# PNEUMATIC PUMPS

*Series 3103135÷38*

## User and Maintenance Manual

## Warranty information


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## 1. INTRODUCTION

This *User and Maintenance Manual* refers to ***Pneumatic Pumps Series 3103135÷38***.
You can find additional copies and newer revisions of this document from our website http://www.dropsa.com. Alternatively contact one of our Sales Offices.
This manual contains important information on health and safety issues for the personnel. It is recommended to attentively read this manual and carefully keep it in good condition so that it is always available to personnel requiring to consult it.

## 2. GENERAL DESCRIPTION

Lubricant delivery is controlled by the pneumatic- operated pump. It is suitable for lubrication systems installed on machines provided with compressed-air systems.

## 3. PRODUCT-MACHINE IDENTIFICATION

Machine identification yellow label is located on the front side of the reservoir and contains product serial number, supply pressure and details of the operating parameters.

## 4. TECHNICAL SPECIFICATIONS

### 4.1 PUMP

| **Version** | **3103135** | **3103136** | **3103138** | **3103138** |
|---|---|---|---|---|
| **Pump flowrate* per cycle** | 7.5 cc (0.4 cu.in.) | | 15 cc (0.9 cu.in.) | |
| **Compression ratio** | 8.5:1 | | 4:1 | |
| **Air pressure** | 4 ÷ 7 bar (59 ÷103 psi) | | | |
| **Air inlet** | M 10x1 dual conical seat - pipe Ø 6 mm (0.2 in.) | | | |
| **Lubricant outlet** | G 1/8" BSP | | | |
| **Lubricant** | Mineral oil | | | |
| **Oil viscosity (at working temperature)** | 15 ÷ 1000 cSt (77÷4628 SUS) | | | |
| **Working temperature** | + 5°C ÷ + 40°C (+ 41°F ÷ + 104°F) | | | |
| **Working humidity** | 90 % max. | | | |
| **Storage temperature** | - 20°C ÷ + 50°C (- 4°F ÷ + 122°F) | | | |
| **Sound pressure level** | < 70 dB(A) | | | |

***Pumps have fixed flowrate.**

### 4.2 3-WAY SOLENOID VALVE (LINE-CYLINDER-DISCHARGE)

| | |
|---|---|
| **Control pulse time** | Not less than 3 seconds |
| **Release (discharge)** | Not less than 10 seconds |

### 4.2 "SAMBA"MINIMUM LEVEL

| | |
|---|---|
| **MAX commutable input voltage** | 220 V CA |
| **MAX commutable current** | 1 A |
| **MAX commutable power** | 50 W |

***WARNING:*** **Operate the pump only according to pressure indicated on the product label.**

## 5. PUMP COMPONENTS

Pump main components are:

- ***A reservoir,*** made of transparent plastic material, compatible with the lubricants on the market;
- ***A pneumatic pump***, made of high resistance pressure die-cast light alloy with and lapped piston;
- ***A SAMBA*** *level sensor* (standard N.C.), which indicates lubricant minimum level via electric contact *(to reverse the contact, please see drawing on par. 6.3);*
- ***A manometer***.

## 6. UNPACKING AND INSTALLING THE PUMP

### 6.1 UNPACKING

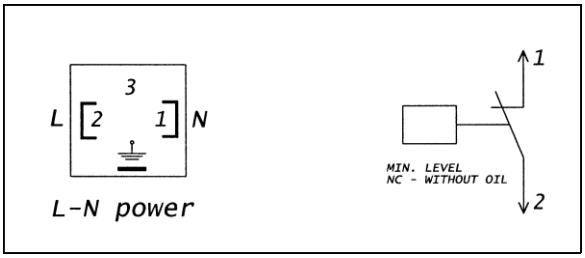
Once a suitable location has been found to install the unit, remove the pump from the package.
Check the unit has not been damaged during transportation or storage.
No particular disposal procedures are necessary as package materials are no dangerous for health or environment. However, package should be disposed of in accordance with regulations that may be in force in your area or state.

