



SERVICE INSTRUCTION

SI-21-06
Revision 0

TITLE: Air Conditioner Airflow Improvement

SUBJECT / REASON / DESCRIPTION:

The air conditioner installation in aircraft SN 306 has not been effective at outside air temperatures above 100F due to limited airflow in the evaporator system. Therefore, to maximize the conditioned air flow into the cabin, the evaporator has been moved forward in the aft fuselage to reduce duct inlet and outlet length. The location chosen for the evaporator requires removal of the centre aft seat shoulder harness, thus reducing the aft seat capacity to two passengers.

COMPLIANCE:

Compliance is optional.

EFFECTIVITY:

Aircraft S/N 306

APPROVAL:

This modification has been approved by FAC Engineering and TCCA where applicable.

MANPOWER REQUIREMENTS:

It is estimated that the modification will take approximately 80 man-hours. This excludes labor necessary to open and close the aircraft, and work is performed by experienced personnel.

SPECIAL TOOLS / EQUIPMENT:

- R134a compatible recycling/recovery unit.
- Ground Power Unit (GPU) capable of supplying more than 45 amps of current at 28 V.D.C.

PARTS LIST (BILL OF MATERIALS):

Evaporator Case Kit: FAC-SI-21-06A Rev 0

QTY	P/N	Description
1	Q2495	Evaporator Case Assy.

Condenser Case Kit: FAC-SI-21-06B Rev 0

QTY	P/N	Description
1	F2857 Iss 2 (Iss 3 preferable)	Top Wall (Condenser Case)
2	F2865 Iss 2	Compressor Mount
1	F2957	Controller Box Assy
1	F2969	Attachment Angle
1	F2975 Iss 2	Inlet Deflector
2	ME80252V1-0000-A99	Fan
2	92070	Grommet, Closed Back (Grote)
2	T-5	Plug (red)
4	MS21059L3	Nut Plate
4	MS21059L08	Nut Plate
4	AN3-4A	Bolt
4	AN960-10L	Washer
8	AN525-832R22	Screw
8	AN960-8L	Washer

Cargo Bulkhead Kit: FAC-SI-21-06C Rev 0

QTY	P/N	Description
1	F2417 Iss 2	Frame (Side)
1	F2418 Iss 2	Frame (Side)
1	F2419 Iss 3	Frame (Top)
1	F2979	Hose Support (Aft)
1	F2987 Iss 2	Bulkhead Channel
1	F2983	Bulkhead (Upper)
1	F2985	Bulkhead (Lower)
22	SK245-4	Receptacle
18	R4G	Retainer
18	SK-N2S	Grommet
18	SK40S5-2S	Stud

Plumbing Kit: FAC-SI-21-06D Rev 0

QTY	P/N	Description
1	F2907 Iss 3	Suction Hose Assy
1	F2909 Iss 3	Liquid Hose Assy
1	F2955 Iss 2	Discharge Hose Assy
1	F2981 Iss 3	Hose Support (Fwd)
1	F2525 Iss 2	Hose Support
4	AN525-832R7	Screw
4	AN960-8L	Washer
2	MS21059L08	Nut Plate
2	MS21083N08	Nut
1	MS21919WCJ15	Clamp
1	MS21919WCJ16	Clamp
1	AN3-4A	Bolt
1	MS21042-3	Nut
1	MS35489-23	Grommet
1	MS35489-6	Grommet
1	T60-1	Tee
	1/4" Clear Tubing	Clear Tubing

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October 17, 2012

Evaporator Cover Kit: FAC-SI-21-06E Rev 0

QTY	P/N	Description
2	F2501	Attachment Angle
2	F2503	Attachment Angle
2	F2505	Mounting Angle
1	F2989	Evaporator Case Cover (Left)
1	F2991	Evaporator Case Cover (Right)
1	F2993	Evaporator Case Cover (Front)
1	F2995	Evaporator Case Cover (Corner)
1	F2996	Evaporator Case Cover (Corner)
2	F2997	Stiffener (Evaporator Case Cover)
20	SK245-4	Receptacle
28	R4G	Retainer
28	SK-N2S	Grommet
28	SK40S5-2S	Stud

WEIGHT & BALANCE:

To be determined by weighing the aircraft.

DRAWINGS/MANUALS:

FAC Maintenance Manual FAC2-M200
S09 Flight Manual Supplement
N2855 Air Conditioner Electrical Installation - Iss 3

IMPLEMENTATION INSTRUCTIONS:

Part 1 - Preparation:

1. Gain access to the air condition system, ref. MM 21-55.
2. Discharge the system, ref. MM 21-55-30.
3. Disconnect and remove the refrigerant hoses. They will be replaced.
4. Remove cargo overhead panel, H2273, and disconnect the cabin light. Overhead panel will not be used again.
5. Remove the center seat belt with the inertia reel, it will not be used again.

Part 2 - Rework:

1. Evaporator Case Assembly, ref. Figure 1
 - a) Remove the evaporator case from the aircraft.
 - b) Remove the evaporator coil, blower, and blower controller from the evaporator case.
 - c) Install the evaporator coil, blower, and blower controller into a new evaporator case assembly, Q2495, using hardware from the original installation.
 - d) Install the assembly in the new location, i.e. cargo area.

