

INSTRUCTION MANUAL

FOR INSTALLATION,
OPERATING,
AND MAINTENANCE.



Pump

SERIES GM

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

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GUARANTEE

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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.
- Store protected from adverse weather conditions.

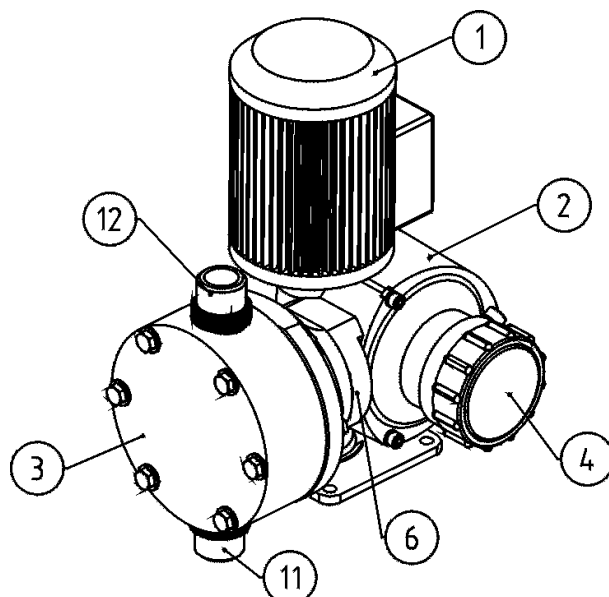
I - 2. DESCRIPTION

The GM 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):

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



1	Motor	6	Liquid end mounting assembly
2	Mechanical assembly	11	Valve assembly (suction)
3	Liquid end	12	Valve assembly (discharge)
4	Stroke adjustment knob		

Fig. 1.2a: GM pump

I - 3. OPERATING PRINCIPLE OF THE PUMP

See Figures 1.3b and 1.3c

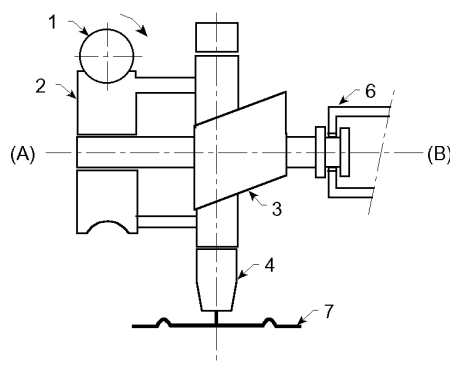
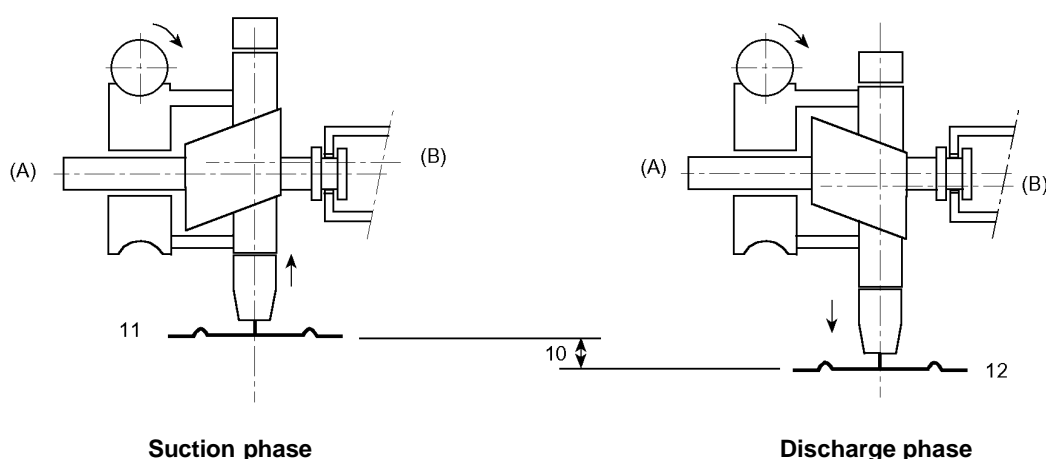


Fig. 1.3b : Setting to zero stroke



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.

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:

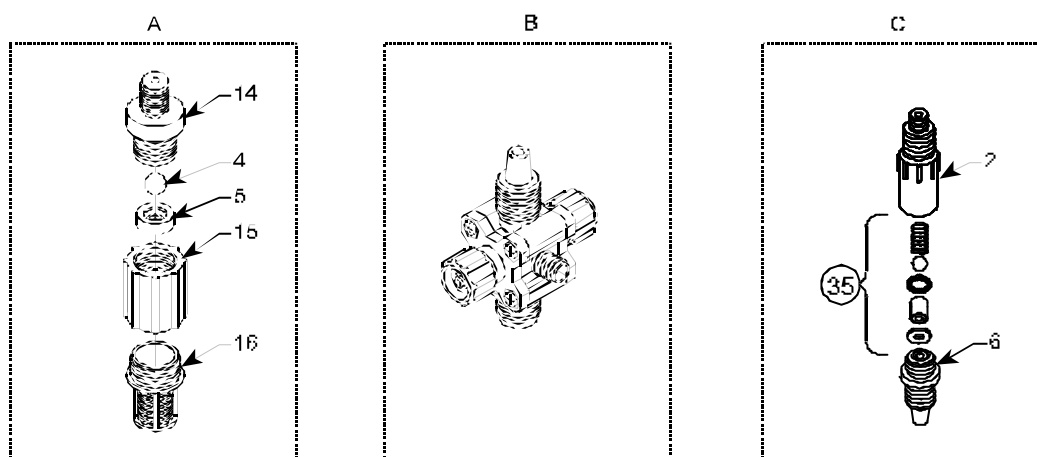
- avoid any possible risk to themselves or to third parties,
- ensure the reliability of the equipment,
- avoid any error or pollution due to incorrect operation.

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, oxidizing/reducing solutions, ...).



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

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 equipped with the filter downstream 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.

Typical installations are shown schematically in Figure 2.1a.

II - 2. DRIP COLLECTION

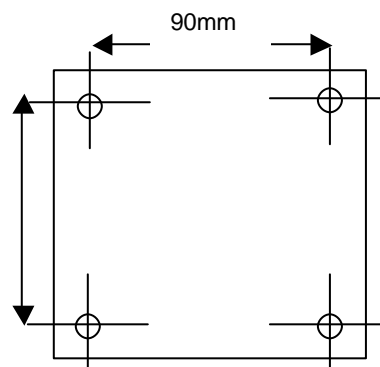
Provide for outlets so that any leak or drips can be easily drained off without any danger. This is especially important in the case of harmful liquids.

