



Zee Systems, Inc.

**Fairchild
SA227-AC, BC, CC, DC**

Maintenance and Parts Manual

SZ85-001-1
Aft Evaporator Assembly

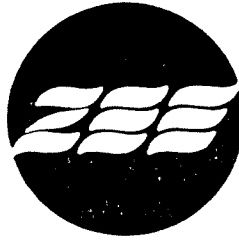
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**MAINTENANCE AND SERVICE
INSTRUCTIONS
P/N SZ85-001-1
EVAPORATOR ASSY, AFT**

1.0 INTRODUCTION

1.1 This manual contains maintenance instructions for the service and minor repair procedures for the SZ85-001-1 Aft Evaporator Assembly installed on the Fairchild SA227-AC/-BC/-CC/-DC aircraft.

1.2 OPERATION

1.2.1 The SZ85-001-1 Evaporator Assembly was designed with compactness in mind utilizing a dual axial mounted electrical motor and blower configuration. The squirrel cage draws air across the coils and into the aircraft ducting for circulation.

WARNING

THIS SYSTEM IS UNDER PRESSURE. INJURY COULD OCCUR IF PROPER SAFETY PRECAUTIONS ARE NOT TAKEN. THE SYSTEM PRESSURE MUST BE RELIEVED BEFORE ANY LINES ARE DISCONNECTED. REFER TO FAIRCHILD SPS 12-2 FOR INSTRUCTIONS FOR DISCHARGING AND RECHARGING THE SYSTEM.

WARNING

AVOID PROLONGED SKIN CONTACT WITH THE REFRIGERANT HFC-134a. AVOID CONTACT WITH EYES. DO NOT BREATHE THE FUMES. REFER TO THE MATERIAL SAFETY DATA SHEET FOR INFORMATION ON TREATMENT.

2.0 SPECIAL TOOLS AND MATERIALS

2.1 Fairchild SPS 12-2 describes all special tools. No other special tools are required to perform the maintenance described in this manual.

2.2 No special materials are required to the perform maintenance described in this manual.

2.3 The following equipment and material may be required to perform maintenance in this manual.

ITEM	SOURCE
Liquid Detergent, water soluble	Commercially available
Cloth, lint free	Commercially available
Tape, Insulation, Cork, Black	Commercially available
Detector, Leak, Suitable for HFC-134a	Commercially available

3.0 INSPECTION

3.0.1 Items described are followed by a reference to the Figure and Item Number (X-X) which can be found in Section 9.

3.1 Refer to Fairchild Maintenance Manual Section 21 for instructions to access the evaporator. Remove the Containment Cover.

3.1.1 Evaporator Filter (3-2). Inspect the filter every 100 hours for clogging due to dust or other airborne contaminants. Check for tears in the element. Refer to Section 5 for service instructions.

3.1.2 Motor Blower Housing Assy (3-3, 1-2). Check for noisy or slow operation. Refer to Section 5 for service procedures.

3.1.3 Fuses (3-5,-6,-7,-8) Check each fuse for continuity. Examine for discolored or broken element. It may be necessary to remove the fuse cover (3-9) to inspect the fuse. Refer to Section 5 for service procedures.

4.0 TOLERANCES

4.1 No special tolerances apply.

5.0 SERVICE/REPAIR/REPLACEMENT

5.0.1 Items described are followed by a reference to the Figure and Item Number (X-X) which can be found in Section 9.

5.1 Evaporator Filter (3-2): Lift the filter from the evaporator (3-1). Clean the filter (3-2) with a solution of water and liquid detergent, rinse with clear water. Dry the filter (3-2) and return it to the evaporator assy (3-1). Care should be taken not to damage the element.

5.2 Motor Blower Housing Assy (1-2): There is no field repair of this assembly. Inoperative units should be removed and replaced. This component should be removed as an assembly.

5.2.1 Note the terminal connection locations of the orange (High Speed) and red (Low Speed) wires on the fuse block (1-10). Disconnect the orange and red wires at the fuse block (1-10, 3-4). Disconnect the black ground wire.

