

Operation Manual

R Series Orbital Cutting/Beveling Machine R4, R6, R8, and R12



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Section 1: Operation Safety

The R series Pipe Cutting and Beveling machine are designed to last. Please use it properly based upon the procedure in this manual. Using it for purpose other than those described in this manual may cause injury to the user or to others. It may also cause damage to the machine or other equipment.

Therefore:

- Always ensure the machine is in good working condition and comply with these notes on safety
- Keep complete documents nearby the machine
- General valid regulations for the prevention of accidents must be observed.
- Only use the machine for cutting and beveling of pipes
- Damage caused by not following the manual is user's responsibility
- Only use the dimensions and material specified in these instructions. Consult LEFON for cutting material that is not covered in the manual.
- Inspect the machine daily of visible sign of wear or damage.
- Repair any damage or defect immediately
- Only qualified electrician can work on the electrical equipment
- Only operate the machine if the Electrical Restart Inhibitor is working properly
- Unplug the power input before carrying out any maintenance or repair work on the machine.

Keep Safety in Mind

- Report any unusual response from the machine to the person in charge of this machine
- Keep Safety in mind all the time
- Wear protective goggles, safety gloves and ear protection when working with the machine
- Keep hands off the machine during processing
- Pay attention to the surroundings. Don't use any electric tools in humid area. Make sure to have excellent lighting. Do not working near combustible liquids or gases.





Danger of death by electric shock

If the main cable is damaged, live parts may cause death when touching directly.

- Keep the main cable of the machine motor away from the saw blade or beveling cutter
- Secure the falling pipe piece
- Don't let the cut-off piece of pipe drop in an uncontrolled way
- Don't run the machine unattended
- While cutting the pipe, always pay attention to the positions of the main cable.



DANGER

Danger of injury by sharp cutting edges

- Keep hands away from the machine during cutting or beveling
- Wear safety gloves



WARNING

Disposal

- Recycle discarded electric tools and accessories containing valuable materials
- Dispose of chips and used gear oil according to regulation requirement

Section 2: Machine Application & Specification

Machine Application

- | | |
|--|---|
| <ul style="list-style-type: none"> • Plastic(PE,PP,PVDE,PVC) • Copper • Brass • Annealed cast iron pipe • General structural steel • Black and galvanized steel pipe • Aluminum • High quality steel (Cr<12 % and Mo< 2.5 %;
Cr<20 % and Mo=0 %) ○ Case hardened steel ○ High speed steel ○ Tempering steel ○ Bearing steel ○ Tool steel | <ul style="list-style-type: none"> • High quality stainless steel(any Cr and Mo content *) <p>* Only workable with RH</p> |
|--|---|

Machine Weight and Dimension

Model	LxWxH (mm)	Net Weight(kg)	Gross Weight(kg)
R4	820×540×470mm	75	100
R6	920×870×570mm	90	117
R8	1050×590×670mm	105	133
R12	1050×590×790mm	126	155



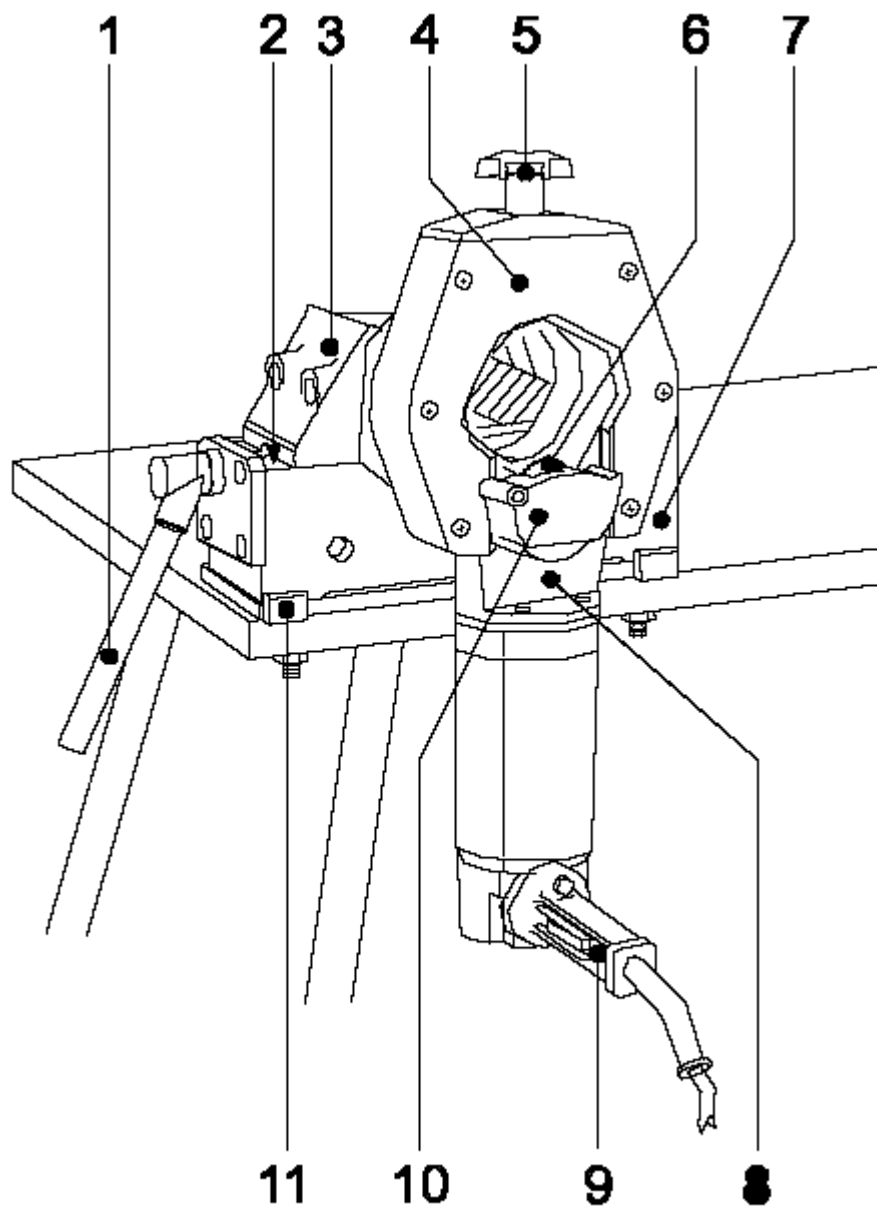
Technical Specification

Power	1600 W
Protection	Double insulated
Speed	150 – 270 RPM (R2 to R12) 40 – 70 RPM (RH)
Drive Motor	1 phase AC motor 200-240 V, 50/60 Hz 100-120 V, 50/60 Hz
Cutting Range	Specified in the following table

