AIR MOTOR
MODEL 9200-2

Equipment Reference

146 350 000

User Manual 582128110

2020-11-25

Index D

Translation of the original instructions

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Dear customer, you have just purchased your new equipment and we thank you for it.

We have taken the utmost care, from design to manufacture, so that this equipment gives you complete satisfaction.

For a good use and an optimal availability, we invite you to read this manual carefully before using your equipment.

Guarantee

We reserve the right to make any changes or improvements even after receipt of an order without being able to attribute a non-compliance to the descriptions contained in the instruction manuals and selection guides.

Our equipment is checked and tested in our workshops before shipment.

To be valid, any complaint concerning a material will have to be formulated to us in writing within 10 days of the delivery.

SAMES KREMLIN equipment, equipped with its original identification plates, has a one-year warranty or 1800H of operation (first term reached) from the date of ex-factory against any defect of material or defect of it is up to us to see and appreciate.

The warranty excludes wear parts, deterioration or wear resulting from abnormal or unscheduled use by SAMES KREMLIN, failure to observe instructions for proper operation or lack of maintenance.

The warranty is limited to the repair or exchange of parts returned to our factory and recognized as defective by us and does not cover the listed wear parts or not.

Any costs resulting from an operating outage can not be charged to us. The costs of return to our workshops are the responsibility of the customer.

An intervention can be carried out on site at the customer's request.

In this case, the transportation and accommodation costs of the technician (s) will remain the responsibility of the applicant.

Any changes made to our equipment without our consent will void the warranty.

Our guarantee is limited to that of the suppliers of materials which enter in the composition of our sets.

1 Declaration of Conformity

Refer to the existing declaration delivered with the product.

2 Safety instructions

2.1 Personal safety

Overview

Read all operating instructions and device labels carefully before putting the equipment into service.

Personnel using this equipment must have been trained in its use.

The workshop manager must ensure that the operators have fully understood all the instructions and safety rules of this equipment and other elements and accessories of the installation.

Misuse or operation can cause serious injury. This material is for professional use only. It must be used only for the purpose for which it was intended.

Do not modify or transform the material. Parts and accessories must only be supplied or approved by SAMES KREMLIN.

The equipment must be checked periodically. Defective or worn parts must be replaced.

Never exceed the maximum working pressures of the equipment components.

Always respect the laws in force regarding security, fire, electricity of the destination country of the equipment.

Only use products or solvents that are compatible with the parts in contact with the product (see product manufacturer's technical data sheet).

Meaning of the pictograms

 Danger pinching, crushin	 Danger moving parts	 Danger : high pressure	 Risks of product emanation
 Danger : hot parts or surfaces	 Danger : flammability risks	 Danger : electricity	 Risk of explosion
 Danger (user)	 Warning Danger	 Gloves required	 Grounding
 Protective helmet	 Hearing pro- tection	 Mandatory respiratory protection	 Safety shoe
 Protective clothing	 Protective visor	 Safety glasses is mandatory	 Refer to the manual/ins- truction leaflet

Security devices

Attention

- ✓ Guards (motor cover, coupling guard, housings, ...) are set up for safe use of the equipment.
- ✓ The manufacturer can not be held responsible for any bodily injury as well as failures and / or damage to the equipment resulting from the destruction, the occultation or the total or partial removal of the protectors.
- ✓ Never exceed the maximum working pressures of the equipment components.

Danger of Pressure

Safety requires that a decompressed air shutoff valve be mounted on the pump motor supply circuit to allow trapped air to escape when the supply is shut off.

Without this precaution, the residual air from the engine may cause the motor pump to operate and cause a serious accident.

Similarly, a **product purge valve** must be installed on the product circuit so that it can be purged (after shutting off engine air and decompressing it) before any intervention on the equipment. These valves should remain closed for air and open for the product during the procedure.

Injection hazards

"HIGH PRESSURE" technology requires the utmost care.

Operation can cause dangerous leaks. There is a risk of product injection into exposed parts of the body, which can lead to serious injury and the risk of amputation :

- ✓ An injection of product into the skin or other parts of the body (eyes, fingers ...) must be treated urgently by appropriate medical care.
- ✓ Do not look at the gun nozzle when it is under pressure.
- ✓ Never direct the jet to another person.
- ✓ Never attempt to stop the jet with the body (hands, fingers ...) or with rags or similar.

Fire hazards, explosion, electric arc, static electricity

Improper grounding, insufficient ventilation, open flames or sparks can cause an explosion or fire which could result in serious injury.

To avoid these risks, especially when using pumps, it is imperative :

- ✓ To connect the equipment, the parts to be treated, the cans of products and cleaners to the ground,
- ✓ To ensure good ventilation,
- ✓ Keep the work area clean and free of rags, papers, solvents,
- ✓ Do not operate electrical switches in the presence of vapors or during removal,
- ✓ Immediately stop the application in the presence of arcs,
- ✓ Store all liquids outside the work areas.
- ✓ Use products whose flash point is as high as possible to avoid any risk of formation of flammable gases and vapors (consult the product safety data sheets).
- ✓ To equip the drums with a lid to reduce the diffusion of gases and vapors in the cabin.
- ✓ It is forbidden to pump explosive materials

Hazards of toxic products

Toxic products or vapors can cause serious injury through contact with the body, in the eyes, under the skin, but also by ingestion or inhalation. It is imperative :

- ✓ To know the type of product used and the dangers it represents,
- ✓ Store the products to be used in appropriate areas,
- ✓ Contain the product used in the application in a container designed for that purpose,
- ✓ Evacuate the products in accordance with the legislation of the country where the equipment is used,
- ✓ To wear protective clothing designed for that purpose,
- ✓ Wearing goggles, hearing protectors, gloves, shoes, coveralls and masks for the respiratory tract.

Attention

The use of halogenated hydrocarbon solvents and products containing these solvents in the presence of aluminum or zinc is prohibited.

Failure to follow these instructions exposes the user to the risk of explosion resulting in serious injury or death.

2.2 Integrity of the material

Material recommendations

 Protectors are put in place for safe use of the equipment.

Exemples :

- ✓ Motor cover.
- ✓ Carters.

The manufacturer can not be held responsible in case of:

- ✓ Bodily injury.
- ✓ As well as breakdowns and / or damage to the equipment resulting from the destruction, the occultation or the total or partial withdrawal of the protectors.

Pump

Recommendations for pumps.

- ✓ It is essential to read the compatibilities of the motors and pumps before coupling as well as the special safety instructions.
- ✓ These instructions are on the pump instruction manuals.
- ✓ The air motor is intended to be coupled to a pump. Never modify the coupling system.
- ✓ Keep hands clear of moving parts.
- ✓ The parts constituting this movement must be kept clean.
- ✓ Before starting up or using the motor pump, carefully read the DECOMPRESSION PROCEDURE.
- ✓ Check that the decompression and purge air valves are working properly.
- ✓ It is forbidden to operate the pump without its protective motor cover - risk of crushing
- ✓ It is forbidden to disassemble the safety valve during the operation of the pump - check that the air regulator and pressure gauge are working once a month.
- ✓ Only use genuine SAMES KREMLIN accessories and spare parts designed to withstand the pump's operating pressures.

Booster phase of the pump

- ✓ Mandatory wearing of PPE (glasses + gloves + safety shoes).

Feeding cycle

- ✓ The booster cycle must be at a maximum of 1 bar at the gauge of the air equipment, keeping the gun open. Progressive manual mounting to the air regulator.

Paint phase pump and pressure gun

- ✓ Mandatory wearing of PPE during this phase of painting where the pump and the gun are under pressure.
- ✓ Do not look at the gun nozzle when it is under pressure.
- ✓ Rinse at a maximum of 1 bar at the pressure gauge of the air equipment (variable pressure depending on the length of the pipes).

Rinsing the pump

- ✓ Wearing PPE (glasses + gloves + safety shoes)
- ✓ Do not look at the gun nozzle when it is under pressure
- ✓ Rinse at a maximum of 1 bar at the pressure gauge of the air equipment (variable pressure depending on the length of the pipes).

Defusing the pump

- ✓ PPE port mandatory.

Risk of hydraulic heating during defusing

- ✓ Risk of overheating of the hydraulics in case of defusing.

Mass cable

- ✓ It is mandatory to connect the pump to earth. The canes are conductive

Cart

Concerning the work and displacement of the pump on cart on a flat floor it is forbidden to pull on the cart and pump assembly via the pipe.

Tubing

Recommendations for pipes.

- ✓ Keep hoses away from traffic areas, moving parts and hot areas.
- ✓ Never subject product hoses to temperatures above 60 ° C or below 0 ° C.
- ✓ Do not use hoses to pull or move equipment.
- ✓ Tighten all connections and hoses and connectors before commissioning the equipment.
- ✓ Check hoses regularly, replace them if damaged.
- ✓ Never exceed the maximum operating pressure stated on the hose (PMS).
- ✓ For fitting the hoses and gun: PPE is mandatory.
- ✓ Tighten to block stop. (Pipes + Pistol)

Normal stop

To make a normal stop:

- ✓ Use the air regulator to gradually decompress the pump.

Emergency shut-off valve

- ✓ The stop valve is an emergency stop valve.
- ✓ This valve must be within easy reach of the operator.

Products implemented

Given the diversity of the products implemented by the users and the impossibility of listing all the characteristics of the chemical substances, their interactions and their evolution over time SAMES KREMLIN can not be held responsible:

- ✓ The poor compatibility of materials in contact.
- ✓ inherent risks to staff and the environment.
- ✓ Wear and tear, maladjustment, malfunction of equipment or machines and the quality of the finished product.

The user will have to identify and prevent the potential dangers inherent to the implemented products such as /

- ✓ Toxic vapors.
- ✓ Fire.
- ✓ Explosions.

It will determine the risks of immediate reactions or due to repeated exposures to the staff.

SAMES KREMLIN declines any responsibility, in case of:

- ✓ Bodily or psychic injuries.
- ✓ Direct or indirect material damage due to the use of chemical substances.

3 Environment

The equipment must be installed on a horizontal, stable and flat ground (eg concrete slab).

Non-moving equipment must be fixed to the ground by suitable fasteners (spit, screws, bolts, ...) to ensure their stability during use.

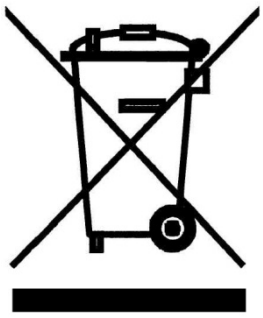
To avoid risks due to static electricity, the equipment and its components must be grounded.

- ✓ **For pumping equipment** (pumps, elevators, chassis, etc.), a 2.5 mm section wire is attached to the equipment. Use this wire to connect the equipment to the general "earth". In severe environments (mechanical protection of the ground wire, vibrations, moving equipment, etc.) where damage to the grounding function is likely, the user will have to replace the wire of 2, 5 mm supplied, by a device more adapted to its environment (wire of greater section, braid of mass, fixing by lug with eyelet ...).
- ✓ Have the earth continuity checked by a qualified electrician. If earth continuity is not assured, check terminal, wire and grounding point. Never operate the equipment without solving this problem.
- ✓ The gun must be "grounded" through the air hose or fluid hose. In the case of spraying with a pistol equipped with a bucket, the air hose must be conductive.
- ✓ The materials to be painted must also be "grounded" by means of clamps with cables or, if they are suspended, by means of hooks which must remain permanently clean.

