HIGH TEMPERATURE DRYER

MODELS CPXHT 25, 50, 75, 100 & 125

Chicago Pneumatic

OWNER'S MANUAL

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

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GENERAL INFORMATION

CP Compressors Models CPXHT 25, 50, 75, 100 and 125 High Temperature Refrigerated Dryers are designed to cool and remove moisture from compressed air. The units cool air in two stages. Compressed air enters the system at a maximum temperature of 180°F and is cooled in an aftercooler by ambient air. It is further cooled in an air to refrigerant heat exchanger to about 40°F. Once cooled, the air is sent through an automatic draining moisture separator and finally through an optional oil filter.

When properly installed, the units require little maintenance or adjustment. A list of service parts is provided. Contact CP Compressors for repair or replacement of other parts on these units.

⚠ 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 Operating Instructions section of this manual before attempting to operate the unit.

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

Contact CP Compressors before performing any service or maintenance work NOT discussed in this manual.

RECEIVING – 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.

All the equipment shipped F.O.B. factory becomes the property of the purchaser. In all cases of damage, visible or suspected, contact CP Compressors before attempting to install equipment.

SERVICE INQUIRIES: Provide Model No., Serial No., Operating Pressure, Inlet Temperature, Nature of Problem. See Dryer Specification Tag located on the control panel.

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.

⚠ WARNING

Comply with the National Electrical Code, Federal, State and Local Codes when installing or operating this unit.

3. **COALESCING OIL FILTER (OPTIONAL) – CHANGING AND REMOVING**
   Shut off power and discharge all pressure from this unit and air system before removing or adding parts or attachments and before maintaining unit.
4. **INSPECT HOSES**
   Regularly inspect hoses and load handling fittings for signs of damage, deterioration, weakness or leakage. Do not use if a defect is found. Remove dryer from service and repair or discard defective parts. Keep hoses away from sharp objects, chemical spills, oil, solvents and wet floors. All of these can damage a hose.
5. **USE SUITABLE PARTS & ACCESSORIES**
   Do not use air pressurized accessories or parts in the air system not suitable for the maximum air pressure used. Be sure maximum pressure specified by the accessory manufacturer is well above the working pressure of your compressor.

6. **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.

7. **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.

⚠ WARNING

Air from compressor and from Models CPXHT 25, 50, 75, 100 and 125 High Temperature Refrigerated Dryers, 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.

READ THESE INSTRUCTIONS THOROUGHLY BEFORE USING THIS UNIT.

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.

IF USED FOR SPRAYING

- Follow all labels and printed instructions provided by the manufacturer of the material being sprayed.
- **Spray in an open area away from flames and electrical equipment.** Fumes are dangerous. Spray in a well ventilated area to keep fumes from collecting and causing health and fire hazards.
- Do not spray in vicinity of open flames or other areas where a spark can cause ignition. Do not smoke when spraying paint, insecticides, or other flammable substances. Use a respirator when spraying.
- Always direct paint or other sprayed material away from compressor and air dryer. Locate these units as far away from painting area as possible to minimize accumulation on equipment. Keep other people away from spraying area.

INSTALLATION INSTRUCTIONS

NOTE: Improper installation methods of air inlet and air outlet piping that causes internal damage to the air dryer system will void warranty. Installer should follow proper pipe installation practices or hire a certified contractor to install this unit.

NOTE: Before installing the air dryer system, make sure that the unit has at least 24 inches of clearance around all sides and at least 24 inches of clearance on top. This is required to provide proper air circulation to the unit. Also, a floor drain must be provided for moisture and oil drainage. The unit must stand above the floor drain by at least an inch or two for proper drainage. If the floor drain is located further from the unit than 3 Ft., obtain longer hoses locally (refer to the installation instruction Step 5 for proper dimensions). If it is impossible to connect the unit to a floor drain, a container can be made to collect the drainage. This container must have a lid to prevent the pressurized drainage from spraying. This lid must have an air hole to allow the air inside to escape when the drainage is discharged.

