

INSTRUCTIONS FOR USE

Dragone Pump DROPSA SpA

In conformity with section 1.7.4, app. I, EEC Dir. 98/37/CE



Company Name	DROPSA SpA
Address	via Croce 1, 20090 Vimodrone (Mi), Italy
Model	DRAGONE pump
Year of construction	1998
Marking	CE

Catalogue P/N C2000IE - Wk 23/02

0.0 INTRODUCTION

This manual provides instructions for the use and maintenance of the Dragone pump, which is designed for use in lubrication systems using mineral oil or fluid grease.

The manual should be kept in a safe place in which it is protected from damage and does not deteriorate over time; it should be easily available to any staff member who wishes to consult it.

For other copies of the manual, updates or clarifications, please contact the technical office of Dropsa SpA.

The Dragone pump may only be operated by qualified personnel who have basic hydraulic and electrical skills.

The manufacturer reserves the right to update the product and/or manual without necessarily revising the preceding versions. It is however possible to request the latest version in use from the Dropsa SpA technical office.

The overall condition of the pump, and of any accessories attached to it, should be checked immediately after receiving it. In the event of a complaint, immediately contact the commercial office of Dropsa SpA.

DROPSA S.p.A. is absolved from any responsibility for damage to persons or things in the event that the instructions outlined in this manual are not followed.

Any modifications to the components of the system or any usage of the system (and its parts) differing from its intended use without written permission from DROPSA S.p.A. will absolve the company from any responsibility for damage to persons and/or things and will also absolve the company from any guarantee obligations.

The importer and the instructions for ordering the model desired are reported in Chapter 4.

1.0 DESCRIPTION OF THE PUMP

This series of pumps is particularly suited for feeding lubrication systems. There are three basic versions:

motor-driven gear pumps:

- ❖ For lubrication systems with injectors and for circulation systems with operating pressure < 20 bar (290 psi) – system 01
- ❖ With a built-in release valve, for lubrication systems equipped with “direct response” feeding devices with operating pressure < 70 bar (1015 psi) – system 04/06
- ❖ For progressive lubrication systems and for circulation systems controlled by progressive feeding devices with operating pressure < 70 bar (1015 psi) – system 26

The pump is made up of a series of components, a frame and a tank, with the option to install a series of accessories:

1.1 Gear pump

This pump interlocks the lubrication circuit. There are two versions available: the first has a flow rate of 350 cm³/min, the second has a flow rate of 500 cm³/min, both operating at 1,500 rpm. The maximum pressure with intermittent running is 70 bar (1015 psi) with a three-phase motor, 40 bar (580 psi) with a single-phase motor, and 30 bar (435 psi) with continuous running (with single-phase or three-phase motor); the operating temperature is + 5 °C ÷ + 40 °C.

The system may only be used with mineral lubricating oil that has a viscosity of 15 ÷ 2000 cSt or NGLI 000 grease (at operating temperature); in the event that a different product is to be used, authorisation must

first be received from Dropsa S.p.A.

1.2 Electric motor

Standard motor, three-phase with 4 poles multi-voltage or single-phase, as specified.

Special three-phase motor with the following voltages: 220/380 V, 240/415 V and 255/440 V, frequency 50 - 60 Hz and power 90 W.

Single-phase motor: 220 V, 50 Hz and 90w – on request: 110 V 50/60 Hz

Size 56	IP degree of protection 55	class F insulation	Continuous running S1
---------	----------------------------	--------------------	-----------------------

12 and 24 V dc motors are available on request.

1.3 Tank

Version	Dimensions (mm)	Weight (Kg)
3 litres nylon	144 - 337 – 240	6
5 litres nylon	144 - 430 – 240	7
3 litres aluminum	144 - 330 – 240	6,5
6 litres steel	184 - 421 – 327	10

1.4 Indicator of minimum level

Magnetic type

Reversible float with contact normally closed at minimum level. Maximum commutable power 50 W ÷ 50 VA; maximum commutable voltage 220 ac – 150 V dc, maximum current 3A;

on request, a minimum level and lubricant reserve indicator is available: equipped with floats and two switches (minimum and zero).

