



The Science of Compressed Air

Refrigerated Air Dryers



**NON-CYCLING REFRIGERATED
AIR/GAS DRYERS QPNC 10 to QPNC 50**

OPERATOR'S MANUAL

DATE OF PURCHASE:
MODEL:
SERIAL NO.:
Record above information from nameplate. Retain this information for future reference.

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GENERAL INFORMATION

Quincy QPNC-10 to QPNC-50 Dryers are designed to cool with direct expansion and dry evaporators. Air to be dried is sent to the heat exchanger in which the water vapor present is cooled and condensed. The condensate gathers in the separator and is discharged through an auto drain.

When properly installed, the unit requires little maintenance or adjustment.

WARNING

DO NOT install, operate, maintain, adjust or service this unit without thoroughly reading this manual.

This manual contains important safety information. Read THOROUGHLY and follow the Safety Instructions provided in this manual and posted on the unit. Keep this manual near the unit and in a safe place. Replace this manual if it becomes torn or dirty and cannot be properly used.

Please read the Installation Instructions and Start-Up and Operation sections of this manual before attempting to operate the unit.

Please read the Maintenance and Troubleshooting sections of this manual before beginning any maintenance or service work on this unit.

INSPECTION

Inspect equipment. Any concealed shipping damage must be reported to the carrier immediately. Damage claims should be filed by the consignee with the carrier.

CAUTION

Cut the metal strapping carefully to prevent injury. 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 approved collection centers.

WARNING

Air from compressor and from Quincy Air Drying System, as equipped, is *not* safe for human respiration (breathing).

To provide safe, breathable air, compressor must be capable of producing at least Grade D breathing air as described in Compressed Gas Association Commodity Specification G7.1-1966. Special filtering, purifying and associated alarm equipment must be used to convert compressed air to "Breathing Air." Other special precautions must also be taken.

Refer to OSHA 29 CFR 1910.134.

DISCLAIMER OF WARRANTY

If this unit is used to produce breathing air, the special equipment and precautions expressed in OSHA 29 CFR 1910.134 for specifications of the necessary equipment and special precautions to make Breathing Air **MUST BE** used or any warranties are VOID and manufacturer disclaims any liability whatsoever for loss, personal injury or damage.

SAFETY MESSAGES

CAUTION

- **This dryer has been built to dry 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 vapors, alcohol, etc.).**
- **This appliance must be used only for the purpose for which it was specifically designed. All other uses are to be considered incorrect and unreasonable. The manufacturer cannot be held responsible for any injury or damage resulting from improper, incorrect or unreasonable use.**

NOTICE

In the event of breakdown or malfunction of the dryer, switch it off and do not tamper with it. If repairs are needed, contact a technical assistance center approved by the manufacturer and insist on the use of original spare parts. Failure to comply with the above may cause damage to the machine.

! WARNING

Before removing the protective guards to perform any maintenance on the machine, switch off the electric power supply and discharge the residual pressure inside the unit. All work on the unit, however slight, must be performed by professionally skilled personnel.

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

SAFETY ZONES, DEVICES AND DECALS

The appliance may be used only by specially trained and authorized personnel. Any tampering with the machine or alterations not approved by the manufacturer relieve the latter of responsibility for any injury or damage resulting from the such actions.

NOTICE

This machine is not suitable for outdoor installation.

! CAUTION

The lubricating liquids and other discharge fluids must not be discharged into the environment. Polluting and hazardous products must be disposed of by authorized personnel.

! WARNING



The following risks are present on the machine (see Figure 1):

