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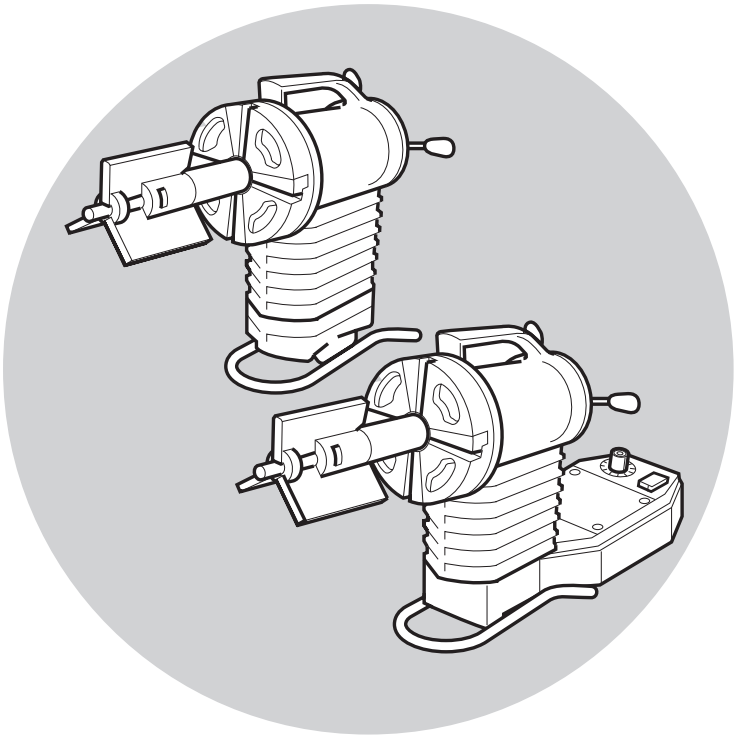
Operating instructions

Pipe End Preparation Machines

REB 6, REB 14, REB 20



Code 790 093 762

Translation of original operating instructions

Machine-no.: _____

Table of contents

0 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.

0.1 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.

0.2 Further symbols and displays

Symbol	Meaning
Important Note	Notes: Contain particularly important information for comprehension.
	Instruction: You must take notice of this symbol.
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.

0.3 Abbreviations

Abbr.	Meaning
REB 6 (D) REB 14 (D) REB 20 (D)	Pipe End Preparation Machines (compressed air)
REB 6 (E) REB 14 (E)	Pipe End Preparation Machines (electric)
MFW	Multifunctional Tool
WH	Tool Holder
QTC®	Quick Tool Change (tool system)

1 Notes on safety

The Pipe End Preparation Machine (in the following referred to as REB) is a state-of-the-art machine. Using it for purposes other than those described in this manual may cause injury to the user or to others. The machine or other equipment may also be damaged.

Therefore:

- Always ensure that the machine is in good working condition, and always comply with these notes on safety.
- Keep the complete documentation close by the machine.
- All regulations generally valid for the prevention of accidents must be observed.

1.1 Proper use

- Use the REB only for preparing (beveling, squaring) of pipe ends made from metallic materials (see chapter 3.2, p. 12).
- The user will be the only person liable for damages caused by improper use.

1.2 Safety regulations

- Only use the dimensions and materials specified in this manual. Always consult Orbitalum Tools after-sales service personnel before using other materials.
- Only use original Orbitalum Tools spare parts and auxiliaries.
- Inspect the REB every day for visible signs of damage or defects. Any damage or defect must be repaired immediately.
- Work on the electrical equipment may only be performed by a qualified electrician.
- Only operate the REB (E) if both electrical protection devices, disable re-start and overload protection, are in proper working order.
- Disconnect the REB (E) from power supply before changing the tools or carrying out maintenance and repair work and allow the machine to come to a stop.
- Operate the REB (D) only by the ON/OFF switch on the twist grip for speed regulation.

1.3 Working with safety in mind

"Make your contribution to safety in the workplace."

- Report any unusual behavior of the machine to the person in charge immediately.
- Always work with safety in mind.

- Wear safety goggles and safety gloves when working with the REB.
- Tie up long hair (snood-type cap); do not wear any wide clothing. **Attention:** jewelry and ties can get caught by rotating parts.

- Keep hands away from the tools during processing.
- Switch off the REB after each working cycle and allow the machine to come to a stop.
- REB (E): Disconnect the REB from power supply before performing any cleaning, maintenance or repair work and allow the machine to come to a stop.
- Do not carry the electric tool holding it at the cable and do not use it to pull the plug out of the socket. Protect the cable against heat, oil and sharp edges (chips).
- REB (D): Shut down the compressed air supply before carrying out any maintenance work or cleaning the REB and allow the machine to come to a stop.
- Do not use the REB in areas subject to explosion hazards.
- Pay attention to the surroundings. Do not use any electric tools in a damp or wet area. Make sure to have good illumination. Do not work near combustible liquids or gases.

WARNING

Danger of being injured on hands!

Sharp cutting edges and chipping.

⦸ Keep hands away from the tools during processing.

▶ Wear safety gloves.

1.4 Waste disposal / environmental protection

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

(RL 2002/96/EC)

Discarded electric tools and accessories contain a large share of valuable raw and synthetic materials which can be recycled.

Therefore:

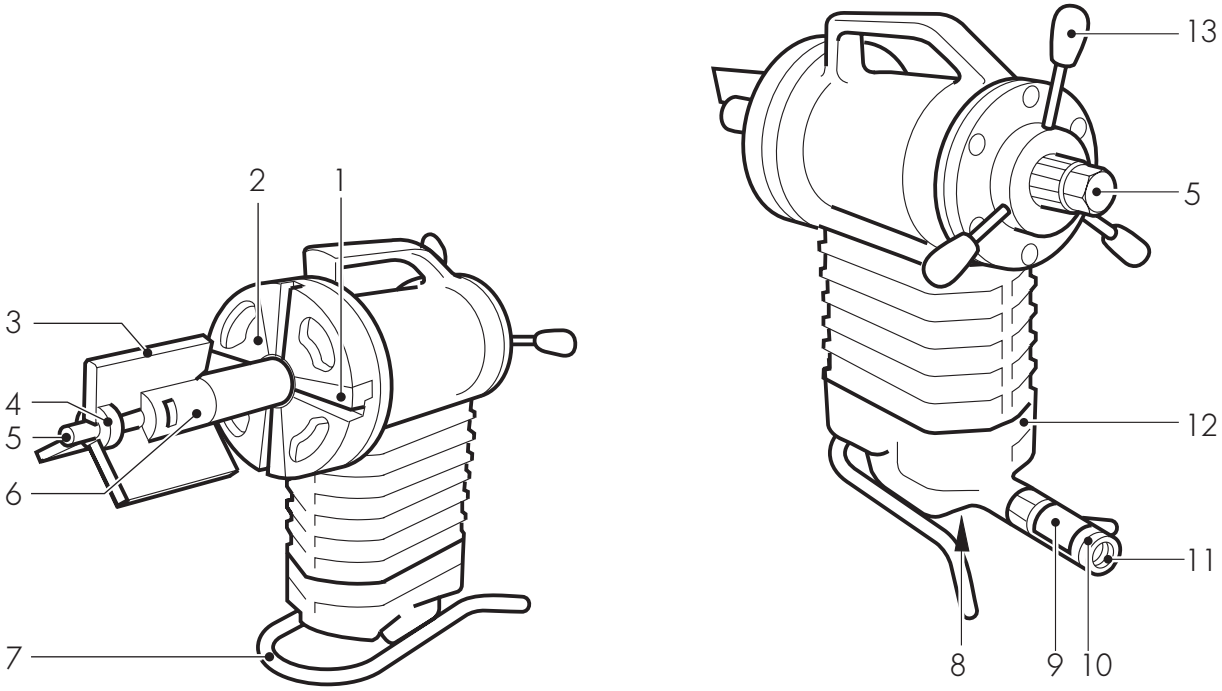
- Electrical (electronic) devices which are marked with the symbol to the left, may not be disposed of with household waste in accordance to the EU directive 2002/96/EC.
- By actively using the offered return and collection systems, you actively contribute to the reuse, recycling and utilization of electrical (electronic) devices.
- Electrical (electronic) used devices contain parts which must be handled selectively according to the EU directive. Separate collection and selective treatment is the basis for environment-friendly disposal and the protection of human health.
- Our products that were sold to you after August 13th, 2005 are taken back and treated according to legal standards. These products have to be send free of charge.
- The return of used devices which pose a health or safety risk for human beings due to soiling during use may be refused.
- The legally compliant disposal of electrical (electronic) devices that were placed on the market before August 13th, 2005 are in the responsibility of the end-user.

1.5 Further safety regulations

Observe the regulations, standards and guidelines applicable in your country.

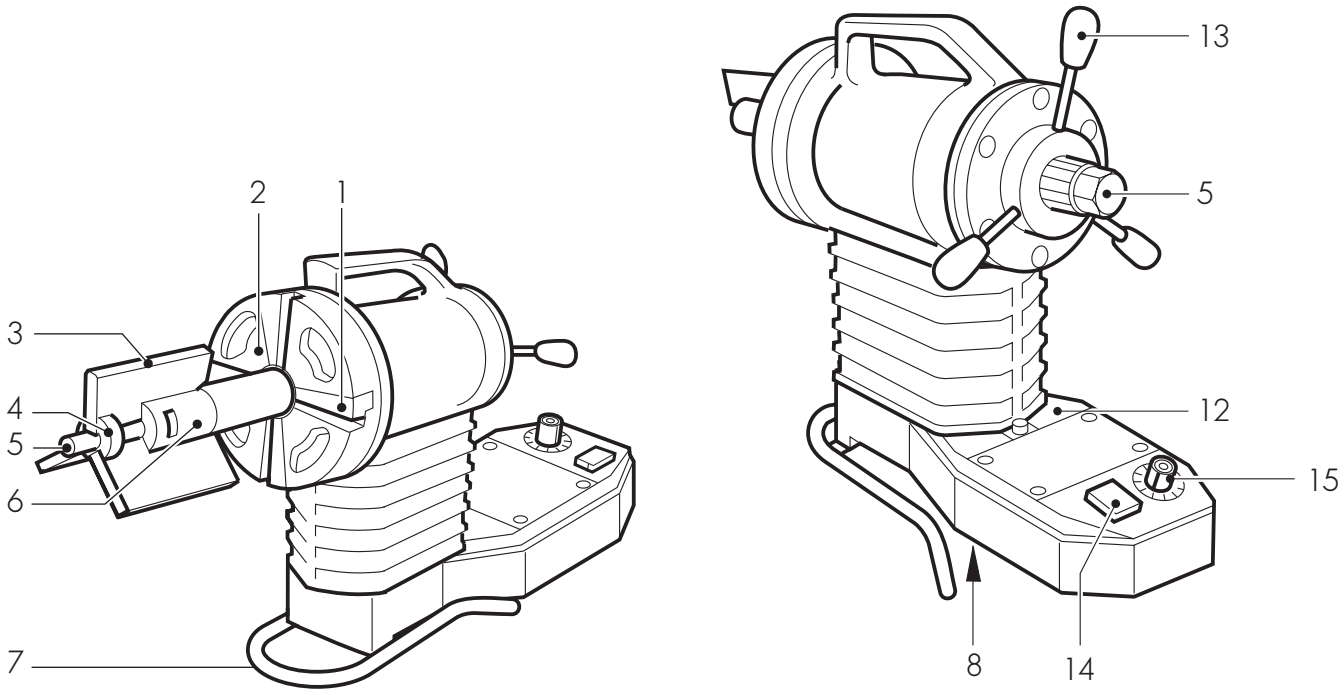
2 Design of the product

2.1 REB 6 (D), REB 14 (D), REB 20 (D)



1 Tool arbor wedge
2 Tool arbor
3 Wedges
4 Clamping washer
5 Spindle
6 Mandrel
7 Stand
8 Nameplate
9 ON/OFF switch
10 Twist grip for speed regulation
11 ½“- threaded connection for compressed air
12 Housing cover
13 Forward-feed supply

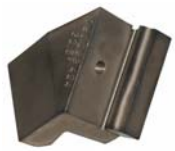
2.2 REB 6 (E), REB 14 (E)



1 Tool arbor wedge
2 Tool arbor
3 Wedges
4 Clamping washer
5 Spindle
6 Mandrel
7 Stand
8 Nameplate
12 Housing cover
13 Forward-feed supply
14 ON/OFF switch
15 Speed control

2.3 Accessories

Get further information from our current product catalogue.



2.3.1 Tool Holder (WH)

Tool holder for multifunctional tools (MFW) for facing pipe ends and for beveling different welding forms at the inner and outer diameter of the pipe.

2.3.2 Multifunctional Tools (MFW)

With high-performance Balinit® Futura protective coating against tool wear. Two- or four-sided tool bit. For high-alloy steel (stainless steel), low-alloy, carbon steel and cast iron pipes.

2.3.3 Elbow clamping system

For preparing elbows with ID 75 – 157 mm (2.95 – 6.18 inch).

