



**E.H. WACHS®**

Superior Equipment. Complete Support.™

**TW** | ORBITAL  
CUTTING & WELDING

# Operating instructions with spare parts list

For responsible bodies and persons using the machine

SafeQuip

## **EPD** Electric Power Drive



To work safely with this machine, please read through the operating instructions in full before initial operation. Retain the operating instructions for future reference.

Machine no.:

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# 1. ABOUT THESE INSTRUCTIONS

To allow quick understanding of these instructions and safe handling of the machine, all the warning messages, notes and symbols used in these instructions are presented here along with their meaning.

## 1.1 Warning messages

In these instructions, warning messages are used to warn you against the dangers of injury or material damage. Always read and observe these warning messages!



This is a warning symbol. It should warn you against dangers of injury. Follow all instructions which are identified with this safety symbol in order to avoid injuries or death.

Warning symbol	Meaning
 DANGER	Direct danger! Non-observance could result in death or critical injury. ⊙ Restrictions (if applicable). ► Measures to prevent danger.
 WARNING	Possible danger! Non-observance could result in serious injury. ⊙ Restrictions (if applicable). ► Measures to prevent danger.
 ATTENTION	Dangerous situation! ► Non-observance could result in minor injuries.
ATTENTION	Dangerous situation! ► Non-observance could result in material damage.



DANGER

Direct danger!  
 Non-observance could result in death or critical injury.  
 ⊙ Restrictions (if applicable).  
 ► Measures to prevent danger.



WARNING

Possible danger!  
 Non-observance could result in serious injury.  
 ⊙ Restrictions (if applicable).  
 ► Measures to prevent danger.



ATTENTION

Dangerous situation!  
 ► Non-observance could result in minor injuries.

ATTENTION

Dangerous situation!  
 ► Non-observance could result in material damage.

## 1.2 Further symbols and displays

Symbol	Meaning
IMPORTANT NOTE	Notes: Contain particularly important information for comprehension.
 1.	Request for action in a sequence of actions: You have to do something here.
►	Single request for action: You have to do something here.
▷	Conditional request for action: You have to do something here if the specified condition is met.





### 1.3 Abbreviations

<b>Abbr.</b>	<b>Meaning</b>
EPD	Electric Power Drive
EPM	Electric Power Motor
EPB	Electric PowerBox
LCSF/3	E.H. WACHS Low Clearance Split Frame (Version 3)
EP 424	E.H. WACHS Pipe End Preparation Machine

## 2. INFORMATION AND SAFETY INSTRUCTIONS FOR THE RESPONSIBLE BODY

### 2.1 Requirements for the responsible body

**Workshop/outdoor/field application:** The responsible body is responsible for safety in the danger zone around the machine, and should allow only qualified personnel to enter the zone or operate the machine in the danger zone.

**Employee safety:** The safety regulations described in chap. 2 must be observed and work must be carried out with safety in mind using the prescribed protective equipment.

### 2.2 Using the machine

#### 2.2.1 Proper use

- The EPD is solely intended for the operation of pipe processing machines and is not ready to use without a machine (e.g. LCSF Split Frame).
- The intended use of the system is in connection with the pipe processing machines and their product-specific documentation.
- The machine may only be used on empty, unpressurized horizontal pipes and tanks in a non-explosive atmosphere.



Proper use also includes the following:

- observing all safety instructions and warning messages included in these operating instructions and the user information of the mechanical processing machines (e.g. LCSF Split Frame).
- carrying out all inspection and maintenance work
- sole use in the original condition with original accessories, spare parts and materials
- processing only materials set out in the operating instructions.

#### 2.2.2 Improper use

- The enable button may not be manipulated.
- A use other than that defined under "proper use" or a use that goes beyond this or the specified constraints shall be considered improper use due to the potential risks involved.
- The responsible body shall be solely responsible for damages that arise through improper use and the manufacturer shall assume no liability whatsoever.
- The removal of safety equipment is not permitted.
- Do not misuse the machine.
- The machine is not intended for use by private consumers.
- The technical values defined for normal operation must not be exceeded.
- Do not use the machine as a drive for applications other than those listed under proper use (chap. 2.2.1).
- Use on pipes not installed horizontally requires that the machine be secured and must be planned with the manufacturer or specific safety precautions against separation of the machine from the pipe must be taken.
- When processing thin-walled pipes, the pipe can be deformed by the tension and the machine can be separated from the machine during processing. Heed this with wall thicknesses under 8 mm (0.315 inch) and contact the manufacturer if necessary.



### 2.2.3 Machine constraints

- The workplace can be in pipe preparation, in plant construction or in the plant itself.
- A radial space requirement/freedom of movement of approx. 2 m around the machine is required for people.
- Keep your working area clean. Disorder or unlit working areas can lead to accidents.
- Work lighting: min. 300 lux.
- Operating duration: 250 operating hours, after which the first maintenance is due.
- Operator age: at least 14 years old and without physical impairments.
- Operator qualification: instructed operator.
- Operated by one person.
- Climate conditions: temperature range for machine operation:  $-10\text{ }^{\circ}\text{C}$  to  $40\text{ }^{\circ}\text{C}$ .  
Temperature range for machine storage:  $-10\text{ }^{\circ}\text{C}$  to  $40\text{ }^{\circ}\text{C}$ .

### 2.2.4 Shutting down the machine

Information on the EMERGENCY STOP or the shutting down function, see chap. 8.4, p. 23.

## 2.3 Environmental protection/disposal

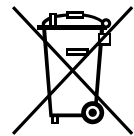
### 2.3.1 Chips and gear lubricant oil

Dispose of chips and used gear lubricant oil according to the regulations.

### 2.3.2 Electric tools and accessories

Discarded electric tools and accessories contain large quantities of valuable raw and synthetic materials that can be recycled. Therefore:

- Electrical (electronic) devices that are marked with the symbol to the left may not be disposed of with household waste in accordance with EU regulations.
- By actively using the available return and collection systems, you actively contribute to the reuse, recycling and utilization of electrical (electronic) devices.
- Used electrical (electronic) devices contain parts that must be handled selectively according to EU regulations. Separate collection and selective treatment is the basis for environment-friendly disposal and the protection of human health.
- Appliances and products that you bought from us after August 13, 2005 will be disposed of in accordance with legal standards after they have been supplied to us at no cost.
- We may refuse to accept old appliances that pose a risk to human health or safety due to contamination produced during use.
- The end user is responsible for disposing of used appliances introduced to the market before August 13, 2005. Please contact a disposal center near you for this purpose.
- **Important for Germany:** our products may not be disposed of in municipal disposal sites as they are only used for industrial purposes.



(as per RL 2002/96/EC)

## 2.4 Basic safety instructions

The Electric Power Drive (hereinafter referred to as the EPD) is a state-of-the-art machine designed for safe use. The risks involved in using the machine are described in the operating instructions below. Using this machine in a way other than that described in these instructions can lead to serious physical injury and material damage.

Therefore:

- Observe warning messages at all times.
- Keep complete documentation close by the machine.
- Generally valid regulations for the prevention of accidents must be observed.
- Observe country-specific regulations, standards and guidelines.
- Always ensure that the machine is in good working order. Observe the maintenance information (chap. 9, p. 24).
- Only operate the machine if all safety-relevant components (e.g. restart inhibitor, overload protection,...) are fully functional. Check safety-relevant components daily for correct functionality. Check whether the substrate is able to take sufficient loads.
- Report any unusual machine behavior to the person responsible immediately.
- Repair and maintenance work on the electrical equipment may only be carried out by a qualified electrician.
- At the end of each working cycle, before transportation, changing tools, cleaning and performing any maintenance, adjustment or repair work, switch off the machine, allow it to run to a stop and pull the mains plug.
- Do not carry the machine by the cable and do not use the machine to pull out the plug except in an emergency. Protect the cable from heat, oil and sharp edges (chips).
- During operation, keep hands away from the tools.
- Check that the pipe is correctly clamped.
- Only switch on the EPD with a firm connection to the processing machine (e.g. LCSF Split Frame) with pipe clamped in and at a safe distance from the machine.
- When working with the machine, wear safety shoes (in accordance with EN ISO 20345, at least S1), safety goggles (according to DIN EN 166 Class 2 basic resistance S), snug-fitting safety gloves (according to DIN EN 388 Class 2 against wear, cut resistance Class 3, tearing resistance Class 2, piercing resistance Class 3) and hearing protection (according to DIN EN 352-4 or comparable).

**NOTE** The recommendations concerning "Personal protective equipment" only apply to the product being described. Other requirements resulting from the ambient conditions on-site or of other products, or from combining with other products, are not taken into account. These recommendations do not in any way release the responsible body (employer) from its statutory health and safety at work obligations towards its employees.



