

Refrigerated Non-Cycling Series Air Dryers



User's Guide

Models covered:

RAD-0025 through RAD-1250 RHT-0010 through RHT-0120



1. Welcome & Congratulations

Congratulations on your purchase of a new Altec AIR *Refrigerated Non-Cycling Series* Air Dryer! We here at Altec AIR are very proud of our products and we are committed to providing you with the best value and service possible.

We are sure that you will be satisfied with your new Air Dryer and would like to thank you for choosing Altec AIR for your Air Dryer requirements. We also hope that you will continue to choose us for your future compressed air treatment purchases.

For information about this and other Altec AIR products, please visit us on the web at:

www.AltecAIR.com

2. Introduction

PLEASE READ THIS USER'S GUIDE THOROUGHLY AND SAVE FOR FUTURE REFERENCE.

This User's Guide is provided for the benefit of our customers and contains information and direction specific to the Altec AIR *Refrigerated Non-Cycling Series Air Dryers*. Models covered include *RAD-0025 through RAD-1250 and RHT-0010 through RHT-0120*. This guide covers topics including safety, specifications, installation, registration, operation, testing, maintenance, replacement parts, service, and troubleshooting issues. Observation and compliance with this User's Guide will ensure the maximum life and efficiency of your Air Dryer.

This User's Guide should be read thoroughly prior to installing, operating, or servicing the Air Dryer in order to become familiar with the recommended procedures. This will minimize the possibility of personal injury or damage to the Air Dryer due to improper operation or handling.

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4. Safety & Warning Information

This section contains general information about safety and warning points to consider and adhere to during installation, operation, and maintenance of your Air Dryer. PLEASE READ THIS SECTION BEFORE PERFORMING ANY OPERATION OR PROCEDURE ON YOUR AIR DRYER.

Additional warnings specific to an operation or procedure will also be presented throughout the following sections. These will include the ANSI safety alert symbol as well as a label of “**WARNING!**”, “**CAUTION!**”, or “**NOTICE!**”. Please be sure to pay close attention for these warnings and read them as you encounter them.



WARNING!

For your safety, all the information in this User's Guide must be followed to minimize the risk of electrical shock, and prevent property damage or personal injury.



WARNING!

Stored energy hazardous voltage. Be sure all capacitors are discharged before servicing unit.



WARNING!

Extreme care should be exercised to avoid contact with live electrical circuits. Many procedures performed during installation, operation, testing, and maintenance of this Air Dryer require the equipment to be running, creating a situation for potential electrical shock. It is highly recommended that you remove all jewelry before performing any procedures.

**WARNING!**

To avoid electrical overload and shock hazard, incoming power to Air Dryer must be sized according to Air Dryer specifications – refer to Air Dryer Electrical Information in Section 5.4.3

**CAUTION!**

Internal surfaces may be hot. Use care when coming into contact with internal components as there is a potential for some of these components to become hot when in operation or standby.

**CAUTION!**

Proper Installation & Maintenance as outlined in this User's Guide is extremely important to ensure the reliability and longevity of the equipment as well as prevent damage or personal injury.

**CAUTION!**

Depressurizing the Air Dryer may be necessary before performing certain procedures.

NOTICE!

Performing routine maintenance as outlined in the *Maintaining Your Dryer* section will ensure optimal performance over the lifecycle of your Air Dryer. Performing procedures not recommended by Altec AIR or installing components not supplied by Altec AIR is **NOT RECOMMENDED AND MAY VOID THE WARRANTY.**

5. Overview & Specifications

5.1 Product Description

This Refrigerated Air Dryer has been specifically designed, manufactured, and tested for the purpose of reducing the humidity in compressed air. Any other use is considered improper. Altec AIR will not be responsible for any problem due to improper use. The outlet air from this product is not intended for use in breathing, food, or other sterile applications.

The proper use requires the following to adhere to the installation instructions:

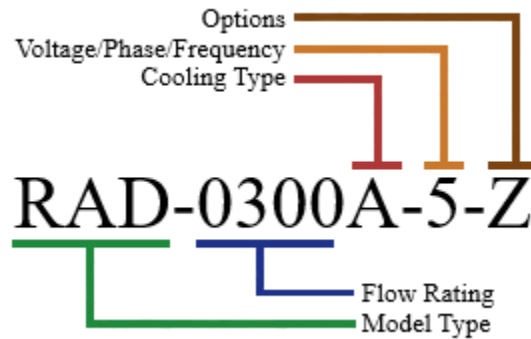
- Main power source voltage and frequency
- Flow rate, pressure, and temperature of the inlet air
- Ambient temperature
- Inlet air quality (dirty air with solid particles not acceptable)

5.2 Key Features

The Refrigerated Non-Cycling Air Dryer Series is designed to meet the demand of your compressed air system with quality components that are built to last. RAD series models range from 25 SCFM to 1250 SCFM, and RHT models range from 10 SCFM to 120 SCFM.

- Consistent & reliable dry air at 45°F outlet dew point for RAD series, or 50°F outlet dew point for RHT Series Air Dryers
- Compact all-aluminum heat exchanger modules with low pressure drops
- Programmable automatic electronic drains
- Easy-access cabinet design for ease of maintenance & serviceability
- Suction pressure gauges provide simple & reliable monitoring of the Air Dryer's refrigeration system
- Top mounted inlet & outlet connections allow for easy installation of Air Dryer, filters, & bypass valves
- Outlet air pressure drop of 2 psi or less at rated conditions

5.3 Refrigerated Non-Cycling Series Air Dryer Models



Model Type:

- RAD: 100°F saturated, 100 PSIG Inlet Air, 45°F Outlet Dewpoint
- RHT: 180°F, 160°F Dew Point, 150 PSIG Inlet Air, 50°F Outlet Dewpoint

Flow Rating:

- RAD Series Flow Rates: 25 - 1250 SCFM
- RHT Series Flow Rates: 10 - 120 SCFM

Cooling Type:

- A: Air Cooled
- W: Water Cooled **

Nominal Voltage/Phase/Frequency:

- 1: 115V/1Ph/60Hz
- 2: 230V/1Ph/60Hz
- 3: 230V/3Ph/60Hz
- 4: 460V/3Ph/60Hz
- 5: 575V/3Ph/60Hz

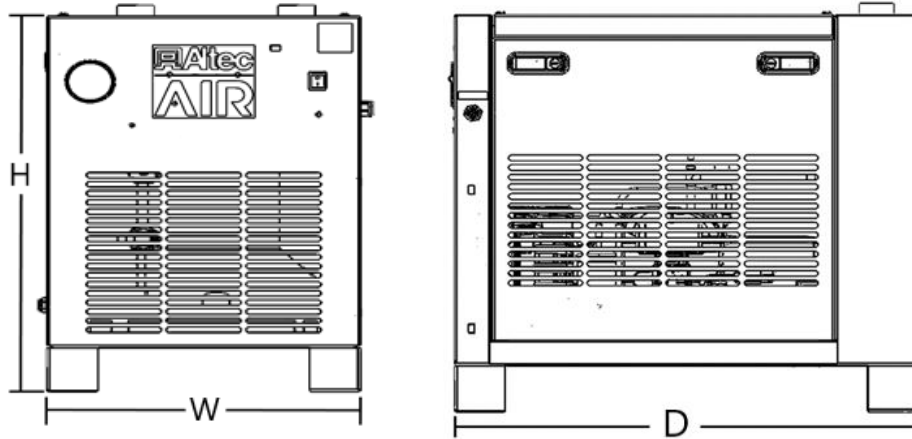
Options:

- D: Digital Scroll Compressor **
- P: Programmable Timer
- Z: Zero-Loss Drain **

** Selections may not be available at time of print. Please contact Altec AIR for more information.

5.4 Technical Specifications

5.4.1 Air Dryer Dimensions



Model	Dimensions H x W x D	Weight	Air Port Sizes (NPT)	Refrigerant Type
RAD-0025A-1 RHT-0010A-1	23.9 x 18.9 x 16.9	92	1/2	R134a
RAD-0040A-1 RHT-0015A-1		102	1	
RAD-0055A-1 RHT-0020A-1		102		
RAD-0075A-1 RHT-0030A-1	25.8 x 18.4 x 27.6	160	1	
RAD-0075A-2 RHT-0030A-2		160		
RAD-0100A-1 RHT-0040A-1		173		
RAD-0100A-2 RHT-0040A-2		173		
RAD-0150A-1 RHT-0060A-1	29.3 x 21.9 x 34.1	190	1-1/2	
RAD-0150A-2 RHT-0060A-2		192		
RAD-0200A-1 RHT-0080A-1		205		
RAD-0200A-2 RHT-0080A-2		225		

RAD-0250A-3 RHT-0100A-3	35.8 x 23.7 x 34.8	300	1-1/2	R404a		
RAD-0250A-4 RHT-0100A-4		300				
RAD-0250A-5 RHT-0100A-5		331				
RAD-0300A-3 RHT-0120A-3		300	2			
RAD-0300A-4 RHT-0120A-4		300				
RAD-0300A-5 RHT-0120A-5		345				
RHT-0120A-4 RHT-0120A-5		300 345				
RAD-0400A-3 RAD-0400A-4 RAD-0400A-5		46.5 x 29.2 x 43.3			450	R449A
RAD-0500A-3 RAD-0500A-4 RAD-0500A-5					475	
RAD-0500A-3 RAD-0600A-4 RAD-0600A-5	500					
RAD-0750A-4 RAD-0750A-5	575					
RAD-1000A-4 RAD-1000A-5	55.8 x 34.2 x 53.3		600			
RAD-1250A-4 RAD-1250A-5			625			

5.4.2 Air Dryer Conditions Information

	RAD-0025 through RAD-0200	RAD-0250 through RAD-0300	RAD-0400 through RAD-1250	RHT-0010 through RHT-0060	RHT-0080 through RHT-0120
Max Inlet Air Temperature (F)	140	140	140	200	200
Max Inlet Air Pressure (PSIG)	232	232	232	232	232
Min Ambient Air Temperature (F)	45	45	45	45	45
Max Ambient Air Temperature (F)	120	120	120	120	120
Min Refrigerant Pressure (PSIG)	150	181	181	150	181
Max Refrigerant Pressure (PSIG)	300	450	450	300	450
Suction pressure (PSIG)	30	70	70	30	70
Discharge pressure (PSIG)	115	225	225	115	225
Drain Port NPT	¼	¼	¼	¼	¼

5.4.3 Air Dryer Electrical Information



WARNING!

