

Installation and maintenance guide



RAM MOUNTED EXTRUSION PUMPS PP200



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Index

1 INTRODUCTION	pag. 3
1.1 The manual	
1.2 Warranty	
1.3 Goods receiving	
2 TECHNICAL DESCRIPTION	pag. 3
2.1 Safety instructions and remaining risks	
2.2 Material chemical compatibility	
2.3 Burn hazard	
2.4 Explosion danger	
2.5 Fire and explosion hazard	
2.6 Fluid outpour hazard	
2.7 Toxic vapours	
2.8 Emergency stopping	
2.9 Elevator operation	
2.10 How to replace the product container	
3 MACHINE DESCRIPTION AND TECHNICAL SPECIFICATIONS	pag. 5
3.1 Description of the unit and of the pump functioning regulating principle	
3.2 Spare parts	
3.3 Dismantling	
4 INSTALLATION	pag. 7
4.1 Storage and trasport	
4.2 Installament	
4.3 Regulating the air lubrication	
5 OPERATION PROCEDURES	pag. 8
5.1 Preliminary operations and functioning	
5.2 Unit pressure tightness test	
5.3 How to replace the product container	
5.4 What to do when the unit is not being used	
5.5 Precautions to be taken when handling products which are extremely reactive to air humidity (polyurethanes, silicones, etc.)	
5.6 How to prepare the 200L adhesive drum with polyethylene bag	

1 INTRODUCTION

1.1 The manual

The user guide is the document that accompanies the pump from the time of its construction and throughout the period of use, it is therefore an integral part of the valve. It requires reading the manual before taking any action involving the pump. The manual must be readily available for use by staff and maintenance of the pump. The user and the attendant use are required to know the contents of this manual.

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1.2 Warranty

The warranty is valid for a period of 12 months from the date of commissioning and no later than 15 months from the date delivery. The interventions carried out during the warranty period does not extend in any way the validity period of the guarantee. The seller is not liable for defects caused by normal wear of parts which by their nature are subject to wear.

1.3 Goods receiving

The original configuration of the pump must never be changed.

Upon receipt of the goods, check that:

- The packaging is intact
- The exact correspondence of the material ordered.

2 TECHNICAL DESCRIPTION

2.1 Safety instructions and remaining risks

It is necessary to read carefully the safety instructions regarding the risks implied by the use of a pump for spraying liquids. The user must know how the equipment works and understand clearly the dangers connected to pressurized liquids pumping. We recommend you comply with the following regulations, so as to correctly use the equipment and its accessories.



You must never exceed the working pressure maximum value allowed by the pump and the components connected to it. If in doubt, refer to the data on the pump plate.
If it necessary to replace any of the components, make sure the new ones can work at the pump maximum pressure. The pressure pump ratio times the input air pressure equals the overall output pressure (e.g.:if we have a 6 bar input pressure and a 30:1 pressure pump ratio, the total pressure acting on the product will amount to 180 bar).



At the end of the job and before performing any maintenance or cleaning operation, shut off the supply of compressed air and discharge the pressure from the pump and hoses connected to it by doing the following:

- **Make sure the valve (5) is closed**
- **Open the delivery valve on the circuit used and wait for the pressurised product to come out completely.**
- **In case the delivery valve malfunctions or the hoses become clogged (the pressurised product does not leave the valve), slowly open the recycle valve (6) and leave it open until the product has come out completely.**

Warning: if check valves have been installed on the circuit, it is impossible to discharge the pressure through the recycle valve. Complete discharge of the pressure can be achieved only by opening the circuit downstream of these valves.

NOTE: Remember to put the mobile components protections back into place after servicing or cleaning the unit.

Installation and maintenance guide

2.2 Material chemical compatibility

Make sure the materials employed in manufacturing the pump are chemically compatible with the fluid you wish to pump. If you make the wrong choice you risk harming people (as a, result of noxious and irritant: products outpour) as well as polluting the environment, besides prematurely damaging the pump and its hoses. If in doubt, please call our Technical Service Department.

2.3 Burn hazard

If hot fluids are being pumped, the pumping element may reach temperatures high enough to cause a burn hazard, in case of contact with the skin.

