Working instructions
Translation
Heating element-butt welding machine

WIDOS 4002

Keep for further use!
## Identification of product

<table>
<thead>
<tr>
<th>Model:</th>
<th>Workshop machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>WIDOS 4002</td>
</tr>
<tr>
<td>Serial number:</td>
<td>see type plate</td>
</tr>
</tbody>
</table>

## Customer entries

<table>
<thead>
<tr>
<th>Inventory- No.:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Location:</td>
<td></td>
</tr>
</tbody>
</table>

## Order of spare parts and after sales service

**Address of manufacturer**

WIDOS  
Wilhelm Dommer Söhne GmbH  
Einsteinstr. 5  
D - 71254  Ditzingen

Phone: +49 7152 9939 0  
Fax: +49 7152 9939 40  
E-mail: [info@widos.de](mailto:info@widos.de)  
Internet: [www.widos.de](http://www.widos.de)
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 in making our products and working instructions continuously better, we kindly ask you to inform us about problems and defects which occur in exercise. Thank you.

Structure of the working instructions

The working instructions are arranged in chapters, which belong to the different using phases of the machine. Therefore the searched information can be found easily.
Contents

4.4.1. Elements on the heating element ................................................................. 19
4.4.2. Heating element for conversion kit (optional) ........................................... 20
4.5. Additional cylinder (optional) ................................................................. 21
4.6. Holes in the table ...................................................................................... 22
4.7. How to adjust the angle for the clamping tools ........................................ 22
4.8. Elements on the planer .............................................................................. 23
4.9. How to adjust the clamping tools .............................................................. 23
4.10. Plane girder to plane only at one side (optional) ...................................... 23
4.11. Elements at the clamping tool................................................................... 24
4.11.1. How to mount the reducer inserts ......................................................... 24
4.12. Conversion kit clamping tool (optional) ................................................... 24
4.13. Limit stop of planer for T-piece welding (optional) .................................. 25
4.14. Base plate for the welding of T- and cross-pieces 90° ............................ 26
4.15. Clamping tools for T-piece 90° ................................................................. 27
4.16. Clamping tool for cross-piece 90° second welding .................................. 27
4.17. Clamping tool for T-piece 45° ................................................................. 28
4.18. Clamping tool for T – 60°........................................................................ 29

5. STARTING AND OPERATING .................................................................. 30
5.1. Safety indications ...................................................................................... 30
5.2. Starting ...................................................................................................... 30
5.3. Welding process ........................................................................................ 31
5.3.1. Aligning and clamping of the pipes ....................................................... 31
5.3.2. Planing of the pipes ............................................................................... 32
5.3.3. Mismatch compensation ....................................................................... 32
5.3.4. Welding with additional cylinder (optional) .......................................... 32
5.3.5. Adjusting ............................................................................................... 33
5.3.6. Heating-up ............................................................................................ 33
5.3.7. Change-over ........................................................................................ 33
5.3.8. Joining ................................................................................................ 33
5.3.9. Welding complete ................................................................................ 33

6. WELDING LOGS AND TABLES .............................................................. 34
6.1. Factors for the welding of angle and T-piece ............................................ 34
6.2. Welding of segmented bends .................................................................... 34
6.3. Welding of cross- and T-pieces ................................................................. 35
6.4. How to prepare pipes for T-pieces ........................................................... 35

7. MAINTENANCE AND REPAIR ............................................................. 39
7.1. Planer ........................................................................................................ 39
7.2. Clamping elements .................................................................................. 39
7.3. Used hydraulic oil

7.4. How to check the oil level

7.5. How to vent the hydraulic cylinders

7.6. Storage

7.7. Disposal

7.8. Transport

8. WIRING AND HYDRAULIC DIAGRAMS

9. SPARE PARTS LIST

10. DECLARATION OF CONFORMITY
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. Mounting and purpose-oriented use

The WIDOS 4002 is a workshop machine and especially designed for the heating element butt welding of pipes and fittings from Ø = 90 mm - 315 mm.
(Standard diameters are: 90 / 110 / 125 / 140 / 160 / 180 / 200 / 225 / 250 / 280 / 315 mm).
The machine is screwed tightly on a steel pipes frame in the right working height and has one fix and one movable machine slide, with two (optional 4) clamping tools.
For the balance of diameter tolerances, the right table half is movable sidewards.
For the production of segmental bends, both clamping tools may be swiveled up to 15° each, alternatively reduction inserts with a 15° and 22,5° chamfer are available.
For the stabilization of pipe bends and fittings, supporting angles with pipe supports and reduction inserts are available.
By means of an optional available conversion kit with 2nd cylinder, larger planer and heating element, even the diameters 355, 400 and 450 mm can be clamped and welded.
In addition, T- and cross-pieces up to OD 250 mm can be welded with a special clamping device for angles.

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.
Also part of the appropriate usage are
• following all indications of the working instructions and
• performing the inspection and maintenance work.

1.2. Safety measures

In case of wrong use, wrong operation or wrong maintenance, the machine itself or products standing nearby may be damaged or destroyed.
Persons who stay in the danger area may suffer injuries.
Therefore the working instructions on hand are to be red thoroughly and the corresponding safety instructions are to be observed by all means.

1.3. Conformity

The machine corresponds in its construction to the valid recommendations of the European Community as well as to the according European standard specifications.
The development, manufacturing and mounting of the machine were made very carefully.
### 1.4. Marking of the product

The product is marked by a type-plate at the basic machine.

It contains the machine type, the serial number and the year of construction.