**NOTE** Since the EPD is mounted to other processing machines, e.g. LCSF/3 Split Frame, as an incomplete machine, the operating instructions of the respective machines (e.g. LCSF/3 or EP424) and their warnings must also be complied with. This may mean that, for example, the use of safety gloves may be impermissible for corresponding operating modes, but is recommended only for installation and removal of the motor here.



**DANGER**

**If the mains cable is damaged, live parts may cause death if touched directly!**

Fatal electric shock.

- ⊘ Do **not** allow power cable to get near rotating parts.
- ▶ During processing, always keep an eye on the position of the mains cable.



**DANGER**

**Damaged insulation!**

Fatal electric shock.

- ⊘ Do **not** screw any indicators or signs to the drive motor.
- ▶ Use stickers.





DANGER

**Damaged plug!**

Fatal electric shock.

- ⊘ Do **not** use adapter plugs with ground protected electrical tools.
- ▶ The machine connector plug must fit the socket.



DANGER

**Loose/baggy clothing, long hair or jewelry can get caught in rotating machine parts!**

Serious injury or death.

- ▶ Wear tight-fitting clothing when using the machine.
- ▶ Tie up long hair to prevent it from being caught.



DANGER

**Defective safety components due to soiling, breakage and wear!**

The failure of safety components can cause physical injury.

- ⊘ Do **not** misuse the cable, e.g. such as using it to suspend or carry the machine.
- ▶ Replace defective safety components immediately and check them daily to ensure proper operation.
- ▶ Have an expert replace defective power cables immediately.
- ▶ Clean and perform maintenance on the machine after each use.
- ▶ Keep cables away from heat, oil, sharp edges and moving equipment parts.
- ▶ Inspect the machine daily for visible signs of damage or defects, and have them repaired by a specialist if necessary.



WARNING

**Flying parts/breaking tool!**

Diverse physical injuries and material damage.

- ⊘ Do **not** process pipe "loose".
- ⊘ Damaged or deformed cutting tools may **not** be used.
- ⊘ In the event of tool breakage with a new tool, do **not** enter the old cut because the tool can break again.
- ▶ Firmly clamp the pipe to be processed.
- ▶ Immediately replace worn-out tools.
- ▶ Ensure that the cutting tools are correctly fitted.



WARNING

**Falling objects or tilting and bending pipes!**

Irreversible crushing.

- ▶ Wear safety shoes (in accordance with EN ISO 20345, at least S1).
- ▶ Place sufficient supports under the pipe.



WARNING

**Danger caused by vibration and unergonomic, monotonous work!**

Discomfort, tiredness and disruptions to the locomotor system.

Limited ability to react, and cramps.

- ▶ Do relaxation exercises.
- ▶ Ensure activity is varied.
- ▶ Assume an upright and relaxed posture when working.



WARNING

**Pressing the ON-OFF switch unintentionally!**

Diverse physical injuries and material damage.


- ▶ At the end of each working cycle, before transportation, changing tools, cleaning and performing any maintenance, adjustment or repair work, switch off the machine, allow it to run to a stop and pull the mains plug.

## 2.5 Warning symbols

Observe all of the warnings and safety instructions affixed to the machines.

Unreadable or damaged warning signs must be replaced.

The following labels appear on the machine:

Image	Position on machine	Meaning	Part no.
	EPM 8 plastic housing, top	<p><b>INSTRUCTION:</b> Wear safety goggles in accordance with DIN EN 166, ear protection in accordance with DIN EN 352 and tightfitting safety gloves in accordance with DIN EN 388.</p> <p>Read the operating instructions.</p>	790 086 200

## 3. PRODUCT DESIGN

### 3.1 Overview

#### 3.1.1 EPD with LCSF



1. PowerBox EPB
2. Motor EPM
3. Remote control
4. LCSF

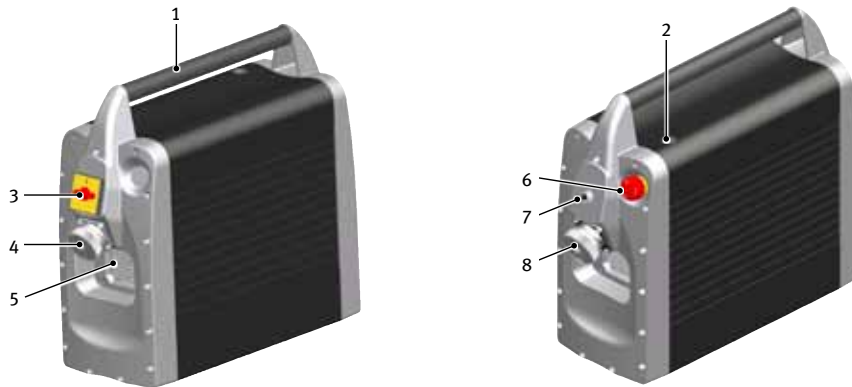
#### 3.1.2 EPD with EP 424



1. PowerBox EPB
2. Motor EPM
3. Remote control
4. EP 424

## 3.2 Components

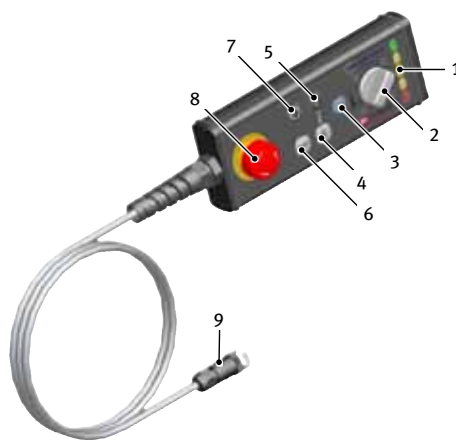
### 3.2.1 PowerBox (front)



1. Carry handle
2. Sight glass with operating and error code display
3. ON/OFF switch
4. Power supply connection
5. Fan
6. EMERGENCY-STOP
7. Remote control connection
8. Motor connection

Article	Part no.	kg
PowerBox	900 007 201	16.500

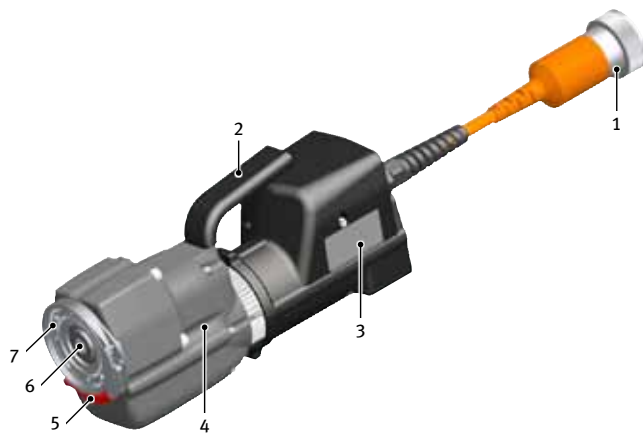
### 3.2.2 Remote control



1. LED load display
2. Speed switch
3. Enable button
4. Feed activation ON
5. Feed activation OFF
6. Motor ON
7. Motor OFF
8. EMERGENCY-STOP
9. PowerBox connection plug

Article	Part no.	kg
Remote control	900 007 301	0.900

### 3.2.3 Motor (EPM)



1. PowerBox connection plug
2. Handle
3. HF motor
4. Transmission
5. Quick-clamping lever
6. Drive shaft
7. Connecting flange

Article	Version	Part no.	kg
Motor EPM8-250	Speed: 0 - 250 rpm	900 007 401	9.300
Motor EPM8-160	Speed 0 - 160 rpm	900 007 402	9.300

### 3.2.4 Cable



*Cable 230 V*



*Cable 380 - 480 V*

Article	Version	Part no.	kg
Cable 230 V	EU 230 V	900 007 101	1.300
Cable 380 - 480 V	5-pin, 380 - 480 V	900 007 102	1.700

### 3.2.5 Connecting flange and drive shaft LCSF/3



Connecting flange LCSF/3



Drive shaft

Article	Version	Part no.	kg
Connecting flange	LCSF/3	900 007 103	0.300
Drive shaft	LCSF/3	900 007 104	0.078

## 3.3 Accessories

### 3.3.1 Extension cable and feed unit with cable



SafeQuip feed unit extension cable



Feed unit with cable

Article	Part no.	kg
Extension cable and feed unit with cable	900 007 105	2.280
Motor extension cable, 7 m (23 ft) long	900 002 132	1.300
SafeQuip feed unit extension cable, 15 m (49.2 ft) long	900 002 112	1.946
Feed unit with cable, 15 m (49.2 ft) long, for LCSF 206 – 1420	900 002 113	2.300

## 4. FEATURES AND SCOPE OF APPLICATION



The "SafeQuip" series from Orbitalum Tools is the new safety standard for industrial prefabrication and maintenance of pipeline systems with portable machines from the E.H. WACHS company. This solution is required to ensure safe machine operation as per the current European standards and guidelines.

