



ZEE Systems, Inc.

SERVICE BULLETIN 70-R134

1. PLANNING INFORMATION

A. Effectivity: Zee Systems, Inc. SZ70-001-1 Evaporator Assembly, all serial numbers installed on Bell 212 and 412 helicopters.

B. Reason: To modify the SZ70-001-1 Evaporator Assembly to use CFC free R-134a refrigerant.

C. Description: This service bulletin gives instructions for converting the SZ70-001-1 Evaporator Assembly used on the Vapor Cycle Air Conditioning system from R-12 (Freon) to EPA approved R-134a refrigerant. This conversion consists of flushing the evaporator coil, minor parts replacement and recharging the system.

D. Compliance: Compliance is optional. Service Bulletin 65-R134-1 and Service Bulletin R134-05 must be accomplished prior to installing this modified equipment back on the aircraft.

E. Approval: This service bulletin contains no modification data that changes the fit, form or function of the original design and therefore does not require any additional approvals.

F. Manpower: It is recommended it be performed when the components are exposed or removed from the aircraft during regularly scheduled maintenance of the air conditioning system. The time estimated for flushing the evaporator and the replacement of the components is 2.0 man hours. This estimate excludes the time required to discharge the system, expose or remove the evaporator assembly from the aircraft, replace the system to its normal operating configuration in the aircraft, service the system and perform normal leak detection and functional tests accomplished when returning the system to service on the aircraft.

No additional man hours are required to accomplish component replacement if done during overhaul.

G. Material Cost and Availability: Refer to paragraph 3 for a detailed listing of parts and materials required to accomplish the modification procedures outlined in this service bulletin. The required parts, materials, equipment and pricing is available from:

ZEE Systems, Inc
406 W. Rhapsody
SAN ANTONIO, TX 78216

1-800-988 COOL⁽²⁶⁶⁵⁾
FAX 210-341-2609
e-mail: info@zeeco-zeesys.com

Equipment and Tooling:

| | |
|---------------------|------------------------|
| Flushing equipment | Commercially Available |
| Mineral Spirits | Commercially Available |
| Flush solvent, R-12 | Commercially Available |
| Nitrogen Bottle | Commercially Available |
| R-134a Refrigerant | Commercially Available |



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* Optional equipment used in Discharging and Charging the system.

| | |
|--|---|
| * Refrigerant Recovery/Recycle Equipment | Commercially Available meeting SAE J1990 or J2209 specifications. |
| * Manifold Gauge Set, with hoses R-134a compatible | Commercially Available |
| * Scale .1 lb. increments | Commercially Available |
| * Leak Detector | Commercially Available |
| * Vacuum Pump | Commercially Available |

I. Weight and Balance: No effect.

J. Electrical Load Data: No effect.

References: Refer to Maintenance and Parts Manual SZ70, Evaporator Assembly for basic disassembly and assembly instructions. Disregard references to R-12 servicing instructions. Refer to Service Bulletin R134-05 for R-134a servicing instructions.

2. ACCOMPLISHMENT INSTRUCTIONS

NOTE

COMPONENTS MAY BE RETURNED TO ZEE SYSTEMS FOR MODIFICATION. INSTRUCTIONS OUTLINED BELOW INCLUDE STEPS FOR FIELD MODIFICATIONS.

A. Preparation: The replacement of components should be accomplished in a clean, dry area free of oil, dirt, moisture and other contamination.

B. Disassembly:

CAUTION

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

NOTE

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

NOTE

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



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NOTE

ALWAYS USE A BACK UP WRENCH TO LOOSEN OR TIGHTEN CONNECTIONS.

1. Lines: Disconnect the flex line from the expansion valve to the bulkhead fitting. Note the position of the clamps.
2. Remove the AN932-4D bulkhead fitting from the bracket.
3. Remove the expansion valve. Remove the equalization tube (copper) and save it for re-installation. Check the tube for kinks, replace as necessary. Peel away the black insulation wrapping and expose the thermostatic bulb. Remove the expansion valve and thermostatic bulb from the evaporator coil.

C. Flushing:

NOTE

ALL COMPONENTS OR LINES WHICH CARRY REFRIGERANT MUST BE FLUSHED OR REPLACED.