Standard accessories:

- 1 Durable storage and shipping case
- 1 Mandrel with clamping mechanism for elbows
- 1 Straightening tool
- 8 Sets à 3 dimension-pins for the following dimensions:

Version	Clamping range (pipe ID)		Code
	[mm]	[inch]	
for REB 6	146 – 157	5.75 – 6.18	790 093 492
for REB 6	136 – 147	5.35 – 5.79	790 093 491
for REB 6	126 – 137	4.96 – 5.39	790 093 490
for REB 6	116 – 127	4.57 – 5.00	790 093 489
for REB 6	106 – 117	4.17 – 4.61	790 093 488
for REB 6	96 – 107	3.78 – 4.21	790 093 487
for REB 6	86 – 97	3.39 – 3.82	790 093 486
for REB 6	75 – 87	2.95 – 3.43	790 093 485

2.3.4 Optional clamping wedges

For pipe ID 3.150 – 4.094 inch (80 – 104 mm).

Version	Pipe inner diameter ID		Code
	[mm]	[inch]	
for REB 6	155 – 166	6.102 – 6.535	790 093 295
for REB 14	320 – 339	12.598 – 13.346	790 094 189
for REB 14	331 – 350	13.031 – 13.780	790 094 190

2.3.5 Clamping shell segments

Customised plastic (POM) clamping shell segments for thin-walled pipes. Deformation-free clamping system.

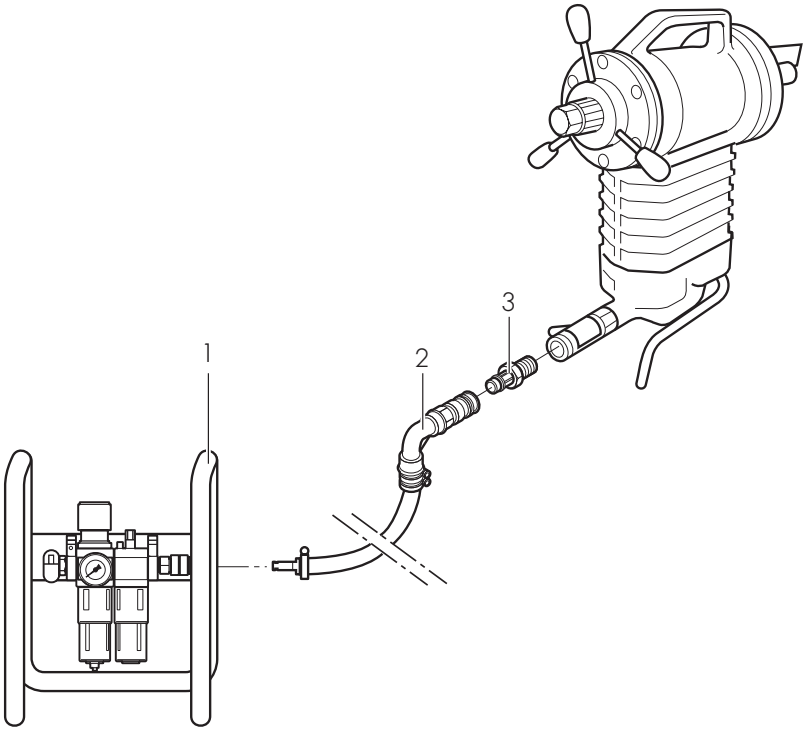
Other dimensions are upon request.

Version	Pipe inner diameter ID		Code
	[mm]	[inch]	
for REB 6	108.2 – 110.1	4.260 – 4.335	790 093 297
for REB 6	147.0 – 149.0	5.787 – 5.866	790 093 298
for REB 6	161.5 – 162.8	6.358 – 6.409	790 093 452
for REB 14	161.5 – 162.7	6.358 – 6.406	790 094 202
for REB 14	211.6 – 213.5	8.330 – 8.406	790 094 206
for REB 14	250.0	9.843	790 094 208
for REB 14	264.7 – 266.2	10.421 – 10.480	790 094 210
for REB 14	314.7 – 315.9	12.390 – 12.437	790 094 222
for REB 14	342.9	13.500	790 094 226
for REB 14	347.7	13.689	790 094 224

2.3.6 Portable maintenance unit

REB (D) only, consisting of:

- Maintenance unit (1), Code 790 093 060.
- Compressed air hose (2), incl. plug nipple (3) with external thread, Code 790 093 061.



3 Features and scope of application

3.1 Features

The Pipe End Preparation Machine REB is designed for preparing (beveling, facing) pipe ends made of metallic materials.

The REB is characterized by the following:

- Pipe-end preparation for normed welding forms
- Separate pre-assembly of the mandrel
- QTC® system (Quick Tool Change) for fast attachment of cutting tools to tool arbor
- Only one multifunctional tool necessary for:
  - different processing operations (beveling, facing)
  - different pipe-wall thicknesses
  - different pipe materials
- Four-edged cutting tool:
  - only one screw needed for fixing tools to tool holder
  - cutting tools coated with Futura® Balinit
- Clamping system:
  - only 3 (+3) screws to cover the entire inner-Ø range
  - self-centring wedges to take up the torque
- Housing:
  - stand-alone housing
  - for preparing short pipe pieces and flanges
  - very low noise level
- Power supply:
  - REB 6 / 14 / 20 (D):
    compressed air motor with speed regulation using a throttle valve with a safety on-off switch
  - REB 6 / 14 (E):
    speed-regulated electric motor
  - low-maintenance gearbox with grease lubrication

3.2 Scope of application

3.2.1 Applications (minimum and maximum pipe dimensions*)

		Inner-Ø ID		Wall thickness s		Outer-Ø OD	
		[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
REB 6	**min.**	49	1.93	3	0.12	56	2.20
	max.	159	6.26	22	0.87	168	6.61
REB 14	**min.**	92	3.62	4	0.16	100	3.94
	max.	320[1)]	12.60	30	1.18	355,6	14.00
REB 20	**min.**	282	11.10	4	0.16	290	11.42
	max.	500	19.69	10	0.39	508	20

1) *14" pipes with a wall thickness s < 17.5 mm cannot be prepared using standard accessories. Special accessories are available on request.*

* *Machining of other pipe dimensions and pipe materials are available on request*.

3.2.2 Pipe materials

- Unalloyed and low-alloy steels
- High-alloy steels (stainless steel)
- Aluminum

4 Technical specifications

4.1 Rating

	REB 6 (D)	REB 6 (E)	REB 14 (D)	REB 14 (E)	REB 20 (D)
Dimensions [mm]	560x260x400	640x260x420	625x375x490	700x375x510	700x510x570
Weight [kg]	27.0	28.0	45.0	46.0	55
Power [kW]	1.8	1.2	1.8	1.2	1.8
Air consumption [m^3/min at 6 bar/90 psi]	2.0	–	2.0	–	2.0
Mains supply	–	230 V, 50/60 Hz 120 V, 50/60 Hz	–	230 V, 50/60 Hz 120 V, 50/60 Hz	–
Speed [min^{-1}]	0 to 26	10 to 32	0 to 13	5 to 16	0 to 13
Sound level in the workplace* [dB (A)]	at idle-speed: approx. 75 (average speed range) under load: approx. 77				
Vibration level in accordance with EN 28662, part 1 [m/s^2]	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

* *The sound level is measured under normal operating conditions in accordance with EN 23741.*

5 Commissioning

5.1 Checking the parts of delivery

▶ Check all parts of the delivery for completeness and transportation damage.

