


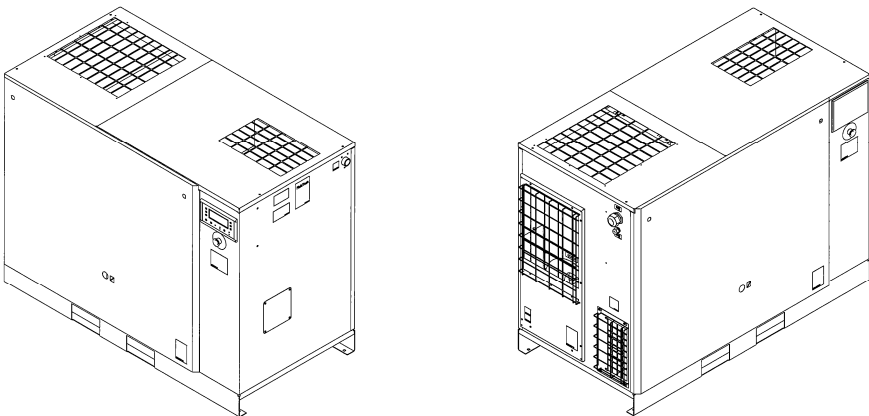


# MANUAL USE AND MAINTENANCE


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Edition 05/2012	


QUIET SCREW ROTARY COMPRESSOR UNITS

HP 20-25-30-40 KW 15-18,5-22-30  
 HP 20-25-30-40 (VSD) KW 15-18,5-22-30 (VSD)

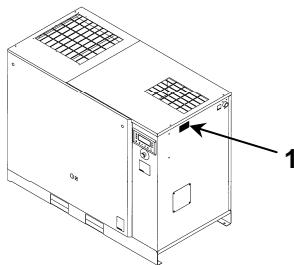
**THIS MACHINE MUST BE CONNECTED TO TWO DIFFERENT POWER SUPPLIES: THREE-PHASE SUPPLY FOR THE COMPRESSOR SINGLE-PHASE SUPPLY FOR THE DRYER**

 **READ THIS MANUAL CAREFULLY BEFORE CARRYING OUT ANY OPERATIONS ON THE COMPRESSOR UNIT.**

 **WARNING: THE INVERTER REMAINS CHARGED WITH HIGH VOLTAGE FOR FIVE MINUTES AFTER THE MASTER SWITCH HAS BEEN OPENED. ALWAYS WAIT FOR FIVE MINUTES BEFORE REMOVING THE FRONT COVER (INSTRUMENT PANEL). USE A SPECIFIC INSTRUMENT TO CHECK THAT THERE ARE NO DANGEROUS VOLTAGES BEFORE PERFORMING OPERATIONS ON THE INVERTER OR MOTOR.**

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MACHINE AND MANUFACTURER IDENTIFICATION DATA



1) Position of the identification plate

**ADDRESSES OF ASSISTANCE CENTRES**

In the event of breakdown or malfunction of the machine, switch it off and do not tamper with it. If repairs are needed, apply only to a technical assistance centre approved by the manufacturer and insist on the use of original spare parts. Failure to comply with the above may endanger the safety of the machine.

**INTRODUCTION**

Keep this manual with care for future consultation; the use and maintenance manual is an integral part of the machine. Read this manual carefully before carrying out any operations on the compressor unit.

The installation of the compressor unit and all operations involving it must be performed in conformity with the regulations in force concerning electric plants and personal safety.

**CHARACTERISTICS AND SAFETY PRECAUTIONS**



**MACHINE WITH AUTOMATIC START**



**BEFORE REMOVING THE PROTECTIVE GUARDS TO CARRY OUT ANY MAINTENANCE ON THE MACHINE, SWITCH OFF THE ELECTRIC POWER SUPPLY AND DISCHARGE THE RESIDUAL PRESSURE INSIDE THE UNIT.**

**ALL WORK ON THE ELECTRIC PLANT, HOWEVER SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL.**

**THIS MACHINE IS NOT SUITABLE FOR EXTERNAL INSTALLATION**

**THIS MACHINE CORRESPOND TO THE ESSENTIAL SAFETY REQUIREMENTS FORESEEN FROM THE EUROPEAN STANDARD (2006/42 CE).**

***THE LUBRICATING LIQUIDS AND OTHER EVENTUAL FLUIDS MUST NOT BE DISCHARGED IN THE ENVIRONMENT. THESE POLLUTING AND HAZARDOUS PRODUCTS MUST COMPULSORY BE DISPOSED BY CHARGING AUTHORISED AND SPECIALISED FIRMS ACCORDING TO THE DIFFERENT TYPOLOGY OF PRODUCT.***

***DIFFERENTIATE THE COMPRESSOR COMPONENTS ACCORDING TO THE DIFFERENT CONSTRUCTION MATERIALS (PLASTIC, COPPER, IRON, OIL FILTER, AIR FILTER ECC...)***

The manufacturer does not accept responsibility for damage caused as a result of negligence or failure to abide by the instructions given above.

**AIR RECEIVER AND SAFETY VALVE:**

- To limit internal corrosion, which could compromise the safety of the compressed air tank, **the condensation that is produced must be discharged at least once a day**. If an automatic drain fitted to the air receiver is present, it is necessary to check that it is working correctly every week and repair it if necessary.
- **The thickness of the receiver must be checked every year and also in accordance with legislation in force in the country where the receiver is installed.**
- **The tank cannot be used and must be replaced if the thickness falls below the minimum level given in the instruction documents for the tank.**
- The tank can be used within the temperature limits given in the conformity declaration.
- **The safety valves of the air receiver and oil receiver must be checked every year and replaced in accordance with legislation in force.**

**NOT RESPECTING THE ABOVE MENTIONED PRESCRIPTION CAN RESULT IN AIR RECEIVER BURSTING HAZARD.**

The manufacturer does not accept responsibility for damage caused as a result of negligence or failure to abide by the instructions given above.

## 1.0 GENERAL CHARACTERISTICS

The compressor units use single-stage screw rotary air compressors with oil injection.

The central unit comprises:

compressor, dryer and steam trap if present, storage tank.

The system is self-bearing and does not require bolts or other devices to anchor it to the floor.

The unit is completely assembled in the factory; the necessary connections for setting it up are:

- connection to the power mains (see installation chapter)
- connection to the compressed air network (see installation chapter)

## 2.0 INTENDED USE

The compressor has been built to supply compressed air for industrial use.

The machine cannot be used in premises where there is a risk of fire or explosion or where work is carried out which releases substances into the environment which are dangerous with regard to safety (for example: solvents, inflammable vapours, alcohol, etc.).

In particular the appliance cannot be used to produce air to be breathed by humans or used on direct contact with foodstuffs. These uses are allowed if the compressed air produced is filtered by means of a suitable filtering system (Consult the manufacturer for these special uses.) This appliance must be used only for the purpose for which it was specifically designed.

All other uses are to be considered incorrect and therefore unreasonable.

The Manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

## 3.0 OPERATION

### 3.1 OPERATION FOR COMPRESSOR

The electric motor and the compressor unit are coupled by means of a belt transmission.

The compressor unit takes in the outside air through the suction valve. The air taken in is filtered by two panel pre-filter placed on the side conveyor external and by the filter cartridge fitted upstream from the suction valve. Inside the compressor unit, the air and the lubricating oil are compressed and sent to the oil separating tank where the oil is separated from the compressed air; the air is then filtered again by the oil separating cartridge to reduce the amount of suspended oil particles to a minimum. At this point the two flows (of oil and air) are sent to two separate coolers where they are cooled, using a flow of air taken from the environment by a special fan inside the machine. The cooled oil returns to the circuit while the compressed air passes the using network.

### 3.2 OPERATION FOR DRYER

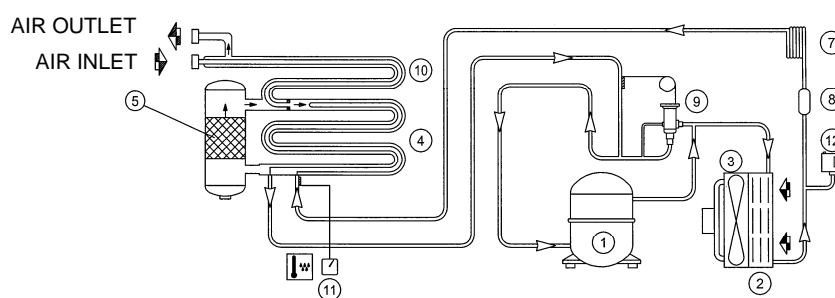
Dryer operation is described below. The gaseous refrigerant coming from the evaporator (4) is sucked by the refrigeration compressor (1) and it is pumped into the condenser (2). This one allows its condensation, eventually with the help of the fan (3); the condensed refrigerant passes through the dewatering filter (8) and it expands through the capillary tube (7) and goes back to the evaporator where it produces the refrigerating effect.

Due to the heat exchange with the compressed air which passes through the evaporator against the stream, the refrigerant evaporates and goes back to the compressor for a new cycle. The circuit is equipped with a bypass system for the refrigerant; this intervenes to adjust the available refrigerating capacity to the actual cooling load. This is achieved by injecting hot gas under the control of the valve (9): this valve keeps constant the pressure of the refrigerant in the evaporator and therefore also the dew point never decreases below 0 °C (32 °F) in order to prevent the condensate from freezing inside the evaporator.

The drier runs completely automatically; it is calibrated in the factory for a dew point of 3 °C (37,4 °F) and therefore no further calibrations are required.

### DRYER FLOW DIAGRAM

- 1 COMPRESSOR
- 2 CONDENSER
- 3 MOTOR FAN
- 4 EVAPORATOR
- 5 SEPARATOR
- 7 EXPANSION CAPILLARY TUBE
- 8 REFRIGERANT FILTER
- 9 HOT GAS BYPASS VALVE
- 10 AIR-TO-AIR EXCANGER
- 11 DEW POINT THERMOMETER
- 12 FAN PRESSURE SWITCH



## 4.0 GENERAL SAFETY STANDARDS

The appliance may be used only by specially trained and authorized personnel.

Any tampering with the machine or alterations not approved beforehand by the Manufacturer relieve the latter of responsibility for any damage resulting from the above actions.

The removal of or tampering with the safety devices constitutes a violation of the European Standards on safety.










**ATTENTION: UPSTREAM OF THE MACHINE INSTALL AN ISOLATOR KNIFE-SWITCH WITH AN AUTOMATIC CUTOFF AGAINST CURRENT SURGES AND EQUIPPED WITH A DIFFERENTIAL DEVICE FOR CALIBRATIONS SEE WIRING DIAGRAM.**



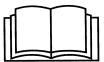
ALL WORK ON THE ELECTRIC PLANT, HOWEVE SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONEL.

5.0 DESCRIPTION OF DANGER SIGNALS

FIG. 2

	1) FLUID EJECTION		6) HOT PARTS
	2) DANGEROUS ELECTRIC VOLTAGE		7) MOVING PARTS
	3) AIR NOT FIT FOR BREATHING		8) MOVING PARTS
	4) NOISE		9) MACHINE WITH AUTOMATIC START
	5) HIGH PRESSURE		

5.1 DESCRIPTION OF COMPULSORY SIGNALS

	11) READ THE USE AND MAINTENANCE INSTRUCTIONS		
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6.0 DANGERS ZONES

6.1 DANGERS ZONES FOR COMPRESSOR UNIT

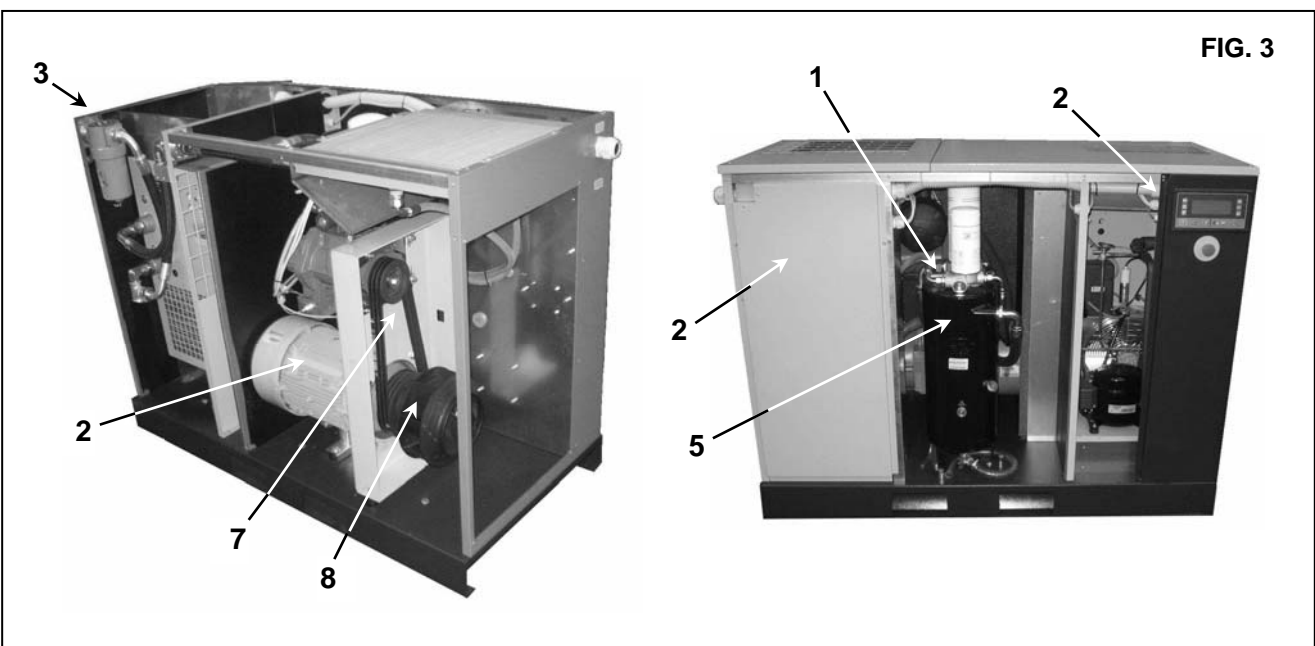
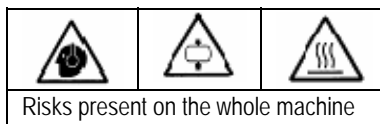





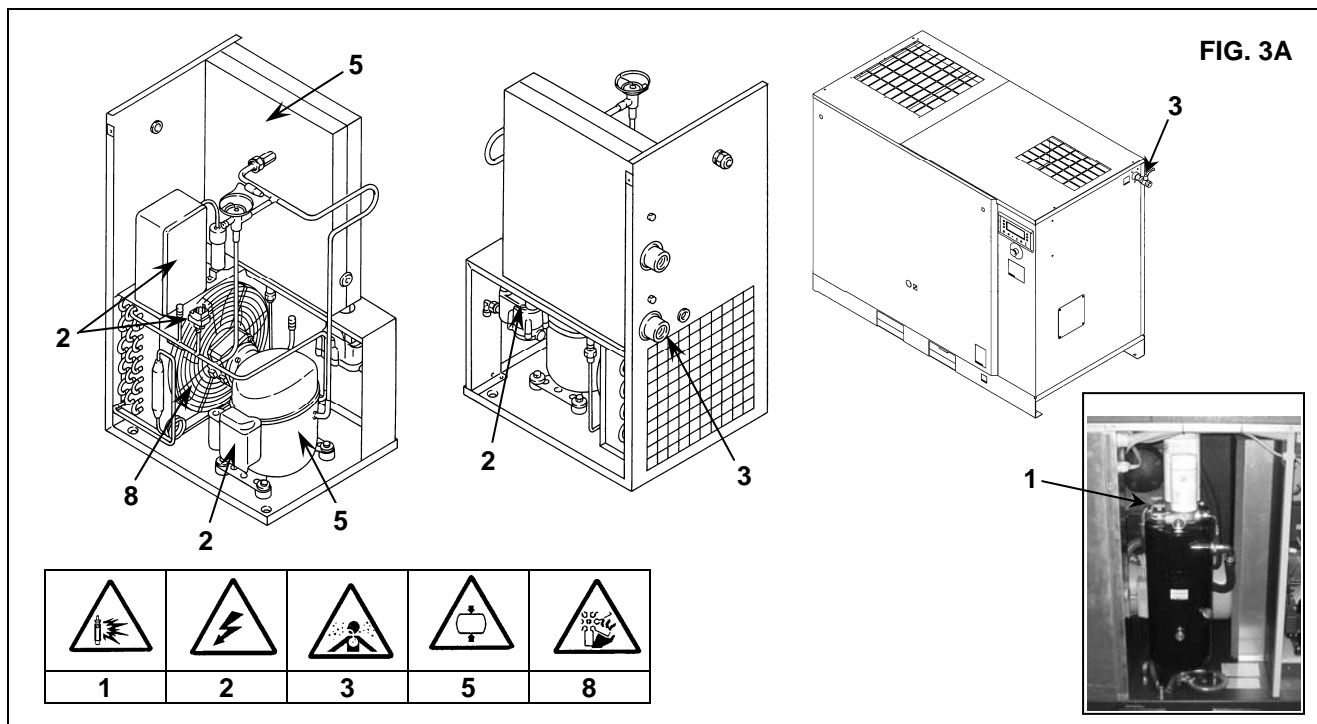
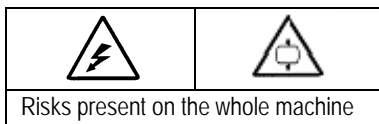


