



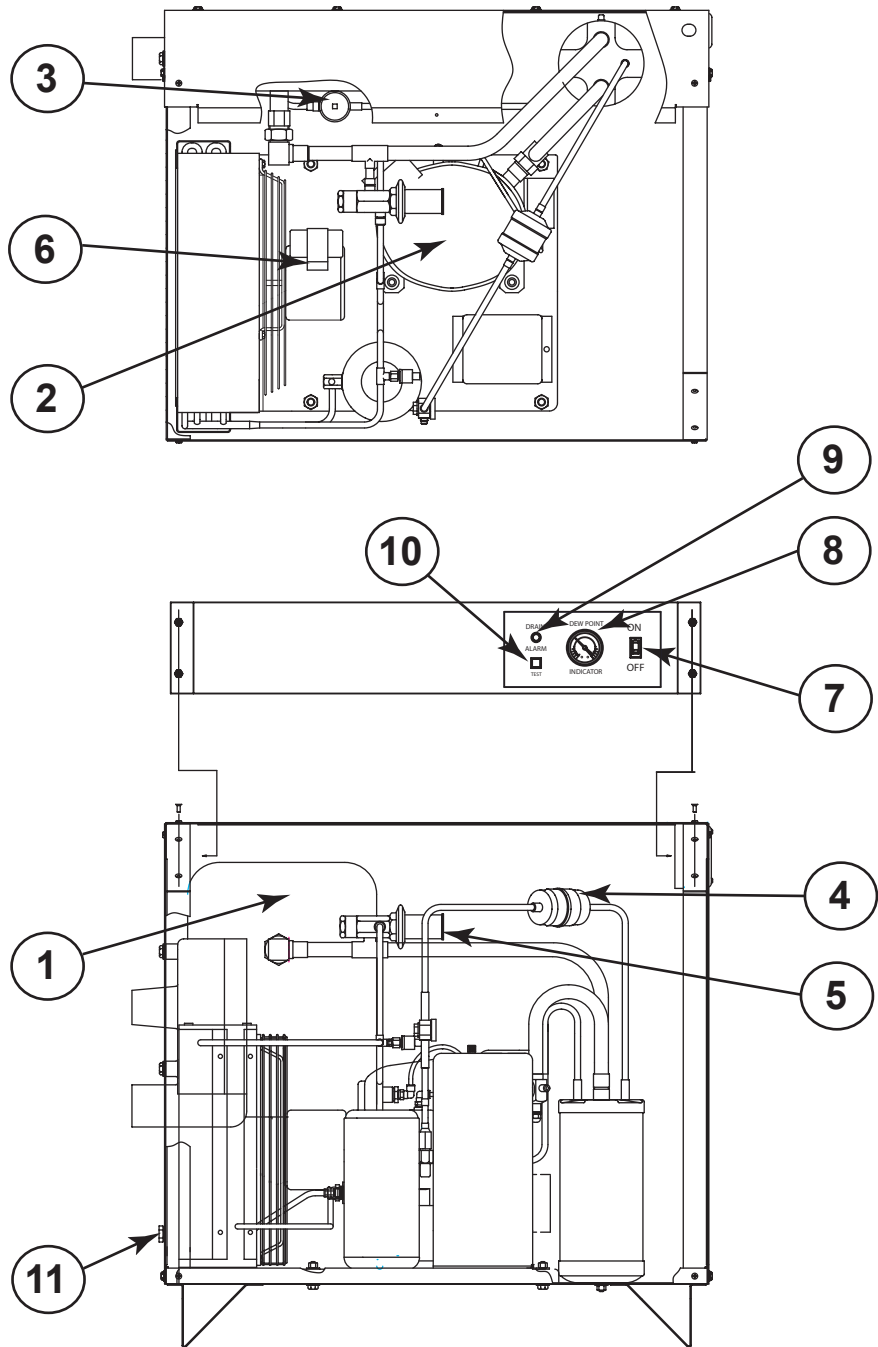
**Owner's Manual
Refrigerated
Compressed Air Dryers
Models F-200, 250, 300 & F350**

Read carefully before attempting to assemble, install, operate or maintain the product described. Protect yourself and others by observing all safety information. Failure to comply with instructions could result in personal injury and/or property damage. Retain instructions for future reference.

