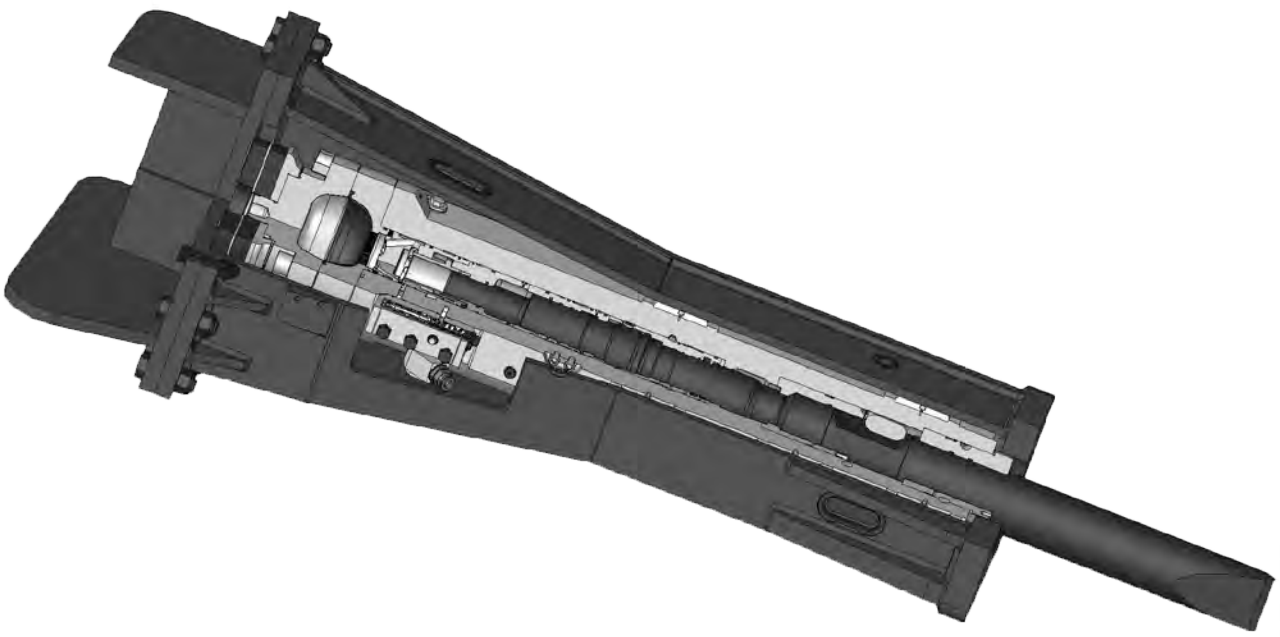
# HB 1800
# HYDRAULIC BREAKER

## Operation and Maintenance Manual

***135100***



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# 1 General warnings

All actions representing a situation of potential danger for the operators are pointed out by the sign reproduced aside.

All actions requiring a special attention are pointed out by the sign reproduced aside.

**During the work, non-authorized people must not be allowed to stay in an area, which operating range is less than 20 meters from the hammer. The people in charge of the building site will prevent this from happening.**

According to the CE regulation nr. **2006/42/CE** and subsequent bringing up to date we specify that**: by "Operator" we mean the person or the people in charge of installing, operating, servicing, cleaning, repairing and transporting the machine.**

## 1.1 Operator safety rules

**While working the hammer vibrates: thus it is dangerous to touch it or leave any object on it.**
The hammer must be started by the operator whose working position is in front of the control board of the carrier.
**The person in charge of the safety rules must give the operator all the instructions for the correct use of the hammer. The operator must also know how the carrier works, enquire about its safety measures and strictly obserre them.**

The operator must be familiar with the technical characteristics of the hammer and especially with pressures, oil flow rates, dimensions of the flexible hoses and connections.

**Before using the hammer and according to the type of work, the operator must get the following equipments: safety glasses, dust-mask, helmet, earmufes, etc.**

Large and loose clothes, watches and other types of bracelets are dangerous,

**The operator must not make use alcohol or drugs medicines which can produce sleepiness while working.**

The working area must be indicated and illuminated.

**The operator must follow the maintenance program proposed by the manufacturer and make sure that the hammer is in good conditions.**

After work, the temperature of the tool can be very high: so it is necessary to leave it to cool before touching or in any case to protect hands with working gloves.

**It is absolutely forbidden to temper with the safety devices and to eliminate or modify the protections.**

# OPERATOR

The operator is to be a person that is suited to the work and physically and psychologically able to withstand the demands connected with operating the equipment for its intended use. The operator must not allow anyone to approach the machine while it is working, and must not allow the use of external personnel. He is to follow the instructions given to obtain maximum performance, minimum consumption, and maximum safety for himself and for others. Especially in terms of safety, the operator is to scrupulously observe all the instructions given in this manual.

# OPERATOR'S POSITION

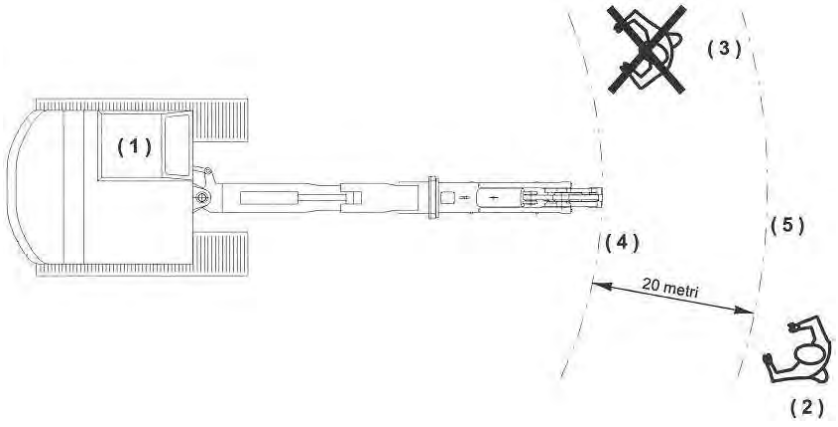
When the machine is running, the operator must pay particular attention to his own position to prevent this being a source of danger to himself or those nearby. The area surrounding the equipment is divided into two zones:

# OPERATOR'S ZONES

These are the zones the operator has to work in, while the equipment is working normally.
The "operator's zones" are to be considered as potentially dangerous areas. In these areas, which are indicated in the drawing below, it is best for the safety of the operator and those nearby to be very careful when the machine is working. **It is extremely important that all the accident prevention standards indicated are strictly applied.**

# DANGEROUS ZONES

These are the areas that only authorized people can approach while the machine is working.
**Plan view of the operator's position**




1 = Control area
2 = Person in safety zone
3 = Person in danger zone
4 = Machine's action radius
5 = Limit of safety zone

# PERSONAL SAFETY EQUIPMENT

The operator involved in working with the equipment or in the surroundings of the equipment must always be equipped with adequate **Personal Safety Equipment**, that is:

- Hardhat
- Leather working gloves
- Safety shoes
- Earmuffs (when necessary).

In using and handling the equipment bear in mind both the safety devices indicated above, and all that has been described in greater detail in the **GENERAL WARNINGS AND RESIDUAL RISKS** chapter.

In addition the user should affix the following pictograms on the equipment:


Do not repair or adjust while the engine is running.

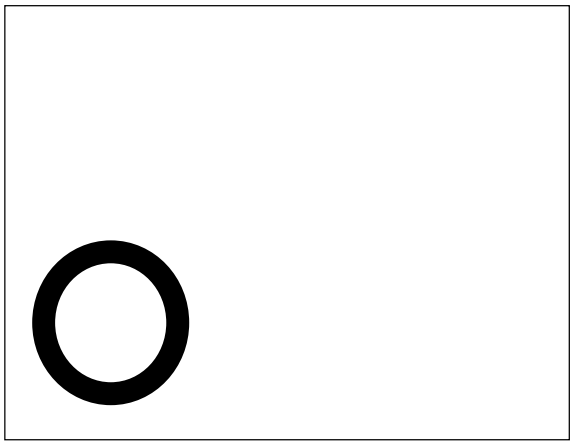
| Symbol | Name |
|---|---|
|  | It is obligatory to use protective goggles. |
|  | It is obligatory to wear work clothing. |
|  | It is obligatory to protect your hearing. |
|  | It is obligatory to wear protective gloves. |
|  | It is obligatory to wear protective shoes. |
|  | It is obligatory to wear a hard hat. |

# 2 Technical Features

## 2.1 Use

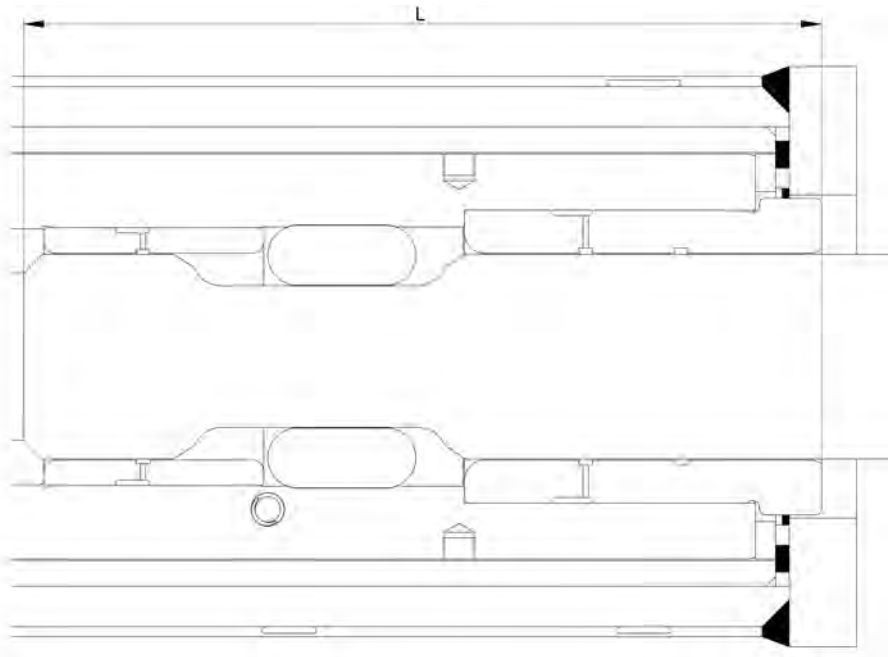
The hammer has been projected and manufactured for all types of demolitions, on any kind of material, to drive poles, to cut and break asphalt surfaces.

**The manufacture is in accordance with the European Directive 2006/42/CE and with the Noise Directive 2000/14/CE.**



## 2.2 Technical features DMS 1800

| Technical features | unit of measurement | Value |
|---|---|---|
| Energy per stroke | J | **3900** |
| Maximum Frequency | s/min | **490 - 670** |
| Maximum oil flow | l/min | **170 - 190** |
| Maximum working pressure | bar | **140** |
| Maximum exhaust back pressure | bar | **10** |
| Accumulator charging pressure | bar | **35** |
| Calibration pressure of the hydraulic system maximum valve | bar | **180** |
| Hammer weight in working conditions | lbs | **3968** |
| Tool weight | lbs | **229** |
| Pin retainer tool weight | Kg | **6,5** |
| Pressure line pipe diameter (EN 856 - 4SP) | G | **1"** |
| Return line pipe diameter (EN 853 - 2SN) | G | **1”1/4** |
| Tool diameter | in | **5** |
| Hammer height with tool without adapting plate | in | **92** |
| Maximum length of the tool inner guide (L) | in | **19.4** |
| Maximum diameter in front and back the tool bushings | in | **5.5** |
| Maximum oil temperature in the tank | °F | **176** |
| Maximum absorbed power | Kw | **40** |
| Excavator weight | t | **19 - 25** |



### 2.2.1 Tightening values:

| Component denomination | Unit of measurement | Value |
|---|---|---|
| Accumulator cover screw | Nm | **1100** |
| Accumulator screw | Nm | **1100** |
| Articulation plug | Nm | **150** |
| Variator screw | Nm | **140** |
| Block Screw | Nm | **250** |

