L250 PROCESSING MODULES

Added value directly
in the forming process

BIHLER

MANUFACTURING OF THE FUTURE

With the standardized machines and process modules of the Modular Series L250, Bihler offers you a future-proof platform concept for maximum investment security and flexibility.

Compatible and expandable: All process modules can be combined with all machines and expand your forming processes with value-adding functions.

Variable tool kit: Standardized or individually customizable tool modules enable tailor-made solutions for every requirement.

Same setup methodology: All tool modules can be quickly and efficiently converted using the same setup strategy and a uniform setup process.

Central control: For efficient processes from a single source, the VariControl VC 1 takes over complete machine, process, and automation control.

Digital networking: With the integrated OPC UA interface, your production is ready for the networked future.

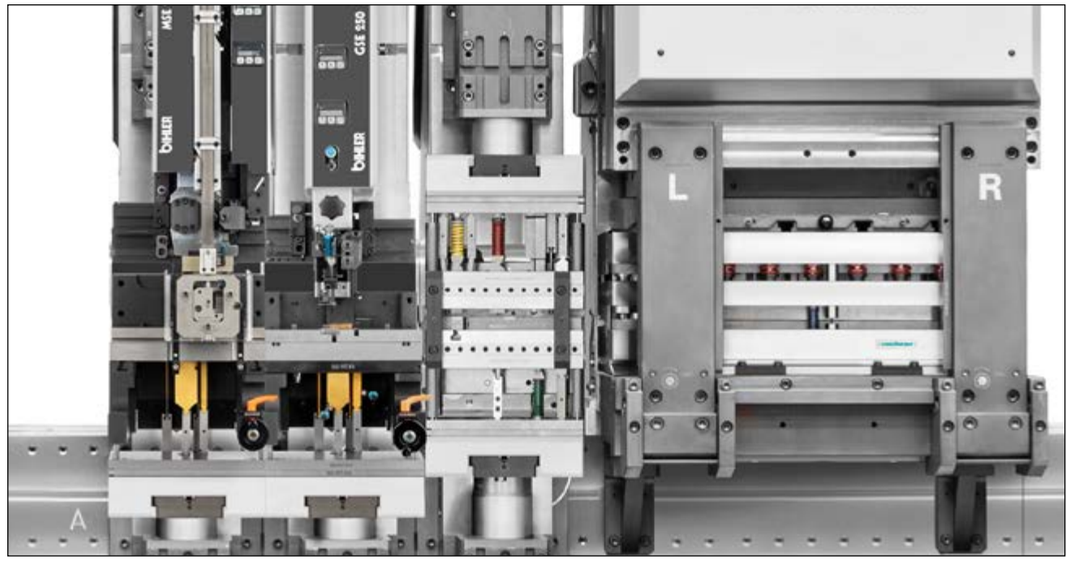
OPC UA

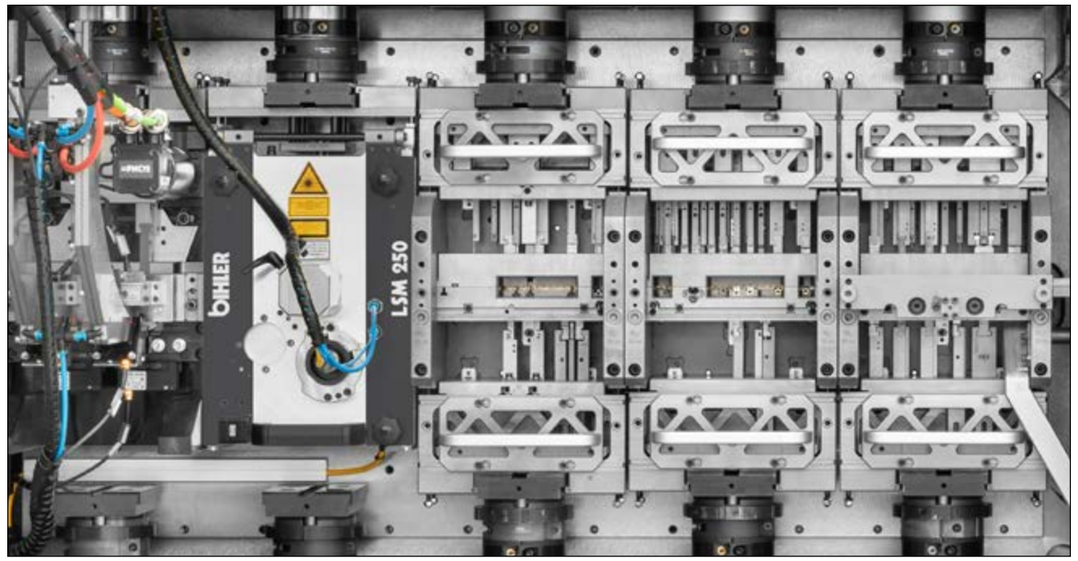
MORE THAN STAMPING AND FORMING

The process modules of the Modular Series L250 stand for maximum added value in your production.

