



# 2 BALL PUMP

**227 cm<sup>3</sup>**

**Pump REX 2B0227**

**User Manual 528132110**

2024-03-18

Index G

Translation of the original instructions

## **SAMES KREMLIN SAS**



13 Chemin de Malacher  
38240 Meylan



[www.sames-kremlin.com](http://www.sames-kremlin.com)



33 (0)4 76 41 60 60

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**Evolution table of the document**

| Recording revisions |  |          |            |             |
|---------------------|--|----------|------------|-------------|
| Editor              | Object   | Revision | Date       | Modified by |
| SEGUIN              | 2 Ball fluid section 227 cm <sup>3</sup><br>REXSON 2B227 | A -      | 05/26/2020 |             |
| SEGUIN              | 2 Ball fluid section 227 cm <sup>3</sup><br>REXSON 2B227 | B -      | 01/25/2021 |             |
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| SEGUIN              | 2 Ball fluid section 227 cm <sup>3</sup><br>REXSON 2B227 | G -      | 03/18/2024 |             |

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.

**Additional Documentations**

|                | Documentation Reference |
|----------------|-------------------------|
| Air Motor 6000 | 582147110               |
| Air Motor 7000 | 582148110               |
| Air Motor 9000 | 582149110               |

**IMPORTANT: Before assembly and start-up, please read and clearly understand all the documents relating to this equipment (professional use only).**

## **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 (in the first term reaches) 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.

Any costs resulting from the operation cannot 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.

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## 1 Declaration of Conformity



Refer to the existing declaration delivered with the product.

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## 2 Safety instructions

### 2.1 Personal safety

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#### Overview



Read carefully 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**

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

## Security devices



### Attention

- ✓ Guards (motor cover, coupling guard, housings, ...) are set up for safe use of the equipment.
- ✓ The manufacturer cannot 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 pressure relieve 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 **material bleed valve** must be installed on the material circuit so that material pressure can be relieved (after shutting off air motor and decompressing it) before any intervention on the equipment. These valves should remain closed for air and open for the material 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 point the gun nozzle at 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:

- ✓ Before operating the Pump supply system make sure that all Pump equipment and material containers are grounded,
- ✓ 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,
- ✓ Treat product waste 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.**

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## 2.2 Integrity of the material

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### Material recommendations



Protectors are put in place 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 to the equipment resulting from the destruction, the misuse or the total or partial withdrawal of the protectors.
- 

### Pump

It is imperative to be aware of the compatibility of the motors and pumps before coupling them together as well as the special safety instructions. These instructions can be found in the instruction manuals of the pumps.

The air motor is intended to be coupled to a pump. Never modify the coupling system. Keep hands away from moving parts. The moving parts must be kept clean. Before commissioning or using the motor pump, read carefully the DECOMPRESSURIZATION PROCEDURE. Check the proper operation of the pressure relief and bleed air valves.

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### Tubing

Recommendations

- ✓ Keep hoses away from traffic areas, moving parts and hot areas.
- ✓ Never subject hoses being produced to temperatures above 80°C or below 0°C.
- ✓ Do not use hoses to pull or move equipment.
- ✓ Tighten all connections and hoses and couplings before operating equipment.
- ✓ Check hoses regularly and replace if damaged.
- ✓ Never exceed the maximum working pressure (MWP) stated on the hose.
- ✓ When fitting the hoses and the gun: PPE must be worn.
- ✓ Tighten to full stop (hoses + gun).

---

## 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.
-

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### 3 Environment

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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.

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

- ✓ **In combination with a pneumatic motor, the hydraulics will be earthed via the earth cable of this motor.** This earth cable must be connected to a safe earth.
  - ✓ 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.
- 



- ✓ **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.
-

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### Material marking



Each device is equipped with a identification 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 Available Configurations

### 4.1 Rexson parts number of High Viscosity Pumps

#### Presentation of the pump REXSON 2B227

A very versatile pump, the REXSON 2B227 hydraulic is used for airless applications as well as for the extrusion of thick products (<50000 cP\*).

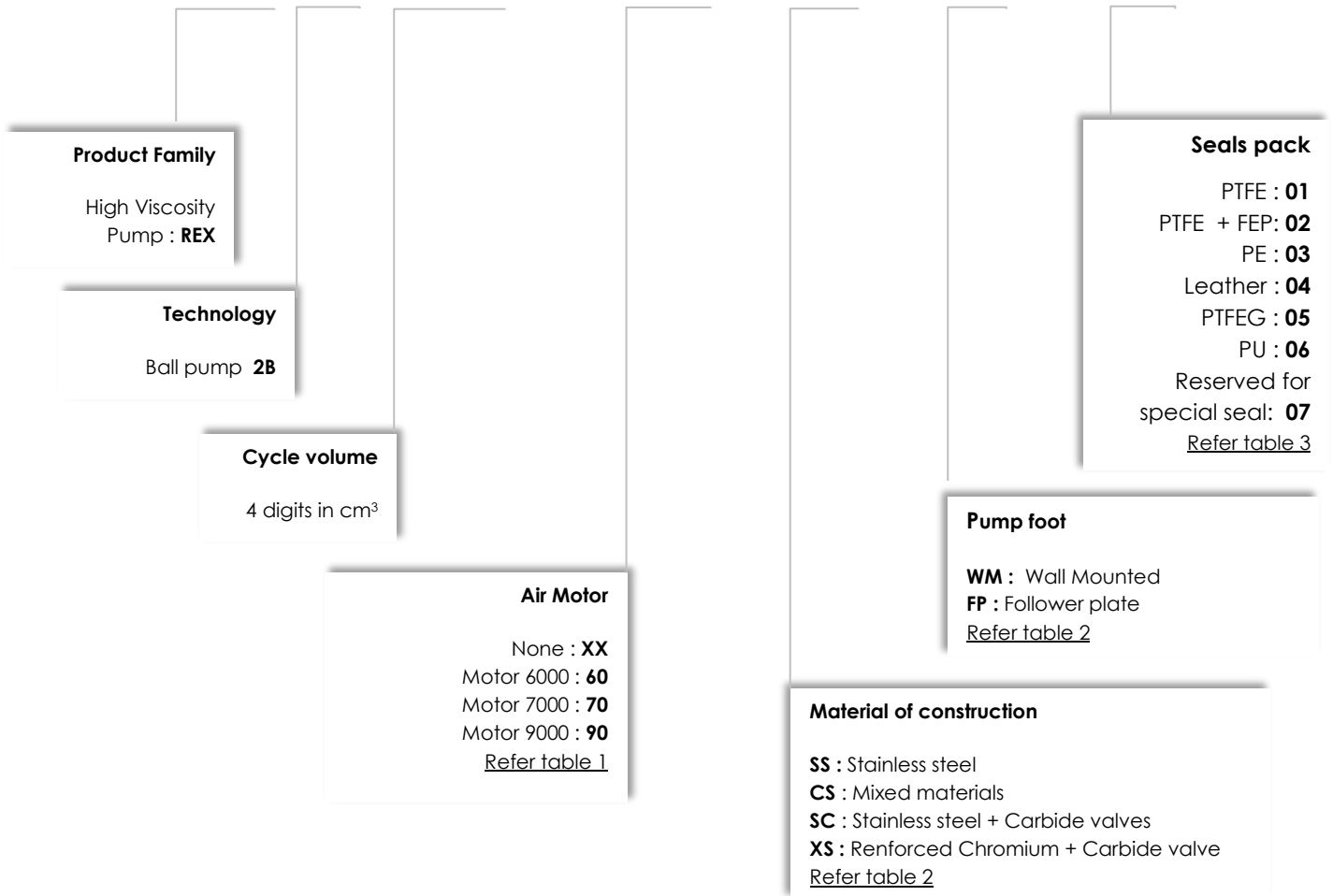
Different configurations are available.

\* 1 cP = 1 mPa.s

#### Significant designation

|            |           |             |   |   |   |   |   |   |   |   |
|------------|-----------|-------------|---|---|---|---|---|---|---|---|
| <b>REX</b> | <b>2B</b> | <b>0227</b> | - | □ | - | □ | - | □ | - | □ |
|------------|-----------|-------------|---|---|---|---|---|---|---|---|

Ex : REX 2B 0227 - 60 - SS - FP - 01



### 4.2 Table 1 Fluid Section-Air Motor Selection

| Available Motors |            | Pressure Ratio | Maximum Air Inlet Pressure |     | Maximum Outlet Fluid Pressure |      | Documentation reference |
|------------------|------------|----------------|----------------------------|-----|-------------------------------|------|-------------------------|
|                  |            |                | bar                        | psi | bar                           | psi  |                         |
| <b>XX</b>        | NONE       | -              | -                          |     | -                             |      | -                       |
| <b>60</b>        | MOTOR 6000 | 29 : 1         | 6                          | 100 | 170                           | 2500 | 582147110               |
| <b>70</b>        | MOTOR 7000 | 52 : 1         | 6                          | 100 | 310                           | 4500 | 582148110               |
| <b>90</b>        | MOTOR 9000 | 80 : 1         | 6                          | 100 | 480                           | 7000 | 582149110               |

R E X     2B     0227    -     -     -     -   

### 4.3 Table 2 Fluid Section – Pump Foot & Material Selection

| Available pump foot |                | Available material |                 |                                  |                                    |
|---------------------|----------------|--------------------|-----------------|----------------------------------|------------------------------------|
|                     |                | SS                 | CS              | SC                               | XS                                 |
|                     |                | Stainless steel    | mixed materials | Stainless steel + carbide valves | Renforced Chromium + Carbide valve |
| <b>WM</b>           | Wall mounted   | ✓                  | ✓               | x                                | ✓                                  |
| <b>FP</b>           | Follower plate | ✓                  | ✓               | ✓                                | x                                  |

R E X     2B     0227    -     -     -     -

#### 4.4 Table 3 Seals Pack Selection

|           | Available Seals Packing | Static seals "O"-rings | Upper seals packing | Piston seals packing |
|-----------|-------------------------|------------------------|---------------------|----------------------|
| <b>01</b> | PTFE                    | FKM                    | PTFE                | PTFE                 |
| <b>02</b> | PTFE + FEP              | FEP                    | PTFE                | PTFE                 |
| <b>03</b> | PE                      | FKM                    | PTFE and PE         | PTFE and PE          |
| <b>04</b> | Leather                 | FKM                    | Leather and PE      | Leather and PE       |
| <b>05</b> | PTFEG                   | FKM                    | PTFEG               | PTFEG                |
| <b>06</b> | PU                      | FKM                    | PU and PE           | PTFEG                |
| <b>07</b> | PTFEG/PE + FEP          | FEP                    | PTFEG and PE        | PTFEG and PE         |



