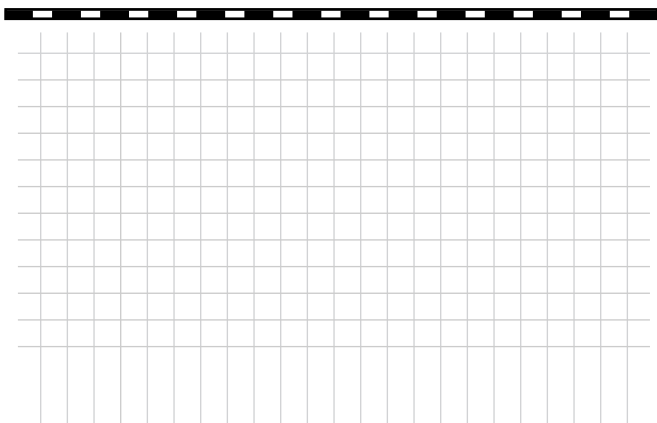
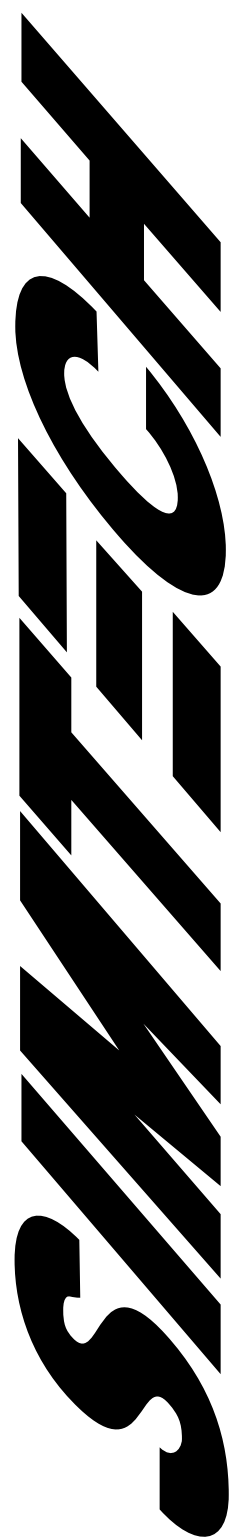


**Maxiplast
Butt Fusion Machine**

Operation & Maintenance Manual

*Corrosion Resistant Fluid and
Air Handling Systems.*



WeldTech - MaxiPlast Instruction Manual

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1. Description of Product

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

1.1. Application and Prescribed Use

The WeldTech MAXIPLAST is made for heating element butt welding of pipes and fittings out of PE, PP and PVDF with a diameter range of $\text{Ø} = 50 - 160$.

The machine is kept small so that it can easily be used in the pipe system. The clamping of the pipes is managed by steel clamping tools.

All use going beyond is not prescribed.

The manufacturer is not responsible for damages caused by misuse. The risk is held only by the user.

Also part of the purpose oriented use is

- The respect of all the indications of the working instructions and
- The performing of the inspection and maintenance works.

1.2. Safety Measures

In case of wrong use, wrong operation or wrong maintenance the machine itself or products being in the surrounding can be damaged or destroyed.

Persons being in the endangered area may be injured.

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

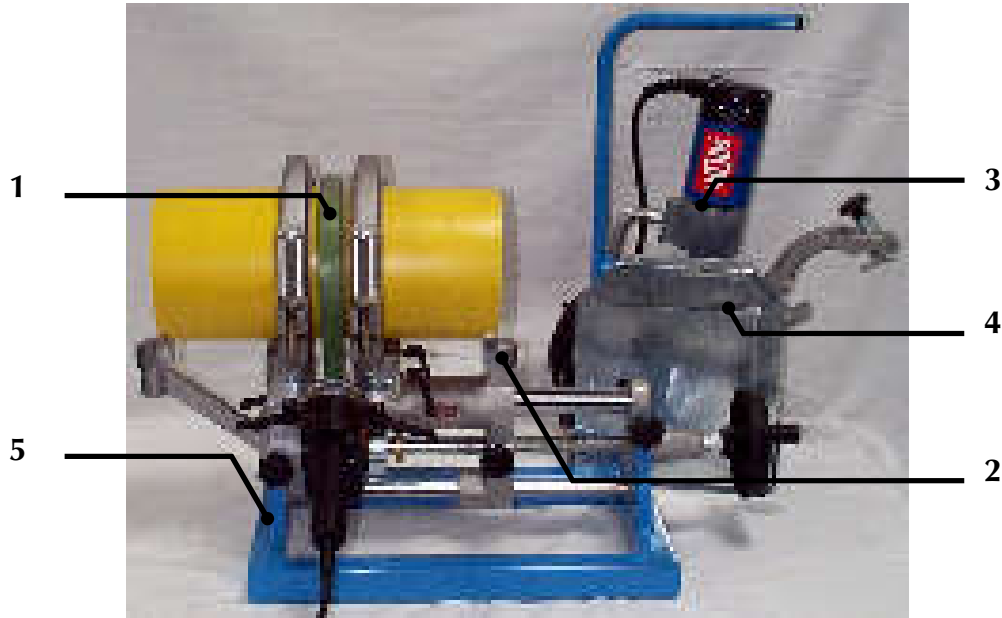
1.3. Conformity

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.

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1.4. Overview



| No. | Denomination |
|-----|-----------------|
| 1 | Heating element |
| 2 | Basic machine |
| 3 | Planer |
| 4 | Protective box |
| 5 | Table support |

1.5. Designation of Product

The product is designated by a sign at the frame. It contains the type of the machine, the serial number and the year of construction.

1.5.1 Technical Data

1.5.1.1 SIMTECH MAXIPLAST General Data

| | |
|---------------------------|-------------------------|
| Material: | PP, PE, PVDF, |
| Dimensions of pipes: | Outside-~ = 50 - 160 mm |
| Transport box (LxBxH): | 630 x 505 x 562 mm |
| Weight (without packing): | 99.2 lbs. |
| Weight transportbox | approx. 30.8 lbs |
| Fuse: | 16 A |
| Wire cross section: | 1,5 mm ² |

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| | |
|-------------|---|
| Emissions: | <ul style="list-style-type: none"> - The sound intensity level is below 70 dB (A) - When using the named pipe materials and when welding below 260° C no toxicant damp arises. |
| Environment | <ul style="list-style-type: none"> - Keep the workshop clean (especially welding area must be clean) - do not weld below 5° C, if necessary heat-up before welding - avoid humidity - avoid strong sun beams - if it is windy shut the pipe endings. |

1.5.1.2 Heating Element

| | |
|-------------|--|
| Power: | 760 Watt |
| Voltage: | 110V |
| Current: | 3,5 A (± 10 %) |
| Frequency: | 50 Hz |
| Outside-~ : | 200 mm |
| surface: | anti-stick coated |
| Elements: | <ul style="list-style-type: none"> - electric temperature control - control lamp - connecting cable with plug |
| Weight: | appr. 3,9 kg |

1.5.1.3 Planer

| | |
|------------|----------------|
| Power: | 950 Watt |
| Voltage: | 110V |
| Current: | 3,5 A (± 10 %) |
| Frequency: | 50 Hz |
| Weight: | appr. 9,3 kg |

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1.5.1.4 Basic Machine with Table Support

| | |
|------------------------------------|-----------------|
| Material frame and clamping tools: | Machinery steel |
| max. force | 1000 N |

**See spare parts list for order-numbers and single parts, when ordering,
please state the machine number.**

1.6. Equipment and Accessories:

Following accessories are part of the delivery:

| | |
|-----|---|
| 1 x | Hexagonal socket screw key size 3 for screwing in / out the reduction inserts |
| 1 x | Hexagonal socket screw key size 4 for tightening the optional clamping jaws for fittings |
| | Screws for reduction inserts, flat-head screws for reduction inserts, flat head screws for mounting the optional clamping jaws for fittings |

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 Different Symbols

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



This symbol means a possible danger for the life and the health of people.

- The non-respect of these indications may have serious consequences for the health.



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.



Under this symbol you get user tips and particularly useful informations.

- 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 / Worker

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.
- The workers also must have read and understood the safety chapter of this manual and certify this by their signature.
- The safety-conscious working of the staff should be checked in regular intervals. All persons who are to work at the machine undertake before working:
 - To take care of the basic safety and accident protection rules.
 - To have read and understood the safety chapter and the warnings in this manual.

2.3. Nonproductive Arrangement

- All equipment required for personal safety is to be provided by the owner.
- All available safety equipment is to be inspected regularly.
- The working instructions are 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 working instructions, the generally valid and also the local rules for the prevention of accidents and for the protection of the environment are to be provided and adhered to.
- Every time the machine changes hands or is being rented to third persons, the working instructions are to be sent along with and their importance is to be emphasized.

2.4. Training of the Staff

- Only trained and introduced staff is authorized to work on the machine.
- The responsibility of the staff concerning transportation, assembling- and disassembling putting into function, setting and arming, operating, maintenance and inspection, repair and disassembling is to be clearly defined.
- Staff-members who are in training should only work at the machine under surveillance of an experienced person.

