

# Electro-pneumatic Valve (4/2)

## User and Maintenance Manual

Original text translation

## Warranty information

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## 1. INTRODUCTION

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This user's and maintenance manual refers ***Electro-pneumatic Valve (4/2) for oil and grease in Dual Line System.***

It is recommended that this manual is carefully kept in good condition and is always available to persons requiring to consult it. To request further copies, updates or clarifications with respect to this manual contact the Engineering Department at Dropsa SpA.

The use of the Modular Directional Valve referred to in this manual must be entrusted to qualified personnel with a knowledge of hydraulics and electrical systems.

The manufacturer reserves the right to update the product and/or the user's manual without the obligation to revise previous versions. It is however, possible to contact the Engineering Department for the latest revision in use.

The *Modular Directional Valve*, and any accessories mounted on it, should be carefully checked immediately on receipt and in the event of any discrepancy or complaint the Dropsa SpA Sales Department should be contacted without delay.

DROPSA S.p.A. declines to accept any responsibility for injuries to persons or damage to property in the event of the non-observance of the information presented in this manual.

Any modification to component parts of the system or the different destination of use of this system or its parts without prior written authorisation from DROPSA S.p.A. will absolve the latter from any responsibility for injury or damage to persons and/or property and will release them from all obligations arising from the guarantee.

## 2. GENERAL DESCRIPTION

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These Electro-pneumatic Valves have been designed to control Dual Line Systems (Systems 02). They can operate with Oil or Grease at a max pressure of 400 bar (5880psi).

The main function of the Modular Directional Valves is to put in communication alternatively the pump with one of the two lines, allowing at the same time, the release of the pressure in the other line.

## 3. PRODUCT IDENTIFICATION

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Product identification yellow label contains product serial number, input voltage and details of the operating parameters.

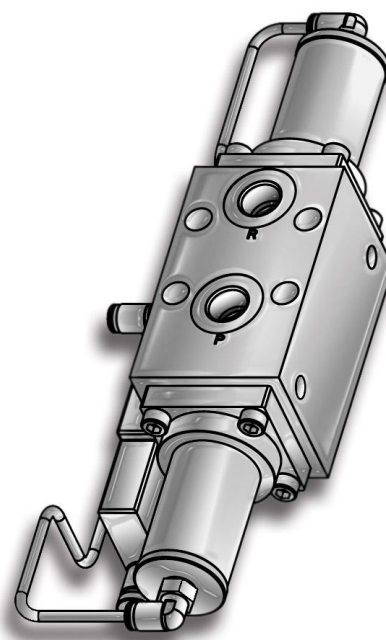
## 4. TECHNICAL SPECIFICATIONS

<b>TECHNICAL CHARACTERISTICS</b>	
Max. delivery (Oil 100 cSt)	40L/min. (10.56 gpm)
Manual override force requirement	14 kg@400 bar
Max. operating pressure	400 bar (5880 psi)
Air pressure	3÷10 bar (44 ÷ 147 psi)
Lubricant	Oil min. 32 cSt max. 1000 cSt Grease max. NLGI 2
Port (R – P – 1 – 2)	3/8" BSP or NPT
Protection Grade	IP-55
Voltage	24V DC 24 AC, 110V AC, 230V AC, - 50/60 Hz (Other voltages available on request)
Solenoid power	1 w
Working temperature (*)	-30° C ÷ + 50° C (-22° ÷ +122° F)
Humidity	90°
Weight	7,5 Kg (17.63 lb)

