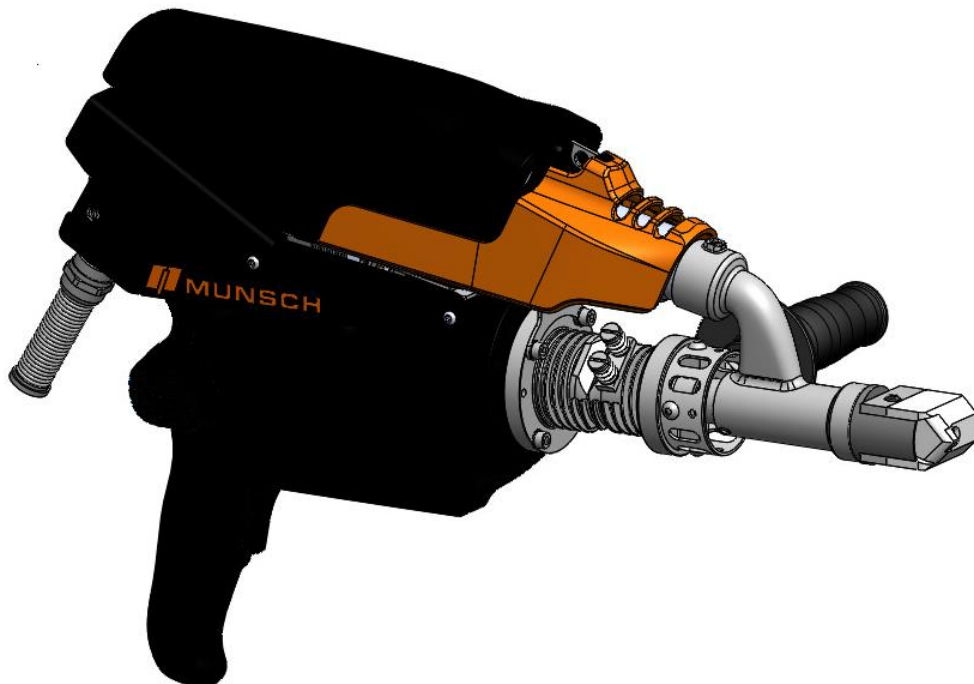


Operating Instructions

Type: MAX-18-S



These operating instructions contain important information to be observed for hand extruder operation and maintenance. It is therefore imperative that they be read and their contents fully understood by the operators before the hand extruder is placed in service.



Hand Extruder MAX-18-S

Scope of delivery:

It is to check that the delivery is complete.

The delivery comprises:

- 1 hand extruder
- 1 handle
- 2 welding shoes
- 1 extruder stand
- 1 hot air hood
- 1 tool set
- 1 transport case

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EC-Declaration of Conformity by the Manufacturer as defined by machinery directive 2006/42/EC, Annex II, No. 1 A



MUNSCH Kunststoff-Schweißtechnik GmbH
Im Staudchen
D-56235 Ransbach-Baumbach
Germany

Mr. Carsten Wiele,
Munsch Kunststoff-Schweißtechnik GmbH,
is authorised to compile the technical documentation.

We hereby declare that the hand extruders

Machine type: Hand extruder
Type designation: MAX-18-S
Serial number:

is in accordance with all relevant provisions of the EC Machinery Directive 2006/42/EG.

The hand extruder is also in accordance with the following directives:

☒ Directive 2011/65/EC (RoHS)	☒ EU EMC Directive 2014/30/EC
☐	☐

The following harmonised standards (or parts of these standards) were applied:

☒ DIN EN ISO 12100:2011-03	☒ DIN EN 13732-1:2008-12
☒ DIN EN 60204-1 (VDE 0113-1):2019-06	☒ DIN EN IEC 61000-6-2:2019-11
☒ DIN EN 62841-1:2023-03	☒ DIN EN IEC 61000-6-4:2020-09
☐	☐

This industrial tool complies with the aforesaid standards insofar as it is used at the contractually agreed conditions. The operator is responsible for this.

In the event of any modifications to the machine/unit or use not as intended, this declaration becomes invalid unless the manufacturer's prior written approval has expressly been given.



Dipl.-Ing. Stefan Munsch

Ransbach-Baumbach, 01.04.2025

Hand Extruder MAX-18-S

1 General



These operating instructions must always be available at the place of use of the hand extruder.

The objective of these operating instructions is to support operators in familiarizing themselves with the hand extruder and in using its functions for the intended service.

These operating instructions provide important information for the safe, workmanlike and economical operation of the hand extruder. Their observance helps avoid danger, minimize repair costs and downtimes, enhance reliability, and extend the service life of the hand extruder.

These operating instructions must be observed by all persons working with/on the hand extruder. Such work includes, for instance:

- operation,
- maintenance, inspection and repair
- transport.

The hand extruder may only be mounted, operated and maintained by trained personnel.

In addition to the operating instructions and the national and local accident prevention regulations applicable at the place of use, the acknowledged technical rules for safe and proper working practices must be observed.

These operating instructions provide basic information to be observed for operation and maintenance. For this reason, it is imperative that they are read by the specialist personnel/Operator prior to placing the hand extruder in service and that they always be available at the place of use.

Apart from the general safety instructions under section "Safety", also the special safety instructions given under the respective sub-sections must be adhered to.



Non-observance of the safety instructions may cause hazards to persons and the environment or damage to the hand extruder. Moreover, failure to observe the safety instructions may lead to the forfeiture of any damages.

Non-observance of the safety instructions may in particular involve the following risks:

- failure of important hand extruder functions,
- hazards to persons due to electrical and mechanical impacts including risk of burns,
- hazards to the environment due to vapour-phase hazardous substances,
- risk of fire,
- risk of explosion.

2 Safety

These operating instructions provide basic information to be observed for operation and maintenance. For this reason, it is imperative that they are read by the specialist personnel/Operator prior to placing the hand extruder in service and that they always be available at the place of use.

The operational safety of the hand extruder presupposes that the instructions under section 1 – General – of these operating instructions are complied with. In no case must the limit values indicated be violated.

Intact and unaltered hand extruders conform to the applicable codes and standards and meet all regulatory limit values regarding EMC (electromagnetic discharges and interference immunity). For the country-specific limit values to be observed, the Operator should consult the local electric utility. Nevertheless, the hand extruders emit electromagnetic fields within the acceptable limits. Electromagnetic fields may interfere with the operation of vital electronic devices (e.g. cardiac pacemakers). Persons wearing a cardiac pacemaker should therefore consult their physician before using the machine.

