



## Hot Plate Welding

Plastics  
Technologies  
in Motion.

Within the hot plate welding process the welding areas of the components to be joined are heated through contact or radiation heat and then joined under pressure. This process is commonly used today. This method involves a multi-stage process, because heating and joining of the molded parts occur at different times. After the parts to be joined have been placed in a special fixture, they are moved against an electrically heated hot plate. The welding process begins with contact between the welding surfaces and the hot plate, which is subdivided into the heating, positioning, and joining process phases.

## Hot plate elements

The required heat is typically produced by electrical heating cartridges. When designing the hot plate ensure equal temperature distribution across the entire workspace. High-strength aluminum, aluminum bronze, and steel are the proven materials for hot plates.

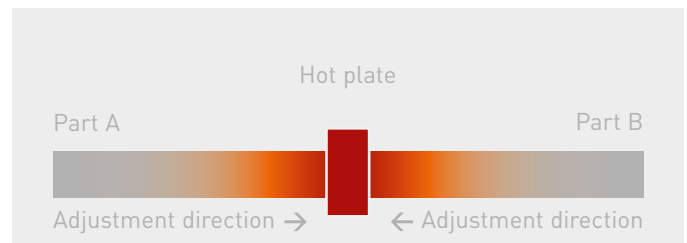
### The following types of heating are possible:

- Contact heating at a temperature of 180 °C to 280 °C (normal temperature range)
- High heat welding at a temperature of up to max. 400 °C
- Radiation heating up to 600 °C

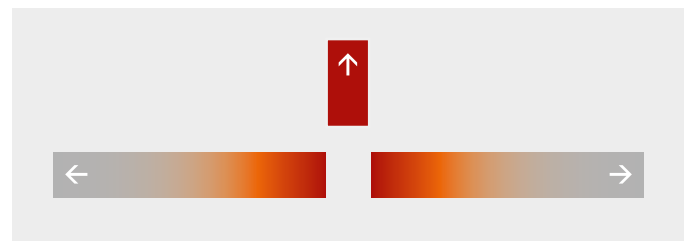
### Hot plate welding enables

- The welding of large plastic surfaces
- The manufacture of large production lots
- The welding of complex geometries
- High welding strengths

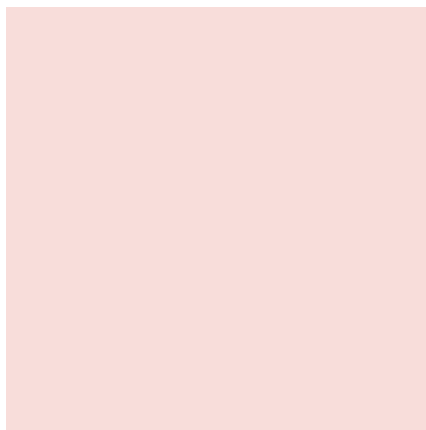
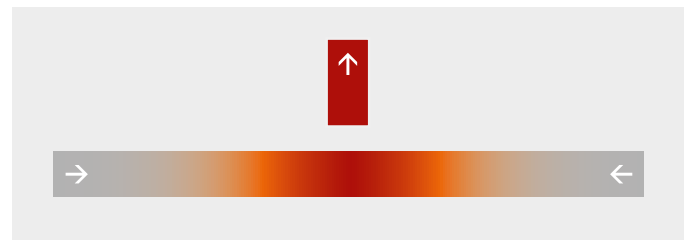
### Unpressurized adjusting and heating



### Changeover



### Joining and cooling down



# FRIMO Machinery and Tooling – Flexible and Efficient

## Machinery portfolio

### FRIMO JoinLine – Machinery for hot plate welding

The machinery portfolio encompasses standard machines of different dimensions for welding of components of different sizes. Frequently used applications in the medium-scale component field are glove boxes as an example. All machine types can be equipped with a standardized tool-changing system as an option.

The standard machine allows for a variety of applications including multi-cavity tools.

Advance drive technology has shortened cycle times.