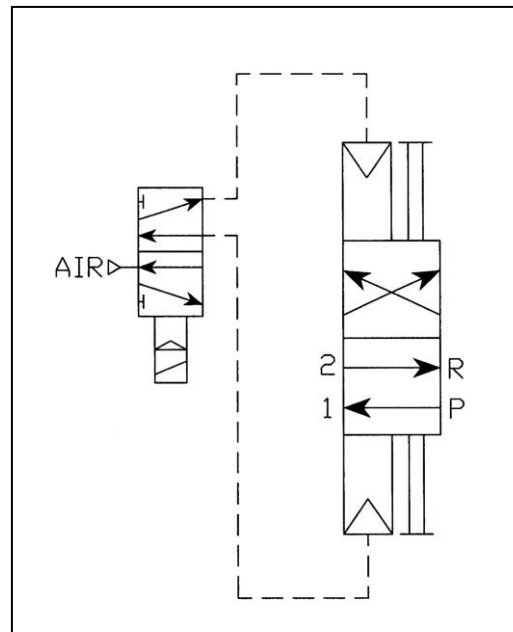
## 5. MACHINE COMPONENTS

The modular valve is composed of:

- ❑ a grinding **piston** with roughness grade of 0,2  $\mu$  and double coupling head. Each coupling has 3 grooves to improve the seal at high pressure;
- ❑ an **modular valve body** with a lapping central hole which allows the sealing coupling with the modular valve's piston. All piping are disposed on the same surface and have 4 holes G 3/8 UNI ISO 228-1. The inversion phase is made easier by a balancing system, holes and grooves that allow to regulate the pressure;
- ❑ close **flanges**;
- ❑ **spacers**;
- ❑ **sealing gaskets** designed to tolerate high pressures. These basket allow to have a high pressure chamber which maximise the functioning of the modular valve.
- ❑ two pneumatic cylinders controlled by a solenoid valve 5 / 2
- ❑ solenoid valve 5/2, 1/8 "BSP



## 5.1 Circuit Diagram



## 6. UNPACKING AND INSTALLING

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### 6.1 Unpacking

Once a suitable location has been found to install the unit remove the valve from the packaging. Check the Modular directional valve 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 Modular directional valve

1. Attach the valve to the desired location using the two holes of diameter 8.5 mm placed on the top of the valve itself (for attachment to basement).
2. Connect the inlet pipe of the lubricant to the INLET hole on the valve(P).
3. Connect the two outlet pipes to the holes marked as LINE 1 and LINE 2 on the valve (1 and 2).
4. Connect the lubricant return line with the hole marked as OUTLET (R).
5. Connect the electromagnet assembly connectors.
6. Finally, connect the compressed air pipe to the terminal.

## 7. INSTRUCTIONS FOR USE

### 7.1 Start-up

#### *Steps to be taken before starting up the device:*

- Check Electro-pneumatic valve integrity;
- Check that the Modular directional valve is at running temperature and that the pipes are free of air bubbles
- Check that the electrical connection has been carried out correctly (CEI 64/8, IEC 364);
- Check the correct inversion of the Modular directional valve both in pression and without pression;
- Check that there aren't lubricant leakage or air pressure loss;
- Check that the lock screws are properly screwed up;
- For correct fastening, check the dimensions of the axle bases (see chapter 12);
- Use gloves and safety goggles, as stipulated in the safety chart for the lubricating oil;
- DO NOT use lubricants that may irritate the NBR gaskets; if in doubt, contact the Dropsa SpA technical office, which can provide you with a detailed chart of recommended oils.
- Do not ignore dangers to the health and maintain the regular hygiene standard.

### 7.2 Precaution during installation process

In order to avoid the danger of fulguration due to direct or indirect contacts with the live parts, it is necessary that the electric power supply line be adequately protected by a special magnetothermal differential switch with a cut-off threshold of 0.03 Ampere and a maximum cut-off time of 1 second.

## 8. TROUBLESHOOTING

<b>DIAGNOSTIC TABLE</b>		
<b>PROBLEMS</b>	<b>PROBABLE CAUSE</b>	<b>SOLUTION</b>
<b>The modular valve doesn't invert</b>	<ul style="list-style-type: none"> <li>• there isn't electric power supply</li> <li>• seizure piston</li> <li>• the modular valve has reached the maximum pressure level</li> <li>• important lubricant leakage from one of the four connection pipes</li> <li>• gasket broken</li> </ul>	<ul style="list-style-type: none"> <li>• check the power supply line</li> <li>• verify if the piston creeps properly</li> <li>• replace the modular valve</li> <li>• regulate the installation pressure to max 400 bar (5880 psi)</li> <li>• check if the connection fittings are properly fastened</li> <li>• replace</li> </ul>

## 9. MAINTENANCE PROCEDURE

To make easier the maintenance, position the modular valve in such a way that it can be checked easily. Check periodically coupling and pipes to identify possible leakages. Keep always clean the modular valve in order to identify quickly possible leakage or defects.