### 6.2 INSTALLING THE PUMP

- In order to facilitate any maintenance intervention, to avoid unnatural posture for personnel during machine operation or the possibility of sustaining impacts, install the machine in a comfortable and easy-to-reach location.
- Allow sufficient space for the installation, leaving minimum 100 mm (3.93 in.) around the unit.
- Do not install the unit immersed into fluids or in aggressive/explosive/inflammable environments or on vibrating surfaces, if not preventively provided for this purpose by the supplier.
- For the installation, use only the supplied bracket arranged with n°2 holes Ø6.5 mm (Ø 0.25 in.). Provide flat washers under the screws (For a correct fixing see ch. 12.DIMENSIONS).
- Always use piping suitable for the working pressure.

### 6.3 MINIMUM LEVEL ELECTRIC WIRING

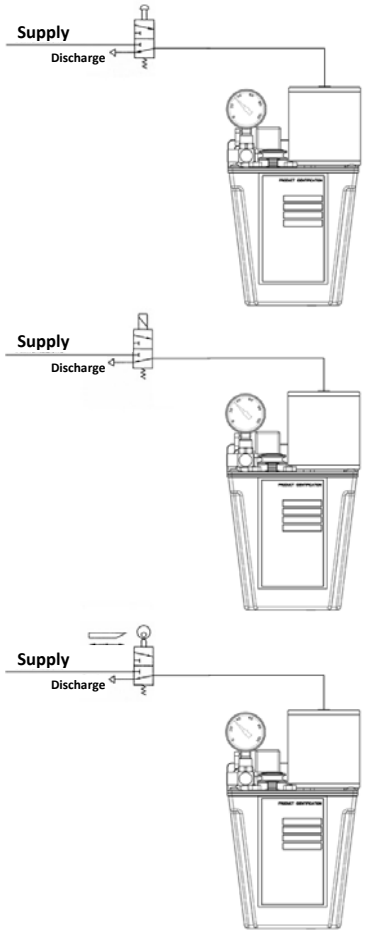
Before any operation, connect the minimum level as shown in the figure below (drawing on pump reservoir).



### 6.4 AIR INLET CONNECTION

Pneumatic connections: M10x1 female thread (it is possible the use of Dropsa Ø 6 mm (0,2 in.) pipe dual conical; 3-way solenoid valve cylinder in discharge and de-energized valve. Provide also a check valve to stop air supply.

#### 6.4.1 SOLENOID VALVE CONNECTION DIAGRAM




### 6.5 OIL OUTLET CONNECTION

Hydraulic connections are located on the upper side of the pump: 1/8" BSP female thread, pipe seating Ø 6 mm (0.2 in.)

### 6.6 PRESSURE REGULATION

As delivery pressure depends on the supply pressure, the last one must be regulated according to system requirements (see 4. TECHNICAL SPECIFICATIONS).

> ***WARNING:*** **At the end of all the connecting operations, make sure that pipes and wires are safe from impacts and carefully fixed.**

## 7. INSTRUCTIONS FOR USE

### 7.1 Precautions for use

- Use gloves and safety glasses as provided in the lubricant safety chart.
- Do not use aggressive lubricants against NBR seals. In the event of doubts, please contact **Dropsa SpA Eng. Dept.** which will provide a detailed filed on advised lubricants.
- Do not ignore the hazards and dangers in using lubrication systems and observe all the hygienic requirements.

> ***WARNING:*** **Flexible piping expansion reduces system flowrate.**

**7.2 Prior to pump start-up**

- ❑ Verify the unit is undamaged.
- ❑ Check that the hydraulic and electric connections have been carefully carried out (observe the regulations in force in your area or state).
- ❑ Check minimum level connection to the control panel and its operation.
- ❑ Refill the reservoir with compatible lubricant.

**7.3 Pump start-up**

*In order to avoid damage to the pump, the unit must start operating at a minimum working temperature of +5°C (+41°F).*

- ❑ Pneumatically supply the pump
- ❑ Press the start button of the machine to which the pump is connected.
- ❑ Verify pump start-up.
- ❑ Verify piping is air-bubble free
- ❑ Regulate the pressure.
- ❑ Verify unit correct operation: the pump must carry out lubrication correctly

***NOTE:*** **In case of doubts as to correct machine functioning, it is recommended to consult our Engineering Dept. to request testing procedures.**

