MEGGITT

Meggitt (Addison), Inc.

CR-45-15

MAINTENANCE MANUAL WITH ILLUSTRATED PARTS CATALOG

FOR LEARJET 40/45/70 SUPPLEMENTARY AIR CONDITIONING/HEATING SYSTEM

SECTION	COMPONENT
21-50-00	AIR CONDITIONING SYSTEM
21-50-01	ELECTRICAL
21-50-02	PLUMBING
21-50-03	COMPRESSOR/DRIVE MOTOR ASSEMBLY
21-50-04	CONDENSER ASSEMBLY
21-50-05	FWD EVAPORATOR
21-50-06	AFT EVAPORATOR/HEATER ASSEMBLY
21-50-07	ILLUSTRATED PARTS CATALOG

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This service manual is for the installation of a Meggitt (Addison) Inc. supplementary air conditioning and heating system on the Learjet Model 40, Learjet Model 45, and Learjet Model 70.

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SB184	8/15/01	Supplemental Ground-Only Heater Upgrade	C	
SB189	12/12/02	Supplemental Heating System Upgrade	B	

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INTRODUCTION

1. PURPOSE

The purpose of this maintenance manual is to provide detailed instructions for troubleshooting, checking, and maintaining Meggitt (Addison) Inc., Supplementary Air Conditioning/Heating System for the Learjet Model 40, Learjet Model 45, and Learjet Model 70 Series aircraft.

2. SCOPE

The scope of this service and maintenance manual provides the maintenance technician with detailed information covering:

- Overall system level description and theory of operation.
- Component level description and theory of operation.
- Component checking and troubleshooting procedures.
- Maintenance practices to keep the environmental control system operating at its maximum efficiency.

3. ARRANGEMENT

This maintenance manual is arranged similar to format found in Air Transport Association (ATA) Specification 100.

4. GLOSSARY

Nonstandard abbreviations and symbols used in the maintenance manual are described below.

Abbreviations

A/C	Air conditioning
A/R	As Required
Assy	Assembly
Comm Avail	Commercially Available
Evap	Evaporator
Fwd	Forward
Gnd	Ground
GPU	Ground Power Unit
IPC	Illustrated Parts Catalog
STC	Supplemental Type Certificate
Sw	Switch
VDC	Volts Direct Current
OAT	Outside Air Temperature

AIR CONDITIONING SYSTEM

SYSTEM DESCRIPTION

1. GENERAL

The supplemental air conditioning system for the Learjet Model 40, Learjet Model 45, and Learjet Model 70 aircraft consists of a refrigerant R134a vapor cycle cooling system. This system allows the pilot to control cooling for a comfortable aircraft cabin on the ground and in flight. The co-pilot's switch panel contains the cooling system "COOL/OFF/HEAT" switch, the cockpit fan speed switch/potentiometer, and the cabin fan speed switch/potentiometer.

2. REFRIGERATION SYSTEM

The refrigeration or air conditioning system, as designed and manufactured by Meggitt (Addison) Inc. for the Learjet Model 40, Learjet Model 45, and Learjet Model 70 aircraft, is a vapor cycle type cooling system using refrigerant R134a. The air conditioning system is electrically operated using the aircraft 28 VDC electrical system and is operable in all normal flight modes. Air conditioning may be operated with ground external power or the aircraft electrical system with both generators providing 28 VDC. The heating system is electrically operated using the aircraft 28 VDC electrical system and is operable on the ground only (GPU use only).

The major components of the system are the compressor and condenser assembly with a common blower/motor, and two evaporator/blower units. The aft evaporator, located in the lavatory, also consists of the supplemental heating system. Refrigerant plumbing and electrical systems connect the major components to provide a closed loop system.

The compressor and condenser assemblies are mounted in the tail-cone. The compressor drive motor also has a fan that provides airflow for the condenser. The motor and compressor are mounted on a pallet above the baggage ceiling. The motor turns at approximately 7,500 RPM. The compressor is belt driven from the motor shaft. The compressor takes low-pressure refrigerant gas and compresses it to higher pressure and temperature. Condenser cooling air (ambient air) is drawn in through a cutout in the left side of the fuselage of the aircraft. The air passes over the drive motor to provide cool air prior to passing through the condenser coil, transferring heat from the system. After passing through the condenser coil, the air is exhausted to the outside through an exhaust cutout located on the right hand side of the tail-cone.

An evaporator/blower unit is mounted on the forward pressure bulkhead. It provides cooling airflow for the cockpit through 4 adjustable air outlets. Moisture removed from the air by the cold coil (condensate) is collected within the evaporator housing and is forced overboard. The evaporator is equipped with a

thermal expansion valve, which regulates the amount of refrigerant entering the coil to provide the optimum cooling effect. The evaporator blower can be operated in the “FAN” position to re-circulate cockpit air without cooling. The blower is operated from an independent variable fan speed control potentiometer mounted on the co-pilot’s switch panel.

The cabin evaporator/blower unit is installed on the left-hand side of the aircraft in the lavatory. It contains an evaporator, blower, and heater assembly. The blower provides the airflow to the cabin. The air passes through the heater assembly, through the evaporator, and out the flood duct system. This re-circulating system continues to dry and cool the air each time it passes through the evaporator. Moisture removed from the air by the cold coil (condensate) is collected within the evaporator housing and is forced overboard. The evaporator is equipped with a thermal expansion valve, which regulates the amount of refrigerant entering the coil to provide the optimum cooling effect. The evaporator blower can be operated in the “FAN” position to re-circulate cabin air without cooling. The blowers are operated from an independent variable fan speed control potentiometer mounted on the co-pilot’s switch panel. During any mode of operation (heat or cooling), a momentary switch can be depressed to decrease the blower to a minimum speed for approximately 2 minutes.

The aft evaporator also contains an auxiliary heater system that is powered by an external power source for ground operation only. The system consists of two heater circuits protected with over-temp thermal switches, over temp thermal fuses, and redundancy relays.

The plumbing that connects the compressor, condenser and the evaporators consists of flexible hoses with a nylon barrier. The fittings are permanently swaged onto the hoses. All fittings are “o-ring” type connections with sealant on the fitting mating surfaces to prevent refrigerant leaks. Two R134a service valves are located near the compressor in the tail-cone. They are sized differently to avoid incorrect connecting when servicing the system.

The air conditioning system is protected against overpressure conditions by two separate safety devices. The first device is a binary high/low pressure switch that activates in the event of an overpressure and is on the compressor discharge port. This switch will open at approximately 350 psig and will interrupt power to the compressor control circuit. This in turn will de-energize the compressor motor relay and remove power to the compressor motor. The refrigerant system pressures will then drop. The switch will also interrupt power to the compressor control circuit under low-pressure conditions. The second overpressure safety device is a fuse plug that will vent the system refrigerant safely overboard in the event of a system temperature in excess of 218-240 degrees F. It is located on the receiver/drier bottle.

On Ground: Air conditioning may be operated with a ground power unit (GPU) or with both generators operating providing 28 VDC.

Starting (GPU): The system incorporates a load shedding system that drops out the compressor drive motor during starts, However, it is recommended to prevent the drive motor from re-starting when the start is complete, the Cool / Heat switch should be in the off position, and the fan speed rheostats in the off position (full CCW). This allows the generator to stabilize prior to seeing the load of the drive motor.

Starting (battery): The system incorporates a load shedding system that prevents the operation of the compressor drive motor while on battery power. However, it is recommended to prevent the drive motor from re-starting when the start is complete, the Cool / Heat switch should be in the off position, and the fan speed rheostats in the off position (CCW). This allows the generator to stabilize and the battery's to charge prior to seeing the load of the drive motor. Monitor generator load to ensure adequate power is available after battery starts before turning on air conditioning. See ICAS description.

In Flight: The automatic load shed system requires both generators to be on line supplying 28 volts to operate the air-conditioning system. The in flight failure of either generator would disable the air-conditioning drive motor.

TROUBLESHOOTING

1. GENERAL

It needs to be understood that a vapor cycle refrigeration system is dynamic in nature. It is difficult to give exact temperature drops or suction pressure and discharge pressures for trouble shooting purposes without knowing all the possible variables. It is recommended that you read and become familiar with this section before attempting to trouble shoot the air conditioning system. Below you will find a few examples of the dynamic nature of a refrigeration system that should help you in your trouble shooting process.

2. MEASURING TEMPERATURE DROP ACROSS THE EVAPORATOR:

Trying to associate a specific temperature drop across the evaporator is also dependent on many factors such as inlet air temperature, moisture content (relative humidity) and airflow. On a day with extreme humidity, up to 70% of the evaporator capacity will go towards dehumidification (latent Heat). That only leaves 30% available to actually lower the air temperature (sensible HEAT). A mechanic when encountering this scenario may assume that because he can only measure a 10°F drop in temperature that the system is not operating properly. This assumption is incorrect because he is not considering the amount of work it takes to condense moisture in the air and convert it to water that pours out of the condensate drain. To further complicate the issue if you eliminate the source of this humidity by closing the cabin door, your initial temperature readings will have a smaller temperature drop than measurements taken later. This is because you are drying out the air in the cabin and the evaporator is allowed to remove more sensible heat.

3. MEASURING SUCTION AND DISCHARGE PRESSURES:

The most accurate method to start diagnosing the system is to start with checking the pressures. However you must remember that these pressures are affected by many different conditions such as outside air temperature, cabin temperature, cabin humidity and charge level. It is impossible to give an accurate head pressure at a specific temperature without knowing these other factors. These pressures can even vary during the trouble shooting process, as the system continues to run you are removing heat from the cabin and lower the cabin temperature. This lowered heat load will result in lower suction and discharge pressures.

4. CHARGING EQUIPMENT

There are many different manufacturers of charging equipment available on the market. They range in price and capabilities. EPA regulations require you to recover the refrigerant completely and not allow any to be vented to the atmosphere. Some machines only recover, while others recover and recycle the refrigerant. It is recommended that only new or recycled refrigerant be used in the system. This will ensure that your system will not be contaminated with impure refrigerant.

During the refrigerant recovery process, some oil is removed from the system with the refrigerant. This oil will be separated from the refrigerant by the recovery machine and drained to a special container. The containers are graduated in ounces so you can view the amount of oil removed. Record the amount of oil because the same amount of new oil will need to be added back to the system prior to charging. It is critical that only Polyolester oil (POE) is used. Mixing PAG (Automotive) type oils will cause contamination and system failure. It is pertinent that oil only be added to the discharge side of the system prior to charging*. Note: If oil is added to the suction side of the system it is possible that on start up oil can be sucked into the compressor and because it is not compressible it can damage the reed valves*.

It is best to add the oil after the system has been evacuated to 29.9 in hg. This will allow the vacuum to suck the oil in to the system then add the appropriate charge through the discharge service valve only. This will ensure oil is distributed through the system prior to start up. Most charging carts have the provisions to add oil without breaking into the system. *Note: ensure that there is an adequate amount of oil in the charging bottle and there are no air bubbles in the standpipe.*

If your cart does not have this feature you can add oil in the following manner. After recovering the refrigerant and prior to evacuation, remove the discharge fitting from the compressor and pour the required amount into the line. Reconnect the fitting to the compressor. Evacuate the system through the low side only to prevent oil from being sucked out by the vacuum pump. Add the appropriate charge through the discharge service valve only. This will ensure oil is distributed through the system prior to start up.

5. SYSTEM DIAGNOSIS

It is important to understand the basic principles of vapor cycle air-conditioning before attempting to troubleshoot the system. The following is a brief overview.

i. Compressor:

The compressor's only function is to raise the pressure of the refrigerant to a point where it can be condensed to a liquid at ambient temperature. Unfortunately as the laws of physics tell us, we create heat in the process of compression. We now have a superheated high pressure vapor.

ii. Condenser

The condenser function is to remove the heat from the super heated vapor. As the heat is removed, the vapor will begin to condense into a liquid. Condensing occurs in accordance to a temperature / pressure ratio. *i.e. the higher the condenser air inlet temperature is, the greater the pressure required to condense, while the lower the condenser air inlet temperature is, the lower the pressure is required for condensing.* This is why on a hot day you will have higher discharge pressures than on a cool day.

iii. Receiver dryer

The receiver dryer is a reservoir for liquid refrigerant. It also contains a filter screen and a desiccant material to remove particles and moisture from the refrigerant. It ensures that a filtered and dried column of liquid refrigerant is sent to the expansion valve.

iv. Expansion Valve

The expansion valve is a device that meters liquid refrigerant into the inlet of the evaporator where it will be evaporated. It has an orifice with a metering pin to vary the flow of refrigerant. This pin is attached to a diaphragm, which balances suction and spring pressure on one side and capillary sense bulb pressure on the other, which moves the pin in and out of the orifice.

The capillary sensing bulb contains a charge of refrigerant that is permanently sealed. This charge exerts pressure on the diaphragm to move the metering pin. Pressure is generated from the expansion or contraction of the gas charge contained in the bulb as it is warmed or cooled.

This bulb attaches to the suction line where the refrigerant exits the evaporator. It measures the temperature of this line. If there is insufficient refrigerant flowing through the evaporator the gas will be warmer than desired (superheated). This in turn will warm the sense bulb, therefore expanding the gas within and exerting pressure on the diaphragm. The diaphragm will then move the metering pin and increase the flow of refrigerant to the evaporator. With the increased flow of refrigerant, the gas temperature exiting the evaporator will be reduced, therefore cooling the sense bulb, which lowers the pressure within and reduces the pressure exerted on the diaphragm. The diaphragm will then move the metering pin to reduce the refrigerant flow. The valve will make adjustments until a balance has been reached. One of the most common problems associated with expansion valves is a bad attachment of the sense bulb. It must make contact along its entire length and be securely attached to the metallic suction tube exiting the evaporator case. It must be thoroughly insulated with foam tape to ensure that outside air does not affect its reading.

AIR CONDITIONING SYSTEM TROUBLESHOOTING

(This section will deal with trouble shooting the refrigeration circuit only; it will not cover the obvious, such as failed blowers or burned out drive motors.)

Assume that an aircraft is reported to have a malfunctioning system. The report from the pilots will usually say “poor cooling”. From this you must decide where to start your investigation. *(If the OAT is below 70°F it is more difficult to troubleshoot because of lack of heat load)*

Step one

Install gage set to the service ports. Turn on the system and allow it to stabilize for ten minutes. Observe suction and discharge pressures and temperatures across evaporator(s). If one or both evaporators do not have an adequate temperature drop or you suspect a loss of refrigerant charge, stop the system and evacuate and recharge to the prescribed weight of refrigerant R134a. With the system charged to the required weight you have now eliminated the possibility of an overcharged or undercharged system as being the cause of the problem. .

Step Two

Turn the system on and allow it to stabilize for ten minutes. Check the suction and discharge pressures. A normal pressure reading for the suction side should be between 25 and 40 PSIG (remember this is dependent on OAT and evaporator heat load). The discharge pressure should be between 150 and 300 PSI (also dependent on OAT and evaporator heat load).

Let us assume that our condenser blower and evaporator blowers are functioning properly. This leaves only those components that are involved in compressing and metering the refrigerant to be suspect of. The suction and discharge pressures will indicate the nature of the problem.

As stated above the expansion valve is the brain of the system. It controls how much liquid refrigerant is released into the evaporator coil. When this component fails it is important to understand the different ways it can fail and the associated symptoms.

The valve is stuck in mid range: This is usually associated with a contaminated system. The evaporator will have a poor temperature drop at extreme operating parameters therefore there is inadequate refrigerant flow at high heat loads and excessive refrigerant flow at low heat loads (coil flooding)

The valve is stuck wide open: This will cause excessive refrigerant to flow into the evaporator coil. The coil will become flooded with liquid refrigerant. The result will be poor temperature drop because the refrigerant is not evaporating in to a vapor. Because the expansion valve is wide open the suction pressure will be higher than normal and the return line will be very cold because the liquid refrigerant is evaporating in the line instead of the evaporator. The discharge pressure will be higher than normal because there is very little pressure drop across an open expansion valve. There may also be bubbles in the sight glass under this condition.

The valve is stuck closed: This will result in minimal refrigerant flow into the evaporator. The coil is being starved for refrigerant. The result will be poor temperature drop because there is a lack of refrigerant available to evaporate. The suction line exiting the evaporator will be warmer than normal. The suction and discharge pressures in this scenario will not look much different from normal. The biggest clue will be a very warm suction line at the compressor.

(It is very important to understand that in a system with two evaporators, it is more difficult to determine which valve is malfunctioning. If one valve is stuck wide open, it can consume most of the refrigerant and give you the indication that the other valve is starving.)

AIR CONDITIONING SYSTEM
INSPECTION

1. GENERAL

Listed below are the recommended inspection intervals for maintenance critical items associated with the air conditioning system. Proper and timely inspections will keep the air conditioning system operating at its peak efficiency.

2. INSPECTION INTERVALS

Hours indicated are defined as air conditioning system hours.

ITEM	INSPECT FOR	INTERVAL	ACTION
Air conditioning system components	Dirt Damage	On condition or at 600 aircraft hour Inspection.	Clean or replace component as necessary.
Compressor belt	Tension Wear	Within 5 hours of installing new belt, then at 600 aircraft hour insp.	Tension or replace as necessary (see 21-50-03, page 201).
Sight glass	Proper refrigerant level	When problem is suspected.	Discharge/charge as necessary per 21-50-00 pg.102
Evaporator and condenser coils	Dirt	At 600 hr aircraft inspection.	Clean as necessary per 21-51-04 pg. 201 21-51-05 pg. 202 21-51-06 pg. 202
Refrigerant hoses	Chafing Wear, Security of clamps, leaks	At 1200 hr aircraft inspection.	Repair as necessary per 21-50-02,
Compressor drive motor	Brush wear	Every 600 motor operation hours.	Inspect/replace per 21-50-03, page 201.
	Overhaul	1,200 hrs, motor	
Fwd evaporator blower	Proper operation	On condition	Replace when failed.
Aft evaporator blower	Proper operation	On condition	Return to Keith for overhaul.
Aft Evap Heater Electrical System	Component Operation	At 600/1200 hr acft. inspection.	21-50-00 See Page 602

HEATER TESTING

Auxiliary Heater Functional Test (600 Hrs)

NOTE: Ensure the auxiliary heater has not been operated for at least 30 minutes prior to initiating this functional test.

CAUTION: Do not activate the LAV switch until instructed to in Step 13. If the LAV switch is inadvertently activated, wait at least two minutes to allow the system to return to normal operation before proceeding.

1. Verify that the primary CABIN FAN circuit breaker located in the copilot's circuit breaker panel and the Hot Buss CABIN BLOWER circuit breaker located in the P34 aft circuit breaker panel in the tail-cone equipment bay are closed. Verify that the AIR COND switch is selected to OFF.
2. With external power connected and aircraft power on, select the CABIN FAN control knob located in the Environmental Control Panel just past its OFF position to the lowest speed setting. Verify that the cabin fan begins to operate immediately in low speed.
3. Pull the primary CABIN FAN circuit breaker located in the copilot's circuit breaker panel. Verify that the cabin fan stops.
4. Reset the primary CABIN FAN circuit breaker. Verify that the cabin fan begins to operate immediately in low speed.
5. Run the cabin fan for 3-5 minutes and verify that airflow at the outlet vent is not warmer than the ambient air. Auxiliary heater should not be powered.
6. Select the CABIN FAN control knob to MAX (full clockwise position). Verify that the fan speed increases to high speed and that no heated airflow is present.
7. Select the CABIN FAN control knob OFF. Verify that the cabin fan is inoperative.
8. Select the AIR COND switch to HEAT. Verify that the cabin fan begins operating on high speed and airflow at the outlet vent is heated more than the ambient air. Run the heater for approximately 10 minutes.
9. Pull the primary CABIN FAN circuit breaker located in the copilot's circuit breaker panel.
10. The cabin fan shall be operational but may take up to 30 seconds to resume operation after pulling the CABIN FAN circuit breaker depending on OAT. Verify that the cabin fan operates in low speed, and airflow from the outlet vent begins to cool. Continue cabin fan operation for three minutes before proceeding to Step 11.
11. Pull the CABIN BLOWER circuit breaker located in the P34 aft circuit breaker panel in the tail-cone equipment bay and verify that the cabin fan is inoperative.

NOTE: Proceed immediately to Step 12 after completion of Step 11.

12. Reset the primary CABIN FAN circuit breaker. Verify that the cabin fan begins operating on high speed and airflow at the outlet vent is heated more than the ambient air.
13. Activate the LAV switch. Verify that the cabin fan speed is reduced to low speed and the airflow present at the outlet vent has cooled for approximately a two-

minute interval, after which the cabin fan resumes high speed and warmer, heated airflow is present at the outlet vent.

14. Select the AIR COND switch to OFF. There may be residual heat, and the fan may continue to operate in low speed. Verify that outlet vent airflow has cooled and fan is inoperative or becomes inoperative after the cool down is complete. Until full cool down is achieved the fan may cycle on and off several times.
15. Reset the Cabin Blower, Circuit Breaker, power down the aircraft, and disconnect external power.

Auxiliary Heater Electrical and Temperature Switch Test (1200 Hours)

NOTE: This test is performed to determine if any of the four heater power relays are either failed in the open position or have a stuck or welded contact.

NOTE: Drawing 45-0700 lists relay and wire callouts.

1. Ensure that all power to the aircraft is off.
2. Gain access to the heater /evaporator unit by removing the cover.
3. Disconnect the heater power wires (AWG 6 wire that connects the heater to the terminal block) from the terminal block position 1 and 4. Secure the heater power wires so they will not come in contact with the terminal block. Loosely install the washers and nuts back on the terminal block.
4. Disconnect the 6-pin connector from the heater.
5. Connect a jumper between pins 1 and 4 on the aircraft side of the connector.
6. With external power connected supplying 28 +/- 2VDC and aircraft power on, select heat by moving the AIR COND switch to HEAT.
7. 28 +/-2VDC should be present on wires KAC4514-A6 and KAC4513-A6 where they connect to relays K5 and K6.
8. Load shed the L NON-ESS Bus by pressing the switch indicator in the Electrical Control Panel. Verify that no power is present on wires KAC4514-A6 and KAC4513-A6 where they connect to relays K5 and K6.
9. Reactivate the L NON-ESS Bus by pressing the switch indicator in the Electrical Control Panel. Verify that power is present on wires KAC4514-A6 and KAC4513-A6 where they connect to relays K5 and K6.
10. Check that no power is present on the power wires connected at the terminal block positions 1 and 4.
11. Select the AIR COND switch to the OFF position.
12. Install a second jumper between pins 2 and 3 of the aircraft side of the connector.
13. Select heat on by moving the AIR COND switch to the HEAT position. Check for 28 +/-2VDC at the terminal block pins 1 and 4.
14. Load shed the L NON-ESS Bus by pressing the switch indicator in the Electrical Control Panel. Verify that no power is present on the wires connected to terminal block pins 1 and 4.
15. Reactivate the L NON-ESS Bus by pressing the switch indicator in the Electrical Control Panel. Verify that 28+/- 2VDC is present on the wires connected to terminal block pins 1 and 4.

