

HOLEMAKER HMP45

Holemaker Portable Magnetic Drilling Machine

OPERATOR'S MANUAL

WARNING!

BEFORE USE, ENSURE EVERYONE USING THIS MACHINE READS AND UNDERSTANDS ALL SAFETY AND OPERATING INSTRUCTIONS IN THIS MANUAL .



EYE PROTECTION
REQUIRED



HEARING PROTECTION
REQUIRED



NEVER PLACE
FINGERS NEAR
CUTTING AREA OR
MACHINE ARBOR



LINE VOLTAGE
PRESENT



BEWARE OF
ROTATING
MACHINE PARTS



Serial # _____

Date of Purchase _____

Ver: 1.10 18/08/2015

LIMITED WARRANTY

Industrial Tool & Machinery Sales (hereinafter referred to as ITMS) will, within twelve (12) months from the original date of purchase, repair or replace any goods found to be defective in materials or workmanship.

This warranty is void if the item has been damaged by accident, neglect, improper service or other causes not arising out of defects in materials or workmanship. This warranty does not apply to machines and/or components which have been altered, changed, or modified in any way, or subjected to overloading or use beyond recommended capacities and specifications. Worn componentry due to normal wear and tear is not a warranty claim. Goods returned defective shall be returned prepaid freight to ITMS or agreed repair agent, which shall be the buyer's sole and exclusive remedy for defective goods. ITMS accepts no additional liability pursuant to this guarantee for the costs of travelling or transportation of the product or parts to and from ITMS or the service agent or dealer, such costs are not included in this warranty.

Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

THE MANUFACTURER RESERVES THE RIGHT TO MAKE IMPROVEMENTS AND MODIFICATIONS TO DESIGN WITHOUT PRIOR NOTICE.

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The Holemaker HMP45 Package consists of:

- metal box 1pc
- HMP45 drilling machine 1pc
- #2 Morse Taper arbor 1pc
- coolant system 1pc
- chip guard 1pc
- spoke handles 3pcs
- hex wrench s=4 1pc
- hex wrench s=5 1pc
- drill drift, MT2 1pc
- safety chain with snap hook 1pc
- operator's manual 1pc

BEFORE YOU START WORK WITH THE MACHINE, PLEASE READ THESE INSTRUCTIONS CAREFULLY AND USE ALL RECOMMENDATIONS.

1. GENERAL SAFETY ADVICE

Drilling machine must not be used when:

1. The operator has not read the Operator's Manual.
2. The work to be done is not in agreement with the recommendations in this Manual.
3. Drilling machine is not complete or has been repaired with non-original parts.
4. Power supply parameters do not conform to those stated on the motor's plate.
5. Machines operator has not checked condition of the drilling machine, condition of air hose, control panel or cutting tool.
6. Machine is not secured with safety chain as a protection from falling down especially when used at heights or in vertical or upside-down positions.
7. Bystanders are present in the immediate vicinity of machine.

Important rules of safe use of drilling machine

1. Before attempting to work with the machine check condition of air hose and coupling.
2. Make sure that the drill is supplied with purified air and oiled.
3. Machine can be used outdoors, but is not weatherproof. Do not expose to rain, snow or frost.
4. Machine should not be used on: rusty surfaces, steel plates covered with paint, uneven surfaces, or steel plate which is being welded on.
5. In all cases always use a safety chain/strap. See drawing 1. The safety chain must not be loose!
6. Do not use the machine in explosion hazard zones.
7. Do not start work if the machine has excessive play on guide slides.
8. Always wear safety goggles and ear protection.

Drawing 1.

Examples how safety chain should be fastened.



9. Do not remove metal chips with bare hands, always use gloves.
10. Do not touch the spindle and cutting tool during work.
11. Cutting Tools must be fastened firmly.
12. Do not drill with blunt or damaged cutting tools.
13. Do not use annular cutters without a pilot pin, and arbors without an ejection spring.



Do not touch or replace the cutting tool with power source on

14. After use, always clean drilling machine from metal chips and cutting fluid.
15. Any maintenance and repair should be performed only when the machine is disconnected from the air supply.
16. Before each use the machine should be checked for the presence of damage. Check whether any of the parts are broken and all the that all parts are fasten properly.
17. In the case that the machine falls on a hard surface, from a height, is wet or is subjected to other unfortunate events that could affect its technical state - work should be terminated immediately and the machine should be sent to service for inspection as soon as possible.

This machine is not recommended to be used to drill on steel thinner than 10mm (3/8"). On thin steel less than 10mm (3/8") magnet's adhesive power would be significantly reduced which can cause machines failure or personal injury.

The pneumatic motor used in Holemaker HMP45 drilling machine is ATEX II2 G/D C IIC T6;T4 certified, which is required for usage in explosion risk zones.



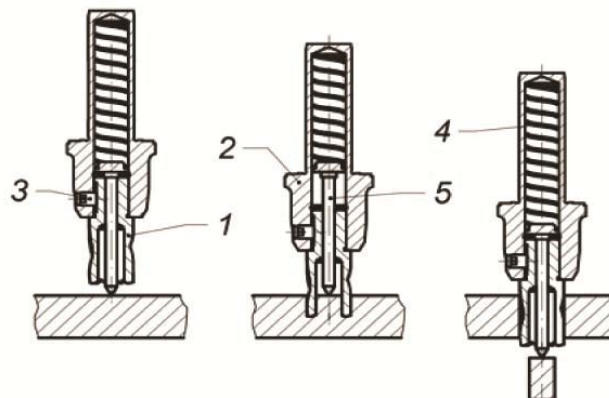
CAUTION: Never carry the drill by the motor's air supply hose!

2. START UP AND OPERATION

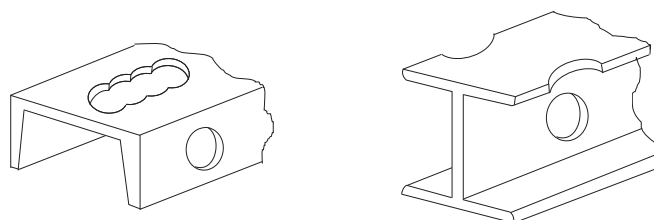
Cutters and optional equipment features

The Holemaker HMP45 has a #2 Morse Taper spindle which can be used with twists drills, annular cutters, tapping heads and reamers etc. that have a #2 Morse Taper shank.

The Annular cutter (1) is located inside arbor body (2) and is fastened with grub screws (3). When fastening the cutter in the arbour, ensure that the grub screws are firmly tightened to avoid them coming loose during operation. It is important to position the cutter in relation to the arbour in such a way that fixing flats on the cutter shank are positioned opposite to the grub screws (3). Both grub screws(3) should be used to fasten the cutter. The Pilot Pin (5) is located inside the cutter to easily position the annular cutter over centre of a planned hole. During drilling as the cutter goes into the material, the pilot pin moves back into the arbour body and pressurizes the discharge spring (4). That spring ejects the slug which is a by-product of drilling the hole with a centre free cutter.



Drawing 2. Principle of annular cutter's work



Drawing 3. A few types of holes that can be done with an annular cutter.

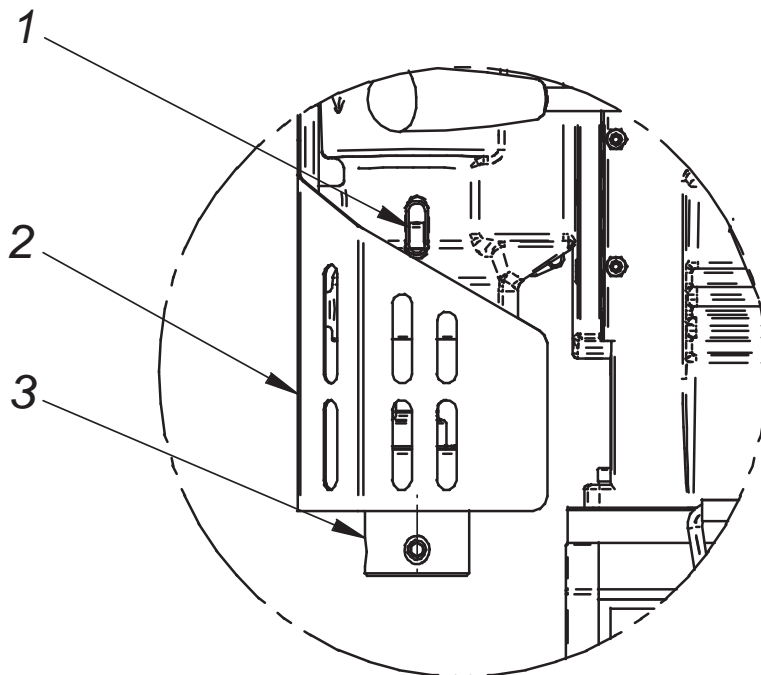
2.1 Installing and uninstalling the arbor



The arbor installation and uninstallation should be carried out when the machine is turned off and disconnected from the air supply.

Installing the arbor:


- a) Raise the cutter guard (2) to the maximum height
- b) Clean the inside of the spindle using a cotton cloth,
- c) Before mounting, clean off the lubricant from the new arbor (3),
- d) Place the arbor with the tang on top, and place it in the spindle,
- e) By turning the arbor, align the tang to the appropriate slot in the spindle,
- f) Using a light impact from the bottom side, drive the arbor into the spindle.



Uninstalling the arbor:

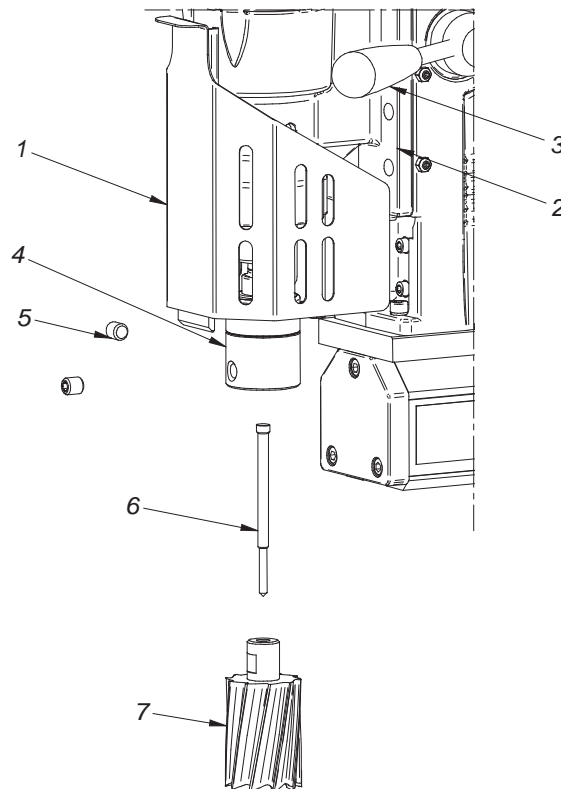
- a) Raise the guard, turn the spindle so that the opening in the spindle (1) is lined up with the opening in the reducer body,
- b) Place the drill drift (included as standard equipment) into the uncovered spindle opening (1),
- c) Hold down the arbor (3) with one hand,
- d) Strike the drill drift with a hammer, taking care to not to damage the arbor,
- e) Carefully remove the arbor from the socket in the spindle,
- f) Remove the drill drift

2.2 Installing and uninstalling an annular cutter

 Annular cutter installation and uninstallation should be carried out when the machine is turned off and disconnected from the air supply!

