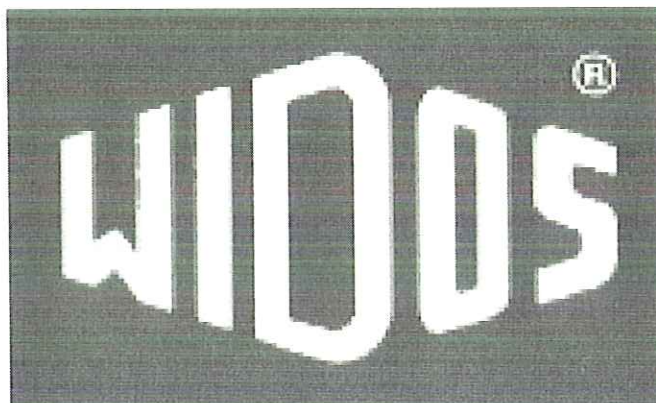
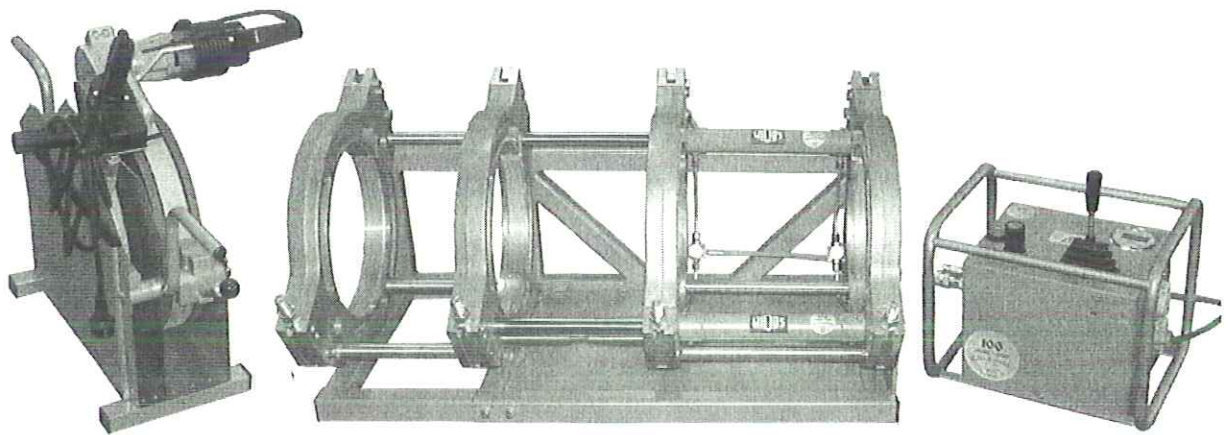


# Working Instructions Translation

Heating element butt welding machine

**WIDOS 4911**



Keep for further use!

Version: Ditch machine  
 Type: WIDOS 4911  
 Serial number / year of construction: see type label

### Customer's entries

Inventory- No.:  
 Place of working:

### Address of manufacturer

**WIDOS**  
 W. Dommer Söhne GmbH  
 Einsteinstraße 5  
 D-71254 Ditzingen-Heimerdingen  
 Phone: +49 (0) 71 52 / 99 39 – 0  
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[info@widos.de](mailto:info@widos.de)  
<http://www.widos.de>

### Order of spare parts and sales service:

Directly at the manufacturer or at the subsidiary companies:

WIDOS GmbH  
 An der Wiesenmühle 15  
 D-09224 Grüna / Sachsen  
 Phone: +49 (0) 3 71 / 8 15 73 - 0  
 Fax: +49 (0) 3 71 / 8 15 73 - 20

**WIDOS**  
 W. Dommer AG  
 St. Gallerstr. 93  
 CH-9201 Gossau  
 Phone: +41 (0) 71 / 388 89 79  
 Fax: +41 (0) 71 / 388 89 73

## 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 these working instructions, 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.

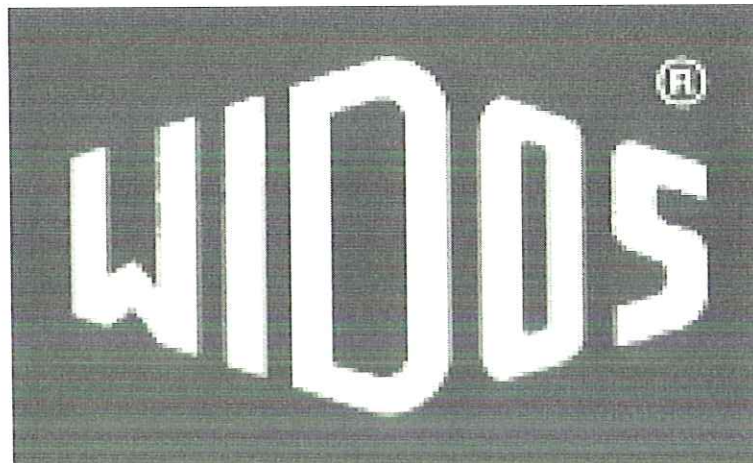
According to our interest to continuously improve our products and working instructions, we kindly ask you to inform us about problems and defects which occur in exercise.

Thank you.

## Structure of the working instructions

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

Therefore the searched information can be easily found.



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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 4911** is made for the heating element butt welding of pipes and fittings with a diameter range of  $\varnothing = 90 - 355$  mm.

It is a building site machine and is designed especially for the use on site as well as in the workshop.

For this reason, the frame is kept small such that it can also be used in constrained positions (e.g. building ditches).

All use going beyond is not prescribed.

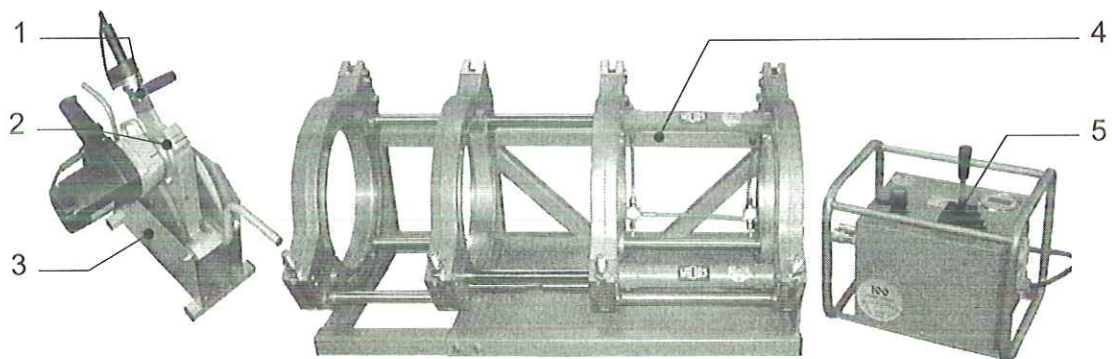
The manufacturer is not responsible for damages caused by misuse.

The risk is held only by the user.

Prescribed use also means:

- taking notice of all remarks in this manual
- performing of repair work.

## 1.2. Machine overview



1	Heating element
2	Planer
3	Protective box
4	Basic machine with clamping tools
5	Hydraulic aggregate

### 1.3. 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 be necessary adhered to.

### 1.4. Conformity

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

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

### 1.5. Designation of product

The product is designated by two signs at the frame.

The type-labels are fixed on the control unit and on the basic machine.

They contain the type of the machine, the serial number, and the year of construction.

#### 1.5.1 Technical Data

##### 1.5.1.1 WIDOS 4911 General data

Material:	PP, PE, PVDF
Pipe diameter range:	outside-Ø = 90 – 355 mm
Transport box (l x w x h) / weight:	approx. 1380 x 1210 x 820 mm / approx. 77 kg
Total weight (without packing):	approx. 228 kg
Protection:	16 A
Wire cross section:	1,5 mm <sup>2</sup>
Emissions	<ul style="list-style-type: none"> <li>- Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection!</li> <li>- When using the named pipe materials and when welding below 260°C / 500°F no toxicant damp arises.</li> </ul>
Environment:	<ul style="list-style-type: none"> <li>- keep the workshop clean (especially the 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, if necessary put up a tent</li> <li>- avoid strong sun beams</li> <li>- if it is windy shut the pipe endings.</li> </ul>



1.5.1.2 Planer

Motor:	monophase-alternating current-motor
Power:	1,75 kW
Voltage:	230 V ( $\pm 10\%$ )
Current:	7 A
Frequency:	50 Hz ( $\pm 10\%$ )
Revolutions per minutes, n2 of planer	approx. 27 rpm
Elements:	<ul style="list-style-type: none"> <li>- Switch on / off with fixing device</li> <li>- Safety micro switch</li> <li>- Connecting cable with plug</li> </ul>
Weight:	approx. 26 kg

1.5.1.3 Heating element

Power:	3 kW
Voltage:	230 V ( $\pm 10\%$ )
Current:	13,1 A ( $\pm 10\%$ )
Frequency:	50 Hz
Outside-Ø:	390 mm
Surface:	Anti-stick coated
Elements:	<ul style="list-style-type: none"> <li>Electronic temperature control</li> <li>Control lamps, switch on / off</li> <li>Connecting cable with plug</li> </ul>
Weight:	approx. 12 kg

1.5.1.4 Hydraulic aggregate

Feeding	max. 3,6 kW
Fuse protection	max. 16 A
Voltage:	230 V ( $\pm 10\%$ )
Frequency:	50 / 60 Hz
Hydraulic oil tank:	approx. 1 l
Electromotor and pump:	
Power:	3,1 kW
Current:	2,7 A
Revolutions per minutes:	1380 (rpm)
max. pressure of pump:	approx. 100 bar
Working pressure:	100 bar
Volume velocity:	1,9 l/min
Weight:	approx. 23 kg

1.5.1.5 Basic machine

Dimensions (l x w x h):	1185 x 705 x 580 mm
Reduction insert:	Dimensions can be selected
Material frame:	Machine steel
Material reduction inserts:	Aluminum
Weight:	approx. 152 kg
Cylinder-Ø:	40 mm
Piston rod-Ø:	35 mm
Length of stroke of cylinder:	285 mm
max. force:( $F=P \cdot A$ )	5900 N (at 100 bar)
Velocity of piston rod:	5,4 cm/s

Stock numbers for component parts see spare parts list

## 1.6. Equipment and accessories:

The following accessories are part of the first delivery:

1	Tool bag for 10 parts
1	Socket wrench, size 30
1	Allan key tilted, size 8
1	Allan key with T-grip, size 5
1	Fork wrench, size 17 / 19
1	Torx-screw driver, T10
optional	- Reduction inserts, - Stub end holder - Roller brackets for the pipes

## 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.

The security notices of this chapter represent the general part.

Particular information is listed directly before the corresponding actions.

- These working instructions provide you with the most important information to run the machine safely.
- The safety information must be read by all persons who work on the machine.

### 2.1. Explanation of the different symbols

The working instructions contain the following signs for certain situations:



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 due to hot surfaces.

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



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

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



This symbol means a possible risk of injury by noise exceeding 80 dB (A).

- Ear protection is obligatory.



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 on the machine, who

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

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

## 2.3. Obligations of the worker

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

- To take care of the basic safety and accident protection rules.
- To have read and understood the safety chapter and the warnings in this manual and to certify this with their signature.
- To inform themselves about the functions of the machine before using it.

## 2.4. Organizational measures

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

## 2.5. Informal security measures

- The manual has to be permanently kept at the place of use of the machine. It is to be at the operator's disposal at any time and without effort.
- As a supplement to the working instructions, the generally valid and also the local regulations for the prevention of accidents and the protection of the environment are to be provided and adhered to.
- All security and danger notices on the machine have to be kept in a readable state.
- Every time the machine changes hands or is being rented to third persons, the working instructions are to be sent along with and their importance is to be emphasized.

## 2.6. Instruction of the staff

- Only skilled and instructed persons are allowed to work at the machine.
- The responsibilities of the staff are to be determined clearly concerning transport, mounting and dismounting, starting, adjusting and tooling, operating, maintenance and inspection, repairs.
- Workers who are to be trained are only allowed to work at the machine under control of an experienced worker.

## 2.7. Dangers while handling the machine

The machine **WIDOS 4911** is constructed according to the actual technical standard 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 eliminated immediately.***

## 2.8. Maintenance and inspection, repair



All maintenance and repair work have to be basically performed with the machine in off position.

During this the machine has to be secured against unauthorized switching on.

Prescribed maintenance and inspection work should be performed in time.

The DVS gives the advice of inspection work after 1 year.

For machines with an especially high usage percentage the testing cycle should be shortened.

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

## 2.9. Dangers caused by electric energy



Only skilled workers are allowed to work at electrical appliances!

- The electrical equipment of the machine has to be checked regularly.
- Loose connections and damaged cables have to be replaced immediately.
- If work at alive parts is necessary, a second person has to assist who can disconnect the machine from the mains if necessary.
- All electric tools (heating element, planer and aggregate) have to be protected from rain and dropping water (if need be use a welding tent).
- According to VDE 0100, the use on construction sites is only allowed with a power distributor with a FI-safety switch.

## 2.10. Dangers caused by the hydraulics



System parts and pressure hoses should be depressurized before the beginning of any repair work.

Even if the machine is switched off, pressure may be in the hydraulic accumulator!

There is a danger of injuring the eyes by hydraulic oil squirting out.

- Damaged hydraulic hoses have to be **immediately** replaced.
- Make a visual inspection of the hydraulic hoses before each work beginning.
- The hydraulic oil is inedible!

## 2.11. Special dangers

### 2.11.1 Danger of catching clothes by the planer



There is the danger of cutting yourself or even breaking bones!

- Wear only tight clothes.
- Do not wear rings or jeweler during work.
- If necessary wear a hair-net.
- Always put the planer back into the reception case after and before each use.
- Only transport the planer at the handle.
- Do not touch the planer surfaces.
- Switch on the planer only for use. Otherwise the planer will start every time when the security micro switch is pressed.

### 2.11.2 Danger of noise



Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection!

### 2.11.3 Danger of combustion at heating element, protective box and welding area



You can burn yourself, inflammable materials can ignite!

The heating element is heated up to more than **200°C / 392°F!**

- Do not touch the surface of the heating element.
- Do not leave the heating element unattended.
- Take enough safety distance to materials which might be ignited.
- Wear safety gloves.
- Insert the heating element into the heat protective box after use.
- Only transport the heating element at the handle.

### 2.11.4 Danger of stumbling over hydraulic and electric wires



- Make sure that no person has to step over the wires.
- Make sure that the cables lie in such a way that the danger is maintained at a minimum.

### 2.11.5 Danger of crushing by clamping tool and guideways



There is a possibility of serious injury:

- On the one hand between the inner clamping tools and on the other hand between the outside clamping tool and the end of the guideway.
  - Upon opening / closing the clamping tools.
  - Upon opening / closing the machine.
  - Upon mounting the reducer inserts.
  - Upon clamping the pipes.
- Do not put hands or foot between clamped pipe ends.
  - Do not step or grab between the inner clamping tools with not yet clamped pipes.
  - Do not block opening and closing of the machine.
  - Keep away others from the clamping area.

## 2.12. Structural modifications on the machine

- No modifications, extensions or reconstructions may be performed on the machine without permission of the manufacturer.
- Machine parts that are not in perfect condition are to be replaced immediately.
- Only use original **WIDOS** spare and wear parts.
- In case of purchase orders please always note the machine and version number.

## 2.13. How to clean the machine

The used materials and cloths are to be handled properly and to be disposed of, especially:

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

## 2.14. Guarantee and liability

Fundamentally our "general sales and delivery conditions" are in force.

They are at the buyer's disposal latest 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.
- Insufficient checking of machine parts that are worn out.
- Unprofessionally performed repairs.
- In case of catastrophes and acts of God.





### 3. Functional description

Basically the international and national standard specifications are to be fulfilled.

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

Then the foreparts are planed parallel by means of the **planer**, and mismatch is checked.

Now the heating element is inserted and the pipes are pressed against the heating element with the defined adjusting pressure. This operation is called "**adjusting**".

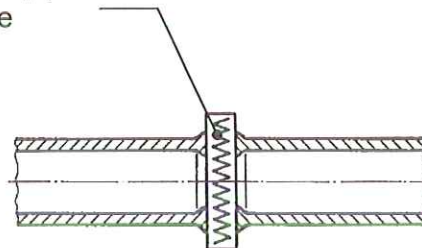
After the prescribed bead height is reached, the pressure is relieved and the **heat-up time** is starting. Now the pipes are heated up to welding temperature.

After expiration of the heat-up time, the slide has to be opened, the heating element is removed quickly and the pipes are rejoined. The time between removing the heating element and rejoining the pipes is called **change-over time**.

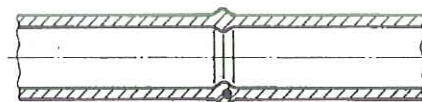
The pipes are joined with the prescribed welding pressure and then cool down under pressure (**cooling time**).

The weld joint can be unclamped, the welding process is finished.

