24509259
Revision H
December 2016

D-EC High Efficiency Cycling Refrigerated Dryer 10-125 SCFM

Models D17EC, D31EC, D41EC, D59EC, D85EC, D127EC, D170EC, D212EC

Operator's Manual

EN Operator's Manual
ES Manual Del Operador
FR Manuel De L'opérateur
PT Manual do Operador

Save These Instructions

Ingersoll Rand

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2.0 INTRODUCTION

This manual is an integral part of the dryer you have bought, and must remain with the machine even resold.

It is highly recommended that qualified* personnel be responsible for the installation, maintenance and/or control will fully comply with the contents of this manual as well as the prevention and safety rules in force in the country where the system will be used.

In the event that your dryer experiences any difficulty, please contact your local authorized **Ingersoll Rand** distributor.

Please note that, when necessary, the use of original spare parts will ensure proper operation of your dryer.

Due to the continuous technological evolution, **Ingersoll Rand** reserves the right to modify the specifications contained in this manual without giving prior notice.

3.0 SYMBOLS AND LABELS USED IN THIS MANUAL

	Read the Operators manual before attempting to start up the machine or to perform any service operation on the dryer.
	Pay particular attention to the indications preceded by these symbols.
	Installation, maintenance, and/or control operations preceded by these symbols must be performed exclusively by qualified personnel*.
	Pay particular attention to the risk of moving parts
	Pay particular attention to components or systems under pressure.
	Pay particular attention to hot surfaces.
	Pay particular attention to the risk of electric shock.
	Attention: Before performing any maintenance operation on this machine, do not forget to disconnect the electric supply, to completely discharge air pressure, and to refer to the Operators manual.

*Qualified personnel must be trained and certified in accordance with local laws and regulations and authorized by the local **Ingersoll Rand** distributor.

4.0 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 occur first. 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 HERBY 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 nonconformities 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 equipment or negotiated as part of the purchase order may take precedence over this warranty.

5.1 FUNCTIONAL DESCRIPTION

Ingersoll Rand refrigerated air dryers remove moisture from compressed air. Moisture is detrimental to pneumatically operated appliances, controls, instruments, machinery and tools.

Hot compressed air enters the patented aluminum heat exchanger where it is cooled down to the dew point temperature in two different stages: In the first stage, the precooler/reheater makes use of the colder compressed air exiting counterflow from the condensate separator to cool the inlet air. In the second stage, the compressed air temperature is further reduced as it passes through the refrigerant to air and glycol chiller. During these two stages almost all the oil and water vapour contained in the compressed air are condensed to liquid and successively separated from it in the condensate separator, then drained out by the automatic drain. The cold compressed air then re-enters the precooler/ reheater where it is heated before exiting the dryer for use.

When operating at partial loads, the dryer uses the energy previously stored in the gycol circuit, making it possible to shut down the refrigerant compressor and substantially save energy and costs.

This dryer can be easily installed into various pneumatic systems in which dry air is required or desired. Please refer to Start Up chapter 7.0 for complete operating details.

The dryer comes provided with all the control, safety and adjustment devices, therefore no auxiliary devices are needed.

Improper grounding can result in electrical shock and can cause severe injury or death.

This product must be connected to a grounded, dedicated service, permanent wiring system.

All grounding must be performed by a qualified electrician and comply with national and local electrical codes. In the event of an electrical short circuit, grounding reduces the risk of electric shock by providing an alternate, lower resistence, route for the electrical current.

Ground must be established with a bare grounding wire sized according to the voltage and minimum branch circuit requirements.

Ensure good bare metal contact at all grounding connection points, and ensure all connections are clean and tight.

Check grounding connections after initial installation and periodically thereafter to ensure good contact and continuity has been maintained.

Check with a qualified electrician or service technician if the grounding instructions are not completely understood, or if in doubt as to whether the product is properly grounded.

Dryer must be powered by a dedicated circuit, for dryers furnished with electronic no air loss drain, the power for the drain can be wired to the same circuit.

5.2 USE OF THE MACHINE IN SAFE CONDITIONS

Because an air dryer is pressurized and contains rotating parts, the same precautions should be observed as with any piece of machinery of this type where carelessness in operation or maintenance could be hazardous to personnel.

In addition to obvious safety rules that should be followed with this type of machinery, safety precautions as listed below must be observed.

1. Only qualified personnel shall be permitted to adjust, perform maintenance or repair this air dryer.
2. Read all instructions completely before operating unit.
3. Pull main electrical disconnect switch and disconnect any separate control lines, if used, before attempting to work or perform maintenance on the unit.
4. Do not attempt to service any part while machine is in an operational mode.
5. Do not attempt to remove any parts without first relieving the entire air system of pressure.
6. Do not attempt to remove any part of the refrigeration system without removing and containing refrigerant in accordance with the EPA and local regulations.
7. Remove any trace of spilled surface fluids before connecting the dryer to electrical power.
8. Do not operate the dryer at pressures in excess of its rating.
9. Do not operate the dryer without guards, shields and screen in place.
10. Inspect unit daily to observe and correct any unsafe operating conditions.

6.1 ACCEPTANCE, UNPACKING AND HANDLING

Upon receiving your **Ingersoll Rand** air dryer, please inspect the packaging closely. If rough handling is detected, please note it on your delivery receipt. Obtaining the delivery person's signed agreement to any noted damages will facilitate any insurance claims by the customer.

It is mandatory to always keep the dryer in a vertical position, as indicated by the symbols present on the packaging. For handling, use devices having sufficient capacity for the weight of the machine.

Remove the packaging after having positioned the dryer in the installation site. Dispose of the packaging materials in compliance with local rules and regulations.

If not in use, the dryer can be stored in its packaging in a dust free and protected site between 50 °F (10 °C) and 120 °F (50 °C), and a specific humidity not exceeding 90 %. Should the stocking time exceed 12 months, please contact your local **Ingersoll Rand** authorized distributor.

Under no circumstances should any person attempt to lift heavy objects without proper lifting equipment (i.e., crane, hoist, slings or fork truck). Lifting any unit without proper lifting equipment, may cause serious injury. Use fork lift channels where provided.

6.2 INSTALLATION SITE

While preparing a proper site for installation of the dryer, please take into account the following requirements.

- The machine must be protected from atmospheric agents and not directly exposed to sun light.
- The unit must be placed on a flat surface that is capable of supporting the unit.
- Ambient temperature complying with the nominal data of the dryer.
- The dryer should be located in a clean area, without forced air draft that can affect the fan control system.
- Make sure to leave sufficient clearance (20 inches, 500 mm) around the dryer in order to allow proper air circulation and to provide proper service access.

The incoming air must be free from smoke or flammable vapours which could lead to explosion or fire.

6.3 INSTALLATION

Before attempting any installation operation, make sure that:

- No parts of the air system are under pressure.
- No parts of the system are electrically powered.

- Tubing to be connected to the dryer are free of impurities.
- All interconnecting piping has been tightened.

After having verified the points listed above, you can proceed to the installation of the machine.

1. Connect the dryer to the compressed air line. An optional three valve by-pass allows the machine to be isolated for service.

2. Perform the electrical connection in accordance with any local laws and regulations after reviewing the dryer electrical specifications and wiring diagram.
3. Check the condensate drainage assembly, Connect the flexible drain hose to the floor drain. Keep in mind that the condensate separated by the dryer may contain oil. In order to dispose of it in compliance with the local rules in force, we suggest installing a water-oil separator having adequate capacity.

