



47824057
Revision A
May 2024

Refrigerated Type Compressed Air Dryers

Models: DAV42INA100, DAV59INA100 & DAV85INA100



Product Information

Instruction Manual



Save These Instructions

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GENERAL SAFETY INFORMATION

■ Pressurized Devices

This equipment is a pressure containing device.

- Do not exceed maximum operating pressure as shown on equipment serial number tag.
- Make sure equipment is depressurized before working on or disassembling it for service.



■ Breathing Air

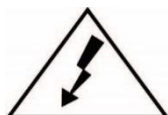
- Air treated by this equipment may not be suitable for breathing without further purification.
- Refer to applicable standards and specifications for the requirements for breathing quality air.



■ Electrical

This equipment requires electricity to operate.

- Install equipment in compliance with all applicable electrical codes.
- Standard equipment is supplied with electrical enclosures not intended for installation in hazardous environments.
- Disconnect power supply to equipment when performing any electrical service work.



REFRIGERATED DRYER NOMENCLATURE

PREFIX/SERIES	NOMINAL FLOW*		DESIGN	CONDENSER TYPE	POWER
	m ³ /hr	SCFM			
DAV	42	25	IN = NON-CYCLE	A = AIR COOLED	1=115/1/60
	59	35			
	85	50			

* Nominal Flows indicated are for 100°F inlet temperature, 100°F ambient temperature and 100 psig compressed air pressure.

RECEIVING, MOVING, AND UNPACKING

■ Receiving

This shipment has been thoroughly checked, packed and inspected before leaving our plant. It was received in good condition by the carrier and was so acknowledged.

Check for Visible Loss or Damage. If this shipment shows evidence of loss or damage at time of delivery to you, insist that a notation of this loss or damage be made on the delivery receipt by the carrier's agent.

■ Unpacking

Check for concealed loss or damage. When a shipment has been delivered to you in apparent good order, but concealed damage is found upon unpacking, notify the carrier immediately and insist on his agent inspecting the shipment. Concealed damage claims are not our responsibility as our terms are F.O.B. point of shipment.

■ Moving

In moving or transporting dryer, do not tip dryer onto its side.

■ Storage

IMPORTANT: Do not store dryer in temperatures above 130°F (54.4°C).

INSTALLATION

■ Ambient Air Temperature

Locate the dryer indoors where the ambient air temperature will be between 40°F and 100°F. Intermittent operation at ambient temperatures up to 113°F will not damage the dryer but may result in a higher dew point or dryer shutdown due to high refrigerant discharge pressure (see Field Service Guide).

Do not operate air-cooled dryers at ambient air temperatures below 40°F. Such operation may result in low suction pressure, causing freeze-up.

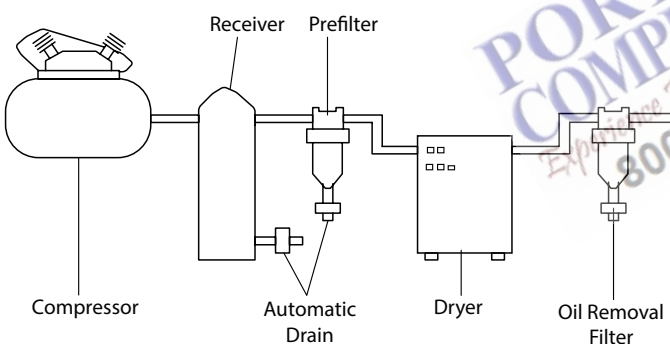
Call your local distributor if prolonged operation at ambient temperatures above 100°F or below 40°F is unavoidable.

■ Location and Clearance

Mount the dryer on a level base. Install the dryer in a clean, well-ventilated area to reduce fouling of the condenser coils with dirt and dust.

Vapors and contaminants corrosive to copper and aluminum must not be in the area of the dryer or air compressor intake. Allow at least 6 inches clearance from the front and from the condenser coil service access. Install the dryer with the frame level. Anchor bolts are not required.

NOTE: A suitably sized prefilter must be installed before the dryer. Failure to install and maintain a proper prefilter will void the dryer warranty.



TYPICAL COMPRESSED AIR SYSTEM

■ System Arrangement

Liquid water in the inlet air will adversely affect the performance of the dryer. Install the dryer downstream of an aftercooler or separator so that the temperature of the dryer inlet air does not exceed 120°F and the inlet air does not contain any liquid water.

