Component

Maintenance

Manual

with

Illustrated Parts List

for

Z12H701-SERIES

Evaporator-Heater Assembly

Record of Revision

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Z12H701 COMPONENT MAINTENANCE MANUAL

List of Effective Pages and Table of Contents

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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 Z12H701 Evaporator-Heater Assembly was designed utilizing dual axial mounted electrical motor and blower configuration. The squirrel cage blower wheel draws air across the coils and heating elements and into the aircraft ducting for circulation. For cooling the Evaporator is part of the vapor cycle air conditioning system. For heating the unit has an electric heating element.

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 ZEE Systems, Inc. CMM Z12-89600 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 Addison Express Installation drawings for instructions to access the evaporator. Remove the covers/panels as necessary.

3.0.2 The only component on the Evaporator-Heater 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.

NOTE

DUE TO THE TIGHT FIT OF THE MOTOR COMPRESSOR CONDENSER ASSY IT MAY BE NECESSARY TO REMOVE THE MOTOR COMPRESSOR CONDENSER ASSY AND THE EVAPORATOR TO PERFORM SOME OF THE MAINTENANCE DESCRIBED BELOW.

3.1 AIR FILTER (1-6)

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 MOTOR (3-2)

3.3.1 INSPECTION: On condition. Check for slow or noisy operation.

3.3.2 REMOVAL: It may be necessary to remove the whole Evaporator-Heater Unit from the aircraft. Refer to Addison Express installation drawings for removal procedure. Unsolder the motor red wire at the resistor (2-27) on the blower housing. Remove the three screws and washers (3-23, 3-14, 3-13) and spacers (3-15) between the motor and the blower housing. Disconnect the black ground from the ground post.

3.3.2.1 Note the spacing of the squirrel cage blower wheel on the motor shaft. Loosen the set screw on the squirrel cage and remove from the defective motor and attach squirrel cage blower wheel to the new motor with the same alignment spacing.

3.3.3 SERVICE: There is no field repair for this sealed motor. Replace if defective.

3.3.4 INSTALLATION: Attach the squirrel cage blower wheel on the new motor shaft. Care should be taken to insure the squirrel cage has the same alignment to the motor and is free to rotate. Tighten the set screw. Attach the blower motor with blower wheel to the blower housing in reverse order as removed. Place shrink tube material over the wires that were unsoldered. Solder the red motor wire to the resistor on the same side as the orange wire. Move shrink tubing in place and heat. Connect the black motor wire to the ground post.

3.4 THERMOSTATIC EXPANSION VALVE (TXV) (2/3/5-1)

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.

3.4.1 INSPECTION: On condition.

3.4.2 REMOVAL: Expose the Thermostatic Bulb on the Suction Line on the evaporator by removing the insulating tape (2-30). Care should be taken not to puncture or damage the bulb or any of the coils on the evaporator. Next, carefully remove the clip (2-29) holding the bulb to the Suction Line, retain it for reinstallation.

3.4.2.1 Disconnect and remove the Inlet Hose (NS). Plug the hose end to prevent any contamination of the system. Hold the expansion valve (2-1) with a wrench and loosen the B-Nut on the Pressure Line (Inlet) on the evaporator. Remove the Expansion Valve (2-1) including the bulb. Plug the Pressure Line to prevent contamination to the system.

3.4.2.2 Pull the Line Screen (NS) from the expansion valve (2-1). Check for any signs of clogging. Clean and remove any foreign matter from the screen.

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

3.4.4 INSTALLATION: Connect the expansion valve to the Pressure Line on the evaporator. Use Backup Wrench. Next use clip (2-29) 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 (2-30).

3.4.4.1 Make sure the line screen (NS) is installed in the expansion valve (2-1). Attach the inlet hose to the expansion valve. During servicing check for leaks.

