ZEE Systems, Inc.

CMM SZ67-002

Component

Maintenance

Manual

with

Illustrated Parts List

for

SZ67-002-SERIES

Evaporator Assembly

ZEE Systems, Inc.

CMM SZ67-002

Record of Revision

REVISION NO:	ISSUE DATE	POSTED DATE	INSERTED BY:
A	3-12-90	3-12-90	Zee Systems
B	8-03-95	8-03-95	Zee Systems
3	10-15-02	10-15-02	Zee Systems

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CMM SZ67-002

List of Effective Pages and Table of Contents

* REV. 3 10-15-02 This revision is a re-issue which includes all previous changes.

1.0 INTRODUCTION

1.1 This Component Maintenance Manual provides information on the maintenance, maintenance schedules and repair and replacement of parts.

1.2 Refer to the Illustrated Parts List (IPL) in Section 8 when using this manual or ordering replacement parts. Parts are identified in parenthesis (FIG-ITEM NO.).

1.3 The SZ67-002 Evaporator Assembly was designed utilizing single mounted electrical motor and dual wheel squirrel cage blower configuration. Cabin air is pulled across the coil and into each squirrel cage blower and returned to the cabin.

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.

WARNING

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

2.0 SPECIAL TOOLS AND MATERIALS

2.1 No special tools are required to perform the maintenance described in this manual. If the refrigerant has been removed for service, repair or replacement of components refer to installation instructions for instruction and special tools to service the system with refrigerant.

2.2 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,	Commercially available
Detector, Leak, Suitable for HFC-134a	Commercially available

3.0 INSPECTION, REPAIR AND REPLACEMENT OF COMPONENTS

3.0.1 Refer to applicable Installation drawings for instructions to access the evaporator. Remove the covers/panels as necessary.

3.0.2 The only component on the Evaporator Unit which requires routine maintenance is the inlet Air Filter. The unit and other components are serviced on condition.

CAUTION

AIR CONDITIONING SYSTEM UNDER PRESSURE. APPROPRIATE SAFETY MEASURES SHOULD BE TAKEN WHEN SERVICING THIS EQUIPMENT. ONLY TRAINED PERSONNEL WITH APPROVED SAFETY EQUIPMENT SHOULD PERFORM SERVICING DUTIES.

NOTE

IT IS UNLAWFUL TO RELEASE R-12 OR OTHER REFRIGERANTS TO THE ATMOSPHERE. USE APPROVED RECOVERY/RECYCLE EQUIPMENT TO CAPTURE REFRIGERANTS. USE ONLY LAWFUL MEANS TO DISPOSE OF RECOVERED REFRIGERANTS. CHECK WITH LOCAL AGENCIES FOR APPROVED DISPOSAL PROCEDURES.

NOTE

CAP ALL OPEN LINES TO PREVENT CONTAMINANTS AND MOISTURE FROM ENTERING THE SYSTEM.

3.1 AIR FILTER (1-11)

3.1.1 INSPECTION: Inspect the filter every 100 hours for clogging due to dust or other airborne contaminants. Check for tears in the element. Check the foam insulation for wear or deterioration.

3.1.2 REMOVAL: Slide the top of the filter from the housing until it clears the top cover then lift the filter from the evaporator.

3.1.3 SERVICE: On condition. Clean the filter with a solution of water and liquid detergent, rinse with clear water. Dry the filter with light compressed air. Care should be taken not to damage the element. Replace foam insulation if worn or damaged.

3.1.4 INSTALLATION: Slide the filter into the housing in reverse order of removal.

3.2 DRAIN LINE (NOT SHOWN)

3.2.1 INSPECTION: Check that the connection on the external drain tube is secure. Check for any leaks or damaged areas on the flexible tube. Using an Air Supply, apply 10 PSI (max.) to the flexible tube at the highest point to the external drain outlet. Check that drain line is clear.

3.2.2 REMOVAL: Loosen the clamp that attaches the drain line to the evaporator drain pan. And pull the flexible drain line off of the evaporator drain pan tube.

3.2.3 SERVICE: Clear any obstructions as required. Replace flexible tube as required by condition.

3.2.4 INSTALLATION: Slide the flexible tube over the evaporator drain pan tube. And tighten the clamp.

3.3 BLOWER ASSY (1-1)

3.3.1 INSPECTION: On condition. Check for slow or noisy operation. Check for blown fuses, this is an indication of a defective motor.