16. Disconnect the jumper between pins 1 and 4 and ensure that no power is present on wires KAC4514-A6 and KAC4513-A6 where they connect to relays K5 and K6.
17. Select heat off by moving the AIR COND switch to the OFF position.
18. Remove both jumpers.
19. Remove the mounting screws that attach the evaporator/ heater unit to the floor structure. Slide unit away from blower to gain access to the blower inlet of the unit.
20. Ensure that the 6-pin connector is still disconnected. Connect an ohmmeter across the unit side of the 6-pin connector between pins 1 and 4. There should be continuity through S1 and S2.
21. Use a heat gun to apply heat to the S1 temperature switch located in the blower inlet of the heater assembly. When the switch temperature reaches approximately 150 deg. F the switch will open and continuity will be broken.
22. Allow switch S1 to cool sufficiently to regain continuity. Use a heat gun to apply heat to switch S2. When the switch temperature reaches approximately 150 deg. F the switch will open and continuity will be broken. Allow switch S2 to cool sufficiently to regain continuity.
23. Connect an ohmmeter across the unit side of the 6-pin connector between pins 5 and 6. There should be no continuity.
24. Use a heat gun to apply heat to the S3 temperature switch located on the 45-0281-1 heater coil assembly. It will be necessary to use an extension tube attached to the heat gun to concentrate the heat on the switch. When the switch temperature reaches approximately 180 deg. F the switch will close and continuity will be present.
25. Allow switch S3 to cool and continuity to cease. Apply heat to the S4 temperature switch located on the 45-0281-1 heater coil assembly. When the switch temperature reaches approximately 180 deg. F the switch will close and continuity will be present. Allow switch S4 to cool and continuity to cease.
26. Check for continuity across pins 2 and 3 through the thermal fuses. There should be continuity.
27. Re-connect the 6-pin connector.
28. Start both aircraft engines. Select EXT PWR to AVAIL and disconnect external power. Verify that both generators are on-line. Verify that the L & R NON-ESS Bus switch indicators are dark.

29. Select the AIR COND switch to HEAT. Verify that the cabin fan is operating at high speed. Verify that no power is present at terminal block pins 1 and 4.
30. Select the AIR COND switch to OFF. Shut down both aircraft engines.
31. Reconnect the heater power wires to the terminal block and reinstall the heater panel. Re-position the heater and install fasteners to the floor structure.
32. Perform the Auxiliary Heater Functional Test.

Secondary Cabin Fan Power Interlock Relay Test 1200 Hours

1. Ensure all power to the aircraft is OFF.
2. Pull the Hot Buss CABIN BLOWER circuit breaker located in the P34 aft circuit breaker panel in the tail-cone equipment bay.
3. Gain access to the heater/evaporator and cabin fan units by removing the appropriate aft lavatory interior panels.
4. Connect a voltmeter across pins A and B of the cabin fan connector and verify no power is present.
5. Disconnect the 6-pin connector from the heater assembly.
6. Jumper between pins 5 and 6 on the aircraft side of the connector.
7. Reset the CABIN BLOWER circuit breaker and verify 24 ±2.5 VDC is present at the cabin fan connector.
8. Pull the CABIN BLOWER circuit breaker and verify no power is present.
9. Remove the voltmeter and jumper, reconnect the 6-pin connector, and reinstall the interior panels.
10. Reset the CABIN BLOWER circuit breaker.
11. Perform the Auxiliary Heater Functional Test.

ELECTRICAL

DESCRIPTION AND OPERATION

1. GENERAL

The air conditioning system consists of one compressor drive/condenser fan motor and two brushless DC centrifugal evaporator blowers in the cockpit and cabin evaporator. A mode switch with “COOL/OFF/HEAT” positions operates the air conditioning/heating system. Airflow from the evaporators is controlled by a variable potentiometer. In the “HEAT” mode, fan speed is automatically set to high. The system incorporates a binary pressure switch to sense an over-pressure or under-pressure condition in the system.

The system is protected by a 10 amp cockpit fan circuit breaker, a 10 amp cabin fan breaker, and a 5 amp heat circuit breaker. (The cabin blower is powered in parallel with a 10 amp circuit breaker located on the hot buss)

This section of the maintenance manual describes the electrical system and presents electrical troubleshooting procedures. Refer to drawing 45-0700 for wiring information.

2. LOAD/SHED DESCRIPTION

The system incorporates a logic interface control box that enables the system to operate or be shed under various conditions. The table below shows operation under various conditions.

CONDITIONS	EVAP FANS	COMP DRIVE	Heat
Ground power cart/on	On	On	On
Ground power cart connected/off	On	Off	Off
Battery only	On	Off	Off
One generator on ground	On	Off	Off
Both generators on ground	On	On	Off
Refrigerant over/under pressure	On	0ff	N/A
One generator in flight	On	Off	Off
Both generators in flight	On	On	Off
Either “START-OFF-GEN” switch in "START” position	On	Off	Off

Table 1. AC SYSTEM OPERATIVE CONFIGURATIONS

ELECTRICAL

TROUBLESHOOTING

GENERAL

The following procedures are used for troubleshooting the electrical system and the electrical interface with the other assemblies of the air conditioning system.

TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Service pressure gauge	Comm. Avail	1	None
Multi-meter	Comm. Avail	1	None
28 VDC source		A/R	None

3 ELECTRICAL TROUBLESHOOTING PROCEDURES (Ref. 45-0700 Electrical Installation Dwg.)

NOTE: Always attach a service gauge set to system prior to beginning troubleshooting to ensure proper refrigerant charge is present.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

A. Air condition selected, compressor drive/condenser fan motor does not turn.

1. Connect service pressure gauge to service ports located near compressor/drive motor assembly.

2. Connect and activate ground power to aircraft.

3. Select air conditioning system to “COOL”.

4. Check the 175A current limiter located in the air conditioning power distribution panel in the aft equipment bay, replace if necessary.

5. Check that load/shed start conditions in the “Description and Operation” paragraph are met.

6. Check for power at input and output of the compressor relay located on the air conditioning power distribution panel. If power is present at input and output, proceed to step 8. If power is present only at input, proceed to step 7.

7. Check for power at the terminals of the pressure switch. If power is present at the input of the switch and not the output, disconnect leads to the switch and check continuity of pressure switch. If no continuity and gauge set reads adequate pressure, replace pressure switch. Switch can be removed without discharge of refrigeration. Back switch off in a counter-clockwise direction. Reinstall in reverse order. Lubricate o-ring in switch.

8. Check for power at motor. If power is present, proceed to step 9. If power is not present and load/shed conditions of step 4 are met, check power on the interface control box at connector pin 4. If power is present, system problem exists in load/shed system start unit. If power is not present, check 5 amp CB and mode switch.

9. Fault is isolated to compressor drive/condenser fan motor. Unit should be replaced.

10. Select air conditioning “OFF”, remove electrical power, and disconnect service gauge when troubleshooting is complete.

B. Fwd evaporator (crew) blower will not operate.

1. Check for power at terminal of the blower connector. If present, proceed to step 2. If power is not present, ensure that air conditioner circuit breaker (10 amp) is set. Check for power at the connector. If present, proceed to step 2. If power is not present, problems exist either with the air conditioner fan circuit breaker, or crew fan potentiometer.

2. Remove blower assembly from aircraft. Gain access to motor located in the overhead. Remove fan power connector and remove screws that attach the fan housing to the aircraft and remove motor. Install new motor in reverse order.

C. Aft evaporator blower will not operate.

1. Turn the “COOL-OFF” switch to “OFF”. Disconnect electrical connectors from the blower. Turn the blower switch on and set it to max speed. Check for power at pin A and pin D. Both terminals should have a voltage reading between 26.0V and 28.0V. If present, check for ground continuity through pin B. If power is present, move on to Step 2. If power is not present, the problem is with the cabin fan circuit breaker.

   NOTE: The cabin blower is powered by a 10A circuit breaker located on the hot buss in parallel with the primary circuit breaker. Before removing blower connector, this circuit breaker must be disabled.

2. Remove blower assembly from aircraft by gaining access to motor located on the evaporator. Remove fan power connectors, remove screws that attach motor to fan housing, and carefully remove motor and blower wheel. Take note of blower wheel location on motor shaft before separating from motor, as the blower wheel needs to be mounted at the same location on the shaft of the new blower motor. Install new motor in reverse order.

PLUMBING

DESCRIPTION AND OPERATION

1.0 GENERAL

The plumbing system consists of a flexible nylon lined refrigerant hose with permanent swaged on fittings. All connections are tube o-ring type with sealant on the fitting mating surfaces to ensure leak-free operation. Hose, o-ring material, and sealants are specially designed to work with refrigerant R134a and Polyolester oils. Two service valves are located near the compressor/drive motor assembly. They are sized differently to avoid incorrect connection when servicing the system. A receiver/drier bottle is located downstream of the condenser to remove moisture from the liquid refrigerant. A binary pressure switch monitors the refrigerant gas pressure. This switch will open at a compressor discharge over-pressure of 384 $\pm$29 psi and under-pressure conditions of 30 $\pm$5 psi. This will interrupt the power to the compressor drive motor control circuit and stop the compressor.

This section of the maintenance manual discusses checks and maintenance practices used for the plumbing portion of the air conditioning system. Refer to 45-0800 for parts list and schematics.

PLUMBING

MAINTENANCE PRACTICES

1.0 GENERAL

The following procedures are used to perform typical maintenance on the air conditioning system plumbing.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

2. PLUMBING MAINTENANCE PROCEDURES (Ref. 45-0800 Plumbing Installation Dwg.)

A. Connection to components, o-ring replacement:

1. Place the appropriate o-ring (reference 45-0800 drawing) over the tube “O” end of the fitting.
2. Lubricate o-ring with Polyolester oil or ES49000-1sealant prior to assembly.
3. Apply sealant to all fitting-mating surfaces prior to assembly.
4. Torque requirements for all fittings are included in Appendix A.

B. Receiver/drier bottle replacement:

1. Replace receiver/drier bottle whenever the compressor is replaced or when the air conditioning system plumbing is left open to the atmosphere for a period of time greater than one (1) hour.

PLUMBING

INSPECTION/CHECK

1. GENERAL

The following procedures are used for checking and inspecting the air conditioning system plumbing.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Electronic R134a refrigerant leak detector	Comm. Avail	1	None

3. PLUMBING CHECK PROCEDURES (REFERENCE 45-0800 DRAWING)

NOTE: All o-rings should be lubricated with Polyolester oil or ES49000-1 sealant applied to all fittings mating surfaces before assembly.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

A. Plumbing installation preventive maintenance check:

1. Check that all hoses are properly supported and do not chafe. Check that all clamps remain secure and that the hose and fitting are well supported at connections with fixed units such as evaporator, condenser, etc., to prevent fatigue cracking in tubing headers or fittings.

B. Plumbing system refrigerant leak check:

1. Connect service pressure gauge set to service ports, located near the compressor closeout box assembly.

2. Check that the gauges are reading the proper static pressure. Both gauges should read approximately 55 psig @ standard temperature (59^{o}F) with a properly charged system when the system is not operating.

3. Using leak detector, check entire plumbing system including hose fittings and coil assemblies for leaks. There shall be no leaks. Repair or replace leaking component per the appropriate maintenance manual section and its drawing.

COMPRESSOR/DRIVE MOTOR BEAM ASSEMBLY

DESCRIPTION AND OPERATION

1. GENERAL

The compressor and condenser assemblies are located in the tail-cone. The compressor is mounted on a pallet assembly that also includes the compressor drive motor. The drive motor, via a multi "V" flat belt, turns the compressor, which compresses the refrigerant gas for condensing at ambient temperatures. A binary pressure switch mounted on the compressor monitors the refrigerant gas pressure. This switch will open at a compressor discharge over-pressure of 370 psi and under-pressure conditions of 30 psi. This will interrupt the signal to the interface control box and stop the compressor drive motor.

This section of the maintenance manual discusses troubleshooting and maintenance practices used for the compressor assembly portion of the air conditioning system.

COMPRESSOR/DRIVE MOTOR ASSEMBLY

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the compressor assembly.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Service pressure gauge	Comm. Avail	1	None
28 VDC source		A/R	None

3. COMP/DRIVE MOTOR TROUBLESHOOTING PROCEDURES (Ref. 45-0500 Comp/Motor Beam Installation Dwg.)

With the air conditioning system operating, observe if any of the following conditions occur as described in table 1:

NOTE: Always attach a service gauge set to system prior to beginning troubleshooting to ensure proper refrigerant charge is present.

TROUBLE	PROBABLE CAUSE	CORRECTION
1. Unusually high suction pressure with low discharge pressure.	a) Internal problem with compressor body. b) Faulty expansion valve.	a) Replace compressor. b) Replace expansion valve.
2. Unusually low suction and discharge pressure.	a) System or compressor leak. b) Faulty expansion valve.	a) Repair leak or replace compressor. b) Check bulb location and/or replace valve as necessary.
3. High compressor discharge pressure.	a) Condenser air exhaust restricted. b) Refrigerant overcharge. c) Excessive amount of compressor oil. d) Receiver/drier clogged. e) Condenser fan damaged.	a) Inspect exhaust flow path. b) Discharge refrigerant until only occasional bubbles are present in sight glass. c) Drain until correct d) Replace as necessary e) Replace as necessary
4. Rough running.	a) Damaged belt. b) Damaged fan. c) Loose beam on mounts. d) Internal compressor problem.	a) Replace as necessary b) Replace as necessary. c) Tighten bolts. d) Replace compressor.

Table 1. COMP/COND TROUBLESHOOTING

COMPRESSOR/DRIVE MOTOR BEAM ASSEMBLY

MAINTENANCE PRACTICES

1. GENERAL

The following procedures are used to perform typical maintenance on the compressor assembly.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Oil dipstick	Make from metal wire	1	See figure on Page 202
Coil cleaner	Comm. Avail	A/R	Non-acid based
Polyolester oil	Comm. Avail	A/R	Viscosity ISO 68

3. COMPRESSOR ASSEMBLY MAINTENANCE PROCEDURES

A. Compressor drive belt adjustment:

1. Adjust belt for moderate tension and then rotate large pulley through 2 revolutions.
2. Tension belt to deflect 0.16 inch with a 2 – 3 lb. force applied at mid-span location.
3. Rotate belt 2 revolutions. Re-tension as required.

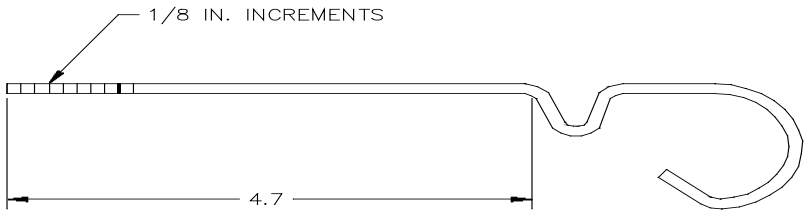
B. Compressor drive motor brush inspection:

1. Remove belt guard and motor from aircraft.
2. Remove cover from anti-drive end bell from motor.
3. Inspect brushes for wear. Measure brush length along the longest side of angled face.
4. Return motor to Meggitt (Addison) Inc. for brush replacement if brush length is less than 1.00 inch.

C. Compressor oil level check:

NOTE: It is not necessary to check the compressor oil level during routine maintenance. It only needs to be checked when a system component is replaced or when incorrect oil level is suspected. Use only Polyolester oil viscosity grade ISO 68.

1. Operate air conditioning system for 10 minutes. This will collect as much oil as possible in the compressor.
2. Evacuate air conditioning system of refrigerant and remove compressor from aircraft.
3. Place compressor on table such that the oil fill plug is up.
4. Remove oil fill plug.
5. Insert dipstick into oil fill port. It may be necessary to insert the dipstick into the compressor at a slight angle. Ensure that the dipstick is not inserted into the compressor more than 4.7 inches as shown below.
6. Check that the oil level is 8 fluid ounces (at the 8th increment). Add or subtract oil in one-fluid-ounce increments until 8 fluid ounces is obtained.
7. Clean oil fill port area and install oil fill plug. Torque plug to 6 – 9 ft lbs.



FABRICATED DIPSTICK

CONDENSER ASSEMBLY

DESCRIPTION AND OPERATION

1. GENERAL

The condenser assembly is located in the tail-cone and is attached to the frames on the right hand side of the aircraft. It consists of a condenser coil unit and shroud. The condenser condenses the refrigerant gas to a liquid. The receiver/drier bottle where moisture is removed collects this liquid. The compressor drive motor includes a fan, which draws in cool (ambient) air from an air inlet on the left-hand side of the aircraft and supplies air to the condenser coil where the refrigerant gas can be condensed to a liquid. The air is then exhausted overboard through the exhaust cutout on the right hand side of the aircraft.

This section of the maintenance manual discusses troubleshooting and maintenance practices used for the condenser assembly portion of the air conditioning system.

CONDENSER ASSEMBLY

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the condenser assembly portion of the air conditioning system.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Service pressure gauge	Comm. Avail	1	None
28 VDC source		A/R	None

3. CONDENSER TROUBLESHOOTING PROCEDURES

NOTE: Always attach a service gauge set to system prior to troubleshooting to ensure proper refrigerant charge is present.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

TROUBLE	PROBABLE CAUSE	CORRECTION
Low airflow across condenser coil.	Dirty condenser coil.	Clean condenser coil.

Table 1. CONDENSER TROUBLESHOOTING

CONDENSER ASSEMBLY

MAINTENANCE PRACTICES

1. GENERAL

The following procedures are used to perform typical maintenance on the condenser assembly.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Polyolester Oil	Comm. Avail	A/R	Viscosity ISO 68
Vacuum Cleaner	Comm. Avail	1	None
Coil Cleaner	Comm. Avail	A/R	Non-acid based

3. CONDENSER ASSEMBLY MAINTENANCE PROCEDURES

A. Condenser coil cleaning procedure:

1. Remove coil and use vacuum cleaner to remove large debris from upstream and downstream coil faces.
2. Spray coil cleaner on both coil faces. Wash off with water.
3. Allow coil to dry thoroughly prior to additional maintenance.

FORWARD EVAPORATOR ASSSEMBLY

DESCRIPTON AND OPERATION

1. GENERAL

The forward evaporator assembly is mounted on the forward pressure bulkhead. Four flexible ducts provide cooling airflow to the flight crew through adjustable air outlets. The evaporator assembly includes an evaporator coil, blower with a brushless DC motor, expansion valve and air outlet ducting.

FORWARD EVAPORATOR ASSEMBLY

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the fwd evaporator assembly portion of the air conditioning system.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Service pressure gauge	Comm. Avail	1	None
28 VDC source		A/R	None

3. EVAPORATOR TROUBLESHOOTING PROCEDURES (Ref. 45-0200 Fwd. Evaporator Installation)

NOTE: Always attach a service gauge set to system prior to troubleshooting to ensure proper refrigerant charge is present.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

A. Water is being blown from air outlets.

1. Operate GPU and apply 28 VDC electrical power.
2. Select air conditioning system to ON.
3. Check evaporator drain for condensate runoff.
4. If no runoff, clear drain of blockage or verify that routing is in a downhill orientation.
5. Select air conditioning “OFF”, remove electrical power.

B. No cooling at evaporator.

1. Connect service pressure gauge to service ports located near compressor closeout assembly.
2. Operate GPU and apply 28 VDC electrical power.
3. Select air conditioning system to “ON”.

4. Check evaporator for proper cooling. If cooling is not sufficient, check refrigerant level to ensure that system is correctly charged. A clear sight glass (no bubbles) on top of the receiver/drier bottle can confirm this. If bubbles are present, add refrigerant until sight glass clears.
5. If system is correctly charged and there is still insufficient cooling, replace expansion valve per forward evaporator, maintenance practices procedure

.

FORWARD EVAPORATOR ASSEMBLY

MAINTENANCE PRACTICES

1. GENERAL

The following procedures are used to perform typical maintenance on the evaporator assembly.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Sealant	ES49000-3	A/R	None
Polyolester oil	Comm. Avail	A/R	Viscosity ISO 68
Vacuum cleaner	Comm. Avail	1	None
Coil cleaner	Comm. Avail	A/R	Non-acid based

3. EVAPORATOR MAINTENANCE PROCEDURES (Ref. 45-0200 Fwd. Evaporator Installation Dwg.)

A. Expansion valve replacement:

1. Discharge system in accordance with recovery equipment's instructions.
2. Disconnect liquid line from inlet of expansion valve, and cap. Remove the thermal sense bulb from its clamp located on the suction tube of the evaporator and carefully remove insulation covering bulb.
3. Disconnect the fitting that connects the valve to the coil and plug coil fitting.
4. Install new expansion valve and o-ring in the reverse order.
5. Lubricate o-ring or flare surfaces with polyolester oil or apply sealant to fitting mating surfaces prior to assembly.
6. Install the thermal sense bulb in the 3 or 9 o'clock position such that it makes contact with the suction tube along its entire length. Insulate the bulb thoroughly with insulation.

B. Evaporator coil cleaning procedure:

1. Gain access to the forward evaporator installation.
2. Remove interconnecting “Y” duct to have a better view of the evaporator assembly.
3. Use vacuum cleaner to remove large debris from the coil face.

AFT EVAPORATOR ASSEMBLY

DESCRIPTION AND OPERATION

1.0 GENERAL

The aft evaporator assembly is located in the left-hand side of the lavatory. It contains an evaporator, a blower and two heater element assemblies. The blower provides airflow over the heater elements, through the evaporator coil and into the cabin through a duct system. The evaporator assembly includes an evaporator coil, a blower with a brushless DC motor, expansion valve, flood duct opening, and the two heating elements that provide auxiliary heating.

This section of the maintenance manual discusses troubleshooting and maintenance practices used for the aft evaporator assembly portion of the air conditioning system.

AFT EVAPORATOR ASSEMBLY

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the aft evaporator assembly portion of the air conditioning system.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Service pressure gauge	Comm. Avail	1	None
28 VDC source		A/R	None

3. EVAPORATOR TROUBLESHOOTING PROCEDURES (Ref. 45-0210 Aft Evaporator Installation Dwg.)

NOTE: Always attach a service gauge set to system prior to troubleshooting to ensure proper refrigerant charge is present.

CAUTION: Do not operate air conditioning system with condenser air inlet or outlet blocked.

A. Water is being blown from air outlets.

1. Operate GPU and apply 28 VDC electrical power.
2. Select air conditioning system to “COOL”.
3. Check evaporator drain for condensate runoff.
4. If no runoff, clear drain of blockage or verify that routing is in a downhill orientation.
5. Select air conditioning “OFF”, remove electrical power.

B. No cooling at evaporator.

1. Connect service pressure gauge to service ports located near compressor closeout assembly.
2. Operate GPU and apply 28 VDC electrical power.
3. Select air conditioning system to “COOL”.
4. Check evaporator for proper cooling. If cooling is not sufficient, check refrigerant level to ensure that system is correctly charged. This can be confirmed by seeing if the sight glass on top of the receiver/drier bottle is clear and free of bubbles. If bubbles are present, add refrigerant until sight glass clears.

5. If system still has insufficient cooling, replace expansion valve per aft evaporator maintenance practices procedure.

4. AUX HEATER OPERATION

The auxiliary heaters consist of two heater assemblies that are a part of the aft evaporator assembly. When the heater switch is selected “ON”, the heater elements activate and the aft blower assembly automatically spools to a pre-set speed. Two thermal switches (located at the blower outlet) protect the system from reaching a temperature of 150°F or higher. During normal operation, these switches will not open. During a failure mode when the switches open, all power is removed from the heater elements and the blower assembly. This action immediately removes power from the heater elements and blower assembly.

A second set of temp switches are located on the heater assembly that if activated will supply the blower with 28VDC from the aircraft’s hot buss. (This is used for heater cool down if the master switch is selected off while heater is operating.)

A pair of thermal fuses protects the unit from over-heating if the blower motor fails.

AFT EVAPORATOR ASSEMBLY

MAINTENANCE PRACTICES

1. GENERAL

The following procedures are used to perform typical maintenance on the evaporator assembly.

