WIDOS
W. Dommer Söhne GmbH
Einsteinstr. 5
D-71254 Ditzingen-Heimerdingen
Website: www.widos.de
Phone +49 (0) 71 52 99 39 - 0
Fax +49 (0) 71 52 99 39 - 40
Email: info@widos.de

Kunststoffschweißtechnik

Working Instructions Translation

Heating element butt welding machine
with CNC control unit

WIDOS 4900 CNC 3.5

Keep for further use!

Model:	Heating element butt welding machine with CNC control unit
Type:	WIDOS **4900 CNC 3.5**
Serial number, year of construction:	see type lable

Customer Entries

Inventory-no.:	
Place of working:	

Order of spare parts and sales service

Address of Manufacturer

WIDOS
W. Dommer Söhne GmbH
Einsteinstr. 5

D -71254 Ditzingen-Heimerdingen

Phone: ++49 7152 / 99 39 - 0
Fax: ++49 7152 / 99 39 - 40

Address of the Subsidiary Companies:

WIDOS GmbH
An der Wiesenmühle 15

D - 09224 Grüna / Sachsen

Telefon: ++49 (0) 3 71 / 8 15 73 - 0
Telefax: ++49 (0) 3 71 / 8 15 73 - 20

WIDOS
W. Dommer Söhne AG
St. Gallerstr. 93

CH – 9201 Gossau

Telefon: ++41 (0) 71 / 388 89 79
Telefax: ++41 (0) 71 / 388 89 73

Purpose of the document

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

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

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

Should questions arise, contact our 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 machine.

Due to this structure, the searched informations can be easily found.

W. Dommer Söhne GmbH
Einsteinstraße 5
D-71254 Ditzingen-Heimerdingen

1. Description of the product

1.1. Usage and purpose-oriented Use

The **WIDOS 4900 CNC 3.5** has been designed only for heating element butt welding of pipes and fittings made out of the materials PE, PP, and PVDF with their diameter range going from OD_{min} = 90 mm up to OD_{max} = 315 mm in the way as described below.

All use of this machine going beyond is not purpose oriented.

The machine is only to be used in a technically perfect condition, as well as purpose oriented, safety- and danger-conscious in compliance with the working instructions and the relevant safety regulations (especially the regulations for the prevention of accidents).

The described plastic welding machine 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 control unit 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 machine itself or products standing nearby can be damaged or destroyed.

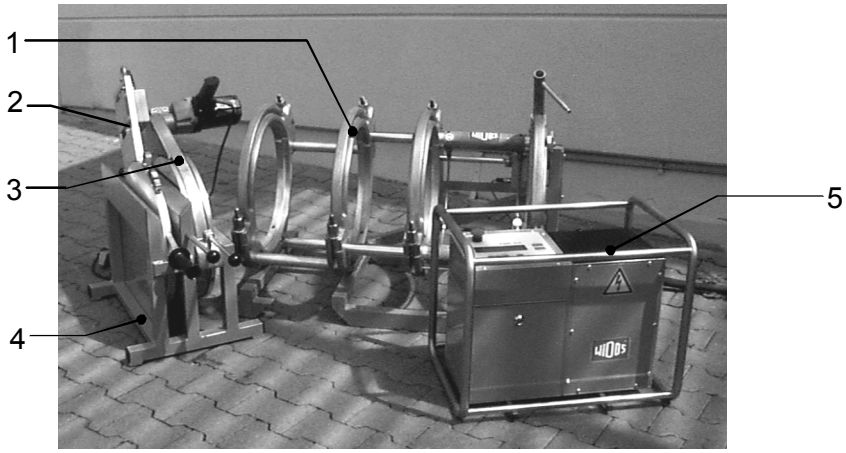
Persons being in the endangered area may be injured.

Therefore these working instructions have to be thoroughly read and the corresponding safety regulations must be necessarily adhered to.

1.3. Conformity

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

1.4. Machine overview



No.	*Denomination*
1	Basic machine
2	Heating element
3	Planer
4	Reception box
5	Control unit

1.5. Structure of the CNC 3.5 control unit

No.	*Denomination*
6	Display
7	Operating field
8	SD-card

1.6. Designation of the product

The product is designated by type labels.

The type labels are attached at the control unit, at the heating element, at the planer and at the basic machine.

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

1.6.1. Technical data

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

1.6.1.1. **WIDOS CNC 3.5** general data

Weight (without transport box): Dimensions (l x w x h):	40.5 kg appr. 630x430x510 (mm)
Power:	370 Watt
Voltage:	230 V (± 10%)
Current:	3,0 A
Frequency:	50 Hz
Phase shift:	ca. 18°
Control voltage:	5 V
Insulation system:	IP 44
Hydraulic oil tank:	appr. 1 l
Power emergency set:	5.5 kVA / 230 V/1~
Electro motor and pump:	
Driving speed (t/min):	1340
Max. working pressure of the pump:	120 bar
Working pressure:	100 bar
Volume flow:	1.9 l/min.

1.6.1.2. Basic frame

Material of frame:	Construction steel
Material of clamping devices:	Aluminium
Weight:	48 kg
Ø of cylinder / Ø of piston rod:	40 / 35 mm
Stroke length of cylinder:	175 mm
Max. force: (F=P*A)	5890 N (at 100 bar)
Velocity of piston rod:	5,4 cm/s

1.6.1.3. Heating element

Power:	2.5 kW
Voltage:	230V (± 10 %)
Current:	10.8 A
Frequency:	50 Hz
Outside-Ø:	320 mm
Surface:	nonstick-coated
Attached elements:	- Control lamps - Cable with multiple pole plug
Weight:	appr. 6 kg

1.6.1.4. Planer

Engine:	Monophase-alternating current motor
Power:	1050 Watt
Voltage:	230 V (± 10 %)
Current:	3.8 A
Frequency:	50 Hz (± 10 %)
Driving speed n2 of the planer	appr. 60
Weight:	appr. 14 kg

1.6.1.5. Automatic heating element (optional)

Power:	2.1 KW
Voltage:	230 V (± 10 %)
Current:	9.1 A (± 10 %)
Frequency:	50 Hz
Outside-∅:	320 mm
Surface:	nonstick-coated
Attached elements:	- Control lamps - Cable with multiple pole plug
Weight:	appr. 17 kg

1.6.1.6. Reception box for automatic heating element (optional)

Weight:	appr. 6 kg

See spare parts list (chapter 10) for order numbers and single parts

1.7. Equipment and accessories

Following accessories are part of the delivery:

1 x	- Key for front plate / hydraulic system
1 x	- SD-card (64 MB memory capacity)

Following optional accessories are available on request:

- Program WICON for reading out the data (possibility of displaying included in SD-card)
- Automatic heating element

2. Safety rules

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

- These working instructions contain the most important indications to run the machine safely.
- The safety indications are to be followed by all persons working on the machine.

2.1. Explanation of the symbols and indications

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

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

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

This symbol means a possible dangerous situation by moving parts of the machine
- The disrespect of these indications may cause heavy crushings of parts of the body resp. damages of parts of the machine.

This symbol means a possible dangerous situation due to hot surfaces.
- The disrespect of these indications may conduct to heavy burns, respectively to self-ignition or even fire.

This symbol gives important indications for the proper use of the machine.
- The disrespect of these indications may conduct to malfunctions and damages on the machine or on goods in the surrounding.

Under this symbol you get user tips and particularly useful information.
- It is a help for using all the functions on your machine in an optimal way and helps you to make the job easier.

The regulations for the prevention of accidents are valid (UVV).

2.2. Obligations of the owner

The owner is obliged only to let persons work at the machine, who

- know about basic safety and accident prevention rules and are instructed in the handling of the machine, 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 at the machine 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 machine 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 machine. 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 machine have to be in a clear readable condition.
- Every time the machine 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

- It must be clearly defined who is responsible for transport, mounting and dismounting, starting the operation, setting and tooling, operation, maintenance and inspection, repair and dismounting.
- Only skilled and trained persons are allowed to work at the machine.
- A person who is being trained may only work at the machine under supervision of an experienced person.

2.7. Dangers while handling the machine

The heating element butt welding machine **WIDOS 4900 CNC 3.5** 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 machine should only be used

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

Disturbances, which may affect the safety of the machine must be cleared immediately.

Only skilled persons are allowed to work at electrical appliances.

- The electrical equipment of the machine has to be checked regularly.
  Loose connections and damaged cables have to be replaced immediately.
- All electric tools (heating element, planer, basic machine with clamps and control unit) have to be protected from rain and dropping water (if need be use a welding tent).
- According to VDE 0100, the use on construction sites is only allowed with a power distributor with a FI-safety switch.
- Replace damaged front foil at the control unit in order to avoid water coming in.

System parts and pressure hoses should be made pressureless before beginning of any repair works.
There is a danger of injuring the eyes by hydraulic oil squirting out. The hydraulic oil can be hot!

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

2.8. Specific dangers

2.8.1. Danger of stumbling over hydraulic and electric wires

Make sure that nobody has to step over the cables.

Make sure that the cables lay in such a way that the danger is maintained in a minimum. Do not squeeze, buckle, etc. the cables. Avoid the hydraulic cables from being heated up (increase of pressure!).

2.8.2. Danger of catching clothes by the planer

You can cut yourself or even get bones broken!
For some machines the planer may shortly turn when switching the machine on!

- Only wear clothes tight to the body.
- Do not wear rings or jewellery during the work.
- If necessary wear a hair-net.
- Always put the planer back into the reception box after and before each use.
- Only transport the planer at the handle. Do not touch the surfaces.

2.8.3. Danger of being burnt by heating element and welding area

You can burn parts of your body and inflammable materials can also be ignited!
The heating element is heated up to more than **200°C** !

- Do not touch the surfaces of the heating element.
- Do not leave the heating element unsupervised.
- Take enough safety distance to inflammable materials.
- Do wear safety gloves.
- Always put the heating element back into the reception box after and before each use.
- Only transport the heating element at the handle.

2.8.4. Danger of squeezing by clamping devices and guideways

There is a danger of serious injuries: on the one hand between the inner clamping devices and on the other hand between the outer clamping device and the end of the guideway.

- Do not stand or put hands between clamped pipe ends.
- Do not stand or put hands between the inner clamping tools with not yet clamped pipes.
- Do not block opening and closing of the machine sledge.

2.9. Structural modifications on the machine

- No modifications, extensions or reconstructions may be made on the machine without permission of the manufacturer. In cases of non-compliance, any guarantee and liability demands shall expire (see chapter 2.5).
- Machine parts 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 machine and version number !

2.10. 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 machine according to the prescriptions
- inexpert building-up, starting, operating, maintenance and transport of the machine
- running the machine with defective or not orderly mounted safety appliances
- ignoring the information given in this manual
- structural modifications on the machine without permission
- unsatisfactory checking of parts of the machine, which are worn out
- repairs performed in an inexpert way
- In case of catastrophes and force majeure

3. Functional description

The WIDOS **CNC 3.5** control unit performs a butt welding process with the plastic welding machine WIDOS **4900** after entering the type of material, the pipe diameter and the pipe wall thickness.

The welding processes are recorded and can be saved on a SD-card.

The corresponding pipe data are entered manually over the operating field.

Welding with the WIDOS **4900 CNC 3.5** works as following:

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 smaller than 0.1 X pipe wall thickness you can start welding.

The heating element has to be cleaned and checked before insertion and the desired temperature prescribed by the DVS must have been reached.

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.

After reaching the prescribed bead height, the control unit automatically switches into the **heating time**.

During the heating time, the basic machine is in a pressureless state 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.

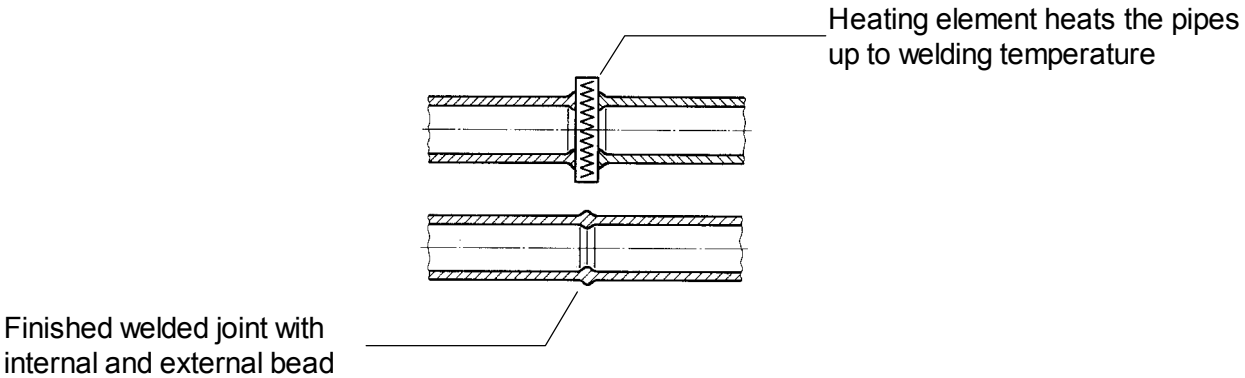
The time period between the removal of the heating element and the closing of the pipes is called **change over time**.

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**).

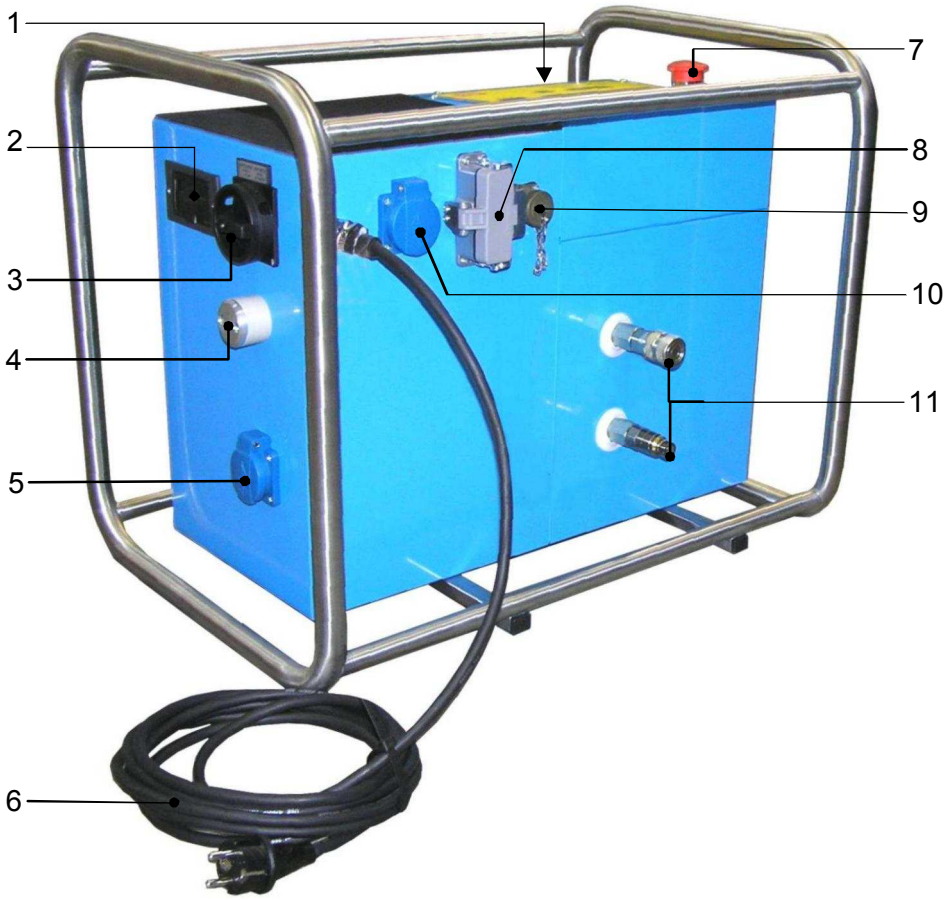
After completion of the cooling time, the pressure on the pipe is automatically released and the welded pipe can be unclamped.

The welding process is completed.