2.5. Structural Modifications on the Machine

- No modifications, extensions or reconstructions may be made on the machine without permission of the manufacturer.
- Machine parts that are not in perfect condition are to be replaced immediately.
- Only use original SIMTECH spare and wear parts.

2.6. Danger while Handling the Machine

The machine SIMTECH MAXIPLAST is constructed according to the actual technical standards and the acknowledged technical safety rules.

However, dangers for the operator or other persons standing nearby may occur. Also damages to the machine itself or to other things are possible.

The machine must only be used

- According to the prescription
- In safety technical impeccable status
- Disturbances, which may affect the safety of the machine must be immediately cleared.

2.7. Danger caused by Electrical Energy



- Only skilled qualified workers are allowed to work at electrical features.
- The electrical equipment of the machine has to be regularly checked. Loose connections and damaged cables have to be replaced immediately.
- The heating element need to be protected from rain and dropping water, eventually put up welding tent.
- The use on construction sites is only allowed according VDE 0100 over a power distributor with a FI-safety switch.

2.8. Specific Dangers

2.8.1 Danger of Burning / Heating Element, Protective Box, Welding Area

You may burn parts of your body and material may also be ignited ! The heating element is heated up to over 200° C !



- Do not leave the heating element unattended.
- Take enough safety distance to materials which may be ignited.
- Do wear safety gloves.
- Always put the heating element back into its box before and after usage.
- Only transport the heating element at the holder, do not touch the surfaces of the heating element.

2.8.2 Danger by Stumbling over Electric Wires

- Make sure that no person must step over the wires.

2.8.3 Danger by Cutting / Squeezing / Catching

- Always put the planer back into its box before and after usage.
- Only transport the planer at the holder and do not touch surfaces.
- Do not grip between clamped pipe endings.
- Make sure that your clothing is not seized into the planer.

2.9. Warranty and Liability

Fundamentally our “general sales and delivery conditions” are in force.

The buyer received them before making the contract.

Guarantee and liability demands referring to damages of persons or things are excluded if they are caused by one or several of the following reasons:

- Not using the machine according to the prescription.
- Unprofessional transport, building-up, starting , operating and maintenance of the machine.
- Running the machine with defective or not properly mounted safety equipment.
- Ignoring the information given in this manual.
- Structural changes on the machine without permission.
- Unsatisfactory checkings of parts of the machine, which are worn out.
- Unprofessionally performed repairs.
- In case of catastrophes and acts of God.

3. Description of the Welding Process

Basically the international and national guidelines are to be followed.

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

Then the front of the pipes are planed. As soon as the pipes are parallel and the pipe deviation is smaller than $0,1x$ pipe thickness, the welding can begin.

Now the clamping tool with the pipes must be moved forward against the heating element until a certain pressure is achieved. Now the pipes are heated up and a circular bead arises. This happens during the **bead-up time**.

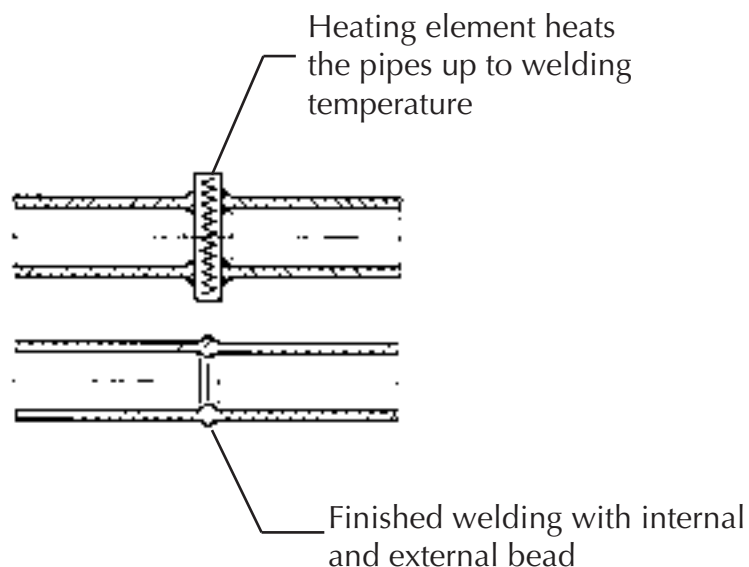
After reaching the necessary bead-height, the pressure is reduced, and this is the beginning of the **heat-up time**, this time is used to heat-up the pipe ends.

After heat-up time the support must be moved backward and the heating element must be removed as quickly as possible and the pipes driven together again.

The time between moving backward of the support and moving forward again after the heating element is taken out ist called **change-over time**.

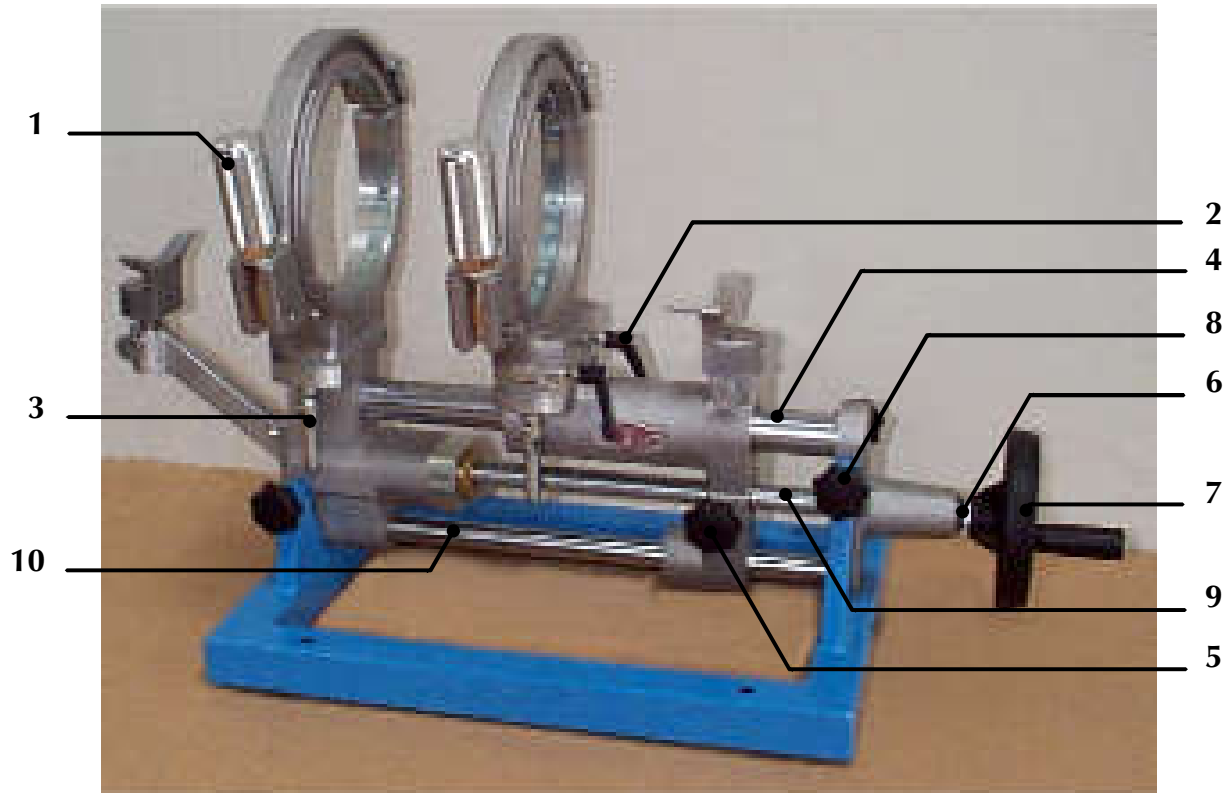
The pipes are fitted together according to the prescribed welding pressure and now the pipe cools down under pressure (**cool-down time**).

The welded pipes can be unclamped, the welding process is finished



4. Elements for Operating the Machine

4.1 Elements of the Basic Machine / Table Support



| No. | Denomination | Function |
|-----|----------------------------------|---|
| 1 | Tightening nut | - tightening of the pipes |
| 2 | Lever for horizontal offset (2x) | - by loosening the levers the clamping tool can be moved upwards and downwards on the wedge |
| 3 | Clamping lever (4x) | - adjustment of the angle |
| 4 | Guide bar above | - guidance for the support |
| 5 | Star grip | - fixing the support |
| 6 | Scale | - display of the actual welding force - max. 100 kp |
| 7 | Handwheel | - Driving the support forward / backward - application of the bead-up force |
| 8 | Star grip for basic machine | - tightening the basic machine at the table support. |
| 9 | Spindle | - advance for support |
| 10 | Guide bar below | - guidance for the support - fixing the planer - rest for the heating element |

4.2 Elements of the Heating Element



| No. | Denomination | Function |
|-----|---------------------------|--|
| 1 | Switch on / off with lamp | - comes on as soon as the heating element has been connected to the aggregate and the switch has been switched "on". |
| 2 | control knob with slot | - setting temperature at heating element |
| 3 | control lamp green | - there are three statuses: out: If the desired temperature is lower than the actual temperature the heating element cools-down to the desired temperature. blinking: The adjusted temperature is maintained. on: The heating element is heated up because it has not reached the desired temperature. |

4.3 Elements of the Planer



| No. | Denomination | Function |
|-----|--------------------------------|--|
| 1 | Switch on / off for planer | <ul style="list-style-type: none">- The planer can be switched on via the switch and the associated adjustment knob.- The planer has to be switched off before and after use. |
| 2 | Locking with protection switch | <ul style="list-style-type: none">- protection against unintentional running.- locking the planer, thus avoiding a falling out.- planer can only start when switch is pressed. |

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. Starting

The machine should only be operated by initiated and authorized people.
For the qualification a plastic welding exam can be taken according to DVS and DVGW.