FIG. 3

					
1	2	3	5	7	8

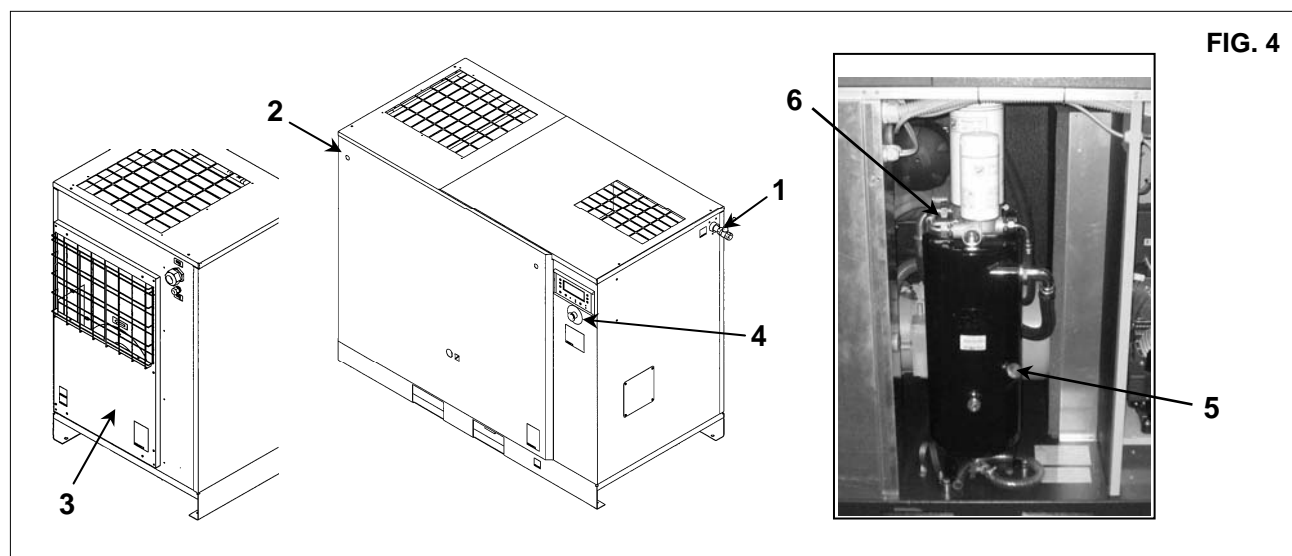
6.2 DANGERS ZONES FOR DRYER UNIT AND TANK



7.0 SAFETY DEVICES

7.1 SAFETY DEVICES FOR SCREW COMPRESSOR (Fig. 4)

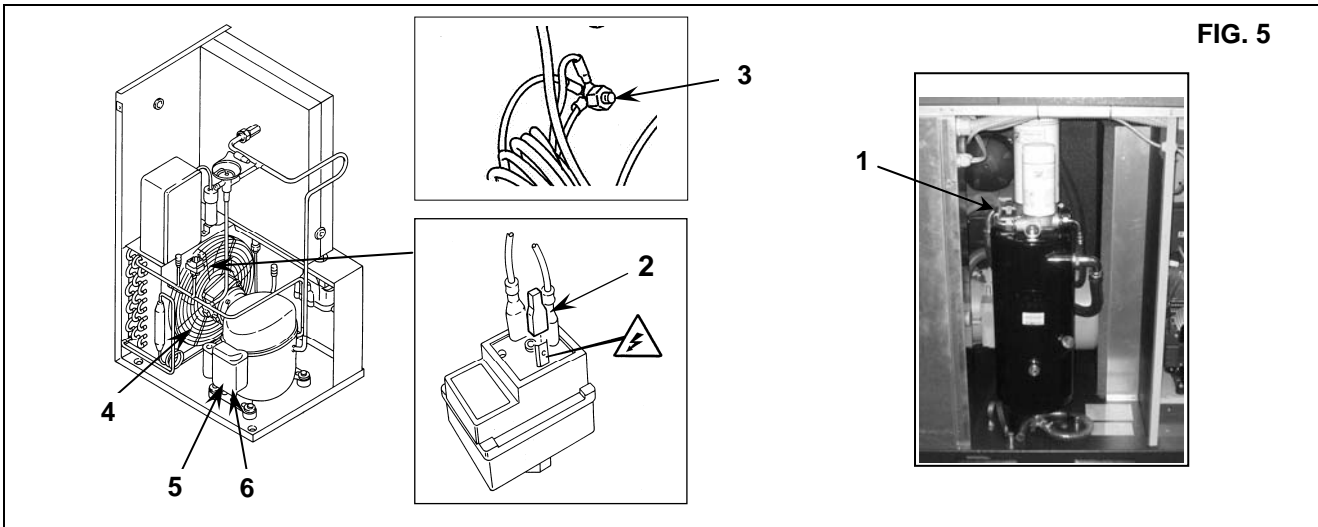
1) Safety screws	4) Emergency stop button with mechanical seal and rotation release.
2) Side panels and door to the electric panel, opened with a special key	5) Oil filling cap (with safety breather)
3) Fixed protection device - cooling fan	6) Safety valve
3) Fixed protection device - pulleys	



**ENGLISH**

**7.2 SAFETY DEVICES FOR DRYER UNIT**

1) Safety valve	4) Fan protection
2) Protective pressure switch cap.	5) Relay for compressor (automatic)
3) Earth	6) Overload protector for compressor

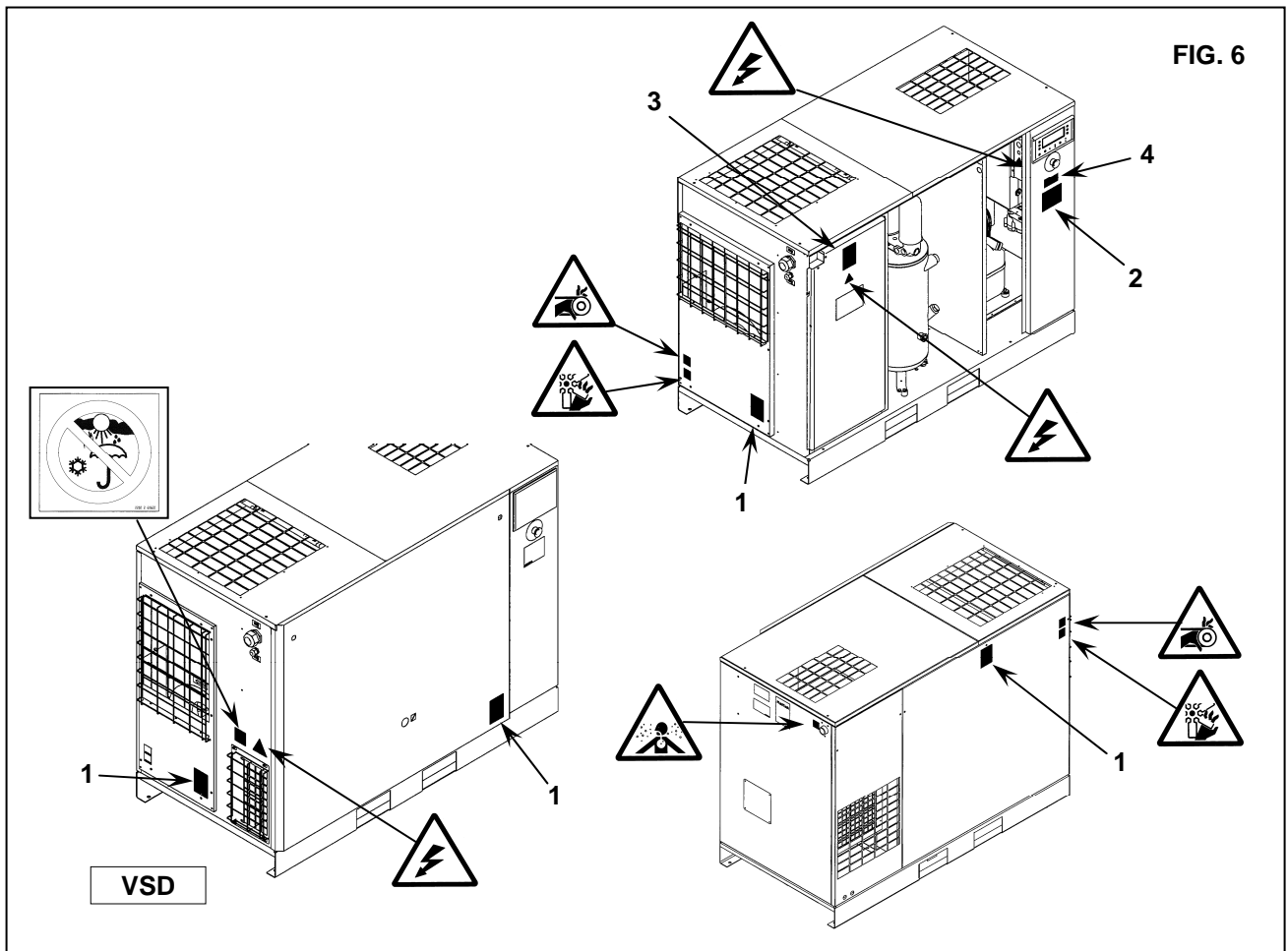


**8.0 POSITION OF PLATES**

**8.1 POSITION OF THE DANGER PLATES FOR COMPRESSOR UNIT**

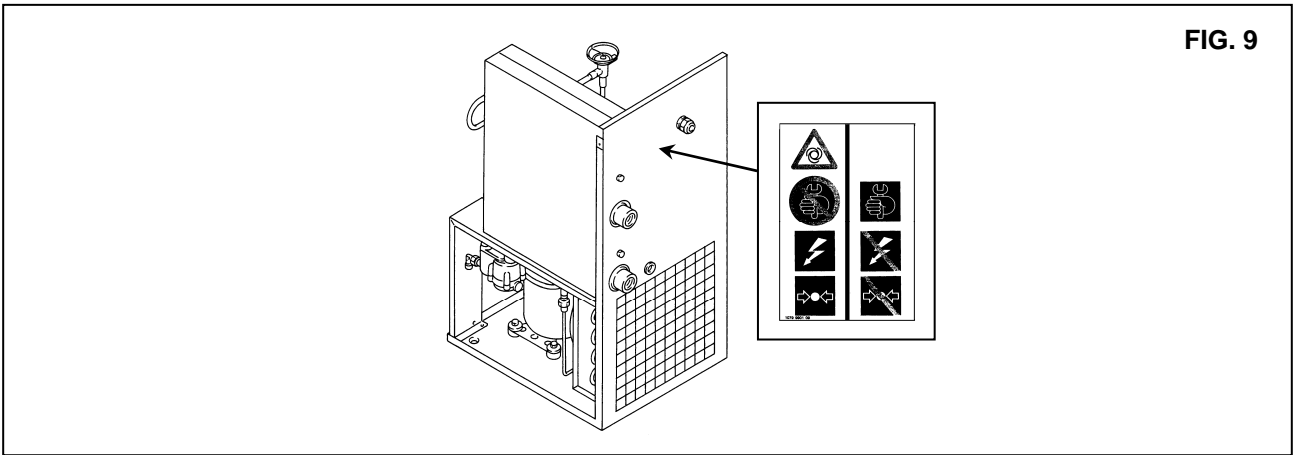
The plates fitted on the compressor unit are part of the machine; they have been applied for safety purposes and must not be removed or spoiled for any reason.

- 1) Danger plate Code 1079990348
- 2) Plate "Machine with automatic start" 2202260791
- 3) Danger plate
- 4) Label "UL"





**8.4 POSITION OF THE DATA PLATE FOR DRYER**



**FIG. 9**

**9.0 COMPRESSOR ROOM**

**9.1 FLOOR**

The floor must be even and of industrial type; the total weight of the machine is shown in the Chap. 13.0 Remember the total weight of the machine when positioning it.

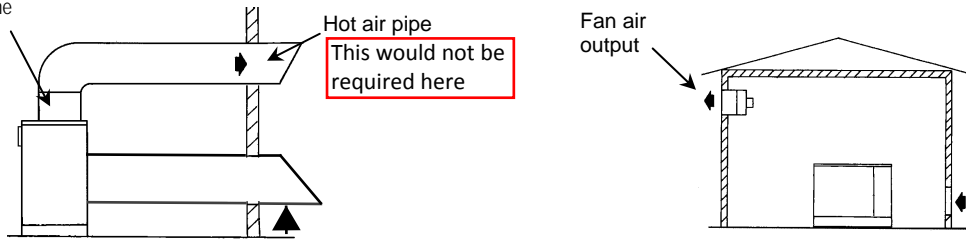
**9.2 VENTILATION**

When the machine is operating, the room temperature must not be higher than **40 °C (104 °F)** or lower than **1 °C (33,8 °F)**. The volume of the room must be about **60 m<sup>3</sup>**. The room must be provided with 2 openings for ventilation with a surface area of about **0,5 m<sup>2</sup>** each. The first opening must be in a high position to evacuate the hot air, the second opening must be low to allow the intake of external air for ventilation. If the environment is dusty it is advisable to fit a filtering panel on this opening.

**9.3 EXAMPLES OF VENTILATION OF THE COMPRESSOR ROOM**

**FIG. 10**

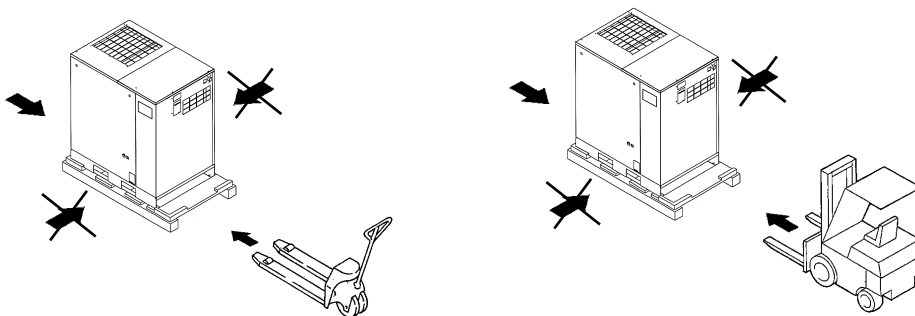
ATTENTION: Removable pipe to allow cleaning of the radiator.



**10.0 TRANSPORT AND HANDLING**

The machine must be transported as shown in the following figures.

**FIG. 11**



**11.0 UNPACKING**

After removing the packing, ensure that the machine is unbroken and that there are no visibly damaged parts. If you are in doubt, do not use the machine but apply to the manufacturer technical assistance service or to your dealer. The packing material (plastic bags) must not be left within the reach of children or abandoned in the environment, as they are a potential source of danger and pollution. Dispose of these materials in the approved collection centres.

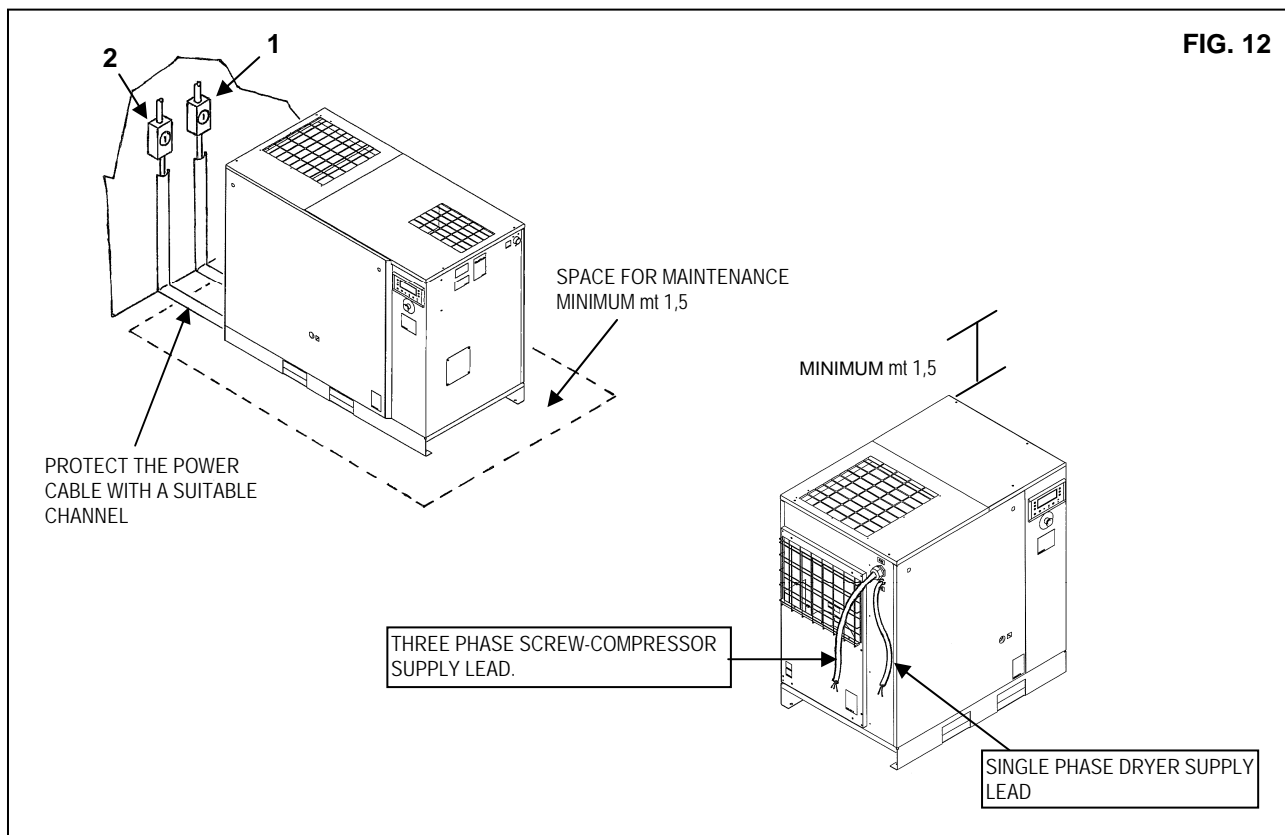


## 12.0 INSTALLATION

### 12.1 POSITIONING

After unpacking the equipment and preparing the compressor room, put the machine into position, checking the following items:

- ensure that there is sufficient space around the machine to allow maintenance (see Fig. 12).



