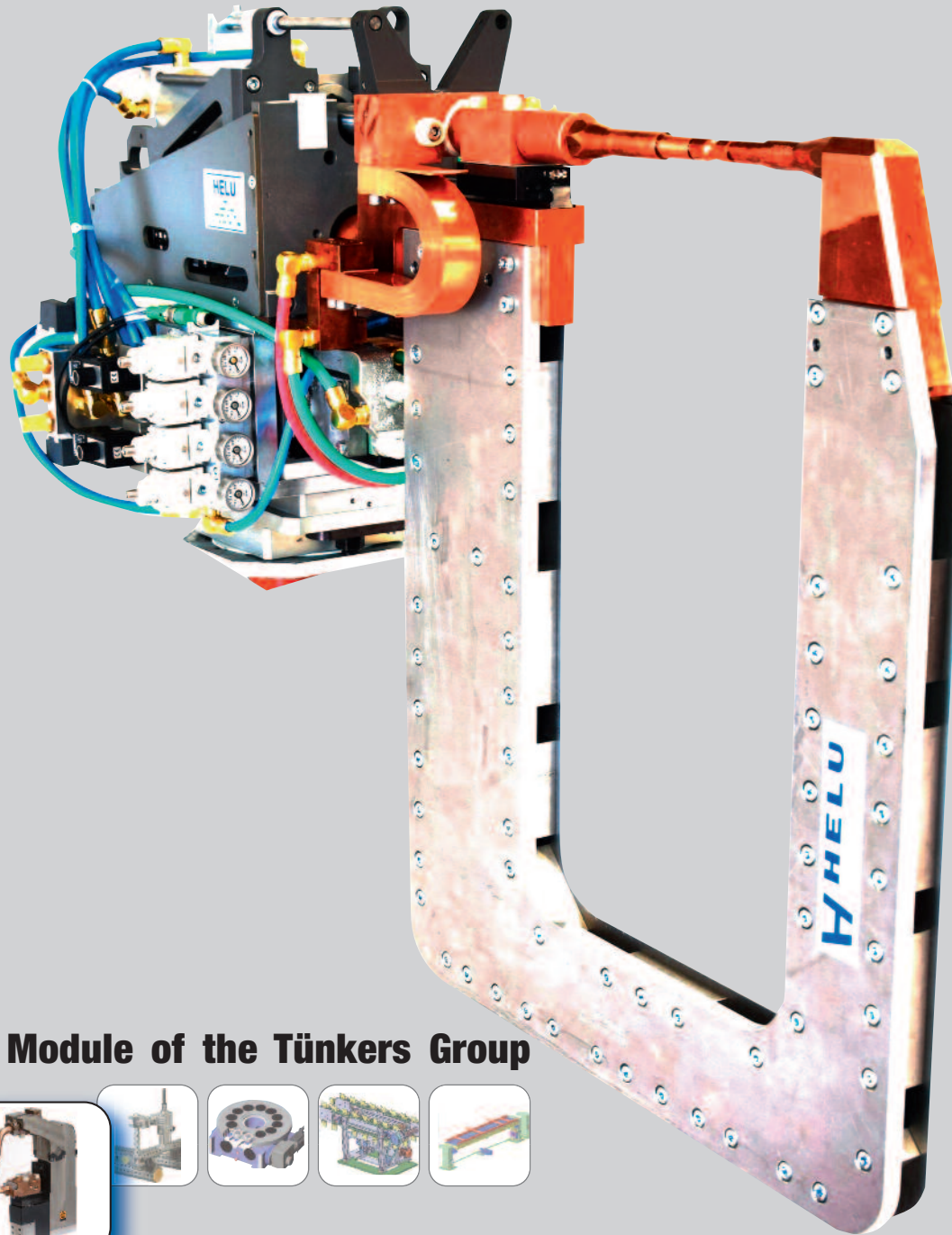


Welding



Welding - An Automation Module of the Tünkers Group



Welding is the prevalent process used for joining elements in sheet metal processing. In this context, automotive car body construction is probably the greatest field of application.

Tight joining of interior and exterior panels or setting of joining elements, e. g. weld nuts are typical applications.

