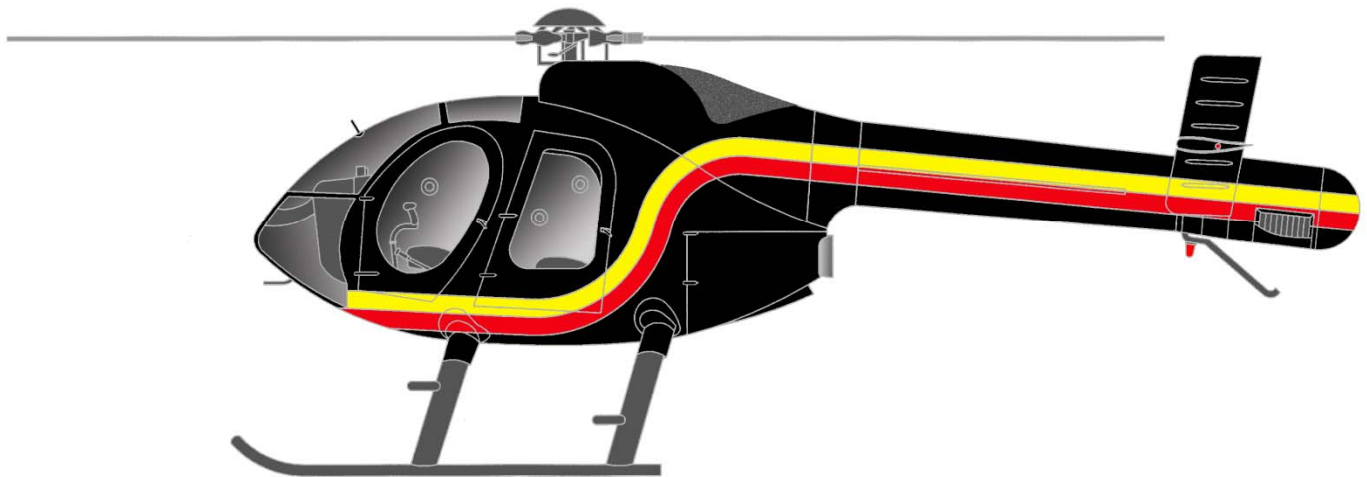




# **Air Conditioning System Installation Manual For**



## **500-00-011**

(IM-500-00-011 Rev B, Feb 09, 2018)

## **Notice of Terms and Conditions**

THIS PRODUCT IS OFFERED SUBJECT TO YOUR ACCEPTANCE OF THE TERMS AND CONDITIONS PROVIDED WITHIN THIS DOCUMENT. USE OF THIS PRODUCT/DATA CONSTITUTES ACCEPTANCE OF THE TERMS AND CONDITIONS. THIS PRODUCT AND INFORMATION OR TECHNICAL DATA AND DESIGNS CONTAINED WITHIN ARE PROPRIETARY DATA AND THE EXCLUSIVE PROPERTY OF INTEGRATED FLIGHT SYSTEMS AND IS DELIVERED ON THE EXPRESS CONDITION THAT NEITHER THIS DOCUMENT OR PRODUCT NOR THE INFORMATION CONTAINED HEREIN SHALL BE DISCLOSED TO OTHERS, REPRODUCED IN WHOLE OR IN PART, OR USED FOR THE MANUFACTURE OR FABRICATION OF PARTS FOR ANYONE OTHER THAN INTEGRATED FLIGHT SYSTEMS WITHOUT WRITTEN CONSENT AND AUTHORIZATION, AND THAT NO RIGHT IS GRANTED TO DISCLOSE OR SO USE ANY INFORMATION CONTAINED IN SAID DOCUMENT. THIS RESTRICTION DOES NOT LIMIT THE RIGHT TO USE INFORMATION OBTAINED FROM ANOTHER SOURCE.

<b>1</b>	<b>KIT INVENTORY</b>
<b>2</b>	<b>AIRCRAFT PRE-INSPECTION</b>
<b>3</b>	<b>AIRCRAFT PREPARATION</b>
<b>4</b>	<b>REMOVAL OF FACTORY COMPONENTS</b>
<b>5</b>	<b>INSTALLATION OF AFT EVAPORATOR</b>
<b>6</b>	<b>INSTALLATION OF CONDENSER</b>
<b>7</b>	<b>INSTALLATION OF FWD EVAPORATOR</b>
<b>8</b>	<b>INSTALLATION OF COMPRESSOR</b>
<b>9</b>	<b>INSTALLATION OF ELECTRICAL</b>
<b>10</b>	<b>INSTALLATION OF HOSES</b>
<b>11</b>	<b>PAPERWORK</b>
<b>12</b>	<b>CONTINUED AIRWORTHINESS</b>
<b>13</b>	<b>PARTS BREAK DOWN</b>
<b>14</b>	<b>WARRANTY/REPAIR</b>
<b>15</b>	<b>TROUBLE SHOOTING GUIDE</b>

## RECORD OF REVISIONS

Revision	Description	Date	Revised By
A	Made into new format	May 1, 2009	IFS
B	Updated kit list, section 10 & 12	Feb 9, 2018	RSG

## LIST OF EFFECTIVE PAGES

Rev	Sect.	Page	Description	Date
N/C	1	1-14	Kit Inventory	05/01/09
B	1	1-10	Kit Inventory	02/09/18
N/C	2	1-2	Aircraft Pre-Inspection	05/01/09
N/C	3	1-2	Aircraft Preperation	05/01/09
N/C	4	1-2	Removal of Factory Components	05/01/09
N/C	5	1-7	Installation of Evaporator	05/01/09
N/C	6	1-2	Installation of Condenser	05/01/09
N/C	7	1-1	Section Not Used	05/01/09
N/C	8	1-3	Installation of Compressor	05/01/09
N/C	9	1-3	Installation of Electrical	05/01/09
N/C	10	1-2	Installation of Hoses	05/01/09
B	10	Insert	Updated drawing	02/09/18
N/C	11	1-2	Paperwork	05/01/09
N/C	12	1-15	Instructions for Cont. Airworthiness	05/01/09
B	12	5 & 21	Update 7" Blower Motor P/N	02/09/18
N/C	13	1-6	Parts Breakdown	05/01/09
N/C	14	1-6	Warranty/Repair	05/01/09
B	13	4	Update 7" Blower Motor P/N	02/09/18
B	14	1-6	Update Warranty/Repair info	02/09/18
N/C	15	1-5	Trouble Shooting Guide.	05/01/09



## Getting Started

The air conditioning system installation instructions are laid out step-by-step starting with one (1) through ten (10), for installation and eleven (11) through fifteen (15) for care and airworthiness, the instructions are designed to be easy – to – use.

The example below is designed to give you a basic overview of how the steps work.

**Example:** A. In the step below there is a number **5.1** The “**5**” stands for step 5 and the “**1**” stands for direction 2.

## Installation of Aircraft Systems

**Example:** B. When the parts are called out in a step: **5.1**, locate the part and

<u>Step</u>	<u>Procedure</u>	<u>Mech</u>	<u>Insp</u>
5.1	Locate the two seat pans supplied in the kit, IFS P/N 261023 and IFS PN 261024, and review drawing sheet 1 of 2 prior to beginning the work.		

parts that go with this step (5.2). The part or parts have a tag with the step number, part number, part name and quantity of parts. It is best to organize your parts by step numbers so they can be drawn from as needed.



**STEP:** 5.1

**QUANTITY:** 1

**PART NAME:**

Left Seat Pan

**PART NUMBER:**

261023

Should you have any questions, problems or need technical support, do not hesitate to call, fax, E-mail, or write us:

Phone: 1-817-624-6600  
Fax: 1-817-624-6601

E-Mail: [info@integratedflightsys.com](mailto:info@integratedflightsys.com)

## 1.0 **MODELS AFFECTED:**

Read the following and determine the exact model and serial number of the helicopter involved prior to beginning installation. Several MD options, AD notes or different avionic packages can affect installation. The basic Installation Instructions should be read and understood. Both the I.A. and the installing mechanic are cautioned that the Supplemental Type Certificate, under which this system is approved, requires its compatibility with pre-existing factory or other STC'd systems previously installed.

IFR and VFR equipped aircraft are in service. Single pilot IFR aircraft have been approved. These are equipped with elaborate avionic packages and may use completely different electrical bus systems than those for which this kit is presently designed. Do not modify those aircraft with this FAA approved kit unless Supplemental Instructions and FAA approval are obtained and complied with.

- 1.1 The instructions contained herein pertain to **Integrated Flight Systems, Inc. kit P/N 500-00-011.**
- 1.2 Any items or drawings required for the installation in single pilot IFR aircraft will be made known by request.
- 1.3 Drawings and basic instructions are for all aircraft from serial number XXXX through present delivered aircraft.
- 1.4 A total of two different configurations may be utilized using the kit number specified in 1.1.
- 1.5 See Integrated Flight Systems KIT INVENTORY LIST for the configuration that applies to your particular aircraft.
- 1.6 The FAA approved data is contained on Drawing List Report No. DL-41-1.

## IMPORTANT! READ FIRST!

### 2.0 **GENERAL:**

#### 2.1 **READ INSTRUCTIONS THOROUGHLY BEFORE BEGINNING.**

- 2.2 The installing mechanic and the I.A. shall thoroughly examine the kit and determine its compatibility to the aircraft's electrical system and any previously installed equipment, whether factory or STC'd items. The total electrical requirement is approximately 35 amps at 28 VDC.
- 2.3 These instructions are intended only to sequence and clarify the Installation Drawings. **In case of a discrepancy, the drawing shall be the authority.** Minor installation deviations may be necessary to accommodate placement of equipment due to previously installed items or to comply with AD notes on the aircraft.
- 2.4 These installation instructions **do not** repeat information contained on the **Installation Drawings**. The drawings contain all of the necessary information for installation and should be expressly followed.
- 2.5 All references are to the **Installation Drawings** unless otherwise specified.
- 2.6 The **Drawings** are "**FAA Approved design data**". They **do not allow for any deviation**. Any deviations required must be cleared and approved by a local FAA official.
- 2.7 Prior to beginning installation, these **Installation Instructions** and related **Drawings** should be thoroughly studied. Doing so will alleviate problems arising during installation and eliminate unnecessary hours of labor.
- 2.8 Standard aircraft practices should be adhered to as outlined by **FAA Advisory Circular 43.13-1A and 43.13-2A**.
- 2.9 For removal and reinstallation of seats, inspection panels, cowlings, etc., see the appropriate MD Helicopters, Inc. Service Manual.
- 2.10 Upon completion of installation, charge and test unit following **Operators Manual** included in each kit.
- 2.11 The instructions contained herein pertain to **Kit P/N: 500-00-011**.

**2.12 Use only refrigerant R-134a.**

Do not use refrigerant canned for pressure-operated accessories (such as boat air horns). This type refrigerant is not pure R-134a and will cause a malfunction in the system. Do not mix any other type refrigerant with R-134a.

2.13 Avoid R-134a contact with the skin and especially the eyes. Refrigerant 12 is non-explosive, non-inflammable, non-corrosive, has practically no odor and is heavier than air. However liquid R-134a, at normal atmospheric temperatures, evaporates so quickly that it has the tendency to freeze anything it comes in contact with. Therefore, extreme care should be taken to prevent contact with the skin and especially the eyes. Should R-134a come in contact with the skin or eyes, **do not** attempt first aid other than immediately washing the affected area with clean water. A doctor should be contacted for immediate treatment even though irritation may have ceased.

**2.14 Wear safety goggles when servicing any part of the refrigerant system.**

2.15 Never use any amount of excessive heat in the immediate vicinity of the refrigerant system or R-134a supply cylinder whether it is filled with refrigerant or not.

2.16 Ensure adequate ventilation when servicing the refrigerant system.

2.17 Never heat an R-134a supply cylinder to produce additional pressure or to attempt to empty the container completely.

2.18 Always keep the R-134a supply cylinder in an upright position when admitting refrigerant into the system. If a cylinder is on its side or upside down, liquid R-134a will enter the system and may damage the compressor.

Integrated Flight Systems  
REQUIRED TOOLS/CONSUMABLES – MD500 Air-Conditioning

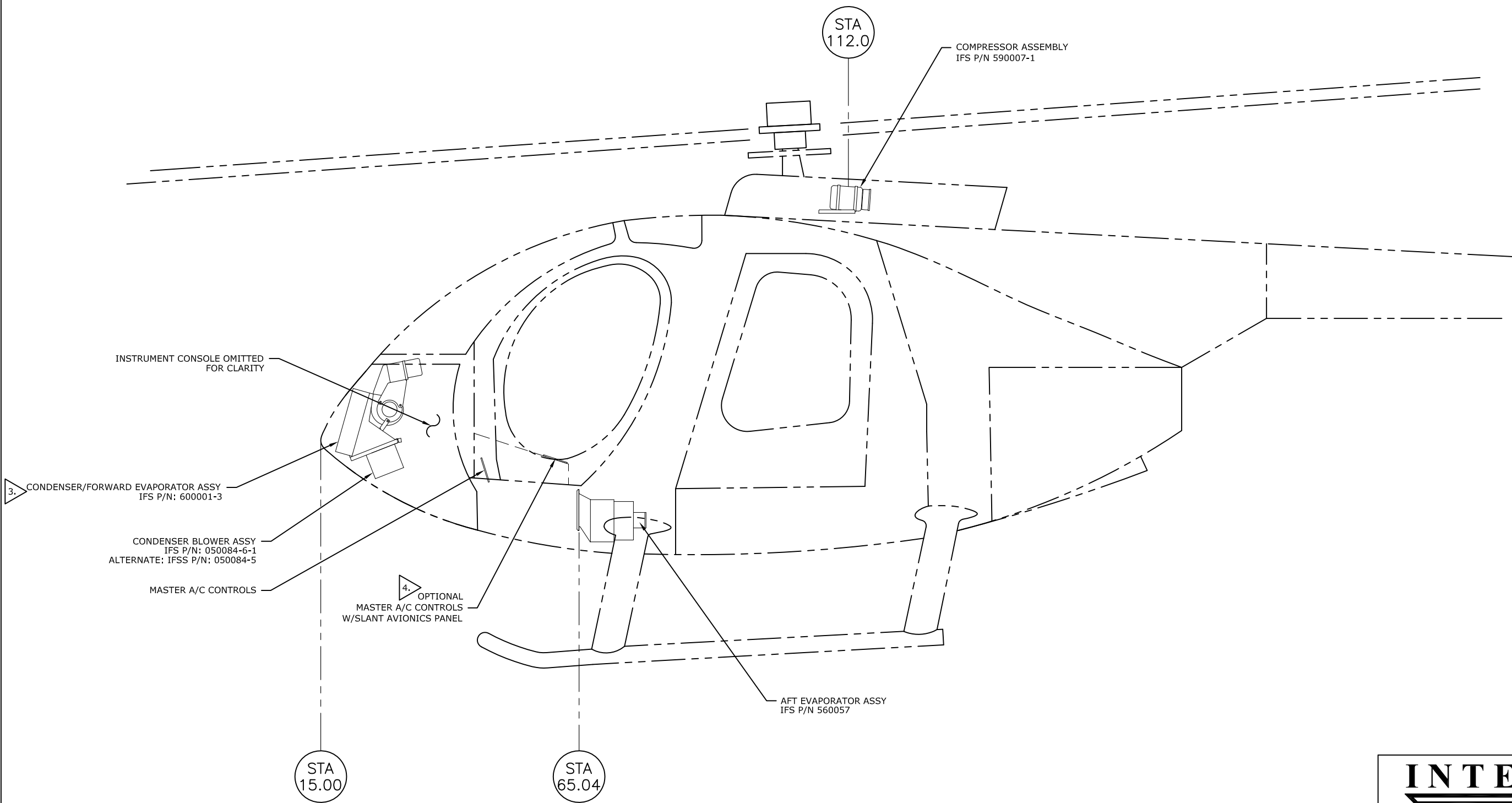
## Tools and Consumables Required to Complete the Job

1.	Drill ¼ or 3/8 Capacity / Straight and 90 degrees
2.	Rivet Gun - #4 & #5 Rivet Set
3.	Blind Rivet Puller
4.	Assorted Drill Bits - 40, 30, 10, ¼, & 21
5.	Standard Wrenches - ¼-1¼
6.	Metric Wrenches - 5mm to 19mm
7.	Standard Sockets - ¼ to ¾ cap Ratchet & Extensions
8.	Metric Sockets - 5mm to 19mm
9.	Torque Wrench (For Pulley) 200 in-lbs
10.	Rotary File (Die Grinder)
11.	Drum Sander
12.	Hole Finder - #30 & #10
13.	Cleco - #30, #21 & #40
14.	C-Clamps – Vise Grip Clamps
15.	Wire Cutters
16.	Phillips Screw Driver
17.	Torque-Bite (For Belly Pan) Pan American Tool 170-10 & 170-8 Power Torque
18.	Common Screw Drivers
19.	Cape Chisel
20.	Center Punch

Integrated Flight Systems  
REQUIRED TOOLS/CONSUMABLES – MD500 Air-Conditioning

21.	6oz Ball-peen Hammer for Removing Rivets
22.	Assorted Bucking Bars
23.	Safety Wire .032
24.	Wire Twisters
25.	Steel Ruler
26.	Adjustable Wrench Cap 1-1/2
27.	Freon Gauges
28.	Vacuum Pump
29.	Gauge Manifold 0 to 500 psi
30.	Nitrogen (400 psi available)
31.	R-134A 3 lbs
32.	Blocks for Supporting Forward Engine
33.	Vacuum Cleaner
34.	Rivnut Puller

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



NOTES:

1. ALL DATUM LINES ARE "FUSELAGE STATIONS" (STA OR FS) AND MAY BE USED TO CALCULATE C.G. FOR WEIGHT & BALANCES PURPOSES.
2. IF A GYRO COMPASS SYSTEM IS TO BE INSTALLED, THE FLUX VALVE MUST BE LOCATED AT STA. 280, WL. 40 AND BL.0. (500N ONLY)
3. IFS P/N 600001 MAY EXIST IN PREVIOUS INSTALLATIONS IFS P/N 600001-3 IS NOW UTILIZED.
4. OPTIONAL LOCATION FOR SLANT AVIONICS PANEL. SEE DWG No. 2-2-MDHS 500 FOR INSTALLATION.

**INTEGRATED**  
Flight Systems

TITLE: AIR CONDITIONING OVERVIEW

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: 1:25	SHEET: 1 OF 1
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 1-1-MDHS 500	

CONFIGURATION CONTROL TABLE								
DRAWING NO.	DRAWING TITLE	NUMBER OF SHEETS	DRAWING DATE	REVISION	REVISION DATE	AIR CONDITIONING CONFIGURATION DESCRIPTION		
						1	2	
1-MDHS 500	AIR CONDITIONING OVERVIEW	1 OF 1	08/20/98	N/C	08/20/98	✕		
1-1-MDHS 500	AIR CONDITIONING OVERVIEW	1 OF 1	05/01/09	N/C	05/01/09		✕	
2-MDHS 500	ELECTRICAL INSTALL	1 OF 4	08/20/98	N/C	08/20/98	✕		
2-MDHS 500	ELECTRICAL INSTALL	2 OF 4	08/20/98	N/C	08/20/98	✕		
2-MDHS 500	ELECTRICAL INSTALL	3 OF 4	08/20/98	N/C	08/20/98	✕		
2-MDHS 500	ELECTRICAL INSTALL	4 OF 4	08/20/98	N/C	08/20/98	✕		
2-1-MDHS 500	ELECTRICAL INSTALL	1 OF 4	05/01/09	N/C	05/01/09		✕	
2-1-MDHS 500	ELECTRICAL INSTALL	2 OF 4	05/01/09	N/C	05/01/09		✕	
2-1-MDHS 500	ELECTRICAL INSTALL	3 OF 4	05/01/09	N/C	05/01/09		✕	
2-1-MDHS 500	ELECTRICAL INSTALL	4 OF 4	05/01/09	N/C	05/01/09		✕	
2-2-MDHS 500	ELECTRICAL INSTALL	1 OF 4	05/01/09	N/C	05/01/09		✕	
2-2-MDHS 500	ELECTRICAL INSTALL	2 OF 4	05/01/09	N/C	05/01/09		✕	
2-2-MDHS 500	ELECTRICAL INSTALL	3 OF 4	05/01/09	N/C	05/01/09		✕	
2-2-MDHS 500	ELECTRICAL INSTALL	4 OF 4	05/01/09	N/C	05/01/09		✕	
3-MDHS 500	PLUMBING INSTALL	1 OF 3	08/20/98	N/C	08/20/98	✕		
3-MDHS 500	PLUMBING INSTALL	2 OF 3	08/20/98	N/C	08/20/98	✕		
3-MDHS 500	PLUMBING INSTALL	3 OF 3	08/20/98	N/C	08/20/98	✕		
3-1-MDHS 500	PLUMBING INSTALL	1 OF 3	05/01/09	N/C	05/01/09		✕	
3-1-MDHS 500	PLUMBING INSTALL	2 OF 3	05/01/09	N/C	05/01/09		✕	
3-1-MDHS 500	PLUMBING INSTALL	3 OF 3	05/01/09	N/C	05/01/09		✕	
4-MDHS 500	AFT EVAPORATOR INSTALL	1 OF 3	08/20/98	N/C	08/20/98	✕		
4-MDHS 500	AFT EVAPORATOR INSTALL	2 OF 3	08/20/98	N/C	08/20/98	✕		
4-MDHS 500	AFT EVAPORATOR INSTALL	3 OF 3	08/20/98	N/C	08/20/98	✕		
4-1-MDHS 500	AFT EVAPORATOR INSTALL	1 OF 3	05/01/09	N/C	05/01/09		✕	
4-1-MDHS 500	AFT EVAPORATOR INSTALL	2 OF 3	05/01/09	N/C	05/01/09		✕	
4-1-MDHS 500	AFT EVAPORATOR INSTALL	3 OF 3	05/01/09	N/C	05/01/09		✕	
5-MDHS 500	AIR DISTRIBUTION	1 OF 6	08/20/98	A	05/01/09	✕		
5-MDHS 500	AIR DISTRIBUTION	2 OF 6	08/20/98	N/C	08/20/98	✕		
5-MDHS 500	AIR DISTRIBUTION	3 OF 6	08/20/98	N/C	08/20/98	✕		
5-MDHS 500	AIR DISTRIBUTION	4 OF 6	08/20/98	N/C	08/20/98	✕		
5-MDHS 500	AIR DISTRIBUTION	5 OF 6	08/20/98	N/C	08/20/98	✕		
5-MDHS 500	AIR DISTRIBUTION	6 OF 6	08/20/98	N/C	08/20/98	✕		
5-1-MDHS 500	AIR DISTRIBUTION	1 OF 6	05/01/09	N/C	05/01/09		✕	
5-1-MDHS 500	AIR DISTRIBUTION	2 OF 6	05/01/09	N/C	05/01/09		✕	
5-1-MDHS 500	AIR DISTRIBUTION	3 OF 6	05/01/09	N/C	05/01/09		✕	
5-1-MDHS 500	AIR DISTRIBUTION	4 OF 6	05/01/09	N/C	05/01/09		✕	
5-1-MDHS 500	AIR DISTRIBUTION	5 OF 6	05/01/09	N/C	05/01/09		✕	
5-1-MDHS 500	AIR DISTRIBUTION	6 OF 6	05/01/09	N/C	05/01/09		✕	

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

CONFIGURATION DESCRIPTIONS:

1

ORIGINAL DL-41-1, REVISION N/C, DATED 09/28/98.

2

FACTORY NOSE, STRAIGHT INSTRUMENT PANEL & OPTIONAL SLANT AVIONICS PANEL.

INTEGRATED

Flight Systems

TITLE:

AIR CONDITIONING CONFIGURATION  
CONTROL DRAWING-MDHS 500

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 2
APPLICATION: MDHS 369D,E,FF, 500N			DWG No. 1-0-MDHS 500	



CONFIGURATION CONTROL TABLE								
DRAWING NO.	DRAWING TITLE	NUMBER OF SHEETS	DRAWING DATE	REVISION	REVISION DATE	AIR CONDITIONING CONFIGURATION DESCRIPTION		
						1	2	
6-MDHS 500	COMPRESSOR INSTALLATION	1 OF 3	08/20/98	N/C	08/20/98	✕		
6-MDHS 500	COMPRESSOR INSTALLATION	2 OF 3	08/20/98	N/C	08/20/98	✕		
6-MDHS 500	COMPRESSOR INSTALLATION	3 OF 3	08/20/98	A	05/01/09	✕		
6-1-MDHS 500	COMPRESSOR INSTALLATION	1 OF 3	05/01/09	N/C	05/01/09		✕	
6-1-MDHS 500	COMPRESSOR INSTALLATION	2 OF 3	05/01/09	N/C	05/01/09		✕	
6-1-MDHS 500	COMPRESSOR INSTALLATION	3 OF 3	05/01/09	N/C	05/01/09		✕	
8-MDHS 500	SEAT PAN MODIFICATION	1 OF 2	08/20/98	N/C	08/20/98	✕		
8-MDHS 500	OIL BLOWER MODIFICATION	2 OF 2	08/20/98	N/C	08/20/98	✕		
8-1-MDHS 500	SEAT PAN MODIFICATION	1 OF 2	05/01/09	N/C	05/01/09		✕	
8-1-MDHS 500	OIL BLOWER MODIFICATION	2 OF 2	05/01/09	N/C	05/01/09		✕	
9-MDHS 500	COND/FORWARD EVAP INSTALL	1 OF 4	08/20/98	N/C	08/20/98	✕		
9-MDHS 500	COND/FORWARD EVAP INSTALL	2 OF 4	08/20/98	N/C	08/20/98	✕		
9-MDHS 500	COND/FORWARD EVAP INSTALL	3 OF 4	08/20/98	N/C	08/20/98	✕		
9-MDHS 500	COND/FORWARD EVAP INSTALL	4 OF 4	08/20/98	N/C	08/20/98	✕		
9-1-MDHS 500	COND/FORWARD EVAP INSTALL	1 OF 5	05/01/09	N/C	05/01/09		✕	
9-1-MDHS 500	COND/FORWARD EVAP INSTALL	2 OF 5	05/01/09	N/C	05/01/09		✕	
9-1-MDHS 500	COND/FORWARD EVAP INSTALL	3 OF 5	05/01/09	N/C	05/01/09		✕	
9-1-MDHS 500	COND/FORWARD EVAP INSTALL	4 OF 5	05/01/09	N/C	05/01/09		✕	
9-1-MDHS 500	COND/FORWARD EVAP INSTALL	5 OF 5	05/01/09	N/C	05/01/09		✕	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

CONFIGURATION DESCRIPTIONS:

- 1 ORIGINAL DL-41-1, REVISION N/C, DATED 09/28/98.
- 2 FACTORY NOSE, STRAIGHT INSTRUMENT PANEL & OPTIONAL SLANT AVIONICS PANEL.

INTEGRATED

Flight Systems

TITLE: AIR CONDITIONING CONFIGURATION CONTROL DRAWING-MDHS 500

DRAWN BY: DWE

DATE: 05/01/09

REV

SCALE: NTS

SHEET: 2 OF 2

APPLICATION: MDHS 369D,E,FF, 500N

DWG No. 1-0-MDHS 500

# **Step 1**

## **Kit Inventory**

**CL-500-00-011**

## KIT INVENTORY LIST

Sales Order Number: \_\_\_\_\_

Shipping Date: \_\_\_\_\_

Kit S/N Number: \_\_\_\_\_

Kit Model Number: \_\_\_\_\_

Customer: \_\_\_\_\_

Customer PO: \_\_\_\_\_

Kit Specifies: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

## KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
5.1	Left Seat Pan	261023	1		
	Right Seat Pan	261024	1		
5.2	Cyclic Cover Screen	080043	1		
	Inner Shim	261169	1		
	Outer Doubler	261169-2	2		
	Doubler	261207	1		
	Return Air Cover Assy.	520086	1		
	Rivet	MS20470AD3-4	16		
5.3	Rivet	CCR264SS3-3	100		
	Nut Plate	MS21059L-3	50		
5.7	Screw	AN525-10R7	50		
5.11	Oil Cooler Screen Assy.	530095-1	1		
5.20	Bolt	AN3-5A	15		
	Nut	MS21044N3	7		
	Rivet	MS20470AD3-4	16		
	Rivet	MS20470AD4-4	50		
	Rivnut	A10K80	2		
5.21	Aft Return Air Doubler	261032-1	1		
6.0	Blower Assy., Aft	490032	1		
	Aft Evap. Mount Channel Assy.	510276	1		
	Aft Evap. Mount Angle Assy.	510277	1		
	Aft Evaporator Assy.	560057	1		
6.3	Louver	030011	2		
	Snap Vent	030019	2		
	Plastic Doubler	030020	2		
	Upper Air Duct	250304	1		
	Aft Evaporator Transition	250361	1		
	Center Line Transition	250362	1		
	RH Toe Space Closeout Panel	250390	1		
	LH Console Shroud Assy.	520095	1		
	RH Console Shroud Assy.	520096	1		
	Air Outlet Adapter Assy.	520104	2		

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

## KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
6.3 (Cont.)	Screw	AN515-6R8	10		
	Screw	AN525-10R7	15		
	Chrome Washer	050020-5	7		
	Nut	MS21044N06	7		
	Nut Plate	MS21059L08	9		
	Rivet	ABA 4-4	10		
	Washer	AN960-6	8		
7.0	Condenser Duct Exit Assy.	520105-2	1		
	Condenser/FWD Evap. Assy.	600001-3	1		
	Drain Hose ½" I.D.	090018-1	6' Ft.		
	Drain Tee ½"	100100-5	1		
7.1	Mounting Bracket, LH	261203	1		
	Mounting Bracket, RH	261203-1	1		
	Condenser Inlet Transition Assy.	520098	1		
7.2	1" Band Clamp	060037	2		
7.6	LH Support Arm	261192	1		
	RH Support Arm	261192-1	1		
	Washer	AN960-10	15		
	Bolt	AN3-4A	2		
	Cherry Max Rivet	CR3243-4-4	4		
	Rivnut	A10K80	2		
7.7	Bolt	AN3-4A	6		
	Nut	MS21044N3	4		
	Washer	AN960-10	15		
7.10	Bolt	AN3-4A	2		
	Nut	MS21044N3	3		
	Washer	AN960-10	15		
7.14	Landing Light Retaining Ring	250403	1		
	Bolt	AN3-4A	4		
	Landing Light Housing Assy.	520100	1		
	Screw	AN525-832R12	25		
	Screw	MS51957-17	120		

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

## KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
7.14 (Cont.)	Washer	NAS1149DN416K	260		
	Nut	MS21043-04	86		
	Nut Plate (Stainless)	BACN10JN04CM	35		
	Nut Plate	MS21059L08	21		
	Rivet	CCR264SS3-3	100		
	Rivet	MS20470AD3-4	10		
	Washer	AN960-10	15		
7.16	Bolt	AN3-4A	4		
	Cherry Max Rivet	CR3243-4-4	6		
	RH Closeout Plenum Panel	250385	1		
	LH Closeout Plenum Panel	250386	1		
7.17	Defroster Duct Extension	261206	1		
	Defroster Duct Extension	261206-1	1		
	Defroster Duct Extension	261205	1		
	Defroster Duct Extension	261205-1	1		
8.0	Spacer, Rotor Disk	300349	1		
	Rotor Brake Line Assy. LH Pilot	530097-1	1		
	Rotor Brake Line Assy. RH Pilot	530099	1		
8.1	Compressor Shim	261025	2		
8.2	Flat Belt	060033	1		
	Pulley, Solid	300374	1		
8.3	Compressor Mount Bracket Assy.	530101	1		
8.5	Washer	AN970-3	8		
	Bolt	AN3-6A	8		
8.7	Compressor Placard	120093	1		
	Nut	MS21044N3	4		
	Nut Plate	MS21059L-3	5		
8.9	SD 507 Compressor	590007-1	1		
	Washer	AN960-516	8		
	Washer	AN960-616	6		
	Washer	AN960-616L	2		
	Nut	MS21042-5	4		

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

## KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
8.9 (Cont.)	Nut	MS21044N6	4		
	Bolt	AN6-12A	3		
	Bolt	AN6-45A	1		
	Bolt	NAS1305-10	4		
8.21	Tension Bolt	070064	1		
	Tension Block	300372	1		
9.0	Ring Terminal 16-14 #8	050020-7	4		
	Ring Terminal 16-14 #10	050020-8	2		
	Splice 16-14 Butt	050020-1	8		
	Heat Shrink ¼" x 24"	070077-24	1		
9.2	Tie Wrap	TY524M	200		
9.3	Electrical Box Assy.	540097	1		
	Cherry Max Rivet	CR3243-4-2	10		
	Cherry Max Rivet	CR3243-4-3	5		
9.5	Ring Terminal 8GA #10	050020-9	1		
9.7	Splice (Handshakes) 22-18	050020-6	4		
	Splice (Handshakes) 16-14	050020-2	4		
9.8	Aft Evaporator Switch Assy.	540095	1		
	Rivet	MS20470AD3-4	4		
	Screw	MS35214-29	2		
10.0	Rivnut	A10K80	10		
	Cherry Max Rivet	CR3243-4-4	6		
	Receiver/Drier	090016-5	1		
	Mounting Bracket, Stand Off	261202	1		
	Nut	MS21044N3	7		
	Nut Plate	MS21059L-3	5		
	Hose Clamp Mounting Bracket Assy.	510319	2		
	Rec/Drier Mount Bracket Assy.	510322	1		
	Service Port Mount Bracket Assy.	510323	1		
	Tie Block	ZZCR4HM	40		
	Screw	AN525-10R8	20		
	Screw	AN525-832R8	5		

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Section 1 Kit Inventory

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Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

## KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
10.0 (Cont.)	Rivet	MS20470AD4-5	60		
	Rivet	MS20470AD4-6	20		
	Rivet	CCR264SS3-3	50		
	Aluminum Tube	070080-1	1		
	Caterpillar	GM 1	24" In.		
10.1	Screw	AN525-10R10	10		
10.8	Switch Low Pressure	050107	1		
10.9	High Pressure Switch	090004	1		
10.12	#10 Hose-Comp to Aft Evap. Fwd Evap.	570037-1	1		
	Adel Clamp	MS21919WDG-10	15		
	Adel Clamp	MS21919WDG-11	15		
	Adel Clamp	MS21919WDG-12	15		
	#10 O-Ring	090094	4		
10.14	LH Forward Hose Doubler	261063-1	1		
	RH Forward Hose Doubler	261062-1	1		
	Rivet	MS20470AD4-4	50		
10.16	#8 Hose Comp. To Cond. Assy.	570038	1		
	#8 O-Ring	090093	4		
10.17	#6 Hose Rec/Drier to Aft & Fwd Evap.	570039	1		
	#6 Hose Rec/Drier to Condenser	570040	1		
	#6 O-Ring	090092	4		
12.24	7" Vane Axial Blower	IFSS 050084-7-3	1		



## KIT INVENTORY LIST

(Misc. Hardware)

PART NAME	PART #	QTY	Chk'd By	Verf'd By
Nut	AN365-624C	1		
Adel Clamp	MS21919WDG-2	2		
Nut	NAS509-6	1		
Insulation Cork Tape	070078-0	6' Ft.		
Rivet (Solid)	MS20470AD3-4	30		
Bolt	AN3-5A	10		
Nut	MS21044N3	25		
Rivnut	A10K80	10		
Screw	AN515-6R8	10		
Nut	MS21044N06	7		
Washer	AN960-10	40		
Bolt	AN3-4A	20		
Screw	AN525-832R12	25		
Nut Plate (Stainless)	MS21076-04N	35		
Nut	MS21044N6	4		
Bolt	NAS1305-10	4		
Ring Terminal 16-14 #10	050020-8	2		
Ring Terminal 8GA #10	050020-9	1		
16-14 x #10 Ring Terminal	MS25036-108	8		
Knife Splice 22-16	050020-6	4		
Screw	AN525-10R10	10		
Washer	NAS1149FN632P	10		
Rivet	AD44ABS	10		

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

### DRAWING LIST

DRAWING LIST	DRAWING #	QTY	Chk'd By	Verf'd By
AIR CONDITIONER OVERVIEW	1-1-MDHS 500 (1 of 1)	1		
ELECTRICAL INSTALL	2-1-MDHS 500 (1 of 4)	1		
ELECTRICAL INSTALL	2-1-MDHS 500 (2 of 4)	1		
ELECTRICAL INSTALL	2-1-MDHS 500 (3 of 4)	1		
ELECTRICAL INSTALL	2-1-MDHS 500 (4 of 4)	1		
ELECTRICAL INSTALL	2-2-MDHS 500 (1 of 4)	1		
ELECTRICAL INSTALL	2-2-MDHS 500 (2 of 4)	1		
ELECTRICAL INSTALL	2-2-MDHS 500 (3 of 4)	1		
ELECTRICAL INSTALL	2-2-MDHS 500 (4 of 4)	1		
PLUMBING INSTALL	3-1-MDHS 500 (1 of 3)	1		
PLUMBING INSTALL	3-1-MDHS 500 (2 of 3)	1		
PLUMBING INSTALL	3-1-MDHS 500 (3 of 3)	1		
AFT EVAPORATOR INSTALL	4-1-MDHS 500 (1 of 3)	1		
AFT EVAPORATOR INSTALL	4-1-MDHS 500 (2 of 3)	1		
AFT EVAPORATOR INSTALL	4-1-MDHS 500 (3 of 3)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (1 of 6)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (2 of 6)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (3 of 6)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (4 of 6)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (5 of 6)	1		
AIR DISTRIBUTION	5-1-MDHS 500 (6 of 6)	1		
COMPRESSOR INSTALLATION	6-1-MDHS 500 (1 of 3)	1		
COMPRESSOR INSTALLATION	6-1-MDHS 500 (2 of 3)	1		
COMPRESSOR INSTALLATION	6-1-MDHS 500 (3 of 3)	1		
SEAT PAN MODIFICATION	8-1-MDHS 500 (1 of 2)	1		
OIL BLOWER MODIFICATION	8-1-MDHS 500 (2 of 2)	1		

Integrated Flight Systems  
KIT INVENTORY LIST – MD500-00-011 Air Conditioning

### DRAWING LIST CONTINUED

DRAWING LIST	DRAWING #	QTY	Chk'd By	Verf'd By
COND/FORWARD EVAP INSTALL	9-1-MDHS 500 (1 of 5)	1		
COND/FORWARD EVAP INSTALL	9-1-MDHS 500 (2 of 5)	1		
COND/FORWARD EVAP INSTALL	9-1-MDHS 500 (3 of 5)	1		
COND/FORWARD EVAP INSTALL	9-1-MDHS 500 (4 of 5)	1		
COND/FORWARD EVAP INSTALL	9-1-MDHS 500 (5 of 5)	1		
LH DEFROSTER DUCT MOD ASSY	520101	1		
RH DEFROSTER DUCT MOD ASSY	520102	1		

### DOCUMENT LIST

DOCUMENT LIST	DOCUMENT #	QTY	Chk'd By	Verf'd By
INSTALLATION INSTRUCTIONS	Sect 5 - 10	1		
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS	Sect 12	1		
SUPPLEMENTAL TYPE CERTIFICATE (SR00060DE)	Sect 11	1		
FLIGHT MAUAL SUPPLEMENT	Sect 11	1		
MASTER PARTS LIST	Sect 13	1		
WARRANTY CLAIMS FORM	Sect 14	1		

**MAJOR COMPONENTS SERIAL NUMBERS:**

Condenser Blower S/N: \_\_\_\_\_

Condenser Blower S/N: \_\_\_\_\_

Aft Evaporator Blower S/N: \_\_\_\_\_

Compressor S/N: \_\_\_\_\_



## 1 Identification of substance

- **Product details**
- **Trade name:** 61003 Multi-Coat Blank Aerosol
- **Article number:** 61003
- **Manufacturer/Supplier:**  
SEM Products, Inc.  
651 Michael Wylie Dr.  
Charlotte, NC 28217  
USA  
(704)522-1006
- **Information department:** 24HR EMERGENCY CHEMTREC 800-424-9300

## 2 Composition/Data on components

- **Chemical characterization**
- **Description:** Mixture of the substances listed below with nonhazardous additions.

- **Dangerous components:**

67-64-1	acetone	50-100%
74-98-6	propane	10-25%
78-93-3	butanone	2.5-10%

## 3 Hazards identification

- **Hazard description:**



Irritant  
Extremely flammable

- **Information pertaining to particular dangers for man and environment:**

The product has to be labelled due to the calculation procedure of international guidelines.

Warning! Pressurized container.

Has a narcotizing effect.

Extremely flammable.

Irritating to eyes, respiratory system and skin.

Vapours may cause drowsiness and dizziness.

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C, i.e. electric lights. Do not pierce or burn, even after use.

100.0 % by mass of the contents are flammable

Keep out of the reach of children.

- **Classification system:**

The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

- **NFPA ratings (scale 0 - 4)**



Health = 2  
Fire = 4  
Reactivity = 0



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Trade name: 61003 Multi-Coat Blank Aerosol

(Cont'd. of page 1)

**HMS-ratings (scale 0 - 4)**

	2	Health = 2
	4	Fire = 4
	0	Reactivity = 0

#### 4 First aid measures

- **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
- **After skin contact:** Immediately wash with water and soap and rinse thoroughly.
- **After eye contact:**  
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
- **After swallowing:** If symptoms persist consult doctor.

#### 5 Fire fighting measures

- **Suitable extinguishing agents:** CO<sub>2</sub>, sand, extinguishing powder. Do not use water.
- **For safety reasons unsuitable extinguishing agents:** Water with full jet
- **Protective equipment:** No special measures required.

#### 6 Accidental release measures

- **Person-related safety precautions:** Wear protective equipment. Keep unprotected persons away.
- **Measures for environmental protection:** Do not allow to enter sewers/ surface or ground water.
- **Measures for cleaning/collecting:**  
Ensure adequate ventilation.  
Do not flush with water or aqueous cleansing agents

#### 7 Handling and storage

- **Handling:**
  - **Information for safe handling:**  
Open and handle receptacle with care.
  - **Information about protection against explosions and fires:**  
Do not spray on a naked flame or any incandescent material.  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C, i.e. electric lights. Do not pierce or burn, even after use.
- **Storage:**
  - **Requirements to be met by storerooms and receptacles:**  
Store in a cool location.  
Observe official regulations on storing packagings with pressurized containers.
  - **Information about storage in one common storage facility:** Not required.
  - **Further information about storage conditions:**  
Keep receptacle tightly sealed.  
Do not gas tight seal receptacle.  
Store in cool, dry conditions in well sealed receptacles.

(Cont'd. on page 3)



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Protect from heat and direct sunlight

(Contd. of page 2)

## 8 Exposure controls and personal protection

- Additional information about design of technical systems: No further data; see item 7.

- Components with limit values that require monitoring at the workplace:

### 67-64-1 acetone

PEL () 2400 mg/m<sup>3</sup>, 1000 ppm  
REL () 590 mg/m<sup>3</sup>, 250 ppm  
TLV () Short-term value: 1782 mg/m<sup>3</sup>, 750 ppm  
Long-term value: 1188 mg/m<sup>3</sup>, 500 ppm  
BEI

### 74-98-6 propane

PEL () 1800 mg/m<sup>3</sup>, 1000 ppm  
REL () 1800 mg/m<sup>3</sup>, 1000 ppm  
TLV () (450S) mg/m<sup>3</sup>, (2500) ppm

### 78-93-3 butanone

PEL () 590 mg/m<sup>3</sup>, 200 ppm  
REL () Short-term value: 885 mg/m<sup>3</sup>, 300 ppm  
Long-term value: 590 mg/m<sup>3</sup>, 200 ppm  
TLV () Short-term value: 885 mg/m<sup>3</sup>, 300 ppm  
Long-term value: 590 mg/m<sup>3</sup>, 200 ppm  
BEI

- Additional information: The lists that were valid during the creation were used as basis.