The "SafeQuip" Electric Power Drive (EPD) in conjunction with the E.H. WACHS LCSF Split Frames, EP 424 and other processing machines is characterized by the following features:

- Maximum power despite minimal motor weight thanks to the use of state-of-the-art technologies.
- Maximum flexibility thanks to unit portability.
- Remote control unit: Safe operation at monitored distance from the processing machine.
- This unit impresses with its low weight and simple, ergonomic handling.
- Speed control: Continuous from the lowest to the highest level. It is possible to start with a slow and safe speed and then increase it slowly.
- Start, stop and EMERGENCY-STOP buttons: Maximum safety through starting and stopping from a distance. To comply with European standards and guidelines, the EMERGENCY-STOP button can be directly activated remotely from the operating position.
- Enabling switching: If the enabling function is not maintained, the machine stops immediately.
- SafeQuip feed system: New safety system enables activation of the feed remotely (only in conjunction with LCSF Split Frames).
- Toolless quick-clamping system which enables quick, flexible adaptation of the motor to various processing machines either way (e.g. LCSF Split Frame).

### Additional characteristics:

- Protects against dust and sprayed water (IP65).

## 5. TECHNICAL SPECIFICATIONS

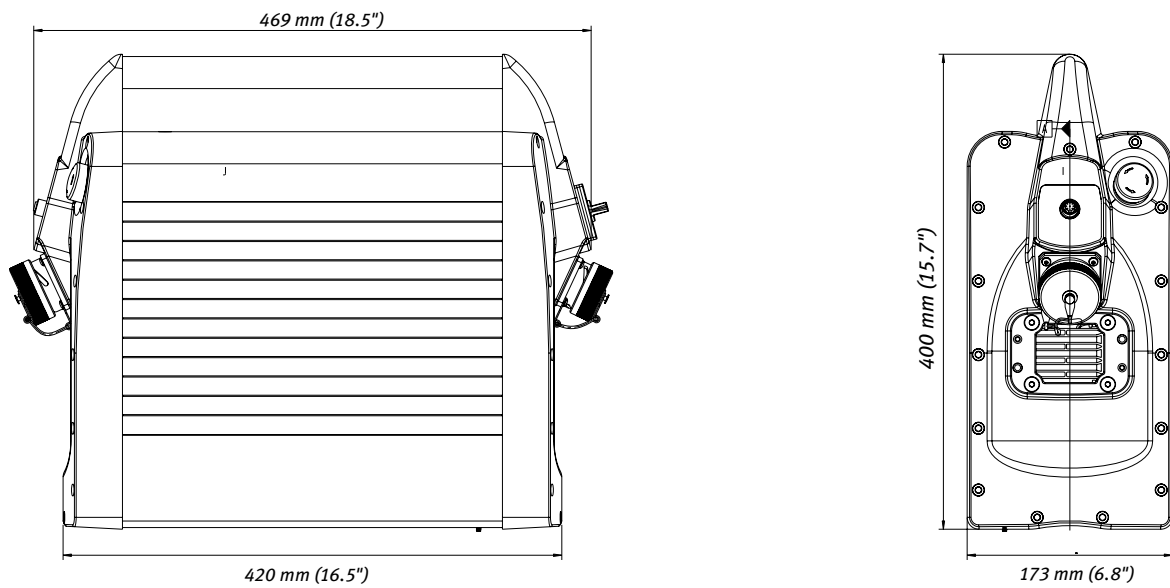
Type of machine	Electric Power Drive <b>EPD</b>	Electric Power Motor <b>EPM 8-250 / EPM 8-160</b>	Electric PowerBox <b>EPB 480 / EPB 230</b> (depending on the cable type)
Power		8 kW (10.7 HP) at 400 - 480 V 4 kW (5.4 HP) at 230 V	8 - 12 kW (10.7 - 16.1 HP)
Voltage		230 V 1- / 400 V 3- / 480 V 3- /	230 V 1- / 400 V 3- / 480 V 3- /
Frequency		50 - 60 Hz	50 - 60 Hz
Current		15 - 20 A	15 - 20 A
Protection type		IP65	IP65
Weight	44 kg (97 lbs) incl. transport case	9 kg (19.8 lbs)	16,5 kg (36.4 lbs)
Speed (depending on the version)	–	n = 250 (optional: n = 160)*	–
Sound pressure level	–	78 dB (A) medium speed range max. 84 dB (A) at max. speed	–

\* *Reduced speed in connection with corresponding processing machines such as the LCSF/3.*

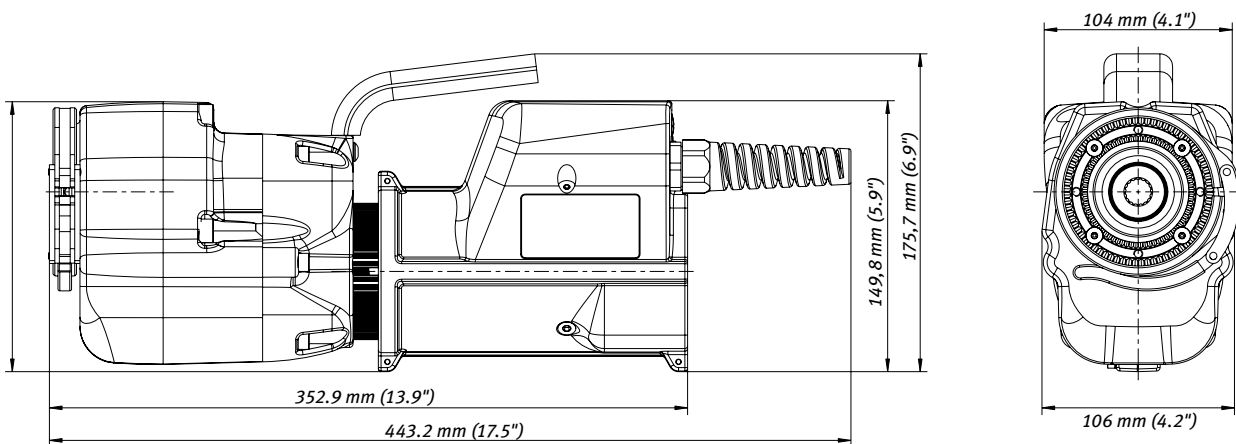


## 5.1 Dimensions

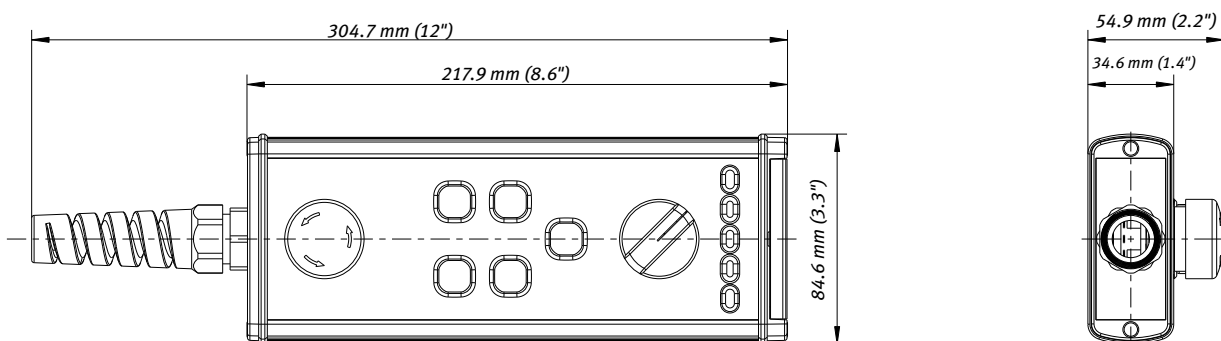
### 5.1.1 EPB



### 5.1.2 EPM 8-250, EPM 8-160



### 5.1.3 Remote control



## 6. STORAGE AND TRANSPORT



WARNING

**Starting up of the machine due to inadvertent actuation of the ON/OFF button!**

Diverse physical injuries and material damage.

- ▶ At the end of each working cycle, before transportation, changing tools, cleaning and performing any maintenance, adjustment or repair work, switch off the machine, allow it to run to a stop and pull the mains plug.



WARNING

**Heavy weight when transporting the machine with case (44 kg)!**

Danger of being injured through overstraining.

- ▶ Transport the machine with case over longer distances with suitable lifting g.



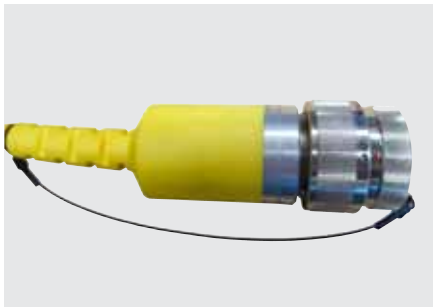
ATTENTION

**Incorrect machine storage!**

Diverse physical injuries and material damage.

