

INSTRUCTIONS FOR USE

Pneumatically driven pump Type 233000 & 234000 DROPSA SpA

In accordance with point 1.7.4, to I, Dir. 98/37 CE

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Catalogue P/N C2017IE - Wk 23/02

Registered name	DROPSA SpA
Address	via Croce 1, 20090 Vimodrone (MI), Italy
Model	Pneumatically driven pump 233000 & 234000
Year of manufacture	1999
Marking	CE

0.0 INTRODUCTION AND WARNING

This user's and maintenance manual refers to series **233000 & 234000 pneumatically driven pumps**, for use in mineral oil or grease lubrication systems.

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 pump referred to in this manual must be entrusted to qualified personnel with a knowledge of hydraulics, mechanical and electrical systems; the non-observance of the information given in this manual or the improper use of the equipment by non-qualified or non-authorised personnel can put persons or the environment at risk due to the escape of fluids under pressure.

It is of extreme importance that the instructions for use are read and understood both by the operators and maintenance personnel, in cases of doubt please contact the area representative or our "Customer Service" department.

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.

It is the responsibility of the installer to utilise tubing suitable for the system; the use of unsuitable tubing can generate problems with the pump, risks to persons and cause pollution.

The loosening of connections can cause serious safety problems and all such connections should be checked before and after installation and tightened if necessary.

Never exceed the maximum operating pressure values allowed for the pump and the components to which it is connected.

Before any maintenance or cleaning operations, close off the air supply and release the pressure from the pump and the tubing to which it is connected.

Do not subject the pump, the tubing or other parts under pressure to violent impacts; damaged tubing or connections are dangerous and should be replaced.

After prolonged periods of inactivity, ensure the tightness of all connections subjected to pressure.

It is required that personnel make use of protection devices, clothing and necessary tools, suitable to the place and employment of the pump both while in operation and during the undertaking of maintenance tasks.

The pump, 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.

The list of importers and instructions for ordering the required model are shown in Section 4.

1.0 DESCRIPTION OF THE PUMP

These powerful, robust and long lasting pumps, mounted on commercial drums, are used for transferring light greases, lubricants and other non-corrosive fluids or, fitted with a flexible hose and gun, for filling grease cups or small tanks in the industrial and automotive fields.

Another interesting application of this type of pump is in the lubrication field where its capacity to deliver large quantities at a high working pressure renders it particularly suitable for feeding centralised progressive systems.

The pump is made up of a motor assembly with a synthetic rubber piston, particularly resistant to abrasion, moved from top to bottom (and vice-versa) by a compressed air jet, and a pump rod with a chromed piston, connected to the motor piston.

The lubricant is primed on the upstroke of the piston filling the lower chamber of the pump rod or the priming chamber and from here, through a non-return valve, passes to the upper chamber (high pressure chamber).

In the successive downstroke phase, the piston forces this quantity of lubricant through the pump outlet and, simultaneously, refills the priming chamber so repeating the cycle.

The pressure with which the lubricant is delivered is 40 times that of the command air, while the flow rate, at a temperature of 20°C, with an air pressure of 10 bar, is in the order of 400 grams of lubricant a minute.

The following accessories can be supplied on request:

Pressure disk – to be used when the pump is mounted directly on a commercial grease drum. This disk acts to maintain the grease compact and to avoid the formation of air bubbles in the feed line so prejudicing the functioning of the system.

Lid – made for mounting this type of pump, substituting the original drum lid.

Suction filter – to be mounted on the pump dip tube as the lubricants supplied in commercial drums are not always free from impurities.

Air treatment assemblies – Specifications: double action filter in the air line. Air regulator for a constant air pressure. Lubricator with a constant air-oil ratio. Control of the oil flow – viscosity of the oil up to 110 cSt.

The versions for double lines are complete with a tank of 5 Kg/lt. In sheet steel, minimum level electrical contact, filling valve, hydraulic inverter and pressure gauge; these are suitable for the lubrication of small to medium sized machinery.

