PNEUMATIC GREASE PUMPS

Series 234700÷4 234710-234711

User and Maintenance Manual

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CE

Manual drafted in compliance with EC Directive 42/06

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1. INTRODUCTION

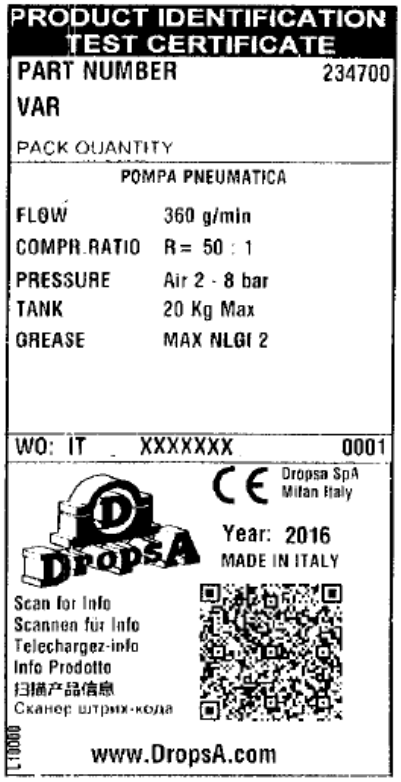
This manual refers to the ***Pneumatic Grease Pumps Series 234700÷4, 234710,234711.*** You can find additional copies and newer revisions of this document from our website http://www.dropsa.com. Alternatively contact one of our sales offices.
Please read this manual carefully, as it contains important information on health and safety issues. A copy of this manual should remain with the user of the product.

2. GENERAL DESCRIPTION

The pneumatic grease pump is an assembly consisting of a *cam pneumatic motor* connected to a piston-pump located at the bottom of the suction unit. This equipment is required in all working conditions where grease needs to be pumped under pressure (such as bearings, hubs, pins, fittings, etc.).
This machine can be considered as a *pressure pnumo-hydraulic multiplier*: pressure ratio (PR) is given by the ratio between the pneumatic (motor) and the hydraulic (pump) sections. When the motor is supplied with a pressure (P1), the pump will generate another pressure (P2) as result of the multiplication P1XPR.
The motor consists of a pneumatic cylinder slave to an automatic device which alternatively supplies two chambers determining the in-continuous movement.
Pump designing features allow the suction of high viscosity fluids without pump priming or oil addition for pump operation. The pump, combined with a suitable grease follower plate completed with O-ring-seals both on the hub and on the outer lip, allows the suction of the whole lubricant inside the drum with no generation of air pockets.

3. PRODUCT – MACHINE IDENTIFICATION

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



4. TECHNICAL CHARACTERISTICS

4.1 ENVIRONMENTAL CONDITIONS

Working temperature	*with grease NLGI 0*	-10 °C ÷ +60 °C (-14 °F ÷ +140 °F)
	with grease NLGI 1	+5 °C ÷ +60 °C (+41 °F ÷ +140 °F)
	with grease NLGI 2	

The following performances refers to the operating temperatures within the range +18 °C ÷ +20 °C (+64.4 °F ÷ +68 °F)

4.2 CHARACTERISTICS

	Art. 234700	**Art. 234701**	**Art. 234702**	**Art. 234704**	**Art. 234710**	**Art. 234711**
Working pressure	2 ÷ 8 bar (29.4 ÷ 147 psi)				2 ÷ 6 bar (29.4 ÷ 88,2 psi)	
Recommended pressure	6 bar (88.2 psi)					
Grease flow maximum pressure	400 bar (7350 psi)			80 bar (1470 psi)	600 bar (8820 psi)	
Grease flow at 6 bar pressure (88.2 psi)	360 g/min. (0.79 lb/min.)			600 g/min. (1.32 lb/min.)	360 g/min. (0.88 lb/min.)	
Air consumption at 6 bar (88.2 psi)	40 lt / min. (8.8 galls/min.)					
Air inlet port	1/4" GAS - F					
Grease outlet port	1/4" GAS - M			3/8" GAS – M	1/4" GAS - M	
Shank length	550 mm (21.65 in.)	750 mm (29.5 in.)		930 mm (36.6 in.)	750 mm (29.5 in.)	930 mm (36.6 in.)
Drum capacity	20 kg (44 lb)	50 kg (110.2 lb)	200 kg (441 lb)		50 kg (110.2 lb)	200 kg (441 lb)
Compression ratio	50 : 1			10 : 1	100 : 1	
Operating humidity	Max 90 %					
Maximum grease grade	NLGI 2					

