

MEBW-60 L135

MICRO ELECTRON BEAM WELDING
MEETS PRODUCTIVITY



 MADE
IN
GERMANY


MICRO ELECTRON BEAM WELDER

 FOCUS

The most recent version of the MEBW-60 family, the L135, is a unique tool combining precise electron beam power control down to the μm -range with high productivity and ultimate flexibility. The MEBW-60 L135 is equipped with either a CNC driven bottom mounted x/y table or with a side mounted rotary manipulator. Conversion from a large single-drum into a six-drum rotary manipulator for high throughput and batch processing is very convenient. The optional egun-shift solution allows for maximum positioning flexibility. Workpiece observation is realized with the unique FOCUS SEM Mode "Scan & View" or by traditional optical means using a camera/lens system combination. A low maintenance pumping system with high pumping speed allows for very fast turnaround cycles.

Multi drum rotary motion manipulator:

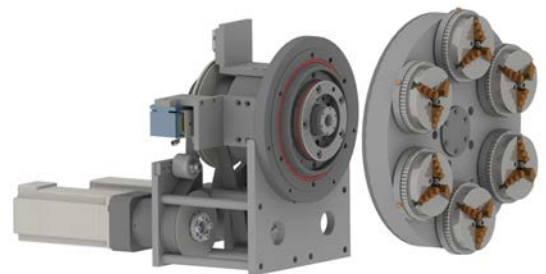
A modular multi drum rotary motion manipulator has been developed to allow welding of either one, six or even twelve workpieces within one vacuum cycle. The drive unit is mounted vertically or horizontally outside to the chamber. Inside the chamber, the drive unit can be equipped with either a one, a six or even a twelve fold rotary work piece holder. An easy to use tooling helps to change quickly between different configurations. The motion is equipped with two motors for rotation and indexing and allows fastest cycle times. The devices can also be ordered with a tail stock or counter bearings.

Generator Slide:

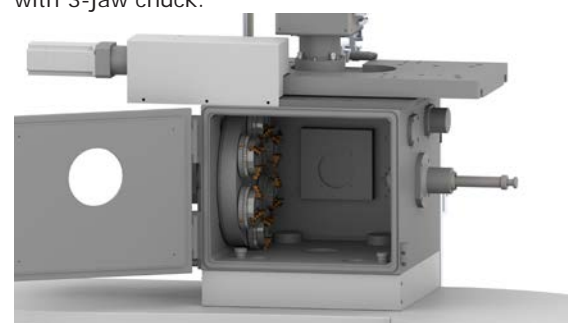
The new generator slide allows for individual lateral positioning of the power beam in the vacuum chamber. In combination with the fixed mounted rotary motion manipulators, the generator slide allows for flexible beam positioning for radial or axial welds. Multiple radial or axial welds within one vacuum cycle is possible.

Turning- & Tilting Motion:

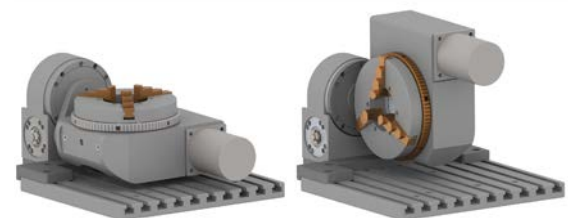
The modular tilt and turning device allows an angled position of the turning device for radial or axial welds. The tilting of the turning device allows for easy access to fillet welds or other special welding geometries. This device includes several unique features, making it a more versatile tool for micro manipulation and welding. The devices grant a tight specification. Together with the minimized backlash and in combination with a precise x- y- table, free 3D interpolated workpiece positioning for welding or surface treatment becomes possible. Furthermore the turning device has a wide inner passage. This allows an easy manipulation and welding of long shafted rotational parts. Finally the devices are modular and easy to disassemble to be used separately.



a.) Simple and fast change-over from a single-drum to a six-drum rotary motion manipulator with 3-jaw chuck.



b.) Six-drum rotary motion manipulator with opposite tailstock mounted to the chamber sides.



c.) T-Nut plate (on x/y manipulator) with internal tilt and turning device (adjustable tilt).



x/y manipulator with T-Nut plate and with internal rotary clamp mounted to the chamber.



d) linear egun slide with 160mm travel in x-direction.

SPECIFICATIONS

Specification	MEBW-60 L135	Workpiece Size	Speed
Accelerating Voltage	5 to 60 kV continuously adjustable		
Beam Current	0.015 mA – 33 mA @ 60 kV, min step width 15µA, DC and fast pulse mode, min pulse width 10µsec		
Beam Power	2 kW		
Beam Diameter @ 1mA	< 50 µm		
Maximum Beam Deflection Angle	±8° depending on deflection system		
Working Chamber Dimension	500 x 500 x 540 mm ³		
Options for CNC Workpiece Handling	Flexible configuration; easily exchangeable:		
a.)	CNC single drum rotary motion manipulator with 3-jaw chuck and opposite tailstock (optional)	up to Ø250 mm x 350mm length	0.1 to 30 rpm with 0.1° angular resolution
b.)	CNC six-drum rotary motion manipulator with 3-jaw chuck	up to Ø100 mm x 250mm length	0.1 to 30 rpm with 0.1° angular resolution
c.)	CNC x/y manipulator with T-Nut plate Travelrange: +/-75mm Accuracy: <50µm	250 x 230 x 170 mm ³	0.1 to 100 mm/s
	together with internal tilt and turning device (mounted on x/y table) with 3-jaw chuck tilt angle: 0° to 90°	up to Ø60 mm x 100mm length	0.1 to 100 rpm with 0.1° angular resolution
d.)	CNC linear egun slide with 160mm travel in x-direction		0.1 to 10 mm/s travel speed
Position Accuracy	< 10 µm		
SEM Image Resolution	down to approx. 25 µm		
Pump Down Time	approx. 3 minutes		
Base Preussure	< 2 * 10 ⁻⁵ mbar		
Foot print	2.3 m x 3.9 m (angled setup) or 1 m x 3 m (straight setup)		
Power Supply	400 V / 4.6 kW, triple phase		
Gross Weight	approx. 1500 kg		

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Process Development:

We offer a complete advisory service for the electron beam processes like welding, brazing, drilling and surface modification.

This includes the guidance during the construction phase, the machining of test pieces, the parameter study and the assesment of the welds according to DIN ISO 13919.

Additionally we provide He-leakage testing, quantitative 3D surface- and metallurgical analysis. The mechano-technological properties can be tested via hardness measurement and tensile tests.

Machine Development or Jobshop:

Beyond the two standard machines, we offer customized machine conception to the special requirements of your parts. Single-part or small-scale production is possible at all facilities including the process development.

After-Sales Support and Training:

Our support does not finish with the sale. We offer to our customers a full service over the whole life time of the machines. This includes in detail:

- Training of your operator
- Process Development for new applications
- Software update
- Spare part management
- Development of special instruments like e.g. wire feeder or temperature control unit adopted to your needs.

Our highly skilled engineers are looking forward to get in contact with you.