To avoid electrical overload and shock hazard, incoming power to Air Dryer must be sized according to Air Dryer specifications – refer to Air Dryer Electrical Information in Section 5.4.3

Plug Types:



NEMA 5-15P



NEMA 5-20P

Model	Voltage	RLA	LRA	MCA	MOP	HP	Charge (oz)	Cord and Plug Type
RAD-0025-1 RHT-0010-1	115V-1Ph-60Hz	3.65	29	6.21	15	1/5	9	NEMA 5-15P
RAD-0040-1 RHT-0015-1	115V-1Ph-60Hz	3.65	29	6.21	15	1/5	9	NEMA 5-15P
RAD-0055-1 RHT-0020-1	115V-1Ph-60Hz	4.91	27.5	8.38	15	1/4	9	NEMA 5-15P
RAD-0075-1 RHT-0030-1	115V-1Ph-60Hz	5.82	32	9.83	15	1/3	9	NEMA 5-15P
RAD-0075-2 RHT-0030-2	230V-1Ph-60Hz	3.03	16	5.18	15	1/3	9	Cord Only
RAD-0100-1 RHT-0040-1	115V-1Ph-60Hz	9.5	48	15.38	25	1/2	12	NEMA 5-15P
RAD-0100-2 RHT-0040-2	230V-1Ph-60Hz	4.8	23	7.88	15	1/2	12	Cord Only
RAD-0150-1 RHT-0060-1	115V-1Ph-60Hz	13.6	56	21.38	35	3/4	15	NEMA 5-20P
RAD-0150-2 RHT-0060-2	230V-1Ph-60Hz	7.3	38	12	20	3/4	15	Cord Only
RAD-0200-1 RHT-0080-1	115V-1Ph-60Hz	13.6	78	24.25	40	1-1/4	24	NEMA 5-20P
RAD-0200-2 RHT-0080-2	230V-1Ph-60Hz	11.8	37	19.38	30	1	24	Cord Only
RAD-0250-3 RHT-0100-3	230V-3Ph-60Hz	10.4	58	9	15	1-1/2	36.8	No Cord or Plug
RAD-0250-4 RHT-0100-4	460V-3Ph-60Hz	5.3	30	7.5	15	1-1/2	36.8	
RAD-0250-5 RHT-0100-5	575V-3Ph-60Hz	5.3	30	7.5	15	1-1/2	36.8	
RAD-0300-3 RHT-0120-3	230V-3Ph-60Hz	10.4	58	9	15	1-1/2	36.8	
RAD-0300-4 RHT-0120-4	460V-3Ph-60Hz	5.3	30	7.5	15	1-1/2	36.8	
RAD-0300-5 RHT-0120-5	575V-3Ph-60Hz	5.3	30	7.5	15	1-1/2	36.8	
RAD-0400-3	230V-3Ph-60Hz	8.9	55	10.0	25	3-1/2	80	
RAD-0400-4	460V-3Ph-60Hz	5	27	5.0	15	3-1/2	80	
RAD-0400-5	575V-3Ph-60Hz	5	27	4.0	15	3-1/2	80	

RAD-0500-3	230V-3Ph-60Hz	8.9	55	10.0	25	3-1/2	88
RAD-0500-4	460V-3Ph-60Hz	5	27	5.0	15	3-1/2	88
RAD-0500-5	575V-3Ph-60Hz	5	27	4.0	15	3-1/2	88
RAD-0600-3	230V-3Ph-60Hz	8.9	55	11.7	30	3-1/2	96
RAD-0600-4	460V-3Ph-60Hz	5	31	5.8	15	3-1/2	96
RAD-0600-5	575V-3Ph-60Hz	5	31	4.7	15	3-1/2	96
RAD-0750-4	460V-3Ph-60Hz	6.1	39	6.1	20	4-1/2	144
RAD-0750-5	575V-3Ph-60Hz	6.1	39	4.9	20	4-1/2	144
RAD-1000-4	460V-3Ph-60Hz	8.2	50	9.2	25	6	144
RAD-1000-5	575V-3Ph-60Hz	8.2	50	7.3	25	6	144
RAD-1250-4	460V-3Ph-60Hz	9.6	63	11.7	30	7-1/3	160
RAD-1250-5	575V-3Ph-60Hz	9.6	63	9.4	30	7-1/3	160

RLA: Rated Load Amps – maximum current the Air Dryer should draw under any operating conditions

LRA: Locked-Rotor Amperage – The highest current the Air Dryer draws when power is first applied

MCA: Minimum Circuit Amps – Highest steady-state electrical current

MOP: Maximum Over-Current Protection – Maximum size of over-current protection device such as circuit breakers or fuses

5.4.4 RAD Series Correction Factors

Corrected Inlet Flow Capacity =

$$\text{INLET Flow (above)} \times \text{Inlet Pressure Correction Factor (A)} \times \text{Inlet Temp Correction Factor (B)} \times \text{Ambient Temp Correction Factor (C)}$$

Inlet Pressure (PSIG)	50	80	100	125	150	175	200
Correction Factor (A)	0.82	0.95	1.00	1.05	1.09	1.12	1.15
Inlet Temp (°F)	80	90	100	110	120	140	
Correction Factor (B)	1.72	1.28	1.00	0.80	0.66	0.45	
Ambient Temp (°F)	80	90	100	110	120		
Correction Factor (C)	1.08	1.06	1.00	0.90	0.76		

5.4.5 RHT Series Correction Factors

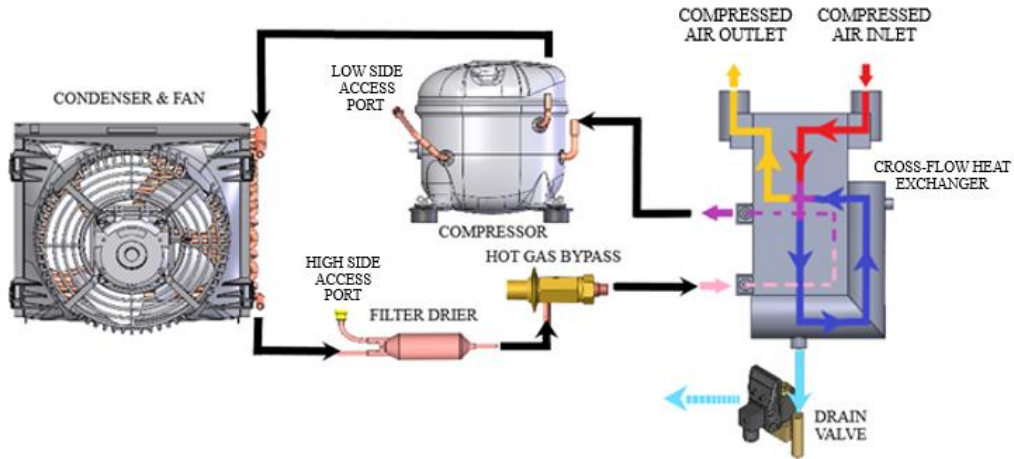
Corrected Inlet Flow Capacity =

$$\text{INLET Flow (above)} \times \text{Inlet Pressure Correction Factor (A)} \times \text{Inlet Temp Correction Factor (B)} \times \text{Ambient Temp Correction Factor (C)}$$

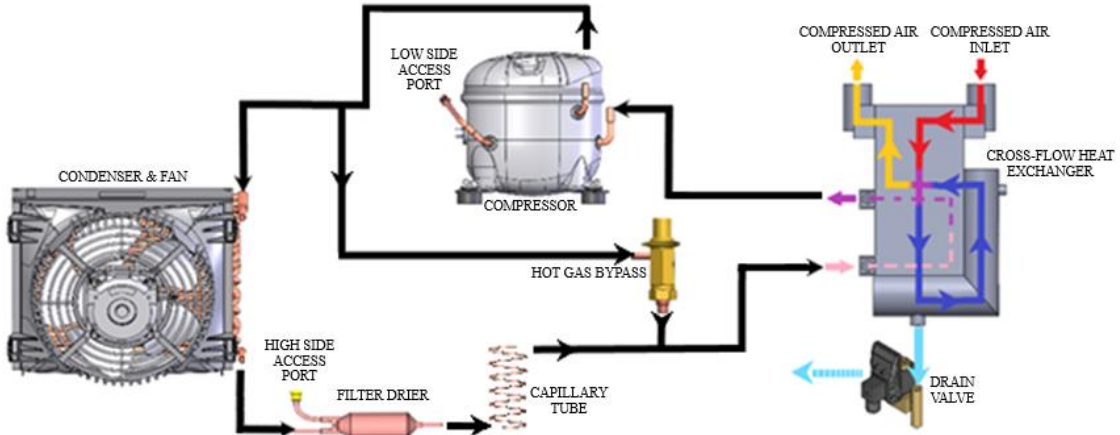
Inlet Pressure (PSIG)	100	125	150	175	200
Correction Factor (A)	0.80	0.88	0.95	1.00	1.04
Inlet Temp (°F)	100	125	150	180	200
Correction Factor (B)	3.31	1.99	1.30	1.00	0.91
Ambient Temp (°F)	80	90	100	110	120
Correction Factor (C)	1.08	1.06	1.00	0.90	0.76

5.5 Air Dryer Function Overview

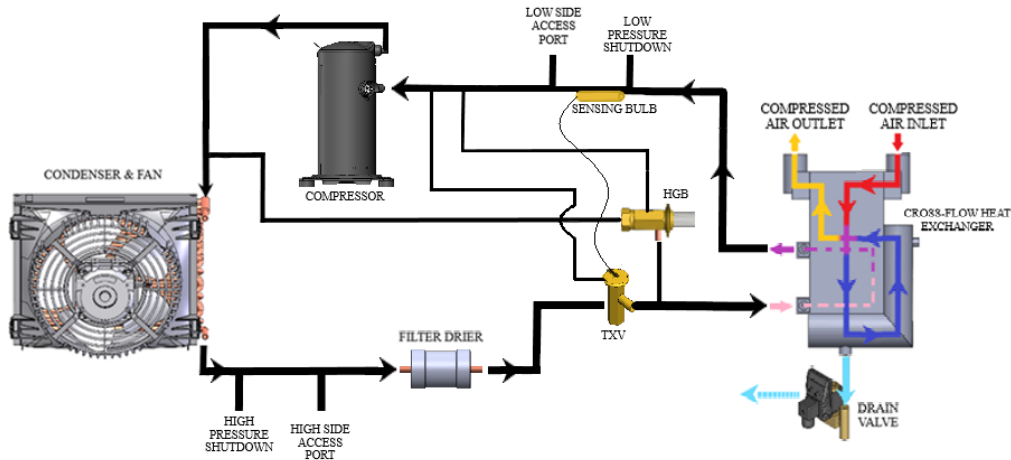
5.5.1 Functional Flow Diagram RAD-0025 through RAD-0055, RHT-0010 through RHT-0020



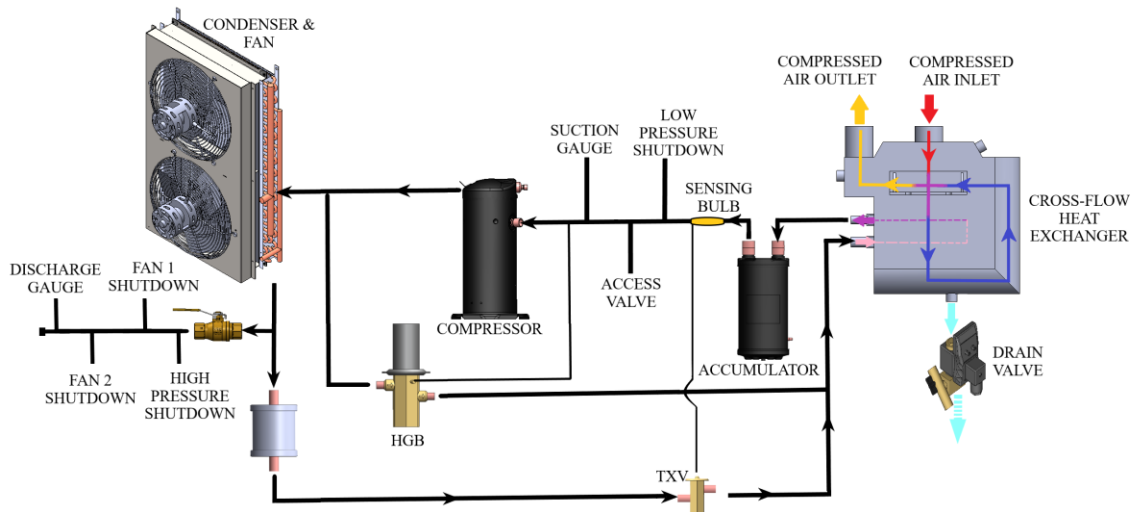
5.5.2 Functional Flow Diagram RAD-0075 through RAD-0200, RHT-0030 through RHT-0080



5.5.3 Functional Flow Diagram RAD-0250 through RAD-0300, RHT-0100 through RHT-0120



5.5.4 Functional Flow Diagram RAD-0400 through RAD-1250



Component	Description
Accumulator	Prevents liquid refrigerant from entering the compressor
Condenser & Fan	Cools the hot gas from the compressor into a liquid
Compressor	Draws in refrigerant and compresses it to a gas
Cross-flow Heat Exchanger	Exchanges thermal energy from the air to the refrigerant
Access Port	Ports for adding or removing refrigerant and for refrigerant gauges
Filter Drier	Filters out any particulates in the refrigerant
Hot Gas Bypass (HGB)	Regulates the cooling temperature based on refrigerant pressure
Drain Valve	Drain for condensed water removed from the air in the heat exchanger
Thermostatic Expansion Valve (TXV)	Regulates the rate liquid refrigerant flows into the evaporator

6. Installing Your Air Dryer

6.1 Safety & Warning Information



WARNING!