PTFE=Polytetrafluoroethylene (Teflon like properties) / PTFEG=PTFE + Graphite (impregnated)  
 PE=Polyethene (UHMWPE) / FKM=Flouroelastomer (Viton like properties)  
 PU=Polyurethane / PTFEV=PTFE + Glass (impregnated)  
 FEP=Encapsulated O-Ring (Teflon like properties over Viton or Silicone)


## 5 Identification



### 5.1 Description of the marking of the plate

#### Principles

This equipment complies with the following provisions:

- ✓ Machinery Directive (2006/42 / EC),
- ✓ Safety of machinery - Basic terms, general implementation guidelines DIN EN ISO 12100 T1/T2
- ✓ ATEX Directive (2014/34 / EU: II 2 G - Group II, Category 2, Gas).

|  |   |   |
|--|---|---|
|  <p style="text-align: center; font-size: small;">STAINES FRANCE</p> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>○</span> <span>MAX.PRES.(Bar/Psi)</span> <span>PROD</span> <span>○</span> </div> <div style="display: flex; justify-content: space-between; align-items: center;"> <span>CE Ex II2G IIA T3</span> <span>RAPPORT RATIO</span> <span>AIR</span> </div> | <p>POMPE / PUMP<br/>REF / SERIE</p> <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |   |
|  | <div style="border: 1px solid black; height: 20px; width: 100%;"></div>                                     | <div style="border: 1px solid black; height: 20px; width: 100%;"></div> |

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

## 5.2 Correspondence table New part numbers / Significant designations

| New Part Number      |                                     | Significant Designation |
|----------------------|-------------------------------------|-------------------------|
| 61 MO 0227 M S F 000 |                                     | REX2B0227-MO-MA-FO-SE   |
|                      | <b>Options</b>                      |                         |
| <b>MO</b>            | <b>Motor</b>                        | <b>MO</b>               |
| 44                   | MOT6000                             | 60                      |
| 45                   | MOT7000                             | 70                      |
| 46                   | MOT9000                             | 90                      |
| <b>M</b>             | <b>Material</b>                     | <b>MA</b>               |
| 1                    | Mixed Steels                        | CS                      |
| 2                    | Stainless Steel                     | SS                      |
| 4                    | Stainless Steel + Carbide valve     | SC                      |
| 5                    | Reinforced Chromium + Carbide valve | XS                      |
| <b>S</b>             | <b>Seal</b>                         | <b>SE</b>               |
| 1                    | PTFE                                | 01                      |
| 2                    | PTFE +FEP                           | 02                      |
| 3                    | PTFE /PE                            | 03                      |
| 4                    | Leather                             | 04                      |
| 5                    | PTFE G                              | 05                      |
| 6                    | PU                                  | 06                      |
| 7                    | PTFEV                               | 07                      |
| <b>F</b>             | <b>Foot</b>                         | <b>FO</b>               |
| 1                    | Wall mounted                        | WM                      |
| 2                    | Follower plate Ø 80 mm              | FP                      |

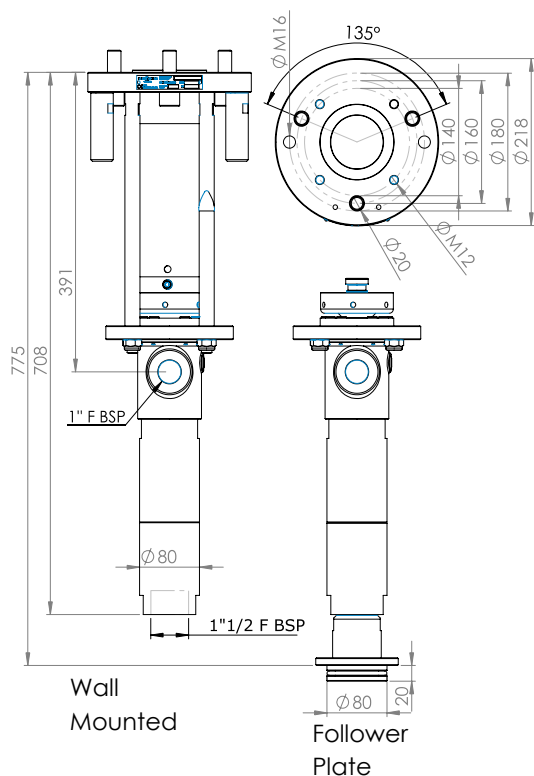
| Documentation Reference |           |
|-------------------------|-----------|
| Air Motor 6000          | 582147110 |
| Air Motor 7000          | 582148110 |
| Air Motor 9000          | 582149110 |

### 5.3 Correspondence table Existant part numbers / Significant designations

| Existant part number   | Significant designation | Motor             | Material              | Foot                            | Seal           |
|------------------------|-------------------------|-------------------|-----------------------|---------------------------------|----------------|
| <b>997 169 600</b>     | REX2B0227-XX-CS-WM-01   | None              | CS<br>Mixed Steels    | WM<br>Wall mounted              | 01<br>PTFE     |
| <b>461 251 740 103</b> | REX2B0227-60-CS-WM-03   | MOT6000<br>29 : 1 | CS<br>Mixed Steels    | WM<br>Wall mounted              | 03<br>PTFE/PE  |
| <b>997 000 500</b>     | REX2B00227-XX-CS-WM-04  | None              | CS<br>Mixed Steels    | WM<br>Wall mounted              | 04<br>Leather  |
| <b>471 251 740 306</b> | REX2B0227-70-CS-FP-06   | MOT7000<br>52 : 1 | CS<br>Mixed Steels    | FP<br>Follower plate<br>Ø 80 mm | 06<br>PTFE G   |
| <b>997 192 600</b>     | REX2B0227-XX-CS-FP-03   | None              | CS<br>Mixed Steels    | FP<br>Follower plate<br>Ø 80 mm | 03<br>PTFE /PE |
| <b>997 188 300</b>     | REX2B0227-70-CS-FP-04   | MOT7000<br>52 : 1 | CS<br>Mixed Steels    | FP<br>Follower plate<br>Ø 80 mm | 04<br>Leather  |
| <b>471 251 741 002</b> | REX2B0227-70-SS-WM-02   | MOT7000<br>52 : 1 | SS<br>Stainless steel | WM<br>Wall mounted              | 02<br>PTFE+FEP |
| <b>997 000 451</b>     | REX2B0227-60-SS- WM-03  | MOT6000<br>29 : 1 | SS<br>Stainless steel | WM<br>Wall mounted              | 03<br>PTFE/PE  |

## 6 Technical characteristics

### 6.1 General characteristics



| Technical characteristics |   |
|---------------------------|---|
| Volume per cycle          | 227 cm <sup>3</sup> / 7,68 oz                         |
| Stroke                    | 120 mm / 4,72 in                                      |
| Fluid outlet connections  | 1" F BSPP   |
| Weight                    | 25 kg / 55,1 lb                                       |
| Maximum fluid temperature | 80°C / 176°F  |
| Wetted parts              | Depending on Materials of construction and seals pack |
| Packings                  | Depending on seals pack                               |

| Available Motors                             |             | Motor selection |            |            |            |
|--|-------------|-----------------|------------|------------|------------|
|  |             | XX              | 60         | 70         | 90         |
|  |             | NONE            | MOTOR 6000 | MOTOR 7000 | MOTOR 9000 |
| <b>Pressure Ratio</b>                        |             | -               | 29 : 1     | 52 : 1     | 80 : 1     |
| <b>Maximum Air Inlet Pressure</b>            | bar         | -               | 6          | 6          | 6          |
|  | psi         | -               | 100        | 100        | 100        |
| <b>Maximum Outlet Fluid Pressure</b>         | bar         | -               | 170        | 310        | 480        |
|  | psi         | -               | 2500       | 4500       | 7000       |
| <b>Minimum Outlet Fluid Pressure</b>         | bar         | -               | 44         | 78         | 120        |
|  | psi         | -               | 631        | 1131       | 1740       |
| <b>Complete Pump Weight</b>                  | Kg          | -               | 46         | 51         | 60         |
|  | Lbs         | -               | 101.4      | 112.5      | 132.3      |
| <b>Air consumption 15 Cycles/min @ 4 bar</b> | NL.min-1    | -               | 395        | 708        | 1090       |
|  | scfm        | -               | 13,9       | 25         | 38,5       |
| <b>Air inlet fitting</b>                     | Female BSPP | -               | 3 / 4 "    | 3 / 4 "    | 3 / 4 "    |

scfm= Standard cubic feet of gas per minute



**(General characteristics - continued)**

| Pump Foot |                | Technical characteristic |
|-----------|----------------|--------------------------|
| WM        | Wall mounted   | Inlet F 1"1/2            |
| FP        | Follower Plate | Ø 80 mm                  |