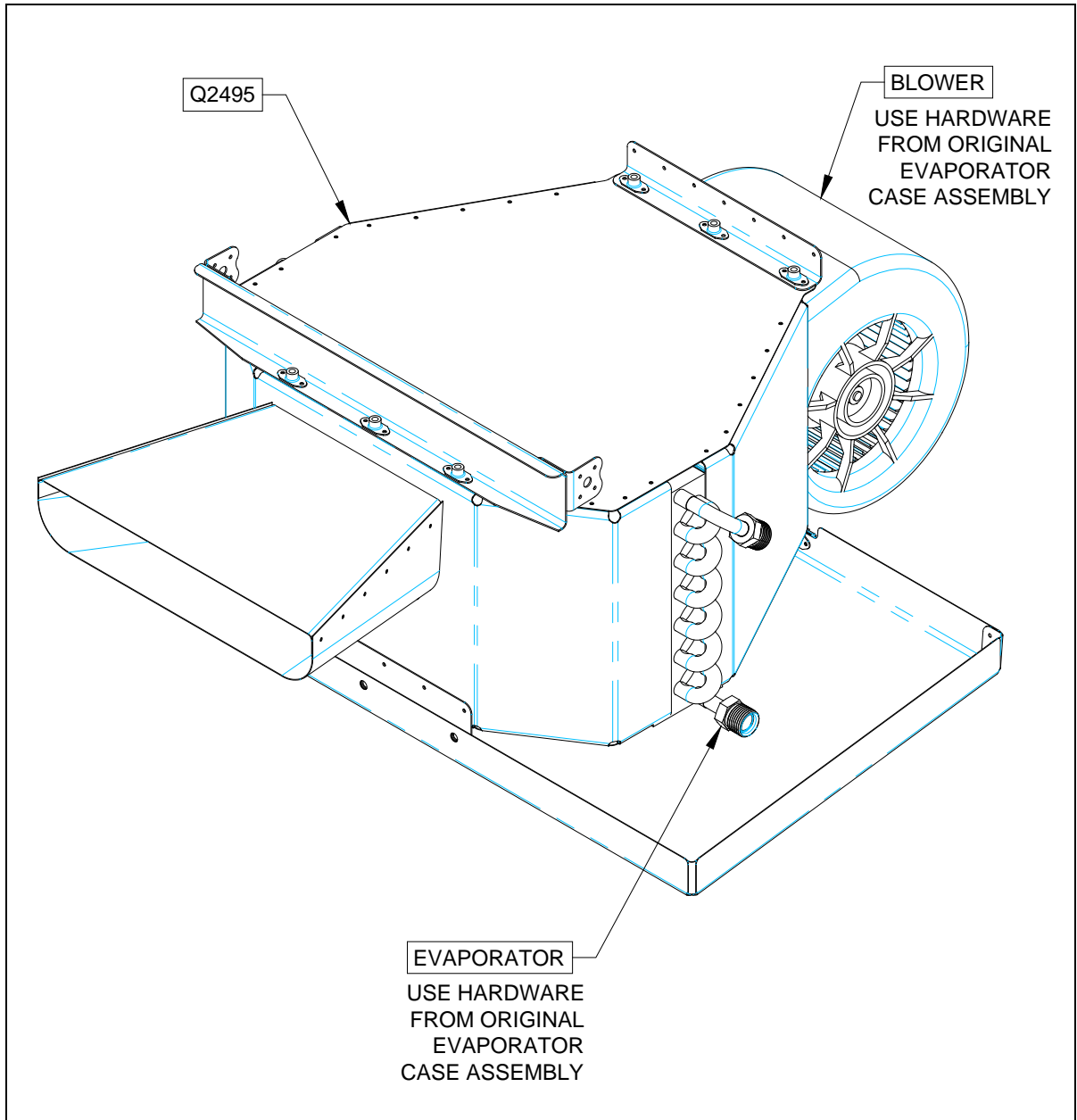
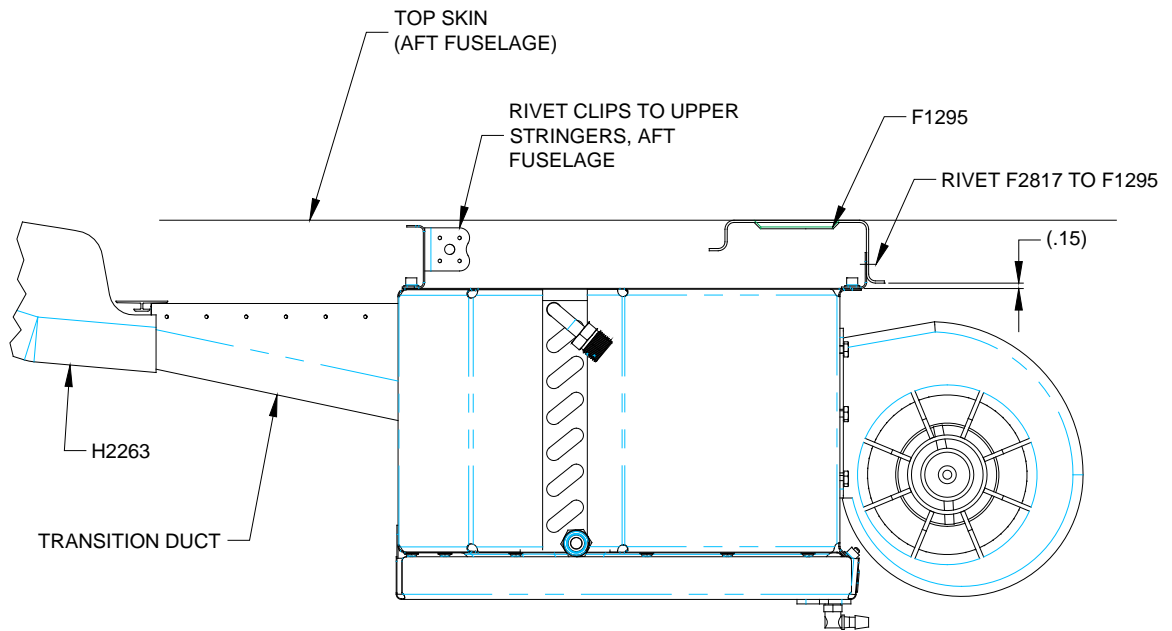


Figure 1A



INSTALLATION

Unless stated otherwise, all rivets are MS20470AD3
 Unless stated otherwise, all nut plate rivets are MS20426AD3

Figure 1B

2. Condenser Case Assy, ref. Figure 2.

- a) Remove the compressor controller cover, F2863, it will not be used again.
- b) Remove the compressor controller and the electrical relay. They will be relocated.
- c) Replace the compressor mounting rails with F2865 Iss 2 and install with screws.
- d) Replace the top shelf with F2857 Iss 2 and add the hardware.
- e) Add the new compressor controller box, F2957 including F2969 mounting angle.
- f) Install the compressor controller in the new location.
- g) Install the controller cooling fans and electrical relay per N2855 - Iss 3.
- h) Install the compressor with a new orientation.
- i) Add the inlet air deflector, F2975