Whether thread forming, screw joining, laser welding, or assembly, each process step can be directly integrated into the forming processes, controlled, and flexibly exchanged—and all this uniformly on all machines of the L250 platform. Mechanics, electronics, and control systems interact seamlessly and guarantee fast setup operations and maximum machine availability.

The highly dynamic L250 process modules are designed as a closed system. This can be adapted to individual component requirements at any time within certain system limits. The modules thus enable the future-proof development of variable manufacturing concepts. In these, functionality and maximum precision can be added exactly where they are needed.





Your advantages at a glance:

High flexibility: Modules can be easily combined, exchanged, or supplemented in a standardized manner as required.

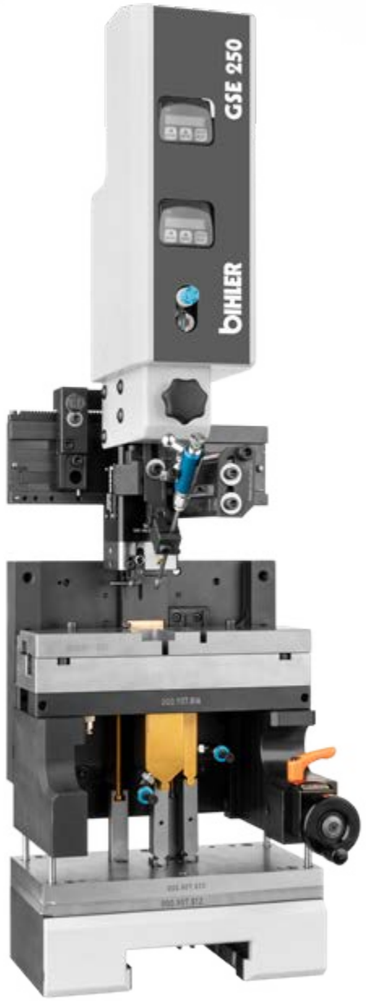
Shorter commissioning times: thanks to standardized connections and integrated functions.

Lower complexity: Clear system boundaries and defined interfaces reduce planning and maintenance costs.

Scalability: Production can be expanded step by step or adapted to new requirements.

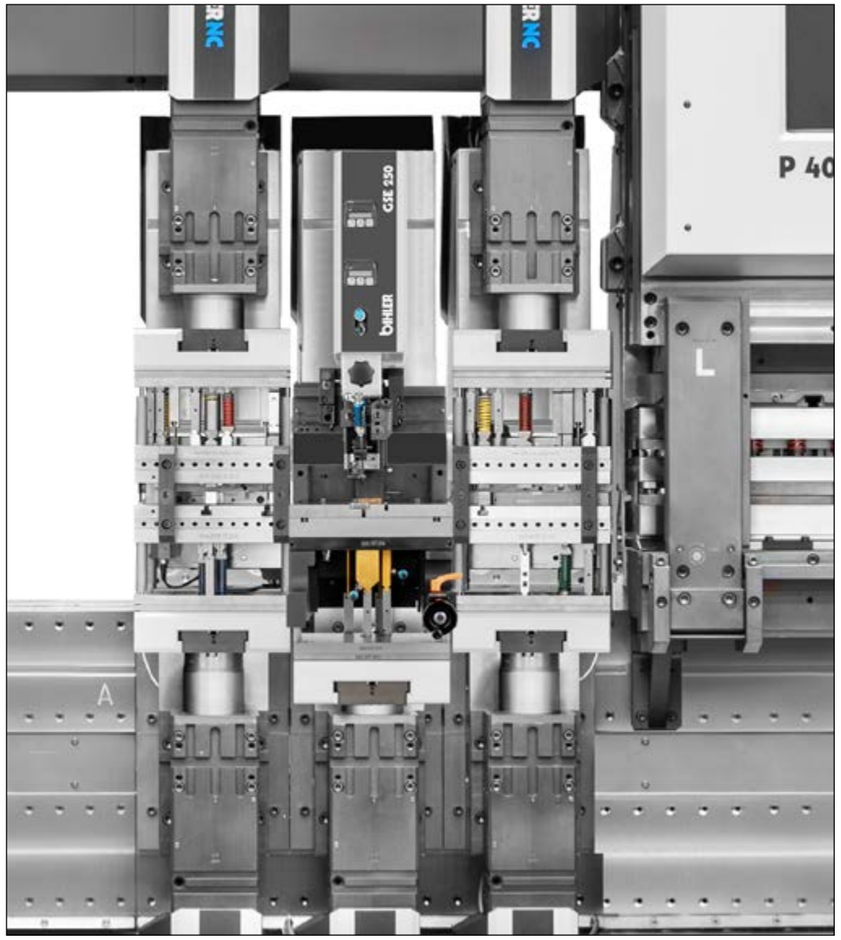
Clear design: Process modules are easy to implement and adapt thanks to defined system boundaries, interfaces, and functions.