Model	R4	R6	R8	R12
Pipe OD	½”-4” 19-120 mm	3”-6” 85-182 mm	6”-8” 150-230 mm	8”-12” 215-325 mm
Wall thickness	0.04”-0.22” 1-7 mm	0.08”-0.4” 2-10 mm	0.08”-0.4” 2-10 mm	0.08”-0.4” 2-10 mm
Motor	1600 w	1600w	1600w	1600w
Blade RPM	150-250	150-250	150-250	150-250
Voltage/ Frequency	110/220 V 50/60 Hz	110/220 V 50/60 Hz	110/220 V 50/60 Hz	110/220 V 50/60 Hz
Net Weight	75 kg 165 lb	90 kg 198 lb	110 kg 242 lb	130 kg 286 lb
Application	- Thin-wall stainless-steel tubes - Stainless steel pips - Low and unalloyed steel - Casting materials, non-ferrous metal - Copper, aluminum and plastic pipes			



Section 3: Assembly & Transport Instructions



- 1 Vice handle
- 2 Machine Number
- 3 Vice
- 4 Slide housing with cover plate
- 5 Hand wheel
- 6 Saw blade
- 7 Name plate / machine number
- 8 Slide
- 9 Motor grip with switch
- 10 Saw blade guard
- 11 Quick-assembly plate



Scope of Delivery

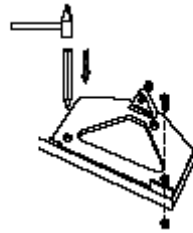
One set of pipe cutting/beveling machine should include the following item. Please inform the manufacturer or forwarder of any missing parts or transportation damage immediately.

1. One pipe cutting/beveling machine
2. One base plate
3. Three blade
4. One ring spanner(SW22)
5. Two Hexagon socket head wrenches
6. One Tube of LEFON saw blade lubricant
7. One operation Manual
8. One Spare parts List

Installation

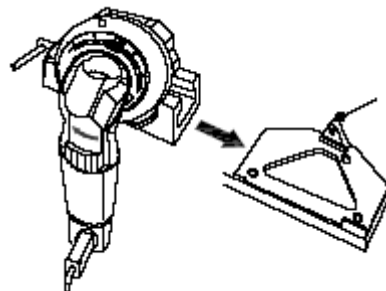
Step 1: Install the base plate

Step 2: Mark and prepare to perforate



Step 3: Drill 13 mm holes

Step 4: Install the cutting machine on base plate (follow the procedure in next page)





Transportation and Fitting of the machine

Danger of death or injury caused by electric shock

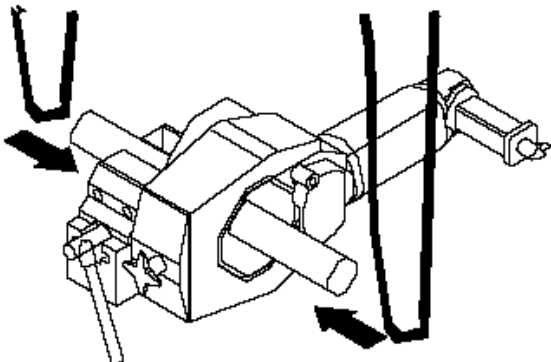
- Disconnect power before transporting, mounting or dismounting.
- Transport and fit the machine with the aid of crane or similar lifting device



Fitting Instruction for R2, R4, R6 and R8

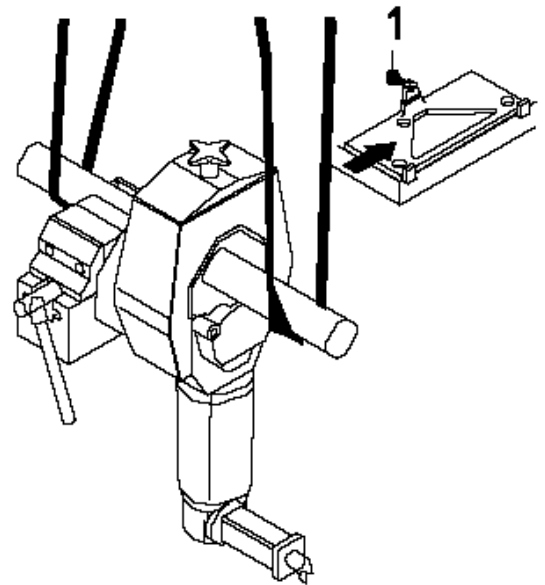
Step 1: Clamp a suitable pipe of sufficient length centrally in the vice

Step 2: Position transport belts around the pipe on both sides



Step 3: Raise the machine on the belts and guide it sideways onto the fitted quick-assembly plate

Step 4: Bolt the machine securely in place with the hexagon bolt (1).

