

# Working Instructions Translation

Heating element butt welding machine

**WIDOS MAXIPLAST**



Keep for further use!

Type: **WIDOS MAXIPLAST**  
Serial number / year: see type plate

**Inserts of customer**

Inventory-no.:  
Place of working:

**Order of spare parts and sales service:**

**Address of manufacturer**

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### **Purpose of the document**

These working instructions give you information about all important questions which refer to the construction and the safe working of your machine.

Just as we are you are obliged to engage in this working instruction, as well.

Not only to run your machine economically but also to avoid damages and injuries.

Should questions arise, contact our advisers in the factory or in our subsidiary companies.

We will help you with pleasure.

According to our interest to make our products and working instructions continuously better, we kindly ask you to inform us about problems and defects which occur in during operation.

Thank you.

### **Design of the working instruction**

This manual is arranged in chapters which belong to the different using phases of the machine.

Therefore the searched information can be found easily.



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W.Dommer Söhne GmbH

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Any changes prior to technical innovations.

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# 1. Description of product

This chapter gives important basic information about the product and its prescribed use. All technical details of the machine are put together as a general arrangement.

## 1.1. Application and prescribed use

The WIDOS **MAXIPLAST** is made for heating element butt welding of pipes and fittings out of PE, PP and PVDF with a diameter range of  $\varnothing = 50 - 160$ .

The machine is kept small so that it can easily be used in the pipe system. The clamping of the pipes is managed by steel clamping tools.

**All use of this machine going beyond is not purpose oriented.**

The machine is only to be used in a technically perfect condition, as well as purpose oriented, safety- and danger-conscious in compliance with the working instructions and the relevant safety regulations (especially the regulations for the prevention of accidents).

The described plastic welding machine may only be operated, maintained and repaired by persons who are trained and informed about the dangers.

The manufacturer is not responsible for any damages caused by inexpert handling or operation. For personal injuries, material and immaterial damages resulting herefrom, only the user is responsible!

Also part of the purpose oriented use is

- the respect of all the indications of the working instructions and
- the performing of the inspection and maintenance works.

## 1.2. Safety measures

In case of wrong use, wrong operation or wrong maintenance the machine itself or products being in the surrounding can be damaged or destroyed.

Persons being in the endangered area may be injured.

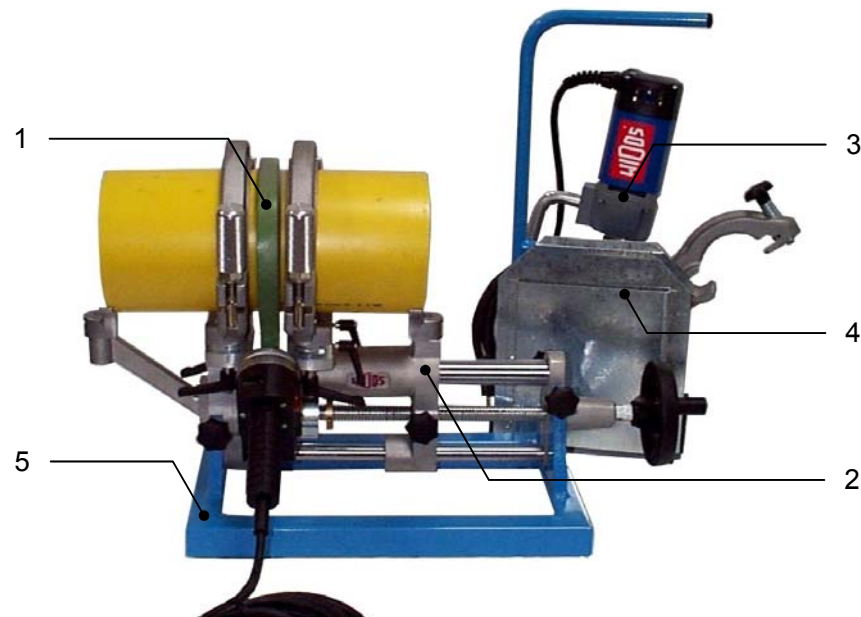
Therefore these working instructions have to be thoroughly read and the corresponding safety advices must necessarily be adhered to.

## 1.3. Conformity

The machine corresponds in its construction to the valid recommendations of the European Community as well as to the according European standard specifications.

The development, manufacturing and mounting of the machine were made very carefully.

## 1.4. Overview



No.	Denomination
1	Heating element
2	Basic machine
3	Planer
4	Protective box
5	Table support

## 1.5. Designation of product

The product is designated by a sign at the frame.  
It contains the type of the machine, the serial number and the year of construction.

### 1.5.1 Technical data

#### 1.5.1.1 WIDOS MAXIPLAST General data

Material:	PP, PE, PVDF,
Dimensions of pipes:	Outside- $\varnothing$ = 50 - 160 mm
Transport box (LxBxH):	630 x 505 x 562 mm
Weight (without packing):	45 kg
Weight transportbox	appr. 14 kg
Fuse:	16 A
Wire cross section:	1,5 mm <sup>2</sup>

Emissions:	<ul style="list-style-type: none"> <li>- The sound intensity level is below 70 dB (A)</li> <li>- When using the named pipe materials and when welding below 260 °C no toxicant damp arises.</li> </ul>
Environment	<ul style="list-style-type: none"> <li>- Keep the workshop clean (especially welding area must be clean)</li> <li>- If secured by an appropriate measurement that allowed conditions for welding are indicated, it is possible to work in any outside temperature condition as far as the welder is not constrained in its manual skill.</li> <li>- avoid humidity</li> <li>- avoid strong sun beams</li> <li>- if it is windy shut the pipe endings.</li> </ul>

#### 1.5.1.2 Heating element

Power:	800 Watt
Voltage:	230 V (± 10 %)
Current:	3,5 A (± 10 %)
Frequency:	50 Hz
Outside-Ø :	200 mm
surface:	anti-stick coated
Elements:	<ul style="list-style-type: none"> <li>- electric temperature control</li> <li>- control lamp</li> <li>- connecting cable with plug</li> </ul>
Weight:	appr. 3,9 kg

#### 1.5.1.3 Planer

Power:	950 Watt
Voltage:	230 V (± 10 %)
Current:	3,5 A (± 10 %)
Frequency:	50 Hz
Weight:	appr. 9,3 kg

#### 1.5.1.4 Basic machine with table support

Material frame and clamping tools:	Machinery steel
max. force	1000 N

**See spare parts list chapter 10, for order-numbers and single parts, when ordering, please state the machine number!**



## 1.6. Equipment and accessories:

Following accessories are part of the delivery:

1	Allan key with T-grip size 3 for screwing in / out the reduction inserts
1	Allan key with T-grip size 4 for tightening the optional clamping jaws for fittings
1	Allan key tilted size 5 for tightening the pipe support
1	Torx-screwdriver T10
	Screws for reduction inserts, flat-head screws for reduction inserts, flat-head screws for mounting the optional clamping jaws for fittings

## 2. Safety rules

The base for the safe handling and the fault-free operation of this machine is the knowledge of the basic safety indications and rules.

- These working instructions contain the most important indications to run the machine safely.
- The safety indications are to be followed by all persons working on the machine.

### 2.1. Explanation of the different symbols

In the working instructions the following denominations and signs are used for dangers:



This symbol means a possibly danger for the life and the health of persons.

- The disrespect of these indications may have heavy consequences for the health.



This symbol means a possible dangerous situation.

- The disrespect of these indications may cause slight injuries or damages on goods.



This symbol means a possible dangerous situation by moving parts of the machine

- The disrespect of these indications may cause heavy crushings of parts of the body resp. damages of parts of the machine.



This symbol means a possible dangerous situation due to hot surfaces.

- The disrespect of these indications may conduct to heavy burns, respectively to self-ignition or even fire.



This symbol gives important indications for the proper use of the machine.

- The disrespect of these indications may conduct to malfunctions and damages on the machine or on goods in the surrounding.



Under this symbol you get user tips and particularly useful information.

- It is a help for using all the functions on your machine in an optimal way and helps you to make the job easier.

**The regulations for the prevention of accidents are valid (UVV).**

### 2.2. Obligations of the owner

The owner is obliged only to let persons work at the machine who

- know about basic safety and accident prevention rules and are instructed in the handling of the machine, as well as who
- the workers also must have read and understood the safety chapter of this manual and certify this by their signature.

***The safety-conscious working of the staff has to be checked in regular intervals.***

### 2.3. Obligations of the user

All persons who are to work at the machine are obliged:

- to follow the basic safety and accident protection rules,
- to have read and understood the safety chapter and the warnings in this manual and to confirm by their signature that they have well understood them,
- to inform themselves about the functions of the machine before using it, before working.

### 2.4. Measure of organisation

- All equipment required for personal safety is to be provided by the owner.
- All available safety equipment is to be inspected regularly.

### 2.5. Information about safety precautions

- The working instructions have to be permanently kept at the place of use of the machine. They are to be at the operator's disposal at any time and without much effort.
- In addition to the manual, the common valid and the local accident protection rules and regulations for the environmental protection must be available and followed.
- All safety and danger indications on the machine have to be in a clear readable condition.
- Every time the machine changes hands or is being rent by a third person, the working instructions are to be sent along with and their importance is to be emphasized.

### 2.6. Instructions for the staff

- Only skilled and trained persons are allowed to work at the machine.
- It must be clearly defined who is responsible for transport, mounting and dismounting, and starting the operation.
- A person who is being trained may only work at the machine under supervision of an experienced person.

### 2.7. Structural modifications on the machine

- No modifications, extensions or reconstructions may be made on the machine without permission of the manufacturer (look chapter 2.11. In cases of non-compliance, any guarantee and liability demands expire.
- Machine parts which are not in a perfect condition are to be replaced immediately.
- Only use original **WIDOS** spare and wear parts.
- In case of purchase orders please always state the **machine number and version number!**

## 2.8. Danger while handling the machine

The machine WIDOS **MAXIPLAST** is constructed according to the actual technical standards and the acknowledged technical safety rules.

However, dangers for the operator or other persons standing nearby may occur.

Also damages to the machine itself or to other things are possible.

The machine must only be used

- according to the prescription
- in safety technical impeccable status
- disturbances, which may affect the safety of the machine must be immediately cleared.

## 2.9. Danger caused by electrical energy



Only skilled qualified workers are allowed to work at electrical features.

- The electrical equipment of the machine has to be regularly checked.
- Loose connections and damaged cables have to be replaced immediately.
- The heating element need to be protected from rain and dropping water, eventually put up welding tent.
- The use on construction sites is only allowed according VDE 0100 over a power distributor with a FI-safety switch.

## 2.10. Specific dangers

### 2.10.1 Danger of burning / heating element, protective box, welding area



You may burn parts of your body and material may also be ignited!

- The heating element is heated up to over **200° C!**
- Do not leave the heating element unattended.
- Take enough safety distance to materials which may be ignited.
- Do wear safety gloves.
- Always put the heating element back into its box before and after usage.
- Only transport the heating element at the holder, do not touch the surfaces of the heating element.

### 2.10.2 Danger by stumbling over electric wires

- Make sure that no person must step over the wires.

### 2.10.3 Danger by cutting / squeezing / catching



- Always put the planer back into its box before and after usage.
- Only transport the planer at the holder and do not touch surfaces.
- Do not grip between clamped pipe endings.
- Make sure that your clothing is not seized into the planer.

### 2.11. Warranty and liability

Fundamentally our "general sales and delivery conditions" are in force.  
The buyer received them before making the contract.

Guarantee and liability demands referring to damages of persons or things are excluded if they are caused by one or several of the following reasons:

- Not using the machine according to the prescription.
- Unprofessional transport, building-up, starting , operating and maintenance of the machine.
- Running the machine with defective or not properly mounted safety equipment.
- Ignoring the information given in this manual.
- Structural changes on the machine without permission.
- Unsatisfactory checkings of parts of the machine, which are worn out.
- Unprofessionally performed repairs.
- In case of catastrophes and acts of God.

### 3. Description of the welding process

**Basically the international and national guidelines are to be followed.**

The plastic pipes are clamped by means of the clamping tools.

Then the front of the pipes are planed. As soon as the pipes are parallel and the pipe deviation is smaller than 0,1x pipe thickness, the welding can begin.

Now the clamping tool with the pipes must be moved forward against the heating element until a certain pressure is achieved. Now the pipes are heated up and a circular bead arises.

This happens during the **bead-up time**.

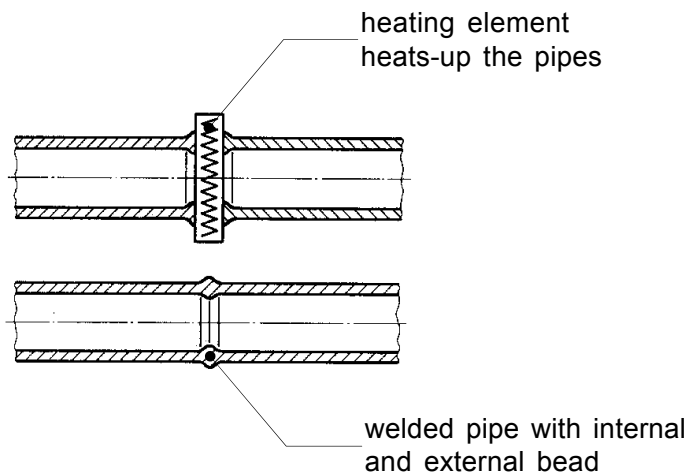
After reaching the necessary bead-height, the pressure is reduced, and this is the beginning of the **heat-up time**, this time is used to heat-up the pipe ends.

