OPERATOR'S MANUAL

AIR DRILLING MACHINE WITH MAGNETIC BASE

DRILL-AIR50A, ATEX

Unit 21 Empire Bus Park, Enterprise Way, Burnley, UK, BB12 6LT
Phone: +44 1706 229490
www.jeiuk.com e-mail: sales@jeisolutions.co.uk

Contents

1. GENERAL INFORMATION

1.1. Application

The DRILL-AIR50A, ATEX is a drilling machine designed to drill holes of diameters up to 50 mm (1 31/32″) by using annular cutters. The machine can also drill holes of diameters up to 23 mm (29/32″) by using twist drill bits.

It is allowed to drill outside pipes of a minimum diameter of 250 mm (9 27/32″) after checking the clamping of the magnetic base using the indicator.

The machine is II 2G Ex h IIC 135ºC (T4) Gb II 2D Ex h IIIB T135ºC Db certified to allow work in potentially explosive atmospheres.

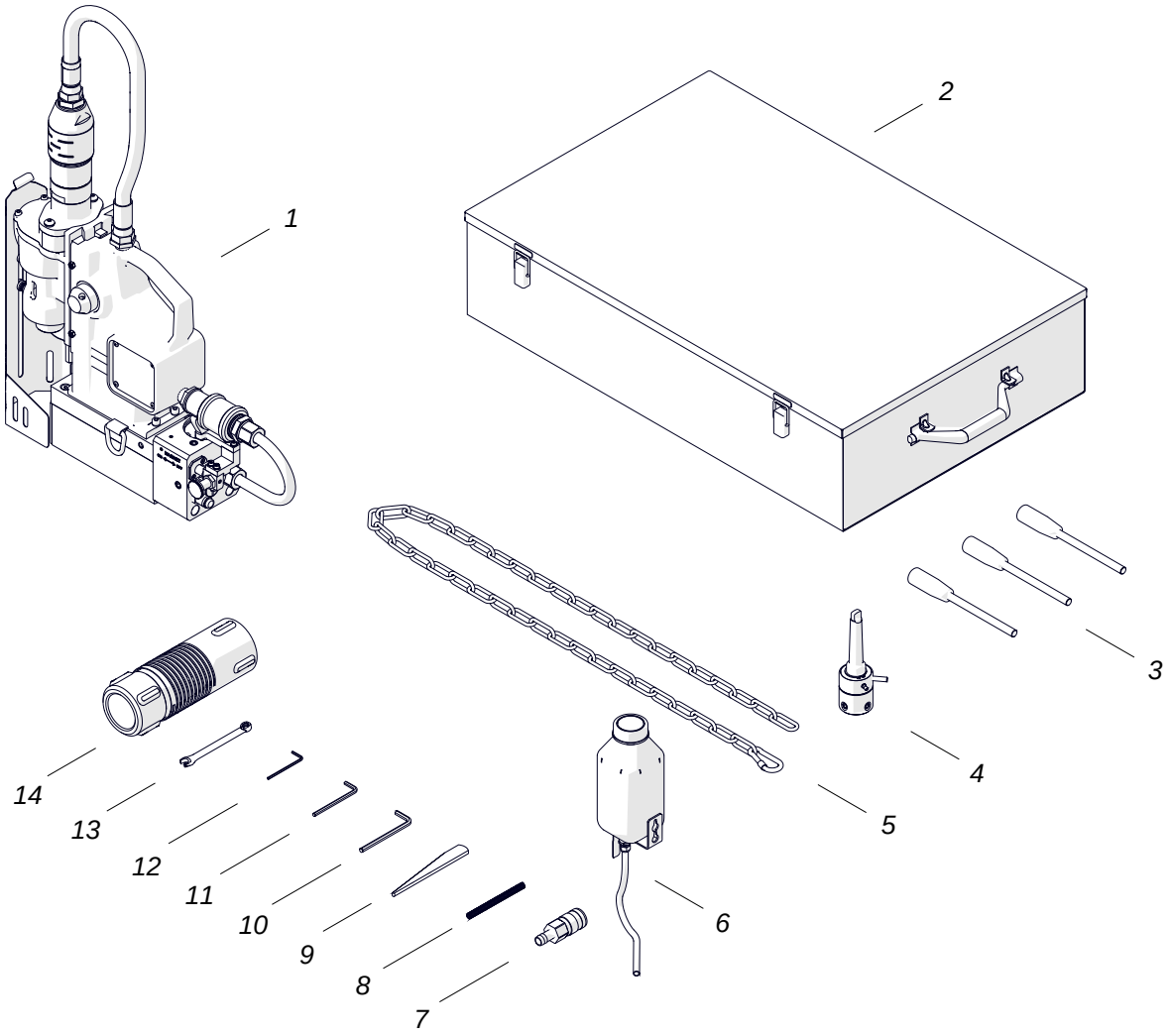
The magnetic base clamps the machine to ferromagnetic surfaces. This assures that the operator is safe and the machine works correctly. A safety chain protects the machine from falling in case of clamping loss.

1.2. Technical data

Pressure	6 bar (87 psi)
Air connection	CEJN 410 DN 10.4 R 3/8″ BSPT fitting for quick coupling
Power	800 W
Air consumption	1400 l/min (49,4 CFM)
Spindle shank	MT2
Tool holder	19 mm (3/4″) Weldon
Maximum drilling diameter with a TCT annular cutter	50 mm (1 31/32″)
Maximum drilling diameter with a HSS annular cutter	45 mm (1 49/64″)
Maximum drilling diameter with a twist drill bit	23 mm (29/32″)
Maximum drilling depth	51 mm (2 1/64″)
Stroke	150 mm (5 29/32″)
Clamping force (surface with the thickness of 25 mm (63/64″) and roughness R_a = 1.25)	9500 N
Magnetic base dimensions	66.5 mm x 90 mm x 192.5 mm (2 5/8″ x 3 35/64″ x 7 37/64″)
Rotational speed with load	190 rpm (I gear) 290 rpm (II gear)
Rotational speed without load	330 rpm (I gear) 500 rpm (II gear)
Minimum workpiece thickness*	8 mm (5/16″)
Minimum pipe diameter*	250 mm (9 27/32″)
Noise level	More than 70 dB
Required ambient temperature	0–40°C (32–104°F)
Weight	24.5 kg (54 lbs)

