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Notice technique
Instruction manual
Technische Beschreibung

GROUPE DE POMPAGE

PUMPING UNIT

TYPES : DR YTEL 100 - DRYTEL 100



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NOTES

READ THIS MANUAL COMPLETELY BEFORE UNPACKING AND INSTALLING THE UNIT

Check the crates for damage in shipping. Notify ALCATEL and shipping company of any damage.

DO NOT UNPACK UNIT UNTIL READY TO INSTALL.

The guaranty is in effect only if the instructions in this manual are followed.

RETURN FOR REPAIR OR MAINTENANCE WORK

When returning equipment to our factories for repair or maintenance by our After-Sales Service, we would request you to :

. let us know in writing, if your pump has been used for applications involving toxic or dangerous products, such chlorine, fluorine and their derivatives, etc... Please specify the nature of the product used, if this is the case.

. If high risk or contaminating products, such as arsenic and its compounds, cyanide, etc... have been used, we are only able to carry out work on your equipment after decontamination performed and certified by your company, or by a specialist.

We advise the user that :

- The pumping unit must be handled by means of the four lifting rings on the housing.
- For the initial start up, or when the pump is not used for a 2 months period, the MDP should be operated for approximately 5 minutes at atmospheric pressure (see section 3.4).
- It is necessary to lubricate periodically the ball-bearings (see chapter 5.2.2).

CHAPTER 1 - DESCRIPTION

Drytel 100 includes the following equipment :

- a molecular drag pump, MDP 5030 CP, water or air cooled.
- a membranes pump standard for DRYTEL 100 model or chemical for DRYTEL 100 C model.
- a solid-state frequency converter and electronic controls
- an automatic valve to vent the membrane pump
- a power cord

1.1 - PUMPING SYSTEM

The Drytel is an oil-free, two stage pumping system capable of operation from atmospheric pressure to 10^{-6} mbar. The Drytel utilizes an Alcatel model 5030 CP molecular dry pump backed by an oil-free membranes pump.

DRYTEL 100 standard model is used for air and non corrosive gases pumping.

DRYTEL 100 C chemical model, is particularly recommended for corrosive gases pumping.

Inlet flange : NW 100 (100 mm O.D.)

Exhaust flange : A filter is installed on the exhaust port to reduce the sound of the membrane pump. If connection to a separate exhaust system is required then the filter may be removed in order to utilize the fitting on the exhaust port (connection Rp 1/4). Connect the "inlet gas and piped exhaust" option on this exhaust port.

1.2 - CONTROL SYSTEM

The control system located within the Drytel frame includes the following :

- the frequency converter which powers the MDP 5030 CP.
- the electronic controls which allow the sequential starting of the pumps.
- the fan which ventilates the inside of the body
- the electrical interfacing of the different components (converter, pumps and valves).

1.21. FRONT PANEL (figure 4)

It includes :

a) a two-position control switch which has three functions :

- . Power indicator - When the Drytel is plugged in and power is supplied to the package the switch is illuminated.
- . On/off switch - To start Drytel push the switch in at the "1" position. To stop the package push the switch in at the "0" position.
- . Thermal protection - In the event of excessive current draw the package is shut off.

b) Three lamps which indicate :

An orange lamp labeled "< 27 000" which indicates that the pump is running at less than full speed. The orange lamp is on while the pump is accelerating after start-up or when there is a high pressure overload.

A green lamp labeled "= 27 000" which indicates that the pump is running at the full speed of 27 000 RPM.

Note : when the MDP is started, the green lamp flashes once.

A red lamp "FAULT"

It is normally off. When it is on, it indicates one of the following :

- an external or an internal malfunction of the converter (spikes on the line)
- a start up time or an overload which has lasted more than 8 minutes (± 1 minute)
- temperature of the pump has exceeded 55° C. (131° F) (insufficient cooling).

NOTE : The converter is equipped with a "total security" system which protects the internal circuits against any irregularities (power spikes). When the total security system actuates the red lamp, "FAULT" comes on and power to the MDP and converter is cut. Shut down the converter (pushing the "ON/OFF" switch to OFF position) for 4 seconds, then turn on again (pushing the "ON/OFF" switch to ON position). If the malfunction is still present, please call Alcatel's service department.

c) A timer :

For evacuating volumes greater than 75 liters, it is necessary to delay the starting of the MDP 5030 CP to avoid a high pressure overload. See items (b).

ROTATION INDICATOR





They are three lamps (green, yellow, and red) which indicate the status of the pump.

All the possible combinations of lighted lamps and the status they indicate are listed below.

STATUS :

1 : indicates on or closed circuit

0 : indicates off or open circuit

	Set the timer	Control switch		Membranes pumps	LAMPS			MDP	
		Posit. "0"	Posit. "1"		Yel.	Green	Red	Motor	Speed rpm
1) At rest	$t = T$	1	0	0	0	0	0	0	0
2) DRYTEL start up	T 	0	1	1	0	0	0	0	0
3) MDP start up	$t = 0$	0	1	1	1	0	0	1	< 27 000
4) "Full speed"	$t = 0$	0	1	1	0	1	0	1	= 27 000
5) Over heated *	$t = 0$	0	1	1	0	0	1	0	
6) Overload < 8 min	$t = 0$	0	1	1	1	0	0	1	< 27000
7) Overload > 8 min**	$t = 0$	0	1	1	0	0	1	0	
8) Stop	$t = 0$	1	0	0	0	0	0	0	

* : without venting, it will take about 10 minutes for the pump to coast to a complete stop.

** : in this case, do the following :

- 1) find the cause of the overload (leak, etc...)
- 2) wait the converter to recycle (about 8 minutes after the time to red lamps shuts off.
- 3) Push the "ON/OFF" switch to "1" position.

1.22 - REAR PANEL

It includes :

- a receptacle for the power cord
- two nipples G 1/4 marked "WATER" to connect the fittings R 1/4 for the water line (if the MDP is water cooled).
- two free locations to connect the gas purge line when the DRYTEL is equipped with "gas inlet and piped exhaust" option.
- an hour counter which indicates the accumulated running time of the MDP 5030 CP from 0 to 100 000 hours.
- a location to connect the interface plug (P 104) delivered on request (see figures and 7 and 8)

CHAPTER 2 - SPECIFICATIONS

2.1. - PUMPING SPECIFICATIONS

SPECIFICATIONS	DRYTEL 100 and 100 C
Pumping speed for N ₂ ($P \leq 10^{-4}$ mbar)	100 m ³ /h
for He	59 m ³ /h
for H ₂	45 m ³ /h
Ultimate pressure	$5 \cdot 10^{-6}$ mbar
Maximum continuous inlet pressure for 8 hours of continuous use at ambient temperature of less than 25 C (77° F)	
- with air cooling	1 mbar
- with water cooling	10 mbar
Ultimate pressure from membrane pump	2 mbar
Maximum overpressure at exhaust	2 bars
Pump down time on a 110 liters volume	see fig. 2/2
35 liters volume	see fig. 2/3
Cooling water flowrate *	1 l/mn
Ambient temperature	
- with air cooling	0 to 30° C
- with water cooling	0 to 35° C
Storage temperature	0 to 60° C
Dry nitrogen supply **	
Flowrate (50 SCCM)	$83 \cdot 10^{-3}$ Pa m ³ ·s ⁻¹
Pressure (absolute)	psi 15-19
	bar 1-1.3
Admissible overpressure	2 bars

* : maximum water flowrate, with water temperature from 15° C (57° F) and at high pressure.

** : Without continuous use of the purge, the pump is not suitable for reactive gas and particulate laden applications.

2.2 - ELECTRICAL SPECIFICATIONS

- Line voltage :

100 V - 115 V - 200 V - 220 V - 240 V - 50/60 Hz. Each power voltage corresponds with a specific part number (see chapter 6).

During acceleration : 650 Watts

At full speed with inlet pressure $< 10^{-4}$ mbar : 500 Watts

2.3 - INSTALLATION SPECIFICATIONS

. Weight : 43 kg

. Dimensions : 625 mm x 465 mm x 350 mm (see figure 3)
(w x l x h)

CHAPTER 3 - INSTALLATION

3.1 - UNPACKING

IMPORTANT ! To prevent accidental damage, PLEASE DO NOT UNPACK the pumping system until it is at the site and ready for installation. The pump should be installed immediately after unpacking. A complete Drytel consists of the pumping package, a power cord and this instruction manual.

3.2 - INSTALLATION OF THE DRYTEL

3.21. Remove the plastic cover from the MDP inlet and save it for future use.

This cover is only for shipping and storage and must not be used when the Drytel is in operation.

3.22. Before installing the Drytel on the vacuum system please note :

- a) The system must be clean and free of foreign objects and solid particles that could damage the unit.
- b) the Drytel should be handled carefully to avoid jarring.
- c) the surface on which the Drytel rests should be rigid enough not to generate vibration.

3.23. If the gases that will be pumped are toxic then the exhaust silencer should be removed and the exhaust port of the Drytel should be plumbed to a suitable exhaust system. In this case, we will use a "inlet gas and piped exhaust" option. DRYTEL 100 C is equipped with this device.

3.24. Water cooling option

If the Drytel 100 is water cooled, connect the water line to the fittings labeled "Water" on the Drytel rear panel (connection G 1/4).

3.3 - ELECTRICAL SUPPLY

MAKE SURE THAT THE DRYTEL VOLTAGE IS THE SAME AS THE LINE VOLTAGE
--

Check the label next to the power receptacle on the side panel to make sure that the Drytel is wired according to the correct voltage.

INTERFACE (Options) (P 104)

This plug allows :

- . The remote starting stopping of the DRYTEL.
- . The output by dry contact closures, from the state of the three lamps (red, yellow, green), from the "ON-OFF" state of the converter, from the "ON-OFF" state of the DRYTEL. If the Drytel is equipped with this option, see figures 7 and 8 for the electrical connections.

If the remote control is not used, strap the terminals 22 and 9 on P104 socket (see figure 8).

3.4 - STARTING

For the initial start-up, or when the pump has not been used for a 2 month period, it is recommended that the MDP be operated for about 5 minutes at atmospheric pressure. This procedure is necessary to redistribute the grease in the ball bearings.

3.5 - APPLICATIONS NOTES

3.51. The membranes pump must be vented to atmosphere whenever the Drytel is stopped.

To accomplish this an automatic vent valve is employed. This valve vents the membranes pump while isolating the MDP and the chamber whenever Drytel is stopped.

3.52. The membranes pump must never be used to pump liquids.

3.53. Drytel must be sheltered from rain, leaking water and excessive dust.

3.54. If the foreline or exhaust is restricted in any way then care must be taken to be sure that the maximum foreline pressure given in the specifications is not exceeded. Excessively high foreline pressure will cause the MDP to shut off after 8 minutes. (See 1.21 b)

3.55. Warning !

For the transport, the membranes pump is fastened on its frame. Before start the Drytel, proceed like this.

- Disconnect the line cable
- Unscrew the 4 assembling screws located on the side panels of the DRYTEL and remove the body.
- Disconnect the electrical cable from the frame (on Jo connector) (see figure 7).
- Unscrew the 2 assembling nuts from the clamping strap and remove it, with its 2 connection pins.
- Reconnect the electrical cable to connector Jo.
- Install and secure with screws the body on the frame.