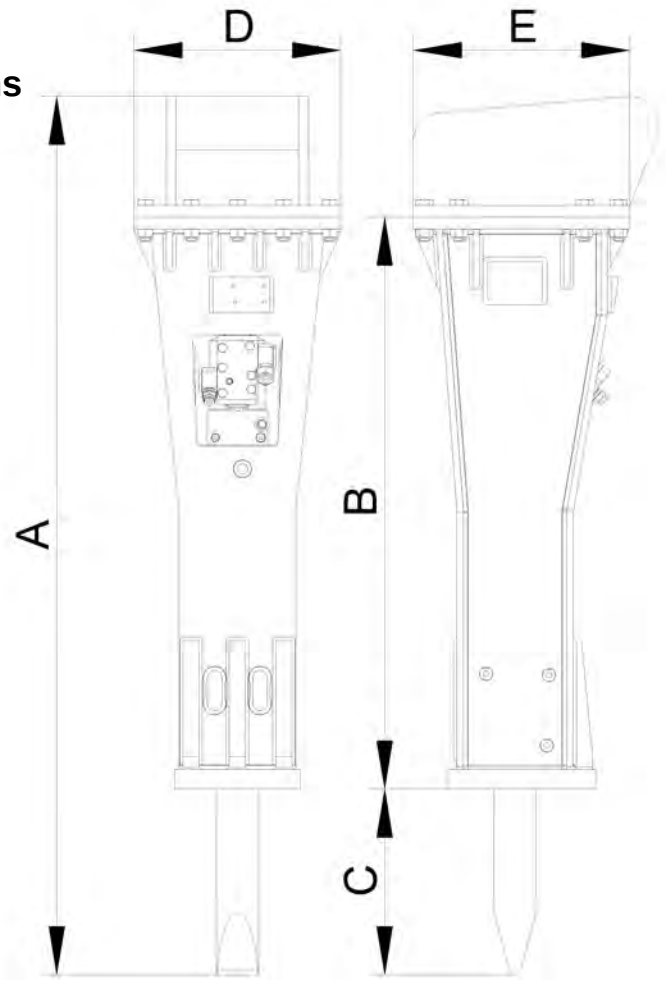
## 2.3 Optimal environmental working conditions:

| DENOMINATION | Unit of Measurement | VALUE (between) |
|---|---|---|
| Temperature | °C | **[ -5 ; +45 ]** |
| Humidity | % | **[ 40 ; 90 ]** |

## 2.4 Overall dimensions

**HB1800**

| Dimensions | Size in |
|---|---|
| A | **107.126** |
| B | **70** |
| C | **23** |
| D | **25** |
| E | **26** |

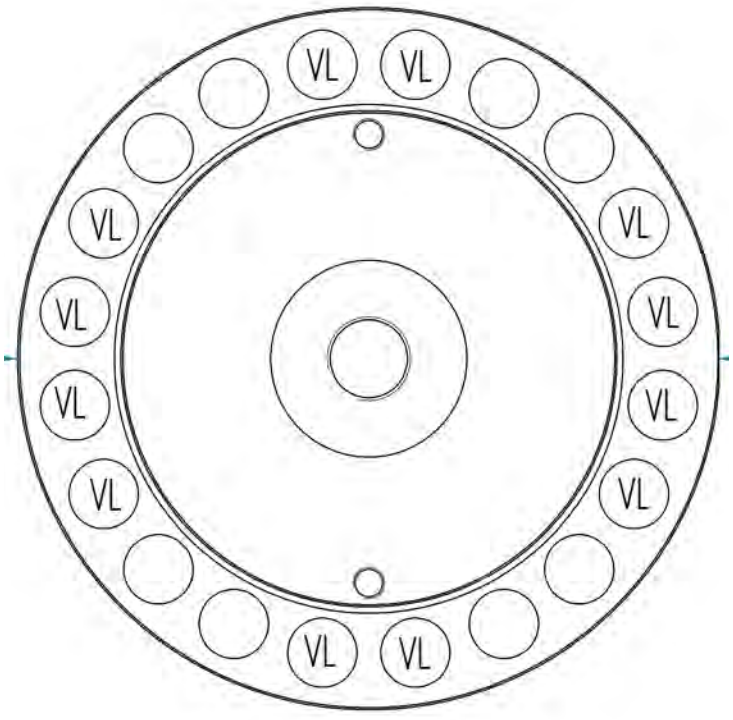


## 2.5 The accumulator

**It's necessary to unscrew the long screws in order to remove the accumulator from the monoblock.**
**You will find here below the accumulator details with the long screws to be unscrewed highlighted.**

DMS 1800 ACCUMULATOR SCREWS

## V.L. = Long Screws




**BLOCK SIDE**

# 3 Transportation and installation

***The personnel in charge of freighting and installing the machine must be acquainted with the following instructions.***

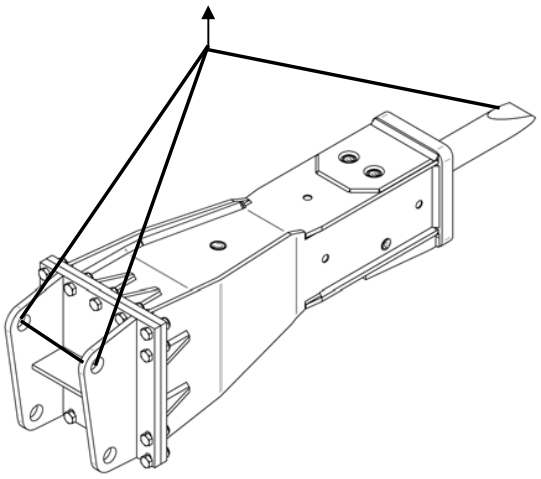
***Pay careful attention to the weight of the hammer.***

## 3.1 Freight

Check in the technical specification paragraph, the total weight of the hammer, including the adapting plate and the tool already mounted.

In order to move the hammer safely, when it is not coupled to the excavator, it is necessary to have a suitable and safe lifting system (as showed in the picture on the right).

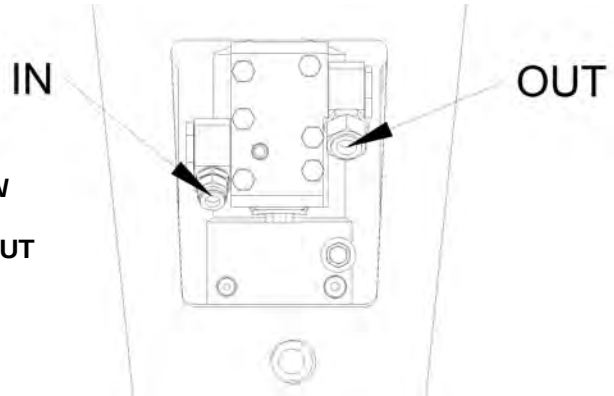
Always use means of transport and lifting that are suitable to the weight of the hammer.



***Always move with care: each inappropriate movement can be very dangerous.***

***Do not pass or stop under the hammer when it is lifted up.***

## 3.2 Hammer Hoses connection




***Connect pressure line hose to the entry side*** ***IN***

**Connect returne line hose to the exit side** **OUT**

# 3.3 Coupling on and uncoupling from the excavator

## 3.3.1. Coupling

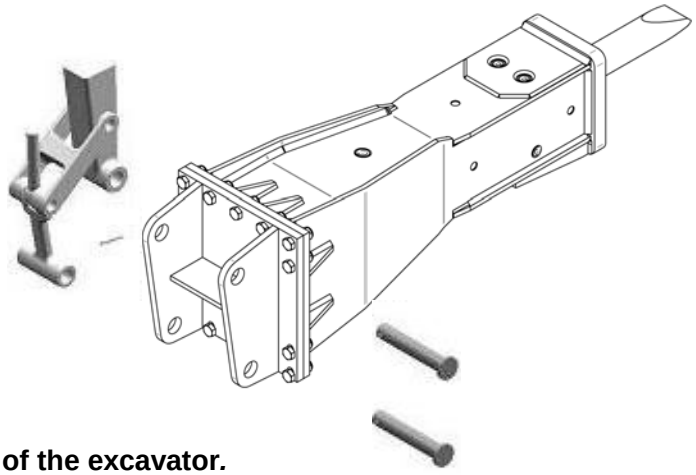
1) Place the hammer horizontally with its axe parallel to the excavator boom on the ground in a stable position.

2) Remove the clamps holding the bucket and take the bucket away.

Insert the boom end in the middle of the handles of the adapting plate.

- Line up the hole of the excavator boom with the equivalent one on the adapting plate, insert the first pin and fix its clamps.

- Then line up the hole of the connecting rod with the second hole on the adapting plate, insert the second pin and fix well its clamp.



**- Stop the hydraulic system of the excavator.**

- Take the caps out of the system and in case they have no taps, collect the hydraulic oil in a container, then fix the hoses connecting the hammer to the system (see scheme “Hammer hoses connection” par. 3.2) and open the oil taps if present.
- Stock away the caps of the flexible hoses, which will be used again during the next uncoupling of the hammer.

## 3.3.2. Uncoupling

- Place the hammer horizontally on the ground in a safe area.

***- Stall the hydraulic system of the excavator.***

- Close the hoses' flow if possible.

- Disconnect the hoses and close up the ends of the flexible hoses in order to prevent oil leaking and dirt intake.

- Remove the connecting rod pin.

- Remove the boom pin.

- After unblocking the hydraulic system, take the excavator boom out of the adapting plate.

# 4 Use of the hammer

***The operator must follow the manufacturer's instructions.***

It is forbidden to use the hammer without the retainer pin for the tool.

Do not use tools which are not authorised by the manufacturer.

The hammer must be in an open area so that, when it begins to hit, the tool is with no doubt pressed against the surface of the material.

## Engine speed

During the inspection of the hammer, the installer determinates the exact number of revs of the excavator engine to which corresponds the appropriate oil flow rate for the hammer.

***It is absolutely necessary that the operator sticks this limit.***

***Working with a higher or lower number of revs can cause serious damages to the hammer.***

## 4.1 Instruction for use

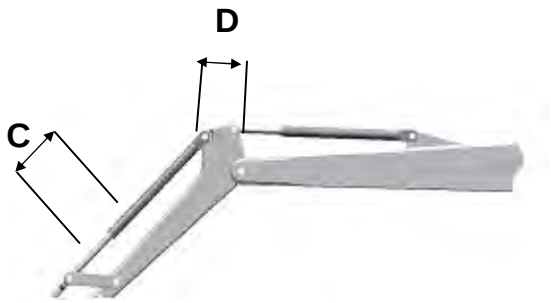
The hammer can work in all the positions allowed by the joints of the excavator boom, as long as it is always pressed perpendicularly against the surface of the material to be demolished.

***The correct position must be kept during the whole phase of feed of the tool, operating on the controls of the bucket and the forearm.***

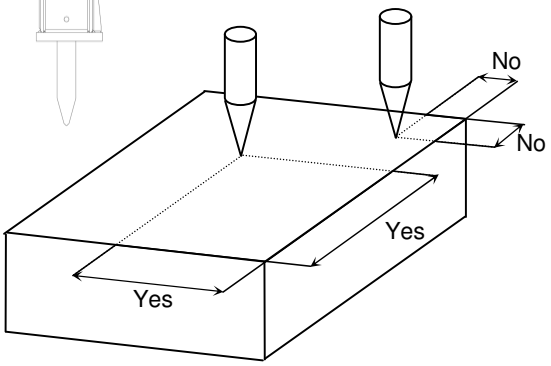
The operator must release the correct load pressure on the hydraulic pipe line to the hammer: if it is too low, it retains a part of the energy which will be released to the excavator boom that will eventually undergo dangerous vibrations and shakings.

If it is too powerful instead, it can endanger the structure of the hammer, of the metal plate and the tool.

Moreover, while the hammer is working, we advice to shorten the distance between excavator and hammer as much as possible and to remove the cylinder piston rods only partially (C-D strokes never completely out).