## 8. TROUBLESHOOTING

The following diagnostic table indicates the main anomalies which may be encountered, the probable causes and possible solutions. If you cannot solve the problem, do not attempt to disassemble parts of the machine but contact the **Eng. Dept. of DROPSA S.p.A.**

| TROUBLE | PASSIBLE CAUSE | SOLUTION |
|---|---|---|
| **Pump does not deliver lubricant. Pump does not delivery fixed quantity of lubricant** | • Lubricant below minimum level<br>• Solenoid valve does not discharge. | • Refill the reservoir<br>• Verify e-valve is 3-way and discharges air. |
| **Pump does not deliver lubricant at a proper pressure. Pump does not take working pressure** | • Loose fittings<br>• Wrong pressure regulation. | • Tighten all the fittings. Be sure there are no leaks.<br>• Regulate pressure considering pump compression ratio (see ch. 4.TECHNICAL SPECIFICATIONS) |

## 9. MAINTENANCE PROCEDURE

*The machine does not require any special tool for check or maintenance tasks. However, it is recommended the use only of appropriate and in good conditions tooling, protective devices (gloves) and clothing to avoid injury to persons or damage to machine parts.*

***WARNING!***
**Prior to any maintenance, be sure that the power, hydraulic and pneumatic supplies are off.**
**In order to avoid contact with the lubricant use adequate protective clothing and devices.**

**9.1 PERIODICAL MAINTENANCE**

Pump has been designed and constructed to require a minimum maintenance:

CHECK:

- ❑ Lubrication status;
- ❑ Lubricant level;
- ❑ Refill filter cleanliness;
- ❑ Deposits in the reservoir;
- ❑ Suction filter obstructions.

Furthermore, we recommend:

- ❑ To clean pump body and check pipe joints to readily detect possible leaks.
- ❑ Always use impurity-free lubricants.

**9.2 HOW TO DISASSEMBLE AND THE PUMP**

1. Discharge air pressare;
2. Disconnect pipino;
3. Unscrew fixing screws and remove the pump;
4. Remove pump body and filters;
5. Unscrew the pneumatic cylinder paying attention to the spring load; then remove all pimp components;
6. Wash pump components with petrol and lubricate before reassembly.

## 10. DISPOSAL

During maintenance or disposal of the machine care should be taken to properly dispose of environmentally sensitive items. Refer to local regulations in force in your area.
When disposing of this unit, it is important to ensure that the identification label and all the other relative documents are also destroyed.

## 11. ORDERING INFORMATION

**11.1 PUMP SERIES 3103135÷38**

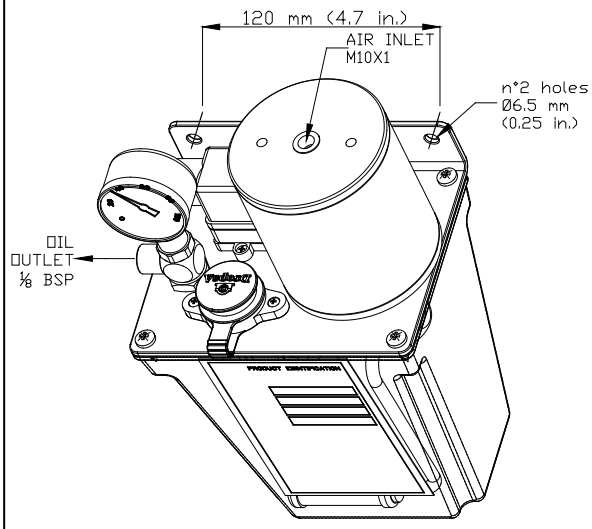
| PART NUMBER | FLOWRATE | | COMPRESSION RATIO | RESERVOIR |
|---|---|---|---|---|
| | cm³ | cu.in. | | |
| 3103135 | 7.5 | 0.46 | 8.5:1 | 1 lt (0.22 gals) |
| 3103136 | | | | 3 lt (0.66 gals) |
| 3103137 | 15 | 0.9 | 4:1 | 1 lt (0.22 gals) |
| 3103138 | | | | 3 lt (0.66 gals) |