1. Dangerous electric voltage
2. Air not fit for breathing
3. High pressure
4. Rotating fan

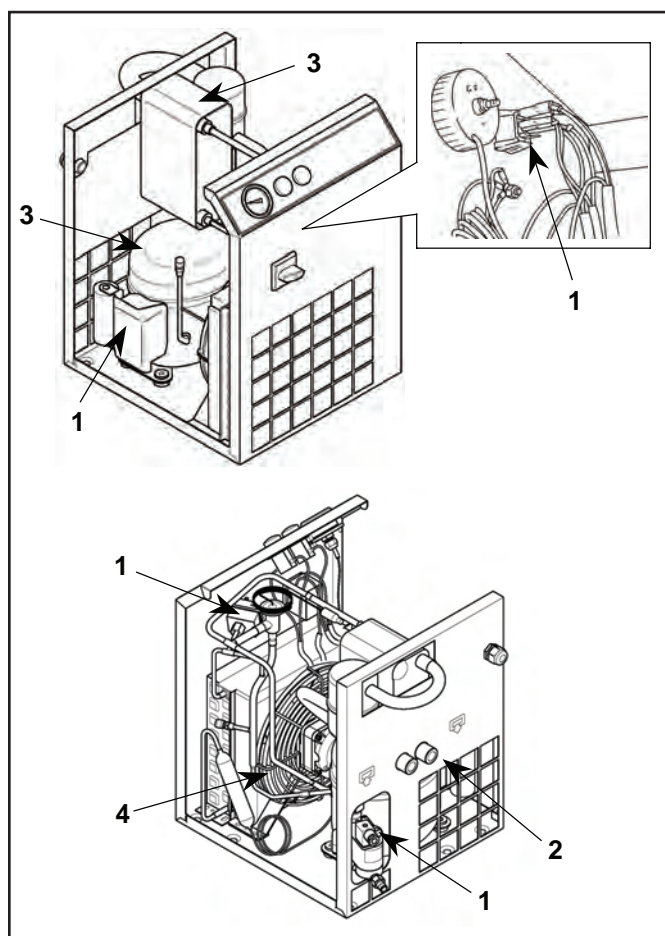


FIGURE 1 — SAFETY RISKS

The removal of or tampering with the safety devices constitutes a violation of these safety standards. Safety devices include (see Figure 2): (1) cooling fan shield, (2) shield and (3) earth ground.

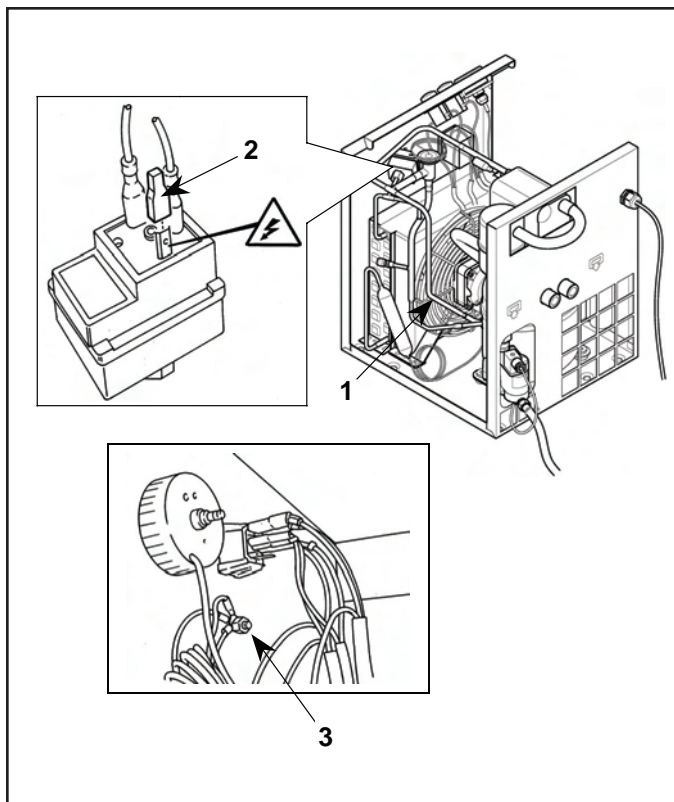


FIGURE 2 — SAFETY DEVICES

Decals fitted on the compressor unit are part of the machine; they have been applied for safety purposes and must not be removed or altered for any reason (see Figure 3):

1. Spare plate Code
2. "IN"
3. "OUT"
4. Identification plate
5. Label for electrical equipment

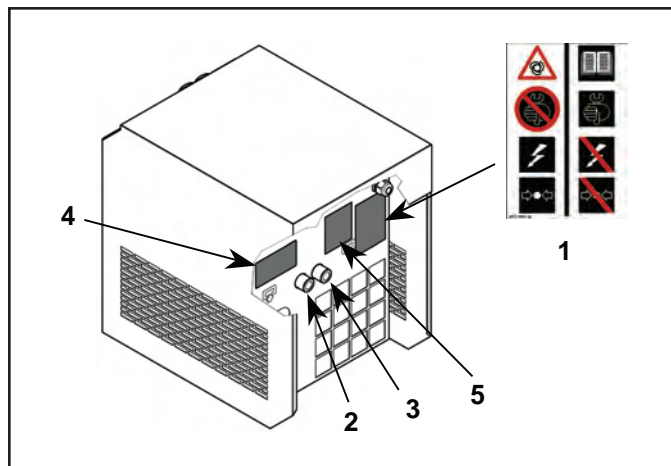


FIGURE 3 — SAFETY DECALS

SAFETY INSTRUCTIONS

When using air compressors and compressed air accessories, basic safety rules and precautions must always be followed, including the following:

1. **READ ALL INSTRUCTIONS FULLY.**
2. **WIRING & BREAKERS**
Wiring, breakers and other electrical equipment must conform to local and national electrical codes. Do not operate this unit with damaged wiring or after the unit or air handling parts have been dropped or damaged in any manner. Notify authorized service facility for examination, repair or other adjustments.
3. **USE SUITABLE PARTS & ACCESSORIES**
Do not use air pressurized accessories or parts in the air system not suitable for the maximum air pressure.
4. **RELEASE AIR PRESSURE SLOWLY**
Fast moving air will stir up dust and debris, which may be harmful. Release air pressure slowly when depressurizing your system to avoid bodily injury.
5. **SECURE DRAIN LINES**
Fasten drain lines to floor or drain. Pressurized air may periodically pass through drain lines, which will cause an unsecured line to whip and may cause bodily injury.