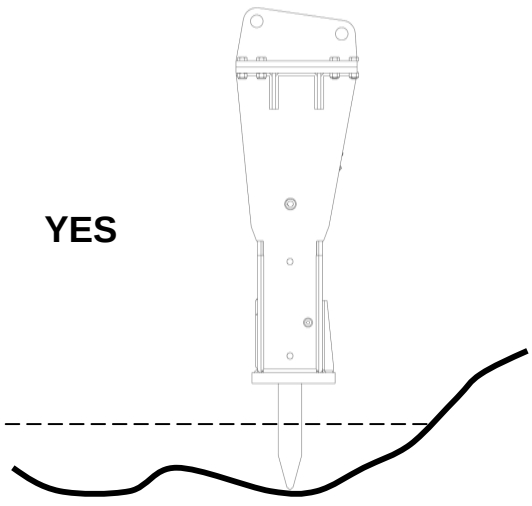


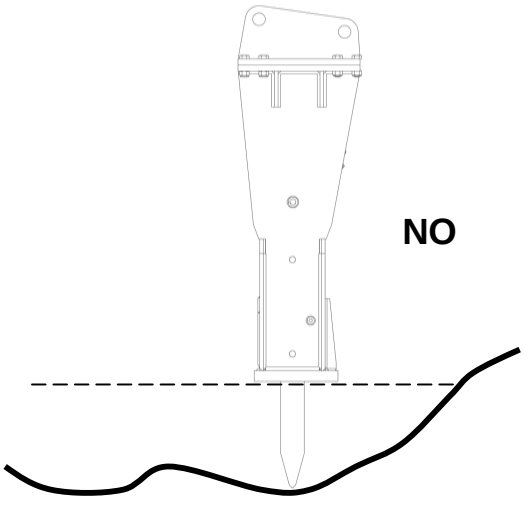

Make sure that the tool does not slip from the surface (see picture). If the tool is place wrongly or holds weakly on the material, the dangerous **blank firing** can occur**.**



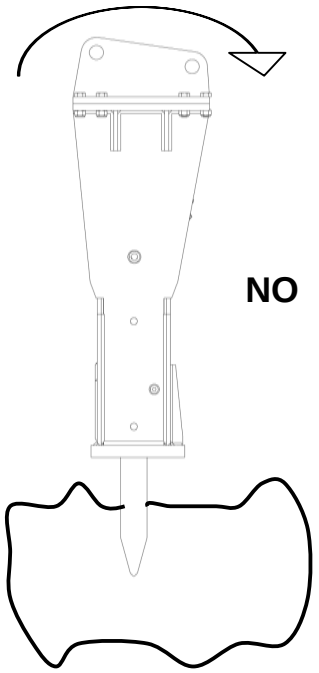

The hammer cannot work into the water if its level exceeds the tool stroke (see picture down under), unless it is specifically made for this purpose.

In case of doubt contact the manufacturer.



## 4.2 Operations to be avoided




Avoid that the hammer delivers blank firings. They cause early weariness and chippings to the retainer pin for tool and to the tool itself, which scraps can provoke serious damages. Moreover, due to these blank firings, the tool will break very soon.

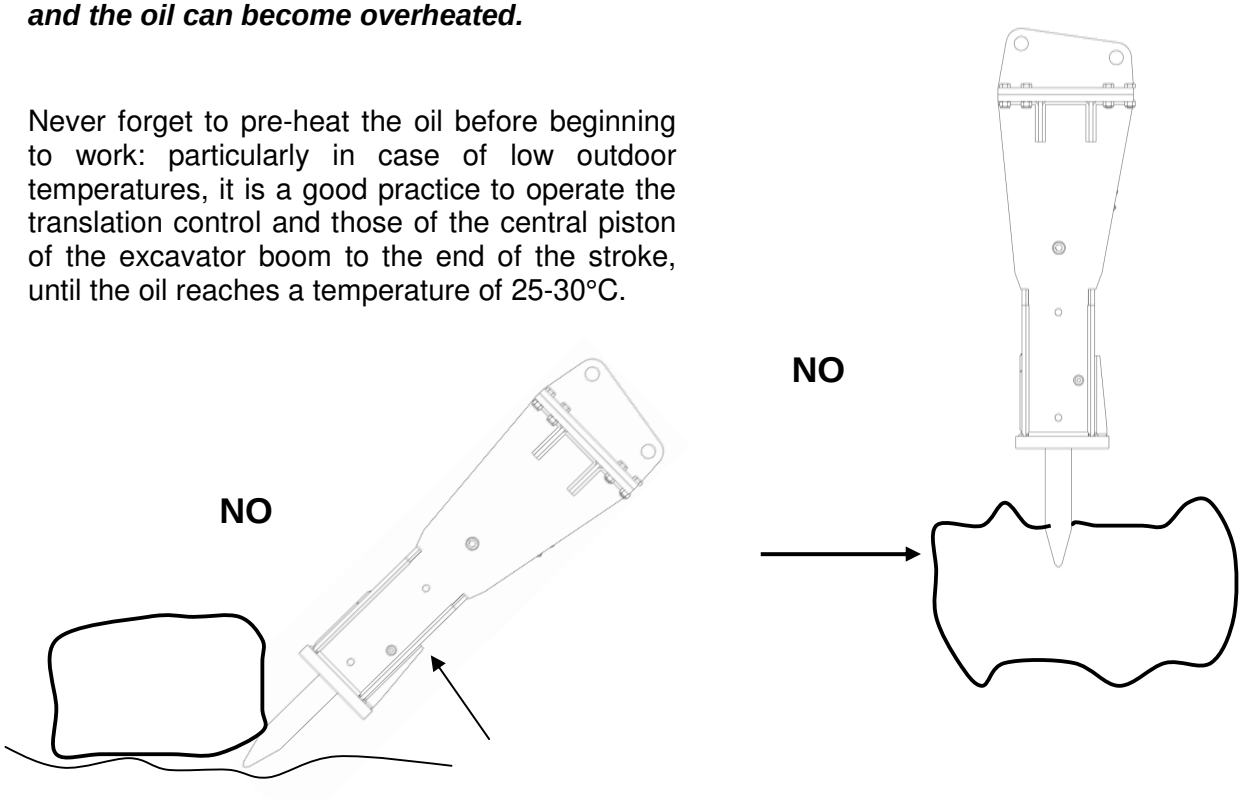
The tool cannot be used as a lever to move rocks or debris: this operation can cause the seizing or breaking of the tool, mainly if it is carried out while the hammer is working.

Do not remove big rocks with the help of the hammer frame: some parts can unweld and the plate can warp.

Do not hammer on the same spot for more than thirty seconds. In case of a very hard surface, it is necessary to change position very often until you find a softer ground.

***If you insist on the same spot for a long time, the drill can swell up, the tool can seize and the oil can become overheated.***

Never forget to pre-heat the oil before beginning to work: particularly in case of low outdoor temperatures, it is a good practice to operate the translation control and those of the central piston of the excavator boom to the end of the stroke, until the oil reaches a temperature of 25-30°C.



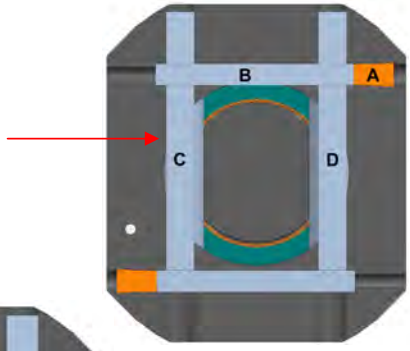
## 4.3 Replacement of the tool

***Before replacing the tool, it is necessary to wear gloves because it overheats during the use.***

Place the hammer vertically, touching the ground and lift it of a few centimetres so that the boom of the excavator supports the weight of the hammer, but with the tool still touching the ground.

***Get off the excavator, after blocking the hydraulic system.***

***Check the weight of the pin in the technical specifications.***

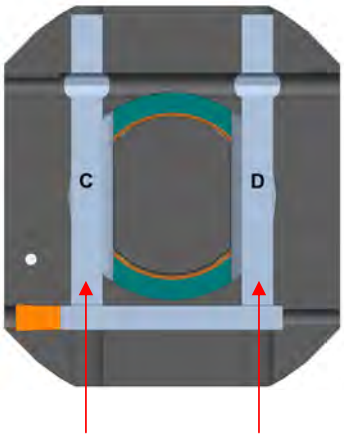



With a lever and a hammer push the pin (B) and the plug (A) to the external side untill you unlock the reteiners.
Take the retainers out (C and D).

Catch on the prominent part with your gloves and place the pin on the ground.

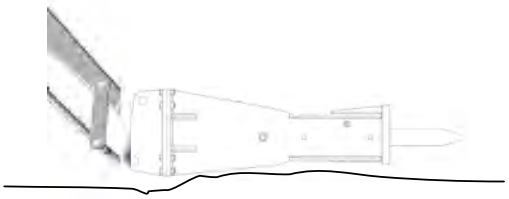
Get on the excavator again and unblock the hydraulic system.

Lift the hammer vertically until the damaged tool slips off.




### Coupling of a new tool

Place the hammer horizontally on the ground and the tool lined up before it.
Grease well the part that must get into the guide.



Fit the tool end (the one having the retainer flat/flats) into the guide, manually.
***Two operators can be necessary if the weight is more than 30 kgs (check the weight into the technical specifications).***
Then push from the other side and fit the tool completely into the guide. Rotate it so that its milled side sets parallel to the pin guide. Insert the retainer pin for tool.

## 4.4 Types of tools, usage and lifetime

Tools differentiate on the basis of the different shapes of their terminal parts. There are various types of tools capable of meeting the requirements of every kind of work.

### Flat terminal tool (ref. A)

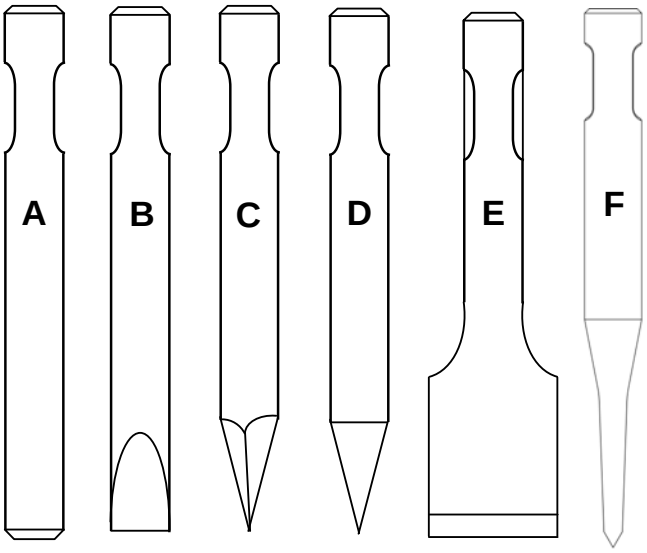
It is suitable for stoke crushing.
Normally used on small and medium hammers.

### Chisel terminal tool (ref. B)

Used for mining in general. It is essential in demolitions where a high cutting capacity is required: for example walls, floors and reinforced concrete buildings, fixed section, diggings and excavations in stone.

Not suitable for stone crushing.

It covers 80% of the applications on small and big hammers.




### Pyramidal terminal tool (ref. C)

The use is similar to the one described up-above. To be mounted on small hammers.

### Cone-shaped terminal tool (ref. D)

Suitable for the demolition of walls and non-reinforced concrete structures, for stones and quite soft materials. To be mounted on the whole range of hammers.

### Small spade terminal tool (ref. E) or asphalt-cutter tool (ref. F)

Suitable for tracing the lines marking the limits of the diggings. To be mounted only on small and medium hammers.

# 5 Cleaning, maintenance and checks

***Never operate on the hammer or on the hydraulic system, when they are under pressure or at high temperatures.***
It is always essential to remove the connecting hoses between the hammer and the excavator.

## 5.1 Cleaning

The hammer does not require particular care. The only precaution to take consists in preventing the dirt from entering through the hose connections, which must be rigorously plugged before any operation of assembly or disassembly.

## 5.2 Maintenance and daily checks

The machine needs some important maintenance, in order to work correctly and for a long time.

### Greasing

The greasing operation, if done manually, must be performed every 2 hours in order to provide a suitable quantity of grease. In case the hammer is supplied with an automatic greasing pump, it is necessary to pay attention to the level of the grease inside the cartridge which must be replaced before it is empty. If the hammer is connected to the excavator general greasing system, it is necessary to pay attention to the level of the grease inside the tank.

***Remember to use a type of grease, which must be:***

- resistant to high loads.
- water resistant, anti-rust, anti-corrosive.

**Have:**

- NLGI-2 penetration
- Dripping point = 200-220 C°
- Temperature of use until t=170-180 C°

***It is recommended to use possibly only Socomec grease for a longer life of the parts.***

### Other checks to be made on the hammer

- Make sure that there are no oil leakages along the tool sank.
- Make sure that no cracks are evident on the frame or on the linking bracket.