3.56. It is possible that during the transport, the power switch of the converter was pushed accidentally : the MDP will not start at the end of the time T set on the timer.

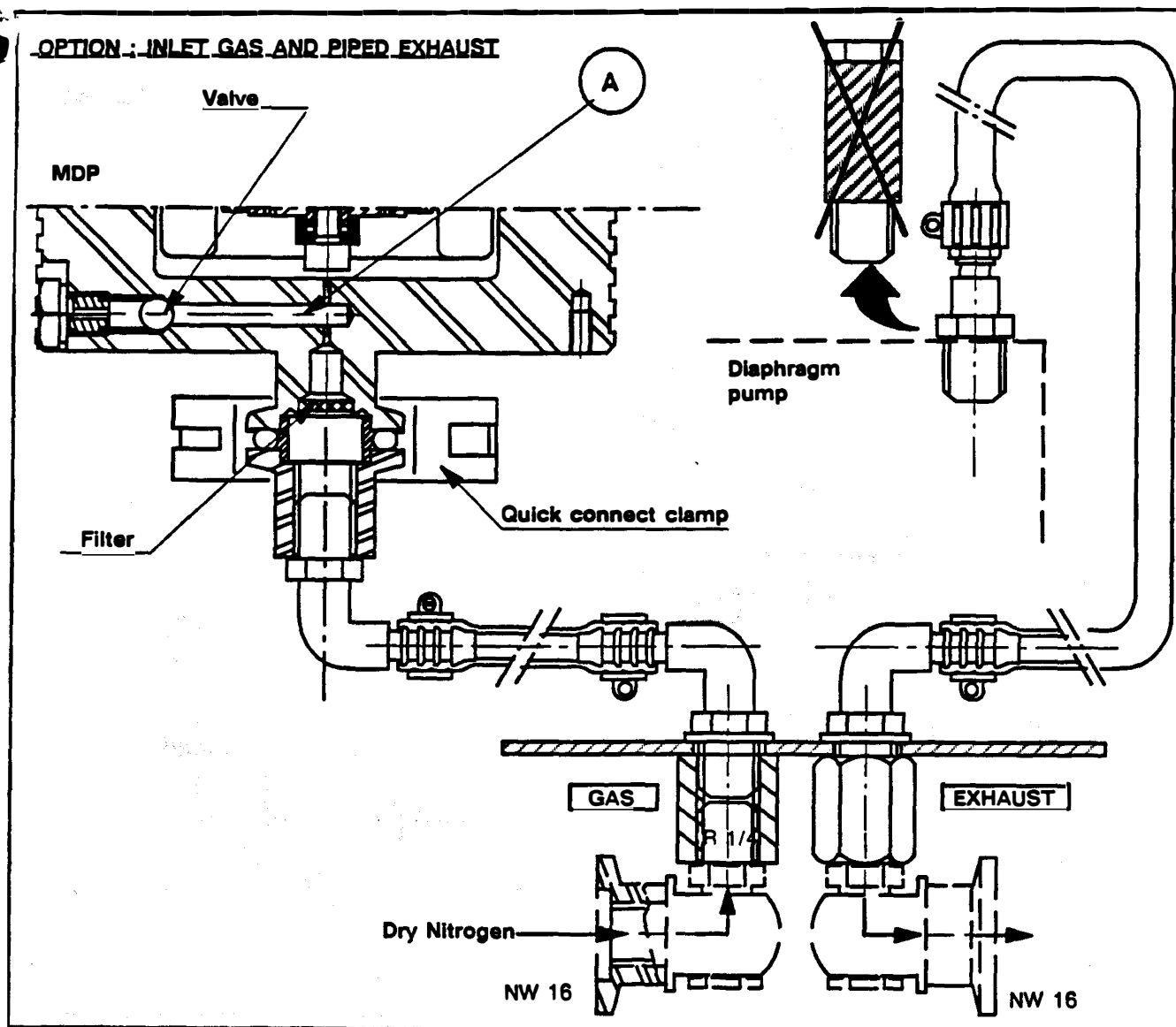
if it is the case, remove the body and push on the right the power switch of the converter.

3.6 - OPTION INERT GAS PURGE SYSTEM

- For proper protection from reactive gases and particulate the inert gas purge system must be used continuously. Alcatel recommends a nitrogen source that is dry (dew point of - 22 C at atmospheric pressure) and properly filtered (particulate < 1 µ and oil < 0,1 ppm)
- Connect the nitrogen gas line to the nipple referenced "gas", by a pipe end R 1/4 (or NW 16).
- Connect the exhaust port referenced "Exhaust" to a suitable exhaust system, with a pipe end R 1/4 (or NW 16).

Note:

- 1) If the pressure in the purge gas line is greater than 1.4 bar (20.5 psi) absolute the check valve automatically opens in order to limit the flow into the MDP to 50 sccm.
- 2) Alcatel recommends that the pressure of the purge line be set at 1 to 1.3 bar (15 to 19 psi) absolute to avoid wasting the purge gas.
- 3) If the pressure of the purge line exceeds 29 psi absolute (2 bar) the performance of the pump will be affected.



3.7 - GAS BALLAST (OPTION)

The gas ballast allows to inject occasionally air or nitrogen during pumping to improve light gas, pumping, and avoid the particles contamination.

The opening of the gas ballast causes the flushing of the light molecules by the heavy molecules (air or nitrogen) in the roughing line.

The gas ballast flow rate adjusted at 60 SCCM automatically calibrated for a pressure of 1 000 mbar.

1 - Manual gas ballast option : when the control button is screwed, the gas ballast is closed.

2 - Automatic gas ballast option : it is equipped with a 24 V. solenoid valve. This valve can be connected to a neutral gas pipe (connection G 1/8" female) by the customer.

CHAPTER 4 - OPERATING DIAGRAM

4.1 - SETTING THE TIMER

4.1.1. The timer can be set from 0.1 seconds to 999 hours with the buttons under the corresponding units. The unit selector furthest to the right can be set at any one of the ten positions indicating six different units of time : 0.1 seconds; seconds ; 0,1 minutes, minutes, 0.1 hour, and hours.

Set the timer to the amount of time, T , given in the graph of time versus volume (see fig. 4.12)

4.1.2. Set the timer when the "ON-OFF switch" is in at the "0" position.

- If the timer is changed while it is already in a count down then the new time will not take affect until the next pump down cycle, i.e. until the Drytel is turned "off" and then "on".
- When the Drytel is turned "on" the timer display indicates the following information :
 - . The setting of the timer
 - . The unit of time
 - . The state of the normally closed relay which controls the MDP 5030 CP.

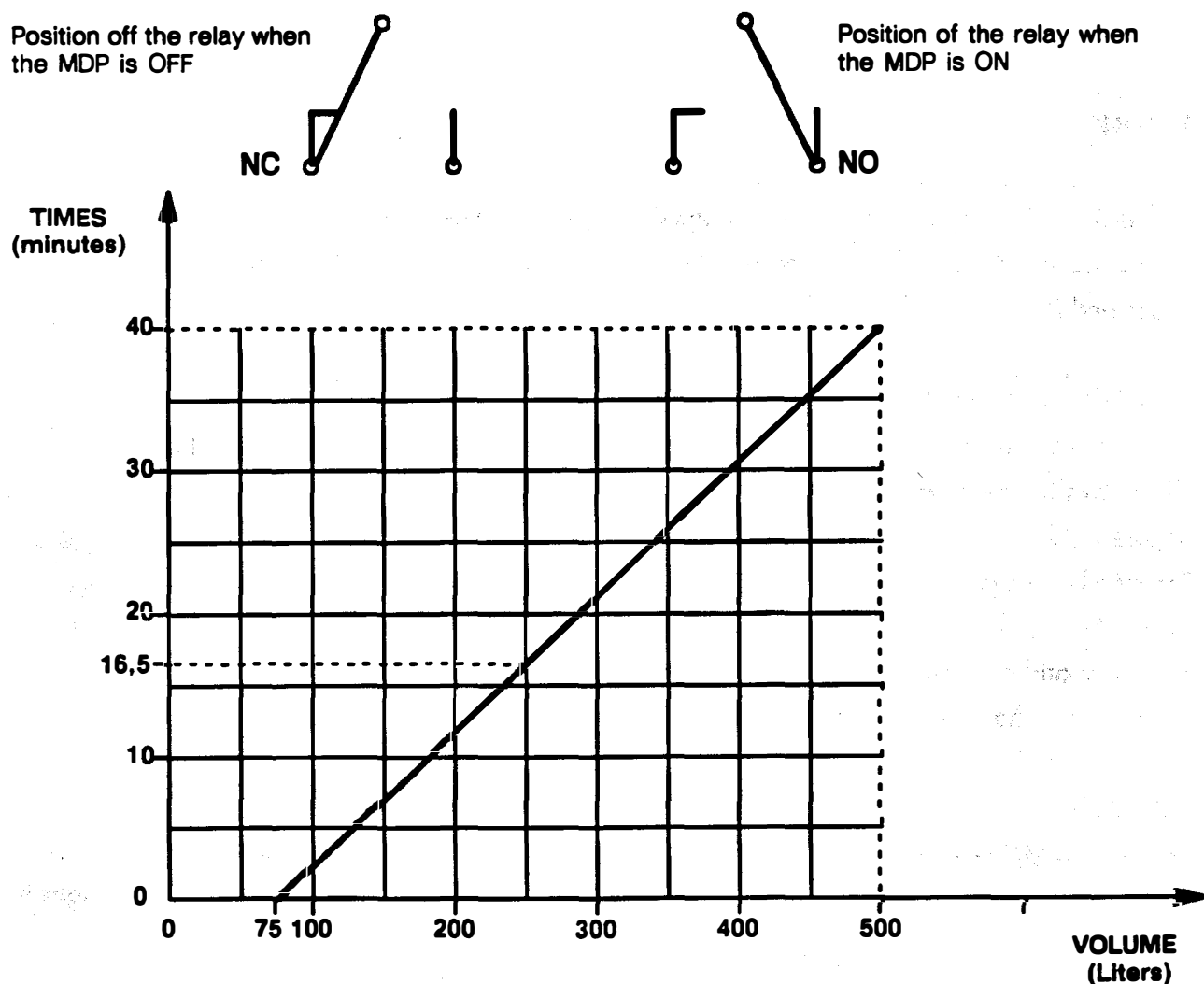
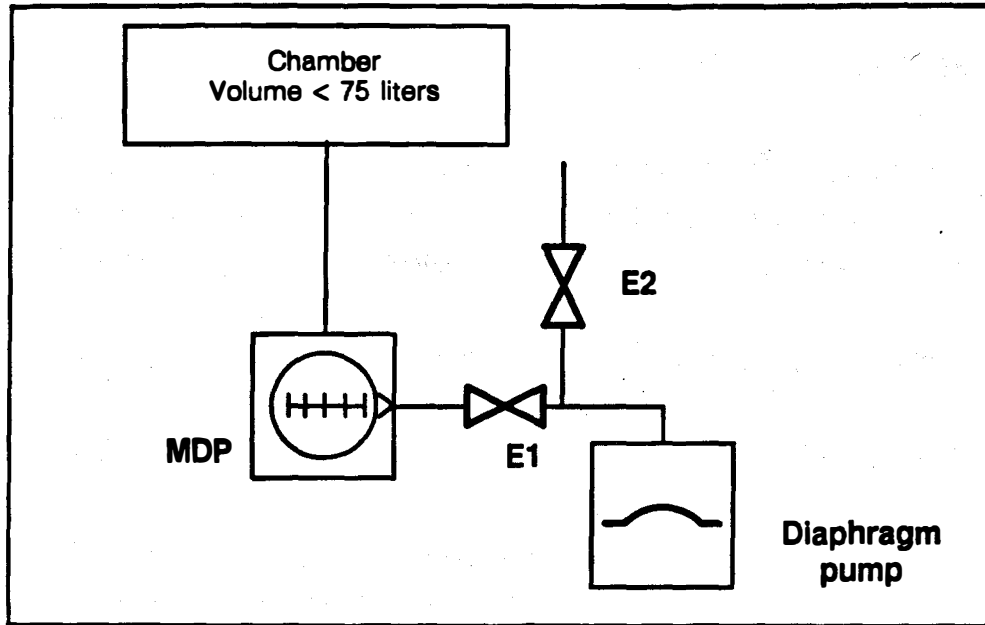


Figure 4/1

4.2 - EVACUATION OF A CHAMBER LESS THAN 75 LITERS



1) STARTING

- The membranes pump and MDP are off. E1 is closed. E2 is open.
- Timer set at "0" (the MDP will start approximately 2 seconds after the membranes pump).
- When the Drytel is started, (control switch on "1" position"), both pumps and fan start E2 closes and E1 opens.