**ENSURE THAT THE OPERATOR CAN SEE THE WHOLE MACHINE FROM THE CONTROL PANEL AND CHECK THE PRESENCE OF ANY UNAUTHORIZED PERSONS IN THE VICINITY OF THE MACHINE.**

### 12.2 ELECTRICAL CONNECTION

- Check that the supply voltage is the same as the value indicated on the machine data plate.
- Check the condition of the line leads and ensure that there is an efficient earth lead.
- Ensure that there is an automatic cut-out device upstream for the machine against overcurrents, with a differential device (see Ref. 1 for compressor Ref. 2 for dryer ) wiring diagram.
- Connect the machine power cables with the greatest care, according to the standards in force. These cables must be as indicated on the machine wiring diagram.
- Connect the cables to the charging clamps on the electric panel and make sure they are properly tightened. After the first 50 working hours, check that the screws on the electric terminals are tight.



**ONLY PROFESSIONALLY SKILLED PERSONNEL MAY HAVE ACCESS TO THE ELECTRIC PANEL. SWITCH OFF THE POWER BEFORE OPENING THE DOOR OF THE ELECTRIC PANEL.**

**COMPLIANCE WITH THE REGULATIONS IN FORCE CONCERNING ELECTRIC PLANTS IS FUNDAMENTAL FOR OPERATOR SAFETY AND FOR THE PROTECTION OF THE MACHINE.**

**CABLES, PLUGS AND ALL OTHER TYPE OF ELECTRIC MATERIAL USED FOR THE CONNECTION MUST BE SUITABLE FOR THE USE AND COMPLYING WITH THE REQUIREMENTS STATED BY THE REGULATIONS IN FORCE.**



The standard voltage configuration for the compressor is mentioned on the **data plate** of the machine.

**NEVER OPERATE THE COMPRESSOR ON A VOLTAGE OTHER DIFFERENT THAN SHOWN ON THE ELECTRIC CABINET.**

**For tri-voltage machine follow the instructions in the electrical diagram (inside cubicle) to convert the operating voltage of the compressor for either 208V or 230V or 460V**

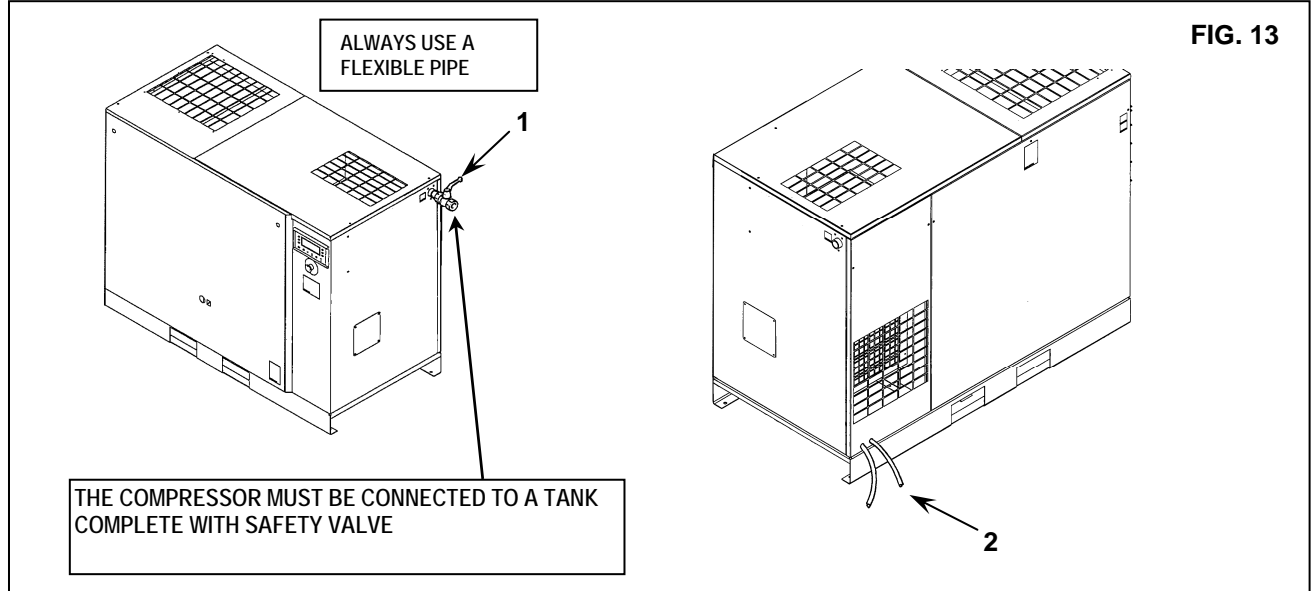
## ENGLISH

### 12.3 CONNECTION TO THE COMPRESSED AIR NETWORK

Fit a manual interception valve Ref. 1 between the machine and the compressed air network so that the compressor may be isolated during maintenance operations (see figure 13) .



PIPES, FITTINGS AND CONNECTIONS USED FOR THE CONNECTION OF THE ELECTROCOMPRESSOR TO THE COMPRESSED AIR NETWORK MUST BE SUITABLE TO THE USE ACCORDING TO THE PRESCRIPTIONS OF THE REGULATIONS IN FORCE IN THE COUNTRY OF USE.



The automatic condensate drainage Ref. 2 Fig. 13, is led outside the machine with a flexible pipe that may be inspected. Drainage must comply with the local regulations in force.

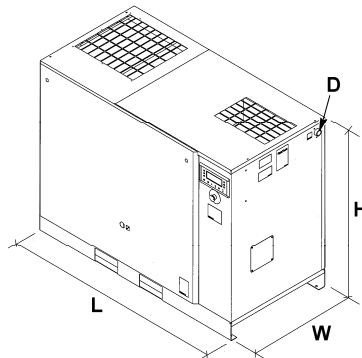


ALL DAMAGE DUE TO THE FAILURE TO COMPLY WITH THESE INDICATIONS CANNOT BE ATTRIBUTED TO THE MANUFACTURER AND MAY CAUSE INVALIDITY OF THE GUARANTEE CONDITIONS.

### 12.4 STARTING UP

See part B of this manual, Chapter 20.0

## 13.0 DIMENSIONS AND TECHNICAL DATA



<i>Variable speed / With Dryer</i>				
HP20-25-30-40 kW 15-18,5-22-30	Dimensions mm (in)			Air connection
	L	W	H	D
	1659 (65,3)	805 (31,7)	1220 (48)	1"

<i>With Dryer</i>				
HP20-25-30-40 kW 15-18,5-22-30	Dimensions mm (in)			Air connection
	L	W	H	D
	1659 (65,3)	805 (31,7)	1220 (48)	1"

<i>Variable speed / Without Dryer</i>				
HP20-25-30-40 kW 15-18,5-22-30	Dimensions mm (in)			Air connection
	L	W	H	D
	1204 (47,4)	805 (31,7)	1220 (48)	1"




<i>Fixed speed / Without Dryer</i>				
HP20-25-30-40 kW 15-18,5-22-30	Dimensions mm (in)			Air connection
	L	W	H	D
	1204 (47,4)	805 (31,7)	1220 (48)	1"




	Net weight Kg. (lb)			
	HP 20 -kW 15	HP 25 -kW 18,5	HP 30 -kW 22	HP 40 - kW 30
Weight (without / with ) dryer	366 - 439	375 - 448	391 - 464	419 - 492
	(806,8 - 976,8)	(826,7 - 987,7)	(862 - 1022)	(932 - 1084)

	Net weight Kg. (Variable speed)			
	HP 20 -kW 15 (IVR)	HP 25 -kW 18,5 (IVR)	HP 30 -kW 22 (IVR)	HP 40 - kW 30 (IVR)
Weight (without / with ) dryer	394 - 467	403 - 476	419 - 492	447 - 520
	(868 - 1029)	(888 - 1049)	(923 - 1084)	(985 - 1146)

	HP 20 - kW 15	HP 25 - kW 18,5	HP 30 - kW 22	HP 40 - kW 30
	PSI 125	PSI 125	PSI 125	PSI 125
Standard air capacity acfm	80	99,7	116,7	135,5
Max. pressure PSI	132	132	132	132
Noise product. dB(A)	69	72	74	77
Power HP - KW	20 - 15	25 - 18,5	30 - 22	40 - 30
Oil operation timer setting °C (°F)	110 (230)			
Oil load kg. (lb)	10,7 (23,5)			

	HP 20 - kW 15 (IVR)	HP 25 - kW 18,5 (IVR)	HP 30 - kW 22 (IVR)	HP 40 - kW 30 (IVR)
	80 - 138 PSI	80 - 138 PSI	80 - 138 PSI	80 - 138 PSI
Standard air capacity at 100 PSI acfm	24,8 - 92	29,7 - 116	39,7 - 128,1	45,5 - 147
Max. pressure PSI	138	138	138	138
Noiose product. dB(A)	69	72	74	77
Power HP - KW	20 - 15	25 - 18,5	30 - 22	40 - 30
Oil operation timer setting °C (°F)	110 (230)			
Oil load kg. (lb)	10,7 (23,5)			

Type Dryer (230V 60Hz)	Weight Kg. (lb)	Freon R 404A Kg. (lb)	 Nominal Power W (HP)	 Nominal Power W (HP)	Nominal Power W (HP)	Bar (PSI) MAX. 
		60 Hz	60 Hz	60 Hz	60 Hz	
A7	53 (116,8)	0,650 (1,43)	777 (1,04)	84 (0,11)	861 (1,15)	bar 13 (188)
A8	65 (143,3)	0,650 (1,43)	1035 (1,38)	90 (0,12)	1125 (1,508)	bar 13 (188)

Type Dryer (115V 60Hz)	Weight Kg. (lb)	Freon R 404A Kg. (lb)	 Nominal Power W (HP)	 Nominal Power W (HP)	Nominal Power W (HP)	Bar (PSI) MAX. 
		60 Hz	60 Hz	60 Hz	60 Hz	
A7	53 (116,8)	0,600 (1,32)	646 (0,87)	106 (0,14)	752 (1,01)	bar 13 (188)
A8	65 (143,3)	0,650 (1,43)	904 (1,21)	106 (0,14)	1010 (1,35)	bar 13 (188)

**Reference conditions:**

Ambient temperature 25 °C (77 °F)  
 Inlet air temperature 35 °C (95 °F)  
 Pressure 7 bar (101 psi)  
 Dew point in pressure 3 °C (37,4 °F)

**Limit conditions:**

Max. ambient temperature 43°C (109,4 °F)  
 Min. ambient temperature 1°C (33,8 °F)  
 Max. inlet air temperature 55°C (131 °F)  
 Max. working pressure 13 bar (188 psi)

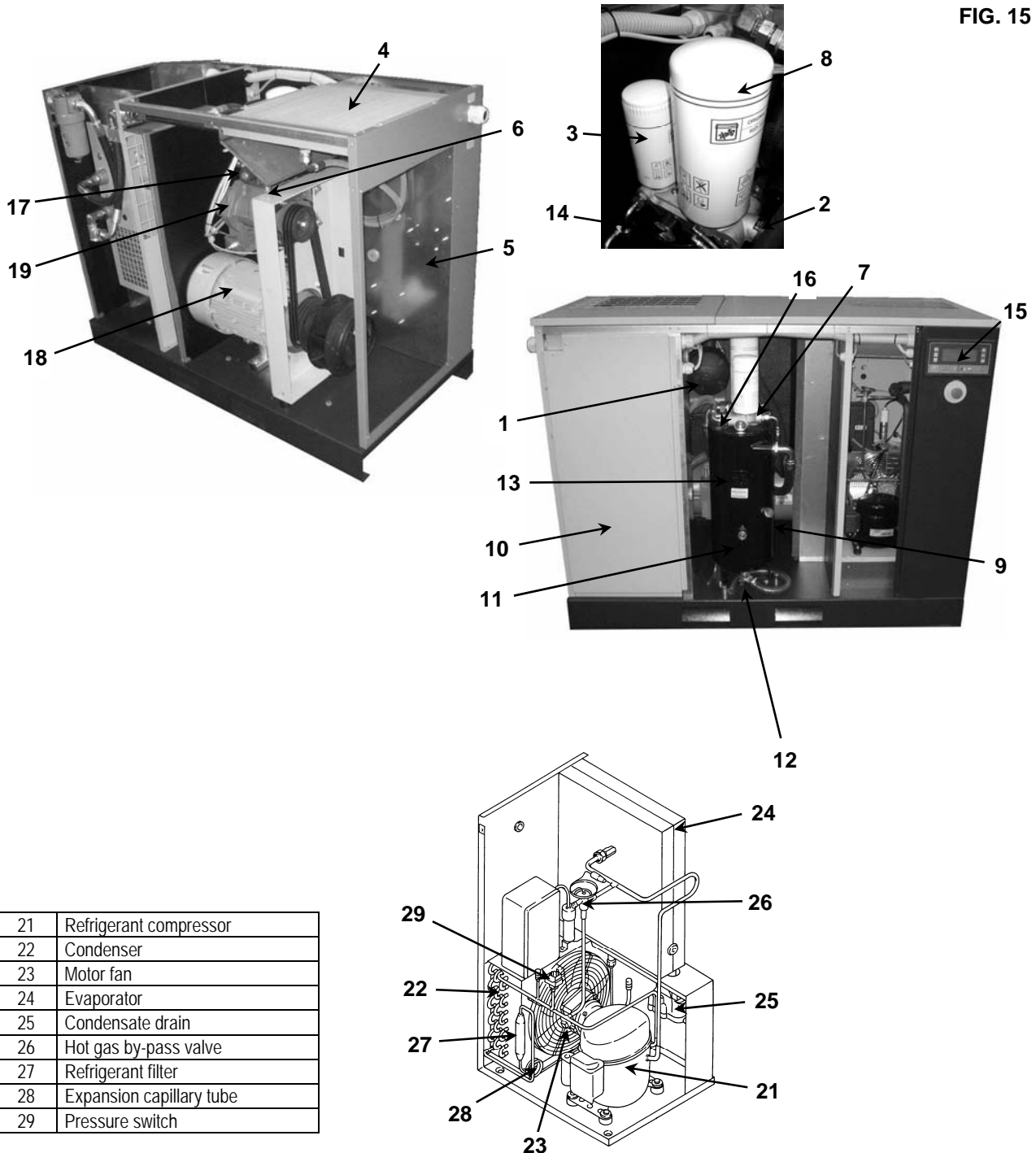
14.0 MACHINE ILLUSTRATION

14.1 GENERAL LAYOUT FOR COMPRESSOR AND DRYER

- |  |                        |
|--|------------------------|
| 1 Air suction filter                           | 12 Oil discharge       |
| 2 Thermostatic valve                           | 13 Oil tank            |
| 3 Oil filter                                   | 14 Pressure gauge tank |
| 4 Air-oil cooler                               | 15 Control card        |
| 5 Filter panel                                 | 16 Safety valve (*)    |
| 6 Belt tightening system                       | 17 Suction unit        |
| 7 Minimum pressure valve                       | 18 Electric motor      |
| 8 Air-oil separator with oil separating filter | 19 Screw compressor    |
| 9 Top-up or oil filling cap                    |                        |
| 10 Control panel                               |                        |
| 11 Oil gauge                                   |                        |

