

Original Operating Instructions

TP EM III Vulcanizing Machine

REMA TIP TOP Item number: 517 7804
Horn item number: 106-176-0019

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Issue 05/2015

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The TP EM III Vulcanizing Machine is CE-compliant in accordance with the applicable directives and regulations. The applicable standards and directives are outlined in the declaration of conformity.



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1 Introduction

1.1 General information

These Operating Instructions contain information and procedures regarding the safe operation and maintenance of the TP EM III Vulcanizing Machine.

To ensure your own safety and prevent injuries, carefully read and always observe the Operating Instructions and, in particular, the safety instructions.

The operator must supplement the Operating Instructions with existing national regulations, for example, about accident prevention and environmental protection.

The Operating Instructions are not a guide for carrying out extensive maintenance and repair work. Such work must be carried out by the manufacturer's customer care service.

The Operating Instructions must always be provided in the location where the machine is used.

Compliance with these Operating Instructions is essential to ensure trouble-free operation and in order for any warranty entitlements to be honored.

The procedures for carrying out repairs can be found in the separate REMA TIP TOP OTR Repair Instructions.

The work steps, safety instructions and descriptions provided in these Operating Instructions do not release the TP EM III operator and/or user from his/her general safety and due diligence obligations when handling technical equipment.

All information provided in these Operating Instructions refers exclusively to the use of original materials, accessories and spare parts from REMA TIP TOP.

Modifications for the purpose of further technical development remain reserved.

The use of high-quality repair materials and equipment is essential to achieving good repair results as is the state of the corresponding repair environment:

- Good lighting conditions
- Trained personnel
- Regular cleaning of workplace and equipment

2 Safety instructions

2.1 Notices and symbols

These Operating Instructions contain different symbols. The symbols used in these Operating Instructions are used to point out possible dangers or inform you of protective measures.

Warning symbols

The warning symbols are divided into the following categories: danger, warning, caution and attention.



Danger

This symbol indicates an **imminent danger**. Failure to take appropriate precautions will result in death or serious injury.



Warning

This symbol indicates a **potentially dangerous situation**. Failure to take appropriate precautions may result in death or serious injury.



Caution

This symbol indicates a **potentially dangerous situation**. Failure to take appropriate precautions may result in serious injury.



Attention

This symbol indicates a **potentially dangerous situation**. Failure to take appropriate precautions may result in material damage.

Always observe warning information, pay attention to the work steps described and exercise caution.

Special hazards

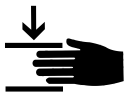
In the case of some potential hazards, the warning symbols are replaced with special pictograms. The division into the categories danger, warning, caution and remains reserved.



This pictogram warns against a **hot surface**.



This pictogram warns against **electrical voltage**.



This pictogram warns against being **crushed**.



This symbol refers to explanations intended to provide a better understanding of the machine and how to use it optimally.

2.2 General principles

- The machine is manufactured in accordance with the current state of science and technology and is approved in accordance with recognized safety regulations. Nevertheless, its use may endanger the life and limb of the user or third parties or have a detrimental effect on the machine and other property.
- Read the Operating Instructions and always observe the safety regulations and hazard warnings to ensure safe operation.
- Only use the machine for its intended purpose (see Section 3).
- Only use the machine if it is technically in perfect condition.
- Immediately repair or have somebody repair faults which could impair safety.
- The machine is integrated in the systems of other manufacturers. When working on these systems, also observe the instructions of the system manufacturer.

2.3 Organizational measures

Information for the operator

- Always keep these Operating Instructions within reach of where the machine is used and ensure that they are complete and legible.
- In addition to the Operating Instructions, any universally valid legal provisions or other mandatory regulations relating to accident protection and prevention must be complied with and observed.
The rules and regulations concern, for example:
 - Occupational safety
 - Accident prevention
 - Environmental protection
 - Handling of hazardous substances
 - Hygiene
 - First aid
- Supplement the Operating Instructions with information on in-house company regulations.
The rules concern, for example:
 - Labor organization
 - Work processes
 - Supervisory obligations
 - Reporting obligations
- Every person working with the machine must have read and understood the Operating Instructions and, in particular, the safety instructions, before carrying out any work.
- Check that personnel observes safety and hazard issues while working.
- Provide personal protective equipment – in so far as required – in accordance with regulations.
- All safety information and hazard warnings on the machine must be kept legible.
- No changes, additions or modifications may be made to the machine without the manufacturer's express written confirmation.
- Work for modifications or changes approved by the manufacturer must be carried out in compliance with safety requirements.
- Only use spare parts approved by the manufacturer. This is always guaranteed with original spare parts.
- Mandatory intervals and/or intervals listed in the Operating Instructions for regular tests/inspections must be observed.
- The location and operation of fire extinguishers must be made known.
- Persons under the influence of drugs, alcohol or medication that impair reactions are not allowed to work on the machine.
- Provide the appropriate workplace equipment for maintenance work.
- The Operating Instructions as well as any other documents on the machine must be given to the new owner when the machine is resold.

Information for the operator

- Read the Operating Instructions and, in particular, any safety instructions before using the machine the first time.
- Refrain from any manner of work that endangers safety (e.g. incorrect operation).
- Observe all safety information and hazard warnings on the machine.
- National accident prevention regulations and universal safety instructions must be strictly observed.
- Personal protective equipment must be worn if required.

- Never disable safety functions.
- Immediately disconnect the machine from the power supply if safety-relevant changes occur to the operating behavior of the machine or the machine malfunctions, and notify the responsible person/authority of the malfunction.
- Observe all fire alarm requirements and firefighting procedures.
- All work carried out on the machine may only be done using suitable and tried-and-tested workshop equipment.
- Only move and/or operate the machine on flat, hard surfaces.
- Avoid rolling over supply cables. Risk of cable damage.
- Before starting up every time, check heating mats, heating plates and cables for damage. There is a risk of short-circuiting and risk of breakage.
- Immediately disconnect defective or damaged components from the machine and remove from the workplace, and then replace with original spare parts from REMA TIP TOP.
- Only have qualified experts carry out work on current-carrying and pressure-generating parts.
- Do not reach between heating plates, pressure plates and tyres while closing the pressure units. Risk of crushing.
- Never leave the machine unattended while in operation.
- Do not touch the heating plates and heating mat while the machine is in operation and cooling down. Risk of burns.
- Do not place any objects outside the designated storage area. Risk of fire.
- Protect the machine from getting wet; do not bend or open the heating mats. Risk of fire and short-circuiting.
- If necessary, seek assistance when making changes to the machine position and settings.
- Never use the machine for securing/holding tyres. Always use appropriate support aids/safety devices to prevent tyres from rolling away and/or falling over. If possible, use the REMA TIP TOP EM repair stand.
- Check the machine once a month for wear and/or defects caused by aging, for example, corrosion, deformation, etc. and replace with the corresponding parts as soon as possible.
- Only allow authorized persons access to the key for the control box.
- Only use accessories and attachments which are offered or approved by the machine manufacturer (REMA TIP TOP GmbH).
- Always remove any mineral oil-based tyre-fitting lubricants, tyre sealants, etc. from the inside of the tyre. Risk of spontaneous combustion due to heat.
- For all work on the machine, comply with any regulations concerning waste prevention, proper waste recycling and waste disposal.

Workplace

- The workplace in normal operation is located in the area around the machine.

2.4 Personnel selection and qualifications

- Only authorized personnel may work on the machine.
- The operator may only authorize persons to work on the machine who fulfill the following requirements:
 - The persons are physically and mentally fit.
 - The persons have demonstrated their ability to operate and carry out maintenance work on the machine, as based primarily on written operating instructions.
 - It is expected of these persons that they reliably carry out assigned tasks on a permanent basis.
- Clearly define personnel responsibilities for setting up, operating, maintaining and repairing the machine. Only technically trained and skilled persons may connect, service and repair the machine.
- Define responsibility! The operator must be allowed to refuse any third-party instructions that are detrimental to safety.
- Personnel who are trained, instructed or undergoing general training may only work on the equipment under the constant supervision of an experienced person.
- All work on the machine's electrical equipment may only be carried out by qualified electricians or by a person working under the direction and supervision of a qualified electrician according to electrical engineering regulations.

2.5 Safety instructions for specific operating phases

- | | |
|-----------------------------|---|
| Transport | <ul style="list-style-type: none">• Only use lift trucks and forklifts that are suitable for the machine's weight and dimensions.• Use suitable and appropriate devices for lifting.• Never stand under suspended loads. |
| Assembly/disassembly | <ul style="list-style-type: none">• After receiving shipment, immediately inspect the package and the machine for transport damage. Immediately report any damage and defects to the transport company and supplier.• Assembly work should only be carried out by qualified persons (experts) in compliance with the safety instructions and local regulations.• Secure assembly area.• Only connect the machine to a power supply that is suitable for the machine's electrical load ratings. Please see Chapter 5 in this regard. |
| Initial operation | <ul style="list-style-type: none">• Always check whether the voltages and frequencies indicated on the rating plates match those of the operator's network. |
| Normal operation | <ul style="list-style-type: none">• Refrain from any manner of working which poses a risk to safety.• Only operate the machine if all the protective equipment and safety-related equipment is in place and fully functional.• Check the machine for any external signs of visible damage or defects once a day. Report any changes which have occurred (including changes in operating behavior) immediately to the responsible person/authority. If necessary, immediately disconnect the machine from the power supply and prevent it from being switched back on (warning label). Immediately repair or have somebody repair damage or defects.• Ensure that there are no unauthorized persons in the work area. |

- Maintenance**
- Adhere to the maintenance work and intervals stipulated in the Operating Instructions. Only qualified personnel may carry out such work.
 - Only carry out maintenance when the machine is turned off. Power to the appliance must always be switched off when working on the electrical equipment.
 - When protective equipment must be detached/disassembled for maintenance: Reattach/reassemble protective equipment immediately after work is completed.
 - When screw connections must be loosened for maintenance: Always re-tighten screw connections.
 - After cleaning, check all lines/cables for loose connections, wear and damage. Immediately fix any identified defects.
 - Properly dispose of cloths soaked in oil.
 - Dispose of operating materials and auxiliary material as well as replacement parts in an environmentally friendly manner.

- Storage**
- Avoid storing outside. Even if the machine is covered, it can be permanently affected by rain, cold, heat, wind, etc.

- Hazardous situations**
- Always immediately disconnect the machine from the power supply.
 - When disconnecting due to damage to the machine: Only operate the machine after the cause of the hazard has been eliminated.

2.6 Information about special dangers

- Electrical energy**
- All work on the machine's electrical equipment may only be carried out by qualified electricians or by a person working under the direction and supervision of a qualified electrician according to electrical engineering regulations.
 - Regularly check the machine's electrical equipment. Immediately repair or have somebody repair defects such as loose connections, damaged cables or worn-out earthing contacts.
 - Always keep the switch unit closed.
 - Only use tools that are insulated against voltage when working on the machine's electrical equipment.
- Hydraulics**
- Work on hydraulic systems may only be carried out by individuals with special knowledge and experience in hydraulics (experts).
 - Check all lines/cables, hoses and screw connections regularly for leaks and any external signs of visible damage. Have damage repaired immediately.
 - Replace hose lines within specified time intervals, even if no safety-relevant defects have been detected.
 - Depressurize system sections and pressure lines to be opened before beginning repairs.
 - Properly route and install hydraulic lines. Check for leaks after installation.
- Oils, greases and other chemical substances**
- Observe product-related safety regulations when handling oils, greases and other chemical substances. Refer to the manufacturer's safety data sheets for this information and wear the appropriate protective equipment.
 - Do not allow any auxiliary and operating materials to come into contact with skin or clothing. Wear personal protective equipment.

- Immediately clean up any leaked operating materials using a suitable binding agent or a cloth. There is a risk of slipping.
- Never allow any substances that pose a threat to the groundwater to get into the soil or enter the sewer system. Collect substances that pose a threat to groundwater.
- Separately collect and properly return oils, greases and other chemical substances in accordance with the applicable national regulations.

Residual risks

- Direct or indirect contact with live parts, in particular in the switch unit or at connections. Only a qualified electrician may work on the electrical equipment. Always keep the switch unit closed when the machine is in operation.
- Danger posed by touching hot surfaces on the workpiece. Wear mandatory personal protective equipment.
- Risk of falling posed by improperly installed cables. Properly install cables.
- Risk of slipping posed by leaking operating material. Keep your workplace clean and immediately clean up leaks (or have leaks cleaned up).
- Injury due to falling parts. Only use appropriate means to lift heavy parts.

2.7 Safety labels



Warning against dangerous electrical voltage

Touching live parts can result in immediate death. Covers (e.g. hoods and doors) which are marked with this symbol may only be opened by qualified electricians after switching off the relevant operating voltage (input terminal voltage, operating voltage and external input terminal voltage).

3 Intended use

- Use** The TP EM III Vulcanizing Machine is only intended for the following work:
- Vulcanizing (curing) damaged areas filled with raw rubber on tractor tyres and in particular EM tyres (OTR)
 - Pressing multiply repair patches on the inside of the tyre of EM tyres

As part of the intended use, you should read these Operating Instructions and comply with all information prescribed within the Operating Instructions, in particular the safety instructions.

Any further usage or usage which goes beyond the defined scope of usage is considered as improper.

- Improper use** The application of veneers is considered improper use.
Use as a hose crimper is considered improper use.
Use as a gluing press is considered improper use.

- Exclusion of liability** Only the operator of the machine shall be held liable for all damages to persons and property arising from inappropriate use.