Installing the annular cutter:

1. Raise the drive and the slide (2) up using the feed handles (3);
2. Raise the guard (1) to the maximum height in order to attain access to the arbor (4) grub screws (5);
3. Insert the appropriate type of pilot (6) into the annular cutter (7);
4. Position the annular cutter (7) with the cutter facing up, so that the flat sides of the milling cutter are found facing the grub screws (5)
5. Put the annular cutter (7) into the arbor socket (4);
6. Tighten the grub screws securely (5), locking onto the flat sections of the annular cutter.

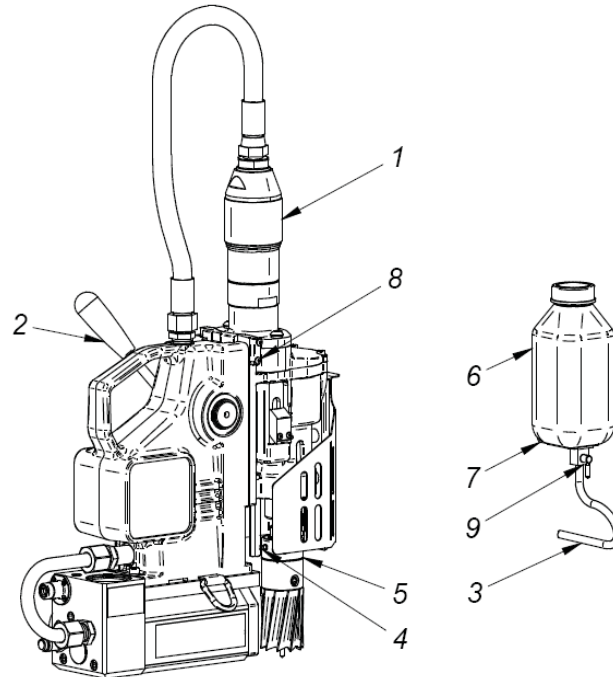


Uninstalling the annular cutter:

1. Raise the drive and the slide (2) up using the feed handles (3);
2. Raise the guard (1) to the maximum height in order to attain access to the arbor (4) grub screws (5).
3. Loosen the grub screws (5);
4. Remove the annular cutter (7) and the pilot pin (6) from the arbor socket (4).

2.3 Installing and uninstalling the coolant system

1. Place the machine in the vertical position,
2. Slide the drive and the slider (1) up using feed handles (2),
3. Place coolant bracket (7) with cooling unit (6) onto screws (8)
4. Connect the cooling conduit ending (3) with the coupling (4) found in the cooling ring (5).



Before starting the machine:

- Remove the bottle's cap,
- Fill it with soluble cutting fluid,
- Replace bottle cap.

After fulfilling the above actions and making sure, that the system has been appropriately fixed, and the cooling conduit (3) is placed correctly on the coolant coupling (4), the bottle cap should be loosened by 1/3 of a turn. Turn on the valve (9), so that liquid travels to the hose, after which the machine can be started (see II pt. 3)

After finishing work, one must remember to tighten the bottle cap and turn off the valve (9) (to prevent liquid from leaking during the time that the machine is not being used) and uninstall the cooling system (6) before placing the machine in the box.

Uninstalling the cooling system:

1. Place the machine in the vertical position,
2. Slide the drive and the slider (1) up using feed handles (2),
3. Disconnect the cooling conduit ending (3) and the coolant coupling (4) found in the cooling ring (5).
4. Remove the cooling system.

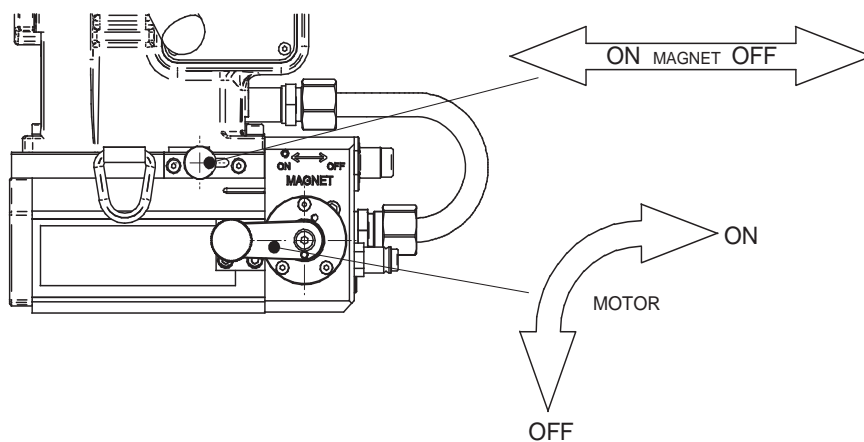
2.4 Before first use:

- Steel elements of the drilling machine are protected for transit and storing with grease film.
- Before first start up of the machine all grease should be removed before each use all handles should be screwed into pinion.

2.5 Before you cut

Control elements include:

- MAGNET switch,
- MOTOR switch.



To start the machine, follow these steps:

- Make sure that both the motor and magnet ON/OFF switch are in the OFF position.
- Plug machine into air supply, and position drill
- Slide the magnet ON/OFF switch to the ON position.
- Toggle the motor switch to ON position, after pulling back the safety latch of the switch.
- Once cut has been completed, toggle the motor ON/OFF switch to the off position.
- To position the machine in a new drilling spot, the magnetic base switch has to be toggled to OFF position.

READ THE WHOLE INSTRUCTIONS MANUAL BEFORE ATTEMPTING TO START UP

2.6 Before you cut

- Before positioning the machine on work piece always make sure that:
- Work piece is made of ferrous steel (some grades of stainless or acid resistant steel do not conduct magnetic flux)

- thickness of work piece is at least 10mm (3/8")
- surface of steel under the magnet is flat
- wipe, brush or sand down clean surface where you intended to place the drilling machine, so that you remove rust, paint, dirt etc. which would reduce adhesive power of the electromagnetic base.
- Install drill bit, annular cutter or other tooling such as tapping head or reamer into the machine before plugging it air supply. Then plug into air supply (see paragraph 2) and position where you wish to drill. Place the machine so that the tool is over the centre of the hole you intend to make and turn the magnetic base ON.

Prior to use always make sure that the machine is secured from falling down with original chain

2.7 Cutting

- Select the right speed for the tool you intend to use (see the speeds chart in this manual).



Do not use water as the cutting fluid.

The coolant system is an integral part of the machine and should always be used.

Warning: The coolant system can only be used when drilling machine is in vertical position. In other positions additional external source of coolant should be used, for example: a pressure feed coolant bottle.

- Check working of cooling system. Open coolant reservoir's tap and apply pressure on the pilot by turning the feed handles counter clockwise. As the pilot pin starts to retract up into the annular cutter, cutting fluid should start to run down cutters inner wall and onto the workpiece. If there is no cutting fluid flowing down check if the tap is fully opened. It may take a few seconds for cutting fluid to fill the whole system.
- Connect air pressure hose with feeding air of appropriate parameters (6 bar / 90 PSI, 1400 l/min).
- Position an axis of the spindle precisely above drilling point
- Switch on magnetic action using the MAGNET switch.
- Turn the motor on.
- Making a hole with an annular cutter should ideally be done in one pass. It makes the cutter work better and easier to eject the slug after the hole is completed. If you experience slugs getting stuck inside a cutter after hole is complete try to reduce pressure on the cutter. Do not allow excessive swarf build up around the annular cutter and arbor.

WARNING: when the annular cutter goes through the material, the slug can be pushed out often with considerable strength. Pay attention to avoid injury.

- After a hole is made the cutter should be withdrawn back and both the motor and the electromagnet should be switched OFF.
- When work with the machine is finished the air supply should be disconnected, the machine should be cleaned up from swarf, coolant etc and the cutter should be removed and cleaned.

2.8 Workpiece Material

As shown on the graphs [Drawing 4] magnetic clamping force of the electromagnetic base to the ferrous material depends on its magnetic properties. Steel with increased carbon content and some other alloying ingredients have lower magnetic permeability, which causes a decrease in the clamping force. Also the thickness of the work piece, on which the drill is placed, is significant.

If material less than 10mm (3/8") is to be drilled, a thick (10mm or more) piece of material must be placed underneath the workpiece, directly below the machines magnet, to ensure enough magnetic adhesion is present.