5.2.2 The Motor and Wheel Assy (1-2) must be removed to gain access to the four screws which hold the Housing Assy (1-4) to the evaporator housing Assy (1-1-1). Remove the three screws (1-5) and spacer (1-6). Remove the Motor and Wheel Assembly (1-3) from the Housing Assy (1-4).

5.2.3 Remove the four screws (1-7), lock washers (1-8) and flat washers (1-9), now remove the Housing Assy (1-4) from the evaporator housing (1-1-1).

5.3 Expansion Valve Line Screen (1-4): **WARNING: SYSTEM IS UNDER PRESSURE AND MUST BE RELIEVED BEFORE ANY SERVICE TO THE EXPANSION VALVE CAN BE ACCOMPLISHED. REFER TO FAIRCHILD SPS 12-2.** Disconnect and remove the Inlet Hose (NS). Discard the Conical Washer (NS). Plug the hose end to prevent contamination of the system. Pull the Line Screen (2-4) from the expansion valve (2-2). Clean and remove any foreign matter from the screen.

5.4 Expansion Valve (2-2): **WARNING: SYSTEM IS UNDER PRESSURE AND MUST BE RELIEVED BEFORE ANY SERVICE TO THE EXPANSION VALVE CAN BE ACCOMPLISHED. REFER TO FAIRCHILD SPS 12-2.** The Expansion Valve setting is preset at the factory and there are no adjustments authorized to the expansion valve. Cleaning of the Line Screen (2-4) (Refer to 6.3) is the only service to the expansion. Defective Expansion Valves must be replaced.

5.4.1 Expose the Thermostatic Bulb on the Suction Line on the evaporator (2-1) by removing the insulating tape. Care should be taken not to puncture or damage the bulb or any of the coils on the evaporator (2-1). Next, carefully remove the clip (2-5) holding the bulb to the Suction Line, retain it for reinstallation.

5.4.2 Disconnect and remove the Inlet Hose (NS) and Conical Washer (NS). Plug the hose end to prevent any contamination of the system. Hold the expansion valve (2-2) with a wrench and loosen the B-Nut

on the Pressure Line on the evaporator (2-1). Remove the Expansion Valve (2-2) including the bulb. Discard the conical washer (NS). Plug the Pressure Line to prevent Contamination to the system.

5.5 Fuse (3-5,-6,-7,-8) replacement: Remove the fuse cover (3-9), lift out the defective fuse (Note: the High Speed (Orange wire) and Low Speed (Red wire) fuses are NOT interchangeable, refer to the parts list for the proper application), install new fuse, replace fuse cover (3-9).

6.0 REASSEMBLY

6.1 Filter (3-2): Place the filter in the evaporator (3-1).

6.2 Motor Blower and Housing Assy (1-2): Reassemble in the reverse order described in 5.2. Care should be taken to insure the squirrel cage is free to rotate.

6.3 Expansion Valve Line Screen (2-4): Insert the screen into the expansion valve (2-2). Install new a conical washer (NS) and attach the hose (NS). Care should be taken to insure proper alignment of the conical washer (NS). Improper alignment could result in a leak or restrict the flow of refrigerant.

6.4 Expansion Valve (2-2): Install a new conical washer and attach the expansion valve to the Pressure Line on the evaporator. Care should be taken to insure proper alignment of the conical washer (NS). Improper alignment could result in a leak or restrict the flow of refrigerant.

6.4.1 Next use clip (2-5) to attach the Thermostatic Bulb to the Suction Line on the evaporator (2-1). The Thermostatic Bulb must have FULL contact with the line. Thoroughly secure the bulb to the line by wrapping with insulating tape.

6.4.2 Make sure the line screen (2-4) is still in the expansion valve (2-2) (SEE 5.3 or 6.3 for instructions). Install a new conical washer (NS) and attach the hose (NS).

6.5 When service is complete replace the Containment Cover. If the system pressure was relieved charge system in accordance with Fairchild SPS 12-2 and make all appropriate log book entries.

