

Operating instructions

Pipe Cutting and Beveling
Machines

GF4 (AVM / MVM)



Code 790 142 762

Machine-no:

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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 must do something here.
▶	Single request for action: You must do something here.
▷	Conditional request for action: You must do something here if the specified condition is met.

0.3 Abbreviations

Abbr.	Meaning
GF 4	Pipe Cutting and Beveling Machine for up to 4 inch pipe outer diameter
AVM	Automatic Feed Module
MVM	Manual Feed Module

1 Notes on safety

The Pipe Cutting and Beveling Machine (here further referred to as GF 4) 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. It may also damage the machine or other equipment.

Therefore:

- Always ensure that the machine is in good working order and comply with these notes on safety.
- Keep all relevant documents close by the machine.
- Generally valid regulations for the prevention of accidents must be observed.

1.1 Proper Use

- Use the pipe cutter GF 4 only for cutting and beveling pipes.
- The Automatic and Manual Feed Module AVM/MVM may only be operated in conjunction with the Orbitalum Tools pipe cutter GF 4.
- The user will be the only person liable for damages caused by improper use.
- GF 4 AVM: Only the mains cable of the pipe cutter may be connected to the socket of the AVM.

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.
- Only use original Orbitalum Tools spare parts and resources.
- Inspect the pipe cutter GF 4 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 pipe cutter if the electrical restart inhibitor is working.
- Disconnect the mains plug before carrying out a tool change or maintenance and repair work and allow the machine to run to a stop.
- Flex rotating cable: only approved for double-insulated cutter motor, protection class II.
- GF 4 AVM: do not connect any other devices to the socket of the AVM.

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 GF 4, wear protective goggles, safety gloves, safety shoes, and ear protection.
- Tie up long hair (hair-net); do not wear loose-fitting clothes.
Attention: Jewellery and ties may get caught in the rotating parts.
- Check that the work piece is correctly clamped.
- Switch on the machine only when the pipe has been clamped.
- Once the machine is running, keep hands away from the tools.
- Before changing tools, cleaning or performing any maintenance, adjustment or repair work, disconnect the mains plug and allow the machine to run to a stop.
- An FI protection in the mains supply line, provided by the customer, is recommended.
- When working with the AVM: in case of danger, immediately press the EMERGENCY OFF button.
- When working with the AVM, the AVM will stop automatically after each cutting process. If you are working manually, switch off the machine after each working cycle (ON/OFF switch of the pipe cutter) and allow the machine to run to a stop.
- Be aware of environmental influences: do not use electric tools in damp or wet conditions. Ensure lighting is adequate. Do not use in close proximity to flammable liquids or gases.
- Do not carry the machine by the cable and do not use the machine to pull out the plug. Protect the cable from heat, oil and sharp edges (chips).



WARNING

Danger of being injured by sharp cutting edges

- ⊙ Keep hands **away** from the running tool.
 - ▶ Wear safety gloves.
 - ▶ Tie up long hair (hair-net); do not wear loose-fitting clothes.
 - ▶ Use the pipe cutter only when the pipe has been clamped.
-

**WARNING**

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

- ⊘ Keep hands **away** from the running tool.
 - ▶ Always wear protective goggles.
 - ▶ Remove chips only with safety gloves.
-

**WARNING**

Danger of being injured by breaking tool

- ⊘ Do **not** process the pipe while it is loose in the vice.
 - ▶ Clamp the pipe to be cut into the vice.
 - ▶ Immediately change worn-out tools.
 - ▶ Saw blade must be securely clamped in.
 - ▶ Pipe diameter must be set correctly. During cutting, saw blade must saw through the entire pipe wall.
-

**WARNING**

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

- ⊘ Keep hands **away** from the running tool.
 - ▶ Always wear protective goggles and safety gloves.
 - ▶ Remove chips only with safety gloves.
-

**WARNING**

Danger of being injured by rotating slide housing

When switching the motor on, the pipe cutter may revolve around the pipe automatically.

- ⊘ When working with the GF 4 AVM, do **not** stand within swiveling distance of the machine during an automatic revolution of the slide housing.
 - ▶ Make sure that the slide housing starts from its home position.
 - ▶ Clamp the pipe to be cut into the vice.
 - ▶ Pull off the vice handle from the spindle before the slide housing starts rotating.
 - ⊘ In their home position, the saw blade or bevel cutter must **not** touch the pipe!
 - ▶ Before switching the motor on, make sure that the gap between the saw blade/bevel cutter and the pipe is sufficient and that the pipe is securely clamped in the vice.
-

**DANGER****Danger of death by electric shock**

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

- ⊘ Keep the mains cable of the pipe cutter motor **away** from the saw blade or bevel cutter.
- ⊘ Do **not** let the cut-off pipe piece drop in an uncontrolled way.
- ▶ Secure the falling pipe piece.
- ⊘ Do **not** run the machine unattended.
- ▶ During the machining process, always keep an eye on the position of the mains cable.

Unintended actuation of the ON-OFF switch

- ▶ Before changing tools, cleaning or performing any maintenance, adjustment or repair work, pull the mains plug and allow the machine to run to a stop.

**WARNING****Danger of being injured by laser radiation!**

Failure to take due care can result in the retina of the eyes being damaged and can thereby impair sight.

- ⊘ Do **not** look at the laser beam or view using optical instruments.
- ⊘ Do **not** point the laser beam in the direction of others.
- ⊘ Do **not** misuse the laser pointer and do **not** remove from the pipe cutter.

1.4 Waste disposal

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

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 products that were sold to you after August 13th, 2005 are taken back and disposed of according to legal standards. The customer must however bear the cost of delivery to Orbitalum Tools.



(RL 2002/96/EG)

- The return of used devices that pose a health or safety risk for human beings due to contamination during use may be refused.
- The legally compliant disposal of electrical (electronic) devices that were placed on the market before August 13th, 2005 is the responsibility of the end-user.
- **Important for Germany:** our products may not be disposed of in municipal disposal sites as they are used for industrial purposes only.

1.5 Returning of batteries



Some of our products work with batteries.

- Batteries which are marked with one of the symbols on the left may not be disposed of together with household waste according to the applicable EU directive 91/157/EEC.
- With batteries containing hazardous substances, the chemical symbol for the heavy metal content is indicated below the waste bin.
Cd = Cadmium Hg = Mercury Pb = Lead

1.6 Further safety regulations

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

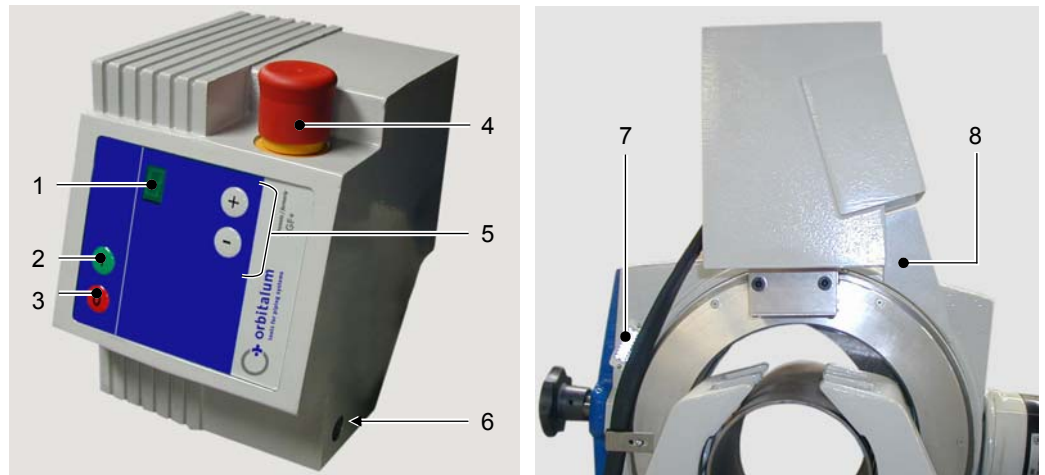
2 Design of the product

2.1 Pipe cutting and beveling machine GF 4



- | | | | |
|----|--------------------------------|----|---|
| 1 | Hand wheel | 11 | Rotating-speed regulator |
| 2 | Line laser | 12 | ON-OFF switch |
| 3 | Slide housing with cover plate | 13 | Ergonomic handle |
| 4 | Saw blade/bevel cutter | 14 | Retainer for vice handle |
| 5 | Opening for meter rule | | Anti-theft protection |
| 6 | Saw blade guard | | Holding fixture for pipe length gauge bar |
| 7 | Identification plate | 15 | Quick mounting plate |
| 8 | Slide | 16 | Multifunctional wrench/vice handle |
| 9 | Motor | 17 | Vice |
| 10 | Rotating-speed indicator | 18 | Turnable clamping jaws |