- Personal protective equipment:

- General protective and hygienic measures:

Keep away from foodstuffs, beverages and feed.  
Immediately remove all soiled and contaminated clothing.  
Wash hands before breaks and at the end of work.  
Avoid contact with the eyes and skin.

- Breathing equipment:

In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Use suitable respiratory protective device in case of insufficient ventilation.

- Protection of hands:



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.

Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

Selection of the glove material on consideration of the penetration times, rates of diffusion and the degradation

- Material of gloves

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. As the product is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

- Penetration time of glove material

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

(Contd. on page 4)





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(Cont'd. of page 3)

· Eye protection:



Tightly sealed goggles

## 9 Physical and chemical properties

### · General Information

Form: Aerosol  
Color: According to product specification  
Odor: Characteristic

### · Change in condition

Melting point/Melting range: Undetermined.  
Boiling point/Boiling range:  $< 0^{\circ}\text{C}$  ( $< 32^{\circ}\text{F}$ )

· Flash point:  $< 0^{\circ}\text{C}$  ( $< 32^{\circ}\text{F}$ )

· Ignition temperature:  $465.0^{\circ}\text{C}$  ( $869^{\circ}\text{F}$ )

· Auto igniting: Product is not selfigniting.

### · Danger of explosion:

#### · Explosion limits:

Lower: 1.7 Vol %  
Upper: 13.0 Vol %

· Vapor pressure at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ): 8300.0 hPa (6226 mm Hg)

· Density at  $20^{\circ}\text{C}$  ( $68^{\circ}\text{F}$ ): 0.70 g/cm<sup>3</sup>

### · Solubility in / Miscibility with

Water: Not miscible or difficult to mix.

### · Solvent content:

Organic solvents: 99.0 %  
VOC content: 34.0 %  
243.6 g/l / 2.03 lb/gal

## 10 Stability and reactivity

- Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- Dangerous reactions: No dangerous reactions known.
- Dangerous products of decomposition: No dangerous decomposition products known.

## 11 Toxicological information

### · Acute toxicity:

### · LD/LC50 values that are relevant for classification:

#### 67-64-1 acetone

Oral	LD50	5800 mg/kg (rat)
Dermal	LD50	20000 mg/kg (rabbit)

(Cont'd. on page 5)





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Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 4)

- **Primary irritant effect:**
  - **on the skin:** Irritant to skin and mucous membranes.
  - **on the eye:** Irritating effect.
- **Sensitization:** No sensitizing effects known.
- **Additional toxicological information:**  
The product shows the following dangers according to internally approved calculation methods for preparations:  
Irritant

## 12 Ecological information

- **General notes:**  
Water hazard class 3 (Self-assessment): extremely hazardous for water  
Do not allow product to reach ground water, water course or sewage system, even in small quantities.  
Danger to drinking water if even extremely small quantities leak into the ground.

## 13 Disposal considerations

- **Product:**
- **Recommendation:**  
Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- **Uncleaned packagings:**
- **Recommendation:** Disposal must be made according to official regulations.

## 14 Transport information

- **DOT regulations:**



- **Hazard class:** 2.1
- **Identification number:** UN1950
- **Packing group:** -
- **Proper shipping name (technical name):** AEROSOLS, flammable
- **Label:** 2.1

- **Land transport ADR/RID (cross-border):**



- **ADR/RID class:** 2 SF Gases
- **Danger code (Kemler):** 23
- **UN-Number:** 1950
- **Packaging group:** -
- **Label:** 2.1

(Contd. on page 6)



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Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 6)

**NTP (National Toxicology Program)**

None of the ingredients is listed.

**TLV (Threshold Limit Value established by ACGIH)**

67-64-1 acetone

A4

**NIOSH-Ca (National Institute for Occupational Safety and Health)**

None of the ingredients is listed.

**OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

**Product related hazard informations:**

The product has been classified and marked in accordance with directives on hazardous materials.

**Hazard symbols:**

Irritant  
Extremely flammable

**Risk phrases:**

Extremely flammable.  
Irritating to eyes, respiratory system and skin.  
Vapours may cause drowsiness and dizziness.

**Safety phrases:**

Keep in a cool place.  
Keep container in a well-ventilated place.  
Use only in well-ventilated areas.  
This material and its container must be disposed of as hazardous waste.

**Special labeling of certain preparations:**

Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C, i.e. electric lights. Do not pierce or burn, even after use.  
100.0 % by mass of the contents are flammable  
Keep out of the reach of children.

**16 Other information**

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

- Department issuing MSDS: Environment protection department.
- Contact: Mr. George Wallace

## **Step 2**

# **Aircraft Pre-Inspection**

## Aircraft Pre-Inspection

STEP	PROCEDURE	MECH	INSP
2.1	Inspect the aircraft for other kits and modifications that may effect the installation of the air conditioning kit.		
2.2	Inspect the airframe structure for any obvious structural damage or corrosion.		
2.3	Repair discrepancies that are found prior to installation of kit.		
2.4	Inspect aircraft paperwork for damage history that may effect the installation of this kit.		

**This kit is eligible for installation in an McDonnell Douglas  
500N, 369E and 369FF**

**WARNING**  
**THIS INSTALLATION SHOULD NOT BE EXTENDED TO ELIGIBLE  
AIRCRAFT ON WHICH OTHER PREVIOUSLY FAA APPROVED  
MODIFICATIONS ARE INCORPORATED UNLESS IT IS  
DETERMINED BY THE INSTALLER THAT THE  
INTERRELATIONSHIP BETWEEN THIS CHANGE AND ANY OF  
THOSE OTHER PREVIOUSLY APPROVED MODIFICATIONS WILL  
PRODUCE NO ADVERSE EFFECT UPON THE AIRWORTHINESS  
OF THE AIRCRAFT.**

## General Safety Instructions

PROCEDURE
<b><u>WARNING:</u></b> Always handle the refrigerant fluids carefully.
<b><u>WARNING:</u></b> Do not mix other refrigerant fluids with the R134a. Do not use refrigerant canned for pressure-operated accessories (such as boat air horns). This refrigerant is not pure and will cause malfunctions in the system.
<b><u>WARNING:</u></b> When the system must be opened to do maintenance, before you do the work, you must drain the air conditioning system.
<b><u>WARNING:</u></b> When you open the system, you must collect the refrigerant in accordance with Federal and Local regulations.
<b><u>WARNING:</u></b> When the R134a is used in normal conditions, it is not flammable. Do not use it near a source of heat to prevent the risk of separation of the vapors.
<b><u>WARNING:</u></b> Avoid skin and eye contact with R-134a. The liquid R-134a, at normal atmospheric temperatures evaporates so quickly that it will freeze anything it comes in contact with.
<b><u>WARNING:</u></b> Wear safety goggles when servicing any part of the refrigerant system.
<b><u>WARNING:</u></b> Never heat a R-134a supply cylinder to produce additional pressure or attempt to empty the container completely.
<b><u>WARNING:</u></b> Insure adequate ventilation when servicing the refrigerant system.
<b><u>WARNING:</u></b> If the R-134a and lubrication oil are mixed with water they make hydrochloric acid. This will cause corrosion of the system components.

## General Safety Instructions

PROCEDURE
<b><u>WARNING:</u></b> You must replace the filter drier each time you open the system.
<b><u>WARNING:</u></b> Comply with the regulations in force in the country where the aircraft is operated when working on the air conditioning system.
<b><u>WARNING:</u></b> Only use nitrogen or Alcohol to clean the system components.
<b><u>WARNING:</u></b> Always keep the R-134a supply cylinder in an upright position when admitting refrigerant into the system. If a cylinder is on its side or upside down, liquid will enter the R-134a system and cause damage to the compressor.

## **Step 3**

# **Aircraft Preparation**

## Aircraft Preparation

**NOTE:** Step 3 instructions to be performed in accordance with the applicable McDonnell Douglas service manuals.

STEP	PROCEDURE	MECH	INSP
3.0	<b>NOTE: STORE ALL REMOVED ITEMS</b>		
3.1	<u>COCKPIT/CABIN:</u> Remove the left and right hand forward cabin doors. Remove left and right hand rear cabin doors. Remove battery and store Remove left and right hand chin windows Remove right hand (pilot) rudder pedals if installed. Remove all seat cushions Remove cyclic cover Remove headliner in aft cabin. Remove rear seat assembly. Remove rear cabin bulkhead upholstery panels. Remove aft cabin seats and floor panel. Remove aft side of door posts décor panels at station 78.50. Remove foot wells both left and right side. Remove left and right side instrument console covers as well as the top panel. Remove fresh air inlet duct (it will not be reused).		
3.2	<u>UPPER DECK AREA:</u> Remove left and right side composite cowlings from both sides of transmission Remove particle separator (if installed). Remove MDHS protective screen assembly, P/N 369D25640, located immediately above rotor brake area.		
3.3	<u>FUSELAGE:</u> Remove landing light		
3.4	<u>TRANSMISSION COMPARTMENT:</u> Remove drive shaft cover		



Integrated Flight Systems  
AIRCRAFT PREPARATION – MD500 Air Conditioning

**NOTE:**

**After installation of system, a thorough inspection of all areas affected must be performed to determine security component installations and workman-ship standards prior to reassembly of aircraft and return to service by a qualified individual.**

## **Step 4**

# **Removal of Factory Installed Components**

## Removal of Factory Installed Components

**NOTE:** Step 4 to be completed in accordance with applicable McDonnell Douglas service manuals.

STEP	PROCEDURE	MECH	INSP
4.0	Remove the lower chin bubble windows (both sides), to aid in the installation and prevent damage to the windows.		

## **Step 5**

# **Seat Pan & Oil Blower Modification, Evaporator Return Air Doubler Installation**

Integrated Flight Systems  
SEAT PAN & OIL BLOWER MODIFICATION, EVAPORATOR RETURN AIR  
DOUBLER INSTALLATION – MD500 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.0	<b><u>SEAT PAN MODIFICATION:</u></b> See drawing 8-1-MDHS 500, sheet 1 of 2.		
5.1	Locate the two seat pans supplied in the kit, IFS P/N 261023 and IFS PN 261024, and review drawing sheet 1 of 2 prior to beginning the work.		
5.2	Remove all of the sheet metal in the top of each seat. Take care to ensure that the instructions in the note number at the top of the page and a second note of the same number within the outline of the left hand seat are adhered to. <b>Remove all shavings or debris.</b>		
5.3	Note that the majority of the nut plates to be installed are MS21059L3 (#10) as supplied in the kit but that some existing #8 nut plates previously installed will be utilized.		
5.4	Trial fit each of the seat pans, left and right, and trim, as required, to the notes on the drawing to clear existing rivet heads and maintain proper edge distance. <b>Remove all shavings or debris.</b>		
5.5	Ensure that the pilot holes in the seat pans are not drilled to excessive oversized dimensions. The same is true of the holes as called out in note 2 at the top of the drawing where the dimension for the floating nut plate is held to <b>.200 diameters</b> as opposed to the more traditional .250 diameters. <b>Remove all shavings or debris.</b>		
5.6	It is essential that all holes in the seat pans mate to the nut plates in a tight fitting manner to ensure that the original MDHS design is not compromised.		
5.7	Install seat pans using AN525-10R7 screws except where #8 screws are required.		

Date: 05/01/09

Section 5: Seat Pan & Oil Blower Mod., Evap. Ret. Air Doubler Installation Page 2 of 3

Integrated Flight Systems  
SEAT PAN & OIL BLOWER MODIFICATION, EVAPORATOR RETURN AIR  
DOUBLER INSTALLATION – MD500 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.10	<b><u>OIL BLOWER MODIFICATION:</u></b> See drawing 8-1-MDHS 500, sheet 2 of 2.		
5.11	Secure screen assembly, IFS P/N 530095-1, from the kit and trial fit to the topside of the existing MDHS oil cooler blower.		
5.12	It is essential that the screen assembly, which is provided to protect the oil cooler blower and its drive belt in the event of an IFS air conditioning belt breakage, be installed precisely as shown. MDHS engineers have reviewed the method of installation and are totally opposed to securing the screen to the existing composite oil cooler blower housing in any manner other than the one shown on the FAA approved drawings.		
5.13	See install instructions on the drawing for all necessary mounting notes.		
5.20	<b><u>EVAPORATOR RETURN AIR DOUBLER INSTALL:</u></b> See drawings 4-1-MDHS 500 sheet 1 & 2 of 3.		
5.21	Secure doubler IFS P/N 261032-1 from kit. Locate doubler 8.4” inboard from the right side of the pilot’s seat and immediately below the extruded angle at the top of the seat at station 65.04.		
5.22	See sheet 2 of 3 for <b>INSTALLATION INSTRUCTIONS.</b>		

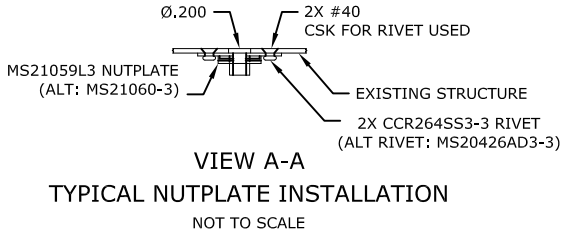
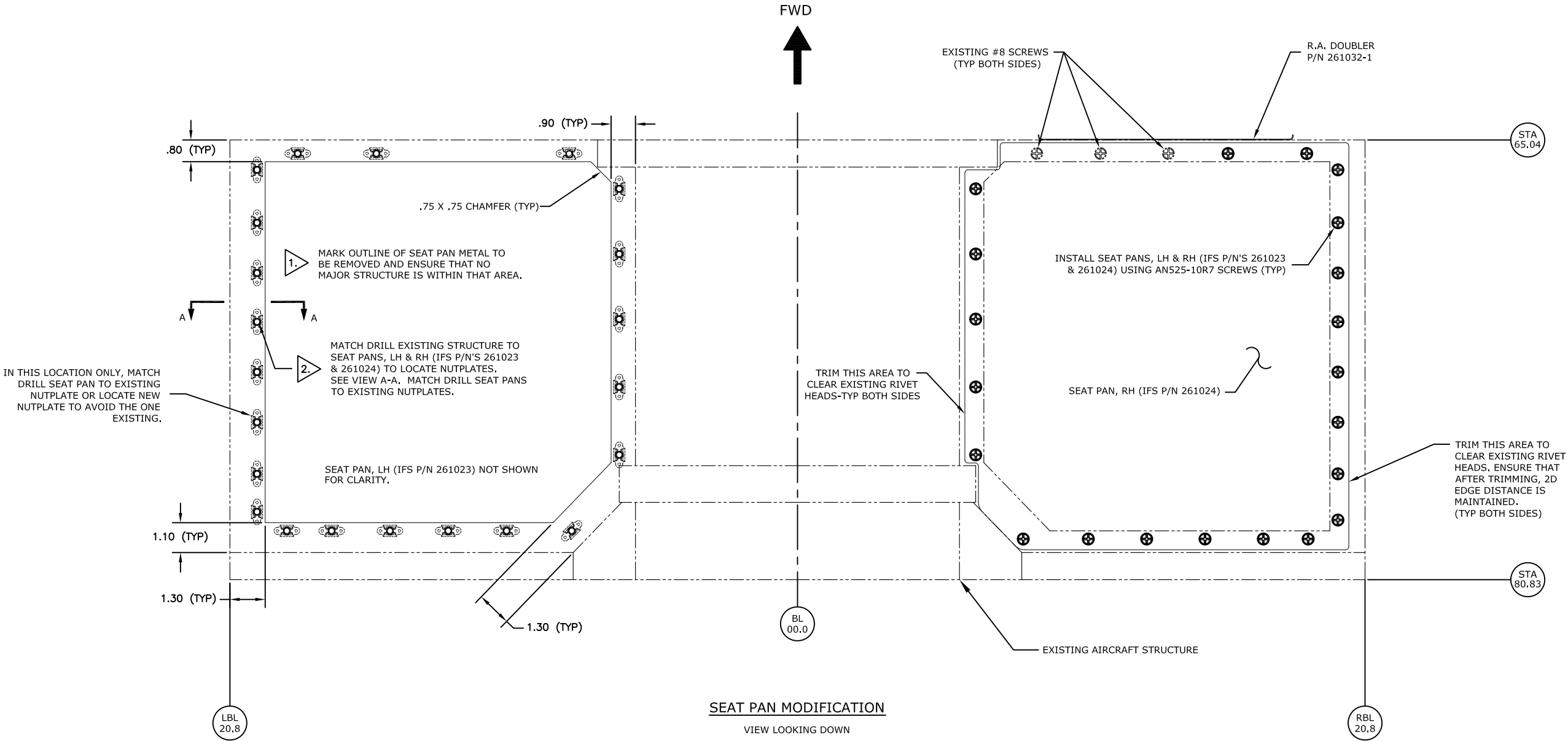
Date: 05/01/09

Section 5: Seat Pan & Oil Blower Mod., Evap. Ret. Air Doubler Installation Page 3 of 3

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

NOTES:

1. CUT OUT DIMENSIONS TYPICAL LH AND RH SIDES.
2. DRILL #10 DIAMETER HOLE.  
DRILL RIVET HOLES WITH NUTPLATE TEMPLATE.  
COUNTERSINK RIVET HOLES.  
DRILL #10 DIAMETER HOLE OUT TO .200 DIA.



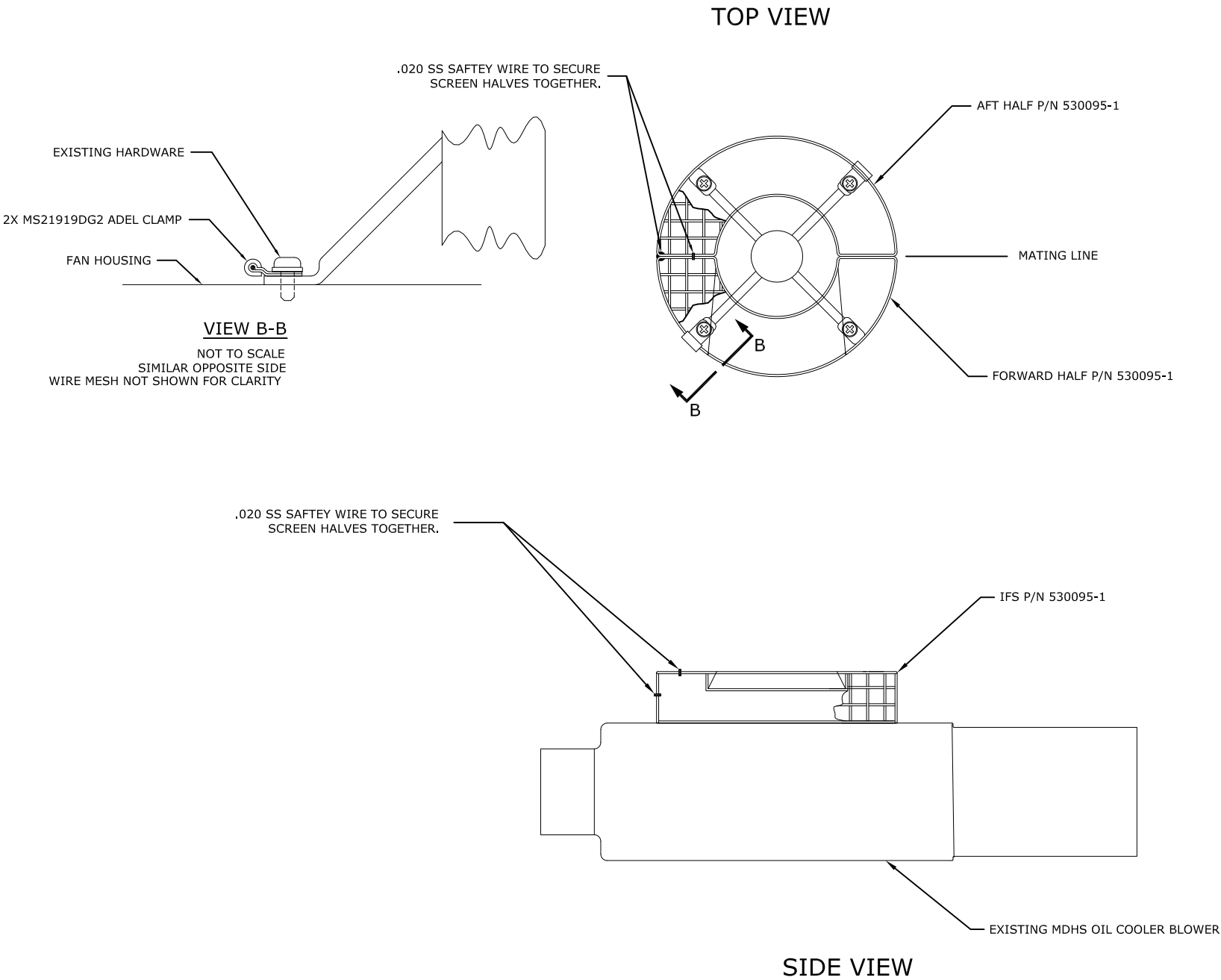
NOTE:

ENSURE THAT NUT PLATES DO NOT SIT ON UNEVEN SURFACES, PARTICULARLY THE AFT ROW, BOTH SIDES.



TITLE: SEAT PAN MODIFICATION				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 2
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 8-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



## INSTALL INSTRUCTIONS

1. REFER TO MDHS 500 SERIES MAINTENANCE MANUAL FOR ALL REMOVAL AND INSTALLATION PROCEDURES.
2. REMOVE TRANSMISSION FOR PULLEY INSTALLATION.
3. REMOVE BLOWER ASSEMBLY IF REQUIRED.
4. INSTALL SCREEN ASSEMBLY (P/N 530095-1) UTILIZING .020 SS SAFTEY WIRE AT MATING SURFACES.
5. INSTALL SCREEN ASSEMBLY TO BLOWER HOUSING W/EXISTING HDWR.
6. REINSTALL BLOWER.



TITLE: OIL BLOWER MODIFICATION

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 2
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 8-1-MDHS 500	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

NOTE:  
MDHS CYCLIC COVER NOT SHOWN ON THIS PAGE FOR CLARITY  
SEE PAGE 3 OF 3 FOR CYCLIC COVER VARIATIONS.



FORE/AFT LOCATION OF MOUNT  
COMPONENTS IS DETERMINED BY  
EXISTING VERTICAL ANGLE.

ATTACH AFT EVAP MOUNT CHANNEL ASSY  
(IFS P/N 510276) TO INBOARD SEAT CLOSE  
OUT USING 2X AN3-5A BOLTS, 4X AN960-10  
WASHERS, AND 2X MS21044N3 NUTS.

ATTACH AFT EVAPORATOR RETURN AIR DOUBLER  
(IFS P/N 261032-1) TO FORWARD FACE OF SEAT  
CLOSE OUT USING 44X MS20470AD4-4 RIVETS.

MATCH DRILL DOUBLER, A/C STRUCTURE  
AND MOUNTING FLANGE OF FWD EVAP. HOUSING  
IN 4X LOCATIONS SHOWN. ATTACH MOUNTING  
FLANGE OF EVAPORATOR HOUSING TO  
VERTICAL FACE OF SEAT AND DOUBLER  
WITH 4X AN3-4 BOLTS, 4X AN960-10 WASHERS, AND  
4X MS21044N3 NUTS (SEE VIEW D-D).  
AS AN OPTION TO SPECIFIED NUTS AND WASHERS,  
MS21059L3 NUTPLATES MAY BE INSTALLED ON THE  
AFT SIDE OF THE EVAPORATOR HOUSING MOUNTING  
FLANGE.

TOP VIEW

OUTBOARD RIGHT

MATCH DRILL AFT EVAP MOUNT CHANNEL ASSY  
(IFS P/N 510276) TO EVAP MOUNT ANGLE  
ASSY (IFS P/N 510277) AND ATTACH USING 2X  
AN3-5A BOLTS, AND 2X AN960-10 WASHERS.

ATTACH AFT EVAPORATOR ASSY  
(IFS P/N 560057) TO AFT EVAP MOUNT  
CHANNEL ASSY (IFS P/N 510276) USING  
4X AN3-5A BOLTS, AND 4X AN960-10  
WASHERS.

ATTACH BLOWER ASSY (IFS P/N 490032)  
TO AFT EVAPORATOR ASSY (IFS P/N 560057)  
USING 3X AN3-5A BOLTS, AND 3X AN960-10  
WASHERS.

FWD

TOP OF SEAT REMOVED  
FOR CLARITY

2.25 (REF)

VIEW C-C  
LOOKING OUTBOARD

AREA UNDER SEAT  
REMOVED FOR CLARITY

EXPANSION VALUE  
DELETED FOR CLARITY

VIEW B-B  
LOOKING FORWARD  
OUTBOARD

ATTACH 1/2" DRAIN TUBE TO EVAPORATOR DRAIN  
FITTING USING SS SAFETY WIRE OR A HOSE CLAMP.  
CUT HOLE IN AIRCRAFT SKIN, INSTALL GROMMET AND  
ROUTE TO OUTSIDE OF AIRCRAFT.

GROMMET

AIRCRAFT SKIN

UNDER RIGHT SIDE SEAT

SEE SHEET 2 FOR INSTALLATION INSTRUCTIONS

TEMPORARILY REMOVE APU PLUG  
FOR ACCESS WHILE INSTALLING  
AFT EVAPORATOR.

ATTACH AFT EVAP MOUNT ANGLE ASSY  
(IFS P/N 510277) TO SIDE SEAT CLOSE OUT  
USING 2X AN3-5A BOLTS, 4X AN960-10  
WASHERS, AND 2X MS21044N3 NUTS.

NOTE: USE OF SHIMS  
P/N 261178, 261178-1,  
261178-2 MAY BE NECESSARY  
BECAUSE OF CORRUGATION ON  
INSIDE WALL.

BUTT DOUBLER UP AGAINST  
EXISTING ANGLE

EVAPORATOR RETURN  
AIR DOUBLER  
(IFS P/N 261032-1)

VIEW D-D  
LOOKING AFT  
OUTBOARD



TITLE: AFT EVAPORATOR INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	

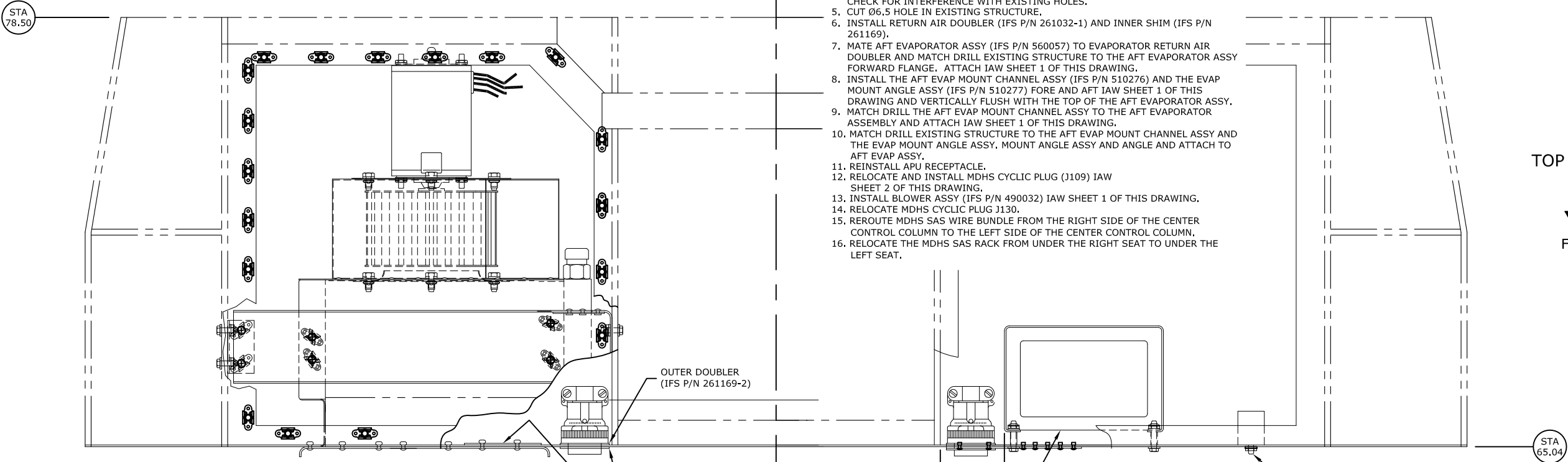
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

NOTE:  
MDHS CYCLIC COVER NOT SHOWN ON THIS PAGE FOR CLARITY  
SEE PAGE 3 OF 3 FOR CYCLIC COVER VARIATIONS.

INSTALLATION INSTRUCTIONS.

1. TEMPORARILY REMOVE APU RECEPTACLE.
2. REMOVE MDHS CYCLIC PLUG (J109) AND EXISTING DOUBLER.
3. REMOVE MDHS SAS RACK (500N ONLY).
4. LOCATE EVAPORATOR RETURN AIR DOUBLER (IFS P/N 261032-1) IAW SHEET 1, VIEW D-D OF THIS DRAWING, MARK PILOT HOLES ON EXISTING STRUCTURE AND CHECK FOR INTERFERENCE WITH EXISTING HOLES.
5. CUT Ø6,5 HOLE IN EXISTING STRUCTURE.
6. INSTALL RETURN AIR DOUBLER (IFS P/N 261032-1) AND INNER SHIM (IFS P/N 261169).
7. MATE AFT EVAPORATOR ASSY (IFS P/N 560057) TO EVAPORATOR RETURN AIR DOUBLER AND MATCH DRILL EXISTING STRUCTURE TO THE AFT EVAPORATOR ASSY FORWARD FLANGE. ATTACH IAW SHEET 1 OF THIS DRAWING.
8. INSTALL THE AFT EVAP MOUNT CHANNEL ASSY (IFS P/N 510276) AND THE EVAP MOUNT ANGLE ASSY (IFS P/N 510277) FORE AND AFT IAW SHEET 1 OF THIS DRAWING AND VERTICALLY FLUSH WITH THE TOP OF THE AFT EVAPORATOR ASSY.
9. MATCH DRILL THE AFT EVAP MOUNT CHANNEL ASSY TO THE AFT EVAPORATOR ASSEMBLY AND ATTACH IAW SHEET 1 OF THIS DRAWING.
10. MATCH DRILL EXISTING STRUCTURE TO THE AFT EVAP MOUNT CHANNEL ASSY AND THE EVAP MOUNT ANGLE ASSY. MOUNT ANGLE ASSY AND ANGLE AND ATTACH TO AFT EVAP ASSY.
11. REINSTALL APU RECEPTACLE.
12. RELOCATE AND INSTALL MDHS CYCLIC PLUG (J109) IAW SHEET 2 OF THIS DRAWING.
13. INSTALL BLOWER ASSY (IFS P/N 490032) IAW SHEET 1 OF THIS DRAWING.
14. RELOCATE MDHS CYCLIC PLUG J130.
15. REROUTE MDHS SAS WIRE BUNDLE FROM THE RIGHT SIDE OF THE CENTER CONTROL COLUMN TO THE LEFT SIDE OF THE CENTER CONTROL COLUMN.
16. RELOCATE THE MDHS SAS RACK FROM UNDER THE RIGHT SEAT TO UNDER THE LEFT SEAT.

TOP VIEW  
↓  
FWD



INSTALL INNER SHIM (IFS P/N 261169) IN LOCATION SHOWN TO COVER ORIGINAL CYCLIC PLUG LOCATION. MATCH DRILL SHIM TO EXISTING STRUCTURE THEN MATCH DRILL RETURN AIR DOUBLER TO SHIM AND EXISTING STRUCTURE. ATTACH USING MS20470AD4-4 RIVETS.

OUTER DOUBLER  
(IFS P/N 261169-2)

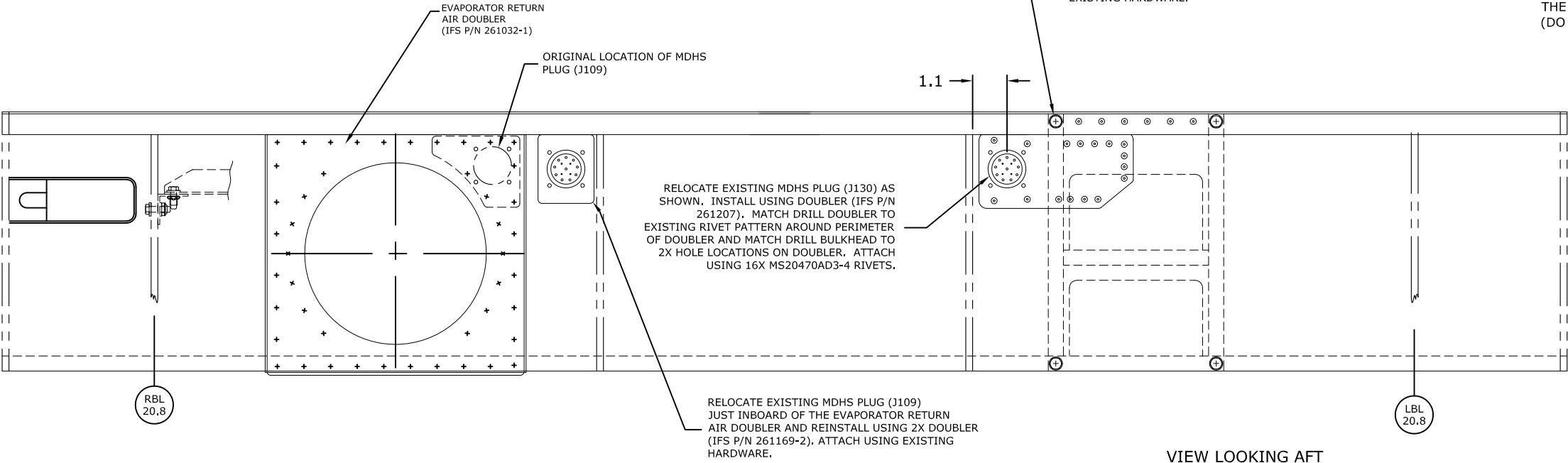
OUTER DOUBLER  
(IFS P/N 261169-2)

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AFTER REROUTING SAS WIRE BUNDLE ATTACH EXISTING RELAY IN AN EXISTING HOLE USING EXISTING HARDWARE.

NOTE: (500N ONLY)  
RELOCATE SAS RACK AS SHOWN. DRILL OUT 4X EXISTING RIVETS, ENLARGE HOLES TO Ø.194 (#10) AND ATTACH USING EXISTING HARDWARE.

NOTE: (500N ONLY)  
SAS MUST BE RELOCATED AND PLACED IN THE EXACT SAME ORIENTATION AS REMOVED (DO NOT ROTATE IN ANY MANNER)



RELOCATE EXISTING MDHS PLUG (J130) AS SHOWN. INSTALL USING DOUBLER (IFS P/N 261207). MATCH DRILL DOUBLER TO EXISTING RIVET PATTERN AROUND PERIMETER OF DOUBLER AND MATCH DRILL BULKHEAD TO 2X HOLE LOCATIONS ON DOUBLER. ATTACH USING 16X MS20470AD3-4 RIVETS.

RELOCATE EXISTING MDHS PLUG (J109) JUST INBOARD OF THE EVAPORATOR RETURN AIR DOUBLER AND REINSTALL USING 2X DOUBLER (IFS P/N 261169-2). ATTACH USING EXISTING HARDWARE.

VIEW LOOKING AFT  
AT STA 65.04

DETAIL OF CYCLIC PLUG RELOCATION



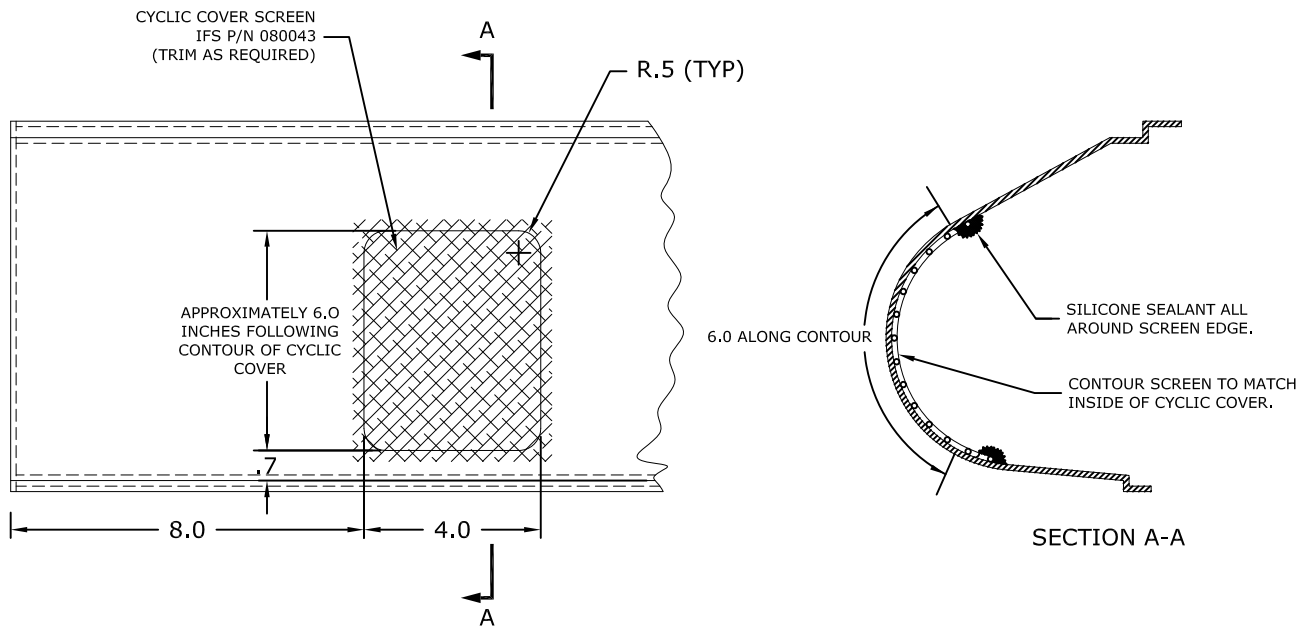
TITLE: AFT EVAPORATOR INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	

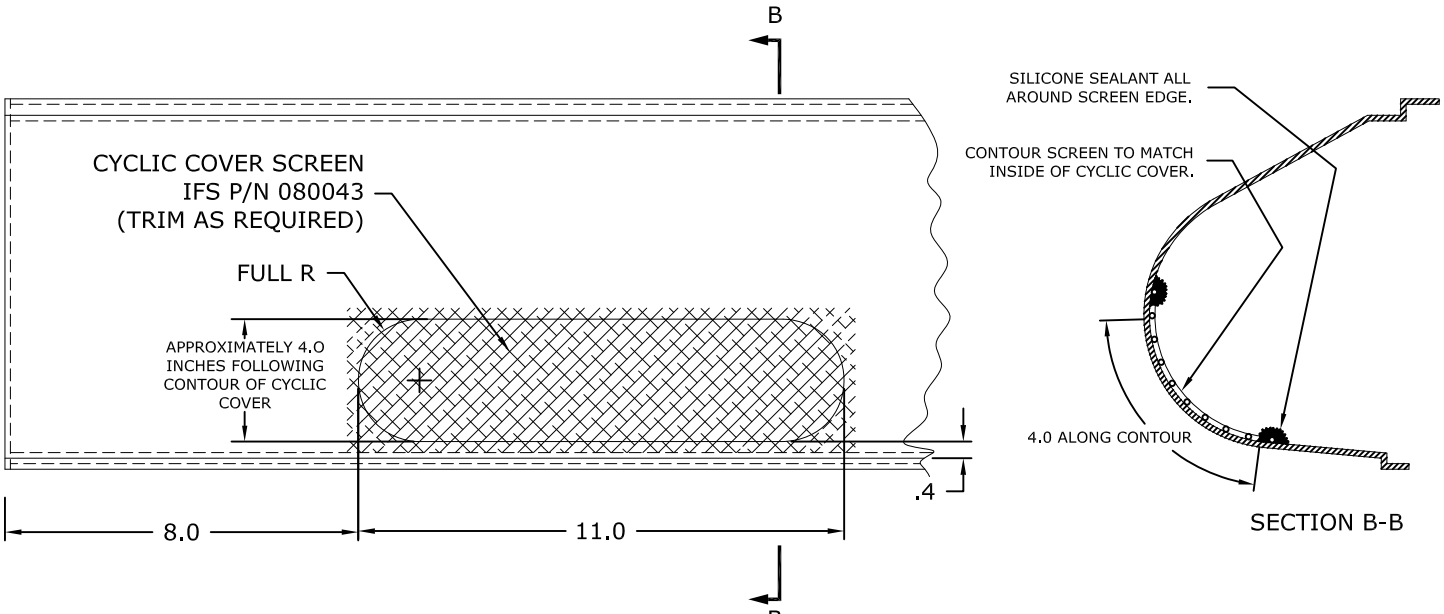
CYCLIC COVER SCREEN VARIATIONS  
CYCLIC CONTROLS NOT SHOWN FOR CLARITY

REVISION RECORD

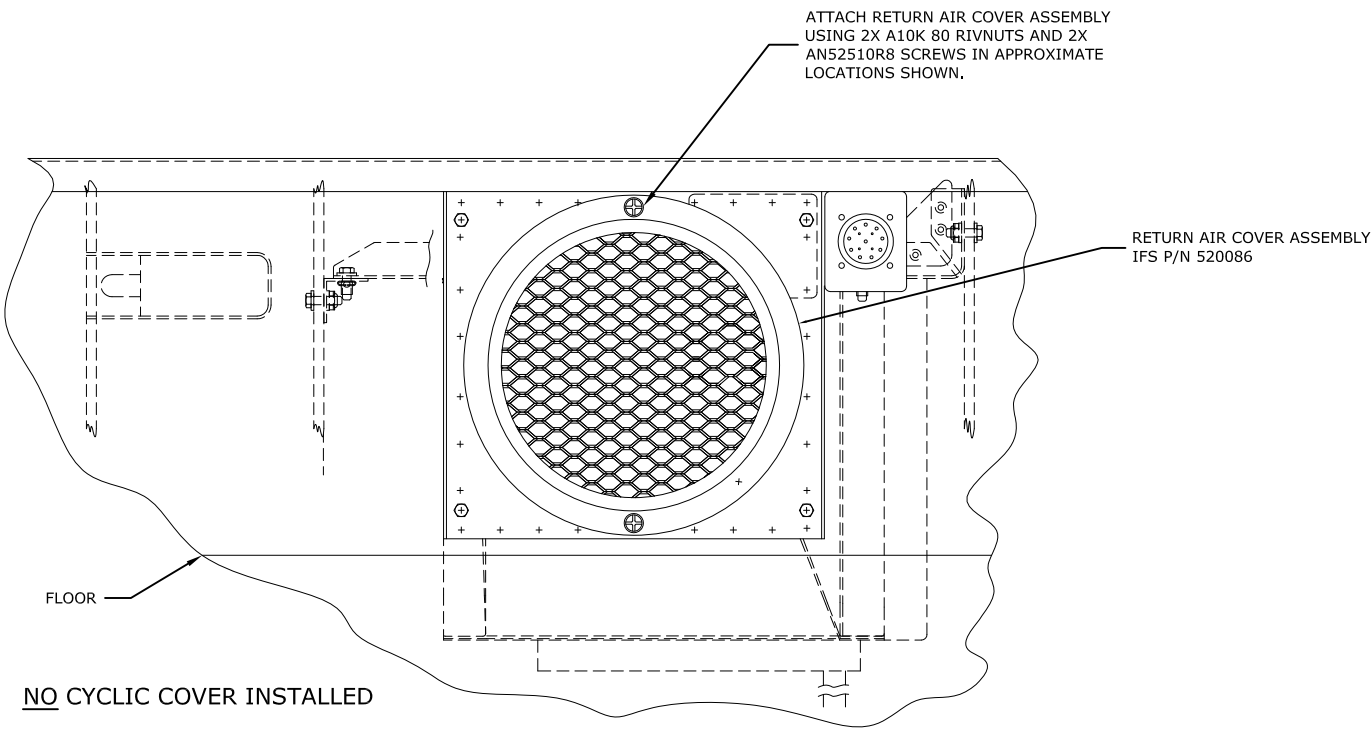
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



CYCLIC COVER SCREEN INSTALLATION  
WITH SLANT RADIO PANEL INSTALLED.  
VIEW LOOKING AFT



CYCLIC COVER SCREEN INSTALLATION  
WITHOUT SLANT RADIO PANEL INSTALLED.  
VIEW LOOKING AFT



NO CYCLIC COVER INSTALLED

VIEW LOOKING AFT AT STA 65.04



TITLE: AFT EVAPORATOR INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	

## **Step 6**

# **Installation of AFT Evaporator**

## Installation of AFT Evaporator

**Warning:** The minimum clearance of the flight controls is .15 inches. The clearance must maintained throughout installation of evaporator and condenser.

