

PNEUMATIC PUMP

Series 3103...

User and Maintenance Manual

Original text translation

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1. INTRODUCTION

This manual refers to the *Pneumatic Pump Series 3103...*

You can find additional copies and newer revisions of this document from our website <http://www.dropsa.com>.

Alternatively contact one of our *Sale Offices*.

Please read this manual carefully, as it contains important information on health safety issues: a copy of this manual should remain with the user of the product.

2. GENERAL DESCRIPTION

Pneumatic Pump Series 3103... is characterized by an optimal relation price/performance, small dimensions, long lasting life.

It is recommended for all the applications on textile, glass making and plate deforming machines.

Compatible with *Serial 26 Systems* and *Valve 33*.

The pump allows a 3-second working-time and a 10-second pause-time depending on lubricant viscosity.

Pump control unit consists of a cylinder in which an anti-oil rubber seal runs. A spring ensures piston-return to the starting position.

The solenoid valve control must be 3-way, normally closed (N.C.)

3. PRODUCT – MACHINE IDENTIFICATION

Pump identification label is located on the front side of the reservoir containing pump serial number and details of its operating parameters.

4. TECHNICAL CHARACTERISTICS

PNEUMATIC PUMP <i>Series 3103...</i>	
Operating temperature	-5 °C ÷ +40 °C (+23 °F ÷ +104 °F)
Maximum operating humidity	90% relative humidity
Flow rate*	2.6 cm ³ /stroke (0.158 cu.in./stroke)
Maximum pressure	68 bar (1000 psi)
Control air pressure	3 ÷ 8 bar (43 ÷ 116 psi)
Compression ratio	8.5: 1
Cycle minimum time	3 seconds
Pause minimum time	10 seconds
Reservoir capacity	3 litres (0.66 galls)
Return oil filter	Paper + metallic + magnet
Lubricant	Mineral oil
Viscosity at working temperature	15 ÷ 1000 cSt (77.31 ÷ 4628 SUS)

* The effective flow rate is given by the sum of the value of the applied valves, which cannot exceed 50% of the pump nominal value