High precision and repeatability, durability and rapidity are also requirements to modern welding technology. The decisive factors for optimum

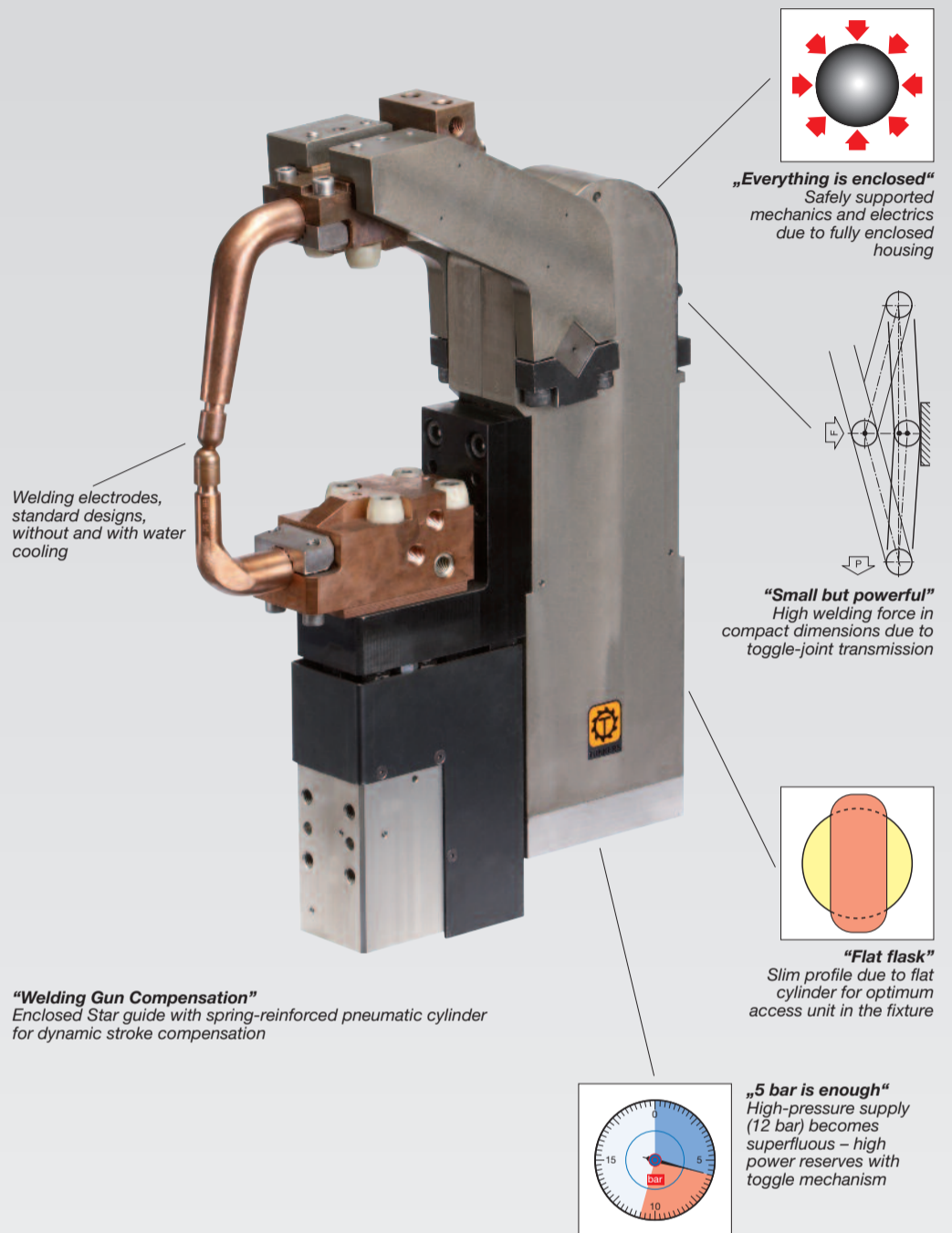
results are: correct current intensity, duration and optimum pressure during the welding procedure. Therefore a high-performance drive is crucial. To meet these requirements, Tünkers and HELU have developed a broad range of products. The welding technology portfolio of Tünkers and HELU ranges from welding clamps and manual welding guns to modular light-weight welding guns.