## 5.3 Checks to be made on the hydraulic system

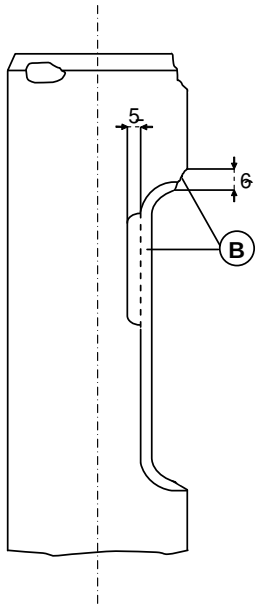
### Temperature of the hydraulic oil in the tank

Make sure that the temperature, during the work, does not exceed 80°C.
Higher temperature can cause an irregular working condition and also the stopping of the hammer.

## Level of the hydraulic oil in the tank

It is absolutely necessary to pay attention to the hydraulic oil level of the excavator tank. In case it is under the lowest limit, the hammer can vibrate or work irregularly.
It is important to check the rigid and flexible hoses in order to find out eventual damages, crushing or oil leaking.

## 5.4 Weekly maintenance




a) Take down the tool in order to determinate possible chippings or cracks in the bush and on the surfaces of the pin for tool.

***These marks are proof of insufficient lubrication, use of unsuitable oil or improper use of the hammer.***

With the help of a sanding disk, polish the trimmings that can be seen on the surface between the tool and the retainer pin for tool (see points B in the picture).

b) Check the wear of the retainer pin for tool; in the case of excessive wear, invert the assembly or change it.

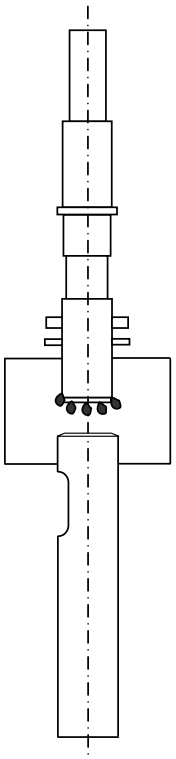
c) Check the wear of the tool bushings; if the inside diameter is bigger than the value indicated in the technical specifications, contact the technical assistance for the replacement of the bushes.

### Check on the loosening of the hammer bolts.

It is advisable to check, at regular intervals possible loosening of the bolts and particularly:

- The screws fixing the head/bracket.
- The screws fixing the flanges/pipe joints.

## 5.5 Machine stop



### Stop at the end of a work with a hot hammer

During the night, drive the hammer vertically into the ground, so that the condensed water can easily be emptied through the prominent part of the piston, thus avoiding oxidation.

### Long term stop

When the hammer is disconnected from the excavator boom and is left at a standstill for a long time, it is necessary to:

Remove the tool, push the piston (with a tube) as higher as possible, grease abundantly and re-install the tool.
***This operation prevents the piston terminal from rusting.***

Keep the hammer in a close place sheltered from bad weather.

# Problems and solutions

***Contact Socomec technical assistance for any problem that you cannot solve by just reading the following instructions.***

| Problem | Cause | Solution (possible in the working site) |
|---|---|---|
| Frequency loss with heavy and violent blows. | Very high back pressure on the exhaust line. | Check if the exhaust line hose is partially occluded, if the filters are partially or totally blocked or if the taps are partially or totally closed. Remove the obstacle. |
| Even though the hammer is lifted up, the tool does not slide downward. | Insufficient greasing or dirt entered between the bushings guide and the tool. | In this case, take down the tool, check the bush and eliminate the seizing marks eventually present. Then clean, grease and install the tool again. |
| The hammer suddenly stops after four or five blows, just after touching the ground surface. | The piston is at the bottom of the automatic brake, andthe tool is completely out. | In this case the material is usually soft. The tool sticks out, but it does not go in again. It is necessary to load the hammer correctly and to try and keep a constant load.<br>It is possible to improve the operation by keeping the hammer as much vertical as possible, while working. |
| Oil leaking from the hose connection block. | The O-Ring is damaged. | Take down the block and change the seals. |
| Oil leaking from the hoses. | The rubber hose is damaged.<br>The rubber hose is screwed badly. | Change the flexible hose.<br>Screw the hose joints better. |

| Problem | Cause | Solution (bring the hammer to an authorized workshop) |
|---|---|---|
| The hammer stops after few blows, after being re-installed on the excavator. | Dirt entered into the hammer through the rubber hoses. | Take down the hammer, clean and eventually change the damaged components. |
| Oil leaking from the tool. | Seals are worn out. Marks on the piston surface. | Replace seals and other damaged parts. |
| The hammer beats with a weak penetration force and there are too many vibrations on the high pressure rubber hose. | The accumulator has lost the pre-charge or the diaphragm is broken. | Restore the correct pressure.<br><br>In other cases, replace the diaphragm and restore the right nitrogen pressure. |
| The hammer increases the number of blows, but the power decreases. | The tool support seat (support ring) is worn out. The piston shortens its stroke. | Make sure that the tool support seat (support ring) is intact. So to operate as follows:<br><br>1) Lay the hammer on the ground and trace a mark on the tool at the level of the bush end.<br><br>2) Remove the tool and make sure that the value between the mark and the plate end of the tool is lower or equivalent to the one indicated in the technical specifications. If higher, it is necessary to change the support ring immediately. |
| One of the tie rod bolts is broken or loosened. | The working pressure is to high. | Ask to a technical service to change it (it is always suggested to replace all 4 tie rod bolts) or to tighten it well at the correct torques (see technical specifications – tightening values). Check the oil flow to the hammer. |

## 5.6 Technical service

It is absolutely necessary to address to a specialized technical service.

## 5.7 Instructions for scrapping

The main materials composing the machine are listed below, with a reference to the interested element:

| | |
|---|---|
| **All components of the structure and the moving parts** | **Steel** |
| **Accumulator diaphragm** | **Rubber** |
| **Upper and lower stroke-end stoppers** | **Synthetic rubber and steel** |
| **Seals & O-rings** | **Rubber & teflon** |
| **Soundproofing materials** | **Synthetic rubber** |

***The accumulator contains nitrogen under pressure. Before scrapping, exhaust the nitrogen under pressure, which is in the accumulator, through the charging valve.***

***The various materials composing the machine must be demolished in appropriate dumping grounds.***

***In any case stick to the laws in force in the country where the hammer is used.***

## 5.8 Warranty

The producer assures the customer a warrantee term which is foreseen in the contract of purchase.

The customer will lose his rights on warranty, if he does not comply with the terms of payment (just even once), or if the breakdowns are caused by the customer himself, his employees or others, through: an improper installation (if not made by the manufacturer), inexperience in handling the machine, improper use, bad maintenance, modifications, mending, changes or tampering made without an authorization by the manufacturer.

The warranty decays if non original spare parts are used by the customer (including the tools and the retainer pins for the tool).

All those parts subject to wear and tear, are excluded from warranty.

The warranty, which the producer must grant by law, is limited to the change and mending of the parts damaged by the manufacturer himself and this at his own choice.

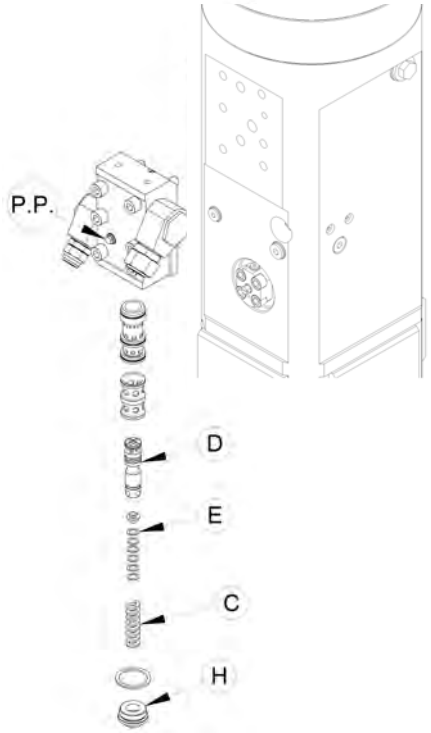
The report on possible faults must be done by the customer, within 8 days, by registered letter. No compensation for damages is due to the customer.

The faulty parts must be sent to the supplier's factory, carriage free, in order to be inspected and eventually changed or repaired under warranty.

Where the installation is made by the manufacturer, any damage provoked to the customer or others, during the installation, falls on the customer's responsibility.

# 6 Regulations and greasing system

## 6.1 How to regulate the pressure control valve




In order to verify the setting of the valve, you have to proceed as follows:

1. Connect a manometer (with the scale 300-400 bar) to a capillary hose 8-10 m long to get the working pressure from a safe distance.
2. Install the other extremity of the hose with the plug “P.P.”
3. Operate the hammer and check the working pressure on the manometer.

If the pressure is lower than what indicated by the manufacturer (see par. 2.2 “Technical features”) you have to:

A. Remove the plug “H”
B. Take off the spring “C”
C. Insert, between the spring “C” and the collar of the small piston “D”, the necessary number of washers “E”, until the correct working pressure is achieved. In order to know which is the correct number of washers to add, you have to consider that **one washer** makes a variation on the working pressure of **7 bar**. The washers must have the following characteristics: thickness 0.5 mm, Øi=14mm, Øe=21.8 mm.

If the measured working pressure is higher than what indicated by the manufacturer (see par. 2.2 “Technical features”) you have to:

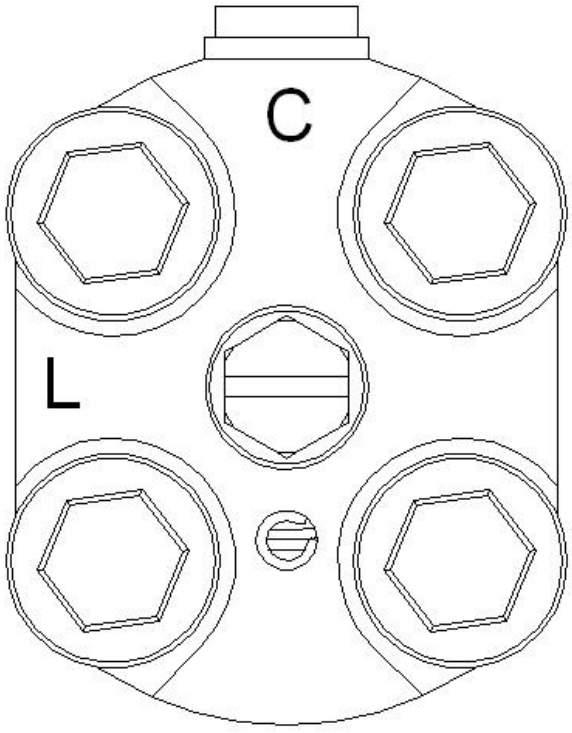
D. Repeat the same steps mentioned above (A+B);
E. Remove the necessary number of washers to get the right working pressure as explained above.

# 6.2 STROKES LENGTH VARIATION

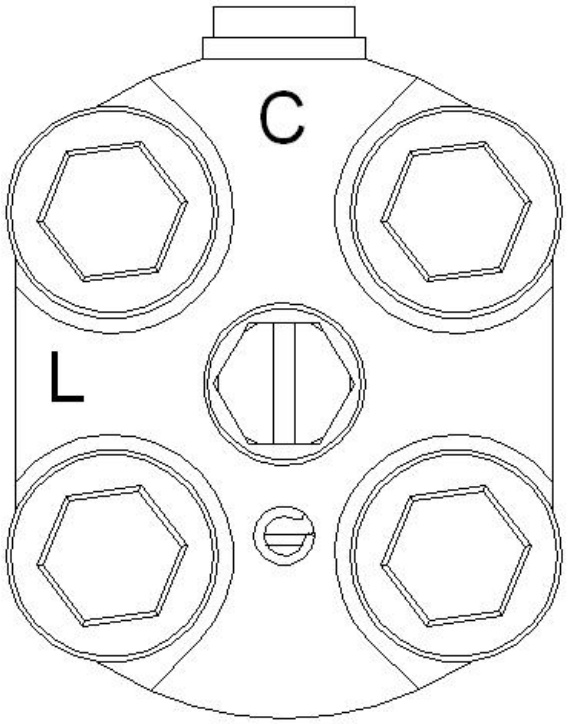
The hammer, when delivered to every customer, is set with the long stroke indicated as L (see picture n.1).