2.4 Explosion danger

You must never use chloride or halogenated solvents, (such as trichloroethane and methylene chloride), as they may react chemically with units containing aluminium or galvanized and zinc-plated parts, thus producing an explosion danger. Read the classification and information leaflet concerning the product you are going to use.

2.5 Fire and explosion hazard

The high velocity of the flow inside high pressure equipment may lead to the formation of static electricity which must be discharged to avoid harming people. Before you start the pump, make sure it is correctly earthed, connecting the appropriate clamp to a suitable ground plate. Should you notice static electricity related phenomena, stop the pump at once and check its grounding.



The equipment is unsuited for operating in the atmosphere with danger of explosion. The products used and the work environment must be such as to not generate explosive atmospheres.

2.6 Fluid outpour hazard

Always check all hoses connected to the pump for wear or poor conditions. Avoid squashing or bending the flexible hoses. Carefully tighten up all hose fittings before starting the pump.



You must never use your hands or other parts of your body to stop or divert eventual leaks. Do not subject fittings, hoses and all pressurized parts to violent impacts. Damaged flexible hoses and fittings are DANGEROUS: replace them immediately.

2.7 Toxic vapours

Some products may cause irritations or become injurious to health. Always read the classification card as well as the safety and use-related information concerning the product you are going to use carefully, complying with the recommendations they report.

2.8 Emergency stopping

To stop the unit at the right time, close the air cutoff valve (5); as a consequence of this the flow of air feeding the motor will be interrupted. Carry out the pump priming operations correctly to prevent pressurized air babbles from being trapped. Pneumatic pumps can keep all components connected to the delivery under pressure, even when the driving air feed is closed. To avoid damaging things or the environment as well as to prevent harm to people, once the pump has been stopped, it is best to discharge the pressure by keeping the outlet open or by resorting to the air valve (6). If it is not possible to do so, adequately point out the presence of pressure inside the apparatus.

2.9 Elevator operation

While operating the elevator you must NOT touch or bring your hands near its moving part.



WARNING: While inserting the follower plate into the container you must NOT rest your hands on the rim of the latter, to prevent your fingers from being squashed between the outer gasket of the follower plate and the container rim.

2.10 How to replace the product container

Before causing the follower plate to rise, you must make sure that the outer gasket of the follower plate has not stuck to the container rim. If necessary, take it off using a tool. While the follower plate is rising, repeatedly open and close valve (8), thus gradually introducing air into the container (preventing it from pressurizing) in order to facilitate the extraction of the plate.



WARNING: When you use the pump after a long period of inactivity, make sure that all parts subject to pressure hold.

Use only original spare parts.

NOTE: The appliance must be installed in a room or within a boundary qualified for its use, to which unauthorized personnel have no access.

NOTE: All personnel must use protections, clothes and tools complying with the regulations in force, both when they are working and when they are servicing the unit.

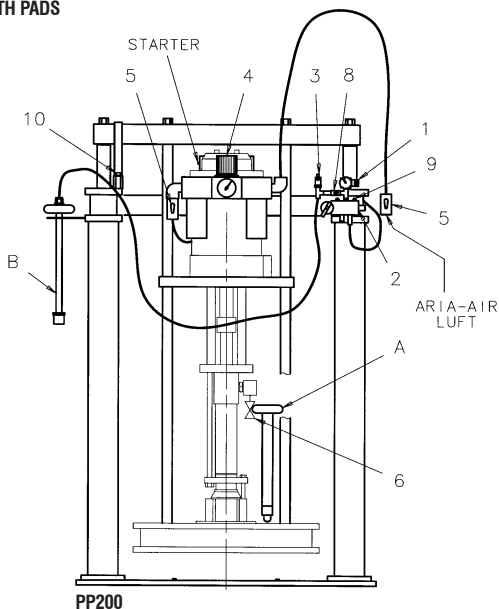
Standard pumps are not fit for food handling.