4. Operating and indicating elements

4.1. Elements on the CNC 3.5 control unit



No.	*Name*
1	Operation field with display
2	Reading unit for SD - card
3	Main switch
4	Outside temperature sensor
5	Plug box (fuse protection 1 A)
6	Mains connection cable for the control unit
7	EMERGENCY-Stop push button
8	Plug box with safety stirrup for heating element
9	Connection for the travel sensor
10	Plug for planer
11	Connections for hydraulic hoses

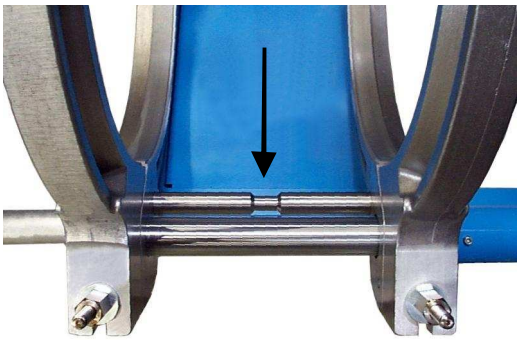
4.2. EMERGENCY-stop push button

There is an EMERGENCY-Stop push button (see chapter 4.1 No. 9) on the CNC control unit, for interrupting the working process if the work piece, tools or persons are endangered by the working pressure.

The devices connected to the plug boxes (e.g. heating element and planer) are not disconnected from the main power by the EMERGENCY-Stop and for this reason dangers due to these devices are still possible.
Turn the main switch off or unplug the main connector!

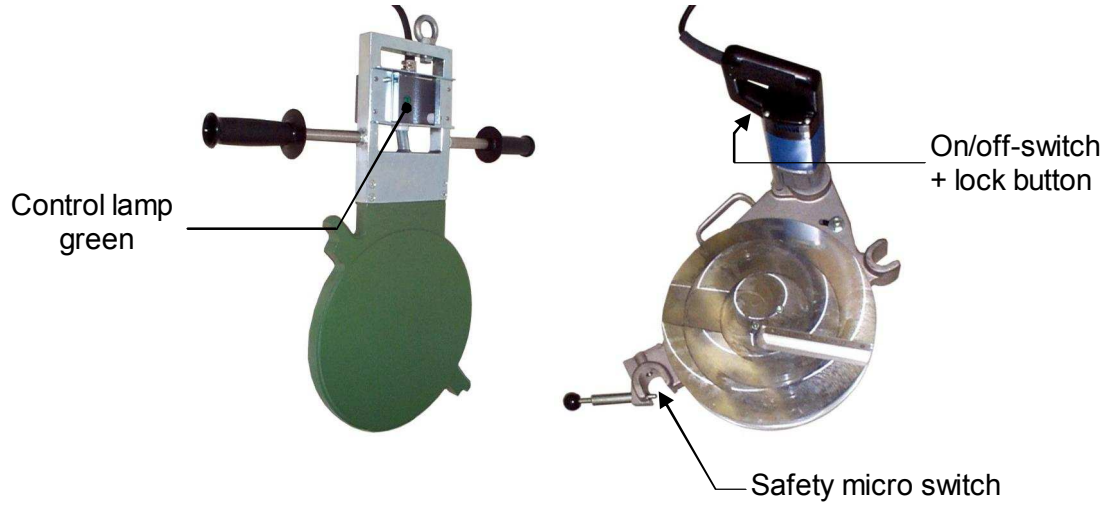
- The EMERGENCY-Stop push button snaps when it is operated.
- In case the EMERGENCY-Stop push button was pushed, the system is pressure-less and the sledge can only be moved manually.
- After elimination of the danger, the EMERGENCY-Stop push button must be unlocked again by turning it in clockwise direction and the functions of buttons <+> and <-> (open and close the sledge) are possible again.

4.3. Separating device for heating element



There is a tear-off bar mounted between the movable and the fixed clamping shells on the basic machine. It prevents the heating element from sticking to the heated-up pipe ends.
When inserting the heating element take care that it lies in the zone of the throat of the tear-off bar (see arrow).

4.4. Elements on heating element and planer



Denomination	***Function***
Control lamp green (Heating element)	There are 3 different states: • **lightening,** only interrupted by short switch-off pulses: the heating element is being heated up, the desired temperature is not yet reached. The desired and the actual temperature are displayed alternating on the display of the control. • **blinking:** the temperature of the heating element is maintained by a pulse-position ratio. • **off:** the desired temperature has been exceeded, the heating element is cooled automatically onto desired temperature, or the heating element is switched off.
Safety micro switch (Planer)	- The planer starts only when the safety micro switch is pressed. - Locking device of the planer
On/off-switch (Planer)	- During the planing process, the planer has to be switched on at the switch and its corresponding lock button. The planing process is operated by the CNC control.

5. Starting and operating

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

This includes

- the safe operation of the machine
- using all the possible options of the machine
- economic operation of the machine

5.1. Safety indications

- The machine should only be operated by initiated and authorized persons.
  For the qualification, a plastic welding exam can be taken according to DVS and DVGW.
- In situations of danger for persons and the machine, the EMERGENCY-Stop push button or the main switch have to be activated immediately.
- After completion of the welding work and during breaks, the machine has to be switched off. Further be sure 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-safety switch.

Check the oil level of the hydraulic system before each starting of the control unit in order to avoid damages on the pump.
If necessary, add hydraulic oil of the quality HLPD 32.

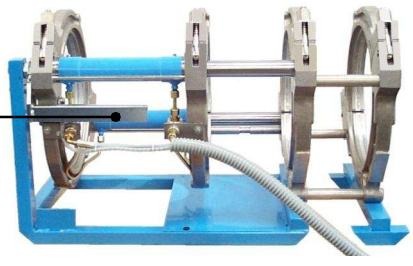
The heating element surfaces should be clean, especially non greasy, therefore they need to be cleaned shortly before each welding or in case of dirtiness by means of a **fibre-free paper** and cleaning agent (e.g. technical pure alcool or cleaning tissues which are available at the WIDOS company).

The anti-adhesive coating of the heating element must remain undamaged in the working area.

Take care that all hydraulic and electric connections are connected.

Never lift or transport the basic machine at path measuring system!

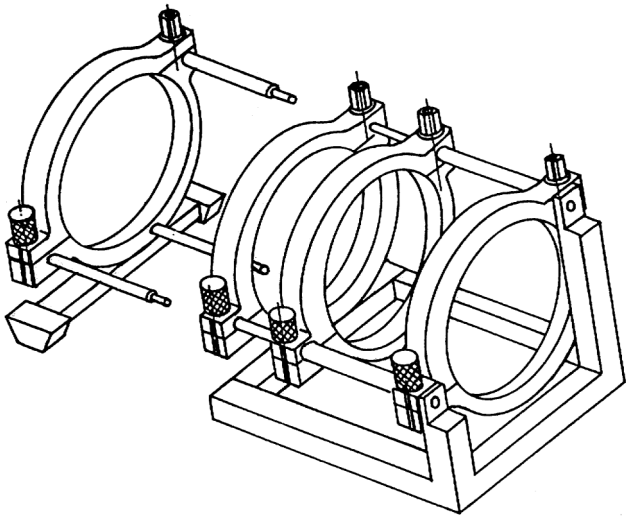
Path measuring system



- Take into account the surrounding conditions:
  The welding may not be performed under direct sun rays influence, use a welding umbrella if necessary.
- If the surrounding temperature is under 5° C, measures have to be taken:
  Use a welding tent or preheat the pipe ends if necessary.

5.2. Replacing the reduction inserts

- Unscrew the mounted reduction inserts.
- Screw the reduction inserts with the corresponding diameter into the clamping devices.
- If necessary (e.g. for T- pieces) the outer fixed clamping device can be dismantled by unscrewing the three hexagon socket screws.

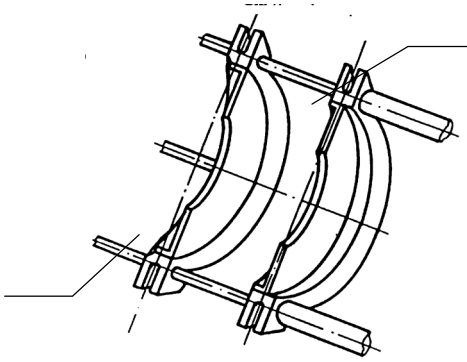


Dismantling of the outer fixed clamping device

5.2.1. Using small and large reduction inserts

Small reduction inserts:

- Pipe fittings often have only a short straight surface area on which they can be clamped.
- Fittings mostly need to be clamped in the inner clamping devices with the small reduction inserts.
- When fittings are to be welded (bends, T-pieces etc.), the inner small reduction insert can also be used flush to the inside or to the outside.

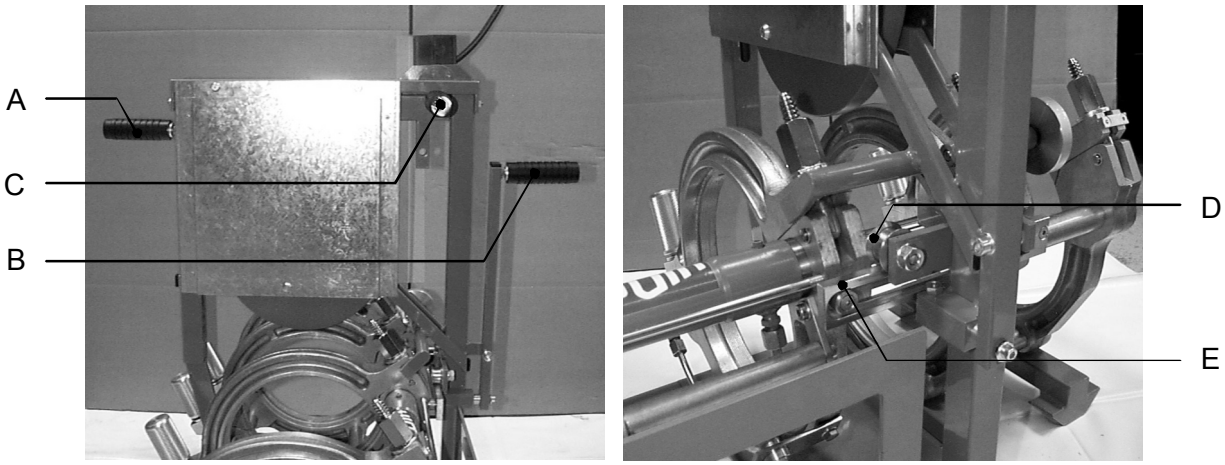


Shown here:
Small reduction insert,
flush to the inside
(for bends, T-pieces)

Large reduction inserts:

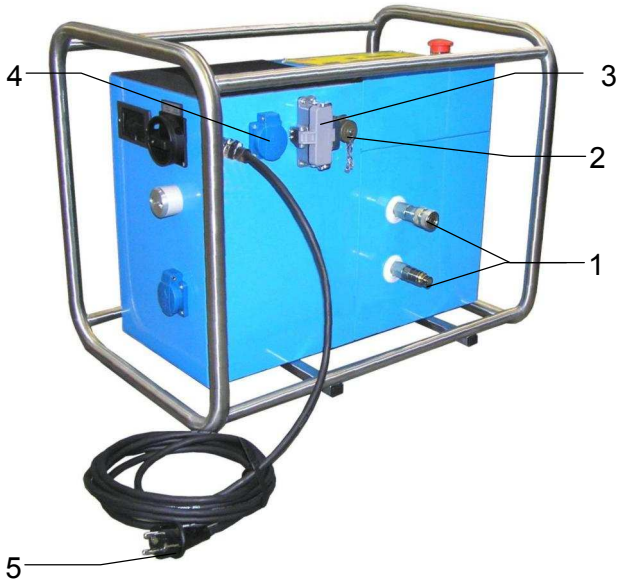
- They are mainly used for a good tightening and are generally mounted on the inner clamping devices.
- Super large reduction inserts have a specially high guidance quality and are mainly used during the welding of fittings with long legs which can only be clamped with a single clamping device.

5.3. Automatic heating element (Optional)



For inserting the heating element, please use in any case the handle provided for this purpose (A and B).
Pressing the handle (B) in the direction of the heating element plate will lock or release the heating element in the protection box or on the basic machine. The rollers (D) have to be supported on the guideway (E) before the heating element is locked by releasing the handle (B).
For welding, the heating element is pressed downwards by means of the handles (C) (sledges must not be opened completely).
After expiration of the adjusting or heating time, the heating element is unlocked by opening the sledge and is moved automatically out of the basic machine.

5.4. Connection with the basic machine



- Connect the hydraulic hoses and travel measuring systems of the basic machine at the CNC 3.5 (Pos. 1 and 2).
- Connect the heating element at the CNC 3.5 (Pos. 3) by means of the special plug and secure it by means of the safety stirrup.
- Connect the planer to the corresponding plug box of the CNC 3.5 (Pos. 4).
- Connect the power line plug (No. 5) of the CNC 3.5 to the mains, and be sure to have a correct mains voltage (230 V / 50 Hz).

5.5. Operation with emergency power supply

Do not connect any other current consumers to the emergency power supply.

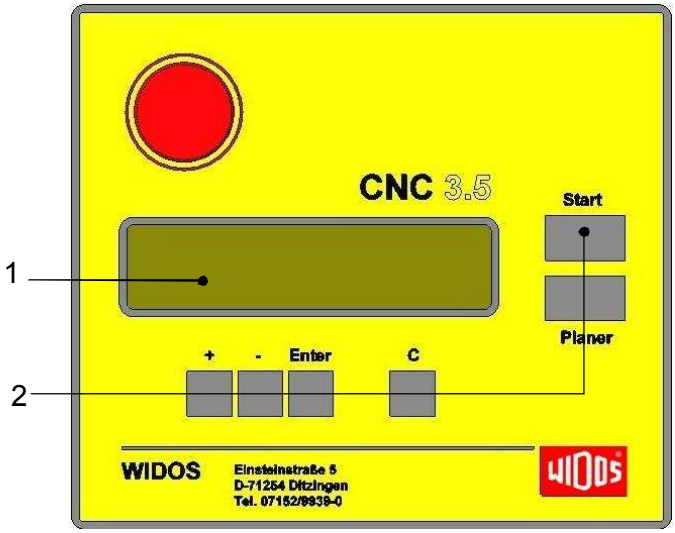
Current consumers, such as drilling machines, fluorescent lamps or motors, can generate spikes (more than 1000 V) which can **disturb the welding process** and might **destroy the welding aggregate**!

The emergency power supply should be maintained periodically.

For further details see the working instructions of the emergency power supply**.**

Important: first start the emergency power supply and then the other current consuming devices.

5.6. Description of the display



No.	*Denomination*	*Function*
1	Display	• shows the required parameters (for welding and programming) • 3 values can be displayed simultaneously
2	Operating buttons	• Setting the pipe data and the project number • Setting the machine type • Setting the welding parameters • Saving and printing the welding data • Diagnostics menu

5.7. SD – card and drive

The unit CNC 3.5 has a drive for a SD - card.

The machine 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.

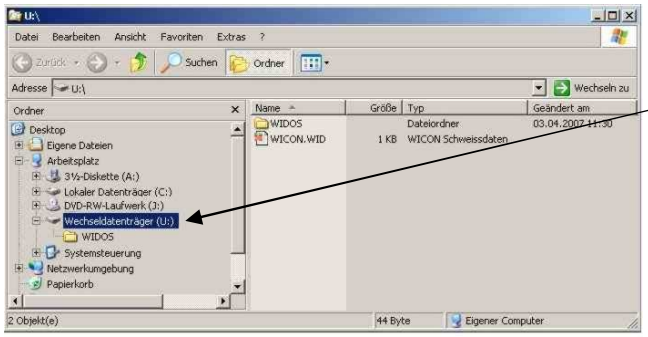
- The SD - card must be formatted by **"FAT 16"** necessarily before usage.
- Insert the card with its inscription to the top **carefully** and with low force into the reading unit.
- The card can be read out with a WICON program.
- The card may not be bent, opened, overheated and become wet!