INSTALLATION INSTRUCTIONS

LOCATING THE DRYER

FLOOR

The floor must be even and of industrial type; the total weight of the machine is shown in Figure 4.

Consider the total weight of the machine when positioning it.

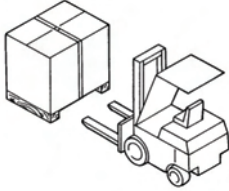
	Model	Gross Weight lb. (kg.)
	QPNC 10	57.3 (26)
	QPNC 15	59.5 (27)
	QPNC 25	70.5 (32)
	QPNC 35	75.0 (34)
	QPNC 50	75.0 (34)

FIGURE 4 — MODEL WEIGHT

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.

DESIGN CONDITIONS

Min. room temperature:
+ 40 °F (+ 4.5 °C)

Max. room temperature:
+ 115 °F (+ 46 °C)

Min. temperature of incoming air:
+ 40 °F (+ 4.5 °C)

Max. temperature of incoming air:
+ 131 °F (+ 55 °C)

Max. working pressure:
232 psi (16 bar)

TRANSPORT AND HANDLING

The machine must be transported as shown in Figure 4.

POSITIONING

After unpacking the equipment, preparing the dryer's room, and putting the machine into position, check the following items:

1. Ensure that there is sufficient space around the machine to allow maintenance (see Fig. 5).
2. Ensure that the operator can see the whole machine from the control panel and can check for the presence of unauthorized persons in the machine's vicinity.

ELECTRICAL CONNECTION

1. Check that the supply voltage is the same as the value indicated on the machine's identification plate.
2. Check the condition of the line leads and ensure that there is an efficient earth ground lead.
3. Dryer must be wired to the power supply through a fused disconnect switch or circuit breaker in accordance with national and local electrical codes to protect against overcurrents, with ground-fault circuit interrupter protection, if required by local codes (see Figure 5).

NOTE: There is a copy of the wiring diagram inside the electric panel.

CAUTION

Only professionally skilled personnel may have access to the electrical panel. Switch off the power supply before opening the door to the electrical panel. Compliance with national and local codes concerning electrical plants is fundamental for operator safety and for the protection of the machine.

DIMENSIONS AND TECHNICAL DATA

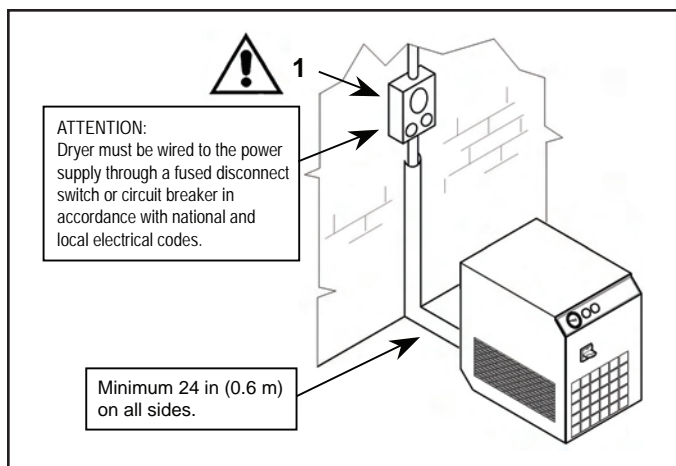


FIGURE 5 — INSTALLATION

CONNECTION TO THE COMPRESSED AIR SYSTEM

Fit a manual shut-off valve between the machine and the compressed air system so that the dryer may be isolated during maintenance operations. Drainage of condensate (automatic) passes outside the machine through a flexible tube (2 in Figure 6) that may be inspected. Drainage must comply with local codes.

ALL DAMAGE DUE TO THE FAILURE TO COMPLY WITH THESE INSTRUCTIONS CANNOT BE ATTRIBUTED TO THE MANUFACTURER AND MAY INVALIDATE THE GUARANTEE.