▶ Report any missing parts or transportation damage to your supplier immediately.

5.1.1 Included with the machine*

- 1 Pipe End Preparation Machine REB
- 1 Transportation box
- 1 Clamping chuck (REB 6 and REB 14) **or**
  2 Clamping chucks (REB 20)
- 5 Clamping sets, each with 3 clamping wedges (on REB 6) **or**
  6 Clamping sets, each with 3 clamping wedges (REB 14 and REB 20)
- 1 Tool set
- 1 Cutting lubricant spray KSS-TOP
- 1 Operating instructions and 1 spare parts list

* *Subject to modifications*

5.2 Requirements on the compressed air system

The compressed air system must meet the following requirements for interference-free working with the REB:

- The following air capacities must be supplied by the compressed air network (see also chapter 4, p. 13 „Technical specifications“):

  70 cfm – 90 psi
- A maintenance unit with lubricator, water collector and pressure reducer must be installed upstream of the REB.
- The compressed air line from the maintenance unit to the REB must not be more than 5 m long.

5.3 Mains connection for electrical drive

- Single-phase alternating current 230 V, 50/60 Hz or 120 V, 50/60 Hz, protection class I (see also chapter 4, p. 13 „Technical specifications“).
- Mains fuse, minimum rating 10 A

6 Transport and assembly

6.1 Transport

DANGER

REB (E):

Danger of death caused by electric shock and restart of the machine!

During transportation, the ON/OFF switch could be actuated inadvertently so that the machine is started.

- ▶ Cut off the power supply before carrying out the transportation or a workplace change and allow the machine to come to a stop.
- ▶ Only transport the REB by the carrying handles intended for this purpose.

WARNING

REB (D):

Danger of injuries caused by restart of the machine!

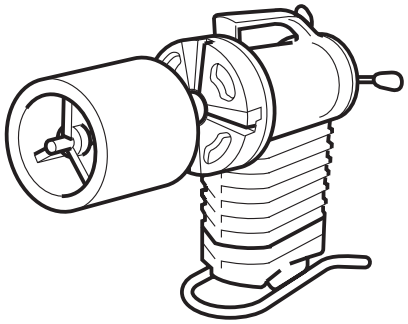
During transportation, the compressed air outlet could be actuated inadvertently so that the machine is started.

- ▶ Cut off the compressed air input before carrying out the transportation or a workplace change and allow the machine to come to a stop.
- ▶ Only transport the REB by the carrying handles intended for this purpose.

- ▶ The REB can be transported either by carrying or with a crane.

The REB can be operated in two ways:

A) Standing upright on the frame



The REB stands upright on the stand frame and the pipe to be prepared is mounted to the mandrel. This is possible for short lengths of pipe and for flanges.

WARNING

Danger of injury!

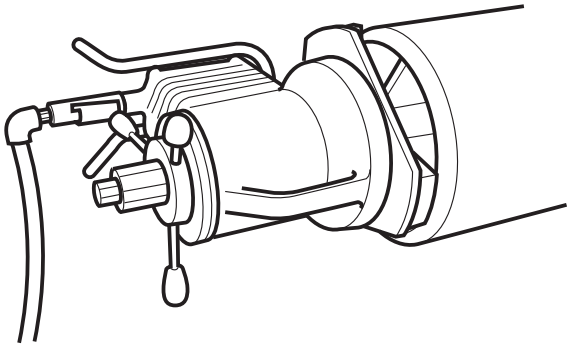
Long length of pipe could cause the machine to overturn.

▶ Support of the free end is required when processing long and heavy pipes.

B) Machine mounted to the pipe to be prepared

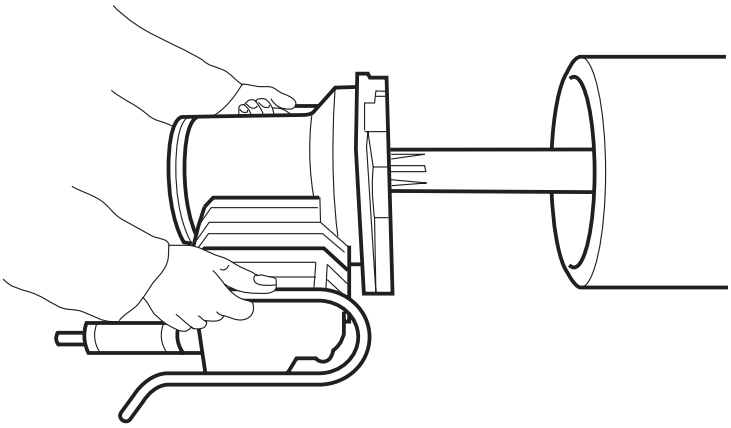
There are two options:

▷ The REB is guided into the pipe with the mandrel and subsequently fastened.



Or:

▷ The mandrel is mounted to the pipe and the REB guided over the mounted mandrel.

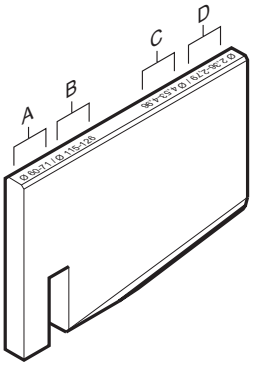


Note We recommend because of the high weight of the **REB 20 (D)**, at first to mount the mandrel as described above to the pipe and then to guide the REB over the mounted mandrel.

7 Operation

7.1 Choose the wedges and the clamping chuck

Note



The clamping range of the **REB 6 and REB 14** given on each wedge, in mm and inches, refers to the **pipe inner diameter**.

A: Pipe inner-Ø, without clamping chuck, in mm

B: Pipe inner-Ø, with clamping chuck, in mm

C: Pipe inner-Ø, with clamping chuck, in inches

D: Pipe inner-Ø, without clamping chuck, in inches

The clamping range of the **REB 20** is **not** given on the wedges, as they are identical to the wedges of the REB 14. For transmission, see the table in chapter 7.1.3, p. 18.