3.5 SAFETY SWITCH ASSEMBLY (3-5)

3.5.1 INSPECTION: Check for blown Thermal Fuse. Check condition of wiring. Check for continuity of circuit wiring.

3.5.2 REMOVAL: It may be necessary to remove the whole Evaporator-Heater Unit from the aircraft. Refer to Addison Express installation drawings for removal procedure. Remove the housing (3/4-9) from the evaporator coil. Remove the heater element assembly (5-11) from the evaporator coil (1/2/4/5-10). Remove the blower motor from the blower housing. Loosen and remove the three screws and washers (3-23, 3-14, 3-13) and spacers (3-15) between the motor and the blower housing. Loosen and remove the blower housing from the (3/4-9) housing.

3.5.2.1 Disconnect the switch assembly wire to the heater element bus. Mark the wires to the thermal switches then unsolder.

3.5.3 SERVICE: The only field service is to replace the Thermal Fuse (-5A) on the Safety Switch (3-5). Return the complete safety switch assembly to a ZEE Systems, Inc. authorized repair facility for other repairs.

3.5.4 INSTALLATION: Place shrink tubing over wires that were unsoldered. Solder wires and position the tubing over connections and then heat the shrink tubing. Connect the wire from the safety switch assembly to the heater element bus.

3.6 HEATER ELEMENT ASSEMBLY (5-11)

3.6.1 INSPECTION: Check for heater coils. Check condition of wiring. Check for continuity of circuit wiring.

3.6.2 REMOVAL: It may be necessary to remove the whole Evaporator-Heater Unit from the aircraft. Refer to Addison Express installation drawings for removal procedure. Remove the housing(3/4-9) from the evaporator coil. Remove the heater element assembly (5-11) from the evaporator coil (1/2/4/5-10). Disconnect the two power wires from the bus.

3.6.3 SERVICE: There is no field service of the Heater Element Assembly. Return the complete heater element assembly to a ZEE Systems, Inc. authorized repair facility for other repairs.

3.6.4 Connect the two power wires to the heater element bus. Attach the heater element assembly to the evaporator coil using the four screws and washers. Attach the housing to the evaporator coil.

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 ZEE Systems, Inc. CMM Z12-89600 for required equipment and materials to service the air conditioning system.

5.0 SERVICE SCHEDULES

5.1 MAINTENANCE SCHEDULE

ITEM	INSPECTION	R&R/T.B.O.
DESCRIPTION	INTERVAL *	HRS

SZ84-010-3 Air Filter	Every 100 Hrs. Inspect for tears or damage. Refer to 3.1.	ON CONDITION
ITEM DESCRIPTION	INSPECTION INTERVAL *	R&R/T.B.O. HRS
SZ63-021-1 Blower Motor	N/A	ON CONDITION
BFJB-CP60 TXV	N/A	ON CONDITION
SZ89-730-1 Safety Switch Assembly	N/A	ON CONDITION
Z12-731-1 Heater Element Assembly	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 block	Replace fuse
	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.

TROUBLE	POSSIBLE CAUSE	REMEDY
	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
	Obstructed Expan-sion 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.
Compressor Motor trips current limiter.	Motor shorted. Motor brushes worn beyond limits.	Replace Motor.
.	Short in wiring.	Check wiring to motor, repair as required.
Compressor Motor inoperative.	Motor open. Motor brushes worn beyond limits.	Replace Motor.
	Short in wiring.	Check wiring to motor, repair as required.

TROUBLE	POSSIBLE CAUSE	REMEDY
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.