INSPECTION / MAINTENANCE OPERATION	WORK CYCLES
Gasket wear	50.000
Bush wear (pneumatic version)	50.000



**WARNING:** Prior to any maintenance, be sure that the power and the hydraulic supplies are off and there is no residual pressure in the main/branch pipe.

*In the case of persistent problems and/or doubts, do not disassemble parts of the machine to trace the origin, instead contact the technical office of DROPSA S.p.A.*

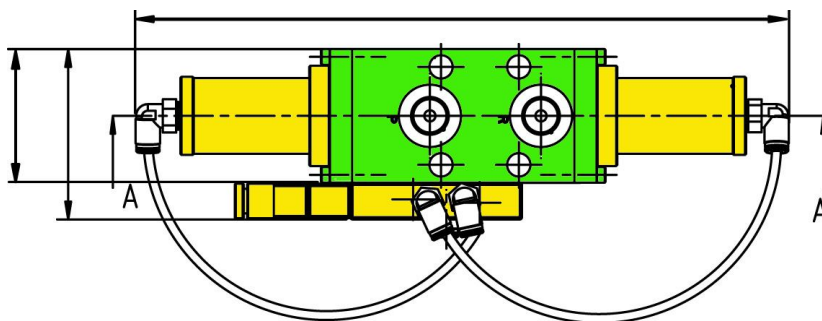
## 10. DISPOSAL

During maintenance or disposal of the modular valve care should be taken to properly dispose of environmentally sensitive items such as oils or other lubricants. 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 Modular directional valve



#### ELECTRO-PNEUMATIC VALV

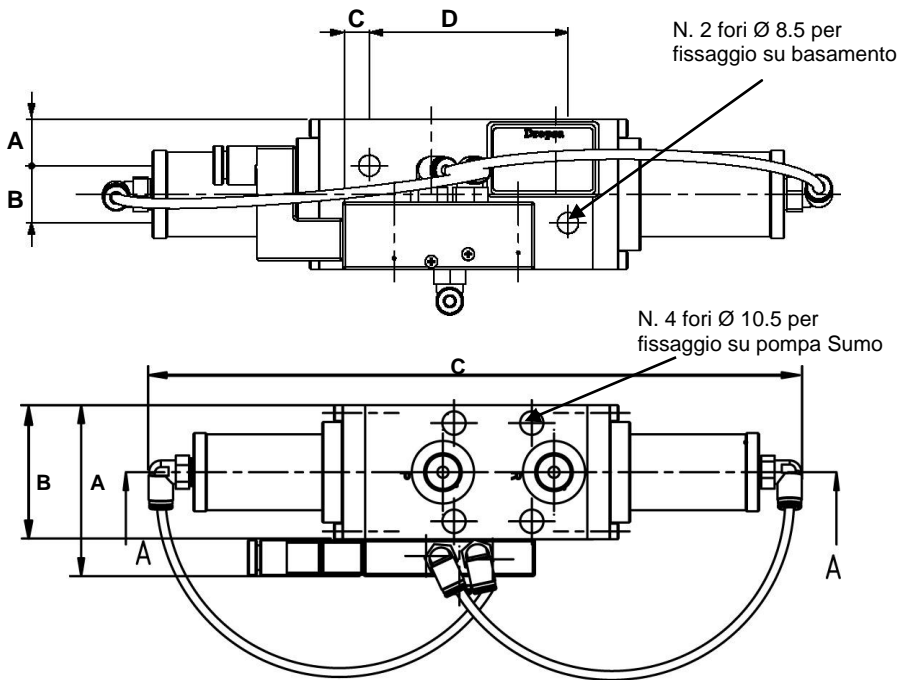
Code	Voltage
083450	24V DC
083451	24V AC 50/60 Hz
083452	110V AC 50/60 Hz
083453	230V AC 50/60 Hz