4 Brief description

4.1 Setup



Bild 1 TP EM III Vulcanizing Machine (machine frame and control unit)

- 1 Slot for control lever
- 2 Control panel
- 3 Control unit
- 4 Frame section – main cross-piece
- 5 Left frame section
- 6 Hydraulic pressure cylinder
- 7 Platform

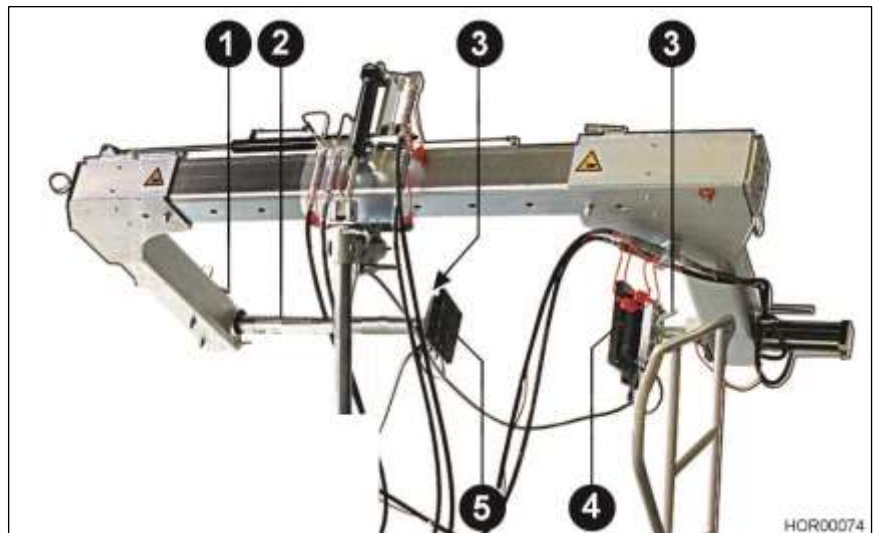


Bild 2 TP EM III Vulcanizing Machine (heating plate)

- 1 Retaining bolt for heating plate holder
- 2 Heating plate holder for inner heating plate
- 3 Retaining bolt for heating plate
- 4 Outer heating plate
- 5 Inner heating plate

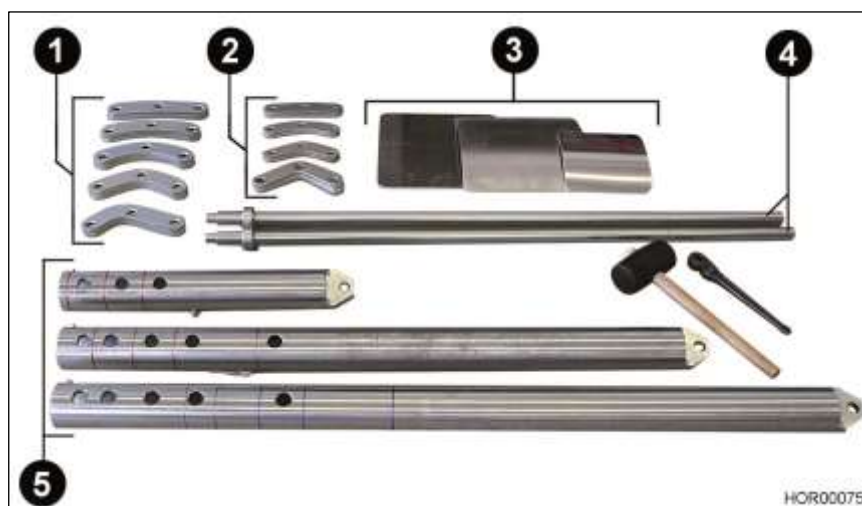


Bild 3 TP EM III Vulcanizing Machine (accessories)

- 1 Outer contour segments (5 pairs)
- 2 Inner contour segments (4 pairs)
- 3 Heating plates
- 4 Operating lever (2 pc.)
- 5 Heating plate holder for inner heating plate (3 pc), 50 x 225 mm / 450 mm / 695 mm

TP EM III Vulcanizing Machine consists of the main structural components:

- Machine frame (Bild 1/3, 6 and 7)
- Control panel (Bild 1/2)
- Heating plates (Bild 2/4 and 5)

4.1.1 Machine frame

The machine frame consists of the following components:

- Frame section – main cross-piece (Bild 1/4)
- Left frame section
- Right frame section (Bild 1/5)

The main cross-piece (Bild 1/4) consists of a rectangular tube and connects to the right and left frame section (Bild 1/5). The adjustment unit, retaining bolts and holes can be used to adjust frame sections to the desired distance.

The left frame section is used to attach a hydraulic pressure cylinder (Bild 1/6). The outer heating plate (Bild 2/4) is attached to the pressure cylinder with a retaining bolt (Bild 2/1).

The right frame section is used to attach the inner heating plate (Bild 2/5). The inner heating plate is attached to the right frame section with a heating plate holder (Bild 2/2) and a retaining bolt (Bild 2/1 und 3).

The distance between the heating plates can be adjusted in order to adapt the heating plates to the tyres that are to be vulcanized.

4.1.2 Control unit



Bild 4 Control unit

- 1 Temperature controller for heating system Sz. III
- 2 Fine wire fuse 6 Amp.
- 3 Electronic timer
- 4 Temperature controller for heating system Sz. V
- 5 Fine wire fuse 10 Amp.
- 6 Socket heating system Sz. V
- 7 Socket heating system Sz. III
- 8 Operating hour counter
- 9 Heating system heating
- 10 Power indicator
- 11 Malfunction
- 12 Start button

The purpose of the control unit, which consists of a metal housing, is to distribute the electrical current. A power indicator (Bild 4/1), main switch (Bild 4/2), a switch for the hydraulic pump (Bild 4/4), 2 push-buttons for turning the machine on and off (Bild 4/5 and 6), 1 power socket (Bild 4/7), 1 socket for transmitting data (Bild 4/8), the main socket (Bild 4/9) and 1 touchscreen (Bild 4/10) are built into the control unit. There are four signal lamps on the top of the control unit (Bild 4/11).

4.1.3 Control panel

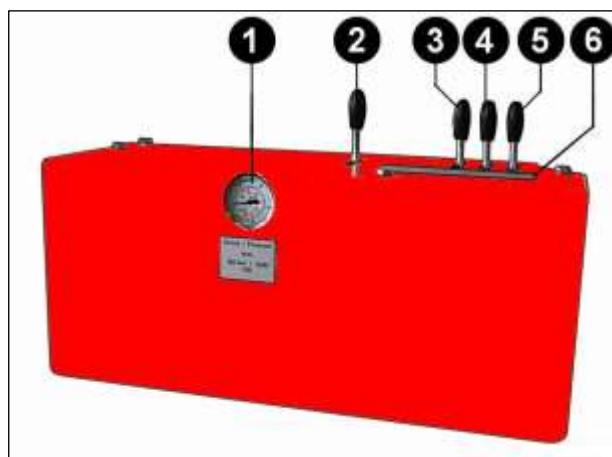


Bild 5 Control panel

- 1 Pressure gauge for operating pressure max. 160 bar / 2285 PSI
- 2 Lever for inner heating plate
- 3 Lever for hydraulic pressure unit
- 4 Lever for tilting
- 5 Lever for lifting and lowering
- 6 Explanation of lever functions

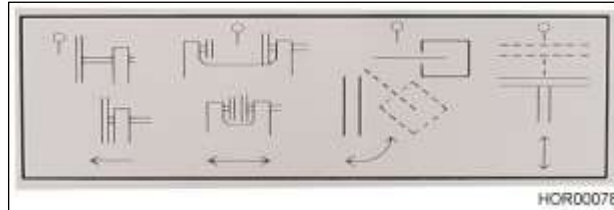


Bild 6 Explanation of lever functions

The machine frame can be adjusted to the respective position requiring repair on the tyre by using a hydraulic lifting/lowering device as well as an inclining/tilting mechanism and a rotating device.

4.1.4 Heating plates

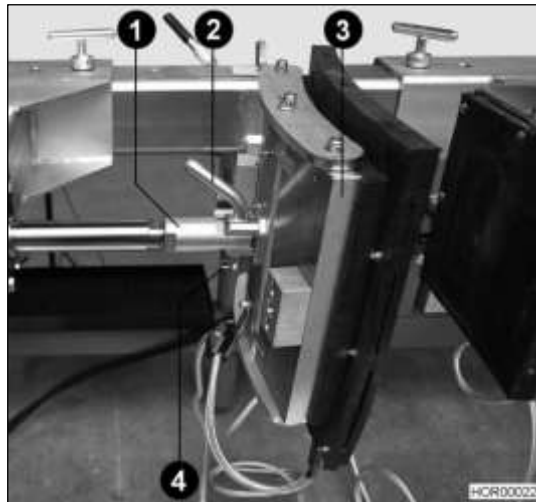


Bild 7 Heating plate

- 1 Heating plate holder
- 2 Retaining bolt
- 3 Outer heating plate (complete)
- 4 Locking pin

The heating plates (Bild 7/3) are attached to the pressure cylinder or frame section with a heating plate holder (Bild 7/1) and a retaining bolt (Bild 7/2) as well as with a locking pin (Bild 7/4). The heating plates are used to vulcanize (cure) repair patches on defective tyres.

4.1.5 Timer



Bild 8 Timer

- 1 Reset display (orange)
- 2 Button lock display (orange)
- 3 Control output display (orange)
- 4 ACTUAL value
- 5 Time unit display
- 6 TARGET value (green)
- 7 TARGET value 1, 2 display

Controls:

- 8 Mode/Menu button (switching of modes and settings)
- 9 Reset button (ACTUAL value and output are reset)
- 10 UP buttons 1 to 4
- 11 DOWN buttons 1 to 4
- 12 Start button for machine operation/vulcanization (to the right of the timer)

The TP EM II has an electronic timer with remaining time memory. The timer is used to set the TARGET value. After pressing the start button on the ACTUAL display, vulcanization (curing/heating time) counts down to the value 00.00. If there is a power failure or the machine is disconnected from the power supply during vulcanization, the remaining vulcanization (curing/heating) time is stored so that it automatically starts counting down the remaining time after restoration of the power supply.



To operate and set the timer, see Section **Fehler! Verweisquelle konnte nicht gefunden werden..**

4.1.6 Ground-fault circuit interrupter (GFCI)

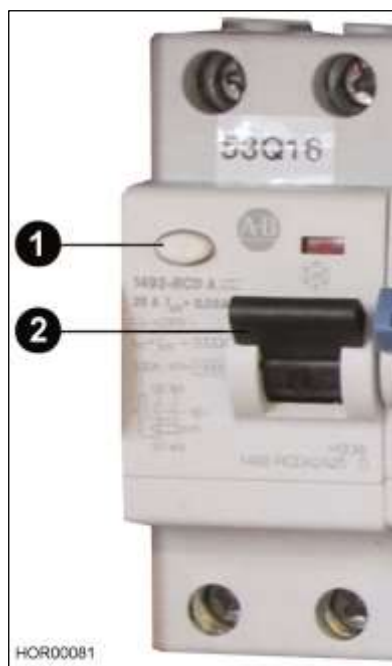


Bild 9 Ground-fault circuit interrupter (GFCI)

- 1 Test button "T"
- 2 ON/OFF button

The machine has a built-in ground-fault monitoring system (GF) that also protects the heating circuits.

4.1.7 Operating hour counter

The operating hours are displayed on the operating hour counter; the operating hour counter cannot be reset.

4.2 Function

The TP EM III Vulcanizing Machine consists of a mobile lower part on which a three-part machine frame, which can swivel and be adjusted on all sides, is attached. The machine frame can be adjusted to the respective position requiring repair on the tyre by using a hydraulic lifting/lowering device. The two heating plates, which can be adapted to the different tyre contours, work with the hydraulic clamping unit to generate the necessary vulcanization parameters: pressure and temperature.

The tyre with attached repair patch or filled raw rubber is clamped between the two heating plates. The vulcanization process is started using the touchscreen on the control unit.

The heat and pressure of the heating plates vulcanize (cure) the repair patch onto the tyre. The vulcanizing machine can then be removed from the tyre after the mandatory cooling time.

4.2.1 Function of the ground-fault monitoring system (GF)

The EM III has a built-in ground-fault monitoring system (GF) that also protects the heating circuits. The GFCI turns off the entire heating system in the case of a current flow of > 30 mA between the heating mat surface and heating conductor. After checking the heating mat as well as the supply cable for damage/wear, the system shutdown can be cancelled using the ground-fault monitoring system's on/off switch (Bild 9/2) which is located inside the control box (switch position "I").

The ground-fault circuit interrupter can be tested by pressing the test button "T" (Bild 9/1). The circuit interrupter works properly when the on/off switch (Bild 9/2) flips over to the "0" position.

4.3 Accessories

The following accessories are included in the package contents of the TP EM III Vulcanizing Machine:

- Operating lever (2 pcs)
- Contour segments, inner (4 pairs)
- Contour segments, outer (5 pairs)
- Heating plates (3 pcs)
- Heating plate holder for inner heating plate (3 pcs)
- Color spray in the color of the machine
- Toolkit including:
 - Fork wrench set (6–30 mm)
 - Allen wrench set (2–10 mm)
 - Rubber mallet
 - Square socket wrench (2 pc.)
 - Screwdriver set
 - Circlip pliers



Also see Bild 3 above.

5 Technical data

5.1 General information

Designation..... TP EM III Vulcanizing Machine Special M1

5.2 Dimensions and weights

Shipping dimensions

Box 1 (Length x width x height)approx. 3,350 x 1,550 x 800 mm

Box 2 (Length x width x height)approx. 2,750 x 1,500 x 800 mm

Max. dimensions in operation

(with chassis and crossbar standing straight

up) (Length x width x height) approx. 3,300 x 3,300 x 2,900 mm

Max. dimensions in operation

(with chassis and crossbar standing on

angle) (Length x width x height) approx. 4,500 x 3,300 x 2,900 mm

Max. tension of the pressure unit approx. 350 mm

Max. distance of tipping/tilting mechanism..... approx. 930 mm

Max. space between heating plate center and the machine's longitudinal frame..... approx. 990 mm

Dimensions of inner heating plate approx. 430 x 430 mm

Dimensions of exterior heating plate approx. 530 x 530 mm

Machine weight..... approx. 1,300 kg

Package weight

Box 1.....approx. 850 kg

Box 2.....approx. 950 kg

5.3 Performance

Operating temperatureapprox. 175°C/350°F

Pressure system..... hydraulic with automatic resetting device,
max. operating pressure 160 bar (2285 PSI)

5.4 Load ratings

Voltage..... 3 N AC 400 V

Frequency.....50 Hz/60 Hz

Rated output 4200 W

5.5 Special features

Temperature control electronic, via controls/touchscreen

Heating controlelectronic, via controls/touchscreen



Technical data modifications which serve the purpose of further technical development remain reserved.

6 Transport, storage, setup, disassembly

6.1 Transport

Package The TP EM III Vulcanizing Machine is delivered in two wooden boxes. The wooden boxes have been specially treated and are also suitable for export.

Inspection upon delivery After receiving the package, immediately inspect the vulcanizing machine and accessories for shipping damage and ensure all pieces are there. Immediately report any damage, defects or missing parts to the transport company and supplier.

6.2 Storage

Only store the TP EM III Vulcanizing Machine in a dry place.
There is no storage limitation.

6.3 Setup

6.3.1 Conditions for setup location

Only store the TP EM III Vulcanizing Machine on level, solid ground.

6.3.2 Assembly

- Take the machine out of the packaging, check for possible transport damage and put together according to the assembly instructions.
- Check load ratings.



Attention

There is no guarantee that the control unit will work when the input voltage is below 400 V. Have a qualified electrician carry out the connection.

- Replace the transport screw with hydraulic pump's filling plug.

6.3.3 Connecting



Danger

Dangerous voltage

Touching live parts can result in serious injury or death.
Only have a qualified electrician install power outlets.



Caution

Risk of tripping
Lay out supply cables in such a way to prevent tripping.

- Check the cable and plug for any damage.
- Insert the heating plate cables into the switch unit's sockets.

6.4 Disassembly

- Shut down the TP EM III Vulcanizing Machine and unplug all cables.
- If the TP EM III Vulcanizing Machine is no longer required for use, dispose of the TP EM III Vulcanizing Machine's parts in accordance with national regulations.

7 Initial operation, operating, decommissioning

7.1 Operating elements and display



Bild 10 Control panel

1. Temperature controller for heating system Sz. III
2. Fine wire fuse 6.5 Amp
3. Electronic timer
4. Temperature controller for heating system Sz. V
5. Fine wire fuse 10 Amp.
6. Socket heating system Sz. V
7. Socket heating system Sz. III
8. Operating hour counter
9. Heating system heating
10. Power indicator
11. Malfunction
12. Start button

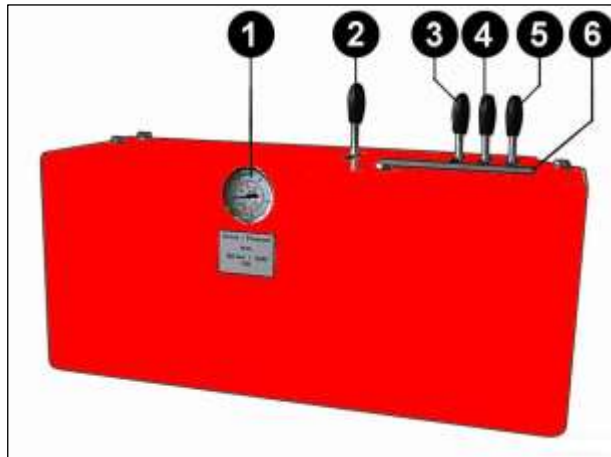


Bild 11 Control panel

- 1 Pressure gauge for operating pressure max. 160 bar / 2285 PSI
- 2 Lever for inner heating plate
- 3 Lever for hydraulic pressure unit
- 4 Lever for tilting
- 5 Lever for lifting and lowering
- 6 Explanation of lever functions

The TP EM III Vulcanizing Unit is operated using the control unit and control panel.