FIG-ITEM		*PART NUMBER*	*NOMENCLATURE*	*QTY*	*USAGE CODE*
		Z12H701-1	EVAPORATOR-HEATER ASSEMBLY		A
		Z12H701-2	EVAPORATOR-HEATER ASSEMBLY		B
2/3/5	-1	BFJB-CP60	EXPANSION VALVE	2	A, B
3	-2	SZ63-021-1	MOTOR	2	A, B
2/3/4	-3	SZ63-023-1	BLOWER MOTOR ASSY	2	A, B
1/5	-4	SZ84-009-11	COVER	1	A, B
3	-5	SZ89-730-1	SAFETY SWITCH ASSY	1	A, B
NS	-5A	-GLC141C	THERMAL FUSE	1	A, B
1	-6	SZ84-010-3	FILTER, AIR	1	A, B
1	-7	Z12-033-4	FUSE HOLDER	1	A, B
1/4/5	-8	Z12-304-1	DRAIN PAN	1	A, B
3/4	-9	Z12-305-1	HOUSING	1	A, B
1/2/4/5	-10	Z12-701-2	COIL ASSY	1	A, B
5	-11	Z12-731-1	HEATER ELEMENT ASSY	1	A, B
NS*	-12	AN935-6	WASHER, LOCK ALT: MS35338-41	4	A, B
1/2/3/4/5	-13	AN935-8	WASHER, LOCK ALT: MS35338-42	20	A, B
1/2/3/4/5	-14	AN960-8L	WASJER, FLAT ALT: NAS1149FN816P	20	A, B
3/4	-15	AN960-10	WASHER, FLAT ALT: NAS1149F036P	12	A, B
1	-16	MDL-4	FUSE	2	A, B
1	-17	MDL-6	FUSE	2	A, B
3	-18	MS3106A-22-5P	CONNECTOR, ELECTRICAL	1	A
3	-19	MS3106A-24-9P	CONNECTOR, ELECTRICAL	1	A
NS#	-20	MS3367-4-9	TIE WRAP	AR	A, B
NS*	-21	MS35206-216	SCREW	4	A, B
1/2/3/4/5	-22	MS35206-245	SCREW	12	A, B
3	-23	MS35206-246	SCREW	14	A, B
3	-24	MS35489-11	GROMMET	1	A, B
1	-25	MS35249-286B	NUT, BRASS	3	A, B
1	-26	N3	CLAMP, NYLON	3	A, B

2	-27	RH-50	RESISTOR	2	A, B

FIG-ITEM		***PART NUMBER***	***NOMENCLATURE***	***QTY***	***USAGE CODE***
NS	-28	02150800	THREADCERT	8	A, B
2	-29	14-2388	CLIP	1	A, B
2	-30	18-2710	INSULATION	AR	A, B
2/5	-31	2606	ADAPTER ALT: 920-2606	1	A, B
NS	-32	406772-1	I.D. PLATE	1	A, B
4	-33	67470	INSULATION	AR	A, B
1	-34	8-32 X 1	SCREW, BRASS, SLOT, MACHINE	1	A, B
1	-35	840836	COVER, FUSE	4	A, B
-NS**		CSX-900-1100-AT	INSULATION TUBING	AR	A, B

* Used to attach the Fuse Holder (-7) to Cover (-4).
** Used to insulate wires from heater coils.
# Used to as wire ties.