2.2 Automatic Feed Module AVM



- | | | | |
|---|----------------------|---|---|
| 1 | Display | 5 | Buttons for presetting the feed force level |
| 2 | START button | 6 | Light barrier |
| 3 | STOP button | 7 | Reflector |
| 4 | EMERGENCY OFF button | 8 | Protective web |

2.2.1 Description of the AVM buttons

Display



If the control system is connected to the mains, the number of the current software version will first appear on the display for approx. 1 second. If the module is ready for operation, the currently preset feed force level will be displayed. In case of a malfunction, this display will flash at 1-second intervals showing **F** and a figure from **1** to **6**. For error messages/trouble-shooting, see chapter 9.2, p. 44.

PRESET buttons



By actuating these buttons, it is possible to preset the desired feed force in 9 levels. If the device is ready for operation, these buttons may be pressed at any time to set the feed force level or to vary it during processing. If one of the buttons remains pressed by the user, the display will run to the respective direction selected by the user.

START button



The machining process is initiated by actuating this button. After start-up, this button serves no further function. It remains also without function during a fault or while the software version is being displayed.

STOP button

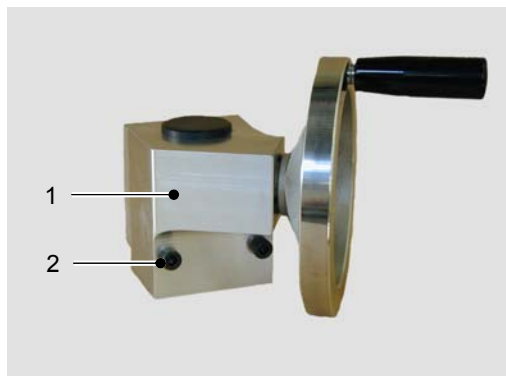


During the machining process, a stop cycle is initiated by actuating this button, and a new start is waited for.

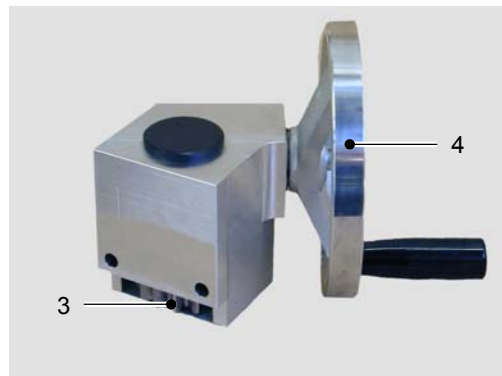
Before and after the machining process, the feed will run backwards as long as the button is pressed, regardless whether the cutter motor is running or not.

During a fault, the button remains without function. For error messages/trouble-shooting, see chapter 9.2, p. 44.

2.3 Manual Feed Module MVM



- 1 Gear
2 Fastening screws



- 3 Gear drive with freewheel
4 Hand wheel

2.4 Accessories

Not in product contents.

2.4.1 Saw blades and bevel cutters



All saw blades and bevel cutters are specially developed for Orbitalum Tools pipe cutters to endure maximum strain and have a maximum tool life. A selection of 4 different saw blades and bevel cutters are available for various uses:

- **Economy Series**
for low and non-alloy steels and cast iron /casting alloys
- **Performance Series**
for high-alloy steels (high-quality steel)
- **High-Performance Series**
for high-performance materials and high-alloy steels
- **Premium Series**
especially for high-quality steel use with extremely long service life

Processable pipe materials	Al	Non-alloy steel, Cu, CuNi, CuZn, CuSn	High-quality steel, V2A, V4A, 304, 316 (L)	Ti, Duplex, Inconel
Economy	*	*		
Performance		*	*	
High-Performance		*	*	*
Premium			*	

2.4.2 Aluminum clamping shells



Suitable for the Pipe Cutting and Beveling Machines GF 4 and RA 41 Plus. For deformation-free clamping of thin-walled pipes. Further clamping shells are available for various outer diameters.

Pipe OD [mm]	Pipe OD [inch]	Code
25.40	1.000	790 046 316
38.10	1.500	790 046 331
50.80	2.000	790 046 345
76.10	2.996	790 046 358
88.90	3.500	790 046 363
108.00	4.252	790 046 367
114.30	4.500	790 046 368



2.4.3 Special high-quality steel clamping jaws

For GF 4 and RA 4. In pairs.

Article	Code
Special high-quality steel clamping jaws for GF 4 and RA 4	790 042 201



2.4.4 Length gauge

For all GF 4, RA 2, RA 4, RA 6 and RA 8 versions. Measuring range up to 680 mm (26.77 inch).

Article	Code
Length gauge	790 041 011



2.4.5 Quick-mounting plate with screw clamps

With integrated screw clamps for quick mounting of the machine on workbenches. Ideal if changing location often.

Article	Code
Quick-mounting plate for GF 4, RA 4, RA 6, RA 8, RA 41 (Plus)	790 042 027

2.4.6 Gear oil

For all Orbitalum Tools pipe cutters.



Article	Code
Gear oil, bottle, 250 ml	790 041 030

2.4.7 Saw blade lubricant GF TOP



Synthetic high-performance lubricant for cutting and beveling machines. Increases the tool life of the saw blade. Compliant with the former food approval USDA H2. The screwable brush guarantees an easy and uniform application of lubricant on the saw blade.

Article	Code
Saw blade lubricant GF TOP	790 060 228

2.4.8 Saw blade lubricant ROCOL



High-performance lubricant for cutting and beveling. Increases the tool life of the saw blade.

Article	Code
Saw blade lubricant ROCOL, Tube, 150 ml	790 041 016
Saw blade lubricant ROCOL, Can, 0.5 kg	790 041 013
Saw blade lubricant ROCOL, Container, 5.0 kg	790 041 019

3 Features and scope of application

3.1 Features

The pipe cutter GF 4 is distinguished by the following characteristics:

- Enhanced safety due to stationary pipe - rotating tool.
- A restart inhibit function prevents 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 following a power failure.
- Self-centering vice.
- Low-maintenance gearbox with oil lubrication.
- Speed-controlled pipe cutter motor.
- Burr-free cutting surface and deformation-free pipe cross-section.
- Cold machining process.
- Quick cutting process.
- The ability to produce “V” and “Y” weld preps using a bevel cutter with the option of cutting and beveling simultaneously.
- Cutting of elbows.
- Quick tool change.
- Line laser for optical identification of the cutting area.
- Locking mechanism of the slide housing prevents unauthorized usage and theft.

GF 4 AVM:

- The intelligent control system of the AVM monitors the feed force continuously, depending on the torque and the parameter settings.
- The operator position guarantees utmost protection against hot chips flying around.
- Reducing the amount of physical effort for the operator.
- Manual operation is still possible.