4. Verify the voltage prior to applying power to the dryer. The unit must be powered by a dedicated circuit.

In order to optimise the use of the dryer, we suggest the dryer to be placed in such a way that all the control instruments of the machine will be easily visible.

A suitably sized prefilter must be installed before the dryer. Failure to install and maintain a proper prefilter will void the dryer warranty. The rating for this filter must be at least 10 micron.

Make sure that the dryer is by–passed, or there is no load on the cooler. Switch on the main electrical isolation switch (present on D127EC-D212EC). The control panel will show the message OFF, indicating that the line and control voltages are available.

Start sequence

The dryer will initially start by pressing and holding the local ON/OFF button for 1 second. The start sequence will progress only if there are no active alarms. The compressor motor will start AFTER 120 SECONDS. The fan motor will start simultaneously with the compressor.

Stop sequence

The dryer can be stopped locally from the control panel. After pressing the ON/OFF switch for 1 second, the compressor and the fan motor keep running for an additional 10 seconds in order to re-balance the internal pressures. The dryer can also be stopped due to an alarm or energy saving condition (ESA or ES2). Any alarm will de–energize the compressor, fan motor may still be running , it depends on the type of alarm (see Display indications chapter). If the shutdown is due to an alarm, a message will blink on the display indicating the reason for the shutdown. Energy saving condition (ESA or ES2) occurs when the dew point stands below the set value for a long time in order to save energy and avoid heat exchanger freezing. This situation can happen when the ambient temperature is low and the compressed air load is reduced.

Energy Saving System

A patented 3-layer (air / glycol / refrigerant) heat exchanger allows the dryer to utilize the full power of the refrigeration system, maximizing the efficiency by storing the energy surplus in the glycol. The result is, at partial load, the microprocessor can switch OFF the refrigerant system for significant periods of time while the glycol circulation system (always running) ensures a constant dew point. Under standard load conditions, the refrigerant circuit is turned on 100% of the time.

7.1 CONTROL PANEL

The dryers are provided with an electronic control system. All adjustments and resets can be performed by means of the digital panel located on the front of the dryer.

The control panel is composed of 5 keys (ON/OFF, TEST, SET, DOWN and UP) and a 3 digit display, with three signalling LED's indicated by icons (Figure 1)

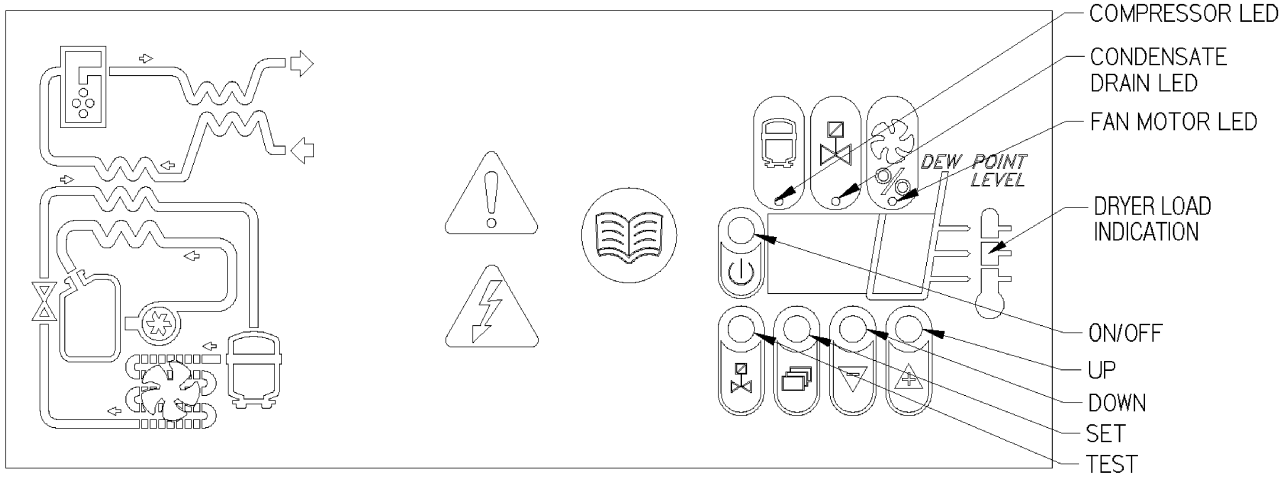


FIGURE 1

The ON/OFF switch is provided for D127-D212 models. The main power cord must be disconnected prior to servicing unit.

DISPLAY VISUALIZATION AND SIGNALLING LEDS

DISPLAY	DESCRIPTION
	the unit is ON with low load
	the unit is ON with normal load
	the unit is ON with normal-high load
	the unit is ON with high load

LED	STATUS	DESCRIPTION
	ON	Compressor energized
	Blinking	Programming mode activated
	ON	Condensate drain energized*
	Blinking	
	ON	Speed of the fan = 100%
	Blinking	Speed of the fan < 100%
	OFF	Fan not running

*Not used with Zero Loss Drain Option

7.1.1 KEYS FUNCTION

TEST: When pushed for 3 sec. during normal operation, it activates the condensate drain.
If pushed while the display shows Energy saving values, resets the counter.

SET: When pushed and released during normal operation, it displays the dew point set value (decimal).
When pushed for 10 seconds, it allows to enter the C8 and C9 condensate drain parameters programming menu (see relevant table).
When pushed after having set new configuration values, it stores the applied modifications.

DOWN: When pushed while setting the drain set point, it decreases the displayed value of one unit per second, during the first 10 seconds, than one unit every 0.1 sec.
When pushed for 10 seconds during normal operation, it starts an automatic test cycle of the controller.

UP: When pushed while setting the drain set point, it increases the displayed value of one unit per second, during the first 10 seconds, than one unit every 0.1 sec.

ON / OFF: Pushed, it activates or deactivates the dryer. When the dryer is deactivated, the display shows OFF.

SET+DOWN: When pushed simultaneously for 1 second, the dislay shows in sequence the the Energy Saving value of the last cycle (iSt) and the value of the last 100 hours (tot). The Energy Saving value is the percentage of time in which the dryer is in ESA/ES2 mode.

NOTICE
When the controller is in the OFF position, some parts of the dryer may still be energized. Therefore, for safety purposes, disconnect the electrical power before performing any maintenance operation on the machine.

7.1.2 CONDENSATE DISCHARGE PARAMETERS PROGRAMMING

Push the SET key for 10 seconds to enter the parameters configuration menu: the display will show in sequence the set point value, the code of the first modifiable parameter (C8) and its value).
Use the UP and/or DOWN keys to change the displayed parameter value.

Press the SET key to store the previously changed parameter value or to browse the parameters without changing them.

15 seconds after the last performed operation, the controller will return automatically to the normal operation mode.

7.1.3 DRAIN TIIMING PARAMETERS.

PARAMETER	DESCRIPTION	RANGE	DEFAULT SET VALUE
C8	Delay between condensate discharges	1 ÷ 999 (min)	**1**
C9	Time required for condensate discharge	1 ÷ 999 (sec)	**10**

NOTICE

Changes entered for timing values will be effective only after exiting the programming, while changes to other variables will be immediately effective.

Please remember that eventual changes to the configuration parameters of the machine could negatively affect its efficiency. Thus, changes have to be performed by a person familiar with the operation of the dryer.

⚠ WARNING

IT'S FORBIDDEN TO ATTEMPT TO MODIFY THE OTHER CONFIGURATION PARAMETERS OF THE ELECTRONIC CONTROLLER WITHOUT AUTHORIZATION FROM INGERSOLL RAND'S AUTHORIZED DISTRIBUTOR.