See Figure 1.2a.

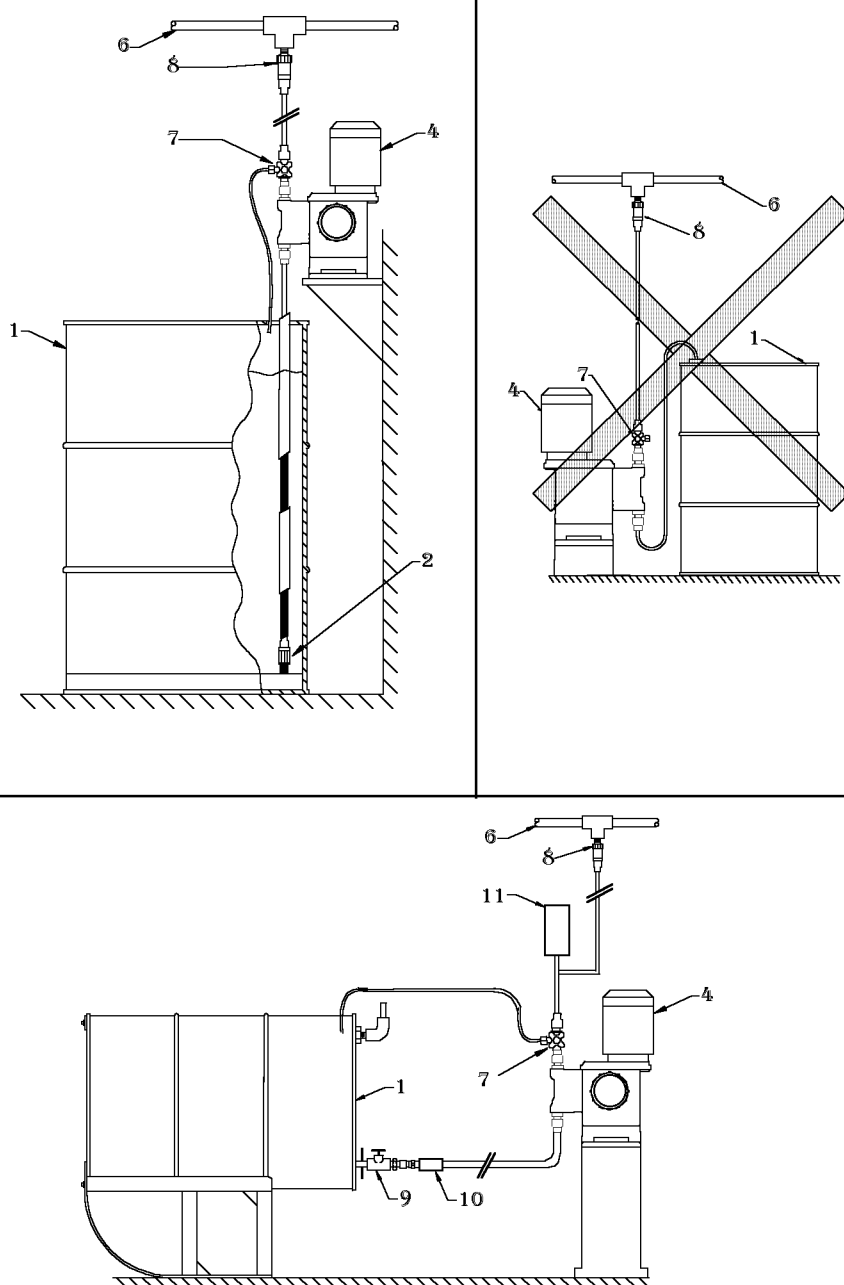
Position a tray under the plain hole (detection port) located at the bottom of the liquid end mounting assembly to collect leaks in the event of rupture of the diaphragm or boot.

II - 3. 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	Shut-off valve
4	Metering pump	10	Filter
6	Utilization	11	Pulsation dampener

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

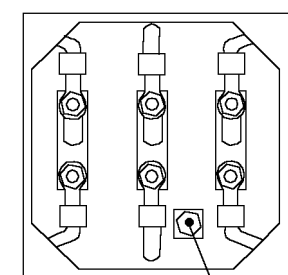
For connection in SINGLE-PHASE mode, see Figure 2.5d.

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

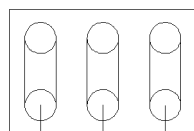
CAUTION : Do not forget to connect the earth terminal on the motor [PE] (Fig. 2.5a) to the equipment earth conductor.

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

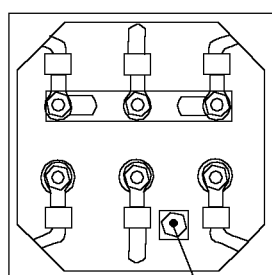


PE

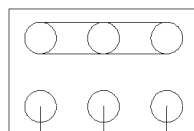


A B C

Fig. 2.5b :
230 V delta connection

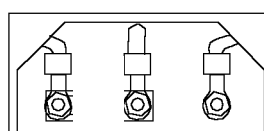


PE



A B C

Fig. 2.5c :
400 V star connection



A C B

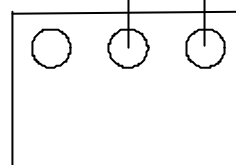


Fig. 2.5d :
Single-phase connection

PART III - START UP

III - 1. PROCEDURES BEFORE START UP

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

See Figure 1.2a.

- Check that the pump is secured to its support (Chapter II - 4. Setting up).
- Check the pipe fitting torque.
- 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.

To reverse the motor's direction of rotation, invert A and (See Figure 2.5b or 2.5c).

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 with 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.