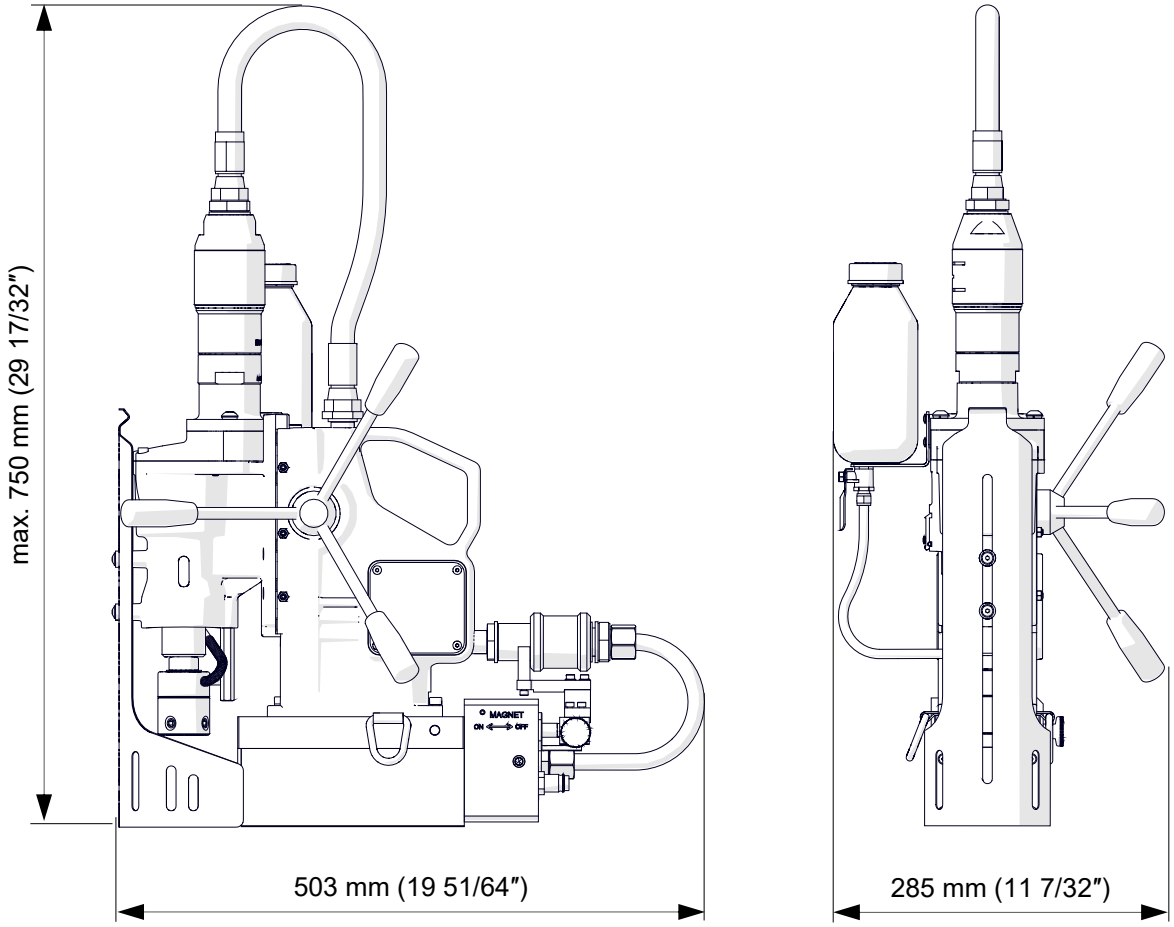
* always check the clamping of the magnetic base using the indicator

1.3. Equipment included

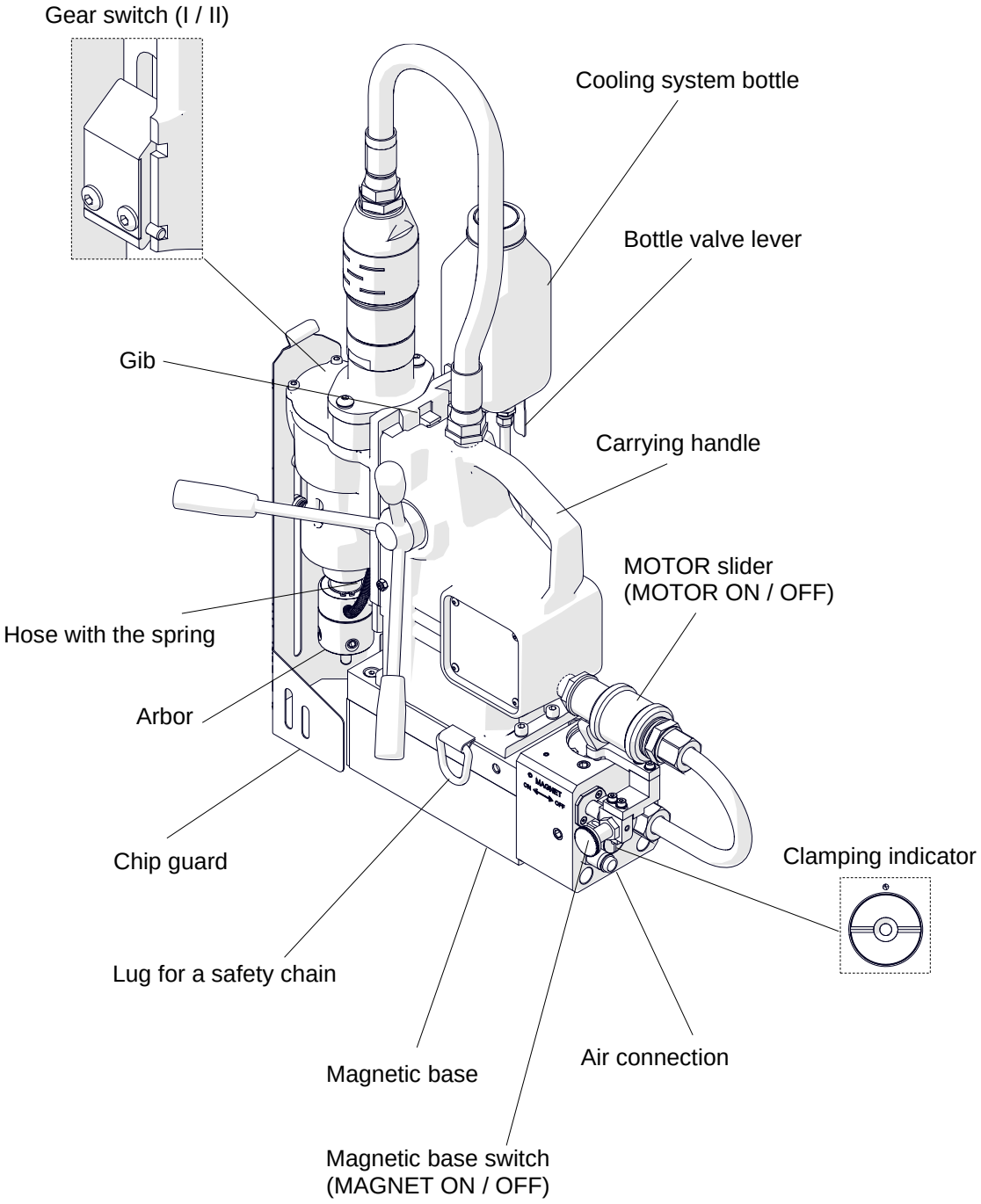


1	Drilling machine	1 unit
2	Box	1 unit
3	Handle	3 units
4	Arbor MT2	1 unit
5	Chain with a snap hook	1 unit
6	Cooling system	1 unit
7	Quick coupling	1 unit
8	Cooling system hose protective spring	1 unit
9	MT2 drift	1 unit
10	5 mm hex wrench	1 unit
11	4 mm hex wrench	1 unit
12	2.5 mm hex wrench	1 unit
13	8 mm combination wrench	1 unit
14	Equipment box	1 unit
–	Operator’s Manual	1 unit

