Working Instructions
Translation

Weld log recording apparatus

WIDOS SPA 600

Keep for further use!
### Product identification

<table>
<thead>
<tr>
<th>Model:</th>
<th>Weld Log Recording Apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type:</td>
<td>WIDOS SPA 600</td>
</tr>
<tr>
<td>Serial number, year of construction:</td>
<td>see nameplate</td>
</tr>
</tbody>
</table>

### Customer entries

<table>
<thead>
<tr>
<th>Inventory No.:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Place of working:</td>
<td></td>
</tr>
</tbody>
</table>

### Order of spare parts and after sales service

**Address of manufacturer**

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

Phone:  ++49 7152 9939 0
Fax:    ++49 7152 9939 40
[info@widos.de](mailto:info@widos.de)
[http://www.widos.de](http://www.widos.de)
Introduction

Purpose of the document

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

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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 SPA 600 has been designed only for the surveillance and the logging of butt welds in combination with a butt welding machine designed by WIDOS.

All use of the SPA going beyond is not purpose oriented.

The described SPA 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 SPA 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 works.

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. Structure of the SPA

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display</td>
</tr>
<tr>
<td>2</td>
<td>SD card</td>
</tr>
<tr>
<td>3</td>
<td>Bar code reading pen (optional)</td>
</tr>
</tbody>
</table>

1.5. 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.

1.5.1. Technical data

All important technical data of each single component are listed. This allows a quick information about working capacity and structure.
1.5.1.1. **WIDOS SPA 600 General data**

<table>
<thead>
<tr>
<th>Specification</th>
<th>SPA 600</th>
<th>SPA 600</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimension (l x w x h):</td>
<td>appr. 390x270x210 (mm)</td>
<td>appr. 390x270x210 (mm)</td>
</tr>
<tr>
<td>Weight:</td>
<td>6.3 kg</td>
<td>6.3 kg</td>
</tr>
<tr>
<td>Power:</td>
<td>15 Watt</td>
<td>15 Watt</td>
</tr>
<tr>
<td>Voltage:</td>
<td>230 V (± 10%)</td>
<td>110 V (± 10%)</td>
</tr>
<tr>
<td>Current:</td>
<td>100 mA</td>
<td>200 mA</td>
</tr>
<tr>
<td>Frequency:</td>
<td>50 Hz</td>
<td>60 Hz</td>
</tr>
<tr>
<td>Insulation system:</td>
<td>IP 44</td>
<td>IP 44</td>
</tr>
</tbody>
</table>

See spare parts list for order numbers and single pieces.

1.6. **Equipment and accessories:**

<table>
<thead>
<tr>
<th>Optional</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>- Drive for SD card</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Bar code reading pen with accessories</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Adapter for NTC heating element</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Heating element adapter necessary when welding without SPA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 apparatus safely.
- The safety indications are to be followed by all persons working with the apparatus.

2.1. Explanation of the symbols and indications

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

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

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

This symbol gives important indications for the proper use of the apparatus.
- The non-respect of these indications may conduct to misfunctions 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 apparatus before using it.

2.4. **Measures of organisation**

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

2.5. **Information about safety precautions**

- The working instructions have to be permanently kept at the place of use of the apparatus. 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 apparatus have to be in a clear readable condition.
- Every time the apparatus 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 apparatus.
- 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 apparatus under supervision of an experienced person.

2.7. **Dangers while handling the apparatus**

The apparatus **SPA 600** 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 apparatus 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 works at alive parts are necessary, a second person has to assist who can disconnect the apparatus from the mains if necessary.