1. Remove unit from carton and VISUALLY inspect for damage.
2. To install the optional coalescing oil filter, thread a pipe nipple on the air outlet connection. Install the filter to the pipe nipple with arrow on filter pointing away from air dryer unit. Use pipe sealer on both ends of the nipple to facilitate sealing without undue torque pressure.

IMPORTANT

Optional coalescing oil filter must be installed with direction arrow facing AWAY from the air dryer system unit. If the oil filter is installed backwards, discharge air will be contaminated with oil.

3. Connect discharge air line to the dryer or optional filter outlet connection.
4. Connect air piping from the air compressor to the air dryer system inlet connection. Use caution when connecting piping to the air dryer system to avoid twisting and damaging the air connection.

NOTE: Install brackets and support fixtures as needed to eliminate fatigue and vibration in the air system piping.

5. Drain Connection
   Models CPXHT 25 and CPXHT 50 are equipped with a 1/2″ OD plastic moisture drain tube. The drain tube needs to be directed to a proper drain point. A longer drain tube or extension may be required. Be sure to provide a secure attachment as the moisture drain tube will periodically be under pressure.

   Models CPXHT 75, 100 and 125 are equipped with a 3/8″ NPTF drain connection. A plastic drain tube or copper pipe must be attached and directed to a proper drain point. Be sure to provide a secure attachment as the moisture tube or pipe will periodically be under pressure.

⚠ CAUTION

Moisture drain line must be tightly secured at the drain. This line will periodically contain pressurized air. An unsecured line will whip around. Failure to secure lines can cause bodily injury.

6. Connect the grounded electrical plug to a standard three-hole grounded outlet. If an extension cord is necessary, use a 14 Gauge extension cord only. Wiring must meet local and national electrical codes.

⚠ CAUTION

Air dryer unit MUST be attached to a properly wired and grounded outlet. Failure to properly ground unit can cause electrocution. Observe all local and national electrical codes.

7. The air dryer system has been tested and shipped with a full charge of oil and refrigerant. Inspect the suction pressure gauge located on the front of the unit (refer to Figures 1 – 3). While the unit is idle (not operating) the refrigerant suction pressure should be within the range of 90 to 130 PSIG.

If the suction pressure gauge reads 0 PSIG or near 0 PSIG, contact CP Compressors.

IMPORTANT

Air dryer unit will not function properly unless all cabinet panels are in place.

IMPORTANT

Do not operate unit in an ambient temperature below 40°F (4°C) or above 100°F (38°C). If the unit has been stored overnight or longer in temperatures below 40°F (4°C), the unit must sit for at least eight hours at a recommended temperature before operating.

