

Operating instructions

Tube Squaring Machines

RPG ONE
RPG 1.5
RPG 2.5
Cordless
Electric



Code 790 036 766

Machine No.:

Translation of original operating instructions

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Table of contents

	Page
0 About these instructions	1
0.1 Warning messages	1
0.2 Other symbols and displays	2
0.3 Abbreviations	2
1 Safety instructions	3
1.1 Intended Use	3
1.2 Safety Regulations	3
1.3 Working with safety in mind	4
1.4 Environmental Protection/Disposal	6
1.5 Further safety regulations	6
2 Design of the product	7
2.1 RPG ONE Electric	7
2.2 RPG ONE Cordless	7
2.3 RPG 1.5 Electric	8
2.4 RPG 1.5 Cordless	8
2.5 RPG 2.5 Electric	9
2.6 RPG 2.5 Cordless	9
2.7 RPG 2.5 (Cordless) tool mounting plate	10
2.8 Accessories	11
2.8.1 Multifunctional tool (MFW)	11
2.8.2 Tool holder (WH) for beveling and squaring	11
2.8.3 Adapter clamping shell	12
2.8.4 Stainless steel clamping shells	12
3 Features and scope of application	13
3.1 Features	13
3.2 Scope of application	14
3.2.1 Application range	14
4 Technical data	14
4.1 Characteristics	14
5 Commissioning	15
5.1 Included with the machine*	15
5.2 Connection requirements	15
5.3 Assembly of the bench stand	15
5.4 Transportation	16
6 Operation	17
6.1 Determining tube dimension	18
6.2 Assembly of multifunctional tool (MFW) and tool holder (WH)	18
6.2.1 Mount multifunctional tool	18
6.2.2 Assemble tool holder	19
6.3 Setting up and/or replacing clamping shell	20
6.3.1 Remove a clamping shell	20
6.3.2 Inserting a clamping shell	21
6.4 RPG 2.5: Setting up and/or replacing adapter clamping shell	22

6.4.1	When is the adapter clamping shell necessary?	22
6.4.2	Removing clamping shell	22
6.4.3	Inserting adapter clamping shell	23
6.5	Clamping the tube	24
6.6	Selecting the speed range	25
6.6.1	Adjusting the speed: RPG Electric	25
6.6.2	Adjusting the speed: RPG Cordless	26
6.7	Processing the tube	27
6.7.1	Turn on the RPG Electric	28
6.7.2	Switching on RPG Cordless	28
6.7.3	Facing, feeds and Adjustments	29
6.7.4	Switching off RPG Electric	29
6.7.5	Switching off RPG Cordless	30
6.8	Processing in restricted environments	30
6.8.1	Change position of drive	30
6.8.2	Change position of body	31
7	Maintenance	32
8	What to do if?	33
8.1	Troubleshooting	33
8.2	Servicing/after-sales service	33
9	EU declaration of conformity	34
9.1	RPG ONE, RPG 1.5, RPG 2.5	34
9.2	RPG ONE Cordless, RPG 1.5 Cordless, RPG 2.5 Cordless	35

0 About these instructions

For a quick understanding of these instructions and safe operation 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 about the risks of bodily injuries or property damage. Please read and observe these warning messages at all times!



This is a warning symbol. It is designed to warn you against risks of injury.

Please follow all instructions marked 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 minimize risks.
 WARNING	Possible danger! Non-observance could result in serious injury. ⊙ Restrictions (if applicable). ► Measures to prevent risks.
 ATTENTION	Dangerous situation! Non-observance could result in minor injuries.
ATTENTION	Dangerous situation! Non-observance could result in material damage.

0.2 Other symbols and displays

Symbol	Meaning
Important Note	Notes: Contain particularly important information to be understood.
	Instruction: You should pay attention to this symbol.
1.	Request for action in a sequence of actions: You need to do something here.
▶	Single request for action: You need to do something here.
▷	Conditional request for action: You need to do something here if the specified condition is met.

0.3 Abbreviations

Abbr.	Meaning
RPG	Tube Squaring Machine with electric drive
RPG Cordless	Tube Squaring Machine with cordless drive
MFW	Multifunctional tool
WH	Tool holder
QTC®	Quick Tool Change

Important **Warning: While using electrical tools, the following safety measures need to be observed in order to protect against electrical shock, risk of injury or fire.**

Read all these instructions before using this electrical tool, and preserve the safety instructions carefully.

1 Safety instructions

The Tube Squaring Machine (later called RPG ONE, RPG 1.5 or RPG 2.5 (Cordless)) is built to state-of-the-art technology. Using this machine in a manner other than that described in this manual can lead to personal injuries to the user or of third parties. Furthermore, the machine or other objects may be damaged.

Therefore:

- Always ensure that the machine is in good working order and comply with these notes on safety.
- Keep complete documents close by the machine.
- Generally recognised procedures for the prevention of accidents should be observed.

1.1 Intended Use

- Use RPG ONE, RPG 1.5 or RPG 2.5 exclusively as a bench machine for processing thin-walled stainless-steel or steel tubes and welded micro fittings.
- Use RPG ONE Cordless, RPG 1.5 Cordless or RPG 2.5 Cordless exclusively as a mobile machine for processing thin-walled stainless-steel or steel tubes and welded micro fittings at fixed tubeline systems.
- 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 these instructions. Other materials should be used only after consulting the Orbitalum Tools after-sales service.
- Please read through the operating instructions and safety prescriptions completely, before using the rechargeable battery and charger of the RPG ONE Cordless, RPG 1.5 Cordless or RPG 2.5 Cordless.
- Only use original Orbitalum Tools spare parts and resources.
- Inspect the RPG ONE, RPG 1.5 or RPG 2.5 daily for visible signs of damage or defects. Have any damages or defects repaired immediately.

- Work on the electrical equipment must only be carried out by a qualified electrician.
- Only operate the RPG ONE, RPG 1.5 or RPG 2.5 if the electrical restart prevention is working correctly.
- Switch off the machine, allow it to run to a standstill and take out the plug from the power supply unit or take out the rechargeable battery before any change of tools, transport, maintenance and repair operations.

1.3 Working with safety in mind

“Make your contribution to safety in the workplace.”



- Report any unusual response from the machine to the person responsible immediately.
- Be aware of safety aspects at all times during work.
- When working with the RPG, wear protective goggles and safety gloves.
- Tie up long hair (hair-net); do not wear loose-fitting clothes.
Note: Jewellery and ties could get caught in the rotating parts!
- Check that the work piece is correctly clamped.
- After the work process, have the machine switched off and let it run to a standstill.
- Switch the machine off, allow it to run to a standstill or take out the rechargeable battery before any change of tools, cleaning, maintenance, setup and repair operations.
- During operations, keep hands away from the tools.
- Be aware of environmental influences: Do not use electric tools and rechargeable batteries in a damp or wet environment. Ensure lighting is adequate. Do not use in close proximity to flammable liquids or gases.
- Do not carry the electric tool by the cable and do not use the electric tool to pull out the plug. Protect the cable from heat, oil and sharp edges (chips).
- Before and during the processing of tubes, ensure that the viewing window is closed.
- In order to reduce vibrations, always work with sharp multifunctional tools (MFW).