3.3.2 REMOVAL: It may be necessary to remove the whole Evaporator Unit from the aircraft. Refer to installation drawings for removal procedure. Remove the three screws, nuts and washers (1-18) from each side Blower Assembly (1-1). Disconnect the wires from the fuse block.

3.3.3 SERVICE: The only service from the blower assembly is to align the blower wheels so there is no rubbing during operation. Defective parts must be replaced. Refer to 3.4. for Motor Wheel replacement instructions

3.3.4 INSTALLATION: Install in reverse order of 3.3.2.

3.4 MOTOR WHEEL ASSY (2-1)

3.4.1 INSPECTION: On condition. Check for slow or noisy operation. Check for blown fuses, this is an indication of a defective motor.

3.4.2 REMOVAL: Remove each blower housing. Remove the three screws and washers (1-19) from each housing.

3.4.3 SERVICE: There is no field repair for this sealed motor. Replace Motor Wheel Assembly (FIG.2) if defective.

3.4.3.1 On the replacement Motor Wheel Assembly, loosen the set screw on each blower wheel enough that the wheel can slide on the shaft, DO NOT remove the set screw or the wheel from the shaft.

3.4.3.2 Attach both blower housings and tighten.

3.4.3.3 Place the Blower assembly on a flat surface. If the Blower Assembly rests flat, no further alignment is required, go to step 3.4.3.6 If the Blower Assembly does not rest flat remove the venturi from the either housing. Remove the wheel by sliding it off the shaft. Loosen the two lock nuts until you can rotate the housing.

3.4.3.4 Rotate the housing until the Blower Assembly rests flat. You may need to rotate both housings to obtain proper alignment. Only do one side at a time.

3.4.3.5 When the blowers are aligned return the wheel to the shaft DO NOT tighten the set screw. Attach the venturi to the housing.

3.4.3.6 Do both sides the same. Slide the wheel toward to venturi. Position the wheel as close to the venturi as possible without rubbing. Make sure the set screw is on the flat of the shaft and tighten.

3.4.3.7 Run the blower on all three speeds to insure the wheel is not rubbing the venturi. Adjust as necessary.

3.5 THERMOSTATIC EXPANSION VALVE (TXV) (1-14)

CAUTION

AIR CONDITIONING SYSTEM UNDER PRESSURE. APPROPRIATE SAFETY MEASURES SHOULD BE TAKEN WHEN SERVICING THIS EQUIPMENT. ONLY TRAINED PERSONNEL WITH APPROVED SAFETY EQUIPMENT SHOULD PERFORM SERVICING DUTIES.

WARNING

SYSTEM IS UNDER PRESSURE AND MUST BE RELIEVED BEFORE ANY SERVICE TO THE EXPANSION VALVE CAN BE ACCOMPLISHED.

3.5.1 INSPECTION: On condition.

3.5.2 REMOVAL: Expose the Thermostatic Bulb on the Suction Line on the evaporator by removing the insulating tape . Care should be taken not to puncture or damage the bulb or any of the coils on the evaporator. Next, carefully remove the clip (3-5) holding the bulb to the Suction Line, retain it for reinstallation.

3.5.2.1 Disconnect and remove the Inlet Hose (NS). Plug the hose end to prevent any contamination of the system. Hold the expansion valve (1-14, 3-3) with a wrench and loosen the B-Nut on the Pressure Line (Inlet) on the evaporator. Loosen the nut on expansion valve on the external equalizing tube to the coil return header. Remove the Expansion Valve (1-14) including the bulb. Plug the Pressure Line and the tube port to prevent contamination to the system.

3.5.2.2 Pull the Line Screen (3-4) from the expansion valve (1-14). Check for any signs of clogging. Clean and remove any foreign matter from the screen.

3.5.3 SERVICE: The only service is to clean the Line screen. Defective expansion valve must be replaced.

3.5.4 INSTALLATION: Replace the screen (3-4). Connect the expansion valve to the Pressure Line on the evaporator. Use Backup Wrench. Next use clip (3-5) to attach the Thermostatic Bulb to the

Suction Line on the evaporator. The Thermostatic Bulb must have FULL contact with the line. Thoroughly cover the bulb by wrapping with insulating tape provided with the new expansion valve.