3 MACHINE DESCRIPTION AND TECHNICAL SPECIFICATIONS

3.1 Description of the unit and of the pump functioning regulating principle

The unit can pump extremely viscous products such as stucco, putty, ink, adhesive, dope, grease, etc...., sucking them directly from their original containers. The functioning is based on a double effect pneumatic piston pump equipped with a mechanical device (shovel) whose function is to feed it constantly, as well as with a follower plate which keeps the product on the surface compacted and air-free. A pneumatic pump, which is the primary element of the unit, is basically a sophisticated pneumohydraulic pressure multiplier in which the pressure ratio (PR) is represented by the pneumatic component section (the motor) and the hydraulic component section (the pump) ratio. This means that if the motor is fed with air at a P1 pressure, the pump will produce a P2 pressure corresponding to the product P1 x PR. The motor comprises a pneumatic cylinder interlocked to an automatic device which alternately feeds the two chambers, thus producing a continuous movement. The pump is a double-effect pump and keeps the flow constant during the piston upstroke and downstroke phases. During the upstroke phase, suction chamber "A" fills up with product while delivery chamber "M" ejects product. During the downstroke phase the product contained inside chamber "A" flows into chamber "M" where a part of it remains, saturating the capacity which has been created, while the rest (which is equal to the volume occupied by the piston rod) is ejected.

CONTROL PANEL WITH PADS



A = PAD USED DURING WORK

B = PAD USED DURING EXTRACTION

Description

1	1
2	2
3	3
4	4
5	5
6	6
8	8
9	9
10	10

3.2 Spare parts

To make sure that the pump will keep working efficiently it is best to buy a number of spare parts for a first intervention. e.g.:

- gasket kit
- gaskets (diaphragms) follower plate.

3.3 Dismantling

When you have to demolish a pump, it is best to dispose of its various parts separately.

The following materials have been employed in manufacturing the pump:

- steel
- aluminium
- rubber, plastic material
- glass

All substances and all products must be disposed of in compliance with the specific regulations in force.

4 INSTALLATION

4.1 Storage and trasport

a) Storage

When storing a unit, place it in a closed and dry environment. If you know you are not going to need the unit for a long time, follow the instructions given in the what to do when the unit is not being used chapter.

b) Transport

The size and weight of the appliance can be found in the technical datasheet.

b1) PP200

The appliance may be transported by means of a pallet. It can be equipped with a wheel-support. When you have to lift it, insert the tools into the appropriate eyebolts or the points shown in the picture.



WARNING: Before you do this you must: tie the follower plate to the base using a rope or adhesive tape; make sure that pump ascent valve (2) is closed.



WARNING: Before you start lifting it, make sure that the moving part of the elevator is secured to the fix part by means of tension rods and their nuts (10).

4.2 Installment

When you receive the unit make sure it has not been aged while it was being trasported. Earth the unit. Fill the compressed air lubricator with original TECNI-LUBE liquid up to the level shown in the picture. If you happen not to have any, use a lubricant with the following characteristics:

- Viscosity 2° ÷ 4° Engler ÷ 50°C
- Aniline point 98° ÷ 105°
- Acidity index 0.2

If you use the wrong type of lubricant you risk damaging the motor. Make sure the inline air pressure is high enough, also taking into account that working pressures vary from 4 to 6 bar.



WARNING: The pressure must not exceed the value indicated on the plate. The pneumatic motor must be supplied with clean industrial air; make sure efficient filtering and condensate separation systems are installed on the air line. All impurities and the eventual condensate that has built up inside the air filter on top of the pump must be drained daily. Connect the pump to the line or to a build-up reservoir using a pipe whose section is not smaller than that of the pump connector and insert an on-off valve.

Installation and maintenance guide

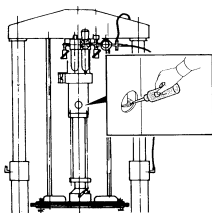
Connect the pump delivery fitting to the delivery system, using a flexible hose which can be used with the maximum pressure developed by the pump. Remove the protection and fill the appropriate oil cup situated on the pump body with fluid lubricant: by doing so you will prevent eventual small product blow-by from getting hard.

Once you have done this, put the protections back. The unit must be checked daily and, if it shows evident signs of product pollution, you must change the oil and clean the cup as well as the rod. Release the follower plate and/or the moving part of the elevator removing the rope and/or the nuts and their tension rods (10).