Please only use SD cards purchased from WIDOS. We will not be liable for any cards from other manufactures!

5.8. Read-out WICON with USB card reader

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 CNC - aggregate.

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.

5.9. Switching the CNC 3.5 on

As soon as the control unit **CNC 3.5** is connected to the mains and switched on at the main switch, the display is lightened (the computer is being initialised).

Display:
2nd line:

```
    WIDOS GmbH
     Germany
```

after a few seconds, the display changes

Display:
2nd line:

```
version: 0.00.00
serial no: 0000000
```

Number of the software version
Serial number of the machine

after a few seconds, the display changes

Display:
2nd line:

```
000 free weldings
0000       SD-card
```

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

after a few seconds, the display changes

Display:
2nd line:

```
WIDOS 4900 CNC
welcome XXXX
```

after a few seconds, the display changes

Display:
2. line:

```
initial position
```

button <Start> → machine moves into initial position

Display:
2nd line:

```
  WIDOS 4900 CNC
22.11.2000 10:10
```

The type of the machine is displayed
Current date and time

„Basic menu“

5.10. Programming and welding

As soon as the control unit CNC 3.5 is switched on, you can start welding.

Display:
2nd line:

```
  WIDOS 4900 CNC
22.11.2000 10:10
```

The type of the machine is displayed
Current date and time

In the basic menu, following functions are possible:

button <+> and <–>: moving the sledge

button <Enter>: menu / setting

button <Start>: welding process

5.10.1. Setting the pipe data

Display: 2nd line:	WIDOS 4900 CNC 22.11.2000 10:10	The type of the machine is displayed Current date and time

button <Start> for welding process

Display: 2nd line:	mat diam wall temp PE80 225 20.5 206°	The last welding parameters are displayed

button <+> or <–>: change the respective value
button <Start>: confirm and jump to the next parameter

Display: 2nd line:	mat diam wall temp PE80 225 20.5 206°	

button <+> or <–>: change the respective value
button <Start>: confirm and jump to the next parameter

Display: 2nd line:	mat diam wall temp PE80 225 20.5 206°	

button <+> or <–>: change the respective value
button <Start>: confirm and jump to the next parameter

Display: 2nd line:	mat diam wall temp PE80 225 20.5 206°	Display of the heating element temperature calculated according to the prescriptions of the DVS

button <Start>: back to basic menu

Display: 2nd line:	WIDOS 4900 CNC 22.11.2000 10:10	Basic menu

5.11. Welding process

The basic machine is connected with the control unit **CNC 3.5**, the planer and the heating element.
The control unit **CNC 3.5** is switched on.
Now you can start the welding process. Please proceed as follows:

Display:
2nd line:

```
   WIDOS 4900 CNC
22.11.2000 10:10
```

The type of the machine is displayed
Current date and time

button <Start>: menu welding parameters
Abort with button <C> if need be → basic menu

Display:
2nd line:

```
mat diam wall temp
PE80 225 20.5 206°
```

The welding parameters to be used for the following welding are displayed

❷ button <Start>: confirm welding parameters
Abort with button <C> if need be → basic menu

Only appears in case shortened cooling time is entered (Chapter: 5.14.4)

Display:
2. line:

```
Attn! shortened
cooling time
```

In case you have selected shortened cooling time, it is reduced by appr. 40% compared to the one of DVS.

Activate the shortened cooling time with button <+>
Abort with button <C> if need be → basic menu

Display:
2nd line:

```
name of project
WIDOS ........
```

Enter name of project

button <+> and <->: select letters
button <Enter>: cursor jumps for 1 position to the right
button <Planer>: 5 storage locations for projects can be called
(when a new project is created, the oldest one is overwritten)
button <Start>: confirm
Abort with button <C> if need be → basic menu

Display:
2nd line:

```
number of joint
0000
```

Number of joint of the selected project
Enter and display the number of joint

button <+> and <->: select numbers
button <Enter>: cursor jumps for 1 position to the right
button <Start>: confirm
Abort with button <C> if need be → basic menu

Display:
2nd line:

```
weather protect
24       31
```

Weather character and protecive measures to be taken (according to prescriptions of the DVS)

Weather character	Protective measures
1 = sunny	1 = none
2 = dry	2 = umbrella
3 = rain or snowfall	3 = tent
4 = wind	4 = preheat
In case of multiple statement respect the above mentioned order of the numbers (e.g.: 24 = dry and wind)	

Setting the weather data: numbers by pressing buttons <+> and <->
for 1 pos. to the right by pressing button <Enter>
confirm by pressing button <Start>

Abort with button <C> if need be → basic menu

Display:
2nd line:

```
opening machine
```

This message appears only if the machine is not opened completely

button <Start>: confirm (machine opens)

Display:
2nd line:

```
insert pipes
clean pipes
```

Insert, clean and clamp the pipes

button <Start>: confirm

Display:
2nd line:

```
closing machine
measuring dragpress
```

The machine opens and closes several times, the dragpressure is measured herewith

after a few seconds, the display changes

Display:
2nd line:

```
closing machine
calibrating
```

Machine closes
Pressure systems is calibrated

after a few seconds, the display changes

Display:
2nd line:

```
opening machine
```

Machine opens

after a few seconds, the display changes

Display:
2nd line:

```
insert planer
start planer
```

❶ Suspend the planer into the basic machine, keep button <Planer> pressed until **a circular chip running 2-3 times around the pipe ends is formed** and the pipe ends are plane

Display:
2nd line:

```
planer working
Ps=000 Pi=000 P 0.0
```

During the planing process, the desired, actual and drag pressures are displayed

after a few seconds, the display changes

Display:
2nd line:

```
alignment check
start planer
```

Take planer out of the machine and remove the chips without touching worked faces

button <Start>: alignment check is started

Display:
2nd line:

```
closing machine
```

Machine closes

after a few seconds, the display changes

Display:
2nd line:

```
confirm alignment
test pressure
```

Keep pressed button <+> to check the pressure build-up (e.g. whether pipes slip through)

If the alignment of the pipes is correct, confirm with button <Start>.
The misalignment may not be higher than 10 % of the wall thickness.
If the misalignment is too high, re-adjust the pipe ends in the basic clamping devices and repeat the planing process.

Display:
2nd line:

```
opening machine
```

after a few seconds, the display changes

Display:
2nd line:

```
insert heating elem
repeat planing
```

Button <Start>
by pressing the button <Planer>, the planing process is repeated ❶

Insert the heating element in the machine and make sure that it is lying in the necking of the tear off rod, (Chapter 4.3), then press button <Start>

Display:
2nd line:

```
closing machine
measuring dragpress
```

after a few seconds, the display changes

Display:
2nd line:

```
bead up
Ps=000 Pi=000 P 0.0
```

The bead up pressure is displayed

Display shows alternating bead up pressure and heating element temperature

Display:
2nd line:

```
bead up
heat.elem.t. 000°C
```

The heating element temperature is displayed

after the bead height being reached, the display changes

Display:
2nd line:

```
heat up Taw= 0000s
heat.elem.t. 000°C
```

Remaining heating time
Heating element temperature

5 seconds before end of the heating time you will hear several beeps

Display:
2nd line:

```
change over
remove heating elem
```

Take heating element out of the machine directly

after a few seconds, the display changes

Display:
2nd line:

```
change over
```

after a few seconds, the display changes

Display:
2nd line:

```
ramp Tf= 000s
Ps=000 Pi=000 P 0.0
```

Remaining pressure build-up time (sec)

after a few seconds, the display changes

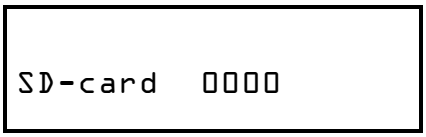
Display:
2nd line:

```
cooling Tk=00:00
Ps=000 Pi=000 P 0.0
```

Remaining cooling time (min and sec)

After expiration of the cooling time you will hear 5 beeps

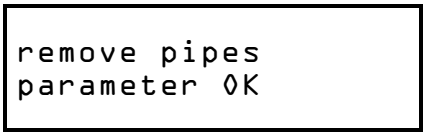
Display:
2nd line:



The welding is stored on the SD-card

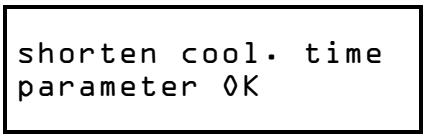
after a few seconds, the display changes

Display:
2nd line:



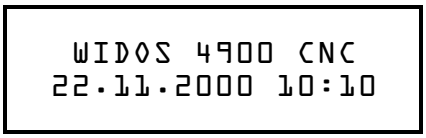
Or: welding is finished with shortened cooling time:

Display:
2nd line:



Welding completed, unclamp the pipes
button <Start>: back to basic menu

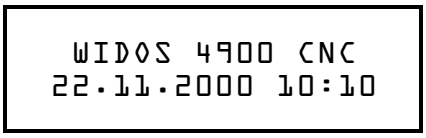
Display:
2nd line:



Basic menu
Current date and time

5.11.1. Welding process with traceability

Display:
2. line:



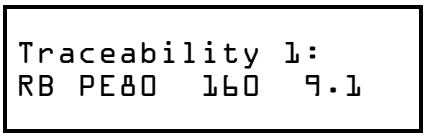
The type of the machine is displayed
Current date and time

button <Start> to confirm

Display:
2. line:

Simultaneously pres 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:



The pipe data is displayed

After e few seconds, the display changes

Display:
2. line:

```
please read addit.
pipe code (2nd pipe)
```

Read with bar code reader

Simultaneously pres all buttons <+ / - / Enter>.
Then manually enter barcode of 2nd pipe: Select first digit with <+/-> and jump to the next digit with <Enter>.

Display:
2. line:

```
Traceability 2:
RB PE80  160  9.1
```

The pipe data is displayed

in case of different pipe data, an error message appears:

Display:
2. line:

```
error: not possible
to weld those pipes
```

Confirm the error message by pressing button <Enter>

If the length of pipe is entered additional, disapears:

Display:
2. line:

```
length of 1. pipe
+000.00 mm
```

Enter the length of the last (read in) barcode pipe 1 up to the joint by buttons <+ / - / Enter>
Press button <Start>

Display:
2. line:

```
length of 2. pipe
+000.00 mm
```

Enter the length of the last (read in) barcode pipe 2 up to the joint by buttons <+ / - / Enter>
Press button <Start>

Display:
2. line:

```
mat. diam wall temp
PE80 225  20.5  206°
```

The welding parameters are displayed

next menu by pressing <Start> button
Continue as described in chapter: 5.11 welding process ❷

5.12. Error messages

If during the work with the machine

- the prescriptions of the DVS are not followed;
- the working steps necessary for the welding process are not correctly or not at all performed;
- certain measuring devices do not function,

the following error messages will appear on the display:

T	Heating element temperature
A	Adjusting
W	Heating
U	Change over
R	Pressure build-up ramp
t	Joining time
p	Joining pressure

In case of an error, these error codes will also appear in the first line of the display. All error messages are logged.

5.13. Administration of the welding data

The battery-buffered CNC 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 will be over-written.
If necessary, copy the welding data on SD-card and read out in time.

5.13.1. Copying internal data onto SD-card and deleting them (RAM)

Abort and back to basic menu by pressing <C>.
One menu item back by pressing <Enter> (keep pressed) and <->.

Display:
2. line:

```
WIDOS 4900 CNC
09:43 03.05.2007
```

basic menu

next menu by pressing <Enter> button

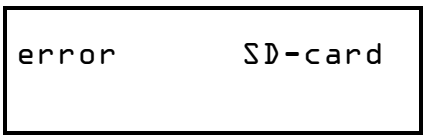
Display:
2. line:

```
copy
_
```

By pressing <+> the data from the internal memory is transferred to the SD-card.

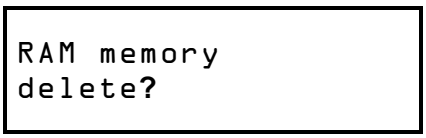
Only appears in case no SD-card is in the slot:

Display:
2. line:



By pressing <Enter> confirm the error message.

Display:
2. line:

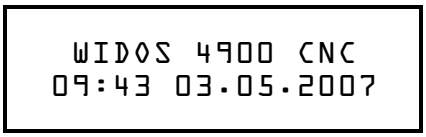


By pressing <+> the internal memory (RAM) is deleted.
By pressing <-> the internal memory (RAM) is **not** deleted.

Display:
2. line:

Either: press <Enter> several times,
or: wait until the basic menu appears after a while

Display:
2. line:



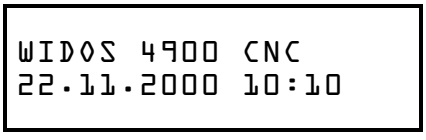
Indication of the currently entered machine type
current time and date
alternating with: **21°C HE= - - - °C** current ambient and heating element temperature

„Basic menu“

5.13.2. Storing data on the SD - card

When pressing the button <Enter>, the stored welding parameters can be printed or stored on a PCMCIA card.

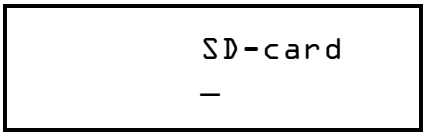
Display:
2. line:



Basic menu
Current date and time

next menu by pressing <Enter> button

Display:
2. line:



Storing the welding data on the PCMCIA

button <+> for menu "storing"

Display:
2. line:

SD-card 0000

Data is stored on the SD-card

press button <Start> until the basic menu appears

Display:
2. line:

WIDOS 4900 CNC 22.11.2000 10:10

Basic menu

5.14. More adjustemends

5.14.1. Setting the time and the date

Display:
2. line:

WIDOS 4900 CNC 22.11.2000 10:10

Basic menu
Current date and time

next menu by pressing button <Enter>

Display:
2. line:

SD-card _

next menu by pressing button <Start>

Display:
2. line:

Diag Clk WICON Param 10:10

next menu by pressing button <Start>

Display:
2. line:

Diag Clk WICON Param 10:10

Setting the time

buttons <+> and <->: change the time
button <Enter>: confirm

Display:
2. line:

Diag Clk WICON Param 22.11.2000

Setting the date

buttons <+> and <->: change the date
button <Enter>: confirm
press several times button <Start> or after a short while appears automatically:

Display:
2. line:

```
   WIDOS 4900 CNC
 22.11.2000 10:10
```

Basic menu

5.14.2. Setting the language

Display:
2. line:

```
   WIDOS 4900 CNC
 22.11.2000 10:10
```

Basic menu
Current date and time

next menu by pressing button <Enter>

Display:
2. line:

```
          copy
          _
```

next menu by pressing button <Start>

Display:
2. line:

```
Diag Clk WICON Param
_    10:10
```

press several times button <Start> until language appears

Display:
2. line:

```
Language    german?
_
```

several languages are entered

buttons <+> and <->: change the language
button <Enter>: confirm
press several times button <Start> or after a short while appears automatically:

Display:
2. line:

```
   WIDOS 4900 CNC
 22.11.2000 10:10
```

Basic menu

5.14.3. Setting information of traceability and lenght of pipe

Display:
2. line:

```
   WIDOS 4900 CNC
 22.11.2000 10:10
```

Basic menu
Current date and time

next menu by pressing button <Enter>

Display:
2. line:

```
            copy
            _
```

next menu by pressing button <Start>

Display:
2. line:

```
Diag Clk WICON Param
_    10:10
```

press several times button <Start> until language appears

Display:
2. line:

```
Traceability
Yes
```

traceability can be enterd: yes or no

buttons <+> and <->: set traceablity
Select “yes” with <+> if traceability is required.

Only appears if traceability has been selected with “yes”:

Display:
2. Zeile:

```
pipe length
Yes
```

Length of pipe, yes or no, can be entered

Wth button <+> - enter length of pipe (yes)

press several times button <Start> or after a short while appears automatically:

Display:
2. line:

```
   WIDOS 4900 CNC
 22.11.2000 10:10
```

Basic menu

5.14.4. Setting of shortened cooling time

Display:
2. line:

```
   WIDOS 4900 CNC
22.11.2000 10:10
```

Basic menu
Current date and time

next menu by pressing button <Enter>

Display:
2. line:

```
          copy
          _
```

next menu by pressing button <Start>

Display:
2. line:

```
Diag Clk WICON Param
_    10:10
```

press several times button <Start> until shortened cooling time appears

Display:
2. line:

```
shorted cool. time?
yes
```

shortened cooling time can be entered

Select “yes” with <+> if shortened cooling time is required.

