



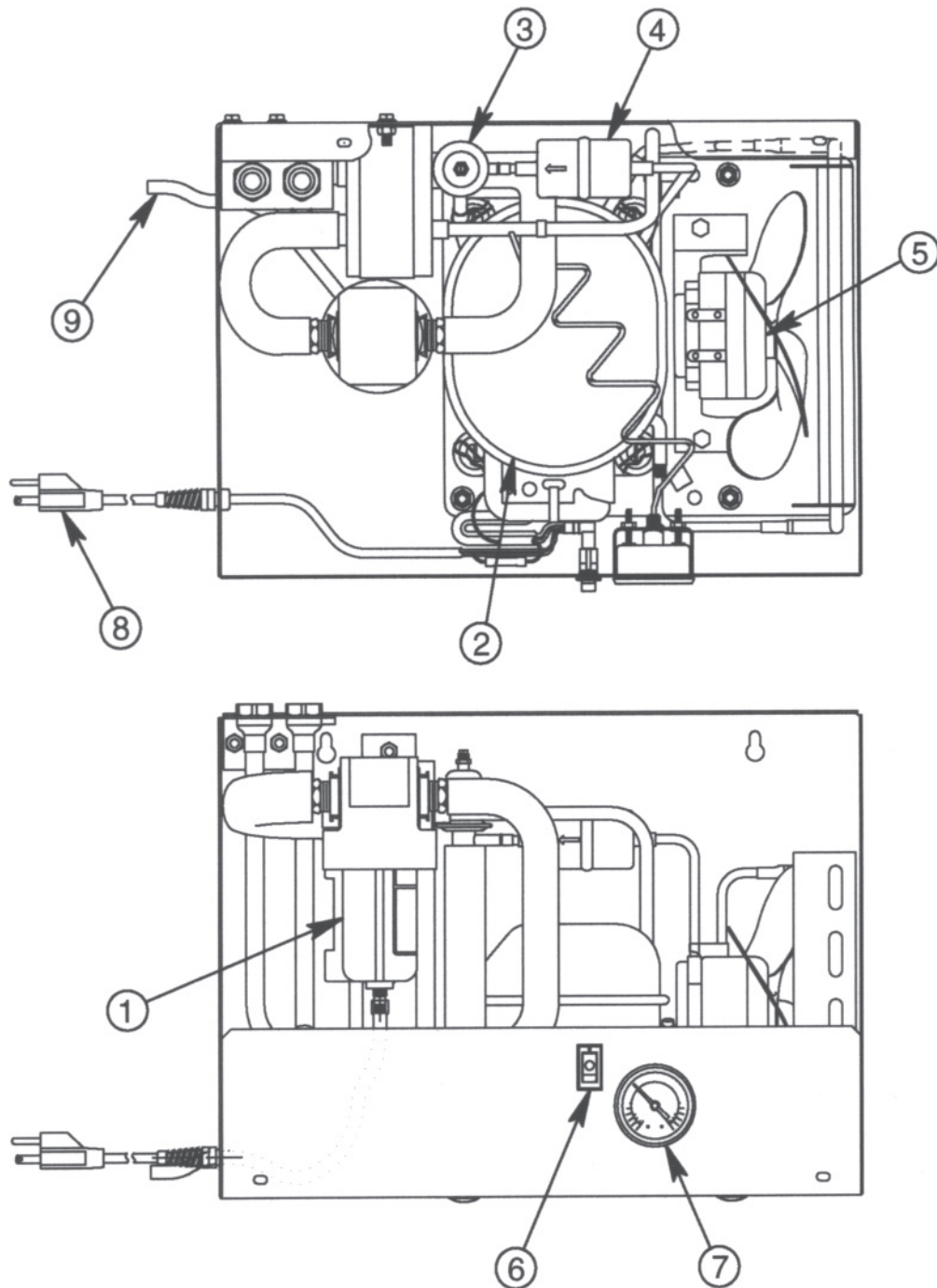
Owner's Manual Refrigerated Compressed Air Dryers Model F-20

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-20



- 1) Separator**
- 2) Compressor**
- 3) Expansion/Control Valve**
- 4) Refrigerant Filter**
- 5) Fan Motor**
- 6) Power On Light/Switch**
- 7) Dew Point Indicator**
- 8) Power Cord**
- 9) Drain Line**

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 suction pressure gauge. If the suction pressure 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 float drain (see figure 4).

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.

The dryer can be mounted on a wall with the key hole slots provided or on a floor stand.