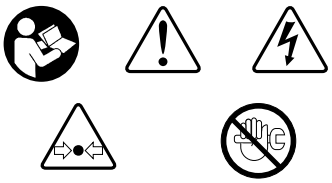
7.1.4 DISPLAY INDICATIONS

The controller is capable of recognizing certain types of anomalies in the drying circuit. In such cases, a message will blink on the display, alternated to the current dew point value.

MESSAGE	CAUSE	OUTPUTS	ACTIONS
HtA	High dew point value (delayed alarm)	Alarm output ON Refrig. Compressor output OFF Fan output ON Drain cycle standard	Resettable by switching off the dryer. If problem persists call your local **Ingersoll Rand** distributer.
Ht2	Very high dew point value (immediate alarm)		
PF1 **PF2**	Interruption or short circuit on the PTC probe input line	Alarm output ON Refrig. Compressor output OFF Fan output OFF Drain cycle standard	Resettable by switching off the dryer. May require replacing the faulty probe. If problem persists call your local **Ingersoll Rand** distributor.
ESA	The automatic Energy saving mode activated due to low load	Alarm output OFF Refrig. Compressor output OFF Fan output OFF Drain cycle standard	No action necessary. Automatic Reset
ASt	Activated after repeated alarms	Alarm output ON Refrig. Compressor output OFF Fan output ON Drain cycle standard	Contact your local **Ingersoll Rand** distributor.
PCd	Glycol circuit malfunction	Alarm output ON Refrig. Compressor output ON Fan output ON Drain cycle standard	Resettable by switching off the dryer. See troubleshooting section. If problem persists call your local **Ingersoll Rand** distributor.
Cnd	High compressor output temperature	Alarm output ON Refrig. Compressor output OFF Fan output ON Drain cycle standard	No action necessary. Automatic Reset
ES2	Potential freezing condition/ Refrigerant leak	Alarm output ON Refrig. Compressor output OFF Fan output ON Drain cycle standard	Resettable by switching off the dryer. See troubleshooting section. If problem persists call your local **Ingersoll Rand** distributor.

Note: PF1 has priority on all other messages.

7.1.5 REMOTE SIGNALING SYSTEM



The dryer control board is equipped with a terminal block for a remote alarm signal. Proceed as follows to activate a remote alarm output:

1. Disconnect the dryer from electrical power supply, remove cover and left side panel.
2. Connect the alarm circuit to the terminal block (See Figure.2).
3. Replace cover, left side panel and reconnect power.

Alarm Output electric features:

12V DC - 40mA on alarm,
0V on normal conditions.

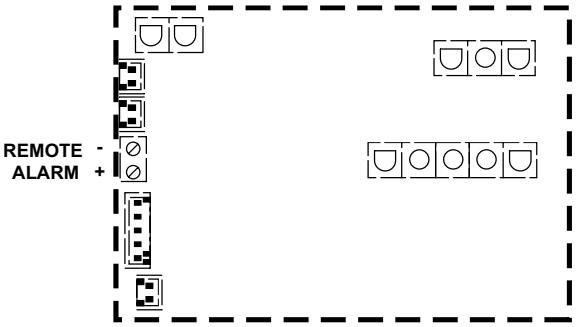


FIGURE 2

The activation of the above function is at the User's discretion. The User will purchase all necessary installation material. Any operation which needs access to the dryer must be carried out by qualified personnel.

7.2 BEFORE START UP

Before starting the machine, make sure that the dryer is properly sized to the compressed air system.

The dryer is supplied already tested and preset for normal operation, and it doesn't require any calibration. Nevertheless, it's necessary to check the operating performances during the first working hours.

The dryer must be powered by a dedicated power circuit.

7.3 START UP

The operations specified below must be performed after the first start up and at each start up after a prolonged period of inactivity due to maintenance operations, or any other reason.

1. Make sure that the unit is properly installed that are outlined in the section 6 of this manual.
2. Make sure that dryer by-pass is open and air inlet/outlet valves closed. (if existing).
3. Make sure that there is no glycol spillage and clean carefully (if any).
4. Activate power supply and press the ON/OFF switch on the control panel for at least 1 second. (NOTE: there is a 2 minute delay before the dryer will start after the dryer is turned on). For D127-D212 models, press the ON button to apply power to dryer.
5. Wait 5 to 10 minutes until machine has achieved its standard operating parameters.
6. Slowly open the air outlet valve and successively open the air inlet valve.
7. If existent, close the air by-pass valve.
8. Check if the condensate drain is working properly.
9. Check if all connecting pipes are properly tightened and fixed.

Before disconnecting the dryer from electrical power supply, use ON/OFF button on controller to stop the dryer. Otherwise wait 10 minutes before switching the dryer on again, in order to allow freon pressure to rebalance.

8.1 MAINTENANCE

Before attempting any maintenance operation, make sure that, no parts of the system are:

1. Under pressure.
2. Electrically powered.

➔ **WEEKLY OR EVERY 40 HOURS OF OPERATION**

- Verify the LED's on the control panel display are functioning.
- Visually check if the condensate is drained regularly.

➔ **MONTHLY OR EVERY 200 HOURS OF OPERATION**

- Clean the condenser with compressed air, taking care not to damage the condenser fins..
- At the end of the above mentioned operations, check if the dryer is working properly. This includes compressor, circulating pump and condensor fan.
- Check the condition of any filters installed with the dryer. Replace elements as needed.
- Check drain operation, inspect screen for solenoid drains for debris.

➔ **YEARLY OR EVERY 2000 HOURS OF OPERATION**

- Check if the flexible tube used for condensate drainage is damaged and replace it if necessary.
- Replace the Service Unit of the Electronic drain discharge (If present).
- Check if all connecting pipes are properly tightened and fixed.
- Check glycol circuit.
- At the end of the above mentioned operations, check if the dryer is working properly. This includes compressor, circulating pump and condensor fan.

8.2 TROUBLESHOOTING

NOTE: FOLLOWING BEHAVIORS ARE NORMAL CHARACTERISTIC OF OPERATION AND NOT TROUBLES

- Display of message ESA and ES2 in case of operation without load or low load.
- A 2 minutes delay for dryer to start after pressing the on/off switch.
- Temporary compressor and/or fan motor shutdown.



Troubleshooting and eventual control and/or maintenance operations must be performed by qualified personnel.

For maintaining the refrigerating circuit of the machine, contact a refrigeration mechanic.

TROUBLE	DISPLAY	POSSIBLE CAUSE	REMEDY
WATER IN THE SYSTEM	Control panel display is blank	No electrical power.	Restore power.
		Problems with cabling.	Check cabling; if the trouble persists, replace it.
		Problems with the electronic control board.	Check the electronic control board; if trouble persists, replace it.
	OFF	The dryer is OFF.	Turn it on by pressing the ON/OFF switch for 1 second.
		Dryer in stand-by.	Wait 2 minutes after the dryer is switched ON.
		Compressed air inlet/outlet inverted.	Check if the compressed air inlet/outlet is connected properly.
		The flow rate and/or temperature of the air entering the dryer are higher than the nominal values.	Restore the nominal conditions.
		The ambient temperature is higher than the nominal values.	Restore the nominal conditions.
		The condenser is dirty.	Clean the condenser.
	On:	Condensate drain is not functioning. Pic.3	Clean the condensate drainage system pre-filter. (Pic.3)
			Replace the coil of the drainage solenoid valve if burned.
			Clean or replace the drainage solenoid valve if clogged/jammed.
			Check the C8 and C9 parameters of the electronic control board; if the trouble persists, replace it.
		No loss condensate drain is not functioning. (Optional)	Check the no loss condensate drain; if the trouble persists, replace the service unit.
		The temperature control probe is positioned improperly or faulty.	Check the probe; if the trouble persists, replace it.
		Problems with cabling or with the electronic control board.	Check the cabling and the electronic control board, if the trouble persists, replace them.
	HtA	Activation of compressor's internal thermal protection.	Wait one hour and check again. If the fault persists: stop dryer and call your local **Ingersoll Rand** distributor.
	Ht2	Problems with the electrical components of the compressor.	Check the electrical components of the compressor.
		Defective compressor.	Replace the compressor.
		The flow rate and/or temperature of the air entering the dryer are higher than the nominal values.	Restore the nominal conditions.