2) STOPPING :

When the Drytel is stopped, (control switch on "0" position), membranes pump and fan stop simultaneously. MDP is not powered and will stop progressively. Avoid sudden pressure changes in the MDP. E1 closes and E2 opens.

4.3 - EVACUATION OF CHAMBERS BETWEEN 75 AND 500 LITERS

1) STARTING : Set the timer to the amount of time, T, given in the graph of time versus volume (see figure 4.12).

- The membranes pump and MDP are off. E1 is closed. E2 is open.
- When the Drytel is started (control switch the "1" position) the membrane pump only and fan start. E2 closes and E1 opens.
- At the end of the time T, set on the timer the MDP starts.

2) STOPPING

When the Drytel is stopped (control switch to "0" position) membranes pump and fan stop simultaneously. MDP is not powered and will stop progressively. Avoid sudden pressure changes in the MDP.

E1 closes and E2 opens.

CHAPTER 5 - MAINTENANCE

5.1 - GENERALITIES

- For any operation of maintenance, stop the DRYTEL and disconnect the line cable.
- Remove the DRYTEL from the pumping installation
- Unscrew the 4 assembling screws located on the DRYTEL side panels and remove the body.
- Disconnect the electrical cable from the frame, on the connector Jo.

5.2. - MDP 5030 CP - MAINTENANCE

The bearings of the MDP have been properly lubricated prior to assembly and testing. It is essential that you familiarize yourself with the relubrication intervals detailed in figure 5/1 and 5/2 of this manual.

5.2.1 DISASSEMBLY OF THE MDP

- Disconnect the cable between MDP and converter.
- Remove the quick connect clamp from the discharge vacuum line.
- If the MDP is water cooled, remove the two clamping collar from the water line.
- Remove the 4 screws assembling MDP and its support on the shocks absorber.

5.2.2. RELUBRICATION

The MDP must be properly maintained to insure optimum performance and minimum downtime. You must use only the grease contained in the syringe available from Alcatel.

When adding grease, proceed carefully with maximum cleanliness.

WARNING !

- . The MDP has 2 ball bearings : at every relubrication (see fig. 5/1 and 5/2) schedule, the user must relubricate the two ball bearings.
- . The syringe is equipped with 2 removable black spacers :
 - one spacer for the ball bearing near the pumping unit.
 - the other spacer for the ball-bearing opposite the pumping unit.

Relubrication process :

1) Bearing opposite the pumping unit (see figure 1) :

- Unscrew the regreasing plug, (7B)
- Position the syringe in the orifice perpendicular to axis of rotation
- Remove one spacer and inject progressively the grease. The piston must touch the ring spacer (or the other black spacer).
- Remove the syringe.
- Change the seal, (8B), and reinstall the plug.

2) Bearing nearer the pumping unit (see figure 1) :

- Unscrew the regreasing plug, (7A).
- Position the syringe in the orifice inclined at a 45 degrees angle to the axis of rotation.
- Remove the other black spacer and inject the grease into the bearing.
- Remove the syringe.
- Change the seal, (8A), and reinstall the plug.

Reinstall the MDP on its shocks absorber in reverse order from parag. 5.2.1.

Connect the power line, the vacuum line, and water line.

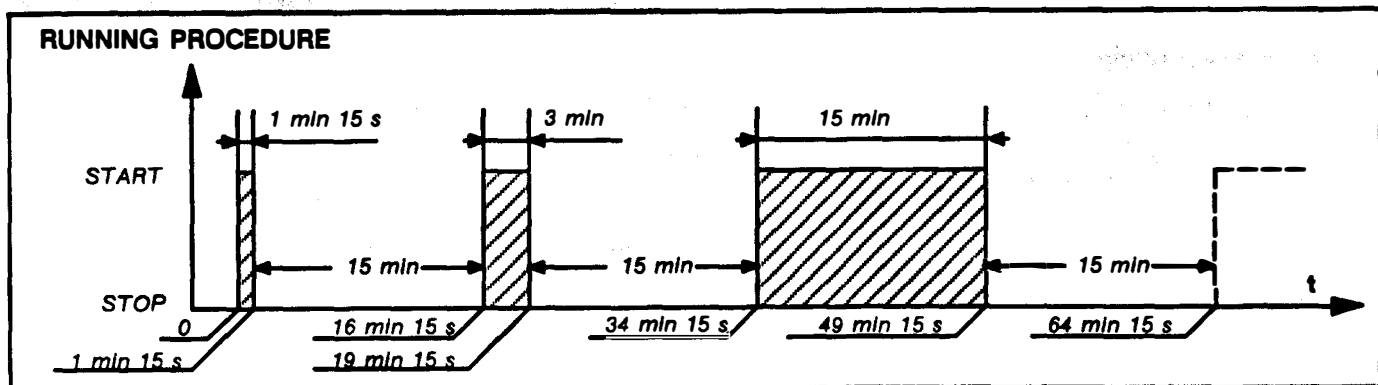
5.2.3 - START UP AFTER REGREASING

1) Run the MDP at atmospheric pressure without cooling for about 5 minutes as follows :

- Start the DRYTEL, the inlet opened.

If the red fault lamp comes on before the MDP has run 5 minutes it indicates that the protection switch has shut off the pump. In this case, wait for the red lamp to go off then restart the DRYTEL. Repeat this procedure until the MDP runs continuously for 5 minutes.

2) Now run the MDP with cooling and with the backing pump according to the following procedure, the inlet closed :



5.3 - REPLACEMENT OF BALL BEARINGS FROM THE MDP 5030 CP

*The ball bearings can be replaced at the users facility by a competent technician familiar with the Alcatel MDP. The following tools and replacement parts are required :

- ball bearings (see below)
- seals kit P/N 063255
- special tools for disassembly and assembly P/N 062792
- instruction manual P/N 063250
- a torque wrench P/N 063221

All of the above are available from Alcatel.

SELECTION OF BALL BEARINGS

Note the two numbers to the right of the 5 digit serial number, on the MDP name plate. Use these numbers and the chart below to select correct bearings.

Reference on name plate (shaft diam.)	Ball-bearings kit P/N
1 (7,999)	066671
2 (7,998)	066672
3 (7,997)	066673
4 (7,996)	066674
5 (7,995)	066675

Example

ALCATEL
 MDP type 5030 CP
 Serial number : 85501 - 23

→ Shaft dimensions

- 1st number "2" : indicates the shaft dimension opposite the pumping unit is 7.998 mn.
The proper ball bearing is P/N 066672.
- 2nd number "3" : indicates the shaft dimension opposite the pumping unit is 7.997 mn.
The proper ball bearing is P/N 066673.
- * The ball bearing kit includes the ball bearing and a spring washer (not used on MDP 5030 CP).
The damping ring of the ball bearing is included into seals kit.

5.4. - MAINTENANCE OF THE MEMBRANES PUMP

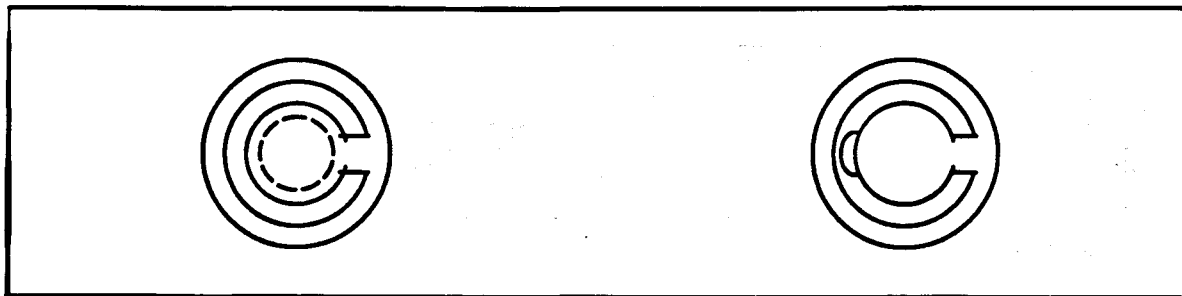
- Disconnect the electrical cable from connector TB1 (see figure 9).
- Unscrew the connecting nut from the capacitor.
- Disassemble the vacuum line at the inlet port of the pump.
- Unscrew the membranes pumps by removing the 4 nuts.

5.4.1 Cleaning and checking the suction chamber (see figure 6).

Depending on the application, the diaphragm failing period occurs between 6000 and 8000 hours. These diaphragms can be easily replaced following the procedure here below (maintenance kit P/N on chapter 6.4.)

We recommend the diaphragms replacement every 5000 hours to be sure that DRYTEL works properly.

- Unscrew any connecting members between the pump stages.
- Remove the 4 fixing bolts (20) per pump stage.
- Lift the housing cover (7).
- Note the position of the valve seal (17) and clean the seal. Renew the valve seal if damaged.



- Remove the head cover and check the diaphragms for damage and renew them if necessary. (see parag. 5.4.2.)
- If contaminated, clean the affected parts with petroleum, ether or an industrial solvent.
- Reassemble the pump in the reverse order and check the final vacuum.

5.4.2 Changing the diaphragm in the standard type

- Lift the housing cover and the head cover as described in the section 5.21
- The Philips screw (19) in the centre of the diaphragm clamping disc must first be slackened. This is usually only possible if you carefully turn the upper clamping disc (9) on the diaphragm with a pair of water pump pliers, because the fixing screw is secured against slackening by adhesive. Take care to not damage the bearing surfaces of the seals.
- Take great care when removing the underlying support disc (10) of the diaphragm. Spacers can be inserted between the drive connecting rod and the diaphragm support disc in order to provide compensation. These spacers must be reused at the same depth.
- If the old diaphragm is difficult to separate from the support disc, loosen it in tri-chloroethylene, petroleum spirit or kerosene.
- Replace any available spacers under the lower support disc of the diaphragm and fix them in position with some grease to prevent the spacers falling down during assembly.
- Insert a new diaphragm and diaphragm support disc and make sure that this diaphragm is a double diaphragm with an overall thickness of 1.6 mm. When using spare diaphragms, two diaphragms, each 0.8 mm thick, have to be placed on top of one another (use only factory paired diaphragms with max. tolerance of 1.6 ± 0.05 mm).
- Insert the diaphragm clamping disc (9)
- Apply a drop of glue adhesive beneath the screw head (19) and then screw down the diaphragm and the clamping disc.

