<table>
<thead>
<tr>
<th>DATE OF PURCHASE:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>MODEL:</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>SERIAL NO.:</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

Record above information from nameplate. Retain this information for future reference.
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</table>
GENERAL INFORMATION

Quincy QPNC-75 to QPNC-250 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.

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.


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.
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.

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.

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

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.

![Figure 4 — Model Weight](image)

<table>
<thead>
<tr>
<th>Model</th>
<th>Gross Weight (lb. (kg.))</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPNC 75</td>
<td>112.4 (51)</td>
</tr>
<tr>
<td>QPNC 100</td>
<td>134.5 (61)</td>
</tr>
<tr>
<td>QPNC 125</td>
<td>149.9 (68)</td>
</tr>
<tr>
<td>QPNC 150</td>
<td>198.4 (90)</td>
</tr>
<tr>
<td>QPNC 175</td>
<td>198.4 (90)</td>
</tr>
<tr>
<td>QPNC 200</td>
<td>198.4 (90)</td>
</tr>
<tr>
<td>QPNC 250</td>
<td>198.4 (90)</td>
</tr>
</tbody>
</table>

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:
203 psi (14 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.
Fit a manual shut-off valve (1 in Figure 6) 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) 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.**

**DIMENSIONS AND TECHNICAL DATA**

<table>
<thead>
<tr>
<th>Type</th>
<th>L in (mm)</th>
<th>W in (mm)</th>
<th>H in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPNC 75</td>
<td>14.57 (370)</td>
<td>20.28 (515)</td>
<td>30.08 (764)</td>
</tr>
<tr>
<td>QPNC 100</td>
<td>18.11 (460)</td>
<td>22.64 (575)</td>
<td>31.06 (789)</td>
</tr>
<tr>
<td>QPNC 125</td>
<td>18.11 (460)</td>
<td>22.64 (575)</td>
<td>31.06 (789)</td>
</tr>
<tr>
<td>QPNC 150</td>
<td>22.83 (580)</td>
<td>23.82 (605)</td>
<td>35.39 (899)</td>
</tr>
<tr>
<td>QPNC 175</td>
<td>22.83 (580)</td>
<td>23.82 (605)</td>
<td>35.39 (899)</td>
</tr>
<tr>
<td>QPNC 200</td>
<td>22.83 (580)</td>
<td>23.82 (605)</td>
<td>35.39 (899)</td>
</tr>
<tr>
<td>QPNC 250</td>
<td>22.83 (580)</td>
<td>23.82 (605)</td>
<td>35.39 (899)</td>
</tr>
</tbody>
</table>

**FIGURE 7 — DIMENSIONS**

**FIGURE 8 — CONNECTION**

<table>
<thead>
<tr>
<th>Type</th>
<th>A — NPT</th>
<th>B — NPT</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPNC 75</td>
<td>1 F.</td>
<td>1 F.</td>
</tr>
<tr>
<td>QPNC 100</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
<tr>
<td>QPNC 125</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
<tr>
<td>QPNC 150</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
<tr>
<td>QPNC 175</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
<tr>
<td>QPNC 200</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
<tr>
<td>QPNC 250</td>
<td>1-1/2 F.</td>
<td>1-1/2 F.</td>
</tr>
</tbody>
</table>

**ATTENTION:**
Dryer must be wired to the power supply through a fused disconnect switch or circuit breaker in accordance with national and local electrical codes.

Minimum 24 in (0.6 m) on all sides.
### Table 1 — Specifications

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Net Weight lb. (kg.)</th>
<th>Freon R404A lb. (kg.)</th>
<th>Nominal Power V230-60Hz</th>
<th>Nominal Power V115-60Hz</th>
<th>Nominal Power V460-3Ph-60Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>QPNC 75</td>
<td>97.0 (44)</td>
<td>0.9 (0.40)</td>
<td>0.807 (602)</td>
<td>0.904 (674)</td>
<td>0.076 (57)</td>
</tr>
<tr>
<td>QPNC 100</td>
<td>116.8 (53)</td>
<td>1.4 (0.64)</td>
<td>1.000 (746)</td>
<td>1.004 (749)</td>
<td>0.127 (95)</td>
</tr>
<tr>
<td>QPNC 125</td>
<td>132.3 (60)</td>
<td>1.4 (0.64)</td>
<td>1.220 (910)</td>
<td>1.242 (926)</td>
<td>0.127 (95)</td>
</tr>
<tr>
<td>QPNC 150</td>
<td>176.4 (80)</td>
<td>3.0 (1.35)</td>
<td>1.743 (1300)</td>
<td>1.743 (1300)</td>
<td>0.255 (190)</td>
</tr>
<tr>
<td>QPNC 175</td>
<td>176.4 (80)</td>
<td>3.0 (1.35)</td>
<td>1.743 (1300)</td>
<td>1.743 (1300)</td>
<td>0.255 (190)</td>
</tr>
<tr>
<td>QPNC 200</td>
<td>176.4 (80)</td>
<td>2.9 (1.30)</td>
<td>1.930 (1439)</td>
<td>1.930 (1439)</td>
<td>0.255 (190)</td>
</tr>
<tr>
<td>QPNC 250</td>
<td>176.4 (80)</td>
<td>2.9 (1.30)</td>
<td>2.262 (1687)</td>
<td>2.262 (1687)</td>
<td>0.255 (190)</td>
</tr>
</tbody>
</table>

Reference Conditions:
- Ambient temperature: + 100 °F (+ 38 °C)
- Inlet air temperature: + 100 °F (+ 38 °C)
- Working pressure: 100 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: 203 psi (14 bar)

**FIGURE 9 — GENERAL LAYOUT**

1. Refrigerant compressor
2. Condenser
3. Fan motor
4. Evaporator
5. Condensate drain
6. Hot gas bypass valve
7. Refrigerant filter dryer
8. Expansion capillary tube
9. Pressure switch
START-UP AND OPERATION

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
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).