WARNING: Air treated by this equipment is not suitable for breathing without further purification. Refer to O.S.H.A. standards for the requirements for breathing quality air.



Figure 1 - F-200, 250, 300 & F-350



- 1) Heat Exchanger/Separator**
- 2) Compressor**
- 3) Expansion/Control Valve**
- 4) Refrigerant Filter**
- 5) Hot Gas Valve**
- 6) Fan Motor**
- 7) Power On Light/Switch**
- 8) Dew Point Indicator**
- 9) Drain Alarm Light**
- 10) Drain Override**
- 11) Drain**

Receiving and inspection

Arrow Dryers are carefully prepared for shipment at the factory to protect them from damage in transit. Dryers are shipped F.O.B. factory. Immediately upon arrival, check the dryer for possible damage. **If damage is found, report it to the carrier and file a damage claim.**

Check the dew point indicator gauge. If the dew point indicator gauge reads zero, it indicates a possible refrigerant leak. Notify your dealer immediately.

Be sure you have the right dryer. Check the nameplate for voltage and amperage

How the Air Dryer Works

Compressed air enters the inlet and passes through the air-to-air heat exchanger where the air is partially cooled by the exiting cold air. Next, the air passes through a refrigerant-to-air heat exchanger where it is cooled to near the freezing point of water. As the air is cooled, it loses the capacity to hold water vapor. The water vapor condenses into water droplets and drains to the separator. Passing through the separator, air flow slows down and causes more water to condense and collect in the bottom of the separator bowl. The water is exhausted by the automatic drain.

The compressed air, now at a pressure dew point of 35°F, leaves the dryer through the air-to-air heat exchanger where it is heated by the incoming air.

Location and Installation

Locate the dryer indoors in a protected area where ambient temperature will range between 45°F and 100°F. Dryers are usually located near the compressor. Do not cycle the dryer with the compressor. If an aftercooler is used after the compressor, install the dryer downstream of the aftercooler and receiver (see figure 2). Install the dryer so that there is sufficient room around it to permit circulation of air through the refrigeration condensing unit. Allow for easy access into the dryer through the cover panel.

Check the nameplate for voltage and amperage. The dryer is furnished with a 6 foot electrical cord for connection to a grounded outlet.

Be sure that the compressor air passes through the dryer in the proper direction. Connect the compressed air lines to the inlet and outlet connection as marked on the cabinet. Connect the air lines with standard pipe fittings.

The mechanical separator has an automatic zero loss drain with a 1/2" drain line connection located on the outside of the dryer cabinet.

It is recommended that a bypass line is piped around the dryer. Shutoff valves should be installed at both inlet and outlet, with another valve in the bypass line. This complies with O.S.H.A. lockout regulations and permits the dryer to be removed from the system or serviced without turning off the air supply.

