



ZEE Systems, Inc.

SERVICE BULLETIN 45-R134

1. PLANNING INFORMATION

A. Eligibility:

1. Aircraft that currently have installed the ZEE Systems, Inc. Motor Compressor Condenser Assy P/N: SZ45-002-1/-1A/-3/-3A.

B. Reason: To modify the system to use CFC free R-134a refrigerant.

C. Description: This service bulletin gives instructions for converting the Motor Compressor Condenser Assy of the air conditioning system from R-12 (Freon) to EPA approved R-134a refrigerant. And to provide general instructions to allow the air conditioning system to use the R-134a refrigerant.

1. New Installation: Install equipment as normal R-12 system. Service system with R-134a refrigerant in accordance with this service bulletin.

2. Upgrade of existing system: This conversion consists of flushing the condenser coils, flushing the evaporator coils, flushing or replacing the expansion valve, parts replacement and servicing the system with the R-134a refrigerant in accordance with this service bulletin.

D. Compliance: Compliance is optional.

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. There are no changes to the operating characteristics of the air conditioning equipment. There is no part number change. However, as most of our equipment is owner installed via FAA Form 337 Field Approval contact your local FSDO for compliance questions.

F. Manpower:

1. New Installation: When incorporating this service bulletin during new installation no additional man hours are required over the normal installation time.

2. Upgrade of existing system: No man hour estimates are available at this time. This upgrade will require the Compressor, Receiver Dryer, Modulator Valve, and Expansion Valve be exposed for removal and flushing or replacement.

G. Material Cost and Availability: Refer to Section 5 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 SYSTEM, Inc.

406 W. Rhapsody

San Antonio, TX 78216 USA

210-342-9761 TOLL FREE in the US 800-988-COOL(2665) FAX (210) 349-9208

e.mail: info@zeeco-zeesys.com

H. Equipment and Tooling:



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Flushing Equipment,
Pulsator II,
or similar equipment

J.A. Echols and Assoc.
Norcross, GA 30071
(404) 263-9119

Mineral Spirits

Commercially Available

Nitrogen Bottle

Commercially Available

Source for dry shop air.

** Equipment used to Discharge/recover refrigerant and Charge the system.

Refrigerant Recovery/Recycle Equipment
meeting SAE J1990 or J2209 specifications.

Commercially Available

Manifold Gauge Set, with hoses
R-134a compatible

Commercially Available

Scale .1 lb. increments

Commercially Available

Leak Detector

Commercially Available

Vacuum Pump

Commercially Available

Temperature Measuring Device

Commercially Available

I. Weight and Balance: No effect.

J. Electrical Load Data: No effect.

K. References: Refer to Maintenance and Parts Manual SZ45-SERIES, Motor Compressor Condenser Assembly for basic disassembly and assembly instructions. Disregard references to R-12 servicing instructions. Refer to this service bulletin for R-134a servicing instructions. Service Letter 45-1, Refrigerant charging instructions.

2. INSTRUCTIONS FOR UPGRADING EXISTING R-12 SYSTEM.

NOTE

MOTOR COMPRESSOR CONDENSER ASSY P/N: SZ45-002-XXX 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: Disassemble the system only to a state which will allow the flushing of components described in section C and the substitution of the components listed in this service bulletin. Remove components listed in section 3, "Old Part Number".



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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.

1. Compressor: Disconnect lines to the compressor and remove the compressor from the compressor plate. Remove the pulley from the compressor. Discard compressor.
2. Disconnect line from the discharge (DISCH) port of the compressor to the top of the condenser, Discard.
3. Remove union from inlet (top) of condenser coil, Discard.

NOTE: On new installations disregard steps 1 through 3 above.

NOTE

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

C. Flushing: Always follow the OEM manufacturer, S.T.C. or P.M.A. holder maintenance instructions if available. The instructions listed below are general directions for flushing the components. Not all instructions may apply.

CAUTION

DO NOT USE HOSE ASSEMBLIES THAT USE HOSE CLAMPS TO SECURE THE END FITTINGS WITH R-134a REFRIGERANT. R-134a REFRIGERANT NORMAL OPERATING DISCHARGE (HIGH SIDE) PRESSURES ARE ABOUT 20% HIGHER THAN WITH R-12. CONTACT INSTALLER, S.T.C. HOLDER OR ZEE SYSTEMS FOR RECOMMENDATIONS IF THE AIR CONDITIONING SYSTEM HAS THESE TYPE OF HOSE ASSEMBLIES.

NOTE

CONTACT INSTALLER, S.T.C. HOLDER, HOSE MANUFACTURER OR ZEE SYSTEMS TO DETERMINE IF THE CURRENT SYSTEM HOSE ASSEMBLIES ARE COMPATIBLE WITH R-134a REFRIGERANT.

1. Condenser Coil: With all lines to and from the coil disconnected perform the following steps:
 - a. Fill flushing equipment with Mineral Spirits in accordance with manufacturers instructions.
 - b. With the inlet line to the condenser removed use a suitable adapter to connect the flushing equipment to the coil. Attach a suitable reservoir to the outlet side of the coil to capture the dirty flushing fluid. Flush the coil in



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accordance the flushing equipment manufacturers instructions. Continue to flush until clean fluid flows from outlet.

c. Blow nitrogen through the coil until the inner tubes are dry.

2. Evaporator Coil: With all lines to and from the coil disconnected perform the following steps:

a. Disconnect and set aside the expansion valve.

b. Fill flushing equipment with Mineral Spirits in accordance with manufacturers instructions.

c. With the expansion valve removed use a suitable adapter to connect the flushing equipment to the coil. Attach a suitable reservoir to the outlet side of the coil to capture the dirty flushing fluid. Flush the coil in accordance the flushing equipment manufacturers instructions. Continue to flush until clean fluid flows from outlet.

c. Blow nitrogen through the coil until the inner tubes are dry.

