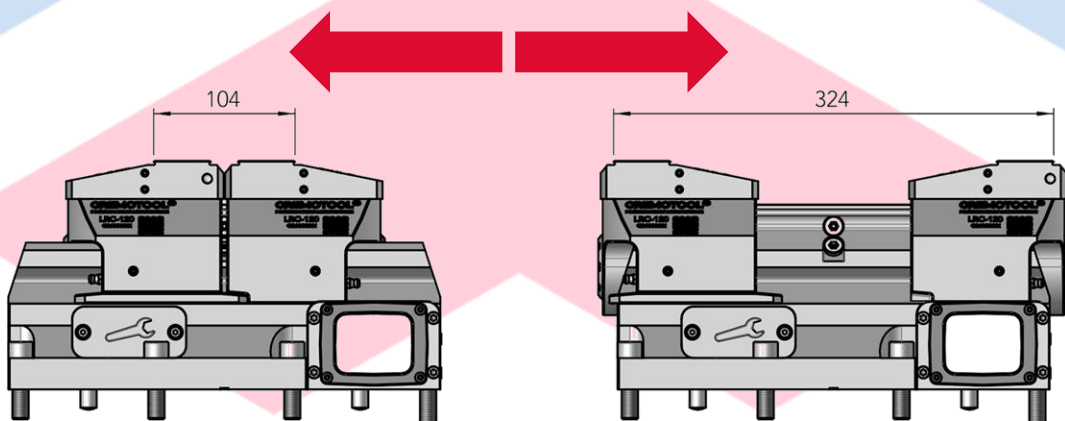
Clamping directions

The LRC allows workpieces to be clamped in both directions. The same interchangeable jaws can be used for this.

External clamping of workpieces from 10 to 305 mm*



Internal clamping of workpieces from 29 to 324 mm*



* The clamping range specified relates to the current jaw configuration. Select the jaws to suit your specific requirements and thus determine the desired clamping range.

Product presentation

Gremotool Connected Systems

The Gremotool Connected System enables the intelligent monitoring of clamping systems and manufacturing processes. By recording relevant status data, clamping operations can be monitored, deviations detected at an early stage and processes optimised automatically. The sensor data is transmitted directly to the machine control system, enabling reliable process control. The wireless sensor technology and data transmission reduce the amount of cabling required on the machine table and open up new possibilities for automated production.

Designed for use on the machine table

The electrical system has been specifically developed for use directly on the machine table. The battery is securely integrated into the system; its charge level is continuously monitored, allowing for planned battery replacement. All the electronics are compactly integrated into the system and designed to meet the demands of dynamic machine operation.

Sensors

Pressure sensor

This monitors the applied hydraulic or pneumatic pressure and detects whether the clamping system is being supplied correctly. This allows the clamping status to be monitored and ensures that the workpiece is securely fixed in place.

Inductive distance sensor

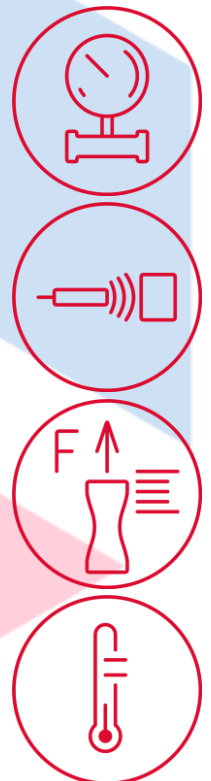
This detects the precise position of the jaws. This allows verification that both the clamping system and the workpiece are correctly positioned and clamped. The position data is made available to the machine control system for automated process monitoring.

Force sensor

This measures the actual clamping force and enables continuous monitoring of the clamping status. Deviations can be detected at an early stage and transmitted to the machine control system.

Temperature sensor

This monitors the temperature on the machine table and provides additional process information. Temperature changes can be recorded and used for process monitoring and condition analysis.



Product presentation

Gremotool Connected Systems

Data transmission

Wireless data transmission

With the Blum Novotest MG81, sensor data is transmitted wirelessly to the RC66 interface. This eliminates the need for complex cabling on the machine table. The machine PLC can evaluate the data directly and respond to changes in the process.

Blum Novotest RC66

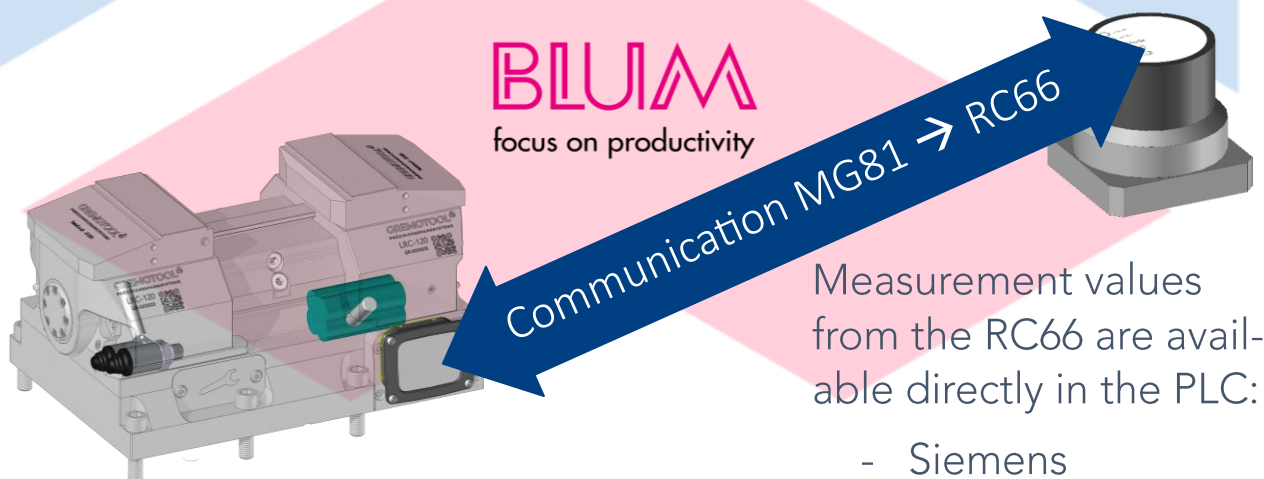
The RC66 receiver from Blum-Novotest can be connected to the IF20 interface, which in turn is linked directly to the machine control system. This allows the recorded measurement data to be made available in Siemens, Fanuc and Heidenhain control systems and processed directly within the CNC programme. Consequently, the CNC programme can react immediately to the measured values and control processes precisely.