In order to modify the length of the strokes from Long to Short, you need to rotate 90° clockwise or anticlockwise the central screw with a screwdriver or with a wrench key by turning it with the split in vertical position as appears in picture 2.

If you want to get back to Long Strokes you only have to rotate again 90°.

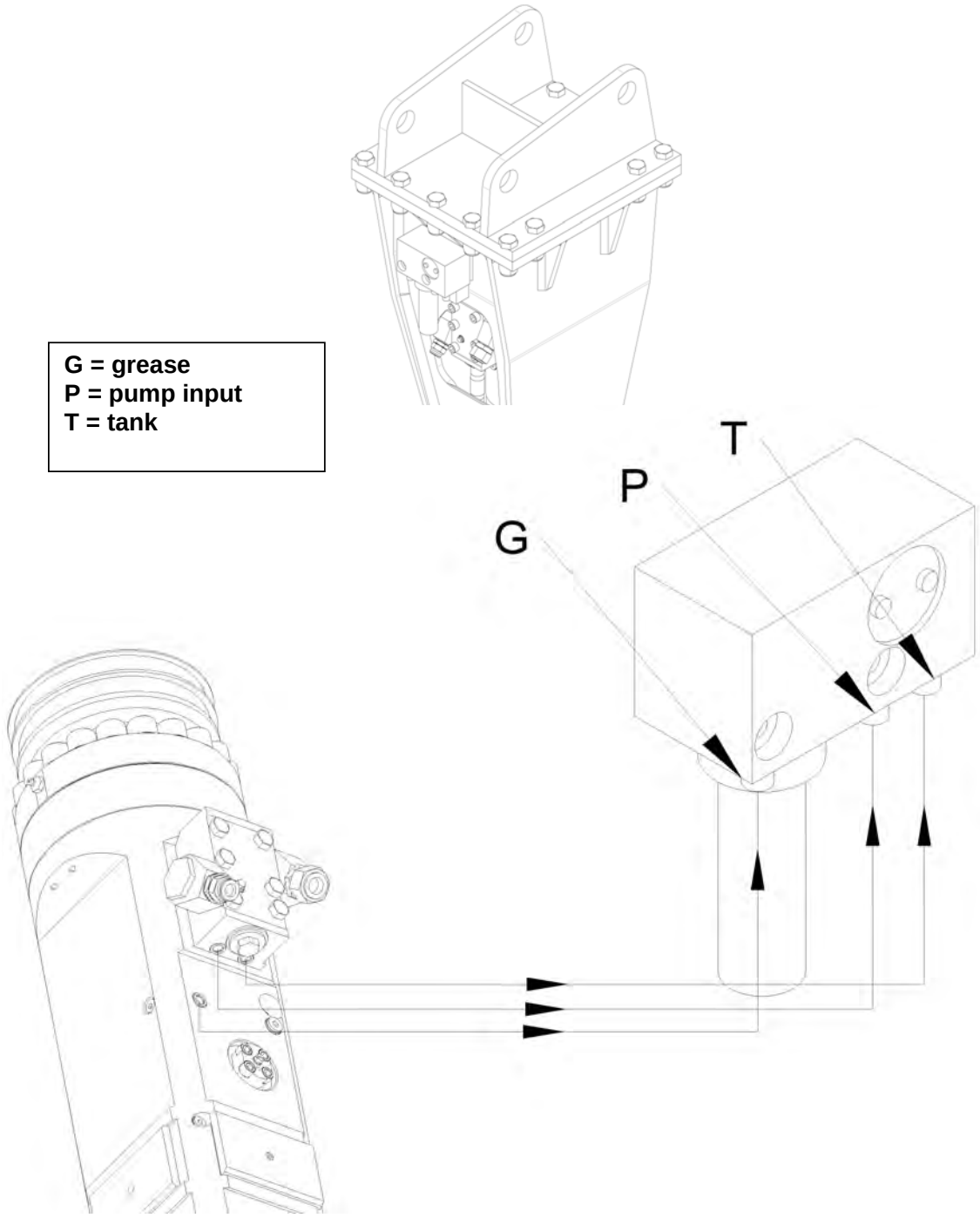



Picture 1
Long stroke position




Picture 2
Short stroke position

## 6.3 How to install the greasing system



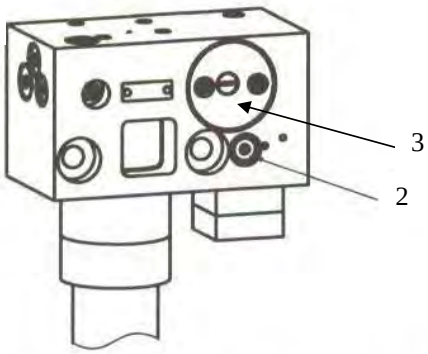

The hammer can be equipped with a lubrication system. For the installation of the lubrication system, it is necessary to follow the above scheme. The hoses of the grease (input and output) have to be linked to the greasing pump. In order to have a correct installation, please read and follow the manual supplied by the lubrication system's manufacturer.

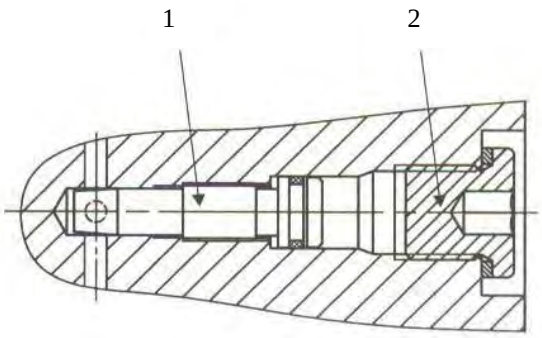
## 6.4 Grease supply setting

To set the grease supply you must act on the restricting system of the hydraulic motor of the pump. The hydraulic circuit must not be in pressure. To act on the restricting system first of all you must unscrew the plug (fig. 12, pos. 2). After this operation act on the register (fig. 12, pos. 1) with a screwdriver.

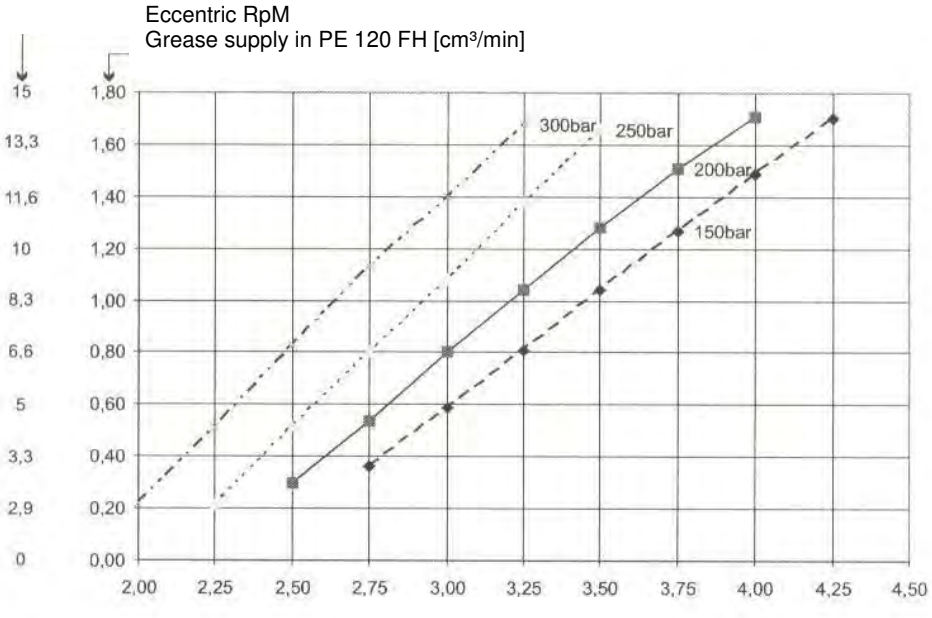
By unscrewing the register you widen the section and therefore increase the amount grease supplied. Before putting once again in action the pump, mount the plug with the copper washer (fig. 12, pos 2). Functional control occurs through the visible eccentric shaft (fig. 12, pos. 3).

Fig. 12




The following diagram shows the values for setting purpose. Before proceeding to the setting, screw the register completely. To set the grease supply, unscrew the register as shown in the following graphic.



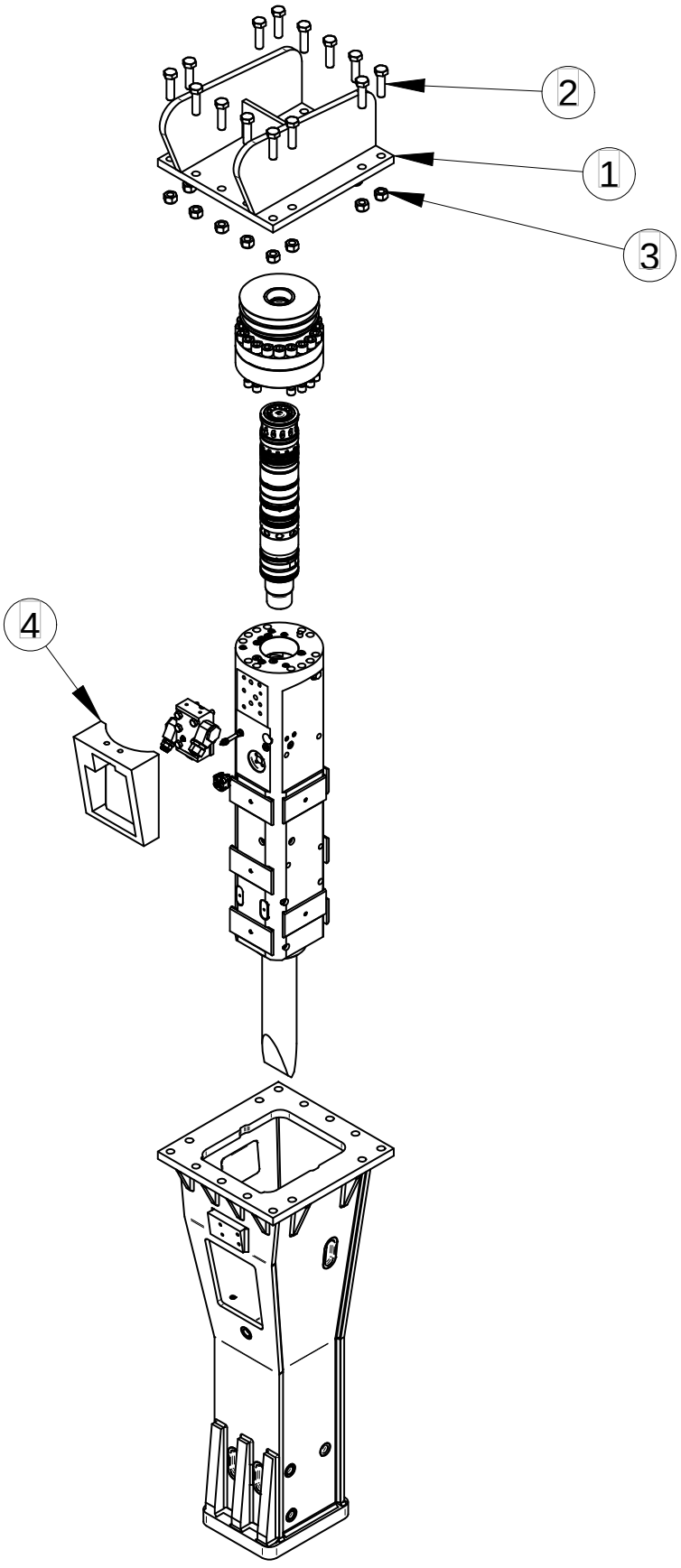
# 7 Spare parts

For a correct and prompt answer to the various requests of parts, it is absolutely necessary that they are completed with the following details:

a) Exact name and reference number of the parts required (these specifications can be taken in the list written in the following pages);

b) Exact serial number of the hammer for which the spare parts are required.