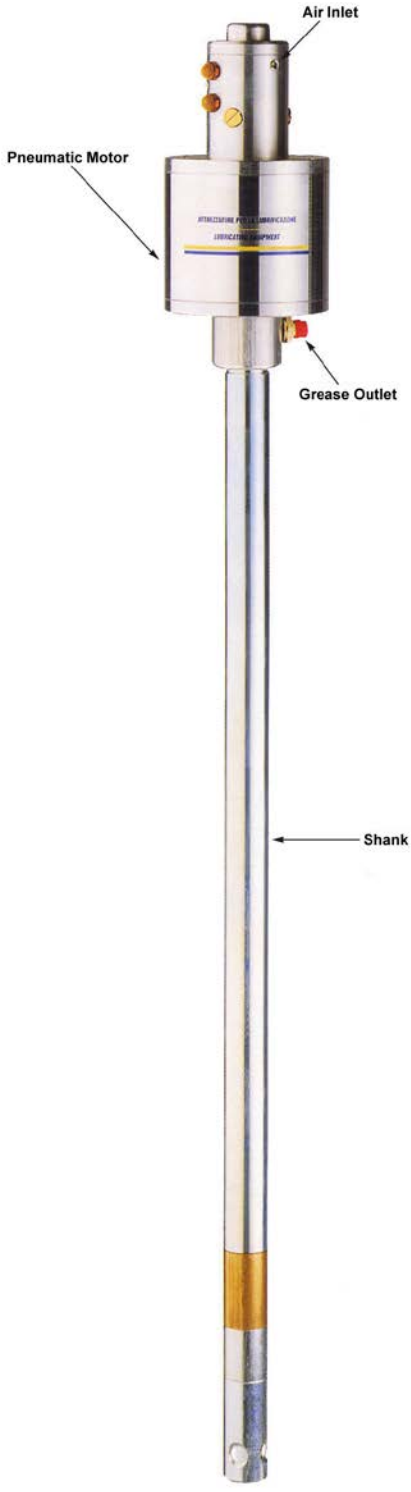
4.3 PNEUMATIC PUMP AIR-SUPPLY

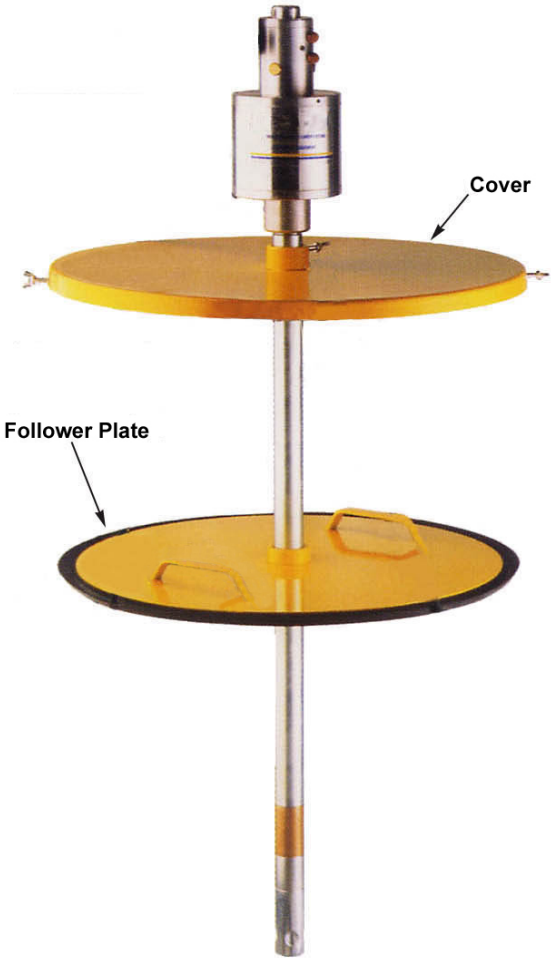
The pneumatic motor must be supplied with impurity-free air. Verify the installation of suitable and efficient filtering systems and water separators.
The pump must be supplied with compressed air in line with the nominal value of the above table.