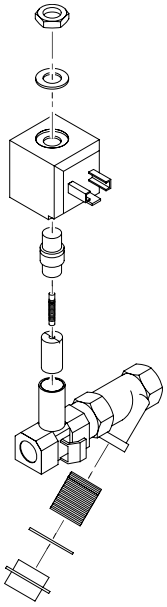
TROUBLE	DISPLAY	POSSIBLE CAUSE	REMEDY
WATER IN THE SYSTEM		The ambient temperature is higher than the nominal values.	Restore the nominal conditions.
		The condenser is dirty.	Clean the condenser.
		The temperature control probe is positioned improperly or faulty.	Check the probe; if the trouble persists, replace it.
	HtA	Fan pressure switch defective or burned out (if present).	Turn off the dryer and call your local **Ingersoll Rand** distributor.
	Ht2	High pressure switch defective or burned out (if present).	Turn off the dryer and call your local **Ingersoll Rand** distributor.
		Gas leakage in the refrigerating circuit.	Turn off the dryer and call your local **Ingersoll Rand** distributor.
		Defective fan.	Replace the fan.
		Protection fuse burned out (if present).	Replace the fuse.
	E52	The temperature control probe is positioned improperly or faulty.	Check the probe; if the trouble persists, replace it.
		Gas leakage in the refrigerating circuit without load.	Turn off the dryer and call your local **Ingersoll Rand** distributor.
	PF1 PF2	The temperature control probe is positioned improperly or faulty.	Check the probe; if the trouble persists, replace it.
		Series of alarms very close to each other.	Call your local **Ingersoll Rand** distributor.
		The flow rate and/or temperature of the air entering the dryer are higher than the nominal values.	Restore the nominal conditions.
		The ambient temperature is higher than the nominal values.	Restore the nominal conditions.
	Cnd	The condenser is dirty.	Clean the condenser.
		Fan pressure switch defective or burned out (if present).	Turn off the dryer and call your local **Ingersoll Rand** distributor.
		Gas leakage in the refrigerating circuit.	Turn off the dryer and call your local **Ingersoll Rand** distributor.
		Defective fan.	Replace the fan.
		Protection fuse burned out (if present).	Replace the fuse.
LOW PRESSURE IN THE SYSTEM		Ice formation in the evaporator.	Check the probe; if the trouble persists, replace it.
	E52		Check the electronic control board; if the trouble persists, replace it.
	On		Contact our Service Centre to check the gas charge.
		Clog.	Check if the compressed air inlet/outlet is connected
			Check for air line obstructions..
			Check if any valves are closed.
			Check the condition of filters.
	On_	Air flows continuously through the condensate drainage. Pic. 3	Drainage solenoid valve jammed, clean or replace it.
			Verify the condensate drainage times set on the electronic control board (C8 and C9).
			Check the signal from the control board: if it is continuous, replace the control board.
		Air flows continuously through the Zero Drain condensate drainage. (Optional)	Check the no loss condensate drain; if the trouble persists, replace it.

TROUBLE	DISPLAY	POSSIBLE CAUSE	REMEDY
GLYCOL CIRCUIT MALFUNCTION	PCd	Loose probe – The glycol temperature probe (GT) may be loose, giving an inaccurate reading to the control board.	Begin by making sure the unit is off; this will "rest" the PCd message.
			Pull the glycol temperature probe out of its thermal well and inspect it.
			To insure good thermal conductivity, make sure there is white thermal mastic on the probe and in the thermal well. If additional thermal mastic required, you can obtain more "heat conducting compound" from a local refrigeration supply store.
			Check to make sure the probe is attached and secure electrically at the control board.
			Reinsert the probe into the thermal well and wire tie it in place.
			Check the glycol level and restart the unit.
			While unit is running, remove the cap from the thermal mass reservoir.
			Using a flashlight, look inside the tank. If fluid is flowing, the pump is working.
		No pump flow – Lack of glycol flow from pump.	If the fluid is not flowing, there may be several causes. • First check the amp draw of the pump to insure that the pump has not burnt out. • Remove the single screw from the pump cover. • Place an amp probe on the yellow wire inside the pump housing. • If the pump is operating properly, you should read between 0.3 and 0.5 amps. • If there is no reading (0.0 amps), the pump is not working and needs to be replaced with the retrofit pump kit designed for your unit. • Refill with glycol per kit instructions.
			If there is an amp draw but no flow, the pump may be airbound. • If the pump is air-bound, it is best to replace the pump and tubing with the retrofit pump kit. • Designed for your unit, the pump kit includes a new pump, mounting hardware, tubing and instructions.
		Glycol leakage.	Check glycol circuit and connections, if necessary replace flexible tubes and/or refill glycol tank to correct level.

IMPORTANT:

The temperature control probe is extremely delicate. Do not remove the probe from its position. In case of any kind of problem, please contact your local Ingersoll Rand distributor.