IO-Link data transmission

Where electrical connections are available on the machine table, the sensors can be integrated directly via IO-Link and linked to the machine control system.

Power supply

The integrated 7000 mAh rechargeable battery powers the sensor system and the wireless data transmission of the Connected System. This allows the system to operate independently of any additional power supply at the machine table. The MG81 continuously monitors the battery's charge status via the battery voltage. This ensures transparency regarding the system's energy status, and any necessary battery replacement can be detected at an early stage – even in automated systems – and integrated into maintenance or set-up processes in a planned manner. The power supply can optionally be expanded to include an inductive charging solution.



Sensor-based monitoring
(Independent of the clamping system)

Measurement values
from the RC66 are avail-
able directly in the PLC:

- Siemens
- Fanuc
- Heidenhain

Product presentation

Hydraulic System

The hydraulic system of the LRC series consists of three lines, which ensure a safe clamping and release process:

Release Line (1)

When hydraulic pressure is applied to the release line, the integrated brakes on the jaws are released and the two unlockable check valves open. This allows pressure to be applied to the clamping and opening lines.

Clamping Line (2)

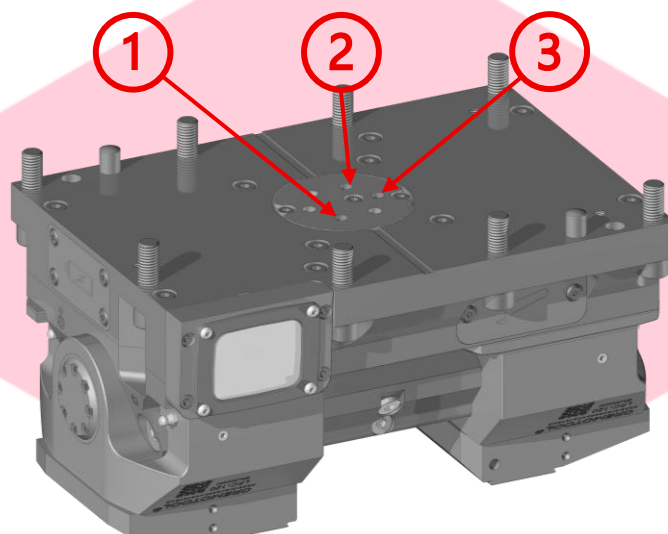
The clamping line is used to close and clamp the system. It builds up the necessary clamping force, which ensures that the workpiece is held securely and reliably. Once the clamping force has been established, the hydraulic supply can be disconnected without losing the clamping force.

Opening Line (3)

The opening line is used to open the clamping system or to clamp a workpiece outwards.

The hydraulic connections are located on the underside of the clamping system, thereby enabling a direct connection via the machine table. This allows the individual lines to be conveniently controlled without the need to route cumbersome hydraulic hoses across the machine table.

Once clamping is complete, the entire system can be disconnected from the external hydraulic lines whilst maintaining the clamping force. This makes the system particularly suitable for use on zero-point pallets in automated manufacturing and handling systems. The pallet, including the clamped workpiece, can be disconnected from the hydraulic system and, for example, stored in a pallet magazine or transported further.



Product presentation

Mechanical System

The mechanical system forms the basis for precise, stable and reliable workpiece clamping. Direct force transmission, robust slide guides and the precise centring mechanism ensure that the workpiece is positioned securely, even under the high loads encountered during machining.

Direct force transmission and secure clamping

The two slides are driven directly by the hydraulic cylinders. The resulting force is transmitted directly to the slides, enabling fast and powerful clamping of the workpiece.