In addition to the operating instructions and the national and local accident prevention regulations applicable at the place of use, the acknowledged technical rules for safe and proper working practices must be observed.

Apart from the general safety instructions under section "Safety", also the special safety instructions given under the respective sub-sections must be adhered to.

Any working practices posing a safety risk are prohibited.

2.1 Identification of information in the operating instructions

In these operating instructions, safety instructions whose non-observance may cause hazards to persons are identified with



Hazard symbol according to DIN 4844 – W 9

for general hazards and with



Hazard symbol according to DIN 4844 – W 8

for electrical hazards.

Safety instructions whose non-observance may cause damage to the hand extruder and its functions are marked with

CAUTION

Instructions directly indicated on the hand extruder must be strictly followed and kept in a fully legible state.

2.2 Personnel qualification and training

The operating, maintenance and inspection personnel must possess appropriate qualification for the work to be performed. Functional and technical responsibilities and supervision of the operating personnel must be clearly regulated by the Operator. Where the personnel do not have the necessary skills and knowledge they must be trained and instructed (e.g. a DVS basic welder training in extrusion welding). A detailed instruction into hand extruder operation will be provided by the Manufacturer/Supplier on request. Furthermore, the Operator has to make sure that the contents of the operating instructions is fully understood by the operating personnel.

2.3 Risks resulting from non-observance of the safety instructions

Non-observance of the safety instructions may cause hazards to persons and the environment or damage to the hand extruder. Moreover, failure to observe the safety instructions may lead to the forfeiture of any damages.

Non-observance of the safety instructions may in **particular** involve the following risks:

- failure of important hand extruder functions,
- hazards to persons due to electrical and mechanical impacts including risk of burns,
- hazards to the environment due to vapour-phase hazardous substances,
- risk of fire,
- risk of explosion.

2.4 Safe working practices

The safety instructions given in these operating instructions, the applicable national accident prevention regulations and any existing in-company work instructions, operating and safety procedures issued by the Operator must be followed.

2.5 Safety instructions for Operator / operating personnel

- Before placing the hand extruder in service, check the mains voltage and frequency against the data indicated on the type tag. The allowable tolerances are $\pm 5\%$ for voltage and/or $\pm 2\%$ for frequency.
- According to VDE 0100 §55, the hand extruder must be operated via a residual current-operated circuit breaker or an isolating transformer.
- **CAUTION** During hand extruder operation (under load), a voltage of not less than 230 V¹⁾ or 115 V²⁾ must be available at the connector of the hand extruder.
- When using an extension cable, make sure to observe the minimum conductor cross-section. Use extension cables with protective conductor only.

Length [m]	Minimum cross-section [mm ²]
up to 19	2.5 ¹⁾
20-40	4.0 ¹⁾

1) for 230 V AC

Length [m]	Minimum cross-section [mm ²]
up to 7	2.5
8-15	4.0 ¹⁾

2) for 115 V AC

Hand Extruder MAX-18-S

- Extension cables must be certified for the specific service conditions (e.g. outdoor service) and identified accordingly.

Always handle the connecting cable with care.

- Do not kink the connecting cable.
- Do not place any objects on the cable.
- Do not jam or squeeze the connecting cable, nor pull it over sharp edges.
- Protect the connecting cable from moisture.
- Keep away hot parts from the connection cable.

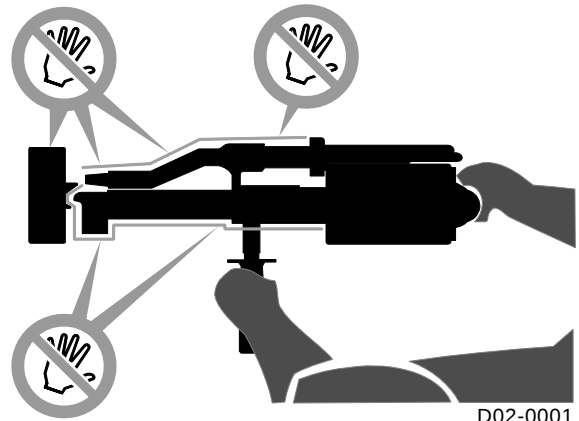
-  Do not touch the mains connector or connecting cable with wet hands. Hold the cable always at the connector when plugging or unplugging it.
- **CAUTION** Power generator sets used for power supply must be designed for the following rated output:
 $\geq 4 \times$ rated output of hand extruder
-  Never allow the hand extruder to come into contact with water: Hazard to persons and equipment, short-circuit risk.
- Avoid usage in dusty and moisty environment.
- **CAUTION** Never operate the hand extruder without air supply; risk of hand extruder damage.

-  The hand extruder must not be used in explosion hazard areas or flammable atmospheres.

Make sure that the hand extruder is firmly positioned during the extrusion welding job.

The connecting cable, welding rod and hose for external air supply, if applicable, must be freely movable and must not obstruct the operator or third parties in their work.

-  Hold and touch the hand extruder only on the handles provided for this purpose.
 - **Do not** touch bare metal parts (including hot air hood) either with or without gloves. These parts reach temperatures of up to 350 °C.
 - Attachments may be damaged or impaired in their function if subjected to the full weight of the hand extruder.
 - Bare metal parts must not come into contact with other items during the work or work breaks (e.g. cooling).



D02-0001

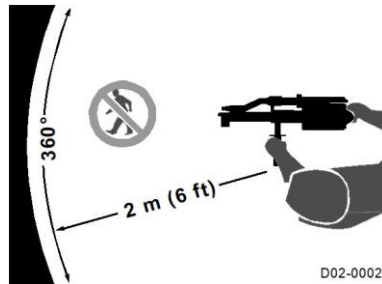
-  Contact of combustible components with hot bare metal parts poses a risk of fire!

Do not use synthetic gloves!

- Do not direct the hot air jet of the hand extruder towards living beings or temperature-sensitive items.

Safety distance, secured working area:

2 m – radius



D02-0002

- Use suitable personal protection equipment for overhead work (e.g. hard hat, safety goggles, gloves, protective clothes, ear protectors, ...)
- Take care of falling items.
- Due to possible malfunctions, overheated liquid plastic can exit and cause burns.
- Never look directly into the LEDs. This can cause temporarily visual impairments.
- Body parts and hair must be kept away from the device's feed area during welding.
- During work breaks and after completion of the welding job, place the hand extruder on the rests supplied for this purpose.