***WARNING**:* pressure must not go over the value indicated on the yellow label

5. PUMP COMPONENTS

5.1 Pneumatic Grease Pump, *Series 234700÷4*





Pump with cover and follower plate

5.2 ACCESSORIES

Pumps are supplied without accessories. The user must provide all the accessories to guarantee a safe and a correct pump operation

CAUTION!

- If the pump is to be used in continuous service (more than 15 minutes), a **water separator** should be used to prevent humidity from damaging the pump group.

- The **grease follower plate** is indispensable with highly thick grease types (NGLI 2). Built with a steel plate (10 mm thick) (0.4 in) is equipped with lip seal on the outer edge and O-Ring on the central hub. This plate meets the following requirements:
  - it presses grease preventing air-pockets;
  - it guarantees the suction of the whole lubricant inside the drum.

- The **drum-cover** separates impurities from grease. It is provided with fixing screws and holds up vertically the pump for its optimal operation.

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

Allow sufficient space for the installation, leaving minimum 100 mm (3.93 in.) around the pump. Place the pump at shoulder height to avoid an unnatural posture or possibility of sustaining impacts.

Pumps Series 234700÷4 must be installed vertically inserting the shank into the grease barrel until it reaches the bottom of the drum.

***WARNING*:** When using a grease follower plate, it is recommended to check for crushes on drum sides which could prevent the follower plate from descending into the barrel. Use only intact drums with no defects.

6.3 PNEUMATIC CONNECTIONS

Connect the pump delivery fitting to the flow system using a flexible pipe suitable for applications with the maximum pressure and maximum flowrate produced by the pump.

WARNING!

- **The user must use suitable piping.**
- **Using unsuitable piping might cause damages to the pump, injuries to persons and environmental pollution. It is recommended to use piping SAE 100 R2AT section ¼".**
- **Connection loosening might cause serious safety and pollution troubles.**
- **After the first installation, check all the connections. It is recommended to repeat this checks daily. Tighten the connections, when required.**

Connect the pump to the compressed-air distribution system through the air inlet connection.

CAUTION: When all the connection are fitted, make sure that piping is safe from eventual impacts and carefully fixed.

7. PUMP OPERATION

- Before pumping the lubricant, it is recommended to strongly hold the end of the delivery piping when using flexible piping with the grease gun.
- Before pump start up, ensure that the shut-off valve is closed (grease gun or line valve).
- Open the air-compressed supply.
- Open the shut-off valve holding strongly the piping end.
- Close the shut-off valve to stop the supply.
- At the end of the operation close the air-compressed supply.

8. TROUBLESHOOTING

WARNING: The unit can only be opened and repaired by authorized Drop*sa 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 Engineering Department of DROPSA S.p.A.

PROBLEM	POSSIBLE CAUSE	SOLUTION
Pneumatic motor does not operate	o Power supply failure	→ Check the air inlet connections → Check the air treatment group
	o Ice in the air discharge pipe-line	→ Provide the air line with a functional water separator
	o Air distribution blockage caused by poor oil delivery to the lubricator	→ Disassemble, lubricate and increase lubricator oil delivery
	o Internal breaks	→ Disassemble the motor and check for possible damages
Pneumatic motor is operating but no grease is discharged by the pump	o Low grease level in the drum	→ Refill the drum
	o Suction filter obstructed by impurities	→ Remove and clean the filter
	o Worn seals	→ Replace the seals
	o Inappropriate ambient conditions	→ Ensure that the lubricant and the environmental conditions are within the specified range (see table ch. 4)
	o Damaged drums prevents follower plate from descending in the barrel and causes the formation of air-pockets next to the pump suction unit	→ Remove the plate and eliminate any crush. Replace the drum with a new one, if required
Pneumatic motor is still running once the grease gun is close	o Grease gun leakage	→ Clean or replace the grease gun
	o Impurities in the foot valve outlet	→ Remove and clean the standing valve
	o Worn seals	→ Replace the seals