3.5.4.1 Make sure the line screen (3-4) is installed in the expansion valve (1-14). Attach the inlet hose to the expansion valve. During servicing check for leaks.

3.5.5 Connect the external equalizing tube to the expansion valve. During servicing check for leaks.

4.0 SERVICING – REFRIGERANT CHARGE

CAUTION

AIR CONDITIONING SYSTEM UNDER PRESSURE. APPROPRIATE SAFETY MEASURES SHOULD BE TAKEN WHEN SERVICING THIS EQUIPMENT. ONLY TRAINED PERSONNEL WITH APPROVED SAFETY EQUIPMENT SHOULD PERFORM SERVICING DUTIES.

NOTE

IT IS UNLAWFUL TO RELEASE R-12 OR OTHER REFRIGERANTS TO THE ATMOSPHERE. USE APPROVED RECOVERY/RECYCLE EQUIPMENT TO CAPTURE REFRIGERANTS. USE ONLY LAWFUL MEANS TO DISPOSE OF RECOVERED REFRIGERANTS. CHECK WITH LOCAL AGENCIES FOR APPROVED DISPOSAL PROCEDURES.

NOTE

CAP ALL OPEN LINES TO PREVENT CONTAMINANTS AND MOISTURE FROM ENTERING THE SYSTEM.

4.1 CHECK THE SYSTEM. Anytime refrigerant has been lost or removed from the system. Check for leaks and secure all plumbing connections before filling the system with refrigerant. Refer to applicable instructions for required equipment and materials to service the air conditioning system.

5.0 SERVICE SCHEDULES

5.1 MAINTENANCE SCHEDULE

ITEM DESCRIPTION	INSPECTION INTERVAL *	R&R/T.B.O. HRS
SZ67-016-1 Air Filter	Every 100 Hrs. Inspect for tears or damage. Refer to 3.1.	ON CONDITION
SZ67-003-1/-1A Motor & Wheel Assy	N/A	ON CONDITION
BFJB-CP60 TXV	N/A	ON CONDITION

6.0 TOLERANCES

6.1 TORQUE VALUES. Use standard torque values for bolts and other fasteners.

7.0 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 Assy.
	Check fuse on fuse	Replace fuse block
	Check wiring to motor. Check switch in cockpit. Check motor for shorts.	Repair or replace faulty system or component.
System not cooling with. Adequate airflow over evaporators	Condenser airflow blocked.	Remove obstruction.
	Low refrigerant.	Service system.
	Overcharge of refrigerant.	Service system
	Faulty Compressor	Replace Compressor.
	High Discharge Pressure Overcharge of refrigerant.	Service system
	Obstruction in Receiver-Dryer.	Replace defective component and service system

TROUBLE	POSSIBLE CAUSE	REMEDY
	Obstructed Expansion Valve and/or Line Screen.	Clean Line Screen. Replace Expansion Valve and service system
Low Discharge Pressure.	Low refrigerant.	Service system
	Faulty Compressor.	Replace bad component and service system
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 connections. Replace defective component. Service system
Defective O-Ring.	Replace defective O-Ring. Service system	
	Loose connections.	Tighten connections. Service system
Slow refrigerant loss.	Loose connections.	Tighten connections. Service system

8.0 ILLUSTRATED PARTS LIST

8.1 EXPLANATION OF SYMBOLS:
ALT - The Part Number shown is an approved alternate, either part number may be used.
MOD "X" Refers to modification information of this part as applicable to this assembly.
NP - Not Procurable individually, see next higher assembly.
NS - Not Shown
OBS - Obsolete
USAGE/QTY - This identifies parts used on specific applications (not common to all units).
.. - Part of higher assembly.
*/# - See explanation at end of parts list.
USAGE CODE – No code shown indicateS the Item applies to all codes. When code is listed that item applies to only that code.