Most compressed air systems require filters for removal of solid and liquid contaminants. When an oil-removal filter is used, it should be installed downstream of the refrigerated dryer. The dryer will remove some entrained dirt, extending the life of the replaceable filter element. Outlet air temperature may be 10 to 30 degrees higher than inlet air temperature. This is normal. Consult your distributor if a lower outlet air temperature is required.

■ Piping and Connections

Piping must be furnished by the user unless otherwise specified. Connections and fittings must be rated for the maximum operating pressure given on the dryer data plate and must be in accordance with applicable codes. Support all piping; do not allow the weight of any piping to stress the dryer or filters. Inlet and outlet shutoff valves and a bypass valve are recommended. Piping should be at least the size of the inlet and outlet connections to minimize pressure drop in the air system. See Engineering Data section for dryer inlet and outlet connections.

■ Removing Condensate

A separator with an automatic drain valve is supplied with each dryer. The user must install a separate discharge line at the drain connection to carry off condensate to an environmentally approved condensate collection/disposal system. Securely anchor drain line to prevent whipping.

If clogging of the automatic drain is a problem, install a particulate filter before the dryer to keep solid particles from entering the dryer. Contact your local distributor for the appropriate particulate filter.

■ Electrical Connections (See Figure 3)

Dryer is designed to operate on the voltage, phase and frequency listed on the serial number tag. Reference tag prior to making electrical connection. Dryers are supplied with a cord and plug. Install in receptacle of proper voltage.

⚠ CAUTION

Operation of dryers with improper line voltage constitutes abuse and could affect the dryer warranty.

INSTRUMENTATION

■ ON/OFF Switch

The dryer is equipped with an ON/OFF switch on the front panel. A light signals when the dryer is on.

■ Color Indicator

All dryers are equipped with a color indicator which indicates dryer conditions as follows:

It is normal for the indicator color to be in the red zone when the dryer is first turned on and then move to the green zone when the dryer reaches its normal operating temperature. If this indicator is in the red zone during normal operation, turn the dryer off to avoid compressor damage. Refer to the Field Service Guide for additional information, or call your local distributor.

DRAIN VALVES

An electronic drain valve is supplied to automatically discharge condensate from the dryer. The drain valve and its controls are accessible from the rear of the dryer. The electronic drain valve has two indicators and a test button to help verify operation. Pushing the test button causes the drain port to click open. If either indicator fails to turn on at the proper time, refer to the maintenance section of this manual. Drain valve operation is controlled by an electronic timer. The drain opening can be set from 0.5 sec to 10 sec. The drain cycle can be set from 0.5 min to 45 min.

■ Drain Valve Adjustment

To minimize air losses, the drain timer should be adjusted to open the drain port just long enough to discharge accumulated condensate. Set the timer so that only air discharges at the end of the open period.

Recommended Drain Settings

Model	Time	
	Open (Sec)	Closed (Min)
DAV42	2	10
DAV59	2	10
DAV85	2	10

NOTE: If liquid discharges as the port is closing, set the timer for a shorter cycle or a longer opening. The amount of condensate will vary as ambient conditions and inlet flow rates change.

START-UP/OPERATION

Follow the procedure below to start your dryer. Failure to follow the prescribed start-up procedure will invalidate the warranty. If problems arise during start-up, call your distributor.

⚠ WARNING

Refer to Serial Number Tag for dryer operating capacity. Do not exceed recommended capacity.

Drain connections must be made before the dryer can be operated. The dryers are fully automatic and require no auxiliary controls.

1. Connect inlet and outlet lines to the dryer. Reference dryer indentations and instruction tag for appropriate inlet and outlet connections.
2. Route drain connections to a condensate separator or approved collection point.
3. Turn the on/off switch to on. Double check connections.
4. After the dryer has been running for 30 minutes:
 - a. Check that on/off lighted switch is glowing. If light is not glowing, unplug unit and refer to Field Service Guide for additional information or call your local distributor.

- b. Check the Color Indicator. If the Indicator is in the red zone, unplug the dryer. Refer to the Field Service Guide for additional information, or call your local distributor.
- c. Confirm that condensate is discharging from the drain. This can only be done when there is air flow through the dryer.

⚠ WARNING

Reference Serial Number Tag for appropriate power requirement/connection rating. Make other dryer connections prior to connecting power source.

The dryer is designed to run continuously. Let the dryer run even when the demand for compressed air is interrupted; the dryer will not freeze up.

■ Operating Check Points

1. Power light is on, light is illuminated.
2. Condensate is discharging properly.
3. Color Indicator is in the Green Zone.