CAUTION The hot air hood must be remounted.



Make sure that the hand extruder is firmly positioned!

Deposit the hand extruder in a dry location.

After completion of the welding job, before storing / packing / transport, cool the complete hand extruder to safe-to-touch temperature, using the air supply system.

-  Do not operate, dismantle or carry out any modifications on the hand extruder, if
 - the connecting cable or the mains connector is defective,
 - safety devices are damaged,
 - foreign matter or liquid has penetrated into the hand extruder,
 - the unit does not work properly or there are unusual changes in its operating behaviour.
 - oil leakage is visible at the engine.
 (dispose leaking oil properly)

-  Never allow the hand extruder to come into contact with water: Hazard to persons and equipment, short-circuit risk.

2.6 Safety instructions for maintenance, inspection and mounting

The Operator is responsible for ensuring that maintenance, inspection and mounting activities are performed by authorized and **qualified personnel** who are thoroughly familiar with the operating instructions.

- As a rule, the hand extruder must be shut off and the connector unplugged before proceeding to any work on the unit. The shutoff procedure for the hand extruder described in the operating instructions must be strictly observed.
- Electrical hazards must be ruled out (for details, see VDE guidelines and the standards of your local electric utility, for instance).

-  VDE 0701 (IEC 335) prescribes the measurement of the protective conductor resistance, insulation resistance and leakage current after each repair or modification to electrical equipment. Furthermore, a visual inspection of the unit and its connecting cable as well as voltage and current measurements and a function test must be carried out.
- Ensure the safe and environmentally compatible disposal of media, auxiliary materials and replaced parts!
- Remount and reactivate all safety and protective devices immediately on completion of the maintenance, inspection or repair work.

2.7 Unauthorized modifications and spare parts

Modifications or changes to the unit are only allowed after consultation with the Manufacturer. In the interest of safety, only original spare parts and accessories authorized by the Manufacturer should be used. The use of components other than the original spare parts may invalidate the Manufacturer's liability for any resulting damage.

Hand Extruder MAX-18-S

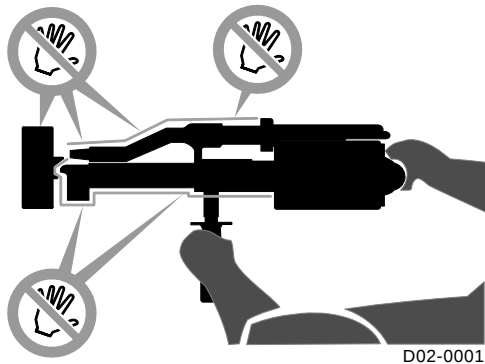
3 Transport and Storage

3.1 Transport

- ⚠ Before transport and storage, make sure that the hand extruder has cooled down to safe-to-touch temperature.

- ⚠ Hold and touch the hand extruder only on the handles provided for this purpose.

Do not touch bare metal parts (including the hot air hood) – whether with or without gloves - before having made sure that they are safe to touch. These parts reach temperatures of up to 350 °C during operation.



- Always transport or store the hand extruder in such a way as to preclude any mechanical loads on the attachments.

If parts have been removed for transport purposes, mount and fasten them carefully before re-starting the hand extruder!

Transport of the hand extruder in MUNSCH's original transport case is recommended.

3.2 Storage

- Store the hand extruder in a dry and frost-free place.
- Protect the hand extruder from unauthorized access.
- Special preservation is not required.

3.3 Return to Munsch

Should it become necessary to return the hand extruder to MUNSCH Kunststoff-Schweißtechnik GmbH or an authorized service partner, always use the original transport case packed within the shipping case.

4 Product Description

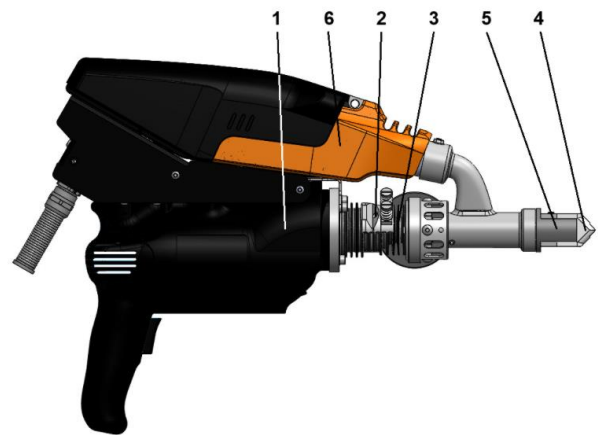
4.1 Application range

The application range of the hand extruder is defined by the data on the type tag and the service limits indicated in these operating instructions.

CAUTION Operation of the hand extruder outside the service limits stated in these operating instructions is subject to the Manufacturer's prior approval.

4.2 General

Type **MAX** is a hand extruder with integrated air supply (Autoair).



For the hand extruder, the following parameters can be freely selected:

- welding rate,
- hot air temperature,
- melt temperature and throughput; the melt throughput can be controlled downward from the maximum value, **firstly** by using 3 mm instead of 4 mm welding rod and, **secondly** by reducing the speed using the button on the controller.

CAUTION Too low a speed will cause drive overheating!

Driven by a powerful electric motor (1), the welding rod (2) is fed into the extruder (3) and granulated by the extruder screw in the process. The screw forces the granulate into the extruder nozzle, melting it into a homogeneous, completely plastified mass. As the molten material exits the extruder nozzle, it is moulded by a welding shoe (4) to the geometry of the weld seam to be deposited.

Preheating of the base material to be joined is accomplished by a preheating nozzle (5) which is supplied from an integrated hot air unit (6). The air is supplied from an on-board blower.

As the MAX-18-S does not provide for separate setting and control of the hot air temperature and the melt temperature, we would like to point out that this extruder type does not meet all of the DVS requirements and may therefore not be used for certain types of welding job.

The melt temperature must have reached the preset **start interlock temperature** for the startup timer to be activated. After the startup timer has timed out, the start interlock will be released and the extruder can be started.

The temperature-controlled start interlock prevents the drive from starting if there is still unmolten material in the extruder, thus precluding damage to the unit.