Make sure the pressure regulators (1), (4) and cocks (5), (8) are closed.

4.3 Regulating the air lubrication

Open the feeding air and the cock (5) and turn the regulator knob (4) clockwise until the pump starts up. Let the pump work at a 10/15 cycles per minute speed. Turn the appropriate screw adjusting the lubricator so as to have a drop fall every 30-40 pump cycles. Make sure that this happens by looking through the transparent cup. Every day you must check that the lubricator adjustment is correct. Set air pressure regulator (4) to zero and close cutoff valve (5).



5 OPERATION PROCEDURES

5.1 Preliminary operations and functioning

A) MODEL WITH PADS

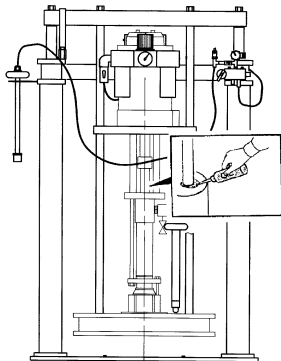
Make sure that the knob of pressure regulator (1) is turned fully anticlockwise (0 bar pressure). Make sure valve (2) is in down position and valve (8) is closed and the valve (6) is open; make sure the pad (A) is loosened so that air can flow out, then open the air on-off valve on the feeding pipe. Use valve (2) and regulator knob (1), turning it clockwise until the pump goes up. Place the product container on the base, aligning it with the follower plate, then reduce pressure on the regulator (1) and lower the pump using valve (2).

NOTE: pressure on the regulator (1) must be kept at the minimum value necessary to lower the pump and even reduced to avoid any product leakage from the follower plate diaphragm and the container inside perimeter.

During this phase make sure that the follower plate is correctly inserted into the product container. Pump lowering can be stopped using valve (2).

NOTE: In order to facilitate the subsequent positioning of the containers, it is best to place two small lock blocks on the base or adjust the blocks on those units that feature them. To shorten the priming time of the pump we would advise you to level the surface of the product inside the container.

If you have to pump extremely viscous products it is necessary to increase the pressure exerted by the follower plate by turning the knob of regulator (1) clockwise. When the follower plate stops moving down and is in contact with the product, screw in the pad (A) until tightening, then open the product valve, the engine air on-off valve (5) and turn the regulator knob (4) clockwise until the pump starting up. If, once you have reached a 2 bar pressure, the pump does not start, alternately press the starter buttons on the motor as far as they will go, until you hear the noise caused by the violent discharge of air, in order to start the pump. During this phase it is better to keep a low frequency of



pump functioning (to do this resort to regulator 4) in order to facilitate priming.

If the pump is not completely filled up or in case of cavitation (this is due to an acceleration during the first phase of piston lowering and to a flow interruption in the delivery), increase the pressure of the follower plate on the product by means of the regulator (1). Wait for the product to come out of valve (6) continuously and without air bubbles, and then close it.

**WARNING:**

The pump is pressurized.

Increase the pump starting pressure by turning the knob of regulator (4) to obtain the desired delivery.

NOTE: after the first pumping test on a product, it is possible to set the pressure optimal value to be applied on the follower plate to avoid any product leakage from the plate edge and to assure the required flow rate. This value shall be used to have the pump moving up and down, thus avoiding continuous variations of regulator pressure (1).

B) MODEL WITHOUT PADS

Make sure that the knob of pressure regulator (1) is turned fully anticlockwise (0 bar pressure). Make sure valve (2) is in down position and valve (8) is closed, the valves (B) and (6) are open; then open the air on-off valve on the feeding pipe. Use valve (2) and regulator knob (1), turning it clockwise until the pump goes up. Place the product container on the base, aligning it with the follower plate, then reduce pressure on the regulator (1) and lower the pump using valve (2).

NOTE: pressure on the regulator (1) must be kept at the minimum value necessary to lower the pump and even reduced to avoid any product leakage from the follower plate diaphragm and the container inside perimeter. During this phase make sure that the follower plate is correctly inserted into the product container. Pump lowering can be stopped using valve (2).