SHUTDOWN

When the dryer must be shutdown for maintenance or other reasons, use the following procedure:

1. Turn the power on/off switch to off.
2. Disconnect the main power supply.

If mechanical repairs are to be made or service is performed, vent the internal pressure of the dryer to atmospheric pressure. Restart the dryer according to the start-up instructions.

WARNING

Disconnect power supply and depressurize dryer before servicing. Dismantling or working on any component of the compressed air system under pressure may cause equipment failure and serious personal injury.

MAINTENANCE

The dryers require little maintenance for satisfactory operation. Good dryer performance can be expected if the following routine maintenance steps are taken.

WARNING

Disconnect power supply and depressurize dryer before performing any maintenance.

■ General

For continued good performance of your refrigerated dryer, all refrigeration system maintenance should be performed by a competent refrigeration mechanic.

NOTE: Before corrective maintenance is done during the warranty period, call your local distributor and proceed according to instructions. Refer to the warranty for limits of your coverage.

■ Daily Maintenance

Check the separator for condensate discharge. If no discharge is evident, depressurize and perform the following:

- Electric Drain - Clean strainer and/or clean/replace solenoid valve.

■ Monthly Maintenance

Inspect the condenser coils. Remove accumulated dust and dirt with a soft brush or with air from an OSHA approved compressed air nozzle that limits the discharge pressure to 30 psig.

■ Electronic Drain Valve Disassembly and Servicing

CAUTION

Do not disassemble drain valve timer or attempt to repair electrical parts. Replace timer if defective.

The drain valve discharge condensate through a full-port drain opening. The valve body may need to be cleaned under conditions of gross particulate contamination.

To disassemble the drain valve body for cleaning and other maintenance:

1. Turn power switch off.
2. Disconnect main power supply to dryer.

3. Depressurize unit.
4. Lock out and tag power supply in accordance with OSHA requirements.

WARNING

If power supply is not connected and unit is not depressurized before disassembly, serious personal injury and valve damage may result.

5. Remove screw and washer from front of the drain valve.
6. Remove the power supply connector and gasket (with the timer assembly if attached) from the solenoid coil housing. Do not damage or lose the gasket.
7. Remove coil fixing nut and spring washer from top of solenoid coil housing.
8. Lift solenoid coil housing off solenoid core in valve body.
9. Unscrew solenoid core from valve body.

Once the drain valve is disassembled, the following maintenance can be performed.

1. Inspect internal parts of valve body; clean or replace as required.
NOTE: Replace solenoid valve if component damage is observed.
2. Remove debris from valve body.
3. Wipe solenoid core components with a clean cloth or blow out debris with compressed air from an OSHA-approved air nozzle that limits its discharge pressure to 30 psig.
4. Check that the plunger assembly is clean and moves freely in housing.
5. If timer is attached to valve body, check electrical continuity across timer assembly. To reassemble the drain valve, reverse the sequence of the preceding steps. After the drain valve is reassembled, connect the main power supply to the dryer. When the dryer is returned to service, check the drain valve for air or condensate leaks; tighten connections as required to correct leaks. Check the drain cycle; adjust the timer according to the procedure in the drain valve adjustment section.

■ Returns to Manufacturer

If the dryer or a component of the dryer must be returned to the manufacturer, first call your local distributor for a return authorization number and shipping address.

Your distributor will inform you whether the dryer or only a component must be returned. Mark the package with the return authorization number and ship freight prepaid as directed by your local distributor.

FIELD SERVICE GUIDE

Problems most frequently encountered with refrigerated dryers are water downstream of the dryer and excessive pressure drop. Most causes can be identified and remedied by following this guide.

WARNING

Closed refrigeration systems are potentially dangerous. Work on the refrigeration system must be done only by a competent refrigeration mechanic. Do not release fluorocarbon refrigerants to the atmosphere. All refrigerants must be recovered per EPA requirements. Do not smoke when a refrigeration leak is suspected. Burning materials may decompose refrigerants, forming a toxic gas or acids that may cause serious injury and property damage. Before dismantling any part of the dryer or compressed air system, completely vent the internal pressure to the atmosphere.