**WARNING**

Danger of being injured by sharp cutting edges

- ⊘ Do **not** touch the running tool while the machine is operating.
 - ▶ Wear safety gloves.
 - ▶ Tie up long hair (hair-net); do not wear loose-fitting clothes.
 - ▶ Use the tube squaring machine only when the tube has been clamped.
 - ▶ No chips or workpiece parts should be removed from the processing area as long as the machine is running and the tool is not yet at rest.
-

**WARNING**

Danger of eyes and hands being injured by hot and sharp-edged chips flying around

- ⊘ Do **not** touch the running tool while the machine is operating.
 - ▶ Always wear protective goggles and safety gloves.
 - ▶ Remove chips only with safety gloves. Remove long and bent chips with pincers and/or side cutting pliers.
-

**DANGER**

Danger of death by electric shock

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

- ⊘ Do **not** leave the power cord of the electric motor near the processing area and/or the tool.
- ⊘ Do **not** run the machine unattended.

Danger to life by unintentionally touching the ON/OFF switch

- ▶ The machine may only be operated using a fault current (FI) protect switch.
 - ▶ Allow the machine to run to a standstill and remove the power plug from the power supply unit or take out the rechargeable battery before any change of tools, cleaning, maintenance, setup and repair operations.
-

1.4 Environmental Protection/Disposal

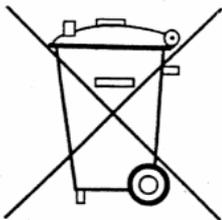
- Dispose of chips and used gear lubricant oil according to the regulations.



(as per 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 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 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 EU regulations. Separate collection and selective treatment is the basis for environment-friendly disposal and the protection of human health.
- Our appliances and products that were sold to you after August 13, 2005 will be disposed of according to legal standards after they have been delivered free of cost to us by the customer.
- Taking back old appliances, which pose a risk to human health or safety due to soiling during their use, may be refused.
- The disposal of old appliances that were placed on the market before August 13, 2005 is the responsibility of the end user. Please contact a disposal unit near you for this purpose.
- **Important for Germany:** our products may not be disposed of in municipal disposal sites as they are used for industrial purposes only.



Cd

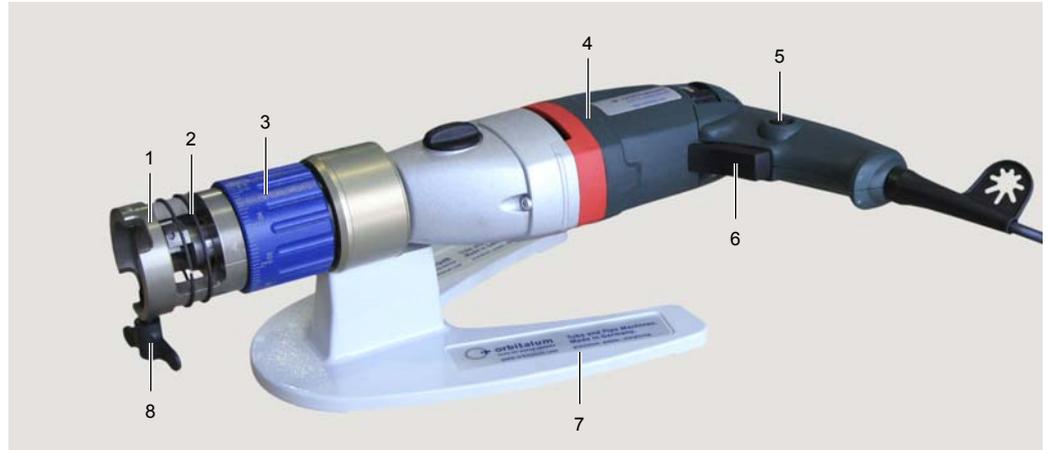
- **Accumulators and batteries** that are marked with the symbol to the left may not be disposed of with household garbage according to EU directive 91/157/EEA.
- In batteries containing harmful substances, the chemical sign for the heavy metal contained is indicated below the garbage can: Cd = Cadmium
- **For Germany, it holds that:** The end user is liable to return defective or used batteries to the distributor or to a recycling center established for the purpose.

1.5 Further safety regulations

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

2 Design of the product

2.1 RPG ONE Electric



- | | | | |
|---|--------------------------------|---|---|
| 1 | Tool recipient/housing | 5 | Fixing button |
| 2 | Viewing window | 6 | ON-OFF switch |
| 3 | Feed with scale divisions | 7 | Bench stand (removable) |
| 4 | Driving motor Metabo 1010 Plus | 8 | Release handle for fixing the clamping shells |

2.2 RPG ONE Cordless



- | | | | |
|---|---------------------------|---|---|
| 1 | Tool recipient/housing | 5 | Rechargeable battery |
| 2 | Viewing window | 6 | ON-OFF switch/speed regulator |
| 3 | Feed with scale divisions | 7 | Release handle for fixing the clamping shells |
| 4 | Metabo driving motor | | |

2.3 RPG 1.5 Electric



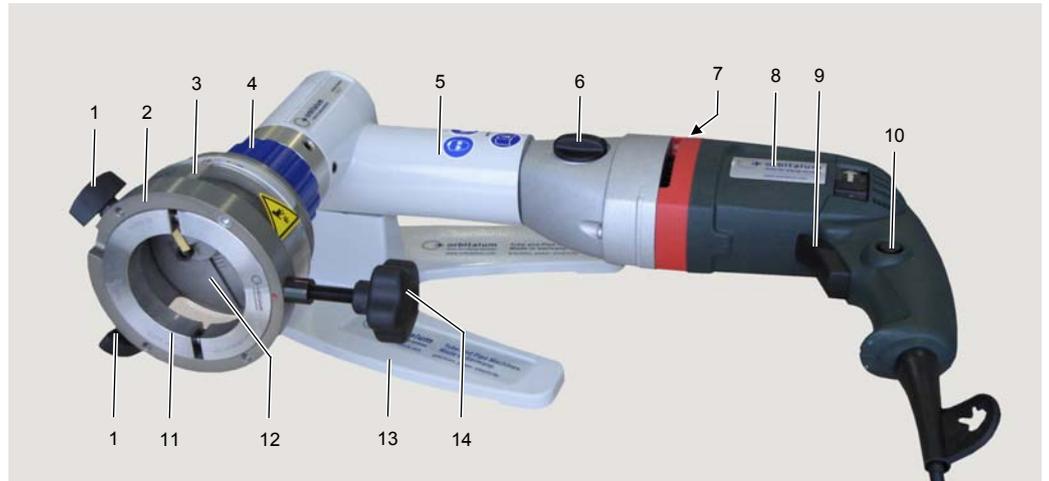
- | | | | |
|---|--------------------------------|---|-------------------------|
| 1 | Large clamp handle | 6 | Fixing button |
| 2 | Tool recipient/housing | 7 | ON-OFF switch |
| 3 | Viewing window (slidable) | 8 | Bench stand (removable) |
| 4 | Feed with scale divisions | 9 | Small clamp handles |
| 5 | Driving motor Metabo 1010 Plus | | |