NOTE: In order to facilitate the subsequent positioning of the containers, it is best to place two small lock blocks on the base or adjust the blocks on those units that feature them. To shorten the priming time of the pump we would advise you to level the surface of the product inside the container.

If you have to pump extremely viscous products it is necessary to increase the pressure exerted by the follower plate by turning the knob of regulator (1) clockwise. When the follower plate stops moving down and is in contact with the product, close the valve (B), then open the product valve, the engine air on-off valve (5) and turn the regulator knob (4) clockwise until the pump starting up. If, once you have reached a 2 bar pressure, the pump does not start, alternately press the starter buttons on the motor as far as they will go, until you hear the noise caused by the violent discharge of air, in order to start the pump. During this phase it is better to keep a low frequency of pump functioning (to do this resort to regulator 4) in order to facilitate priming. If the pump is not completely filled up or in case of cavitation (this is due to an acceleration during the first phase of piston lowering and to a flow interruption in the delivery), increase the pressure of the follower plate on the product by means of the regulator (1). Wait for the product to come out of valve (6) continuously and without air bubbles, and then close it.

**WARNING:**

The pump is pressurized. Increase the pump starting pressure by turning the knob of regulator (4) to obtain the desired delivery.

NOTE: after the first pumping test on a product, it is possible to set the pressure optimal value to be applied on the follower plate to avoid any product leakage from the plate edge and to assure the required flow rate. This value shall be used to have the pump moving up and down, thus avoiding continuous variations of regulator pressure (1).

Installation and maintenance guide

5.2 Unit pressure tightness test

Close the delivery valve and gradually increase the pressure by turning regulator (4) until you reach the maximum value indicated on the plate; check that the fittings and the packing glands do not leak.

NOTE: In manually adjusted models a leaking packing gland will have to be adjusted (see the Maintenance chapter).

As for self-adjusting models, it will be enough to repeat the unit pressure tightness test so that the gaskets might "settle" in their seats. Reduce the pressure by turning the regulator knob (4) anti-clockwise and release the pressure contained inside the pump.

5.3 How to replace the product container

a) Model with pads

When the product inside the container runs out, the pump functioning frequency increases: close the valve (5).



WARNING: Do not let the pump work for prolonged periods of time when there is no product left, as this may damage the seals.

Before lifting the pump, replace pad (A) with pad (B), then lift the pump using valve 2; while the follower plate moves up, open and close valve (8) repeatedly, introducing the air gradually into the container to easily remove the plate, without pressurise the container. Once removed the empty container, open valve (6), remove the pad so as to leave the purging hole open, then reduce the pump pressure turning the regulator knob (4) anticlockwise; go on as described in the chapter "Preliminary and working operations".

b) Model without pads

When the product inside the container runs out, the pump functioning frequency increases: close the valve (5).



WARNING: Do not let the pump work for prolonged periods of time when there is no product left, as this may damage the seals.

Lift the pump using valve 2; while the follower plate moves up, open and close valve (8) repeatedly, introducing the air gradually into the container to easily remove the plate, without pressurise the container. If during this phase safety valve (3) is activated, it is necessary to temporarily shut off the valve (A) by pressing the button on it. As soon as the elevator rises, you have to release the valve's button (A) so as to prevent the drum of product from becoming pressurised. Once removed the empty container, open valves (6) and (B), then reduce the pump pressure turning the regulator knob (4) anticlockwise; go on as described in the chapter "Preliminary and working operations".

5.4 What to do when the unit is not being used

a) Products which do not harden (e.a.: grease). Close the air cutoff valve on the pipe feeding the unit.

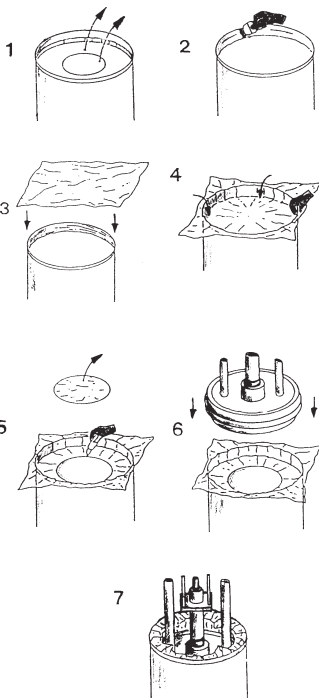
b) Products which harden as a result of solvent loss and chemical reaction (e.g.: silicone).