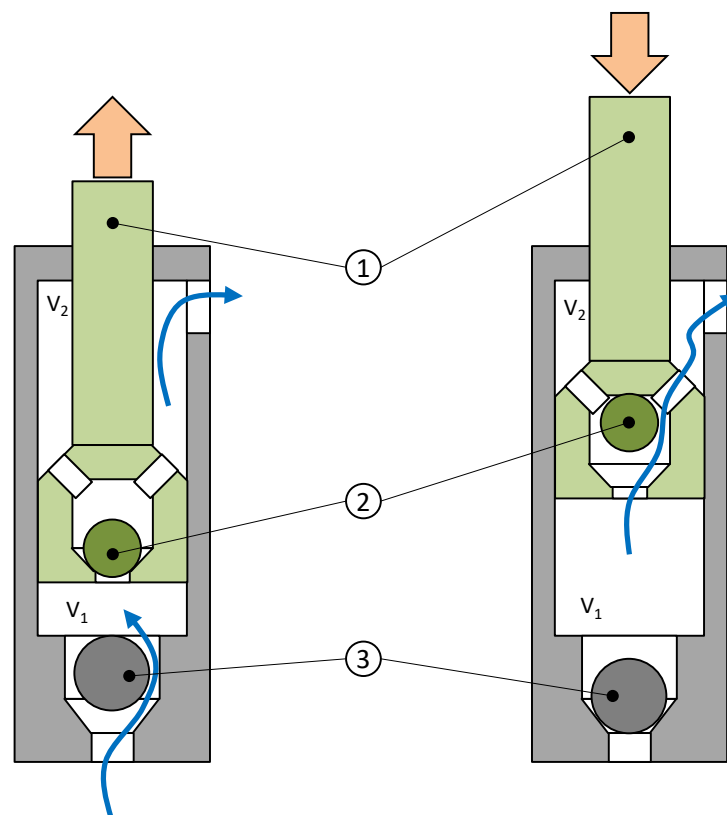
| Materials of construction |            | SS                          | CS                                | SC                               | XS                                 |
|---------------------------|------------|-----------------------------|-----------------------------------|----------------------------------|------------------------------------|
|                           |            | Stainless steel             | Mixed materials                   | stainless steel + carbide valves | Renforced Chromium + Carbide valve |
| Pump body                 | Wet Cup    | Carbon steel + Zinc treated | Carbon steel + Zinc treated       | Carbon steel + Zinc treated      | Carbon steel + Zinc treated        |
|                           | Upper body | Stainless steel             | Stainless steel                   | Stainless steel                  | Stainless steel                    |
|                           | Cylinder   | Stainless steel chromed     | Carbon steel + Chromium treatment | Stainless steel chromed          | Carbon steel + Chromium treatment  |
| Piston (Upper check)      | Piston rod | Stainless steel chromed     | Carbon steel + Chromium treatment | Stainless steel chromed          | Carbon steel + Chromium treatment  |
|                           | Valve body | Stainless steel             | Stainless steel                   | Stainless steel                  | Stainless steel                    |
|                           | Valve ball | Stainless steel             | Stainless steel                   | Stainless steel                  | Stainless steel                    |
|                           | Valve seat | Carbide                     | Carbide                           | Carbide                          | Carbide                            |
| Lower valve (Lower check) | Bodys      | Stainless steel             | Carbon steel                      | Stainless steel                  | Carbon steel                       |
|                           | Ball       | Stainless steel             | Stainless steel                   | Stainless steel                  | Stainless steel                    |
|                           | Seat       | Stainless steel             | Stainless steel                   | Carbide                          | Carbide                            |
| Pump Foot                 |            | -                           | Carbon steel                      | -                                | Carbon steel                       |

## 6.2 Principle of operation

### Expected use

These pumps coupled to air or hydraulic motors are intended for transferring or spraying different liquid or pasty products with a desired flow rate and output pressure.

### Functional description



When the piston (1) rises, the upper flap (2) closes and the lower flap (3) opens. The piston (1) expels the product from the upper chamber (V<sub>2</sub>) to the outside and sucks the product to fill the lower chamber (V<sub>1</sub>).

When the piston (1) is lowered, the upper flap (2) opens and the lower flap (3) closes. The piston (1) compresses the fluid in the lower chamber (V<sub>1</sub>) and transfers it to the upper chamber (V<sub>2</sub>). Since the volume of the upper chamber (V<sub>2</sub>) is half that of the lower chamber (V<sub>1</sub>), a volume equivalent to the upper chamber (V<sub>2</sub>) is expelled from the pump.

**ATTENTION!**

The friction generated by the movement of the product inside the pump and its accessories, as well as that caused by the seals, creates static electricity that can cause fire or explosion. Therefore, the fluid section system must be earthed via the motor ground cable (see the motor instruction manual for its ground connection).

---

## 7 Installation

---

### 7.1 Handling

**Fluid sections of great weight and size must be handled with suitable lifting equipment.**

### 7.2 Connections subsets



- ✓ These fluid sections are intended to be coupled to motors (pneumatic or hydraulic) with compatible stroke.
- ✓ It is imperative to comply with an air motor / hydraulic combination provided by **SAMES KREMLIN**
- ✓ Make sure that all connections of the pump and fluid section components - cables, hoses and pipes - are installed in such a way that they do not cause people to fall.
- ✓ Make sure that the order in which the cables, hoses and pipes are connected is in accordance with the connection diagram.
- ✓ Make sure that all cable connectors, hose and pipe connections are correctly fitted.
- ✓ Remember that unconnected or incorrectly connected cables, hoses and pipes can lead to malfunctions that endanger the safety of operating personnel.

---

#### 7.2.1 Fluid supply connection



- ✓ If the supply pressure is higher than the max. pressure, it is necessary to install a fluid pressure regulator the closest possible of the equipment.
  - ✓ Ensure that a short product hose reduces pressure fluctuations and pressure drops.
  - ✓ Make sure that the fluid supply is properly made. The nominal size of the fitting to be used depends on the nominal size of the fluid hose.
-

## 7.2.2 Air supply connection

- ✓ Ensure that in bound air supply and hose are of correct size to reduce pressure fluctuations and pressure drops.
- 

## 7.3 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 Commissioning

---



The fluid sections are integrated in a system, if necessary refer to any additional instructions for further information on commissioning.

---

### **Pump**

Pumps are tested for operation at the factory using a light weight oil lubricant.

Before commissioning, this lubricant must be removed by flushing with a suitable solvent.

At the end of the day, flush with a suitable solvent.

It is advisable to stop the fluid section in the "low" position in order to prevent the product from taking hold of the piston rod.

---

### **Motor**

The Air motors are tested before their shipment. Nevertheless:

- ✓ Before coupling the Air motor to a fluid section pump, it is recommended to run the air motor at a low air pressure (1 bar / 14.5 psi max) for a few minutes.
  - ✓ Couple the motor with the recommended pump fluid section.
-

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## 9 Use of the product

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### 9.1 User settings

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#### **Wet cup nut**

Before commissioning, fill the wet cup halfway with lubricant "T".

The wetting cup nut must be tightened moderately. Overtightening quickly damages the gland packing. A wrench is supplied to allow proper tightening.

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#### **Tightening of the Wet cup**

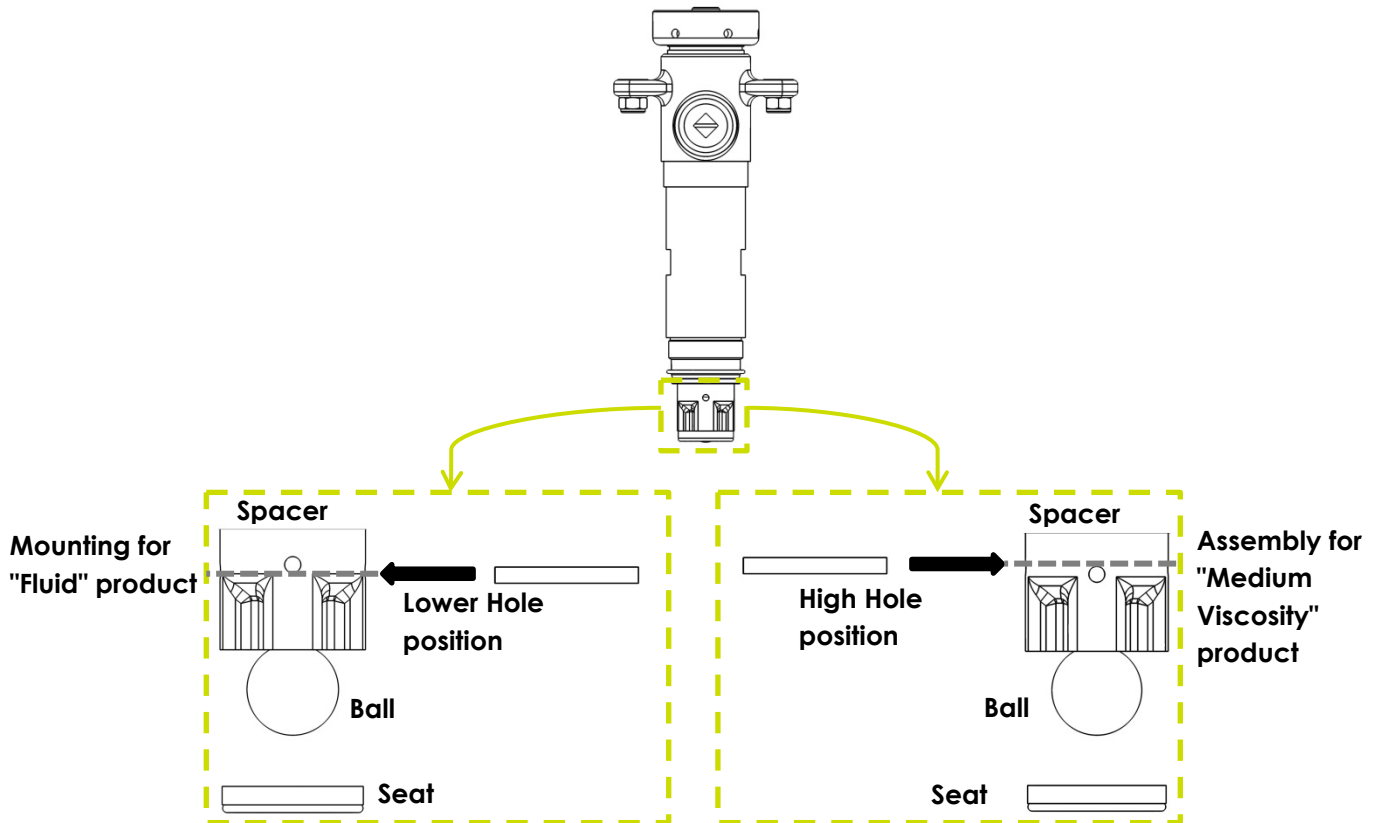
- ✓ Verify cup is filled with lubricant T,
  - ✓ Run the pump, then tighten the cup after 10 minutes, again after 1 hour, then after 1 day of operation,
  - ✓ In the event of a leak, the cup must be tightened.
- 

#### **Tightening procedure**

- ✓ Depressurize the Air motor (see depressurization procedure),
  - ✓ Depressure the product circuit (see depressurization procedure),
  - ✓ Tighten the cup, clean it and fill it with lubricant T,
  - ✓ Close the pump purge circuits,
  - ✓ Open the Air motor air valve.
-

## Suction Valve Pin Adjustment

Depending on the viscosity of the medium to be pumped, position the lower plug pin as shown below.



*(For a full description of spare parts, see Part 12 - Spare Parts)*



As this pump is mainly dedicated to the transfer and application of viscous products, the pin is, when leaving the factory, positioned at the highest point. This allows the ball to move far away from the seat and allow the liquid to enter the pump during suction without hindering its passage.



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## 9.2 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.**

---

## 9.3 Start up



Pumps are tested for operation at the factory using a light weight oil lubricant.

Before commissioning, this lubricant must be removed by flushing with a suitable solvent.