After heat-up time the support must be moved backward and the heating element must be removed as quickly as possible and the pipes driven together again.

The time between moving backward of the support and moving forward again after the heating element is taken out ist called **change-over time**.

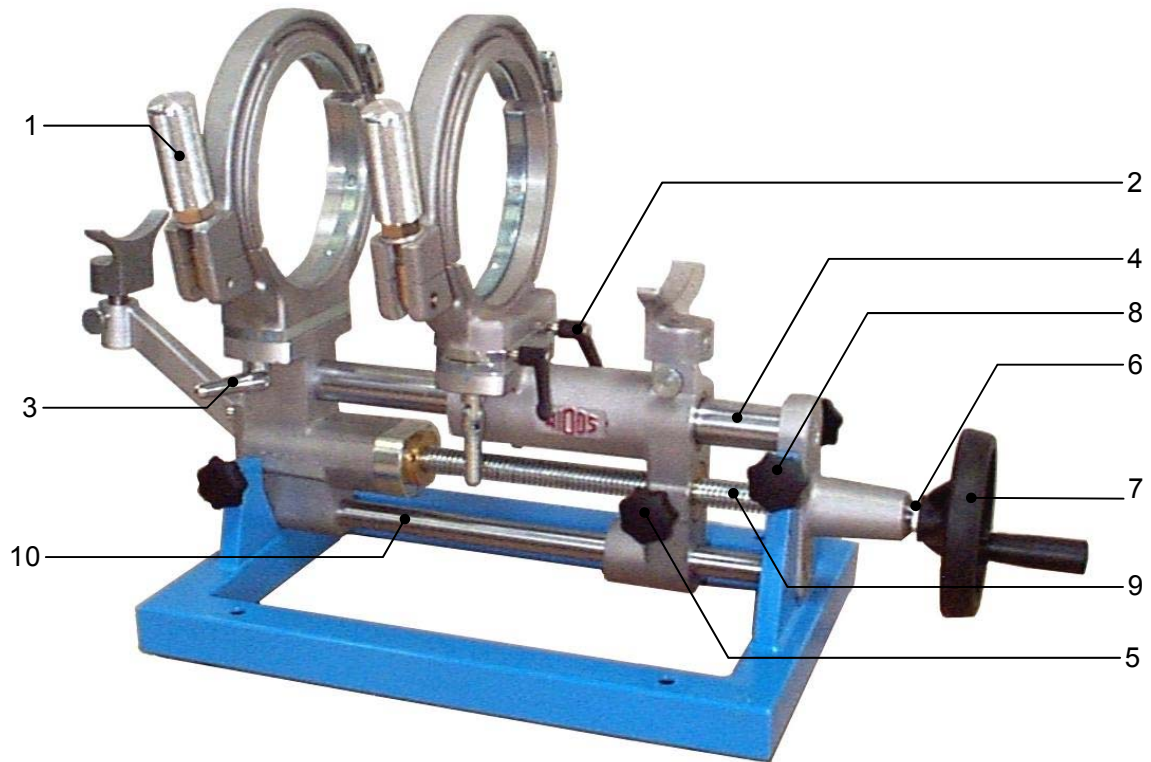
The pipes are fitted together according to the prescribed welding pressure and now the pipe cools down under pressure (**cool-down time**).

The welded pipes can be unclamped, the welding process is finished



## 4. Elements for operating the machine

### 4.1. Elements on the basic machine / table support



<b>No.</b>	<b>Denomination</b>	<b>Function</b>
1	Tightening nut	- tightening of the pipes
2	Lever for horizontal offset (2x)	- by loosening the levers the clamping tool can be moved upwards and downwards on the wedge
3	Clamping lever (4x)	- adjustment of the angle
4	Guide bar above	- guidance for the support
5	Star grip	- fixing the support
6	Scale	- display of the actual welding force - max. 120 kp
7	Handwheel	- Driving the support forward / backward - application of the bead-up force
8	Star grip for basic machine	- tightening the basic machine at the table support.
9	Spindle	- advance for support
10	Guide bar below	- guidance for the support - fixing the planer - rest for the heating element

### 4.2. Elements at the heating element



No.	Denomination	Function
1	Switch on / off with lamp	- comes on as soon as the heating element has been connected to the aggregate and the switch has been switched „on“.
2	control knob with slot	- setting temperature at heating element
3	control lamp green	- there are three statuses:  <b>out:</b> If the desired temperature is lower than the actual temperature the heating element cools-down to the desired temperature.  <b>blinking:</b> The adjusted temperature is maintained.  <b>on:</b> The heating element is heated up because it has not reached the desired temperature.



### 4.3. Element at the planer



<b>Nr.</b>	<b>Benennung</b>	<b>Funktion</b>
1	Switch on / off for planer	<ul style="list-style-type: none"> <li>- The planer can be switched on via the switch and the associated adjustment knob.</li> <li>- The planer has to be switched off before and after use.</li> </ul>
2	Locking with protection switch	<ul style="list-style-type: none"> <li>- protection against unintentional running.</li> <li>- locking the planer, thus avoiding a falling out.</li> <li>- planer can only start when switch is pressed.</li> </ul>

## 5. Starting and operating

The instructions of this chapter are supposed to initiate in the operation of the machine and lead during the appropriate starting of the machine.

This includes:

- the safe operation of the machine
- using all the possible options of the machine
- economic operation of the machine

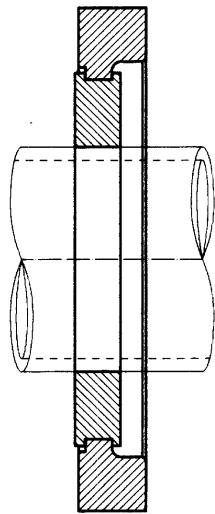
### 5.1. Starting



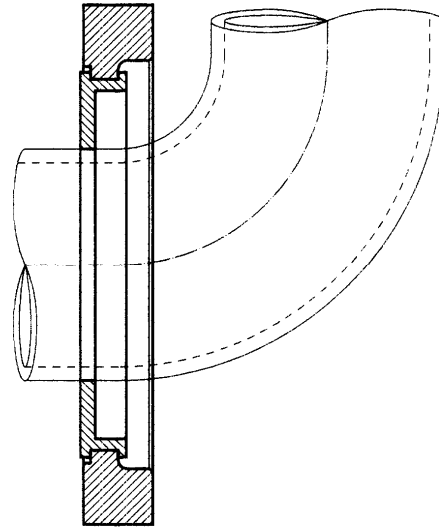
- The machine should only be operated by initiated and authorized people.
- For the qualification a plastic welding exam can be taken according to DVS and DVGW.
- If dangers occur unplug the machine immediately.
- Switch off the machine after the work and during pauses.
- Make sure that unauthorized people are kept at a distance.
- Protect the machine from wetness and moisture!
- For working at the building site use a current distributor with a FI-security protective.
- Lay electric cables thoroughly (danger of stumbling)!
- Take care of the surrounding conditions:
  - The welding should not be performed under direct sun rays influence, use a welding umbrella if necessary.
- In case of surrounding temperature under 5° C measures should be taken :
  - Build up a welding tent or heat up the pipe ends if necessary.
- Take measures against rain, wind and dust.
- Connect the heating element to the mains supply (230 V / 50 Hz).

#### 5.1.1 Change of the reduction inserts

- Unscrew the in-screwed reduction inserts by means of the enclosed Allan key.
- Screw on reduction inserts of the desired diameter.
- With respect to curves, the angle on the basic clamping tools can be set (on each side between -15° to +15°).



wide clamping tool



small clamping tool

## 5.2. Welding process

**In principle, the valid welding regulations (ISO / CEN / DVS ...) are to be observed.**

- Put on safety gloves to protect you from being burned.
- A stop-watch should be available in order to be able to register the actual times for heating up and cooling down.
- A table should be available from which you can read the parameters that are prescribed by the welding regulation for the pipe dimension to be welded.
- The heating elements are to be clean and, above all, free from grease. Therefore they are to be cleaned with non-fraying paper and detergent (e.g. technically pure alcohol or pipe-cleansing cloths which can be bought at the WIDOS company) before every welding or if they are dirty.

The anti-adhesive coating of the heating element has to remain undamaged in the working area.

- Switch on heating element and set the required welding temperature on the adjustment screw on the handle.
  - If the control light flashes, the nominal temperature has been reached and is held at a constant level through a given impulse-break relationship.
- Screw in reduction inserts according to the outer diameter of the pipes to be welded, if necessary set the angle.

- Clamp the basic frame to the table holder, if required mount the table holder to the support surface or insert machine without table holder directly into the pipe system.



machine working directly in the pipe system

- Put the workpieces into the clamping tool, fasten clamping nuts tightly and align the workpieces with respect to one another.
- Insert the planer between the workpieces, arrest them on the guide bar by turning the star grip. Switch on the planer and plane with little pressing force. Planing should be carried out until a revolving cutting has been formed on both sides.
- Open slide again, switch off the planer, remove it and put it into the heat protective box. Remove the produced cuttings, thereby preventing contact with the worked surfaces.
- Close slide again.
- Check pipe mismatch and gap at the abutting pipe ends.  
According to DVS 2207, the mismatch on the pipe outside should not exceed  $0.1 \times$  pipe wall thickness, the admissible gap should not exceed 0.5 mm.  
The mismatch compensation is effected through the stronger tightening or releasing of the clamping nuts. In case mismatch compensation was effected, renewed planing has to be carried out afterwards.
- Take the adjustment force for the pipe dimension to be welded from the table and add the motivity.
- Open slide again somewhat.
- Take the heating-up time, the maximum change-over time, the cooling-down time and the bead height for the pipe dimension to be welded from the table.
- Bring the heating element which has been cleaned and brought to its nominal temperature between the pipes with the handle facing downwards (hang into guide bar).

- Close the slide smoothly with the determined adjustment force.  
The force applied can be gathered from the force scale on the handwheel.  
When the prescribed circulating bead height has been reached, reduce the force (heating up pressure = approx. 10 % of the adjustment pressure).
- Now the heating up time starts. Press the stop-watch and compare the actual time with the nominal time taken from the table.
- After expiration of the heating up time, open slide, remove heating element as quickly as possible, put it into the heat protective box and close the slide smoothly.  
The maximum time limit for this purpose is predetermined by the value for the change-over time taken from the table.
- Press the stop-watch when the welding pressure has been built up.  
If necessary, readjust the pressure during cooling down (the pressure for cooling down is the same as the adjustment pressure).
- After expiration of the cooling-down period stop the pressure, remove the welded parts and open the slide.

## 6. Welding record and tables



# Table for PE



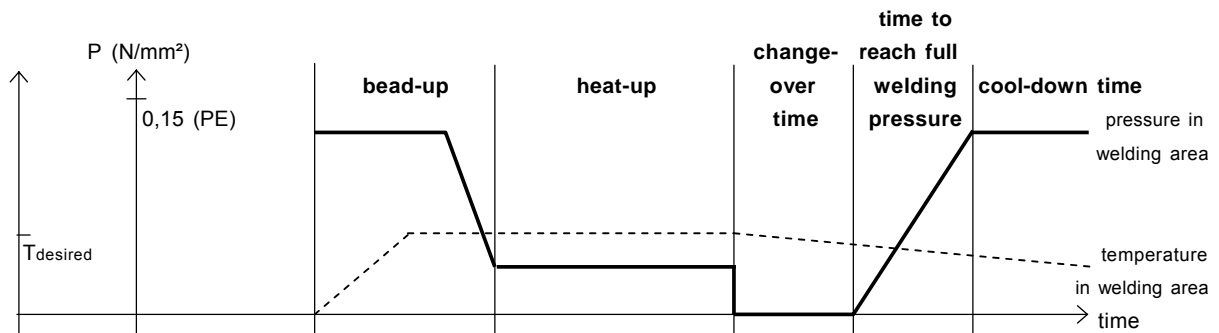
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

**PE 80** The value for heating element temperature is between 200° C - 220° C.  
 The **smaller** the pipe wall the **higher** the temperature.