If dangers occur unplug the machine immediately.



Switch off the machine after the work and during pauses. Make sure that unauthorized people are kept at a distance. Protect the machine from wetness and moisture.

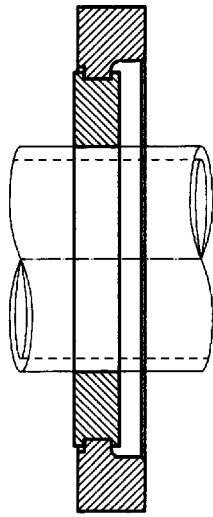
For working at the building site use a current distributor with a FI-security protective.

Lay electric cables thoroughly (danger of stumbling) !

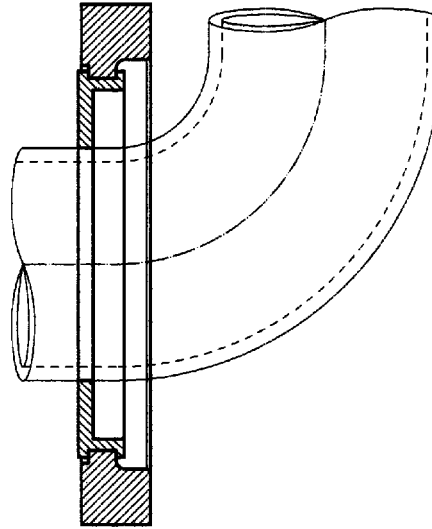
- Take care of the surrounding conditions:
- The welding should not be performed under direct sun rays influence, use a welding umbrella if necessary.
- In case of surrounding temperature under 5° C measures should be taken :
- Build up a welding tent or heat up the pipe ends if necessary.
- Take measures against rain, wind and dust.
- Connect the heating element to the mains supply (110V / 50 Hz).

5.1.1 Change of the Reduction Inserts

- Unscrew the in-screwed reduction inserts by means of the enclosed Allan key.
- Screw on reduction inserts of the desired diameter.
- With respect to curves, the angle on the basic clamping tools can be set (on each side between -15° to +45°).



wide clamping tool



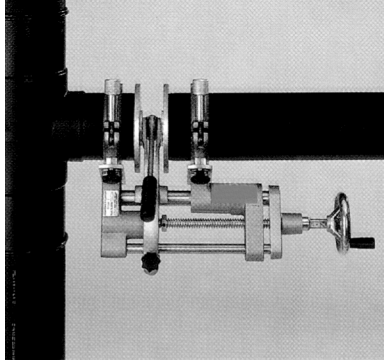
small clamping tool

5.2. Welding Process

In principle, the valid welding regulations (ISO / CEN / DVS ...) are to be observed.

- Put on safety gloves to protect you from being burned.
- A stop-watch should be available in order to be able to register the actual times for Heating up and cooling down.
- A table should be available from which you can read the parameters that are prescribed by the welding regulation for the pipe diemesion to be welded.
- The heating elements are to be clean and, above all, free from grease. Therefore they are to be cleaned with non-fraying paper and detergent (e.g. technically pure alcohol or pipe-cleansing cloths which can be bought at the WIDOS company) before every welding or if they are dirty. The anti-adhesive coating of the heating element has to remain undamaged in the working area.
- Switch on heating element and set the required welding temperature on the adjustment screw on the handle.
- If the control light flashes, the nominal temperature has been reached and is held at a constant level through a given impulse-break relationship.
- Screw in reduction inserts according to the outer diameter of the pipes to be welded, if necessary set the angle.
- Clamp the basic frame to the table holder, if required mount the table holder to the support surface or insert machine without table holder directly into the pipe system.
- Put the workpieces into the clamping tool, fasten clamping nuts tightly and align the workpieces with respect to one another.
- Insert the planer between the workpieces, arrest them on the guide bar by turning the star Grip. Switch on the planer and plane with little pressing force. Planing should be carried out until a revolving cutting has been formed on both sides.

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machine working directly in the pipe system

- Open slide again, switch off the planer, remove it and put it into the heat protective box. Remove the produced cuttings, thereby preventing contact with the worked surfaces.
- Close slide again.
- Check pipe mismatch and gap at the abutting pipe ends.
According to DVS 2207, the mismatch on the pipe outside should not exceed $0.1 \times$ pipe wall thickness, the admissible gap should not exceed 0.5 mm.
The mismatch compensation is effected through the stronger tightening or releasing of the clamping nuts. In case mismatch compensation was effected, renewed planing has to be carried out afterwards.
- Take the adjustment force for the pipe dimension to be welded from the table and add the motivity.
- Open slide again somewhat.
- Take the heating-up time, the maximum change-over time, the cooling-down time and The bead height for the pipe dimension to be welded from the table.
- Bring the heating element which has been cleaned and brought to its nominal temperature between the pipes with the handle facing downwards (hang into guide bar).
- Close the slide smoothly with the determined adjustment force.
The force applied can be gathered from the force scale on the handwheel. When the prescribed circulating bead height has been reached, reduce the force (heating up pressure = approx. 10 % of the adjustment pressure).
- Now the heating up time starts. Press the stop-watch and compare the actual time with the nominal time taken from the table.
- After expiration of the heating up time, open slide, remove heating element as quickly as possible, put it into the heat protective box and close the slide smoothly. The maximum time limit for this purpose is predetermined by the value for the change-Over time taken from the table.
- Press the stop-watch when the welding pressure has been built up.
If necessary, readjust the pressure during cooling down (the pressure for cooling down is the same as the adjustment pressure).
- After expiration of the cooling-down period stop the pressure, remove the welded parts and open the slide.

6. Welding Tables

6.1 - PP Welding Table

| DVS-2207-11 | | | | | | | | | | | | | | | | |
|---------------------------|------|------------|------|------------------|------|-----------------------------|-----|------------------|-------------|------------------|----|---------------|-----|--------------|---------|----|
| PP Welding Values | | SDR Rating | | Weld Temperature | | Melt Pressure & Bead Height | | Heating Time | | Change Over Time | | Weld Pressure | | Cooling Time | | |
| Diameter & Wall Thickness | D | S | Wall | SDR | Temp | | P1 | Bead Height (mm) | P2 | | T2 | T3 | T4 | P5 | | T6 |
| | | | | | C° | F° | | | Pressure kg | Pressure lbs | | | | Seconds | Seconds | |
| 1 1/4" (40mm) | 3.7 | 11 | 210° | 410° | 4 | 9 | 0.6 | 1.3 | 135 | 5 | 6 | 4 | 9 | 6 | | |
| 1 1/2" (50mm) | 4.6 | 11 | 210° | 410° | 7 | 15 | 0.9 | 2.0 | 137 | 5 | 6 | 7 | 15 | 6 | | |
| 2" (63mm) | 5.8 | 11 | 210° | 410° | 11 | 23 | 1.4 | 3.1 | 156 | 6 | 7 | 11 | 23 | 9 | | |
| | 3.6 | 17.6 | 210° | 410° | 7 | 15 | 0.9 | 2.0 | 119 | 5 | 6 | 7 | 15 | 6 | | |
| 2 1/2" (75mm) | 6.8 | 11 | 210° | 410° | 15 | 33 | 2.0 | 4.4 | 172 | 6 | 7 | 15 | 33 | 12 | | |
| | 4.3 | 17.6 | 210° | 410° | 10 | 21 | 1.3 | 2.9 | 131 | 5 | 6 | 10 | 21 | 6 | | |
| | 8.2 | 11 | 210° | 410° | 22 | 47 | 2.9 | 6.4 | 192 | 6 | 8 | 22 | 47 | 14 | | |
| 3" (90mm) | 5.1 | 17.6 | 210° | 410° | 14 | 31 | 1.8 | 4.0 | 145 | 5 | 6 | 14 | 31 | 7 | | |
| | 2.8 | 33 | 210° | 410° | 8 | 18 | 1.1 | 2.4 | 104 | 4 | 5 | 8 | 18 | 3 | | |
| 4" (110mm) | 10 | 11 | 210° | 410° | 32 | 70 | 4.3 | 9.5 | 217 | 7 | 9 | 32 | 70 | 17 | | |
| | 6.3 | 17.6 | 210° | 410° | 21 | 46 | 2.8 | 6.2 | 164 | 6 | 7 | 21 | 46 | 10 | | |
| | 3.4 | 33 | 210° | 410° | 12 | 26 | 1.8 | 4.0 | 115 | 5 | 6 | 12 | 26 | 4 | | |
| | 11.4 | 11 | 210° | 410° | 42 | 91 | 5.5 | 12.1 | 237 | 7 | 11 | 41.5 | 91 | 19 | | |
| 4 1/2" (125mm) | 7.1 | 17.6 | 210° | 410° | 27 | 59 | 3.6 | 7.9 | 176 | 6 | 7 | 26.8 | 59 | 12 | | |
| | 3.9 | 33 | 210° | 410° | 15 | 33 | 2.0 | 4.4 | 124 | 5 | 6 | 15 | 33 | 5 | | |
| | 12.7 | 11 | 210° | 410° | 52 | 114 | 6.9 | 15.2 | 253 | 7 | 12 | 51.8 | 114 | 21 | | |
| 5" (140mm) | 8 | 17.6 | 210° | 410° | 34 | 74 | 4.5 | 9.9 | 189 | 6 | 8 | 33.8 | 74 | 14 | | |
| | 4.3 | 33 | 210° | 410° | 19 | 42 | 2.0 | 4.4 | 131 | 5 | 6 | 19 | 42 | 6 | | |
| | 14.6 | 11 | 210° | 410° | 68 | 150 | 9.1 | 20.0 | 277 | 8 | 13 | 68 | 150 | 24 | | |
| 6" (160mm) | 9.1 | 17.6 | 210° | 410° | 44 | 97 | 5.9 | 13.0 | 204 | 6 | 9 | 44 | 97 | 15 | | |
| | 4.9 | 33 | 210° | 410° | 24 | 53 | 2.0 | 4.4 | 141 | 5 | 6 | 24 | 53 | 7 | | |