Typical Compressed Air Systems

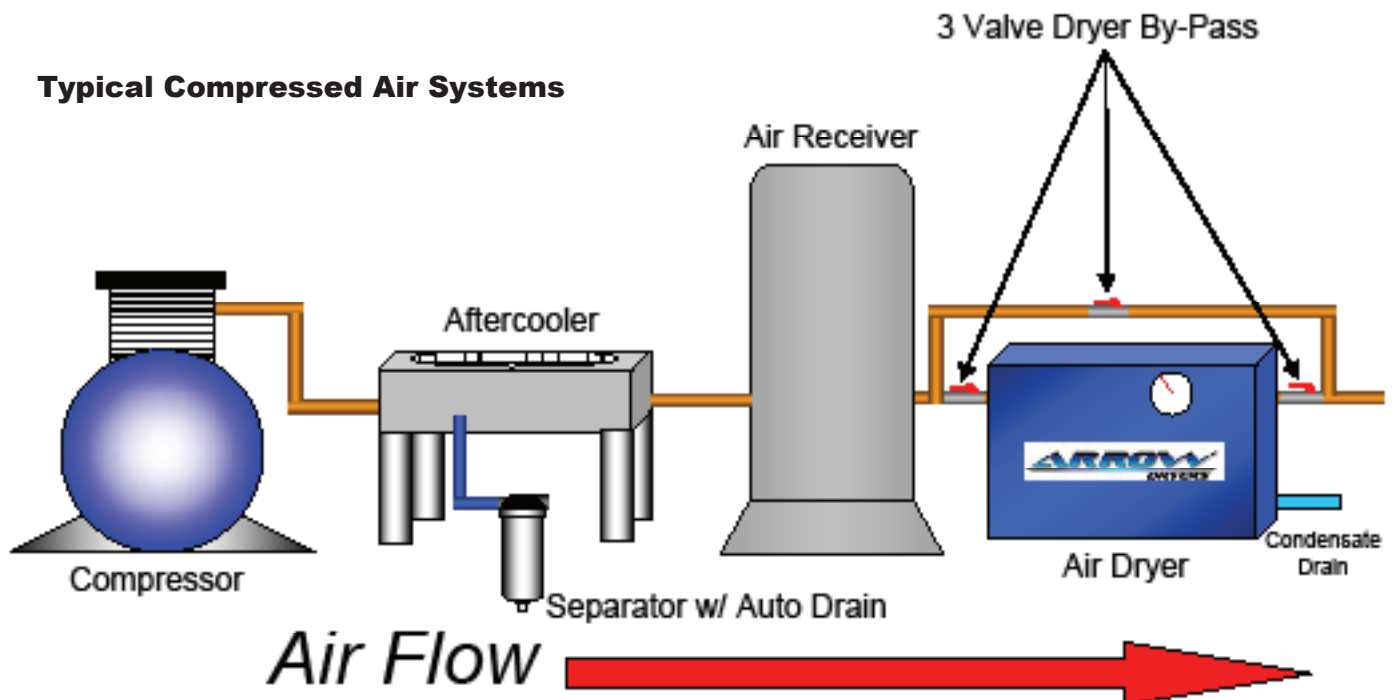
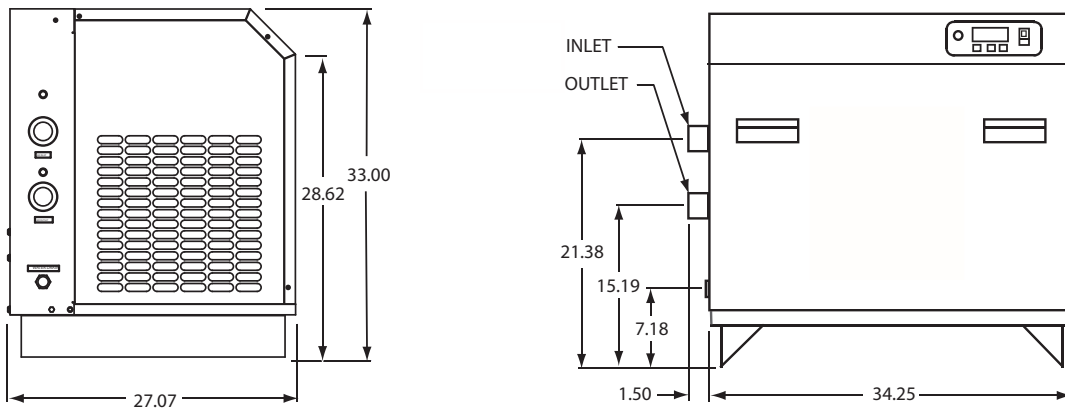
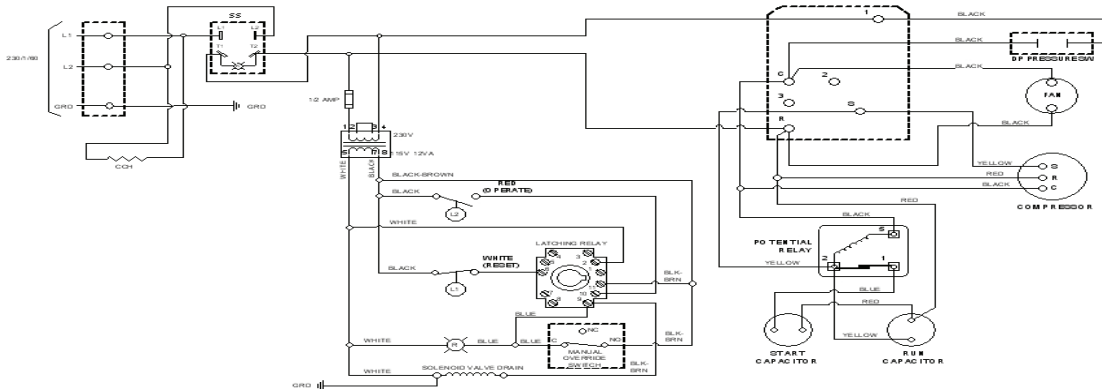