### 11.2 Spare parts

#### SPARE PARTS

Code	Description
3155154	Solenoid 24V DC
3155155	Solenoid 24V AC 50/60 Hz
3155156	Solenoid 110V AC 50/60 Hz
3155157	Solenoid 230V AC 50/60 Hz

## 12. DIMENSIONS



Pos.	mm (in.)
A	18,5 (0.72)
B	23 (0.90)
C	10 (0.39)
D	80 (3.14)

Pos.	mm (in.)
A	77 (3.03)
B	60 (2.36)
C	293 (11.53)



**Note:** please respect the following instructions for correct operation of the Modular directional valve:

1. return pipe connected to port "R" with grease NLGI2 must have an internal diameter of  $\geq 12$  [mm].
2. return pipe connected to port "R" with fluid oil and grease (max NGLI 00) must have an internal diameter of  $\geq 8$  [mm].

## 13. HANDLING AND TRANSPORTATION

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

No particular precautions are required except as noted on the package itself.

## 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 and Maintenance Manual.

### Power supply

Any type of intervention must not be carried out before unplugging 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.

### 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

Modular Directional Valve does not produce excessive noise, less than 70 dB(A) .

## 15. PRECAUTIONS

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The verification of conformity with the essential safety requirements and regulations of the Machine Directive is effected by means of the compilation of a check list which has been pre-prepared and is contained in the *technical file*.

The lists which are utilised are of three types:

- list of dangers (as in EN 414 referring to EN 292)
- application of essential safety requirements (Machine Dir. - att. 1, part 1)
- electrical safety requirements (EN 60204-1).

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

- in modular valve it is possible to encounter squirts of oil (for this reason appropriate protective clothing must be worn)
- contact with oil -> see the requirements for the use of suitable personal protective clothing
- use of unsuitable lubricant -> the characteristics of the fluid are shown on the modular directional valve and in the manual (**in case of doubt contact the Eng. Dept of Dropsa Spa**)
- protection against direct and indirect contact must be provided by the user
- never work at pressures above 400 bar (5880 psi.).
- check the correctness of power supply .

Fluids	Dangers
Lubricants containing abrasive components	Premature wear of modular valve
Lubricants containing silicon	Modular valve failure
Petrol – solvents – inflammable liquids	Fire – explosion – seal damage
Corrosive products	Modular valve damage - danger to persons
Water	Modular valve oxidization
Food Products	Contamination of the product



## 16. WARRANTY INFORMATION

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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 xxxxx-xxxxx), 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.



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DECLARATION DE CONFORMITE/ KONFORMITÄTSEKTLÄRUNG 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 la macchina denominata/that the machine named / que la machine dénommée/ Die Maschine mit der Bezeichnung/ que la máquina denominada/ que o equipamento denominado

**VALVOLE ELETTOPNEUMATICHE (4/2) PER LINEA DOPPIA**

è conforme alle condizioni previste dalle Direttive CEE /has been constructed in conformity with the Directives Of The Council Of The European Community on the standardization of the legislations of member states/ a été construite en conformité avec les Directives Du Conseil Des Communautés Europeennes/ Entsprechend den Richtlinien des Rates Der Europäischen Union, für die Standarisierung der Legislative der Mitgliederstaaten, konstruiert wurde/ cumple con las condiciones establecidas por las directivas comunitarias/ foi construído em conformidade com as diretivas do Conselho das Comunidades Europeias:

- 2006/42 Direttiva macchine /Machinery Directive / 2006/42 Directive machines / Maschinenrichtlinien/ Maquinaria 2006/42/CEE /Directiva 2006/42 Máquinas;

Vimodrone (MI), August 2011

Technical Director:  
*Maurizio Greco*

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*Milena Gavazzi*



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## 18. DISTRIBUTORS

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