Preparation of the pipe with REB 6 and REB 14 depends on its inner-Ø

- without clamping chuck and with small clamping washer (column 1), or
- with clamping chuck and large clamping washer (column 2)

7.1.1 Clamping range REB 6

Clamping range pipe ID		Wedges	
[mm]	[inch]	without clamping chuck and with small clamping washer	with clamping chuck and with large clamping washer
		Column 1	Column 2
49 - 60	1.93 - 2.36	790 093 134	
60 - 71	2.36 - 2.79	790 093 136	
71 - 82	2.79 - 3.23	790 093 138	
82 - 93	3.23 - 3.66	790 093 140	
93 - 104	3.66 - 4.09	790 093 142	
104 - 115	4.09 - 4.53		790 093 134
115 - 126	4.53 - 4.96		790 093 136
126 - 137	4.96 - 5.39		790 093 138
137 - 148	5.39 - 5.83		790 093 140
148 - 159	5.83 - 6.26		790 093 142
Code no. clamping washers		790 093 152	790 093 154
Code no. clamping chuck			790 093 130

7.1.2 Clamping range REB 14

Clamping range pipe ID		Wedges	
[mm]	[inch]	without clamping chuck and with small clamping washer	with clamping chuck and with large clamping washer
		Column 1	Column 2
92 - 111	3.62 - 4.37	790 094 134	
111 - 130	4.37 - 5.12	790 094 136	
130 - 149	5.12 - 5.87	790 094 138	
149 - 168	5.87 - 6.61	790 094 140	
168 - 187	6.61 - 7.36	790 094 142	
187 - 206	7.36 - 8.11	790 094 144	
206 - 225	8.11 - 8.86		790 094 134
225 - 244	8.86 - 9.61		790 094 136
244 - 263	9.61 - 10.35		790 094 138
263 - 282	10.35 - 11.10		790 094 140
282 - 301	11.10 - 11.85		790 094 142
301 - 320	11.85 - 12.60		790 094 144
Code no. clamping washers		790 094 152	790 094 154
Code no. clamping chuck			790 094 130

7.1.3 Clamping range REB 20

Preparation of the pipe with REB 20 depends on its inner-Ø

- with small clamping chuck 790 094 242 and small clamping washer (column 1), or
- with large clamping chuck 790 094 244 and large clamping washer (column 2)

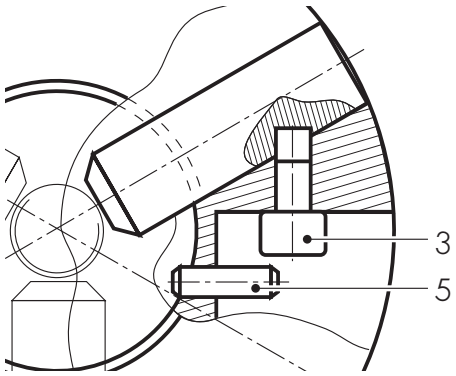
The wedges of the REB 20 are identical to the wedges of the REB 14. Therefore the clamping range given on the wedges is only for the dimension range 92 – 320 mm (3,62 – 12.60 inch). Choose at first the desired clamping range of the REB 20 from the following table, and then choose the wedges (clamping range) of the REB 14, stated in the same line.

Transmission table					
Clamping range pipe ID REB 20		**Clamping range pipe ID REB 14**		**Wedges**	
[mm]	**[inch]**	**[mm]**	**[inch]**	with **small** clamping chuck (790 094 242) and with **small** clamping washer	with **large** clamping chuck (790 094 244) and with **large** clamping washer
				Column 1	**Column 2**
282 - 301	11.10 - 11.85	92 - 111	3.62 - 4.37	790 094 134	
301 - 320	11.85 - 12.60	111 - 130	4.37 - 5.12	790 094 136	
320 - 339	12.60 - 13.35	130 - 149	5.12 - 5.87	790 094 138	
339 - 358	13.35 - 14.09	149 - 168	5.87 - 6.61	790 094 140	
358 - 377	14.09 - 14.84	168 - 187	6.61 - 7.36	790 094 142	
377 - 396	14.84 - 15.59	187 - 206	7.36 - 8.11	790 094 144	
396 - 415	15.59 - 16.34	206 - 225	8.11 - 8.86		790 094 134
415 - 434	16.34 - 13.50	225 - 244	8.86 - 9.61		790 094 136
434 - 453	13.50 - 17.83	244 - 263	9.61 - 10.35		790 094 138
453 - 472	17.83 - 18.58	263 - 282	10.35 - 11.10		790 094 140
472 - 491	18.58 - 19.33	282 - 301	11.10 - 11.85		790 094 142
491 - 510	19.33 - 20.08	301 - 320	11.85 - 12.60		790 094 144

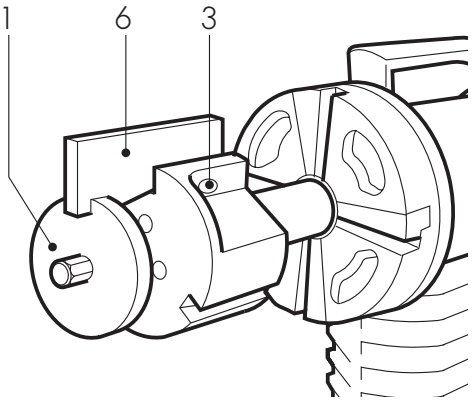
7.2 Mounting the wedges to the mandrel

1. Unscrew the three guiding screws (3) to the pin limit (5).

Important The guiding pins may not project into the path of the wedge.



2. Screw on the clamping washer (1).
   REB 6: Code 790 093 152. REB 14: Code 790 094 152.
   REB 20: Code 790 094 246 (small); Code 790 094 248 (large).

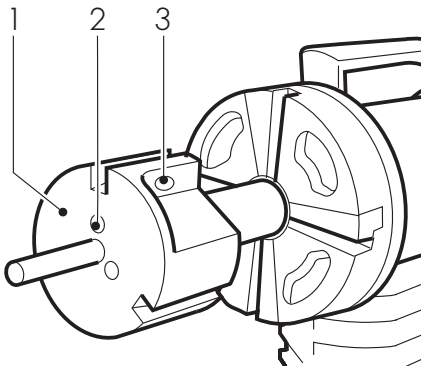


3. Insert the three wedges (6) and screw in the guiding screws (3) completely.

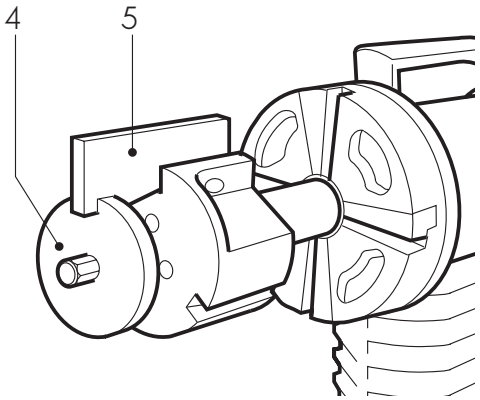
7.3 Mounting the clamping chuck to the mandrel

Important The guiding screws must be loosened sufficiently from the mandrel (3) so that the wedge paths are free for the driving wedge.

