Working Instructions Translation

Hydraulic control unit

WIDOS WI-CNC® 1.1 - 1.3

Keep for further use!
Identification of product

Model: Hydraulic control unit
Type: WIDOS WI-CNC® 1.1 - 1.3
Serial number, year of construction: see nameplate

Customer entries

Inventory No.: 
Place of working: 

Order of spare parts and after sales service

Address of manufacturer

WIDOS
W. Dommer Söhne GmbH
Einsteinstr. 5
D -71254  Ditzingen-Heimerdingen

Phone: +49  71 52  99 39  0
Fax: +49  71 52  99 39 - 40
E-mail: info@widos.de
Webside: 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 apparatus.

Just as we are, you are obliged to engage in these working instructions, as well.

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

Should questions arise, contact our service team 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 apparatus. Due to this structure, the searched information can be easily found.
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1. Description of the product

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

1.1. Usage and purpose-oriented use

The WIDOS WI-CNC® 1.1 - 1.3 has been designed only for the welding and the logging of butt welds in combination with a butt welding machine 4400 up to 6113 designed by WIDOS.

All use of the WI-CNC® 1.1 - 1.3 going beyond is not purpose oriented.

The described WI-CNC® 1.1 - 1.3 may only be operated, maintained and repaired by persons who are trained and informed about the dangers.

The manufacturer is not responsible for any damages caused by inexpert handling or operation.

For personal injuries, material and immaterial damages resulting herefrom, only the user is responsible!

The WI-CNC® 1.1 - 1.3 is reliable in the use when it is used according to the prescriptions in connection with a welding machine designed by WIDOS.

Also part of the purpose oriented use is

- respecting all the 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 apparatus itself or products standing nearby 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 regulations must be necessarily adhered to.

1.3. Conformity

The apparatus 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 apparatus were made very carefully.
1.4. Designation of the product

The product is designated by a nameplate. It contains the type, the serial number and the year of construction of the apparatus.

1.4.1. Technical data

All important technical data of each single component are listed. This allows a quick information about working capacity and structure.

1.4.1.1. WIDOS WI-CNC® 1.1 General data

| Dimension (l x w x h): | appr. 250x570x490 (mm)  
<table>
<thead>
<tr>
<th></th>
<th>height appr. 580 mm with open flaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>38.5 kg</td>
</tr>
<tr>
<td>Feeding:</td>
<td>max. 3.6 kW</td>
</tr>
<tr>
<td>Voltage:</td>
<td>230 VAC (± 10%)</td>
</tr>
<tr>
<td>Current:</td>
<td>max. 16 A</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Insulation system:</td>
<td>IP 44</td>
</tr>
</tbody>
</table>

1.4.1.2. WIDOS WI-CNC® 1.3 General data

| Dimension (l x w x h): | appr. 370x665x610 (mm)  
<table>
<thead>
<tr>
<th></th>
<th>height appr. 710 mm with open flaps</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight:</td>
<td>kg</td>
</tr>
<tr>
<td>Feeding:</td>
<td>max. 11 kVA</td>
</tr>
<tr>
<td>Voltage:</td>
<td>400 VAC (± 15%)</td>
</tr>
<tr>
<td>Current:</td>
<td>max. 3*16 A</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz</td>
</tr>
<tr>
<td>Insulation system:</td>
<td>IP 44</td>
</tr>
</tbody>
</table>

1.5. Equipment and accessories:

<table>
<thead>
<tr>
<th>Piece/ Mach.</th>
<th>Denomination</th>
<th>Article number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>USB-Stick with 1 GB</td>
<td>EPR1060</td>
</tr>
<tr>
<td>1</td>
<td>Barcode – Scanner (optional)</td>
<td>EG0004</td>
</tr>
<tr>
<td>1</td>
<td>Outside temperature sensor (optional)</td>
<td>EE0404</td>
</tr>
<tr>
<td>1</td>
<td>GPS (optional)</td>
<td>EG1060</td>
</tr>
</tbody>
</table>

Order numbers and single pieces see spare part lists, or can be obtained from WIDOS.
2. **Safety rules**

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

- These working instructions contain the most important indications to run the hydraulic control unit safely.
- The safety indications are to be followed by all persons working with the hydraulic control unit.

2.1. **Explanation of the symbols and indications**

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

![Symbol](image)

- This symbol means a possible danger for the life and the health of persons by electrical energy.
- The non-respect of these indications may have heavy consequences for the health.

![Symbol](image)

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

![Symbol](image)

- This symbol gives important indications for the proper use of the apparatus.
- The non-respect of these indications may conduct to malfunctions and damages on the apparatus 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 apparatus 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 with the apparatus who

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

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

All persons who are to work with the apparatus are obliged before working:

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

2.4. Measures 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. Information about safety precautions

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

2.6. Instructions for the staff

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

2.7. Dangers while handling the hydraulic control unit

The hydraulic control unit WI-CNC® 1.1 / 1.3 is constructed according to the latest technical standard and the acknowledged technical safety rules. However, dangers for the operator or other persons standing nearby may occur. Also material damages are possible.

The hydraulic control unit should only be used

- According to the purpose oriented usage;
- In safety technical impeccable status.

Disturbances which may affect the safety must be cleared immediately.
2.8. **Dangers due to electric energy**

Only skilled persons are allowed to work at electrical appliances. If work at alive parts is necessary, a second person has to assist who can disconnect the hydraulic control unit from the mains if necessary.

