

PNEUMATIC-DRIVEN PUMP

Series 3414...

User and Maintenance Manual

Warranty information

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1. INTRODUCTION

This manual refers to the **Pneumatic-driven Pump, Series 3414....**

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

2.1 Pneumatic-driven pump - with reservoir

Pneumatic-driven Pump, Series 3414.... is strong and reliable. It consists of a *pump body* made of zinc-plated steel, a *piston* made of hardened and lapped steel, a pneumatic cylinder in which a piston with anti-oil rubber seal runs.

The single-acting drive requires a 3-way solenoid valve. This item can be furnished by Dropsa on request (see *ch.11*).

2.2 Pneumatic-driven pump - without reservoir

These pumps have been designed for client's reservoir or special reservoir applications. Equipped with plate with lubricant inlet thread G½ UNI-ISO 228/1.

3. PRODUCT – MACHINE IDENTIFICATION

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

4. TECHNICAL CHARACTERISTICS

4.1 Series 3414... general technical characteristics

| | |
|-----------------------|---------------------------------|
| Operating temperature | -5 °C ÷ +80 °C (+23°F ÷ +176°F) |
| Storage temperature | -20°C ÷ + 50°C (-4°F÷+122°F) |
| Operating humidity | 90% relative humidity |
| Lubricant | oil |
| Lubricant viscosity | 15÷2000 cSt (73.31÷9256 SUS) |
| Refilling filter | metallic |
| Sound pressure level | 70dB(A) |

4.2 Single-acting Pneumatic-driven pump

| Pump | With reservoir | | | | | | | Without reservoir (For special applications) | | |
|----------------------|---|---------|---------------|---------|----------------|---------|---------|---|---------|---------|
| | 3414001 | 3414002 | 3414006 | 3414032 | 3414033 | 3414034 | 3414046 | 3414000 | 3414005 | 3414016 |
| Compression ratio | 50:1* | | | | | | | | | |
| Reservoir capacity | 2l (0.44 gals) | | 5l (1.1 gals) | | 5kg (11.02 lb) | | | - | | |
| Flowrate | 0.5÷2 cm ³ /stroke (0.03÷0.12 cu.in./stroke) | | | | | | | | | |
| Driving air pressure | 4÷8 bar (58.8÷117.6 psi) | | | | | | | | | |
| Lubricant inlet | - | | | | | | | G ½ UNI-ISO 228/1 | | |
| Lubricant outlet | Rp ¼ UNI-ISO 7/1 | | | | | | | | | |
| Compressed-air inlet | G 1/8 UNI-ISO 228/1 | | | | | | | | | |

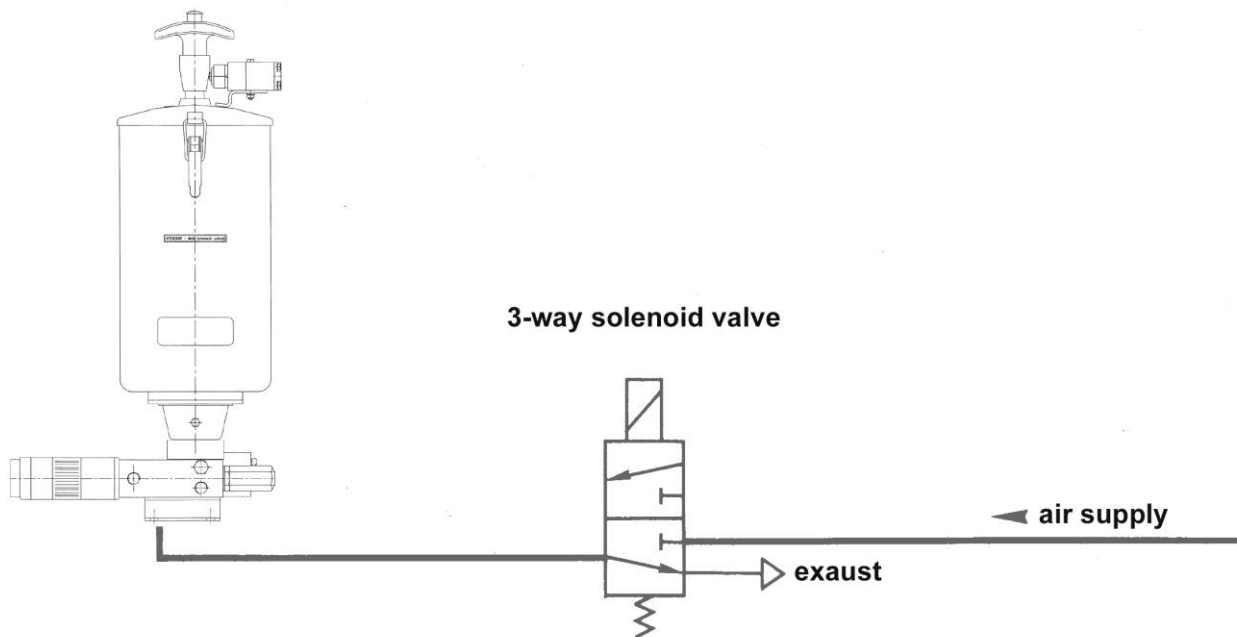
*It is kindly recommended to verify compression ratio on machine label:

- For pumps manufactured before 03.03.2003, compression ratio is 30:0;
- For pumps manufactured after 03.03.2003, compression ratio is 50:0

5. PUMP COMPONENTS

5.1 Example of a pneumatic-driven pump *Series 3414...*

PNEUMATIC DRIVE DIAGRAM



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 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 operations are provided.

Pump must be fixed to floor. On this purpose, pump bracket has been provided with 4 holes, \varnothing 8.5 mm (0.33 in). Then, pump must be pneumatically connected to the machine (see par. 5.1).

Furthermore, we recommend:

- To leave minimum 100 mm (3.93 in.) space around the pump in order to avoid unnatural posture or possibility of sustaining impacts.
- Not to install pump submerged into fluids or in aggressive/explosive/inflammable environments, if not preventively provided for this purpose by the supplier.
- To use gloves and safety glasses, as required in the *lubrication oil safety chart*.
- Not to use aggressive lubricants with NBR seals. If any doubt, please contact Eng. Dept. of Dropsa S.p.A. We will provide you with a detailed chart of recommended oils.
- Not to ignore dangers to health and observe all hygienic standards.

7. PUMP OPERATIONS

After installing the pump, adjust driving air pressure.

7.1 Prior to pump start-up

- ☐ Verify the unit is undamaged.
- ☐ Check that pneumatic and electric connections (IEC 64/8, IEC 364) have been carefully carried out.
- ☐ Refill the reservoir with compatible lubricant.
- ☐ Verify operating temperature [MIN temperature: -5°C (+23°F)].

7.2 Pump start-up

- ☐ Verify piping are air-bubble-free.
- ☐ Verify that lubrication is correctly carried out.

8. TROUBLESHOOTING



WARNING: The unit can only be opened and repaired by authorized Dropsa personnel.

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.**

| ANOMALY | PROBABLE CAUSE | SOLUTION |
|--|-------------------------------------|---|
| Lubricant is not delivered by pump at all or in the required quantity | Lubricant is below the MIN. level | → Refill the reservoir with impurity-free lubricant. Do not exceed the MAX level indicator |
| | Solenoid valve does not discharge | → Verify that solenoid valve is 3-way. Verify, also, that air is properly discharged from pump chamber. |
| Lubricant is not delivered by pump at the required pressure | Loosened pipe fitting | → Carefully retighten pipe fitting. Be sure there are no lubricant leakages. |
| | Incorrect regulation of driving air | → Regulate driving air according to the technical characteristics (see ch. 4) |

9. MAINTENANCE PROCEDURE

Pneumatic-driven Pump, Series 3414.... require only minimal maintenance.

To facilitate maintenance, it is suggested to install the pump in an easily accessible location (see paragraph 6.2).

Machine does not require any special tool for checking or maintenance tasks. However, it is recommended the use only of appropriate and in good conditions tooling, protective devices (gloves) and clothing to avoid hazards to equipment or persons.



CAUTION!

Prior to any maintenance and cleaning task, discharge pressure from pump and from the respective connected piping.

9.1 How to disassemble the pump

- Empty the reservoir;
- Disconnect the piping;
- Unscrew the fixing screws;
- Remove the reservoir;
- Remove the pump and the provided filters;
- Unscrew the pneumatic cylinder from pump;
- Remove all the other components.