Future-proof platform concept: a modular system for a wide range of requirements.



GSE-MODUL

With the **GSE 250 thread forming module**, you can seamlessly integrate thread forming into the stamping and forming process – directly on the machine, directly in cycle. Combining forming and machining technology on a single platform reduces component handling, lowers production costs, and increases vertical integration. This saves you external machining steps and eliminates the need for additional machines. The GSE module can be integrated directly into the machine control system using the plug & play principle. The compact, process-reliable design with high availability means less logistics, shorter throughput times, and maximum efficiency in series production.

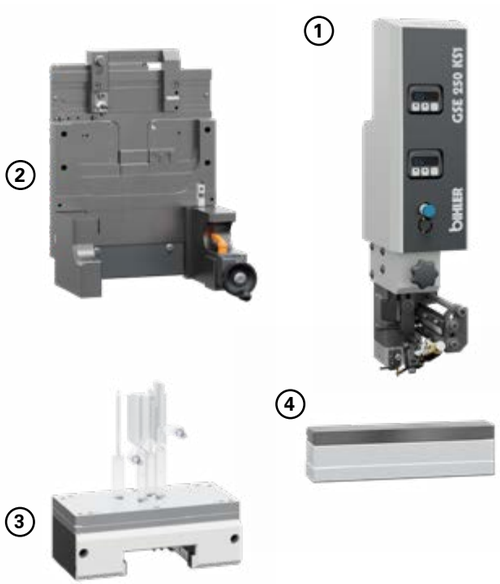


① **Two sizes available:**
GSE KS1 for thread sizes M2-M6
GSE KS2 for thread sizes M5-M12

② **Base unit**
with L250 interface for cross-machine use within the L250 series
Process module GSE
can be positioned on the base carrier
Can be detached when not in use
Electrical connection remains on the machine

③ **Clamping and positioning unit**
for secure and accurate positioning of the component

④ **Guide unit**
for the strip



Your advantages at a glance

Includes all functions required for reliable thread forming with high dynamics.

Quick change of the thread former – in case of wear for maximum machine availability

Quick access to the strip – for smooth maintenance and shortest intervention times

Optional oil cover for increased process cleanliness – less cleaning effort, longer maintenance intervals

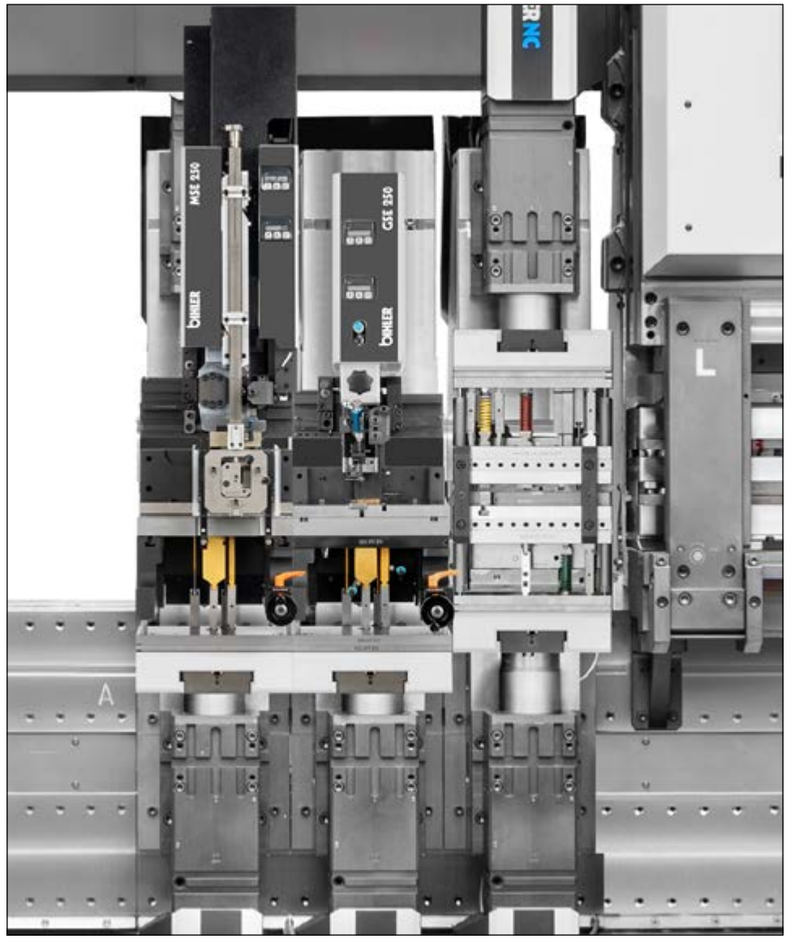
Manual lifting unit – module can be lifted for free access to the strip