To order the spare parts use the form at the end of this manual.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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 1 | 1 | | ADAPTING PLATE |
| 2 | 14 | 236500 | SCREW |
| 3 | 14 | 236501 | NUT |
| 4 | 1 | 236502 | SHELL |
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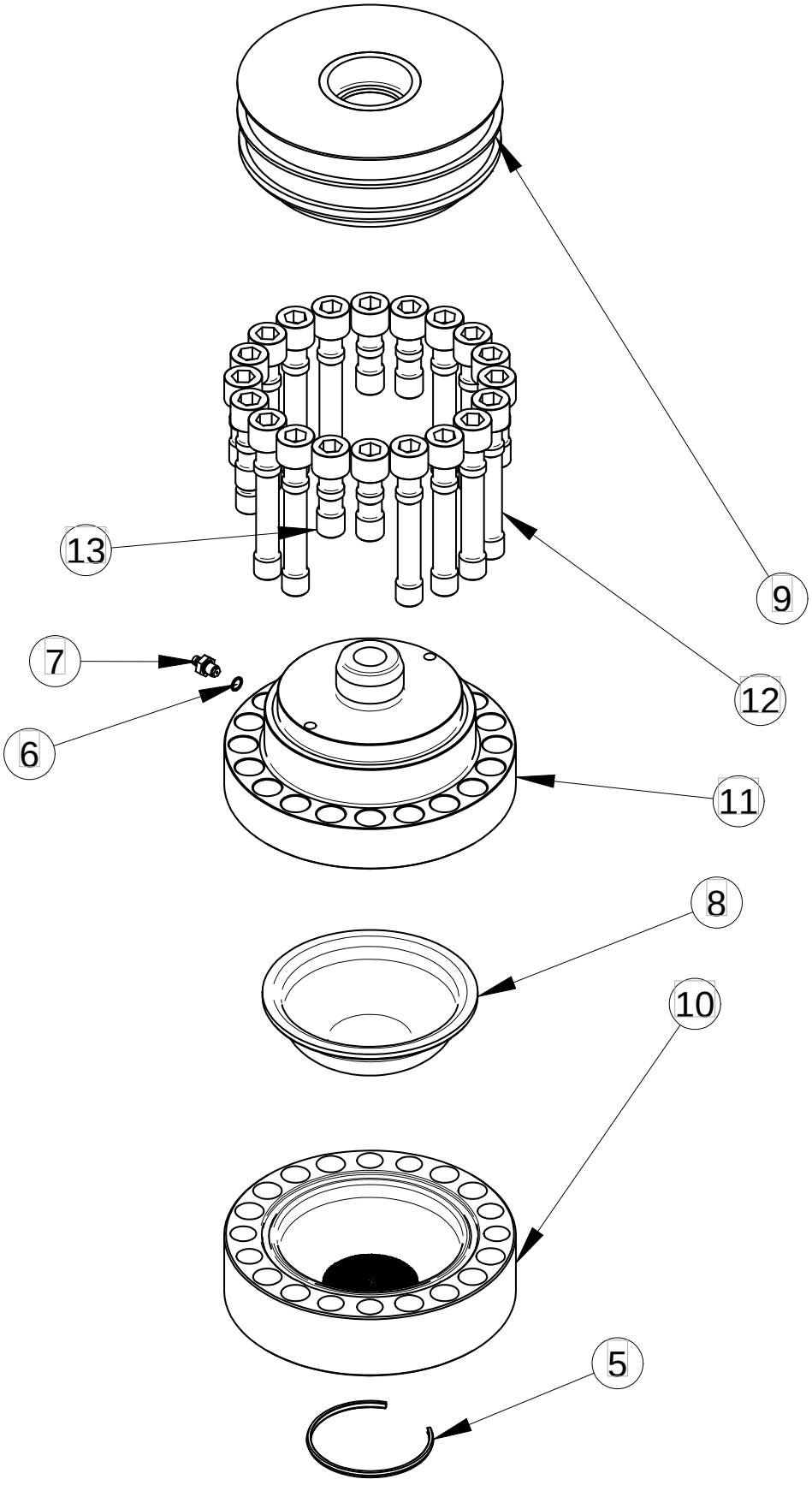
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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 5 | 1 | 236514 | SEAL |
| 6 | 1 | 236504 | O-RING |
| 7 | 1 | 236505 | NITROGEN CHARGING VALVE |
| 8 | 1 | 236506 | DIAPHRAGM |
| 9 | 1 | 236507 | UPPER BUFFER |
| 10 | 1 | 236508 | ACCUMULATOR BASE |
| 11 | 1 | 236509 | ACCUMULATOR COVER |
| 12 | 12 | 236510 | SCREW |
| 13 | 8 | 236511 | SCREW |
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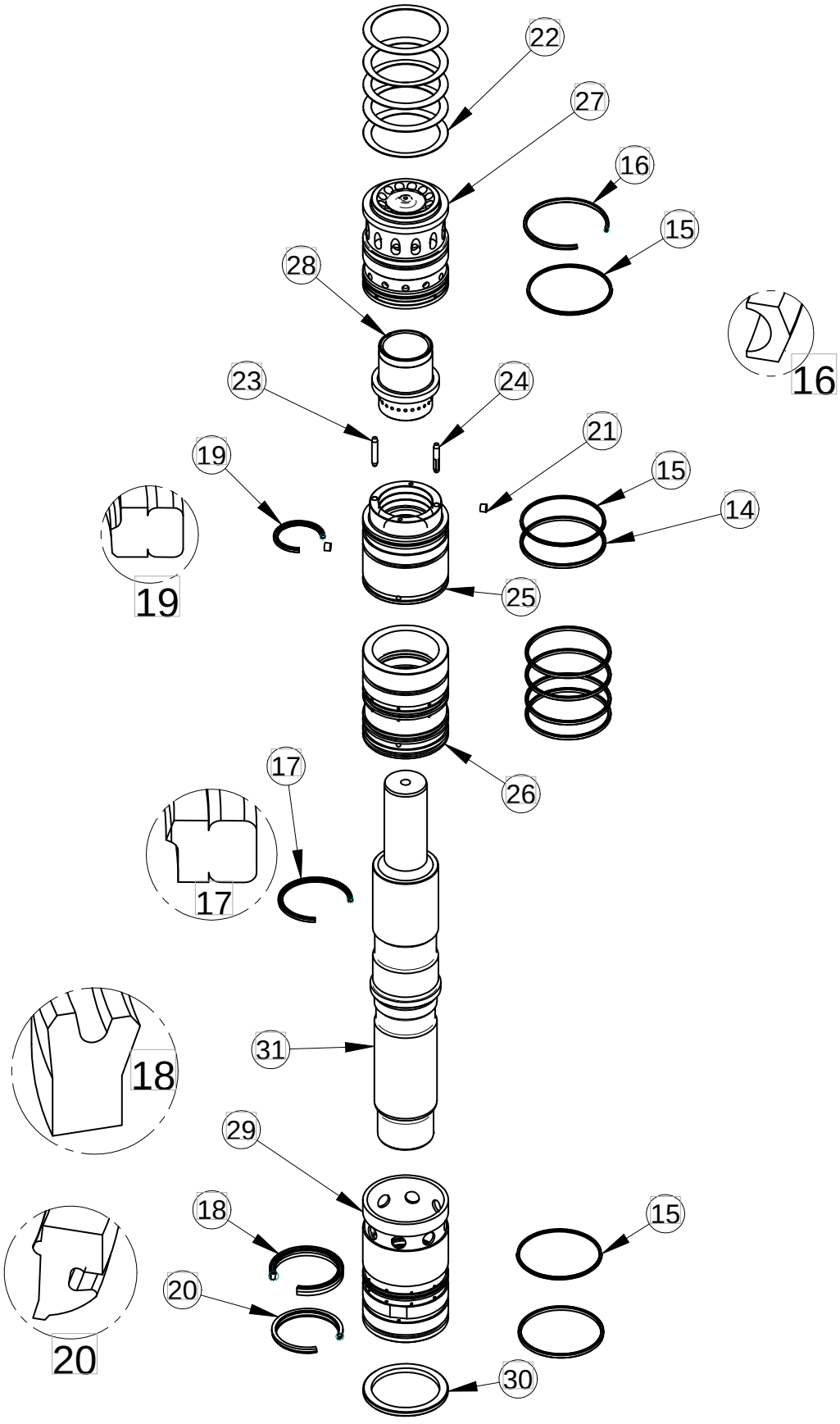
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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 14 | 6 | 236559 | O-RING |
| 15 | 3 | 236513 | O-RING |
| 16 | 1 | 236514 | SEAL |
| 17 | 1 | 236515 | SEAL |
| 18 | 1 | 236516 | SEAL |
| 19 | 1 | 236517 | SEAL |
| 20 | 1 | 236518 | SEAL |
| 21 | 2 | 236519 | ALLEN PLUG |
| 22 | 5 | 236520 | CUPPED SPRING WASHER |
| 23 | 1 | 236521 | PILOTING PISTON |
| 24 | 1 | 236521 | PILOTING GRINDED PISTON |
| 25 | 1 | 236523 | UPPER BODY BUSH |
| 26 | 1 | 236524 | CENTRAL BODY BUSH |
| 27 | 1 | 236525 | DISTRIBUTOR BUSH |
| 28 | 1 | 236526 | DISTRIBUTOR VALVE |
| 29 | 1 | 236527 | LOWER BODY BUSH |
| 30 | 1 | 236528 | BODY BUSH RING |
| 31 | 1 | 236529 | PISTON |
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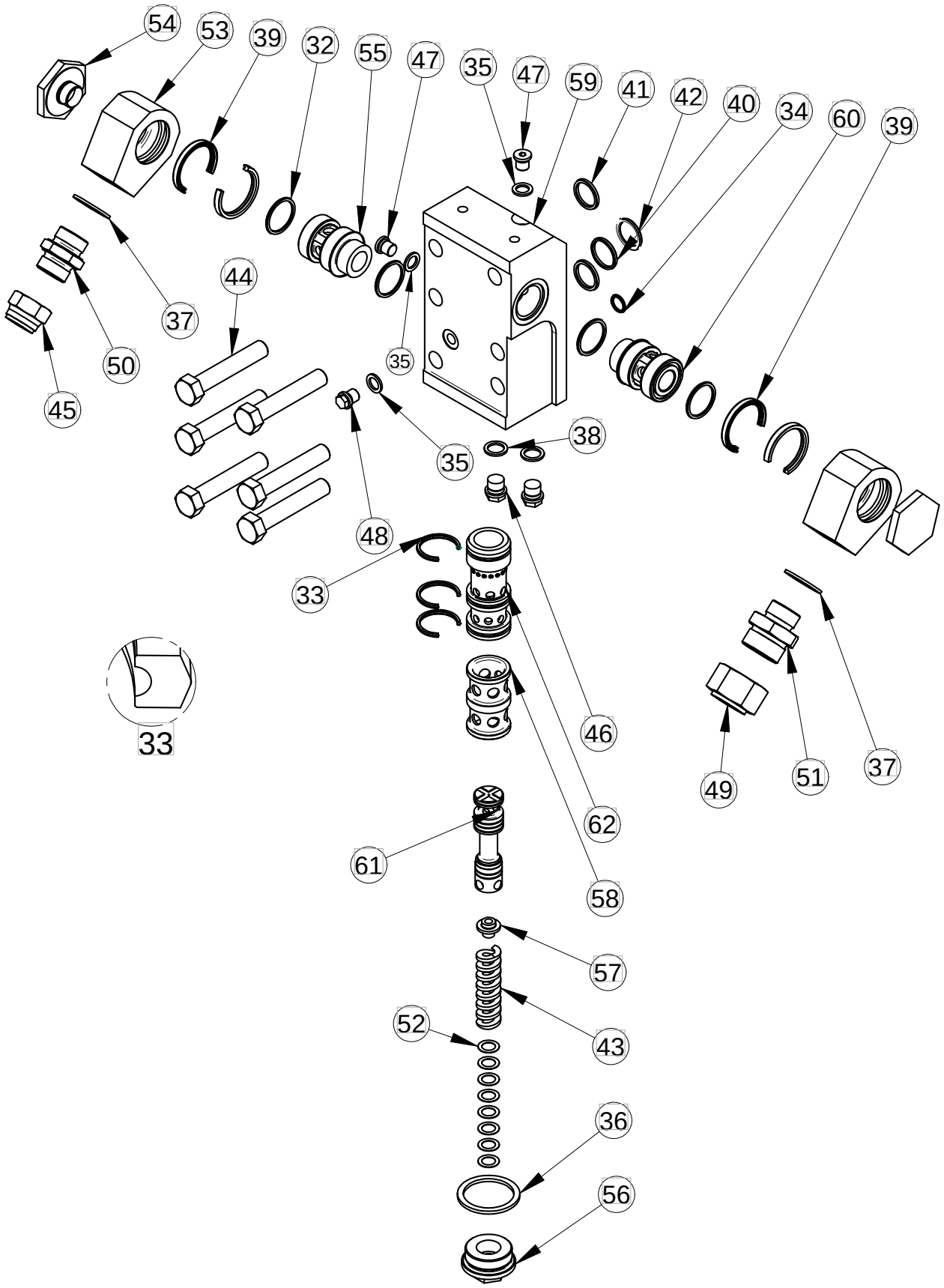
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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 32 | 4 | 236530 | O-RING |
| 33 | 3 | 236531 | SEAL |
| 34 | 1 | 236532 | O-RING |
| 35 | 3 | 235252 | BONDED WASHER |
| 36 | 1 | 236533 | BONDED WASHER |
| 37 | 2 | 236534 | BONDED WASHER |
| 38 | 2 | 236535 | BONDED WASHER |
| 39 | 4 | 236536 | SEAL |
| 40 | 1 | 236537 | O-RING |
| 41 | 2 | 236538 | O-RING |
| 42 | 1 | 236539 | O-RING |
| 43 | 1 | 236540 | SPRING |
| 44 | 6 | 236541 | SCREW |
| 45 | 1 | 236542 | PLUG |
| 46 | 2 | 236543 | PLUG |
| 47 | 2 | 235257 | PLUG |
| 48 | 1 | 235315 | PLUG |
| 49 | 1 | 236544 | PLUG |
| 50 | 1 | 236545 | NIPPLE |
| 51 | 1 | 236546 | REDUCTION |
| 52 | 8 | 236547 | WASHER |
| 53 | 2 | 236523 | OGIVE |
| 54 | 2 | 236549 | OGIVE PLUG |
| 55 | 1 | 236550 | OGIVE SEAT |
| 56 | 1 | 236551 | PLUG |
| 57 | 1 | 236552 | SPRING GUIDE |
| 58 | 1 | 236553 | SPACER VALVE |
| 59 | 1 | 236554 | OIL FLOW CONTROL BLOCK |
| 60 | 1 | 236555 | OGIVE SEAT SX |
| 61 | 1 | 236556 | SLIDING SPOOL |
| 62 | 1 | 236557 | BUSH |
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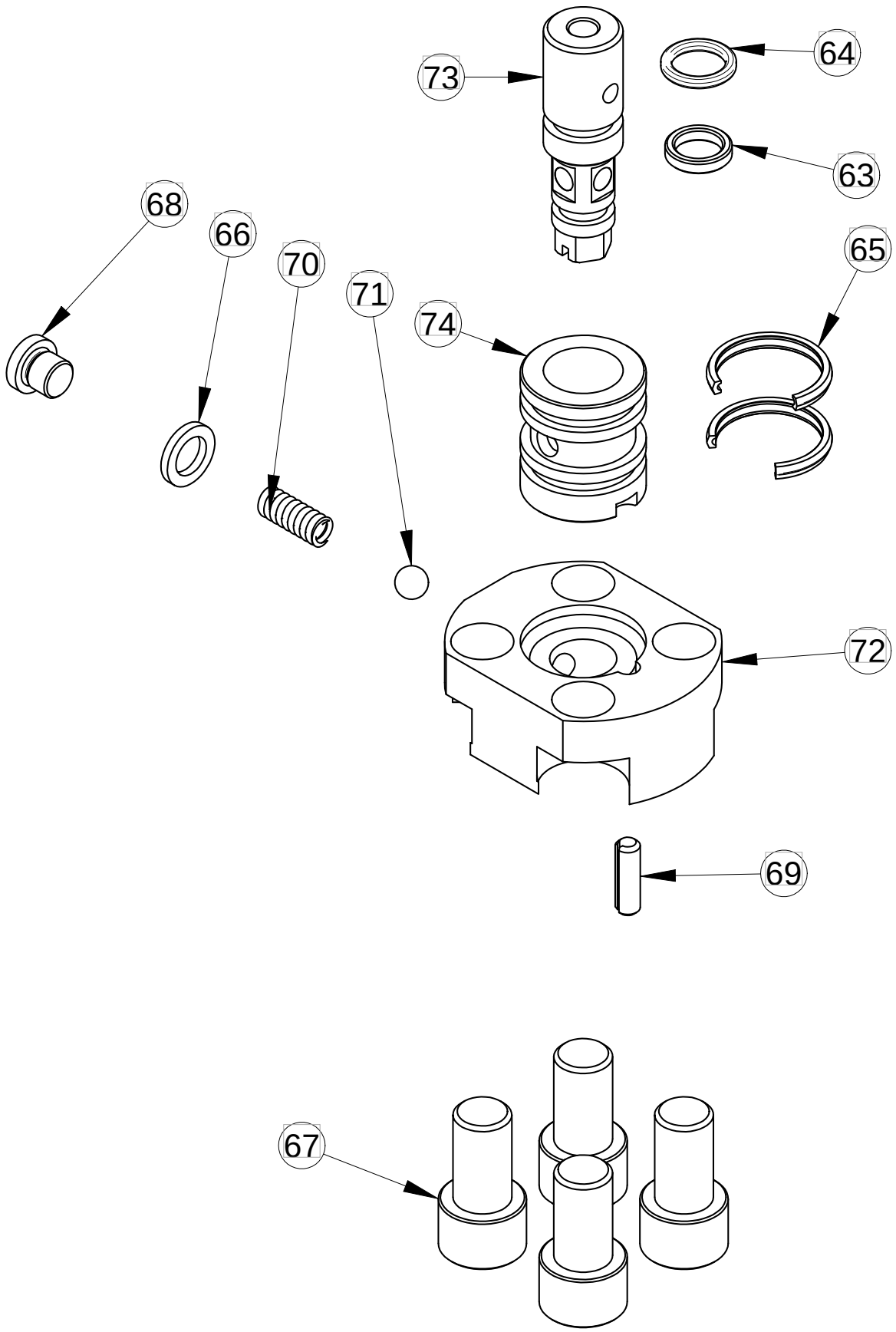
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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 63 | 1 | 236558 | O-RING |
| 64 | 1 | 236559 | O-RING |
| 65 | 2 | 236560 | SEAL |
| 66 | 1 | 236561 | BONDED WASHER |
| 67 | 4 | 236562 | SCREW |
| 68 | 1 | 236620 | PLUG |
| 69 | 1 | 236566 | ELASTIC PIN |
| 70 | 1 | 236565 | SPRING |
| 71 | 1 | 236566 | SPHERE |
| 72 | 1 | 236567 | VARIATOR FLANGE |
| 73 | 1 | 236568 | COMMUTATION SHAFT |
| 74 | 1 | 236569 | VARIATOR BUSH |
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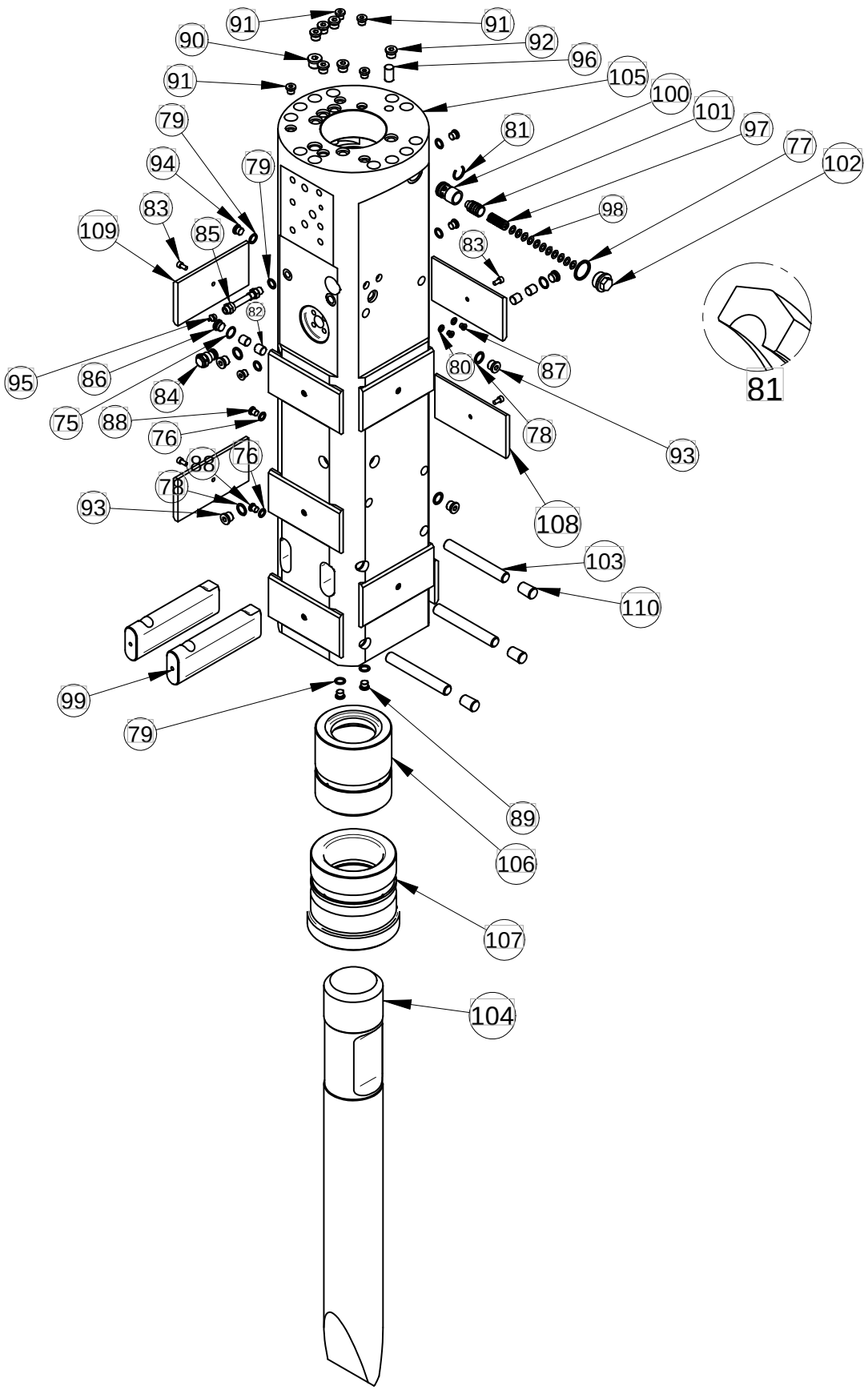
## 13 HAMMER EXPLODED VIEW



# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 75 | 2 | 236570 | BONDED WASHER |
| 76 | 2 | 235252 | BONDED WASHER |
| 77 | 1 | 236572 | BONDED WASHER |
| 78 | 4 | 236573 | BONDED WASHER |
| 79 | 7 | 236535 | BONDED WASHER |
| 80 | 2 | 236561 | BONDED WASHER |
| 81 | 1 | 236576 | SEAL |
| 82 | 4 | 236577 | ALLEN PLUG |
| 83 | 10 | 236578 | SCREW |
| 84 | 1 | 236579 | UNIDIRECTIONAL VALVE |
| 85 | 1 | 236580 | HOSE |
| 86 | 2 | 236582 | PLUG |
| 87 | 2 | 236620 | PLUG |
| 88 | 2 | 235257 | PLUG |
| 89 | 4 | 236585 | PLUG |
| 90 | 1 | 236586 | PLUG |
| 91 | 4 | 236587 | PLUG |
| 92 | 6 | 236588 | PLUG |
| 93 | 4 | 236589 | PLUG |
| 94 | 2 | 236590 | PLUG |
| 95 | 1 | 236591 | GREASE NIPPLE |
| 96 | 1 | 236592 | CYLINDRICAL PIN |
| 97 | 1 | 236593 | SPRING |
| 98 | 11 | 236594 | WASHER |
| 99 | 2 | 236595 | TOOL RETAINER |
| 100 | 1 | 236596 | VALVE BODY |
| 101 | 1 | 236597 | VALVE PISTON |
| 102 | 1 | 236598 | PLUG |
| 103 | 3 | 236599 | LOCKING PIN |
| 104 | 1 | 236600 | TOOL |
| 105 | 1 | 236601 | MONOBLOCK |
| 106 | 1 | 236602 | INTERNAL SUPPORT BUSH |

# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 107 | 1 | 236603 | EXTERNAL SUPPORT BUSH |
| 108 | 6 | 236604 | GUIDE |
| 109 | 4 | 236605 | INCREASED GUIDE |
| 110 | 3 | 236606 | PLUG |
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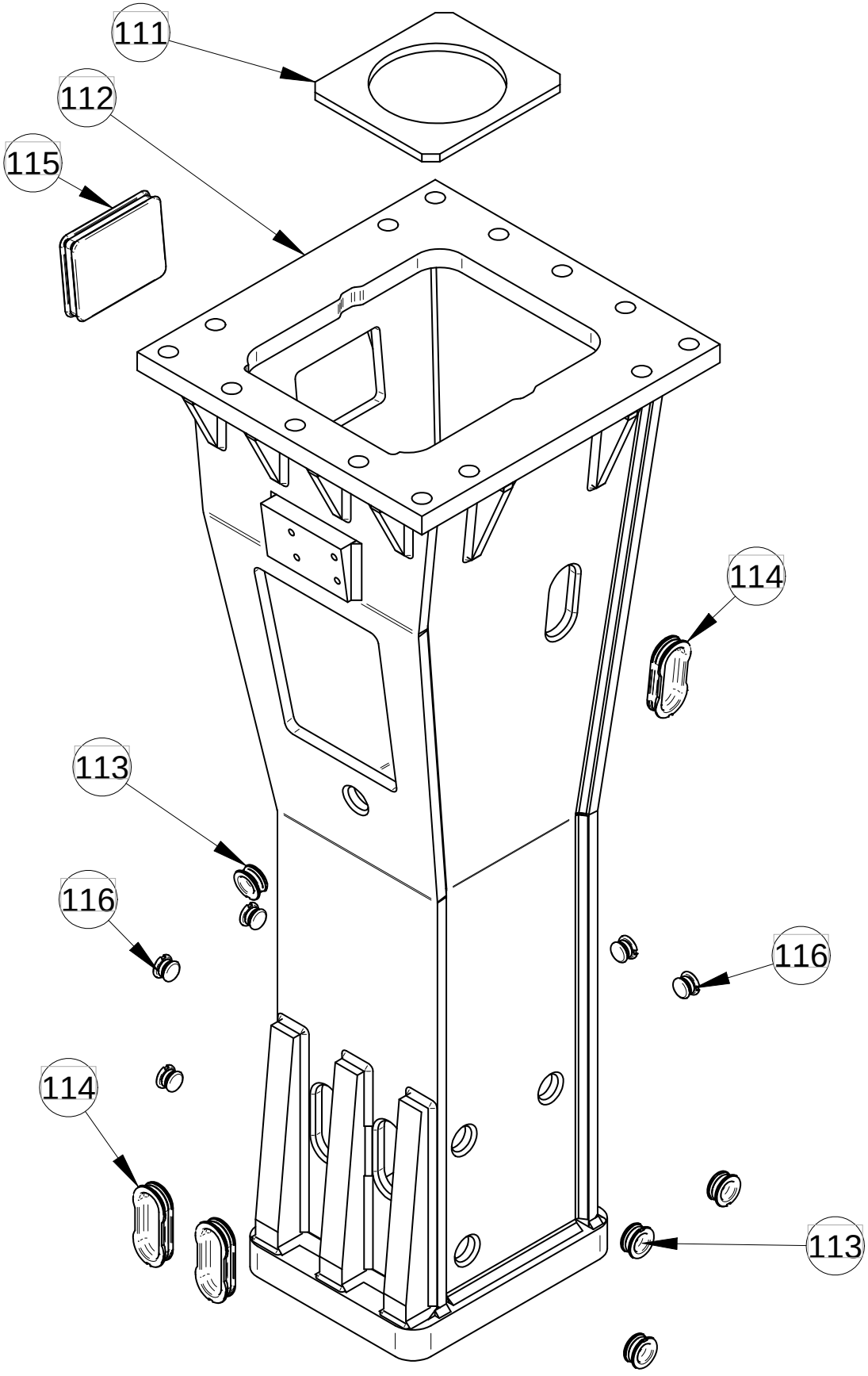
## 14 CASE



# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 111 | 1 | 236607 | LOWER PAD |
| 112 | 1 | 236608 | CASE |
| 113 | 4 | 236609 | PLUG |
| 114 | 3 | 236610 | RETAINER HOLE PLUG |
| 115 | 1 | 236611 | PLUG |
| 116 | 5 | 236612 | PLUG |
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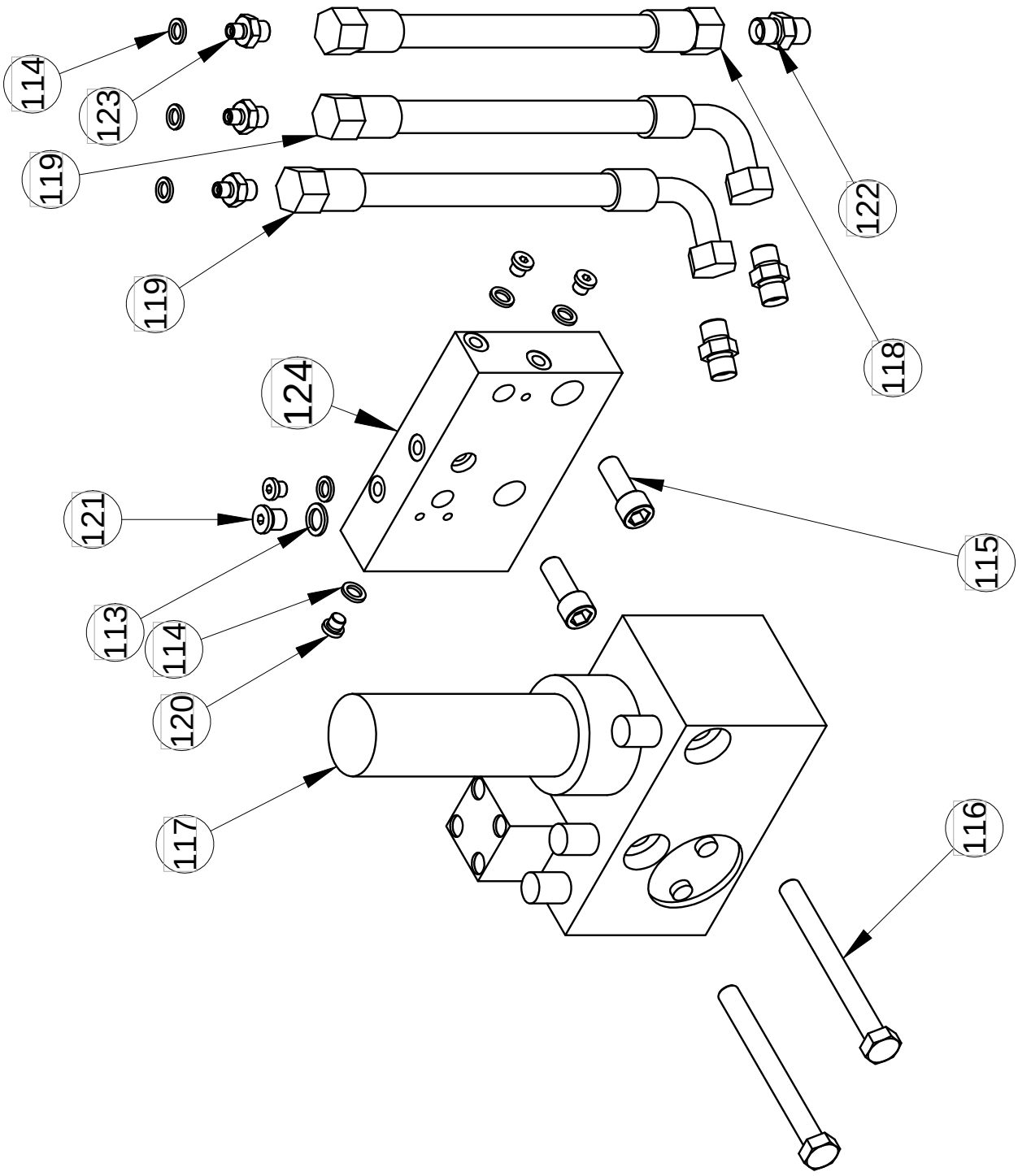
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# Spare parts

(Refer to the exploded views of the previous pages)

| Ref | Quantity | Part # | Description |
|---|---|---|---|
| 113 | 1 | 235252 | BONDED WASHER |
| 114 | 7 | 236561 | BONDED WASHER |
| 115 | 2 | 236615 | SCREW |
| 116 | 2 | 236616 | SCREW |
| 117 | 1 | 236617 | GREASING PUMP |
| 118 | 1 | 236618 | HOSE |
| 119 | 2 | 236619 | HOSE |
| 120 | 4 | 236620 | PLUG |
| 121 | 1 | 235257 | PLUG |
| 122 | 3 | 236622 | NIPPLE |
| 123 | 3 | 236623 | REDUCTION |
| 124 | 1 | 236624 | GREASE PUMP HYDRAULIC BLOCK |
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## MANUFACTURER'S LIMITED WARRANTY

BLUE DIAMOND ATTACHMENTS, a manufacturer of quality attachments, warrants new BLUE DIAMOND ATTACHMENTS products and/or attachments at the time of delivery to the original purchaser, to be free from defects in material and workmanship when properly set up and operated in accordance with the recommendations set forth by BLUE DIAMOND ATTACHMENTS, LLC.

BLUE DIAMOND ATTACHMENTS liability for any defect with respect to accepted goods shall be limited to repairing the goods at a BLUE DIAMOND ATTACHMENTS designated location or at an authorized dealer location, or replacing them, as BLUE DIAMOND ATTACHMENTS shall elect. The above shall be in accordance with BLUE DIAMOND ATTACHMENTS warranty adjustment policies. BLUE DIAMOND ATTACHMENTS obligation shall terminate twelve (12) months for the HB 1800 Hydraulic Breaker after the delivery of the goods to original purchaser.

This warranty shall not apply to any machine or attachment which shall have been repaired or altered outside the BLUE DIAMOND ATTACHMENTS factory or authorized BLUE DIAMOND ATTACHMENTS dealership or in any way so as in BLUE DIAMOND ATTACHMENTS judgment, to affect its stability or reliability, nor which has been subject to misuse, negligence or accident beyond the Company recommended machine rated capacity.

## WARRANTY CLAIM

To submit a warranty claim, a return authorization from BLUE DIAMOND ATTACHMENTS must be obtained. The failed part may then be returned. Tampering with the failed part may void the warranty. This warranty does not include freight or delivery charges incurred when returning machinery for servicing. Dealer mileage, service calls, and pickup/delivery charges are the customers' responsibility.

## EXCLUSIONS OF WARRANTY

Except as otherwise expressly stated herein, BLUE DIAMOND ATTACHMENTS makes no representation or warranty of any kind, expressed or implied, AND MAKES NO WARRANTY OF MERCHANTABILITY IN RESPECT TO ITS MACHINERY AND/OR ATTACHMENTS ARE FIT FOR ANY PARTICULAR PURPOSE. BLUE DIAMOND ATTACHMENTS shall not be liable for incidental or consequential damages for any breach or warranty, including but not limited to inconvenience, rental of replacement equipment, loss of profits or other commercial loss. Upon purchase, the buyer assumes all liability for all personal injury and property resulting from the handling, possession, or use of the goods by the buyer.

No agent, employee, or representative of BLUE DIAMOND ATTACHMENTS has any authority to bind BLUE DIAMOND ATTACHMENTS to any affirmation, representation, or warranty concerning its machinery and/or attachments except as specifically set forth herein.

This warranty policy supersedes any previous documents.

**NOTE:** Blue Diamond Attachments is a trademark of BLUE DIAMOND ATTACHMENTS, LLC.


**QUALITY | DEPENDABILITY | INTEGRITY**

Blue Diamond® Attachments
4512 Anderson Road, Knoxville, TN 37918
888-376-7027