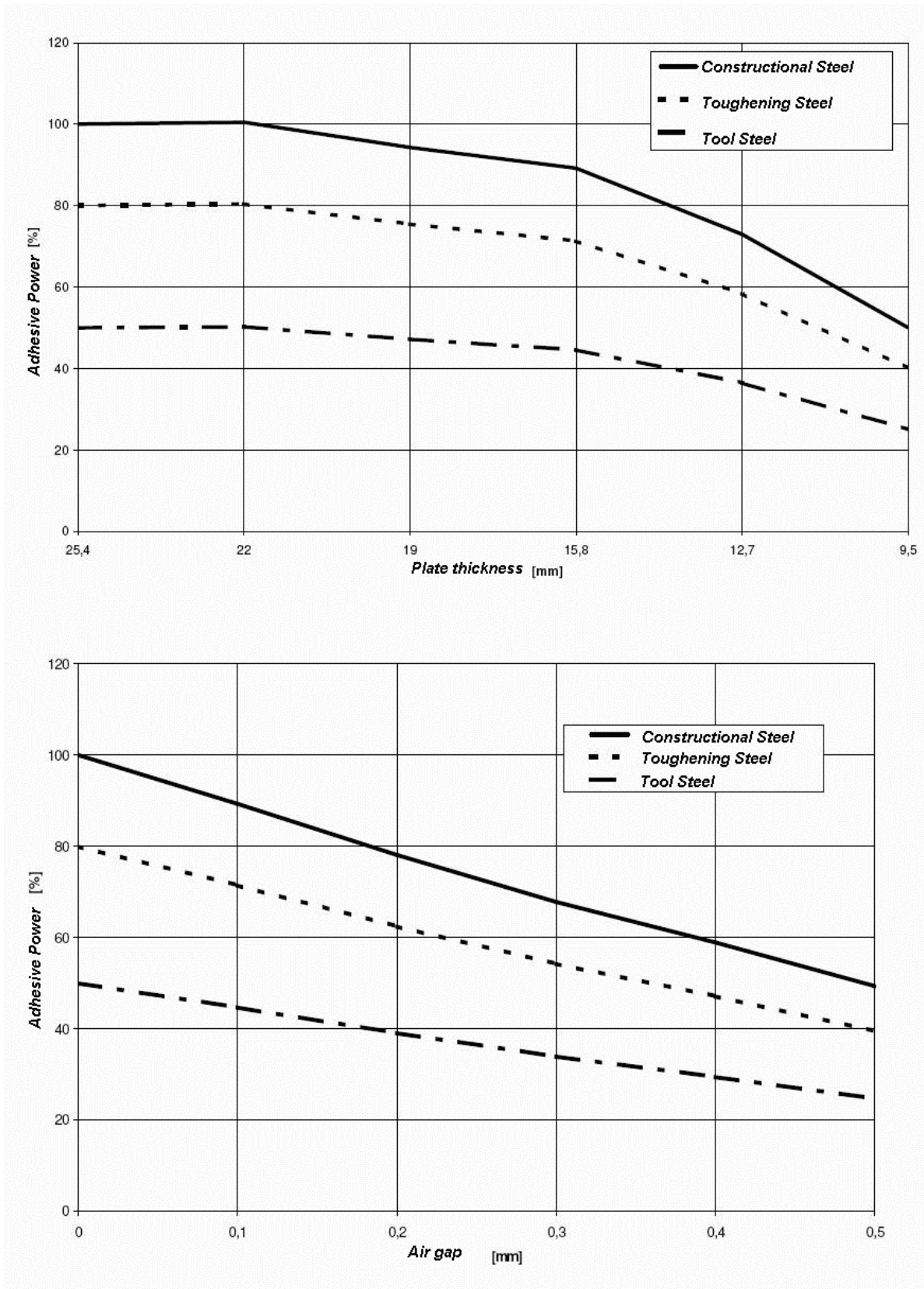
Appropriate rpm should be adjusted depending on if drilling would be carried out with a drill bit, or annular cutter, and also the cutting tool's diameter. The HMP45 is equipped with a mechanical 2-step reducing gearbox. A general dependence between drilling diameter and drilling speed is shown in graphs [Drawing 5]. Detailed guides should also be available from the cutting tool manufacturer. The graph is just a general guide and applies to average mild steel.

2.9 Working in difficult areas

The feed handles of the machine can be moved from one side to the other, by removing the entire pinion shaft from the machine, and re-inserting into the opposite side of the drill.



Please keep all recommendations



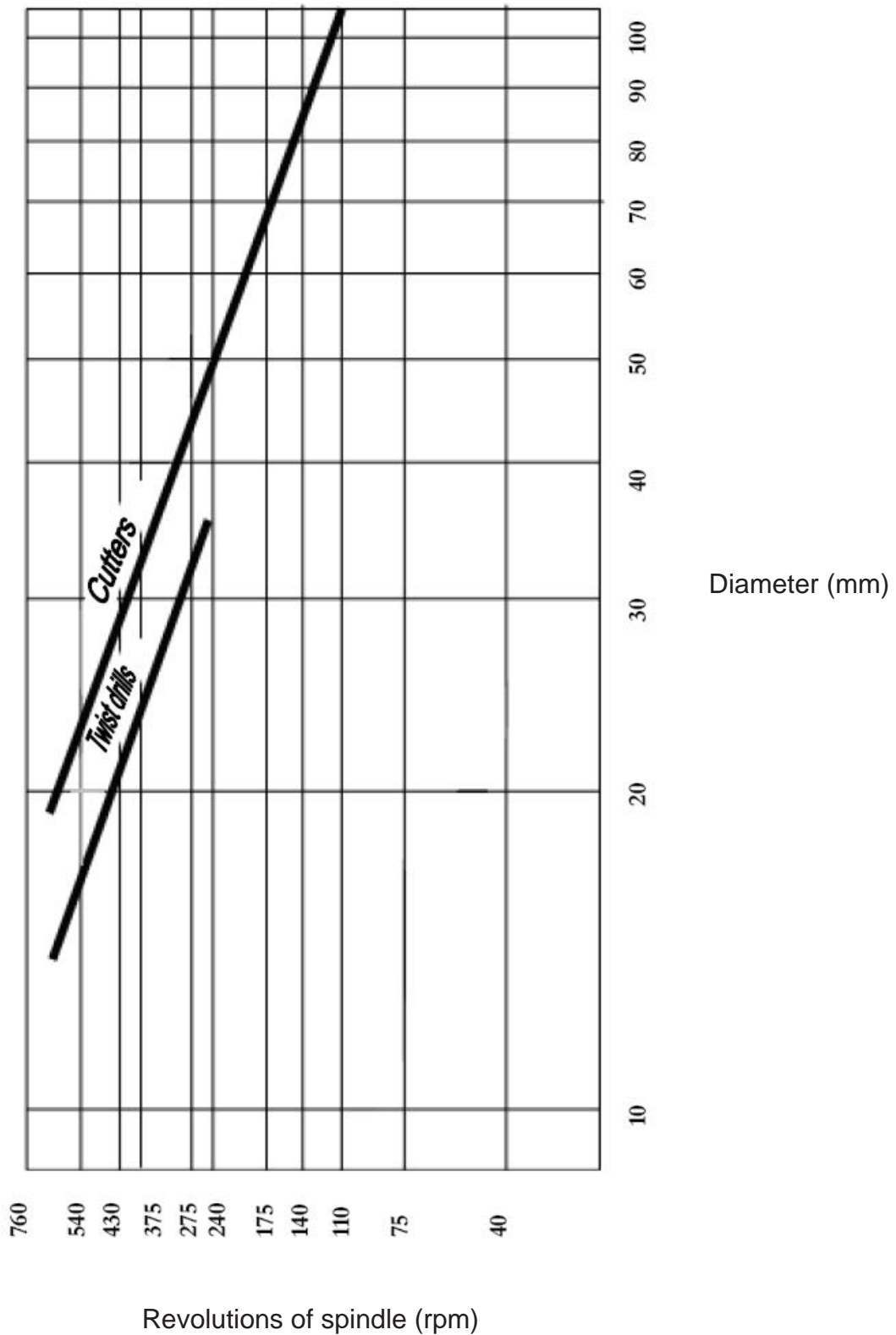
Drawing 4. Clamping force depending on the thickness of the substrate and the value gap.

Relationship between machine speed and cutter diameter

The cutter diameter		Rotary speed (rpm)
(inch)	(mm)	
0.04 ÷ 0.43	3.5 ÷ 13	290
0.44 ÷ 0.78	14 ÷ 20	190

Relationship between machine speed and twist drill diameter

The twist drill diameter		Rotary speed (rpm)
(inch)	(mm)	
0.04 ÷ 0.43	3.5 ÷ 13	290
0.44 ÷ 0.78	14 ÷ 20	190



Drawing 5. Dependence of rotational speed on drilling diameter

3. ADJUSTMENT, MAINTENANCE AND SERVICE

- After every days work position of gear lever (used for selection of gearbox speed) should be changed. For example if machine worked with 190 rpm speed, it should be switched to 290rpm.
- Regularly Lubricate brass slide guide inserts with grease as well as the rack and pinion.
- To prevent the machine from rusting (especially when used outdoors) all steel parts should be covered with thin layer of grease film.
- When working with a pneumatic motor it is necessary to use an air lubrication unit.
- Damaged machine parts to be exchanged only to original parts.
- All repair work should be done only by authorized service points, appointed by distributor.

CAUTION: The warranty conditions for the pneumatic motor do not apply when occurred damages and wear are caused by impurities from air supply, or an appropriate lubrication wasn't used.

Lubrication of the pneumatic motor.

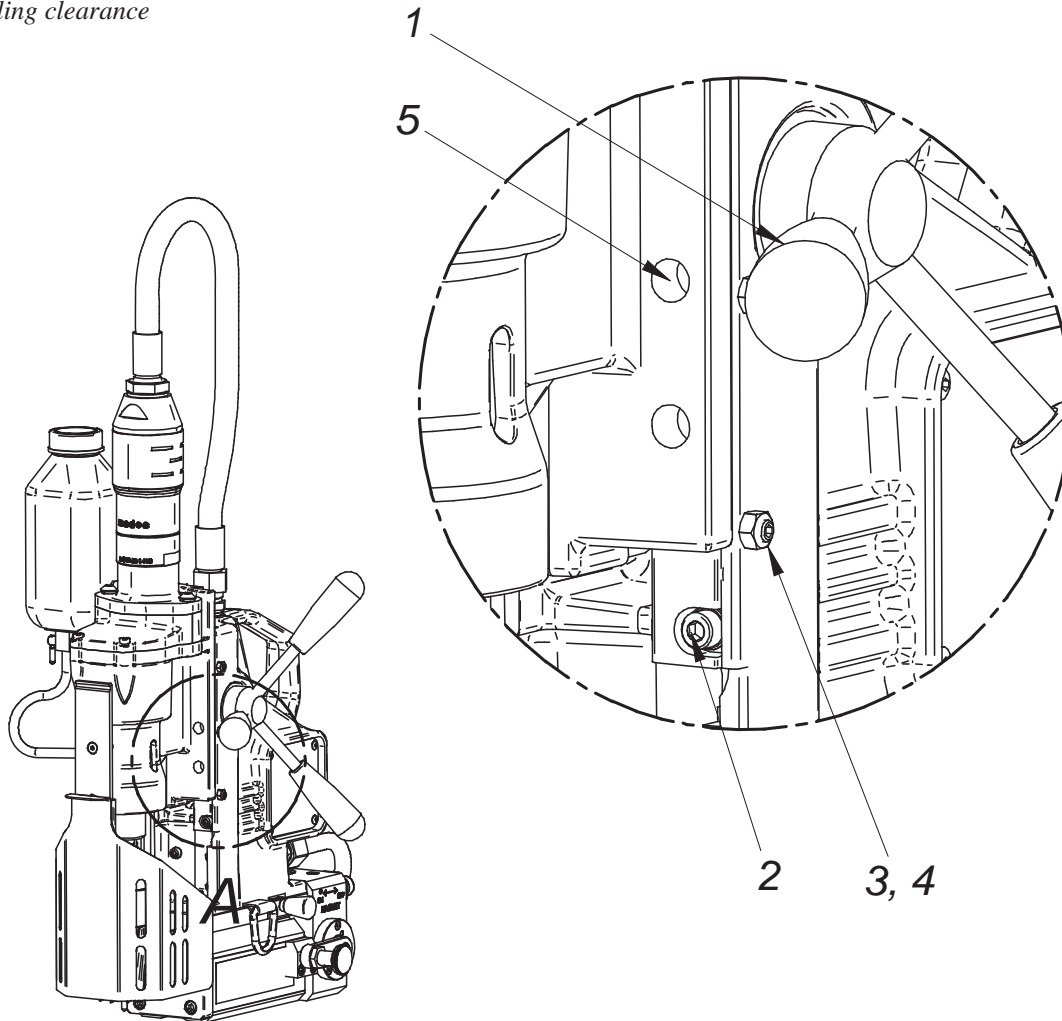
- It is necessary to use the air lubrication unit in the air supply system.
- Inspections and maintenance of the air supply system should be carried out when needed depending on level of air pollution; clean the filter and maintain the amount of oil in the lubrication unit to ensure an oil drop every 2 to 5 seconds.
- The oil used in the air supply unit must have an ignition temperature higher than 260°C.