D = Pipe & Fitting O.D.
 S = Pipe & Fitting Wall Thickness
 Temp = 210° C +/- 10°
 P1 = Initial Weld Pressure
 P2 = Heat Soak Pressure
 T2 = Heat Soak Time in Seconds
 T3 = Change over Time in Seconds
 T4 = Time to Bring up to Full Weld Pressure in seconds
 P5 = Ending Weld Pressure
 T5 = Cool Down Time in Minutes

* Cool down time in the clamps can be reduced by 50% provided the parts being welded are not under duress until the complete cool down time has been achieved

6.2 - PVDF Welding Table

PVDF DVS Welding Times For the Following Machines:

- Miniplast
- Maxiplast
- PM-125
- PM-160

| PVDF Welding Valves | | | | | | | | | | | | DVS-2207-15 | | | | |
|---------------------------|------|------------|------------------|------|-----------------------------|-------------------|------------------|------------------|-------------------|------------|------------------|-------------|------------------|-------------------|--------------|----|
| Diameter & Wall Thickness | | SDR Rating | Weld Temperature | | Melt Pressure & Bead Height | | Heating Time | | | | Change Over Time | | Weld Pressure | | Cooling Time | |
| | | | C° | F° | P1 Pressure (kg) | P1 Pressure (lbs) | Bead Height (mm) | P2 Pressure (kg) | P2 Pressure (lbs) | T2 Seconds | T3 Seconds | T4 Seconds | P5 Pressure (kg) | P5 Pressure (lbs) | T6 Minutes | |
| D | S | | | | | | | | | | | | | | | |
| | Wall | SDR | | | | | | | | | | | | | | |
| 1¼" (40mm) | 2.4 | 21 | 240° | 464° | 3 | 7 | 0.5 | 0.3 | 0.7 | 64 | 3 | 3 | 3 | 3 | 7 | 5 |
| 1½" (50mm) | 3.0 | 21 | 240° | 464° | 5 | 11 | 0.5 | 0.5 | 1.1 | 70 | 3 | 4 | 3 | 4 | 11 | 6 |
| 2" (63mm) | 3.0 | 21 | 240° | 464° | 6 | 13 | 0.5 | 0.6 | 1.3 | 70 | 3 | 4 | 3 | 4 | 13 | 6 |
| 2½" (75mm) | 3.6 | 21 | 240° | 464° | 9 | 20 | 0.5 | 0.8 | 1.8 | 76 | 3 | 4 | 3 | 4 | 20 | 6 |
| 3" (90mm) | 4.3 | 21 | 240° | 464° | 12 | 26 | 0.5 | 1.2 | 2.6 | 83 | 3 | 4 | 3 | 4 | 26 | 7 |
| | 2.8 | 33 | 240° | 464° | 8 | 17 | 0.5 | 1.0 | 2.2 | 68 | 3 | 4 | 3 | 4 | 17 | 6 |
| 4" (110mm) | 5.3 | 21 | 240° | 464° | 18 | 40 | 0.5 | 1.8 | 4.0 | 93 | 3 | 5 | 3 | 5 | 40 | 8 |
| | 3.4 | 33 | 240° | 464° | 12 | 26 | 0.5 | 1.5 | 3.3 | 74 | 3 | 4 | 3 | 4 | 26 | 6 |
| 4½" (125mm) | 6 | 21 | 240° | 464° | 23 | 50 | 0.6 | 2.3 | 5.1 | 100 | 4 | 5 | 4 | 5 | 50 | 9 |
| | 3.9 | 33 | 240° | 464° | 15 | 33 | 0.5 | 2 | 4.4 | 79 | 3 | 4.2 | 3 | 4.2 | 33 | 7 |
| 5" (140mm) | 6.7 | 21 | 240° | 464° | 29 | 63 | 0.6 | 2.9 | 6.4 | 107 | 4 | 6 | 4 | 6 | 63 | 10 |
| | 4.3 | 33 | 240° | 464° | 19 | 41 | 0.5 | 2.5 | 5.5 | 83 | 3 | 4.4 | 3 | 4.4 | 41 | 7 |
| 6" (160mm) | 7.7 | 21 | 240° | 464° | 38 | 83 | 0.8 | 3.8 | 8.4 | 117 | 4 | 6 | 4 | 6 | 83 | 11 |
| | 4.9 | 33 | 240° | 464° | 24.4 | 54 | 0.5 | 3.2 | 7.04 | 89 | 3 | 4.7 | 3 | 4.7 | 54 | 8 |

| | | | | | |
|------|---|-------------------------------|----|---|---|
| D | = | Pipe & Fitting O.D. | T2 | = | Heat Soak Time in Seconds |
| S | = | Pipe & Fitting Wall Thickness | T3 | = | Change over Time in Seconds |
| Temp | = | 210° C +/- 10° | T4 | = | Time to Bring up to Full Weld Pressure in seconds |
| P1 | = | Initial Weld Pressure | P5 | = | Ending Weld Pressure |
| P2 | = | Heat Soak Pressure | T5 | = | Cool Down Time in Minutes |

* Cool down time in the clamps can be reduced by 50% provided the parts being welded are not under duress until the complete cool down time has been achieved

7. Maintenance Instructions

Goal of the chapter is:

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

7.1. General



Replace damaged parts immediately, be particular cautions with electrical parts - dirt and wetness are very good current conductors.

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 SIMTECH or by an authorized partner.

7.2. Clamping elements

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

7.3. Planer

- Never lay the planer onto its discs !
- The blades of the planer must be checked for sharpness. Wrong blades must be either turned over (double sided) or replaced (max. thickness of the shavings =0,2 mm!)

7.4. Storing

- Cover the guidance bars and the spindle with thin oil film.
- Store the machine dry.

7.5. Cleaning of the machine

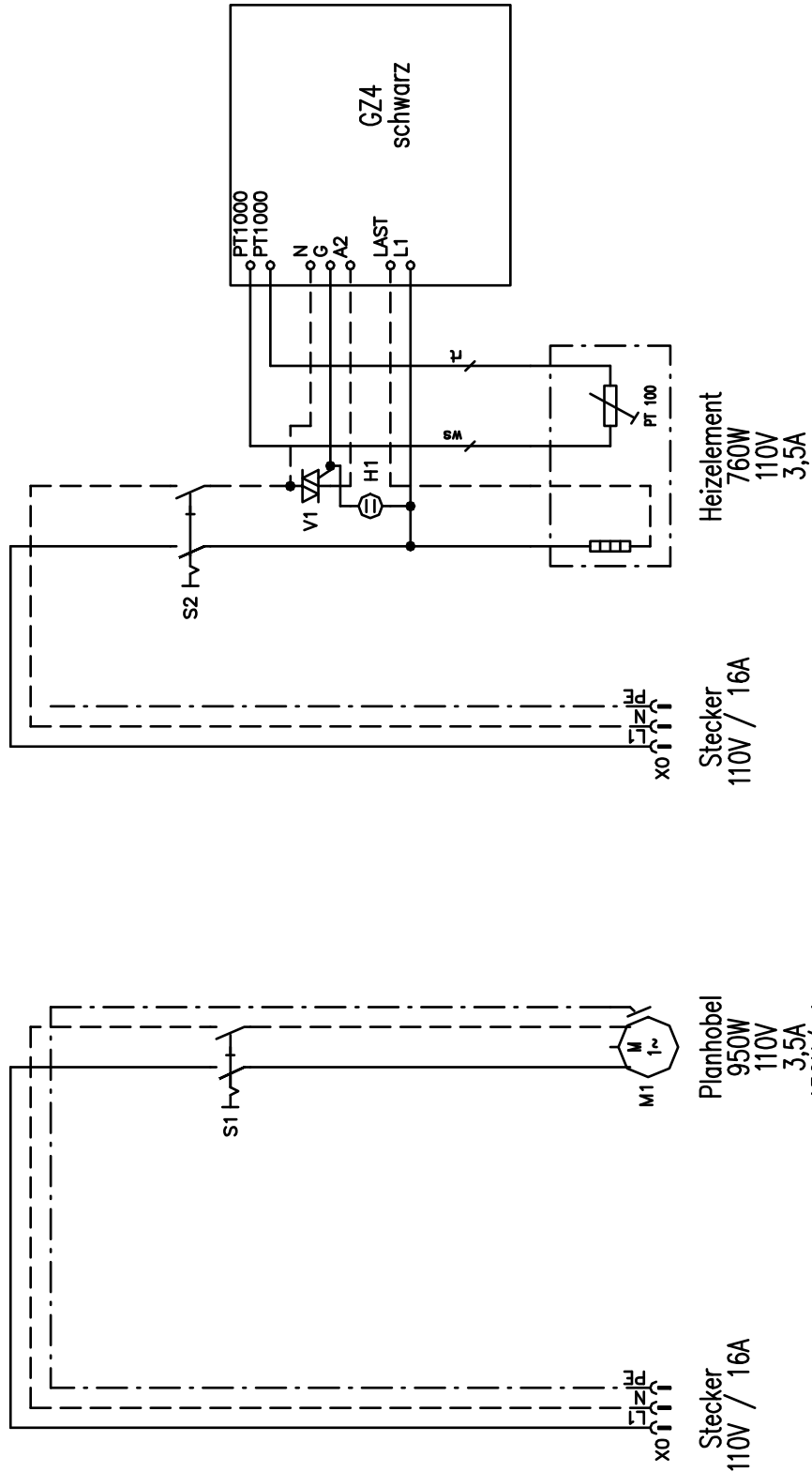
The used materialis and clothes have to be handled and disposed off properly especially