3. Expansion Valve: If applicable, remove the screen and clean it separately. If the expansion valve is a one piece valve it is recommended to replace the valve. Order Kit K45-R134-A or K45-R134-1A.

1. Use a suitable adapter and connect the expansion valve the flushing equipment and flush the valve until clean fluid flows from the valve.

2. Using low pressure blow nitrogen through the valve until dry.

3. Install the screen back in the expansion valve if it is to be reused.

4. Connect the expansion valve to the flushed evaporator coil.

D. Structural: None.

E. Assembly: Install and adjust components in accordance with the SZ45-SERIES Maintenance Manual.

NOTE

FOR NEW MCC UNITS DISREGARD STEPS 1 THROUGH 3. CONNECTIONS ARE MADE AT THE FACTORY.

1. Attach pulley on new compressor (SZ84-913OH-1/SZ84-913OP-1). Install new compressor on mounting plate and adjust belts.

2. Attach Union (DS200U137-8) to condenser inlet (top).

3. Connect Hose (Z2008180BCX102) with 90 degree fitting and service port to the discharge (DISCH) port of the compressor and the other end to the top of the condenser.

4. Reinstall all items which were removed for flushing in their normal configuration.

F. Modification: Modification occurs when all components are flushed and new components (Kit K45-R134) are installed on the aircraft.



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3. INSTRUCTIONS FOR INSTALLATION OF KIT K45-R134.

1. Refer to Section 7 of this service bulletin and install listed components in accordance SZ45 Maintenance Manual.

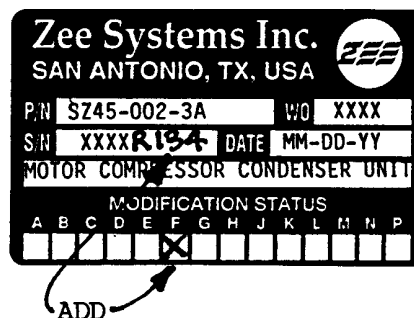
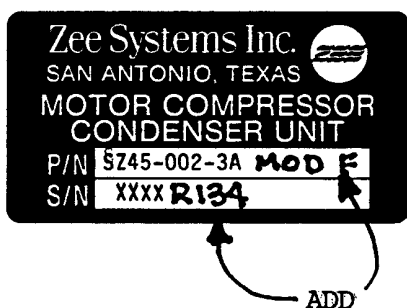
NOTE

USE A BACKUP WRENCH WHEN TIGHTENING FITTINGS. DO NOT OVER TIGHTEN.

4. SERVICING THE SYSTEM: Charge the system in accordance with ZEE Systems, Inc. Service Letter 45-1.

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

6. RE-IDENTIFICATION: For R-12 systems that have been upgraded, add by stamping or etching "MOD F" behind the Part Number. For units that have the latest I.D. Plate stamp an "X" in the "F BLOCK" on the "Modification Status" section of the plate. On both I.D. Plates stamp or etch "R134" behind the serial number. Make appropriate log book entries.



7. MATERIAL INFORMATION

Parts and materials required are listed below. Quantities are for one aircraft.

A. Modification Kit P/N: K45-R134. The kit contains the following parts:

QTY	Part Number	Description	Old Part Disposition
1 **	SZ84-913OH-1	Compressor	Discard
1 **	Z2008180BCX190	Hose Assy	Discard
1 **	DS200U137-8	Union	Discard
1	207-101C	Receiver Dryer	Discard
1	SZ41-016-11.0C	Valve, Mod.	Discard

B. When replacing Expansion Valve order Modification Kit P/N: K45-R134-A. The kit contains the following parts:

QTY	Part Number	Description	Old Part Disposition
1 **	SZ84-913OH-1	Compressor	Discard
1 **	Z2008180BCX190	Hose Assy	Discard



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1 **	DS200U137-8	Union	Discard
1	207-101C	Receiver Dryer	Discard
1	SZ41-016-11.0C	Valve, Mod.	Discard
1	14-2409	Expansion Valve (TXV)	Discard
6"	18-2710	Insulation	Discard

C. When ALL hoses replaced with Z200-Series Hose Assemblies order kit P/N: K45-R134-1

QTY	Part Number	Description	Old Part Disposition
1 **	SZ84-913OP-1	Compressor	Discard
1 **	Z2008180BCX190	Hose Assy	Discard
1 **	DS200U137-8	Union	Discard
1	207-101B	Receiver Dryer	Discard
1	SZ41-016-11.0C	Valve, Mod.	Discard

D. When ALL hoses replaced with Z200-Series Hose Assemblies and the Expansion Valve is replaced order kit P/N: K45-R134-1A.

QTY	Part Number	Description	Old Part Disposition
1 **	SZ84-913OP-1	Compressor	Discard
1 **	Z2008180BCX190	Hose Assy	Discard
1 **	DS200U137-8	Union	Discard
1	207-101B	Receiver Dryer	Discard
1	SZ41-016-11.0C	Valve, Mod.	Discard
1	14-2409	Expansion Valve (TXV)	Discard
6"	18-2710	Insulation	Discard

** On new installations these come assembled on Motor Compressor Condenser Assy P/N: SZ45-002-XXX/MOD F.

*Zee Systems will provide updated Data Plates with either kit upon request. User must provide Serial Number of Motor Compressor Condenser Assy being modified when ordering Kit K45-R134.