DOSAPRO MILTON ROY

INSTRUCTION MANUAL

FOR INSTALLATION,
OPERATING,
AND MAINTENANCE.

CE

Pump

SERIES G™ MODEL A

This manual should be made available to the person responsible for installation, operating and maintenance.

Date : 11/99 **O / Ref : 160.0707.001. Rev. B**

CONTENTS

HOW TO USE THIS MANUAL ?

I – DESCRIPTION

I - 1. Unpacking and storage
I - 2. Description
I - 3. Operating principle of the pump
I - 4. Accessories
I - 5. Safety and health instructions

II – INSTALLATION

II - 1. Hydraulic installation
II - 2. Drip collection
II - 3. Handling
II - 4. Setting up
II - 5. Electrical installation

III - START UP

III - 1. Procedures before start up
III - 2. Start up
III - 3. Failures on start up
III - 4. Operation - Schedule of checks and maintenance operations

IV - ROUTINE MAINTENANCE

IV - 1. Occurrence of a leak from detection port
IV - 2. Cleaning the foot valve and valve assemblies
IV - 3. Checking the pump capacity
IV - 4. Tracing causes of failure
IV - 5. Ordering spare parts

V - PREVENTIVE MAINTENANCE - ANNUAL OVERHAUL

V - 1. Spare parts required for annual overhaul
V - 2. Sequential actions

VI - CORRECTIVE MAINTENANCE

VI - 1. List of other spare parts
VI - 2 Sequential actions

VII - SERVICING THE LIQUID END AND THE LIQUID END MOUNTING ASSEMBLY

VII - 1. General
VII - 2. Removing, reinstalling the check valve
VII - 3. Reinstalling, reinstalling the liquid end assembly
VII - 4. Reinstalling, reinstalling the liquid end assembly (double diaphragm)

VIII - SERVICING THE MECHANICAL ASSEMBLY

VIII - 1 Dismantling, Reinstalling the mechanical assembly

TECHNICAL CHARACTERISTICS

« EC » DECLARATION OF CONFORMITY

GUARANTEE

LIST OF « TECHNICAL ASSISTANCE » AND « SPARE PARTS » DEPARTMENTS

HOW TO USE THIS MANUAL ?

IMPORTANT: You should read the following paragraphs carefully in order to understand how to use this manual efficiently.

This manual corresponds to the type of pumps mentioned on the cover page.

There may be several different construction versions for each type of pump, however, and this manual takes those differences into account.

The paragraphs or lines specific to a given construction are:

- indented compared to the main text body,
- marked by a vertical line indicating the specific text,
- marked by a rectangle specifying the corresponding code.

Note: When first reading this document, you are advised to highlight the « boxes » corresponding to the construction of your equipment so the manual will be easier to read in future.

MARKING USED IN THE MANUAL

You will find the list of the various possibilities and the corresponding markings, at the end of the illustrations manual.

In addition, to identify the type of construction of your pump, the table includes the pump code shown on the identification plate attached to the pump (Fig. 4.5a). Caution : only characters mentioned are to be taken into account when reading this manual.

Examples of pump code :

Pump flow rate ↘ ↙ **Liquid en matrial**

GA [5] [P] 1M [3] ←***Power type***

Mark	Description
P	Liquid end PP
D	Liquid end PVDF
S	Liquid end, stainless steel
V	High-viscosity version
4FV*	4-function valve
3	3-phase power supply
2	Single-phase power supply
A	*Débit* ≤ 45 l/h
B	*Débit* >45 l/h

* Available as option for pumps equipped with plastic liquid ends. 22 l/h.

Nota

- For the sake of simplicity, the procedures described do not mention the washers fitted with fasteners (such as screws and nuts). Do not forget to reinstall washers after removing them.
- Verify that parts are undamaged before reinstalling.

PART I - DESCRIPTION

I - 1. UNPACKING AND STORAGE

UNPACKING

The packaging must be carefully examined on receipt in order to ensure that the contents have not sustained any obvious damage. Precautions must be taken when opening the packaging in order to avoid damaging accessories which may be secured inside the packaging. Examine the contents and check them off against the delivery note.

STORAGE PRECAUTIONS

Storage for less than six months

Equipment shall preferably be stored in its original packaging and protected from adverse weather conditions.

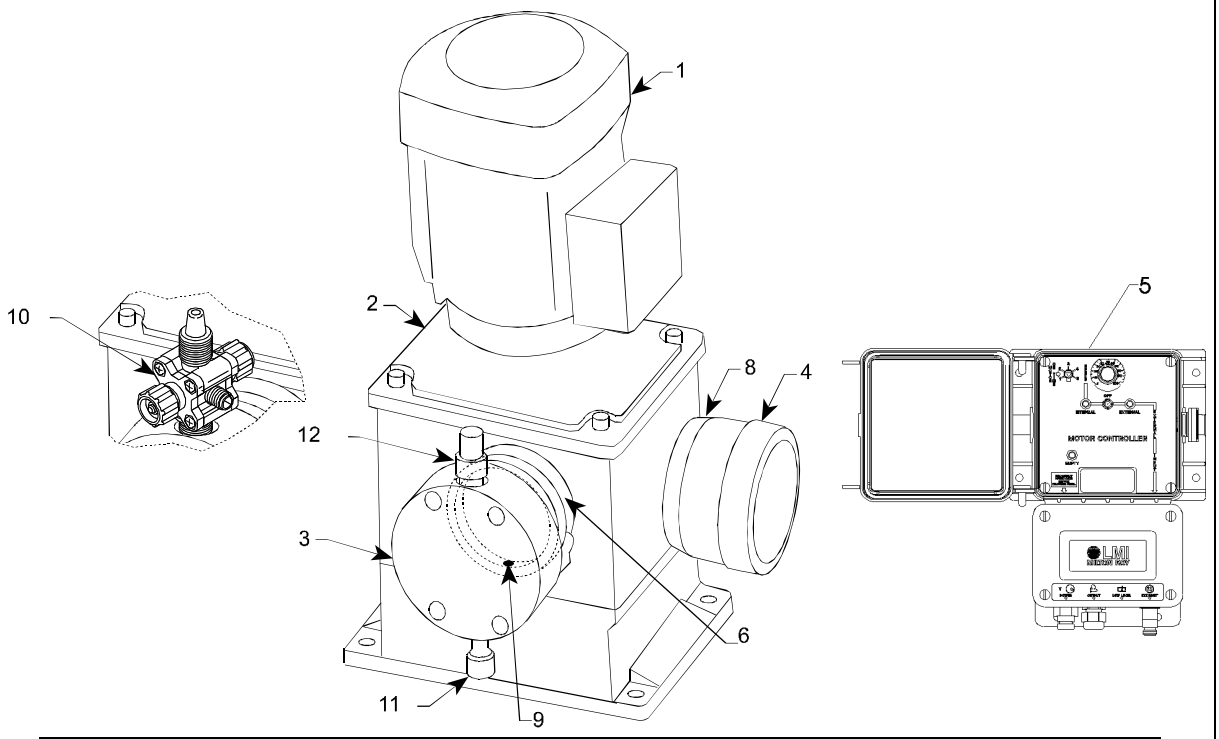
Storage for more than six months

- Store the pump in its original packaging. In addition, packaging in heat-sealing plastic cover and dessicant bags must be provided for. The quantity of dessicant bags should be adapted to the storage period and to the packaging volume.
- Store protected from adverse weather conditions.

I - 2. DESCRIPTION

The « SERIES G » Model A pump is a compact electromechanical metering pump that is life-lubricated with oil in a sealed housing, with capacity adjustment in operation or when stopped.

It is made up of the following components (Fig. 1.2a):



1	Motor	8	Stroke locking device
2	Mechanical assembly	9	Leak detection port
3	Liquid end	10	4-function valve *
4	Stroke adjustment knob	11	Valve assembly (suction)
5	Control unit (frequency control)	12	Valve assembly (discharge)
6	Liquid end mounting assembly		

* Accessory supplied as optional equipment with pumps equipped with plastic liquid end.

Fig. 1.2a: Model A, series G pump

-
- a drive device comprising a motor [1],
- a mechanical assembly [2],
- a liquid end [3].

Leak-tightness between the mechanical assembly and the liquid end is ensured by means of a bellows.

Capacity adjustment is controlled either manually (by a stroke adjustment knob [4]) or automatically by a control box [5] (such as in the case of a G PULSE version single-phase motor).

Various components of the pump are shown in Figure 1.2a.

Note: For further information on the automatic control system, see the relevant specific manual.

I - 3. OPERATING PRINCIPLE OF THE PUMP

See Figures 1.3b and 1.3c.

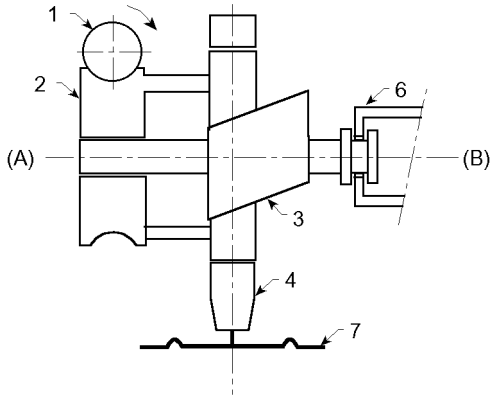
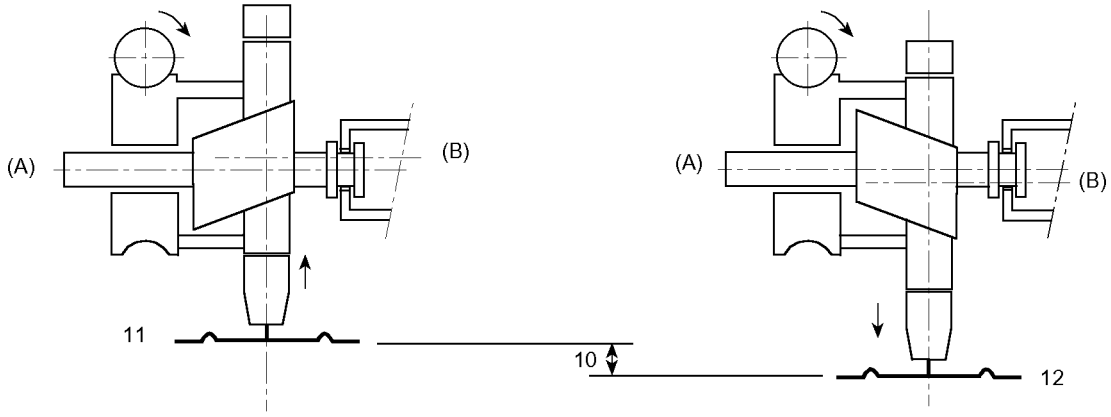


Fig. 1.3b : Setting to zero stroke



Suction phase **Discharge phase**

Fig. 1.3c : Setting to maximum stroke

1	Worm	7	Diaphragm
2	Tangential wheel	10	Stroke = two times the distance between (A) and (B)
3	Eccentric	11	Position at rear neutral point
4	Connecting rod	12	Position at forward neutral point
6	Crosshead		

MECHANICAL ASSEMBLY

The mechanical assembly works on the principle of a variable eccentric.

The rotational motion of the motor is transmitted by the worm [1] to the tangential gear [2] which is linked to an eccentric system [3].

The connecting rod [4], attached to this eccentric system, converts the rotary motion into a reciprocating linear motion with variable stroke. The stroke depends upon the eccentricity between the axis of rotation of the tangential wheel [A] and an axis of the connecting rod [B]. The stroke is adjusted by moving the crosshead [6] by means of a stroke adjustment screw. The movement of the crosshead causes movement of the male eccentric piece which modifies the position of the connecting rod axis.

When the connecting rod axis [B] is aligned with the axis of the tangential wheel [A], the connecting rod does not move and the stroke is zero.

Figure 1.3b shows the functional diagram at zero stroke.

Figure 1.3c shows the functional diagram at maximum stroke.

MECHANICALLY CONTROLLED DIAPHRAGM-TYPE LIQUID END

The diaphragm [7] is mechanically linked to the connecting rod [4] and has the same reciprocating motion.

During the suction phase, the movement of the diaphragm allows the suction of a given volume of fluid.

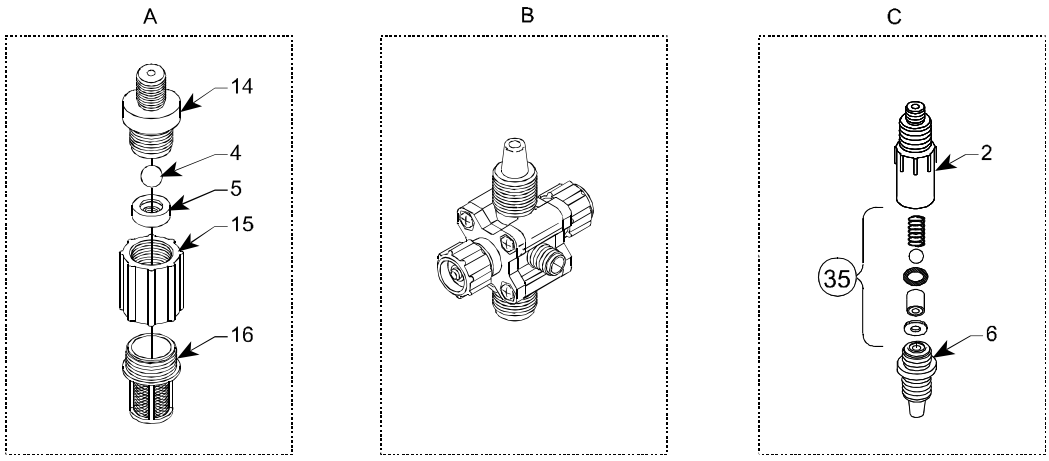
In the discharge phase, the process is reversed. The diaphragm then expels the fluid.

I - 4. ACCESSORIES

See Figure 1.4a.

Certain accessories are supplied as standard equipment or as options, as applicable.

- A foot valve [A] (equipped with a filter). This avoids unpriming of the pump as well as allowing filtering of the fluid.
- A 4-function valve [B] : anti-syphon, back pressure, manual pressure relief and priming aid valve. See the specific documentation if your pump is equipped with this accessory.
- An injection nozzle [C]. This allows the pumped fluid to be isolated from the main flow.



A	Foot valve	6	Valve body seat
B	4-function valve	14	Valve housing
C	Injection nozzle	15	Valve seat
2	Valve housing	16	Filter
4	Ball	35	Kit for injection check valve
5	Ball seat		

Fig. 1.4a : Accessories

1 - 5. SAFETY AND HEALTH INSTRUCTIONS

The personnel responsible for installing, operating and maintaining this equipment must become acquainted with, assimilate and comply with the contents of this manual in order to:

- avoid any possible risk to themselves or to third parties,
- ensure the reliability of the equipment,
- avoid any error or pollution due to incorrect operation.