- The electrical equipment of the apparatus 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 wires**

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

2.10. **Structural modifications on the apparatus**

- No modifications, extensions or reconstructions may be made on the apparatus without permission of the manufacturer. In case of non-compliance, any guarantee and liability demands shall expire.
- Parts of the apparatus 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 apparatus 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 apparatus according to the prescriptions;
- Inexpert transport, mounting, starting, operating, and maintenance of the apparatus;
- Ignoring the information given in this manual;
- Structural modifications on the apparatus without permission;
- Unsatisfactory checking of parts of the apparatus which are worn out;
- Repairs performed in an inexpert way;
- In case of catastrophes and force majeure.
3. Functional description

After entering the type of the plastic material, the pipe diameter and the wall thickness (if necessary also of the environmental temperature), the weld log recording apparatus (SPA) 600 calculates the respective parameters which are necessary for performing a welding process with a corresponding welding machine of company WIDOS.

The welding processes are logged and can be stored on a SD-card.

The respective pipe data are entered manually by means of the four buttons or with the corresponding pipe data card provided with a bar code which has to be read by the (optional) bar code reading pen.
4. Operating and indicating elements

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bar code reading pen (optional)</td>
</tr>
<tr>
<td>2</td>
<td>Display</td>
</tr>
<tr>
<td>3</td>
<td>Buttons for operation</td>
</tr>
<tr>
<td>4</td>
<td>Drive for the SD card</td>
</tr>
<tr>
<td>5</td>
<td>Interface for barcode readind pen</td>
</tr>
<tr>
<td>6</td>
<td>Connecting cable</td>
</tr>
<tr>
<td>7</td>
<td>Holder for T-pieces</td>
</tr>
<tr>
<td>8</td>
<td>- Plug box for the heating element (when 230 V)</td>
</tr>
<tr>
<td></td>
<td>- Plug box for heating element probe (when 400 V)</td>
</tr>
<tr>
<td>9</td>
<td>Outside temperature probe</td>
</tr>
</tbody>
</table>
5. Starting, operating

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

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

5.1. Safety indications

- The apparatus 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 apparatus 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 FI-security protective switch.

Take care that all hydraulic and electric connections are connected.
- Secure the heating element connection (connection to the temperature probe) by means of the safety stirrup.
- Be sure of safe power supply. Only use regulated power aggregates with 40% standby capacity (= appr. 3 kW)!

5.2. Connecting the SPA 600 with the hydraulic aggregate for machines from 250C up to 315C and 4400 up to 6100

- Put the SPA onto the hydraulic aggregate (arrow) and screw it (1).
- Connect the T-piece (2) with the **frontal** hydraulic connection of the hydraulic aggregate.
- Connect the corresponding hose (3) of the basic machine, e.g. WIDOS 4600 or another type of WIDOS machines.
- Connect the heating element with the special plug to the SPA (5).
- Connect the power plug of the SPA (4) with one of both plug boxes of the hydraulic aggregate or an external plug box.
- Connect the planer with the remaining plug box of the hydraulic aggregate or an external plug box.
- Connect the power plug of the hydraulic aggregate to the mains and be sure to have the correct voltage (230 V (400 V) / 50 Hz).

### 5.3. How to connect the SPA to the hydraulic aggregate from 6100 steel version

- Put the SPA onto the hydraulic aggregate (arrow) and screw it (1).
- Connect the T-piece (2) to the upper hydraulic connector of the hydraulic aggregate.
- Connect the suitable hydraulic hose (3) of the basic machine e.g. WIDOS 6100 steel version to this spot.
- Put the special plug of the heating element into the multipolar power socket at the SPA (5) and secure by the bracket.
- Connect the plug (4) of the SPA to the power socket (6) at the hydraulic aggregate.
- Connect the mains plug of the hydraulic aggregate to the power supply, observe the correct voltage (230 V (400 V) / 50 Hz).
5.4. How to connect the SPA to the closed hydraulic aggregate, from WIDOS 6100 steel version upwards

