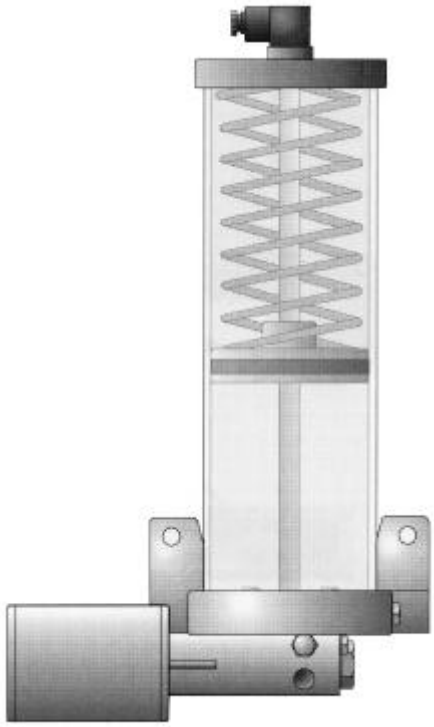
INSTRUCTIONS FOR USE

Pneumatically driven pump
Type 3413…
Type 31040..
DROPSA SpA

In accordance with point 1.7.4, to I, Dir. CEE 89/392



Catalogue P/N C2008IE - Wk 05/99

Registered name	DROPSA SpA
Address	via Croce 1, 20090 Vimodrone (MI), Italy
Model	**Pneumatically/hydraulically driven pump 3413--- & 31040**
Year of manufacture	1990
Marking	**CE**

0.0 INTRODUCTION AND WARNING

This user's and maintenance manual refers to series **3413--- and 31040 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

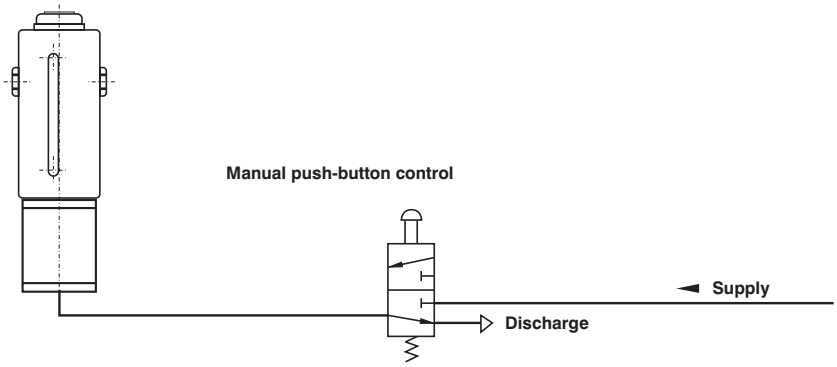
These pumps utilise compressed air to control the delivery of the lubricant and are ideal for lubrication systems installed on machines already supplied with compressed air.
The solenoid control valve must be:
3 way (line-cylinder-discharge) for single action pumps
4 way (line-cylinder-discharges) for double action pumps
Deliverable lubricant: mineral, not containing abrasive substances.
Compressed air supply pressure: min. 4 bar (0.4 MPa) – max 8 bar (0.8 MPa)
Tank filling valve: G 1/2 UNI-ISO 228/1 – only for pump 3413026 hydraulic connection
Lubricant outlet: Rp 1/4 UNI-ISO 7/1
Compressed air inlet: for pump type 3413… G 1/8 UNI-ISO 228/1 fitting for 6 mm tube
for pump type 31040.. G 1/4 UNI-ISO 228/1 fitting for 8 mm tube
Filter for oil recovery (where fitted) in metal and/or paper.
Magnet type electrical minimum oil level indicator. Maximum operating temperature: +80 °C