Inductive sensor type

For oil and light grease exclusively for 3 l tanks; minimum voltage 30 V ac and maximum voltage 250 V ac; peak current: min. 15 mA, max. 300 mA.

1.5 Suction filter

Degree of filtration: 260 micron

1.6 Block valve

Mounted inside the tank, composed of a by-pass valve that is easily calibrated from the outside; release valve for systems equipped with “direct response” feeding devices (04 – 06).

1.7 Accessories

◆ Pressure gauge

DESCRIPTION	CODE
Depending on the lubrication system, two versions may be assembled: 0 ÷ 25 bar for uses with low pressures, 0 ÷ 100 bar for higher pressures.	20566
	20564

◆ Manostat

DESCRIPTION	CODE
Depending on the lubrication system, two versions may be	3291022 (high pressures)

assembled: 10 ÷ 20 bar for uses with low pressures, 20 ÷ 50 bar for higher pressures.	3291028 (low pressures)
---	-------------------------

◆ Control panel

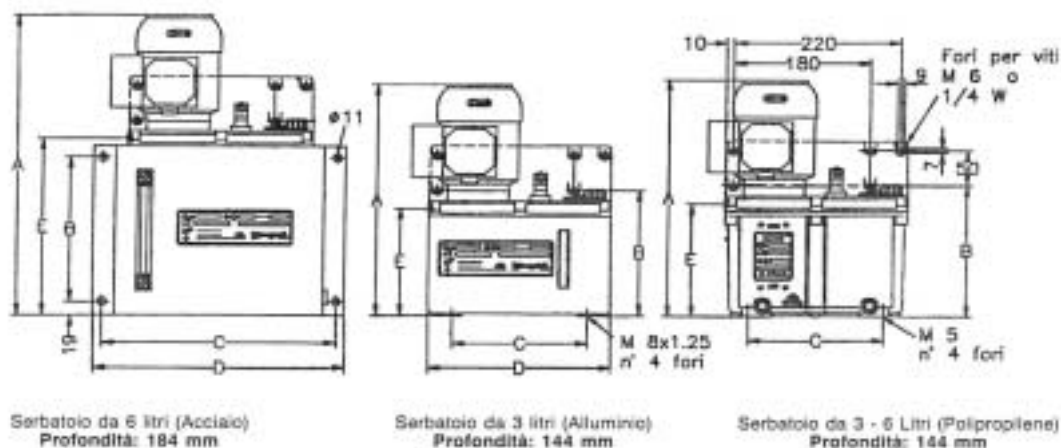
DESCRIPTION	CODE
It is also possible, as an accessory to the pump, to have a control panel entitled “VIP”, which allows the various operating parameters to be controlled: manostat and level alarms, as well as the operating and pause cycle.	1639077 (single-phase) 1639087 (three-phase)

◆ Revolving terminal

DESCRIPTION	CODE
Provisions must be taken for this when the pressure gauge and manostat are installed.	3095230

2.0 TECHNICAL CHARACTERISTICS

2.1 Fastener and dimensions



Capacità Serbatoio Litri	Dimensioni in mm				
	A	B	C	D	E
3 Polipropilene	337.5	187	177.8	240	180.5
6 Polipropilene	430.5	280	177.8	240	253.5
3 Alluminio	330	179	177.8	240	152.5
6 Lamiera acciaio	421	205	305	327	243.5

[Scheda:] 6 litre tank (steel) 3 litre tank (aluminum) 3 – 6 litre tank (polypropylene)

Depth: 184 mm

Depth: 144 mm

Depth: 144 mm

Tank capacity in litres	Dimensions in mm
Polypropylene - Aluminum - Sheet steel	

For easy assembly, increase the measurements by at least 10 cm.

