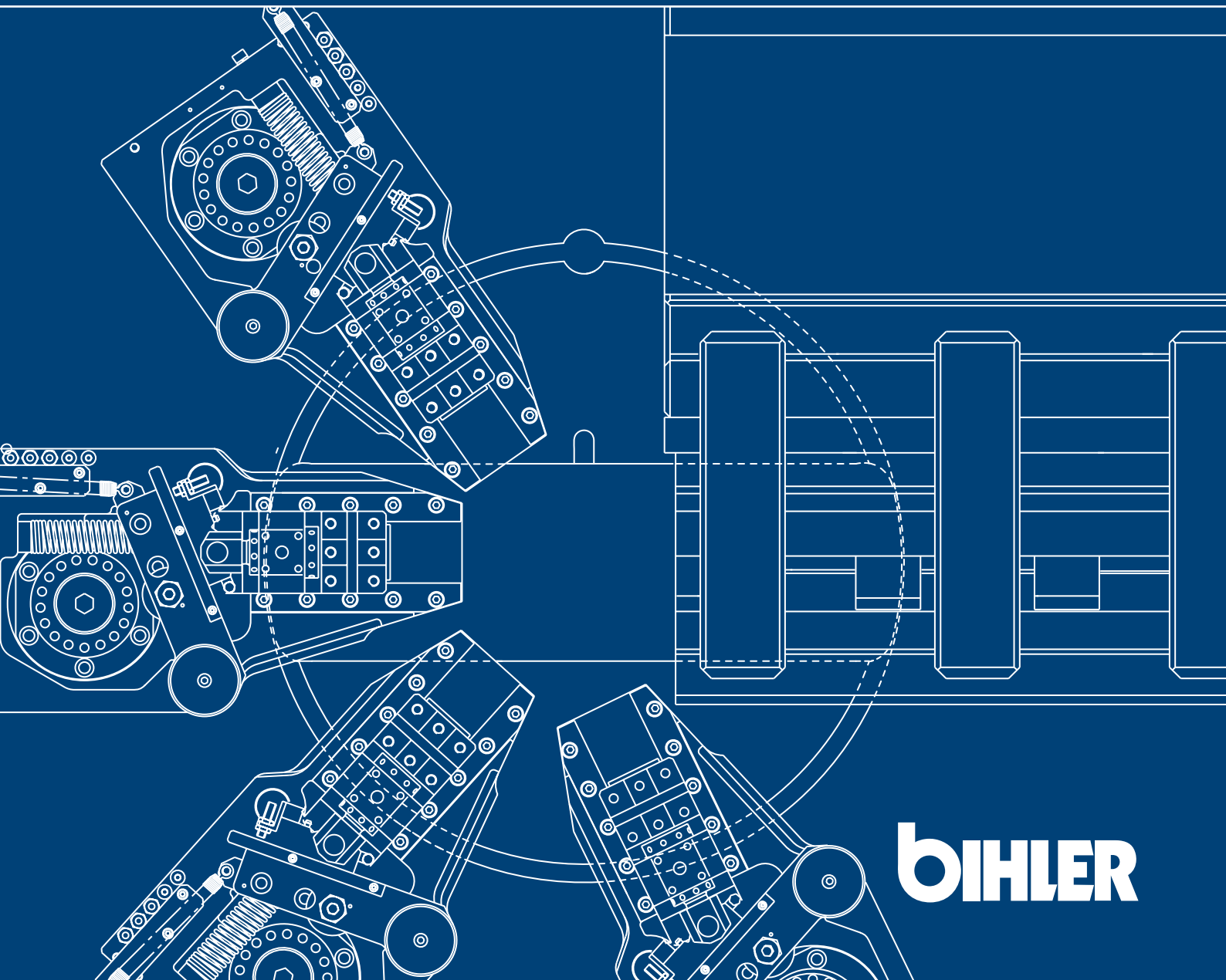


# GRM SERIES

Stamping and forming machines GRM 80E / GRM 80P



**BIHLER**

### Fully automatic perfection

Give your production a powerful kick-start. Take advantage of the strengths of the GRM series. You can produce precision parts from wire and strips as well as complete modules even more effectively with the universal machining systems GRM 80E and GRM 80P.

These compact stamping and forming machines stand out with their high performance with excellent production quality. The open design allows integration of different processing stages such as stamping, forming, assembling, welding, thread forming, screw insertion, transporting, measuring, etc. Automation knows no bounds!

