

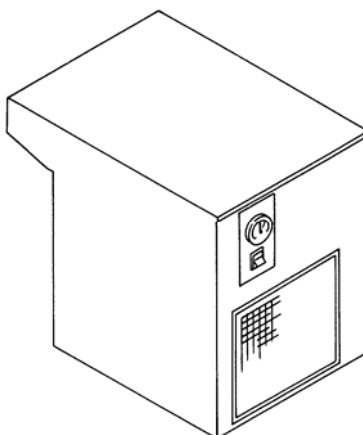


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2200772340	03
Edit. 09/2007	

INSTRUCTION AND MAINTENANCE MANUAL

DRYERS

A0 - A1 - A2 - A3 - A4



READ THIS MANUAL CAREFULLY BEFORE CARRYING OUT ANY OPERATIONS ON THE DRYER.

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PART A: INFORMATION FOR THE USER

- 1.0 GENERAL CHARACTERISTICS
- 2.0 INTENDED USE
- 3.0 OPERATION
- 4.0 GENERAL SAFETY STANDARDS
- 5.0 DESCRIPTION OF DANGER SIGNALS
- 6.0 DANGER ZONES
- 7.0 SAFETY DEVICES

- 8.0 POSITION OF PLATES
- 9.0 DRYERS ROOM
- 10.0 TRANSPORT AND HANDLING

- 11.0 UNPACKING
 - 12.0 INSTALLATION
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 - 14.0 MACHINE ILLUSTRATION
 - 15.0 PARTIAL ROUTINE MAINTENANCE
 - 16.0 SCRAPPING THE DRYERS
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- PART B: INFORMATION RESERVED FOR TECHNICALLY SKILLED PERSONNEL**
- 18.0 STARTING UP

ATTENTION: THERE IS A COPY OF THE WIRING DIAGRAM INSIDE THE ELECTRIC PANEL

ADDRESSES OF ASSISTANCE CENTRES

In the event of breakdown or malfunction of the dryer, 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 on the dryer. Read this manual carefully before carrying out any operations on the dryer.

The installation of the dryer 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



**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.**

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

THIS MACHINE IS NOT SUITABLE FOR EXTERNAL INSTALLATION

THIS MACHINE CORRESPOND TO THE ESSENTIAL SAFETY REQUIREMENTS FORESEEN FROM THE EUROPEAN STANDARD 98/37 AND THE RULE EN 292

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...)

1.0 GENERAL CHARACTERISTICS

The dryer is a chilling machine with direct expansion and dry evaporator.

The air to be dried is sent to the heat exchanger in which the water vapour present is condensed: the condensate gathers in the separator and is discharged outside through a steam trap.

2.0 INTENDED USE

The dryer has been built to dry the compressed air for industrial use. The dryer 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.).

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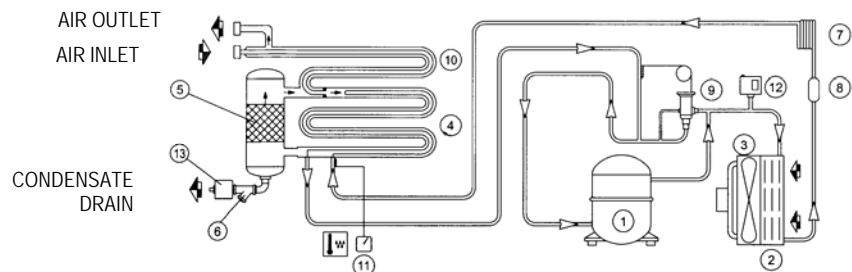
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The circuit is equipped with a bypass system for the refrigerant; this intervenes to adjust the available refrigerating capacity to the actual cooling load. This is achieved by injecting hot gas under the control of the valve (9): this valve keeps constant the pressure of the refrigerant in the evaporator and therefore also the dew point never decreases below 0 °C in order to prevent the condensate from freezing inside the evaporator. The dryer runs completely automatically.

DRYER FLOW DIAGRAM



1) REFRIGERANT 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) DEMISTER CONDENSATE SEPARATOR	12) FAN CONTROL PRESSURE SWITCH
6) IMPURITY TRAP	13) CONDENSATE DRAIN
7) EXPANSION CAPILLARY TUBE	

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 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.



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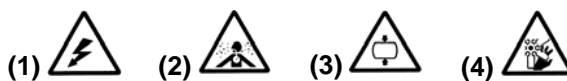
5.0 DESCRIPTION OF DANGER SIGNALS



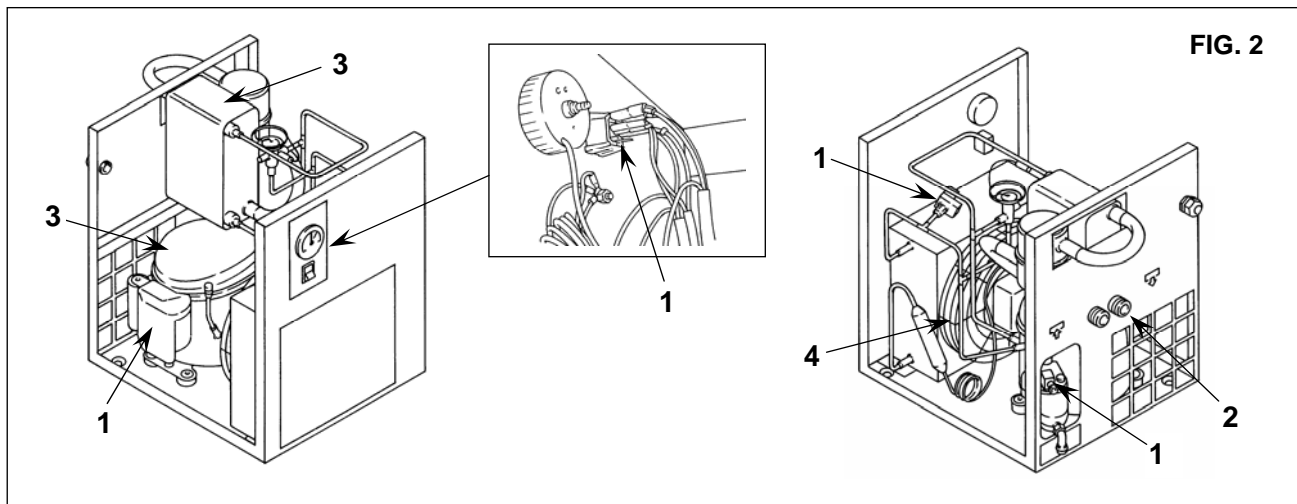
- | | | | | |
|------------------------------|------------------------------|------------------|-----------------|--------------|
| 1) Dangerous electricvoltage | 2) Air not fit for breathing | 3) High pressure | 4) Fan rotating | 5) Hot parts |
|------------------------------|------------------------------|------------------|-----------------|--------------|

6.0 DANGER ZONES

6.1 DANGER ZONES



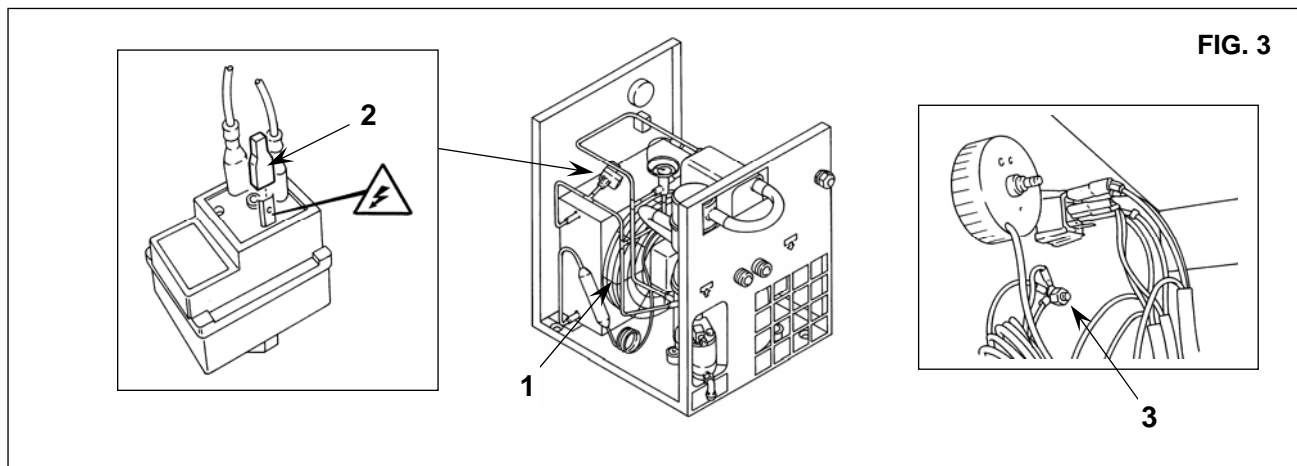
Risks present on the whole machine



7.0 SAFETY DEVICES

7.1 SAFETY DEVICES

- | | |
|-----------------------|----------|
| 1) Cooling fan shield | 3) Earth |
| 2) Shield | |

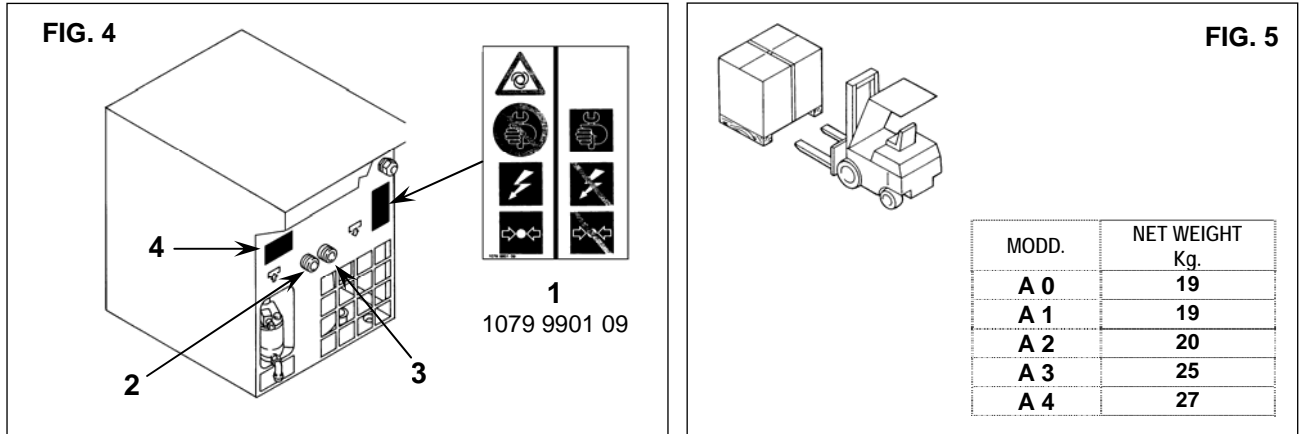


8.0 POSITION OF PLATES

8.1 POSITION OF THE DANGER PLATES (Fig. 4)

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.

Ref.1 - Spare plate Code 1079 9901 09



8.2 POSITION OF THE DATA PLATES (Fig. 4)

Ref. 2) "IN"	Ref. 4) Identification plate
Ref. 3) "OUT"	

9.0 DRYERS ROOM

9.1 FLOOR

The floor must be even and of industrial type; the total weight of the machine is shown in Fig. 5. Remember the total weight of the machine when positioning it.

9.2 VENTILATION

The choice of an appropriate room will prolong the life of your dryer; the room must be spacious, dry, well ventilated and free from dust. The operating conditions to be complied with are the following:

Min. room temperature: + 5 °C (compulsory)	Min. temperature of incoming air: 10 °C
Max. room temperature: + 45 °C (compulsory)	Max. working pressure: 16 bar
Max. temperature of incoming air: 55 °C	

10.0 TRANSPORT AND HANDLING

The machine must be transported as shown in the following fig. 5.

11.0 UNPACKING



CUTTING THE METAL STRAPPING IS A DANGEROUS OPERATION, DO NOT ABANDON THE CUT PIECES IN THE ENVIRONMENT.

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, polystyrene foam, nails, screws, wood, metal strapping, etc.) 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 dryers room, put the machine into position, checking the following items:

- ensure that there is sufficient space around the machine to allow maintenance (see Fig. 6).

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 (Ref. 1 Fig. 6), wiring diagram.



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.

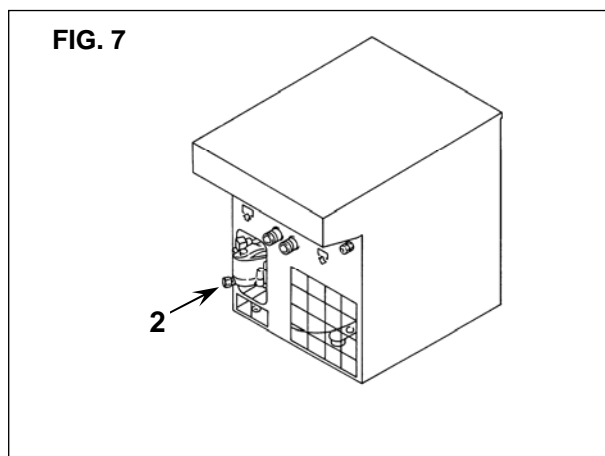
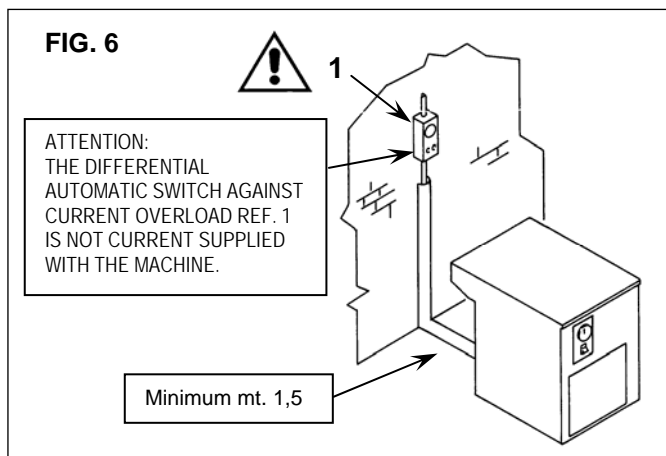
12.3 CONNECTION TO THE COMPRESSED AIR NETWORK

Fit a manual interception valve between the machine and the compressed air network so that the dryer may be isolated during maintenance operations. Drainage of condensate Rif. 2 Fig. 7 (automatic) are led outside the machine with a flexible pipe that may be inspected. Drainage must comply with the local regulations in force.

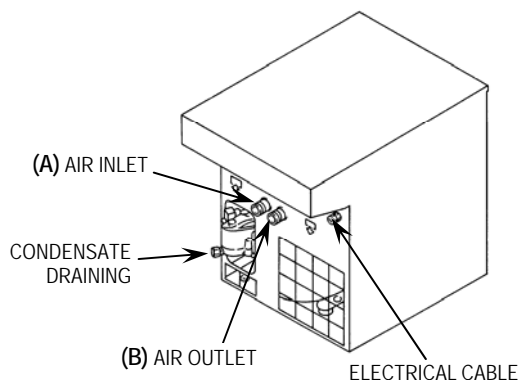
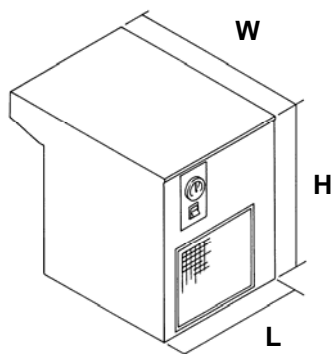
ALL DAMAGE DUE TO THE FAILURE TO COMPLY WITH THESE INDICATIONS CANNOT BE ATTRIBUTED TO THE MANUFACTURER AND MAY CAUSE INVALIDITY OF THE GUARANTEE CONDITIONS.