At the end of the day, flush with a suitable solvent.

It is advisable to stop the fluid section in the "low" position in order to prevent the product from taking hold of the piston rod.

---

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## 9.4 Shutdown procedure

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### Pump



**To avoid the risk of personal injury, material injections, injuries caused by moving parts or electric arcs, it is imperative that the following procedure be followed before any work is carried out when shutting down the system, assembling, cleaning or changing the nozzle.**

- ✓ Lock the guns (valve, tap...) on OFF.
- ✓ Shut off the air supply through the shut off valve to remove residual air from the motor.
- ✓ Unlock the gun (valve, tap...).
- ✓ Bring the gun (valve, tap...) close to a metal bucket in order to recover the product. Hold it against the wall of the bucket to avoid interrupting the grounding continuity (if necessary, use the wire with clamp to ground the metal bucket).
- ✓ Open the gun (valve, tap) in order to drain the circuit.
- ✓ Lock the gun (valve, tap) in the OFF position.
- ✓ Open the pump drain valve and collect the fluid in a properly grounded metal pail.
- ✓ Leave the bleed valve open during the entire operation.



**Check the conformity of the wiring before intervention.**

---

## 9.5 Diagnostic help / Troubleshooting guide

### Possible symptoms of faults / Causes of faults / Remedies to apply

| Defaults   | Possible causes  | Remedies   |
|--|--|--|
| Leakage at the cup seals   | Insufficient tightening of the packing nut                         | Tighten the cup.   |
|  | Incorrect assembly of seals  | Check the assembly.  |
|  | Damaged or worn seals  | Replace them.  |
|  | Incorrect selection of the material of the joints                  | Check compatibility.   |
| The cup seals get rapidly damaged                                | No lubricant in the cup (pumped product drying on the piston rod). | Clean, replace parts if necessary. When stopping for a long time, stop the pump with the piston in the low position. |
|  | Product compatibility / seals                                      | Check.   |
| The pump is stopped  | The fluid is polymerized, hardened, dried in the pump.             | Clean the pump, change the parts if necessary.   |
|  | The cup is too tightened.  | Loosen.  |
|  | Broken part(s) in the pump.  | Remove, check, replace.  |
| The motor seems to operate but the pump does not deliver product | Internal parts of the motor failing                                | Check the operating of the motor.  |
|  | Defective coupling.  | Check coupling.  |
| The pump operates but irregular flow                             | Valve clogged on the seat, incorrectly mounted or worn.            | Check mounting, state of the parts, tightening of parts and seals.   |
|  | Air inlet in the suction circuit.                                  |  |
| At stop, pump piston continues to move on going down             | Valve worn or incorrectly mounted                                  | Check and replace parts.   |
|  | Plug or drain valve not tightened                                  |  |
| At stop, pump piston continues to move on going up               | Head piston seals or upper valve worn or incorrectly mounted.      | Check and replace parts.   |
|  | Plug or drain valve not tightened                                  |  |

| Defaults  | Possible causes  | Remedies  |
|---|--|---|
| Pump strokes quickly downward (simple effect working)       | Bad feeding of the pump.   | Check use parameters of the accessories (pressure on follower plate or suction rod,...). Accessories can be not adapted or clogged. |
|   | Product is too viscous.  | Bad definition of the pump.   |
|   | Lower valve worn.  | Check and replace parts.  |
|   | A foreign product obstructs the lower valve.                                     | Clean and check.  |
| Pump strokes quickly upward                                 | Valve worn or damaged.   | Check and replace parts.  |
|   | A foreign product obstructs the upper valve.                                     | Clean and check.  |
| Pump cycles up and down at different speeds                 | Valve, head piston seals or cylinder worn.                                       | Replace parts.  |
|   | Seals incorrectly mounted or damaged   | Check the mounting; change if necessary.  |
| The pump does not deliver enough pressure                   | Insufficient air pressure to the motor (valve insufficiently open, air leak,...) | Check, adjust.  |
|   | Insufficient air inlet on the motor or outlet clogged.(hose not adapted)         | Check filter, mounting, hose not adapted.   |
|   | Cup or head piston seals too tightened.  | Check mounting or loosen cup nut.   |
| Abnormal operating after racing or to elevated temperature. | Head piston or cup seals too tightened, damaged.                                 | Check mounting, reduce pumping rhythm. Replace parts if necessary.  |
|   | Product drum empty.  | Fill the drum, check the suction circuit and possible air leakage.  |
| Pressure drop when pump strokes downward                    | Lower valve lifted or process  | Displace the pin.   |
| Fluid leakage from the pump body                            | Cylinder tightened   | Check parts and change them if necessary  |
|   | No seals or seals damaged  |   |

---

## 10 Maintenance

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### Attention

Before any pump maintenance or service work performed, it is imperative to follow the depressurization procedure and the safety instructions.

Only qualified personnel should be allowed to carry out the following interventions. Observe the safety instructions given in this and all other documentation.

These procedures cover only the most common problems. If the information given here does not solve the problem you are experiencing, please contact your local **SAMES KREMLIN** representative for assistance.

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



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.

## 10.1 Preventive Maintenance Plan



### ATTENTION

Before any pump maintenance or service work performed, it is imperative to follow the depressurization procedure and the safety instructions.

Routine maintenance after a certain number of operating hours is recommended.

This is defined by the service department of the user and depends on the product, the working cycle and the usual pressure.

Take note of the disassembly/reassembly of the pump and the spare parts.

## Fluid section

### Daily

- ✓ Detect leaks at connections.
- ✓ Check the condition of the hoses.
- ✓ Observe the piston rod of the pump. Do not let the product dry onto the piston rod.
- ✓ Check the lubricant level inside the cup (keep it at half level). Fill it if necessary. It is normal for this lubricant to stain.
- ✓ Tighten the packing cup moderately with the supplied wrench, if necessary.
- ✓ Check the tightness of the components.
- ✓ If the pump is equipped with a pusher plate:
  - check the condition of the plate seal,
  - clean the top and bottom of the follower plate.
- ✓ Operate all valves in the system.
- ✓ Clean the site and the environment.

### Twice a month

- ✓ If the lubricant is strongly colored in the cup, renew it.
- ✓ Check that the cup remains clean and clean it regularly with solvent after draining the lubricant.

---

## 10.2 Curative Maintenance

---

**ATTENTION**

**Before any pump maintenance or service work performed, it is imperative to follow the depressurization procedure and the safety instructions.**

---

**Before each reassembly**

- ✓ Clean the parts with the appropriate cleaning solvent.
  - ✓ Fit new seals if necessary, after greasing them.
  - ✓ Grease the piston and the inside of the cylinder to avoid damaging the seals.
  - ✓ Fit new parts if necessary.
-

## 11 Disassembly / Reassembly Operation



### ATTENTION

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



### ATTENTION

The equipment 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.

#### Before each reassembly :

- Clean the parts with appropriate cleaning solvent.
- Fit new seals if necessary, after greasing them.
- Grease the piston and the inside of the cylinder to avoid damaging the seals (see table below),
- Fit new parts if necessary.

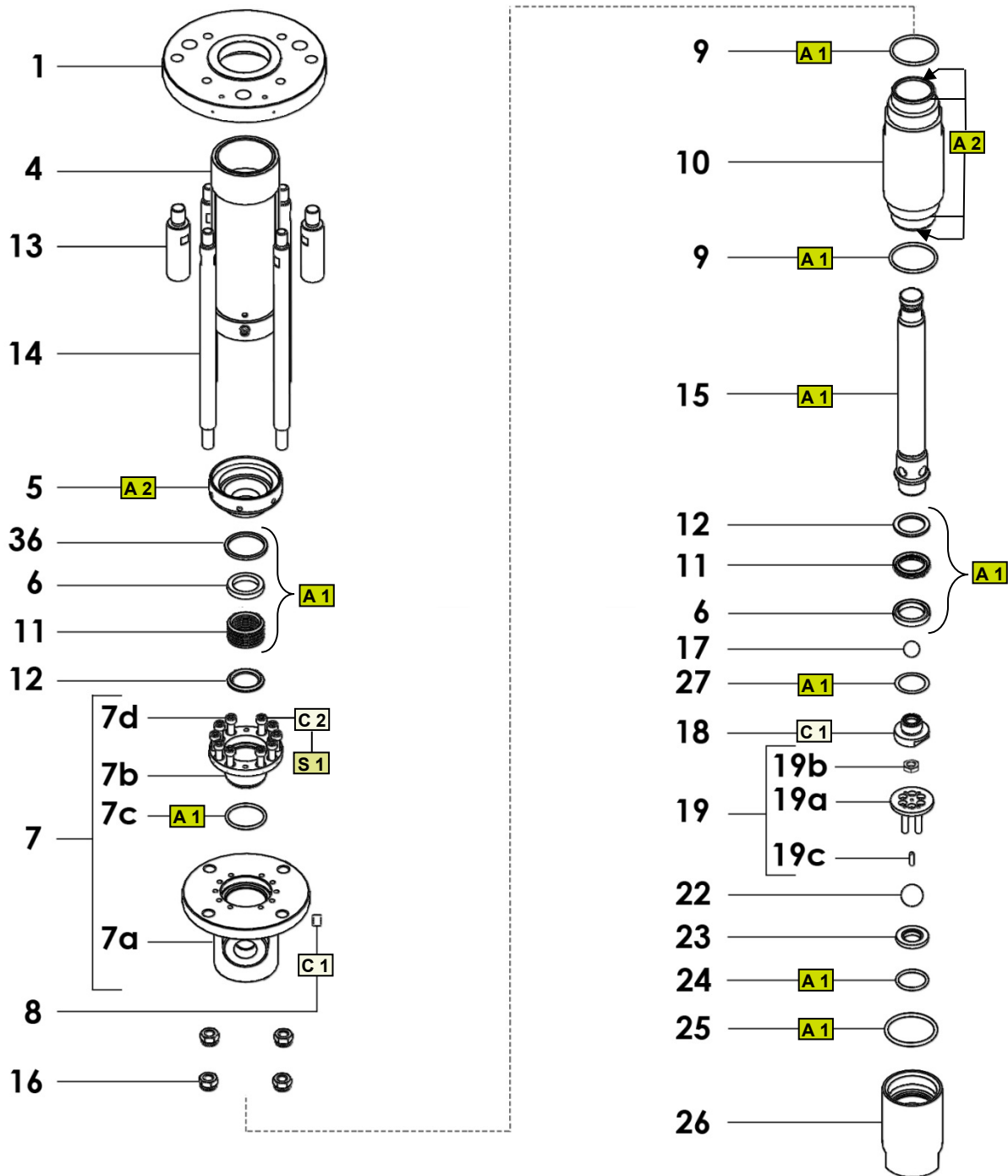
### Greases and thread lockers designations

| Index      | Instruction                               | Description                                    | Part number |
|------------|---|--|-------------|
| <b>A 1</b> | PTFE grease                               | 'TECHNI LUB' grease<br>(10 ml / 0.0026 US gal) | 560.440.101 |
| <b>A 2</b> | Anti-seize grease                         | Grease box (450 g / 0.99 lb)                   | 560.420.005 |
| <b>C 1</b> | Medium strength<br>Aneorobic Pipe sealant | Loctite 5772 (50 ml / 0.013 US gal)            | 554.180.015 |
| <b>C 2</b> | Low strength<br>Aneorobic Adhesive        | Loctite 222 (50 ml / 0.013 US gal)             | 554.180.010 |
| <b>S 1</b> | Screwing torque: 20 Nm / 14.75 ft/lbs     |  |             |