PROBLEM	SYMPTOM:	POSSIBLE CAUSE	REMEDY
Water Downstream of Dryer	Refrigerant compressor not running.	Leak in refrigeration system.	Contact your local distributor.
		Compressor overheated.	Turn dryer off, wait 30 minutes; turn dryer on. (Motor thermostat self-starting)
		Compressor burned out.	Contact your local distributor.
	No condensate discharging from dryer.	Failure of drain.	Dismantle and clean strainer. Repair or replace solenoid valve.
Excessive Pressure Drop Across Dryer	Low outlet pressure.	Dryer inlet air temperature too high.	Check aftercooler discharge temperature and reduce to dryer design condition (120°F max)
		Dryer undersized (may also cause water downstream of dryer)	Check airflow and dryer capacity. Reduce airflow or resize and replace dryer.
		Dryer icing up. (check at separator)	Contact your local distributor.
Color Indicator Out of Green Zone	Indicator in red zone.	Inlet air temperature too high.	Reduce aftercooler discharge temperature to design conditions (See Engineering Data).
		Condenser fouled or clogged.	Clean or replace condenser.
		Inlet air temperature too high.	Reduce aftercooler discharge temperature to design conditions. (See Engineering Data)
		High ambient temperature.	Ventilate area.
		Improper adjustment of expansion valve.	Remove cap from the expansion valve and turn the screw until the indicator is in the green zone.
	Indicator in blue zone.	Improper adjustment of expansion valve.	Adjust the expansion valve until the indicator is in the green zone.
		Low ambient temperature.	Increase ambient temperature to design conditions.

ENGINEERING DATA

MODEL	DAV42INA100	DAV59INA100	DAV85INA100
SPECIFICATIONS			
Rated Capacity - (scfm)	25	35	50
Inlet /Outlet Connections - (inches)	3/4	3/4	3/4
Dimensions			
Height - (inches)	22.2	22.2	22.2
Length - (inches)	15.5	15.5	19.7
Width - (inches)	14.5	14.5	19.7
Power Supply - (V/Ph/Hz)	115/1/60	115/1/60	115/1/60
Refrigerant Compressor Rating - (hp)	1/4	1/4	1/3
Input Power - (kW)	0.47	0.47	0.63
Refrigerant Type	R-134a (6.98 oz)	R-134a (6.98 oz)	R-134a (9.49 oz)

Rating conditions are 100°F inlet temperature, 100 psig inlet pressure, 100% inlet relative humidity, 100°F ambient temperature @ 60Hz. Per CAGI ADF-100.

Refer to dryer data plate for refrigerant charge.

MODEL	DAV42INA100, DAV59INA100 & DAV85INA100
MINIMUM - MAXIMUM OPERATING CONDITIONS	
Min.-Max. Inlet Air Pressure (compressed air at inlet to dryer)	30 - 250 psig
Min.-Max. Inlet Air Temperature (compressed air at inlet to dryer)	40°F - 120°F
Min.-Max. Ambient Temperature	40°F - 110°F

NOTE: Continuous operation in the above maximum and minimum operation conditions is not allowable.

