



**ZEE Systems, Inc.**

**COMPONENT MAINTENANCE MANUAL SZ43-002**

***Component  
Maintenance  
Manual***

***with***

***Illustrated Parts List***

***for***

***SZ43-002-SERIES  
Motor-Compressor-Condenser  
Assembly***

***THIS MANUAL SUPERSEDES  
MAINTENANCE MANUAL SZ43, OCT 95, REV. 5  
and  
MAINTENANCE MANUAL SZ43/45, REV.C***



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**RECORD OF REVISIONS**

REVISION NO:	ISSUE DATE:	POSTED DATE:	POSTED BY:



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\* INITIAL RELEASE 4-30-04



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#### **1.0 GENERAL REQUIREMENTS**

##### **1.1 DUCTING REQUIREMENTS**

1.1.1 CONDENSER: The unit should be installed with the maximum inlet and discharge duct size to and from the condenser. The minimum required opening area is 80 square inches of free area provided into the compartment and a minimum of 80 square inches free area for the condenser air discharge duct. The importance of this minimum size opening on the cooling efficiency cannot be over emphasized.

1.1.2 MOTOR, COMPRESSOR DRIVE: The motor may require direct ducting for cooling. Contact ZEE SYSTEMS for specific recommendations for your installation.

**NOTE:** Refer to the airframe manufacturer recommendations and other appropriate engineering data before attaching components to a structure and/or performing structural modifications. Refer to FAA AC 43.13-1B for guidelines.

##### **1.2 ELECTRICAL REQUIREMENTS**

1.2.1 Electrical circuits should be properly engineered to provide adequate current capacity and proper overload protection. Refer to AC 43.13-1B for guidelines.

##### **1.3 REFRIGERATION CIRCUIT COMPONENTS.**

1.3.1 MODULATOR VALVE/(CROT): A modulator valve is included in the installation at the compressor return/suction hose. The valve is pre-set to control the compressor inlet pressure and thereby effectively control the motor current draw to a predetermined level. The Modulator valve only effects the pressure under certain conditions of heat and pressure overload. The valve is preset at ZEE SYSTEMS and field adjustment is not recommended or authorized.

1.3.2 RECEIVER-DRYER: The receiver-dryer is located in the liquid line after the condenser and before the expansion valve. It serves two purposes in the circuit: 1) as a refrigerant reservoir to maintain evaporator capacity, and 2) to hold desiccant which removes moisture from the system. However, to avoid cross contamination, once a receiver-dryer has been used with one refrigerant do not use it in a circuit with a different refrigerant. **Anytime a circuit has had a major component failure or has been opened to the atmosphere the receiver-dryer should be replaced.** Keep the receiver-dryer capped until being installed as the last operation prior to pulling a vacuum on the system.

1.3.3 COMPRESSOR: The compressor is piston type self lubricating compressor. The level of oil must be checked and maintained to insure proper lubrication throughout the system. See Section 3.2 for instructions. Some compressors are equipped with back seating valves. The valves must be in the proper position during operation or the compressor may be damaged and caused to fail. See ILLUSTRATION 1.

#### **2.0 EQUIPMENT AND MATERIAL**

2.1 EQUIPMENT: The following equipment may be required to perform the maintenance described in this manual.

ITEM	SOURCE
Refrigerant Recovery/Recycle equipment meeting SAE J1990 or J2209 specifications.	Commercially Available



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<u>R-134a</u> : Manifold Gauge Set, R-134a, with automotive quick disconnect service connections.	Commercially Available
<u>R-134a</u> : Leak Detector, for R-134a	Commercially Available
<u>R-12</u> : Manifold Gauge Set, R-12	Commercially Available
<u>R-12</u> : Leak Detector, for R-12	Commercially Available
Refrigerant Vacuum Pump.	Commercially Available
<u>R-134a</u> : Scale .1 lb. increments Scale with 10 gram increments is acceptable Scale with .01 kilogram increments is acceptable	Commercially Available
Thermometer	Commercially Available
Fin Comb Set	Commercially Available
Torque Wrench IN-LBS	Commercially Available
Torque Wrench FT-LBS	Commercially Available
2.1.2 Refer to applicable ZEE SYSTEMS Service Letter(s) and Service Bulletin(s) for any additional equipment that may be required to service the air conditioning system.	
2.2 MATERIALS: The following materials may be required to perform the maintenance described in this manual.	
ITEM	SOURCE
MS20995C025 Lock Wire	Commercially Available
MS20995C032 Lock Wire	Commercially Available
<u>R-134a</u> : Any Synthetic Polyol Ester (P.O.E.) refrigerant oil with an ISO (viscosity) of 68 to 100 Lubrizol 2916 Nu-Calgon RL68S CCI Retro-Fix II Castrol SW100-Icematic	Commercially Available
Refrigerant (HFC-134a) Only use virgin refrigerant. NEVER used reclaimed or recycled refrigerant in this system.	Commercially Available
<u>R-12</u> : Mineral Oil	Commercially Available
<u>R-12</u> : CFC-12 (Freon) Only use virgin refrigerant. NEVER used reclaimed or recycled refrigerant in this system.	Commercially Available



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**3.0 REPAIR AND REPLACEMENT OF COMPONENTS** Refer to Section 5.0 for Maintenance Schedules

**CAUTION**

**AIR CONDITIONING SYSTEM IS 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 DRIVE BELT**

**3.1.1 OPERATION AND DESCRIPTION:** The drive belt train is an efficient two-stage reduction to provide the proper compressor speed ratio and compact design. The drive directly off the motor is the "primary" drive and the drive off the compressor is the "secondary" drive. The large diameter pulleys are aluminum with a hard anodize on the entire pulley. Extreme care should be taken during maintenance not to strike or use pullers directly against the hardened area of the pulleys as this may crack or chip the anodized surface.

**3.1.1.2** Once a drive is properly adjusted no further belt maintenance should be required unless the adjustment is disturbed by component replacement. It is recommended that belts be replaced in pairs.

**3.1.2 INSPECTION:** Prior to belt adjustment inspect each belt for deterioration and fraying. Replace as belt condition dictates.

**3.1.3 BELT REMOVAL:**

**3.1.3.1 Secondary Belt (1A-6):** To remove the belts start with the secondary belt. Loosen the four bolts (1A-10) then loosen the secondary belt adjusting bolt (1A-12). This slides the compressor toward the jack shaft (1A-14), remove the secondary belt (1A-35) from the compressor pulley first then from the small pulley.

**3.1.3.2 Primary Belt (1B-4A):** Loosen the two locking bolts (1A-11, -11A). Put a 3/8" diameter pin in the hole in the jack shaft (1A-14) and lift upward. This will loosen the primary belt, remove the belt from the jack shaft pulley first then from the motor pulley.

**3.1.4 BELT INSTALLATION:** Always place the belt over the smaller diameter pulley first then carefully slide the belt over the larger diameter pulley. Care should be taken to not tear the edges of the belts. Place both belts loosely over the pulleys.

**3.1.4.1** With the belts loosely in place, make sure that the jack shaft (1A-14) is centered axially in the frame assembly so the belts will track as close as possible to the center of each pulley and 3/8" pin hole is pointing upward. Tighten the four compressor mount bolts (1A-10) to the point where the compressor slides but that



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compressor base plate (1A-28) is fairly well seated. If this is not done the belt tension will change when the bolts (1A-10) are tightened.

3.1.5 BELT ADJUSTMENT: Anytime the primary belt has been loosened both belts must be loosened and readjusted. Always adjust the primary belt first.

3.1.5.1 Primary Belt Adjustment: The secondary belt should be loose before adjusting the primary belt. Insert the 3/8" pin in the jack shaft housing (1A-14) and push downward on the pin to tighten the primary belt until a tension of 1/8" deflection midway between pulleys with 2-3 pound pull is achieved. Tighten the two locking bolts (1A-11) to torque of 30 foot-pounds.

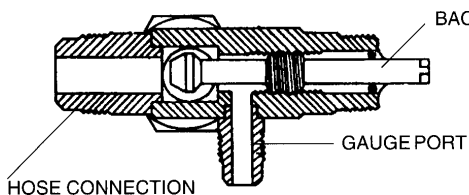
3.1.5.2 Secondary Belt Adjustment: Tighten the adjusting bolt (1A-12) until a tension of 1/8" deflection midway between pulleys with a 4-5 pound pull is achieved. Tighten the four bolts (1A-10) to a torque of 40 foot-pounds. Loosen the adjusting bolt (1A-12) and then tighten to a torque of 15 inch-pounds.

3.1.5.3 Check the belt alignment before running the motor. Turn the compressor pulley by hand to see that belts are properly aligned. Slight striking of the belt against the rim on the small pulleys is normal but not to the point where chafing occurs. Readjust belts if necessary. Next run the motor and check for smooth operation. If a belt hops or flutters it is too loose. If the belt is too tight against the pulley rim a discharge of fine dust like rubber particles will occur. Check the condition of the smaller pulley rim and readjust belts as necessary. Once the belts are adjusted and the hardware is properly tightened no further adjustments should be necessary if the components are not disturbed.

### 3.2 COMPRESSOR

#### NOTE

**IF YOUR COMPRESSOR HAS BACK SEATING VALVES, TO SAVE THE REFRIGERANT CHARGE, YOU MAY TURN THEM ALL THE WAY IN (TURN CW) UNTIL THEY ARE TIGHT AGAINST THE FRONT SEAT. RECOVER THE SMALL AMOUNT OF REFRIGERANT IN THE COMPRESSOR CASE. THEN USING A TWELVE-POINT SOCKET REMOVE THE VALVE FROM THE COMPRESSOR. THIS WILL ISOLATE THE REFRIGERANT CHARGE. DO NOT OPERATE THE COMPRESSOR WITH THE VALVES IN THIS POSITION. TURN THE VALVES BACK OUT PRIOR TO OPERATION.**



Turn valve stem all the way forward (clockwise) to shut off connecting line. This is "front seating". Turn valve stem all the way backward (counter-clockwise) to shut off gauge port and allow connection of service line (hose) to gauge port. This is "back seating". In normal operation valve stem is "back seated" to allow full flow through the valve.