Any servicing on this equipment must be carried out when it is stopped. Any accidental start-up must be prevented (either by locking the switch or removing the fuse on the power supply line).

A notice must be attached to the location of the switch to warn that servicing is being carried out on the equipment.

Switch off the power supply as soon as any fault is detected during operation: abnormal heating or unusual noise.

Special care has to be taken for chemicals used in the process (acids, bases, oxiding/reducing solutions, ...).

PART II - INSTALLATION

II - 1. HYDRAULIC INSTALLATION

All the information concerning the hydraulic installation of a metering pump is detailed in a volume, « Generalities about metering pumps installation ». You should consult that manual to determine the installation required for your application.

Certain essential points are, however, also briefly covered in this document.

GENERAL

- Piping layout

There must be no swan-necks or stagnant volumes which are liable to trap air or gas.

Stresses due to incorrect alignment of piping with respect to the centreline of valves must be avoided as far as possible.

- Remove burrs and clean the piping before fitting.
- It is advisable to provide for a calibrating chamber in order to calibrate the pump in service conditions.

PIPING ON THE SUCTION CIRCUIT

- If your pump is flooded, a shutt-off valve will be required
- If your pump is not flooded (suction lift), install the foot valve equiped with the filter upstream of the above-mentioned item
- For viscous products: consult us.
- Check whether the diameter and length of pipe are compatible with the pump's maximum capacity.
- Install the pump as near as possible to the suction tank.

PIPING ON THE DISCHARGE CIRCUIT

- Provide for a safety valve on the discharge pipe, designed to protect the installation.
- It is advisable to install a priming valve on the discharge circuit in order to make starting and maintenance of the pump easier.

Note: The priming valve and the safety valve have no purpose if your pump is equipped with a 4-function valve.

Typical installations are shown schematically in Figure 2.1a.

II - 2. DRIP COLLECTION

Provide for outlets so that any leak or drips can be easily drained off without any danger. This is especially important in the case of harmful liquids.

See Figure 1.2a.

Position a tray under the plain hole (detection port [9]) located at the bottom of the liquid end mounting assembly to collect leaks in the event of rupture of the diaphragm or boot.

4FV	Connect the 4-function valve [10] to the top of the reservoir (see the specific documentation), ensuring that tube is not submerged.

II - 3. HANDLING

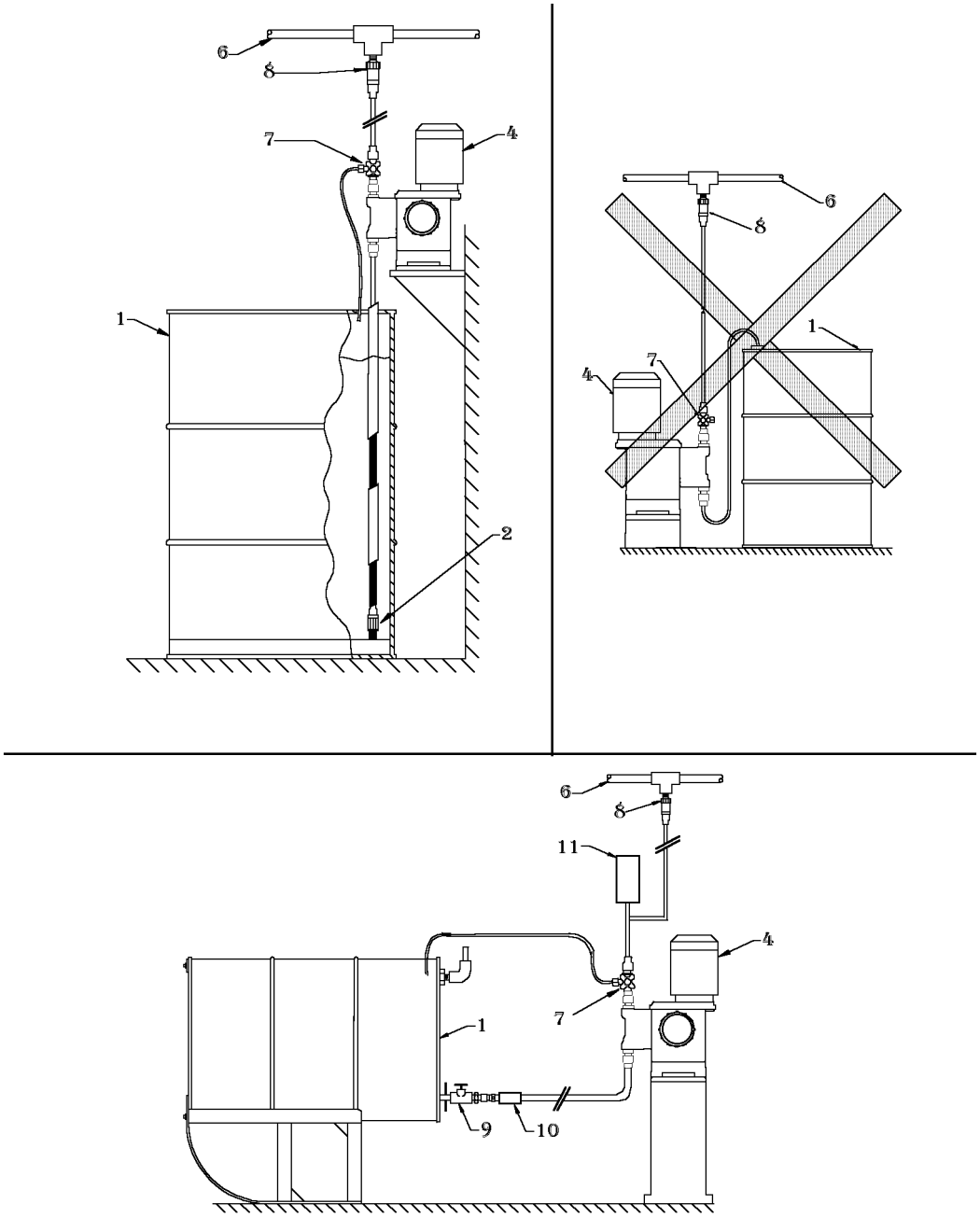
The « SERIES G » Model A pump requires no special precautions owing to its light weight.

Proceed with mounting as soon as it is set up on site (see Chapter II - 4. Setting up).

II - 4. SETTING UP

Secure the pump to a horizontal support (see attaching holes). Leave enough clear space around the pump to be able to carry out servicing operations and adjustments.

Pumps installed outdoors must be protected by a shelter (according to the climatic conditions).



1	Tank	8	Injection nozzle
2	Foot valve (equipped with a filter)	9	Shutt-off valve
4	Metering pump	10	Filter
6	Utilization	11	Pulsation dampener
7	4-function valve*		

* In case of plastic liquid end only
Provide for a safety valve on the discharge circuit in case of a stainless steel liquid end

Fig. 2.1a : Diagrams of typical installations

II - 5. ELECTRICAL INSTALLATION

CONNECTING THE MOTOR

Check the specifications of the motor and compare them with the voltage available on your installation before making connections. Connect up the motor in accordance with the instructions in the terminal box (Fig. 2.5a).

Tri

A delta connection is required to connect up to a 230 V 3-phase power supply (Fig. 2.5b).

A star connection is required to connect up to a 400 V 3-phase power supply (Fig. 2.5c).

Mono

For connection in SINGLE-PHASE mode, see Figure 2.5d.

Replace the existing wires with those of your electrical power supply.

CAUTION : Do not forget to connect the earth terminal on the motor [PE] (Fig. 2.5a) to the equipment earth conductor.

The electrical protection installed for the motor (fuse or thermal protection) must be suitable for the motor's rated current.

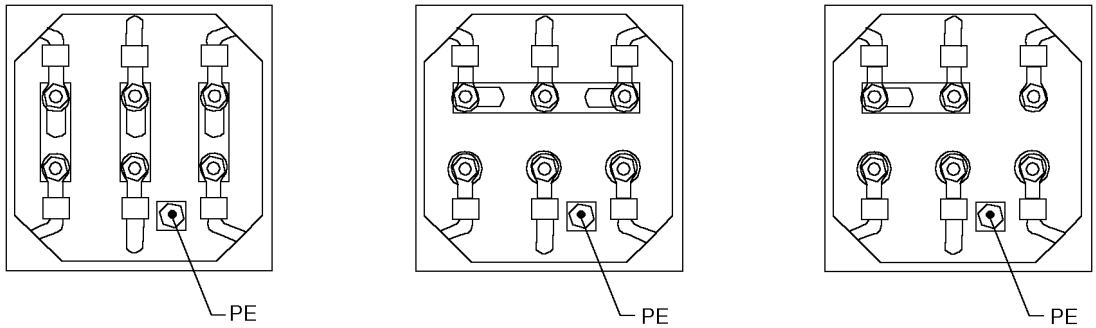


Fig. 2.5a : Motor terminal box

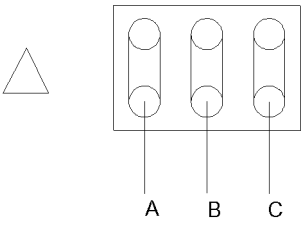


Fig. 2.5b :
230 V delta connection

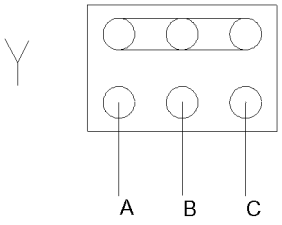


Fig. 2.5c :
400 V star connection

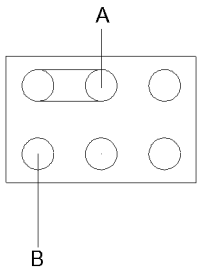


Fig. 2.5d :
Single-phase connection

PART III - START UP

III - 1. PROCEDURES BEFORE START UP

Special care has to be taken for chemicals used in the process (acids, bases, oxiding/reducing solutions, ...).

See Figure 1.2a.

- Check that the pump is secured to its support (Chapter II - 4. Setting up).
- Check the opening of all the isolating valves installed on the suction and discharge circuits. If your pump is equipped with a 4-function valve, see the relevant specific documentation. If the discharge circuit is equipped with an injection nozzle or a back-pressure valve, open the priming valve on the discharge side (if there is no priming valve, disconnect the piping on the discharge side). This allows you to check for the presence of liquid if the pump is installed in flooded suction or to prime the pump if it is installed in suction lift.
- Set the pump capacity adjustment to 0% (stroke adjustment knob [4]).

Checking the electrical connection of the motor

Start up the pump to check the motor's direction of rotation. It must comply with that indicated by the arrow marked on the pump cover.

Tri | To reverse the motor's direction of rotation, invert A and B or A and C (See Figure 2.5b or 2.5c). Stop the pump.

III - 2. START UP

- Once all the checks and procedures described in the previous section have been carried out, start up the pump.
- Check visually and by listening. (In particular, check that there are no suspicious noises).
- Make sure that the stroke adjustment knob is unlocked.
- Adjust the pump capacity gradually from 0 % to 100 % and control
  - either the liquid output at priming valve,
  - either the noise of the liquid when it goes through the discharge check valve (if your installation is not equipped withe a priming valve).

Priming has been achieved if one of the two conditions is carried out. Close the priming valve.

- Set the pump to the desired capacity. Lock the stroke adjustment knob with the stroke locking device [8] (Fig. 1.2a).

III - 3. FAILURES ON START UP

PROBLEMS WITH MOTOR

The motor runs with difficulty and heats up.

- The characteristics of the electrical power supply do not match the specifications of the motor.

Tri |
- One phase is incorrectly connected.
- The electrical connection used is not suitable.

- Check that the pressure on the discharge side is compatible with the equipment's capabilities.
- Too many flow pulsations : a pulsation dampener is required, or the pulsation dampener installed is of the wrong size, or the pressurization of the pulsation dampener is incorrect.

Tri |
- The direction of rotation of the motor is incorrect. (Check using the arrow marked on the cover). Reverse the direction of rotation (see Chapter III - 1. Procedures before start up, Checking the electrical connection of motor).

PROBLEMS WITH FLOW RATE

The flow rate is lower than desired

- The pump capacity is incorrectly adjusted: adjust the capacity to the desired value and lock the stroke adjustment knob.
- The suction power is insufficient. (Piping cross-section too small or piping too long): replace the pipes with ones with a larger cross-section or install the pump in flooded suction.
- The leak-tightness of the suction pipes is unsatisfactory.
- The viscosity of the liquid is incompatible with the capabilities offered by your pump version.

The capacity is greater than desired

- The pump capacity is incorrectly adjusted: adjust the capacity to the desired value and lock the stroke adjustment knob.
- A syphoning phenomenon is observed: check that the suction pressure is not greater than the discharge pressure. Install a 4FV or a back-pressure valve on the discharge side.
- Too many flow pulsations : a pulsation dampener is required, or the pulsation dampener installed is of the wrong size, or the pressurization of the pulsation dampener is incorrect.

The capacity is variable

- This problem may be due to particles from the piping which interfere with the operation of the valve assemblies: clean the piping and the valve assemblies.

III - 4. OPERATION - SCHEDULE FOR CHECKS AND MAINTENANCE OPERATIONS

The programme of checks and maintenance operations depends on the conditions in which the equipment is used. For this reason, the following frequencies are given as an example only. Individual users should adapt these frequencies to their own specific operating conditions.

When	Check	Servicing	See
Every month	Check for the occurrence of a leak from the detection port - if leak occurs ->		Chapter IV -1
Every 3 months	Check by listening (no knocking) - if unsatisfactory ->		Chapter IV-4
Every 6 months (or 1,500 hours)	Cleaning of foot valve and valve assemblies		Chapter IV-2
Frequency to be defined according to process (approx. 1,000 hours)	Check on compliance of flow rate	Check on pump capacity	Chapter IV-3
Every year (or 3,000 hours)		Annual overhaul	Part V

A model maintenance sheet is shown in Figure 3.4a to help you ensure follow-up of your servicing actions (checking or maintenance).

MAINTENANCE SHEET

Pump code : D.M.R. internal no. :
Liquid pumped :
Date of commissioning :

Service Operation	Date	Hours	Remarks

Fig. 3.4a : Model Maintenance Sheet

PART IV - ROUTINE MAINTENANCE

IV - 1. OCCURRENCE OF A LEAK FROM DETECTION PORT

Determine whether the product collected at the detection port [9] (Fig. 1.2a) is lubricating oil or the pumped fluid.

- If the product is pumped fluid, the diaphragm is faulty. Proceed with its replacement (see Part V).
- If the product is lubricating oil, the secondary diaphragm is faulty. Proceed with its replacement (see Part V).

IV - 2. CLEANING THE FOOT VALVE AND VALVE ASSEMBLIES

Carry out the procedures in the specified order having read the general information (in Chapter VII - 1).

CLEANING THE FOOT VALVE

See figure 1.5a.