- Pressure gauge** The pressure gauge (Bild 11/1) shows the current operating pressure.
- Lever** The lever (Bild 11/2) is used to move the inner heating plate.
The lever (Bild 11/3) is used to close or open the clamping unit.
The levers (Bild 11/4 and 5) are used to tilt/incline, lift and lower the main cross-piece.
- Power indicator** The power indicator (**Fehler! Verweisquelle konnte nicht gefunden werden.**/10) shows if the machine is connected to a voltage source.

7.2 Initial operation

After setting up and connecting the machine properly (see Section 6.3), have a service technician carry out the initial operation of the TP EM III Vulcanizing Unit.

7.3 Operation

7.3.1 Preparing the vulcanizing process to fill damaged areas with raw rubber



Bild 12 Hooking the tyre into the repair stand



Danger



Attention

Danger due to overturning, falling or rolling large tyres

- Only use suitable and technically sound lifting equipment with sufficient carrying capacity.
- Never stand or work under suspended loads.
- Only place tyres and equipment on even surfaces.
- Observe accident prevent regulations.

Make sure that the tyre is not damaged by lifting/holding devices.

- Use a crane or forklift to hook the tyre into the REMA TIP TOP EM repair stand (Item No. 517 3554, 517 4254 or 517 7811).
- Lift the tyre until it can freely move and then turn the area to be repaired to the approx. the "3 o'clock position" (Bild 12).
- If no EM repair stand is available or its use is not possible due to the tyre dimensions: Use a crane or forklift to put the tyres in the required position and use several wooden wedges to secure them from tipping over or rolling away.

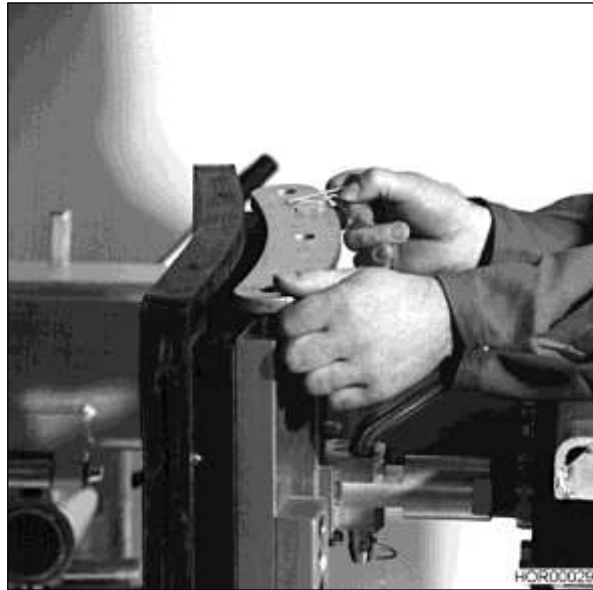


Bild 13 Replacing the heating plate contour segments



Attention

- Only operate the machine with completely assembled contour segments (2 per heating plate).
- Check locating bolts for wear and damage every time upon replacing each segment. Immediately replace defective parts.

- Remove the upper contour segment's retaining spring (Bild 13).
- Lift off contour segment and then repeat the process for the lower contour segment.



Bild 14 Replacing the heating plate contour segments

- Put the previously selected contour segments into place by adjusting the heating plate blades (use the operating lever for the outer heating plate) and press the retaining spring (Bild 14).

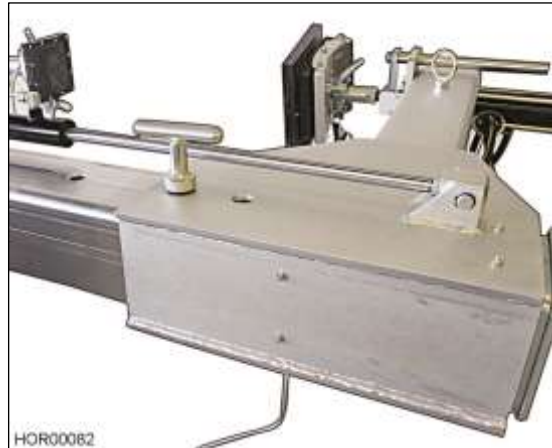


Bild 15 Positioning the frame sections

- Remove a frame section's safety bolt and use the pressure unit's lever to put the frame section into outer position (Bild 15).
- Insert the safety bolt.
- Repeat process for second frame section.

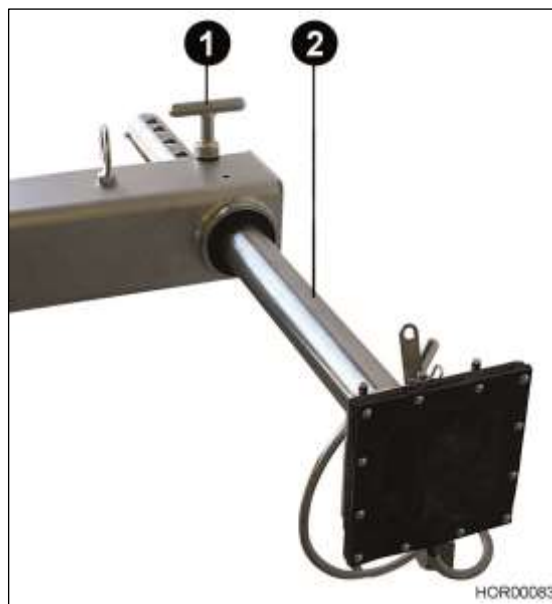


Bild 16 Positioning the heating plate holder

- Remove the heating plate holder's (Bild 16/2) safety bolts (Bild 16/1) and push the heating plate holder towards the back (Bild 16).
- If necessary, turn the outer heating plate holder (in 60° increments). To do this, loosen the lock nut and turn the heating plate holder until it fits into the slot again. Tighten the lock nut.
- If necessary, replace the heating plate holder (see Section 7.3.3).

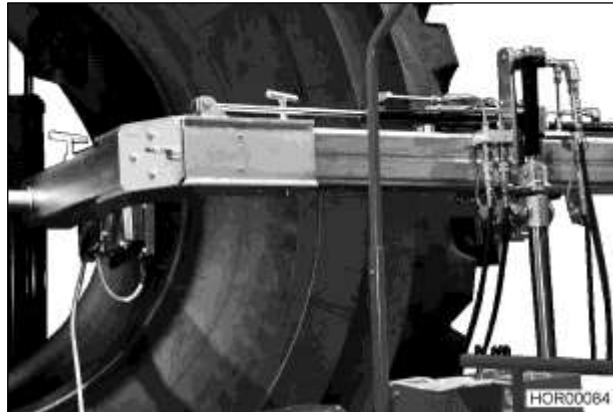


Bild 17 Positioning the machine

- Use the operating lever to move the tyre laterally and use the hydraulic lift/lowering device or the inclining/tilting mechanism to align the position of the two heating plates with the area to be repaired (Bild 17).



To operate the lifting/lowering device, the inclining/tilting mechanism and the rotating device, see Sections 7.3.4, 7.3.5, 7.3.6 and 7.3.7 respectively.

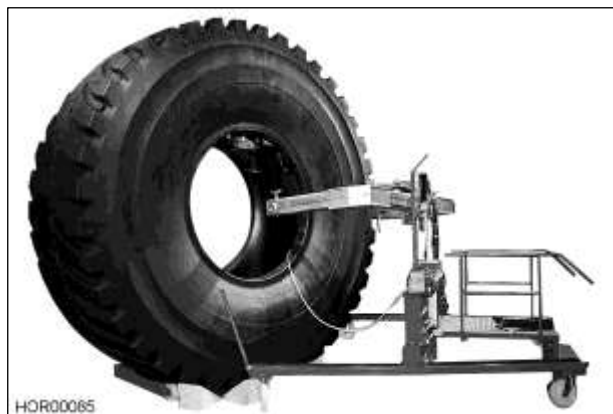


Bild 18 Positioning the left frame section



Danger

Danger of machine tipping over

Make sure that the machine is securely positioned before all position changes.



Danger

Danger due to overturning, falling or rolling large tyres

- Make sure that the tyre is securely positioned using the appropriate brackets/stands.
- During the clamping process, unplug the heating mat supply cable from the control unit.

- Move the chassis and rotate the upper part of the machine in such a manner as to guide the left frame section into the tyre (Bild 18).

- Move the heating plate holder with the inner heating plate as far as possible towards the inside of the tyre and lock into place using safety bolts (Bild 18).

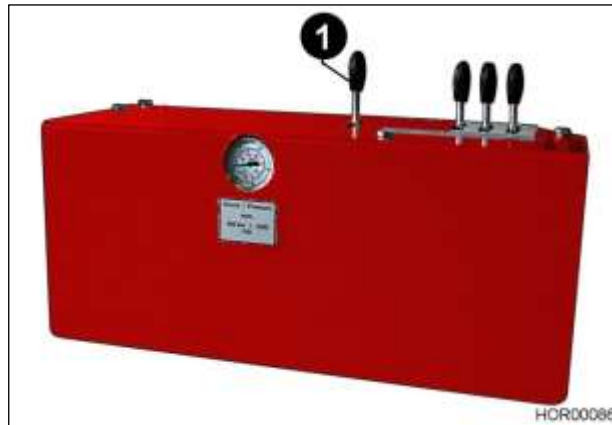


Bild 19 Control panel, positioning the left frame section

- Use the lever (Bild 19/1) to move the left frame section to the tyre until the inner heating plate rests against the area to be repaired, and then lock into place using safety bolts.



Frame part must not rest on the tyre. If necessary, replace the heating plate holder (see Section 7.3.3).



Bild 20 Positioning the right frame section

- Use the frame adjuster to bring the right frame section as close as possible towards the tyre and then use the retaining bolt to lock it into place in the position closest to the tyre.
- Use the guide lines provided on the tyre to center the inner and outer heating plates on the area to be repaired.
- If necessary, use the adjusting devices to adjust the position of the upper part of the machine (see Sections 7.3.4 to 7.3.7).

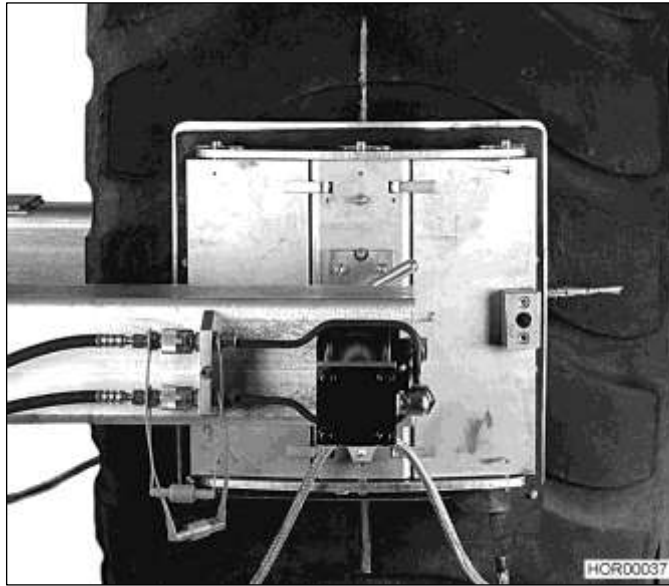


Bild 21 Attaching the contour aluminum plate to the outer heating plate

- Hold the matching contour aluminum plate between the outer heating plate and the area to be repaired and attach to the heating plate using two rubber rings (cut from used truck tyre tube).



For larger tyre punctures, also use the aluminum heating plates to prevent any uneven surfaces on the inside of the tyre.



To prevent thermal radiation, make sure the contour aluminum plate is not larger than the heating bag.

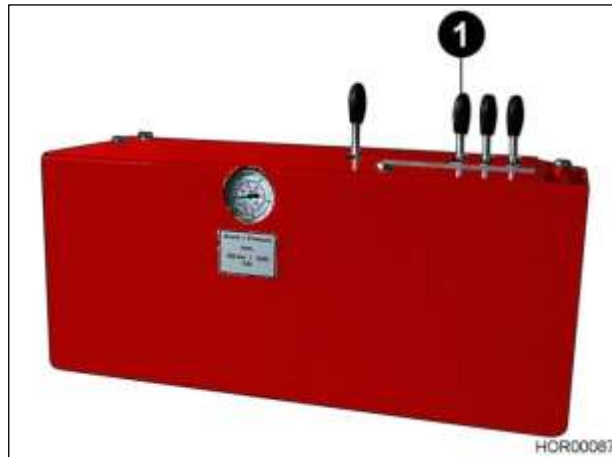
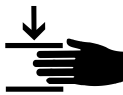


Bild 22 Control panel, closing the hydraulic pressure unit



Caution

Risk of crushing

- Do not reach between the tyre and heating plate during the closing process.
- Do not go above or below target pressure.
- Check safety bolts.
- Make sure that the power supply corresponds to the load ratings on the rating plate.

- Connect control unit to power supply.
- Check that all retaining bolts are perfectly put in place.



Attention

- Before using, ensure heating mats, cables and temperature controller(s) are working and not damaged.
- Immediately replace damaged parts.
- Never leave the machine unattended while in operation.

- Reinspect heating plate position. If necessary, correct position by reopening the pressure unit.
- Reinspect heating mat connection cables or plug connections.

7.3.2 Preparing the application of multiply repair patches

Bild 23 Hooking the tyre into the repair stand



Danger

Danger due to overturning, falling or rolling large tyres

- Only use suitable and technically sound lifting equipment with sufficient carrying capacity.
- Never stand or work under suspended loads.
- Only place tyres and equipment on even surfaces.
- Observe accident prevent regulations.



Attention

Make sure that the tyre is not damaged by lifting/holding devices.

- Use a crane or forklift to hook the tyre into the REMA TIP TOP EM repair stand (Item No. 517 3554, 517 4254 or 517 7811).
- Lift the tyre until it can freely move and then turn the area to be repaired to the approx. "3 o'clock position" (Bild 23).
- If no EM repair stand is available or its use is not possible due to the tyre dimensions: Use a crane or forklift to put the tyres in the required position and use several wooden wedges to secure them from tipping over or rolling away.

7.3.3 Replacing the heating plate holder



Danger

Danger of falling parts

- Have a second person help you replace the heating plate or heating plate holder.
- Secure parts against falling.
- Wear safety shoes.



Attention

Do not bend the supply cable or subject it to any tension.

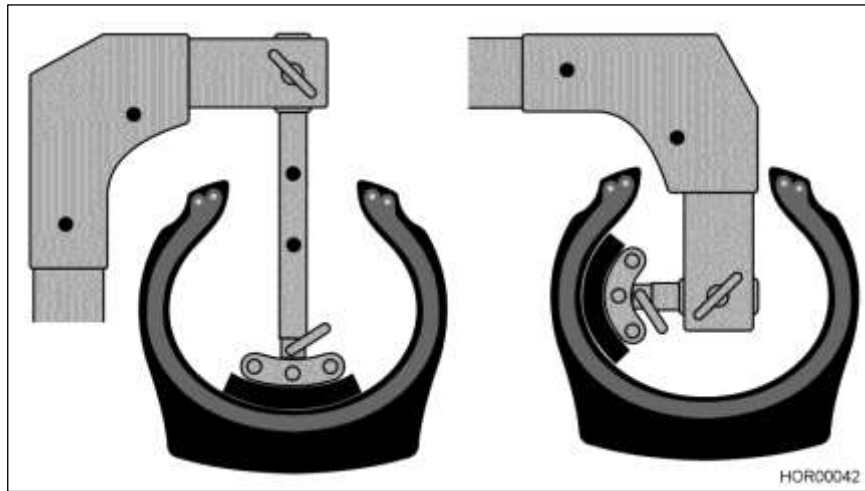


Bild 24 Selecting the heating plate holder



The machine is equipped with different heating plate holders. Select heating plate holder based on the size of the tyre and the location of the damaged area (sidewall, tread or shoulder) (Bild 24).