12.4 STARTING UP

See part B of this manual, Chapter 18.0



13.0 DIMENSIONS AND TECHNICAL DATA



TYPE	L	W	H
A0	350	500	450
A1	350	500	450
A2	350	500	450
A3	350	500	450
A4	350	500	450

TYPE	A	B
A0	3/4" GAS	3/4" GAS
A1	3/4" GAS	3/4" GAS
A2	3/4" GAS	3/4" GAS
A3	3/4" GAS	3/4" GAS
A4	3/4" GAS	3/4" GAS

TYPE	Weight Kg.	V230 Freon R134A Kg.		Nominal Power W		Nominal Power W		Nominal Power W		bar MAX.
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
A0	19	0,150	0,170	101	128	29	44	130	172	bar 16
A1	19	0,170	0,170	135	125	29	42	164	167	bar 16
A2	20	0,290	0,290	161	173	29	49	190	222	bar 16
A3	25	0,350	0,350	233	252	33	54	266	306	bar 16
A4	27	0,480	0,450	251	310	33	54	284	364	bar 16

Reference conditions:	Limit conditions:
Ambient temperature 25 °C	Max. ambient temperature 45 °C
Inlet air temperature 35 °C	Min. ambient temperature 5 °C
Working pressure 7 bar	Max. inlet air temperature 55 °C
	Max. working pressure 16 bar

14.0 MACHINE ILLUSTRATION

14.1 GENERAL LAY-OUT

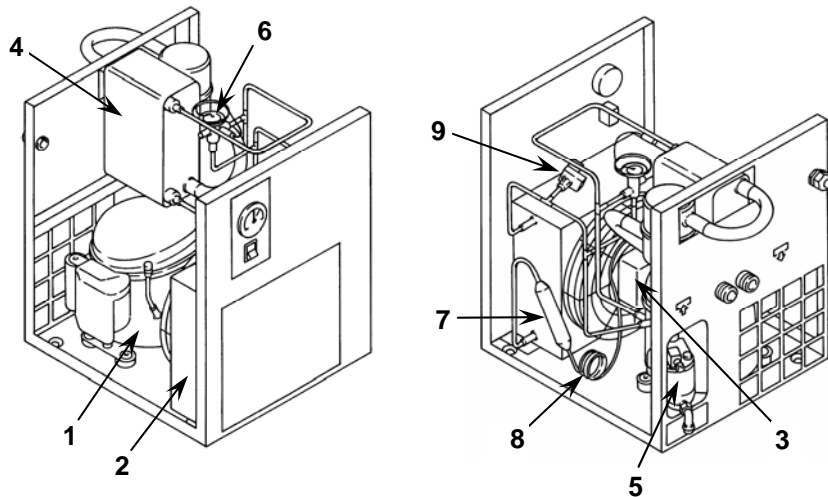


FIG. 8

1	Refrigerant compressor
2	Condenser
3	Motor fan
4	Evaporator
5	Condensate drain
6	Hot gas by-pass valve
7	Refrigerant filter
8	Expansion capillary tube
9	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.

Ref. 1) Dew point indicator
 Ref. 2) Stop - Running button

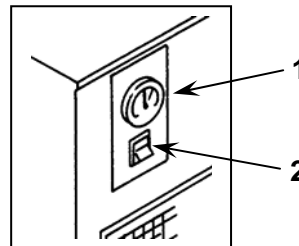


FIG. 9

15.0 PARTIAL ROUTINE MAINTENANCE



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.

15.1 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 controls.

Each Week

Condensate drain: Clean the filter of the steam trap

Each Monthly

Condenser: Clean the condenser fins to remove eventual dust.

15.2 CLEANING OF THE AUTOMATIC CONDENSATE DISCHARGER FILTER (Fig. 10)

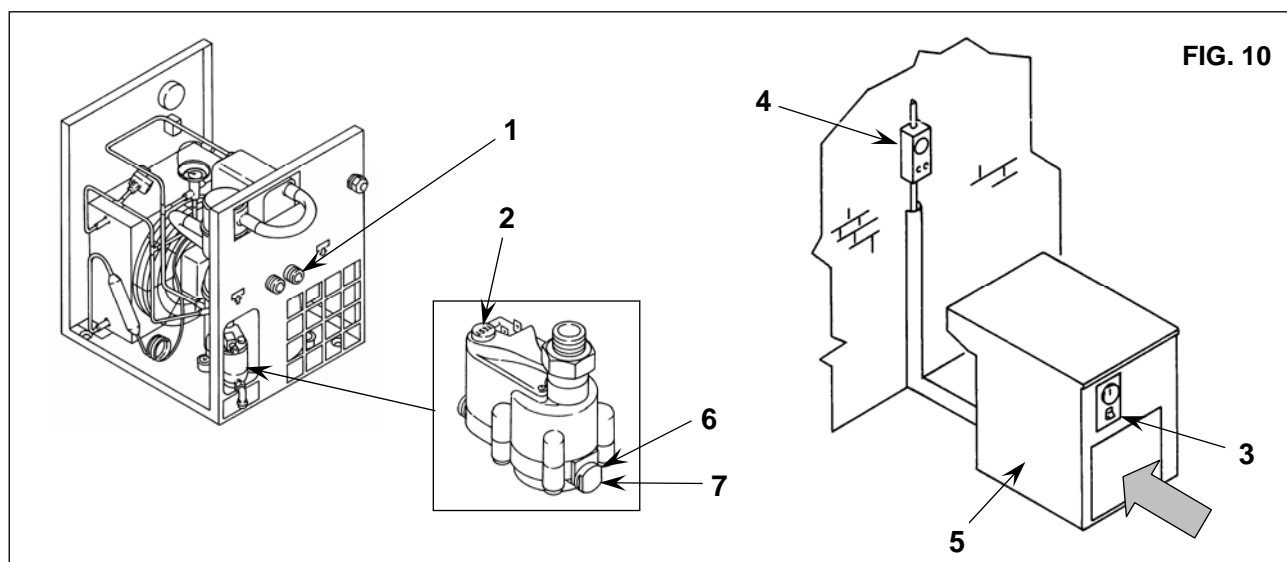
Clean the filter of the steam trap.

Proceed as follows:

- Close the cock Ref. 1 Fig. 10
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton located on the steam trap Ref. 2 Fig. 10.
- Switch off the machine by pressing the STOP button Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10

HOT PARTS INSIDE

- Remove the panels Ref. 5
- Remove the stopper Ref. 6
- Remove the filter Ref. 7
- Clean the filter Ref. 5 with a jet of air, working from inside to outside
- Install the filter, fix the plug Ref. 7 - 6
- Close the panels Ref. 5



15.3 CLEANING THE CONDENSER (Fig. 10)

The condenser must be cleaned every month.

Proceed as follows:

- Switch off the machine by pressing the STOP button Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10
- Remove the panels Ref. 5 Fig. 10
- Clean the condenser fins Ref. 1 with compressed air (Fig. 10) **DO NOT USE WATER OR SOLVENTS**
- Close the panels Ref. 5 Fig. 10

16.0 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 INSULATING FOAM, ETC.

17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES



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"> ■ ■ -The bypass valve of the hot gas is broken or out-of-calibration -The room temperature is too low and the evaporators piping are obstructed with ice
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"> - Clean the filter from the condensate drain ■ ■ -Check the condensate drain -Check the flow rate of treated air -Check the room temperature -Check the air temperature at the drier inlet. -Clean the condenser. ■ ■ -Check the operation and the calibration of the press. switch ■ ■ -Check the good operation of the fan.
3) The compressor head is very hot (> 55 °C)	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"> ■ ■ -Check if there are leaks of refrigerating gas. ■ ■ - Charge it again.

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.	-Contact the electric power company -Wait a few minutes before starting the machine again. ■ ■ -Check the running and starting relays and condensers (if any)
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.

18.0 STARTING UP

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

18.1 PRELIMINARY CONTROLS

Before starting the dryer, check:

- The correct connection to the compressed air piping: remember to remove eventual caps on the drier inlet and outlet.
- The correct connection to the condensate drainage system.
- That the power supply is right.

18.2 STARTING AND STOP

Start the system before the air compressor starts running and stop it after the air compressor has been stopped. The compressed air piping will be free of condensate only by doing so. The drier must be kept running during all the time the air compressor is running. **WARNING:** if the drier is switched off, before starting it again, wait at least 5 minutes in order to allow the pressure balancing.

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PRESSURE DISCHARGE PROCEDURE (Fig. 10)

Proceed as follows:

- Close the taps Ref. 1 Fig. 10
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton locate on the steam trap Ref. 1 Fig. 10
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CALIBRATIONS

BYPASS VALVE FOR HOT GAS

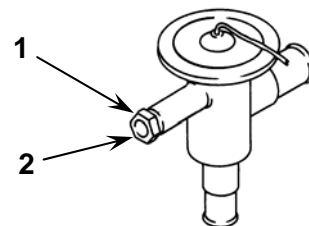
N.B. These valves have already been calibrated and they do not require any adjustment. A dew point different from the rated one generally depends on causes which are not attributable to their operation.

Ref. 1) Closing cap

Ref. 2) Adjusting screw

WORKING PRESSURES AND TEMPERATURES OF R134A

SUCTION SIDE OF REFRIGERATION COMPRESSOR		
	Evaporat. Temperat. °C	Evaporating Pressure bar
RATED VALUES (Temperat. 20 °C)	1 ÷ 2	R134A 2,1 ÷ 2,3



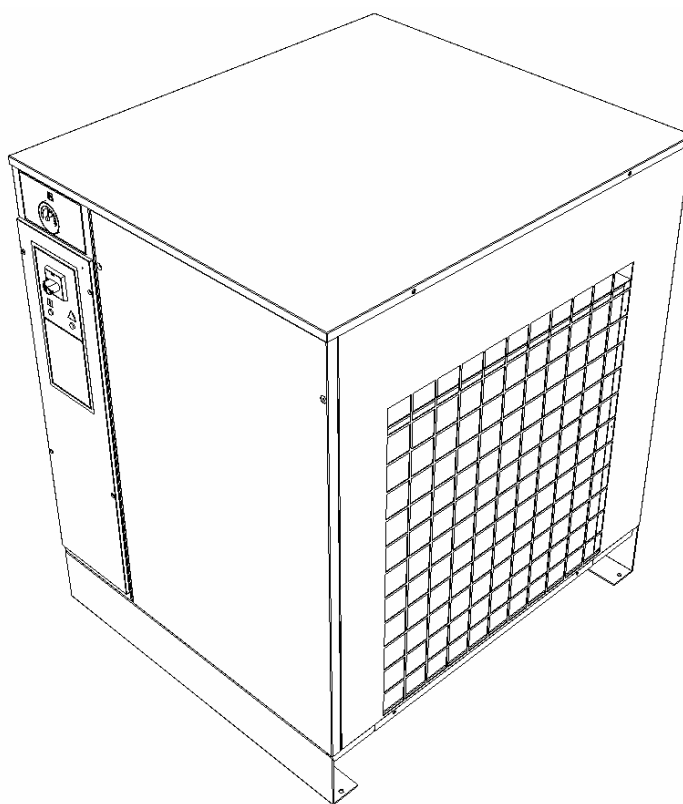


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DRYERS

A11 – A12 – A13 – A14



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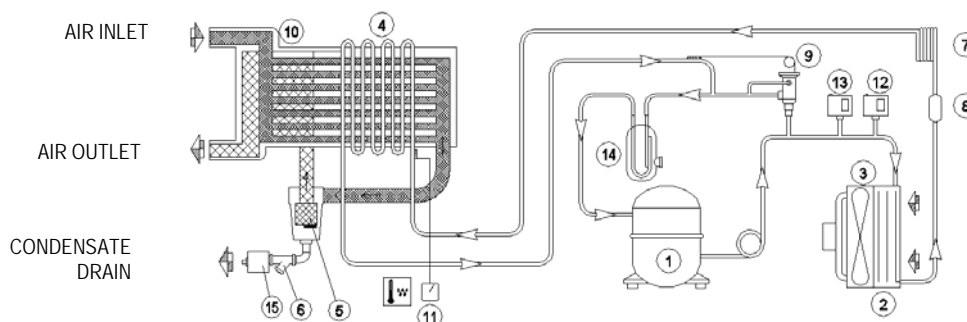
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3) MOTOR FAN	11) DEW POINT THERMOMETER
4) EVAPORATOR	12) MAX PRESSURE SWITCH
5) DEMISTER CONDENSATE SEPARATOR	13) FAN CONTROL PRESSURE SWITCH
6) IMPURITY TRAP	14) LIQUID SEPARATOR
7) EXPANSION CAPILLARY TUBE	15) CONDENSATE DRAIN
8) REFRIGERANT FILTER	

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



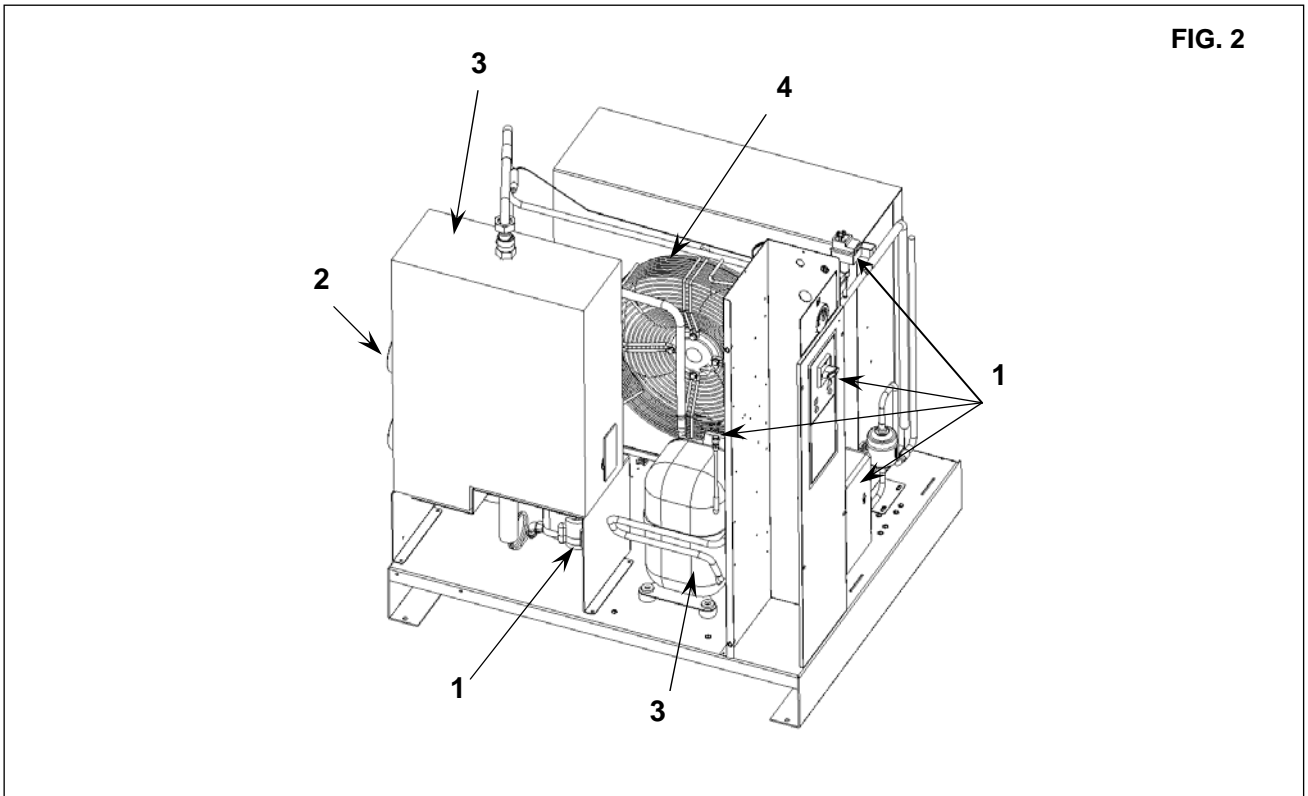
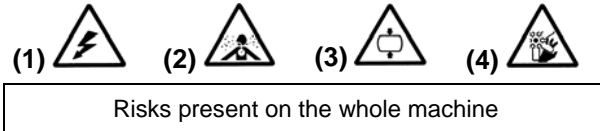
ALL WORK ON THE ELECTRIC PLANT, HOWEVER SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL.

5.0 DESCRIPTION OF DANGER SIGNALS

				
1) Dangerous electricvoltage	2) Air not fit for breathing	3) High pressure	4) Fan rotating	5) Hot parts

6.0 DANGER ZONES

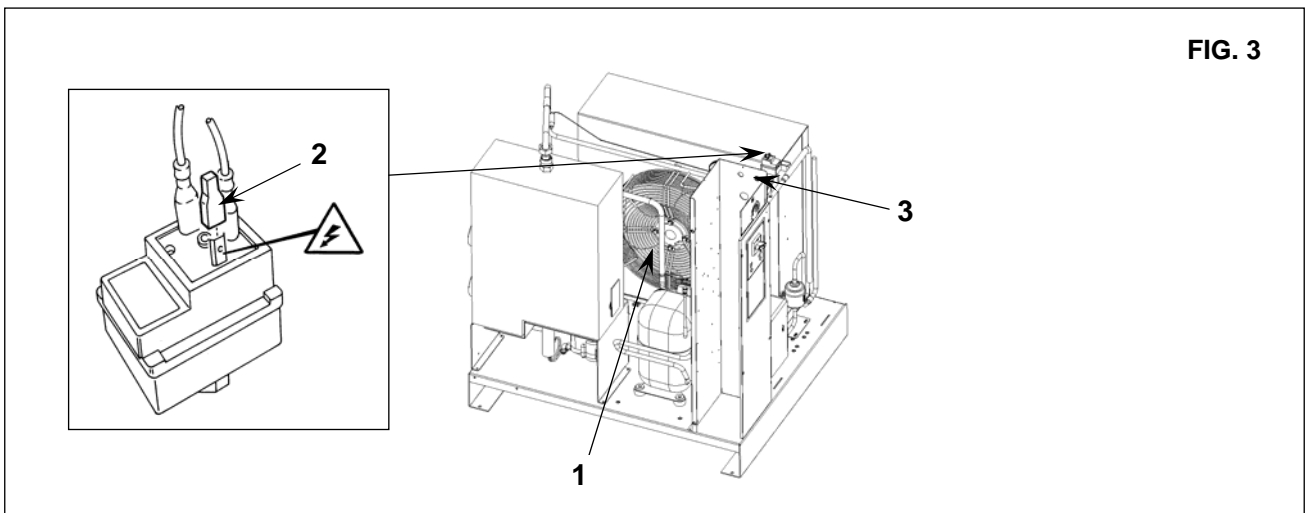
6.1 DANGER ZONES



7.0 SAFETY DEVICES

7.1 SAFETY DEVICES

1) Cooling fan shield	3) Earth
2) Shield	



8.0 POSITION OF PLATES

8.1 POSITION OF THE DANGER PLATES (Fig. 4)

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.