Stepless adjustment in X, Y, and Z directions – for precise and flexible thread positioning

Seamless integration into the VC 1 control system – with customized user interface

MSE-MODUL

The **MSE 250 screw joining module** enables precise screw joining directly in sync with the forming process – synchronized, reliable, and fully integrated. Eliminating external assembly systems not only shortens the process chain, but also reduces overall manufacturing and logistics costs. Your advantage: Screw connections are created where the component is produced – without additional transfers, without assembly islands, without loss of time. This increases process stability, reduces sources of error, and creates space for greater efficiency and productivity.



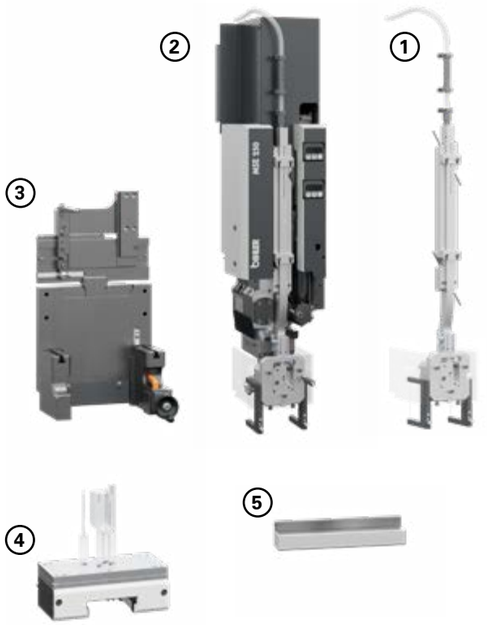
① **Feeding and separating the screws**
the screws

② **MSE process module**
positioned on the base carrier
Complete system
consisting of feeding, positioning, and screwdriving units

③ **Base unit**
with L250 interface
Can be detached when not in use
Electrical connection remains on the machine

④ **Clamping and positioning unit**
for secure and accurate positioning of the component.

⑤ **Guide unit**
4for the strip



Your advantages at a glance

Synchronous NC control – precise coordination of rotary and linear movements by two servo motors

High cycle rates – thanks to efficient screwdriving process and upstream rotary table

Integrated presence control – prevents assembly errors through automatic screw detection

Modular design – easy maintenance and full accessibility during operation

Manual lifting unit – module can be lifted for free access to the strip.

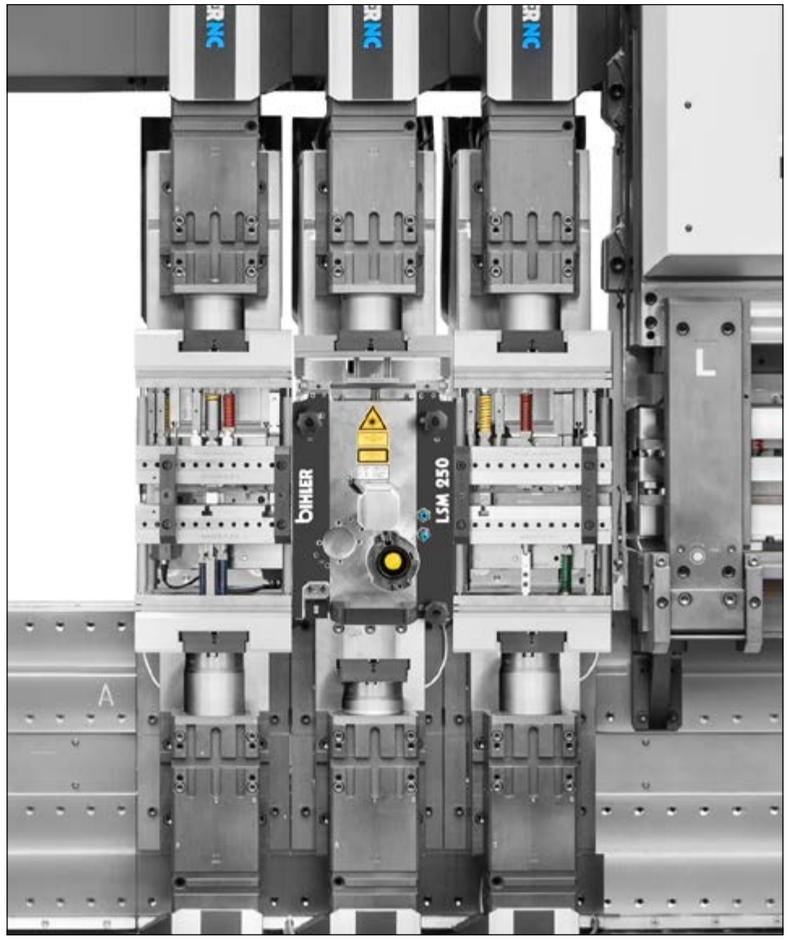
Interfaces compatible with the L250 modular series – for cross-machine use.