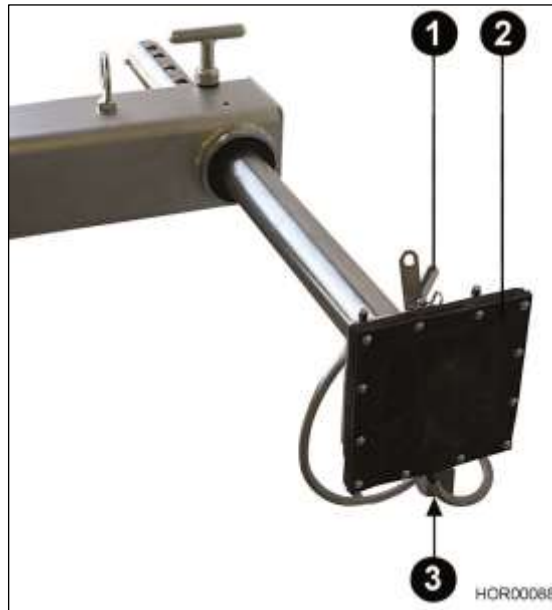


Bild 25 Replacing the heating plate holder

- Remove retaining spring (Bild 25/3).
- Remove the inner heating plate's (Bild 25/2) retaining bolts (Bild 25/1) and hold onto the heating plate at the same time. Then hang the heating plate onto the bracket on the frame section.
- Remove heating plate holder from its guide.
- Insert required holder in reverse order.
- Reattach the heating plate and insert the retaining spring.

7.3.4 Operate the lifting and lowering device

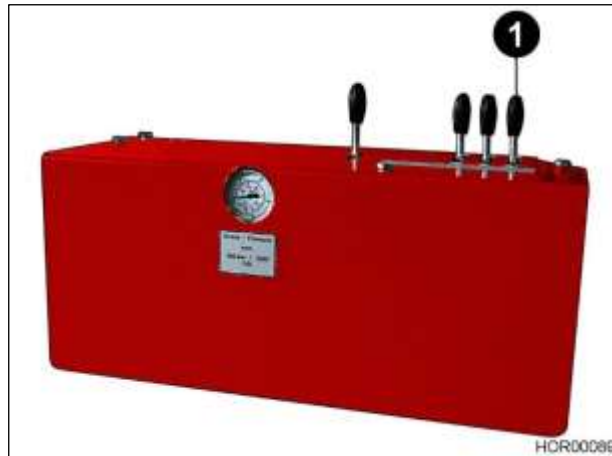


Bild 26 Control panel, lifting and lowering

Lifting:

- Push the lever (Bild 26/1).

Lowering:

- Pull the lever (Bild 26/1).

7.3.5 Operating the inclining mechanism (for tread or shoulder repairs)

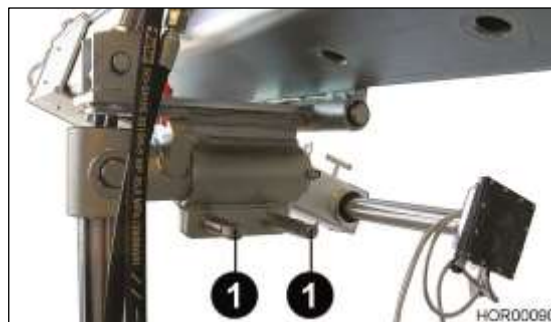


Bild 27 Inclining mechanism



Caution

Risk of crushing

- Do not reach between movable frame parts.
- Seek assistance when carrying out machine settings.

- Use the square socket wrench to slightly open the clamping screw (Bild 27/1).
- Insert operating lever at the longitudinal frame end.
- Tilt the upper part of the machine based on the area to be repaired.
- Close the clamping screw again.

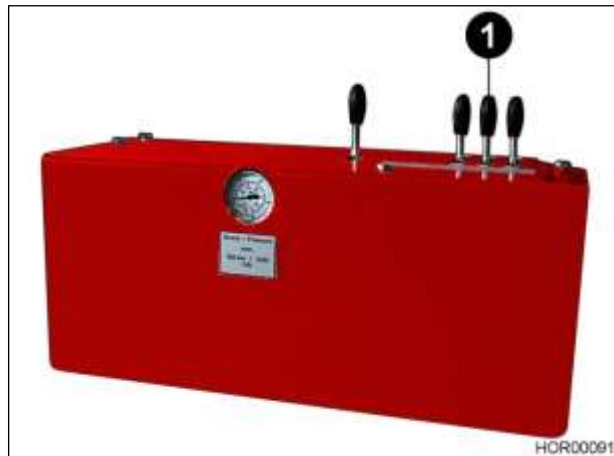
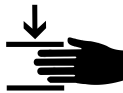
7.3.6 Operating the tilting mechanism (for sidewall repairs)

Bild 28 Control panel, tilting



Caution

Risk of crushing

- Do not reach between movable frame parts.
- Seek assistance when carrying out machine settings.

Tilting:

- Push the lever (Bild 28/1).

Moving the upper part of the machine into a horizontal position:

- Pull the lever (Bild 28/1).

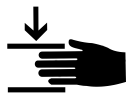
7.3.7 Operating the rotating device



Danger

Danger of machine tipping over

- Make sure that the machine is securely positioned before all position changes.
- If necessary, seek assistance when carrying out machine settings.
- Only move frame parts individually. Do not loosen multiple clamping screws at once.



Caution

Risk of crushing

- Do not reach between movable frame parts.
- If necessary, seek assistance when carrying out machine settings.
- Only move frame parts individually. Do not loosen multiple clamping screws at once.

- Turn the upper part of the machine against the chassis and stop in the desired position.

7.4 Vulcanization process

Requirements

The following requirements must be fulfilled:

- The vulcanizing machine is properly set up, connected and switched on.
- The tyre and machine are properly prepared.
- The hydraulic pressure unit is open.



Danger

Risk of electrical voltage

In the event of a GFCI-related system shutdown, disconnect the machine from the power supply before opening the switch contact (control unit).



Danger

Danger due to hot surface

- Immediately disconnect the machine from the power supply if the temperature limiter unit triggers a safety shutdown or there is an GFCI-related system shutdown again.
- Avoid contact with hot surfaces.

**Attention**

Immediately disconnect the machine from the power supply and inspect the machine components (e.g. heating mat incl. supply cable) for damage if the temperature limiter unit triggers a safety shutdown or there is an GFCI-related system shutdown again. Immediately replace damaged parts with original spare parts. Consult a REMA TIP TOP consultant and/or qualified electrician to inspect the machine and repair it.

**Attention**

There is no guarantee that the control unit will work when the input voltage/power voltage is under 400 V.

**Attention**

Never leave the machine unattended while in operation.

7.5 Decommissioning

- Open hydraulic pressure unit.
- Press the reset button "RST" Bild 8(6).
- Remove power cable.

8 Maintenance



Warning

- Only carry out maintenance measures that are described in these Operating Instructions.
- Maintenance measures that are not described must be carried out by the manufacturer's service technician or, after consultation with the manufacturer, by a qualified expert.
- Make certain that, during all cleaning, maintenance work and inspections, the machine is disconnected from the power and protected against being restarted again.



Attention

The machine operator is responsible for carrying out maintenance activities at the specified intervals (see Section 8.1).

8.1 Maintenance plan

The machine is extremely reliable due to its design and the processed materials and parts, meaning maintenance must only be carried out at longer intervals. For safety and warranty reasons, damaged machine components must be immediately replaced with original spare parts from REMA TIP TOP. Only qualified personnel may carry out work extending beyond the scope of maintenance. Used oil and soiled cloths must be disposed of properly.

The required maintenance work and maintenance intervals can be found in the TP EM III Vulcanizing Machine's service booklet.

8.2 Repairs

8.2.1 Replacing the heating mats

- Unplug the supply cable from control unit.
- Turn the heating plate 180° (cable outlet facing up).
- Remove the locking screws and heating mat.
- Dust the new heating mat with REMA TIP TOP asbestos-free talcum powder (Order No. 593 0649).
- Put the heating mat in the heating bag. Pay attention to the position of the cable connection block when you do this.
- Tighten the locking screws by hand.

8.2.2 Replacing the heating bags

- Detach the heating mat (see Section 8.2.1).
- Use a skiving knife to detach the heating bag in the area vulcanized to the pressure pad.
- Buff the back of the new heating bag within the marked area, coat it with Thermopress MTR Solution (Art. No. 516 9207), let dry for approx. 10 minutes and then apply one layer of Thermopress MTR Rubber (Art. No. 516 1250).
- Evenly buff the center of the pressure pad, coat with Thermopress MTR Solution, let dry for approx. 10 min. and then apply one layer of Thermopress MTR Rubber.
- Fit flat contour segments on both heating plates.



The heating bag must only be positioned on the pressure pad in the marked vertical direction; otherwise, it is not possible to adjust the heating plate to the corresponding tyre contour.

- Install the heating mats in the heating bag and then center the heating bag on the pressure pad.
- Press the two heating plates together (60–80 bar) and cure for 90 minutes at the desired TARGET temperature setting.

8.2.3 Changing the hydraulic oil of the pressure unit hydraulic pump



Observe local disposal regulations for used oil!

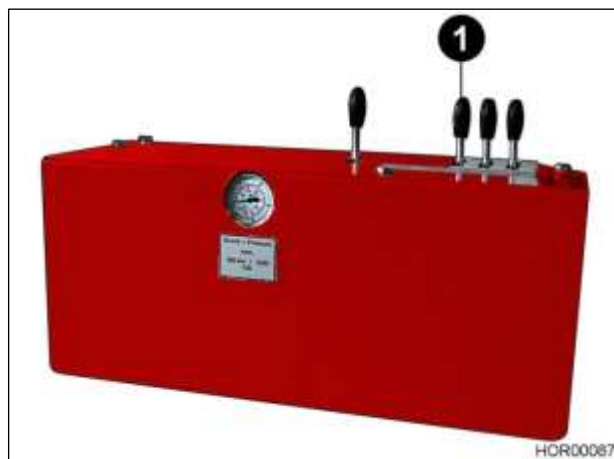


Bild 29 Control panel, hydraulic pressure unit

- Retract the hydraulic cylinder piston completely by pulling the lever (Bild 29/1).
- Remove the filling plug from the filling hole on the hydraulic pump.
- Put an appropriate collection container (approx. 50 liters) under the hydraulic pump. Open the oil drain plug on the rear of the pump (bottom) and drain oil into the container. After having drained the oil completely, put the oil drain plug back and tighten.



Bild 30 Oil dipstick

- Use a funnel to add new hydraulic oil (SAE 5-10).
- Check the oil level with the oil dipstick. The oil level must be between the two markings (Bild 30).
- Screw in the bleed screw.
- Fully extend/retract the hydraulic cylinder by pulling and pushing the lever (Bild 29/1).
- Repeat the aforementioned process twice to completely remove the used oil from the hydraulic pump, cylinder and connecting lines.
- Fully extend/retract the hydraulic cylinder several times. When the cylinder is retracted, the oil level must be between the two markings on the oil dipstick (Bild 30).

9 Defect, possible cause and solution



Danger

Dangerous voltage

In the event of a machine malfunction which cannot be determined precisely, immediately disconnect the machine from the power supply, safeguard against being put into operation again and consult a specialist to diagnose and repair the malfunction.

Only qualified personnel may carry out corrective actions on electrical equipment when the vulcanizing machine is disconnected from the power supply.



Attention

For all the listed defects, a new heating system or repeat repair may be necessary after fixing the cause of the error. Reassess if it's worth repairing the tyre or if the tyre is capable of being repaired.

Error/error display	Possible cause	Solution
Tears in the heating bag	Signs of wear	Replace heating bag
Heating mat damaged	Signs of wear	Replace heating mat, regularly dust with talcum powder
Automatic resetting device does not work or the pressure gauge is too low	Incorrect setting of pressure adjustment screw	Set target pressure of 160 bar
Hydraulic pump runs constantly	Oil pressure nozzle in the automatic resetting device dirty	Remove and clean oil pressure nozzle or replace complete pressure control unit
Automatic resetting device constantly resets	Oil loss	Check the entire hydraulic system for leaks and refill with oil
	Used, old oil	Change hydraulic oil

The following error messages can be displayed on the touchscreen:

Error message	Solution
FIH in the display of the temperature controller	Replace heating system, call service technician if unsuccessful
FIL in the display of the temperature controller	Replace heating system, call service technician if unsuccessful
Heating systems don't get hot	Ground-fault circuit interrupter triggered, open the control unit and switch on the ground-fault circuit interrupter again
Hydraulic pump does not start	Check motor protection switch F1 and F2 fuse
Heating socket Sz. III doesn't get hot	Check fine wire fuse 6 Amp. Bild 4/9)
Heating socket Sz. V doesn't get hot	Check fine wire fuse 10 Amp Bild 4/5)
During the repair process, the heating system turns cold after awhile	Push reset button Bild 8/9), wait until the heating system cools below 100 degrees. Start repair process again. If the error occurs again, call service technician.

10 Customer Service

Regular customer service is not required if the operator performs the prescribed inspection and maintenance work reliably.

Our Customer Service is available to answer any technical questions you may have about the machine and the use of its system technology.

You can contact our Customer Service at the following address:

REMA TIP TOP GmbH
Business Unit Automotive
Gruber Straße 63
85586 Poing
Telephone: 08121 707-333
08121 707-225
Fax: 08121 707-349
Email: tpotr.service@tiptop.de

11 Spare parts



Danger

Dangerous voltage

Only have qualified personnel carry out work on current-carrying parts.



Warning

Only use original spare parts or spare parts which have been approved by the manufacturer.

Spare parts are listed in the spare parts list in the Annex of these Operating Instructions.