GENERAL ARRANGEMENT- DAV42-59INA100

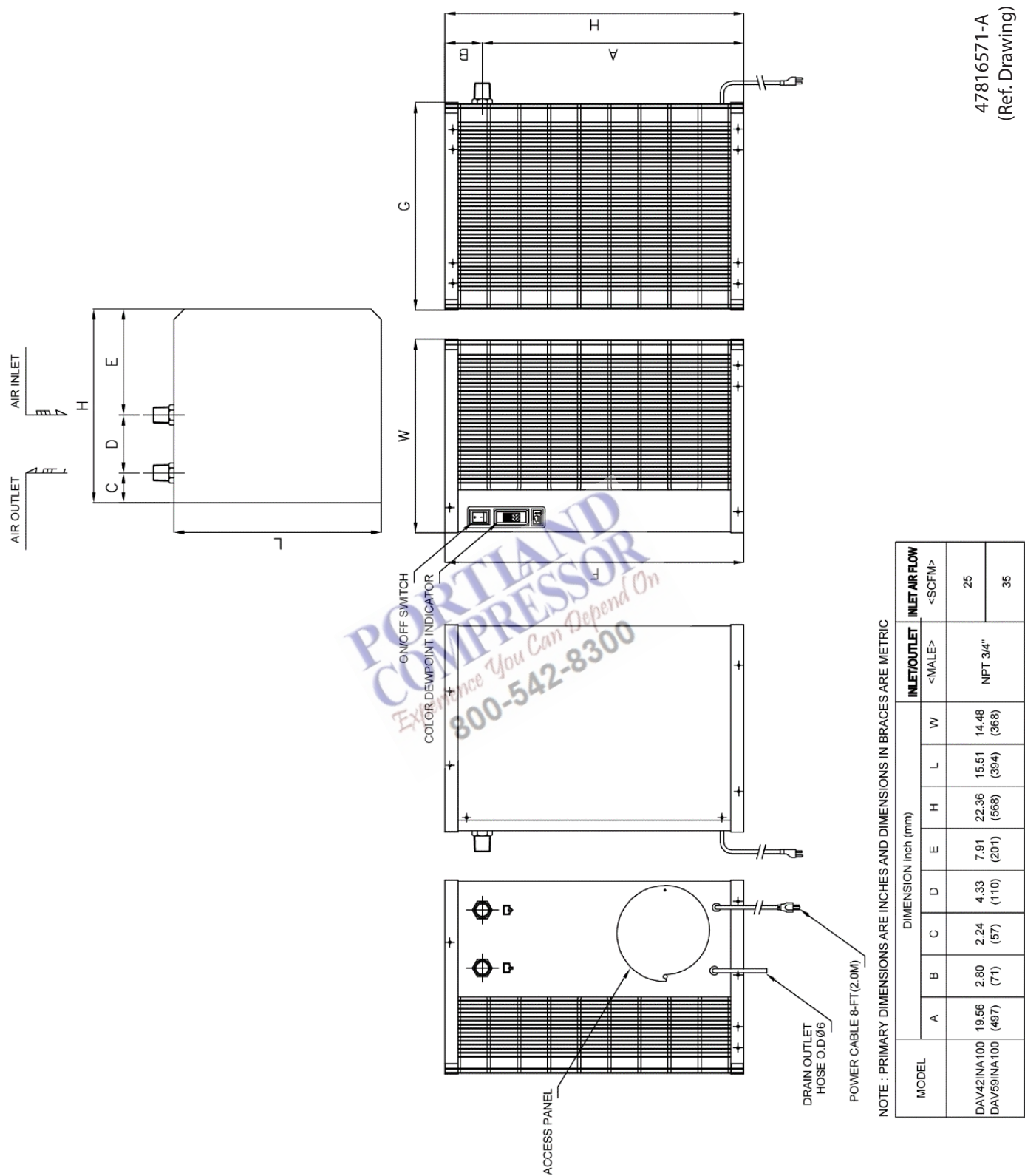