- ▶ Store the machine in its original crate in a dry environment.

For secure transport and storage, always store the machine in a hard-sided transport case and always observe the following:



- ▶ Firmly tighten the end caps of the electrical connections.

- ▶ Put the components away as shown.

**EPD transport case**

Dimensions	860 x 560 x 330 mm (33.9" x 22" x 13")
Empty weight	15.5 kg (34 lbs)
Total weight with EPD	44.0 kg (97 lbs)



## 7. INITIAL OPERATION

### 7.1 Checking the parts of delivery

- Check delivery for completeness and damage caused by transport.
- Report any missing parts or damage caused by transport to your supplier immediately.

### 7.2 Included with the machine

Subject to modifications.

- 1 EPM 8 electric motor (depending on the version)
- 1 EPB electric PowerBox
- 1 remote control unit
- 1 power connection cable (depending on the version)
- 1 hard-sided transport case
- 1 set of operating instructions, incl. spare part list

Additional scope of delivery for LCSF Split Frame and EP 424:

- 1 connecting flange
- 1 drive journal

## 7.3 Before each commissioning

### 7.3.1 Setting up the PowerBox



Place the PowerBox at a distance suitable for your work (at least 1 meter from the processing machine) to enable convenient working without the risk of tripping over the PowerBox.

### 7.3.2 Power connection



Check whether the power supply matches the voltage specified on the rating plate.

- ▶ Remove the protective caps from the sockets. These protective caps are intended for protection against the penetration of water when cables are not plugged in. This increases the service life of the high-quality cable connections considerably.
- ▶ Check proper seating of the connection cable. Only then are they protected to the required IP65 level. The connection cable used (400 V 3 ph., 480 V 3 ph. or 230 V 1 ph.) determines whether the drive machine uses 230 V, 1 ph., 4,000 W or 400 V, 3 ph. or 480 V 3 ph., 8,000 W. Also comply with the general, country-specific standards and guidelines for connection to the power supply network.
- ▶ Use only extension cables with protective ground and a sufficient diameter. A cross-section which is too weak can lead to excess power loss and overheating of the motor and cable. An extension cable must be secured with an overload switch. Recommended cable cross-sections:

Nominal current = 15/20 A

Cable length	[m (ft)]	7,5 (24)	15 (49)	25 (82)	30 (98)	45 (147)	60 (196)
Cable cross-section	[mm <sup>2</sup> (inch <sup>2</sup> )]	4 (0.0002)	4 (0.0002)	4 (0.0002)	4 (0.0002)	6 (0.0004)	6 (0.0004)

## 7.4 Commissioning

The EPD is solely intended as a drive for pipe processing machines and is not ready to use without a machine (e.g. LCSF Split Frame). Together, they form a complete machine according to the EU Machinery Directive.



WARNING

#### Cables can be caught during processing!

Non-compliance can result in serious injury.

- ⊘ All cables, especially the motor cable, may not be allowed to reach moving machine parts.



DANGER

#### Body parts and people can be caught!

Non-observance could result in death or critical injury.

- ⊘ Do **not** reach into the running machine while processing is being carried out.
- ▶ Maintain a minimum distance of 1 meter to the moving processing machine (e.g. LCSF/3).



DANGER

#### General dangers while operating complete machines!

Non-observance could result in death or critical injury.

- ⊘ **No** processing without prior training or instruction on the machine.
- ▶ Comply with the operating instructions of the operated machine (e.g. LCSF/3 Split Frame).

### 7.4.1 Commissioning with the LCSF/3 Split Frame

1. Mount connecting flange to the drive transmission of the processing machine (e.g. LCSF/3).
2. Then mount the drive shaft.



3. Attach motor to machine (e.g. LCSF/3) securely and connect cable to PowerBox.
4. Connect remote control to PowerBox.
5. Connect power connection cable to PowerBox. Ensure that both EMERGENCY-STOP buttons are disengaged.



## 7.5 Decommissioning

Decommissioning is carried out in reverse order of initial operation (see chap. 7.4.1, p. 21).

# 8. OPERATION

## 8.1 Remote control button explanation

**LED load display (1) – Shows the load of the motor:**  
 Green LED = motor ready for operation/small load  
 Yellow LED = medium to high load  
 Red LED = overload/error

**Speed regulator (2):**  
 levels 1 - 10, depending on the processing.

**Enable button (3) – Safety function:**  
 must be pressed and held during processing. The motor stops immediately when the button is released.

**Trip ON/OFF (4 + 5) – Safety function:**  
 feed activation ON/OFF. Special accessory required (e.g. feed unit with cable, part No. 900 002 112).

**START button (6)**  
 Starts the motor.

**STOP button (7)**  
 Stops the motor.

**EMERGENCY-STOP button (8)**  
 Shutdown in case of danger (release by turning), see chap. 8.2.



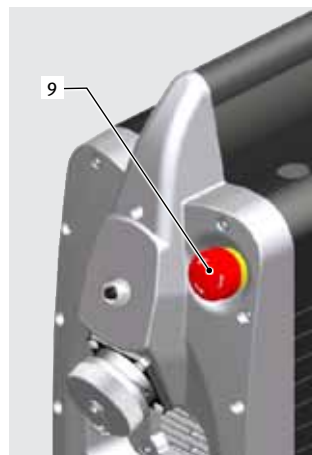
## 8.2 Shutting down (even in an emergency)

To be able to stop the machine (also in case of emergency), perform the corresponding steps and immediately remove from the danger area, until the machine comes to a stop:

- ▶ Press the EMERGENCY-STOP button on the PowerBox (9) or on the remote control (8).

Should the red ON/OFF switch (1) not function:

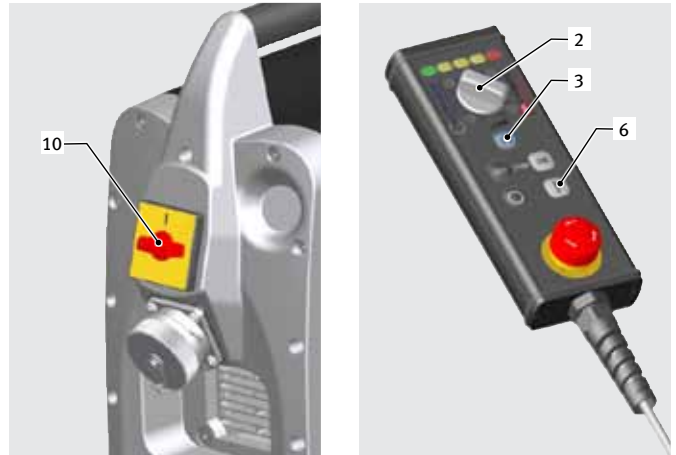
- ▶ Disconnect from the power supply or leave the danger zone as quickly as possible and disconnect the power supply.



## 8.3 Starting the EPD

Before starting, carefully read all work instructions and warnings in chap. 7 "Commissioning" (see chap. 7, p. 19).

1. Set the ON/OFF switch (10) on the PowerBox to "ON"; wait about 10 seconds.
2. Set speed regulator (2) on the remote control to "0".
3. Press and hold enable button (3) and then press the START button (6) briefly.
4. Press and hold enable button (3) again and turn up speed regulator (2) slowly.

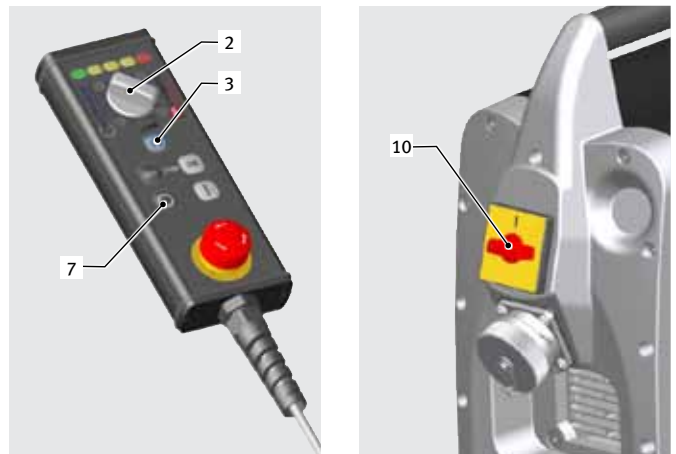


## 8.4 Shutting down the EPD/Switching off machine



The machine stops when the enable button (3) is no longer pressed.

1. To end an operation, set the speed regulator (2) back to "0" and release the enable button (3).
2. Press STOP button (7).
3. Set the ON/OFF button (10) on the PowerBox to "OFF".
4. Disconnect power connection cable from mains network.



## 8.5 Retrofitting the EPD

Before commissioning the EPD in conjunction with another machine, you must carefully read all work instructions and warnings in chap. 7, p. 19.