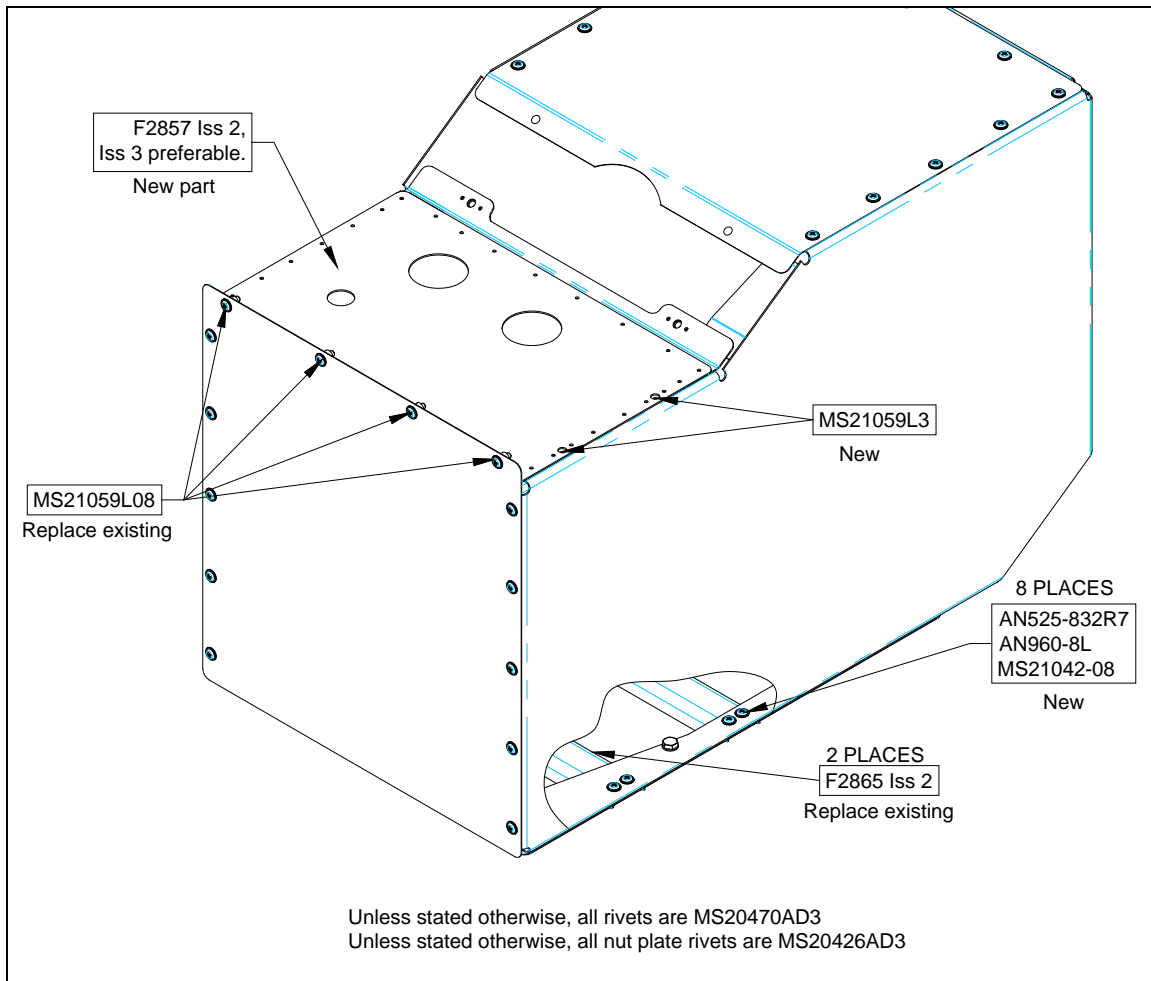


Figure 2A

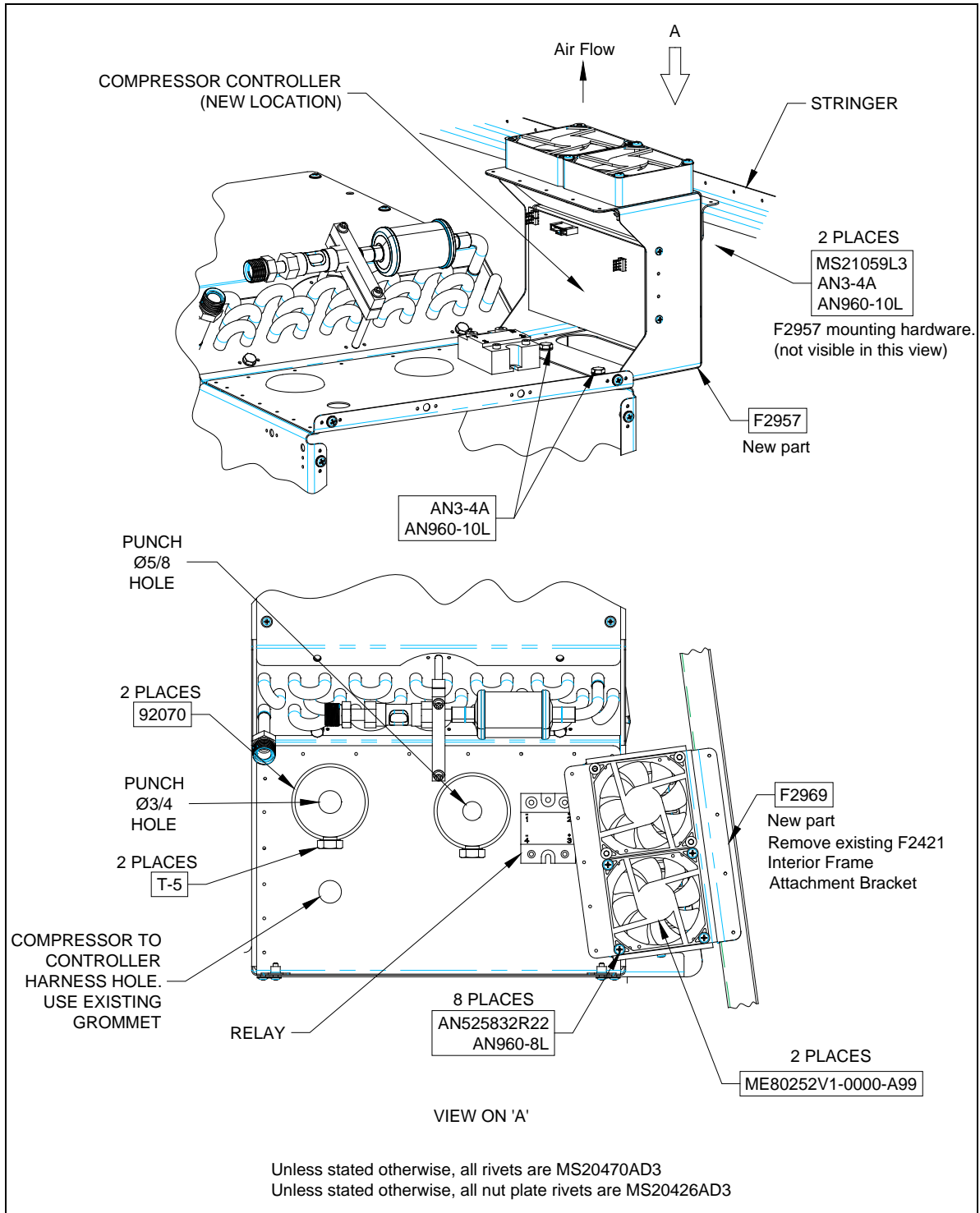


Figure 2B

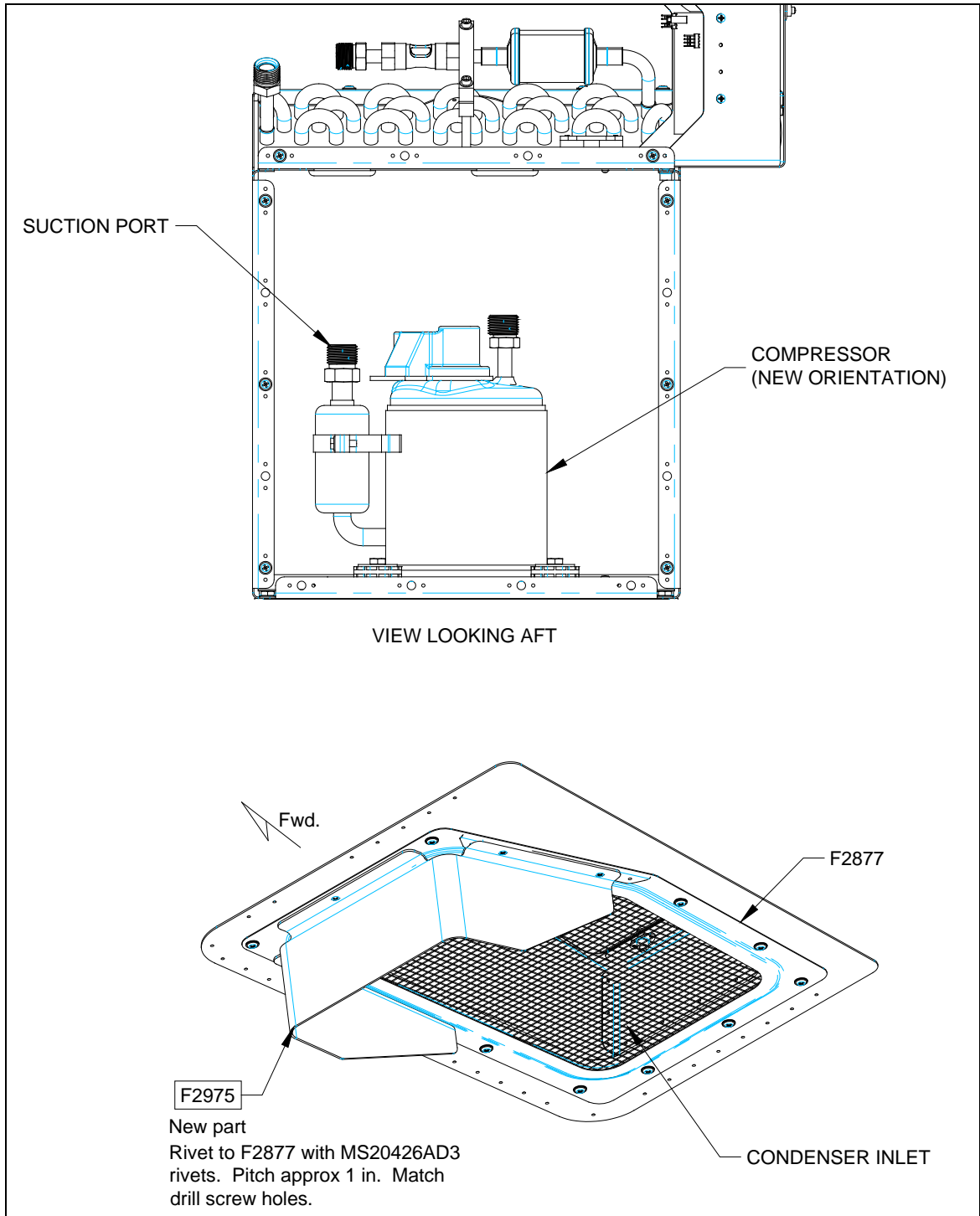


Figure 2C

3. Cargo Bulkhead modification, ref. Figure 3

- a) Remove existing cargo bulkhead, F2893, and the supporting frame.
- b) Install a new frame, F2417, F2418, F2419, as well as hose support, F2979, and the bulkhead channel, F2987.
- c) Install camlocks and grommets.