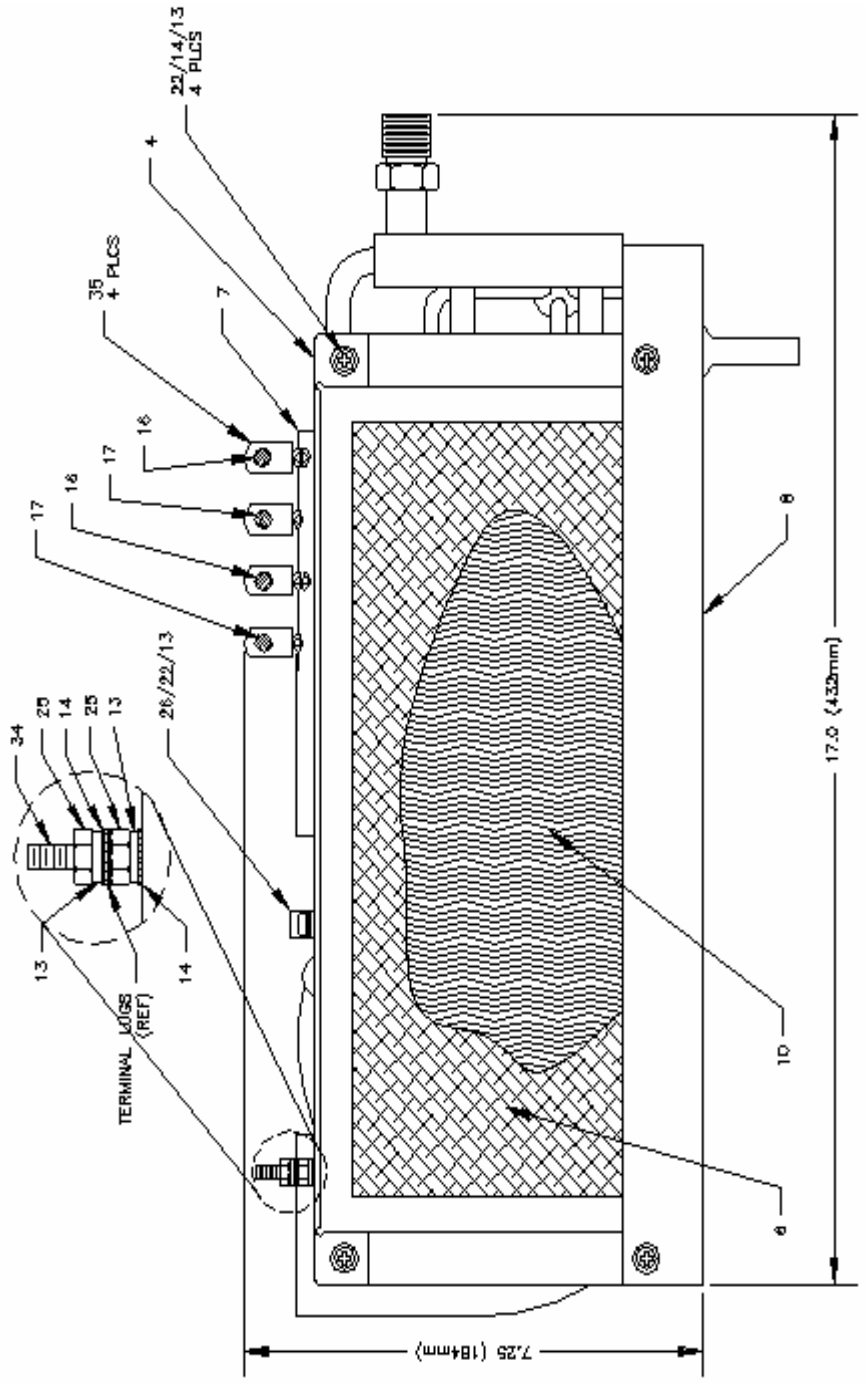
22/14/13
4 PLCS
4
35
4 PLCS
7
16
17
16
17
8
26/22/13
34
25
14
25
13
13
14
TERMINAL LUGS
(REF)
10
6
17.0 (432mm)
7.25 (184mm)