1. Screw the clamping chuck (1) onto the mandrel.
2. Fasten the clamping chuck with the three screws (2).



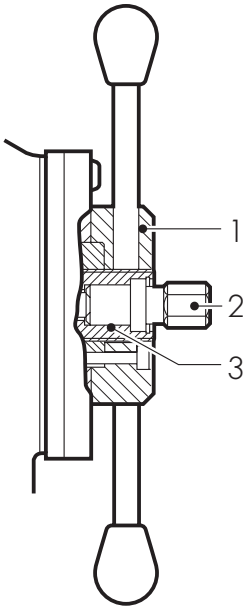
3. Screw the clamping washer (4) onto the spindle.
   REB 6: Code 790 093 154. REB 14: Code 790 094 154.
   REB 20: Code 790 094 246 (small) Code 790 094 248 (large).



4. Insert the three wedges (5) and screw in the screws (3) completely.

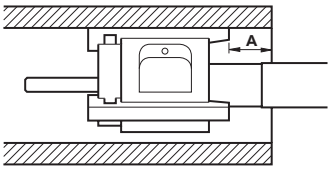
7.4 Centring the mandrel in the pipe

1. Use the feed supply to bring the machine into the zero position, so that the thread runout from the mandrel (3) is flush with the facing disc (1) of the feed supply.



2. Insert the REB into the pipe.

Distance A



The distance A (pipe end – wedges) depends on the preparing method:

- If the **outer diameter** of the pipe is to be prepared, then the distance A should be as small as possible, with a min. of 10 mm.
- If the **inner diameter** of the pipe is to be prepared, then the distance A must be set as follows:

  Length of the tool cutting edge plus 5 mm.

3. Tighten up the thread spindle (2) once the REB has been correctly positioned.

7.5 Mounting the multifunctional tools (MFW) and the tool holder (WH)

Note Up to 4 tool holders can be clamped to the tool arbor of the REB 6 and REB 14 (at REB 20 up to 3 tool holders). Thus, several types of machining (facing, 1st bevel, 2nd bevel, interior-diameter turning) are possible at the same time. Preparing the fusion bead is thus reproducible for subsequent pipe ends.

▶ Select the appropriate MFW according to the type of machining required (separate/combined) from the table given in chapter 7.5.1 and 7.5.2.

7.5.1 Separate working steps (only 1 tool in operation)

Material: Unalloyed and low-alloy steel, high-alloy steel.

Pipe OD	MFW	Tool Holder		
		Facing	30° bevel	37.5° bevel
<114 mm (4")	790 093 037	790 092 202	790 092 210	790 092 216
56 up to 168 mm	790 093 033	790 093 202	790 093 210	790 093 216
>168 mm (6")	790 093 033	790 093 202	790 093 210	790 093 216

7.5.2 Combination of beveling and facing tool holder (two tools in operation at the same time)

Bevel holder 30° (code 790 093 210) for REB 6 and REB 14.

Pipe ID [mm]	Pipe OD [mm]	S [mm]	Facing tool holder		Machine type
			Code	H [mm]	
54 ≤ ID ≤ 76	82 < AD ≤ 104	S ≤ 14	790 093 204	27	REB 6
76 < ID ≤ 80	104 < AD ≤ 108	S ≤ 14	790 093 204	27	REB 6
	128 < AD ≤ 132	S ≤ 26	790 093 202	20	REB 6
80 < ID ≤ 106	108 < AD ≤ 134	S ≤ 14	790 093 204	27	REB 6
	132 < AD ≤ 158	S ≤ 26	790 093 202	20	REB 6, REB 14
106 < ID ≤ 124	134 < AD ≤ 152	S ≤ 14	790 093 204	27	REB 6, REB 14
	158 < AD ≤ 176	S ≤ 26	790 093 202	20	REB 6, REB 14
124 < ID ≤ 150	152 < AD ≤ 178	S ≤ 14	790 093 204	27	REB 6, REB 14
	176 < AD ≤ 202	S ≤ 26	790 093 202	20	REB 14
150 < ID ≤ 317.5	178 < AD ≤ 345.5	S ≤ 14	790 093 204	27	REB 14
	202 < AD ≤ 369.5	S ≤ 26	790 093 202	20	REB 14

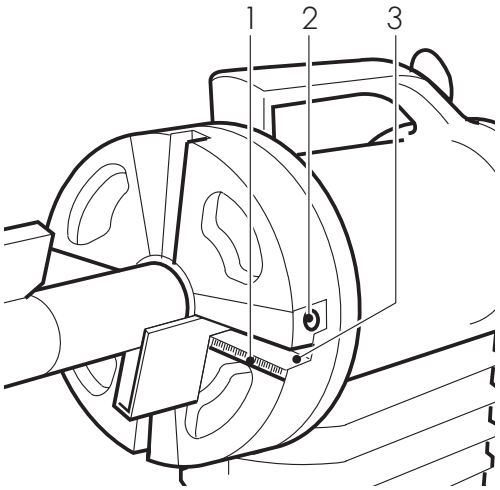
Bevel holder 37.5° (code 790 093 216) for REB 6 and REB 14.

Pipe ID [mm]	Pipe OD [mm]	S [mm]	Facing tool holder		Machine type
			Code	H [mm]	
54 ≤ ID ≤ 76	82 < AD ≤ 104	S ≤ 14	790 093 204	27	REB 6
76 < ID ≤ 80	104 < AD ≤ 108	S ≤ 14	790 093 204	27	REB 6
	128 < AD ≤ 132	S ≤ 26	790 093 202	20	REB 6
80 < ID ≤ 106	108 < AD ≤ 134	S ≤ 14	790 093 204	27	REB 6
	132 < AD ≤ 158	S ≤ 26	790 093 202	20	REB 6, REB 14
106 < ID ≤ 124	134 < AD ≤ 152	S ≤ 14	790 093 204	27	REB 6, REB 14
	158 < AD ≤ 176	S ≤ 26	790 093 202	20	REB 6, REB 14
124 < ID ≤ 150	152 < AD ≤ 178	S ≤ 14	790 093 204	27	REB 6, REB 14
	176 < AD ≤ 202	S ≤ 26	790 093 202	20	REB 14
150 < ID ≤ 317.5	178 < AD ≤ 345.5	S ≤ 14	790 093 204	27	REB 14
	202 < AD ≤ 369.5	S ≤ 26	790 093 202	20	REB 14

▶ Screw the MFW onto the tool holder using the Torx T20 screwdriver.

7.5.3 Mounting the tool holder

1. Insert the tool holder with mounted MFW into the dovetail mortise (3) from the side and position.



2. Tighten up the screw (2) while pressing the tool holder against the facing surface of the tool carrier at the same time.