> **Note: all objects in the work area must also be grounded.**

- ✓ **Do not store** more flammable products than necessary inside the work area.
- ✓ These products must be stored in **approved containers** and grounded.
- ✓ Use only grounded **metal buckets** for the use of rinse solvents.
- ✓ **Cartons and papers are to be banned**. Indeed they are very bad conductors, even insulators.

Material marking



Each device is equipped with a sign plate with the name of the manufacturer, the reference of the device, important information for the use of the device (pressure, power, ...) and sometimes against the pictogram shown below.

The equipment is designed and manufactured with high quality materials and components that can be recycled and reused.

European Directive 2012/19 / EU applies to all devices marked with this logo (crossed out bin). Find out about the collection systems available for electrical and electronic devices.

Comply with the rules in your area and **do not dispose of old appliances with household waste.** Proper disposal of this old device will help prevent adverse effects on the environment and human health.

4 Presentation of the material

Context of use

The high viscosity Rexson pumps are designed to meet the required performance and lifetime requirements:

- ✓ Very high performance pump for maximum energy savings.
- ✓ Optimized design: simple and fast maintenance.

The use of equipment is most often in the workshop or outdoors on site.

4.1 Description of the main elements of the motor

Motor 146350000
9200-2

Expected use

This air motor is designed to be coupled to the hydraulics recommended by SAMES KREMLIN in order to obtain the required ratio and flow rate.

Functional description

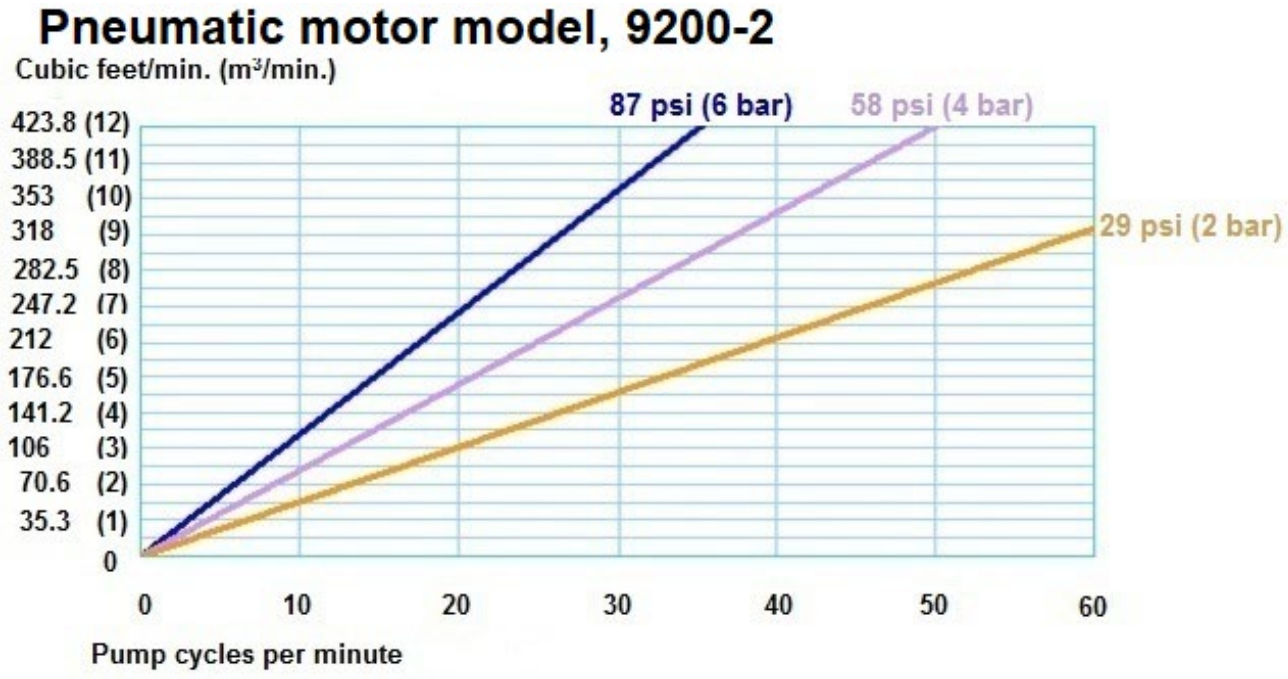
SAMES KREMLIN air motors with straight reciprocating movements are operated by compressed air supply. The reversing system is carried out via of:

- ✓ 2 distributors, model 4/2,
- ✓ two switches,
- ✓ a distributor, model 5/2.

Air consumption

The increase of the motor supply air pressure (via the air regulator) leads to an increase of the number of pump piston returns/mn (cycles) which leads to a flow rate increase and to an outlet pressure increase of the pumped material.

AIR CONSUMPTION OF THE MOTORS	
Pressure of the motors at 6 bar / 87 psi	
Serie	**daN**
9200-2	9000



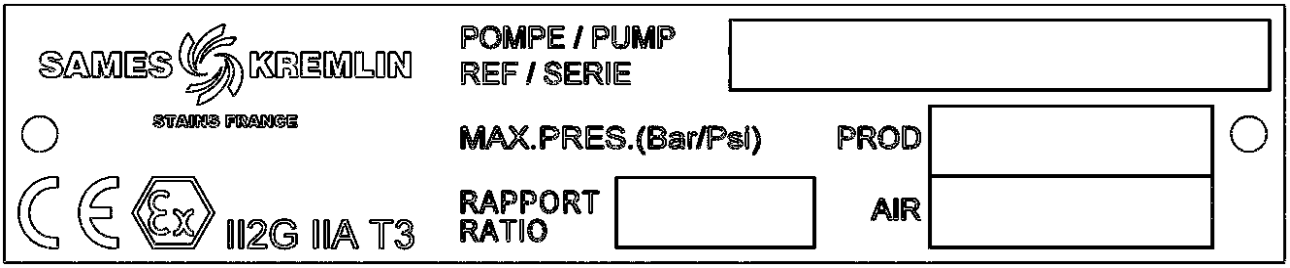
5 Identification

5.1 Description of the marking of the plate

Principles

This equipment complies with the following provisions:

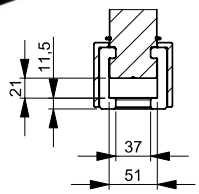
- ✓ ATEX Directive (2014/34 / Ex II 2 G - Group II, Category 2, Gas).

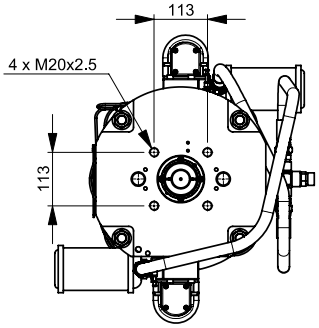


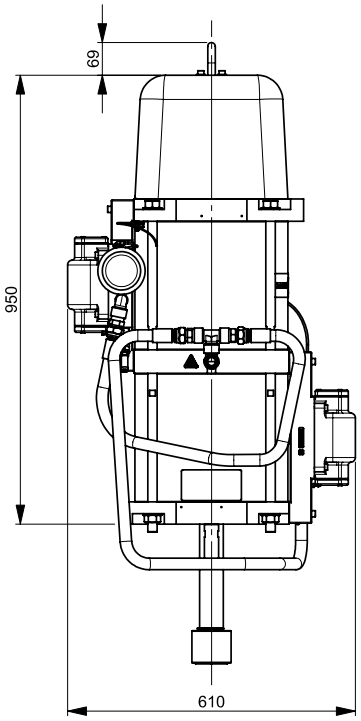
		Description
Sigle SAMES KREMLIN **STAINS FRANCE**		Manufacturer's mark
POMPE / PUMP **REF / SERIE**		Pump reference and serial number. The first two digits indicate the year of manufacture.
MAX. PRES. (Bar/Psi)	**PROD**	Maximum product pressure (Bar/Psi)
	AIR	Maximum air pressure (Bar/Psi)
RAPPORT / RATIO		Pump pressure ratio
CE		**EC:** European conformity
II2G		**:** Use in explosive area **II** : group II **2** : category 2 Surface material intended for an environment in which explosive atmospheres due to gases, vapors, mists are likely to occasionally occur during normal operation. **G** : gas
IIA T3		**IIA** : Reference gas for equipment qualification **T3** : Maximum surface temperature 200 ° C / 392°F

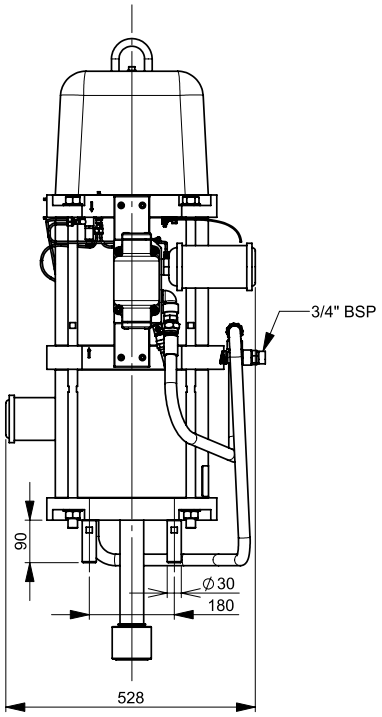
6 Equipment plans

Motor 9200-2









7 Technical specifications and performance

7.1 Technical specifications

Motor 9200-2

Technical specifications	
Cylinder bore Ø	310 mm / 12.2"
Practical stroke (mm / ")	200 mm / 7.9"
Maximum stroke	212 mm / 8.3"
Air supply Ø	3/4" F BSP
Muffler	1" F BSP
Noise level (average)	76,5 dB
Weight	122 Kg / 269 lbs
Air supply	6 bar / 87 psi
Tapping of the lower flange	M18

8 Installation

Connections of sub-assemblies

Pneumatic supply

Any restriction in the supply and/or exhaust air to the engine may reduce its performance. The air supply is 6 bar / 87 psi max.

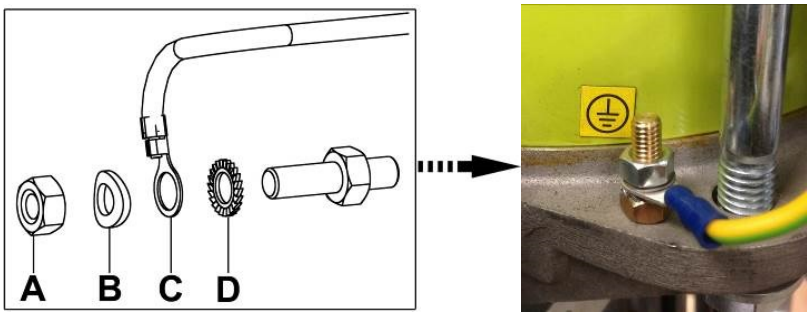
It is imperative to comply with an engine/hydraulic combination provided by SAMES KREMLIN.

Motor label

Grounding

In combination with a air motor, the hydraulics will be earthed via the earth cable of this motor.

This earth cable must be connected to a safe earth.