2.4 RPG 1.5 Cordless



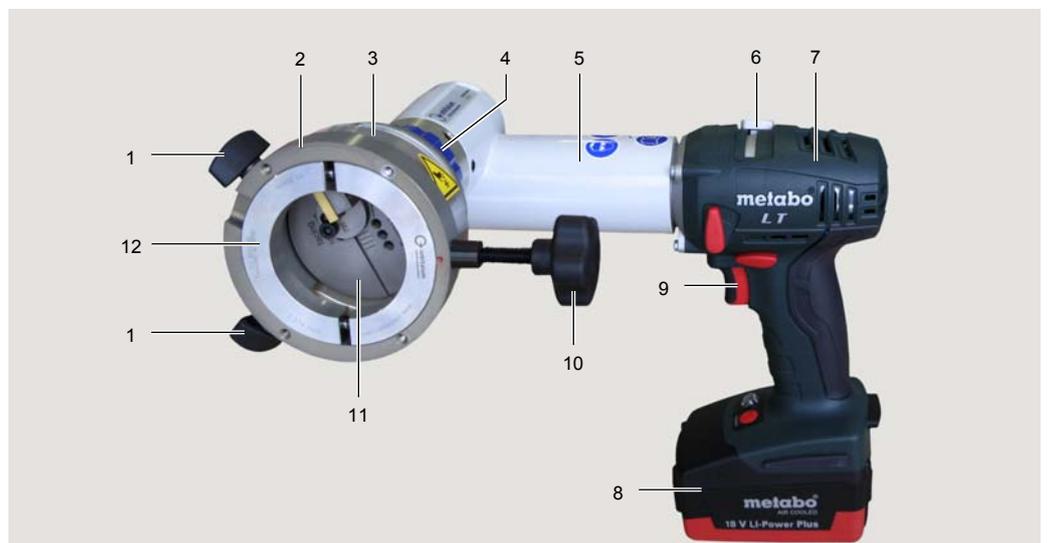
- | | | | |
|---|---------------------------|---|-------------------------------|
| 1 | Large clamp handle | 5 | Rechargeable battery |
| 2 | Viewing window (slidable) | 6 | ON-OFF switch/speed regulator |
| 3 | Feed with scale divisions | 7 | Small clamp handle |
| 4 | Metabo driving motor | 8 | Tool recipient/housing |

2.5 RPG 2.5 Electric



- | | |
|---|--|
| <ul style="list-style-type: none"> 1 Small clamp handles 2 Housing 3 Viewing window (slidable) 4 Feed with scale divisions 5 Gear box unit 6 Speed regulator for pre-adjustment
(Step 1 + 2, refer to chap. 6.6.1, p. 25) 7 Speed thumb wheel for fine-tuning
(Steps A – G, refer to chap. 6.6.1, p. 25) | <ul style="list-style-type: none"> 8 Driving motor Metabo 1010 Plus 9 ON-OFF switch 10 Fixing button 11 Clamping shell 12 Tool recipient with tool holder
and multifunctional tool
(for description refer to chap. 2.7, p. 10) 13 Bench stand (removable) 14 Large clamp handle |
|---|--|

2.6 RPG 2.5 Cordless



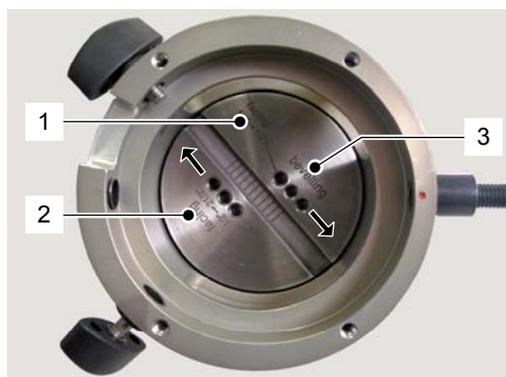
- | | |
|---|--|
| <ul style="list-style-type: none"> 1 Small clamp handles 2 Housing 3 Viewing window (slidable) 4 Feed with scale divisions 5 Gear box unit 6 Speed switch
(Step 1 + 2, refer to chap. 6.6.2, p. 26) 7 Metabo driving motor | <ul style="list-style-type: none"> 8 Rechargeable battery 9 ON-OFF switch/speed regulator 10 Large clamp handle 11 Tool recipient with tool holder
and multifunctional tool
(for description refer to chap. 2.7, p. 10) 12 Clamping shell |
|---|--|

2.7 RPG 2.5 (Cordless) tool mounting plate

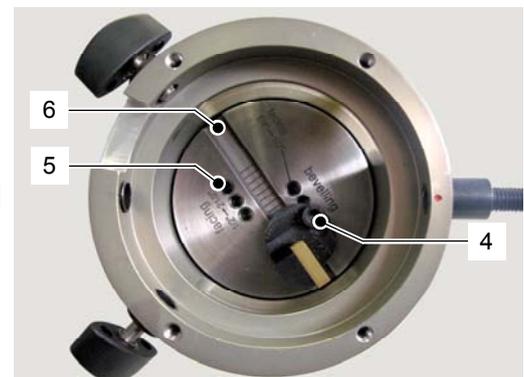
The tool mounting plate of the RPG 2.5 (Cordless) offers different tool holder assembly possibilities, according to type of application:

- Facing (1) of 6.35 - 12.7 mm ($\frac{1}{4}$ " - $\frac{1}{2}$ "")
- Facing (2) of 12.7 - 63.5 mm ($\frac{1}{2}$ " - $2\frac{1}{2}$ "")
- Beveling (3), dimension range as per bevel tool

- Notes**
- ▶ The tool holder (4) should be assembled in one of the 6 fastening threads (5) as a function of the above listed processing type and tube outer diameter.
 - ▶ The bigger the outer diameter of the tube, the further apart are the fastening threads selected for the tool holder (see arrows).
 - ▶ For exact positioning, install the tool holder (4) with a multifunctional tool in the groove guide (6) and screw it in as a function of the desired processing type along the groove guide and using the correct fastening thread (5).
 - ▶ The groove guide (6) is provided with fine lines, so as to facilitate the positioning of the tool holder (4).



Tool recipient *without* tool holder



Tool recipient *with* tool holder

2.8 Accessories

Please check the outer diameter of the tubes before ordering the clamping shells. The different standards sometimes involve a special size (particularly for tubes in accordance with DIN 2430).

2.8.1 Multifunctional tool (MFW)



Supplied as standard. Cutting insert with two cutting edges and high-performance coat of Futura® Balinit.

Can be used with all tool holders of the RPG series.

Article	Pieces	Code
Multifunctional tool MFW-P-2	1	790 038 314
Multifunctional tool MFW-P-2	10	790 038 315

2.8.2 Tool holder (WH) for beveling and squaring

Adjustable tool holder incl. Torx screw. Further tool holder for different bevel angles on request.

Application range	Possible application		Bevel angle [°]	Tube OD RPG ONE (Cordless)		Tube OD RPG 1.5 (Cordless)		Tube OD RPG 2.5 (Cordless)	
	Squaring	Beveling		[mm]	[inch]	[mm]	[inch]	[mm]	[inch]
Standard tool holder WH12-I**	x	–	–	3.0 - 25.4	0.118 - 1.000	3.0 - 63.5	0.118 - 2.500	3.0 - 63.5	0.118 - 2.500
Optional tool holder WH12-I	x	–	–	12.7 - 25.4	0.500 - 1.000	12.7 - 63.5	0.500 - 2.500	12.7 - 63.5	0.500 - 2.500
Optional tool holder WH12-I for micro fittings*	x	–	–	–	–	3.0 - 21.2	0.118 - 0.835	6.35 - 21.2	0.250 - 0.835
Tool holder WH3-V-30	–	x	30°	max. 25.4	max. 1.000	max. 35.0	max. 1.378	max. 60.3	max. 2.374
Tool holder WH3-V-35	–	x	35°	max. 25.4	max. 1.000	max. 34.0	max. 1.339	max. 59.3	max. 2.335

Article	Code
Standard tool holder WH12-I**	790 037 152
Optional tool holder WH12-I	790 037 154
Optional tool holder for micro fittings WH12-I*	790 037 156
Tool holder WH3-V-30	790 037 158
Tool holder WH3-V-35	790 037 159

* Only to be used with stainless steel clamping shells for micro fittings.