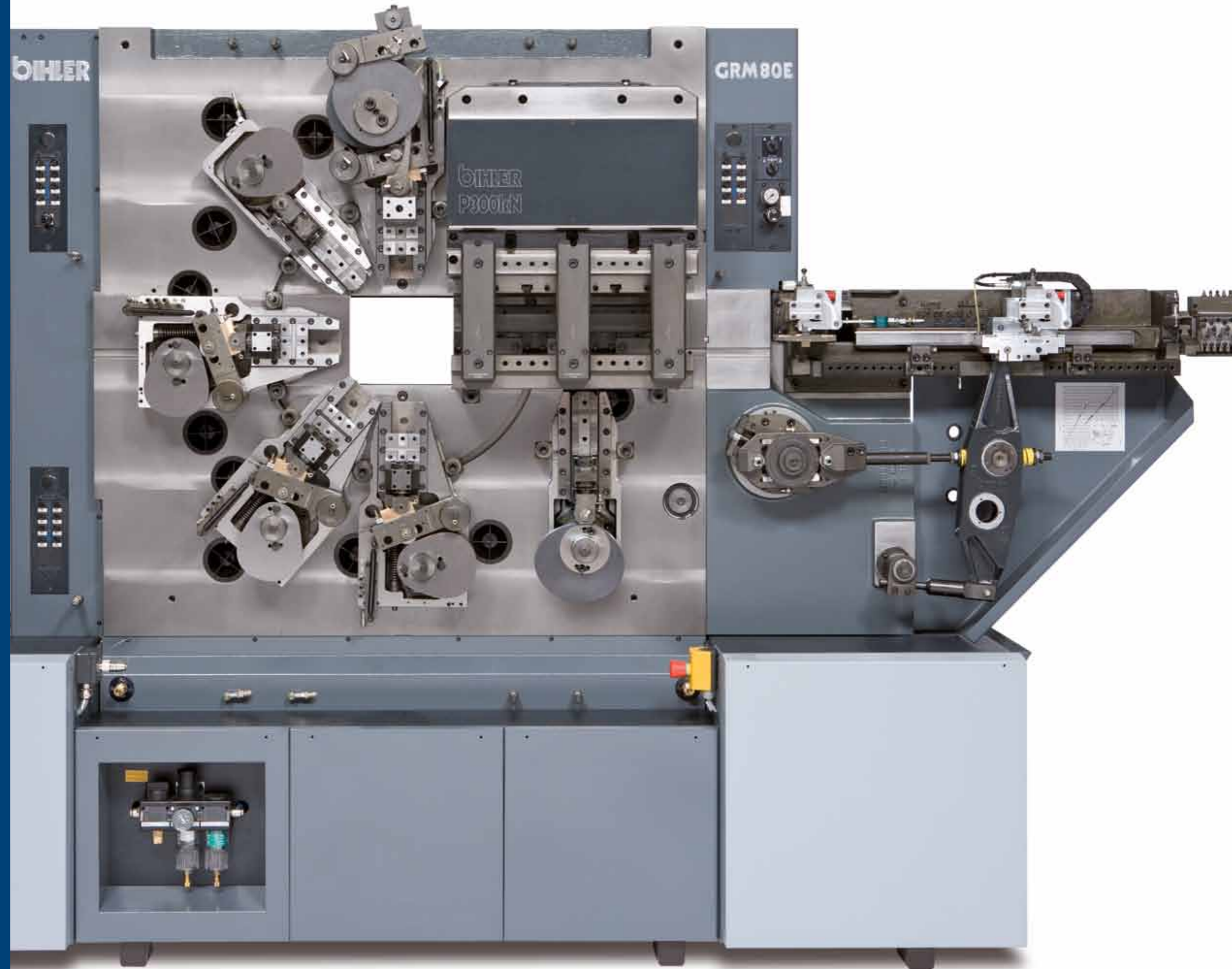
The GRM 80P with its separate press module offers even more scope and longer travel. Easily accessible processing stations guarantee minimum retooling times and facilitate maintenance work significantly. Fitted with leading-edge control technology, the GRM machines are easy to operate and satisfy the most stringent requirements for process reliability.