1.4. Dimensions



1.5. Design



2. SAFETY PRECAUTIONS

Read the Operator's Manual

Wear ear protection

Wear eye protection

1. Before use, read this Operator's Manual and complete a training in occupational health and safety.
2. Use only in applications specified in this Operator's Manual.
3. Make sure that the machine has all parts and they are genuine and not damaged.
4. Make sure that the specifications of the power source are the same as those specified on the rating plate.
5. Supply only with clean and lubricated air. Make sure that the air source has an air preparation unit (filter, regulator, and lubricator). Do not supply air by using a hose without a quick coupling.
6. Do not carry the machine by the hoses and do not pull the hoses. This can cause damage and serious injury.
7. Set the MAGNET switch to OFF before you move the machine. Use carrying handle to move the machine.
8. Keep untrained persons away from the machine.
9. Before each use, ensure the correct condition of the machine, air source, supply hose, air connection, quick coupling and tools.
10. Before each use, make sure that no part is cracked or loose. Make sure to maintain correct conditions that can have an effect on the operation of the machine.
11. Keep the machine dry. Do not expose the machine to rain, snow, or frost. Protect the supply hose from the sun.
12. Do not stay below the machine that is put at heights.
13. Keep the work area well lit, clean, and free of obstacles.
14. Use the set screws to tighten the annular cutter. Remove wrenches from the work area before you connect the machine to the power source.
15. Do not use tools that are dull or damaged.

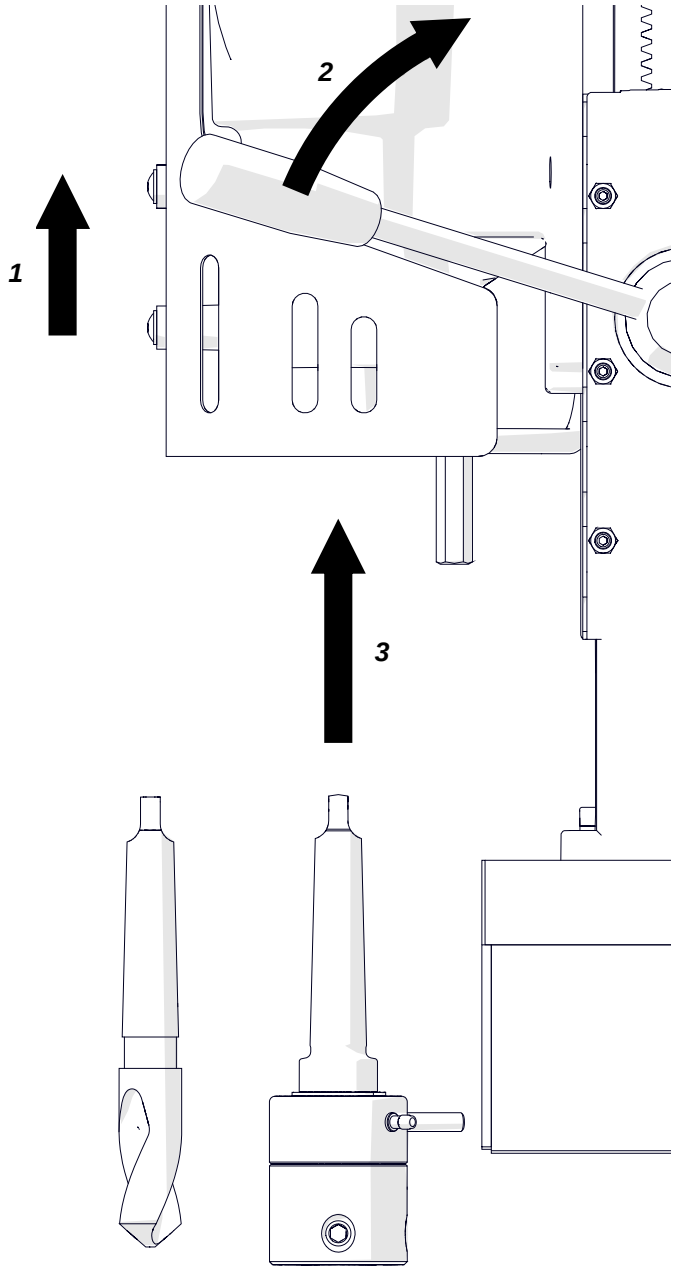
16. Unplug the supply hose before you install and remove tools. Install and remove tools by using protective gloves.
17. Use annular cutters without the pilot pin only when you drill incomplete through holes. Do not use arbors without a spring.
18. Do not drill holes whose diameter or depth differ from those specified in the technical data.
19. Do not use on surfaces that are rough, not flat, not rigid, or have rust, paint, chips, or dirt.
20. Use the safety chain to attach the machine to a stable structure. Attach the chain by the drill lugs or by the carrying handle. The chain must not be loose. If possible, wrap the chain around the workpiece.
21. Do not use if the gibs are adjusted incorrectly.
22. Do not use if there is no grease on the gibs.
23. We do not recommend work on workpieces thinner than 8 mm (5/16″). The clamping force depends on the workpiece thickness and is much lower for thin plates.
24. Each time before you put the machine on the workpiece, rub the workpiece with coarse-grained sandpaper. Make sure that the full bottom of the base touches the workpiece.
25. Ensure that the machine is correctly attached to the surface by checking the position of clamping indicator.
26. Use eye and ear protection and protective clothing. Do not use loose clothing.
27. Do not touch chips or moving parts. Do not let anything to be caught in moving parts.
28. After each use, clean the machine and the tool. Do not remove chips with bare hands.
29. Unplug the supply hose before you do maintenance or install/remove parts.
30. Repair only in a service center appointed by the seller.
31. If the machine falls, is wet, or has any damage, stop the work and immediately send the machine to the service center for check and repair.
32. Do not leave the machine when it operates.
33. If you are not going to use the machine, remove the tool from the holder. Then, remove the machine from the work area and keep it in a safe and dry place.

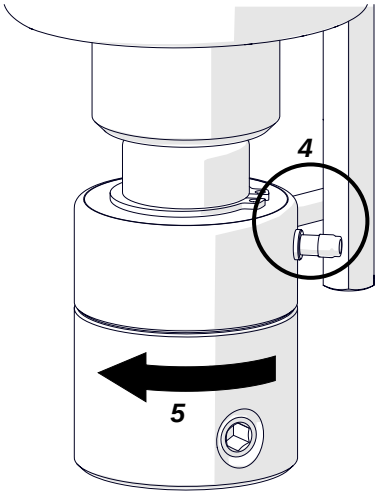
34. If you are not going to use the machine for an extended period, put anti-corrosion material on the steel parts.