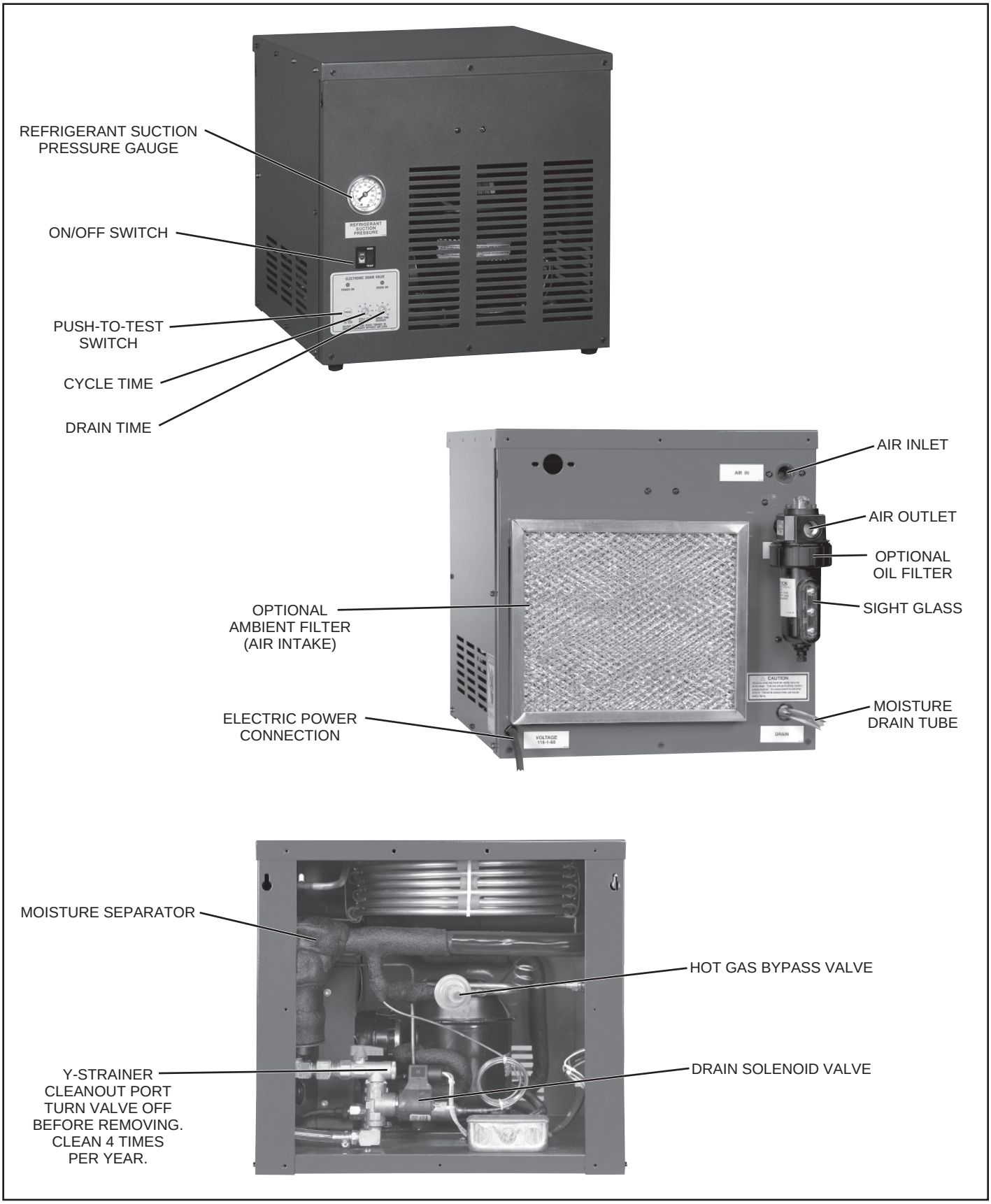

FIGURE 1 — MODEL CPXHT 25

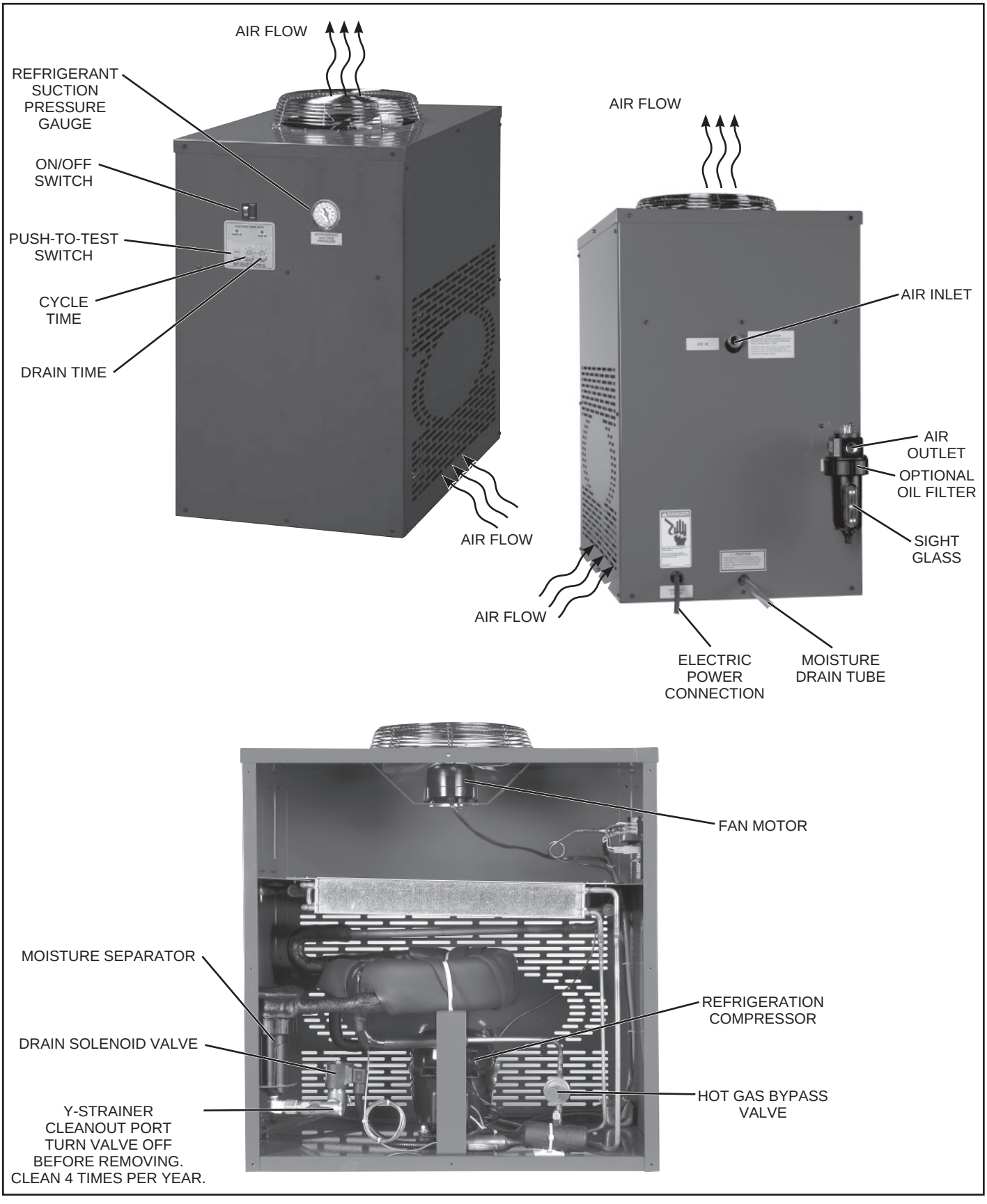

FIGURE 2 — MODEL CPXHT 50

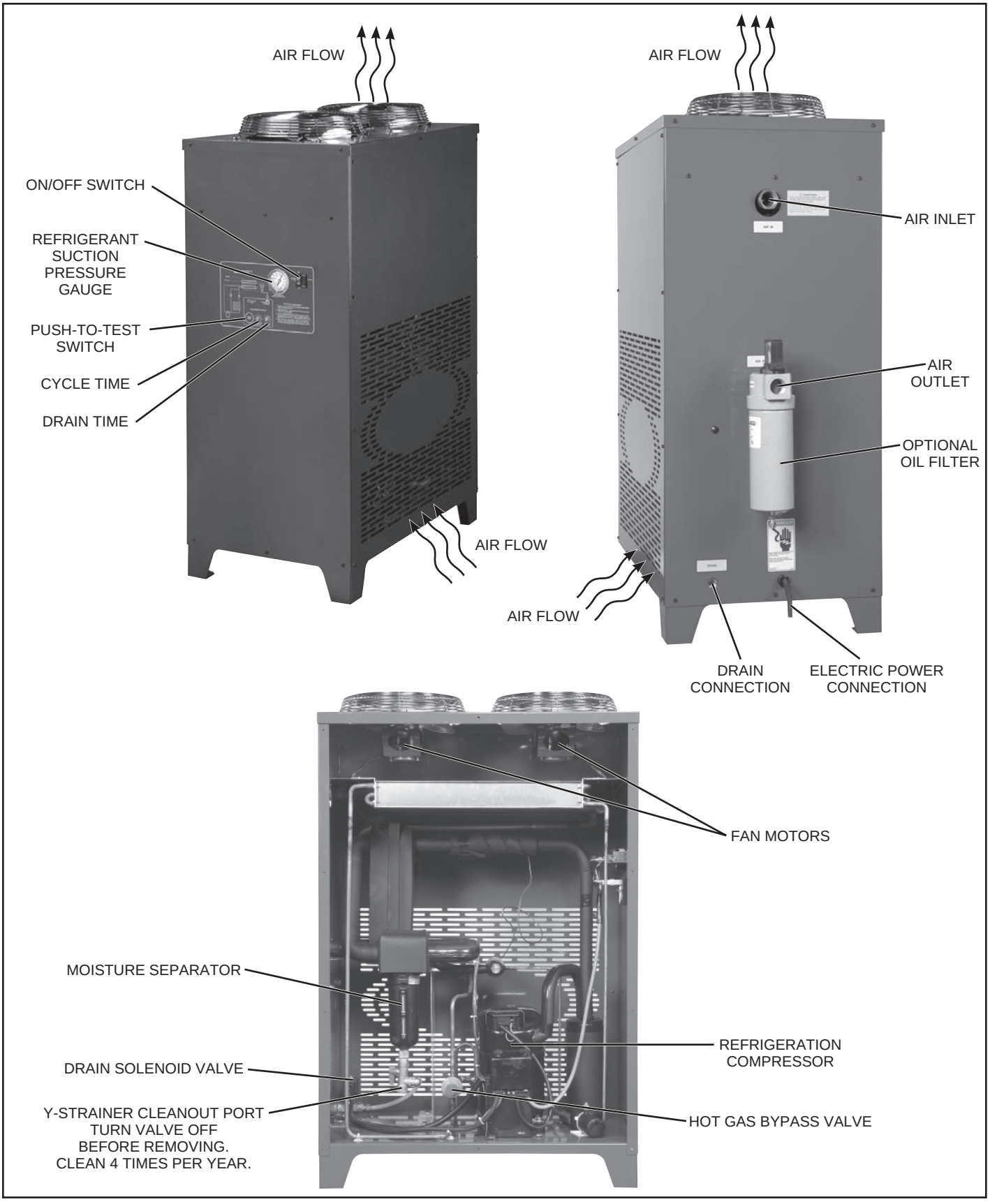

FIGURE 3 — MODEL CPXHT 75/100/125

1. Start the air dryer system by turning the switch to the ON position. At this time the compressor and cooling fans will start.
2. After the unit is running, the suction pressure will begin to drop into the appropriate pressure range for the particular dryer model. Normal operating suction pressure range is from 25 to 33 PSIG (blue zone).
3. Once the suction pressure stabilizes and is maintained in the proper operating pressure range, compressed air can be allowed to flow through the air dryer system. At this point the air dryer system is delivering dry air to your process.
4. If the refrigerant suction pressure is not in the proper operating range, a hot gas bypass adjustment may be required. See Page 12 for hot gas bypass valve adjustment instructions.
5. Hold the PUSH-TO-TEST button on the drain controls open for several seconds. This procedure should be repeated 3 or 4 times in every 8 hour period of operation.
6. The moisture drain valve operates automatically and is controlled with the CYCLE TIME and DRAIN TIME knobs. Initially both knobs should be turned counterclockwise to the seven o'clock position. When using the unit after shipment, check both knobs and turn to the seven o'clock position if they have been moved. The controls are now set so that the unit opens the drain every 1 minute (cycle time) for a 2 second period (drain time).