#### 1.4.1. Technical data

##### 1.4.1.1. WIDOS 4002 general data

<table>
<thead>
<tr>
<th>Material:</th>
<th>PP; PE PVDF</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipe dimension:</td>
<td>Outside-Ø = 90 – 315 mm; With conversions kit: outside-Ø = 90 - 450</td>
</tr>
<tr>
<td>Total weight (without packing):</td>
<td>400 kg</td>
</tr>
<tr>
<td>Connection:</td>
<td>400 V / 16 A</td>
</tr>
<tr>
<td>Power section:</td>
<td>2,5 mm²</td>
</tr>
<tr>
<td>Emissions</td>
<td>- Noise exceeding 80 dB (A) may occur; during planing it is obligatory to wear ear protection!</td>
</tr>
<tr>
<td></td>
<td>- In case of using the prescribed plastics and if the work is performed inside the temperature range up to 260°C, no toxic vapors will generate.</td>
</tr>
<tr>
<td>Environmental conditions in the welding area</td>
<td>- Be aware of tidiness (no dust at the welding spot)</td>
</tr>
<tr>
<td></td>
<td>- 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.</td>
</tr>
<tr>
<td></td>
<td>- prevent from moisture influence, if necessary mount a tent</td>
</tr>
<tr>
<td></td>
<td>- avoid strong sun rays radiation</td>
</tr>
<tr>
<td></td>
<td>- prevent from strong wind, close the pipe ends.</td>
</tr>
</tbody>
</table>

##### 1.4.1.2. Heating element

<table>
<thead>
<tr>
<th>Power:</th>
<th>3,6 kW / 5,4 kW for conversion kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage:</td>
<td>230 V / 400 V for conversion kit (± 10%)</td>
</tr>
<tr>
<td>Amperage:</td>
<td>16 A / 13,5 A (± 10%)</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Surface:</td>
<td>anti-stick coated</td>
</tr>
<tr>
<td>Mounted elements:</td>
<td>- electronic temperature control</td>
</tr>
<tr>
<td></td>
<td>- control lamps</td>
</tr>
</tbody>
</table>
### 1.4.1.3. Planer

<table>
<thead>
<tr>
<th>Motor:</th>
<th>Monophase-alternating current-universal motor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power:</td>
<td>1,15 kW / 1,4 kW for conversion kit</td>
</tr>
<tr>
<td>Voltage:</td>
<td>230 V (± 10%)</td>
</tr>
<tr>
<td>Amperage:</td>
<td>3,8 A / 4,9 A for conversion kit</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz (± 10%)</td>
</tr>
<tr>
<td>Gear:</td>
<td>Gear ratio: approx. 0,12</td>
</tr>
<tr>
<td>Revolutions of planer [rpm]</td>
<td>50 - 70</td>
</tr>
</tbody>
</table>

### 1.4.1.4. Hydraulic aggregate

<table>
<thead>
<tr>
<th>Power:</th>
<th>300 Watt</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage:</td>
<td>230 V (± 10%)</td>
</tr>
<tr>
<td>Amperage:</td>
<td>2,7 A</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Phase displacement:</td>
<td>approx. 18°</td>
</tr>
<tr>
<td>Hydraulic oil tank:</td>
<td>approx. 1 l</td>
</tr>
<tr>
<td>Type of protection:</td>
<td>IP 54</td>
</tr>
<tr>
<td>Electric motor and pump:</td>
<td></td>
</tr>
<tr>
<td>Engine revolution:</td>
<td>1330 rpm</td>
</tr>
<tr>
<td>Max. working pump:</td>
<td>approx. 250 bar</td>
</tr>
<tr>
<td>Working pressure:</td>
<td>adjustable up to 250 bar</td>
</tr>
</tbody>
</table>

### 1.4.1.5. Basic unit

<table>
<thead>
<tr>
<th>Dimension l x w x h:</th>
<th>1600 x 1000 x 1355 (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame material:</td>
<td>Construction steel</td>
</tr>
<tr>
<td>Cylinder-Ø:</td>
<td>25 mm</td>
</tr>
<tr>
<td>Piston rod-Ø:</td>
<td>18 mm</td>
</tr>
<tr>
<td>Additional cylinder for conversion kit: Cylinder-Ø:</td>
<td>22 mm</td>
</tr>
<tr>
<td>Additional cylinder for conversion kit: Ø piston rod :</td>
<td>18 mm</td>
</tr>
<tr>
<td>Max. force (F=P*A) (without 2.cylinder)</td>
<td>2,36 kN (at 100 bar)</td>
</tr>
<tr>
<td></td>
<td>5,9 kN (at 250 bar)</td>
</tr>
<tr>
<td>Max. force (F=P*A) (with 2.cylinder)</td>
<td>3,62 kN (at 100 bar)</td>
</tr>
<tr>
<td></td>
<td>9,05 kN (at 250 bar)</td>
</tr>
<tr>
<td>Moving speed of the piston:</td>
<td>ca. 5 cm/s without additional cylinder</td>
</tr>
<tr>
<td></td>
<td>ca. 3,7 cm/s with additional cylinder</td>
</tr>
</tbody>
</table>
1.5. **Equipment and accessories:**

The following tools and 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 10-piece</td>
</tr>
<tr>
<td>1</td>
<td>Socket wrench size 27</td>
</tr>
<tr>
<td>1 each</td>
<td>Allan key size 3; 6; 7; 8</td>
</tr>
<tr>
<td>1 each</td>
<td>Allan key with T grip, size 4; 5 6</td>
</tr>
<tr>
<td>1</td>
<td>Spanner wrench, size 17 / 19</td>
</tr>
<tr>
<td>1</td>
<td>Torx screw driver T10</td>
</tr>
<tr>
<td>optional:</td>
<td>different reduction inserts, support angle, rollerstands as pipe support,</td>
</tr>
<tr>
<td></td>
<td>Conversion kit for OD &gt; 315 mm,</td>
</tr>
<tr>
<td></td>
<td>Carrying handle for hand carrying of machine</td>
</tr>
<tr>
<td></td>
<td>Clamping tools and inserts for fabrication of T-pieces</td>
</tr>
<tr>
<td></td>
<td>Plane girder for planing only at one side</td>
</tr>
<tr>
<td></td>
<td>Reduction inserts with 15° or 22.5° (OD 63 mm…315 mm)</td>
</tr>
</tbody>
</table>

*For order numbers and single parts see spare parts list*
2. Safety rules

The basic condition for the safety conscious handling and the fault free operation of this machine is the knowledge of the basic safety advises and rules.