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

press several times button <Start> or after a short while appears automatically:

Display:
2. line:

```
   WIDOS 4900 CNC
22.11.2000 10:10
```

Basic menu

6. Diagnosis program

The purpose of the diagnosis program is the modification of stored machine parameters.

In the following lines all important diagnosis numbers for the function tests are described.

Unappropriated 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:
2nd line:

```
WIDOS 4900 CNC
22.11.2000 10:10
```

Press button <Enter>

Display:
2nd line:

```
copy
_
```

Press button <Start> for the next menu

Display:
2nd line:

```
Diag Clk WICON Param
_    10:10
```

Setting the diagnosis number

The respective diagnosis number can be set with buttons <+>, <-> and <Enter>.

No.	***Signification***
0008	The actual position of the sledge is displayed
0010	The actual temperature (°C) of the heating element is displayed
0011	The environmental temperature (°C) is displayed
0012	The actual pressure (bar) is displayed
0013	- The required bead height (in 1/10 mm) which was calculated by the programmed welding parameters is displayed
0014	- The required heating time which was calculated by the programmed welding parameters is displayed
0015	- The required change over time which was calculated by the programmed welding parameters is displayed
0016	- The required pressure build-up time which was calculated by the programmed welding parameters is displayed
0017	- The required cooling time which was calculated by the programmed welding parameters is displayed
0018	- The required joining pressure which was calculated by the programmed welding parameters is displayed

No.	*Signification*
0021	- The operation and printout language can be choosen • 0000 German • 0001 English • 0003 French • 0004 Spanish
0023	- The automatic change to summer or winter time may be switched on or off • 0000 change summer / winter time switched off • 0001 change summer / winter time switched on
0030	- All stored weldings are deleted: • By entering of 0001 all weldings stored in the RAM memory up to that time are deleted • By reapeted entering of 0001 all weldings stored in the SD – card 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 • 0005 Travel • 0008 Heating element temperature PT 1000 • 0010 Environmental temperature • 0011 Pressure (4-20 mA)
0044	- A self-test of the machine and the control unit is performed, including a weld log on SD-card.

Abort with button <->.
Press several times button <Start> or after a short while appears automatically.

7. Equipment care / maintenance / repair

Goal of the chapter is:

- Keeping the nominal state and the operation capacity of the machine.
- Increasing the efficiency by avoiding non-planned outage.
- Efficient planning of the maintenance works and the maintenance tools.

7.1. Storage

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

7.2. Cleaning the machine

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

- when cleaning with solvents.

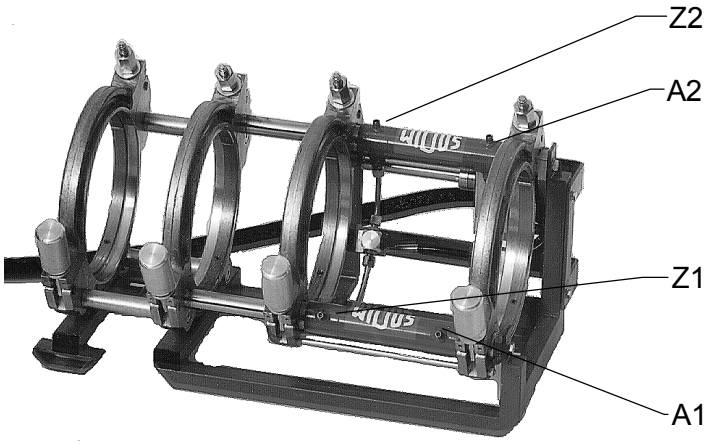
7.3. Clamping elements

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

7.4. Checking the hydraulic oil level

- To avoid damages check the oil level of the hydraulic pump before each starting of the control unit.
- Open front plate on the lefthand side of the control unit.
- Unscrew the cover of the filler neck of the tank (with integrated oil dipstick).
- Clean the oil dipstick with a fiber-free tissue and insert it again in the tank (do not screw).
- Remove the oil dipstick again and check the oil level by means of the two marks on it (the oil level should be between both marks).
- If the oil level is under the lower mark, then hydraulic oil of the quality HLPD 32 should be added.
- The oil level may not be over the upper mark because otherwise there is the risk of inondation.
- After completion ot the works, close the tank cover again and close the front plate.

7.5. Venting the hydraulic cylinders



- Venting the hydraulic cylinder **is <u>not</u> required** if
  - the hoses have been disconnected from the quick-action couplings at the control unit because the remaining oil in the hose is being kept by valves and for this reason no air can enter.
- The hydraulic cylinder **must be vented** if
  - there has been too less oil in the tank and air has been attracted
  - there were leaky parts in the hoses or in the connections
  - the hoses were unscrewed from the basic machine.
- Eliminate the cause of the air entrance.
- Switch the machine on, legitimate with the card, then the main menu appears.
  With buttons <+> and <->, the machine can be opened or closed.
- Press button <-> and open the machine completely.
- First unscrew the lower vent screw (Z1) for closing (lefthand side).
- Connect the transparent venting hose and insert it in the collecting vessel.
- Close by pressing button <+> until there is no more air visible in the venting hose.
- Tighten again the vent screw (Z1).
- Press button <+> and close the machine completely.
- Then unscrew the lower vent screw (A1) for opening (righthand side).
- Connect the transparent venting hose and insert it in the collecting vessel.
- Open by pressing button <-> until there is no more air visible in the venting hose.
- Tighten again the vent screw (A1).
- When the venting procedure at the lower vent screws is finished, repeat the same at the upper vent screw (Z2) for closing (lefthand side), and the upper vent screw (A2) for opening (righthand side).

The lower vent screws always have to be vented at first because there is a direct connection between the upper and the lower cylinders.

- If air remains in the lower cylinder, it will ascend in the upper cylinder when pressure is applied.

There must always be enough oil in the tank (see chapter 7.4).

7.6. Maintenance, inspection and repair

All maintenance and repair works have to be basically performed with the machine in off position.
During this the machine has to be secured against unauthorized switching on.

Prescribed maintenance and inspection works should be performed in time.
The DVS gives the advice of inspection works after 1 year.
For machines with a specially high usage percentage the testing cycle should be shortened.
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 and tighten again if need be.
- Check the function of the safety devices after completion of the maintenance works. Check especially insulation and tension resistance and protective cables resistance.

7.7. Saving the welding data

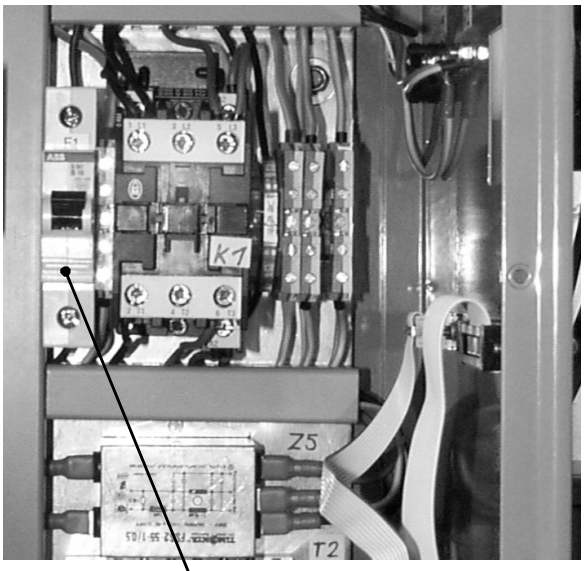
The battery buffer for the CNC-memory (RAM) goes empty.

Without current connection, the batteries necessary for the storage of the welding data work for about 1 month.

Remedy: connect the machine 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 machine the welding data are read out so that they can not get lost.

7.8. Fuse for overload safety device



The control unit does **not** function although the control unit is connected to the power supply, the main switch is on, and the Emergency-Stop has **not** been pressed and locked.

In the case above the fuse (overload protection) must be checked.

For this purpose unscrew the righthand cover plate, check the fuse (F1) and switch it on again, if necessary.

7.9. Error signals

If during the work with the machine

- the DVS prescriptions are not followed
- the necessary steps for the welding process are not correctly or not at all performed
- certain measuring devices do not function

an error message will appear on the display.
By pressing the button <Enter>, the error message can be deleted on the display.

Error message	***Cause***	***Remedial action***
heating element temperature not o.k. !	Heating element did not yet set the nominal temperature and is out of the tolerance of ± 10° C	Wait until the heating element is heated up and the setting process is finished
pipes clamped too long !!	Pipes are clamped too close one to the other and the planer does not fit between the ends	Clamp the pipes with more distance one to the other
insert heating element !!	Message „insert heating element“ has been confirmed with <Start> although the heating element has not yet been inserted	Insert heating element and confirm with <Start>
error: time between plan./warm. too long !	The time between inserting the heating element and closing has overgone 10min.	Confirm with <Enter> and repeat planing process
pipes slipped in clamps	Pipes were not properly clamped and are slipping through the clamping devices	Clamp the pipes tightly
heating element is still inserted !!	After completion of the change over time, the heating element was not removed	Abort the welding process and restart welding
error SD-card	Any other SD-card error	Check if SD card is present or is inserted in a wrong way
error SD-card card full	Memory space of the SD-card is full	Read out data from the SD-card card and perform new formatting
error SD-card write protect	SD-card has a write protection	Remove the write protection at the SD-card
error SD-card not formatted	SD-card is not formatted and no data can be stored	Format SD-card with PC **necessarily** using „**FAT16**“
power failure at last welding	Power supply of the control unit has been interrupted during the welding process	Eliminate the cause of the power failure and restart welding
no welding in memory	Internal memory is empty	
memory full !	Internal memory is full (more than 300 weldings stored)	Copy internal memory onto SD-card and then delete it

Error message	***Cause***	***Remedial action***
ambient.temp. not o.k. !	Ambient temperature is higher than 50° C or lower than 0° C	Use a welding tent or umbrella or pre-heat pipe ends
error des. temp. choose material !	No pipe parameters were set	Set pipe parameters
error: check cable to way measuring !	Travel measuring cable is not connected or defective	Connect or replace travel measuring cable
error: pipes not well in place !	In the pressureless phase, the pipes open the clamping devices	Prevent the clamping devices from opening

7.10. Possible defects and their elimination

Defect	***Possible cause***	***Identification and elimination***
Machine does not move forward nor backward	- Emergency-stop is pressed - A valve is not getting its command - Travel cable is not plugged - Travel cable is interrupted	- Unlock the Emergency-stop - Start "Test and diagnosis program". - Perform diagnosis No. 0008 travel test
Planer works the whole time or not at all	- Button at the planer is not pressed - Semi-conductive relais defective	- Check the button. - Perform diagnosis No. 0003 planer
After the planer program the planer is needed again and again	- No 2 mm material were planed - The travel measurement varies too much due to a defective travel recorder or a defective travel recorder cable.	- Make sure that min. 2 mm material are being planed (circular chip!).
Machine does not switch from bead up programm to "heating"	- No travel change is recognized	- Perform diagnosis Nr. 0008 travel test
The pressure falls very fast, the pump keeps on working	- Pipes have slipped through - Hydraulic bloc is leaky - Cylinder is leaky	- Clamp pipes correctly. - Check oil leakage. - Inform service-team

8. Transport

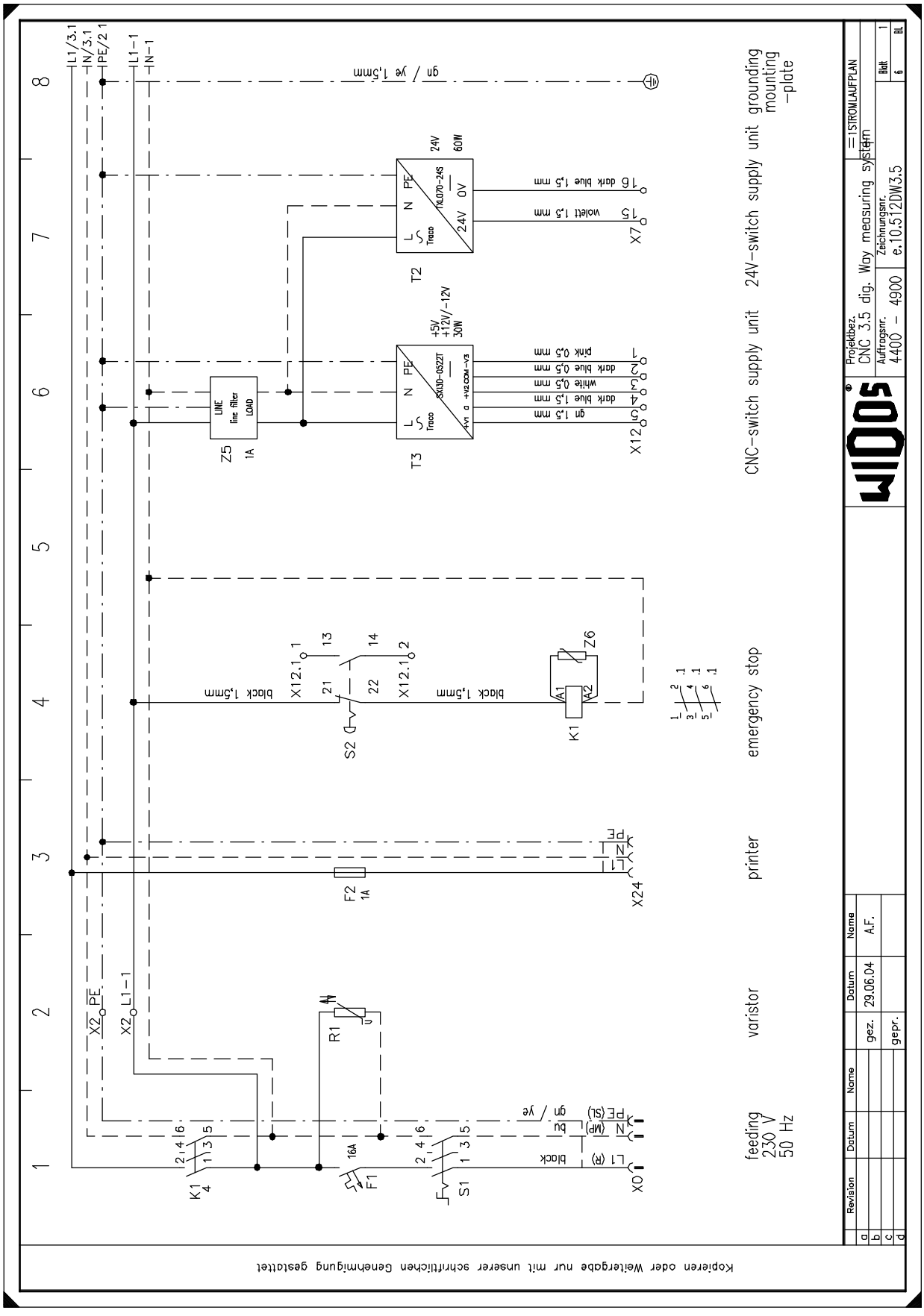
The machine can be transported in 3 transport boxes or 1 packing box.
Due to its compact design, the packing box is more suitable for longer transports.