- When cleaning with solvents
- When lubricating with oil and grease

8. Transport

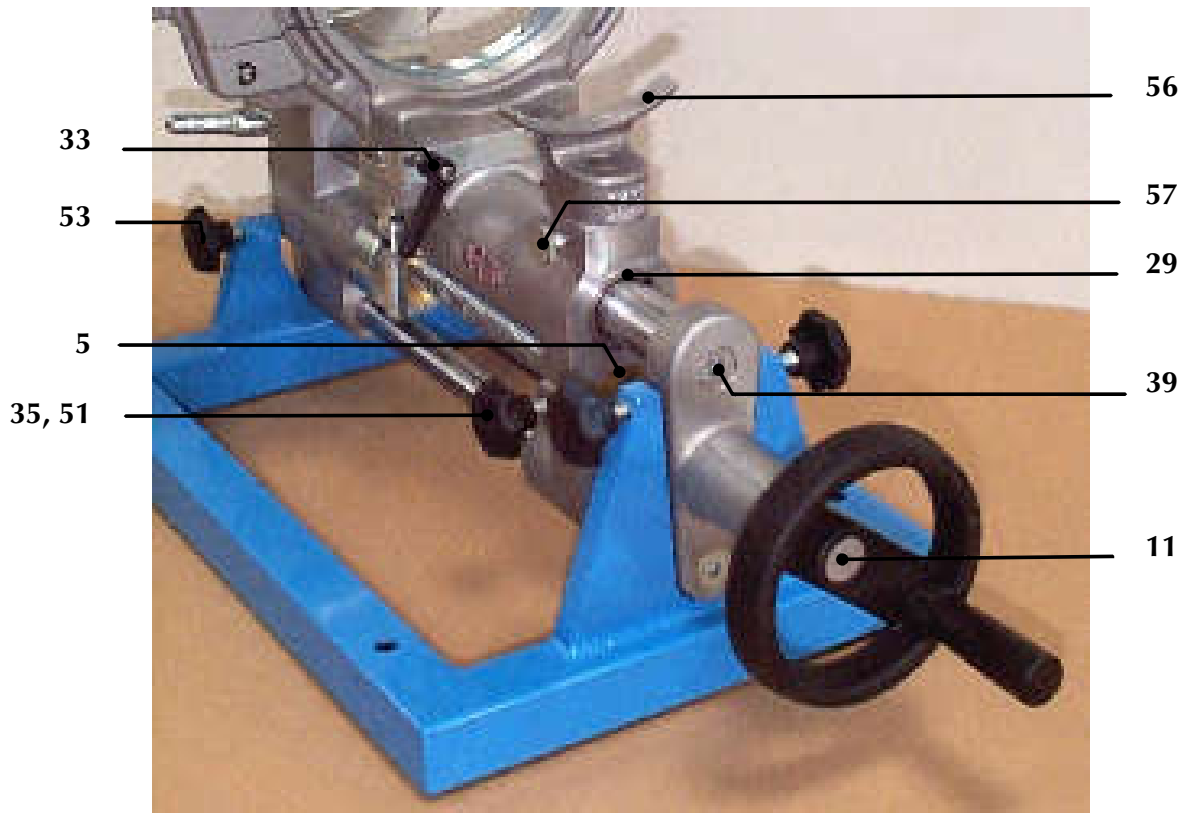
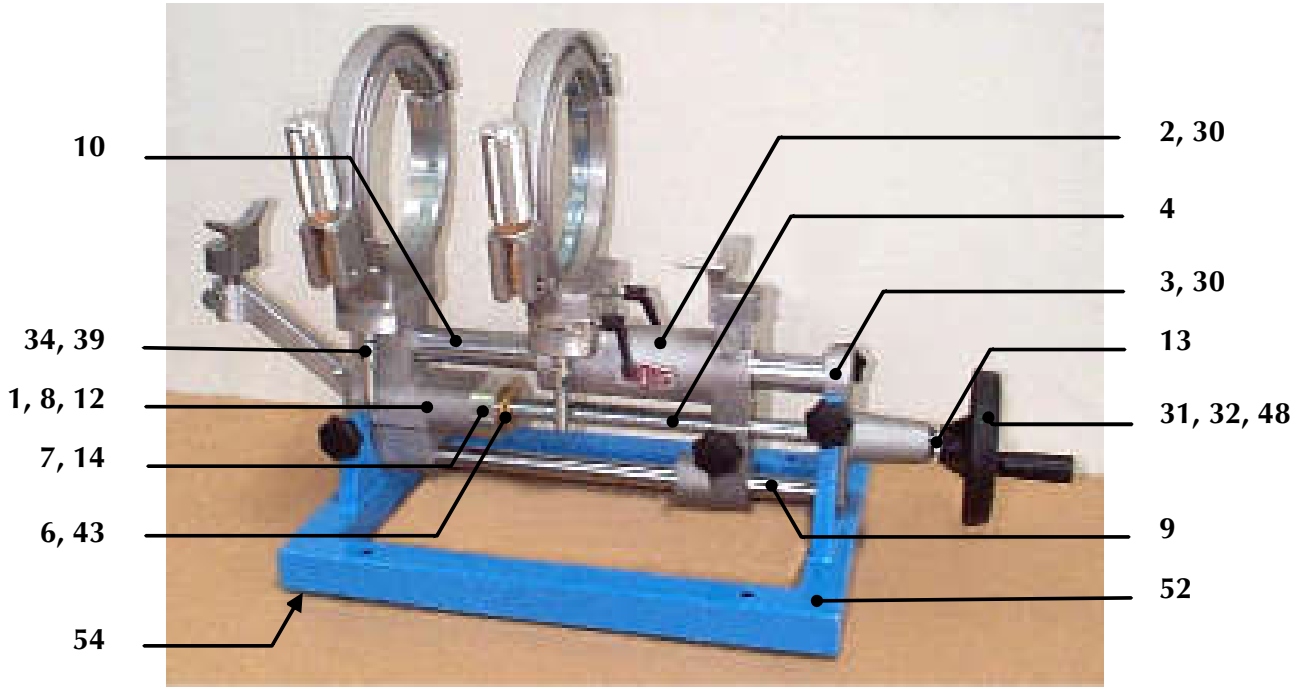
- Protect against bumps.
- Handle the machine with care.
- Make sure that the box is closed correctly.
- The machine is transported by means of a transport box out of steel. The single elements are placed within the steel transport box.
- The steel transport box contains a rectangular insert for the planer.
- The basic machine and the table support are put at the side of the planer.
- Insert heating element with cable and temperature control in such a way that it remains beyond the strip for the reducer inserts.
- Insert both cotainers containing the reducer inserts.