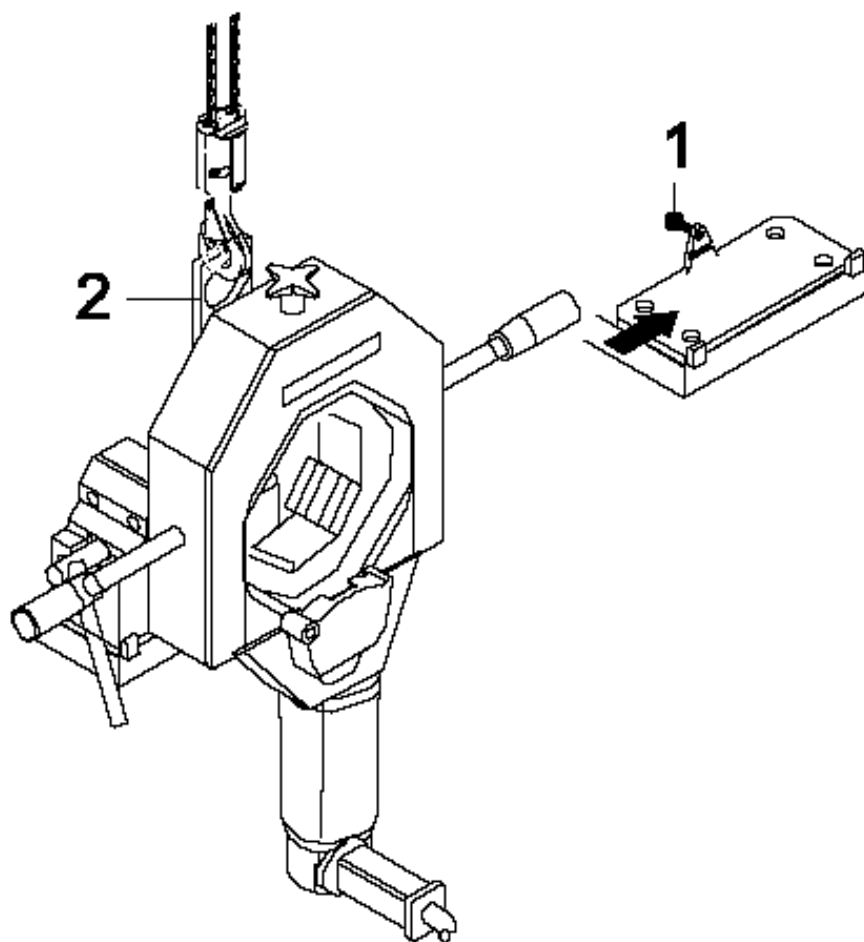




Fitting Instruction for R12

Step 1: Guide the hook from the crane into the shackle (2) and slide onto the fitted quick-assembly plate from the side

Step 2: Bolt the machine securely in place with the hexagon bolt (1)





Section 4: Operation Procedure

Danger of death or injury caused by electric shock

- Disconnect power before transporting, mounting or dismounting.
- The cable **must not** contact rotating (moving) parts of this cutting machine

Danger of being injured by sharp cutting edges

- Keep hands off the machine when mounting or changing the machine
- Wear safety gloves and goggle

Damage to material

- The saw blade or beveling cutter must be free of chips and dirt
- Use only LEFON saw blades and beveling cutter
- When deploying an additional cutter, only use the special LEFON clamp washer, not the normal clamp washer
- Press the saw blade guard down by maximum 90 degree
- Mount the saw blade/beveling cutter or additional cutter with the inscription facing operator. Then the teeth will be pointing to the correct direction.



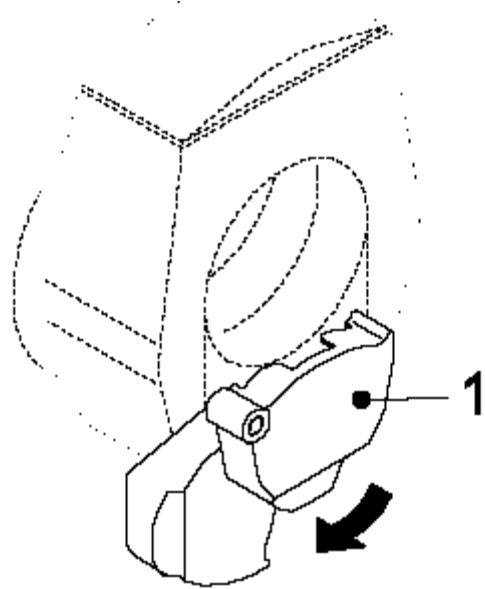
WARNING



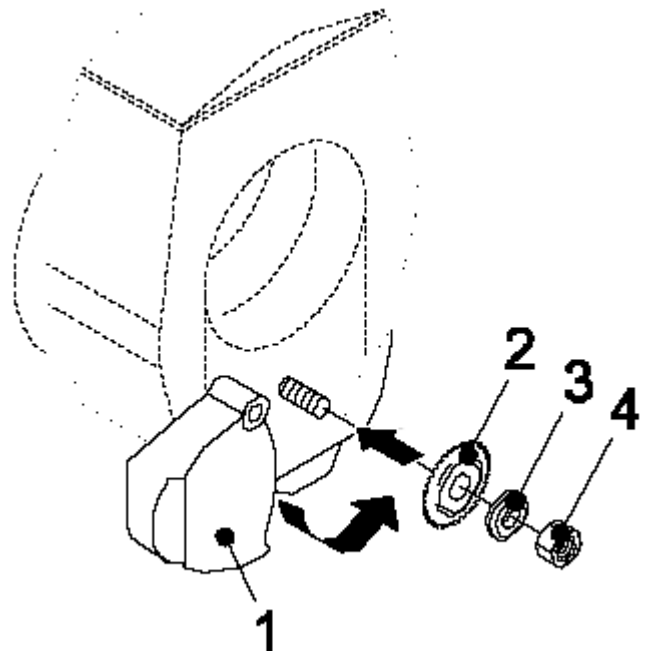
DANGER

Install the saw blade/beveling cutter

Step 1: Turn the saw blade guard (1) down for approx 90°.



Step 2: Loosen the hexagon nut (4). Remove the clamping plate (3) and the saw blade (2).





Step 3: Clean the saw blade shaft and vicinity

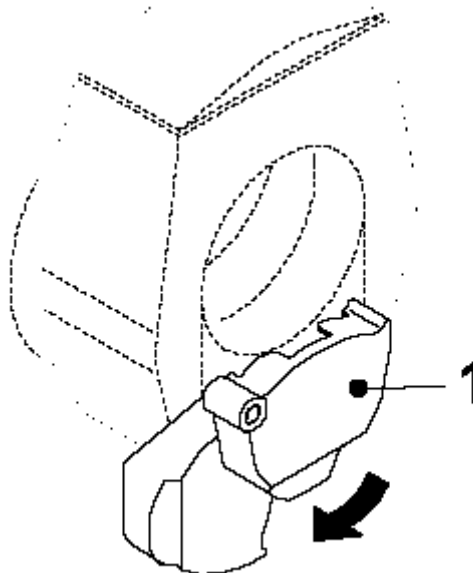
Step 4: Fit the saw blade (2) or bevel cutter and the clamping plate (3)

Step 5: Tighten the hexagon nut (4).

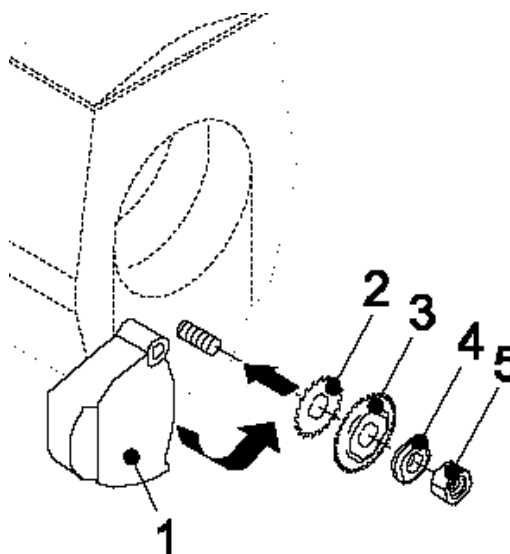
Step 6: Move the saw blade guard (1) back to its original position.