**PE 100** The standard value for heating element temperature is 220° C.  
 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min] <b>1</b>
<b>20</b>	1,9	11	2	0,5	20	4	4	2	2
	2,3	9	2	0,5	23	4	4	2	2
	2,8	7,4	3	0,5	28	4	4	3	3
<b>25</b>	2,3	11	3	0,5	23	4	4	3	2
	2,8	9	3	0,5	28	4	4	3	3
	3,5	6	4	0,5	35	5	5	4	4
<b>32</b>	1,8	17	3	0,5	20	4	4	3	2
	1,9	17	3	0,5	20	4	4	3	2
	2,4	13,6	4	0,5	24	4	4	4	3
	2,9	11	4	0,5	29	4	4	4	3
	3,6	9	5	0,5	36	5	5	5	5
<b>40</b>	1,8	26	4	0,5	20	4	4	4	2
	1,9	21	4	0,5	20	4	4	4	2
	2,3	17,6	5	0,5	23	4	4	5	2
	2,4	17	5	0,5	24	4	4	5	3
	3,7	11	7	0,5	37	5	5	7	5
	4,5	9	8	1	45	5	5	8	6
	5,5	7,4	9	1,0	55	5	5	9	8



# Table for PE

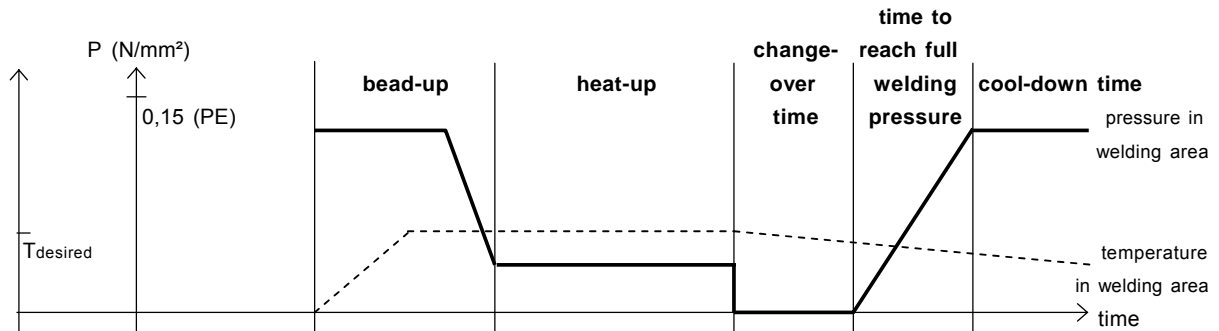
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
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pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min] <b>1</b>
<b>50</b>	1,8	33	5	0,5	20	4	4	5	2
	2,0	26	5	0,5	20	4	4	5	2
	2,4	21	6	0,5	24	4	4	6	3
	2,9	17,6	7	0,5	29	4	4	7	3
	3,0	13,6	7	0,5	30	4	4	7	4
	3,7	13,6	9	0,5	37	5	5	9	5
	4,6	11	10	1,0	46	5	5	10	6
	5,6	9	12	1,0	56	5	5	12	8
<b>63</b>	1,8	41	6	0,5	20	4	4	6	2
	2,0	33	6	0,5	20	4	4	6	2
	2,5	26	8	0,5	25	4	4	8	3
	3,0	21	9	0,5	30	4	4	9	4
	3,6	17,6	11	0,5	36	5	5	11	5
	3,8	17	11	0,5	38	5	5	11	5
	4,7	13,6	13	1,0	47	5	5	13	6
	5,8	11	16	1,0	58	6	6	16	8
	7,1	9	19	1,5	71	6	6	19	10
8,6	7,4	23	1,5	86	7	7	23	12	

# Table for PE

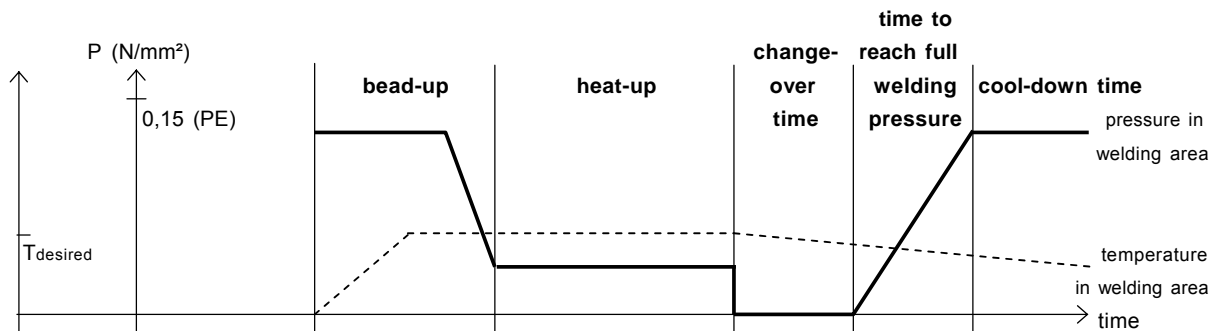
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

**PE 80** The value for heating element temperature is between 200° C - 220° C.  
 The **smaller** the pipe wall the **higher** the temperature.

**PE 100** The standard value for heating element temperature is 220° C.  
 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min] <b>1</b>
<b>75</b>	1,9	41	7	0,5	20	4	4	7	2
	2,3	33	8	0,5	23	4	4	8	2
	2,9	26	10	0,5	29	4	4	10	3
	3,6	21	13	0,5	36	5	5	13	5
	4,3	17,6	15	0,5	43	5	5	15	6
	4,5	13,6	15	1,0	45	5	5	15	6
	5,6	13,6	19	1,0	56	5	5	19	8
	6,8	11	22	1,0	68	6	6	22	10
	8,4	9	27	1,5	84	7	7	27	12
10,3	7,4	32	1,5	103	7	7	32	14	
<b>90</b>	2,2	41	10	0,5	22	4	4	10	2
	2,8	33	12	0,5	28	4	4	12	3
	3,5	26	15	0,5	35	5	5	15	4
	4,3	21	18	0,5	43	5	5	18	6
	5,1	17,6	21	1,0	51	5	5	21	7
	5,4	17	22	1,0	54	5	5	22	7
	6,7	13,6	27	1,0	67	6	6	27	10
	8,2	11	32	1,5	82	6	6	32	11
	10,1	9	39	1,5	101	7	7	39	14
12,3	7,4	46	2,0	123	8	8	46	16	

# Table for PE



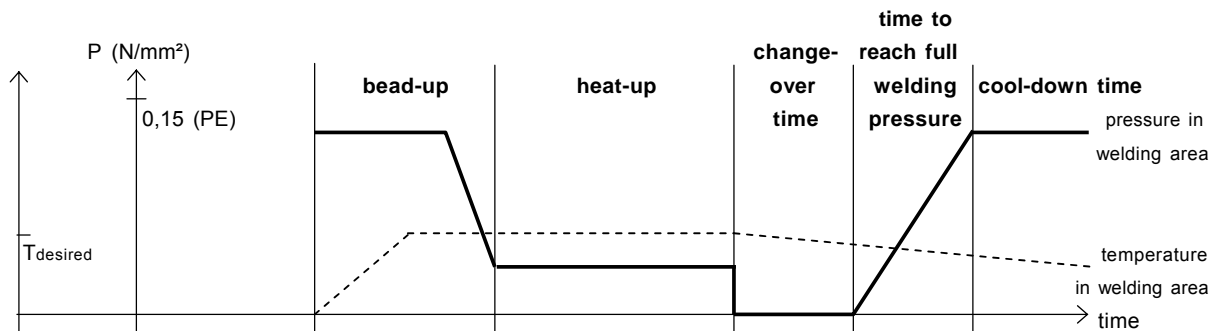
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

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 The **smaller** the pipe wall the **higher** the temperature.

**PE 100** The standard value for heating element temperature is 220° C.  
 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min] <b>1</b>
<b>110</b>	2,7	41	14	0,5	27	4	4	14	3
	3,4	33	18	0,5	34	5	5	18	4
	4,2	26	21	0,5	42	5	5	21	6
	5,3	21	27	1,0	53	5	5	27	7
	6,3	17	31	1,0	63	6	6	31	9
	6,6	17	33	1,0	66	6	6	33	9
	8,1	13,6	39	1,5	81	6	6	39	11
	10,0	11	48	1,5	100	7	7	48	14
	12,3	9	57	2,0	123	8	8	57	16
15,1	7,4	68	2,0	151	9	9	68	20	
<b>125</b>	3,1	41	18	0,5	31	4	4	18	4
	3,9	33	23	0,5	39	5	5	23	5
	4,8	26	28	1,0	48	5	5	28	6
	6,0	21	34	1,0	60	6	6	34	8
	7,1	17,6	40	1,5	71	6	6	40	10
	7,4	17	42	1,5	74	6	6	42	10
	9,2	13,6	51	1,5	92	7	7	51	13
	11,4	11	62	1,5	114	8	8	62	15
	14,0	9	74	2,0	140	9	9	74	18
17,1	7,4	87	2,0	171	9	10	87	22	

# Table for PE



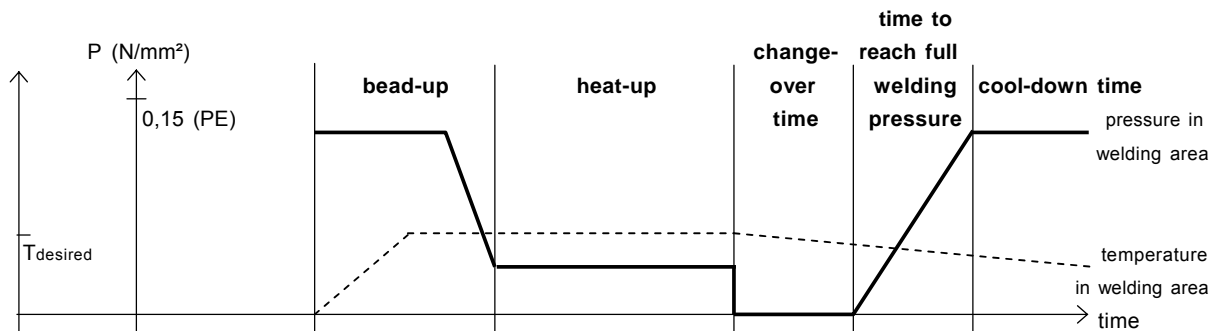
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

**PE 80** The value for heating element temperature is between 200° C - 220° C.  
 The **smaller** the pipe wall the **higher** the temperature.

**PE 100** The standard value for heating element temperature is 220° C.  
 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min] ①
<b>140</b>	3,5	41	23	0,5	35	5	5	23	4
	4,3	33	28	0,5	43	5	5	28	6
	5,4	26	35	1,0	54	5	5	35	7
	6,7	21	43	1,0	67	6	6	43	10
	8,3	17	52	1,5	80	6	6	52	11
	10,3	13,6	63	1,5	83	7	7	63	12
	12,7	11	77	1,5	103	7	7	77	14
	15,7	9	92	2,0	127	8	8	92	17
	19,2	7,4	110	2,0	157	9	10	110	20
23,3	6	129	2,5	192	10	11	129	24	
<b>160</b>	4,0	41	30	0,5	40	5	5	30	5
	4,9	33	36	1,0	49	5	5	36	7
	6,2	26	45	1,0	62	6	6	45	9
	7,7	21	56	1,5	77	6	6	56	11
	9,1	17,6	65	1,5	91	7	7	65	13
	9,5	17	68	1,5	95	7	7	68	13
	11,8	13,6	83	1,5	118	8	8	83	16
	14,6	11	101	2,0	146	9	9	101	19
	17,9	9	120	2,0	179	10	11	120	23
21,9	7,4	143	2,5	219	11	12	143	27	

# Table for PE



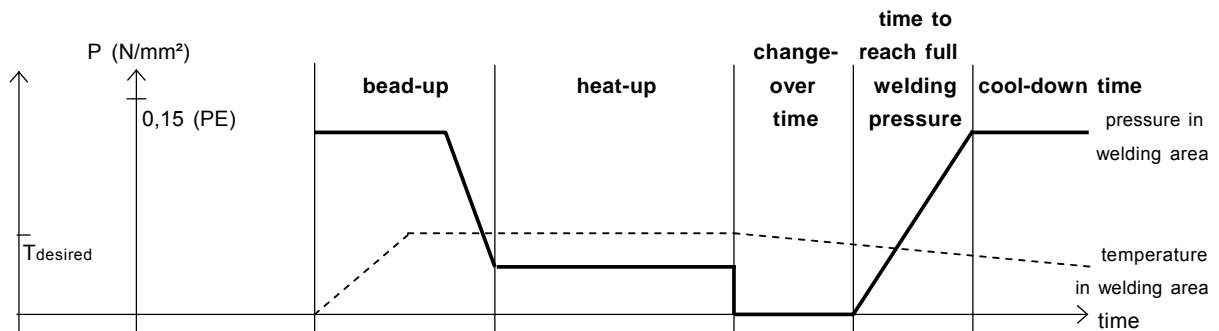
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

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 The **smaller** the pipe wall the **higher** the temperature.