Figure 2

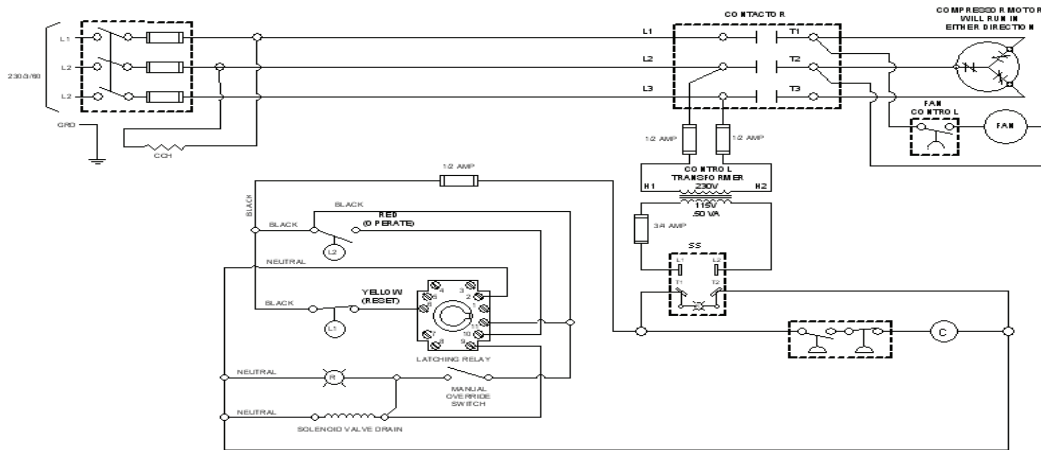
Dimensions F-200, 250, 300 & F-350 Air Dryer