Heating element heats the pipes  
up to welding temperature



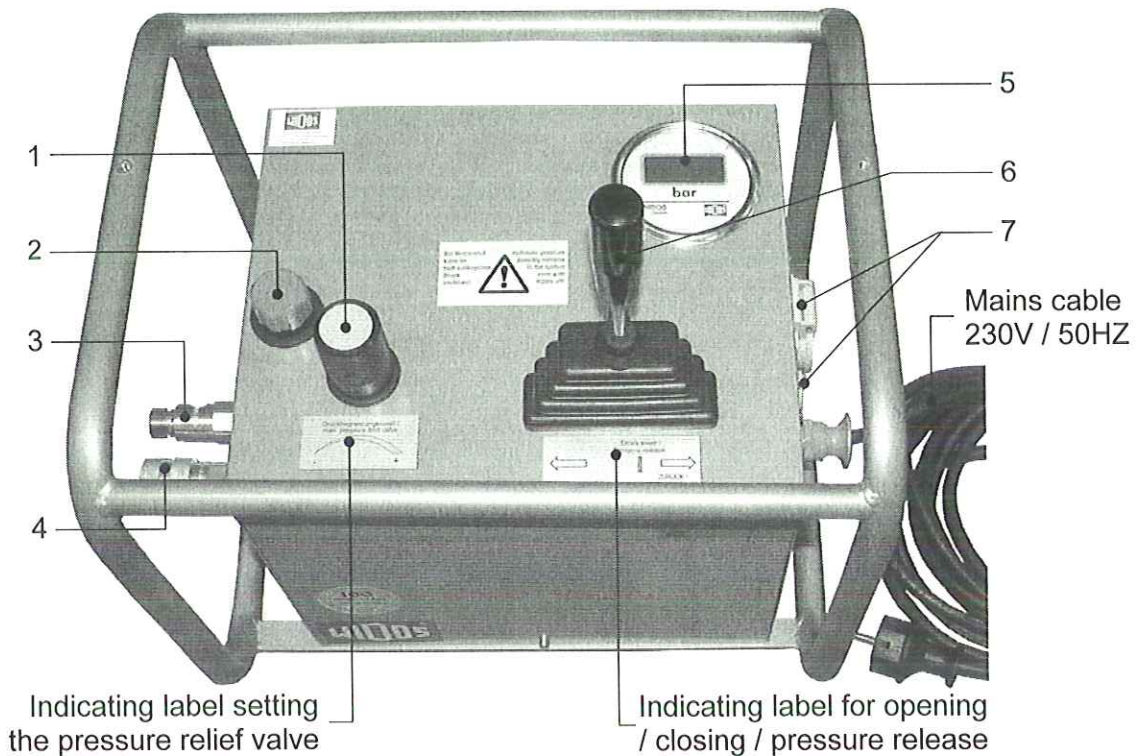
Finished weld joint with  
internal and external bead





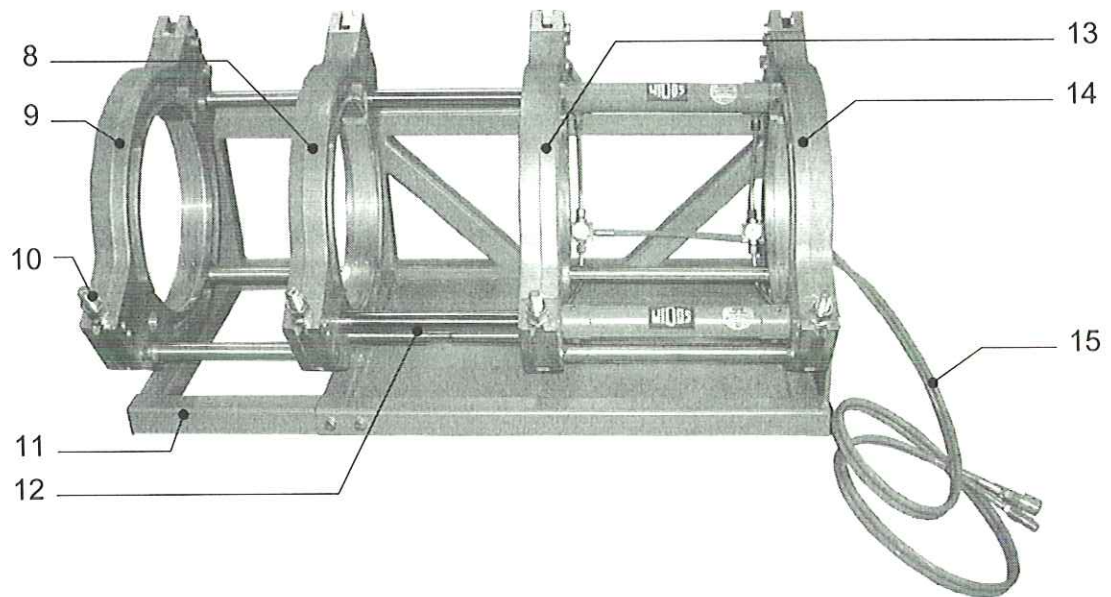
## 4. Operating and indicating elements

### 4.1. Elements on the hydraulic aggregate



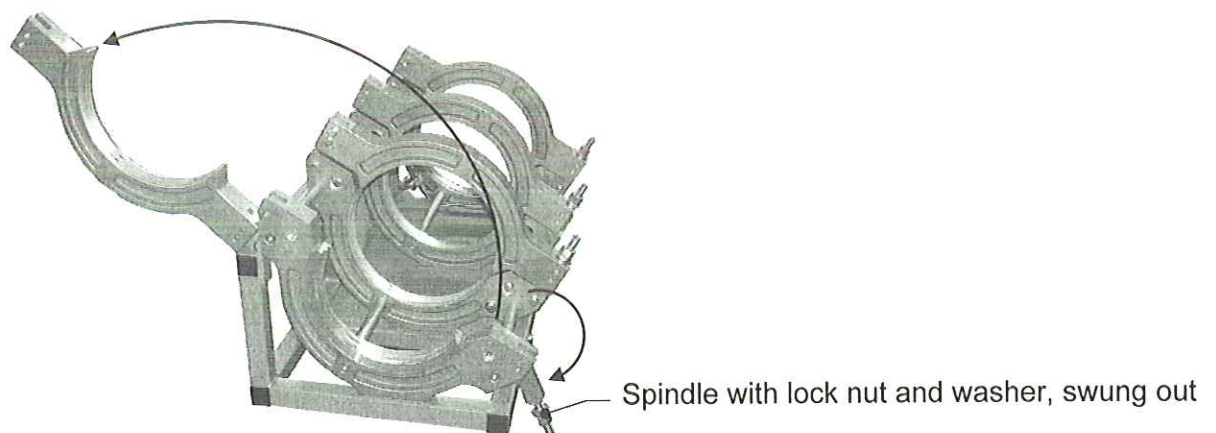
No.	Denomination	Function
1	Adjusting screw for pressure relief valve	- For the limitation of the hydraulic pressure to the desired value
2	Screw with oil level stick	- Checking the oil-level - Filling in oil
3	Hydraulic connection for opening	- Non-dropping quick-action hose coupling
4	Hydraulic connection for closing	- Non-dropping quick-action hose coupling
5	Pressure gauge	Digital display of the hydraulic pressure
6	Valve lever	Opening/closing the slide. There are 4 different positions: - <Forwards>: slide closes - <b>in the middle</b> (usual position): the pressure is currently achieved is kept (also by means of the hydraulic accumulator) - <Pressure release> (depressurized position): a possibly existing pressure is released without moving the slide. Due to the hydraulic accumulator it takes about 10 s until the pressure is completely released. - <Backwards>: slide opens
7	Power socket (2 pieces)	Connection for planer or heating element

## 4.2. Basic machine



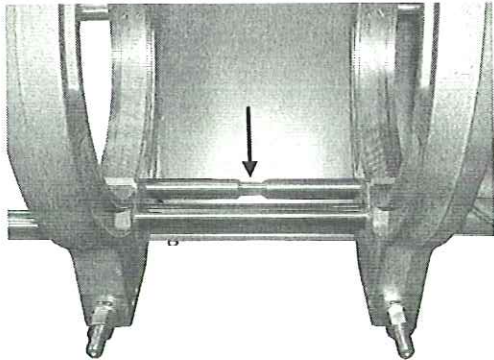
No.	Denomination / Function
8	Inner clamping ring flexible
9	Outer clamping ring flexible
10	Clamping nut with washer and spindle, for clamping the pipes
11	Basic frame part 2, removable
12	Tear off bar, separates the heating element and the heated tubes
13	Inner clamping ring fixed
14	Outer clamping ring fixed
15	Hydraulic hoses, connection with hydraulic aggregate

### 4.2.1 How to open/close the clamping ring



- Loosen the lock nut and swivel the spindle with locking nut and washer to the front of the clamping ring (small arrow).
- Swivel the upper part of the clamping ring to the back (large arrow).

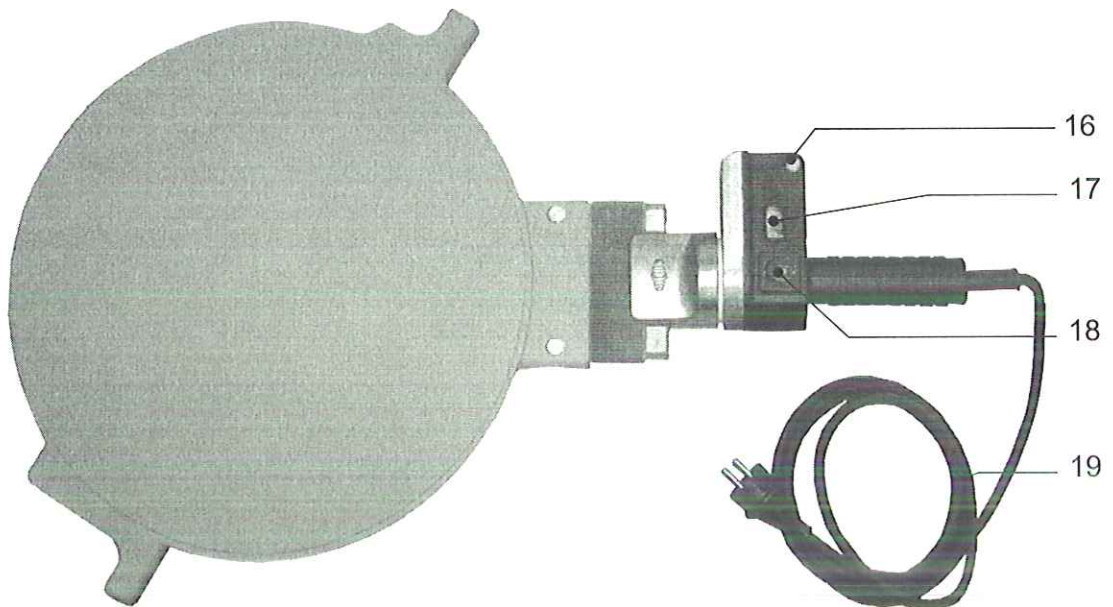
### 4.2.2 Separating device for heating element



There is a tear-off bar mounted between the flexible and the fixed clamping rings on the basic machine. It prevents the heating element from sticking to the heated-up pipe ends.

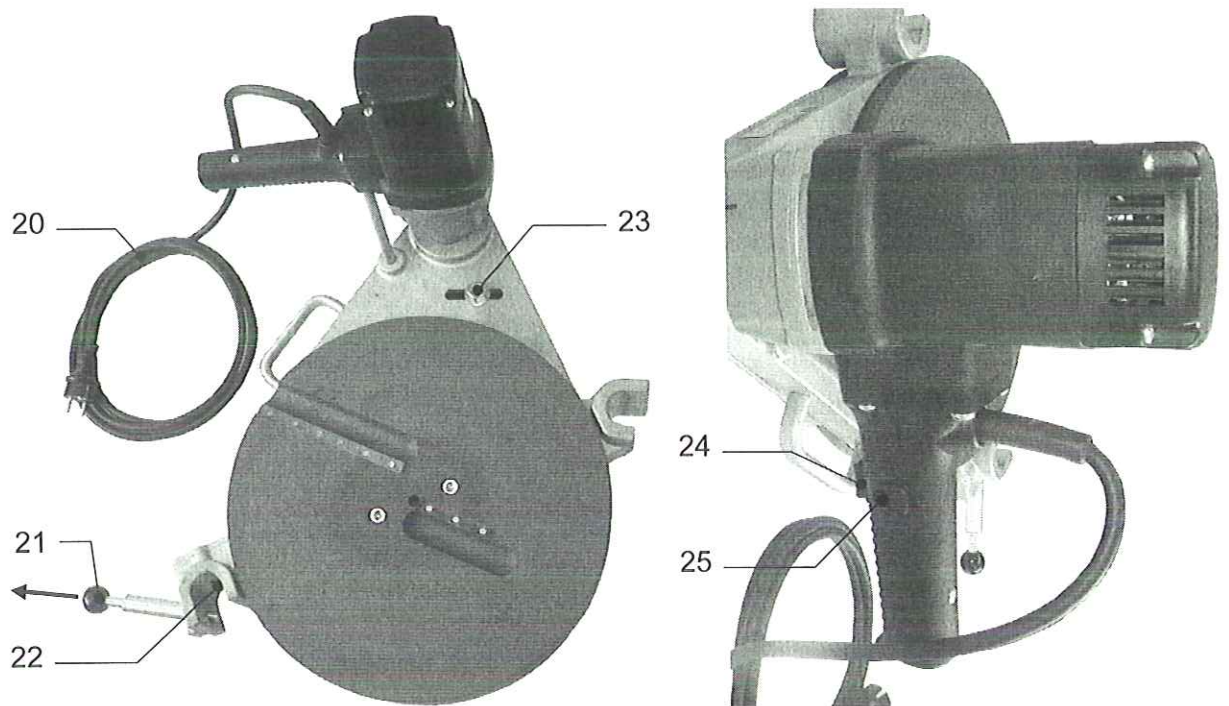
- When inserting the heating element take care that it lies in the zone of the diminution of the tear-off bar (see arrow).

### 4.3. Elements at the heating element



No.	Denomination	Function
16	Control lamp green	- There are three different states: <ul style="list-style-type: none"> <li>• <b>off</b>: signalizes that the heating element is not heated up at the moment or that it cools down</li> <li>• <b>blinking</b>: the heating element temperature is maintained by a certain pulse-position ratio</li> <li>• <b>on</b>: signalizes that the heating element is heated up at the moment. It has not yet reached the desired temperature</li> </ul>
17	Setting screw	- For regulating the temperature of the heating element
18	On/off-switch with red lamp	- As soon as the heating element is switched on, the red control lamp lightens
19	Connecting cable with plug	- Connecting with a socket of hydraulic aggregate

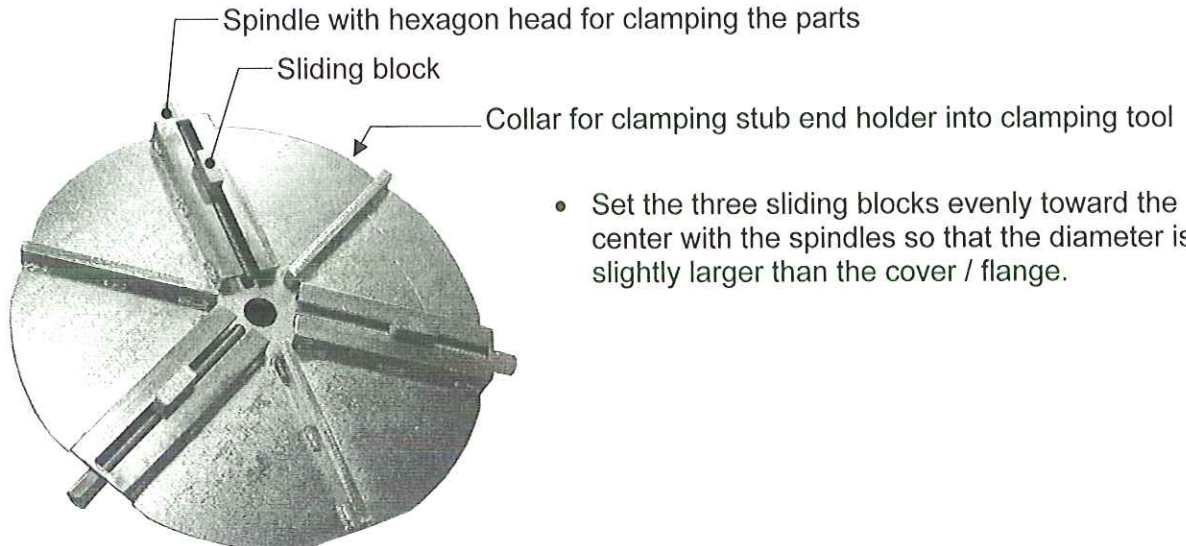
### 4.4. Elements at the planer



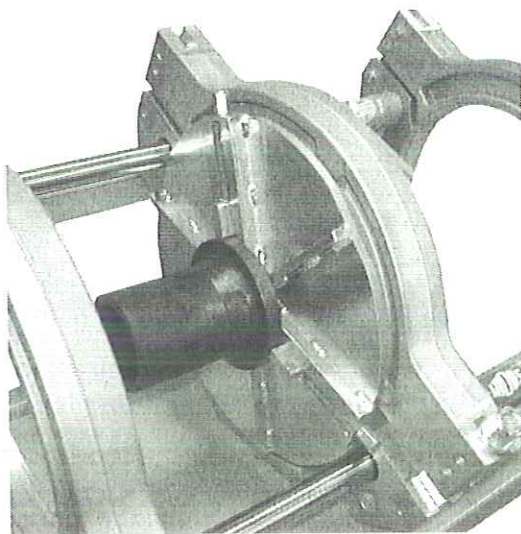
No.	Denomination	Function
20	Connecting cable with plug	- Connecting with a socket of hydraulic aggregate
21	Locking lever	- to lock the planer, thus avoiding a falling out. - for unlocking pull the locking lever in direction of arrow
22	Safety micro switch	- planer can only start when switch is pressed
23	Chain tightening bolt	- in order to tighten the chain, disassemble the cap at the rear of the planer, then tighten the chain sturdily
24	Locking button	- if the switch is activated you may press the locking button, thus the activation is maintained as long as the switch is deactivated.
25	Switch on / off for planer	- to switch on the planer. - the planer has to be switched off before and after use.

### 4.5. Stub end holder (optional)

When welding a cap or a flange to a pipe, a stub end holder is provided for holding these pieces.



- Set the three sliding blocks evenly toward the center with the spindles so that the diameter is slightly larger than the cover / flange.



- Insert the stub end holder into the lower part of the flexible clamping ring (13) with its face showing to the centre of the machine.
- Close the upper part of clamping ring and clamp the stub end holder.
- Replace the cap / flange between the sliding blocks and clamp the work piece firmly.
- Clamp the pipe into the fixed clamping rings.
- Move the pipe towards the cap / flange.
- Align the cap / flange to the pipe with the threaded spindles.
- Now you can start the welding process (see chapter: 5.2).





## 5. Starting and operating

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

This includes:

- the safe operation of the machine
- using all the possibilities
- running the machine economically

### 5.1. Starting



The machine should only be operated by trained and authorized people. For the qualification a plastic welding exam can be taken according to DVS and DVGW.