3.2 Scope of application

3.2.1 Working range

Type of machine	GF 4 (AVM / MVM)
Pipe/elbow OD [mm]	12 - 120
Wall thickness [mm] (depends on material)	1 - 9
Pipe ID min. [mm] (saw blade Ø 63 mm)	21
Pipe ID min. [mm] (saw blade Ø 68 mm)	16
Pipe ID min. [mm] (saw blade Ø 80 mm)	4

Pipe materials

- High-quality steel (any Cr and Mo content)
- High-quality stainless steel (any Cr and Mo content)
- High-quality steel (Cr < 12% and Mo < 2.5%; Cr < 20% and Mo = 0%):
 - Case hardened steels
 - High-speed steels
 - Heat-treated steels
 - Bearing steels
 - Tool steels
- Black and galvanized steel pipe
- General structural steel
- Annealed cast iron pipe (GGG)
- Aluminum
- Brass
- Copper
- Plastics (PE, PP, PVDE, PVC)

4 Technical data

4.1 GF 4 (AVM / MVM)

Dimensions (l x b x h) GF 4	680 x 325 x 480 mm / 26.8 x 12.8 x 18.9 inch
Dimensions (l x b x h) GF 4 AVM	810 x 325 x 480 mm / 31.9 x 12.8 x 18.9 inch
Dimensions (l x b x h) GF 4 MVM	780 x 325 x 480 mm / 30.7 x 12.8 x 18.9 inch
Weight GF 4, approx.	55.0 kg / 121.2 lbs
Weight GF 4 AVM, approx.	64.5 kg / 142.2 lbs
Weight GF 4 MVM, approx.	60.0 kg / 132.2 lbs
Versions	One-phase alternating current 200 - 240 V, 50/60 Hz 100 - 120 V, 50/60 Hz
Power GF 4	1800 W / 2.45 HP
Power AVM	50 W / 0.068 HP
Protection class GF 4, GF 4 MVM	Double insulated according to class II, DIN VDE 0740
Protection class GF 4 AVM	Double insulated according to class I, DIN VDE 0113
Tool speed	65 - 215 rpm
Speed of the slide housing	0.1 - 1.8 rpm
Torque of the slide housing	100 - 200 Nm
Sound pressure level at the workplace*	approx. 79 dB (A)
Vibration level in accordance with DIN EN 28662, Part 1	< 2.5 m/s ²
Mains fuse by customer	16 A

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

4.2 Line laser

Dimensions (l x b)	68 x 15 mm / 2.7 x 0.59 inch
Weight	30 g / 0.066 lbs
Power	5 mW / 0.007 HP
Beam range	1 m / 39.37 inch
Wavelength	650 nm
Operating voltage	2.8 to 4.5 V DC
Operating current	20 mA
Operating temperature	-10 to 40 °C
Storage temperature	-40 to 80 °C
Laser class	2M
Battery type	2 x LR44 / AG13

5 Commissioning

Checking the scope 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 Scope of delivery

Subject to change

- 1 Pipe Cutting and Beveling Machine GF 4 (AVM / MVM)*
- 1 Transportation case
- 1 Saw blade
- 1 Set of clamping jaws made from cast aluminum
- 1 Quick-mounting plate
- 1 Tool set
- 1 Tube of saw blade lubricant GF TOP (Code 790 060 228)
- 1 Tube of special gear oil (Code 790 041 030)
- 1 Set of operating instructions and spare parts list

* *The automatic and manual feed module AVM/MVM is already fitted to the pipe cutter upon delivery.*

6 Transport and assembly



Danger of death caused by electric shock

- ▶ Disconnect from the mains plug before transporting, mounting or dismantling and allow the machine to run to a stop.
-



6.1 Transporting the pipe cutter

Danger of being injured during transportation

- ⊙ **Never** carry and fit the pipe cutter alone.
 - ▶ Transport and fit the pipe cutter with the aid of a second person, or a crane or a similar lifting device.
 - ▶ Wear safety gloves.
-



Position of the machine in the transportation case upon delivery.

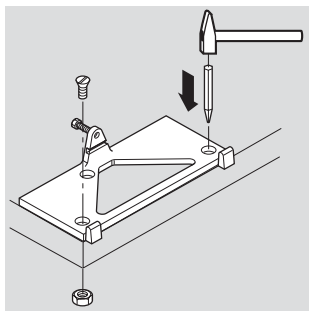


Transport and fit the machine with the aid of a second person or a crane or similar device.

6.2 Fitting the pipe cutter to the workbench

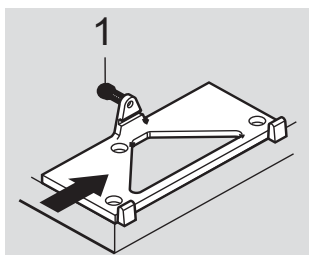
Fit the pipe cutter together with the vice, either

- to the quick-mounting plate (see chapter 6.2.1, p. 18 for assembly),
- to the quick-mounting plate with screw clamps (special accessories, see chapter 2.4.5, p. 11, plate is clamped directly to the workbench without pre-drilling).



6.2.1 Fitting the quick-mounting plate to the workbench

1. Mark and punch the bolt holes on the workbench. Use the quick-mounting plate as a template.
2. Drill \varnothing 13 mm (0.51 inch) holes.
3. Fasten the quick-mounting plate with screws.



6.2.2 Fitting the pipe cutter to the quick-mounting plate

1. Guide the pipe cutter sideways onto the fitted quick-mounting plate.
2. Bolt the pipe cutter securely in place with the hexagon bolt.

Pipe feeder base unit

When using the Orbitalum Tools pipe feeder base unit, the pipe cutter is directly fitted to the mounting plate of the base unit without special accessories (special accessories, code-no. 790 068 051).

It is recommended to support pipes with a length of more than 1 m using the pipe feeder base unit or the pipe feeder optional unit (code-no. 790 068 061, both special accessories).



7 Operation



DANGER

Danger of death caused by electric shock

- ▶ Disconnect from the mains plug before transporting, mounting or dismantling and allow the machine to run to a stop.
 - ⊙ GF 4 AVM: The cable **must not** contact rotating (moving) parts of the pipe cutter.
 - ▶ GF 4 AVM must only be operated with the supplied protective web.
 - ▶ Ensure that the cables of the AVM are fastened in the cable clamps.
-



WARNING

Danger of being injured by sharp cutting edges

- ⊙ Keep hands away from the tools when inserting or changing the tool.
 - ▶ Wear safety gloves.
-

Attention

Damage to material

- ▶ The saw blade or bevel cutter must be free from chips and dirt.
- ▶ Only use Orbitalum Tools saw blades and bevel cutters.
- ▶ Using combination saw blade / bevel cutters, only use the special Orbitalum Tools clamp washer, not the normal clamp washer.
- ▶ Press the saw blade guard down by max. 90°.
- ▶ Mount the saw blade/bevel cutter or combination cutters with the inscription facing you. The teeth will then be pointing in the correct direction.

7.1 Special functions

The Orbitalum Tools pipe cutting series (formerly +GF+) have enthused users around the world for 40 years. The new pipe cutting generation GF 4 (AVM/MVM) now offers lots of new innovative features and the finest ergonomic design. **What's new?**

7.1.1 Multifunctional wrench

Detachable. It is possible to make 5 different adjustments on the machine using this multifunctional wrench:



Vice handle



Adjusting the clamping jaws



Tightening the saw blades and bevel cutters



Tightening the GF 4 quick mounting plate



Locking mechanism of the slide housing prevents unauthorized usage and theft

7.1.2 Line laser

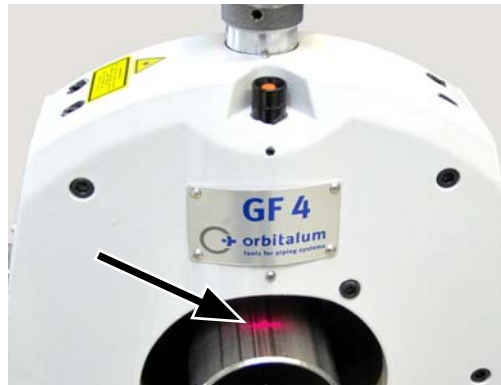


Danger of being injured by laser radiation!

Failure to take due care can result in the retina of the eyes being damaged and can thereby impair sight.

- ⊗ Do **not** look at the laser beam or view using optical instruments.
- ⊗ Do **not** point the laser beam in the direction of others.
- ⊗ Do **not** misuse the laser pointer and do **not** remove from the pipe cutter.

To determine the cut-off point on the pipe. Ideal for checking whether the pipe is adjusted to the desired cut-off point. A red line marking, to determine the cut-off point, appears on the clamped pipe once the red button on the laser pointer has been actuated. If necessary, the pipe position can be corrected until the desired cut-off point is marked.