- ✓ Unscrew the lock-nut (A), remove the washer (B), insert the lug (C) with its ground wire (D) (minimum section : 1,5 mm^2) between the washer (B) and the washer (D).
- ✓ Tighten the lock-nut. Connect the other end of the wire to a real "ground", according to the national rules.
- ✓ A qualified electrician must check the ground continuity.
- ✓ If the continuity is not correct, check the terminal, the electric wire, the U bolt and the ground point.
- ✓ Never operate pump without revolving the trouble.

Connection to compressed air supply

Set the pressure at the air regulator.

For proper operation and long life of the engine, the supply air must be filtered and not lubricated (see § Maintenance).

- ✓ It is imperative to install a decompression valve after the air regulator and as close as possible to the engine inlet in order to follow the decompression procedure (See the pump manual § Operating problems).
- ✓ The engine air supply hose must have an inside diameter of at least 19 mm.
- ✓ The engines are tested before shipping. Nevertheless, before coupling the motor to a pump, it is necessary to operate it under vacuum at a pressure of 1 Bar maximum for a few minutes.

Proceed as follows:

- ✓ Couple the motor with the recommended pump.
- ✓ Connect the main air supply to the engine.

8.1 Storage

Pump

Place the equipment away from moisture after closing the various air inlets and various openings (plugs).

Storage before installation:

- ✓ Storage ambient temperature: 0 / +50 ° C.
- ✓ Protect the unit against dust, water runoff, moisture and shocks.

Storage after installation:

- ✓ Protect the unit against dust, water runoff, moisture and shocks.

8.2 Handling

Motor

The ring on the top of the cover is intended for lifting the motor and its pump and must not be used for handling a complete machine under any circumstances.

Never submerge the motor.

9 Commissioning

Motor

Engines are tested before shipping.

Nevertheless, before coupling the motor to a pump, it is necessary to operate it under vacuum at a pressure of 1 Bar / 14.5 psi maximum for a few minutes.

Proceed as follows:

- ✓ Couple the motor with the recommended pump.

10 Using the product

10.1 Safety in production

Guards (motor cover, coupling guard, housings, ...) are set up for safe use of the equipment.

The manufacturer can not be held responsible in case of bodily injury as well as breakdowns and / or damage of the material resulting from the destruction, the occultation or the total or partial removal of the protectors.

10.2 Diagnostic help / Troubleshooting guide

Operating disorders

Before any intervention on a pump, it is imperative to carry out a general procedure of decompression and purge.

In order to avoid the risk of personal injury, product injections, injuries caused by moving parts or arcing, it is essential to follow the following procedure before any intervention during system shutdown, assembly, cleaning or changing the nozzle.

- ✓ Lock the guns (valve, valve, etc.) to OFF or OFF.
- ✓ Shut off the oil supply via the pressure relief valve to remove residual air from the engine.
- ✓ Unlock the gun (valve, valve ...).
- ✓ Bring the gun (valve, tap ...) to a metal bucket to collect the product. Hold it against the wall of this bucket to avoid interrupting the continuity of the earthing (use the wire with stirrup to put the metal bucket to earth).
- ✓ Open the pump bleed valve and collect the product in a well-grounded metal bucket.
- ✓ Lock the gun (valve, valve) to OFF or OFF.
- ✓ Open the pump bleed valve and collect the product in a well-grounded metal bucket.
- ✓ Leave this purge valve open during the whole period of the operation.

Check the conformity of the wiring before intervention.

Ice formation

When the compressed air is exhausted, the sudden drop in pressure causes the air temperature to drop below 0°c. Any liquid or water vapour then turns to ice.

Higher air pressures accumulate large amounts of air and water vapour with each cycle and create more expansion and ice. Faster cycles also accumulate ice and cause the engine temperature to drop more quickly.

Warm, humid climates can increase ice formation due to higher humidity levels. Ambient temperatures close to 0°c allow engine parts to fall below freezing more easily.

To minimize ice formation :

- Lower the dew point of the compressed air. Use a refrigerated air dryer, coalescing filter or desiccant filter to lower the water vapor content of the air.

- Increase the temperature of the compressed air. Warmer air entering helps engine parts stay above 0°c. Compressed air, especially at these volumes, is hot when compressed. Keep the air warm or stay close to the compressor to reduce ice formation.

10.3 Possible symptoms of faults / Causes of faults / Remedy to be applied - fast operation

Remedies motor part

Perform a decompression procedure before any intervention:

- ✓ shut off the air supply with the pressure relief valve in order to evacuate residual air from the engine,
- ✓ decompress the circuit produced by opening the purge valve of the pump or the gun.

Description	Causes	Remedies
Engine piston lock	Defective switch	Adjust or replace the switch (s)
	Defective control distributor	Check operation, replace if necessary
	Defective power distributor	Check operation, replace if necessary
Decrease of product flow	Escape leak	Check the piston seals, change them if necessary
		Check the distributor seals, change them if necessary
	Silencer clogged	Clean or change the muffler
Large exhaust leak	Improper installation of the distributor base gasket	Reassemble the seal in the correct direction
	Defective power distributor	Check operation, replace if necessary.

11 Maintenance

11.1 Preventive maintenance plan

Attention

Before any intervention, it is imperative to follow the decompression procedure and the safety instructions.

During prolonged shutdown, stop the pump when the piston is in the down position.

Motor part

Attention

The motor is subject to the ATEX directive and must not be modified under any circumstances.

Failure to comply with this recommendation does not engage our responsibility.

The engine is designed to keep maintenance to a minimum (filtered supply air).

It is advisable to provide preventive maintenance after 12 months of operation.

Check:

- ✓ The clogging of the air filter.
- ✓ The absence of air leaks.
- ✓ The absence of breaks in the air hoses.
- ✓ The correct snapping of the connections / hoses.
- ✓ The general condition of the supply hoses (rubber, crimping), regulators and manometers.
- ✓ The tightening of the components.
- ✓ The condition of the silencer (s).
- ✓ The fixing of the hood.
- ✓ The correct operation of the safety valve.
- ✓ The state of the decompression valve.

Greases and glues

Index	Instruction	Description	Part number
A 1	PTFE Grease (Teflon)	'TECHNI LUB' grease (10 ml)	560.440.101
A 5	High-performance lubricating grease	Grease box Kluber petamo GHY 133N (1 kg / 2.204 lb))	560.440.005
C 1	Medium strength Aneorobic Pipe sealant	Loctite 5772 (50 ml / 0.013 US gal)	554.180.015
C 2	Low strength - Aneorobic Adhesive	Loctite 222 (50 ml / 0.013 US gal)	554.180.010
C 3	High strength - Aneorobic Adhesive	Loctite 270 (50 ml / 0.013 US gal)	554.180.004
S1	Tightening torque: 100Nm		
S2	Tightening torque: 250Nm		

This maintenance consists of replacing parts with cuts or wear and cleaning organs with compatible products without using abrasive materials that could damage them.
The O-rings are mounted with a special "pneumatic" grease.

Make sure that none of them get damaged, cutting one of them may cause the engine to malfunction.

12 Disassembly / Reassembly Operation

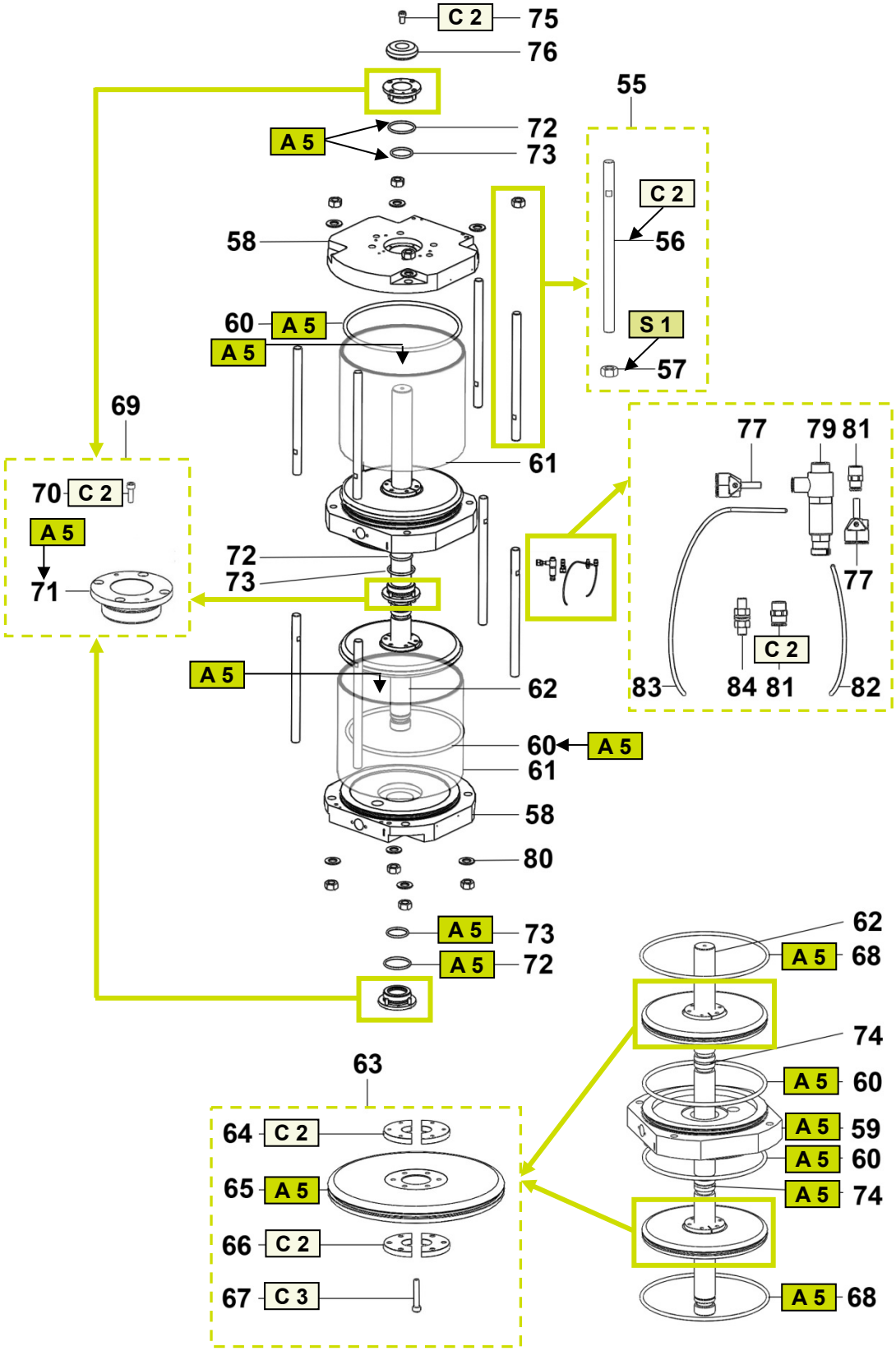
Attention

Before any intervention, it is imperative to follow the decompression procedure and the safety instructions.

12.1 Disassembling the 9200-2 motor

This maintenance consists of replacing parts with cuts or wear and tear and cleaning the components with compatible products without using abrasive materials that could damage them.