In case of danger unplug the machine immediately.

In case of power failure, the hydraulic system can still be under pressure.

For this reason, release pressure when required.

After completion of the welding work and during breaks the machine has to be switched off.

Further be sure that no unauthorized persons have access.

Protect the machine from wetness and moisture!

Operating the machine on construction sites is only allowed with an in-coming power distributor with a FI safety switch according to VDE 0100.



Check the oil level of the hydraulic system before each starting in order to avoid damages on the pump.

The oil-level must be between the two markers.

- Connect the power plug of the hydraulic aggregate to the mains, and be sure to have a correct mains voltage (230 V / 16 A / 50 Hz, right hand rotary field).
- Connect the heating element and planer to the corresponding sockets of the aggregate (chapter: 4.1, no. 7).
- Connect the hydraulic hoses of the basic machine to the aggregate (chapter: 4.1 no. 3 + 4).



Lay hydraulic and electric lines carefully (danger of stumbling)!

- Take into consideration the environmental conditions:
  - Welding should not be carried out in direct sunlight.
  - If necessary put up a welding tent.
- In case of ambient temperatures below 5°C / 41°F the following measures have to be taken:
  - If need be, put up a welding tent and heat up the pipe ends.
- Take measures against rain, wind and dust.

### 5.1.1 How to mount the reduction inserts

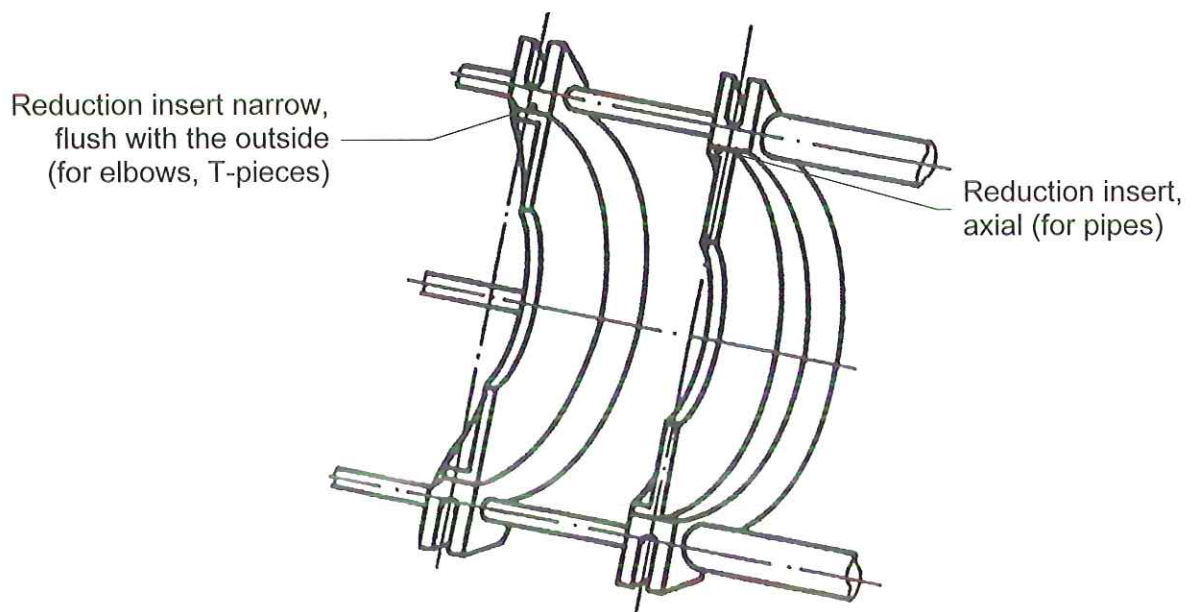
- Pipes having OD 355 mm are clamped without reducer inserts.
- For pipes with OD 315 mm mount the reduction inserts (OD 315 mm) into clamping rings, it is also the adapter for the smaller reduction inserts.
- For pipes with OD 90 - 280 mm mount the desired diameter into the adapter (OD 315 mm).

### 5.1.2 How to use small and large reduction inserts

#### Small reduction inserts:

- Pipe fittings often only have a short straight surface area on which they can be clamped.
- Fittings often need to be clamped in the inside clamping tools with the narrow reduction inserts.
- In case of welding fittings (elbows, T-pieces etc.) the inside narrow reduction insert can also be used flush with the outside.

*The picture shows both internal clamping tools:*



#### Large reduction inserts:

- They are mainly used for a good tightening and are generally mounted on the inside clamping tools.
- Super large reduction inserts have a specially high guidance quality and are mainly used during the welding of fittings with long legs which can only be clamped with a single clamping tool.

### 5.1.3 How to remove clamping ring with basic frame part 2

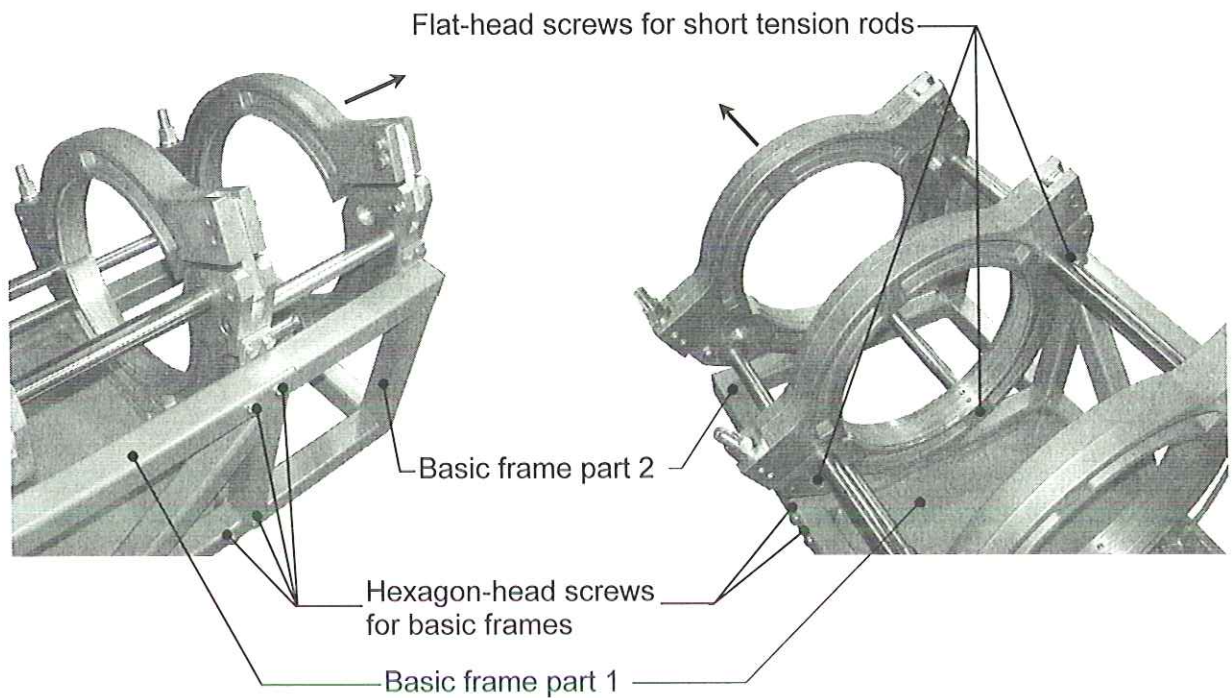
If you want to weld a T-piece, you can remove the outer fixed clamping ring inclusive basic frame part 2.

- Remove the three flat-head screws of the short tension rods.
- Loosen the six hexagon-head screws (e. g. 1-2 rotations); then you can remove the basic frame part 2 in direction of arrow.



Important, don't unscrew the hexagon-head screws!

The hexagon-head screws hold terminal strips into the square tubes. The terminal strips fixed the both basic frames with the hexagon-head screws.



## 5.2. Welding process

The respectively valid welding prescriptions (ISO / CEN / DVS...) are to be basically followed.



There is the danger of serious crushing.

On the one hand between the inner clamping tools, on the other hand between the outer clamping tool and the end of the guide bar.

- Do wear safety gloves as a protection against combustion!
- Keep a stop-watch ready for recording the actual times for the heating and cooling.
- In the same way a table should be available from which the parameters for the pipe dimensions to be welded prescribed by the welding prescriptions may be taken from.
- The heating element surfaces are to be clean and, above all, free from grease. Therefore they are to be cleaned with non-fraying paper and detergent (e.g. PE - cleaner) 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 the heating element and adjust the required welding temperature at the adjusting screw.
  - The adjusted temperature is obtained when the control light is blinking.
- Screw in the reduction inserts according to the outside diameter of the pipes to be welded.
- Put the work pieces into the clamping tools, tighten the clamping nuts tightly and align the work pieces with respect to one another.  
In case of long pipe ends, use WIDOS rollerstands for alignment.
- Close the slide, <Control lever> on: "FORWARDS", thereby reading the **movement pressure** on the pressure gauge.  
The movement pressure is displayed exactly when the slide with the clamped-pipe passes over into its movement.
- Subsequently, open slide again, <Control lever> on: "BACKWARDS", such that the planer fits in-between.
- Put the planer between the pipe ends, and let the planer lock therefore the security micro switch (chapter: 4.4, no. 22) is switched on.
- Switch on the plan on with on/off-switch (24) and press the locking button (25) as needed.



There is the danger that the planer draws in clothes!

As soon as the planer is switched on it will run immediately when the security micro switch has been pressed.

Do not hold the planer on its front sides in any case.



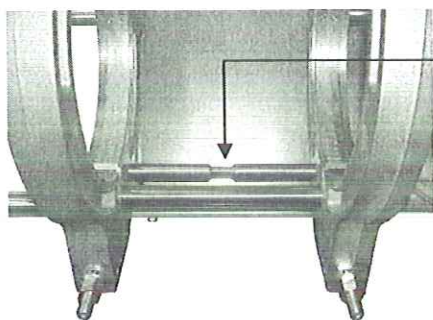
Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection!



In case there are too many chips stop planer and remove them.

Necessarily take care that no chips will be drawn-in between the planer discs.

- Move the pipe ends towards one another by <Control lever> on: "FORWARDS" and plane same with a planing pressure between **1 and 15** bar above the movement pressure. Planing must be carried out until a revolving cutting has been formed on both sides.
- Open the slide again by <Control lever> on: "BACKWARDS", switch off planer motor, unlock planer, remove it and put it into the protective box.
- Remove the produced cuttings without contacting the worked surfaces.
- Close slide by <Control lever> on: "FORWARDS".
- Check pipe mismatch and gap on the joining pipe ends. According to DVS 2207, the mismatch on the pipe outer side must not exceed  $0.1 \times$  pipe wall thickness, the admissible gap must not exceed 0.5 mm.  
The mismatch compensation is carried out via further tightening or releasing of the clamping nuts.  
In case of a mismatch compensation, planing must be carried out again afterwards.
- The adjustment pressure for the pipe dimension to be welded can be gathered from the table. Add the movement pressure.  
Set the resulting pressure value at the pressure limiter valve and check by actuating the valve lever.
- Open slide again slightly by <Control lever> on: "BACKWARDS".
- Take heating up time, maximum change-over time, cooling down time and bead height for the pipe dimension to be welded from the table.
- Insert the heating element, which has been cleaned and brought to nominal temperature, by means of the handle upwards between the pipes, if necessary wait until the control lamp on the heating element flashes in regular intervals.



**Take care that it lies in the zone of the diminution of the tear-off bar, if required displace the shaft.**

- Close slide smoothly to the set adjustment pressure, by <Control lever> on: "FORWARDS". When the prescribed revolving bead height has been reached, reduce pressure. For this purpose, move <Control lever> on: "Release pressure" until the desired heating up pressure has built up (heating up pressure = approx. 10% of the adjustment pressure).
- The heating up time starts now. 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 the slide by <Control lever> on: "BACKWARDS", remove the heating element as quickly as possible, put it into the protective box and close the slide smoothly.  
The maximum time frame for this process is predetermined by the value for the change-over time taken from the table.

- When the welding pressure has been built up, press the stop-watch and keep the <Control lever> for approximately 10s on "FORWARDS" so that the hydraulic accumulator can be filled.  
During the cooling down period re-adjust pressure, if necessary (the pressure for cooling down is the same as the set adjustment pressure).
- After expiration of the cooling down period, release pressure by <Control lever> on: "Pressure release".



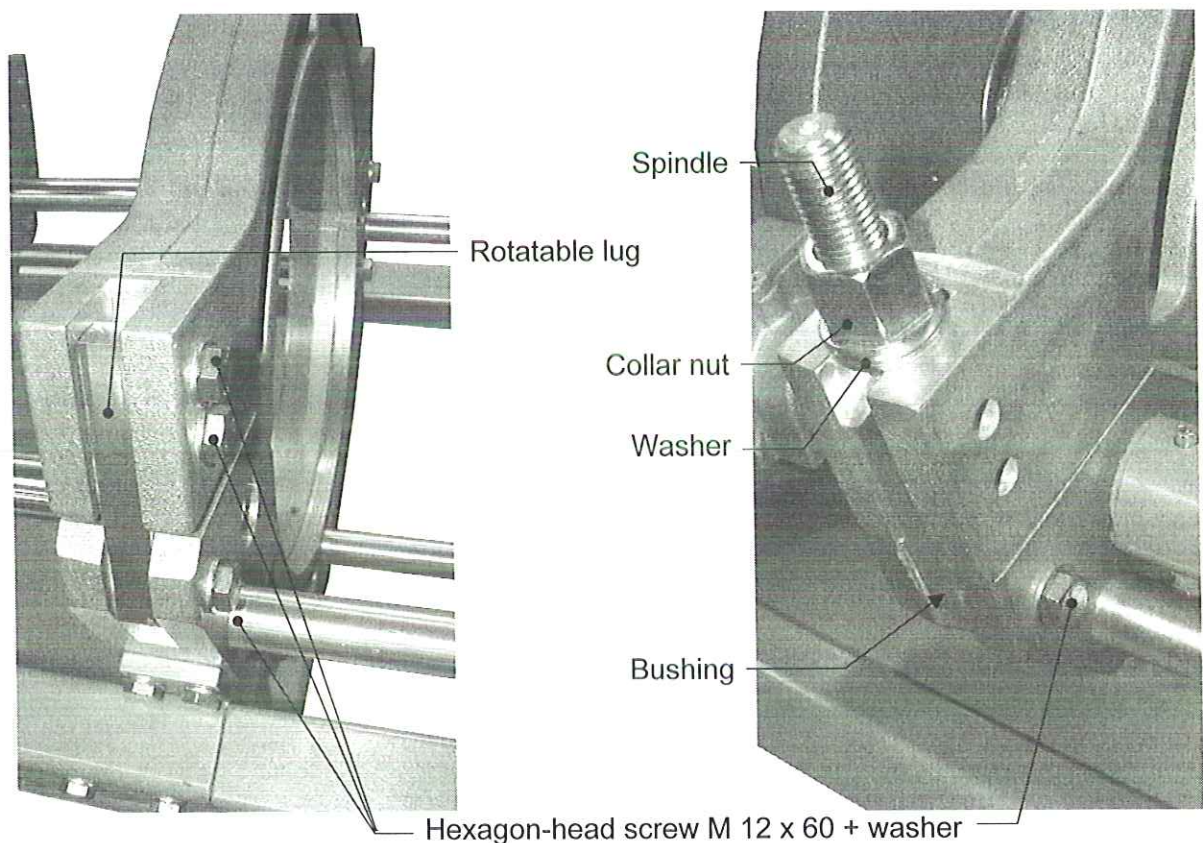
Don't drive machine open!

- Open the clamping rings and remove the welded part.
- Open the slide by <Control lever> on: "FORWARDS".

The welding process is finished.

### 5.2.1 Retrofitting the clamping rings (optional)

You can disassemble the rotatable lug between the clamping ring lower and upper part, and then clamp the upper clamping ring on both sides with spindle and collar nut.



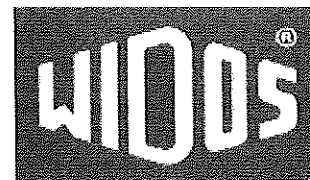
- Dismount the three hexagon-head screws and remove the rotatable lug.
- Put the bushing into the hole of spindle, insert the spindle into the clamping ring lower part and mount it with hexagon-head screw + washer.
- Put the washer onto spindle and screw the collar nut onto spindle.