Line laser to determine cut-off point

7.1.3 Turnable aluminum-cast clamping jaws

The turntable clamping jaws made from coated aluminum cast are a standard feature of the GF 4 (AVM / MVM). Both thin-walled pipes (OD 12-56 mm) and thick-walled pipes (OD 20-120 mm) can be processed by turning the clamping jaws. Fitting the clamping jaws, see chapter 7.2, p. 24.



Turnable aluminum-cast clamping jaws

7.1.4 Swivel cable with quick-disconnect coupler

For easy and comfortable replacement of power cables. Also prevents cables from twisting.



Plug connection with quick-disconnect coupler

7.1.5 Optimized saw blade guard

Optimized saw blade guard protects against flying chips and comes with a yard stick-port for measuring the pipe length.



Optimized saw blade guard

7.1.6 Hand wheel with ratchet adjustment

The pipe dimension can also be adjusted by manually turning the hand wheel using a ratchet (the ratchet is not in the product contents).

1. Insert a number eight nut into the ratchet and slot into the designated opening at the top of the hand wheel.
2. Adjust the pipe dimensions by turning the ratchet.



Adjusting the pipe dimensions using a ratchet with a number eight nut in the hand wheel

7.2 Fitting the clamping jaws

The turntable clamping jaws made from coated aluminum cast are a standard feature of the GF 4 (AVM / MVM). Both thin-walled pipes (OD 12-56 mm) and thick-walled pipes (OD 20-120 mm) can be processed by turning the clamping jaws.

Fitting the clamping jaws

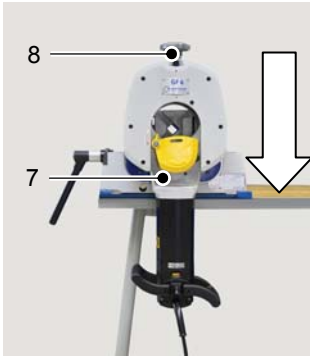
1. Unscrew the hexagon bolts (1) on the sides of the vice using the multifunctional wrench (2).
2. Fit the clamping jaws.
3. Tighten hexagon bolts (1) using the multifunctional wrench (2).



7.3 Fitting the saw blade, bevel cutter, additional cutters

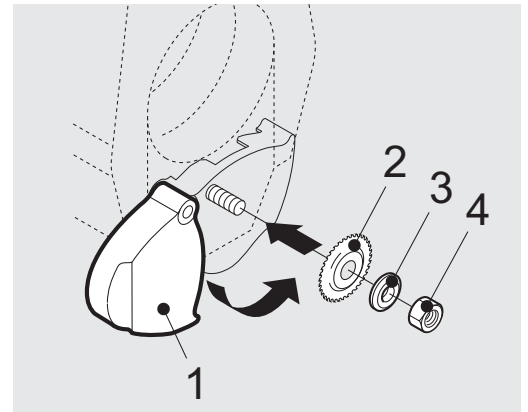
Important

Before fitting the saw blade or bevel cutter: move the slide (7) all the way down using the hand wheel (8).



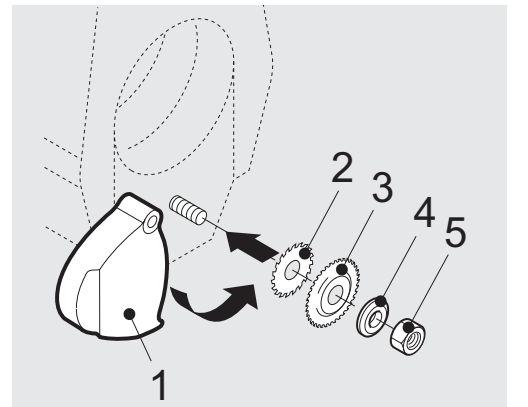
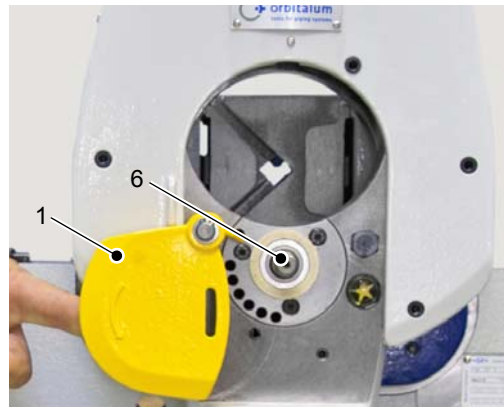
7.3.1 Inserting the saw blade or bevel cutter

1. Turn the saw blade guard (1) down by approx. 90°.
2. Loosen the hexagon nut (4). Remove the clamping washer (3) and saw blade (2).
3. Clean the saw blade shaft (6) and vicinity.
4. Fit the saw blade (2) or bevel cutter and the clamping plate (3).
5. Tighten the hexagon nut (4).
6. Move the saw blade guard (1) back to its original position.



7.3.2 Inserting additional cutters

1. Turn the saw blade guard (1) down for approx. 90°.
2. Loosen the hexagon nut (5). Remove the clamping washer and the saw blade.
3. Clean the saw blade shaft and surrounding area.
4. Fit the additional cutter (2), the saw blade (3) and special clamping plate (4).
5. Tighten the hexagon nut (5).
6. Move the saw blade guard (1) back to its original position.



7.4 Adjusting the pipe diameter

Note The working steps described in chapter 7.4 are the same for all GF 4 versions.



WARNING

Danger of being injured by rotating slide housing

When switching the motor on, the pipe cutter may revolve around the pipe automatically.

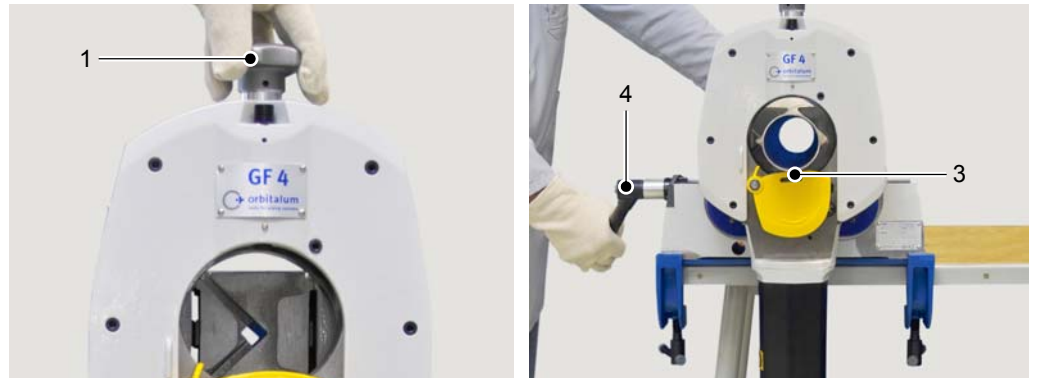
- ⊙ In their home position, the saw blade or bevel cutter must **not** touch the pipe!
- ▶ Before switching the motor on, make sure that the gap between the saw blade/bevel cutter and the pipe is sufficient and that the pipe is securely clamped in the vice.

Note It is recommended to support pipes with a length of more than 1 m (39.37 inch) using the pipe feeder base unit or the optional unit (code-no. 790 068 061, both special accessories).

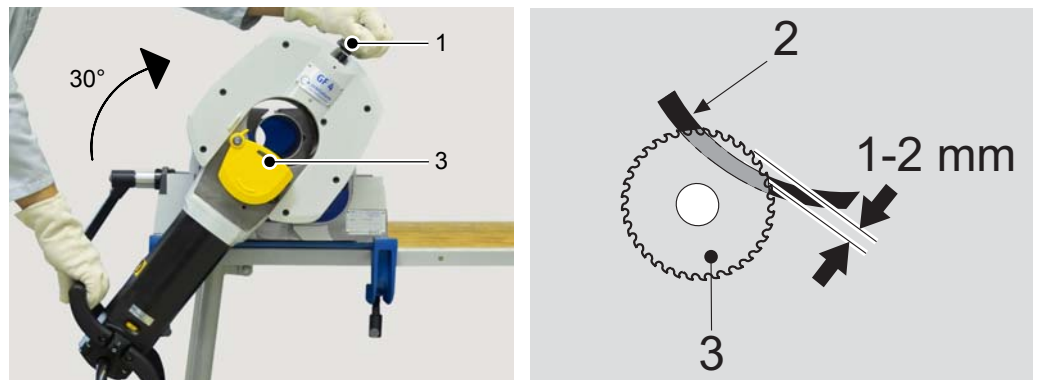


7.4.1 Saw blade without additional cutter

1. Turn the slide with saw blade all the way down using the hand wheel (1) or the ratchet (see chapter 7.1.6, p. 23).
2. Insert the pipe so that it almost reaches the saw blade (3) and tighten using the multifunctional wrench (4).