Fluid section wall mounted : all versions

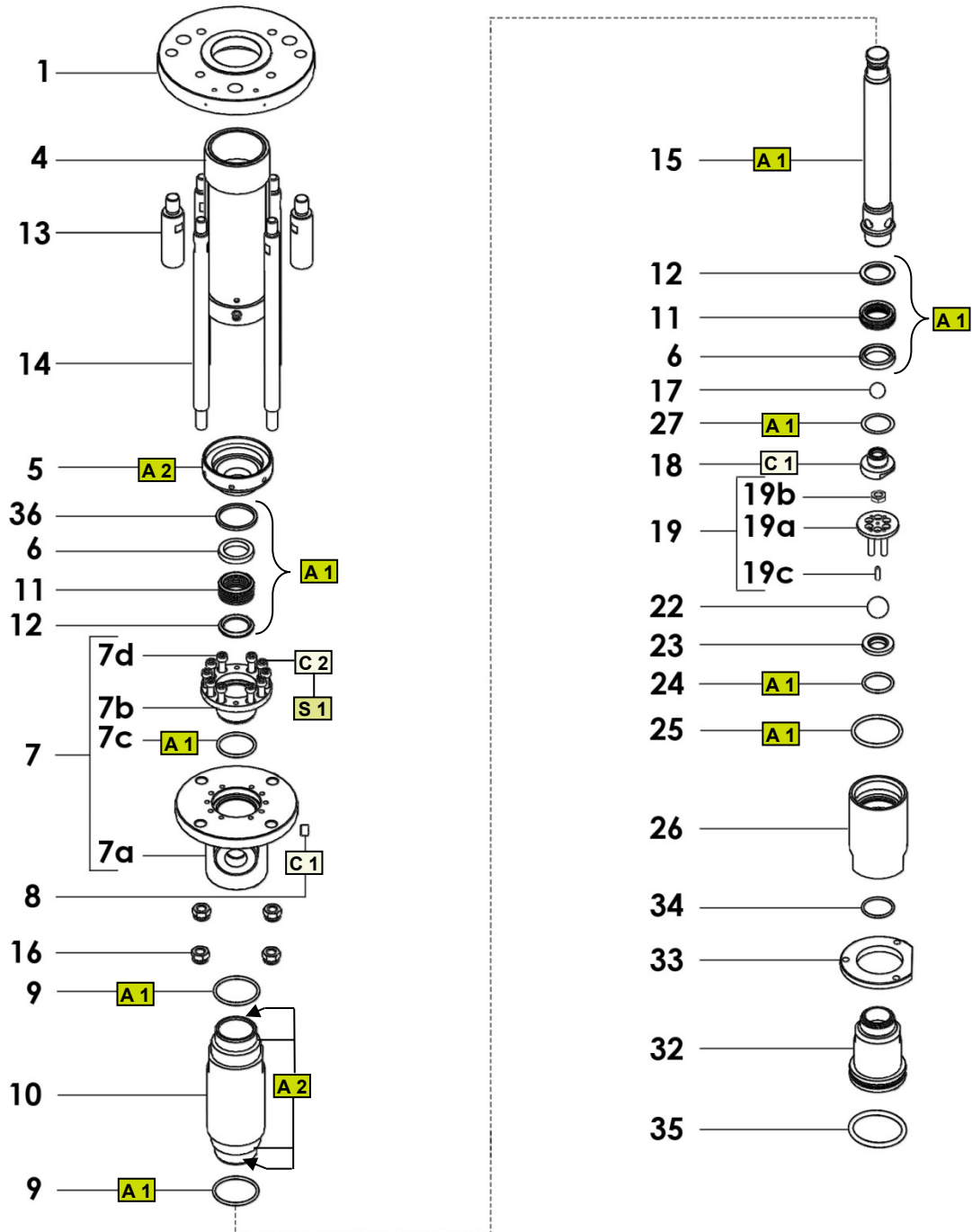
REX2B0227-□-□-WM-□



(For a full description of spare parts, see Part 12 - Spare Parts)

**Fluid section Follower plate : all versions except  
Reinforced Chromium + Carbide valve**

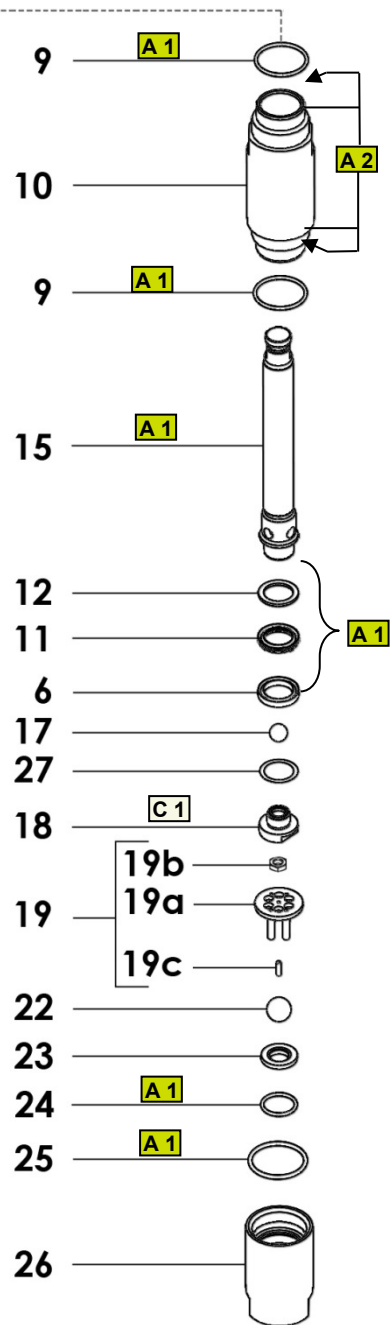
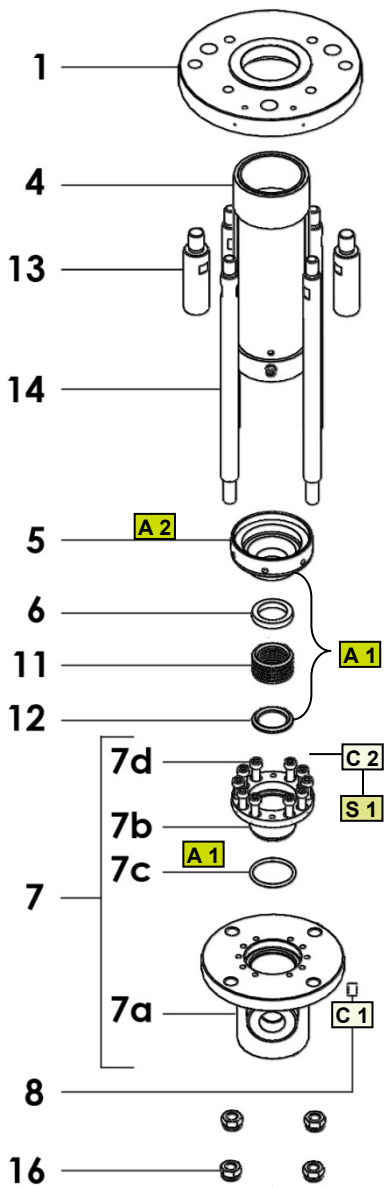
REX2B0227-□-SS-FP-□  
REX2B0227-□-CS-FP-□  
REX2B0227-□-SC-FP-□



(For a full description of spare parts, see Part 12 - Spare Parts)

**Fluid Section Folower plate : Reinforced Chromium + Carbide valve version**

**REX2B0227-□-XS-FP-□**



*(For a full description of spare parts, see Part 12 - Spare Parts)*

---

## Disassembly of the pump

- ✓ Unscrew the 2 nuts (16) and put aside the flange (1), the tie rods (14) and the protection (4),
- ✓ Clamp the pump horizontally through the body with a vice (7),
- ✓ Unscrew the foot-valve body assembly (26) [*for the fluid section, model REX2B0227-□-CS-FP-□: unscrew the adapter (32), the flange (33) and the O-Rings (34 & 35)*],
- ✓ Take off the piston (15) downwards,
- ✓ Put aside the cylinder (10).

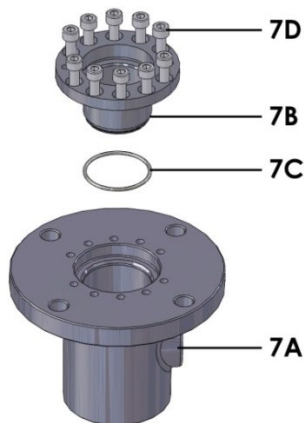
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## Lower valve

- ✓ Unscrew the body of the foot valve body (26),
  - ✓ Take off the ball cage (19) and the ball (22),
  - ✓ Take off the seat (23), the seal (24 & 25),
  - ✓ Clean the parts, check them if they are damaged or worn, change them
  - ✓ Reinstall the parts in the reverse order of the disassembly sequence.
-

**Wet cup seals**

*Nota: the pump body (7) consists of a cartridge (7B) to make easier the changing of the seals.*



Ind.7

- ✓ Unscrew the cup (5),
- ✓ Take off the 10 screws (7D) that tighten the cartridge (7B) in the body (7A),
- ✓ Take off the cartridge (7B) screwing the extractors in the 2 M8 holes of the cartridge,
- ✓ Take off the washers (6 & 12), the ring (36), and the seals (11),
- ✓ Change the seals (11), [for the fluid section, model REX2B0227-□-XS-FP-□: change the PTFE seals (11b) & PTFE G seals (11d)],
- ✓ Change the seal (7C),
- ✓ Clean all the parts, check them; if there are damaged or worn, change them,
- ✓ Clean and reinstall the parts in the reverse order of the disassembly sequence.