- Put the SPA onto the hydraulic aggregate (arrow) and screw it (1).
- Put the SPA onto the hydraulic aggregate (arrow) and fix it (1).
- In case the T-piece (2) is not mounted to position, remove it from holder (7) and connect it to the upper hydraulic connector of the aggregate.
- Connect both hydraulic hoses (3) of the basic machine e.g. WIDOS 6100 steel version there.
- Put the special plug of the heating element into the multipolar power socket at the SPA (5) and secure by the bracket.
- Connect the plug (4) of the SPA to the power socket (6) at the hydraulic aggregate.
- Connect the mains plug of the hydraulic aggregate to the power supply, observe the correct voltage (32 A (400 V) / 50 Hz).
5.5. Description of the display

<table>
<thead>
<tr>
<th>No.</th>
<th>Denomination</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Display</td>
<td>- Displays the necessary parameters (for welding and programming).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Two values can be displayed at the same time.</td>
</tr>
<tr>
<td>2</td>
<td>Buttons for operation</td>
<td>- Drag pressure measurement;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Setting the pipe data and the project number;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Setting the type of the machine;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Printing the welding data;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Diagnosis menu;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reset to the previous item of the menu.</td>
</tr>
</tbody>
</table>
5.6. Programming the SPA

As soon as the mains plug of the SPA 600 is connected to a plug box (mains / hydraulic aggregate), the display is lightened (the computer is being initialised).

Display:
2. line: WIDOS GmbH
   Germany

after 3 s:

Display:
2. line: version 0.00.0
   sernr  000000

Number of the software version
Serial number of the machine

after 3 s:

Display:
2. line: 000 free weldings
   0000  SD card

Number of free memory capacity (RAM)
Number of free memory capacity SD card

after 3 s:

Display:
2. line: WIDOS 4600 SPA
   09:43  03.05.2004

Display of the currently set machine type
Current time and date
alternating with: 21°C HE= - - - °C current outside and heating element temperature

„Basic menu“

In the basic menu, following possibilities are given:

- The welding process is started by the drag pressure measurement.
- Setting the pipe data and the project number by pressing simultaneously <+> and <->.
- The pipe data can also be read from the pipe data card with the bar code reading pen.
- Setting the machine type and printing the welding data by pressing simultaneously <-> and <Enter>.
- Diagnosis menu by pressing simultaneously <+> and <Enter>. 
5.6.1. Setting the machine types

Abort and back to basic menu by pressing button <C>.
One step back by pressing buttons <Enter> (keeping pressed) and <->.

Display:
2. line: WIDOS 4600 SPA 09:43 03.05.2004

Display of the currently set machine type
Current time and date
alternating with: 21°C HE= - - - °C current
outside and heating element temperature

Next menu by pressing simultaneously buttons <-> and <Enter>

Display:
2. line: Copy

The data is stored from internal RAM to SD-card by <+>
Next menu by pressing button <Enter>

Display:
2. line: lang. english ?

Select the language

Select the language with buttons <+> and <->
Next menu by pressing button <Enter>

If welding double pipes is possible, the message appears:

Display:
2. line: pipe in pipe No

Select double pipe welding

Press button <-> for Yes
Confirm Yes or No by pressing button <Enter>

Display:
2. line: Traceability No

Traceability can be select

Press button <-> for Yes
Confirm Yes or No by pressing button <Enter>
In case traceability has been confirmed with "yes", the display indicates:

Display:

2. line: Pipe length

No

Select pipe length for traceability

Press button <-> for Yes

Confirm Yes or No by pressing button <Enter>

Display:

2. line: shortened cooling

no

Select the shortened cooling time

Press button <-> for Yes

Confirm Yes or No by pressing button <Enter>

It is allowed to use the shortened cooling time under the following conditions:
- Welding material: PE and PP
- Prefabrikation under workshop conditions
- Low additional pressure at unclamp
- No additional pressure during further cooling down
- Load onto the workpieces only after being completely cooled down

Display:

2. line: WIDOS 4400 SPA

09:43 03.05.2004

Select the machine type

Select the machine type with buttons <-> and <->

Next menu by pressing button <Enter>

Display:

2. line: WIDOS 4400 SPA

09:43 03.05.2004

Enter the time

Enter the time with buttons <-> and <->

Next menu by pressing button <Enter>

Display:

2. line: WIDOS 4400 SPA

09:43 03.05.2004

Enter the date

Enter the date with buttons <-> and <->

Next menu by pressing button <Enter>
5.6.2. Setting the pipe data

Abort and back to basic menu by pressing button <C>.