**ILLUSTRATION 1.  
BACK SEAT VALVE OPERATION**

3.2.1 REMOVAL: Loosen the four bolts (1A-10) then loosen the adjusting bolt (1A-12) and remove the secondary belt. Remove the four bolts and washers (1A-10, -10A, -10B) and adjusting bolt (1A-12) and lift the compressor (1A-2) and base plate (1A-28) from the side frames. Separate the compressor from the base plate





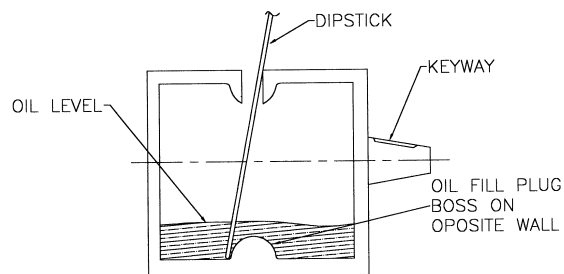
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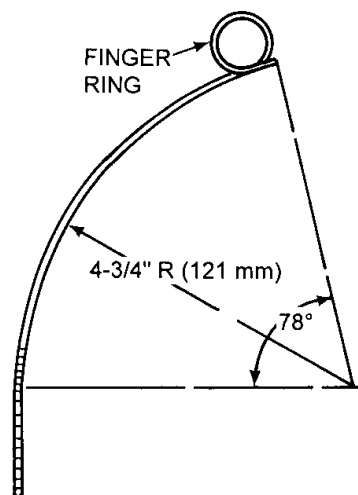
(1A-28) by loosening and removing the three bolts (1B-13, -13A, -13B). To remove the pulley (1A-7) loosen and remove bolt (1A-21) and washer (1A-22). Evenly pry between the compressor boss and the pulley hub.

3.2.2 INSPECTION: Check for signs of oil leakage.

3.2.2.1 Check oil level. Fashion an oil dipstick from any soft metal bar or rod stock approximately 9-1/4" long. Bend metal as shown in Illustration 1 below. Remove the oil fill plug on top of the compressor, take care not to damage the O-ring. Place the dipstick in the opening; make sure the dip stick goes in past the crankshaft and pistons. Minimum oil depth is 13/16" full is 1-5/8". Refer to TABLE 1 for correct oil for your system and add oil as necessary. Return and tighten oil fill plug.



**ILLUSTRATION 2.**  
**OIL DIP STICK**



**ILLUSTRATION 3.**  
**CHECK OIL IN COMPRESSOR**

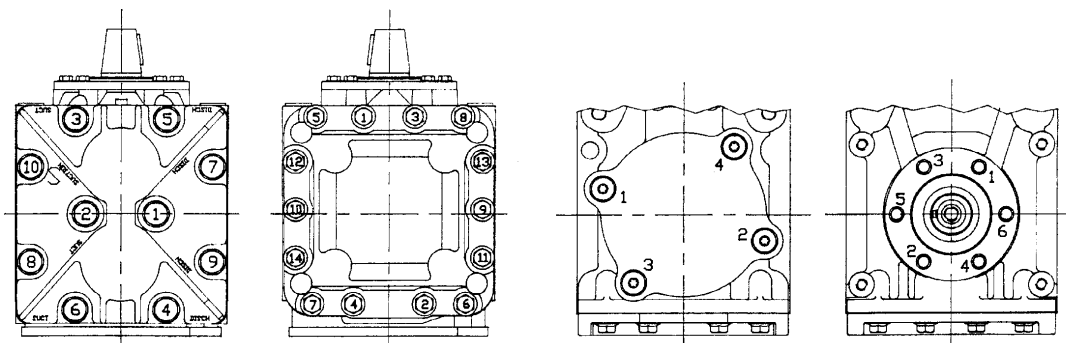


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	Horizontal Mount	Vertical Mount
6 fl. oz. (177 ml)	3/4" (19 mm)	1" (25 mm)
8 fl. oz. (237 ml)	1" (25 mm)	1-1/4" (32 mm)
10 fl. oz. (296 ml)	1-3/16" (30 mm)	1-1/2" (38 mm)
12 fl. oz. (355 ml)	1-7/16" (37 mm)	1-13/16" (46 mm)
14 fl. oz. (414 ml)	1-3/4" (44 mm)	2-1/16" (52 mm)

**TABLE 1.  
OIL LEVEL**



LOCATION	THREAD	HEAD	FIELD TORQUE SPECS
Baseplate	1/4" - 20 UNC	Hex	10-16 ft.-lb. (13.6-21.7 N-m)
Rear Bearing Cover Plate	1/4" - 20 UNC	Flat	10-16 ft.-lb. (13.6-21.7 N-m)
Cylinder Head	5/16" - 18 UNC	Hex	17-25 ft.-lb. (23.0-33.9 N-m)
Seal Plate	10-24 UNC	Hex	5-8 ft.-lb. (6.8-10.8 N-m)
Oil Fill Plug	3/8" - 24 UNF	Hex	5-10 ft.-lb. (6.8-13.6 N-m)
Clutch Mounting Screw	1/4" - 20 UNC	Hex	13-19 ft. lb. (17.6-25.8 N-m)
Clutch Center Bolt	5/16" - 24 UNF	Hex	20-25 ft. lb. (27.1-33.9 N-m)
Rotalock Valve	1" - 14 UNS	Hex	35-40 ft. lb. (47.5-54.2 N-m)
Tube 'O' Valve	1" 14 UNS	Hex	35-40 ft.-lb. (47.5-54.2 N-m)
Flange Valve	5/16" - 18 UNC	Torx	17-25 ft.-lb. (23.0-33.9 N-m)
Pressure Relief Valve	3/8" - 24 UNF	Hex	5-10 ft.-lb. (6.8-13.6 N-m)

**TABLE 2.  
COMPRESSOR TORQUE INFORMATION**

**3.2.3 PULLEY INSTALLATION:** Place the pulley on the new compressor and align on the shaft key. Using a block of wood, lightly tap the pulley on the compressor shaft. Take care not to damage pulley or strike black rim area. Place washer (1A-22) and bolt (1A-21) in place and torque to 20 foot-pounds, secure with .032 diameter lock wire.



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3.2.4 BASE PLATE REASSEMBLY: Attach the base plate (1A-28) to the compressor using the three bolts (1C-13, -13A, -13B), torque to 45 foot-pounds.

3.2.5 INSTALLATION: Set the assembled compressor (3.2.2, 3.2.3) on the side frames and reassemble using bolts and washers (1A-10, -10A, -10B). Tighten and torque to 40 foot-pounds, secure with .032 dia. lock wire. Install belts in accordance with Section 2.1.

### **3.3 MOTOR, COMPRESSOR DRIVE**

3.3.1 REMOVAL: Disconnect the positive and negative leads to the motor. Remove and set aside the primary belt in accordance with paragraph 2.1.3.2. Hold the motor pulley with a spanner wrench and turning the 1" hex nut (1B-18) (right-hand thread) loosen the fan shaft assembly (1B-20, 3-8). Do not completely remove the fan shaft assembly at this time. Remove the two bolts and washers (1D-16, -16A, -16B) and free the stainless steel clip (1D-17) from the motor. Loosen the lock nuts (1D-15B). Back out the three motor mount locking bolts (1D-15) and attaching parts (1D-15A, -15B). The motor may be slightly stuck to the rubber mounting pads, lightly pry with a screwdriver to break it loose. Slide the motor away from the condenser coil far enough to remove the fan shaft assembly (B-20, 3-8) and spacer (B-19, 3-6) from the motor shaft, set it aside. Now slide the motor completely out of the frame.

NOTE: New or ZEE SYSTEMS overhauled motors come with the motor pulley fitted on the shaft.

3.3.2 INSPECTION: If brushes are removed for inspection mark the location and return each brush to its original holder.

3.3.2.1 Remove the brush cover and inspect the brushes, replace brushes if any brush is worn to the wear mark on the side of the brush, minimum length is .575 inches. Check for chips, cracks, pitting, and signs of arcing or overheating. Replace in sets only, order P/N: SZ43-P19C8351, Brush Kit.

3.3.2.2 With brushes removed inspect the commutator for signs of overheating or unusual wear. Turn the armature and check that there is no binding or endplay.

3.3.3 INSTALLATION: On the motor find the two detents located approximately 180° from the electrical terminals. Slide the motor assembly into the frame, start the spacer (1B-19) and fan shaft assembly (1B-20, 3-8), and tighten to finger tight. Hold the motor, line up the two detents with the motor mount locking bolts (1D-15), and tighten evenly. Care should be taken to insure the bolts enter the detents. At the same time make sure the motor is firmly in contact with the rubber pads to complete the three-point mount when the mounting bolts are tight.

3.3.3.1 Fasten the stainless steel clip (1D-17) to the motor with bolts and washers (1D-16, -16A, -16B) and to the center motor mount bolt (1D-15). Tighten finger tight until the bolt contacts the motor housing then back out two turns; tighten the lock nut (1D-15B) to secure it into position. Tighten the two outside mounting bolts (1D-15) and torque to 20 inch-pounds then tighten the lock nuts (1D-15B). Check to insure the three-point mount is maintained.

3.3.3.2 Attach the fan shaft assembly (B-20, 3-8) and spacer (B-19, 3-6). Using a spanner wrench, hold the motor pulley and tighten the fan shaft assembly (1" hex nut).

3.3.3.3 Slip the belt over the fan and adjust in accordance with paragraph 3.1.5.



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#### **3.4 FAN SHAFT ASSEMBLY**

**3.4.1 REMOVAL:** Remove and set aside the primary belt in accordance with paragraph 3.1.3.2. Hold the motor pulley with a spanner wrench and turning the 1" hex nut (right hand thread) loosen and remove the fan shaft assembly (B-20, 3-8).

**3.4.2 INSTALLATION:** Attach the fan shaft assembly (B-20, 3-8) and spacer (B-19, 3-6). Using a spanner wrench hold the motor pulley tighten the fan shaft assembly (1" hex nut). Adjust belt(s) in accordance with paragraph 3.1.5.

**3.4.3 REPAIR:** Refer to FIG. 3 for breakdown of the Fan Shaft Assembly. Disassemble by holding the 1" hex nut on the fan shaft (3-8A) and removing the nut (3-8E). Replace any blade (3-8C) that is broken or damaged. Replace the O-Ring (3-8B). When installing new blades make sure the blade side with "PUSHER" is toward the motor. Align the blades so there is equal spacing. Re-assemble in reverse order of disassembly. Tighten the nut (3-8E) until the blade compresses the O-Ring and makes complete contact with the shaft shoulder.