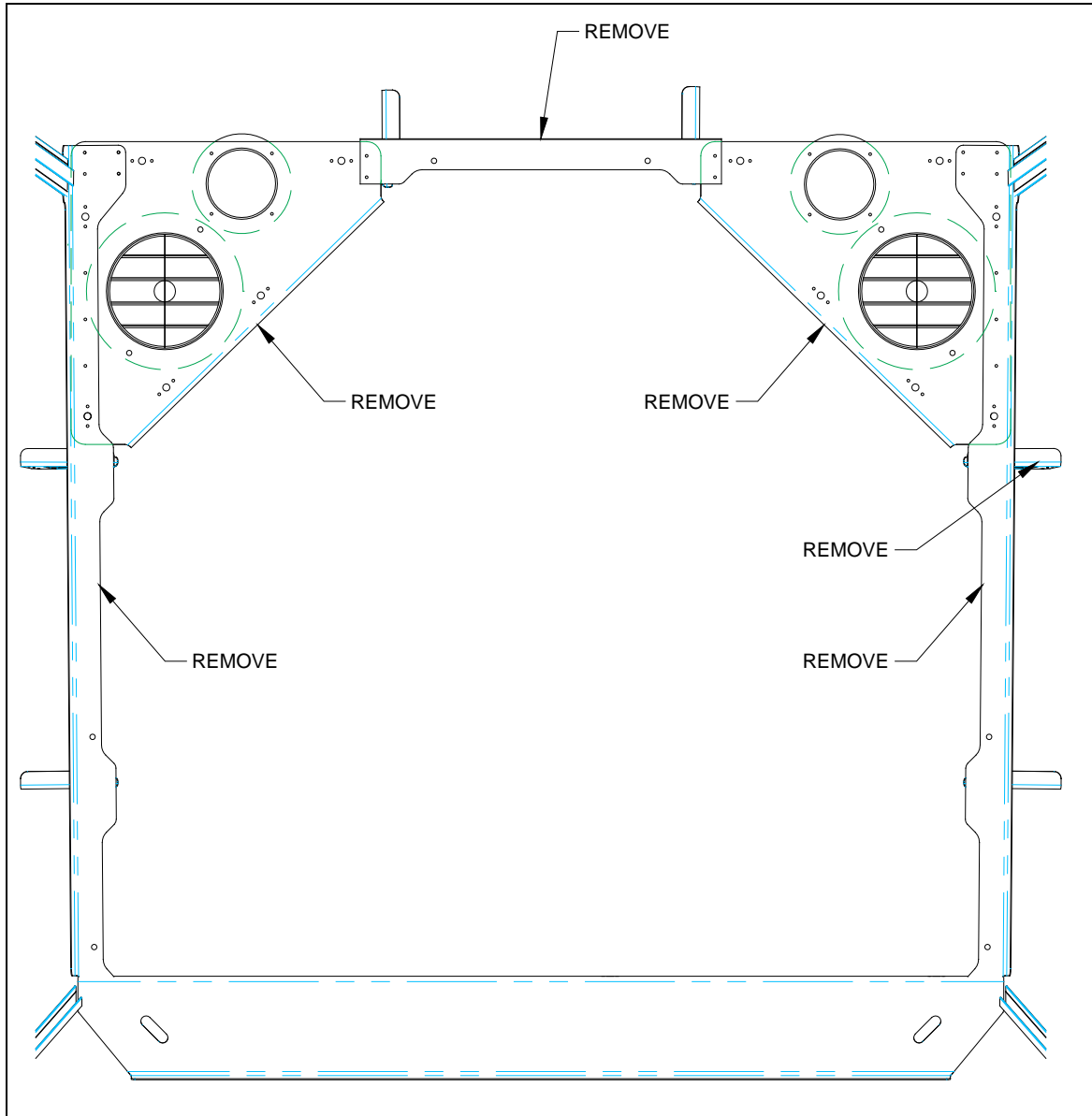


Figure 3A

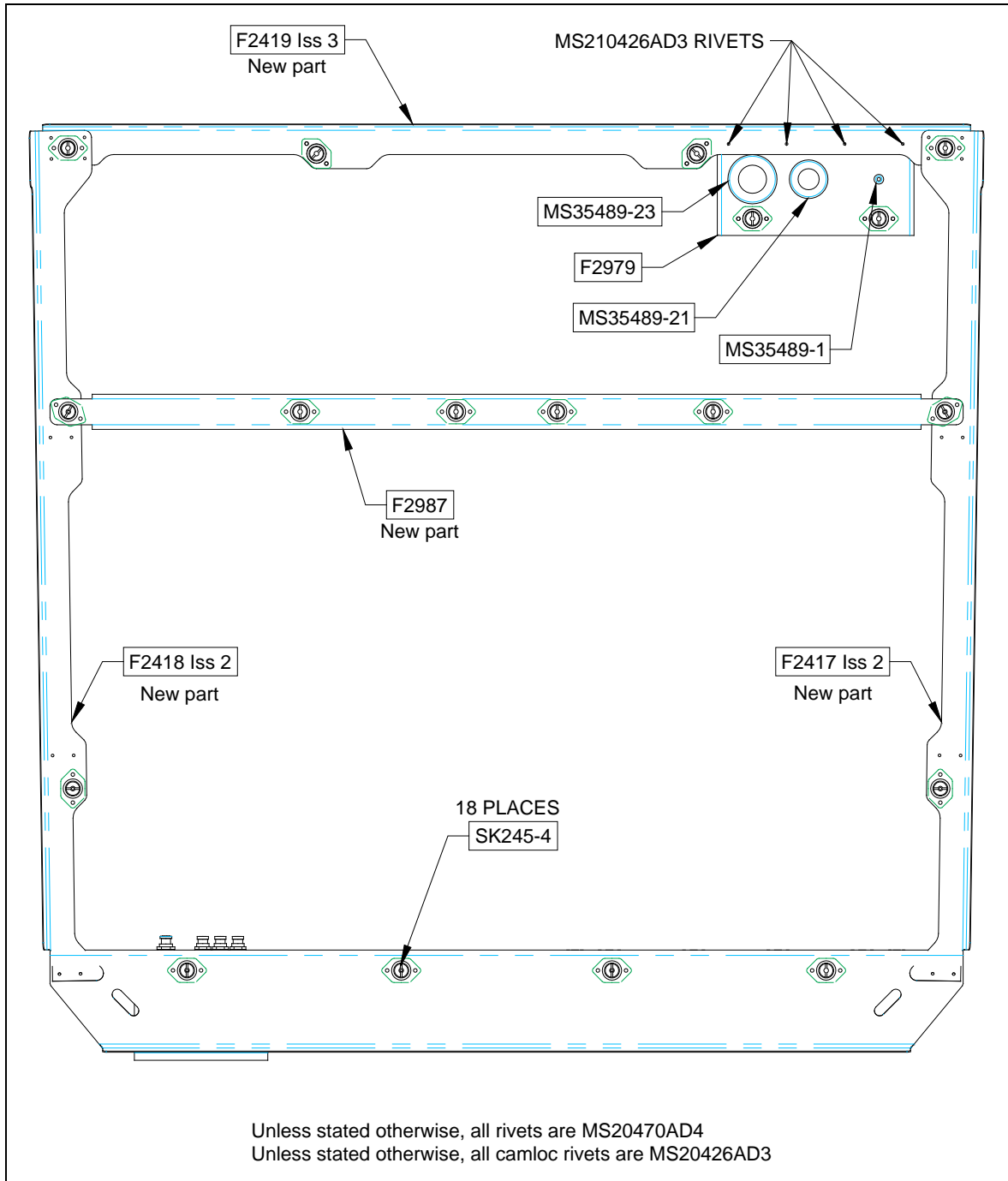


Figure 3B

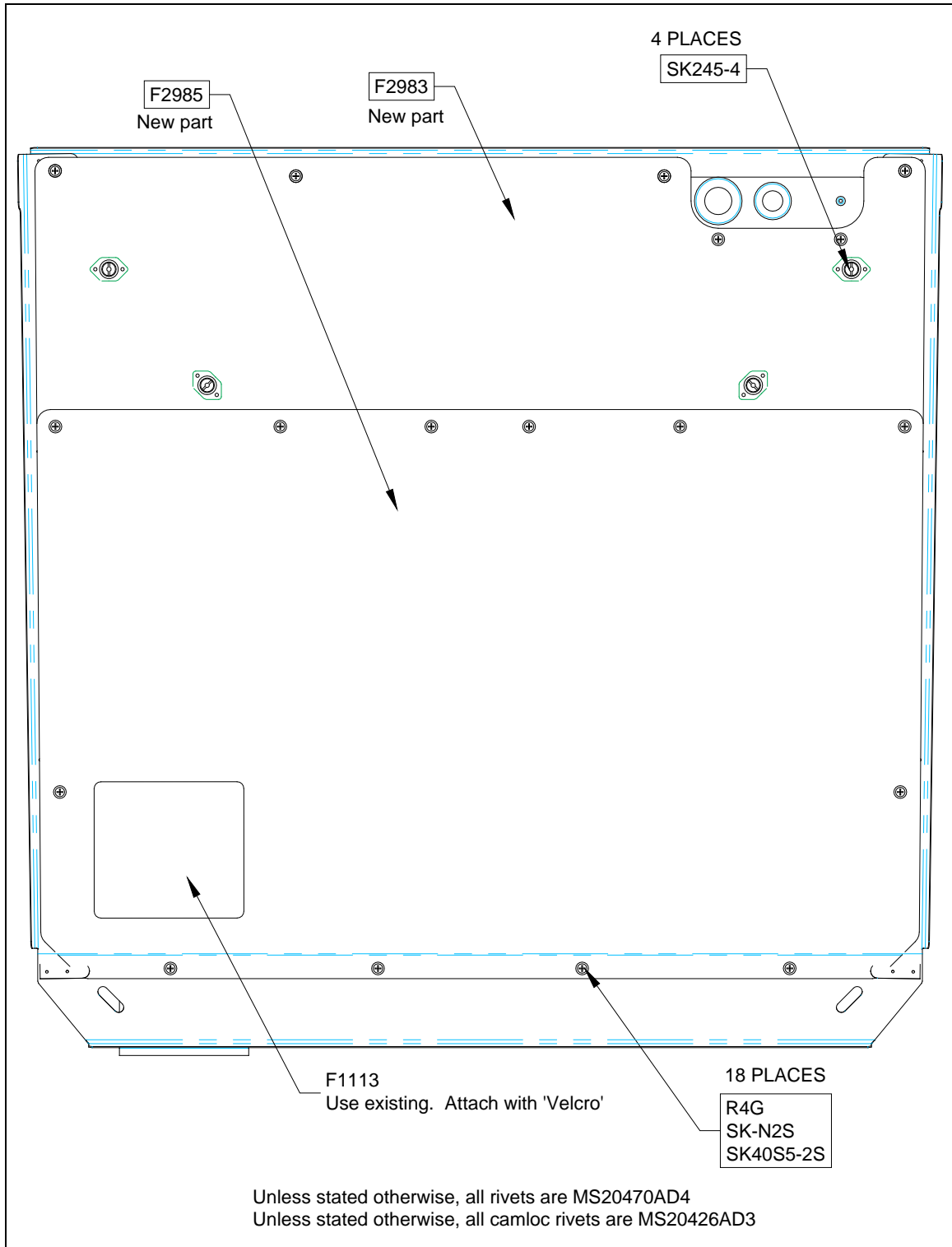


Figure 3C

4. Plumbing, ref. Figure 4

- a. Install hose support bracket, F2981.
- b. Install the temperature probe into F2981 bracket.
- c. Install 35-62036 Swivel Union.
- d. Install the hoses, F2907, F2909, and F2955.
- e. Secure the suction and liquid hoses to F2981 bracket using F2525 support.
- f. Acceptable to secure the suction hose to discharge hose using p-clamps. The connection shall be made where the two hoses cross each other above the condenser case.
- g. Seal the hoses passing through the diaphragm grommets in the condenser case.
- h. Install water drain tubes.