2. TOOLS AND EQUIPMENT

DESIGNATION	REF. NO.	QTY.	REMARKS
Sealant	ES49000-3	A/R	None
Polyolester oil	Comm. Avail	A/R	Viscosity IO=SO68
Vacuum cleaner	Comm. Avail	1	None
Coil cleaner	Comm. Avail	A/R	Non-acid based

3. EVAPORATOR MAINTENANCE PROCEDURES (Ref. 45-0210 Aft Evaporator Installation Dwg.)

A. Expansion valve replacement:

1. Discharge system in accordance with recovery equipment's instructions.
2. Disconnect liquid line from inlet of expansion valve, and cap. Remove the thermal sense bulb from its clamp located on the suction tube of the evaporator and carefully remove insulation covering bulb.
3. Disconnect the fitting that connects the valve to the coil and plug coil fitting.
4. Install new expansion valve and o-ring in the reverse order.
5. Lubricate o-ring with Polyolester oil or apply sealant to fitting mating surfaces prior to assembly.
6. Install the thermal sense bulb such that it makes contact with the suction tube along its entire length. Insulate the bulb thoroughly with insulation
.

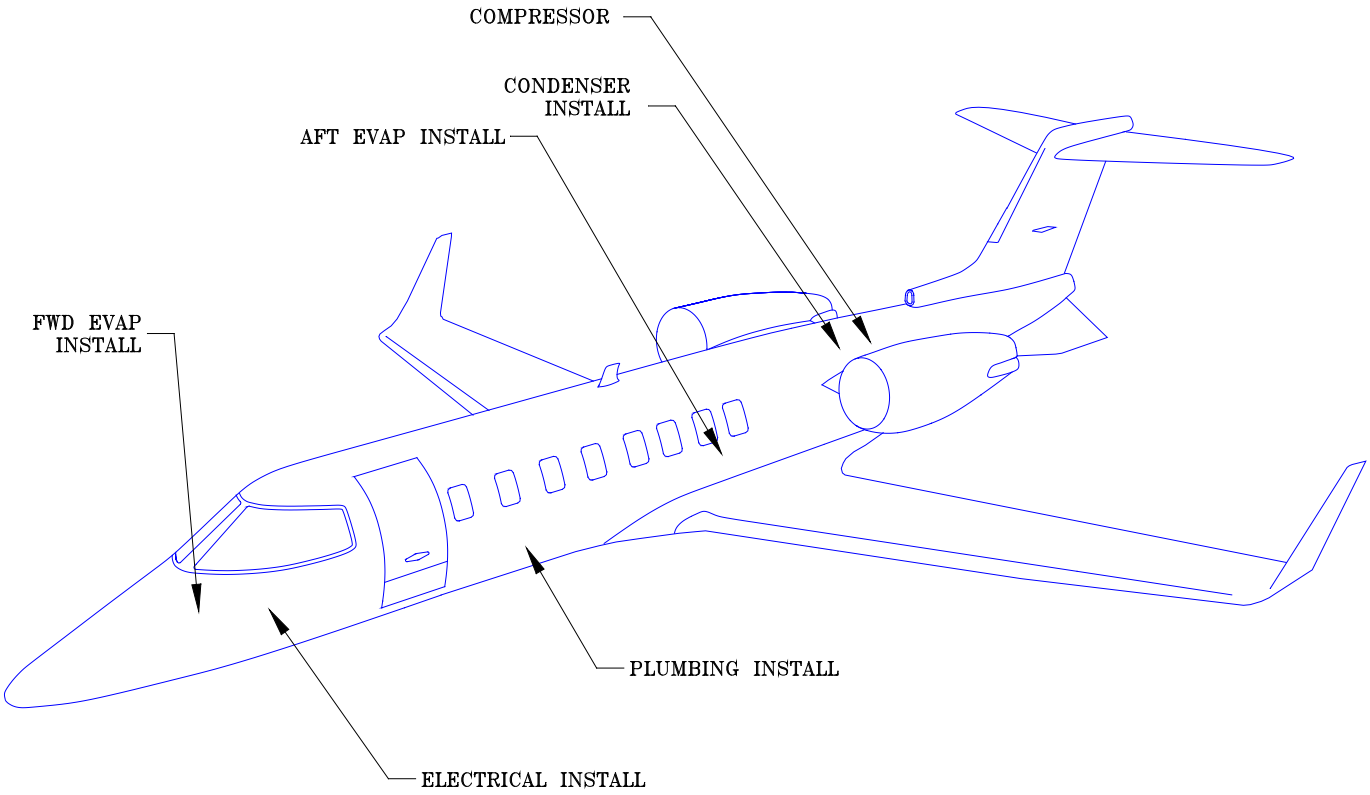
B. Evaporator coil cleaning procedure:

1. Use vacuum cleaner to remove large debris from the coil face.
2. Spray coil cleaner on coil face. Wash off with water.

4. AUXILIARY HEATER

A. REMOVAL/INSTALLATION

1. Remove equipment and interior panels as required to gain access to aft evaporator installation.
2. Disconnect all electrical connector(s) from evaporator and blower assemblies.
3. Remove screws securing heater to evaporator assembly.
4. Carefully lower heaters to where all components are visible and can be replaced if necessary.
5. Re-install in the reverse order of removal.



ILLUSTRATED PARTS CATALOG

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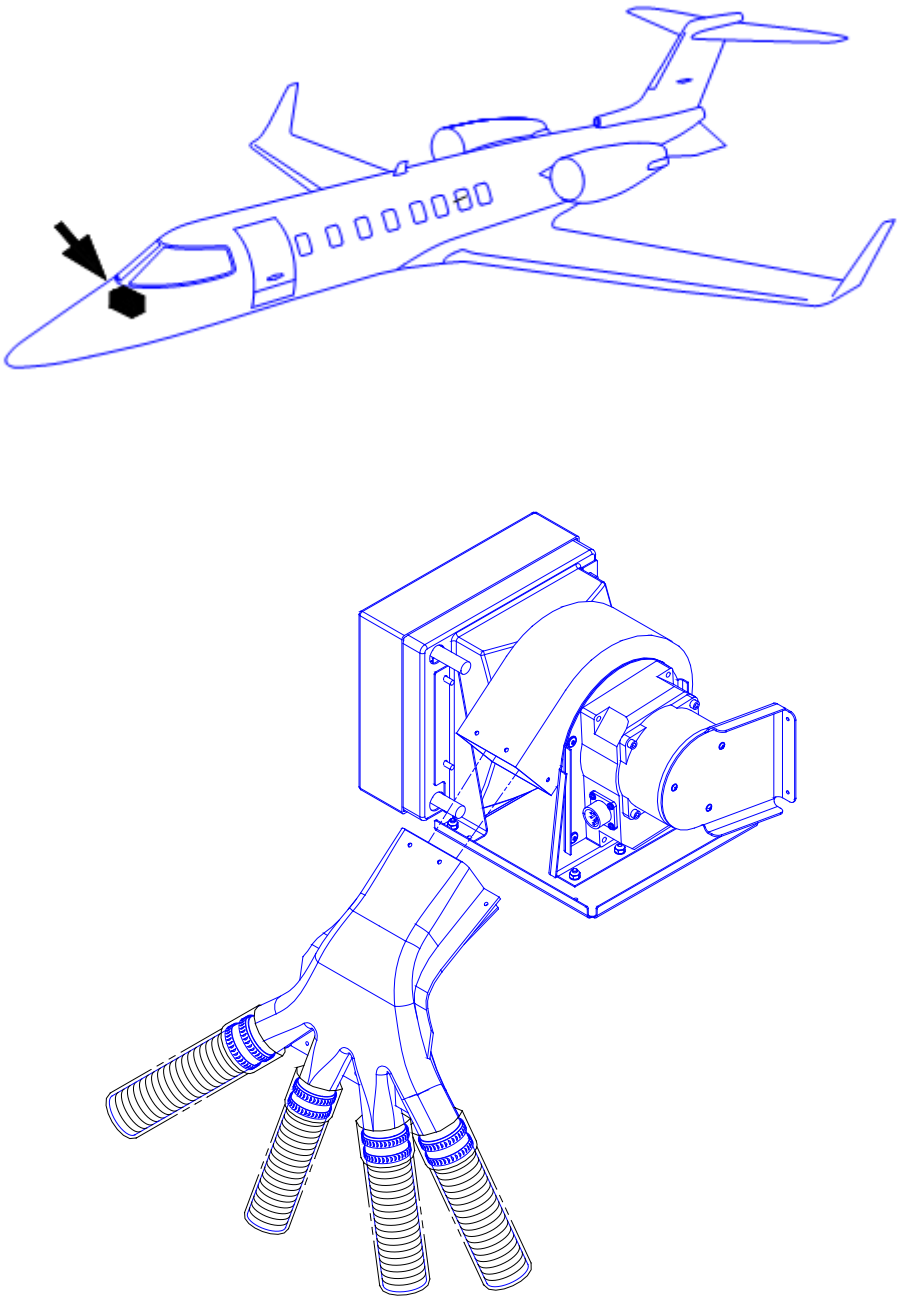
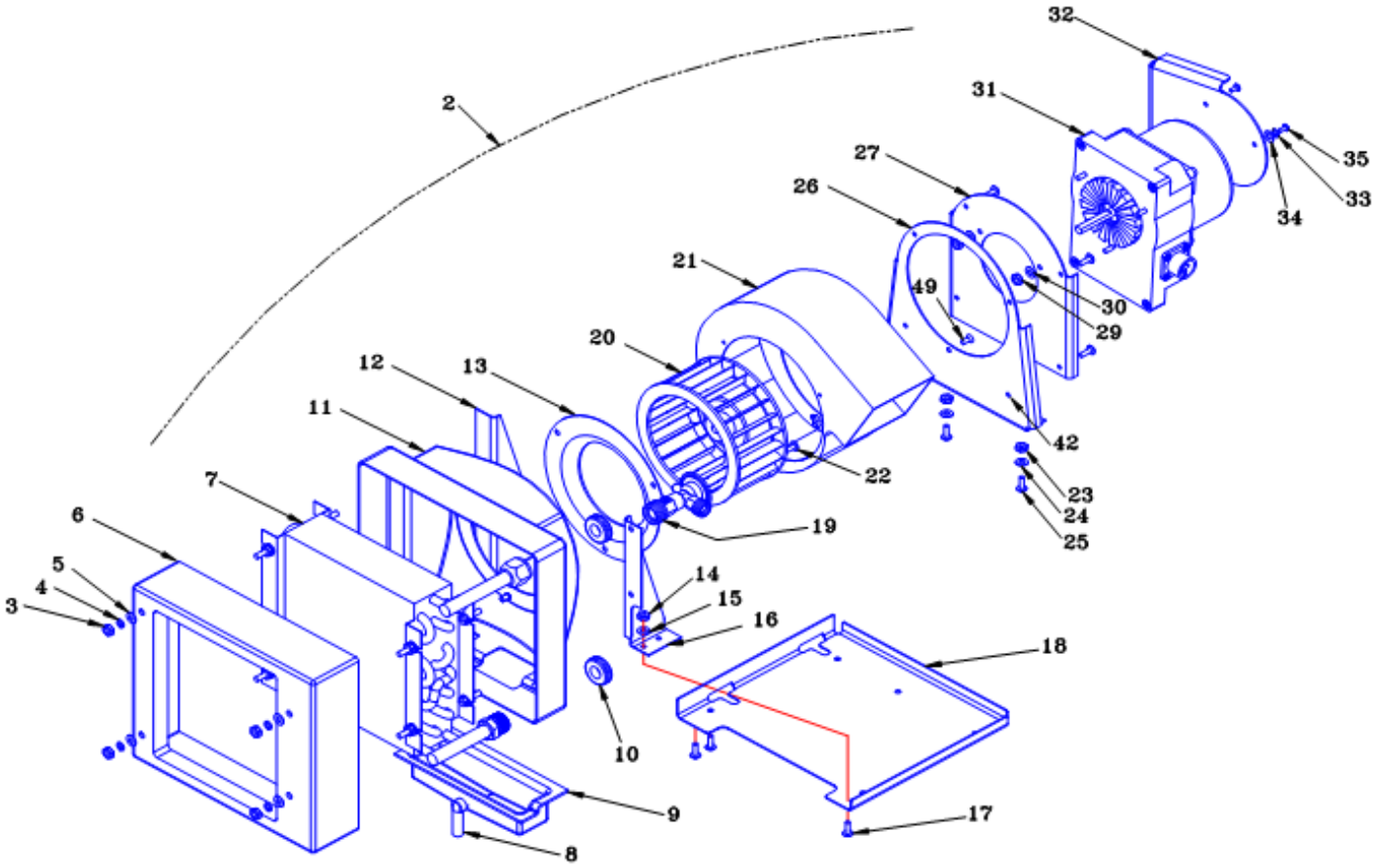
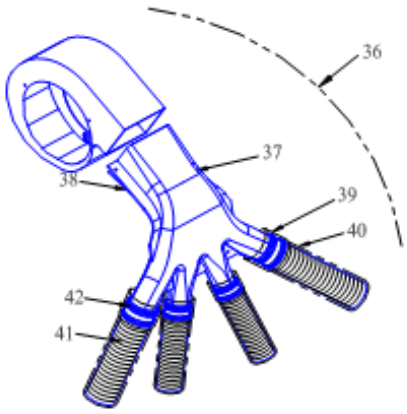
www.meggitt.com



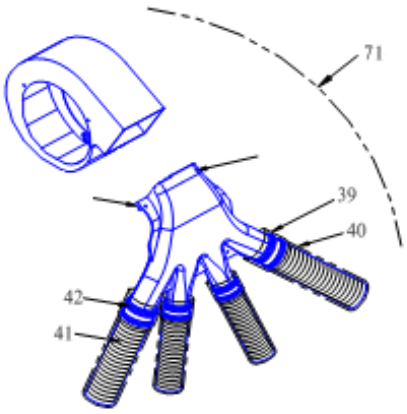
45-0200-3 Fwd. Evaporator Installation



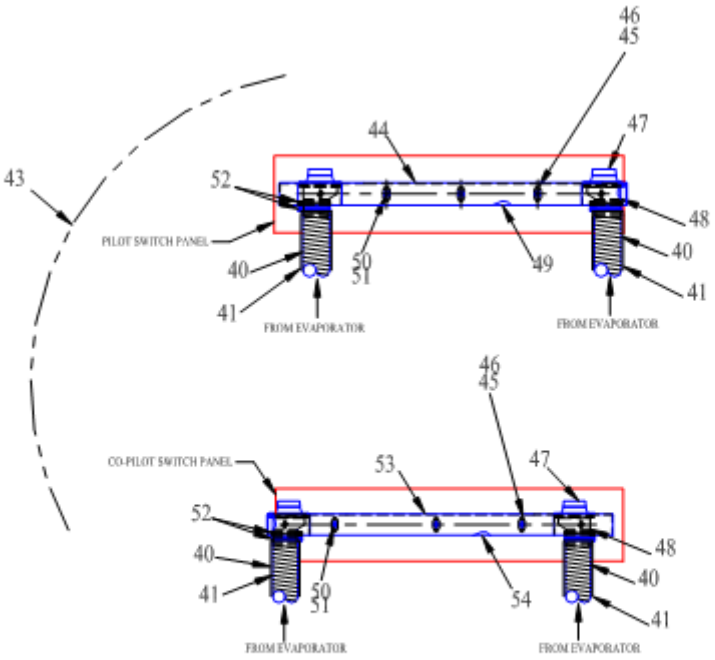
45-0250-2/-3 Fwd. Evaporator Assembly



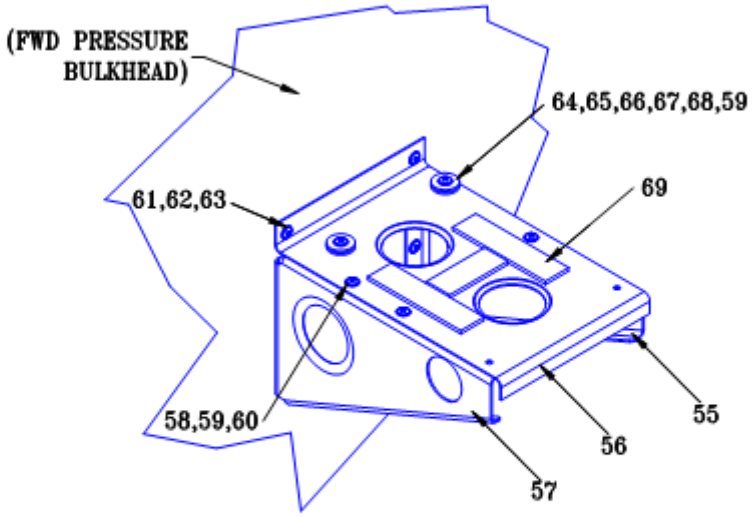
45-0255-1 Duct Assembly



45-0255-3 Duct Assembly



45-0200-1 Air Outlet Installation

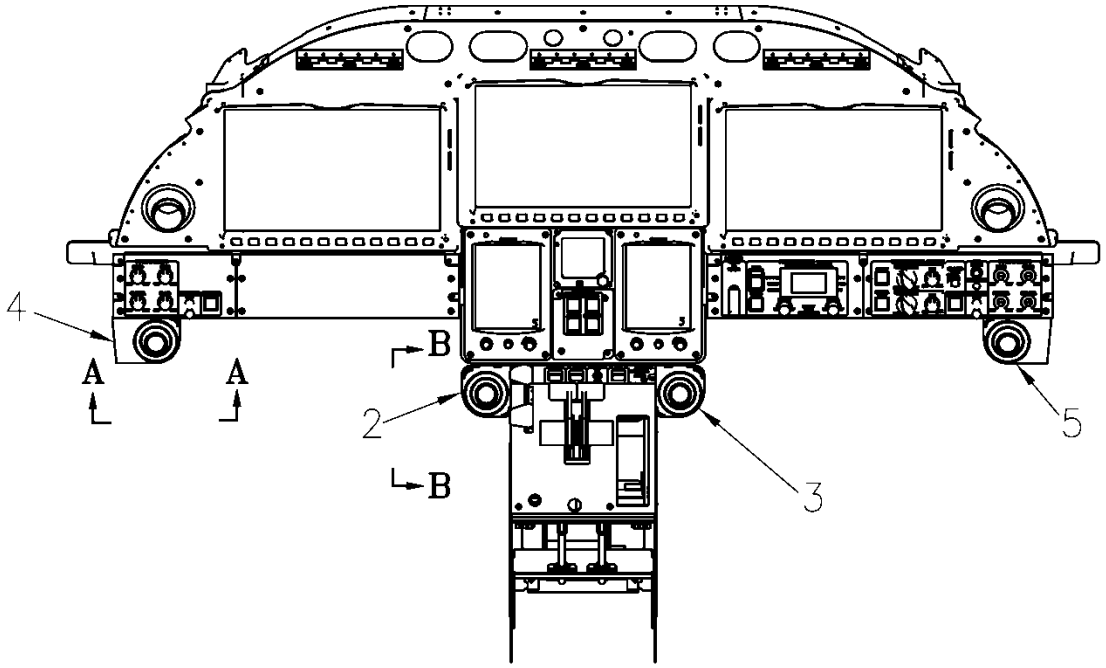


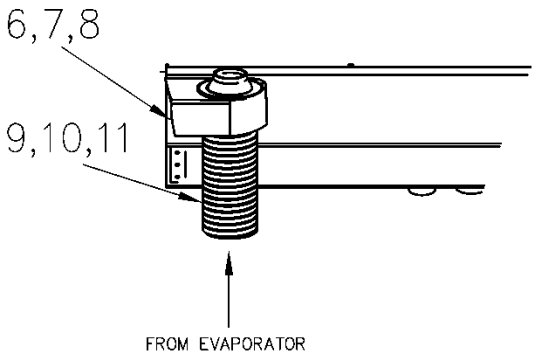
Fwd. Evaporator Shelf Installation

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0200-3	FWD Evaporator Installation	
	2	•45-0250-2/-3	FWD Evaporator Assembly	
	3	•AN315-3	Nut	8
	4	•MS35338-43	Lock Washer	8
	5	•AN960-10L	Flat Washer	8
	6	•JBS12007-1	Shroud, Air Inlet	1
	7	•JBS12011-5	Coil Assembly	1
	8	•ES49006-2	Drain	1
	9	•45-1250-7	Sump	1
	10	•MS35489-14	Grommet	2
	11	•45-1250-8	Housing	1
	12	•45-1250-6	Bracket	1
	13	•ES73128-6	Inlet Ring	1
	14	•MS20365-1032	Nut	3
	15	•AN960-10L	Flat Washer	4
	16	•45-1250-5	Bracket	1
	17	•AN525-10R6	Screw	4
	18	•45-1250-11	Pallet	1
	19	•ES26104-1	Expansion Valve	1
	20	•ES73100-7	Blower Wheel	1
	21	•ES73128-4	Blower Housing	1
	22	•NAS8702-2	Screw	1
	23	•MS20365-1032	Nut	5
	24	•AN960-10L	Flat Washer	5
	25	•AN525-10R6	Screw	5
	26	•45-1250-12	Blower Bracket	1
	27	•45-1250-10	Blower Bracket	1
	28	•MS20365-632	Nut	5
	29	•AN960-6	Washer	3
	30	•AN525832R7	Screw	3
	31	•ES61136-2	Motor Brushless	1
	32	•45-1250-9	Motor Bracket	1
	33	•MS35338-155	Lock Washer	3
	34	•AN960-42	Flat Washer	3

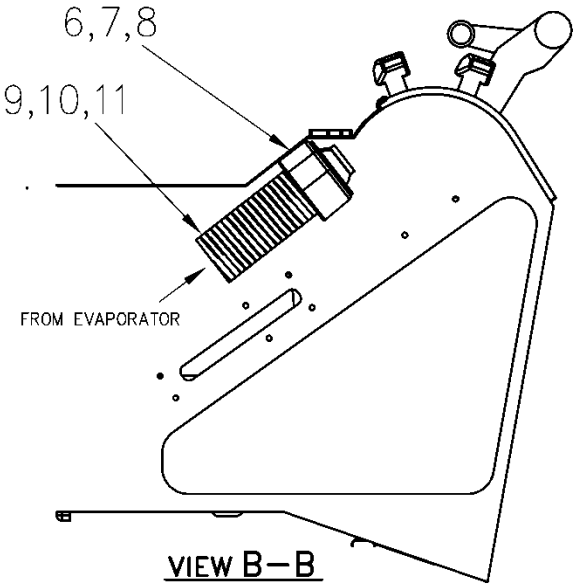
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	•AN515-4R5	Screw	3
	36	•45-0255-1	Duct Assembly	
	37	••45-1255-2	Duct Half	1
	38	••45-1255-1	Duct Half	1
	39	••ES02163-5	Insulation (SQ.IN)	60
	40	••ES06022-1	Tape Insulation (IN.)	540
	41	••ES70009-4	Flex Duct (IN)	192
	42	••ES30015-6	Cable Tie	8
	43	45-0200-1	Air Outlet Installation	
	44	•45-1200-3	Outlet Support	1
	45	•MS21059-L06	Nut Plate	10
	46	•MS20426AD3-3.5	Rivet	20
	47	•ES72121-2	Air Outlet	4
	48	•182-1650-9	Adapter	4
	49	•45-1200-5	Stiffener	1
	50	•MS35206-230	Screw	10
	51	•AN960-6	Washer	10
	52	•ES30015-6	Cable Tie	8
	53	•45-1200-2	Outlet Support	1
	54	•45-1200-4	Stiffener	1
	55	•45-1200-7	Support Bracket	1
	56	•45-1200-9	Pallet	1
	57	•45-1200-8	Support Bracket	1
	58	•AN525-10R6	Screw	3
	59	•MS20365-1032	Nut	3
	60	•AN960-10L	Washer	3
	61	•AN525-10R9	Screw	12
	62	•AN960-10	Washer	4
	63	•MS20365-1032	Nut	2
	64	•AN970-3	Washer	8
	65	•MS35338-43	Lock Washer	2
	66	•AN525-10R10	Screw	4
	67	•AN960-10	Washer	2
	68	•AN960-10L	Washer	2