#### **3.5 JACK SHAFT ASSEMBLY**

**3.5.1 REMOVAL:** First, remove the belts. Start with the secondary belt. Loosen the four bolts (1A-10) then loosen the secondary belt adjusting bolt (1A-12). This slides the compressor toward the jack shaft (1A-14), remove the secondary belt (1A-35) from the compressor pulley first then the small pulley. Then remove the primary belt. Loosen the two locking bolts (1A-11). Put a 3/8" diameter pin in the hole in the jack shaft and lift upward, remove the belt from the jack shaft first then from the motor pulley.

**NOTE:** Take care not to nick or damage the hard-anodized area of the pulley.

**3.5.1.1** Remove bolts and washers (1C-9, -9A) from the Browning taper lock bushing (1C-5). Place the bolts (1C-9) in the threaded holes in the bushing flange. Remove the pulley by alternately tightening the bolts into the bushing. Tap bushing from shaft and remove pulley.

Loosen bolts (1C-11) and slide jack shaft assembly from frame. It may be necessary to wedge open the frame if the jack shaft does not readily slide out.

**3.5.2 INSPECTION:** Inspect the pulley (1C-4) for wear. Check for damaged or rounded teeth. Excessive wear will show as shiny areas on the teeth. Replace if damaged.

**3.5.2.1** Inspect the small pulley (1A-8) for damaged or rounded teeth. Replace if damaged.

**3.5.2.2** Inspect the jack shaft housing (1B-14) for cracks or other damage. Turn the shaft in the housing. It should turn free and true, there should not be any endplay in the bearings. Replace assembly as required. **NOTE:** Jack Shaft Assembly from ZEE SYSTEMS will come with the small pulley (1A-8) fitted to the shaft.

**3.5.3 INSTALLATION:** Slide jack shaft assembly into frame and align it so the belt will ride centered on the compressor pulley and the small pulley on the jack shaft, and tighten bolts (1C-11) to hold the assembly while attaching the other jack shaft (large) pulley. Slip the pulley over the shaft, using a rawhide mallet tap bushing into the pulley until approximately 1/8" of the shaft shows.

**NOTE:** If bushing is tight DO NOT PRY the slot open, this will disturb the machined alignment of the bushing.

**3.5.3.1** Install the two bolts and washers (1C-9, -9A) and evenly tighten. This will move the pulley toward the bushing, continue tightening until the outer edge of the pulley is even with the outer flange of the motor pulley



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so the belt will ride centered. Turn shaft and check that the pulley is square on the shaft. Realign as necessary. This takes patience and will become a quick and easy procedure with practice.

3.5.3.2 Install and align belt(s) in accordance with paragraphs 3.1.4 and 3.1.5. The belt should ride in the middle of the (large) pulley. Run the motor and check the belt does not walk on the pulley, then secure (1C-9) bolts with .025 diameter lock wire.

#### **3.6 CONDENSER ASSEMBLY**

3.6.1 **REMOVAL:** Disconnect the hose assemblies to the condenser. Use a back up wrench to hold fitting on the coil and loosen the nut on the hose assembly.

3.6.1.1 Remove and set aside the mounting hardware (1D-53, -54, -55) that attaches the condenser assembly (1D-37, -37A) to the channel base plate (1C-40A, -40B, -40C). Lift the condenser assembly from the base plate.

3.6.1.2 To separate the coil (2-1) from the housings (2-3, -4) first remove the mounting hardware (2-5, -6, -7, -8) and slide the coil out. Save the black insulation (2-2A) between the coil (2-1) and the cover (2-2).

3.6.2 **FIELD REPAIR:** Pin hole leaks may be repairs by soldering. Use silver solder (15%) for all repairs. After any solder repairs the coil must be tested for leaks in accordance with paragraph 3.6.3.1.

3.6.2.1 Comb out any flattened fins.

3.6.3 **INSPECTION:** Check the fins are free from debris and other contaminants. Check that the fins are open and not flattened or bent over restricting airflow over the tubes.

3.6.3.1 Check for leaks. Cap the outlet (bottom) tube. To pressure test the coil, connect a source of dry nitrogen to the top fitting and apply 300 PSIG for 5 minutes. No leaks or distortion is allowed.

3.6.3.2 Install the coil assembly on the base plate.

3.6.4 **COIL REPLACEMENT:** New replacement coils from the factory will be sent un-drilled for the inlet and outlet ducts. Remove the defective condenser assembly (2-1) from the base plate (1C-40A, -40B, -40C) as per paragraph 3.6.1. Remove the inlet duct (2-4), outlet duct (2-3)) and cover (2-2) and insulation (2-2A) from the defective coil (2-1). Place the black insulation (2-2A) on the top ends of the new coil. Slide the cover (2-2) onto the inlet duct (2-4) and place the two pieces on the inlet side of the coil. Match drill 4 each No. 10 (.193 diameter) the mounting holes in the coil. Use hardware (3-5, -6, -8), to attach the inlet duct, cover to the coil. Next slide the outlet duct (2-3) into the cover (2-2) and place the outlet duct on the coil. Match drill 4 each No. 10 (.193 diameter) the mounting holes in the coil. Use hardware (3-5, -6, -8), to attach the outlet duct (2-3) to the coil.

3.6.4.1 Install the coil assembly on the base plate.

3.6.5 **INSTALLATION:** Place condenser assembly (1D-37, -37A) on channel base plate (1C-40A, -40B, -40C). Use hardware (1D-53, -54, -55) to secure. Check the fan shaft assembly (1B-20, 3-8) turns free and does not hit the inlet housing.

3.6.5 **PRESERVATION:** Whenever the air conditioning system will be inactive for more than 30 consecutive days of normal operation the system should be preserved to prevent damage from chemical or other contamination. Remove all debris and flush the condenser coil fins with fresh water before storage.



**ZEE Systems, Inc.**

**COMPONENT MAINTENANCE MANUAL SZ43-002**

**4.0 SERVICING**

**CAUTION**

**AIR CONDITIONING SYSTEM IS 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.**

**NOTE**

**DO NOT USE A SIGHT GLASS WHEN USING R-134a REFRIGERANT TO DETERMINE THE PROPER CHARGE.**

**NOTE**

**USE ONLY VIRGIN REFRIGERANT IN THIS SYSTEM. DO NOT RETURN REMOVED REFRIGERANT TO THIS SYSTEM.**

**NOTE**

**DO NOT ADD OIL WITH THE REFRIGERANT. ONLY ADD OIL TO THE CRANKCASE OF THE COMPRESSOR. IF THE COMPRESSOR DOES NOT HAVE BACK SEAT VALVES THE SYSTEM MUST BE DISCHARGED TO ADD OIL.**

4.1 SERVICING INSTRUCTIONS: Refer to ZEE Systems, Inc., Service Letter 43-1 for servicing instructions

**5.0 MAINTENANCE SCHEDULES**

5.1 MAINTENANCE SCHEDULE: This maintenance schedule is only an estimate it is the maximum interval between service. When this MCC is installed on an agricultural spray plane the maintenance schedule should be amended to each individual operator. When operating around chemicals which may contain high corrosive potential the inspection and TBO intervals should be adjusted accordingly to shorter intervals.

<b>ITEM</b>	<b>INSPECTION</b>	<b>R&amp;R/T.B.O.</b>
<b>DESCRIPTION</b>	<b>INTERVAL *</b>	<b>HRS</b>
SZ43-002 M-C-C	FIRST 100 HRS* AFTER OH OR NEW - CHECK OIL LEVEL, REPLENISH AS NECESSARY.	2000
	EVERY 250 HRS* - INSPECT FOR LOOSE, DAMAGED ITEMS. CHECK FOR AND	



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<u>ITEM</u>	<u>INSPECTION</u>	<u>R&amp;R/T.B.O.</u>
DESCRIPTION	INTERVAL *	HRS
	REMOVE ANY DEBRIS OR OBSTRUCTIONS TO THE CONDENSER COILS.	
	CHECK FOR SIGNS OF OIL LEAKS. BELT CONDITION AND ALIGNMENT OF PULLEYS.	
DRIVE BELTS**	EVERY 250 HRS* - INSPECT AS PER SECTION 3.1.2	500
MOTOR **	EVERY 1000 HRS* - INSPECT AS PER SECTION 3.3.2	2000
JACK SHAFT**	EVERY 1000 HRS* - INSPECT AS PER SECTION 3.5.2	2000
COMPRESSOR**	EVERY 250 HRS - INSPECT AS PER SECTION 3.2.2	ON CONDITION

\* UNIT OPERATING TIME

\*\* COMPONENT IS PART OF THE M-C-C

5.2 PRESERVATION: Whenever the air conditioning system will be inactive for more than 30 consecutive days of normal operation the system should be preserved to prevent damage from chemical or other contamination. Failure to winterize the motor will void all warranty.

#### 6.0 TOLERANCES

6.1 COMPRESSOR OIL. The minimum compressor oil depth is 13/16" (20mm). The Maximum is 1-5/8" (41mm). Replenish as necessary.

6.2 BRUSH LENGTH, COMPRESSOR DRIVE MOTOR. The minimum brush length on the drive motor is 0.575" (14mm). Each brush has a wear line on one side of the brush. Replace brushes if any brush is worn to the wear mark on the side of the brush.

6.3 TORQUE VALUES. Use standard torque values for bolts. Refer to TABLE 2 and Manual SZ206 for torque values and torque sequence for the compressor.

#### 7.0 TROUBLE SHOOTING

<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Compressor Motor trips circuit breaker.	Motor shorted.	Replace Motor.
	Motor brushes worn beyond limits.	Overhaul Motor.
	Defective or undersize Circuit Breaker.	Check Circuit Breaker.



**ZEE Systems, Inc.**

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<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
Compressor Motor trips current limiter.	Short in wiring.	Check wiring to motor, repair as required.
	Motor brushes worn beyond limits.	Overhaul Motor.
	Wrong or undersize Current Limiter.	Check Current Limiter.
Compressor Motor inoperative.	Motor open.	Overhaul or Replace Motor.
	Motor brushes worn beyond limits.	Overhaul Motor.
	Short in wiring.	Check wiring to motor, repair as required.
Excessive vibration at Motor/Compressor.	Improper belt tension.	Adjust belt to correct tension.
	Worn, damaged or loose or over tightened motor mounts.	Adjust or replace mounts.
	Pulleys out of alignment.	Adjust pulley alignment.
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.
	Compressor Shaft Seal.	Replace Shaft Seal. Service System.





# ZEE Systems, Inc.

## COMPONENT MAINTENANCE MANUAL SZ43-002

### 8.0 ILLUSTRATED PARTS LIST

#### 8.1 EXPLANATION OF SYMBOLS:

ALTERNATE - 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, no longer available.