- The electrical equipment of the hydraulic control unit has to be checked regularly. Loose connections and damaged cables have to be replaced immediately.
- According to VDE 0100, the use on construction sites is only allowed with a power distributor with a FI-safety switch.

2.9. **Specific dangers**

2.9.1. **Danger of stumbling over electric wire**

- Make sure that no person has to step over the wire.

2.10. **Structural modifications on the hydraulic control unit**

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

2.11. **Warranty and liability**

Fundamentally our "General Sales and Delivery Conditions" are valid. They are at the owner’s disposal latest when signing the contract. Guarantee and liability demands referring to personal injuries or damages on objects are excluded if they are caused by one or several of the following reasons:

- Not using the hydraulic control unit according to the prescriptions;
- Inexpert transport, mounting, starting, operating, and maintenance of the hydraulic control unit;
- Ignoring the information given in this manual;
- Structural modifications on the apparatus without permission;
- Unsatisfactory checking of parts of the hydraulic control unit which are worn out;
- Repairs performed in an inexpert way;
- In case of catastrophes and force majeure.
3. Functional description

The hydraulic unit **WI-CNC® 1.1 / 1.3** calculates the corresponding parameters being necessary for executing a welding with a corresponding welding machine by WIDOS after entering the kind of plastic, the pipe diameter and the wall thickness (if necessary the ambient temperature as well).

If the basic machine including distance meter and a heating element with PLC function are connected to the **WI-CNC® 1.1 / 1.3**, the device will automatically identify these components.

The corresponding pipe data is selected manually on the touch screen.

**Welding** with the WIDOS **WI-CNC® 1.1 / 1.3** works as follows:

The plastic pipes are clamped by means of the clamping devices (basic machine) and the pipe ends are cut plane and parallel by means of the planer.

As soon as the pipes are plane and parallel and the misalignment is in order, you can start welding. The cleaned heating element is inserted into the machine.

The clamped pipes drive under pressure in direction of the heating element and are heated up under the defined adjustment pressure (adjusting), the duration of the adjustment is called **adjusting time**.

During the adjustment, the **bead** prescribed by the DVS is performed.

During the heating time, the machine is depressurized and the pipe ends are heated.

After expiration of the heating time, the sledges move apart and the heating element should be removed as fast as possible. The time period between the removal of the heating element and the closing of the pipes is called **change over time**.

After the maximum time prescribed by the DVS, the pipe ends are driven together and a continuous welding pressure is built up.

The pipe then cools down under the prescribed welding pressure (**cooling time**).

After completion of the cooling time, the pressure on the pipe is automatically released and the welded pipe can be unclamped.

The welding process is completed.

The weldings are logged and stored and can be read out via the USB interface.
4. Operating and indicating elements

4.1. Elements on WI – CNC® 1.1

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flap for covering main switch and USB interface</td>
</tr>
<tr>
<td>2</td>
<td>Flap for covering the touch screen resp. as glare shield</td>
</tr>
<tr>
<td>3</td>
<td>Main switch for switching the WI – CNC® 1.1 on / off</td>
</tr>
<tr>
<td>4</td>
<td>USB interface, connection example for memory stick or scanner</td>
</tr>
<tr>
<td>5</td>
<td>GPS receiver (optional)</td>
</tr>
<tr>
<td>6</td>
<td>Oil dipstick and oil filler neck</td>
</tr>
<tr>
<td>7</td>
<td>Frame for WI – CNC® 1.1</td>
</tr>
<tr>
<td>8</td>
<td>EMERGENCY-Stop push button for stopping the machine in case of danger</td>
</tr>
</tbody>
</table>
| 9   | Touch screen for:  
|     | - selecting dimensions and various functions of welds  
|     | - operation of welding function |
| 10  | Interface for way measurement of the basic machine |
| 11  | Outside temperature probe |
| 12  | Socket for WIDOS heating element **only** |
| 13  | Coupling muff for hydraulic hose for closing |
| 14  | Coupling pin for hydraulic hose for opening |
| 15  | Alarm horn |
| 16  | Socket for WIDOS planer **only** |
| 17  | Connecting cable with plug (for 230 V / 50 Hz / 16 A) |
### 4.2. Elements on WI – CNC® 1.3

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Flap for covering main switch and USB interface</td>
</tr>
<tr>
<td>2</td>
<td>Flap for covering the touch screen resp. as glare shield</td>
</tr>
<tr>
<td>3</td>
<td>Main switch for switching the WI – CNC® 1.3 on / off</td>
</tr>
<tr>
<td>4</td>
<td>USB interface, connection example for memory stick or scanner</td>
</tr>
<tr>
<td>5</td>
<td>GPS receiver (optional)</td>
</tr>
<tr>
<td>6</td>
<td>Oil dipstick and oil filler neck</td>
</tr>
<tr>
<td>7</td>
<td>Frame for WI – CNC® 1.3</td>
</tr>
<tr>
<td>8</td>
<td>EMERGENCY-Stop push button for stopping the machine in case of danger</td>
</tr>
<tr>
<td>9</td>
<td>Touch screen for:</td>
</tr>
<tr>
<td></td>
<td>- selecting dimensions and various functions of welds</td>
</tr>
<tr>
<td></td>
<td>- operation of welding function</td>
</tr>
<tr>
<td>10</td>
<td>Interface for way measurement of the basic machine</td>
</tr>
<tr>
<td>11</td>
<td>Outside temperature probe</td>
</tr>
<tr>
<td>12</td>
<td>Sockets for WIDOS heating element only</td>
</tr>
<tr>
<td>13</td>
<td>Coupling muff for hydraulic hose for closing</td>
</tr>
<tr>
<td>14</td>
<td>Coupling pin for hydraulic hose for opening</td>
</tr>
<tr>
<td>15</td>
<td>Alarm horn</td>
</tr>
<tr>
<td>16</td>
<td>Sockets for WIDOS planer only</td>
</tr>
<tr>
<td>17</td>
<td>Connecting cable with plug (CEE-16 A)</td>
</tr>
</tbody>
</table>
4.3. Heating elements with PLC function (optional)