Ref.1 - Spare plate Code 1079 9903 48

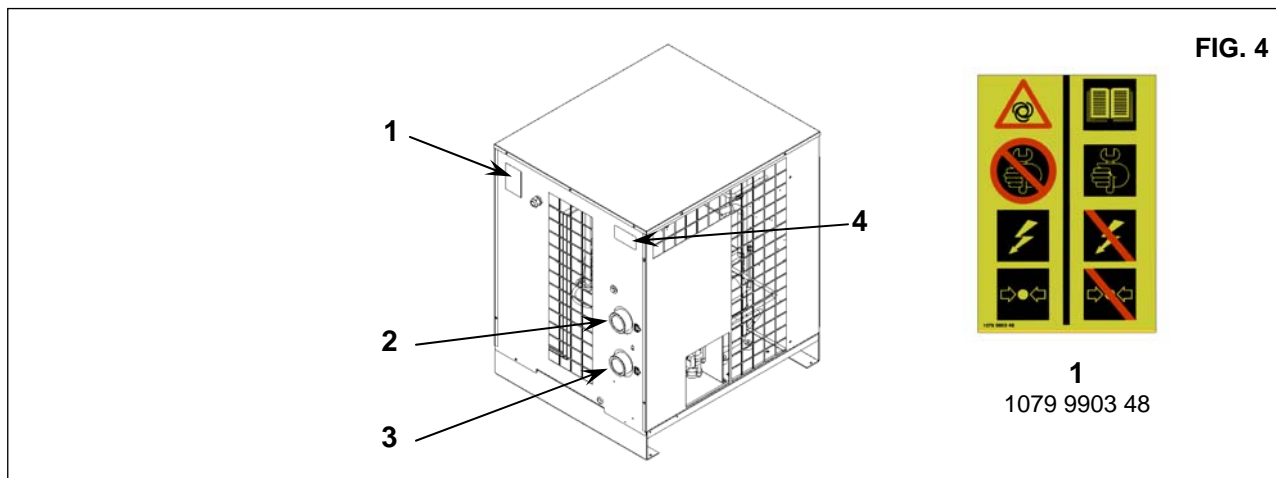


FIG. 4

8.2 POSITION OF THE DATA PLATES (Fig. 4)

Ref. 2) "IN"	Ref. 4) Identification plate
Ref. 3) "OUT"	

9.0 DRYERS ROOM

9.1 FLOOR

The floor must be even and of industrial type; the total weight of the machine is shown in Fig. 5. Remember the total weight of the machine when positioning it.

9.2 VENTILATION

The choice of an appropriate room will prolong the life of your dryer; the room must be spacious, dry, well ventilated and free from dust.

The operating conditions to be complied with are the following:

Min. room temperature: + 5 °C (compulsory)	Min. inlet allowed temperature: 3°C
Max. room temperature: + 45 °C (compulsory)	Max. inlet allowed temperature: 55°C
Max. temperature of incoming air: 55 °C	Max. working pressure: 13 bar

10.0 TRANSPORT AND HANDLING

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

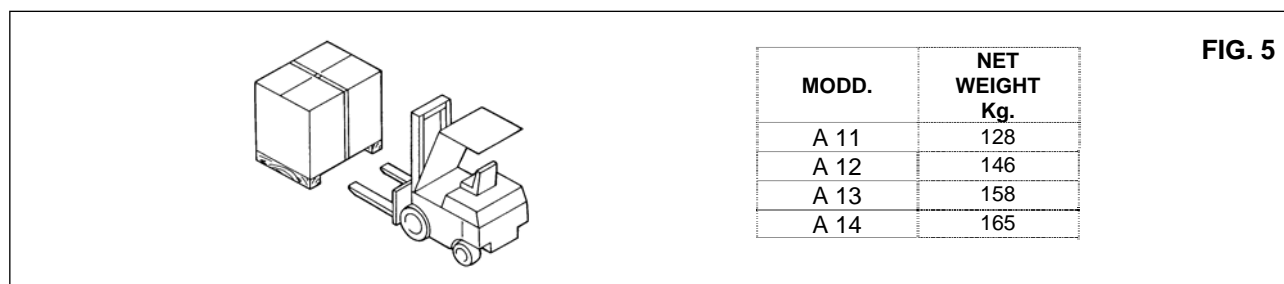


FIG. 5

11.0 UNPACKING



CUTTING THE METAL STRAPPING IS A DANGEROUS OPERATION, DO NOT ABANDON THE CUT PIECES IN THE ENVIRONMENT.

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, polystyrene foam, nails, screws, wood, metal strapping, etc.) 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.

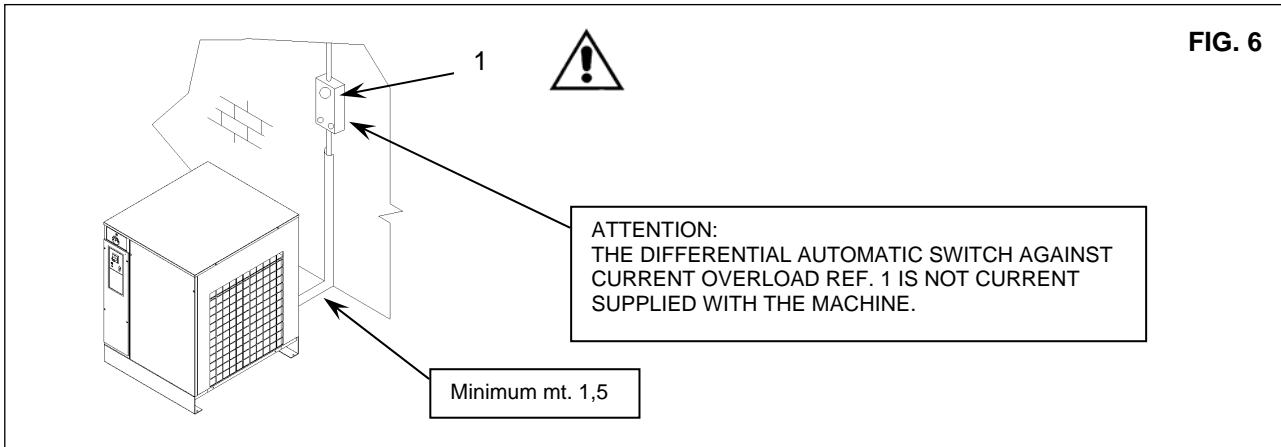
12.0 INSTALLATION

12.1 POSITIONING

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

- ensure that there is sufficient space around the machine to allow maintenance (see Fig. 6).

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 (Ref. 1 Fig. 6), wiring diagram.**



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.

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 dryer may be isolated during maintenance operations (see figure 7).

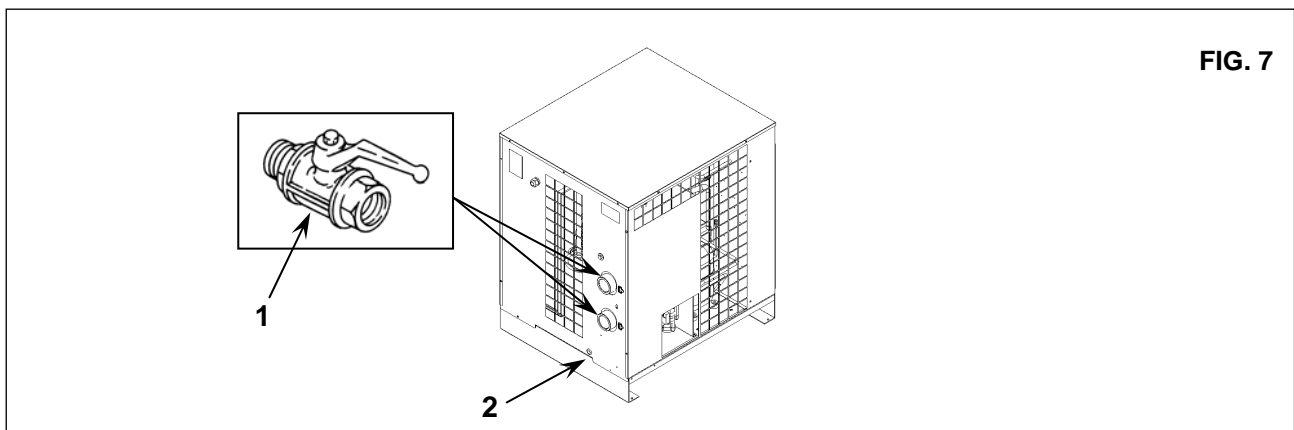
Drainage of condensate Rif. 2 Fig. 7 (automatic) are led outside the machine with a flexible pipe that may be inspected. Drainage must comply with the local regulations in force.



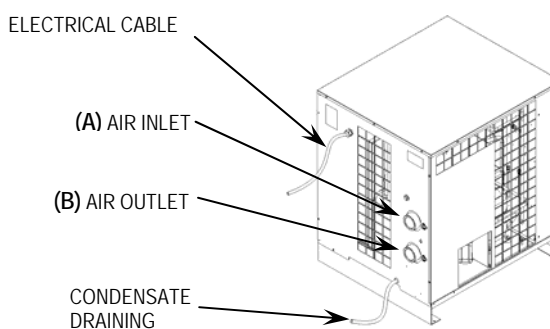
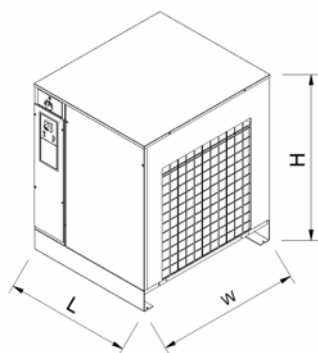
ALL DAMAGE DUE TO THE FAILURE TO COMPLY WITH THESE INDICATIONS CANNOT BE ATTRIBUTED TO THE MANUFACTURER AND MAY CAUSE INVALIDITY OF THE GUARANTEE CONDITIONS.

12.4 STARTING UP

See part B of this manual, Chapter 18.0



13.0 DIMENSIONS AND TECHNICAL DATA



MODD.	L (mm)	W (mm)	H (mm)
A 11	735	898	962
A 12	735	898	962
A 13	735	898	962
A 14	735	898	962

MODD.	A	B
A 11	2" GAS F.	2" GAS F.
A 12	2" GAS F.	2" GAS F.
A 13	2" GAS F.	2" GAS F.
A 14	2" GAS F.	2" GAS F.

MODD.	WEIGHT Kg.	Freon R404A Kg.		Nominal Power W		Nominal Power W		bar MAX.
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
A 11	128	2,2	2,2	1818	2485	150	220	bar 13
A 12	146	2,4	2,5	2013	2776	540	810	bar 13
A 13	158	3	3	2636	3344	540	810	bar 13
A 14	165	3,5	3,5	3568	4527	540	810	bar 13

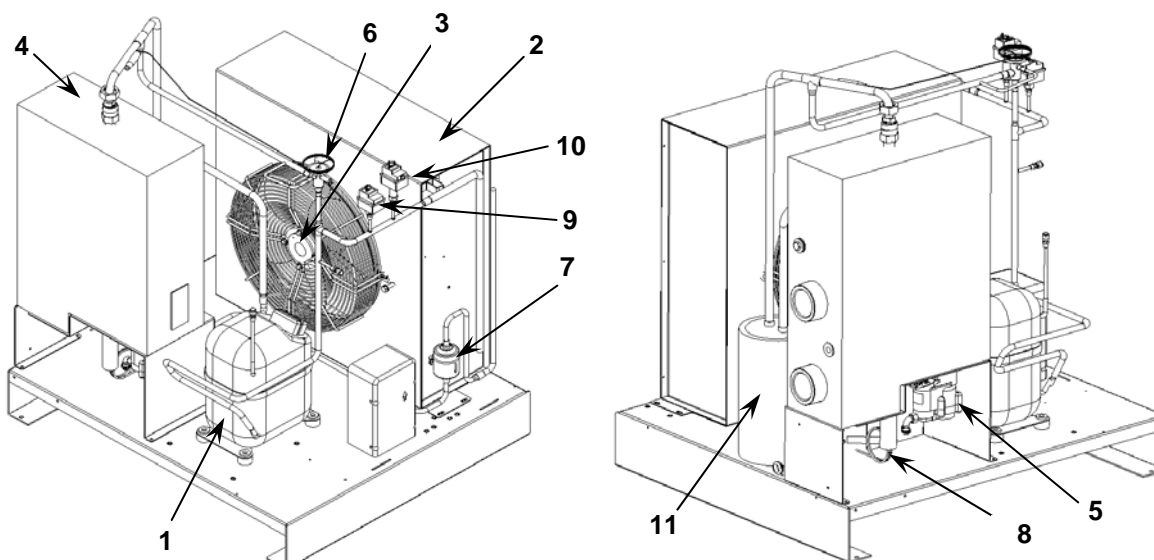
Reference conditions:	V400-3-50		V460-3-60		Limit conditions:		
	V400-3-50	V460-3-60	V400-3-50	V460-3-60	V400-3-50	V460-3-60	V460-3-60
Ambient temperature	25 °C	38 °C	Max. ambient temperature	45 °C	45 °C		
Inlet air temperature	35 °C	38 °C	Min. ambient temperature	5 °C	5 °C		
Working pressure	7 bar	7 bar	Max. inlet air temperature	55 °C	55 °C		
			Max. working pressure	13 bar	13 bar		

14.0 MACHINE ILLUSTRATION

14.1 GENERAL LAY-OUT

1	Refrigerant compressor	7	Freon filter
2	Condenser	8	Capillary
3	Motor fan	9	Pressure switch of motor fan
4	Evaporator	10	Pressure switch of the high pressure
5	Condensate drain	11	Liquid separator
6	Hot gas by pass valve		

FIG. 8



14.2 COMMAND AND CONTROL PANEL



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

- Ref. 1) Dew point indicator
- Ref. 2) Stop - Running button – Door block
- Ref. 3) Green indicator of voltage - Running
- Ref. 4) Red indicator of alarm for:
 - High pressure
 - Fan motor protection

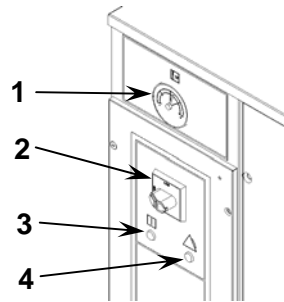


FIG. 9

15.0 PARTIAL ROUTINE MAINTENANCE



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.

15.1 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 controls.

Each Week

Condensate drain: Clean the filter of the steam trap

Each Monthly

Condenser: Clean the condenser fins to remove eventual dust.

15.2 CLEANING OF THE AUTOMATIC CONDENSATE DISCHARGER FILTER (Fig. 10)

Clean the filter of the steam trap.

Proceed as follows:

- Close the cock Ref. 1 Fig. 10
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton located on the steam trap Ref. 2 Fig. 10.
- Switch off the machine. Turn the switch in position STOP Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10



HOT PARTS INSIDE

- To use the hole Ref. 5
- Remove the stopper Ref. 6
- Remove the filter Ref. 7
- Clean the filter Ref. 5 with a jet of air, working from inside to outside
- Install the filter, fix the plug Ref. 7 - 6
- Close the panels Ref. 5

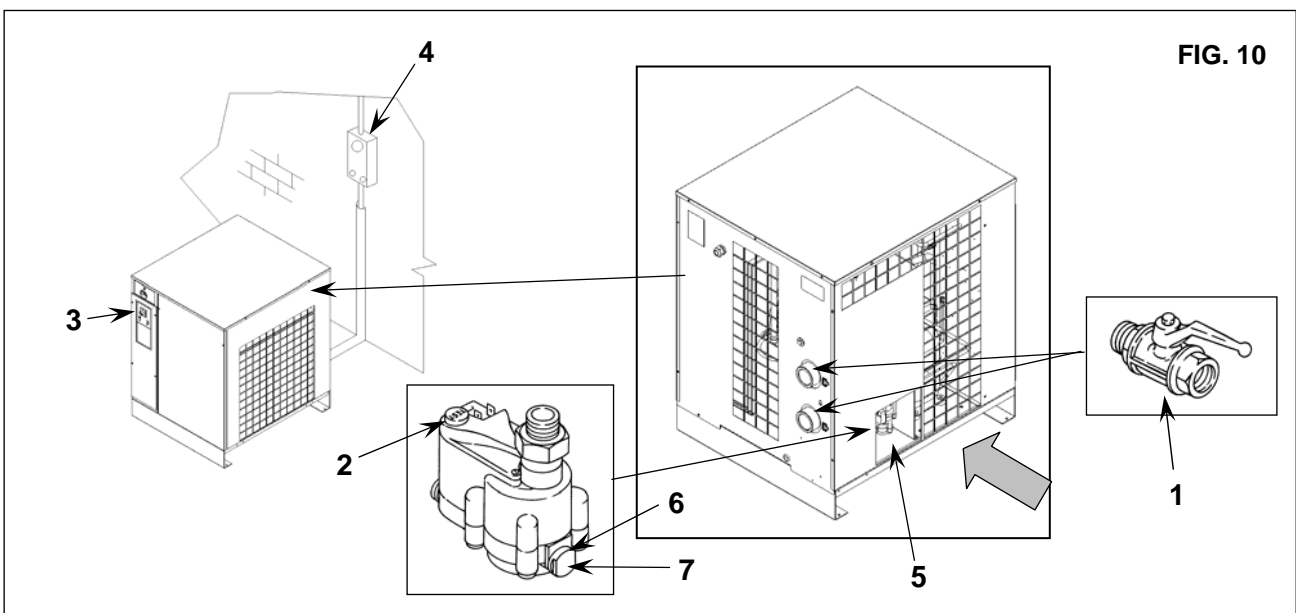


FIG. 10

15.3 CLEANING THE CONDENSER (Fig. 10)

The condenser must be cleaned every month.