CONDENSATE DRAIN



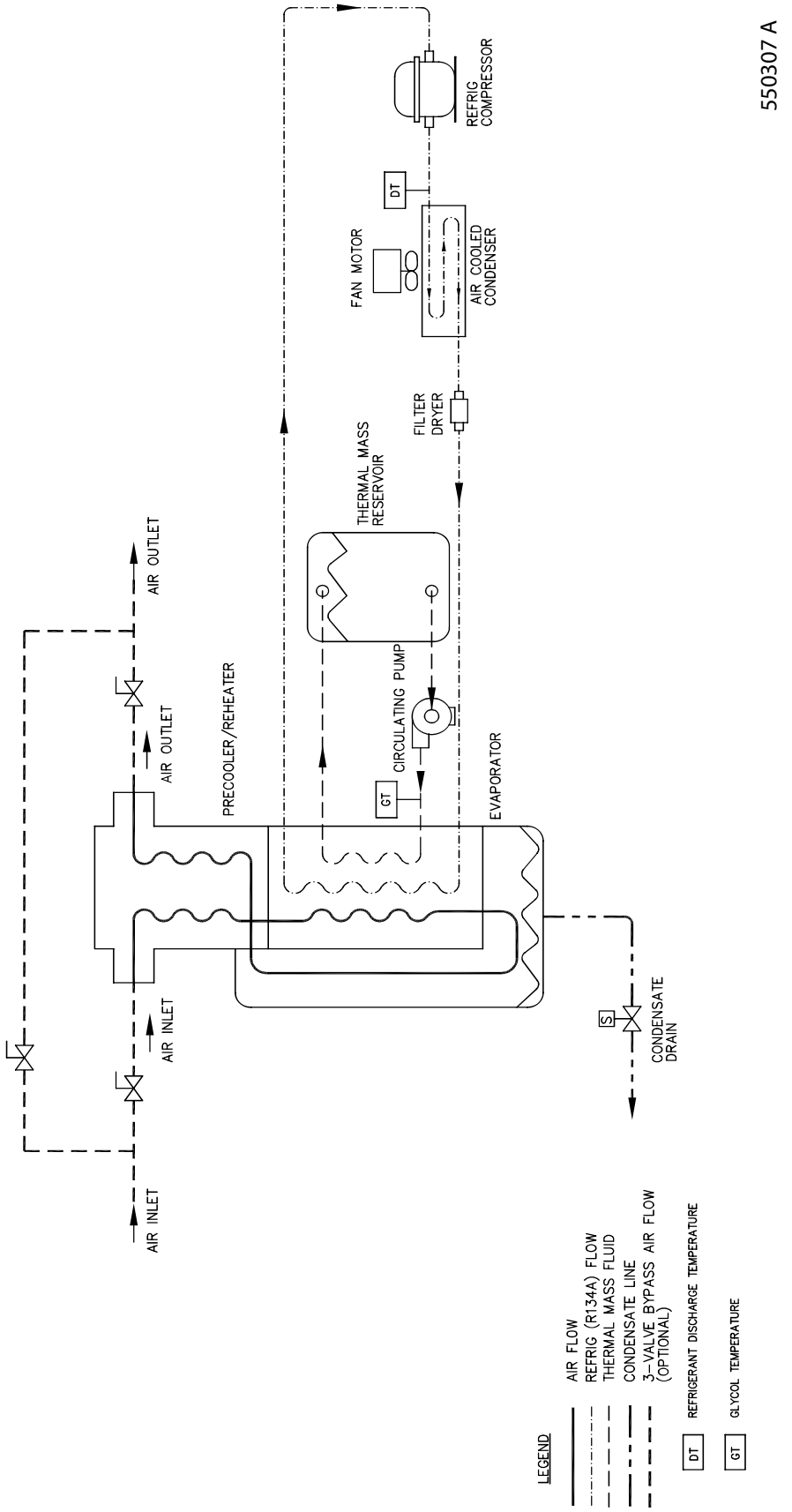
CLEANING OF THE DRAIN SOLENOID VALVE

8.3 DECOMMISSIONING

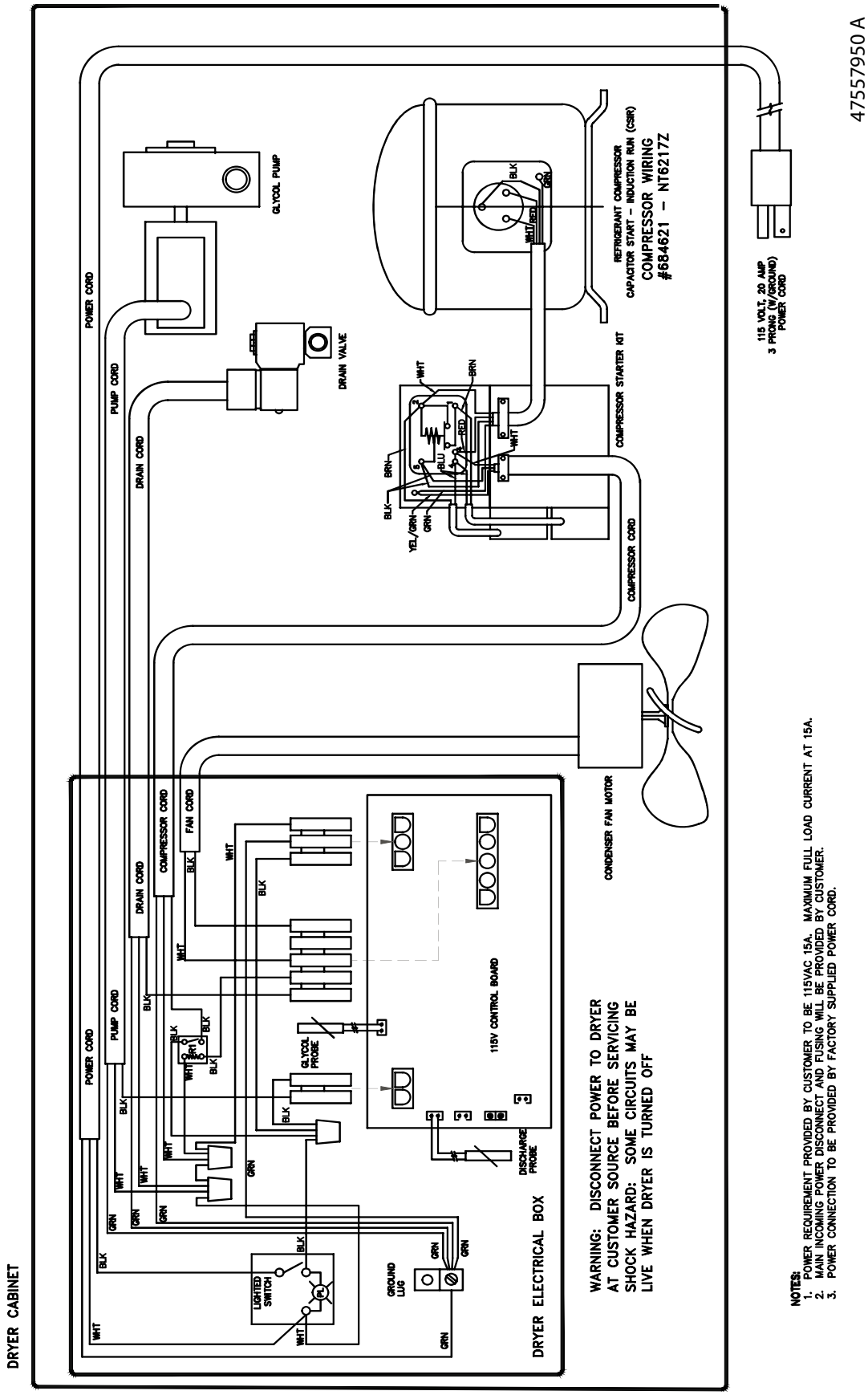
If necessary, decommission the machine and the relevant packaging in compliance with local rules and regulations.

Pay particular attention to the refrigerant, as it contains part of the refrigerating compressor lubricating oil. Always contact a waste disposal and recycling facility.