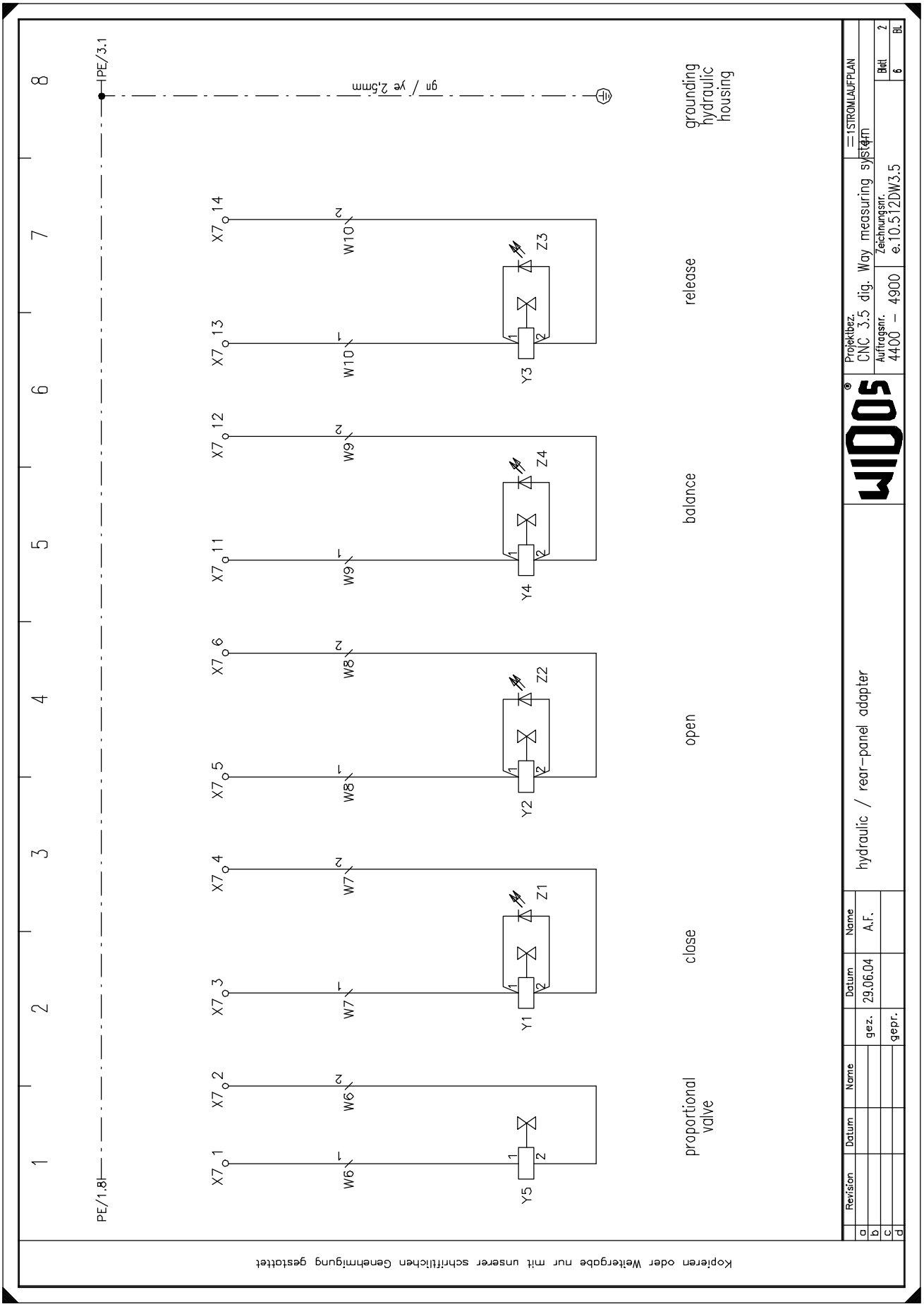
In each box holders are included which are suitable for each single element of the machine in order to avoid slipping.

- Put the elements into the box in such a way that they are fitting in the holders.
- The hydraulic hoses at the basic machine should not be unscrewed (air penetration). Make sure that they are not being squeezed.
- The sensors integrated in the 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.
  - **Never** lift or transport the basic machine at path measuring system!
- 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.

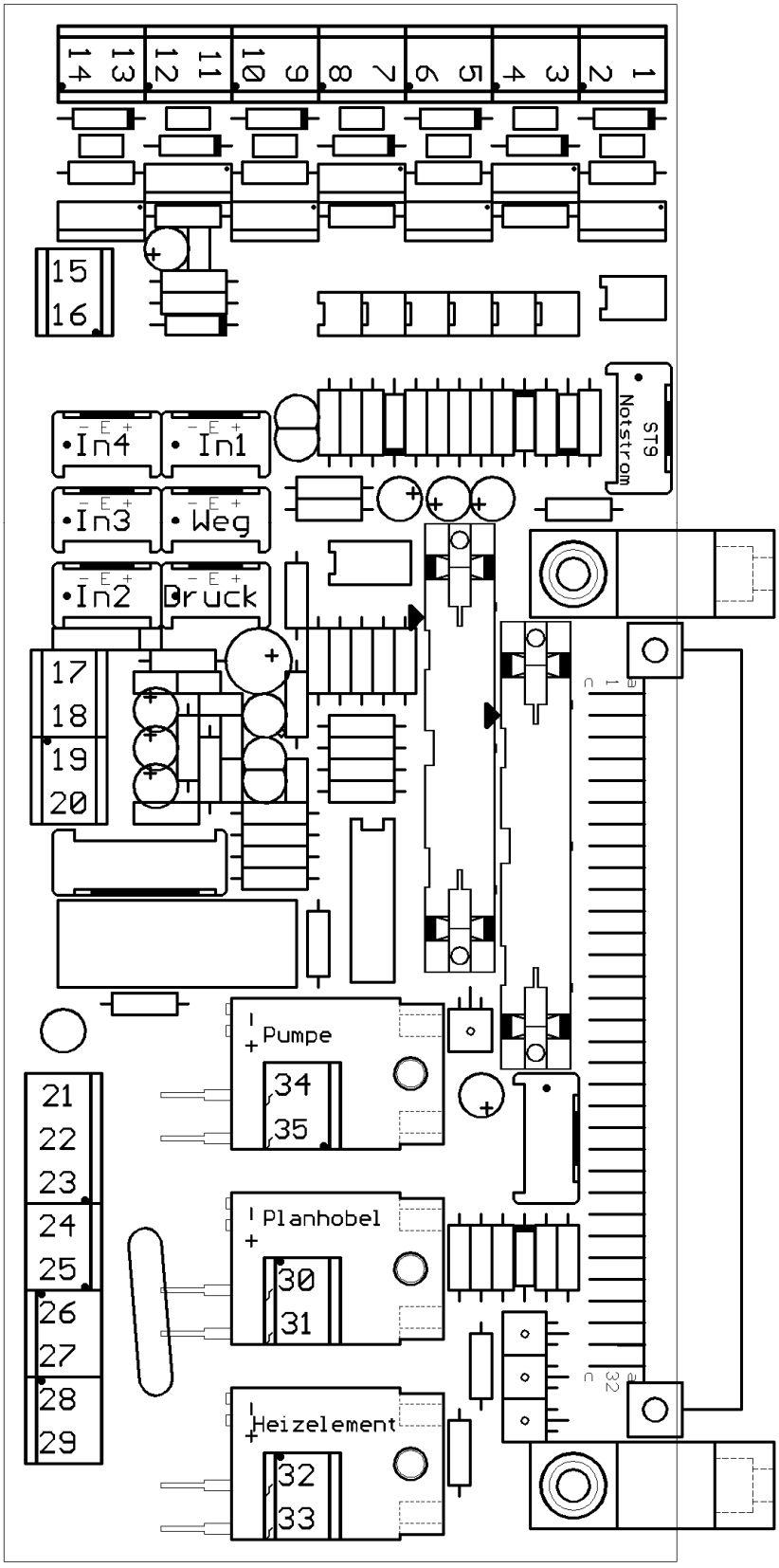
Transport the planer in the reception box.
If the planer is transported in the basic machine, grease the holders with PTFE-spray because otherwise damages at the piston and sealings may occur.

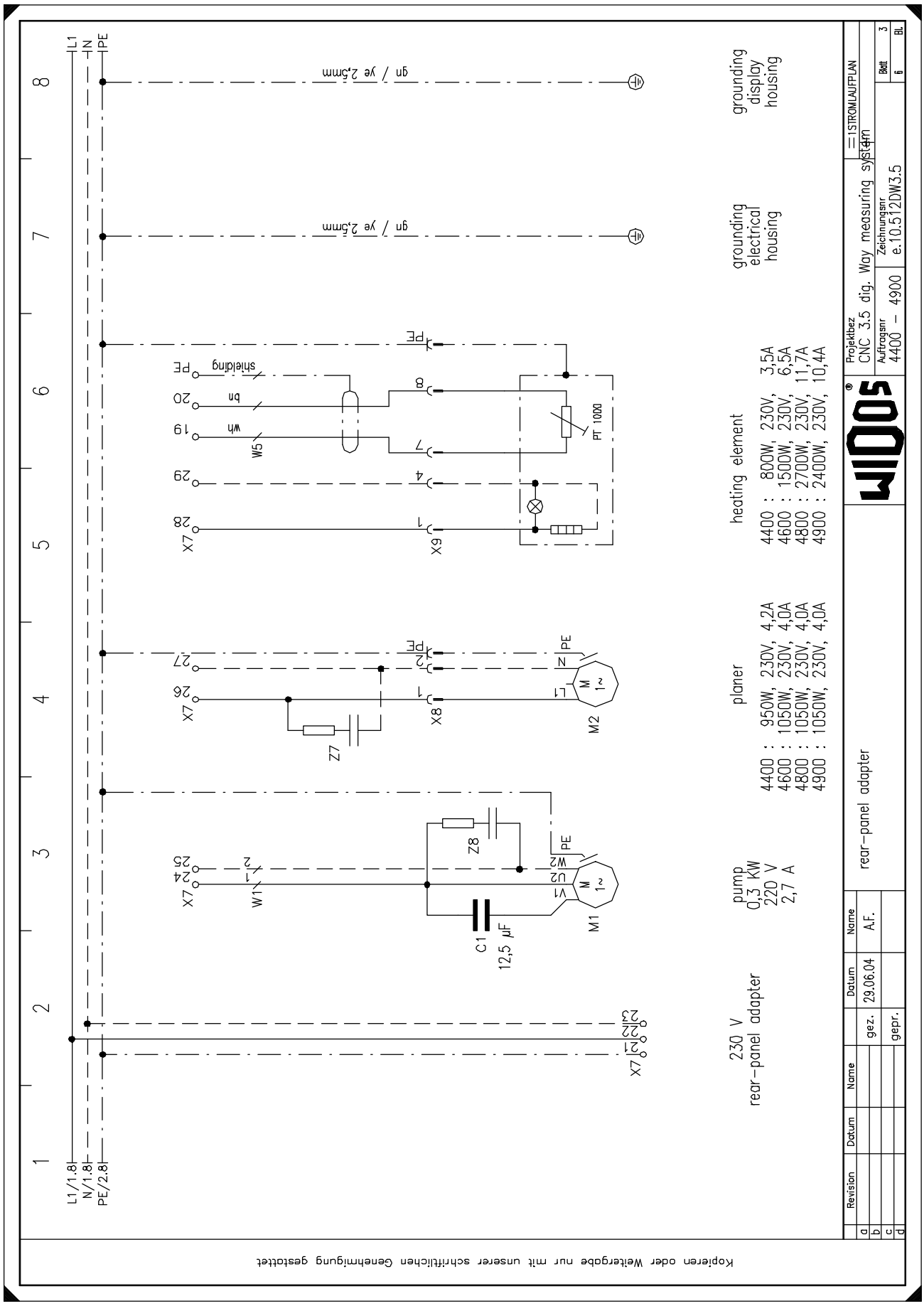
9. Wiring diagrams

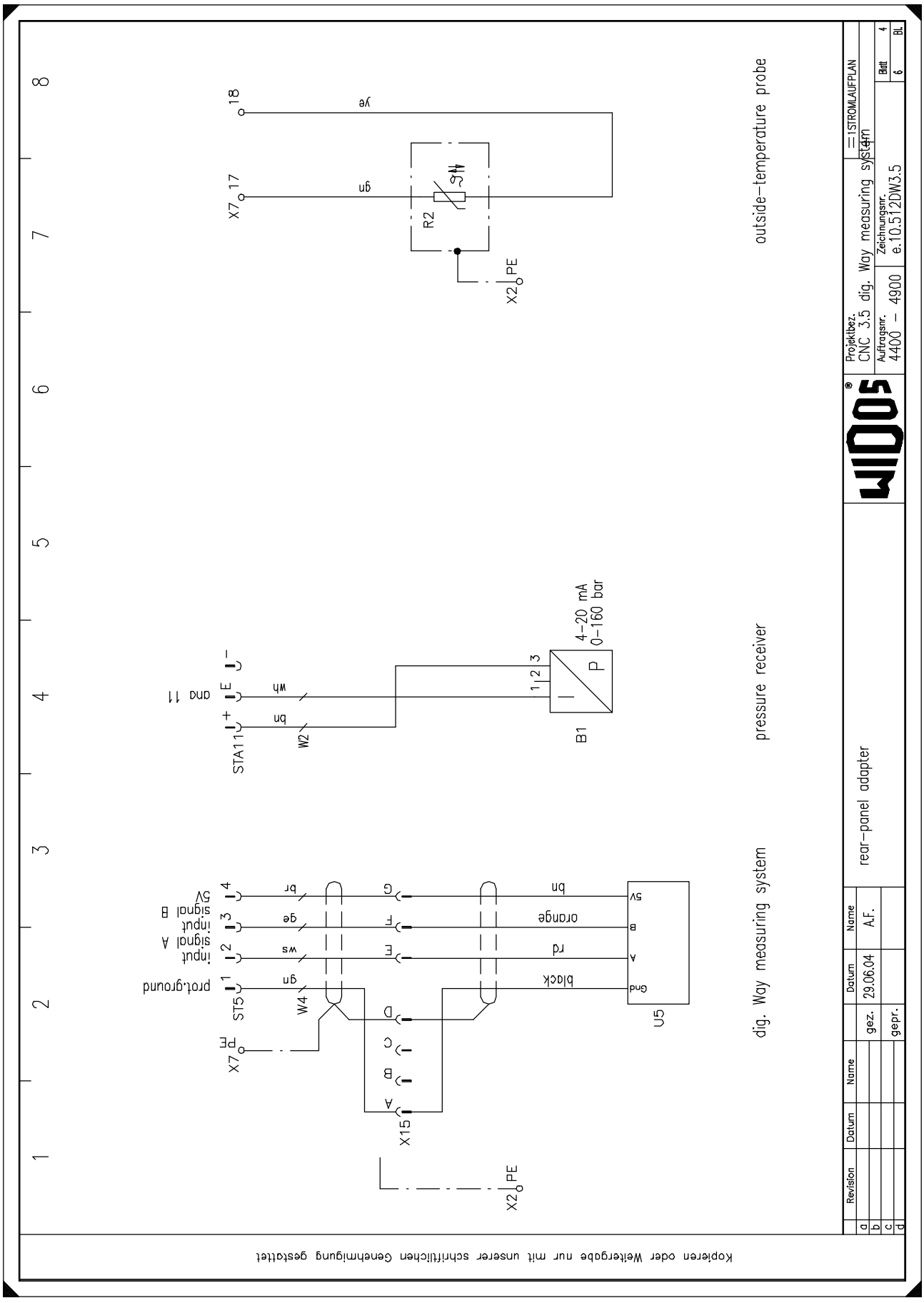



PE/3.1
PE/1.8
gn / ye 2,5mm
grounding hydraulic housing
release
balance
open
close
proportional valve
X7 1
X7 2
X7 3
X7 4
X7 5
X7 6
X7 11
X7 12
X7 13
X7 14
W6
W7
W8
W9
W10
Y1
Y2
Y3
Y4
Y5
Z1
Z2
Z3
Z4
hydraulic / rear-panel adapter
Projektbez.
CNC 3.5 dig. Way measuring system
Auftragsnr.
4400 – 4900
Zeichnungsnr.
e.10.512DW3.5
=1STROMLAUFPLAN
Revision
Datum
Name
gez.
gepr.
29.06.04
A.F.
Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet

Rear Panel Adapter X7
CNC 3.5

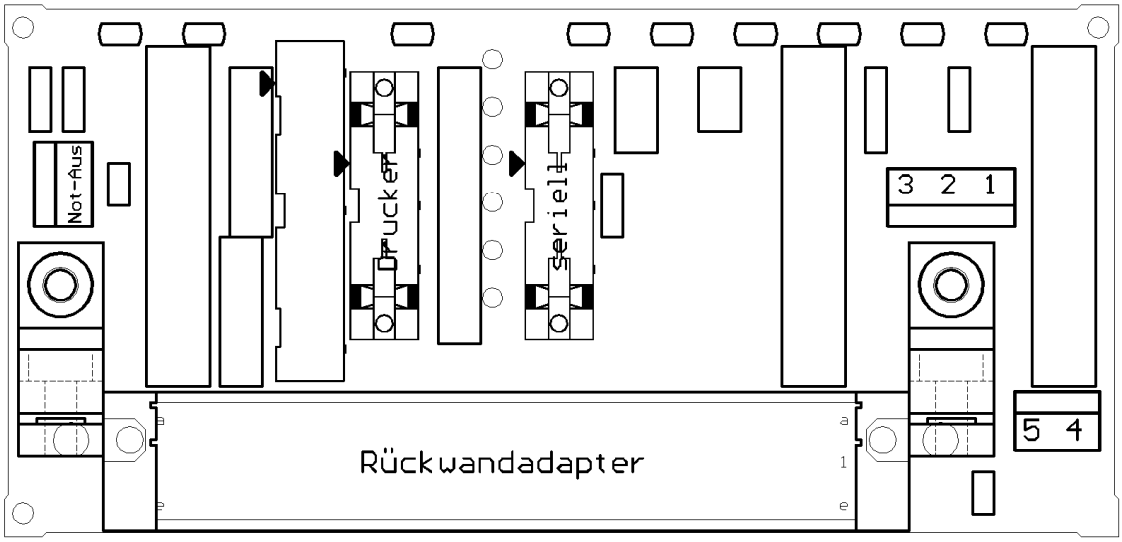



L1
N
PE
gn / ye 2,5mm
gn / ye 2,5mm
grounding display housing
grounding electrical housing
heating element
4400 : 800W, 230V, 3,5A
4600 : 1500W, 230V, 6,5A
4800 : 2700W, 230V, 11,7A
4900 : 2400W, 230V, 10,4A
planer
4400 : 950W, 230V, 4,2A
4600 : 1050W, 230V, 4,0A
4800 : 1050W, 230V, 4,0A
4900 : 1050W, 230V, 4,0A
pump
0,3 kW
220 V
2,7 A
230 V
rear-panel adapter
PT 1000
shielding
wh
bn
W5
W1
M1
M2
Z7
Z8
C1
12,5 µF
X6
X7
X8
rear-panel adapter
=1STROMLAUFPLAN
Projektbez
CNC 3.5 dig. Way measuring system
Auftragsnr
4400 - 4900
Zeichnungsnr
e.10.512DW3.5
Blatt 3
Revision
Datum
Name
gez. 29.06.04 A.F.
gepr.
Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet


outside-temperature probe
pressure receiver
dig. Way measuring system
rear-panel adapter
X7 17
X7 18
R2
X2 PE
B1
STA11
W2
W4
ST5
X15
U5
prot.ground
input signal A
input signal B
5V
black
rd
orange
bn
gn
ye
wh
br
ge
ws
Projektbez. CNC 3.5 dig. Way measuring system
Auftragsnr. 4400 – 4900
Zeichnungsnr. e.10.512DW3.5
Datum 29.06.04
Name A.F.
gez.
gepr.
Revision
Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet

Rear Panel X 12

Layout	W642B
Datum	9-16-1999 11:19:38a
Druck	9-16-1999 11:26:30a
Name	Li



Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet
Revision Datum Name
a
b
c
d
Datum Name
gez. 29.06.04 A.F.
gepr.
=Stromlaufplan-X2
control voltage 230 V
WIDOS
Projektbez.
CNC 3.5 dig. Way measuring system
=ZKLEMMENPLAN
Auftragsnr. 4400 - 4900
Zeichnungsnr. e.10.512DW3.5
Bldtt 100
6 Bl.
Klemmleiste =STROMLAUFPLAN-X2
Bemerkung
line filter
varistor
line filter /
CNC-switching power supply unit / pump
24V-switching power supply unit / rear-panel adapter
mounting plate /
W1 Oflex 3x1,5mm
W0 5,0m H07RN-F 3x1,5mm
Nr. Typ Querschn. Laenge Kabel
Aderbe-zeichnung
bk 1,50mm
blue 1,50mm
gn / ye 1,50mm
von =Anlage+Ort-BMK:Anschl
Quer-verweis
Bruecke
Klemmen-Nr.
nach =Anlage+Ort-BMK:Anschl
Z5 1.6 L1-1 1.4 S2:1
S1:6 1.2 L1-1 1.1 K1:1
Z5:PE / X24:PE 1.6 / 1.3 R3 1.2 F1
T3:PE / M1:PE 1.6 / 3.3 PE 3.8 / 3.7 display / electrical
T2:PE / X7:21 1.7 / 3.2 PE 2.8 / 4.1 hydraulic / X15
mounting plate / 1.7 / PE 3.6 / 3.4 X9:PE / X8:PE
PE 1.1 / 4.7 X0:PE / R2
Bemerkung
emergency stop
emergency stop
varistor
electrical housing / display housing
hydraulic / way sensor
heating element / planer
feeding / outside-temperature probe

Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet

Revision	Datum	Name		Datum	Name
a			gez.	29.06.04	A.F.
b					
c			gepr.		
d					

=Stromlaufplan–X7
rear–panel adapter

WIDOS®

Projektbez. CNC 3.5 dig. Way measuring system
Auftragsnr 4400 – 4900
Zeichnungsnr. e.10.512DW3.5

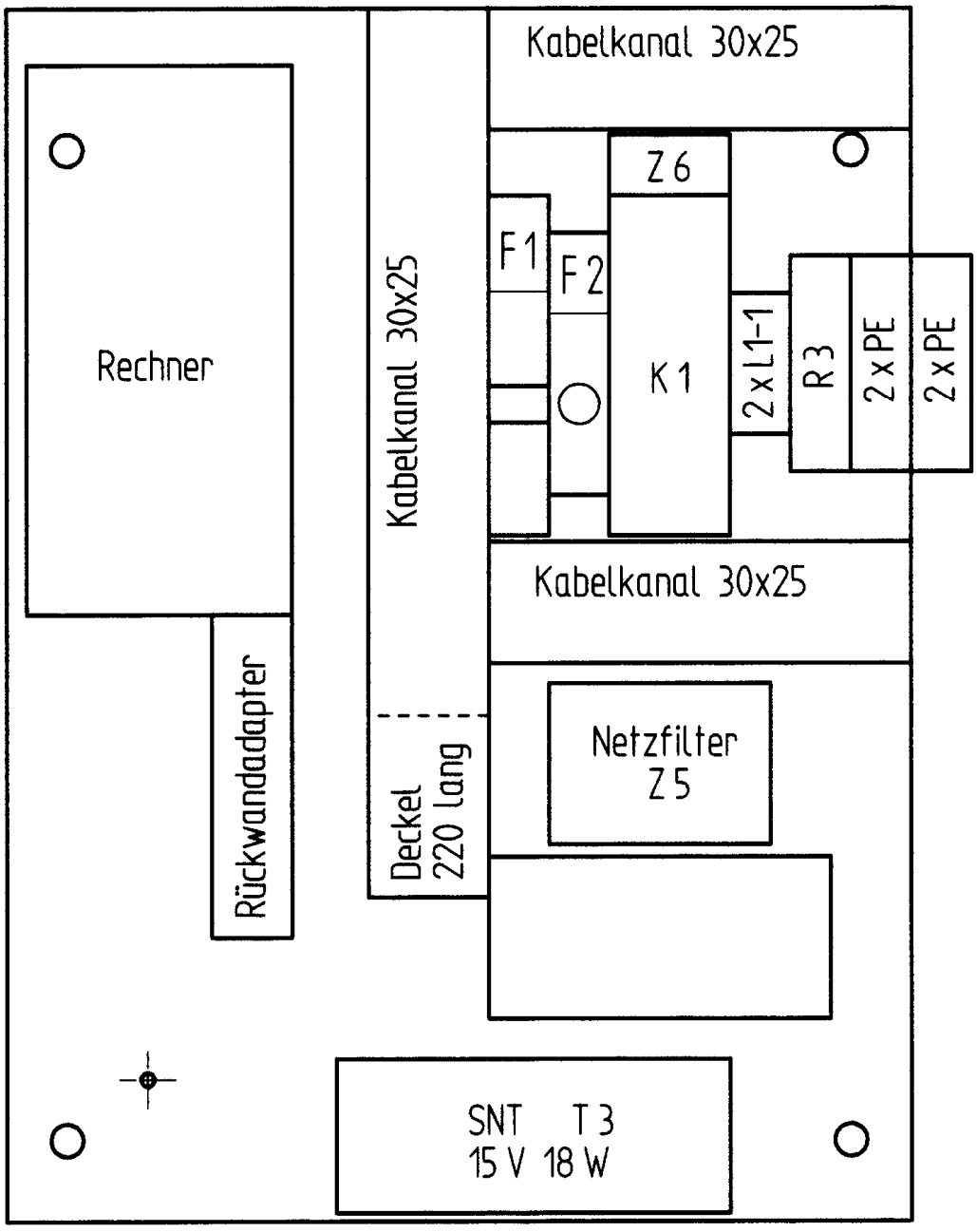
=2KLEMMENPLAN
Bdtt 101
6 Bl.

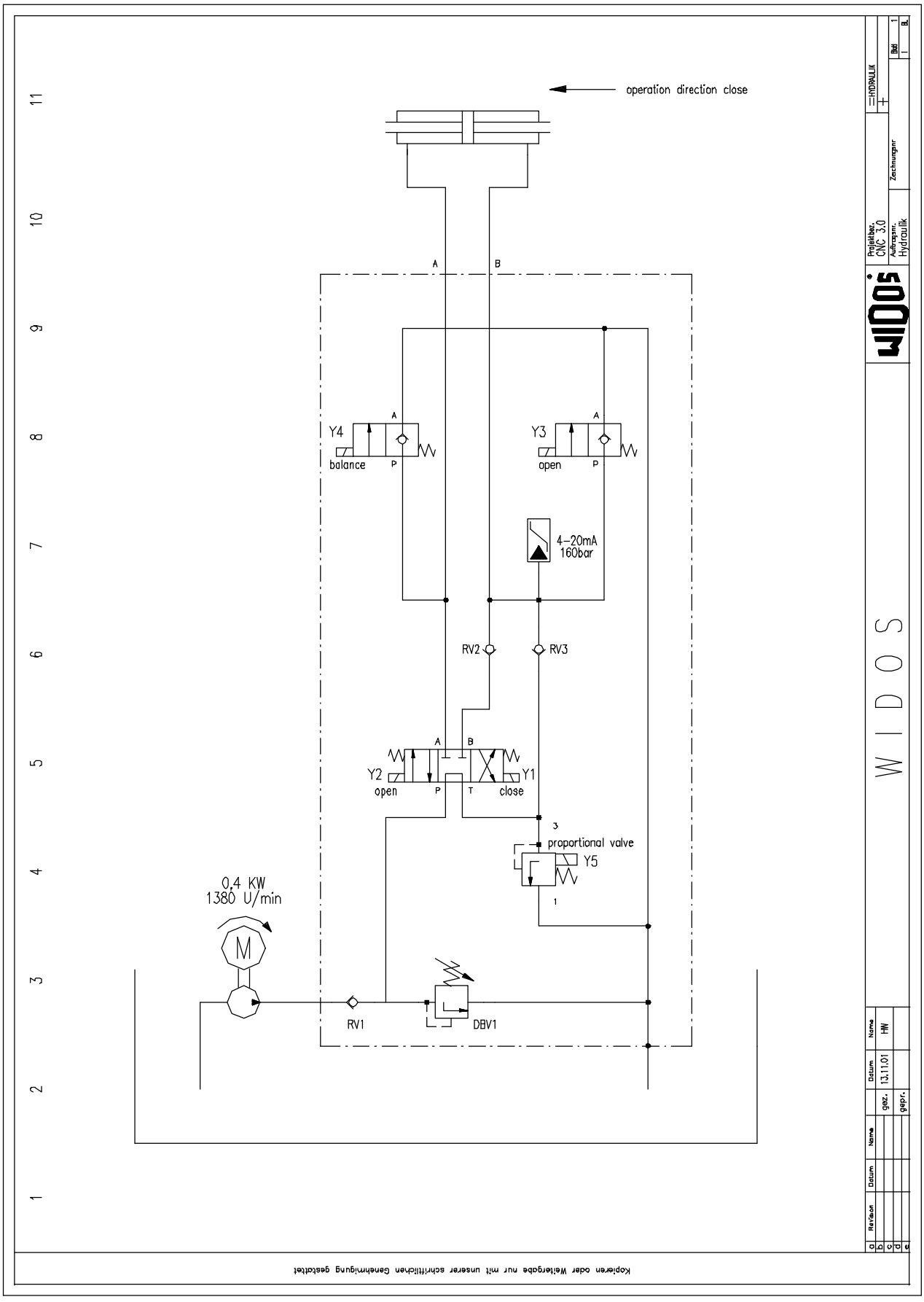
Klemmleiste =STROMLAUFPLAN–X7

von: =Anlage+Ort–BMK:Anschl	Querverweis	Bruecke	Klemmen–Nr	nach: =Anlage+Ort–BMK.Anschl	Aderbezeichnung	Nr. Typ Querschn. Laenge Kabel	W1 Ölflex 3x1,5mm	W4 Tronic CY 4x0,34mm abg	W5 Tronic CY 2x0,34mm abg	W6 Ölflex 2x0,75mm	W7 Ölflex 2x0,75mm	W8 Ölflex 2x0,75mm	W9 Ölflex 2x0,75mm	W10 Ölflex 2x0,75mm	W2 Ölflex 2x0,34mm	Bemerkung
	2.1		1	Y5:1	1					X						proportional valve
	2.2		2	Y5:2	2					X						proportional valve
	2.2		3	Y1:1	1						X					close
	2.3		4	Y1:2	2						X					close
	2.4		5	Y2:1	1							X				open
	2.4		6	Y2:2	2							X				open
			7													
			8													
			9													
			10													
	2.5		11	Y4:1	1								X	X		balance
	2.6		12	Y4:2	2								X	X		balance
	2.6		13	Y3:1	1									X	X	release
	2.7		14	Y3:2	2									X	X	release
	1.6		15	T3:24V	violett 1,5mm											24V–switch supply unit
	1.6		16	T3:0V	dark blue 1,5mm											24V–switch supply unit
	4.7		17	R2	gn 0,5mm											outside–temperature probe
	4.8		18	R2	ye 0,5mm											outside–temperature probe
	3.6		19	X9:7	white				X							heating element
	3.6		20	X9:8	brown				X							heating element
	3.6	●	PE	PT1000–sensor	shielding				X							heating element
	3.2		21	X2:PE	gn / ye 1,5mm											voltage supply
	3.2		22	K1:2	bk 1,5mm											voltage supply
	3.2		23	K1:6	blue 1,5mm											voltage supply
	3.3		24	M1:U2	1			X								pump
	3.3		25	M1:W2	2			X								pump
	3.4		26	X8:1	bk 1,5mm											planer
	3.4		27	X8:2	blue 1,5mm											planer
	3.5		28	X9:1	bk 1,5mm											heating element
	3.5		29	X9:4	blue 1,5mm											heating element
	4.1		ST5:1	X15:A	gn			X								way sensor
	4.2	●	PE	X15:D	shielding			X								way sensor
	4.2		ST5:2	X15:E	white			X								way sensor
	4.3		ST5:3	X15:F	ye			X								way sensor
	4.3		ST5:4	X15:G	brown			X								way sensor
	4.4		STA11:+	B1:3	brown										X	pressure receiver
	4.4		STA11:E	B1:1	white										X	pressure receiver
	4.4		STA11:–													pressure receiver