**PE 100** The standard value for heating element temperature is 220° C.  
 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>180</b>	4,4	41	37	0,5	44	5	5	37	6
	5,5	33	46	1,0	55	5	5	46	8
	6,9	26	57	1,0	69	6	6	57	10
	10,2	17,6	82	1,5	86	7	7	82	12
	10,7	17	86	1,5	102	7	7	86	14
	13,3	13,6	105	1,5	107	7	7	105	14
	16,4	11	127	2,0	133	8	9	127	17
	20,1	9	152	2,0	164	9	10	152	21
	20,1	9	152	2,5	201	10	11	152	25
24,6	7,4	181	2,5	246	12	13	181	30	
<b>200</b>	4,9	41	46	1,0	49	5	5	46	7
	6,2	33	57	1,0	62	6	6	57	9
	7,7	26	70	1,5	77	6	6	70	11
	9,6	21	87	1,5	96	7	7	87	13
	11,4	17,6	102	1,5	114	8	8	102	15
	11,9	17	106	1,5	119	8	8	106	16
	14,7	13,6	129	2,0	149	9	9	129	19
	18,2	11	156	2,0	182	10	11	156	23
	22,4	9	188	2,5	224	11	12	188	28
27,4	7,4	223	3,0	274	13	15	223	34	

# Table for PE



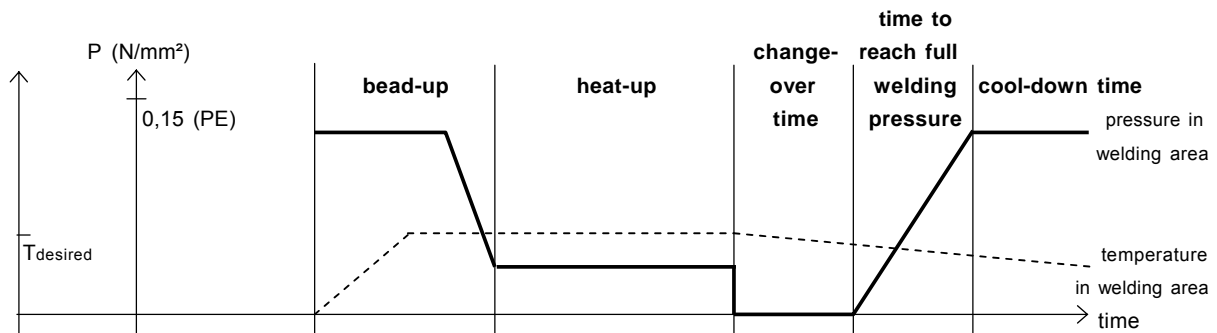
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

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 The **smaller** the pipe wall the **higher** the temperature.

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 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>225</b>	5,5	41	57	1,0	55	5	5	57	8
	6,9	33	71	1,0	69	6	6	71	10
	8,6	26	88	1,5	86	7	7	88	12
	10,8	21	110	1,5	108	8	8	110	15
	12,8	17,6	128	2,0	128	8	8	128	17
	13,4	17	134	2,0	134	8	9	134	18
	16,6	13,6	164	2,0	166	9	10	164	21
	20,5	11	198	2,5	205	10	12	198	26
	25,2	9	238	2,5	252	12	14	238	31
30,8	7,4	282	3,0	308	14	16	282	38	
<b>250</b>	6,2	41	72	1,0	62	6	6	72	9
	7,7	33	88	1,5	77	6	6	88	11
	9,6	26	109	1,5	96	7	7	109	13
	11,9	21	134	1,5	119	8	8	134	19
	14,2	17,6	158	2,0	142	9	9	158	16
	14,8	17	165	2,0	148	9	9	165	19
	18,4	13,6	201	2,0	184	10	11	201	23
	22,7	11	244	2,5	227	11	13	244	28
	27,9	9	293	3,0	279	13	15	293	34
34,2	7,4	348	3,0	342	15	18	348	42	

# Table for PE

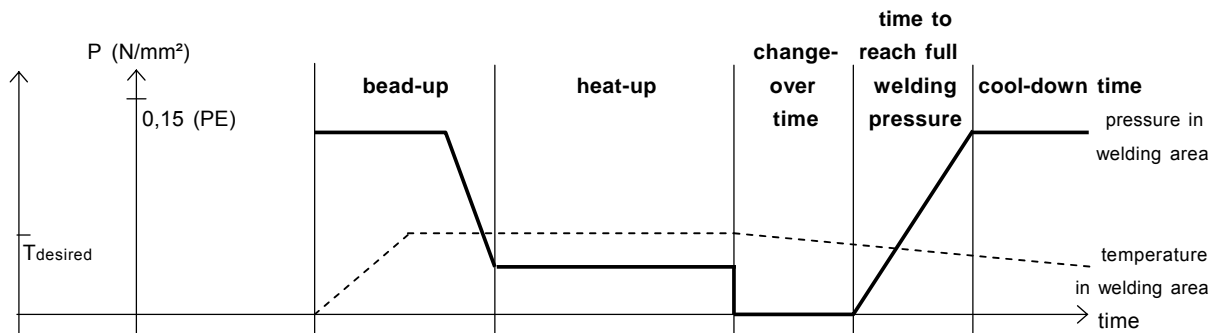
Foundation: 2207, 2208 DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM 160 / ASM 315** OD 50 - 315

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 The **smaller** the pipe wall the **higher** the temperature.

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 Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>280</b>	6,9	41	89	1,0	69	6	6	89	10
	8,6	33	110	1,5	86	7	7	110	12
	10,7	26	136	1,5	107	7	7	136	14
	13,4	21	169	2,0	134	8	9	169	18
	15,9	17,6	198	2,0	159	9	10	198	20
	16,6	17	207	2,0	166	9	10	207	21
	20,6	13,6	252	2,5	206	10	12	252	26
	25,4	11	305	2,5	254	12	14	305	31
	31,3	9	367	3,0	313	14	16	367	38
38,3	7,4	437	3,5	383	16	20	437	47	
<b>315</b>	7,7	41	112	1,5	77	6	6	112	11
	9,7	33	140	1,5	97	7	7	140	13
	12,1	26	173	2,0	121	8	8	173	16
	15,0	21	213	2,0	150	9	9	213	19
	17,9	17,6	251	2,0	179	10	11	251	23
	18,7	17	262	2,0	187	10	11	262	24
	23,2	13,6	320	2,5	232	11	13	320	29
	28,6	11	386	3,0	286	13	15	386	35
	35,2	9	465	3,0	352	15	18	465	43
43,1	7,4	553	3,5	431	18	22	553	52	

① Remaining under the cool-down time for up to 50% is allowed under the following conditions:

- prefabrication under workshop conditions
- low additional pressure at unclamping
- no additional pressure during further cooling down
- load onto the workpieces only after being completely cooled down
- Join parts with wall thickness  $\geq 15$  mm

# Table for PP

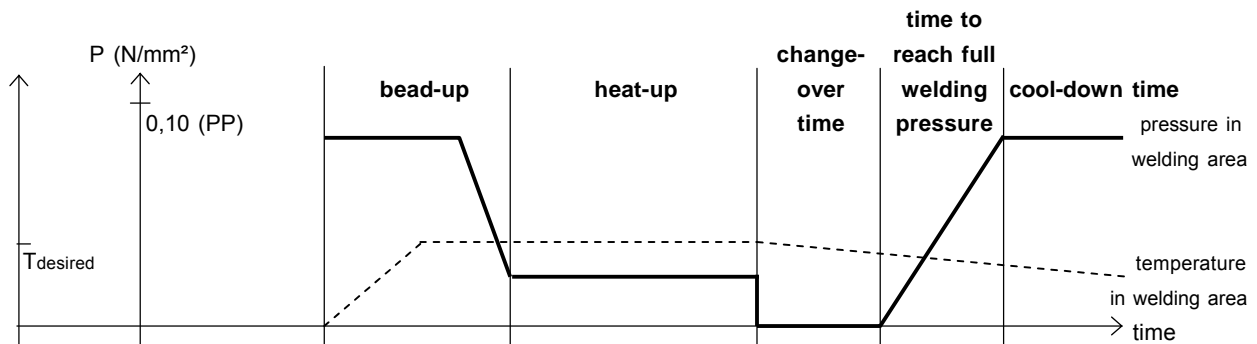


Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>20</b>	1,9	11	2	0,5	90	4	5	2	2
	2,8	7,4	2	0,5	104	4	5	2	3
	3,4	6	2	0,5	115	5	6	2	4
	4,1	5	3	0,5	128	5	6	3	5
<b>25</b>	2,3	11	2	0,5	95	4	5	2	2
	3,5	7,4	3	0,5	117	5	6	3	4
	4,2	6	3	0,5	130	5	6	3	6
	5,1	5	4	0,5	145	5	6	4	7
<b>32</b>	1,8	17,6	2	0,5	90	4	5	2	2
	2,9	11	3	0,5	106	4	5	3	3
	4,4	7,4	4	0,5	133	5	6	4	6
	5,4	6	5	0,5	149	5	6	5	8
	6,5	5	6	0,5	167	6	7	6	11
<b>40</b>	1,8	26	3	0,5	90	4	5	3	2
	2,3	17,6	3	0,5	95	4	5	3	2
	3,7	11	5	0,5	121	5	6	5	5
	5,5	7,4	6	0,5	151	5	6	6	8
	6,7	6	8	0,5	170	6	7	8	11
	8,1	5	9	1,0	190	6	8	9	14



# Table for PP

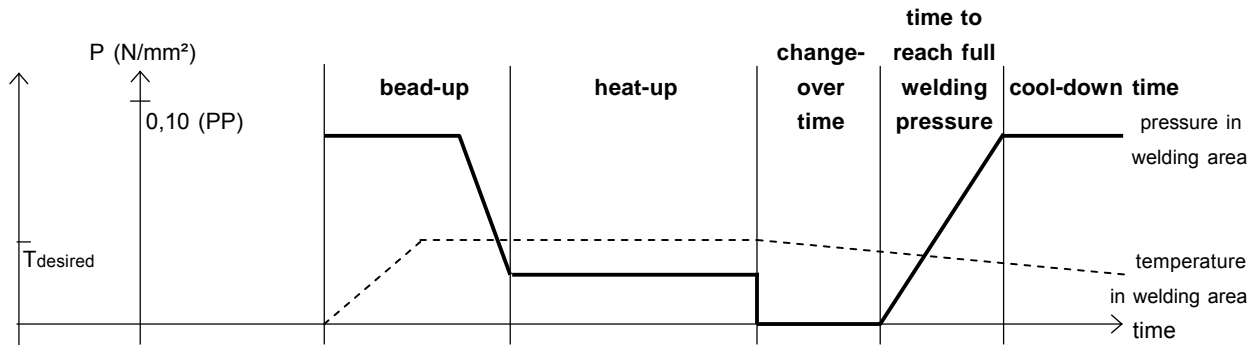


Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>50</b>	1,8	33	3	0,5	90	4	5	3	2
	2,0	26	4	0,5	90	4	5	4	2
	2,9	17,6	5	0,5	106	4	5	5	3
	4,6	11	7	0,5	137	5	6	7	6
	6,9	7,4	10	0,5	173	6	7	10	12
	8,3	6	11	1,0	193	6	8	11	14
	10,1	5	13	1,0	218	7	9	13	17
<b>63</b>	1,8	41	4	0,5	90	4	5	4	2
	2,0	33	4	0,5	90	4	5	4	2
	2,5	26	5	0,5	99	4	5	5	3
	3,6	17,6	7	0,5	119	5	6	7	4
	5,8	11	11	0,5	156	6	7	11	9
	8,6	7,4	15	1,0	197	6	8	15	15
	10,5	6	18	1,0	224	7	10	18	18
	12,7	5	21	1,0	254	7	12	21	21
<b>75</b>	1,9	41	5	0,5	90	4	5	5	2
	2,3	33	6	0,5	95	4	5	6	2
	2,9	26	7	0,5	106	4	5	7	3
	4,3	17,6	10	0,5	131	5	6	10	6
	6,8	11	15	0,5	172	6	7	15	12
	10,3	7,4	21	1,0	221	7	10	21	17
	12,5	6	25	1,0	251	7	11	25	21
	15,1	5	29	1,0	283	8	14	29	24

# Table for PP

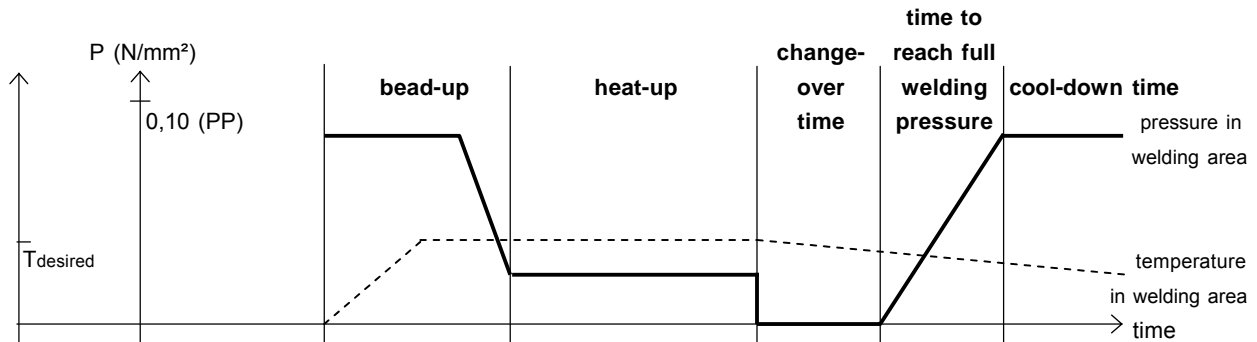


Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
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**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>90</b>	2,2	41	7	0,5	94	4	5	7	2
	2,8	33	8	0,5	104	4	5	8	3
	3,5	26	10	0,5	117	5	6	10	4
	5,1	17,6	14	0,5	145	5	6	14	7
	8,2	11	22	1,0	192	6	8	22	14
	12,3	7,4	31	1,0	249	7	11	31	20
	15,0	6	36	1,0	281	8	14	36	24
	18,1	5	41	1,0	319	9	16	41	29
<b>110</b>	2,7	41	10	0,5	103	4	5	10	3
	3,4	33	12	0,5	115	5	6	12	4
	4,2	26	14	0,5	130	5	6	14	6
	6,3	17,6	21	0,5	164	6	7	21	10
	10,0	11	32	1,0	217	7	9	32	17
	15,1	7,4	46	1,0	283	8	14	46	24
	18,3	6	53	1,0	322	9	16	53	29
	22,1	5	62	1,5	361	10	19	62	34
<b>125</b>	3,1	41	12	0,5	110	4	5	12	4
	3,9	33	15	0,5	124	5	6	15	5
	4,8	26	19	0,5	140	5	6	19	7
	7,1	17,6	27	1,0	176	6	7	27	12
	11,4	11	41	1,0	237	7	11	41	19
	17,1	7,4	58	1,0	307	8	15	58	27
	20,8	6	69	1,5	348	10	18	69	33
	25,1	5	79	1,5	391	11	21	79	39