9. Wiring Diagram

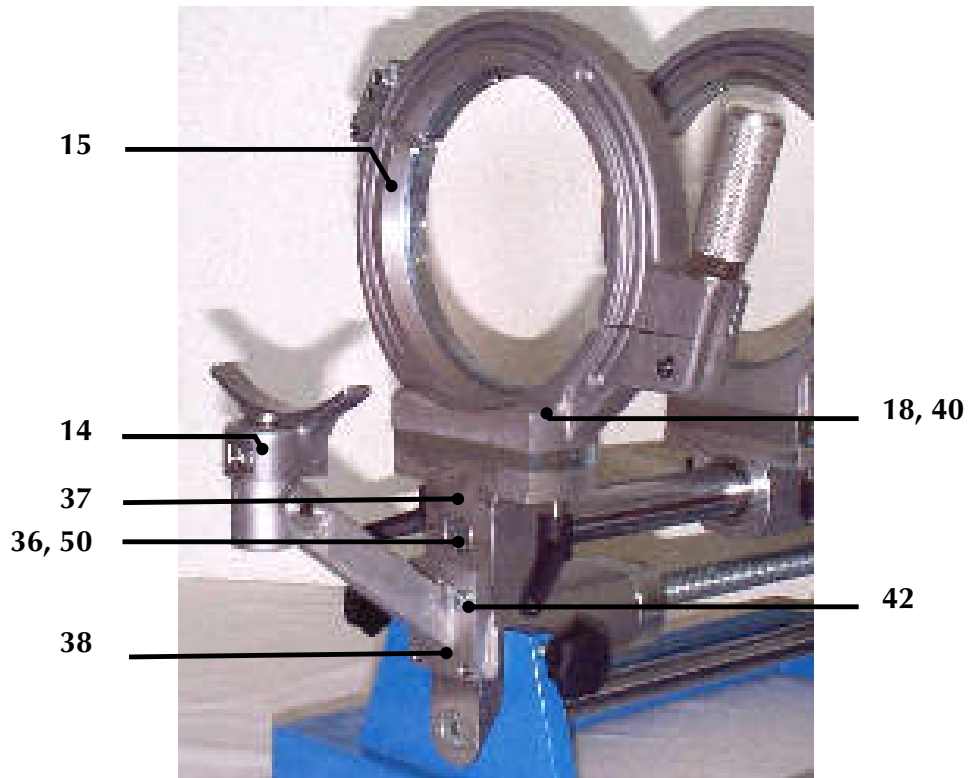
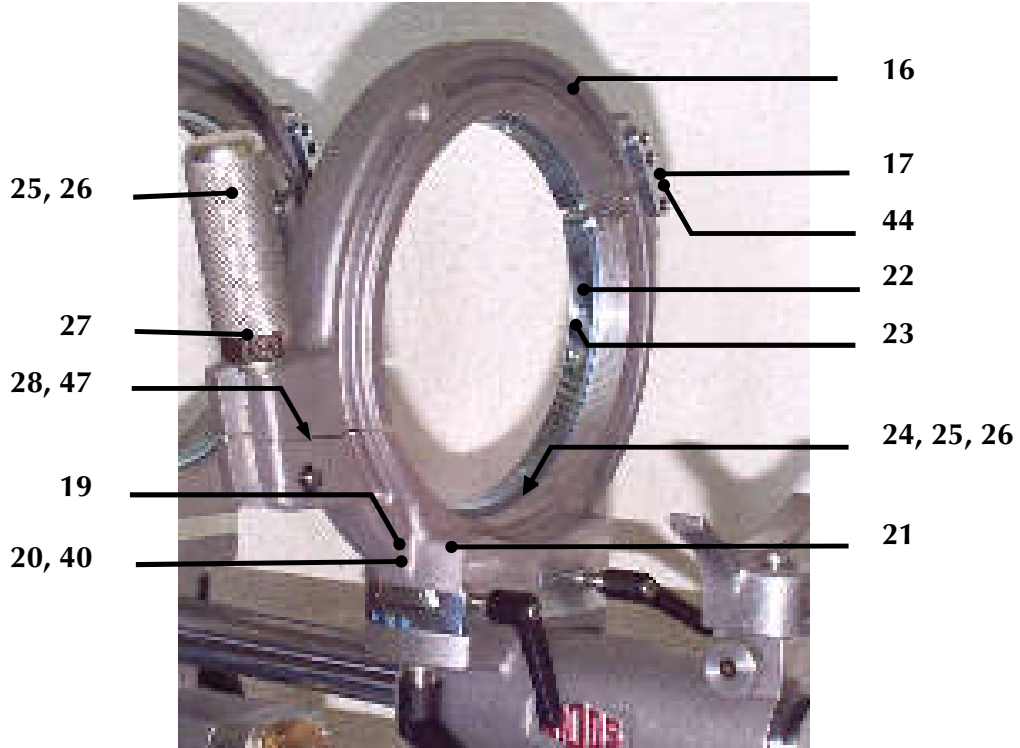


10 Spare parts list

10.1 Basic machine



10.1 Basic machine



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10.1 Basic machine

| Pos. | Name | Piece | Order no. |
|------|------------------------------------|-------|------------|
| 1 | Spring block | 1 | 454101 |
| 2 | Guidance | 1 | 454102 |
| 3 | Counter bracket | 1 | 454103 |
| 4 | Spindle | 1 | 454104 |
| 5 | Spindle nut | 1 | 454105 |
| 6 | Adjusting nut | 1 | 454106 |
| 7 | Bearing plate | 1 | 454107 |
| 8 | Spring washer | 1 | 454108 |
| 9 | Drag rod, down | 1 | 454111 |
| 10 | Drag rod, up | 1 | 454112 |
| 11 | disc | 1 | 454113 |
| 12 | Pressure spring | 1 | on request |
| 13 | Scale | 3 | 454114 |
| 14 | Pipe support | 1 | 454114 |
| 15 | Pipe clamp, upper frame / base l/h | 1 | 45470.5 |
| 16 | Pipe clamp, upper frame / base r/h | 1 | 454703/04 |
| 17 | Coupling | 4 | 454704 |
| 18 | Basic plate for pipe clamp, l/h | 1 | 454705 |
| 19 | Upper part of the axial alignment | 1 | 454706 |
| 20 | Lower part of the axial alignment | 1 | 454707 |
| 21 | Clamp strip | 1 | 454708 |
| 22 | Adaptor | 4 | 454709 |
| 23 | Flat-head screw M4x10 DIN 7991 | 8 | 7991D010 |
| 24 | Center bolt | 2 | 454710 |
| 25 | Knurled screw | 2 | 161109 |
| 26 | Threaded rod | 2 | 160108 |
| 27 | Washer M12 DIN 134 | 2 | 0134L |
| 28 | Rivet | 2 | 160111 |
| 29 | Ball bushing | 2 | LKH3050 |
| 30 | Permaglid bushing | 4 | PAP2020 |
| 31 | Hand wheel, tilting | 1 | on request |
| 32 | Thrust ball bearing | 1 | L51104 |
| 33 | Clamping lever GN300.1-63-M8-25-SW | 4 | on request |
| 34 | Joint lever | 2 | 454714 |
| 35 | Star grip M8x20 DIN 6336 | 1 | 6336H020 |
| 36 | Cylinder-head screw M6x16 DIN 912 | 2 | 0912F016 |

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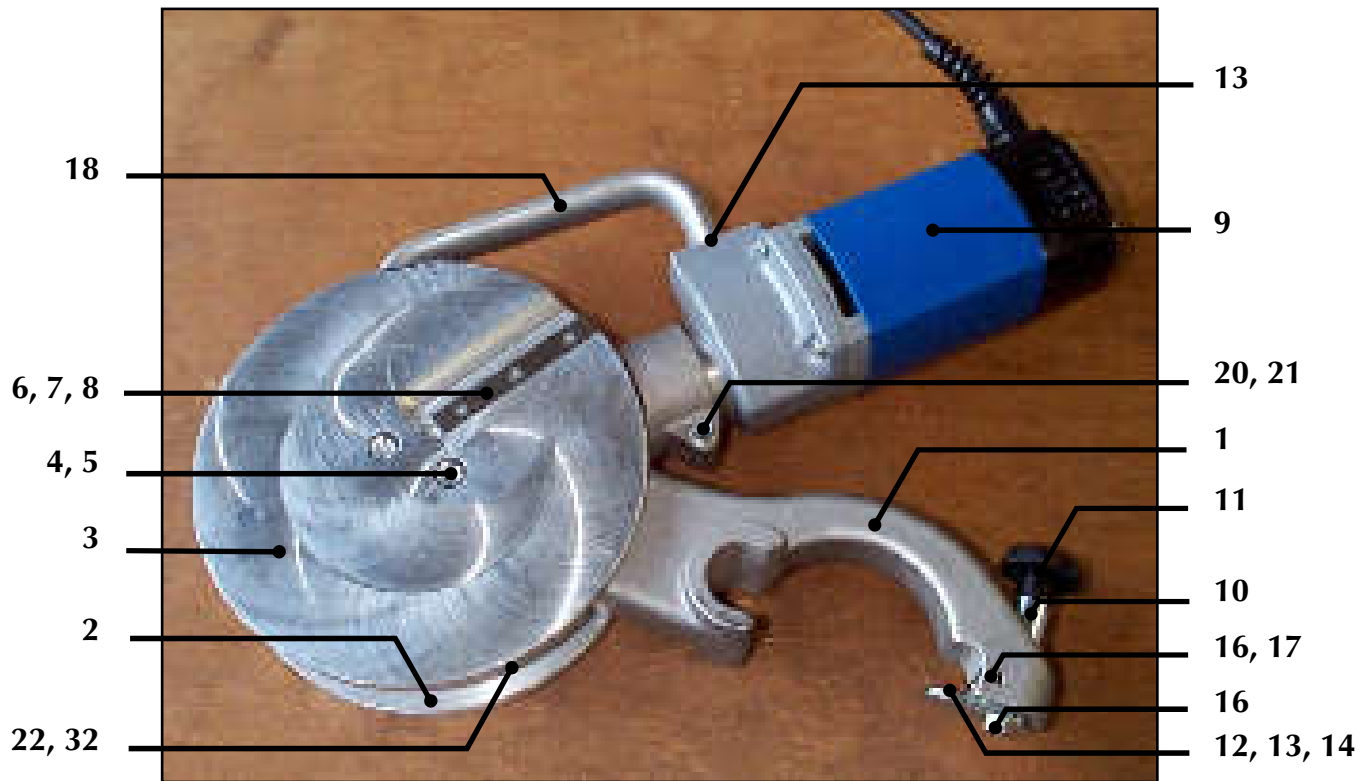
10.1 Basic machine