Welding Clamp

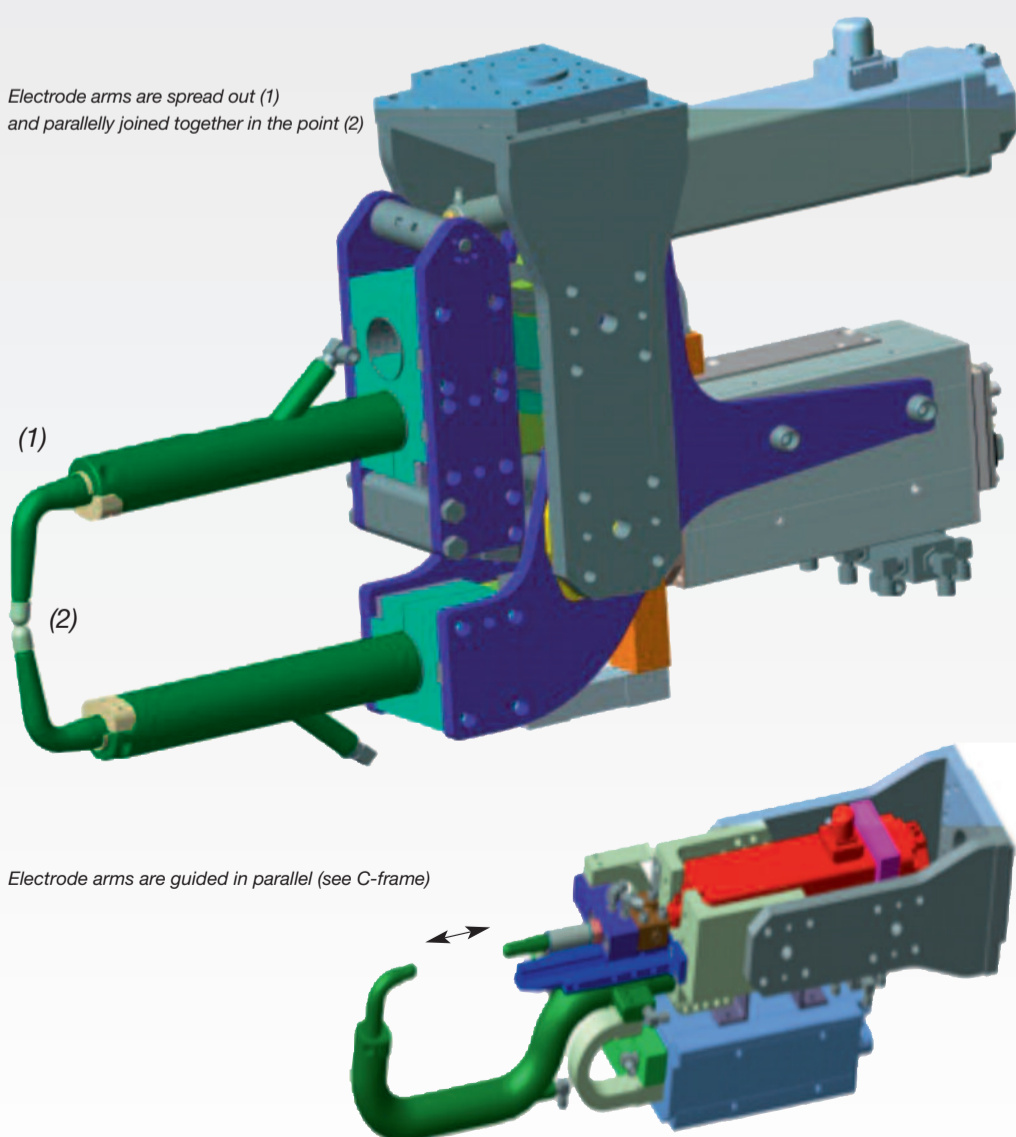
The welding clamp is the smallest element of the welding tools series. The core element of the welding clamp is an enclosed flat housing in mono-block design made of highly rigid aluminium. The electrode arm is moved by a flanged pneumatic cylinder by means of the toggle principle. Tünkers welding clamps are compact units, characterized by minimum mounting space and high welding force in the end position, where the full toggle-joint transmission acts.

Robotic Welding Guns

In automation technology mainly robotic welding guns are used, they are moved to the component by the robots to join the components there. Robotic welding guns are assembled in modules. One core element is the drive. For rapid welding processes with smooth touch down servo technology - servo-pneumatic or servo-electric - is used.



Various Types of Welding Guns



OEM Welding Guns

OEM welding guns form a special group of robotic welding guns. The individual modules of the guns are designed and manufactured in accordance with group standards. This leads to the highest possible standardization and high availability.

Manual Welding Guns

Manual welding guns are guided and positioned by an operator to the component. Even difficult-to-access welding points can be reached. The decisive factors of good handling are low weight and an optimally designed centre of gravity.

Welding Machines

Welding machines are stationary installations. Components are manually or automatically fed to the machine. Cylinders move the pneumatically or electrically driven electrodes to the component. During the joining process, differences in material can be compensated by optimum adjusting function. C-frame welding machines - a special form - offer a sturdy and compact C-frame.

