Working Instructions
Translation

Heating element butt welding machine

WIDOS 4911

Keep for further use!
Identification of product

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
Wilhelm Dommer Söhne GmbH
Einsteinstraße 5
D-71254 Ditzingen
Phone: ++49 7152 9939 0
Fax: ++49 7152 9939 40
info@widos.de
http://www.widos.de
Introduction

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.
1. DESCRIPTION OF PRODUCT ........................................................................................................ .. 6
   1.1. Application and prescribed use ................................................................................................ ......... 6
   1.2. Machine overview .............................................................................................................. ................. 6
   1.3. Safety measures ............................................................................................................... ................... 7
   1.4. Conformity .................................................................................................................... ........................ 7
   1.5. Designation of product ........................................................................................................ ................ 7
       1.5.1 Technical Data ................................................................................................................................................... 7
   1.6. Equipment and accessories: .................................................................................................... ........... 9

2. SAFETY RULES .................................................................................................................. ............ 10
   2.1. Explanation of the different symbols .......................................................................................... ...... 10
   2.2. Obligations of the owner ...................................................................................................... ............. 11
   2.3. Obligations of the worker ..................................................................................................... ............. 11
   2.4. Organizational measures .................................................................................................... .......... 11
   2.5. Informal security measures .................................................................................................... .......... 11
   2.6. Instruction of the staff ...................................................................................................... ................. 11
   2.7. Dangers while handling the machine ............................................................................................ .. 12
   2.8. Maintenance and inspection, repair ............................................................................................ .... 12
   2.9. Dangers caused by electric energy ............................................................................................. .... 12
   2.10. Dangers caused by the hydraulics ............................................................................................. .... 12
   2.11. Special dangers ............................................................................................................... .................. 13
       2.11.1 Danger of catching clothes by the planer ................................................................................................... 13
       2.11.2 Danger of noise ................................................................................................................................................ 13
       2.11.3 Danger of combustion at heating element, protective box and welding area .................................... 13
       2.11.4 Danger of stumbling over hydraulic and electric wires ............................................................ .... 13
       2.11.5 Danger of crushing by clamping tool and guideways ............................................................................ 14
   2.12. Structural modifications on the machine ....................................................................................... . 14
   2.13. How to clean the machine ...................................................................................................... .......... 14
   2.14. Guarantee and liability ....................................................................................................... ............... 14

3. FUNCTIONAL DESCRIPTION ........................................................................................................ 15

4. OPERATING AND INDICATING ELEMENTS ................................................................................ 16
   4.1. Elements on the hydraulic aggregate ......................................................................................... 16
   4.2. Basic machine .................................................................................................................. 17
       4.2.1 How to open/close the clamping ring .................................................................................... .... 17
       4.2.2 Separating device for heating element ................................................................................. .... 18
   4.3. Elements at the heating element .............................................................................................. 18
   4.4. Elements at the planer ........................................................................................................ .............. 19
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 Ø = 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

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heating element</td>
</tr>
<tr>
<td>2</td>
<td>Planer</td>
</tr>
<tr>
<td>3</td>
<td>Protective box</td>
</tr>
<tr>
<td>4</td>
<td>Basic machine with clamping tools</td>
</tr>
<tr>
<td>5</td>
<td>Hydraulic aggregate</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Material:</th>
<th>PP, PE, PVDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe diameter range:</td>
<td>outside-Ø = 90 – 355 mm</td>
</tr>
<tr>
<td>Transport box (l x w x h) / weight:</td>
<td>approx. 1380 x 1210 x 820 mm / approx. 77 kg</td>
</tr>
<tr>
<td>Total weight (without packing):</td>
<td>approx. 228 kg</td>
</tr>
<tr>
<td>Protection:</td>
<td>16 A</td>
</tr>
<tr>
<td>Wire cross section:</td>
<td>1,5 mm²</td>
</tr>
<tr>
<td>Emissions</td>
<td>- Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection! - When using the named pipe materials and when welding below 260°C / 500°F no toxicant damp arises.</td>
</tr>
<tr>
<td>Environment:</td>
<td>- keep the workshop clean (especially the welding area must be clean) - 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. - avoid humidity, if necessary put up a tent - avoid strong sun beams - if it is windy shut the pipe endings.</td>
</tr>
</tbody>
</table>
1.5.1.2 **Planer**

<table>
<thead>
<tr>
<th>Motor:</th>
<th>monophase-alternating current-motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power:</td>
<td>1,75 kW</td>
</tr>
<tr>
<td>Voltage:</td>
<td>230 V (± 10 %)</td>
</tr>
<tr>
<td>Current:</td>
<td>7 A</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz (± 10 %)</td>
</tr>
<tr>
<td>Revolutions per minutes, $n_2$ of planer:</td>
<td>approx. 27 rpm</td>
</tr>
<tr>
<td>Elements:</td>
<td>- Switch on / off with fixing device</td>
</tr>
<tr>
<td></td>
<td>- Safety micro switch</td>
</tr>
<tr>
<td></td>
<td>- Connecting cable with plug</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 26 kg</td>
</tr>
</tbody>
</table>