# GRM 80E

Stamping and forming machine

## Highlights at a glance

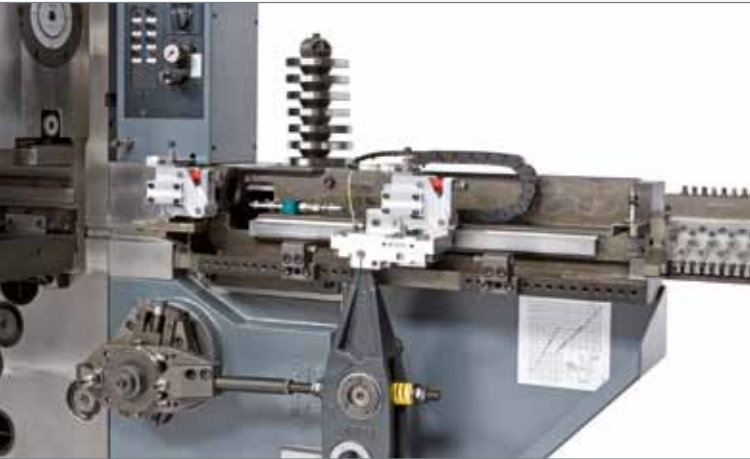
- Universal machining system for radial and linear processing
- Stable two-point eccentric press with large installation capacity for bulky cutting tools
- Large central aperture for variable central mandrel movement
- Accessories fully compatible for the whole GRM series
- Comprehensive control and monitoring functions
- Easy to use VC1-E control with 15" touch screen





# GRM 80E

Stamping and forming machine



## Precise material feed

Mechanical standard, traverse and tandem feeds satisfy the highest requirements for precision and speed. Feed time reduction offers larger head angles for comprehensive processing. Maximum feed length 500 mm. Optional NC gripper and roller feeds as well as the highly dynamic NC radial gripper feed RZV 2 can be added.