CHAPTER 6 - PART NUMBERS AND ACCESSORIES

6.1 - THE STANDARD DRYTEL CONSISTS OF THE FOLLOWING :

DESCRIPTION	100 V 50/60 Hz	115 V 60 Hz	200 V 50/60 Hz	220 V 50/60 Hz	240 V 50/60 Hz
MDP 5030 CP (air)	795197	795197	795197	795197	795197
MDP 5030 CP (water)	795532	795532	795532	795532	795532
Membranes pump :					
standard	062980	062982	062984	062981	062981
chemical	066605	066604	066603	066606	066606
Vent valve : coil	038130	038129	038131	038131	039182
Power cord	057662	057662	057662	056727	056727
Fan (for cover)	063179	063179	056205	056205	056205
Fan (for MDP air)	055772	055772	087216	087216	087216
CFF 450 TURBO	795185	795186	795185	795187	795196
DRYTEL 100 (air)	795455	795454	795457	795453	795456
DRYTEL 100 (water)	795542	795541	795544	795540	795543
DRYTEL 100 C (air)	795911	795910	795913	795909	795912
DRYTEL 100 C (water)	795915	795914	795917	795918	795916

6.2 - OPTIONS *

- "Inlet gas and piped exhaust" (std on DRYTEL 100 C) 062979
- 4 castors 062868
- Interface..... 062898
- Manual gas ballast..... 050590
- Automatic gas ballast..... 050580
- Metallic pipe between MDP and diaphragm pump..... 050578
- Metallic pipe exhaust..... 050577

6.3 - ACCESSORIES

INLET FLANGE

- Inlet filter screen, NW 100 (splinter shield)..... 056844
- Inlet filter, fine mesh, NW 100 063215
- Rotatable flange, NW 100..... 068348
- Centering ring / Viton o-ring NW 100 068349
- Connecting hardware 068350
- Screw, washers..... 068080

PURGE FLANGE

- Centering ring with viton o-ring NW 16..... 068228
- Quick connect clamp NW 16..... 083333

MISC

- Set of 4 handles..... 062867

* Options P/N must be specified on order with the P/N of the Drytel chosen.

6.4 - MAINTENANCE

. MDP

Relubrication syringe.....	063251
- Seals kit.....	063255
- Bearing kit - 1 -	066671
- 2 -	066672
- 3 -	066673
- 4 -	066674
- 5 -	066675
- Ball bearings replacement tools.....	062792

. DRYTEL 100

- Timer.....	039563
- Membrane pump maintenance kit DRYTEL 100.....	062968
DRYTEL 100 C.....	062368

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- Figure 10 - Electrical schematic diagram of CFF 450 TURBO converter.

NOMENCLATURE - SPARE PART LISTS

REP REF.	DESIGNATION	DESCRIPTION	Nombre Quantity	RÉFÉRENCE P/N
1	Palier	Housing	1	063225
2	Moyeu	Hub	1	063226
3	Arbre	Rotor	1	063232
4	Entretoise	Spacer	1	063228
5	Ensemble moteur	Motor	1	
6	Embout DN 25 R 1/2" LG 22	Exhaust port NW 25 R 1/2	1	063230
7 A-B	Bouchon de graissage	Lubrication plug	2	063231
8 A-B	Joint "BS" Type B12	O-ring "BS"	2	083640
9	Stator carter DN 100	Stator DN 100	1	063233
10 A-B	Roulement	Ball-bearing	2	
11 A-B	Joint torique 2 x 22	O-ring 2 x 22	2	079068
12	Thermostat	Thermoswitch	1	056978
13	Embase mâle Réf. 536 206	Plug socket	1	060709
14	Joint torique 1,5 x 23	O-ring 1,5 x 23	1	079246
15	Bride prise	Clamp bracket	1	056914
16	Vis CHc M3 x 8	Screw CHc M3 x 8	3	075635
17	Rondelle Onduflex	Washer	3	073447
18	Bague de serrage	Fixation ring	2	056885
19	Vis CHc M5 x 12	Screw CHc M5 x 12	2	063209
20	Ressort de précharge	Compression ring	1	063103
21	Joint torique 2 x 102	O-ring 2 x 102	1	079006
22	Joint torique 3 x 84	O-ring 3 x 84	1	079008
23	Vis CHc M4 x 20	Screw M4 x 20	4	075575
24	Vis CHc M4 x 50	Screw M4 x 50	4	075567
25	Rondelle Onduflex	Washer	8	073481
26	Joint torique 4 x 71	O-ring 4 x 71	2	079244
27	Carter moteur	Motor housing	1	063227
28	Vis spéciale	Screw	1	063106
29	Ressort	Spring	1	063105
30	Clapet sphérique	Globe valve	1	079970
31	Disque inox fritté	Filter	1	075980
32	Rubis	Ruby	2	067748
33	Bouchon	Plug	1	056926
34	Bague BS A8	Ring BS A8	1	087927
35	Anneau de refroidissement	Cooling collar	1	063245
38	Joint torique 3 x 96	O-ring 3 x 96	1	079136
39	Joint torique 2 x 8	O-ring 2 x 8	2	079134

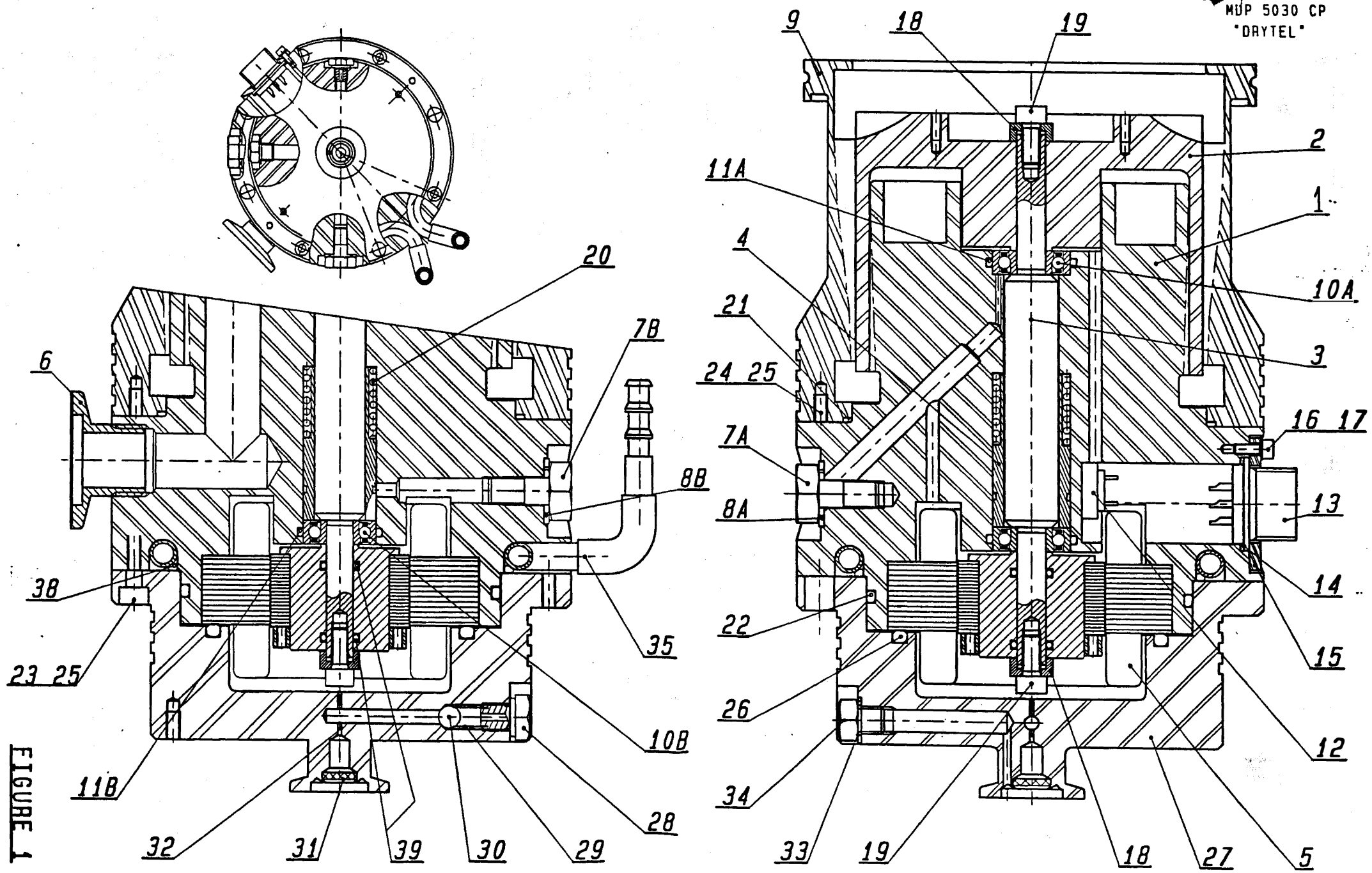
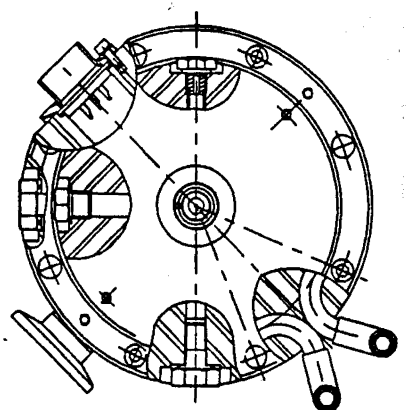