4.3.1. Digital heating element with PLC function

Temperature display:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>220</td>
<td>Indication of the actual temperature (without blinking dots).</td>
</tr>
</tbody>
</table>

2.2.0. Indication with blinking dots behind the numbers:
If the heating element is connected to the WI-CNC 1.1 / 1.3 and you turn the adjusting screw additionally, the blinking dots will appear.
The heating element will however keep the nominal temperature that is provided by the WI-CNC® 1.1 / 1.3.

Caution! If you connect the heating element externally afterwards, the nominal temperature will be misaligned.

Control lamp green:

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>The desired temperature has been exceeded, the heating element is cooled automatically onto desired temperature, or the heating element is switched off.</td>
</tr>
<tr>
<td>On</td>
<td>The heating element is being heated up, the desired temperature has not yet been reached.</td>
</tr>
<tr>
<td>Blinking</td>
<td>The temperature of the heating element is maintained by a pulse-position ratio.</td>
</tr>
</tbody>
</table>
4.3.2. Analog heating element with PLC function

On / off switch:
As soon as the heating element is connected and started, the switch illuminates and starts heating up to the desired temperature.

Control lamp green:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>The desired temperature has been exceeded, the heating element is cooled automatically onto desired temperature, or the heating element is switched off.</td>
</tr>
<tr>
<td>On</td>
<td>The heating element is being heated up, the desired temperature is not yet reached.</td>
</tr>
<tr>
<td>Blinking</td>
<td>The temperature of the heating element is maintained by a pulse-position ratio.</td>
</tr>
</tbody>
</table>

4.3.3. Heating element with PLC function (5100)

Control lamp green:

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>The desired temperature has been exceeded, the heating element is cooled automatically onto desired temperature, or the heating element is switched off.</td>
</tr>
<tr>
<td>On</td>
<td>The heating element is being heated up, the desired temperature is not yet reached.</td>
</tr>
<tr>
<td>Blinking</td>
<td>The temperature of the heating element is maintained by a pulse-position ratio.</td>
</tr>
</tbody>
</table>
4.3.4. Heating element with PLC function (5500 - 6113)

As soon as the heating element is connected to the WI-CNC®, it starts heating up to the desired temperature.

![Terminal box with control](image)

2.2.0
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.

1 8 0
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.

4.3.5. How to set the heating temperature

Connected to the WI-CNC® 1.1 - 1.3:
If the heating element is connected to the power socket (chapter: 4.1 or 4.2, no. 11) and activated, the temperature will be heated up to the prescribed nominal temperature automatically while selecting the welding material.

Connected to external power socket:
If the heating element is connected to an external power socket and activated, you can adjust the nominal temperature with the adjusting screw.

Either: Digital heating element:
The display first shows the nominal temperature (with blinking dots) and afterwards the current temperature (without blinking dots). If the green control lamp is blinking, the temperature has been reached.

Or: Analog heating element:
The heating element is heated up to the adjusted temperature; if the green control lamp is blinking, the temperature has been reached.
4.4. **Barcode scanner (optional)**

With the barcode scanner, you can authorize. For reading the barcode you need an Operator card or optional a Master card).

Connect the USB plug of the scanner into a free interface below the left shutter.

For reading a barcode, hold the scanner vertically over the barcode and press the push button. Scanning is confirmed by an acoustic signal and by the flashing of the red control lamp.

The holder of the barcode scanner features four magnets at the bottom side; therefore you can position the scanner at the machine wherever you prefer.

Examples showing how you can position the scanner horizontally or vertically:
5. Starting and operating

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

This includes:
- The safe operation of the hydraulic control unit;
- Using all the possible options of the hydraulic control unit;
- Economic operation of the hydraulic control unit.

5.1. Safety indications

- The hydraulic control unit may only be operated by initiated and authorized persons. For the qualification, a plastic welding exam can be taken according to DVS and DVGW.
- After completion of the welding work and during breaks the hydraulic control unit has to be switched off. Further take care that no unauthorized person has access.
- According to VDE 0100, the use on construction sites is only allowed with a power distributor with a RCD (FI) security protective switch.

Take care that all hydraulic and electric connections are connected.

5.2. Connecting the WI-CNC® 1.1 / 1.3 to the welding machine

Connect both hydraulic hoses of the basic machine with couplings (chapter: 4, no. 12 and 13).

In case there is a basic machine with measuring system, connect it with the interface (9).

Connect the plug of the WI-CNC® 1.1 with a local socket (230V / 50 Hz /16 A) and the WI-CNC® 1.1 with a local socketet (400V / 50 Hz / 3*16A) or on building sites to the current distributor with RSD (FI) safety switch.

Connect the heating element with PLC system (optional) to the socket (11), or connect a heating element without PLC system to the socket (11) or an external socket.

Connect the planer to the socket (15).