2.2 Electrical system – Technical Data

Electrical power:	220 Vac 50 Hz single-phase
-------------------	----------------------------

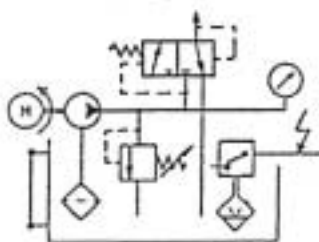
	220 ÷ 440 Vac 50 - 60 Hz three-phase
Power absorbed:	Approx. 90 W

2.3 Hydraulic system – Technical Data

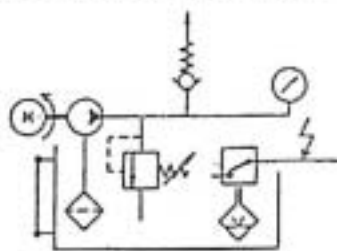
Connection between the gear pump and the valve body by means of nylon tubing, external \varnothing 4 mm (see Appendix 7);

[Scheda:] Functional diagram for system with release valve
Functional diagram for system with non-return valve

SCHEMA FUNZIONALE PER SISTEMA
CON VALVOLA DI RILASCIO



SCHEMA FUNZIONALE PER SISTEMA
CON VALVOLA DI NON RITORNO



2.4 Other data

Degree of protection	F
Degree of mechanical protection	IP 55
Operating temperature	+ 5 ÷ + 40 °C
Operating humidity	90 % relative humidity
Storage temperature	- 20 ÷ + 50 °C
Level of continuous sonic pressure	< 70 dB(A)

3.0 USAGE

3.1 Setting in operation

Damage to the power supply cable or the housing may result in contact with the high-voltage live elements and therefore the danger of death:

- ◆ Check that the power supply cable and the unit itself are undamaged before use.
- ◆ In the event that either the power supply cable or the unit itself is damaged, do not turn on the device!
- ◆ If the power supply cable is damaged, replace it with a new one.
- ◆ The unit may be opened and repaired only by specialised personnel.

- ◆ 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.
The cut-off power of the switch must be 10 kA and the rated current $I_n = 6 A$.
- ◆ The connection of the manostat directly attached to the tank must be effectuated at 24 V ac/dc.
- ◆ The pump must not be used while submerged in fluids or in particularly aggressive or explosive/inflammable settings, unless specially preset by the supplier for such purposes.
- ◆ For correct fastening, check the dimensions of the axle bases reported in the illustrations in Chapter 2.
- ◆ 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 standards.
- ◆ Attention! All the electrical components must be grounded. This applies both to the electrical components themselves and the control devices. To this end, ensure that the grounding wire is correctly connected. For safety reasons, the grounding conductor must be approx. 100 mm longer than the phase conductors. In the event of an accidental disconnection of the cable, the grounding terminal must be the last to detach itself.

Steps to be taken before starting up the device:

- ◆ Check that the pump is in good condition;
- ◆ Fill the tank with an appropriate lubricant (the min/max indications are on the tank);
- ◆ Check that the pump is at running temperature and that the tubes are free of air bubbles;
- ◆ Check that the electrical connection has been carried out correctly (CEI 64/8, IEC 364);
- ◆ Check the connection of the level (and, if present, the manostat) to the control board;
- ◆ With the pump activated, check the direction of rotation of the electric motor; if the motor turns the wrong way, it is necessary to invert the connection of the cables.



The minimum level condition is supplied, unless requested differently by the client, with the contact closed for the minimum level. Should the user require a contact that is normally open, it is necessary (with the tank open) to invert the operating direction of the float.

3.2 Use

1. Check the preset data;
2. Press the start button of the machine to which the Dragone pump is attached;
3. Check that the pump starts up;
4. Check that the machine is adequately lubricated (if there are any doubts about its correct functioning, it is possible to contact the Dropsa SpA technical office in order to request the test procedure).

3.3 Transportation and storage

Transportation and storage are carried out using cardboard packaging.

There are no particular measures to be taken, apart from respecting the up/down direction indicated on the packaging itself.

The device may be moved by a single individual.



Lift the device respecting the up/down direction indicated on the cardboard packaging



While in storage, the components of the machine may withstand temperatures ranging from -20 to +50 °C; in order to avoid damage, however, the machine should only be activated when its temperature has reached +5 °C.

3.4 Assembly/Disassembly

No assembly operations are required for the pump.

To mount on a wall, adequate space must be allowed (as in the installation diagram) in order to avoid incorrect postures or the possibility of knocks. There are four fastening holes provided, with differing characteristics depending on the version (see Chapter 2).