7.0 TEST PROCEDURES

7.1 Motor Blower Housing Assy (1-2, 3-3): Activate the blower switch in the cockpit. Select both HIGH and LOW. Check for adequate

air flow at the duct outlet and a noticeable change in airflow volume between the High and Low settings.

7.2 The system must be recharged to check the evaporator or expansion valve. Refer to Fairchild SPS 12-2 for charging procedure. With the system fully charged use a leak detector to check for leaks at fitting connections.

7.3 No other tests are required. Refer to Fairchild SPS 12-2 for proper system operation.

8.0 TROUBLE SHOOTING

TROUBLE	POSSIBLE CAUSE	REMEDY
Evaporator Blowers low flow	Obstructed blower Inlet.	Remove obstruction.
	Obstructed duct.	Remove obstruction.
	Obstructed Outlet.	Remove obstruction.
Evaporator Blowers Inoperative.	Motor open. Motor brushes worn beyond limits.	Replace Motor Blower Housing Assy.
		Check circuit breaker in cockpit, RESET. Check fuse on fuse block, REPLACE. Check wiring to motor. Check switch in cockpit. Check motor for shorts. Repair or replace faulty system or component.
Condenser Power Motor Inoperative.	Motor open. Motor Brushes worn beyond limits.	Replace Motor.
	Faulty circuit breaker or switch.	Replace bad component.
Condenser Power Motor trips circuit breaker in cockpit. continued.	Motor shorted.	Replace Motor.
	Short in wiring.	Check wiring to motor, repair as required.

TROUBLE	POSSIBLE CAUSE	REMEDY
	Faulty circuit breaker or switch.	Replace bad component.
Compressor Motor trips circuit breaker.	Motor shorted. Motor brushes worn beyond limits.	Replace Motor.
Compressor Motor trips circuit breaker.	Short in wiring.	Check wiring to motor, repair as required.
	Faulty circuit breaker or switch.	Replace bad component.
Compressor Motor inoperative.	Motor open. Motor brushes worn beyond limits.	Replace Motor.
	Short in wiring.	Check wiring to motor, repair as required.
	Faulty circuit breaker, ON/OFF switch or low/high pressure cutout switch.	Replace bad component.
	Low/high pressure switch tripped.	Reset relay.
System not cooling. Adequate airflow over evaporators.	Condenser airflow blocked.	Remove obstruction.
	Low refrigerant.	Service system IAW SPS 12-2.
	Overcharge of refrigerant.	Service system IAW SPS 12-2.
	Faulty Compressor	Replace Compressor.
High Discharge Pressure	Overcharge of refrigerant.	Service system IAW SPS 12-2.
	Obstruction in	Check form proper installation of conical washers; locate and remove obstruction and service system IAW SPS 12-2.
continued.		

TROUBLE	POSSIBLE CAUSE	REMEDY
		obstruction and service system IAW SPS 12-2.
High Discharge Pressure	Condenser Power Motor inoperative.	Replace defective component and service system IAW SPS 12-2.
	Little or no air-flow through Condenser coils.	Check Condenser Power Motor, replace as necessary. Check for obstruction, remove.
	Obstruction in Receiver-Dryer.	Replace defective component and service system IAW SPS 12-2.
	Obstructed Expansion Valve and/or Line Screen.	Clean Line Screen. Replace Expansion Valve and service system IAW SPS 12-2.
Low Discharge Pressure.	Low refrigerant.	Service system IAW SPS 12-2.
	Faulty Compressor.	Replace bad component and service system IAW SPS 12-2.
Excessive vibration at Motor/Compressor.	Improper belt tension.	Adjust belt to correct tension.
	Worn, damaged or loose or over tightened mounts.	Adjust or replace mounts.
Quick refrigerant loss.	Open in system.	Check compressor head gasket. Check Hoses or tubing for holes. Check conical washers. Replace defective component. Service system IAW SPS 12-2.
	Defective Conical Washer.	Replace defective washer. Service system IAW SPS 12-2.

continued.