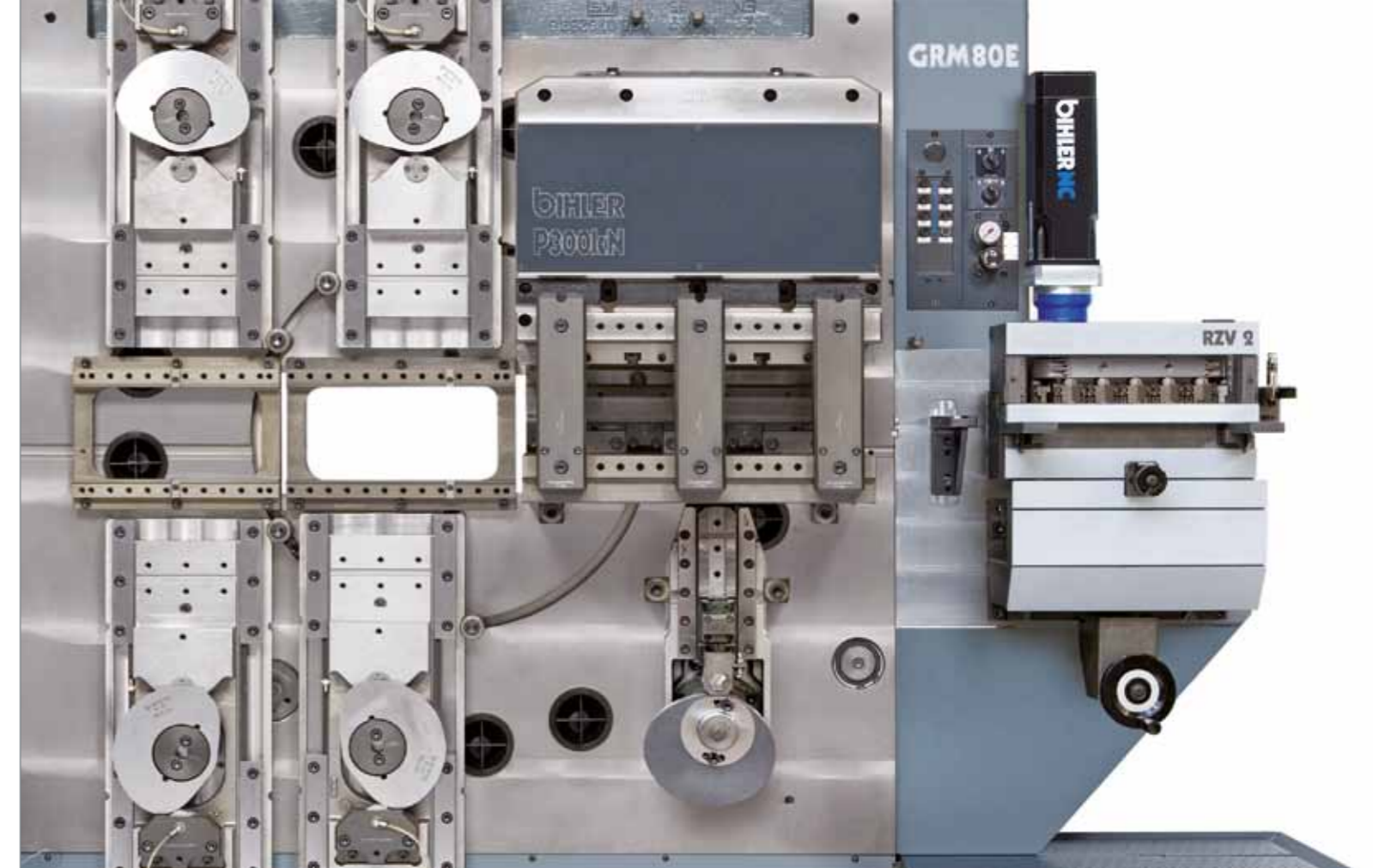
## Stable press for precise cuts

The stable 300 kN two-point eccentric press offers a lot of space for bulky cutting tools. There is plenty of space to fit dies up to 540 mm in length and 230 mm in width. For low cutting pressure a 100 kN eccentric press can be used. Compatibility to units of older machines is ensured. Separate press capacity monitoring is offered as an option for each con-rod.



## Central mandrels for additional movements (GRM 80E/P)

The machine has a large opening in the work plate for horizontal control and ejection movements from the rear (length 644 mm, height 200 mm). 10 mounting positions on the rear offer variable mounting options for a maximum of 3 central mandrels. These movements segregate the tools, making them even more accessible and provide new areas of application. Optional: NC controlled central mandrels.



## Slide units with tool rapid-clamping system (GRM 80E/P)

Depending on the force required and the space available, cam driven normal, narrow, sub-bed, wide or special design slide units are available with rigid or sprung retraction. To achieve fastest tool-exchange all slide units are equipped with a rapid tool-clamping system. Optional sensor-based protection of the slide unit guarantees maximum production safety.

## Easy and fast handling

The punch-holder interlock is quickly and easily released by a pin. After the new tool is inserted it must only be fixed using the clamping pin.