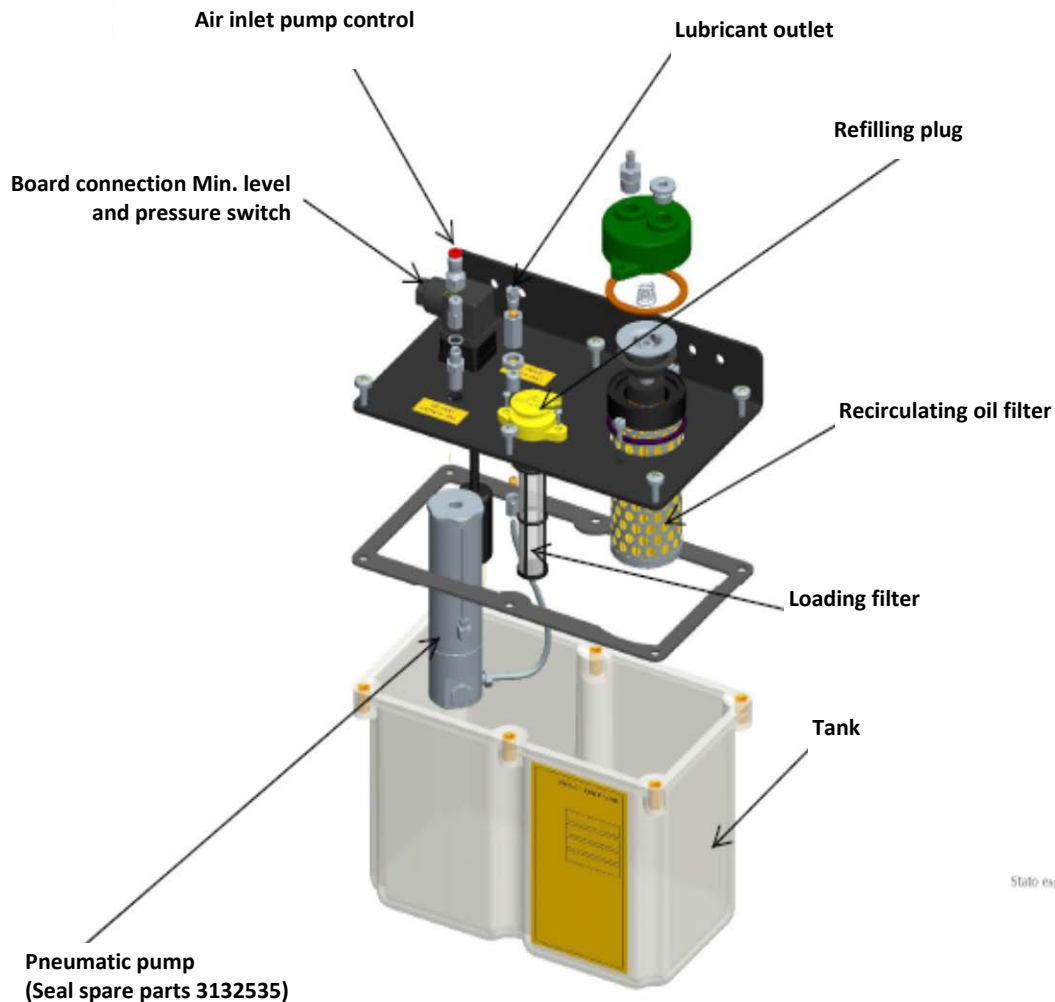


WARNING: The expansion of the flexible hoses causes a decrease of the usable flow rate.

5. PUMP COMPONENTS

Pump main component is the *baseplate* on which pump components are fixed.

- The *reservoir* is made of light-coloured Moplen which allows to check oil level.
- *Pneumatic pump air inlet* and *lubricant outlet* are both located on the baseplate.
- The *re-circulating oil filter*, needed for all the applications involving oil recycling, is supplied with four inlets. one or more inlet (depend on the version)
- The *sensor level* indicates the minimum level achievement through an electric contact closure.



(*) Indicative images. Hydraulic and pneumatic connections may differ from shown

6. UNPACKING AND INSTALLING THE PUMP



WARNING: The unit must be used, opened and repaired only by qualified personnel.

6.1 UNPACKING

Once a suitable location has been found to install the unit remove the pump from the packaging.

Check the pump has not been damaged during transportation or storage.

No particular disposal procedures are necessary; however packing should be disposed of in accordance with regulations that may be in force in your area or state.

6.2 INSTALLING THE PUMP

No particular assembly pump operations are provided.

- Allow sufficient space for the installation, leaving minimum 100 mm (3.93 in.) around the pump in order to avoid unnatural posture or possibility of sustaining impacts.
- Do not install the pump plunged into fluids or in aggressive/explosive/inflammable environments, if not preventively provided for this purpose by the supplier.
- For correct fixing, verify the distance between centres shown in the diagram, ch. 12.
- Use gloves and safety glasses as required in the *lubrication oil safety chart*.
- DO NOT use aggressive lubricants with NBR seals. For any doubt, please consult the Engineering Department of Dropsa S.p.A., which will provide a detailed chart of recommended oils.

6.3 HYDRAULIC FITTING

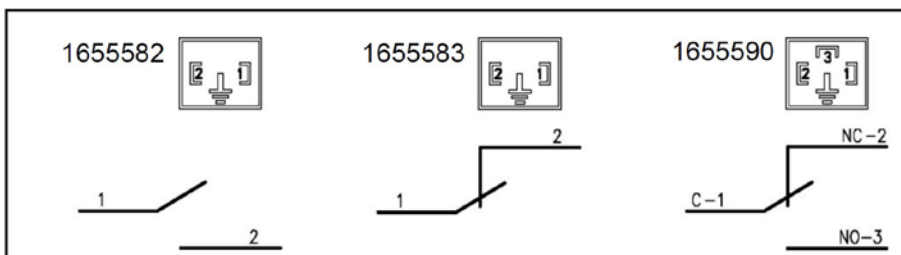
The pump is connected to the system by means of a hydraulic fitting located on the baseplate and coming from the pump. Piping must be nylon $\varnothing 4$ mm ($\varnothing 0.15$ in.) (furnishable by Dropsa).

6.4 PNEUMATIC FITTING

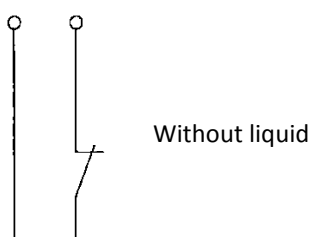
Connect the solenoid valve air control inlet pipe to the fitting, using a $\varnothing 4$ mm ($\varnothing 0.15$ in.) nylon pipe and arrange a check valve to stop lubricant supply, when required.