Now the machine is ready.
### 5.3. Buttons on the touch screen

Three variants are possible:

- **Button dark:** Button inactive, cannot be operated
- **Button bright:** Button active, for manual operation
- **Button bright, animated:** Indication for next operation

#### 5.3.1. Small buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Abort" /></td>
<td>Abort</td>
</tr>
<tr>
<td><img src="image2" alt="Next in:" /></td>
<td>Next in: (insert pipes, clean them)</td>
</tr>
<tr>
<td><img src="image3" alt="Open, manually" /></td>
<td>Open, manually</td>
</tr>
<tr>
<td><img src="image4" alt="No (red)" /></td>
<td>No (red)</td>
</tr>
<tr>
<td><img src="image5" alt="Diagnosis" /></td>
<td>Diagnosis</td>
</tr>
<tr>
<td><img src="image6" alt="Parameter" /></td>
<td>Parameter</td>
</tr>
<tr>
<td><img src="image7" alt="Welding process" /></td>
<td>Welding process</td>
</tr>
<tr>
<td><img src="image8" alt="Plus" /></td>
<td>Plus</td>
</tr>
<tr>
<td><img src="image9" alt="Information" /></td>
<td>Information</td>
</tr>
<tr>
<td><img src="image10" alt="Checking off" /></td>
<td>Checking off</td>
</tr>
<tr>
<td><img src="image11" alt="Yes (green)" /></td>
<td>Yes (green)</td>
</tr>
<tr>
<td><img src="image12" alt="Checking on (black)" /></td>
<td>Checking on (black)</td>
</tr>
<tr>
<td><img src="image13" alt="Copy" /></td>
<td>Copy</td>
</tr>
<tr>
<td><img src="image14" alt="Identify machine automatically, (option with digital displacement transducer)" /></td>
<td>Identify machine automatically, (option with digital displacement transducer)</td>
</tr>
<tr>
<td><img src="image15" alt="Empty" /></td>
<td>Empty</td>
</tr>
<tr>
<td><img src="image16" alt="Back" /></td>
<td>Back</td>
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<tr>
<td><img src="image17" alt="Minus" /></td>
<td>Minus</td>
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<tr>
<td><img src="image18" alt="Close, manually" /></td>
<td>Close, manually</td>
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<tr>
<td><img src="image19" alt="Next section" /></td>
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<tr>
<td><img src="image20" alt="Check oil level" /></td>
<td>Check oil level</td>
</tr>
<tr>
<td><img src="image21" alt="Next" /></td>
<td>Next</td>
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### 5.3.2. Large buttons

<table>
<thead>
<tr>
<th>Button</th>
<th>Description</th>
<th>Action</th>
</tr>
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<tbody>
<tr>
<td><img src="image" alt="Cooling" /></td>
<td>Cooling</td>
<td>Keyboard (colored) active</td>
</tr>
<tr>
<td><img src="image" alt="Aligning" /></td>
<td>Aligning</td>
<td>Keyboard (black) not activated</td>
</tr>
<tr>
<td><img src="image" alt="Heating" /></td>
<td>Heating</td>
<td>Joint number</td>
</tr>
<tr>
<td><img src="image" alt="Move open" /></td>
<td>Move open</td>
<td>O.K. (green)</td>
</tr>
<tr>
<td><img src="image" alt="Unclamp" /></td>
<td>Unclamp</td>
<td>not O.K. (red)</td>
</tr>
<tr>
<td><img src="image" alt="Basic position" /></td>
<td>Basic position</td>
<td>Set parameters</td>
</tr>
<tr>
<td><img src="image" alt="Drag pressure measuring" /></td>
<td>Drag pressure measuring</td>
<td>Ramp, pressure build-up</td>
</tr>
<tr>
<td><img src="image" alt="Check (black)" /></td>
<td>Check (black)</td>
<td>Start</td>
</tr>
<tr>
<td><img src="image" alt="Check heating element temperature" /></td>
<td>Check heating element temperature</td>
<td>Change over</td>
</tr>
<tr>
<td><img src="image" alt="Planer rotating" /></td>
<td>Planer rotating</td>
<td>Alignment check</td>
</tr>
<tr>
<td><img src="image" alt="Insert planer" /></td>
<td>Insert planer</td>
<td>Alignment check made, o.k.</td>
</tr>
</tbody>
</table>
5.4. How to switch on the WI – CNC® 1.3

Open the flaps on the WI – CNC® 1.3 and switch on the main switch (chapter: 4, no.: 3).

As soon as the switch is activated, the display gets bright, the processor is being initialized and the display messages change automatically.

Indication of current software version, serial number and free memory space:

- 183 = free weldings in the RAM (max. appr. 200 memory capacities)
- 31,830 memory capacities available at USB

Display: validity period until next service, and operator identification

Before entering the 4-digit login name, the machine is depressurized. Only now you can check the oil level (chapter: 6.4)!

Either: Authorize yourself with (optional) scanner and corresponding barcode from the authorization card.

Or: Press: < and enter a four-digit login name via keyboard.

Then press button <.

If you press button < it appears:

Confirm the message with <.
Enter a four-digit code using the keypad. Confirm the code with button <\>

In the basic menu you can:

Either: Move the basic machine open, therefore press button: <\>
Or: Identify the basic machine type with button: <\>

5.4.1. Select machine type with way measurement system

Display of software version
Display of serial numbers
Display: validity period until next service,

Press button <\>, the machine is identified automatically.
This error message appears if no position measuring system is available and basic machine is not connected.

Error message always appears once no travel sensor is available, or error message appears if pipes are clamped.

Confirm the error message with button: <✓>.

Press: <✓> in order to identify the machine manually.

Indication of all machine types, the selected machine type is highlighted.