**F-200, 250, 300 & F-350 Wiring Diagram
230/1/60**



**F-200, 250, 300 & F-350 Wiring Diagram
230/3/60 - 460/3/60**



Specifications

Model No.	Power Supply	Capacity SCFM @ 100 PSIG	Dimensions (Inches)			Air Line Conn. FPT	Drain Line Conn.	H.P.	Refrig Charge*	Net Wt. Lbs.	Max. Press. PSI	Full Load AMP	L.R. AMP
			Length	Height	Width								
F-200-2	230/1/60	200	34	33	27	1 1/2"	1/2"	1	7 lbs.	275	175	11.75	56.0
F-200-3	230/3/60	200	34	33	27	1 1/2"	1/2"	1	7 lbs.	275	175	10.4	65.5
F-200-4	460/3/60	200	34	33	27	1 1/2"	1/2"	1	7 lbs.	275	175	3.59	25.0
F-250-2	230/1/60	250	34	33	27	1 1/2"	1/2"	1 1/4	9 Lbs.	295	175	12.4	61
F-250-3	230/3/60	250	34	33	27	1 1/2"	1/2"	1 1/4	9 Lbs.	295	175	9.1	55
F-250-4	460/3/60	250	34	33	27	1 1/2"	1/2"	1 1/4	9 Lbs.	295	175	10.2	51
F-300-2	230/1/60	300	34	33	27	1 1/2"	1/2"	1 1/4	9 1/2 Lbs.	295	175	12.4	61
F-300-3	230/3/60	300	34	33	27	1 1/2"	1/2"	1 1/4	9 1/2 Lbs.	295	175	9.1	55
F-300-4	460/3/60	300	34	33	27	1 1/2"	1/2"	1 1/4	9 1/2 Lbs.	295	175	10.2	51
F-350-2	230/1/60	350	34	33	27	2"	1/2"	1 1/2	9 1/2 Lbs.	315	175	16	82
F-350-3	230/3/60	350	34	33	27	2"	1/2"	1 1/2	9 1/2 Lbs.	315	175	9.4	66
F-350-4	460/3/60	350	34	33	27	2"	1/2"	1 1/2	9 1/2 Lbs.	315	175	4.7	33

NOTE: The air leaving the dryer is reheated to 25°F below the inlet air temperature

Design Conditions

The Dryer must not be cycled with the air compressor. The dryer is non-cycle and is designed to run continuously (even under light loads). If the compressed air system remains pressurized and the air compressor cycles off and on to maintain line pressure, the dryer should remain in operation to keep the air lines dry.

Air Flow SCFM: The rated air flow (SCFM) of the dryer is designed for 100 PSIG. Above the rated air flow, the dew point will rise and moist air may reappear downstream. The dryer may cycle off and on under excessive load and cause compressor damage.

Inlet Air Temperature: The dryer will function normally up to 100°F. Above this temperature, the dryer capacity will fall off. Inlet air temperature should be controlled so that it does not exceed 100°F.

Line Pressure: The maximum design pressure is 175 PSIG.

Ambient Air Temperature: Locate the dryer indoors in a protected area where the ambient temperature will range between 45°F and 100°F. Note: Above an ambient temperature of 100°F the refrigerant will rise until the dryer shuts down. Several off and on cycles under these conditions will damage the compressor.

Automatic Expansion Valve: The automatic expansion valve regulates the refrigerant suction pressure. The expansion valve is factory set between 33 and 36 PSIG.

Start UP

- 1) On initial start-up of system check electrical connections to the dryer, as well as the air piping, so inlet and outlet piping are connected to correct ports.
- 2) Check panel mounted Dew Point Indicator gauge before starting. The indicator must read above the green area and into the high red section.
- 3) When ready to operate the compressed air system, the dryer should be started before air compressor is started.
- 4) When closing the start switch the indicator light on the front panel of dryer will show there is power to the refrigeration compressor. The dew point indicator will slowly drop and hold within the green area the gauge.
- 5) When pressure has dropped to this level the air compressor can be started and air flow can begin.

NOTE: All dryer models are designed to operate without compressed air load in order to pre-cool the heat exchanger surface.

NOTE: Operation of dryer is automatic and continuous. Refrigerant compressor does not cycle off and on. Discharge of condensate through drain is automatic.

To Stop

To stop the unit turn start-stop switch to off position.

IMPORTANT: IF IT IS NECESSARY TO PROTECT THE AIR SYSTEM DURING NORMAL SHUT-DOWN THE INLET SHUT-OFF VALVE TO THE DRYER SHOULD BE CLOSED TO PREVENT WET AIR FROM ENTERING AIR SYSTEM.