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 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

PART IV - ROUTINE MAINTENANCE

IV-1. GENERAL

- 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

BEFORE SERVICING

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.
4. 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 (**not necessary for chapter V and V-1**)

RESTARTING

1. Refill the housing (see Chapter LUBRICATION), with the pump being laid onto the opposite side of liquid end. Remove any overflow oil immediately with a degreasing agent
2. Connect up the pump hydraulically.
3. Check that the capacity is set to « 0% ».
4. Check that there are no suspicious noises when starting up.
5. Set the pump capacity to « 100 % » to obtain quicker priming.
6. After priming, set the pump to the desired capacity and lock the stroke adjustment knob

IV-2. 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-3
Every 3 months	Check by listening (no knocking) - if unsatisfactory ->		Chapter IV-3
Every 6 months (or 1,500 hours)	Cleaning of foot valve and valve assemblies		Chapter IV-3
Frequency to be defined according to process (approx. 1,000 hours)	Check on compliance of flow rate		Chapter IV-3
Every year (or 3,000 hours)		THE FOOT VALVE Balls and seats kits or sets of cartridges depending on model),	Chapter IV-3
Every year (or 3,000 hours)		VALVE ASSEMBLIES Balls and seats kits or sets of cartridges (depending on model),	Chapter V
Every 2 years (or 6000 hours)		Replacing the diaphragm	Chapter V-1
Every 2 years (or 6000 hours)		Replacing the secondary diaphragm	Chapter V-2

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 :
Liquid pumped :
Date of commissioning :

S/N. :

[illegible]

Fig. 3.4a : Model Maintenance Sheet

IV-3. BASIC MAINTENANCE

OCCURRENCE OF A LEAK FROM DETECTION PORT

Determine whether the product collected at the detection port is lubricating oil or the pumped fluid.

- If the product is pumped fluid, the diaphragm is faulty. Proceed with its replacement (see Part V-2).
- If the product is lubricating oil, the secondary diaphragm is faulty. Proceed with its replacement (see Part V-3).

CLEANING THE FOOT VALVE AND VALVE ASSEMBLIES

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

CLEANING THE FOOT VALVE

See figure 1.4a.

- Preliminary operations: Part IV-1
- 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 IV-1

CLEANING THE VALVE ASSEMBLIES

- Preliminary operations: Part IV-1
- Removing the valve assemblies: Part V
- Reinstalling the valve assemblies: Part V
- Restarting: Part IV-1

CLEANING THE INJECTION NOZZLE

See Figure 1.4a.

- Preliminary operations: Part IV-1
- 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 IV-1

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

CHECKING THE PUMP CAPACITY

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

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.

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 - 2.)
- The pump is used in conditions it was not designed for.

PROBLEMS WITH NOISY MECHANICAL PARTS

- The tangential wheel is faulty. Replace the « wheel » (see Part VI-2).
- A bearing is faulty. Provide for the replacement of either the « whole A » or the ball bearing assembly [404] (see Part VI-2).

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.

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 »] (see Part VI).

A bearing is faulty. Provide for the replacement of either the « wheel - connecting rod » or the ball bearing [404] (see Part VI).

The leak-tightness of the suction circuit is unsatisfactory: repair or replace the piping.

ORDERING SPARE PARTS

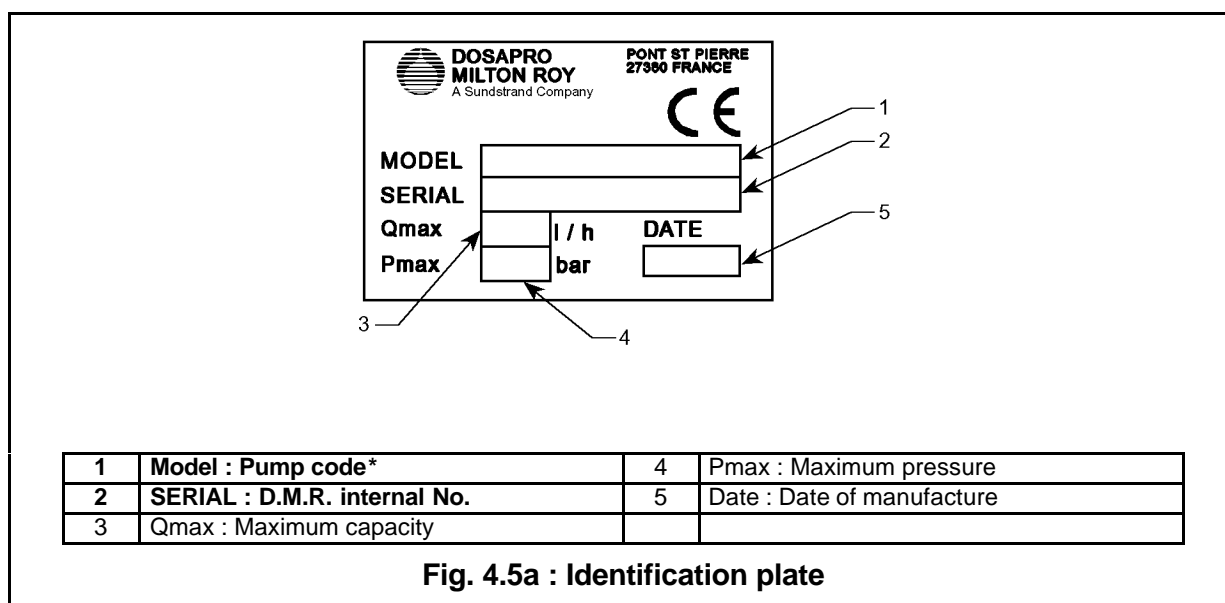
A complete spare parts list is given at the end of this manual for the mechanical assembly.

A complete spare parts list is joined to this manual for the liquid end assembly

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.

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



* Pump code

Model **GM** **2** **P** **1** **R** **3**

Pump type **GM** Liquid end size **2** Liquid end material **P** Fitting **1** Motor **R** Motor **3**

V Assembly/Disassembly of the check valves

Drawing : 1066105100D01 rev00

GM005GB

Disassembly		Assembly
A	<ol style="list-style-type: none"> 1. Unscrew the part [6] 2. Remove the parts [2],[3],[4] 3. Clean the parts 4. Clean the tapped holes in the liquid end [1] 	<ol style="list-style-type: none"> 1. Fit the parts [5],[C],[4],[3] in the valve assembly body [6] (taking care to the assembly direction of the carbridge). 2. Fit a seal [2] under the valve assembly body 3. Screw the valve assembly body [6] into the liquid end body[1] (taking care to the assembly direction) (screwing by hand)
B	<ol style="list-style-type: none"> 1. Unscrew the part [6] 2. Remove the parts [2],[3],[4],[7] 3. Clean the parts 4. Clean the tapped holes in the liquid end [1] 	<ol style="list-style-type: none"> 1. Insert the balls [7] 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 into the liquid end body [1]. Tighten to a torque of 20 m.N. 4. Tighten the union (to a torque of 20 m.N).
C	<ol style="list-style-type: none"> 1. Unscrew the part [6] 2. Remove the parts [3],[4],[8] 3. Clean the parts 4. Clean the tapped holes in the liquid end [1] 	<p style="text-align: center;">For the discharge circuit</p> <ol style="list-style-type: none"> 1. Insert a ball seat [3] in the liquid end [1] (taking care to comply with the direction of fitting). Insert a ball [4]. Insert a spring [8] in the valve assembly body [6] or the 4-function valve body. 2. Screw the valve assembly body. 3. Tighten by 1/8 of a turn to ensure leak-tightness. <p style="text-align: center;">For the suction circuit</p> <ol style="list-style-type: none"> 1. Install a spring [8] in the liquid end body [1]. Fit a ball seat [6] (taking care to comply with the direction of fitting) and a ball [3] on the valve assembly body [4]. 2. Screw the valve assembly body into the liquid end [1] 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.
D	<ol style="list-style-type: none"> 1. Unscrew the part [6] 2. Remove the valve assembly in order to replace it 3. Clean the tapped holes in the liquid end [1] 	<ol style="list-style-type: none"> 1. Check that O-rings [3] have been placed correctly. 2. Screw the valve assembly body [6] in the liquid end body [1] (taking care to the assembly direction) (screwing by hand) (complying with the arrow indicating the direction of flow of the liquid)