**Caution:** After any step that requires drilling. Care must be taken to remove any shavings from the area.

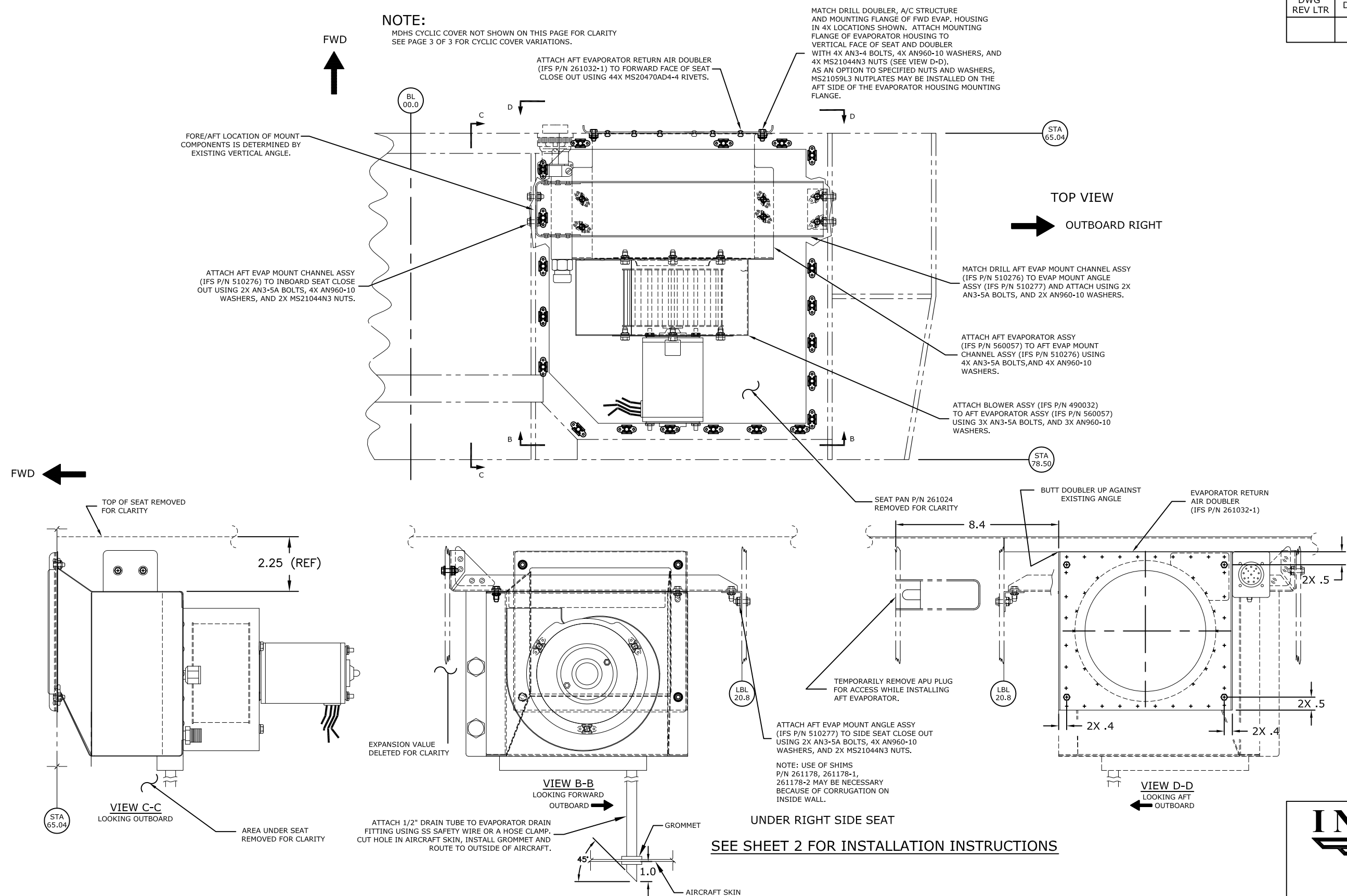
**NOTE:** Torque all fasteners with applicable McDonnell Douglas service manuals or utilize AC 43.13.

STEP	PROCEDURE	MECH	INSP
6.0	See drawing 4-1-MDHS 500, sheets 1, 2, 3 of 3.		
6.1	Secure drawing sheet 2 of 3. <b>STUDY INSTALLATION INSTRUCTIONS</b> provided at the top/center of the page.		
6.2	Locate all parts referenced on the drawing prior to beginning installation.		

**NOTE:** Some installation instructions pertain to the 500N only due to the requirements to relocate the SAS rack and associated wiring, which is not found in any other of the 369 series helicopters.

6.3	<b><u>AFT AIR DISTRIBUTION:</u></b> See drawing 5-1-MDHS 500, sheets 4, 5, 6 of 6.		
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REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



TITLE: AFT EVAPORATOR INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	

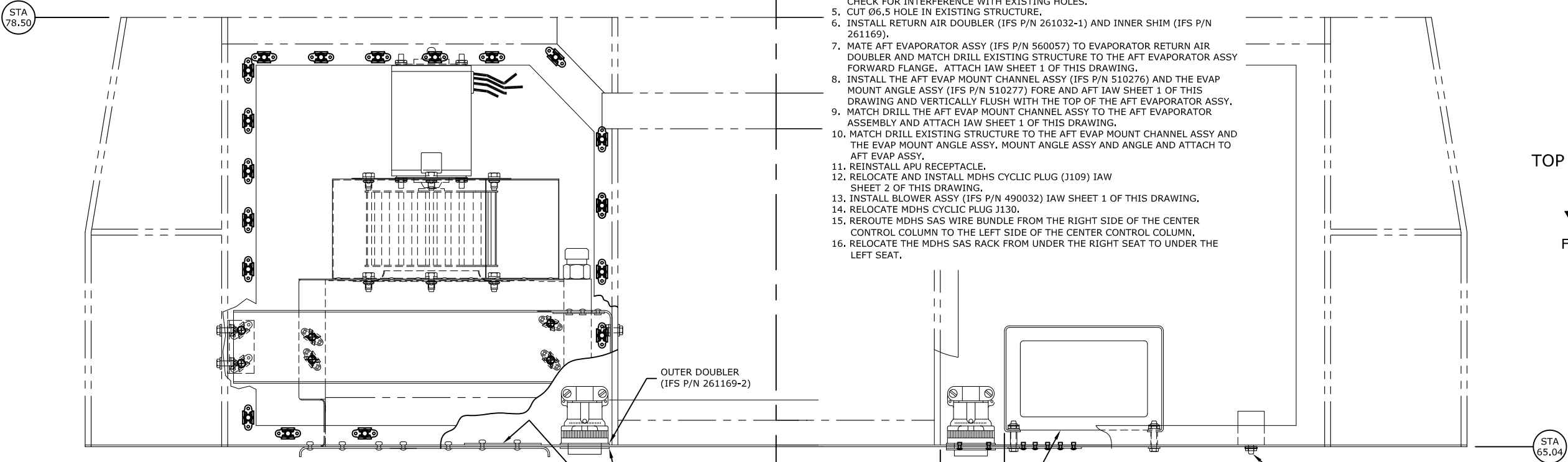
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

NOTE:  
MDHS CYCLIC COVER NOT SHOWN ON THIS PAGE FOR CLARITY  
SEE PAGE 3 OF 3 FOR CYCLIC COVER VARIATIONS.

INSTALLATION INSTRUCTIONS.

1. TEMPORARILY REMOVE APU RECEPTACLE.
2. REMOVE MDHS CYCLIC PLUG (J109) AND EXISTING DOUBLER.
3. REMOVE MDHS SAS RACK (500N ONLY).
4. LOCATE EVAPORATOR RETURN AIR DOUBLER (IFS P/N 261032-1) IAW SHEET 1, VIEW D-D OF THIS DRAWING, MARK PILOT HOLES ON EXISTING STRUCTURE AND CHECK FOR INTERFERENCE WITH EXISTING HOLES.
5. CUT Ø6,5 HOLE IN EXISTING STRUCTURE.
6. INSTALL RETURN AIR DOUBLER (IFS P/N 261032-1) AND INNER SHIM (IFS P/N 261169).
7. MATE AFT EVAPORATOR ASSY (IFS P/N 560057) TO EVAPORATOR RETURN AIR DOUBLER AND MATCH DRILL EXISTING STRUCTURE TO THE AFT EVAPORATOR ASSY FORWARD FLANGE. ATTACH IAW SHEET 1 OF THIS DRAWING.
8. INSTALL THE AFT EVAP MOUNT CHANNEL ASSY (IFS P/N 510276) AND THE EVAP MOUNT ANGLE ASSY (IFS P/N 510277) FORE AND AFT IAW SHEET 1 OF THIS DRAWING AND VERTICALLY FLUSH WITH THE TOP OF THE AFT EVAPORATOR ASSY.
9. MATCH DRILL THE AFT EVAP MOUNT CHANNEL ASSY TO THE AFT EVAPORATOR ASSEMBLY AND ATTACH IAW SHEET 1 OF THIS DRAWING.
10. MATCH DRILL EXISTING STRUCTURE TO THE AFT EVAP MOUNT CHANNEL ASSY AND THE EVAP MOUNT ANGLE ASSY. MOUNT ANGLE ASSY AND ANGLE AND ATTACH TO AFT EVAP ASSY.
11. REINSTALL APU RECEPTACLE.
12. RELOCATE AND INSTALL MDHS CYCLIC PLUG (J109) IAW SHEET 2 OF THIS DRAWING.
13. INSTALL BLOWER ASSY (IFS P/N 490032) IAW SHEET 1 OF THIS DRAWING.
14. RELOCATE MDHS CYCLIC PLUG J130.
15. REROUTE MDHS SAS WIRE BUNDLE FROM THE RIGHT SIDE OF THE CENTER CONTROL COLUMN TO THE LEFT SIDE OF THE CENTER CONTROL COLUMN.
16. RELOCATE THE MDHS SAS RACK FROM UNDER THE RIGHT SEAT TO UNDER THE LEFT SEAT.

TOP VIEW  
↓  
FWD



INSTALL INNER SHIM (IFS P/N 261169) IN LOCATION SHOWN TO COVER ORIGINAL CYCLIC PLUG LOCATION. MATCH DRILL SHIM TO EXISTING STRUCTURE THEN MATCH DRILL RETURN AIR DOUBLER TO SHIM AND EXISTING STRUCTURE. ATTACH USING MS20470AD4-4 RIVETS.

OUTER DOUBLER  
(IFS P/N 261169-2)

OUTER DOUBLER  
(IFS P/N 261169-2)

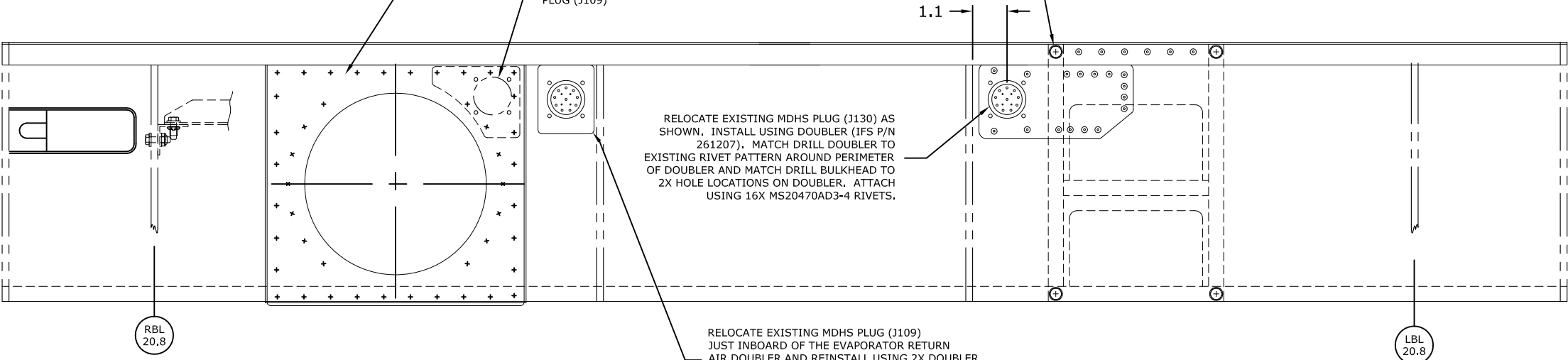
BL  
00.0

EVAPORATOR RETURN  
AIR DOUBLER  
(IFS P/N 261032-1)

ORIGINAL LOCATION OF MDHS  
PLUG (J109)

NOTE: (500N ONLY)  
RELOCATE SAS RACK AS SHOWN. DRILL OUT 4X EXISTING RIVETS, ENLARGE HOLES TO Ø.194 (#10) AND ATTACH USING EXISTING HARDWARE.

NOTE: (500N ONLY)  
SAS MUST BE RELOCATED AND PLACED IN THE EXACT SAME ORIENTATION AS REMOVED (DO NOT ROTATE IN ANY MANNER)



RELOCATE EXISTING MDHS PLUG (J130) AS SHOWN. INSTALL USING DOUBLER (IFS P/N 261207). MATCH DRILL DOUBLER TO EXISTING RIVET PATTERN AROUND PERIMETER OF DOUBLER AND MATCH DRILL BULKHEAD TO 2X HOLE LOCATIONS ON DOUBLER. ATTACH USING 16X MS20470AD3-4 RIVETS.

RELOCATE EXISTING MDHS PLUG (J109) JUST INBOARD OF THE EVAPORATOR RETURN AIR DOUBLER AND REINSTALL USING 2X DOUBLER (IFS P/N 261169-2). ATTACH USING EXISTING HARDWARE.

VIEW LOOKING AFT  
AT STA 65.04

DETAIL OF CYCLIC PLUG RELOCATION



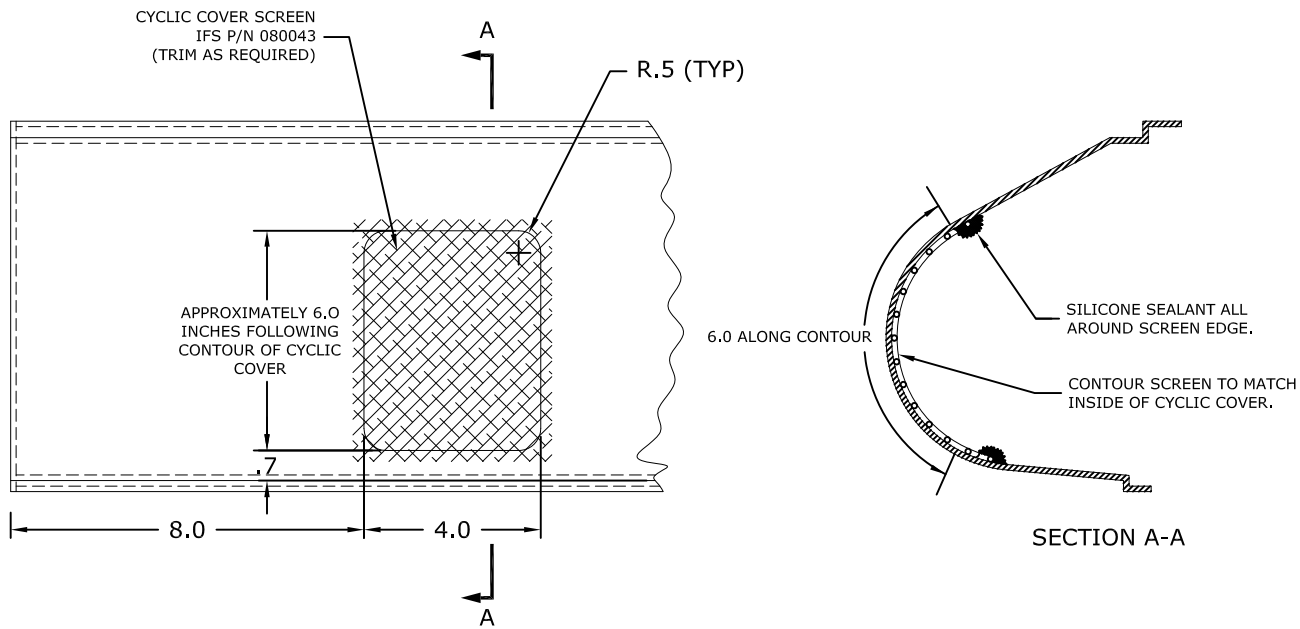
TITLE: AFT EVAPORATOR INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	

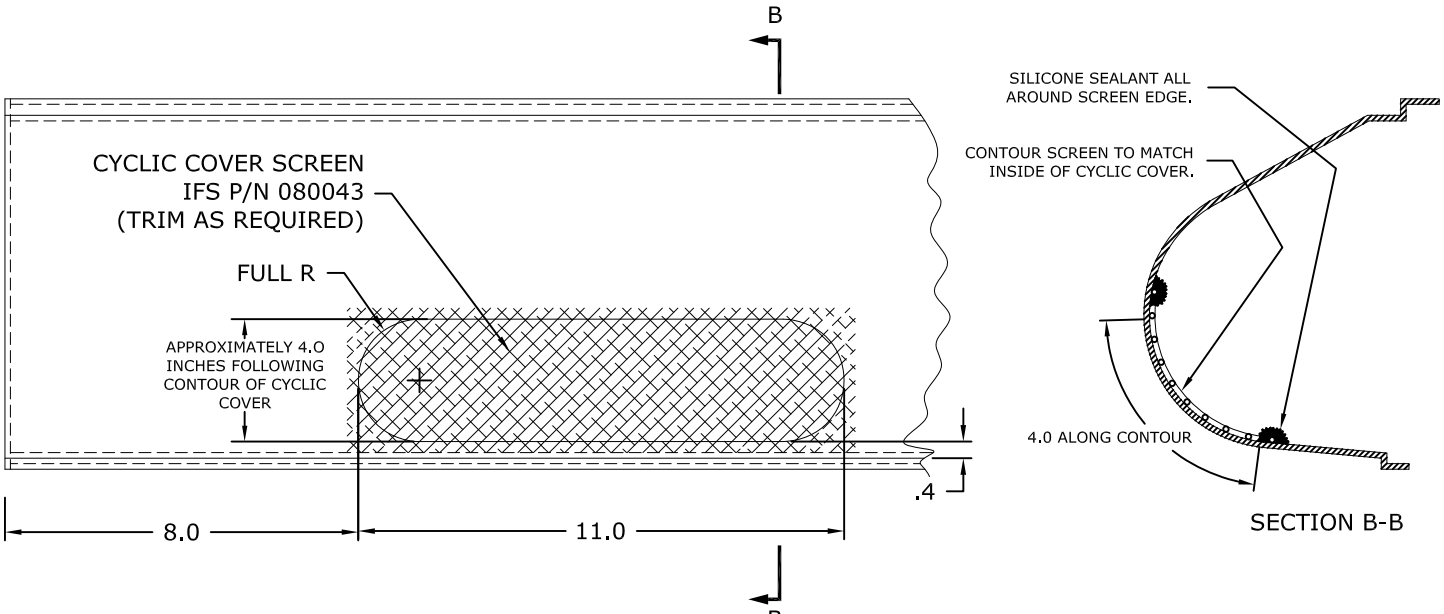
CYCLIC COVER SCREEN VARIATIONS  
CYCLIC CONTROLS NOT SHOWN FOR CLARITY

REVISION RECORD

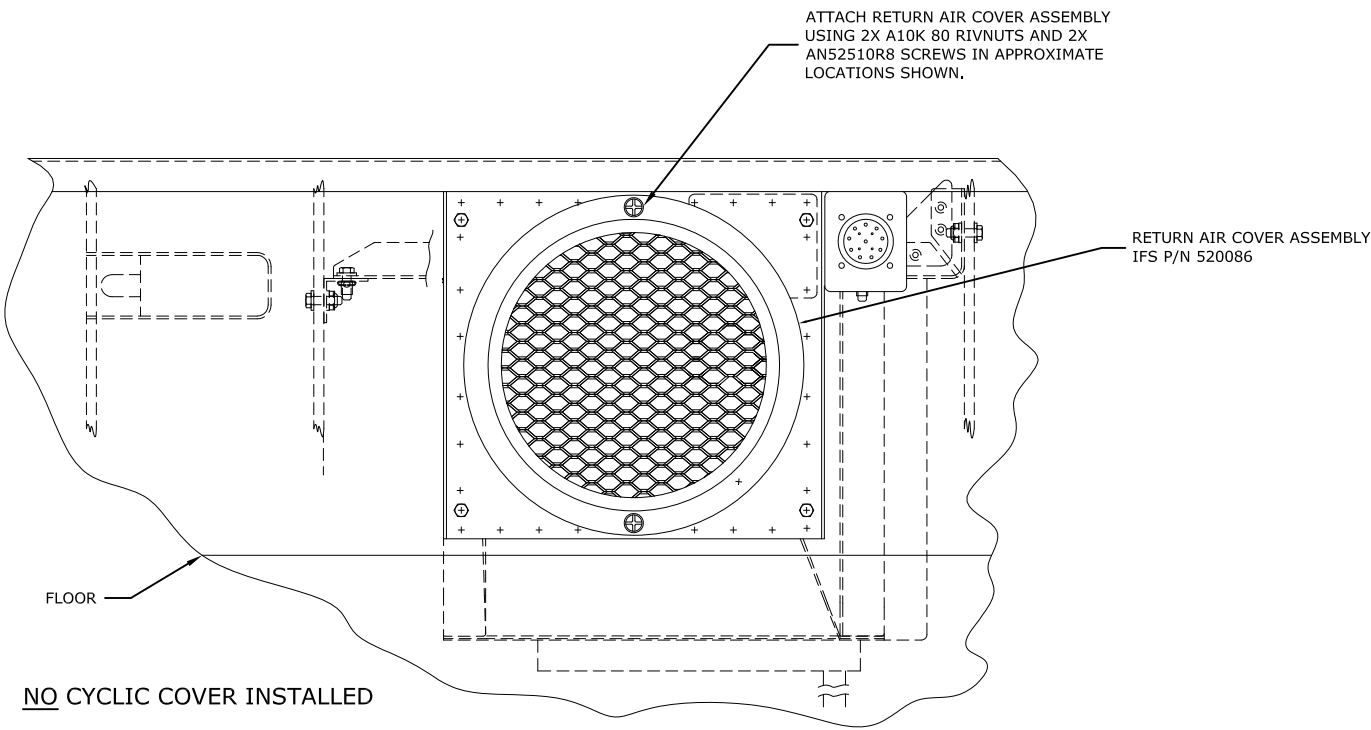
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



CYCLIC COVER SCREEN INSTALLATION  
WITH SLANT RADIO PANEL INSTALLED.  
VIEW LOOKING AFT



CYCLIC COVER SCREEN INSTALLATION  
WITHOUT SLANT RADIO PANEL INSTALLED.  
VIEW LOOKING AFT



NO CYCLIC COVER INSTALLED

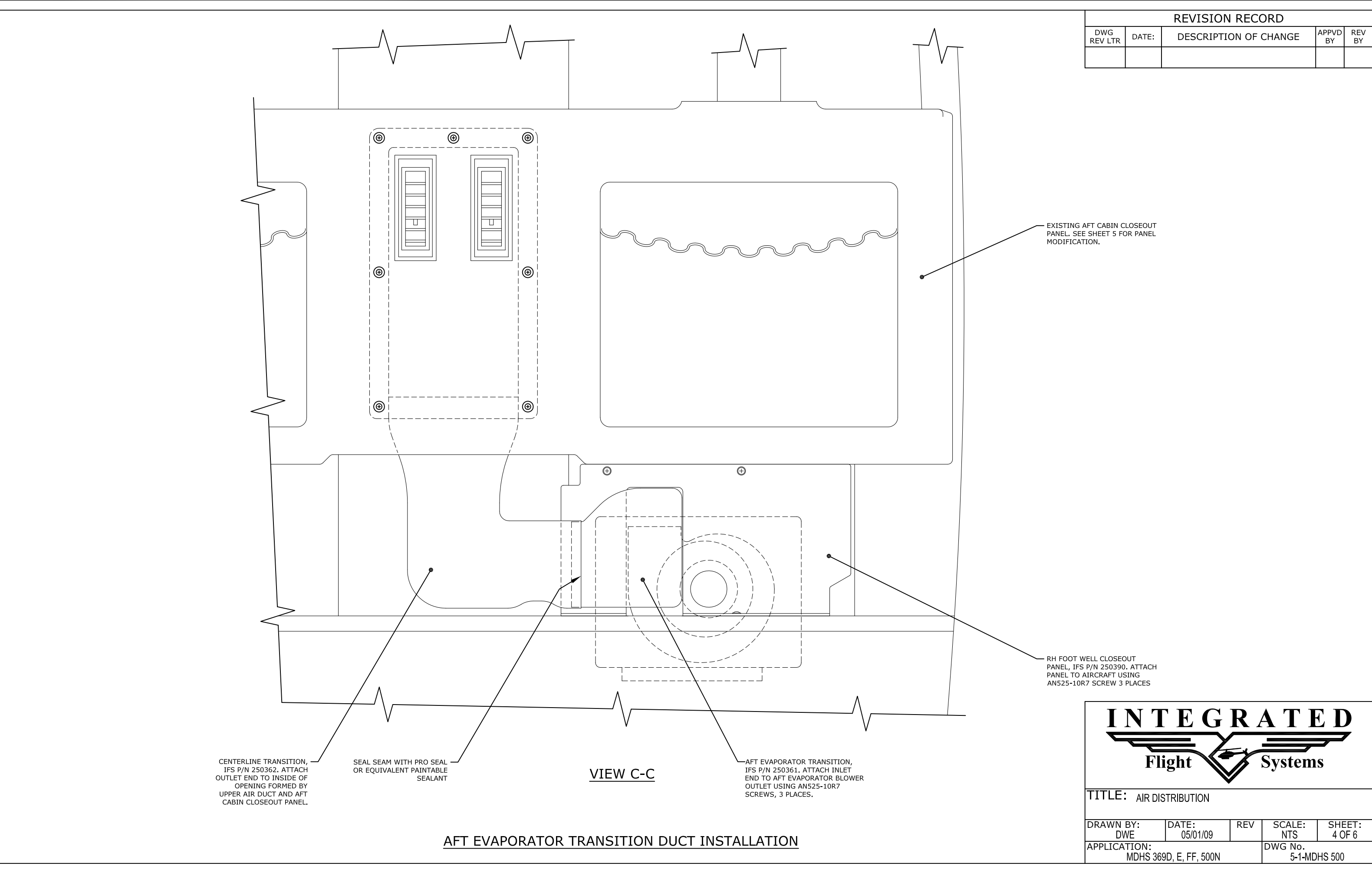
VIEW LOOKING AFT AT STA 65.04



TITLE: AFT EVAPORATOR INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 4-1-MDHS 500	





REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

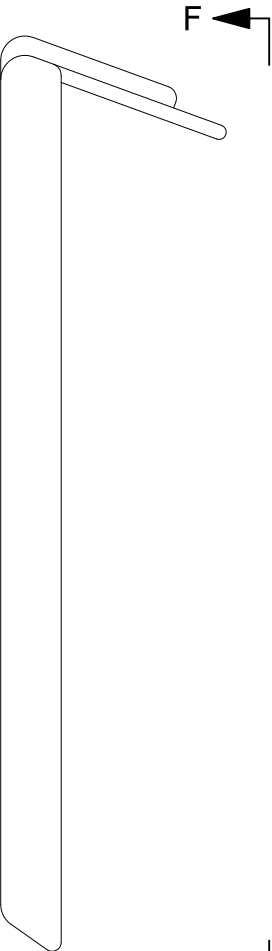
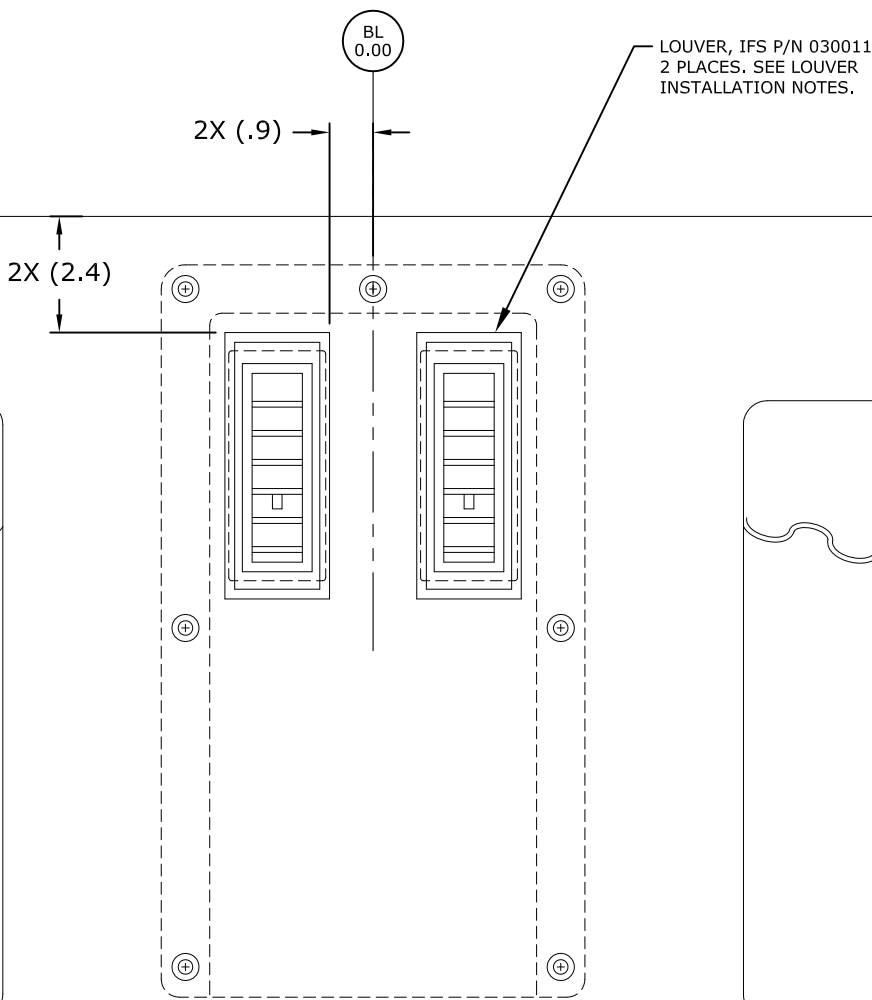


TITLE: AIR DISTRIBUTION				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 4 OF 6
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 5-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

LOUVER INSTALLATION NOTES:

- 1. LOCATION DIMENSIONS FOR LOUVERS ARE FOR REFERENCE. LOUVERS MAY BE LOCATED TO ACCOMMODATE OTHER EQUIPMENT INSTALLATION.
- 2. LOCATE LOUVERS PER DIMENSIONS SHOWN OR AS REQUIRED. CUTOUTS TO BE 2.0 X 4.75.
- 3. INSTALL LOUVERS AND BOND TO AFT CABIN CLOSEOUT PANEL ON BACK SIDE USING 2 PART PROSET ADHESIVE OR EQUIVALENT.



F  
SEE SHEET 6 OF 6

MODIFICATION OF EXISTING AFT MDHS CABIN CLOSEOUT PANEL  
(MOUNTED ON REAR OF PILOT/CO-PILOT SEATS)  
VIEW LOOKING FORWARD

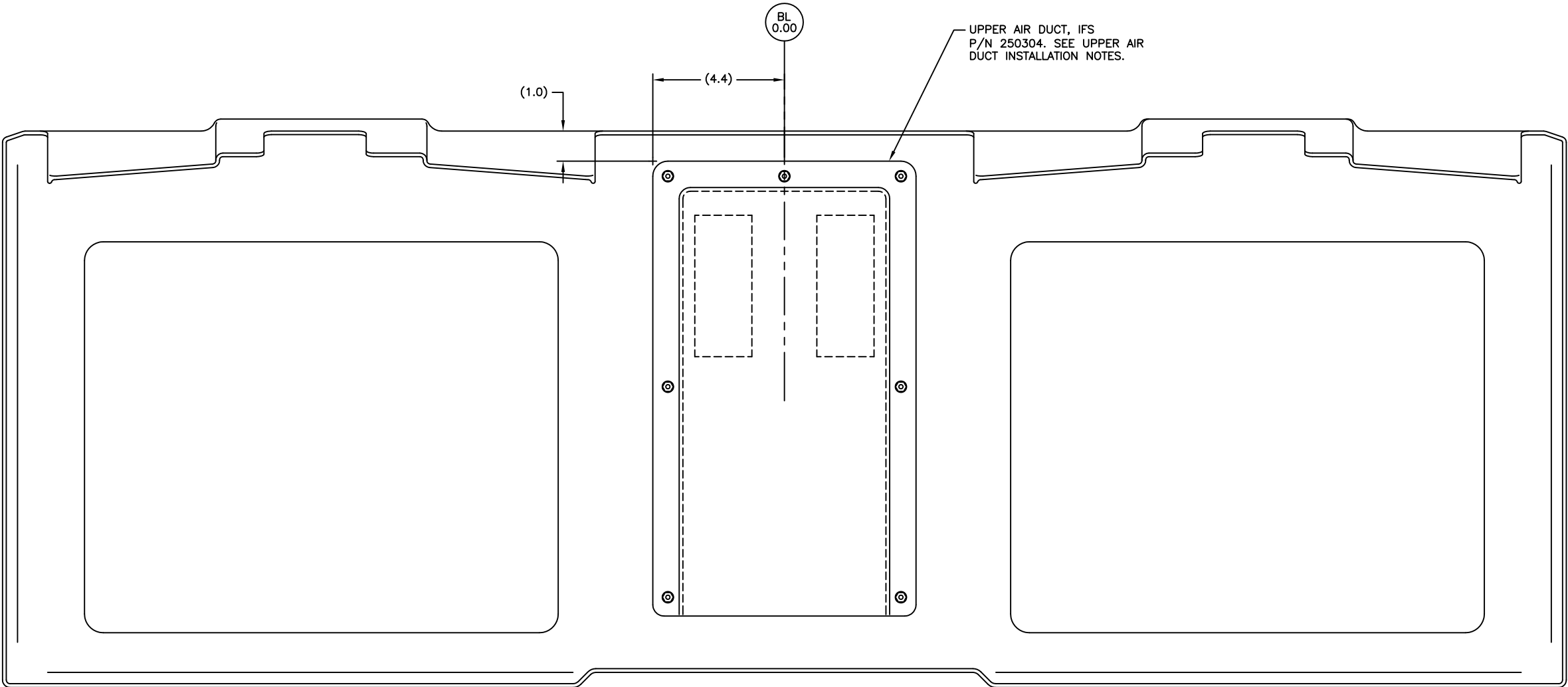
**INTEGRATED**  
Flight Systems

TITLE: AIR DISTRIBUTION

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 5 OF 6
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 5-1-MDHS 500	

UPPER AIR DUCT INSTALLATION NOTES:

- 1. LOCATION DIMENSIONS FOR UPPER AIR DUCT ARE APPROXIMATE. ACTUAL DIMENSIONS WILL BE DETERMINED BY INTERFACE WITH AFT EVAPORATOR TRANSITION DUCT INSTALLATION.
- 2. LOCATE UPPER AIR DUCT ON BACK SIDE OF AFT CABIN CLOSEOUT PANEL AS REQUIRED AND BOND USING 2 PART PROSET ADHESIVE.
- 3. MATCH DRILL CLOSEOUT PANEL FROM CLEARANCE HOLES IN UPPER AIR DUCT AND INSTALL AN515-6R8 SCREW, FINISH WASHER, MS21044N06 LOCKING NUT AND AN960-6 FLAT WASHER 7 PLACES.



VIEW F—F  
(FROM SHEET 5 OF 6)  
VIEW LOOKING AFT

INTEGRATED FLIGHT SYSTEMS INC.				
DATE 08/20/98	APPROVED BY	SHEET 6 OF 6	DRAWING SIZE D	DRAWN BY LB
SCALE 1/2	TITLE AIR DISTRIBUTION			
APPLICATION MDHS 369D,E,FF,500N		DRAWING NO. 5—MDHS 500		

## **Step 7**

# **Installation of Condenser/FWD Evaporator**

## Installation of Condenser/FWD Evaporator

STEP	PROCEDURE	MECH	INSP
7.0	See Drawings 9-1-MDHS 500, sheets 1, 2, 3, 4 & 5.		

**Note: Before proceeding it is recommended that the lower chin bubble windows be removed, which will aid in the installation and prevent damage to the windows.**

7.1	Remove existing fresh air push/pull cable and fill the resulting hole in the instrument panel. Enlarge existing fresh air cut out in fiberglass nose structure in location shown on view A-A, sheet 2 of 5. Use template on sheet 4 of 5 as a guide. Attach IFS P/N 520098 condenser inlet transition assembly using two-part epoxy adhesive.		
7.2	Locate condenser/forward evaporator assembly along with all other parts pertaining to this installation.		
7.3	Temporarily remove the forward evaporator assembly along with the forward evaporator fan assembly from the base supporting the condenser coil assembly.		
7.4	Temporarily remove the two forward instrument panel screws and trial fit IFS P/N 510318-1 per view B-B, sheet 1 of 5.		
7.5	Center the IFS support shelf assembly with only the condenser coil installed on the forward existing flange of the instrument panel structure as shown in view B-B, sheet 1 of 5.		
7.6	Temporarily install left hand and right hand support arms IFS P/N 261192 and IFS P/N 261192-1 as shown in view C-C sheet 1 of 5.		
7.7	When proper clearance of the condenser coil to forward nose structure is obtained, match drill the shelf to the existing MDHS locations on the existing instrument panel structure and attach shelf using hardware shown in view B-B. Permanently attach shelf support arms per view C-C.		

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – MD500 Air Conditioning  
**Installation of Condenser/FWD Evaporator**

7.8	Attach both top and bottom closeouts to coil and to the existing aircraft structure. Trim as required for close fit. <b>IMPORTANT: SEAL ALL GAPS INSIDE TOP AND BOTTOM CLOSE OUTS TO ENSURE AN AIR/WATER TIGHT CHAMBER.</b>		
7.9	On installations pertaining to Platinum Aviation Group model TV-500 windshield modification install angles IFS P/N 261208 and IFS P/N 261208-1. Locate support angles flush with the bottom of the support shelf and with the outboard edges of the existing nose structure. Match drill IFS P/N 510327 support assembly to the blower mounting holes on the top of the condenser plenum assembly and attach using hardware referenced on the drawing. Attach support angles to existing nose structure as shown with the designated hardware. <b>Remove all shavings or debris.</b>		
7.10	On installations pertaining to a factory nose installation, install mounting brackets IFS P/N 261203 and IFS P/N 261203-1. Locate brackets flush with the bottom side of the close out assembly and with the vertical members of the existing fiberglass nose structure. See view A-A, sheet 1 of 5.		
7.11	Re-install evaporator blower and evaporator assembly to condenser plenum assembly using the existing hardware.		
7.12	It will be necessary to move the existing Pitot tube assembly to a new location in the nose structure. Maintain the original angle of attack when re-locating the Pitot tube. See sheet 5 of 5.		
7.13	Cut opening in bottom of nose structure as shown in view C-C on sheet 2 of 5. Move the Pitot tube opening for a new location as shown in view B-B on sheet 2 of 5. Install nut plates as shown in view B-B on sheet 2 of 5.		

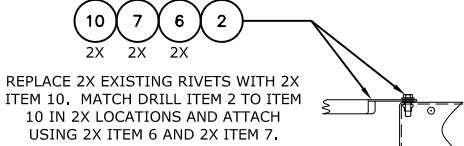
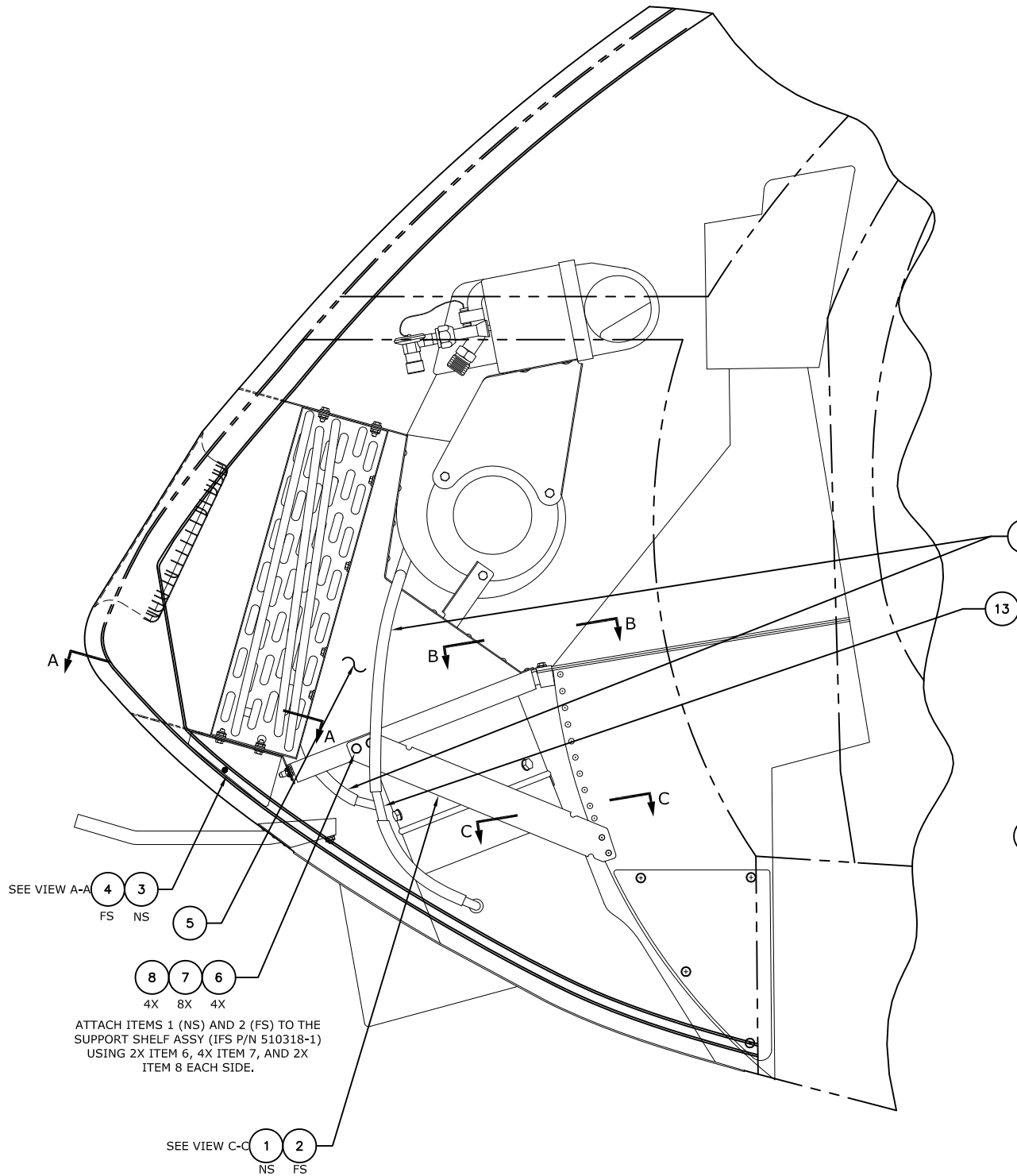
Integrated Flight Systems  
INSTALLATION OF CONDENSER – MD500 Air Conditioning

### Installation of Condenser/FWD Evaporator

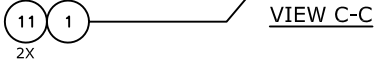
7.14	Install condenser blower assembly to bottom of support shelf. Slide condenser exit duct assembly over the blower assembly flush with the bottom of fiberglass nose structure. Place IFS P/N 520100 landing light housing assembly along bottom of existing nose structure as shown in view B-B on sheet 2 of 5. Trim P/N 520100 landing light housing assembly to match the blower exhaust opening in the condenser exit duct. Match drill landing light housing assembly to existing/new nut plates along nose structure.		
7.15	Re-install existing landing light into IFS P/N 520100 using original MDHS landing light retainer or IFS P/N 250403. Before final installation of IFS P/N 520100 aircraft windows will have to be installed.		
7.16	Install left hand and right hand close out panels over condenser coil to the condenser plenum as shown on page 3 of 5. Trim as required. Ensure all edges are sealed to create an airtight chamber.		
7.17	On models pertaining to factory nose installations, the installation of the IFS modified forward defroster ducts is required. Re-install using existing hardware.		
7.18	On models pertaining to the Platinum Aviation Group, Inc. model TV-500 windshield modification new defroster ducts are provided with the windshield kit.		
7.19	Intentionally left blank.		
7.20	<b><u>FWD AIR DISTRIBUTION:</u></b> See drawing 5-1-MDHS 500, sheets 1, 2, 3 of 6.		
7.21	The cockpit air outlets, left and right hand require that “crew ventilation” be addressed in accordance with drawing 5-1-MDHS 500 sheet 1 of 6. IFS utilize the existing MDHS fresh air intake in the nose as the source of air for the condenser assembly. It is essential that crew ventilation be adequately installed.		