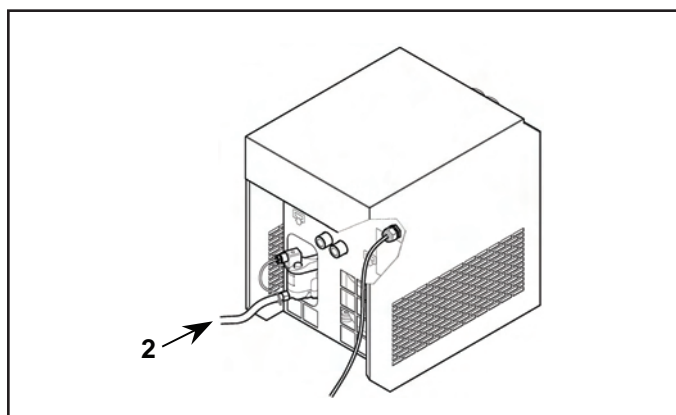
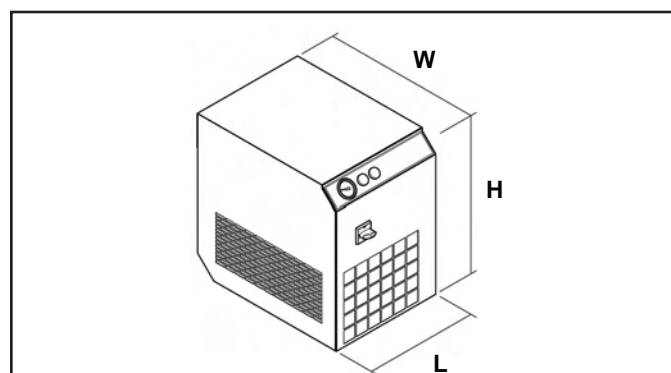
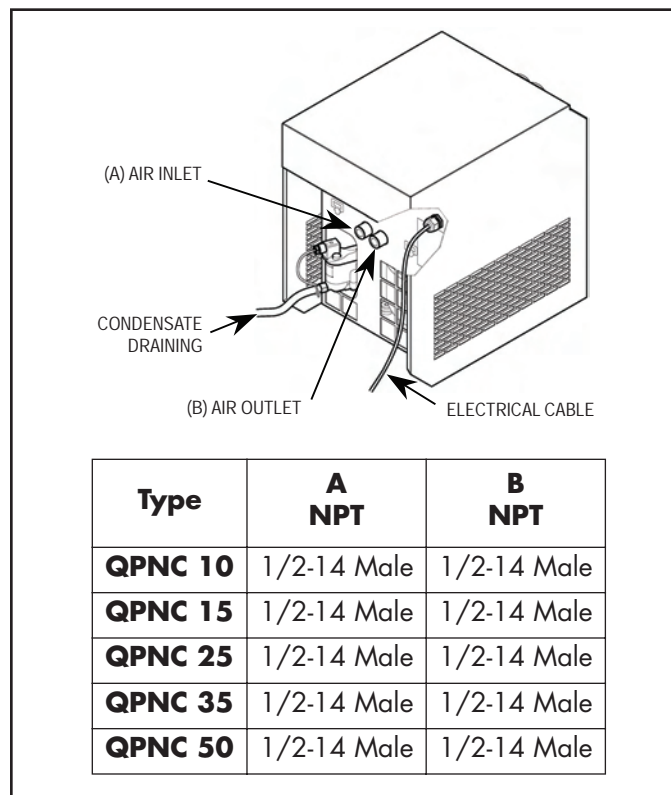


FIGURE 6 — CONDENSATE PIPE



Type	L in (mm)	W in (mm)	H in (mm)
QPNC 10	13.78 (350)	20.09 (510)	19.05 (484)
QPNC 15	13.78 (350)	20.09 (510)	19.05 (484)
QPNC 25	13.78 (350)	20.09 (510)	19.05 (484)
QPNC 35	13.78 (350)	20.09 (510)	19.05 (484)
QPNC 50	13.78 (350)	20.09 (510)	19.05 (484)




FIGURE 7 — DIMENSIONS



Type	A NPT	B NPT
QPNC 10	1/2-14 Male	1/2-14 Male
QPNC 15	1/2-14 Male	1/2-14 Male
QPNC 25	1/2-14 Male	1/2-14 Male
QPNC 35	1/2-14 Male	1/2-14 Male
QPNC 50	1/2-14 Male	1/2-14 Male

FIGURE 8 — CONNECTION

Table 1 — Specifications

TYPE	Net Weight lb. (kg.)	Refrigerant R134a lb. (kg.)	 Nominal Power HP (W)		 Nominal Power HP (W)		Nominal Power HP (W)		MAX psi (bar) 
		V230/115- 60Hz	V230- 60Hz	V115- 60Hz	V230- 60Hz	V115- 60Hz	V230- 60Hz	V115- 60Hz	
QPNC 10	41.9 (19)	0.397 (0.180)	0.161 (120)	0.164 (122)	0.040 (30)	0.040 (30)	0.201 (150)	0.204 (152)	232 (16)
QPNC 15	44.1 (20)	0.463 (0.210)	0.205 (153)	0.212 (158)	0.040 (30)	0.040 (30)	0.245 (183)	0.252 (188)	232 (16)
QPNC 25	55.1 (25)	0.639 (0.290)	0.312 (233)	0.306 (228)	0.040 (30)	0.040 (30)	0.353 (263)	0.346 (258)	232 (16)
QPNC 35	59.5 (27)	0.970 (0.440)	0.390 (291)	0.386 (288)	0.040 (30)	0.040 (30)	0.430 (321)	0.426 (318)	232 (16)
QPNC 50	59.5 (27)	1.047 (0.475)	0.417 (311)	0.441 (329)	0.040 (30)	0.040 (30)	0.457 (341)	0.481 (359)	232 (16)

Reference Conditions:

Ambient temperature: + 100 °F (+ 38 °C)

Inlet air temperature: + 100 °F (+ 38 °C)

Working pressure: 102 psi (7 bar)

Dew point in pressure: + 39 °F (+ 4 °C)

Limit Conditions:

Max. ambient temperature: + 115 °F (+ 46 °C)