Integrated brakes

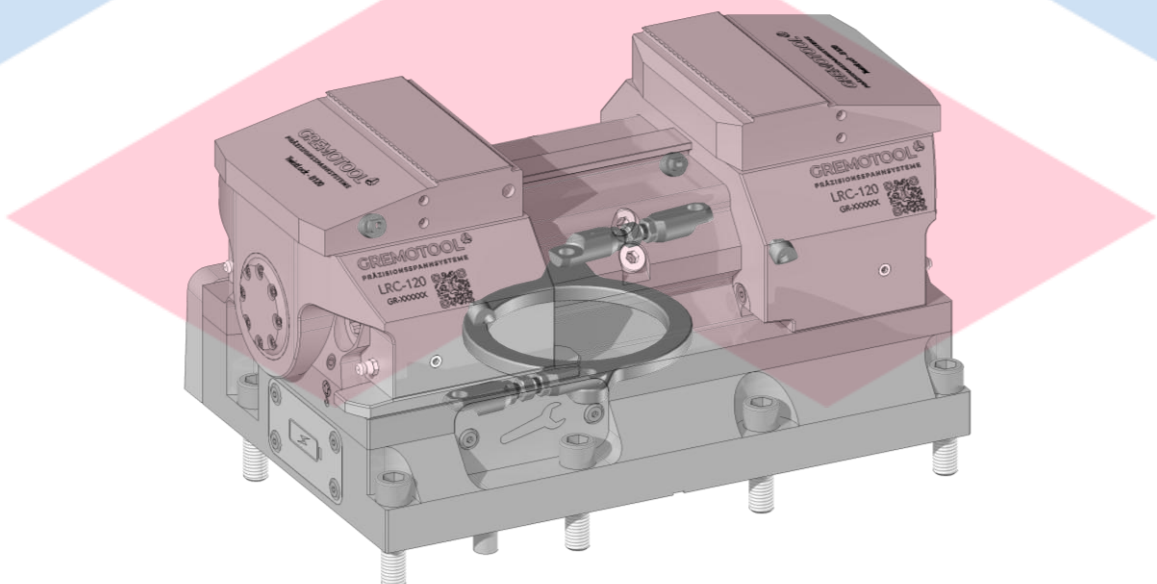
Hydraulically released brakes are integrated into the LRC. These hold the jaws securely in position and prevent unintended movement during machining. As the brakes are released whilst hydraulic pressure is applied, the slides remain reliably in position even in the event of a drop in pressure. This provides additional security for the workpiece's clamping position.

Stable and precise guides

The robust guides ensure high stability and precise motion control. Even when lateral or fluctuating forces are exerted on the workpiece by the machining spindle and the tool, the workpiece is held securely in position. This minimises unwanted movements and positional deviations.

Precise centring with easy adjustment

The workpiece is centred via a precisely guided lever linkage within the system. Should there be any deviation from the desired centre position, the centring can be corrected and optimally adjusted in just a few simple steps.



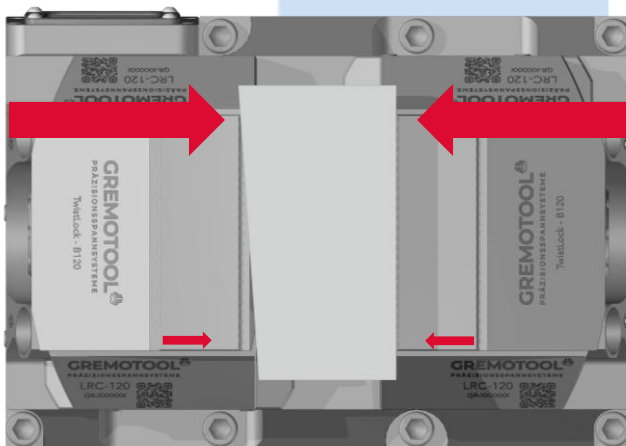
Product presentation

Swivelling jaws and pneumatic contact control

Swivelling jaw

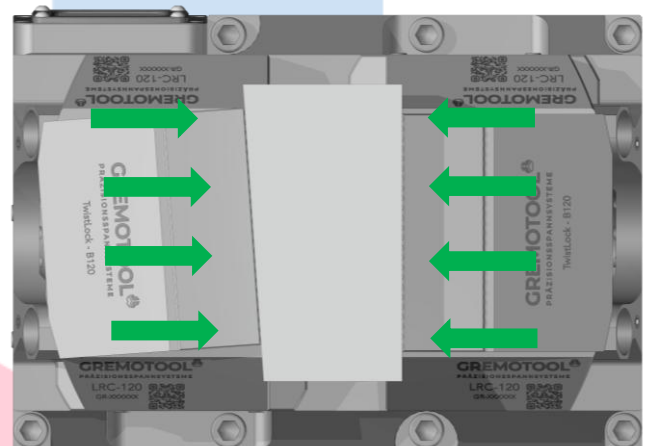
Our TwistLock swivelling jaw system combines rapid jaw mounting with automatic adaptation to the workpiece geometry and an integrated downward clamping force. The jaw is simply placed onto the interface, rotated 90° into the correct position, and is thus securely positioned. The special dovetail geometry of the TwistLock interface not only ensures a form-fit connection but also generates a downward force component during clamping. During the subsequent clamping process, the jaw oscillates and moulds itself perfectly to the workpiece. At the same time, the downward force effect pulls the workpiece securely onto the support surface.

The result is an even clamping force, a secure hold, optimal adaptation to the workpiece geometry and reliable downward pressure on the workpiece.



Non-deflected swivel jaw

- High force on one side
- Workpiece is subject to high localised stress
- Workpiece loose on one side



Deflected swivel jaw

- Force distributed across the entire width
- Workpiece is subject to uniform stress
- Workpiece securely held across the entire width

pneumatic contact control or support surface cleaning

The LRC series features a continuous, integrated air duct that runs from the clamping table to the workpiece support surface of the jaw. This provides direct and targeted airflow to the jaws. The air duct can be used for various functions depending on the application.

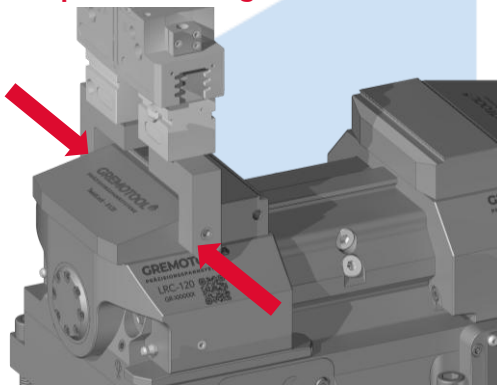
Reliable pneumatic contact control is enabled by the integrated air duct when a workpiece is in place. If the outlet opening is blocked by the workpiece, this creates increased flow resistance, which is detected by the machine and can be used to verify that the workpiece is correctly positioned.