** Recommended application range with the standard tool holder: 3.0 - 12.7 mm (0.118 - 0.5 inch).

2.8.3 Adapter clamping shell



Supplied as standard with the RPG 2.5 (Cordless). Using this adapter clamping shell, the clamping shells for the RPG 1.5 can also be set up on RPG 2.5 machines, extending the processing range to min. 6.35 mm (0.250 inch).

Comes with:

- 1 Adapter clamping shell
- 1 long clamping screw

Article	Code
Adapter clamping shell	790 030 094

2.8.4 Stainless steel clamping shells



Not supplied as standard.

For deformation-free clamping of tubes. Extremely durable. Ensures precise mounting of tubes/micro fittings and quick change of clamping shells without tools. For use on all materials with an OD from 6.0 mm up to 63.5 mm (0.236 - 2.500 inch).

You can find a range of clamping shell dimensions with code numbers in our current product catalogue.

3 Features and scope of application

3.1 Features

The RPG is designed for facing tube ends/welded micro fittings of metallic materials and has the following properties:

- Preparation of tube ends for welding conforming to standards
- Tool holding system QTC® (Quick Tool Change):
Fastener for fixing the tool holder to the tool recipient
- Only one multifunctional tool necessary for:
 - different tube wall thicknesses (up to 3 mm/0.118 inch)
 - different tube materials (exclusively ferrous materials)
- Multifunctional tool:
 - non standard tool holders are available on request to the case under consideration
 - tool with multiple cutting edges
 - only if necessary, a screw for fastening and fixing the tools
 - tool cover TiN
- Cordless drive:
 - rotating / removable
 - Motor with high performance and small size
 - No memory effect
 - Single cell monitoring in the cordless pack
 - Electronic overload protection with integrated temperature monitor
 - Robust cordless packs with capacity display
 - Minimal self-discharge
 - Environmentally friendly
 - AIR COOLED technology for short charging times and a long service life
- Electric drive:
 - twistable/detachable
 - speed-controlled electric motor with speed stabilization
 - restart protection to prevent the machine from starting in an uncontrolled way after it has been re-connected to the electric mains or after the voltage supply has been re-established after a power failure
- Quick change system for clamping shells
- Feed with scale divisions:
 - total: 10 mm (0.394 inch)
 - per rotation: 9 mm (0.354 inch)
 - per graduation mark: 0.1 mm (0.004 inch)
- Simple movable viewing window and/or protection from chips makes clean work possible

3.2 Scope of application

3.2.1 Application range

Machine type		RPG ONE (Cordless)	RPG 1.5 (Cordless)	RPG 2.5 (Cordless)
Tube OD min.-max.	[mm]	3.00 - 25.40	3.0 - 38.10	6.35* - 63.50
	[inch]	0.118 - 1.000	0.118 - 1.500	0.250* - 2.500
Wall thickness max.	[mm]	3.0	3.0	3.0
	[inch]	0.118	0.118	0.118

* only with special adapter clamping shells (refer to chap. 2.8.3, p. 12).

- Tube materials**
- High-alloy steels (stainless steel material no. 1.40... to 1.45...)
 - Unalloyed and low-alloy steels
 - Aluminum

More upon request.

4 Technical data

4.1 Characteristics

Machine type		RPG ONE	RPG ONE Cordless	RPG 1.5	RPG 1.5 Cordless	RPG 2.5	RPG 2.5 Cordless
Dimensions (lxhxd)	[mm]	390x200x70	261x255x80	400x350x160	275x255x90	500x300x170	260x300x320
	[inch]	15.35x7.87x2.76	10.28x10.04x3.15	15.75x13.78x6.30	10.83x10.04x3.54	19.69x11.81x6.69	10.24x11.81x12.60
Weight (without accessories)	[kg]	4.14	2.88	4.7	3.44	6.6	5.23
	[lbs]	9.13	6.35	10.36	7.58	14.6	11.8
Versions		230 V. 50/60 Hz EU 110 V. 50/60 Hz EU 120 V. 50/60 Hz US	230 V. 50/60 Hz EU 115 V. 60 Hz US	230 V. 50/60 Hz EU 110 V. 50/60 Hz EU 120 V. 50/60 Hz US	230 V. 50/60 Hz EU 115 V. 60 Hz US	230 V. 50/60 Hz EU 110 V. 50/60 Hz EU 120 V. 50/60 Hz US	230 V. 50/60 Hz EU 115 V. 60 Hz US
Power	[W]	1010	–	1010	–	1010	–
Voltage rechargeable battery	[V]	–	18	–	18	–	18
Speed of the tool	[rpm]	145 - 380	0 - 400	145 - 380	0 - 400	1. speed: 9 - 52 2. speed: 27 - 153	1. speed: 0 - 24 2. speed: 0 - 83
Sound pressure level (EN 23741)	[dB (A)]	approx. 78	approx. 78	approx. 78	approx. 78	approx. 78.2	approx. 78.2
Vibration level (EN 50144)	[m/s ²]	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5

5 Commissioning

Checking the parts of delivery

- ▶ Check all parts of the delivery for completeness and damage in transportation.
- ▶ Report any missing parts or transportation damage to your supplier immediately.

5.1 Included with the machine*

- 1 Tube Squaring Machine RPG ONE, RPG 1.5 or RPG 2.5 (Cordless)
- 1 Durable storage and shipping case
- 2 Rechargeable batteries, 1 battery charger (for cordless versions only)
- 1 Overload protection (square nut 790 037 118)
- 1 Adapter clamping shell (Code 790 030 094, for RPG 2.5 versions only)
- 1 Tool holder WH (Code 790 037 152) with
1 Multifunctional tool MFW (Code 790 038 314)
- 1 Tool set
- 1 Set of operating instructions and spare parts list

* *Subject to change*

5.2 Connection requirements

The mains supply must meet the following requirements:

- 1-phase alternating current, protection class II:
230 V, 50/60 Hz
110 V, 50/60 Hz
120 V, 50/60 Hz
230 V, 50/60 Hz EU, Cordless: 18 V
115 V, 60 Hz US, Cordless: 18 V
- Mains fuse at least 10 A

5.3 Assembly of the bench stand

The bench stand for RPG ONE, RPG 1.5 and RPG 2.5 Electric needs to be assembled for commissioning the machine.

- ▶ Fasten the bench stand on the machine with a spanner (SW4x150).



Bench stand

5.4 Transportation



DANGER

Risk of injury due to unintentional activation of the machine

During transportation, the ON/OFF switch (speed regulator) may unintentionally be activated, please check the machine is switched off before operating.

- ▶ Allow the machine to run to a standstill and remove the power plug from the power supply unit or take out the replaceable battery before transportation and/or change of operating environment.

The RPG is a portable machine. Special resources are not required for transportation (carry the machines as shown in the diagrams to ensure safe transportation).