## 6. Welding logs and tables





## Table for PE



Foundation: 2207, 2208 DIN 16932 German association for welding

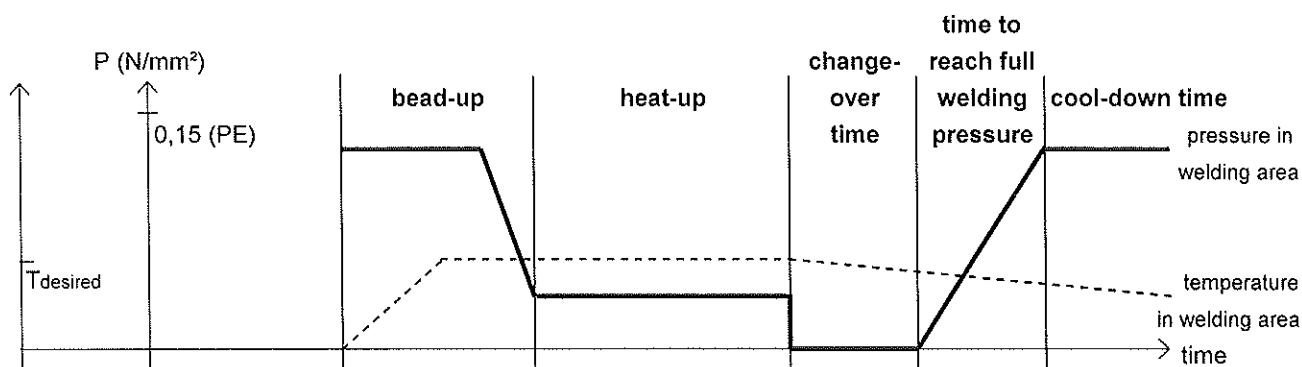
Use for: **4911**

1 bar on manometer: **59 N**

**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 !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] ①
<b>90</b>	2,2	41,0	2	0,5	22	4	4	2	2
	2,8	33,0	2	0,5	28	4	4	2	3
	3,5	26,0	3	0,5	35	5	5	3	4
	4,3	21,0	3	0,5	43	5	5	3	6
	5,1	17,6	4	1,0	51	5	5	4	7
	5,4	17,0	4	1,0	54	5	5	4	7
	6,7	13,6	5	1,0	67	6	6	5	10
	8,2	11,0	6	1,5	82	6	6	6	11
	10,1	9,0	7	1,5	101	7	7	7	14
12,3	7,4	8	2,0	123	8	8	8	16	
<b>110</b>	2,7	41,0	3	0,5	27	4	4	3	3
	3,4	33,0	3	0,5	34	5	5	3	4
	4,2	26,0	4	0,5	42	5	5	4	6
	5,3	21,0	5	1,0	53	5	5	5	7
	6,3	17,6	6	1,0	63	6	6	6	9
	6,6	17,0	6	1,0	66	6	6	6	9
	8,1	13,6	7	1,5	81	6	6	7	11
	10,0	11,0	8	1,5	100	7	7	8	14
	12,3	9,0	10	2,0	123	8	8	10	16
15,1	7,4	12	2,0	151	9	9	12	20	

## Table for PE



Foundation: 2207, 2208 DIN 16932 German association for welding

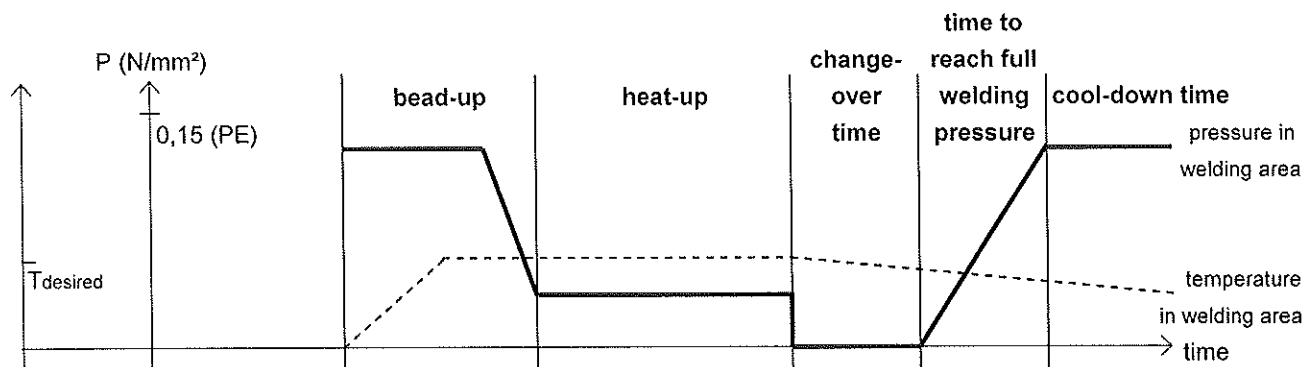
Use for: **4911**

1 bar on manometer: **59 N**

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

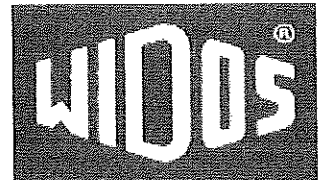
**PE 100** The standard value for heating element temperature is 220° C.  
Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min]
<b>125</b>	3,1	41,0	4	0,5	31	4	4	4	4
	3,9	33,0	4	0,5	39	5	5	4	5
	4,8	26,0	5	1,0	48	5	5	5	6
	6,0	21,0	6	1,0	60	6	6	6	8
	7,1	17,6	7	1,5	71	6	6	7	10
	7,4	17,0	7	1,5	74	6	6	7	10
	9,2	13,6	9	1,5	92	7	7	9	13
	11,4	11,0	11	1,5	114	8	8	11	15
	14,0	9,0	13	2,0	140	9	9	13	18
17,1	7,4	15	2,0	171	9	10	15	22	
<b>140</b>	3,5	41,0	4	0,5	35	5	5	4	4
	4,3	33,0	5	0,5	43	5	5	5	6
	5,4	26,0	6	1,0	54	5	5	6	7
	6,7	21,0	8	1,0	67	6	6	8	10
	8,0	17,6	9	1,5	80	6	6	9	11
	8,3	17,0	9	1,5	83	7	7	9	12
	10,3	13,6	11	1,5	103	7	7	11	14
	12,7	11,0	13	2,0	127	8	8	13	17
	15,7	9,0	16	2,0	157	9	10	16	20
	19,2	7,4	19	2,5	192	10	11	19	24

## Table for PE



Foundation: 2207, 2208 DIN 16932 German association for welding

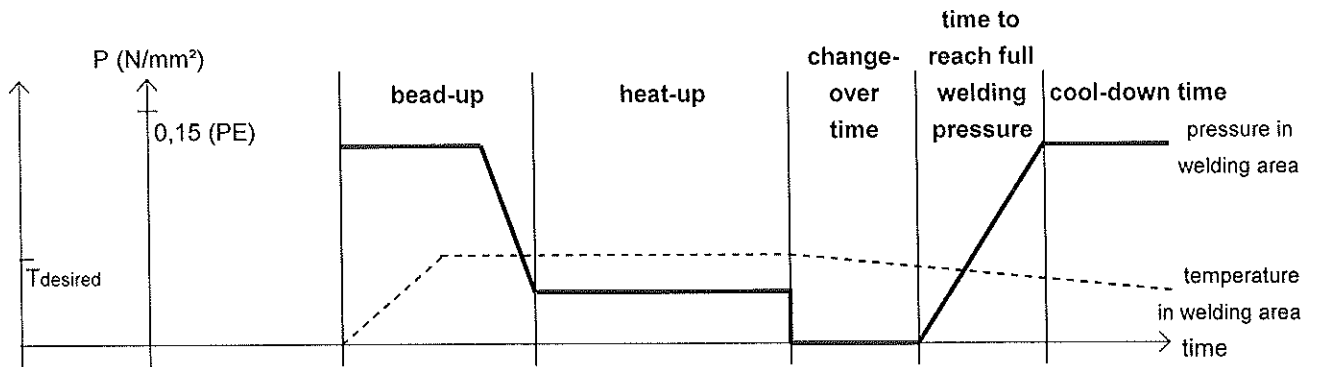
Use for: **4911**

1 bar on manometer: **59 N**

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

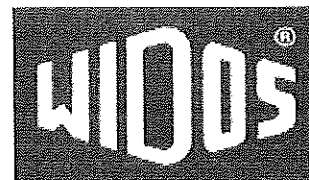
**PE 100** The standard value for heating element temperature is 220° C.  
Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min]
<b>160</b>	4,0	41,0	5	0,5	40	5	5	5	5
	4,9	33,0	7	1,0	49	5	5	7	7
	6,2	26,0	8	1,0	62	6	6	8	9
	7,7	21,0	10	1,5	77	6	6	10	11
	9,1	17,6	11	1,5	91	7	7	11	13
	9,5	17,0	12	1,5	95	7	7	12	13
	11,8	13,6	14	1,5	118	8	8	14	16
	14,6	11,0	17	2,0	146	9	9	17	19
	17,9	9,0	21	2,0	179	10	11	21	23
21,9	7,4	25	2,5	219	11	12	25	27	
<b>180</b>	4,4	41,0	7	0,5	44	5	5	7	6
	5,5	33,0	8	1,0	55	5	5	8	8
	6,9	26,0	10	1,0	69	6	6	10	10
	8,6	21,0	12	1,5	86	7	7	12	12
	10,2	17,6	14	1,5	102	7	7	14	14
	10,7	17,0	15	1,5	107	7	7	15	14
	13,3	13,6	18	2,0	133	8	9	18	17
	16,4	11,0	22	2,0	164	9	10	22	21
	20,1	9,0	26	2,5	201	10	11	26	25
24,6	7,4	31	2,5	246	12	13	31	30	

## Table for PE



Foundation: 2207, 2208 DIN 16932 German association for welding

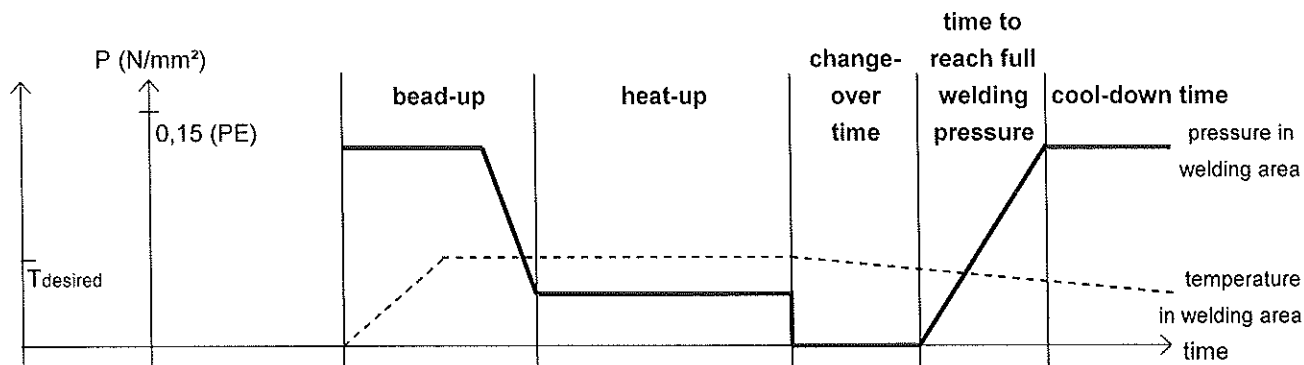
Use for: **4911**

1 bar on manometer: **59 N**

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

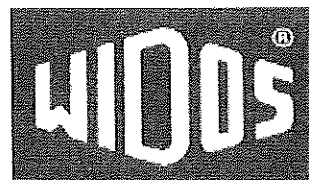
**PE 100** The standard value for heating element temperature is 220° C.  
Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min]
<b>200</b>	4,9	41,0	8	1,0	49	5	5	8	7
	6,2	33,0	10	1,0	62	6	6	10	9
	7,7	26,0	12	1,5	77	6	6	12	11
	9,6	21,0	15	1,5	96	7	7	15	13
	11,4	17,6	18	1,5	114	8	8	18	15
	11,9	17,0	18	1,5	119	8	8	18	16
	14,7	13,6	22	2,0	147	9	9	22	19
	18,2	11,0	27	2,0	182	10	11	27	23
	22,4	9,0	32	2,5	224	11	12	32	28
27,4	7,4	38	3,0	274	13	15	38	34	
<b>225</b>	5,5	41,0	10	1,0	55	5	5	10	8
	6,9	33,0	13	1,0	69	6	6	13	10
	8,6	26,0	15	1,5	86	7	7	15	12
	10,8	21,0	19	1,5	108	8	8	19	15
	12,8	17,6	22	2,0	128	8	8	22	17
	13,4	17,0	23	2,0	134	8	9	23	18
	16,6	13,6	28	2,0	166	9	10	28	21
	20,5	11,0	34	2,5	205	10	12	34	26
	25,2	9,0	41	2,5	252	12	14	41	31
30,8	7,4	48	3,0	308	14	16	48	38	

## Table for PE



Foundation: 2207, 2208 DIN 16932 German association for welding

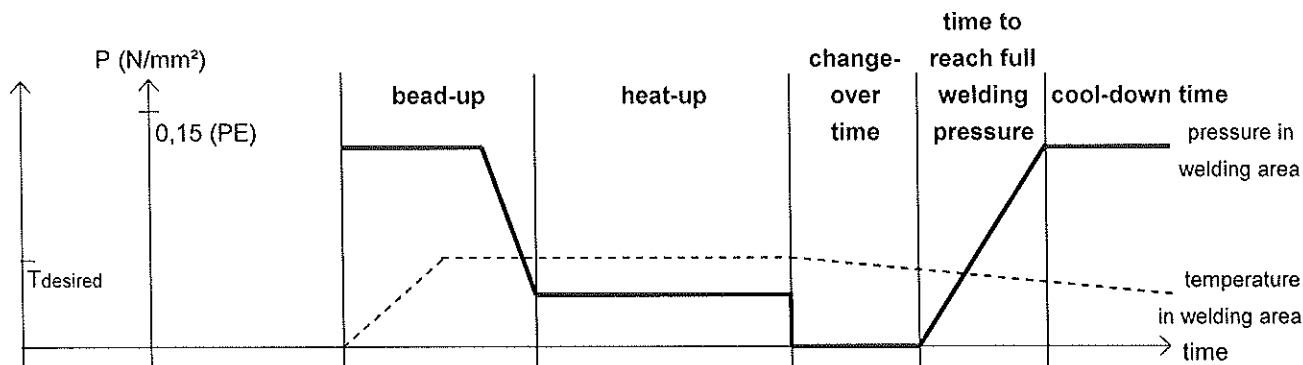
Use for: **4911**

1 bar on manometer: **59 N**

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

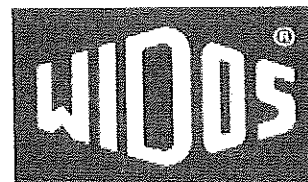
**PE 100** The standard value for heating element temperature is 220° C.  
Increase the change-over time and the welding pressure time at PE 100 as fast as possible !

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] ①
<b>250</b>	6,2	41,0	13	1,0	62	6	6	13	9
	7,7	33,0	15	1,5	77	6	6	15	11
	9,6	26,0	19	1,5	96	7	7	19	13
	11,9	21,0	23	1,5	119	8	8	23	16
	14,2	17,6	27	2,0	142	9	9	27	19
	14,8	17,0	28	2,0	148	9	9	28	19
	18,4	13,6	35	2,0	184	10	11	35	23
	22,7	11,0	42	2,5	227	11	13	42	28
	27,9	9,0	50	3,0	279	13	15	50	34
34,2	7,4	59	3,0	342	15	18	59	42	
<b>280</b>	6,9	41,0	16	1,0	69	6	6	16	10
	8,6	33,0	19	1,5	86	7	7	19	12
	10,7	26,0	24	1,5	107	7	7	24	14
	13,4	21,0	29	2,0	134	8	9	29	18
	15,9	17,6	34	2,0	159	9	10	34	20
	16,6	17,0	35	2,0	166	9	10	35	21
	20,6	13,6	43	2,5	206	10	12	43	26
	25,4	11,0	52	2,5	254	12	14	52	31
	31,3	9,0	63	3,0	313	14	16	63	38
38,3	7,4	74	3,5	383	16	20	74	47	

## Table for PE



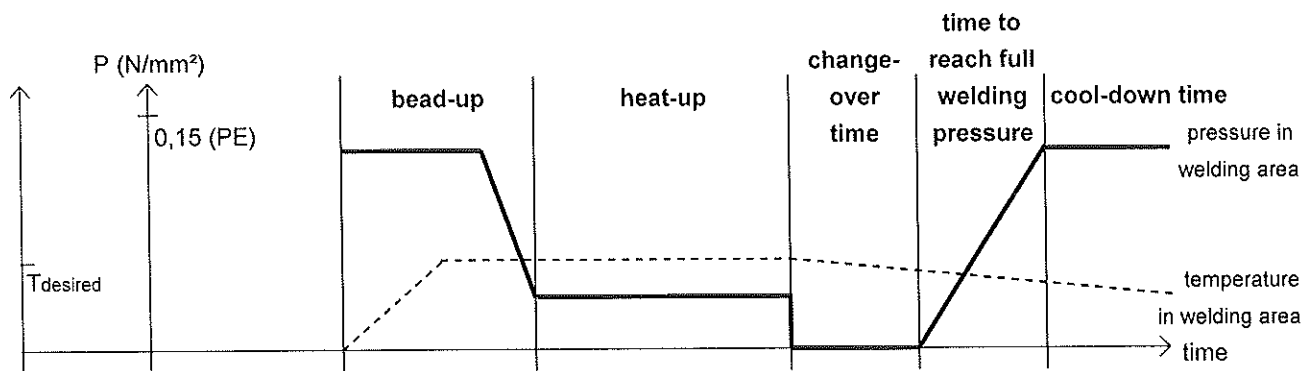
Foundation: 2207, 2208 DIN 16932 German association for welding  
Use for: **4911**

1 bar on manometer: **59 N**

**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 !

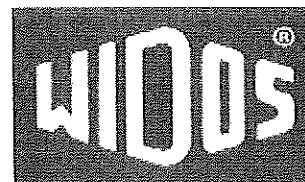


pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] ①
<b>315</b>	7,7	41,0	19	1,5	77	6	6	19	11
	9,7	33,0	24	1,5	97	7	7	24	13
	12,1	26,0	30	2,0	121	8	8	30	16
	15,0	21,0	36	2,0	150	9	9	36	19
	17,9	17,6	43	2,0	179	10	11	43	23
	18,7	17,0	45	2,0	187	10	11	45	24
	23,2	13,6	55	2,5	232	11	13	55	29
	28,6	11,0	66	3,0	286	13	15	66	35
	35,2	9,0	79	3,0	352	15	18	79	43
43,1	7,4	94	3,5	431	18	22	94	52	
<b>355</b>	8,7	41	25	1,5	87	7	7	25	12
	10,9	33	30	1,5	109	8	8	30	15
	13,6	26,0	38	2,0	136	8	9	38	18
	16,9	21,0	46	2,0	169	9	10	46	22
	20,1	17,6	54	2,5	201	10	11	54	25
	21,1	17	57	2,5	211	11	12	57	26
	26,1	13,6	69	3,0	261	12	14	69	32
	32,2	11,0	84	3,0	322	14	17	84	39
	39,7	9,0	100	3,5	397	17	20	100	48
48,5	7,4	119	3,5	485	20	24	119	58	

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

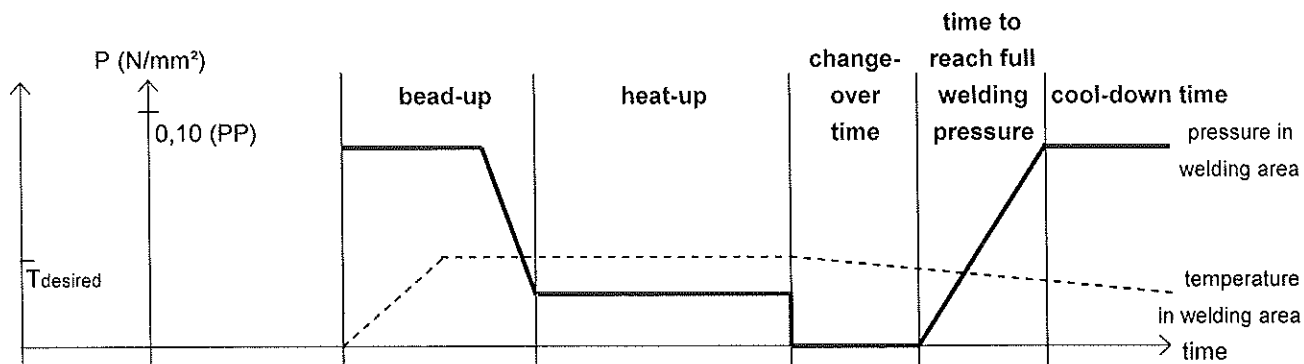
Use for: **4911**

1 bar on manometer: **59 N**

The standard value for heating element temperature is 210° C +/- 10° C.