This appliance is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.



WARNING!

Children must be supervised to ensure that they do not play with the appliance.



WARNING!

To avoid electrical shock, damaged cords should be replaced by a qualified individual



WARNING!

To avoid electrical overload and shock hazard, incoming power to Air Dryer must be sized according to Air Dryer specifications – refer to Air Dryer Electrical Information in Section 5.4.3

6.2 Before You Begin

The Air Dryer cannot be tilted on its side or upside-down during shipping.

Upon arrival check the Air Dryer for damage. Inspect the pressure gauge through the box cutout and ensure the gauge does not read zero. Review data label and ensure proper electrical circuit to support voltage and amperage of the Air Dryer.

The Air Dryer must be installed in a well-ventilated room that is free from dust, toxic gases, humidity, or pollution. Ambient temperatures must be at least 45° F and not exceed 120°F.

All Air Dryers are designed to be installed on a concrete base capable of supporting the weight and forces from the Air Dryer operation. Install the Air Dryer by removing the Air Dryer from the shipping pallet.

Air Dryers must be installed at least three feet away from walls and any other equipment or walls.

Do not run air through the Air Dryer without power to the unit on.

Do not mix inlet and outlet air flow. Pipe diameter should be sized according to the air flow requirement of the Air Dryer. Do not use the inlet and outlet of the Air Dryer to support the weight of the air piping.

A complete compressed air filter kit is recommended to protect your Air Dryer and downstream processes from contaminants found in the compressed air supply. Oil and particulates can damage the heat exchanger and reduce the Air Dryer efficiency.

A bypass may also be installed on the Air Dryer outlet, inlet and filtration to allow for bypassing, depressurizing, maintenance, and servicing of the Air Dryer.

Tubing used must be secured as the condensate is discharged at the system pressure. Connect the condensate drain port to a collection point and dispose of condensate in compliance to local regulations. Condensate may contain oil particles from the compressor air.

Consult with a licensed technician to ensure the electrical network and protection is sized properly. Ensure all fuses or breakers are correctly sized based on the data label information. For electrical data refer to Section 5.4.3

Prior to connecting the Air Dryer to the electrical supply, verify the data nameplate for the proper electrical information.

Air Dryers are equipped with either a power cord or terminal hookup locations. Refer to Section 5.4.3 for plug type. Do not use any socket adapters at the main plug.

Air Dryers without a power cord included must be wired by a licensed technician according to the model specific wiring diagram as shown in Section 13.1 .

If your unit is equipped with a programmable timer (Option -P), please refer to the programming your timer section [13.2.1](#), prior to operating your unit.

6.3 Installation Configuration

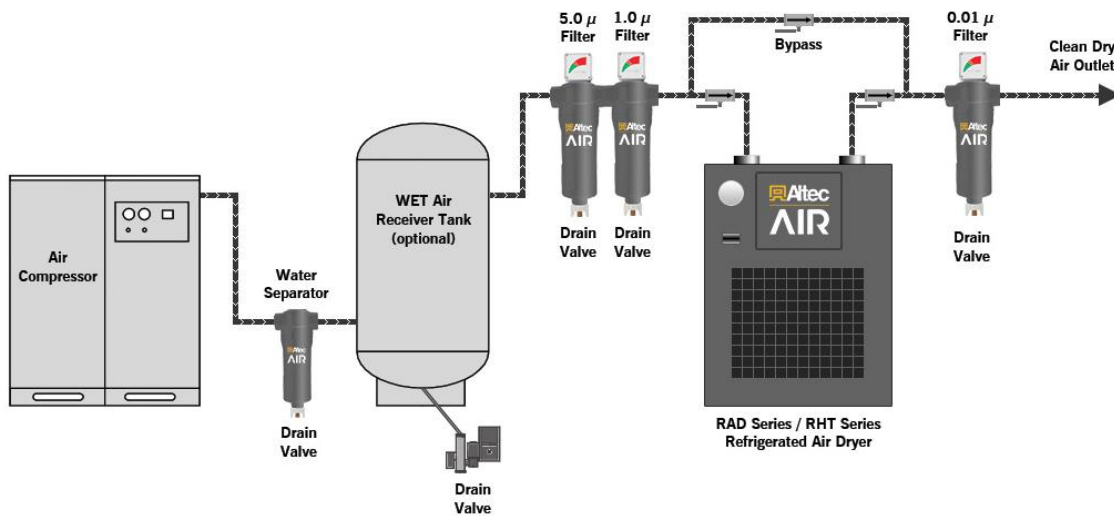


Figure 1: Wet Air Receiver Tank Set-Up

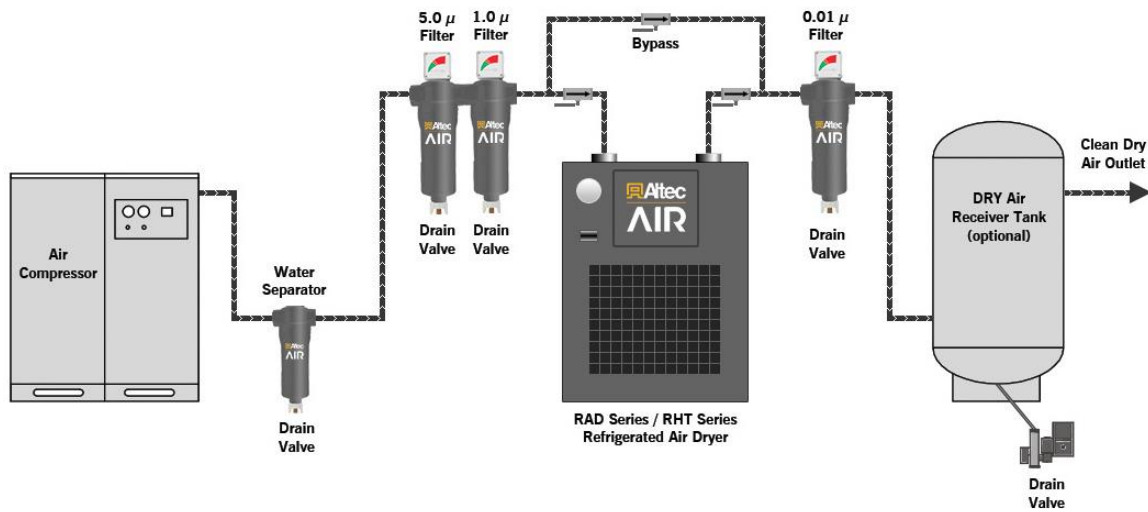


Figure 2: Dry Air Receiver Tank Set-Up

Wet Air Receiver Tank Set-Up: Recommended for systems that consume less than or equal to the maximum capacity of the air compressor

Dry Air Receiver Tank Set-up: Recommended for systems where the peak air consumption exceeds the flow rate of the air compressor. The tank capacity must be sized to compensate for the peak demand.

6.4 Included Contents

Items included with the Air Dryer:

- (1) Refrigerated Air Dryer
- (1) User's Guide
- (4) Latch Keys RAD-0075 through RAD-1250, RHT-0030 through RHT-0120

6.5 Required Tools and Materials

- Medium adjustable wrench
- Box cutter
- Cup of soapy water
- 1-inch paint brush (recommended)

6.6 Installation Steps

6.6.1 Use a box cutter to remove the Air Dryer from the box and shipping materials

NOTE: If ANY SHIPPING DAMAGE is detected, file a claim with the shipping company prior to continuing the installation process.

6.6.2 Open Panel Latches and remove one of the Side Panels

6.6.3 Check for loose parts, hoses, wiring, and copper tubing for leaks for cracks

6.6.4 Place the Air Dryer at the desired operating location:

- Place the Air Dryer on a leveled surface
- Ensure Air Dryer is at least three feet away in all directions from other equipment or walls

6.6.5 Remove the plugs from the Inlet and Outlet Air Ports

- 6.6.6** Install plumbing from the Inlet and the Outlet of the Air Dryer to the proper air compressor setup
- 6.6.7** Route the Condensate Drain Line to an environmentally approved disposal system per local regulations.
- 6.6.8** Verify that the Air Dryer is powered OFF
- 6.6.9** Verify the main electrical supply voltage matches the voltage on the Data Label and that proper circuit protection has been installed.
- 6.6.10** Plug AC Power Cord to Air Dryer or have a qualified individual wire the correct power to the Air Dryer in accordance to local, state, regional, or territory codes and requirements.
- 6.6.10.1** If equipped with a programmable timer, see section [13.2.1](#)
- 6.6.11** Power the Air Dryer ON
- 6.6.12** Use the soapy water and paint brush to check for leaks in the Air Inlet and Outlet plumbing
- 6.6.13** Allow the Air Dryer to operate for 15 minutes
- 6.6.14** Verify the Refrigerant Suction Pressure
- R134a Air Dryers: 28-34 PSIG*
 - R404a Air Dryers: 72-80 PSIG*
 - R449a Air Dryers: 65-85 PSIG*
- 6.6.15** Verify the Refrigerant Discharge Pressure (RAD-0400 and larger)
- R449a Air Dryers: 110-275 PSIG*

*Pressure will vary depending on operating and ambient conditions

- 6.6.16** Verify the Condenser Fan Motors are operating
- Fan 1 449a Dryers: On at 210 PSIG, Off at 135 PSIG
 - Fan2 449a Dryers: On at 275 PSIG, Off at 195 PSIG
- 6.6.17** Confirm that condensate is discharging from the Condensate Drain based on Drain Valve time settings
- 6.6.18** Confirm that the Condensate Drain tubing is clear of obstructions
- 6.6.19** Check the Dew Point of the outlet air
- 6.6.20** Hook up Refrigerant Gauges
- 6.6.21** Check the Evaporating Pressure, Suction and Discharge Pressure
- 6.6.22** Use the wrench to adjust the Hot Gas Bypass a quarter turn at a time to dial in the Evaporator Temperature to 33-35 degrees Fahrenheit
- After each quarter turn, allow Air Dryer to operate for 5 minutes
- 6.6.23** Reinstall the Side Panel
- 6.6.24** **REGISTER YOUR AIR DRYER.** *See section 7 for details.*

7. Registering Your Air Dryer

Please take a moment to register your Altec AIR Refrigerated Non-Cycling Series Air Dryer. Registering is necessary to activate the Limited Warranty on your product. Once you register, you are eligible to receive free technical support, as well as updates concerning your Altec AIR products.

Register Online at www.altecair.com/product-support/registration/

Or by Phone 1-800-521-5351 (option 2)

Have the following information available:

PRODUCT INFORMATION

Model #: _____ **Serial #:** _____

Date Purchased: _____ **Date Installed:** _____

Distributor Company Name (if applicable): _____

Customer Company Name: _____

INSTALLATION LOCATION INFORMATION

Location Name (if applicable): _____

Street Address: _____

City: _____ **State:** _____ **Zip Code:** _____

CONTACT INFORMATION

Contact Name: _____ **Phone #:** () - ext. _____

Email: _____

8. Operating Your Air Dryer

8.1 Air Dryer Access

8.1.1 To remove Side Panel, unlock Latches using Latch Keys included with the Air Dryer. Press Latch down and pull outward and up. To replace Side Panel, line up bottom tab and tilt panel inward. Press Latches down and lock if needed.

8.1.2 To remove the Top Panel, remove both Side Panels. Then locate the four screws on the top and remove. Lift Panel straight up and off the Air Dryer.

8.2 Refrigerant Manifold Attachment

8.2.1 See Functional Flow Diagrams for High Side/Low Side ports – Section 5.5 Remove the low side and high side access valve caps. Connect the blue tube of the refrigerant manifold to the low side access valve. Connect the red tube of the refrigerant manifold to the high side access valve. Open refrigerant manifold valves on the high side and low side. Ensure correct refrigerant type is selected on the refrigeration manifold readout.