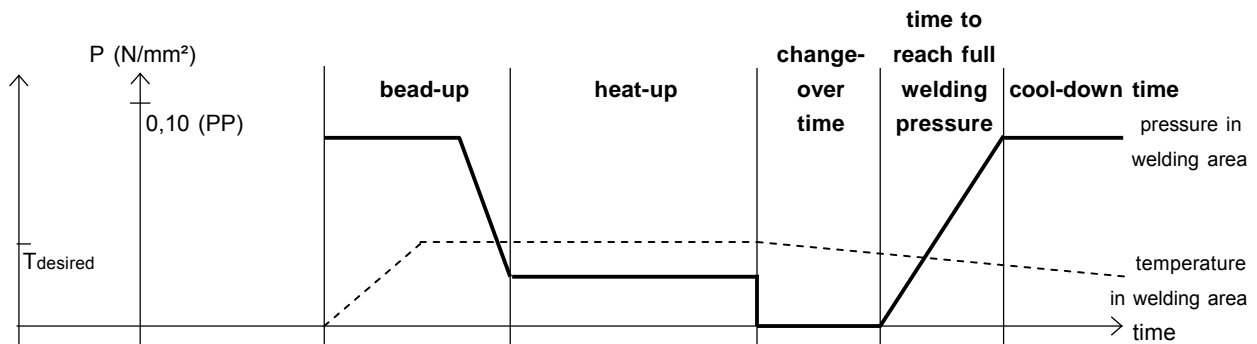
# Table for PP

Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>140</b>	3,5	41	16	0,5	117	5	6	16	4
	4,3	33	19	0,5	131	5	6	19	6
	5,4	26	23	0,5	149	5	6	23	8
	8,0	17,6	34	1,0	189	6	8	34	14
	12,7	11	51	1,0	254	7	12	51	21
	19,2	7,4	73	1,5	332	9	17	73	30
	23,3	6	86	1,5	373	10	20	86	36
	28,1	5	99	2,0	416	12	24	99	43
<b>160</b>	4,0	41	20	0,5	126	5	6	20	5
	4,9	33	24	0,5	141	5	6	24	7
	6,2	26	30	0,5	162	6	7	30	10
	9,1	17,6	44	1,0	204	6	9	44	15
	14,6	11	67	1,0	277	8	13	67	24
	21,9	7,4	96	1,5	359	10	19	96	34
	26,6	6	112	2,0	405	11	23	112	41
	32,1	5	129	2,0	447	13	28	129	48
<b>180</b>	4,4	41	25	0,5	133	5	6	25	6
	5,5	33	31	0,5	151	5	6	31	8
	6,9	26	38	0,5	173	6	7	38	12
	10,2	17,6	55	1,0	220	7	10	55	17
	16,4	11	85	1,0	298	8	15	85	26
	24,6	7,4	121	1,5	386	11	21	121	38
	29,0	6	138	2,0	423	12	25	138	44
	36,1	5	164	2,0	478	14	31	164	54

# Table for PP

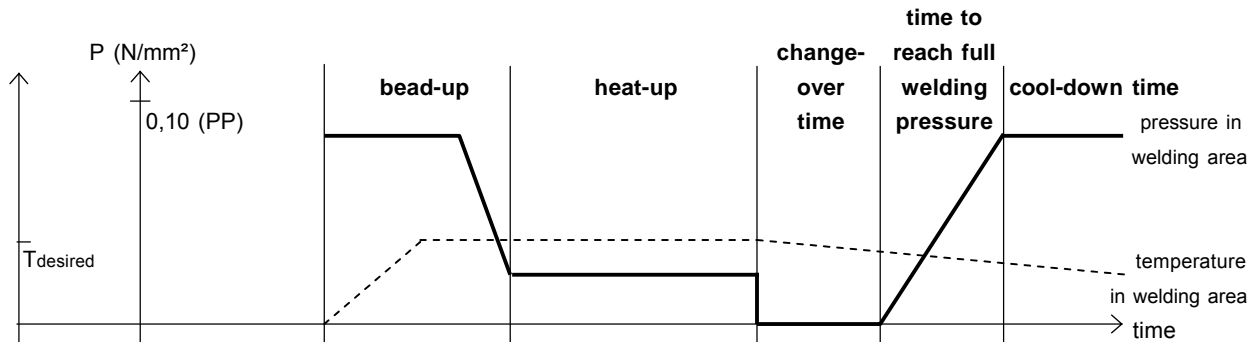


Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>200</b>	4,9	41	31	0,5	141	5	6	31	7
	6,2	33	38	0,5	162	6	7	38	10
	7,7	26	47	1,0	185	6	8	47	13
	11,4	17,6	68	1,0	237	7	11	68	19
	18,2	11	104	1,0	320	9	16	104	29
	27,4	7,4	149	2,0	411	11	23	149	42
	33,2	6	174	2,0	456	13	29	174	50
<b>225</b>	5,5	41	38	0,5	151	5	6	38	8
	6,9	33	48	0,5	173	6	7	48	12
	8,6	26	59	1,0	197	6	8	59	15
	12,8	17,6	86	1,0	255	7	12	86	21
	20,5	11	132	1,5	345	9	18	132	32
	30,8	7,4	188	2,0	437	12	26	188	47
	37,4	6	221	2,5	487	14	32	221	55
<b>250</b>	6,2	41	48	0,5	162	6	7	48	10
	7,7	33	59	1,0	185	6	8	59	13
	9,6	26	73	1,0	211	7	9	73	16
	14,2	17,6	106	1,0	272	8	13	106	23
	22,7	11	163	1,5	367	10	20	163	35
	34,2	7,4	232	2,0	463	13	29	232	51

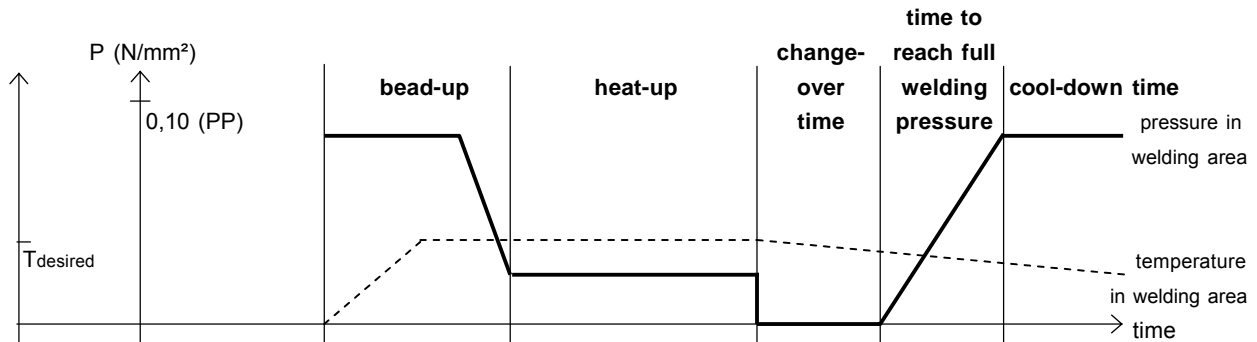
# Table for PP

Foundation: 2207, 2208, DIN 16932 German association for welding

Use for: **Miniplast 2 / 110** OD 20 - 110  
**Maxiplast / 501 / 900 / 955** OD 50 - 160  
**Instaweld 160** OD 50 - 160  
**2000 / 3000 Kombi** OD 50 - 250  
**2500 DO 160 / 250 / 315** OD 50 - 315  
**ASM160 / ASM 315** OD 50 - 315

The standard value for heating element temperature is 210° C +/- 10° C.  
 The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
 1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>280</b>	6,9	41	60	0,5	173	6	7	60	12
	8,6	33	74	1,0	197	6	8	74	15
	10,7	26	91	1,0	227	7	10	91	18
	15,9	17,6	132	1,0	292	8	14	132	26
	25,4	11	204	1,5	394	11	22	204	39
	38,3	7,4	291	2,5	493	14	33	291	57
<b>315</b>	7,7	41	75	1,0	185	6	8	75	13
	9,7	33	94	1,0	213	7	9	94	16
	12,1	26	116	1,0	246	7	11	116	20
	17,9	17,6	168	1,0	317	9	16	168	28
	28,6	11	258	2,0	420	12	24	258	44

❶ Remaining under the cool-down time for up to 50% is allowed under the following conditions:

- prefabrication under workshop conditions
- low additional pressure at unclamping
- no additional pressure during further cooling down
- load onto the workpieces only after being completely cooled down
- Join parts with wall thickness  $\geq 15$  mm

# Table for PVDF



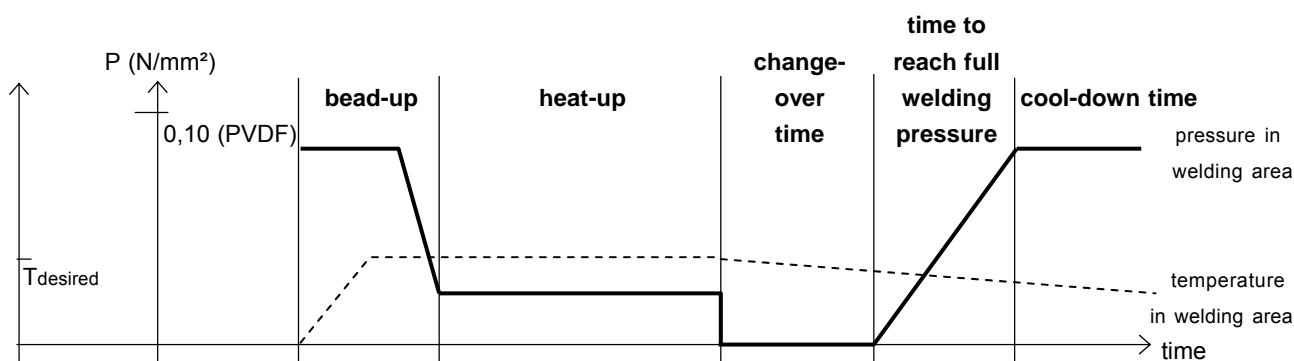
Kunststoffsweißtechnik

Foundation: 2208, 2207 Part 15 German association for welding

Use for:	<b>Miniplast 2 / 110</b>	OD 20 - 110
	<b>Maxiplast / 501 / 900 / 955</b>	OD 50 - 160
	<b>Instaweld 160</b>	OD 50 - 160
	<b>2000 / 3000 Kombi</b>	OD 50 - 250
	<b>2500 OD 160 / 250 / 315</b>	OD 50 - 315
	<b>ASM 160 / ASM 315</b>	OD 50 - 315

The standard value for heating element temperature is 240° C +/- 8° C.  
The **smaller** the pipe wall the **higher** temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>20</b>	1,9	2	0,5	59	3	3	2	4,5
<b>25</b>	1,9	2	0,5	59	3	3	2	4,5
<b>32</b>	2,4	3	0,5	64	3	3	3	5,0
<b>40</b>	2,4	3	0,5	64	3	3	3	5,0
<b>50</b>	3,0	5	0,5	70	3	4	5	5,5
<b>63</b>	2,0	4	0,5	60	3	3	4	4,5
	3,0	6	0,5	70	3	4	6	5,5
	3,8	8	0,5	78	3	4	8	6,5
<b>75</b>	2,3	6	0,5	63	3	3	6	5,0
	3,6	9	0,5	76	3	4	9	6,5
	4,5	10	0,5	85	3	5	10	7,5
<b>90</b>	2,8	8	0,5	68	3	4	8	5,5
	4,3	12	0,5	83	3	4	12	7,0
	5,4	15	0,5	94	3	5	15	8,5
<b>110</b>	3,4	12	0,5	74	3	4	12	6,0
	5,3	18	0,5	93	3	5	18	8,5
	6,6	22	0,6	106	4	5	22	10,0
<b>125</b>	3,9	15	0,5	79	3	4	15	6,5
	6,0	23	0,6	100	4	5	23	9,0
<b>140</b>	4,3	19	0,5	83	3	4	19	7,0
	6,7	29	0,6	107	4	6	29	10,0
<b>160</b>	4,9	24	0,5	89	3	5	24	8,0
	7,7	37	0,7	117	4	6	37	11,0