\* IT IS FORBIDDEN TO TAMPER WITH THE SETTING VALUES OF THE SAFETY VALVE

FIG. 15

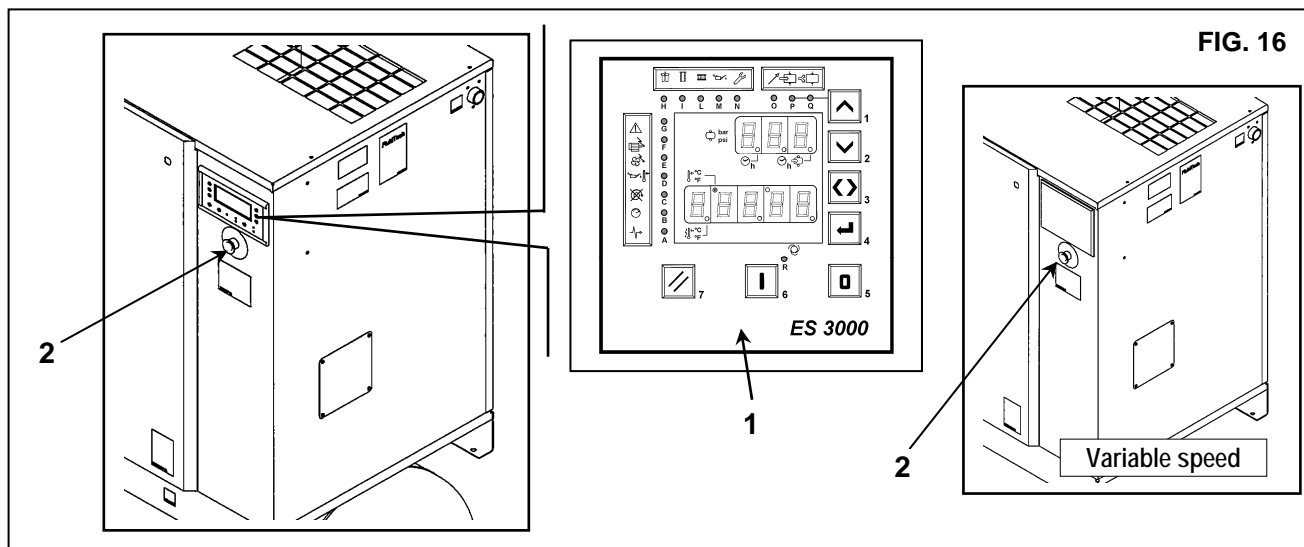


21	Refrigerant compressor
22	Condenser
23	Motor fan
24	Evaporator
25	Condensate drain
26	Hot gas by-pass valve
27	Refrigerant filter
28	Expansion capillary tube
29	Pressure switch

14.2 COMMAND AND CONTROL PANEL

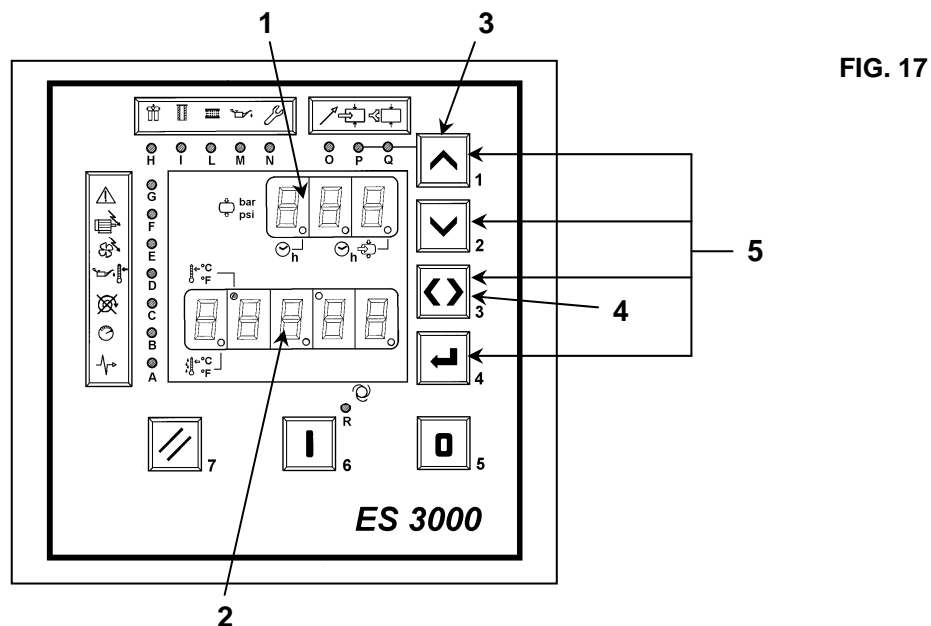


BEFORE CARRYING OUT THE OPERATION TEST, READ CAREFULLY AND ACQUIRE A GOOD KNOWLEDGE OF THE COMMAND FUNCTIONS.



1) Control card	
2) Emergency stop button with mechanical seal and rotation release	




14.3 ELECTRONIC CARD









There is an electronic control and diagnostics card on the electric panel ; this card includes the display of the functions as shown in figure 17.

1) Upper display: indicates the compressor pressure.	4) Tabulation key to move to the next field of the screen on the display Ref. 2
2) Lower display: indicate the temperature, total hours, loaded hours.	5) Buttons to programme the board.
3) Button to create a manual unload in the compressor.	

## ENGLISH







Symbol	Description
 (7)	Pressing the pushbutton cancels the stored alarm indication. Pressing the pushbutton for more than 3 seconds, the central control unit is tested: all the LEDs must be on.
 (6)	By pressing this button the compressor is switched on. N.B. there is a delay of about 10 seconds before start up. (ATTENTION: start-up takes place about 15 seconds after the board is supplied with power or from the moment it is switched off with the button " 5 ").
 (5)	Pressing the pushbutton starts the compressor switch-off phase: The compressor runs loadless for 20 seconds before stopping.

Led – indicates compressor operating status: "RED" pilot lamps (cause machine stoppage)

Symbol	Led flashing	Led on
 (B)	Overpressure alarm in progress	Machine stopped for overpressure
 (C)	Alarm inverse rotation in progress	Alarm inverse rotation restored
 (D)	Oil overtemperature alarm in progress (>95 °C – 203 °F)	Machine stopped for oil overtemperature (> 100 °C – 212 °F)
 (E)	Not enabled	Not enabled
 (F)	- Motor overload (for F.S.) - Fault on frequency converter (for VSD)	- Machine stopped for motor overload (for F.S.) - Machine stopped for fault on frequency converter for VSD)
 (G)	-	General alarm in progress for fault in pressure and temperature probes. Enabled emergency stop push-button.





N.B. to switch off the red LEDs press "reset"

Led – indicates compressor operating status: "YELLOW" pilot lamps (do not cause machine stoppage).

Symbol	Led flashing	Led on
 (A)	Not enabled	Not enabled
 (H)	Forewarning to replace oil filter	Replace oil filter
 (I)	Forewarning to replace separator filter	Replace separator filter
 (L)	Forewarning to replace suction filter	Replace suction filter
 (M)	Forewarning to change oil	Change oil
 (N)	Forewarning for general check	Perform general check

N.B. to switch off the "YELLOW" LEDs see chapter 14.6

Led – indicates compressor operating status: "GREEN" pilot lamps

Symbol	Led flashing	Led on
 (O)	Not enabled	Not enabled
 (P)	-	Compressor running under load
 (Q)	Manual loadless operation of compressor	Loadless operation of compressor
 (R)	Compressor in stand-by for start-up (10 seconds) or in shut-down phase (45 seconds).	Compressor on

**ATTENTION:** to start up again after a protection has been triggered (alarm) press "RESET" followed by the start button "I"



**ATTENTION:** start-up takes place about 15 seconds after the board is supplied with power or from the moment it is switched off with the button (5).

#### OPERATION OF THE CENTRAL CONTROL UNIT

The central control unit operation is programmed for Energy Saving; it switches off the compressor, thus reducing idle running to a minimum.

The control unit also indicates when filters require maintenance etc.. (Yellow LEDs).

#### 14.4 VIEWING THE HOURS OF OPERATION

To view the total hours of operation press Ref. 3, Fig. 17a, the hours of operation appear in the bottom display and a dot lights up in the top display (confirm LED).

To view the LOADED hours of operation press Ref. 3 Fig. 17a again and a dot lights up on the right side of the top display (confirm LED).

#### 14.5 VIEWING THE HOURS OF OPERATION OF COMPONENTS SUBJECT TO MAINTENANCE

To view the hours of operation of individual components subject to maintenance, proceed according to Chapter 14.6,(1 to point 4); the operating hours will be viewed on the bottom display.

- Press the button Ref. 3 Fig 17a to exit.

#### 14.6 RESETTING THE MAINTENANCE INTERVAL COUNTERS (YELLOW LEDs excluding LED "A")

To reset a counter (i.e. Ref. L air filter) after having performed the relevant maintenance, proceed as follows: (see Fig. 17a)

- 1) Press buttons Ref. 7 and Ref. 4 simultaneously until the LED ref. H lights up.
- 2) Release the buttons Ref. 7 and Ref. 4
- 3) Use the buttons Ref. 1 and Ref. 2 to select the LED Ref. L (air filter) relevant to the component in question.
- 4) The operating hours of the component Ref. L (air filter) are viewed on the 5-digit bottom display.
- 5) Press the button Ref. 4 once and the value viewed flashes, press the button Ref. 4 again; the display is now reset and the LED Ref. L is lit.
- 6) Press the button Ref. 3 to exit from RESET
- 7) To reset another component, move to the relevant LED using the buttons Ref. 1 and Ref. 2.

**N.B. the board exits automatically from programming after 30 seconds of inactivity**

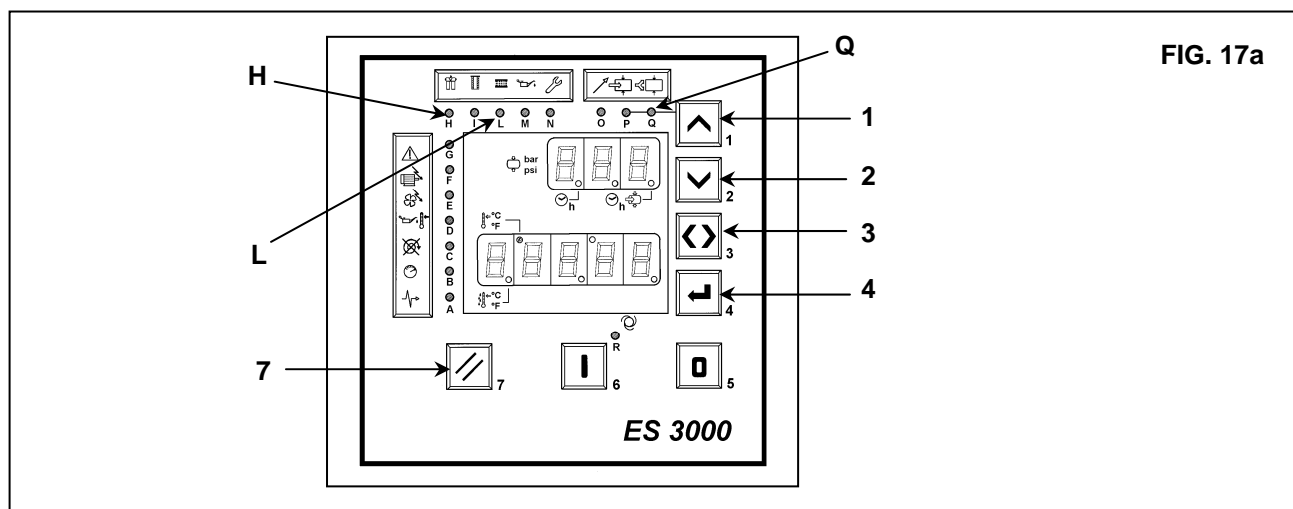


FIG. 17a

#### 14.7 ACTIVATING / DEACTIVATING THE LOADLESS-LOADED OPERATION MODE

- 1) Press the button Ref. 1 Fig. 17a and the LED Ref. Q flashes, the machine operates in MANUAL LOADLESS mode.
- 2) Press the button Ref. 1 Fig. 17a again and the machine returns to the automatic cycle.

#### 14.8 OPERATING PARAMETERS OF THE BOARD.

The board is programmed in the factory with a preset value of the following parameters :

- P0 = cut-off pressure (8 –10 bar) / (116 – 145 psi)
- P1 = cut-in pressure (7.5 – 9.5 bar) / (108,5 – 137,7 psi)
- r 2 = maximum operating temperature (100 °C) – (212 °F)
- t 3 = not active
- t 4 = not active
- C5 = maximum number of starts per hour (10)

**ENGLISH**

The board is also programmed to measure the pressure in "bar" (parameter C7) and the temperature in °C (parameter C6). The pressure and temperature units of measurement correspond to the table below.

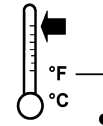
Name of the parameter	Value of the parameter	
C6	0 = °C	1 = °F
C7	0 = bar	1 = °PSI

All parameters described above can be viewed and modified with the procedure indicated in paragraph 14.9. The parameter number appears in the top display and the value of the parameter appears in the bottom display.

**14.9 VIEWING AND MODIFYING THE VALUE OF BOARD PARAMETERS.**

To view the board parameters proceed as follows:

- Press and hold the button 4 Fig. 17a for a few seconds, until "P0" (cut-off pressure) appears on the top display: the value of the cut-off pressure in bar (8, 10 bar) / (116 – 145 psi) appears simultaneously on the bottom display.
- By pressing the button Ref. 1 Fig. 17a all the board parameters (P0, P1, r2, t3, t4, C5, C6, C7) will appear in sequence on the top display while the values set for each parameter will appear on the bottom display. To exit press the button Ref. 3 until the luminous dot on the display is positioned on the symbol.



To change the value of parameters follow the example indicated below:

EXAMPLE: the maximum temperature value is to be modified to 95°C. (203 °F)

- Press and hold the button Ref. 4 fig. 17a for a few seconds, until the parameter "P0" appears on the top display.
- Press the button Ref. 1 Fig. 17a until reaching the parameter "r2" (maximum temperature).
- Press the button Ref. 4 Fig. 17a: the value of the temperature indicated on the bottom display flashes.
- Press the button Ref. 2 Fig. 17a until reaching the value 95.
- Press the button Ref. 4 Fig. 17a to confirm the modification; the value 95 stops flashing.
- Exit from programming by pressing the button Ref. 3 Fig. 17a.


The new maximum temperature value is now 95.

**14.10 DISPLAYING A TEMPERATURE LEVEL THAT IS TOO LOW**

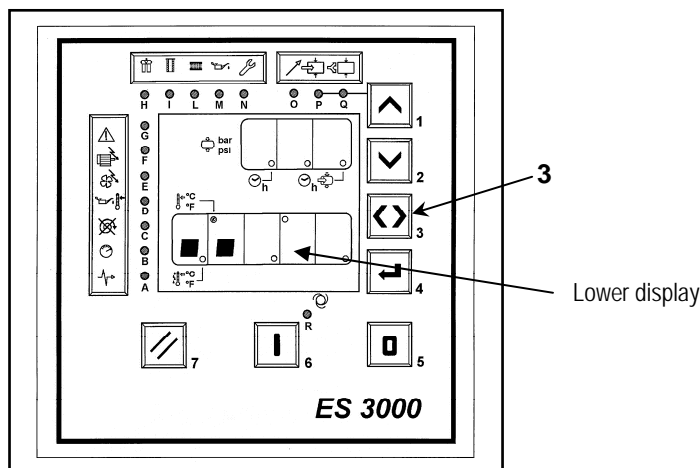
The card is programmed in the factory with a minimum temperature level set at (+ 4 °C – 39,2 °F), if the read level is lower, it is shown by the bottom display flashing. This fault signal does not mean the compressor cannot be started, but warns the operator that the room temperature is too low.

**14.11 DRYER STATUS VISUALIZATION (ONLY FOR MACHINES WITH DRYER)**

In order to see the visualization of the dryer status you have to press the button Ref. 3 Fig. 17b starting by main visualization.

Dryer status	Lower display visualization	 Status of led ( G )
Local Ambient Temperature too low	Empty	Fixed ON
Good	One square	OFF
Good	Two squares	OFF
Good	Three squares	OFF
Good	Four squares	OFF
Local Ambient Temperature too high	Five squares	Fixed ON

Below an example of the visualization for a good dryer status.



**FIG. 17b**



**15.0 ORDINARY MAINTENANCE TO BE DONE BY THE USER**

**BEFORE CARRYING OUT ANY MAINTENANCE IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION NETWORK.**

The maintenance jobs described in this chapter may be carried out by the user.

The more complex maintenance jobs which require professionally skilled personnel are listed in the chapter on **GENERAL ROUTINE MAINTENANCE**. (See Chap. 21.0)

**15.1 GENERAL INFORMATION****15.2 MAINTENANCE PROGRAMME**

■ OPERATIONS THAT MAY BE CARRIED OUT BY THE USER

■ ■ OPERATIONS THAT REQUIRE SKILLED PERSONNEL; THESE OPERATIONS ARE ILLUSTRATED IN PART B OF THIS MANUAL.

These maintenance intervals are recommended for work environments that are not dusty and are well ventilated. For particularly dusty environments, double the frequency of controls.

<b>Every Day (after use)</b>	<ul style="list-style-type: none"> <li>■ Drain condensate from the air tank</li> <li>■ Check automatic condensation emptying (on the dryer if fitted)</li> </ul>
Every 50 working hours	<ul style="list-style-type: none"> <li>■ Drain condensate from the oil tank</li> <li>■ Check the oil level</li> <li>■ Clean the filtering panel</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>■ Clean the air suction filter (see control board LED)</li> <li>■ Clean the condenser battery (on the dryer if fitted)</li> <li>■ Clean the dirt collection filter</li> <li>■ ■ Check belt tension</li> </ul>
Every 2000 hours	<ul style="list-style-type: none"> <li>■ Change the suction filter (see control board LED)</li> <li>■ ■ Change the oil (see control board LED)</li> <li>■ ■ Change the oil filter (see control board LED)</li> <li>■ Change the filtering panel</li> <li>■ Replace the line afterfilter (change the filter cartridge at least once a year)</li> </ul>
Every 4000 hours	<ul style="list-style-type: none"> <li>■ ■ Clean the finned surface of the air-oil cooler</li> <li>■ ■ Change the oil separating filter (see control board LED)</li> </ul>

**15.3 DRAINING CONDENSATE FROM THE OIL TANK**

If the compressor work cycle contemplates long pauses during which the machine cools down, a certain amount of condensate will gather in the oil tank. This happens, for example, when stopping overnight or at weekends.