NOTES:

1. IF NECESSARY, THE ENCODER MAY BE RELOCATED ON THE AFT SIDE OF THE CONDENSER PLENUM ASSEMBLY, BETWEEN THE EVAPORATOR BLOWER HOUSINGS.

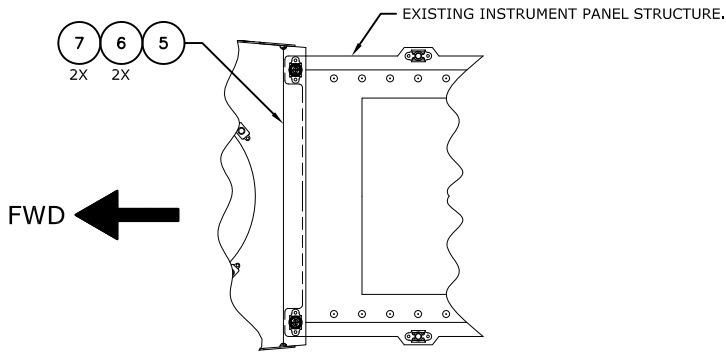


REMOVE 2X EXISTING RIVETS. MATCH DRILL ITEM 1 TO RESULTING HOLES AND ATTACH USING 2X ITEM 11.



FWD

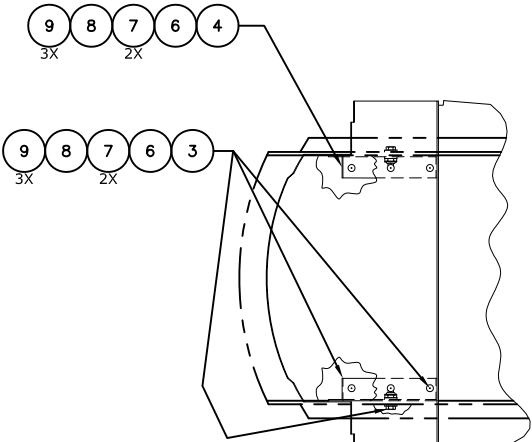
VIEW C-C



VIEW B-B  
LOOKING DOWN  
SHELF ONLY SHOWN  
FOR CLARITY.

CENTER THE SUPPORT SHELF ASSEMBLY (IFS P/N 510318-1) OF ITEM 5 ON THE FLANGE OF THE INSTRUMENT PANEL STRUCTURE AND MATCH DRILL THE SHELF TO 2X EXISTING NUTPLATE LOCATIONS. ATTACH SHELF USING 2X ITEM 6 AND 2X ITEM 7.

USE SS SAFETY WIRE OR HOSE CLAMPS TO SECURE HOSE TO ALL FITTINGS. USE TIE WRAPS TO SECURE AS REQUIRED TO PREVENT CHAFFING.



VIEW A-A  
LOOKING DOWN  
CONDENSER COIL NOT  
SHOWN FOR CLARITY

LOCATE ITEMS 3 AND 4 FLUSH WITH THE BOTTOM SIDE OF THE CLOSE OUT ASSEMBLY (IFS P/N 510324-1) AND WITH THE VERTICAL MEMBERS OF THE EXISTING FIBERGLASS NOSE STRUCTURE. DRILL THROUGH NOSE STRUCTURE AND ITEMS 3 AND 4 ENSURING .3 MIN EDGE DISTANCE ON ALL PARTS. ATTACH ITEMS 3 AND 4 TO NOSE STRUCTURE USING 2X ITEM 6, 4X ITEM 7, AND 2X ITEM 8. MATCH DRILL THE CLOSEOUT ASSEMBLY (IFS P/N 510324-1) TO ITEMS 3 AND 4 AND ATTACH USING 6X ITEM 9.

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

1	13	100100-5	DRAIN TEE - 1/2"
AR	12	090018-1	1/2" DRAIN HOSE
2	11	CR3243-4-4	RIVET
2	10	A10K-80	RIVNUT
6	9	MS20470AD4-4	RIVET
6	8	MS20144N3	NUT
16	7	AN960-10	WASHER
10	6	AN3-4A	BOLT
1	5	600001-3	CONDENSOR/FORWARD EVAPORATOR ASSY
1	4	261203-1	MOUNTING BRACKET, RH
1	3	261203	MOUNTING BRACKET, LH
1	2	261192-1	RH SUPPORT ARM
1	1	261192	LH SUPPORT ARM
		9-1-MDHS 500	COND/FORWARD EVAP INSTALL
QTY	ITEM	PART NO.	DESCRIPTION



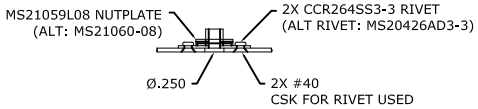
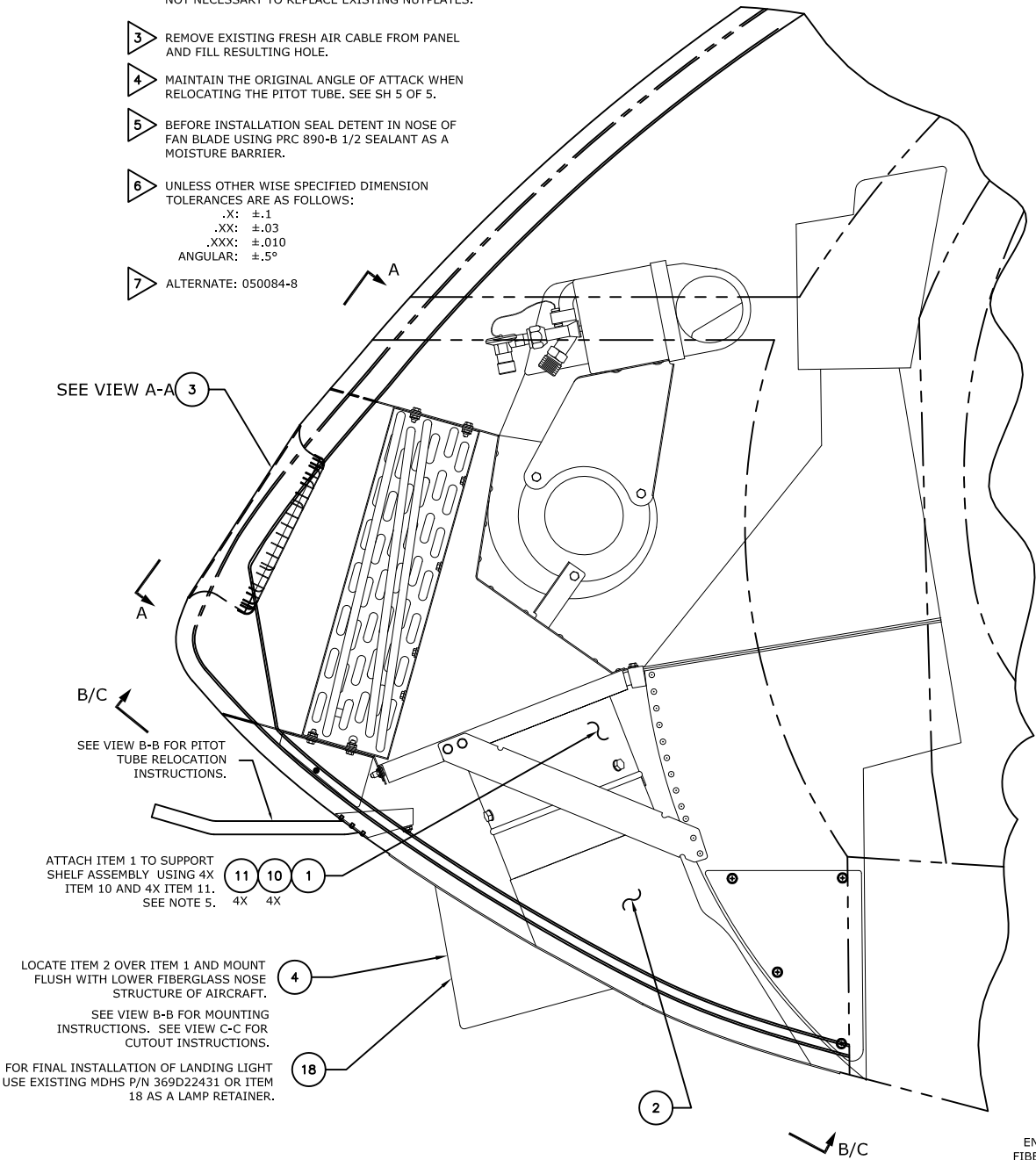
TITLE: COND/FORWARD EVAP INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 5
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 9-1-MDHS 500	



NOTES:

- 1
- DRILL #10 DIAMETER HOLE.  
DRILL RIVET HOLES WITH NUTPLATE TEMPLATE.  
COUNTERSINK RIVET HOLES.  
DRILL #10 DIAMETER HOLE OUT TO .250 DIA.
- 2
- SOME MDHS AIRCRAFT HAVE CHIN BUBBLES  
INSTALLED USING NUTPLATES. IN THIS CASE IT IS  
NOT NECESSARY TO REPLACE EXISTING NUTPLATES.
- 3
- REMOVE EXISTING FRESH AIR CABLE FROM PANEL  
AND FILL RESULTING HOLE.
- 4
- MAINTAIN THE ORIGINAL ANGLE OF ATTACK WHEN  
RELOCATING THE PITOT TUBE. SEE SH 5 OF 5.
- 5
- BEFORE INSTALLATION SEAL DETENT IN NOSE OF  
FAN BLADE USING PRC 890-B 1/2 SEALANT AS A  
MOISTURE BARRIER.
- 6
- UNLESS OTHER WISE SPECIFIED DIMENSION  
TOLERANCES ARE AS FOLLOWS:  
.X: ±.1  
.XX: ±.03  
.XXX: ±.010  
ANGULAR: ±.5°
- 7
- ALTERNATE: 050084-8



VIEW D-D  
TYPICAL NUTPLATE INSTALLATION  
NOT TO SCALE

ENLARGE EXISTING FRESH AIR CUT OUT IN  
FIBERGLASS NOSE STRUCTURE IN LOCATION  
SHOWN USING THE TEMPLATE ON SHEET 4 OF  
THIS DRAWING AS A GUIDE. TRIM ITEM 3 TO FIT.  
ATTACH ITEM 3 TO INSIDE OF NOSE STRUCTURE  
USING PROSET TWO PART EPOXY ADHESIVE.  
BLEND EDGES USING POLYESTER BODY FILLER.

UNLESS OTHERWISE NOTED, RE-INSTALL CHIN BUBBLES  
TO CENTER FIBERGLASS NOSE STRUCTURE USING 34X  
ITEM 14, 34X ITEM 15, AND 34X ITEM 16. AT ALL OTHER  
CHIN BUBBLE ATTACH POINTS USE ITEMS 14, 15, AND 17.

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

1	18	250403	LANDING LIGHT RETAINING RING	
86	17	MS21043-04	NUT	
34	16	BACN10JN04CM	NUTPLATE	
206	15	NAS1149DN416K	WASHER	
120	14	MS51957-17	SCREW	
AR	13	PROSET	2 PART EPOXY ADHESIVE	
AR	12	890-B 1/2	PRC SEALANT	
4	11	AN960-10	WASHER	
4	10	AN3-4A	BOLT	
42	9	CCR264SS3-3	RIVET	
6	8	MS20470AD3-4	RIVET	
21	7	MS21059L08	NUTPLATE	
			RESERVED	
21	5	AN525-8R12	SCREW	
1	4	520100	LANDING LIGHT HOUSING ASSY	
1	3	520098	CONDENSER INLET TRANSITION ASSY	
1	2	520105-2	CONDENSER EXIT DUCT ASSY	
1	1	050084-5	7	7" FAN VANEAXIAL, 24 VDC
		9-1-MDHS 500	COND/FORWARD EVAP INSTALL	
QTY	ITEM	PART NO.	DESCRIPTION	

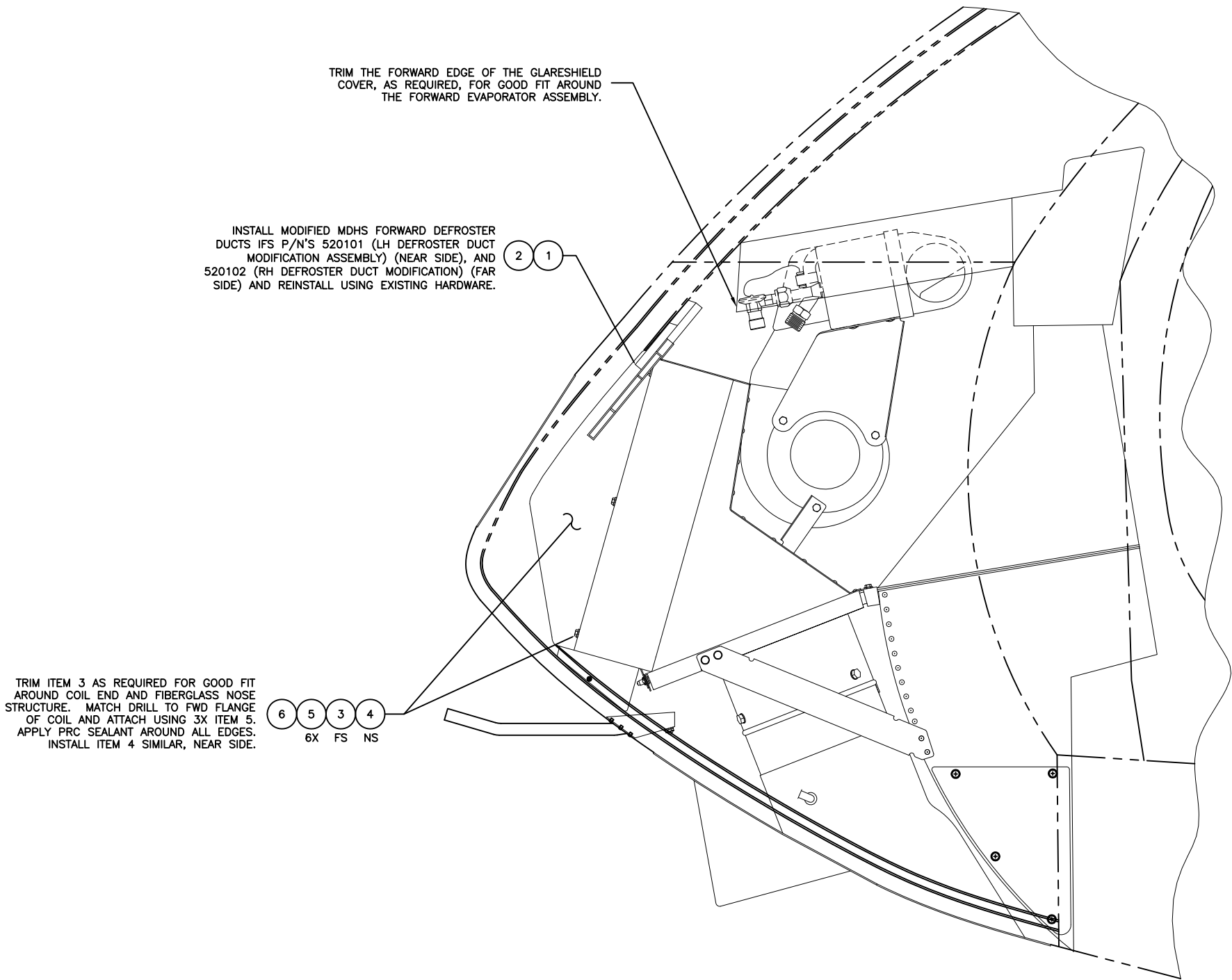
INTEGRATED

Flight Systems

TITLE: COND/FORWARD EVAP INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 5
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 9-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

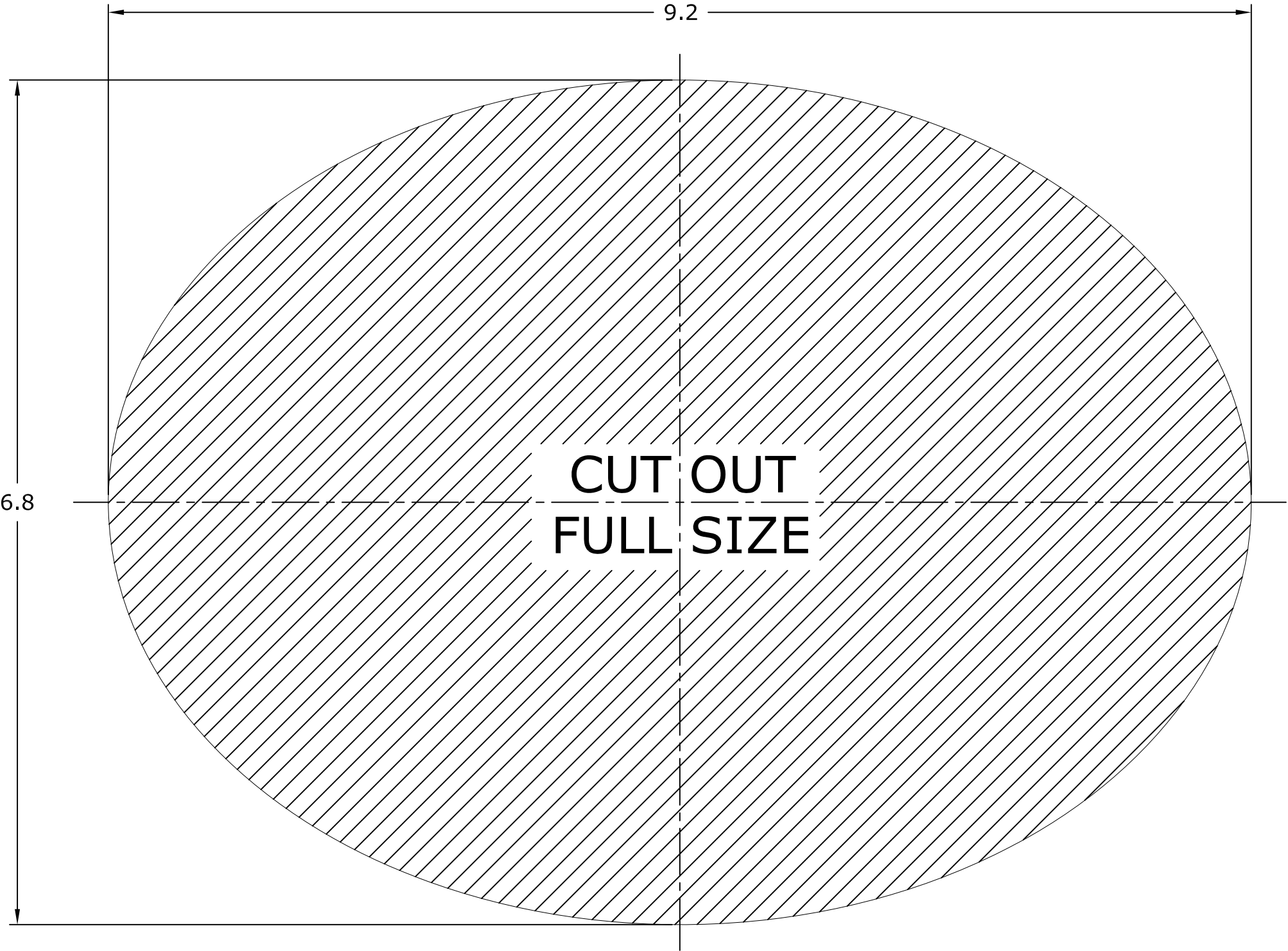


AR	6	890B 1/2	PRC SEALANT
6	5	AN3-4A	BOLT
1	4	250386	LH CLOSEOUT PANEL, COND PLENUM
1	3	250385	RH CLOSEOUT PANEL, COND PLENUM
1	2	520102	RH DEFROSTER DUCT MODIFICATION ASSY
1	1	520101	LH DEFROSTER DUCT MODIFICATION ASSY
		9-1-MDHS 500	COND/FORWARD EVAP INSTALL
QTY	ITEM	PART NO.	DESCRIPTION



TITLE: COND/FORWARD EVAP INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 5
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 9-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



TEMPLATE FOR NOSE CUTOUT  
CAUTION: THIS DRAWING MUST  
ALWAYS BE PLOTTED 1:1, FULL SCALE!!

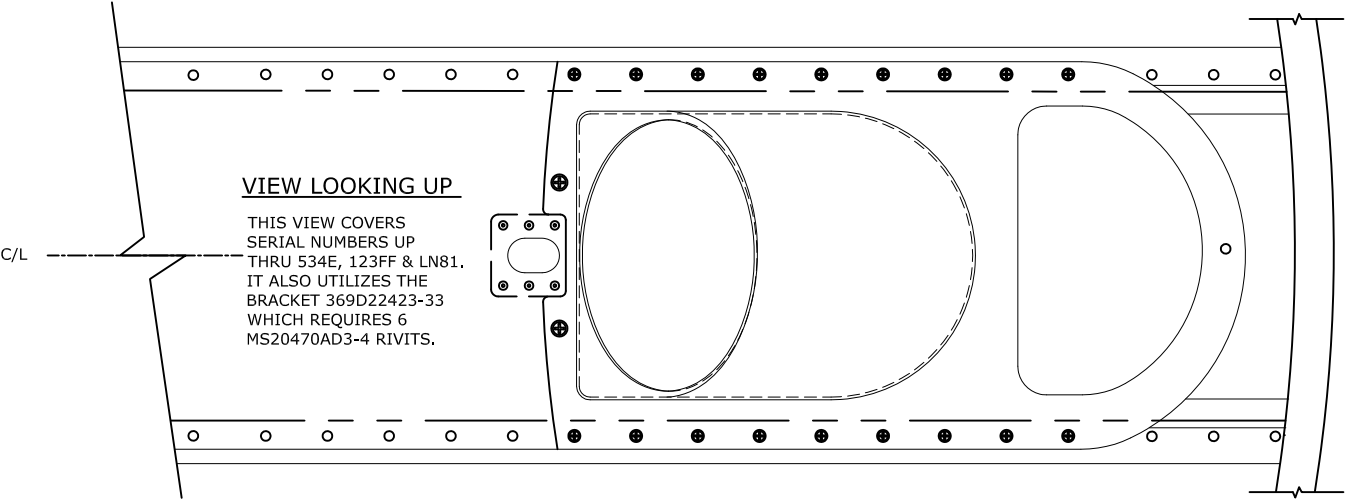


TITLE: COND/FORWARD EVAP INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 4 OF 5
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 9-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



THE AREA BETWEEN THE ARROWS ON THE PITOT TUBE IS TO BE SET AT EXACTLY 22.3° OFF OF THE FORWARD FLOOR OF THE COCKPIT. USE A DIGITAL PROTRACTOR TO MEASURE THE COCKPIT FLOOR ANGLE. ZERO THE PROTRACTOR. ALIGN THE PROTRACTOR ALONG THE BOTTOM OF THE PITOT TUBE AND MOUNT TUBE TO THE AIRCRAFT USING THE HARDWARE SPECIFIED BY MODEL AND SERIAL NUMBER.



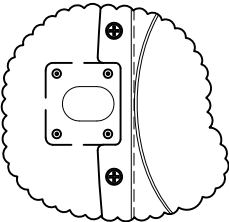
VIEW LOOKING UP

THIS VIEW COVERS SERIAL NUMBERS UP THRU 534E, 123FF & LN81. IT ALSO UTILIZES THE BRACKET 369D22423-33 WHICH REQUIRES 6 MS20470AD3-4 RIVITS.

C/L

VIEW B-B

AFT →



THIS VIEW IS FOR SERIAL NUMBERS 535E & SUB, 124FF & SUB AND LN82 & SUB. THESE SERIAL NUMBERS HAVE PITOT BRACKET 600N2423 INSTALLED WHICH REQUIRE: 4xNAS 623-3-3, SCREWS AND 4x NAS1149C0332R, WASHERS. NUT PLATES ARE INSTALLED ON THE BRACKET.



TITLE: COND/FORWARD EVAP INSTALL

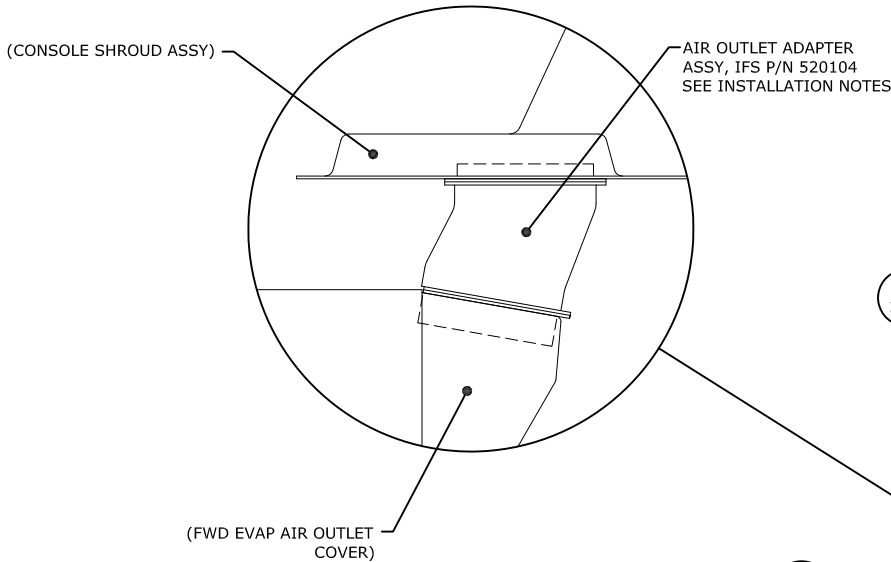
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 5 OF 5
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 9-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

CREW VENTILATION:

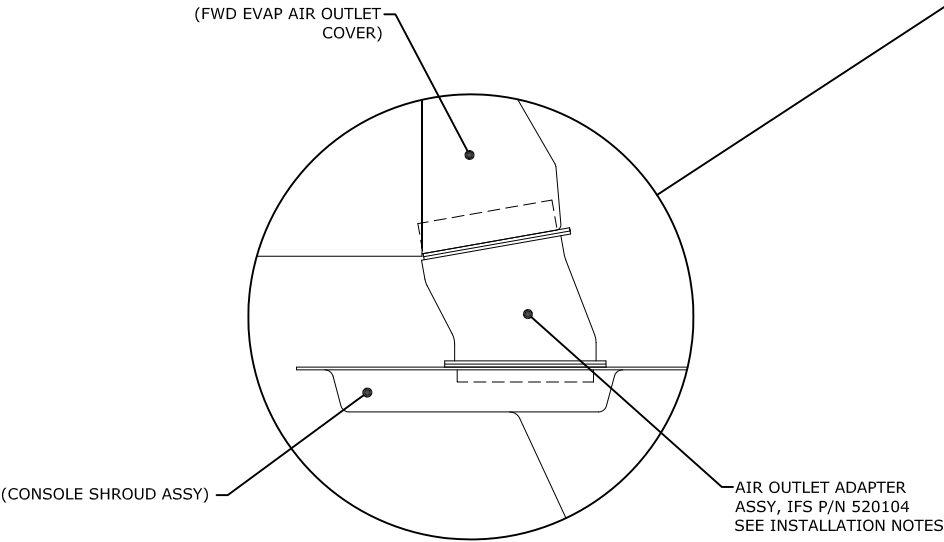
MDHS HELICOPTERS HAVE AS STANDARD INSTALLATION IN THE COCKPIT, ONE (1) EACH ROUND WINDOW VENT, THREE (3) INCHES IN DIAMETER IN BOTH THE PILOT AND CO-PILOT DOORS AND TWO (2) EACH IN THE AFT DOOR WINDOWS FOR A TOTAL OF SIX (6) ROUND WINDOW VENTS. IN ORDER TO INSTALL IFS KIT NO. 500-00-011 WHERE THE EXISTING NOSE VENT INLET HAS BEEN MADE PART OF THE AIR CONDITIONING CONDENSER INTAKE, IT IS NECESSARY TO COMPLY WITH ONE OF THE FOLLOWING OPTIONS TO ACOMODATE FAA CREW VENTILATION REQUIREMENTS:

- OPTION 1: DETERMINE THAT THE PILOT AND CO-PILOT DOORS HAVE TWO (2) EACH VENTS THREE (3) INCHES IN DIAMETER
- OPTION 2: IF THE PILOT AND CO-PILOT DOORS HAVE ONLY ONE VENT EACH, INSTALL IN THE LOWER PORTION OF EACH PILOT AND CO-PILOT WINDOW AN ADDITIONAL ROUND VENT, THREE (3) INCHES IN DIAMETER, IFS P/N 030019 (SNAP VENT) AND IFS P/N 030020 (PLASTIC DOUBLER). ATTACH THE PLASTIC DOUBLER TO THE INSIDE OF THE WINDOW USING PS18 PLASTIC ADHESIVE (USE CAUTION SO THAT EXCESS ADHESIVE DOES NOT DAMAGE THE REMAINDER OF THE WINDOW). LOCATE THE SNAP VENT SO THAT IT IS WITHIN THE REACH OF THE PERSON SITTING IN THE SEAT. SEE 5-MDHS 500 SH 2 OF 6.
- OPTION 3: INSTALL SLIDING WINDOWS (IN LIEU OF TWO (2) EACH DOOR VENTS) SUCH AS THOSE PRODUCED BY AERONAUTICAL ACCESSORIES, INC. UNDER STC NO. SH704SW OR THEIR EQUAL. THE WINDOWS MUST BE INSTALLED IN BOTH THE PILOT AND CO-PILOT DOORS.

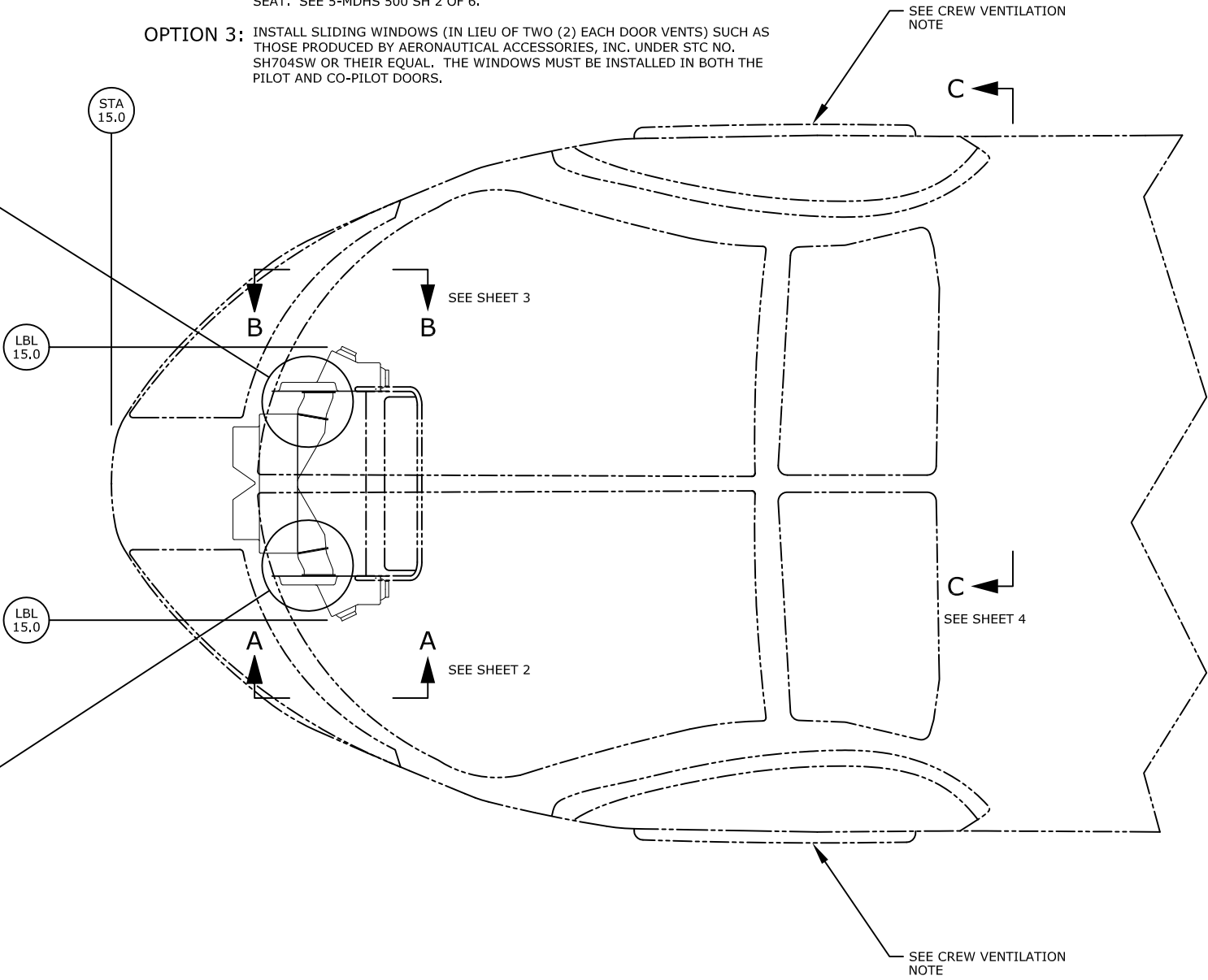


INSTALLATION NOTES:


1. ATTACH "SHORTER COLLAR" END OF AIR OUTLET ADAPTER INTO OPENING OF MODIFIED CONSOLE SHROUD USING SILICONE SEALANT AS REQUIRED.
2. INSERT "LONGER COLLAR" END OF AIR OUTLET ADAPTER INTO OPENING OF EVAPORATOR AIR OUTLET COVER. TRIM FLANGE ON MOUNTING RING AS REQUIRED FOR PROPER FIT.



FWD EVAPORATOR AIR OUTLET INSTALLATION



TOP VIEW OF AIRCRAFT



**INTEGRATED**  
Flight Systems

TITLE: AIR DISTRIBUTION

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 6
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 5-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

NUTPLATE HOLE PATTERN NOTES:

1. DRILL #8 DIAMETER HOLE.
2. DRILL RIVET HOLES WITH NUTPLATE TEMPLATE.
3. COUNTERSINK RIVET HOLES NEARSIDE.
4. DRILL #8 DIAMETER HOLE OUT TO .250 DIA.

INSTALL #8 NUTPLATE,  
P/N MS21059L08, TO  
INSIDE OF EXISTING  
SHROUD MTG BRACKET  
PER DIMENSIONS SHOWN.  
SEE DETAIL G AND  
NUTPLATE HOLE  
PATTERN NOTES.

EXISTING SHROUD MTG  
BRACKET (ATTACHED TO  
SIDE OF CONSOLE),  
REMOVE VELCRO STRIP  
FROM BRACKET BEFORE  
INSTALLING NUTPLATE

MS21059L08 NUTPLATE  
(ALT: MS21060-08)

2X CCR264SS3-3 RIVET  
(ALT: MS20426AD3-3)

2X Ø.098 (#40)  
CSK FOR RIVET USED

DETAIL G

TYPICAL NUTPLATE INSTALLATION  
SCALE: NONE

INSTALL #8 NUTPLATE,  
P/N MS21059L08, TO  
INSIDE OF TOP CONSOLE  
SHROUD, LOCATE PER  
DIMENSIONS SHOWN.  
SEE DETAIL G AND  
NUTPLATE HOLE  
PATTERN NOTES.

MODIFIED LH SHROUD

MODIFIED LH SHROUD

MODIFIED LH SHROUD  
SEE DETAIL D

VIEW A-A

LH CONSOLE SHROUD MODIFICATION AND INSTALLATION

EXISTING MDHS SNAP VENT

FILL EXISTING HOLE IN  
MDHS/BOEING LH CONSOLE  
SHROUD PER SHROUD  
MODIFICATION NOTE 7

LH CONSOLE SHROUD ASSY,  
IFS P/N 520095

SNAP VENT (IFS P/N 030019)  
PLASTIC DOUBLER (IFS P/N 030020)  
SEE CREW VENTILATION NOTE  
(5-MDHS 500 SH 1 OF 6)

DETAIL D  
SEE SHROUD MODIFICATION  
NOTES

RELOCATE Ø3.0 HOLE  
PER DIMENSIONS SHOWN

MDHS/BOEING  
LH CONSOLE SHROUD

SHROUD MODIFICATION NOTES:

1. REMOVE LH CONSOLE SHROUD FROM AIRCRAFT.
2. SECURE IFS P/N 520095 TO LH CONSOLE SHROUD WITH 2 PART PROSET ADHESIVE. USE CLAMPS OR CLECOS TO HOLD IN PLACE PER ADHESIVE MFG'S CURE TIME SPECIFICATIONS.
3. FEATHER UPPER AND LOWER MATING LINES OF IFS P/N 520095 INTO SHROUD.
4. TRIM EXISTING CONSOLE SHROUD TO FIT INDIVIDUAL AIRCRAFT.
5. FINISH: IFS P/N 520095 AND SHROUD BY APPLYING 3M ROCKER PANEL SPRAY, P/N 051131-059 PER LABEL INSTRUCTIONS. FINAL COLOR, BLACK.
6. REINSTALL MODIFIED LH SHROUD INTO AIRCRAFT USING ORIGINAL SCREWS OR AN525-832R7 SCREW, 4 PLACES.
7. FIBERGLASS OVER EXISTING HOLE WITH 2 LAYERS F/G MAT AND RESIN.
8. RELOCATE 3.0 DIA HOLE AS SHOWN.

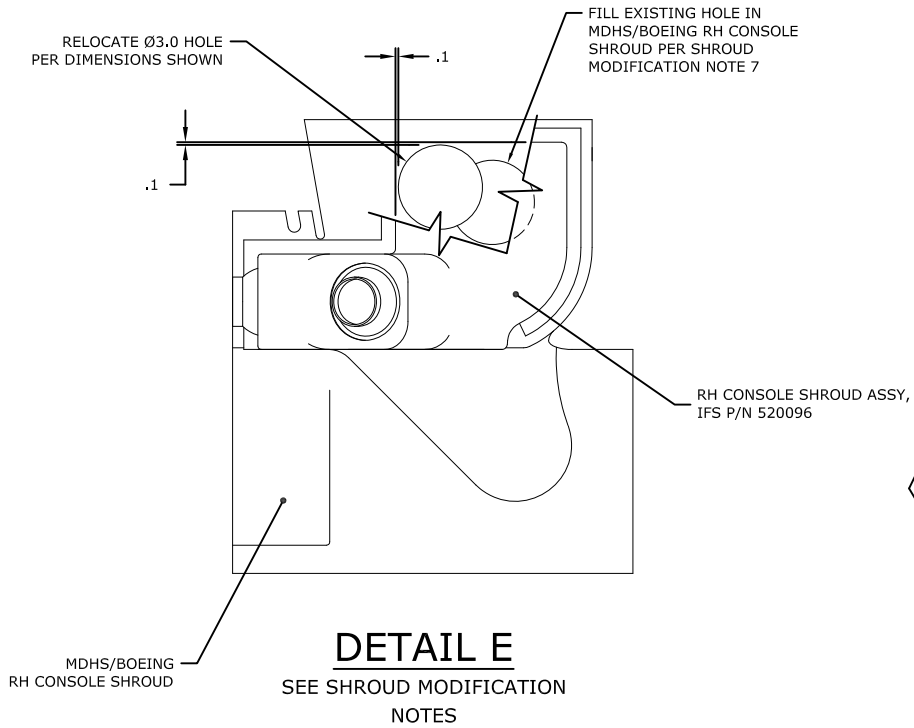


TITLE: AIR DISTRIBUTION

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 6
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 5-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

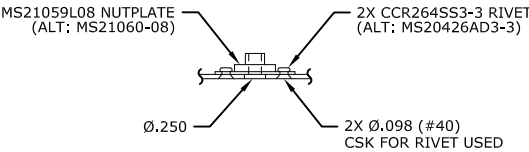
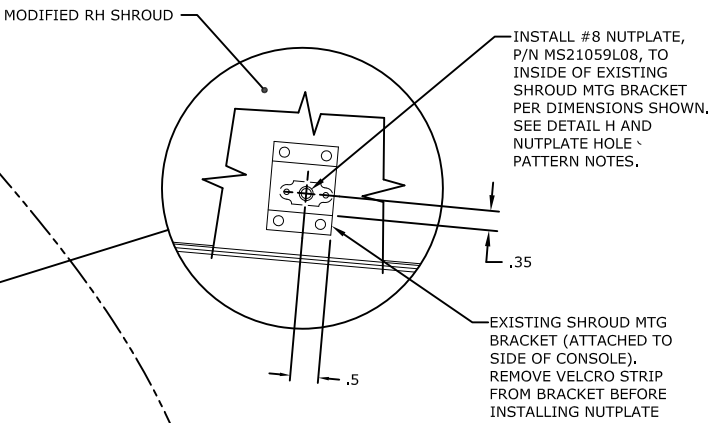
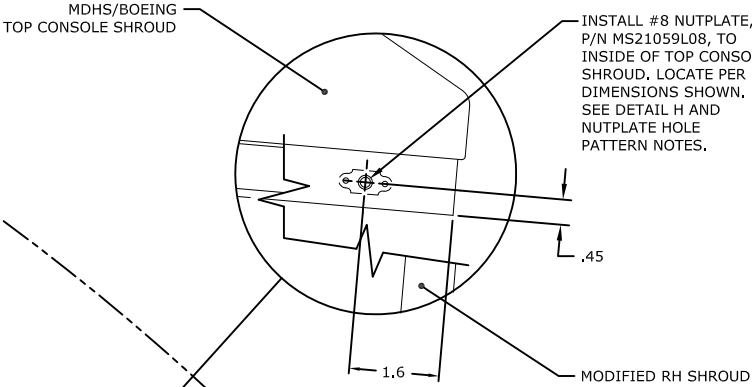
NUTPLATE HOLE PATTERN NOTES:  
1. DRILL #8 DIAMETER HOLE.  
2. DRILL RIVET HOLES WITH NUTPLATE TEMPLATE.  
3. COUNTERSINK RIVET HOLES NEARSIDE.  
4. DRILL #8 DIAMETER HOLE OUT TO .250 DIA.