A targeted blast of air through the integrated air duct enables the workpiece support surface to be cleaned. This reliably removes swarf and contaminants from the area of the workpiece support surface.

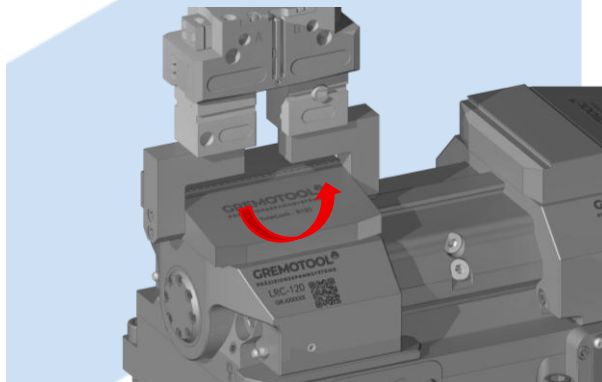
Product presentation

Jaw replacement using a robot

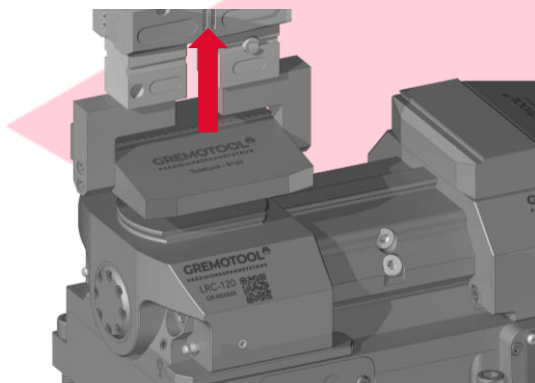
Automated jaw replacement using a robot



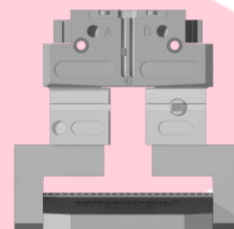
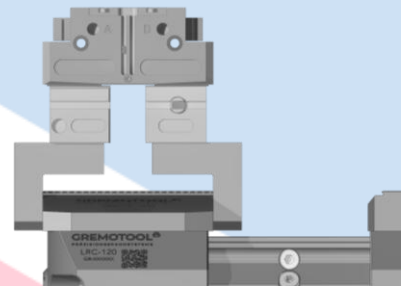
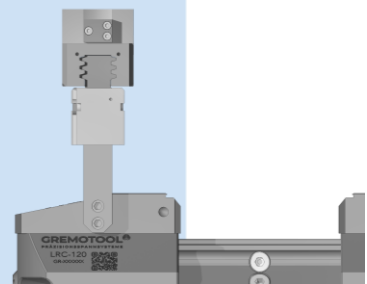
Gripping the jaw



Rotating the jaw by 90°



Lifting the jaw / Fitting the jaws in reverse order



Product presentation

Installation options

PAROTEC
spanntechnik · robotik · engineering

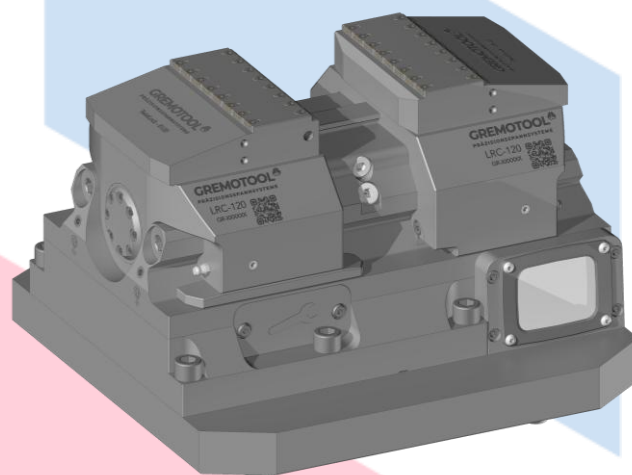
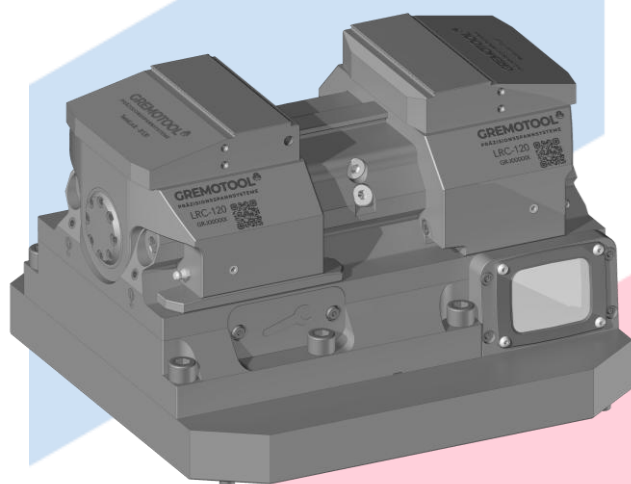
VISCHER & BOLLI HAINBUCH GROUP
vb
AUTOMATION

Parotec

Vischer & Bolli Automation

PowerGrip

DockLock Safe 20



Dimensions 320 x 320 x 207

Dimensions 318 x 318 x 199

Grid size Palette 160*

Grid size Palette 200*

Possible grippers Fork or Pin grippers*

Possible grippers Fork or Pin grippers*

* Additional configurations are available upon request.