- These working instructions contain the most important indications for running the machine according to the safety regulations.
- The safety indications need to be followed by all persons working on the machine.

2.1. Explanation of the different symbols

In the working instructions, the following designations and signs are used for potential dangers:

This symbol means a possibly danger for the life and the health of persons.
- The disrespect of these indications may have heavy consequences for the health.

This symbol means a possible dangerous situation.
- The disrespect of these indications may cause slight injuries or damages on goods.

This symbol means a possible dangerous situation 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’s 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 in order to use all the functions on your machine in an optimal way and helps you to make the job easier.

The accident prevention measures are valid (UVV).
2.2. Obligation of the owner

The owner engages himself to only let people work on the machine who

- are familiar with the basic prescriptions about work safety and accident prevention and have been initiated into the handling of the machine, as well as who
- have read and understood the safety chapter and the warning indications in these working instructions and have confirmed that by their signature.

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

2.3. Obligations of the worker

All persons, who have to perform work on the machine engage themselves before working:

- To follow the basic prescriptions about work safety and accident prevention.
- To read the safety chapter and the warning indications in these working instructions and to confirm by signature that they have understood them.
- To inform themselves about the functions of the machine before using it.

2.4. Measure of organization

- 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 safety measures

- The working instructions have to be kept permanently at the place of working of the machine. They must be at every time and without efforts at the workers’ disposal.
- In addition to the working instructions, the general valid as well as the local regulations about accident prevention and environmental care have to be disposed to and to be followed.
- All the safety and danger indications on the machine have to be kept in good reading condition.
- At each change of the owner or in case of a lend to other persons, the working instructions have to be given along with the machine and a stress is to be put on their importance.

2.6. Instruction of the staff

- Only skilled and instructed persons are allowed to work on the machine.
- The responsibilities of the staff have to be clearly defined in relation to transport, mounting and dismantling, starting, setting and equipping, working, maintenance and inspection, repair and dismantling.
- Persons who are being instructed are only allowed to work on the machine under the supervision of an experienced person.
2.7. **Dangers while handling the machine**

The machine WIDOS 4002 has been constructed according to the latest standards of the technology and according to the recognized technical rules. Although, during the operation dangers for the user or for persons standing close as well as damages for items may occur.

The machine should only be used

- purpose oriented
- in a perfect technical safety condition

*Troubles that may affect the safety are to be immediately cleared.*

---

2.8. **Maintenance and inspection, repair**

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

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

Prescribed maintenance and inspection work have to be performed in time.

The DVS recommends inspection work after 1 year.

For machines being very much in use, the inspection cycle should be shortened.

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

---

2.9. **Dangers due to electrical energy**

Work on the electric parts should only be performed by skilled workers.

- The electrical equipment of the machine has to be checked regularly. Loose connections and damaged cables have to be replaced immediately.

- If work on conductive parts are necessary, a second person is required who may switch the power off in case of emergency.

- All electric tool (heating element, planer, aggregate) are to be protected from rain and dropping water. For that purpose mount a tent if necessary.

- According to VDE 0100, operation on building sites is only allowed with a current distributor with FI-security protective switch.

---

2.10. **Dangers due to the hydraulic**

System parts and pressure conducts which need to be opened are to be depressurized before any kind of repair.

Even a switched off machine may keep pressure in its hydro storage system!

There is a particular danger for the eyes due to hydraulic oil spraying out.

- Replace defective hydraulic hoses immediately.

- Visual inspection of the hydraulic conducts before beginning to weld.

- The hydraulic oil is inedible!

- The hydraulic oil is to be handled and disposed of in *appropriate* manner.
2.11. Special dangers

2.11.1. Danger of combustion at the heating element and the welding point

You may burn parts of the body and flammable materials may ignite!

The heating element is heated to a temperature of more than 200°C!

- Do not touch the surface of the heating element.
- Do not leave the heating element without supervision.
- Keep enough safety distance to inflammable materials.
- Do wear safety gloves.
- Switch off the heating element after use.
- Swivel and transport the heating element only at the grip.
- No third persons should stay inside the range of the moving area of the heating element.

2.11.2. Danger of crushing by clamping tools and guide rods

Heavy injuries can result from crushing:

- Upon opening / closing the clamping tools.
- Upon driving in and out the planer and heating element.
- Upon opening / closing the slides.
- Upon mounting the reducer inserts.
- Upon mounting the additional cylinder

- Do not touch in-between clamped pipes.
- Do not touch into the clamping and swiveling area
- Do not touch in-between the machine slides during welding
- Do not reach between the clamping rings in case the pipes are still to be clamped and in case you move the clamping tools.
- Upon mounting the reducer inserts do not touch in the clamping area

2.11.3. Danger of catching clothes by the planer

You may get injuries by cutting up to broken bones!

- Do wear clothes tight to the body.
- Do not wear rings or jewelry during work.
- If necessary, do wear a hair net.
- Transport the planer only at the grip.
- Do not touch the face of the planer.
- Keep away third persons from the swiveling area of the planer.
- Switch on the planer only for use.
2.11.4. Danger of stumbling over electric wire and hydraulic hose

Pay attention that nobody has to step over the lines or pneumatic hose. Favorably pass the line and hose in order that the danger is minimized. Do not squeeze and kink the lines or anything likewise.

2.11.5. Risk of injury by noise

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

2.12. Structural modifications on the machine

- No modifications, extensions or reconstructions may be made on the machine without permission of the manufacturer.
- Machine parts which are not in perfect condition have to be replaced immediately.
- Only use original WIDOS spare and wear parts.
- In case of order, always state the machine number!

2.13. Cleaning of the machine

The used materials and clothes have to be handled and disposed of properly especially
- when cleaning with solvents
- when lubricating with oil and grease.