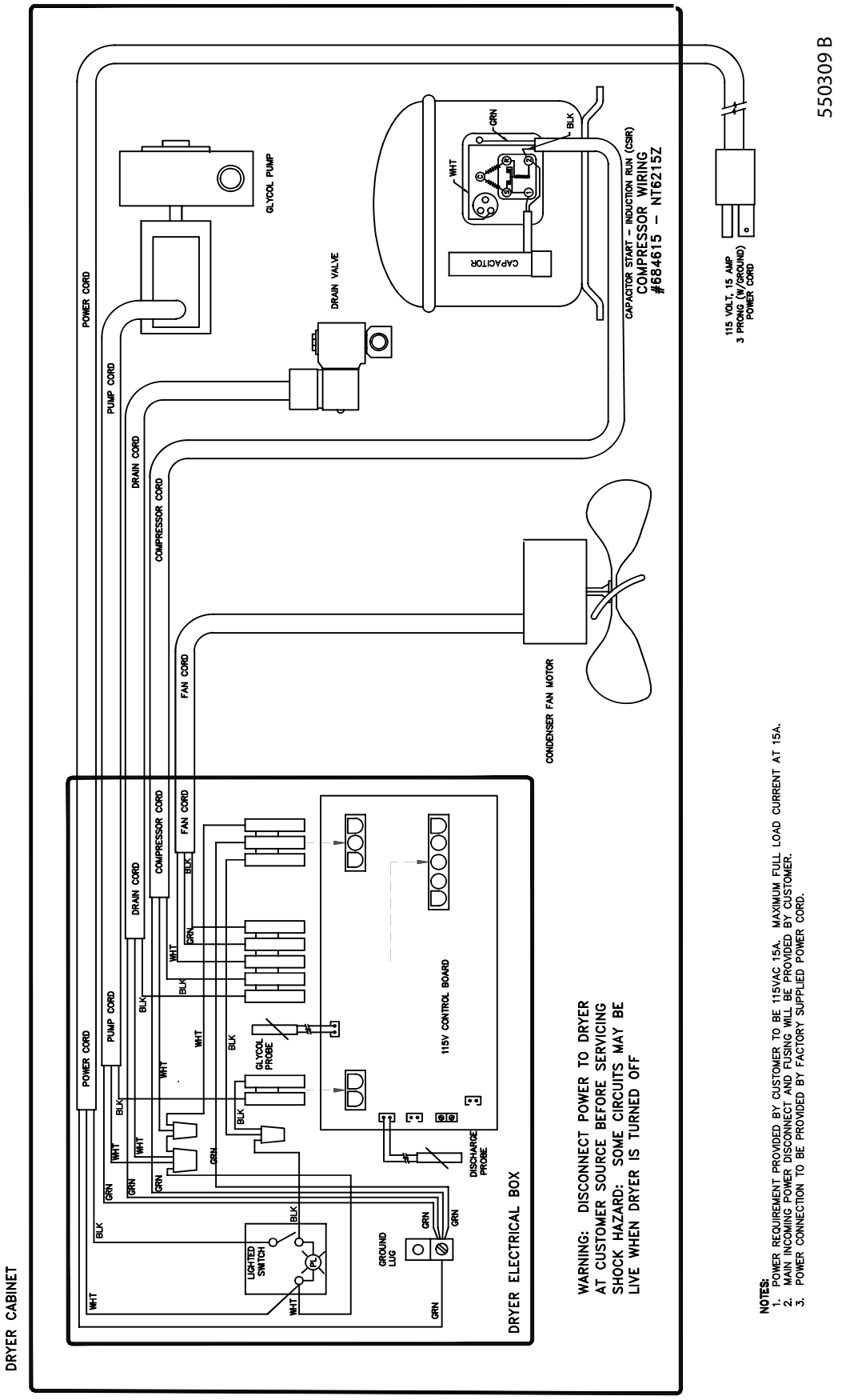
9.1 FLOW DIAGRAM – MODELS D17ECA THROUGH D212ECA



9.2 WIRING DIAGRAM – MODELS D170ECA100 THROUGH D212ECA100

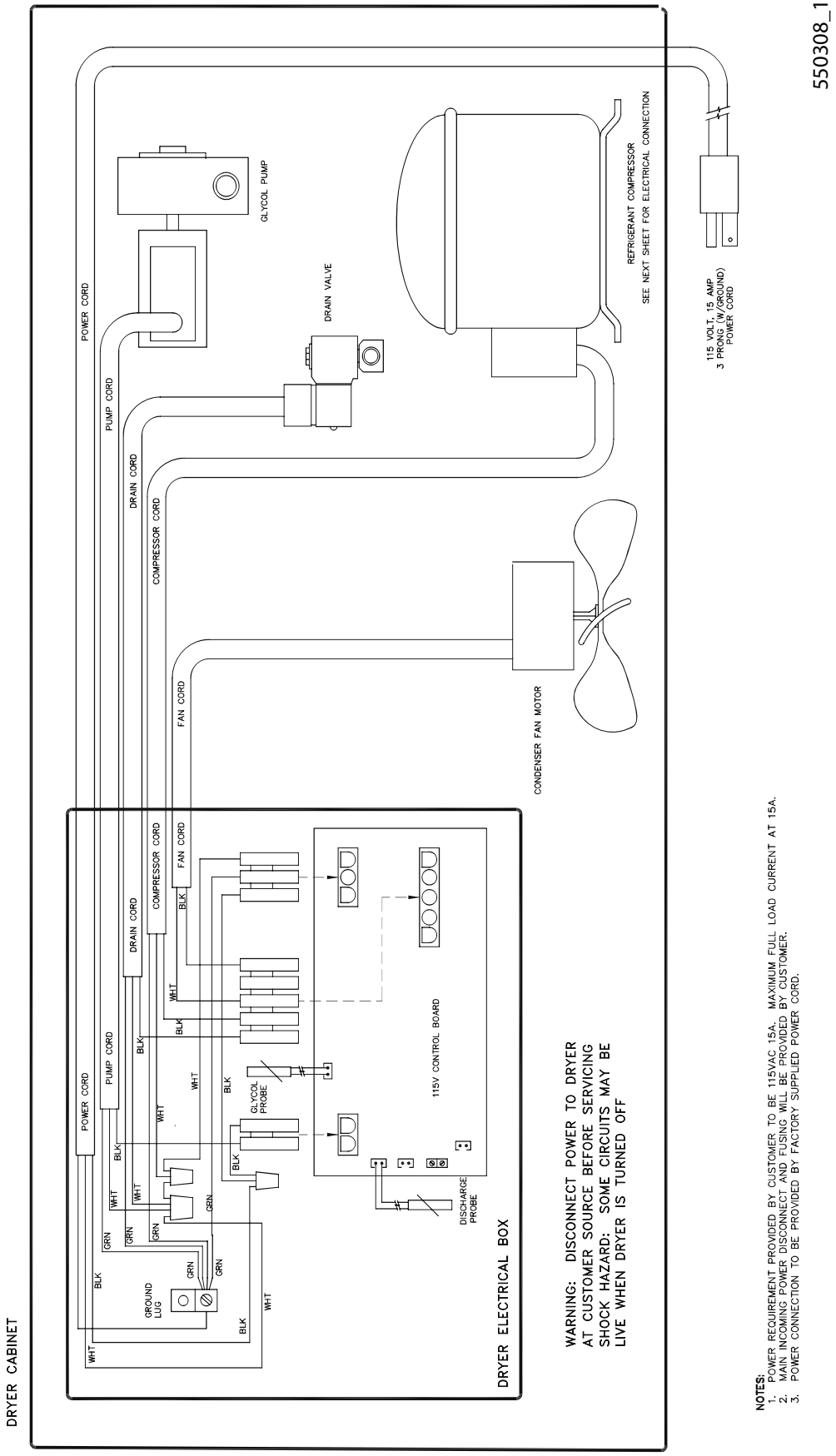


9.3 WIRING DIAGRAM – MODEL D127ECA100

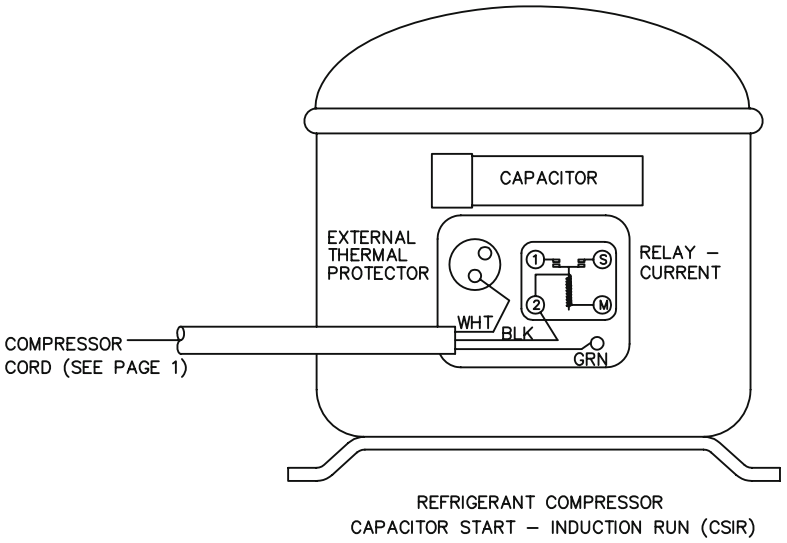


NOTES:
1. POWER REQUIREMENT PROVIDED BY CUSTOMER TO BE 115VAC 15A. MAXIMUM FULL LOAD CURRENT AT 15A.
2. MAIN INCOMING POWER DISCONNECT AND FUSING WILL BE PROVIDED BY CUSTOMER.
3. POWER CONNECTION TO BE PROVIDED BY FACTORY SUPPLIED POWER CORD.