**11.2 SPARE PARTS**

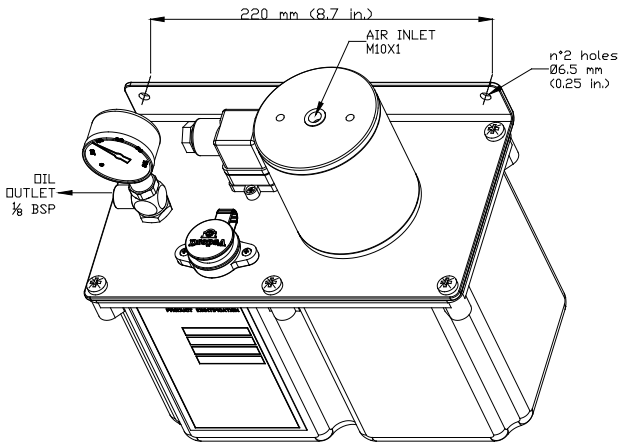
| PART NUMBER | DESCRIPTION |
|---|---|
| 3044333 | Transparent reservoir 1 lt (0.22 gals) |
| 6770033 | Transparent reservoir 3 lt (0.66 gals) |
| 1655583 | SAMBA level - N.C. (connector not included) |
| 20564 | Manometer 100 kg (220 lbs) 1/8” G |
| 3130137 | Suction filter for 1 lt (0,22 gals) pumps |
| 3130052 | Suction filter for 3 lt (0,66 gals) pumps |
| 3130101 | Oil refill filter |

## 12. DIMENSIONS

| PART NUMBER | DIMENSIONS lxdxh | | WEIGHT | |
|---|---|---|---|---|
| | mm | in. | kg. | lb |
| 3103135 | 142x115x239 | 5.6x4.5x9.4 | 2.3 | 5 |
| 3103136 | 242x139x237.5 | 9.5x5.5x9.3 | 3 | 6 |
| 3103137 | 142x115x238 | 5.6x4.5x9.4 | 2.3 | 5 |
| 3103138 | 242x139x236 | 9.5x5.5x9.3 | 3 | 6 |




**1 lt (0.22 gals)**




**3 lt (0.66 gals) PUMP**

(*) These images are indicative. Hydraulic and pneumatic connections may differ from those shown above.

## 13. HANDLING AND TRANSPORTATION

Prior to shipping, the pump is carefully packed in cardboard package. During transportation and storage, always maintain the pump the right way up as indicated on the box. On receipt check that package has not been damaged. Then, storage the machine in a dry location.

## 14. OPERATING HAZARDS

***WARNING**: It is necessary to carefully read about the instructions and the risks involved in the use of lubrication machines. The operator must know the machine functioning through the user manual.*

***Power supply***

Any type of intervention must not be carried out before the unplugging of the machine from the power supply. Make sure that no one can start it up again during the intervention.

All the installed electric and electronic equipment, reservoirs and basic components must be grounded.

***Flammability***

The lubricant generally used in lubrication systems is not normally flammable. However, it is advised to avoid contact with extremely hot substances or naked flames.

***Pressure***

Prior to any intervention, check the absence of residual pressure in any branch of the lubricant circuit as it may cause oil sprays when disassembling components or fittings.

***Noise***

The equipment does not produce excessive noise, less than 70 dB(A).

## 15. PRECAUTIONS

Verification of compliance with essential safety requirements and Machine Directive dispositions has been carried out filling in checking provided and contained in the *technical file.*

**Dropsa used two kinds of checking list:**

- List of hazards (according to the EN 1050 as it refers to EN 292)
- Enforcement of the essential safety requests (machine Directive - 82/08)

The following is a list of dangers which have not been fully eliminated but which are considered acceptable:

- During assembly or maintenance **lubricant squirts at low pressure** are possible. (For this reason suitable personal protective clothing must be worn and appropriate protective measures must be taken during these operations).
- Operator's **contact with lubricant** in case of piping breaking/opening or during refill/maintenance. -> *Protection against direct and indirect contact with the fluid must be provided by the user: the operator must be provided with suitable individual protective clothing and devices.*
- **Pre-loaded spring** located in the pump cylinder.
- **Use of incompatible lubricant** -> fluid characteristics are shown on the pump and in the manual (in case of doubt contact the Eng. Dept of Dropsa Spa).

↓

| Fluid | Danger |
|---|---|
| Lubricants containing abrasive components | Premature wear of pump |
| Lubricants containing silicon | Pump failure |
| Petrol – solvents – inflammable liquids | Fire – explosion –seal damage |
| Corrosive products | Pump damage - danger to persons |
| Water | Pump oxidization |
| Food Products | Contamination of the product |