TROUBLE	POSSIBLE CAUSE	REMEDY
	Loose connections.	Tighten connections. Service system IAW SPS 12-2.
Slow refrigerant loss.	Loose connections.	Tighten connections. Service system IAW SPS 12-2.

8.2 Refer to Fairchild SPS 12-2 or Aircraft Maintenance Manual for additional trouble shooting procedures.

9.0 ILLUSTRATED PARTS LIST

9.0.1 Refer to FIG.1, FIG.2, FIG. 3 and Parts List on pages 9 through 14.

9.1 CODES: (NP) Item is not Procurable, see next higher assembly.
(NS) Item is not shown.

9.2 NOTES:

- A. See FIG.1 for proper positioning of Blower Assembly OUTLET.
- B. FIG.2, Fittings and Expansion Valve not shown.

10.0 DIFFERENCE DATA SHEETS

10.1 This section is not applicable.

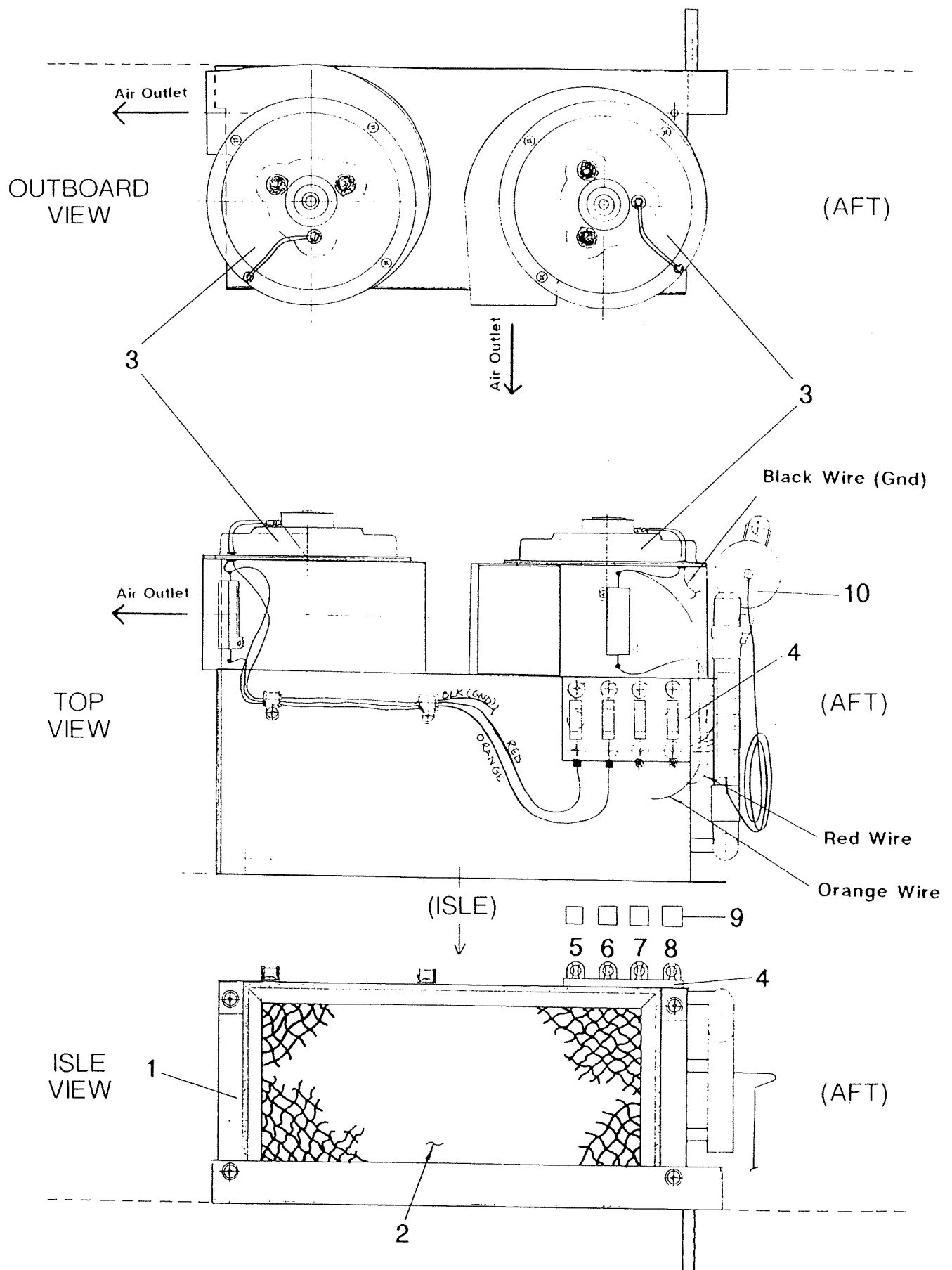
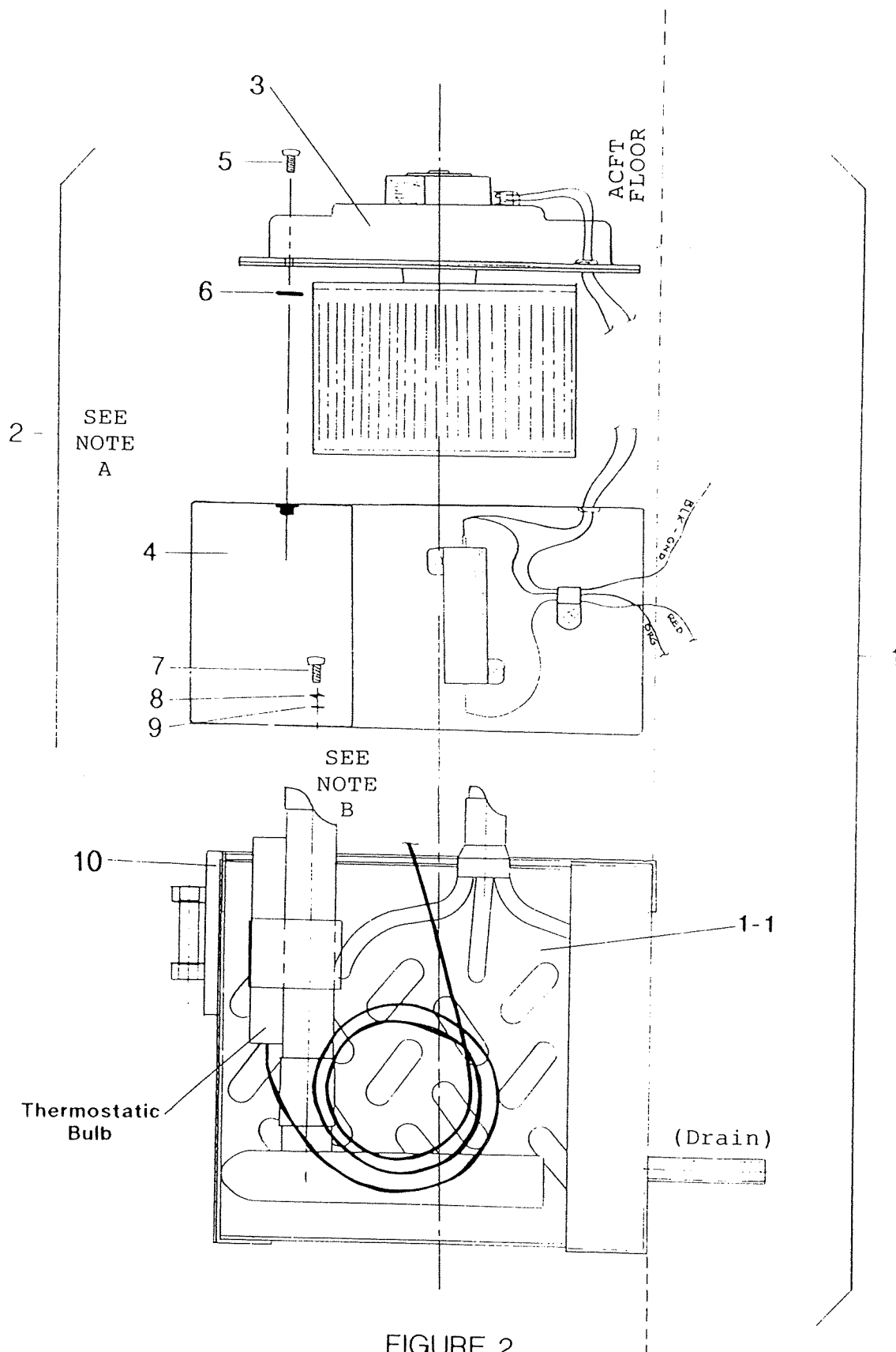