USAGE/QTY - This identifies parts used on specific applications (not common to all units). If no code is shown the part is used in all applications and dash numbers.

.. - Part of higher assembly.

# - See explanation at end of parts list.

\* No longer available, order next higher assembly. Refer to Service Letter SZ43-002-1A

\*\* Available individually or in Kit P/N: K43-002-1A. Refer to Service Letter SZ43-002-1A

(\*) SEE FIGURE 2. 3.5" Coil replaces 3.0" Coil which is only available until current inventory is depleted. New production units will have the 3.5" Coil and be identified as MOD "E". Units may be upgraded to MOD "E" by replacing parts indicated in this Parts List annotated with (\*).

NOTE 1. Refer to CMM SZ206 for CMM and IPL for compressor.

NOTE 2.

"AN", "MS" and "NAS" equivalent hardware is considered to be approved alternates for each other and may be used. The most common are as follows:

PART NUMBER	ALTERNATE	DESCRIPTION
AN345-516	MS35650-3312	NUT, MACHINE
AN364-624A	MS21083N6	LOCK NUT
AN365-428A	MS21044N4	LOCK NUT
AN365-832A	MS21044N08	LOCK NUT
AN501A10-6	MS35266-61	SCREW
AN935-416	MS35338-44	WASHER, LOCK
AN935-516	MS35338-45	WASHER, LOCK
AN935-616	MS35338-46	WASHER, LOCK
AN935-8	MS35338-42	WASHER, LOCK
AN960-416	NAS1149F0463P	WASHER, FLAT
AN960-416L	NAS1149F0432P	WASHER, FLAT
AN960-516	NAS1149F0563P	WASHER, FLAT
AN960-516L	NAS1149F0532P	WASHER, FLAT
AN960-616	NAS1149F0663P	WASHER, FLAT
AN960-616L	NAS1149F0632P	WASHER, FLAT
AN960-8L	NAS1149FN816P	WASHER, FLAT



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8.2 MOTOR-COMPRESSOR-CONDENSER ASSEMBLY

<u>ITEM-FIG</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>USAGE NOTES</u>
<b>1A/1B/1C/1D/1E</b>				
	SZ43-002-1	MOTOR COMPRESSOR CONDENSER	A	
	SZ43-002-1A	MOTOR COMPRESSOR CONDENSER	B	
	SZ43-002-1B	MOTOR COMPRESSOR CONDENSER	C	
	SZ43-002-1C	MOTOR COMPRESSOR CONDENSER	D	
	SZ43-002-1D	MOTOR COMPRESSOR CONDENSER	E	
-1	A/B	SZ43-003-1 MOTOR		OBS / SS by SZ43-003-1A
		SZ43-003-1A MOTOR	1	
		SEE FIG.3 FOR MOTOR DETAILS		
-2	A/B	SCF206T-21905 COMPRESSOR (R-12)	1	
		SCF206TC-21905		
		CR206R		
		SCF206T-20885		
		SZ84-913OP-1 COMPRESSOR (R-134a)	1	MOD F/G
-3	##	SEE FIG. 3		
-4	B	SZ43-018-3 PULLEY, PRIMARY	1	
-4A	B	187L075 BELT, PRIMARY	1	
-5	B/C	G X 5/8 BUSHING	1	
-6	A/B	187L100 BELT, SECONDARY	1	
-7	A/B	SZ43-017-3 PULLEY, COMPRESSOR	1	
-8	A/B	SZ43-009-3 PULLEY, SECONDARY	1	
-8A	A	605 KEY	1	
-9	C	NAS1352-4H16P BOLT	2	
-9A	C	AN935-416 WASHER	2	
-10	A/B	AN76A11 BOLT	4	
-10A	A/B	AN960-616 WASHER	4	
-10B	A/B	AN935-616L WASHER	4	
-11	A	5/16-18UNCx2-1/4 BOLT	2	
-11A	A	AN960-516 WASHER	2	
-11B	A	AN935-516L WASHER	2	
-12	A	1/4-20UNCx2-1/4 BOLT	1	
-12A	A	AN960-416 WASHER	1	
-12B	A	AN935-416L WASHER	1	
-13	B	3/8-16UNCx1-3/4 BOLT	1	E.O. 43-002-3A
-13A	B	SZ58-440-1 BOLT	2	E.O. 43-002-3A
-13B	B	AN960-616 WASHER	3	
-13C	B	AN935-616L WASHER	3	
-14	A/B	SZ43-004-1A JACK SHAFT ASSY	1	
-14A	A	.. JACK SHAFT HOUSING	1	
-15	D	5/16-18UNCx1 BOLT	3	
-15A	D	5/16-18UNC NUT	3	
-15B	D	AN960-516 WASHER	3	
-15C	D	AN935-516L WASHER	3	
-16	D	SZ43-020-3 BOLT, MOTOR SAFETY	1	
-16A	D	AN960-416 WASHER	1	
-16B	D	AN935-416L WASHER	1	
-17	D	SZ43-015-3 CLIP, STAINLESS	1	



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**COMPONENT MAINTENANCE MANUAL SZ43-002**

<b>ITEM-FIG</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>USAGE NOTES</b>
<b>1A/1B/1C/1D/1E</b>				
-18	##	SEE FIG. 3		
-19	##	SEE FIG. 3		
-20	##	SEE FIG. 3		
-21	A	AN5H5A BOLT	1	
-22	A	SZ37-014-3 WASHER	1	
-23	A	AN501A10-6 SCREW	1	
-24	A	SZ43-005-1 SUPPORT ASSY, MOTOR	2	E.O. 43-002-3A
	A	. . SZ43-005-3A SUPPORT, MOTOR	2	E.O. 43-002-3A
-24A	C	. . SZ43-019-1A PAD	2	E.O. 43-005-1
	C	SZ43-019-1 PAD		NP/OBS / SS by SZ43-019-1A
	A	SZ43-005-3 SUPPORT, MOTOR		NP/OBS / SS by SZ43-005-3A
-25	D	SZ43-006-3 SUPPORT	1	
-26	C	1 X 495-1 RUBBER MOUNT	4	
	C	SZ58-019-5 RUBBER MOUNT	4	MOD K
-27	C	MS35649-2382 NUT	12	
-28	C	AN960-616 WASHER	12	
-29	C	AN935-616L WASHER	8	
-30	A/C	SZ43-014-3 COMPRESSOR PLATE	1	
-31	B	SZ43-016-5 FRAME	1	
-32	B	SZ43-016-3 FRAME	1	
-33	B	AN345-516 NUT, LOCK	1	
-33A	B	AN960-516 WASHER	1	
-33B	B	AN935-516L WASHER	1	
-34	B	5/16-18UNCx1 BOLT	4	
-34A	B	AN960-516 WASHER	8	
-34B	B	AN935-516L WASHER	8	
-35	B	SZ41-011-3 BOLT, MTR COMP SAFETY	2	
-36	NS	SZ43-026-3 STRAP	1	MOD A
-37	D(*)	SZ45-022-3B CONDENSER ASSY (3.5")	1	A MOD E
-37A	D(*)	SZ45-022-4B CONDENSER ASSY (3.5")	1	B,C,D,E MOD E/J
	D	SZ45-022-1 CONDENSER ASSY (3.0")		NP/OBS
	D	SZ45-022-1A CONDENSER ASSY (3.0")		NP/OBS / SS by SZ45-022-3B / -4B
-38	#	SEE FIG. 2		
-38A	#	SEE FIG. 2		
-39	#	SEE FIG. 2		
-39A	#	SEE FIG. 2		
-40A	D	SZ43-012-1 CHANNEL ASSY, BASE	1	A,B,D
		ALT: SZ43-302-1		
-40B	C	SZ43-012-1A CHANNEL ASSY, BASE	1	C MOD B
		ALT: SZ43-301-1		
-40C	C/E	SZ43-012-1B CHANNEL ASSY, BASE	1	E MOD D
		ALT: SZ43-303-1		
-41	#	SEE FIG. 2		
-42	#	SEE FIG. 2		
-43	D	SZ43-022-1 HOSE ASSY	1	
		Z1008000A204 ALTERNATE		
-43A	D	Z2008000BC192 HOSE ASSY	1	MOD F
-43B	D	Z2008180BCX190 HOSE ASSY	1	MOD G



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**COMPONENT MAINTENANCE MANUAL SZ43-002**

<b>ITEM-FIG</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>	<b>QTY</b>	<b>USAGE</b>	<b>NOTES</b>
<b>1A/1B/1C/1D/1E</b>					
-44	D # SZ55-035-3	UNION	1		MOD J
-44A	D/E # DS200U137-8	UNION	1		MOD D/F/G
-45	A SZ43-007-3	BAR	1		
-46	A/B SZ43-013-3	PLATE	1		
	A/B SZ43-013-5	PLATE	1		MOD L
-47	E Z2008180BC184	HOSE ASSY	1	E	MOD D
-48	E Z2006000BB130	HOSE ASSY	1	E	MOD D
-49	E Z20010000AB252	HOSE ASSY	1	E	MOD D
-50	E DS200B-10	FITTING, BULKHEAD	1	E	MOD D
-50A	E AN901-10D	WASHER	1	E	MOD D
-50B	E AN924-10D	NUT	1	E	MOD D
-51	E DS200B-6	FITTING, BULKHEAD	1	E	MOD D
-51A	E AN901-8D	WASHER	1	E	MOD D
-51B	E AN924-8D	NUT	1	E	MOD D
-52	E # DS200U137-6	UNION	1		MOD D/J
-53	D MS35206-245	SCREW	8		
-54	D AN960-8L	WASHER, FLAT	16		
-55	D MS21044N08	LOCK NUT	8		

# SEE FIG. 2 FOR DETAILS  
 ## SEE FIG. 3 FOR DETAILS

NOTE: MCC Unit identified as SZ43-002-1ABC is the same as SZ43-002-1 with MOD A, MOD B, and MOD C. This part numbering system was designed before a large number of modifications were incorporated into the MCC. Units manufactured after 4-30-04 will be properly identified as SZ43-002-1 Motor Compressor Condenser Units with the modifications noted in the MOD STATUS section of the I.D. Plate.

NOTE: MCC Unit identified as SZ43-002-1AD is the same as SZ43-002-1 with MOD A and MOD D. This part numbering system was designed before a large number of modifications were incorporated into the MCC. Units manufactured after 4-30-04 will be properly identified as SZ43-002-1 Motor Compressor Condenser Units with the modifications noted in the MOD STATUS section of the I.D. Plate.