- Preliminary operations: Part VII - Section A1 - paragraphs 1 and 2.
- Disconnect the suction circuit from the pump.
- Remove the foot valve [A].
- Unscrew the filter [16] and the valve seat [15] to remove the ball seat [5] (mark the direction of fitting) and the ball [4].
- Proceed with the cleaning of the various items. In the case of wear, proceed with the replacement of the « seat - ball » assembly or the foot valve.
- Screw the filter [16] onto the valve seat [15].
- Insert a ball seat [5] (taking care to comply with the fitting directions) and a ball [4] in the valve support.
- Screw the valve support onto the body of the valve housing [14].
- Connect up the pump suction circuit.
- Restarting: Part VII - Section A2 - paragraphs 2 to 4.

CLEANING THE VALVE ASSEMBLIES

- Preliminary operations: Part VII - Section A1
- Removing the valve assemblies: Part VII - Section B1
- Reinstalling the valve assemblies: Part VII - Section B2
- Restarting: Part VII - Section A2

CLEANING THE INJECTION NOZZLE

See Figure 1.5a.

- Preliminary operations: Part VII - Section A1 - paragraphs 1 and 2
- Remove the injection nozzle [C].
- Unscrew the valve body seat [6] to remove the ball seat [5] (mark the direction of fitting), the ball [4] and the spring [3] (see note below).
- Proceed with the cleaning of the various items. In case of wear, proceed with the replacement of the « seat - ball » assembly or of the injection nozzle.
- Insert a ball seat [5] (taking care to comply with the fitting direction), a ball [4] and a spring [3] (see note below) in the valve body seat [6].
- Screw the valve assembly body into the valve housing [2].
- Install the injection nozzle.
- Restarting: Part VII - Section A2 - paragraphs 2 to 4.

Note : Consult the relevant liquid end sheet : some injection nozzles are not supplied with spring.

IV - 3. CHECKING THE PUMP CAPACITY

This is a question of determining the curve representing the pump's capacity according to its setting.

Four measurements are sufficient (adjustment to 100 %,75 %, 50 % and 25 %).

Place the foot valve in a calibrating chamber (graduated reservoir). Measure the volume of pumped liquid for a given period of time at the various settings.

Plot the curve and use it to determine the adjustment corresponding to the desired capacity.

IV - 4. TRACING CAUSES OF FAILURE

PROBLEMS WITH MOTOR

The motor does not run

The thermal relay has been tripped.

- The motor is defective.
- Wiring is defective.
- Check the parts of the mechanical assembly.

The motor heats up abnormally

- The quantity of lubricating oil is incorrect: trace the leak (see Chapter IV - 1.)
- The pump is used in conditions it was not designed for.

PROBLEMS WITH NOISY MECHANICAL PARTS

- The tangential wheel is faulty. Replace the « wheel - connecting rod » assembly [D] (see Part VI).
- A bearing is faulty. Provide for the replacement of either the « wheel - connecting rod » assembly [D], the « male eccentric » assembly [12] or the whole mechanical assembly [J] (see Part VI).

PROBLEMS WITH FLOW RATE

The pump produces no flow

- The pump capacity is adjusted to « 0 % » : Adjust the capacity to the desired value and lock the stroke adjustment knob.
- The liquid end is unprimed: release the pressure on the discharge pipe and prime the liquid end, or check the leak-tightness of the suction circuit.
- The balls of the valve assemblies are blocked by particles: clean or replace the valve assemblies. First, check whether the presence of these particles is normal and take corrective action if necessary.
- The diaphragm is faulty (rupture): see Chapter IV - 1. And replace the diaphragm (see Part V).

The pump does not provide the required flow rate

- The pump capacity is incorrectly adjusted: adjust the capacity to the desired value and lock the stroke adjustment knob.

4FV

- The 4-function valve continuously releases pressure: the discharge piping is partially or totally blocked.

- The ball seats and/or the balls are dirty or worn: clean or replace the ball seats and the balls or the valve assemblies.
- The tangential wheel is faulty. Replace the «wheel - connecting rod » assembly [D] (see Part VI).
- A bearing is faulty. Provide for the replacement of either the « wheel - connecting rod » assembly [D], the « male eccentric » assembly [12] or the whole mechanical assembly [J] (see Part VI).
- The leak-tightness of the suction circuit is unsatisfactory: repair or replace the piping.

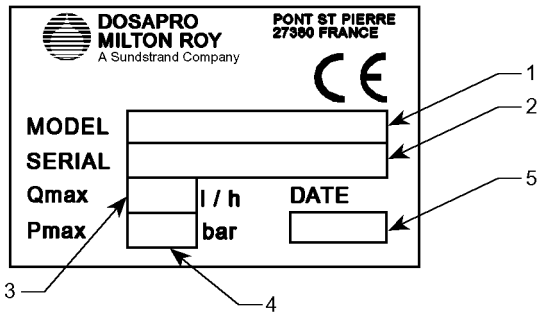
IV - 5. ORDERING SPARE PARTS

To make it easier to register your order for spare parts and ensure quicker delivery, please provide us with the following details:

- information on the pump: Codel [1] and D.M.R. internal no. [2]. These two items of information are shown on the identification plate mounted on the pump (see Fig. 4.5a).

- Information on the spare part: reference, description and quantity. These items of information are specified in the relevant sheets supplied with the pump.

You will find the phone and fax number of the Spare Parts Department at the end of this documentation.



1	**Model : Pump code**	4	Pmax : Maximum pressure
2	**SERIAL : D.M.R. internal No.**	5	Date : Date of manufacture
3	Qmax : Maximum capacity		

Fig. 4.5a : Identification plate

PART V - PREVENTIVE MAINTENANCE

ANNUAL OVERHAUL

V - 1. SPARE PARTS REQUIRED FOR ANNUAL OVERHAUL

Annual overhaul (after one year or 3,000 hours' operation) involves the replacement of the following wear parts:

- Balls and seats kits or sets of cartridges (depending on model),
- Diaphragm,

Every two years (or 6,000 hours' operation), during the annual overhaul, replace also :

- Secondary diaphragm,

The servicing action required for the replacement of balls and seats kits, diaphragm and secondary diaphragm are described in Part VII: Servicing the liquid end and the liquid end mounting assembly. The procedures must be carried out in the specified order.

Chapter V - 2. Sequential actions allow partial servicing operations to be carried out.

Note : For full list of spare parts refer to the relevant liquid end sheet and mechanical assembly sheet.

V - 2. SEQUENTIAL ACTIONS

Carry out the procedures in the specified order having read the general information (in Chapter VII - 1).

SERVICING THE FOOT VALVE

See Chapter IV - 2, paragraph on cleaning the foot valve.

SERVICING THE VALVE ASSEMBLIES

- Preliminary operations: Part VII - Section A1
- Removing the valve assemblies: Part VII - Section B1
- Reinstalling the valve assemblies: Part VII - Section B2
- Restarting: Part VII - Section A2

REPLACING THE DIAPHRAGM

- Preliminary operations: Part VII - Section A1
- Removing the diaphragm: Part VII - Section C1
- Reinstalling the diaphragm: Part VII - Section C2
- Restarting: Part VII - Section A2

REPLACING THE SECONDARY DIAPHRAGM

- Preliminary operations: Part VII - Section A1
- Removing the diaphragm: Part VII - Section C1
- Removing the secondary diaphragm: Part VII - Section D1
- Reinstalling the secondary diaphragm: Part VII - Section D2
- Reinstalling the diaphragm: Part VII - Section C2
- Restarting: Part VII - Section A2

PART VI - CORRECTIVE MAINTENANCE

VI - 1. LIST OF OTHER SPARE PARTS

This completes the list given in Chapter V - 1 which covers the set of spare parts required for annual overhaul of the pump.

- Motor (with worm) [22]
- Mechanical assembly (without cover or base, with bellows and lubricating oil) [J]
- « Wheel - connecting rod » assembly [D]
- « Male eccentric » assembly [12]
- Lubricating oil

Note : For full list of spare parts refer to the relevant liquid end sheet and mechanical assembly sheet.

VI - 2. SEQUENTIAL ACTIONS

Carry out the procedures in the specified order after reading the general information (in Chapters VII - 1 and VIII - 1).

REPLACING THE MOTOR

- Preliminary operations: Part VII - Section A1 - Paragraphs 1 and 2
- Removing the motor: Part VIII - Section M1
- Reinstalling the motor: Part VIII - Section M2
- Restarting: Part VII - Section A2 - Paragraphs 2 and 3

REPLACING THE MECHANICAL ASSEMBLY

- Preliminary operations: Part VII - Section A1
- Removing the diaphragm: Part VII - Section C1
- Removing the secondary diaphragm: Part VII - Section D1
- Removing the motor: Part VIII - Section M1
- Removing the base: Part VIII - Section P1
- Reinstalling the base: Part VIII - Section P2
- Reinstalling the motor: Part VIII - Section M2
- Reinstalling the secondary diaphragm: Part VII - Section D2
- Reinstalling the diaphragm: Part VII - Section C2
- Restarting: Part VII - Section A2

REPLACING THE « MALE ECCENTRIC » ASSEMBLY

- Preliminary operations: Part VII - Section A1
- Removing the diaphragm: Part VII - Section C1
- Removing the secondary diaphragm: Part VII - Section D1
- Removing the motor: Part VIII - Section M1
- Removing the « male eccentric » assembly: Part VIII - Section N1
- Reinstalling the « eccentric » assembly: Part VIII - Section N2
- Reinstalling the stroke adjustment knob: Part VIII - Section Q2
- Reinstalling the motor: Part VIII - Section M2
- Reinstalling the secondary diaphragm: Part VII - Section D2
- Reinstalling the diaphragm: Part VII - Section C2
- Restarting: Part VII - Section A2

Note: It is advisable to replace the secondary diaphragm.

REPLACING THE « WHEEL - CONNECTING ROD » ASSEMBLY

- Preliminary operations: Part VII - Section A1
- Removing the diaphragm: Part VII - Section C1
- Removing the secondary diaphragm: Part VII - Section D1
- Removing the motor: Part VIII - Section M1
- Removing the « male eccentric » assembly: Part VIII - Section N1
- Removing the « wheel - connecting rod » assembly: Part VIII - Section O1
- Reinstalling the « wheel - connecting rod » assembly: Part VIII - Section O2
- Reinstalling the « male eccentric » assembly: Part VIII - Section N2
- Reinstalling the stroke adjustment knob: Part VIII - Section Q2
- Reinstalling the motor: Part VIII - Section M2
- Reinstalling the secondary diaphragm: Part VII - Section D2
- Reinstalling the diaphragm: Part VII - Section C2
- Restarting: Part VII - Section A2

Note: It is advisable to replace the secondary diaphragm.

PART VII - SERVICING THE LIQUID END AND THE LIQUID END MOUNTING ASSEMBLY

Carry out the procedures described below:

- in the order of the text in the case of annual overhaul (or 3,000 hours' operation), except for the secondary diaphragm which has to be removed every two years (or 6,000 hours ' operation).
- in the order specified in the section dealing with the partial servicing envisaged (Chapter V - 2. Sequential actions).

VII - 1. GENERAL

Note

- For the sake of simplicity, the procedures described do not mention the washers fitted with fasteners (such as screws and nuts). Do not forget to reinstall washers after removing them.
- Verify that parts are undamaged before reinstalling.
- Clean the recess for O-rings when they are removed. Apply tallow in the recess before reinstalling the new O-ring.

Special care has to be taken for chemicals used in the process (acids, bases, oxiding/reducing solutions, ...).

VII - 2. REMOVING REINSTALLING THE LIQUID END AND THE LIQUID END MOUNTING ASSEMBLY

A1. Preliminary operations

Before carrying out any servicing action on the liquid end or tubes, take the necessary steps to ensure that any harmful liquid they may contain is not spilt and does not touch personnel. Provide for the rinsing of the liquid end, if necessary, and provide for appropriate protective equipment. Check that there is no pressure and the temperature of components before starting to dismantle.

1. Position the pump capacity adjustment on "0%".
2. Disconnect the pump electrically. Check that the equipment cannot be started up accidentally. Place a notice at the location of the switch.
3. Disconnect the pump hydraulically.

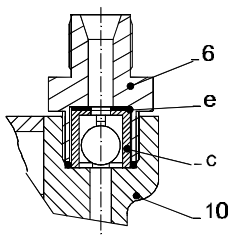
≤45l/h P-D

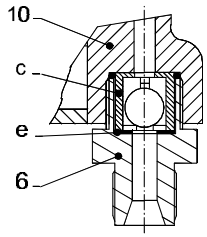
B1. Removing the valve assemblies

See Figure 7.2a.

1. Unscrew the valve assembly body [6] (or the 4-function valve body). Remove the cartridge [c] (and mark the direction of fitting) and the washer [e].
2. Clean the tapped holes in the liquid end [10].
3. Clean the valve assembly bodies if they are not to be replaced.

≤45l/h P-D





Discharge Suction

6	Valve assembly body
10	Liquid end
c	Cartridge
e	Washer

Fig. 7.2a : Sectional drawing of valve assy

S

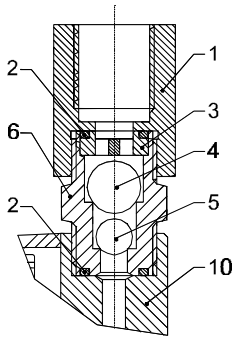
B1. Removing the valve assemblies

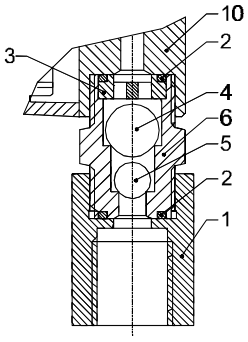
See Figure 7.2b.

For each valve assembly:

1. Unscrew the union [1].
2. Unscrew the valve assembly body [6].
3. Remove the O-rings [2], the ball stop [3] and the balls [4] and [5].
4. Clean the body, seat and ball assemblies. In case of wear, proceed with the replacement of the « seat - ball » assemblies or the valve assemblies.
5. Clean the tapped holes in the liquid end [10].

S





Discharge Suction

1	Union
2	O-ring
3	Ball stop
4	Ball
5	Ball
6	Valve assembly body
10	Liquid end

Fig. 7.2b : Sectional drawing of valve assy

V

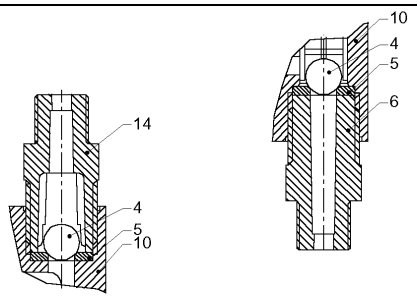
>45l/h
P-D

B1. Removing the valve assemblies

See Figure 7.2c.- 7.2d

1. For the discharge circuit: Unscrew the valve assembly body [14] (or the 4-function valve body). Remove the spring [3], ball [4] and ball seat [5] (and mark the direction of fitting).
2. For the suction circuit: Unscrew the valve assembly body [13]. Hold the body in the vertical position to avoid losing the ball [4]. Remove the spring [3], ball and ball seat [5] (and mark the direction of fitting).
3. Clean the tapped holes in the liquid end [10].
4. Clean the body, seat and ball assemblies. In case of wear, proceed with the replacement of the « seat - ball » assemblies or the valve assemblies.