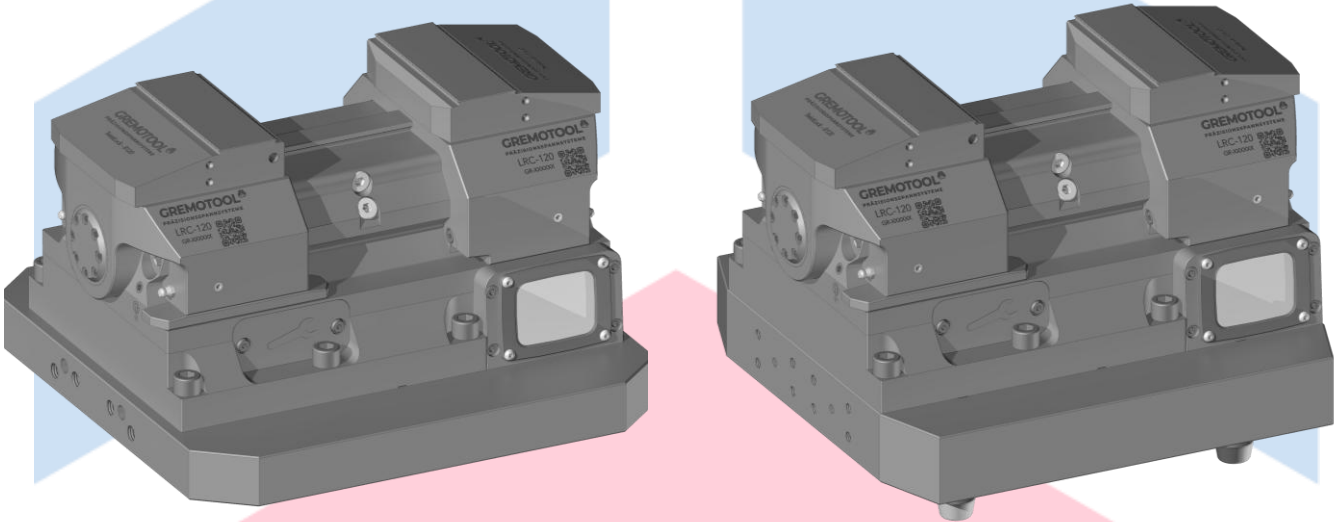
Product presentation

Installation options

system 3R

EROWA® 

System 3R	Erowa
Delphin	MTS

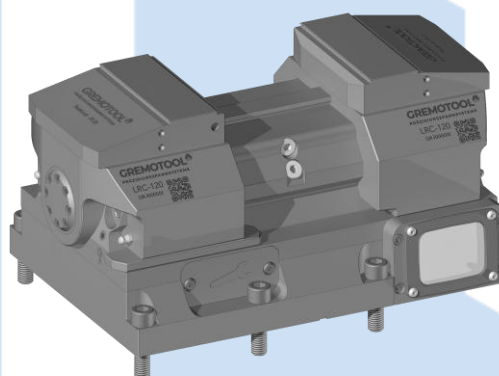


Dimensions	335 x 335 x 203	Dimensions	320 x 320 x 216
Grid size Palette	200*	Grid size Palette	200*
Possible grippers	Fork or Pin grippers*	Possible grippers	Fork or Pin grippers*

* Additional configurations are available upon request.

Technical data

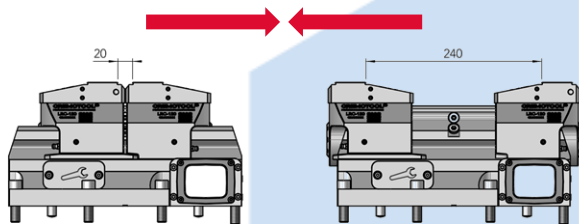
LRC-series



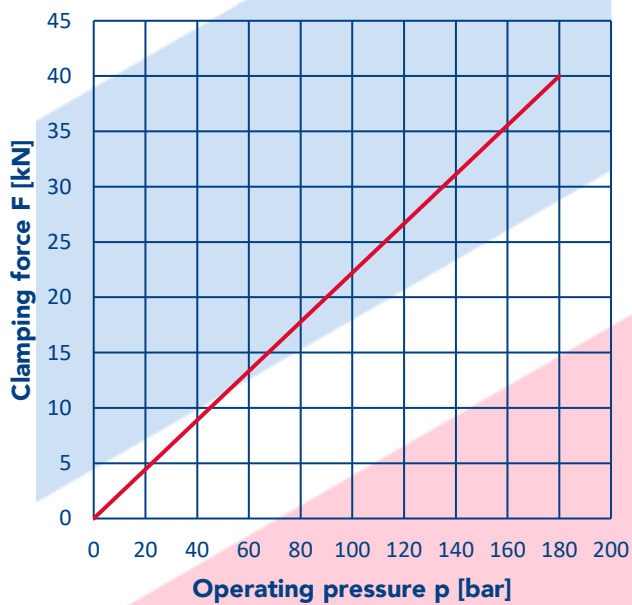
LRC size		LRC-120
Function		Hydraulic centric long-stroke clamp with automatable jaw change, fail-safe shut-off valve and slide locking brake
Jaw width	[mm]	100 bis 180 mm (Standard = 120)
Clamping range	[mm]	10 – 240
Stroke per jaw	[mm]	55 (total stroke 110 mm)
Repeatability	[mm]	0.02 independent of clamping stroke
Footprint	[mm]	318 x 220
Workpiece support height	[mm]	165 above table
Clamping force	[kN]	40 per jaw (total 80 kN)
Actuation pressure (Kanal 1,2,3)	[bar]	10 - 180 (continuously variable for clamping force adjustment)
Cylinder volume	[l]	0.25
weight	[kg]	40
Standards		Complies with the requirements of MR 2023/1230 MD 2006/42/EG