RPG ONE Electric and RPG 1.5 Electric



RPG ONE Cordless and RPG 1.5 Cordless



RPG 2.5 Electric



RPG 2.5 Cordless

6 Operation



Risk of injury due to unintentional activation of the machine

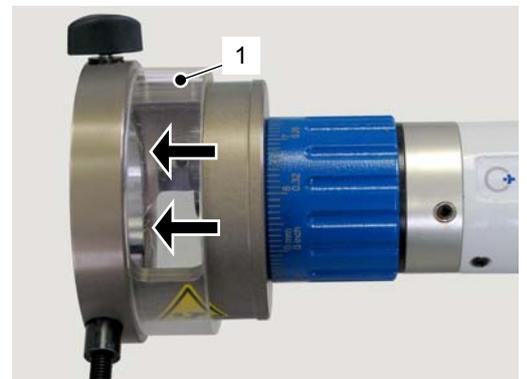
- ▶ Allow the machine to run to a standstill and remove the power plug from the power supply unit or take out the replaceable battery before repair, maintenance, job set-ups, change of tools as well as after the end of an operation.

Risk of injury due to rotating tool

- ⊙ Do **not** touch the tool holder or tool mounting plate whilst processing; keep loose clothes away from the processing area.
- ▶ Run the machine only with a clamped tube and a closed viewing window (1) (Note: the RPG ONE is not equipped with a slidable viewing window).



Viewing window open



Viewing window closed

6.1 Determining tube dimension

1. Determine the tube dimension to be processed.
2. Select tool holder, multifunctional tool and clamping shells (accessories, refer to chap. 2.8, p. 11).

Note Please check the outer diameter of the tubes before ordering the clamping shells. The different standards sometimes involve a special size (particularly for tubes in accordance with DIN 2430).

6.2 Assembly of multifunctional tool (MFW) and tool holder (WH)

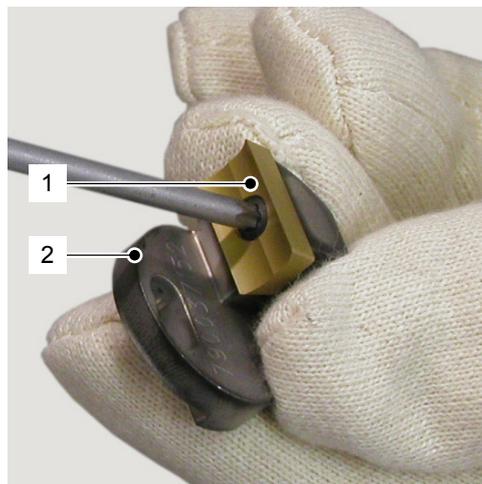


Danger of being injured by sharp cutting edges!

- ⊘ Do **not** touch the cutting edges while mounting the multifunctional tool.
 - ▶ Wear protective gloves.
-

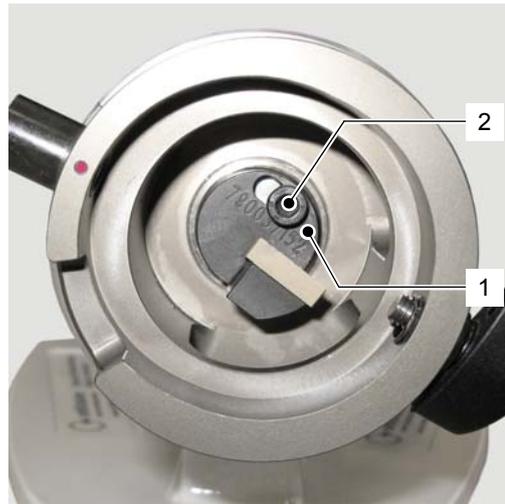
6.2.1 Mount multifunctional tool

- ▶ Screw on the multifunctional tool (1) with Torx screwdriver onto the tool holder (2).

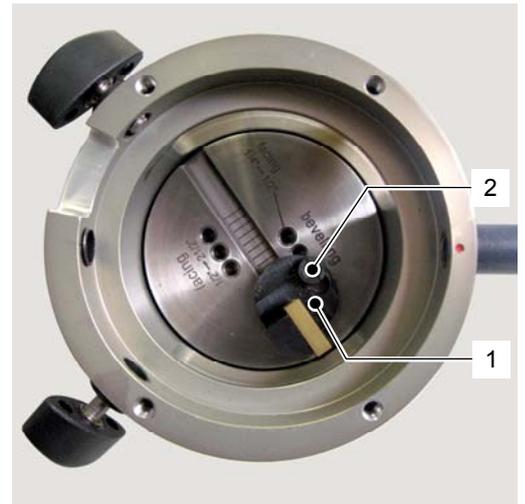


6.2.2 Assemble tool holder

1. Install tool holder (1) with multifunctional tool in the groove guide frontal from the front and place the processing type and outer diameter of tube accordingly. RPG 2.5 (Cordless): according to the type of application (beveling/squaring) install the tool holder in one of the 6 fastening threads as per description in chap. 2.7, p. 10).
2. Tighten screw (2) of the tool holder with the spanner.



RPG ONE and RPG 1.5 (Cordless)



RPG 2.5 (Cordless)

The tool holder with the multifunctional tool is now assembled.

6.3 Setting up and/or replacing clamping shell

1. Select correct clamping shell according to tube dimension (refer to chap. 2.8.4, p. 12).
2. Unscrew the clamp handles:

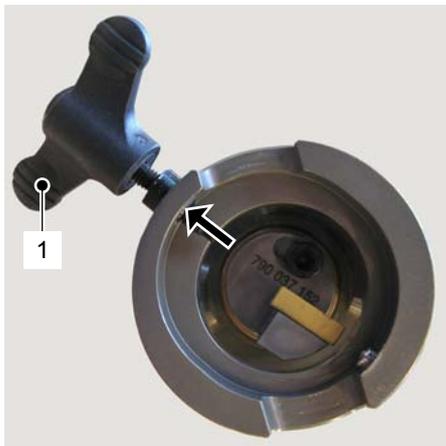
RPG ONE (Cordless):

Turn out the release handle (1) (the end of the release handle must be flush with the inside of the housing).

RPG 1.5 (Cordless), RPG 2.5 (Cordless):

Unscrew the clamp handle (large handle) (2) (the end of the clamp handle must be flush with the inside of the housing).

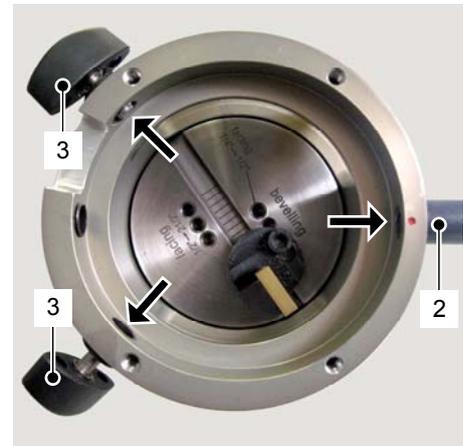
Screw out clamping shell retainers (small handles) (3) till free play is achieved (the end of the handles must be flush with the inside of the housing).