Close the air cutoff valve on the pipe feeding the unit. Wrap the container opening and the pump end with sheets of plastic and seal them using adhesive tape, preferably placing a bag of dehydrating salts inside the wrapping. Close the orifice of valve (6) using a plug. Place the nozzle of the delivery valve in a container with some compatible solvent or otherwise seal it. If you know you are not going to use the unit for a long period of time, you must eject all the product contained inside the pump and the pipe that connects it to the delivery valve. To do this remove the follower plate from the pump, once you have removed its central fixing screws from the bottom face insert the end of the pump into a container with solvent hose function is to dissolve the product. Afterwards, once you have started the pump, proceed to wash the system for a long time, letting the solvent re-cycle and replacing it repeatedly until it remains clean. After the washing a good thing to do is to at least disassemble the pump to make sure that there are no traces of product left inside it which, when the pump is next used, may come off in the form of lumps and obstruct the passageways of the delivery system downstream from the pump.

5.5 Precautions to be taken when handling products which are extremely reactive to air humidity (polyurethanes, silicones, etc...)

Normally those who supply these products protect the exposed surface of the product stored inside a container with a polyethylene or aluminium film. We would advise you to follow this procedure to avoid problems concerning product polymerization or the sticking of the follower plate seal gasket to the rim of the container.

- 1) Remove the protective film from the container.
- 2) Apply a small quantity of oil or other fluid suitable for inhibiting the reticulation of the product to the rim of the container.
- 3) Place a sheet of polyethylene over the container, making sure it adheres perfectly to the surface of the product.
- 4) You should place the sheet in such a way that its ends come out of the container rim.
- 5) Cut a hole measuring about 15 cm in diameter in the middle of the polyethylene sheet and then remove it.
- 6) Insert the follower plate carefully into the container, trying not to drag the film edges with it.
- 7) Wrap the sheet round the plate and use the appliance as described in the preceding chapters.



5.6 How to prepare the 200L adhesive drum with polyethylene bag

Open the polyethylene bag fastening (fig. 1) and spread it pulling its ends upward (fig. 2) to compact the product.

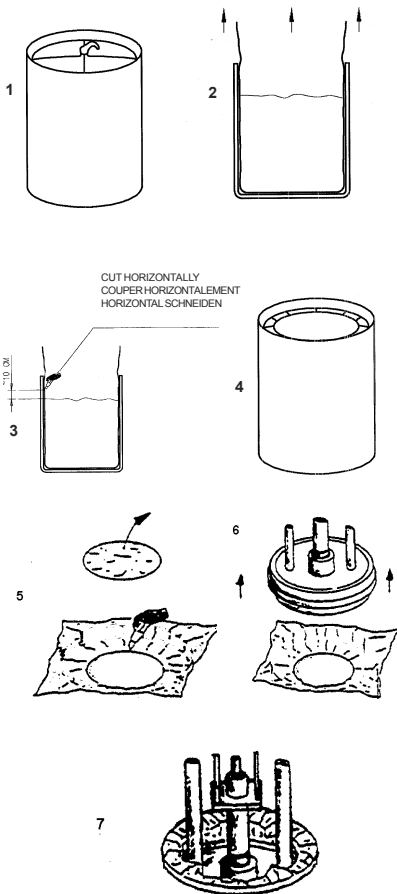
Cut the bag horizontally (fig. 3) using a cutter, about 10 cm from the product free surface. Remove the cut part of the bag, then fold up the bag edge inside, on the product, making sure it sticks perfectly to the adhesive (fig. 4).

Wrap up the follower plate (fig. 6 and 7) in a strong polyethylene paper, previously perforated in the middle (fig. 5) for a diameter of 30/35 cm (the product bleed pad hole must be free).

Make sure the hole in the middle of the paper is perfectly centred with reference to the follower plate.

Carefully introduce the follower plate into the drum, paying attention not to move the protection paper and following the instructions given at page 38 of this manual.