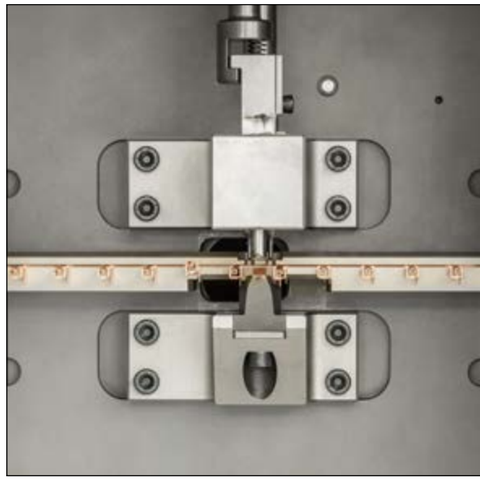
Expandable and combinable with other process modules

Proven complete technology system in three sub-areas:
- **Feeding:** Separating and positioning the screw in the correct position in the transport system.
- **Positioning:** High cycle rates thanks to an intermediate turntable with simultaneous screw presence check.
- **Screw joining process:** Synchronous rotation and lifting movement as well as precise tightening to a specified torque

LSM-MODUL

The **LSM 250 laser welding module** enables high-precision laser welding directly during the forming process. The compact module combines state-of-the-art fiber laser technology with freely positionable optics around the strip material – integrated into a modular, maintenance-friendly system with a standardized concept for the protective housing. Thanks to fully compatible interfaces to the L250 platform and optional process monitoring, the module offers maximum flexibility, safety, and efficiency for demanding welding applications in series production.





① **Base module**
with laser safety enclosure, door safety switch, and L250 interfaces

② **Guiding and centering system**
with active parts for guiding, centering, and positioning the strip/component

③ **Beam adjustment unit**
for laser optics in 3 directions to the component.

④ **Process air guidance**
Supply and exhaust air for laminar flow at the component/joint.

Your advantages at a glance

Integration of fiber lasers with high-quality Auxxos laser optics – designed for maximum precision and process stability

Free positioning of the laser optics around the strip material – for maximum process flexibility for different welding tasks

Uniform concept of the laser safety enclosure – for maximum operator protection. Individually adaptable to your specific requirements

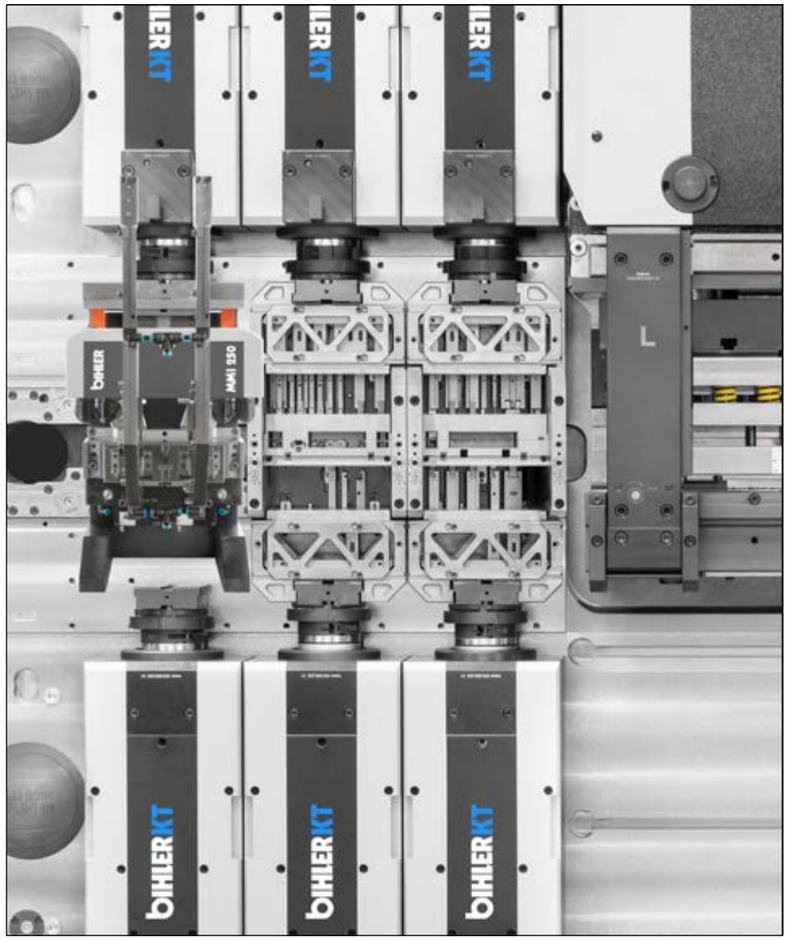
Ready-to-connect interfaces for supply and exhaust air – laminar air flows ensure reliable cooling and protect the welding area from particle emissions