3. Use the handle to turn the motor upwards for about 30° (clockwise) until the saw blade is in cutting position.
4. Turn the hand wheel (1) until the teeth of the saw blade (3) protrude about 1 to 2 mm (0.039 – 0.079 inch) inside the pipe (2).
5. If desired, perform a test cut (cutting the pipe, see chapter 7.7, p. 32) check the cut result and readjust the hand wheel (1) if necessary.

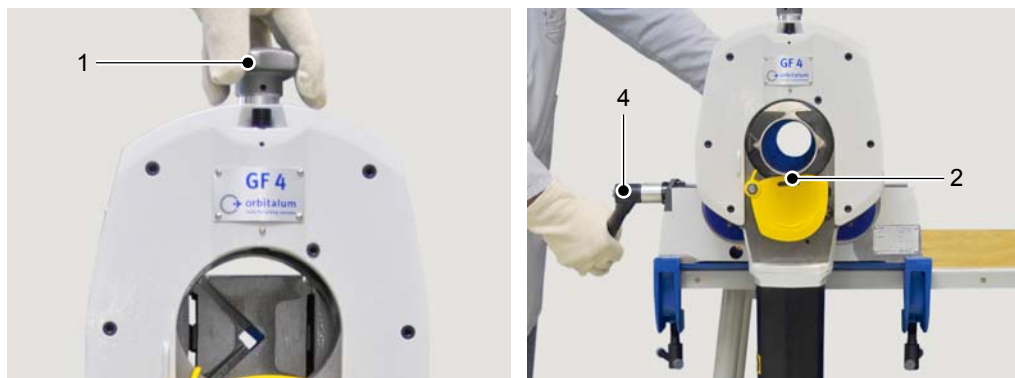


6. Turn the motor back to its home position.

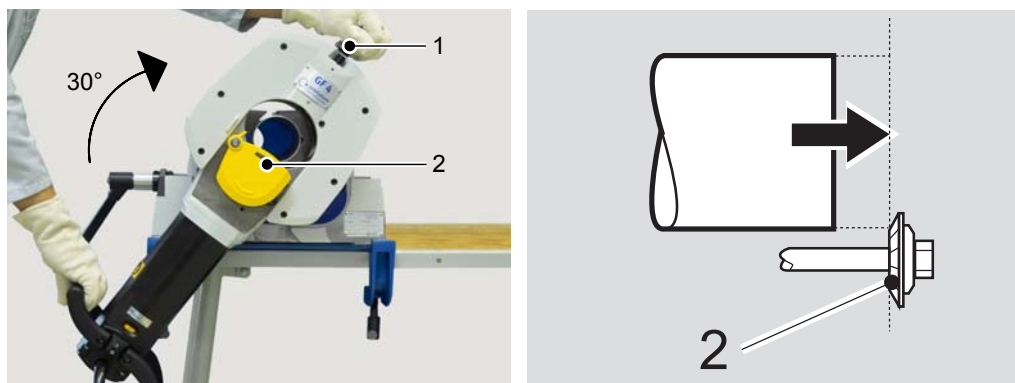
Note Scale of the hand wheel: a readjustment by one graduation mark will result in a radial feed or bevel alteration of 0.1 mm (0.0039 inch).

7.4.2 Saw blade with additional cutter

1. Turn the slide with the saw blade and additional cutter (2) all the way down using the hand wheel (1) or the ratchet (see chapter 7.1.6, p. 23).
2. Insert the pipe so that it almost reaches the additional cutter (2) and tighten using the multifunctional wrench (4).



3. Use the handle to turn the motor upwards for about 30° until the saw blade is in cutting position.
4. Turn the hand wheel (1) until the teeth of the additional cutter (2) cover the wall thickness of the pipe.
5. Perform a test cut (cutting the pipe, see chapter 7.7.4, p. 35), check the cut and bevel result and readjust the hand wheel (1) if necessary.

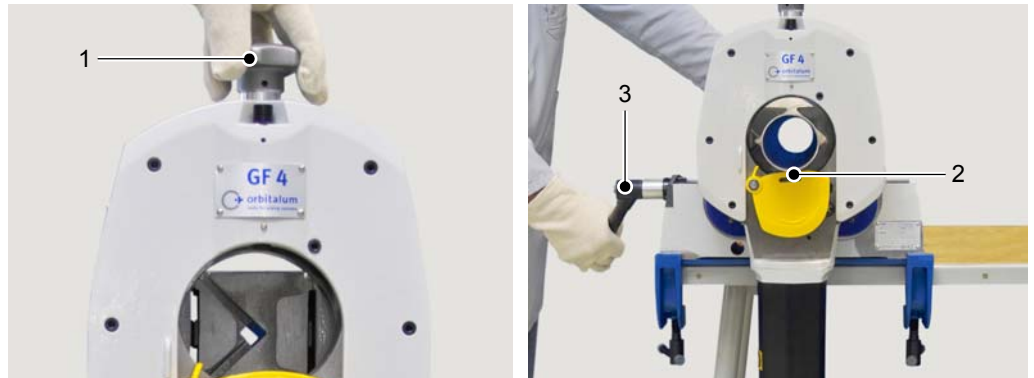


6. Turn the motor back to its home position.

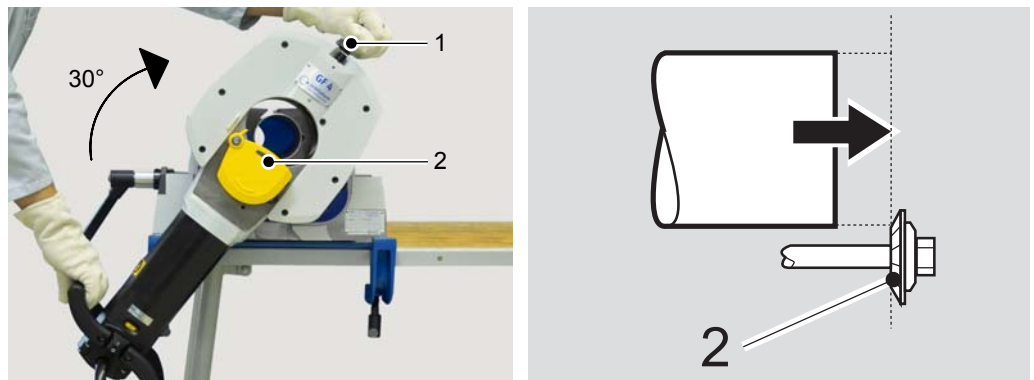
Note Scale of the hand wheel: a readjustment by one graduation mark will result in a radial feed or bevel alteration of 0.1 mm (0.0039 inch).

7.4.3 Adjusting the bevel cutter

- Note**
1. Turn the slide with the bevel cutter (2) all the way down using the hand wheel (1) or the ratchet (see chapter 7.1.6, p. 23).
 2. Insert the pipe so that it almost reaches the bevel cutter (2). The pipe must not project over the cutter. Tighten using the multifunctional wrench (3).



3. Use the handle to turn the motor upwards for about 30° until the bevel cutter is in beveling position.
4. Turn the hand wheel (1) until the teeth of the bevel cutter (2) cover the wall thickness of the pipe and the desired beveling position is reached.
5. If desired, perform a test bevel (beveling the pipe, see chapter 7.7.3, p. 34), check the bevel result and readjust the hand wheel (1) if necessary.