FIG. 1

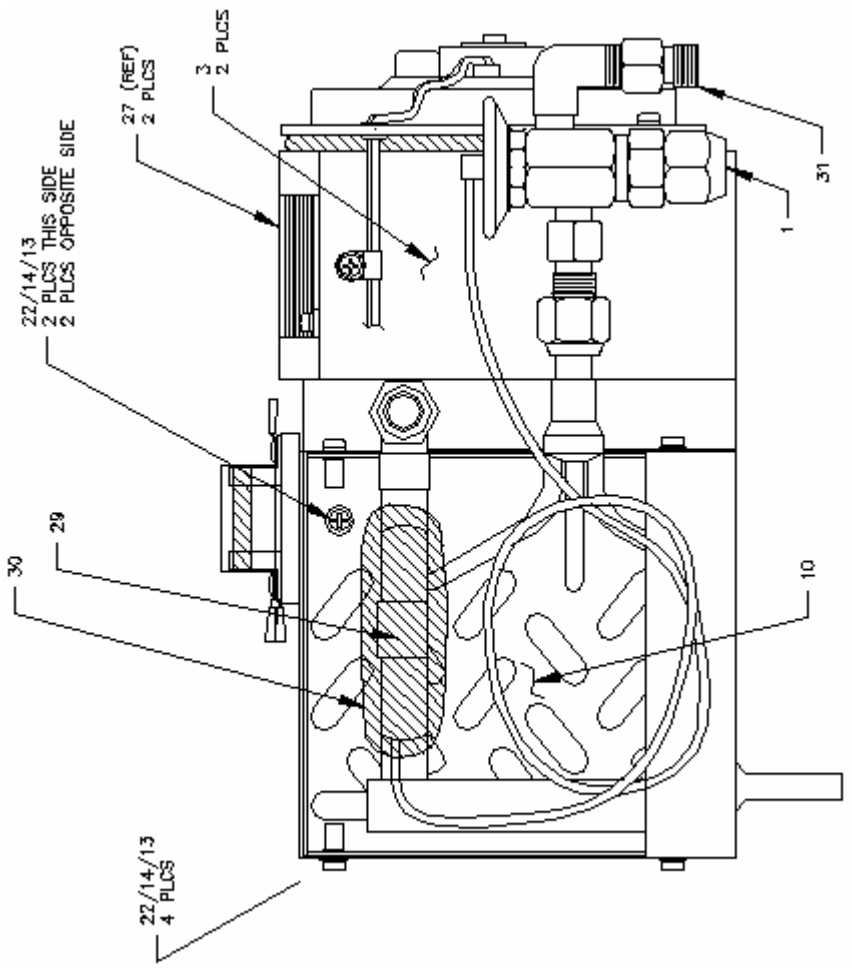
27 (REF)
2 PLCS
3
2 PLCS
22/14/13
2 PLCS THIS SIDE
2 PLCS OPPOSITE SIDE
31
1
29
30
10
22/14/13
4 PLCS

FIG. 2

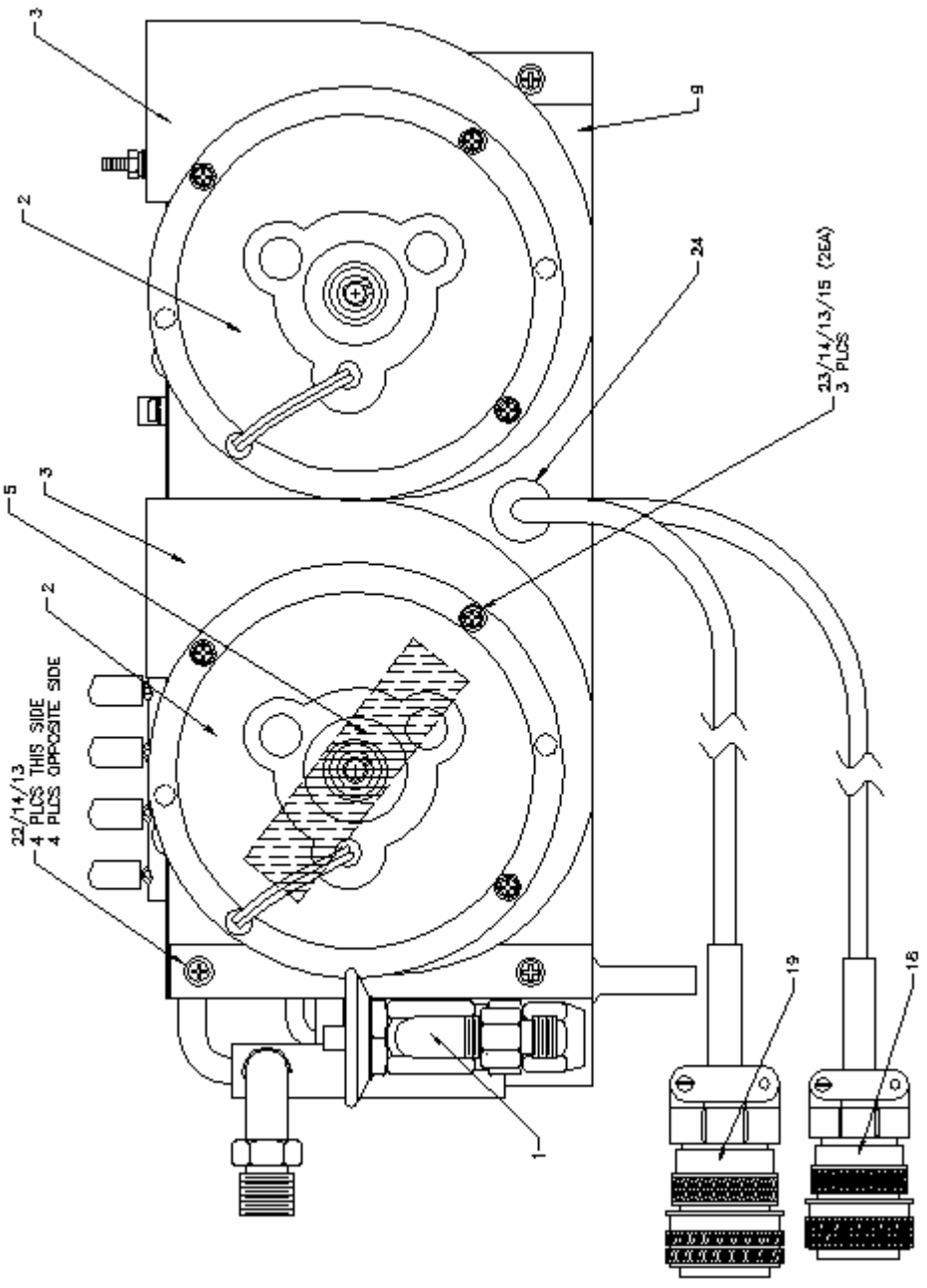
3
9
2
24
23/14/13/15 (2EA)
3 PLCS
5
3
2
22/14/13
4 PLCS THIS SIDE
4 PLCS OPPOSITE SIDE
19
18
1