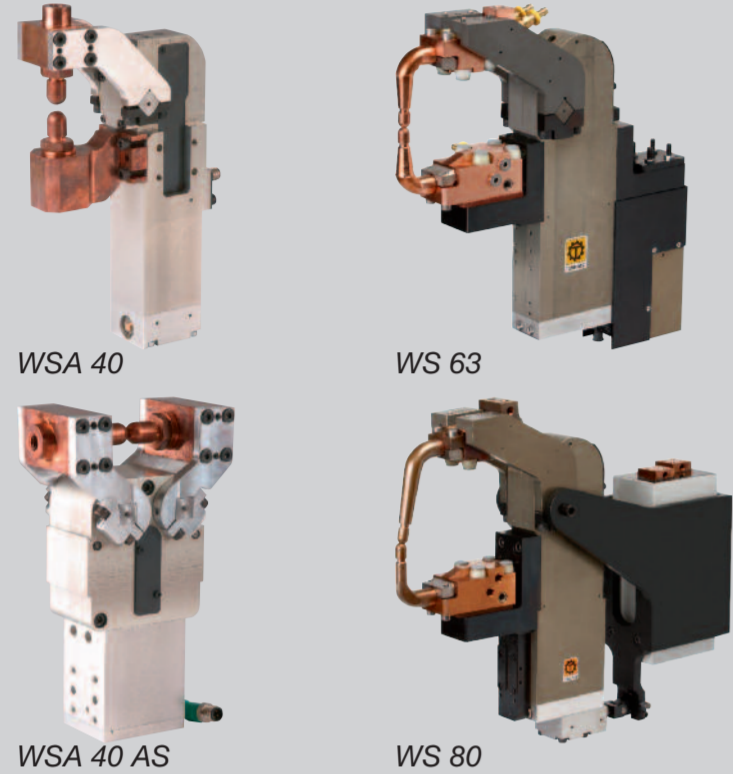
Applied welding procedures are spot welding and also resistance projection welding.

Welding



Welding Clamp - Optimized and Integrated

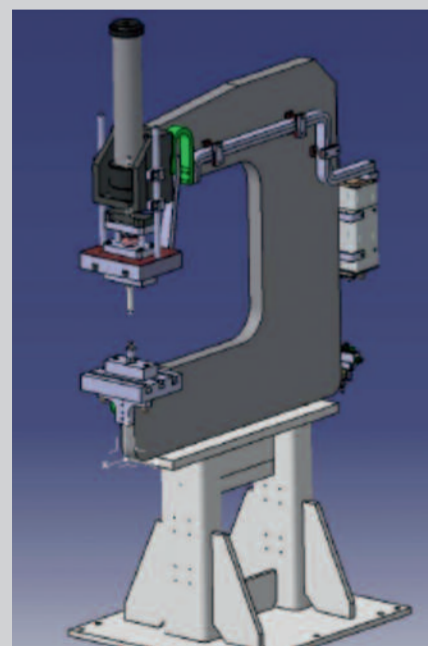
- Higher welding forces for the same cylinder size.
- Prolonged force curve to compensate melting loss and setting characteristics of the caps
- Robust front and rear clamp compensation with enclosed Star guide.
- Optionally with adapted welding transformer



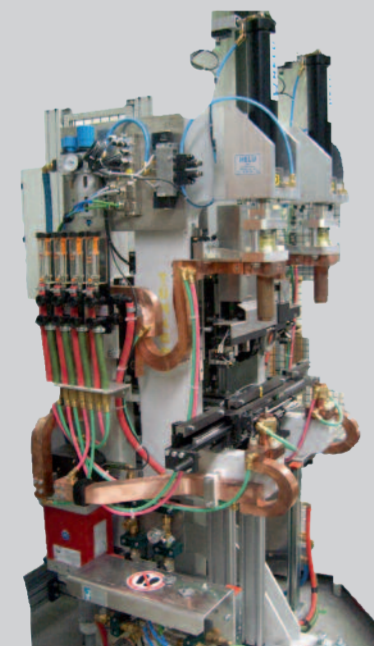
Typ	Tightening torque at 5 bar	Welding force for throat depth (mm)	Operating pressure (bar) with oil-free air	Connection (G)	Opening and closing time (sec.)	Weight (kg) without console
WSA 40	120 Nm	1,5 kN	5	1/8	ca. 1	3,98
WSA 40 AS	120 Nm	1,5 kN	5	1/8	ca. 1	4,42
WS 63	400 Nm	2,2 kN	5	1/4	ca. 1	16,2
WS 80	800 Nm	4,5 kN	5	1/4	ca. 1	90

C-frame Welding Unit

- Compact design
- Available with AC or MF-DC transformers
- Manifold configuration options based on the Tünkers modular design system