Proceed as follows:

- Switch off the machine. Turn the switch in position STOP Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10
- To use the hole Ref. 5 Fig. 10
- Clean the condenser fins Ref. 1 with compressed air (Fig. 10) **DO NOT USE WATER OR SOLVENTS**
- Close the panels Ref. 5 Fig. 10

16.0 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 INSULATING FOAM, ETC.

17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES



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"> ■ ■ -The bypass valve of the hot gas is broken or out-of-calibration -The room temperature is too low and the evaporators piping are obstructed with ice
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"> -Clean the filter from the condensate drain ■ ■-Check the condensate drain -Check the flow rate of treated air -Check the room temperature -Check the air temperature at the drier inlet. -Clean the condenser. ■ ■-Check the operation and the calibration of the press. switch ■ ■-Check the good operation of the fan.
3) The compressor head is very hot (> 55 °C)	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"> ■ ■ -Check if there are leaks of refrigerating gas. ■ ■ - Charge it again.
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"> -Contact the electric power company -Wait a few minutes before starting the machine again. ■ ■ -Check the running and starting relays and condensers (if any)
6) The machine has stopped and does not restart even after a few minutes.	The thermostatic protection with manual reset has intervened: make reference to 2B-2C-3A.	
7) The compressor is very noisy.	The motor has burnt out. 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.

18.0 STARTING UP



BEFORE CARRYING OUT ANY OPERATION ON THE MACHINE, ENSURE THAT THE ELECTRIC POWER SUPPLY HAS BEEN DISCONNECTED
 WAIT AT LEAST TWO HOURS BEFORE STARTING UP, AFTER ANY MACHINE MOVEMENT (TRANSPORT OR HANDLING).

18.1 PRELIMINARY CONTROLS

Before starting the dryer, check:

- The correct connection to the compressed air piping: remember to remove eventual caps on the drier inlet and outlet.
- The correct connection to the condensate drainage system.
- That the power supply is right.

18.2 STARTING AND STOP

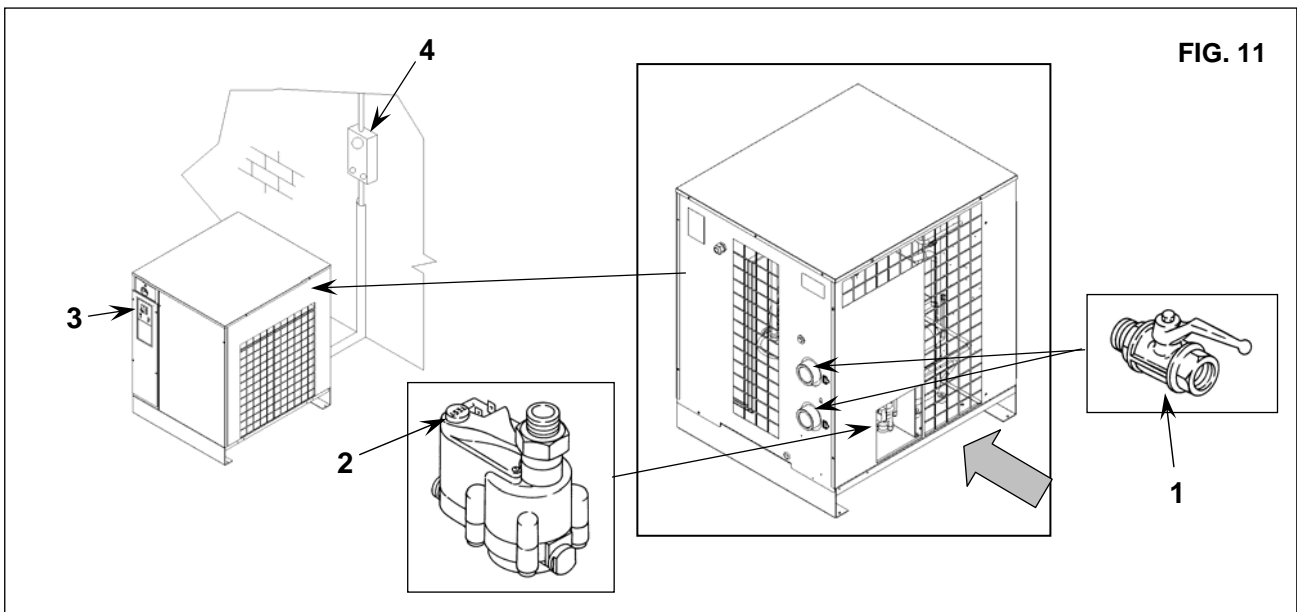
Start the system before the air compressor starts running and stop it after the air compressor has been stopped. The compressed air piping will be free of condensate only by doing so. The drier must be kept running during all the time the air compressor is running. **WARNING:** if the drier is switched off, before starting it again, wait at least 5 minutes in order to allow the pressure balancing.

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.

PRESSURE DISCHARGE PROCEDURE

Proceed as follows:

- Close the taps Ref. 1 Fig. 11
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton locate on the steam trap Ref. 1 Fig. 11
- Switch off the machine. Turn the switch in position STOP Ref. 3 Fig. 11
- Turn on the supply automatic differential switch Ref. 4 Fig. 11



CALIBRATIONS

BYPASS VALVE FOR HOT GAS

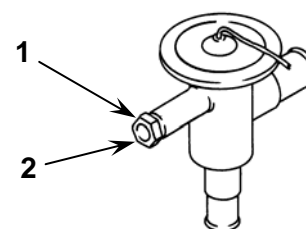
N.B. These valves have already been calibrated and they do not require any adjustment. A dew point different from the rated one generally depends on causes which are not attributable to their operation.

Ref. 1) Closing cap

Ref. 2) Adjusting screw

WORKING PRESSURES AND TEMPERATURES OF R404A

	SUCTION SIDE OF REFRIGERATION COMPRESSOR	
	Evaporat. Temperat. °C	Evaporating Pressure bar
RATED VALUES (Temperat. 20 °C)	1 ÷ 2	R404A 4,3 ÷ 4,5



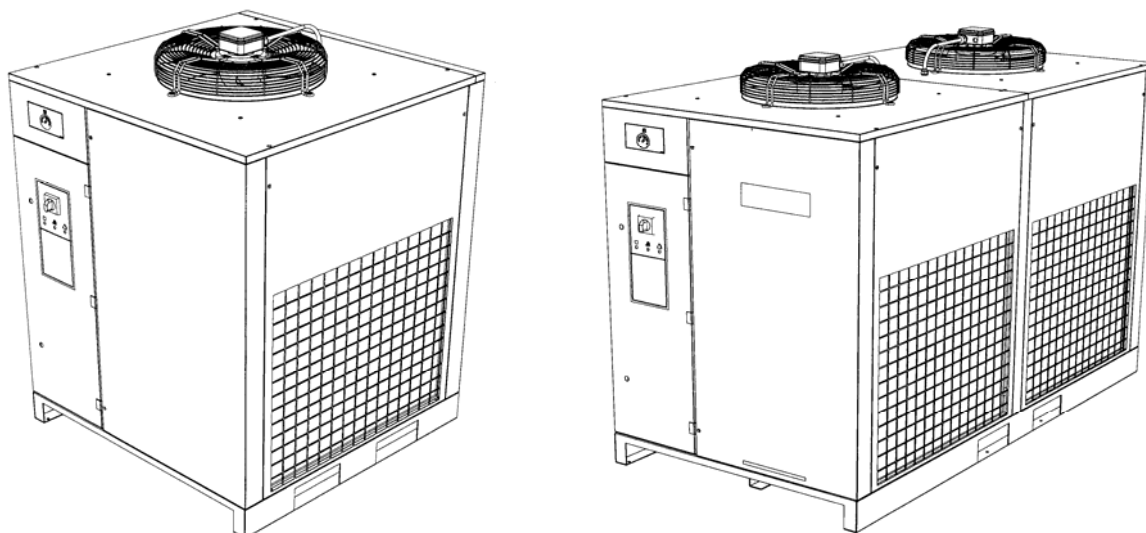


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INSTRUCTION AND MAINTENANCE MANUAL

DRYERS

A15 - A16 - A17- A18 - A19



READ THIS MANUAL CAREFULLY BEFORE CARRYING OUT ANY OPERATIONS ON THE DRYER.

CONTENTS

PART A: INFORMATION FOR THE USER

- 1.0 GENERAL CHARACTERISTICS
- 2.0 INTENDED USE
- 3.0 OPERATION
- 4.0 GENERAL SAFETY STANDARDS
- 5.0 DESCRIPTION OF DANGER SIGNALS
- 6.0 DANGER ZONES
- 7.0 SAFETY DEVICES
- 8.0 POSITION OF PLATES
- 9.0 DRYERS ROOM
- 10.0 TRANSPORT AND HANDLING
- 11.0 UNPACKING
- 12.0 INSTALLATION
- 13.0 DIMENSIONS AND TECHNICAL DATA
- 14.0 MACHINE ILLUSTRATION
- 15.0 PARTIAL ROUTINE MAINTENANCE
- 16.0 SCRAPPING THE DRYERS
- 17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES

PART B: INFORMATION RESERVED FOR TECHNICALLY SKILLED PERSONNEL

- 18.0 STARTING UP

ATTENTION: THERE IS A COPY OF THE WIRING DIAGRAM INSIDE THE ELECTRIC PANEL

ADDRESSES OF ASSISTANCE CENTRES

In the event of breakdown or malfunction of the dryer, 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 on the dryer. Read this manual carefully before carrying out any operations on the dryer.

The installation of the dryer 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



**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.**

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

THIS MACHINE IS NOT SUITABLE FOR EXTERNAL INSTALLATION

THIS MACHINE CORRESPOND TO THE ESSENTIAL SAFETY REQUIREMENTS FORESEEN FROM THE EUROPEAN STANDARD (98/37 CE) AND THE RULE EN 292

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...)

1.0 GENERAL CHARACTERISTICS

The dryer is a chilling machine with direct expansion and dry evaporator.

The air to be dried is sent to the heat exchanger in which the water vapour present is condensed: the condensate gathers in the separator and is discharged outside through a steam trap.

2.0 INTENDED USE

The dryer has been built to dry the compressed air for industrial use. The dryer 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.)

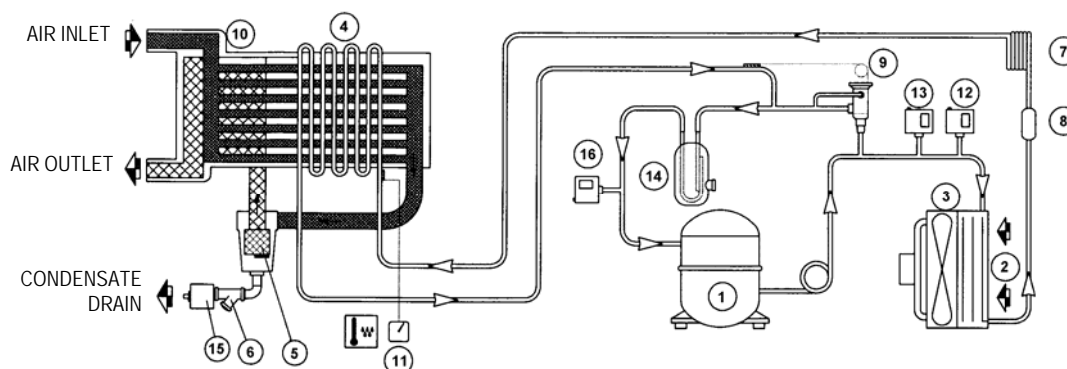
This appliance must be used only for the purpose for which it was specifically designed. All other uses are to be considered incorrect and therefore unreasonable. The Manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

3.0 OPERATION

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 in order to prevent the condensate from freezing inside the evaporator. The drier runs completely automatically.

DRYER FLOW DIAGRAM



1) REFRIGERANT COMPRESSOR	9) HOT GAS BYPASS VALVE
2) CONDENSER	10) AIR-TO-AIR EXCANGER
3) MOTOR FAN	11) DEW POINT THERMOMETER
4) EVAPORATOR	12) FAN CONTROL PRESSURE SWITCH
5) DEMISTER CONDENSATE SEPARATOR	13) MAX PRESSURE SWITCH
6) IMPURITY TRAP	14) LIQUID SEPARATOR
7) EXPANSION CAPILLARY TUBE	15) CONDENSATE DRAIN
8) REFRIGERANT FILTER	16) MIM. PRESSURE SWITCH

4.0 GENERAL SAFETY STANDARD

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.



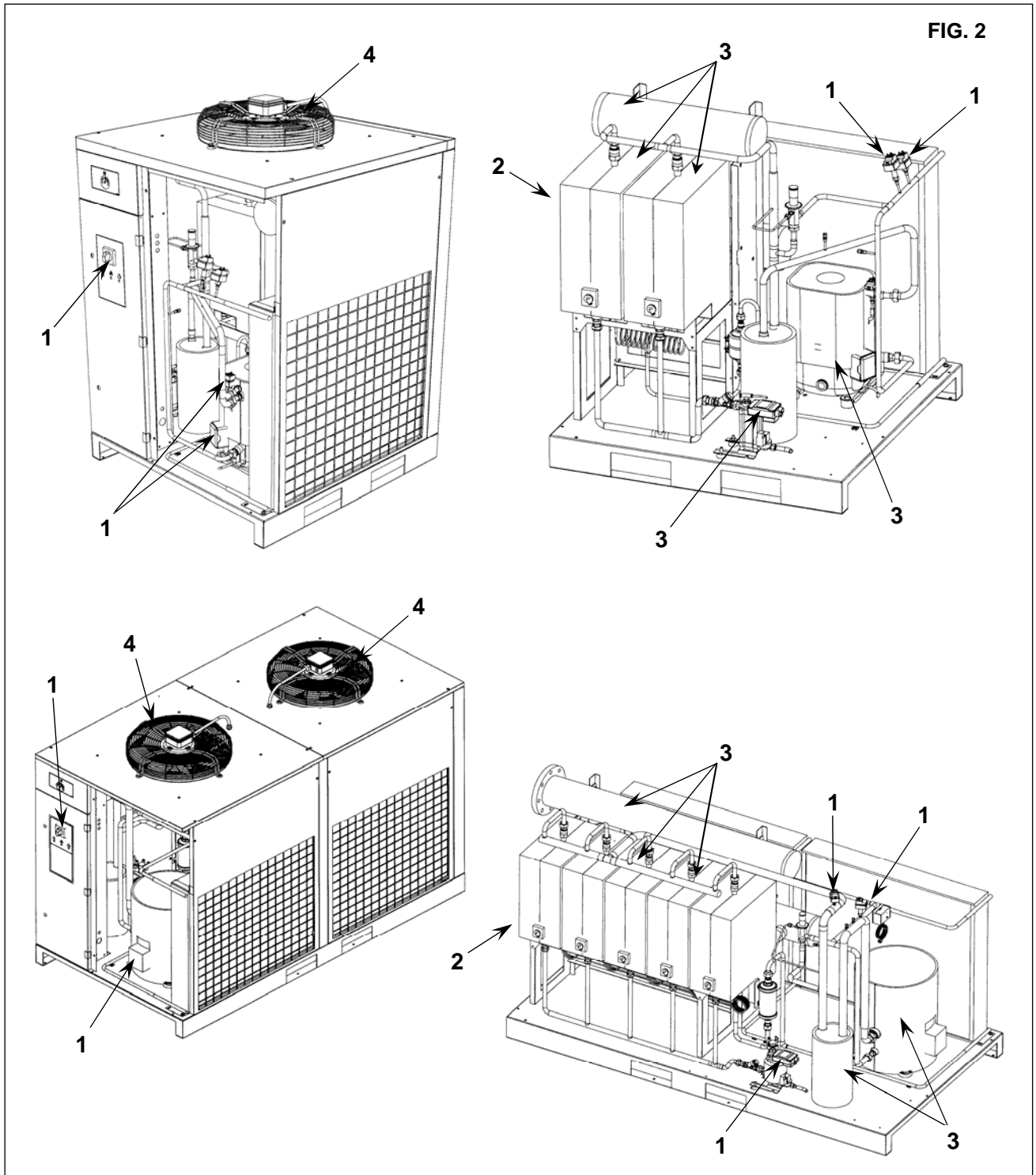
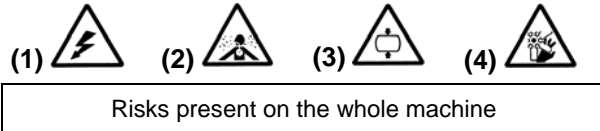
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5.0 DESCRIPTION OF DANGER SIGNALS