The O-rings are fitted with a "special pneumatic" grease. Make sure that none of them are damaged, as cutting one of them may cause the motor to malfunction.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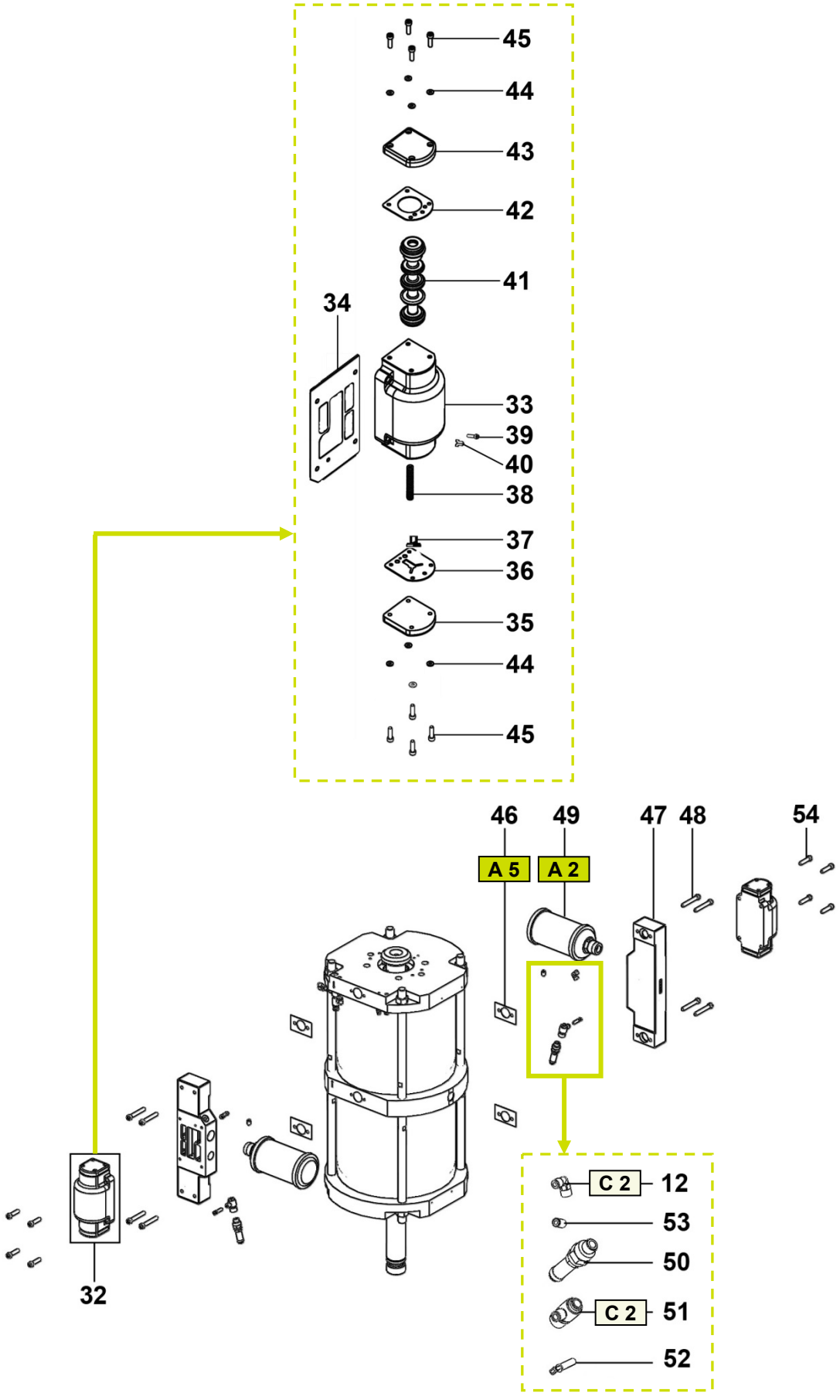
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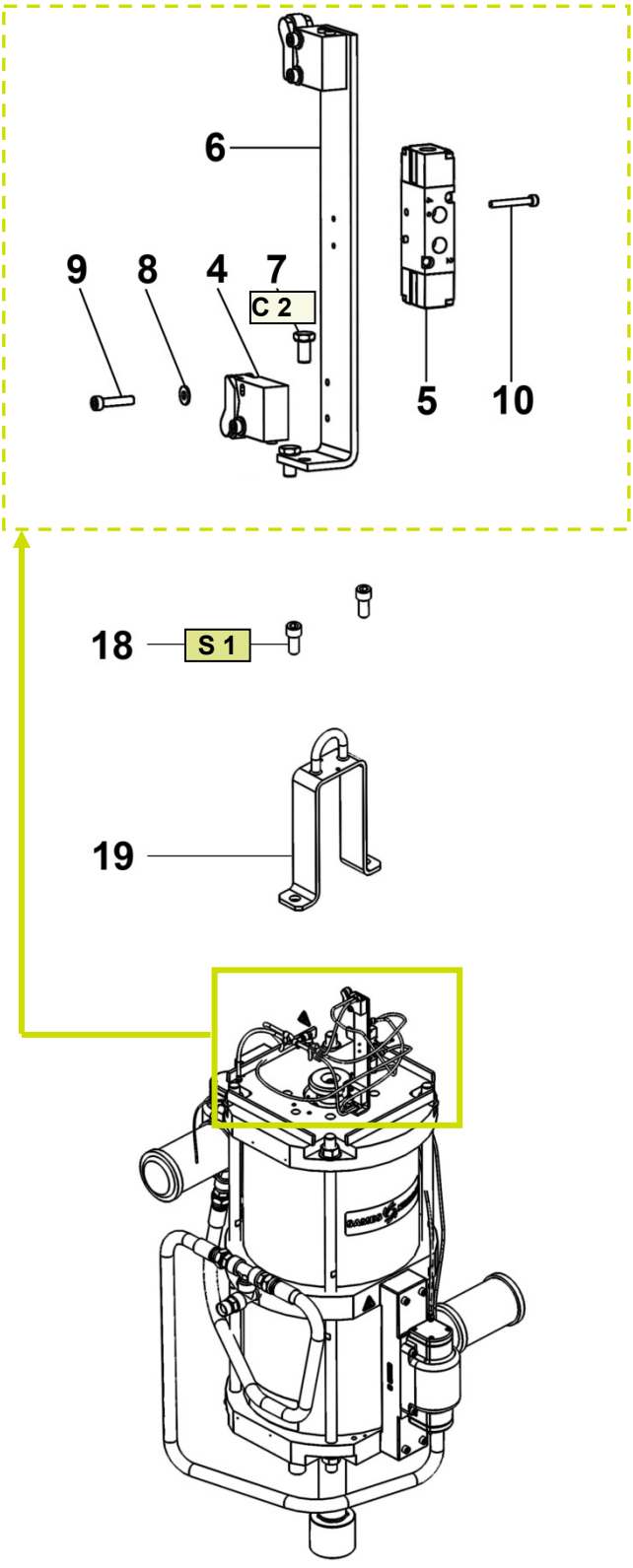
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S 1
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Dismantling the grounding cable

- ✓ Hold the earthing terminal with a 10mm open-end wrench and unscrew the top nut with the other wrench.
- ✓ Manually remove the washers as well as the grounding cable.

Tools needed **10 x2** 

Disassembly of the motor and of the fluid section

- ✓ Adjust the air regulator to 0 bar / 0 psi,
- ✓ Shut off the air supply from the motor, then carry out the pressure release and drain instructions,
- ✓ Take off the stop ring (27),
- ✓ Lift the closing ring (29),
- ✓ Take off the two half bushes (28) and put aside the closing ring,
- ✓ Remove the fixing screws of the motor,
- ✓ Put aside the motor.

Removal of mufflers (49)

- ✓ Disconnect the hoses (31) to the mufflers (49),
- ✓ Unscrew the mufflers (49).
- ✓ Reassemble in reverse order

Le remontage s'effectue en ordre inverse

Dismantling the safety valve (50)

- ✓ Unscrew the safety valve (50) using a 20mm open-end wrench (31).

Reassemble in reverse order, having applied anaerobic low thread locking adhesive (ex loctite 222) to the threads of the safety valve (50).

Tools needed **20**

Disassembling the distributors (32)

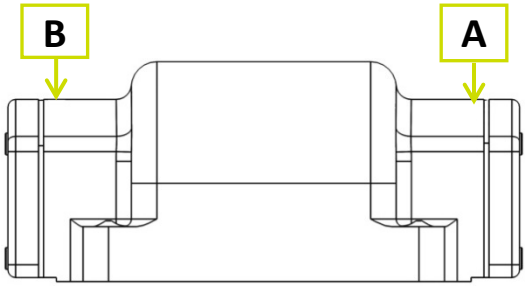
- ✓ Unscrew the 2 screws (1) with a 6 mm Allen key and remove the washers (2),
- ✓ Remove cover (3) and disconnect hoses (13) and (15),
- ✓ Unscrew the 4 screws (54) with a 6 mm Allen key, remove the distributor (32) and take out the base seal (34),
- ✓ Unscrew the 4 stainless steel screws (48) with a 6 mm Allen key and remove the distributor base (47),
- ✓ Recover the 2 base seals (46),

Tools needed

Reassembly

Reassembly is carried out in reverse order, paying attention to the following points:

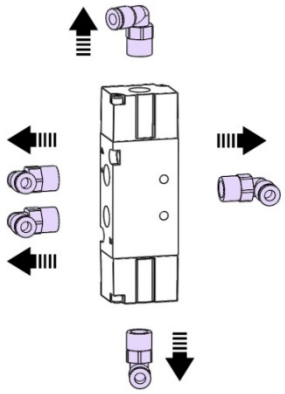
- ✓ When replacing the switches (4), push them away from the piston rod and lock the screws.
- ✓ The rollers must be flush with the piston rod.
- ✓ Re-wire the elements according to the pneumatic diagram.
- ✓ Make sure that the base seal (34) is aligned with the marks A and B on the distributor (32).



Tools needed

Disassembly of valve (5) and switches (4)

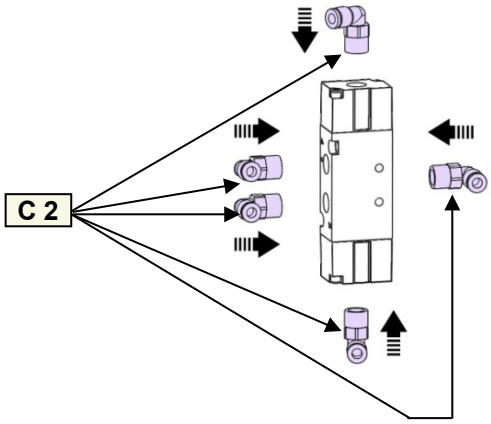
- ✓ Unscrew the 2 screws (18) with a 14 mm Allen key and remove the bracket (19),
- ✓ Unscrew the screws (7) with a 10 mm open-end wrench and remove the valve/switch assembly,
- ✓ Unscrew the 2 screws (10) with a 2.5 mm Allen key and remove the distributor assembly (5),
- ✓ Unscrew the screws (9) with a 2.5 mm Allen key and remove the switches (4),
- ✓ Unscrew the elbows (12) with a 10 mm open-end wrench.



Reassembly

Reassembly is carried out in reverse order, paying attention to the following points:

- ✓ - In step 4/ : Coat the elbows (53) with "Loctite n° 222" glue.