Double C-frame Welding Unit

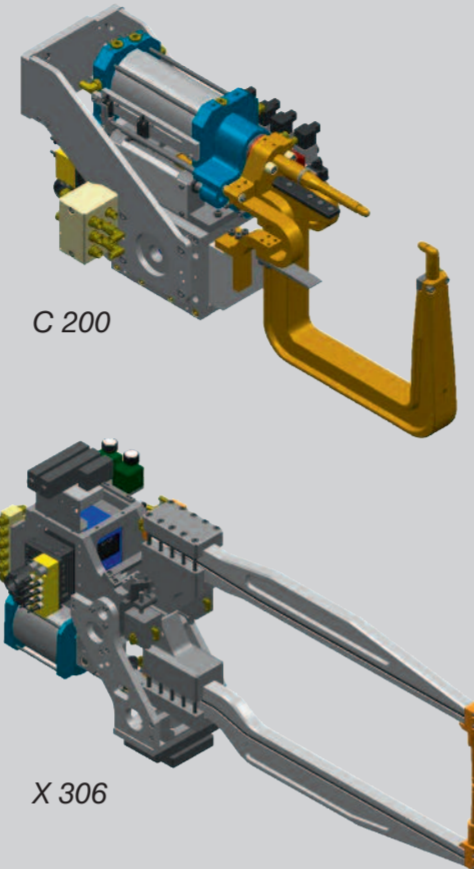


Double Welding Unit

Typ	Welding force	Cylinder stroke
C-frame Welding Unit	20 kN	200 mm

Robotic Welding Guns

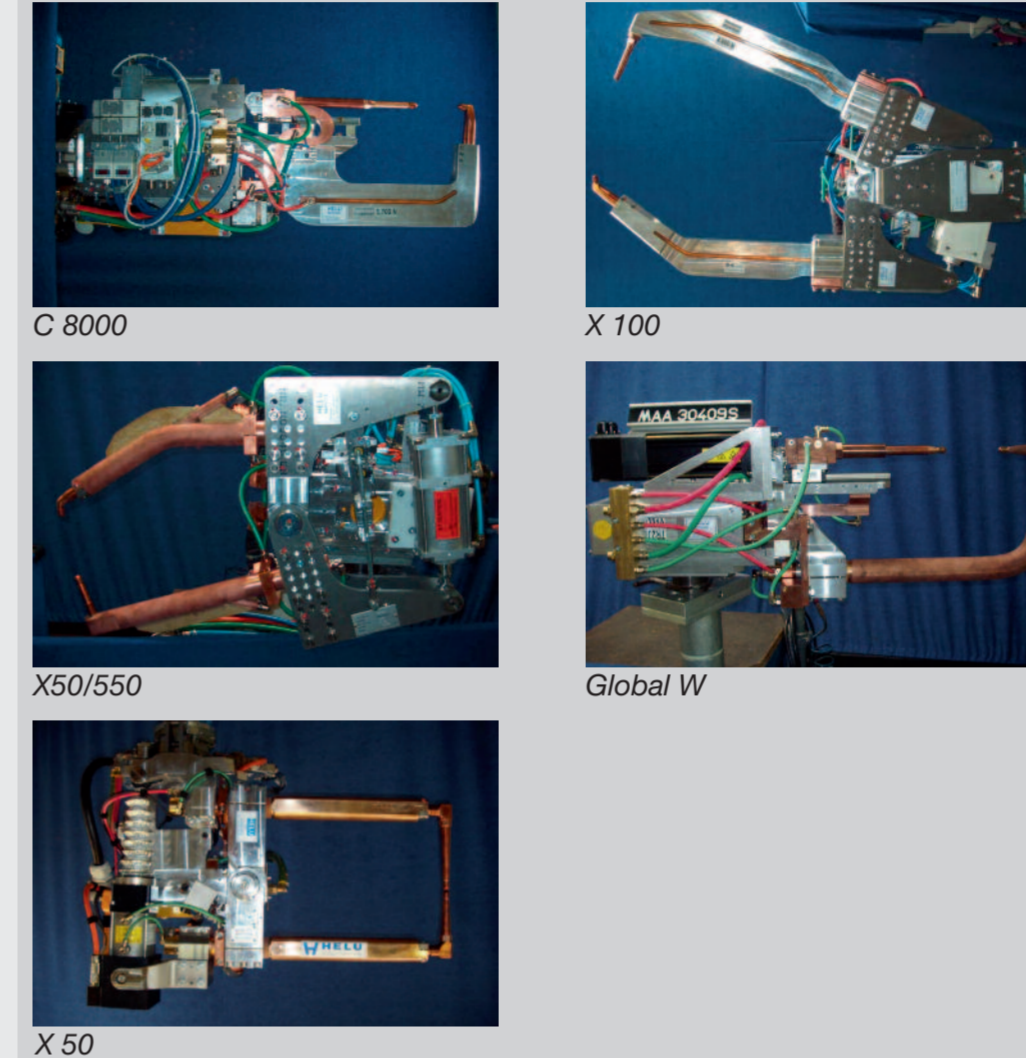
- Pneumatic or servo-electric
- AC or MF-DC transformers
- Al or Cu welding gun fittings
- Pneumatic welding gun compensation