Min. ambient temperature: + 40 °F (+ 4.5 °C)

Max. inlet air temperature: + 131 °F (+ 55 °C)

Max. working pressure: 232 psi (16 bar)

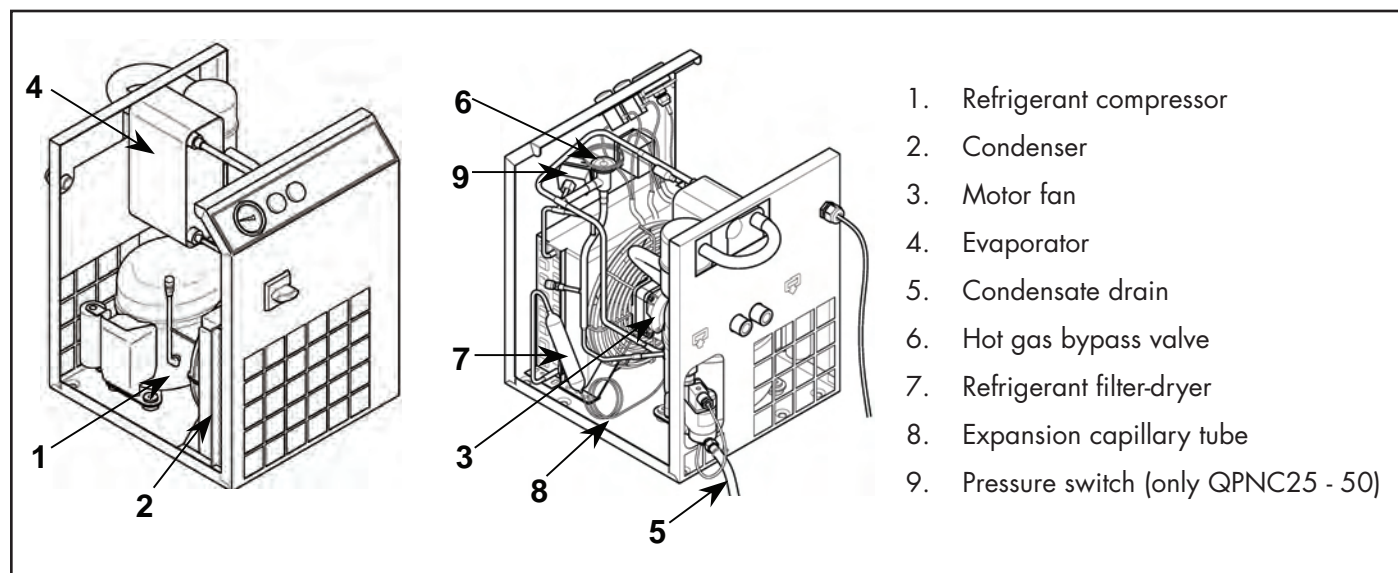


FIGURE 9 — GENERAL LAYOUT

START-UP AND OPERATION

⚠ CAUTION

Before making any change to 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).

PRELIMINARY CONTROLS

Before starting the dryer, check for:

1. The correct connection to the compressed air piping: remember to remove end caps on the dryer inlet and outlet.
2. The correct connection to the condensate drainage system.
3. The correct power supply.

STARTING AND STOPPING

⚠ CAUTION

The following procedure must be performed by skilled personnel approved by the manufacturer.

Always start the dryer at least 5 minutes before the air compressor starts running and stop it after the air compressor has been stopped in order to keep the compressed air piping free of condensate. The dryer must be kept running while the air compressor is running.

PRESSURE DISCHARGE PROCEDURE

See Figure 13 on Page 10.

1. Isolate the dryer from the air system (1).
2. Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton located on the auto drain (2).
3. Switch off the machine by turning the STOP button to position "0 OFF" (3).
4. Turn off the power supply by opening the circuit breaker or fused disconnect switch (4).

⚠ CAUTION

If the dryer is switched off, before starting it again, wait at least 5 minutes to allow for pressure balancing.

CALIBRATIONS

HOT GAS BYPASS VALVE

These valves have already been calibrated and they do not require any adjustment. A dew point different from the rated one generally is caused by factors which are not attributable to their operation. Figure 10 shows:

1. Closing cap
2. Adjusting screw

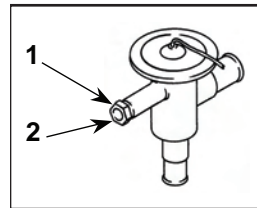


FIGURE 10 — BYPASS VALVE

This valve maintains the refrigerant suction pressure in varying load conditions. The dryer will run from no load to full load conditions without freeze-up. The operation of this valve is automatic. If the valve needs adjustment, turn the adjusting stem clockwise to raise the suction pressure, and

counterclockwise to lower the suction pressure. This adjustment should be made under a no-load condition if possible. When the adjustment is made, turn one quarter of a turn at a time, and wait 3 to 5 minutes between adjustments. Careful adjustment of this valve is necessary for normal operation of the air dryer. Hot gas bypass valve adjustment may be made by maintenance personnel. (See Figure 10.)