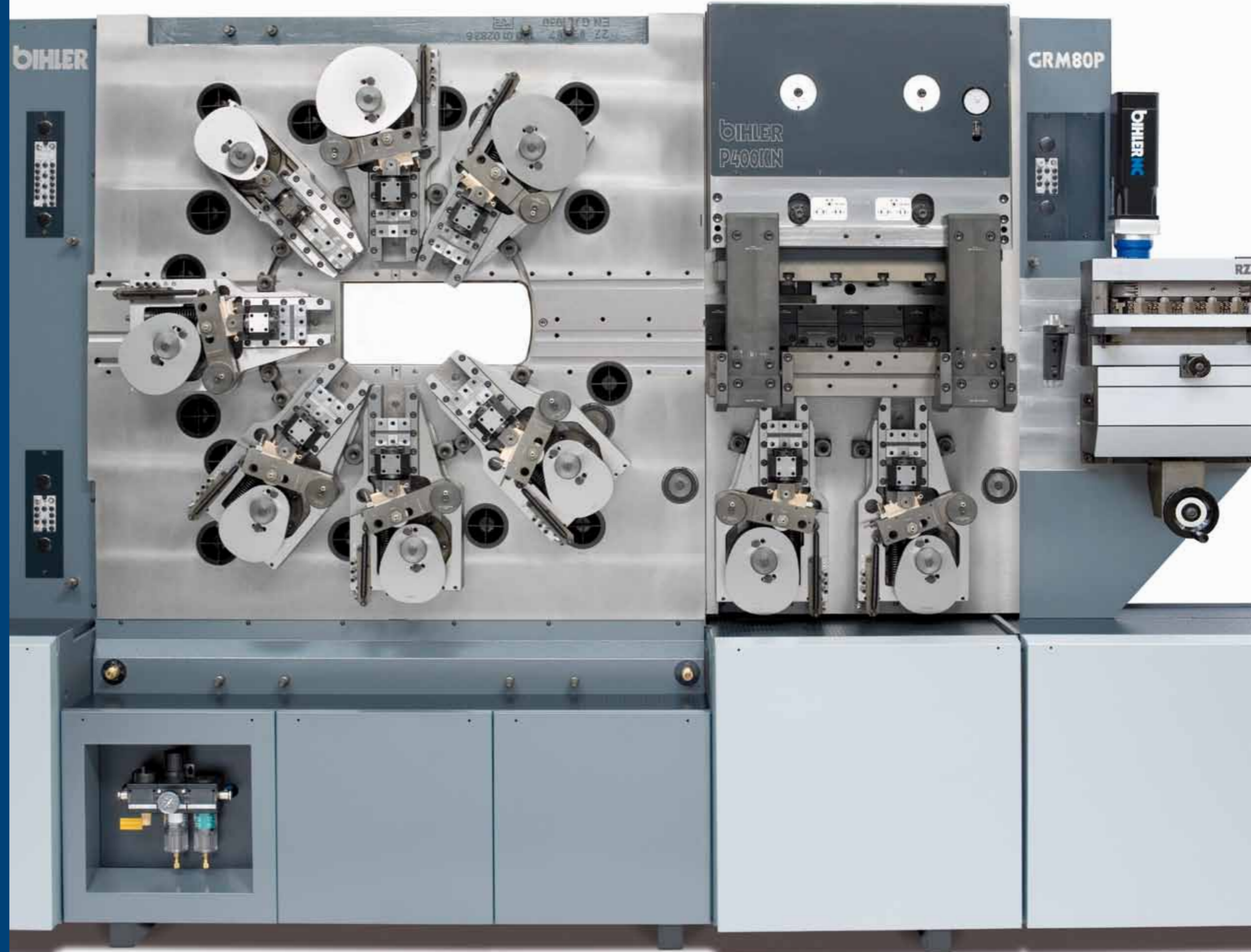


# GRM 80P

Stamping and forming machine

## Highlights at a glance

- Powerful machining system for extended range of applications
- Greater processing room thanks to the spatial division of stamping and forming operations
- More than 2100 mm travel for linear tool applications
- 400 kN two-point eccentric press with large installation capacity for bulky cutting tools
- Flexible integration of all Bihler key technologies
- Large central aperture in the work plate for flexible central mandrel movement
- Compatible with tools of the GRM 50, GRM 80 and GRM 80E Series
- Easy to use VariControl VC 1 with 15" touch screen





# GRM 80P

Stamping and forming machine



## Highly dynamic NC material feed

The compact NC radial gripper feed RZV 2 stands out with its fast feed speeds and excellent positioning accuracy - also for large feed lengths. Automatic adjustment for material thicknesses between 0 and 9.5 mm.

The shorter feed angle leaves a greater machining angle for optimum cam plate movement. This results in smoother running and higher production speeds. A mechanical feeder unit with feed time reduction can be installed as an option.



## Stable press for long tool service life

The 400 kN two-point eccentric press offers plenty of room for cutting tools with lengths up to 670 mm and widths up to 230 mm. The pretensioned press casing offers high rigidity - for maximum precision of workpieces and long tool service life.

## Standard press capacity monitoring

Temperature sensors on the bearing positions and the integrated press capacity monitoring system guarantee the very highest tool and process reliability.