12 Annex

This Annex contains:

- Declaration of conformity as well as the manufacturer's declaration
- Circuit diagrams
- Spare parts lists

Declaration of conformity as well as the manufacturer's declaration



CE-Konformitätserklärung
EC Declaration of Conformity

Hersteller/Manufacturer:	Horn GmbH
Anschrift/Address:	Gewerbestrasse 14, D-78244 Gottmadingen
Dokumentationsbevollmächtigte(r):	Markus Graf
Produktbezeichnung:	Reifen Vulkanisiermaschine EM III
product designation:	Tire vulcanizing machine EM III
Artikelnummer/Article no.:	106-176-0019-0C
Article no.:	106-176-0019-0C

Wir erklären hiermit im Sinne der EG-Richtlinien dass, das oben bezeichnete Produkt in Übereinstimmung mit folgenden Richtlinien entwickelt, konstruiert und gefertigt wurde.
 We thereby declare, in exclusive responsibility, that the aforementioned product was developed, designed and manufactured in harmony with the following directives

Richtlinie 2006/95/EG, (Niederspannungsrichtlinie Anhang 4)
 Richtlinie 2004/108/EG, (EMVG Anhang 2)
 Richtlinie 2006/42/EG, (Maschinen)
 Council Directive 2006/95/ECC (Low Voltage Annex 4)
 Council Directive 2004/108/ECC (Electromagnetic Compatibility Annex 2)
 Council Directive 2006/42/ECC (Machinery)

Wir bestätigen zusätzlich die Konformität des oben bezeichneten Produktes mit den Normen:
 We additionally confirm that the aforementioned product conforms with the following standards:

DIN EN 61140-03/2007	DIN VDE 0140-1
DIN EN 60335-1-11/2010	DIN VDE 0700-1
DIN EN 50106-05/2009	DIN VDE 0700-500
DIN EN 55014-1-02/2010	DIN VDE 0875-14-1
DIN EN 61000-6-3-09/2007	DIN VDE 0839-6-3
DIN EN 61000-3-2-03/2010	DIN VDE 0838-2
DIN EN 55014-2-06/2009	DIN VDE 0875-14-2
DIN EN ISO 12100-1-2003/A1:10/2009	
DIN EN ISO 12100-2-2003/A1:10/2009	
DIN EN ISO 14121-1-11/2007	
DIN EN ISO 13849-1-12/2008	
DIN EN ISO 13849-2-09/2008	

Horn GmbH
 Gottmadingen, 22.01.2015

 Geschäftsführer
 CEO

 Qualitätsmanagement
 Quality Management

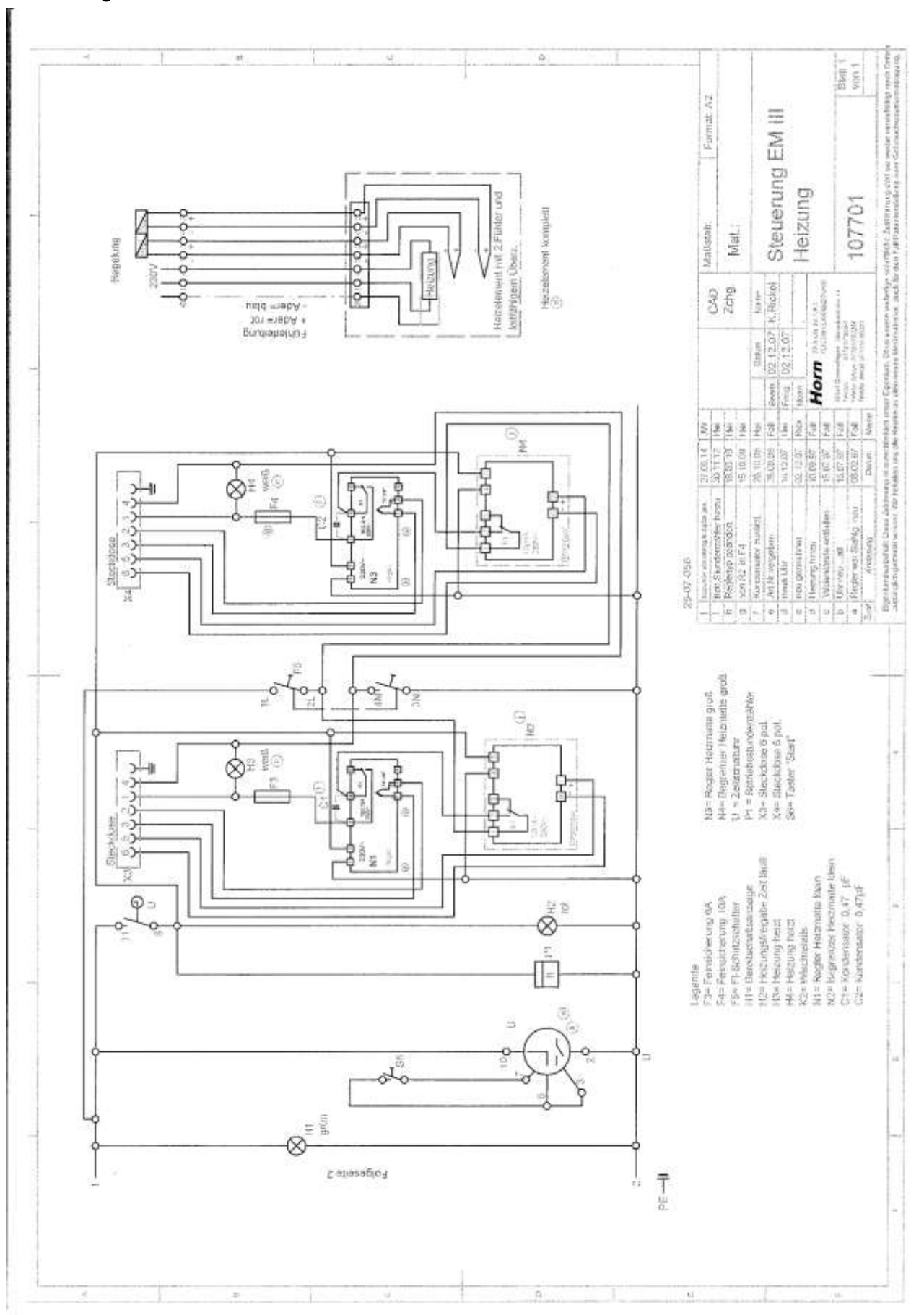
Diese Erklärung ist keine Zusicherung im Sinne des Produkthaftungsgesetzes!
 This declaration is not an assurance for the purposes of the product liability law!

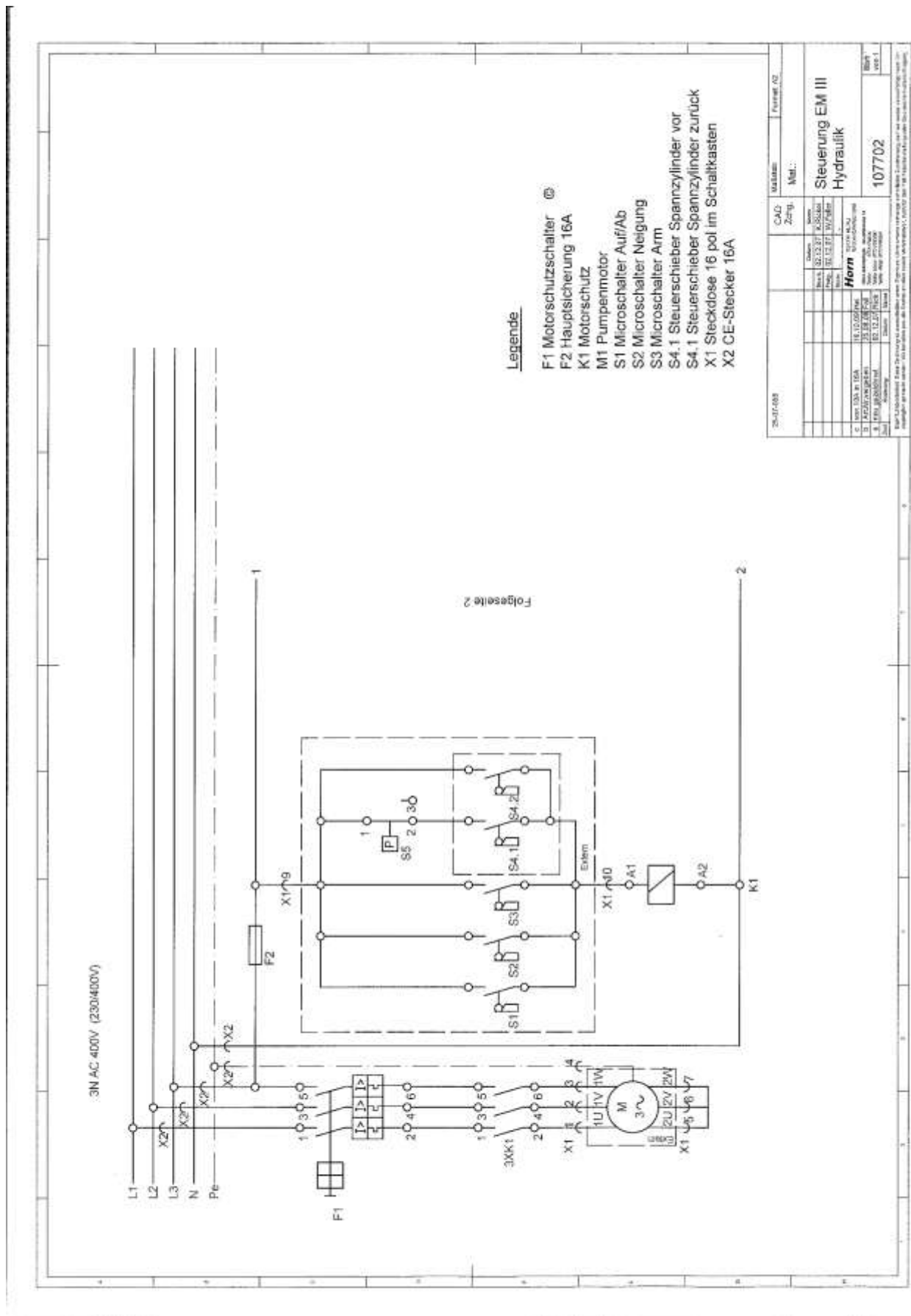
Die Sicherheitshinweise der Produktdokumentation sind zu beachten!
 The safety advice in the product's documentation must be followed!

Horn GmbH
 Gewerbestr. 14 78244 Gottmadingen Fax + 49 (77 35) 78 03 - 0 E-Mail + 49 (77 35) 78 03 - 91 info@horn-gmbh.com www.horn-kettenschut2.de

Geschäftsführer: Karl Emminger Ulrike Ritzmann	Registereintrag: HBR 540 352 Amtsgericht Freiburg USt-IdNr.: DE42760633	Bankverbindung: SW - Bank Singen Volksbank Villingen Commerzbank Singen	BANK: DE38 4925 0035 0003 0270 00 IBAN: DE32 6005 0107 7485 5080 93 IBAN: DE20 6549 0000 0000 7763 00 IBAN: DE42 6928 0035 0843 8444 00	Swift-Bic: SOLADEST33 Swift-Bic: SOLADEST Swift-Bic: GENODE33V21 Swift-Bic: DRESDETF602
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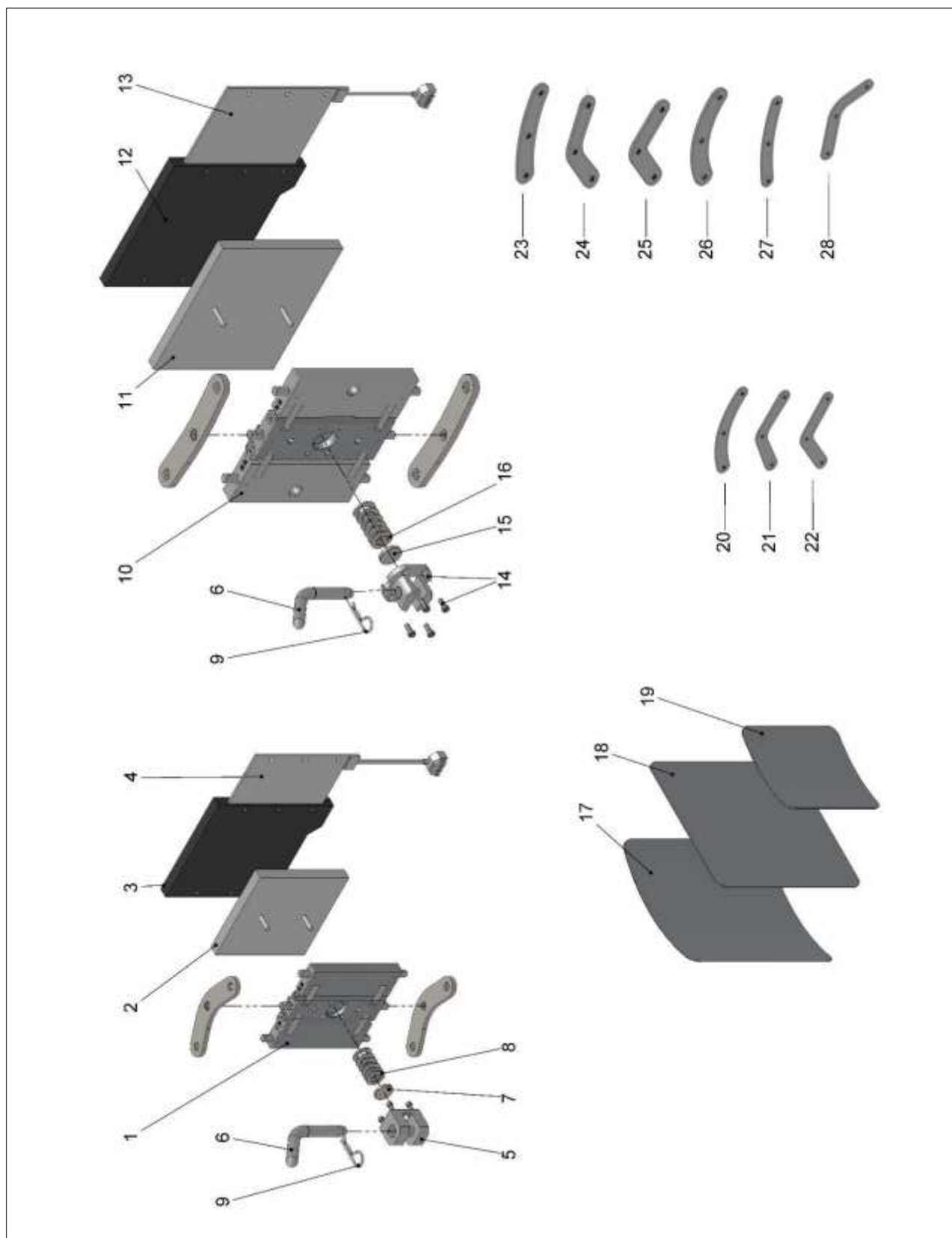
Circuit diagrams