4

3

2

1

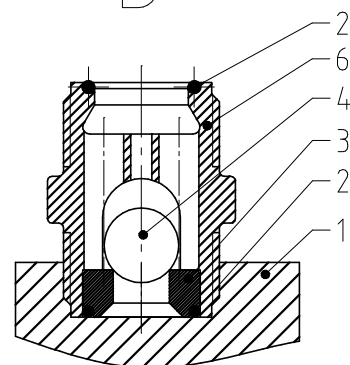
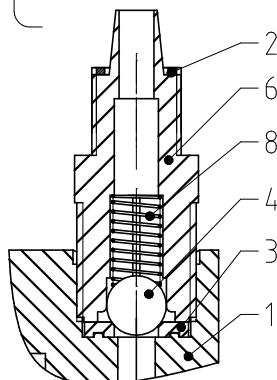
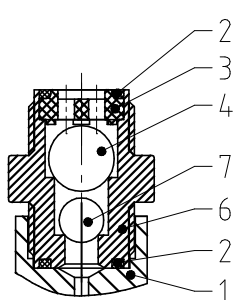
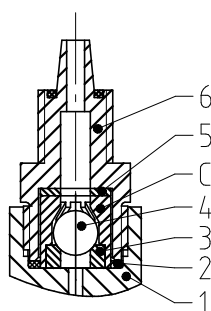
A

B

C

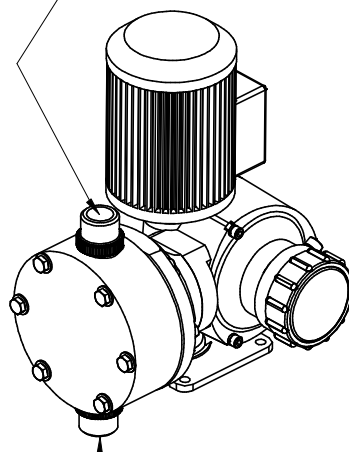
D

D



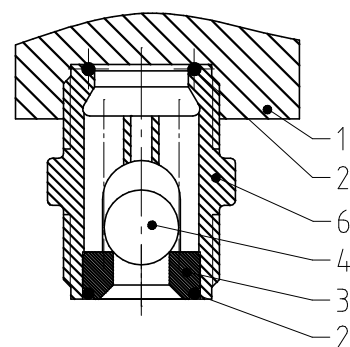
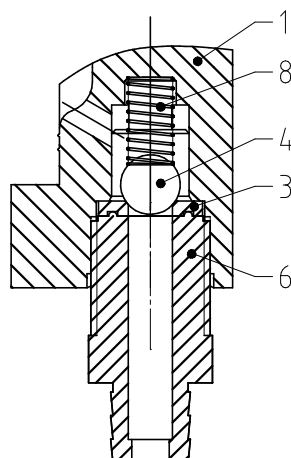
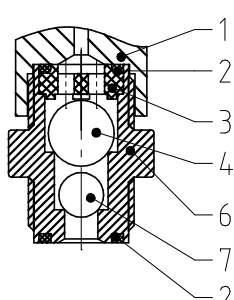
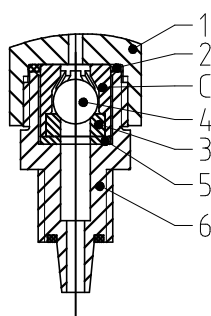
D

C



C

B



B

A

B

C

D

A

A

POMPE GM/GM PUMP

Boîte à clapets
Check valves

Revision : 00

106.6105.100.D01

4

3

2

1

V-1 Assembly / Disassembly of the diaphragm

Drawing 1066105100D02 rev00

GM005-1GB

Disassembly

Assembly

Torque value

Liquid end size

1 & 4

40

50

[103]