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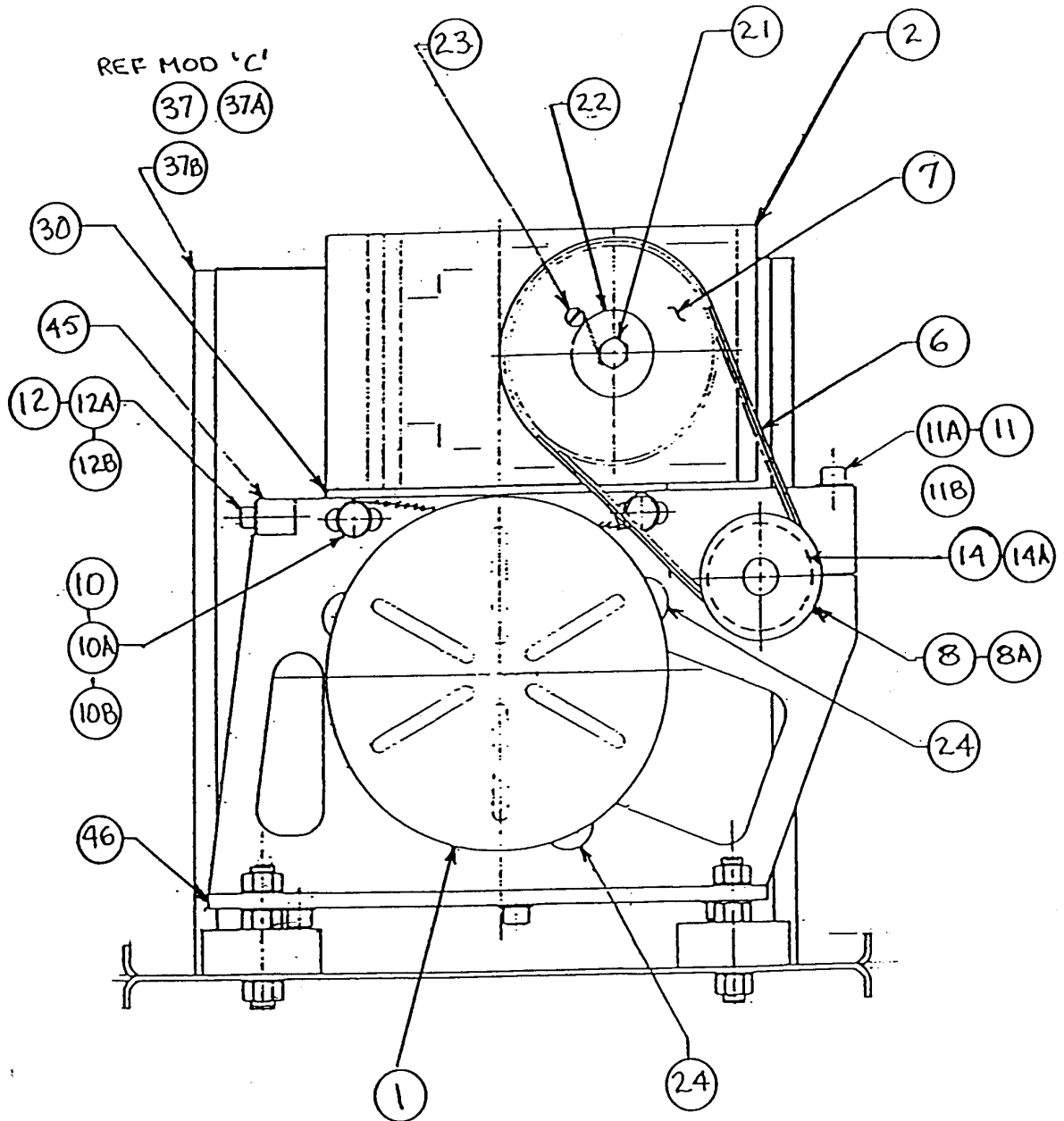


FIGURE 1A.



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COMPONENT MAINTENANCE MANUAL SZ43-002

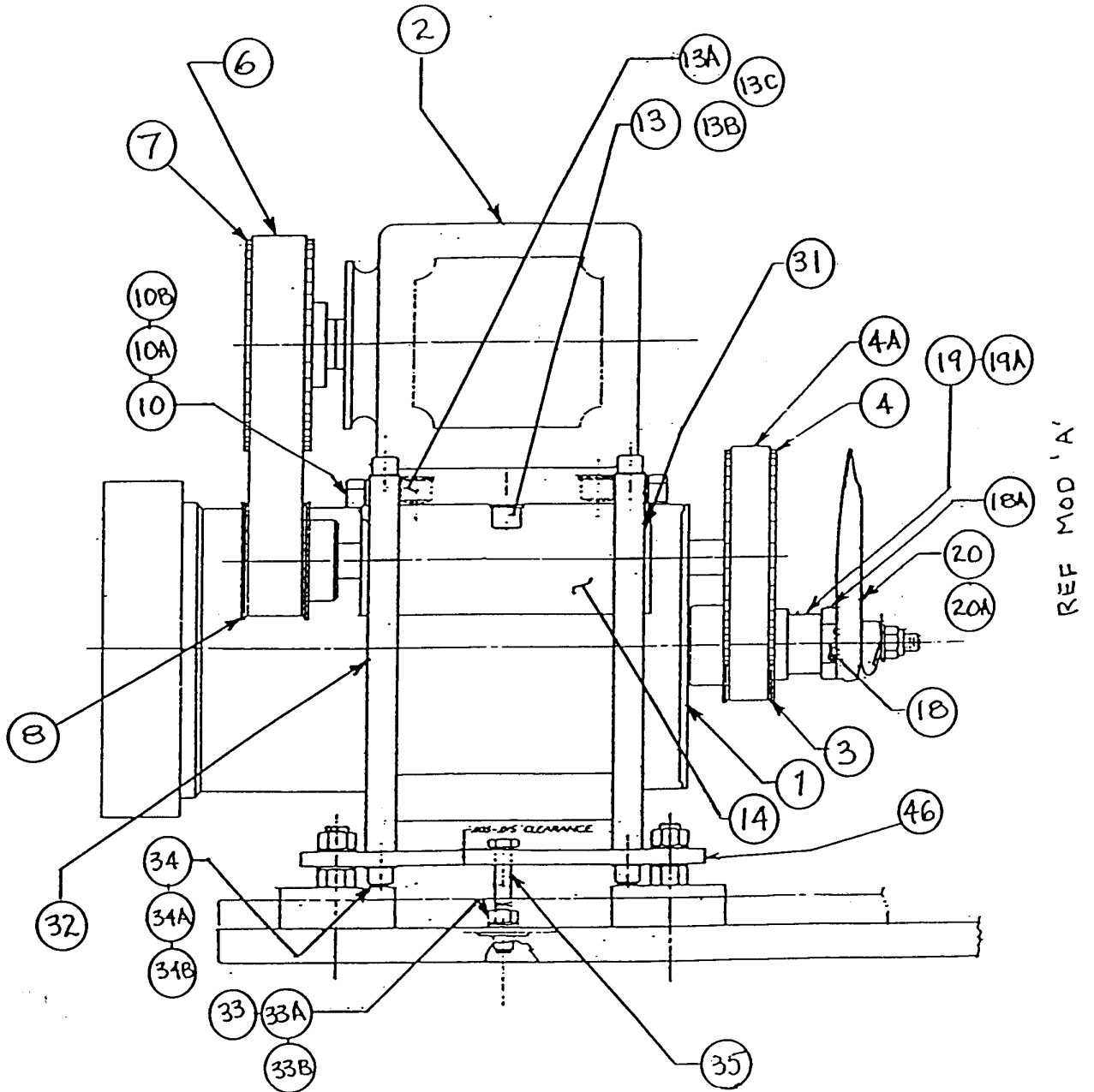


FIGURE 1B.



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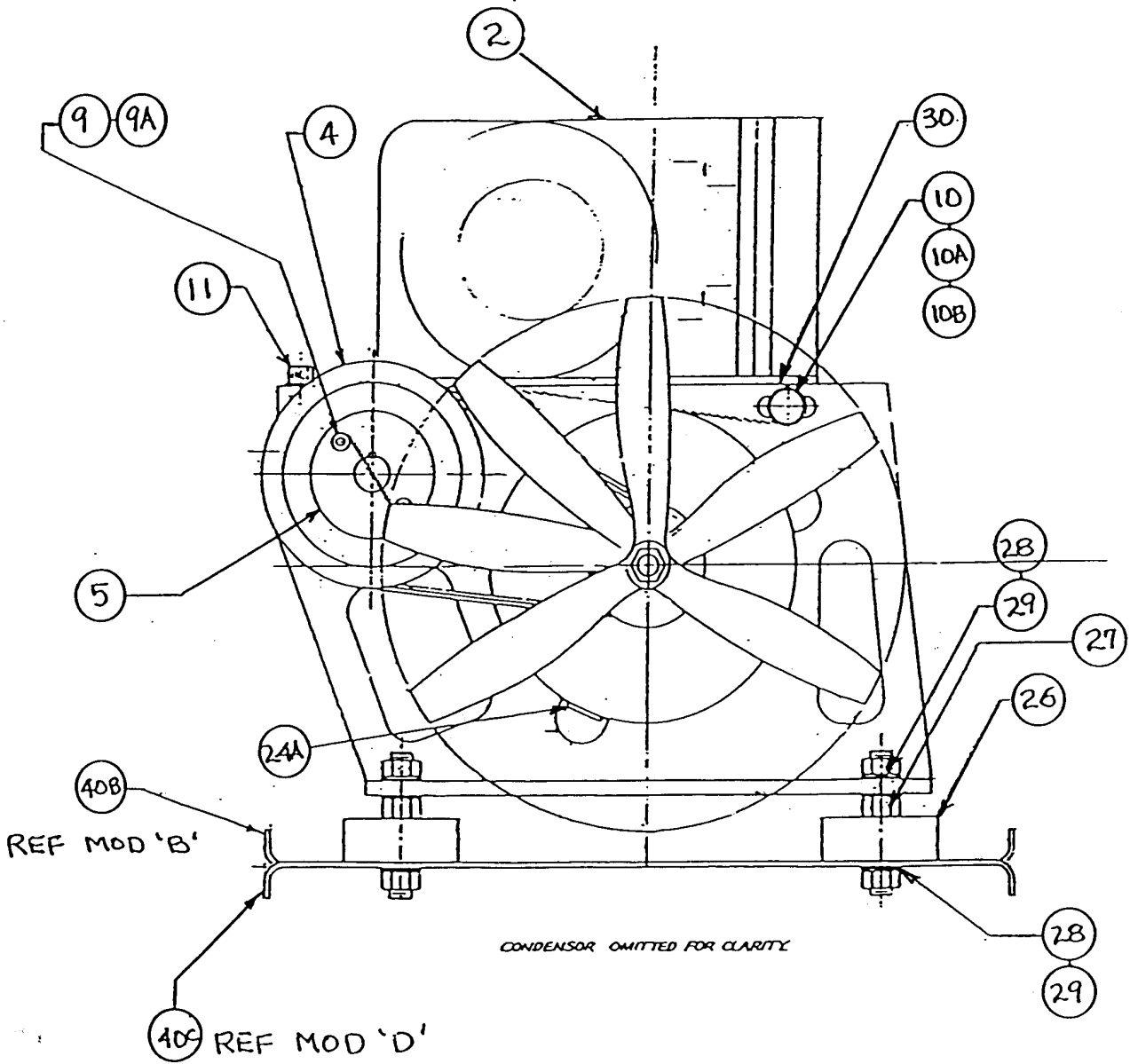


FIGURE 1C.