The output rate is variable so that the preheat temperature can be matched to the weld thickness

5 Startup and Shutoff

5.1 General

In addition to the operating instructions and the national and local accident prevention regulations applicable at the place of use, the acknowledged technical rules for safe and proper working practices must be observed.

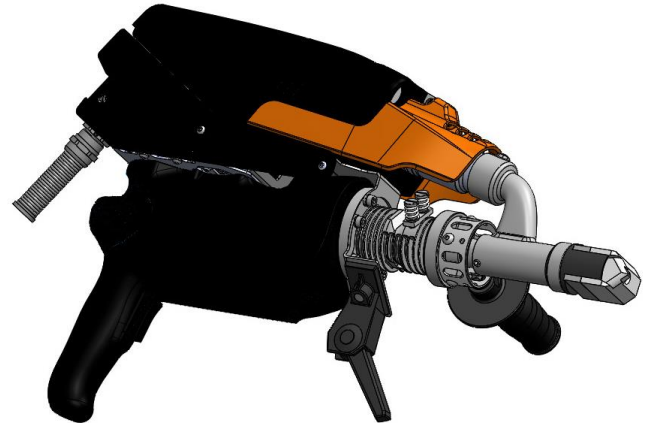
Any working practices posing a safety risk are prohibited.

Before starting / shutting off the hand extruder, make sure to carefully read the instructions under section "Safety".

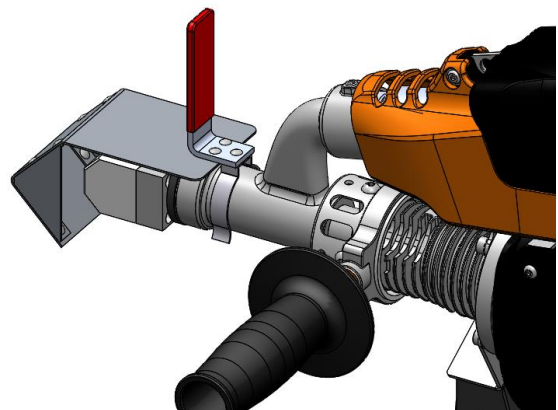
Only trained and qualified personnel may be assigned to the operation of the hand extruder.

5.2 Preparation

- Swing out the extruder stand and place hand extruder on a firm support and secure them against toppling over as shown in the illustration.



- Mount hot air hood

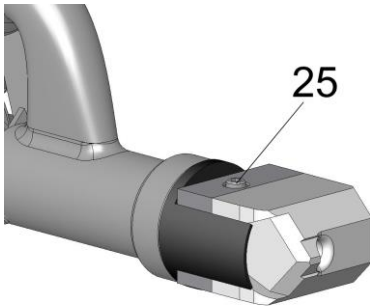


- Position handle
Loosen handle (55) by screwing it, move it to the ideal working position and forth.

Hand Extruder MAX-18-S

- Mount welding shoe
 - Select the welding shoe required for the specific weld geometry or machine a welding shoe blank to the required geometry.
 - Observe DVS 2207 Guideline, Part 4 for machining welding shoe blanks.
 - Mount welding shoe to the hand extruder in the position required for welding.
Observe welding direction!
Tighten set screw (25).

- The welding shoe including preheat nozzle can be rotated through 360° by releasing the set screw (25). After rotating the welding shoe, tighten set screw (25) to fix the welding shoe in place for the welding operation.



Care must be taken to ensure that the preheat nozzle provides intensive and uniform preheating (melting) of the base material over the entire joint width at as low a hot air temperature as possible. For larger weld seam widths, a wider preheat nozzle is available as an accessory.

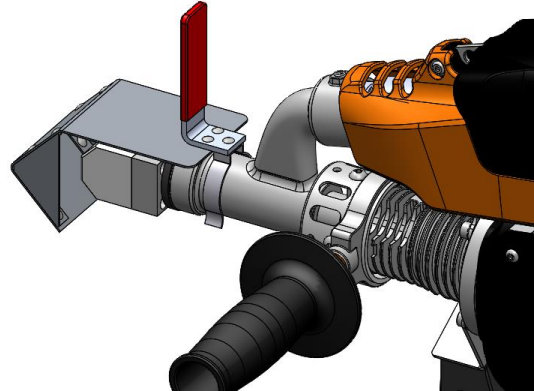
5.3 Starting the hand extruder



Observe section "Safety".

- **CAUTION** Never operate the hand extruder without air supply. Otherwise the unit may suffer severe damage.
- **CAUTION** Before plugging in the mains connector, check that the drive unit is not set to continuous operation.

- **CAUTION** The hot air hood must be in place.

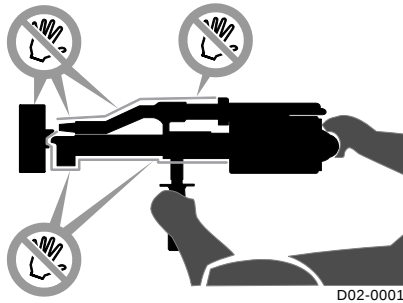


- **CAUTION** Plug in mains connector.
- **CAUTION** In the case of the MAX hand extruder with integrated air supply, the blower must start automatically.
- **CAUTION** Once air exits the preheat nozzle (4), set the desired temperature on rotary button, minimum position 3.5. If knob is set to lower than 3, drive does not start (motor start-protection).



- For the operation of the temperature controller, see section 5.5 "Set temperatures". For temperature settings, see page 12.
- **The hand extruder will reach its operating temperature after about 10 minutes.**

-  Hold the hand extruder only on the handles provided for this purpose.



- **CAUTION** The melt temperature must have reached the preset **start interlock temperature** for the startup timer to be activated. After the startup timer has timed out, the start interlock will be released and the extruder can be started.

5.4 Welding with the hand extruder

-  Observe section "Safety" and the data sheet.

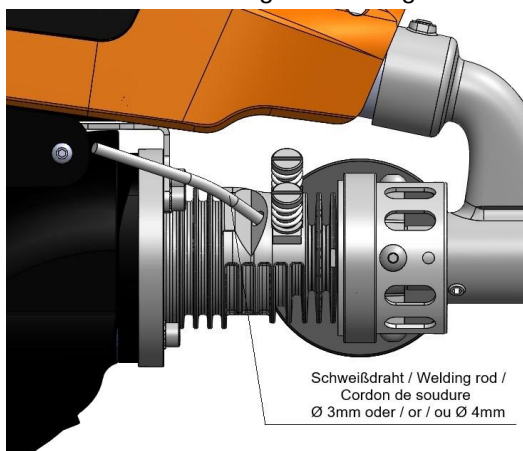
General

Welding is to be carried out in accordance with the guidelines of the German Association for Welding Technology (Deutscher Verband für Schweißtechnik DVS).