- SHROUD MODIFICATION NOTES:
1. REMOVE RH CONSOLE SHROUD FROM AIRCRAFT.
  2. SECURE IFS P/N 520096 TO RH CONSOLE SHROUD WITH 2 PART PROSET ADHESIVE. USE CLAMPS OR CLECOS TO HOLD IN PLACE PER ADHESIVE MFG'S CURE TIME SPECIFICATIONS.
  3. FEATHER UPPER AND LOWER MATING LINES OF IFS P/N 520096 INTO SHROUD.
  4. TRIM EXISTING CONSOLE SHROUD TO FIT INDIVIDUAL AIRCRAFT.
  5. FINISH: IFS P/N 520096 AND SHROUD BY APPLYING 3M ROCKER PANEL SPRAY, P/N 051131-059 PER LABEL INSTRUCTIONS. FINAL COLOR, BLACK.
  6. REINSTALL MODIFIED RH SHROUD INTO AIRCRAFT USING ORIGINAL SCREWS OR AN525-832R7 SCREW, 4 PLACES.
  7. FIBERGLASS OVER EXISTING HOLE WITH 2 LAYERS F/G MAT AND RESIN.
  8. RELOCATE 3.0 DIA HOLE AS SHOWN.

**VIEW B-B**

**RH CONSOLE SHROUD MODIFICATION AND INSTALLATION**



**DETAIL H**  
TYPICAL NUTPLATE INSTALLATION  
SCALE: NONE



TITLE: AIR DISTRIBUTION

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 6
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 5-1-MDHS 500	

## **Step 8**

# **Installation of Compressor**



Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – MD500 Air Conditioning

**NOTE:**  
**ALL REMOVAL AND RE-ATTACHMENT OF EQUIPMENT SHOULD BE DONE IN ACCORDANCE WITH APPLICABLE MCDONNELL DOUGLAS SERVICE MANUALS. TORQUE ALL FASTENERS IN ACCORDANCE WITH AC43.13 OR APPLICABLE MCDONNELL DOUGLAS SERVICE MANUALS.**

### Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.0	See Drawings 6-1-MDHS 500, sheets 1, 2, & 3.		
8.1	Locate compressor shim, P/N 261025 per sheet 2 of 3 on the upper deck immediately aft of Station 106.5. Trial fit.		
8.2	Locate existing rivets and determine which rivets need to have their location and diameter transferred to the shim. Remove the shim and follow instructions on sheet 2 of 3.		
8.3	Match drill compressor shim and compressor bracket support assembly, IFS P/N 530101 to the aircraft structure.		

**Note: The compressor bracket extends forward from Station 106.5. Do not drill bracket until pulley alignment is established.**

8.4	Ensure that the right side of the compressor bracket is located 4.6 inches to the right of the centerline of the aircraft at BL 0.00.		
8.5	Complete the installation of the compressor shim and compressor bracket support in accordance with the directions on sheet 1 of 3.		
8.6	Before final assembly ensure that the compressor shim has material removed from it at the hole locations noted (must be match drilled to the airframe) in order to allow the shim to rest flat on the airframe deck. Make sure holes are large enough to fit around existing aircraft rivets.		
8.7	Install nut plates and attaching hardware per drawing 1 of 3.		
8.8	Seal only the perimeter of the new components to transmission deck with PRC 890-B1/2 or equal sealant.		
8.9	Secure the compressor assembly, P/N 590007-1, and trial fit per the instructions contained on sheet 2 of 3.		

Date: 05/01/09

Section 8: Installation of Compressor

Page 2 of 4

Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – MD500 Air Conditioning

### Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.10	Utilize MDHS Maintenance Manual to remove the engine to transmission drive shaft. Store. (369E, 369FF only)		
8.11	Using above guidance, remove the MDHS output shaft on the zee box. (500N only)		
8.12	Secure the correct hydraulic type jack used to lower the main transmission and place the jack on plywood supported on top of the existing sheet metal floor. Add the appropriate MDHS mating tool at the top of the jack, which attaches directly with three bolts to the bottom of the transmission. (500N only)		
8.13	Loosen the four mounting bolts that secure the transmission to the airframe. (500N only)		
8.14	Remove all oil lines and cap. Clearly mark for ease of reinstallation. Plug all oil holes in transmission where all lines were removed. (500N only)		
8.15	Loosen the four mounting bolts that secure the tail rotor gear box to the tail boom. (369E, 369FF only)		
8.16	Remove bolt on tail rotor gear box control rod. (369E, 369FF only)		
8.17	Remove all electrical connections. Clearly mark for ease of reinstallation. (all versions)		
8.18	After the tail rotor gearbox and driveshaft have been removed it must be determined if a MDHS existing rotor brake disc IFS P/N 369H92569 is installed. If it is not installed, then spacer IFS P/N 300349-2 must be installed. (500N only)		
8.19	After the transmission has been removed it must be determined if a MDHS existing rotor brake disc P/N 369H92569 is installed. If it is not installed, then spacer IFS P/N 300349-2 must be installed. (369E, 369FF only)		

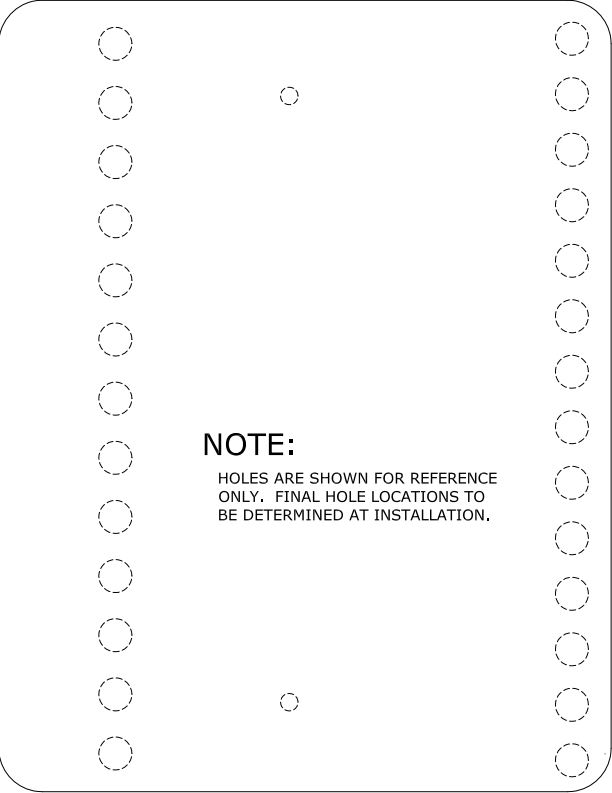
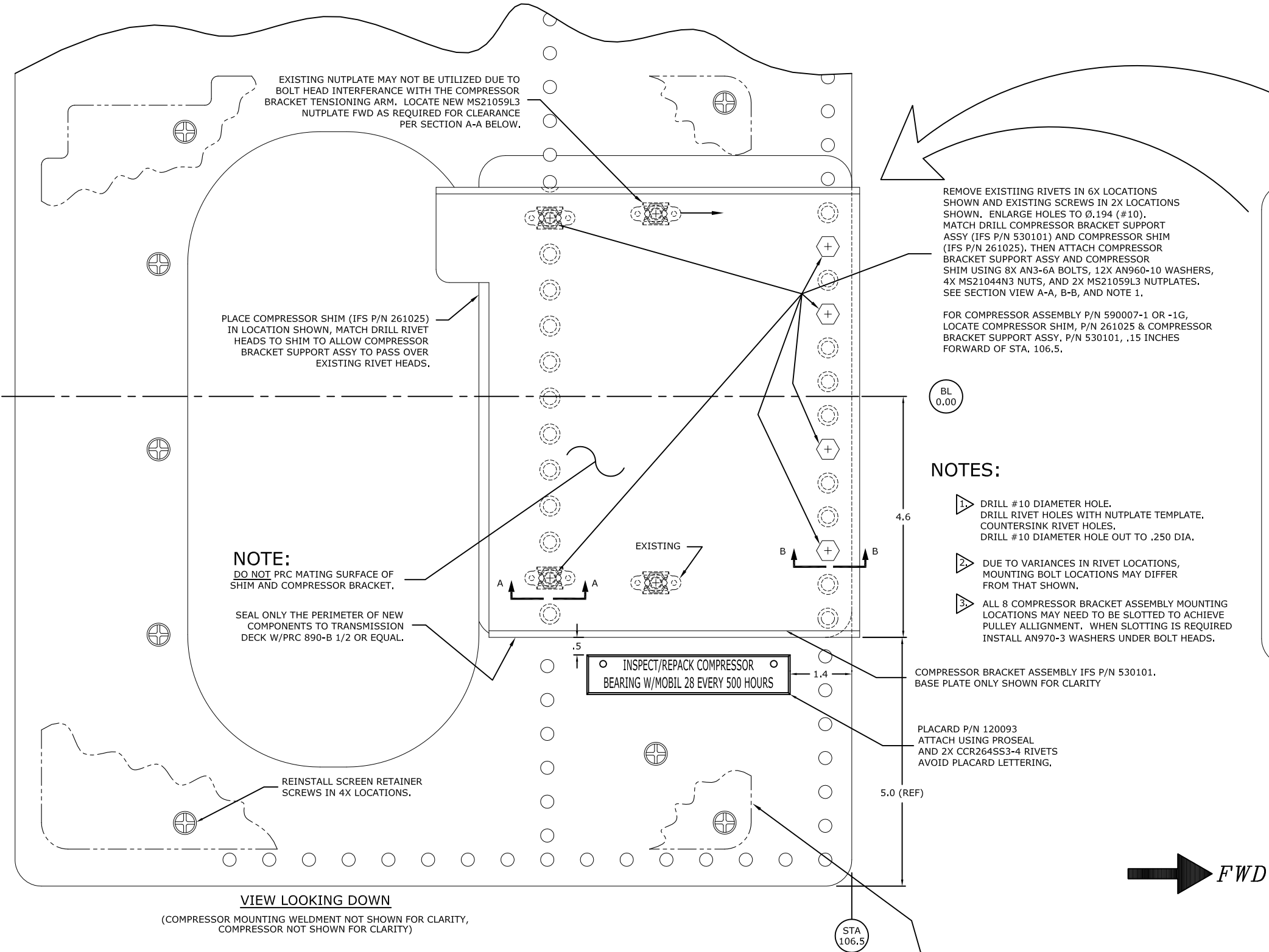
Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – MD500 Air Conditioning

### Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.20	Install solid pulley, IFS P/N 300374, per drawing 6-1-MDHS 500, sheet 2 of 3, utilizing the hardware required. (all versions)		
8.20	Install grooved pulley, IFS P/N 300374-1, per drawing 6-1-MDHS 500, sheet 2 of 3, utilizing the hardware required. (all versions)		
8.21	Install the belt, IFS P/N 060033, and tension utilizing the tension block, IFS P/N 300372, and the tension bolt, IFS P/N 070064. See page 2 of 3 for instructions on setting belt tension. (all versions)		
8.21	Install the belt, IFS P/N 060033-1, and tension utilizing the tension block, IFS P/N 300372, and the tension bolt, IFS P/N 070064. See page 2 of 3 for instructions on setting belt tension. (all versions)		
8.22	After the correct belt tension has been achieved, use .032 SS safety wire to safety the drilled head of the bolt to the compressor bracket.		

Step & Procedure in blue above are for grooved pulley installation. The parts other than P/N: 300372 & 070064 are not interchangeable.

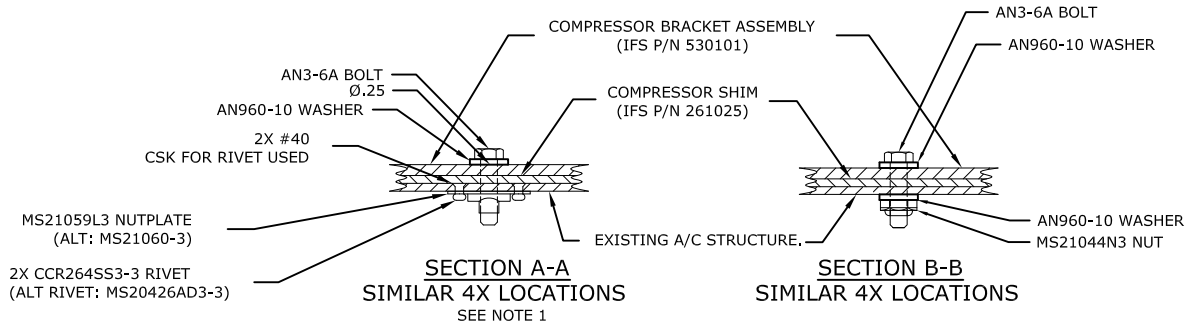
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY




**COMPRESSOR SHIM P/N 261025**

INSTALL BETWEEN COMPRESSOR BRACKET ASSY & TRANSMISSION DECK  
NOTE: INSTALL 2ND SHIM, IF REQUIRED, TO ACHIEVE CORRECT BELT TENSION. USE OF LONGER MOUNTING BOLTS SUCH AS AN3-7A MAY BE NECESSARY.

**VIEW LOOKING DOWN**  
(COMPRESSOR MOUNTING WELDMENT NOT SHOWN FOR CLARITY, COMPRESSOR NOT SHOWN FOR CLARITY)





TITLE: COMPRESSOR INSTALLATION

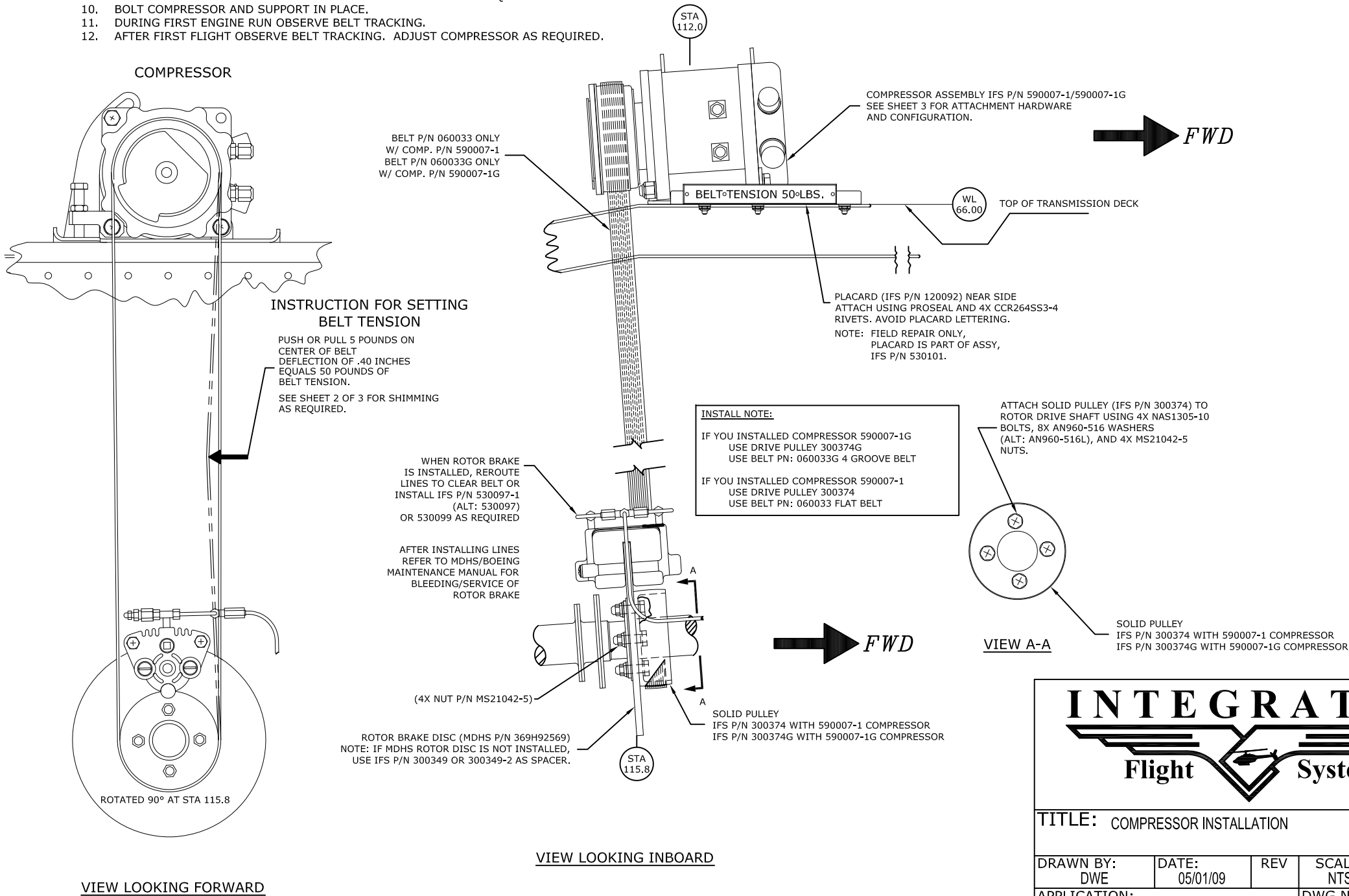
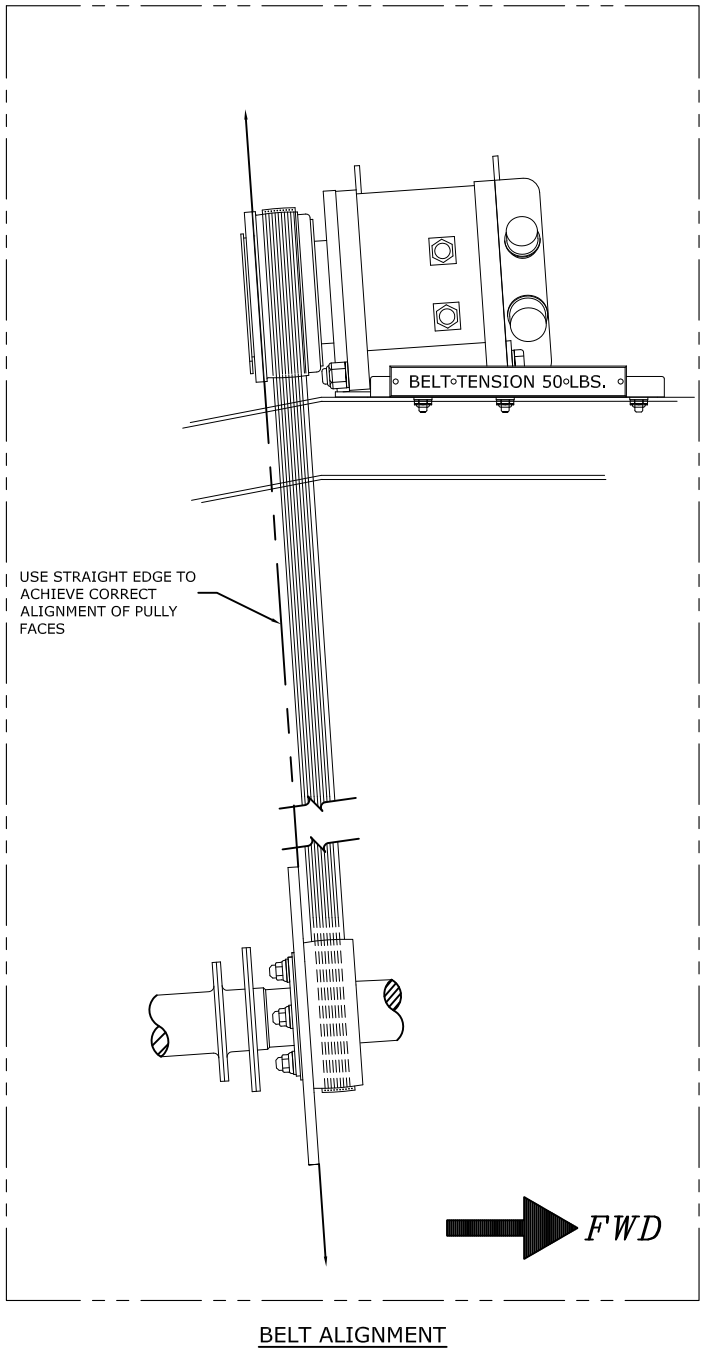
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 6-1-MDHS 500	

# INSTRUCTIONS:

1. TRIAL FIT COMPONENTS PER SHEET 1 AND 2 OF 3.
2. BOLT COMPRESSOR TO SUPPORT BRACKET ON WORK BENCH.
3. AFTER INSTALLING SHIM PER SHEET 1 OF 3, TRIAL FIT COMPRESSOR AND SUPPORT TO AIRCRAFT USING CLAMPS. ENSURE BELT IS ALIGNED WITH LOWER DRIVE PULLEY BY USING TWO STRAIGHT EDGES FROM FWD SIDE OF ROTOR BRAKE DISC TO AFT FACE OF COMPRESSOR PULLEY (W/FACE PLATE REMOVED). SEE VIEW B-B
4. DETERMINE THAT BELT CLEARS SENSOR, CALIPER, ROTOR, AND ROTOR BRAKE LINES AT HIGHEST TENSION SETTING.
5. DETERMINE BELT TENSION IS CORRECT OR INCREASE PER "INSTRUCTION FOR SETTING BELT TENSION".
6. FOR COMPRESSOR P/N 590007-1 ONLY. ENSURE COMPRESSOR IS ALIGNED WITH THE C/L OF THE HELICOPTER.THE COMPRESSOR BRACKET ASSEMBLY (P/N 530101) FORWARD EDGE MAY NOT ALIGN WITH THE AIRFRAME SHEET METAL AS STA 106.5 WHEN COMPRESSOR ALIGNMENT IS CORRECT. NOTE .15" OVERHANG FORWARD.
- 6A. FOR COMPRESSOR P/N 590007-1G ONLY. ENSURE COMPRESSOR IS ALIGNED WITH THE C/L OF THE HELICOPTER. THE COMPRESSOR BRACKET ASSEMBLY (P/N 530101) FORWARD EDGE MAY OVERHANG FORWARD.
7. LOCATE COMPRESSOR FWD AND AFT BY SLOTTING HOLES FOR AN3 BOLTS, AS REQUIRED. PLACE AN970-3 WASHERS UNDER HEAD OF BOLTS AND SEAL WITH PRC AFTER FINAL ADJUSTMENTS.
8. USE DIGITAL PROTRACTOR TO ENSURE ROTOR DISC TO COMPRESSOR PULLEY FACE ANGLE IS NOT MORE THAN .1 DEGREES.
9. TURN ROTOR HEAD AND OBSERVE BELT TRACKING. ADJUST AS REQUIRED.
10. BOLT COMPRESSOR AND SUPPORT IN PLACE.
11. DURING FIRST ENGINE RUN OBSERVE BELT TRACKING.
12. AFTER FIRST FLIGHT OBSERVE BELT TRACKING. ADJUST COMPRESSOR AS REQUIRED.

## REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



TITLE: COMPRESSOR INSTALLATION

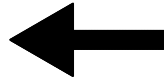
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 6-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

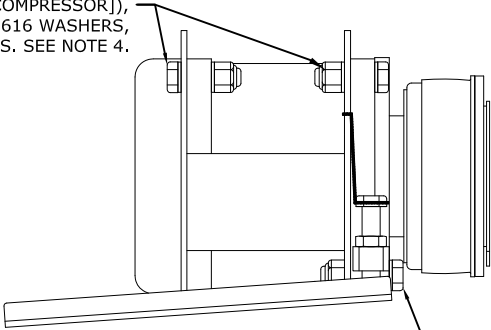
NOTES:

4 BUSHINGS SHOWN ARE PART OF COMPRESSOR ASSEMBLY (IFS P/N 590007-1 OR -1G) AND ARE DETAILED HERE FOR FIELD MAINTENANCE PURPOSES. NOTE THAT FWD (BRASS) BUSHING IS .005 UNDER EAR THICKNESS AND AFT (STEEL) BUSHING IS .030 OVER EAR THICKNESS.

FWD



2X AN6-12A BOLT, 2X BRASS BUSHING (IFS P/N 070066 [590007-1 COMPRESSOR] OR PN 070066 [590007-1G COMPRESSOR]), 4X AN960-616 WASHERS, AND 2X MS21044N6 NUTS. SEE NOTE 4.

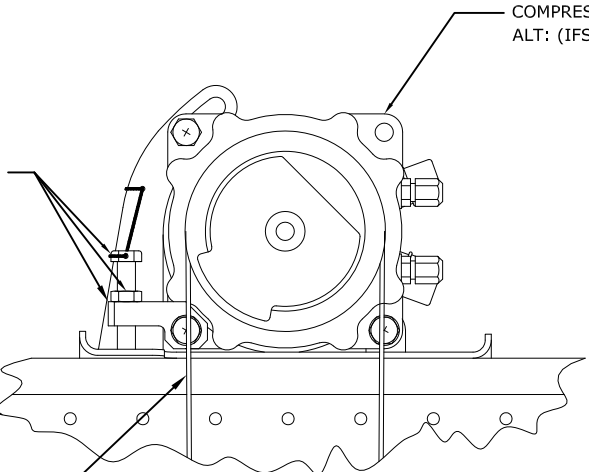


1X AN6-12A BOLT, 1X BRASS BUSHING (IFS P/N 070066), 2X AN960-616L WASHERS, AND 1X MS21245-6 NUT, (ALTERNATE MS 21044N6). SEE NOTE 4.

4

VIEW LOOKING INBOARD  
FROM LH SIDE

TENSION BLOCK IFS P/N 300372  
TENSION BOLT IFS P/N 070064  
(NUT TO LOCK THREADS IN PLACE)  
AFTER CORRECT BELT TENSION IS ACHIEVED,  
SAFTEY USING .032 SS SAFTEY WIRE.

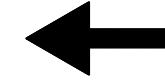


BELT P/N 060033 ONLY  
W/ COMP. P/N 590007-1  
BELT P/N 060033G ONLY  
W/ COMP. P/N 590007-1G

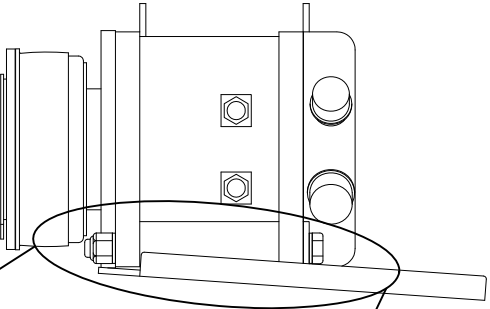
A

VIEW LOOKING FORWARD

AFT



COMPRESSOR ASSEMBLY (IFS P/N 590007-1)  
ALT: (IFS P/N 590007-1G)



MS21044N6 NUT  
AN960-616 WASHER  
STEEL BUSHING (IFS P/N 300373).  
SEE NOTE 4.

VIEW LOOKING INBOARD  
FROM RH SIDE

COMPRESSOR MOUNT ASSEMBLY  
SHIM  
TRANSMISSION DECK  
AN6-45A BOLT  
AN960-616 WASHER  
COMPRESSOR ADJUSTMENT ARM  
BRASS BUSHING  
(IFS P/N 070066). SEE NOTE 4.



TITLE: COMPRESSOR INSTALLATION

DRAWN BY: TMUZZY	DATE: 08/20/98	REV	SCALE: NONE	SHEET: 3 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 6-1-MDHS 500	

## **Step 9**

# **Installation of Electrical**

Integrated Flight Systems  
INSTALLATION OF ELECTRICAL – MD500 Air Conditioning

**NOTE: Route all wires along side of existing harnessing, secure every 6 to 8” with ZZCR4HM tie blocks and TY524M zip ties.**

## Installation of Electrical

STEP	PROCEDURE	MECH	INSP
9.0	Obtain drawings from kit for your configuration.		

**Read completely prior to beginning.**

9.1	Two different locations for the “Master Air Conditioning Electrical Panel” are utilized. In the most common situation the panel is located immediately below the “T” panel next to the floor. When a slant auxiliary panel is installed to allow room for additional aircraft radios, the IFS control switches and other air conditioner related components are located within the slant panel.		
9.2	All wiring is routed per sheet 1 and 2 of 4. All wiring is marked for easy identification and contained in harnesses. After all wiring has been completed it should be tie wrapped or otherwise secured to the aircraft structure in such a manner as to preclude chaffing of any component.		
9.3	The Master Air Conditioning Electrical Panel, IFS P/N 540097 (with reset relay and 1 amp circuit breaker), is located per drawing 2-1-MDHS 500 sheet 2 of 4.		
9.4	The electrical controls and circuit breakers are located per drawing 2-2-MDHS 500 sheet 2 of 4 when a slant panel is installed.		
9.5	Route the #8 wire from the 50-amp circuit breaker located in the Master Air Conditioning Electrical Panel to the aircrafts main electrical buss.		
9.6	The <b>AIR CONDITIONING electrical wires</b> are run from the Master Air Conditioning Control Panel forward to the condenser blower and forward evaporator fan motor.		

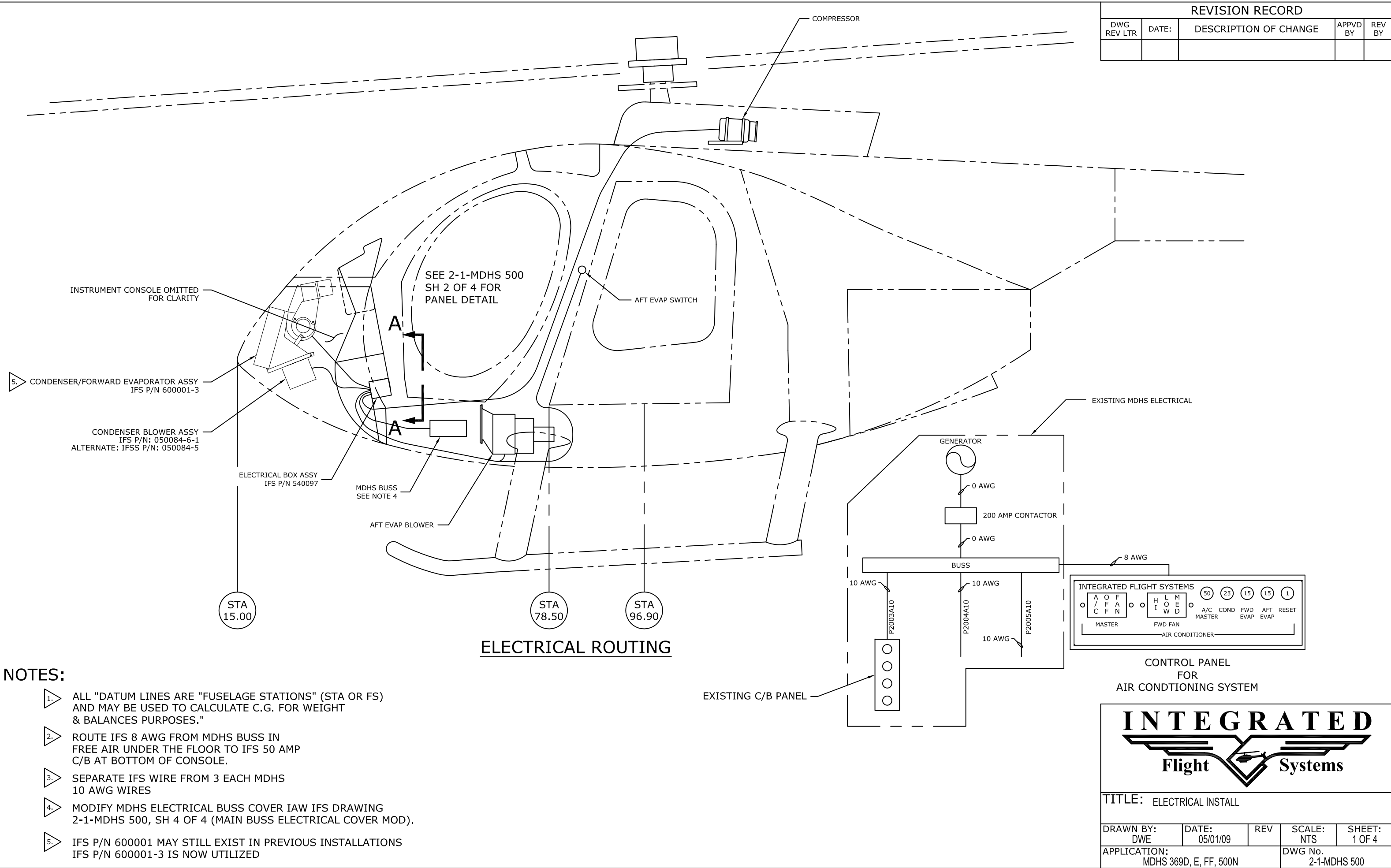


### Installation of Electrical

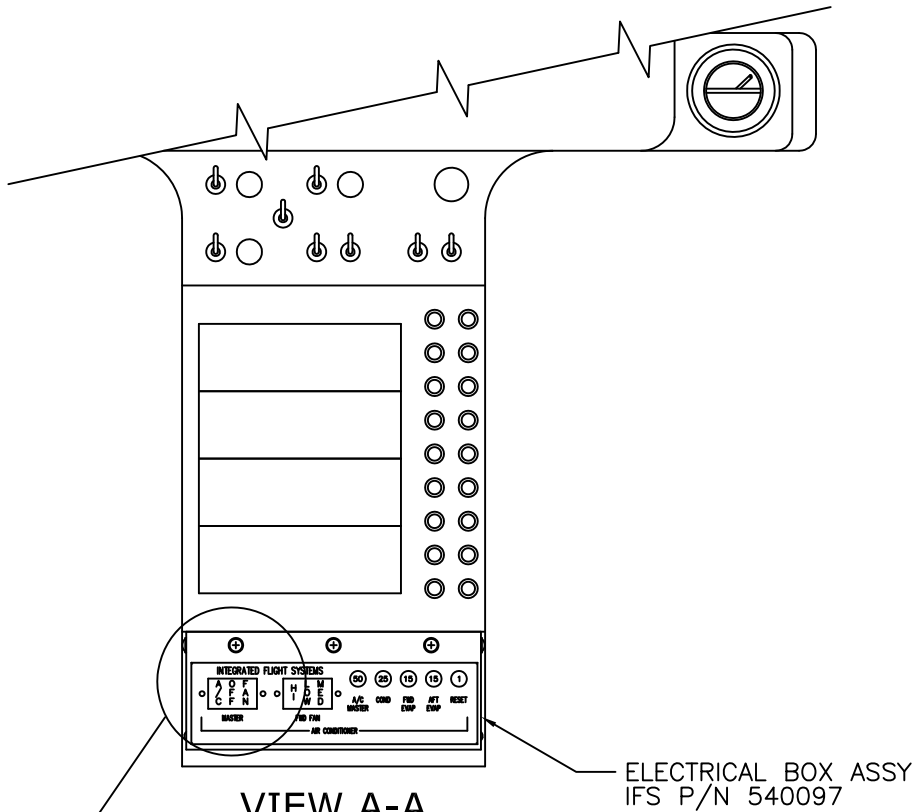
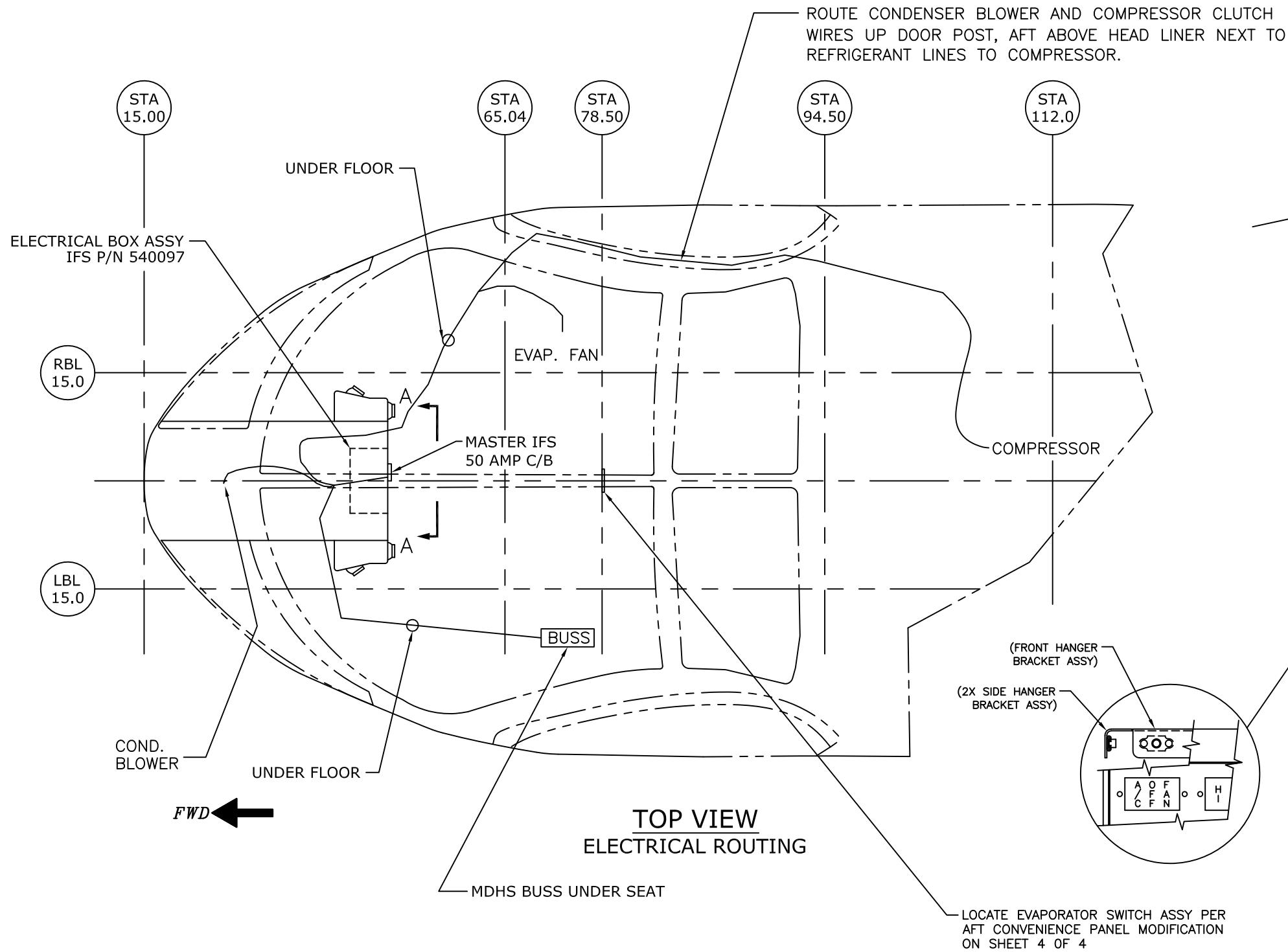
9.7	Additional parts of the A/C harness are run to the compressor, high/low pressure switches, aft evaporator fan motor, and aft cabin speed control switch.		
9.8	<p>Install aft cabin switch and modify buss cover per sheet 4 of 4.</p> <p><b>NOTE: IT IS ESSENTIAL THAT ALL THE MOTOR AND SYSTEM GROUND WIRES BE PROPERLY CONNECTED.</b></p> <p><b>BURNISH PAINT FROM AREAS OF CONNECTION.</b></p> <p><b>FAILURE OF ANY ONE COMPONENT GROUND WILL AFFECT THAT COMPONENT -- ONLY.</b></p> <p><b>FAILURE OF THE GROUND FROM THE "SYSTEM SELECTOR CONTROL SWITCH" WILL CAUSE "TOTAL SYSTEM FAILURE".</b></p> <p>After installing the "Master Control Switch" assembly, it is important that a preliminary investigation be made of the operation of the switch. Ensure that the circuit breakers marked for the evaporator and the condenser motors operate the correct components. This is proven after all wire harnesses have been run by turning the aircraft electrical "Master-On", and placing the air conditioning switch in the "FAN" position. Only the evaporator fans should be operational.</p>		

### Installation of Electrical

9.9	<p>Place the control switch in the "A/C" position. Both of the evaporator fans/blowers should be operational immediately. The condenser blower will start (a time delay of about 4 seconds is provided) and a snapping action at the clutch of the compressor should be heard.</p> <p><b>NOTE: The compressor clutch will not engage unless R-134a refrigerant pressure has been added to the system in an amount sufficient to close the low-pressure safety switch (22 psi, minimum).</b></p>		
9.10	<p>It is important to pull the individual A/C system circuit breakers to determine that both the electrical feeds to the switches and the individual wires are correctly located. It should be noted that all wiring is numbered for tracing and troubleshooting. Refer to electrical diagrams on the Drawings for correct wiring of the system.</p>		



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY




**VIEW A-A**  
**COCKPIT LOWER CONSOLE**  
**VIEW LOOKING FORWARD**  
**SCALE: 1:4**

**ELECTRICAL BOX ASSY INSTALLATION NOTES:**

1. REMOVE HANGER BRACKETS FROM ELECTRICAL BOX ASSY.
2. POSITION AND MATCH DRILL FRONT HANGER BRACKET ASSY (IFS P/N 510316) AND SIDE HANGER BRACKET ASSY'S 2 EA (IFS P/N 510317) TO THE COCKPIT LOWER CONSOLE.
3. ATTACH HANGER BRACKETS WITH 9 EA CR3243-4-2 RIVETS.
4. MOUNT ELECTRICAL BOX WITH HARDWARE PREVIOUSLY REMOVED.