Table 2 — WORKING PRESSURES AND TEMPERATURES OF R134A

	SUCTION SIDE OF REFRIGERATION COMPRESSOR	
	Evaporating Temperature °F (°C)	Evaporating Pressure psi (bar)
RATED VALUES AT AMBIENT TEMPERATURE +68 °F (+20 °C)	33.8 - 35.6 (1 - 2)	R134A 29 - 31 (2.1 - 2.3)

CONTROLS

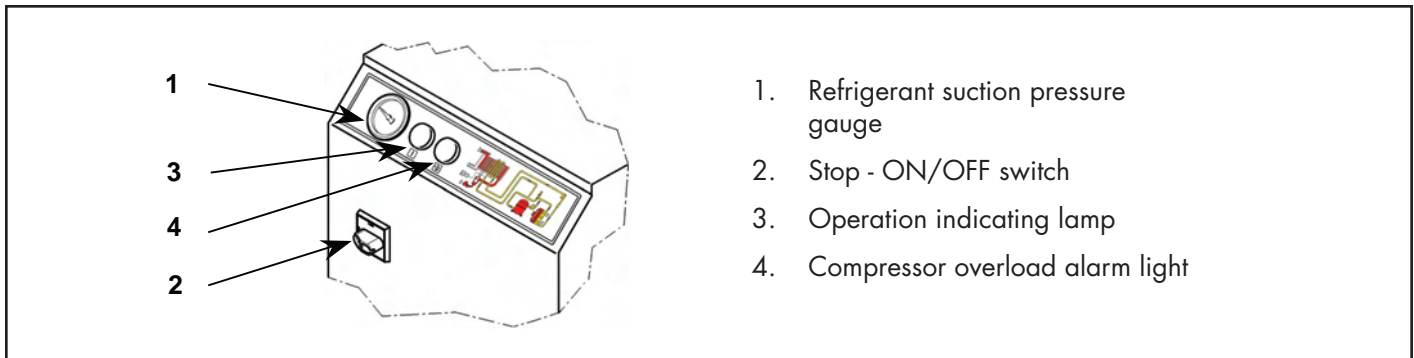


FIGURE 11 — COMMAND AND CONTROL PANEL

OPERATION

See Figure 12. The gaseous refrigerant coming from the evaporator (4) is drawn by the refrigeration compressor (1) and is pumped into the condenser (2). This allows its condensation, with the help of the fan (3). The condensed refrigerant passes through the dewatering filter (8), 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 the refrigerant pressure constant in the evaporator and therefore keeps the dew point from decreasing below 32 °F (0 °C) in order to prevent the condensate from freezing inside the evaporator. The dryer runs completely automatically; it is calibrated at the factory for a dew point of 39 °F (4 °C) ± 2 °F (1 °C) and therefore no further calibrations are required.