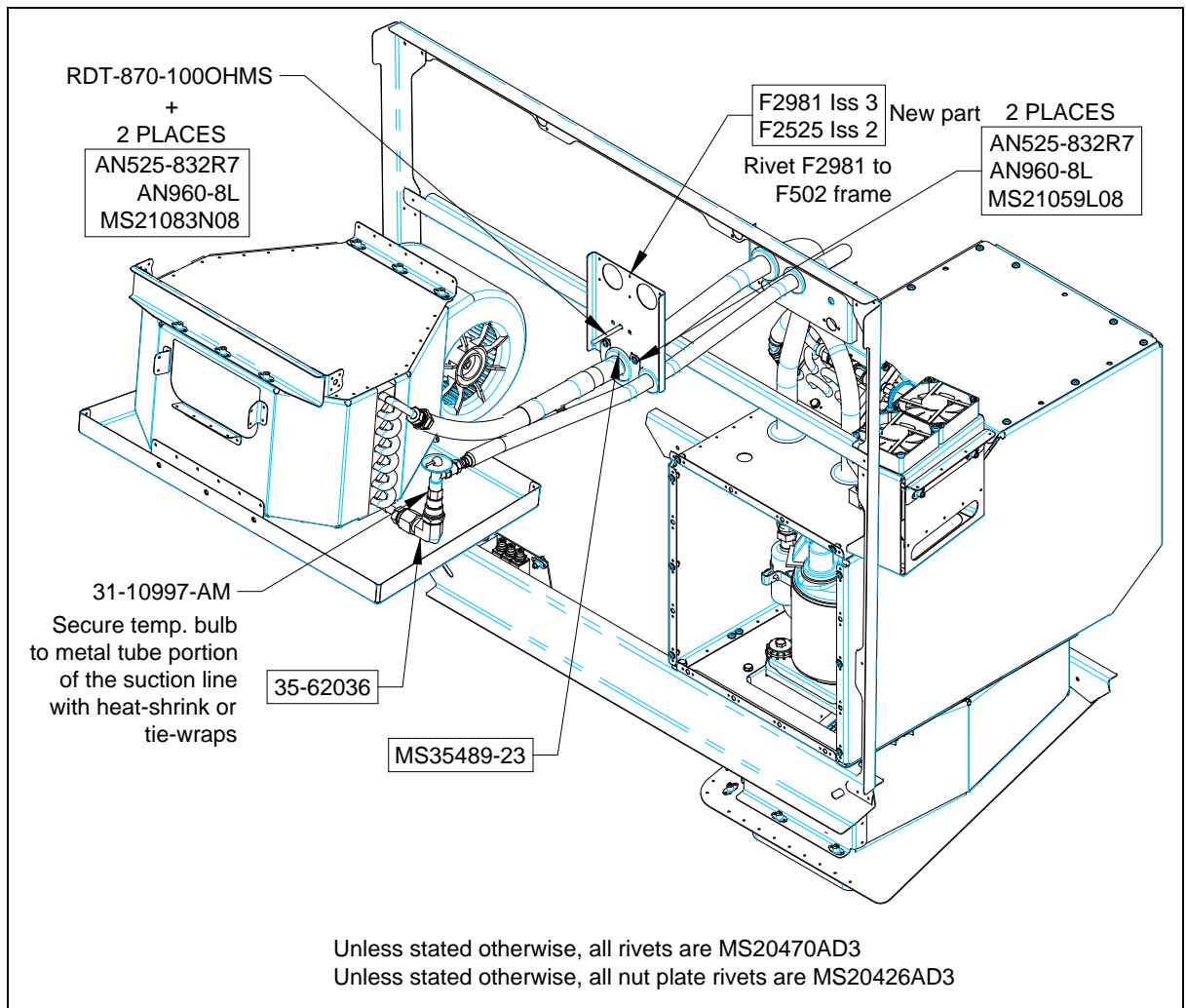


Figure 4A

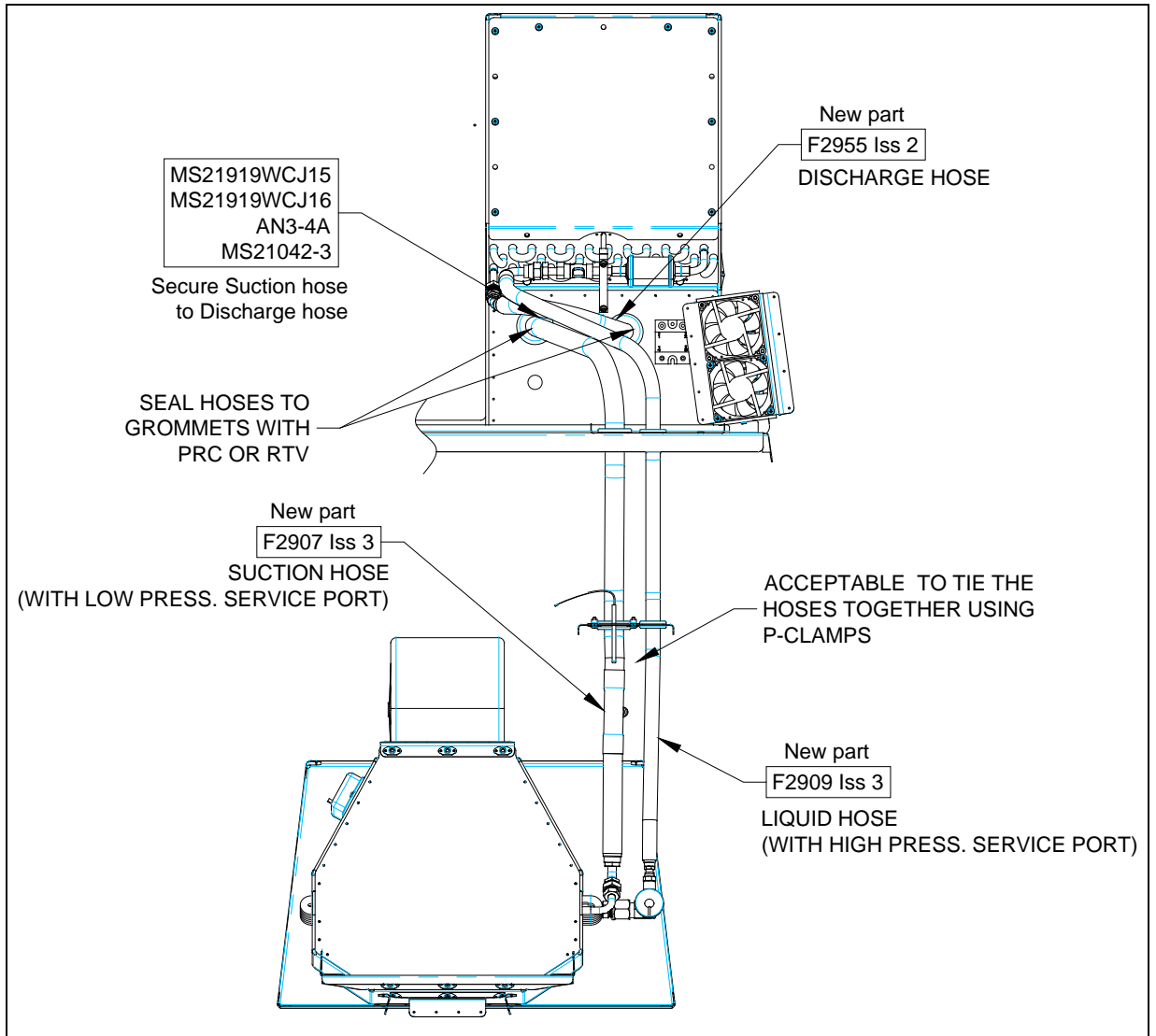


Figure 4B

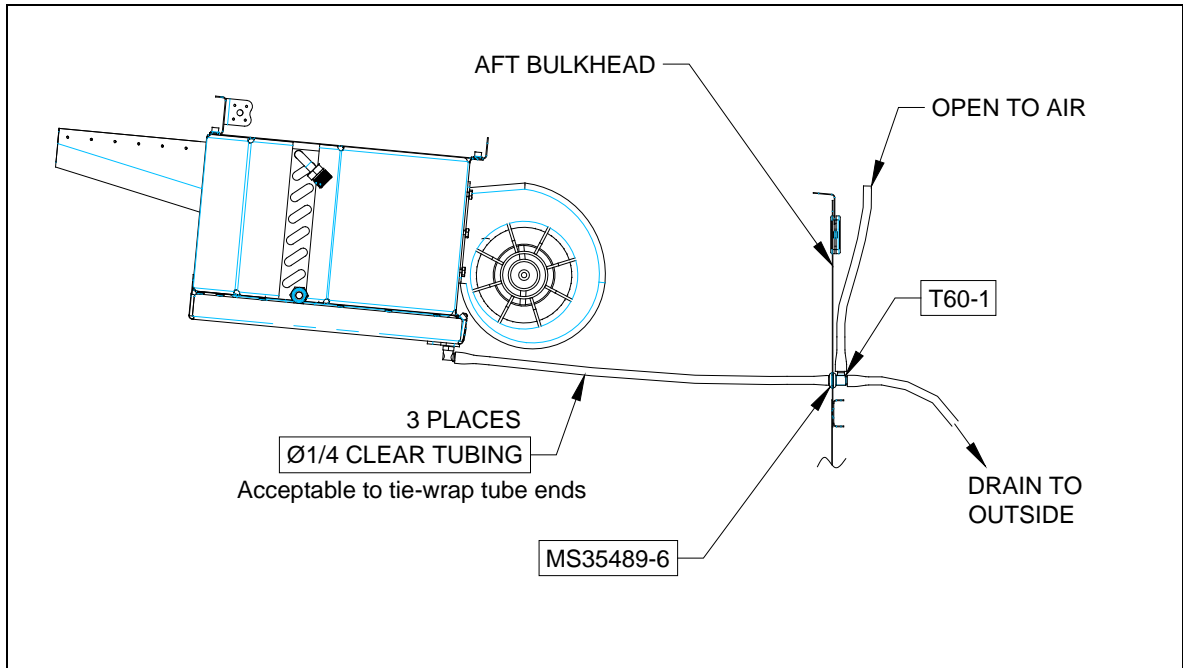


Figure 4C

5. Evaporator Cover, ref. Figure 5

- a. Rivet stiffeners, F2997, to their respective halves, F2989 and F2991.
- b. Rivet corner, F2995 to F2889.
- c. Rivet corner, F2996 to F2991.
- d. Locate and install the camlocs joining the cover together.
- e. Locate side mounting angles, F2505, to the H-trim and cleco in position.