FIG. 3

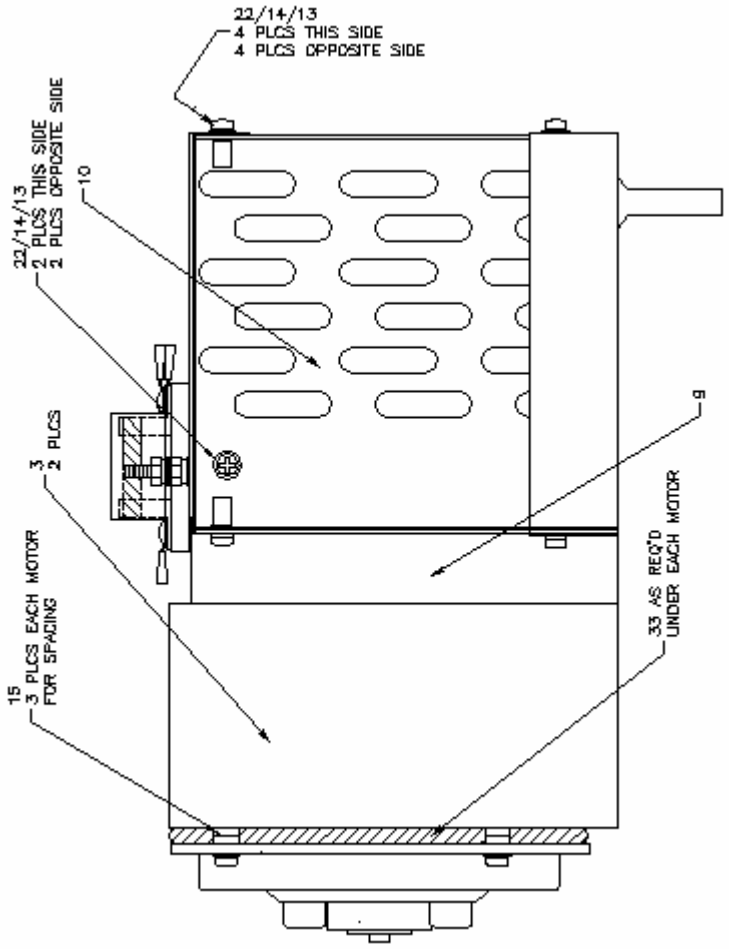
22/14/13
4 PLCS THIS SIDE
4 PLCS OPPOSITE SIDE
22/14/13
2 PLCS THIS SIDE
2 PLCS OPPOSITE SIDE
10
3
2 PLCS
9
33 AS REQ'D UNDER EACH MOTOR
15
3 PLCS EACH MOTOR FOR SPACING