8.2.2 Important measurements to note:

- Evaporating temperature
- Low side pressure
- High side pressure

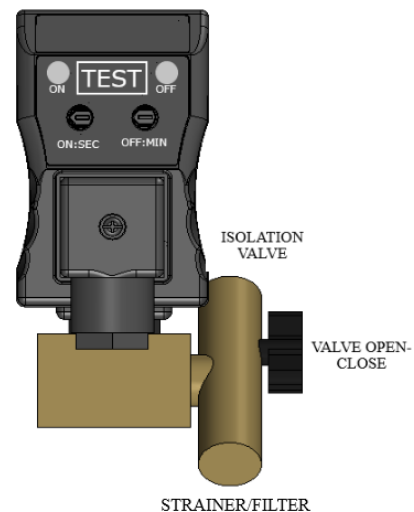


8.3 Drain Valve Operations

8.3.1 To manually open the Drain Valve, depress the 'TEST' Button.

8.3.2 The Drain Valve Open (ON) Time is adjustable from 0.5 seconds to 10 seconds. The default setting is 6 seconds. When the Drain Valve opens, the 'ON' light will illuminate. To change the Open Time, twist the Knob labelled 'ON-SEC' to the desired time.

8.3.3 The Drain Valve Closed (OFF) Time is adjustable from 0.5 minutes to 45 minutes. The default setting is 10 minutes. When the Drain Valve is closed, the 'OFF' light will illuminate. To change the Closed Time, twist the Knob labelled 'OFF-MIN' to the desired time.



8.3.4 To clean the Drain Valve, close the Isolation Valve. Depress the Test Button to release the pressure. Remove the Filter from the bottom of the Isolation Valve by twisting off the threaded base and pulling out the Filter. Clean the Filter and replace. Open the Drain Valve and resume normal operation.

8.4 Hot Gas Bypass Valve Adjustments (HGBV)

- 8.4.1** Attach refrigerant gauges to the Air Dryer.
- 8.4.2** Allow Air Dryer to operate for 15 minutes after running under the compressed air load.
- 8.4.3** Open the Side Panel that allows for the easiest access to the Hot Gas Bypass Valve.
- 8.4.4** Remove the black rubber cap from the Hot Gas Bypass Valve.
- 8.4.5** Take note of the initial Evaporating Temperature value shown on the refrigerant gauges.
- 8.4.6** Turn the Hot Gas Bypass Valve hex head bolt one quarter turn.
- 8.4.7** Allow the Air Dryer to operate 5 minutes.
- 8.4.8** Note the new Evaporating Temperature.
- 8.4.9** Continue to adjust the Hot Gas Bypass Valve until the Evaporating Temperature is between 32 and 34 degrees Fahrenheit.
- 8.4.10** Replace the black rubber cap, remove the refrigerant gauges, and replace the Air Dryer Side Panel.



8.5 Thermostatic Expansion Valve Adjustments (TXV)

8.5.1 The TXV controls the amount of superheat. To adjust, use a wrench to turn the hex nut one quarter turn at a time.

8.5.2 Allow Air Dryer to operate for 5 minutes prior to adjusting further.



8.6 Condenser Coil Cleaning

8.6.1 Open both Side Panels of the Air Dryer and Top Panel if necessary to reach the Condenser Coil.

8.6.2 Blow clean pressurized air into the fins of the Condenser Coils from the front and top as accessible. Do not bend fins in the process.

8.6.3 Replace Air Dryer Panels.

9. Maintaining Your Air Dryer

To ensure that your Refrigerated Non-Cycling Series Air Dryer continues to operate efficiently and reliably, Altec AIR recommends performing the following maintenance procedures at the specified time intervals.

9.1 Safety & Warning Information



WARNING!

Extreme care should be exercised to avoid contact with live electrical circuits. Many procedures performed during installation, operation, testing, and maintenance of this Air Dryer require the equipment to be running, creating a situation for potential electrical shock. It is highly recommended that you remove all jewelry before performing any procedures.



CAUTION!

Internal surfaces may be hot. Use care when coming into contact with internal components as there is a potential for some of these components to become hot when in operation or standby.



CAUTION!

Depressurizing the Air Dryer may be necessary before performing certain procedures.

NOTICE!

Air Dryer failure due to a dirty Condenser is not covered under warranty.

9.2 Regular Maintenance

Time Frame	Maintenance Operation	Reference Section
Weekly	Check Automatic Drain Valve operation once per eight-hour shift	8.3.1
	Ensure Suction Pressure Gauge in proper range	6.6.14
	Ensure Condenser Coil is clean and unobstructed	8.6
	Clean air-cooled Condenser Coils	8.6
Monthly	Clean Automatic Drain Valve	8.3.4
	Check Compressed Air Filter Differential	Refer to Filter manufacturer
	Replace Pre and Post Filtration Elements	Refer to Filter manufacturer

10. Troubleshooting Your Air Dryer

10.1 Before You Call Altec AIR

PLEASE READ THIS SECTION FIRST. It is important that you use the following sections in order to diagnose and attempt to fix the problem with your Air Dryer before placing a call to Altec AIR Technical Support.

This troubleshooting guide is intended to simplify the isolation of problems, present possible causes, provide test procedures for verification, and suggest corrective actions to restore the Air Dryer back to normal operation. Each section begins with the most likely cause(s) of the issue. Otherwise, they start from the simplest possibilities and progress to more complicated ones.

This troubleshooting guide is designed to be easy to follow and very effective when used properly. It is suggested to always start at the beginning of the specific problem section and continue in sequence, following the procedures indicated.

10.2 Safety & Warning Information



WARNING!

For your safety, all the information in this User's Guide must be followed to minimize the risk of electrical shock, and prevent property damage or personal injury.



WARNING!

Internal surfaces may be hot. Use care when coming into contact with internal components as there is a potential for some of these components to become hot when in operation or standby.



WARNING!

Extreme care should be exercised to avoid contact with live electrical circuits. Many procedures performed during installation, operation, testing, and maintenance of this Air Dryer require the equipment to be running, creating a situation for potential electrical shock. It is highly recommended that you remove all jewelry before performing any procedures.



CAUTION!

Depressurizing the Air Dryer may be necessary before performing certain procedures.

NOTICE!

Performing routine maintenance as outlined in the *Maintaining Your Dryer* section will ensure optimal performance over the lifecycle of your Air Dryer. Performing procedures not recommended by Altec AIR or installing components not supplied by Altec AIR is NOT RECOMMENDED AND MAY VOID THE WARRANTY.

10.3 Air Dryer Not Performing – High Outlet Dew Point

Possible Cause	Check	Correction
Air Compressor too hot	Verify Cooler on Air Compressor working	Fix Air Compressor to supply proper inlet air flow
Condenser Coils Dirty	Verify Condenser Fins are clean and unobstructed	Using clean compressed air or a dry soft cloth clean any dust or debris from the Condenser Fins
Fan not Running Correctly	Verify the Fan Blade is spinning and that air is blown from the outside of the Air Dryer towards the inside of the Air Dryer	Rewire according to Wiring diagram
Incorrectly sized Air Dryer	Verify the inlet air conditions and the Air Dryer ratings	Consult Altec AIR for assistance with properly sizing your Air Dryer

10.4 Condensate in Piping After Air Dryer

Possible Cause	Check	Correction
Air Dryer operating outside of its rating	Verify the inlet air conditions and the Air Dryer ratings	Supply Air Dryer with rated inlet and ambient air
Condensate Drain Not Working	Press the TEST Button on the Drain Valve	Clean Filter
Inlet Air Contains Liquid Water	Verify inlet air is free from liquid	Add in a Condensate Filter prior to the Air Dryer Inlet

10.5 Contacting Altec AIR Technical Support

Please read the *Before You Call Altec AIR* section (10.1 10.1)

Once you have exhausted all the potential problems and solutions covered in the *Troubleshooting Your Air Dryer* section, and you still require further assistance to correct a problem, contact Altec AIR Technical Support:

(800) 521-5351 (option 1)

Have the following information available:

Trouble Ticket # (if following-up on a previous call): _____

Technician Name: _____ **Phone #:** _____

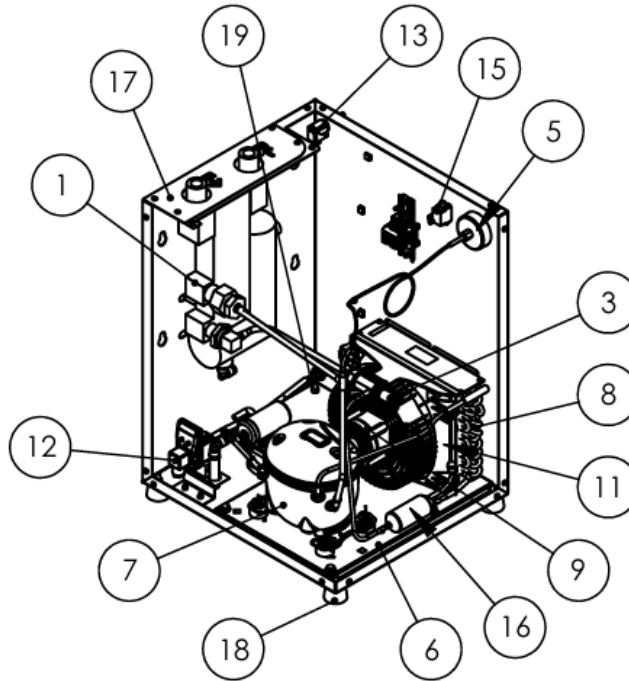
Model #: _____ **Serial #:** _____

Company Name: _____ **Location Name:** _____

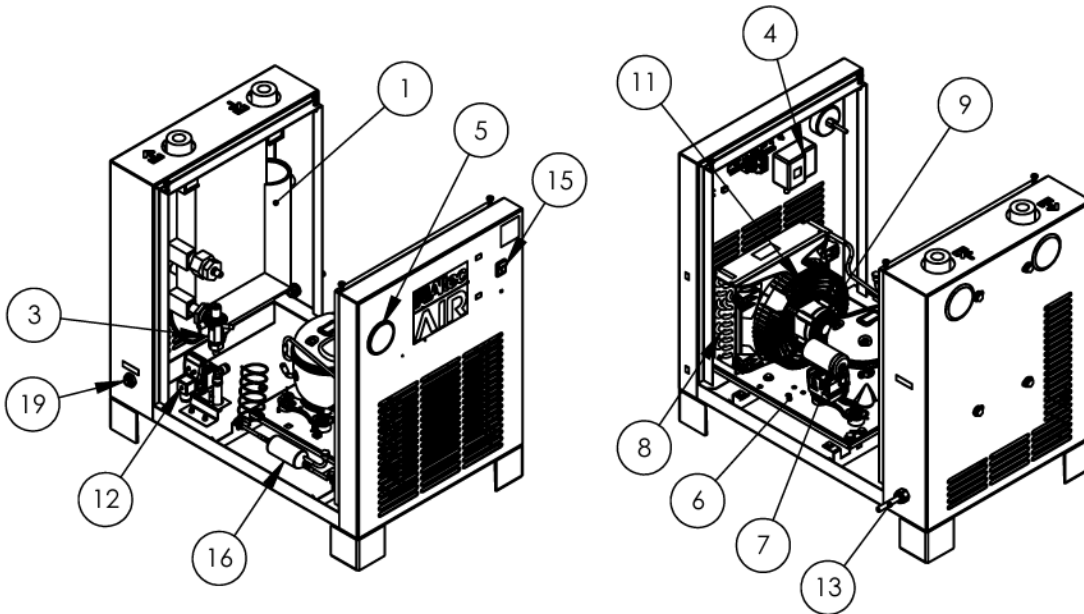
City: _____ **State:** _____

11. Replacement Parts & Accessories

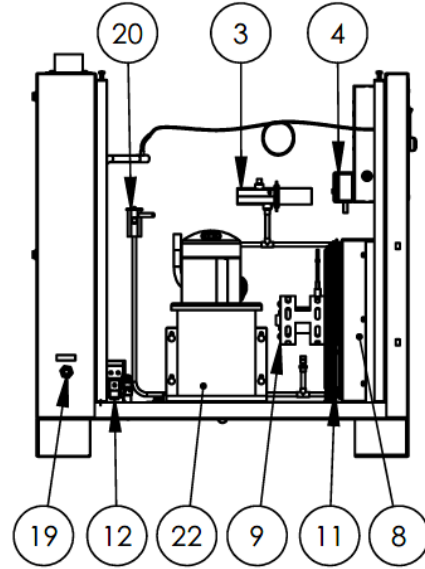
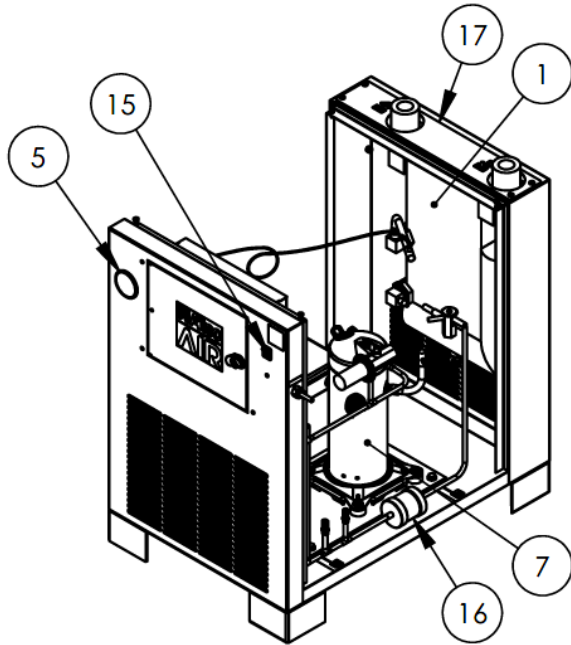
11.1 Air Dryer Diagram, Image, Explosion w/ Part List



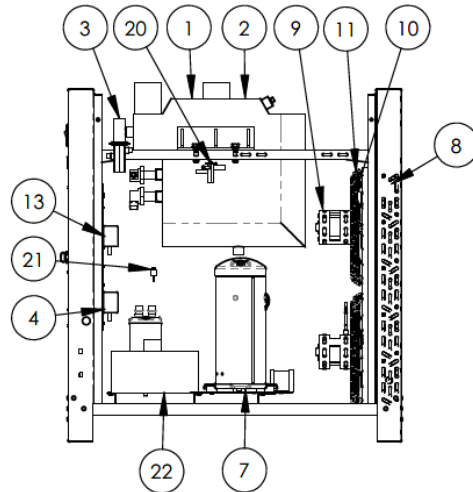
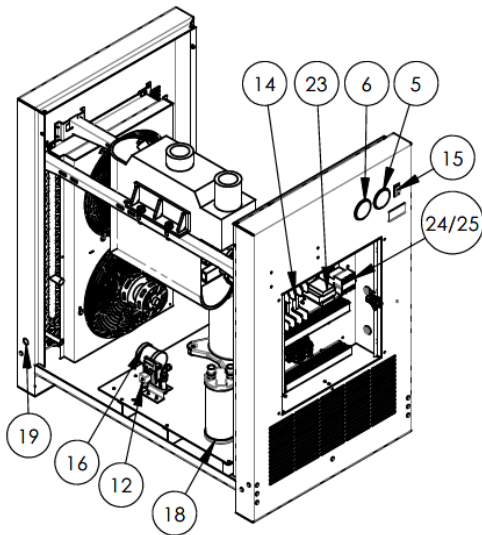
RAD-0025 through RAD-0055 and RHT-0010 through RHT-0020



RAD-0075 through RAD-0200 and RHT-0030 through RHT-0080



RAD-0250 through RAD-0300 and RHT-0100 through RHT-0120



RAD-0400 through RAD-1250

11.1.1 Single Phase Units Replacement Parts

Ref#	Description	PN													
			RAD-0025A-1	RAD-0040A-1	RAD-0055A-1	RAD-0075A-1	RAD-0075A-2	RAD-0100A-1	RAD-0100A-2	RAD-0150A-1	RAD-0150A-2	RAD-0200A-1	RAD-0200A-2		
1	Heat Exchanger Assembly	100514889	X												
		100514875		X	X										
		100514891				X	X	X	X						
		100514898									X	X	X	X	
2	Heat Exchanger	100513579	X												
		100513571		X	X										
		100513568				X	X	X	X						
		100513569									X	X	X	X	
3	Hot Gas Bypass	100513518	X	X	X										
		100513519				X	X	X	X	X	X				
		100513276											X	X	
4	High Pressure Shutdown	100513517				X	X	X	X	X	X	X	X	X	
5	Suction Pressure Gauge	100511199	X	X	X	X	X	X	X	X	X	X	X	X	
6	Condensing Unit	100514868	X	X											
		100510803			X										
		100510802				X									
		100514867					X								
		100510792						X							
		100510794							X						
		100510796								X					
		100510797									X				
		100514881											X		
		100510763													X
7	Compressor	100518790	X	X											
		100510955			X										
		100510956				X									
		100518795					X								
		100510933						X							
		100518800							X						
		100510971								X					
		100514452									X				
		NOTE 1											X		
		100514806													X
8	Condensing Coil	100518791	X	X											
		100514455			X	X									
		100518796					X								
		100514456						X							
		100518801							X						
		100514457								X	X				
		NOTE 1											X		
100514807													X		

Ref#	Description	PN	RAD-0025A-1	RAD-0040A-1	RAD-0055A-1	RAD-0075A-1	RAD-0075A-2	RAD-0100A-1	RAD-0100A-2	RAD-0150A-1	RAD-0150A-2	RAD-0200A-1	RAD-0200A-2
9	Fan Motor	100518792	X	X									
		100510926			X	X							
		100518797					X						
		100510873						X					
		100518802							X				
		100510874								X			
		100510838									X		
		NOTE 1											X
100510840												X	
10	Fan Blade	100518793	X	X									
		100514462			X								
		100514460				X							
		100518798					X						
		100514463						X					
		100518803							X				
		100510893								X	X		X
		NOTE 1											X
11	Fan Guard	100518794	X	X									
		100514465			X								
		100510885				X							
		100518799					X						
		100514466						X					
		100518804							X				
		100514472								X	X		
		NOTE 1											X
100514809												X	
12	Drain Valve	100513116	X	X	X	X		X		X		X	
		100513117					X		X		X		X
13	Power Cord	100518728	X	X	X	X	X	X	X		X		X
		100520958								X		X	
14	Power Plug	100512710								X		X	
15	Power switch	100514964	X	X	X	X	X	X	X	X	X	X	X
16	Filter Drier	100513398	X	X	X	X	X	X	X	X	X		
		100513377										X	X
17	HE Cover Plate	100514911	X										
		100514912		X	X								
18	Rubber Foot	100516244	X	X	X								
19	Drain Bulkhead	100518729	X	X	X	X	X	X	X	X	X	X	X

NOTE 1: Call Altec AIR for replacement part number

11.1.2 Three Phase Units Replacement Parts

Ref. #	Description	PN	Model Series																						
			RAD-0250A-3	RAD-0250A-4	RAD-0250A-5	RAD-0300A-3	RAD-0300A-4	RAD-0300A-5	RAD-0400A-3	RAD-0400A-4	RAD-0400A-5	RAD-0500A-3	RAD-0500A-4	RAD-0500A-5	RAD-0600A-3	RAD-0600A-4	RAD-0600A-5	RAD-0750A-4	RAD-0750A-5	RAD-1000A-4	RAD-1000A-5	RAD-1250A-4	RAD-1250A-5		
1	Heat Exchanger Assembly	100515026	X	X	X																				
		100515033				X	X	X																	
		100520385							X	X	X														
		100520388										X	X	X											
		100520375													X	X	X								
		100520497																X	X						
		100520632																		X	X				
		100520633																				X	X		
2	Heat Exchanger	100513578	X	X	X																				
		100515018				X	X	X																	
		100513572							X	X	X														
		100513565										X	X	X											
		100513573													X	X	X								
		100513563																X	X						
		100513564																		X	X				
		100513566																				X	X		
3	Hot Gas Bypass	100513276	X	X	X	X	X	X																	
		100513384							X	X	X	X	X	X	X	X	X								
4	High Pressure Shutdown	100513517	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
5	Suction Pressure Gauge	100511200	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
6	Discharge Pressure Gauge	100511197							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
7	Compressor	100511810	X			X																			
		100511811		X	X		X	X																	
		100520344							X			X													
		100520412								X	X		X	X											
		100520413												X											
		100520335													X	X									
		100520486																X	X						
		100520634																		X	X				
		100520487																					X	X	

8	Condensing Coil	100510819	X	X	X	X	X	X													
		100514561							X	X	X	X	X	X	X	X					
		100520501															X	X	X	X	X
		100510848	X	X	X	X	X	X	X		X			X							
		100510839							X	X		X	X		X	X					
10	Fan Blade	100510825	X	X	X	X	X	X	X	X	X	X	X	X	X						
11	Fan Guard	100514467	X	X	X	X	X	X													
		100510834							X	X	X	X	X	X	X	X					
12	Drain Valve	100513116		X	X		X	X		X	X		X	X	X	X	X	X	X	X	
		100513117	X			X			X		X		X								
13	Fan Switch	100513516							X	X	X	X	X	X	X	X	X	X	X	X	
14	Fuse Block	100512189									X		X		X		X		X	X	
15	Power Switch	100514964	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
16	Filter Drier	100513377	X	X	X	X	X	X													
		100513379							X	X	X	X	X	X	X	X					
17	HE Cover Plate	100514830	X	X	X																
		100514602				X	X	X													
18	Accumulator	100513169							X	X	X	X	X	X	X						
		100513174														X	X	X	X	X	X
19	Drain Bulkhead	100518729	X	X	X	X	X	X													
		NOTE 1							X	X	X	X	X	X	X	X	X	X	X	X	X
20	Thermostatic Expansion Valve	100513504	X	X	X	X	X	X													
		100520504							X	X	X										
		100520456									X	X	X	X	X						
		100520502														X	X				
		100520503																X	X	X	X
21	Low Pressure Shutdown	100513395	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
22	Transformer 460/575 VAC	100512862			X		X														
		100512863								X		X		X							
		100512866														X		X		X	X
23	Transformer 230/460 VAC	100513138		X	X		X	X		X	X		X	X	X	X	X	X	X	X	
24	Contactors 120 VAC	100510862		X	X		X	X		X	X		X	X	X	X	X	X	X	X	
25	Contactors 230 VAC	100510861	X			X		X		X		X		X							

11.2 Accessories

11.2.1 Floor Stands

Model	Use With Air Dryer
AFS-1	RAD-0025A – RAD-0055A RHT-0010 – RHT-0020
AFS-2	RAD-0075A – RAD-0100A RHT-0030 – RHT-0040
AFS-3	RAD-0150A – RAD-0200A RHT-0060 – RHT-0080
AFS-4	RAD-0250A – RAD-0300A RHT-0100 – RHT-0120

11.2.2 Magnetic Condenser Filters

Model	Use With Air Dryer
AFR-1	RAD-0025A – RAD-0055A RHT-0010 – RHT-0020
AFR-2	RAD-0075A – RAD-0100A RHT-0030 – RHT-0040
AFR-3	RAD-0150A – RAD-0200A RHT-0060 – RHT-0080
AFR-4	RAD-0250A – RAD-0300A RHT-0100 – RHT-0120

11.2.3 Programmable Timer

Model	Use With Air Dryer
APT-1	RAD-0075A* – RAD0200A* RHT-0030* – RHT-0080*
APT-3	RAD-0250A* – RAD-0300A* RHT-0100* – RHT-0120*

*Aftermarket timer can ONLY be installed on units built after a certain date. Please contact Altec AIR (Section [11.3](#)) to confirm this option is available for your unit. Reference AAPN-000086.