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 float drain with a $\frac{3}{8}$ " plastic drain line connection that exits through 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

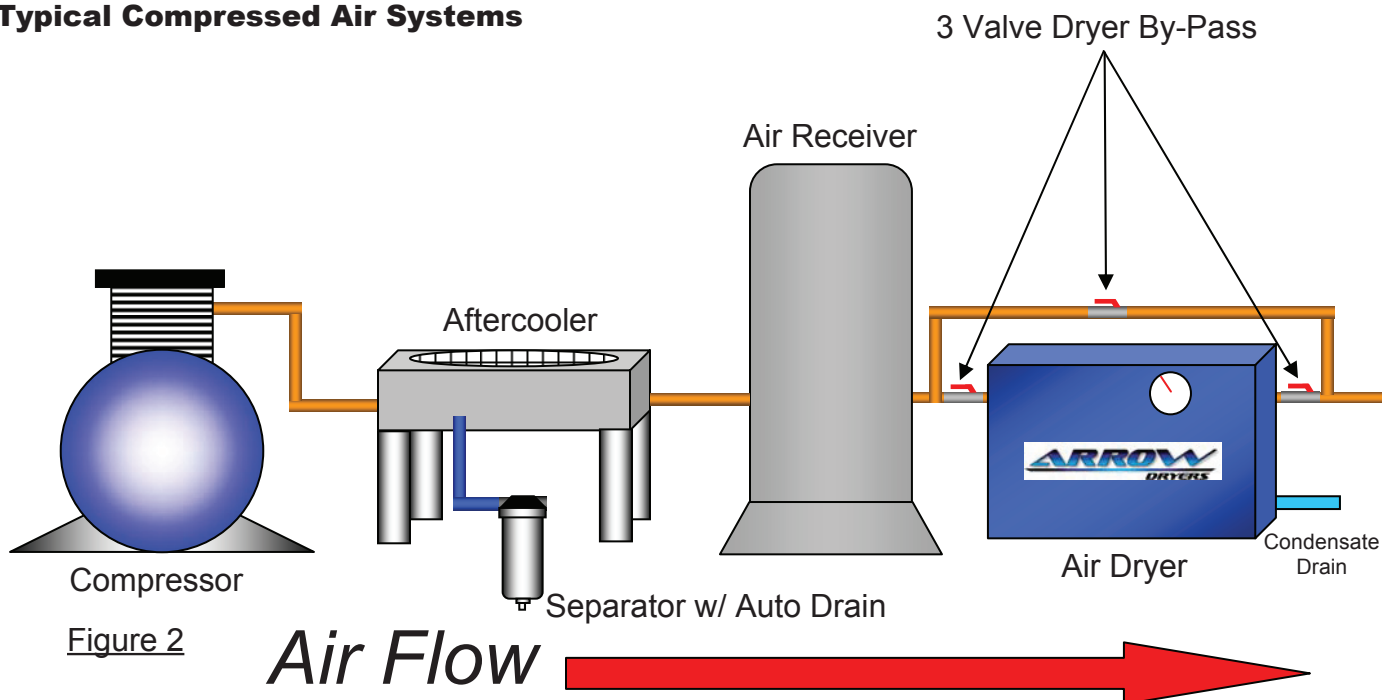
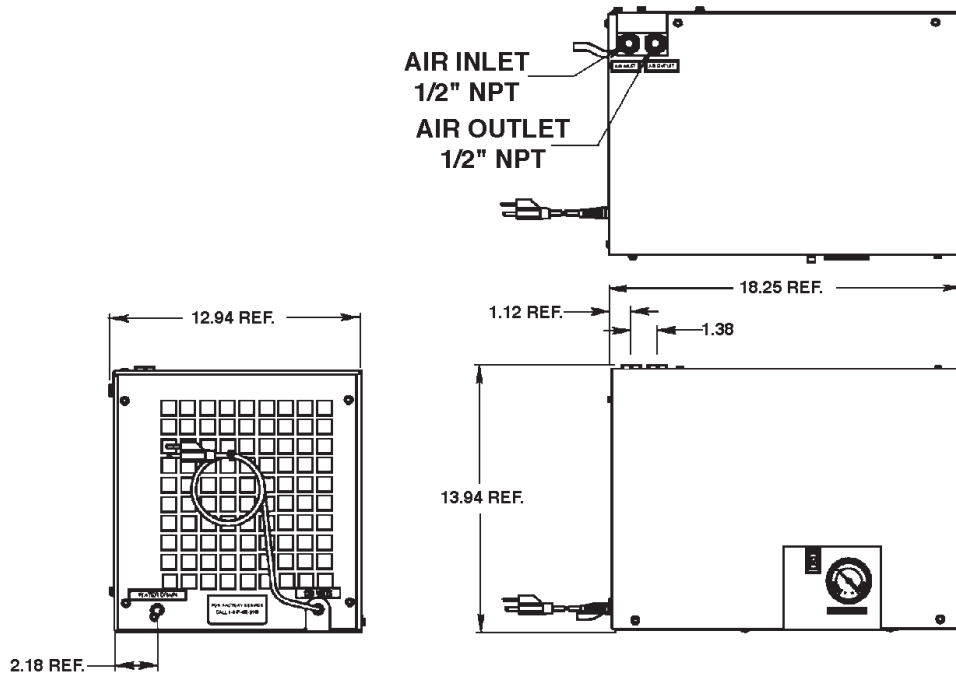