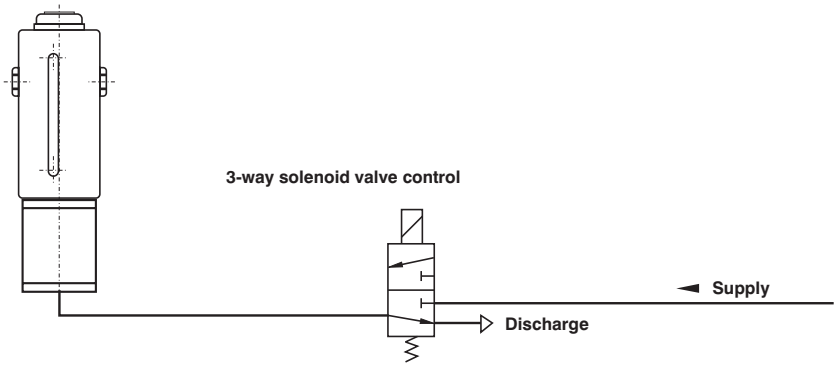
1.1 Accessories

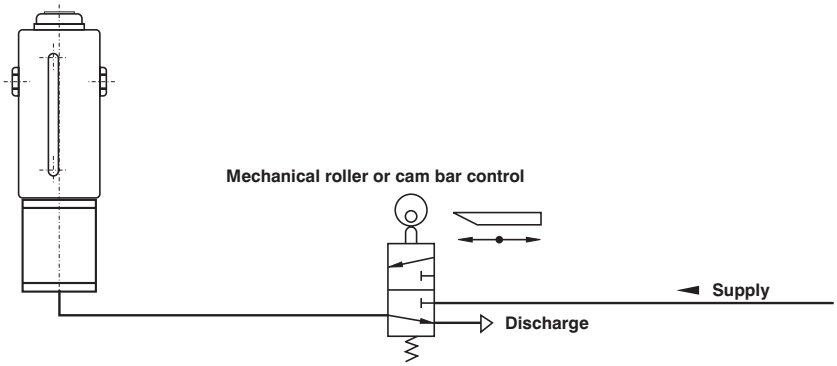
As per specific request.

2.0 TECHNICAL SPECIFICATIONS

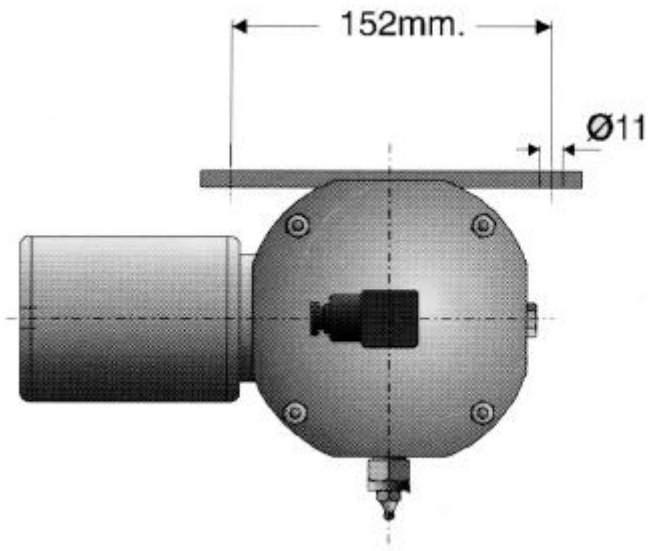
2.1 Methods of commanding the pump







2.2 Fixing dimensions



2.3 Other data

NLGI grease rating at working temperature	see table at sub-section 4.0
Viscosity of the lubricant at working temperature	Between 15 - 2000 cSt
Working temperature	+ 5 - + 80 °C
Working humidity	90 % relative humidity.
Preservation temperature	- 20 - + 50 °C
Sound pressure level	< 70 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;
Fill the tank with suitable lubricant (min/max indication on the tank);
Verify that the pump is at operating temperature and the tubing free from air bubbles;
Check that the electrical connections have been effected correctly (CEI 64/8, IEC 364);
Verify the correct connections of any level and pressure switches to the control panel

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).

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

No pump assembly operations are envisaged.
For wall or floor mounting ensure adequate space is available (as shown in the installation diagram) to avoid abnormal postures and possible impacts; four fixing holes are provided with different characteristics depending on the version (see section 2.2)
Subsequently it will be necessary, as previously described, to connect the pump to the machine hydraulically and then to connect the control panel.

During the disassembly phase ensure the tank is empty.
Disconnect the electrical, hydraulic and pneumatic parts.
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/hydraulic 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.

Disassembly must be effected in the following manner:

1. disconnect the tubing attached to the pump.
2. remove the fixing screws and remove the tank, **paying PARTICULAR ATTENTION to models containing a grease pressure loading spring (it could be under pressure– in this case empty the remaining lubricant first).**
3. remove the pump and any filters.
4. unscrew the pneumatic cylinder of the pump **paying PARTICULAR ATTENTION** to the loading of the spring; the component parts of the pump unit can then be disassembled.