FIG-ITEM	*PART NUMBER*	*NOMENCLATURE*	*QTY*	*USAGE*	*NOTES*
1	SZ67-002-1	EVAPORATOR ASSEMBLY		A	
1	SZ67-002-1A	EVAPORATOR ASSEMBLY		B	
1	SZ67-002-1B	EVAPORATOR ASSEMBLY		C	
-1	SZ67-003-3	BLOWER ASSY	1	A,C	SEE FIG2
-1A	SZ67-003-1	MOTOR WHEEL ASSY	1	A,C	SEE FIG2
	SZ67-003-1A	MOTOR WHEEL ASSY	1	A,C	MOD A
-2	SZ67-004-1	COIL	1		
-3	SZ67-005-1	DRAIN PAN ASSY	1	A,C	
	SZ67-005-1A	DRAIN PAN ASSY	1	B	
-4	SZ67-006-1	MOUNT PLATE ASSY	1		
-5	SZ67-007-3	BRACKET	1		
	SZ67-007-4	BRACKET	1		
-6	SZ67-008-3	BRACKET	1	A,C	
	SZ67-008-4	BRACKET	1	A,C	
-7	SZ67-009-3	ANGLE	2		
-8	SZ67-011-1	BOX ASSY	1	A,C	
-9	SZ67-011-5	BOX ASSY	1	B	
-10	SZ67-012-3	CLIP, FILTER	2		
-11	SZ67-016-1	FILTER	1		
-12	DS103	ADAPTER	1		
-13	SZ67-019-3	BRACKET	1	B	
	SZ67-019-4	BRACKET			
-14	IFE-2-CP60	EXPANSION VALVE (R-12)	1		
	SZ84-760-1 (SB67-R134)	EXPANSION VALVE (R-134a)	1		
-15	MS35206-227	SCREW	8		
	AN960-6L	WASHER ALT: NAS1149FN616P	8		
	AN364-632A	NUT ALT: MS21083N06	8		

FIG-ITEM	PART NUMBER	NOMENCLATURE	QTY	USAGE	NOTES
1 -16	MS35206-245	SCREW	2		
-17	MS35206-245	SCREW	2	A	
			3	B,C	
	AN960-8L	WASHER ALT: NAS1149FN816P	2	A	
			3	B,C	
	AN364-832A	NUT ALT: MS21083N08	2	A	
-17A	MS35206-245	SCREW	2	A	
			3	B,C	
	AN960-8L	WASHER ALT: NAS1149FN816P	2	A	
			3	B,C	
	AN935-8	WASHER, LOCK ALT: MS35338-42	2	A	
			3	B,C	
-18	MS35206-245	SCREW	4		
	AN960-8L	WASHER ALT: NAS1149FN816P	4		
	AN365-832A	NUT ALT: MS21045N08	4		
-19	MS35206-245	SCREW	2		
	AN960-8L	WASHER ALT: NAS1149FN816P	2		
	AN365-832A	NUT ALT: MS21045N08	2		
-20	MS35206-245	SCREW	4		
	AN960-8L	WASHER ALT: NAS1149FN816P	4		
	AN365-832A	NUT ALT: MS21045N08	4		
-21	MS35206-245	SCREW	6		
	AN960-8L	WASHER ALT: NAS1149FN816P	6		
	AN935-8	WASHER, LOCK ALT: MS35338-42	6		
-22	MS21919WDG5	CLAMP	1		
	MS35206-245	SCREW	1		
	AN960-8L	WASHER ALT: NAS1149FN816P	1		
	AN935-8	WASHER, LOCK ALT: MS35338-42	1		
NS	MDL-4	FUSE	1		
NS	MDL-5	FUSE	1		
NS	MDL-10	FUSE	1		

FIG-ITEM	PART NUMBER	NOMENCLATURE	QTY	USAGE	NOTES
2	SZ67-003-1	BLOWER WHEEL ASSEMBLY		A	
2	SZ67-003-1A	BLOWER WHEEL ASSEMBLY		B	
-1	SZ67-7411FB	MOTOR	1	A	
	SZ67-800-1	MOTOR	1	B	
-2	SZ63-009-5	PLATE, MOUNT	2	A	
	SZ63-009-3	PLATE, MOUNT	2	B	
-3	SZ63-010-5	SPACER	2	A	
	SZ63-010-3	SPACER	2	B	

FIG-ITEM		PART NUMBER	NOMENCLATURE	QTY	USAGE	NOTES
2	-4	AA326-215R	WHEEL	1	A	
		SZ63-326CW-5/16	WHEEL	1	B	
	-5	AA326-215L	WHEEL	1	A	
		SZ63-326CCW-5/16	WHEEL	1	B	
	-6	AN364-1032A	NUT ALT: MS20183N3	4		
	-7	AN960-10L	WASHER ALT: NAS1149F0332P	4		