The parts to be joined and the welding rod must be clean and dry.

5.4.1 Introducing the welding rod

- **CAUTION** The hand extruder is provided with a bore for introducing the welding rod.

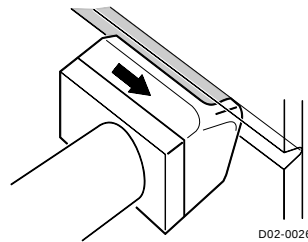


5.4.2 Replacement and aging of welding rod

- If the welding rod is to be replaced, make sure that any remaining rod in the hand extruder is completely removed.
- For this purpose, operate the preheated hand extruder with the new welding rod until clean new material discharges.
- The DVS guideline also recommends this procedure for hand extruders which have been out of service for prolonged periods while still being filled with welding rod
-  Ensure safe and environmentally compatible disposal of any waste generated! The instructions of the material manufacturer must be observed.

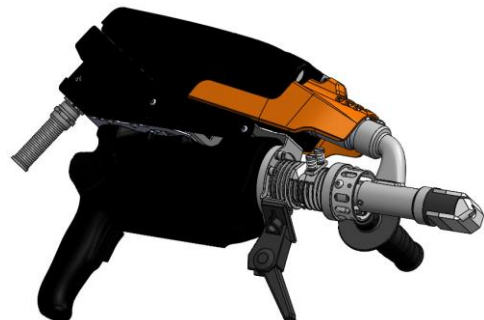
5.4.3 Welding direction / rate

- The pressure of the discharging extrudate causes the welding shoe (and hence, the hand extruder) to move in welding direction.
- See DVS Guidelines for the welding rate.



5.4.4 Interruption of work

-  Observe section "Safety".
Do not leave the hand extruder unattended.
Make sure to maintain the air supply.
- When interrupting the welding job, switch off the drive unit and deposit the hand extruder. Therefore swing out the extruder stand and place hand extruder on a firm support and secure them against toppling over as shown in the illustration.



Hand Extruder MAX-18-S

CAUTION If the interruption lasts longer than 1 minute, the device automatically reduces the air flow and goes into the so-called "standby mode." This results in a significant reduction in noise and less heat input into the welding material. This significantly reduces the stress on the material and reduces the risk of injury or burns.

5.4.5 Shutoff



Observe section "Safety".

- After completion of the welding job, switch off the drive unit and deposit the hand extruder as shown in the illustration (see preceding section).



Do not leave the hand extruder unattended

5.4.5.1 Hand extruder with integrated air supply, type MAX

- By turning the left button counterclockwise, to "0", turn down the heating and let the device cool down.



- Maintain the air supply of the hand extruder until the blower unit automatically shuts off.
- Pull mains connector.



Never use water or another coolant to accelerate the cooling process!

5.4.6 Transport/storage

Make sure to observe the instructions under section "Transport/Storage".

5.5 Set temperatures on temperature controller

Temperature chart for MAX-18-S

Material	Melt temperature	Air temperature
PP	200 – 240 °C	250 – 300 °C
PE	200 – 240 °C	250 – 300 °C

If other temperatures are needed, the corresponding settings can be made on the temperature controller.

5.5.1 Set temperatures

Air /Melt temperature

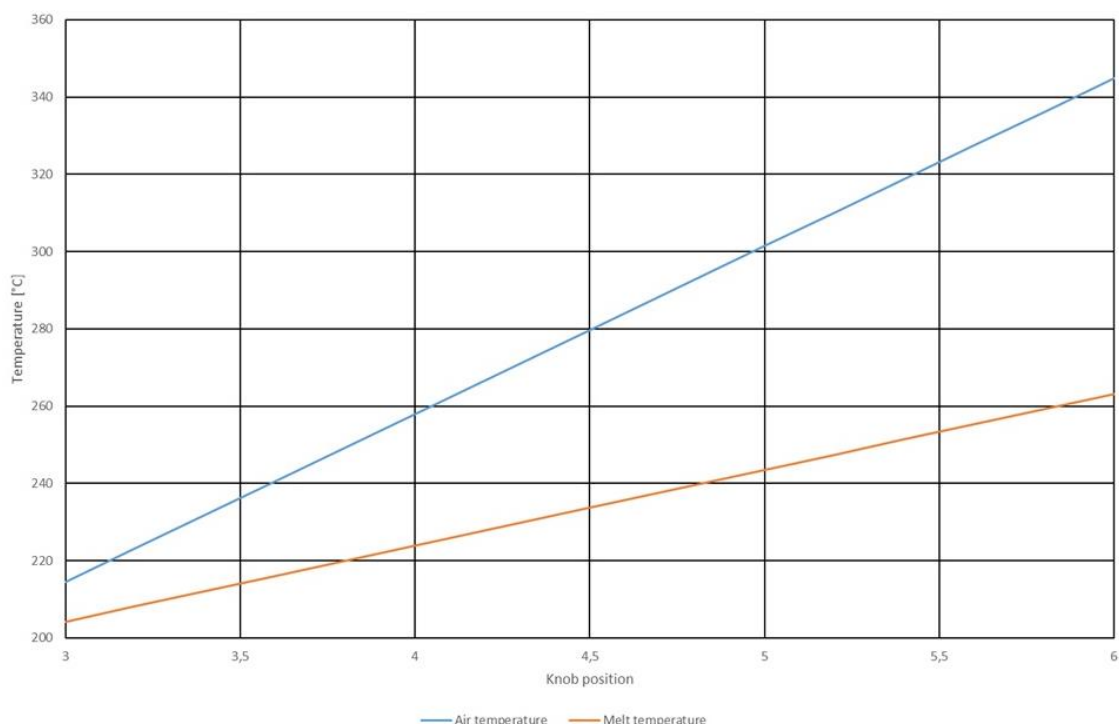
Speed / Output rate



Set/operate temperature controller – Function/description of LEDs

LED GREEN	LED RED	Operating mode
FLASHES	OFF	Heating element is being checked.
FLASHES	FLASHES	Temperature setting on temperature controller is below the minimum temperature (position 3). The drive is blocked – cold start protection.
ON	FLASHES	Temperature setting on temperature controller (1) is above the minimum temperature. On the minimum temperature being reached, a timer is activated. Preheat time: 10 minutes.
ON	OFF	<u>Ready for operation:</u> timer has timed out, drive has been released for operation.
OFF	FLASHES	<u>Air failure:</u> Allow machine to cool, pull mains connector, plug in mains connector and heat up to just above the minimum temperature, i.e. approx. position 30 (3). On a renewed air failure, check the heating element and replace, if necessary.
OFF	ON	Current draw too high. RESET by pressing the controller switch. Check air temperature; if necessary, select a higher temperature and/or speed on the drive.
ON	ON	Device fully cooled down, may be plugged off from mains supply.