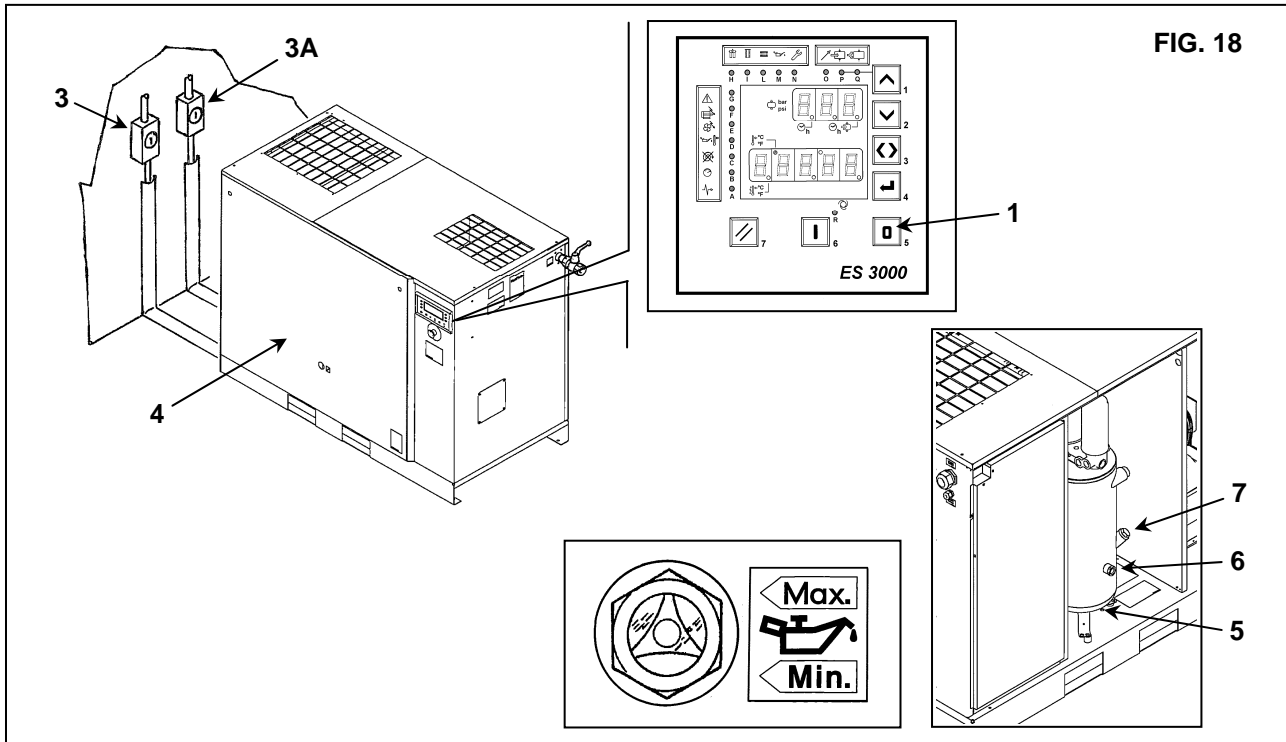
The condensate must be drained off every 50 hours or every week. This operation may be performed only when the machine is cold, that is when it has been switched off for at least 8 hours.



**BEFORE DRAINING THE CONDENSATE IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS.**

Proceed as follows:

- Switch off the machine with pushbutton Ref. 1 Fig. 18: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 3 (on the screw-compressor) and Ref. 3A (on the dryer if fitted) Fig. 18.



- Wait for the machine to cool down.
- Remove the panels Ref. 4 Fig. 18 with the key provided.
- SLOWLY turn on the tap Ref. 5 Fig. 18 and let the condensate flow out.
- When the first traces of oil appear, turn off the tap.



**CONDENSATE MUST BE DISPOSED OF IN CONFORMITY WITH THE LOCAL REGULATIONS IN FORCE.**

- Check the oil level on the indicator Ref. 6 Fig. 18.
- If the oil level is under the minimum, top up as described at point 15.4.

**15.4 CHECK OIL LEVEL AND TOP UP**

- Switch off the machine with push button Ref. 1 Fig. 18: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 3 (on the screw-compressor) and Ref. 3A (on the dryer if fitted) Fig. 18.
- Wait a few minutes for the foam in the oil collector to abate.
- Check the oil level on the indicator Ref. 6 Fig. 18
- If the oil level is under the minimum, top up.



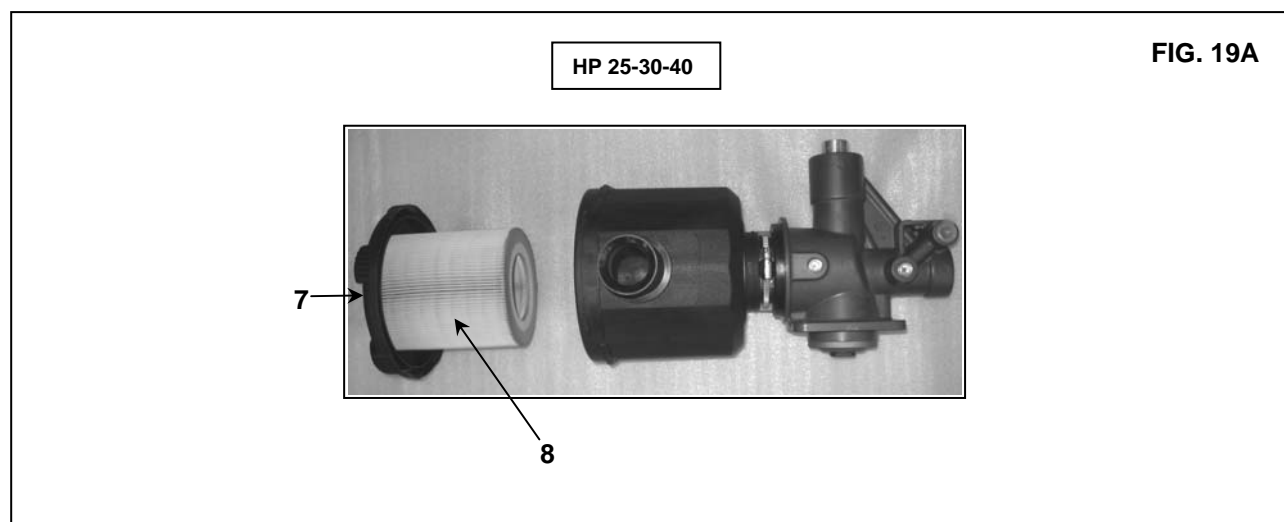
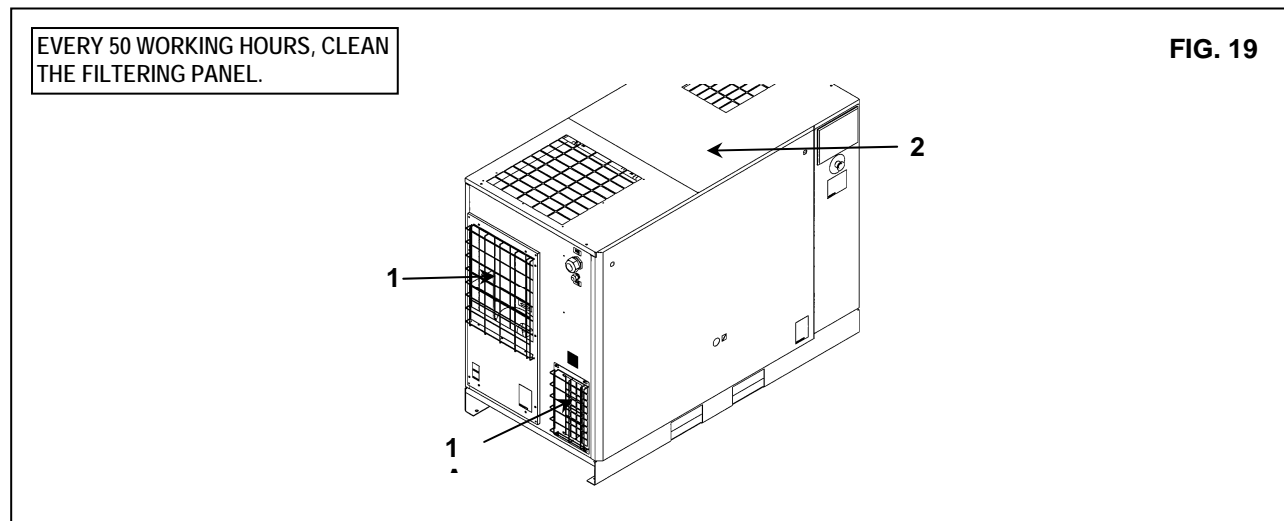
**USE OIL OF THE SAME TYPE AS THAT ALREADY IN THE MACHINE; DO NOT MIX DIFFERENT TYPES OF OIL.**

**BEFORE CARRYING OUT ANY OPERATION ON THE MACHINE, ENSURE THAT THE ELECTRIC POWER SUPPLY HAS BEEN DISCONNECTED.**

- Open the front panel Ref. 4 Fig. 18 with the special key.
- Slowly open the oil plug Ref. 7 Fig. 18.
- Top up to maximum level Ref. 6 Fig. 18, with oil of the same type in the compressor.
- Turn off the cap of the oil tank Ref. 7 Fig. 18.
- Close the panel Ref. 4 Fig. 18.

### 15.5 CLEANING THE FILTERING PANEL

- Switch off the machine with pushbutton Ref. 1 Fig. 18: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 3 (on the screw-compressor) and Ref. 3A (on the dryer if fitted) Fig. 18.
- Remove the filter panel Ref. 1 - 1A Fig. 19.
- Clean the filtering panel with a jet of air or wash it with water. **Do not use solvents.**
- Once the operation has been completed, reassemble the filtering panel Ref. 1 - 1A Fig. 19.



### 15.6 CLEANING THE SUCTION FILTER OR CHANGING THE FILTER

- Switch off the machine with pushbutton Ref. 1 Fig. 18: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 3 (on the screw-compressor) and Ref. 3A (on the dryer if fitted) Fig. 18.



**HOT PARTS INSIDE**

- Remove the fixed protection device (machine cover) Ref. 2 Fig. 19.
- Remove the cover Ref. 7 Fig. 19A.
- Remove the filter Ref. 8 Fig. 19A.



**AVOID DROPPING FOREIGN BODIES INTO THE SUCTION MANIFOLD.**

- Clean the filter with a jet of air, working from inside to outside, **DO NOT USE WATER OR SOLVENTS.** Alternatively, fit a new filter.
- Clean the disk on which the filter rests with a clean cloth.
- Fit the filter and the cover.
- If necessary, dispose of the old filter in conformity with the local regulations in force.
- Close the fixed protection (machine cover) Ref. 2 Fig. 19 device again, using the appropriate safety screws.

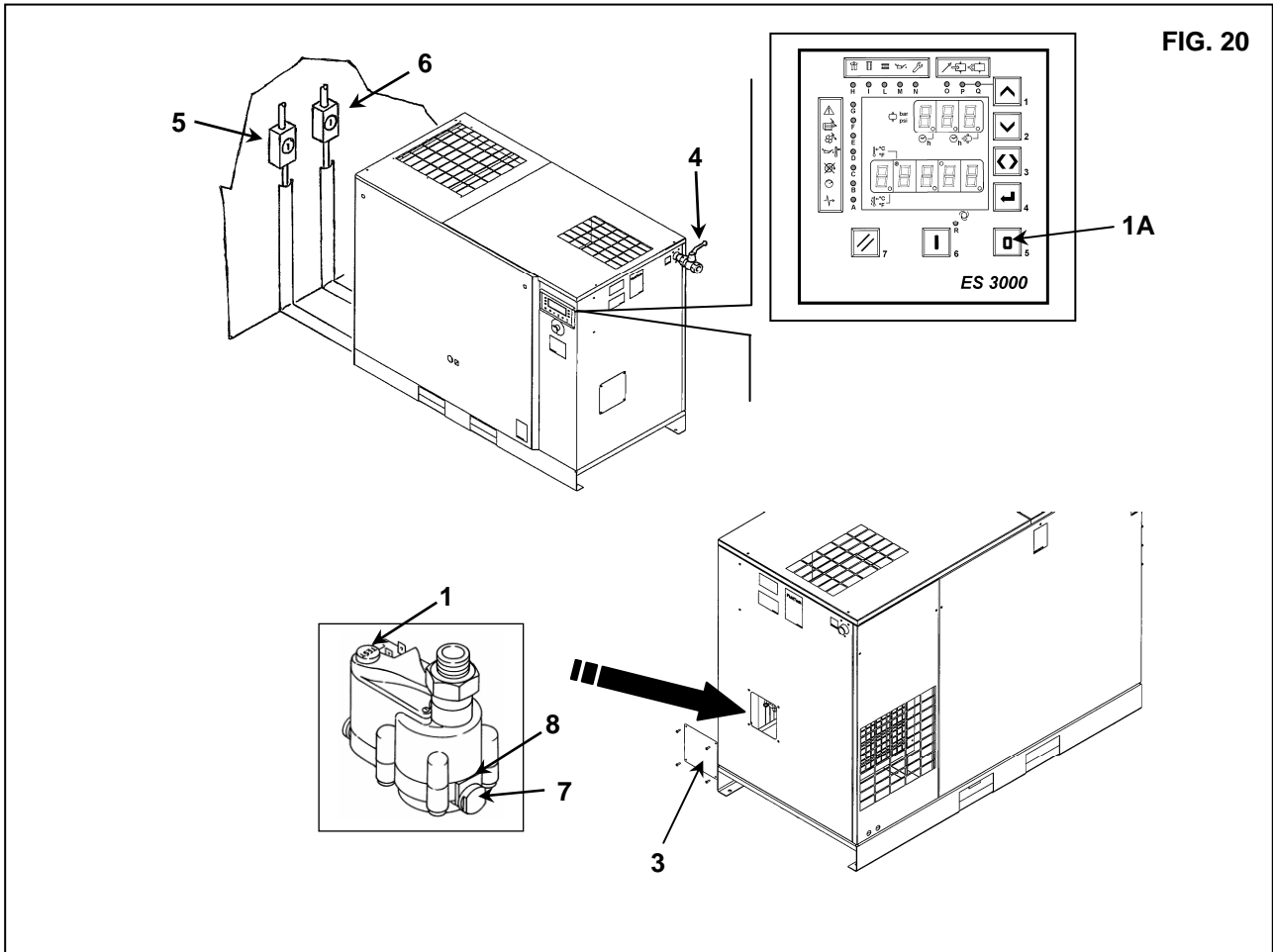
**15.7 CHECKING THE AUTOMATIC CONDENSATION EMPTYING (FOR DRYER )**

**BEFORE CARRYING OUT ANY MAINTENANCE IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION NETWORK.**

The automatic condensation drain must be checked (Rif. 1 every 500 hours working) Fig. 20.

Proceed as follows:

- Remove the panel Réf. 3 Fig. 20
- Press the "TEST" button, Ref. 1 Fig. 20, for a few seconds to check if the condensation is correctly emptied from the drainage pipe

**15.8 CLEAN THE DIRT COLLECTION FILTER FOR DRYER (ON THE DRYER IF FITTED)**

Proceed as follows:

- Close the tap Ref. 4 Ref. 20
- Remove the panel Réf. 3 Fig. 20
- Depressurise the dryer by pressing the "TEST" condensation emptying button (for about 10-20 seconds) Ref. 1 Fig.20
- Switch off the machine with pushbutton Ref. 1A Fig. 20: in this way the machine stops after 45 seconds of idle running.
- Turn off the disconnect switch, Ref. 5 (on the screw-compressor) and Ref. 6 (on the dryer if fitted) Fig. 20.
- Remove the stopper Ref. 7 Fig. 20
- Remove the filter Ref. 8 Fig. 20
- Clean the filter with a jet of air, working from inside to outside
- Install the filter, fix the plug.
- Install the panel Réf. 3 Fig. 20

## 15.9 CLEANING THE CONDENSER BATTERY (ON THE DRYER IF FITTED)



BEFORE CARRYING OUT ANY MAINTENANCE IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION NETWORK.

The condenser must be cleaned every month.