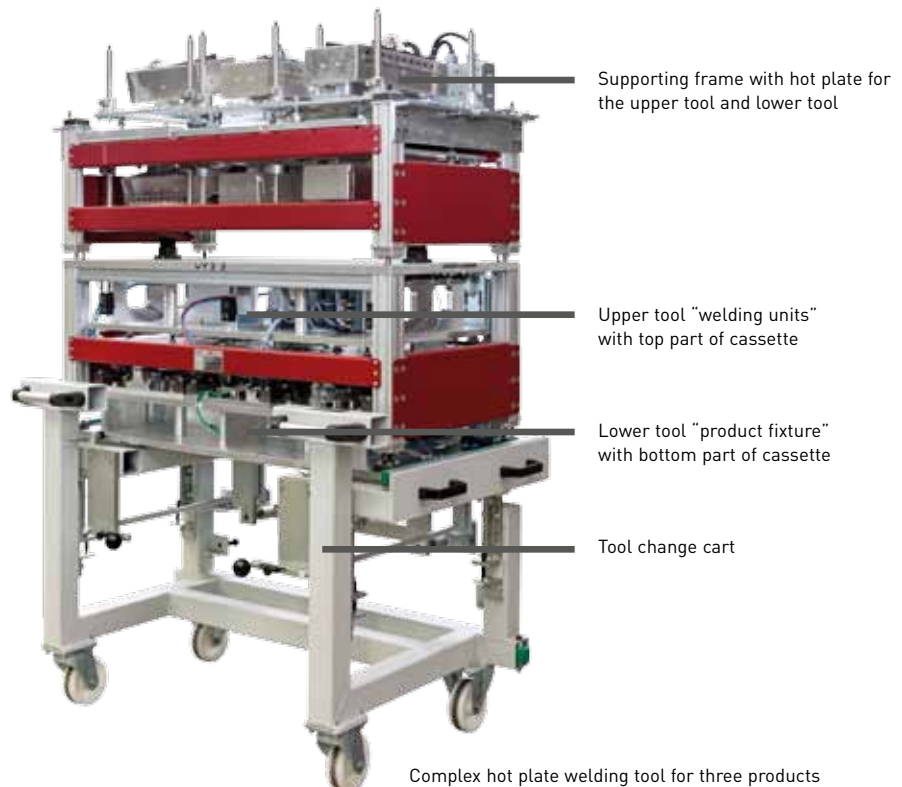
FRIMO also offers a broad range of automated solutions.



## Tooling technology

FRIMO offers innovative concepts for rapid tool change to allow for optimal handling and higher productivity.

- Modular system in the form of an interchangeable cassette
- Cassette usage guarantees optimal protection for the hot plates
- Rapid tool changes possible within 3 minutes by only one operator
- Each machine can use multiple cassettes
- Tool change cart optional
- Depending on production conditions, tool change is possible on the front or back side of the machine

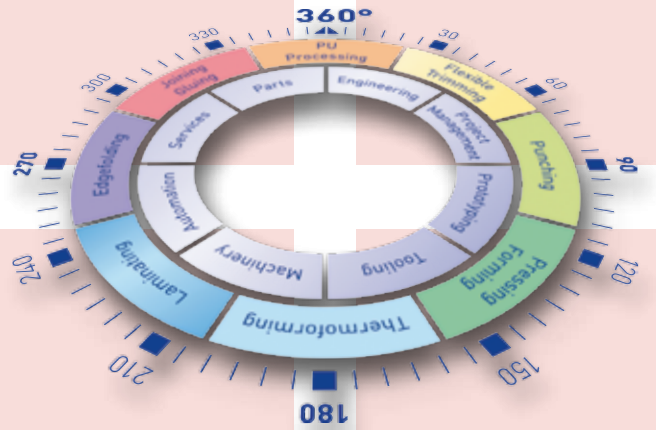


## Benefits

- Complex geometries are possible
- High strengths
- Rapid removal of the hot plate possible due to modern servo drives
- Multiple serial references
- Undercut articles can be welded, since servo drives can maneuver curves
- Expertise in all joining processes
- Optimal weld seam construction for safe welded joints



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|-----------------------|--------------------|
| <b>Brazil</b>         | <b>Mexico</b>      |
| <b>China</b>          | <b>Russia</b>      |
| <b>Czech Republic</b> | <b>Scandinavia</b> |
| <b>France</b>         | <b>Slovakia</b>    |
| <b>Great Britain</b>  | <b>Spain</b>       |
| <b>Hungary</b>        | <b>Turkey</b>      |
| <b>Italy</b>          | <b>USA</b>         |
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