FIGURE 1

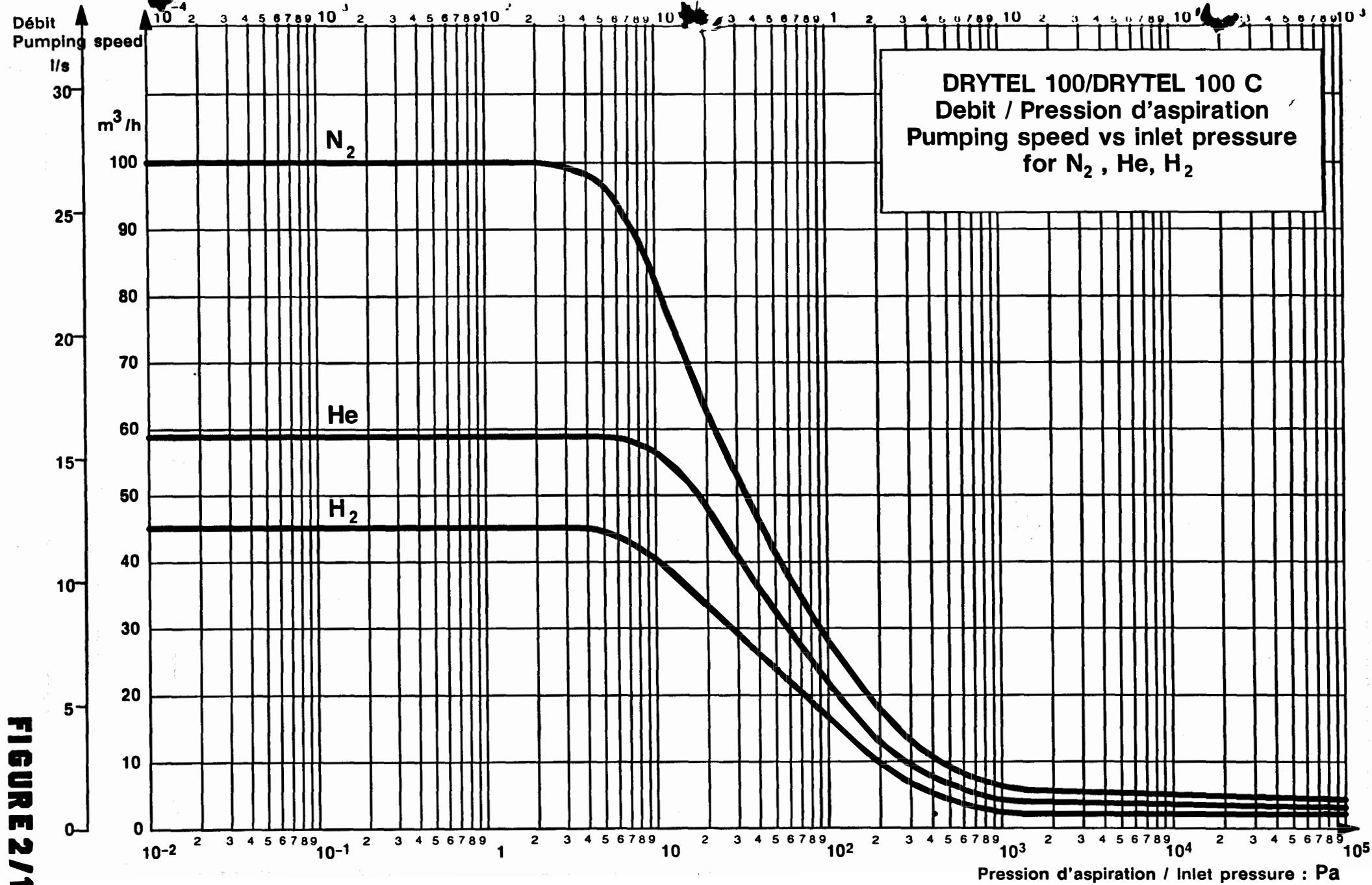


FIGURE 2/1

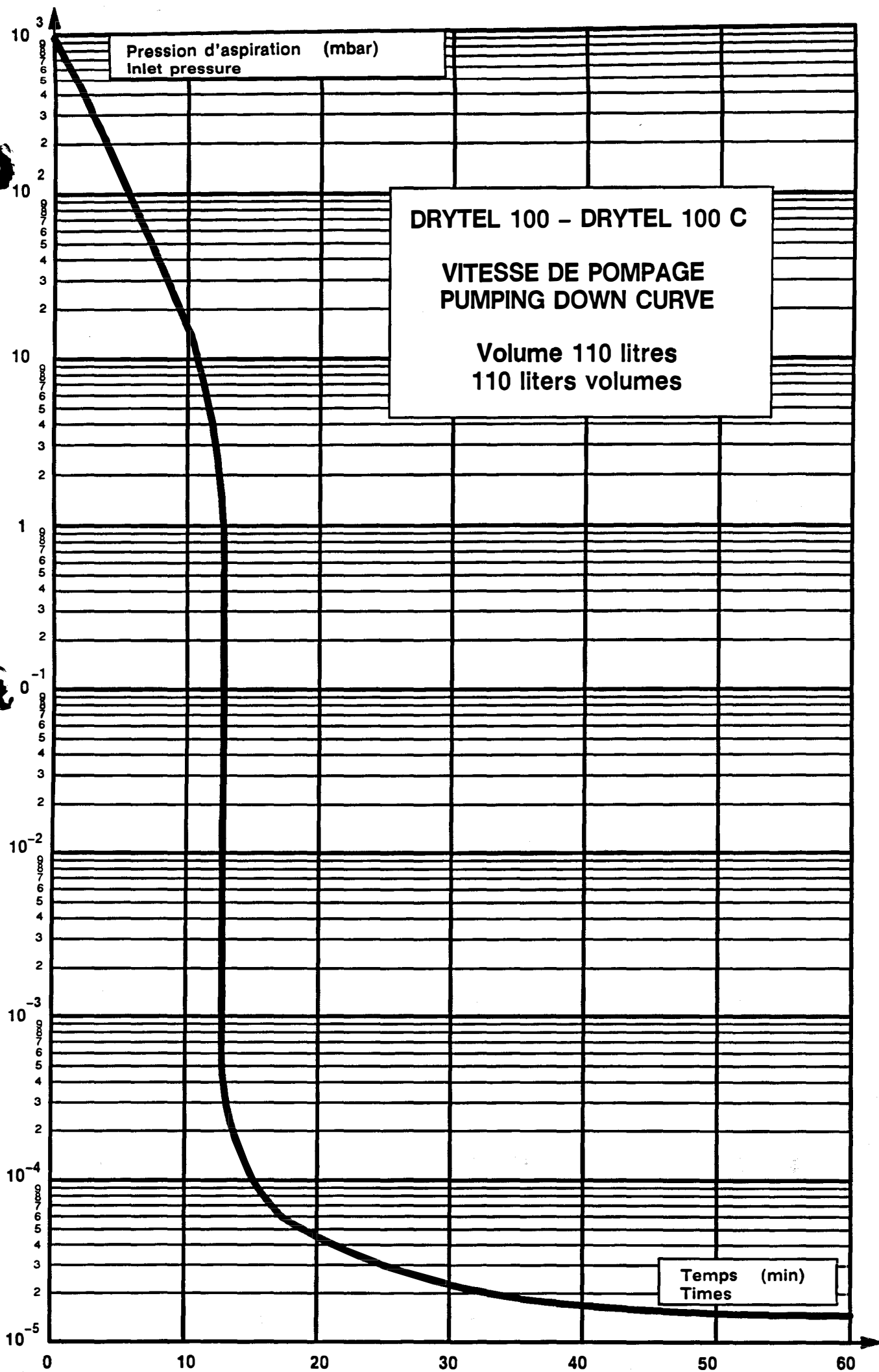


FIGURE 2/2

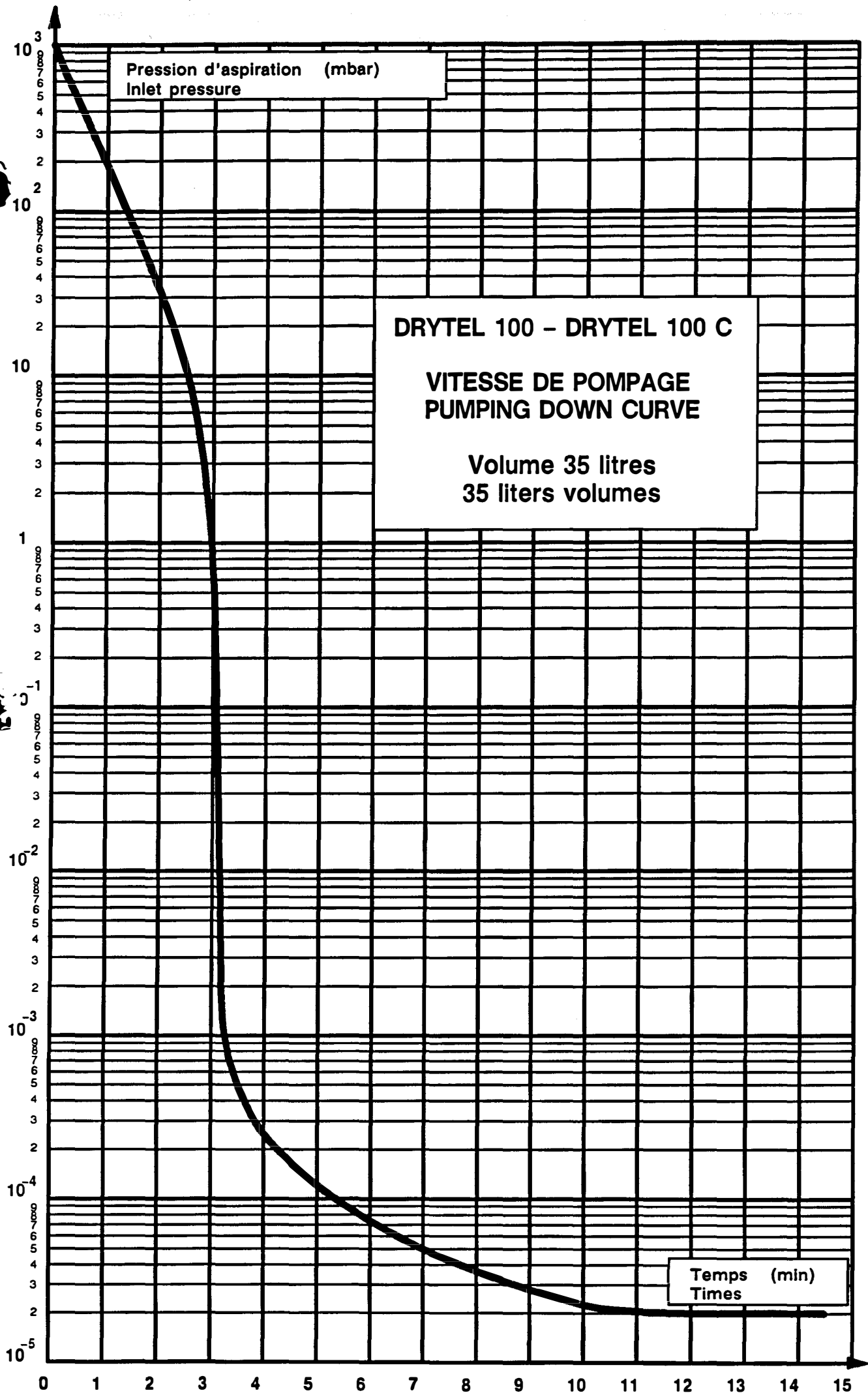


FIGURE 2/3

DRYTEL 100 ENCOMBREMENTS / DIMENSIONS

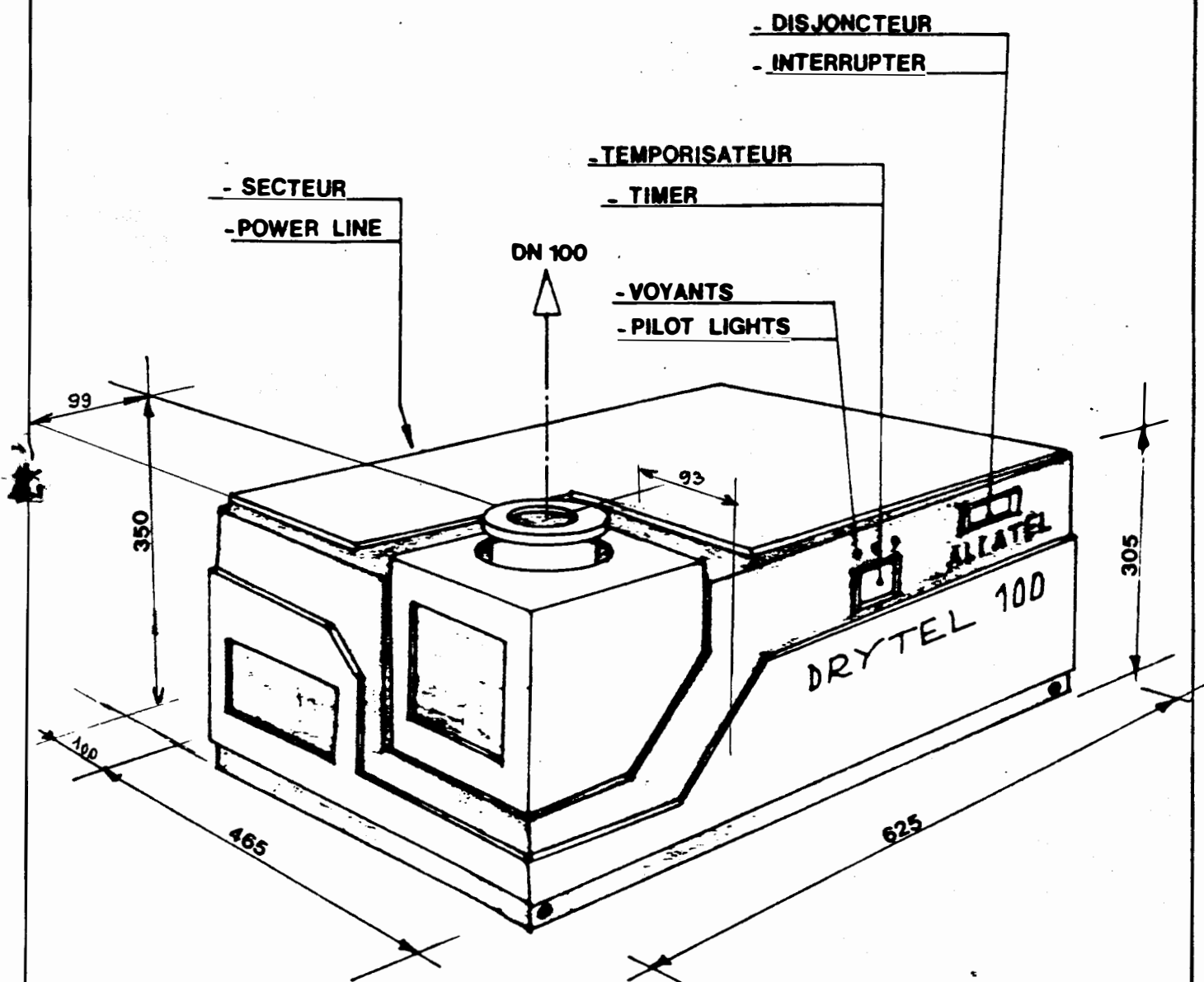


FIGURE 3

DRYTEL 100 – DRYTEL 100 C

PUPITRE DE COMMANDE / CONTROL PUPITER

TEMPORISATEUR / TIMER

Affichage
Display

Selecteur d'unité
Unit selector

VOYANTS / PILOT LIGHTS

Jaune
Yellow

Vert
Green

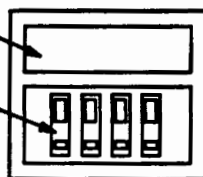
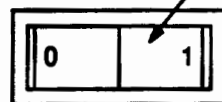
Rouge
Red

Disjoncteur / Interrupter

< 27000

= 27000

FAULT



DRYTEL 100

FIGURE 4/1

DRYTEL 100 – DRYTEL 100 C