The cycle time and drain time will need to be set higher if there is an increased load on the dryer and to compensate for humid ambient conditions. Drain settings should be set to allow for proper drainage with minimal pressure loss.

Press the PUSH-TO-TEST button for manual override, and to periodically clear the moisture drain of sediments or foreign material.

7. **Optional Oil Filter:** Manually turn the coalescing oil filter drain stem once every 8 hours of operation, or when the sight of glass is half full of liquid. Failure to drain may cause reentrainment.

SPECIFICATIONS

Model CPXHT 25

1. **Unit Dimensions:**
   Length: 17.50″
   Width: 18.75″
   Height: 17.75″
2. **Flow:**
   25 SCFM
3. **Inlet Pressure:**
   175 PSIG (200 PSIG Maximum)
4. **Ambient Temperature:**
   Minimum 40°F (4°C)
   Maximum 100°F (38°C)
5. **Inlet Temperature:**
   180°F (82°C) Maximum
6. **Dew Pt. Temperature:**
   50°F±2° (10°C±1°)
7. **Refrigerant H.P.:**
   1/4
8. **Heat Exchanger Material:**
   Copper
9. **Automatic Drain:**
   Installed
10. **Refrigerant:**
    R-134A
11. **Electrical Power Supply:**
    115V, 60HZ, 1 phase
12. **Instrumentation:**
    ON/OFF switch
    Power-on light
    High temperature light
    Refrigerant suction pressure gauge
    Drain test button
    Drain timer adjustment controls (2)

Model CPXHT 50

1. **Unit Dimensions:**
   Length: 28″
   Width: 18″
   Height: 30″
2. **Flow:**
   50 SCFM
3. **Inlet Pressure:**
   175 PSIG (200 PSIG Maximum)
4. **Ambient Temperature:**
   Minimum 40°F (4°C)
   Maximum 100°F (38°C)
5. **Inlet Temperature:**
   180°F (82°C) Maximum
6. **Dew Pt. Temperature:**
   50°F±2° (10°C±1°)
7. **Refrigerant H.P.:**
   1/3
8. **Heat Exchanger Material:**
   Copper
9. **Automatic Drain:**
   Installed
10. **Refrigerant:**
    R-134A
11. **Electrical Power Supply:**
    115V, 60HZ, 1 phase
12. **Instrumentation:**
    ON/OFF switch
    Power-on light
    High temperature light
    Refrigerant suction pressure gauge
    Drain test button
    Drain timer adjustment controls (2)

Model CPXHT 75/100/125

1. **Unit Dimensions:**
   Length: 28″
   Width: 18″
   Height: 40″
2. **Flow:**
   CPXHT 75: 75 SCFM
   CPXHT 100: 100 SCFM
   CPXHT 125: 125 SCFM
3. **Inlet Pressure:**
   175 PSIG (200 PSIG Maximum)
4. **Ambient Temperature:**
   Minimum 40°F (4°C)
   Maximum 100°F (38°C)
5. **Inlet Temperature:**
   180°F (82°C) Maximum
6. **Dew Pt. Temperature:**
   50°F±2° (10°C±1°)
7. **Refrigerant H.P.:**
   CPXHT 75: 1/2
   CPXHT 100: 3/4
   CPXHT 125: 3/4
8. **Heat Exchanger Material:**
   Stainless Steel & Copper
9. **Automatic Drain:**
   Installed
10. **Refrigerant:**
    R-134A
11. **Electrical Power Supply:**
    115V, 60HZ, 1 phase
12. Instrumentation:
    ON/OFF switch
    Power-on light
    High temperature light
    Refrigerant suction pressure gauge
    Drain test button
    Drain timer adjustment controls (2)

1. The ON/OFF switch holds a HIGH TEMP light which will turn on if the unit's compressor system malfunctions. If the red HIGH TEMP light on this switch is illuminated, turn off and unplug the unit for 15 minutes and restart. If the light remains on after restarting or it continues to turn on afterwards, contact CP Compressors.