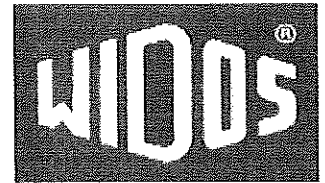
The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] <b>①</b>
<b>90</b>	2,2	41	2	0,5	94	4	5	2	2
	2,8	33	2	0,5	104	4	5	2	3
	3,5	26	2	0,5	117	5	6	2	4
	5,1	17,6	3	0,5	145	5	6	3	7
	8,2	11	4	1,0	192	6	8	4	14
	12,3	7,4	6	1,0	249	7	11	6	20
	15,0	6	6	1,0	281	8	14	6	24
<b>110</b>	2,7	41	2	0,5	103	4	5	2	3
	3,4	33	2	0,5	115	5	6	2	4
	4,2	26	3	0,5	130	5	6	3	6
	6,3	17,6	4	0,5	164	6	7	4	10
	10,0	11	6	1,0	217	7	9	6	17
	15,1	7,4	8	1,0	283	8	14	8	24
	18,3	6	9	1,0	322	9	16	9	29
<b>125</b>	3,1	41	3	0,5	110	4	5	3	4
	3,9	33	3	0,5	124	5	6	3	5
	4,8	26	4	0,5	140	5	6	4	7
	7,1	17,6	5	1,0	176	6	7	5	12
	11,4	11	7	1,0	237	7	11	7	19
	17,1	7,4	10	1,0	307	8	15	10	27
	20,8	6	12	1,5	348	10	18	12	33

## Table for PP



Foundation: 2207, 2208 DIN 16932 German association for welding

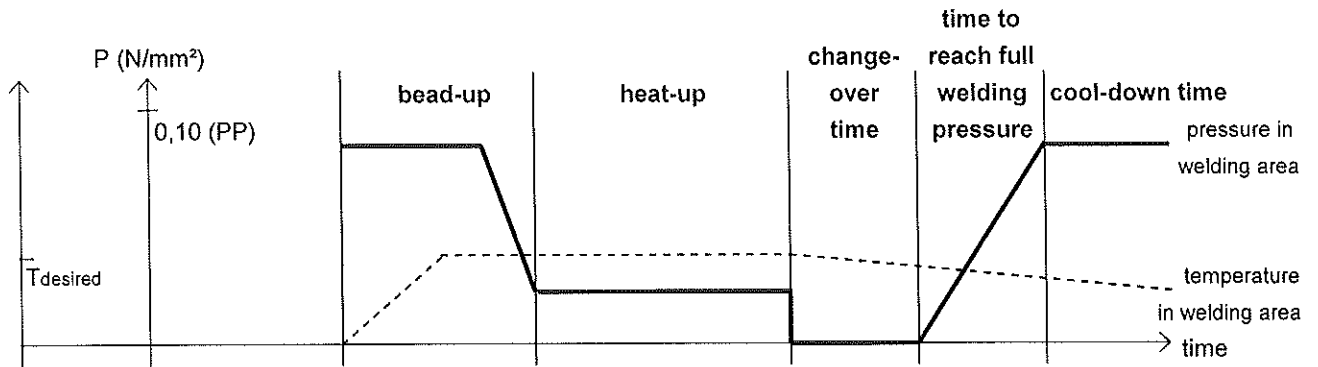
Use for: **4911**

1 bar on manometer: **59 N**

The standard value for heating element temperature is 210° C +/- 10° C.

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

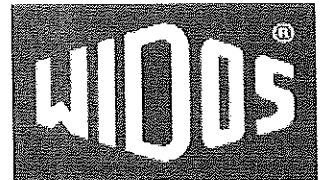
Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] <sup>①</sup>
<b>140</b>	3,5	41	3	0,5	117	5	6	3	4
	4,3	33	4	0,5	131	5	6	4	6
	5,4	26	4	0,5	149	5	6	4	8
	8,0	17,6	6	1,0	189	6	8	6	14
	12,7	11	9	1,0	254	7	12	9	21
	19,2	7,4	13	1,5	332	9	17	13	30
	23,3	6	15	1,5	373	10	20	15	36
<b>160</b>	4,0	41	4	0,5	126	5	6	4	5
	4,9	33	5	0,5	141	5	6	5	7
	6,2	26	6	0,5	162	6	7	6	10
	9,1	17,6	8	1,0	204	6	9	8	15
	14,6	11	12	1,0	277	8	13	12	24
	21,9	7,4	17	1,5	359	10	19	17	34
	26,6	6	19	2,0	405	11	23	19	41
<b>180</b>	4,4	41	5	0,5	133	5	6	5	6
	5,5	33	6	0,5	151	5	6	6	8
	6,9	26	7	0,5	173	6	7	7	12
	10,2	17,6	10	1,0	220	7	10	10	17
	16,4	11	15	1,0	298	8	15	15	26
	24,6	7,4	21	1,5	386	11	21	21	38
	29,0	6	24	2,0	423	12	25	24	44



## Table for PP

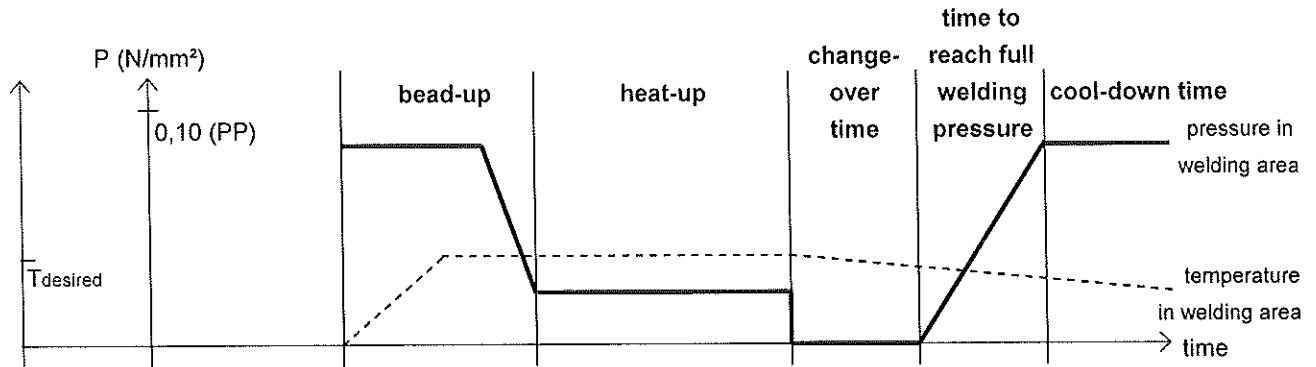


Foundation: 2207, 2208 DIN 16932 German association for welding  
Use for: **4911**

1 bar on manometer: **59 N**

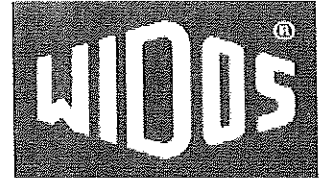
The standard value for heating element temperature is 210° C +/- 10° C.  
The **smaller** the pipe wall the **higher** the temperature.

Additional to the given bead-up force and to the welding force the moving force of the support must be added !



pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min]
<b>200</b>	4,9	41	6	0,5	141	5	6	6	7
	6,2	33	7	0,5	162	6	7	7	10
	7,7	26	8	1,0	185	6	8	8	13
	11,4	17,6	12	1,0	237	7	11	12	19
	18,2	11	18	1,0	320	9	16	18	29
	27,4	7,4	26	2,0	411	11	23	26	42
	33,2	6	30	2,0	456	13	29	30	50
<b>225</b>	5,5	41	7	0,5	151	5	6	7	8
	6,9	33	9	0,5	173	6	7	9	12
	8,6	26	10	1,0	197	6	8	10	15
	12,8	17,6	15	1,0	255	7	12	15	21
	20,5	11	23	1,5	345	9	18	23	32
	30,8	7,4	32	2,0	437	12	26	32	47
	37,4	6	38	2,5	487	14	32	38	55
<b>250</b>	6,2	41	9	0,5	162	6	7	9	10
	7,7	33	10	1,0	185	6	8	10	13
	9,6	26	13	1,0	211	7	9	13	16
	14,2	17,6	18	1,0	272	8	13	18	23
	22,7	11	28	1,5	367	10	20	28	35
	34,2	7,4	40	2,0	463	13	29	40	51

## Table for PP

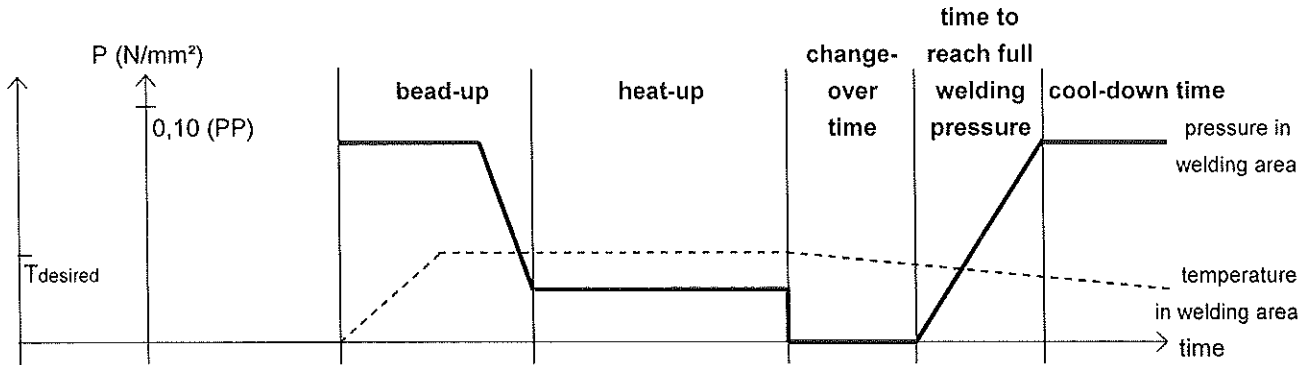


Foundation: 2207, 2208 DIN 16932 German association for welding  
Use for: **4911**

1 bar on manometer: **59 N**

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 !

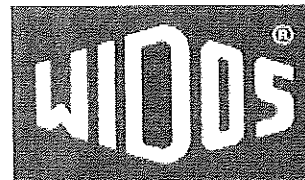


pipe diameter OD [mm]	pipe wall (s) [mm]	SDR	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min] ①
<b>280</b>	6,9	41	11	0,5	173	6	7	11	12
	8,6	33	13	1,0	197	6	8	13	15
	10,7	26	16	1,0	227	7	10	16	18
	15,9	17,6	23	1,0	292	8	14	23	26
	25,4	11	35	1,5	394	11	22	35	39
	38,3	7,4	50	2,5	493	14	33	50	57
<b>315</b>	7,7	41	13	1,0	185	6	8	13	13
	9,7	33	16	1,0	213	7	9	16	16
	12,1	26	20	1,0	246	7	11	20	20
	17,9	17,6	29	1,0	317	9	16	29	28
	28,6	11	44	2,0	420	12	24	44	44
<b>355</b>	8,7	41	17	1,0	199	6	8	17	15
	10,9	33	20	1,0	230	7	10	20	18
	13,6	26	25	1,0	264	7	12	25	22
	20,1	17,6	36	1,5	341	9	18	36	32
	32,2	11	56	2,0	448	13	28	56	48

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 PVDF



Foundation: 2208, 2207 Part 15 German association for welding

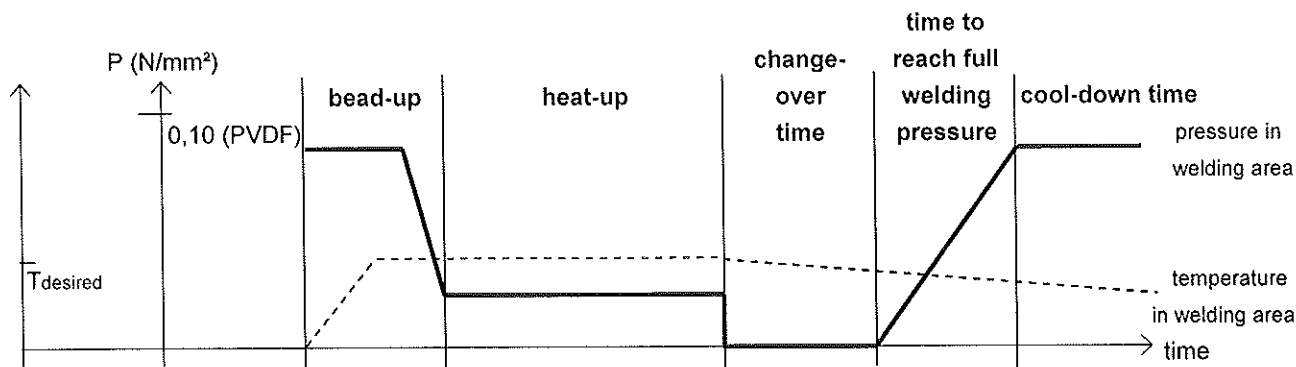
Use for: **4911**

1 bar on manometer: **59 N**

The standard value for heating element temperature is 240° C +/- 8° 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 !



pipe diameter OD [mm]	pipe wall (s) [mm]	bead-up pressure [bar]	circular bead min. [mm]	heat-up time [s]	max. change-over time [s]	time to reach welding pressure [s]	welding pressure [bar]	cool-down time [min]
<b>90</b>	2,8	2	0,5	68	3	4	2	5,5
	4,3	2	0,5	83	3	4	2	7,0
	5,4	3	0,5	94	3	5	3	8,5
<b>110</b>	3,4	2	0,5	74	3	4	2	6,0
	5,3	3	0,5	93	3	5	3	8,5
	6,6	4	0,6	106	4	5	4	10,0
<b>125</b>	3,9	3	0,5	79	3	4	3	6,5
	6,0	4	0,6	100	4	5	4	9,0
<b>140</b>	4,3	4	0,5	83	3	4	4	7,0
	6,7	5	0,6	107	4	6	5	10,0
<b>160</b>	4,9	5	0,5	89	3	5	5	8,0
	7,7	7	0,7	117	4	6	7	11,0
<b>180</b>	5,5	6	0,5	95	4	5	6	8,5
	8,6	8	0,8	126	4	6	8	12,5
<b>200</b>	6,2	7	0,6	102	4	5	7	9,5
	9,6	10	1,0	136	4	7	10	13,5
<b>225</b>	6,9	9	0,7	109	4	6	9	10,5
	10,8	13	1,0	148	4	7	13	15,0
<b>250</b>	7,7	10	0,7	117	4	6	10	11,0
	11,9	16	1,1	159	4	8	16	16,5
<b>280</b>	8,6	13	0,8	126	4	6	13	12,5
<b>315</b>	9,7	16	1,0	137	4	7	16	13,5



## 7. Maintenance and repair

### 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 work and the maintenance tools.

### 7.1. Maintenance and inspection, repair



All maintenance and repair work have to be basically performed with the machine in off position.

During this the machine has to be secured against unauthorized switching on.

Prescribed maintenance and inspection work should be performed in time.

The DVS gives the advice of inspection work after 1 year.

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

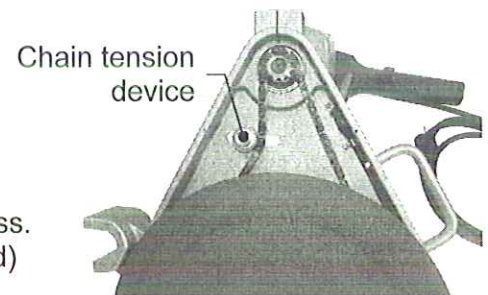
The work should be performed at the WIDOS GmbH company or by an authorized partner.

### 7.2. Clamping elements

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

### 7.3. Planer

- Check the chain tension of the linkage in the planer and grease it regularly.
- Dismount the cover to get to the linkage. The chain must be tensioned hand-tight.
- Do not lay the planer on its blades.
- 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!).
- Check the working of the safety micro switch.



### 7.4. Storing

- The cylindrical waves of the basic machine are to be kept free from dirtiness and need to be covered with a thin oil film if they are not being used.
- Store machine dry.

## 7.5. How to check the hydraulic oil level

Check the oil level in the hydraulic system regularly.

- Detach the red cover screw on the top of the tank.
- Pull out the integrated oil dipstick, clean it with a dry tissue and insert it back into the tank.
- Then turn out again and check the oil level.
- It must be between the marks. If the oil level is under the marks, add oil of the quality (HLDP 32).