CAUTION: The HMP45 is designed to be supplied with an air of pressure 4 to 6 bar/60 to 90 PSI/. Maintaining the machine's parameters and its condition strictly depend on the air purity and its preparation level, and a proper servicing.

3.1 Slides Adjustment

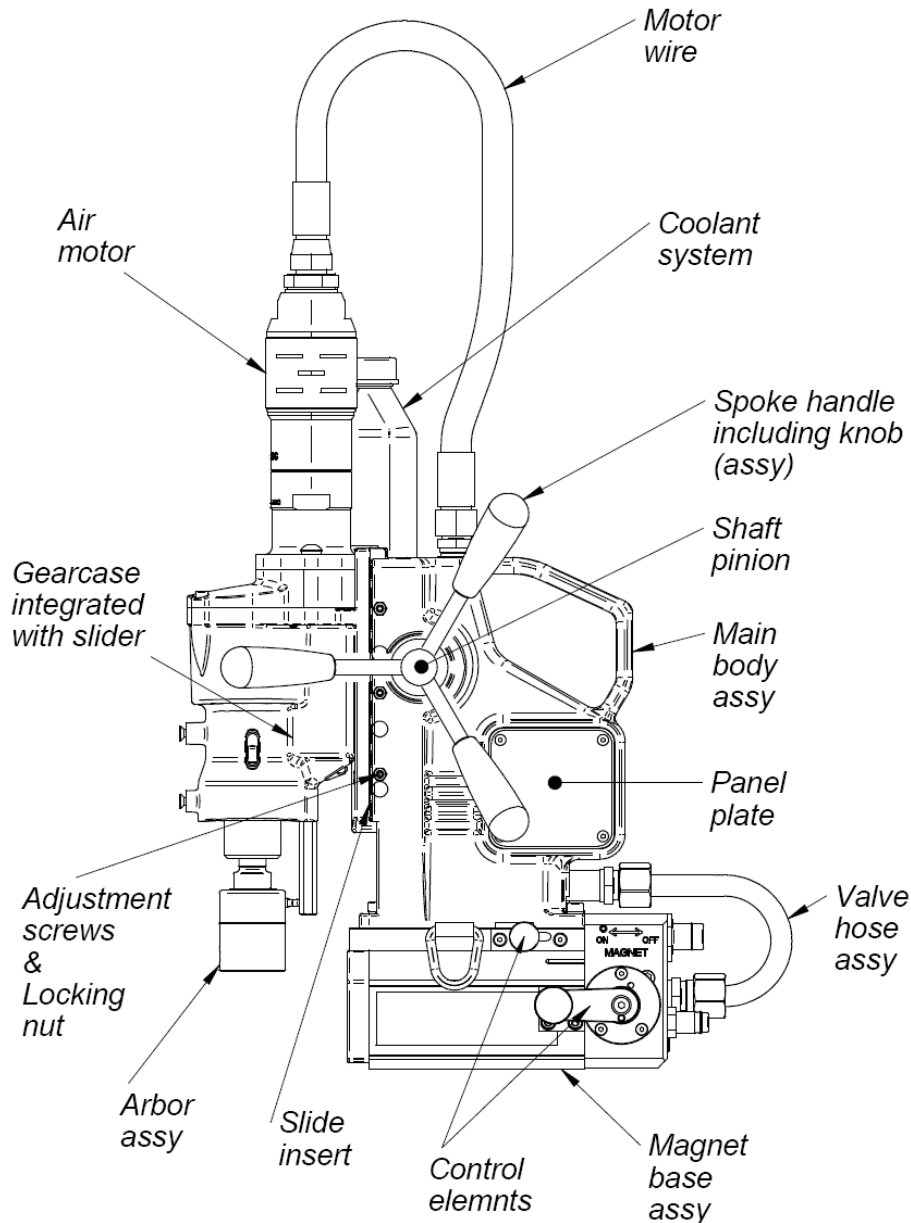
Use the feed handles (1) to move the sliding section of the drill to a position where the screws (2) align with the holes (5) in the sliding section. Loosen each of these screws slightly, and then using the feed handles slide the sliding section up and down several times until any clearance between the pressure strip and the slider is even and aligned.

Canceling clearance



Once this has been completed, tighten screws (2) starting from the middle screw. The slider should be located symmetrically relative to the middle screw. Next, tighten the neighboring screws (2) moving the slider in the degree necessary for making them visible.

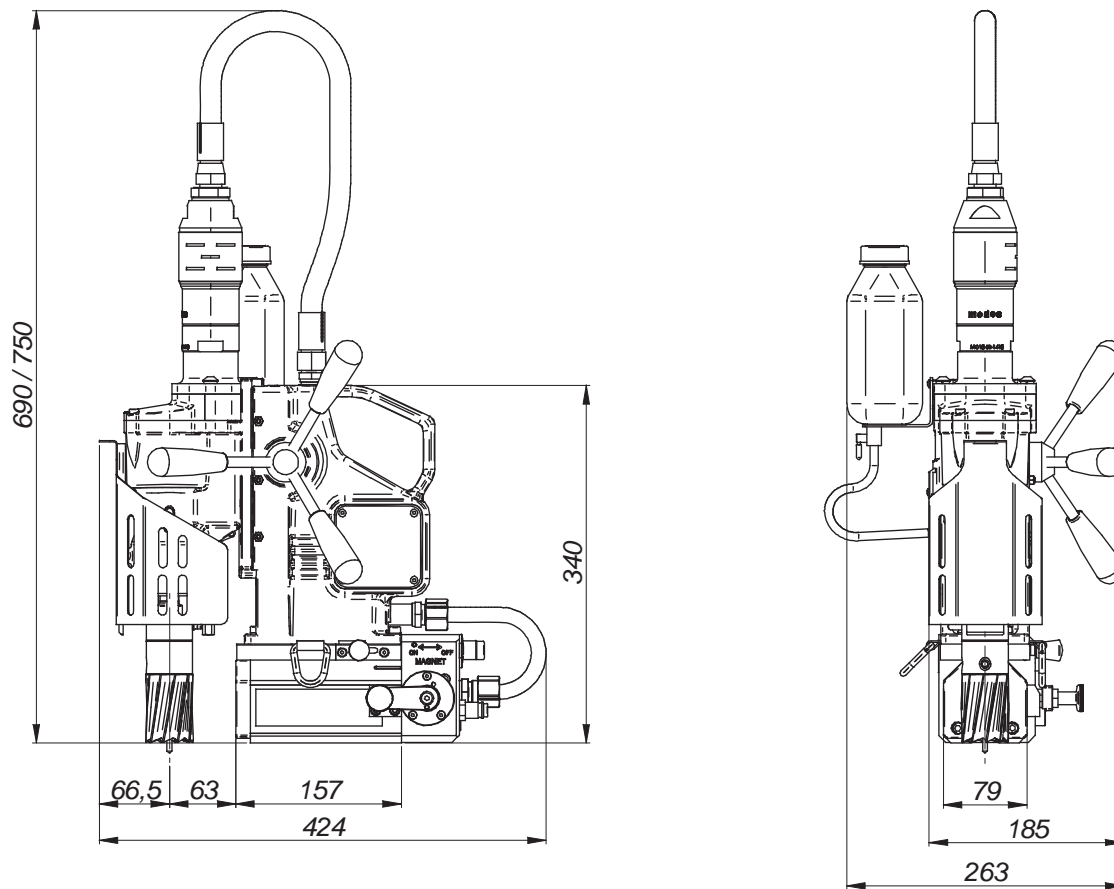
Then, tighten screws (3) until any noticeable resistance is felt. Tighten counter nut (4). The screws (3) counteract the machining force and protect the pressure strip from shifting during operation.



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Caution: In the case that the machine falls on a hard surface, from a height, is wet or is subjected to other unfortunate events that could affect its technical state - work should be terminated immediately and the machine should be sent to service for inspection as soon as possible.