1 step back by pressing button <Enter> (keeping pressed) and button <->.

Display:
2. line:
WIDOS 4600 SPA
09:43 03.05.2004

Display of the currently set machine type Current time and date
alternating with: 21°C HE= - - - °C current outside and heating element temperature

By pressing simultaneously buttons <-> and <->, the pipe data can be changed over the keyboard
or if a reading pen is available, the pipe data can be read with the reading pen (do not press any other button before and move the pen quickly over the bar code).

Display:
2. line:
mat diam wall
PE80 160 14.6

Set the pipe material

Change the material by pressing buttons <-> and <->, confirm with button <Enter> and jump to next parameter.

Display:
2. line:
mat diam wall
PE80 160 14.6

Set the pipe diameter

Change the pipe diameter by pressing buttons <-> and <->, confirm with button <Enter> and jump to next parameter.

Display:
2. line:
mat diam wall
PE80 160 14.6

Set the wall thickness

Change the wall thickness by pressing buttons <-> and <->, confirm with button <Enter> and jump to next parameter.

Display:
2. line:
angle temp
0.00° 214°C

Set the angle (appears only if angles can be welded with the set machine)

Change the angle by pressing buttons <-> and <->, confirm with button <Enter>; the heating element temperature according to DVS can not be changed.

Display:
2. line:
name of project
WIDOS.............
Starting and operating

Chapter 5

Change the name of project by pressing buttons <+> and <->, confirm with button <Enter>.

Display:

number of joint 0000

Change the joint number by pressing buttons <+> and <->, (during welding process, the counter continues starting from the set joint number) confirm with button <Enter>.

Display:

WIDOS 4600 SPA 09:43 03.05.2004

Display of the currently set machine type
Current time and date
alternating with: 21°C HE= - - - °C current outside and heating element temperature

5.7. Welding process

As soon as the SPA 600 is programmed and connected to the hydraulic aggregate / mains as described, you can start welding.

Please proceed as follows:

Switch on the heating element and heat it up to welding temperature.

Open and close the basic machine two or three times by means of the valve lever of the hydraulic aggregate.

5.7.1. Drag pressure measurement

When the pressure is > 2 bar, the SPA switches from basic menu to drag pressure measurement.

Slowly press the valve lever until the slide of the basic machine is closed. The drag pressure must be determined properly since a too high pressure on small pipe diameters leads to incorrect joining forces.

Release the valve lever.

Drag pressure must be at least 3 bar!

Display:

drag pressure OK? P0=0 Pi=4

Display of the actual pressure
P0 = desired pressure; Pi = actual pressure

When pressing <Enter>, the actual pressure is taken over as drag pressure.
5.7.2. Dimension

In case traceability has been confirmed with "yes", the display indicates.

![Display](image)

**Display:**

**2. line:**

**please read in 1st pipe**

Either: Read in traceability of the first pipe via the bar code reading pen
Or: Simultaneously press all buttons <+ / - / Enter>.

Then manually enter barcode of 1st pipe: Select first digit with <+-> and jump to the next digit with <Enter>.

**Display:**

**2. line:**

**please read in 2nd pipe**

Either: Read in traceability of the second pipe via the bar code reading pen
Or: Simultaneously press all buttons <+ / - / Enter>.

Then manually enter barcode of 1st pipe: Select first digit with <+-> and jump to the next digit with <Enter>.

**Display:**

**2. line:**

**dimension PE80 90 2.2**

Display of:

Material, pipe diameter and wall thickness

Confirm the dimensions by pressing <Enter>, or interrupt the welding process by pressing <C> and enter new dimensions.