| Pos. | Name | Piece | Order no. |
|------|---|-------|------------|
| 37 | Flat-head screw M10x50 DIN 7991 | 1 | 7991J050 |
| 38 | Flat-head screw M10x25 DIN 7991 | 1 | 7991J025 |
| 39 | Flat-head screw M10x20 Din 7991 | 2 | 7991J020 |
| 40 | Flat-head screw M8x16 DIN7991 | 4 | 7991I016 |
| 41 | Flat-head screw M6x25 DIN 7991 | 3 | 7991F025 |
| 42 | Flat-head screw M6x16 DIN7991 | 1 | 7991F016 |
| 43 | Headless pin M5x16 DIN 916 | 2 | 0916E006 |
| 44 | Parallel pin 6m6x32 DIN 6325 | 6 | 6325F032 |
| 45 | Parallel pin 6m6x16 DIN 6325 | 6 | 6325F016 |
| 46 | Cylinder-head screw M4x8 DIN 912 | 2 | 0912D008 |
| 47 | Lock washer size 6 DIN 6799 | 2 | 6799F |
| 48 | Feather key 5x5x18 DIN 6885 | 1 | 6885E018 |
| 49 | Washer 8,4 DIN 125 | 4 | 0125H |
| 50 | Washer 6,4 DIN 125 | 2 | 0125F |
| 51 | Ball Ø6,5 | 1 | on request |
| 52 | Table support | 1 | 454120 |
| 53 | Stargrip M8x25 DIN 6336 | 4 | 6336H025 |
| 54 | Covering cap Ø20 | 4 | on request |
| -- | Reducer inserts, OD 50-OD160, | 2 set | 1608...* |
| -- | Reducer inserts large, OD 50-OD160 | 2 set | 1618...* |
| -- | Reducer inserts extra large OD 50-OD160 | 2 set | 1628...* |
| -- | Cylinder-head screw M5x16 DIN 912 (for OD 50-125) | 8 | 0912E16X |
| -- | Flat-head screw M5x16 DIN 7991 (for OD 140) | 8 | 7991E16X |
| 56 | Pipe support, OD 50-OD 160 | 2 | 0106...* |
| 57 | Knurled screw M8x16 | 2 | 10606 |
| -- | Type plate | 1 | SCHTMAXI |

*** When ordering, please state the dimension of the diameter!**

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10.2 Planer

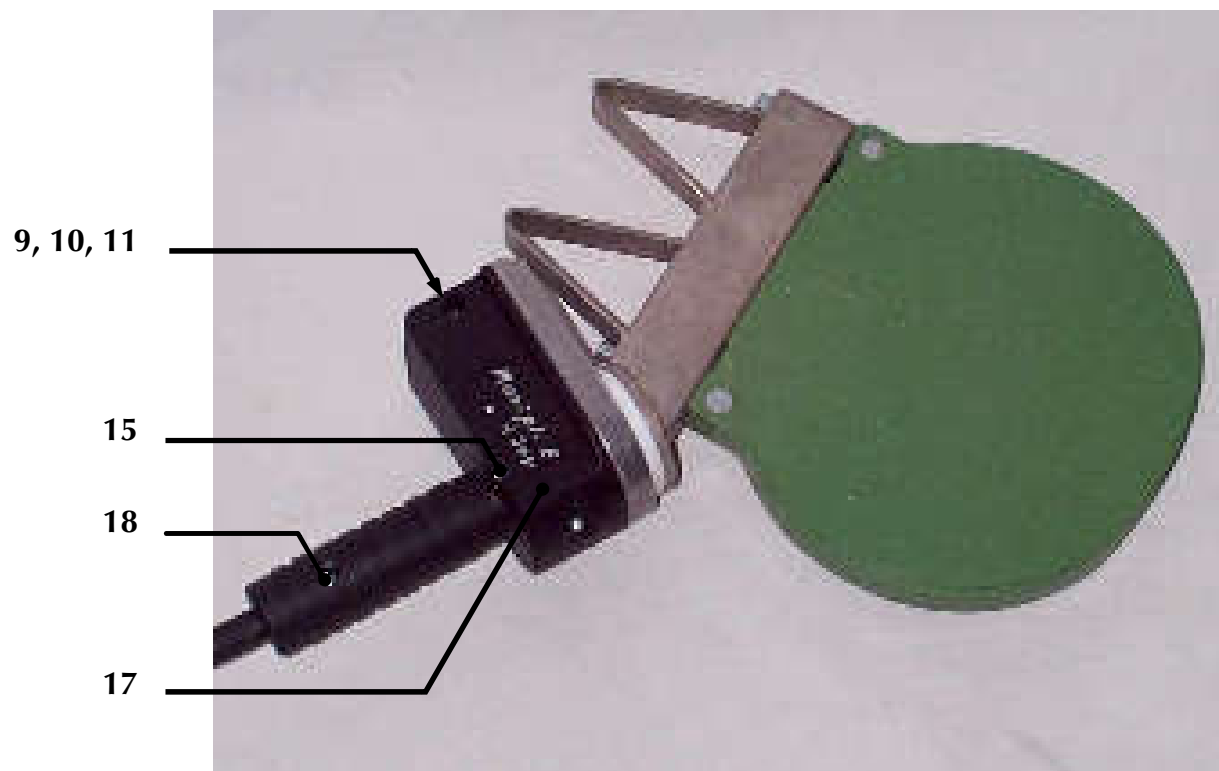
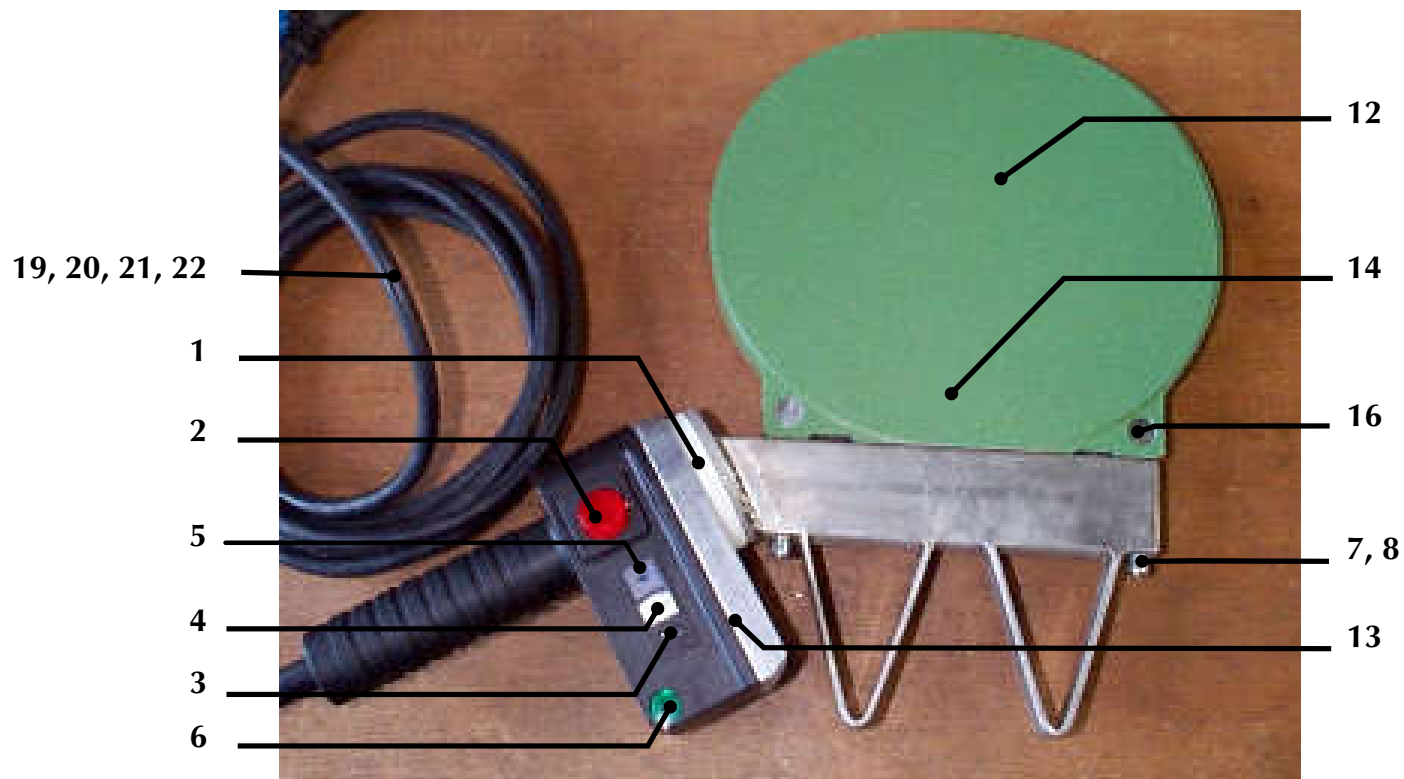