## 7.6. Used hydraulic oil

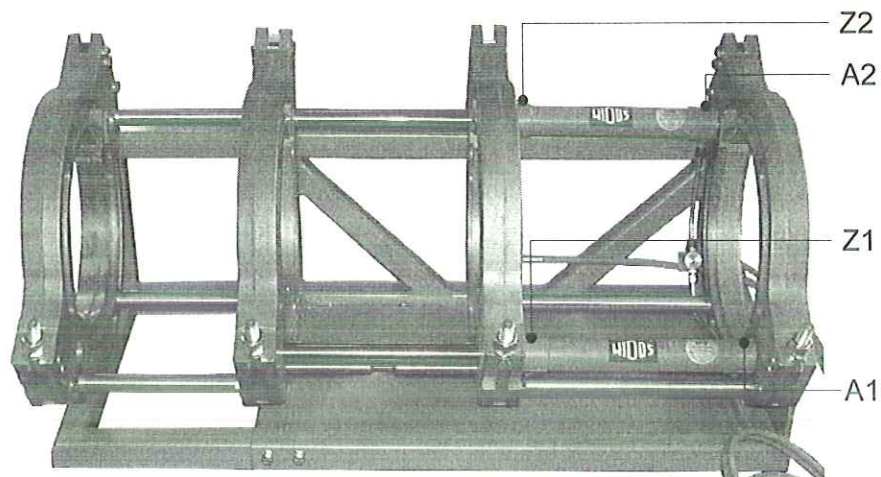
Only use **HLPD 32**.

Features: protection against corrosion, resistance to ageing, abrasion-reducing additives, high carrying capacity and particularly water repellent.



The hydraulic oil has to be handled properly and to be disposed of.

## 7.7. How to vent the hydraulic cylinders



- Venting the hydraulic cylinder is not required, if
  - the hoses have been disconnected from the quick-action couplings at the control unit because the remaining oil in the hose is being kept by valves and for this reason no air can enter.
- The hydraulic cylinder **must be vented** if
  - there has been too less oil in the tank and air has been attracted.
  - there were leaky spots at the hoses or in the connections.
  - the hoses were unscrewed from the basic machine.
- Eliminate the cause of the air entrance.
- Open the machine completely.
- First unscrew the lower „vent screw (Z1 for closing“ (left hand side).
- Connect the transparent venting hose and insert it in the collecting vessel of the aggregate.
- Close until there is no more air visible in the venting hose.

- Tighten the venting screw (Z1) again.
- Close the machine completely.
- Unscrew the lower „venting screw (A1) for opening“ (right-hand side).
- Connect the transparent venting hose and insert it in the collecting vessel of the aggregate.
- Press the valve lever to the left and drive the carriage together until there is no air visible in the venting hose.
- Afterwards tighten the screw (A1) again.
- When the venting process at the lower vent screws is completed, repeat the process at the upper „vent screw (Z2) for closing“ (left-hand side), as well as at the upper „vent screw (A2) for opening“ (right-hand side).



The lower venting screws must always be vented in the first position because there is a direct link between the upper and the lower cylinder. If there is still air in the lower cylinder this will ascent in the upper cylinder under pressure.

## 7.8. 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

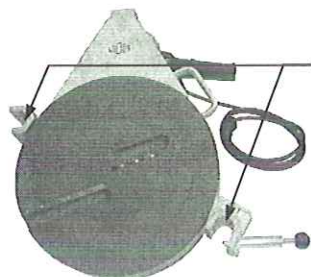
The transport of machine is in a packing box.

In both box there are partitions in which the component elements of the machine fit in such a way that they cannot be moved.

- Put the elements into the box in such a way that they are fitting in the holders.
- The hydraulic hoses at the basic machine should not be unscrewed (air penetration).
- Make sure that the hydraulic hoses and cables are not being squeezed.
- Handle the machine with care.
- Do not tilt the hydraulic aggregate because oil may come out.
- Protect from heavy shocks and impacts.
- Make sure that the box cover is well closed.
- Care was taken to build the transport boxes according to lightweight construction.
- Be always careful while using automatic handling and carrying machines.
- Transport the planer and heating element as possible into protective box



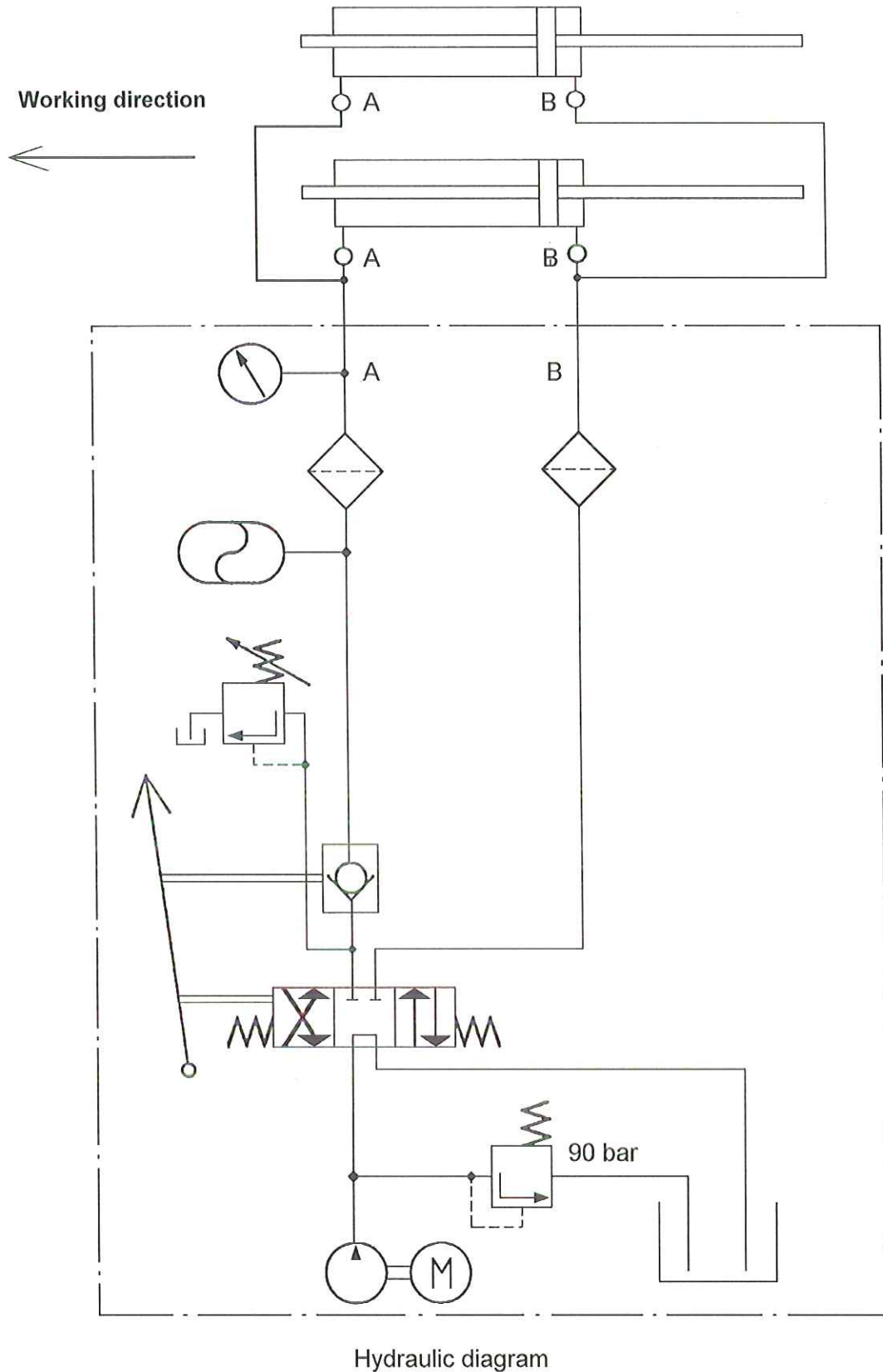
During the transport of the machine there may be cold weldings between the piston rod and the eyes of the planer shell. These spots on the piston rod may damage the sealing.

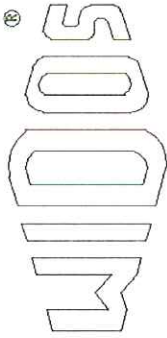


Therefore the eyes must be lubricated with PTFE-spray before transport!

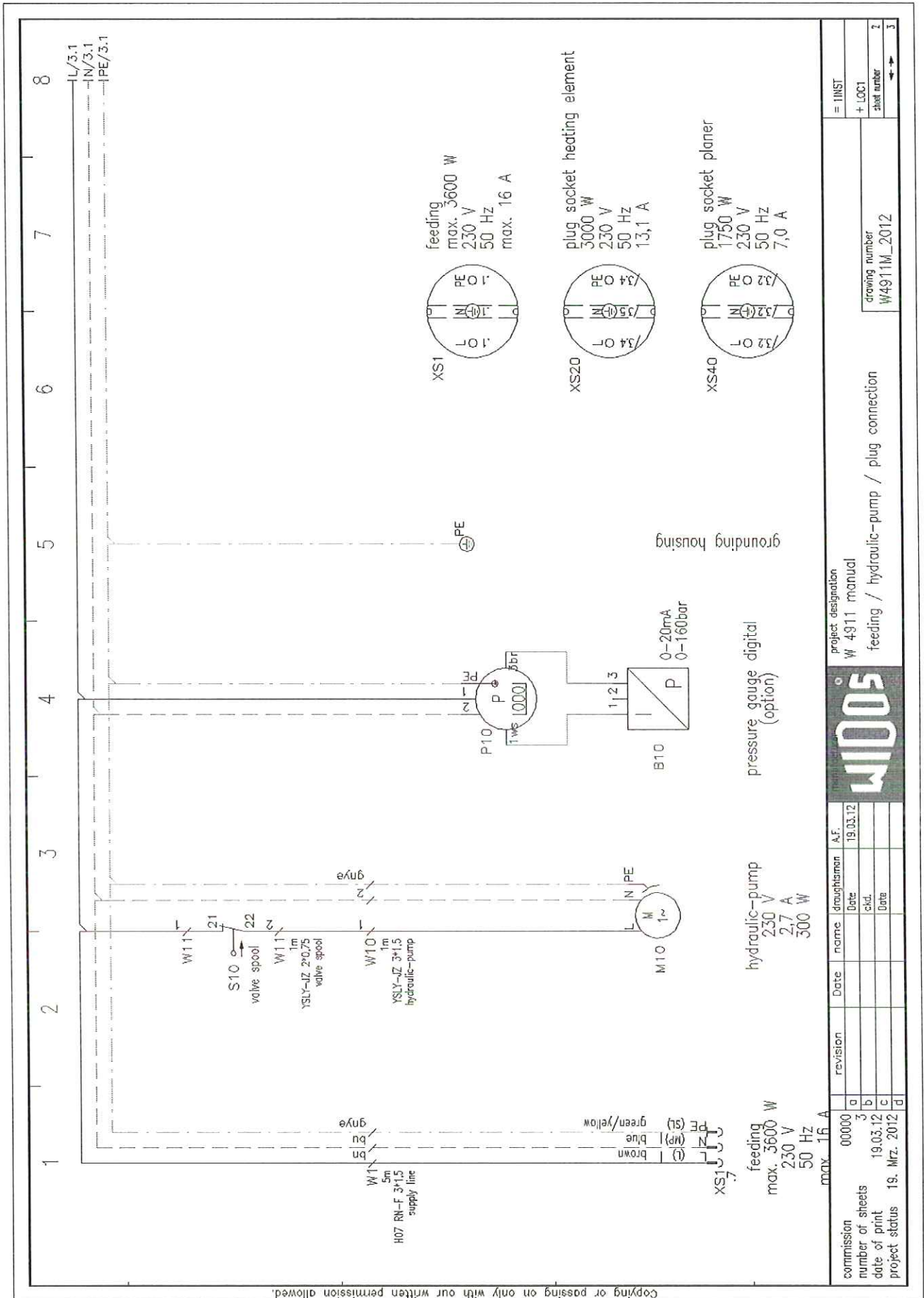


## 9. Electric and hydraulic diagrams



	<p><b>WIDOS GmbH</b> Kunststoffschweißtechnik Plastic Welding Technology</p>	<p>Einsteinstrasse 5 D-71254 Ditzingen Tel.: +49 (0) 7152 / 9939-0 Fax: +49 (0) 7152 / 9939-40 <a href="http://www.widos.de">http://www.widos.de</a></p>	<p>circuit diagram</p>	<p>project designation    W 4911 manual machine type            W4911M – 2012 number of sheets        3 Date                        19.03.12</p>	<p>commission            00000 number of sheets     3 date of print          19.03.12 project status         19. Mrz. 2012</p>	<p>Date            19.03.12 draughtsman    AF.</p>	<p>Date            19.03.12 eid.</p>	<p>Date            19.03.12 eid.</p>	<p>commission            00000 number of sheets     3 date of print          19.03.12 project status         19. Mrz. 2012</p>	<p>project designation W 4911 manual Job number            00000 drawing number        W4911M_2012</p>	<p>sheet number            0 calculation sheet        3 number of sheets        3</p>
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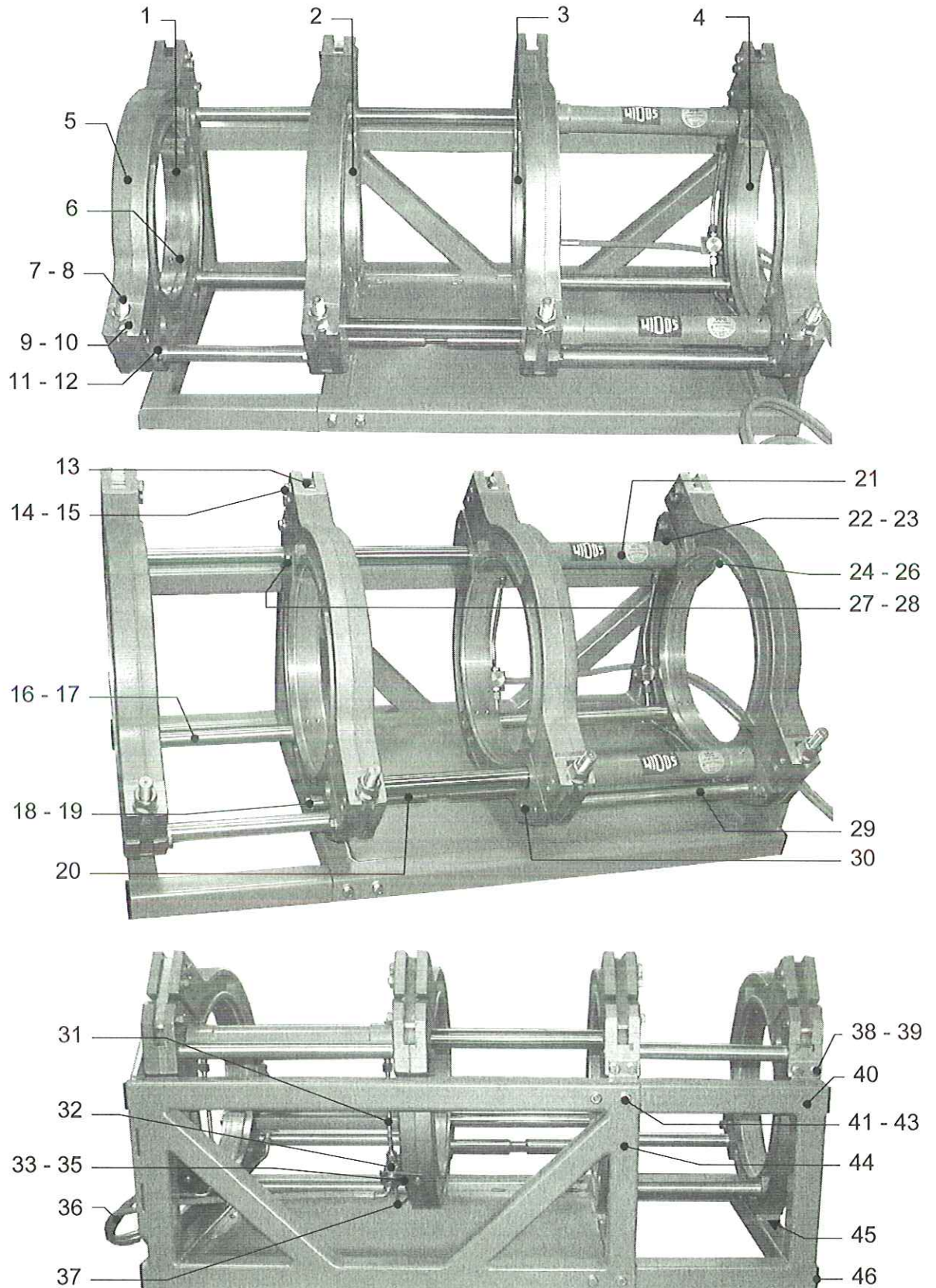
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## 10. Spare parts list