3. STARTUP AND OPERATION

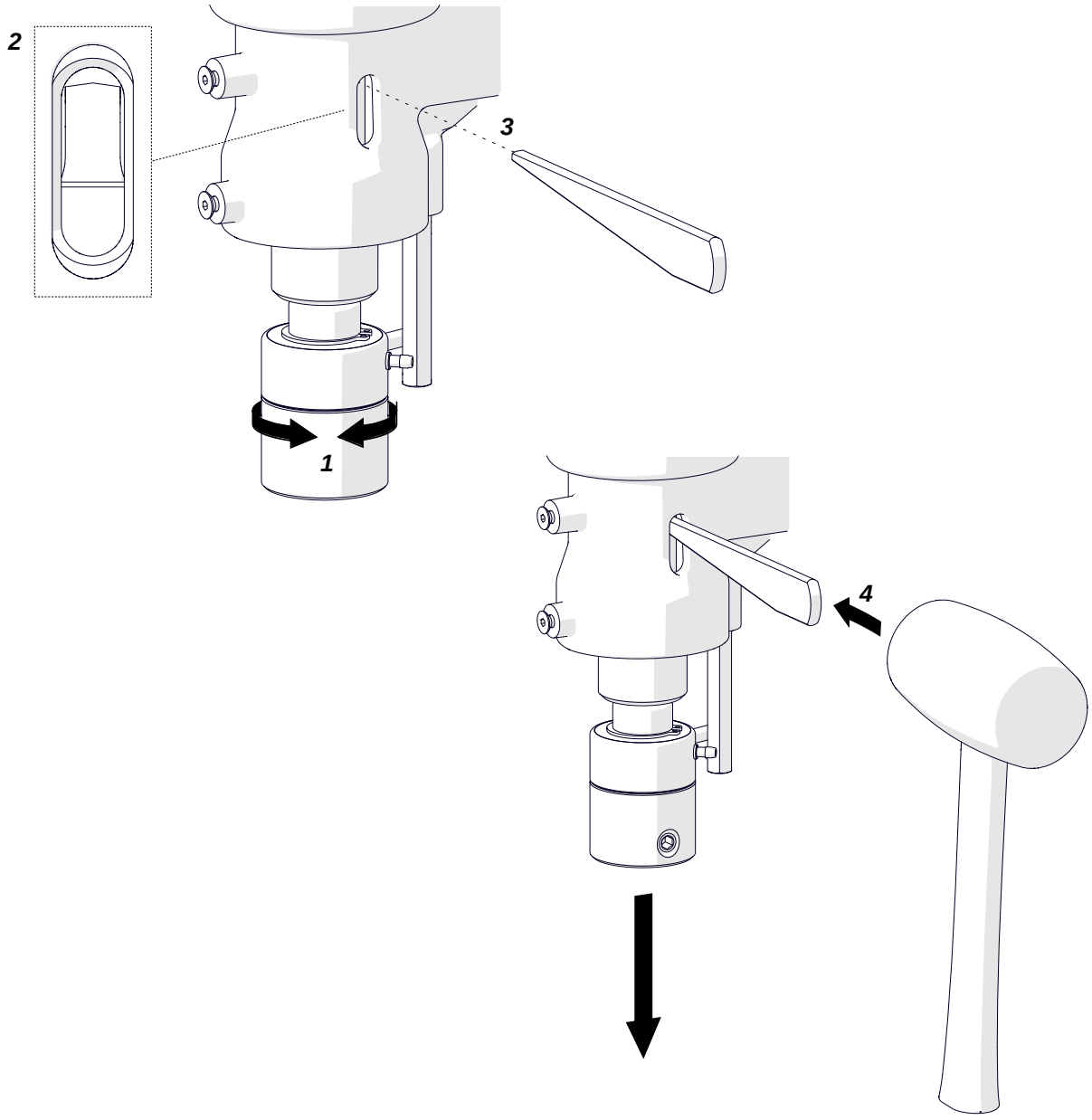
3.1. Installing and removing the arbor or MT2 twist drill bit

Unplug the supply hose and lift the chip guard (1). Turn the handles to the right (2) to lift the motor. Use a dry cloth to clean the spindle and the arbor (twist drill bit). Use gloves to put the arbor (drill bit) into the spindle (3). Make sure that the stop rod is between the pin and the fitting (4). Next, turn the arbor (drill bit) to the right (5) until it snaps into place.





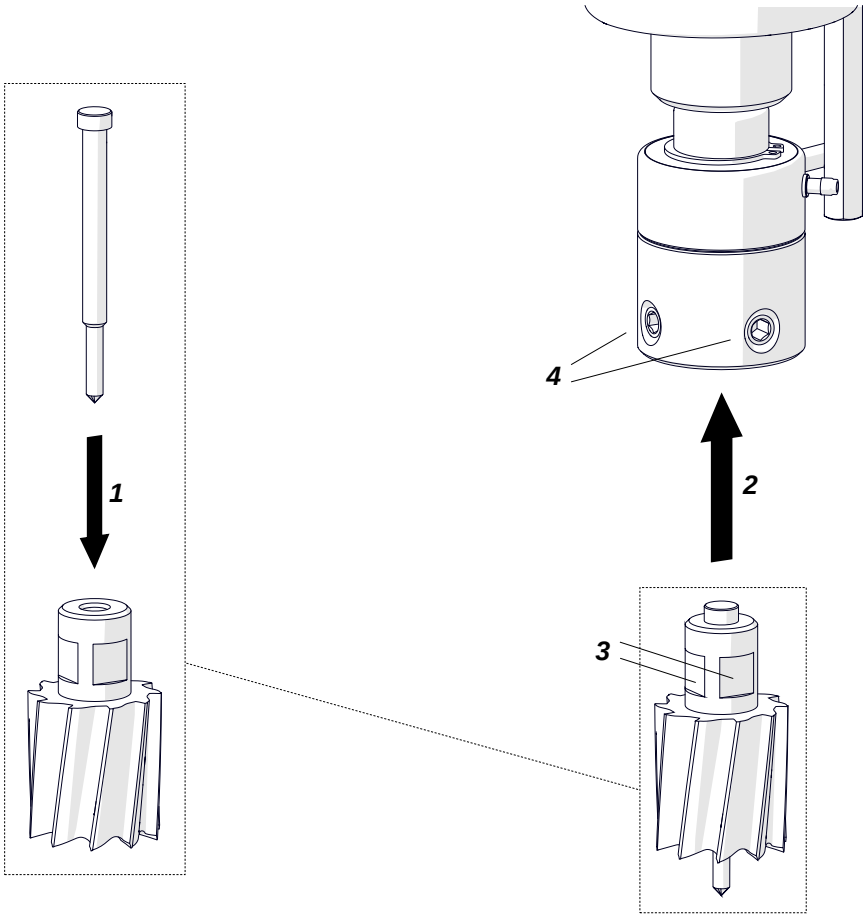
To remove the arbor (drill bit), continue as follows. Lift the motor and turn the spindle (1) to align the holes in the spindle and gearbox (2). Put the drift into the hole (3). Next, hold the carrying handle with one hand and hit the drift with a mallet (4).