**NOTES:**  
ROUTE IFS 8 AWG FROM MDHS BUSS IN FREE AIR UNDER THE FLOOR TO IFS 50 AMP C/B IN CONSOLE.  
  
SEPARATE IFS WIRE FROM 3 EACH MDHS #10 AWG WIRES

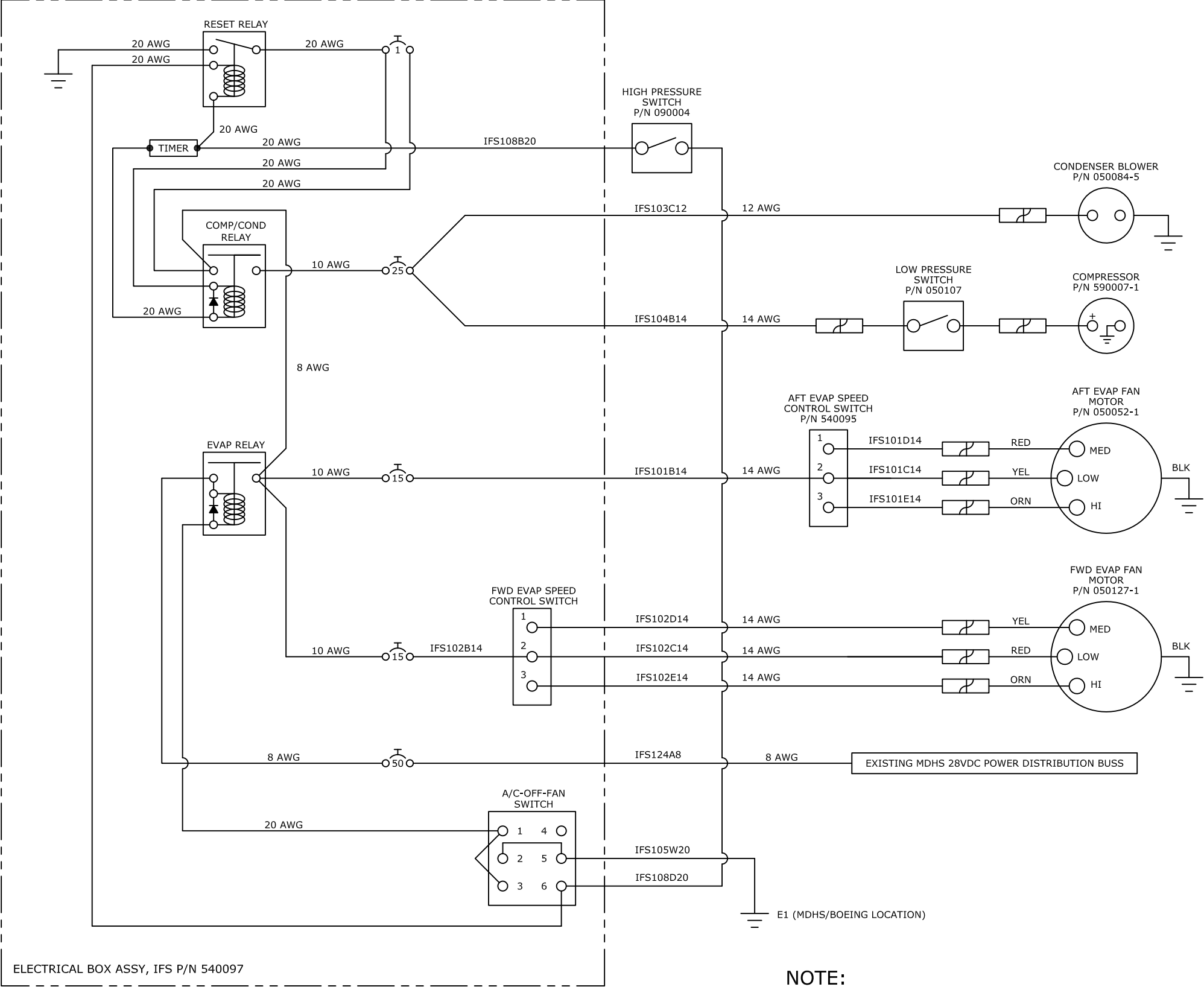


**INTEGRATED**  
**Flight Systems**

**TITLE:** ELECTRICAL INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



ELECTRICAL BOX ASSY, IFS P/N 540097

MDHS 369D,E,FF,500N  
ELECTRICAL WIRING DIAGRAM  
SINGLE CONDENSER BLOWER

NOTE:

1. ALL POWER WIRES PRIOR TO OR INSIDE THE IFS ELECTRICAL BOX ASSEMBLY SHALL BE MIL-W-22759/16 WIRE, EXCEPT 20 AWG MAY BE MIL-W-22759/18.

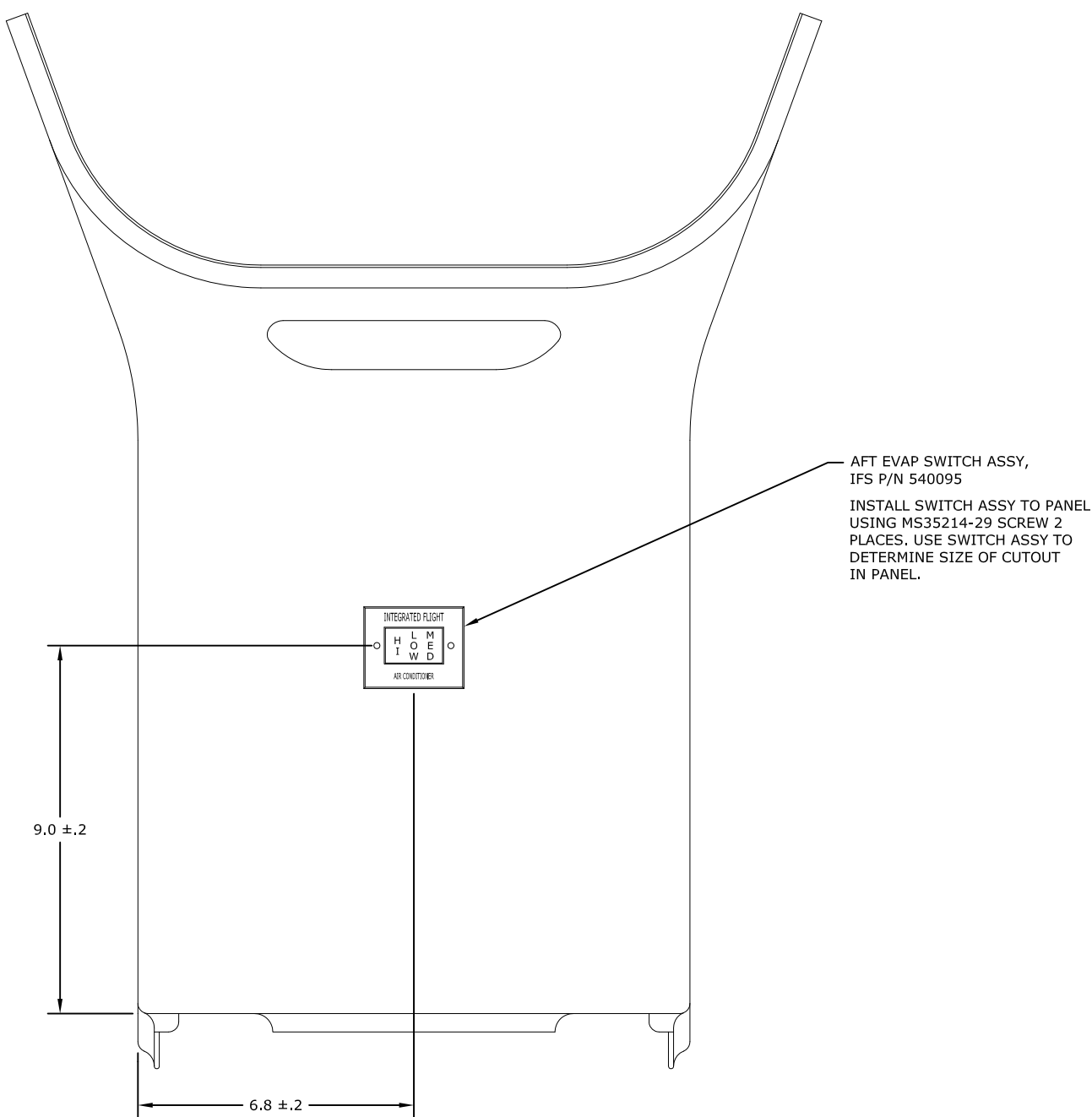
2. WIRE NO. IFS XXX X XX

GROUP  
SEQUENCE  
GUAGE

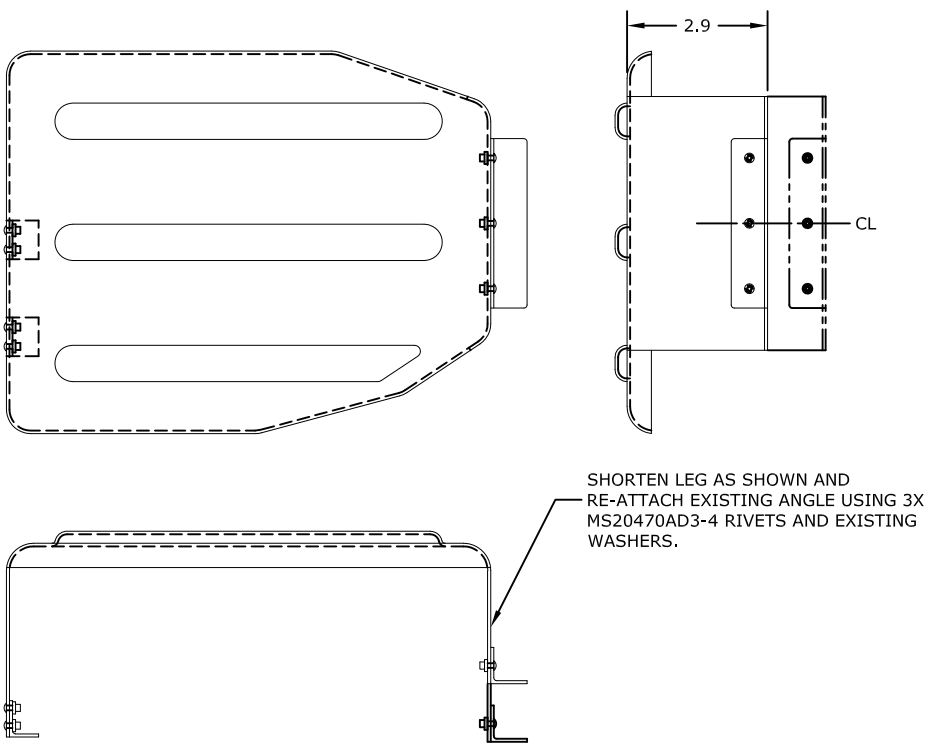


TITLE: ELECTRICAL INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY




AFT MDHS CONVIENENCE PANEL MODIFICATION  
AFT EVAPORATOR SWITCH INSTALLATION



MAIN MDHS BUSS ELECTRICAL COVER MODIFICATION

AFT CABIN SWITCH/BUSS COVER MOD

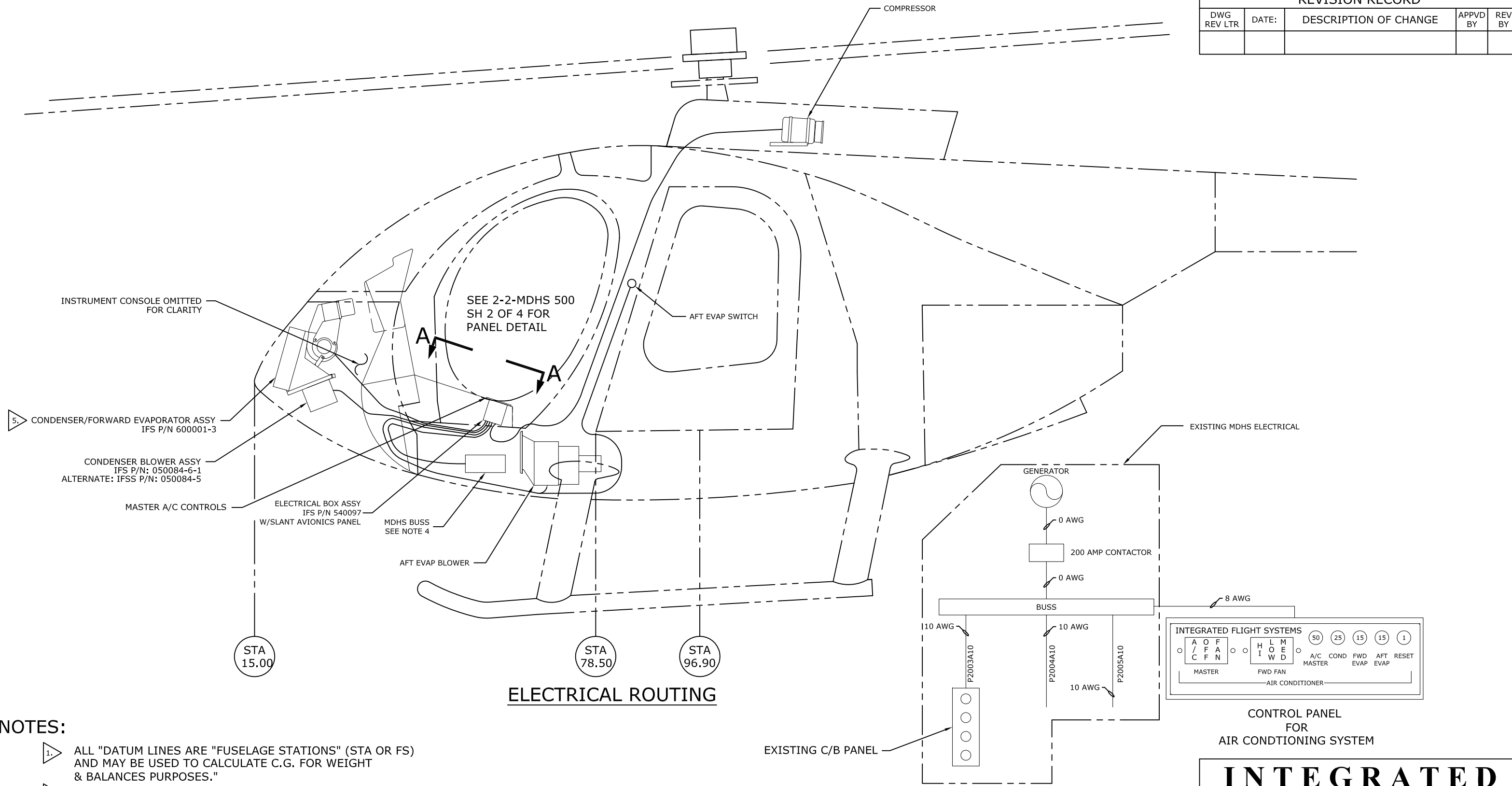


**INTEGRATED**  
Flight Systems

TITLE: ELECTRICAL INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 4 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



NOTES:

- 1. ALL "DATUM LINES ARE "FUSELAGE STATIONS" (STA OR FS) AND MAY BE USED TO CALCULATE C.G. FOR WEIGHT & BALANCES PURPOSES."
- 2. ROUTE IFS 8 AWG FROM MDHS BUSS IN FREE AIR UNDER THE FLOOR TO IFS 50 AMP C/B AT BOTTOM OF CONSOLE.
- 3. SEPARATE IFS WIRE FROM 3 EACH MDHS 10 AWG WIRES
- 4. MODIFY MDHS ELECTRICAL BUSS COVER IAW IFS DRAWING 2-2-MDHS 500, SH 4 OF 4 (MAIN BUSS ELECTRICAL COVER MOD).
- 5. IFS P/N 600001 MAY STILL EXIST IN PREVIOUS INSTALLATIONS IFS P/N 600001-3 IS NOW UTILIZED

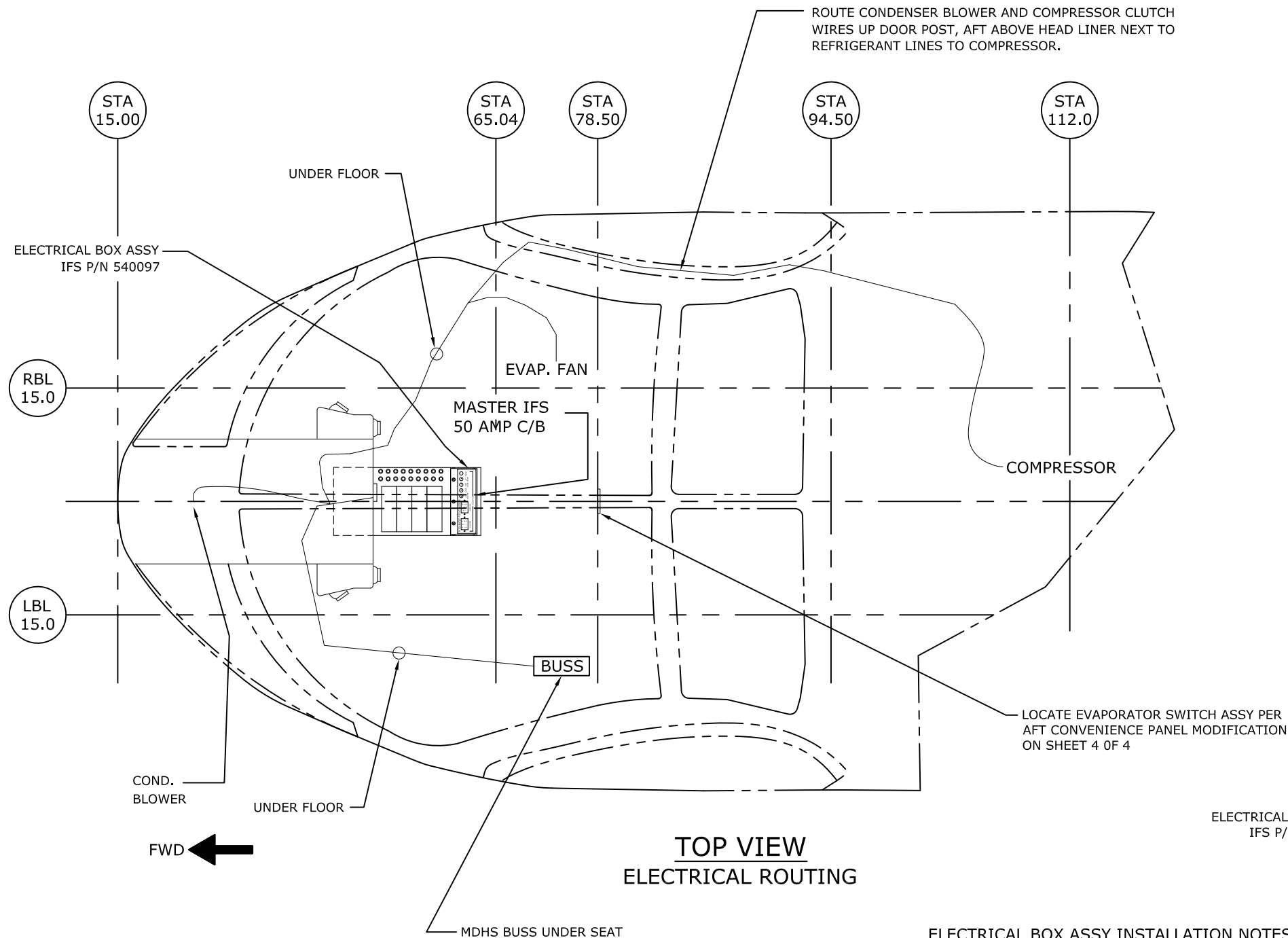
# INTEGRATED

## Flight Systems

TITLE: ELECTRICAL INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-2-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



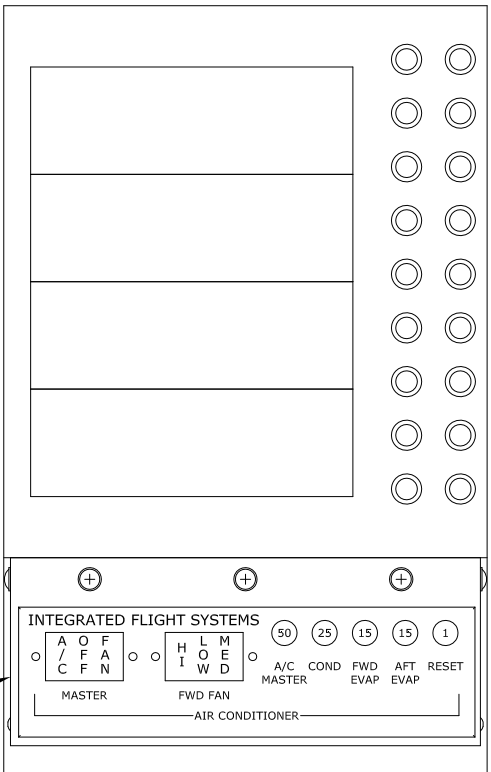
**NOTES:**

ROUTE IFS 8 AWG FROM MDHS BUSS IN  
FREE AIR UNDER THE FLOOR TO IFS 50 AMP  
C/B IN CONSOLE.

SEPARATE IFS WIRE FROM 3 EACH MDHS  
#10 AWG WIRES

- ELECTRICAL BOX ASSY INSTALLATION NOTES:**
- REMOVE PLACARD FROM ELECTRICAL BOX ASSY  
P/N 540097 AND USE AS A TEMPLATE ON SLANT PANEL FOR  
HOLE AND SWITCH LOATION. DRILL HOLES IN SLANT PANEL.
  - REMOVE SWITCHES, AND CIRCUIT BREAKER FROM ASSY  
P/N 540097. DRILL OFF PLATE OF ELECTRICAL BOX  
ASSY THAT HAS ALL OF THE ELECTRICAL COMPONENTS  
MOUNTED ON IT.
  - POSITION BOTTOM PLATE OF ELECTRICAL BOX WITH ALL OF THE  
ELECTRICAL COMPONENTS INSTALLED INSIDE OF SLANTED PANEL  
JUST BELOW CUT OUTS. BACK DRILL AND RIVET PLATE TO SLANT  
PANEL. USE FLUSH RIVETS ON TOP BELOW WHERE PLACARD  
WILL BE INSTALLED.
  - REINSTALL ALL SWITCHES AND CIRCUIT BREAKERS TO SLANT  
PANEL BY SANDWICHING PLACARD P/N 120116 TO TOP OF  
SLANT PANEL.

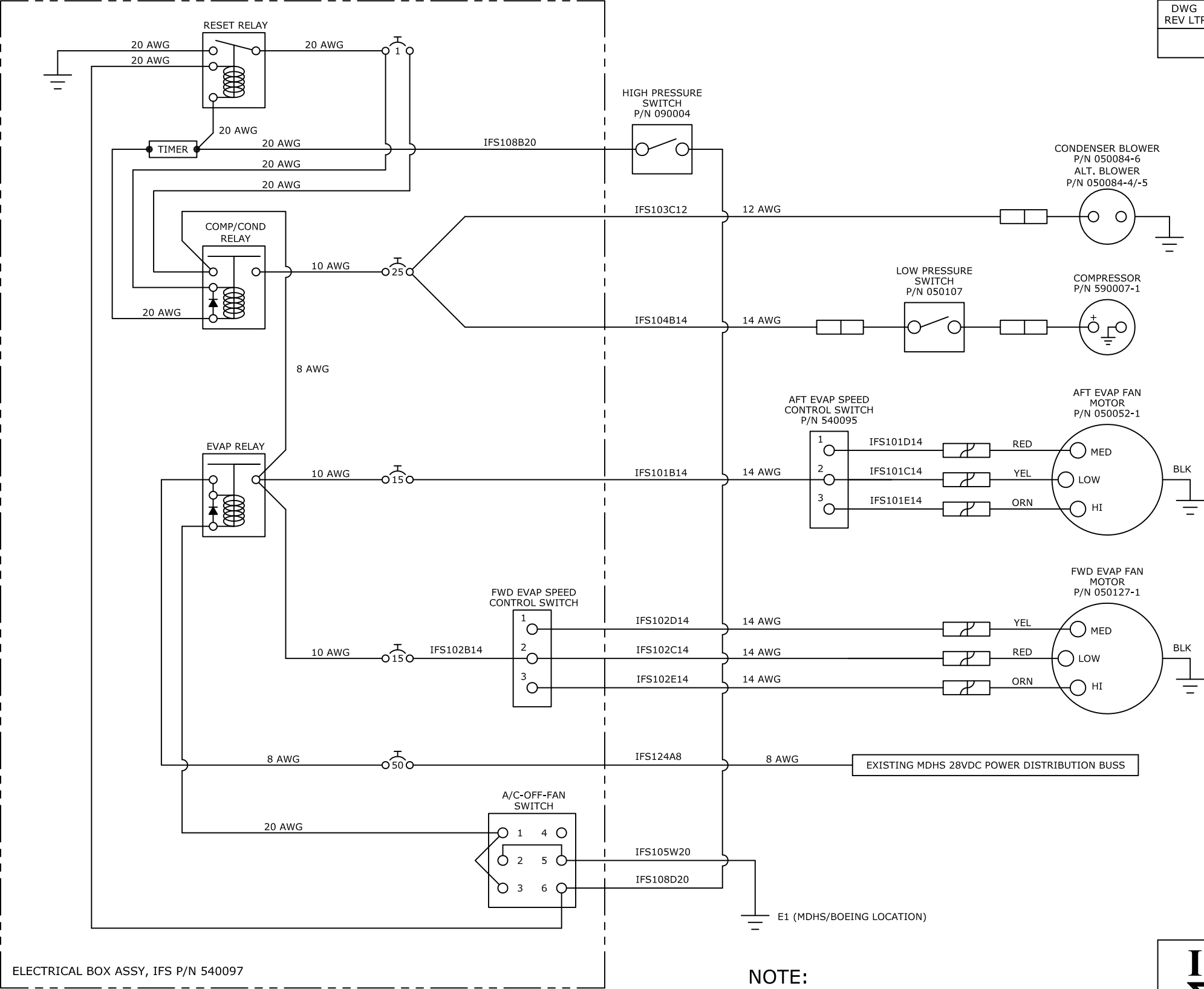
ELECTRICAL BOX ASSY  
IFS P/N 540097



TITLE: ELECTRICAL INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-2-MDHS 500	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



ELECTRICAL BOX ASSY, IFS P/N 540097

MDHS 369D,E,FF,500N  
ELECTRICAL WIRING DIAGRAM  
SINGLE CONDENSER BLOWER

NOTE:

1. ALL POWER WIRES PRIOR TO OR INSIDE THE IFS ELECTRICAL BOX ASSEMBLY SHALL BE MIL-W-22759/16 WIRE, EXCEPT 20 AWG MAY BE MIL-W-22759/18.

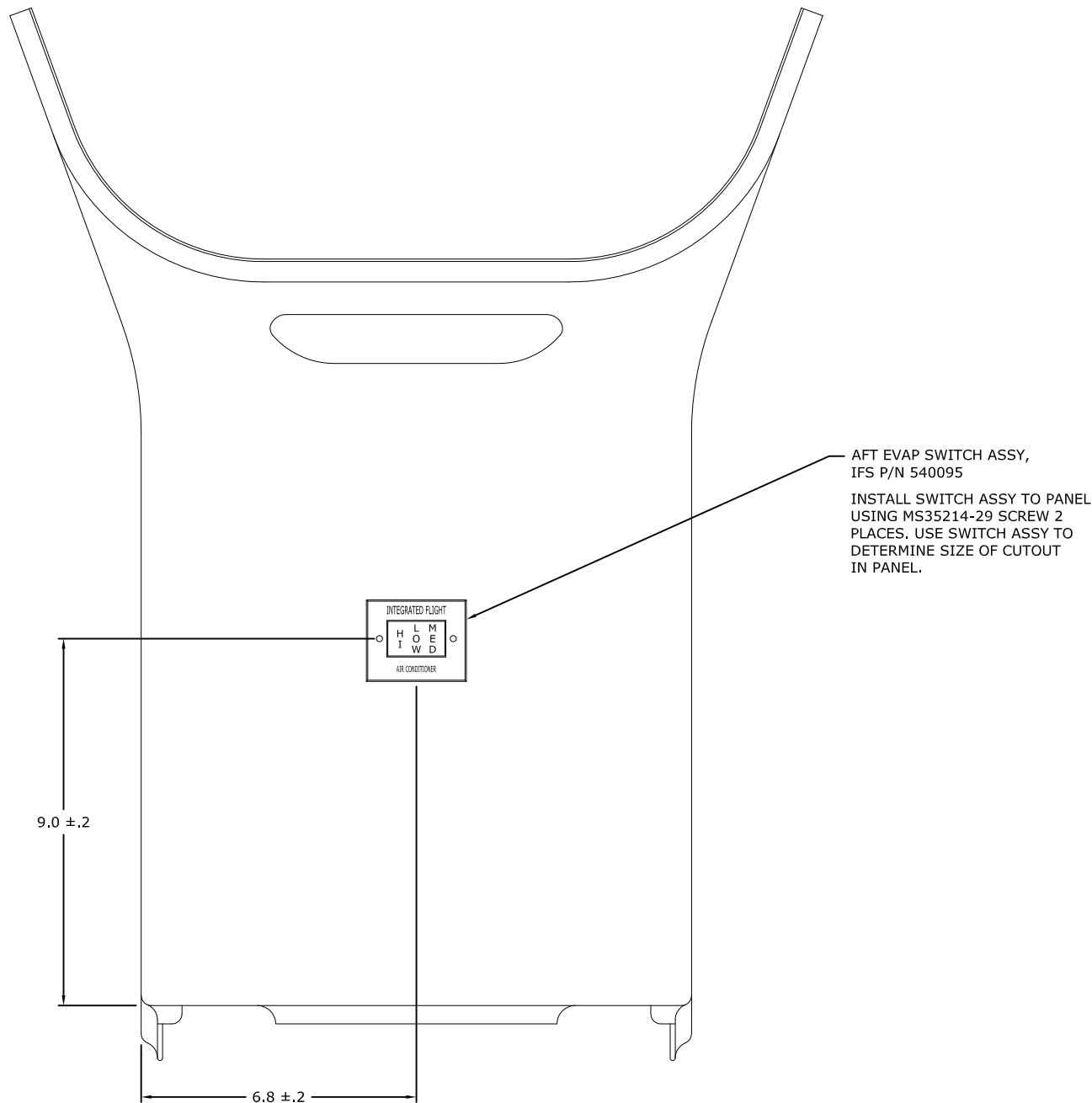
2. WIRE NO. IFS ~~XXX~~ X XX

GROUP  
SEQUENCE  
GUAGE

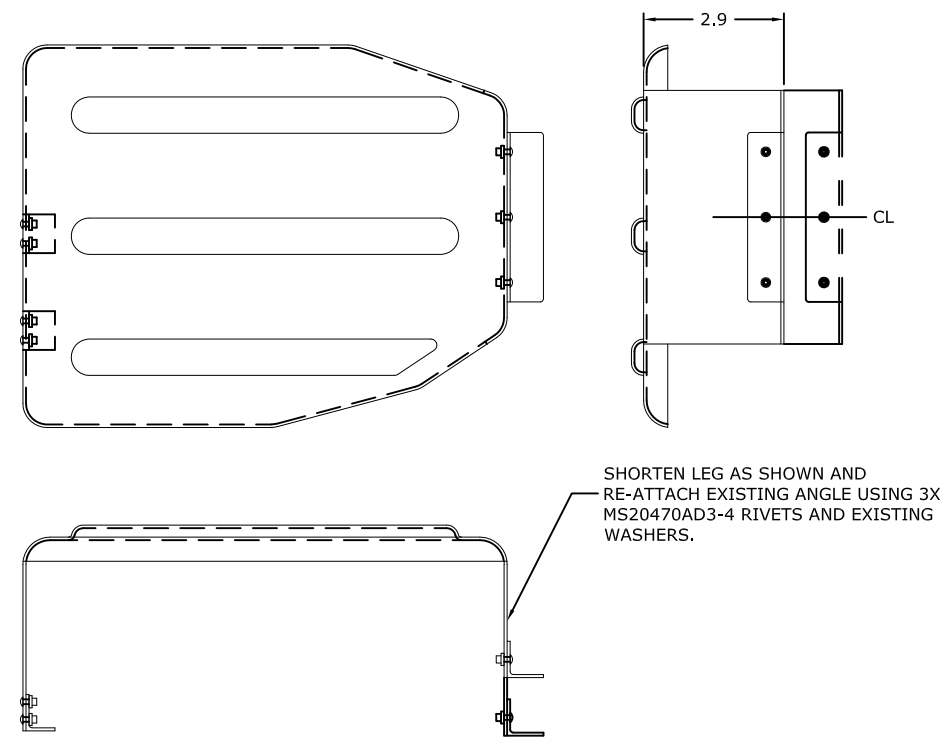


TITLE: ELECTRICAL INSTALL				
DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 4
APPLICATION: MDHS 369D, E, FF, 500N		DWG No. 2-2-MDHS 500		

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY




AFT MDHS CONVIENCE PANEL MODIFICATION  
AFT EVAPORATOR SWITCH INSTALLATION



MAIN MDHS BUSS ELECTRICAL COVER MODIFICATION

AFT CABIN SWITCH/BUSS COVER MOD



**INTEGRATED**  
Flight Systems

TITLE: ELECTRICAL INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 4 OF 4
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 2-2-MDHS 500	

## **Step 10**

# **Installation of Hoses**

Integrated Flight Systems  
INSTALLATION OF HOSES – MD500 Air Conditioning

### INSTALLATION OF HOSES

STEP	PROCEDURE	MECH	INSP
10.0	See Drawings 3-1-MDHS 500, sheets 1, 2 & 3.		
10.1	Rout refrigeration hose using the plumbing diagram as a guideline. Secure all hoses per pertinent aircraft practices.		

**Note: The direction and location of the "T" fittings, which are critical to system operation.**

10.2	"O" ring fittings are used at all connections. Parts with "O" ring type fitting are indicated by; "O" after the PART NUMBER.		
10.3	Reduced Barrier type hose of lighter weight and smaller outside diameter with special "Bubble Crimp" type fittings are utilized.		
10.4	All fittings are attached to the hoses.		
10.5	All hose now utilized is of the "Nylon Barrier Type"		
10.6	Lubricate all fittings, "O" rings and threads with the same type refrigeration oil as used in the compressor and system, prior to all connections.		
10.7	<b>The following sequence of hose connections is suggested.</b> Consult "Plumbing Drawings" for correct hose from and to the forward evaporator for the kit to be installed. Run hose assemblies selected per the attached drawings. Connect and tighten both hose fittings (after final fit of evaporator and fan, <b>but before mounting evaporator</b> ). Mount evaporator and fan. Route hoses down and outboard at right side.		
10.8	<b>Low side pressure switch, IFS P/N 050107, is located on the compressor.</b>		
10.9	<b>High pressure switch, IFS P/N 090004 is located on the compressor.</b>		

Integrated Flight Systems  
INSTALLATION OF HOSES – MD500 Air Conditioning

**INSTALLATION OF HOSES**

10.10	<b>Both switches are non-adjustable and will open or close, as designed, if a single "FAULT" occurs such as the predetermined setting being exceeded.</b>		
10.11	Each switch will automatically reset, once the system pressure has returned to within the desired conditions.		
10.12	Run #10 hose from aft evaporator, outboard and up the left side door post per view B-B, sheet 2 of 3. The location of the adel clamps and hose in relationship to the door post must be as shown in order for the MDHS interior panels to fit over the hose.		
10.13	Run the #10 hose from the top of the door post inboard and then aft along the right side of the transmission to the opening in the MDHS transmission deck. Extend the hose through the opening to the suction port on the compressor. Secure the hose at all locations to prevent chaffing on any metal surface or other hoses.		
10.14	Install LH forward hose doubler IFS P/N 261063-1 and RH forward hose doubler P/N 261062-1 per drawing sheet 2 of 3, view A-A.		
10.15	Run the #10 hose forward from the "T" connection as shown in detail 1-B to the forward evaporator by passing it under the battery and through the left forward hose doubler IFS P/N 261063-1. Connect to the evaporator.		
10.16	Connect the #8 discharge hose at the condenser and pass the hose through the doubler, condenser hose IFS P/N 261062-1. Run the #8 hose aft and up the aft side top of the door post inboard and then aft along the right side of the transmission to the opening in the MDHS transmission deck. Extend the hose through the opening to the discharge port on the compressor. Secure the hose at all locations to prevent chaffing on any metal surface or other hoses.		

Integrated Flight Systems  
INSTALLATION OF HOSES – MD500 Air Conditioning

## INSTALLATION OF HOSES

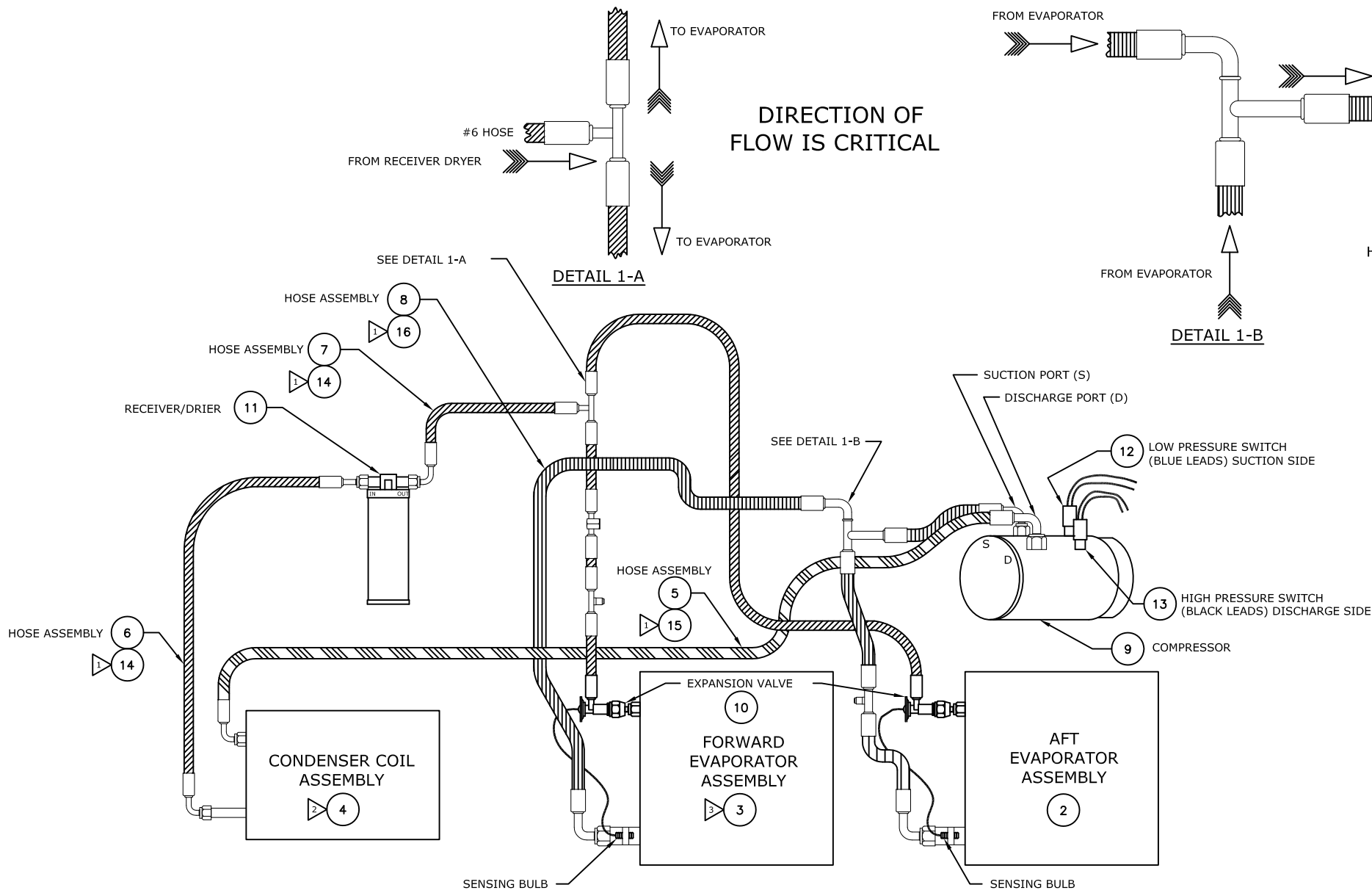
10.17	Run the #6 hose assembly from the condenser coil aft through the right hand doubler, condenser hose to the receiver/drier (Do not connect at this time). Run #6 hose from the receiver/drier to the expansion valve to the aft evaporator (under the pilot seat) and through the LH forward hose doubler IFS P/N 261063-1 to the expansion valve of the left side of the forward evaporator.		
10.18	After all other connections have been made and tightened; make final connections at receiver/drier.		

**NOTE:** All refrigerant lines are to be securely fastened with Adel clamps and/or tie wraps as per guides found in AC 43.13-1A and -2A for hydraulic or similar hoses.

**Caterpillar should be used around all holes in sheet metal where hoses and/or wiring pass through them.**

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY

SEE ECO 0506



PLUMBING DIAGRAM

**EXTREMELY  
IMPORTANT**

FAILURE TO SECURE EXPANSION VALVE

SENSING BULB, TIGHTLY, TO THE

RETURN LINE HOSE FITTING

(AT 3 OR 9 O'CLOCK POSITION)

WITH A STAINLESS STEEL CLAMP (AND INSULATE

SENSING BULB AND LINE W/CORK INSULATION) WILL

DRAMATICALLY DECREASE THE PERFORMANCE OF THE AFT

(NOT AFT) EVAPORATOR.

**NOTE:**

SEE SHEET 2 & 3 FOR ROUTING &  
CLAMPING DETAILS.

REFRIGERANT HOSE SCHEDULE

#6 HOSE	
#8 HOSE	
#10 HOSE	

**EXTREMELY  
IMPORTANT**

FAILURE TO SECURE EXPANSION VALVE

SENSING BULB, TIGHTLY, TO THE

RETURN LINE HOSE FITTING

(AT 3 OR 9 O'CLOCK POSITION)

WITH A STAINLESS STEEL CLAMP (AND INSULATE

SENSING BULB AND LINE W/CORK INSULATION) WILL

DRAMATICALLY DECREASE THE PERFORMANCE OF THE FORWARD

(NOT AFT) EVAPORATOR.

HOSE ASSY PRESSURE CHECK & SERVICING INSTRUCTIONS

AFTER ROUTING AND SECURING HOSE ASSYS, AS SHOWN  
ON SHEET 2, SYSTEM SHOULD BE PRESSURE CHECKED  
AS FOLLOWS:

- APPLY 12 OZ MINIMUM OF R-134a, THEN PRESSURIZE  
SYSTEM WITH 300 PSI OF DRY NITROGEN.
- CHECK ENTIRE SYSTEM WITH AN ELECTRONIC LEAK  
DETECTOR DEVICE, SUCH AS A TIF 5550.
- IF LEAKS ARE FOUND, CONNECT AN EPA APPROVED  
RECOVERY UNIT TO CAPTURE ALL NITROGEN AND  
REFRIGERANT.
- REPAIR LEAKS AS REQUIRED.
- REMOVE RECOVERY UNIT AND REPEAT STEPS A THRU D  
UNTIL NO LEAKS ARE FOUND.
- RECONNECT RECOVERY UNIT TO CAPTURE ALL NITROGEN  
AND REFRIGERANT, THEN VACUUM SYSTEM AND SERVICE  
AS REQUIRED.
- LEAK TEST VALVES AT SERVICE PORTS AFTER REMOVING  
SERVICING EQUIPMENT AND INSTALL DUST CAPS.
- ADD OIL (OF THE TYPE SPECIFIED) AND REFRIGERANT  
TO THE SYSTEM IAW THE "OPERATORS MANUAL" SUPPLIED  
WITH THE AIR CONDITIONING KIT.
- PERFORM FINAL LEAK TEST AFTER COMPLIANCE  
WITH LETTER "H" ABOVE.
- PERFORM INSPECTIONS ON A/C SYSTEM AS RECOMMENDED  
IN THE "OPERATORS MANUAL".