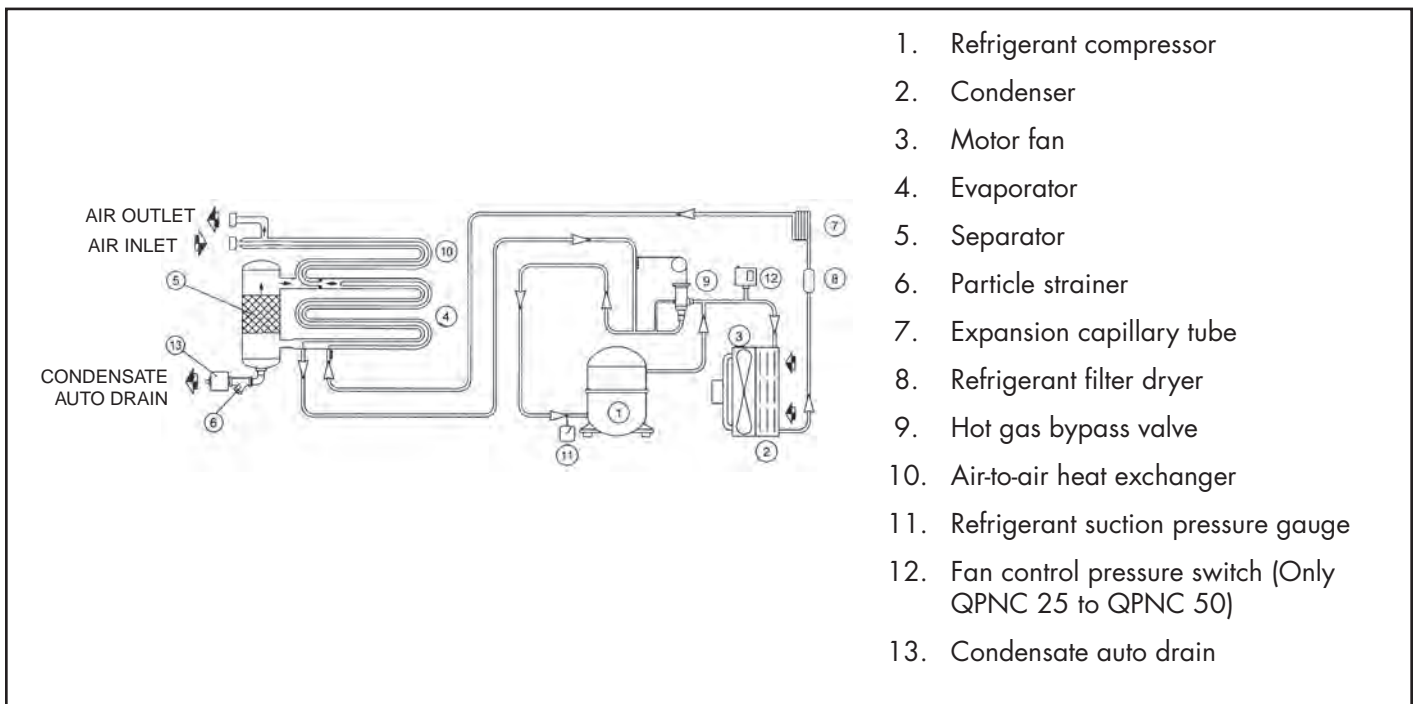


FIGURE 12 — DRYER FLOW DIAGRAM

MAINTENANCE

CAUTION

Before performing any maintenance, stop the machine and disconnect it from the power supply and from the compressed air distribution network.

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 these operations.

Each Week

Condensate drain: Clean the filter of the auto drain.

Each Month

Condenser: Clean the condenser fins to remove accumulated dust.

CLEANING AUTOMATIC CONDENSATE DRAIN FILTER

(see Figure 13)

1. Isolate the dryer from the air system (1).
2. Release the pressure in the dryer by pressing the condensate drain "TEST" pushbutton located on the auto drain (2).
3. Switch off the machine by turning the STOP button to position "0 OFF" (3).
4. Turn off the supply by opening the circuit breaker or fused disconnect switch (4).
5. Remove the panels (5).
6. Remove the stopper (6).
7. Remove the filter (7).
8. Clean the filter (7) with a jet of air, working from inside to outside.
9. Install the filter and affix the plug (7 - 6).
10. Close the panels (5).

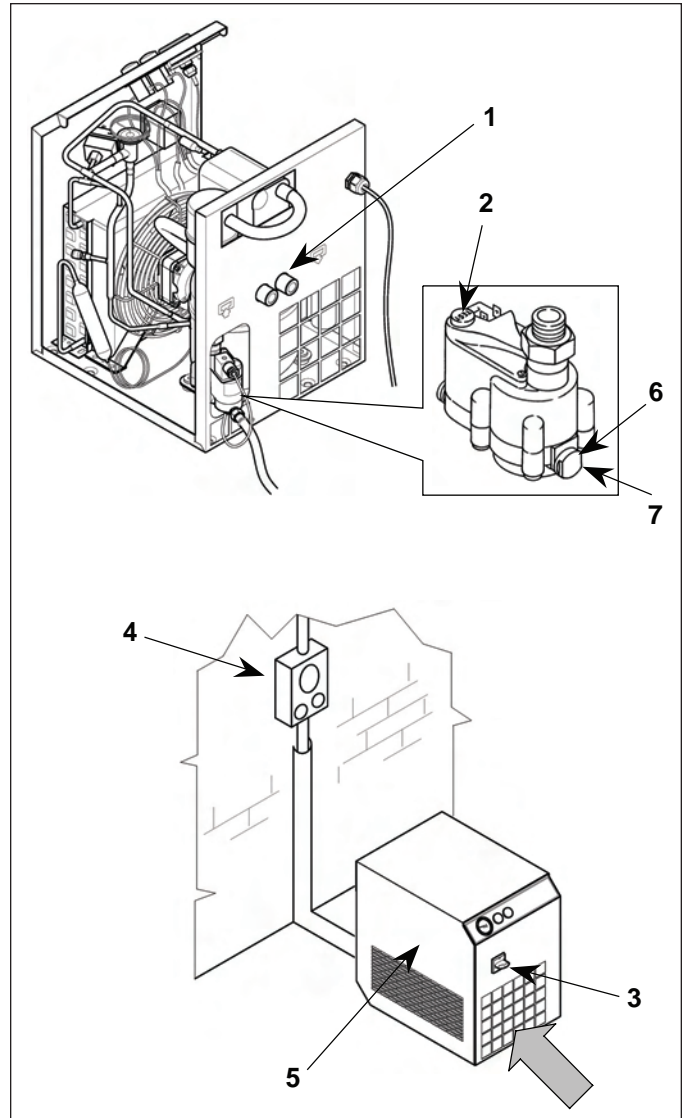


FIGURE 13 — MAINTENANCE

CLEANING THE CONDENSER

The condenser must be cleaned every month (see Figure 13).

1. Switch off the machine by turning the STOP button to position "0 OFF" (3).
2. Turn off the supply by opening the circuit breaker or fused disconnect switch (4).
3. Remove the panels (5).
4. Clean the condenser fins with compressed air. **DO NOT USE WATER OR SOLVENTS.**
5. Close the panels (5).