3.2. Installing and removing the annular cutter

Install the arbor as described before. Use gloves to put the correct pilot pin into the annular cutter (1). Clean the cutter with a dry cloth. Put the cutter into the arbor (2) to align the flat surfaces (3) with the screws (4). Use the 5 mm hex wrench to tighten the screws.

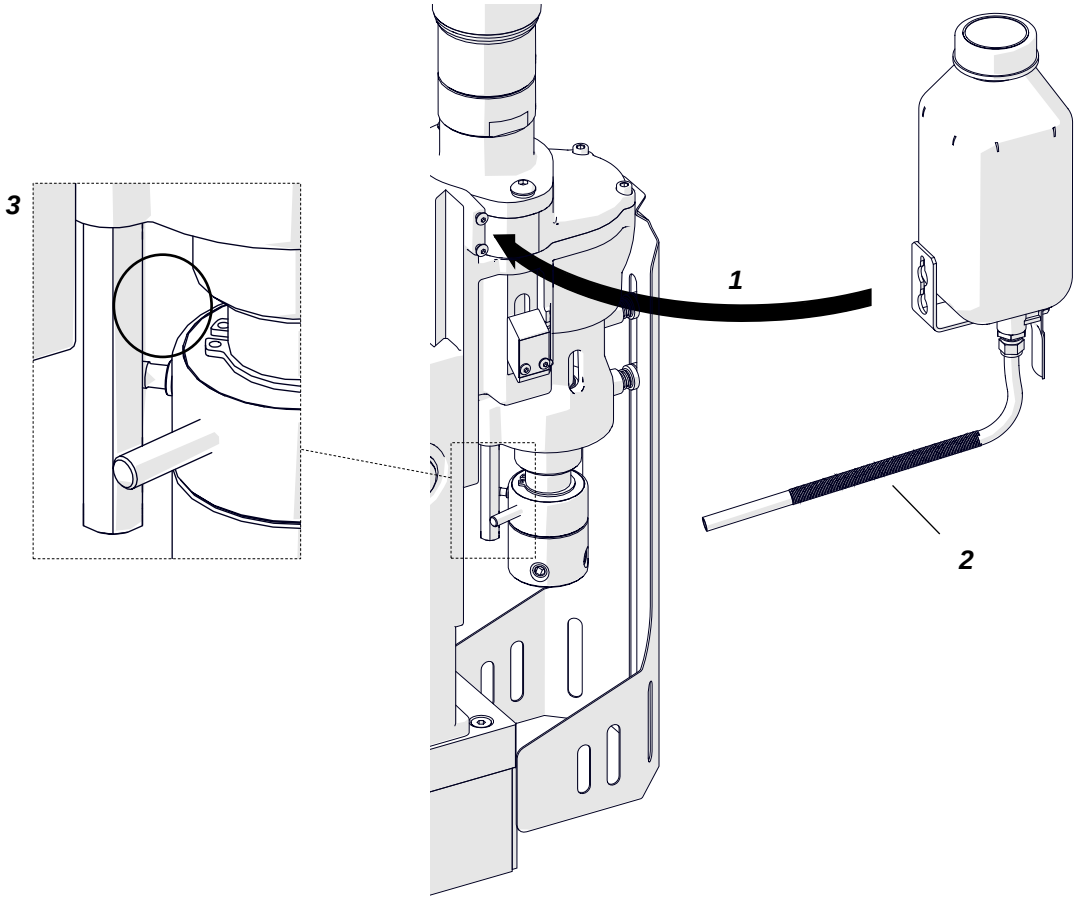
To remove the cutter, loosen the screws (4) with the 5 mm hex wrench.

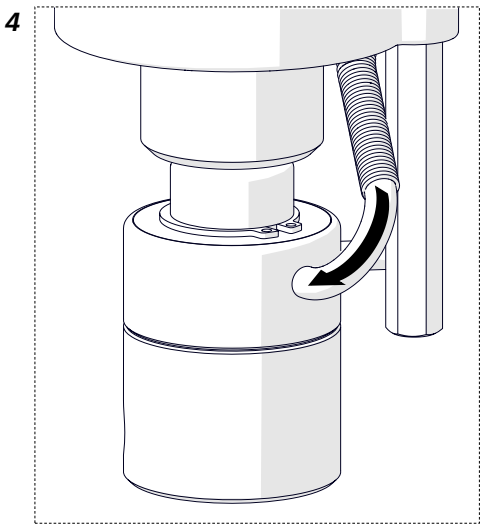


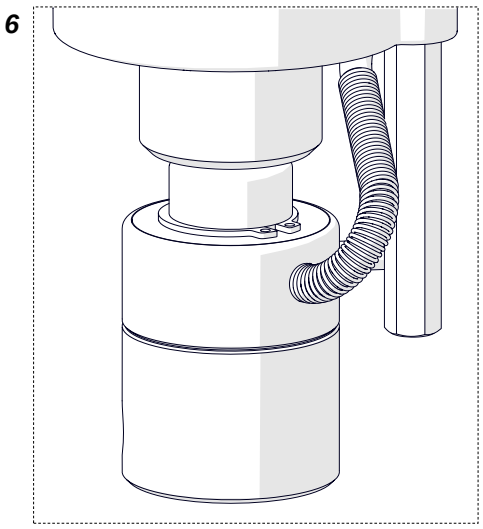
3.3. Installing and removing the cooling system

Hang the bottle on the screws (1). Put the hose with the spring (2) between the stop rod and the arbor (3). Then, attach the hose to the fitting and move the spring to the arbor (5, 6).

To remove the bottle, continue in reverse sequence.







3.4. Preparing

The motor is at its full power after one hour of operation. Before the first use or after a long period of storage, put 3–5 drops of oil into the air connection. Then, connect the machine to a 6 bar air source and let the machine operate for 5–10 minutes.

Before use, clean steel parts, including the MT2 socket, from anti-corrosion material used to preserve the machine for storage and transport.

Attach the handles to the feed shaft. You can install the shaft so that the handles are on the opposite side of the machine.

Apply a thin layer of grease to the gibs.

Select the cutter that matches the required hole diameter.