- f. Fit the evaporator cover to the side mounting angles and the aft bulkhead.
- g. Locate the aft attachment angles, F2501 and F2503.
- h. Install camlocs.
- i. Re-install cabin light.

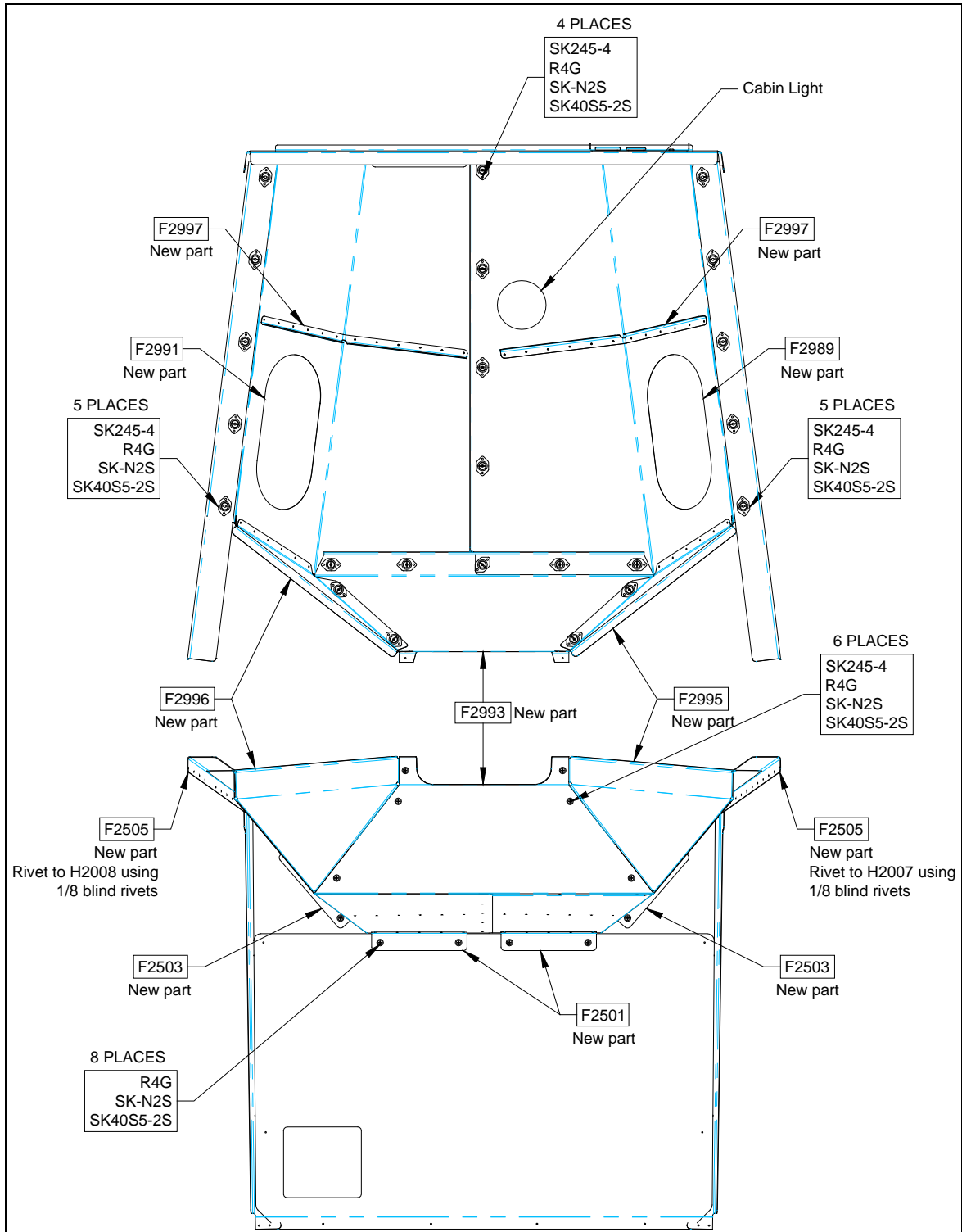


Figure 5

Part 3 - Close-up:

1. Charge the system, ref. MM 21-55-30.
2. Perform a function test, ref. MM 21-55-05
3. Close-up all interior panels.

LOG BOOK CERTIFICATION:

Upon completion of this service instruction make a Log Book entry stating "SI-21-06 Rev 0, Air condition Airflow Improvement accomplished".