Typ	Arm mounting Ø	Throat depth max.	Width max.	max. operating pressure	Working stroke max.
C 200	40 oder 50	650 mm	500 mm	10 bar	36 mm
X 306	40 oder 50	950 mm	-	10 bar	3°

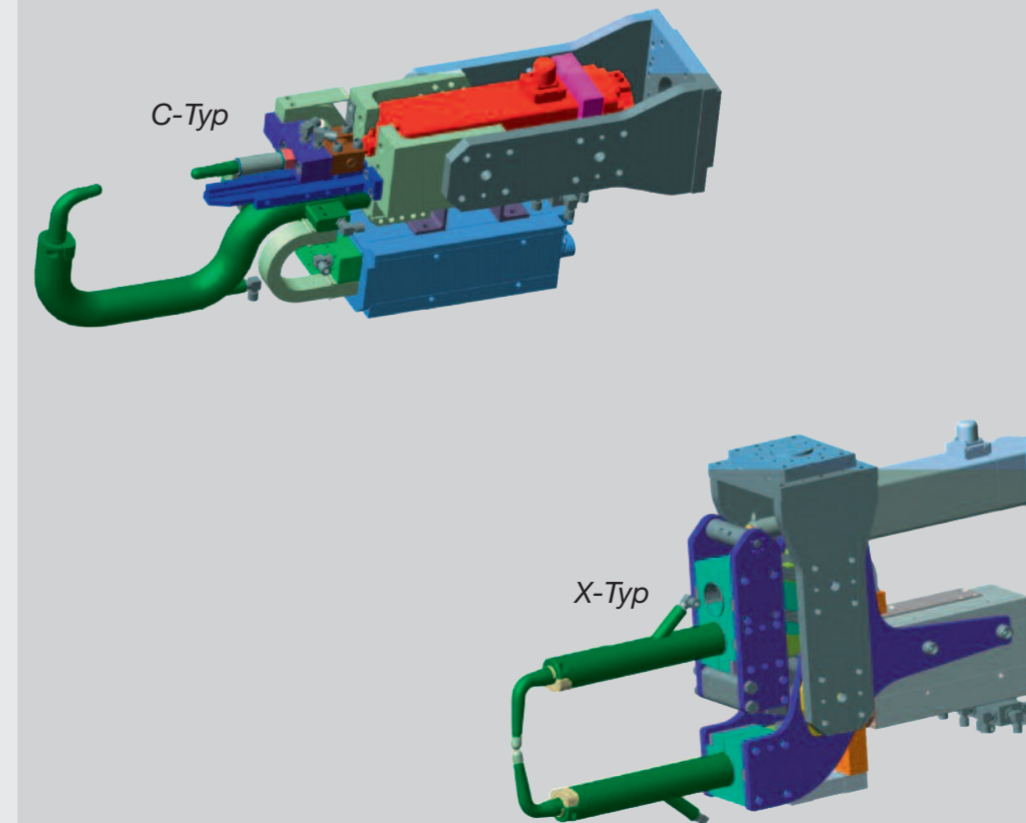
OEM Standard Welding Guns

- Adapted to OEM Standard
- Type X or C
- ISO or medium-frequency transformer



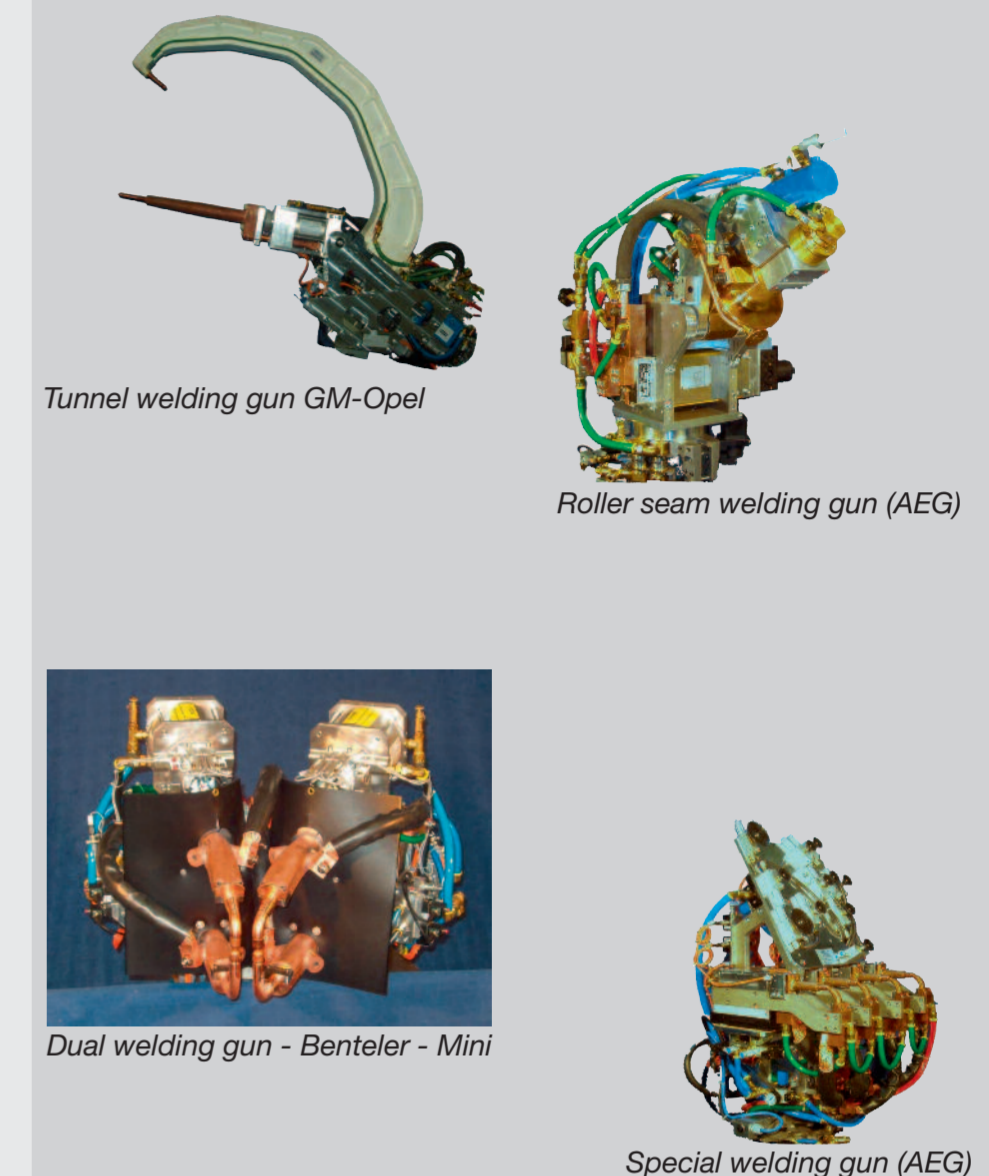