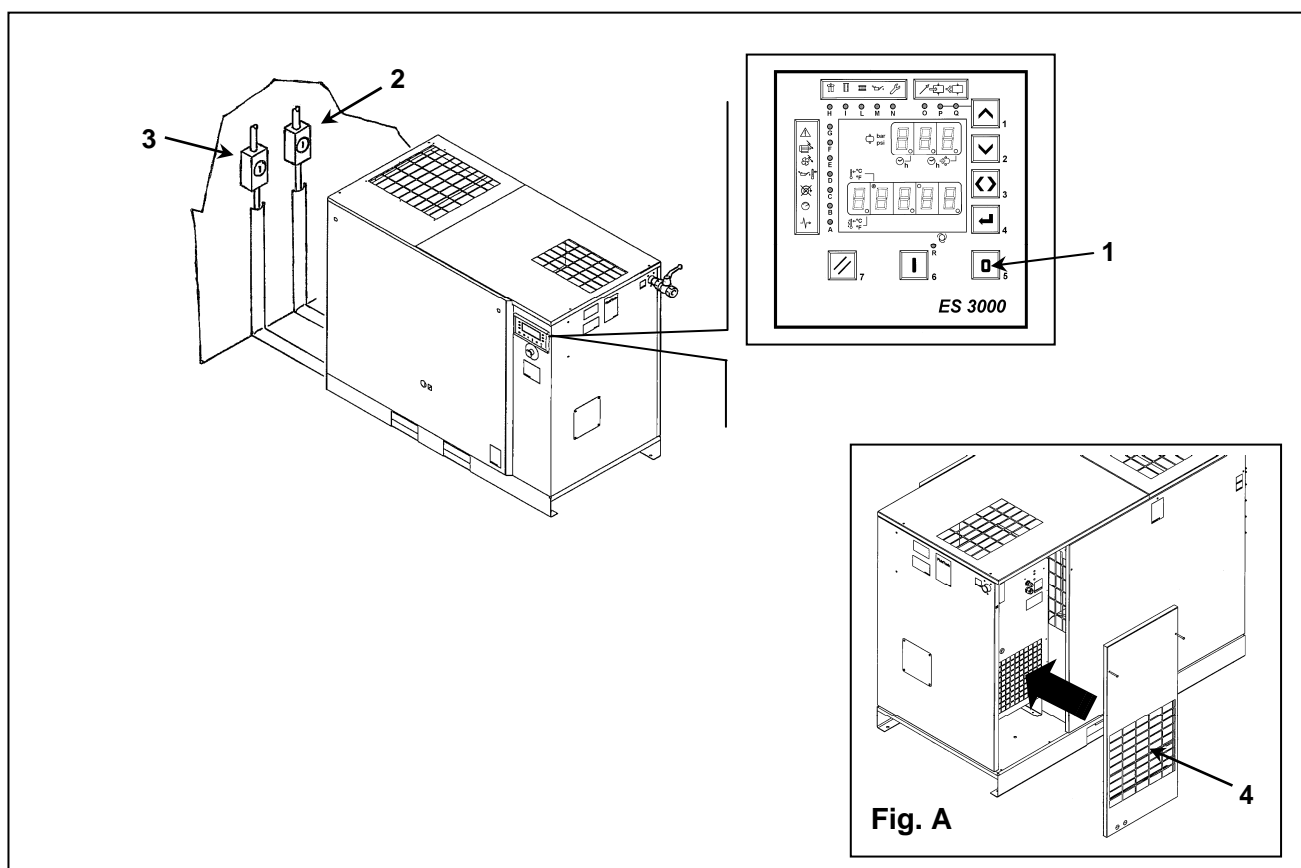
Proceed as follows:

- Switch off the machine with pushbutton Ref. 1 Fig. 21: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 3 (on the screw-compressor) and Ref. 2 (on the dryer if fitted) Fig. 21.



HOT PARTS INSIDE THE DRYER

- Remove the filter panel Rif. 4 Fig. 21
- Clean the condenser fins with compressed air ( See Fig A ). **DO NOT USE WATER OR SOLVENTS.**
- Instal the filter panel Rif. 4 Fig. 21



**15.10 REPLACE THE LINE AFTER FILTER**

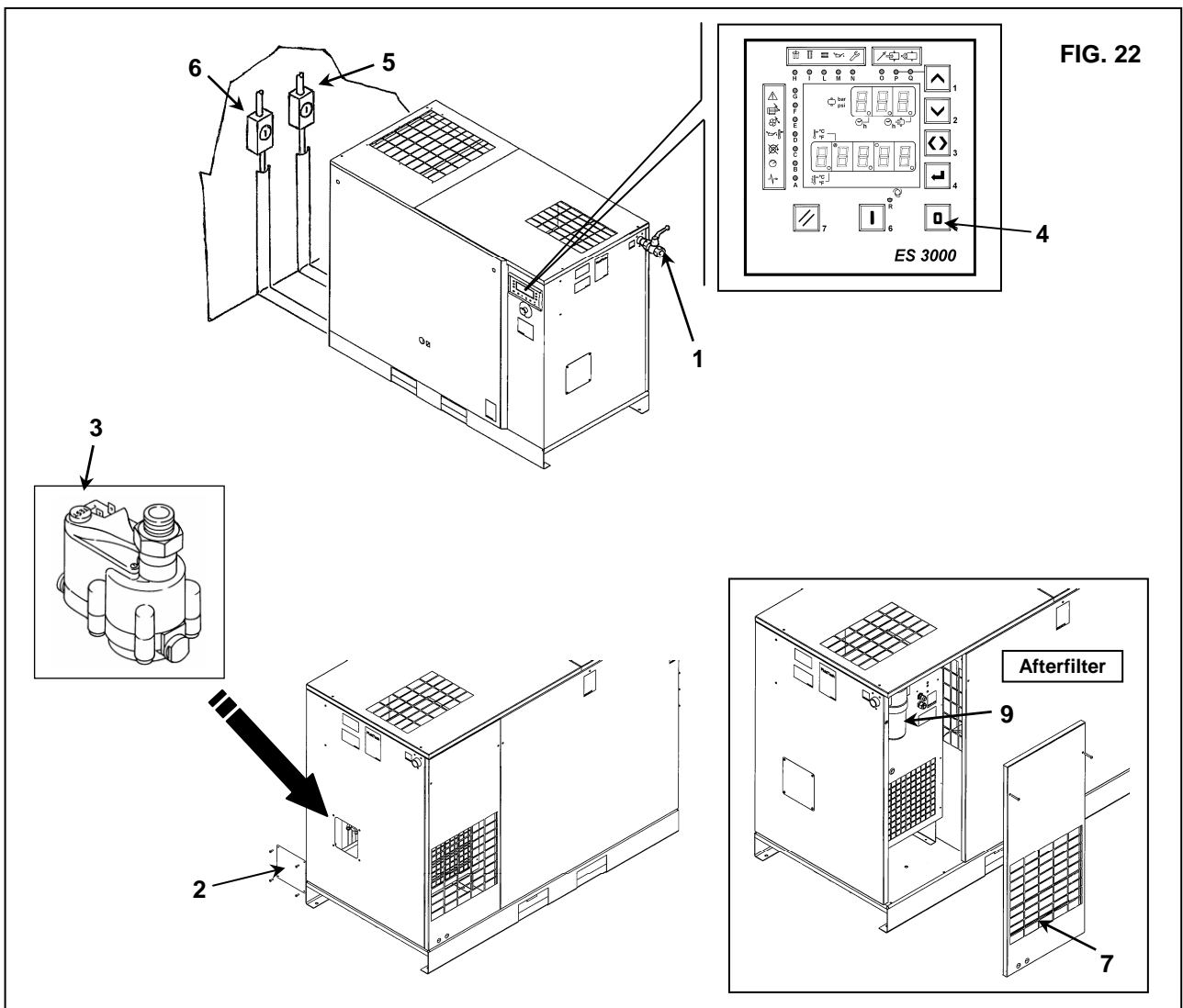


**BEFORE CARRYING OUT ANY MAINTENANCE IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION NETWORK.**

**WARNING:** internal corrosion can seriously compromise the safety of installation; check it when changing cartridge.

Proceed as follows:

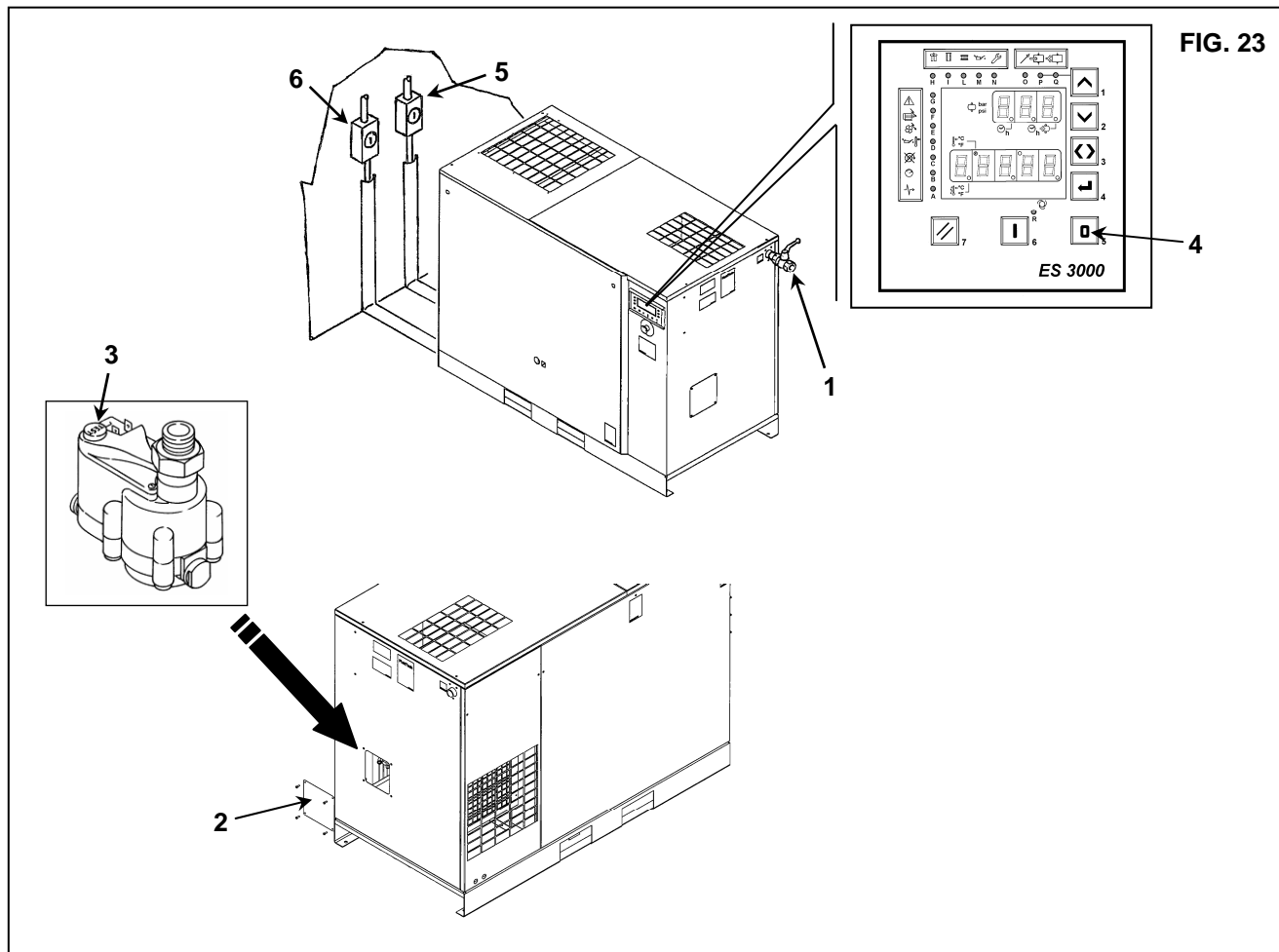
- Close the cock Ref. 1 Fig. 22.
- Remove the filter panel Ref. 2 Fig. 22
- Depressurise the dryer by pressing the "TEST" condensation emptying button (for about 10-20 seconds) Ref. 3 Fig.22
- Switch off the machine with pushbutton Ref. 4 Fig. 22: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 5 (on the screw-compressor) and Ref. 6 (on the dryer) Fig. 22.
- Remove the panel Ref. 7 Fig. 22
- Change the filter Ref. 9 Fig. 22.
- Stick the adhesive label showing the month and year for the next filtering element change (max. one year) on the filter bowl.
- Instal the panel Ref. 7 Fig. 22
- Instal the panel Ref. 2 Fig. 22
- Open the cock Ref. 1 Fig. 22



## 16.0 PERIODS OF INACTIVITY

If the machine has to remain inactive for a long period:

- Close the valve Ref. 1 Fig. 23.
- Remove the panel Ref. 2 Fig. 23
- Depressurise the dryer by pressing the "TEST" condensation emptying button (for about 10-20 seconds) Ref. 3 Fig.22
- Switch off the machine with pushbutton Ref. 4 Fig. 23: in this way the machine stops after 45 seconds of idle running.
- Turn on the differential supply switch, Ref. 5 (on the screw-compressor) and Ref. 6 (on the dryer if fitted) Fig. 23.
- Close the panel Ref. 2 Fig. 23.



During periods of inactivity the weather must be protected against atmospheric agents, dust and humidity which could damage the motor and the electrical system.

To restart the machine after periods of inactivity, consult the manufacturer.

## 17.0 SCRAPPING THE UNIT

If the machine is to be scrapped, it must be dismantled into parts of the same material, to be disposed of according to the local regulations in force.



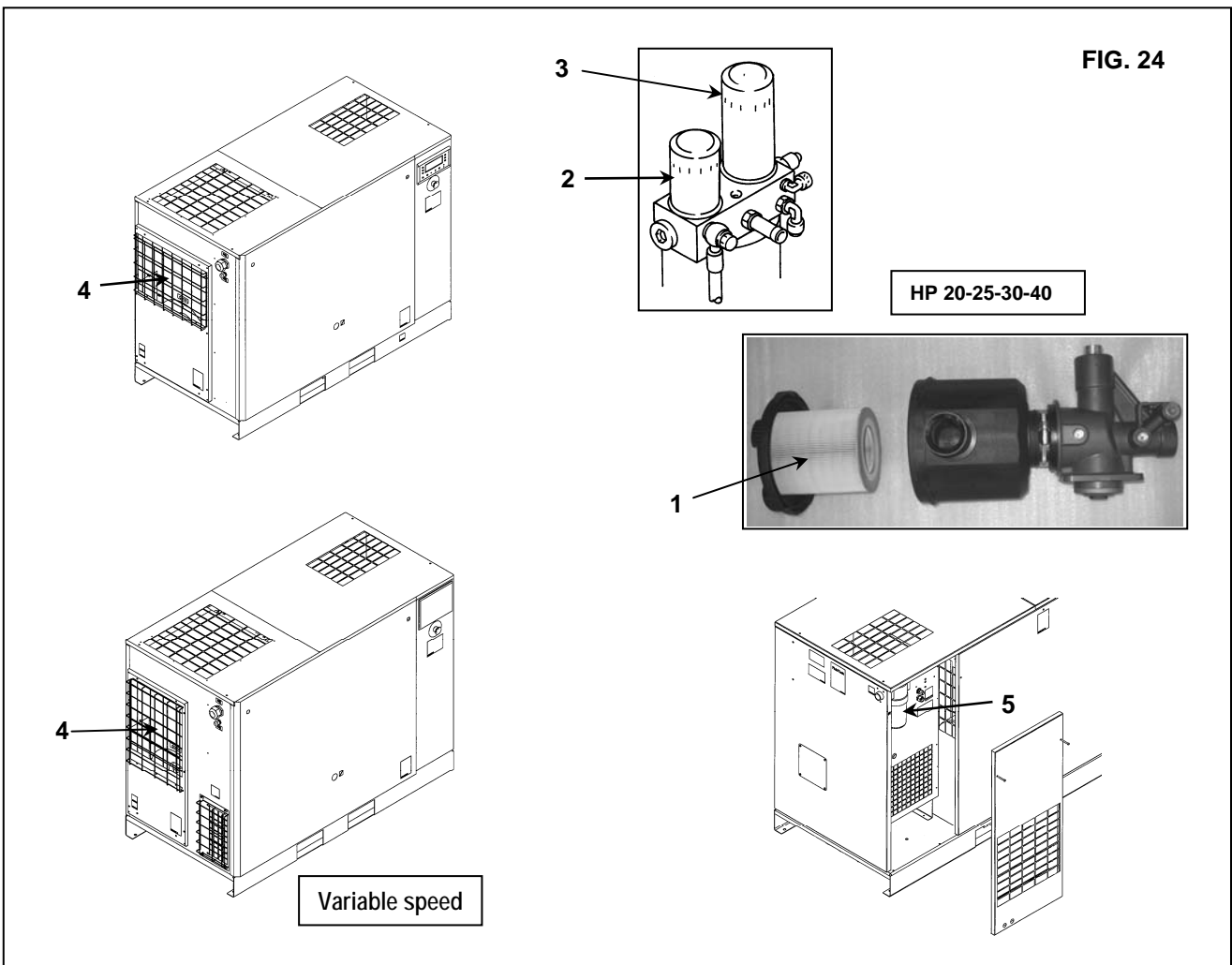
**ALWAYS RESPECT THE REGULATIONS IN FORCE FOR DISPOSING OF OLD OIL AND OTHER POLLUTING MATERIALS SUCH AS SOUND-DEADENING, INSULATING FOAM, ETC.**

18.0 LIST OF SPARE PARTS FOR ROUTINE MAINTENANCE

Ref	DENOMINATION	Code	HP 20	HP 25	HP 30	HP 40
			<i>kw 15</i>	<i>kw 18,5</i>	<i>kw 22</i>	<i>kw 30</i>
			125 psi	125 psi	125 psi	125 psi
1	Suction air filter	6211472350	■	■	■	■
2	Oil filter	6211472250	■	■	■	■
3	Separator cartridge	6221372450	■	■		
3	Separator cartridge	6221372550			■	■
4	Filtering panel	2202251210	■	■	■	■
5	Afterfilter (*)	2258290012	■	■	■	■
-	Oil	6215714000	■	■	■	■

Ref	DENOMINATION	Code	HP 20 <i>kw 15</i>	HP 25 <i>kw 18,5</i>	HP 30 <i>kw 22</i>	HP 40 <i>kw 30</i>
			(VSD)	(VSD)	(VSD)	(VSD)
			80 - 138	80 - 138	80 - 138	80 - 138
			psi	psi	psi	psi
1	Suction air filter	6211472350	■	■	■	■
2	Oil filter	6211472250	■	■	■	■
3	Separator cartridge	6221372450	■	■		
3	Separator cartridge	6221372550			■	■
4	Filtering panel	2202251210	■	■	■	■
5	Afterfilter (*)	2258290012	■	■	■	■
-	Oil	6215714000	■	■	■	■

(\*) Only for machine with dryer.