Tools needed

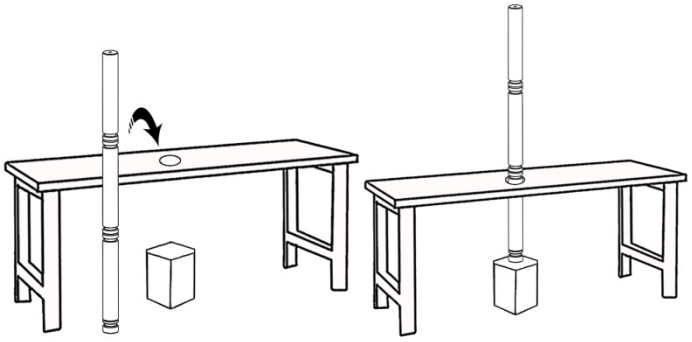
Replacement of bearing seals and upper and lower piston flange seals

- ✓ Replacement of bearing seals and upper and lower piston flange seals
- ✓ Unscrew the 2 screws (1) with a 6 mm Allen key and remove the washers (2),
- ✓ Remove the cover (3) and disconnect the hoses (13 & 15),
- ✓ Unscrew and remove the connections (17, 77, 81), the elbow (20) and the pressure reducing valve (79),
- ✓ Disconnect the hoses (22 and 25),
- ✓ Remove connections (23 and 24),
- ✓ Unscrew the screws (48) and remove the distributor base (47), valve (32), and muffler (49) assembly,
- ✓ Remove the seals (46),
- ✓ Spread out and lift the ring (27),
- ✓ Lift the locking ring (29),
- ✓ Remove the 2 half-bushes (28),
- ✓ Remove retaining ring (27) and locking ring (29),
- ✓ Using a suitable lifting device, place the motor in a lying position on a workbench,
- ✓ Unscrew the 2 screws (18) with a 14 mm Allen key and remove the bracket (19),
- ✓ Unscrew the screw (75) and remove the cam (76),
- ✓ Unscrew the 2 screws (7) with a 10 mm open-end wrench and remove the valve assembly (5),
- ✓ Unscrew the 8 nuts (57) with a 30 mm open-end wrench and remove the 8 washers (80),
- ✓ Remove the flanges (58),
- ✓ Unscrew the 4 screws (70) with a 5 mm Allen key from each bearing (71),
- ✓ Check the flange seals (60) and replace them if necessary,
- ✓ Check the bearing seals (72 and 73) and replace them if necessary,
- ✓ Remove the cylinders (61),

- ✓ Remove the 8 tie rods (56) with a 16 mm open-end wrench,
- ✓ Unscrew the 6 screws (67) of each stop flange (66) and the counter flanges (64),
- ✓ Remove the stop flanges (66) and counter flanges (64),
- ✓ Check the piston seals (68) and replace them if necessary,
- ✓ Unscrew the 4 screws (70) with a 5 mm Allen key and remove the central bearing (71),
- ✓ Check the centre flange seals (60) and replace them if necessary,
- ✓ Check seals (74), replace if necessary.

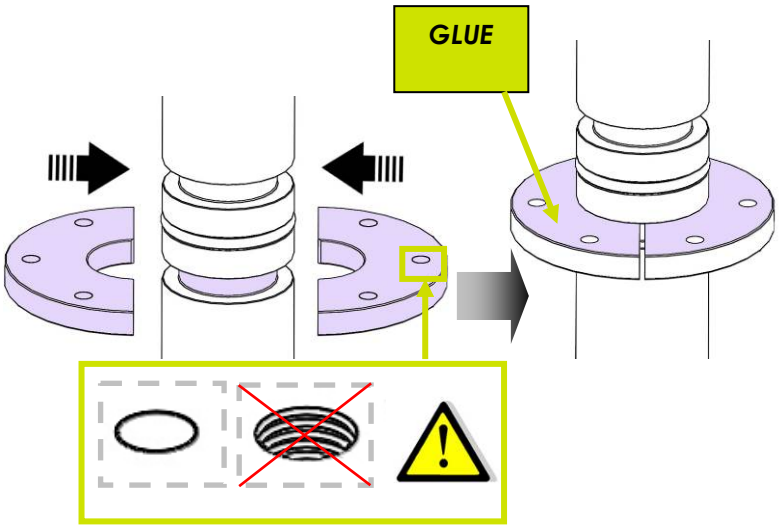
Reassembly

- ✓ Grease the seals (74) and place them in their housing,
- ✓ Hold the piston rod (62) (see illustration below),



- ✓ Grease the bearing seals (72 and 73),
- ✓ Insert the seals (72 and 73) into the center bearing (71),
- ✓ Insert the centre bearing (71) into the flange (59),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the screws (70),
- ✓ Screw the screws (70) into the flange (59),
- ✓ Grease and insert the seals (60) into the flange (59),
- ✓ Grease the inside of the central bearing (71),
- ✓ Insert the flange onto the piston rod (62),
- ✓ Position the stop flange halves without threaded holes (66) in the piston rod housing (62),

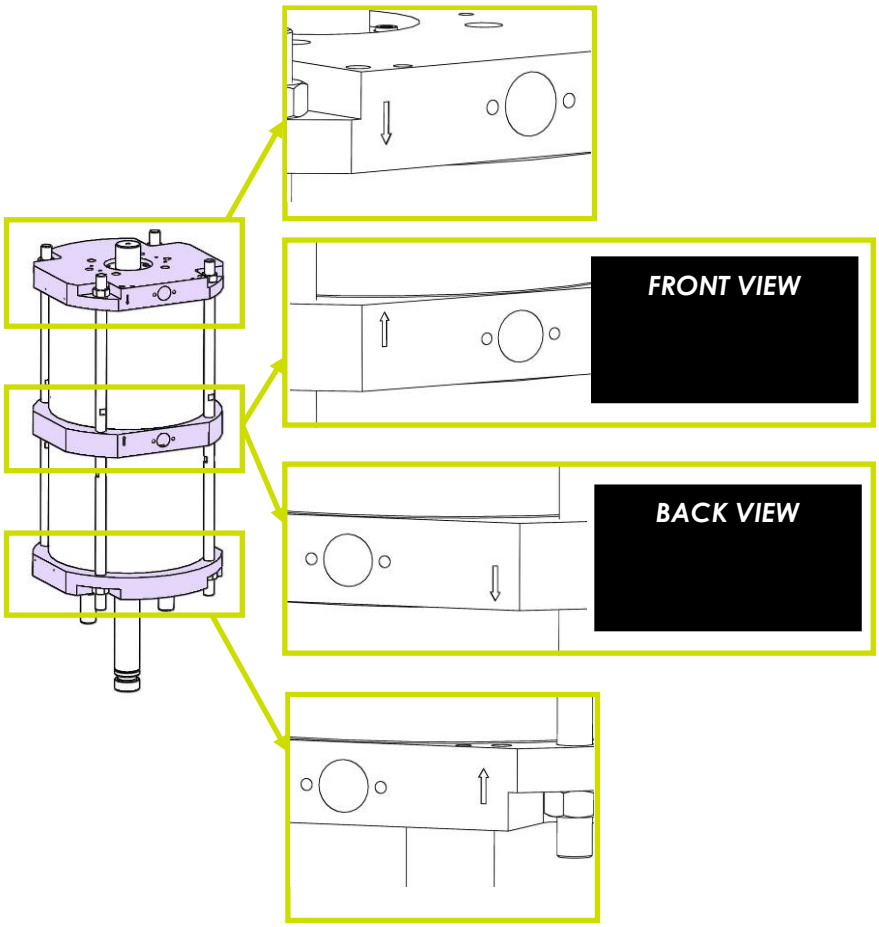
- ✓ Apply glue to the stop flange halves without threaded holes (66),



- ✓ Grease and insert the upper piston (65) onto the piston rod (62),
- ✓ Put glue in the centre of the piston (65),
- ✓ Apply glue (e.g. Loctite 270) to the threads of 2 screws (67),
- ✓ Fit 1 half stop flange (66),
- ✓ Insert and pre-tighten 1 screw (67) with a 6 mm Allen key,
- ✓ Insert the 2nd half stop flange (66),
- ✓ Insert and pre-tighten 1 screw (67) with a 6 mm Allen key,
- ✓ Position the counterflange halves (64) opposite the holes in the center of the piston (65) and the stop flange (66),
- ✓ Apply glue (e.g. Loctite 270) to the threads of the remaining 4 screws (67),
- ✓ Screw the 4 Screws (67) with a 6 mm Allen key into the locking flange halves (66),
- ✓ Finish tightening the 2 1st screws (67),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the 4 tie rods (56),
- ✓ Screw the 4 tie rods (56) onto the flange (59) using a 16mm open-end wrench,
- ✓ Grease and place the seal (68) on the piston (65),

- ✓ Grease the inside of the cylinder (61) and position it on the flange (59),
- ✓ Grease the bearing seals (72 and 73),
- ✓ Insert the seals (72 and 73) into the bearing (71),
- ✓ Grease the inside of the end shield (58)
- ✓ Insert the bearing (71) into the end shield (58),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the screws (70),
- ✓ Screw the screws (70) into the bearing (71),
- ✓ Position the end plates (58) on the 4 tie rods (56),

✓ Match the arrows present as shown below,



✓ Place the 4 washers (80) and screw on the 4 nuts (57) using a 30 mm open-end wrench,

✓ Reassemble the bracket (19) and screw in the 2 screws (18) with a 14 mm Allen key,

✓ Using a suitable lifting device, place the motor in a lying position on a workbench,

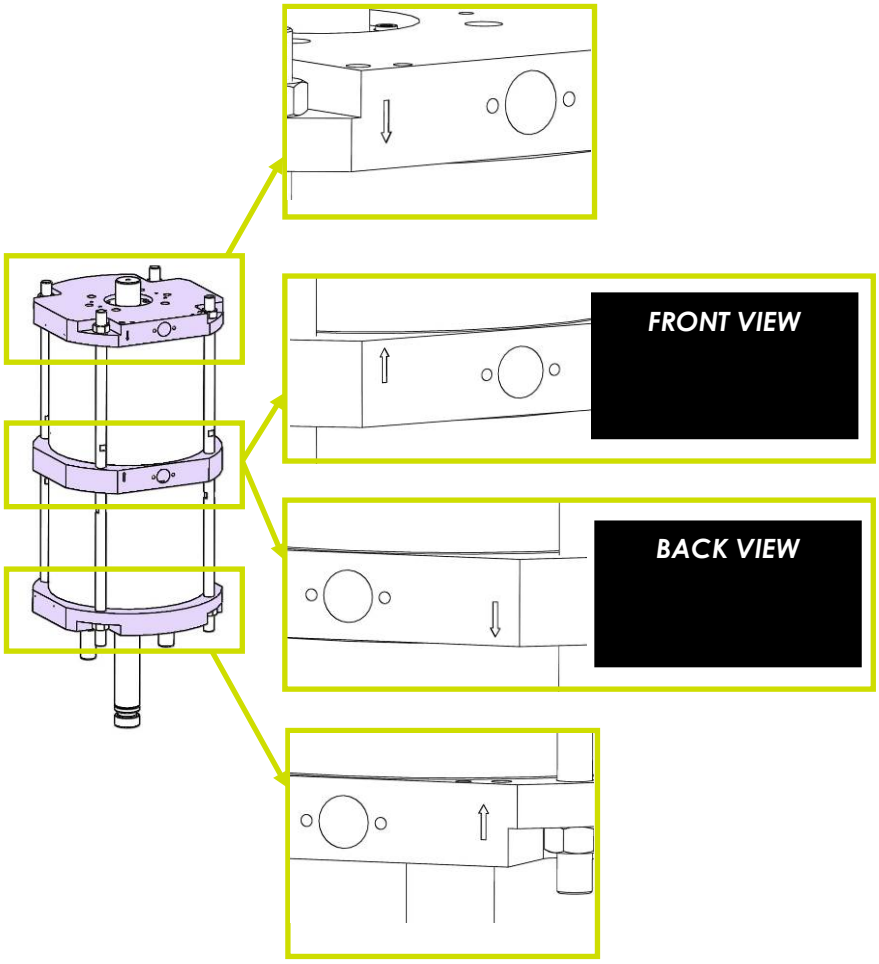
✓ Position the stop flange halves with threaded holes (64) in the piston rod housing (62),