RPG ONE (Cordless)



RPG 1.5 (Cordless)



RPG 2.5 (Cordless)

6.3.1 Remove a clamping shell

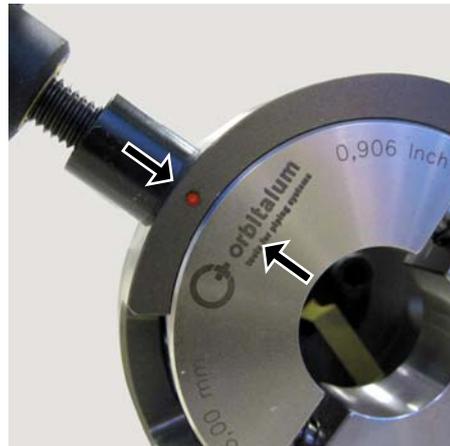
- ▶ If a clamping shell that has already been assembled needs to be replaced, it can now be removed by simply pressing on it.

6.3.2 Inserting a clamping shell

1. Press a little on the clamping shell and install it in the body.

**RPG 1.5 (Cordless),
RPG 2.5 (Cordless):**

The Orbitalum logo should cover the clamping shell with the point marked in red on the body (see arrows below).



Note The clamp shell has been installed correctly, if it is locked in place. If the clamping shell is not locked, this fact can be rectified by a gentle turn of the clamping shell.

2. Setting up clamping shells:

RPG ONE (Cordless):

Screw in the clamping shell with the release handle (1).

**RPG 1.5 (Cordless),
RPG 2.5 (Cordless):**

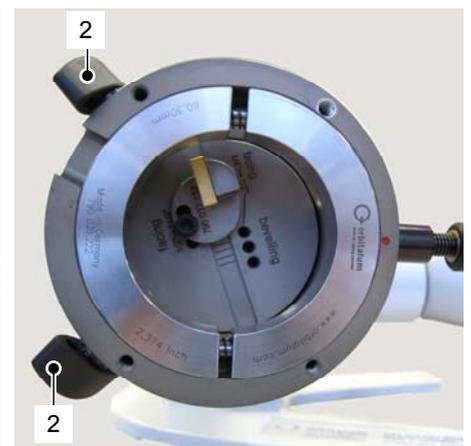
Screw in the clamping shell with the clamping shell retainers (small handles) (2).



RPG ONE (Cordless)



RPG 1.5 (Cordless)



RPG 2.5 (Cordless)

The clamping shell has now been set up correctly.

6.4 RPG 2.5: Setting up and/or replacing adapter clamping shell

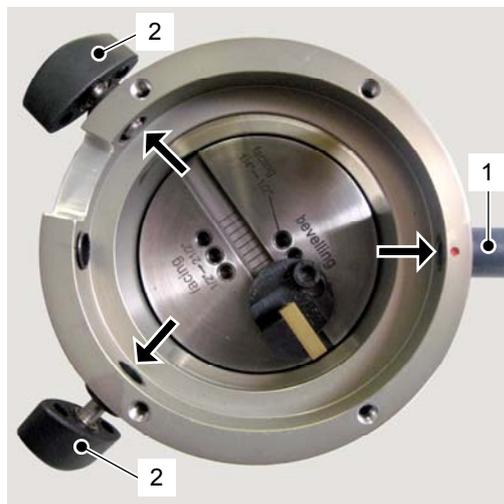
6.4.1 When is the adapter clamping shell necessary?



Adapter clamping shell

Whenever tubes with an outer diameter of 6.35 - 38.1 mm (0.250" - 1.5") need to be processed. For further details refer to chap. 2.8.3, p. 12.

1. Select correct clamping shell according to the tube dimension (refer to chap. 2.8.4, p. 12).
2. Unscrew the clamp handle (large handle) (1) (flush with the body on the inside, see arrows).
3. Unscrew out the clamping shell retainers (small handles) (2) till free play is achieved (flush with the body on the inside, see arrows).



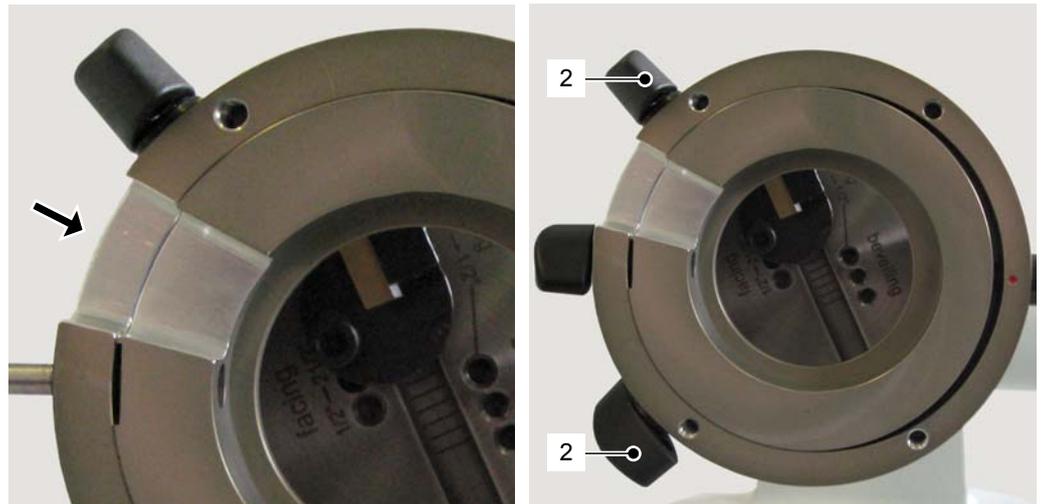
RPG 2.5 (Cordless)

6.4.2 Removing clamping shell

- ▶ If a clamping shell has already been assembled, it can now be removed by simply pressing on it.

6.4.3 Inserting adapter clamping shell

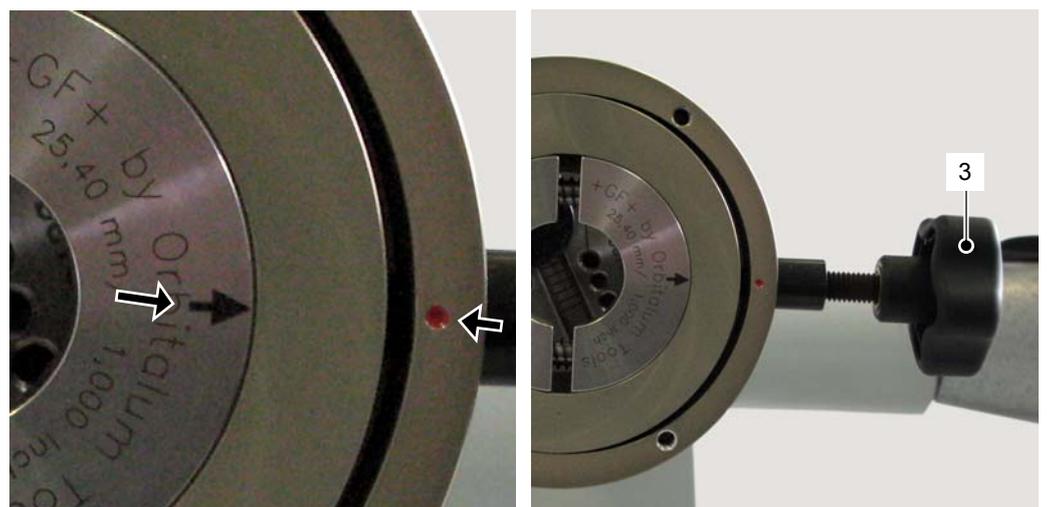
1. Install the adapter clamping shell into the body. The cavity of the clamping shell should thereby be flush with the cavity of the RPG 2.5-body (see arrow).
2. Screw in the adapter clamping shell with the clamping shell retainers (small handles) (2).