Subsequently, the pump must be hydraulically connected to the machine (as described above) and the

connection must then be made to the control board.

During disassembly, make sure the tank is empty.

Disconnect the electrical part and the hydraulic part.

In the event of the machine being demolished, do not dispose of the polluting parts in the environment.

Check your local laws for correct disposal.

When demolishing the machine, it is also necessary to destroy the identification plaque and all other documents.

3.5 Adjustments

The only parameter that may be modified is the pressure parameter. To change its setting, the adjustment screw should be rotated in a clockwise direction (to increase) or an anti-clockwise direction (to decrease).

3.6 Maintenance

! *Position the machine in such a way that it can be checked easily.*

Wear the correct individual protection gear in order to avoid contact with the mineral oil

Periodic inspections

It is necessary to periodically check as follows:

INSPECTION / MAINTENANCE OPERATION	WORK CYCLES
Condition of lubrication	1000
Oil level	2000
Cleansing of the loading filter and of the suction filter	4000
Cleansing of the tank bottom if there are deposits	6000

The machine does not require special equipment for any inspection and/or maintenance activity. It is however recommended that the equipment used be suitable and in good condition (DPR 547/55) so as to avoid damage to people or parts of the machine.

3.7 Repairs

There follows a diagnostics table in which the main problem areas are shown, together with the probable causes and possible solutions.

The problems shown are:

- The pump does not deliver oil in sufficient quantities or does not deliver at all
- The pump does not deliver oil at the preset pressure
- The pressure in the line does not release (only for systems with volumetric valves)
- The lubrication cycle is not carried out

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.

DIAGNOSTICS TABLE

PROBLEMS	PROBABLE CAUSES	ACTION TO TAKE
<p>The pump does not deliver oil in sufficient quantities or does not deliver at all</p>	<ul style="list-style-type: none"> • It is sucking in air because the tank is empty • The suction filter is dirty or blocked • The internal connections are loose • The pump has deteriorated • The valve adjusting the pressure is loose and so the oil is returning immediately into the tank before flowing through the delivery valve 	<ul style="list-style-type: none"> • Restore the correct level in the tank and purge the air from the system • Wash the filter with petrol and blow with compressed air • Carefully close all the connections, ensuring that there is no leakage • Replace the pump • Tighten the adjusting screw until no oil comes out from the delivery
<p>The pump does not deliver oil at the preset pressure</p>	<ul style="list-style-type: none"> • Release valve damaged • Calibration of the pressure-adjusting valve incorrect • There is dirt below the valve 	<ul style="list-style-type: none"> • Replace the valve • Connect a tube of about 30 cm in length to the outlet of the pump, with a pressure gauge at the free end. Adjust the valve by turning the screw and reading the corresponding pressure value on the pressure gauge. • Remove the elastic sealing ring of the valve unit, extract the valve unit and wash it with benzene or petrol. Before reassembling the valve unit, check the condition of wear of the O rings. If necessary, replace the valve unit • Remove the elastic sealing ring of the valve unit, extract the valve unit and wash it with benzene or petrol. Before reassembling the valve unit, check the condition of wear of the O rings. If necessary, replace the valve unit

<p>The pressure in the line does not release</p>	<ul style="list-style-type: none"> • The adjusting valve is malfunctioning 	<ul style="list-style-type: none"> • Remove the elastic sealing ring of the valve unit, extract the valve unit and wash it with benzene or petrol. Before reassembling the valve unit, check the condition of wear of the O rings. If necessary, replace the valve unit
<p>The lubrication cycle is not carried out</p>	<p>Calibration pressure of the cycle-controlling manostat not reached because of:</p> <ul style="list-style-type: none"> • Tubing of the line broken or connections loose • Manostat calibration set higher than that of the pump • The pump does not deliver oil at the preset pressure • The pump does not deliver oil 	<ul style="list-style-type: none"> • Replace the tubing – tighten the connections fully • Calibrate the manostat correctly • See diagnostics table • See diagnostics table

3.8 Other notes on usage

The verification of conformity to the essential safety requirements and to the stipulations reported in the directive on machinery has been carried out by means of the compilation of checklists, which have already been compiled and are contained in the *technical file*.