✓ Put glue in the centre of the piston (65),

✓ Grease and insert the upper piston (65) onto the piston rod (62),

- ✓ Insert 1 screw (67) in each flange half using a 6 mm Allen key,
- ✓ Apply glue to the stop flange halves without threaded holes (66),
- ✓ Position the flange halves (66) on the piston (65),
- ✓ Remove the 2 previously inserted screws with a 6 mm Allen key,
- ✓ Apply glue (e.g. Loctite 222) to the threads of the 6 screws (70),
- ✓ Position the 6 screws (70) in the unthreaded flange halves (66),
- ✓ Tighten the 6 screws (70),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the 4 tie rods (56),
- ✓ Apply grease to the seal (68),
- ✓ Insert the seal (68) into the piston (65),
- ✓ Put grease in the cylinder (60),
- ✓ Insert the cylinder (60),
- ✓ Grease the seals (72 and 73),
- ✓ Insert the seals into the bearing (71),
- ✓ Grease the centre of the end shield (58)
- ✓ Fit the bearing (71),
- ✓ Apply glue (e.g. Loctite 222) to the 4 screws (70),
- ✓ Tighten the screws (70) with a 5 mm Allen key,
- ✓ Grease the gasket (60),
- ✓ Insert the seals (60) into the end shield (58)

- ✓ Match the arrows present as shown below,



- ✓ Place the 4 washers (80) and screw on the 4 nuts (57) using a 30 mm open-end wrench,
- ✓ Insert the locking ring (27) and the closing ring (29) on the piston rod (62),
- ✓ Insert the 2 half-shells (28),
- ✓ Lower the locking ring (29) onto the 2 half-shells (28),
- ✓ Insert the locking ring (27) in its groove,
- ✓ Position the cam (76) on the piston rod (62),
- ✓ Apply adhesive (e.g. Loctite 222) to the thread of the screw (75),
- ✓ Screw in the screw (75) with an 8 mm Allen key,
- ✓ Position the bracket (19) on the flange (58),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the 2 screws (18),

- ✓ Screw in the 2 screws (18) with a 6 mm Allen key,
- ✓ Using a suitable lifting device, bring the motor into a vertical position,
- ✓ Position the valve bracket assembly (6),
- ✓ Apply glue (e.g. Loctite 222) to the threads of the 2 screws (7),
- ✓ Tighten the 2 screws (7) with a 10 mm open-end wrench,
- ✓ Grease the seals (46),
- ✓ Position the distributor base assemblies (47),
- ✓ Tighten the 8 screws (48) with a 6 mm Allen key,
- ✓ Apply adhesive (e.g. Loctite 222) to the fittings (23 & 24),
- ✓ Assemble the fittings (23 & 24),
- ✓ Reconnect the hoses (22 & 25),
- ✓ Position and screw on the connections (17, 77, 81), the elbow (20) and the pressure reducing valve (79),
- ✓ Connect the hoses (13 &15),
- ✓ Position the cover (3),
- ✓ Position the washers (2) and screw in the 2 screws (1) with a 6 mm Allen key.

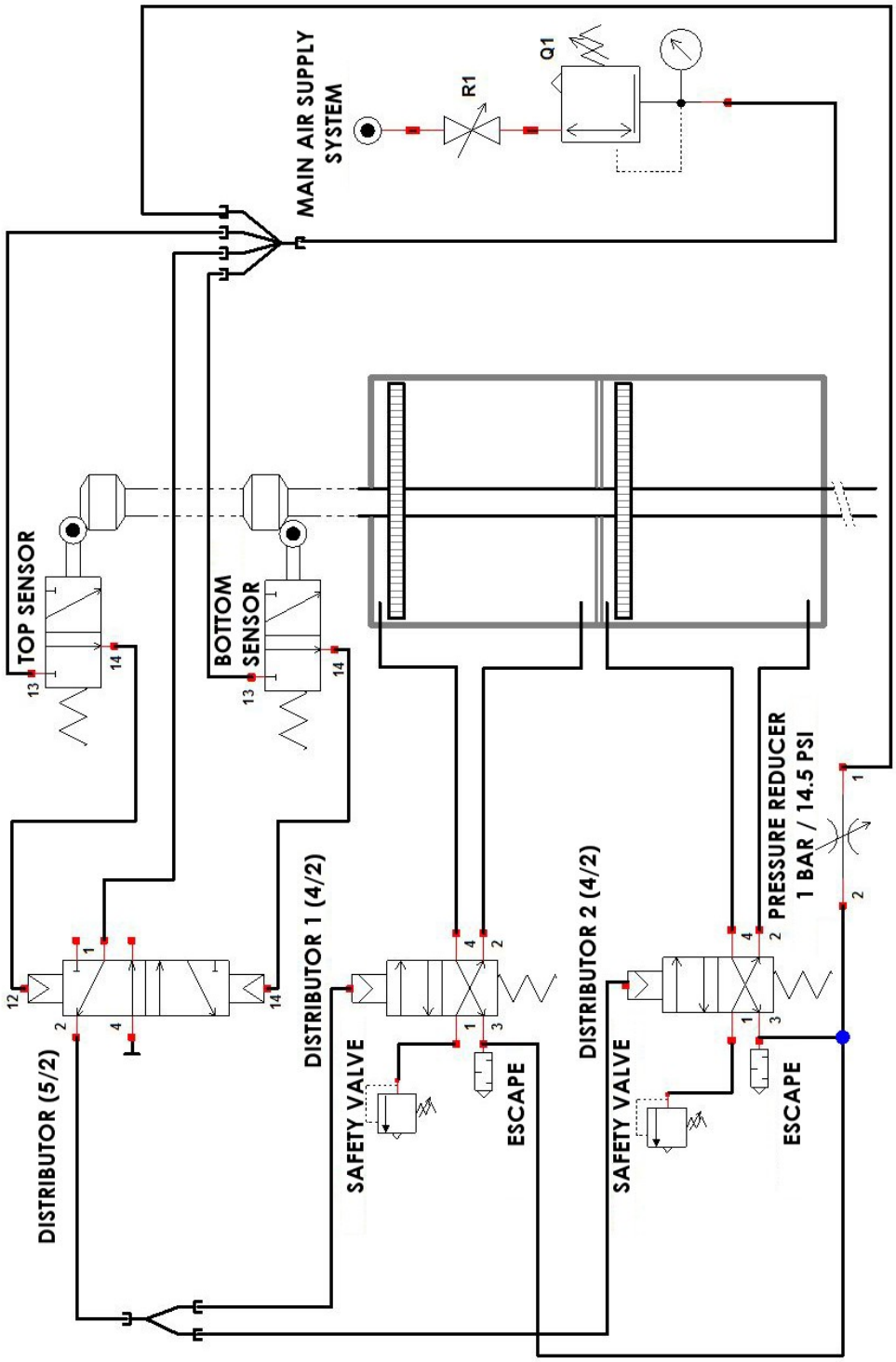
Reassembly is carried out in reverse order, paying attention to the following points:

- ✓ <u>In step 5/:</u> Coat the counter flange (2 parts) (18) and screws (22) with "LOCTITE UNIJOINT N° 518" paste to ensure piston/rod seal.
- ✓ <u>At step 8/:</u> Reassemble the floating piston seal, (seal rep.20). First place the seal (coated with a little " Pneumatic Special Grease ") in the piston groove. Position the rod/piston/seal assembly on top of the cylinder. Then press the entire circumference of the seal until the rod/piston/seal assembly slides into the cylinder.

Tools needed

8 

13 Pneumatic diagram



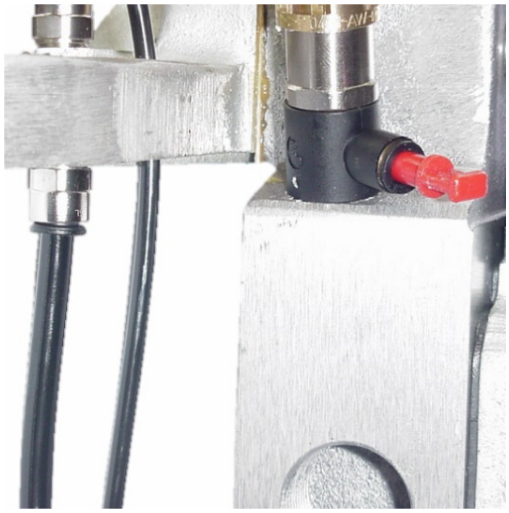
Impulse pickup

The pulse pick-up provides a pneumatic signal that indicates the direction of operation of the motor. When the pulse pick-up is at a pressure equal to the pilot pressure, this means that the motor piston is in the upward phase. When the impulse pick-up is at atmosphere, the motor is in a descending phase. This pulse pick-up is generally used to count the number of reversals of the engine and allows the addition of an anti runaway system.

Standard cabling

All factory assembled motors are wired in **standard control**. This means that the air motor reversing system (called pilot) is connected to the same pressure as the main motor supply. In this case, the starting threshold of the motor is approximately 1.5 bar / 21.7 psi.