Guide values for air temperature / melt temperature



Check temperatures on the running extruder with an external thermometer after about 5 minutes.

Hand Extruder MAX-18-S

6 Maintenance/Inspection



Pull mains connector before carrying out any maintenance and repair work on the hand extruder.

Maintenance and repair work on electrical tools may only be carried out by qualified electricians.



The hand extruder together with the hot air hood must have cooled down to safe-to-touch temperature.

Observe the instructions under section "Safety". Maintenance and repair work may only be carried out by qualified personnel or by our service staff.

To ensure the proper function of the hand extruder over its entire service life for its intended service, we recommend:

- to have all maintenance, inspection and mounting work carried out by authorized and qualified personnel who are familiar with the operating instructions,
- to always shut off the unit before carrying out any work on it,
- to remount and reactivate all safety and protective devices immediately after completion of the maintenance/repair work.

During maintenance and repair work, make sure that the hand extruder and its individual components are firmly positioned.

In addition to the operating instructions and the national and local accident prevention regulations applicable at the place of use, the acknowledged technical rules for safe and proper working practices must be observed.

Any working practices posing a safety risk are prohibited.



Activities other than those described in this section may only be performed at the Manufacturer's workshops!

6.1 Maintenance/inspection of MAX-18-S hand extruder

- **CAUTION** After approx. 500 operating hours, the hand extruder including drive unit must be thoroughly cleaned and inspected. This work may only be carried out at the manufacturer's workshops.
- **CAUTION** Cables, switches, plug-in connections must be inspected by qualified staff every three months (requirement according to VBG4); the inspection results must be documented.
- Carbon brushes must be checked regularly for wear. If strong sparks occur, shut down the extruder and replace the brushes (see right). Start up the extruder and operate the drive for 15 minutes without welding consumables.
- Check filter K07623 regularly for contamination, clean or replace.

6.2 Dismantling

Prior to dismantling the hand extruder, pull the mains connector.

The hand extruder must be at ambient temperature.

Damaged mains connection cables must be completely replaced. Not professionally repaired power cables pose a hazard to life and limb. Cable replacement is to be carried out by qualified electricians only.

The safety precautions described under sections "Safety" and "Malfunctions, Causes and Remedies" must be strictly adhered to.

6.2.1 Overview of spare parts/attachments

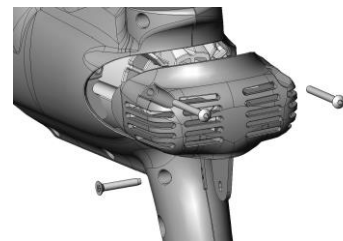
When ordering spare parts, always indicate the serial number of the extruder.

Make sure to use original spare parts only.

If necessary, contact MUNSCH Kunststoff-Schweißtechnik GmbH.

Drive unit UX1 – Replacement of carbon brushes:

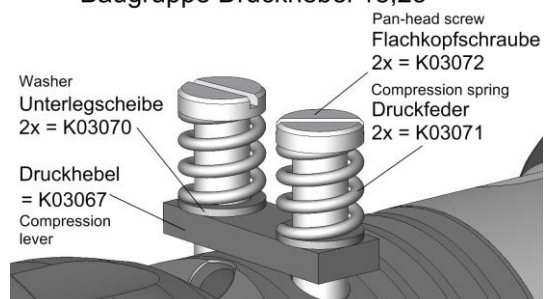
Remove the 3 screws and pull off the cap. Remove dirt / carbon dust using compressed air, for instance. Replace carbon brushes (2 x K04886A) and screw the cap in place again.