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	69	•45-1200-10	Spacer	3
	70	•ES02012-1 (-3 only)	Insulation	1
	71	•45-0255-3	Duct Assembly	1



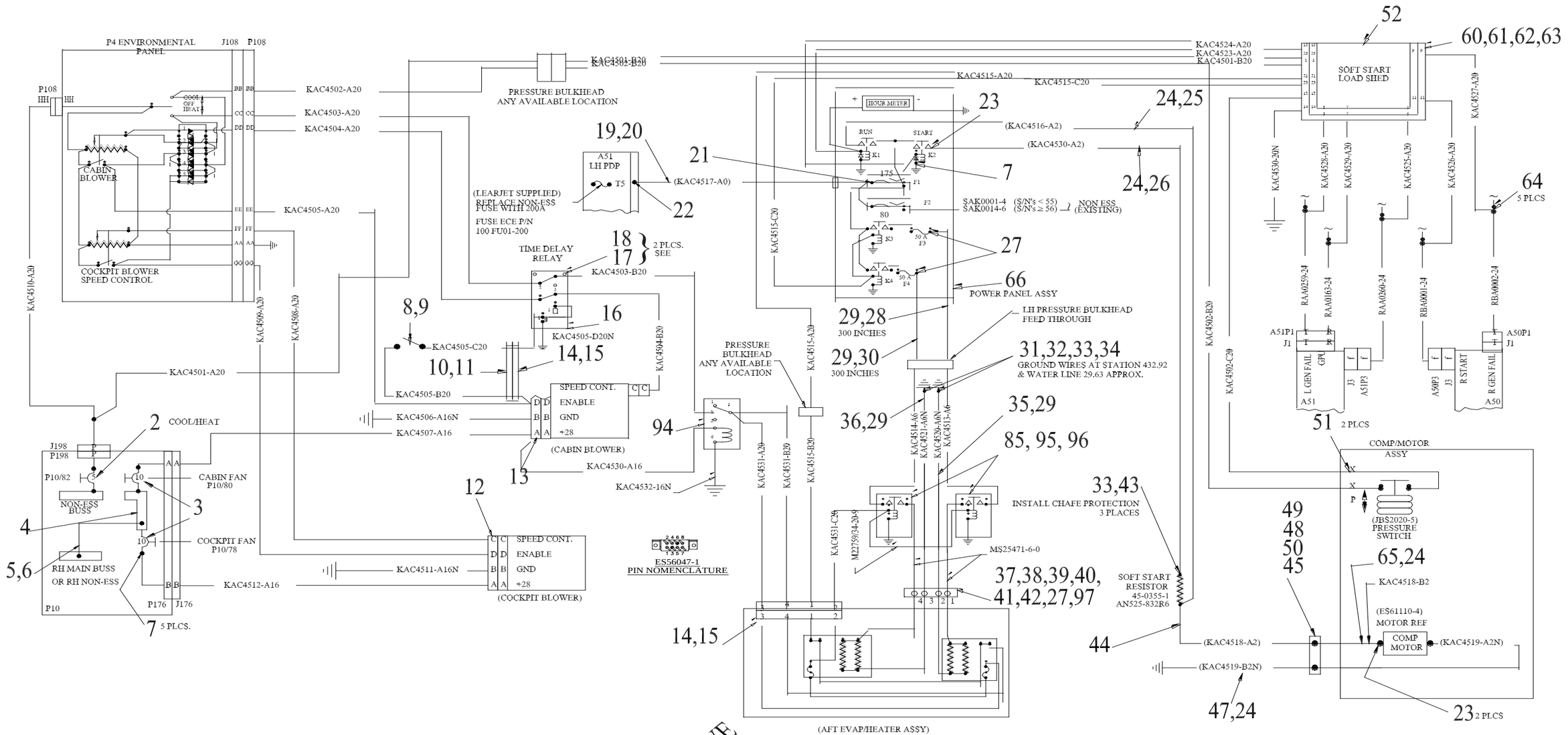


VIEW A–A



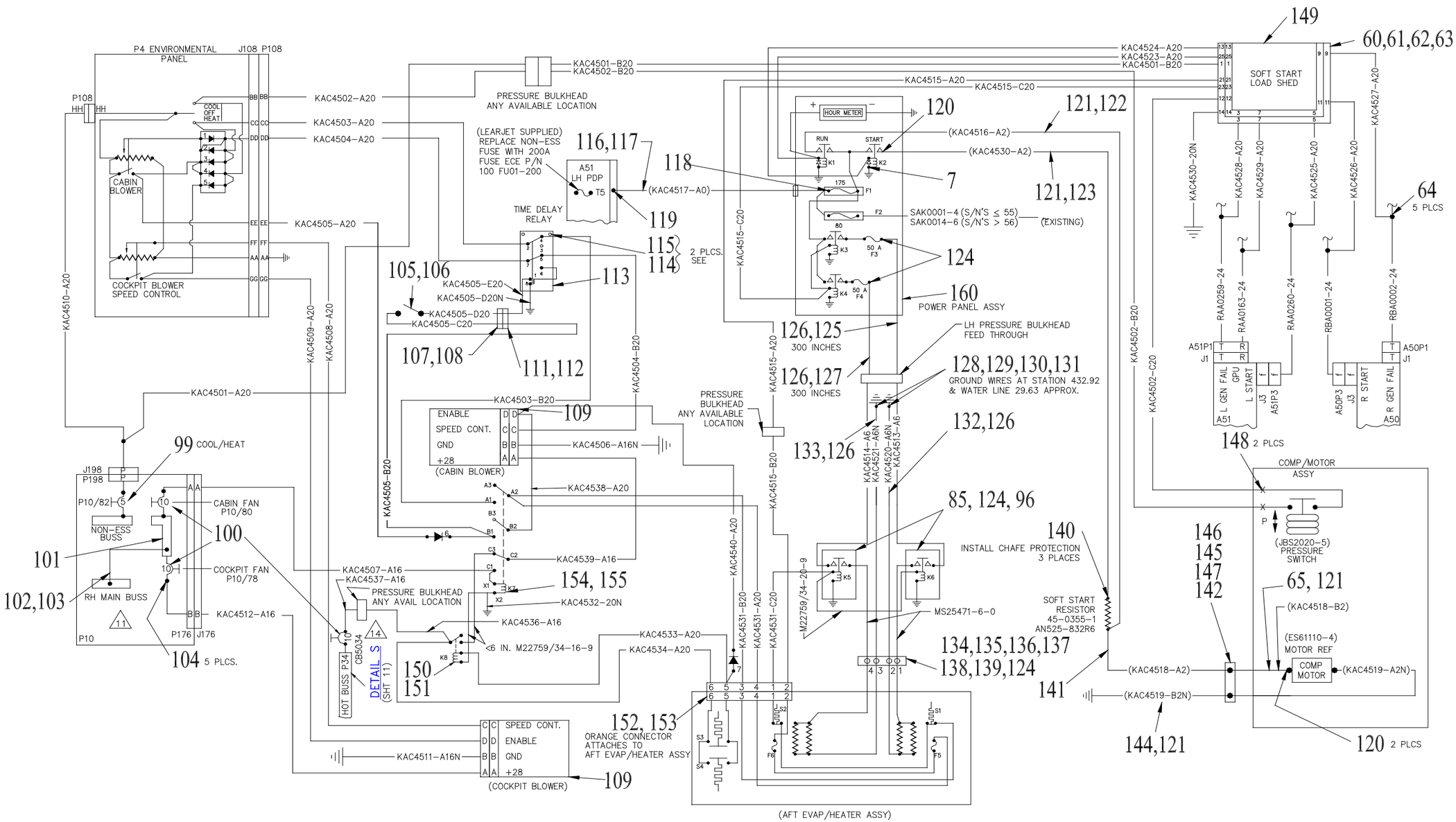
VIEW B–B

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0203-3	FWD Air Outlet Installation	
	2	•45-0256-1	Outlet Support Assembly	1
	3	•45-0256-2	Outlet Support Assembly	1
	4	•45-0257-1	Outlet Support Assembly	1
	5	•45-0257-2	Outlet Support Assembly	1
	6	ES72121-2	Air Outlet	4
	7	ES30015-6	Cable Tie	8
	8	182-1650-9	Adapter	4
	9	ES70009-4	Flexduct	192
	10	ES02013-1	Insulation (sq in)	1080
	11	ES02168-1	Fiberglass Fabric (sq in)	1080

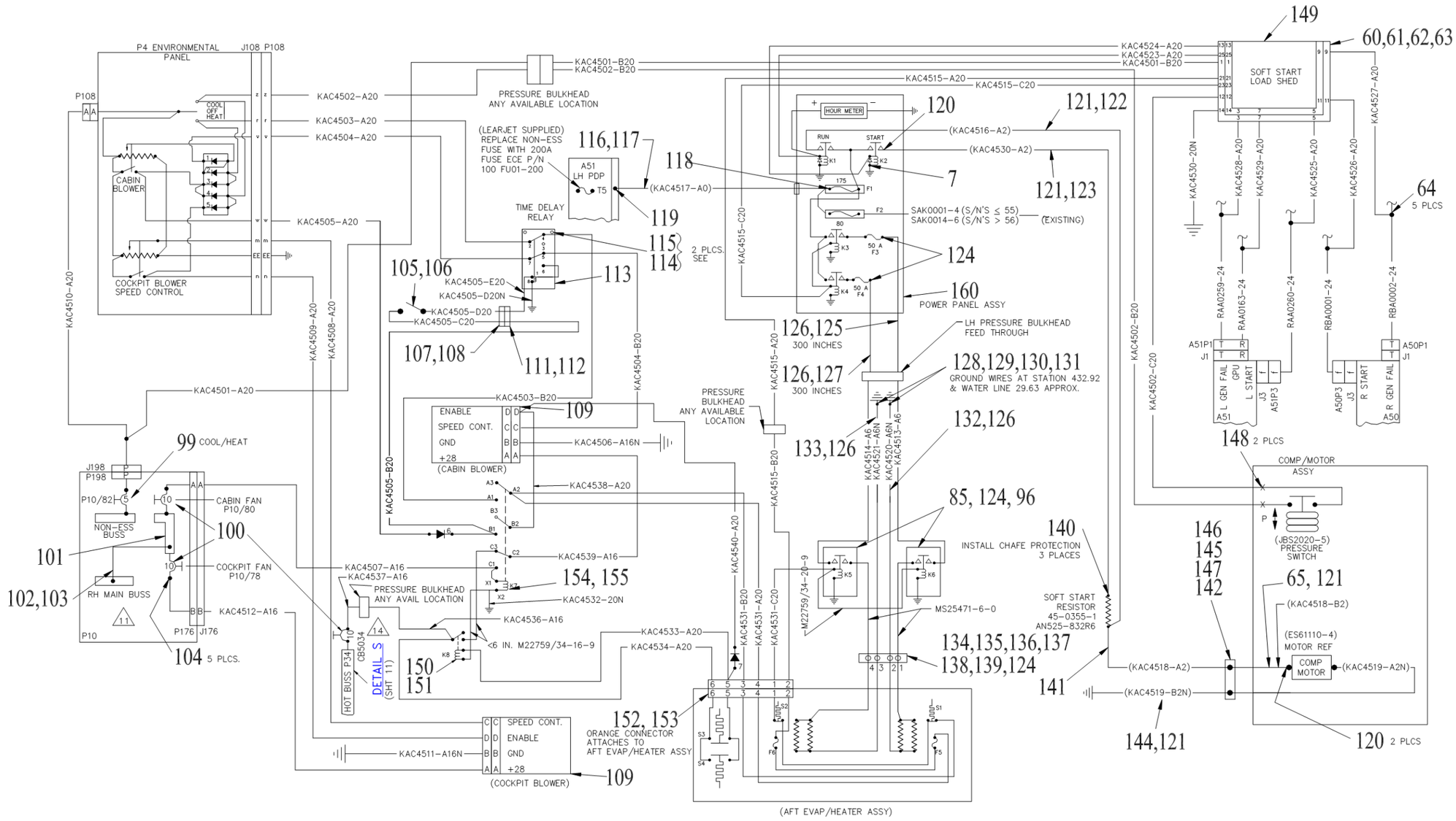


45-0700-1 ELECTRICAL INSTALLATION

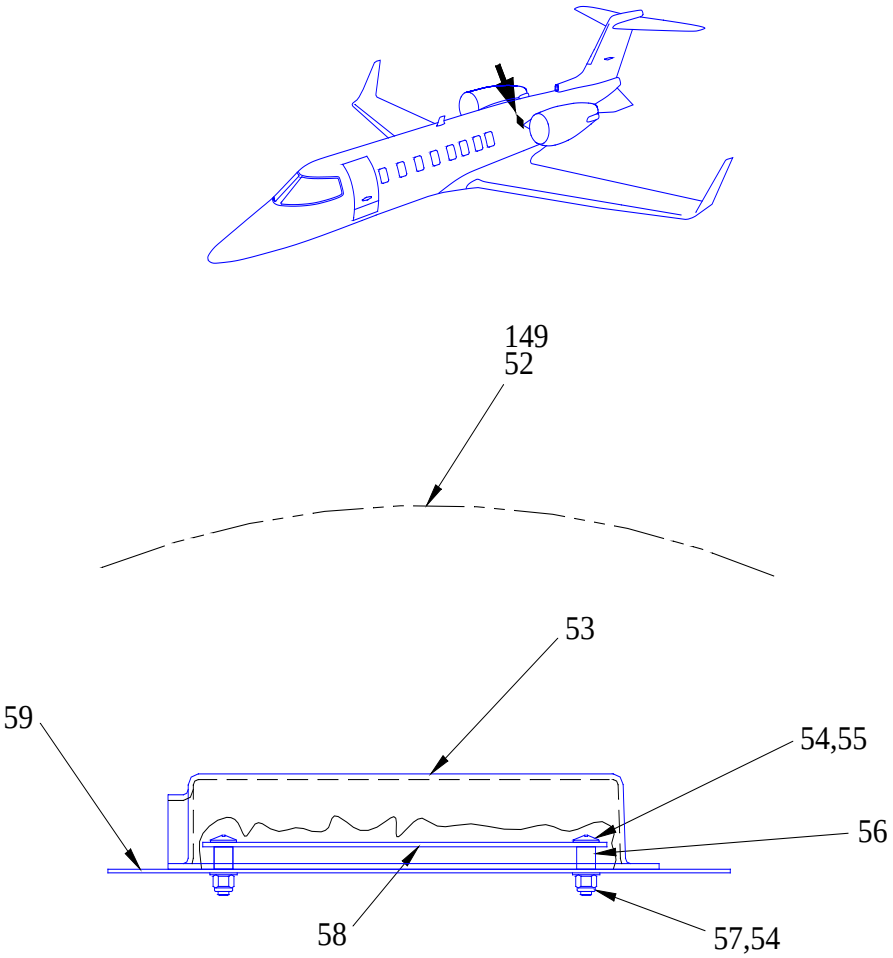
INACTIVE



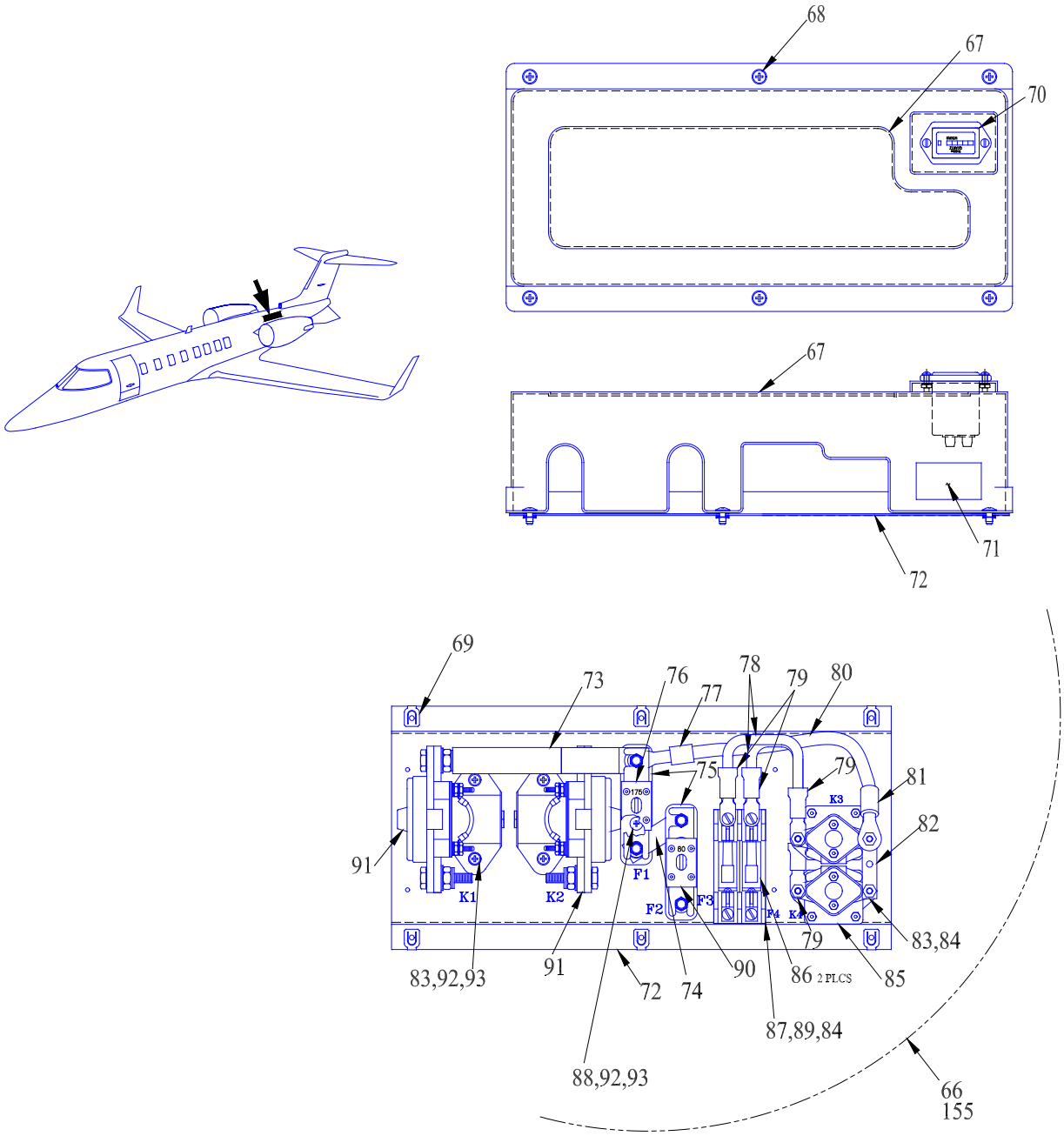
45-0700-4 ELECTRICAL INSTALLATION



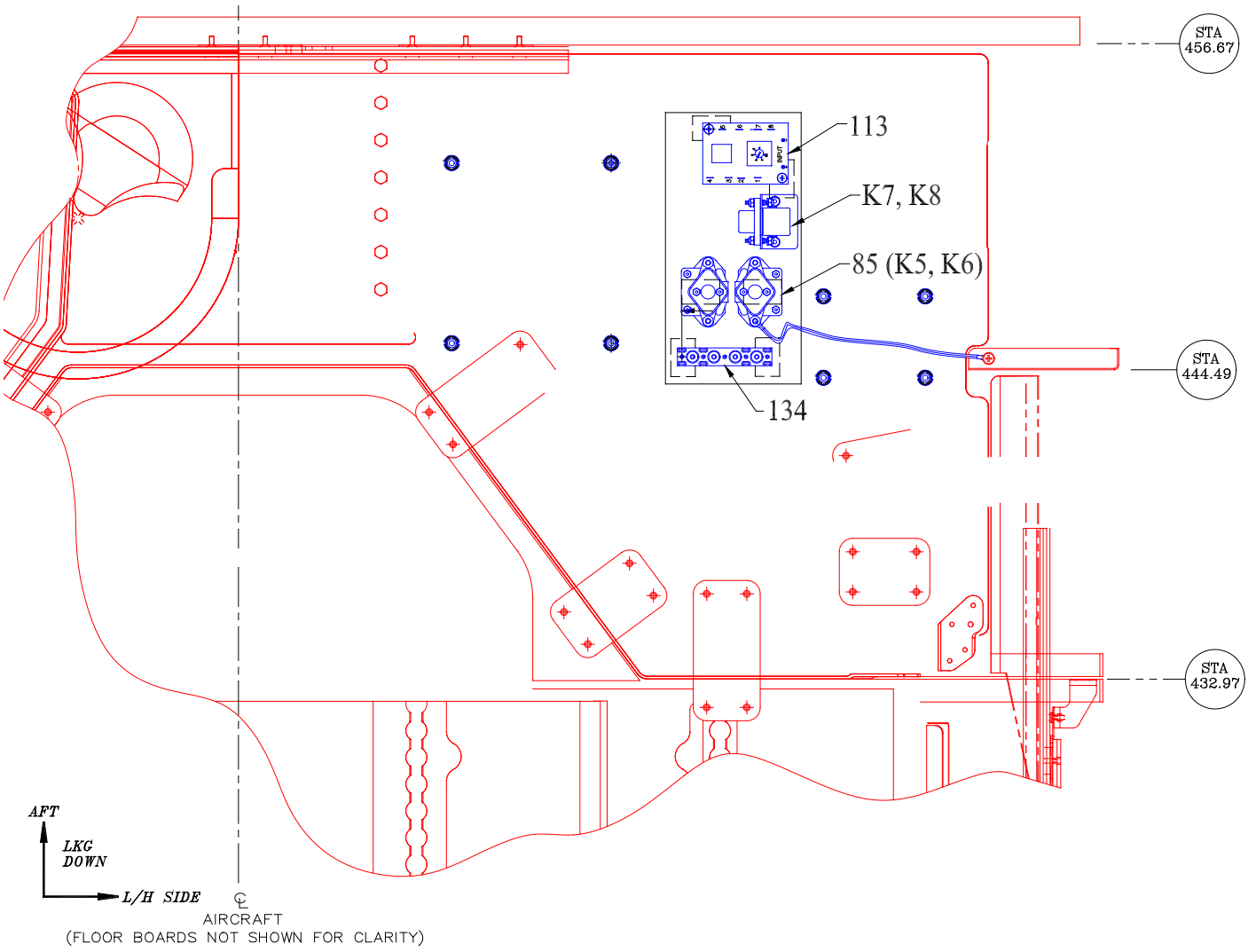
45-0702-4 ELECTRICAL INSTALLATION



LOAD SHED ASSEMBLY
ITEM # 52 (-1 ONLY)
ITEM # 149 (-4 ONLY)



POWER PANEL ASSEMBLY
ITEM # 66 (-1 ONLY)
ITEM # 160 (-4 ONLY)


STA 456.67
113
K7, K8
85 (K5, K6)
134
STA 444.49
STA 432.97
AFT
LKG DOWN
L/H SIDE
℄
AIRCRAFT
(FLOOR BOARDS NOT SHOWN FOR CLARITY)