1.1 Accessories

Nipple to connect pump to the flexible hose: Part N°. 2513006 - Ø ½" 27 threaded for 1" (flex side)
R ¼ UNI ISO 7/1 (gas) pump side

Connector, rotary: Part N° 2037659

Gun, greasing: Part N° 1151000

Filter, suction: Part N° 234063

Snap connector: Part N° 919000

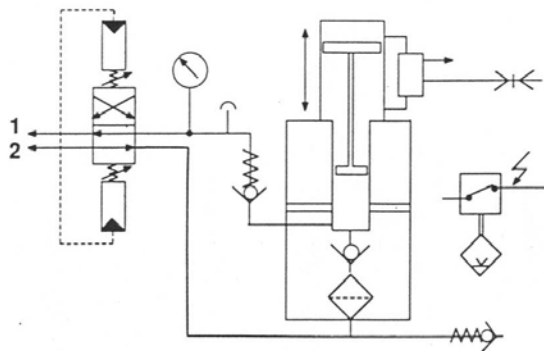
Hose, flexible, air: Part N° 101100 + length in cm (overall) – R ¼ gas, Ø flex 8x17

Hose, flexible, lubricant: Part N° 2513021 + length in cm (overall) - ½ “ 27 threaded for 1”

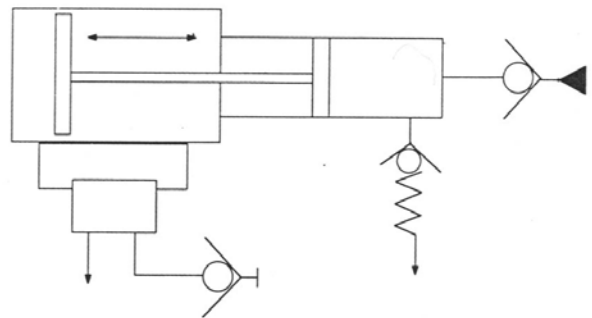
2.0 TECHNICAL SPECIFICATIONS

Compression ratio:	40:1
Command air pressure:	minimum 4 bar (0.4 MPa) – maximum 10 bar (1 MPa) – recommended 7 bar (0.7 MPa)
Lubricant outlet :	G 1/4 UNI-ISO 228/1 (1/4 Gas)
Compressed air inlet:	G 1/4 UNI-ISO 228/1 (1/4 Gas)
Delivery flow rate:	400 gr. of grease/min with an air pressure of 10 bar

HYDRAULIC DIAGRAM 233000



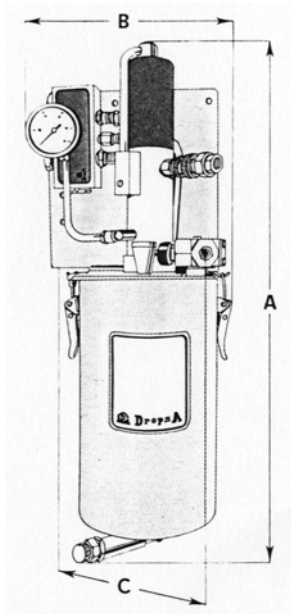
HYDRAULIC DIAGRAM 234000



2.1 Methods of commanding the pump

It is possible to command the pump manually with a simple valve or automatically utilising a 2 or 3 way solenoid valve.

2.2 Fixing dimensions

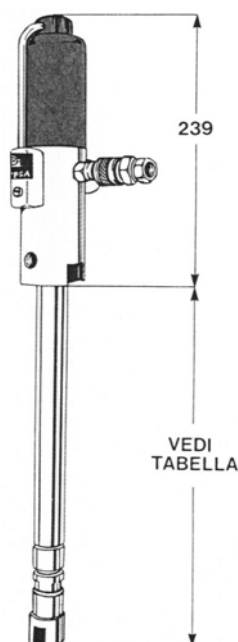


DIMENSIONS 233000

CODICE E TIPO	PESO Kg (daN)	DIMENSIONI (mm)		
		A	B	C
233250 Grasso	21	580	240	200
233300 Grasso	21	580	240	200
233305 Olio	20	530	215	200

CODE & TYPE	WEIGH T	DIMENSIONS
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DIMENSIONS 234000



Fusto kg (daN)	Codice Pompa	Codice Motore ad aria	Codice Asta Pompante	Lungh. gambo mm	Codice coperchio	Codice disco pressatore	Codice pompa+ accessori
20	234150	234001	234160	393	1141550	1141132	234125*
56	234200	234001	234210	697	1141551	1141136	
200	234250	234001	234260	852	1141552	1141102	234126*
200Δ	234320	234315	234260	852	3042054		234360Δ

* Pompe complete di coperchio e disco pressatore

Drum	Part N° Pump	Part N° Air Motor	Part N° Pump rod	Length Dip tube	Part N° Lid	Part N° Pressure disc	Part N° pump + access.
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*Pump complete with lid and pressure disc

2.3 Other data

Viscosity of lubricant at operating temperature (oil)	From 15 - 2000 cSt
Max. density of grease which can be pumped at operating temperature	NLGI 1
Operating temperature	+ 5 - + 80 °C
Operating humidity	90 % relative humidity
Storage temperature	- 20 - + 50 °C
Noise pressure level	< 75 dB(A)