Before the reassembling all pump components must be washed with petroleum and lubricated.

Periodical checks:

| VERIFICATION | WORK CYCLES |
|--|-------------|
| State of lubrication | 100 |
| Lubricant level | 200 |
| Cleanliness of refilling filter | 400 |
| Cleanliness of return filter (where provided) | 400 |
| Cleaning of the bottom of reservoir in presence of sediments | 600 |

Furthermore:

⇒ **Keep the machine unit clear and check pipe joints to readily detect possible leaks.**

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 Single- acting pneumatic pump – with reservoir

| SERIAL N° | MIN level | Characteristics |
|-----------|-----------|---|
| 3414001 | visual | Without MIN level electric contact |
| 3414002 | | |
| 3414006 | | With MIN level electric contact |
| 3414032 | | With MIN and MAX level electric contact |
| 3414033 | | Pneumatic piston-pump with PNP sensor |
| 3414034 | | Pneumatic piston-pump with level electric contact |
| 3414046 | | Pump-like serial n°3414006 with viton seals |

11.2 Single- acting pneumatic pump (without reservoir) –Special reservoir applications

| SERIAL N° | Characteristics |
|-----------|--|
| 3414000 | Solenoid valve for serial n°: 3414032, 3414033, 3414034, 3414046 |
| 3414005 | Special reservoir applications |
| 3414016 | |

11.3 3-way solenoid valve for pneumatic-driven pumps

| SERIAL N° | Voltage and frequency |
|-----------|-----------------------|
| 45273 | 110V/50Hz |
| 45274 | 220V/50Hz |
| 45275 | 24V/50Hz |

12. DIMENSIONS

12.1 Single-acting pneumatic pumps – with reservoir

| Serial N° | Length | | Width | | Depth | | Weight | |
|-----------|--------|-------|-------|-------|-------|------|--------|-------|
| | mm | in. | mm | in. | mm | in. | Kg | lb |
| 3414001 | 454 | 17.87 | 280 | 11.02 | 130 | 5.11 | 5.1 | 11.24 |
| 3414002 | 420 | 16.53 | | | 170 | 6.69 | 6.9 | 15.21 |
| 3414006 | 450 | 17.71 | | | | | 7 | 15.43 |
| 3414032 | 467 | 18.38 | 270,5 | 10.64 | 160 | 6.29 | N.A. | N.A. |
| 3414033 | 464 | 18.26 | 280 | 11.02 | | | N.A. | N.A. |
| 3414034 | 466 | 18.34 | 270,5 | 10.64 | | | 10 | 22 |
| 3414046 | 491 | 19.33 | 280 | 11.02 | 155 | 6.10 | N.A. | N.A. |

N.A.: information not available

12.2 Single-acting pneumatic pumps (without reservoir) – Special reservoir applications.

| Serial N° | Length | | Width | | Depth | | Weight | |
|-----------|--------|------|-------|-------|-------|------|--------|-------|
| | mm | in. | mm | in. | mm | in. | Kg | lb |
| 3414000 | 90 | 3.54 | 280 | 11.02 | 130 | 5.11 | 4.6 | 10.14 |
| 3414005 | | | | | 100 | 3.93 | 7 | 15.43 |
| 3414016 | | | | | 90 | 3.54 | 4 | 8.81 |

13. HANDLING AND TRANSPORTATION

Prior to shipping, *Pneumatic-driven Pump, Series 3414....* is packed and in cardboard containers. During transportation and storage always maintain the pump the right way up as indicated on the box. On receipt check that the packaging has not been damaged and store the pump in a dry place. Pump may be handled without any special lifting apparatus.

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

14. OPERATING HAZARDS

It is necessary to read and understand the possible hazards and risks involved when using a lubrication pump. The operator must fully understand the hazards implied in pumping grease under pressure.

Inflammability

Lubricant generally used in lubrication systems is not normally flammable. However, it is recommended 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 lubricant squirts when disassembling components or pipe fittings. Do not subject the connections, the piping or parts under pressure to violent impacts. Damaged piping or connections are DANGEROUS and should be immediately replaced.

Noise

During normal operating conditions the pump does not produce excessive noise less than 70 dB(A).