Installation and maintenance guide

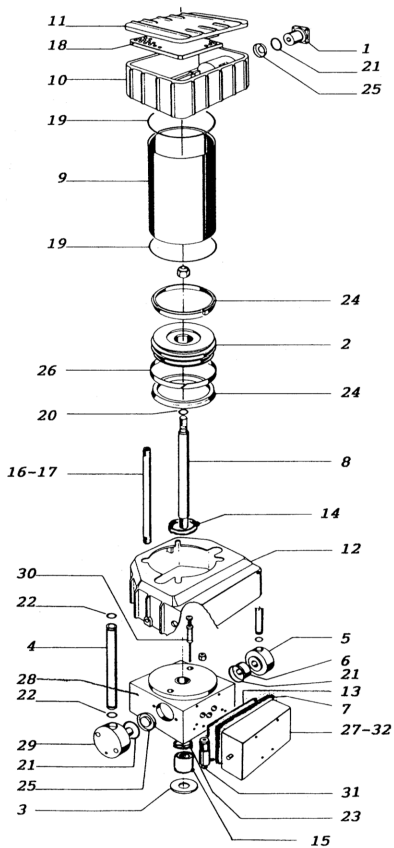


FAULT	REMEDY
The pump does not start	Check the line and the air cutoff valve
	Check the air treatment group
	Press the starter button as far as it will go
The unit is working (i.e.:the pump is moving), but not product is coming out	Check if the follower plate has completed its descent
The product flow into the delivery is discontinuous	Check the pressure on the follower plate
	Check that the pump is not cavitating
	There may be impurities on the valve seats
	Check whether there is any air, if so open the exhaust valve
The pump delivery decreases during work, up to the point when it stops completely	Clogged delivery line
	Ice formation inside the air outlet pipes
The unit stops frequently, making it necessary to press the starter button	Increase the air pressure
	Adjust the lubricator output
	Put antifreezer in the lubricator and put an efficient condensate separator on the air line
The unit keeps working even when the delivery valve is closed	Check inversion valve (starter button)
	Check the valve seal of the delivery valve and of the air valve
	There may be impurities on the valve seats or the bush may be worn
Should you have any further queries or problems which have not been dealt with here, please contact us in writing or call out Technical Service Department.	