Modular Lightweight Welding Gun

- Pneumatic or servo-electric
- MF-DC transformers
- Al or Cu gun fittings
- Type C or X
- Robotic or manual welding gun



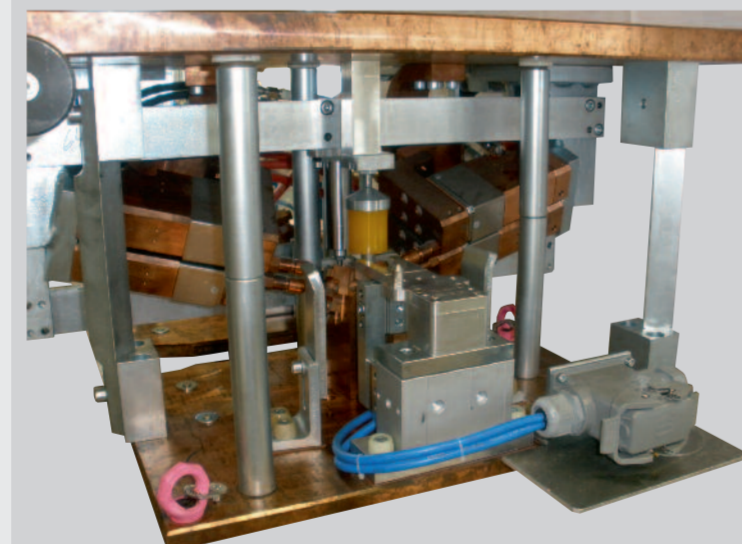
Typ	F max	Arm mounting	Gauge	Servo	Transformer	Weight without fitting
C-Typ	5000 N	D45	75	GSWA33-N05	MF100	ca. 50 kg
X-Typ	5000 N	D50	100/100 100/160	GSWA33-N04	MF100	ca. 58 kg