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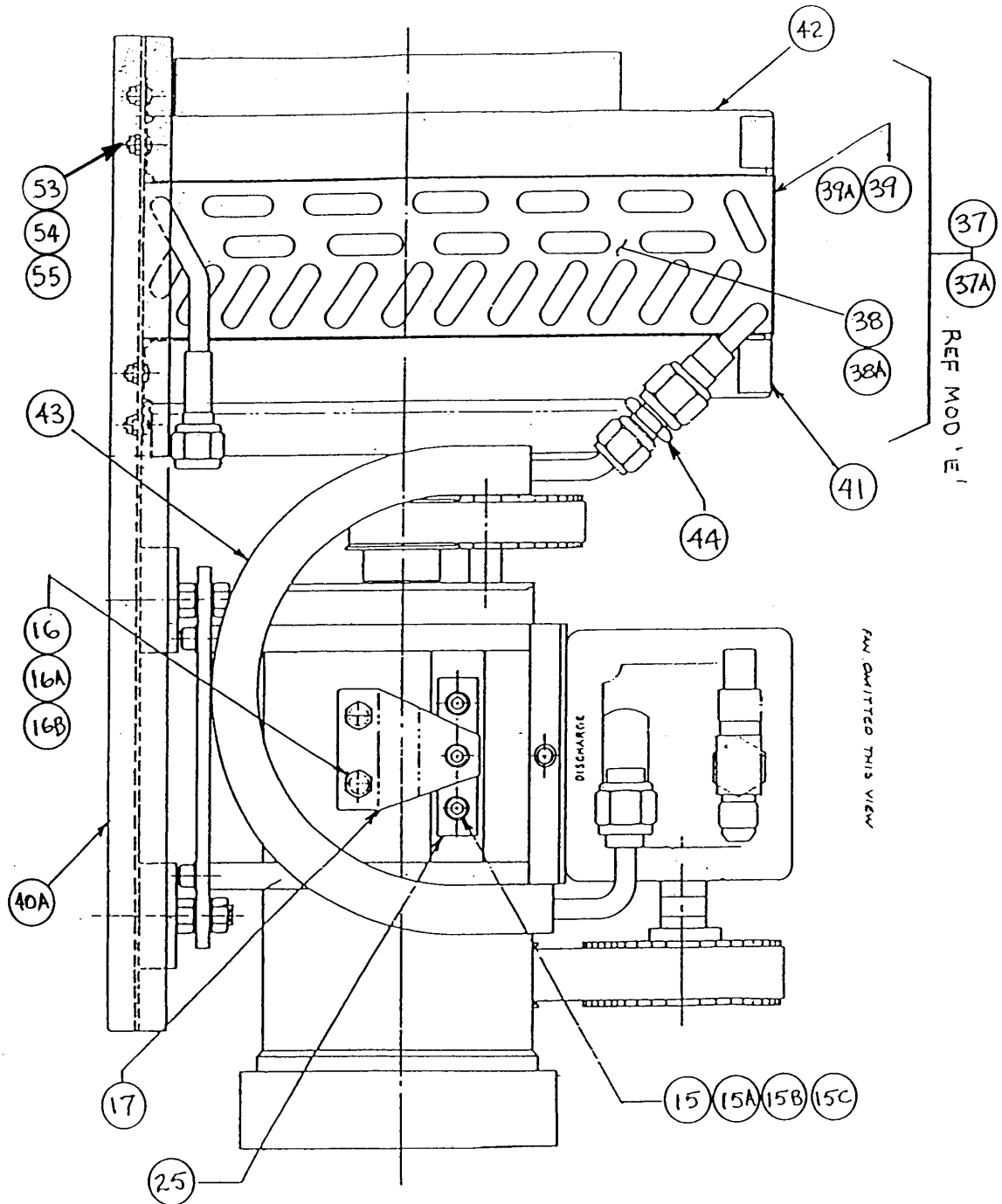


FIGURE 1D.



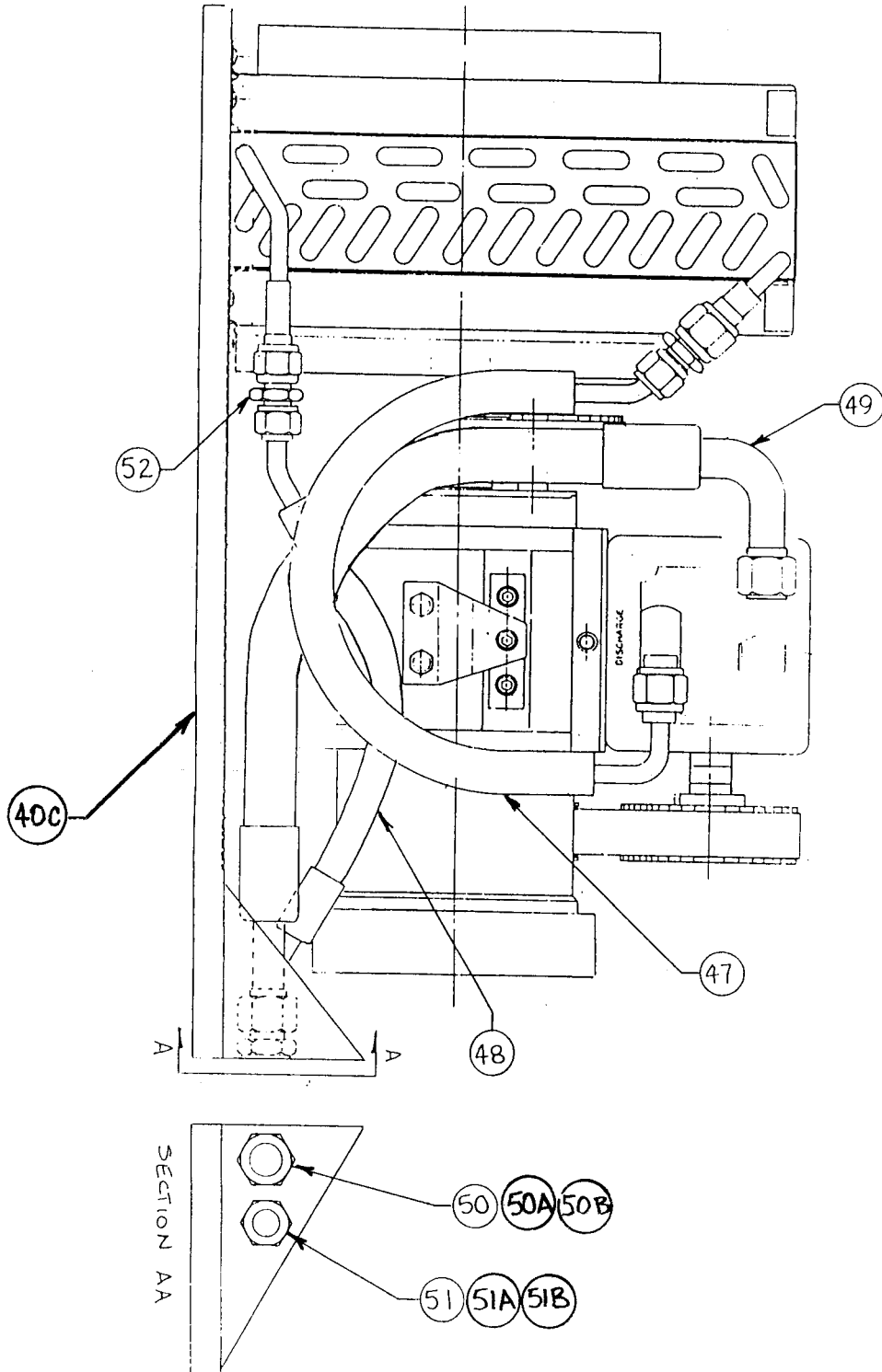


FIGURE 1E.