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

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 R404A

<table>
<thead>
<tr>
<th>SUCTION SIDE OF REFRIGERATION COMPRESSOR</th>
<th>Evaporating Temperature °F (°C)</th>
<th>Evaporating Pressure psi (bar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>RATED VALUES AT AMBIENT TEMPERATURE +68 °F (+20 °C)</td>
<td>33.8 - 35.6 (1 - 2)</td>
<td>R404A 74 - 76 (4.3 - 4.5)</td>
</tr>
</tbody>
</table>
CONTROLS

FIGURE 11 — COMMAND AND CONTROL PANEL

1. Refrigerant suction pressure gauge
2. Stop - ON/OFF switch
3. Operation indicating lamp
4. Compressor overload alarm light

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

1. Refrigerant compressor
2. Condenser
3. Fan Motor
4. Evaporator
5. Separator
6. Particle strainer
7. Expansion capillary tube
8. Refrigerant filter dryer
9. Hot gas bypass valve
10. Air-to-air heat exchanger
11. Refrigerant suction pressure gauge
12. Fan control pressure switch
13. Condensate auto drain
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 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).

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. (see arrow)
5. Close the panels (5).

FIGURE 13 — MAINTENANCE
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

Pub. No. 2200772369 — October 2006
**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

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPERATIONS MARKED WITH AN ASTERISK (*) MUST BE PERFORMED BY PROFESSIONALLY SKILLED PERSONNEL APPROVED FROM THE MANUFACTURER.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. No compressed air passes through the dryer outlet.</td>
<td>1. The pipes are frozen inside.</td>
<td>*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.</td>
</tr>
<tr>
<td>B. Presence of condensate in the pipings.</td>
<td>1. The condensate separator does not work correctly.</td>
<td>1a. Clean the condensate drain filter. *1b. Check the condensate drain.</td>
</tr>
<tr>
<td></td>
<td>2. The dryer is working outside its rating.</td>
<td>2a. Check the flow rate of treated air. 2b. Check the room temperature. 2c. Check the air temperature at the dryer inlet.</td>
</tr>
<tr>
<td></td>
<td>3. The dryer is working under bad conditions for air-cooled condenser.</td>
<td>3a. Clean the condenser. *3b. Check the operation and the calibration of the fan cycling press. Switch. *3c. Check the operation of the fan.</td>
</tr>
<tr>
<td>C. The compressor head is very hot &gt;131 °F (55 °C).</td>
<td>1. The dryer is working outside its rating.</td>
<td>1a. Check the flow rate of treated air. 1b. Check the room temperature. 1c. Check the air temperature at the dryer inlet.</td>
</tr>
<tr>
<td></td>
<td>2. The dryer is working under bad conditions for air-cooled condenser.</td>
<td>2a. Clean the condenser. *2b. Check the operation and the calibration of the fan cycling press. Switch. *2c. Check the operation of the fan.</td>
</tr>
<tr>
<td></td>
<td>3. The cooling circuit is not working with the right refrigerant charge.</td>
<td>*3a. Check if there are leaks of refrigerating gas. *3b. Charge it again.</td>
</tr>
</tbody>
</table>
Table 3 — Troubleshooting Guide, continued

<table>
<thead>
<tr>
<th>Symptoms</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>D. Motor cuts out on overload.</td>
<td>1. The dryer is working outside its rating.</td>
<td>1a. Check the flow rate of treated air. 1b. Check the room temperature. 1c. Check the air temperature at the dryer inlet.</td>
</tr>
<tr>
<td></td>
<td>2. The dryer is working under bad conditions for air-cooled condenser.</td>
<td>2a. Clean the condenser. *2b. Check the operation and the calibration of the fan cycling press. Switch. *2c. Check the operation of the fan.</td>
</tr>
<tr>
<td></td>
<td>3. The cooling circuit is not working with the right refrigerant charge.</td>
<td>*3a. Check if there are leaks of refrigerating gas. *3b. Charge it again.</td>
</tr>
<tr>
<td>E. The motor hums and does not start.</td>
<td>1. The line voltage is too low.</td>
<td>1a. Contact the electric power company.</td>
</tr>
<tr>
<td></td>
<td>2. The machine was switched off and on again without leaving enough time for pressure balancing.</td>
<td>2a. Wait a few minutes before starting the machine again.</td>
</tr>
<tr>
<td></td>
<td>3. The starting system of the motor is defective.</td>
<td>*3a. Check the running and starting relays and condensers (if installed).</td>
</tr>
<tr>
<td>F. The machine (compressor) has stopped and does not restart even after a few minutes.</td>
<td>1. The overload protection has intervened: see B2, B3 and C3 above.</td>
<td>1a. See remedies above.</td>
</tr>
<tr>
<td></td>
<td>2. The compressor motor has burned out.</td>
<td>2a. Replace.</td>
</tr>
<tr>
<td>G. The compressor is very noisy.</td>
<td>1. Trouble with the internal mechanical parts or with the valves.</td>
<td>1a. Repair or replace.</td>
</tr>
</tbody>
</table>