## 9. SERVICING, MAINTENANCE, TROUBLESHOOTING

**NOTE** Some of the work mentioned depends a great deal on the use and on the ambient conditions. The cycles specified are minimum specifications. In individual cases, differing maintenance cycles are possible. To ensure machine safety, have maintenance performed annually by authorized service points. If the machine does not function as previously described, the machine must also be sent into an authorized service center.



**DANGER**

### **Danger of death by electric shock!**

Non-observance could result in death or serious injury.

- ▶ At the end of each working cycle, before transportation, changing tools, cleaning and performing any maintenance, adjustment or repair work, switch off the machine, allow it to run to a stop and pull the mains plug.



**DANGER**

### **Risk of electric shock due to poor electrics!**

Fatal electric shock.

- ▶ At the end of each working cycle, before transportation, changing tools, cleaning and performing any maintenance, adjustment or repair work, switch off the machine, allow it to run to a stop and pull the mains plug.
- ▶ Repair and maintenance work on the electrical equipment may only be carried out by a qualified electrician.

### 9.1 Maintenance

Time/Interval	Activity
Before beginning work	<ul style="list-style-type: none"> <li>▶ Check cleanliness! Damage and defects can only be identified in cleaned components.</li> <li>▶ Visual inspection of damage on switches, cables, plug connections and leaking oil at the motor.</li> </ul>
After 250 operating hours	<p>The PowerBox indicates that 250 operating hours have been reached and that the following maintenance is to be carried out when the second and fourth LED on the remote control blink in an alternating fashion:</p> <ul style="list-style-type: none"> <li>▶ Gear oil change (gear oil, 250 mL, Part no. 900 007 110)</li> <li>▶ The following bearings must be exchanged:               <ul style="list-style-type: none"> <li><u>In the motor:</u></li> <li>– 2 x grooved ball bearings (Part no. 900 007 508)</li> <li><u>In transmission:</u></li> <li>– O-ring (Part no. 900 007 618)</li> <li>– O-ring (Part no. 900 007 623)</li> <li>– Shaft sealing ring (Part no. 900 007 622)</li> </ul> </li> <li>▶ Order "250-hour exchange kit" (Part no. 900 007 109) from Orbitalum Tools or send EPD to responsible service point (see back cover). This exchange kit includes the bearings and the gear oil to be changed.</li> </ul>
After work is completed	<ul style="list-style-type: none"> <li>▶ Clean components! Damage and defects can only be identified in cleaned components.</li> <li>▶ Visual inspection of damage on switches, cables, plug connections and leaking oil at the motor.</li> <li>▶ Attach end caps to the plug connections.</li> </ul>





## 9.2 What to do if ...? – General trouble shooting

The following table shows the possible fault causes and their remedies.

Problem	Remedy
Incorrect motor rotation direction.	▶ For rotation direction of motor, see chap. 9.5, p. 27.
LEDs on remote control not functioning.	▶ Check remote control cable connection on PowerBox. ▶ Check power cable connection. ▶ Check error codes on PowerBox. ▶ Check main fuse at work location.
Machine (e.g. LCSF/3) not turning even though motor is running.	▶ Drive shaft not mounted (see chap. 7.4.1, p. 21).

## 9.3 Error codes: Causes and remedy

The error code display is located in a round sight glass on the top of the PowerBox. This is indicated by red blinking of the LED, digit for digit.

Example: "F- 0- 5- F- 0- 9" (meaning: errors "F05" and "F09").

Once the reason for the error has been eliminated, this can be acknowledged by pressing the START button on the remote control. The PowerBox is then ready for operation again.

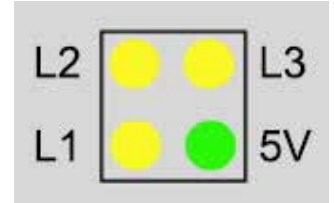
Error code	Possible cause	Remedy
F00, F01	Power supply error.	▶ Bring in PowerBox for repair.
F02	Phase failure.	▶ Check power supply for: – Completeness of phases – Loadability of phases
F03	Motor line break.	▶ Check the motor plug-in connector for soiling and damage. ▶ Hand over PowerBox for repair.
F04	Over-voltage in intermediate circuit.	▶ Check power supply.
F05	Motor over-current.	▶ Operate the motor with lower power.
F07	PowerBox overheated.	▶ Allow the PowerBox to cool down and check fan for operation.
F08	Motor overheated.	▶ Operate motor with smaller load.
F09	Speed sensor error.	▶ Check the motor plug-in connector for soiling and damage. ▶ Hand over motor and PowerBox for repair.
F12	Short circuit.	▶ Check the motor plug-in connector for soiling and damage. ▶ Bring in motor for repair.
F15	Enable error.	▶ Check EMERGENCY-STOP. ▶ Check the motor plug-in connector for soiling and damage.
F24	Power supply error.	▶ Hand over PowerBox for repair.

## 9.4 Additional error LEDs

4 additional LEDs are located in a round sight glass on the top of the PowerBox.

### 9.4.1 Meaning of the 4 LEDs

<b>5V</b>	24 V power supply OK (green)
<b>L1</b>	Motor at standstill (speed: 0/min) (yellow)
<b>L2</b>	No function (yellow)
<b>L3</b>	No function (yellow)



The LED digit shows the current operating mode or drive module error which occurred.

### 9.4.2 Meaning of continuous display

<b>0</b>	Initialization of the hardware
<b>1</b>	Initialization complete
<b>2</b>	Standby (final stage deactivated)
<b>4</b>	Operating mode (final stage activated)

### 9.4.3 Meaning of blinking displays

If an error occurred, the error numbers are indicated by the alternating display in an "F-X-Y" pattern, where "X" and "Y" indicate the error numbers (e.g. "F-0-5" means "error 05"). If several errors are active, the individual error numbers are displayed in succession.

For the **causes of the error numbers and their elimination**, see chap. 9.3, p. 25.

## 9.5 Motor rotation direction reversal



### WARNING

#### Took break or collision due to incorrect rotation direction!

Non-compliance can result in serious injury.

- ⊘ The motor may **not** be used if the rotation direction has been changed.
- ▶ A change in rotation direction is only permissible if the application is described in an operating instruction.
- ▶ The rotation direction change is only permissible if, for example, the tool must be retracted briefly due to a tool break.

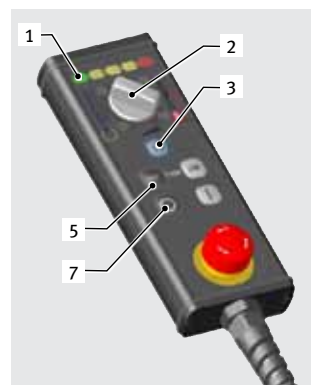
### IMPORTANT

**The specified standard rotation direction of the motor is counterclockwise.**

If the motor rotation direction must be changed (only in exceptional cases, see warning above):

1. Check whether PowerBox is ready (green LED light (1) on the remote control lights up).
2. Press and hold STOP (7) and OFF (5) buttons at the same time and press the enable button (3) briefly (max. 250 ms).

- IMPORTANT**
- ▶ Speed is not reduced with counterclockwise rotation.
  - ▶ Speed regulator (2) at setting "0".
  - ▶ Increase speed slowly.



Remote control



Counterclockwise rotation direction (default)