Confirm the selected machine with button: <✓>.

Indication of all machine types, the selected machine type is highlighted.
Press button: < for automatically identifying of basic machine.

Machine moves in basic position.

5.4.2. Select machine type without way measurement system

This message only appears when you first turn:

- Indication of serial numbers of the connected devices
- Display of the machine type

Confirm the error message with button: < }.

Indication of all machine types, the selected machine type is highlighted.
Tap on the machine type you want to weld with.
Confirm your choice with the <button> button.

Press button: <button> to move the machine in basic position.

Indication of the connected slide

Confirm the selected machine type with button:

Main menu,
Error message: way measuring system missing
Error message: heating element missing
You can:
Select dimensions with: <button>
Open basic machine with: <button>
Close basic machine with: <button>
5.4.3. How to determine the dimension

Press button: <⁰> for selecting the dimensions.

Select material PE / PP / SLM30 with left buttons: <↑ / ↓>,
Select outer diameter for pipe with the second buttons: <← / →>,
Select the wall thickness with the third buttons: <← / →>, then the SDR size is displayed automatically.
The temperature is displayed according to DVS rule, cannot be changed.
Select method DVS / ProFuse / WIS / ASTM / NEN with button <DVS>.
Die ausgesuchte Schweißstandard wird markiert.

Confirm the selected welding method with button <.

No = <; Yes = <;>

Either: Confirm the new method with button <.
Or: Press button < and select the other method.

Current dimensions are displayed

Either: Confirm the selections with button <.
Or: press button: < for other settings.
5.4.4. Further settings for traceability, ½ cooling time or entering RAM > USB

Press button: < الاسلام/> for other settings.

Press <Islam/> in order to select traceability, the button changes to: <Islam/>.
Press <Islam/> in order to select ½ cooling time, the button changes to: <Islam/>.
Press <Islam/> in order to copy all existing weldings from the RAM to the connected device at the USB interface.

Either: Terminate all further settings with <Islam/>.
Or: Enter the diagnosis menu with <Islam/>.
5.4.4.1. How to adjust date, time, signal horn and language

Press button: < for other settings.

Different languages are indicated, by selecting a language it is highlighted.

Volume: Tap the volume bar depending on the volume, the volume bar will be refreshed, or tap < in order to disable the signal horn, then: < appears.

Language: Tap the desired language, the language is highlighted.

Clock + Date: Press < in order to select clock and date adjustment.

Date and time is displayed

Adjust: day, month and year as well as hour and minute with: < / >.

Confirm it with button <.
Different languages are displayed, by selecting a language it is highlighted.

Confirm it with button <button>.

Current machine is displayed

Current date and time is displayed.
5.5. **Welding with the WI–CNC® 1.1 / 1.3**

Activate the WI–CNC® 1.1 / 1.3 (chapter: 5.4), and identify the basic machine (chapter: 5.4.1 or 5.4.2).

Current machine is displayed

Current date and time are displayed.

Press button: < for the start of welding process.

If you have a basic machine without way measurement system, this error message will appear:

Confirm the error message with button <☑>.

If you have not driven the basic machine back into basic position when activating, this error message appears:

Confirm the error message with button <☑>.
Starting and operating

Chapter 5

Current machine is displayed
Current date and time are displayed.

Then go back with < and drive the machine to basic position, otherwise no welding will be possible.

Current dimensions are displayed

Check the dimensions whether they match the pipes. Confirm the settings with <.

Select the current weather on the left side.
Select the weather protections on the right side and carry out the measures on the machine.

Either: Confirm the settings with <. Or Confirm the settings with <. Then the last project name and the next joint number are recorded automatically. Then continue with: 1 (page: 36).
Either: Change the indicated job name via keyboard.

Or: Press < >, then you can select job name numbers 2…5 and use or change them if necessary.

Confirm the selected job name with < >.

You can change the joint number via keyboard, the counter continues automatically for the next welding.

Confirm the joint number with < >.
If you have connected a heating element with PLC function and if the current temperature has not yet reached the nominal temperature, the display shows:

Display: Pipe dimension, time + outside temperature
Indication of nominal temperature (orange) and current temperature (red)

Confirm error message with button <.

Once the heating element has heated up to nominal temperature, the display shows:

Display: Pipe dimension, time + outside temperature
Indication of nominal temperature (orange) and current temperature (red)

If necessary you can open / close the basic machine with buttons < / >.

Press the (blinking) button <.>.
This message appears only if a manual heating element is available resp. if the heating element is not connected to the WI – CNC® 1.3.

Display: Pipe dimension, time + outside temperature
Indication of nominal and current temperature

Confirm the error message with button  

Display: Pipe dimension, time + outside temperature
Indication of nominal temperature (orange) and current temperature (red)

If necessary you can open / close the basic machine with buttons  /  .

Press button  for setting temperature.

Indication of the heating element temperature manually adjusted

Enter the heating element temperature with:  /  that you have adjusted at the manual heating element; it should match the nominal temperature.
Confirm temperature with  .

Display: Pipe dimension, time + outside temperature
Indication of nominal temperature (orange) and current temperature (red)

If necessary you can open / close the basic machine with buttons  /  .
Check the current temperature at the manual heating element if it has been reached and press the (blinking) button afterwards.

This message appears only if the basic machine is not completely open:

Display: Pipe dimension, time + outside temperature
Display: nominal pressure: $p_\text{s}$, motion pressure: $p_0$, current pressure: $p_\text{i}$ and current temperature

Press $\rightarrow$ in order to open the basic machine completely.