1.5.1.3 **Heating element**

| Power:   | 3 kW                                  |
| Voltage: | 230 V (± 10 %)                        |
| Current: | 13,1 A (± 10 %)                       |
| Frequency: | 50 Hz                        |
| Outside-Ø: | 390 mm                                |
| Surface: | Anti-stick coated                    |
| Elements: | Electronic temperature control      |
|          | Control lamps, switch on / off       |
|          | Connecting cable with plug           |
| Weight: | approx. 12 kg                        |

1.5.1.4 **Hydraulic aggregate**

| Feeding: | max. 3,6 kW                         |
| Fuse protection: | max. 16 A                          |
| Voltage: | 230 V (± 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

<table>
<thead>
<tr>
<th>Dimension (l x w x h):</th>
<th>1185 x 705 x 580 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduction insert:</td>
<td>Dimensions can be selected</td>
</tr>
<tr>
<td>Material frame:</td>
<td>Machine steel</td>
</tr>
<tr>
<td>Material reduction inserts:</td>
<td>Aluminum</td>
</tr>
<tr>
<td>Weight:</td>
<td>approx. 152 kg</td>
</tr>
<tr>
<td>Cylinder-Ø:</td>
<td>40 mm</td>
</tr>
<tr>
<td>Piston rod-Ø:</td>
<td>35 mm</td>
</tr>
<tr>
<td>Length of stroke of cylinder:</td>
<td>285 mm</td>
</tr>
<tr>
<td>Max. force: (F=P*A)</td>
<td>5900 N (at 100 bar)</td>
</tr>
<tr>
<td>Velocity of piston rod:</td>
<td>5.4 cm/s</td>
</tr>
</tbody>
</table>

Stock numbers for component parts see spare parts list

### 1.6. Equipment and accessories:

The following accessories are part of the first delivery:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tool bag for 10 parts</td>
</tr>
<tr>
<td>1</td>
<td>Socket wrench, size 30</td>
</tr>
<tr>
<td>1</td>
<td>Allan key tilted, size 8</td>
</tr>
<tr>
<td>1</td>
<td>Allan key with T-grip, size 5</td>
</tr>
<tr>
<td>1</td>
<td>Fork wrench, size 17 / 19</td>
</tr>
<tr>
<td>1</td>
<td>Torx-screw driver, T10</td>
</tr>
<tr>
<td>optional</td>
<td>- Reduction inserts,</td>
</tr>
<tr>
<td></td>
<td>- Stub end holder</td>
</tr>
<tr>
<td></td>
<td>- Roller brackets for the pipes</td>
</tr>
</tbody>
</table>
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.
4. Operating and indicating elements

4.1. Elements on the hydraulic aggregate

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adjusting screw for pressure relief valve</td>
<td>- For the limitation of the hydraulic pressure to the desired value</td>
</tr>
</tbody>
</table>
| 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  
- **in the middle** (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

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

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Control lamp green</td>
<td>- There are three different states:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>off</strong>: signalizes that the heating element is not heated up at</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the moment or that it cools down</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>blinking</strong>: the heating element temperature is maintained</td>
</tr>
<tr>
<td></td>
<td></td>
<td>by a certain pulse-position ratio</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- <strong>on</strong>: signalizes that the heating element is heated up at the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>moment. It has not yet reached the desired temperature</td>
</tr>
<tr>
<td>17</td>
<td>Setting screw</td>
<td>- For regulating the temperature of the heating element</td>
</tr>
<tr>
<td>18</td>
<td>On/off-switch with red lamp</td>
<td>- As soon as the heating element is switched on, the red control lamp</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lightens</td>
</tr>
<tr>
<td>19</td>
<td>Connecting cable with plug</td>
<td>- Connecting with a socket of hydraulic aggregate</td>
</tr>
</tbody>
</table>
### Elements at the planer

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

Reduction insert narrow, flush with the outside (for elbows, T-pieces)

Reduction insert, axial (for pipes)

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.

<table>
<thead>
<tr>
<th>Warning</th>
<th>There is the danger that the planer draws in clothes!</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>As soon as the planer is switched on it will run immediately when the security micro switch has been pressed.</td>
</tr>
<tr>
<td></td>
<td>Do not hold the planer on its front sides in any case.</td>
</tr>
<tr>
<td>Warning</td>
<td>Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection!</td>
</tr>
<tr>
<td></td>
<td>In case there are too many chips stop planer and remove them.</td>
</tr>
<tr>
<td></td>
<td>Necessarily take care that no chips will be drawn-in between the planer discs.</td>
</tr>
</tbody>
</table>
- 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 x 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 dissemble 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

You can access our website and select our welding tables via the qr code shown here. Select “WIDOS 4900” and the corresponding material (PE / PP / PVDF).
### Report for heated plate welding of tubular components