4. TECHNICAL DATA



Nominal pressure	6 bar
Air consumption	1400 l/min
Motor power	800 W
Tool holder	19 mm (3/4") Weldon
Max. twist drill diameter	20 mm
Max. annular drilling diameter	45 mm
Max. milling depth	51 mm (2")
Standard adhesive force of electromagnet (for steel 7/8" (22 mm) thick and Ra < 1.25)	7500 N
Slide stroke	150 mm
Machine speeds /under load/	I – 190 rpm II – 290 rpm
Electromagnetic base	80 x 80 x 143mm
Total weight	19kg
Noise level	70 dB
Surrounding temperature	-20°C ÷ +40°C

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HOLEMAKER HMP45 BREAKDOWN



HMP45 BREAKDOWN

Main Body Assembly

ITEM	PART NUMBER	DESCRIPTION	Q-TY
2.1	SPP45201	MAIN FRAME BODY	1
2.2	SPP45202	PRESSURE PLATE	1
2.3	SPP45203	SLIDE INSERT -LEFT	1
2.4	SPP45204	SELF LUBRICATING SLEEVE 28,05H7x32x16,	2
2.5	SPP45205	SPRING, 1,6x8x14,5	4
2.6	SPP45206	HEX SOCKET BOLT-M5X20	5
2.7	SPP45207	ROUND WASHER 5,3	5
2.8	SPP45208	MAIN FRAME BODY PIPE I	1
2.9	SPP45209	MAIN FRAME BODY PIPE II	1
2.1	SPP45210	MAIN FRAME BODY BLOCK	1
2.11	SPP45211	SCR,SHCS M5 x 25 DIN 912	4
2.12	SPP45212	EXTERNAL RETAINING RING-20Z	2
2.13	SPP45213	SOCKET SET SCREW M5 x 10	3
2.14	SPP45214	NUT M5	3
2.15	SPP45215	SEAL WASHER 3/8 "	2
2.16	SPP45216	SPRING WASHER	4

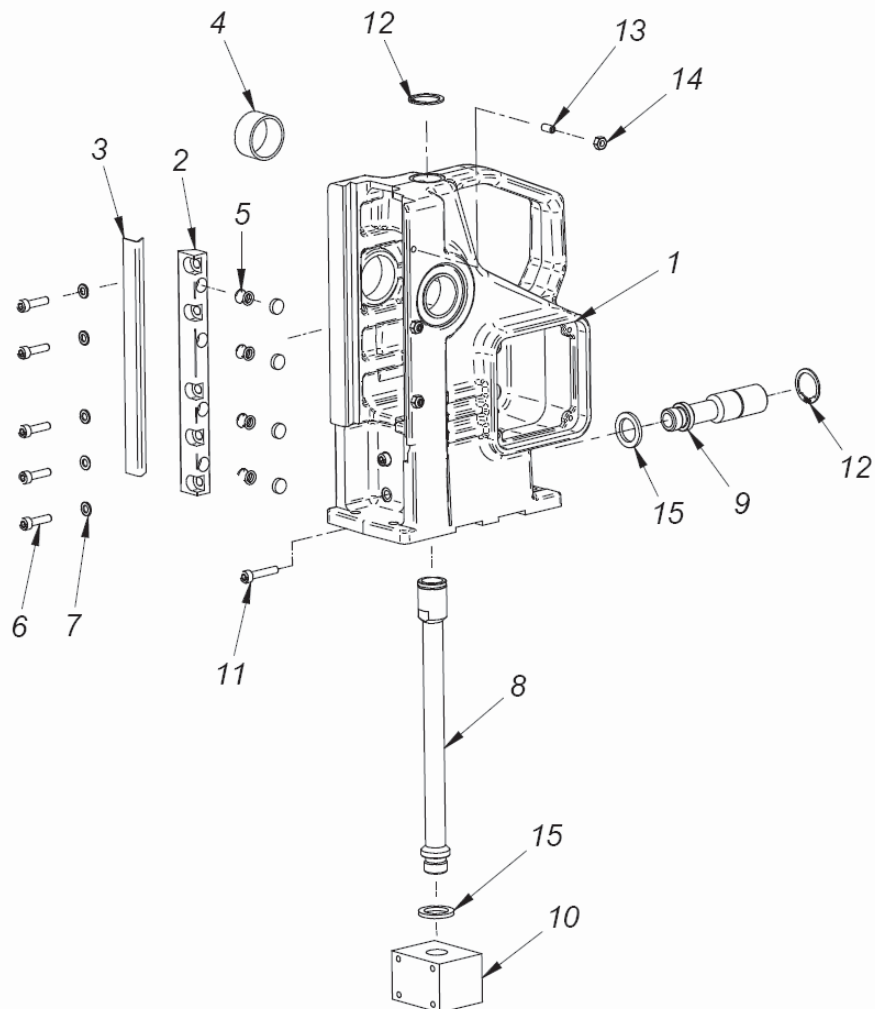
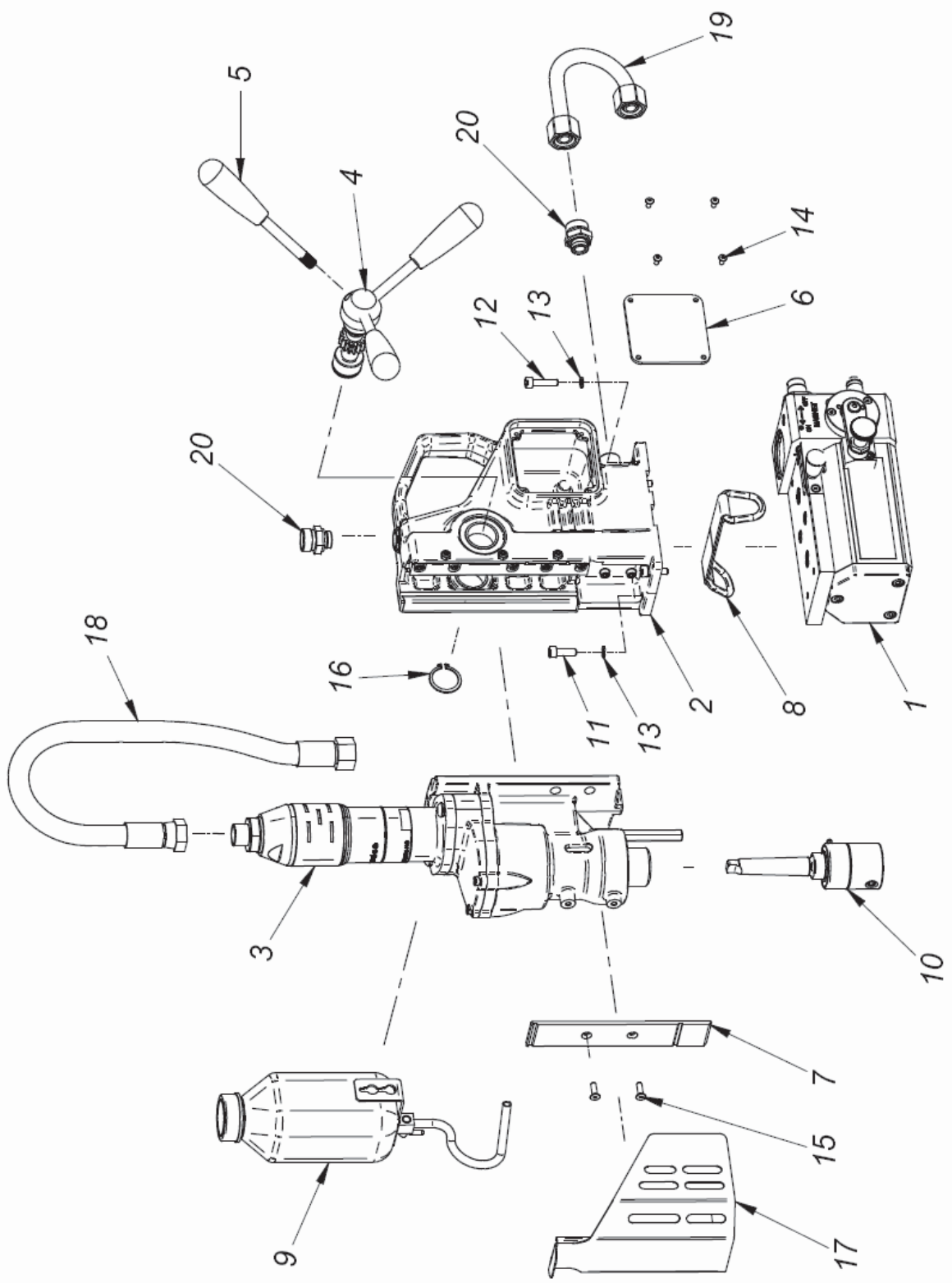