**19.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES**

N.B. OPERATIONS MARKED ■ ■ MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL APPROVED THE MANUFACTURER

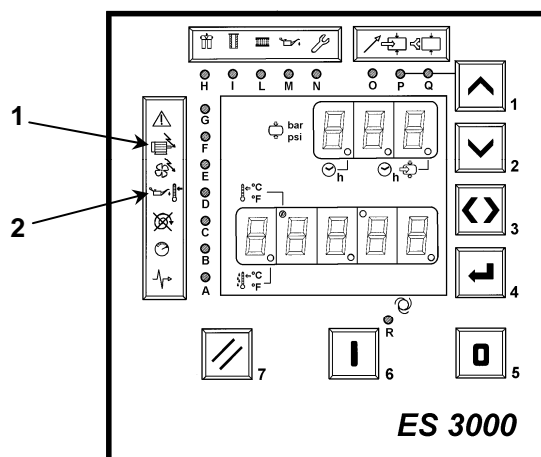


ALL WORK MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL. BEFORE CARRYNG OUT ANY MAINTENANCE JOBS IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS.

**19.1 TROUBLE-SHOOTING AND EMERGENCY REMEDIES FOR SCREW COMPRESSOR**

FAULT FOUND	POSSIBLE CAUSES	OBSERVATIONS
1) The machine does not start	1A - no power 1B - the transformer protection device has tripped	- check the power supply line, Chapter 12.2 - replace fuses
2) The machine does not start the pilot lamp Ref. 1 (F) is flashes (see Fig. A)	2A - the main motor protection device has tripped	- Disconnect voltage and enable again
3) The machine does not start the pilot lamp Ref. 2 (D) is flashes (see Fig. A)	3A - The oil high temperature protection has tripped	- environment temperature too high; improve ventilation in the compressor room, Chapter 9.2 ■ ■ - cooling radiator is dirty, clean the radiator - oil level too low; top up the oil tank
4) The compressor does not reach working pressure	4A - the compressed air consumption is too high 4B - the discharge electrovalve remains open, Ref. EV/SC wiring diagram	■ ■ - check the electric system
5) Excess oil consumption	5A - deteriorated oil separating filter oil level is too high	■ ■ - change the oil separating filter, Chapter 23

FIG. A



## ENGLISH

### 19.2 TROUBLE-SHOOTING AND EMERGENCY REMEDIES FOR DRYER



ALL WORK MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL. BEFORE CARRYING OUT ANY MAINTENANCE JOBS IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS.

N.B. OPERATIONS MARKED ■ ■ MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL APPROVED THE MANUFACTURER

FAULT FOUND	POSSIBLE CAUSES	OBSERVATIONS
1) No compressed air passes through the dryer outlet	1A) The pipes are frozen inside	<ul style="list-style-type: none"> <li>■ ■ -The bypass valve of the hot gas is broken or out-of-calibration</li> <li>-The room temperature is too low and the evaporators piping are obstructed with ice</li> </ul>
2) Presence of condensate in the pipings.	2A) The condensate separator does not work correctly  2B) The dryer is working outside its rating   2C) The dryer is working under bad conditions of condensation	<ul style="list-style-type: none"> <li>■ ■ -Check the solenoid exhaust valve</li> <li>■ ■ -Check the drainage timer</li> <li>-Check the flow rate of treated air</li> <li>-Check the room temperature</li> <li>-Check the air temperature at the drier inlet.</li> <li>-Clean the condenser.</li> <li>■ ■ -Check the good operation of the fan.</li> </ul>
3) The compressor head is very hot (> 55 °C – 131 °F)	Make reference to 2B Make reference to 2C 3A) The cooling circuit is not working with the right gas charge	<ul style="list-style-type: none"> <li>■ ■ -Check if there are leaks of refrigerating gas.</li> <li>■ ■ - Charge it again.</li> </ul>
4) Motor cuts out on overload	Make reference to 2B Make reference to 2C Make reference to 3A	
5) The motor hums and does not start.	The line voltage is too low. You switched the machine off and on again without leaving enough time for the pressure balancing.  The starting system of the motor is defective.	<ul style="list-style-type: none"> <li>-Contact the electric power company</li> <li>-Wait a few minutes before starting the machine again.</li> <li>■ ■ -Check the running and starting relays and condensers (if any)</li> </ul>
6) The machine has stopped and does not restart even after a few minutes.	The overload protection with has intervened: make reference to 2B-2C-3A.  The motor has burnt out.	
7) The compressor is very noisy.	Troubles with the internal mechanical parts or with the valves	



## PART "B"

THIS PART "B" OF THE INSTRUCTIONS MANUAL IS RESERVED FOR PROFESSIONALLY SKILLED PERSONNEL APPROVED THE MANUFACTURER

**WARNING: THE INVERTER REMAINS CHARGED WITH HIGH VOLTAGE FOR FIVE MINUTES AFTER THE MASTER SWITCH HAS BEEN OPENED.**  
**ALWAYS WAIT FOR FIVE MINUTES BEFORE REMOVING THE FRONT COVER (INSTRUMENT PANEL).**  
**USE A SPECIFIC INSTRUMENT TO CHECK THAT THERE ARE NO DANGEROUS VOLTAGES BEFORE PERFORMING OPERATIONS ON THE INVERTER OR MOTOR.**

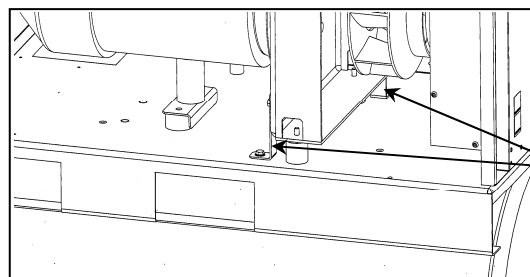
**20.0 STARTING UP**

**BEFORE CARRYING OUT ANY OPERATION ON THE MACHINE, ENSURE THAT THE ELECTRIC POWER SUPPLY HAS BEEN DISCONNECTED.**

**20.1 PREPARING FOR SETTING UP**

After checking everything as indicated in Chap. 12.0, (installation) follow these instructions

- Remove the brackets that hold the compressor-motor group to the base. These brackets, which are painted red, are required only during transport. The brackets may be removed with a spanner (size 13).



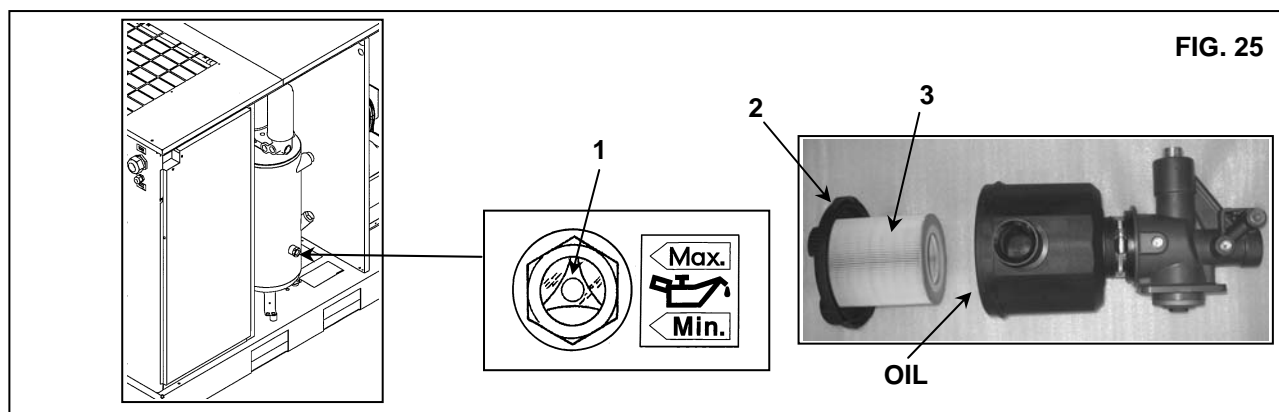
N° 2 Brackets for transport only

**20.2 Preliminary checks**

Check the oil level Ref. 1 Fig. 25; when delivered the machine is filled with oil; if the oil level is not as intended, top up with the same oil as the original type. If more than 3 months have passed between the inspection in the factory and the date of installation, lubricate the screw group before starting up, following the procedure described below:

- Remove the cover Ref. 2 Fig. 25
- Remove the air filter Ref. 3 Fig. 25
- Pour a little oil into the suction unit.
- Reassemble the air filter Ref. 3 Fig. 25
- Reassemble the cover Ref. 2 Fig. 25

If more than 6 months have passed between the inspection in the factory and the date of installation, consult the manufacturer.



**FIG. 25**

**20.3 CHECK THE DIRECTION OF ROTATION (Fig. 26)**

- Check that all fixed guards are in their correct position.
- Connect the control board to the power supply with the automatic circuit-breaker switch of the line Rif. 1 Fig. 26.
- Start up the compressor pushing in sequence **I** button Fig. 26/A and immediately after about 5 seconds the **0** button Fig. 26/A to stop if.
- If the rotation is correct, the compressor will start correctly.
- If the rotation is not correct, the compressor will not start and the related alarm will be shown in the controller display (See cap. 14.3).



**ALL WORK ON THE ELECTRIC PLANT, HOWEVER SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL.**

- Disconnect the energy supply and invert two connections as per Ref. 1 Fig. 26
- **IT IS ADVISABLE NOT TO DO ANYTHING ON THE MACHINE PANEL**

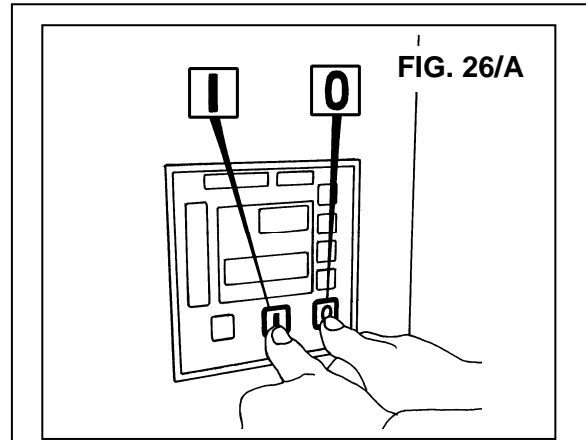
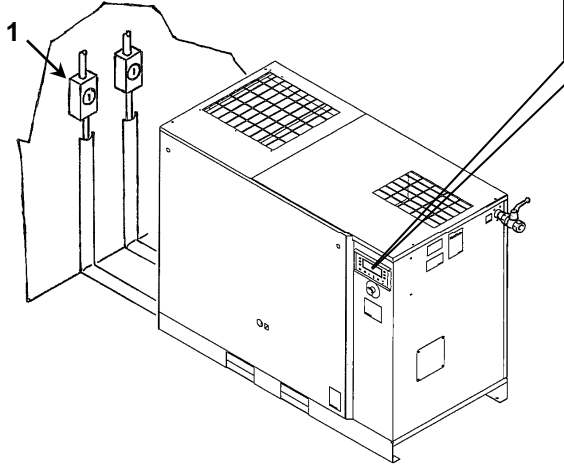
**ENGLISH**

IF ALL THE INSTRUCTIONS FOUND IN THIS MANUAL HAVE BEEN OBSERVED THE MACHINE CAN BE STARTED.



ATTENTION: wait at least 45 seconds before starting the machine after a switch off

FIG. 26



ATTENTION: machine start-up is delayed for a few seconds after the microprocessor is powered and after the scheduled stop

**21.0 GENERAL ORDINARY MAINTENANCE REQUIRES TRAINED PERSONNEL**



BEFORE CARRYING OUT ANY MAINTENANCE JOBS IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS.

**MAINTENANCE SCHEDULE**

These maintenance intervals are recommended for work environments that are not dusty and are well ventilated. For particularly dusty environments, double the frequency of maintenance.

<b>Every Day (after use)</b>	<ul style="list-style-type: none"> <li>■ Drain condensate from the air tank</li> <li>■ Check automatic condensation emptying (on the dryer if fitted)</li> </ul>
Every 50 working hours	<ul style="list-style-type: none"> <li>■ Drain condensate from the oil tank</li> <li>■ Check the oil level</li> <li>■ Clean the filtering panel</li> </ul>
Every 500 hours	<ul style="list-style-type: none"> <li>■ Clean the air suction filter (see control board LED)</li> <li>■ Clean the condenser battery (on the dryer if fitted)</li> <li>■ Clean the dirt collection filter</li> <li>■ Check belt tension</li> </ul>
Every 2000 hours	<ul style="list-style-type: none"> <li>■ Change the suction filter (see control board LED)</li> <li>■ Change the oil (see control board LED)</li> <li>■ Change the oil filter (see control board LED)</li> <li>■ Change the filtering panel</li> <li>■ Replace the line pre- filter and afterfilter (change the filter cartridge at least once a year)</li> </ul>
Every 4000 hours	<ul style="list-style-type: none"> <li>■ Clean the finned surface of the air-oil cooler</li> <li>■ Change the oil separating filter (see control board LED)</li> </ul>

N.B.: THE OPERATIONS MARKED ■ ARE DESCRIBED IN PART "A" OF THIS MANUAL ON CHAPTER 15.2

**22.0 CHANGING THE OIL**



BEFORE CARRYING OUT ANY MAINTENANCE JOBS IT IS OBLIGATORY TO STOP THE MACHINE AND DISCONNECT IT FROM THE POWER MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION NETWORK.

Oil changing is an important operation for the compressor:

if the lubrication of the bearings is not efficient, the compressor life will be short.

The oil must be changed when the machine is still warm, that is immediately after stopping it.

The suggestions listed below should be scrupulously followed.

After draining the old oil out of the machine Ref. 2 Fig. 27.

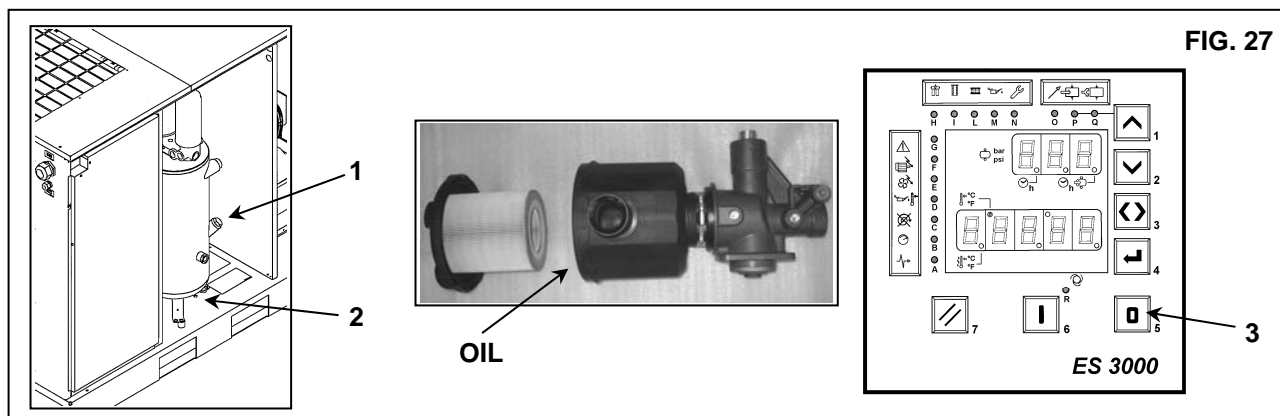
- Completely fill the oil collector Ref. 1 Fig. 27.

- Pour a little oil into the suction unit.

- Start the compressor.

- After about 1 minute switch off the machine by pressing "STOP" (Ref. 3 Fig. 27) after 45 seconds of idle running the machine will switch off.

PROCEED AS DESCRIBED AT POINT CHAPTER 15.4



THE OLD OIL MUST BE DISPOSED OF IN COMPLIANCE WITH THE REGULATIONS IN FORCE.

## ENGLISH

### NOTE ON LUBRICANTS

When delivered the machine is filled with oil.

In normal conditions of use, these lubricants have proved to be able to withstand use for as many as 4.000 hours. However, due to the external polluting agents that get into the compressor with the air that it takes in, it is advisable to change the oil at more frequent intervals, as indicated on the routine maintenance chart. If the compressor is being used at high temperatures (continuous operation above 90 °C) or in particularly severe conditions, we advise changing the oil at shorter intervals than those recommended in the maintenance chart.