In this way all component parts of the pump unit can be removed allowing the disassembly and cleaning of the release and suction valves.
All pieces should be washed in petrol and lubricated prior to reassembly.

The following should be checked periodically:

VERIFY	**WORK CYCLES**
The state of lubrication	100
The oil level	200
The cleanliness of the suction filter	400
The cleanliness of the loading/return filter	400
That the tank is clean and the bottom free from deposits	600

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 pump fails to deliver sufficient oil or no oil at all
- the pump fails to deliver oil at the prescribed 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.

INDICATION	PROBABLE CAUSE	REMEDY
The pump does not deliver oil or does not deliver oil in the exact quantity prescribed	• The oil in the tank is below the minimum level	• Fill the tank with oil without exceeding the MAX level line
	• The suction filter is dirty or blocked	• Remove the pump from the tank, remove the filter, wash it and blow it through with compressed air.
	• The pump control valve fails to discharge	• Check that the pump control valve is a 3-way type for the single action pump and 4 way for the double action; verify that the valve regularly discharges compressed air oil from the pump chamber.
	• The internal connections are loose	• Tighten all connections ensuring there are no leaks
The pump does not deliver oil at the prescribed pressure	• Incorrect regulation of the supply air/oil.	• Regulate the pressure of the oil/air within the range shown in the general characteristics, taking into account the compression ratio.

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.
- take care NOT TO clean with alcohol

INADMISSIBLE FLUIDS	
Fluids	**Danger**
Lubricants with abrasive additives	High wear rate of contacted parts
Lubricants with silicone based 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 substances	Contamination of the substances themselves

4.0 Instructions for ordering and distributors

Part number	Control	Suitable for Lub.	Ratio	Tank L/Kg	Flow cm^3	min. level	Characteristics
3413001	Pneum. S.A.	NLGI 2	30/1	2	0.5-2	NO	with spring
3413002	Pneum. S.A.	NLGI1	30/1	5	0.5-2	YES	
3413003	Pneum. S.A.	NLGI2	30/1	1	0.5-2	NO	with spring
3413005	Pneum. S.A.	NLGI3	30/1	5	0.5-2	YES	pressurised tank
3413007	Pneum. S.A.	NLGI1	30/1	1	0.5-2	NO	
3413012	Pneum. S.A.	NLGI1	30/1	5	0.5-2	YES	
3413014	Pneum. S.A.	NLGI1	30/1	10	0.5-2	NO	
3413016	Pneum. S.A.	NLGI1	30/1	5	0.5-2	YES	with loading filter
3413018	Pneum. S.A.	NLGI1	30/1	3	0.5-2	YES	
3413019	Pneum. S.A.	NLGI3	30/1	10	0.5-2	YES	pressurised tank
3413026	Pneum. S.A.	NLGI2	30/1	2	2	YES	fixed flow, transp. tank with spring
3103014	Pneum. D.A.	OIL	25/1	5	6-15	YES	max. level indicator
3104030	Pneum. D.A.	NLGI3	25/1	5	6-15	YES	pressurised tank
3104040	Pneum. D.A.	NLGI3	25/1	10	6-15	YES	pressurised tank
3104050	Pneum. D.A.	NLGI1	25/1	5	6-15	YES	

S.A. = single action - D.A. = double action

Part number	Height mm	Length mm	Depth mm	Weight Kg
3413001	579/864*	280	150	7.7
3413002	524/754*	280	170	11.5
3413003	357/454*	280	150	6.2
3413005	680	280	192	19.5
3413007	334/474*	280	150	5.3
3413012	558	280	160	11.8
3413014	885	280	310	26.5
3413016	558	280	170	12
3413018	498	280	160	11.2
3413019	990	280	192	27.3
3413026	470	280	160	9.8
3103014	485	346	120	15.5
3104030	690	346	192	27.5
3104040	995	346	192	35.5
3104050	590/820*	346	170	19.5

*** the two height values refer to tank empty/tank full**

CE Declaration Of Conformity

Manufacturer :

DROPSA SpA
Company
Via Croce, 1 - 20090 Vimodrone (MI), Italy
Address
02 - 250791
Telephone

It is certified that:

The machine: Pneumatically driven pump, type 3413… and 31030..