3.0 CORRECT USE

3.1 Putting into service

- ◆ The unit may be used, opened and repaired only by specialised personnel.
- ◆ The pump MUST NOT be submersed in fluids or utilised in environments which are particularly aggressive or explosive/inflammable if not prepared for this purpose beforehand by the supplier.
- ◆ For correct fixing verify the distance between centres shown in the diagram in Section 2.2.
- ◆ Use gloves and safety glasses as required in the lubrication oil safety chart.
- ◆ DO NOT use aggressive lubricants with NBR gaskets and seals; if in doubt consult the Engineering Department of Dropsa SpA, who will provide a chart with the details of recommended oils..
- ◆ DO NOT ignore dangers to health and observe all hygiene standards.
- ◆ WARNING! All electrical components must be grounded. This refers to both electrical components and control devices. In this regard ensure that the ground cable is correctly connected. For reasons of safety the ground cable must be approx. 100 mm longer than the phase cables. In the event of accidental detachment of the cable, the ground terminal must be the last to be removed.

 *action to be taken prior to start up*

Verify the integrity of the pump;
Insert the pump in the drum ensuring there are no air bubbles in the grease;
Verify that the pump is at operating temperature and the tubing free from air bubbles;
Verify the integrity of the supply line
Check that any electrical connections have been effected correctly (CEI 64/8, IEC 364);
Check that any solenoid valves or level indicators are correctly connected to the control panel.
Unless otherwise specified by the customer, the minimum level is supplied with the contacts normally closed. Where the user requires the contacts to be normally open it is necessary to open the tank and to invert the operating direction if the float.

3.2 Use

1. verify the settings on the control panel, where fitted;
2. press the start button of the machine to which the pump is connected;
3. verify the starting of the pump;
4. verify the adequate lubrication of the machine (if doubt exists as to the correct functioning consult the Engineering Department of Dropsa SpA to request test procedures).
5. Where used as a transfer pump verify that the flow of the lubricant is continuous and constant.

3.3 Transport and storage

Transport and storage is effected in a cardboard package.

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

Handling can be effected by one person.

! *Lift the unit with taking account of the right way up indicated on the cardboard carton*

! *The machine components can withstand temperatures, during storage, from -20 to +50°C; however, in order to avoid damage, starting of the machine should occur at a minimum temperature of -5°C.*

3.4 Assembly/Disassembly

Assembly:

No provisions are made for the disassembly of the pump.

1. Carefully check the integrity of the drum, any dents could impend the movement of the pressure disc.
2. Open the lid of the drum and level the surface of the grease
3. Clamp the pump to the appropriate the drum lid.
4. Place the lid with the pump on the drum taking care to secure it with the clamping screws.
5. Connect the flexible hose to the delivery outlet of the pump; check that it is suitable for the operating pressure and flow rate.
6. Connect the pump to the compressed air supply.

Disassembly:

The pump has been designed and constructed to require the minimum of maintenance.

1. Disconnect the air supply and the lubricant delivery hose from the pump; if required the pump rod can be emptied by operating the pump with the rod uppermost. **DANGER! (ensure hands are not near the suction inlet during the pump operation).**
2. Clamp the pneumatic motor head in a vice and unscrew the dip tube; take care of the joint lockpin which can easily come out and be lost in the lubricant.
3. Separate the 2 components; both can be overhauled or replaced without any difficulties.

Where the machine is to be scrapped, do not dispose of potentially polluting parts in the environment, following local regulations for their correct disposal.

At the time of the machine being scrapped it is necessary to remove and destroy the identification plate and all other relative documents.

3.5 Regulation

The only parameter which can be modified is the pressure; to modify the value increase or decrease the pressure of the command air supply.

3.6 Maintenance

- ! *Locate the machine in conditions which facilitate easy access.*
- Utilise individual protection to avoid contact with mineral oil or grease.*

Having undergone rigorous testing by ourselves, the pump does not require any further maintenance. The use of lubricants free from impurities is recommended and the periodic careful cleaning of the component parts of the pump and inspection for any signs of damage.

The machine does not require any special tools to carry out checks or maintenance tasks, However, it is recommended that only tools suitable for the tasks and in good condition should be utilised (DPR 547/55) to avoid injury to persons or damage to machine parts.

3.7 Repairs

The following diagnostic table indicates the main anomalies which may be encountered, the probable causes and possible solutions.