RELAY PANEL

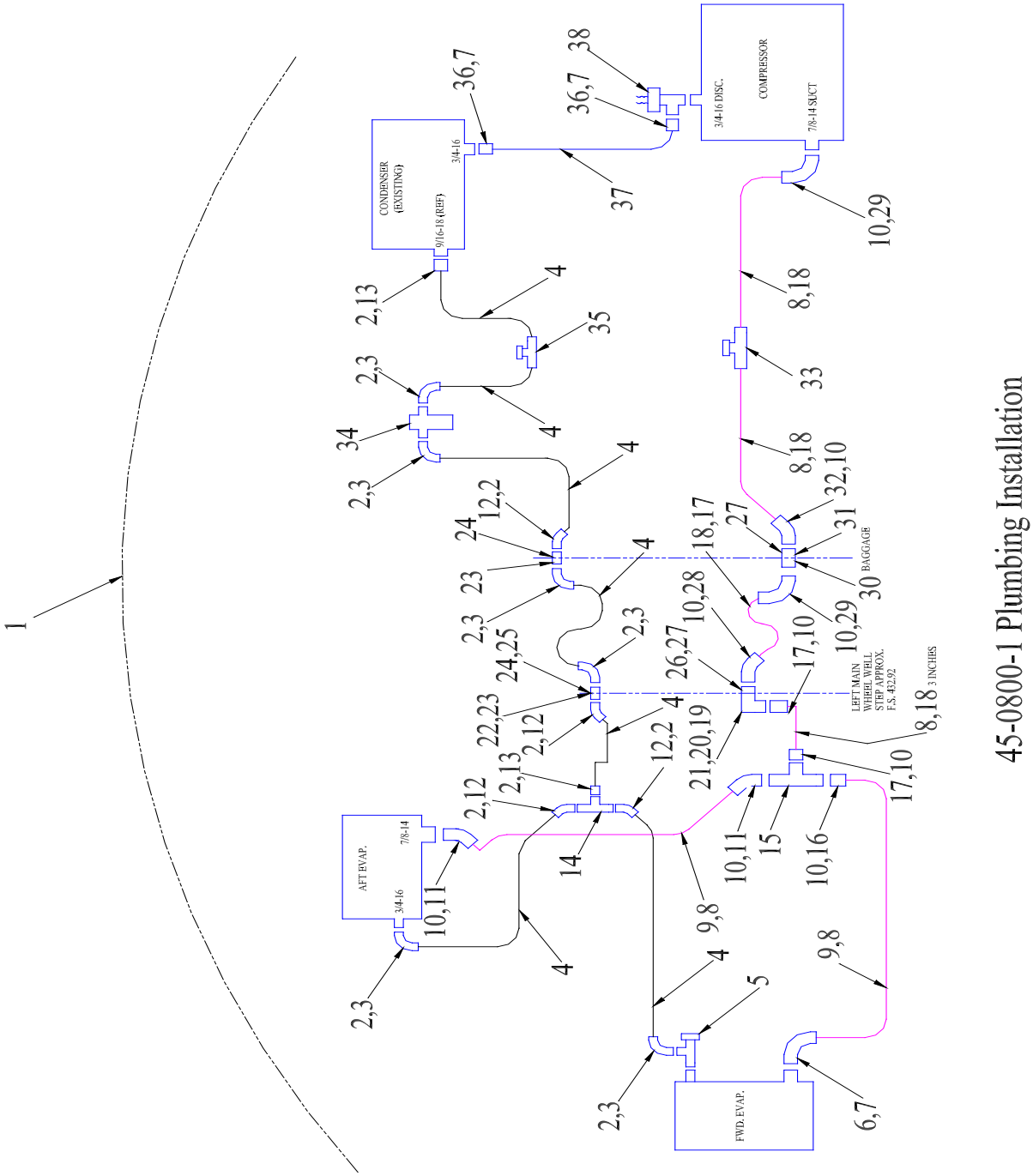
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0700-1	Electrical Installation (INACTIVATED)	
	2	•JBS75-32	Circuit Breaker	1
	3	•JBS75-31	Circuit Breaker	2
	4	•MS25226-4-4	Bus Bar	1
	5	•MS25471-8-NAT	Wire (IN)	48
	6	•ES55072-8	Terminal	2
	7	•MS25036-149	Terminal	15
	8	•ES57010-1	Switch	1
	9	•JBS10-92	Placard	1
	10	•ES53031-1	Pin	2
	11	•ES53029-1	Plug	1
	12	•MS3106F14S-5S	Connector	1
	13	•MS3106F14S-5S	Connector	1
	14	•ES53003-1	Pin	4
	15	•ES53030-1	Plug	2
	16	•ES56040-3	Relay (Time Delay)	1
	17	•AN960-10L	Washer	2
	18	•MS27039-1-17	Screw	2
	19	•89-00-401-258	Sleeve Maker (KAC4517-A0)	4
	20	•MS25471-01-NAT	Wire (IN)	48
	21	•MS25036-133	Terminal	1
	22	•MS25036-132	Terminal	1
	23	•MS25036-127	Terminal	4
	24	•MS25471-2-0	Wire (IN)	120
	25	•89-00-401-260	Sleeve Maker (KAC4516-A2)	4
	26	•89-00-401-272	Sleever Maker (KAC4530-A2)	4
	27	•ES55074-1	Terminal	6
	28	•89-00-401-261	Sleever Maker (KAC4513-A6)	25
	29	•MS25471-6-0	Wire (IN)	700
	30	•89-00-401-262	Sleeve Maker (KAC4514-A6)	25
	31	•ES55074-2	Terminal	2
	32	•AN5-7A	Bolt	1
	33	•45-0355-1	Soft Start Assembly	1
	34	•AN960-C416	Washer	4

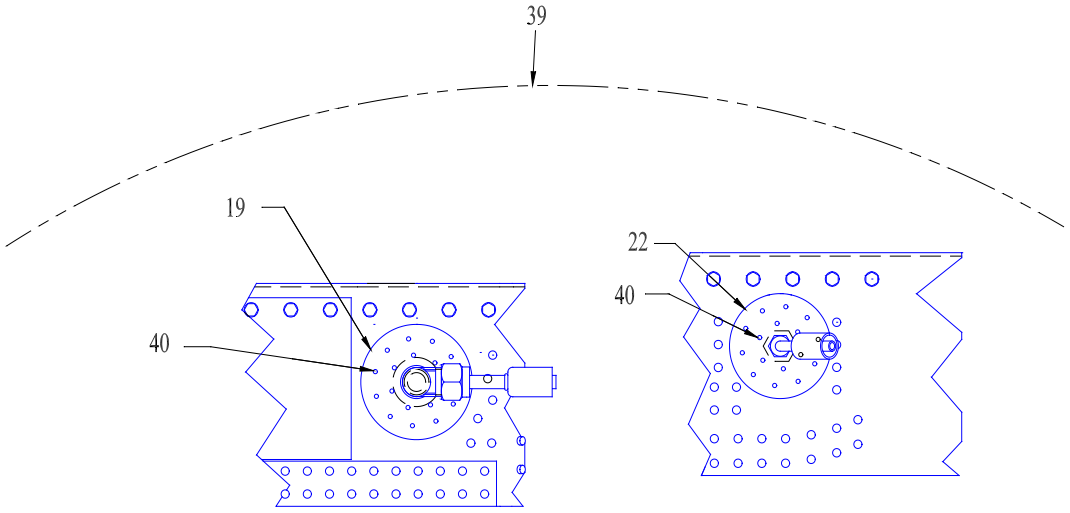
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	•89-00-401-264	Sleeve Maker (KAC4520-A6N)	6
	36	•89-00-401-263	Sleeve Maker (KAC4521-A6N)	6
	37	•MS27212-2-4	Terminal Block	1
	38	•MS3373-A2	Insulator	2
	39	•MS18029-2S-4	Cover	1
	40	•AN960-C10L	Washer	8
	41	•MS21042-3	Nut	4
	42	•MS25036-112	Terminal	4
	43	•MS21266-1N	Grommet	12
	44	•89-00-401-257	Sleeve Marker (KAC4518-A2)	4
	45	•ES55069-2	Terminal	5
	46	•AN4-4A	Bolt	1
	47	•89-00-401-271	Sleeve Marker (KAC4519-B2N)	4
	48	•MS25171-2S	Nipple	2
	49	•AN960-516L	Washer	4
	50	•MS21042-5	Nut	4
	51	•ES55079-1	Terminal	2
	52	•45-0755-1	Load Shed Assy.	1
	53	•117-1763-4	Cover	1
	54	•• AN960-6L	Washer	10
	55	•• AN526-632R10	Screw	3
	56	•• NAS43DD1-15	Spacer	5
	57	•• MS20365-632	Nut	5
	58	•45-0750-1	PC Board Assembly	1
	59	•• 45-1700-9	Plate	1
	60	•ES53008-1	Socket	1
	61	•ES53009-1	Clamp	1
	62	•ES53010-3	Connector	1
	63	•ES53018-1	Screw Retainer	1
	64	•ES55129-3	Splice	5
	65	•89-00-401-270	Sleeve Marker (KAC4518-B2)	4
	66	•45-1755-1	Power Panel Assembly	
	67	•• 45-1700-8	Cover	1
	68	•• AN525-832R6	Screw	6

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	69	•• ES34124-3	Clip Nut	6
	70	•• ES59128-1	Hour Meter	1
	71	•• JBS10-51	Placard	1
	72	•• 45-1700-5	Channel	1
	73	•• 45-1750-2	Buss Bar Assembly	1
	74	•• MS25226-8-2	Buss Bar	1
	75	•• ES51059-1	Limiter Holden	2
	76	•• ES51058-8	Fuse, 175 AMP	1
	77	•• MS25036-125	Terminal	1
	78	•• MS25471-6-0	Wire, 6 Gauge (IN)	12
	79	•• ES55074-1	Terminal	4
	80	•• MS25471-4-0	Wire, 4 Gauge (IN)	12
	81	•• MS25036-123	Terminal	1
	82	•••MS25226-4-4	Buss Bar	1
	83	•••AN525-10R7	Screw	8
	84	•••MS21042-3	Nut	6
	85	•••ES56149-1	Relay	2
	86	•••MS28937-50	Fuse	2
	87	•••MS24001-2	Fuse Holder	1
	88	•••MS24694-S54	Screw,CSK	4
	89	•••MS24694-S52	Screw	2
	90	•••ES51058-4	Fuse, 80 AMP	1
	91	•••JBS421-3	Relay Assy.	2
	92	•••AN960-10	Washer	11
	93	•••MS20365-1032	Nut	8
	94	•••ES56047-1	Relay	1
	95	ES55074-1	Terminal	4
	96	•••MS25036-149	Terminal	4
	97	ES55071-1	Terminal	1
	98	45-0700-4 , 45-0702-4	Electrical Installation	
	99	•JBS75-32	Circuit Breaker	1
	100	•JBS75-31	Circuit Breaker	3
	101	•MS25226-4-4	Bus Bar	1
	102	•MS25471-8-NAT	Wire (IN)	48

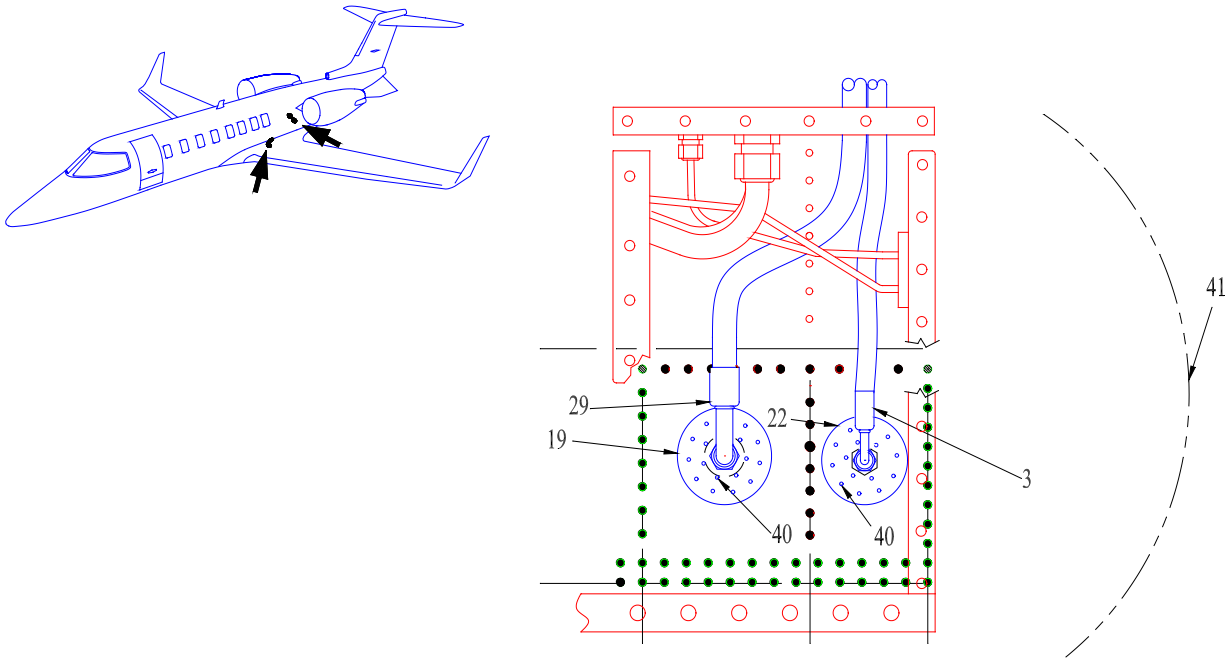
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	103	•ES55072-8	Terminal	2
	104	•MS25036-149	Terminal	15
	105	•ES57001-1	Switch	1
	106	•JBS10-92	Placard	1
	107	•ES53031-1	Pin	2
	108	•ES53029-1	Plug	1
	109	•MS3106F14S-5S	Connector	2
	110			
	111	•ES53003-1	Pin	4
	112	•ES53030-1	Plug	2
	113	•ES56040-3	Relay (Time Delay)	1
	114	•AN960-10L	Washer	2
	115	•MS27039-1-19	Screw	2
	116	•89-00-401-258	Sleeve Maker (KAC4517-A0)	4
	117	•MS25471-01-NAT	Wire (IN)	48
	118	•MS25036-133	Terminal	1
	119	•MS25036-132	Terminal	1
	120	•MS25036-127	Terminal	4
	121	•MS25471-2-0	Wire (IN)	120
	122	•89-00-401-260	Sleeve Maker (KAC4516-A2)	4
	123	•89-00-401-272	Sleever Maker (KAC4530-A2)	4
	124	•ES55074-1	Terminal	6
	125	•89-00-401-261	Sleever Maker (KAC4513-A6)	25
	126	•MS25471-6-0	Wire (IN)	700
	127	•89-00-401-262	Sleeve Maker (KAC4514-A6)	25
	128	•ES55074-2	Terminal	2
	129	•AN5-7A	Bolt	1
	130	•MS21042-5	Nut	4
	131	•AN960-C416	Washer	4
	132	•89-00-401-264	Sleeve Maker (KAC4520-A6N)	6
	133	•89-00-401-263	Sleeve Maker (KAC4521-A6N)	6
	134	•MS27212-2-4	Terminal Block	1
	135	•MS3373-A2	Insulator	2
	136	•MS18029-2S-4	Cover	1

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	137	•AN960-C10L	Washer	8
	138	•MS21042-3	Nut	4
	139	•MS25036-112	Terminal	4
	140	•MS21266-1N	Grommet	12
	141	•89-00-401-257	Sleeve Marker (KAC4518-A2)	4
	142	•ES55069-2	Terminal	5
	143	Reserved		
	144	•89-00-401-271	Sleeve Marker (KAC4519-B2N)	4
	145	•MS25171-2S	Nipple	2
	146	•AN960-516L	Washer	4
	147	•MS21042-5	Nut	4
	148	•ES55079-1	Terminal	2
	149	•45-0755-1	Load Shed Assy.	1
	150	ES56054-1	Relay	1
	151	ES56054-2	Socket	1
	152	ES53026-1	Plug	1
	153	ES53028-3	Pin	6
	154	ES56053-1	Relay	1
	155	ES56053-2	Socket	1
	156			
	157			
	158			
	159			
	160	•45-1755-1	Power Panel Assembly	1


45-0800-1 Plumbing Installation
COMPRESSOR
3/4-16 DISC.
7/8-14 SUCT
CONDENSER (EXISTING)
9/16-18 (REF)
3/4-16
AFT EVAP.
7/8-14
3/4-16
FWD. EVAP.
BAGGAGE
LEFT MAIN WHEEL WELL STEP APPROX. F.S. 432.92
3 INCHES



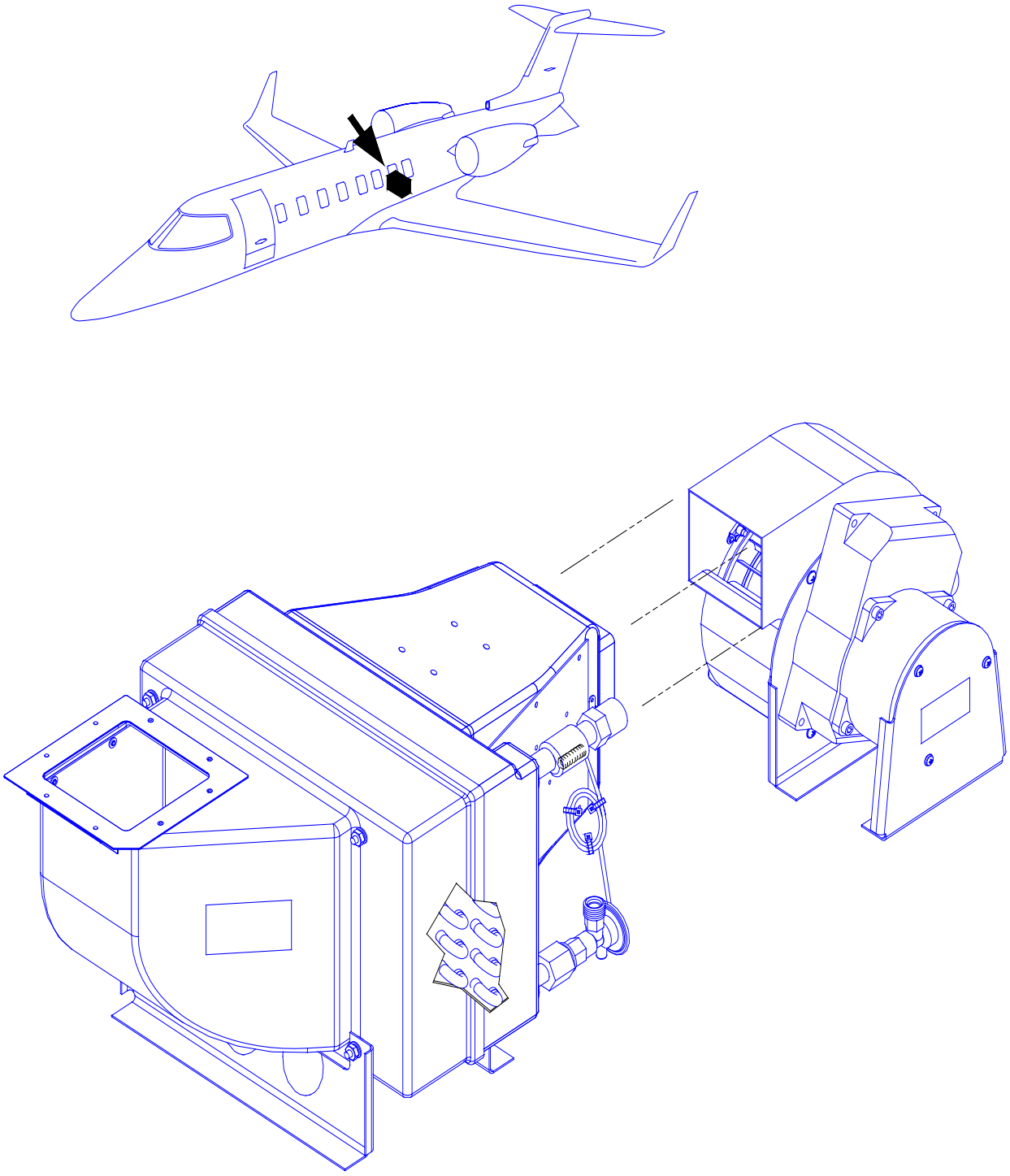
DOUBLER INSTALLATION



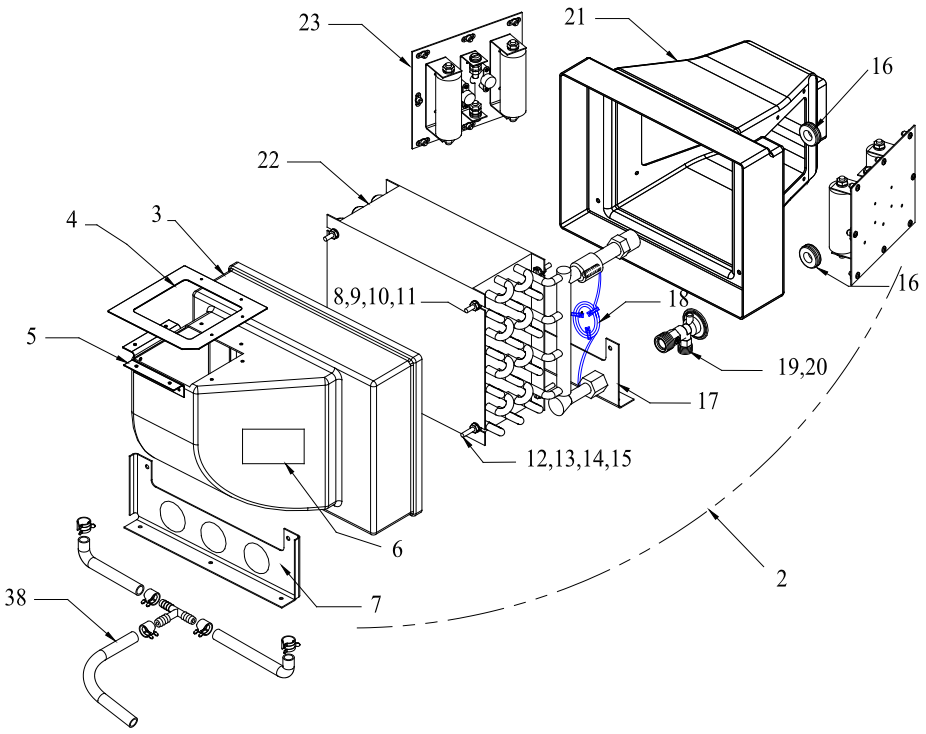
BAGGAGE DOUBLER INSTALLATION

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0800-1	Plumbing Installation	1
	2	• ES49011-1	O-Ring	12
	3	• ES40151-1	Fitting	4
	4	• ES48149-1	Hose, 5/16 I.D. (IN)	860
	5	• ES26104-1	Expansion Valve	Ref
	6	• ES40151-6	Fitting	1
	7	• ES49011-2	O-Ring	3
	8	• ES06022-1	Tape Insulation (IN)	1620
	9	• ES48149-3	Hose, 1/2 I.D. (IN)	540
	10	• ES49011-3	O-Ring	9
	11	• ES40150-3	Fitting 45 º	2
	12	• ES40150-1	45º Fitting	4
	13	• ES40149-1	Fitting (Str.)	2
	14	• ES41061-1	Adapter Tee	1
	15	• ES41061-2	Adapter Tee	16
	16	• ES40149-3	Fitting (Str.)	1
	17	• ES40149-7	Fitting (Str.)	2
	18	• ES48149-4	Hose, 5/8 I.D. (IN)	320
	19	• 45-1800-1	Doubler	1
	20	• AN901-10A	Washer	1
	21	• JBS923-1	90º Fitting	1
	22	• 45-1800-2	Doubler	1
	23	• JBS6009-1	Fitting, BLKHD	2
	24	• ES49016-1	BLKHD Fitting, Nut	2
	25	• MS28775-114	O-Ring	1
	26	• MS28775-211	O-Ring	1
	27	• AN6289-10D	Nut	2
	28	• ES40150-4	45º Fitting	1
	29	• ES40151-7	Fitting	2
	30	• JBS6009-3	Bulk Head Fitting	1
	31	• AN924-10D	Nut	1
	32	• ES40150-7	45º Fitting	2
	33	• ES40158-4	Fitting	1
	34	• ES43030-2	Receiver Drier Bottle	1