				
1) Dangerous electricvoltage	2) Air not fit for breathing	3) High pressure	4) Fan rotating	5) Hot parts

6.0 DANGER ZONES

6.1 DANGER ZONES



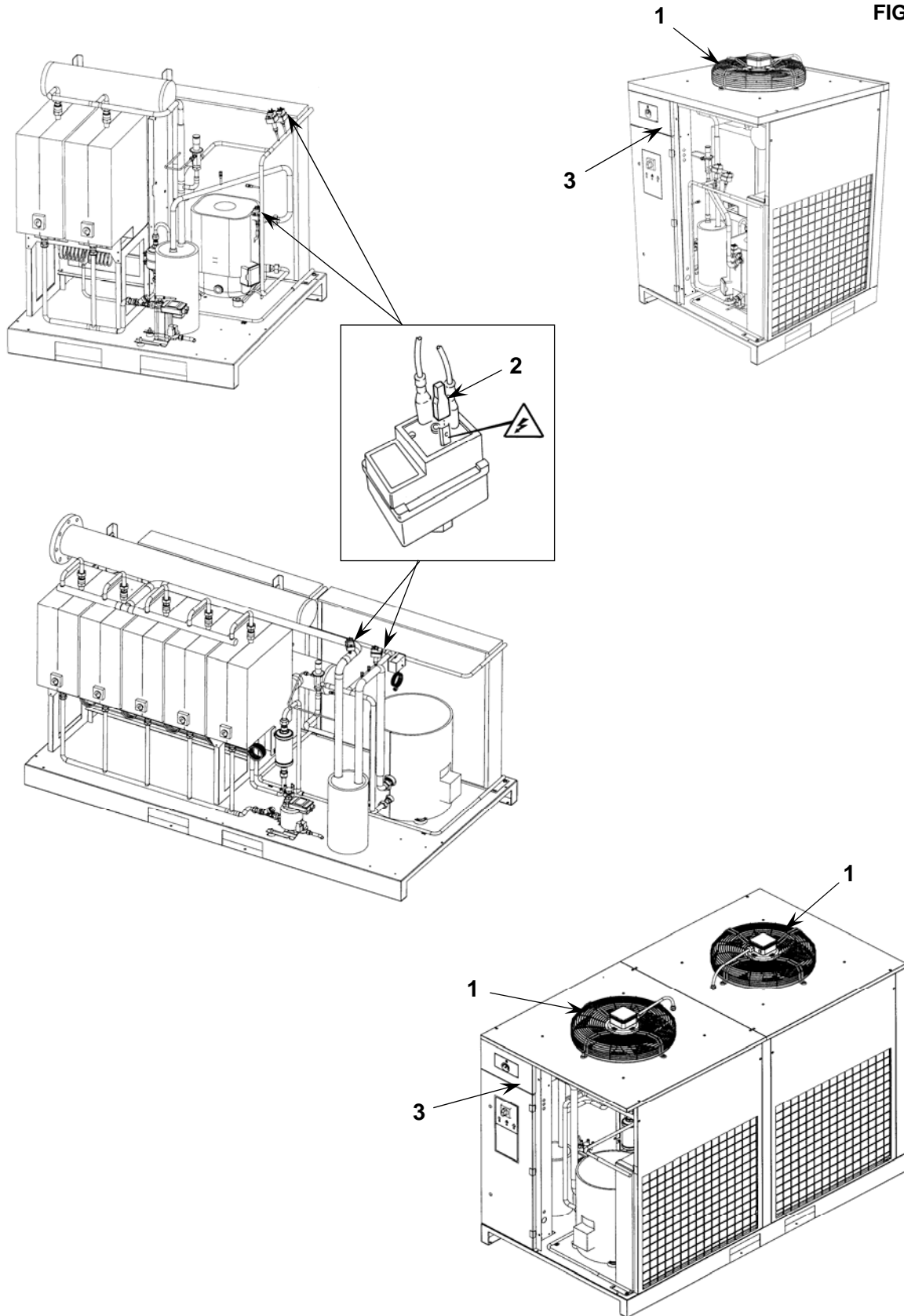
7.0 SAFETY DEVICES

7.1 SAFETY DEVICES

- 1) Cooling fan shield
- 2) Shield

- 3) Earth

FIG. 3

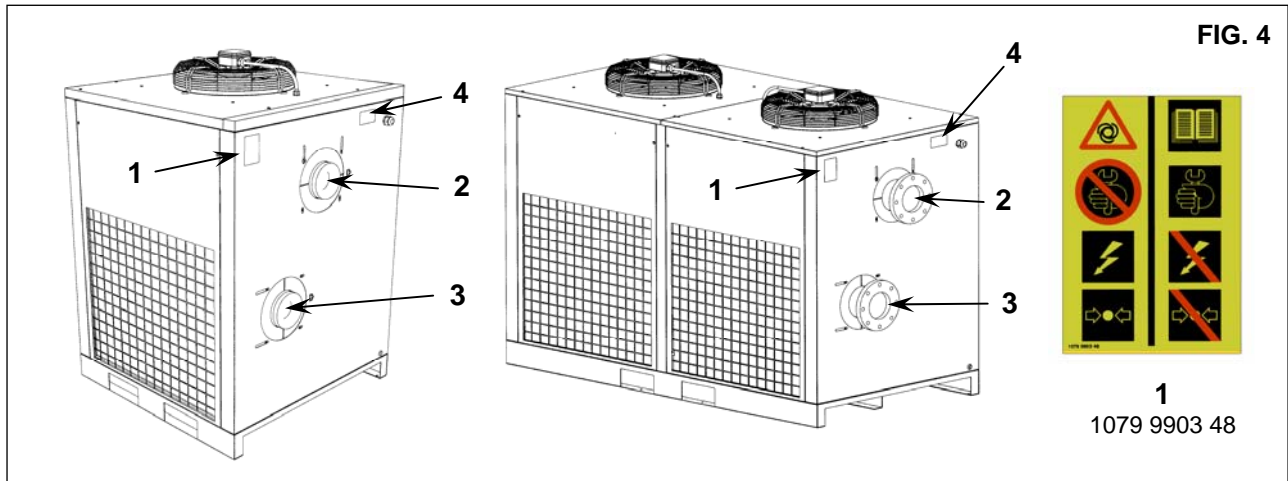


8.0 POSITION OF PLATES

8.1 POSITION OF THE DANGER PLATES (Fig. 4)

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.

Ref.1 - Spare plate Code 1079 9903 48



8.2 POSITION OF THE DATA PLATES (Fig. 4)

Ref. 2) "IN"	Ref. 4) Identification plate
Ref. 3) "OUT"	

9.0 DRYERS ROOM

9.1 FLOOR

The floor must be even and of industrial type; the total weight of the machine is shown in Fig. 5 Remember the total weight of the machine when positioning it.

9.2 VENTILATION

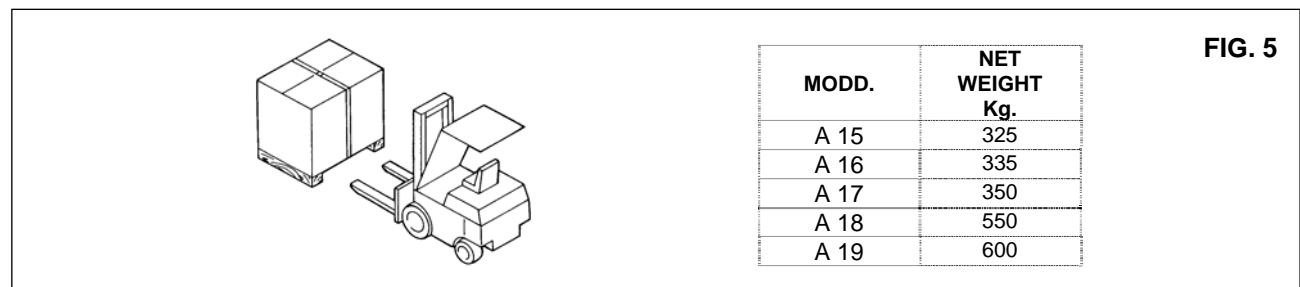
The choice of an appropriate room will prolong the life of your dryer; the room must be spacious, dry, well ventilated and free from dust.

The operating conditions to be complied with are the following:

Min. room temperature: + 5 °C (compulsory)	Min. inlet allowed temperature: 3°C
Max. room temperature: + 45 °C (compulsory)	Max. inlet allowed temperature: 55°C
Max. temperature of incoming air: 55 °C	Max. working pressure: 13 bar

10.0 TRANSPORT AND HANDLING

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



11.0 UNPACKING



CUTTING THE METAL STRAPPING IS A DANGEROUS OPERATION, DO NOT ABANDON THE CUT PIECES IN THE ENVIRONMENT.

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, polystyrene foam, nails, screws, wood, metal strapping, etc.) 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 dryers room, put the machine into position, checking the following items:

- ensure that there is sufficient space around the machine to allow maintenance (see Fig. 6).

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.

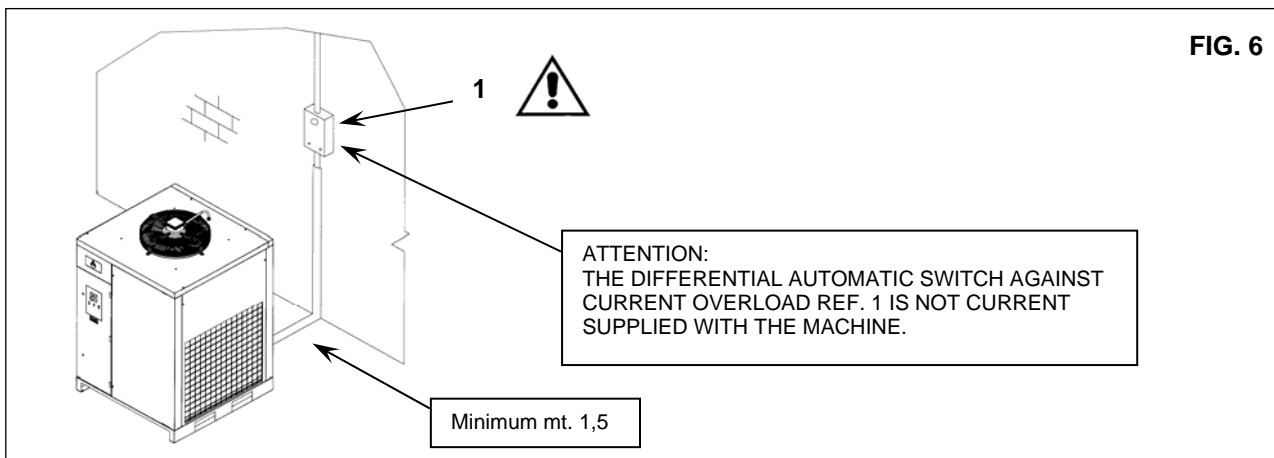


FIG. 6

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 (Ref. 1 Fig. 6), wiring diagram.**



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.

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 dryer may be isolated during maintenance operations (see figure 7).

Drainage of condensate Rif. 2 Fig. 7 (automatic) are 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 18.0

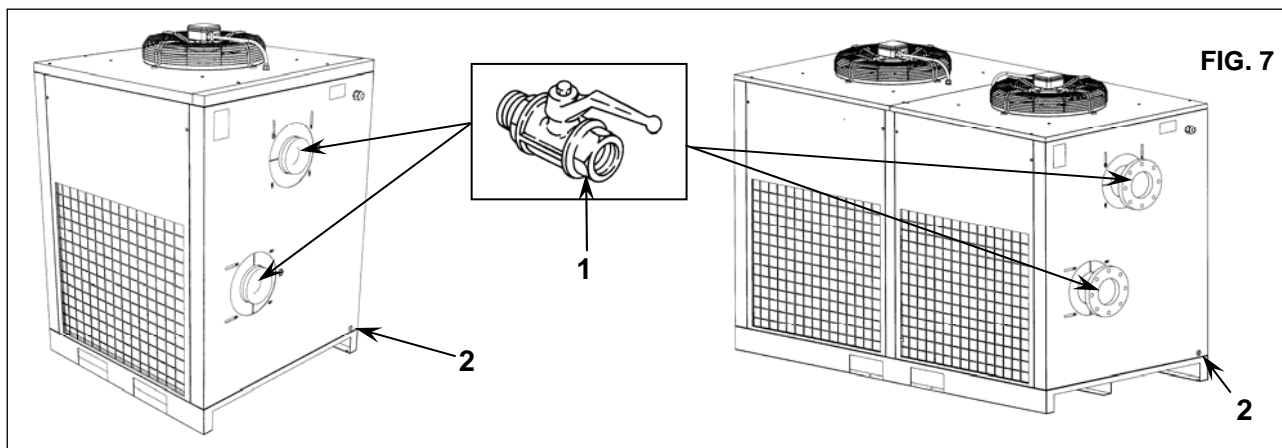
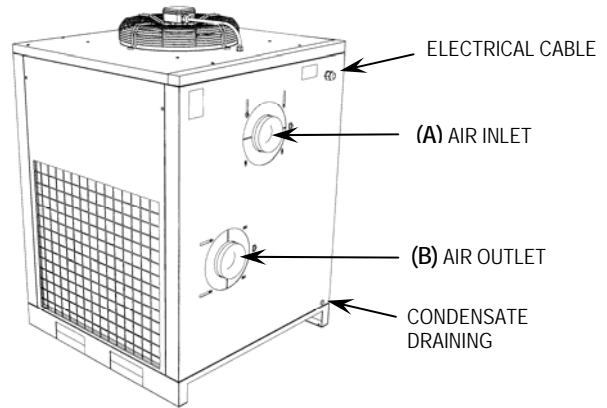
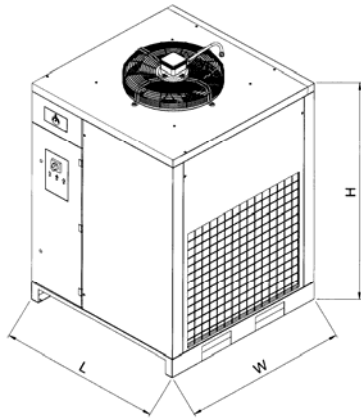


FIG. 7

13.0 DIMENSIONS AND TECHNICAL DATA (A15 - A16 - A17)



MODD.	L (mm)	W (mm)	H (mm)
A 15	1020	1082	1535
A 16	1020	1082	1535
A 17	1020	1082	1535

MODD.	A	B
A 15	3" GAS F.	3" GAS F.
A 16	3" GAS F.	3" GAS F.
A 17	3" GAS F.	3" GAS F.