The anomalies shown are:

- the pneumatic motor fails to function
- the pneumatic motor functions but fails to deliver product
- the pump fails to maintain pressure

In case of doubts and/or problems which cannot be resolved do not attempt to disassemble parts of the machine but contact the Engineering Department of DROPSA S.p.A.

SYMPTOM	PROBABLE CAUSE	REMEDY
The pneumatic motor fails to function.	- Problems with the supply line. - Pump rod blocked - Internal damage	- Check the air supply connections. Check the air treatment assembly. - Remove the rod and check that it slides freely. Disassemble and clean if necessary. - Disconnect the rod and check that the motor functions; if necessary disassemble, clean and replace any damaged parts.
The pneumatic motor functions but fails to deliver product	- lack of lubricant in the drum - The suction is impeded by impurities - Valve or seals worn.	- Refill or replace the drum - Disassemble the rod and clean internally. - Disassemble the rod, clean internally and replace any worn components.
The pump fails to maintain pressure.	Valves or seals worn.	Disassemble the rod, clean internally and replace any worn components.

3.8 Dangers present in use

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:

- ◆ it is possible to encounter low pressure oil squirts during maintenance (for this reason appropriate protective clothing must be worn).
- ◆ contact with oil -> see the requirements for the use of suitable personal protective clothing.
- ◆ **pre-loaded springs** in the control cylinder and, where fitted, in the tank.
- ◆ use of unsuitable lubricant -> the characteristics of the fluid are shown on the pump 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
- ◆ given the purpose of the pump it must always be functioning; for this reason it is necessary to pay attention to the electrical connections which, in the case of a power failure, the customer's machine is restarted only by means of a reset, while the lubrication pump is able to restart.
- ◆ During installation and maintenance stages there exists the danger of cutting with the suction fitting.

INADMISSIBLE FLUIDS	
Fluids	Danger
Lubricants with abrasive additives	High wear rate of contacted parts
Lubricants with silicon additives	Seizure of the pump
Petrol – solvents – inflammable liquids	Fire – explosion – damage to seals
Corrosive products	Corrosion of the pump – injury to persons
Water	Oxidation of the pump
Food products	Contamination of the product itself

4.0 Instructions for ordering and distributors

Versions available						
Part N° pump	For drums of Kg/lt	Syst	Lubricant to be pumped	Part N° dip tube	Pump weight	Note
234000	5	26	Grease NLGI 1	234050	5.5 kg	Air attachment with snap connector (supplied)
234150	20	26	Grease NLGI 1	234160	6 kg	Air attachment with snap connector (supplied)
234200	56	26	Grease NLGI 1	234210	7 kg	Air attachment with snap connector (supplied)
234250	180	26	Grease NLGI 1	234260	7.5 kg	Air attachment with snap connector (supplied)
234125	20	26	Grease NLGI 1	234160	9 Kg	With lid and pressure disc
234126	180	26	Grease NLGI 1	234260	23 Kg	With lid and pressure disc
233310	5 supplied	26	Grease NLGI 1	234050	18.3 Kg	With minimum level
233330	5 supplied	26	Oil 1500 cst	234050	18.5 Kg	With minimum level & 2 way valve
233300	5 supplied	02	Grease NLGI 1	234050	25 kg	With hydraulic inverter, min level & gauge
233305	5 supplied	02	Oil 1500 cst	234050	20 kg	With hydraulic inverter, min level & gauge
254500	20 supplied	26	Grease NLGI 1	234160	35 Kg	Con trolley, 2 m hose & gun

CE Declaration Of Conformity

Manufacturer :	<u>DROPSA SpA</u>
	<u>Company</u>
	<u>Via Croce, 1 - 20090 Vimodrone (MI), Italy</u>
	<u>Address</u>
	<u>02 - 250791</u>
	<u>Telephone</u>

It is certified that:

The machine:	<u>Pneumatically driven pump series 233000 and 234000</u>
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- * is manufactured in conformity with the DIRECTIVE OF THE COUNCIL OF THE EUROPEAN COMMUNITY concerning the harmonisation of member states legislation relative to machines (98/37 CE + 91/368/CEE), EMC (89/336/CEE) and BT (73/23/CEE) and relative amendments.
- * is manufactured in accordance with the following standards and harmonised technical specifications:
EN 292/1, EN 292/2, EN 50081-2, EN 50082-2, CEI EN 60204-1, EN 1050.

Technical manager	<u>Ing. Walter Divisi</u>
Product manager	Name
<u>DROPSA SpA - Vimodrone (MI) - Italy</u>	
Company	
	<u>February 1999</u>
Signature	Date

DROPSA DISTRIBUTORS

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