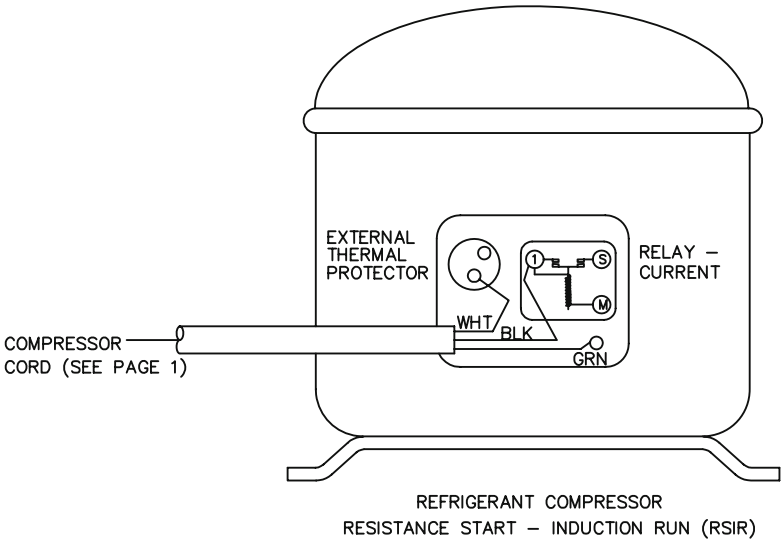
9.4 WIRING DIAGRAM – MODELS D17ECA100 THROUGH D85ECA100



9.5 COMPRESSOR WIRING – MODELS D17ECA100 THROUGH D85ECA100

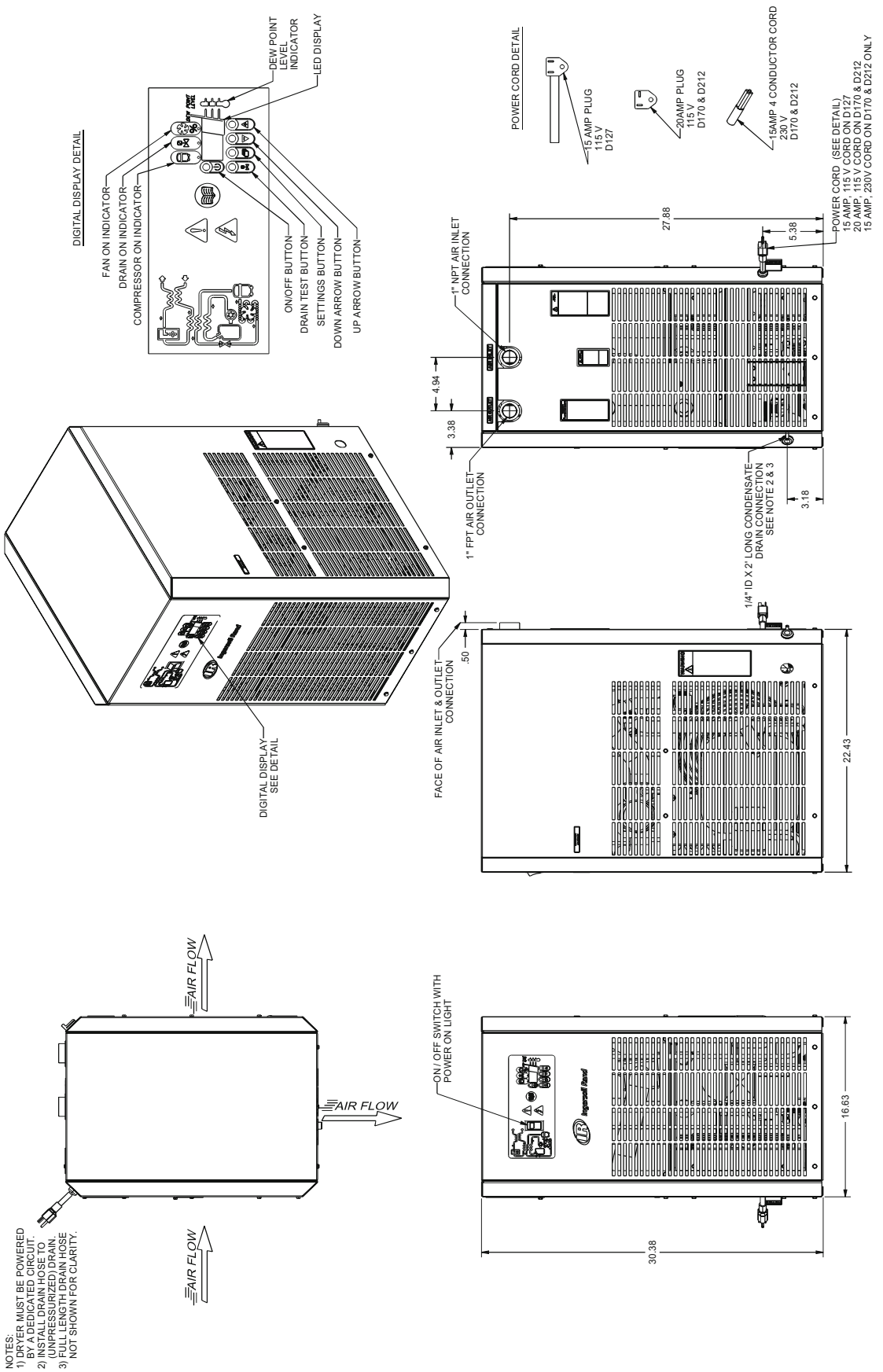


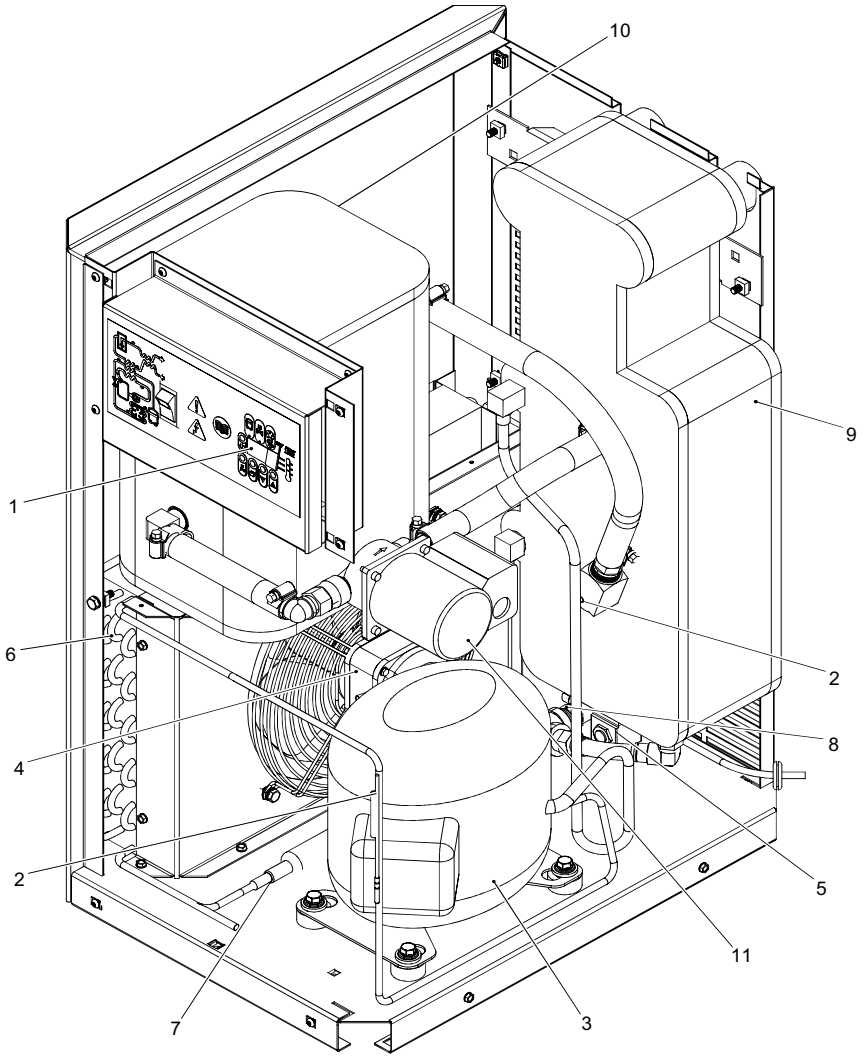
COMPRESSOR WIRING
D59ECA100 – D85ECA100



COMPRESSOR WIRING
D17ECA100 – D41ECA100

550308_2


550295 B
DIGITAL DISPLAY DETAIL
FAN ON INDICATOR
DRAIN ON INDICATOR
COMPRESSOR ON INDICATOR
DEW POINT LEVEL INDICATOR
LED DISPLAY
ON/OFF BUTTON
DRAIN TEST BUTTON
SETTINGS BUTTON
DOWN ARROW BUTTON
UP ARROW BUTTON
POWER CORD DETAIL
15 AMP PLUG 115 V D127
20AMP PLUG 115 V D170 & D212
15AMP 4 CONDUCTOR CORD 230 V D170 & D212
POWER CORD (SEE DETAIL)
15 AMP, 115 V CORD ON D127
20 AMP, 115 V CORD ON D170 & D212
15 AMP, 230V CORD ON D170 & D212 ONLY
27.88
5.38
1" NPT AIR INLET CONNECTION
4.94
3.38
1" FPT AIR OUTLET CONNECTION
1/4" ID X 2" LONG CONDENSATE DRAIN CONNECTION SEE NOTE 2 & 3
3.18
DIGITAL DISPLAY SEE DETAIL
FACE OF AIR INLET & OUTLET CONNECTION
.50
22.43
AIR FLOW
AIR FLOW
AIR FLOW
ON / OFF SWITCH WITH POWER ON LIGHT
16.63
30.38
NOTES:
1) DRYER MUST BE POWERED BY A DEDICATED CIRCUIT.
2) INSTALL DRAIN HOSE TO (UNPRESSURIZED) DRAIN.
3) FULL LENGTH DRAIN HOSE NOT SHOWN FOR CLARITY.



ITEM	DESCRIPTION	D17ECA	D31ECA	D41ECA	D59ECA	D85ECA	D127ECA	D170ECA	D212ECA
1	ELECTRONIC CONTROLLER	48660336	48660336	48660336	48660336	48660336	48660336	48660336	48660336
2	TEMPERATURE PROBE	48660211	48660211	48660211	48660211	48660211	48660211	48660211	48660211
3	COMPRESSOR (115V)	48660187	48660187	48660187	48660278	48660260	48660195	48660203	48660203
-	COMPRESSOR ELECTRICS KIT	24616708	24616708	24616708	24616716	24616724	24616732	24616740	24616740
-	COMPRESSOR RELAY	-	-	-	-	-	-	47557936001	47557936001