9. MAINTENANCE PROCEDURE

Pneumatic Grease Pumps Series 234700÷4 require only minimal maintenance.
To facilitate maintenance it is suggested to install the pump in an easily accessible location (see paragraph 6.2).

- Periodically check piping joints to detect possible leaks.
- Keep the machine unit clear to readily detect possible leaks.
- In case of delivery reduction, remove and clean the foot valve suction filter.

CAUTION!
Prior to any maintenance and cleaning task, close the air compressed supply and discharge pressure from the pump and the connected piping.

The 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 (626/94 and DPR 547/55) to avoid hazards to equipment or persons.

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

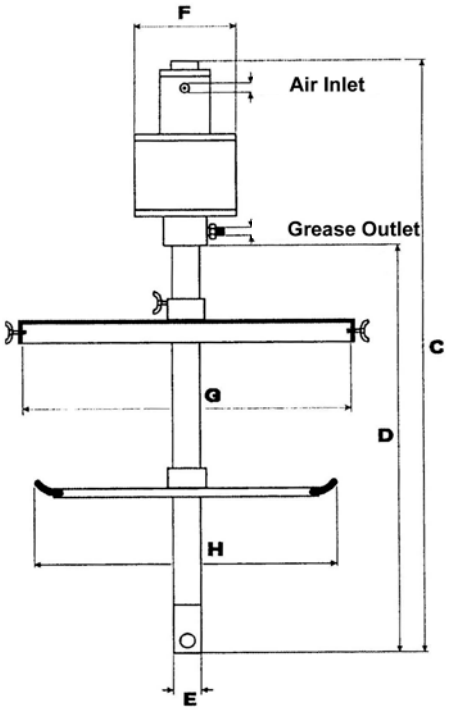
11.1 Pneumatic Grease Pumps *Series 234700 ÷ 4*

Serial Number
234700
234701
234702
234704

11.2 Accessories

PRODUCT	Part Number for *Pump 234700*	Part Number for *Pump 234701*	Part Number for *Pump 234702*	Part Number for *Pump 234704*	Part Number for *Pump 234710*	Part Number for *Pump 234711*
Follower Plate	1141600	1141602	1141604	1141604	1141602	1141604
Cover	1141601	1141603	1141605	1141605	1141603	1141605

12. DIMENSIONS



- *Pump 234700, packaging dimensions 150x150x800 mm (5.9 x 5.9 x31.5 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	20 (44.1)	8 (17.6)	780 (30.7)	490 (19.3)	38 (1.5)	100 (3.9)	-	-
Follower plate		4.5 (9.9)	-	-	-	-	-	290 (11.4)
Cover		1.5 (3.3)	-	-	-	-	315 (12.4)	-

- *Pump 234701, packaging dimensions 150x150x1070 mm (5.9 x 5.9 x42.1 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	50 (110.2)	9 (19.9)	1040 (40.9)	750 (29.5)	38 (1.5)	100 (3.9)	-	-
Follower plate		8 (17.6)	-	-	-	-	-	380 (14.9)
Cover		2 (4.4)	-	-	-	-	400 (15.7)	-

- *Pump 234702, packaging dimensions 150x150x1250 mm (5.9 x 5.9 x49.2 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	200 (440.9)	11 (24.2)	1220 (48)	930 (36.6)	38 (1.5)	100 (3.9)	-	-
Follower plate		18 (39.7)	-	-	-	-	-	590 (23.2)
Cover		2.5 (5.5)	-	-	-	-	600 (23.6)	-