Clamping Force

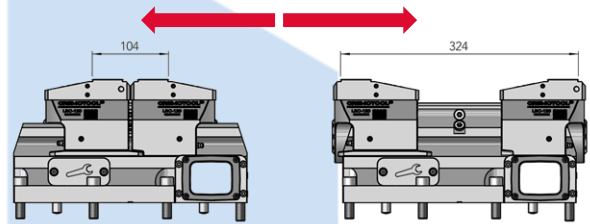
LRC-series



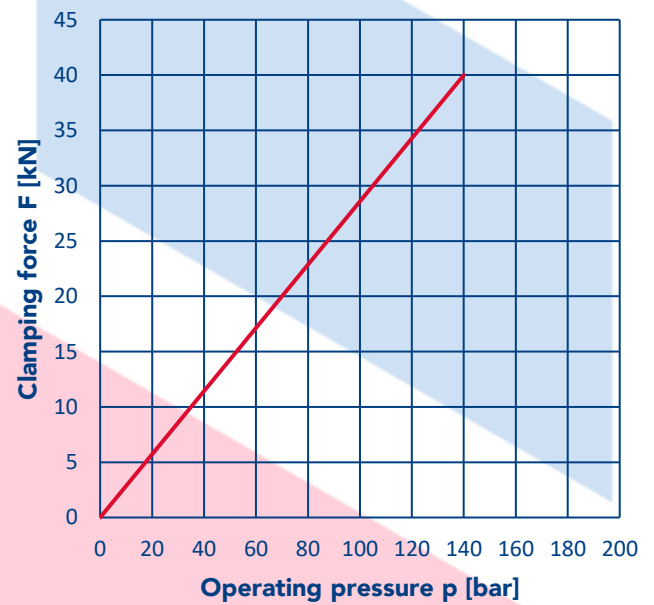
External clamping (workpiece between the jaws)



p max.	180 bar
p min.	0 bar
F max.	40 kN
F min.	0 kN



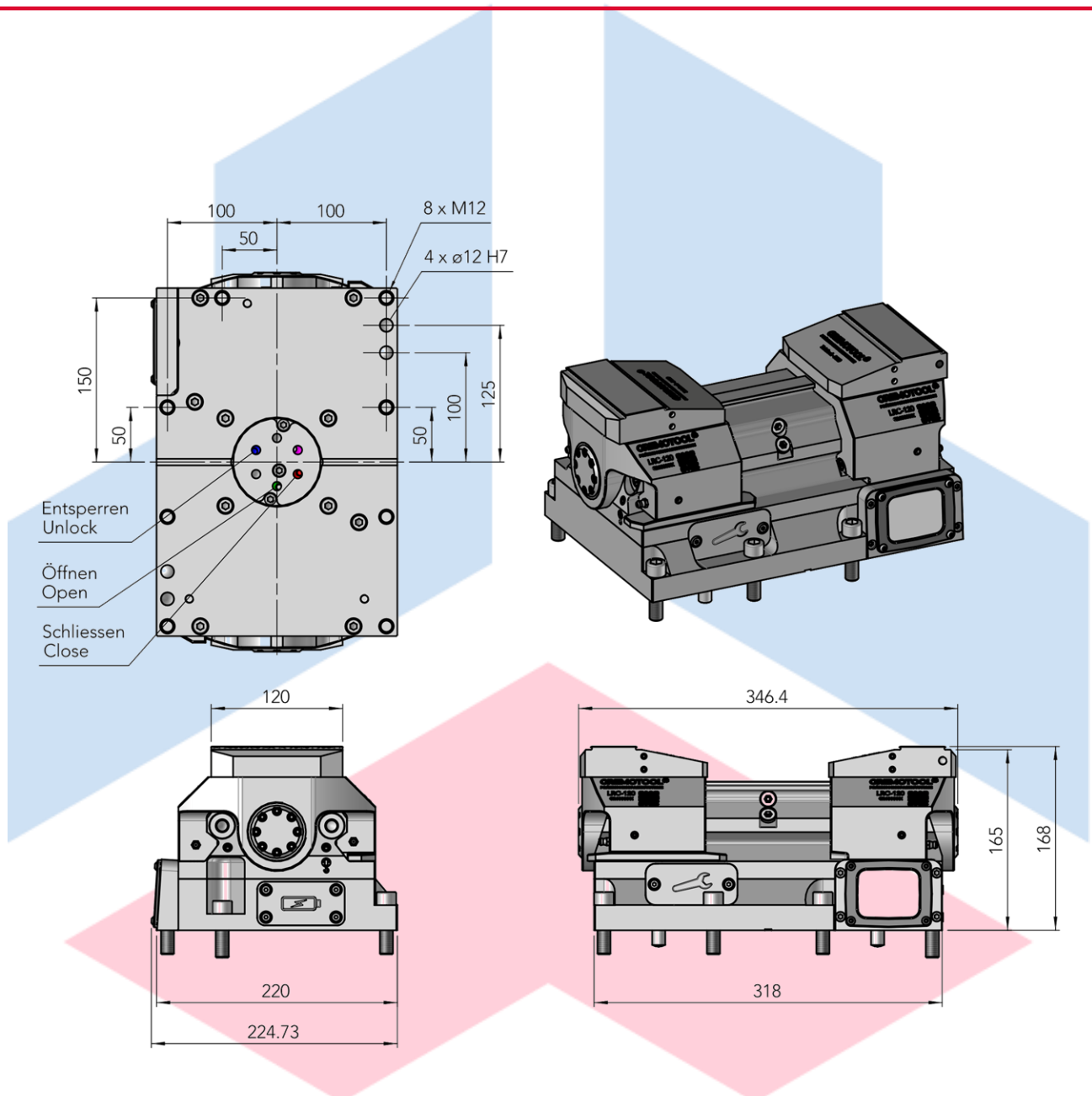
Internal clamping (workpiece outside the jaws)