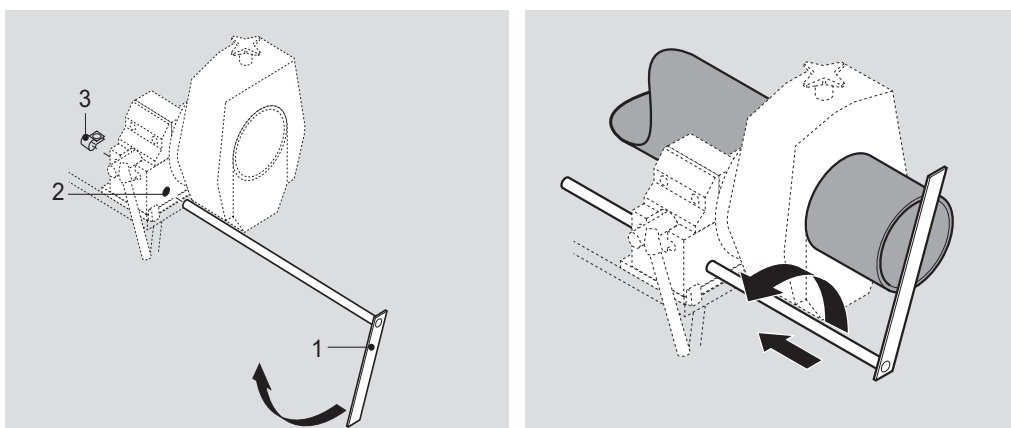
6. Turn the motor back to its home position.

- Note** Scale of the hand wheel: a readjustment by one graduation mark will result in a radial feed or bevel alteration of 0.1 mm (0.0039 inch).

7.5 Adjusting the length gauge

Note A length gauge is available as an optional accessory for producing pipe sections of equal length (code no. 790 041 011, for all GF and RA types except RA 12).

1. Place the length gauge (1) in the holding fixture (2).
2. Swivel the cut-off stop to the middle of the pipe.
3. Use a meter rule to extend the gauge to the desired length (slot for meter rule, see chapter 7.1.5, p. 23).
4. Position the clamp (3) flush with the housing and turn it so that it rests on the workbench.
5. Tighten the clamp (3).
6. Move the pipe forward up to the cut-off stop and clamp it into place.
7. Swivel the cut-off stop outward and push it all the way back.
8. Cut the pipe (see chapter 7.7, p. 32 for GF 4 AVM, chapter 7.8, p. 36 for GF 4 MVM and chapter 7.9, p. 39 for working without AVM/MVM).
9. For the next cut, extend the cut-off stop and swing it into place clockwise.



7.6 Selecting the motor speed

Select low power speed for:

- tough and high-strength materials
- large wall thickness

7.6.1 Standard values for spindle speed and feed force level (AVM)



Pipe material	Motor speed controller setting (1)	Spindle speed (rpm)	Feed force level AVM*
High-alloy high-quality steels	1 - 2	65	1 - 2
Low-alloy high-quality steels	2 - 4	150	1 - 4
Structural steel	4 - 6	215	5 - 9



* The feed force level may be varied depending on the thickness and diameter of the pipe wall.

Important notes regarding AVM

When first starting to process the pipe with the AVM, a low feed force level is recommended which may be increased later. Higher levels result in a higher chip production and possibly also in a higher wear of tools. The intelligent control system of the AVM monitors the feed force continuously, depending on the torque and the parameter settings.

- ▶ Select the feed force level (L - 9) on the AVM display via the + / - buttons (for standard values, see the table above).

7.7 Processing the pipe with GF 4 AVM

See chapter 7.8, p. 36 for processing the pipe with GF 4 MVM.
See chapter 7.9, p. 39 for GF 4 without AVM or MVM.

Important The AVM may only be operated in conjunction with the Orbitalum Tools pipe cutter GF 4.

- ⊘ Do **not** connect any other devices to the socket of the AVM.

7.7.1 Commissioning

1. Connect the pipe cutter to the socket (1) of the AVM.
2. Connect the main cable of the AVM to the main power supply.

After unlocking the EMERGENCY OFF button, the number of the current software version will appear on the display for approx. 1 second. After this second has passed, the control system will supply the cutter motor with power and is thus ready to operate (the currently selected feed force level is indicated).



7.7.2 Cutting the pipe with GF 4 AVM



Danger of being injured by chips flying around

- ⊙ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

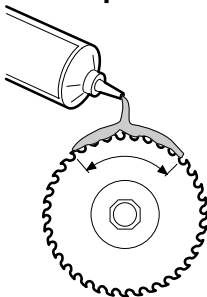
- Turn the cutter motor by 180°.
- Switch on the AVM and the pipe cutter (see chapter 7.7.1, p. 32), let the cutter motor run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the length gauge (see chapter 7.5, p. 30).
3. Adjust the saw blade to the pipe diameter (see chapter 7.4.1, p. 27).
4. Tighten the hexagon nut of the saw blade fixture, if necessary (see chapter 7.3, p. 25).
5. Adjust the spindle speed and the feed force level (for standard values, see chapter 7.6, p. 31).
6. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important


Pull off the vice handle from the spindle before the slide housing starts rotating.



7. Apply saw blade lubricant to the saw blade:

- up to 2": every 3 cuts,
- over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

8. Switch the pipe cutter on.
9. Press the START button .

Processing will now be started and will be stopped automatically after a correct cutting process.

7.7.3 Beveling the pipe with GF 4 AVM



Danger of being injured by chips flying around

- ⊗ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

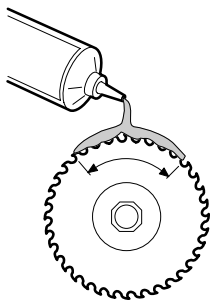
- Turn the cutter motor by 180°.
- Switch on the AVM and the pipe cutter (see chapter 7.7.1, p. 32), let the cutter motor run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the bevel cutter to the pipe diameter (see chapter 7.4.3, p. 29).
3. Tighten the hexagon nut of the bevel cutter fixture, if necessary (see chapter 7.3, p. 25).
4. Adjust the spindle speed and the feed force level (for standard values, see chapter 7.6, p. 31).
5. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important

Pull off the vice handle from the spindle before the slide housing starts rotating.



6. Apply saw blade lubricant to the bevel cutter:
 - up to 2": every 3 cuts,
 - over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

Note

For non-stop operation: after beveling, loosen the hexagon nut on the bevel cutter to avoid damage caused by tension.

7. Switch the pipe cutter on.
8. Press the START button

Processing will now be started and will be stopped automatically after a correct beveling process.

7.7.4 Cutting the pipe and beveling it simultaneously GF 4 AVM

Pipes with a wall thickness of up to 4.5 mm (0.177 inch) can be simultaneously cut and beveled.

If using a combination cutter, the cutter motor has to be turned around the pipe more slowly than during normal cutting, as two tools are being used at the same time. The working procedure is the same as described in chapter 7.7.2, p. 33.

Note If necessary, lubricate the saw blade and the additional cutter again during work. For non-stop operation: after cutting, loosen the hexagon nut on the saw blade to avoid damage caused by tension.

7.8 Processing the pipe with GF 4 MVM

For processing the pipe with GF 4 AVM, see chapter 7.7, p. 32.
For GF 4 without AVM or MVM, see chapter 7.9, p. 39.

7.8.1 Cutting the pipe with GF 4 MVM



WARNING

Danger of being injured by chips flying around

- ⊙ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

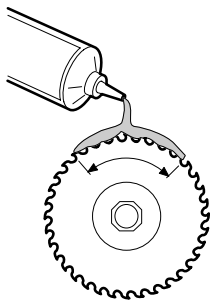
- Turn the cutter motor by 180°.
- Switch the pipe cutter on and let it run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the length gauge (see chapter 7.5, p. 30).
3. Adjust the saw blade to the pipe diameter (see chapter 7.4.1, p. 27).
4. Tighten the hexagon nut of the saw blade fixture, if necessary (see chapter 7.3, p. 25).
5. Adjust the spindle speed (see chapter 7.6, p. 31).
6. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important

Pull off the vice handle from the spindle before the slide housing starts rotating.