Nr. Typ Querschn. Laenge Kabel	Aderbezeichnung

Mounting Plate




operation direction close
A
B
Y4
balance
P
Y3
open
P
4-20mA
160bar
RV2
RV3
Y2
open
P
T
Y1
close
3
proportional valve
Y5
1
0,4 KW
1380 U/min
M
RV1
DBV1
WIDOS
Kopieren oder Weitergabe nur mit unserer schriftlichen Genehmigung gestattet

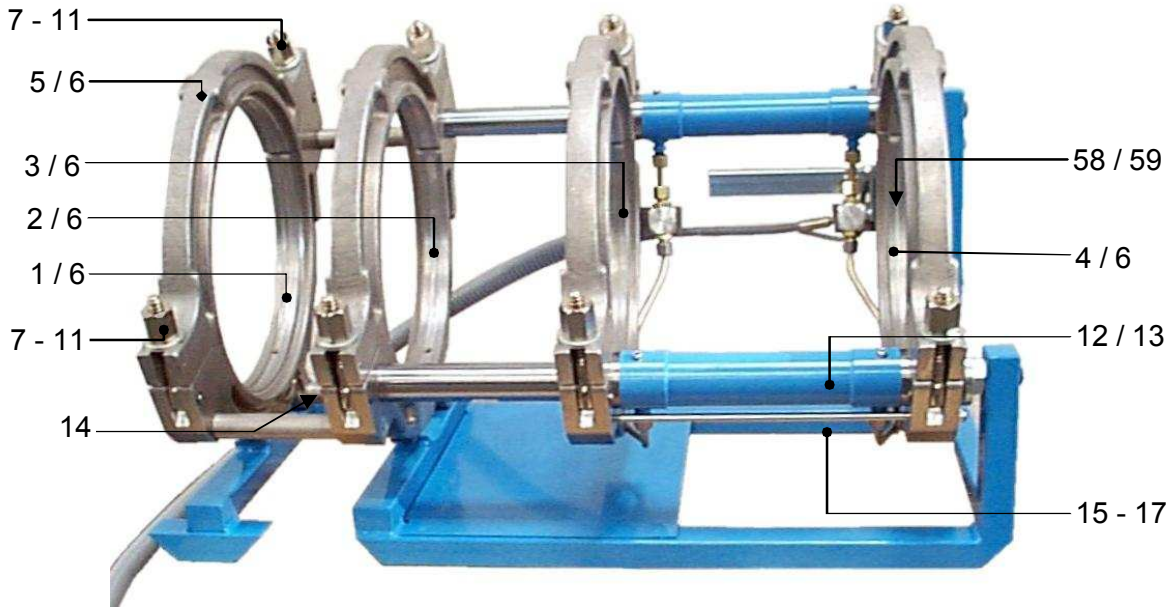
10.Spare parts list

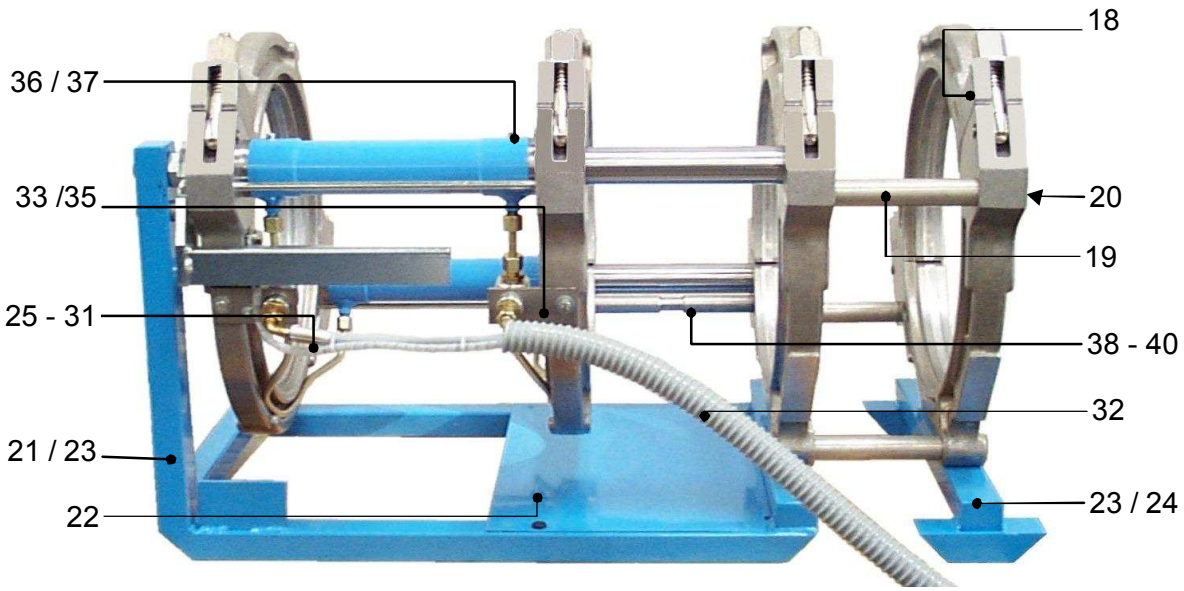
10.1. CNC contol unit 3.5

CNC-control unit WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Order no.
1	Flat head screw M 3x16 DIN 965	2	0965C016
2	Outside temperature sensor	1	EE0404
3	Carrying frame	1	105010
4	Pan head screw M 8x40 DIN 912	4	0912H040
5	Disk M 8 DIN 125	4	0125H
6	Hexagon nut M 8 DIN 934	4	0934H
7	Sheeting for front panel	1	EF0601
8	Flat head screw M 4x10 DIN 7991	8	7991D010
9	Rosette M4	8	ROSM4
10	Lock for front panel	1	J1001
--	Key	1	on request
11	Front panel for hydraulic	1	105011
12	Filler pipe	1	C1002002
13	Oil dip rod	1	C102001
14	Conical nipple for filler pipe	1	D24x18,5
15	Hydraulic oil	1 l	HLPD032
16	Protecting cover (position sensor)	1	EST0508
17	Protecting cover for 16-chanel plug	1	EST0548
18	Rubber plate	1	105006
19	Front panel for electric	1	105012
20	Seal for front panel	1	105013

10.2. Basic machine





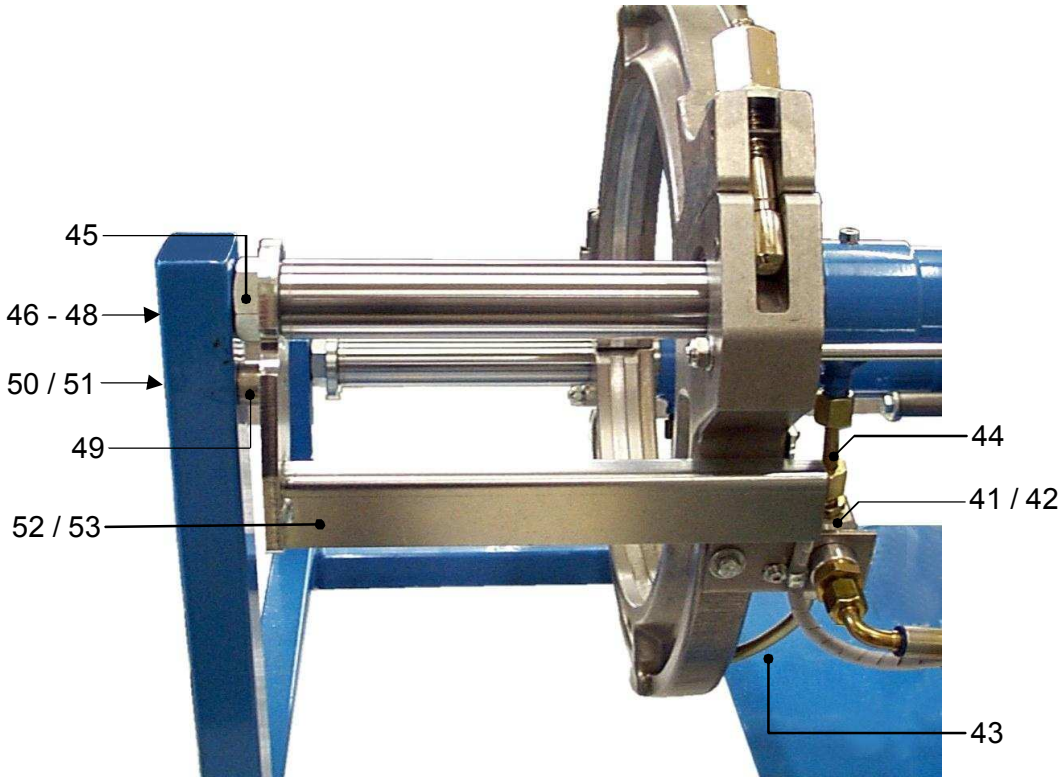
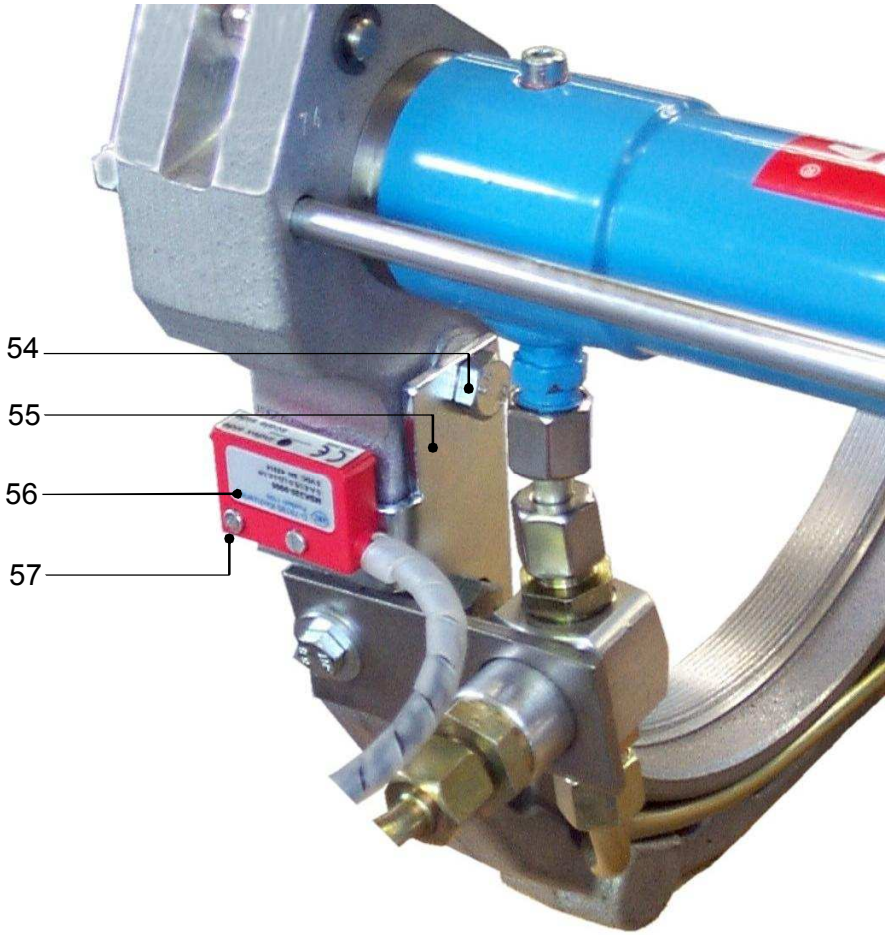


Illustration without rail for the travel sensor:



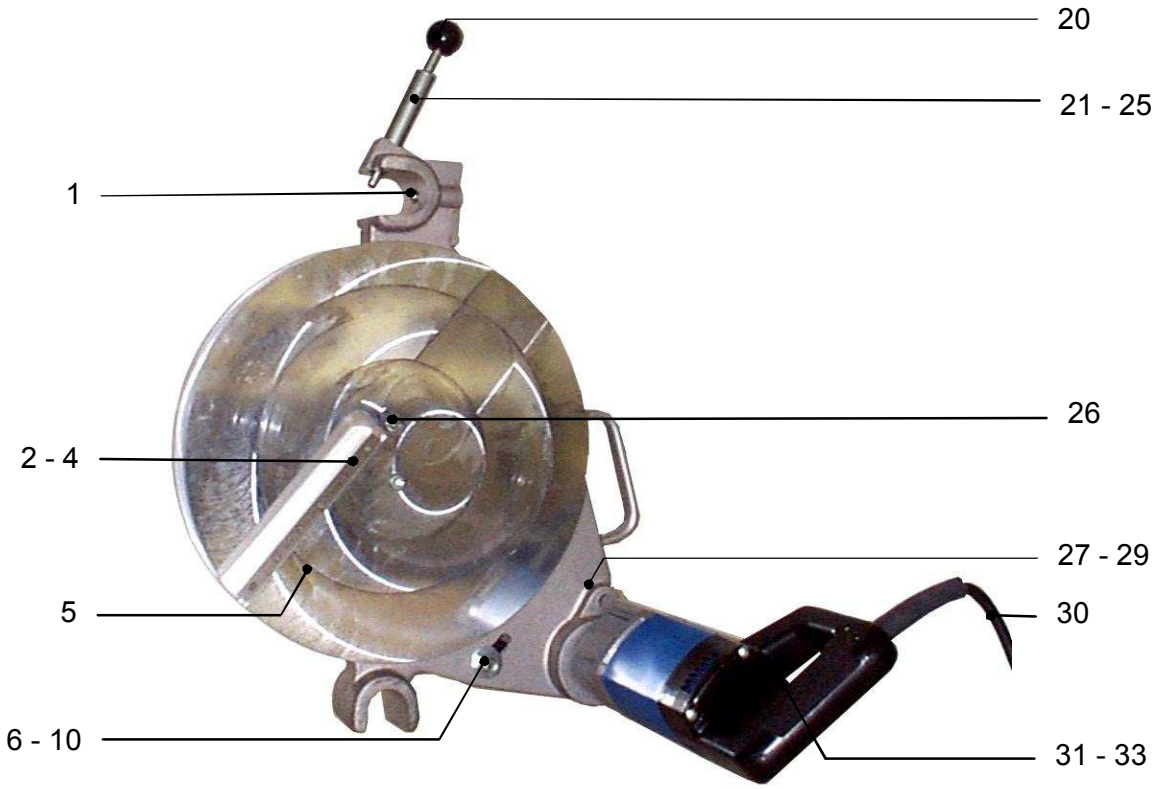
Basic machine WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Art.-No.
1	Outer clamp, fixed	1	216101
2	Inner clamp, fixed	1	216102
3		1	216103
4	Outer clamp, movable	1	216104
5	Upper clamp	4	214105
6	Thread insert M 6	8	GEW-M6
7	Threaded rod	8	091108
8	Nut	8	091109
9	Pressure disc M 14 DIN 6340	8	6340N
10	Rivet	8	216111
11	Lock washer Gr. 7 DIN 6799	8	6799G
12	Hydraulic cylinder	2	216106
13	Guide bearing	4	LKH3050
	Gasket set for cylinder	2 set	D216106
14	Flat head screw M 12x20 DIN 7991	8	7991L020
15	Pull shaft	2	216107
16	Hexagon nut M 8 DIN 934	2	0934H
17	Disc M 8 DIN 125	2	0125H
18	Grub screw M 8x10 DIN 916	4	0916H010
19	Shaft	3	091131
20	Flat head screw M 12x30 DIN 7991	6	7991L030
21	Base frame	1	216118
22	Base plate for base frame	1	2161182
23	Pan-head screw M 8x30 DIN 912	2	0912H030
24	Support	1	216141
25	Hydraulic tube	2	VSCHL61
26	Quick coupling spigot	1	VST14
27	Quick coupling socket	1	VMU14
28	Screwed connection GE 8 LR 3/8"	2	VXGE8L38
29	Compressing collar	4	VP256
30	Threaded nippel 1/4"	2	VN856
31	Elbow nippel	2	VB386
32	Protection hose (3 m)	1	EA0801
33	Support for filter	2	092120
34	Disk M 8 DIN 125	2	0125H
35	Hexagon screw M 8x20 DIN 933	2	0933H020
36	Copper ring 5x9x1 DIN 7603	4	7603E
37	Pan-head screw M 5x6 DIN 912	4	0912G006
38	Tear off bar for heating element	1	216503
39	Washer M 8 DIN 6340	2	6340H
40	Hexagon-head screw M 8x12 DIN 933	2	0933H012
41	Filter	2	V092114
	O-ring	2	D11x2

Basic machine WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Art.-No.
	Sintering filter	2	V091114
42	Screwed connection GE 8 LR 1/4"	4	VXGE8L14
43	Hydraulic tube	2	2161121
44	Hydraulic tube	2	2161131
45	Stop bolt	2	091117
46	Hexagon screw M 10x20 DIN 933	2	0933J020
47	Disk M 10 DIN 125	2	0125J
48	Protective cap Ø 20 x 1-2	2	J0215
49	Distance bush	1	091173
50	Pan-head screw M 6x20 DIN 912	1	0912F020
51	Washer M 6 DIN 125	1	0125F
52	Rail for travel sensor	1	216171
53	Magnetic belt 240 mm	1	EE0735
54	Hexagon-head screw M 8x12 DIN 933	2	0933H012
55	Holder for sensor	1	091172
56	Sensor, digital	1	EE0724
57	Slotted pan head srew M 3x12 DIN 85	2	0085C012
58	Reducer inserts OD 90 - 280	1 set	3808...*
59	Pan-head screw M 6x30 DIN 912 (to OD 90-225)	8	0912F30X
	Pan-head screw M 6x25 DIN 912 (to OD 280)	8	0912F25X
--	Nameplate for WIDOS 4900 CNC	1	SCHT4900
--	Hydraulic oil	2 l	HLPD35
--	Socket spanner size 27	1	ZRS27
--	Transport box	1	TKA10
	* When ordering necessarily state the dimension !		