3. Press on the clamping shell slightly and install it into the adapter clamping shell.

Important The Orbitalum logo should cover the clamping shell with the point marked in red on the body (see arrows below).

4. Screw in the clamping shell with the clamp handle (large handle) (3).



Note The clamping shell has been correctly installed, if it is locked in place. If the clamp shell is not locked, this can be rectified by a gentle turn of the clamp shell.

The clamping shell has now been installed correctly.

ATTENTION Tool breakage

Using the adapter clamping shell could lead to collisions with the tool.

- ▶ Take care that there is enough space between the tool and the adapter clamping shell.

6.5 Clamping the tube**DANGER****Risk to life due to tilting machine and/or tilting tube**

Non-observance could result in death or critical injury.

- ▶ Support long tubes with suitable fixtures.

ATTENTION Tool breakage

A multifunctional tool can be damaged by incorrectly setting up the tube.

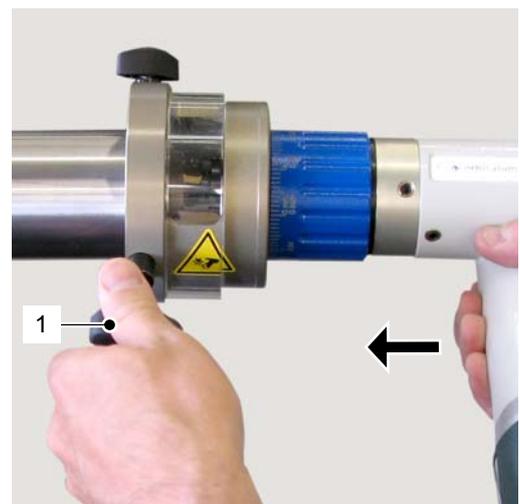
- ▶ Before clamping the tube, take care that there is enough space between the MFW and the tube.

Note ▶ Clamp the tube squarely, ensuring that the tube and machine axes are aligned. If care is not taken, the tube end may not be processed at right angles.

1. Set up the tube in the clamping shell of RPG or with the use of a RPG Cordless, guide the machine to the tube and pick it up with the clamping shell.
2. To clamp the tube tightly, rotate the clamp handle (large handle) (1) clockwise until stop.



*Clamp tube with RPG Electric:
tube to machine*



*Clamp tube with RPG Cordless:
machine to tube*

The tube can be processed now.

- ▶ To remove the tube from the machine, rotate the clamp handle (large handle) (1) anti-clockwise up to the stop.

6.6 Selecting the speed range

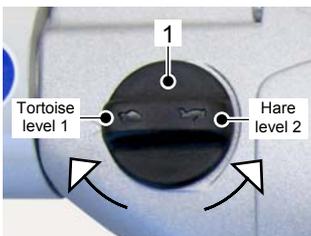
There are 2 speed levels in the RPG drives.
It is recommended that you work exclusively with speed level 1.
RPG ONE and RPG 1.5: disabled speed level 2 upon delivery.

Type of machine	Speed range level 1 [min ⁻¹]	Speed range level 2 [min ⁻¹]
RPG ONE	145 - 380	(disabled)
RPG ONE Cordless	0 - 400	(disabled)
RPG 1.5	145 - 380	(disabled)
RPG 1.5 Cordless	0 - 400	(disabled)
RPG 2.5	9 - 52	27 - 153
RPG 2.5 Cordless	0 - 24	0 - 83

6.6.1 Adjusting the speed: RPG Electric

Note The chip removal characteristic may be influenced by the speed.

The speed level can be pre-installed using the speed regulator (1) in the RPG Electric. The outer diameter of the tube can be adjusted precisely using the thumb wheel (2):



Speed regulator (1) level codes		
Tortoise	Level 1	9 - 52 min ⁻¹
Hare	Level 2	27 - 153 min ⁻¹



Fine-tuning of the thumb wheel speed regulator (2)								
RPG ONE			RPG 1.5			RPG 2.5		
Level	Tube OD [mm]	Tube OD [inch]	Level	Tube OD [mm]	Tube OD [inch]	Level	Tube OD [mm]	Tube OD [inch]
C	3.18	0.125	C	3.18	0.125	G	6.35	0.250
B	6.35	0.250	B	6.35	0.250	D	38.10	1.500
A	12.70	0.500	A	12.70	0.500	C	50.80	2.000
A	25.40	1.000	A	38.10	1.500	B	63.50	2.500

Increasing speed ▶ Increase speed using thumb wheel (2).

Decreasing speed ▶ Decrease speed using thumb wheel (2).

6.6.2 Adjusting the speed: RPG Cordless

The speed-level is pre-installed in the RPG Cordless versions via the speed switch (1) (speed ranges, refer to chap. 6.6, p. 25) and fine-tuned via the speed regulator (2).

- Notes**
- The harder the speed regulator (2) is depressed, the higher is the speed.
 - Chip removal can be influenced by the speed.
 - The processing of tubes can slow down and/or influence the speed, and it can be controlled with the speed regulator (2).
- ▶ Regulate the speed with the speed regulator and/or the ON/OFF switch (2).



Increasing speed ▶ Press the speed regulator (2) further down.

Decreasing speed ▶ Release the speed regulator (2).

6.7 Processing the tube



Risk of injury by unintentional activation of the machine

- ▶ Allow the machine to run to a standstill and remove the power plug from the power supply unit or take out the replaceable battery before repair, maintenance, job set-ups, change of tools as well as after the end of an operation.

Risk of injury by rotating tool recipient

- ⊙ Do **not** touch the tool mounting plate while the machine is in operation; keep loose clothes away from the processing area.
- ▶ Only operate the machine with a clamped tube and closed viewing window.

Risk of injury due to hot and sharp-edged chips

- ▶ Always wear protective goggles.
- ▶ Remove chips only with safety gloves. Remove long and bent chips with pincers and/or side cutting pliers.

ATTENTION Tool breakage

Excessive feed can damage the cutting tool during the processing.

- ▶ Refer to "Troubleshooting", chap. 8.1, p. 33.
- ▶ Only drive the rotating tool with limited feed to the tube!

A tube that is not sawn off at right-angles can damage the tool (MFW) if the distance between the cutting edge and the tube end is too small.

- ▶ Before starting the RPG, ensure that there is enough distance between the cutting edge (MFW) and the tube end.

RPG Cordless:

Excessive feed during the operation, and the ON/OFF switch still remains depressed, the operation may be damaged (by overheating).

- ▶ Release the ON/OFF switch immediately and separate the machine from the tube.

If the speed is reduced too quickly whilst operating, the tool may "dig in", causing damage to the face and the tool, and may cause the machine to stop.

- ▶ Always reduce the feed gradually.

6.7.1 Turn on the RPG Electric

1. Check if the viewing window is closed, and close it, if necessary.
2. Set the desired speed via the speed regulator (1).
3. Activate the ON-OFF switch (2).