FIG-ITEM		PART NUMBER	NOMENCLATURE	QTY	USAGE	NOTES
3	-2	IFE-2-CP60	EXPANSION VALVE (R-12)	1		
		SZ84-760-1 (SB67-R134)	EXPANSION VALVE (R-134a)	1		
	-3	PART OF EXPANSION VALVE				
	-4	NO PART NUMBER	SCREEN	1		
	-5	14-2388	CLIP	1		

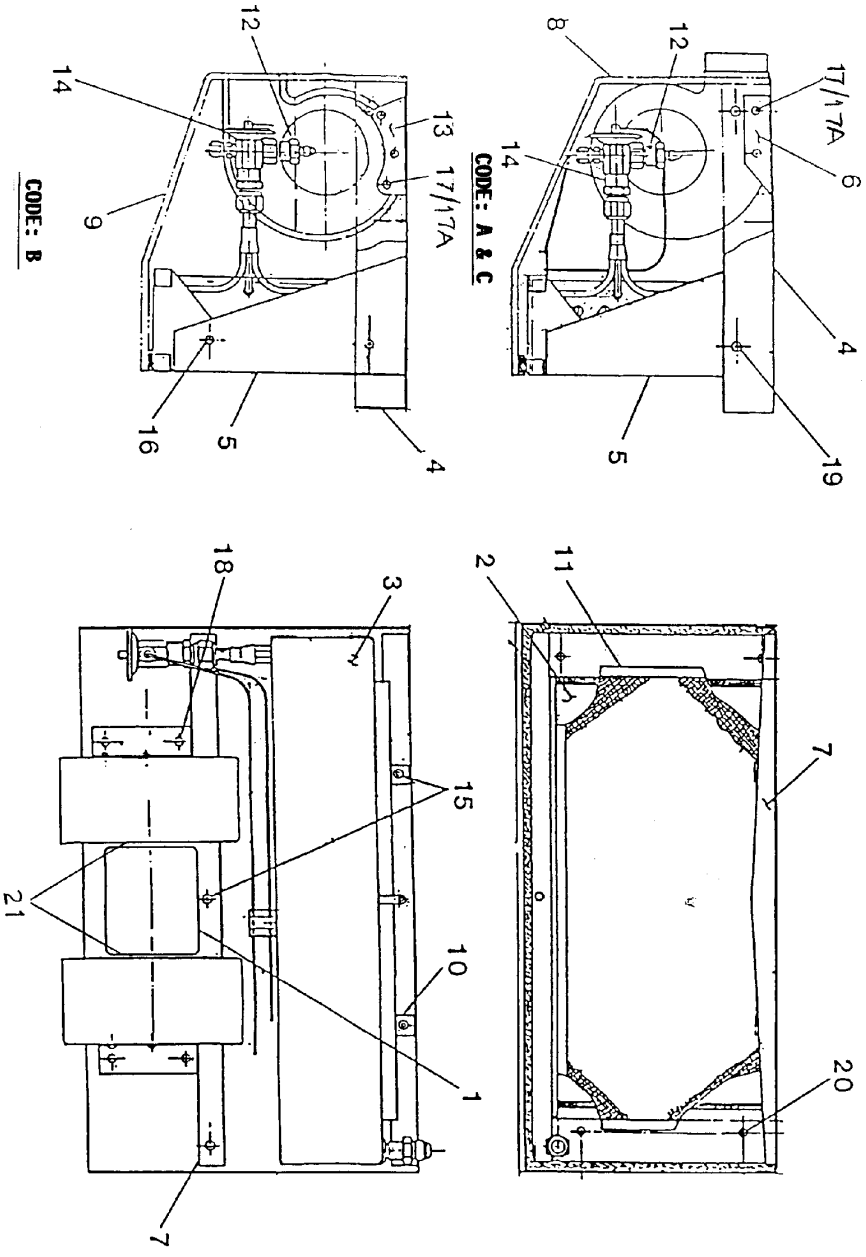

FIG. 1

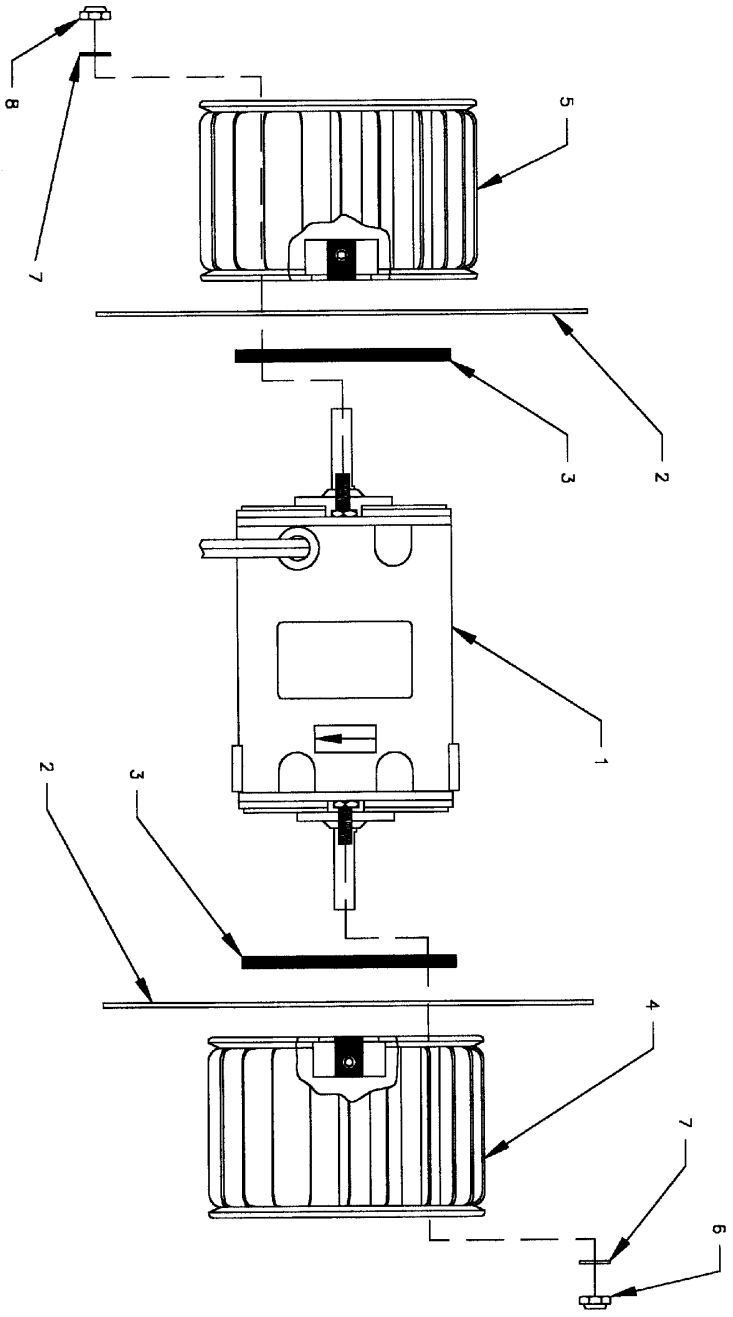

FIG. 2

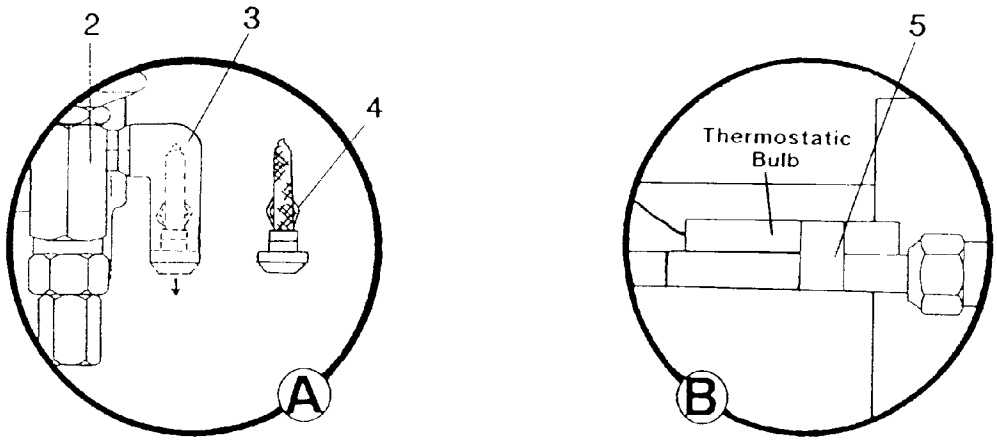

FIG. 3