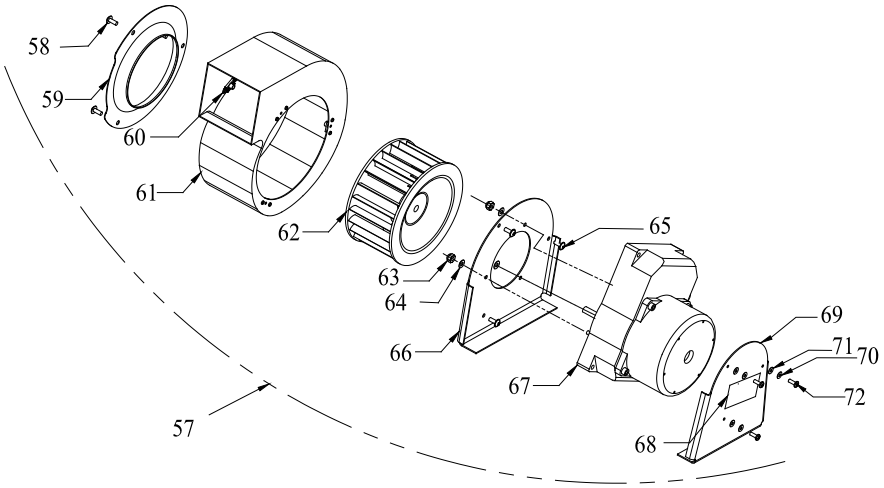
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	• ES40158-1	Fitting	1
	36	• ES40149-2	Fitting	2
	37	• ES48149-2	Hose, 13/32 I.D. (IN)	67
	38	• JBS2020-5	Press. Switch	Ref
	39	45-0800-2	Doubler Installation	
	40	• MS20470AD4-4	Rivet	68
	41	45-0800-3	Baggage Doubler Installation	