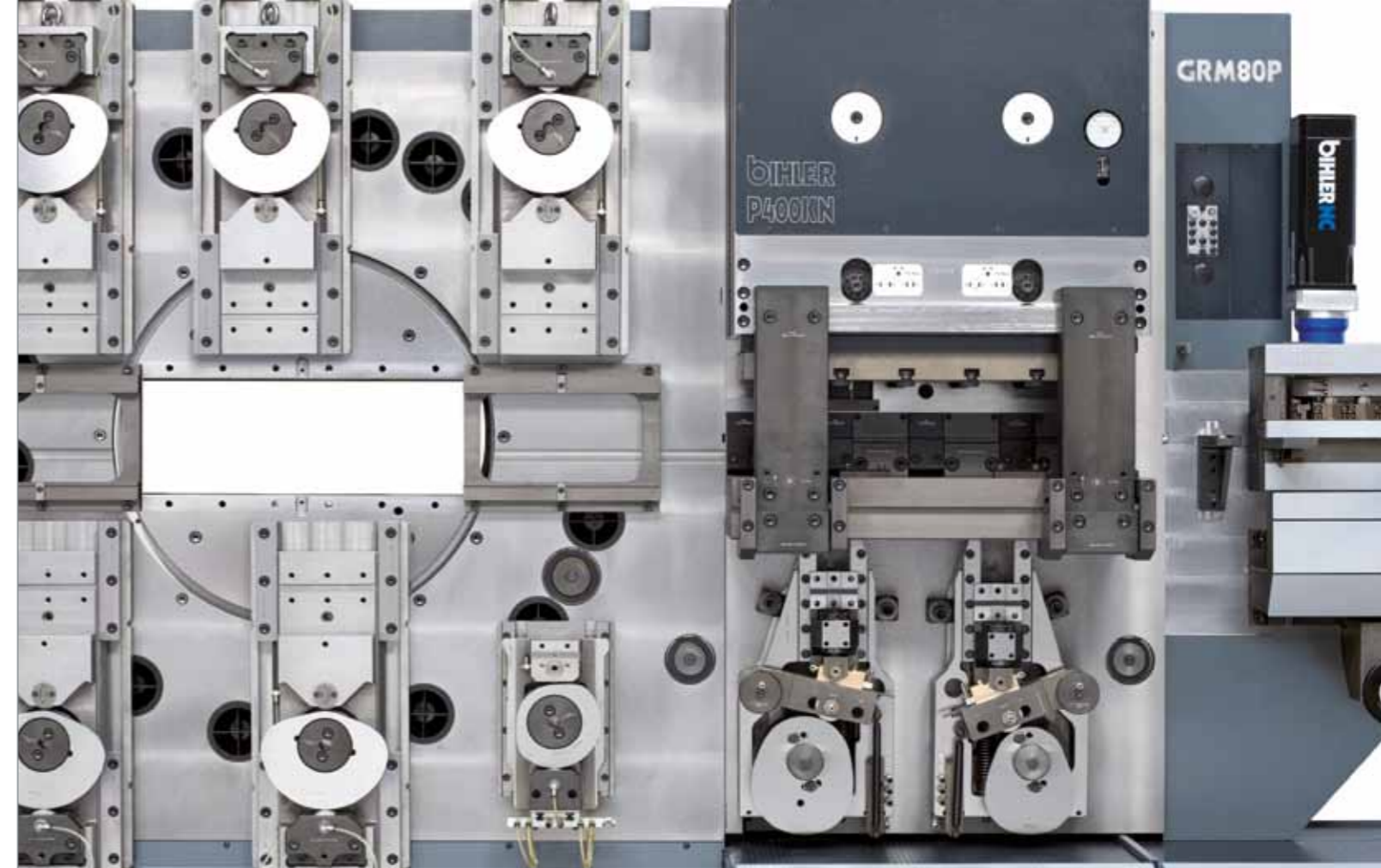


## Rapid change of cutting tools

Two pivotable tie-rods on the press facilitate installation and removal of cutting tools and help to shorten tooling times. An optional pneumatic tool clamping system speeds up and simplifies tooling even more.

## Actuations for welding units

Up to two mechanical actuations for welding units can be mounted on the press housing.



## More space due to separate press module

The clear separation of stamping and forming offers more space for bulky processes. With over 1400 mm travel for linear tool applications a total of more than 2100 mm is available on the work plate, if the press is included. Additional process modules for thread forming, welding, screw insertion, mounting, laser marking, etc. can be integrated with flexibility in different applications.

## Highly accurate strip guide

Two drive positions are fitted below the press. Drawing bushings, forming anvils or forming movements can be initiated in the press from below. This means the punch strip does not have to be lifted when processing with the cutting tool. The strip guide is significantly more accurate. Complicated manoeuvring in the cutting tool is avoided.

## Standard noise and operator protection

The full encapsulation of the machine for noise and operator protection, with two doors at the front and rear, is fully compliant with the current European Machinery Directive 98/37 EU. Noise insulation reaches a maximum of 15 dB(A) depending on the frequency range of the machine, tool and non-insulated ambient sound level.





# GRM 80E/P

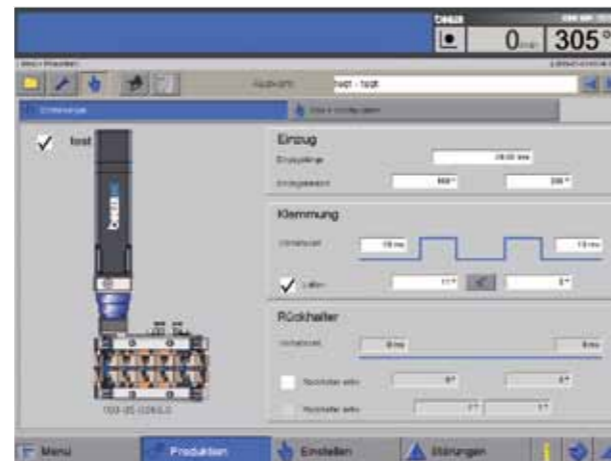
VariControl

## The highlights at a glance

- Simple, versatile machine setup without external programming device
- Customized production menus and user interfaces
- Multimedia diagnostic and online help system
- Freely configurable production menus and user interfaces
- Integrated monitoring system of production and machine sensing data

## Intuitive handling

The GRM series is equipped with the machine and process control VariControl VC 1(E). The control system ensures simple handling and monitoring of complex production and assembly processes via a 15" touch display and a multifunctional keyboard.