>45l/h
P-D

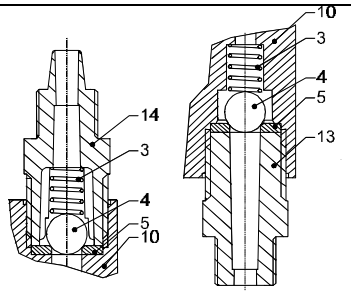


Discharge Suction

4	Ball
5	Ball seat
6	Valve assembly body
10	Liquid end
14	Valve assembly body

Fig. 7.2c : Sectional drawing of valve assy

V



ischarge Suction

3	Spring
4	Ball
5	Ball seat
10	Liquid end
13	Valve assembly body
14	Valve assembly body

Fig. 7.2d : Sectional drawing of valve assy

B2. Reinstalling the valve assemblies

See Figure 7.2a.

≤45l/h
P-D

1. Insert a washer [e] and a cartridge [c] (taking care to comply with the direction of fitting) in the valve assembly body [6 (or the 4-function valve body)].
2. Screw the valve assembly body [16] (or the 4-function valve body) into place without torquing.

B2. Reinstalling the valve assemblies

See Figure 7.2b.

For each valve assembly:

S

1. Insert the balls ([5] and {4]) and the ball stop [3] into the valve assembly body [6] (taking care to comply with the direction of fitting).
2. Fit a seal [2] on the ball stop and a seal [2] under the valve assembly body.
3. Screw the valve assembly body onto the liquid end body [10]. Tighten to a torque of 20 m.N.
4. Tighten the union [1] (to a torque of 20 m.N).

B2. Reinstalling the valve assemblies

See Figure 7.2c-7.2d.

For the discharge circuit:

1. Insert a ball seat [5] in the liquid end [10] (taking care to comply with the direction of fitting). Insert a ball [4]. Insert a spring [3] in the valve assembly body [14] or the 4-function valve body.
2. Screw the valve assembly body or the 4-function valve body into place without torquing (complying with the arrow indicating the direction of flow of the liquid).
3. Tighten by 1/8 of a turn to ensure leak-tightness.

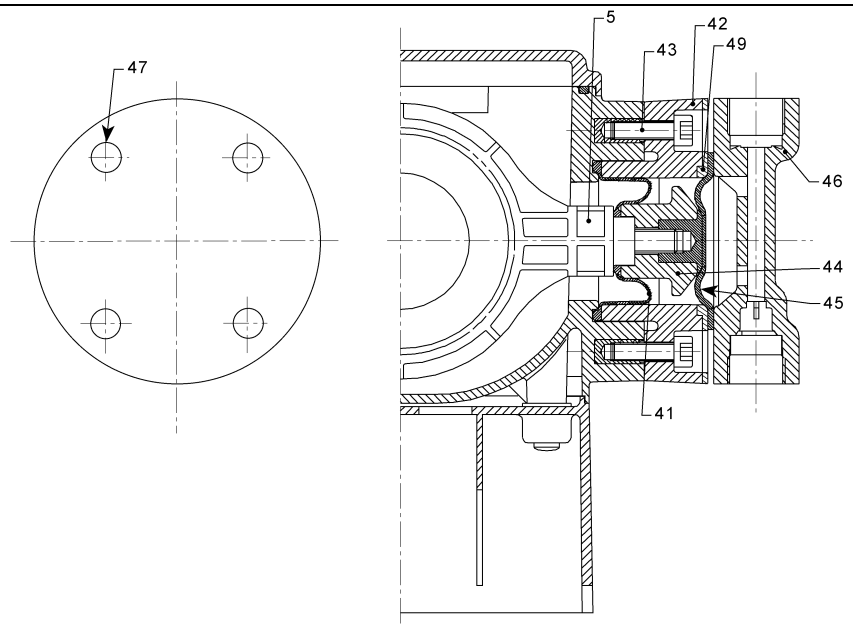
H

>45l/h
P-D

For the suction circuit:

1. Install a spring [3] in the liquid end body [10]. Fit a ball seat [5] (taking care to comply with the direction of fitting) and a ball [4] on the valve assembly body [13].
2. Screw the valve assembly body into the liquid end [10] without torquing (complying with the arrow indicating the direction of flow of the liquid).
3. Tighten by 1/8 of a turn to ensure leak-tightness.

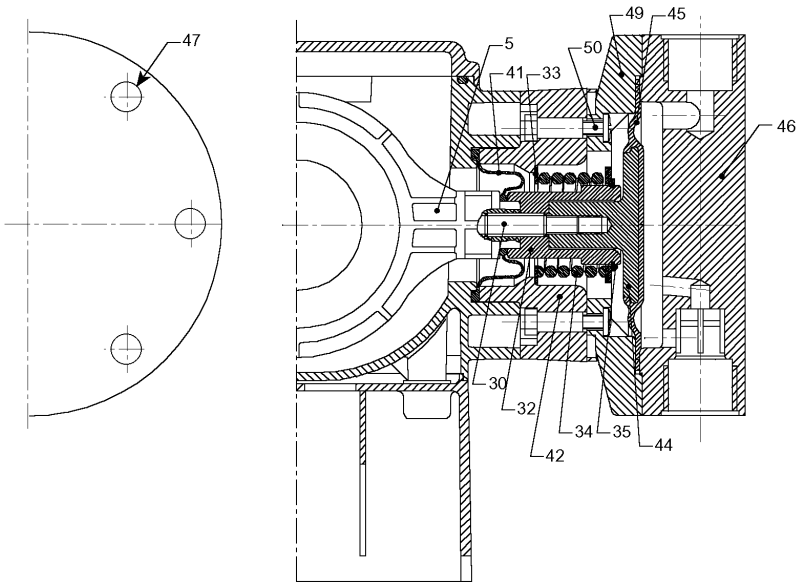
A



5	Connecting rod	45	Diaphragm
41	Secondary diaphragm	46	Liquid end
42	Spacer	47	Screw
43	Screw	49	Diaphragm seat
44	Support		

Fig. 7.2e : Sectional view of liquid end and liquid end mounting assembly

B



5	Connecting rod	42	Spacer
30	Stud	44	Support
32	Diaphragm spacer	45	Diaphragm
33	Washer	46	Liquid end
34	Spring	47	Screw
35	Retaining ring	49	Diaphragm seat
41	Secondary diaphragm	50	Screw

Fig. 7.2f : Sectional view of liquid end and liquid end mounting assembly

VII - 3. REMOVING REINSTALLING THE LIQUID END AND THE LIQUID END MOUNTING ASSEMBLY (Figure 7.2 e - 7.2 f)

C1. Removing the diaphragm

1. Undo the screws [47]. Remove the liquid end [46].
2. Set the stroke adjustment knob to « 100 % ».
3. Remove the motor casing and rotate the motor by hand in order to place the diaphragm [45] in the « front » position.
4. Hold the outer edge of the diaphragm and turn it anticlockwise in order to unscrew it. Remove the diaphragm equipped with its support [44].
5. Where applicable, remove the diaphragm seat [49].

D1. Removing the secondary diaphragm

A

1. Disconnect the terminal box wires, and mark their connection.
2. Remove the attaching hardware securing the pump onto its frame.
3. Tilt the pump onto the opposite side of liquid end (with the secondary diaphragm on top).
4. Undo the screws [43] and remove the spacer [42].
5. Remove the secondary diaphragm [41] and mark the direction of fitting.
6. If this servicing is required owing to a lubricating oil leak or in the context of work on the mechanical assembly, carefully drain the housing and leave it to drip for about half an hour. Wear protective gloves to avoid any risk of being burned by hot oil.

Note: It is advisable to replace the secondary diaphragm in the course of servicing operation.

D1. Removing the secondary diaphragm

R

1. Disconnect the terminal box wires, and mark their connection.
2. Remove the attaching hardware securing the pump onto its frame.
3. Tilt the pump onto the opposite side of liquid end (with the secondary diaphragm on top).

4 Unscrew the attaching screw [50] and remove the diapram seat [49]

5. Remove the retaining ring [35], the washer [33] and the spring [34]

6 Unscrew the attaching screw [43] and remove the spacer [42]

7 Unscrew the diaphragm spacer [32] and remove the stud [[30]

8. Remove the secondary diaphragm [41] and mark the direction of fitting.
9. If this servicing is required owing to a lubricating oil leak or in the context of work on the mechanical assembly, carefully drain the housing and leave it to drip for about half an hour. Wear protective gloves to avoid any risk of being burned by hot oil.

D2. Reinstalling the secondary diaphragm

A

1. If the housing was drained, refill it (see Chapter VIII - 4. LUBRICATION), with the pump being laid onto the opposite side of liquid end. Remove any overflow oil immediately with a degreasing agent suitable for the operating conditions.
2. Position the secondary diaphragm [41] in compliance with the direction of fitting.
3. Position the spacer [42], placing the detection port [9] (Fig. 1.2a) facing downwards (with the pump in the operating position) and tighten the screws [43] (applying a torque of 3 m.N)
4. Reinstall the diaphragm (see Section C2)
5. Tilt the pump and secure it onto its support.
6. Connect up the motor in compliance with the directions marked during dismantling (see also Chapter II -5. ELECTRICAL INSTALLATION).

D2. Reinstalling the secondary diaphragm

R

1. If the housing was drained, refill it (see Chapter VIII - 4. LUBRICATION), with the pump being laid onto the opposite side of liquid end. Remove any overflow oil immediately with a degreasing agent suitable for the operating conditions.
2. Screw the stud [30] fully home in the connecting rod
3. Position the secondary diaphragm [41] in compliance with the direction of fitting.
4. Position the spacer [42], placing the detection port [9] (Fig. 1.2a) facing downwards (with the pump in the operating position) and tighten the screws [43] (applying a torque of 3 m.N)
5. Screw the diapragm spacer [32] (torque 0.15 m.daN). Place the washer [33], the spring [34] (caution the spring must be introduice by the most bigger diameter), a washer [33] and the retaining ring [35].(Use the special tooling available at the spare parts department)

6 Place the diaphragm seat [49] placing the detection port [9] (Fig. 1.2a) facing downwards and tighten the screws [50] (torque of 2.5 m.N)

7. Reinstall the diaphragm (see section C2).
8. Tilt the pump and attach it onto its support.
9. Connect up the motor in compliance with the directions marked during dismantling (see also Chapter II -5. ELECTRICAL INSTALLATION).

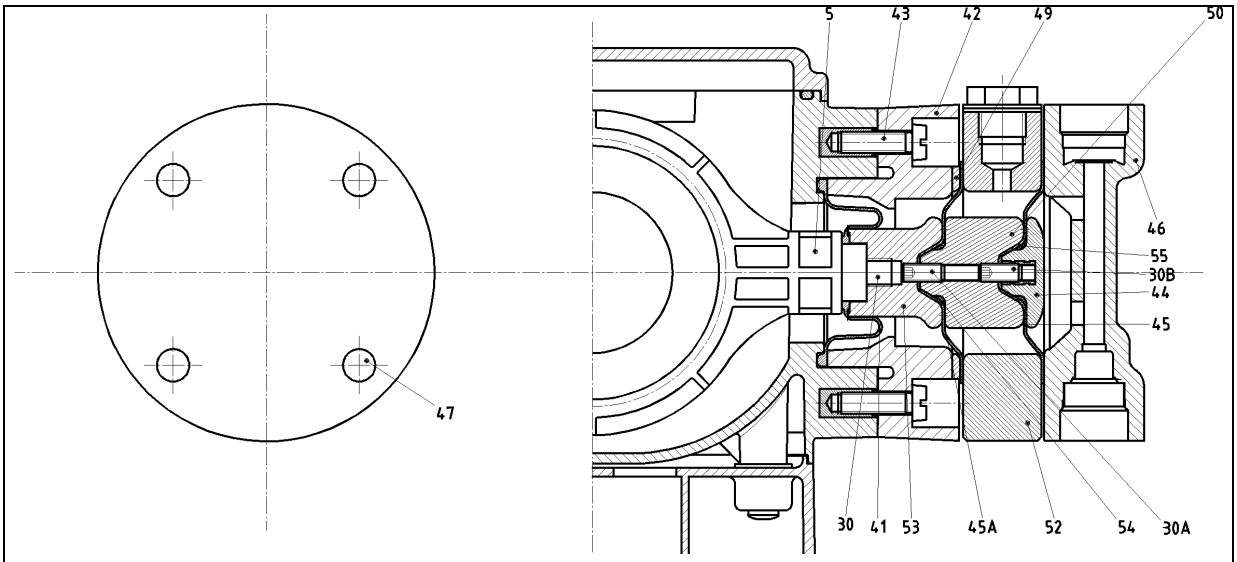
C2. Reinstalling the diaphragm

1. Where applicable, position the diaphragm seat [49] on the spacer [42].
2. Screw the diaphragm [45] fully home.
3. Rotate the motor by hand in order to place the diaphragm in the « back » position.
4. Position the liquid end [46] on the diaphragm and attach it by tightening the screws [47] evenly. Tighten to a torque of 3m.N).
5. Fit the motor casing.
6. Set the stroke adjustment knob to « 0 % ».

A2. Restarting

1. Connect up the pump hydraulically.
2. Check that the capacity is set to « 0% ».
3. Check that there are no suspicious noises when starting up.
4. Set the pump capacity to « 100 % » to obtain quicker priming.
5. After priming, set the pump to the desired capacity and lock the stroke adjustment knob.