p max.	140 bar
p min.	0 bar
F max.	40 kN
F min.	0 kN

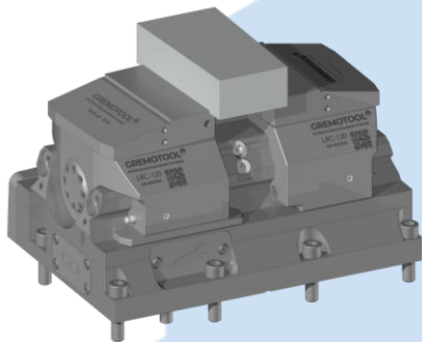
Dimensions

LRC-120 standard

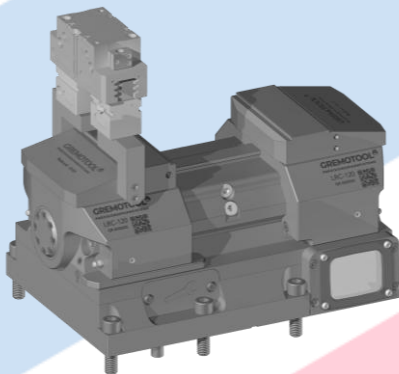
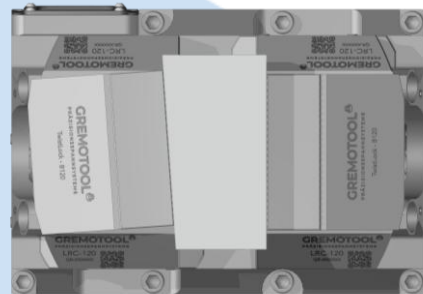


Applications

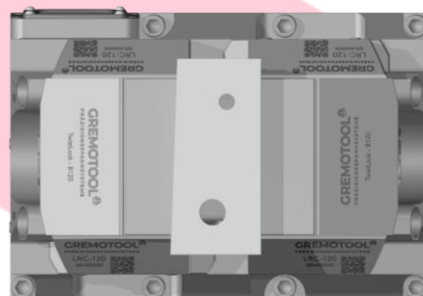
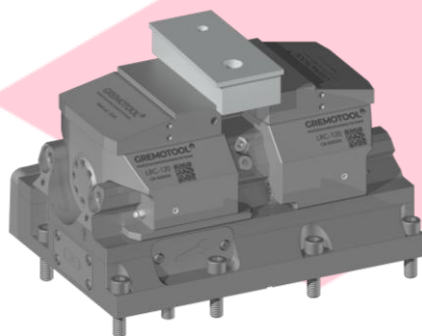
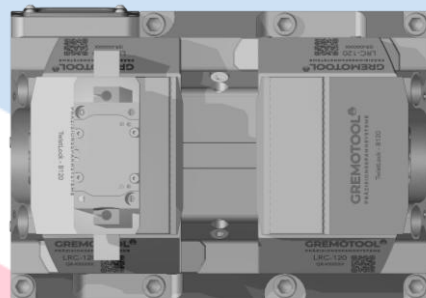
Machining procedures



Machine the workpiece on 5 sides using the self-centring swing jaws



Automates the changing of the jaws and the rotation of the workpiece

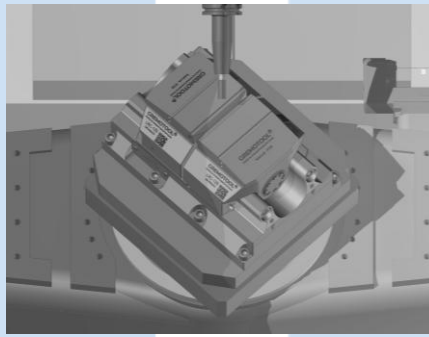


Finish machining the workpiece on the sixth side with a repeatability of +/- 0.02 mm

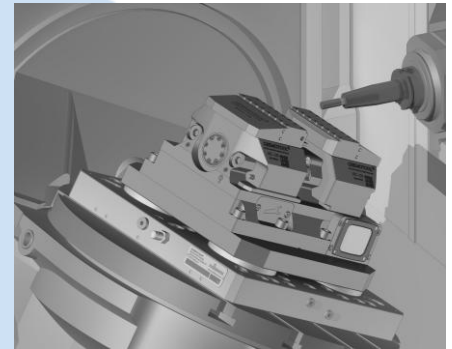
Applications

On zero-point clamping systems

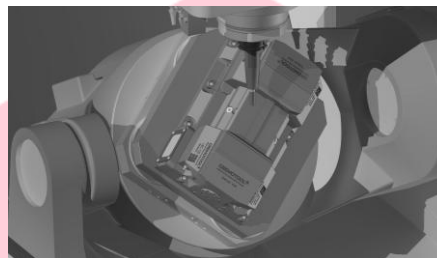
To enable customers to make the best possible use of the clamping devices, the LRC series can be used on a variety of fixtures. To maximise the system's flexibility, it is recommended to use a hydraulic rotary joint through the machine table and a zero-point clamping system.