## Easy programming

Direct and easy programming of NC process modules (feeding unit, thread forming unit, screw insertion unit) via a simple input screen



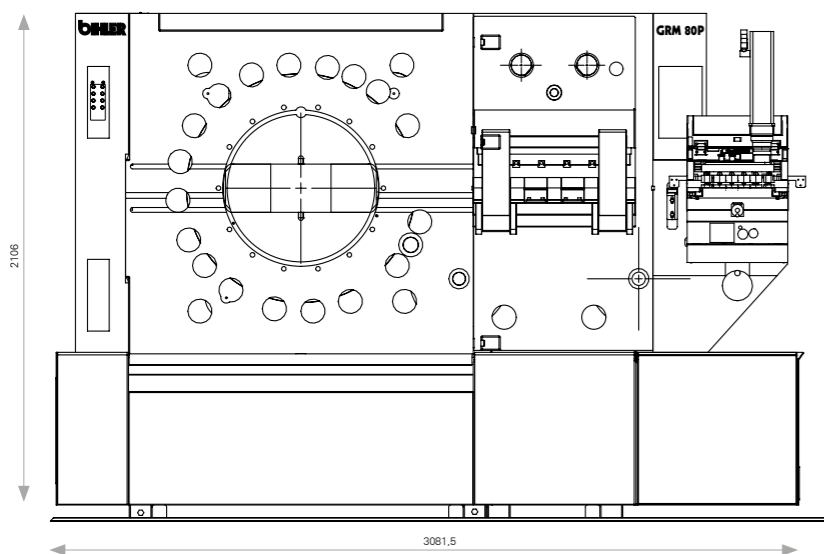
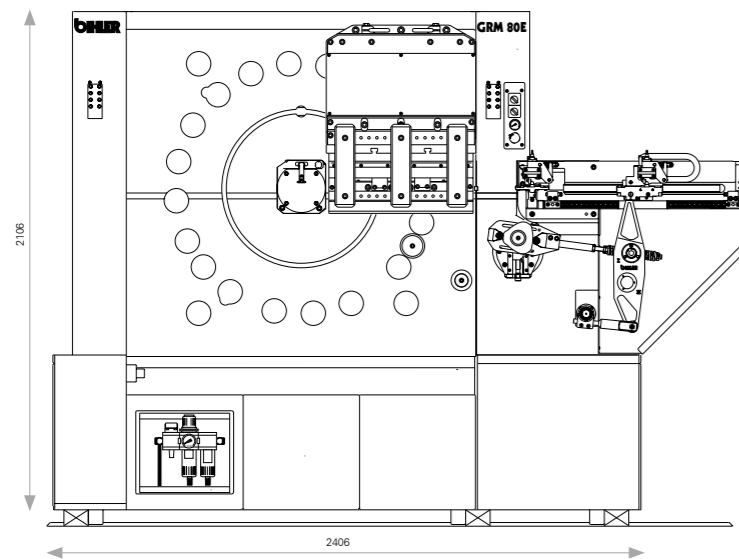
## Support at the touch of a button

The extremely versatile remote maintenance solution fulfils the exacting support requirements. The portal provides full access to the machine's control and all networked components. At the touch of a button on the control cabinet the secure connection is established.



# GRM 80E/P

Technical data / Dimensions



## GRM 80E

## GRM 80P

### System concept

Housing with single processing side; 22 drive positions for radial and linear manufacturing; rear side with 10 drive positions for central mandrel movements; centre aperture (length 644, height 200 mm)

Housing with single processing side; 26 drive positions for radial and linear manufacturing; rear side with 10 drive positions for central mandrel movements; centre aperture (length 644, height 200 mm)

### Stroke rate

Infinitely variable from approximately 5 to a max. of 250 rpm

Infinitely variable from approximately 5 to a max. of 250 rpm

### Drive

Infinitely adjustable drive; nominal drive power 17 kW

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### Control

VariControl VC1-E process control in separate, stand-alone control cabinet 700x700x2100 mm with power supply unit and electronic control and monitoring system; operating panel with 15" TFT touch screen, keyboard and control elements; 1 machine-controller with I/O bus modules for the entire machine control; 1 tool-controller with I/O bus modules; standard are 2 freely-programmable modules, each of which is equipped with 8 channels programmable as input or output; 1 bus module programmable with 16 inputs and 16 outputs; 1 press force monitor as option, slide force monitor as option

VariControl VC 1 process control in separate, stand-alone control cabinet 700x700x2100 mm with power supply unit and electronic control and monitoring system; operating panel with 15" TFT touch screen, keyboard and control elements; 1 machine-controller with I/O bus modules for the entire machine control; 1 tool-controller with I/O bus modules; standard are 2 freely-programmable modules, each of which is equipped with 8 channels programmable as input or output; 1 bus module programmable with 16 inputs and 16 outputs; 1 press force monitor, slide force monitor as option