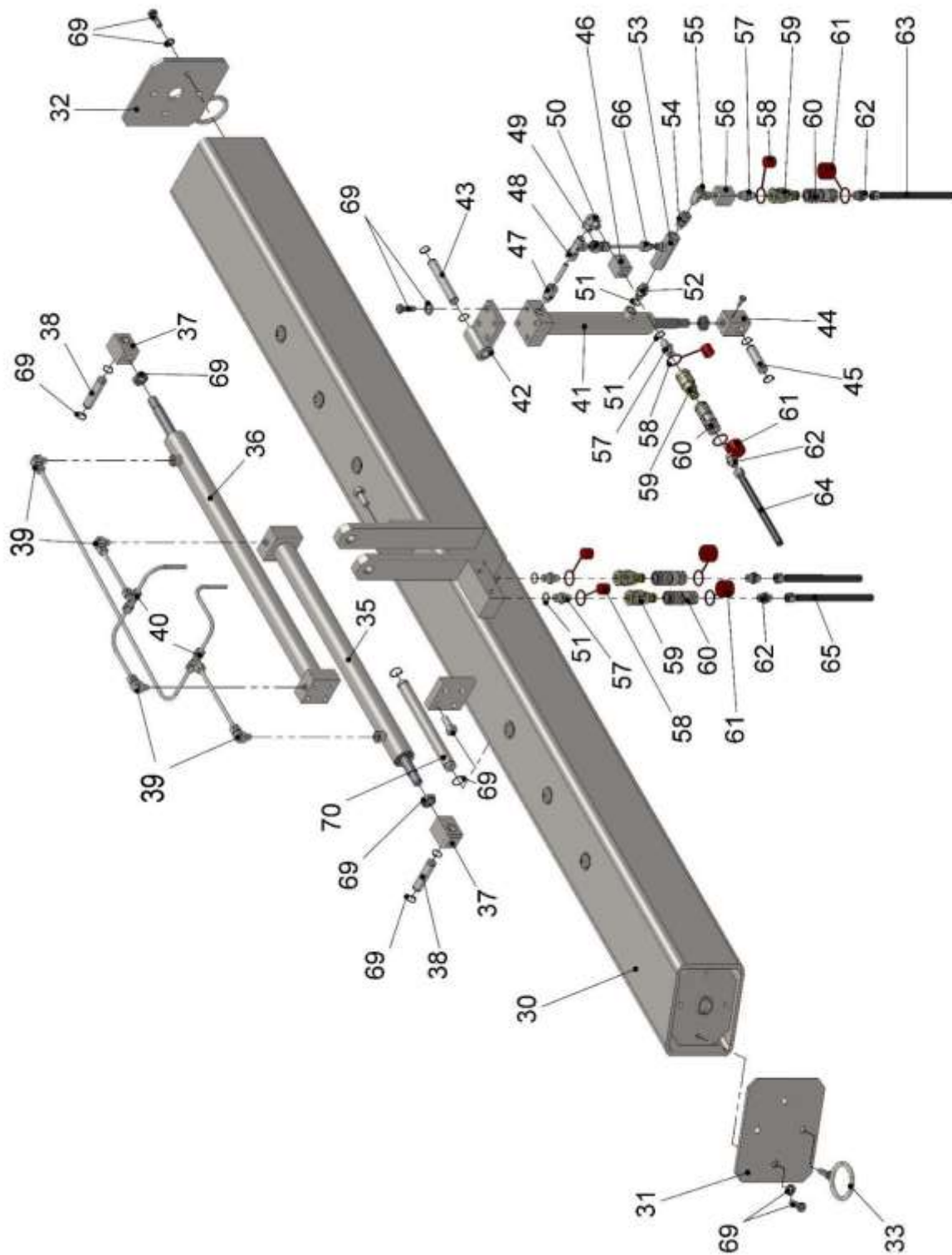


Spare parts list for THERMOPRESS EM III

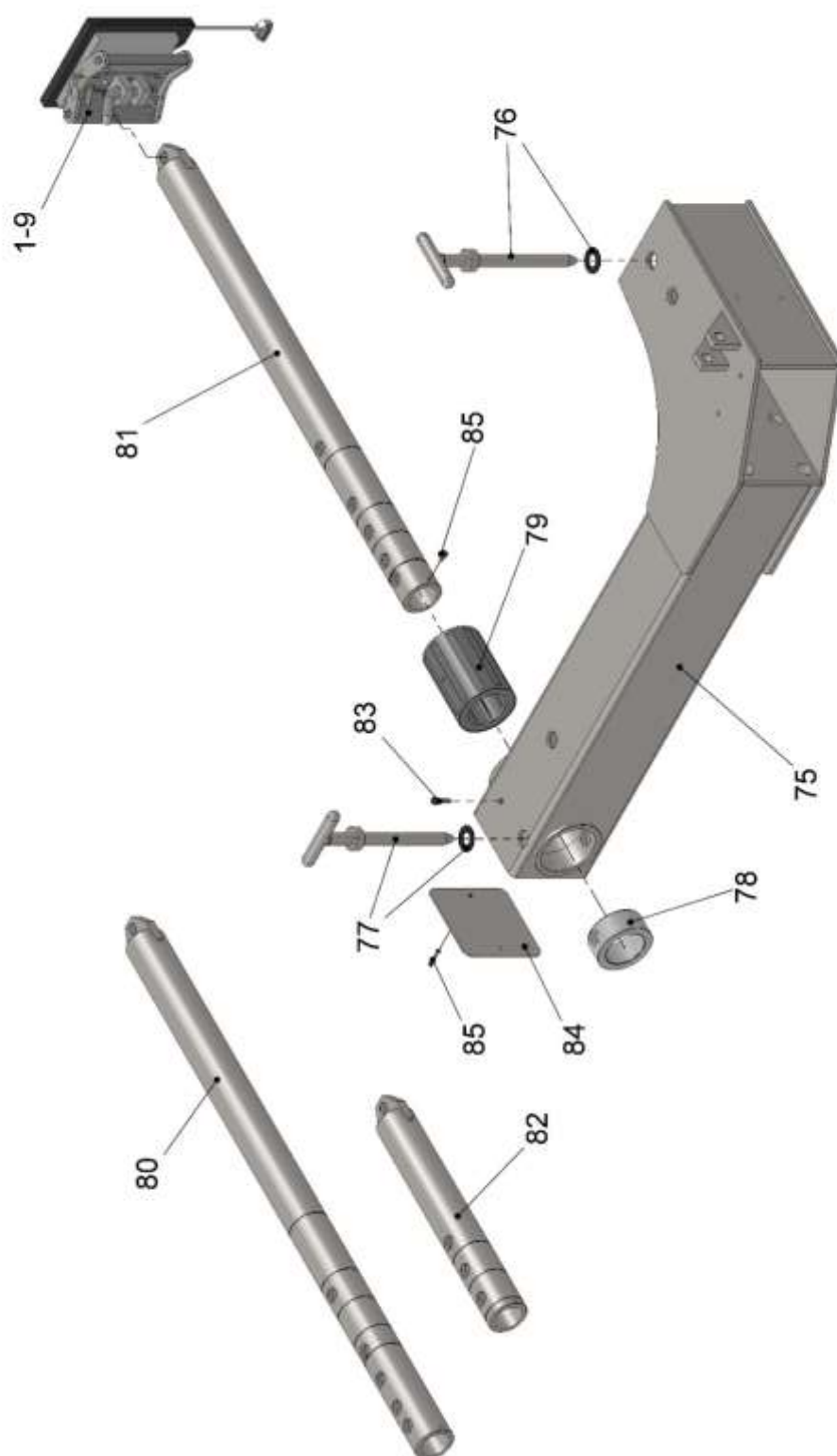
Issue 03/2015



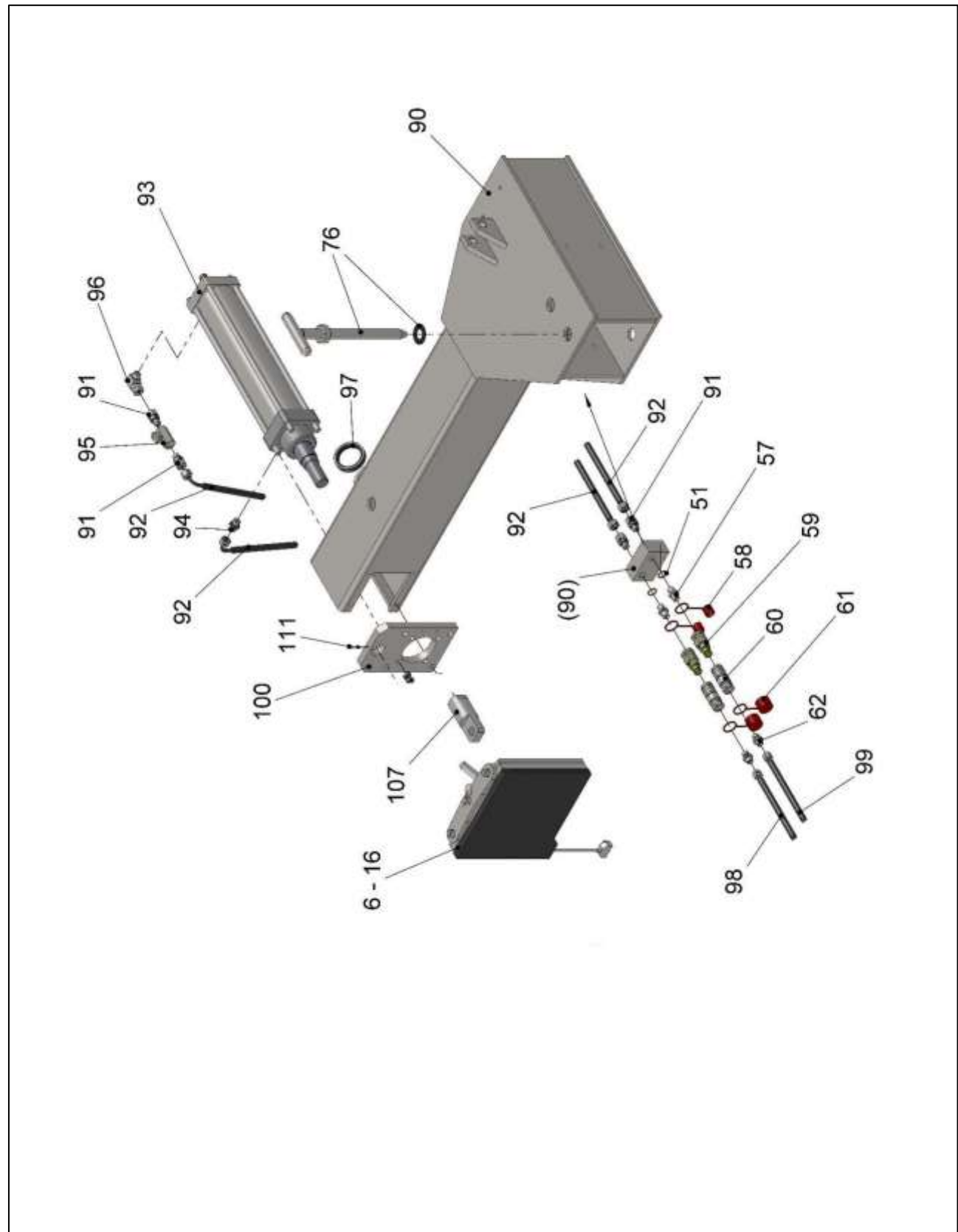
Pos.	Item No.	Description
1	557 3006	Adjustable pressure plate for heating plate Sz. 3 350 x 390 mm
2	517 5064	Small pressure pad, Sz. 3 345 x 395 mm
3	517 5040	Small heating mat, Sz. 3 430 x 430 mm
4	517 5239	Small heating mat, Sz. 3 365 x 365 mm
5	557 8386	Joint support with screws – heating plate Sz. 1
6	557 8135	Retaining bolt for heating element
7	557 8393	Ø 34 mm thrust washer for heating plate Sz. 1
8	557 8403	Set of Ø 34 x Ø 16.3 x 1.5 disc spring
9	558 0587	Ø 4 mm safety pin
10	557 4531	Adjustable pressure plate for heating plate Sz. IV 430 x 450 mm
11	517 6283	Large pressure pad, Sz. IV 445 x 495 mm
12	517 6276	Large heating bag, Sz. IV 530 x 530 mm
13	517 5246	Large heating mat, Sz. IV 450 x 470 mm
14	557 8386	Joint support with screws – heating plate Sz. 2
15	557 8393	Ø 40 mm thrust washer for heating plate Sz. 2
16	557 8403	Set of Ø 40 x Ø 20.4 x 2.5 disc spring
17	558 0271	550 x 550 x 2 aluminum sheet – contoured
18	558 0288	550 x 550 x 2 aluminum sheet – straight
19	557 8836	330 x 330 x 2 aluminum sheet – straight
20	557 3477	Contour segment No. 22
21	557 3484	Contour segment No. 23
22	557 3491	Contour segment No. 24
23	557 3398	Contour segment No. 14
24	557 3408	Contour segment No. 15
25	557 3415	Contour segment No. 16
26	557 3439	Contour segment No. 18
27	557 3460	Contour segment No. 21
28	558 0257	Contour segment No. 25



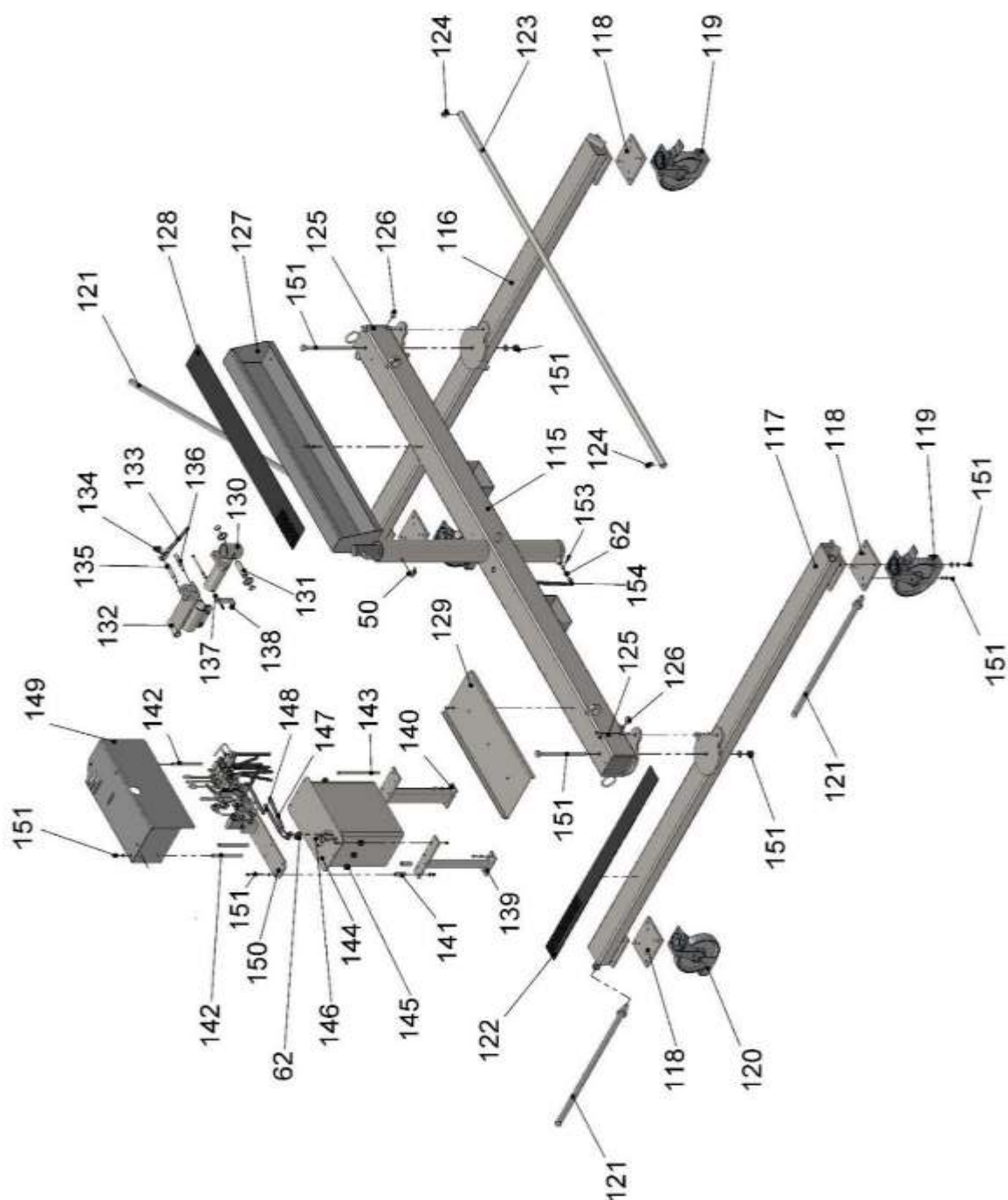
Pos.	Item No.	Description
30	WH 7200	Center cross-piece
31	558 0130	Left stop plate
32	558 0123	Right stop plate
33	558 0147	Eye bolt for lashing strap
34	WH 7201	Q 20 H8 throttling screw
35	558 0721	Left positioning cylinder (see extra list)
36	558 0769	Right positioning cylinder (see extra list)
37	558 0154	Cylinder eye bolt for positioning cylinder
38	558 0185	Ø 20 x 85 mm pivot bolt
39	558 1610	EO screw connection WE 12 S M 18 x 1.5 conical
40	558 1627	EO screw connection T 12 S
41	558 0800	Tilting cylinder (see extra list)
42	558 0178	Cylinder bracket for tilting cylinder
43	558 0202	Ø 20 x 125 mm pivot bolt
44	558 0161	Cylinder eye bolt for tilting cylinder
45	558 0192	Ø 20 x 73 mm pivot bolt
46	558 1634	3/8" – 3/8" connecting piece
47	558 1476	EO screw connection GE 10 L M 18 x 1.5 CFX
48	558 1531	EO screw connection EVL 10 S OMD CF
49	558 1586	EO screw connection KOR 10/08 (= RED 10/08) CF
50	558 1490	EO screw connection WE 10 S R A3CX
51	558 1270	Ø 18 x Ø 24 x 1.5 copper ring
52	558 1483	EO screw connection GE 10 SR CFX
53	558 1184	RH 2 piloted check valve
54	557 8685	EO screw connection RI 3/8 x 1/4
55	558 1218	Q 20 H6 throttling screw
56	WH 7133	3/8" – 1/4" connecting piece
57	558 6299	3/8" thread
58	558 1256	Dustproof cap TFF 38 FF 10 for plug
59	558 1232	Coupling plug STFF 06 BSP 10S
60	558 1249	Coupling sleeve STFF 06 BSP 10M
61	558 1263	Dustproof plug TMF 38 FF 10 for sleeve
62	558 1452	EO screw connection GE 10 L R 3/8 CFX
63	558 1294	High-pressure hose 2SN – DN 8 x 2500 – DKO 10 L / DKO 10 L 90°
64	558 1304	High-pressure hose 2SN – DN 8 x 2200 – DKO 10 L / DKO 10 L 90°
65	558 1335	High-pressure hose 2SN – DN 8 x 2000 – DKO 10 L / DKO 10 L 90°
66	558 1414	EO screw connection GE 08 S R 1/4
67	558 1380	Ø 8 x 1.5 hydraulic line pipe
68	558 1373	Ø 10 x 1.5 hydraulic line pipe
69		Set of screws for center cross-piece
70	WH 7018	Ø 25 x 260 mm pivot bolt