Installation and maintenance guide

PP 200 - Motor Breakdown

Pump version: 30-40



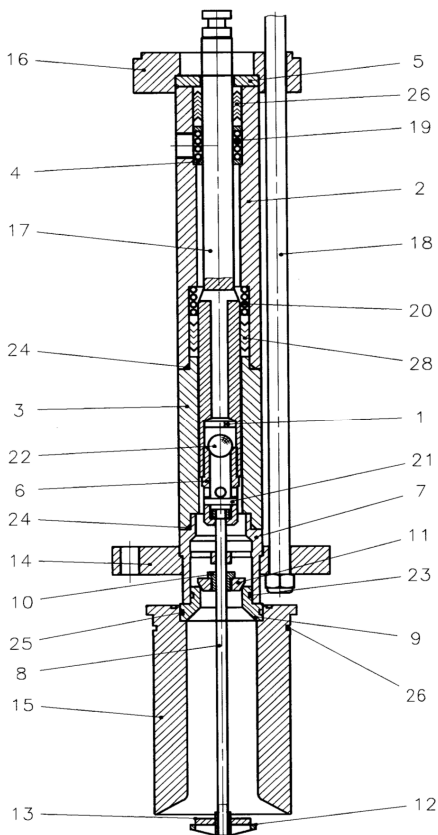
PP 200 - Motor components

Pump version: 30-40

POS	DESCRIPTION	Q.	CODE
1	Top discharge flange	1	A10171A
2	Motor piston	1	A13301
3	Reversing plate	1	A13762
4	Air motor tube	2	A23312
5	Inlet flange	1	A45771A
6	Inlet flange bush	1	A45801
7	Valve base	1	A81971
8	Motor rod	1	D41212
9	Motor cylinder	1	D60912
10	Motor head	1	F12091A
11	Motor lid	1	F12191A
12	-	-	-
13	Valve gasket	1	G73606
14	Downstroke damper	1	G90806
15	Upstroke dumper	1	G90906
16	Rod tie	3	H15862
17	Rod tie	1	H15962
18	Silencer	1	H51100A
19	O-ring	2	L106.06
20	O-ring	1	9971123
21	O-ring	3	L11606
22	O-ring	4	L11806
23	Rod gasket	1	L40406
24	Piston gasket	2	L40506
25	Discharge gasket	2	L41406
26	Sliding ring	1	L80608
27	Air valve	1	P49600E
28	Motor base	1	T61800E
29	Bottom discharge flange	1	T63000E
30	Top sensor	1	T70600
31	Bottom sensor	1	T70700
	Gasket repair kit consist of following ref . 13-14-15-19-20-21-22-23-24-25-26-30-31		T903300

PP 200 - Pump breakdown

Pump version: 30-40



PP 200 - Pump components

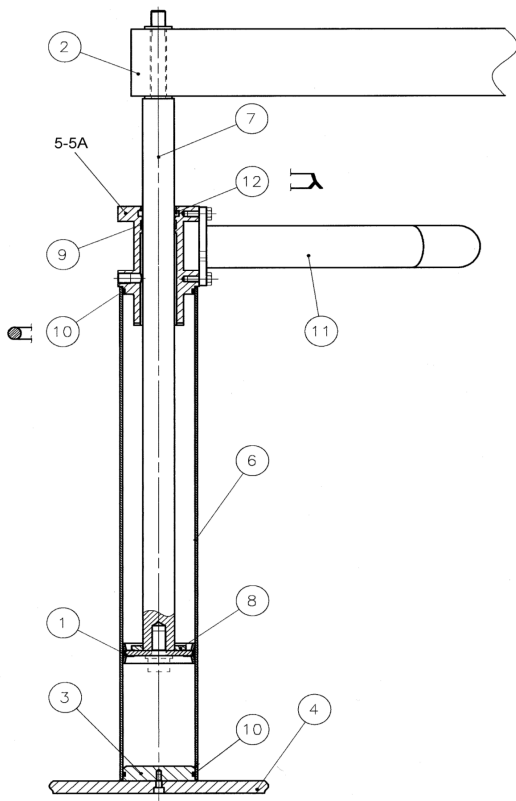
Pump version: 30-40

POS	DESCRIPTION	Q.	CODE
1	Valve rod retainer	1	A15603
2	Upper pump body	1	A35422
3	Lower pump body	1	A35522
4	Spring washer	1	A47603
5	Gland ring	1	A47701
6	Rod valve body	1	-
7	Pump base	1	A61103
8	Rod tie	1	T617100B
9	Valve seat	1	A61303
10	Valve bush	1	A61407
11	Valve	1	A61503
12	Shovel	1	A61603
13	Shovel disk	1	A61703
14	Bottom pump flange	1	A98462
15	Inductor plate connection	1	B44201
16	Top pump flange	1	A50571A
17	Pump rod	1	T615400
18	Rod tie	3	H15762A
19	Gland spring	1	H20303
20	Spring	1	H22203
21	Pin 4x19	1	-
22	Ball 9/16"	1	K80203
23	O-ring	1	L11606
24	O-ring	2	L11706
25	O-ring	1	L15406
26	O-ring	1	L15806
27	Packing gland	1	T92000E
28	Piston gland	1	T94100F
	Seal repair set pos.10-24-25-26-27-28		T99600

Installation and maintenance guide

PP 200 - Lift column breakdown

Pump version: 30-40



PP 200 - Lift column components**Pump version: 30-40**

POS	DESCRIPTION	Q.	CODE
1	Piston d.80	2	R004400
2	Rod bracket	1	E307162
3	Cylinder closing bottom	2	B010701
4	Base plate	1	E003962
5	Cylinder head	1	F18201
5A	Cylinder head	1	F18201A
6	Cylinder	2	D63481
7	Rod	2	D44852
8	Damper	2	G701506
9	Sliding band	2	L82308
10	O-ring	4	L20106
11	Cylinder bracket/	1	E307062A
12	Gasket	2	L40606

Serie guarnizioni costituita dalle pos. 1-8-9-10-12

T912100



**SCAN THIS CODE
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