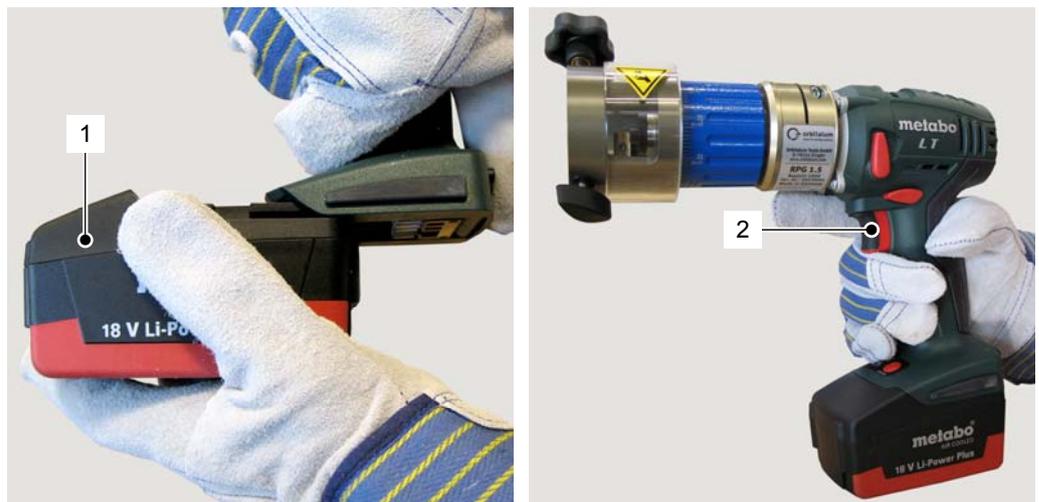
The machine starts.

Note If the tool vibrates after starting, the cutting speed is too high.

- ▶ Reduce the speed (refer to chap. 6.6.1, p. 25).

6.7.2 Switching on RPG Cordless

1. Check whether the viewing window is closed, and close it, if necessary.
2. Connect battery (1) to RPG Cordless.
3. Activate the ON/OFF switch and/or speed regulator (2).



The machine starts.

Note If the tool vibrates after starting, the cutting speed is too high.

- ▶ Reduce speed (refer to chap. 6.6.2, p. 26).

6.7.3 Facing, feeds and Adjustments

Feed with scale division (1)

- Each division means an insertion of 0.1 mm (0.004 inch).
- Do not exceed clamp thickness of 0.05 mm (0.002 inch) with chip removal. Excessive feed levels will reduce the speed or even stop the machine (refer to "Troubleshooting", chap. 8.1, p. 33).

1. Introduce the tool with feed (1) to the tube, until the tool is in contact.



Feed RPG Electric



Feed RPG Cordless

2. When the tool is cutting at the complete face of the tube:
 - ▷ continue the tool with the same pressure further, until the desired processing result is achieved.
 - ▷ To achieve the optimum squareness and finish, the tool should be allowed to rotate for 2-3 revolutions without any feed being applied.

6.7.4 Switching off RPG Electric

1. Release ON-OFF switch (2).

The machine stops.

2. Remove plug from power supply.
3. Remove tube from machine (refer to chap. 6.5, p. 24).





6.7.5 Switching off RPG Cordless

1. Release ON/OFF switch and/or speed regulator (3).
- The machine stops.
2. Remove rechargeable batteries.
 3. Remove machine from tube (refer to chap. 6.5, p. 24).

6.8 Processing in restricted environments

To make operation easier, the position of the machine with respect to the tube can be changed as follows:

6.8.1 Change position of drive

1. Release screw (1) on the reverse of the body.



*Screw position of RPG ONE Cordless,
RPG 1.5 Cordless, RPG 2.5 Cordless*



*Screw position of RPG ONE Electric,
RPG 1.5 Electric, RPG 2.5 Electric*

2. Rotate drive to desired position.
3. Install screw (1).

6.8.2 Change position of body

Body position changeable only at the RPG 2.5 (Cordless).

1. Fully unscrew headless screw (2) on the reverse of the body.



2. Rotate body to desired position (only possible in 4 x 90° steps). Pay attention to countersinks in the body.
3. Assemble headless screw (2).

7 Maintenance



DANGER

Risk of injury due to unintended activation of the ON-OFF switch.

- ▶ The machine may only be operated using a fault current (FI) protect switch.
 - ▶ Allow the machine to run to a standstill and take out the plug from the power supply unit or take out the rechargeable battery before any change of tools, cleaning, maintenance, setup and repair operations.
-

Interval	Activity
Every time the machine is cleaned	▶ Clean clamping shell and body/tool recipient.
Every time the tool is changed	▶ Clean tool holder and multifunctional tool.

8 What to do if?

8.1 Troubleshooting

The following table gives you the possible causes while troubleshooting.

Problem	Possible cause	Remedy
Tool (MFW) is causing a "step" during facing.	Feed is too big or battery is almost empty.	<ul style="list-style-type: none"> ▶ Disassemble tool holder and take out tube from the machine. ▶ Remove chip using side cutting pliers and file off section. ▶ Introduce carefully during new processing.
	MFW or WH loose.	▶ Screw in MFW or WH tightly.
Rechargeable battery power system of the RPG Cordless does not work.	Battery completely discharged.	<ul style="list-style-type: none"> ▶ Charge battery (refer to attached operating instructions of the charger). ▶ Use spare battery.
	Battery not connected to RPG Cordless.	▶ Connect battery to RPG Cordless.
Tool tends to vibrate.	Speed too high.	▶ Reduce speed (see chap. 6.6, p. 25).
Strong tendency to vibrate.	Axial or radial play in the components.	▶ Check machine for freedom from play.
	MFW loose.	▶ Check MFW on fixed seat.
The processed tube is jagged or has a burr which is too big.	MFW blunt.	▶ Replace MFW.

8.2 Servicing/after-sales service

For ordering spare parts, refer to the separate spare parts list.

For troubleshooting, please contact your competent branch office directly.

Please indicate the following details:

- Machine type:
 - **RPG ONE (Cordless)**
 - **RPG ONE (Electric)**
 - **RPG 1.5 (Cordless)**
 - **RPG 1.5 (Electric)**
 - **RPG 2.5 (Cordless)**
 - **RPG 2.5 (Electric)**
- Machine no.: *(refer to name plate)*

9 EU declaration of conformity

9.1 RPG ONE, RPG 1.5, RPG 2.5



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

Orbitalum Tools GmbH
 Josef-Schüttler-Straße 17
 78224 Singen, Deutschland
 Tel.: +49 (0) 77 31 792-0
 Fax: +49 (0) 77 31 792-524

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

Die Bauart der Maschine: **RPG ONE** Tube Squaring Machine
 The following product: **RPG 1.5** Tube Squaring Machine
 Il seguente prodotto: **RPG 2.5** Tube Squaring Machine
 Le produit suivant:
 El producto siguiente:

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)

Markus Tamm
 Managing Director

Hasan Caglar
 Product Manager

Singen, 22.01.2010

9.2 RPG ONE Cordless, RPG 1.5 Cordless, RPG 2.5 Cordless



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: **RPG ONE Cordless** Tube Squaring Machine with cordless drive
 The following product: **RPG 1.5 Cordless** Tube Squaring Machine with cordless drive
 Il seguente prodotto: **RPG 2.5 Cordless** Tube Squaring Machine with cordless drive
 Le produit suivant:
 El producto siguiente:

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:
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 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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