2.14. Warranty and liability

Basically, our “General Terms of sale and delivery” are valid. They are at the owner’s disposal latest at conclusion of the contract. Warranty and liability rights are excluding injuries of persons and property damages if they are due to one or several of the following reasons:
- Not using the machine purpose oriented.
- Unsuitable transport, mounting, starting, operating and maintenance of the machine.
- Operating the machine without or with not correctly fixed safety devices.
- Not following the indications of the working instructions.
- Unauthorized structural modifications on the machine.
- Unsatisfactory inspection of machine parts which are subject to wearing.
- Unsatisfactory performed repairs.
- In case of catastrophes through action of an external body or Acts of God.
3. Description of process

Basically, the international and national process guidelines are to be followed!

At first, the clamping tools are fixed on the machine slide.

For the fabrication of angles and bends, the clamping tools can be turned on both sides.

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

If necessary, stabilize the pipes by means of roller stands or pipe supports (for bends, a supporting angle is existing).

Then the front sides of the pipes are planed parallel by means of the planer and the misalignment of the pipes is checked.

Now the heating element is swiveled in and the pipes are pressed against the heating element under defined adjusting pressure. This process is called "adjusting".

After the prescribed bead height being reached, pressure is reduced, heat up time begins. The function of this time is to heat up the pipe ends.

After expiration of the heat up time, the slides are opened, the heating element is swiveled out quickly and the pipes are closed again hydraulically.

The time gap from the removal of the heating element to joining the pipes is called change over time.

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

In case you are welding with additional cylinder and conversion kit,
then first mount the clamping tools of the conversion kit onto the slides including the heating element and planer of the conversion kit.

Afterwards, insert the additional cylinder always on the clamping tool, on the right side of the machine.

In order to weld, connect the hydraulic hoses of the additional cylinder to the connectors at the right side of the machine.

Carry out welding as described above.

After the cooling remove the additional cylinder and store it in the holder on the right side of the machine.

Heating element heats the pipes up to welding temperature.

Welded pipe with inside and outside bead.
4. Operating and indicating elements

4.1. Elements on the front side

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Heating element</td>
<td>- to bring the pipe up to welding temperature.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- can be moved sideward and be swiveled in</td>
</tr>
<tr>
<td>2</td>
<td>Clamping tool</td>
<td>- may be swiveled up to 15° (on both sides).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- to clamp the pipes. By means of the respective reduction inserts,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pipes from OD=90 - 315 mm can be clamped.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- when using reduction inserts with 15° or 22,5° obliquity the</td>
</tr>
<tr>
<td></td>
<td></td>
<td>clamping tools need not be turned.</td>
</tr>
<tr>
<td>3</td>
<td>Supporting angle (optional)</td>
<td>- Stabilization of bends and angles.</td>
</tr>
<tr>
<td>4</td>
<td>Clamping lever (optional)</td>
<td>- Fixation to support the angle</td>
</tr>
<tr>
<td>5</td>
<td>Main switch</td>
<td>- By means of the main switch, all the electric elements can be</td>
</tr>
<tr>
<td></td>
<td></td>
<td>devoid of current.</td>
</tr>
<tr>
<td>6</td>
<td>Carrying handle (optional)</td>
<td>- Hand carrying of the machine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- can be unscrewed if necessary.</td>
</tr>
<tr>
<td>7</td>
<td>Switch on/off</td>
<td>- Switch the planer on/off.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Use only if necessary.</td>
</tr>
<tr>
<td>8</td>
<td>Place for stop watch</td>
<td>- to place for the delivered stop watch giving a good view on it.</td>
</tr>
<tr>
<td>9</td>
<td>Pressure gauge</td>
<td>- Indication of the hydraulic pressure</td>
</tr>
</tbody>
</table>
# Operating and indicating elements

## Chapter 4

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
</table>
| 10  | Planer       | - to plane the pipe ends to be welded.  
|     |              | - Is switched on/off over the switch (7) at the control desk. |
| 11  | Pipe support | - Clamped pipes can be supported with the corresponding inserts.  
|     |              | - Bends can be supported on the supporting angles. |
| 12  | Holder and additional cylinder (optional) | - The additional cylinder is needed for pipes with large diameter and high nominal pressure degree in order to prevent formation of a gap during unbalanced strain of the clamping tool. |
| 13  | Valve lever  | To open / close the slide. There are 4 different positions:  
|     |              | - **To the left side**: slide is closed.  
|     |              | - **In the center (without moving)**: the instantaneous pressure is held (also by means of the built in pressure reservoir).  
|     |              | - **Somewhat to the right side** (position depressurized): a possible pressure can be released without opening the machine. Due to the pressure reservoir it takes approx. 10 s until the complete pressure is released.  
|     |              | - **To the right side**: slide is opened. |
| 14  | Oil dipstick | - Oil filler neck / checking the oil level. Oil level must be between the two marks. |
| 15  | Connection for additional cylinder | - Connection for hydraulic hoses |
| 16  | Setscrew for pressure relief valve | - Limitation of the hydraulic pressure onto the desired value. (adjustable from 0 - 250 bar) |
| 17  | Control desk right | - Includes the hydraulic aggregate. |
| 18  | Control desk left | - Includes the electric elements and the wirings |

### 4.2. Elements on the right side

![Image of elements on the right side](image)

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Clamping lever</td>
<td>- release in order to move the right table half, for horizontal mismatch compensation.</td>
</tr>
</tbody>
</table>
### 4.3. Elements on the left side

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>20</td>
<td>Plug box 400 V</td>
<td>Connection for conversion kit heating element.</td>
</tr>
<tr>
<td>21</td>
<td>Plug box 230 V</td>
<td>Connection for heating element, as well as for the SPA unit (optional) for the automatic running of the welding process.</td>
</tr>
<tr>
<td>22</td>
<td>Plug box 230 V</td>
<td>Connection for planer</td>
</tr>
<tr>
<td>23</td>
<td>Power supply 400 V</td>
<td>Power supply to work without the conversion kit.</td>
</tr>
</tbody>
</table>

### 4.4. Heating element controls

#### 4.4.1. Elements on the heating element
### 24 Control lamp yellow

There are three different states:
- **Off**: the heating element is not being heated up at the moment or is cooling down.
- **Blinking**: the temperature of the heating element is maintained by a certain pulse-position ratio.
- **On**: the heating element is being heated up at the moment. The desired temperature has not yet been reached.