NOTES:

- ITEMS 14,15 AND 16 ARE INTENDED TO BE USED AS  
SPARES ONLY. O-RINGS ALREADY EXIST AS PART OF  
EACH HOSE ASSEMBLY.
- ITEM (4) P/N 550029 MAY STILL BE IN USE  
BUT IS REPLACED WITH P/N 550030 IN  
RECENT INSTALLS
- ITEM (3) DEPENDANT UPON INSTALLATION VERSION

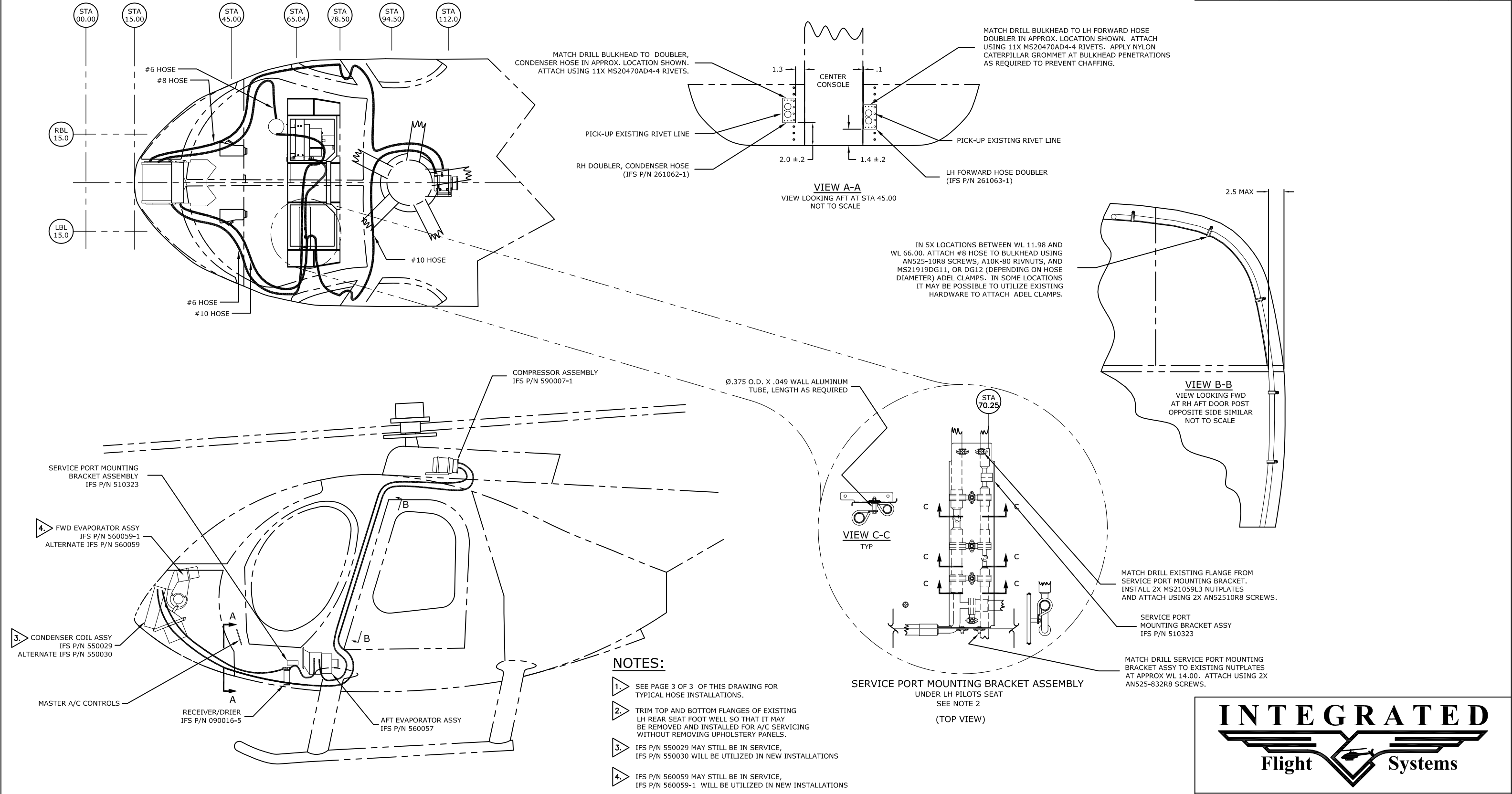
1	4	16	090094	#10 R134a O-RING
	4	15	090093	#8 R134a O-RING
	4	14	090092	#6 R134a O-RING
1	1	13	090004	PRESSURE SWITCH, HIGH
	1	12	050107	PRESSURE SWITCH, LOW
	1	11	090016-5	RECEIVER/DRIER
2	2	10	090002-"O"	EXPANSION VALVE
	1	9	590007-1	COMPRESSOR ASSEMBLY
	1	8	570037	HOSE ASSEMBLY, COMP TO EVAP'S
1	1	7	570039	#6 HOSE ASSEMBLY, REC/DRIER TO EVAP'S
	1	6	570040	HOSE ASSEMBLY, REC/DRIER TO COND
	1	5	570038	HOSE ASSEMBLY, COMP TO COND ASSY
2	1	4	550029	ALTERNATE CONDENSER COIL ASSEMBLY
	1	4	550030	CONDENSER COIL ASSEMBLY
	1	3	560059-1	FORWARD EVAPORATOR ASSEMBLY
1	1	2	560057-1	AFT EVAPORATOR ASSEMBLY
	PARTNUMBER		DESCRIPTION	
	QTY	ITEM	PART NO.	DESCRIPTION




TITLE: PLUMBING INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 1 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 3-1-MDHS 500	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



**PLUMBING ROUTING**



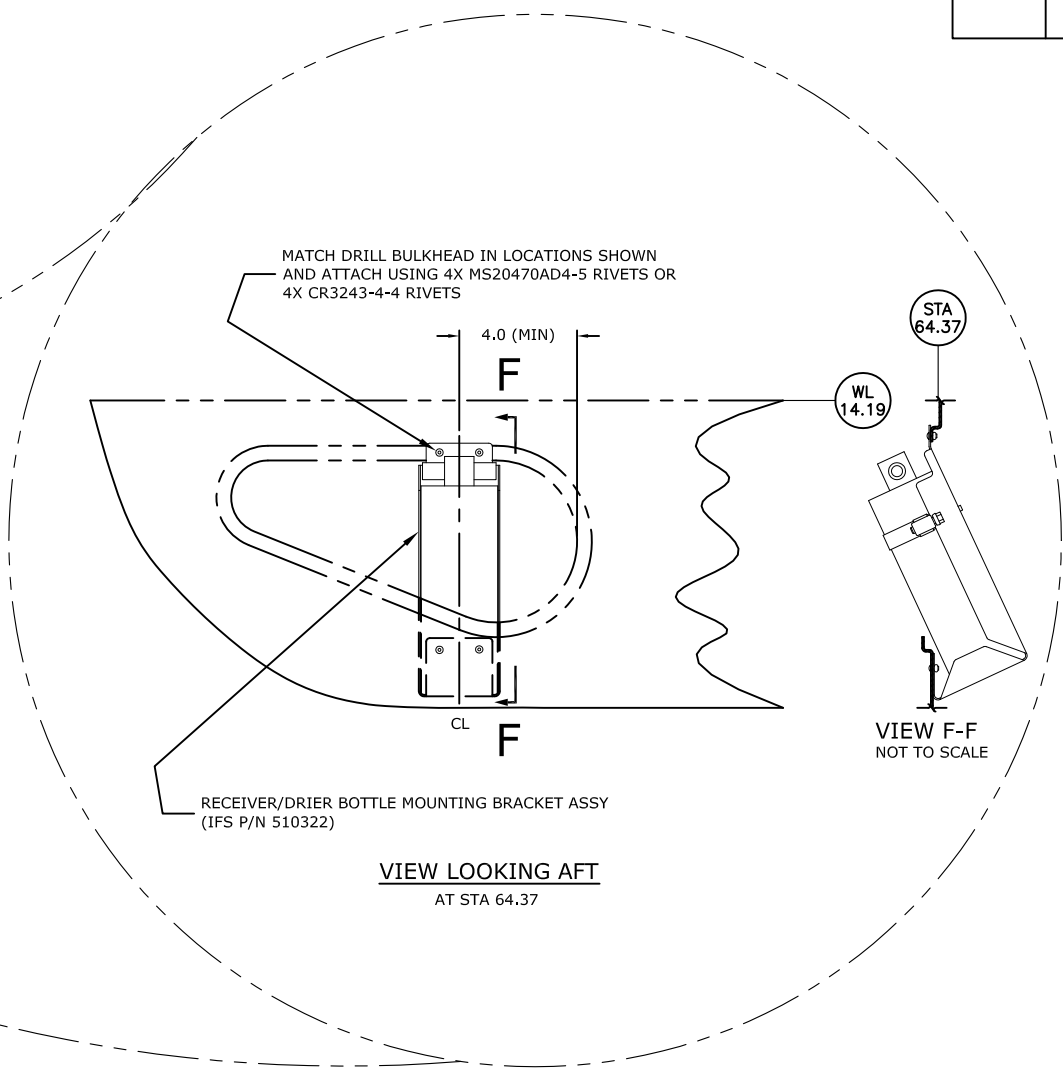
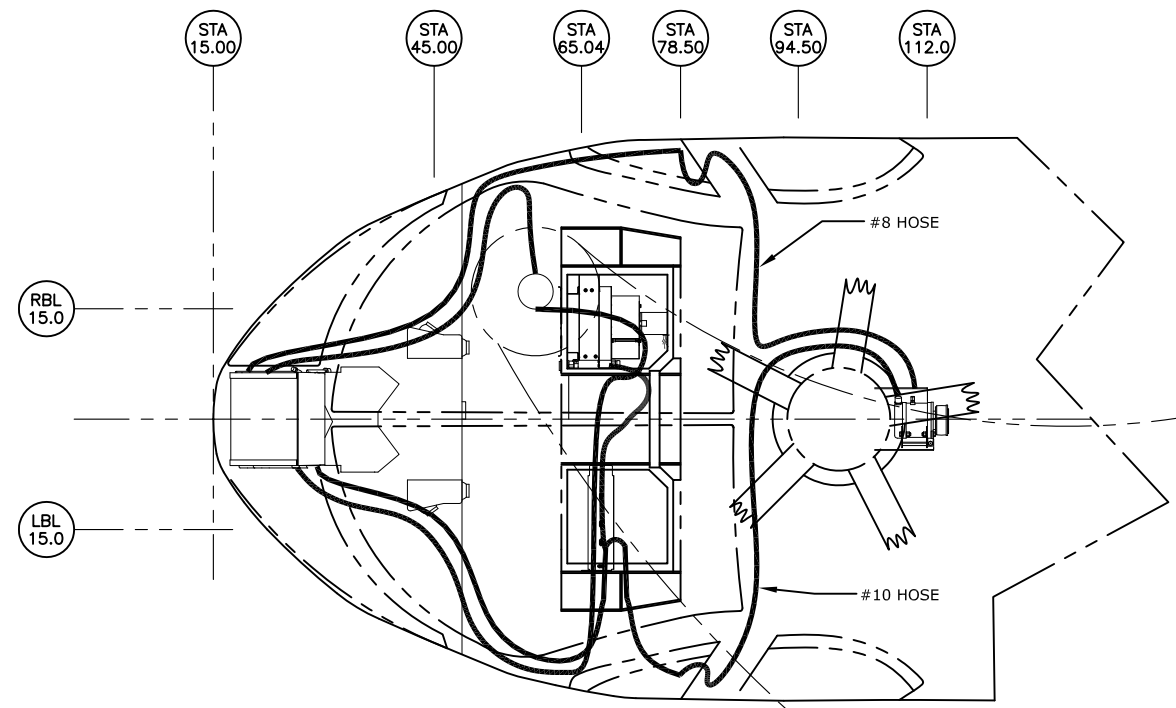
**INTEGRATED**  
Flight Systems

**TITLE:** PLUMBING INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 2 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 3-1-MDHS 500	



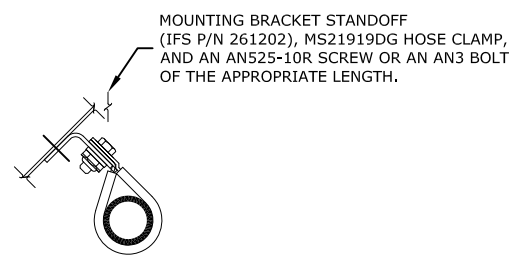
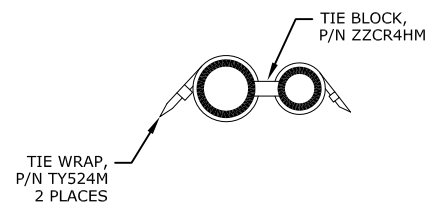
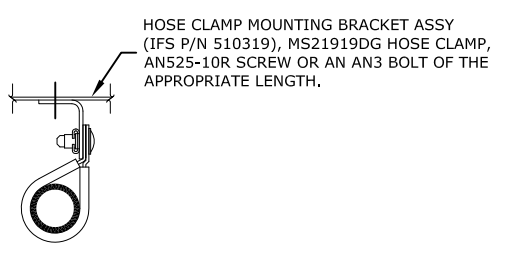
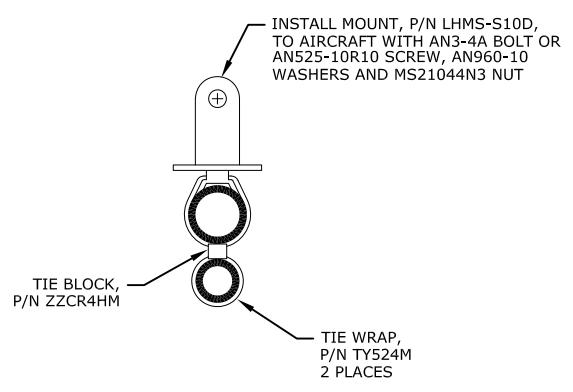
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY




NOTES:



INSTALL ADEL CLAMPS TO AIRCRAFT USING AN AN3 BOLT OR AN AN525-10 SCREW, AN AN960-10 WASHER AND A MS21044N3 NUT. IN BLIND AREAS USE A10K-80 RIVNUTS IN PLACE OF FIBER LOCKNUTS.



TYPICAL HOSE INSTALLATIONS



**INTEGRATED**  
Flight Systems

TITLE: PLUMBING INSTALL

DRAWN BY: DWE	DATE: 05/01/09	REV	SCALE: NTS	SHEET: 3 OF 3
APPLICATION: MDHS 369D, E, FF, 500N			DWG No. 3-1-MDHS 500	



# ENGINEERING CHANGE ORDER

ECO No.	0506	SHT	1 OF 1
DWG No.	3-1-MDHS500	REV	NC
DWG No.		REV	
DWG No.		REV	

## CHANGE CLASS:

- ☐ RECORD CHG. PARTS NOT AFFECTED 
 ☐ NON-INTERCHANGEABLE PARTS  
☒ INTERCHANGEABLE PARTS 
 ☐ OTHER \_\_\_\_\_

REF. STC No. **SR09251RC**

## EXISTING/IN-WORK STOCK DISPOSITION:

- ☐ RECORD CHG. PARTS NOT AFFECTED 
 ☐ RE-WORK EXISTING STOCK  
☐ SCRAP EXISTING STOCK 
 ☒ OTHER BREAK IN AT NEXT BUILD

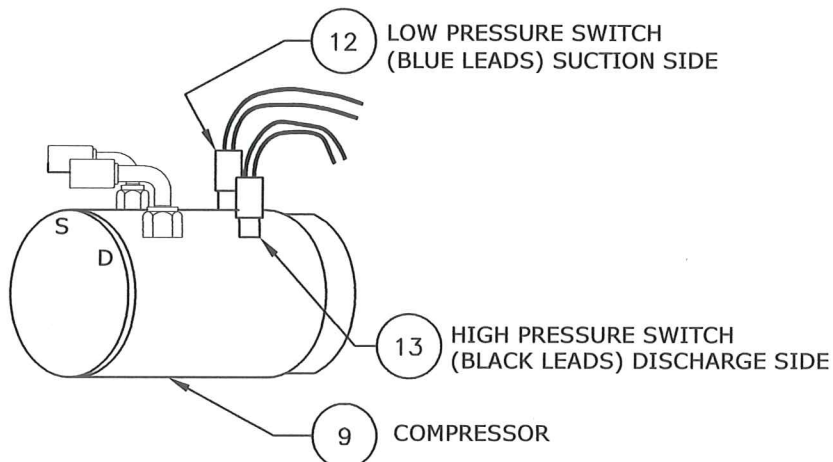
## EFFECTIVITY:

- ☐ ALL UNITS THIS CUSTOMER 
 ☐ LIMITED UNITS SPECIFIED  
☐ ALL UNITS MFG'D AFTER THIS DATE 
 ☒ OTHER ALL UNITS

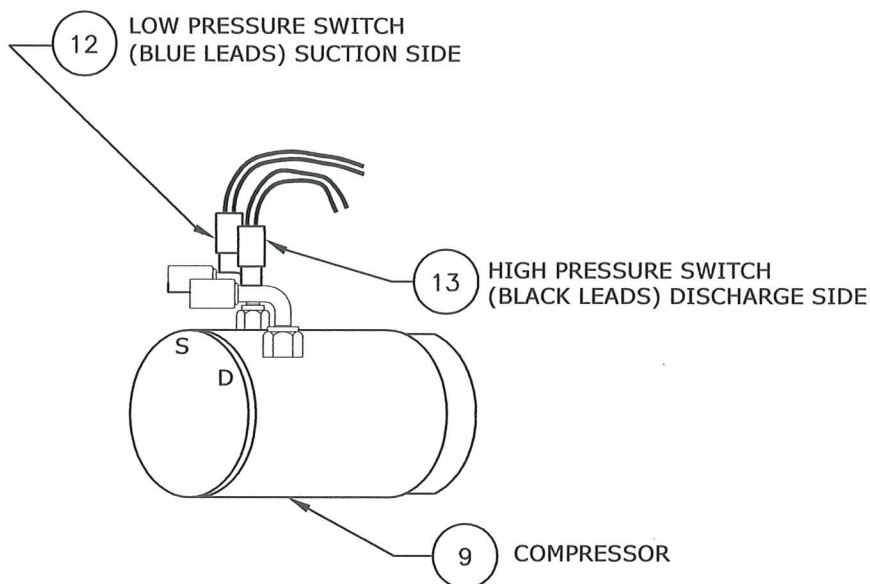
## DESCRIPTION OF CHANGE:

### UPDATED VIEW OF COMPRESSOR

WAS;



IS:



## BOM ITEM 8:

WAS: 570037

IS: 570037-1

## REMARKS:

MINOR CHANGES FOR PRODUCT IMPROVEMENT.

## ENGINEERING REVIEW BOARD

SIGNATURE	STAMP	DATE
<i>S. Weidner</i>	P02	4/15/2012
<i>By Tyn</i>	QA11	8/15/12

## INCORPORATION STATUS

- ☐ IMMEDIATE 
 ☒ OUTSTANDING

## **Step 11**

# **Paperwork**

United States Of America  
Department of Transportation - Federal Aviation Administration  
**Supplemental Type Certificate**

*Number* SR09251RC

*This Certificate issued to* **Integrated Flight Systems, Inc.  
1900 Flightline Drive, Suite 3  
Lincoln, California 95648**

*certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 6 of the Civil Air Regulations.*

*Original Product Type Certificate Number:* H3WE

*Make:* MD Helicopter

*Model:* 369E, 369FF, 500N

*Description of Type Design Change:* Installation of a Vapor Cycle (R-134a Refrigerant) Air-Conditioner with belt driven compressor in accordance with Integrated Flight Systems, Inc., Drawing List DL-41-1 Revision N/C dated September 20, 1998, or later FAA approved revision.

*Limitations and Conditions:* FAA Approved Rotorcraft Flight Manual Supplement (RFMS) for Model 369FF dated July 10, 2000, or later FAA approved revision. FAA approved RFMS for Models 369E and 500N dated July 10, 2000, or later FAA approved RFMS is required.

Compatibility of this design change with previously approved modifications must be determined by the installer. This installation should not be incorporated in any rotorcraft unless it is determined that the interrelationship between this installation and any previously approved configuration will not introduce any adverse effect upon the airworthiness of the rotorcraft. A copy of this STC must be included in the permanent records of the modified rotorcraft. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

*This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.*

*Date of application:* August 24, 1998

*Date reissued:* September 10, 2001; March 25, 2010

*Date of issuance:* July 10, 2000

*Date amended:*



*By direction of the Administrator*

*[Signature]*  
(Signature)

Manager, Cabin Safety, Mechanical &  
Environmental Systems Branch  
Los Angeles Aircraft Certification Office  
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding \$1,000, or imprisonment not exceeding 3 years, or both.

Integrated Flight Systems  
PAPERWORK – MD500 Air Conditioning

**DETAILED HELICOPTER WEIGHT & BALANCE DATA**

**FOR**

**INTEGRATED FLIGHT SYSTEMS UNIT INSTALLED**

**IN A TYPICAL**

**MD HELICOPTER SYSTEMS**

**TYPE: 369E, FF, 500N**

**PERTAINS TO KIT #: 500-00-011**

**AUGUST 28, 1998**

	<u><b>WEIGHT</b></u>	<u><b>CGARM</b></u>	<u><b>MOMENT</b></u>
Cockpit Air Dist. Assy.	3.00	42.00	126.00
Cockpit Evap. & Fan Assy.	14.35	33.00	473.55
Aft Evaporator & Fan Assy.	11.00	72.00	792.00
Aft Cabin Ducting	1.50	82.00	123.00
Master Electrical Panel & Wiring	4.75	47.00	223.25
Refrigerant Hose	8.00	115.00	920.00
Condenser Assy.	18.00	24.50	441.00
Condenser Blower	7.40	30.50	225.70
Compressor Assy. & Mount	18.50	112.00	2,072.00
Drive Pulley & Belt	1.30	114.90	149.37
Seat Pans	1.00	71.74	71.74
<b>SUB-TOTAL:</b>	<b>88.80</b>	<b>63.26</b>	<b>5,617.61</b>

**FAA APPROVED DATA**

**Reference Points: NOSE 15.0    MAST 100.0**

**INTEGRATED FLIGHT SYSTEMS, INC.  
132 EAST MAIN STREET  
GRAND PRAIRIE, TX 75050**

**FAA APPROVED**

**HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
McDONNELL DOUGLAS HELICOPTER SYSTEMS**

**MODEL: 369E and 500N**

**REGISTRATION NO.:**

**SERIAL NO.:**

This supplement must be attached to the FAA approved Rotorcraft Flight Manual when an Integrated Flight Systems, Inc., air conditioning system is installed in accordance with Supplemental Type Certificate number SR09251RC. The information contained herein supplements the basic Rotorcraft Flight Manual only in those areas listed. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

**FAA APPROVED:**

*for* *Erwin E. Lopez*  
**Mr. Carl Mittag  
Manager, Southwest Region  
Certification Office ASW-170  
Ft. Worth, Texas 76193-170**

**DATE: July 10, 2000**

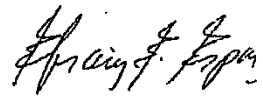
Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement For 369E, 500N  
Air Conditioning

### LOG OF REVISIONS

Original

Dated: July 10, 2000

<u>PAGE</u>	<u>REVISION NO.</u>	<u>APPROVAL</u>
1 thru 9	Original	

NOTE: Revised portions of affected pages are identified by vertical black line in the margin adjacent to the change.

FAA APPROVED: July 10, 2000

Page 2 of 9

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for: 369E, 500N  
Air Conditioning

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ii. Manufacturers Information.....	8
iii. Electrical Loading.....	9



## 1.0 GENERAL

### 1.1 System & Description

The air conditioning installation consists of a vapor cycle (R-134a) air conditioning system featuring a belt driven compressor.

The system as supplied, may be used without any heater installed. It is a stand alone system.

The air conditioning system provides for cabin comfort during all operations both on the ground and in flight. During ground operations when the engine is running, cooling may be provided. Controls for the air conditioning system are located forward of the pilot for ease of use.

Two switches are provided. The Master control Selector consists of a rocker type switch, labeled "A/C", "OFF", and "FAN". Selecting the "A/C" position turns on the system's evaporator fans, and after a delay of several seconds the condenser blower, and belt driven compressor clutch. The second rocker switch provides for "HIGH", "LOW" and "MED" evaporator fan speed selection for the cockpit.

A rocker switch in the aft cabin provides blower speed control for passengers.

## 2.0 OPERATING LIMITATIONS

The air conditioning system must be "OFF" during engine start.

Prior to turning "ON" air conditioner ensure ammeter indicates 50 amps or less.

Operation of the air conditioning system is prohibited if the total electrical load will exceed 85 amps, continuous (150 amps for ten minutes is allowed).

"MAG" compass deviation may be excessive with air conditioner or fans - "ON".

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for 369E, 500N  
Air Conditioning

### 3.0 EMERGENCY PROCEDURES

In the event of an engine failure, turn air conditioner "OFF".

#### 3.1 D.C. Generator Failure

Air conditioning - "OFF".

Note: Auto load shedding of the air conditioning system is not provided.

#### 3.2 Excessive Temperature, Fire, Smoke.

In the event of any of the following, turn air conditioner "OFF".

1. Cabin or other fire.
2. Presence of smoke.

4.0 NORMAL PROCEDURES

4.1 Ground Operation - Generator ON

To turn air conditioner "ON" - Move switch to "A/C".  
Prior to "ON" ensure ammeter indicates 50 amps or less.

To turn air conditioner "OFF" - Move switch to "OFF".

For air circulation without cooling - Move switch to "FAN".

Select desired blower speed for cockpit.

Select desired blower speed for cabin.

4.2 Ground and Flight Operations

Ventilation Control - As desired. (Close windows for cockpit/cabin cooling.)

Air Conditioning Control Switch - As desired.

Air conditioning Fan Speed Control Switches - As desired. (cockpit and cabin)

Turn Air Conditioner - "OFF" to obtain correct Magnetic Compass heading.

Monitor Electrical Load to ensure that it remains within approved limits.

Integrated Flight Systems, Inc.  
Hanger 11 N., Grand Prairie Airport  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for 369E, 500N  
Air Conditioning

5.0 PERFORMANCE

With air conditioner - "ON" decrease rotorcraft Flight Manual data by:

Reduce Hover Gross Weight for Take Off and Landing by 100 pounds.

6.0 WEIGHT and BALANCE

6.1 Weight and Balance must be computed with air conditioning system installed.

ii. Manufacturers Information

The installed unit is a vapor cycle air conditioner. Refrigerant utilized is the EPA approved R-134a. The compressor is belt driven utilizing a "custom designed flat belt". Point of drive is an IFS pulley just forward of the rotor brake disc. Compressor is mounted on the upper deck aft of the mast.

The system features dual evaporators, one for the cockpit located forward of the radio/instrument console and another under the right side cockpit seat. Separate fans are provided for each evaporator. Each contains multi speed blower motors.

The condenser is mounted in the nose of the ship, forward of the evaporator. Thermostatic temperature control is not provided. Dual refrigerant pressure safety switches are provided.

A high pressure safety switch disengages the compressor and stops operation of the refrigeration cycle in the event of excessive pressure. This can occur due to failure of the condenser blower or restricted condenser air intake.

A low pressure switch of similar design protects the system due to loss of refrigerant. Both switches will automatically reset.

However, the system will NOT cycle on again when the safety pressures are again within the preset perimeters, as in older IFS designs. In the "new" design a 1 amp circuit breaker is "TRIPPED" by a single occurrence of either a low or high pressure fault. The pilot can not reset the circuit breaker in flight.

Service ports, both high and low, are provided on under the left side pilot's seat. A sight glass is also provided.

The evaporator fan system may be used anytime air circulation is desired. This is accomplished by placing the selector switch in the "FAN" position.

System electrical protection is provided by two (2) each 15 amp, one (1) each 25 amp and one (1) each 1 amp circuit breakers, labeled EVAP, EVAP, COND and RESET in the Air Conditioning Master Electrical Control Panel. This panel is located just below the horizontal shelf, forward of the radio console. A 50 amp Master Air Conditioning system circuit breaker is provided next to the A/C control switches located immediately in front of the pilot's position. If this circuit breaker is pulled for any reason, all electrical power to the air conditioning system is disconnected.

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for 369E, 500N  
Air Conditioning

ii. Manufacturers Information continued;

A "soft start mode" is provided electrically for this system. When the Master control selector labeled "A/C" is turned to "ON", both evaporator fans, having a total electrical requirement of 13 amps are immediately energized. A few seconds later, the condenser blower and compressor clutch are energized, which requires another 22 amps of electrical system capacity. Due to this "Delay Feature", electrical system "soft start" is provided.

iii. Electrical Loading

The maximum electrical requirements of the basic air conditioning system are as follows:

Condenser Blower	1 each @ 20 amps	= 20 amps
Compressor Clutch	1 each @ 2 amps	= 2 amps
Evaporator Fan	1 each @ 7 amps	= 7 amps (forward)
Evaporator Fan	1 each @ 6 amps	= 6 amps (aft)
TOTAL SYSTEM		35 AMPS

INTEGRATED FLIGHT SYSTEMS, INC.  
132 EAST MAIN STREET  
GRAND PRAIRIE, TX 75050

FAA APPROVED

HELICOPTER FLIGHT MANUAL SUPPLEMENT

FOR

MCDONNELL DOUGLAS HELICOPTER SYSTEMS

MODEL: 369 FF

REGISTRATION NO.:

SERIAL NO.:

This supplement must be attached to the FAA approved Rotorcraft Flight Manual when an Integrated Flight Systems, Inc., air conditioning system is installed in accordance with Supplemental Type Certificate number SR09251RC. The information contained herein supplements the basic Rotorcraft Flight Manual only in those areas listed. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

FAA APPROVED:

*for, [Signature]*  
Mr. Carl Mittag  
Manager, Southwest Region  
Certification Office ASW-170  
Ft. Worth, Texas 76193-170

DATE: July 10, 2000

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement For 369 FF  
Air Conditioning

### LOG OF REVISIONS

Original

Dated:

<u>PAGE</u>	<u>REVISION NO.</u>	<u>APPROVAL</u>
1 thru 9	Original	<i>John F. Frazier</i> for Rotorcraft ASW-1

NOTE:

Revised portions of affected pages are identified by vertical black line in the margin adjacent to the change.

FAA APPROVED: July 10, 2000

Page 2 of 9



Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for: 369 FF  
Air Conditioning

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The system as supplied, may be used without any heater installed. It is a stand alone system.

The air conditioning system provides for cabin comfort during all operations both on the ground and in flight. During ground operations when the engine is running, cooling may be provided. Controls for the air conditioning system are located forward of the pilot for ease of use.

Two switches are provided. The Master control Selector consists of a rocker type switch, labeled "A/C", "OFF", and "FAN". Selecting the "A/C" position turns on the system's evaporator fans, and after a delay of several seconds the condenser blower, and belt driven compressor clutch. The second rocker switch provides for "HIGH", "LOW" and "MED" evaporator fan speed selection for the cockpit.

A rocker switch in the aft cabin provides blower speed control for passengers.

## 2.0 OPERATING LIMITATIONS

The air conditioning system must be "OFF" during engine start.

Prior to turning "ON" air conditioner ensure ammeter indicates 105 amps or less.

Operation of the air conditioning system is prohibited if the total electrical load will exceed 140 amps, continuous (200 amps for ten minutes is allowed).

"MAG" compass deviation may be excessive with air conditioner or fans - "ON".

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for 369 FF  
Air Conditioning

### 3.0 EMERGENCY PROCEDURES

In the event of an engine failure, turn air conditioner "OFF".

#### 3.1 D.C. Generator Failure

Air conditioning - "OFF".

Note: Auto load shedding of the air conditioning system is not provided.

#### 3.2 Excessive Temperature, Fire, Smoke.

In the event of any of the following, turn air conditioner "OFF".

1. Cabin or other fire.
2. Presence of smoke.

4.0 NORMAL PROCEDURES

4.1 Ground Operation - Generator ON

To turn air conditioner "ON" - Move switch to "A/C".  
Prior to "ON" ensure ammeter indicates 105 amps or less.

To turn air conditioner "OFF" - Move switch to "OFF".

For air circulation without cooling - Move switch to "FAN".

Select desired blower speed for cockpit.

Select desired blower speed for cabin.

4.2 Ground and Flight Operations

Ventilation Control - As desired. (Close windows for cockpit/cabin cooling.)

Air Conditioning Control Switch - As desired.

Air conditioning Fan Speed Control Switches - As desired. (cockpit and cabin)

Turn Air Conditioner - "OFF" to obtain correct Magnetic Compass heading.

Monitor Electrical Load to ensure that it remains within approved limits.

Integrated Flight Systems, Inc.  
Hanger 11 N., Grand Prairie Airport  
Grand Prairie, TX 75050

Rotorcraft Flight Manual  
Supplement for 369 FF  
Air Conditioning

5.0 PERFORMANCE

With air conditioner - "ON" decrease rotorcraft Flight Manual data by:

Reduce Hover Gross Weight for Take Off and Landing by 100 pounds.

6.0 WEIGHT and BALANCE

6.1 Weight and Balance must be computed with air conditioning system installed.

Integrated Flight Systems, Inc.  
132 East Main Street  
Grand Prairie, TX 75050

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ii. **Manufacturers Information**

The installed unit is a vapor cycle air conditioner. Refrigerant utilized is the EPA approved R-134a. The compressor is belt driven utilizing a "custom designed flat belt". Point of drive is an IFS pulley just forward of the rotor brake disc. Compressor is mounted on the upper deck aft of the mast.

The system features dual evaporators, one for the cockpit located forward of the radio/instrument console and another under the right side cockpit seat. Separate fans are provided for each evaporator. Each contains multi speed blower motors.

The condenser is mounted in the nose of the ship, forward of the evaporator. Thermostatic temperature control is not provided. Dual refrigerant pressure safety switches are provided.

A high pressure safety switch disengages the compressor and stops operation of the refrigeration cycle in the event of excessive pressure. This can occur due to failure of the condenser blower or restricted condenser air intake.

A low pressure switch of similar design protects the system due to loss of refrigerant. Both switches will automatically reset.

However, the system will NOT cycle on again when the safety pressures are again within the preset perimeters, as in older IFS designs. In the "new" design a 1 amp circuit breaker is "TRIPPED" by a single occurrence of either a low or high pressure fault. The pilot can not reset the circuit breaker in flight.

Service ports, both high and low, are provided on under the left side pilot's seat. A sight glass is also provided.

The evaporator fan system may be used anytime air circulation is desired. This is accomplished by placing the selector switch in the "FAN" position.

System electrical protection is provided by two (2) each 15 amp, one (1) each 25 amp and one (1) each 1 amp circuit breakers, labeled EVAP, EVAP, COND and RESET in the Air Conditioning Master Electrical Control Panel. This panel is located just below the horizontal shelf, forward of the radio console. A 50 amp Master Air Conditioning system circuit breaker is provided next to the A/C control switches located immediately in front of the pilot's position. If this circuit breaker is pulled for any reason, all electrical power to the air conditioning system is disconnected.

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ii. Manufacturers Information continued;

A "soft start mode" is provided electrically for this system. When the Master control selector labeled "A/C" is turned to "ON", both evaporator fans, having a total electrical requirement of 13 amps are immediately energized. A few seconds later, the condenser blower and compressor clutch are energized, which requires another 22 amps of electrical system capacity. Due to this "Delay Feature", electrical system "soft start" is provided.

iii. Electrical Loading

The maximum electrical requirements of the basic air conditioning system are as follows:

Condenser Blower	1 each @ 20 amps	= 20 amps
Compressor Clutch	1 each @ 2 amps	= 2 amps
Evaporator Fan	1 each @ 7 amps	= 7 amps (forward)
Evaporator Fan	1 each @ 6 amps	= 6 amps (aft)
TOTAL SYSTEM		35 AMPS

## **Step 12**

# **Continued Airworthiness**



## General Description

STEP	PROCEDURE
12.0	<p>The Integrated Flight Systems air conditioning system covered by this report for the MD Helicopters, Inc. 369/500 series helicopters consists of five major components. The kit for which this report is applicable is P/N 500-00-011.</p> <p>The above kit is universal. It is designed to mate to the "Corporate or Utility versions of the helicopter.</p>
12.1	The belt-driven compressor is located immediately aft of the main transmission attached to the upper deck.
12.2	The condenser coil and condenser blower are mounted in the nose of the helicopter.
12.3	Dual evaporator fan assemblies. Forward evaporator is mounted forward of the instrument panel.
12.4	Aft evaporator fan is mounted under the pilot's seat.
12.5	Aft evaporator fan is mounted directly to the aft side of the evaporator.
12.6	The refrigerant plumbing lines/fittings required for the above.
12.7	The electrical power and control circuits for the above.
12.8	The forward evaporator is located at C.G. station 33.0, aft evaporator is mounted at C.G. station 72.0, the compressor is located at C.G. station 112.0, and the condenser is mounted at C.G. station 24.5.
12.9	The dual air distribution system consists of four outlets, two forward of the co-pilots' position and two to the right of the pilot from the forward evaporator. The aft evaporator provides airflow to a new duct system, which incorporates two automotive type air outlets for the aft cabin.

## Specific Features

STEP	PROCEDURE
12.10	The condenser coil assembly is mounted in the nose of the helicopter. It is attached to a newly installed IFS designed shelf, which supports the condenser coil, forward evaporator, evaporator fan, and condenser blower.
12.11	Return air is drawn from the cabin through a new-screened return air inlet on the vertical part of the pilots seat. It leads to the aft evaporator and then to the evaporator/fan. No relocation of any cabin appointments is required.
12.12	The forward evaporator/fan is mounted above and aft of the condenser coil assembly. It is forward of the instrument panel. The entire evaporator assembly is contained within a fiberglass case. Air distribution is by way of four (4) each wemac type air outlets for the cockpit and two for the aft cabin.
12.13	The Cabin Environment Control Panel consists of a sheet metal component located at the bottom of the Instrument Console (unless a “slant avionics panel is added) which encloses all the switches, relays, and circuit breakers for the air conditioning system.
12.14	The Sankyo SD 507 compressor is mounted onto a steel plate, which is attached to the existing airframe.
12.15	A 1/8-inch thick 4130N steel bracket is attached to the airframe and supports the compressor. The bracket carries all fore and aft loads.
12.16	A flat belt is used to turn the compressor from the MD Helicopters, Inc. main output drive shaft. An IFS designed pulley mounted to this shaft drives the Sankyo SD-507 compressor pulley, which has been modified to accept the flat belt. Adjusting brackets allow for the tightening of the compressor drive belt.

Integrated Flight Systems  
CONTINUED AIRWORTHINESS – MD500 Air Conditioning

12.17	The belt used to drive the compressor is manufactured by Habasit Belting, Inc. and is produced from A-2 type material. Should the drive belt fail for any reason the net result will simply be the loss of compressor drive and flow of refrigerant. Due to the IFS design of the wire mesh belt guard for the oil cooler blower, failure of the belt would not interfere with any other components or systems. Therefore, the belt is deemed to be "fail safe".
12.18	The electrical system for the air conditioning system consists of dual double throw rocker switches on the cockpit Environment Control Panel. The "Master" control switch has three positions: "A/C", "OFF" and "FAN".
12.19	The "FAN" position allows the evaporator fans to run for non-cooled air circulation. Evaporator fans are protected by two (2) each 15 amp circuit breakers. The "A/C" position turns on the condenser blower as well as the evaporator fans and provides electrical power to the compressor clutch for complete system operation. A 25-amp circuit breaker is provided for protection of the condenser blower.
12.20	A double throw rocker switch is mounted to provide "HIGH- MED-LOW" speed selection for the forward evaporator motor. A 50-amp circuit breaker is employed as "Master Air Conditioning System" protection. This is located on the Environmental Control Panel.
12.21	Plumbing of refrigerant lines is accomplished with a standard air conditioning hose covered under SAE standard J51C. The hose is manufactured by GoodYear under the Galaxy trade name. It is type 4860, which is referred to as a reduced size barrier hose. ATCO or other firms utilizing bubble crimp type connections produce the "O" ring fittings.

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CONTINUED AIRWORTHINESS – MD500 Air Conditioning

12.22	<p>All lines are installed as per standard aircraft practice. Adel clamps or tie wraps are used as required. Butter flying of Adel clamps and the use of standoffs is provided where required. Plumbing from the compressor is run down through an existing hole in the transmission deck. Caterpillar grommet material is used in all aircraft lightning holes to protect refrigerant hoses from chafing, as required. The refrigerant hoses are routed from the compressor below the aircraft roof and along the side of the transmission. This can be next to existing wire bundles or airframe structure to the dual evaporators and condenser. They are secured in accordance with typical hose supporting as shown in AC43.13-1A and -2A. This type hose is STC'd on several aircraft applications.</p>
12.23	<p>Appropriate decals and placards are provided where required. These include switch and circuit breaker identification.</p>
12.24	<p>The vane axial blower used on the condenser is purchased under P/N 050084-5. Blower is 7" in diameter. Enviro Systems, Inc. is the vendor.</p>

**Scope: Charging, Servicing, Maintenance**

STEP	PROCEDURE
12.25	It is assumed by the following instructions that the personnel engaged in Charging, Servicing, or Maintenance of the system will be either an experienced air conditioning mechanics under the supervision of a qualified A & P mechanic or an A & P mechanic possessing good air conditioning skills.
12.26	Prior to charging the system with R-134a, the evaporator fans and condenser blower should be checked for operation and direction of airflow. This is most easily done by utilizing a GPU unit for electrical power. Since the compressor is belt driven only those maintenance and operational functions that are electrically powered may be checked either in the hanger or on the ramp without running the engine.
12.27	After the GPU is connected to the aircraft and the Aircraft Master Switch is "ON", the air conditioning system may be turned "ON". Place the rocker switch on the Master Air Conditioning Control Panel to "A/C". It does not cause the compressor to run or refrigerant to be pumped. Aft fan and the forward fan should start immediately.
12.28	Check airflow of each evaporator fan. Determine that air is coming out of the cockpit and the cabin air outlets.
12.29	Check airflow into and out of condenser air openings.
12.30	All evaporator fans, condenser blowers and controls are 28 volt DC.

## Charging Refrigerant (R-134a) Into System

STEP	PROCEDURE
12.31	<p><u>Danger:</u> R-134a, particularly liquid R-134a, should never be allowed to come in contact with the eyes or skin. Under normal conditions, R-134a as a gas or vapor is an inert substance and non-poisonous. However, the discharge of the gas into an open flame or near by one can produce phosgene gas, which is highly poisonous and can cause blindness and/or death. A flame-type leak detector should therefore <u>Never be used</u> for this reason and also because of the danger of fire or explosion around an aircraft. Several electronic leak detectors are available on the market, such as the Tiff Model 5500 and others. It is highly recommended that due to the time saved in locating leaks, that the money spent on an electronic leak detector is the best investment you can make.</p>
12.32	<p>Never heat a cylinder of R-134a to produce additional pressure or to squeeze that last bit of refrigerant from the cylinder. If the cylinder has become cooled to the point where additional refrigerant cannot be obtained from it, the only approved method is to place the entire cylinder in a container of warm water. Do not exceed 120 degrees Fahrenheit.</p>
12.33	<p>Never attempt to repair a leak requiring brazing or soldering within the aircraft structure as phosgene gas, fire, or explosion can result. Remove the entire assembly from the aircraft to a safe location before attempting such a procedure.</p>
12.34	<p><u>Caution:</u> Should R-134a come in contact with the eyes or skin, Do <u>Not</u> attempt first aid beyond the immediate washing of the eye or skin with clear water. A doctor should be contacted immediately for diagnosis and treatment even though the injury may be considered slight.</p>

**Repeat - Do Not attempt first aid for this condition.**

### **Charging Refrigerant (R-134a) Into System**

<b>STEP</b>	<b>PROCEDURE</b>
12.35	The charging of the system should not be attempted unless two qualified individuals are present. The refrigerant used in this system is R-134a, and no other refrigerant is to be considered. Normal safety practices, such as wearing of gloves and the use of goggles, should be utilized as R-134a could freeze the eyeball instantly were it to come in contact with the eye. Also, frostbite could occur to areas of the skin if R-134a were allowed to come in contact.
12.36	Charging of the system is a simple procedure whether on initial or recharging after leakage repair. A set of refrigerant gauges with a minimum of three hoses should be connected to the high side and low side service ports provided.
12.37	The system is made up of two evaporator assemblies. One is mounted above the condenser forward of the instrument panel. The other is located under the pilot's seat. The compressor for this system is located aft and to the left of the main transmission. Service ports are provided in the right side baggage compartment. The high side and low side service ports are readily accessible. A sight glass is located in line with the high side service port.