**Display:**

**2. line:**

**length pipe 1 +000.00 mm**

Enter pipe length of the 1st pipe by <+ / - / Enter>.

Or: Simultaneously press all buttons <+ / - / Enter>.

Then manually enter barcode of 1st pipe: Select first digit with <+-> and jump to the next digit with <Enter>.

**Display:**

**2. line:**

**length pipe 2 +000.00 mm**

Either: Enter pipe length of the 2nd pipe by <+ / - / Enter>
Or: Simultaneously press all buttons <+ / - / Enter>.

Then manually enter barcode of 1st pipe: Select first digit with <+-> and jump to the next digit with <Enter>.
**5.7.3. Weather / protection (except for workshop machines)**

Weather character and protective measures to be taken (according to DVS prescriptions).

<table>
<thead>
<tr>
<th>Weather character</th>
<th>Protective measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 = sunny</td>
<td>1 = none</td>
</tr>
<tr>
<td>2 = dry</td>
<td>2 = umbrella</td>
</tr>
<tr>
<td>3 = rain or snow fall</td>
<td>3 = tent</td>
</tr>
<tr>
<td>4 = wind</td>
<td>4 = heater</td>
</tr>
</tbody>
</table>

In case of multiple statement respect the above mentioned order of the numbers (e.g.: 34 = rain and wind)

Set the weather data by pressing buttons <++> and <-->;
confirm the weather data by pressing button <Enter>

**5.7.4. Planing**

Insert the planer in the basic machine and switch it on.

Move the pipe ends onto each other by means of the valve lever and cut them plane until a circular cutting running 2-3 times around the pipe ends is formed and the pipe ends are plane.

The planing pressure should be at appr. 15 - 20 bar + drag pressure.

Move the pipes away from each other.

Switch off and remove the planer, then remove the produced cuttings.

When planing is finished, necessarily press button <Enter>.

Abort and back to basic menu by pressing button <C>.

1 step back by pressing buttons <Enter> (keeping pressed) and <-->.
5.7.5. Compensation of mismatch

Move pipe ends onto each other.

Display:
2. line: \textbf{alignment} \quad T=210°C \quad Pi=12

Display of:
Heating element temperature and actual pressure

After releasing the pressure, the following message appears:

Display:
2. line: \textbf{alignment} \quad OK? \quad T=210°C \quad Pi=12

Display of:
Heating element temperature and actual pressure

If alignment of the pipes is correct, open the machine and confirm with button <Enter>.

The mismatch may not exceed 10% of the wall thickness.
In case of higher mismatch, readjust the pipe ends in the clamping devices and repeat the planing process.

Abort the welding process by pressing button <C>.

5.7.6. Bead up

Insert the heating element into the basic machine. Move the pipes in the basic machine onto each other.

Display:
2. line: \textbf{bead up} \quad Ps=15 \quad Pi=3

Display of:
desired and actual pressure

\textit{alternating with}

Display:
2. line: \textbf{bead up} \quad T=210°C \quad Pi=3

Display of:
Heating element temperature and actual pressure

Slowly increase pressure until actual pressure = desired pressure (when desired pressure is reached, a beep sound can be heard).
Maintain pressure until the pipe end lays completely at the heating element and a bead according to DVS has been formed.
5.7.7. **Heating up**

When reducing the pressure to zero, the SPA switches to heating up.

**Important!** Do not open the basic machine.

Display:

```
2. line: heat up t=54s Pi=0
```

Display of: Remaining time for heating and actual pressure

**alternating with**

Display:

```
2. line: heat up T=210°C Pi=0
```

Display of: Heating element temperature and actual pressure

At the end of the heating time, the button <Enter> flashes and a beep sound can be heard.

5.7.8. **Change over**

Press button <Enter> before starting the change over process.

Open basic machine, remove heating element.

Close basic machine.

Display:

```
2. line: chg. over t=4s Pi=0
```

Remaining change over time and actual pressure

5.7.9. **Pressure ramp**

Increase continuously pressure up to desired pressure within the prescribed time for the pressure ramp.