11.3 Ordering Parts from Altec AIR

Once you have identified your required parts and accessories, contact the Altec AIR Inside Sales / Service department to order:

(800) 521-5351 (**option 2**)

Fax – (303) 657-2205

sales@AltecAIR.com

parts@AltecAIR.com

12. Contacting Altec AIR

12.1 General

Altec AIR, LLC
226A Commerce Street
Broomfield, Colorado 80020

(800) 521-5351

(303) 427-3700

Fax – (303) 657-2233

info@AltecAIR.com

www.AltecAIR.com

12.2 Sales

(800) 521-5351 (**option 2**)

Fax – (303) 657-2205

sales@AltecAIR.com

parts@AltecAIR.com

12.3 Service

(800) 521-5351 (**option 3**)

Fax – (303) 657-2205

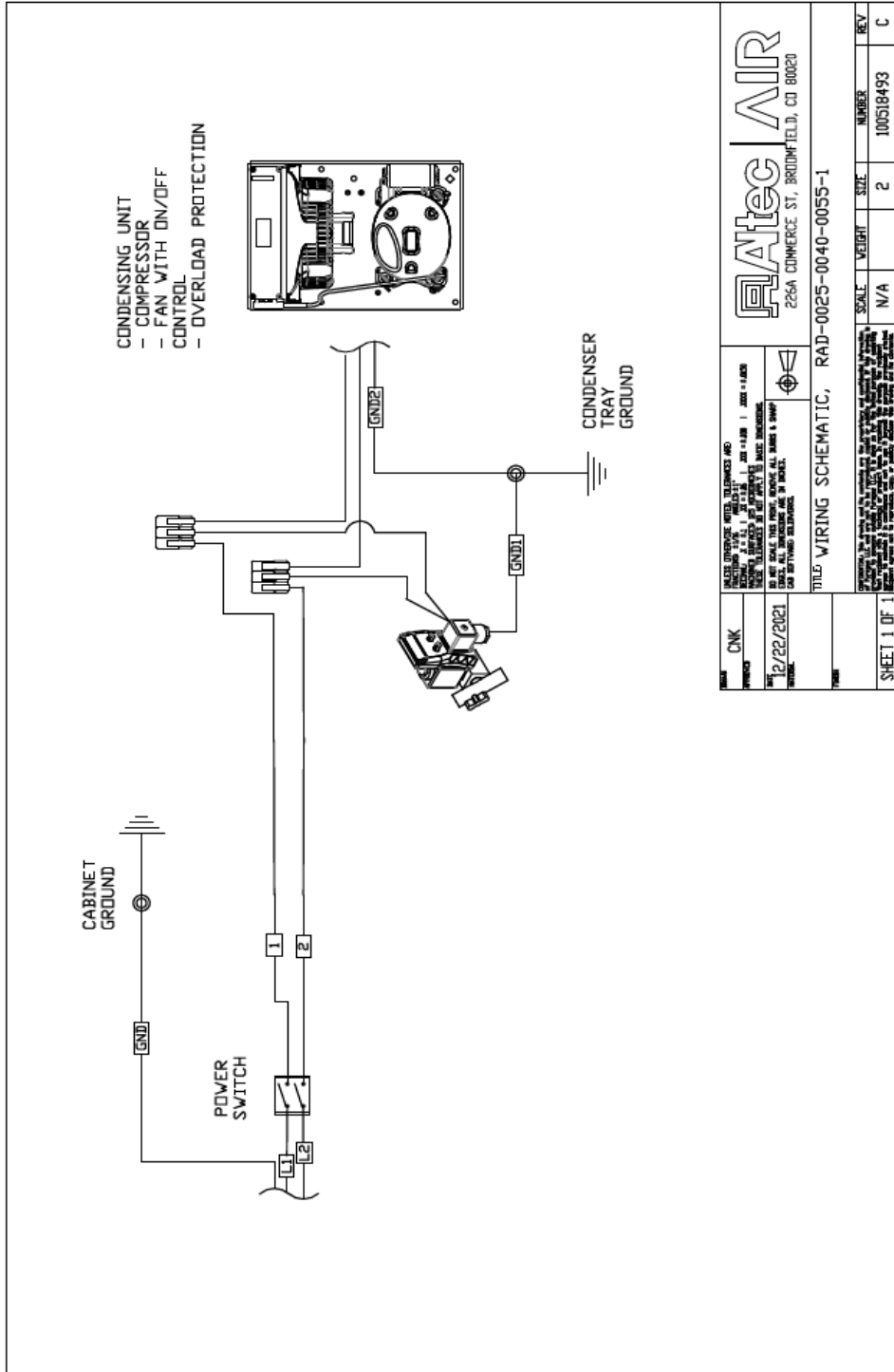
12.4 Technical Support

(800) 521-5351 (**option 1**)

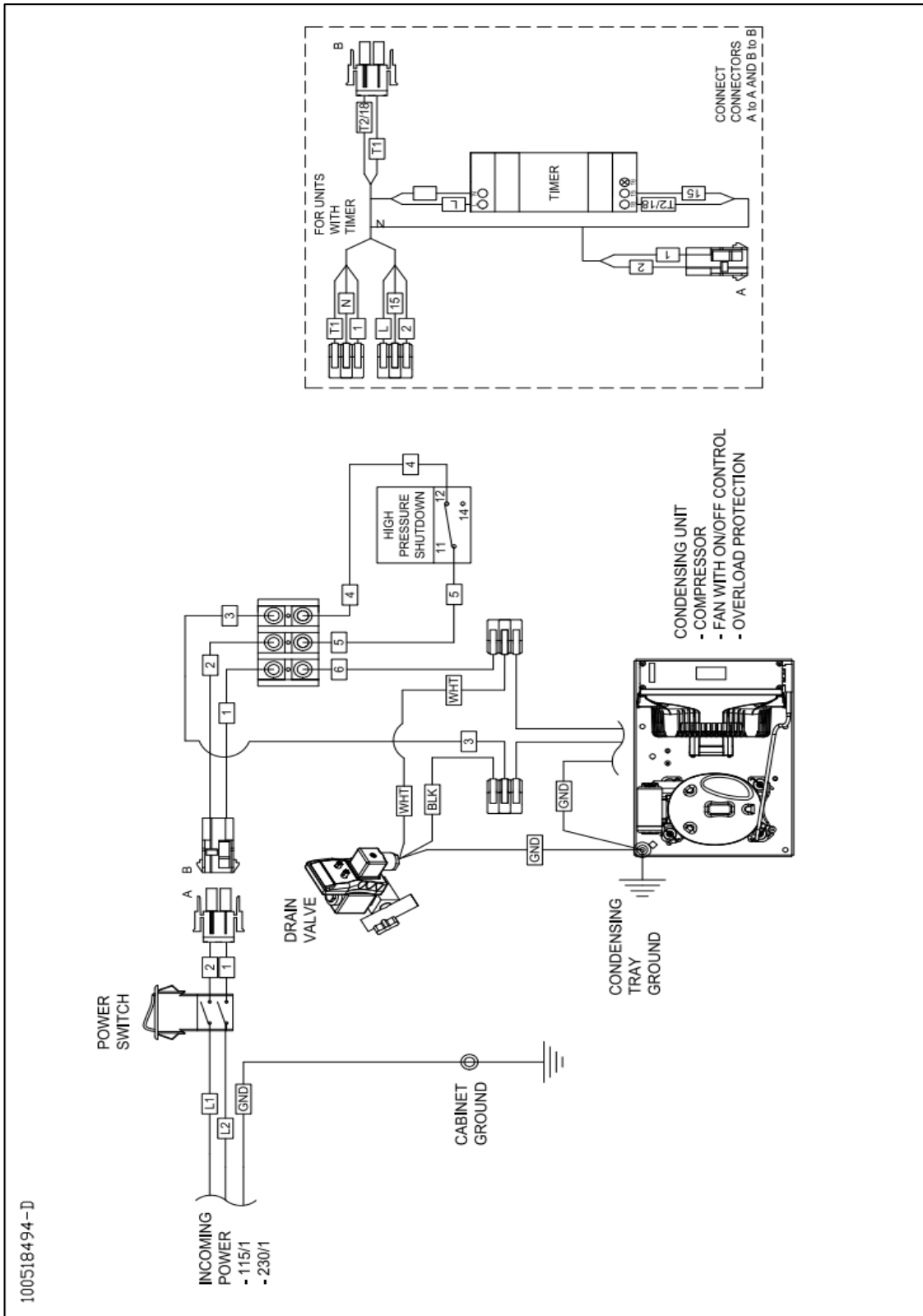
13. Appendix

13.1 Wiring Diagram

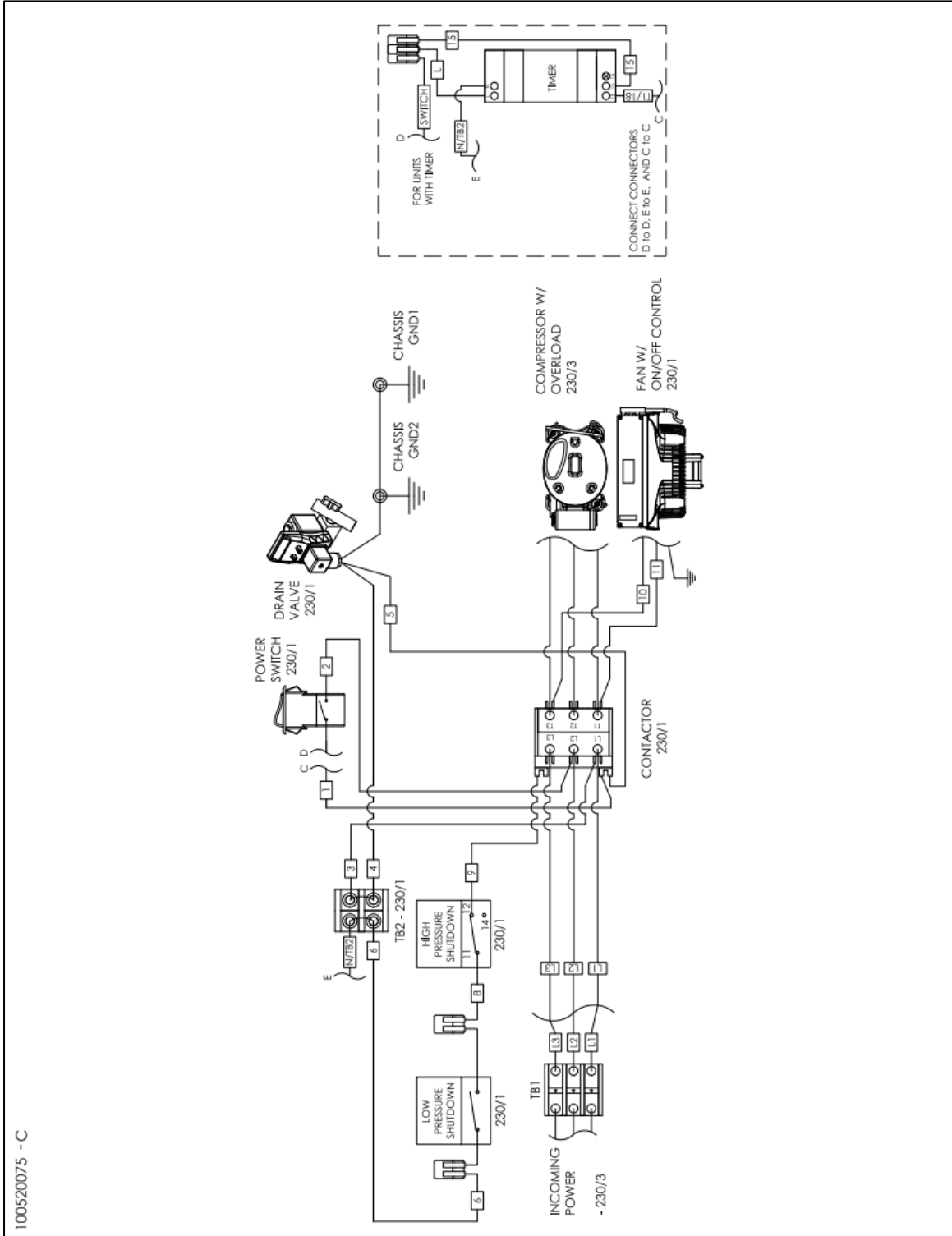
13.1.1 RAD-0025 through RAD-0055 and RHT-0010 through RHT-0020