How to Make Minor Refrigerant Suction Pressure Adjustments

- 1) Keep the dryer running **under no load** and turn off or bypass the compressed air.
- 2) Remove the dryer cover and locate the control valve (See Figure 3).
- 3) Remove cap. With 5/16" allen wrench a turn clockwise to increase or counterclockwise to decrease the suction pressure (1/4 turn will normally be enough). Wait 3 to 4 minutes for the suction pressure to settle. Repeat if needed. Replace cap when adjustments are completed.

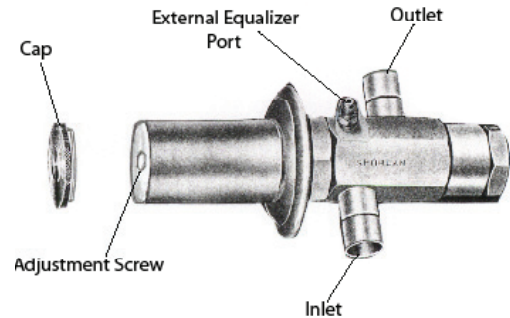


Figure 3

Maintenance and Care

NOTE: Refrigerant air dryers require relatively little maintenance if they are used accordance with the installation and operating instructions.

Cleaning Fin Surface

NOTE: These are air cooled refrigeration systems and depend upon cooling air drawn from the area around the dryer for efficient operation.

1. Inspect the fin surface of the condenser regularly and keep it free of dust, lint or paper.

NOTE: A vacuum cleaner or low pressure air hose can be used for regular and normal maintenance of the fin surface.

2. Machine shop applications with oil vapor in the room air may require cleaning with fin surface cleaners available from refrigerant supply houses.

Automatic Drain Operation

This air dryer is equipped with an automatic zero loss drain. The condensate which has been collected from the wet compressed air is stored in a separator and controlled with a float level device that will automatically trigger the opening of a drain solenoid valve discharging the stored condensate. On the front control panel there is a manual override button that will activate the drain manually when pressed. A drain alarm light has been installed on the control panel and will remain on when a malfunction occurs preventing the discharge of the condensate.

Symptom	TROUBLESHOOTING CHART Possible Causes(s)	Corrective Action
Unit will not run.	<ol style="list-style-type: none"> 1. No Power. 2. Internal compressor overload. 	<ol style="list-style-type: none"> 1. Correct power supply, fuses, circuit breaker. 2. Feel the temperature of the compressor and allow to cool off if hot. Observe the fan motor. Have the motor checked if it does not run. Clean the condenser.
Dew Point Indicator Red Area High	<ol style="list-style-type: none"> 1. Internal compressor overload. 2. High ambient temperature. 	<ol style="list-style-type: none"> 1. Check for air overload. Check inlet air temperature. Check operation of fan motor. 2. Check room temperature and hold between 45°F and 100°F.
Indicator light off	No power to the dryer.	Check power supply, fuses, circuit breaker.
Dew Point Indicator Red Area Low	<ol style="list-style-type: none"> 1. Low refrigerant charge. 2. Low ambient temperature. 3. Low hot gas valve setting. 	<ol style="list-style-type: none"> 1. Have qualified refrigeration service technician check out dryer or call factory. 2. Relocate dryer to heated area between 45°F and 100°F 3. Re-adjust hot gas valve to the green area on the dew point indicator gauge. (See minor pressure adjustments)
High pressure drop	<ol style="list-style-type: none"> 1. High air flow. 2. Drain valve not discharging. 3. Freezing moisture in evaporator. 4. Plugged separator element or drain. 	<ol style="list-style-type: none"> 1. Air flow above rated flow of dryer. 2. Manually blow down drain until water flow stops. Clean drain. 3. Re-adjust hot gas valve to the green area on the dew point indicator gauge. (See minor pressure adjustments) 4. Clean or replace.
Water downstream of dryer	<ol style="list-style-type: none"> 1. Compressed air is flowing through dryer before it is turned on. 2. Dirty separator element or drain. 3. Overload dryer above air flow capacity. 4. High suction pressure. 5. Low outlet air pressure. 6. Low refrigerant charge. 	<ol style="list-style-type: none"> 1. Dryer must be operating 5-10 minutes before compressed air load. 2. Disassemble and clean. 3. Reduce air load to dryer specifications.* 4. Inlet air temperature too hot. 5. Freezing of water, adjust suction pressure.* 6. Contact service technician to leak check.