Direct piloting

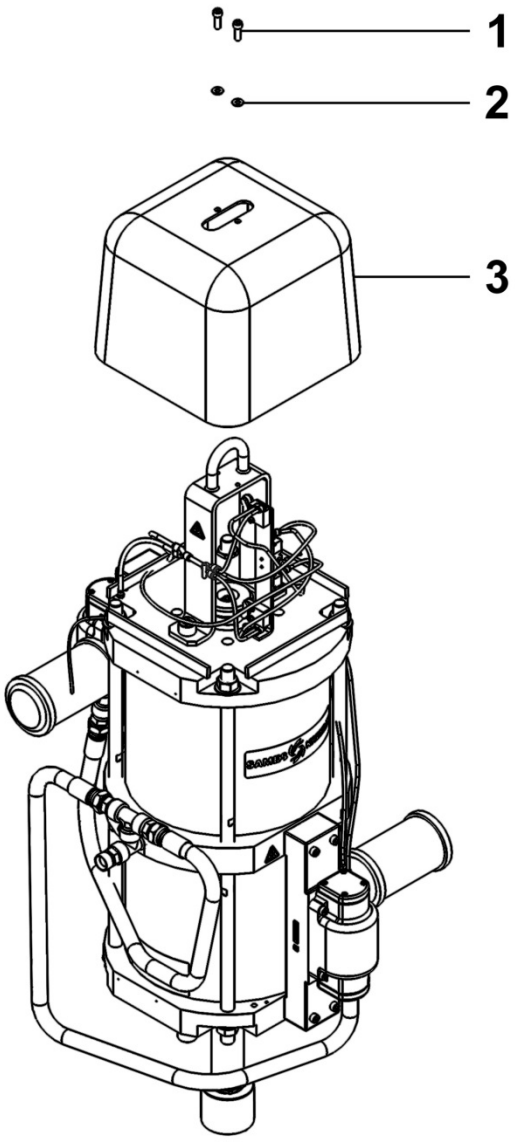


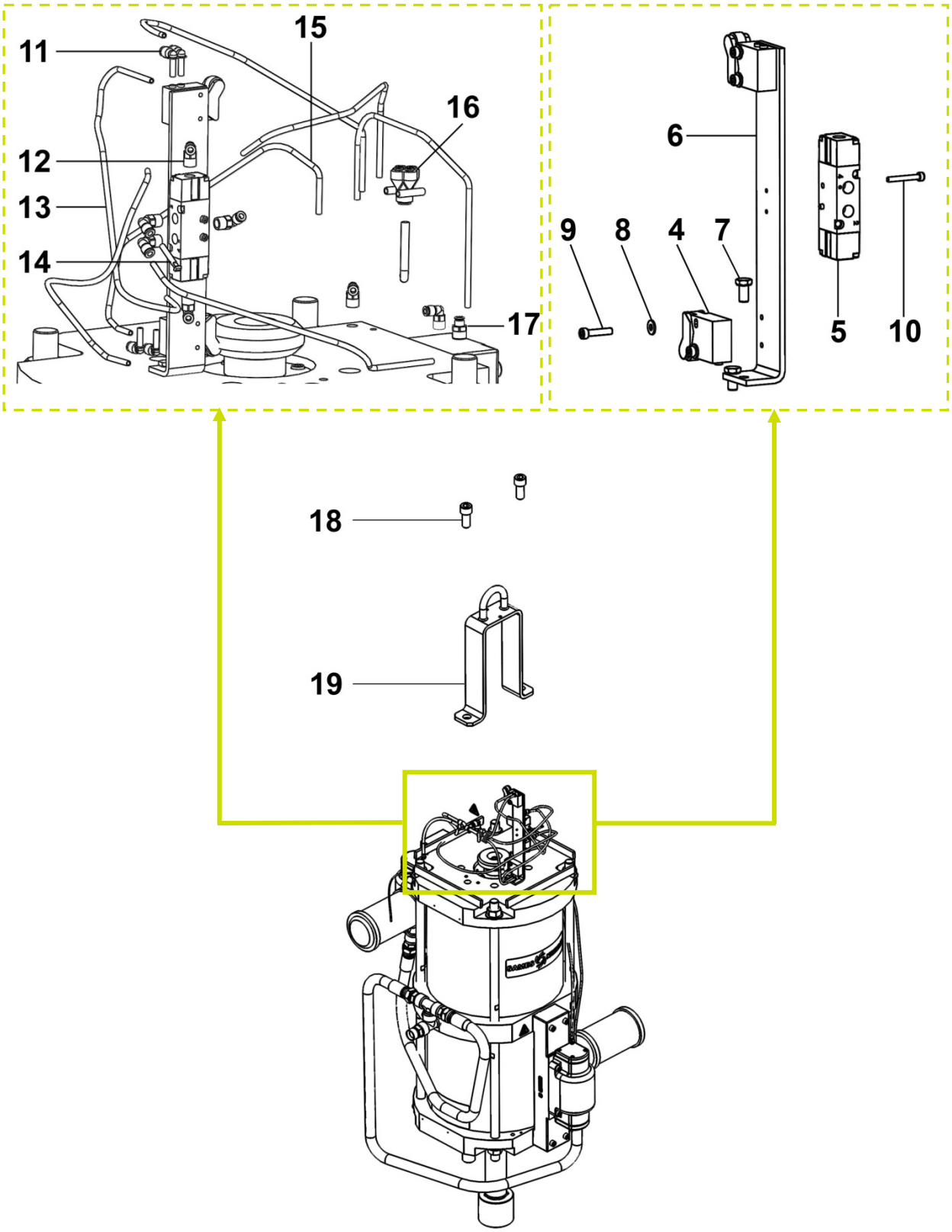
Direct piloting allows the user to connect the air motor reversing system (called a pilot) to an independent source of pressure. This allows the user to start the motor at a supply pressure of approximately 0.5 bar or to use the pilot pressure to control the starting and stopping of the motor.

14 Spare parts

Use only genuine SAMES KREMLIN accessories and spare parts designed to withstand the pump's operating pressures.

14.1 Motor model 9200-2

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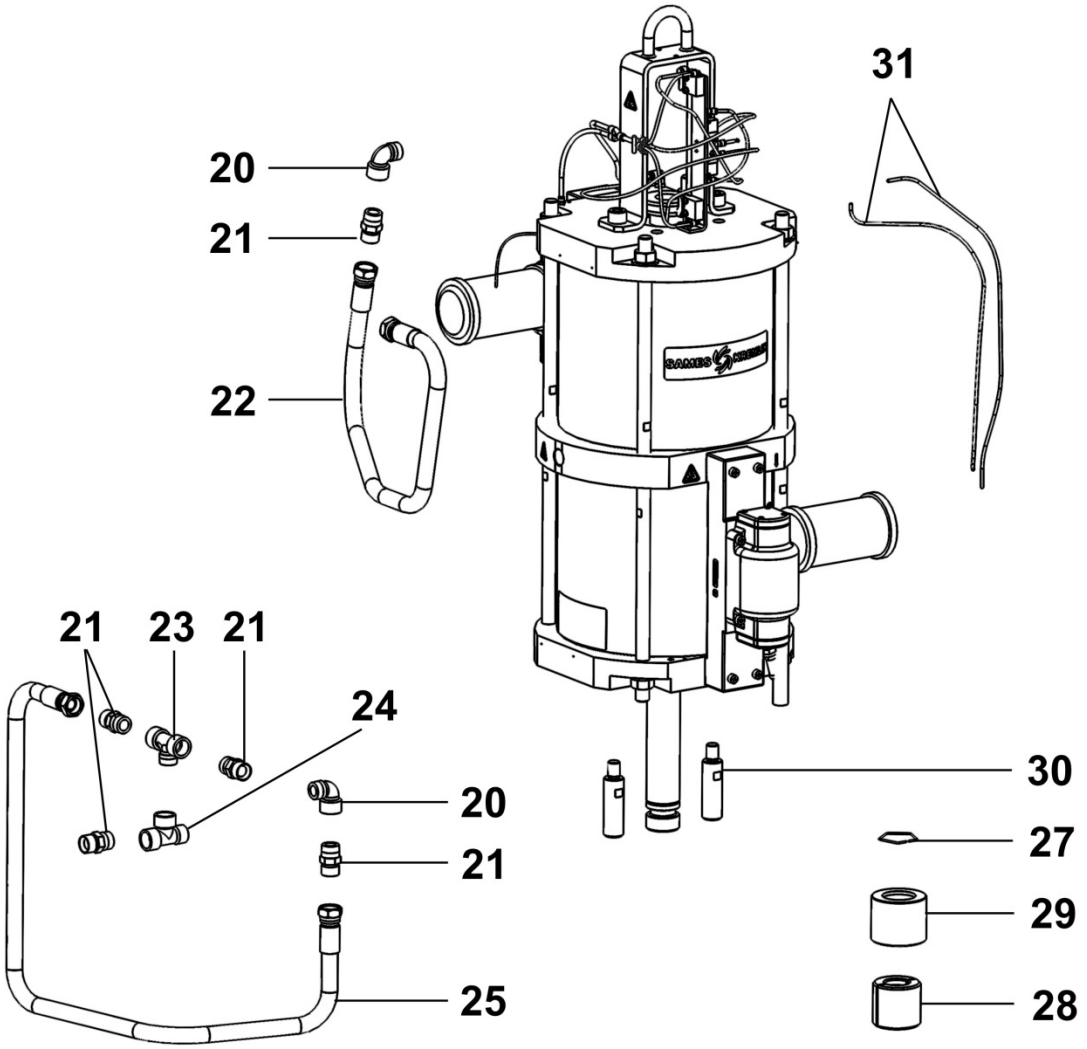
Ind	#References	Description	Qty	Spare part level**
1	88 152	Screw, CHc M 8x25	4	
2	963 040 019	Washer, MU 8	2	
3	046 350 018	Cover	1	
*	**146 320 094**	**Pneumatic kit**	1	**2**
*4	151 800 002	▪ Switch (x 2)	1	
*5	91 424	▪ Distributor, 5/2 1/8"	1	
6	209 354	Bracket	1	
7	933 011 170	Screw, HM 6x12	2	
8	963 040 012	Washer, MU 4	4	
9	933 151 273	Screw, CHc M 4x20	4	
10	932 151 326	Screw, CHc M 3x25	2	
11	N.S. (905 120 983)	Elbow, MF T 2x4	4	
12	905 120 926	Elbow, M 1/8" G	8	
13	N.S. (76 764)	Hose PU 2,5x4 (lg. 3,10 m)	1	
14	905 120 937	Tube plug	1	
15	N.S. (76 607)	Hose PU 4x6 (lg. 2 m)	1	
16	552 226	Fitting, Y T 4x6	1	
17	N.S.	Fitting, droit 1/4" G	1	
18	930 151 507	Screw, CHc M 18x40	2	
19	046 350 019	U-Bolt	1	

*** Recommended maintenance parts.**
N S: Denotes parts are not serviceable.
****Level 1 : Preventive maintenance**
Level 2 : Corrective maintenance
Level 3 : Exceptional maintenance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Ind	#References	Description	Qty	Spare part level**
20	552 434	Elbow, MF 3/4"	2	
21	550 773	Fitting, M 3/4" G - M 3/4" BSP	5	
22	N.S. (76 270)	Hose 3/4" BSP (length: 1,2 m)	1	
23	N.S. (552 444)	Fitting, Té MFF 3/4" G	1	
24	N.S. (552 445)	Fitting, Té FFM 3/4" G	1	
25	N.S. (055 680 121)	Hose 3/4" BSP (length: 1,4 m)	1	
***26**	**146 320 092**	**Coupling kit**	**1**	**2**
27	N.S. (046 350 013)	▪ Stop ring	1	
28	N.S. (046 350 014)	▪ Bush (2 parts)	1	
29	N.S. (046 350 015)	▪ Closing ring	1	
30	209 582	Support pin	2	
31	N.S. (76 764)	Hose PU 2,5x4 (length: 5 m)	1	