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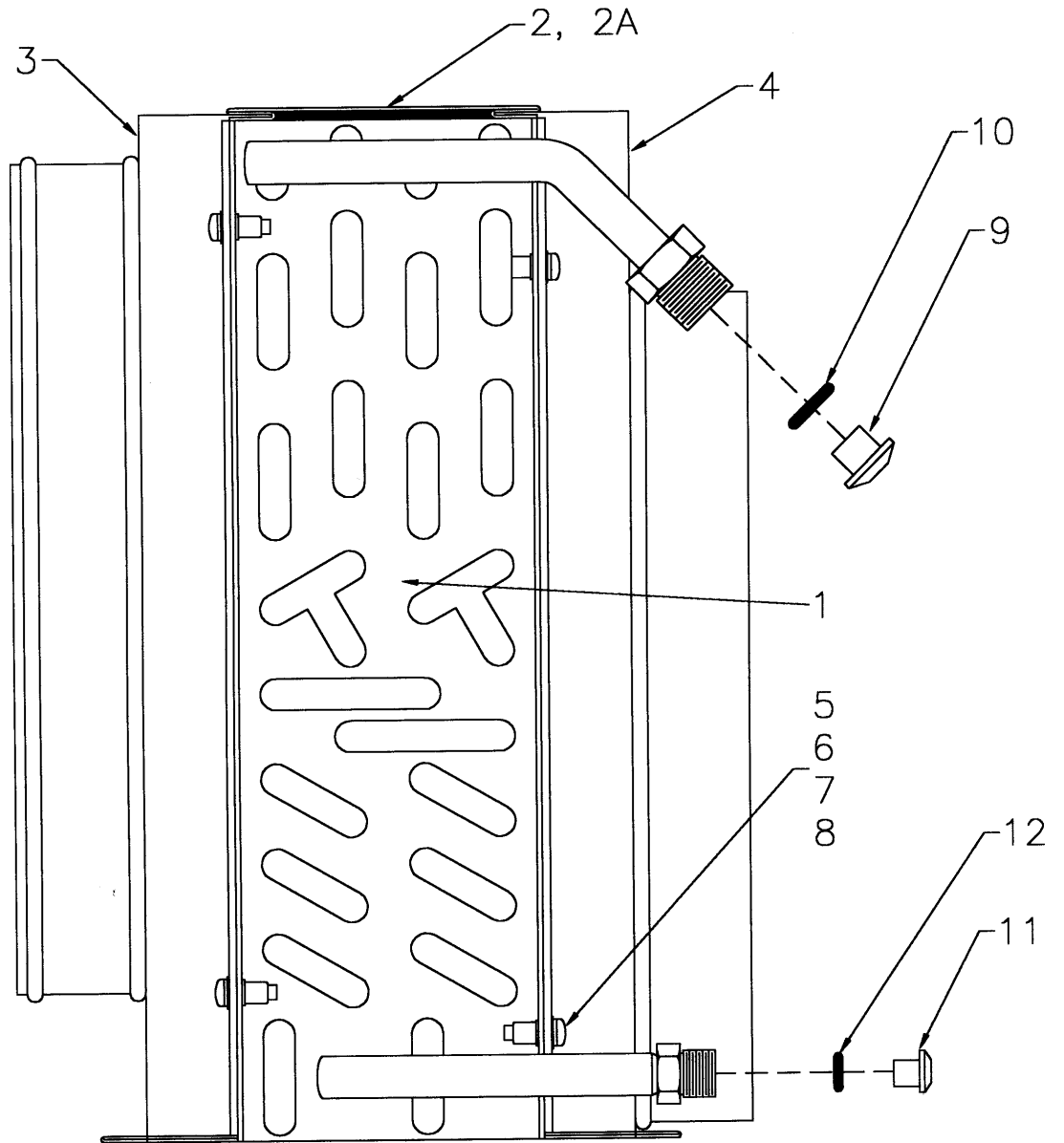
8.3 CONDENSER ASSEMBLY

<u>FIG-ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>USAGE</u>	<u>NOTE</u>
2					
	SZ45-022-3B	CONDENSER ASSY	1	A	MOD E/H
	SZ45-022-4B	CONDENSER ASSY	1	B	MOD E/J
-1	SZ44-030-1B	COIL ASSY	1		MOD E
	SZ45-020-1	COIL ASSY (3.0")	NP/OBS		
	SS by SZ44-030-1B				
-2	SZ41-029-3A	PLATE, COND.COVER	1		MOD E
-2A	18-2710	INSULATION	AR		
-3	SZ41-026-1	DUCT ASSY, OUTLET	1	A	
	SZ41-026-1A	DUCT ASSY, OUTLET	1	B	MOD L
-4	SZ41-027-1	DUCT ASSY, INLET	1	B	
	SZ43-6301-1	DUCT ASSY, INLET	1	A	MOD H
-5	MS35206-245	SCREW	8		
-6	AN960-8L	WASHER, FLAT	16		
-7	AN935-8	WASHER, LOCK	8		
-8 (REF)	MS21044N08	LOCK NUT	8		Section 3.6.4
-9	6242	ADAPTER	1		MOD J
	ALT: 20-4444				
-10	MS28775-013	O-RING	1		MOD J
-11	6240	ADAPTER	1		MOD J
	ALT: 20-4443				
-12	MS28775-011	O-RING	1		MOD J



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**COMPONENT MAINTENANCE MANUAL SZ43-002**



**FIGURE 2.**



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**COMPONENT MAINTENANCE MANUAL SZ43-002**

8.4 MOTOR ASSEMBLY, COMPRESSOR DRIVE

<u>FIG-ITEM</u>	<u>PART NUMBER</u>	<u>DESCRIPTION</u>	<u>QTY</u>	<u>USAGE</u>	<u>NOTE</u>
<b>3</b>	SZ43-003-1A	MOTOR ASSY, COMPRESSOR DRIVE			
-1	# .. SZ40-002-1	MOTOR		OBS / SS by SZ40-002-2	
	# .. SZ40-002-2	MOTOR	1		
-2	.. AN316-6R	NUT	2		
-3	.. AN935-616L	WASHER, LOCK	2		
-4	.. AN960-616L	WASHER, FLAT	4		
-5	.. SZ43-008-3A	PULLEY, MOTOR	1		
-6	.. SZ41-019-5	SPACER	1		MOD A
	.. SZ41-019-9	SPACER	1		MOD M
	* .. SZ41-019-3	SPACER		NP/OBS SS by SZ41-019-5/-9	
-7	.. SZ41-018-5	FAN SHAFT	1		MOD A
	* .. SZ41-018-3	FAN SHAFT		NP/OBS SS by SZ41-018-5	
-8	** .. SZ41-034-5	FAN SHAFT ASSY	1		MOD A
-8A	.... SZ41-018-5	FAN SHAFT	1		
-8B	.... MS28775-114	O-RING	1		
-8C	.... 1063P-925	BLADE, FAN	3		MOD A
-8D	.... R80	WASHER	1		
-8E	.... AN364-624A	NUT	1		

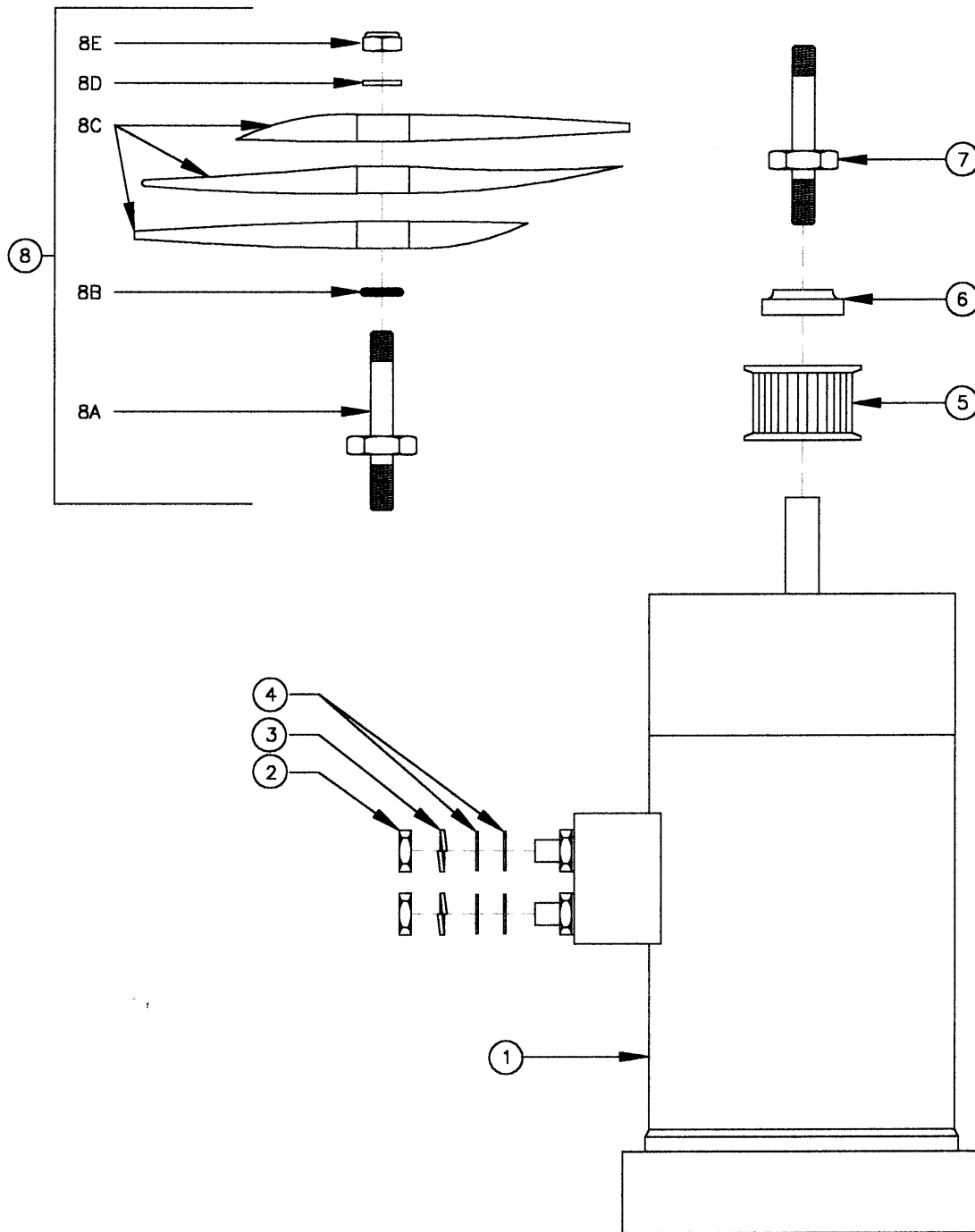
# For replacement Motor only order SZ40-002-2. The SZ40-002-2 Motor does not include the Spacer, Motor Pulley or Fan Shaft. The SZ41-003-1A comes with the SZ43-008-3A Pulley, SZ41-019-5 Spacer and SZ41-018-5 Fan Shaft.

\*\* Complete Fan Shaft Assembly or replacement component parts may be ordered.



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**COMPONENT MAINTENANCE MANUAL SZ43-002**



**FIGURE 3.**



**ZEE Systems, Inc.**

**COMPONENT MAINTENANCE MANUAL SZ43-002**

**9.0 SUMMARY OF MODIFICATIONS**

9.1 SUMMARY OF MODIFICATION "A" This modification changes the Fan Shaft Assembly from two blades to three blades. The three-blade fan shaft assembly increases the efficiency of the condenser. For units in service with two blade fan shaft assembly this modification is optional. New production units after 1990 have this modification.