FACE ARRIERE / REAR PANEL

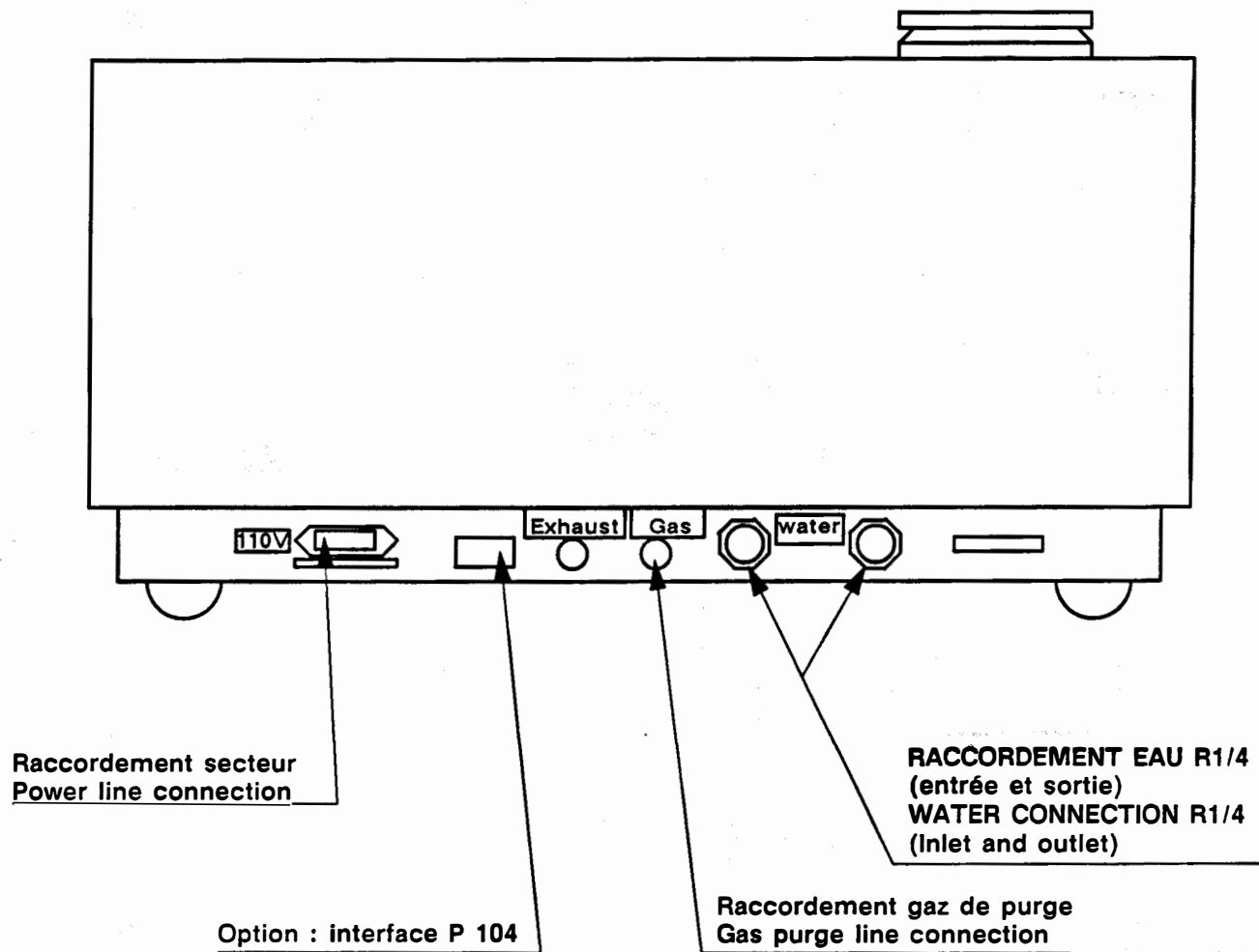


FIGURE 4/2

MDP 5030 CP : Période de rechargement en graisse
RELUBRICATION OF MDP 5030 CP : Relubricate the bearings of the MDP
according to the chart below

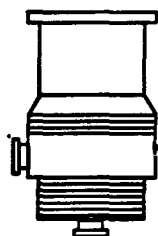
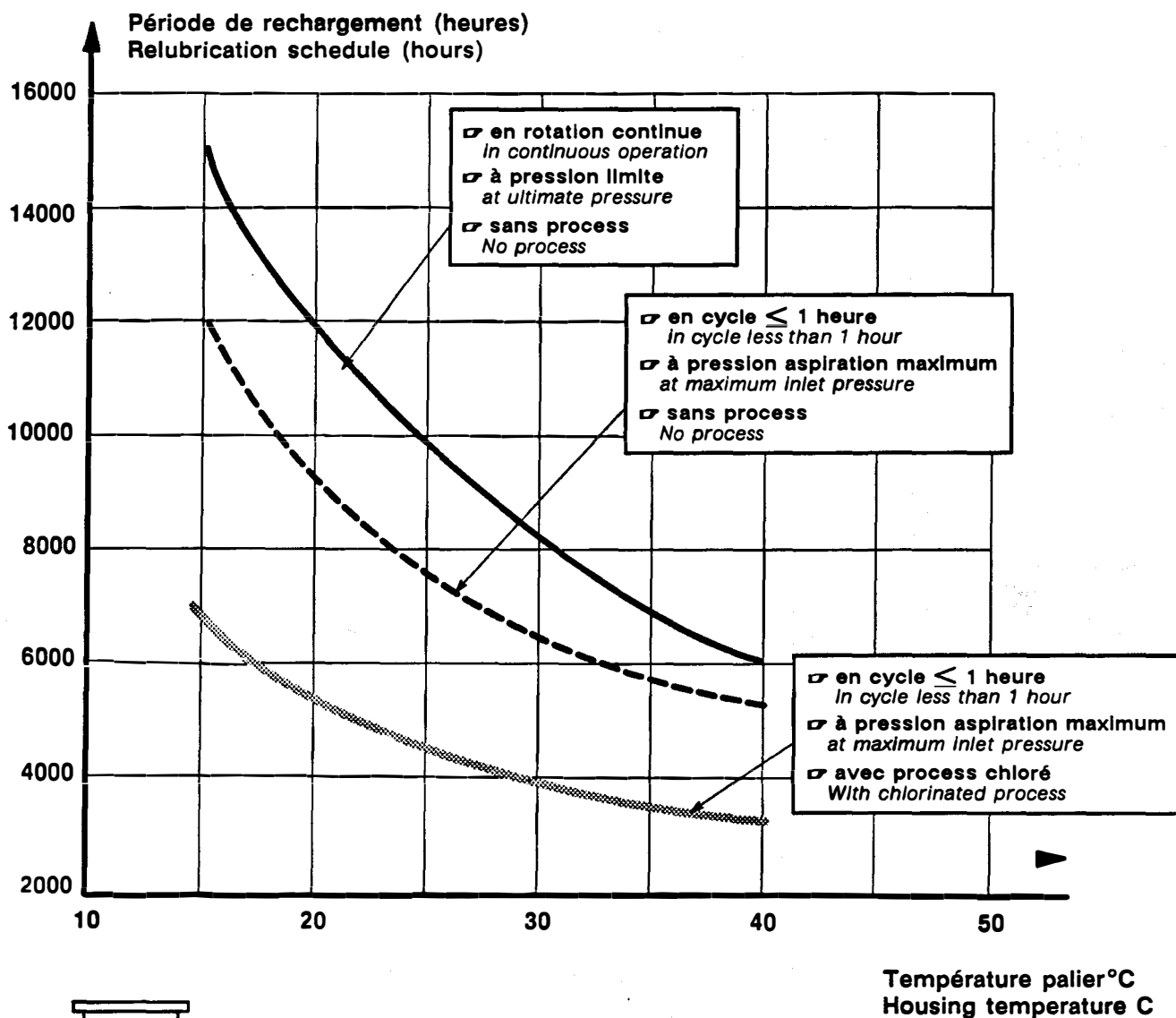
CHLORE, BROME ET GAZ REACTIFS CONDENSABLES
CHLORINE, BROMINE AND CONDENSIBLE REACTIVE GASES

Exemple : Pour une utilisation moyenne à 20 °C de température palier, en rotation continue et à pression limite :

- à 12000 h : 1ère recharge
- à 24000 h : 2ème recharge
- à 36000 h : démontage de la MDP, nettoyage et changement des roulements, rodage.