Install additional cutters

Step 1: Turn the saw blade guard (1) down for approx. 90°.



Step 2: Loosen the hexagon nut (5). Remove the clamping plate and the saw blade.





Step 3: Clean the saw blade shaft and vicinity

Step 4: Fit the additional cutter (2) or saw blade (3) and the special clamping plate (4)

Step 5: Tighten the hexagon nut (5).

Step 6: Move the saw blade guard (1) back to its original position.



Adjustment for different size pipe

Danger of being injured by rotating slide housing

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

- In their home position, the saw blade or beveling cutter **Must Not** touch the pipe!
- Before switching on the motor, make sure the gap between the saw blade/beveling cutter and the pipe is sufficient.

Note: It is recommended to support pipe whose one end is longer than 1 meter with supporting device or an auxiliary place of deposit.

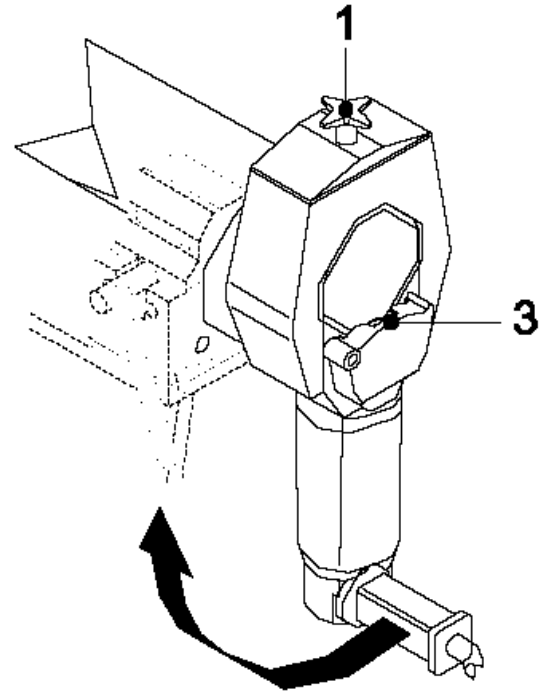


When only cutting blade installed

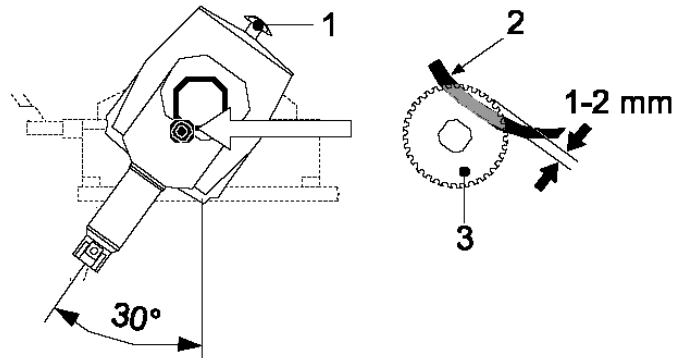
Step 1: Adjust the top handle wheel (1) to make space available for bigger size pipe.

Step 2: Clamp the pipe in place.

Step 3: Grip the lower handle to turn the motor clockwise for about 30° until the saw blade is in cutting position



Step 4: Adjust the top handle wheel (1) until the teeth of the saw blade (3) protrude about 1 to 2 mm inside the pipe (2)



Note: scale of the hand wheel: a readjustment of one graduation mark will result in a radial feed of bevel alteration of 0.1mm.

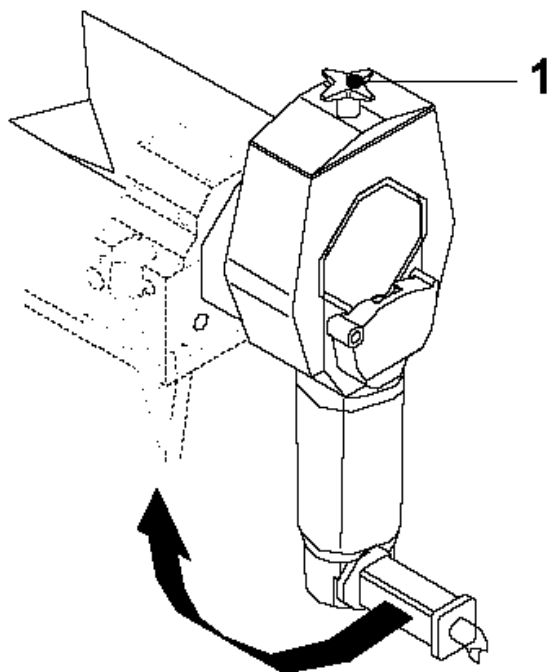


When cutting and beveling blade both installed

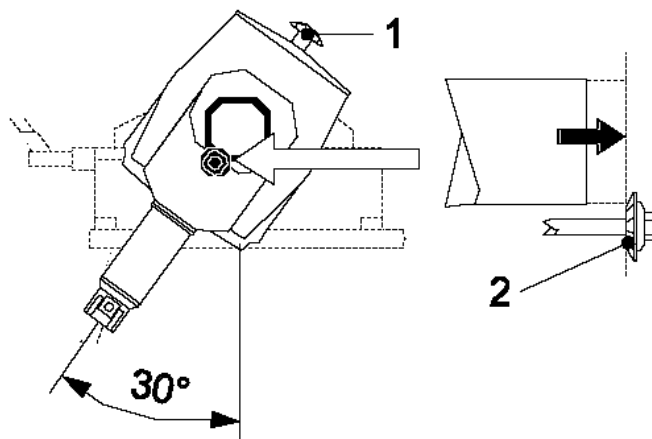
Step 1: Adjust the top handle wheel (1) to make space available for bigger size pipe

Step 2: Clamp the pipe in place so that it almost reaches the additional cutter (2).

Step 3: Grip the lower handle to turn the motor clockwise for about 30° until the saw blade is in cutting position



Step 4: Adjust the top handle wheel (1) until the additional cutter (2) cover the wall thickness of the pipe



Step 5: Perform a test cut; check the cut and beveling result and readjust the handle wheel (1), if necessary.