10.3. Planer

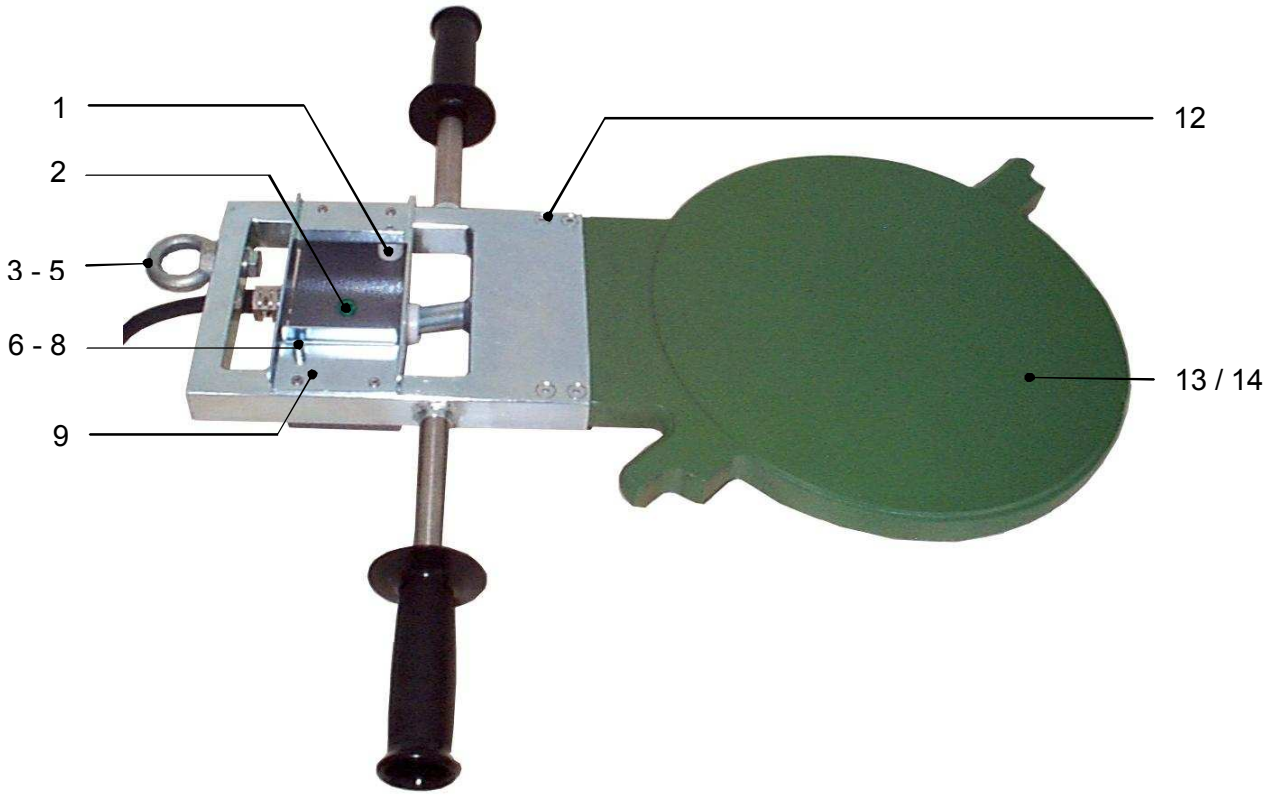

20
21 - 25
1
26
2 - 4
27 - 29
5
30
6 - 10
31 - 33

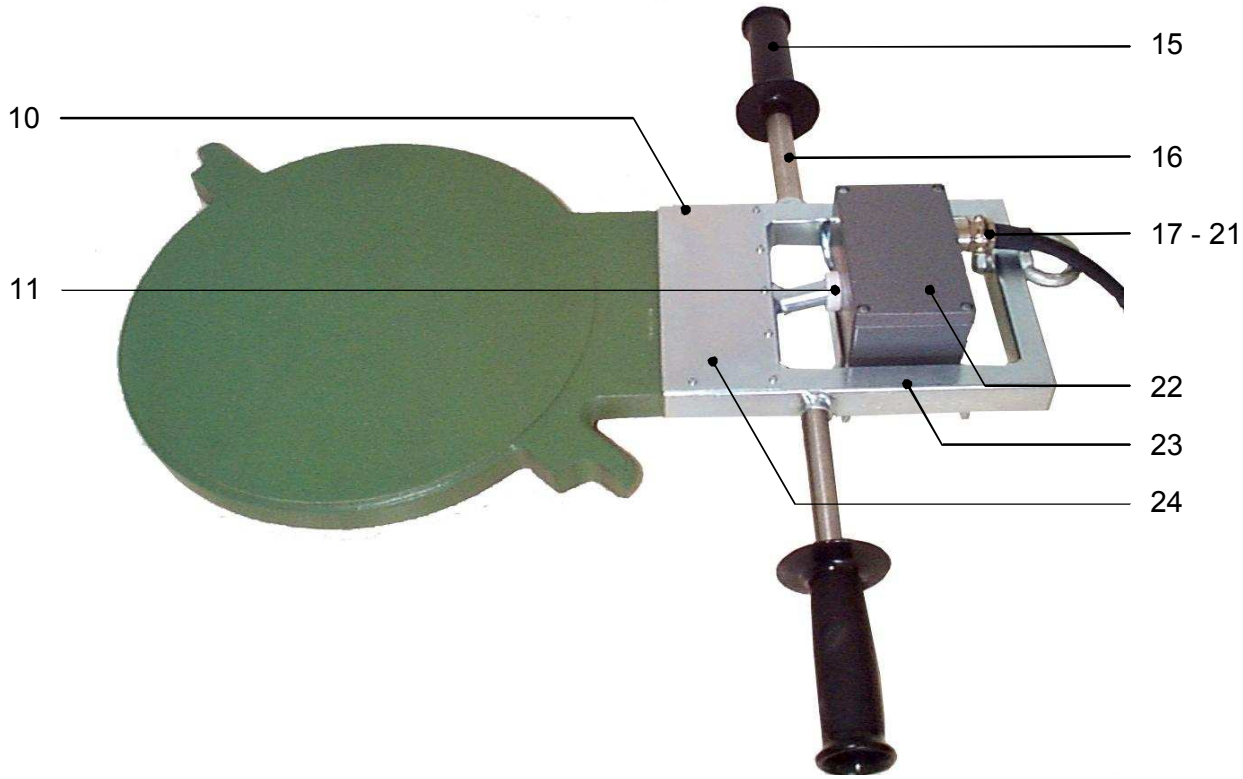

11 / 12
13
34
14 / 15
35 - 40
16 - 18
41
19
42

Planer WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Art.-No.
1	Limit switch, complete	1	ES0102
2	Blade	2	MES170
3	Spacer	2	MU170
4	Flat head screw M 3x8 DIN 965	12	0965C008
5	Planer disc, right-hand	1	214402
6	Ball bearing	2	L6001Z
7	Bolt	1	091410
8	Hexagon nut M 12 DIN 934	1	0934L
9	Washer M 12 DIN 125	3	0125L
10	Washer M 12 DIN 134	1	0134L
11	Cover for switch of planer	1	091420
12	Flat head screw M 5x10 DIN 7991	2	7991E010
13	Fastener for planer	1	216401
14	Bow grip	1	BG56520
15	Pan-head screw M 6x16 DIN 912	2	0912F016
16	Protective tube	1	091424
17	Underground line 1x1,5 mm²	1	EL3015GG
18	Grub screw M 5x6 DIN 916	1	0916F006
19	Pan-head screw M 8x30 DIN 912	2	0912H030
20	Ball button C32 M 8 DIN 319	1	0319-C32
21	Locking bolt	1	091422
22	Grooved taper pin 4x16 DIN 1471	1	1471D016
23	Pressure spring	1	FE006
24	Bush	1	216421
25	Lock nut	1	091423
26	Pan-head screw M 10x30 DIN 912	2	0912H030
27	End sleeve for strands with ring M 4	1	EA05425
28	Tooth lock washer M 4 DIN 6797	1	6797D
29	Pan-head screw M 4x6 DIN 84	1	0084D006
30	Connecting cable with plug	1	EK3220
31	Driving motor 1050 W, 230V	1	AMBF16
32	Motor switch	1	ESMBF16
33	Collector carbon	1 set	EKMBF16
34	Planer disc, left-hand	1	214403
35	Chain wheel, small (11 teeth)	1	K38011
36	Chain 3/8" (117 links)	1	K38117
37	Chain joint	1	KSCH38
38	Ball bearing	1	L6020
39	Flat head screw M 8x20 DIN 7991	4	7991H020
40	Chain wheel, large (95 teeth)	1	K38095
41	Cover	1	214404
42	Pan-head screw M 4x16 DIN 912	2	0912D016

10.4. Heating element

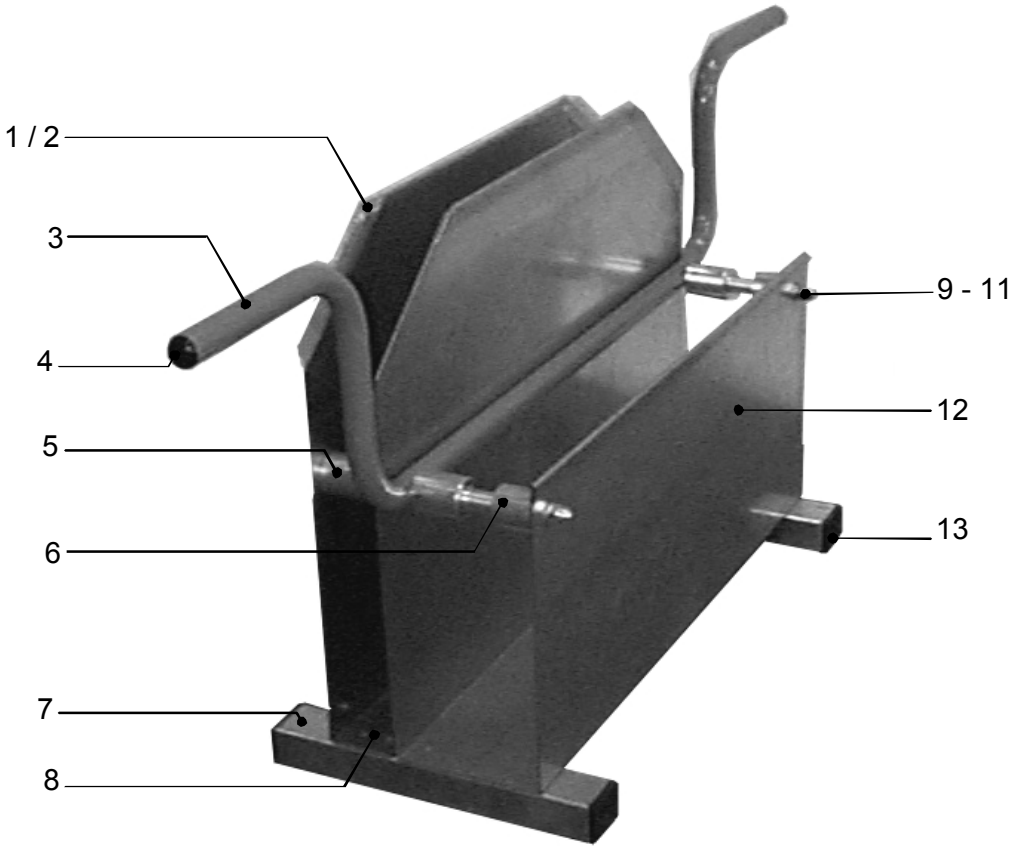




Heating element WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Art.-No.
1	Shim PTFE	2	211508
2	Control lamp, green	1	H2105
3	Ring nut M 12 DIN 582	1	0582L
4	Lock washer M 12 DIN 127	1	0127L
5	Hexagon head screw M 12x35 DIN 933	1	0933L035
6	Pan-head screw M 5x25 DIN 912	2	0912E025
7	Disk M 5 DIN 125	2	0125E
8	Lock washer M 5 DIN 127	2	0127E
9	Frame for control	1	211506
10	Oval-head screw M 3x5 DIN 7985	7	7985C005
11	Joining disc PTFE	1	211505
12	Flat head screw M 6x12 DIN 7991	4	7991F012
13	Heating element H 4900, 230 V	1	H4900C2
	Heating plate new	1	HP4900C2
	Heating plate for change	1	HPT4900C2
14	Temperature probe PT1000	1	H09082
15	Handle	2	H0205
16	Handlebar	2	H0206
17	Cable socket 16/15 f. Pg.16	1	EVK1615
18	Rubber cable 5x1,5 mm²	1	EL02515
19	Nozzle housing, 16-pins	1	EST0542
20	Bolt insert, 16-pins	1	EST0543
21	HKL-screwing Pg 16/15	2	EVH1615
22	Housing for control	1	2115041
23	Holder for heating element	1	211501
24	Cover plate	1	211507

10.5. Reception box



Reception box WIDOS 4900 CNC 3.5

Pos.	Name	Piece	Art.-No.
1	Heat absorbing steel sheet	1	214528
2	Insertion for heating element	1	214523
3	Stirrup	1	214527
4	Fitting cap Ø20x2	2	J5401
5	Spacing bolt for heating element	2	214525
6	Spacing bolt for planer	2	216524
7	Foot-mounting	2	214521
8	Blind rivet 4x10 DIN 7337	8	7337D010
9	Hexagon bolt M 8x160 DIN 933	2	0933H180
10	Hexagon domed cap nuts 6AU M 8 DIN 1587	2	1587H
11	Washer M 8 DIN 125	2	0125H
12	Insertion for planer	1	214522
13	Fitting cap 40x30x2	4	J0203

11. Declaration of conformity

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

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

declares under own responsibility that the product

Heating element butt welding machine with CNC control unit
WIDOS **4900 CNC 3.5**

to which this declaration refers corresponds to the following norms and norming 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 4413
   Safety specifications for fluid technical installations and components

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

The technical documentation is completely available.

Ditzingen-Heimerdingen, the 02.08.2011

Martin Dommer (Technical director)