3 m.N

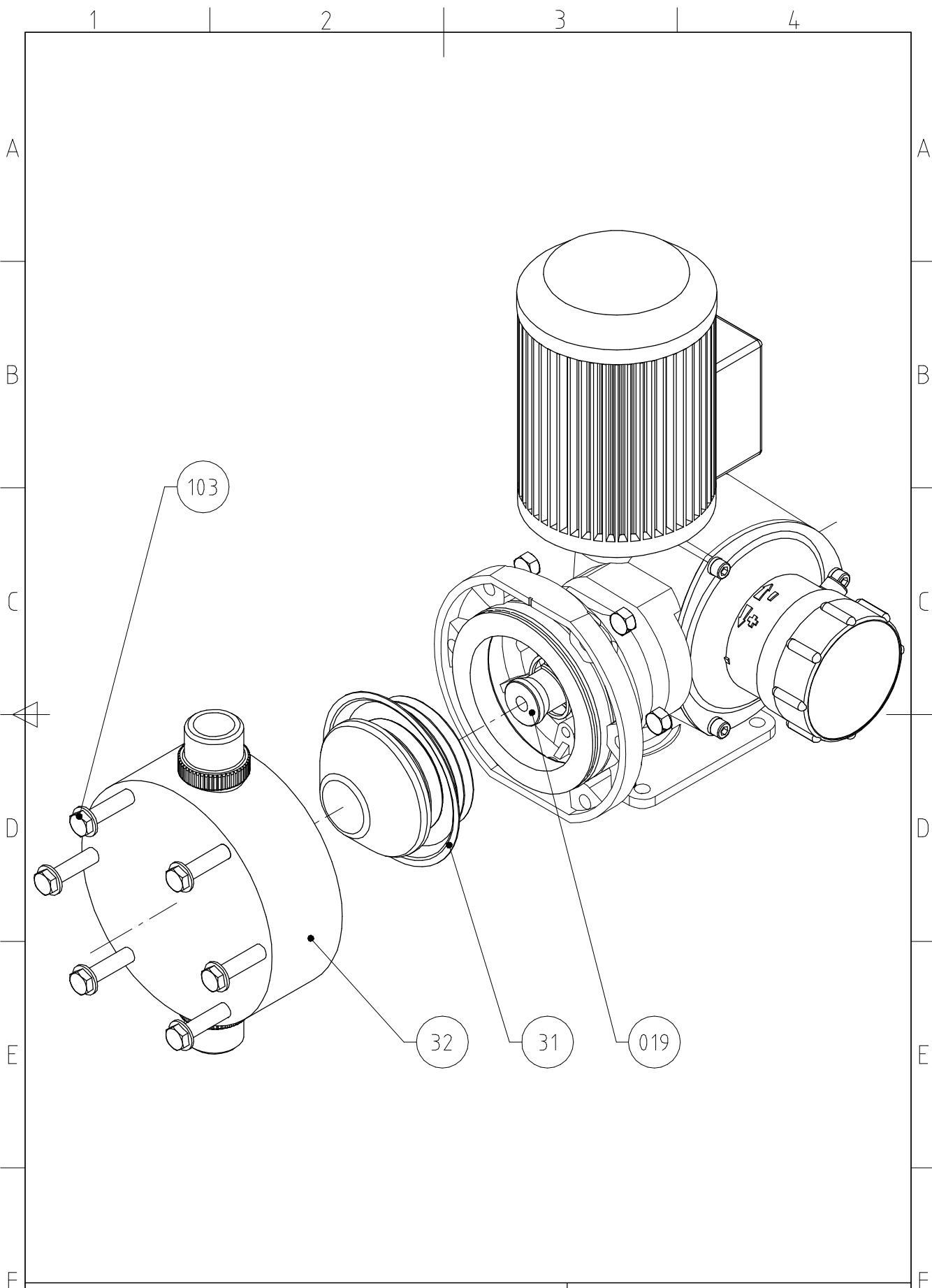
10 m.N

7 m.N

1. Unscrew the screw [103].
2. Remove the liquid end [32].
3. Set the stroke adjustment knob to « 100 % ».
4. Remove the motor casing and rotate the motor by hand in order to place the diaphragm [31] in the « front » position
5. Hold the outer edge of the diaphragm and turn it anticlockwise in order to unscrew it.
6. Remove the diaphragm equipped with its support

1. Screw the diaphragm [31] fully home.
2. Rotate the motor by hand in order to place the diaphragm in the « back » position.
3. Position the liquid end [32] on the diaphragm
4. Screw the screw [103]. (like a star)
5. Fit the motor casing.
6. Set the stroke adjustment knob to « 0 % ».

If the part [019] have been remover refer to the chapter V-2



POMPE GM/GM PUMP

**Doseur
Liquid end**

Revision : 00

106.6105.100.D02

V-2 Assembly / Disassembly of the secondary diaphragm

Drawing 1066105100D04 rev00

GM005-2GB

Disassembly

Assembly

Perform the following steps before this operation :

V-1

Position

Torque value

[435A]

3 m.N

[019]

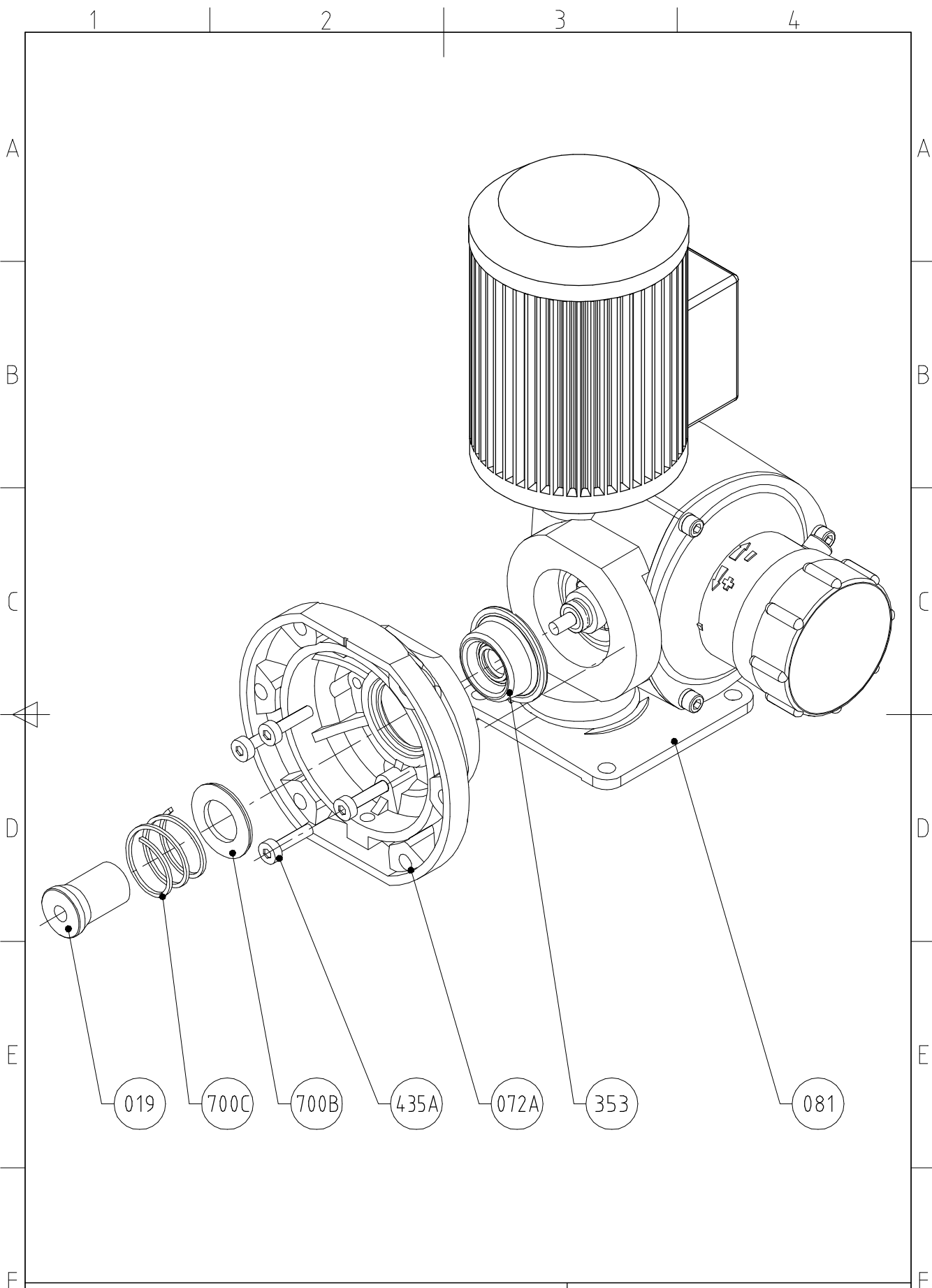
Mechanicam stop

1. Unscrew the part [019]
2. Remove the parts [700C],[700B]
3. Unscrew the screws [435A]
4. Remove the part [072A]
5. Remove the secondary diaphragm [353]

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..