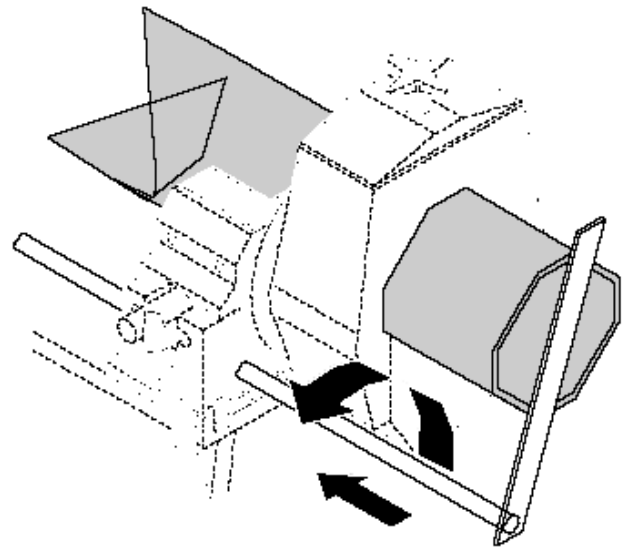
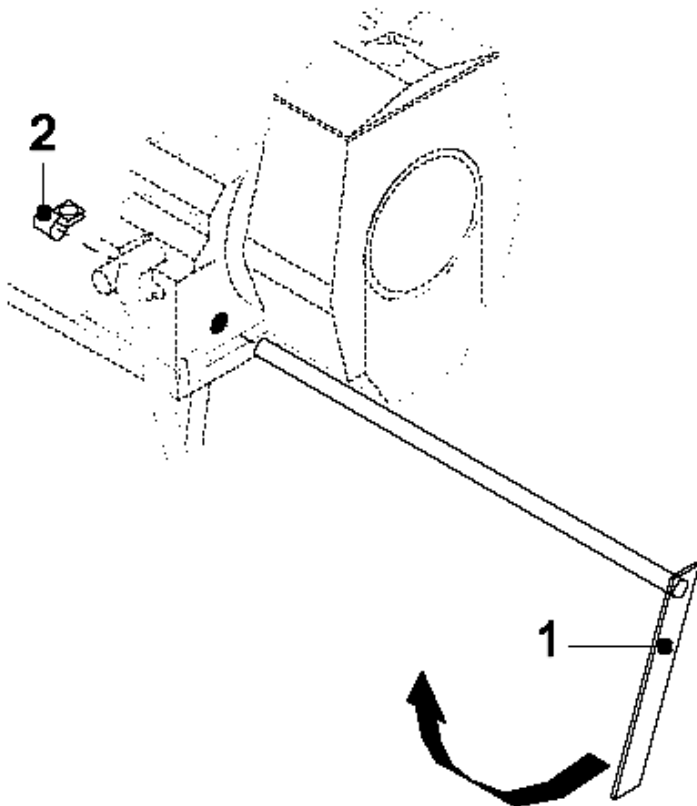
Note: scale of the hand wheel: a readjustment of one graduation mark will result in a radial feed or bevel alteration of 0.1mm.



The usage of Cut-off Stop

A length gauge (cut-off stop) is available as an optional accessory for fabricating pipe sections of equal length (except R12). Below is the instruction how to use the cut-off stop.

1. Mount the cut-off stop (1).
2. Swivel the cut-off stop to the middle of the pipe
3. Use a ruler to decide the desired length.
4. Move the clamp (2) towards the housing and turn it so that it rests on the work bench.
5. Tighten the clamp (2).
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 (refer to instruction on next pages)
9. For the next cut, extend the cut-off stop and swing it into place clockwise.

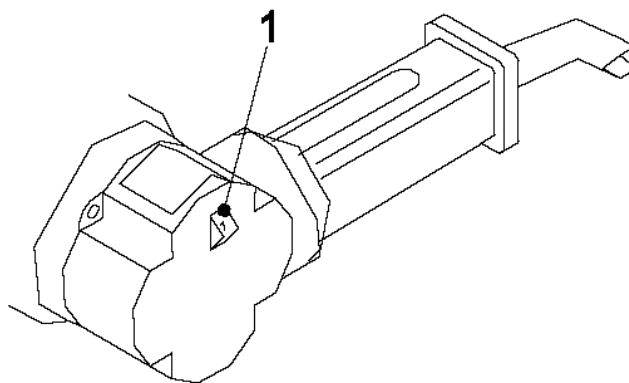


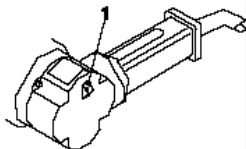


Motor speed selection

As rule of thumb, select low speed for

- Large diameter pipes
- Big wall thickness pipes
- When a supplementary cutter is used



Machine type	Pipe materials	Controller setting (1) 	Spindle speed (rpm)
R 2 R 4 R 6 R 8 R 12	High-quality stainless steel (material no. 1.40 to 1.45) from 1.5 mm to max. 3 mm wall thickness, higher-alloy high-quality steels (see chapter 3.2, p. 7).	1 - 2	150
	Low-alloy and high-quality steels (see chapter 3.2, p. 7).	2 - 4	175 - 200
	Plastic, non-ferrous heavy metal, general structural steel, black and galvanised steel pipe	4 - 6	220 - 270
R H	High-quality steel, high-quality stainless steel	1 - 6	40 - 70
	High-performance materials (nickel-chromium-molybdenum alloys)	1 - 3	40 - 55



Pipe cutting process

Danger of being injured by flying chips

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



Important Notice: If the machine is out of operation for long time

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

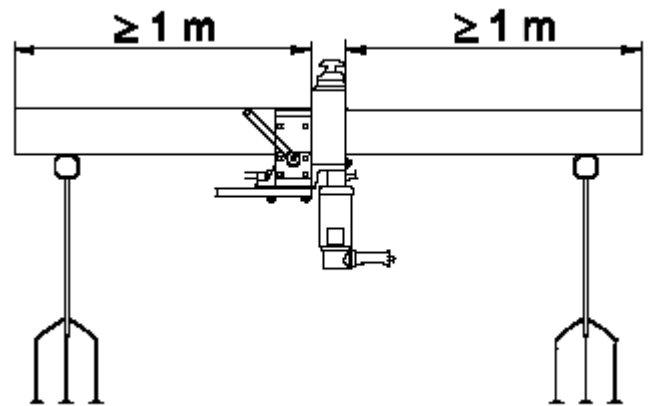
Procedure to cut the pipe

Step 1: Make adjustment to top handle wheel
Compatible for the pipe diameter.(refer to earlier description)

Step 2: Adjust the cut-off stop if used.

Step 3: Set the spindle speed

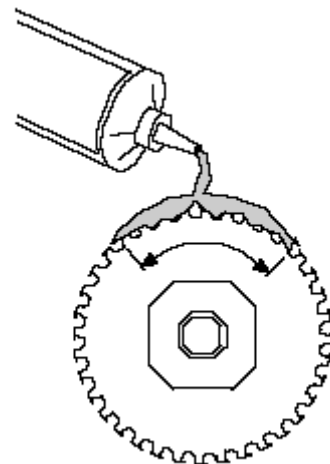
Step 4: Push the pipe through the vice up to the desired length and clamp it. Support pipes at each end if the open end is longer than 1meter.