<table>
<thead>
<tr>
<th>Employer</th>
<th>Contracting company</th>
<th>Welding machine:</th>
<th>Weather conditions</th>
<th>Protective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Make:</td>
<td>1 = sunny</td>
<td>1 = none</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Type:</td>
<td>2 = dry</td>
<td>2 = screen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Machine no.:</td>
<td>3 = rain or snowfall</td>
<td>3 = tent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Year of manufacture:</td>
<td>4 = wind</td>
<td>4 = heating</td>
</tr>
</tbody>
</table>

In the case of multiple designations follow the figures as above:
(e.g. 34 = rain and wind)

<table>
<thead>
<tr>
<th>Weld no.</th>
<th>Date</th>
<th>Pipe size Ø d x s mm</th>
<th>Heating element temperature 1) °C min / max</th>
<th>Movement pressure bar</th>
<th>Joining pressure bar</th>
<th>adjusted values 2) bead-up bar</th>
<th>heat-up time 3) s</th>
<th>time to complete joining pressure 3) s</th>
<th>Change-over time 3) s</th>
<th>Cooling time under joining pressure 3) s</th>
<th>Ambient temperature °C</th>
<th>Code no. Protect measures</th>
<th>Remarks</th>
</tr>
</thead>
</table>

Signature of welder: Date and signature of the welder inspector:

1) From normal internal, frequency according to 4.2.
2) The settings are the sum of the movement pressure and the indications of the manufacturer of the welding machine concerning equalization and joining pressure.
3) The measured values must be entered.
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

Hydraulic diagram

Working direction
circuit diagram

project designation W 4911 manual / 355 Compact A
machine type W4911M / 355 Compact A

number of sheets 3
Date 24.10.18
10. Spare parts list

You can access our website and select our spare parts lists via the qr code shown here. Select "4911"
### 11. Declaration of conformity

Issuing the declaration of conformity with regard to complying with the basic requirements and assembling the technical documentation is in the sole responsibility of:

<table>
<thead>
<tr>
<th>Manufacturer / Installation company:</th>
<th>WIDOS Wilhelm Dommer Söhne GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>WIDOS GmbH</td>
</tr>
<tr>
<td></td>
<td>Einsteinstr. 5</td>
</tr>
<tr>
<td></td>
<td>D-71254 Ditzingen</td>
</tr>
</tbody>
</table>

Subject of the present declaration is the following device:

- **Product name:** Heating element butt welding machine
- **Model name:** WIDOS 4911
- **Machine number:**
- **Year of construction:**

For the stated device we herewith declare that it complies with the basic requirements stipulated in the following designated harmonizing regulations:

**in the sense of the EC guideline EC-Machinery Directive 2006/42/EC**

Statement of the relevant harmonizing standards referred to, or indication of the specifications that the conformity is declared for:

<table>
<thead>
<tr>
<th>Standard</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIN EN ISO 12100</td>
<td>Safety of machines, basic concepts, general layout guidelines</td>
</tr>
<tr>
<td>DIN EN 60204.1</td>
<td>Electric equipment of industrial machines</td>
</tr>
<tr>
<td>DIN EN 60555, DIN EN 50082, DIN EN 55014</td>
<td>Electro-magnetic resistance</td>
</tr>
<tr>
<td>DIN EN 1005-2</td>
<td>Safety of machinery- Human physical performance</td>
</tr>
<tr>
<td>DIN EN 614-1</td>
<td>Safety of machinery- Ergonomic design principles</td>
</tr>
<tr>
<td>EN 1037 (ISO 14118)</td>
<td>Safety of machinery - Prevention of unexpected start-up</td>
</tr>
<tr>
<td>EN ISO 4413</td>
<td>Hydraulic fluid power- General rules and safety requirements for systems and their components</td>
</tr>
<tr>
<td>DVS 2208</td>
<td>Welding of thermoplastics - Machines and devices for the heated tool welding of pipes, piping parts and panels</td>
</tr>
<tr>
<td>ISO 12176-1</td>
<td>Plastics pipes and fittings- Equipment for fusion jointing polyethylene systems – Part 1: Butt fusion</td>
</tr>
</tbody>
</table>

Entitled to compile the technical documentation:

<table>
<thead>
<tr>
<th>Name:</th>
<th>WIDOS Wilhelm Dommer Söhne GmbH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address:</td>
<td>Einsteinstr. 5</td>
</tr>
<tr>
<td></td>
<td>D-71254 Ditzingen</td>
</tr>
</tbody>
</table>

Signed on behalf of the company:

<table>
<thead>
<tr>
<th>Name, first name:</th>
<th>Dommer, Martin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function:</td>
<td>Technical director</td>
</tr>
</tbody>
</table>

Heimerdingen, 20.05.2019

This declaration is to certify the compliance with the mentioned harmonizing regulations, however does not include any assurance of properties.