If the housing was drained, refill it (see Chapter 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.

1. Position the secondary diaphragm [353] in compliance with the direction of fitting.
2. Screw the part [019]
3. Position the spacer [072], placing the detection port facing downwards (with the pump in the operating position)
4. Screw the screws [435A]
5. Fit the parts [700B],[700C]



POMPE GM/GM PUMP
Soufflet d'étanchéité
Secondary diaphragm

Revision : 00
106.6105.100.D04

VI Assembly / Disassembly of the adjusting knob

Drawing 1066105100D05 rev00

GM006GB

Disassembly

Assembly

Position

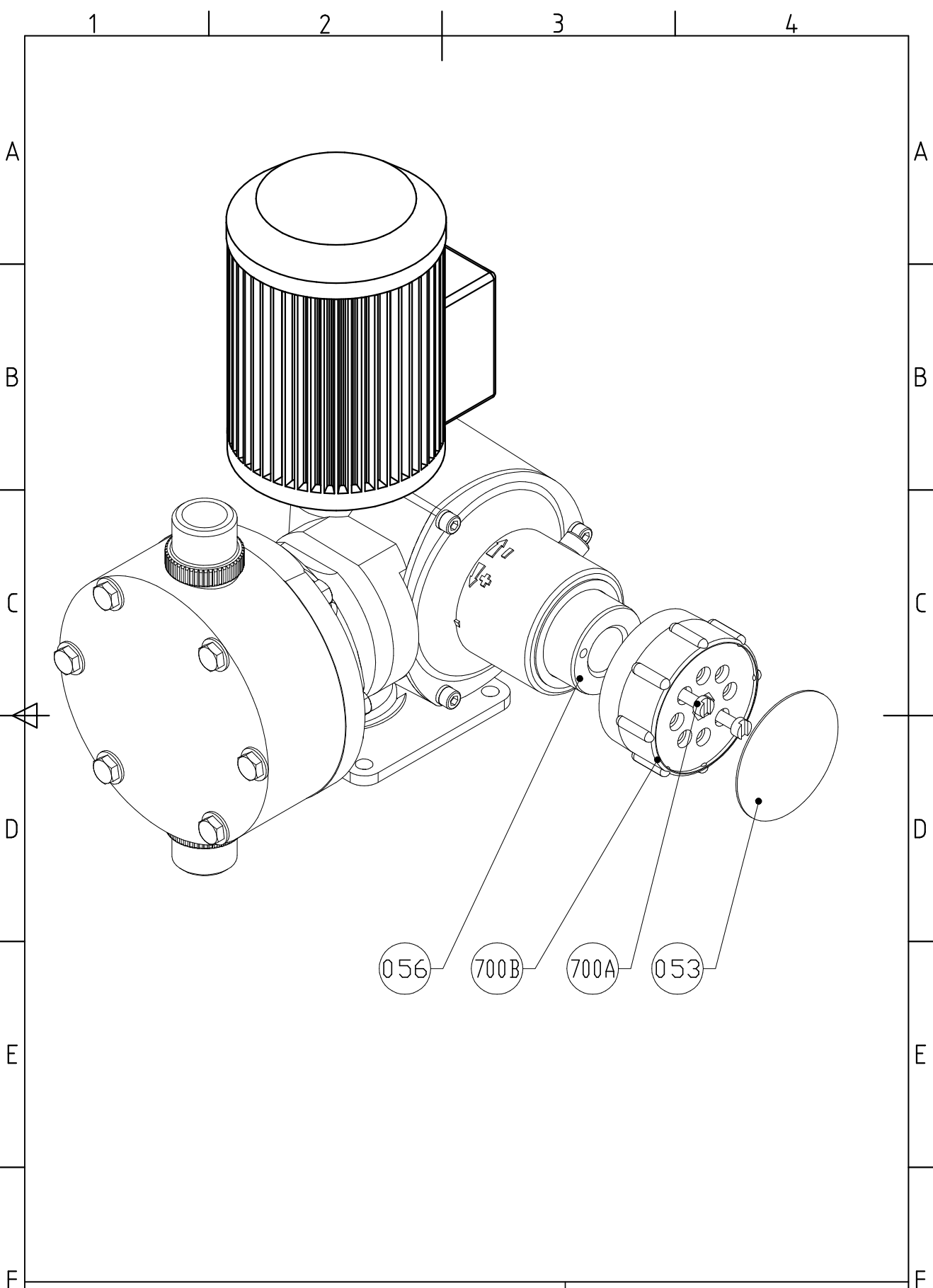
Torque value

[700A]

Mechanical stop

1. Remove the part [053]
2. Unscrew the screw [700A]
3. Remove the part [700B]

1. Turn the part [056] in the negative direction until mechanical stop
2. Turn the part [056] of ½ turn in the positive direction
3. Set the part [700B] to « 0% »
4. Screw the screws [700A] (in the more close tapped holes)
5. Glue the part [053]