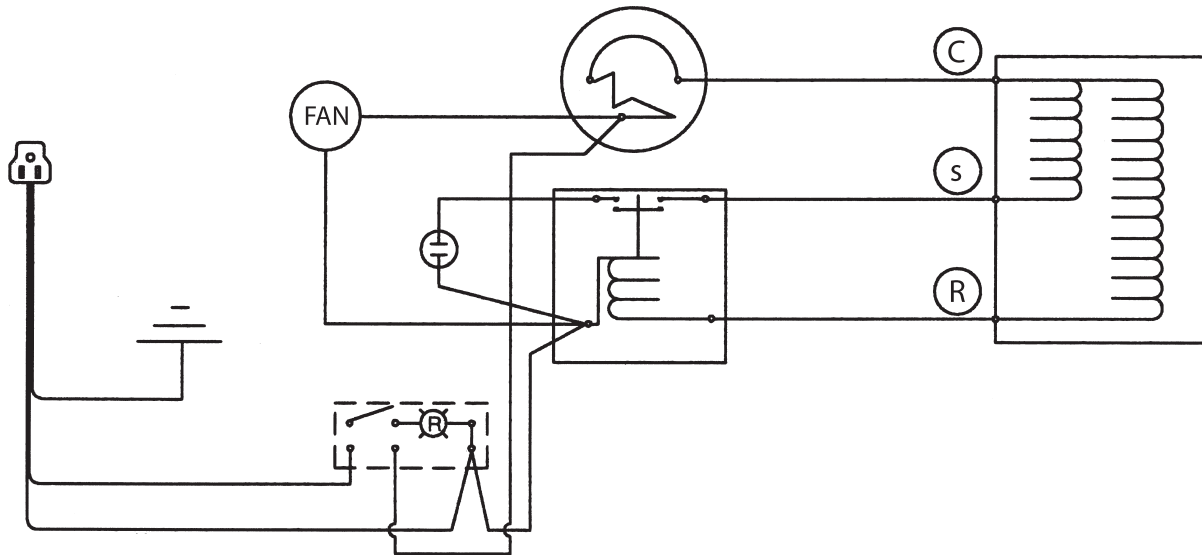
Figure 2

Dimensions

F-20 Air Dryer



F-20 Wiring Diagram 115/220V CSIR



Specifications

Model No.	Power Supply	Capacity SCFM @ 100 PSIG	Dimensions (Inches)			Air Line Conn. FPT	Drain Line Conn. O.D.	H.P.	Refrig Charge*	Net Wt. Lbs.	Max. Press. PSI	Full Load AMP	L.R. AMP
			Length	Height	Width								
F-20-1	115/1/60	20	18	14.0	13	1/2"	3/8"	1/6	10 OZ.	50	250	3.3	18
F-20-2	230/1/60	20	18	14.0	13	1/2"	3/8"	1/6	10 OZ.	50	250	1.6	9.3
F20-250	220/1/50	20	18	14.0	13	1/2"	3/8"	1/6	10 OZ.	50	250	1.7	10.5

*Refrigerant R-134A

Design Conditions

The Dryer must not be cycled with the air compressor. The dryer is non-cycling 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 250 PSIG. The standard internal float drain in the separator will not rise and water will be ejected.

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

Always turn the dryer on 5 to 10 minutes before the air compressor. This will allow the dryer to reach operating temperature and will prevent moist air downstream of the dryer. After starting the dryer, the dew point indicator will slowly drop and hold be within the green area of the gauge.