FIGURE 1

PARTS LIST

FIG.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
1	-1	(No Number)	.Evaporator Subassembly	1
	-2	SZ84-010-3	..Filter	1
	-3	SZ63-023-1	Motor/Blower Housing Assembly	2
	-4	356-004	.Fuse Block	1
	-5	313004	..Fuse (Alt. P/N MDL4)	1
	-6	313008	..Fuse (Alt. P/N MDL8)	1
	-7	313008	..Fuse (Alt. P/N MDL8)	1
	-8	313004	..Fuse (Alt. P/N MDL4)	1
	-9	840836	..Cover, Fuse	4
	-10	BFFBCP60	Expansion Valve	1



PARTS LIST

FIG.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
2	-1	SZ85-001-1	(See Note B) Evaporator Assy.	
	-1-1	(No Number)	.Evaporator Subassembly	1
	-2	SZ63-023-1	(See Note A).Motor/Blower Housing Assembly	2
	-3	SZ63-021	.. Motor & Wheel Assembly	2
	-4	(No Number)	..Housing	NP
	-5	MS35206-246	..Screw	3
	-6	1993	..Spacer	3
	-7	MS35206-246	..Screw	4
	-8	AN935-8	..Washer, Lock	4
	-9	AN960-8L	..Washer, Flat	4
	-10	356-004	.Fuse Block	1