* is manufactured in conformity with the DIRECTIVE OF THE COUNCIL OF THE EUROPEAN COMMUNITY concerning the harmonisation of member states legislation relative to machines (89/392/CEE + 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	Ing. Walter Divisi
Product manager	**Name**
DROPSA SpA - Vimodrone (MI) - Italy	
Company	
	February 1999
Signature	**Date**

DROPSA DISTRIBUTORS

ITALY
Dropsa Spa
Via B. Croce,1 - 20090
Vimodrone (MI)
Tel: (+39) 02 - 250.79.1
Fax: (+39) 02 - 250.79.767
E-mail: sales@dropsa.it (Export)
E-mail: vendite@dropsa.it (National)

U.K.
Dropsa (UK) Ltd.
Unit 6, Egham Business Village,
Egham,
Surrey TW20 8RB
Tel: (+44) 01784 - 431177
Fax: (+44) 01784 - 438598
E-mail: salesuk@dropsa.com

GERMANY
Dropsa Gmbh.
Volmerswerther Strasse 80
40221 Dusseldorf 1,
Deutschland
Tel: (+49) 0211-394-011
Fax: (+49) 0211-394-013
E-mail: sales@dropsa.de

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

BRAZIL
Dropsa - Remonlub
Rua Sobralia 175
Santo Amaro,
Sao Paulo,
Tel: (+55) 011 548 0007
Fax: (+55) 011 548 9408
E-mail: salesbr@dropsa.com

30-TO-1 PNEUMATIC PUMP FOR "SERIAL" LUBRICATING SYSTEMS
INSTRUCTION SHEET

3413002

Pump only (no Reservoir): Part No. 3413000
Pump with 5-kg Reservoir: Part No. 3413002

GREASE PUMP

This pump boosts the operating air pressure 30 times. Its delivery rate may be adjusted from .5 to 2 cu.cm. per stroke. Its pumping assembly consists of a steel body with hardened, lapped piston. The operating assembly consists of a cylinder housing a light alloy piston equipped with oil-resisting gaskets. Springs are provided to pull the piston back to its starting position

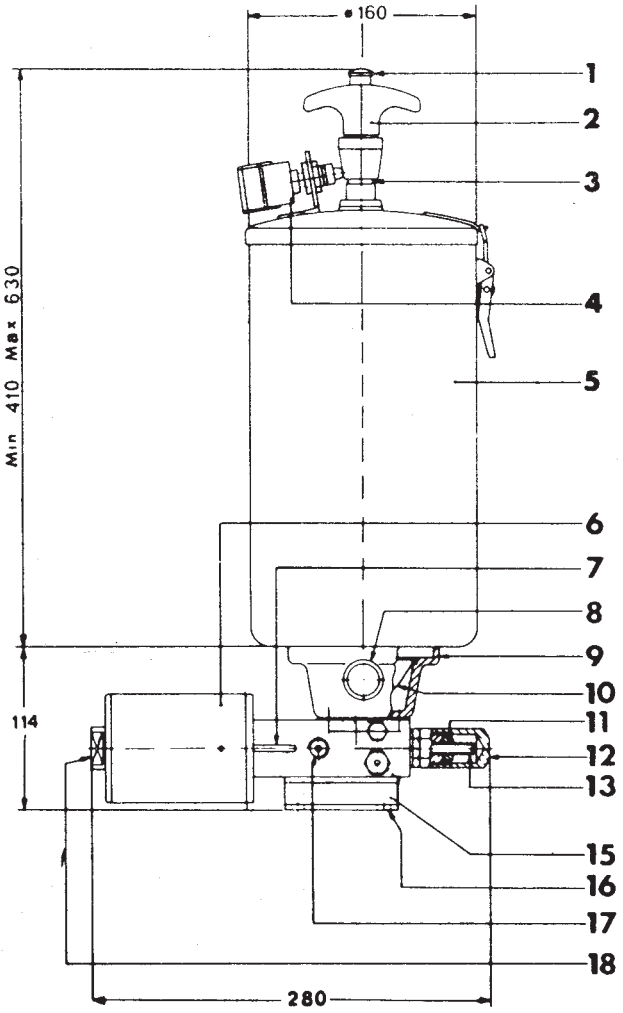
Operating air pressure: 4 to 8 kg/sq.cm.