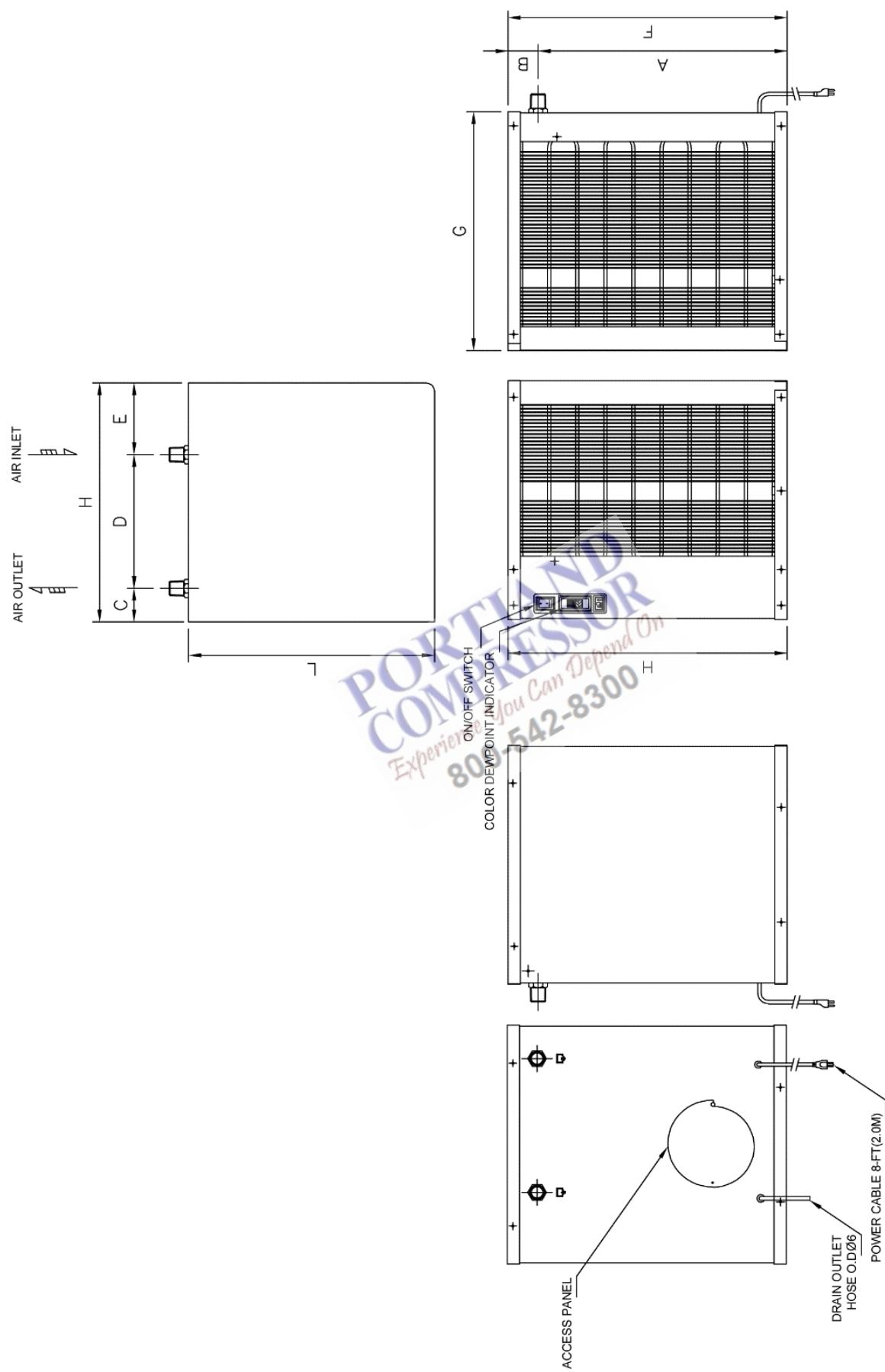