FIGURE 45 BLOWDOWN

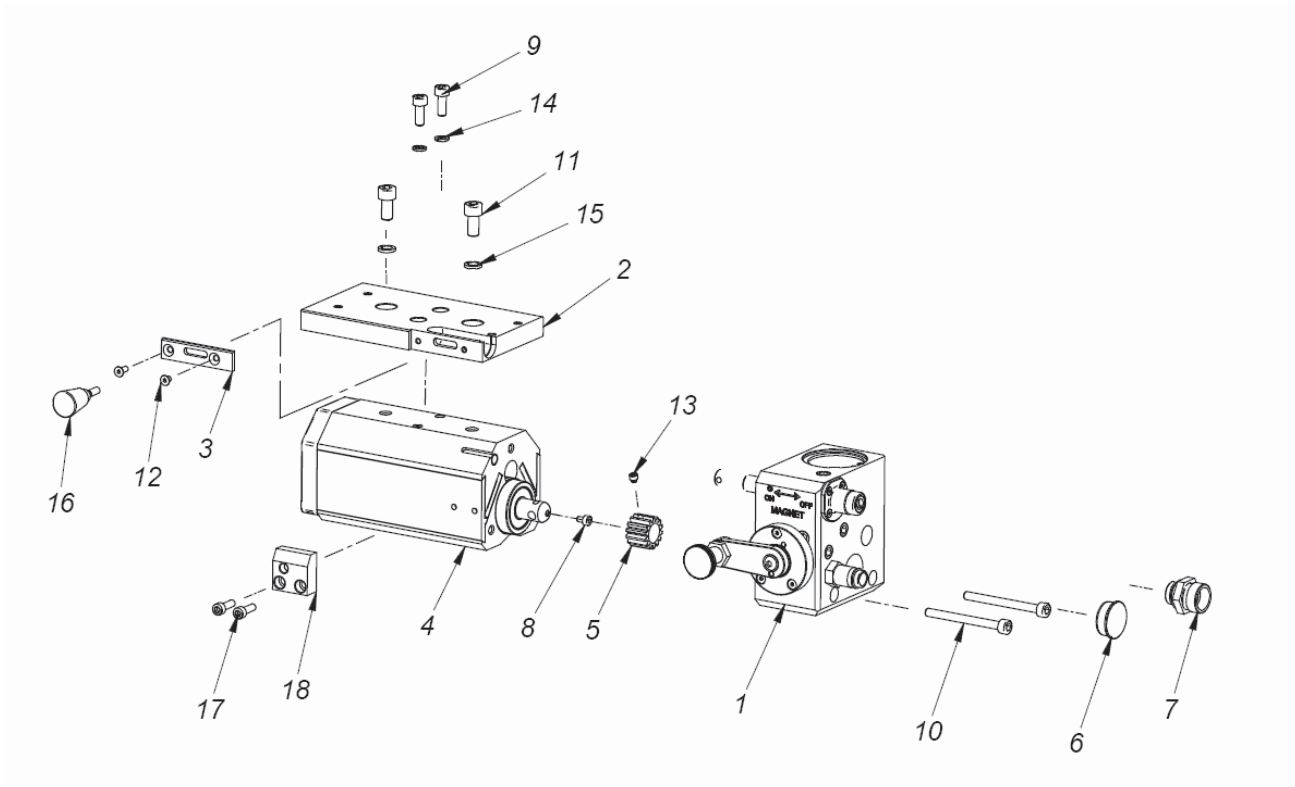
Drilling Machine HMP45

ITEM	PART NUMBER	DESCRIPTION	Q-TY
1	SPP4501	MAGNET BASE ASSY	1
2	SPP4502	MAIN BODY ASSY	1
3	SPP4503	MOTOR ASSY	1
4	SPP4504	PINION SHAFT,	1
5	SPP4505	SPOKE HANDLE INCLUDING KNOB (ASSY),	3
6	SPP4506	PANEL PLATE ASSY	1
7	SPP4507	GUARD'S SLIDE	1
8	SPP4508	D-RING STRAP	1
9	SPP4509	COOLANT SYSTEM	1
10	SPP4510	ARBOR SET -AMT2-C19/2-2	1
11	SPP4511	HEX. SOCKET BOLT M6x20	2
12	SPP4512	HEX SOCKET BOLT-M6X25	1
13	SPP4513	SPRING WASHER 6,1	3
14	SPP4514	SOCKET BUTTON HEAD CAP SCREW M4x10	6
15	SPP4515	SCR, M5 x 16 FHSCS	2
16	SPP4516	EXTERNAL RETAINING RING 28z	1
17	SPP4517	GUARD ASSEMBLY	1
18	SPP4518	MOTOR HOSE ASSY	1
19	SPP4519	VALVE HOSE ASSY	1
20	SPP4520	STRAIGHT COUPLING 1/2" -3/8"	2
23*	SPP4523	METAL BOX	1



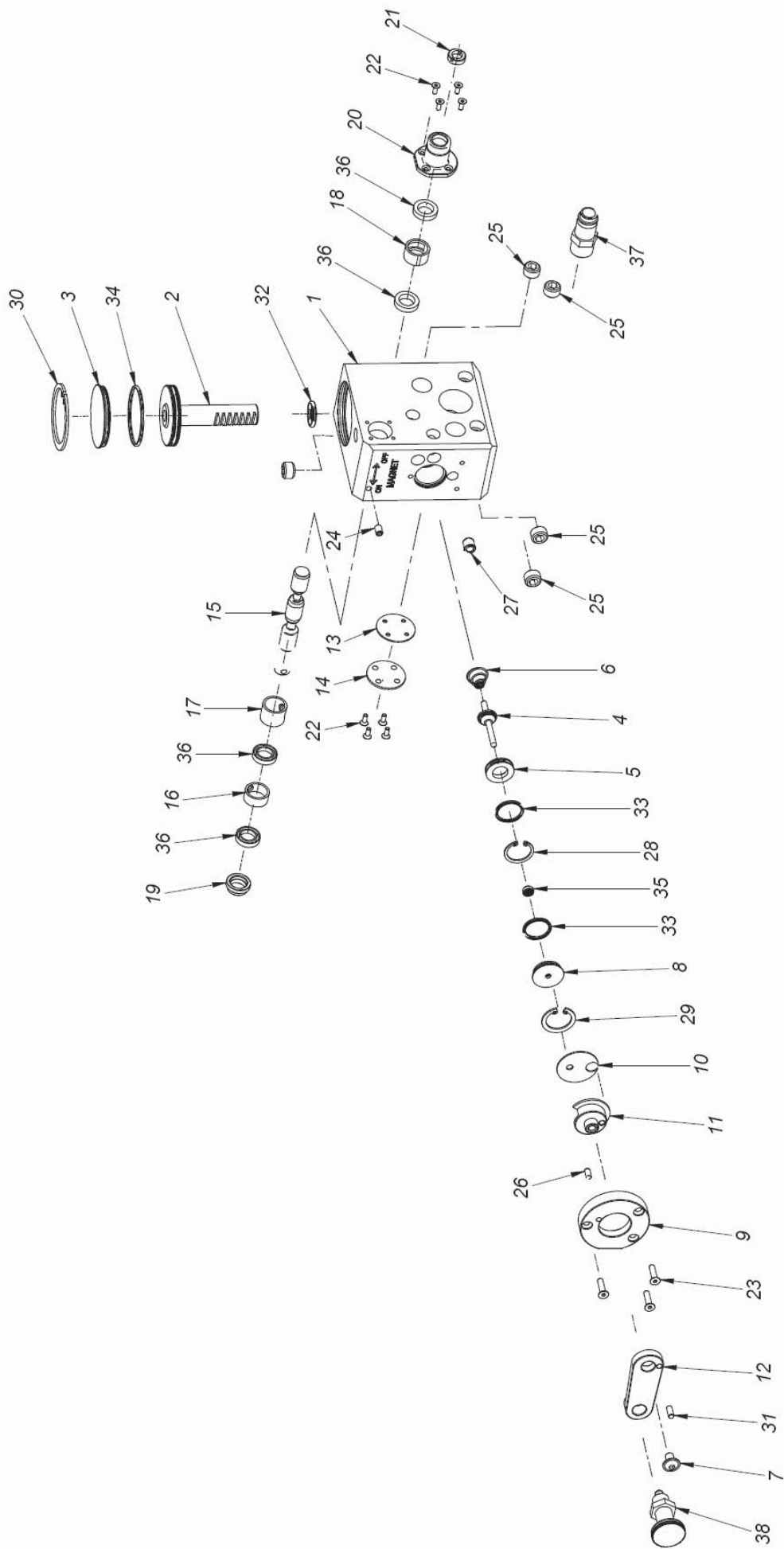
Magnet Base Assembly

ITEM	PART NUMBER	DESCRIPTION	Q-TY
1.1	SPP45101	VALVE ASSEMBLY	1
1.2	SPP45102	MOUNTING PLATE	1
1.3	SPP45103	MOUNTING PLATE INSERT	1
1.4	SPP45104	MAGNET	1
1.5	SPP45105	TURN ON/OFF GEAR	1
1.6	SPP45106	GEAR PLUG	1
1.7	SPP45107	STRAIGHT COUPLING 1/2 -3/8" "	1
1.8	SPP45108	HEX. SOCKET BOLT M4x6	1
1.9	SPP45109	HEX. SOCKET BOLT M6X16	2
1.1	SPP45110	HEX. SOCKET BOLT M6x65	2
1.11	SPP45111	HEX. SOCKET BOLT M8x16	2
1.12	SPP45112	SCR, M4 x 06 FHSCS	2
1.13	SPP45113	HEX SET SCREW-M6 x 6	1
1.14	SPP45114	SPRING WASHER 6,1	2
1.15	SPP45115	SPRING WASHER 8.2	2
1.16	SPP45116	OVAL KNOB ASSY	1
1.17	SPP45117	HEX SOCKET BOLT-M5X16	2
1.18	SPP45118	STOP BLOCK	1