The lists used are of three types:

- list of dangers (taken from EN 414, in reference to EN 292)
- application of the essential safety requirements (Machinery Directive – Appendix 1, part 1)
- electrical safety stipulations (EN 60204-1)

There follows a list of the dangers that have not been completely eliminated, but which are held to be acceptable:

- ◆ in the version with the pump without a release, it is possible that there may be a splash of oil (this operation must be carried out using the appropriate DPIs)
- ◆ contact with the oil -> see stipulations for use of appropriate DPIs
- ◆ use of an inappropriate lubricant -> the characteristics of the fluid are reported both on the pump and in the manual
- ◆ the user must ensure that there is protection against direct and indirect contacts
- ◆ the pump is designed in such a way that it must function at all times; therefore, attention must be paid to the electrical connection so that in the event of an interruption in power, the client's machine will start up again only by means of a reset, while the lubrication pump may restart automatically.

4.0 INSTRUCTIONS FOR ORDERING

MOTOR	FLOW RATE	TANK	SYSTEM 01	SYSTEM 04-06	SYSTEM 26
THREE-PHASE MULTI-VOLTAGE	350	3	3901050	3902050	3903050
		6	3901052	3902052	3903052
	500	3	3901054	3902054	3903054
		6	3901056	3902056	3903056

MOTOR	FLOW RATE	TANK	SYSTEM 01	SYSTEM 04-06	SYSTEM 26
SINGLE-PHASE	350	3	3901070	3902070	3903070
		6	3901072	3902072	3903072
	500	3	3901074	3902074	3903074
		6	3901076	3902076	3903076

EC conformity statement

<p>Constructor : DROPSA SpA _____ Company Via Croce, 1 - 20090 Vimodrone (MI) _____ Address 02 - 250791 _____ Telephone</p>
--

Certifies that:

The machine: DRAGONE pump	ver 10-20-30
----------------------------------	--------------

- * has been constructed in conformity with the DIRECTIVES OF THE COUNCIL OF THE EUROPEAN COMMUNITY on the standardisation of the legislations of member states with respect to machinery (98/37/CE), EMC (89/336/EEC) and BT (73/23/EEC) and respective updates.
- * has been constructed in conformity with the following standardised regulations and technical specifications:
EN 292/1, EN 292/2, EN 50081-2, EN 50082-2, CEI EN 60204-1, EN 1050.

Technical Director	Walter Divisi
Product Director	Name

DROPSA SpA - Vimodrone (Mi) - Italy

Company



October '98

Signature	Date
-----------	------

DROPSA

<p>ITALY Dropsa Spa Via B. Croce, 1 - 20090 Vimodrone (MI) Tel: (+39) 02 - 250.79.1 Fax: (+39) 02 - 250.79.787 E-mail: sales@dropsa.it (Export) E-mail: vendite@dropsa.it (National)</p>	<p>U.K. Dropsa (UK) Ltd. Unit 6, Egham Business Village, Egham, Surrey TW20 8RB Tel: (+44) 01784 - 431177 Fax: (+44) 01784 - 438556 E-mail: salesuk@dropsa.com</p>	<p>GERMANY Dropsa GmbH, Volkmannweither Strasse 80 42221 Düsseldorf 1, Deutschland Tel: (+49) 0211-394-011 Fax: (+49) 0211-394-013 E-mail: sales@dropsa.de</p>	<p>U.S.A. Dropsa Corporation 50679 Wing Drive Utica, Michigan 48315, Tel: (+1) 810-566-1540 Fax: (+1) 810-566-1541 E-mail: salesusa@dropsa.com</p>	<p>BRAZIL Dropsa - Remontub Rua Sobralia 175 Santo Amaro, Sao Paulo, Tel: (+55) 011 548 0007 Fax: (+55) 011 548 9408 E-mail: salesbr@dropsa.com</p>
--	--	--	--	---

© Copyright Dropsa - all rights reserved. Reproduction of any part of this document is strictly forbidden without prior consent from Dropsa. Dropsa reserve the right to withdraw or modify specifications without prior notice.