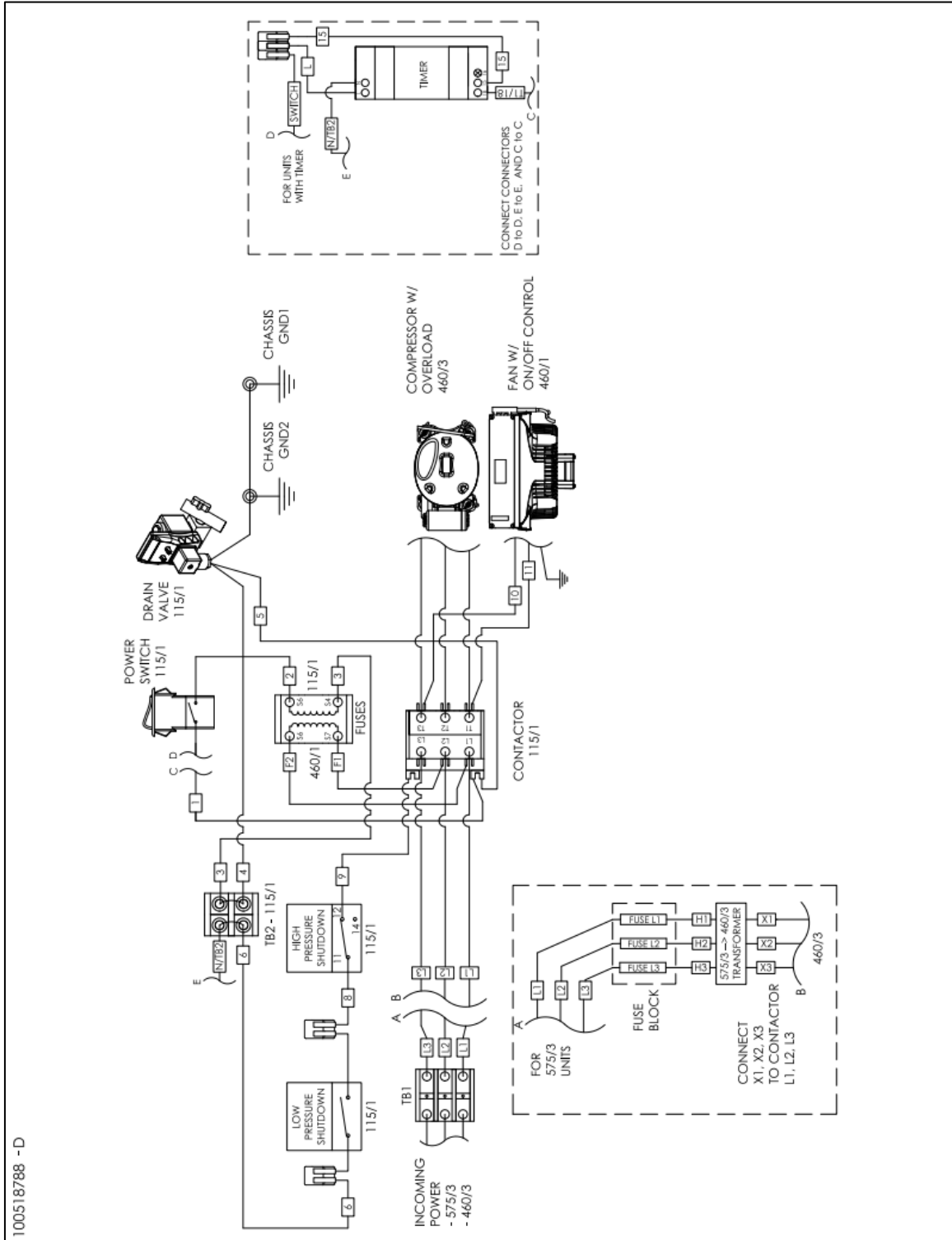
13.1.2 RAD-0075 through RAD-0200 and RHT-0030 through RHT-0080