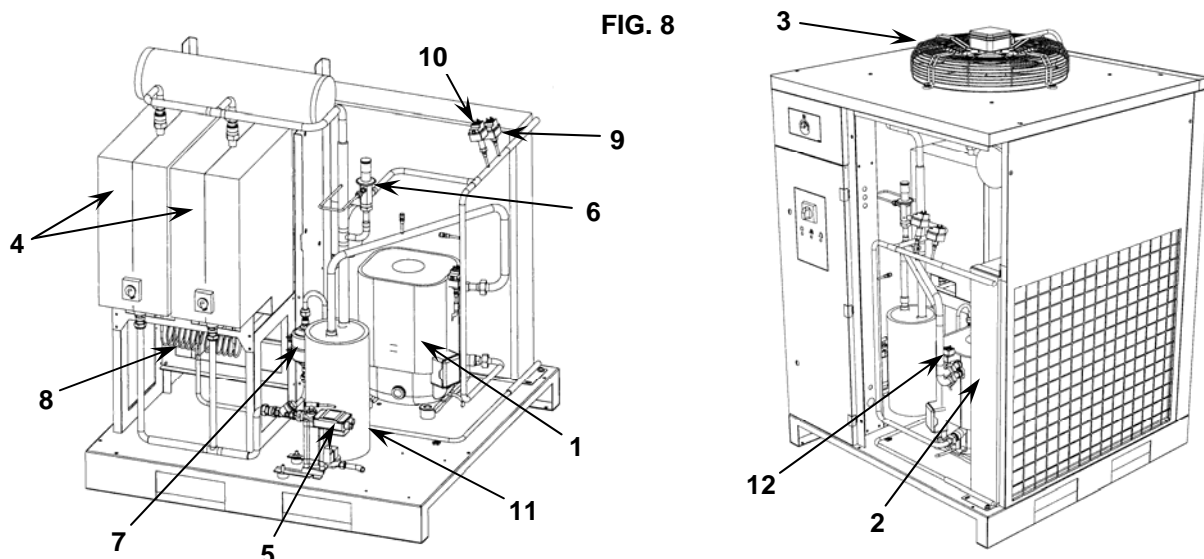
MODD.	WEIGHT Kg.	Freon R404A Kg.		Nominal Power W		Nominal Power W		bar MAX.
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
A 15	325	5,000	5,200	3900	5470	790	1250	bar 13
A 16	335	4,700	5,200	4460	5820	790	1250	bar 13
A 17	350	5,500	5,700	5550	7260	790	1250	bar 13

Reference conditions:	V400-3-50		V460-3-60		Limit conditions:	V400-3-50		V460-3-60	
	Ambient temperature	Inlet air temperature	Working pressure	Max. ambient temperature		Min. ambient temperature	Max. inlet air temperature	Max. working pressure	
	25 °C	35 °C	7 bar	45 °C	45 °C	55 °C	13 bar	45 °C	55 °C
	38 °C	38 °C	7 bar	5 °C	5 °C	55 °C	13 bar	5 °C	55 °C

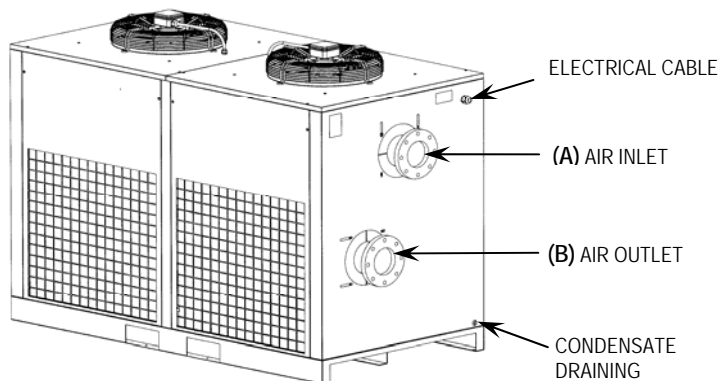
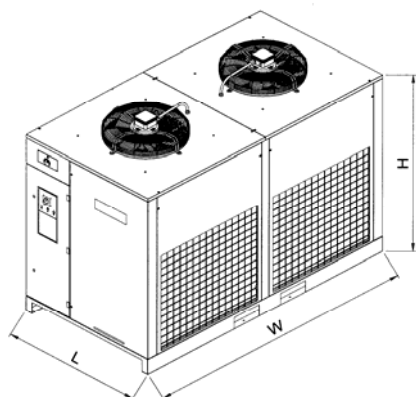
14.0 MACHINE ILLUSTRATION

14.1 GENERAL LAY-OUT (A15 - A16 - A17)

1	Refrigerant compressor	7	Freon filter
2	Condenser	8	Capillary
3	Motor fan	9	Pressure switch of motor fan
4	Evaporator	10	Pressure switch of the high pressure
5	Condensate drain	11	Liquid separator
6	Hot gas by pass valve	12	Pressure switch of the min. pressure



13.1 DIMENSIONS AND TECHNICAL DATA (A18 - A19)



MODD.	L (mm)	W (mm)	H (mm)
A 18	1020	2099	1535
A 19	1020	2099	1535

MODD.	A	B
A 18	FLANGED "DN 125"	FLANGED "DN 125"
A 19	FLANGED "DN 125"	FLANGED "DN 125"

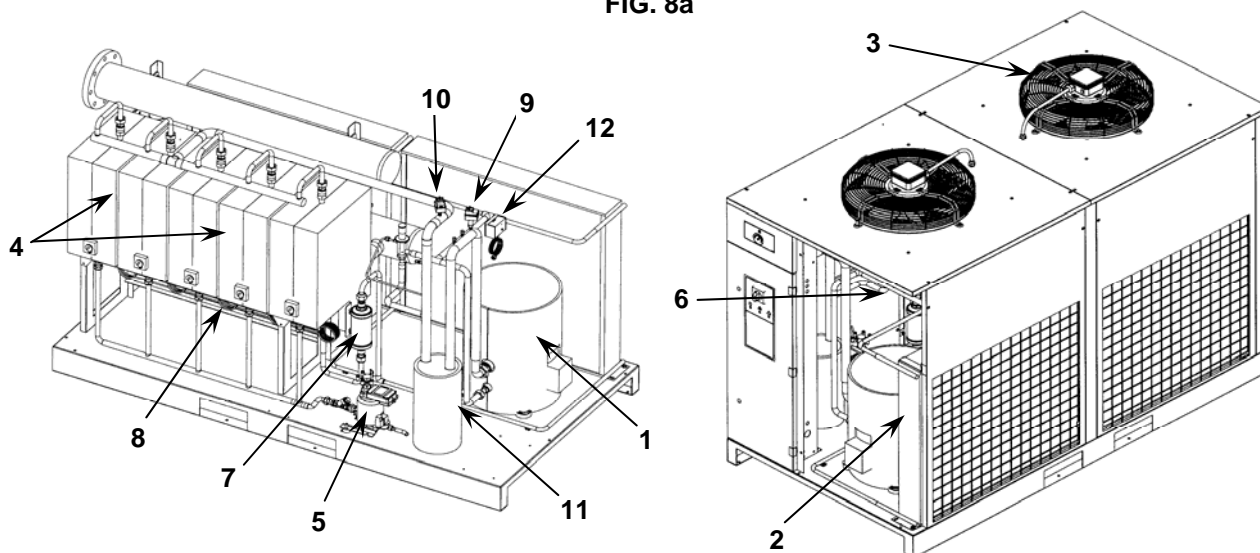
MODD.	WEIGHT Kg.	Freon R404A Kg.		Nominal Power W		Nominal Power W		bar MAX.
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
A 18	550	10,500	10,500	6800	9600	1580	2500	13
A 19	600	11,500	11,000	10200	12500	1580	2500	13

Reference conditions:	V400-3-50		V460-3-60		Limit conditions:	V400-3-50		V460-3-60	
	25 °C	38 °C	38 °C	45 °C		45 °C	5 °C	5 °C	55 °C
Ambient temperature	25 °C	38 °C	38 °C	45 °C	Max. ambient temperature	45 °C	45 °C	5 °C	5 °C
Inlet air temperature	35 °C	38 °C	38 °C	45 °C	Min. ambient temperature	5 °C	5 °C	55 °C	55 °C
Working pressure	7 bar	7 bar	7 bar	13 bar	Max. inlet air temperature	55 °C	55 °C	13 bar	13 bar
					Max. working pressure	13 bar	13 bar		

14.1 GENERAL LAY-OUT (A18 - A19)

1	Refrigerant compressor	7	Freon filter
2	Condenser	8	Capillary
3	Motor fan	9	Pressure switch of the high pressure
4	Evaporator	10	Pressure switch of the min. pressure
5	Condensate drain	11	Liquid separator
6	Hot gas by pass valve	12	Pressure switch of motor fan

FIG. 8a



14.2 COMMAND AND CONTROL PANEL



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

- Ref. 1) Dew point indicator
- Ref. 2) Stop - Running button - Door block
- Ref. 3) Green indicator of voltage - Running
- Ref. 4) Red indicator of alarm for:
 - Condensate drain
- Ref. 5) Red indicator of alarm for:
 - High / Low pressure
 - Fan motor protection

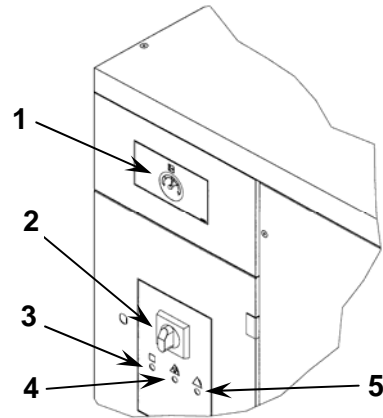


FIG. 9

15.0 PARTIAL ROUTINE MAINTENANCE



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.

15.1 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 controls.

Each Week

Condensate drain: Clean the filter of the steam trap

Each Monthly

Condenser: Clean the condenser fins to remove eventual dust.

15.2 CLEANING OF THE AUTOMATIC CONDENSATE DISCHARGER FILTER (Fig. 10)

Clean the filter of the steam trap.

Proceed as follows:

- Close the cock Ref. 1 Fig. 10
- Remove the panel Ref. 5 Fig. 10
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton located on the steam trap Ref. 2 Fig. 10.
- Switch off the machine. Turn the switch in position STOP Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10



HOT PARTS INSIDE

- Remove the stopper Ref. 6
- Remove the filter Ref. 7
- Clean the filter Ref. 7 with a jet of air, working from inside to outside
- Install the filter, fix the plug Ref. 7 - 6
- Close the panel Ref. 5

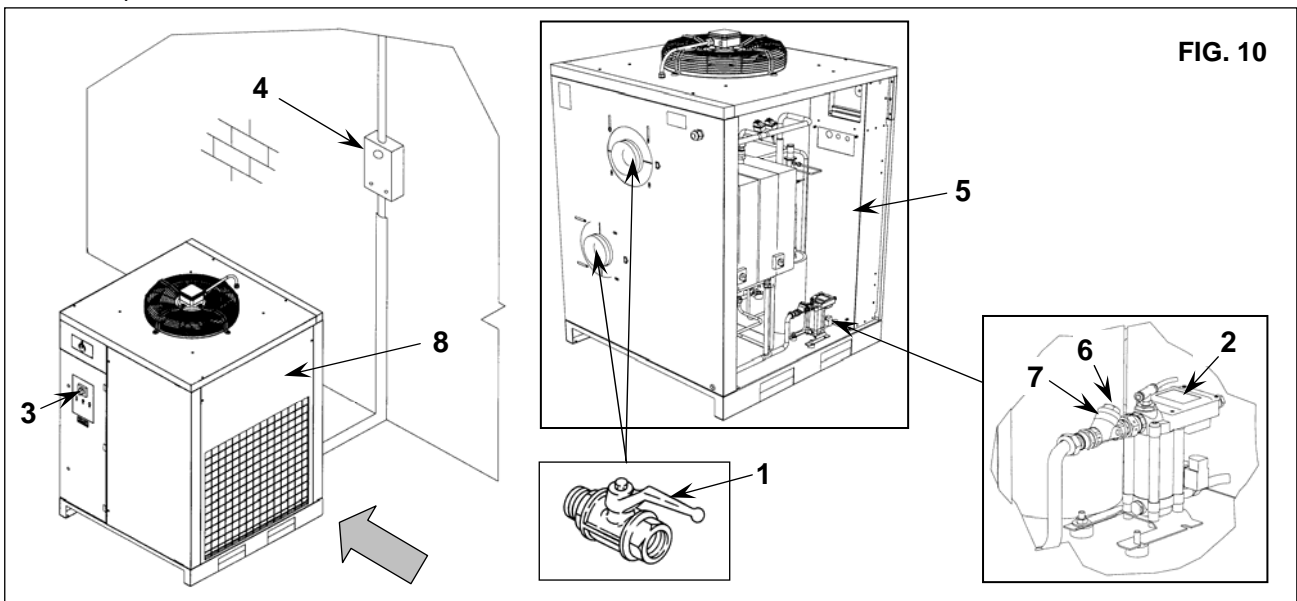


FIG. 10

15.3 CLEANING THE CONDENSER (Fig. 10)

The condenser must be cleaned every month.

Proceed as follows:

- Switch off the machine. Turn the switch in position STOP Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10
- Remove the panel Ref. 8 Fig. 10
- Clean the condenser fins Ref. 1 with compressed air (Fig. 10) **DO NOT USE WATER OR SOLVENTS**
- Close the panel Ref. 8 Fig. 10

16.0 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 INSULATING FOAM, ETC.

17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES



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"> ■ ■ -The bypass valve of the hot gas is broken or out-of-calibration -The room temperature is too low and the evaporators piping are obstructed with ice
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"> -Clean the filter from the condensate drain ■ ■-Check the condensate drain -Check the flow rate of treated air -Check the room temperature -Check the air temperature at the drier inlet. -Clean the condenser. ■ ■-Check the operation and the calibration of the press. switch ■ ■-Check the good operation of the fan.
3) The compressor head is very hot (> 55 °C)	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"> ■ ■ -Check if there are leaks of refrigerating gas. ■ ■ - Charge it again.
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"> -Contact the electric power company -Wait a few minutes before starting the machine again. ■ ■ -Check the running and starting relays and condensers (if any)
6) The machine has stopped and does not restart even after a few minutes.	The thermostatic protection with manual reset has intervened: make reference to 2B-2C-3A.	
7) The compressor is very noisy.	The motor has burnt out. 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.

18.0 STARTING UP



**BEFORE CARRYING OUT ANY OPERATION ON THE MACHINE, ENSURE THAT THE ELECTRIC POWER SUPPLY HAS BEEN DISCONNECTED
WAIT AT LEAST TWO HOURS BEFORE STARTING UP, AFTER ANY MACHINE MOVEMENT (TRANSPORT OR HANDLING).**

18.1 PRELIMINARY CONTROLS

Before starting the dryer, check:

- The correct connection to the compressed air piping: remember to remove eventual caps on the drier inlet and outlet.
- The correct connection to the condensate drainage system.
- That the power supply is right.

18.2 STARTING AND STOP

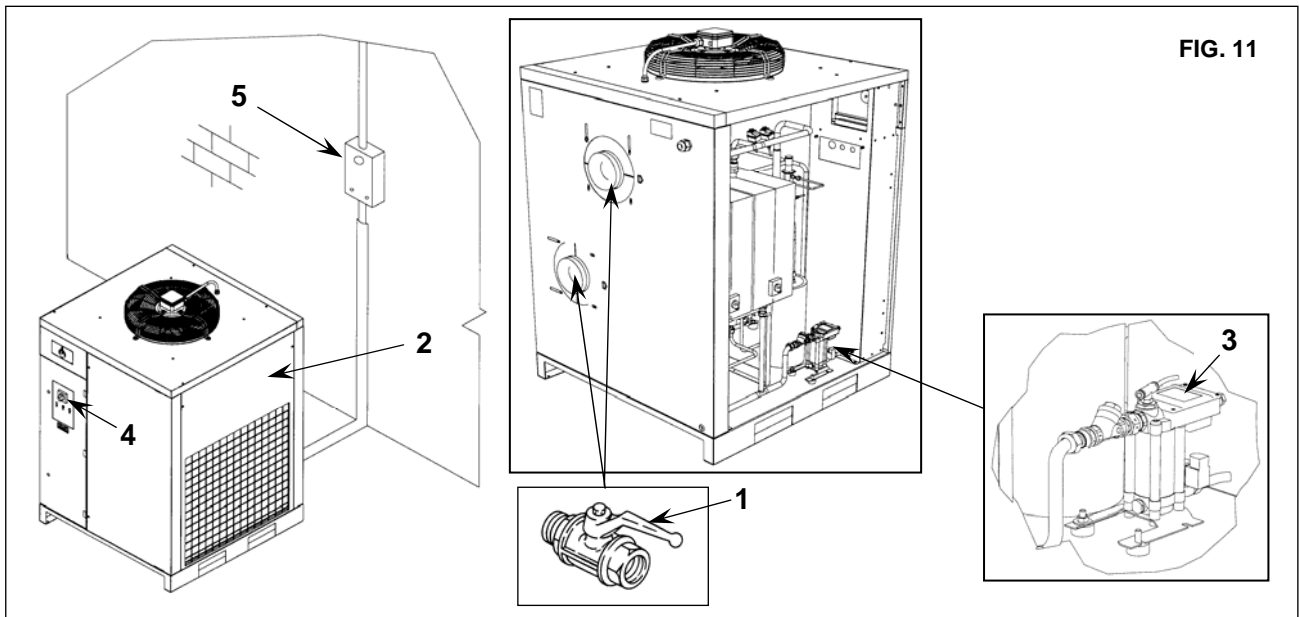
Start the system before the air compressor starts running and stop it after the air compressor has been stopped. The compressed air piping will be free of condensate only by doing so. The drier must be kept running during all the time the air compressor is running. **WARNING:** if the drier is switched off, before starting it again, wait at least 5 minutes in order to allow the pressure balancing.

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.

PRESSURE DISCHARGE PROCEDURE

Proceed as follows:

- Close the cock Ref. 1 Fig. 11
- Remove the panel Ref. 2 Fig. 11
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton locate on the steam trap Ref. 3 Fig. 11
- Switch off the machine. Turn the switch in position STOP Ref. 4 Fig. 11
- Turn on the supply automatic differential switch Ref. 5 Fig. 11
- Close the panel Ref. 2 Fig. 11



CALIBRATIONS

BYPASS VALVE FOR HOT GAS

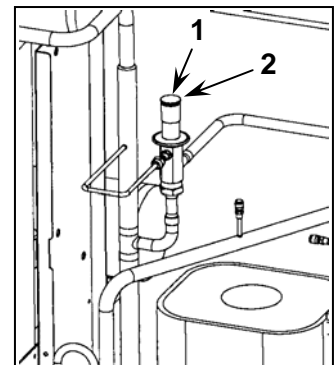
N.B. These valves have already been calibrated and they do not require any adjustment. A dew point different from the rated one generally depends on causes which are not attributable to their operation.