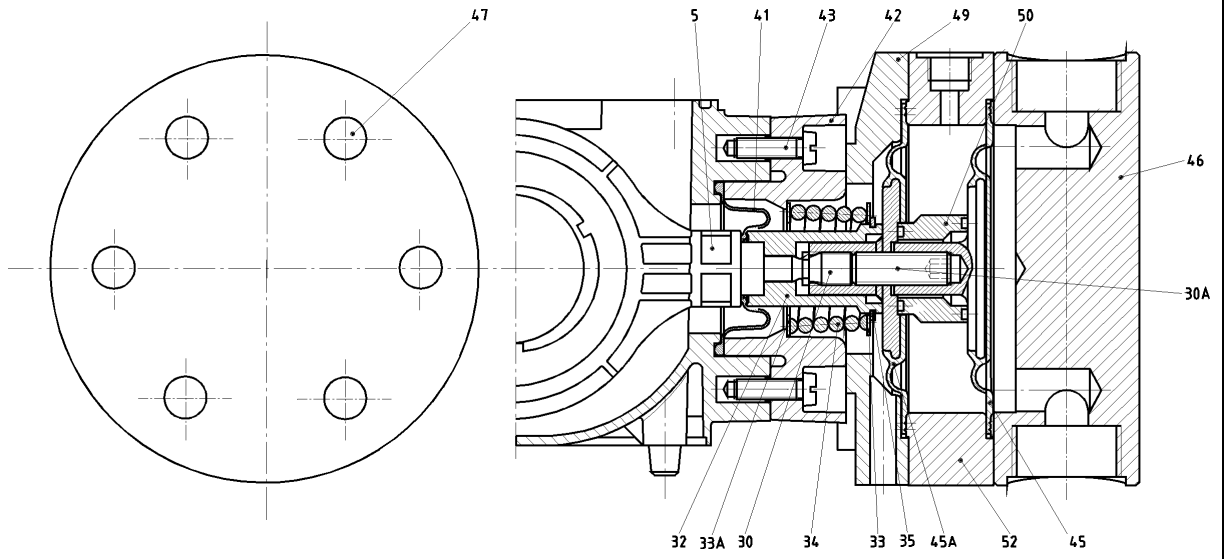
A



5	Connecting rod	45A	Diaphragm
30	Connecting rod	46	Liquid end
30A	Screw	47	Screw
30B	Screw	49	Diaphragm seat
41	Secondary diaphragm	50	Diaphragm spacer
42	Spacer	52	Double diaphragm body
43	Screw	53	Diaphragm support
44	Support	54	Seal
45	Diaphragm	55	Seal

Fig. 7.2g : Sectional view of liquid end and liquid end mounting assembly (double diapragm)

B



5	Connecting rod	44	Support
30	Connecting rod	45	Diaphragm
30A	Screw	45A	Diaphragm
32	Secondary diaphragm	46	Liquid end
33	Washer	47	Screw
33A	Washer	49	Diaphragm seat
34	Spring	50	Diaphragm spacer
35	Retaining ring	52	Double diaphragm body
41	Secondary diaphragm	53	Seal
42	Spacer	54	Seal
43	Screw		

Fig. 7.2h : Sectional view of liquid end and liquid end mounting assembly (double diapragm)

VII - 4. REMOVING REINSTALLING THE LIQUID END AND THE LIQUID END MOUNTING ASSEMBLY (double diaphragm) (Figure 7.2 g - 7.2 h)

C1. Removing the diaphragm

1. Undo the screws [47]. Remove the liquid end [46].
2. Set the stroke adjustment knob to « 100 % ».
3. Remove the motor casing and rotate the motor by hand in order to place the diaphragm [45] in the « front » position.

A
4 Turn the button [44] with a plier (anticlockwise rotation)
5 Remove the diaphragm [45] and the seal [55]
6 Remove the double diaphragm body [52] and the diaphragm spacer [50]
7 Remove the diaphragm [45A] and the seal [54]

B
4. Take the external area of the diaphragm [45] and turn it (anticlockwise rotation)
6 Remove the double diaphragm body [52], the diaphragm spacer [50] and the seals [53][54]
7 Remove the diaphragm [45A]
8.Remove the diaphragm seat [49].

D1. Removing the secondary diaphragm

1. Disconnect the terminal box wires, and mark their connection.
2. Remove the attaching hardware securing the pump onto its frame.
3. Tilt the pump onto the opposite side of liquid end (with the secondary diaphragm on top).

A
4 Remove the diaphragm support [53]

B
4 Remove the retaining ring [35], thje washer [33], the spring[34] and the washer [33A]

5. Unscrew the screws [43] and remove the spacer [42].
6. Remove the secondary diaphragm [41] and mark the direction of fitting..
7. If this servicing is required owing to a lubricating oil leak or in the context of work on the mechanical assembly, carefully drain the housing and leave it to drip for about half an hour. Wear protective gloves to avoid any risk of being burned by hot oil..

Note: It is advisable to replace the secondary diaphragm in the course of servicing operation.

D2. Reinstalling the secondary diaphragm

1. If the housing was drained, refill it (see Chapter VIII - 4. LUBRICATION), with the pump being laid onto the opposite side of liquid end. Remove any overflow oil immediately with a degreasing agent suitable for the operating conditions.
2. Position the secondary diaphragm [41] in compliance with the direction of fitting..
3 Screw the stud [30] fully home in the connecting rod [5]
4. Position the spacer [42], placing the detection port [9] (Fig. 1.2a) facing downwards (with the pump in the operating position) and tighten the screws [43] (applying a torque of 3 m.N)
5. Tilt the pump and attach it onto its support.
6. Connect up the motor in compliance with the directions marked during dismantling (see also Chapter II -5. ELECTRICAL INSTALLATION).

C2. Reinstalling the diaphragm

1. Position the diaphragm seat [49] on the spacer [42].

A
2 Screw the screw [30A] in the diaphragm spacer [50]
3 Screw the diaphragm support [53] in the connecting rod [5]
4 place the diaphragm [45A] and the seal [54]. Screw the diaphragm spacer [50]
5 Place the diaphragm [45] and the seal [55] on the button [44]
6 Place the button [44] and tight it with a plier

B
2 Screw the diapragm spacer [32] (torque 0.15 m.daN). Place the washer [33], the spring [34] (caution the spring must be introduice by the most bigger diameter), the washer [33A] and the retaining ring [35].(Use the special tooling available at the spare parts department)
3 Tight the diphragm [45A] fully home
4 place the double diphragm body [52]
5 Screw the screw [30A] in the diphragm [45A]
6 Place the diphragm spacer [50] with the seals [43] [54]
7 Srew the diphragm [45] fully home

8. Rotate the motor by hand in order to place the diaphragm in the « back » position.
9. Position the liquid end [46] on the diaphragm and attach it by tightening the screws [47] evenly. Tighten to a torque of 3m.N).
10. Fit the motor casing.
11. Set the stroke adjustment knob to « 0 % ».

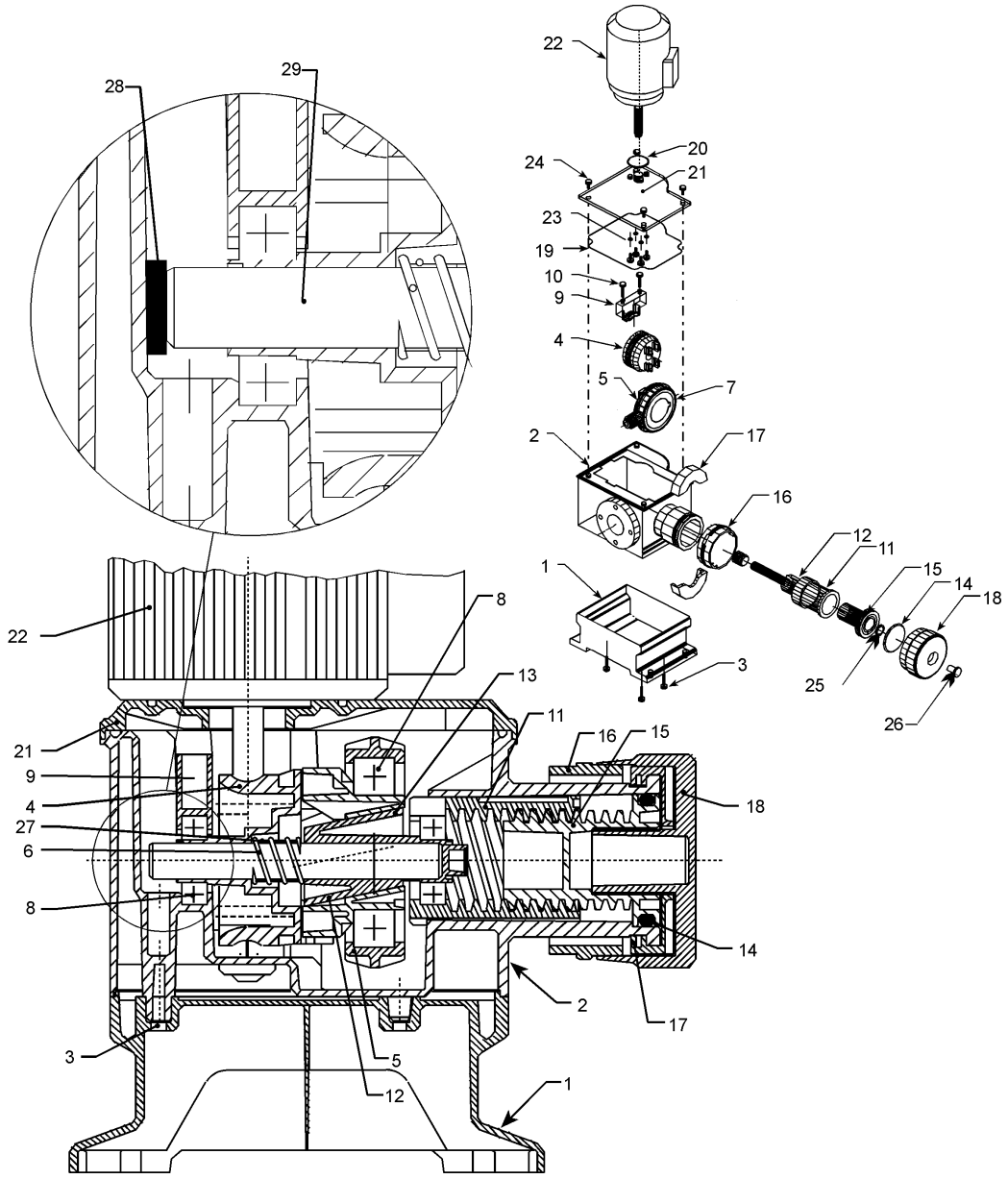
Removing / Reinstalling the detection system

1 Unscrew the optionnal manometer (not represented) from the double diaphragm body [52]
2 Remove the O-ring and replace it if necessary
3 Reinstall the manometer

A2. Restarting

1. Connect up the pump hydraulically.
2. Check that the capacity is set to « 0% ».
3. Check that there are no suspicious noises when starting up.
4. Set the pump capacity to « 100 % » to obtain quicker priming.
5. After priming, set the pump to the desired capacity and lock the stroke adjustment knob.

PART VIII - SERVICING THE MECHANICAL ASSEMBLY



1	Base	16	Stroke locking device
2	Housing	17	Half stop ring
3	Screw (base/housing)	18	Stroke adjustment knob
4	Tangential wheel	19	Cover seal
5	Connecting rod	20	O-ring
6	Spring	21	Cover
7	Metallic plate	22	Motor (with worm)
8	Bearing	23	*Screw*
9	Stop bearing	24	*Screw*
10	Screw	25	*Washer*
11	Crosshead	26	*Screw*
12	Male eccentric piece	27	*Stop **
13	Female eccentric piece	28	*Stop*
14	O-ring	29	*Axis*
15	Stroke adjustment screw		

*Available for *GA2 - GA5 – GA10 – GA120 versions*

Fig. 8.2a : Sectional view of mechanical assembly

VIII -1. DISMANTLING REINSTALLING THE MECHANICAL ASSEMBLY (See Figure 8.2a.)

M1. Removing the motor

1. Remove the cover [21] equipped with the motor [22] (four screws [24]).
2. If the motor has to be replaced, undo the four screws [23] to remove the motor and the seal [20]. Mark the position of the terminal box with respect to the housing.

N1. Removing the « male eccentric » assembly

1. Set the stroke adjustment knob [18] to « 0 % ».
2. Unscrew the screw which hold the stroke adjustment knob (in the center of the knob, not shown on the drawing). Remove the screw and the washer.
3. Extract the stroke adjustment knob and remove the two half stop rings [17].
4. Partially engage the stroke adjustment knob and loosen the stroke adjustment screw [15] by approximately 3/4 of a turn.
5. Remove the stroke adjustment knob again and extract the assembly comprising « stroke adjustment screw [15] - crosshead [11] - male eccentric piece [12] » (using two screwdrivers for leverage).

O1. Removing the « wheel - connecting rod » assembly

1. After undoing the two attaching screws [10], remove the stop bearing [9] by pulling it vertically.
2. Extract the « wheel [4] - connecting rod [5] » assembly vertically. To facilitate dismantling, insert a screwdriver into a cavity in the wheel (on the bearing side).

P1. Removing the wheel

1. Remove the metallic plate [7] from the « connecting rod [5] » assembly.
2. Remove the spring [6] from the « wheel [4] » assembly.
3. Separate the « wheel » assembly from the « connecting rod » assembly.

Q1. Removing the base

1. Remove the base [1] by unscrewing the three screws [3] located under the housing [2].

Q2. Reinstalling the base

1. Assemble the base [1] with the housing [2], taking into account the position of the three studs. Tighten the three screws [3] (max. tightening torque: 1,5 m.N).

P2. Reinstalling the wheel

1. Fit the « connecting rod [5] » assembly in the « wheel [4] » assembly.
2. Install the spring [6] in the « wheel » assembly. The spring must be positioned at the bottom of its recess.
3. Fit the metallic plate [7] at the bottom of its recess in the « connecting » rod assembly, matching up the slot in the metallic plate with the rib on the connecting rod.

O2. Reinstalling the « wheel - connecting rod » assembly

1. Where applicable, check that neither the spring [6] or the metallic plate [7] has been displaced during transportation: the spring must be at the bottom of the wheel [4] and the metallic plate must be at the bottom of its recess.
2. Insert the « wheel [4] - connecting rod [5] » assembly in the housing by pushing on the bearing [8]. To facilitate fitting, position the mounting « T » horizontally. The bearing must be fully home in its recess.
3. Fit the stop bearing [9] on the bearing [8] and tighten the two screws [10] (tightening torque of 1,5 m.N).

N2. Reinstalling the « eccentric » assembly

1. Align the mark on the female eccentric piece [13] with the rib on the wheel [4].
2. Insert an allen key in the hexagonal fitting on the male eccentric piece [12].
3. Insert the assembly from the housing trunnion into the female eccentric piece [13], holding the stud on the male eccentric piece 12] and the opening in the crosshead [11] on the upper section. Push on the allen key to fit. If the fitting operation is not successful, check the alignment of the mark on the female eccentric piece [13] with the rib on the wheel [4]. The assembly must be inserted by 2 to 3 cm.
4. To facilitate fitting, apply a little tallow on the seal [14], the thread of the stroke adjustment screw [15] and the male eccentric piece [12].
5. Screw the stroke adjustment screw fully home in the crosshead.
6. Check that the screw does not protrude from the housing.

R2. Reinstalling the adjusting knob

1. Where applicable, slide the stroke locking device [16] on the housing, (marking towards the top and side of housing).
2. Position the two half stop rings [17] on the housing. The flats of the two half stop rings must be parallel above the housing.