*** Recommended maintenance parts.**
****Level 1 : Preventive maintenance**
N S: Denotes parts are not serviceable.
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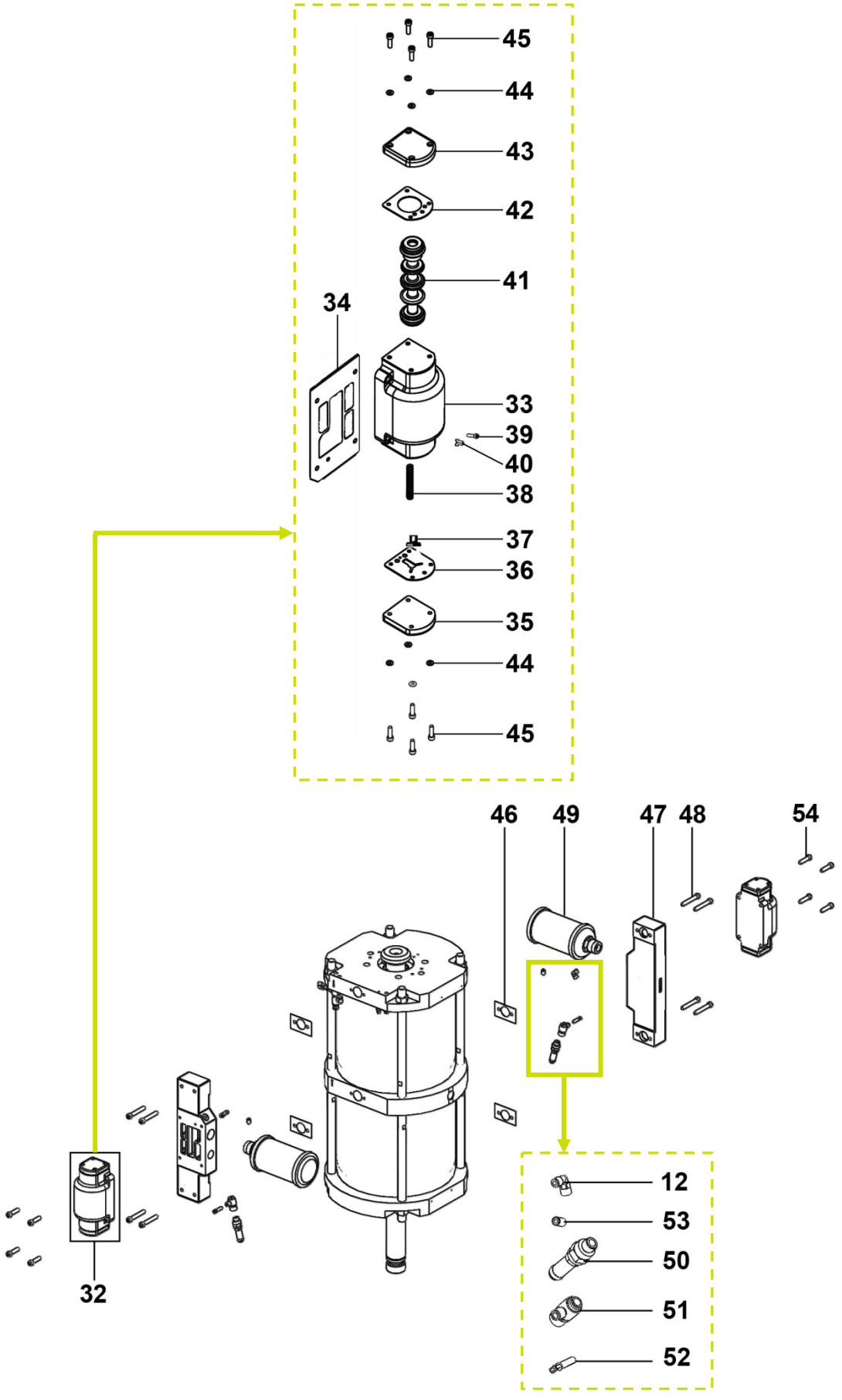
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Ind	#References	Description	Qty	Spare part level**
*** 32**	**146 320 092**	**Distributor, 4/2 1"**	**2**	**2**
33	N.S.	▪ Distributor body	2	
34	N.S.	▪ Base seal	2	
35	N.S.	▪ Cover, spring side	2	
*36	N.S.	▪ Side seal, spring side	2	
37	N.S.	▪ Guide for spring	2	
*38	N.S.	▪ Spring	2	
39	N.S.	▪ Screw	2	
40	N.S.	▪ Seal	2	
*41	N.S.	▪ Valve	2	
*42	N.S.	▪ Side seal, air side	2	
43	N.S.	▪ Cover, air side	2	
44	N.S.	▪ Washer	16	
45	N.S.	▪ Stainless screw, CHc M 5x16	16	
*46	205 213	Base seal	4	
47	209 365	Distributor base	2	
49	88 908	Stainless screw, CHc M 8x60	8	
*49	146 320 091	Muffler 1"	2	
*50	903 080 401	Safety valve	2	
51	552 542	Fitting, 1/4" G	1	
52	905 120 924	Tube plug	2	
53	905 120 944	Fitting	2	
54	88 514	Stainless screw, CHc M 8x35	8	

*** Recommended maintenance parts.**
****Level 1 : Preventive maintenance**
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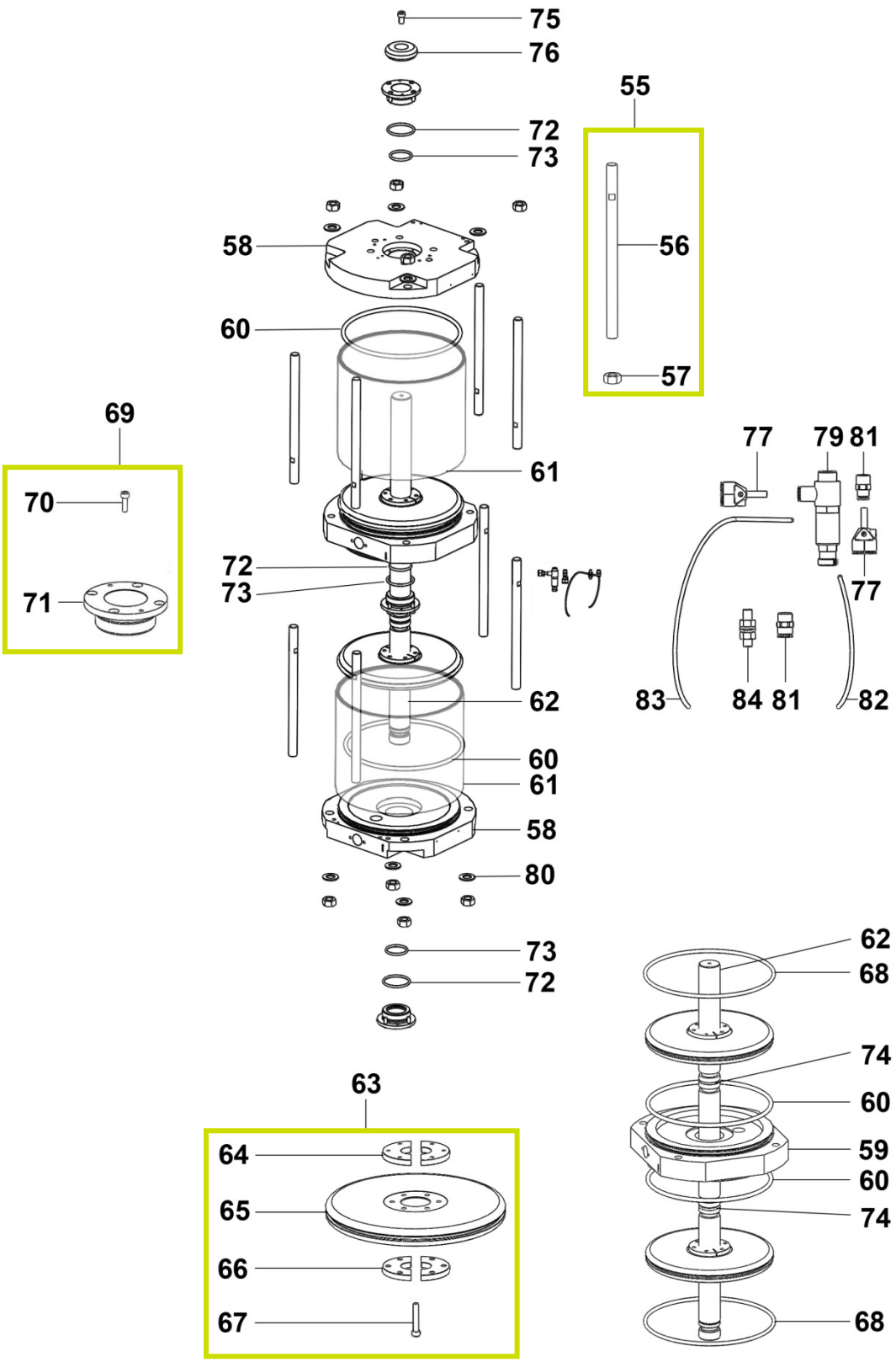
Level 3 : Exceptional maintenance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Ind	#References	Description	Qty	Spare part level**
***55**	**146 350 011**	**Rod kit**	**1**	**2**
56	N.S. (046 350 011)	▪ Tie-rod	8	
57	N.S. (953 010 027)	▪ Nut, HM20	8	
58	N.S. (046 350 001)	End flange	2	
59	N.S. (046 350 002)	Intermediate flange	1	
*60	N.S. (909 420 810)	Flange seal	4	
*61	9 201	Cylinder	2	
62	146 350 006	Piston rod	1	
***63**	**146 350 094**	**Piston kit**	**1**	**2**
64	N.S. (046 350 008)	▪ Adapter (2 parts)	2	
65	N.S. (046 350 007)	▪ Piston	2	
66	N.S. (046 350 009)	▪ Stop flange (2 parts)	2	
67	N.S. (88 166)	▪ Screw, CHc M 8x50	12	
*68	81 081	Piston seal	2	
***69**	**146 350 096**	**Bearing kit**	**1**	**2**
70	88 134	▪ Screw,	12	
71	N.S. (046 350 010)	▪ Bearing	3	
*72	84 188	Seal, FKM	3	
*73	N.S. (909 420 280)	Seal, FKM	3	
*74	909 420 109	Seal	2	
75	N.S. (88 203)	Screw, CHc M 10x20	1	
76	N.S. (046 350 016)	Cam	1	
77	905 120 909	Fitting, Y MF T 6x4	2	
79	903 130 508	Pressure reducer 1/4" G	1	
80	963 040 027	Washer, MU 20	8	
81	N.S. (905 124 901)	Fitting, droit 1/8"	2	
82	N.S. (76 607)	Tube PU 4x6 (lenght : 2 m)	1	
83	N.S. (76 519)	Cable ground	1	
84	N.S. (104 790)	Earth terminal assembly	1	

Ind	#References	Description	Qty	Spare part level**
*	146 350 098	Seal kit air motor (ind. 46 (x4), 60 (x4), 68 (x2), 72 (x3), 73 (x3), 74 (x2))	1	**1**
*	146 320 093	Servicing kit distributor 4/2 1" (ind. 34, 36, 38, 41, 42)	1	**1**

*** Recommended maintenance parts.** **N S: Denotes parts are not serviceable.**
****Level 1 : Preventive maintenance** **Level 2 : Corrective maintenance** **Level 3 : Exceptional maintenance**

Accessory

Ind	#References	Description	Qty	Spare part level*
-	**144 245 495**	**Lower adapter flange**	**1**	**3**

*** Recommended maintenance parts.** **N S: Denotes parts are not serviceable.**
****Level 1 : Preventive maintenance** **Level 2 : Corrective maintenance** **Level 3 : Exceptional maintenance**