NOTE: Check or repairs of the refrigeration system must be done by a qualified refrigeration service technician with the required gauges and other equipment.

*All adjustments must be made under no compressed air load.

If Trouble Starts

If the dryer cycles off and on for any reason TURN OFF THE DRYER. Call the factory for instructions, **Check or repairs of the refrigeration systems must be made by a qualified refrigeration service technician.** Before calling the factory for instructions, have the following data to report.

Model No. _____

Serial No. _____

Refrigeration Suction Pressure. _____

REPLACEMENT PARTS

<u>Model</u>	<u>F-200-2</u>	<u>F-200-3</u>	<u>F-200-4</u>
Voltage	230/1/60	230/3/60	460/360
Compressor Make	Copeland R-134A	Copeland R-134A	Copeland R-134A
Refrigeration System			
*Condensing Unit	14673	14672	14602
*Compressor	14785	14786	14787
Expansion Valve	14546	14546	14546
Hot Gas Bypass Valve	91233	91233	91233
Refrigerant Filter	14517	14517	14517
Electrical			
Fan Motor	98945	98945	98949
Fan Blade	94941	94941	94941
Fan Switch	91639	91639	91639
Power On Light/Switch	97846	97846	97846
Low Pressure Switch	91287	91287	91287
Crankcase Heater	91616	91490	91616
Gauges			
*Dew Point Indicator	14765	14765	14765
Cabinet Panels			
Base Panel	14666	14666	14666
Cover Panel	14663	14663	14663
Back Panel	14667	14667	14667
End Panel Right Side Vented	14664	14664	14664
End Panel Left Side Vented	14665	14665	14665
Support Bracket Right	14661	14661	14661
Support Bracket Left	14662	14662	14662

***Replacement part for refrigeration service only**

If Trouble Starts

If the dryer cycles off and on for any reason TURN OFF THE DRYER. Call the factory for instructions, **Check or repairs of the refrigeration systems must be made by a qualified refrigeration service technician.** Before calling the factory for instructions, have the following data to report.

Model No. _____

Serial No. _____

Refrigeration Suction Pressure. _____

REPLACEMENT PARTS						
<u>Model</u>	<u>F-250-2</u>	<u>F-250-3</u>	<u>F-250-4</u>	<u>F-300-2</u>	<u>F-300-3</u>	<u>F-300-4</u>
Voltage	230/1/60	230/3/60	460/360	230/1/60	230/3/60	460/360
Compressor Make	Copeland R-134A	Copeland R-134A	Copeland R-134A	Copeland R-134A	Copeland R-134A	Copeland R-134A
Refrigeration System						
*Condensing Unit	14624	14626	14625	14624	14626	14625
*Compressor	14779	14780	14781	14779	14780	14781
Expansion Valve	14515	14515	14515	14515	14515	14515
Hot Gas Bypass Valve	91233	91233	91233	91233	91233	91233
Refrigerant Filter	14517	14517	14517	14517	14517	14517
Electrical						
Fan Motor	94935	94935	101934	94935	94935	101934
Fan Blade	98946	98946	98946	98946	98946	98946
Fan Switch	91639	91639	91639	91639	91639	91639
Power On Light/Switch	97846	87846	97846	97846	97846	97846
Dual Pressure Switch	91645	91645	91645	91645	91645	91645
Gauges						
*Dew Point Indicator	14765	14765	14765	14765	14765	14765
Cabinet Panels						
Base Panel	14666	14666	14666	14666	14666	14666
Cover Panel	14663	14663	14663	14663	14663	14663
Back Panel	14667	14667	14667	14667	14667	14667
End Panel Right Side Vented	14664	14664	14664	14664	14664	14664
End Panel Left Side Vented	14665	14665	14665	14665	14665	14665
Support Bracket Right	14661	14661	14661	14661	14661	14661
Support Bracket Left	14662	14662	14662	14662	14662	14662