**Piston rod seals**

- ✓ Unscrew the seat (18),
- ✓ Take off the ball (17), the washers (6 & 12), the seals (11) [for the fluid section, model REX2B0227-□-XS-FP-□: change the PTFE seals (11b) & PTFE G seals (11d)] and the adjustment block(s) (27) if it/they is/are present,
- ✓ Clean all the parts, check them; if there are damaged or worn, change them.
- ✓ Reinstall the parts in the reverse order of the disassembly sequence.

## Reassembly of the fluid section

- ✓ Lubricate the cup seals and piston rod seals,
- ✓ Slide the piston rod assembly (15) inside the body (7), push it upwards,
- ✓ Screw the cylinder (10) into the body (7),
- ✓ Screw the foot valve body assembly (26) [for the fluid section, model REX2B0227-□-CS-FP-□: screw the O-Rings (34 & 35), the flange (33) and the adapter (32)]. Tighten slightly,
- ✓ Reinstall the protection (4), the connection flange (1) and the tie-rods (14). Screw the 2 nuts (16),
- ✓ Couple the fluid section to the pneumatic motor.

*NOTA: The quantity of seals of the packing (11) depends upon the used package of seals.*

---

## Adjustment of the suction valve ball cage screw (model REX2B0227-□-XS-FP-□)

- ✓ Depending upon the fluid viscosity to be pumped, adjust the height of the screw (19c) to increase the ball up motion.
  - ✓ Lock the screw on the lock nut (19b).
-

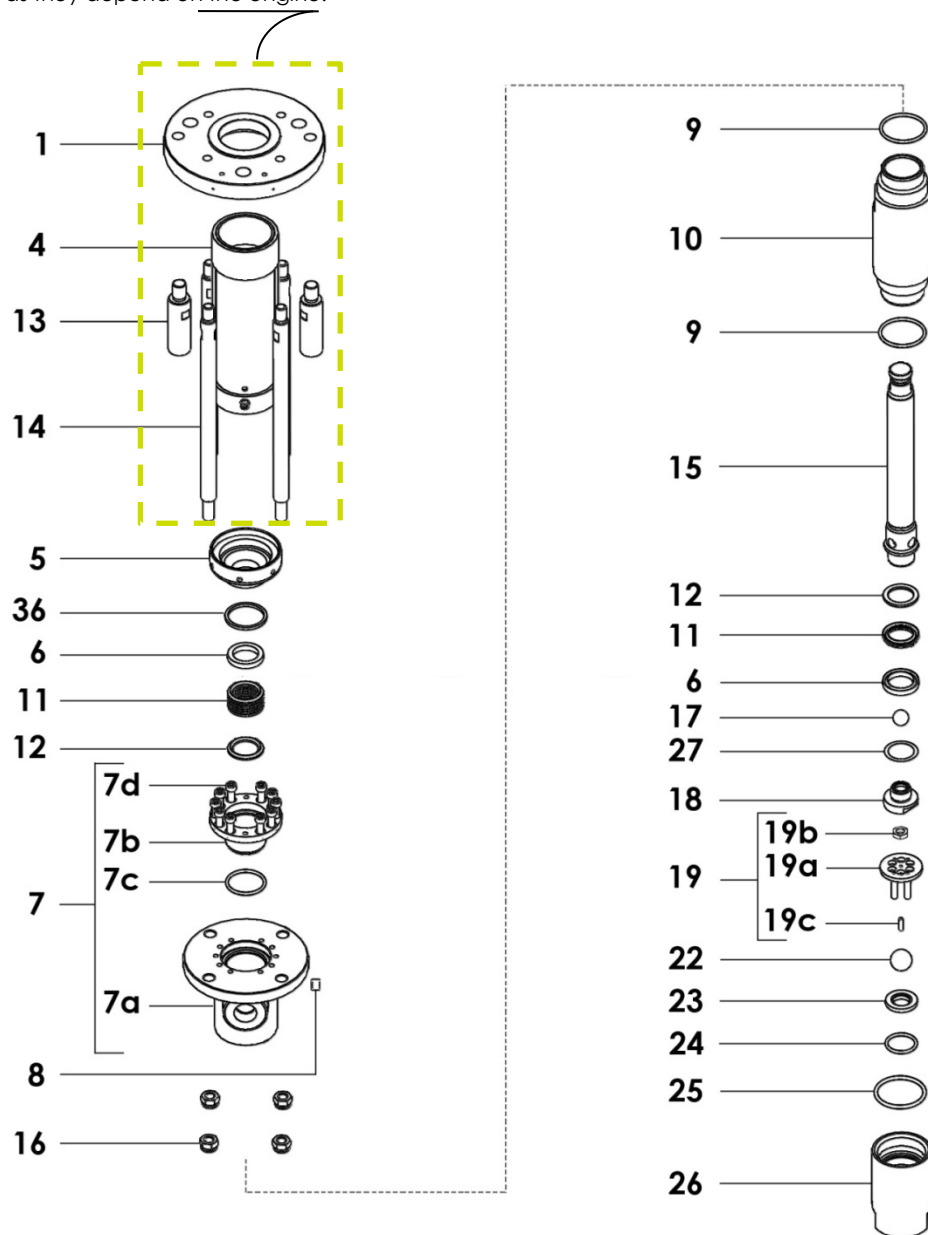
## 12 Spare parts

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

### Fluid Section wall mounted : all versions

REX2B0227-□-□-WM-□

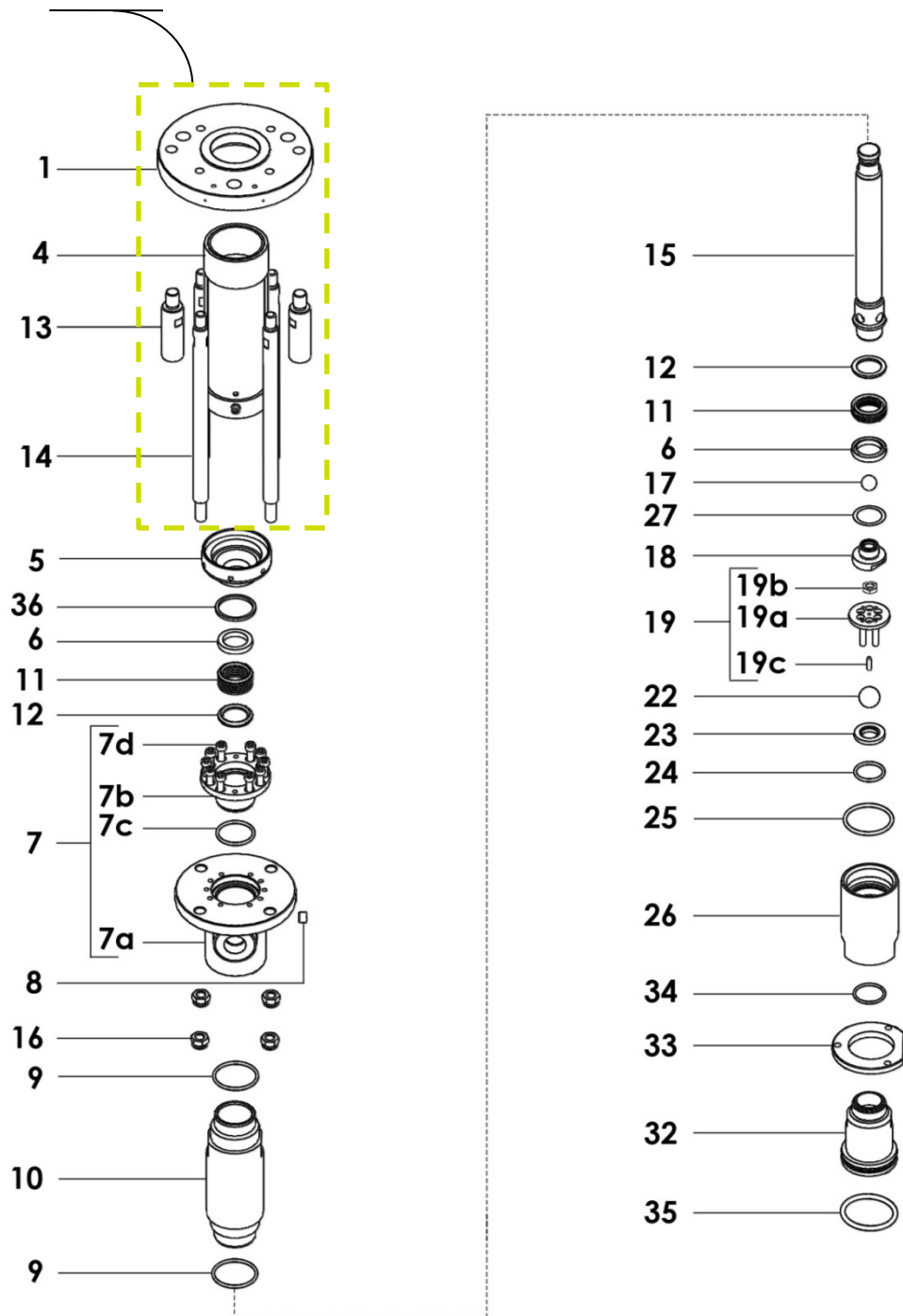
**WARNING:** these parts are not supplied with the fluid section alone as they depend on the engine.