Example : for use at 20 C housing temperature, in continuous operation, at ultimate pressure :

- 12000 h : 1st lubrication
- 24000 h : 2nd lubrication
- 36000 h : disassemble the MDP, replace and condition the ball bearings.



Point de mesure de la température palier
Housing temperature measuring point

MDP 5030 CP : Période de rechargement en graisse
RELUBRICATION OF MDP 5030 CP : Relubricate the bearings of the MDP
according to the chart below

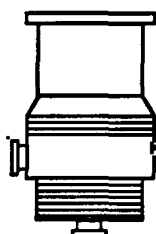
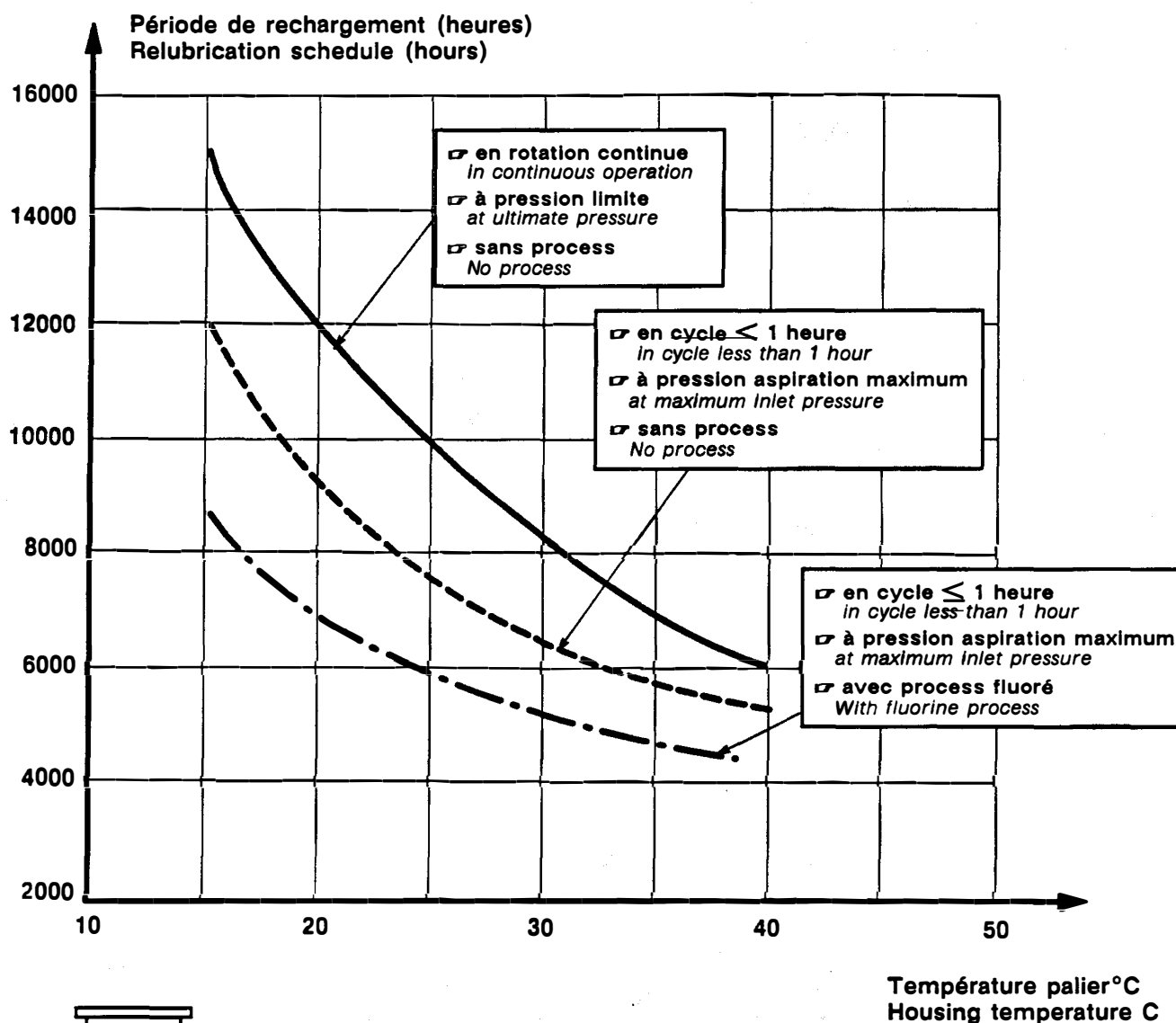
FLUOR ET GAZ REACTIFS NON CONDENSABLE
FLUORINE AND NON CONDENSIBLE REACTIVE GASES

Exemple : Pour une utilisation moyenne à 20 °C de température palier, en rotation continue et à pression limite :

- à 12000 h : 1ère recharge
- à 24000 h : 2ème recharge
- à 36000 h : démontage de la MDP, nettoyage et changement des roulements, rodage.

Example : for use at 20 C housing temperature, in continuous operation, at ultimate pressure :

- 12000 h : 1st lubrication
- 24000 h : 2nd lubrication
- 36000 h : disassemble the MDP, replace and condition the ball bearings.



Point de mesure de la température palier
Housing temperature measuring point

POMPE A MEMBRANES / DIAPHRAGM PUMP

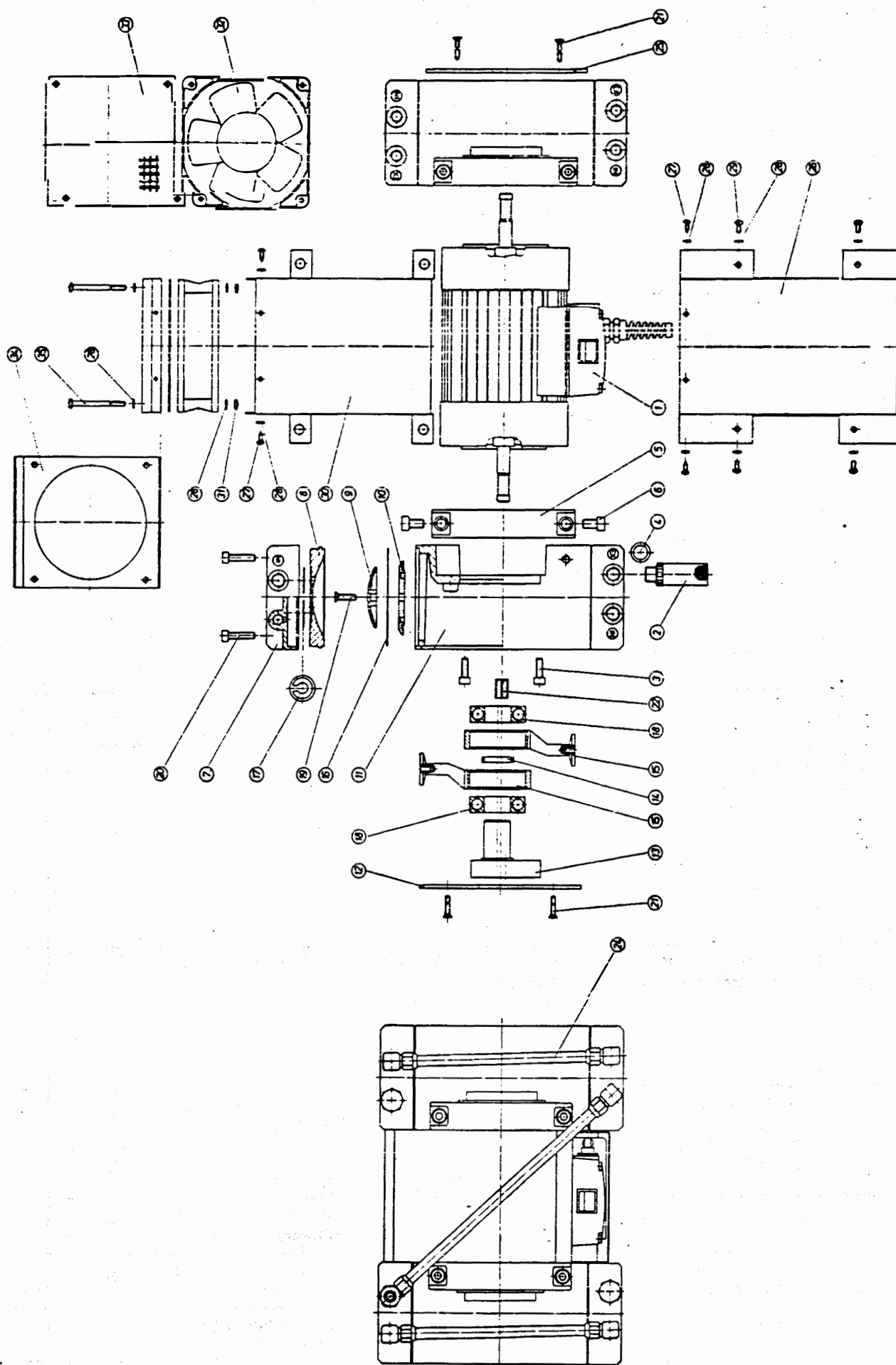
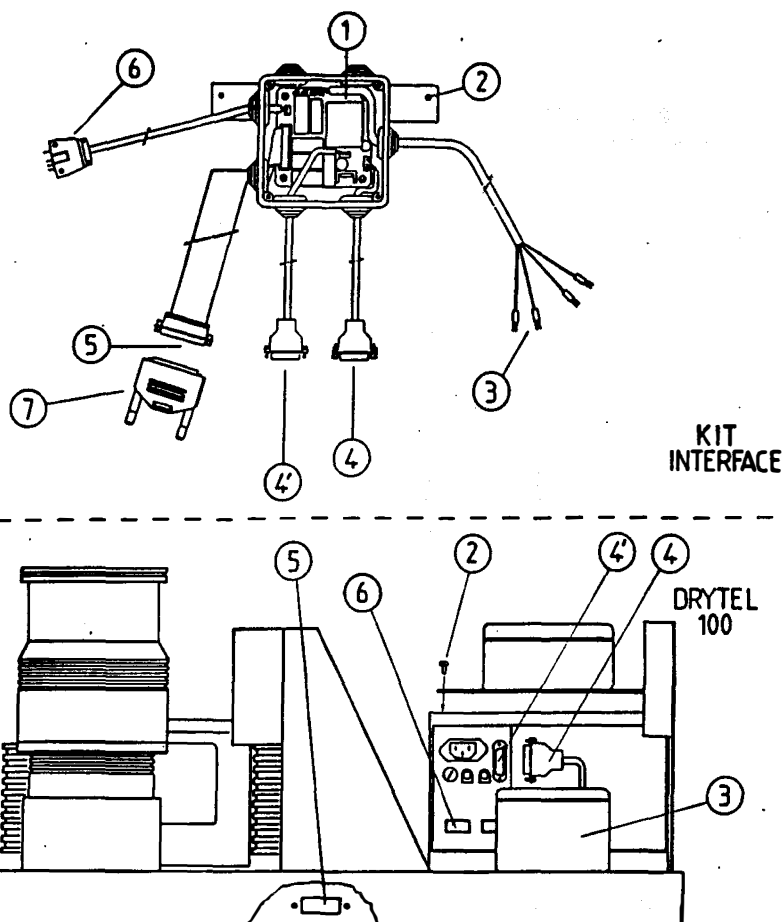