Special Welding Guns

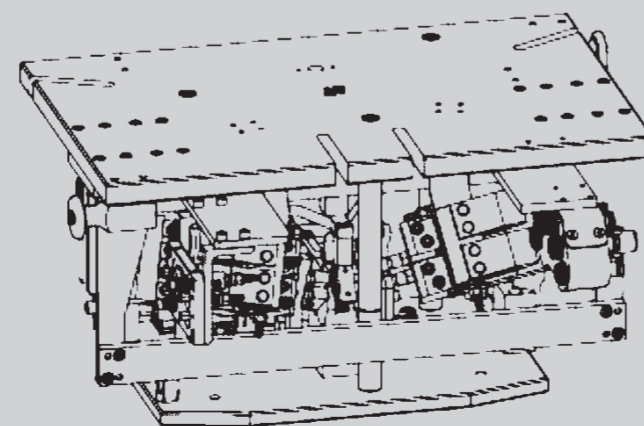


Special Welding Machines and Welding Tools

- Active press welding tools are used for stationary applications or rotary table applications of spot or projection welding.

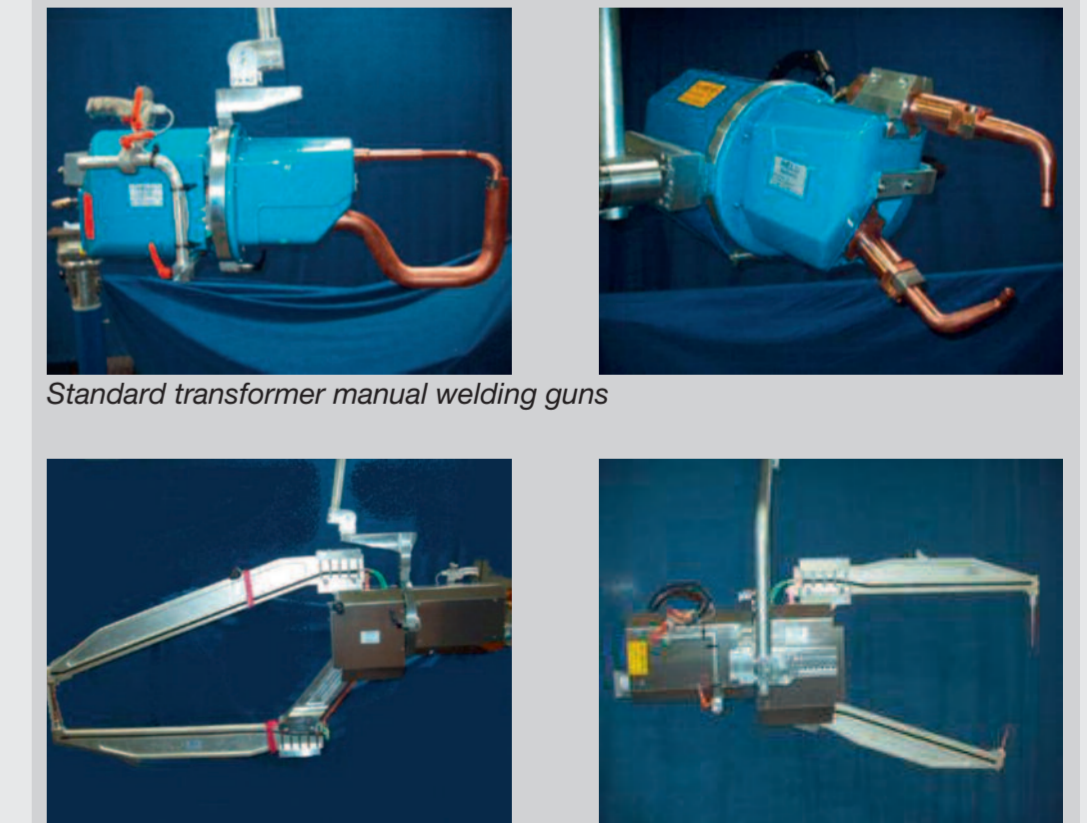


Active press welding tools



Manual Welding Guns

- Pneumatic
- AC or MF-DC transformers
- Al or Cu gun fittings
- Type C or X
- Option: HD (heavy duty) design



Typ	Throat depth max.
C-Typ	1500 mm
X-Typ	1500 mm