6.5 ELECTRIC WIRING

6.5.1 SAMBA level



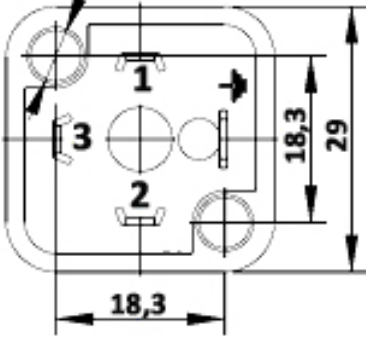
6.5.2 MAGNETIC level



6.5.3 OPTICAL level

Make the minimum level connection through the connector as shown below:

n°2 M3 screws



Technical drawing of the optical level connector. It shows a rectangular component with rounded corners. Two M3 screws are indicated by arrows at the top left. The drawing includes dimensions: a width of 18,3, a height of 29, and a distance of 18,3 from the left edge to the center of the component. Three terminals are labeled: 1 (top center), 2 (bottom center), and 3 (left side). A ground symbol is shown near terminal 4.

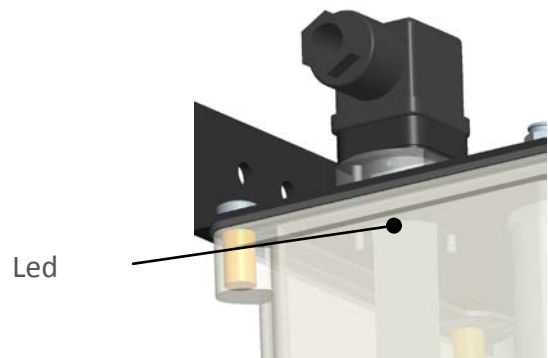
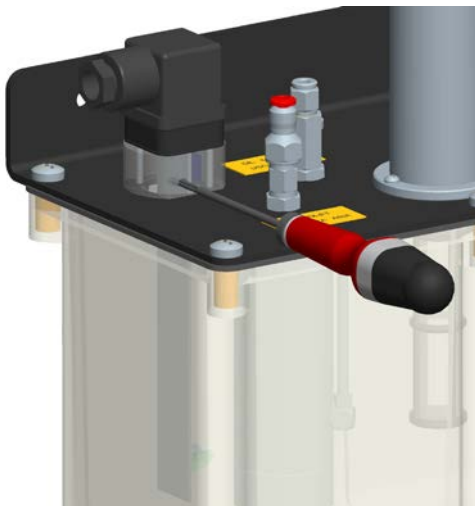
CONNECTION TABLE	
1	V+ (8÷28 Vdc)
2	V- (GND)
3	Out N
⏏ 4	Out P

6.6 OPTICAL LEVEL CALIBRATION

Level was been oil calibrated by Dropsa. We recommended performing the following steps before starting the pump:

- 1) Fill the reservoir.
- 2) Open the front adjustment hole
- 3) Turn the adjustment screw of level (see picture below), using a screwdriver, until the green led will be switch off
- 4) Turn the screw in opposite site until the green led will be on light

At the end of this operating procedure the level is correctly set. You can make different adjustment following the some steps.



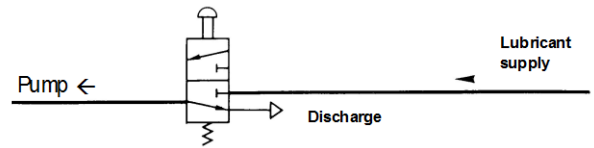
7. PUMP OPERATIONS

7.1 COMMISSIONING THE PUMP

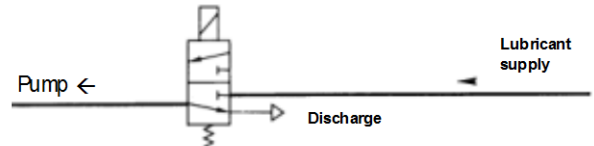
Refill the reservoir with compatible lubricant. Connect the pump to a treated compressed air source. Start the pump and verify its correct operation.