AIR DRYER SERVICE CHECKLIST

Please get answers to as many questions as you can before writing or calling for service.

1. Customer's Name _____
Phone no. _____ Fax no. _____
2. Model no. _____ Serial no. _____
Voltage L1 _____ L2 _____ L3 _____ PH _____ HZ _____
Amp draw L1 _____ L2 _____ L3 _____
Actual air flow (SCFM) _____ Compressor HP _____
3. Description of problem

4. Air in temperature (°F) _____
5. Air out temperature (°F) _____
6. Air in pressure (PSIG) _____
7. Air out pressure (PSIG) _____
8. Refrigerant suction pressure when unit is operating (PSIG) _____
9. Refrigerant suction pressure when unit is not operating (PSIG) _____
10. Refrigerant discharge pressure when unit is operating (PSIG) _____
11. Inspect refrigerant suction line at the outlet of air to refrigerant heat exchanger:
Cold _____ Hot _____ Temperature (°F) _____
12. Inspect refrigerant suction line at inlet of compressor: Temperature (°F) _____
13. Separator skin temperature (°F) _____
14. Location of unit Indoor _____ Outdoor _____
Clean _____ Dusty _____
15. Ambient temperature (°F) _____ Air-cooled condenser clean? Yes _____ No _____
16. a. Water-cooled condenser: City _____ Tower _____
b. Inlet water temperature (°F) _____ Outlet water temperature (°F) _____
c. Inlet water pressure (PSIG) _____ Outlet water pressure (PSIG) _____
17. Inspect auto drain, operation: Stuck open _____ Stuck closed _____

NOTE: Maintenance Personnel, Copy This Page, Fill In Form and Fax to 262-658-1945

Quincy
COMPRESSOR

TROUBLESHOOTING

CAUTION

Before performing any maintenance, stop the machine and disconnect it from the power supply and from the compressed air distribution network.

Table 3 — Troubleshooting Guide

Symptoms	Cause	Remedy
OPERATIONS MARKED WITH AN ASTERISK (*) MUST BE PERFORMED BY PROFESSIONALLY SKILLED PERSONNEL APPROVED FROM THE MANUFACTURER.		
A. No compressed air passes through the dryer outlet.	1. The pipes are frozen inside.	* 1a. The hot gas bypass valve is broken or out of calibration. 1b. The room temperature is too low and the evaporator's piping is obstructed with ice.
B. Presence of condensate in the pipings.	1. The condensate separator does not work correctly. 2. The dryer is working outside its rating. 3. The dryer is working under bad conditions for air-cooled condenser.	1a. Clean the condensate drain filter. * 1b. Check the condensate drain. 2a. Check the flow rate of treated air. 2b. Check the room temperature. 2c. Check the air temperature at the dryer inlet. 3a. Clean the condenser. * 3b. Check the operation and the calibration of the fan cycling press. Switch. * 3c. Check the operation of the fan.
C. The compressor head is very hot >131 °F (55 °C).	1. The dryer is working outside its rating. 2. The dryer is working under bad conditions for air-cooled condenser. 3. The cooling circuit is not working with the right refrigerant charge.	1a. Check the flow rate of treated air. 1b. Check the room temperature. 1c. Check the air temperature at the dryer inlet. 2a. Clean the condenser. * 2b. Check the operation and the calibration of the fan cycling press. Switch. * 2c. Check the operation of the fan. * 3a. Check if there are leaks of refrigerating gas. * 3b. Charge it again.

Table 3 — Troubleshooting Guide, continued

Symptoms	Cause	Remedy
D. Motor cuts out on overload.	<ol style="list-style-type: none"> 1. The dryer is working outside its rating. 2. The dryer is working under bad conditions for air-cooled condenser. 3. The cooling circuit is not working with the right refrigerant charge. 	<ol style="list-style-type: none"> 1a. Check the flow rate of treated air. 1b. Check the room temperature. 1c. Check the air temperature at the dryer inlet. 2a. Clean the condenser. *2b. Check the operation and the calibration of the fan cycling press. Switch. *2c. Check the operation of the fan. *3a. Check if there are leaks of refrigerating gas. *3b. Charge it again.
E. The motor hums and does not start.	<ol style="list-style-type: none"> 1. The line voltage is too low. 2. The machine was switched off and on again without leaving enough time for pressure balancing. 3. The starting system of the motor is defective. 	<ol style="list-style-type: none"> 1a. Contact the electric power company. 2a. Wait a few minutes before starting the machine again. *3a. Check the running and starting relays and condensers (if installed).
F. The machine (compressor) has stopped and does not restart even after a few minutes.	<ol style="list-style-type: none"> 1. The overload protection has intervened: see B2, B3 and C3 above. 2. The compressor motor has burned out. 	<ol style="list-style-type: none"> 1a. See remedies above. 2a. Replace.
G. The compressor is very noisy.	<ol style="list-style-type: none"> 1. Trouble with the internal mechanical parts or with the valves. 	<ol style="list-style-type: none"> 1a. Repair or replace.



The Science of Compressed Air

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