Fix the pipes in the clamping rings and clean the pipe ends.
Confirm with $\rightarrow$.

Press $\rightarrow$ in order to start motion pressure measuring.
Starting and operating

Chapter 5

Display: Pipe dimension, time + outside temperature

Display: nominal pressure: \( p_s \), motion pressure: \( p_0 \), current pressure: \( p_i \) and current temperature

The motion pressure is being measured, afterwards this message appears automatically:

In case you have clamped the pipes too far in, this message appears:

Display: Pipe dimension, time + outside temperature

Confirm the error message with \(<\>\).
Afterwards release the clamping rings and clamp one or both pipes farther out.

Display: nominal pressure: \( p_s \), motion pressure: \( p_0 \), current pressure: \( p_i \) and current temperature

Press \(<\>\) in order to start motion pressure measuring.
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Display: Pipe dimension, time + outside temperature
Display: nominal pressure: ps, motion pressure: p0, current pressure: pi and current temperature

The machine is being calibrated, afterwards this message appears automatically:

Insert the planer into the machine in-between the pipe ends and let it snap in the front.
For starting rotation of the planer press button <C> and keep it pressed.

Cut the pipe ends until a circular chip has formed running around the pipe ends 2-3 times and <B> is blinking.
Then release <C>.
Unlock the planer, take it out of the machine and put it into the reception box.
Remove the chips created, thereby do not touch the prepared surfaces.

Either: The pipe ends are plane; then press \(<\text{B}"\) in order to start mismatch checkup; the machine moves the pipes ends together.
Or: The pipe ends are not plane; then reinsert the planer into the basic machine and start planing with \(<\text{C}"\).

Check mismatch at the abutting pipe ends; mismatch must not exceed 10% of the wall thickness according to DVS.

The gap must not exceed 0.5 mm for pipes with OD ≤ 355 mm and 1.0 mm for pipes with OD 400 – 630 mm.

In case the mismatch is not correct, you can compensate a mismatch by changing the clamping of the pipes; afterwards necessarily repeat planing with: \(<\text{C}"\).

In case the mismatch is correct, then you can:
Either: Continue welding with \(<\text{P}"\),
Or: Carry out a test pressure with: \(<\text{Pr}\\text{e}>\) in order to check the slipping of the pipes.

Display: pipe dimension, time + outside temperature
Display: nominal pressure: \(p_s\), motion pressure: \(p_0\), current pressure: \(p_i\) and current temperature

Keep \(<\text{Pr}\\text{e}>\) pressed; the machine will build up the pressure. Simultaneously check nominal and current pressure.

Or: The pipes are slipping at a current pressure \(\leq\) nominal pressure; then you must increase the clamping of the pipes and repeat planing with \(<\text{C}\\text{h}>\).

This message appears only if machine has a GPS receiver (optional)

Display: pipe dimension, time + outside temperature
Display: nominal pressure: \(p_s\), motion pressure: \(p_0\), current pressure: \(p_i\) and current temperature
Current GPS coordinates are indicated.

Display: pipe dimension, time + outside temperature
Display: nominal pressure: \(p_s\), motion pressure: \(p_0\), current pressure: \(p_i\) and current temperature

Insert the heating element into the machine and confirm it with \(<\text{Ch}>\).
In case you are welding with a basic machine **without way measurement system**, this message appears:

Display: Pipe dimension, time + outside temperature  
Display: nominal pressure: $p_s$, motion pressure: $p_0$, current pressure: $p_i$ and current temperature  
Bead up [mm] is indicated.

Visually check the bead up. Once the bead up is completed, you can take the corresponding value from the welding table of the manual machine, press `<`. This will start heating.

**Once the bead up is completed, pressure is reduced and heating starts.**

Display: Pipe dimension, time + outside temperature  
Display: nominal pressure: $p_s$, motion pressure: $p_0$, current pressure: $p_i$ and current temperature  
The elapsed heating time [s] is indicated.

The end of the heating time is signaled by beeps; the display shows:
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Display: Pipe dimension, time + outside temperature
Display: nominal pressure: ps, motion pressure: p0, current pressure: pi and current temperature
The elapsed change over time [s] is indicated.

The machine opens.

Either: You remove the heating element from the machine within change over putting it into the reception box.

Or: You do not remove the heating element within change over; then this message appears:

Confirm the error message with <✓>; welding is aborted.

The machine will move the pipes together after change over.
Display: Pipe dimension, time + outside temperature
Display: nominal pressure: ps, motion pressure: p0, current pressure: pi and current temperature
The elapsed cooling time [min] is indicated.

Message appears only if welding is not correct:

Confirm the error message with <✔>.

Display: Pipe dimension, time + outside temperature
Display: nominal pressure: ps, motion pressure: p0, current pressure: pi and current temperature
Error during welding is indicated.

Release the clamping rings and remove the welded pipe from the basic machine.
Confirm the error message with <✔>.

In case welding is correct, this message appears automatically.
Release the clamping rings and remove the welded pipe from the basic machine. Confirm removal of the welded pipe with <.

Display: machine type
Display: date and time
Display: user name

Welding is completed.
5.5.1. **Copy internal data onto SD card and delete internal data (RAM)**

Connect the USB stick or any other memory medium to one of the USB interfaces (chapter: 4, no. 4).

Press < for other settings.

Press < in order to copy all existing weldings from the RAM onto the connected device at the USB interface.

In case no stick / memory medium is connected to a USB interface; this message appears:

Plug the stick / memory medium into a USB interface and confirm the error message with <.
In case no welding is stored in the RAM; this message appears:

Confirm the error message with <✓>.