A lighted on/off switch glows when the power is on. During normal operation, the light will be on and the gauge will read in the green area. If the gauge reads in lower red area, the cause is a low refrigerant charge or low expansion valve setting. If the gauge reads in the higher red area, the compressor could be off. Other causes of a high gauge reading: a dirty air cooled condenser, high ambient air temperature, high inlet air temperature or an air flow above the dryer's capacity. When the dryer is off, the gauge should read close to room temperature.

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) Loosen the locknut and turn clockwise to increase or counterclockwise to decrease the suction pressure (1/4 turn will normally be enough). Tighten lockout securely and wait 3 to 4 minutes for the suction pressure to settle. Repeat if needed.

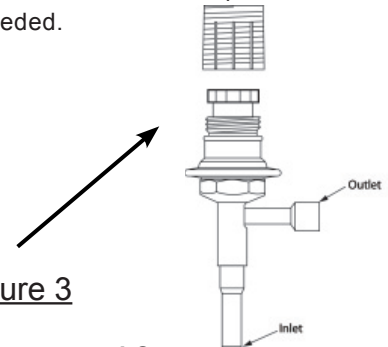


Figure 3

Maintenance and Care

Periodically or as part of a preventative maintenance program, check the following:

Be sure that there is a free flow of water from the separator drain. Check the drain mechanism and bronze element periodically and clean monthly. The drain cock can be opened manually under pressure by turning the knurled stem.

To clean the drain assembly, bypass the air supply. Remove the bowl and then remove the float assembly and wash all part in warm soapy water. Clean bronze element with kerosene. Reassemble in the reverse order.

Be sure that there is a free flow of air over the condenser coils. Check the condenser fins periodically to prevent a build up of dust deposit. If fins are coated with dust, blow compressed air through the fins to clean.

Frosting on refrigerant lines is an indication of too much refrigeration capacity. This results in frozen air passages and prevents air flow through the dryer. It may be necessary to increase the refrigerant suction pressure.

Model F-20

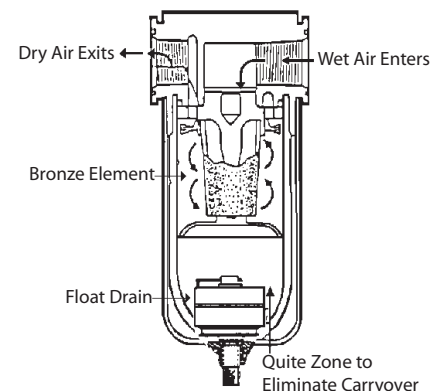


Figure 4

Symptom	TROUBLESHOOTING CHART Possible Causes(s)	Corrective Action
Unit will not run.	1. No Power. 2. Internal compressor overload.	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 (High)	1. Internal compressor overload. 2. High ambient temperature.	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.
Dew Point Indicator Red (Low)	1. High air flow. 2. Drain valve not discharging. 3. Freezing moisture in evaporator.	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 adjustment)
Water downstream of dryer	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.	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.

***ALL ADJUSTMENTS MUST BE MADE WITH DRYER RUNNING 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. _____

<u>REPLACEMENT PARTS</u>			
<u>Model</u> Voltage Compressor Make	<u>F-20-1</u> 115/1/60 TECUMSEH R-134A	<u>F20-2</u> 230-220/1/60 TECUMSEH R-134A	<u>F20-250</u> 240-220/1/50 TECUMSEH R-134A
Separator/ Drain Assembly Separator Bowl Separator Repair Kit Element Kit Float Drain	PART NUMBER F354F-S2 75180-S2 RKF35 EK35 FD06B	PART NUMBER F354F-S2 75180-S2 RKF35 EK35 FD06B	PART NUMBER F354F-S2 75180-S2 RKF35 EK35 FD06B
Refrigeration System Condensing Unit Compressor Condenser Expansion Valve Refrigerant Filter Heat Exchanger	97829 97836 92950 91221 91235 14100	97799 97838 92950 91221 91235 14100	97834 97837 92950 91221 91235 14100
Electrical Fan Motor Fan Blade Overload Power On Light/Switch	94930 92940 91411 57300	92933 92940 91409 57300	92933 92940 91409 57300
Gauges Dew Point Temp. Indicator	14765	14765	14765
Cabinet Panels Base Cover Right Side Vented Left Side Vented	14011 14016 92430 14121	14011 14016 92430 14121	14011 14016 92430 14121

**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.