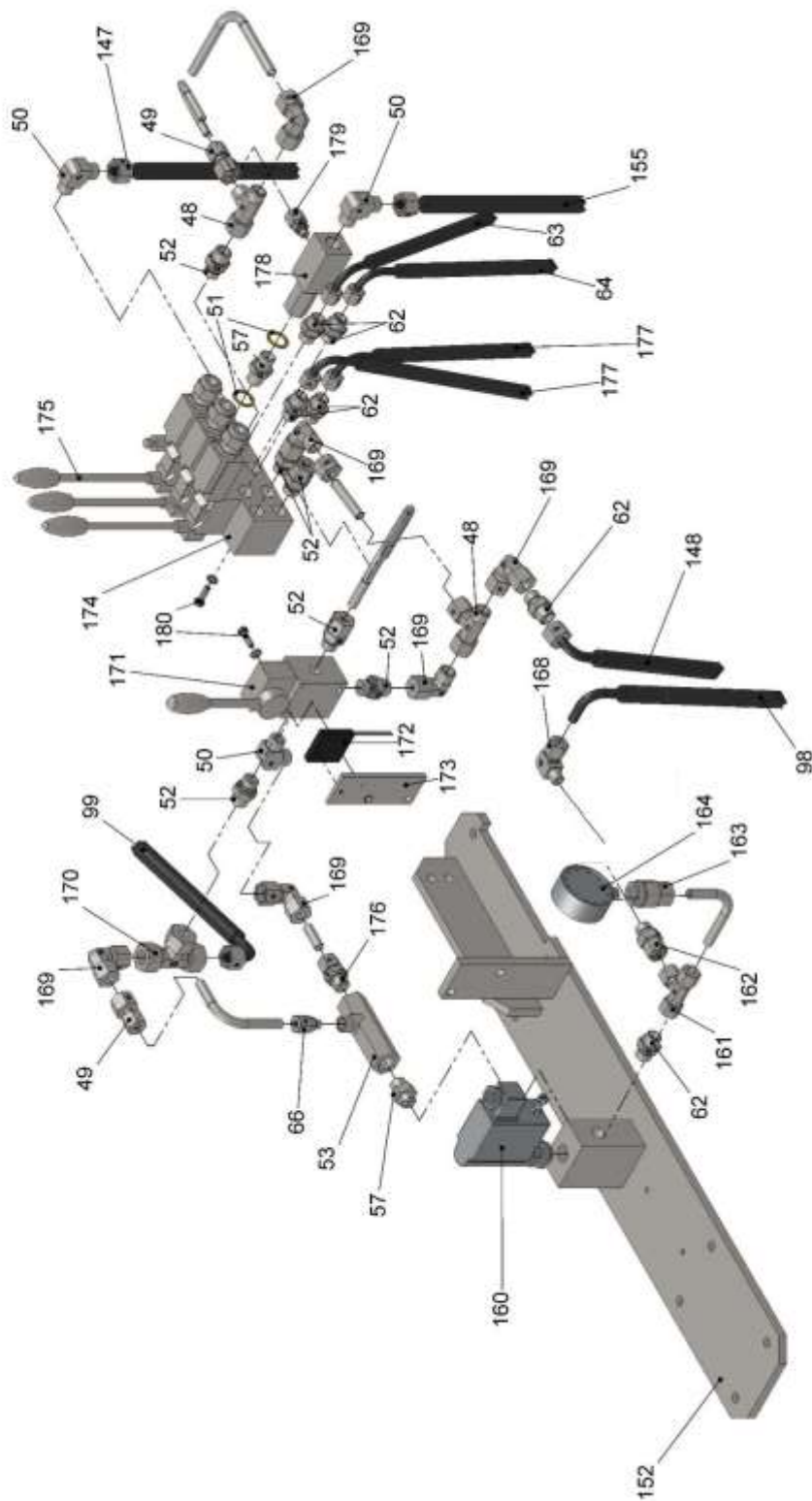
Pos.	Item No.	Description
75	558 0037	Left frame section
76	558 0099	300 mm retaining bolt
77	558 0082	280 mm retaining bolt
80	558 0075	Long heating plate holder 1345 mm
81	558 0068	Medium heating plate holder 1145 mm
82	558 0051	Short heating plate holder 645 mm
83	WH 7209	Greasing nipple for linear ball bearings
84	WH 7239	Cover plate for left frame section
85	WH 7240	Set of screws for left frame section



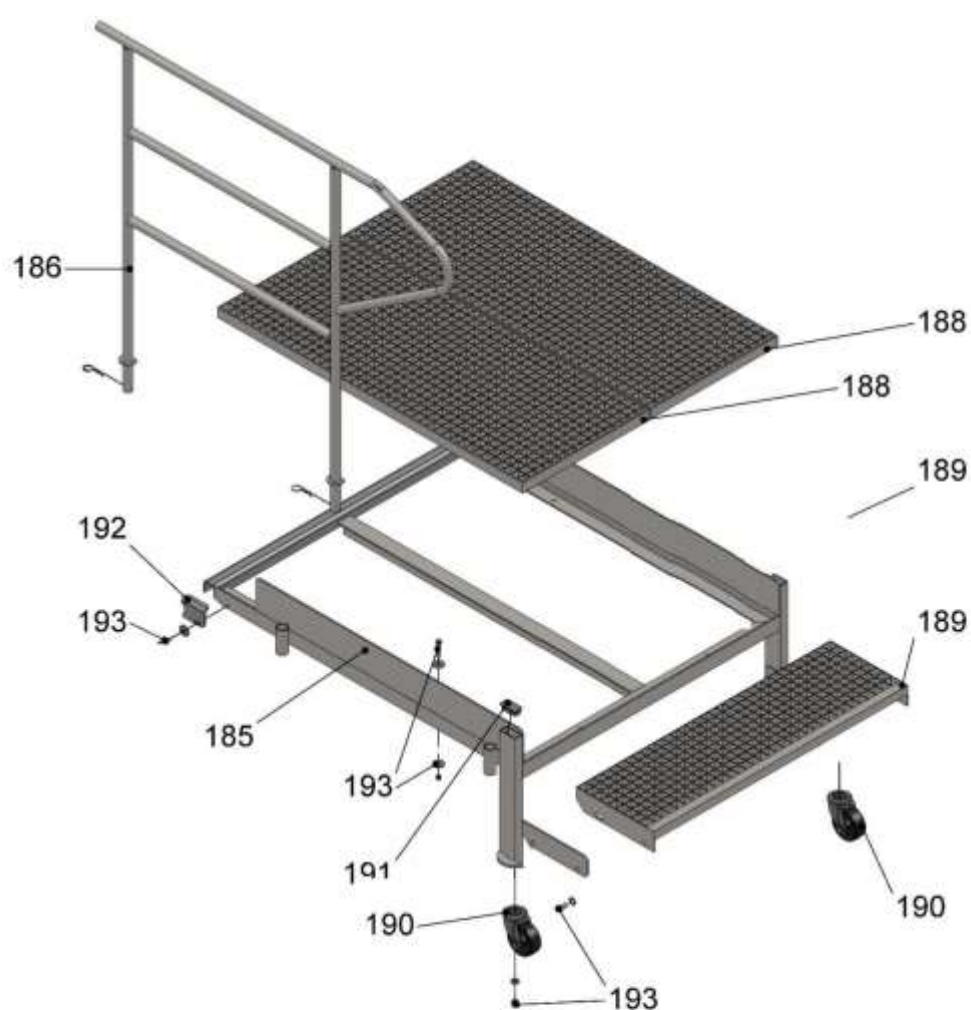
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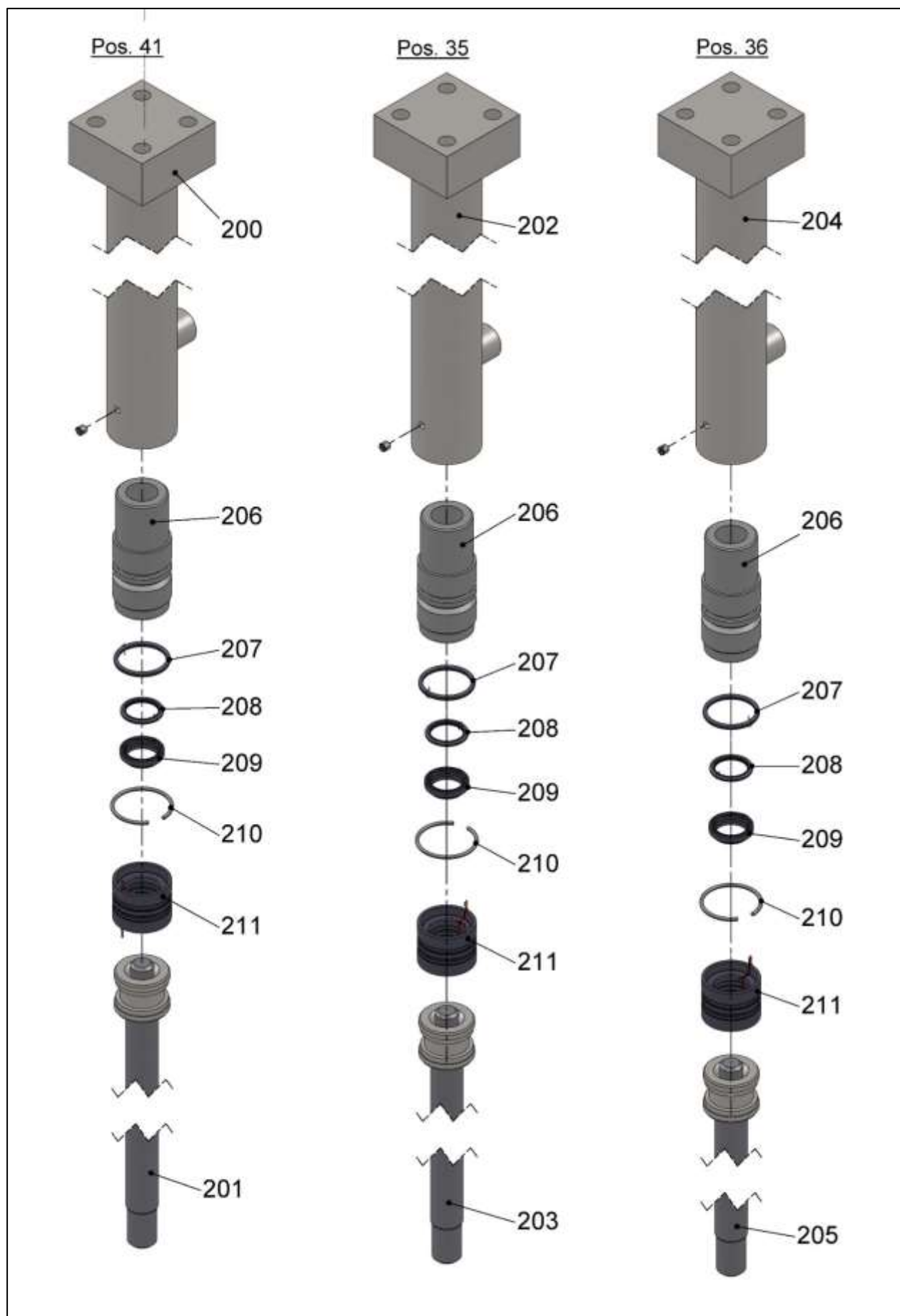
Pos.	Item No.	Description
115	WH 7221	Chassis (center crossbar)
116	WH 7222	Chassis (right crossbar)
117	WH 7223	Chassis (left crossbar)
118	WH 7224	Connection plate for chassis crossbar
119	WH 7225	Castor LH-PO 250 K – ST – FS with stop and foot protection
120	WH 7226	Castor LH-PO 250 K – FS with foot protection
121	558 0336	Operating lever
122	558 0343	1345 x 100 mm rubber pad
123	558 0491	Ø 35 x 2630 mm axle
124	WH 7137	Ø 10 linchpin
125	WH 7227	Ø 20 x 130 mm locking pin
126	558 0501	Ø 8 linchpin
127	558 0381	Right accessories tray
128	558 0477	1375 x 155 mm rubber pad
129	WH 7228	Base for control box
130	WH 7138	Swivel unit
131	558 0226	Ø 30 x 100 mm pivot bolt
132	558 0415	Clamping unit for tilting and swiveling device
133	557 8410	Square wrench
134	557 8427	Insert SW 17 for square wrench
135	557 8348	M14 x 132 square-head threaded bolt
136	557 8331	M14 x 112 square-head threaded bolt
137	558 0240	Ø 12 x 1.5 x 10 mm spacer tube
138	WH 7139	Cable holder
139	WH 7229	Left suspension unit
140	558 0367	Right suspension unit
141	558 0446	Ø 20 x 3.6 x 65 mm spacer tube
142	558 0460	Ø 17.2 x 4 x 190 mm spacer tube
143	558 0453	Ø 17.2 x 4 x 265 mm spacer tube
144	558 1146	Hydraulic unit MP 34 A – H 3.6 / B25 – C6
145	558 0439	Rubber buffer Ø 30 x 20 - 2 x M8
146	WH 7140	90° angle piece – ¾" inner thread
147	558 1311	High-pressure hose 2SN – DN 8 x 1050 – DKO 10 L / DKO 10 L 90°
148	558 1287	High-pressure hose 2SN – DN 8 x 400 – DKO 10 L 90° / DKO 10 S 90° – even
149	558 0408	Cover for hydraulic unit
150	558 0398	Console for hydraulic unit
151	WH 7241	Screw set for chassis
152	558 1225	Line-break safety device LB 2 C – 25
153	WH 7141	High-pressure hose 2SN – DN8 x 1200 – DKO 10 S / DKO 10L 90°