Figure 1

GENERAL ARRANGEMENT – DAV85INA100



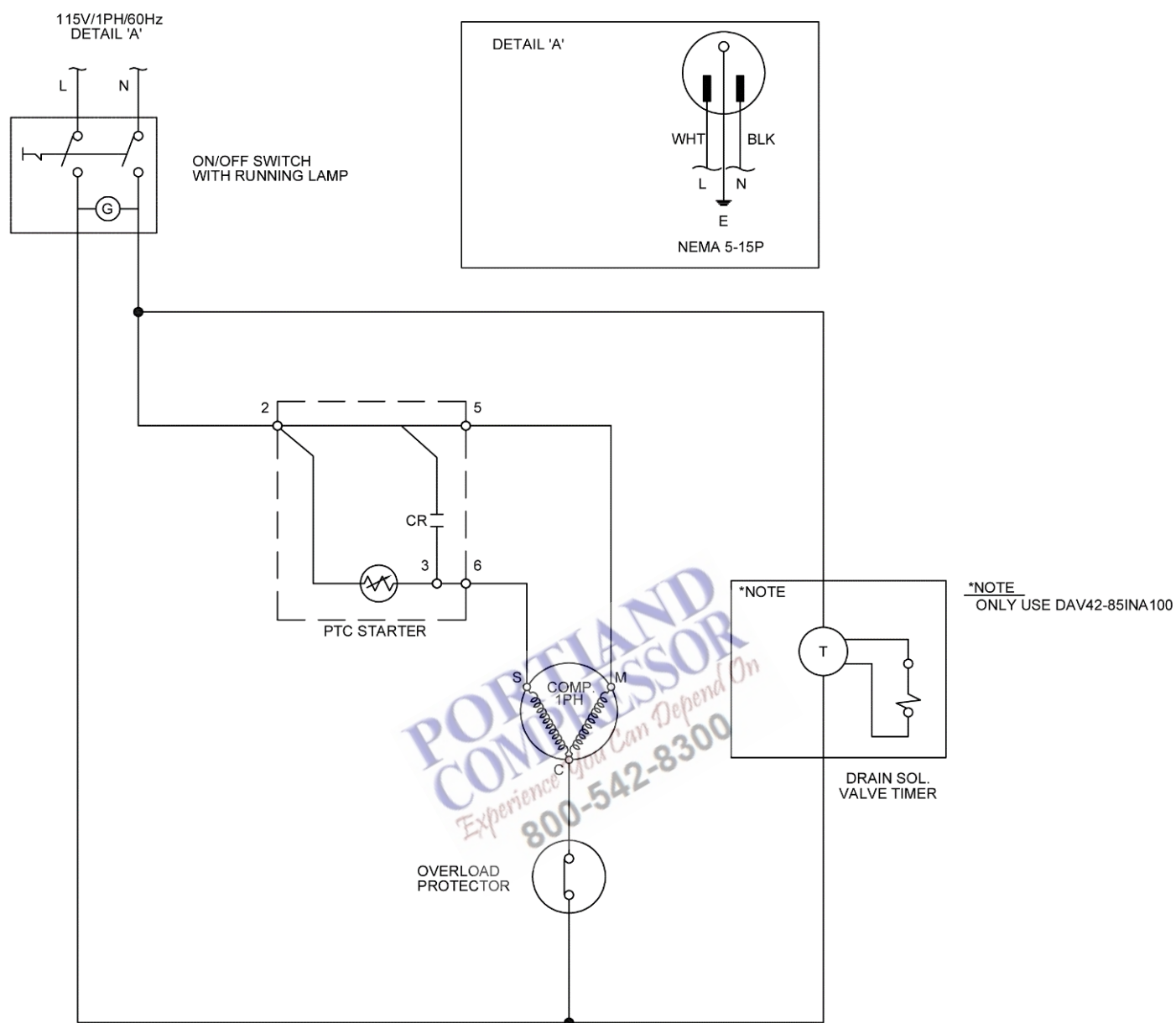
NOTE : PRIMARY DIMENSIONS ARE INCHES AND DIMENSIONS IN BRACES ARE METRIC

MODEL	DIMENSION inch (mm)								INLET/OUTLET <MALE>	INLET AIR FLOW <SCFM>
	A	B	C	D	E	F	G	H		
DAV85INA 100	19.96 (507)	2.40 (61)	2.76 (70)	11.02 (280)	5.90 (150)	22.36 (568)	19.68 (500)	19.68 (500)	NPT 3/4"	50

47816570-A
(Ref. Drawing)