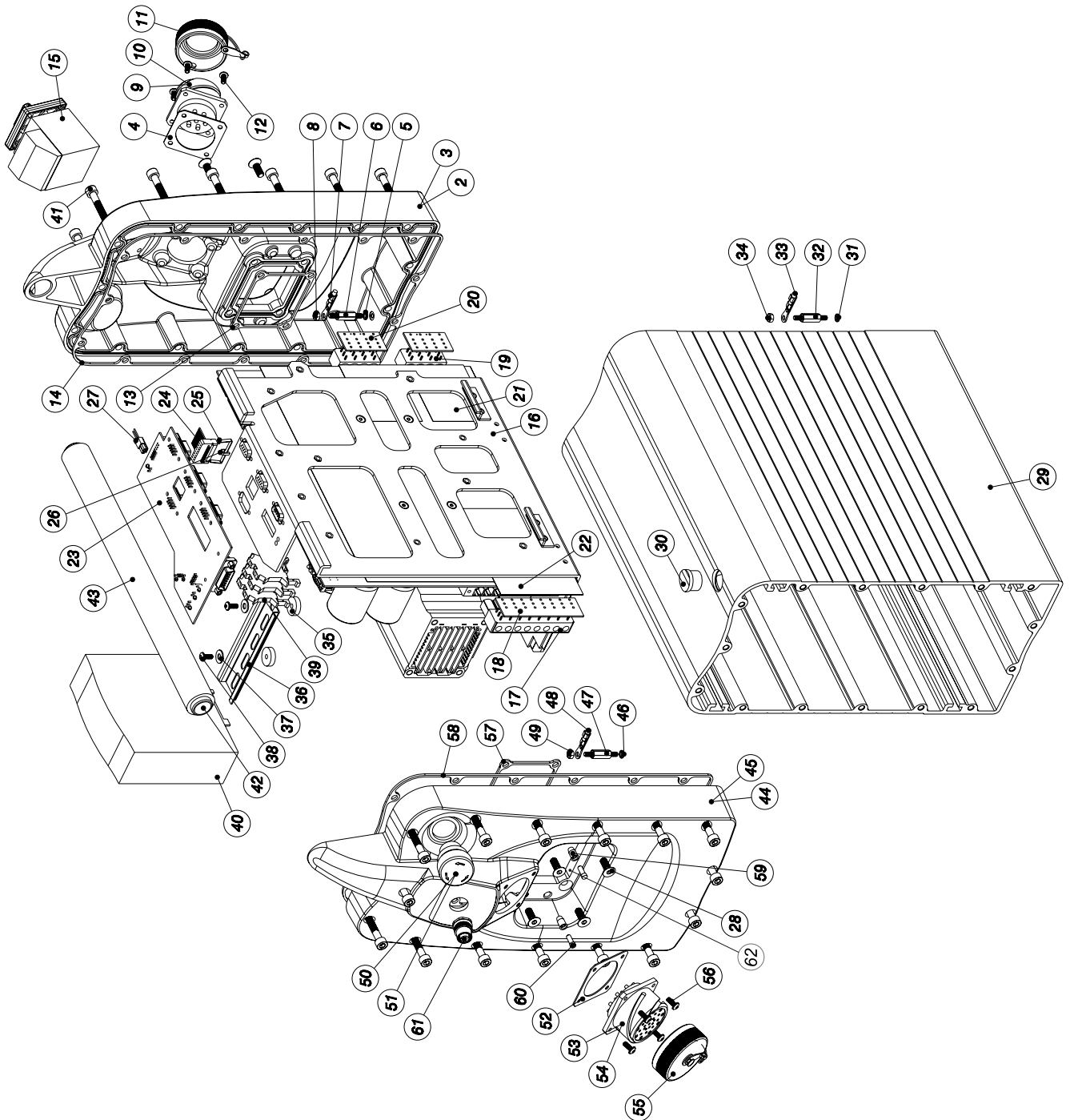
The motor now rotates clockwise.

3. To reverse rotation again, repeat Steps 1 and 2.

# 10. SPARE PARTS LIST

## 10.1 PowerBox

**IMPORTANT** Allow only certified specialists or service points to perform repair work on the PowerBox!



Item no.	Part no.	Quant.	Description
45	900 007 245	1	Casing-plate
46	900 007 205	1	Sealing ring 4x 7x1 fiberred
47	900 007 206	1	Distance bolt M4x 18
48	900 007 248	1	Grounding cable complete
49	900 007 208	1	HHCS hex head cap screw DIN 934 M4 Ms-Ni
50	900 007 250	1	Emergency switch-off button complete
51	900 007 251	1	Emergency switch-off button
52	900 007 252	1	Gasket
53	900 007 253	1	Loom complete
54	900 007 254	1	Loom raw
55	900 007 255	1	Dust cover
56	900 007 212	4	BHCS button head cap screw ISO7380 M4x10-10.9
57	900 007 213	1	Gasket small
58	900 007 214	1	Gasket big
59	900 007 259	2	Sleeve
60	900 007 260	2	Pin
61	900 007 261	1	Plug inside M12x1, 8-pin

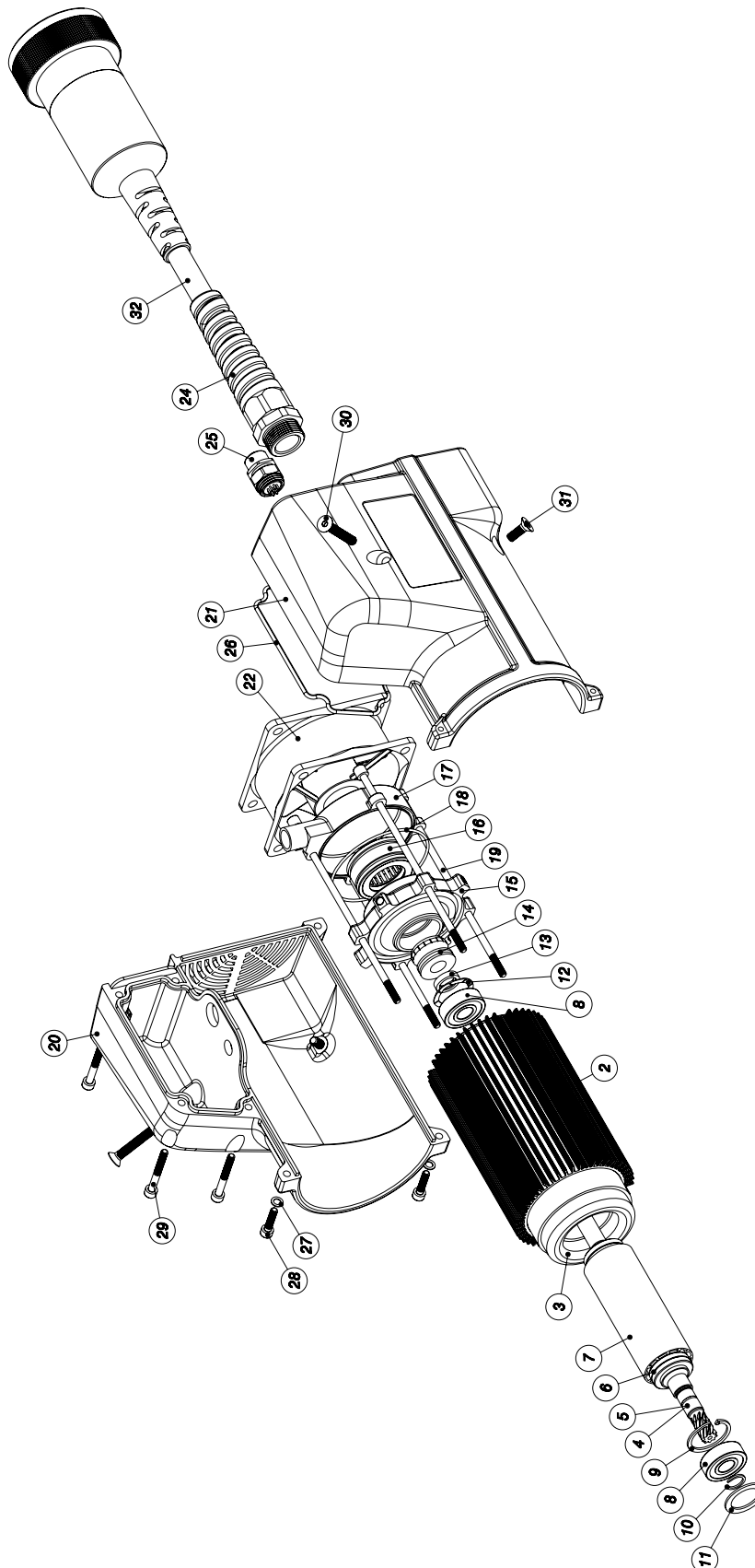
**Not pictured:**

-	900 007 262	1	Air fan
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Item no.	Part no.	Quant.	Description
1	900 007 201	1	PowerBox
2	900 007 202	1	Casing-plate complete
3	900 007 203	1	Casing-plate
4	900 007 204	1	Gasket
5	900 007 205	1	Gasket ring
6	900 007 206	1	Distance bolt M4x18
7	900 007 207	1	Loom complete
8	900 007 208	1	Hexagon nut DIN 934 M4 Ms-Ni
9	900 007 209	1	Loom complete
10	900 007 210	1	Loom raw
11	900 007 211	1	Dust cover
12	900 007 212	4	BHCS button head cap screw ISO 7380-M4x10-10.9 Zn
13	900 007 213	1	Gasket small
14	900 007 214	1	Gasket big
15	900 007 215	1	Main switch
16	900 007 216	1	Frequency changer-unit complete
17	900 007 217	1	Plug connector 8 pin
18	900 007 218	1	Conductor board
19	900 007 219	2	Plug connector 4 pin
20	900 007 220	2	Conductor plate
21	900 007 221	1	Isolation 110x130x0,25
22	900 007 222	1	Isolation 86x110x0,25
23	900 007 223	1	Circuit board complete JM215 Top
24	900 007 224	1	Cable complete
25	900 007 225	1	Spring wire clamp
26	900 007 226	1	Cable connector 2,5x130
27	900 007 227	1	Cable complete
28	900 007 228	8	FHCS flat head cap screw DIN 7991-M6x16-8.8 Zn
29	900 007 229	1	Casing
30	900 007 230	1	Inspection window
31	900 007 205	1	Gasket ring
32	900 007 206	1	Distance bolt M4x 18
33	900 007 207	1	Grounding cable complete
34	900 007 208	1	Hexagonal screw DIN 934 M4 Ms-Ni
35	900 007 235	2	Shim 17x4x4,5
36	900 007 236	1	Hoof rail
37	900 007 237	2	Shim DIN 134 5,3 Zn
38	900 007212	2	BHCS button head cap screw ISO 7380 M4x 10-10.9
39	900 007 239	3	Series terminal 2,5qmm gr/ge b=5,2
40	900 007 240	1	Power Supply Unit WDR-120-24
41	900 007 241	30	SHCS socket head cap screw ISO 4762- M6x 35-8.8 Zn
42	900 007 242	1	Handle-bracket 20x2
43	900 007 243	1	Softgrip
44	900 007 244	1	Casing-plate complete