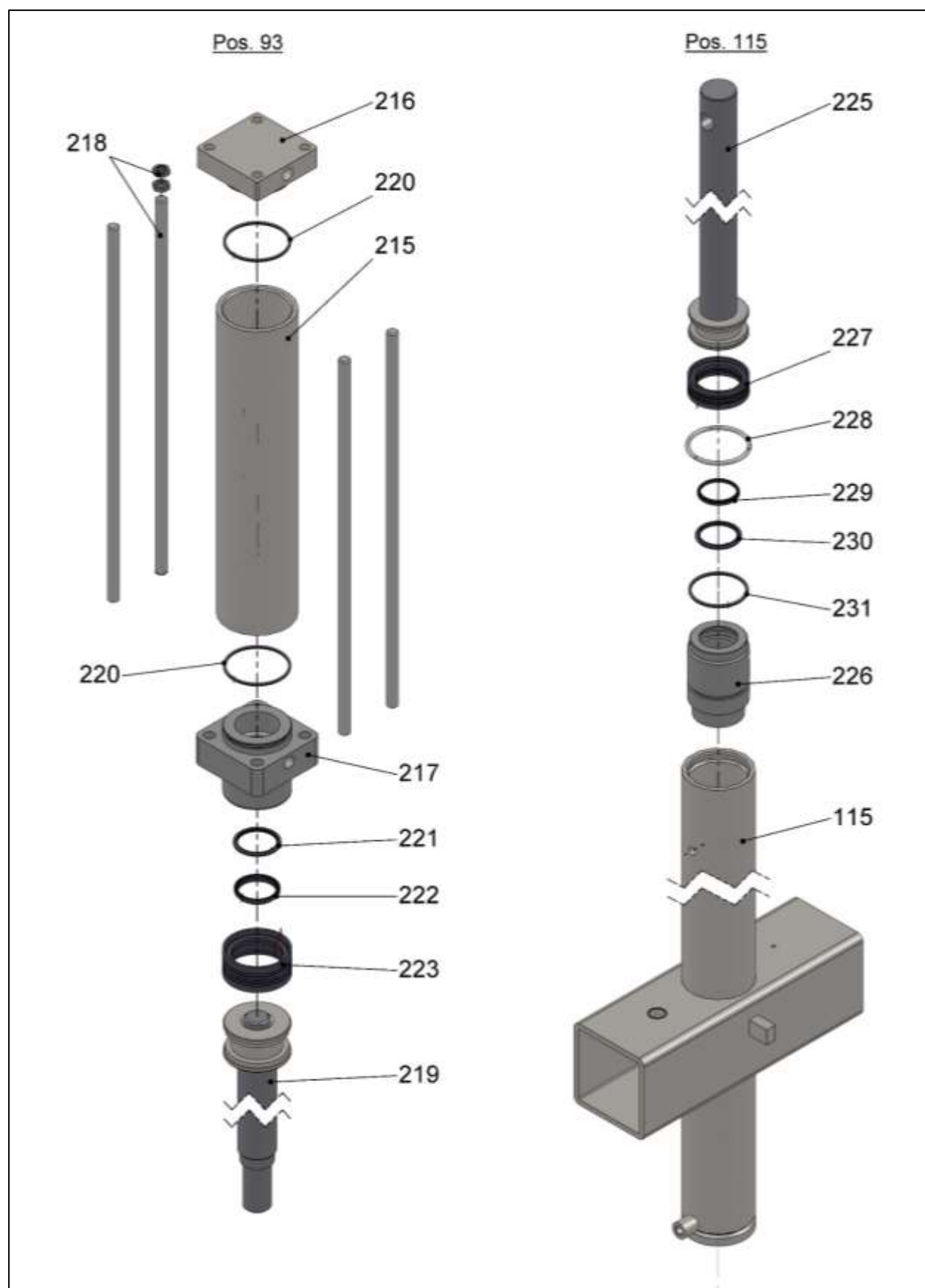
Pos.	Item No.	Description
160	558 1191	Pressure control unit DG 2 MS
161	558 1548	EO screw-in connection EVL 10 LM
163	558 1579	EO screw-in connection MAV 10 LR
164	558 1407	Pressure gauge Ø 60–400 bar
168	558 1517	EO screw-in connection EVW 10 L OMD
169	558 1524	EO screw-in connection EVW 10 S
170	558 1562	EO screw-in connection EVT 10 SR
171	558 1160	Directional control valve SG 1 L - PKH
172	WH 7142	Burgess V 3 S contact switch
173	WH 7143	Mounting plate for contact switch
174	558 1153	Directional control valve block DL 21–2–DGG–B4/E1–3–160
175	558 1177	Lever for directional control valve
176	558 1452	EO screw-in connection GE 10 L R 3/8
177	558 1335	High-pressure hose 2SN – DN 8 x 2000 – DKO 10 L / DKO 10 L 90°
178	558 1201	Load-holding valve LHK 22 G – 11 - 50
179	558 1438	EO screw-in connection GE 08 L R 1/8
180	WH 7232	Screw set for hydraulic console



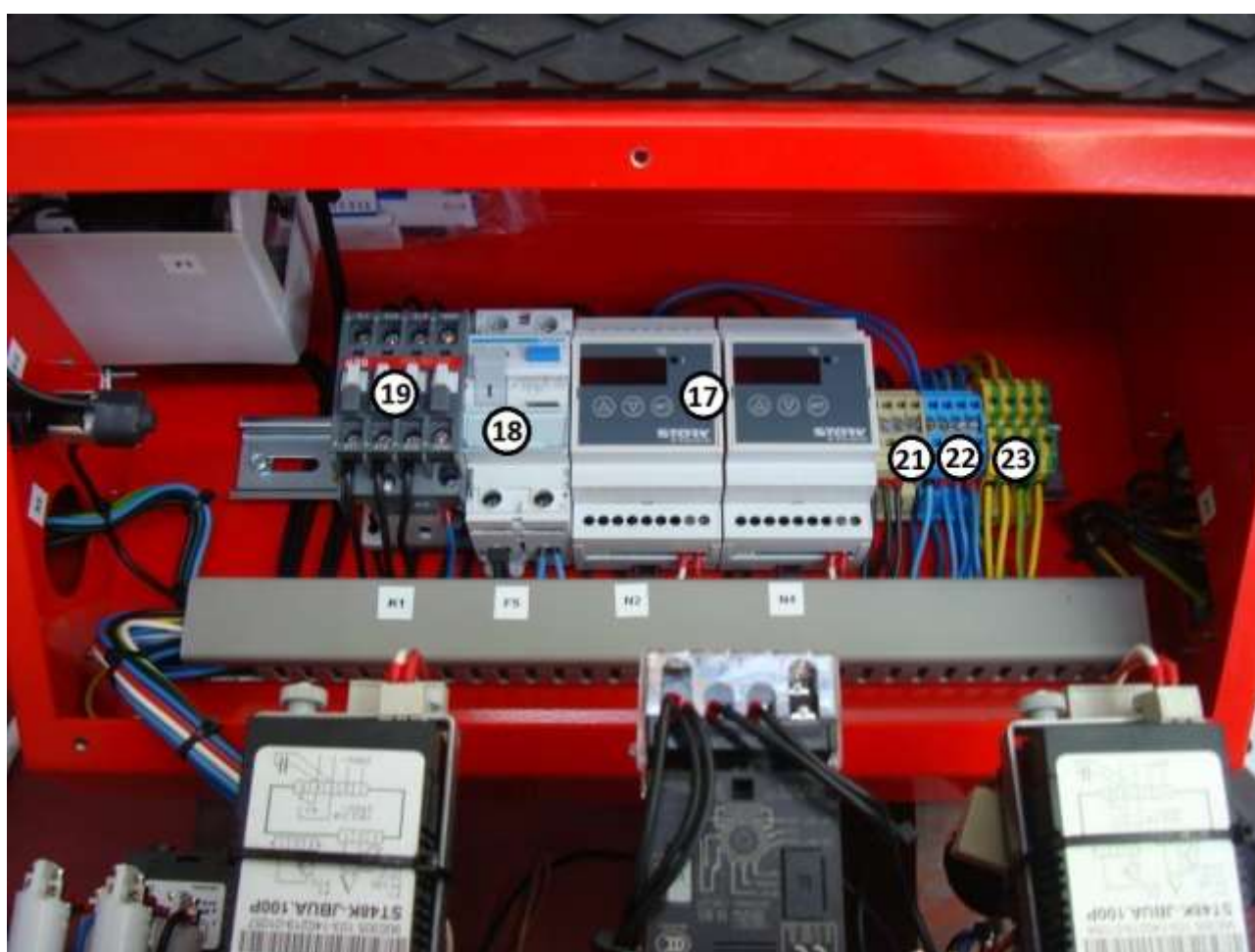
Pos.	Item No.	Description
185	558 0518	Platform base frame
186	558 0525	Left platform railing
187	558 0525	Right platform railing
188	558 0532	1200 x 500 mm grating
189	558 0549	1000 x 305 mm grating
190	558 0556	Castor LER – VPP 100 G
191	558 5805	PE cap 60/30/3
192	WH 7144	End piece for platform base frame
193	WH 7237	Screw set for platform

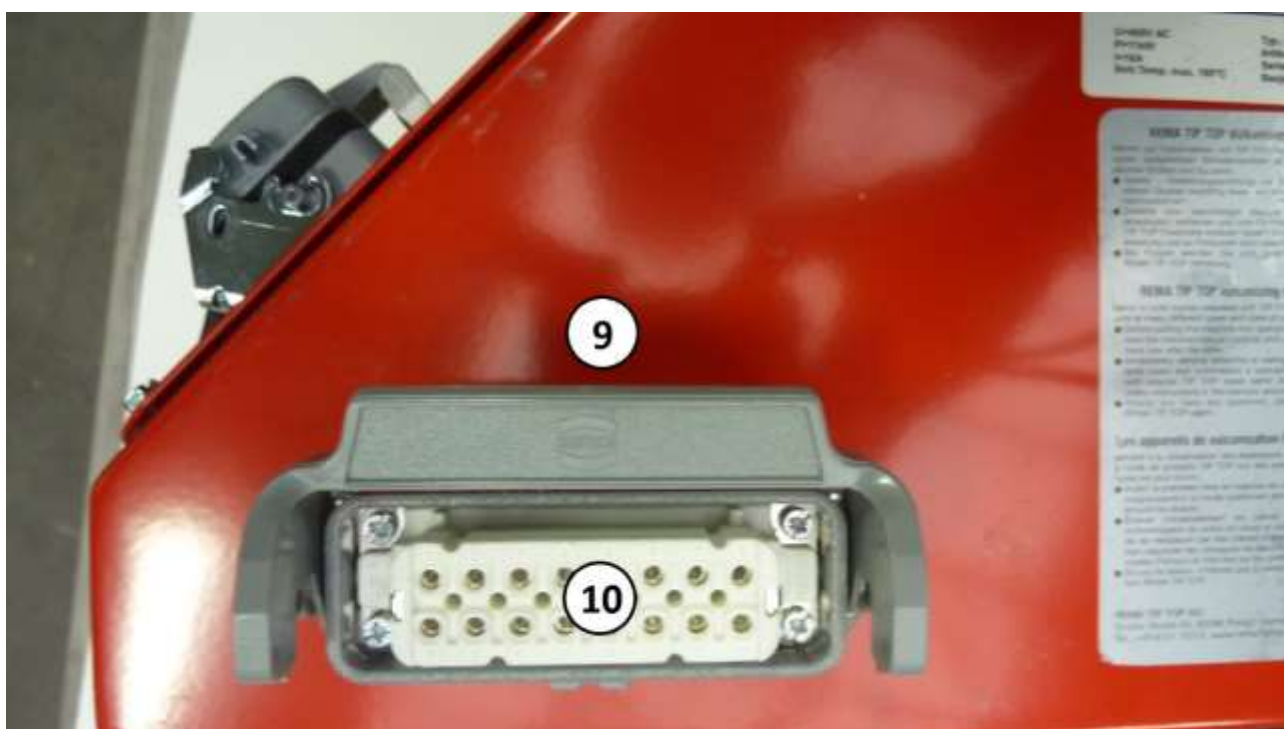


Pos.	Item No.	Description
200	558 3467	Tilt cylinder housing Ø 48 x 286 mm
201	558 0824	Tilt cylinder piston rod Ø 22 x 321 mm
202	558 3364	Positioning cylinder left housing Ø 48 x 636 mm
203	558 0745	Positioning cylinder left piston rod Ø 22 x 671 mm
204	558 3371	Tilt cylinder right housing Ø 48 x 736 mm
205	558 0783	Tilt cylinder right piston rod Ø 22 x 771 mm
206	558 3481	Cast cylinder head Sz. 40
207	558 0879	O-ring ORAR 00219
208	558 0893	Stepseal with O-ring RSK 100220
209	558 0910	Scraper ring WD 17 00220
210	558 3498	Circular wire snap RW 40
211	558 0886	Compact piston seal PCB 2D 0400



Pos.	Item No.	Description
215	558 0628	Ø 95 x 432 mm cylinder tube
216	558 0611	Cylinder base Sz. 80
217	558 0604	Cylinder head Sz. 80
218	558 0659	Tie rod Ø 14 x 530 mm with nuts
219	558 0635	Piston rod Ø 45 x 545 mm with piston Ø 80
220	558 0666	O-ring ORAR 00233
221	558 0680	Stepseal with O-ring RSK 200450
222	558 0707	Scraper ring WD 17 00450
223	558 0673	Compact piston seal PCB 0A 0800
225	558 0934	Piston rod Ø 60 x 1265 mm with piston Ø 100
226	558 0958	Cast cylinder head Sz. 100
227	558 0941	Compact piston seal PCB 0A 1000
228	558 0972	Circular wire snap Ø 107 – 3-part
229	558 1005	Scraper ring WD 17 00600
230	558 0989	Stepseal with O-ring RSK 300600
231	558 0965	O-ring ORAR 00341





Pos.	Art. No.	Designation	Piece(s)
1	5573972	Electronic temp. controller	2
2	5574013	H5CX - A11 clock	1
3		Red cover	1
4		Green cover	1
5		Transparent cover	2
6	5853318	Fuse holder FIZ 5x20 IP6	3
7		Operating hour counter.	1
8	5573800	Harting connector	2
9	5573893	Harting connector	1
10		Socket insert H-A 16-pol.	1
11		Insulating housing for installation	1
12	5581067	CEE appliance inlet 379	1
13	5581029	Cover for control box EM III, complete	1
13	5581036	Diamond rubber matting 400x75x8 +-1	1
15	5581012	Control box housing EM III	1
16		Motor protection switch	1
17		Electronic limit indicator	2
18	5573769	Ground-fault circuit interrupter	1
19	5573738	Power contactor	1
20	5574029	Black pushbutton	1
21		Terminal SAKD 2.5/35	4
22		Terminal SAKD 2.5/35	5
23		Ground terminal EK 2.5/35	4
in 8	5573817	Harting socket	2
not shown in illustration		LG 234 glow lamp	4
not shown in illustration		Signal light with lamp holder E 10 16.2 mm	4
not shown in illustration		Set of spare fuses, 3x10 pieces	1