15. PRECAUTIONS

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

Dropsa used three kinds of checking list:

- List of hazards (according to the EN 414 as it refers to EN 292);
- Enforcement of the essential safety requests (Machine Directive – 06/42);
- Electric safety requirements (EN 60204-1)

Here follows a list of dangers which have not been fully eliminated but which are considered acceptable:

- ◆ During assembly or maintenance, oil squirts at low pressure can occur. (For this reason suitable personal protective clothing must be worn and appropriate protective measures must be taken during such operations).
- ◆ Contact with lubricant during refilling /maintenance -> Protection against direct and indirect contact must be provided by the user. (See the requirements for the use of suitable individual protective measures).
- ◆ Preloaded spring in driving cylinder or reservoir where provided.
- ◆ Use of incompatible lubricant -> fluid characteristics are shown on the pump and in the *User and Maintenance Manual* **(in case of doubts, please contact Dropsa S.p.A. Eng. Dept.)**.
- ◆ Use of incompatible lubricant.
Main incompatible 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 |

16. WARRANTY INFORMATION

All products manufactured and marketed by Dropsa are warranted to be free of defects in material or workmanship for a period of at least 12 months from date of delivery. Extended warranty coverage applies as follows:

Complete system installation by Dropsa: 24 Months

All other components: 12 months from date of installation; if installed 6 months or more after ship date, warranty shall be maximum of 18 months from ship date.

If a fault develops, notify us giving a complete description of the alleged malfunction. Include the part number(s), test record number where available (format xxxxxx-xxxxxx), date of delivery and installation and operating conditions of subject product(s). We will subsequently review this information and, at our option, supply you with either servicing data or shipping instruction and returned materials authorization (RMA) which will have instructions on how to prepare the product for return. Upon prepaid receipt of subject product to an authorized Dropsa Sales & Service location, we will then either repair or replace such product(s), at our option, and if determined to be a warranted defect, we will perform such necessary product repairs or replace such product(s) at our expense.

Dropsa reserves the right to charge an administration fee if the product(s) returned are found to be not defective.

This limited warranty does not cover any products, damages or injuries resulting from misuse, neglect, normal expected wear, chemically caused corrosion, improper installation or operation contrary to factory recommendation. Nor does it cover equipment that has been modified, tampered with or altered without authorization.

Consumables and perishable products are excluded from this or any other warranty.

No other extended liabilities are stated or implied and this warranty in no event covers incidental or consequential damages, injuries or costs resulting from any such defective product(s).

The use of Dropsa product(s) implies the acceptance of our warranty conditions. Modifications to our standard warranty must be in writing and approved by Dropsa.

17. DECLARATION OF COMPLIANCE WITH CE STANDARDS



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DICHIARAZIONE DI CONFORMITÀ/DECLARATION OF COMPLIANCE WITH STANDARDS/ DECLARATION DE CONFORMITE/ KONFORMITÄTSEKLRÄRUNG DES STANDARDS /DECLARACIÓN DE CONFORMIDAD/ DECLARAÇÃO DE CONFORMIDADE

La società Dropsa S.p.A., con sede legale in Milano, Via Besana,5/ Dropsa S.p.A., registered office in Milan, Via Besana,5 / Dropsa S.p.A. au Siège Social à Milan, Via Besana,5/ Dropsa S.p.A., Sitz in Milano, Via Besana 5/ La sociedad Dropsa S.p.a., con sede legal en Milán, Via Besana,5/ A Dropsa S.p.A, com sede em Milão, via Besana, nº 5

DICHIARA /CERTIFIES / CERTIFIE/ ZERTIFIZIERT, DASS/ DECLARA/ CERTIFICA:

che il prodotto denominato/that the product called/ le produit appelé/ das Produkt mit dem Namen/ el producto que se llama/ o produto chamado:

| | |
|---|--|
| Descrizione/ Description/ Description/ Beschreibung/ Descripción/ Descrição: | Pompa pneumatica Pneumatic pump |
| Nome Commerciale/ Product Name/ Dénomination/ Handelsname/ Denominación/ Denominação: | - |
| Versioni/ Versions/ Versions/ Versionen/ Versiones/ Versões: | Tutte |
| Codici/ Codes/ Códigos/: | 3414001-3414002-3414006-3414032- 3414033-3414034-3414046-3414000- 3414005-3414016 |

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Vimodrone (MI), Gennaio 2012

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