## 10.2 Motor

**IMPORTANT** Allow only certified specialists or service points to perform repair work on the PowerBox!



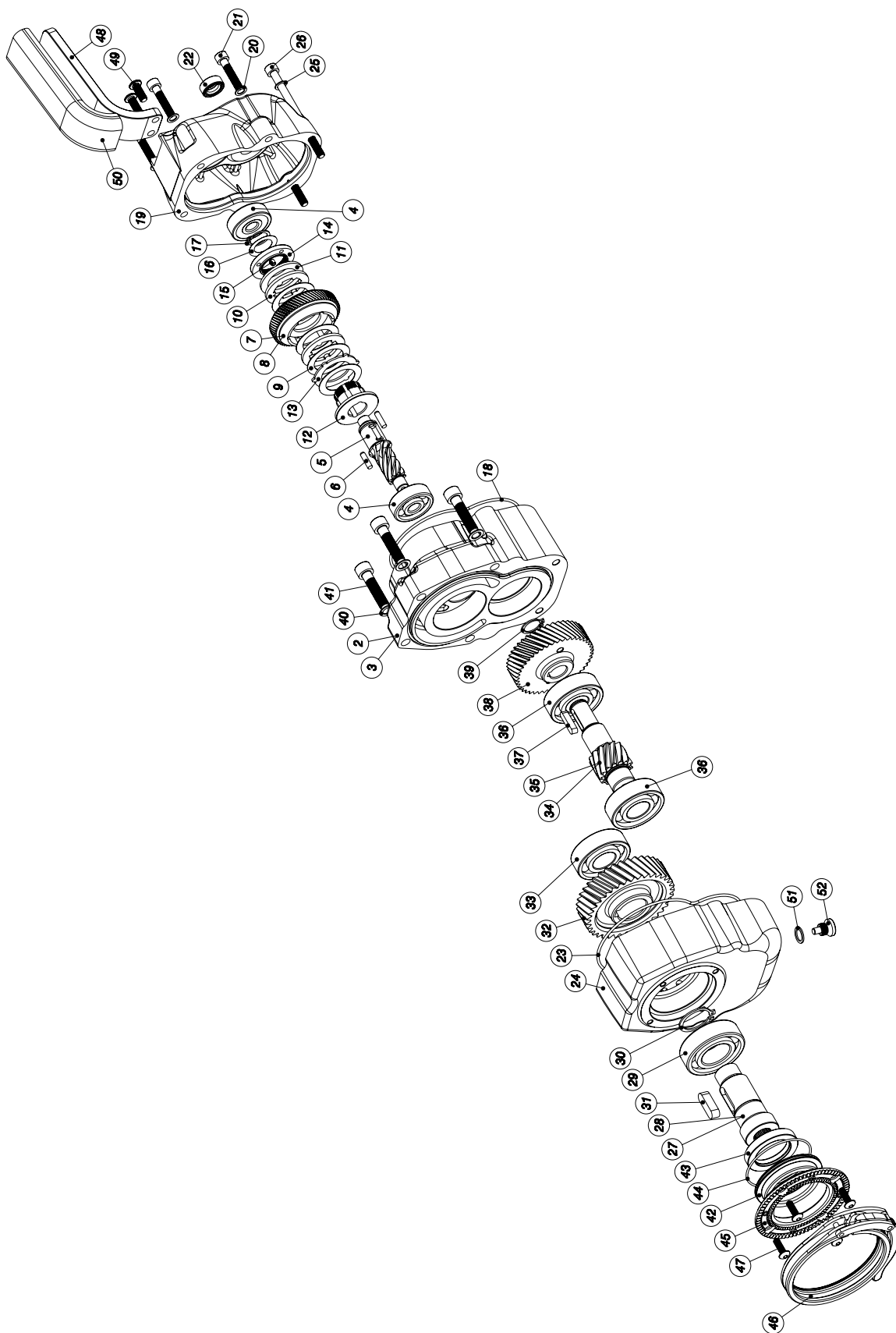
Item no.	Part no.	Quant.	Description
-	900 007 401	1	Motor compl. EPM 8-250 (motor with gear)
	900 007 402	1	Motor compl. EPM 8-160 (motor with gear)
1	900 007 501	1	Motor compl. EPM 8
2	900 007 502	1	Housing motor
3	900 007 503	1	Stator 60x80
4	900 007 504	1	Rotor complete
5	900 007 505	1	Rotor shaft
6	900 007 506	2	Balancing ring 15x 25x 7
7	900 007 507	1	Magnet rotor D31x D15x80
8	900 007 508	2	Ball Bearing HY6000 2RZ C3
9	900 007 509	1	Ring retaining DIN472-26x 1,2
10	900 007 510	1	Snap ring Seeger SW10
11	900 007 511	1	Shim ring DIN 988- 18x25x1,2
12	900 007 512	1	Balancing shim ring
13	900 007 513	1	Distance bushing
14	900 007 514	1	Resolver rotor
15	900 007 515	1	Bearing cap
16	900 007 516	1	Resolver stator
17	900 007 517	1	Cover
18	900 007 518	1	O-Ring 60x 1,5 NBR
19	900 007 519	4	SHCS Socket head cap screw ISO 4762- M4x 14.0A2-70
20	900 007 520	1	Housing motor left
21	900 007 521	1	Housing motor right
22	900 007 522	1	Fan 80x80x20
24	900 007 524	1	Cable connector PG16
25	900 007 261	1	Plug inside M12x1, 8-pin
26	900 007 526	1	O-Ring 93x2 NBR
27	900 007 527	3	Lock washer S4 Zn
28	900 007 528	3	SHCS socket head cap screw ISO 4762- M4x 20-8.8 Zn
29	900 007 529	4	SHCS socket head cap screw ISO 4762- M4x 35-8.8 Zn
30	900 007 530	2	FHCS flat head cap screw DIN 7991- M5x 35- 8.8 Zn
31	900 007 531	2	FHCS flat head cap screw DIN 7991- M5x 14- 8.8 Zn
32	900 007 532	1	Connection cable motor complete

**Not pictured:**

-	900 007 533	1	Control board motor
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### 10.3 Transmission

**IMPORTANT** Allow only certified specialists or service points to perform repair work on the PowerBox!





Item no.	Part no.	Quant.	Description
39	900 007 639	1	Retaining ring DIN471-15x 1
40	900 007 640	4	Lock washer S8 Zn
41	900 007 641	4	SHCS Socket head cap screw ISO 4762- M8x 35-8.8 Zn
42	900 007 642	1	Flange
43	900 007 643	1	Shaft seal DIN3760-A30x45x7 BAUMX7
44	900 007 644	1	O-Ring 56x 1,5 NBR
45	900 007 645	1	Flange
46	900 007 646	1	Clamping ring complete
47	900 007 647	4	BHCS button head cap screw ISO7380- M5x16-10.9 Zn
48	900 007 648	1	Handle FI 30x8
49	900 007 649	2	BHCS Button head cap screw ISO 7380- M6x22- 10.9
51	900 007 651	1	Seal G1/8
52	900 007 652	1	Locking screw complete R1/8