7.2 PUMP CONTROLS

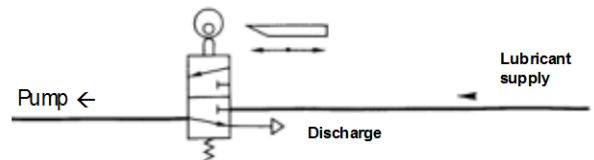
- *Push-button hand control:*



- *3-way solenoid valve control:*



- *Circular or rectilinear cam drive:*



7.3 PRESSURE SETTING

It is possible to adjust lubricant outlet pressure by regulating the inlet air pressure.

7.4 RESERVOIR REFILLING

Use compatible lubricant and refill the reservoir through the oil refilling plug with a filter. Do not pour lubricant directly into the reservoir.

7.5 AIR DISCHARGE

Air in the system does not affect pump well-functioning. However, it is advisable to discharge air by starting the pump until lubricant comes out air-bubbles-free.



WARNING: any presence of air in the system could lower nominal flow.

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 Engineering Department of DROPSA S.p.A.

ANOMALY	PROBABLE CAUSE	SOLUTION
Pump does not deliver oil at all or the fixed quantity	Oil level in the reservoir lower than the minimum	Fill up the reservoir with impurity-free lubricant. WARNING: if the reservoir is empty but no minimum level is shown, please check the level contact
	Suction valve filter unclean or obstructed	Disassemble the pump from the reservoir, remove and wash the inlet valve; if this procedure is insufficient, replace the valve
	Pump control valve does not discharge	Verify that pump control valve is 3-way and that it discharges compressed air in the pump pneumatic chamber at the end of the cycle
	Pressure vent valve does not discharge	Disassemble the pump from the reservoir, remove and wash the pressure vent valve; if this procedure is insufficient, replace the valve
	Loosened inner fittings	Disassemble the baseplate from the reservoir and carefully retighten all the fittings. Be sure there are no leakages
	Piston failure	Replace the pumping unit
Pump delivers oil at an improper pressure	Wrong adjustment of the control air pressure	Adjust carefully the air pressure in accordance with the technical characteristics, considering a compression ratio of 8.5:1

9. MAINTENANCE PROCEDURE

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

For an easy maintenance, it is advised to assemble the pump in a comfortable and reachable location.

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 (according to current regulation) to avoid injury to persons or damage to machine parts.

Periodically check the pipe joints to detect possible leaks.

Furthermore, keep the machine unit clear to readily detect possible leaks.

Replace the refilling filter and the re-circulating filter, when required.

The use of impurity-free lubricant is recommended.

Disassemble the pumping unit as follows:

1. Remove piping from the pump. Be sure there are no residual pressures in the system.
2. Unscrew baseplate fixing screws and reservoir screws.
3. Remove pump and filters.
4. Unscrew pump cylinder **paying attention** to the spring charge; then remove pumping unit parts.

When all pump components are dismantled, it is possible to disassemble and to clean the release and suction valves. Before the reassembling, wash and lubricate all pump components.

Filters replacing:

Replace the refilling and the recirculating filters by simply unscrewing the fastening screws and extracting the filter(s) from the top. It is recommended a periodical maintenance as follows:

Inspection	Number of work cycles
Lubricant checking	10000
Refilling filter cleaning	25000
Recirculating filter cleaning	25000
Reservoir bottom cleaning in case of impurities	30000

Prior to any maintenance, be sure that the power, hydraulic and pneumatic supplies are off.

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**STANDARD VERSIONS**

PART NUMBER	DESCRIPTION
3103269	Pneumatic pump 2.6 cc/stroke (0.15 cu.in./stroke) without manifold
3103289	Pneumatic pump 2.6 cc/stroke (0.15 cu.in./stroke) without manifold and without return

For ordering codes contact Dropsa technical / sales office.