Important Notice: Take the clamp handle off before rotating the slide housing.

Step 5: Apply blade lubricant to the saw blade.

- Lubricant / every 3 cuts, < 2" wall thickness
- Lubricant / every 1 cut, > 2" wall thickness, or with chrome, high quality steel pipes.



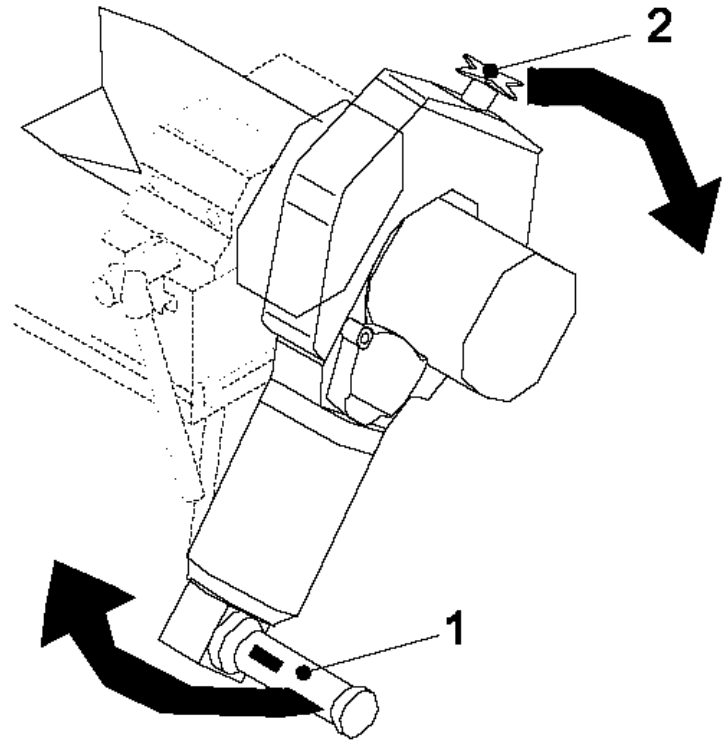


Important Notice: If the pipe got in touch with drinking water or foodstuff, use LEFON lubricating gel on saw blade.

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

Step 6: Switch on the machine. (Soft start takes 3 seconds to initiate due to protection design)

Step 7: Slowly turn the motor using the lower grip handle (1) and top handle wheel (2) clockwise until the wall of the pipe/tube has been pierced through with three or four blade teeth visible.



Step 8: Keep turning, and increase the turning speed to cut the pipe off

Step 9: Switch off the motor.



Pipe beveling process

Danger of being injured by flying chips

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



Important Notice: If the machine is out of operation for long time

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

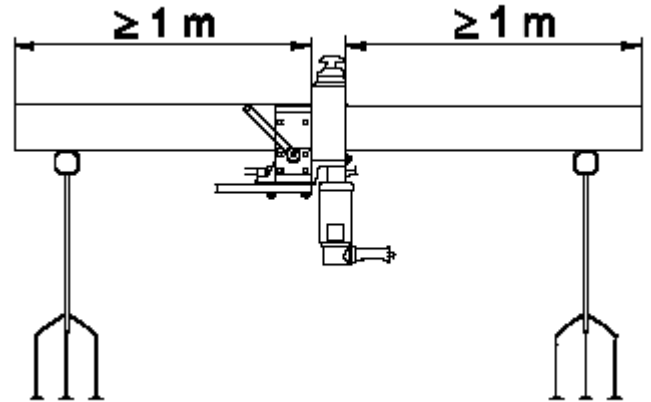
Procedure to bevel the pipe

Step 1: Make adjustment to top handle wheel
Compatible for the pipe diameter. (Refer to earlier description)

Step 2: Adjust the cut-off stop if used.

Step 3: Set the spindle speed

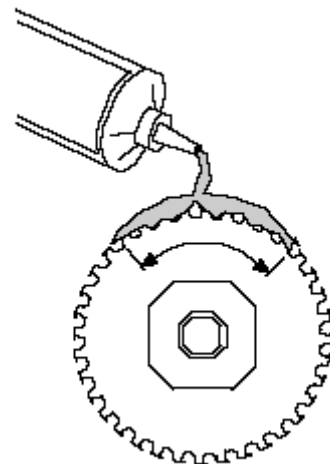
Step 4: Push the pipe through the vice up to the desired length and clamp it. Support pipes at each end if the open end is longer than 1meter.



Important Notice: Take the clamp handle off before rotating the slide housing.

Step 5: Apply blade lubricant to the saw blade.

- Lubricant / every 3 cuts, < 2" wall thickness
- Lubricant / every 1 cut, > 2" wall thickness, or with chrome, high quality steel pipes.



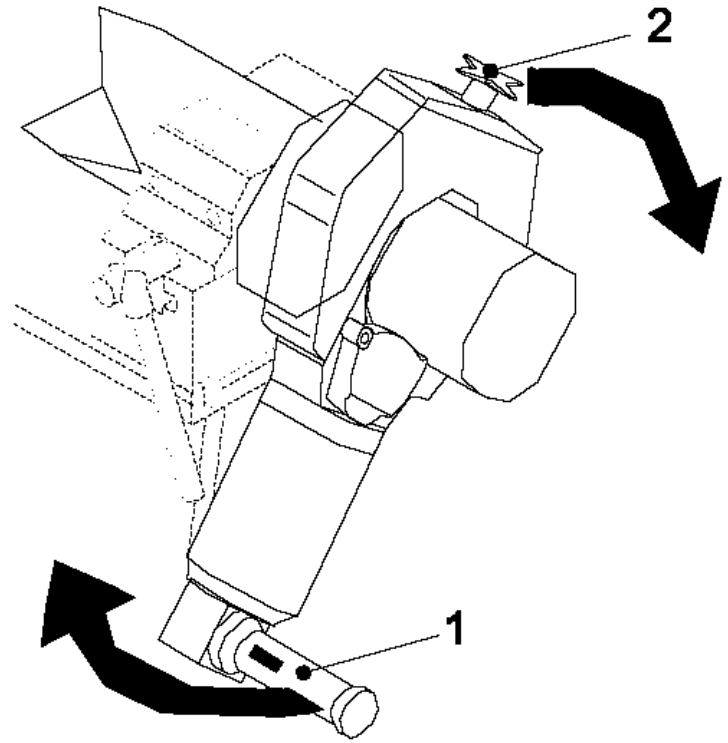


Important Notice: If the pipe got in touch with drinking water or foodstuff, use LEFON lubricating gel on saw blade.