Either: Press <✓> and delete the RAM memory.

Or: Press <✓> and do not delete the RAM memory.
6. Equipment care / maintenance / repair

Goal of the chapter is:
- Keeping the nominal state and the operation capacity of the apparatus.
- Increasing the efficiency by avoiding non-planned outage.
- Efficient planning of the maintenance work and the maintenance tools.

6.1. Maintenance and inspection, repair

All maintenance and repair work has to be basically performed with the apparatus in off position.

During this the apparatus 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.

Validity of the current maintenance will be indicated on the screen after activation:

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

- The operating staff has to be informed before the starting of the maintenance work.
- Check the tightness of all screwed connections.
- Check the function of the safety devices after completion of the maintenance work.

6.2. How to clean the operator panel (touch screen)

Clean the operator panel regularly and proceed as follows:
- Activate the machine.
- Spray some cleaning agent onto the cleaning cloth. Do not spray directly onto the operator panel.
- Clean the operator panel. Wipe the cloth from the edge of the screen to the inside in case you clean the display.

Only clean the operator panel after you have switched it off.
By this, you can be sure not to activate functions unintentionally while touching the keys.

Do not clean the operator panel using compressed air or steam cleaners.
Never use any solvents or abrasives.

Use a wet cleaning cloth with cleaning agent.
As cleaning agents, please only use flush fluid or foaming cleaning agents for photos.
6.3. Cleaning of the hydraulic control unit
The used materials and tissues are to be handled and disposed of properly, especially
- when cleaning with solvents.
- when lubricating with oil and grease.

6.4. Check oil level
Check oil level only at the following indication:
Either: This indication appears automatically after activation of the WI-CNC® 1.1 - 1.3.
Or: Step back with: < while the device is activated and authorized.
- Put the WI-CNC 1.3® on even ground.
- Pull out the oil dipstick at the side of the WI-CNC® 1.1 - 1.3.
- Wipe the oil dipstick with a dry cloth, put it back into the tank and pull it out again.
- Read the oil level; it must be in-between both markings.
- In case the oil level is below the lower marking; you must refill with hydraulic oil HLPD 32.
- Put the oil dipstick back into the device after checking until the lock snaps in.

6.5. Used hydraulic oil
Only use HLPD 32.
Features: protection against corrosion, resistance to ageing, abrasion-reducing additives, high carrying capacity and particularly water repellent.

6.6. Storage
- Store the hydraulic control unit in a dry room.

6.7. Disposal
At the end of their life time, the apparatus and the wear parts have to be disposed of properly and non-polluting, and in accordance with the national laws of waste disposal.
7. Transport

The **WI-CNC® 1.1 - 1.3** is transported together with the welding machine in a transport box. The transport box is more suitable for longer transports.

- Make sure that the device is not tilted too much in order that oil cannot leak out.
- Protect the hydraulic control unit from heavy shocks.
- Make sure that the box cover is closed correctly.

During the construction of the transport box a stress was put on a light-weight construction.

- Take much care when using automatic handling and carrying machines.
8. Circuit diagrams

8.1. Circuit diagrams for WI-CNC® 1.1
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<th>sheet</th>
<th>installation</th>
<th>sheet-nr.</th>
<th>Description</th>
<th>installation place</th>
<th>model</th>
<th>Date</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>0DOKU</td>
<td>0</td>
<td>cover sheet</td>
<td>LOC1</td>
<td>Inhaltsübersicht</td>
<td>01.11.14</td>
</tr>
<tr>
<td>2</td>
<td>0DOKU</td>
<td>1</td>
<td>table of contents</td>
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<td>Grafische Liste</td>
<td>11.11.14</td>
</tr>
<tr>
<td>3</td>
<td>0DOKU</td>
<td>2</td>
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<td>LOC1</td>
<td>Stromlaufplan</td>
<td>06.11.14</td>
</tr>
<tr>
<td>4</td>
<td>1NST</td>
<td>3</td>
<td>outputs 24V</td>
<td>LOC1</td>
<td>Stromlaufplan</td>
<td>11.11.14</td>
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<tr>
<td>5</td>
<td>1NST</td>
<td>4</td>
<td>circuit board</td>
<td>LOC1</td>
<td>Stromlaufplan</td>
<td>07.11.14</td>
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<tr>
<td>6</td>
<td>1NST</td>
<td>5</td>
<td>outputs 24V</td>
<td>LOC1</td>
<td>Stromlaufplan</td>
<td>10.11.14</td>
</tr>
<tr>
<td>7</td>
<td>1NST</td>
<td>6</td>
<td>outputs 24V</td>
<td>LOC1</td>
<td>Stromlaufplan</td>
<td>10.11.14</td>
</tr>
<tr>
<td>8</td>
<td>1NST</td>
<td>7</td>
<td>inputs analog</td>
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<tr>
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<td>8</td>
<td>CAN-BUS</td>
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<tr>
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<td>9</td>
<td>plug connection</td>
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<tr>
<td>11</td>
<td>2PLAN</td>
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<td>Klemmenplan</td>
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<tr>
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<td>200</td>
<td>1NST+LOC1-XG09</td>
<td>LOC1</td>
<td>Klemmenplan</td>
<td>10.11.14</td>
</tr>
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Circuit diagrams Chapter 9

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Commission: 00000
Number of sheets: 12
date of print: 12.11.14