### 25 Control knob - Temperature control

### 26 Control lamp green - Indication of mains operated

---

#### 4.4.2. Heating element for conversion kit (optional)

![Image of the heating element for conversion kit]

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination:</th>
<th>Function:</th>
</tr>
</thead>
<tbody>
<tr>
<td>27</td>
<td>Temperature adjusting knob</td>
<td>- to set the required temperature</td>
</tr>
<tr>
<td>28</td>
<td>Display of temperature</td>
<td>- Digital display of the set heating element temperature. Three different displays are possible.</td>
</tr>
</tbody>
</table>

As soon as the heating element is connected to the mains (400 V / 16A), it starts heating up to the desired temperature. Set the temperature with a screw driver at the adjusting knob.

**Display:** DESIRED temperature + blinking points between the numbers.

The heating element is being heated up, the desired temperature is not yet reached. This display disappears after short time, followed by three lines.

**Display:** Three lines.

The heating element is being heated up, the desired temperature is not yet reached.

**Display:** ACTUAL temperature (without blinking points).

Appears as soon as a temperature of > 170°C is reached and rises continuously to DESIRED temperature. The desired temperature is maintained by a certain pulse-position ratio.
4.5. Additional cylinder (optional)

The additional cylinder is needed for pipes with large diameter and high nominal pressure degree in order to prevent formation of a gap during unbalanced strain of the clamping tool.

Connect the hydraulic tubes of the additional cylinder, for the sweat process, to the connections (Picture below).

The additional cylinder is always mounted on the right machine side onto the clamping tool, even in case the clamping tools have been exchanged.

**Only apply the additional cylinder onto the clamping tools after clamping the pipes.**

Distance from flange to fork: appr. 30-40 mm

**You must remove the cylinder and put it on its holder at the right after welding and before you open the clamping tools.**

Connections for additional cylinder

**If you want to weld without additional cylinder, disconnect the hydraulic hoses from the machine.**

**In case you drive the machine without connected additional cylinder, then connect the cylinder to the distributor block, drive the tables and the additional cylinder entirely apart and mount the additional cylinder onto the clamping tools afterwards.**
4.6. **Holes in the table**

The clamping tool is fixed on one side by means of a centering bolt which serves as swiveling axle if angles have to be adjusted.

The left clamping tool can displaced about 20 mm to the left.

At the slotted hole on the clamping tool, any angles from 0-15° can be adjusted. For the exact setting of 11.25° and 15°, figure stamps are existing.

4.7. **How to adjust the angle for the clamping tools**

In order to adjust the angle, first remove screw 3.

Detach screws 1 and 2, then turn the clamping tool around the rotary point onto the desired angle.

Markings have been fixed to the table for angles 11.25° and 15°, other angles must be adjusted by goniometer.

Afterwards retighten screws 1 and 2.
4.8. **Elements on the planer**

In order to plane, make sure that the planer is locked in the guiding rod in the front after being turned in. Thus, it is secured against unintentional movements. After planing pull the handle of the planer to the front (arrow), now it is unlatched and can be turned out of the machine.

The planer must always be switched ready for the planing. Press the pushbutton at the planer motor and secure lock it by the stop button.

Turn the planer by the rotary switch on the left operator console (chapter: 4.1, no. 7).

4.9. **How to adjust the clamping tools**

In order to adjust the pipes you may shift the right clamping tool in a horizontal direction. Release both clamping levers, now shift the clamping tool into arrow direction until the pipes have no mismatch anymore. Secure this position by tightening both clamping levers.

4.10. **Plane girder to plane only at one side (optional)**

If planing is necessary at only one side (e.g. in case of a fitting) the plane girder (A) for planing is used. Center the centering bolt of the girder in the central drill of the planer and hold tightly to the girder during planing.
4.11. Elements at the clamping tool

Clamp the pipe with spindle, pressure disc and clamping nut.
Swivel the released spindle out and in (arrow).
Now you can open clamping tool, clamping tool for conservation cit with handle.

4.11.1. How to mount the reducer inserts

Fix the reducer inserts into the clamping tool according to the outer diameter of the pipe.

Open the clamping tool. First mount the lower reducer insert.
Then, put the upper reducer insert onto the lower one, shut the clamping tool and fix the reducer inserts to the clamping tool.
Put the pipe support onto the pipe bracket according to the outer diameter of the pipe.

4.12. Conversion kit clamping tool (optional)

Mount the small clamping tool including the base plate onto the right machine table using hexagon socket screws.
4.13. Limit stop of planer for T-piece welding (optional)

In case you want to weld T-pieces, you will need the limit stops (image below) in order to obtain an even welding surface.

Fasten the clamping tools for the welding of T-pieces onto the tables (chapter: 4.16)

Mount the limit stops for the planer on the right and left of the table (image below) using the pan-head screw M 8x35 DIN 7984 and washer.

Fix the pan-head screw M 8x30.

Now swing the limit stops onto the pan-head screw until they rest against it.

![Image]

Attention! Only swing the limit stops into the machine when planing.

The distance from limit stop to clamping tool is 50 mm.

Insert the workpieces into the clamping shells with the same overhang (> 50 mm) to the inside and fasten the clamping nuts; afterwards align the workpieces to each other.

Swing the planer between the tails of the workpieces and make sure that the planer snaps between both limit stops in the front of the guiding rod.

Plane the pipes up to limit stop.

Having finished planing, swing the limit stops out of the machine.

![Image]
4.14. Base plate for the welding of T- and cross-pieces 90°

Mount the base plates with the four screws from the basic clamping tools on the tables.