### Pneumatic system

Maintenance unit with 2 tap connections for oil-free air; normal pressure 6 bar; pressure monitoring with machine cut-out

Maintenance unit with 2 tap connections for oil-free air; normal pressure 6 bar; pressure monitoring with machine cut-out

### Hydraulic system

Pneumatically operated hydro pump with pressure accumulator and valves for hydraulic feed activation; Pmax. = 144 bar

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### Central lubrication system

Single-line central oil lubrication system for machine and system modules, optionally available with integrated oil recovery and/or oil disposal system; air-pressure activated pump, 4.5 litre capacity; function monitoring; 17 free quick-release couplings

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### Central mandrel stroke

Installation of a maximum of 3 side-by-side positively-controlled or spring-return central-mandrels possible, max. stroke 80 mm, max. nominal force 20 kN; max. 1 standard central mandrel, stroke 80 mm, nominal force 35 kN, as option: NC central mandrels \*

Installation of a maximum of 3 side-by-side positively-controlled or spring-return central-mandrels possible, max. stroke 80 mm, max. nominal force 20 kN; max. 1 standard central mandrel, stroke 80 mm, nominal force 35 kN, as option: NC central mandrels \*

### Feed

Mechanical feed unit, extension on housing right-hand side, max. feed length 500 mm, feed-time reduction, hydraulic material clamping; as option: NC radial gripper feed unit RZV 2, feed stroke from 0 to infinity \*

NC radial gripper feed unit RZV 2, feed stroke from 0 to infinity; as option: mechanical feed unit, extension on housing right-hand side, max. feed length 500 mm, feed-time reduction, hydraulic material clamping \*

### Press

Two-point eccentric press; nominal capacity 300 kN; stroke 16 mm; fitting height at BDC 126 mm, stroke position adjustment -4 mm, mounting space for die sets up to 540 mm length and 230 mm width; max. strip width 80 mm (larger strip widths on request possible); two point eccentric press, nominal capacity 100 kN; stroke 12 mm; table length 250 mm; eccentric press; nominal capacity 100 kN; stroke 16 mm

Two-point eccentric press; nominal capacity 400 kN; stroke 20 mm, fitting height at BDC 157 mm, stroke position adjustment -4 mm, mounting space for die sets up to 670 mm length and 230 mm width; max. strip width 80 mm (larger strip widths on request possible), electronic press force monitoring \*

### Slide units

Positively-controlled or spring-return normal slide units, stroke from 35 mm to 95 mm, max. nominal force 90 kN; positively-controlled or spring-return narrow slide units, max. stroke 70 mm, nominal force 50 kN; bottom slide units max. stroke 25 mm, nominal force 30 kN; enlarged slide units, max. stroke 50 mm, nominal force 45 kN \*

Positively-controlled or spring-return normal slide units, stroke from 35 mm to 95 mm, max. nominal force 90 kN; positively-controlled or spring-return narrow slide units, max. stroke 70 mm, nominal force 50 kN; bottom slide units max. stroke 25 mm, nominal force 30 kN; enlarged slide units, max. stroke 50 mm, nominal force 45 kN \*

### Accessories

Bellcrank lever units, double slide units, coiling slide units, tie rod control units, etc. available upon request

Bellcrank lever units, double slide units, coiling slide units, tie rod control units, etc. available upon request

### Straightener

With rapid release of straightening roller; various versions for all admissible widths of strip and wire diameters are available

With rapid release of straightening roller; various versions for all admissible widths of strip and wire diameters are available

### Safety equipment

Full enclosure for personnel and noise protection in accordance with the EC Machinery Directive 98/37/EC, 2 sliding doors

Full enclosure for personnel and noise protection in accordance with the EC Machinery Directive 98/37/EC, 2 sliding doors

### Dimensions and weight

With full enclosure: width 3,140 mm x depth 1,595 mm x height 2,220 mm; approx. 3.000 kg depending on equipment (without tooling)

With full enclosure: width 3,930 mm x depth 1,595 mm x height 2,220 mm; 4,500 kg subject to equipment (without tools)

\* additional versions can be used subject to application .  
(subject to change without notice 05/12)



Otto Bihler Maschinenfabrik GmbH & Co. KG  
Lechbrucker Straße 15  
87642 Halblech  
GERMANY  
Tel.: +49(0)8368/18-0  
Fax: +49(0)8368/18-105  
info@bihler.de  
www.bihler.de