Valve Assembly

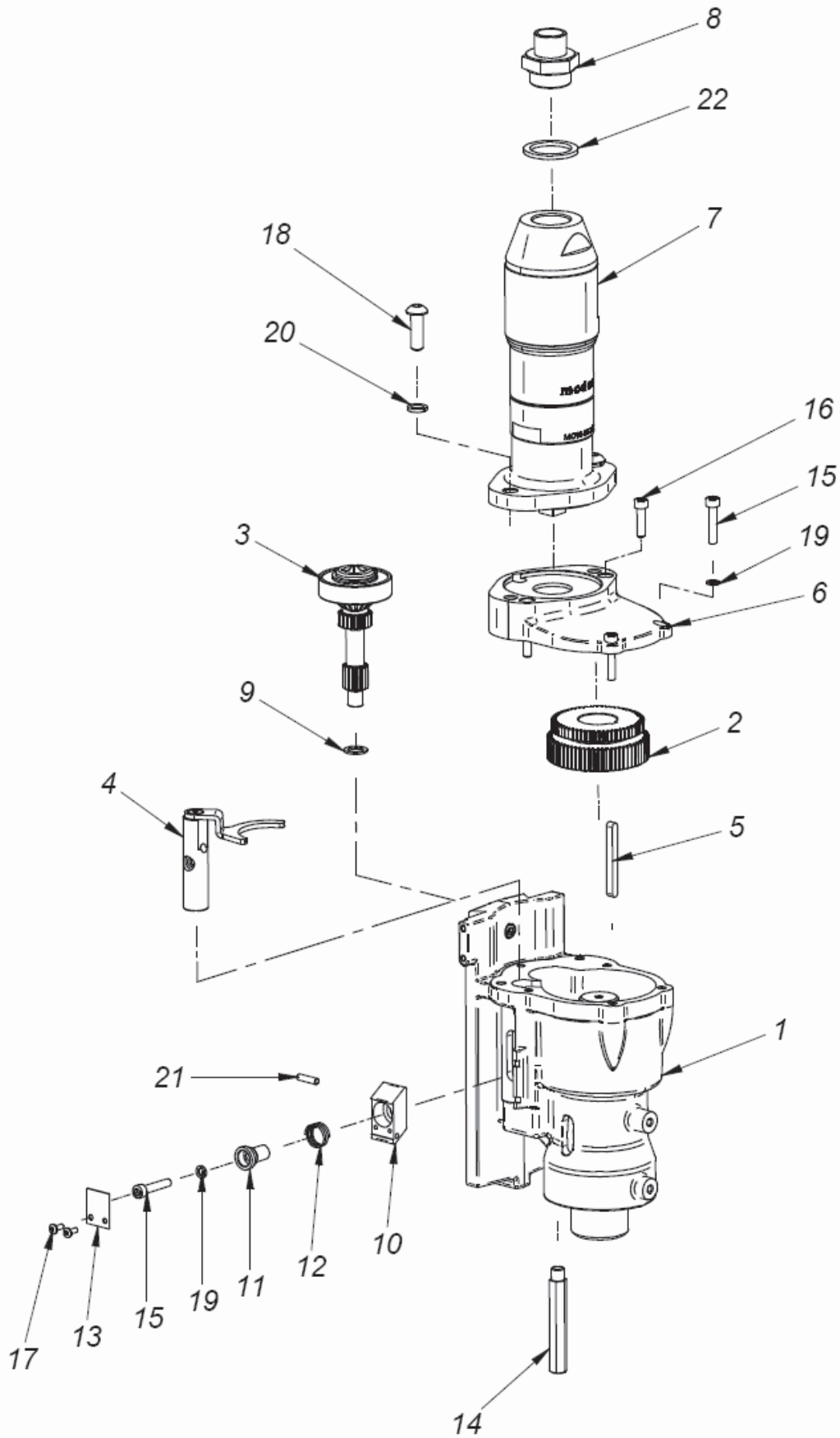
ITEM	PART NUMBER	DESCRIPTION	Q-TY
1.1.1	SPP451101	VALVE HOUSING	1
1.1.2	SPP451102	PISTON ASSY	1
1.1.3	SPP451103	PISTON PLUG	1
1.1.4	SPP451104	STOP PLUG ASSY	1
1.1.5	SPP451105	LOCKING RING	1
1.1.6	SPP451106	SPRING	1
1.1.7	SPP451107	SOCKET BUTTON HEAD CAP SCREW WITH FLANGE M6x10	1
1.1.8	SPP451108	EXTERNAL RING	1
1.1.9	SPP451109	HANDLE HOLDER	1
1.1.10	SPP451110	WASHER	1
1.1.11	SPP451111	HANDLE SHAFT	1
1.1.12	SPP451112	HANDLE	1
1.1.13	SPP451113	SEAL COVER	1
1.1.14	SPP451114	COVER	1
1.1.15	SPP451115	DIVIDING SHAFT	1
1.1.16	SPP451116	SLEEVE I	1
1.1.17	SPP451117	CENTER SLEEVE	2
1.1.18	SPP451118	SLEEVE II	1
1.1.19	SPP451119	SHAFT RING	1
1.1.20	SPP451120	COVER	1
1.1.21	SPP451121	SILENCER G1/4	1
1.1.22	SPP451122	SCR, M3 x 8 FHSCS	8
1.1.23	SPP451123	SCR, M4 x 16 FHSCS	3
1.1.24	SPP451124	HEX. INSERT SCREW M5x8	1
1.1.25	SPP451125	HEX. INSERT SCREW M12x8	4
1.1.26	SPP451126	PIN 4x8	1
1.1.27	SPP451127	BALL LOCK GN 614-8-NI	1
1.1.28	SPP451128	RETAINING RING INTERNAL 21w	1
1.1.29	SPP451129	RETAINING RING INTERNAL 24w	1
1.1.30	SPP451130	INTERNAL RETAINING RING-47W	1
1.1.31	SPP451131	PIN 4x10	1
1.1.32	SPP451132	O-RING 15,3x2,4	1
1.1.33	SPP451133	O-RING 17x2	2
1.1.34	SPP451134	O-RING 42x2	1
1.1.35	SPP451135	SEAL, 4x8,2x4	1
1.1.36	SPP451136	SEAL U2 012x18.4	4
1.1.37	SPP451137	MALE PLUG, G3/8 10mm "	1
1.1.38	SPP451138	INDEXING PLUNGER	1



HMP45 BREAKDOWN

Motor Assembly

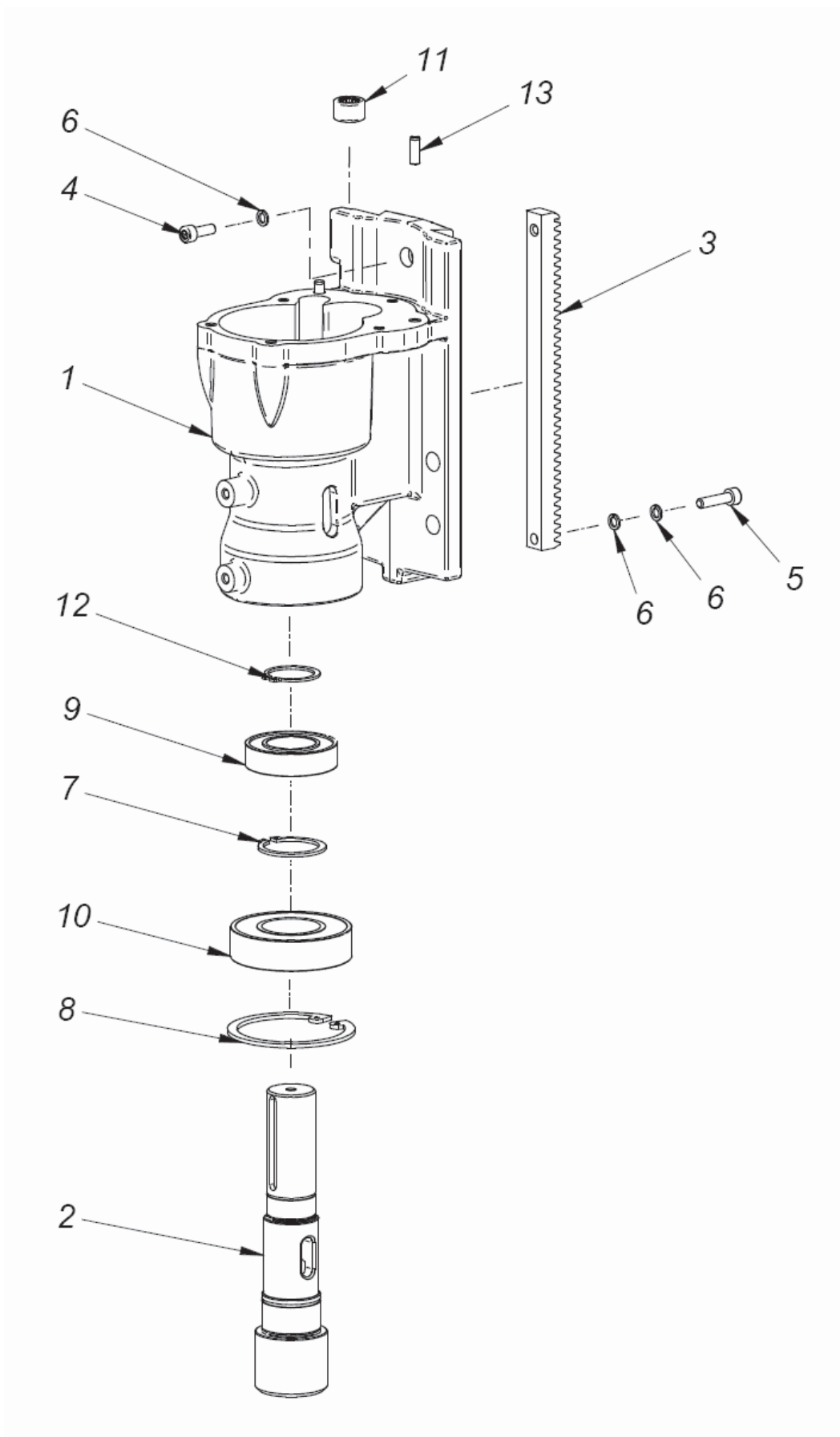
ITEM	PART NUMBER	DESCRIPTION	Q-TY
3.1	SPP45301	GEARCASE ASSY	1
3.2	SPP45302	CLUSTER GEAR z64/z58	1
3.3	SPP45303	PINION SHAFT T=14, T=20 ASSY	1
3.4	SPP45304	SHIFT FORK ASSY	1
3.5	SPP45305	KEY 5X5X50	1
3.6	SPP45306	GEARBOX COVER	1
3.7	SPP45307	AIR MOTOR	1
3.8	SPP45308	COUPLING 3/4 -3/8" "	1
3.9	SPP45309	WASHER, THRUST 10x1 (2x2)	1
3.1	SPP45310	SHIFT LEVER	1
3.11	SPP45311	SHIFT DRIVE PIN (USA-5)	1
3.12	SPP45312	COMPRESSION SPRING (USA 5)	1
3.13	SPP45313	LABEL, SHIFT LEVER	1
3.14	SPP45314	STOP PIN L=70,	1
3.15	SPP45315	SCR,SHCS M5 x 25 DIN 912	3
3.16	SPP45316	HEX SOCKET BOLT-M5X20	3
3.17	SPP45317	SOCKET BUTTON HEAD CAP SCREW M3x8,	2
3.18	SPP45318	SCREW M8x25	2
3.19	SPP45319	SPRING WASHER 5,1	3
3.2	SPP45320	SPRING WASHER 8.2	2
3.21	SPP45321	SPRING PIN 4x16	1
3.22	SPP45322	PIN 5x14	2
3.23	SPP45323	SEAL WASHER, 3/4 "	1
3.24*	SPP45324	GREASE LUBRIPLATE BP1	0,2kg