### 10.1. Basic machine



## Basic machine WIDOS 4911

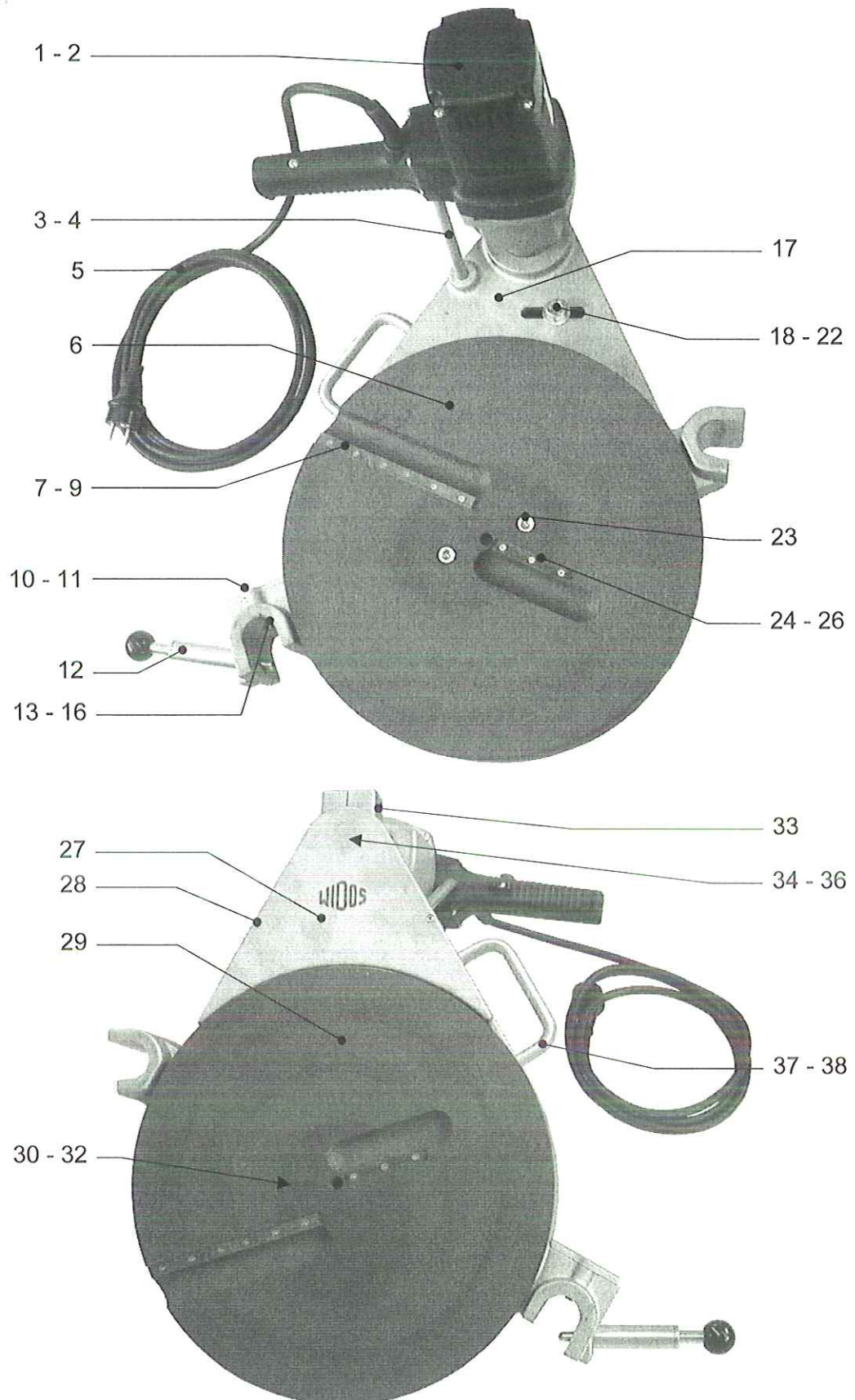
Pos.	Name	Piece	Art.-No.
1	Lower outer clamping ring, fixed	1	2181101
2	Lower inner clamping ring, fixed	1	2181102
3	Lower inner clamping ring, flexible	1	2181103
4	Lower outer clamp, flexible	1	2181104
5	Upper clamping ring	4	2181105
6	Thread insert M 6	8	GEW-M6
7	Spindle	4	2181112
8	Bushing	4	2181118
9	Collar nut M20 DIN 6331	4	6331T
10	Washer M 20 DIN 125	4	0125T
11	Hexagon-head screw M 12x60 DIN 933	4	0933L060
12	Washer M12 DIN 125	4	0125L
13	Rotatable lug	4	2181109
14	Hexagon-head screw M 12x60 DIN 933	12	0933L060
15	Washer M12 DIN 125	12	0125L
16	Tension rod short	3	2181108
17	Flat head screw M 12x35 DIN 7991	12	7991L035
18	Hexagon-head screw M 12x16 DIN 933	2	0933L016
19	Washer M 12 DIN 134	2	0134L
20	Tear off bar for heating element	1	2181210
21	Hydraulic cylinder	2	216106
	Gasket set for cylinder	2 set	D216106
22	Retainer ring 6x9,3x1	4	D6x9,3
23	Pan-head screw M 6x10 DIN 912	4	0912F010
24	Thrust washer for cylinder	2	2181113
25	Hexagon-head screw M 12x50 DIN 933	2	0933L050
26	Washer M12 DIN 6340	2	0125L
27	Hexagon-head screw M 12x40 DIN 933	2	0933L040
28	Washer M12 DIN 125	2	0125L
29	Tension rod long	3	2181208
30	Flat head screw M 12x35 DIN 7991	6	7991L035
31	Hydraulic hose, short	2	2161013
32	Filter	2	V092114
33	Holder for filter	2	092120
34	Washer M8 DIN 125	2	0125H
35	Hexagon-head screw M 8x20 DIN 933	2	0933H020
36	Hose bunch	1	VSCHL4900
37	Hydraulic hose, long	2	2181007
38	Hexagon-head screw M 10x25 DIN 933	4	0933J025
39	Washer M 10 DIN 125	4	0125J
40	Basic frame, part 2	1	2181107
41	Terminal strip	3	2181114
42	Hexagon-head screw M 10x30 DIN 933	6	0933J030



## Basic machine WIDOS 4911

Pos.	Name	Piece	Art.-No.
43	Washer M10 DIN 125	6	0125J
44	Basic frame, part 1	1	2181206
45	Pan-head screw M 12x35 DIN 912	4	0912L035
46	Protective cap 40 x 30	6	J0203
--	Adapter OD 315	1 set	3808315
--	Reducer inserts OD 90 - 280	1 set	3808...*
--	Reduction inserts OD 90 - 280	1 set	3818...*
--	Pan-head screw M 6x30 DIN 912 (to OD 90-250)	8	0912F30X
--	Pan-head screw M 6x25 DIN 912 (to OD 280 / 315)	8	0912F25X
--	Hydraulic oil	2 l	HLPD35
--	Tool bag for 10 parts	1	ZRW
--	Allen key angled size 8 DIN 911 B	1	ZIG08
--	Allen key with T-grip size 5	1	ZIT05
--	Fork wrench size 17 / 19 DIN 3110	1	ZGG17
--	Socket spanner size 30	1	ZRS30
--	Transport case	1	TV4800
	* For ordering necessarily give the dimensions !		

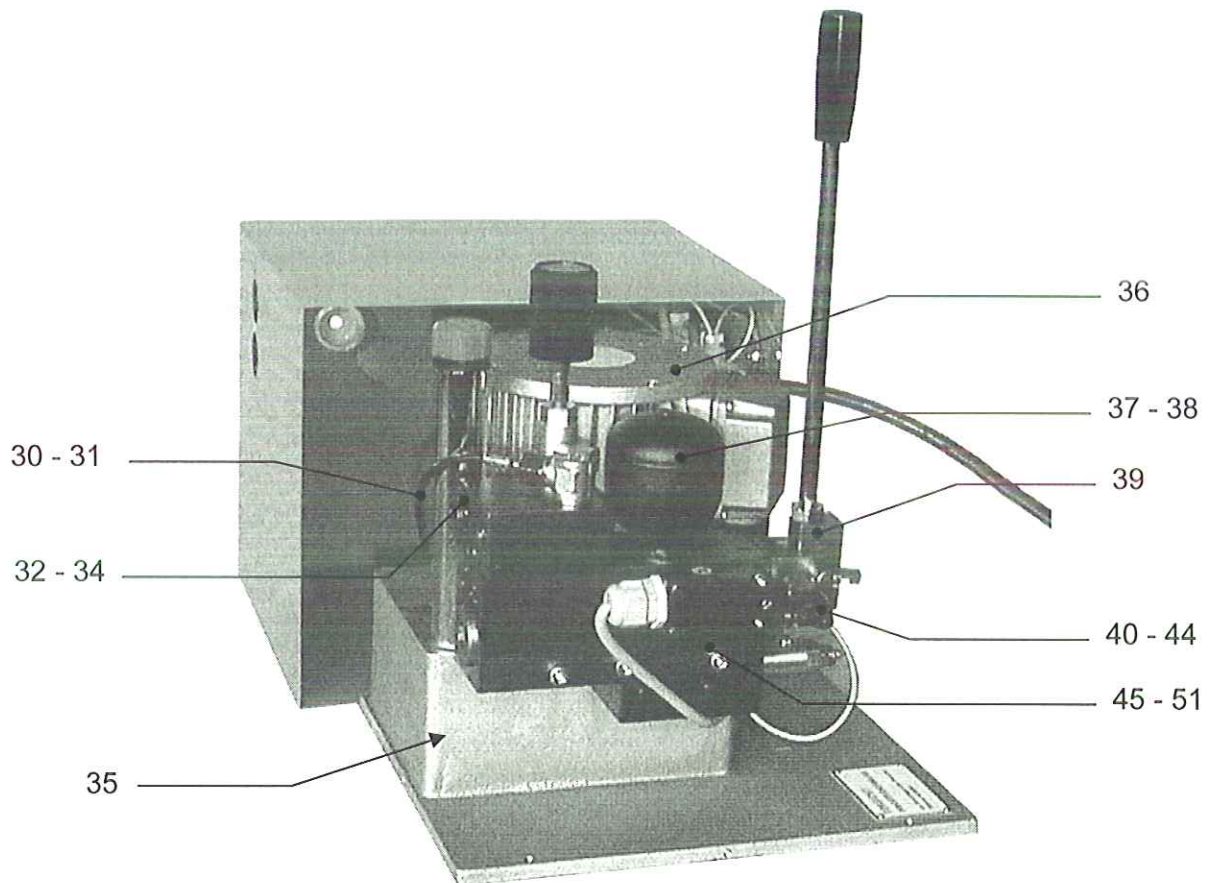
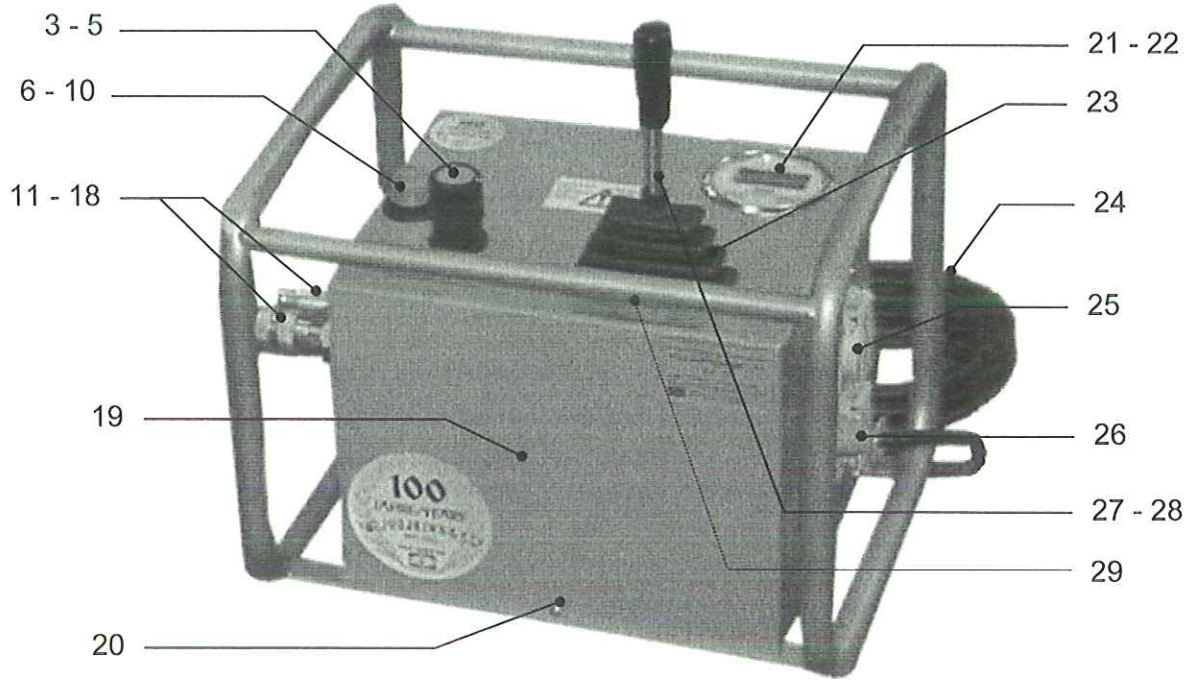
## 10.2. Planer

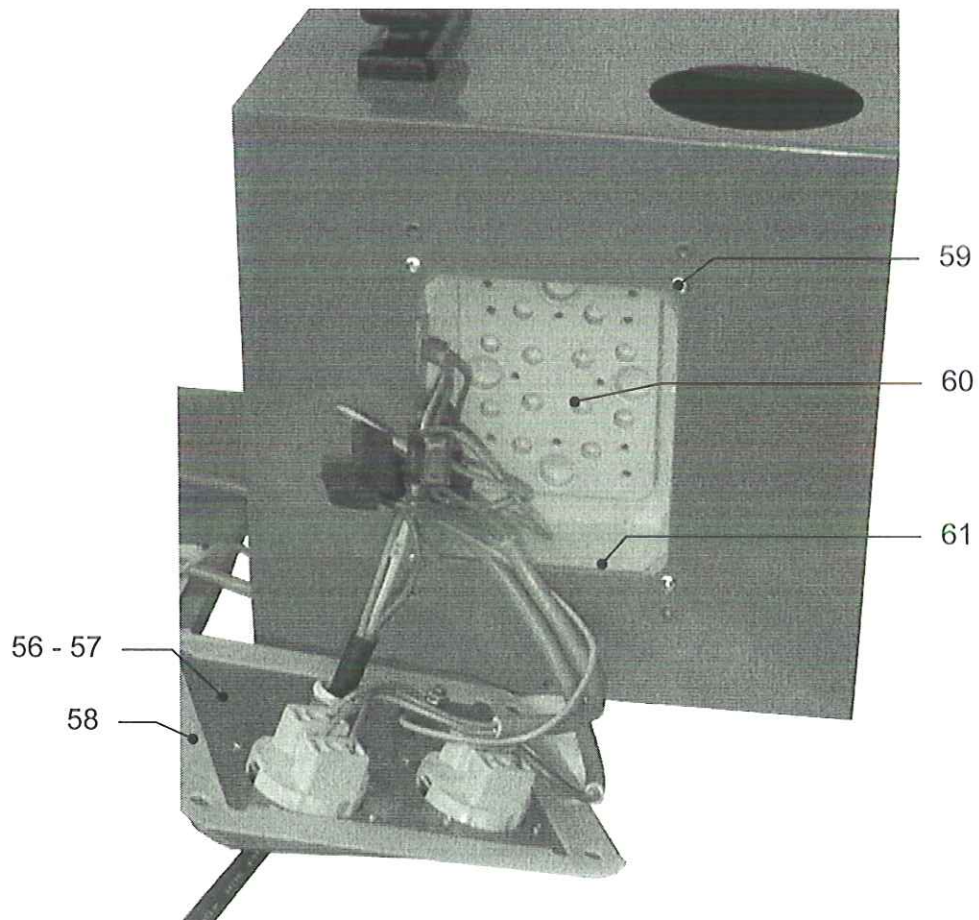
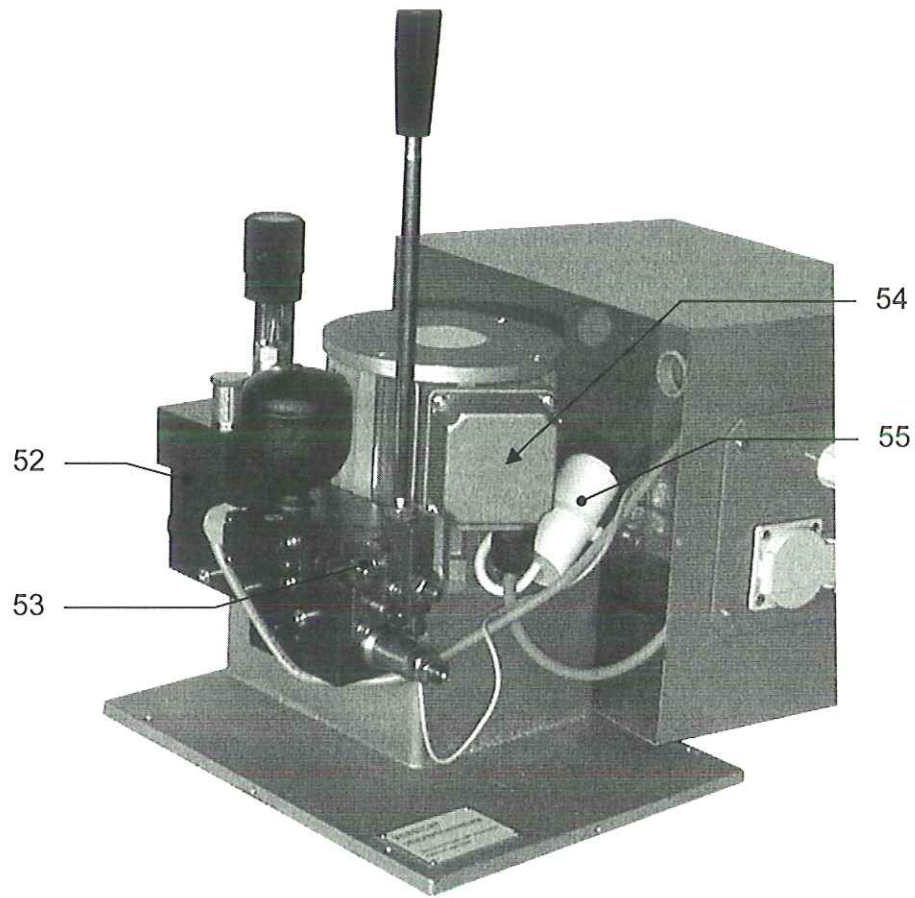