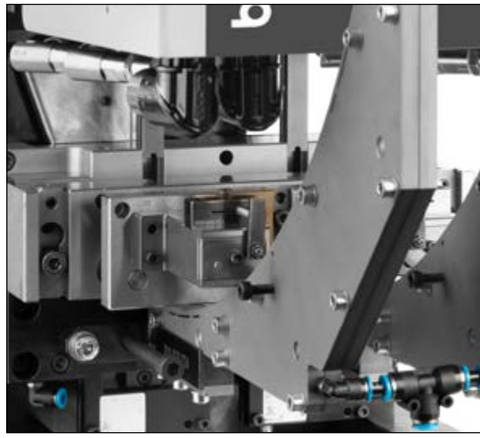
Fully compatible with the interface concept of the Modular Series – flexible, cross-machine use within the Modular Series

Full accessibility for maintenance and interventions – fast, safe access for maintenance, troubleshooting, and setup without dismantling the entire module

MMI-MODUL

The **MMI 250 insulator assembly module** is a highly dynamic, application-specific tool module for precise component assembly within the forming process. With up to 500 parts per minute, the compact module meets the highest requirements for cycle performance and process stability. Thanks to integrated sensor technology, servo drive, and modular design, the assembly module is not only fast and reliable, but also easy to maintain and individually customizable. The MMI module is ideally designed for rotationally symmetrical feed parts, especially for isostatic bodies, touch protection caps for connector contacts, in combination with stamped and bent parts.



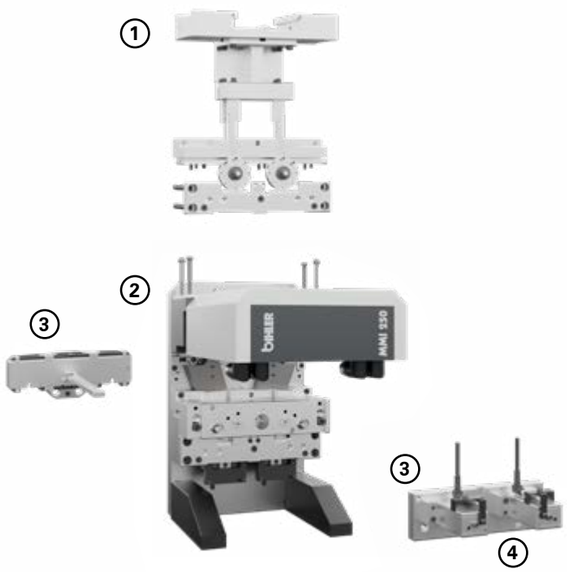


① **Handling and positioning unit**
Active parts elements for positioning and guiding the strip/component, active parts elements for handling and assembling the feed part

② **Drive unit**
with drive, clamping mechanism, and basic structure for accommodating additional function groups and L250 interfaces

③ **Assembly and movement unit**
with movements for the horizontal assembly process for positioning and assembling the components

④ **Feed interface**
connects external feed systems to the process module and ensures precise integration into the process flow.



Your advantages at a glance

Horizontal mounting in the forming process – fully integrable within the Modular Series

Up to 500 parts/min – highly dynamic and process-reliable at the same time

Defined working area – for various assembly movements

Integrated sensor monitoring – detects component presence, misalignment, malfunction, or non-assembly. Machine stops in case of error.