**Fluid section Follower plate : all versions except  
Reinforced Chromium + Carbide valve**

REX2B0227-□-SS-FP-□  
REX2B0227-□-SC-FP-□  
REX2B0227-□-CS-FP-□

**WARNING:** these parts are not supplied with the fluid section alone as they depend on the engine.

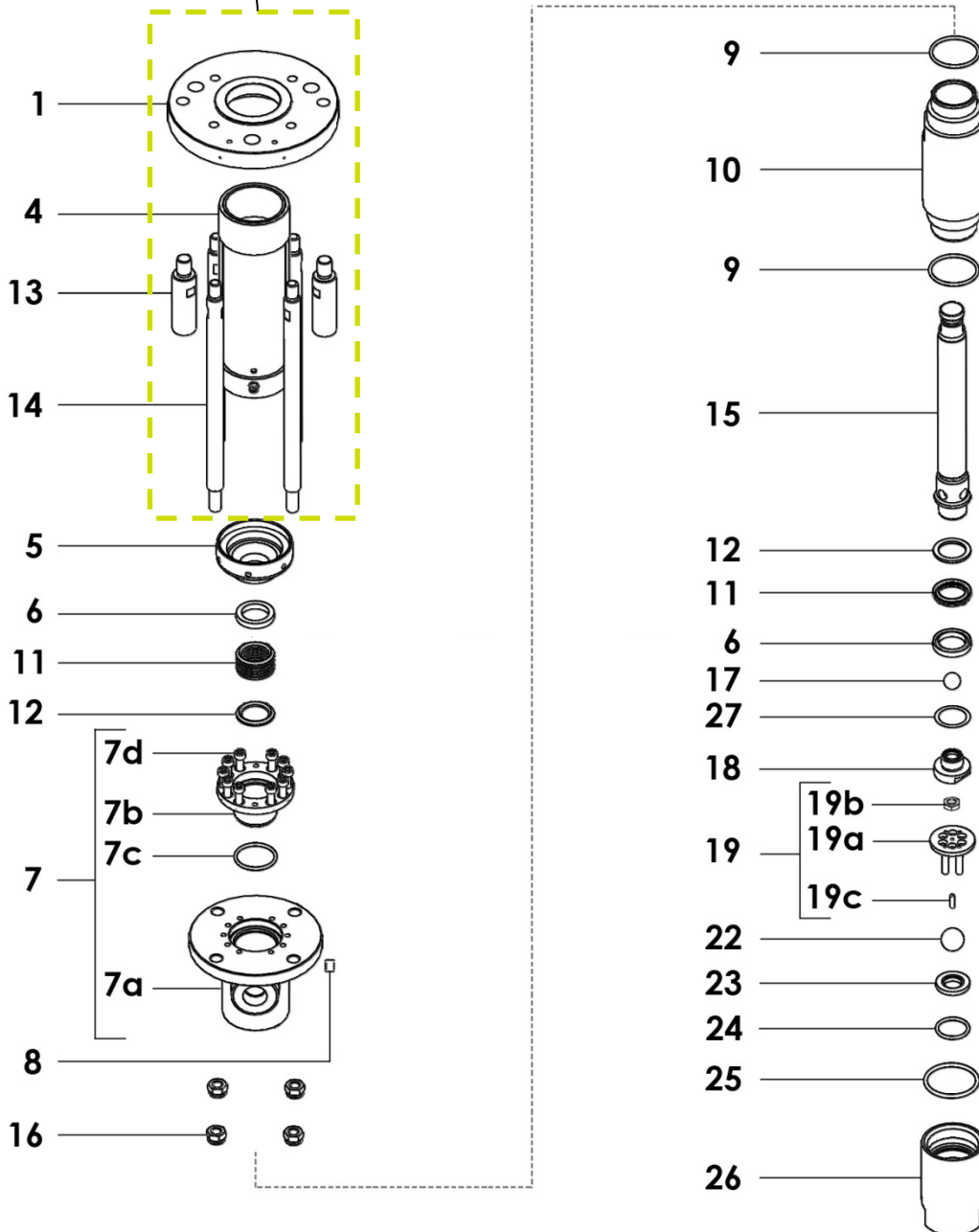




**Fluid Section Follower plate : Reinforced  
Chromium + Carbide valve version**

REX2B0227-□-XS-FP-□

**WARNING:** these parts are not supplied with the fluid section alone as they depend on the engine.



REX2B0227 - □ - □ - □ - □

| WM           |                 | FP             |                     |                                  |
|--------------|-----------------|----------------|---------------------|----------------------------------|
| Wall Mounted |                 | Follower Plate |                     |                                  |
| CS           | SS              | CS             | XS                  | SC                               |
| Mixed Steel  | Stainless Steel | Mixed Steel    | Reinforced Chromium | Stainless steel + Carbide valves |

| Ind. | Description            | # Ref.                       |         |   |             |             | Qty | Spare part maintenance level** |
|------|------------------------|------------------------------|---------|---|-------------|-------------|-----|--------------------------------|
| **1  | Connection flange      | See motor coupling kit table |         |   |             |             | 1   | 3                              |
| **4  | Protection             | See motor coupling kit table |         |   |             |             | 1   | 3                              |
| 5    | Wetting cup nut        | 044 240 140                  |         |   |             |             | 1   | 3                              |
| *6   | 'F' washer             | N.S.                         |         |   |             |             | 2   | 2                              |
| 7    | Pump body              | 210 624                      |         |   |             |             | 1   | 3                              |
| 7a   | ▪ Body                 | N.S.                         |         |   |             |             | 1   | 3                              |
| 7b   | ▪ Cartridge            | N.S.                         |         |   |             |             | 1   | 3                              |
| 7c   | ▪ Seal                 | According to seals pack      |         |   |             |             | 1   | 1                              |
| 7d   | ▪ Screw, CHc M 8x20    | 930 151 279                  |         |   |             |             | 10  | 3                              |
| 8    | Plug                   | 906 333 102                  | 552 237 | 3 | 906 333 102 | 552 237     | 1   | 3                              |
| 9    | O-Ring                 | According to seal pack       |         |   |             |             | 1   | 1                              |
| 10   | Cylinder               | 210 627                      | 210 636 | 2 | 10 517 493  | 210 636     | 1   | 2                              |
| 12   | 'M' washer             | 209 652                      |         |   |             |             | 1   | 1                              |
| 13   | Pin                    | See motor coupling kit table |         |   |             |             | 2   | 3                              |
| **14 | Tie-rod                | See motor coupling kit table |         |   |             |             | 2   | 3                              |
| *15  | Piston rod             | 210 626                      | 210 638 | 2 | 210 626     | 210 638     | 1   | 2                              |
| 16   | Lock nut               | 88 339                       |         |   |             |             | 4   | 3                              |
| *17  | Ball                   | 87 320                       | 87 320  | 2 | 907 414 405 | 87 320      | 1   | 2                              |
| *18  | Upper piston seat      | 209 649                      |         |   |             |             | 1   | 1                              |
| 19   | Ball cage fitted       | 107 307                      |         |   |             |             | 1   | 2                              |
| 19a  | ▪ Ball cage            | N.S.                         |         |   |             |             | 1   | 3                              |
| 19b  | ▪ Lock nut             | N.S.                         |         |   |             |             | 1   | 3                              |
| 19c  | ▪ Screw                | N.S.                         |         |   |             |             | 1   | 3                              |
| *22  | Ball                   | 87 328                       | 87 328  | 2 | 907 414 406 | 87 328      | 1   | 2                              |
| *23  | Lower seat             | 209 612                      | 209 612 | 2 | 044 240 142 | 044 240 142 | 1   | 2                              |
| 26   | Foot valve body        | 210 619                      | 210 628 | 3 | 210 619     | 210 630     | 1   | 2                              |
| 31   | Cup wrench             | 044 950 008                  |         |   |             |             | 1   | 3                              |
| 32   | Follower plate adapter | -                            | 210 631 | 3 |             |             | 1   | 3                              |
| 33   | Valve body flange      | -                            | 210 056 | 3 |             |             | 1   | 3                              |

\* Recommended maintenance parts.

\*\*Level 1 : Preventive maintenance

N S: Denotes parts are not serviceable.

Level 2 : Corrective maintenance

Level 3 : Exceptional maintenance



Ind 31

## Lower adapter flange

| Ind. | Description  | # Ref.             | Qty      | Spare part maintenance level** |
|------|--|--------------------|----------|--------------------------------|
| -    | <b>Lower adapter flange for motors 6000, 7000 and 9000</b> | <b>144 245 493</b> | <b>1</b> | <b>3</b>                       |
| -    | ▪ Connecting flange assembly                               | N.S. (044 245 197) | 1        |                                |
| **1  | ▪ ▪ Connecting flange                                      | N.S. (210 620)     | 1        |                                |
| **2  | ▪ ▪ Screw CHc M18x55                                       | N.S. (88 960)      | 3        |                                |
| **13 | ▪ ▪ Pin  | N.S. (209 582)     | 2        |                                |
| **4  | ▪ Protective housing                                       | N.S. (044 230 010) | 1        |                                |
| **14 | ▪ Tie-rod  | N.S. (209 621)     | 4        |                                |

\* Recommended maintenance parts.

\*\*Level 1 : Preventive maintenance

N S: Denotes parts are not serviceable.

Level 2 : Corrective maintenance

Level 3 : Exceptional maintenance

## Recommended Seals pack

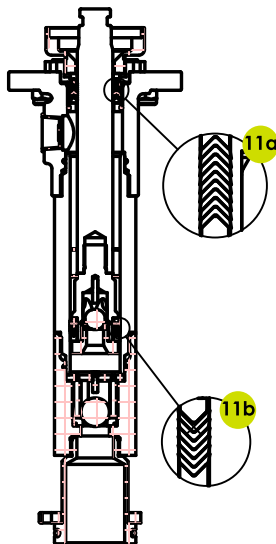
| Code | Composition                 | Use   |
|------|-----------------------------|---|
| 01   | PTFE (+ FKM)                | Solvent - Ether - Ketone - Aromatic alcohol - some varnishes and paints   |
| 02   | PTFE (+ FKM / FEP)          | Solvent - Ether - Ketone - Aromatic alcohol - some varnishes and paints, PU paints - Pharmacy - Cosmetics - Some foodstuffs |
| 03   | PTFE + PE (+ FKM)           | Epoxy glue - Butyl - Silicone - Some varnishes - Paint  |
| 04   | PE + LEATHER (+ FKM)        | Paint - Varnishes - Grease - Oil - Ink - Hydro soluble paint  |
| 05   | GRAPHITED PTFE (+ FKM)      | Paints - Varnishes - Inks - PVC compounds - Butyl   |
| 06   | PU + GRAPHITED PTFE (+ FKM) | Mastics - PVC - Butyl   |
| 07   | GRAPHITED PTFE /PE (+ FKM)  | Paint - Varnishes - Grease - Oil - Inks - Hydro soluble paint - Mastics - PVC - Butyl                                       |
| 08   | GRAPHITED PTFE + PTFE       | Zinc special  |

## Accessory

| Ind. | Description                                      | # Ref.             | Qty      |
|------|--|--------------------|----------|
| -    | <b>Bottle of lubricant T (125 ml / 0,034 oz)</b> | <b>149 990 020</b> | <b>1</b> |