# Table for PVDF



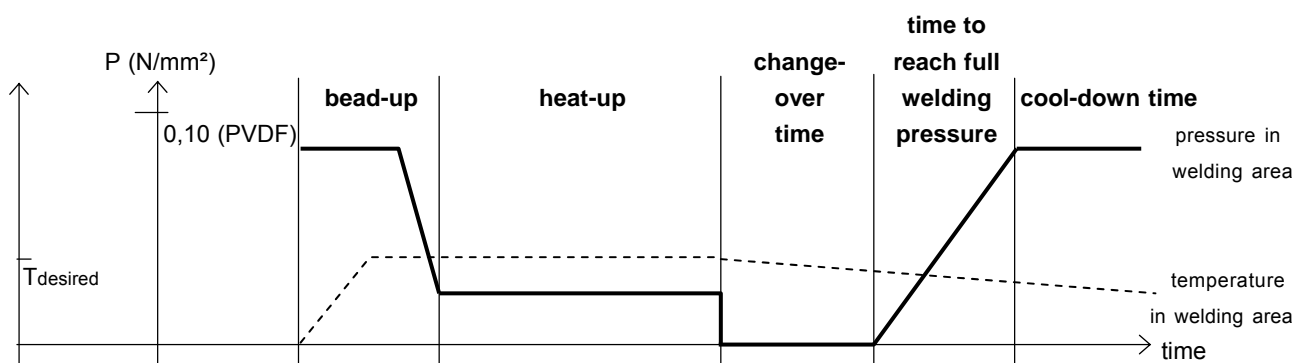
Kunststoffsweißtechnik

Foundation: 2208, 2207 Part 15 German association for welding

Use for:	<b>Miniplast 2 / 110</b>	OD 20 - 110
	<b>Maxiplast / 501 / 900 / 955</b>	OD 50 - 160
	<b>Instaweld 160</b>	OD 50 - 160
	<b>2000 / 3000 Kombi</b>	OD 50 - 250
	<b>2500 OD 160 / 250 / 315</b>	OD 50 - 315
	<b>ASM 160 / ASM 315</b>	OD 50 - 315

The standard value for heating element temperature is 240° C +/- 8° C.  
The **smaller** the pipe wall the **higher** temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !  
1 kp = 10 N



pipe diameter OD [mm]	pipe wall (s) [mm]	bead-up force [kp] [daN]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding force [kp] [daN]	cool-down time [min]
<b>180</b>	5,5	31	0,5	95	4	5	31	8,5
	8,6	47	0,8	126	4	6	47	12,5
<b>200</b>	6,2	38	0,6	102	4	5	38	9,5
	9,6	58	1,0	136	4	7	58	13,5
<b>225</b>	6,9	48	0,7	109	4	6	48	10,5
	10,8	73	1,0	148	4	7	73	15,0
<b>250</b>	7,7	59	0,7	117	4	6	59	11,0
	11,9	90	1,1	159	4	8	90	16,5
<b>280</b>	8,6	74	0,8	126	4	6	74	12,5
<b>315</b>	9,7	94	1,0	137	4	7	94	13,5

## 7. Maintenance instructions

### Goal of the chapter is:

- Keeping of the nominal state and the operation capacity of the machine.
- Increasing of the efficiency by avoiding non-planned outage.
- Efficient planning of the maintenance works and the maintenance tools.

### 7.1. General



- Replace damaged parts immediately, be particular cautions with electrical parts - dirt and wetness are very good current conductors.

Prescribed maintenance and inspection works should be performed in time. The DVS gives the advice of inspection works after 1 year.

For machines with a specially high usage percentage the testing cycle should be shortened .

The works should be performed at the WIDOS GmbH company or by an authorized partner.

- Only use WIDOS spare parts when executing repairs.

### 7.2. Clamping elements

- For a long service life clean and grease regularly the treaded spindles and the joint parts which are used for clamping the pipes.

### 7.3. Planer

- Never lay the planer onto its discs!
- The blades of the planer must be checked for sharpness. Wrong blades must be either turned over (double sided) or replaced (max. thickness of the shavings =0,2 mm!)

### 7.4. Storing

- Cover the guidance bars and the spindle with thin oil film.
- Store the machine dry.

### 7.5. Cleaning of the machine

The used materialis and clothes have to be handled and disposed off properly especially

- when cleaning with solvents
- when lubricating with oil and grease

### 7.6. Disposal



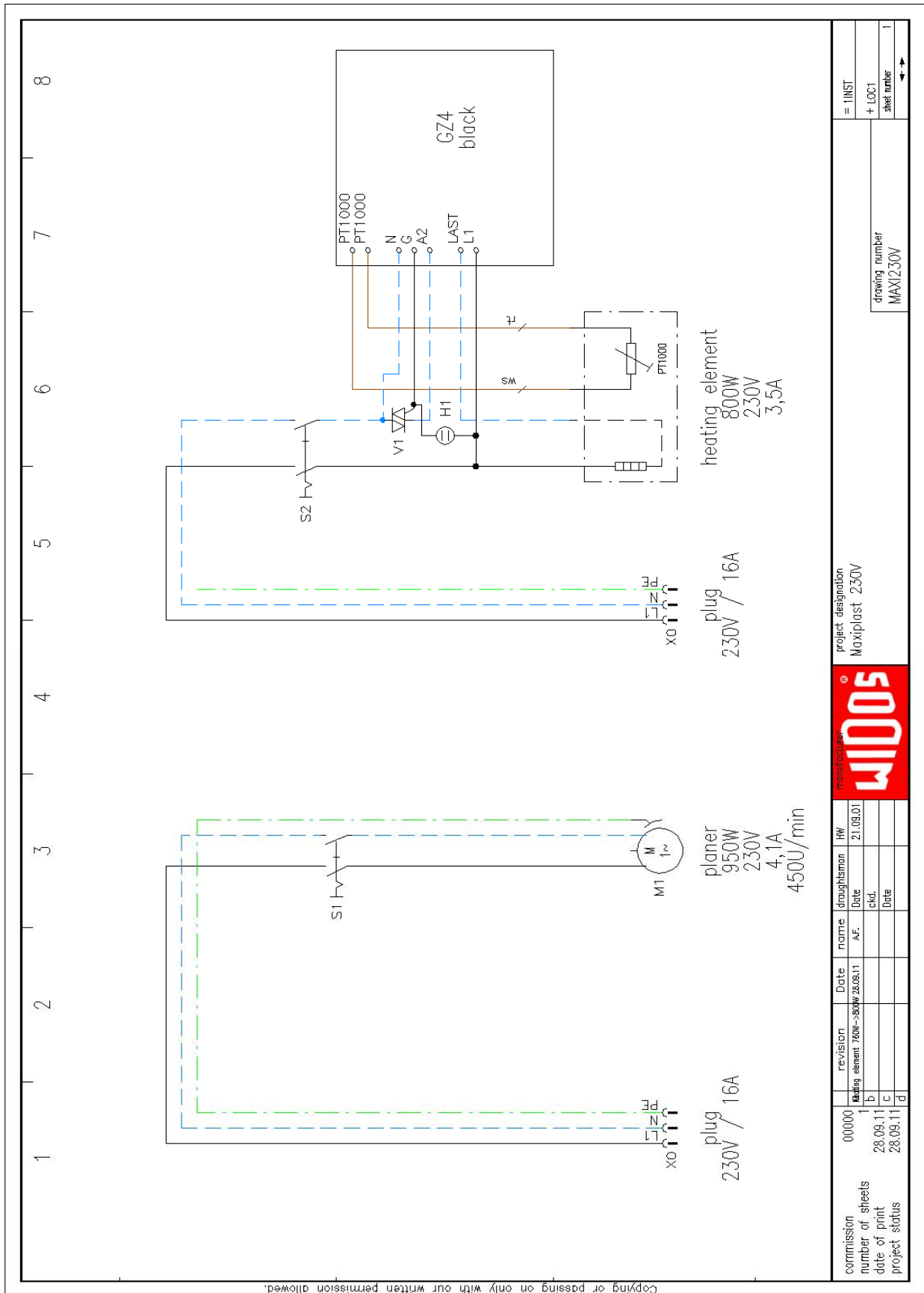
At the end of the life time, the machine has to be disposed of properly, non-polluting and in accordance with the national laws of waste disposal.



## 8. Transport

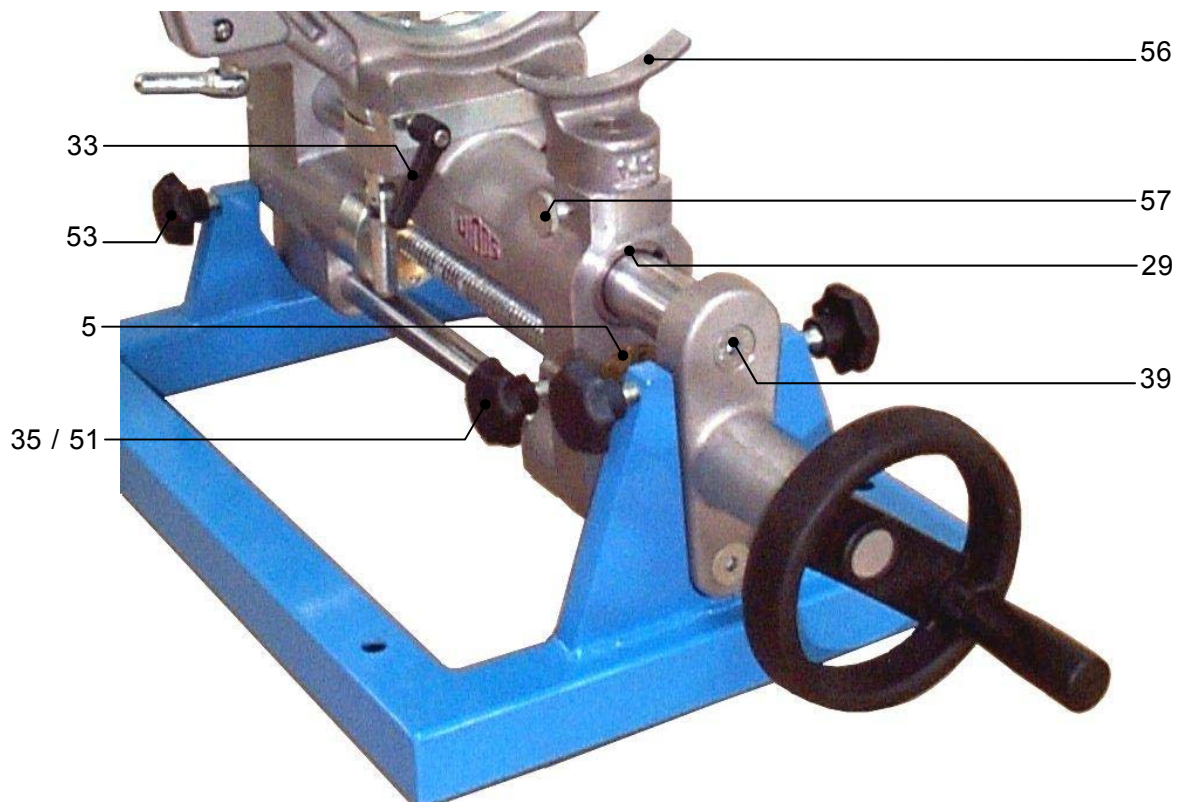
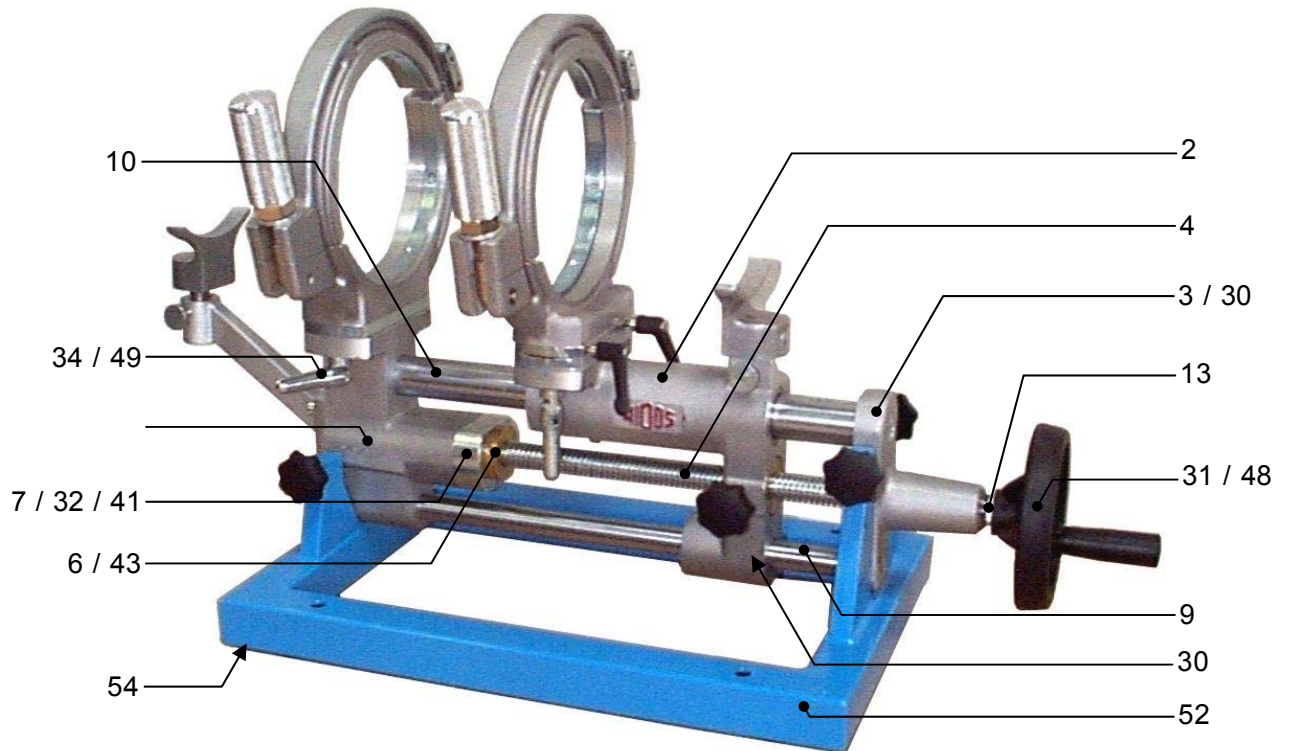
- Protect against bumps.
- Handle the machine with care.
- Make sure that the box is closed correctly.
- The machine is transported by means of a transport box out of steel.
- The single elements are placed within the steel transport box.
- The steel transport box contains a rectangular insert for the planer.
- The basic machine and the table support are put at the side of the planer.
- Insert heating element with cable and temperature control in such a way that it remains beyond the strip for the reducer inserts.
- Insert both containers containing the reducer inserts.