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10.2 Planer

| Pos. | Name | Piece | Order no. |
|------|-----------------------------------|-------|------------|
| 1 | Holder for planer | 1 | 454401 |
| 2 | Disc milling cutter, right | 1 | 454402 |
| 3 | Disc milling cutter, left | 1 | 454403 |
| 4 | Cylinder-head screw M8x20 DIN 912 | 2 | 0912H020 |
| 5 | Cylinder-head screw M8x25 DIN 912 | 2 | 0912H025 |
| 6 | Blade | 2 | MES085 |
| 7 | Spacer | 2 | MU085 |
| 8 | Flat-head screw M 3x6 DIN 965 | 6 | 0965C006 |
| 9 | Drilling machine MBF 13 | 1 | AMBF13 |
| 10 | Extension for planer detent | 1 | 454411 |
| 11 | Stargrip M8x40 DIN 6336 | 1 | 6336H040 |
| 12 | Screw washer | 1 | 450408 |
| 13 | Pressure spring | 1 | on request |
| 14 | Ball Ø4 | 1 | L0004 |
| 15 | Hexagon nut M6 DIN 934 | 1 | 0934F |
| 16 | Ball bearing 623 2Z | 1 | L0623ZZ |
| 17 | Grooved taper pin 3x16 DIN 1471 | 2 | 1471C016 |
| 18 | Bow grip (GN565.1-26-164-BL) | 1 | on request |
| 19 | Cylinder-head screw M6x20 DIN 912 | 2 | 0912F020 |
| 20 | Cylinder-head screw M6x30 DIN 912 | 1 | 0912F030 |
| 21 | Washer M6 DIN 125 | 1 | 0125F |
| 22 | Adaptor | 1 | 454405 |
| 23 | Disc for axial pressure | 1 | 454406 |
| 24 | Counter nut | 1 | 454407 |
| 25 | Bevel gear wave | 1 | 454408 |
| 26 | Bevel gear | 1 | 454409 |
| 27 | Feather key 3x3x16 DIN 6885 | 1 | 6885C016 |
| 28 | Ball bearing 6010 2RS | 1 | L60102RS |
| 29 | Ball bearing 6000 2Z | 2 | L6000ZZ |
| 30 | Hexagon nut M10x1,5 DIN 934 | 1 | 0934F |
| 31 | O-ring 130x4 | 1 | on request |
| 32 | Flat-head screw M5x12 DIN 963 | 6 | 0963E012 |

10.3 Heating Element

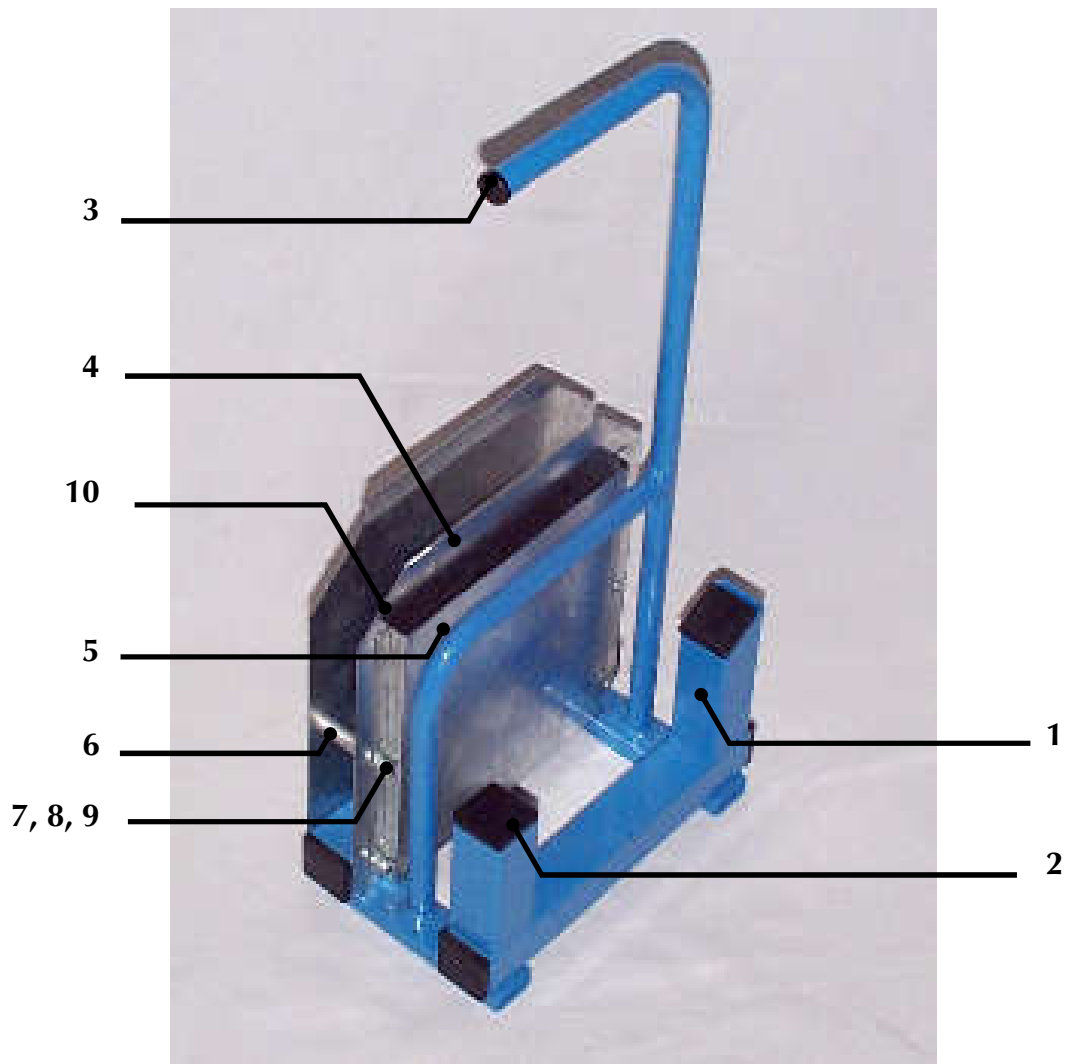


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10.3 Heating Element

| Pos. | Name | Piece | Order no. |
|------|---------------------------------------|-------|-----------|
| 1 | Teflon-conical nipple | 1 | 371520 |
| 2 | Switch on/off with control lamp (red) | 1 | H0903 |
| 3 | Control knob with slot | 1 | H09075 |
| 4 | Scale 180°-280° (d33) | 1 | H0908 |
| 5 | Window cap for grip shell (white) | 1 | H09072 |
| 6 | Control lamp (green) | 1 | H0905 |
| 7 | Cylinder-head screw M 6x50 DIN 912 | 2 | 0912F075 |
| 8 | Spring washer 6 DIN 7980 | 2 | 0125F |
| 9 | Electronic control GZ4 | 1 | H09 18220 |
| 10 | Temperature probe PT 1000 | 1 | H09082 |
| 11 | Isolator piece | 1 | 450506 |
| 12 | Heating element , complete | 1 | HMAXI |
| | Heating plate new, electric | 1 | HPMAXI |
| | Heating plate for change, electric | 1 | HPTMAXI |
| 13 | Heat sink with triac | 1 | H09081 |
| 14 | Heating element holder | 1 | 454503 |
| 15 | Cylinder-head screw M 4x65 DIN 912 | 3 | 0912D065 |
| 16 | Gripping form | 2 | 12505 |
| 17 | Grip shell | 1 | 450504 |
| 18 | Sheet metal screw C 4,8x16 DIN 7981 | 3 | 7981 E016 |
| 19 | Strain relief | 1 | H09076 |
| 20 | Sheet metal screw C 2,9x13 DIN 7981 | 2 | 7981 C013 |
| 21 | Cable bushing | 1 | EKT08 |
| 22 | Connection cable with plug | 1 | EK3220 |

10.4 Protective Box



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10.4 Protective Box

| Pos. | Name | Piece | Order no. |
|------|-----------------------------------|-------|------------|
| 1 | Foot | 2 | 454511 |
| 2 | Screw cap | 6 | on request |
| 3 | Screw cap | 1 | on request |
| 4 | Insert for planer | 1 | 454512 |
| 5 | Insert for heating element | 1 | 454513 |
| 6 | Holder for distance | 2 | 454514 |
| 7 | Cylinder-head screw M5x45 DIN 912 | 4 | 912.47E+ |
| 8 | Cap nut M5 | 4 | 1587E |
| 9 | Washer M5 DIN 125 | 8 | 0125E |
| 10 | Blind rivet S 4x8 | 4 | 7337D008 |

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