Ref. 1) Closing cap

Ref. 2) Adjusting screw

WORKING PRESSURES AND TEMPERATURES OF R404A

	SUCTION SIDE OF REFRIGERATION COMPRESSOR	
	Evaporat. Temperat. °C	Evaporating Pressure bar
RATED VALUES (Temperat. 20 °C)	1 ÷ 2	R404A 4,3 ÷ 4,5



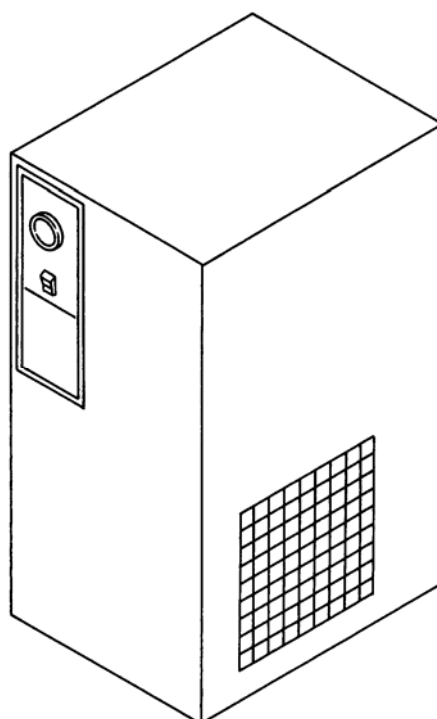


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INSTRUCTION AND MAINTENANCE MANUAL

DRYERS

A5 - A6 - A7 - A7,5 - A8 - A9 - A10



READ THIS MANUAL CAREFULLY BEFORE CARRYING OUT ANY OPERATIONS ON THE DRYER.

CONTENTS

PART A: INFORMATION FOR THE USER

- 1.0 GENERAL CHARACTERISTICS
- 2.0 INTENDED USE
- 3.0 OPERATION
- 4.0 GENERAL SAFETY STANDARDS
- 5.0 DESCRIPTION OF DANGER SIGNALS
- 6.0 DANGER ZONES
- 7.0 SAFETY DEVICES
- 8.0 POSITION OF PLATES
- 9.0 DRYERS ROOM
- 10.0 TRANSPORT AND HANDLING
- 11.0 UNPACKING
- 12.0 INSTALLATION
- 13.0 DIMENSIONS AND TECHNICAL DATA
- 14.0 MACHINE ILLUSTRATION
- 15.0 PARTIAL ROUTINE MAINTENANCE
- 16.0 SCRAPPING THE DRYERS
- 17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES

PART B: INFORMATION RESERVED FOR TECHNICALLY SKILLED PERSONNEL

- 18.0 STARTING UP

ATTENTION: THERE IS A COPY OF THE WIRING DIAGRAM INSIDE THE ELECTRIC PANEL

ADDRESSES OF ASSISTANCE CENTRES

In the event of breakdown or malfunction of the dryer, 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 on the dryer. Read this manual carefully before carrying out any operations on the dryer. The installation of the dryer 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



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.

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

THIS MACHINE IS NOT SUITABLE FOR EXTERNAL INSTALLATION

THIS MACHINE CORRESPOND TO THE ESSENTIAL SAFETY REQUIREMENTS FORESEEN FROM THE EUROPEAN STANDARD (98/37 CE) AND THE RULE EN 292

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...)

1.0 GENERAL CHARACTERISTICS

The dryer is a chilling machine with direct expansion and dry evaporator.

The air to be dried is sent to the heat exchanger in which the water vapour present is condensed: the condensate gathers in the separator and is discharged outside through a steam trap.

2.0 INTENDED USE

The dryer has been built to dry the compressed air for industrial use. The dryer 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.)

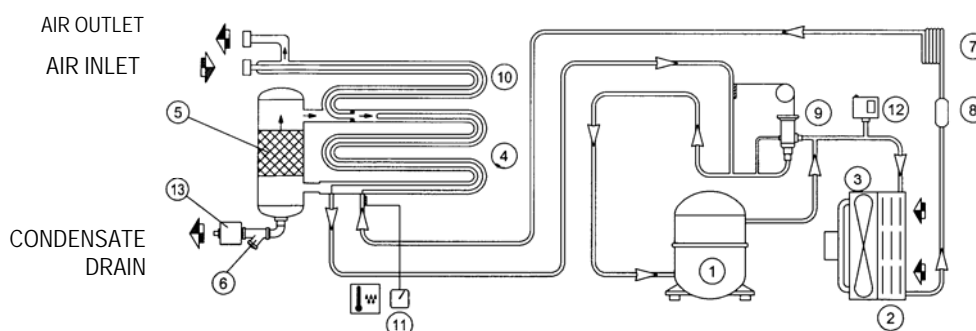
This appliance must be used only for the purpose for which it was specifically designed. All other uses are to be considered incorrect and therefore unreasonable. The Manufacturer cannot be held responsible for any damage resulting from improper, incorrect or unreasonable use.

3.0 OPERATION

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 in order to prevent the condensate from freezing inside the evaporator. The dryer runs completely automatically.

DRYER FLOW DIAGRAM



1) REFRIGERANT 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) DEMISTER CONDENSATE SEPARATOR	12) FAN CONTROL PRESSURE SWITCH
6) IMPURITY TRAP	13) CONDENSATE DRAIN
7) EXPANSION CAPILLARY TUBE	

4.0 GENERAL SAFETY STANDARD

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.



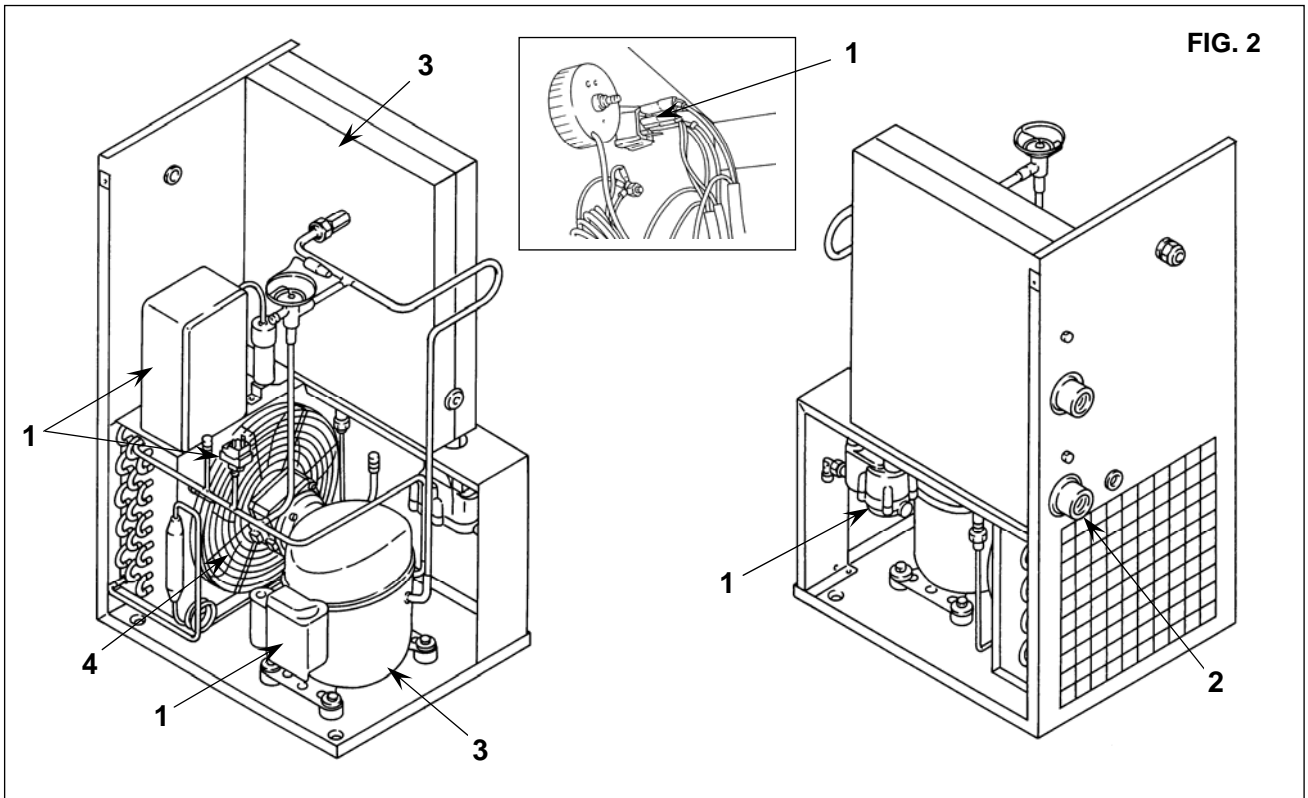
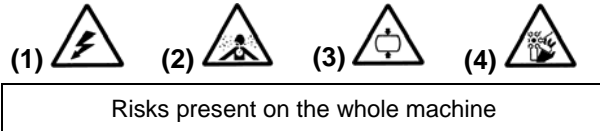
ALL WORK ON THE ELECTRIC PLANT, HOWEVER SLIGHT, MUST BE CARRIED OUT BY PROFESSIONALLY SKILLED PERSONNEL.

5.0 DESCRIPTION OF DANGER SIGNALS

				
1) Dangerous electricvoltage	2) Air not fit for breathing	3) High pressure	4) Fan rotating	5) Hot parts

6.0 DANGER ZONES

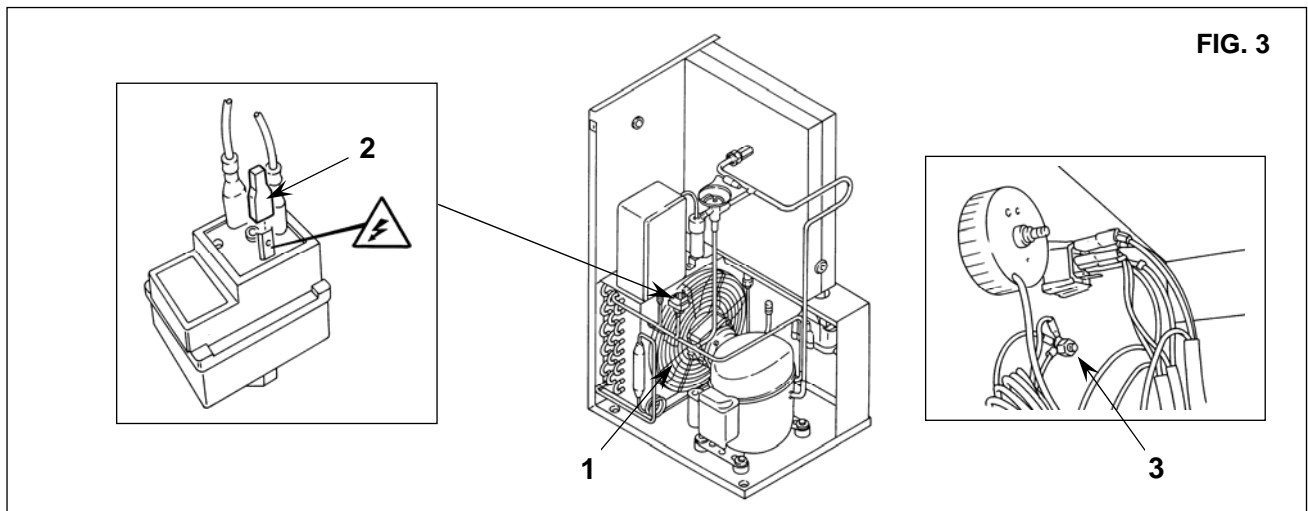
6.1 DANGER ZONES



7.0 SAFETY DEVICES

7.1 SAFETY DEVICES

- | | |
|-----------------------|----------|
| 1) Cooling fan shield | 3) Earth |
| 2) Shield | |

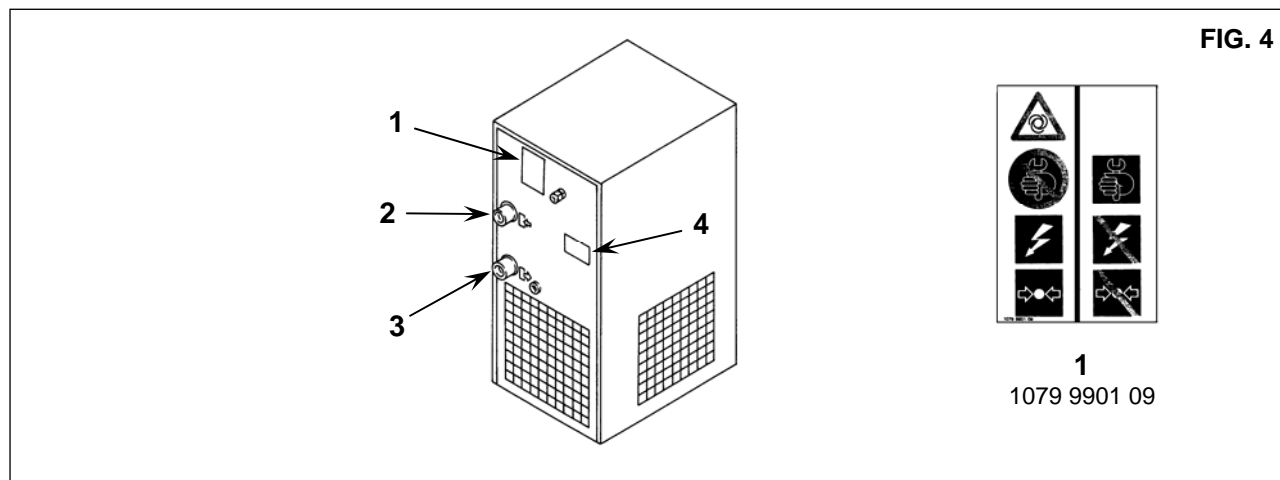


8.0 POSITION OF PLATES

8.1 POSITION OF THE DANGER PLATES (Fig. 4)

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.

Ref.1 - Spare plate Code 1079 9901 09



8.2 POSITION OF THE DATA PLATES (Fig. 4)

Ref. 2) "IN"	Ref. 4) Identification plate
Ref. 3) "OUT"	

9.0 DRYERS ROOM

9.1 FLOOR

The floor must be even and of industrial type; the total weight of the machine is shown in Fig. 5 Remember the total weight of the machine when positioning it.

9.2 VENTILATION

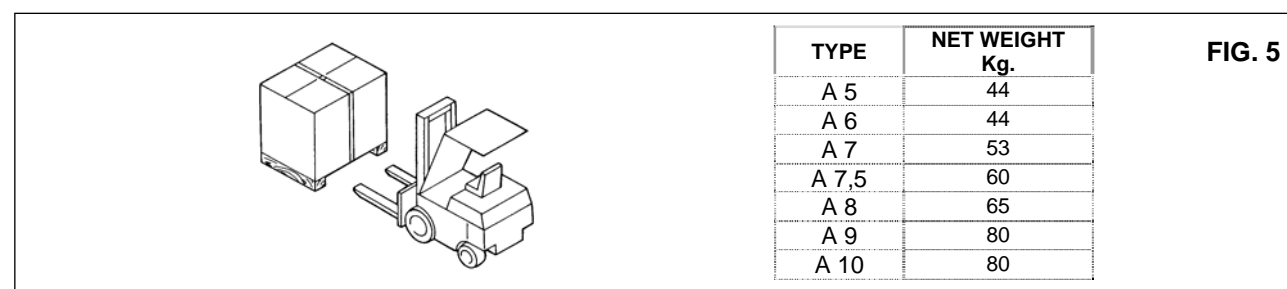
The choice of an appropriate room will prolong the life of your dryer; the room must be spacious, dry, well ventilated and free from dust.

The operating conditions to be complied with are the following:

Min. room temperature: + 5 °C (compulsory)	Min. temperature of incoming air: 10 °C
Max. room temperature: + 45 °C (compulsory)	Max. working pressure: 13 bar
Max. temperature of incoming air: 55 °C	

10.0 TRANSPORT AND HANDLING

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



11.0 UNPACKING



CUTTING THE METAL STRAPPING IS A DANGEROUS OPERATION, DO NOT ABANDON THE CUT PIECES IN THE ENVIRONMENT.

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, polystyrene foam, nails, screws, wood, metal strapping, etc.) 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.