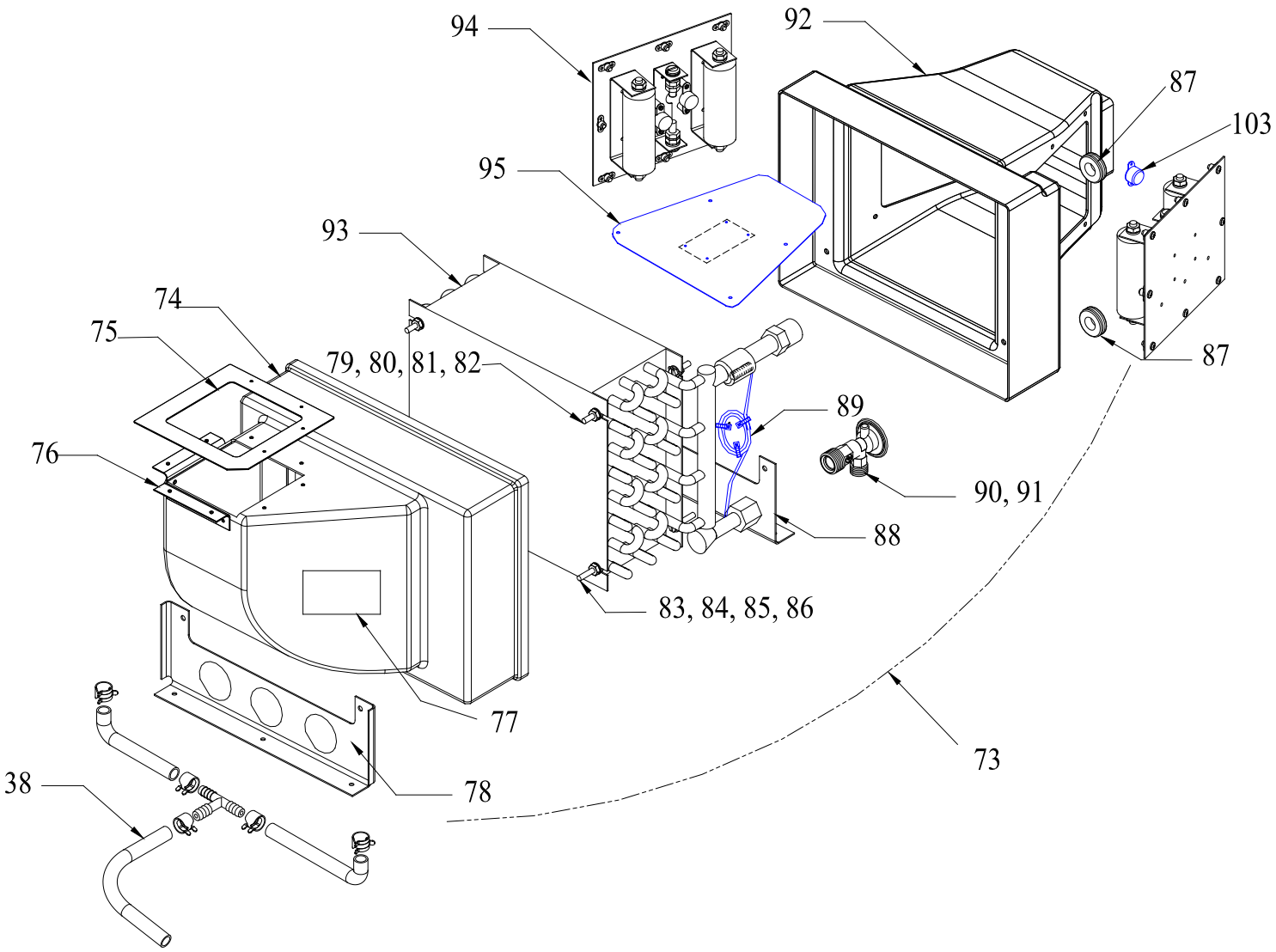
AFT Evaporator Installation



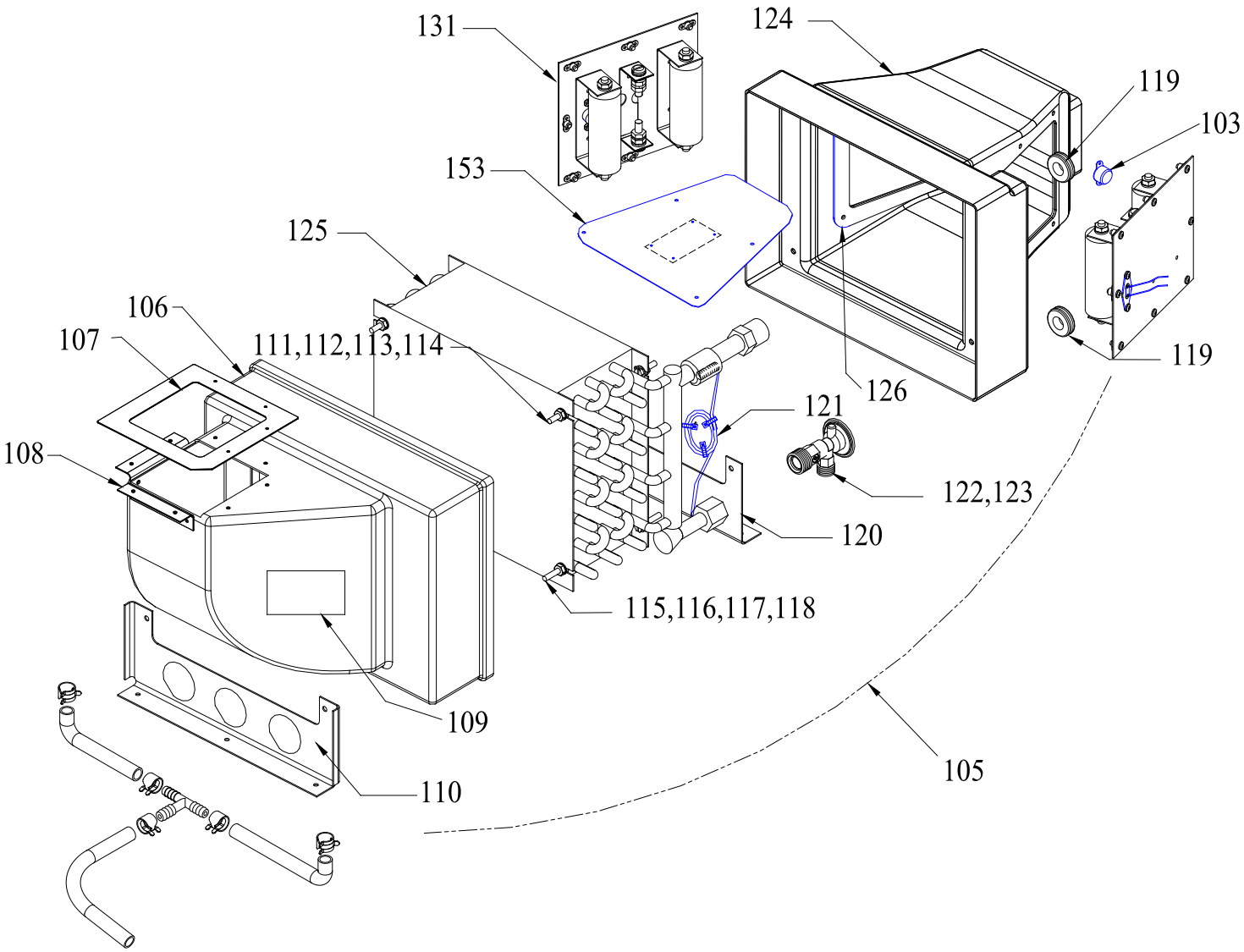
45-0260-1 Aft Evaporator Assembly



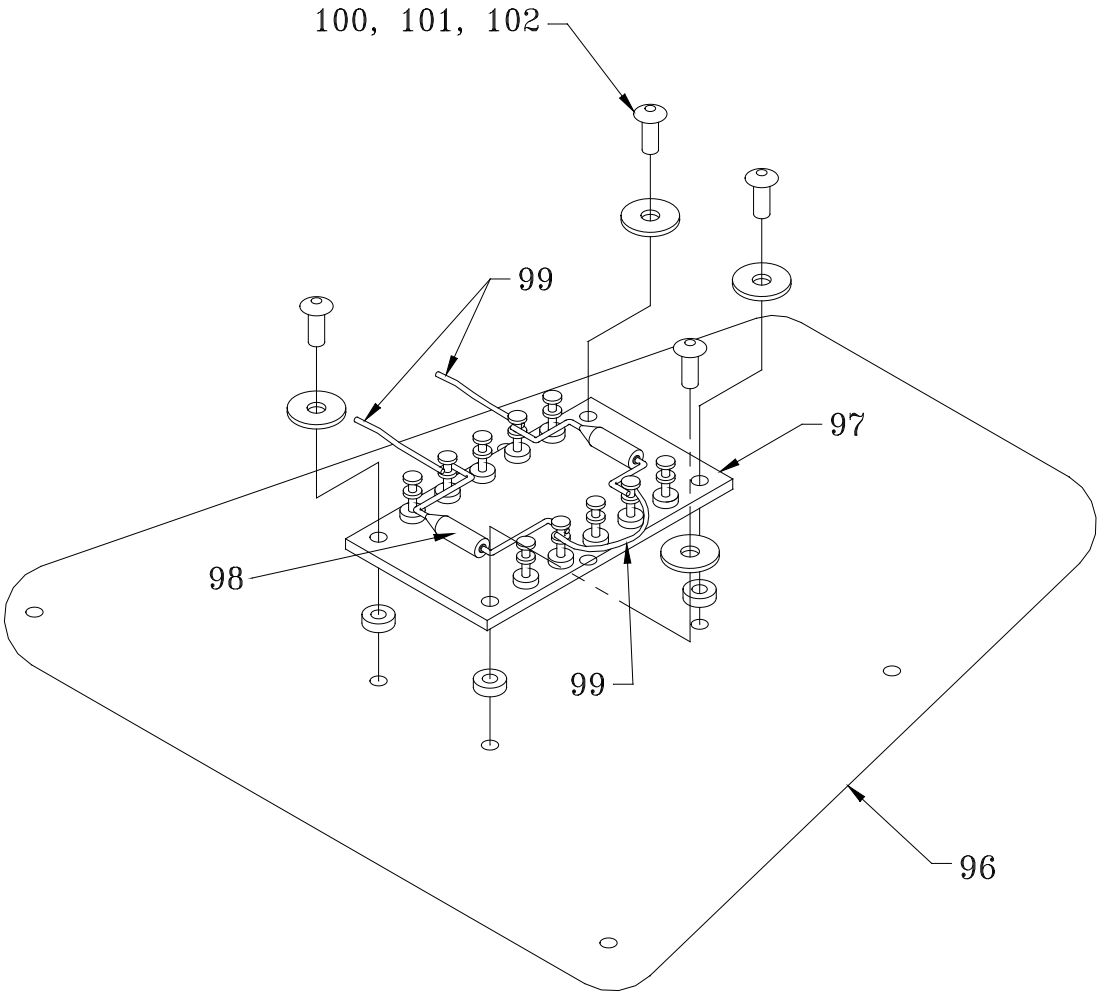
45-0261-2 Aft Blower Assembly



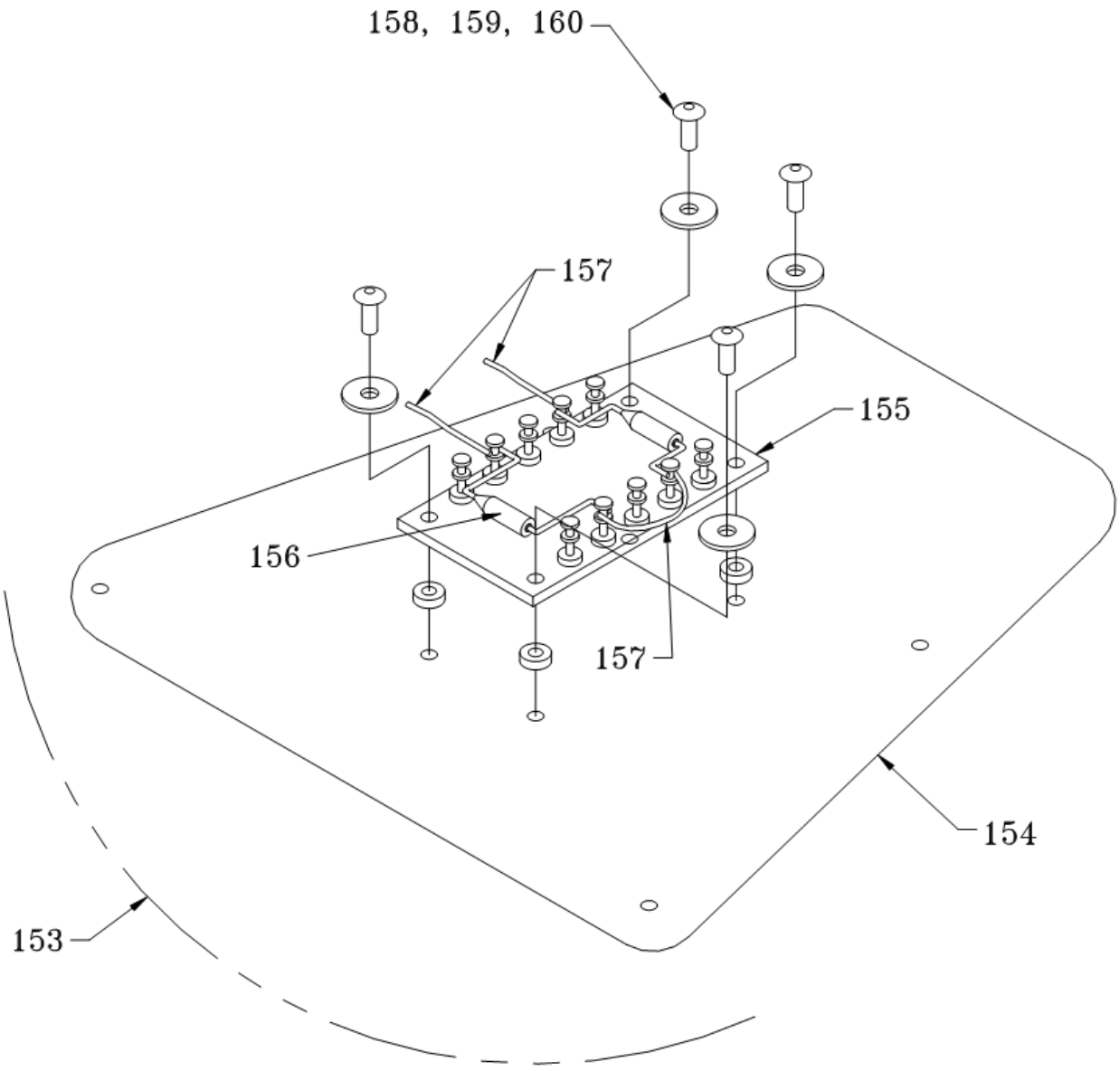
45-0260-2 Aft Evaporator Assembly



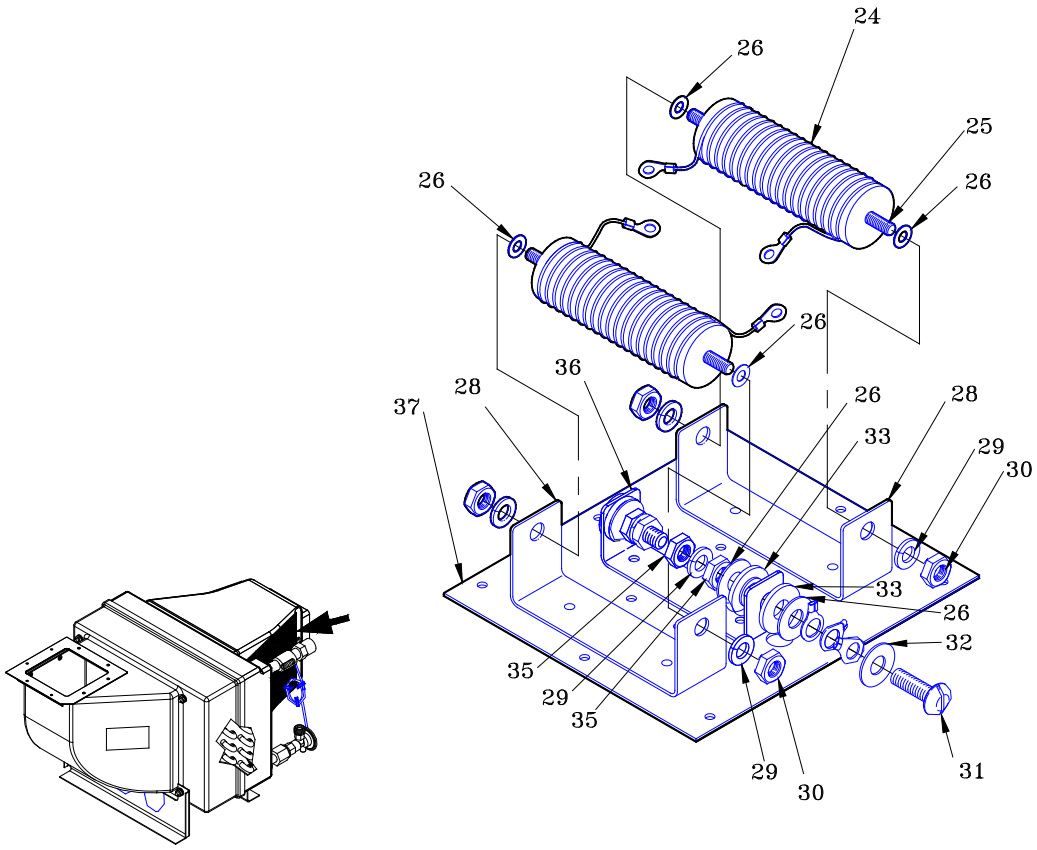
45-0260-4 Aft Evaporator Assembly



45-0260-3 Heat Shield Assembly

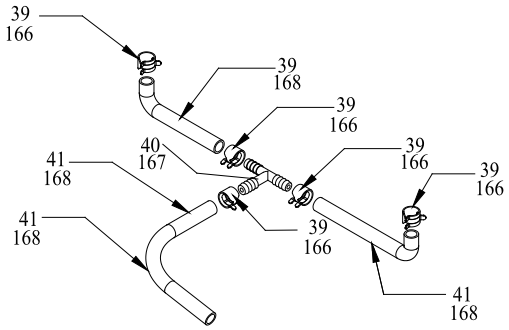


45-0262-1 Heat Shield Assembly

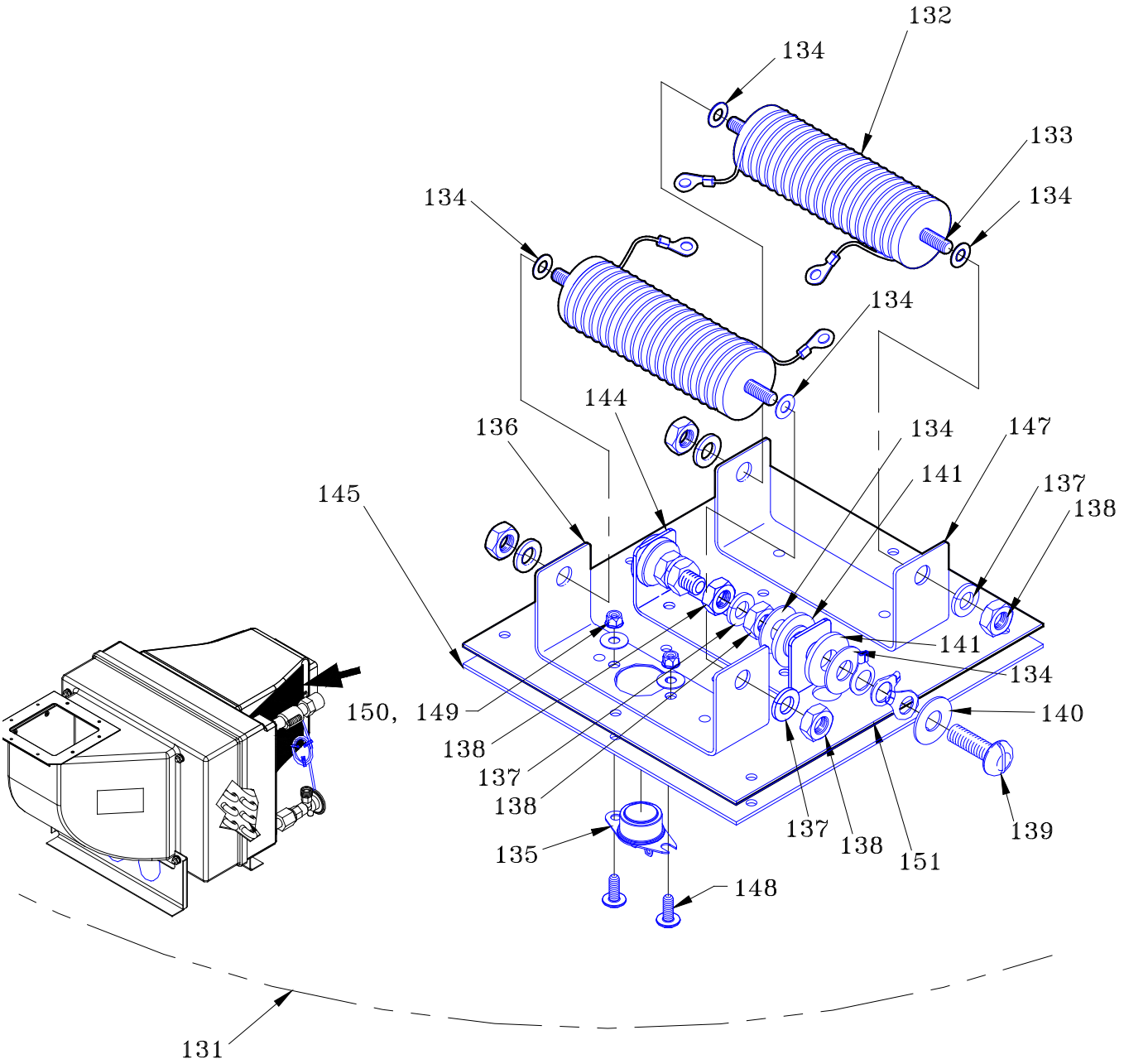


45-0280-1 HEATER ASSEMBLY

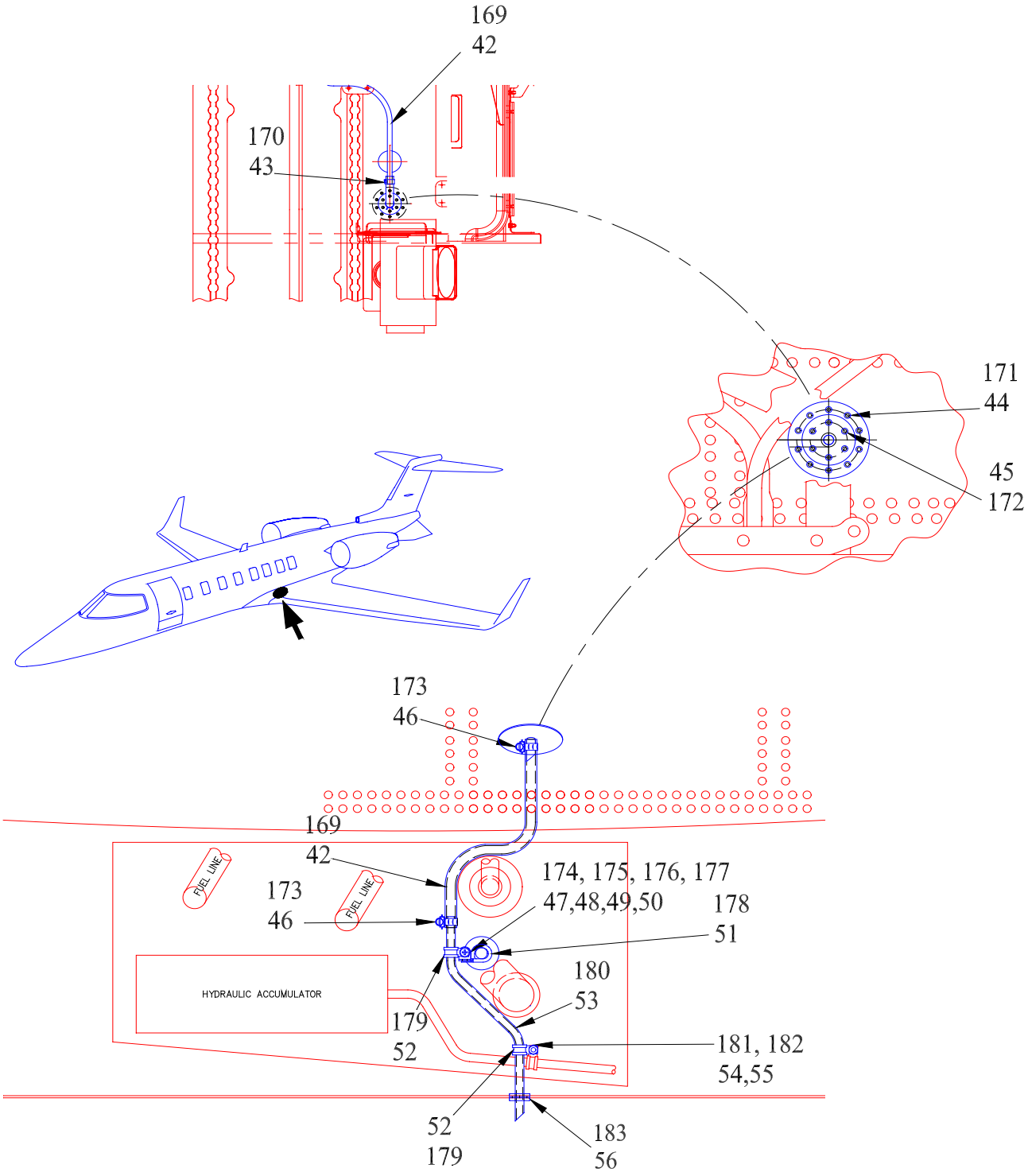
INACTIVE



DRAIN INSTALLATION
39 Thru 41 (45-210-1 only)
166 Thru 168 (45-210-1 only)



45-0281-1 HEATER ASSEMBLY



AFT EVAPORATOR DRAIN INSTALLATION

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0210-1	AFT Evaporation Installation (INACTIVE)	
	2	• 45-0260-1	AFT Evaporation Assembly (INACTIVE)	
	3	• • 45-1260-2	Housing Half	1
	4	• • 45-1260-5	Flange	1
	5	• • 45-1260-6	Angle	2
	6	• • JBS10-51	Placard	1
	7	• • 45-1260-3	Bracket	1
	8	• • MS51849-66	Bolt	2
	9	• • MS35338-43	Lock Washer	16
	10	• • AN960-10L	Flat Washer	12
	11	• • AN315-3	Nut	8
	12	• • MS51849-68	Bolt	4
	13	• • MS35338-43	Lock Washer	2
	14	• • AN960-10L	Flat Washer	12
	15	• • AN315-3	Nut	8
	16	• • MS35489-14	Grommet	2
	17	• • 45-1260-4	Bracket	1
	18	• • ES30015-5	Cable Tie	6
	19	• • ES26104-1	Expansion Valve	1
	20	• • ES49011-2	O-Ring R134a	1
	21	• • 45-1260-1	Housing Half	1
	22	• • JBS2041-10	Coil Assembly	1
	23	• • 45-0280-1	Heat Assembly (INACTIVATED)	2
	24	• • • ES52137-1	Heater Element	4
	25	• • • JBS15031-1	Stud	4
	26	• • • AN960C416	Washer	8
	27	RESERVED		
	28	• • • 31-1280-2	Bracket	4
	29	• • • MS35338-139	Lock Washer	6
	30	• • • AN315C4	Nut	4
	31	• • • ES35010-1	Screw	2
	32	• • • AN960C416L	Washer	2
	33	• • • ES38127-6	Insulating Washer	4
	34	RESERVED		

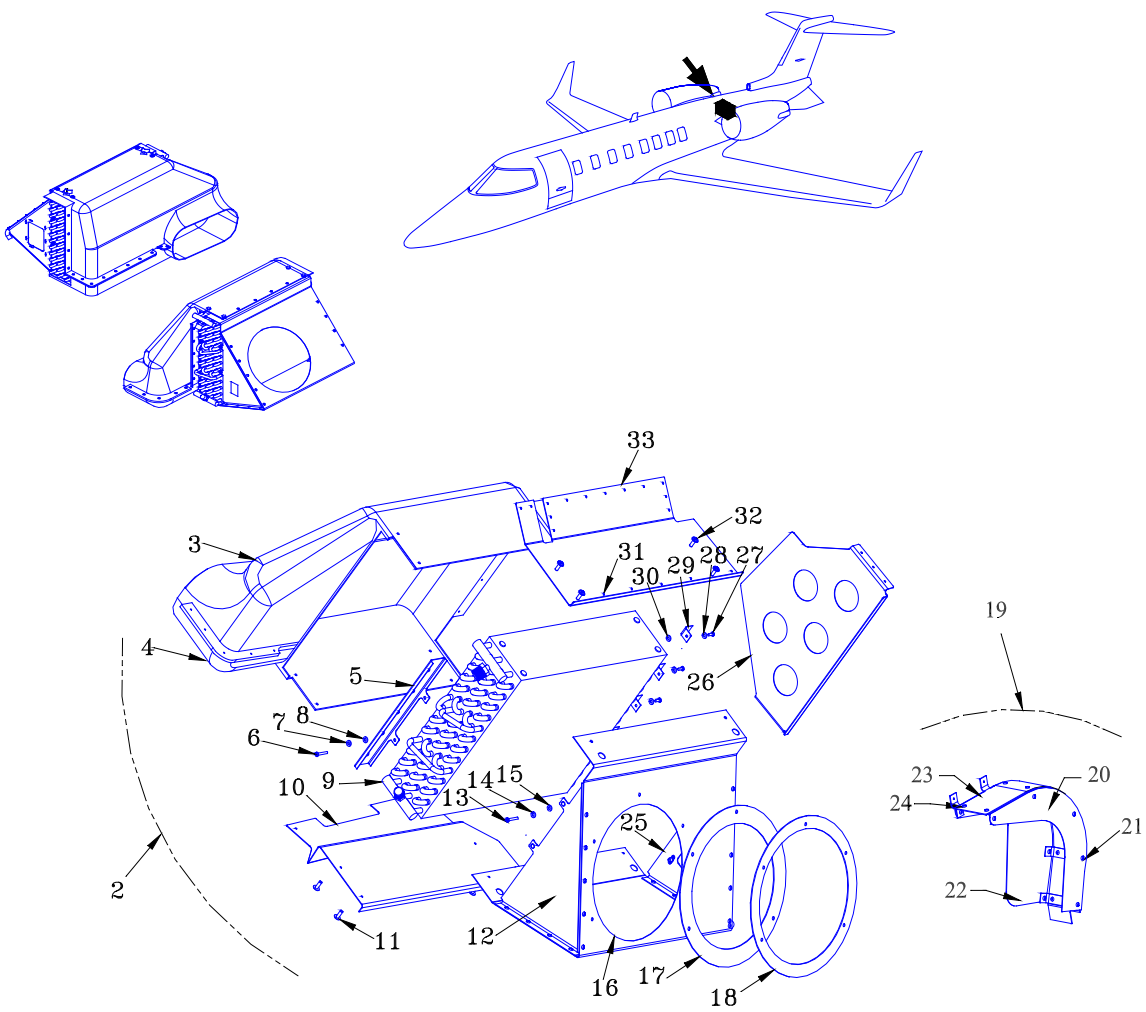
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	• • • AN315C4R	Nut	8
	36	• • • 31-1280-3	Bracket	2
	37	• • • 31-1280-1	Mounting Plate	2
	38	RESERVED		
	39	• • ES30001-1	Clamp, Hose	5
	40	• • ES40121-2	Tee-plastic	1
	41	• • ES48012-1	Tube, Drain (IN.)	42
	42	• • • ES48012-2	Tubing (IN)	20
	43	• • • ES30001-2	Clamp, Hose	2
	44	• • • ES31101DS4-3	Rivet	10
	45	• • • ES31101DS4-4	Rivet	6
	46	• • • ES30043-2	Clamp	2
	47	• • • AN525-10R8	Screw	1
	48	• • • AN960-10	Washer	1
	49	• • • MS20365-1032	Nut	1
	50	• • • AN743-12	Angle	1
	51	• • • MS21919WDG8	Clamp	1
	52	• • • MS21919WDG6	Clamp	1
	53	• • • 45-1260-10	Drain, Tube	1
	54	• • • AN3-7A	Bolt	1
	55	• • • NAS42DD6-32	Spacer	1
	56	• • • MS35489-11	Grommet	1
	57	45-0261-2	AFT Blower Assembly	1
	58	• AN525-832R6	Screw	3
	59	• ES73128-6	Inlet Ring	1
	60	• • MS21059L08	Nut Plate	6
	61	• • ES73128-4	Blower Housing	1
	62	• • ES73100-7	Blower Wheel	1
	63	• • MS21044N08	Nut	3
	64	• • AN960-8L	Washer	3
	65	• • AN525-832R7	Screw	3
	66	• • 45-1260-7	Blower Bracket	1
	67	• • ES61136-2	Motor Brushless	1
	68	• • JBS10-51	Placard	1

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	69	45-1260-8	Motor Bracket	1
	70	MS35338-155	Lock Washer	3
	71	AN960-4L	Flat Washer	3
	72	AN515-4R10	Screw	3
	73	45-0260-2	AFT Evaporation Assembly (INACTIVE)	
	74	• 45-1260-2	Housing Half	1
	75	• 45-1260-5	Flange	1
	76	• 45-1260-6	Angle	2
	77	• JBS10-51	Placard	1
	78	• 45-1260-3	Bracket	1
	79	• MS51849-66	Bolt	2
	80	• MS35338-43	Lock Washer	16
	81	• AN960-10L	Flat Washer	12
	82	• AN315-3	Nut	8
	83	• MS51849-68	Bolt	4
	84	• MS35338-43	Lock Washer	2
	85	• AN960-10L	Flat Washer	12
	86	• AN315-3	Nut	8
	87	• MS35489-14	Grommet	2
	88	• 45-1260-4	Bracket	1
	89	• ES30015-5	Cable Tie	6
	90	• ES26104-1	Expansion Valve	1
	91	• ES49011-2	O-Ring R134a	1
	92	• 45-1260-1	Housing Half	1
	93	• JBS2041-10	Coil Assembly	1
	94	• 45-0280-1	Heat Assembly	
	95	• 45-0260-3	Heat Shield Assembly (INACTIVATED)	1
	96	45-1260-9	Heat Shield	1
	97	• ES53024-1	Terminal Block	1
	98	• ES51063-1	Thermal Fuse	2
	99	• ES54152-20	Wire (in.)	50
	100	• ES31100-3	Rivet	4
	101	• AN960PD5	Washer	4
	102	• NAS42DD4-5	Spacer	4

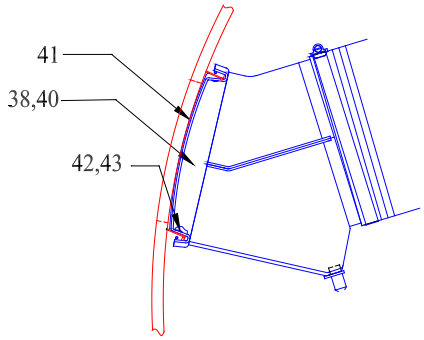
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	103	• ES53128-1	Temp Switch	1
	104	45-0210-3	Aft Evaporator Installation	
	105	• 45-0260-4	AFT Evaporation Assembly	1
	106	• • 45-1260-2	Housing Half	1
	107	• • 45-1260-5	Flange	1
	108	• • 45-1260-6	Angle	2
	109	• • JBS10-51	Placard	1
	110	• • 45-1260-3	Bracket	1
	111	• • MS51849-66	Bolt	2
	112	• • MS35338-43	Lock Washer	16
	113	• • AN960-10L	Flat Washer	12
	114	• • AN315-3	Nut	8
	115	• • MS51849-68	Bolt	4
	116	• • MS35338-43	Lock Washer	2
	117	• • AN960-10L	Flat Washer	12
	118	• • AN315-3	Nut	8
	119	• • MS35489-14	Grommet	2
	120	• • 45-1260-4	Bracket	1
	121	• • ES30015-5	Cable Tie	6
	122	• • ES26104-1	Expansion Valve	1
	123	• • ES49011-2	O-Ring R134a	1
	124	• • 45-1260-1	Housing Half	1
	125	• • JBS2041-10	Coil Assembly	1
	126	• • 45-1261-1	Garlock	2
	127	Deleted		
	128	Deleted		
	129	Deleted		
	130	Deleted		
	131	• • 45-0281-1	Heater Assembly	2
	132	• • • ES52137-1	Heater Element	2
	133	• • • JBS15031-1	Stud	2
	134	• • • AN960-C416	Washer	8
	135	• • • ES53128-3	Thermostat	1
	136	• • • 45-1282-1	Bracket	2

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	137	• • • MS35338-139	Lock Washer	6
	138	• • • AN315C4R	Nut	8
	139	• • • ES35010-1	Screw	2
	140	• • • AN960-C416L	Washer	2
	141	• • • ES38127-6	Insulating Washer	4
	142	Deleted		
	143	Deleted		
	144	• • • 31-1280-3	Bracket	1
	145	• • • 45-1281-1	Mounting Plate	1
	146	• • • MS21042-06	Nut	2
	147	• • • 31-1280-2	Bracket	1
	137	• • • MS35338-139	Lock Washer	6
	138	• • • AN315C4R	Nut	8
	139	• • • ES35010-1	Screw	2
	140	• • • AN960-C416L	Washer	2
	141	• • • ES38127-6	Insulating Washer	4
	142	Deleted		
	143	Deleted		
	144	• • • 31-1280-3	Bracket	1
	145	• • • 45-1281-1	Mounting Plate	1
	146	• • • MS21042-06	Nut	2
	147	• • • 31-1280-2	Bracket	1
	148	• • • AN526-632R6	Screw	2
	149	• • • AN960-6L	Washer	2
	150	• • • MS21042-06	Nut	2
	151	• • • 45-1283-1	Garlock	1
	152			
	153	• • 45-0262-1	Heat Shield Assembly	1
	154	• • • 45-1260-12	Heat Shield	1
	155	• • • ES53024-1	Terminal Block	1
	156	• • • ES51063-1	Thermal Fuse	2
	157	• • • ES54152-20	Wire (in.)	55
	158	• • • ES31100-3	Rivet	4
	159	• • • AN960PD5	Washer	4

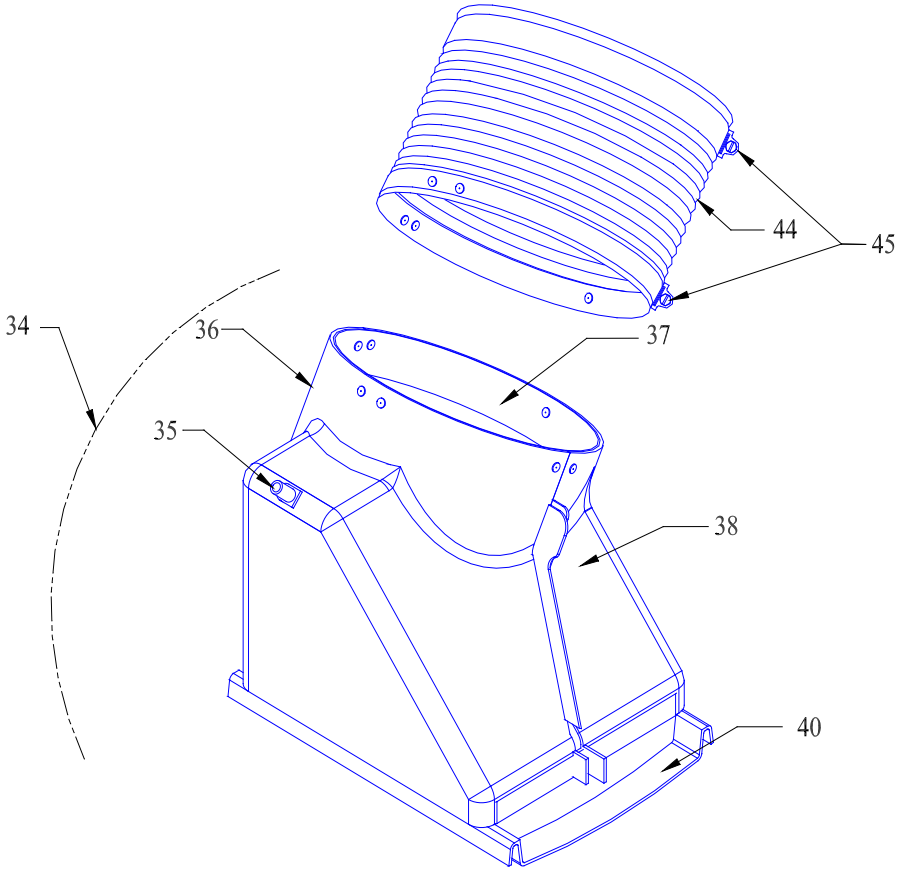
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	160	• • • NAS42DD4-5	Spacer	4
	161	Deleted		
	162	Deleted		
	163	Deleted		
	164	Deleted		
	165	Deleted		
	166	• • ES30001-1	Clamp, Hose	5
	167	• • ES40121-2	Tee-plastic	1
	168	• • ES48012-1	Tube, Drain (IN.)	42
	169	• • • ES48012-2	Tubing (IN)	20
	170	• • • ES30001-2	Clamp, Hose	2
	171	• • • ES31101DS4-3	Rivet	10
	172	• • • ES31101DS4-4	Rivet	6
	173	• • • ES30043-2	Clamp	2
	174	• • • AN525-10R8	Screw	1
	175	• • • AN960-10	Washer	1
	176	• • • MS20365-1032	Nut	1
	177	• • • AN743-12	Angle	1
	178	• • • MS21919WDG8	Clamp	1
	179	• • • MS21919WDG6	Clamp	2
	180	• • • 45-1260-10	Drain, Tube	1
	181	• • • AN3-7A	Bolt	1
	182	• • • NAS42DD6-32	Spacer	1
	183	• • • MS35489-11	Grommet	1