Display:

```
2. line: ramp t=2s Pi=6
```

Display of: Heating element temperature and actual pressure
5.7.10. Joining / cooling

Display:

```
cooling
t=3:32    Pi=12
```

Remaining cooling time (minutes) and actual pressure

alternating with

Display:

```
cooling
Ps=12    Pi=12
```

Comparison desired and actual pressure

In case of decrease of pressure during cooling time, a beep sound can be heard. Readjust pressure onto desired pressure.

5.7.11. Completion of welding

Display:

```
SD card  0000
```

Welding parameters will be saved on the SD card (if present).

0000 = Number of weldings saved on the SD card.

Display:

```
tabl. of errors
parameter OK
```

Display in case of a fault-free welding.

Or: welding is finished with shortened cooling time:

Display:

```
shorten cooling t
parameter OK
```

or

Display:

```
tabl. of errors
TAWURtp9
```

Display of the errors occurred during welding
(s. chapter 5.7.12).

Release pressure (do not separate the pipes).

Open the clamping devices and remove the welded piece.

Back to basic menu by pressing button <Enter>. 
5.7.12. Signification of the error codes

- **T** Heating element temperature
- **A** Bead up
- **W** Heating
- **U** Change over
- **R** Pressure ramp
- **t** Cooling time
- **p** Cooling pressure
- **9** Environmental temperature < 0 °C

When an error occurs, these error codes are also displayed in the first line of the display during the welding process.

5.7.13. Copying the internal data on SD-card and deleting internal data (RAM)

Abort and back to basic menu by pressing button <C>.

One step back by pressing buttons <Enter> (keeping pressed) and <->.

Display:

```
| 2. line: | WIDOS 4600 SPA 09:43 03.05.2004 |
```

Basic menu

Next step by pressing simultaneously buttons <-> and <Enter>.

Display:

```
| 2. line: | copy _ |
```

By pressing <-> you can copy the data from the internal memory onto the SD-card.

Only displayed if no card is in the drive:

Display:

```
| 2. line: | error SD card |
```

Message appears if there is no SD card in the drive.

Confirm the error message by pressing <Enter>.

Next step by pressing button <Enter>.

Display:

```
| 2. line: | delete CNC-RAM? |
```

Delete internal memory (RAM) by pressing button <->.

When pressing button <->, the internal memory (RAM) will not be deleted.
Press several times button <Enter> or after a short while appears automatically:

```
WIDOS 4400 SPA
09:43 03.05.2004
```

,, basic menu”

### 5.7.14. Welding double pipes

Abort and back to basic menu by pressing button <C>.

One step back by pressing buttons <Enter> (keeping pressed) and <->.

Next step by pressing simultaneously buttons <-> and <Enter>.

Next step by pressing button <Enter>.

Select the language by pressing buttons <+> and <->.

When pressing button <->, `-Yes`- is displayed
Confirm Yes by pressing button <Enter>

Display:  
2. line:  

Select machine type

Select machine type by pressing buttons <+> and <->. 
Next step by pressing button <Enter>.

Display:  
2. line:  

Entering the time

Enter the time by pressing buttons <+> and <->. 
Next step by pressing button <Enter>.

Display:  
2. line:  

Entering the date

Enter the date by pressing buttons <+> and <->. 
Next step by pressing button <Enter>.

**5.7.15. Setting the pipe data for welding double pipes**

Abort and back to basic menu by pressing button <C>. 
One step back by pressing buttons <Enter> (keeping pressed) and <->.

Display:  
2. line:  

When pressing simultaneously buttons <+> and <->, the pipe data can be 
changed over the keyboard.

Display:  
2. line:  

Important! First enter the dimension of the internal pipe

Select the dimension of the internal pipe by pressing buttons <+>, <-> and 
<Enter>, 
next step by pressing button <Enter>.