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

Step 6: Switch on the machine. (Soft start takes 3 seconds to initiate due to protection design)

Step 7: Slowly turn the motor using the lower grip handle (1) and top handle wheel (2) clockwise until the wall of the pipe/tube has been pierced through with three or four blade teeth visible.



Step 8: Keep turning, and increase the turning speed to finish beveling.

Step 9: Switch off the motor.

Simultaneous cutting and beveling

Pipes with less than 4.5 mm wall thickness can be cut and beveled simultaneously.

Important Notice: If using an additional cutter, turn the motor slower around the pipe than normal cutting.

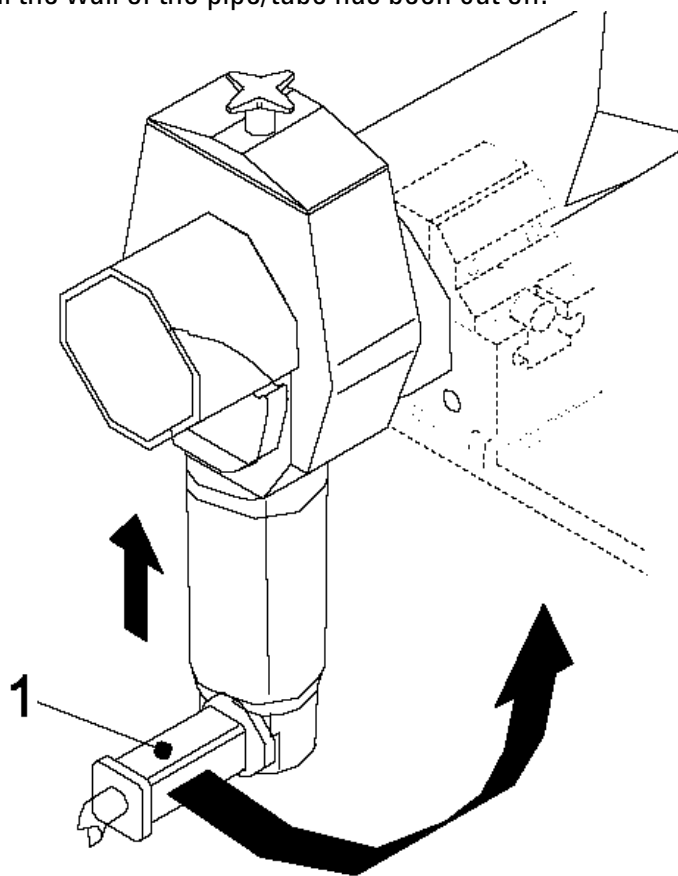
Important Notice: Lubricate the saw blade and additional cutter during work. For non-stop operation, non-stop operation, after cutting, loosen the hexagon nut on top of saw blade to avoid damage caused by tension.

Hard plastic cutting process

For hard plastic pipe with wall thickness less than 2.5 mm

Follow the cutting procedures until Step 7

Step 7: Slowly turn the motor using the lower grip handle (1) and top handle wheel (2) **Counter Clockwise** until the wall of the pipe/tube has been cut off.



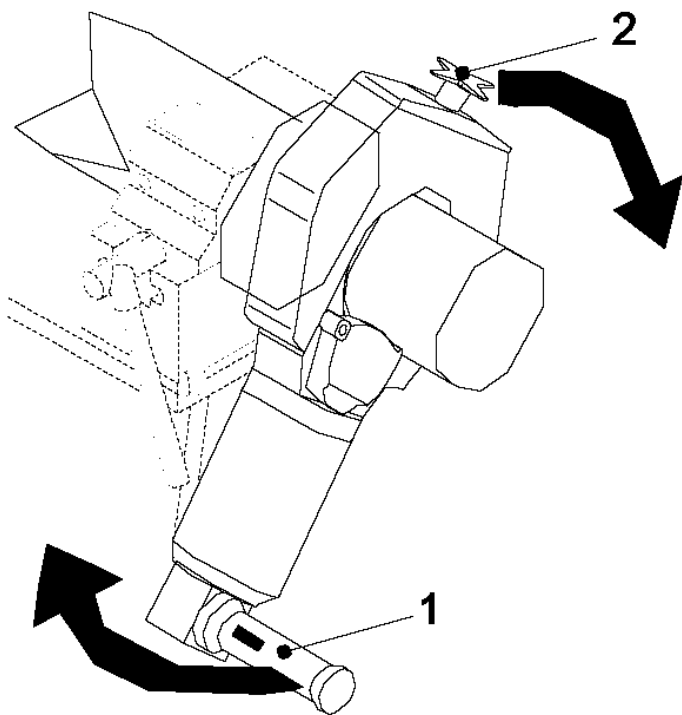
Step 8: Switch off the motor



For hard plastic pipe with wall thickness more than 2.5 mm

Follow the cutting procedures until Step 7

Step 7: Slowly turn the motor using the lower grip handle (1) and top handle wheel (2) **Clockwise** until the wall of the pipe/tube has been pierced with three or four blade teeth visible

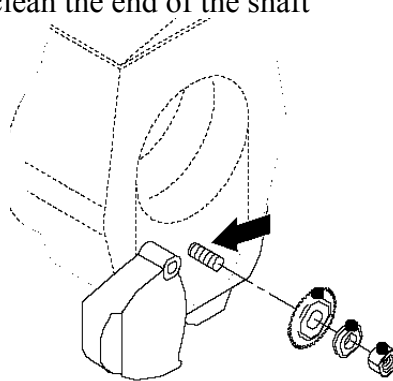
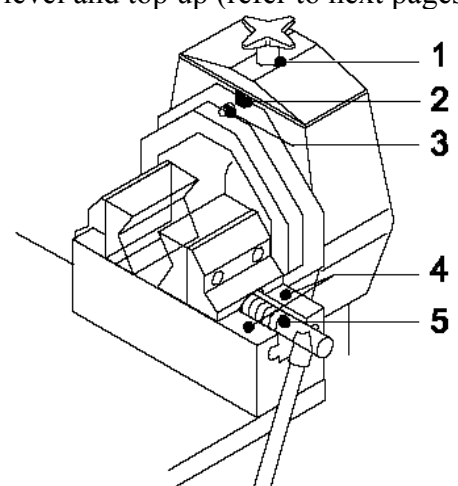


Step 8: Keep turning, and increase the turning speed to finish cutting.