Figure 2

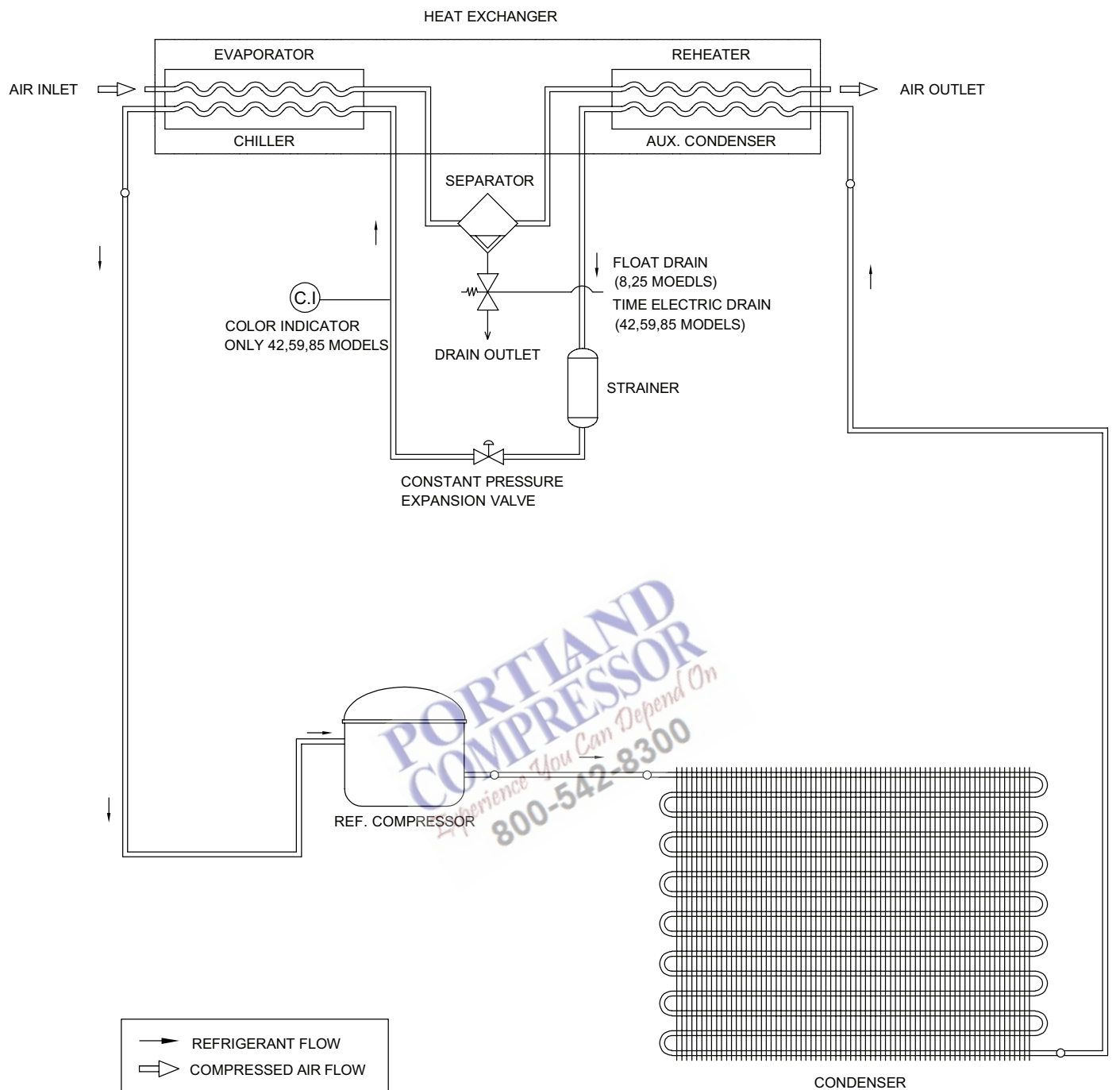
ELECTRICAL SCHEMATIC



47816558-A
(Ref. Drawing)

Figure 3

AIR AND REFRIGERANT FLOW SCHEMATICS



47816574-A
(Ref. Drawing)

Figure 4

REPLACEMENT PARTS

Item	DAV42INA100	DAV59INA100	DAV85INA100
COMPRESSOR	CX04529	CX04529	CX04491
PTC RELAY, COMP	CX07645	CX07645	EEC0104
OVERLOAD RELAY, COMP	EEC0090	EEC0090	EEE0277
STARTING CAPACITOR, COMP	-	-	EEC0102
RUNNING CAPACITOR, COMP	EEC0098	EEC0098	EEC0100
CONDENSER	BA10974	BA10974	BA10975
STRAINER, FILTER DRYER	CX10504	CX10504	CX10504
EXPANSION VALVE	CX11149	CX11149	CX11149
SEPERATOR	C009838	C009838	C009838
FLOAT DRAIN	-	-	-
ELECTRONIC DRAIN VALVE	CX10652	CX10652	CX10652
COLOR INDICATOR	C010484	C010484	C010484
ON/OFF SWITCH	C003495	C003495	C003495

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800-542-8300

NOTICES AND DISCLAIMERS

Machine models represented in this manual may be used in various locations worldwide. Machines sold and shipped into European community countries shall display the CE Mark and conform to various directives. In such cases, the design specification of this compressor has been certified as complying with CE directives. Any modification to any part is absolutely prohibited and would result in the CE certification and marking being rendered invalid.

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Ingersoll Rand reserves the right to make changes and improvements to products without notice and without incurring any obligation to make such changes or add such improvements to products sold previously.

Details of approved equipment are available from **Ingersoll Rand** Service departments.

The company accepts no responsibility for errors in translation of this manual from the original English version.

The design of this Compressor package and certain features within it are covered by patents held by **Ingersoll Rand** and patents pending.

WARRANTY

The Company warrants that the equipment manufactured by it and delivered hereunder will be free of defects in material and workmanship for a period of twelve months from the date of placing the Equipment in operation or eighteen months from the date of shipment from the factory, whichever shall first occur. The Purchaser shall be obligated to promptly report any failure to conform to this warranty, in writing to the Company in said period, whereupon the Company shall, at its option, correct such nonconformity, by suitable repair to such equipment or, furnish a replacement part F.O.B. point of shipment, provided the Purchaser has stored, installed, maintained and operated such Equipment in accordance with good industry practices and has complied with specific recommendations of the Company. Accessories or equipment furnished by the Company, but manufactured by others, shall carry whatever warranty the manufacturers have conveyed to the Company and which can be passed on to the Purchaser. The Company shall not be liable for any repairs, replacements, or adjustments to the Equipment or any costs of labor performed by the Purchaser or others without Company's prior written approval.

The effects of corrosion, erosion and normal wear and tear are specifically excluded. Performance warranties are limited to those specifically stated within the Company's proposal. Unless responsibility for meeting such performance warranties are limited to specified tests, the Company's obligation shall be to correct in the manner and for the period of time provided above.

THE COMPANY MAKES NO OTHER WARRANTY OR REPRESENTATION OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE HEREBY DISCLAIMED.

Correction by the Company of nonconformities whether patent or latent, in the manner and for the period of time provided above, shall constitute fulfillment of all liabilities of the Company for such non conformities whether based on contract, warranty negligence, indemnity, strict liability or otherwise with respect to or arising out of such Equipment.

The purchaser shall not operate Equipment which is considered to be defective, without first notifying the Company in writing of its intention to do so. Any such use of Equipment will be at Purchaser's sole risk and liability.

Note that this is **Ingersoll Rand** standard warranty. Any warranty in force at the time of purchase of the compressor or negotiated as part of the purchase order may take precedence over this warranty.



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