**DO NOT TOP UP WITH DIFFERENT OILS**

### 23.0 REPLACE THE SEPARATOR FILTER AND THE OIL FILTER



**BEFORE CARRYING OUT ANY MAINTENANCE THE MACHINE MUST BE STOPPED, CUT OFF THE MACHINE FROM THE ELECTRICAL MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION CIRCUIT, CHECK THAT THE MACHINE IS NOT UNDER PRESSURE.**

Before proceeding with the replacement of the separator filter or the oil filter check that there is no pressure in the machine: check the pressure gauge Ref. 1 Fig. 28.

- Lubricate the filter seals with a little oil before fitting.
- Tightening must be done by hand.

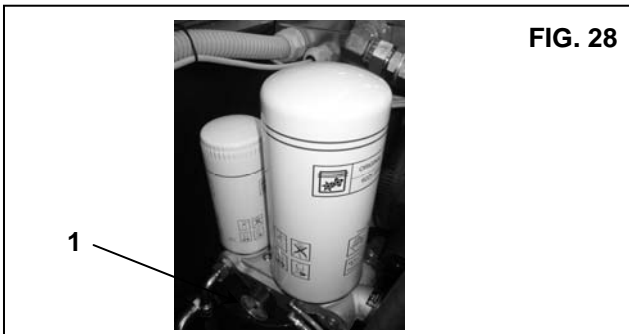


FIG. 28

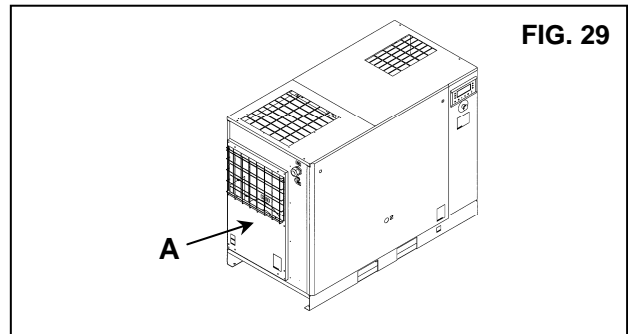


FIG. 29

### 24.0 BELT TENSION



**BEFORE CARRYING OUT ANY MAINTENANCE THE MACHINE MUST BE STOPPED, CUT OFF THE MACHINE FROM THE ELECTRICAL MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION CIRCUIT, CHECK THAT THE MACHINE IS NOT UNDER PRESSURE.**

Tightening or retightening new belts

Proceed as follows:

- Remove the fixed protection device Ref. A Fig. 29.
- Slacken the screws by half a turn Ref. 1 Fig. 30
- Loosen the locknut Ref. 2 Fig. 30
- Adjust the belt tension by turning the screw Ref. 3 Fig. 30
- Lock the locknut again Ref. 2 Fig. 30
- Close the screws again Ref. 1 Fig. 30
- Refit the fixed protection device with its safety screws Ref. A Fig. 29.

HP 20-25-30-40 KW 15-18,5-22-30	1 - F = 50N.m, force to be applied at the centre line, at right angles to the new belt. 2 - f = 7,2 mm. (0,28 in), clearance after the application of F. (after 100 h operation f = 11,7 mm. - 0,460 in)
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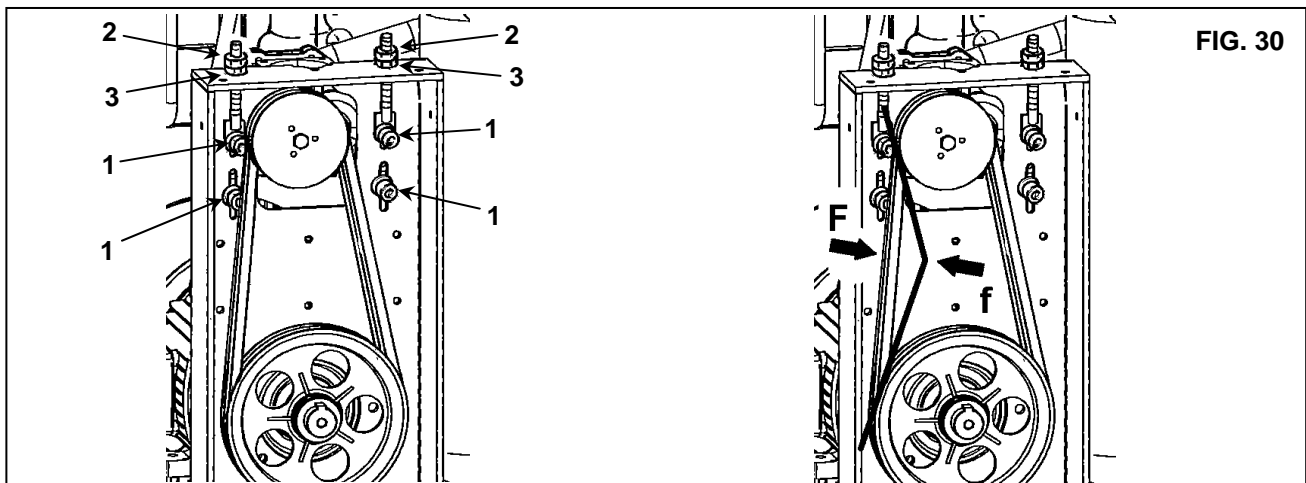


FIG. 30

**25.0 REPLACING THE ELECTRIC MOTOR**



BEFORE CARRYING OUT ANY MAINTENANCE THE MACHINE MUST BE STOPPED, CUT OFF THE MACHINE FROM THE ELECTRICAL MAINS AND FROM THE COMPRESSED AIR DISTRIBUTION CIRCUIT, CHECK THAT THE MACHINE IS NOT UNDER PRESSURE.

**25.1 DISASSEMBLING THE COOLING FAN AND CONVEYOR (Fig. 31)**

Proceed as follows:

- Remove the external panels.
- Block the rotation of the motor.
- Unscrew the fan fastening screw Ref. 2 (\*), use a spanner with an extension.
- Remove the cooling fan Ref. 3.

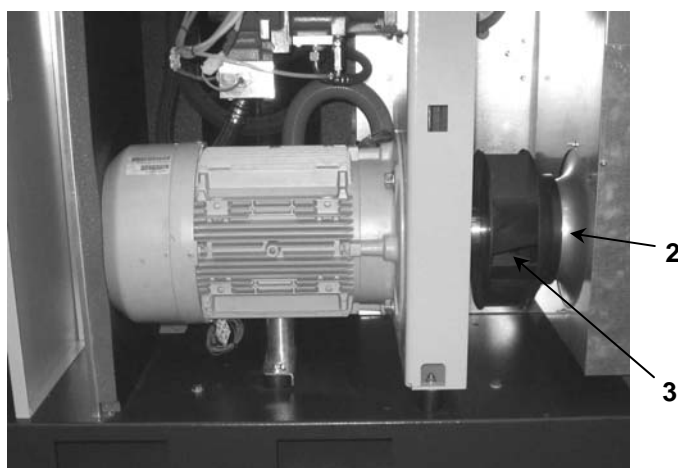


FIG. 31

**25.2 DISASSEMBLING THE ELECTRIC MOTOR (Fig. 32)**

Remove the cooling fan. (See Cap. 25.1)

- Slacken the screws Ref. 5 (\*\*).
- Loosen the locknut Ref. 6
- Slacken off the adjustment screw Ref. 7.
- Remove the transmission belt Ref. 8
- Remove the motor pulley Ref. 9 (See Fig. A)
- Disconnect the electric cables Ref. 10
- Loosen the supporting pad Ref. 11.
- Remove the screws Ref. 12 (\*\*\*), fastening motor.
- Extract the motor Ref. 13.

FIG. A

T-Bush	Tightening torque (N.m)
2012	31
2517	48

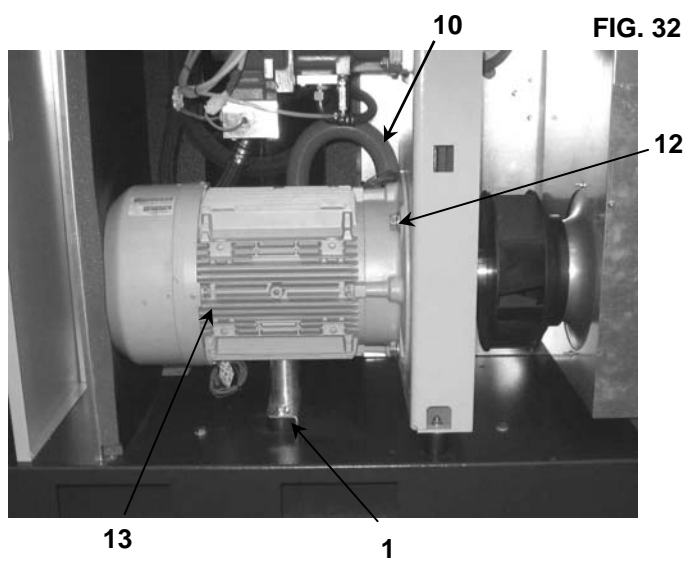
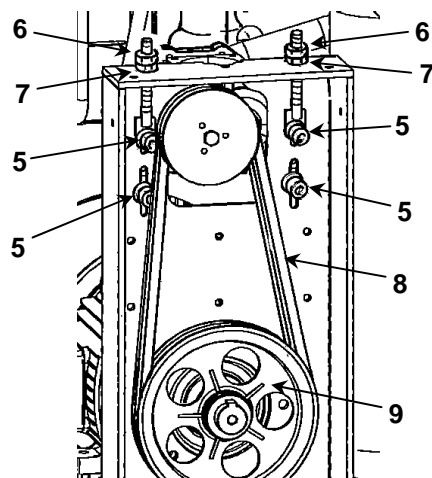
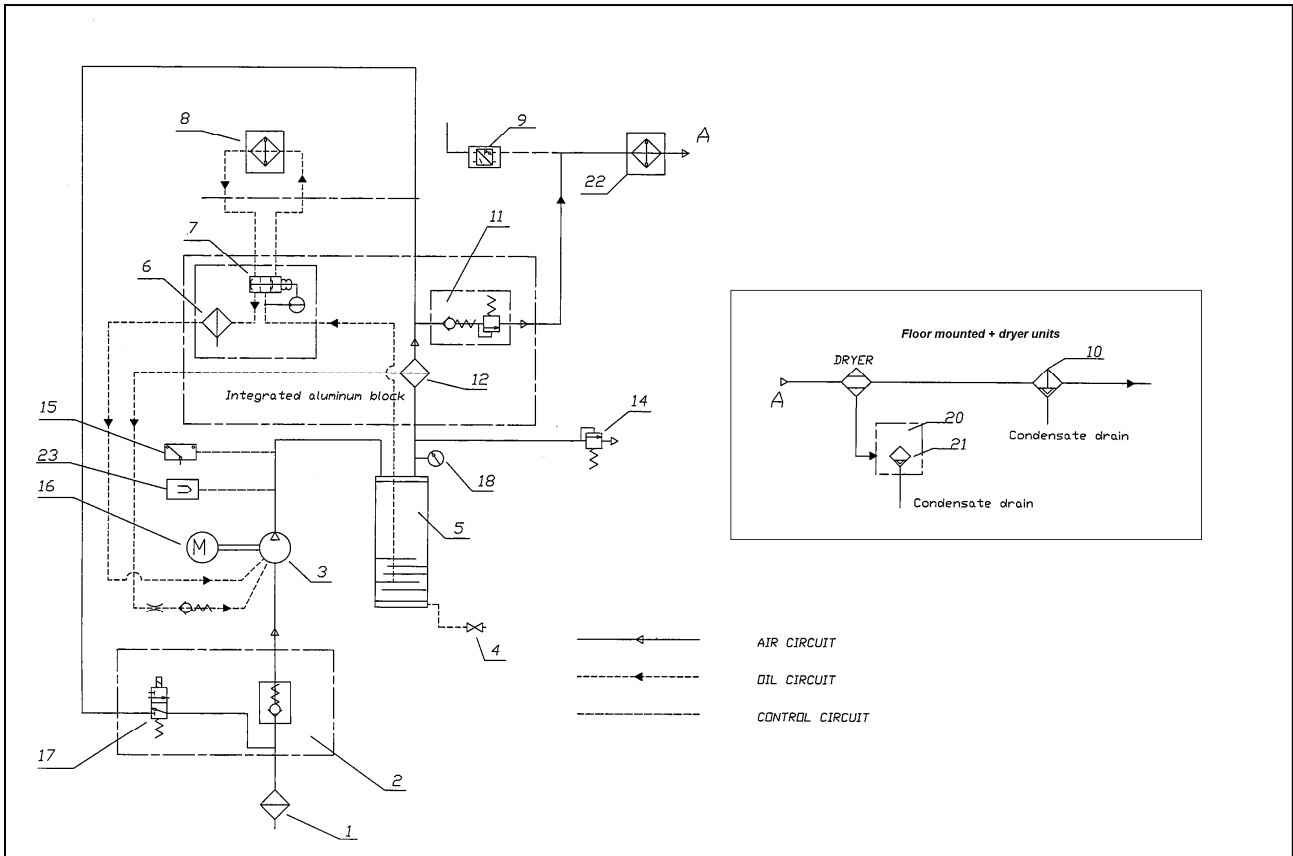


FIG. 32

- (\*) Tightening torque = N.m 160
- (\*\*) Tightening torque = N.m 55
- (\*\*\*) Tightening torque = N.m 160

26.0 OLEOPNEUMATIC DIAGRAM



1 AIR FILTER	12 AIR-OIL SEPARATOR
2 REGULATING VALVE	14 SAFETY VALVE
3 COMPRESSOR	15 SAFETY THERMOSTATIC
4 OIL DRAIN	16 ELECTRIC MOTOR
5 AIR-OIL RECEIVER	17 NO-LOAD RUNNING SOLENOID VALVE
6 OIL FILTER	18 MANOMETER
7 THERMOSTATIC VALVE	20 IMPURITY TRAP
8 OIL COOLER	21 CONDENSATE ELECTRONIC DRAIN VALVE
9 PRESSURE SENSOR	22 AIR COOLER
10 AIR LINE FILTER	23 TEMPERATURE SENSOR
11 MINIMUM PRESSURE VALVE	



**27.0 CALIBRATION FOR DRYER**

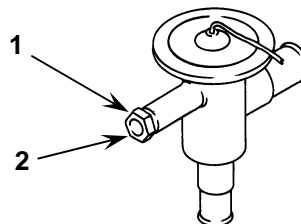
**BYPASS VALVE FOR HOT GAS**

N.B. These valves have already been calibrated and they do not require any adjustment. A dew point different from the rated one generally depends on causes which are not attributable to their operation.

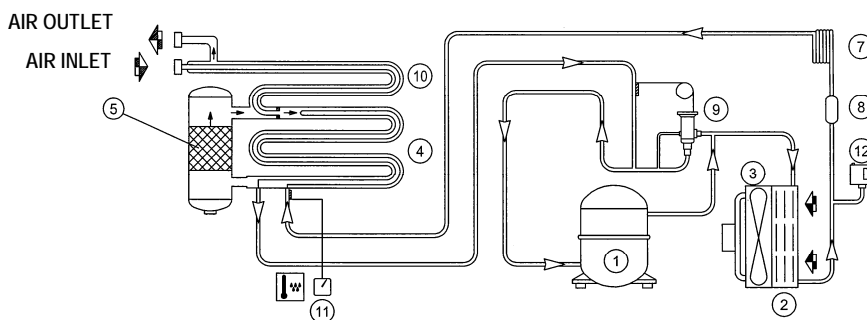
- 1) Closing cap
- 2) Adjusting screw

**WORKING PRESSURES AND TEMPERATURES OF R134a / R404a**

	SUCTION SIDE OF REFRIGERATION COMPRESSOR		
	Evaporat. Temperat. °C (°F)	Evaporating Pressure bar (psi)	Evaporating Pressure bar (psi)
<b>RATED VALUES</b> (Temperat. 20 °C) (68 °F)	1 ÷ 2 (33,8 ÷ 25,6)	<b>R134A</b> 2,1 ÷ 2,3 (30,4 ÷ 33,3)	<b>R404A</b> 4,3 ÷ 4,5 (62,3 ÷ 65,2)



**27.1 FLOW DIAGRAM OF THE DRYER**



1 COMPRESSOR	8 REFRIGERANT FILTER
2 CONDENSER	9 HOT GAS BYPASS VALVE
3 MOTOR FAN	10 AIR-TO-AIR EXCANGER
4 EVAPORATOR	11 DEW POINT THERMOMETER
5 SEPARATOR	12 FAN PRESSURE SWITCH
7 EXPANSION CAPILLARY TUBE	

**28.0 "IVR" VARIABLE SPEED**

The "Variable speed" version of the machine is controlled by an INVERTER.

The equipment is set in the factory and no adjustments to the parameters are required.

The modulating pressure is set at 0.5 bar (7.2 °F) lower than maximum pressure: depending on the air intake, the INVERTER changes the motor speed.

**SETTING THE MODULATION PRESSURE**

The compressor modulating pressure is set at 0.5 bar (7.2 °F) less than maximum pressure. By changing this value (Parameter P0), the modulating pressure level is also changed.