**T – 90° and cross 90°**: Mount the clamping tools on all base plates, hole patterns <-------->.

**T45° first welding**: Mount the large clamping tools on base plates, hole pattern <   >
(A for OD 250 – 200 mm / B for OD 180 – 140 mm / C for OD 125 – 90 mm)

**T45° second welding**: Mount the large clamping tools on left base plate, hole pattern
<------->

Mount the basic clamping tool with reduction insert 22,5° on right table (no base plate).

**T – 60° first welding**: Mount the large clamping tools on base plates, hole pattern <   >
(A for OD 250 – 200 mm / B for OD 180 – 140 mm / C for OD 125 – 90 mm)

**T – 60° second welding**: Mount both of large clamping tools on left base plate, hole pattern
<------->

Mount the basic clamping tool with reduction insert 22,5° on right table (no base plate) and swivel it by 7,5°.
4.15. Clamping tools for T-piece 90°

First welding:
The prepared pipes are welded in both clamping tools in the front.

Second welding for T-piece 90°:
The welded pipe is clamped in both clamping tools on the right.
The third prepared pipe is clamped in the left clamping tool.

4.16. Clamping tool for cross-piece 90° second welding

First and second weldings:
The prepared pipes are welded in both clamping tools in the front.

Third welding:
Tee welded pieces from first and second weldings are clamped on both sides.
4.17. Clamping tool for T-piece 45°

First welding:
Mount the large clamping tools parallel on the base plates (large plate on the left and small plate on the right).
The prepared pipes are welded in the large clamping tools.

Second welding:
Mount the large clamping tools parallel on the large base plate on left side.
Mount the basic clamping tool with reduction insert 22.5° on the right table (no base plate).
Clamp the welded piece from first welding into large clamping tools. Clamp the third prepared pipe into the right clamping tool.
4.18. Clamping tool for T – 60°

First welding:
Mount the large clamping tools parallel, with angle 7,5° between clamping tools, on the base plates (large plate on the left and small plate on the right).
The prepared pipes are welded in the large clamping tools.

Second welding:
Mount the large clamping tools parallel, with angle 7,5° between clamping tools, on the left base plate.
Mount the basic clamping tool with reduction insert 22,5° on right table (no base plate) and swivel it by 7,5°.
Clamp the welded piece from first welding into large clamping tools. Clamp the third prepared pipe into the right clamping tool.
5. Starting and operating

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

This includes:
- the safe operation of the machine
- using all possibilities
- economic operation of the machine

5.1. Safety indications

The machine may only be operated by skilled and authorized persons.
A plastic welder exam according to DVS and DVGW can be taken for the qualification.
In dangerous situations for mankind and the machine immediately turn off the main switch or pull the plug.
In case of power fall, there may still be pressure in the hydraulic system. If required release pressure.
At the end of the work and during breaks, the machine has to be switched off. Also take care that no unauthorized person have access to the machine.
Protect the machine from wetness and humidity!
According to VDE 0100, operation on building sites is only allowed with a current distributor with FI-security protective switch.

Only skilled persons 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 are necessary, a second person has to assist who can disconnect the machine from the mains if necessary.
Before starting the hydraulic check the level of the oil in order to avoid damages on the pump.
The oil has to be between the two marks on the oil level measuring bar.

5.2. Starting

- Unpack the machine and remove the packing material.
- Screw the loosely included handle to the heating element and mount the bar with ball head to the planer.
- Connect the machine to the main power 400V / 50 Hz / 16 A (right rotary field).
- Connect the planer and the heating element to the socket at the control unit on the left side (chapter: 4.3, no. 19 + 20), and switch the planer ready (chapter: 4.8).
- Take care for the ambient conditions:
  - Welding must not be performed at direct sunlight.
  - If necessary, use a welding umbrella.
• At an ambient temperature under 5°C take respective measures:
  • If necessary use a welding tent or heat up the pipe ends.
  • In addition, take measures against dust.

5.3. Welding process

Basically, the corresponding valid welding prescriptions (ISO / CEN / DVS...) have to be followed.

• Do wear safety gloves as protection against burning.
• A stop-watch must be available for recording the actual times for heating and cooling.
• A welding table must be available from which the parameters for the pipe dimensions to be welded prescribed by the welding prescriptions may be taken.
• The heating element surfaces must be clean, especially non greasy, therefore they need to be cleaned shortly before each welding or in case of dirtiness by means of a fiber-free paper and a cleaning agent (e.g. PE cleaner).
• The anti-adhesive coating of the heating element must remain undamaged in the working area.

Clean the heating element only in cold condition – danger of inflammation caused by cleaning agents.

• Set the required welding temperature.
  Set the standard heating element with control knob (Chapter: 4.4.1, no. 25).
  Set the heating element for conversation kid with temperature adjusting knob (chapter: 4.4.2, no. 27).
• If need adjust the angle for the clamping tools (Chapter: 4.7).
• Screw the reduction inserts according to the pipe outside diameter to be welded.

5.3.1. Aligning and clamping of the pipes

Put the work pieces into the clamping tools with the same distance (appr. 20 – 30 mm) inwardly, fasten the clamping screws and align the work pieces to each other.

Use the WIDOS rollerstands for the alignment of long pipe ends, for bends use the supporting angle and pipe supports.

Close the machine meanwhile reading the travel pressure at the manometer.

The travel pressure is displayed exactly at that moment when the machine with the clamped pipe starts moving.

Then open the machine again in such a way that the planer fits in between.
5.3.2. Planing of the pipes

Swivel in the planer between the ends of the workpieces and let the planer lock (chapter: 4.8).

Switch on the planer at the switch at the control unit (chapter: 4.1, no. 7).

By means of the valve lever, drive the pipe ends together and plane with a planer pressure between 1 and 15 bar over the travel pressure.

If necessary, use the Plane girder to plane only at one side (chapter: 4.10) to plane at only one side (in case of pure planing or in case that a welding collar is used where less material should be removed).