## Planer WIDOS 4911

Pos.	Name	Piece	Art.-No.
1	Motor 1750 W, 230 V	1	AMBF23
2	Motor switch	1	ESMBF16
--	Collector carbon	1 set	EKMBF23
3	Cover tube	1	216431
4	Grub screw M 4x8 DIN 913	1	0913D008
5	Connecting cable with plug	1	EK3220
6	Disc planer, righthand	1	2184102
7	Knife	2	MES170
8	Flat-head screw M 3x8 with Torx-drive	12	0965C008TX
9	Spacer	2	MU170
10	Switch cover for planer	1	091420
11	Flat-head screw M 5x12 DIN 7991	2	7991E012
12	Locking bolt complete	1	091422
13	Limit switch, complete	1	ES0102
14	End sleeve for strands with ring M 4	1	EA05425
15	Tooth lock washer M 4 DIN 6797	1	6797D
16	Lens-head screw M 4x8 DIN 7985	1	7985D008
17	Fastener for planer	1	2184101
18	Chain tensioner screw	1	0914101
19	Ball bearing	2	L6001Z
20	Washer M 12 DIN 125	5	0125L
21	Washer M 12 DIN 433	1	0433L
22	Hexagon nut M 12 DIN 934	1	0934L
23	Pan-head screw M 10x40 DIN 912	2	0912J040
24	Knife	2	MES072
25	Spacer	2	MU072
26	Flat-head screw M 3x8 with Torx-drive	6	0965C008TX
27	Cover	1	2184005
28	Pan-head screw M 4x16 DIN 912	2	0912D016
29	Disc planer, lefthand	1	2184103
30	Ball bearing	1	L6013
31	Flat-head screw M 8x12 DIN 7991	4	7991H012
32	Chain wheel, large 3/8" x 7/32"	1	K38095
33	Pan-head screw M 8x30 DIN 912	2	0912H030
34	Driving wheel 3/8"x7/32" - Z11	1	K38011
35	Chain 3/8" (125 links)	1	K38103
36	Chain joint	1	KSCH38
37	Bow grip	1	BG56520
38	Pan-head screw M 6x16 DIN 912	2	0912F016
--	Torx-screw driver T10	1	ZT10

### 10.3. Hydraulic aggregate



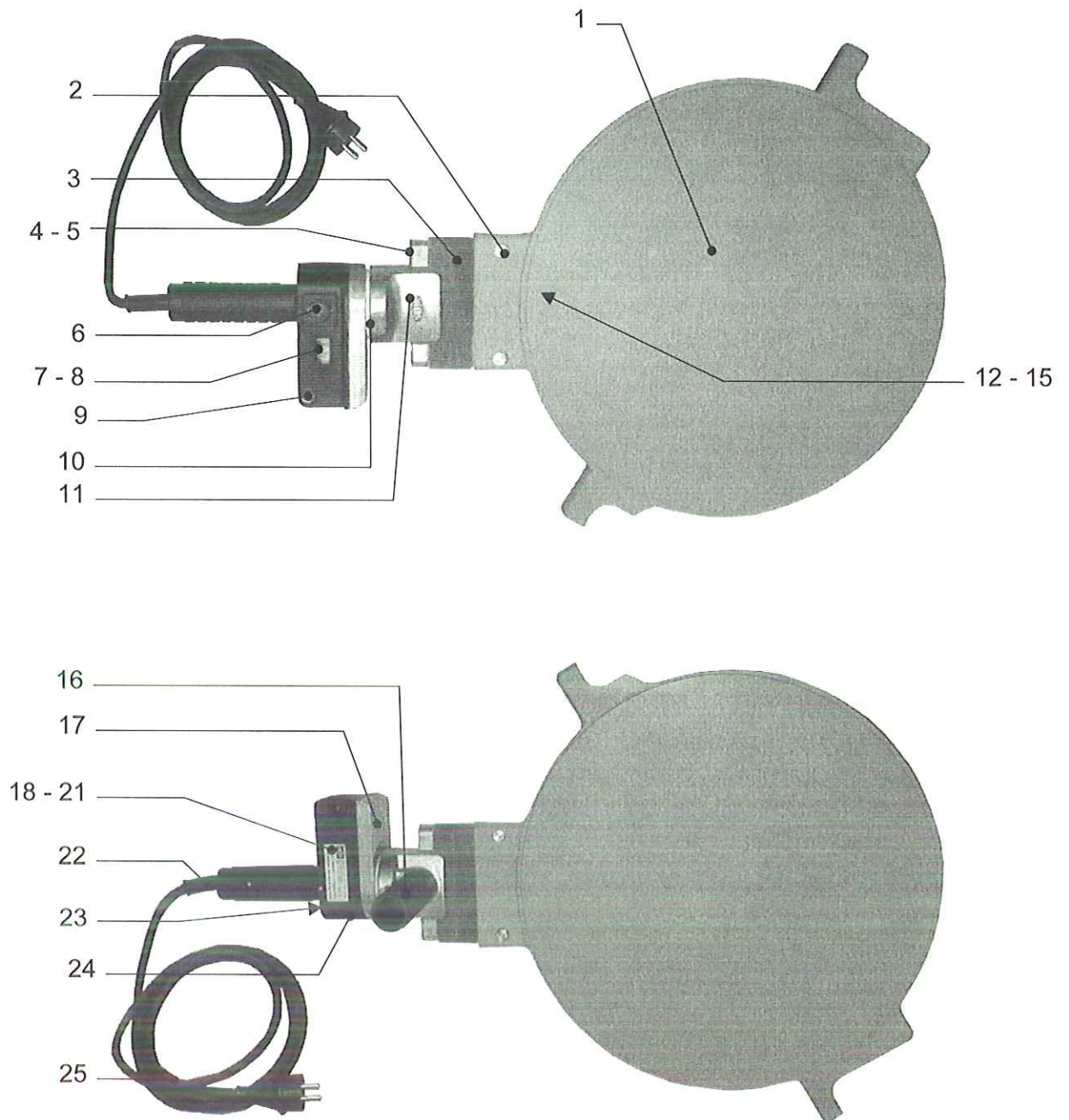


## Hydraulic Aggregate WIDOS 4911

Pos.	Name	Piece	Order no.
1	Protective mounting	1	101042
2	Pan-head screw M6x16 DIN 912	4	0912F016
3	Control knob for pressure setting	1	101022
4	Bush	1	101047
5	Set screw	1	101050
6	Oil dipstick	1	101021
7	Hydraulic oil	1 l	HLPD35
8	Filler neck	1	101026
9	Copper ring 14x18x1.5 DIN 7603	1	D14x18
10	Cable bushing Kt21	2	EKT21
11	Coupling box, flat packing	1	VMU14
12	Synthetic cap for VMU14	1	VKM14
13	Coupling plug, flat packing	1	VST14
14	Synthetic cap for VMST14	1	VKS14
15	Ring for sealing 16x22.7x1.5	2	D16x22,7
16	Screwed connection	2	V101024
17	O-ring 19x1,5	2	D19x1,5
18	Distributor box	1	on request
19	Cover	1	1010021
20	Pan-head screw M4x12 DIN 912	4	0912D012
21	Screwed connection of pressure gauge	1	V042314
22	Pressure gauge	1	101004D
23	Bellows	1	101035
24	Connection cable with plug	1	EK32220
25	Socket	2	EST0701
26	Screwed connection PG 13.5	1	EV0113
27	Valve lever	1	101013
28	Cylinder knob M10	1	101033
29	Plate "Release pressure"	1	SCHD-L
30	Mini hose	1	on request
31	Hose screwing	1	101008
32	Leading-in for tubes size 22	2	EKT22
33	Sinter-filter 15x8 41180	2	101045
34	O-ring 16x2	2	D16x2
35	Pump 1.9 l	1	102103
36	Motor	1	on request
37	Accumulator	1	101006
38	Ring for sealing 16x22.7x1.5	1	D16x22,7
39	Hexagon nut M10 DIN 934	1	0934J
40	Adjusting screw	1	101036
41	Hexagon nut M6 DIN 934	3	0934F
42	Plug-in element P83-1/2"x3/16"	1	101043
43	Bearing block	1	on request
44	Pan-head screw M5x45 DIN 912	2	0912E045
45	Pressure switch	1	ESEK103

**Hydraulic Aggregate WIDOS 4911**

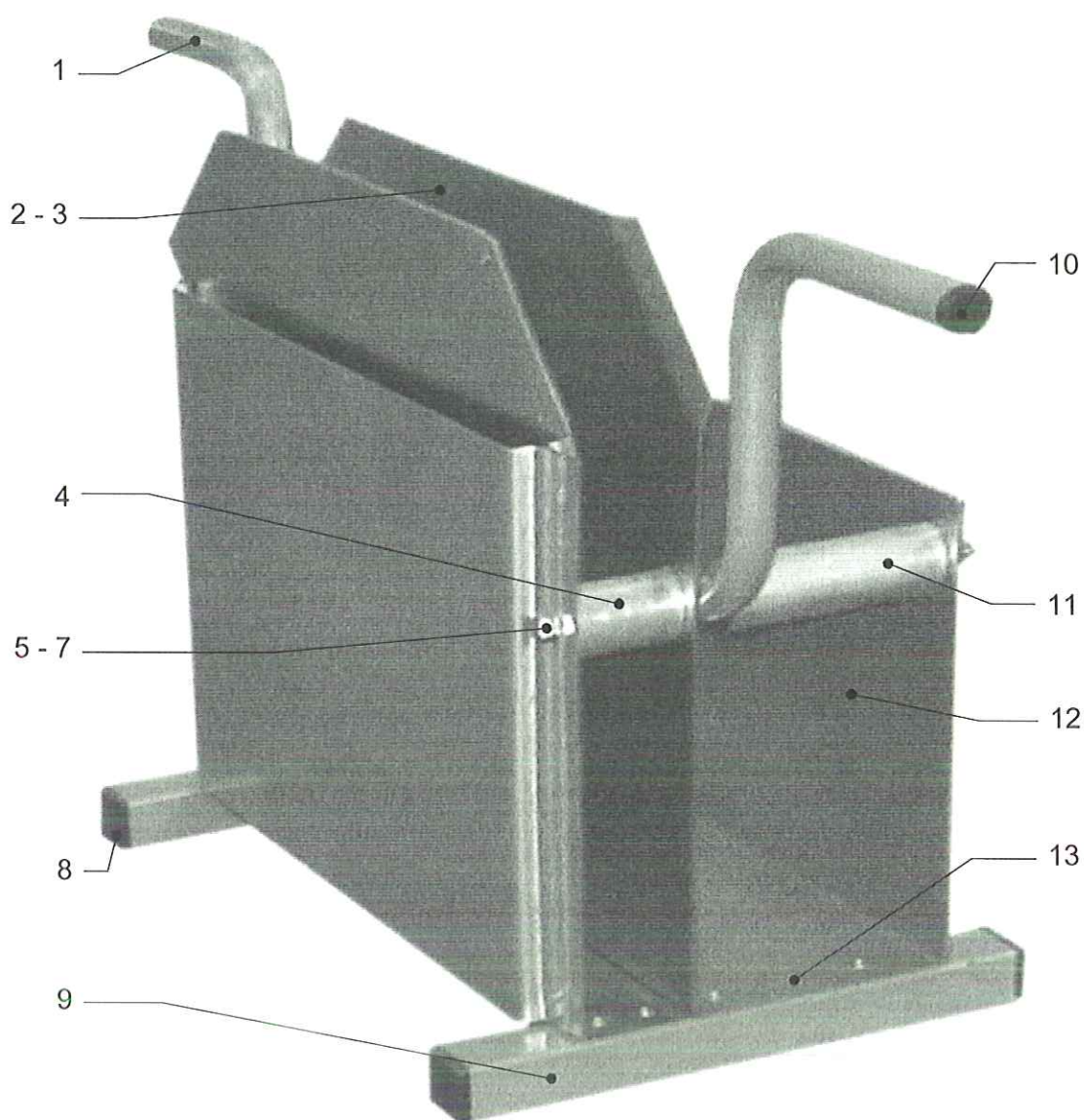
Pos.	Name	Piece	Order no.
46	Pan-head screw M4x25 DIN 84	2	0084D025
47	Angle for pressure switch	1	on request
48	Washer M4 DIN 125	1	0125D
49	Pan-head screw M 4x10 DIN 912	1	0912D010
50	Set screw M5x10 DIN 915	1	0915E010
52	Bolt	1	101038
53	Valve	1	on request
54	Pan-head screw M6x45 DIN 912	4	0912F045
55	Universal RC - link	1	EE0104
56	Capacitor 12,5 µF	1	EK12220
57	Side part	1	1010022
58	Pan-head tapping screw 3.5 x 20	4	7971C020
59	Seal, outside	1	1010023
60	Pan-head screw M4x10 DIN 912	2	0912D010
61	Seal, inside	1	1010024

**10.4. Heating element**



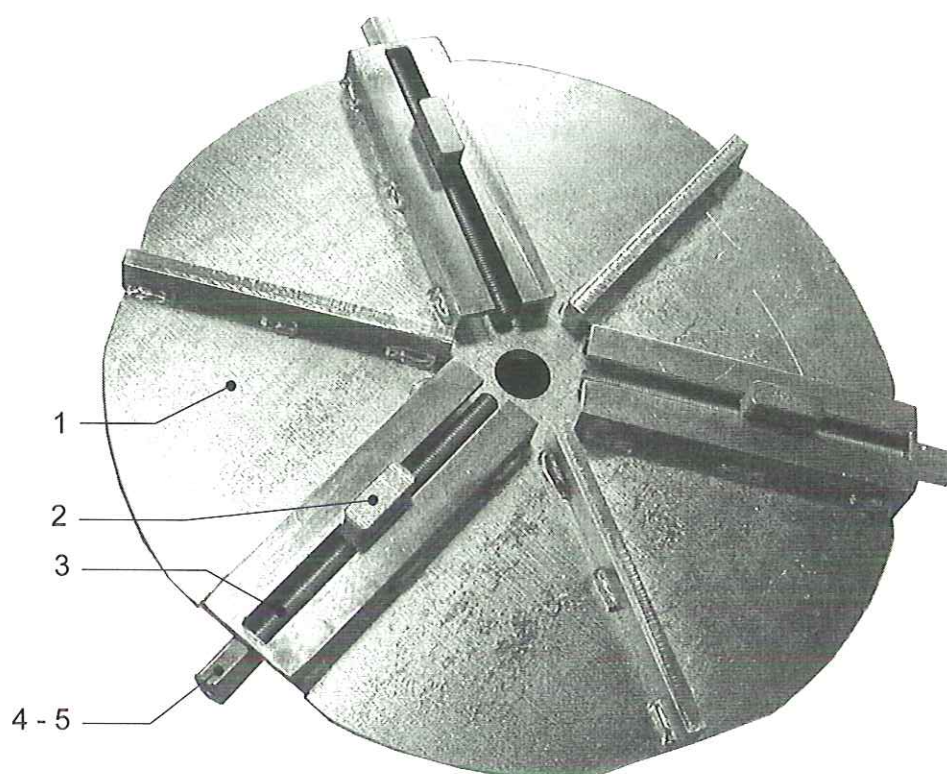
## Heating element WIDOS 4911

Pos.	Name	Piece	Art.-No.
1	Heating element H 4900, 230 V	1	H4911E
	Heating plate new	1	HP4911E
	Heating plate for change	1	HPT4900D
2	Tapped bushing	2	02350491
3	Insulator plate	2	H0902
4	Spring washer M6 DIN 127B	2	0127F
5	Pan-head screw M 6x75 DIN 912	2	0912F075
6	Rocker switch, red lightet	1	H0903
7	Thermo regulator GD4	1	H0908230D
8	Window for grip case	1	H09071
9	Control lamp, green	1	H2105
10	Teflon-conical nipple for heating element	1	H09091
11	Grip joining piece	1	H0909
12	Temperature probe PT1000	1	H09082
13	Probe holder	1	235037
14	Toothedlock washer 14,5 DIN 6797	1	6797D
15	Oval-head screw M 4x8 DIN 7985	2	7985D006
16	Grip	1	H0906
17	Heat sink with TRIAC BTA 216	1	H09081
18	Handle case	1	H0907
19	Lustre terminal	1	on request
20	Oval-head screw 2,9x13 DIN 7981	2	7981C013
21	Strain relief	1	EK3220
22	Antikink grommet	1	EKT08
23	Pan-head screw M 4x70 DIN 912	3	0912D070
24	Oval-head screw C4,2x19 DIN 7981	3	7981D019
25	Connecting cable with plug	1	EK3220

**10.5. Reception box**

## Reception box WIDOS 4911

Pos.	Name	Piece	Art.-No.
1	Bracket	1	211527
2	Heat absorbing steel sheet	1	2185128
3	Insertion for heating element	1	2185123
4	Spacing bolt for heating element	2	214525
5	Hexagon bolt M 8x160 DIN 931	2	0931H180
6	Hexagon domed cap nuts 6AU M 8 DIN 1587	2	1587H
7	Washer M 8 DIN 125	2	0125H
8	Fitting cap 40x30x2	4	J0203
9	Foot-mounting	2	214521
10	Fitting cab Ø20x2	2	J0215
11	Spacing bolt for planer	2	212524
12	Insertion for planer	1	2185122
13	Blind rivet 4x10 DIN 7337	12	7337D010

**10.6. Stub end holder**

**Reception box WIDOS 4911**

Pos.	Name	Piece	Art.-No.
1	Stub end holder OD 355	1	21812281
2	Sliding block	3	21812284
3	Spindle	3	21812282
4	Spindle drive with shaft speed	3	21812283
5	Grub screw M 5x5 DIN 913	6	0913E



# 11. Declaration of conformity

In the sense of the EC-guideline, EG-MRL 2006/42/EG

Corporation

WIDOS GmbH  
Einsteinstr.5  
D- 71254 Ditzingen- Heimerdingen

declares under own responsibility that the product

Plastic welding machine  
**WIDOS 4911**

to which this declaration refers corresponds to the following norms and normative documents:

1. DIN EN ISO 12100 – 1 und 2 (replacement for DIN EN 292 part 1 and 2)  
Safety of machines, basic terminology, gen. design guidelines
2. DIN EN 60204.1  
Electric equipment of industrial machines
3. DIN EN 4413  
Safety technology requirements at fluid technical devices and components
4. EN 60555, EN 50082, EN 55014  
Electro-magnetic resistance

The technical documentation is completely available.

The above-mentioned company will provide the following technical documentation for inspection:

- test certificate
- other technical documentation

Ditzingen - Heimerdingen, the 19.03.12



Martin Dommer (Technical director)