2. **Periodic maintenance.** The following procedures should be performed every six months to insure that the air dryer unit operates properly. These steps should be performed more frequently if either the air compressor or the air dryer is exposed to air that is dirtier or dustier than normal.

   a. Clean optional ambient filter.

   b. Clean optional coalescing oil filter drain assembly

   c. Replace optional coalescing oil filter element

   d. Clean moisture separator drain assembly

   e. Clean Particle Strainer

   f. Clean condenser/air cooler coil.

3. **Optional ambient filter cleaning.** Remove ambient filter from the air dryer system unit and simply flush the filter in a stream of water to remove any dust and dirt. Allow filter to dry and spray on a filter coat adhesive to help trap dust and dirt. If the ambient filter will not come clean, replace with new filter. Refer to the Spare Parts List to order ambient filters or the filter spray-on coat adhesive. Replace ambient filter with the arrow on the filter pointing towards the unit for proper air flow through the filter and into the unit.

4. **Optional coalescing oil filter.** The filter is equipped with a pressure differential indicator. The indicator should be inspected periodically each 24 hour period. If the indicator is at or above the midpoint on the gauge, the filter element should be replaced and the drain assembly cleaned. Filters for models CPXHT 25 and CPXHT 50 are equipped with a ball type indicator gauge. Filters for models CPXHT 75, CPXHT 100 and CPXHT 125 are equipped with a numeric color type indicator gauge.

   a. Depressurize the air system to release compressed air from the air dryer system. Shut down the air compressor AND the air dryer system, and discharge the air through the sprayer or other output device. Shutting down the air compressor or dryer only will not depressurize the air dryer system.

⚠ WARNING

Depressurize air dryer system before removing coalescing oil filter bowl. Failure to do so will cause the filter to blow off its fitting and cause bodily injury and property damage.

   a. Remove the filter bowl, the bottom half of the assembly, by turning the bowl counterclockwise.

   c. Clean the bowl and the drain stem with water and a mild soap solution.

NOTE: When reinstalling the filter bowl, make sure the O-ring is in place on the top half of the filter housing and that the O-ring seats properly. Air leaks may occur if O-ring is not seated.

   d. Optional oil filter: Inspect the coalescing oil filter every 6 months and replace element as necessary. Refer to the Spare Parts List to order a filter element.

   e. If the drain is clean and the filter still will not drain, contact CP Compressors to order a new filter assembly.

5. **Moisture separator drain cleaning.** If after using the PUSH-TO-TEST button to clear sediment or foreign objects from the moisture drain, and the drain still appears to be clogged, depressurize the air system to release compressed air from the air dryer unit. Shut down the air compressor AND the air dryer unit, and discharge the air through the sprayer or other output device. Shutting down the air compressor unit only will not depressurize the air dryer unit.

⚠ WARNING

Depressurize air dryer system before removing moisture separator bowl. Failure to do so will cause the separator to blow off its fitting and cause bodily injury and property damage.

   a. Remove the screws attaching the left side panel to the cabinet and remove the panel. (Refer to Figures 1 – 3.)

IMPORTANT

The air dryer system will not operate properly unless all panels are reinstalled after any maintenance work.

b. Remove compression fitting on the elbow attached to the particle strainer of the separator assembly by turning the hex head nut on the fitting. Remove the plastic tubing connecting the particle strainer and the drain valve solenoid.

c. Close the shut-off valve on the particle strainer, drain the down stream line of the particle strainer with the PUSH-TO-TEST button on the auto drain. Unscrew and clean out screen, replace screen and open shut-off valve.

d. Remove lower bowl bracket by unfastening the two machine screws and nuts that hold the lower bracket to the back panel.

e. Turn the separator bowl counterclockwise to remove. A pipe wrench may be necessary to remove the bowl.