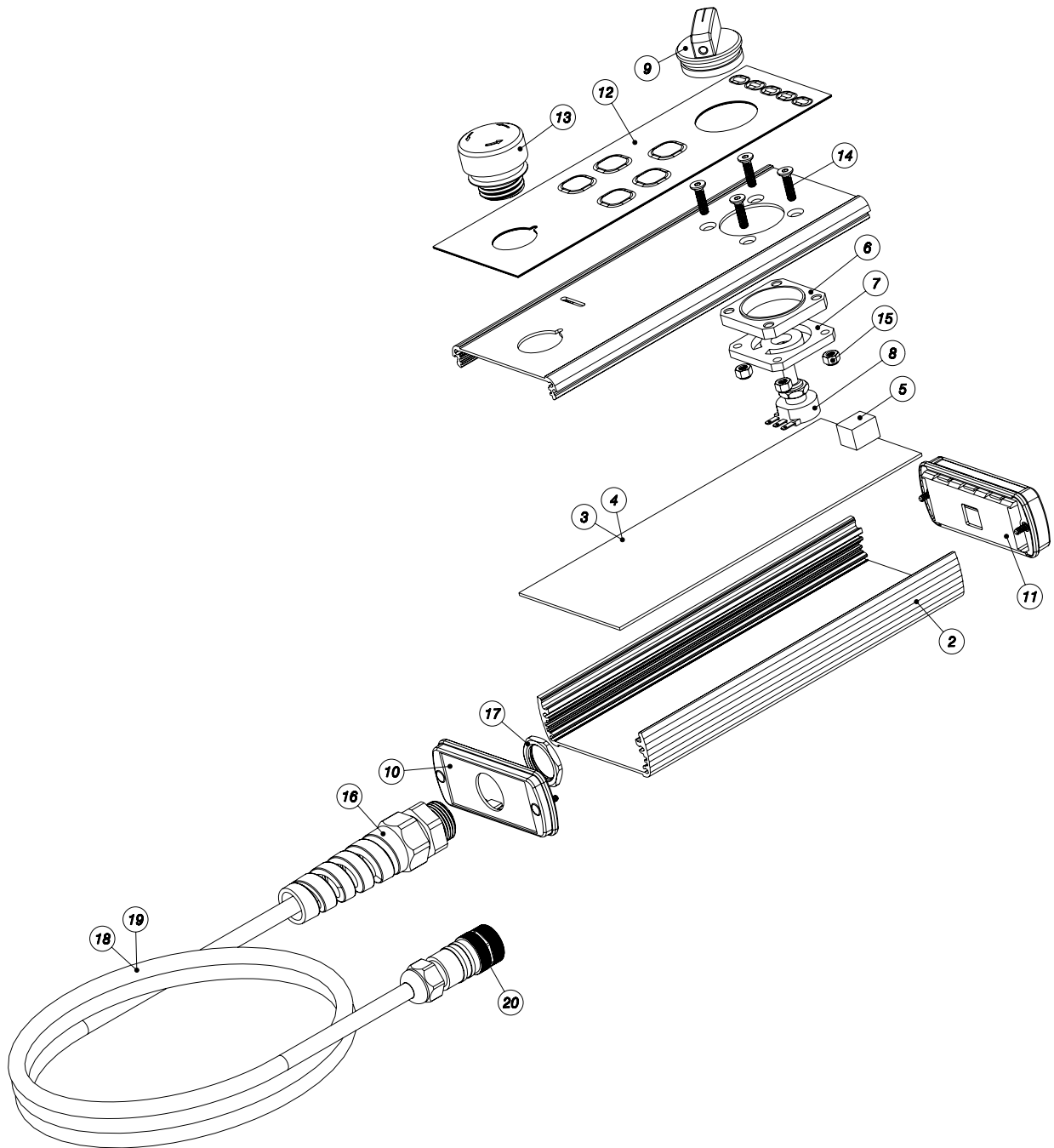
**Not pictured:**

-	900 007 110	1	Gear Oil, 250 ml
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Item no.	Part no.	Quant.	Description
1	900 007 601	1	Gear box complete EPM 8-250
2	900 007 602	1	Gear box complete EPM 8-160
3	900 007 603	1	Gear box V complete
4	900 007 604	2	Ball Bearing 6300 - RSL; 10x35x11
5	900 007 605	1	Bevel pinion 2
6	900 007 606	2	Dowel pin 4m6x 16
7	900 007 607	1	Friction clutch 2 200Nm
8	900 007 608	1	Wheel body
9	900 007 609	4	Brake disc
10	900 007 610	2	Support shim I
11	900 007 611	1	Disc spring
12	900 007 612	1	Driving collar
13	900 007 613	1	Support shim A
14	900 007 614	1	Screw nut
15	900 007 615	1	Pin
16	900 007 616	1	Compensation disc
17	900 007 617	1	Ring retaining DIN471-16x 1
18	900 007 618	1	O-Ring 103x 2 NBR
19	900 007 619	1	Housing
20	900 007 620	4	Lock washer S6 Zn
21	900 007 621	4	SHCS Socket head cap screw ISO 4762- M6x 30-8.8 Zn
22	900 007 622	1	Shaft seal DIN3760-A10x19x7
23	900 007 623	1	O-Ring 112x2 NBR
24	900 007 624	1	Gear box
25	900 007 620	2	Lock washer S6 Zn
26	900 007 626	2	SHCS Socket head cap screw ISO 4762- M6x 90-8.8 Zn
27	900 007 627	1	Bevel pinion 2 complete EPM 8- 250
28	900 007 628	1	Bevel pinion 2 complete EPM 8- 160
29	900 007 629	1	Ball bearing DIN625- 6205
30	900 007 630	1	Ring retaining DIN471-25x 1,2
31	900 007 631	1	Key DIN 6885-A8-7x25 ST geh
32	900 007 632	1	Third wheel EPM 8- 250
33	900 007 633	1	Third wheel EPM 8- 160
34	900 007 634	1	Ball bearing DIN 625- 6204
35	900 007 635	1	Bevel pinion 1 complete EPM 8- 250
36	900 007 633	2	Ball bearing DIN625- 6204
37	900 007 637	1	Through drive countershaft EPM 8- 160
38	900 007 638	1	Through drive countershaft EPM 8- 250
			key DIN 6885-A5-5x22 ST geh
			gear wheel

### 10.4 Remote control

**IMPORTANT** Allow only certified specialists or service points to perform repair work on the PowerBox!



Item no.	Part no.	Quant.	Description
1	900 007 301	1	Remote control complete
2	900 007 302	1	Housing profile
3	900 007 303	1	Control board complete
4	900 007 304	1	Control board
5	900 007 305	1	USB socket
6	900 007 306	1	Plate
7	900 007 307	1	Plate
8	900 007 308	1	Potentiometer
9	900 007 309	1	Control grip

Item no.	Part no.	Quant.	Description
10	900 007 310	1	End cover
11	900 007 311	1	Mounting cover
12	900 007 312	1	Membrane keypad
13	900 007 250	1	Emergency switch-off button complete
14	900 007 314	4	SHCS socket head cap screw ISO 4762- M4x 16 Zn
15	900 007 315	4	HHCS Hex Head Cap Screw DIN 934 M4-8 Zn
16	900 007 316	1	Cable gland M20x 1,5
17	900 007 317	1	Counter Nut M20x 1,5 Skin sealed
18	900 007 318	1	Cable remote control complete

# 11. EG DECLARATION OF CONFORMITY



EG-Konformitätserklärung  
Declaration of conformity  
Dichiarazione di conformità  
Déclaration de conformité  
Declaración de conformidad

**Orbitalum Tools GmbH**  
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According to machine guideline 2006/42/EG (MaschR).

Die Bauart der Maschine:  
The following product:  
Il seguente prodotto:  
Le produit suivant:  
El producto siguiente:

**EPD Electric Power Drive**

Seriennummer:  
Series number:  
Numero di serie:  
Nombre de série:  
Número de serie:

Baujahr / Year / Anno / Année / Año:

ist entwickelt, konstruiert und gefertigt in Übereinstimmung mit folgenden EG-Richtlinien:  
was designed, constructed and manufactured in accordance with the following EC guidelines:  
è stata progettato costruito e commercializzato in osservanza delle seguenti Direttive:  
a été dessiné, produit et commercialisé selon les Directives suivantes:  
ha sido proyectado construido y comercializado bajo observación de las siguientes Directivas:

**Maschinen-Richtlinie (2006/42/EG)**  
**EMV-Richtlinie (2004/108/EG)**  
**Niederspannungsrichtlinie (2006/95/EG)**

Folgende harmonisierte Normen sind angewandt:  
The following harmonized norms have been applied:  
Le seguenti norme armonizzate ove applicabili:  
Les normes suivantes harmonisées où applicables:  
Las siguientes normas armonizadas han sido aplicadas:

**DIN EN ISO 12100: 2010**  
**DIN EN ISO 13849-1: 2008**  
**DIN EN ISO 13849-2: 2008**  
**DIN EN 60204-1: 2006**  
**DIN EN 50144-1: 2002**  
**DIN EN 55014-1: 2012**  
**DIN EN 61000-3-2: 2010**  
**DIN EN 61000-3-3: 2012**  
**DIN EN 61029-1 :2009**

Authorised to compile the technical file is Mr. Gerd Riegraf, Orbitalum Tools GmbH, D-78224 Singen.

Singen, 01.10.2013

*Markus Tamm*  
Managing Director

*Hasan Caglar*  
Business Unit Manager Orbital Cutting

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