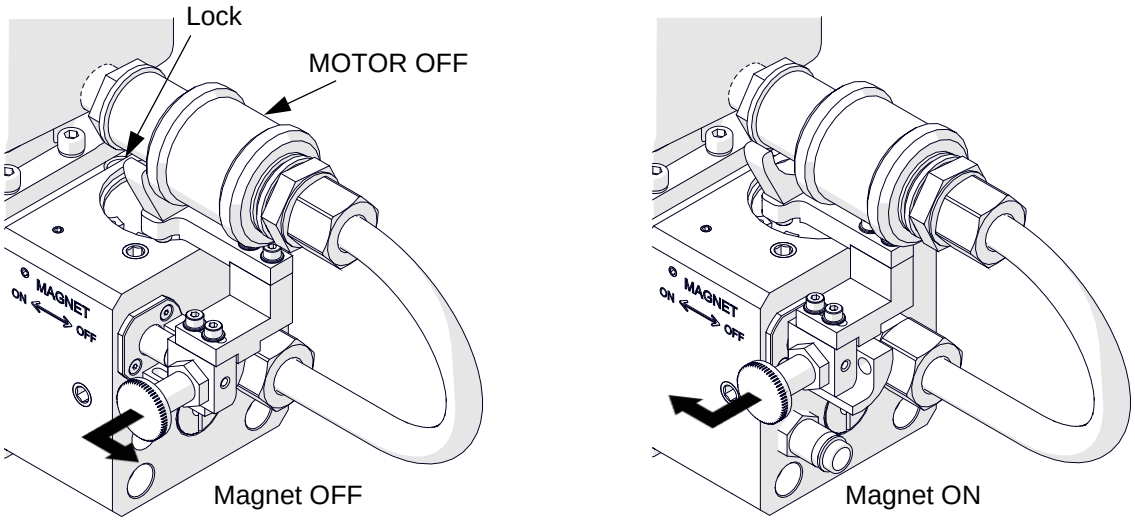
When you drill holes with diameters of 15–23 mm (19/32″–29/32″) by using twist drill bits, select two bits: with 70% and 100% of the required diameter.

Use a dry cloth to clean the spindle, arbor (drill bit), and cutter. Then, as described before, install the arbor (and then the cutter) or twist drill bit with the smaller diameter.

Connect the machine to a correctly prepared air source of sufficient purity. Use a supply hose with a quick coupling. Make sure that all inner diameters of the air source (including the supply hose and fittings) are of at least 13 mm (33/64″). Use an air preparation unit that has a filter, regulator, and lubricator.

Put the machine on a flat ferromagnetic workpiece with the thickness of at least 8 mm (5/16″). Drilling on cylindrical surfaces is allowed only after checking the clamping of the magnetic base using the indicator. Make sure that there is no rust, paint, chips, or dirt on the surface. They decrease the clamping force. The force will be lower also if the surface is thin, rough, not flat, not rigid, or the bottom of the base is worn. Some types of steel (non-ferromagnetic) do not conduct magnetic flux so the machine cannot clamp onto them.

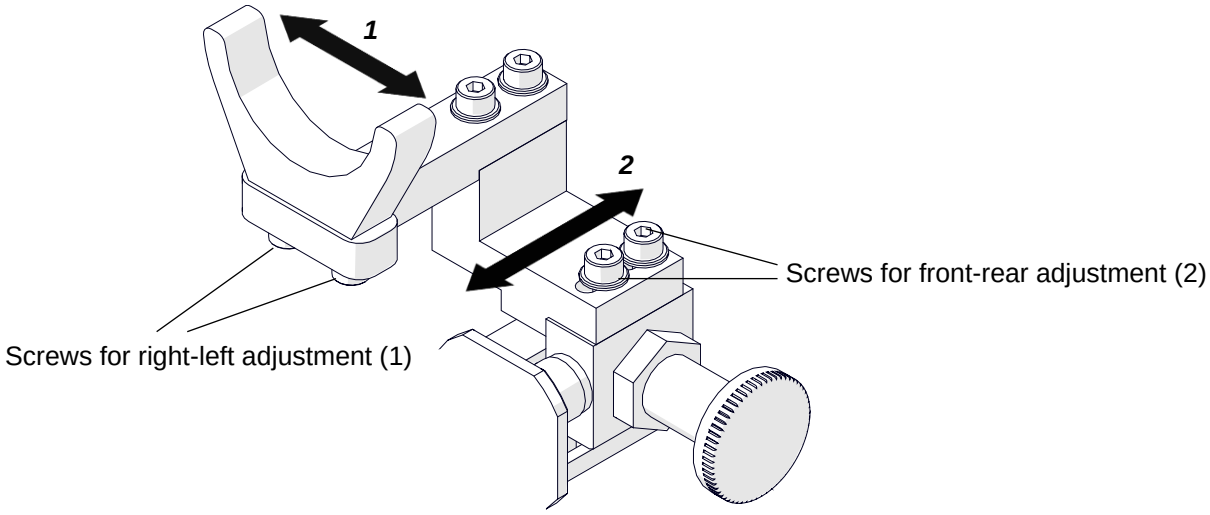
Set the MAGNET switch to ON to turn on the clamping.



Turning off the magnet will move the lock and disable the motor!

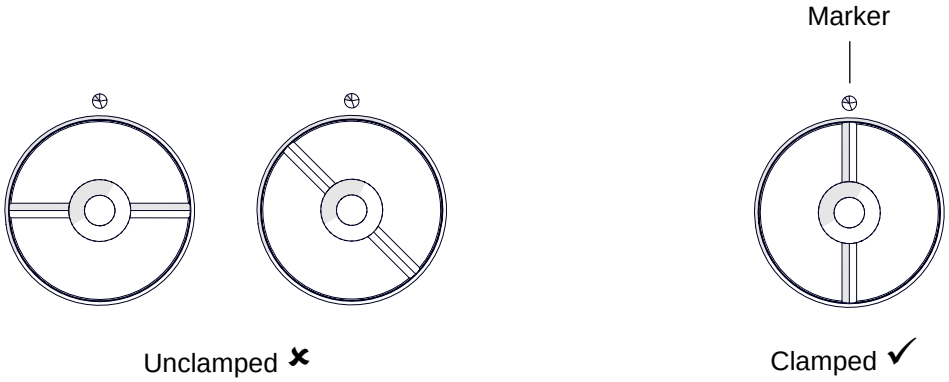
If the position of the lock has become loose during operation, use a 3 mm hex wrench to loosen the screws, adjust the lock (1, 2) and tighten the screws.

CAUTION: Removing the lock is forbidden!