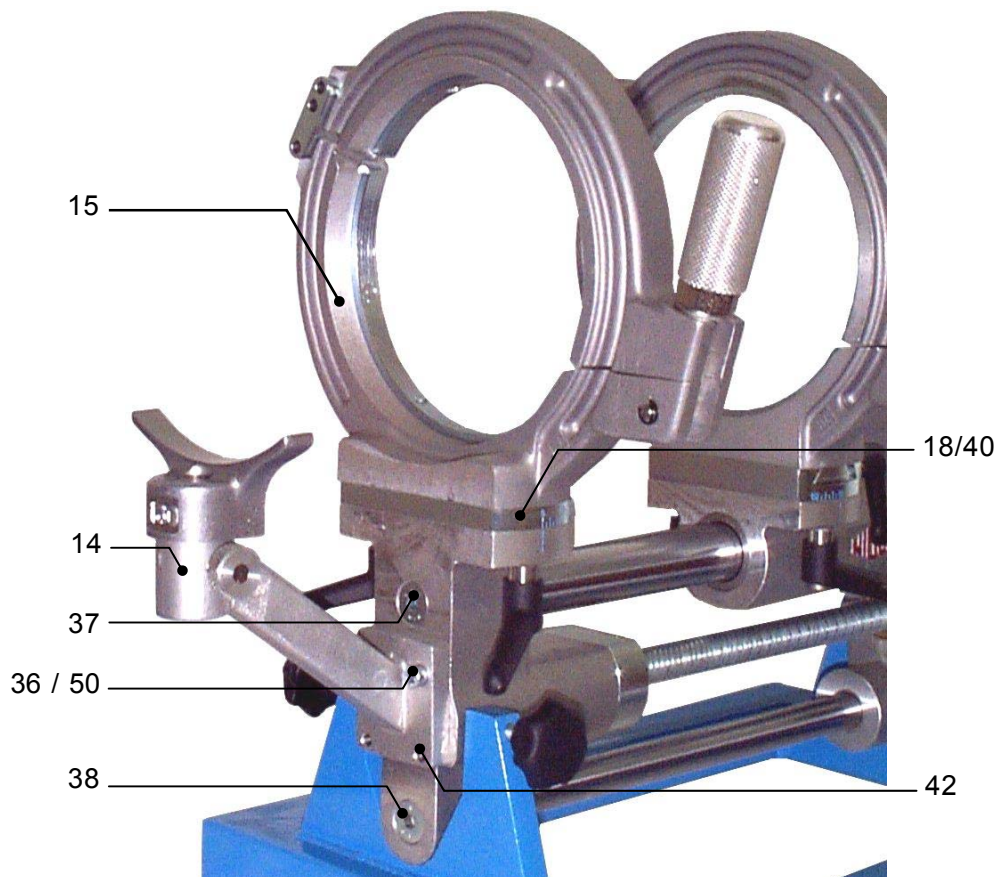
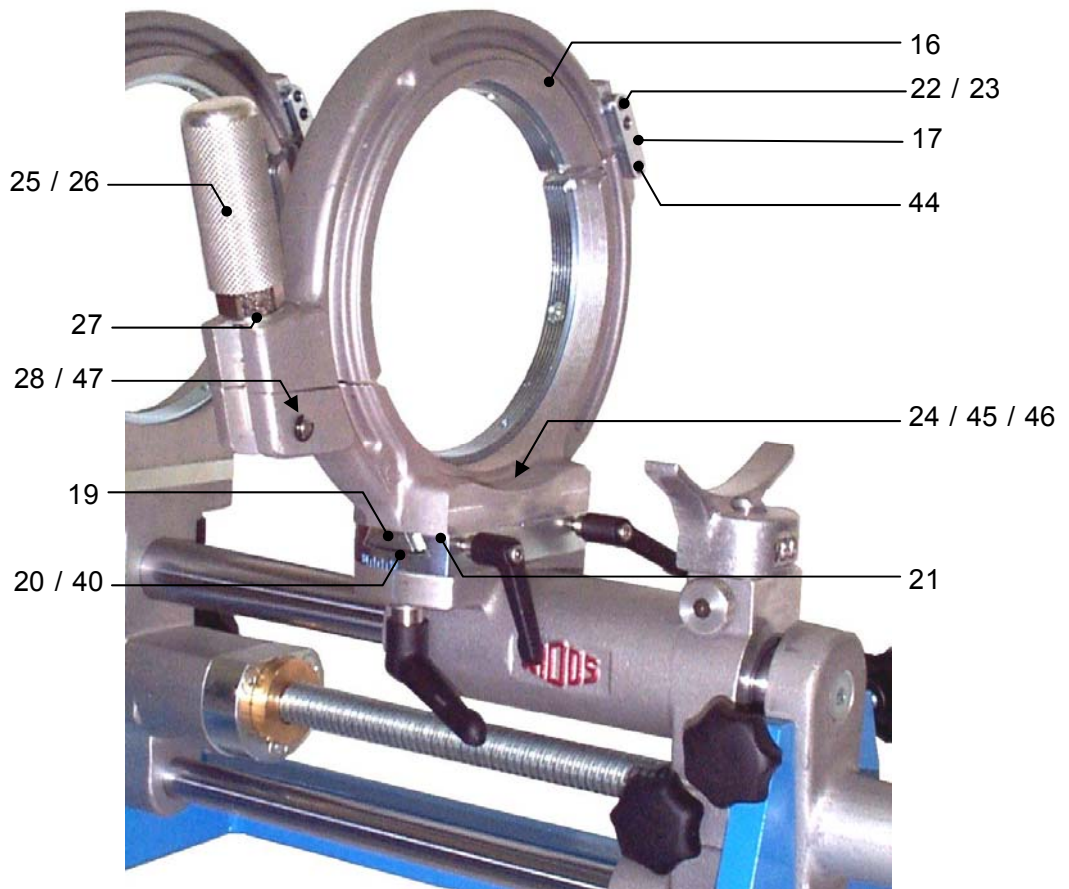
## 9. Wiring diagram



## 10. Spare parts list

### 10.1. Basic machine





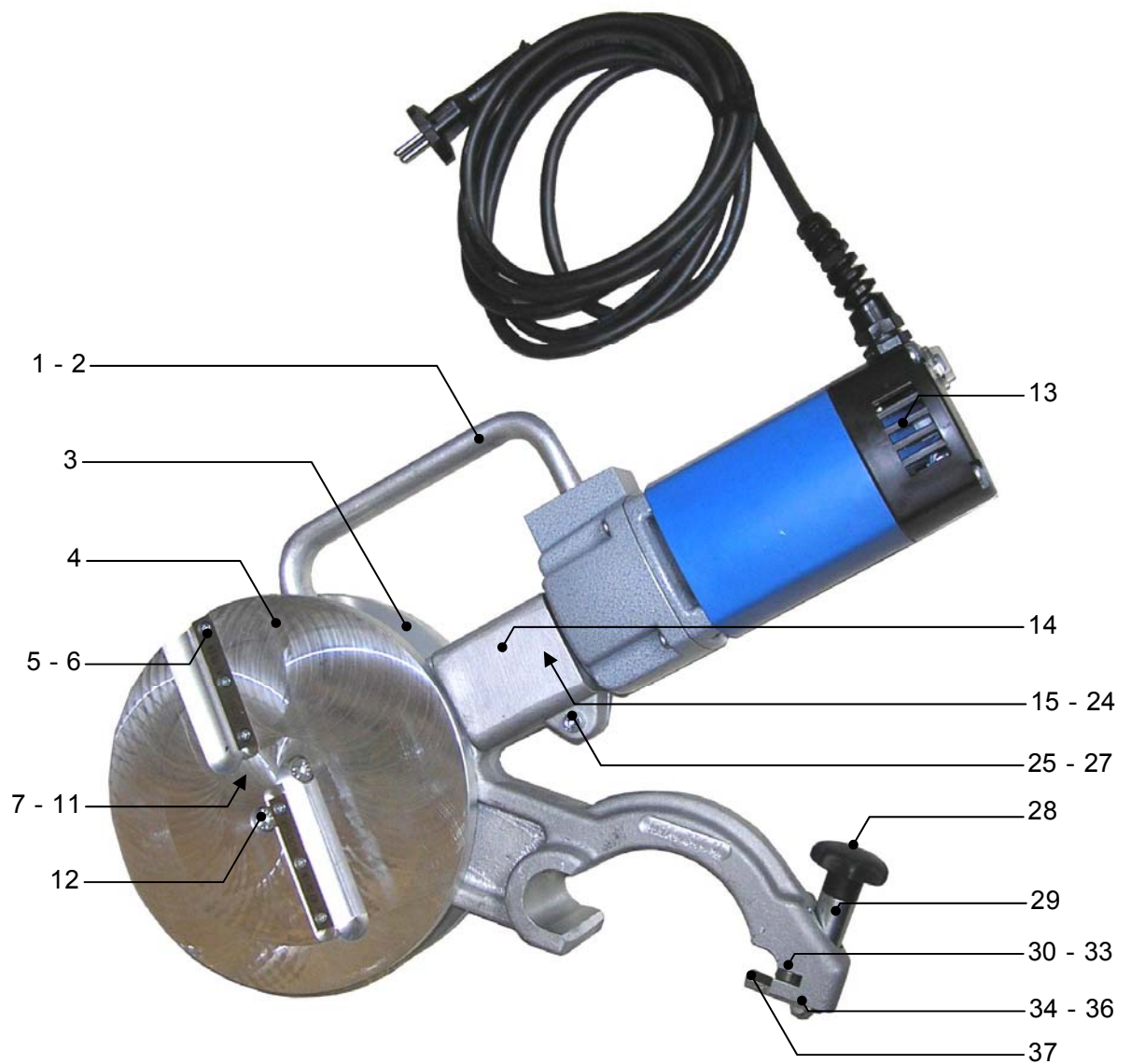
## Basic machine WIDOS MAXIPLAST

Pos.	Denomination	Piece	Order no.
1	Spring block	1	454001
2	Guidance	1	454002
3	Counter bracket	1	454003
4	Spindle	1	454004
5	Spindle nut	1	454005
6	Adjusting nut	1	454006
7	Bearing plate	1	454007
8	Spring washer	1	454008
9	Drag rod, down	1	454011
10	Drag rod, up	1	454012
11	Flath-head screw M 6 x 16 DIN 7991	1	7991F016
12	Pressure spring	1	010217
13	Scale	3	454115
14	Pipe support	1	454114
15	Pipe clamp, complete / left hand	1	454702KP
16	Pipe clamp, complete / right hand	1	454701KP
17	Coupling	4	454713
18	Basic plate for pipe clamp, l/h	1	454705
19	Upper part of the axial alignment	1	454706
20	Lower part of the axial alignment	1	454707
21	Clamp strip	1	454709
22	Rivet	4	4547131
23	Permaglid bushing	4	on request
24	Center bolt	2	454708
25	Knurled screw	2	161109
26	Threaded rod	2	160108
27	Washer M12 DIN 125	2	0125L
28	Rivet	2	160111
29	Ball bushing	2	LKH3050
30	Permaglid bushing	4	PAP2020
31	Hand wheel, tilting	1	on request
32	Thrust ball bearing	1	L51104
33	Clamping lever GN300.1-45-M5-16-SZ	2	4547071
34	Joint lever	4	454714
35	Star grip GN 5337.2-40-M8-20	1	on request
36	Cylinder-head screw M6x16 DIN 912	2	0912F016
37	Flat-head screw M10 x 35 DIN 7991	1	7991J035
38	Flat-head screw M 10 x 50 DIN 7991	1	7991J050
39	Flat-head screw M10x20 Din 7991	2	7991J020
40	Flat-head screw M8x16 DIN7991	2	799H016
41	Flat-head screw M 6 x 30 DIN 7991	3	7991F030
42	Parallel pin 6m6x16 DIN 6325	2	6325F016
43	Headless pin M5x16 DIN 916	2	0916E006

## Basic machine WIDOS MAXIPLAST

Pos.	Denomination	Piece	Order no.
44	Parallel pin 6m6x32 DIN 6325	2	6325F032
45	Parallel pin 6m6x16 DIN 6325	4	6325F016
46	Pan-head screw M 4 x 10 DIN 912	1	0912D010
47	Lock washer size 5 DIN 6799	2	6799E
48	Feather key 5x5x18 DIN 6885	1	6885E018
49	Washer 8,4 DIN 125	4	0125H
50	Washer 6,4 DIN 125	2	0125F
51	pressure piece	1	454009
52	Table support	1	454101
53	Stargrip Ø40-M8x30	4	on request
54	Covering cap Ø 12	4	on request
--	Reducer inserts, OD 50 - OD 140, two parts	2 set	1608...*
--	Reducer inserts large, OD 50 - OD 140, two parts	2 set	1618...*
--	Reducer inserts extra large OD 50 - OD 140, two parts	2 set	1628...*
--	Pan-head screw M5x16 DIN 912 (for OD 50 - 125)	8	0912E16X
--	Flat-head screw M5x16 DIN 7991 (for OD 140)	8	7991E16X
56	Pipe support, OD 50 - OD 160	2	0106...*
57	Knurled screw M 5 x16 DIN 464	2	0464E016
--	Type plate	1	SCHTMAXI
--	Allan key with T-grip size 3	1	ZIT03
--	Allan key with T-grip size 4	1	ZIT04
--	Allan key tilted size 5	1	ZIG05
	* When ordering, please state the dimension of the diameter!		