A 3-way (line-cylinder-discharge) solenoid control valve is required. Energizing time should be 1 second or more per control pulse.

See separate Instruction Sheets for:

ELECTRICAL EQUIPMENT

Voltage	Max. pause time	With adjustable control 0-6 mins
110 V. 50 Hz	1 h	1641190
	4 h	1641199
220 V. 50 Hz	1 h	1641198
	4 h	1641214



1 . 1835021 Pushbutton - Use to eliminate seal between pressure plate and lubricant to facilitate removal of plate

2 . 1835020 Handle - Use to remove pressure plate

3 . Visual and electric level indicator. Two red marks long rod indicate minimum and maximum levels, respectively. The electric low level signal is given by microswitch, Ref.4. Hole at max.level protects reservoirs from overpressure

4 . 3164102 Microswitch for electric low level signal. Specifications: a change-over contact: 15 A to 250 Volts AC

5 . 3044000 5-kg-pressed steel sheet reservoir equipped with rod, pressure plate, lid - red finish.

6 . Pneumatic control Unit

7 . 3002109 Control piston monitor rod

8 . 3093050 Filler Valve-1/2" cylindrical gas thread

9 . 3045101 Flange. Cast light alloy, oil-resisting finish. Used to fasten reservoir to pump

10 . 3130100 Filter. 120 mesh per sq.cm. Galvanized steel wire. Ample filtering area. Should be cleaned every 6 months or less (particularly if heavily contaminated grease is used). To clean, remove reservoir, wash filter with gasoline or kerosene, then rinse with fluid oil

11 . 16406 Nut. Will lock the flow control unit.

12 . 3042113 Flow control unit Protector

13 . 3001110 Pressure Control Boss. Use to adjust delivery rate anywhere between .5 and 2 cu.cm. per stroke. Turn counter-clockwise to increase flow. DO NOT adjust under pressure!

15 . 3041157 Pump Support - Galvanized steel plate construction

16 . 4 pump mounting holes - 8.5 mm dia.

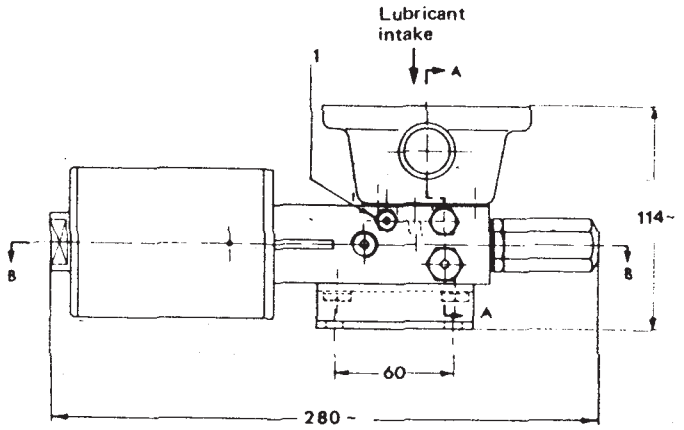
17 . Lubricant Outlet - 1/4" dia. taper gas thread

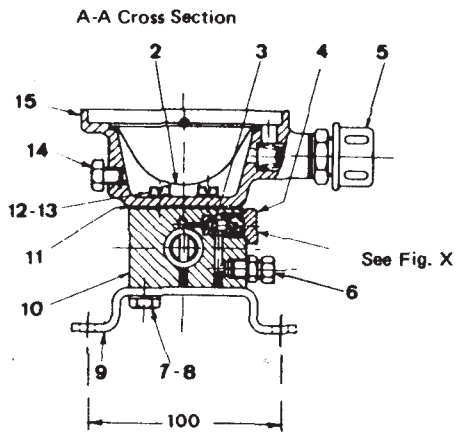
18 . Air Intake for pneumatic control unit-1/8" dia. cylindrical female gas thread with seat for dual cone, 6-mm O.D. pipe.