FIGURE 6

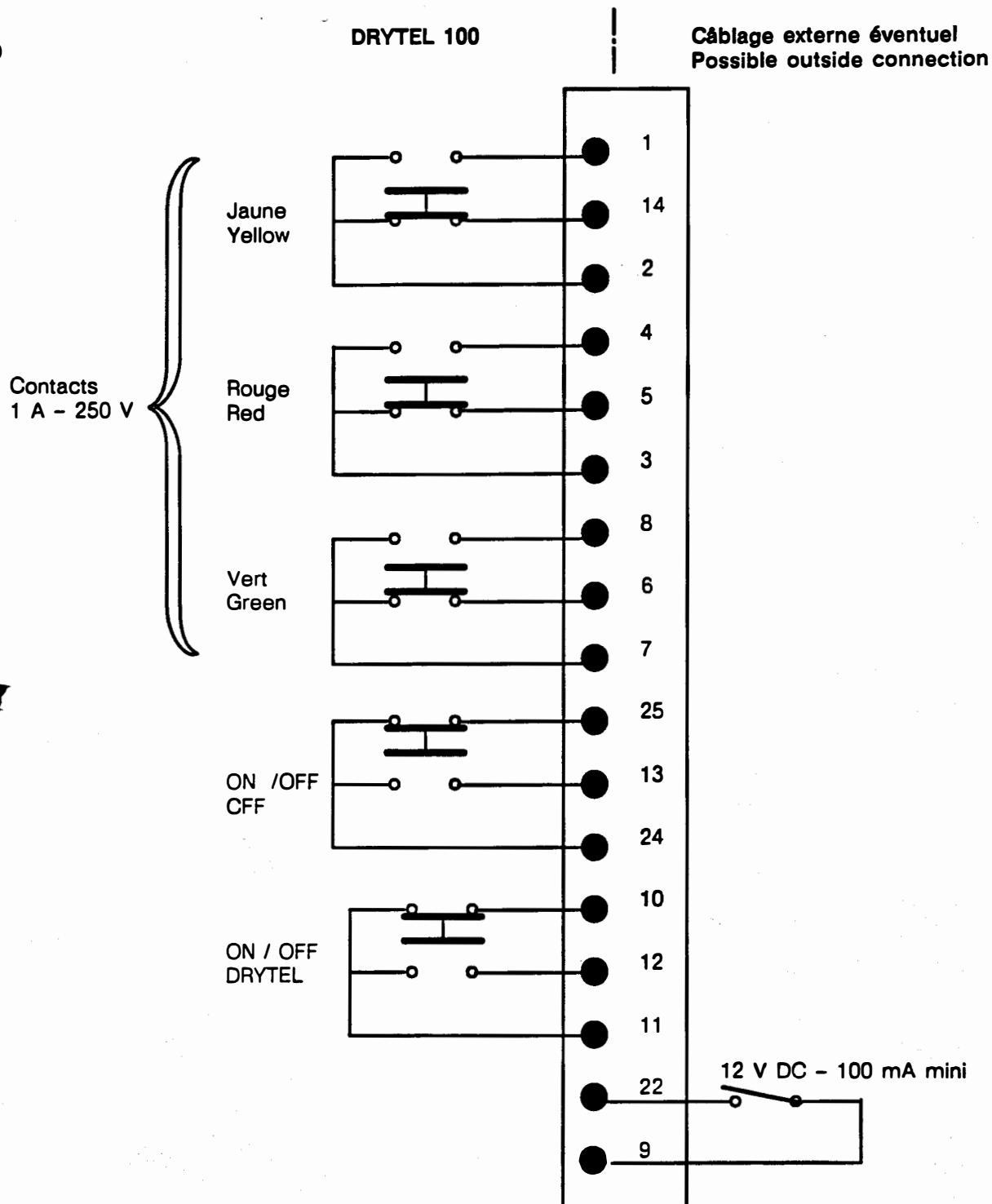
RACCORDEMENT DE L'OPTION INTERFACE SUR LE DRYTEL **INTERFACE OPTION CONNECTION ON THE DRYTEL**



Repère Kit à raccorder sur	Repère du Drytel 100	DESCRIPTION
1	-	<p>Sélection du secteur 100 V = 115 V - 10 % 115 V = 115 V - 0 % <i>Power line connection</i> 200 V = 220 V - 10 % 220 V = 220 V - 0 % 240 V = 220 V - 0 %</p>
2	2	<p>Fixation avec les vis du couvercle convertisseur <i>Connection with the converter cover screws.</i></p>
3	3	<p>Enlever le strap entre les bornes 4 et 5 du bornier (rep. TB sur figure 9) <i>Remove the jumper between terminals connections 4 and 5 (ref. TB on Fig. 9)</i> Cablage sur bornes Vert/Jaune - Green/Yellow ↯ n°2 Bleu - Blue ↯ n°7 <i>Terminals connections</i> Noir - Black ↯ n° 5 Brun - Brown ↯ n° 4</p>
4	4	<p>Enlever P11 du convertisseur et raccorder la fiche à sa place. <i>Remove P11 from converter and connect it to the corresponding plug.</i></p>
4'	4'	<p>Raccorder la fiche à J11 du convertisseur. <i>Connect the plug to J11 on converter rear panel.</i></p>
5	5	<p>Monter l'embase à son emplacement. <i>Install the connector on its location.</i></p>
6	6	<p>Enlever P2 du convertisseur et monter la fiche à sa place. <i>Remove P2 from the converter. Connect the corresponding plug instead of P2.</i></p>
7	7	<p>Câbler les fonctions désirées suivant le schéma ci-joint puis raccorder à 5. <i>Wire up the wanted functions following the diagram below and connect to 5.</i></p>

FIGURE 7

BRANCHEMENT SORTIE INTERFACE P 104 P 104 INTERFACE OUTPUT CONNECTIONS

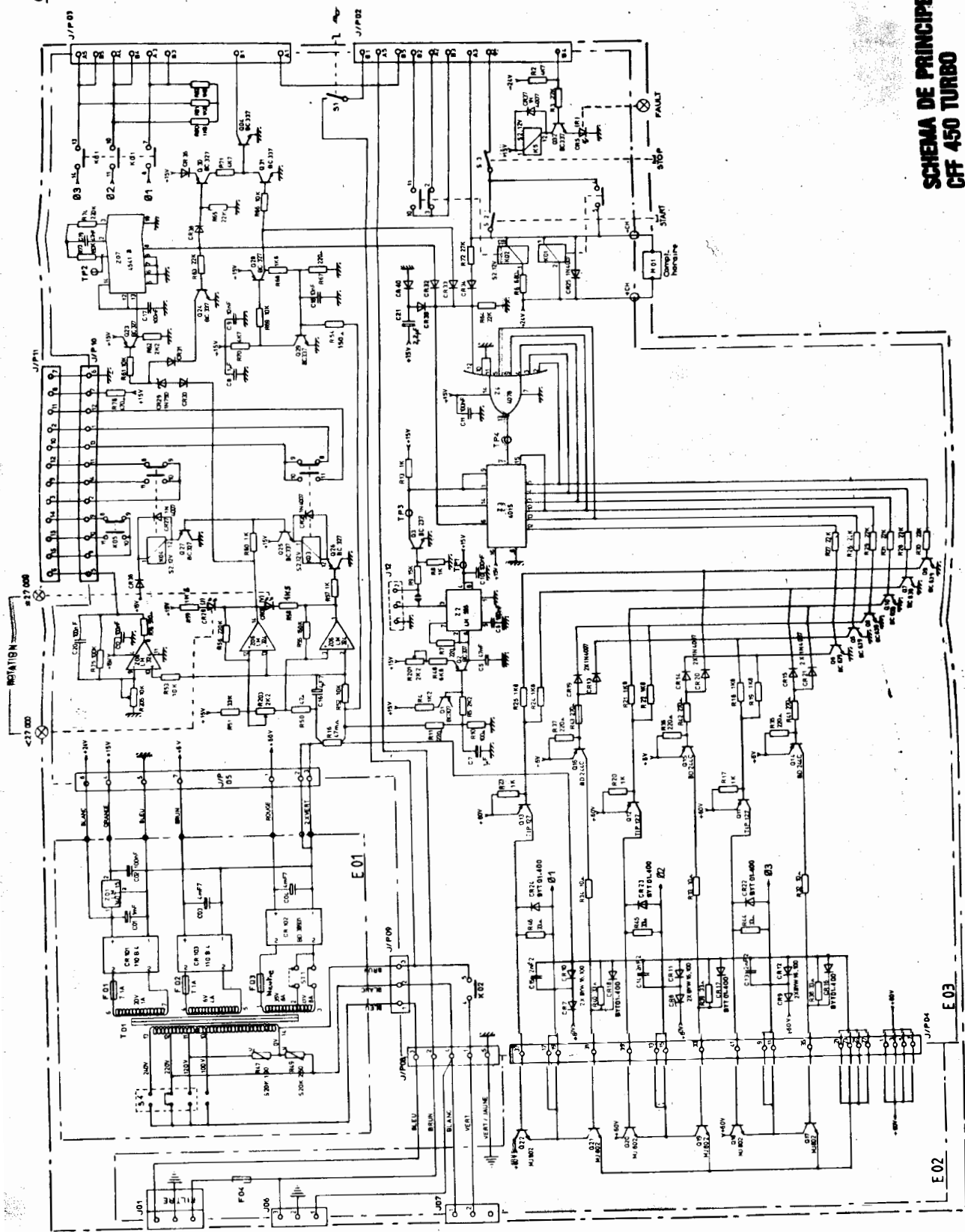


Vert : vitesse = 27000 tr/mn (fonctionnement normal)
Green : speed = 27000 tr/mn (normally operating)

Jaune : vitesse < 27000 tr/mn (démarrage ou surcharge)
Yellow : speed < 27000 tr/mn (starting or overloading)

Rouge : défauts "FAULT" (θ MDP, temps de démarrage trop long, sécurités convertisseur ou sécurités extérieures)
Red : fault "FAULT" (MDP temperature, starting period, converter safeties or outside safeties).

FIGURE 8



SCHEMA DE PRINCIPE CFF 450 TURBO

**CFF 450 TURBO
GENERAL ELECTRICAL SCHEMATIC**