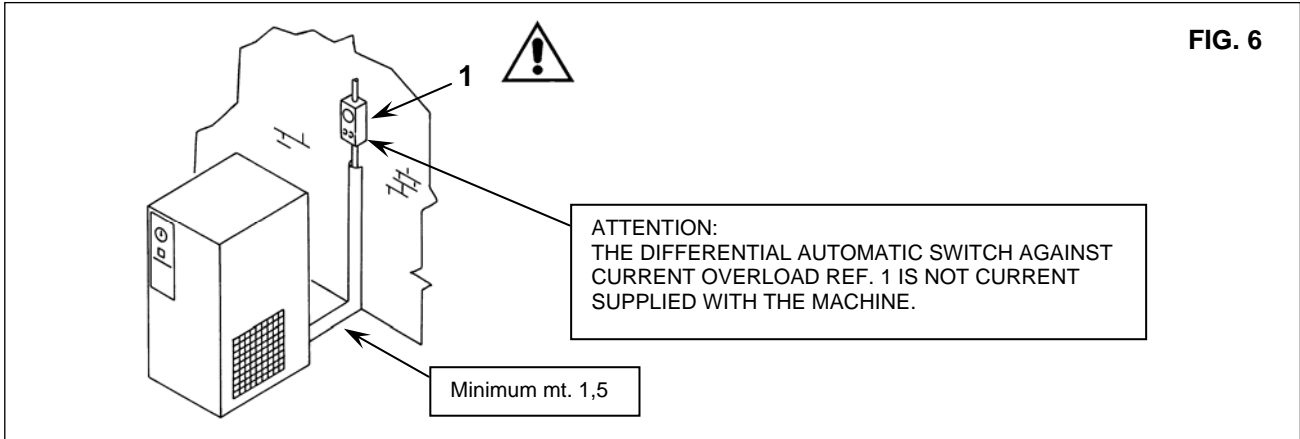
12.0 INSTALLATION

12.1 POSITIONING

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

- ensure that there is sufficient space around the machine to allow maintenance (see Fig. 6).

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 (Ref. 1 Fig. 6), wiring diagram.**



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.

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 dryer may be isolated during maintenance operations (see figure 7).

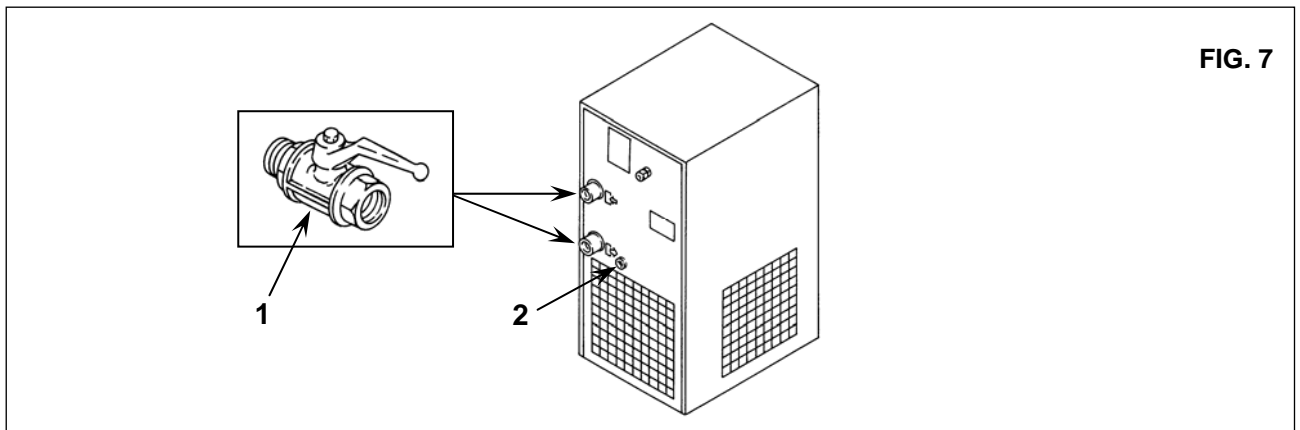
Drainage of condensate Rif. 2 Fig. 7 (automatic) are led outside the machine with a flexible pipe that may be inspected. Drainage must comply with the local regulations in force.



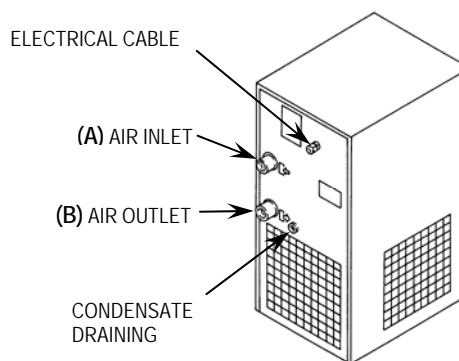
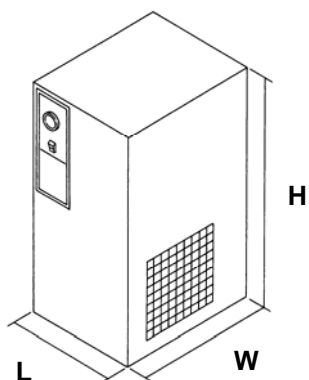
ALL DAMAGE DUE TO THE FAILURE TO COMPLY WITH THESE INDICATIONS CANNOT BE ATTRIBUTED TO THE MANUFACTURER AND MAY CAUSE INVALIDITY OF THE GUARANTEE CONDITIONS.

12.4 STARTING UP

See part B of this manual, Chapter 18.0



13.0 DIMENSIONS AND TECHNICAL DATA



TYPE	L	W	H
A5	370	500	764
A6	370	500	764
A7	460	560	789
A7,5	460	560	789
A8	460	560	789
A9	580	590	899
A10	580	590	899

TYPE	A	B
A5	1" GAS F.	1" GAS F.
A6	1" GAS F.	1" GAS F.
A7	1*1/2 GAS F.	1*1/2 GAS F.
A7,5	1*1/2 GAS F.	1*1/2 GAS F.
A8	1*1/2 GAS F.	1*1/2 GAS F.
A9	1*1/2 GAS F.	1*1/2 GAS F.
A10	1*1/2 GAS F.	1*1/2 GAS F.

TYPE	Weight Kg.	V230 Freon R404A Kg.		Nominal Power W		Nominal Power W		Nominal Power W		bar MAX.
		50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	50 Hz	60 Hz	
A5	44	0,400	0,400	544	572	65	57	609	629	bar 13
A6	44	0,400	0,400	608	720,5	65	57	673	777	bar 13
A7	53	0,650	0,650	711	776,5	82	95	793	861	bar 13
A7,5	60	0,730	0,630	788	960	82	95	870	1045	bar 13
A8	65	0,650	0,650	996	1035	126	90	1072	1120	bar 13
A9	80	1,350	1,350	1040	1210	150	190	1190	1400	bar 13
A10	80	1,300	1,300	1296	1455	150	190	1446	1645	bar 13

Reference conditions:	Limit conditions:
Ambient temperature 25 °C	Max. ambient temperature 45 °C
Inlet air temperature 35 °C	Min. ambient temperature 5 °C
Working pressure 7 bar	Max. inlet air temperature 55 °C
	Max. working pressure 13 bar

14.0 MACHINE ILLUSTRATION

14.1 GENERAL LAY-OUT

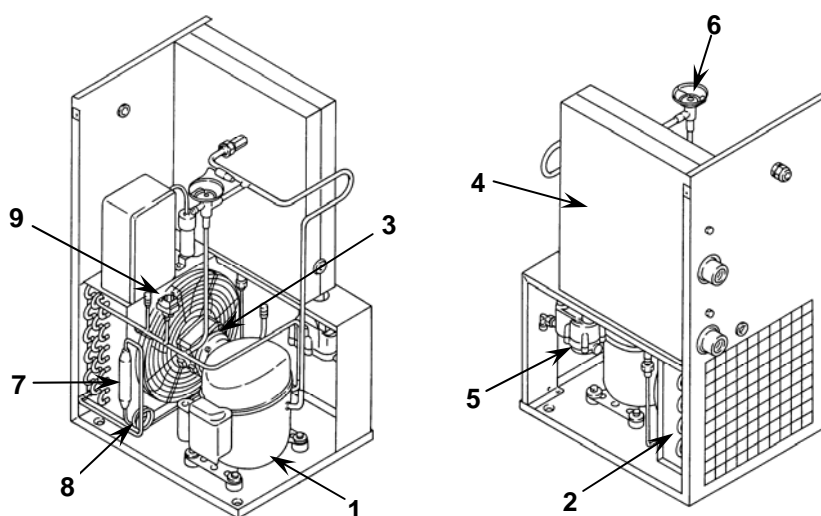


FIG. 8

1	Refrigerant compressor
2	Condenser
3	Motor fan
4	Evaporator
5	Condensate drain
6	Hot gas by-pass valve
7	Refrigerant filter
8	Expansion capillary tube
9	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.

- Ref. 1) Dew point indicator
- Ref. 2) Stop - Running button

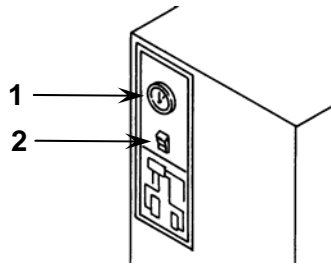


FIG. 9

15.0 PARTIAL ROUTINE MAINTENANCE



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.

15.1 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 controls.

Each Week

Condensate drain: Clean the filter of the steam trap

Each Monthly

Condenser: Clean the condenser fins to remove eventual dust.

15.2 CLEANING OF THE AUTOMATIC CONDENSATE DISCHARGER FILTER (Fig. 10)

Clean the filter of the steam trap.

Proceed as follows:

- Close the cock Ref. 1 Fig. 10
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton locate on the steam trap Ref. 2 Fig. 10.
- Switch off the machine by pressing the STOP button Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10



HOT PARTS INSIDE

- Remove the panels Ref. 5
- Remove the stopper Ref. 6
- Remove the filter Ref. 7
- Clean the filter Ref. 5 with a jet of air, working from inside to outside
- Install the filter, fix the plug Ref. 7 - 6
- Close the panels Ref. 5

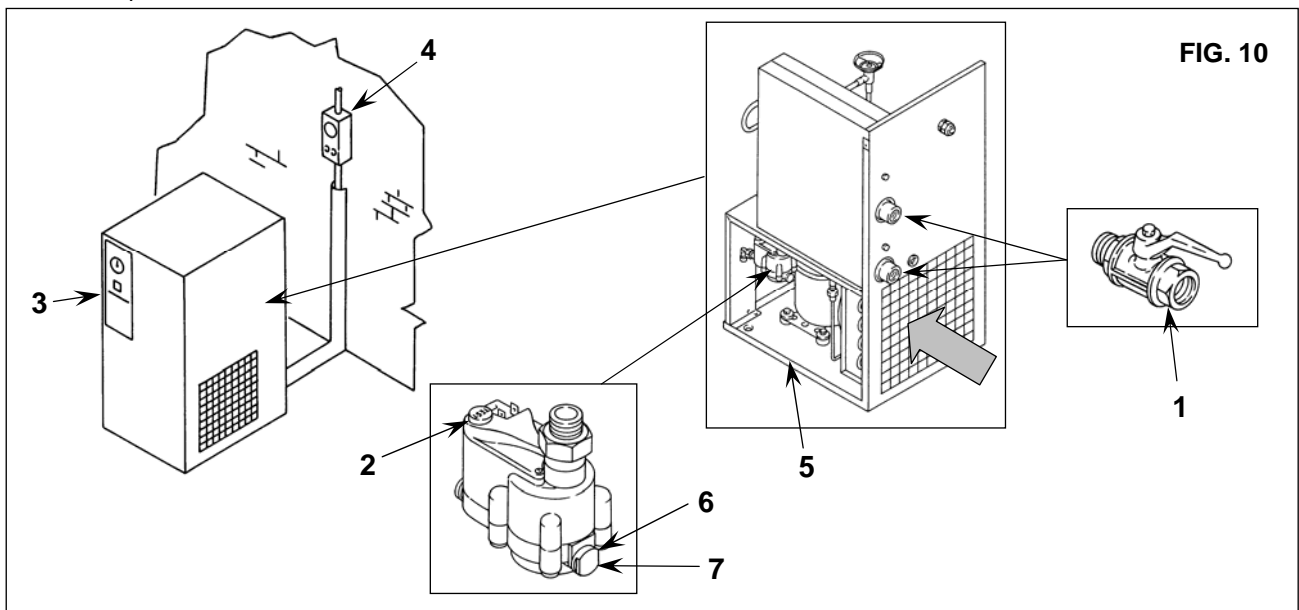


FIG. 10

15.3 CLEANING THE CONDENSER (Fig. 10)

The condenser must be cleaned every month.

Proceed as follows:

- Switch off the machine by pressing the STOP button Ref. 3 Fig. 10
- Turn on the supply automatic differential switch Ref. 4 Fig. 10
- Remove the panels Ref. 5 Fig. 10
- Clean the condenser fins Ref. 1 with compressed air (Fig. 10) **DO NOT USE WATER OR SOLVENTS**
- Close the panels Ref. 5 Fig. 10

16.0 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 INSULATING FOAM, ETC.

17.0 TROUBLE-SHOOTING AND EMERGENCY REMEDIES



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"> ■ ■ -The bypass valve of the hot gas is broken or out-of-calibration -The room temperature is too low and the evaporators piping are obstructed with ice
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"> -Clean the filter from the condensate drain ■ ■-Check the condensate drain -Check the flow rate of treated air -Check the room temperature -Check the air temperature at the drier inlet. -Clean the condenser. ■ ■-Check the operation and the calibration of the press. switch ■ ■-Check the good operation of the fan.
3) The compressor head is very hot (> 55 °C)	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"> ■ ■ -Check if there are leaks of refrigerating gas. ■ ■ - Charge it again.
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"> -Contact the electric power company -Wait a few minutes before starting the machine again. ■ ■ -Check the running and starting relays and condensers (if any)
6) The machine has stopped and does not restart even after a few minutes.	The overload protection 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.

18.0 STARTING UP



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

18.1 PRELIMINARY CONTROLS

Before starting the dryer, check:

- The correct connection to the compressed air piping: remember to remove eventual caps on the drier inlet and outlet.
- The correct connection to the condensate drainage system.
- That the power supply is right.

18.2 STARTING AND STOP

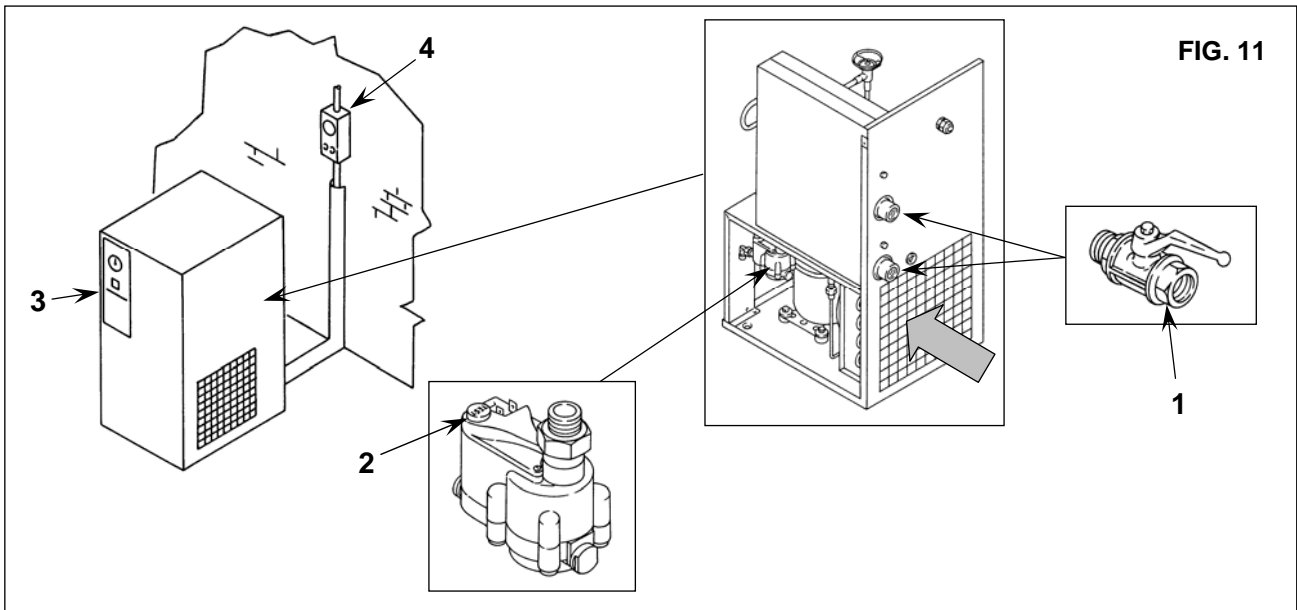
Start the system before the air compressor starts running and stop it after the air compressor has been stopped. The compressed air piping will be free of condensate only by doing so. The drier must be kept running during all the time the air compressor is running. **WARNING:** if the drier is switched off, before starting it again, wait at least 5 minutes in order to allow the pressure balancing.

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.

PRESSURE DISCHARGE PROCEDURE

Proceed as follows:

- Close the taps Ref. 1 Fig. 11
- Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton locate on the steam trap Ref. 1 Fig. 11
- Switch off the machine by pressing the STOP button Ref. 3 Fig. 11
- Turn on the supply automatic differential switch Ref. 4 Fig. 11



CALIBRATIONS

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.

Ref. 1) Closing cap

Ref. 2) Adjusting screw

WORKING PRESSURES AND TEMPERATURES OF R404A

	SUCTION SIDE OF REFRIGERATION COMPRESSOR	
	Evaporat. Temperat. °C	Evaporating Pressure bar
RATED VALUES (Temperat. 20 °C)	1 ÷ 2	R404A 4,3 ÷ 4,5