1. Evaporator Coil:

- a. Fill flushing equipment with Mineral Spirits in accordance with manufacturers instructions.
- b. Using a suitable adapter attach the flushing equipment in place of the expansion valve. Attach a suitable reservoir to the outlet side of the coil to capture the dirty flushing fluid. Flush the coil in accordance with the equipment manufacturers instructions or by pumping the mineral spirits through the coil. Continue to flush until clean fluid flows from the outlet.
- c. Flush the coil with an R-12 flushing solvent to remove residue of mineral oil. Pump the solvent through the coil until clean fluid flows from the outlet.
- d. Blow nitrogen through the coil until the inner tubes are dry. Move the coil around to insure that all of the solvent is removed.
- e. Flush and dry the equalizing line.

C. Modification: Modification occurs when the evaporator coil is flushed and new components are installed on the evaporator assembly.

D. Assembly:

1. Drill out the bore where the bulkhead fitting was removed to .75" (19mm) diameter. Install the DS200B-6 bulkhead fitting, AN901-8D washer and AN924-8D nut on the bracket.
2. Install new SZ84-760-3 expansion valve on the evaporator coil. Take great care not kink or damage tube. Uncoil the tube to the thermostatic bulb only as far as needed. Refer to Fig. 1 Secure the thermostatic bulb in the original location on the coil. Make sure that the open end of the bulb is on the top. Make sure the bulb has full contact with the header tube. Wrap the bulb and header tube with black insulating tape (provided in kit K70-R134). Secure the bulb tube coil with a Cable Tie then place the large spiral wrap over the bundled coil. Place the small spiral wrap at any spot along the tube that may rub against the blower housing. Refer to Fig. 1. The expansion valve adjustment is preset, no adjustment is necessary.



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3. Attach equalization tube and tighten. Take great care not kink or damage tube. Place the small spiral wrap at any spot along the tube that may rub against the blower housing. Refer to Fig. 1.
4. Place the clamps on the Z2006270BB224 hose. Attach the hose the expansion valve and the bulkhead fitting, take care not to damage the O-Rings. Attach the clamps and secure.
5. Cap the return tube. Connect a source of Dry Nitrogen or R-134 refrigerant to the DS200B-6 bulkhead fitting. Slowly pressurize the system to 50 PSIG and check for leaks.
6. Install the modified evaporator in the aircraft system in the normal configuration (using only the flushed or new R-134 components).
7. Tighten all connections, do not over tighten.

E. Servicing Instructions: Refer to Service Bulletin R134-05 for servicing instructions.

NOTE: The servicing instructions are basically the same as with an R-12 system. However, a sight glass is NOT used to determine adequate refrigerant charge. The system is charged with a predetermined amount (by weight) of refrigerant.

F. Testing: Check the system in accordance with your normal certification and return to service specifications.

G. Re-identification: Stamp or etch "R134" behind the serial number on the data plate. Mark an 'X' in block A on the MOD STATUS section of the I.D. Plate. Make appropriate log book entries.

3. MATERIAL INFORMATION

Parts and Materials required to modify the SZ70-001-1 Evaporator Assembly are listed below. Quantities are for one evaporator assembly.

1. Modification Kit P/N: K70-R134. The kit contains the following parts:

| QTY | Part Number | Description | Old Part Number - Disposition |
|-----|---------------|------------------|---|
| 1ea | SZ84-760-3 | Expansion Valve | 1FE2CP60-3/8 - Discard Also discard the DS103 Adapter. |
| 1ft | 18-2710 | Insulating Wrap | Discard old insulation. |
| 1ea | Z2006270BB224 | Hose Assy | Z1014270A204, Discard |
| 1ea | DS200B-6 | Bulkhead Fitting | AN932-4D, Discard |
| 1ea | AN901-8D | Washer | AN901-4D, Discard |
| 1ea | AN924-8D | Nut | AN924-4D, Discard |
| 3ea | MS21919WDG11 | Clamp | MS21919DG9, Discard |
| 1ea | MS21919WDG9 | Clamp | New Part |



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| | | | |
|-----|------------|------------------|--|
| 1ea | AN530-8R6 | Screw | New Part |
| 1ft | | 1/8" Spiral Wrap | New Part |
| 1ft | | 3/8" Spiral Wrap | New Part |
| 5ea | MS3367-4-9 | Cable Tie | New Part |
| *1 | 400649-1 | Data Plate | Re-identify as per paragraph. 2.,H. of his service bulletin or replace I.D. Plate. |

* ZEE Systems will provide a completed Data Plate provided upon request. User must give Serial Number of unit being modified when ordering kit K70-R134.



FIGURE 1.