Note Note the value read off from the scale (1) to make the setting easier for future work.

7.6 Adjusting the rotational speed

1. Connect the REB (requirements for REB (D) see chapter 5.2, p. 14, for REB (E) see chapter 5.3, p. 14).

ATTENTION **Tool damage**

A pipe which is not sawn-off square can damage the tool if the distance between the cutting edge and the pipe end is too short.

▶ Before switching on the REB, check that there is a sufficient distance between the cutting edge and the pipe end.

2. Take the recommended cutting speed from the table below.
3. Determine the actual revolutions per minute (rpm) (formula, see chapter 7.6.2, p. 26).
4. Compare it with the recommended cutting speed and reduce or increase the revolutions per minute (rpm) accordingly.

7.6.1 Standard values for rpm (n) and cutting speed (v)

Pipe OD		Nominal bore DN	Unalloyed and low-alloy steel		High-alloy steel	
[mm]	[inch]	[inch]	[v (m/min)]	[n (rpm)]	[v (m/min)]	[n (rpm)]
42.2	1.66	1 1/4	7	53	6	45
48.3	1.9	1 1/2	7	46	6	40
60.3	2.375	2	7	37	6	32
73	2.875	2 1/2	7	31	6	26
88.9	3.5	3	7	25	5	18
101.6	4	3 1/2	7	22	5	16
114.3	4.5	4	6	17	5	14
141.3	5.563	5	6	14	5	11
168.3	6.625	6	6	11	4	8
219.1	8.625	8	6	9	4	6
273	10.75	10	6	7	4	5
323.8	12.75	12	6	6	4	4
355.6	14	14	6	5	4	4

7.6.2 Determining rpm

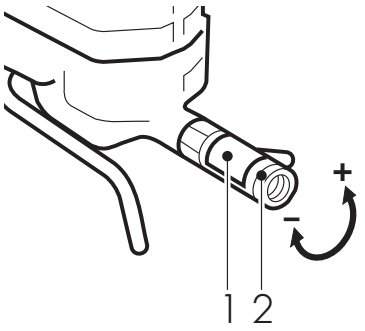
1. Measure the number of revolutions of the tool retainer in one minute (= rpm (n)).
2. Determine the revolutions per minute (rpm) using the following formula:

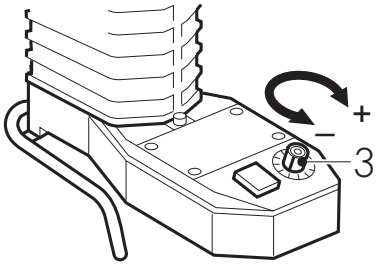
$$\textbf{Revolutions per minute (rpm) n} = \frac{v \bullet 1000}{\pi \bullet d} = [1/\text{min}]$$

v Cutting speed (m/min)
d Exterior pipe ∅ OD (mm)
n Revolutions per minute (rpm) (1/min)

Adjusting the rotational speed

▶ Depress the On/Off switch (1) while at the same time adjusting the twist grip (2) for regulation of the speed, or adjusting the controller knob (3), until the speed measured complies with the required rotational speed.





Increasing the rotational speed

▶ Turn the twist grip (2) in the counterclock-wise direction, or turn the controller knob (3) in the clockwise direction.

Decreasing the rotational speed

▶ Turn the twist grip (2) in the clockwise direction, or turn the controller knob (3) in the counterclockwise direction.

7.7 Preparing the tube

DANGER

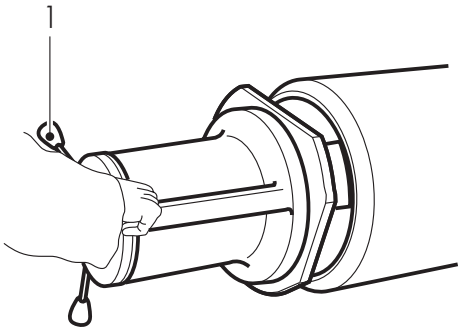
Hot and sharp chips!

Danger of injuries to eyes and hands.

- ▶ Always wear safety goggles when working.
- ▶ Don't remove chips without wearing hand protection.

Note Only use the cooling cutting material KSS-TOP as recommended by Orbitalum Tools for chip removal. Machining with lubrication extends the service life of the multifunctional tools and larger feed rates are possible.

1. Use the feed supply (1) to drive the tool up to the pipe.



2. Advance very carefully until the first contact is made between pipe and tool. When the cutting edge of the tool machines-down over the whole circumference of the pipe, advance forwards with a uniform pressure.

Note **Compressed air drive:** If you reduce the advance (with the advance supply) you must also reduce the cutting speed (using the twist grip for regulation of the speed).

Regulation of the set speed by the controls for **electrical drive** is independent of the load.

WARNING

REB (D):

Danger of injury! The compressed air valve (ON/OFF grip) could be actuated inadvertently so that the machine is started.

- ▶ Switch off the machine after completing each stage of work and allow the machine to run a stop.

7.8 Preparing elbows

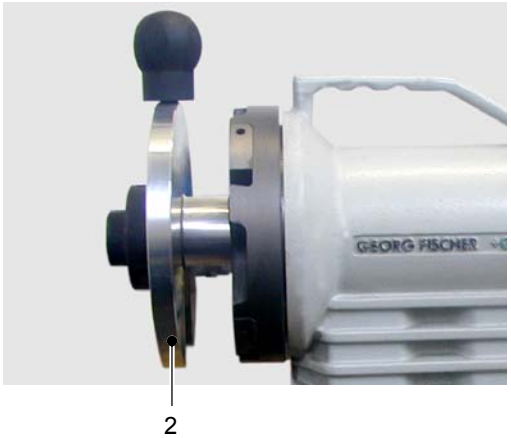
Note Preparing of elbows is only possible with the REB 6 and the special elbow clamping system (accessories, see chapter 2.3.3, p. 8).

The preparation and adjustments for processing elbows are identically to chapter 7.5, p. 23 up to and including chapter 7.6, p. 25.

7.8.1 Mounting the mandrel into the REB

1. Push the special mandrel into the REB and fix it with forward-feed supply (1).

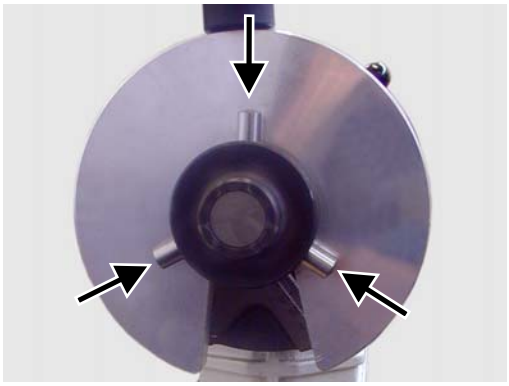
2. Attach the straightening tool (2) between mandrel and tool arbor and fix it with forward-feed supply (1).