4	FAN MOTOR ASSEMBLY	48660286	48660286	48660286	48660286	48660294	48660302	48660310	48660310
5	SOLENOID DRAIN VALVE	48660237	48660237	48660237	48660237	48660237	48660237	48660237	48660237
6	CONDENSOR	23141492	23141492	23141492	23141492	23141492	23141344	23141344	23141344
7	FILTER DRYER	23141450	23141450	23141450	23141450	23141450	23141450	23141450	23141450
8	FILTER STOP	23141278	23141278	23141278	23141278	23141278	23141278	23141278	23141278
9	HEAT EXCHANGER	48660534	48660534	48660534	48660534	48660575	48660518	48660518	48660518
10	TANK AEESMBLY	48660328	48660328	48660328	48660328	48660328	48660328	48660328	48660328
11	CIRCULATOR PUMP (115V)	47535500001	47535500001	47535500001	47535500001	47535500001	47535500001	47535500001	47535500001

12.0 ENGINEERING SPECIFICATIONS

MODEL NUMBER	ELECTRICAL					COMPRESSOR				FANS			REFRIGERANT				WEIGHT	
	Volt	Ph	Freq	MCA	MOP	QTY	hp	RLA	LRA	QTY	hp	FLA	TYPE	Lb	Oz	Kg	Wt (Lbs)	Wt (Kg)
D17ECA100	115	1	60	5.54	9	1	1/5	3.63	29.0	1	9 Watt	0.54	R134A	0	8	0.25	85	38.5
D31ECA100	115	1	60	5.54	9	1	1/5	3.63	29.0	1	9 Watt	0.54	R134A	0	8	0.25	85	38.5
D41ECA100	115	1	60	5.54	9	1	1/5	3.63	29.0	1	9 Watt	0.54	R134A	0	8	0.25	90	40.8
D59ECA100	115	1	60	7.14	12	1	1/4	4.91	27.5	1	9 Watt	0.54	R134A	0	8	0.25	95	43.0
D85ECA100	115	1	60	8.62	12	1	1/3	5.82	32.0	1	18 Watt	0.89	R134A	0	12	0.37	105	47.6
D127ECA100	115	1	60	13.22	20	1	1/2	9.5	44.0	1	18 Watt	0.89	R134A	1	2	0.56	150	68.0
D170ECA100	115	1	60	15.21	20	1	3/4	11.0	45.0	1	25 Watt	1.00	R134A	1	2	0.56	155	70.3
D170ECA200	230	1	60	9.32	15	1	3/4	6.4	31.0	1	34 Watt	0.80	R134A	1	2	0.56	155	70.3
D212ECA100	115	1	60	15.21	20	1	3/4	11.0	45.0	1	25 Watt	1.00	R134A	1	2	0.56	160	72.6
D212ECA200	230	1	60	9.32	15	1	3/4	6.4	31.0	1	34 Watt	0.80	R134A	1	2	0.56	160	72.6