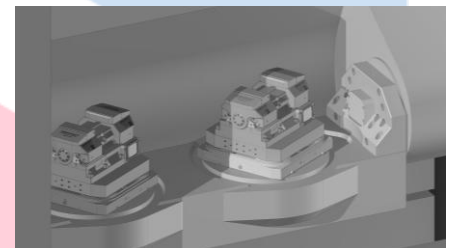
Clamping device: 1x LRC-120
Equipment: Parotec



Clamping device: 1x LRC-120
Equipment: DockLock



Clamping device: 1x LRC-120
Equipment: Delphin



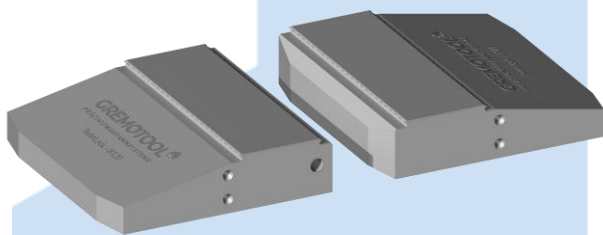
Clamping device: 2x LRC-120
Equipment: MTS

Accessories

Interchangeable jaws

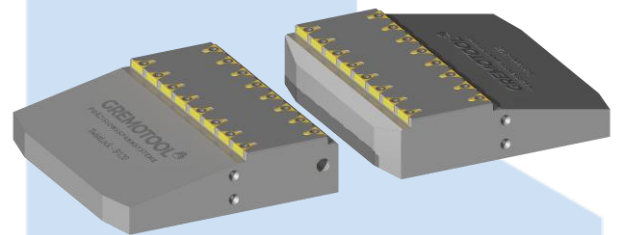
The LRC offers maximum flexibility in terms of clamping range. The system itself remains unchanged – only the jaws are customised to suit your requirements.

The LRC thus remains a tried-and-tested solution – and, thanks to customised jaws, adapts flexibly to your application.



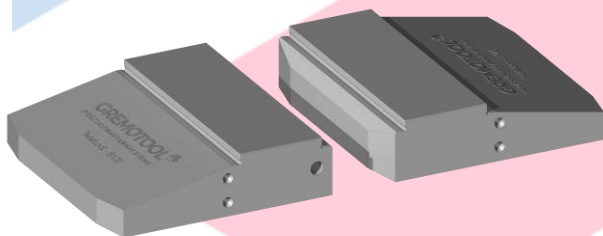
TwistLock gripper jaws

- Automatically interchangeable
- Swivelling
- Gremotool Gripping teeth with downward pull effect
- Side thread for workpiece stop



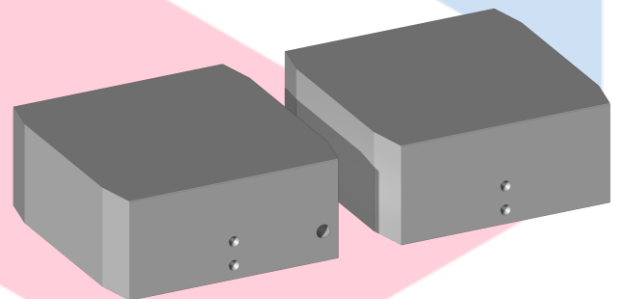
TwistLock SinterGrip jaws

- Automatically interchangeable
- Swivelling
- SinterGrip carbide inserts
- Side thread for workpiece stop



TwistLock stepped jaws

- Automatically interchangeable
- Swivelling
- Flat surfaces to protect contact surfaces
- Side thread for workpiece stop



TwistLock soft jaws steel

- Automatically interchangeable
- Swivelling
- Custom workpiece holders can be manufactured

Further jaws available on request.

Accessories

Automation solutions

The LRC series has been specially designed to meet the needs of the automated manufacturing industry. It offers the option of using it for pallet handling or workpiece handling. Thanks to a rotary joint in the table, the LRC can be used in automated operation without the need for additional couplings. The LRC series can also be fitted with couplings attached by the robot (handling system). This means that your current machine configuration can continue to be used without restriction.

Direct clamping

The standard base plate from the LRC series allows for easy mounting on all machine tables. For machine tables with T-slots, matching cylindrical pins can be fitted to the underside of the base plate to ensure precise alignment. If you use a perforated plate, the precise fit allows you to position the LRC series directly on the machine using the cylindrical pins.

Manual control

If the machine tool is used without a robot, the LRC can also be controlled manually. For this purpose, either a hand valve or a foot valve is used outside the machine. If a permanent connection between the LRC and the valve is not possible, multi-couplings can be used to facilitate the coupling process.

Robot couplings

If your machine does not have a rotary joint in the table, you can use a Gremotool robot coupling for automated production. We offer two different types of robot couplings.

The detachable coupling is gripped by the robot and placed onto the LRC's coupling; the gripper is then empty. Once the workpiece has been changed, the robot removes the coupling from the LRC and machining can begin.

The fixed robot coupling is permanently mounted on the robot. The robot engages the coupling and opens the LRC, then disengages the coupling and changes the workpiece. To close the LRC and thus clamp the workpiece, the robot (handling system) must then engage and disengage the coupling once more.



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