3. Depending on the elbow inner diameter, select 1 set (à 3 pieces) of the dimension-pins from the table below.

Clamping range elbow ID		Code of
[mm]	[inch]	dimension-pins
146 - 157	5.75 - 6.18	790 093 492
136 - 147	5.35 - 5.79	790 093 491
126 - 137	4.96 - 5.39	790 093 490
116 - 127	4.57 - 5.00	790 093 489
106 - 117	4.17 - 4.61	790 093 488
96 - 107	3.78 - 4.21	790 093 487
86 - 97	3.39 - 3.82	790 093 486
75 - 87	2.95 - 3.43	790 093 485

4. Insert the selected dimension-pins (3) into the 3 mandrel bores until stop.



5. Attach the elbow on the mandrel and arrange it close to the straightening tool.

6. If the elbow is correctly positioned, tighten with the threaded spindle (4) by ring spanner (SW 18).

The elbow is now fixed.

7. Remove the straightening tool.

The processing of the elbow can now be started.

8 Maintenance

DANGER

REB (D):

Parts under pressure can cause injuries when loosened!

- ▶ Before performing any maintenance work: Let the machine run out with the compressed air supply switched off.
- ▶ Before performing any maintenance work remove the compressed air supply.

REB (E):

Danger of fatal injuries from electric shocks!

- ▶ Before performing any maintenance work: Ensure that the machine is disconnected from any electrical supply.

Time / Interval	Activity
Before starting work	▶ In the event of the machine already being mounted in the pipe ensure that the machine is firmly clamped before operating. REB (D): ▶ Check the system pressure. ▶ Check the maintenance unit. ▶ Adjust the lubricator of the maintenance unit: max. 3 drops for an air consumption of 70 cfm (oil types: SAE 5 W through to SAE 10 W) At low temperatures: ▶ Use anti-ice lubricant.
Every week	REB (D): ▶ Check the compressed air line for leaks. ▶ Check the hose clamps for firm seating.
With each cleaning	▶ Clean the wedges and seats for the wedges (mandrel and head).
With each tool change	▶ Clean the tool holder and the MFW. ▶ Remove cutting material and dirt from the contact surface of the tool holder.

9 What to do if ...?

9.1 General trouble shooting

In the following table you will find possible causes of faults and the appropriate remedies.

Problem	Possible cause	Remedy
REB (D) does not run even though connected to the compressed air line.	Compressed air motor blades in the wrong position.	▶ Set the throttle valve to maximum speed, then switch on and gradually decrease.
	Plates are stuck in the rotor.	▶ Unscrew the REB (D)'s pressure regulator and put in thin-viscosity oil, then reconnect the compressed air supply. ▶ Dismantle the compressed air motor and clean the plates.
	System pressure too low.	▶ Increase the system pressure to 6 bar.
Motor of the REB (D) does not deliver the performance required.	Pressure in the primary network is too low (under 6 bar).	▶ Disconnect other consumers from the network. ▶ Increase system pressure to 6 bar.
Tool (multifunctional tools (MFW)) catches during preparing.	Too much feed.	On the REB (D): ▶ Turn off the machine, disconnect the compressed air supply, and loosen the pipe clamping. On the REB (D) and (E): ▶ Turn back the machine counter-clockwise approx. 5 mm. ▶ Detach the tool holder and remove the machine from the pipe. ▶ Remove chip using side-cutting pliers and file off the shoulder. ▶ Feed carefully for further machining.
	Multifunctional tool is loosen.	▶ Tighten the multifunctional tool.
Motor of the REB (E) cuts out of its own accord.	Maximum permissible operating temperature has been exceeded.	▶ Switch off the REB (E), allow to cool down and then switch on again.
	Maximum permissible power consumption has been exceeded.	▶ Switch off the REB (E) and then on again.

Problem	Possible cause	Remedy
Motor of the REB (E) does not start.	Overload protection device has tripped.	▶ Switch off the REB (E), wait for approx. 15 minutes and then switch on again.
	Disable re-start has tripped.	▶ Switch off the REB (E) and then switch on again.
Poor machining quality on cut and beveled surfaces.	MFW very worn or broken.	▶ Use new cutting edge. ▶ Use new multifunctional tools (MFW) from Orbitalum Tools.
	Inadequate tool cooling.	▶ Lubricate the cutting area.
	Wrong speed setting.	▶ Adjust the speed according to chapter 7.6, p. 25.
Tool tends to vibrate.	Cutting speed too high.	▶ Adjust the speed (cutting speed) according to chapter 7.6, p. 25.
	Feed supply too low.	▶ Increase the feed rate increasing the power at the same time. In doing so pay attention that the cutting speed remains constant.
Extreme tendency to vibrate.	Axial or radial play in the parts.	▶ Check the machine for play.
	Multifunctional tool is loosen.	▶ Check the multifunctional tool for tightness.

9.2 Servicing/after-sales service

For ordering spare parts, see the separate spare parts list.

For trouble shooting, please contact your competent branch office directly.

Please state the following details:

- Machine type: **REB 6, REB 14, REB 20** (compressed air or electric)
- Machine number: *(see identification plate)*

10 EU declaration of conformity

10.1 REB 6, REB 14, REB 20 (Pneumatic)

CE

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

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According to machine guideline 2006/42/EG (MaschR), Appendix II A

Die Bauart der Maschine: The following product: Il seguente prodotto: Le produit suivant: El producto siguiente:	**REB 6** Pipe End Preparation Machine (Pneumatic) **REB 14** Pipe End Preparation Machine (Pneumatic) **REB 20** Pipe End Preparation Machine (Pneumatic)
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)

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 12100-1 (2003)
DIN EN ISO 12100-2 (2003)
DIN EN 1037 (1995)
DIN EN 983 (1996)

Singen, 22.01.2010

Markus Tamm
Managing Director

Andreas Lier
Manager Division Energy

10.2 REB 6, REB 14 (Electric)

CE

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

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According to machine guideline 2006/42/EG (MaschR), Appendix II A

Die Bauart der Maschine: The following product: Il seguente prodotto: Le produit suivant: El producto siguiente:	**REB 6** Pipe End Preparation Machine (Electric) **REB 14** Pipe End Preparation Machine (Electric)
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 12100-1 (2003)
DIN EN ISO 12100-2 (2003)
DIN EN 61029-1 (2003)
DIN EN 1037 (1995)
DIN EN 50144-1 (1998)
DIN EN 55014-1 (2003)
DIN EN 55014-2 (2002)
DIN EN 61000-3-2 (2001)
DIN EN 61000-3-3 (2002)

Singen, 22.01.2010

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