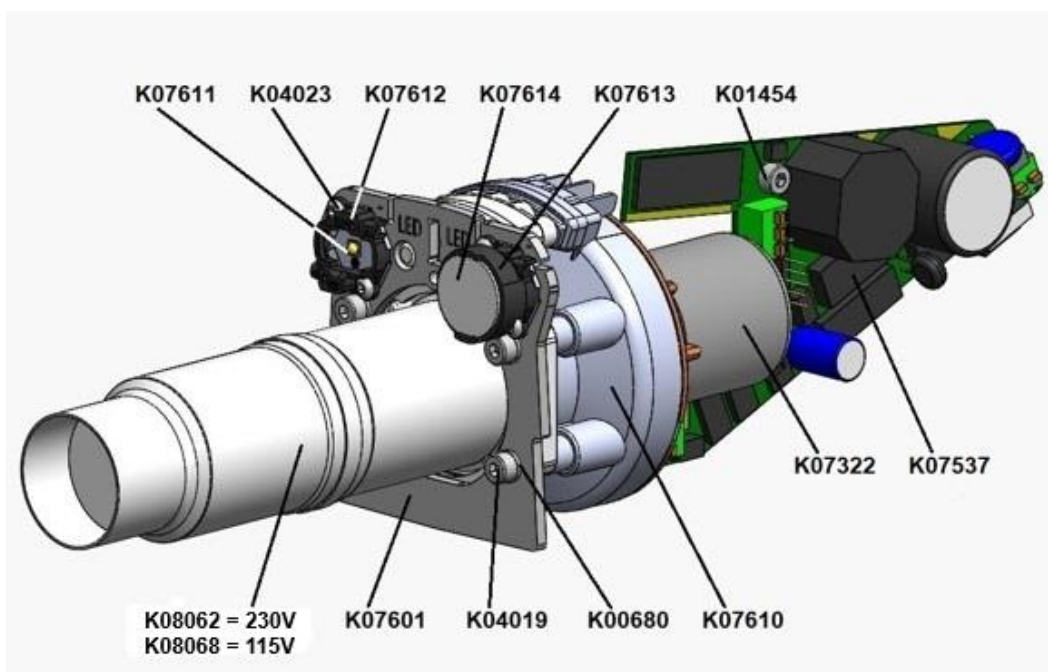
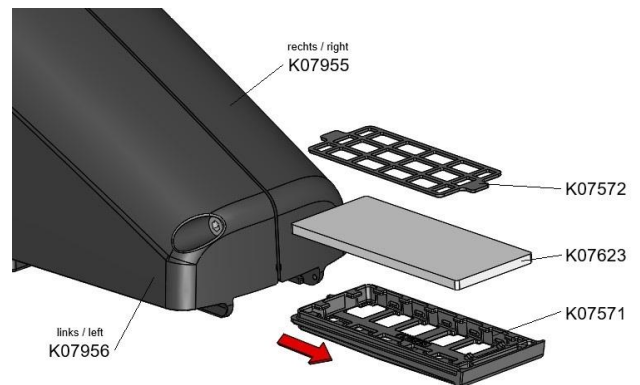
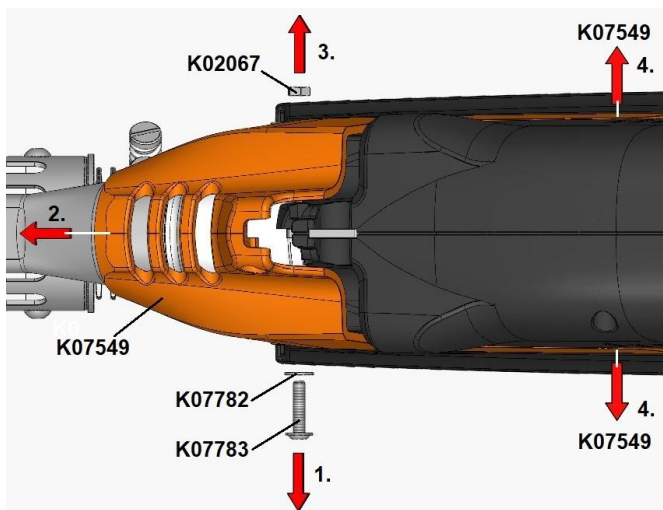
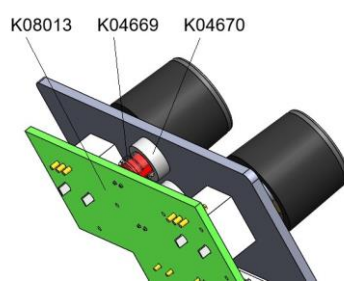
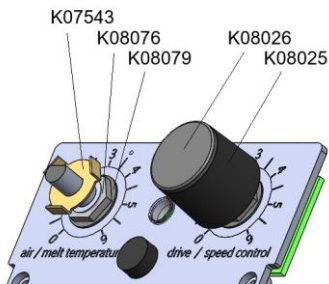
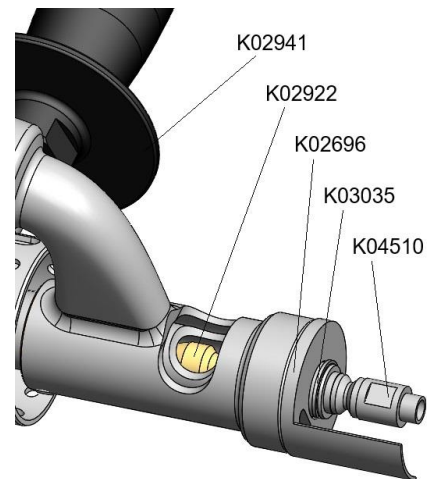
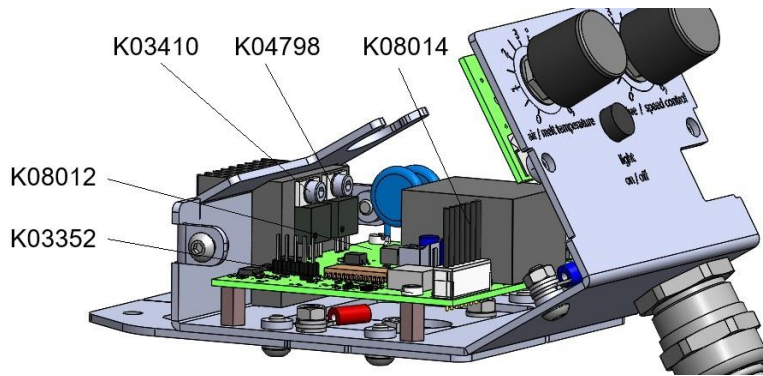


Extruder screw bearing:

K02669 = Axial bearing (replace)
K04361 = Ball bearing (replace)
K04362 = Circlip (replace, if necessary)
K02965 = Seal ring (replace)
K02698 = Spacer ring (replace, if necessary)

Compression lever assembly
Baupruppe Druckhebel 18,25





Hand Extruder MAX-18-S

7 Malfunctions, Causes and Remedies

7.1 Trouble-shooting

The following table lists potential operating upsets of the hand extruder, possible causes and their remedies (fault diagnosis chart).

Should malfunctions occur which are not covered here or which cannot be traced back to the cause stated, please contact MUNSCH Kunststoff-Schweißtechnik GmbH.

Malfunction	Fault No.
Drive motor does not start	5, 8, 10, 11, 14, 15, 16, 17, 18, 19, 22, 23
Drive motor switches off	5, 8, 14, 15, 16, 17, 18, 23
Drive motor does not stop	3, 17, 18
No welding rod feed	1, 16, 17, 20
No extrudate conveyed out of welding shoe	1, 16
Extrudate output decreases during operation	1, 14, 16
Integrated air supply without function	5, 16, 22, 23
No hot air	2, 3, 5, 18, 22, 23, 24, 26
Hot air blower is blowing up	3, 18, 19, 22
Hot air blower does not shut off automatically after cool down	3, 18, 19, 22
Extruder does not heat up	2, 3, 22, 23
Temperature above preset range	2, 3, 18, 19
Controller fluctuates	3, 13, 14, 19