## 10.2. Planer

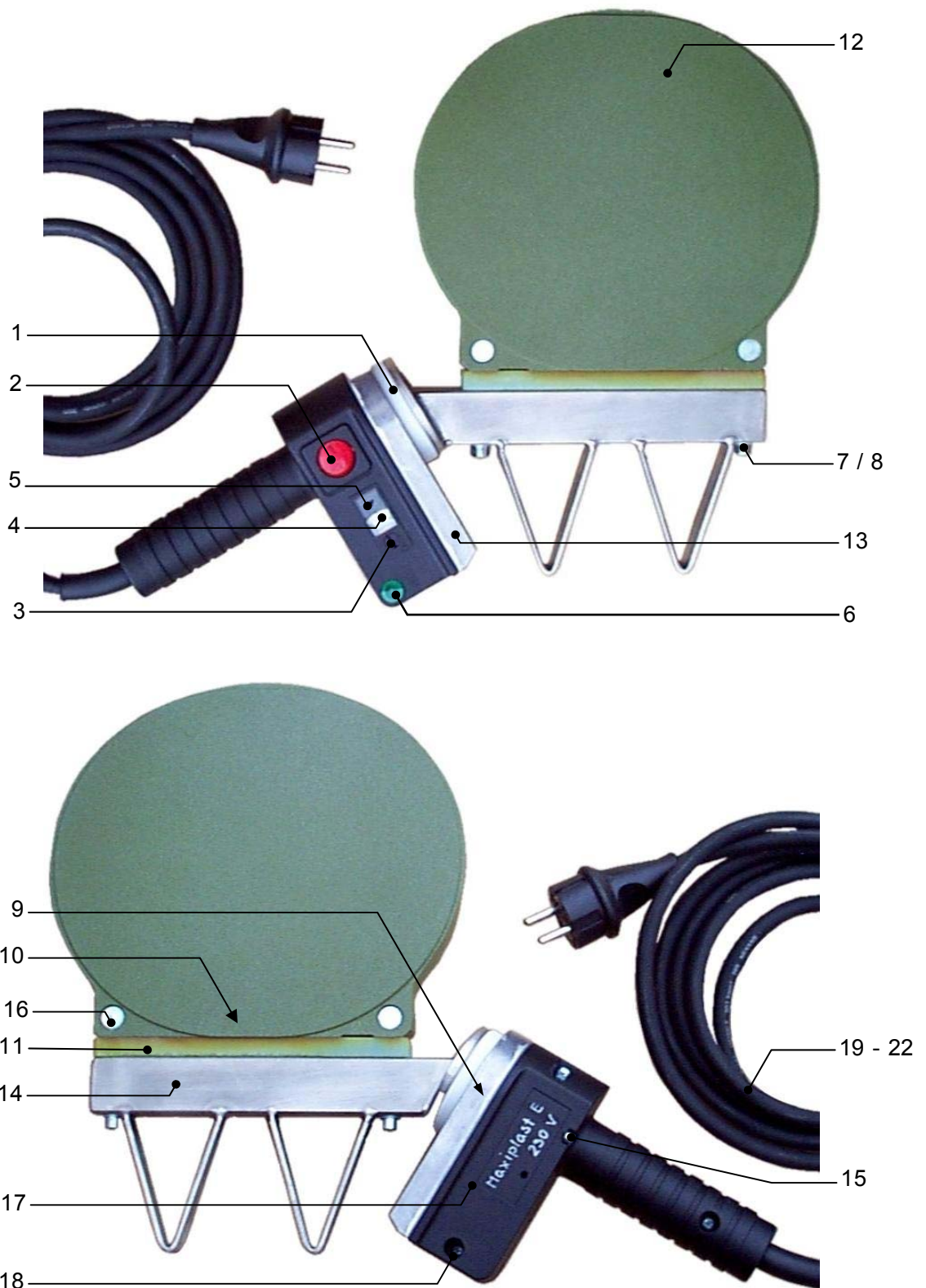


## Planer WIDOS MAXIPLAST

Pos.	Denomination	Piece	Order no.
1	Bow grip (GN565.1-26-164-BL)	1	on request
2	Pan-head screw M6x20 DIN 912	2	0912F020
3	Disc milling cutter, left	1	454403
4	Disc milling cutter, right	1	454402
5	Blade	4	MES072
6	Flat-head screw M 3x6 DIN 965	12	0965C006
7	Planer disc bolt	1	450436
8	Ball bearing 6010 2RS	1	L60102RS
9	Adlusting ring	1	450437
10	Bevel gear	1	454409
11	O-ring 105 x 3	1	D105x3
12	Pan-head screw M8x25 DIN 6912	2	6912H025
13	Drilling machine MBF 13	1	AMBF13
14	Holder for planer	1	454401
15	Pinion	1	454408
16	Spindle for pinion	1	454431
17	Ball bearing 16101	2	L16101
18	Spacer	1	454412
19	Spacer	1	454413
20	Spacer ring	1	450444
21	Washer M 10 DIN 433	1	0433J
22	Hexagon nut M10x1 DIN 934	1	0934J1
23	Washer	1	450441
24	Coupling	1	454410
25	Pan-head screw M6x30 DIN 912	1	0912F030
26	Washer M6 DIN 125	1	0125F
27	Hexagon nut M6 DIN 985	1	0985F
28	Stargrip M8x40 DIN 6336	1	6336H040
29	Extension for planer detent	1	454414
30	Pan-head screw M8x20 DIN 6912	2	6912H020
31	Ball bearing 624 2Z	2	L0624ZZ
32	Washer M 4 DIN 125	4	0125D
33	Grooved pins Ø 4 x 1472	2	1472D020
34	Pressure spring B0,63x1,5x7,5	1	450409
35	Ball Ø4,5	1	L0005
36	Prevailing torque hexagon nut M 6 DIN 985	1	0985F006
37	Screw washer	1	450408
--	Torx-screwdriver T10	1	ZT10



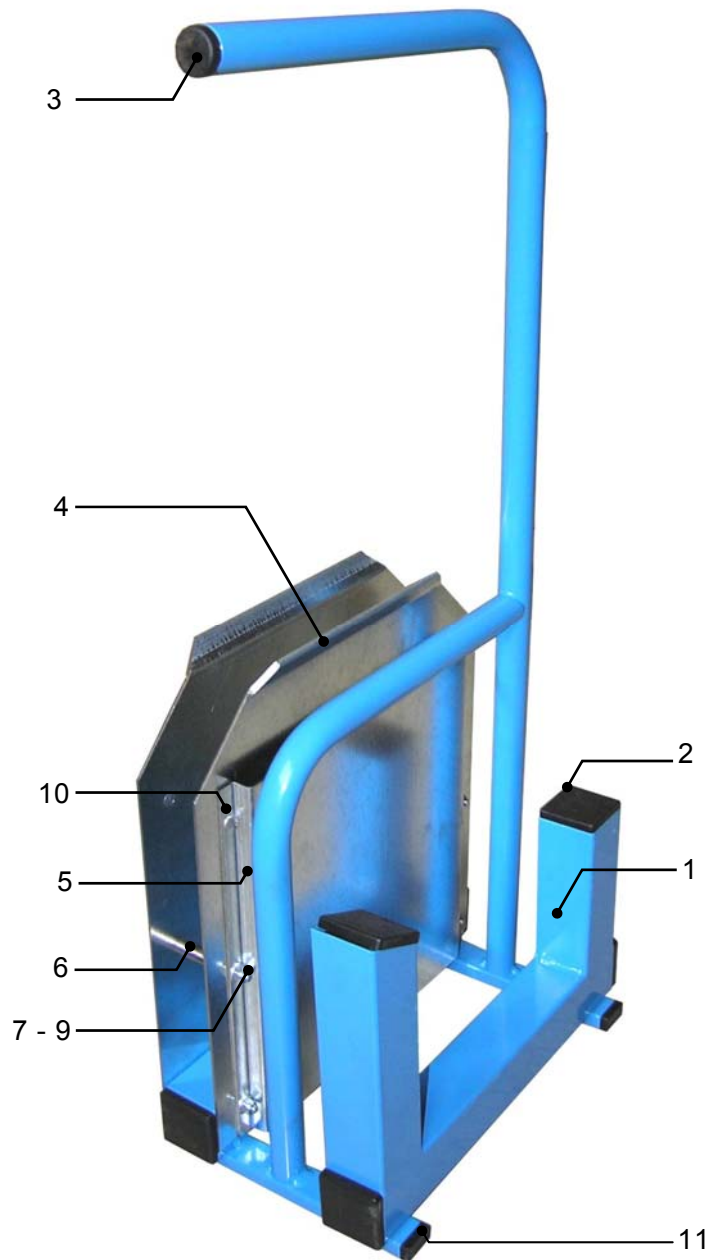
### 10.3. Heating element



## Heating element WIDOS MAXIPLAST

Pos.	Denomination	Piece	Order no.
1	Anti-stick coated insulating washer	1	023584
2	Switch on/off with control lamp (red)	1	H0903
3	Control knob with slot	1	H09075
4	Scale 180°-280° (d33)	1	H0908
5	Window cap for grip shell (white)	1	H09072
6	Control lamp (green)	1	H0905
7	Cylinder-head screw M 6x55 DIN 912	2	0912F055
8	Spring washer M6 DIN 127	2	0125F
9	Electronic control GZ4	1	H0918220
10	Temperature probe PT 1000	1	H09082
11	Isolator piece	1	454502
12	Heating element , complete	1	HMAXI
	Heating plate new, electric	1	HPMAXI
	Heating plate for change, electric	1	HPTMAXI
13	Heat sink with triac	1	H09081
14	Heating element holder	1	454503
15	Cylinder-head screw M 4x65 DIN 912	3	0912D065
16	Gripping form	2	012505
17	Grip shell	1	450504
18	Sheet metal screw C 4,8x16 DIN 7981	3	7981E016
19	Strain relief	1	H09076
20	Sheet metal screw C 2,9x13 DIN 7981	2	7981C013
21	Cable bushing	1	EKT08
22	Connection cable with plug	1	EK3220
230	Spring washer M4 DIN 127	3	0127D

### 10.4. Protective box



**Protective box WIDOS MAXIPLAST**

Pos.	Denomination	Piece	Order no.
1	Frame for transport case	2	454511
2	Screw cap 35 x 35 x 1,5	6	on request
3	Screw cap Ø 18 x 2	1	on request
4	Insert for planer	1	454512
5	Insert for heating element	1	454513
6	Spacer	2	454514
7	Cylinder-head screw M5x45 DIN 912	4	0912E045
8	Cap nut M5	4	1587E
9	Washer M5 DIN 125	8	0125E
10	Blind rivet S 4x8	4	7337D008
11	Screw cap 20 x 10 x 1,5	4	on request

## 11. Declaration of conformity

according the guideline EC Machinery Directive 2006/42/EC

Company

WIDOS GmbH  
Einsteinstr. 5  
D-71254 Ditzingen-Heimerdingen

declares, that the product

Plastic welding machine  
WIDOS **MAXIPLAST**

has been designed in compliance with the following standards:

1. DIN EN ISO 12100 – 1 and 2 (replacement for DIN EN 292 Teile 1 and 2)  
safety of machines, general recommendations for designing machines
2. DIN EN 60204.1  
electrical equipment of industrial machines
3. DIN EN 60555, DIN EN 50082, DIN EN 55014,  
electromagnetic compatibility EMC

The technical documentation is complete.

The working instructions in the language of the customer are given along with the machine.

Ditzingen-Heimerdingen, 01.07.2013

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Martin Dommer (Technical director)