HMP45 BREAKDOWN

Gear Case Assembly

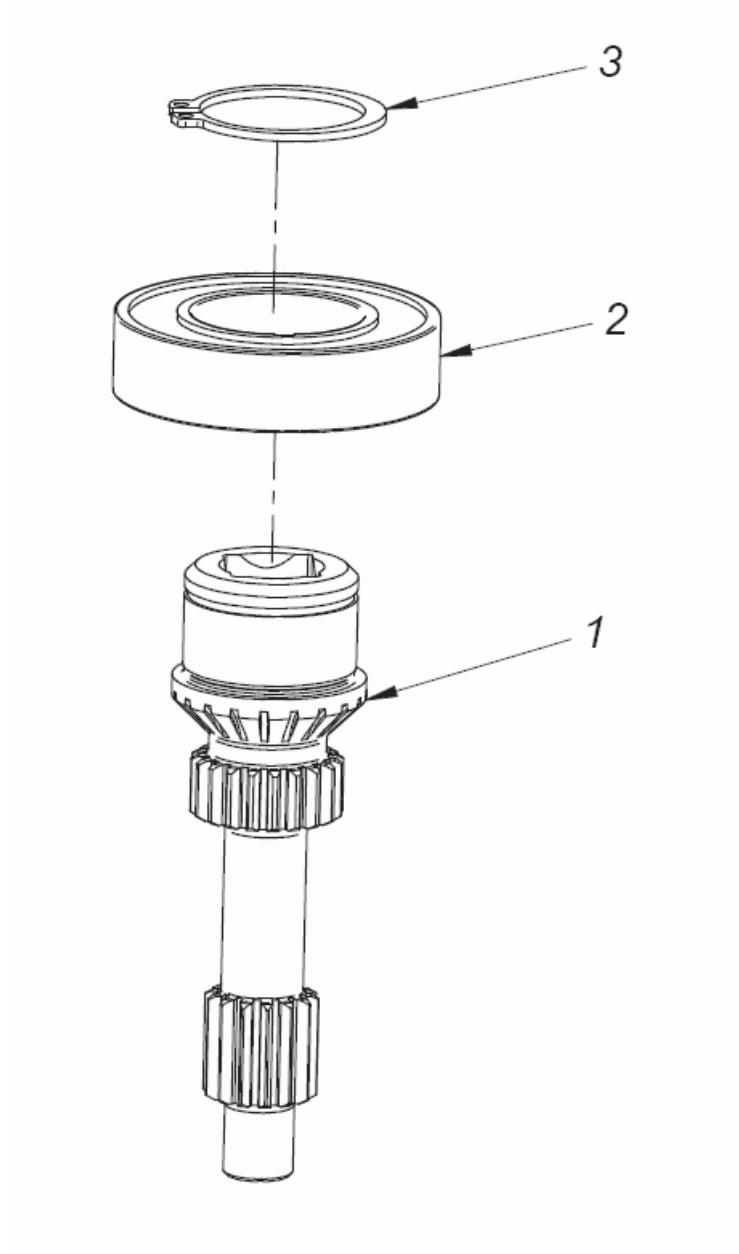
ITEM	PART NUMBER	DESCRIPTION	Q-TY
3.1.1	SPP453101	GEARCASE	1
3.1.2	SPP453102	SPINDLE	1
3.1.3	SPP453103	GEAR RACK,	1
3.1.4	SPP453104	HEX. SOCKET BOLT M5x14	1
3.1.5	SPP453105	HEX. SOCKET BOLT M5X20	1
3.1.6	SPP453106	SPRING WASHER 5,1	3
3.1.7	SPP453107	EXTERNAL RETAINING RING 30z	1
3.1.8	SPP453108	INTERNAL RETAINING RING 62W	1
3.1.9	SPP453109	UPPER SPINDLE BEARING 6005 25x47x12	1
3.1.10	SPP453110	LOWER SPINDLE BEARING 6206 2Z 30x62x16	1
3.1.11	SPP453111	BEARING, NEEDLE RHNA 10x16x10	1
3.1.12	SPP453112	EXTERNALE RETAINING RING 25z	1



HMP45 BREAKDOWN

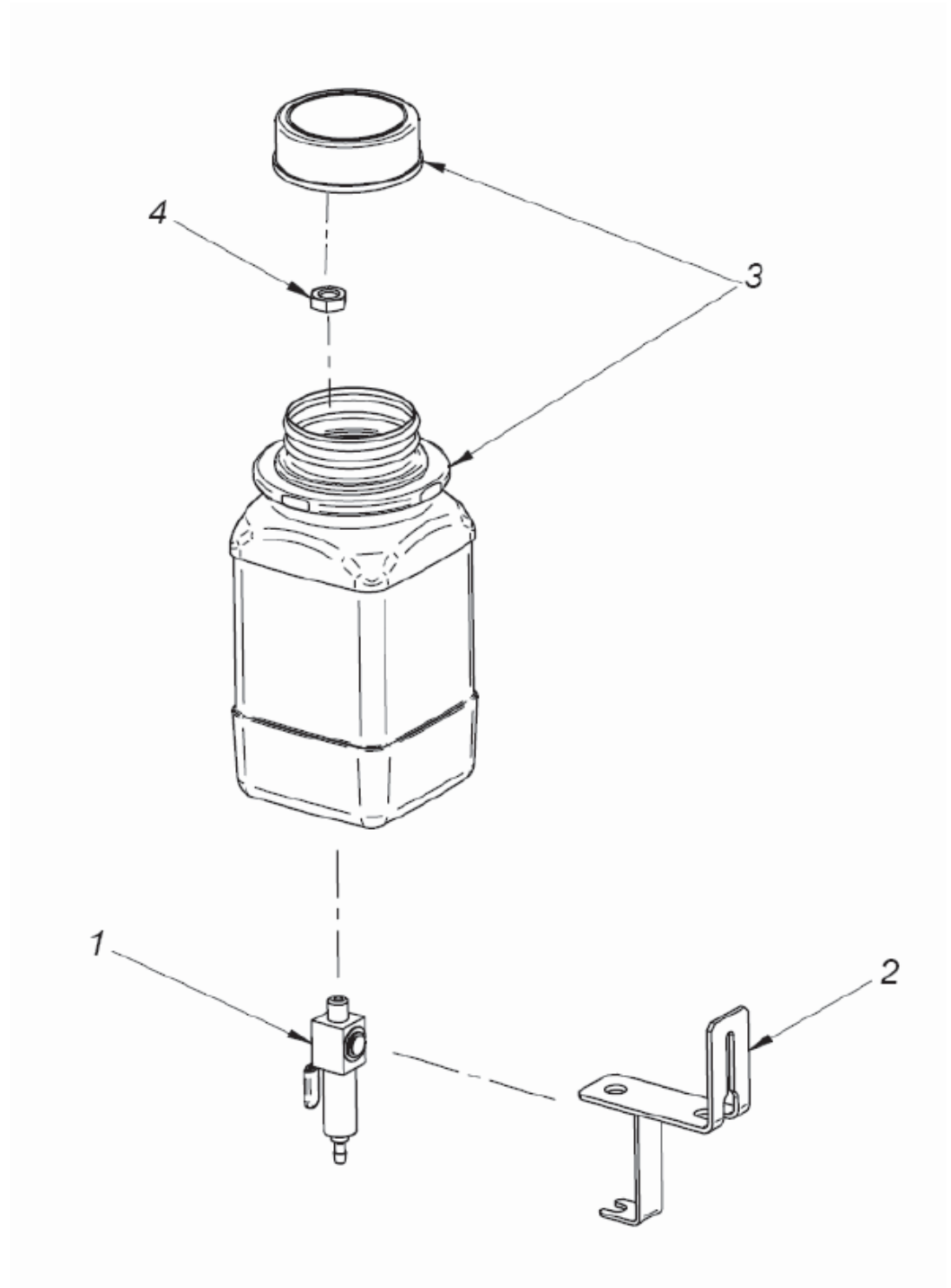
Pinion Shaft T=14, T=20 Assembly

ITEM	PART NUMBER	DESCRIPTION	Q-TY
3.3.1	SPP453301	PINION SHAFT T=14, T=20	1
3.3.2	SPP453302	BEARING BALL 6005 2RS	1
3.3.3	SPP453303	EXTERNALE RETAINING RING 25z	1



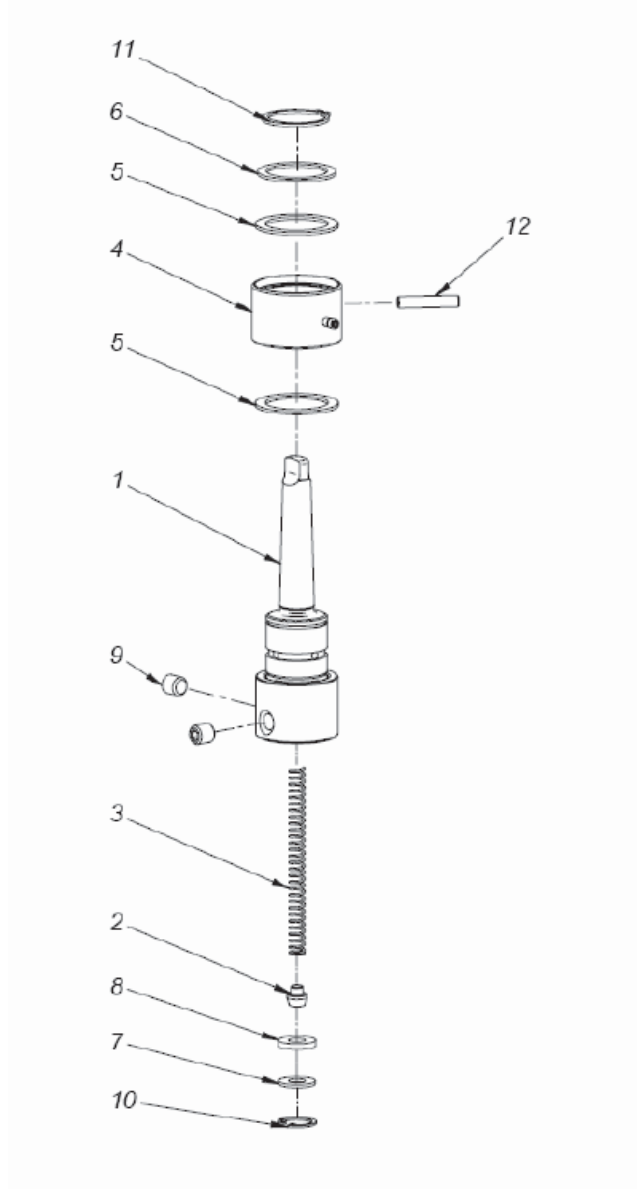
Coolant System

ITEM	PART NUMBER	DESCRIPTION	Q-TY
9.1	SPP45901	COOLANT VALVE,	1
9.2	SPP45902	COOLANT BRACKET	1
9.3	SPP45903	BOTTLE,	1
9.4	SPP45904	NUT M8x1	1
9.5	SPP45905	PLASTIC HOSE 4MM	0,27



Arbor Set - AMT2-C19/2-2

ITEM	PART NUMBER	DESCRIPTION	Q-TY
10.1	SPP451001	ARBOR BODY	1
10.2	SPP451002	PLUNGER	1
10.3	SPP451003	SPRING 2x2 MT2	1
10.4	SPP451004	COOLANT RING	1
10.5	SPP451005	WASHER II	2
10.6	SPP451006	BAR L=25,	1
10.7	SPP451007	WASHER	1
10.8	SPP451008	SEAL	1
10.9	SPP451009	CONNECTOR 4x11,5	1
10.1	SPP451010	HEX SET SCREW M10X10	2
10.11	SPP451011	INTERNAL RETAINING RING 19W	1
10.12	SPP451012	EXTERNALE RETAINING RING 25z	1
10.13	SPP451013	SEAL O-RING 25.2x3	2



HMP45 BREAKDOWN