Pilot and centering function – directly integrated in the module for precise component positioning

Servo-controlled – flexible parameterization for different assembly sequences

Easy to maintain – thanks to removable module elements and quick accessibility in the event of malfunctions

Open system for different feed parts – structurally adaptable within specified system limits

Ideally designed for rotationally symmetrical parts – specially tailored to applications involving isostatic bodies and plastic protective caps with stamped and formed parts made from strip material

TECHNICAL DATA

Laser module	Rough working range* (Y x Z x X): 72 mm x 20 mm x 60 mm (see Fig. 1 for details) Positioning range of laser optics: 300° - 60°/ 120° - 240° (see Fig. 1 for details) Fine adjustment of laser optics: X/Z ± 3 mm, Y ± 4 mm
Thread forming	GSE KS1: Thread sizes M2 - M6 GSE KS2: Thread sizes M5 - M12 Rough working range* (Y x Z x X): 112 mm x 40 mm x 73 mm (see Fig. 2 for details) See performance data
Screw joining	MSE 2: Screw sizes: up to max. M8 Rough working range* (Y x Z x X): 84 mm x 40 mm x 69 mm (see Fig. 3 for details) Feed unit Screws not included For performance data,
Assembly module	Rough working range left/right* (Y x Z x X): 14 mm x 16 mm x 80 mm (see Fig. 4 for details) Area of application: rotationally symmetrical parts, isoparticles, protective caps for connector contacts; max. performance data: 2x 250 = 500 assembly operations/min. (depending on the feed part)

*within module width 250 mm

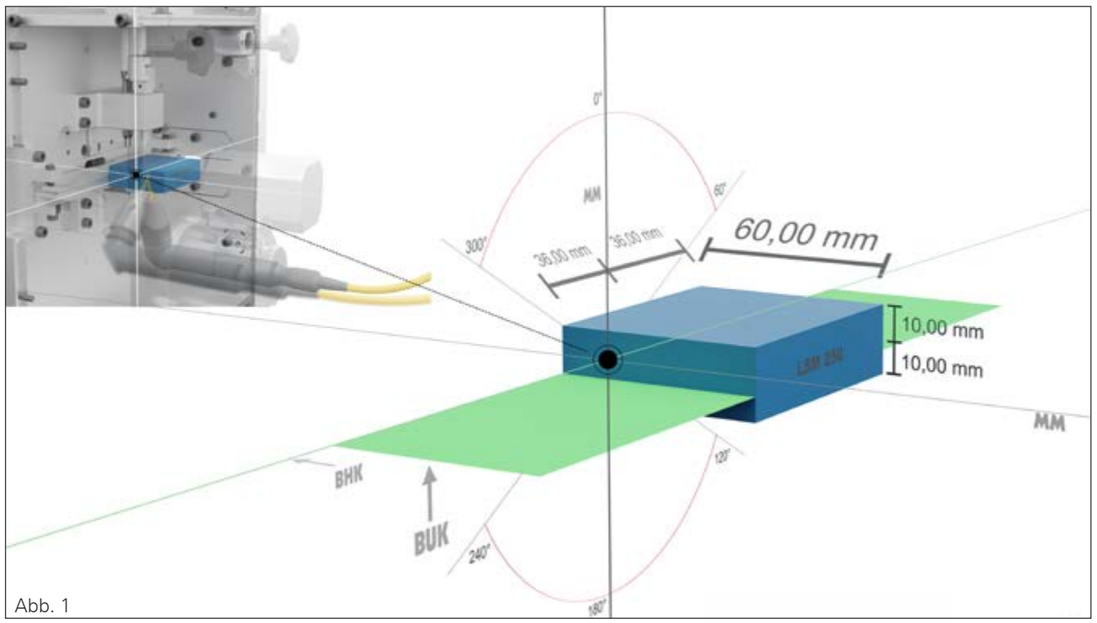
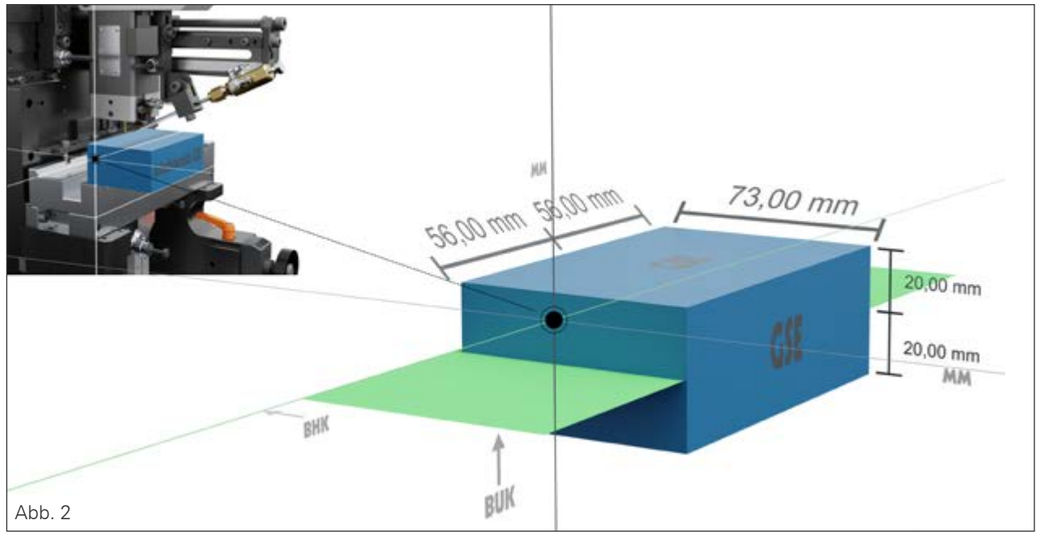