7. Apply saw blade lubricant to the saw blade:

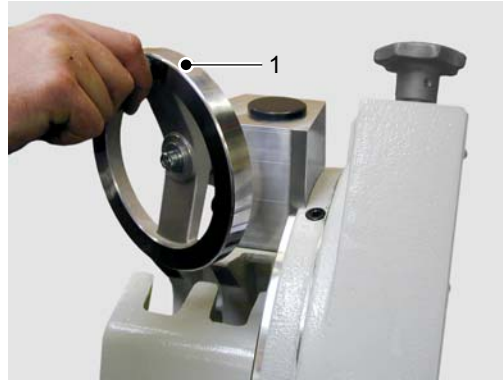
- up to 2": every 3 cuts,
- over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

Note

For non-stop operation: after cutting, loosen the hexagon nut on the saw blade to avoid damage caused by tension.

8. Switch the motor on.
9. Carefully turn the hand wheel (1) of the MVM clockwise until the pipe wall has been pierced through.



10. Continue turning rapidly until the pipe has been cut off.
11. Switch the motor off and allow the machine to run to a stop.

7.8.2 Beveling the pipe with GF 4 MVM



WARNING

Danger of being injured by chips flying around

- ⊙ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

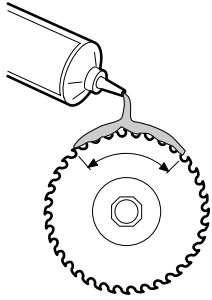
- Turn the cutter motor by 180°.
- Switch the pipe cutter on and let it run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the bevel cutter to the pipe diameter (see chapter 7.4.3, p. 29).
3. Tighten the hexagon nut of the bevel cutter fixture, if necessary (see chapter 7.3, p. 25).
4. Adjust the spindle speed (see chapter 7.6, p. 31).
5. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important

Pull off the vice handle from the spindle before the slide housing starts rotating.

**Note**

6. Apply saw blade lubricant to the bevel cutter:

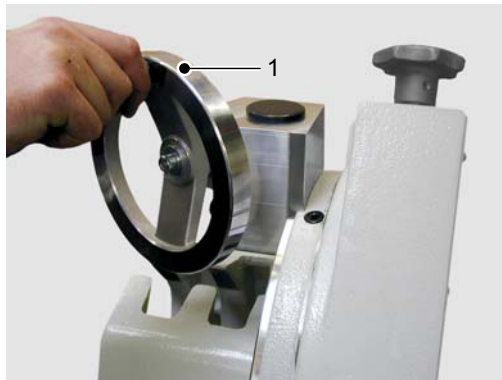
- up to 2": every 3 cuts,
- over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

For non-stop operation: after beveling, loosen the hexagon nut on the bevel cutter to avoid damage caused by tension.

7. Switch the motor on.

8. Carefully turn the hand wheel (1) of the MVM clockwise until the pipe wall has been pierced through.



9. Continue turning rapidly until the pipe has been beveled completely.

10. Switch the motor off and allow the machine to run to a stop.

7.8.3 Cutting the pipe and beveling it simultaneously with GF 4 MVM

Pipes with a wall thickness of up to 4.5 mm (0.177 inch) can be simultaneously cut and beveled.

If using a combination cutter, the cutter motor has to be turned around the pipe more slowly than during normal cutting, as two tools are being used at the same time. The working procedure is the same as described in chapter 7.8.1, p. 36.

Note

If necessary, lubricate the saw blade and the additional cutter again during work. For non-stop operation: after cutting, loosen the hexagon nut on the saw blade to avoid damage caused by tension.

7.9 Processing the pipe manually

For processing the pipe with GF 4 AVM, see chapter 7.7, p. 32.
For GF 4 MVM, see chapter 7.8, p. 36.

7.9.1 Cutting the pipe manually



WARNING

Danger of being injured by chips flying around

- ⊙ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

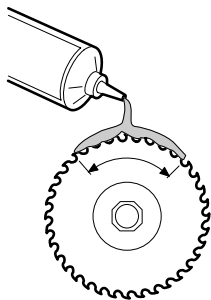
- Turn the cutter motor by 180°.
- Switch the pipe cutter on and let it run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the length gauge (see chapter 7.5, p. 30).
3. Adjust the saw blade to the pipe diameter (see chapter 7.4.1, p. 27).
4. Tighten the hexagon nut of the saw blade fixture, if necessary (see chapter 7.3, p. 25).
5. Adjust the spindle speed (see chapter 7.6, p. 31).
6. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important

Pull off the vice handle from the spindle before the slide housing starts rotating.



7. Apply saw blade lubricant to the saw blade:

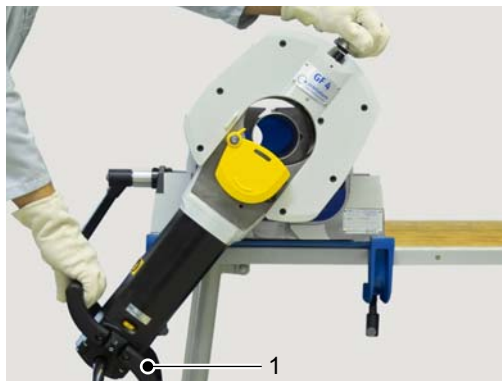
- up to 2": every 3 cuts,
- over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

Note

For non-stop operation: after cutting, loosen the hexagon nut on the saw blade to avoid damage caused by tension.

8. Switch the motor on.
9. Carefully turn the motor clockwise using the handle (1) until the pipe wall has been pierced through.



10. Continue turning rapidly until the pipe has been cut off.
11. Switch the motor off and allow the machine to run to a stop.

7.9.2 Beveling the pipe manually



WARNING

Danger of being injured by chips flying around

- ⊙ **Never** work without the saw blade guard mounted.
- ▶ Wear protective goggles.

Important

If the pipe cutter was out of operation for a longer time:

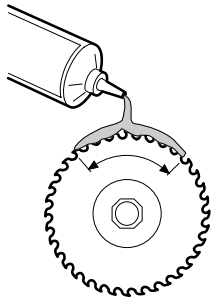
- Turn the cutter motor by 180°.
- Switch the pipe cutter on and let it run for about 10 seconds.

This will lubricate all gear components.

1. Set the pipe diameter (see chapter 7.4, p. 26).
2. Adjust the bevel cutter to the pipe diameter (see chapter 7.4.3, p. 29).
3. Tighten the hexagon nut of the bevel cutter fixture, if necessary (see chapter 7.3, p. 25).
4. Adjust the spindle speed (see chapter 7.6, p. 31).
5. Push the pipe through the vice up to the desired length and clamp it. Support pipes with a length of more than 1 m using a pipe feeder (see chapter 7.4, p. 26).

Important

Pull off the vice handle from the spindle before the slide housing starts rotating.

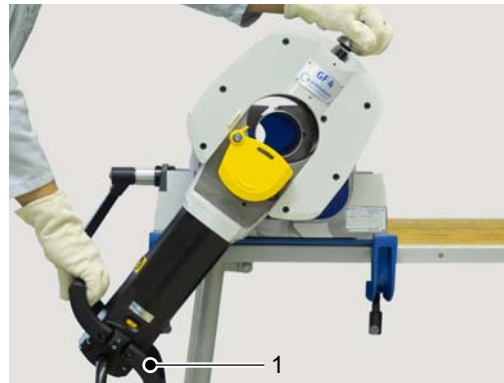
**Note**

For non-stop operation: after beveling, loosen the hexagon nut on the bevel cutter to avoid damage caused by tension.

6. Apply saw blade lubricant to the bevel cutter:
 - up to 2": every 3 cuts,
 - over 2" and with chrome and high-quality steel pipes: after every cut.

Important: If the pipe comes into contact with drinking water or foodstuffs, only use Orbitalum Tools lubricating gel for saw blades.

7. Switch the motor on.
8. Carefully turn the motor clockwise using the handle (1) until the pipe wall has been pierced through.



9. Continue turning rapidly until the pipe has been beveled completely.
10. Switch the motor off and allow the machine to run to a stop.

7.9.3 Cutting the pipe manually and beveling it simultaneously

Pipes with a wall thickness of up to 4.5 mm (0.177 inch) can be simultaneously cut and beveled.

If using a combination cutter, the cutter motor has to be turned around the pipe more slowly than during normal cutting, as two tools are being used at the same time. The working procedure is the same as described in chapter 7.9.1, p. 39.

Note

If necessary, lubricate the saw blade and the additional cutter again during work. For non-stop operation: after cutting, loosen the hexagon nut on the saw blade to avoid damage caused by tension.