7.2 Fault diagnosis

Fault No.	Possible causes	Remedies
1	Smaller or too small a welding rod diameter	Use larger welding rod diameter, if necessary
2	Temperature sensor defective	1)
3	Temperature controller defective	1)
5	Cable connections defective	Check cable connections ¹⁾
8	Hot air temperature below start interlock temperature	Allow hand extruder to heat up

1) Consult MUNSCH Kunststoff-Schweißtechnik GmbH

Fault No.	Possible causes	Remedies
10	Preheat time for hot air too short	Allow hand extruder to heat up
11	Preheat time for melt too short	Allow hand extruder to heat up
13	Air supply not constant	1)
14	Wrong rated voltage	Rated voltage > permissible voltage Check mains voltage Rated voltage < permissible voltage Check mains voltage 1)
15	Extension cable heats up	- Unroll cable reel - Check cable cross-section (see also section "Safety")
16	Extruder nozzle plugged with foreign matter	Clean extruder  Extruder nozzle – left-hand thread
17	Drive unit defective	1)
18	Electronic control defective	1)
19	Controller programming error	1)
20	Welding rod feed	Remove welding rod.  Observe instructions in section "Maintenance". Observe instructions for operation!
22	Hot air unit defective	1)
23	No mains voltage	Check voltage supply
24	Preheating nozzle clogged	Clean the preheating nozzle
26	Filter K07623 clogged	Replace or clean the filter

1) Consult MUNSCH Kunststoff-Schweißtechnik GmbH

Hand Extruder MAX-18-S

8 Technical Data

Type designation	MAX-18-S	MAX-18-S
Welding materials	PP, PE (other materials after consultation and approval by Munsch)	PP, PE (other materials after consultation and approval by Munsch)
Welding rate, max.	Ø 3 mm: 1,4 kg/h PP/PE Ø 4 mm: 2,2 kg/h PP/PE	Ø 3 mm: 1,4 kg/h PP/PE Ø 4 mm: 2,2 kg/h PP/PE
Welding rod	Welding rod Ø 3 and 4 mm	Welding rod Ø 3 and 4 mm
Application range	Wall thicknesses 4-20 mm and film/sheeting welds up to 25mm width (with optional accessories up to 35mm width)	Wall thicknesses 4-20 mm and film/sheeting welds up to 25mm width (with optional accessories up to 35mm width)
Weight	4.8 kg	4.8 kg
Drive	230 V AC with speed control	115 V AC with speed control
Air preheater	2300 W / 230 V	1600 W / 115 V
Ø Power consumption	2800 W	2600W
Max. emission sound pressure level	78.5 dB (A)	78.5 dB (A)
Air supply	Integrated air supply (Auto air)	Integrated air supply (Auto air)
Cold start protection	Start temperature interlock and startup timer for melt and preheat air	Start temperature interlock and startup timer for melt and preheat air

Warranty Certificate

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Name and address of Purchaser

Type of unit: Hand extruder

Type designation:

Serial No.:

Purchasing date:

Your warranty

MUNSCH Kunststoff-Schweißtechnik GmbH hereby warrants the unit to be free from defects in materials and workmanship from the date of its first acquisition. Should deficiencies resulting from defects in materials or workmanship be identified during the warranty period, the dealers will, in accordance with the following terms and conditions, repair the unit or, at their discretion, replace either the complete unit or the defective components without charging labour or material costs.

.....

Dealer's stamp and signature

Hand Extruder MAX-18-S

Warranty

- 1 The Manufacturer warrants freedom from defects in materials and workmanship and state-of-the-art performance of the purchased article for a period of six (6) months from the date of delivery.
- 2 The Purchaser shall check the article delivered for completeness and freedom from defects immediately after receipt.
- 3 The Purchaser shall be entitled to the making good of defects and any resulting damage to other parts of the purchased article (remedial work).
The procedure for claims under this warranty shall be as follows:
 - 3.1 The Purchaser may assert claims under this warranty either with his dealer or with a company authorized by the Manufacturer to provide services for the purchased article. The Purchaser shall give written notice of defects to the respective company promptly after such defects have been identified or shall have such defects registered by the respective company.
 - 3.2 Defects shall be promptly remedied in accordance with the technical requirements by either replacement or repair of the defective parts, the cost of the remedial work being for the account of the Manufacturer. Replaced parts shall become the property of the Manufacturer.
If, as a result of the remedial work, additional maintenance measures are prescribed by the Manufacturer, the resulting costs including the costs of materials and lubricants shall be for the Manufacturer's account.
 - 3.3 For replacement parts installed within the scope of the remedial work, a warranty will be provided under the purchase contract, the warranty period for such parts ending on expiry of the warranty period of the object purchased.
 - 3.4 For the warranty to become effective, this warranty certificate must be produced for each repair.
- 4 If the defect cannot be remedied or if the Purchaser cannot be reasonably expected to accept any further attempts at making good the defect, the Purchaser may demand annulment (cancellation of the contract) or a price reduction (reduction of compensation) in lieu of remedial work. In such a case, the Purchaser shall not be entitled to any replacement.
- 5 Manufacturer's warranty obligations shall not be affected by a change in ownership of the purchased article.
- 6 Any damage incurred through the following acts or omissions of Purchaser shall be **expressly excluded** from this warranty:
 - 6.1 Purchaser's failure to report a defect pursuant to subsection 3.1 or to promptly provide an opportunity to remedy the defect following Manufacturer's request, or
 - 6.2 improper handling or overload operation of the purchased article, or
 - 6.3 prior repair, maintenance and servicing of the purchased article by a company not authorized by the Manufacturer, if the Purchaser can be reasonably expected to have known that such company was not authorized, or
 - 6.4 the installation of parts into the purchased article without having obtained Manufacturer's prior approval for such parts or the modification of the purchased article in a way not approved by the Manufacturer, or
 - 6.5 Purchaser's failure to observe the instructions given in the user's manual accompanying the purchased article (e.g. operation, maintenance and care), or
 - 6.6 Purchaser having removed the serial number or made it illegible.
- 7 Natural wear and tear shall be expressly excluded from this warranty.
- 8 Accidents, force majeure or other circumstances beyond the control of the Manufacturer, in particular damage caused by lightning, overvoltage, water, fire, etc. shall be excluded from this warranty.
- 9 All rights under this warranty shall become null and void on expiry of the warranty term pursuant to Section 1. For claims asserted within the warranty term but not settled by its expiry, the warranty shall remain effective until the respective defect has been remedied. The period of limitation shall be suspended for such claim.

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