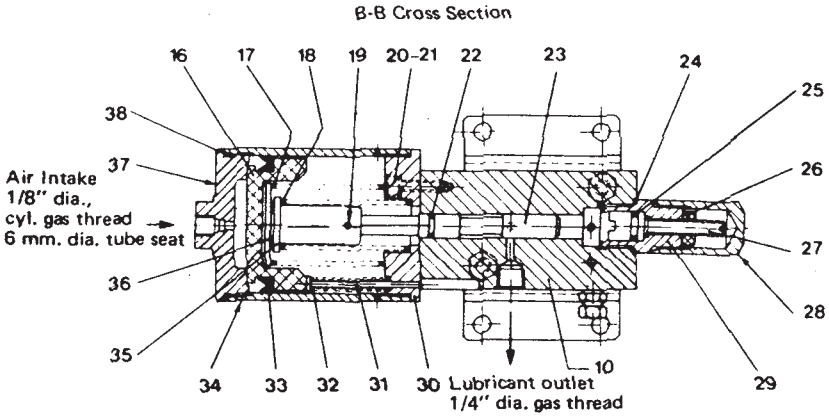
Weight: Pump only, Part No. 3413000-4.6 kg approx.
Pump & Reservoir, Part No. 3413002 11.1 kg approx.

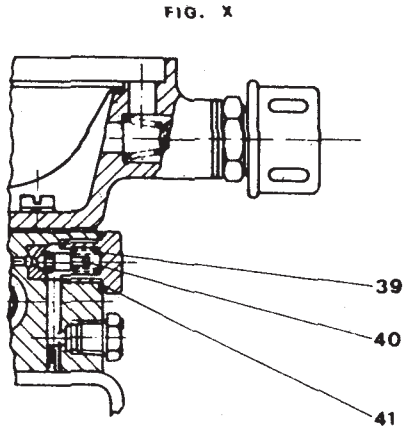
3413002

30- TO- 1 PNEUMATIC PUMP FOR "SERIAL" LUBRICATING SYSTEMS
INSTRUCTION SHEET









Ref.	Part No.	Description
1	3230103	(1) Plug-10mm spanner
2	3130100	(1) Filter, 120 mesh per sq.cm
3	18801	(1) Gasket, OR
4	3234108	(1) Plug - 14mm spanner
5	3093050	(1) Valve, filler
6	91144	(1) Plug
7	11401	(2) Screws, hex.head, M8x16
8	16012	(2) Washer, split
9	3041157	(1) Support
10	3072067	(1) Pump body w/ Pins
11	3190129	(1) Gasket, Petrolvis
12	12696	(6) Screws, taper head, M6x14
13	97010	(4) Gasket copper
14	91144	(1) Plug, 1/8" gas thread,10mm spanner
15	3045101	(1) Flange, reservoir fastening
16	3101105	(1) Piston
17	3191129	(1) Spring
18	3191128	(1) Spring
19	16817	(1) Pin
20	14089	(4) Screws, taper head, M6x20
21	16009	(4) Washers, split
22	18808	(1) Gasket OR
23	3101104	(1) Piston
24	3190127	(1) Gasket, copper
25	18812	(1) Gasket, OR
26	16406	(1) Nut, hex., M8
27	3001110	(1) Boss
28	3042113	(1) Protector
29	3084140	(1) Fitting
30	3045109	(1) Flange, connecting
31	3002109	(1) Rod
32	3191126	(1) Spring
33	53233	(1) Gasket, DE
34	3113102	(1) Cylinder
35	3024100	(1) Pushbutton, end
36	3131101	(1) Plate
37	3234109	(1) Plug cylinder
38	3190128	(1) Gasket, Dalmar
39	3191100	(1) Spring
40	3096102	(1) Valve, ball head
41	3190101	(1) Gasket, copper

MAINTENANCE

Filter Cleaning
Unhook reservoir hinge, remove presser piston by pressing pushbutton while pulling handle (should piston refuse to come out, incline it to assist air entering between piston and grease), remove residual grease, filter 2. Use gasoline or kerosene and fluid oil to wash, then replace.

Pump Cleaning
Separate pressure piping (delivery side) then, after cleaning filter as instructed, loosen plug 37 and remove piston 16, gasket 33, plate 36, spring 17 and indicator rod 31 with spring 32 (be sure not to damage gasket 33). Take out piston 23, check for efficiency, then check condition of gasket 22. Screws 7 are used to fasten body 10 to support 9. Access to valve 40 and spring 39 may be gained by removing plug 4. Clean whole assembly using gasoline or kerosene and fluid oil. Fill reservoir with clean grease, then keep pumping until no air bubbles emerge with lubricant. Pump is now ready for connecting to system.