Display:  
2. line:  

Setting the dimension of the external pipe
Select the dimension of the external pipe by pressing buttons <+>, <→> and <Enter>,
next step by pressing button <Enter>.

Display:
2. line:

Setting the angle (appears only if angles can be welded with the machine).

Enter the angle by pressing buttons <+>, <→> and <Enter>,
the heating element temperature is prescribed by DVS (not changeable).

Display:
2. line:

Setting the angle (appears only if angles can be welded with the machine).

Display:
2. line:

Enter the project name by pressing buttons <+> and <→>,
confirm by pressing button <Enter>.

Display:
2. line:

Enter the joint number by pressing buttons <+> and <→>, (during the welding process, the joint numbers are counted automatically starting from the entered number). Confirm by pressing button <Enter>.

Display:
2. line:

Basic menu

5.8. SD card and drive

The SPA 600 can be equipped optionally with a drive for a SD card.
The apparatus then stores the welding data in the internal memory as well as on the SD card if a card is in the drive.

On a card with 64 MB memory capacity, the welding data of about 32000 weldings can have place.
- The SD card must be formatted with “FAT16” before usage.
- Insert the card with the arrow to the top and in direction of the arrow (socket side) carefully and with a low pressure into the reading unit.
- The card can be read out with a WICON program (optional).
- The card may not be bent, opened, overheated and become wet!

Please only use SD cards purchased from WIDOS. We will not be liable for any cards from other manufactures!
5.9. Bar code (Optional)

- For reading the bar code, glide smoothly over the bar code with the bar code reading pen (maintained vertically).
- The reading pen is ready as soon as the red light at its end is on.

5.10. Read out WICON with USB card reader (Optional)

You may read out the welding data onto a PC by the USB card reader.
Remove the card from the SD card drive of the ESI 4000.

Remove the rear cap and plug card according to the image into the USB card reader.
Remove the front cap and plug USB card reader into the USB interface in your PC.

As soon as the USB card reader has been plugged, it appears as removable medium in the drive list.
Open the WIDOS folder, there you will find:
- WICON2000 viewer for considering and printing the welding data,
- working instructions for WICON2000 viewer as PDF file.

5.11. Reading the welding data

The battery-buffered memory (RAM) can store about 400 weldings.
Make sure not to go over this quantity (in the display the error message “memory full” appears) because otherwise the first stored welding (001) will be overwritten (if necessary, read the welding data on the SD card out in time).
6. Diagnosis program

The purpose of the diagnosis program is the control and the modification of stored machine parameters. In the following lines all important diagnosis numbers for the function tests are described.

Unappropriate operation of the diagnosis functions may lead to disturbances in the machine and may destroy components. The diagnosis functions allow a direct access to the specific parameters of the machine and have to be operated only by skilled staff.

Display:

<table>
<thead>
<tr>
<th>No.</th>
<th>Signification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0010</td>
<td>- The actual temperature (°C) of the heating element is displayed</td>
</tr>
<tr>
<td>0011</td>
<td>- The environmental temperature (°C) is displayed</td>
</tr>
<tr>
<td>0012</td>
<td>- The pressure or the force (bar or N) is displayed</td>
</tr>
<tr>
<td>0014</td>
<td>- The required heating time which was calculated by the programmed welding parameters is displayed</td>
</tr>
<tr>
<td>0015</td>
<td>- The required change over time which was calculated by the programmed welding parameters is displayed</td>
</tr>
<tr>
<td>0016</td>
<td>- The required time for pressure ramp which was calculated by the programmed welding parameters is displayed</td>
</tr>
<tr>
<td>0017</td>
<td>- The required cooling time which was calculated by the programmed welding parameters is displayed</td>
</tr>
<tr>
<td>0018</td>
<td>- The required cooling pressure is displayed</td>
</tr>
<tr>
<td>0022</td>
<td>- Selection of SDR / wall thickness in the display</td>
</tr>
<tr>
<td>0000</td>
<td>mm</td>
</tr>
<tr>
<td>0002</td>
<td>SDR</td>
</tr>
<tr>
<td>0023</td>
<td>- The automatic change to summer or winter time may be switched on or off</td>
</tr>
<tr>
<td>0000</td>
<td>change summer / winter time switched off</td>
</tr>
<tr>
<td>0001</td>
<td>change summer / winter time switched on</td>
</tr>
</tbody>
</table>

Press simultaneously buttons <+> and <Enter> to enter the diagnosis program from the basic menu.