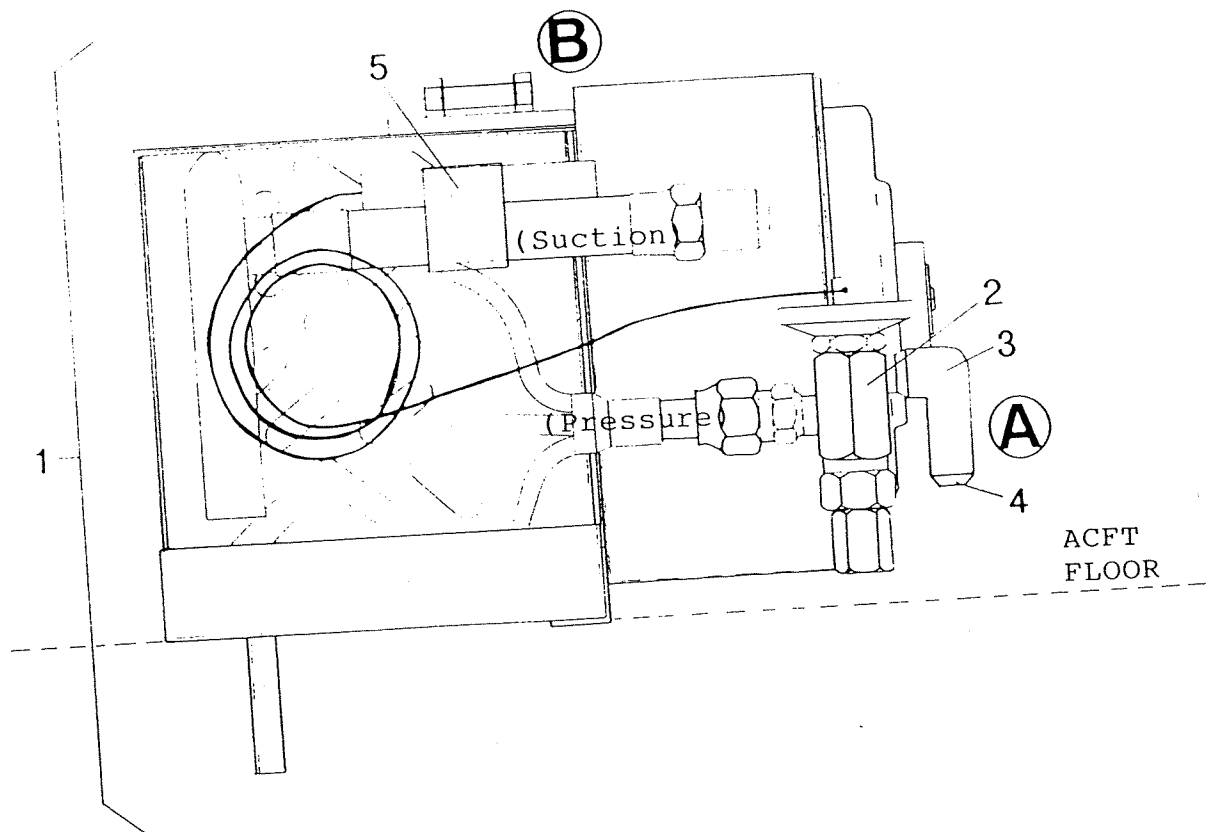
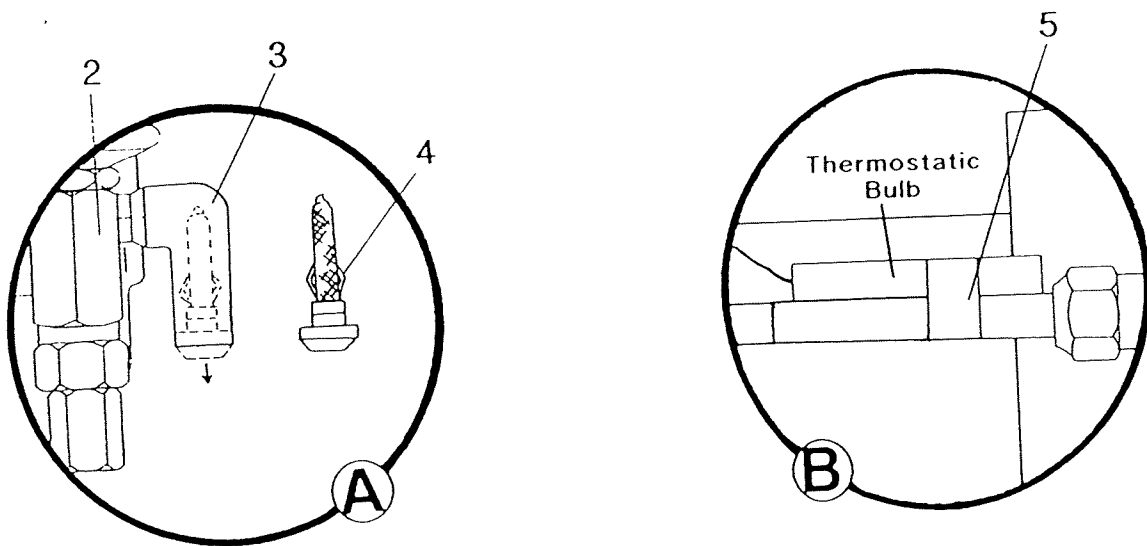


FIGURE 3

PARTS LIST

FIG.	ITEM NO.	PART NUMBER	DESCRIPTION	QTY.
3	-1	SZ85-001-1	Evaporator Assembly (Side View)	
	-2	BFFBCP60	Expansion Valve	1
	-3	(No Number)	.Fitting	NP
	-4	1538-000	..Line Screen	1
	-5	14-2388	Clip	1