- *Pump 234704, packaging dimensions 150x150x1200 mm (5.9 x 5.9 x47.2 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	200 (440.9)	11 (24.2)	1180 (46.4)	930 (36.6)	38 (1.5)	100 (3.9)	-	-
Follower plate		18 (39.7)	-	-	-	-	-	590 (23.2)
Cover		2.5 (5.5)	-	-	-	-	600 (23.6)	-

- *Pump 234710, packaging dimensions 150x150x1070 mm (5.9 x 5.9 x42.1 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	50 (110.2)	9 (19.9)	1040 (40.9)	750 (29.5)	38 (1.5)	100 (3.9)	-	-
Follower plate		8 (17.6)	-	-	-	-	-	380 (14.9)
Cover		2 (4.4)	-	-	-	-	400 (15.7)	-

- *Pump 234711, packaging dimensions 150x150x1200 mm (5.9 x 5.9 x47.2 in.)*

	DRUM CAPACITY	WEIGHT	DIMENSIONS mm (inches)					
	kg (lb)	kg (lb)	C	D	E	F	G	H
Pump	200 (440.9)	11 (24.2)	1180 (46.4)	930 (36.6)	38 (1.5)	100 (3.9)	-	-
Follower plate		18 (39.7)	-	-	-	-	-	590 (23.2)
Cover		2.5 (5.5)	-	-	-	-	600 (23.6)	-

13. HANDLING AND TRANSPORTATION

Prior to shipping, *Pneumatic Grease Pumps Series 234700÷4* are 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.
Given the low weight and the small dimensions, the pump may be handled without any special lifting apparatus.

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.
We recommend:

- To verify the chemical compatibility between the pump material and the fluid it is intended to use (see ch.4). A wrong choice could cause damages to pump or piping, as well as hazards to the environment and persons (leaks of products irritating and injurious to the health).
- Not to exceed pressure maximum level. If any doubt, refer to machine identification yellow label.
- The use of original spare parts.
- When replacing components, be sure to use parts compatible with the machine maximum working pressure (the developed pressure is the product of the air-supply pressure multiplicated by pump compression ratio).

CAUTION!
Do not attempt to stop or to divert possible leaks with your hands or with other parts of your body.

Attention: Personnel must use personal protection equipment, clothing and tools adequate for the location and the use of the pump both during its operation and during maintenance operations.

Inflammability

The lubricant generally used in lubrication systems is not normally flammable. However, it is desirable 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.
After long periods of inactivity check air tightness of all parts subjected to pressure.
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.
It is recommended only the use of original spare parts.

Noise

During normal operating conditions the pump does not produce excessive noise (less than 70 dB(A)) at the distance of 1 m (39.3 inches) from the pump.

EMERGENCY SHUT-DOWN

To immediately shut-down the machine, close the check valve thus interrupting motor supply. Carefully operate the priming of the pump thus preventing air-pockets in pressure.

Pneumatic pumps, might keep in pressure all the components connected to the delivery line even with the air supply closed. To prevent injuries to persons and/or damages to the environment, it is advisable to discharge the pressure keeping the air-inlet opened. Should that not be possible, warn properly the presence of pressure in the equipment.

15. PRECAUTIONS

No particular operating hazards characterize *Pneumatic Grease Pumps Series 234700÷4*, except for the following precautions:

- Operator's contact with fluid in case of breaking/opening of feeding piping.
  The operator must be provided with suitable personal protective clothing.

- Unnatural posture.
  Follow the indications in paragraph 6.2.

- Contact with oil during filling up /maintenance.
  The operator must be provided with suitable personal protective clothing.

- Use of incompatible lubricant.
  Main incompatible fluids:

FLUID	DANGER
Petrol	Fire - explosion seal damage
Inflammable liquids with PM < 55 °C (+131 °F)	Fire - explosion seal damage
Water	Pump oxidization
Alimentary liquids	Contamination of the liquid
Chemical corrosive products	Damage to pump Injuries to persons
Solvents	Fire - explosion seal damage