---

Drawing number: W0NC-11_2014
Sheet number: 1
Circuit diagrams

Chapter 9

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Circuit diagrams

Chapter 9
### Circuit Diagrams Chapter 9

#### Strip Terminal

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<td>3.3, 3.4</td>
<td>PE3 100PE</td>
<td>100PE</td>
</tr>
<tr>
<td>1020PE</td>
<td>3.5, 3.4</td>
<td>PE4 100PE</td>
<td>100PE</td>
</tr>
</tbody>
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---

**Note:**
- 10-circuit board CN2/CN3
- Line filter heating element
- Heating element planet

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**Revision:** 00000
**Date of Issue:** 11.11.14
**Project Status:** 11. Nov. 2014

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**Drawing Number:** WCNC-112014
**Header:** WIDOS WI-CNC® 1.1 - 1.3

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**Commission:**
- No. of sheets: 12
- Date: 11.11.14
- Project Status: 11. Nov. 2014

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**Note:**
- 24V-switch supply unit
- Frequency inverter hydraulic-pump feeding
- Hydraulic-pump
8.2. Circuit diagrams for WI-CNC® 1.3
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<th>Model</th>
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<td></td>
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**Drawing Number:** WCNC-13_2014

**Sheet Number:** 1

**Revision:** 00000

**Date of Print:** 04.12.14

**Commission:** 21. Nov. 2014

**Number of Sheets:** 12

**Status:**

**Date:** 21.11.14

**Name:** ctd.

**Design:** table of contents

**Project Designation:** W-CNC 1.3

**Installation:** LOC1

**Clearance:**

**Inhaltsübersicht:**

**Grafische Liste:**

**Stromlaufplan:**

**Klemmenplan:**

**Kraftwerk:**

**Verbindung:**
Circuit diagrams

Chapter 9

23.06.2015

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<table>
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<th>note</th>
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<td>CEE- plane</td>
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- Semi-conductor relay planet
- Frequency inverter hydraulic-pump
- Semi-conductor relay planet
- Frequency inverter hydraulic-pump
- Semi-conductor relay planet
- Frequency inverter hydraulic-pump
- Switch supply unit
- Frequency inverter hydraulic-pump
- Frequency inverter hydraulic-pump
- X001.PE
- GRAY X

Drawing number: WIDOS-13_2014
Sheet number: 15
Circuit diagrams

Chapter 9

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Note:

The circuit diagrams show all connections and components relevant for the system. They are intended for technical support and maintenance. For further details, please refer to the system manual.
9. Spare parts list

9.1. Hydraulic control unit WI-CNC® 1.1
## WI-CNC® control unit 1.1

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<td>0975E</td>
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<tr>
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<td>Hexagon domed cap nut M 5 DIN 1587</td>
<td>4</td>
<td>1587E</td>
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<tr>
<td>4</td>
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<td>0125EK</td>
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<td>EST110205</td>
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<td>Cap</td>
<td>1</td>
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<td>16</td>
<td>Socket</td>
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<td>17</td>
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9.2. Hydraulic control unit WI-CNC® 1.3
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<td>0125EK</td>
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<td>Built-in socket USB</td>
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<td>Cap</td>
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9.3. Way measuring systems

Way measuring system for WIDOS 6113:

Cable with plug for all machines
Way measuring system for WIDOS 6100:

1 - 4
5
6
7 - 8
9 - 13
14 - 15
16
17 - 19
Way measuring system for WIDOS 5500:
Way measuring-system for WIDOS 5100:
Spare parts list

Way measuring-system for WIDOS 4900:

1 - 4
5
6
7 - 8
17
16
18 - 19
9 - 13
15
14
24 - 25
26
27 - 28
Way measuring-system for WIDOS 4600:

1 - 4
5
6
7 - 8
17
16
9 - 13
15

24 - 25
26
27 - 28
Way measuring-system for WIDOS 4400:

1 - 4
30
5
6
7 / 29
18 - 19
9 - 13
7 - 8 / 20 - 21
26
27 - 28
16
17
15
14
### Way measuring systems WIDOS 4400 - 6113

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<td>Cladding tube (6100)</td>
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## Spare parts list

**Way measuring systems**  WIDOS 4400 - 6113

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<td>0912F016</td>
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<td>0125F</td>
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9.4. Heating elements with PLC-function

Heating element control digital for machines 4400 - 4900

Heating element control analog for machines 4400 - 4900

Heating element control for machine 5100
Heating element control for machine 5500 - 6113
### Heating element controls with PLC-funktion

<table>
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<td>3</td>
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<td>4</td>
<td>Heating element control PLC for 5500 - 6113</td>
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<td>on request</td>
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</table>
10. Declaration of conformity

In the sense of the EC-guideline EC-Machinery Directive 2006/42/EC

Corporation WIDOS GmbH
Einsteinstr. 5
D-71254 Ditzingen-Heimerdingen

declares under own responsibility that the product

Hydraulic control unit
WIDOS WI-CNC® 1.1 - 1.3

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

1. DIN EN ISO 12100 – 1 and 2 (replacement for DIN EN 292 part 1 and 2)
   Safety of machines, basic terminology, general guidelines for design

2. DIN EN 60204.1
   Electric equipment of industrial machines

3. DIN EN 60950
   Safety of equipments of the information technology

4. DIN EN ISO 4414
   Safety specifications for fluid technical installations and components

5. DIN EN 60555, DIN EN 50082, DIN EN 55014
   Electro-magnetic resistance

The technical documentation is completely available.

Ditzingen-Heimerdingen, the 6/23/2015

______________________________
Martin Dommer (Technical director)