POMPE GM/GM PUMP

Réglage de course
Adjusting stroke

Revision : 00

106.6105.100.D05

VI-1 Assembly / Disassembly of the motor

Drawing 1066105100D06 rev00

GM006-1GB

Disassembly

Assembly

Position

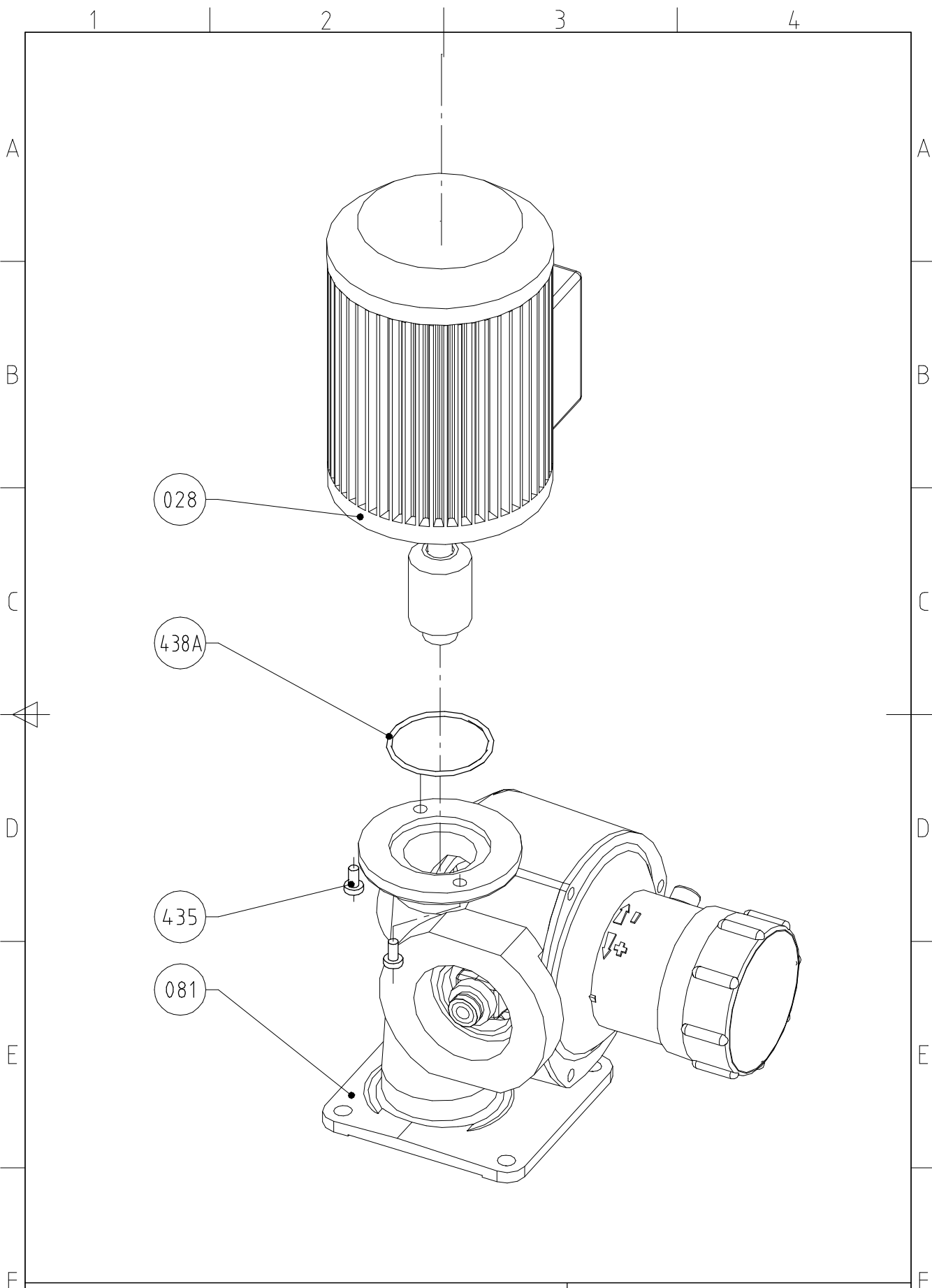
Torque value

[435]