13.1.3 RAD-0250 through RAD-0300 and RHT-0100 through RHT-0120 (230V)

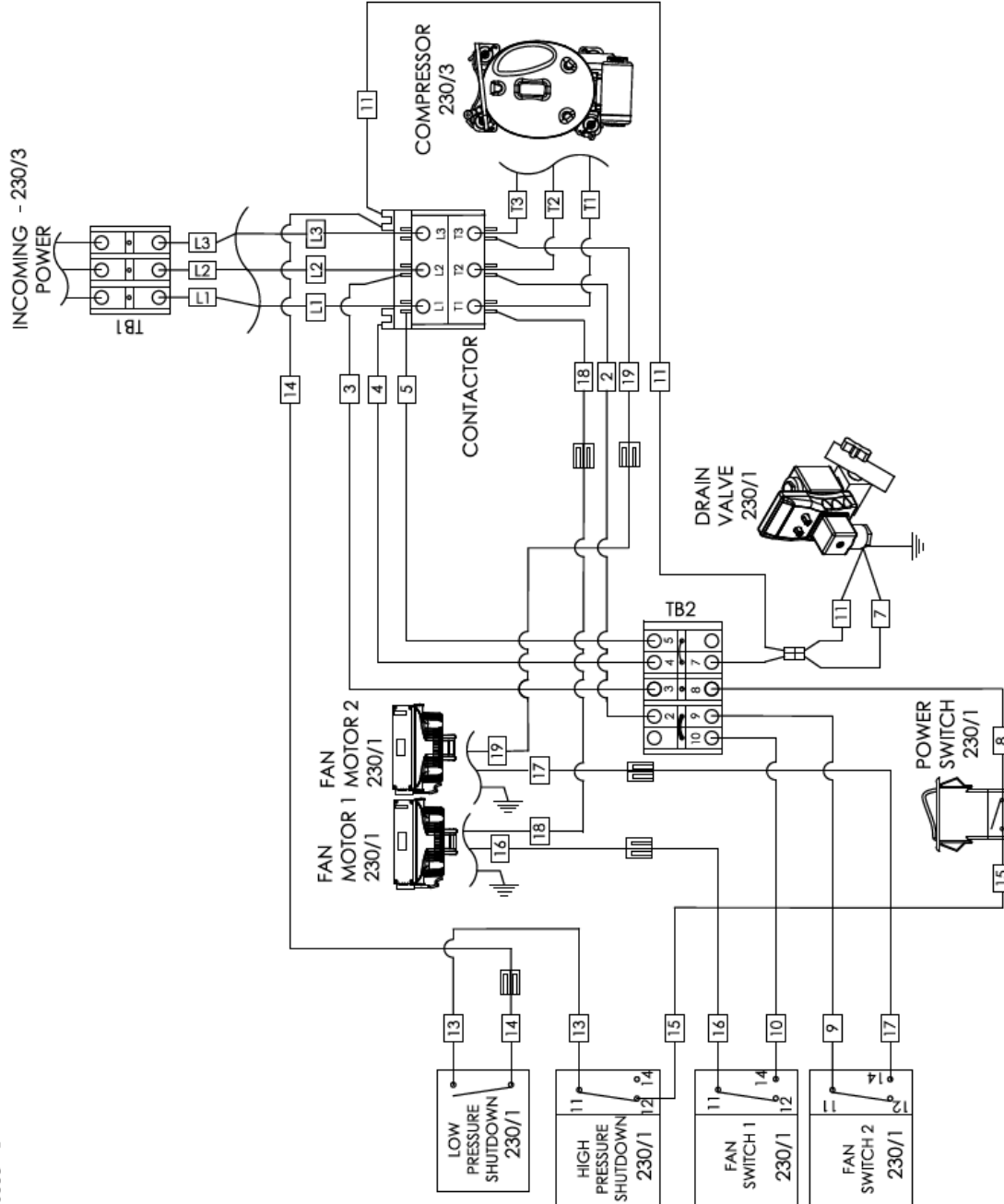


13.1.4 RAD-0250 through RAD-0300 and RHT-0100 through RHT-0120 (460/575V)



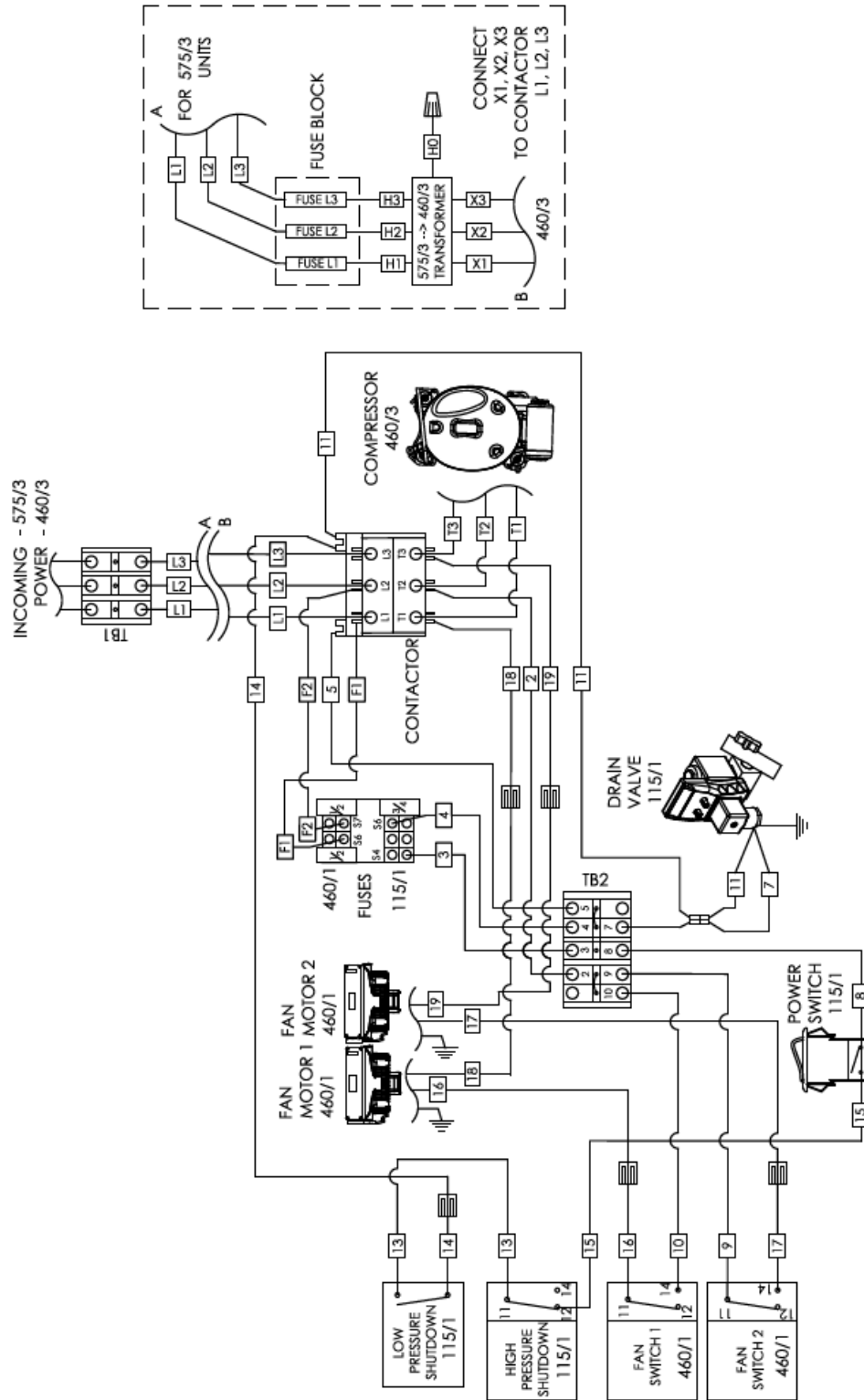
100518788 - D

13.1.5 RAD-0400 through RAD-0600 (230V)



100520558 - B

13.1.6 RAD-0400 through RAD-1250 (460/575V)

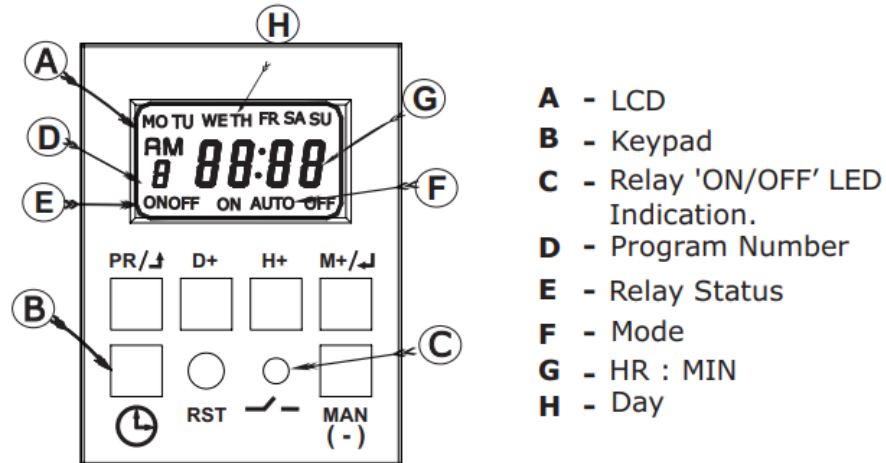


100520406 -B

13.2 P Series Timer – Add on Option

13.2.1 Programming Your Timer

13.2.1.1 Front View



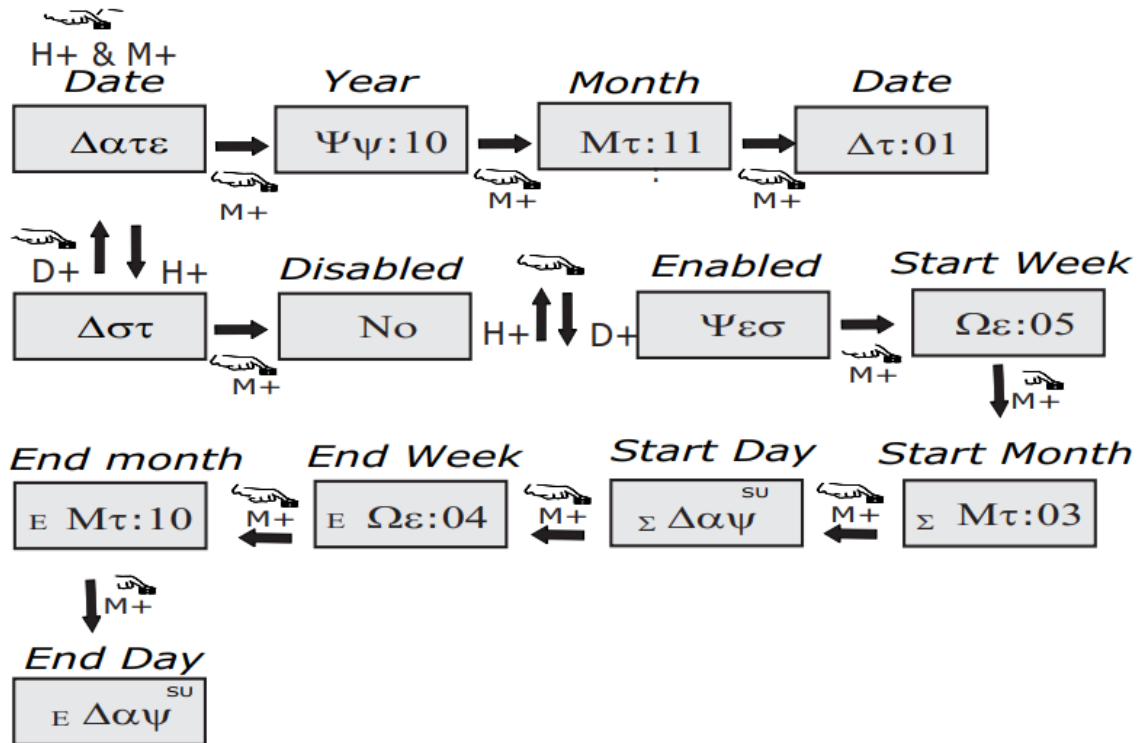
13.2.1.2 Key Functions

- PR / - Program key to view & edit programs & As ESC key
- D+ - Day selection & Also as an Date/DST increment key
- H+ - Hour increment & Also as a Date/DST decrement key
- M+ / - To increment minute & Also as an enter key
- (H+) + (M+) - To enter in Date/DST mode
- RST - Reset programs & settings in the device
- MAN (-) - Manual key for overriding & Also to decrement D/H/M in program mode
- Clock key to set the clock
- CLK + MAN - To set 12 / 24h clock mode
- CLK + PR - To lock / unlock keypad

13.2.1.3 Clock Settings

- + MAN - Press clock key & MAN key simultaneously to toggle between 12 / 24-hour clock mode.
AM / PM
- + D+ - Keep the Clock key pressed & then press the D+ key to set day.
MO/TU/WE/TH/FR/SA/SU
- + H+ - Keep the Clock key pressed, then press the H+ key to set hour.
00 - 23 IN 24 HR MODE
01 - 12 IN 12 HR MODE
- + M+ - Keep the clock key pressed, then press M+ key to set min.
00 - 59

13.2.1.4 DST & Date Settings



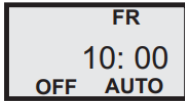
- During Run mode, press H+ with M+ to enter 'dAtE' menu. Press M+ to enter this menu. Edit YY, [t & dt using D+ or H+.
- 'dAtE' menu is being displayed, press H+ or D+ to select DST & press M+ to enter its menu.
- User can enter DST & Date as shown in the figure 2 above.
 - For this, D+ key is used to increment the parameter value
 - H+ key is used to decrement the parameter value
 - M+ key is used to save the current parameter value
 - PR key is used to escape to previous parameter screen
- During DST period 'd' will appear at bottom left corner of the screen & day will be updated according to current date. No need to set day manually by pressing CLK & D+ key

Note:

1. DATE & DST must be set in regions where DST is observed. When DST is enabled, LCD shows 'd' at the left corner.
2. DST Start / End: Clock is rolled over from '02:00' to '03:00' at start and is rolled over from '03:00' to '02:00' at end.
3. When DST period starts, clock gets incremented by 1 hour. If the user has set the clock prior to setting the DST and accounted for this additional hour that would get incremented, then the user might have to readjust the clock.

13.2.1.5 Manual Override & Mode Description

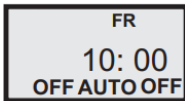
Press MAN key to toggle between-



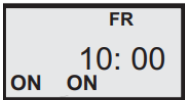
1. **AUTO:** As per set program.



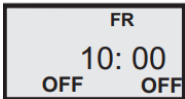
2. **ON AUTO:** Manual ON up to next ON event.



3. **AUTO OFF:** Manual OFF up to next OFF event.



4. **ON:** Manual ON (Continuous).

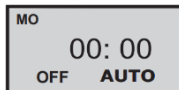


5. **OFF:** Manual OFF (Continuous).

13.2.1.6 Programming Details

25 ON/OFF Programs																								
1	2	3	4	5	6	7	8	9	A	B	C	D	e	f	G	H	J	L	n	P	q	T	u	Y

Screen 1:



After power ON screen 1 will be displayed.

Screen 2:



Set the current time (e.g., 10:00), Day (e.g., Friday) & Relay mode (e.g., AUTO) as per CLOCK setting and mode function.

PR /

- Press PR to enter in ON/OFF time program.

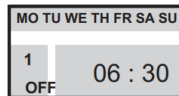
Screen 3:

Press D+ stepwise for day selection as given below. Mon to Sun is default setting.

1. **MO TU WE TH FR SA SU** (All Weekdays)
2. **MO TU WE TH FR SA** (Exclude Sunday)
3. **MO TU WE TH FR** (Exclude Weekends)
4. **MO TU WE TH SU** (Exclude Friday & Saturday)
5. **SA SU** (Only weekends)
6. **FR SA** (Only Weekends)
7. **TU WE TH FR SA SU** (Exclude any Single Day)
8. **MO/TU/WE/TH/FR/SA/SU** (Include any Single Day)
9. **MO WE FR SU** (Exclude Alternate Days)
10. **TU TH SA** (Exclude Alternate Days)

Screen 4:

Press H+ to edit & increment the hour as & if needed, use MAN (-) key to decrement hours.

Screen 5:

Press H+ to edit & increment the hour as & if needed, use MAN (-) key to decrement hours.



To save & exit the program, press the  key.

Program up to 25 individual programs as desired or needed.

How to Delete the Program?

1. To delete single program, go to respective program, press H+ until '--' hr comes & press M+ until '--' min comes on LCD. '--:--' displayed on LCD indicates empty program.
2. To delete/reset all the programs & settings, press RST key.

KEYPAD LOCK:



To lock the keypad, press the  and the 'PR' key simultaneously for 3 seconds or more. 'bLoC' will appear on the screen indicating that the keypad has been locked. When the keypad is locked none of the parameters can be edited, only the mode can be changed from 'Auto' to 'ON Auto' and 'Auto OFF' by pressing the 'MAN' key. To unlock  the keypad press ' ' and PR key simultaneously for 3 or more sec. 'ULoC' will appear on screen. The keypad can be locked only in Run mode and not in program Edit mode.

13.2.2 Troubleshooting Your Timer

13.2.2.1 Troubleshooting Matrix

Possible Cause	Check	Correction
Timer Wired Incorrectly	Verify timer is wired per the wiring diagram	Rewire according to wiring diagram
Timer programming has not been set	Verify programming has been set on timer	Program the timer per "Programming your Timer" section above
Backup Battery lost charge	Verify timer buttons and screen operate when there is no power to unit	Replace backup battery
Timer has Malfunctioned	All of the above	Contact Altec AIR technical support (800) 521-5351

13.2.2.2 Frequently Asked Questions

1. **QUESTION:** In event of power failure, do I lose all my programs?
1. **ANSWER:** No, because battery has a reserve of approx. 6 yr. at operating temperature. In absence of power, we can program the device as per requirement. However, during power fail, relay or LED will not operate but the relay status can be observed on LCD screen.
2. **QUESTION:** How to use Manual override? When is it applicable?
2. **ANSWER:** Press MAN key to toggle to ON Auto, Auto OFF, ON or OFF mode. (Refer Mode Description). It is used if user requires an immediate ON or OFF of the relay.
3. **QUESTION:** Can I select any day in the week as my weekly OFF?
3. **ANSWER:** Yes, when in PR mode, toggle by pressing D+ & MAN (-) or D+ key respectively to select individual holiday selection.
4. **QUESTION:** What should I do to remove all programs & reset RTC?
4. **ANSWER:** Press RST key. All programs will get deleted, RTC will be reset to 00:00 & Default day as Monday.
5. **QUESTION:** How do I change clock format from 12 h to 24 h?
5. **ANSWER:** Press  & MAN  simultaneously to switch clock format from 12h to 24 h & vice-versa.
6. **QUESTION:** How does ON AUTO & AUTO OFF feature help?
6. **ANSWER:** ON AUTO / AUTO OFF feature bypass the current program & continues with the next program. ON AUTO mode returns back to AUTO mode at next programmed ON Time. AUTO OFF mode returns back to AUTO mode at next programmed OFF Time. In this way, one can override the relay to switch ON/OFF without affecting the further programs.

14. Warranty Statement

For updated and current Warranty information, please visit:

www.altecair.com/about-altecair/warranty.html

Registration Reminder

If you haven't already done so, please take a moment to register your Altec AIR Refrigerated Non-Cycling Series Air Dryer. **Registering is necessary to activate this Limited Warranty on your product.** Once you register, you are eligible to receive free technical support, as well as updates concerning your Altec AIR products.

See Section 7. for details on Registering Your Air Dryer.