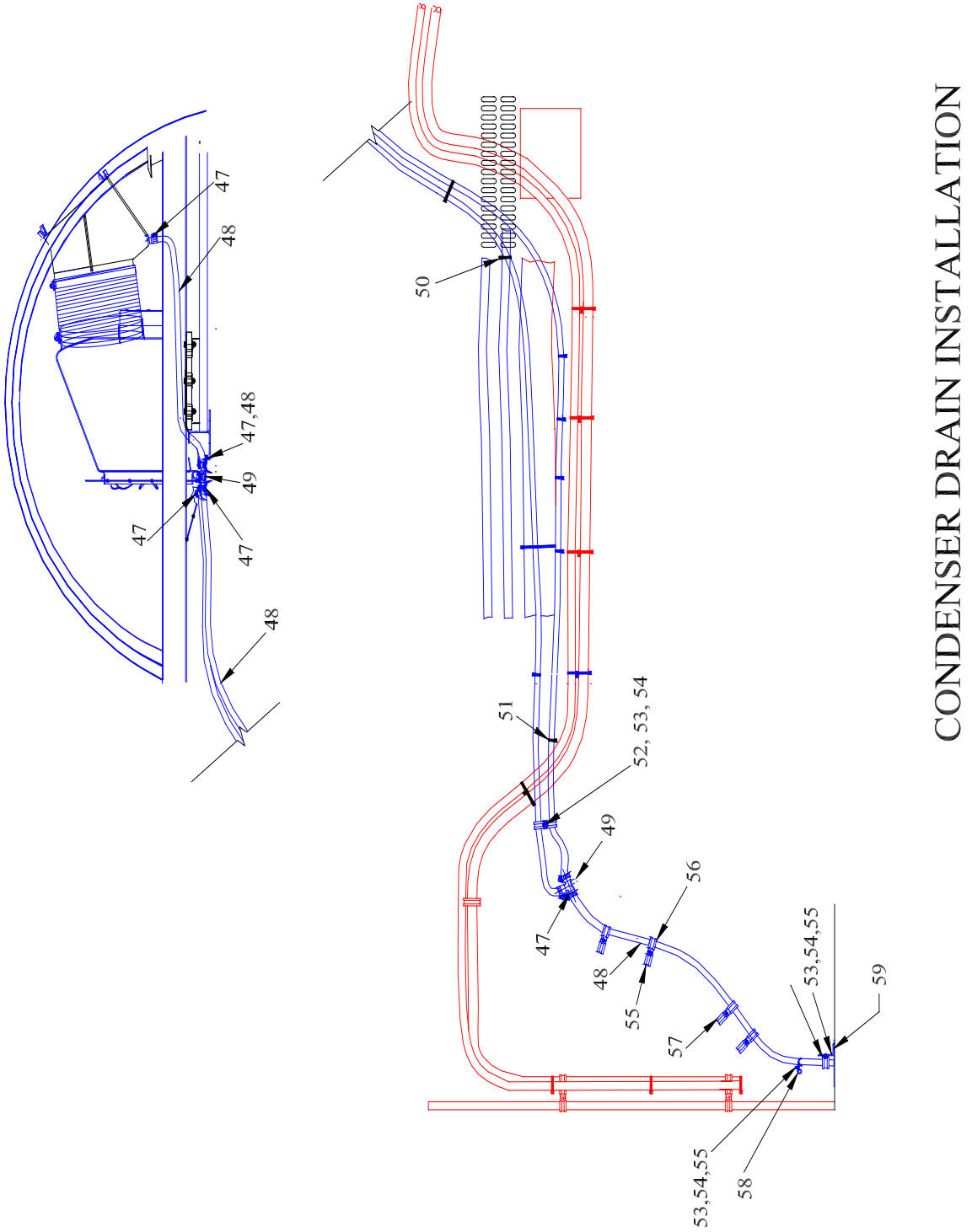
45-0500-5 CONDENSER INSTALLATION



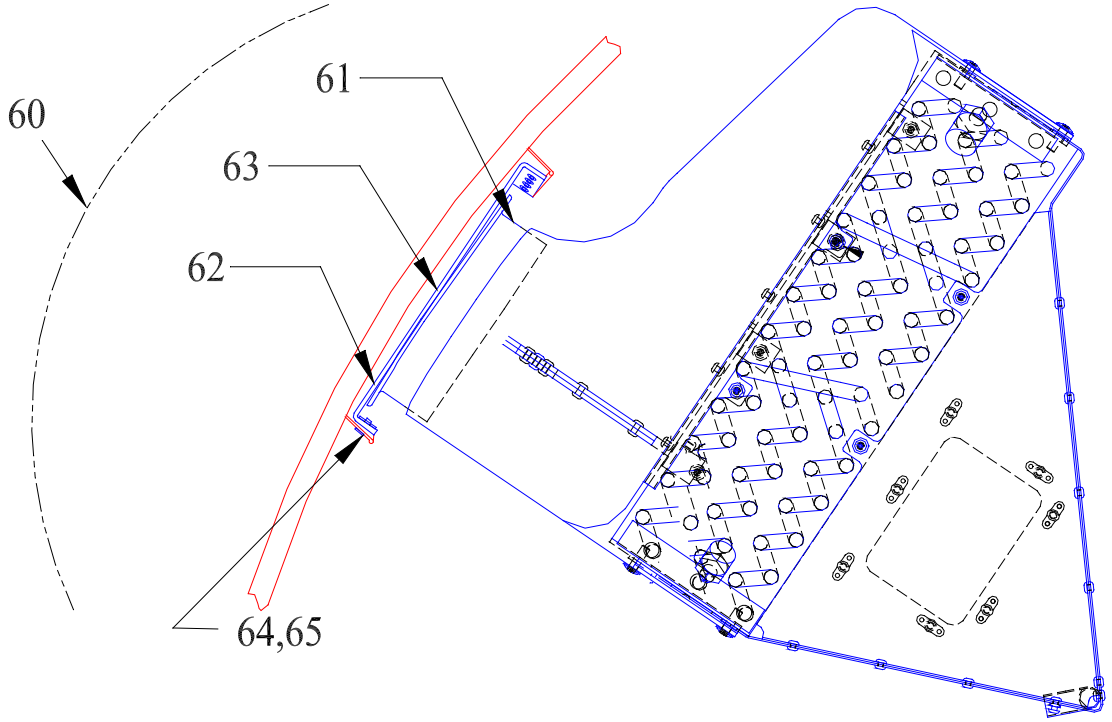
45-0500-3 INLET DUCT INSTALLATION



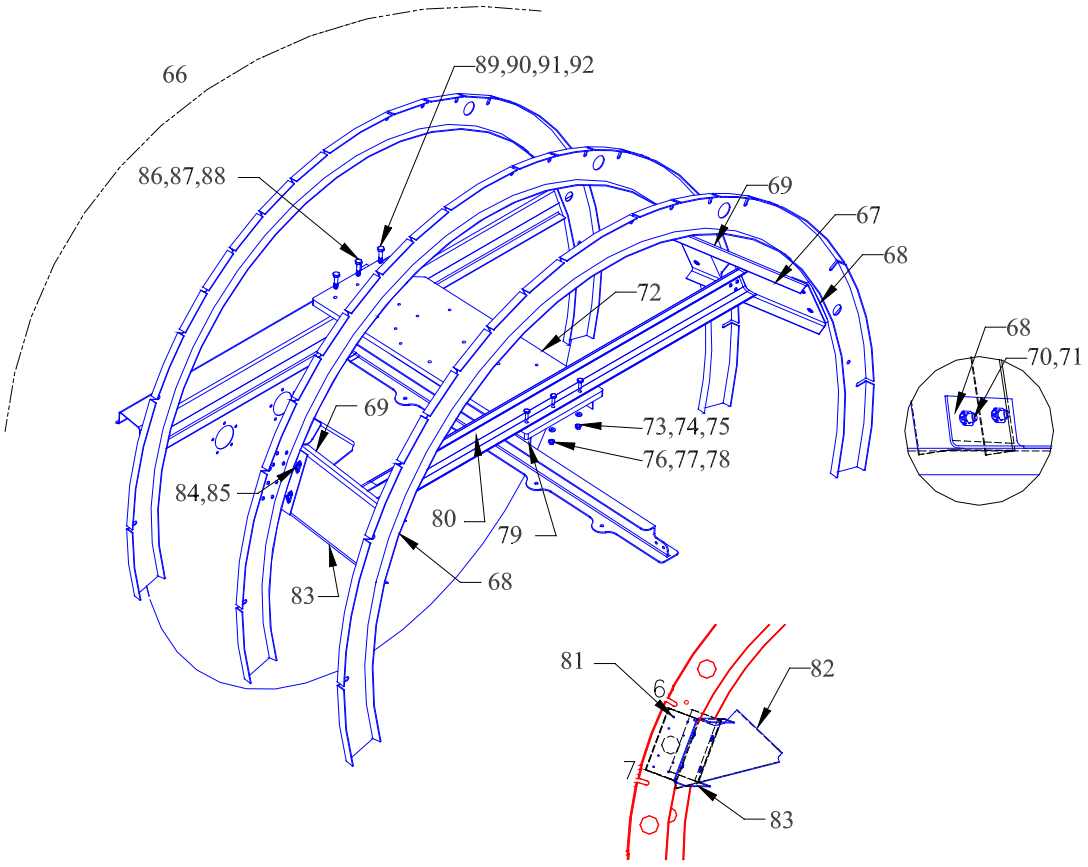
DUCT ASSEMBLY



CONDENSER DRAIN INSTALLATION



CONDENSER EXHAUST DUCT INSTALLATION

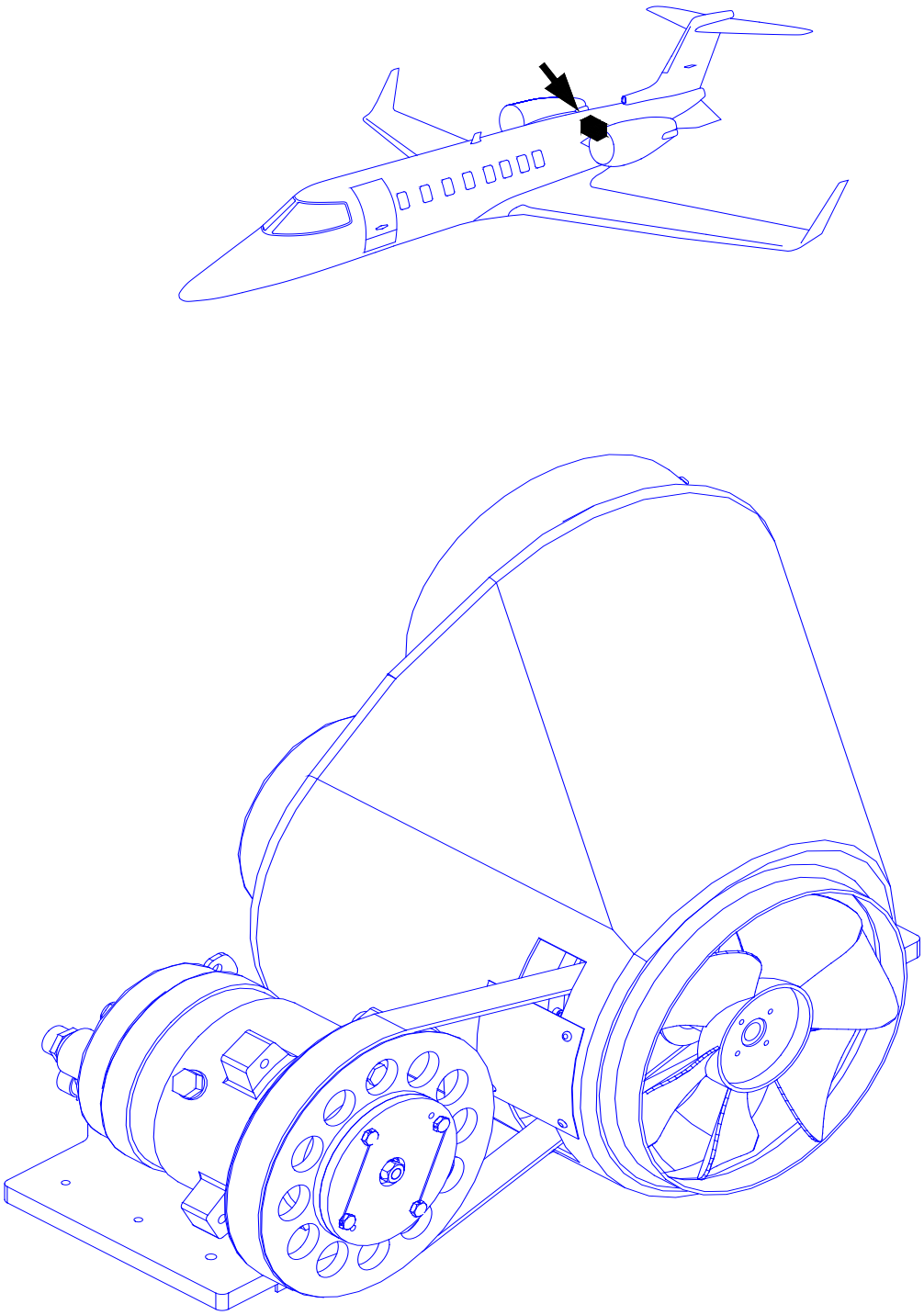


Intercostal/Pallet Installation

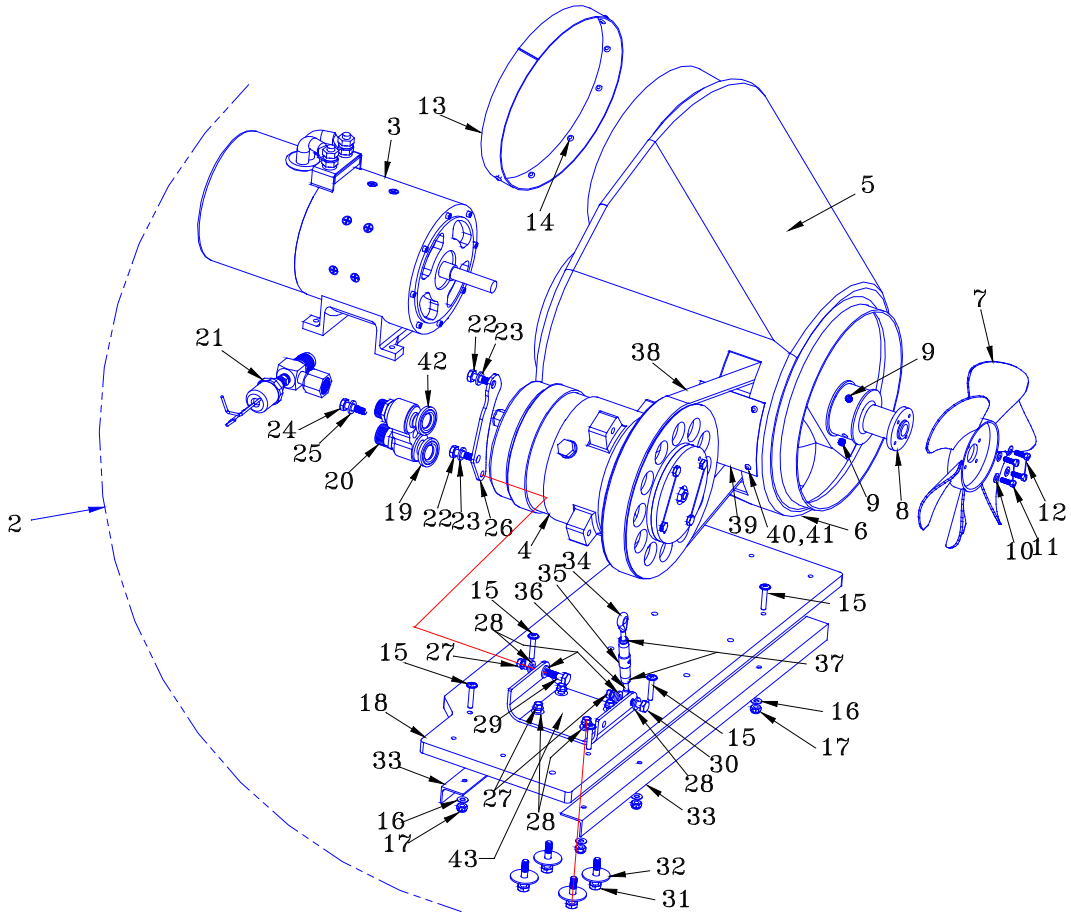
FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
01	1	45-0500-5	Condenser Installation	1
01	2	•45-0350-1	Condenser Assembly	1
	3	• •45-1550-10	Condenser Housing	1
	4	• •45-1550-11	Condenser Housing	1
	5	• •45-1550-8	Close-Out Bracket	1
	6	• •AN530-6RF6	Screws	2
	7	• •AN960-6L	Washer	2
	8	• •MS35338-41	Lock Washer	2
	9	• •JBS3006-3	Condenser	1
	10	• •45-1500-4	Bracket	1
	11	• •AN525-10R9	Screws	4
	12	• •45-1500-23	Condenser Mount Bracket	1
	13	• •AN530-6RF6	Screws	4
	14	• •AN960-6L	Washer	4
	15	• •MS35338-41	Lock Washer	4
	16	• •45-1500-24	Condenser Mount Bracket	1
	17	• •45-1500-21	Backing Ring	1
	18	• •45-1500-20	Seal Ring	1
	19	• • •45-0560-1	Belt Guard Assembly	
	20	• • • • 45-1560-2	Panel	1
	21	• • • • 45-1560-3	Bracket	4
	22	• • • • 45-1560-21	Panel	1
	23	• • • • 45-1560-4	Guard	1
	24	• • • • AN525-832R6	Screws	4
	25	• •45-1500-22	Condenser Mounting Bracket	1
	26	• •45-1500-2	Bracket	1
	27	• •AN525-10R9	Screws	4
	28	• •AN960-6L	Washer	4
	29	• •ES34124-1	Nut Clip	10
	30	• •MS35338-41	Lock Washer	4
	31	• •ES31100-3	Rivet	4
	32	• •AN525-10R9	Screws	4
	33	• •45-1500-1	Bracket	1
	34	• •45-0650-1	Duct Assembly	

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	• • • •ES49006-4	Drain	1
	36	• • • •45-1550-2	Half Duct	1
	37	• • • •82-02-316-4	Band	1
	38	• • • •45-1550-3	Half Duct	1
	39	• • 45-0500-3	Inlet Duct Installation	1
	40	• • • •45-1500-1	Inlet Duct	1
	41	• • • •45-1500-8	Screen	2
	42	• • • • •AN960-5L	Washer	8
	43	• • • • •ES31100-3	Rivet	8
	44	• • • • •ES70009-8	Flex Duct	12
	45	• • • • •ES30042-11	Clamp	2
	46	45-0500-2	Drain Installation	
	47	•ES30043-2	Clamp	9
	48	•ES48012-4	Tube, Drain (IN.)	264
	49	•ES49008-2	Tee, Drain	2
	50	•ES30015-2	Cable Tie	3
	51	•ES30015-6	Cable Tie	6
	52	•AN520-10R8	Screw	7
	53	•MS21042L3	Nut	7
	54	•AN960-10L	Washer	8
	55	•MS21919WDG6	Clamp	2
	56	•MS21919WDG11	Clamp	8
	57	•MS21919WDG8	Clamp	2
	58	•45-1500-25	Drain Support	1
	59	•MS20470A4-9	Rivet	2
	60	45-0500-6	Exhaust Duct Installation	
	61	• •45-1550-9	Exhaust Duct	1
	62	• •45-1500-6	Exhaust Cover	1
	63	• •45-1500-8	Screen	1
	64	• •ES31100-3	Rivet	8
	65	• • AN960-5L	Washer	8
	66	45-0500-4	Intercostal Installation	1
	67	• •45-1500-9	Frame Channel	1
	68	• •45-1500-12	Bracket	2

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	69	• •45-1500-11	Bracket	2
	70	• • MS21059L3	Nut Plate	4
	71	• • NAS1097AD3-3	Rivet	16
	72	• 45-0550-1	Compressor Pallet Assy.	1
	73	• • AN3-11A	Bolt	1
	74	• • AN960-10	Washer	2
	75	• • MS21042-3	Nut	5
	76	• • AN3-11A	Bolt	2
	77	• • AN960-10	Washer	2
	78	• • AN970-3	Washer	1
	79	• • MS21266-1N	Grommet Strip (IN>)	2
	80	• • 45-1500-17	Support Channel	1
	81	• • ES31101DS4-4	Rivet	8
	82	• • 45-1500-18	Bracket	1
	83	• • 45-1500-10	Frame Channel	1
	84	• • •MS21059L3	Nut Plate	4
	85	• • •AN3-4A	Screw	8
	86	• • •AN4-13A	Bolt	2
	87	• • •AN970-3	Washer	1
	88	• • •AN960-416	Washer	2
	89	• • •AN3-10A	Bolt	1
	90	• • •AN960-10	Washer	1
	91	• • •AN970-3	Washer	1
	92	• • •MS21042-3	Nut	1



Compressor Installation



COMPRESSOR PALLET ASSEMBLY

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	1	45-0500-1	Compressor Pallet Installation	
	2	45-0550-1	Compressor Pallet Assembly	1
	3	• ES61110-4	Motor, Compressor	1
	4	• JBS222-1	Compressor Assembly	1
	5	• 45-1550-4	Housing Half	1
	6	• 45-1550-5	Housing Half	1
	7	• JBS13015-2	Fan Blade Assembly	1
	8	• • • JBS15015-4	Pulley	1
	9	• • • ES31030-1	Screw, Locking Nylon	2
	10	• • • AN960-8L	Washer	4
	11	• • • AN503-8-8	Screw	4
	12	• • • MS20995C28	Lockwire	A/R
	13	• 82-02-316-4	Band	1
	14	• ES31100-1	Rivet	6
	15	• AN525-10R16	Screw	6
	16	• AN960-10	Washer	6
	17	• MS20365-1032	Nut	6
	18	• 45-0552-1	Compressor Pallet Assembly	1
	19	• ES38112-1	Seal Washer, Suction	1
	20	• ES49024-1	Manifold Fitting, Compressor	1
	21	• JBS2020-5	Pressure Switch	1
	22	• • • ES39112-4	Bolt	2
	23	• • • ES38128-4	Lock Washer	2
	24	• • • ES39112-5	Bolt	1
	25	• • • ES38128-5	Lock Washer	1
	26	• • • 135-1550-12	Compressor Bracket	1
	27	• • • MS21042-4	Nut	8
	28	• • • AN960-416	Washer	23
	29	• • • AN4-6A	Bolt	1
	30	• • • AN4-7A	Bolt	1
	31	• • • AN4-11A	Bolt	4
	32	• • • AN970-4	Washer	8
	33	• • • 45-1550-12	Angle	2
	34	• • • MS21254-5RS	Eye End	1

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
	35	• • • MS21254-5LS	Eye End	1
	36	• • • MS21251-A5S	Turnbuckle	1
	37	• • • MS21256-1	Clip Locking Turnbuckle	1
	38	• • • ES20040-6	Belt Ribbed	1
	39	• • • 45-1550-6	Arc Clip	1
	40	• • • ES34124-1	Nutclip	15
	41	• • • AN525-832R6	Screw	15
	42	• • • ES38113-1	Seal Washer, Disch	1
	43	• • • 135-1550-35	Compressor Bracket	1

Appendix A

TO INSTALLER OF MEGGITT (ADDISON) INC. AIR CONDITIONING SYSTEM

BEFORE YOU BEGIN YOUR INSTALLATION

Find the provided BILL OF MATERIAL (BOM) and check to ensure that all materials indicated, and the quantities indicated, are in the kit you just received.
Note that this BOM has the SERIAL NUMBER that MEGGITT (ADDISON) INC. has assigned and the SYSTEM PART NUMBER of air-conditioning system on it.

Find the copies of the installation drawings and review them to get the full understanding of how the kit is to be installed. If questions should arise try to resolve them before proceeding with the installation.

If a SWAGE KIT or BUBBLE KIT has been provided as a loaner tool read the instructions enclosed in the kit to ensure that you know how to use the tool properly.

REQUIRED TOOLS

Crimper model 3700-H (Recommended brand ATCO)

DIE #3606-RB
For hose ES48149-1 & fittings ES40149 (-1 & -5), ES40150 (-1 & -5) & ES40151 (-1 & -5)
*Recommended torque 11-13 ft/lbs
DIE #3608-RB
For hose ES48149-2 & fittings ES40149 (-2 & -6), ES40150 (-2 & -6) & ES40151 (-2, -6 & -8)
*Recommended torque 15-20 ft/lbs
DIE #3610-RB
For hose ES48149-3 & fittings ES40149 (-3 &-7), ES40150 (-3 & -7), ES40151 (-3 & -7)
*Recommended torque 21-27 ft/lbs
DIE #3612-RB
For hose ES48149-4 & fittings ES40149 (-4 & -10), ES40150 (-4), ES40151 (-4 & -9)
*Recommended torque 28-33 ft/lbs

Sealant (Ref #ES49000-1) is to be applied to all fittings and mating surface.
Note…. The part number of sealant is included in BOM, but not necessarily found on the plumbing schematic.

If a disconnection of the fitting is to occur, ensure that sealant is applied before reconnecting.

DURING THE INSTALLATION

If errors are found in the copies of the installation drawings and are confirmed by KEITH, please mark the areas of concern with the necessary corrections for future reference.

WHEN YOU FINISH YOUR INSTALLATION

When making the appropriate entries in the aircraft log book please note the Serial Number and Part Number in the entry.

Save all contents of the Data Pack that was provided with the kit. The paperwork should include the General Service Manual for Vapor Cycle air-conditioning, the copies of installation drawings, BOM, STC, FMS, Weight and Balance Sheet. It is imperative that this Data Pack be given to the Owner/Operator for future referencing purposes.