Plane until a revolving chip on both sides has formed.

Open the machine again by means of the valve lever and switch off the planer.

Pull the handle of the planer to the front until it snaps in. Then, swivel the planer out of the machine to the rear.

Remove the formed chips without touching the surfaces.

5.3.3. Mismatch compensation

Close the machine tables.

Check the misalignment and the gap between the two pipes touching each other. According to DVS 2207, the misalignment at the pipe outside should not be higher than 0,1 x pipe wall thickness, the acceptable gap not bigger than 0,5 mm.

The right half of the table can be pushed backwards and forwards for the misalignment check. Turn the clamping lever at the front side of the table for that purpose.

In case of a misalignment compensation, a new planing should be performed.

5.3.4. Welding with additional cylinder (optional)

In case you drive the machine without connected additional cylinder, then connect the cylinder to the distributor block, drive the tables and the additional cylinder entirely apart and mount the additional cylinder onto the clamping tools afterwards.

If you want to weld with additional cylinder, remove the cylinder from the device (chapter: 4.5).

Always put the additional cylinder onto the right clamping tool.

Connect the hydraulic hoses of the additional cylinder to the connections in order to start welding.
5.3.5. Adjusting

Take the adjustment pressure for the pipe dimensions to be welded from the table and add the travel pressure.

Set the thus defined pressure value at the pressure limitation valve (chapter: 4.1, no. 16) and check by operating the valve lever.

Open the machine again somewhat.

Take heat up time, max. change over time, cooling down time and bead height for the pipe dimension to be welded from the table.

Swivel in the cleaned heating element, brought onto desired temperature, between the pipes, if necessary wait until the desired temperature has been reached.

Drive the machine half’s together choc-free under the set adjusting pressure.

5.3.6. Heating-up

When the prescribed circular bead height is being reached, reduce the pressure.

For this purpose put the valve lever into position „Pressure release“ until the desired heating pressure is set (heating pressure = approx. 10% of the adjusting pressure).

Now the heat up time begins. Press the stop watch and compare the actual time with the desired time taken out of the table.

5.3.7. Change-over

Open the machine after completion of the heating time, swivel out the heating element as quickly as possible and drive the machine together without shocks.

The maximum time range for this process is given by the value for the change over time taken out of the table.

5.3.8. Joining

After completion of the welding pressure up-building, press the stop watch and maintain the control lever for about 10 s in position „pressure release“ so that the hydro tank may be filled.

If required set the pressure again during cooling (the pressure for cooling is the same like the set adjusting pressure).

After completion of the cooling time release pressure, do not open the table.

5.3.9. Welding complete

In case you have welded with additional cylinder, remove and store it on the holder.

Open the clamping tools and remove the welded part.

Open the machine.
6. Welding logs and tables

6.1. Factors for the welding of angle and T-piece

If welding angles, the welding surface of the pipe and thus the necessary pressure changes. Calculate the necessary pressure as follows:

- Take the prescribed value for adjusting or cooling from the table.
- Multiply the pressure value with factor: 1/cos (angle).

This will give the following factors:

<table>
<thead>
<tr>
<th>Angle</th>
<th>Description</th>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>15°</td>
<td>Welding with 7,5° chamfered pipe</td>
<td>1,01</td>
</tr>
<tr>
<td>22,5°</td>
<td>Welding with 11,25° chamfered pipe</td>
<td>1,02</td>
</tr>
<tr>
<td>30°</td>
<td>Welding with 15° chamfered pipe</td>
<td>1,04</td>
</tr>
<tr>
<td>45°</td>
<td>Welding with 22,5° chamfered pipe</td>
<td>1,08</td>
</tr>
<tr>
<td>60°</td>
<td>Welding with 30° chamfered pipe</td>
<td>1,15</td>
</tr>
<tr>
<td>90° T</td>
<td>Welding with 45° chamfered pipe</td>
<td>1,41</td>
</tr>
<tr>
<td>60° T</td>
<td>Welding with 60° chamfered pipe</td>
<td>2,00</td>
</tr>
<tr>
<td>45° T</td>
<td>Welding with 67,5° chamfered pipe</td>
<td>2,61</td>
</tr>
</tbody>
</table>

The calculated value for the first welding of T-pieces is to be cut in halves if the pipe ends were cut off (chapter: 6.4).

- Add the motional pressure as usual.

All the other welding parameters remain as usual.

6.2. Welding of segmented bends

Calculate the sawing angle to be set (corresponding to the required angle at the clamping tools or clamping inserts) as follows:

\[
\text{sawing angle} = \frac{\text{angle of the bend}}{\text{number of all welding surfaces}}
\]

Example 1: bend of 90° in 4 segments (6 welding surfaces)

90°

sawing angle = \(\frac{90°}{6} = 15°\)

Example 2: bend of 45° in 3 segments (4 welding surfaces)

45°

sawing angle = \(\frac{45°}{4} = 11,25°\)
6.3. **Welding of cross- and T-pieces**

The optional available clamping device for angles is screwed on together with the adapter plate and standard tools.

T-pieces (45°, 60° and 90°) and Cross-pieces up to OD=250 mm can be welded.