8 Maintenance

The pipe cutter was designed for a long service life and low maintenance.

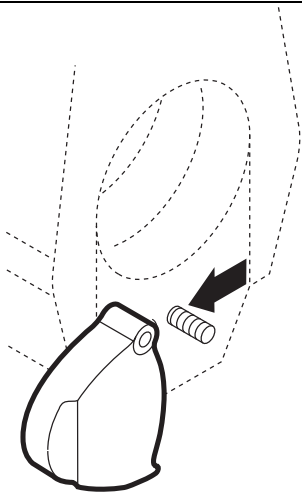
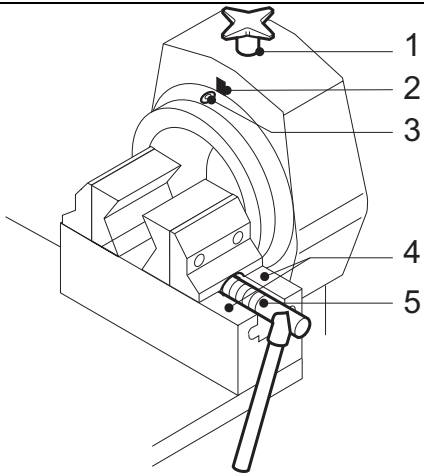
Please follow the maintenance instructions below.



DANGER

Danger of death by electric shock

- ▶ Disconnect mains plug before carrying out any maintenance work.

Interval	Activity
Before starting work	<ul style="list-style-type: none"> ▶ Remove chips and dirt from the saw blade. ▶ Keep the vent holes free from chips.
Every time the cutter is cleaned Every time the tool is changed	<ul style="list-style-type: none"> ⊘ Do not use compressed air to clean the area at the end of the shaft marked with an arrow as the rotary shaft seal may otherwise be damaged by chips. ▶ Use a cloth or brush to clean the end of the shaft. 
Every week	<ul style="list-style-type: none"> ▶ Clean and oil: <ul style="list-style-type: none"> • the spindle of the hand wheel (1) • the sliding block (2) • the guide bush (3) • the vice slides (4) • the vice spindle (5) ▶ Check the oil level of the gear and top up if necessary (see chapter 8.1, p. 43). 

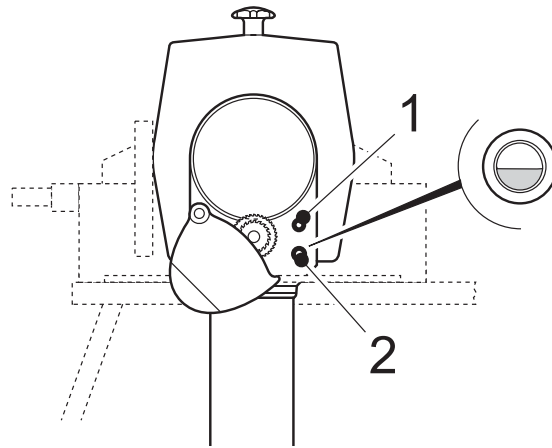
8.1 Checking the oil level of the gear and topping up

The gears of the pipe cutters GF 4 (AVM/MVM) have an oil level inspection glass. The oil level should be visible in the middle of the inspection glass.

1. Check the oil level through the inspection glass (2) and top up if necessary.

To top up:

2. Unscrew the oil filler screw (1). Fill with special Orbitalum Tools gear oil.



3. Re-insert and tighten the oil filler screw.

8.2 Cleaning the slide guide



WARNING

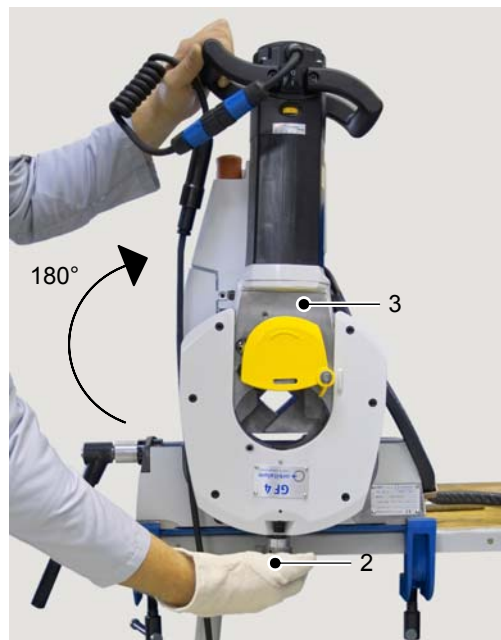
Danger of being injured by a not sufficiently secured slide

- ⊘ **Never** dismount the slide by pulling it downwards.
- ▶ Always tighten the safety screw when assembling the slide.

1. Remove the safety screw (1).



2. Turn the slide housing upwards by 180°.
3. Turn the hand wheel (2) anticlockwise.



4. Pull out the slide (3) with the motor upwards.
5. Clean the guides of the slide housing and slide. Lightly lubricate both parts using HD 30 engine oil.
6. Remount the slide. Insert and tighten the safety screw (1).

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
The motor is not running.	The overload protection relay has tripped.	▶ Set the switch to "0" then switch the pipe cutter back on.
	The restart inhibitor has tripped.	▶ Set the switch to "0", then switch the pipe cutter back on.
The pipe cutter will not turn.	Pipe diameter not correctly set.	▶ Set the pipe diameter correctly (see chapter 7.4, p. 26).
The saw blade is not cutting, and is slipping through.	Hexagon nut on the saw blade shaft not tightened.	▶ Tighten the hexagon nut.
The saw blade is not cutting.	The saw blade has been inserted the wrong way round.	▶ Insert the saw blade correctly. The labeling on the saw blade must be visible.
It is no longer possible to set the pipe diameter.	The slide guide is dirty.	▶ Clean the slide guide (see chapter 8.2, p. 44).

9.2 Error messages/trouble-shooting AVM

In case of faults concerning the AVM, the machine will be stopped automatically. The display will flash at 1-second intervals, alternately showing "F" and a figure from 1 to 6. Before restarting the AVM, it has to be disconnected from the mains supply by pressing the EMERGENCY OFF button or by pulling the mains plug.

Error message/fault	Possible cause	Remedy
Display F1: Cutter motor overloaded.	Feed force level too high.	▶ Select a lower feed force level.
Display F2: Feed motor overloaded.	Feed force level too high.	▶ Select a lower feed force level.
	Pipe diameter not correctly set.	▶ Set the pipe diameter correctly (see chapter 7.4, p. 26).
	Chips between slide housing and pipe.	▶ Remove the chips.
	The slide housing is running sluggishly.	▶ Make the slide housing run smoothly.
Display F3: The cutter motor stops during processing.	Obstacle in the swiveling range.	▶ Remove the obstacle.
	Power supply of the cutter motor interrupted.	▶ Check the connecting cable and the plug-connections.
Display F4: Internal control error.	The overload protection relay of the cutter motor has tripped.	▶ Set the switch to "0" then switch the pipe cutter back on.
	The processor is defective.	▶ Contact the service department.

Error message/fault	Possible cause	Remedy
Display F5: Excess temperature.	The temperature of the control system is too high.	▶ Self-regulating after cooling down.
Display F6: Internal control error.	Wrong basic setting.	▶ Contact the service department.
No display: The AVM does not start.	The cutter motor is not running or is not running long enough.	▶ The cutter motor must be running for at least 5 seconds before the AVM can be started.
The feed stops at the cut-in area.	Blocking by chips.	▶ Remove the chips.
	Pipe diameter not correctly set.	▶ Correct the adjustment.
	Saw blade worn out.	▶ Insert new saw blade.
The feed does not stop at the stop position.	Light barrier or reflector defective.	▶ Replace the defective parts (contact the service department, if necessary).
Display: No decimal point at the stop position.	Light barrier or reflector dirty.	▶ Clean the dirty parts.

After having remedied the cause of malfunction, the AVM has to be re-connected to the mains supply. After having switched off the cutter motor (to position "0"), it may be restarted.

9.3 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: **GF 4**, **GF 4 AVM** or **GF 4 MVM**
- Machine number: (see *Identification plate*)

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