NOTE: When reinstalling the separator bowl, make sure the O-ring is in place on the top of the bowl and that the O-ring seats properly on the separator housing. Air leaks may occur if O-ring is not seated.

f. Clean the bowl assembly with a mild soap solution and cold water.

g. Inspect the drain hoses for any kinks. Remove the drain hose inside the air dryer system and the drain hose outside the unit and blow into the line to clear any sediment or foreign material from the lines.

h. Reinstall the moisture separator bowl, the lower filter bracket, the particle strainer assembly, and the two drain hoses. If the separator still will not drain, contact CP Compressors to order a new separator assembly.

6. **Condenser coil cleaning.** Remove ambient filter (if equipped). Remove either the right or left side panel screws and panel. Using compressed air, blow collected dust and contamination off condenser from inside to outside.

7. **Hot gas bypass valve adjustment.** The hot gas bypass valve adjustment regulates the flow of refrigerant through the heat exchanger to maintain the proper suction pressure. The suction pressure must be maintained within the proper range for normal operation. The needle on the refrigerant suction pressure gauge should be in the blue zone.

   a. Hot gas bypass valve adjustments must be made while the unit is operating. DO NOT TURN THE UNIT OFF.

   b. Remove the left side panel on the cabinet. The hot gas bypass valve adjustment nut is located on the refrigerant discharge line near the compressor.

   c. If the suction pressure gauge indicator arrow is below 25 PSIG, turn the adjusting nut CLOCKWISE. If the suction pressure gauge indicator needle is above 33 PSIG, turn the adjusting nut COUNTERCLOCKWISE. Let the unit operate for a few minutes and read the suction pressure gauge again. Continue to adjust the valve until the indicator arrow is in the BLUE ZONE between 25 PSIG and 33 PSIG. Adjust only 1/4 of a turn at a time. ALLOW 4 — 5 MINUTES BETWEEN ADJUSTMENTS.

Table 1 — Troubleshooting Guide

Symptoms	Cause	Remedy
A. Moisture downstream.	1. Refrigeration compressor not running.	a. Check electric power supply. b. If red light is on, call for factory service.
	2. Suction pressure reads above the blue zone.	a. Clean the air cooled condenser (see Page 12). b. Adjust hot gas bypass valve (see Page 12). c. Check for defective fan motor and replace.
	3. Moisture separator auto drain malfunction.	a. Check the auto drain operation (see Page 11). b. Check for clogged drain line from auto drain outlet to floor drain. c. Check the electronic timer for loose wires or evidence of burn out.
B. Oil downstream. (Only applies with oil filter option.)	1. Oil filter malfunction.	a. Check the drain operation. b. Clean the drain if stuck or clogged. c. Check the drain manual valve for clogging.
	2. Filter element dirty.	a. Replace element (see Page 11).
C. Low air pressure downstream.	1. Suction pressure below the blue zone. This causes freeze-up in the air systems.	a. Adjust hot gas bypass valve (see Page 12). b. Low on refrigerant. Call for service. c. To confirm freeze-up, shut off the unit for 15 minutes. Air pressure should come back to line pressure.
D. Continuous air flow through the moisture drain line.	1. Foreign materials lodged on the valve seat.	a. Press the PUSH-TO-TEST switch several times. b. Disconnect the drain lines to the solenoid valve and blow compressed air from outlet while pressing the PUSH-TO-TEST switch.
	2. Short-circuited timer board.	a. Replace.
	3. Short-circuited PUSH-TO-TEST switch.	a. Replace.
	4. Defective solenoid valve.	a. Replace.
E. Moisture is not draining.	1. Clogged solenoid valve.	a. Press the PUSH-TO-TEST switch several times. b. Disconnect the drain lines to the solenoid valve and blow compressed air from outlet while pressing the PUSH-TO-TEST switch.
	2. Defective timer board.	a. Replace.
	3. Defective solenoid valve.	a. Replace.
	4. Clogged drain lines.	a. Clean or replace.
F. Optional oil filter not draining. (Oil level seen above half way point through the bowl sight glass.)	1. Defective drain valve.	a. Replace.
	2. Plugged drain valve.	a. Clean in soap and water or replace.

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