***Replacement part for refrigeration service only**

If Trouble Starts

If the dryer cycles off and on for any reason TURN OFF THE DRYER. Call the factory for instructions, **Check or repairs of the refrigeration systems must be made by a qualified refrigeration service technician.** Before calling the factory for instructions, have the following data to report.

Model No. _____

Serial No. _____

Refrigeration Suction Pressure. _____

<u>REPLACEMENT PARTS</u>			
<u>Model</u>	<u>F-350-2</u>	<u>F-350-3</u>	<u>F-350-4</u>
Voltage	230/1/60	230/3/60	460/360
Compressor Make	Copeland R-134A	Copeland R-134A	Copeland R-134A
Refrigeration System			
*Condensing Unit	14627	14628	14594
*Compressor	14782	14783	14784
Expansion Valve	14515	14515	14515
Hot Gas Bypass Valve	91233	91233	91233
Refrigerant Filter	14517	14517	14517
Electrical			
Fan Motor	94935	94935	101934
Fan Blade	98946	98946	98946
Fan Switch	91639	91639	91639
Power On Light/Switch	97846	87846	97846
Control Transformer	-----	91390	91390
Dual Pressure Switch	91645	91645	91645
Gauges			
*Dew Point Indicator	14765	14765	14765
Cabinet Panels			
Base Panel	14666	14666	14666
Cover Panel	14663	14663	14663
Back Panel	14667	14667	14667
End Panel Right Side Vented	14664	14664	14664
End Panel Left Side Vented	14665	14665	14665
Support Bracket Right	14661	14661	14661
Support Bracket Left	14662	14662	14662

***Replacement part for refrigeration service only**

NOTES:

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**ORDER REPLACEMENT PARTS
BY CALLING
(877) 640-8300**

Please provide following information:

- Model Number
- Serial Number (if any)
- Part Description and Number

Address parts correspondence to:

ARROW DRYERS
745 Clark Ave.
Bristol, CT 06010

WARRANTY POLICY

When used under the conditions recommended by the manufacturer, Arrow Dryers, this model is warranted to be free from defects in material and workmanship for a period of twenty-four (24) months from date of receipt, not to exceed thirty (30) months from the factory ship date, provided Arrow is furnished the customer's name, address, and date of shipment information

These units will utilize either a braze plate or modular type heat exchanger which will be warranted for five (5) years. This warranty is limited to the replacement of the heat exchangers, F.O.B. Factory, and subject to the same restrictions as outlined below concerning misuse, abuse or accident. The automatic drain carries a 90-day warranty.

This warranty will apply to equipment installed, operated and maintained in accordance with the procedures and recommendations as outlined in the owner's manual published by Arrow Dryers.

During the life of this warranty, Arrow Dryers will repair or replace (at Arrow Dryers' option) any defective part or assembly, free of charge, F.O.B. its plant if such defect occurred in normal service and was not due to apparent misuse, abuse or accident.

Any warranty service performed in the field must be authorized by Arrow Dryers, Unauthorized service voids the warranty and any resulting charge will not be paid by Arrow Dryers.

Arrow Dryers makes no other warranties or guarantees, expressed or implied. The merchantability of the components is expressly excluded. The manufacturer assumes no liability for indirect or consequential damages.