Enter the required diagnosis number by pressing buttons <+>, <-, and <Enter>. One step back by pressing buttons <Enter> (keeping pressed) and <->.
<table>
<thead>
<tr>
<th>No.</th>
<th>Signification</th>
</tr>
</thead>
<tbody>
<tr>
<td>0027</td>
<td>All internal values, such as printing offset, temperature straight line ramp, etc. are displayed on the laptop</td>
</tr>
</tbody>
</table>
| 0030 | All stored weldings are deleted  
When entering 0001, all weldings stored in the RAM memory up to that time are deleted |
| 0034 | Bit values from 0-1023 appear which will change together with the change of the corresponding analog values  
3 Heating element temperature PT 1000  
4 Pressure (4-20 mA)  
5 Environmental temperature |
| 0063 | 0000 = mm / bar / °C  
0001 = mm / bar / °F  
0002 = mm / PSI / °C  
0003 = mm / PSI / °F  
0004 = inch / bar / °C  
0005 = inch / bar / °F |
7. 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 works and the maintenance tools.

7.1. Storage

- Store dry.

7.2. Cleaning the apparatus

The used materials and tissues are to be handled and disposed of properly, especially
- when cleaning with solvents.

7.3. Maintenance and inspection, repair

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

The works 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 works.
- Check the tightness of all screwed connections.
- Check the function of the safety devices after completion of the maintenance works. Check especially insulation and tension resistance and PE-Test (CE standard).

7.4. Saving the welding data

The battery buffer for the CNC memory (RAM) goes empty. Without current connection, the batteries necessary for the storage of the welding data work for about 1 month. For that reason, connect the apparatus in time to power, switch it on and leave it switched on for 24 hours in order to completely load the batteries.

Please make sure that before a longer non-operation period of the apparatus, the welding data are read out so that they can not get lost.
7.5. 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.
8. Transport

The SPA is transported together with the welding machine in a transport box or in a packing box. Due to its compact design, the packing box is more suitable for longer transports.

- In each box holders are included which are suitable for each single component in order to avoid slipping.
  - Put the components into the box in such a way that they are fitting in the holders.
- The hydraulic hoses at the base of the welding machine should not be unscrewed (air penetration).
  - Make sure that they are not squeezed.
- The sensors integrated in the welding machine are sensitive high precision devices which need to be handled carefully in order to reach a longer life.
  - Do not tilt the machine too much.
  - Protect the machine from heavy chocs.
  - 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.
9. Electric diagrams

circuit diagram

project designation  SPA 600
machine type  SPA 600
number of sheets  3
Date  02.10.18
10. Spare parts list

You can access our website and select our spare parts lists via the qr code shown here. Select “SPA 600”
11. Declaration of conformity

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

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

Subject of the present declaration is the following device:

<table>
<thead>
<tr>
<th>Product name:</th>
<th>Weld log recording apparatus</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model name:</td>
<td>WIDOS SPA 600</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,</td>
<td>Electro-magnetic resistance</td>
</tr>
<tr>
<td>DIN EN 50082,</td>
<td></td>
</tr>
<tr>
<td>DIN EN 55014</td>
<td></td>
</tr>
<tr>
<td>DIN EN 60950</td>
<td>Safety of equipments of the information technology</td>
</tr>
<tr>
<td>DIN EN ISO 4414</td>
<td>Safety specifications for fluid technical installations and 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:

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

Heimerdingen, 08.05.2019

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.