Step 9: Switch off the motor.

Section 5: Maintenance & Troubling Shooting

Maintenance summary

Time Interval	Action
Before starting machine	- Remove chips and dirt from the saw blade - Keep the vent holes free of chips
Every cleaning, Every blade change	Don't use pressurized air to clean, which would blow cuttings into machine to compromise the accuracy of future use - Use cloth or brush to clean the end of the shaft 
Every week	- Clean and lubricate - The spindle of the top handle wheel(1) - The sliding block(2) - The guide bush(3) - The vice track(4) - The vice spindle(5) - Check the gear oil level and top up (refer to next pages) 

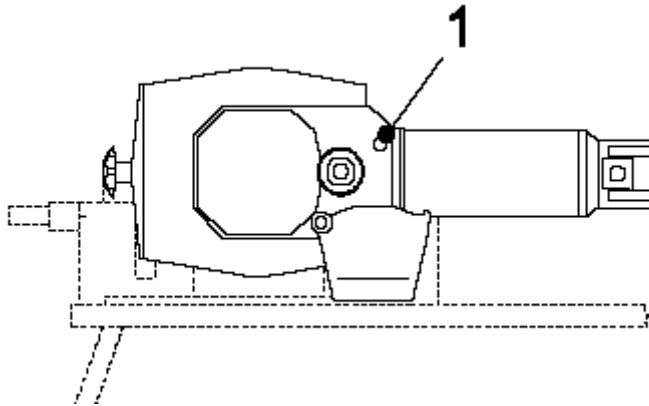


Gear oil level check and change

For R2

Important Notice: The pipe cutter must be mounted on the working bench when checking oil

- Turn the motor 90° counterclockwise
- Remove the oil filler screw(1)



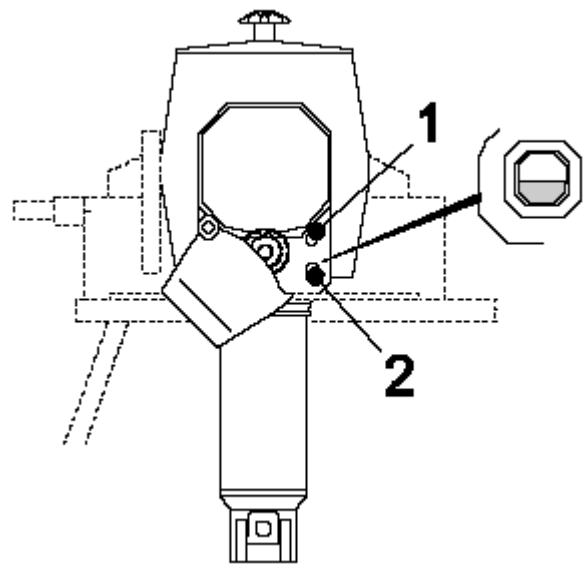
- If no oil runs out of the filling opening, top up with special LEFON gear oil or the equal
- Replace and tighten the oil filler screw

Important Notice: The oil will has to be topped up if an RA H intermediate gear is fitted

For R4, R6, R8, and R12

Important Notice: The gears of pipe cutters R4 to R12 have an oil level inspection tube. The oil level should be visible in the middle of the inspection tube glass.

- Check the oil level at the inspection tube glass(2) and top up if necessary
- Unscrew the oil filler screw (1). Fill with special LEFON gear oil for the equal.



- Replace and tighten the oil filler screw

Important Notice: The oil will has to be topped up if an RA H intermediate gear is fitted

Slide guide cleaning

Step 1: Clamp in a suitable pipe

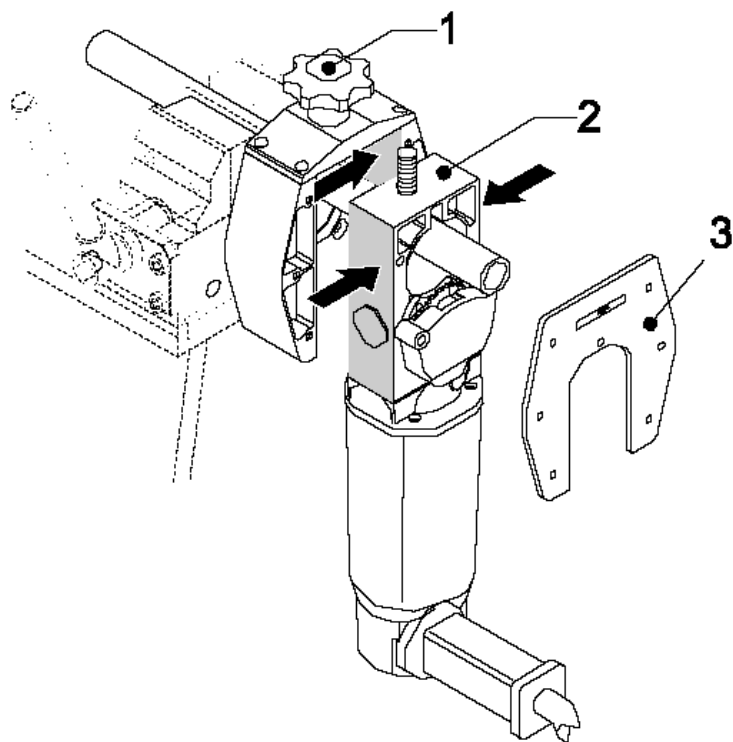
Step 2: Remove the cover plate (3) using the hexagon Allen Key.

Step 3: Rotate the slide (2) all the way down using the top handle wheel (1)

Step 4: Pull the slide (2) out towards the front

Step 5: Clean the guide of the slide housing and slide. Lubricate both parts with HD 30 engine oil.

Step 6: Reassemble the pipe cutter





Trouble Shooting

Symptom	Cause	Correction
The sliding housing doesn't turn	Pipe diameter is not correctly adjusted	Adjust the top handle wheel correctly following earlier instruction
Blade doesn't cut and is slipping	Hexagon nut on the saw blade shaft not tightened	Tighten hexagon nut
Pipe can't be cut	Saw blade is mounted in the wrong way	Reverse the blade, make labeled side facing outwards
Pipe diameter can't be adjusted	Slide guide is dirty	Clean the slide guide(refer to earlier instruction on slide guide cleaning)
The motor is not running	The overload protection relay has been triggered	Set the switch to off, wait about 15 minutes, and switch on the machine again
	The restart inhibitor has been triggered	Set the switch to off, then switch on the machine again