Abb. 1



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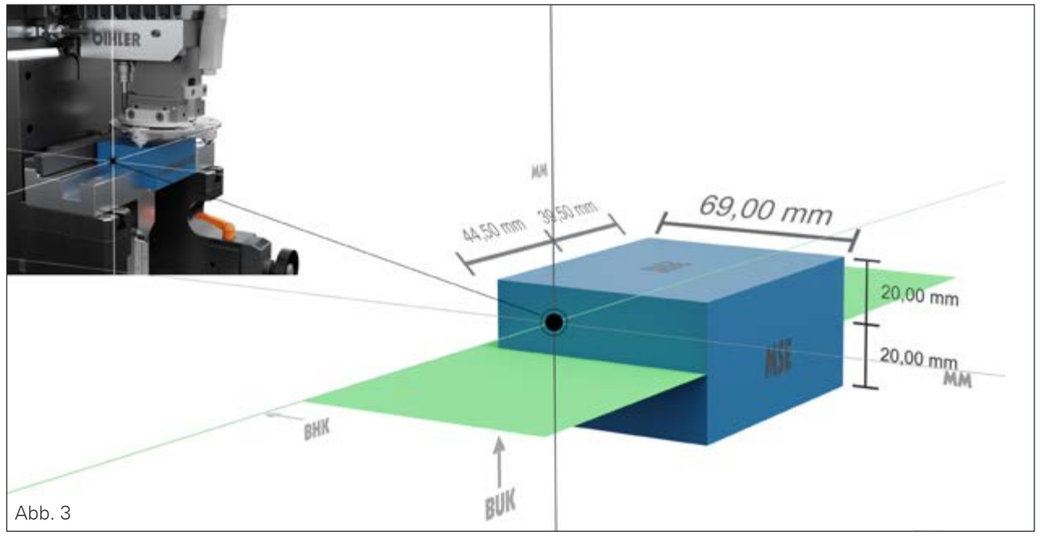

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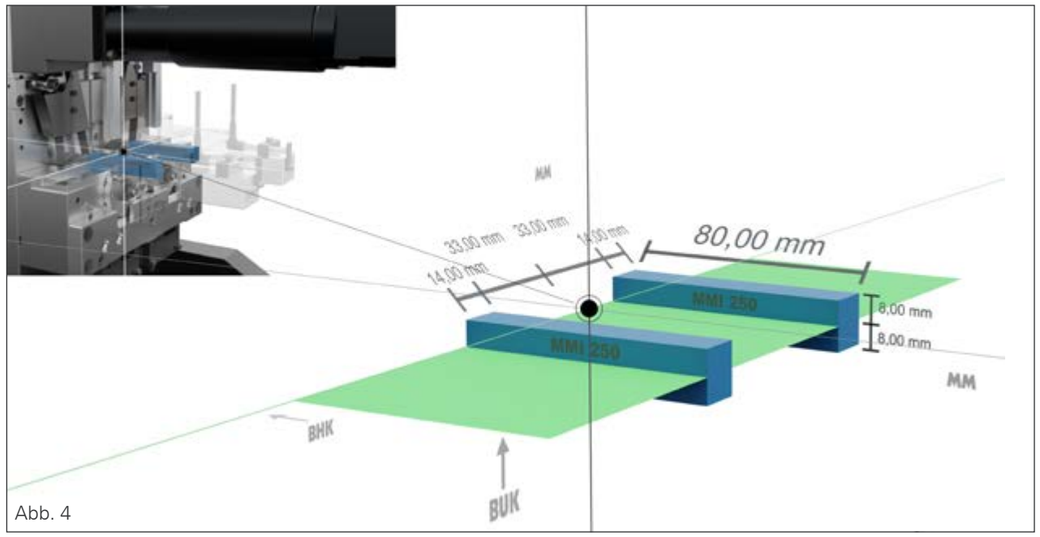

Abb. 4

BUK = bottom edge of tape
BHK = rear edge of tape
MM = module center

Otto Bihler Maschinenfabrik GmbH & Co. KG
Lechbrucker Str. 15
87642 Halblech
DEUTSCHLAND

+49(0)8368/18-0
info@bihler.de

www.bihler.de