**Seals pack composition: 01 to 03**

| Seals Pack:<br># : |                  | 01<br>106 281 |                              |            | 02<br>106 282 |                              |                  | 03<br>106 283 |                              |            |
|--------------------|------------------|---------------|------------------------------|------------|---------------|------------------------------|------------------|---------------|------------------------------|------------|
| Ind.               | Description      | Qté           | #                            | Material   | Qty           | #                            | Material         | Qty           | #                            | Material   |
| 9                  | O-Ring           | 2             | 84 468                       | FKM        | 2             | 84 471                       | FKM / FEP        | 2             | 84 468                       | FKM        |
| <b>11a</b>         | Cup packing      | 9             | 209 655                      | PTFE       | 9             | 209 655                      | PTFE             | 5<br>4        | 209 656<br>209 655           | PE<br>PTFE |
| <b>11b</b>         | Piston packing   | 6             | 209 655                      | PTFE       | 6             | 209 655                      | PTFE             | 3<br>3        | 209 655<br>209 656           | PTFE<br>PE |
| 24                 | O-Ring           | 1             | 84 390                       | PTFE       | 1             | 84 390                       | PTFE             | 1             | 84 390                       | PTFE       |
| 25                 | O-Ring           | 1             | 84 188                       | FKM        | 1             | 84 188                       | FKM              | 1             | 84 188                       | FKM        |
| 34                 | O-Ring           | 1             | 84 391                       | PTFE       | 1             | 84 391                       | PTFE             | 1             | 84 391                       | PTFE       |
| 35                 | O-Ring           | 1<br>1        | 909 130 540**<br>Or 84 468** | FKM<br>FKM | 1<br>1        | 909 130 540**<br>Or 84 471** | FKM<br>FKM / FEP | 1<br>1        | 909 130 540**<br>Or 84 468** | FKM<br>FKM |
| 30                 | Adjustment block | 8*            | 210 341                      | ST STEEL   | 8*            | 210 341                      | ST STEEL         | 8*            | 210 341                      | ST STEEL   |
| 7C                 | Cartridge seal   | 1             | 909 420 271                  | FKM        | 1             | 909 420 271                  | FKM              | 1             | 909 420 271                  | FKM        |

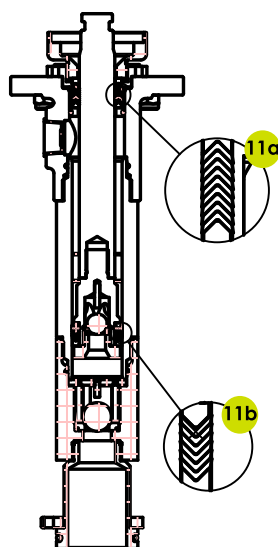


| <b>11a</b> |   |   | <b>11a</b> |   |   | <b>11a</b> |   |   |
|------------|---|---|------------|---|---|------------|---|---|
| PTFE       | → | ^ | PTFE       | → | ^ | PE         | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PTFE       | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PE         | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PTFE       | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PE         | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PTFE       | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PE         | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PTFE       | → | ^ |
| PTFE       | → | ^ | PTFE       | → | ^ | PE         | → | ^ |
| <b>11b</b> |   |   | <b>11b</b> |   |   | <b>11b</b> |   |   |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PE         | → | ∨ |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PTFE       | → | ∨ |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PE         | → | ∨ |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PTFE       | → | ∨ |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PE         | → | ∨ |
| PTFE       | → | ∨ | PTFE       | → | ∨ | PTFE       | → | ∨ |

\* Quantity to be assembled as required\*\* According to pump foot

**Seals pack composition: 04 to 06**

| Seals Pack:<br># : |                  | 04<br>106 284 |               |          | 05<br>106 285 |               |          | 06<br>106 286 |               |          |
|--------------------|------------------|---------------|---------------|----------|---------------|---------------|----------|---------------|---------------|----------|
| Ind.               | Description      | Qté           | #             | Material | Qty           | #             | Material | Qty           | #             | Material |
| 9                  | O-Ring           | 2             | 84 468        | FKM      | 2             | 84 468        | FKM      | 2             | 84 468        | FKM      |
| 11a                | Cup packing      | 4             | 209 656       | PE       | 9             | 209 658       | PTFE G   | 1             | 209 656       | PE       |
|                    |                  | 4             | 209 657       | LEATHER  |               |               |          | 4             | 84 411        | HPU      |
| 11b                | Piston packing   | 3             | 209 656       | PE       | 6             | 209 658       | PTFE G   | 6             | 209 658       | PTFE G   |
|                    |                  | 3             | 209 657       | LEATHER  |               |               |          |               |               |          |
| 24                 | O-Ring           | 1             | 84 390        | PTFE     | 1             | 84 390        | PTFE     | 1             | 84 390        | PTFE     |
| 25                 | O-Ring           | 1             | 84 188        | FKM      | 1             | 84 188        | FKM      | 1             | 84 188        | FKM      |
| 34                 | O-Ring           | 1             | 84 391        | PTFE     | 1             | 84 391        | PTFE     | 1             | 84 391        | PTFE     |
| 35                 | O-Ring           | 1             | 909 130 540** | FKM      | 1             | 909 130 540** | FKM      | 1             | 909 130 540** | FKM      |
|                    |                  | 1             | Or 84 468**   | FKM      |               |               |          |               |               |          |
| 30                 | Adjustment block | 8*            | 210 341       | ST STEEL | 8*            | 210 341       | ST STEEL | 8*            | 210 341       | ST STEEL |
| 36                 | Ring             |               |               |          |               |               |          | 1             | 209 659       | ST STEEL |
| 7C                 | Cartridge seal   | 1             | 909 420 271   | FKM      | 1             | 909 420 271   | FKM      | 1             | 909 420 271   | FKM      |



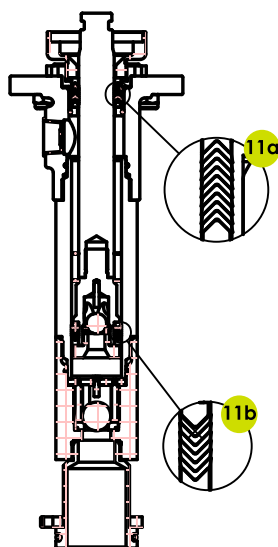
| 11a     |   |   | 11a    |   |   | 11a         |   |   |
|---------|---|---|--------|---|---|-------------|---|---|
| PE      | → | ^ | PTFE G | → | ^ | Ring (I.36) | → | □ |
| LEATHER | → | ^ | PTFE G | → | ^ | HPU         | → | ^ |
| PE      | → | ^ | PTFE G | → | ^ | HPU         | → | ^ |
| LEATHER | → | ^ | PTFE G | → | ^ | HPU         | → | ^ |
| PE      | → | ^ | PTFE G | → | ^ | HPU         | → | ^ |
| LEATHER | → | ^ | PTFE G | → | ^ | PE          | → | ^ |
| PE      | → | ^ | PTFE G | → | ^ |             |   |   |
| LEATHER | → | ^ | PTFE G | → | ^ |             |   |   |
|         |   |   | PTFE G | → | ^ |             |   |   |
| 11b     |   |   | 11b    |   |   | 11b         |   |   |
| PE      | → | v | PTFE G | → | v | PTFE G      | → | v |
| LEATHER | → | v | PTFE G | → | v | PTFE G      | → | v |
| PE      | → | v | PTFE G | → | v | PTFE G      | → | v |
| LEATHER | → | v | PTFE G | → | v | PTFE G      | → | v |
| PE      | → | v | PTFE G | → | v | PTFE G      | → | v |
| LEATHER | → | v | PTFE G | → | v | PTFE G      | → | v |

\* Quantity to be assembled as required\*\* According to pump foot

PTFE G = Graphited PTFE

### Seals pack composition: 07 and 08

| Seals Pack:<br># : |                  | 07<br>107 367 |               |          | 08<br>144 230 095 |               |          |
|--------------------|------------------|---------------|---------------|----------|-------------------|---------------|----------|
| Ind.               | Description      | Qty           | #             | Material | Qty               | #             | Material |
| 9                  | O-Ring           | 2             | 84 468        | FKM      | 2                 | 84 468        | FKM      |
| 11a                | Cup packing      | 5             | 209 656       | PE       | 9                 | 209 658       | PTFE G   |
|                    |                  | 4             | 209 658       | PTFE G   |                   |               |          |
| 11b                | Piston packing   | 3             | 209 656       | PE       | 6                 | 209 655       | PTFE     |
|                    |                  | 3             | 209 658       | PTFE G   |                   |               |          |
| 24                 | O-Ring           | 1             | 84 390        | PTFE     | 1                 | 84 390        | PTFE     |
| 25                 | O-Ring           | 1             | 84 188        | FKM      | 1                 | 84 188        | FKM      |
| 34                 | O-Ring           | 1             | 84 391        | PTFE     | 1                 | 84 391        | PTFE     |
| 35                 | O-Ring           | 1             | 909 130 540** | FKM      | 1                 | 909 130 540** | FKM      |
|                    |                  | 1             | Or 84 468**   | FKM      |                   |               |          |
| 30                 | Adjustment block | 8*            | 210 341       | ST STEEL | 8*                | 210 341       | ST STEEL |
| 7C                 | Cartridge seal   | 1             | 909 420 271   | FKM      | 1                 | 909 420 271   | FKM      |



| 11a    |   |   | 11a    |   |   |
|--------|---|---|--------|---|---|
| PE     | → | ^ | PTFE G | → | ^ |
| PTFE G | → | ^ | PTFE G | → | ^ |
| PE     | → | ^ | PTFE G | → | ^ |
| PTFE G | → | ^ | PTFE G | → | ^ |
| PE     | → | ^ | PTFE G | → | ^ |
| PTFE G | → | ^ | PTFE G | → | ^ |
| PE     | → | ^ | PTFE G | → | ^ |
| PTFE G | → | ^ | PTFE G | → | ^ |
| PE     | → | ^ | PTFE G | → | ^ |
| 11b    |   |   | 11b    |   |   |
| PE     | → | ∨ | PTFE   | → | ∨ |
| PTFE G | → | ∨ | PTFE   | → | ∨ |
| PE     | → | ∨ | PTFE   | → | ∨ |
| PTFE G | → | ∨ | PTFE   | → | ∨ |
| PE     | → | ∨ | PTFE   | → | ∨ |
| PTFE G | → | ∨ | PTFE   | → | ∨ |

\* Quantity to be assembled as required\*\* According to pump foot

PTFE G = Graphited PTFE