For pump type : GA25/GA45/GA90/GA170

3. Position an adjusting shim (2.35 mm thick) in the pin slot on the housing (between housing and Axis).

For other pump type :

4. Push the stroke adjustment knob [18] partly into place and turn it (in the anticlockwise direction) so that the end of the pin comes into contact with the shim (corresponding to a 100 % setting on the pump).
5. Remove the stroke adjustment knob and, then, fit it fully into position so that it indicates 100 %.
6. Position the screw and the washer in the center of the stroke adjustment knob. Screw 4 turns.

M2. Reinstalling the motor

1. Position the O-ring [20] on the cover [21] and position the motor [22] on the cover, complying with the marking made during dismantling. Attach the motor to the cover (four screws [23], tightening torque: 5 m.N).
2. Position the cover seal [19] in the groove on the housing (allowing for the shape of the seal). Attach the cover equipped with the motor (four screws [24], tightening torque: 10 m.N).

TECHNICAL CHARACTERISTICS

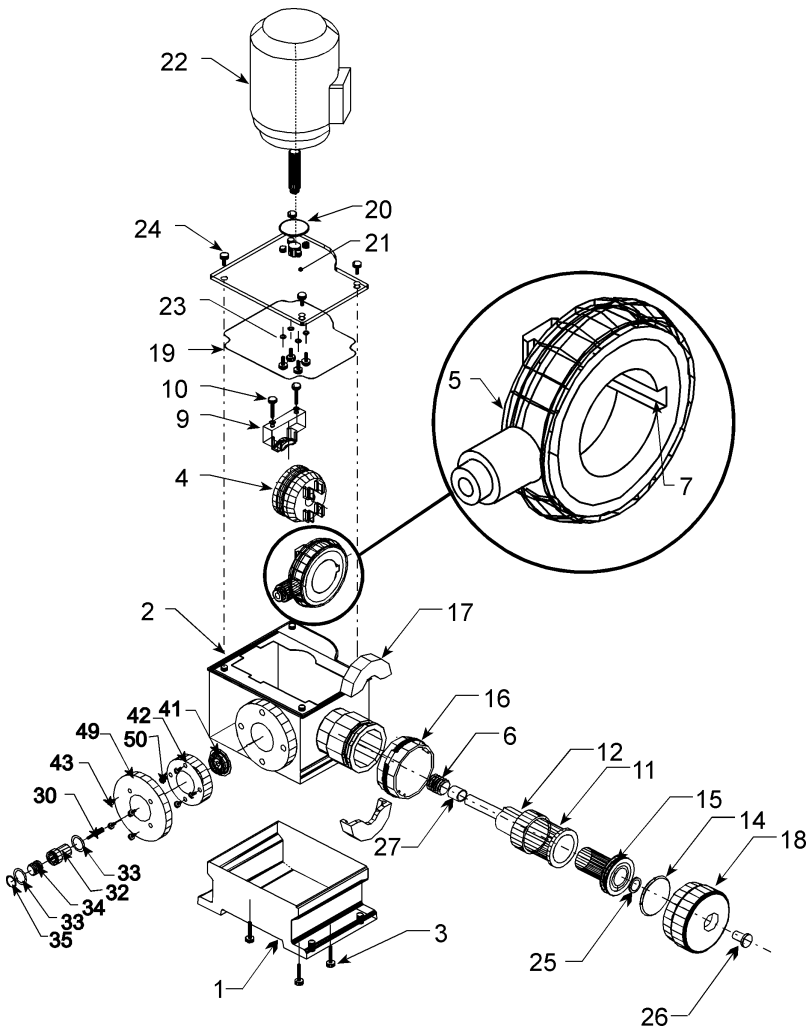
(1) Code of pump	GA2	GA5	GA10	GA25	GA45	GA90	GA120	GA170
(2) Max. flow rate in l/h, at 1,5 barg	2.5	5	10	25	50	83	120	170
Steady state accuracy (flow rate between 10 % and 100 %)	± 2 %							
Max. discharge pressure, in barg	12					5	3.5	
(3) Calibrated pressure of 4 function valve, in barg - back pressure function	12							
Max. suction pressure, in barg (Pasp)	2							
Suction head, in meters water head (Ha)	4							
Priming suction head, in meters water head	4			2.5				
(2) Stroke speed, in stroke /mn	36	72	144	72	144	72	144	
Volume of lubricating oil, in l	0,25							
Noise level, in dB A	< 70							
Température ambiante de fonctionnement	-10°C - +40°C							
Température maxi des fluides pompés	-10°C - +40°C							

(1) See identification plate mounted on the pump (fig. 4.5a).
(2) With 50 Hz motor, multiplied by 1.2 in 60 Hz.
(3) Accessory supplied as optional equipment with pumps equipped with plastic liquid end.

LUBRICATION

The pump is life-lubricated. However, should it be necessary to replace the lubricating oil (servicing the mechanical assembly, ...), then use the following oil :

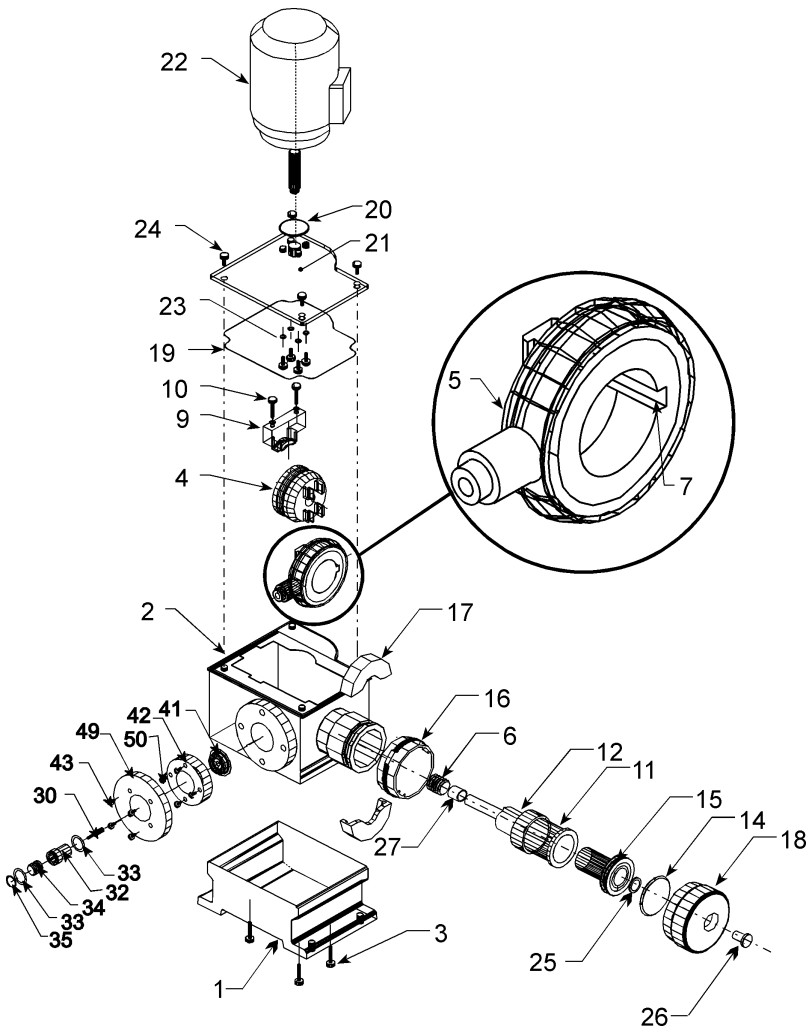
- Quantity : 0.25 l.
- oil : RENEP SINTONEP (FUCHS)
- Ambient temperature: between - 10°C and +40°C



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210023**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
	1	Vis sans tête / Screw without head	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210002**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric asy (H)	**3071210030**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210037**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210038**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210045**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelled'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
22	1	Moteur / Motor 230v 50hz	**77253**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77255**

H * = D + M J ** = H + E + F + N + 41 + huile

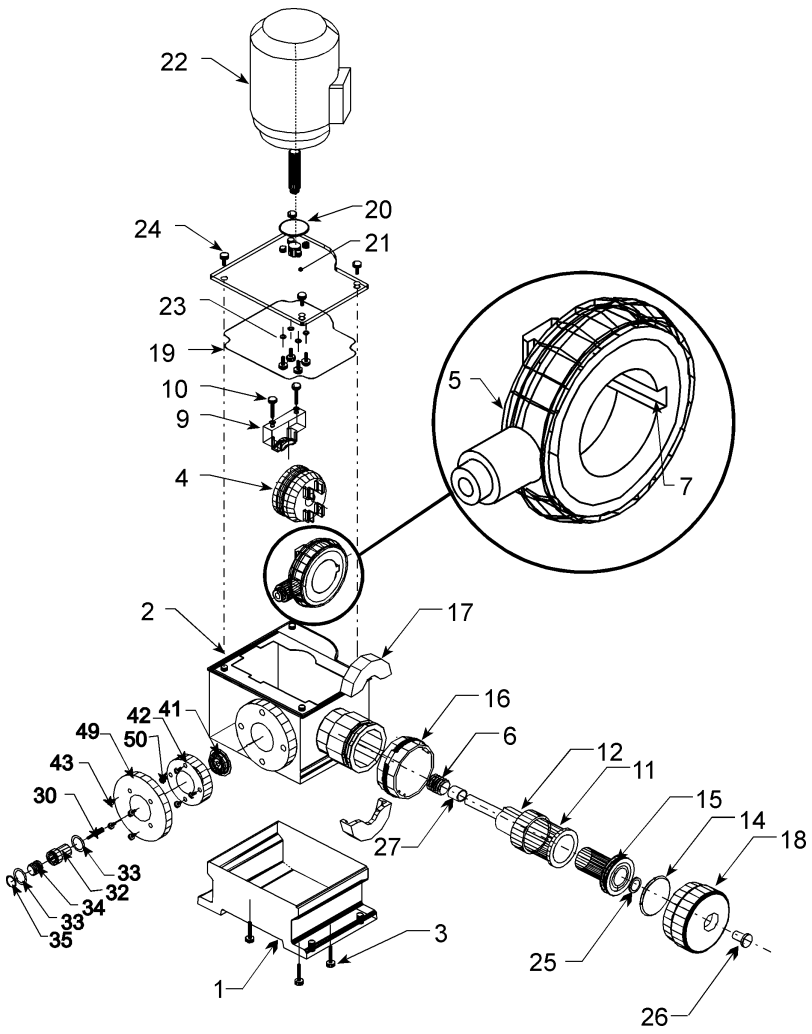
Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210023**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
	1	Vis sans tête / Screw without head	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210002**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric asy (H)	**3071210030**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210037**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210038**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210045**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelled'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
22	1	Moteur / Motor 230v 50hz	**77254**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77256**

H * = D + M J ** = H + E + F + N + 41 + huile

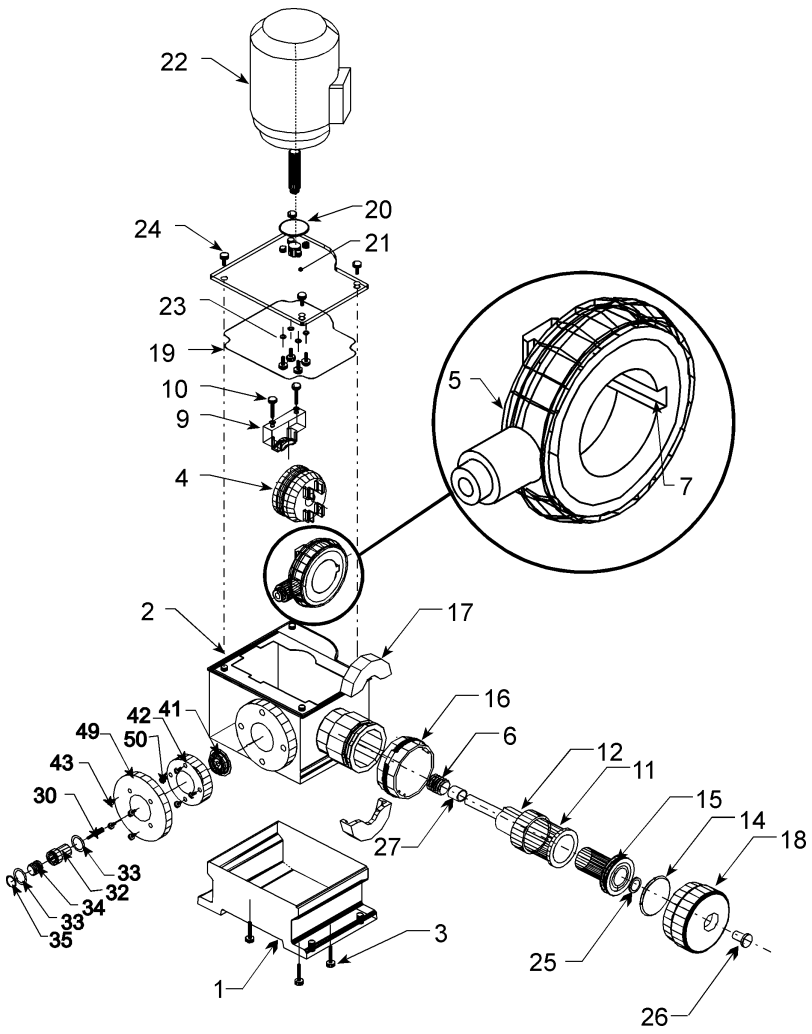
Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210024**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
	1	Vis sans tête / Screw without head	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210002**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric asy (H)	**3071210031**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210037**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210039**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210045**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelled'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
22	1	Moteur / Motor 230v 50hz	**77254**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77256**