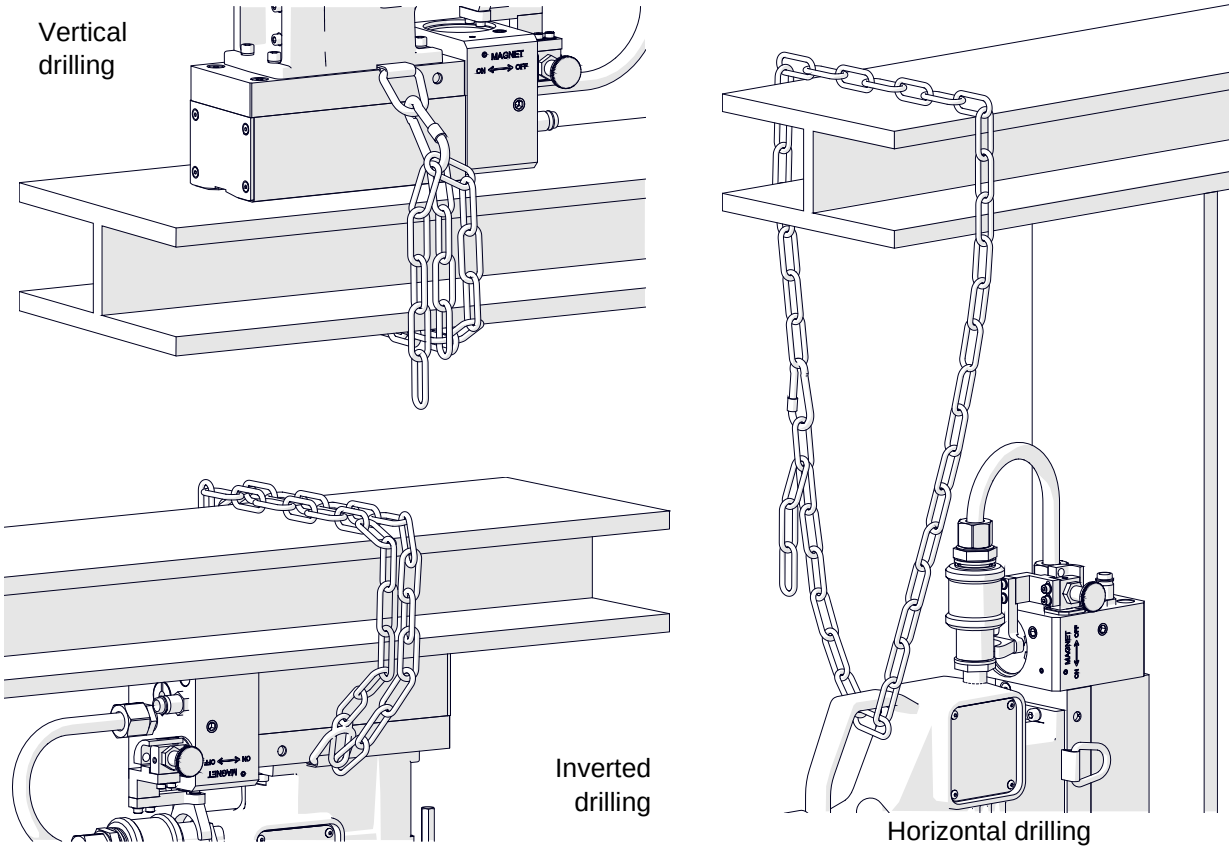


Then ensure that the machine is clamped to the surface by checking the position of clamping indicator.

Drilling is allowed only when the clamping indicator matches the marker.



Use the safety chain to prevent fall and injury if the machine loses the clamping. Attach the machine to a stable structure by fastening the chain to the lugs or the carrying handle. The chain must not be loose. If possible, wrap the chain around the workpiece.



Turn the handles to the left to put the tool above the workpiece.

When you use an annular cutter in the vertical position, install the cooling system and fill it with coolant. Do not use only water as the coolant. You can use a mixture of water and drilling oil. Then, make sure that the cooling system works correctly. To do this, loosen the bottle cap and use the lever to open the valve. Then, turn the handles to the left to apply a light pressure on the pilot pin. The coolant should fill the system and start flowing from the cutter.

The cooling system works by gravity. Thus, in the inverted or horizontal position, use coolants under pressure or in the form of spray or paste.

3.5. Drilling

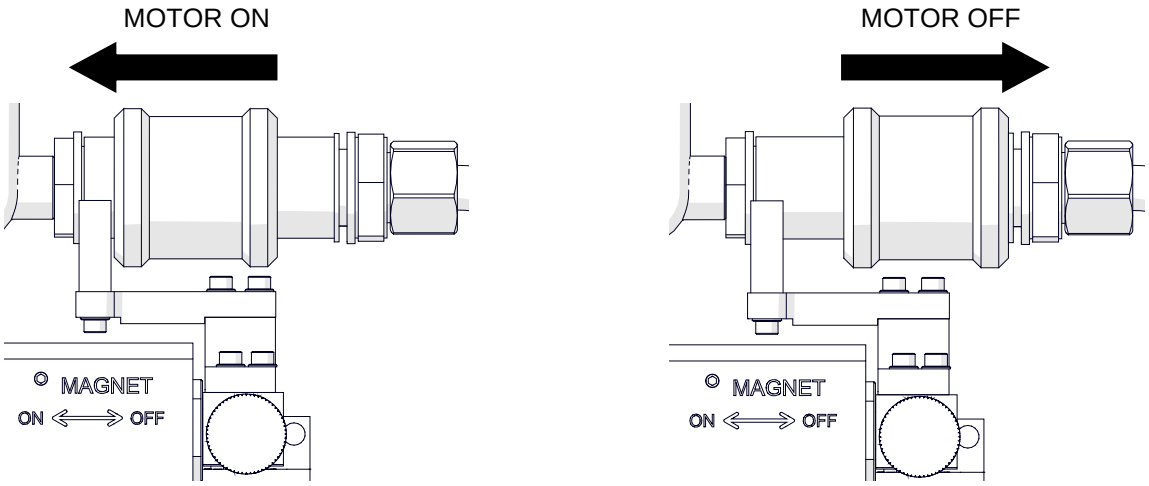
Use the gear switch to set the gear based on the table that follows.

Tool	**Hole diameter** [mm]	**Rotational speed*** [rpm]
Annular cutter	12–30	290 (gear II)
	31–50	190 (gear I)
Twist drill bit	3,5–13	290 (gear II)
	14–23	190 (gear I)

* For a sharp tool and mild steel with a strength Rm < 500 N/mm2 (70,000 psi), such as St0 (S185), St3S (S235JR), or St4W (S275JO).

Steel with a strength Rm ≥ 500 N/mm2 (70,000 psi), such as St5 (E295), 18G2A (S355N), or 45 (C45), requires lower speed. If the speed is too high or too low for the workpiece strength and the type/diameter of the tool, the tool will wear faster or be unable to drill the hole.

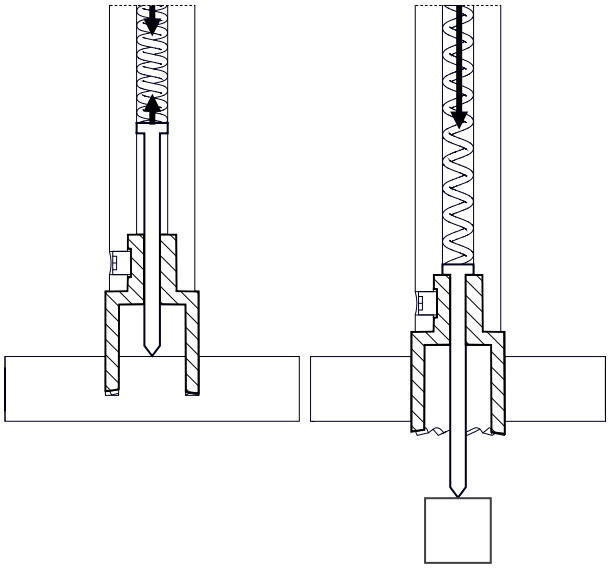
Set the MOTOR slider to ON to start the motor.