DELETE:

PART NUMBER	DESCRIPTION	QTY
SZ41-019-3	SPACER	1
SZ41-018-3	*SHAFT	1
SZ41-024-1	*FAN ASSY	1

ADD:

SZ43-026-3	STRAP	1
SZ41-019-5	SPACER	1
SZ41-034-5	FAN SHAFT ASSY	1
.SZ41-018-5	SHAFT, FAN	1
..1063P-925	BLADE, FAN	3
..MS18775-114	O-RING	1
..R80	WASHER	1
..AN364-624A	NUT	1

The \*Fan Assembly and \*Shaft are no longer procurable as separate items, order next higher assembly, P/N: SZ41-034-1.

New units will have this modification incorporated at the factory. New units will not have the SZ43-026-3 Strap. The condenser P/N SZ45-022-1A inlet flange has been redesigned so the strap is not necessary.

For field modification, refer to Service Letter SZ43-002-1A, REV. 1 dated AUG 98 for specific details.

9.2 SUMMARY OF MODIFICATION "B" This modification allows for turning of the Channel Base Plate.

DELETE:

PART NUMBER	DESCRIPTION
SZ43-021-1	CHANNEL, BASE PLATE

ADD:

SZ43-021-1A	CHANNEL, BASE PLATE
-------------	---------------------

This is a factory modification, no field action required.

Refer to ZEE SYSTEM DWG SZ45-021.

9.3 SUMMARY OF MODIFICATION "C" This modification allows for the use of a different condenser outlet duct which reposition the opening.

The outlet condenser duct is improved to increase efficiency.



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DELETE:

PART NUMBER	DESCRIPTION
SZ41-026-1	CONDENSER DUCT, OUTLET
SZ45-022-1	CONDENSER ASSY

ADD:

SZ41-026-1A	CONDENSER DUCT, OUTLET
SZ45-022-1A	CONDENSER ASSY

This is a factory modification, no field action required.

Refer to ZEE SYSTEMS DWG SZ45-022.

9.4 SUMMARY OF MODIFICATION "D" This modification allows for use of a redesigned base plate channel. This channel is used when Box P/N: SZ57-002-1/-1A is attached to MCC. This Mod also specifies the differences in R-12 and R-134a applications. This may also be used to convert SZ43 MCC Assys with MOD D from R-12 to R-134a refrigerant

R-134

ACTION PART NUMBER	DESCRIPTION
DELETE:SZ45-021-1	CHANNEL
ADD: SZ45-021-1B	CHANNEL

R-12

ACTION PART NUMBER	DESCRIPTION
DELETE:SZ45-021-1	CHANNEL
ADD: SZ45-021-1B	CHANNEL

DELETE:Z2008000BC192	HOSE ASSY
Z2008180BCX190	HOSE ASSY
ADD: Z2008180BC184	HOSE ASSY

DELETE:SZ43-022-1	HOSE ASSY
Z1008000A204	HOSE ASSY
ADD: Z1008180F184	HOSE ASSY

ADD: Z2006000BB130	HOSE ASSY
ADD: Z20010000AB252	HOSE ASSY
ADD: DS200B-10	FITTING, BKHD
ADD: DS200B-6	FITTING, BKHD
ADD: DS200U137-8	UNION
ADD: DS200U137-6	UNION

ADD: Z1006000C130	HOSE ASSY
ADD: Z10010000D252	HOSE ASSY
ADD: DS104-5	FITTING, BKHD
ADD: DS133	FITTING, BKHD

This is a factory modification, no field action required.

CONVERT MOD D R-12 MCC ASSY to R-134a MCC ASSY

ACTION PART NUMBER	DESCRIPTION
DELETE: SZ43-022-1	HOSE ASSY
DELETE: Z1008000A204	HOSE ASSY
ADD: Z2008180BC184	HOSE ASSY

DELETE:Z1006000C130	HOSE ASSY
ADD: Z2006000BB130	HOSE ASSY

DELETE:Z10010000D252	HOSE ASSY
ADD: Z20010000AB252	HOSE ASSY

DELETE:DS104-5	FITTING, BKHD
ADD: DS200B-10	FITTING, BKHD

DELETE:DS133 FITTING, BKHD

CMM SZ43-002  
INITIAL RELEASE

REV. IR  
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ADD: DS200B-6 FITTING, BKHD  
ADD: DS200U137-8 UNION  
ADD: DS200U137-6 UNION

This modification may be accomplished in the field.  
Refer to ZEE SYSTEMS DWG SZ45-021, SZ57-002 and E.O. 43-002-2.  
Mark an X in the "D" block on the "MODIFICATION STATUS" on the I.D. Plate.

9.5 SUMMARY OF MODIFICATION "E" This modification allows for the use of a higher capacity condenser coil. The new coil is 3.5" thick. Existing units may be modified to this coil by replacing the following components.

DELETE:	
PART NUMBER	DESCRIPTION
SZ45-022-1	CONDENSER ASSY
SZ45-021-1	CHANNEL, BASE PLATE

ADD:	
SZ45-022-2A	CONDENSER ASSY
SZ43-012-1A	CHANNEL, BASE PLATE

New production units will have this modification incorporated at the factory.

Field modification is as described below.

Remove the Motor Compressor Assy from the old channel, base plate and attach to the new channel, base plate using the following procedure. The unit is a direct fit to the new base plate.

1. Remove the two safety bolts and hardware (B-35,-33,-33A,-33B).
2. Remove the four nuts and hardware (C-27,-28,-29) from the four rubber mounts (C-26).
3. Lift the Motor-Compressor from the channel, base plate (D-40).
4. Install the Motor-Compressor on new channel, base plate (D-40A). Attach four nuts and hardware (C-27,-28,-29) to the four rubber mounts (C-26) and torque nut to 30 foot-pounds.
5. Install the safety bolt and hardware (B-35,-33,-33A,-33B) to the new channel, base plate. Be sure to maintain a clearance of .005-.015" between the bolt head and the frame as shown in FIGURE B. Tighten the lock nut.
6. Stamp the MOD E block on the data plate.

9.6 SUMMARY OF MODIFICATION "F" This modification allows for the use of R-134a refrigerant in place of R-12 on SZ45-002 Motor Compressor Condenser units installed under STC SA4622SW.

DELETE:	
PART NUMBER	DESCRIPTION
SCF206TC-21905	COMPRESSOR
SZ43-022-1	HOSE ASSY
SZ55-035-3	UNION

ADD:	
SZ84-913OP-1	COMPRESSOR
Z2008000BC192	HOSE ASSY
DS200U137-8	UNION





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Refer to ZEE SYSTEMS Service Bulletin 43-R134 for specific details and R-134a servicing procedures.

9.7 **SUMMARY OF MODIFICATION "G"** This modification allows for the use of R-134a refrigerant in place of R-12 in SZ45-002 Motor Compressor Condenser units installed under STC SA7738SW.

**DELETE:**

<b>PART NUMBER</b>	<b>DESCRIPTION</b>
SCF206T-21905	COMPRESSOR
SZ43-022-1	HOSE ASSY
SZ55-035-3	UNION

**ADD:**

SZ84-913OP-1	COMPRESSOR
Z2008180BCX190	HOSE ASSY
DS200U137-8	UNION

Refer to ZEE SYSTEMS Service Bulletin 54-R134 for specific details and R-134a servicing procedures. Contact R.W. Martin, Inc. for details to upgrade complete aircraft installation to R-134a refrigerant.

9.8 **SUMMARY OF MODIFICATION "H"** This modification adds the SZ45-022-3A/-3B Condenser Assembly to the SZ43-002-1ABC Motor Compressor Condenser Assy. This modification is applicable to MCC Assy installed as part of S.T.C. SA4622SW.

To modify SZ45-022-1/-1A/-2A Condenser Assy to the -3A or -3B con-figuration in accordance with E.O. 45-022-1, dated 8-14-98, perform the following:

REMOVE: SZ41-027-1 Duct, Inlet.

INSTALL: SZ43-6301-1 Duct, Inlet.

This modification allows for easy fitting of the MCC under the floor in the DHC-6 Twin Otter.

Field compliance with the modification is optional. New SZ43-002 MCC Assemblies (for installations as described above) shipped after 8-14-98 will have this modification incorporated.

9.9 **MODIFICATION "I" NOT USED.**

9.10 **SUMMARY OF MODIFICATION "J"** This modification allows for the installation of the SZ44-030-1B Coil in the SZ45-022-1A/-2A/-3A Condenser Assemblies. This coil comes fitted with Male Inside O-Ring (MIO) plumbing connections. This also allows for direct connection Female O-Ring fittings without the need for adapters.

When using a SZ44-030-1B coil re-identify the condenser assembly as follows:

-1A becomes -1B, -2A becomes -2B, -3A becomes -3B, 4A becomes -4B, etc.

**NOTE: Always use a backup wrench on the condenser connection (Flare or O-Ring). Failure to use a back up wrench may damage the tube weld which will result in a leak of refrigerant. All units are leak tested prior to shipment. Failure to use a backup wrench will void warranty for units returned for leaking tubes.**



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DELETE: DS200U137-8 Union  
DELETE: DS200U137-6 Union

When Coil SZ44-030-1B is used the MIO fitting can be converted to male flare (R-12) fittings. An adapter and O-Ring can be inserted to easily convert the MIO connection to receive Female Flare fittings without additional unions.

DELETE: SZ55-035-3 Union

ADD AS REQD: 6242 Adapter (#8) ALT: 20-4444  
MS28775-013 O-Ring

6240 Adapter (#6) ALT: 20-4443  
MS28775-011 O-Ring

This modification is optional. Use existing stock of SZ44-030-1 Coils. When this inventory is depleted all new and replacement coils will be the SZ44-030-1B.

Refer to E.O. 45-022-2, 8-14-98 for additional information.

9.11 SUMMARY OF MODIFICATION "K" This modification allows for the installation of 4 each SZ58-019-5 Mounts in place the 1X495-1 Mounts. This modification is required for MCC Units installed with STC SA7738SW.

DELETE: 1X495-1 Mount (4ea)  
ADD: SZ58-019-5 Mount (4ea)

Refer to E.O. 58-019-1

9.12 SUMMARY OF MODIFICATION "L" This modification gives instructions to make the SZ43-013-5 Plate from the SZ43-013-3 Plate and allows for the installation of the -5 Plate on the SZ43-002-Series MCC. This modification is required for MCC Units installed with STC SA7738SW.

REF: EO 43-013-1

9.13 SUMMARY OF MODIFICATION "M" This modification gives instructions to make the SZ41-019-9Spacer and allows for the use of the -9 Spacer on the SZ43-002-Series MCC.

REF: EO 41-019-1