H * = D + M J ** = H + E + F + N + 41 + huile

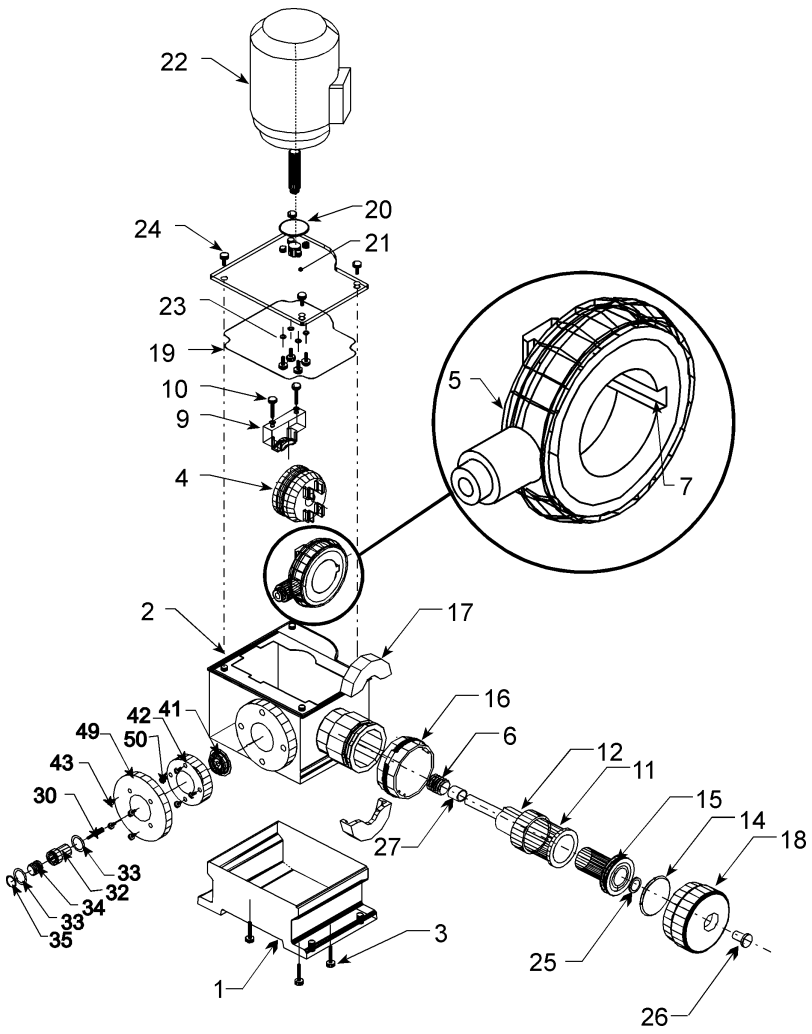
Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210025**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
	1	Vis sans tête / Screw without head	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210002**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric asy (H)	**3071210032**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210009**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210040**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210005**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelled'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
22	1	Moteur / Motor 230v 50hz	**77176**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77173**

H * = D + M J ** = H + E + F + N + 41 + huile

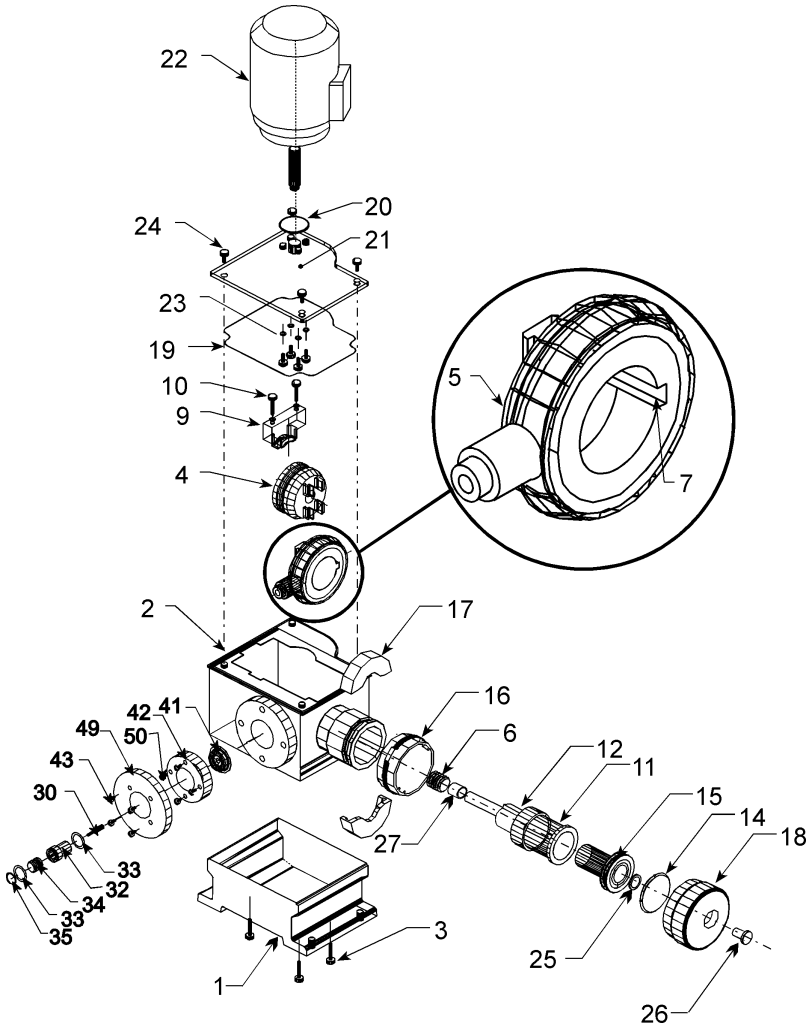
Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210026**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
	1	Vis sans tête / Screw without head	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210002**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric asy (H)	**3071210033**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210009**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210041**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210005**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelled'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
22	1	Moteur / Motor 230v 50hz	**77254**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77256**

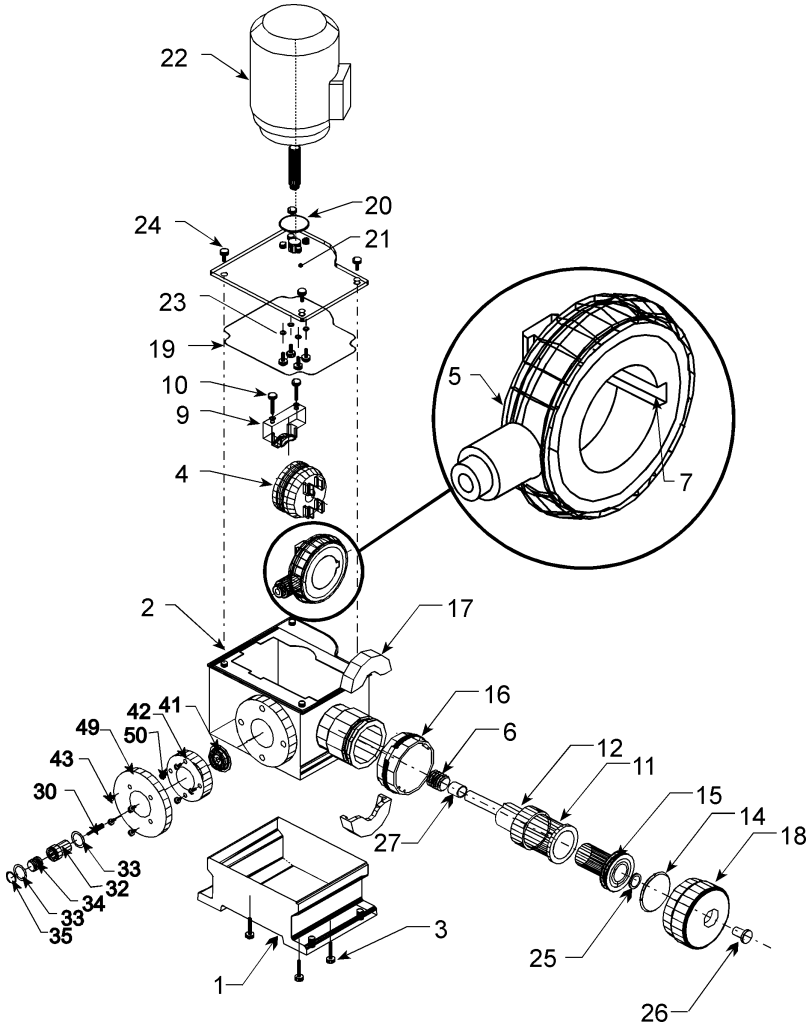
H * = D + M J ** = H + E + F + N + 41 + huile

Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



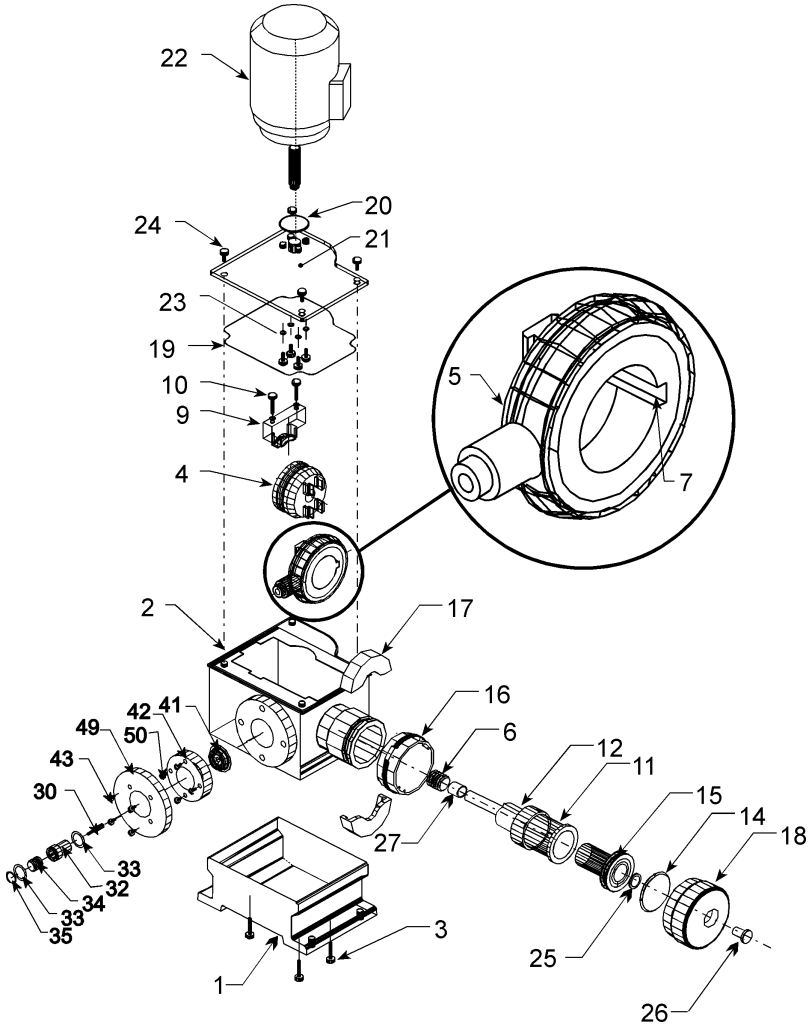
Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210027**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
30	1	Goujon attelage / Stud	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210012**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric assy (H)	**3071210034**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210009**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210042**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210015**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelle d'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
	1	Ens fixation membrane (L) / Diaphragm attachement (L)	**77061**
		Entretoise /*Cross-piece*	
		Rondelle /*Washer*	
		Ressort / Spring	
		Circlips	
22	1	Moteur / Motor 230v 50hz	**77254**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77256**

Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210028**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
30	1	Goujon attelage / Stud	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210012**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric assy (H)	**3071210035**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210037**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210043**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210015**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelle d'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
	1	Ens fixation membrane (L) / Diaphragm attachement (L)	**77061**
		Entretoise /*Cross-piece*	
		Rondelle /*Washer*	
		Ressort / Spring	
		Circlips	
22	1	Moteur / Motor 230v 50hz	**77176**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77173**

Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY



Key	Qty.	Désignation / Description	Ref
	1	Wheel/connecting rod assy (D)	**3071210029**
4	1	Ens Roue/ *Wheel assy*	
5	1	Ens Bielle / *Connecting rod assembly*	
6	1	Ressort/ *Spring*	
7	1	Butée de frottement/ *Stop*	
9	1	Etrier / *Yoke*	
30	1	Goujon attelage / Stud	
	1	Ens excentrique/vis de réglage(M) / Eccentric assy/worm shaft + weel (M)	**3071210012**
12	1	Excentrique male/ *Eccentric*	
15	1	Vis de réglage/ *Worm shaft + weel*	
	1	Ens excentrique complet (H) / Eccentric assy (H)	**3071210036**
	1	Ens bouton de réglage (E) / Hand adjust assembly (E)	**3071210009**
16	1	Bague de blocage/ *Hand adjust assembly*	
17	2	Demi-coquille/ *Half shell*	
18	1	Bouton de réglage/ *Control knob*	
26	1	Rondelle + vis/ *Washer + screw*	
25	1	*Buéte / Stop*	
	1	Lot de joints + vis (F) / Set of seals + screw (F)	**3071210004**
10	2	Vis étrier / *Screw*	
14	1	Joint de vis de réglage/ *Seal*	
19	1	Joint de couvercle/ *Cover seal*	
20	1	Joint moteur/ *Motor seal*	
23	4	Vis moteur/ *Motor screw*	
23	4	Rondelle pour vis moteur/ *Rondelle*	
24	4	Vis couvercle/*Cover screw*	
	1	Ens carter (N) / Housing assembly (N)	**3071210006**
1	1	Socle / *Base*	
2	1	Carter / *Housing*	
3	3	Vis socle carter/ *Base and housing screw*	
21	1	Couvercle/ *Cover*	
41	1	Soufflet d'étanchéité / Oil seal	**35330**
	1	Huile / Oil (0,25l)	**3071210020**
	1	Ens échange mécanique (J) / Mechanical assembly (J)	**3071210044**
	1	Ens lanterne (P) / Spacer assy (P)	**3071210015**
41	1	Soufflet d'étanchéité /*Oil seal*	
42	1	Lanterne/ *Spacer*	
49	1	Rondelle d'appui membrane/ *Washer*	
50	4	Vis de fixation lanterne/ *Spacer screw*	
	1	Ens fixation membrane (L) / Diaphragm attachement (L)	**77061**
		Entretoise /*Cross-piece*	
		Rondelle /*Washer*	
		Ressort / Spring	
		Circlips	
22	1	Moteur / Motor 230v 50hz	**77176**
22	1	Moteur / Motor 230/400v 50 / 60hz	**77173**

Propriete exclusive - Communication et reproduction interdite / All rights reserved - Copyright DOSAPRO MILTON ROY COMPANY

DOSAPRO MILTON ROY

DECLARATION "CE" DE CONFORMITE

F CONFORME A L'ANNEXE II PARTIE A DE LA REGLEMENTATION, DIRECTIVE "MACHINES", CI-DESSOUS
DIRECTIVE DU CONSEIL DU 14 JUIN 1989 (89/392 CEE) MODIFIEE LE 20 JUIN 1991 (91/368 CEE) MODIFIEE LE 14 JUIN 1993 (93/44 CEE) ET LE 22 JUILLET 1993 (93/68 CEE) CONCERNANT LE RAPPROCHEMENT DES LEGISLATIONS DES ETATS MEMBRES RELATIVES AUX MACHINES.
Nous, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCE
déclarons que le matériel désigné ci-après est en conformité avec la directive "machines" sous réserve que l'installation, l'utilisation et la maintenance soient effectuées suivant les régles de l'art et selon les prescriptions définies dans la notice d'instructions.