Mechanical stop

1. Unscrew the screws [435]
2. Remove the motor [028]
3. Remove the part [438]

1. Fit the parts [438],[081]
2. Fit the motor [028]
3. Screw the screws [435]



POMPE GM/GM PUMP

**Moteur
Motor**

Revision : 00

106.6105.100.D06

VI-2 Assembly / Disassembly of the mechanical assembly

Drawing 1066105100D03 rev00

GM006-2GB

Disassembly

Assembly

Position

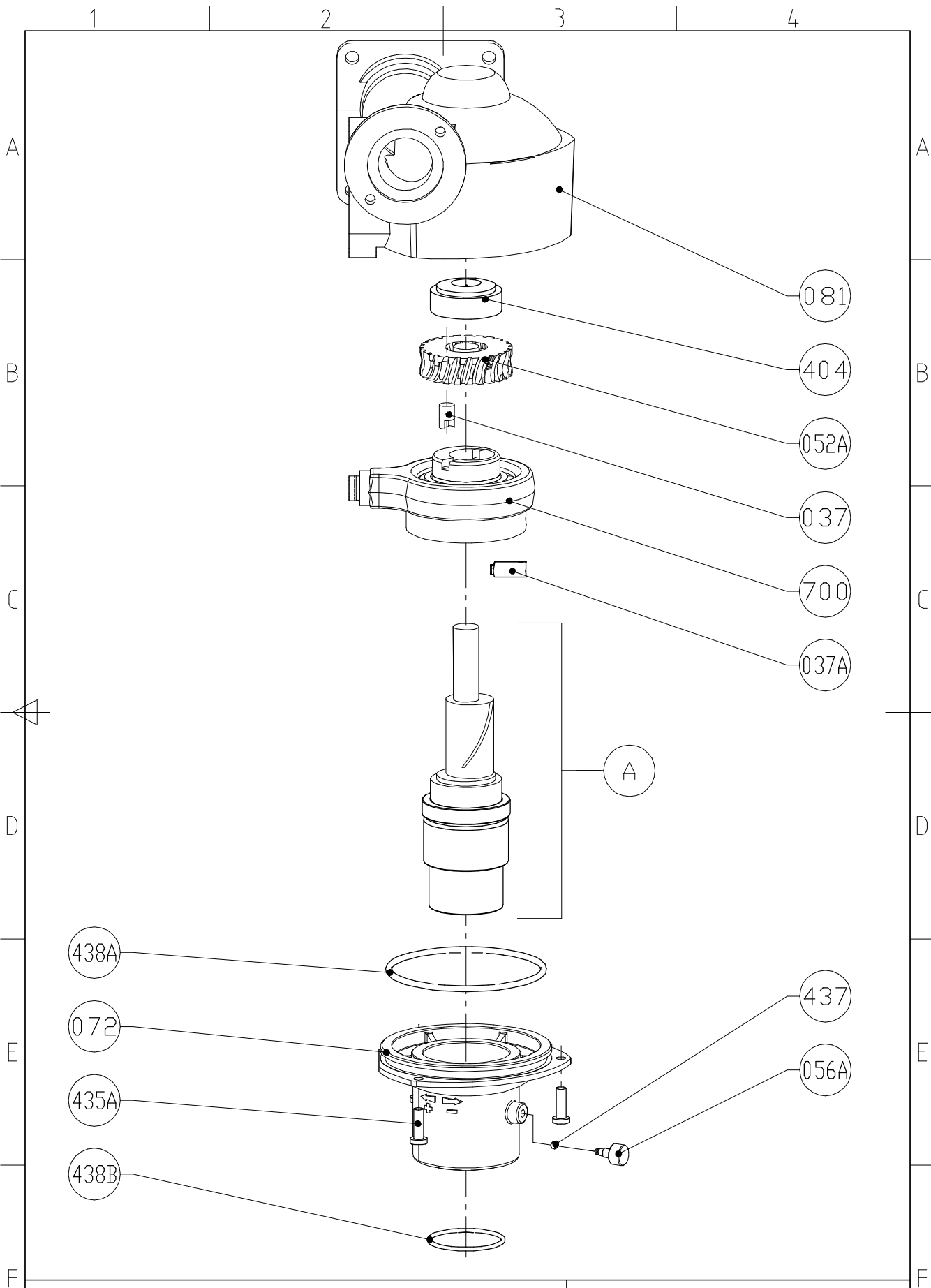
Torque value

[435A]

Mechanical stop

1. Unscrew the screws [435A]
2. Remove the whole from the housing
3. Unscrew the screw [056A]
4. Unscrew the part [A] (left-hand)
5. Remove the parts [052A],[037],[700],[037A]
6. Remove if necessary the bearing [404]

1. Fit the parts [072],[438B],[438A]
2. Oil the thread of the whole [A]
3. Screw the whole [A] on the part [072] (left-hand)
4. Fit the parts [437],[072]
5. Screw the screw [056A]
6. Fit the parts [037A],[700]
7. Fit the parts [404],[081] (with a press)
8. Fit the parts [700],[A]
9. Fit the parts [700],[037],[052A]
10. Introduce the whole into the housing
11. Screw the screws [435A]



POMPE GM/GM PUMP

**Ensemble mécanique
Mechanical assembly**

Revision : 00

106.6105.100.D03

TECHNICAL CHARACTERISTICS

Code of pump	GM2	GM2	GM10	GM25	GM50	GM90	GM120	GM170	GM240	GM330	GM400	GM500
Max. flow rate in l/h	Refer to the characteristics plate											
Steady state accuracy (flow rate between 10 % and 100 %)	± 3 %					± 1,5 %						
Max. discharge pressure, in barg	Refer to the characteristics plate											
Max. suction pressure, in barg (Pasp)	5					4				3		
Suction head, in meters water head (Ha)	4											
Priming suction head, in meters water head	2											
Noise level, in dB A	< 70											
Maximum ambient temperature	-10°C - +40°C (14°F to 104°F)											
Maximum temperature of the fluid pumped	-10°C - +40°C (14°F to 104°F)											

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 : 0.20 l.
- oil : RENEP SINTONEP (FUCHS)
- Ambient temperature: - 10°C to +40°C (14°F to 104°F)

F			DECLARATION "CE" DE CONFORMITE
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 règles de l'art et selon les prescriptions définies dans la notice d'instructions.			
GB			"EC" DECLARATION OF CONFORMITY
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), MODIFIED 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.			
D			EG-KONFORMITÄTSEKHLÄRUNG
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.			
NL			EG FABRIKANTENCONFORMVERKLARING
CONFORM BIJLAGE II VAN HET HIERONDER VERMELDE REGLEMENT RICHTLIJN " MACHINES"			
DOOR DE RAAD VAN DE EUROPESE 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.			
I			DICHIARAZIONE DI CONFORMITA' "CE"
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.			
E			DECLARACION "CE" DE CONFORMIDAD
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.			
P			DECLARAÇÃO "CE" DE CONFORMIDADE
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.			
DK			EF-OVERENSSTEMMELSESEKHLÄRUNG
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).			
Underskrevet:	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.			
SW			"EG"-INTYG OM UPPFYLLANDE
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
intyggar att nedan beskriven utrustning : överensstämmer med "maskin"-direktivet under förutsättning att den installeras, används och underhålls enligt konstens regler och enligt de beskrivningar som ges i användarinstruktionen.			
FIN			"EU"-TODISTUS VAATIMUSTEN TÄYTTÄMISESTÄ
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.			
GR			ΔΗΛΩΣΗ ΠΙΣΤΟΤΗΤΑΣ "ΕΚ"
ΣΥΜΦΩΝΑ ΜΕ ΤΟ ΠΑΡΑΡΤΗΜΑ ΙΙ ΜΕΡΟΣ Α ΤΗΣ ΚΑΤΩΠΕΡΩ 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 ΠΡΟΣΕΛΙΤΙΣΗ ΤΩΝ ΝΟΜΟΘΕΣΙΩΝ ΤΩΝ ΚΡΑΤΩΝ ΜΕΛΩΝ ΣΧΕΤΙΚΑ ΜΕ ΤΑ ΜΗΧΑΝΗΜΑΤΑ.			
Η	DOSAPRO MILTON ROY	27360 PONT SAINT PIERRE	FRANCE
δηλώνουμε ότι το παρακάτω περιγραφόμενο μηχανήμα :			
είναι σύμφωνο προς την οδηγία "Μηχανήματα", με την επιφύλαξη ότι η εγκατάσταση, η χρήση και η συντήρηση του θα πραγματοποιούνται σύμφωνα προς τους κανόνες της τεχνικής και τις προδιαγραφές που ορίζονται από τις οδηγίες χρήσης.			

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	
F		F200 / F400 / F600	
G		GA / GC / GB / GM	
G Pulse		GA / GC	
MAXROY		RD / RA / RB	
MROY		A / B / XA / XB / XT / XW	
MILROYAL		B / C / D	
PRIMEROYAL		Tous types – All models	

Directeur Industriel
Olivier PERRIN



GUARANTEE

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

The guarantee for components and sub-assemblies not fabricated by the vendor is limited to that given by the supplier.

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 purchaser's responsibility to prove the said defects. The guarantee does not cover the replacement of wear parts mentioned in part IV -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, outwith the vendor's 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 justify differing 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 legal action being taken.



F

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E

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I

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USA

UNITED STATES

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Tel. (215) 441.0800- Fax.(215) 441.8620 - Télex 4761 138
Internet : www.miltonroy.com

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