FIG. 4

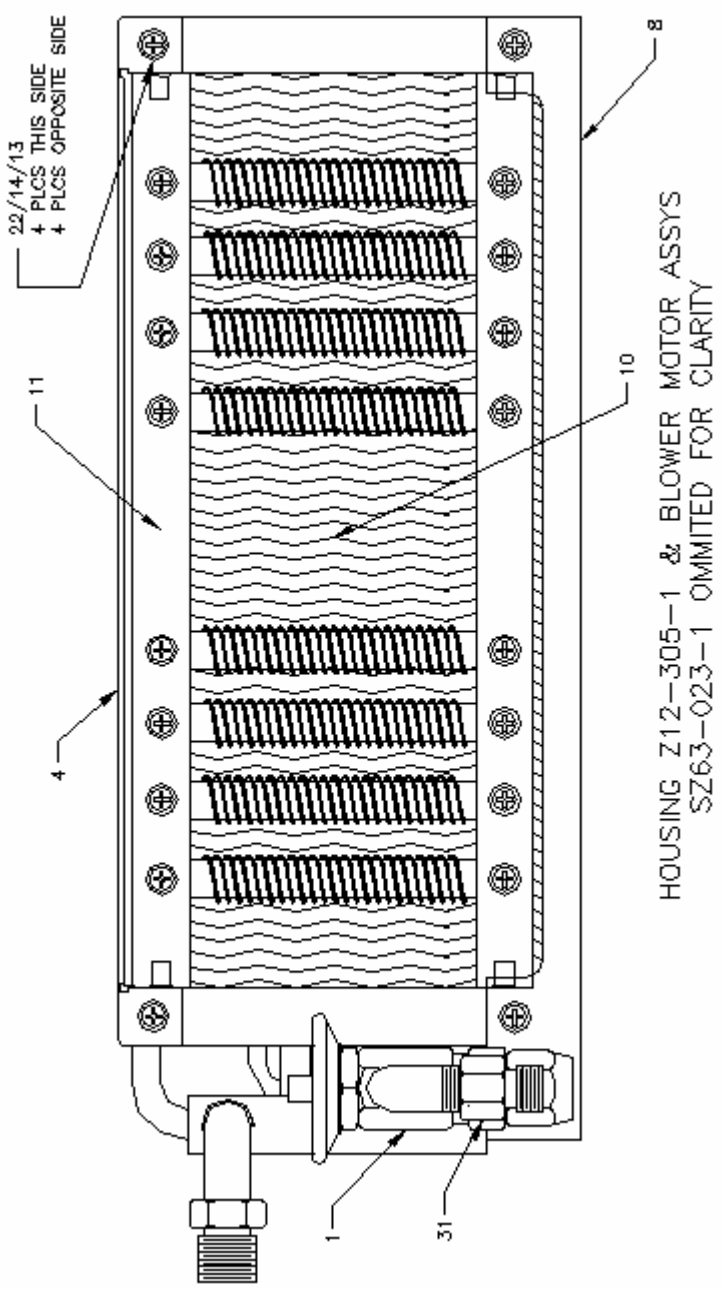
22/14/13
4 PLCS THIS SIDE
4 PLCS OPPOSITE SIDE
8
11
10
4
1
31
HOUSING Z12-305-1 & BLOWER MOTOR ASSYS
SZ63-023-1 OMMITED FOR CLARITY

FIG. 5