"EC" DECLARATION OF CONFORMITY

GB CONFORMS WITH APPENDIX II, PART A, OF THE REGULATIONS "MACHINES" DIRECTIVE BELOW
DIRECTIVE OF THE COUNCIL OF JUNE 14, 1989 (89/392 EEC) MODIFIED ON JUNE 20, 1991 (91/368 EEC), MODIIFIED ON JUNE 14, 1993 (93/44 EEC) AND JULY 22, 1993 (93/68 EEC) CONCERNING THE APPROXIMATION OF THE LAWS OF MEMBER STATES RELATIVE TO MACHINES.
We, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCE
hereby declare that the equipment designated below : conforms with the "machines" directive, on the condition that installation, use and maintenance are performed in keeping with recognized workmanship practices and according to the specifications given in the instruction manual.

EG-KONFORMITÄTSERKLÄRUNG

D IN KONFORMITÄT MIT ANHANG II, TEIL A DER NACHSTEHENDEN BESTIMMUNGEN EG-MASCHINENRICHTLINIE
RICHTLINIE DES RATS VOM 14.JUNI 1989 (89/392 EWG), ABGEÄNDERT AM 20.JUNI 1991 (91/368 EWG), ABGEÄNDERT AM 14.JUNI 1993 (93/44 EWG) UND AM 22 JULI 1993 (93/68 EWG) BEZÜGLICH DER ANNÄHERUNG DER GESETZGEBUNGEN DER MITGLIEDSSTAATEN AUF DEM GEBIET DES MASCHINENWESENS.
Wir, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCE
erklären, daß die nachstehend bezeichneten Gerätschaften : der EG-Maschinenrichtlinie konform ist, falls Einbau, Verwendung und Wartung fachgerecht und unter Einhaltung der in der Gebrauchsanleitung enthaltenen Vorschriften erfolgen.

EG FABRIKANTENCONFORMVERKLARING

NL CONFORM BIJLAGE II VAN HET HIERONDER VERMELDE REGLEMENT RICHTLIJN " MACHINES"
DOOR DE RAAD VAN DE EUROESE UNIE OP 14 JUNI 1989 UITGEVAARDIGD ALS EEG-RICHTLIJN 89/392 EN OP 14 JUNI 1993 GEWIJZIGD ALS EEG-RICHTLIJN 93/44 VERVOLGENS OPNIEUW GEWIJZIGD OP 22 JULI 1993 ALS EEG-RICHTLIJN 93/68 INZAKE DE HARMONISATIE VAN DE WETGEVING DER LIDSTATEN BETREFFENDE MACHINES.
De ondergetekenden, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANKRIJK
verklaren dat het hierna vermelde materiaal overeenstemt met de richtlijn «machines» op voorwaarde dat installatie, gebruik en onderhoud vakkundig en volgens de betreffende handleidingen plaatsvinden.

DICHIARAZIONE DI CONFORMITA' "CE"

I CONFORME ALL'ALLEGATO II PARTE A DELLA NORMATIVA SOTTO DIRETTIVA "MACCHINE" DESCRITTA
DIRETTIVA DEL CONSIGLIO DEL 14 GIUGNO 1989 (89/392 CEE) MODIFICATA IL 20 GIUGNO 1991 (91/368 CEE), MODIFICATA IL 14 GIUGNO 1993 (93/44 CEE) E IL 22 LUGLIO 1993 (93/68 CEE) IN SEGUITO ALL'UNIFORMAZIONE DELLE LEGISLAZIONI DEGLI STATI MEMBRI RELATIVE ALLE MACCHINE.
La società DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCIA
dichiara che l'apparecchiatura descritta di seguito : è conforme alla direttiva "macchine", con la riserva che l'installazione, l'utilizzazione e la manutenzione vengano effettuate attenendosi alle regole d'arte e rispettando le procedure descritte nel manuale d'istruzioni.

DECLARACION "CE" DE CONFORMIDAD

E CONFORME AL ANEXO II PARTE A DE LA REGLAMENTACION DIRECTIVAS "MAQUINAS" SIGUIENTE
DIRECTIVA DEL CONSEJO DEL 14 DE JUNIO DE 1989 (89/392 CEE) MODIFICADA EL 20 DE JUNIO DE 1991 (91/368 CEE) MODIFICADA EL 14 DE JUNIO DE 1993 (93/44 CEE) Y EL 22 DE JULIO DE 1993 (93/68 CEE) RELATIVA AL ACERCAMIENTO DE LAS LEGISLACIONES DE LOS ESTADOS MIEMBROS EN LO QUE RESPECTA A LAS MAQUINAS.
Nosotros, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCIA
Declaramos que el material que a continuación se designa : cumple la directiva "máquinas" siempre y cuando la instalación, el uso y el mantenimiento sean efectuados de conformidad con la normativa profesional y cumpliendo las prescripciones del manual de instrucciones.

DECLARAÇÃO "CE" DE CONFORMIDADE

P CONFORME O ANEXO II DA PARTE A DA REGULAMENTAÇÃO DIRECTIVA "MÁQUINAS" ABAIXO
DIRECTIVA DO CONSELHO DO DIA 14 DE JUNHO DE 1989 (89/392 CEE) MODIFICADA NO DIA 20 DE JUNHO DE 1991 (91/368 CEE) MODIFICADA NO DIA 14 DE JUNHO DE 1993 (93/44 CEE) E NO DIA 22 DE JULHO DE 1993 (93/68 CEE) NO QUE SE REFERE À APROXIMAÇÃO DAS LEGISLAÇÕES DOS ESTADOS MEMBROS RELATIVAS ÀS MÁQUINAS.
Nós, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCE
declaramos que o material designado em seguida : está em conformidade com a directiva "máquinas" sob reserva que a instalação, utilização e manutenção sejam efectuadas seguindo as regras da arte e segundo as prescrições da nota de instruções.

EF-OVERENSSTEMMELSESERKLÆRING

DK I OVERENSSTEMMELSE MED BILAG II AFSNIT A I NEDENSTÅENDE "MASKIN"DIREKTIV BESTEMMELSER
RÅDETS DIREKTIV AF 14. JUNI 1989 OM INDBYRDES TILNÆRMELSE AF MEDLEMSSTATERNES LOVGIVNING OM MASKINER (89/392/EØF) OG ÆNDRET DEN 20. JUNI 1991 (91/368/EØF), DEN 14. JUNI 1993 (93/44/EØF) OG DEN 22. JULI 1993 (93/68/EØF).
Underskrevne: DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANKRIG
erklærer hermed, at nedenstående udstyr : er i overensstemmelse med "maskin"direktivet under forudsætning af, at montering, anvendelse og vedligeholdelse foregår i henhold til god faglig praksis og de i vejledningen angivne forskrifter.

"EG"-INTYG OM UPPFYLLANDE

SW I ENLIGHET MED BILAGA 1) DEL A I NEDANSTÅENDE "MASKIN"ÄDIREKTIV BESTÄMMELSE
DIREKTIV FRÅN RÅDET, DEN 14 JUNI 1989 (89/392 EEC) MODIFIERAT DEN 20 JUNI 1991 (91/368 EEC) MODIFIERAT DEN 14 JUNI 1993 (93/44 EEC) OCH DEN 22 JULI 1993 (93/68 EEC) RÖRANDE NÄRMANDE AV MEDLEMSSTATERNAS LAGSTIFTNINGAR FÖR MASKINER.
Vi, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANKRIKE
intygar att nedan beskriven utrustning : överensstämmer med "maskin"-direktivet under förutsättning att den installareas, används och underhålls enligt konstens regler och enligt de beskrivningar som ges i användarinstruktionen.

"EU"-TODISTUS VAATIMUSTEN TÄYTTÄMISESTÄ

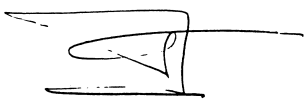
FIN ALLAOLEVAN MÄÄRÄYKSEN LIITTEEN 1) OSAN A MUKAISESTI KONEDIREKTIIVI
NEUVOSTON DIREKTIIVI, 14. KESÄKUUTA 1989 (89/392 EEC), MUUTETTU 20. KESÄKUUTA 1991 (91/368 EEC), MUUTETTU 14. HEINÄKUUTA 1993 (93/44 EEC) JA 22. HEINÄKUUTA 1993 (93/68 EEC) KOSKIEN JÄSENVALTIOIDEN KONEISIIN LIITTYVIEN LAINSÄÄDÄNTÖJEN LÄHENTYMISTÄ.
Me, DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE RANSKA
todistamme, että seuraavassa selostettu varustus : vastaa konedirektiiviä edellyttäen, että se asennetaan, sitä käytetään ja huolletaan sääntöjen ja käyttöohjeissa olevien selostusten mukaisesti.

ΔΗΛΩΣΗ ΠΙΣΤΟΤΗΤΑΣ "ΕΚ"

GR ΣΥΜΦΩΝΑ ΜΕ ΤΟ ΠΑΡΑΡΤΗΜΑ ΙΙ ΜΕΡΟΣ Α ΤΗΣ ΚΑΤΩΤΕΡΩ ΟΔΗΓΙΑ "ΜΗΧΑΝΗΜΑΤΑ" ΡΥΘΜΙΣΗΣ
ΟΔΗΓΙΑ ΤΟΥ ΣΥΜΒΟΥΛΙΟΥ ΤΗΣ 14ης ΙΟΥΝΙΟΥ 1989 (89/392 ΕΟΚ) ΠΟΥ ΤΡΟΠΟΠΟΙΗΘΗΚΕ ΤΗΝ 20η ΙΟΥΝΙΟΥ 1991 (91/368 ΕΟΚ), ΤΗΝ 14η ΙΟΥΝΙΟΥ 1993 (93/44 ΕΟΚ) ΚΑΙ ΤΗΝ 22α ΙΟΥΛΙΟΥ 1993 (93/68 ΕΟΚ), ΠΟΥ ΑΦΟΡΑ ΤΗΝ ΠΡΟΣΕΙΤΙΣΗ ΤΩΝ ΝΟΜΟΘΕΣΙΩΝ ΤΩΝ ΚΡΑΤΩΝ ΜΕΛΩΝ ΣΧΕΤΙΚΑ ΜΕ ΤΑ ΜΗΧΑΝΗΜΑΤΑ.
Η DOSAPRO MILTON ROY 27360 PONT SAINT PIERRE FRANCE
δηλωνουμε ότι το παρακατω περιγραφόμενο μηχανημα :
ειναι συμφωνο προς την οδηγια "Μηχανηματα" , με την επιφυλαξη ότι η εγκατασταση, η χρηση και η συντηρηση του θα πραγματοποιουνται συμφωνα προς τους κανονες της τεχνης και τις προδιαγραφες που οριζονται από τις οδηγιες χρησης.

SERIE SERIEN SARJA	SERIAL SERIEÄ ΣΕΙΡΑΣ	TYPE TIPO ΤΥΠΟΣ	TYP TYYPPI
D		D2 / D4 / D6 / D10 / D17 / D34 / D50 D120 / D170 / D220	
D Pulse		D6 / D10 / D17 / D34 / D50 D120 / D170	
G		GA / GC / GB	
G Pulse		GA / GC	
MAXROY		RD / RA / RB	
MROY		A / B	
MILROYAL		B / C / D	
PRIMEROYAL			

Directeur Industriel
Olivier PERRIN



GUARANTEE

The vendor guarantees his products according to the D.M.R. general conditions of sale.

The vendor' s guarantee only covers the replacement or the repair, at his cost and in his factory, of all parts acknowledged by his technical services as being defective due to an error in conception, of material or of execution.

It is the purchasers responsability to prove the said defects. The guarantee does not cover the replacement of wear parts mentioned in part V - Preventive Maintenance.

The vendor reserves the right to modify all or part of his products in order to satisfy the guarantee. The guarantee does not cover charges arising from dismantling, assembly, transport and movements.

The replacement of one or several parts, for whatever reason, does not prolong the period of guarantee.

The guarantee is not applicable notably in the following cases :

- installation not in accordance with standard current practice.
- deterioration or accident resulting from negligence.
- lack of surveillance or maintenance.
- modifications to conditions of use.
- chemical corrosive or erosive attack. The proposed materials of construction are recommendations subject in all cases to verification and acceptance by the client. The recommendations, based on the experience of the vendor and the best available information, do not guarantee against wear or chemical action.

The guarantee ceases :

- if the storage of the material, outside the vendors factory, does not conform to his recommendations or to current standard practices.
- in case of work or dismantling of the material by someone who does not respect written recommendations of the instruction manual (when replacing wear parts).
- if parts from another origin are substituted for the original parts supplied by the manufacturer.

The purchaser cannot call on guarantee claims to suspend, delay or adjust payments.

INDUSTRIAL OWNERSHIP

This manual can only be used by the purchaser or the user. It cannot be distributed, published, reproduced (partially or totally) or generally communicated to third parties without the advance, formal written authorisation of the vendor.
Any breach of these rules may result in legel action being taken.

DOSAPRO MILTON ROY

F FRANCE

ASSISTANCE TECHNIQUE : Tél. 33.(0.2.32.68.30.02 Fax . 33.(0)2.32.68.30.96
PIECES DE RECHANGE : Tél. 33 (0)2.32.68.30.01 Fax . 33.(0)2.32.68.30.92
ACCUEIL : Tél. 33.(0)2.32.68.30.00 Fax . 33.(0)2.32.68.30.93
10 Grande Rue 27360 Pont-Saint-Pierre ,France
www.dosapro.com email: contact@dosapro.com

E ESPAÑA

ASISTENCIA TECNICA Y PIEZAS DE REPUESTOS :
Tél. 34.91 517 80 00 - Fax. 34.91 517 52 38
C/Embajadores, 100 - 28012 MADRID
www.dosapro.es email: madrid@dosapro.es

I ITALIA

ASSISTENZA TECNICA E PARTI DI RICAMBIO :
Tel. 39.039 60.56.891 - Fax. 39.039 60.56.906
Centro Direzionale Colleoni - Via Paracelso 16
Palazzo Andromeda - Ingresso 1
20041 AGRATE BRIANZA (Ml)
www.miltonroy.it

GB UNITED KINGDOM

TECHNICAL ASSISTANCE AND SPARE PARTS :
Tel. 44.11.89.77 10 66 - Fax. 44.11.89 77 11 98 -
Oaklands Park, fishponds Road, WOKINGHAM - Berkshire RG 11 2FD
www.miltonroypumps.co.uk

USA UNITED STATES

L.M.I. (LIQUID METRONICS, INC.)
Tel : 978 263-9800 - Fax : 978 264-9172
8 Post Office Square Acton, MA 01720
www.lmipumps.com

FLOW CONTROL DIVISION
TECHNICAL ASSISTANCE AND SPARE PARTS :
Tel. 215.441.0800 - Fax.215.293.0468
201 Ivyland Road, IVYLAND, PA, 18974
www.miltonroy.com email: customercervice@miltonroy.com

OTHER COUNTRIES :

Representatives in all countries, contact in FRANCE:
INTERNATIONAL SALES DEPARTMENT
Tel. 33.2.32.68.3004 - Fax. 33.2.32.68.3094
www.dosapro.com email: contact@dosapro.com