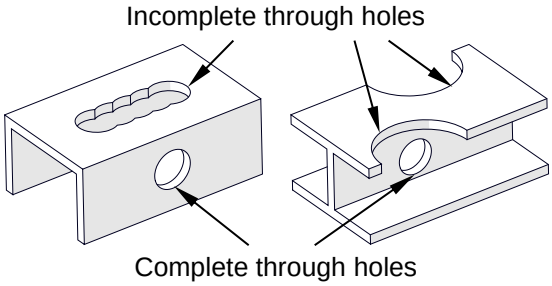
Turn the handles to the left to put the tool into the workpiece.

Keep the machine in the same position until the hole is made.

When the annular cutter goes through the workpiece, the slug core is pushed out with a large force.



When you use an annular cutter, drill only through holes. For incomplete through holes do not use the pilot pin.



When you use a drill bit, drill holes with diameters of 15–23 mm (19/32″–29/32″) in two steps. First, use the drill bit with the 70% diameter of the required diameter to drill a hole. Then, keep the machine in the same position, and drill again with the drill bit that matches the required diameter.

After you get to the depth of 40 mm (1 37/64″), retract the tool above the workpiece as often as possible. Then, manually apply the coolant from the bottle into the drilling area.

After the hole is made, retract the tool from the workpiece. Then vigorously set the MOTOR slider to OFF to turn off the engine. Before you move the machine, set the MAGNET switch to OFF to turn off the base.

After the work is finished and the motor turned off, set the gear switches to the opposite position. Then turn on the motor and let it operate for a while with no load to improve lubrication. Next, turn off the motor and the base, and then unplug the supply hose. Clean the machine and the tool, and then remove the machine from the work area.

Tighten the bottle cap, close the valve, and then press the pilot pin to remove the coolant that remains in the cooling system. Before you put the machine into the box, remove the bottle, and use gloves to remove the tool from the holder.

3.6. Maintaining the air preparation unit

Maintain the air preparation unit as required. Keep the water trap drained, filter cleaned, and oil reservoir filled so that there is a drop of oil every 2–5 seconds. Use only oil of ignition temperature over 260°C (500°F). If you are not going to use the machine for at least 24 hours, increase the supply of oil and let the motor operate for 2–3 seconds. This will prevent rusting and degrading of the rotor vanes.

3.7. Adjusting the gibs

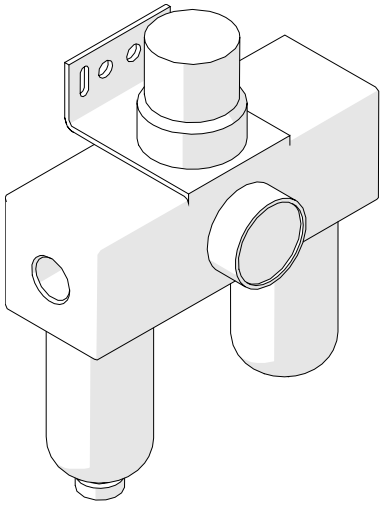
Every 50 work hours, make sure that the gibs are correctly adjusted. To do this, move the motor up and down and make sure that it moves smoothly.

To adjust the gibs, apply a thin layer of grease on them. Then, use the 8 mm combination wrench, the 2.5 mm hex wrench, and the 4 mm hex wrench to loosen the nuts and screws (1). Put the motor as shown (2). Then, lightly tighten the screws (3) so that they touch the gib. Move the motor up and down and adjust the screws (3) so that the travel is smooth. Next, tighten the screws (4) and then tighten the nuts (5).

4. ACCESSORIES

4.1. Air preparation unit

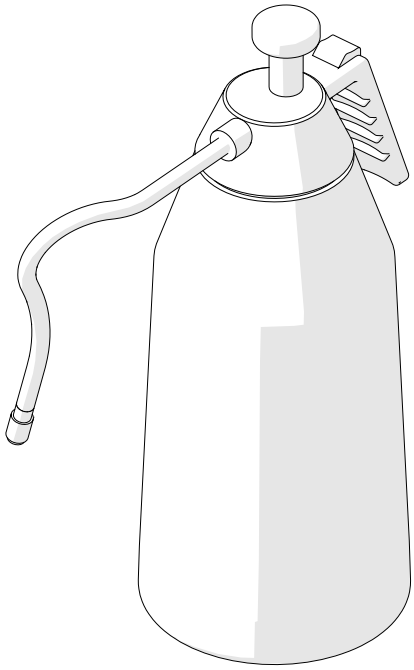
Part number (filter, regulator, lubricator):
ZST-000021



4.2. Pressure cooling system

Capacity: 2 liters.

Part number:
UKL-0440-16-00-00-0



5. ENVIRONMENTAL PROTECTION

In accordance with the European Directive 2012/19/EU, this device is marked with the symbol of the crossed-out waste bin. This marking means that the equipment must not be disposed of with other household waste after the service life. The user must return the product to a collection point for used electrical and electronic equipment. The collectors of used equipment, including local collection points, shops and municipal units create an appropriate system for returning such equipment. Correct handling of used electrical and electronic equipment helps in avoiding damage to health and the environment, which may result from the presence of dangerous components and incorrect storage and processing of such equipment.

6. DECLARATION OF CONFORMITY

Declaration of conformity

JEI Drilling & Cutting Solutions Ltd
Unit 21 Empire Business Park
Enterprise Way, Burnley, BB12 6LT, UK

We declare with full responsibility that:

PRO-50/2 ATEX Air Drilling Machine with Magnetic Base

ATEX group II category 2 G/D

is manufactured in accordance with the following standards:

- EN ISO 12100:2010,
- EN ISO 14120:2015,
- EN ISO 80079-36:2016,
- EN ISO 80079-37:2016,
- EN IEC 60079-0:2018,
- EN ISO 11148-3:2012,

and satisfies regulations of the guidelines: 2014/34/EU, 2006/42/EC.

Person authorized to compile the technical file:
David McFadden, JEI, Burnley, UK

Bunrley, 19 August 2024

_____

David McFadden
Managing Director

7. WARRANTY CARD

WARRANTY CARD No……

..... in the name of Manufacturer warrants the machine to be free of defects in material and workmanship under normal use for a period of 1 years (12 months) from the date of sale, except batteries (if applicable) which are covered with 1 years (12 months) warranty from their manufacturing date.

This warranty does not cover tools and accessories as well as damage or wear that arise from misuse, accident, tempering, or any other causes not related to defects in workmanship or material.

Serial number .....

Date of sale .....

Signature and stamp of the seller .....

0.02 / 24 September 2024

WE RESERVE THE RIGHT TO MAKE CHANGES IN THIS MANUAL WITHOUT NOTICE