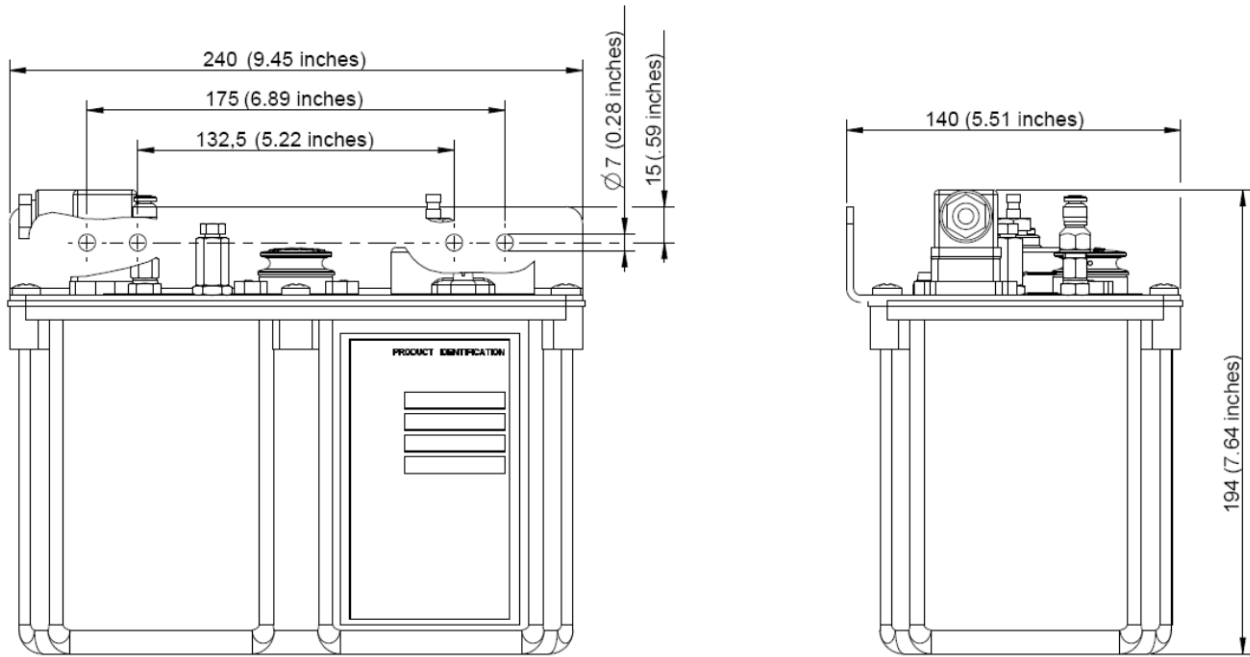
SPARE PARTS

PART NUMBER	DESCRIPTION
3130355	Recirculating filter
3130101	Refilling filter
6770070	Oil pouring clicking plug
3092110	Suction valve
3132535	Seal pneumatic pump kit
3103117	Pneumatic pump 2.6 cc/stroke (0.15 cu.in./stroke), ratio 8.5:1
6770054	3 litres (0.66 galls) reservoir
3050585	Baseplate
1639201	Optical level
1655583	"Samba" level NC
1655582	"Samba" level NA
1655590	"Samba" level NA or NC

ACCESSORIES

PART NUMBER	DESCRIPTION
0045351	Solenoid 3/2 NC 24V Dc
0045275	Solenoid 3/2 NC 24V Ac 50 Hz
0045350	Solenoid 3/2 NC 110V Ac 50 Hz
0045274	Solenoid 3/2 NC 230V Ac 50 Hz

12. DIMENSIONS



13. HANDLING AND TRANSPORTATION

Due to pump low weight (~2.5 kg dry) and small dimensions, it is not necessary the use of material handling equipment. Prior to shipping, pump is carefully packed in a cardboard packing. During pump transportation and storage, pay attention to the side on the cardboard packing. On receipt, check that the packing is not damaged. Then, storage the pump in a dry location.

- Lift the equipment observing the right way up shown on the cardboard packing.
- During storage, machine components can withstand temperatures $-20\text{ }^{\circ}\text{C} \div +50\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F} \div +122\text{ }^{\circ}\text{F}$). However, in order to avoid damages, machine starting should occur at a minimum temperature of $+5\text{ }^{\circ}\text{C}$ ($+41\text{ }^{\circ}\text{F}$).

14. OPERATING HAZARDS

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 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.

Inflammability

The lubricant generally used in lubrication systems is not normally inflammable. 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

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

15. PRECAUTIONS

No particular operating hazards characterize *Pneumatic Pump Series 3103...*, except for the following precautions:

- Operator's contact with fluid in case of piping breaking/opening or contact with oil during filling up/maintenance. The operator must be provided with suitable personal protective clothing.
- Unnatural posture.
- Use of incompatible lubricant.

Main unauthorized fluids:

Fluids	Dangers
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