6.4. **How to prepare pipes for T-pieces**

**Production of T-Pieces 90° / 60° / 45° (60° / 45° = Y-Piece)**

**Basic:** Desired Branch Angle

| Step 1: Pipe Preparation for cutting |

<table>
<thead>
<tr>
<th>Theory: ( \alpha_1 = 90° - \frac{1}{2} \text{Branch Angle} )</th>
<th>( \alpha_2 = \frac{1}{2} \text{Branch Angle} )</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Branch Angle</th>
<th>90°</th>
<th>60°</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting Angle ( \alpha_1 )</td>
<td>45°</td>
<td>45°</td>
<td>67.5°</td>
</tr>
<tr>
<td>Cutting Angle ( \alpha_2 )</td>
<td>45°</td>
<td>30°</td>
<td>22.5°</td>
</tr>
</tbody>
</table>
Step 2: First Welding

Theory: \( \alpha_3 = 90^\circ - \frac{1}{2} \text{Branch Angle} \)

<table>
<thead>
<tr>
<th>Branch Angle</th>
<th>90°</th>
<th>60°</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clamping Angle ( \alpha_3 = \alpha_1 )</td>
<td>45°</td>
<td>60°</td>
<td>67.5°</td>
</tr>
</tbody>
</table>

step 3: Second Welding

Theory: \( \alpha_4 = \frac{1}{2} \text{Branch Angle} \)

<table>
<thead>
<tr>
<th>Branch Angle</th>
<th>90°</th>
<th>60°</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cutting Angle ( \alpha_4 = \alpha_2 )</td>
<td>45°</td>
<td>30°</td>
<td>22.5°</td>
</tr>
</tbody>
</table>

Multiply the pressure values taken from the Welding table with the following factors:

<table>
<thead>
<tr>
<th>Branch Angle</th>
<th>90°</th>
<th>60°</th>
<th>45°</th>
</tr>
</thead>
<tbody>
<tr>
<td>first Welding</td>
<td>0.71</td>
<td>1.0</td>
<td>1.31</td>
</tr>
<tr>
<td>second Welding</td>
<td>1.41</td>
<td>1.15</td>
<td>1.08</td>
</tr>
</tbody>
</table>
### Report for heated plate welding of tubular components

<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 heat-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>Weather</th>
<th>Code no. protect measures</th>
<th>Remarks</th>
</tr>
</thead>
</table>

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.

---

**Signature of welder:**

**Date and signature of the welder inspector:**
You can access our website and select our welding tables via the QR code shown here. Select “WIDOS 4001-4002” and the corresponding material (PE / PP / PVDF).
7. Maintenance and repair

Goal of the chapter is to:

- keep the nominal condition and the operation capacity of the machine.
- increase the efficiency by avoiding non-planned outage.

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 has to be performed at the WIDOS GmbH company or by an authorized partner.

- In general, take care for cleanness!
- Handle the machine carefully.
- Immediately replace damaged parts, take especially care with electric parts.

The linear guides for heating element and planer must be cleaned every week e.g. with a brush.

- Check the linear guide carriages every 3 months and grease them over the lubricating nipple if necessary. Chips or other impurities in the guides can be the cause if the heating element or the planer jam or run heavily.

- Clean the piston rods every month with an oily tissue.
- Check the hydraulic connections every month for tightness, tighten again if necessary.

7.1. Planer

- Check the driving chain in the planer from time to time and lubricate it. For that purpose screw off the housing of the planer.
- Check the cutting ability of the planer, exchange it if necessary (double sided polished section, max. chip thickness = 0.2 mm!)

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. Used hydraulic oil

- Only use hydraulic oil of the quality HLPD 32.

  Characteristics:  anticorrosive, non-ageing, additions reducing wastage, high loading capacity, soil bearing and limited water binding.

  The hydraulic oil must be disposed of expertly.
7.4. **How to check the oil level**

- Detach the red locking screw on the top of the aggregate on the right control panel (chapter: 4.1, no. 14).
- Clean the oil dipstick with a dry cloth and screw it again into the tank.
- The oil level must be between the two marks, if not close the clamping tools completely (the oil is thus flowing back into the tank) and refill oil.
- Afterwards fix the locking screw with the oil dipstick again.

7.5. **How to vent the hydraulic cylinders**

**Necessary:** If a new cylinder has been built in.

**Condition:** A vent hose must exist preventing oil coming out uncontrolled.

**Procedure:**
- Open the slides completely, loosen the vent screw for closing at the cylinder and connect the vent hose.
- Close the slides until there is no air in the vent hose. Repeat the same process at the vent screw for opening.

There are 2 drilled holes at the right table, one of it is in the middle under the horizontal movable plate.

The cylinder has to be dismounted completely from the movable table on the left side.

Then open completely the cylinder:
- Open the rear vent screw (seen from the cylinder) and screw the vent hose to it.
- Move backwards and forwards until there is only oil left in the hose and no more air bubbles.
- Unscrew the vent hose and tighten again the screw.
- Repeat the same process at the frontal screw.

To be sure that the air has left the cylinder completely, you can perform the following the test:
- Drive out the cylinder for the half way as soon as both vent screws are tightened again.
- Move slowly forwards and backwards the piston rod.

A continuous resistance signifies that there is no more air in the cylinder.

Jerking means there is still left air in the cylinder.

7.6. **Storage**

- The linear guiding rods of the basic machine are to be kept free from dirt and to be lubricated regularly over the nipple at the linear guide.
- Store dry.
7.7. 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.

7.8. Transport

- Take care that the machine is not exposed to hurts.
- Handle the machine carefully, take especially care for the electro cables.
- Do not tilt the machine too much, in order to prevent oil slick.
- If need be, dismount the planer and the heating element:

For that purpose remove the heating element from the holder (see arrow) and then the planer itself.

Remove the four screws (S) from the planer and then the planer itself.
8. Wiring and hydraulic diagrams
9. Spare parts list

You can access our website and select our spare parts lists via the qr code shown here. Select “4002 manual”
10. 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:

<table>
<thead>
<tr>
<th>Product name:</th>
<th>Heating element butt welding machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model name:</td>
<td>WIDOS 4911</td>
</tr>
<tr>
<td>Machine number:</td>
<td></td>
</tr>
<tr>
<td>Year of construction:</td>
<td></td>
</tr>
</tbody>
</table>

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</td>
<td>Electro-magnetic resistance</td>
</tr>
<tr>
<td>EN 55014</td>
<td></td>
</tr>
<tr>
<td>EN ISO 4413</td>
<td>Hydraulic fluid power- General rules and safety requirements for systems and their components</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:

| Name, first name:               | Dommer, Martin                  |
| Function:                       | Technical director              |

Heimerdingen, 28.05.2019

Place / Date                     Legally binding signature

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