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**Oil Charging: R-134a Refrigerant**

STEP	PROCEDURE
12.38	Additional oil will not be required during the refrigerant charging phase of the operation due to type hoses utilized.



## Initial Charging

STEP	PROCEDURE
12.39	<p>After the system has had all lines completely installed, with the exception of the two (2) lines at the receiver/drier, connect the refrigerant charging manifold to a cylinder of R-134a. Connect an EPA approved R-134a recovery unit to any open lines. Allow R-134a, in the form of vapor, to flow through both sides of the manifold by opening each of the valves. This will flush any minor debris from the lines as well as expelling any air present and drying the system.</p> <p>Ensure that all R-134a is captured. Continue until a steady stream of vapor has been noted at both of the lines coming to the receiver/drier. Un-seal the receiver/drier. Place refrigerant oil on both line fittings and the male threads of the receiver/drier, and tighten the fittings. Open both charging manifold valves and pressurize the system. Allow approximately 50 to 70 pounds of refrigerant pressure to build up within the system. Close the valve on the cylinder of R-134a. An electronic leak detector should be utilized to check all fittings, hoses, and sockets. Tighten any leaking connections or make repairs as necessary to eliminate leaks. Shut off and disconnect hose from refrigerant cylinder. Connect to a regulator mounted on a cylinder of dry nitrogen. Purge regulator to center manifold hose. Close low side valve (left) at manifold. Failure to do so can cause high pressure to flow to the low side (left) gauge. Failure of gauge can result.</p> <p>Pressurize system to between 300 and 350 PSI.</p>

Integrated Flight Systems  
CONTINUED AIRWORTHINESS – MD500 Air Conditioning

12.40	After the system has been rechecked with a leak detector and it is determined that no leaks exist, disconnect the charging hose from the manifold set to the cylinder of nitrogen. Open the valves allowing the R-134a and nitrogen within the system to be captured by an EPA approved recovery unit.
12.41	Connect a vacuum pump to the center manifold hose. Open both valves and evacuate the system for a minimum of twenty minutes. After twenty minutes of vacuum pump operation, the low side gauges should read approximately 30" of vacuum at sea level. (Note: For each 1,000 foot rise in altitude above sea level a decrease below 30" of vacuum of 1" per one thousand feet will occur.)

## **Adding R-134a Refrigerant To The System**

<b>STEP</b>	<b>PROCEDURE</b>
12.42	<p>Close both the manifold valves and connects the center charging hose to a cylinder of R-134a. Open the valve on the cylinder. Purge the charging hose by loosening it at the charging manifold's center hose. Both the high side and low side valves of the charging manifold may now be opened.</p> <p>The combination of the vacuum still existing and the pressure in the R-134a cylinder transfers the R-134a from the cylinder into the system without the compressor running. If a scale is available, the cylinder may be pre-weighted and four pounds of refrigerant R-134a added to the system. A total of approximately 3 pounds will be required. Additional refrigerant should be added only, if required, after the system is in operation.</p>
12.43	<p>The system is now ready for operation. This must be performed on the flight line with the engine running at 100%. As soon as the "A/C" Master Control Switch is turned to "A/C" all 28 VDC evaporator blowers will immediately begin operation. The condenser blower and clutch have a time delay build in (soft start).</p>
12.44	<p>If, after the system has been in the "A/C" mode for at least 2 minutes and cooling is not being accomplished, then check all circuit breakers. Determine that DC power is available for control circuitry, and check the operation of the relays and contractors.</p>

## **Adding R-134a Refrigerant To The System**

<b>STEP</b>	<b>PROCEDURE</b>
12.45	<p>After the compressor has come online, the entire system is operational. Close the manifold valve on the high side. The R-134a cylinder valve should be closed initially in order to get an accurate reading on the low side gauge of the "system pressure". The reading on the gauge should not be allowed to go below 10 PSI, as this will indicate that the low-pressure safety switch is possibly set too low. It will disconnect the electrical power to the compressor clutch if allowed to open. Open or close the cylinder valve as required to monitor the flow of R-134a from the cylinder into the low side of the system, until the low pressure is above 10 psi.</p>
12.46	<p>At this point, the <u>minimum</u> amount of R-134a is in the system and charging should cease temporarily. If the outside air temperature is 100 degrees F, or more, the amount of R-134a in the system. However, if the temperature is less than 100 degrees F, particularly if it is in the 60-70 degree F range, additional R-134a should be added into the system, by weight.</p>

## Adding R-134a Refrigerant To The System

STEP	PROCEDURE
12.47	<b>The optimum method of determining the correct charge is to obtain at least four digital thermometers and place them near the return air and the discharge air of each evaporator.</b> R-134a can then be added or deleted, as required, until the highest T.D. is noted, per the paragraph below. At that time, the correct amount of refrigerant is installed.
12.48	A test sheet should be completed noting the average cabin temperature, the temperature of the return or entering air to all evaporators, and the discharge air from the evaporators, at the nearest point. If a temperature differential (T.D) of less than 15 degrees Fahrenheit is recorded through the evaporators at sea level, the system should be considered as having possible defects which will need investigation. At altitudes above sea level, less than 15 degrees Fahrenheit temperature difference may be recorded. This is due to less dense air moving more rapidly through the evaporators.

### Effect of Humidity on T.D.

STEP	PROCEDURE
12.49	<p>It should be noted that if measurements are taken and entered on a test sheet in accordance with 6.10, that similar measurements made at a later date, when the humidity is considerably higher, will dramatically change the T.D.</p> <p>The higher the humidity, as compared to a previous T.D. reading taken with a low humidity, will result in a lower T.D. The reason for this lower T.D. measurement is that when a test is performed at lower humidity, only <b>“SENSIBLE HEAT”</b> is being removed. With higher humidity, a different condition exists. It requires that <b>“LATENT HEAT”</b> containing moisture borne heat must first be removed prior to the removal of the sensible heat.</p>

## Recharging the System

STEP	PROCEDURE
12.50	<p>If the system is found to be completely empty of R-134a, a set of charging gauges should be connected to both the high and low side service ports and to a cylinder of R-134a. Purge the charging hoses from the cylinder to the service ports with R-134a vapor. Open both the low and high side charging valves and allow pressure from the cylinder to equalize through the system until at least 50 PSI is noted. Utilizing an electronic leak detector, check all fittings on the system to determine the point of leakage. Any fitting indicating an oily or dirty condition is a prime suspect.</p>
12.51	<p>. After the leaks have been found and corrected, pressurize the R-134a in the system with dry nitrogen as in 6.1. Re-check for leaks. Capture all of the R-134a in the system with an EPA approved recovery unit. Connect a vacuum pump to the center charging hose and evacuate the system for a minimum of 20 minutes from both the high and low sides. If the system has been allowed to become contaminated, then the receiver/drier should be replaced before recharging the system. In no case should the system be allowed to remain open for more than a few minutes without a new receiver/drier being installed.</p>
12.52	<p>It is always good air conditioning practice to replace the receiver/drier whenever it is suspected that moisture has contaminated the system.</p>

## Recharging the System

STEP	PROCEDURE
12.53	<p>The balance of the recharging procedure is exactly the same as pointed out previously under the Initial Charging Operation. A judgment must be made as to the amount of oil, if any, lost at the point of leakage. Additional oil may be required to be added to the system. If the refrigerant has been expelled rapidly by the rupture of a line or similar situation, then two (2) ounces of refrigerant oil of the type previously specified should be applied to the system at this time and immediately prior to charging of the system with R-134a. No additional oil should be added during normal servicing.</p>



Integrated Flight Systems  
CONTINUED AIRWORTHINESS – MD500 Air Conditioning

**Service**

STEP	PROCEDURE
12.54	<p>Normally service will not be required on a properly installed Integrated Flight Systems, Inc. unit. Routine and seasonally dictated operations, such as checking the R-134a refrigerant charge will be listed under the Maintenance section. The question is often asked, "How often should I add refrigerant to my system?" The answer is, "Never". Point is that either a system has a leak or it has none, therefore requiring no service.</p> <p>We recognize the fact that while the above is true, that due to aircraft vibration and the environment in which it is installed, leaks can occur, usually due to vibration. The location, type of equipment used, and other items will thus be addressed under the topic of maintenance.</p>

**Airworthiness Maintenance**  
**(To Accomplish Continued Airworthiness)**  
**CHECK LIST**

STEP	PROCEDURE
12.60	<p>An Integrated Flight Systems, Inc., unit is designed to be as maintenance free as possible. It incorporates in the design components that have proven themselves to be highly reliable after more than fifteen (15) years in the selection process.</p> <p><b>"IN GENERAL" the IFS air conditioning system, is "on an as required" maintenance schedule.</b></p> <p>Few components require specific hours of in Service Inspections or Time Life replacement of components for "Continued Airworthiness".</p> <p>It is suggested that at each periodic inspection, whether at 50 or 100 hour intervals, at least a visual inspection be accomplished to the following items:</p> <ol style="list-style-type: none"><li>1. Compressor and Belt</li><li>2. Compressor Clutch Bearing</li><li>3. Compressor Mount</li><li>4. Refrigerant Hose and Fittings</li><li>5. Evaporator Fans and Mounting</li><li>6. Condenser Blowers and Mounting</li><li>7. Condenser/Evaporator Coils</li></ol>
12.61	<p>In addition to the above inspections, the compressor should be inspected for a true turning and free clutch. One mechanic should turn the tail rotor blade while another observes the belt and clutch faceplate. Turn system to "A/C" and check magnetic operation of clutch plate.</p>
12.62	<p><b>The compressor mounts</b> should be inspected for possible cracks; deterioration and that all bolts are firmly attached.</p>

### Airworthiness Maintenance (Cont.)

STEP	PROCEDURE
12.65	Forward fan motor is a permanent magnetic type. No repair is recommended. If worn or de-graded, replace.
12.66	<p><b>Aft evaporator motor</b> has two (2) removable brushes. Inspect every 200 hours. Remove brushes one (1) at a time. Note position relative to curvature of armature. Inspect brush for wear. Replace if brush is 5/16” or less. Install new brushes and run at 12 VDC (utilizing an independent power source). Until seating occurs on 70% of the surface (this should be accomplished with motor assembly removed from aircraft). This action will greatly enhance brush life. Reconnect wires to aircraft system and reinstall insulated duct. Run both of the blower/fans in the “FAN” position and perform visual inspection of the assemblies to see that foreign materials have not been ingested into the blower/fan, which might cause blade damage. The blower/fan should also be run at the various speeds available to check the motor operation.</p> <p><b>NOTE: TAKE CARE WHEN INSTALLING BRUSHES THAT BRAIDED POSITIVE LEAD DOES NOT CONTACT HOUSING, CAUSING A SHORT.</b></p>

### **Airworthiness Maintenance (Cont.)**

<b>STEP</b>	<b>PROCEDURE</b>
12.67	<b>Condenser Blower:</b> 7” brush type motor P/N 050084-5 Two (2) brushes are located under a metal end cap on each motor. Inspect brushes every 300 hours for wear. Remove, replace and run in at 12 VDC until brushes are seated.
12.68	The fins of the condenser coil, as well as the evaporator coil, should be checked for cleanliness and that they are straight. If damage has occurred to the fins, a fin comb should be utilized to put them in like-new condition.

## **Step 13**

# **Parts Break Down**

Integrated Flight Systems  
Parts Break Down – MD500-00-011 Air Conditioning  
**INTEGRATED FLIGHT SYSTEMS, INC.**  
**3900 Falcon Way West, Hanger 16S**  
**Ft. Worth, TX. 76106**

# **MASTER PARTS LIST**

IN

**369 SERIES**

FOR

**KIT # 500-00-011**

**with**

**NOSE MOUNTED CONDENSER**

**ESTER OIL EQUIPPED COMPRESSOR**

**ISSUED: July 10, 2000**  
**(With R-134a/EPA data)**

Integrated Flight Systems  
Parts Break Down – MD500-00-011 Air Conditioning

**MASTER PARTS LIST**

369 SERIES

07/10/2000

KIT #: 500-00-011

**SINGLE CONDENSER BLOWER**

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>REPLACEMENT PART NUMBER</u>
1.	<b>BELT - FLAT</b> BELT – GROOVED	060033 060033-1
2.	<b>SD-507 COMPRESSOR ASSEMBLY</b> COMPLETE W/ FLAT PULLEY, 24 VDC COIL <b>(FOR USE WITH R-134a ONLY,</b> <b>"ESTER oil equipped)</b> ALT: GROOVED PULLEY	590007-1  590007-2

**COMPRESSOR PARTS**

FOR: SD-507 W/ 5.0" CLUTCH

3.	<b>BEARING (ONLY):</b> SD-507 COMPRESSOR W/ 5.0" CLUTCH	
4.	<b>24 VDC COIL (GREEN WIRE)</b>	050034
5.	<b>IFS PULLEY (FLAT)</b> GROOVED PULLEY	300355-2 300396
6.	<b>PULLEY FACE PLATE 5.0" B507(TK)22</b>	010015

Integrated Flight Systems  
Parts Break Down – MD500-00-011 Air Conditioning

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>REPLACEMENT PART NUMBER</u>
<b>FORWARD EVAPORATOR FAN PARTS</b>		
7.	<b>MOTOR, FORWARD EVAPORATOR</b> 24 VDC, Double Shaft, Right Hand	050052
8.	<b>WHEEL, FORWARD EVAPORATOR</b>	040004-7
<b>AFT EVAPORATOR FAN PARTS</b>		
11.	<b>MOTOR, AFT EVAPORATOR</b> 24VDC, Single Shaft, Right Hand	050052-1
12.	<b>WHEEL, AFT EVAPORATOR,</b> Fan, Metal, CC Rotation, 5/16" Bore	040004-8
<b>CONDENSER BLOWER PARTS</b>		
13.	<b>7" CONDENSER BLOWER</b>	050084-7-3
14.	<b>BRUSHES (2 ea.)</b>	050038



Integrated Flight Systems  
Parts Break Down – MD500-00-011 Air Conditioning

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>REPLACEMENT PART NUMBER</u>
	<b>MISC. PARTS</b>	
15.	<b>RECEIVER/DRIER "O" RING TYPE</b>	090016-5
16.	<b>EXPANSION VALVE FWD. AND AFT EVAP. "O" RING TYPE</b>	090002-"O"
17.	<b>HIGH PRESSURE SAFETY SWITCH (ALL YEARS)</b>	090004
18.	<b>LOW PRESSURE SAFETY SWITCH NON-ADJUSTABLE (7 OUT/22 IN)</b>	050107
19.	<b>LOW PRESSURE SAFETY SWITCH (ALTERNATE) NON-ADJUSTABLE (6 OUT/34 IN)</b>	090014

# ***Integrated Flight Systems, Inc.***

## ***Pressure Switch Identification***

*for all*

*vapor cycle air conditioning kits*

*using R-134a*

### **Low Pressure Switch: IFS P/N 050107**

Leads are: **BLUE** in color

Mfg. P/N on switch: 20PS003MA022C007C

Opens: 7PSI Closes: 22 PSI

IFS P/N 050107

### **High Pressure Switch: IFS P/N 090004**

Leads are: **BLACK** in color

Mfg. P/N on switch: 20PS002MB375K265K

Opens: 375 PSI Closes: 265 PSI

ALT. Mfg. P/N on switch: 20PS104MB350K250K

Opens: 350 PSI Closes: 250 PSI

IFS P/N 090004 (Both Types)

# ***Integrated Flight Systems***

*Pressure Switch Identification*

*for all*

*vapor cycle air conditioning kits*

*using R-134a*

**Low Pressure Switch: IFS P/N 050107**

**High Pressure Switch: IFS P/N 090004**

## **Step 14**

# **Warranty/Repair**



## Standard Terms and Conditions of Sale

**1. Terms of Payment:** Unless prior arrangements are made to establish credit terms RSG Products Inc., all sales are prepaid in full prior to shipment. Payment may be made via cash, check or electronic transfer to RSG Products Inc. prior to delivery.

**2. Buyer's Deposit:** A 50% deposit is required to process an order for an air conditioning kit. The deposit is non-refundable and will be applied to the final price of the kit.

**3. Taxes / Other Charges:** Prices of the specified products are exclusive of all city, state, federal and international taxes, duties, levies or charges of any kind, including, without limitation, taxes on manufacture, sales, receipts, gross income, occupation, use and similar taxes or other charges. Whenever applicable, any taxes or other charges shall be added to the invoice as a separate charge to be paid by Buyer.

**4. Shipment and Packaging:** All products will be suitably packed, marked and shipped F.O.B. RSG Products Inc. Fort Worth Texas, in accordance with standard packaging procedures.

**5. Delays:** RSG Products Inc. will not be liable for any delay in the performance of orders or contracts, or in the delivery or shipment of goods, or for any damages suffered by Buyer by reason of such delays.

**6. Technical Advice:** RSG Products Inc. technical support staff is available for telephone consultation concerning the products it manufactures; however, RSG Products does not warrant or guarantee such advice.

**7. Aircraft Variation:** Due to aircraft manufacturing variations, alterations and other factors, there are differences between aircraft of a certain make and model. Because of these variations, RSG Products Inc. does not guarantee that Buyer has purchased the correct product or that a specified product will fit the intended aircraft. Further, RSG Products does not guarantee the number of labor hours required to install its products.

**8. Returns:** All sales are final unless a return is approved at the sole discretion of RSG Products Inc. If RSG Products Inc. does agree to accept a return, a twenty percent (20%) restocking fee will be charged. All items returned to RSG Products Inc. must be sent freight prepaid and must have a return material authorization (RMA) number clearly marked on the shipping container.

**9. No Fault Found:** If items are sent to RSG Products Inc. for evaluation and no problem is found, or if Buyer elects not to make the required repairs, then Buyer shall be responsible for the payment of \$250 evaluation fee.

**10. Certificate of Conformity:** RSG Products Inc. will provide a Certificate of Conformity with each product assuring that the product has been manufactured according to its approved design drawings. Any additional assurances or certifications shall be at the expense of Buyer and shall be added to the invoice as a separate charge to be paid by Buyer.

**11. Failed Products:** Should any product prove defective, RSG Products Inc. will either replace the item or adjust the matter fairly and promptly, but under no circumstances shall RSG Products be liable for consequential or other damages, losses, or expenses in connections with or by reason of the use or liability to use products purchased for any purpose.

**12. Patents:** Buyer shall hold RSG Products Inc. harmless from, and release and not make claim or suit against RSG Products because of any suits, claims, losses, or other liability made against, or suffered by, Buyer arising from any claim of, or infringement of, patent, copyright, trademark, or other proprietary right, at common law, or claim of unfair trade or of unfair competition, resulting from, or occasioned by Buyer's use, possession, sale, or delivery of the products sold to Buyer by RSG Products Inc.

**13. Warranty Registration and Claims:** The terms RSG Products Inc. Limited Warranty is written on the Warranty Registration Card and published on the RSG Products Inc., website [www.integratedflightsys.com](http://www.integratedflightsys.com). The registration form must be completed and returned to RSG Products Inc. upon receipt of a product. The completed form may be faxed to +1 817 624 6601. Failure to complete the Warranty Registration Card may result in denial of a claim. In order to process a warranty claim, call RSG Products Inc. at +1 817-624 6600 or fax +1 817 624 6601. A Warranty Claim without a Return Material Authorization (RMA) Number will cause delays and a possible denial of the claim.



## WEBSITE

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**14. Acceptance:** This is not a firm offer and may be changed or revoked at any time. Acceptance of this offer is expressly limited to the exact terms contained herein, or as may be changed by a prior written contract between the Buyer and RSG Products Inc., and any attempt to alter or omit any of such terms shall be deemed a rejection and a counteroffer.



## Warranty Terms

RSG Products Inc., warrants that each of its Air Conditioning Systems (the "Equipment") shall be free from defects in material and workmanship under normal use and service until one year after its date of sale if, and only if, installation, maintenance and operation of the Equipment is in accordance with the specifications and instructions provided by RSG Products Inc. and no substitute parts are installed in accordance with the specifications and instructions provided by RSG Products Inc. and no substitute parts are installed in the equipment without the prior written authorization from RSG Products Inc.. For the Equipment, the warranty period is 12 months or 1,000 hours, whichever comes first, from the date of sale. In the case of new spare parts, this warranty is further limited to a period of six (6) months from the date of sale. In the case of overhauled products, this warranty is further limited to a period of three (3) months from the date of sale. In the case of repaired products, this warranty is further limited to a period of thirty (30) days from the date of sale and applies only to the parts used for the repair. Any claims under this warranty shall be made to RSG Products Inc., 3900 Falcon Way West Hanger 16S, Fort Worth, Texas 76106, USA. Warranty is not valid unless the enclosed Registration Card is completed and returned to RSG Products Inc. prior to any claim. The Warranty Claim Form must be completed and returned with the Equipment. All claims shall be handled according to standard warranty repair procedures.

**Limitations & Exclusions.** This warranty shall not apply to any Equipment repaired or altered outside the Rotorcraft Services Inc. Service Department unless express prior written authorization is granted; nor shall this warranty apply to any Equipment that has been subjected to misuse or accident, as determined solely by Rotorcraft Services Inc. The sole responsibility and liability of RSG Products Inc. and your exclusive remedy under any claim arising out of, connected with, or resulting from this sale or the performance or breach or any condition of warranty there under, or from the manufacture, delivery, or use of the Equipment shall be the repair or replacement of defective equipment upon return of the defective equipment to RSG Products Inc. with transportation, customs and any applicable import duties prepaid and provided that an inspection by RSG Products Inc. discloses that the equipment is defective and covered by this warranty. RSG Products Inc. shall not be liable for any labor or other charges necessary to remove or reinstall the Equipment. In no event, whether as a result of a breach of contract, warranty, tort (including negligence) or otherwise, shall RSG Products Inc. be liable for any special, consequential, incidental or penal damages or expenses including but not limited to loss of profit, goodwill or revenues, loss of use of the Equipment or any associated equipment, damage to associated equipment, cost of capital, cost of substitute products, facilities or services, down time, or costs or claims of third parties for such damages or expenses.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR REMEDIES WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING OR USAGE OF TRADE ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED.

Acceptance of the Equipment by you shall constitute your acknowledgement and acceptance of the terms, provisions, limitations and exclusions set forth herein. Such term, provisions, limitations and exclusions shall not be modified, deleted or supplemented. In a case where the purchaser has negotiated warranty terms by express written agreement with RSG Products Inc. as to certain equipment, the terms of that agreement shall supersede the warranty.



## WARRANTY REGISTRATION FORM

DATE: \_\_\_\_\_

CUSTOMER NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE NUMBER: (\_\_\_\_) \_\_\_\_\_ FAX NUMBER: (\_\_\_\_) \_\_\_\_\_

COMPONENT NAME: \_\_\_\_\_

PART NUMBER: \_\_\_\_\_ SERIAL NUMBER: \_\_\_\_\_

TYPE AIRCRAFT: \_\_\_\_\_ N#: \_\_\_\_\_ S/N: \_\_\_\_\_

AIR CONDITIONING INSTALLATION DATE: \_\_\_\_\_

AIR CON. INSTALLATION COMPANY: \_\_\_\_\_

DATE INSTALLED: \_\_\_\_\_ T.T AT INSTALLATION: \_\_\_\_\_

COPY OF T.T. LOG BOOK ENTRY OF A/C INSTALL SIGN OFF. ☐

**This Form Must be received from the Owner of the Aircraft for the warranty to be active.**

**Warranty period extends from Date of Purchase for a period of one year or 1000 hours**

**Subject to the limitations identified in the attached Warranty Terms; effective 22 February 2007**

**PLEASE REVIEW THE ATTACHED WARRANTY POLICY  
PRIOR TO SUBMITTING THIS REGISTRATION FORM.**





## WARRANTY CLAIM FORM

DATE: \_\_\_\_\_ RMA# \_\_\_\_\_

CUSTOMER NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP: \_\_\_\_\_

PHONE NUMBER:(\_\_\_\_) \_\_\_\_\_ FAX NUMBER:(\_\_\_\_) \_\_\_\_\_

COMPONENT NAME: \_\_\_\_\_

PART NUMBER: \_\_\_\_\_ SERIAL NUMBER: \_\_\_\_\_

TYPE AIRCRAFT: \_\_\_\_\_ N#: \_\_\_\_\_ S/N: \_\_\_\_\_

AIR CONDITIONING INSTALLATION DATE: \_\_\_\_\_

AIR CON. INSTALLATION COMPANY: \_\_\_\_\_

DATE INSTALLED: \_\_\_\_\_ T.T AT INSTALLATION: \_\_\_\_\_

DATE REMOVED: \_\_\_\_\_ T.T AT REMOVAL: \_\_\_\_\_

REASON FOR RETURNING COMPONENT: \_\_\_\_\_

### For Company use only

Date Received: \_\_\_\_\_

Warranty Accepted: \_\_\_\_YES \_\_\_\_NO

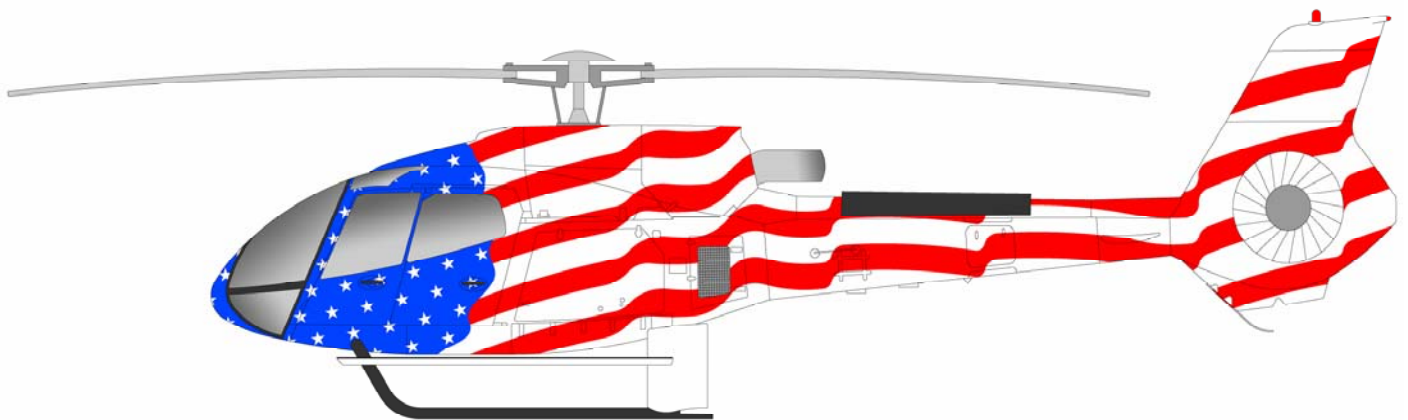
Disposition of component: \_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_

## **Step 15**

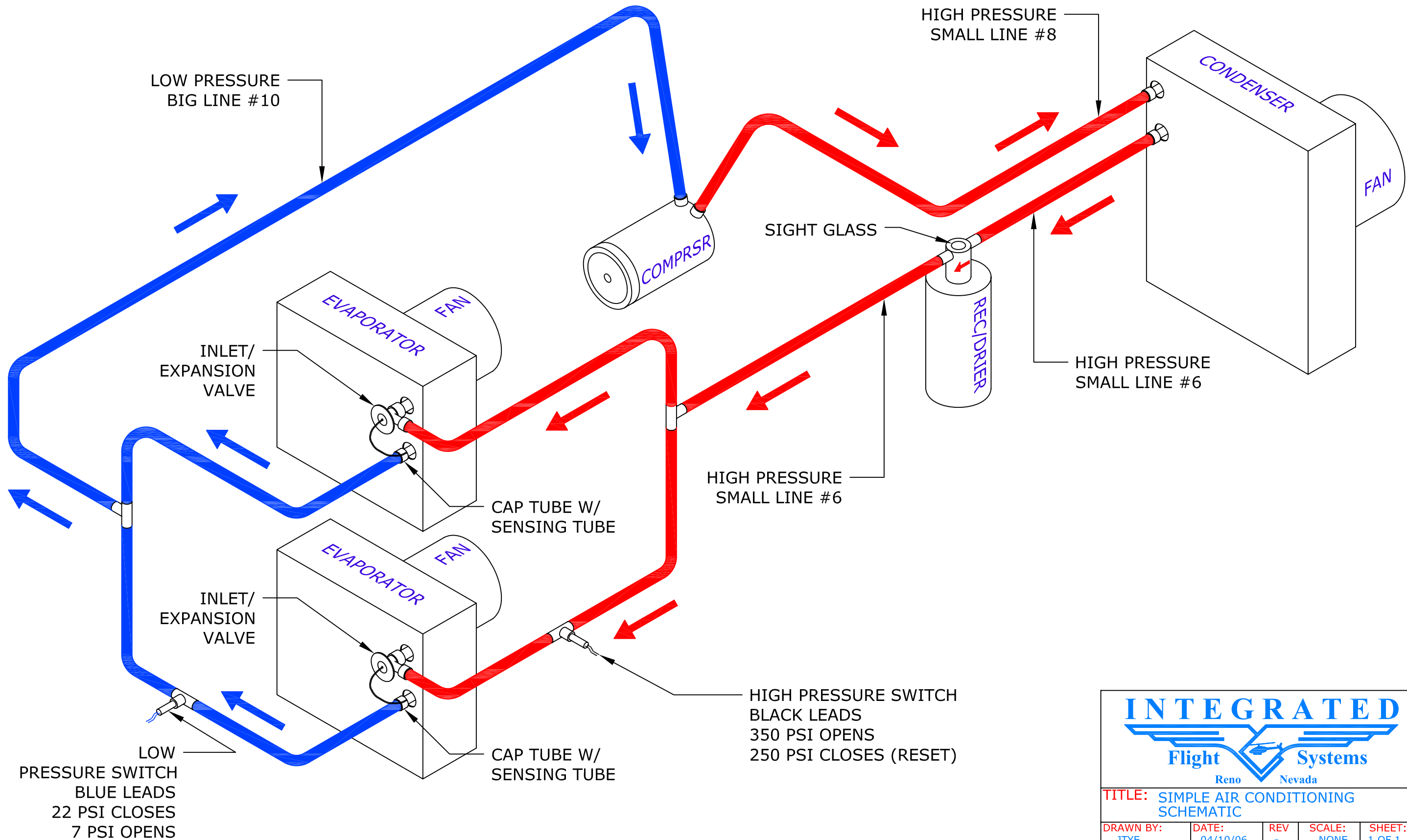
# **Trouble Shooting Guide**




# **Air Conditioning Performance Test Procedure**

(22 September 2006)

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY





**INTEGRATED**  
Flight Systems  
Reno Nevada

**TITLE:** SIMPLE AIR CONDITIONING SCHEMATIC

<b>DRAWN BY:</b> JTye	<b>DATE:</b> 04/10/06	<b>REV:</b> -	<b>SCALE:</b> NONE	<b>SHEET:</b> 1 OF 1
<b>APPLICATION:</b> N/A			<b>DWG No.</b> A/C SCHEMATIC	



# Integrated Flight Systems



## Air Conditioning Performance Test Sheet

After Servicing, Please FAX to IFS at (775) 826-8895

1. Work Order No. \_\_\_\_\_

2. Aircraft Reg. No. \_\_\_\_\_

3. Page \_\_\_\_\_ of \_\_\_\_\_

Description of work performed: \_\_\_\_\_

System Type:

R-12 ☐

R-134a ☐

System Evacuated and Freon Recycled:

Yes ☐

No ☐

Amount Recovered: \_\_\_\_\_ lbs. oz.

Evacuated Time: \_\_\_\_\_

Amount Charged: \_\_\_\_\_ lbs. oz.

Hold Time: \_\_\_\_\_

Amount to be charged to Customer: \_\_\_\_\_ lbs. oz.

### Ground Run Performed at Flight Idle

Time	OAT	Humidity Hi / Low	High PSI (Red)	Low PSI (Blue)	FWD Evap Inlet Temp	Outlet Temp	Delta	Aft Evap Inlet Temp	Outlet Temp	Delta	Freon Added	Freon Removed	Cond Inlet Temp	Cond Outlet Temp	Delta	Cabin Temp Front	Cabin Temp Back
Startup																	
5 min																	
10 min																	
15 min																	
Test Flight 10 min																	
Test Flight 20 min																	

Additional Notes: \_\_\_\_\_



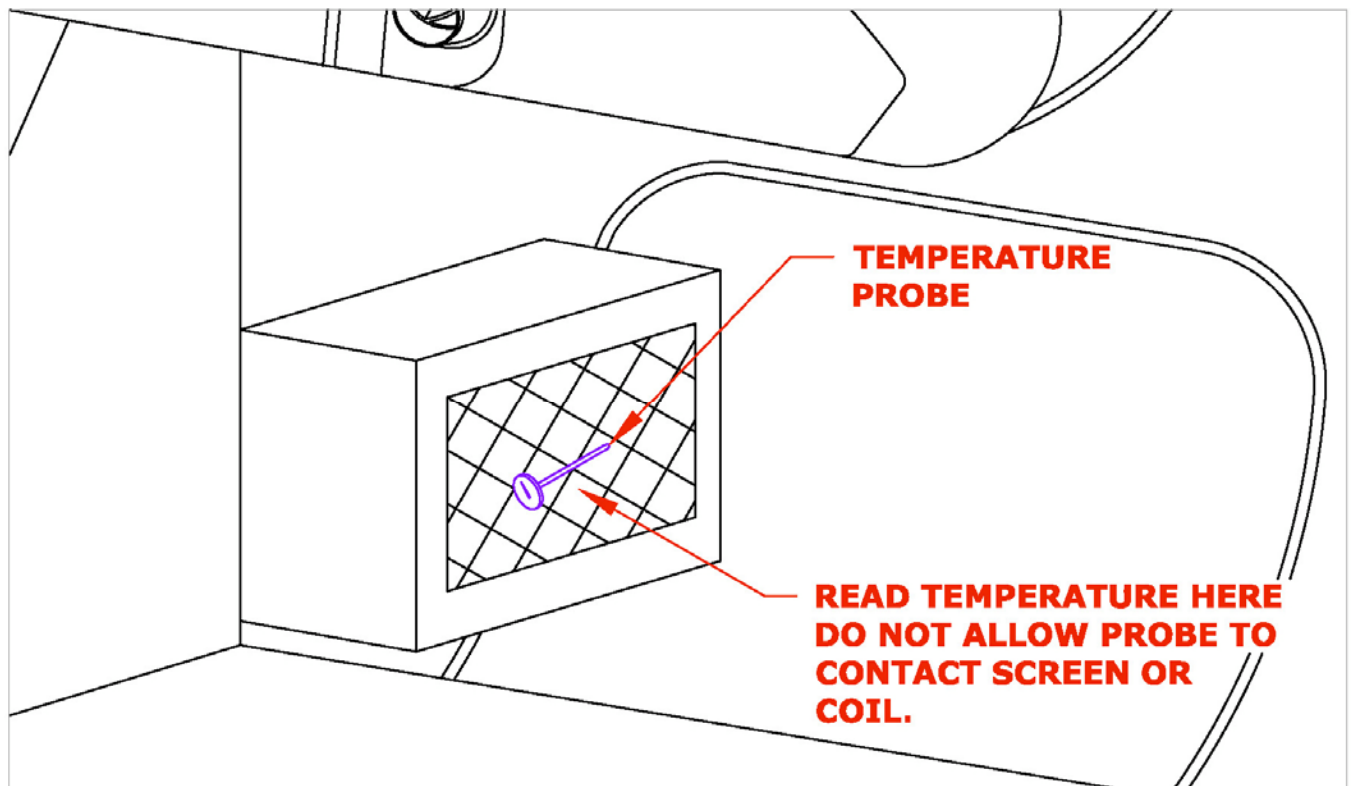
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## Air Conditioning Testing Procedure

These testing procedures are to be done at completion of installation or whenever you have a problem with the air conditioning system. The information you gather on this test sheet after a new installation will be your "Baseline". This information should be retained for future reference.

### Definitions:

1. OAT – Outside Air Temperature.
2. Humidity – High is 50% or higher.  
Low is 0% to 50%.
3. High PSI (Red) – The reading on the high pressure gauge.
4. Low PSI (Blue) – The reading on the low pressure gauge.
5. Fwd Evap Inlet Temp – This is the temperature reading taken just in front of the forward evaporator inlet screen. (Do not allow temperature probe to contact screen or coil)



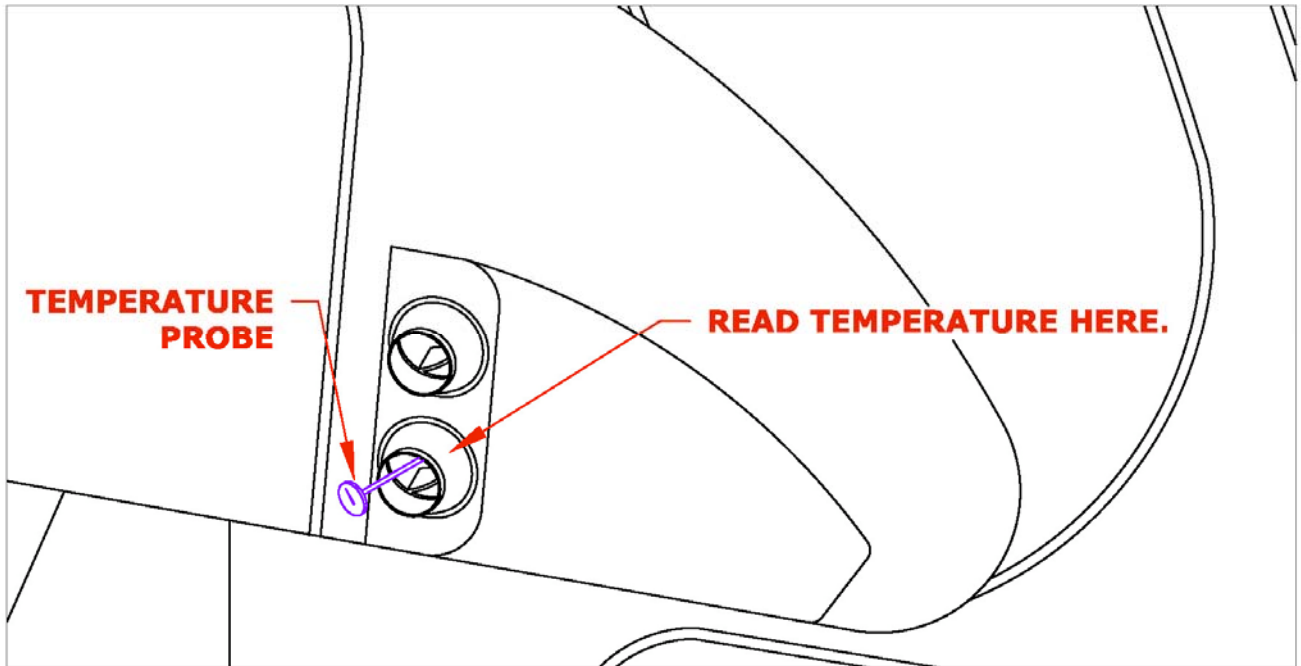
EC130 B4 Shown. Other Aircraft Similar

*"We Cool the World"...*



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6. Outlet Temp – The temperature of the air exiting the Louver or wemac. Insert probe into wemac.



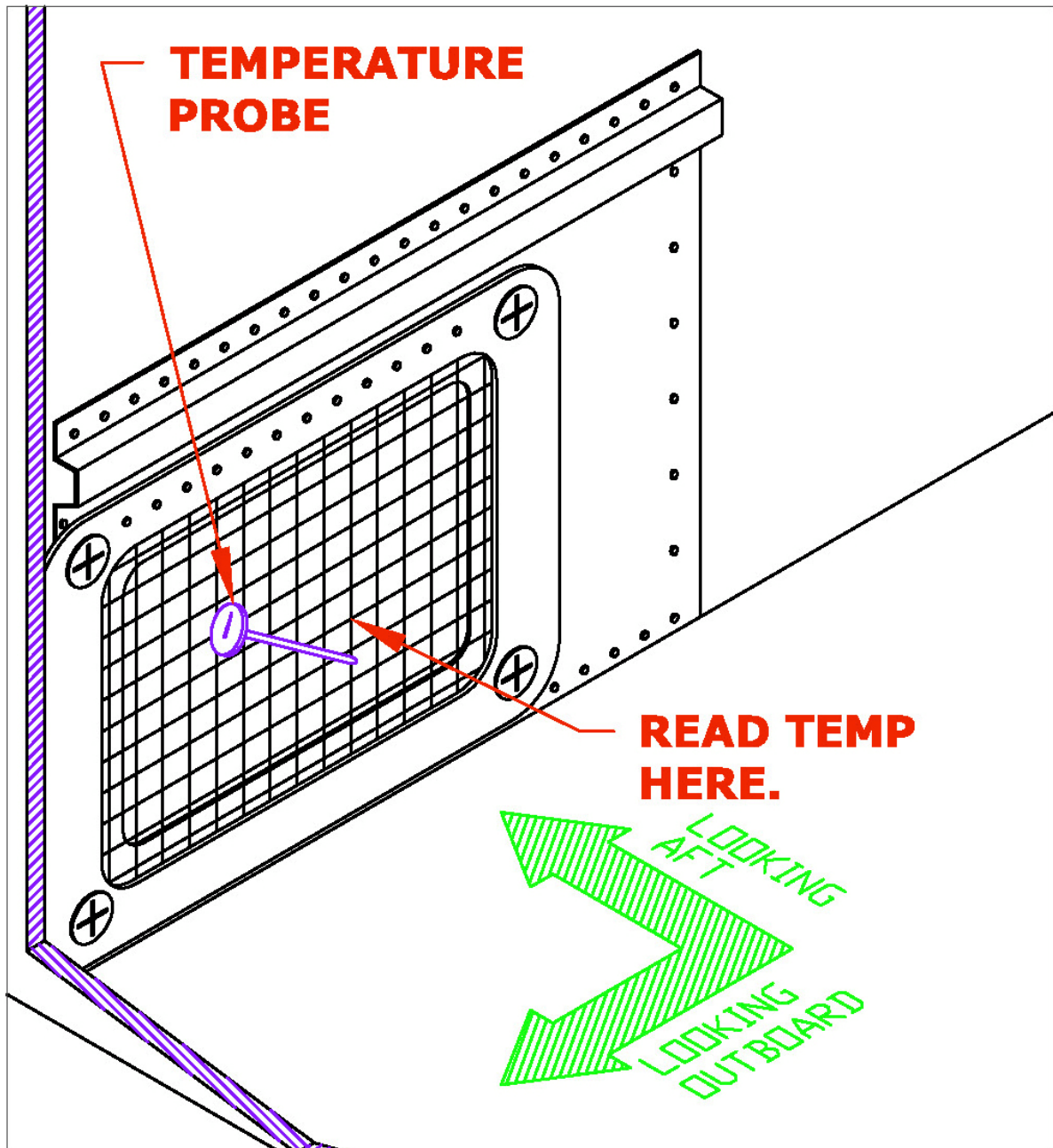
EC130 B4 Shown. Other Aircraft Similar

7. Temp. Delta – The temperature differential between the measurement taken at the outlet, subtracted from the measurement taken at the evaporator intake.



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8. Aft Evap Inlet Temp – This temperature is taken just in front of the return air inlet screen.



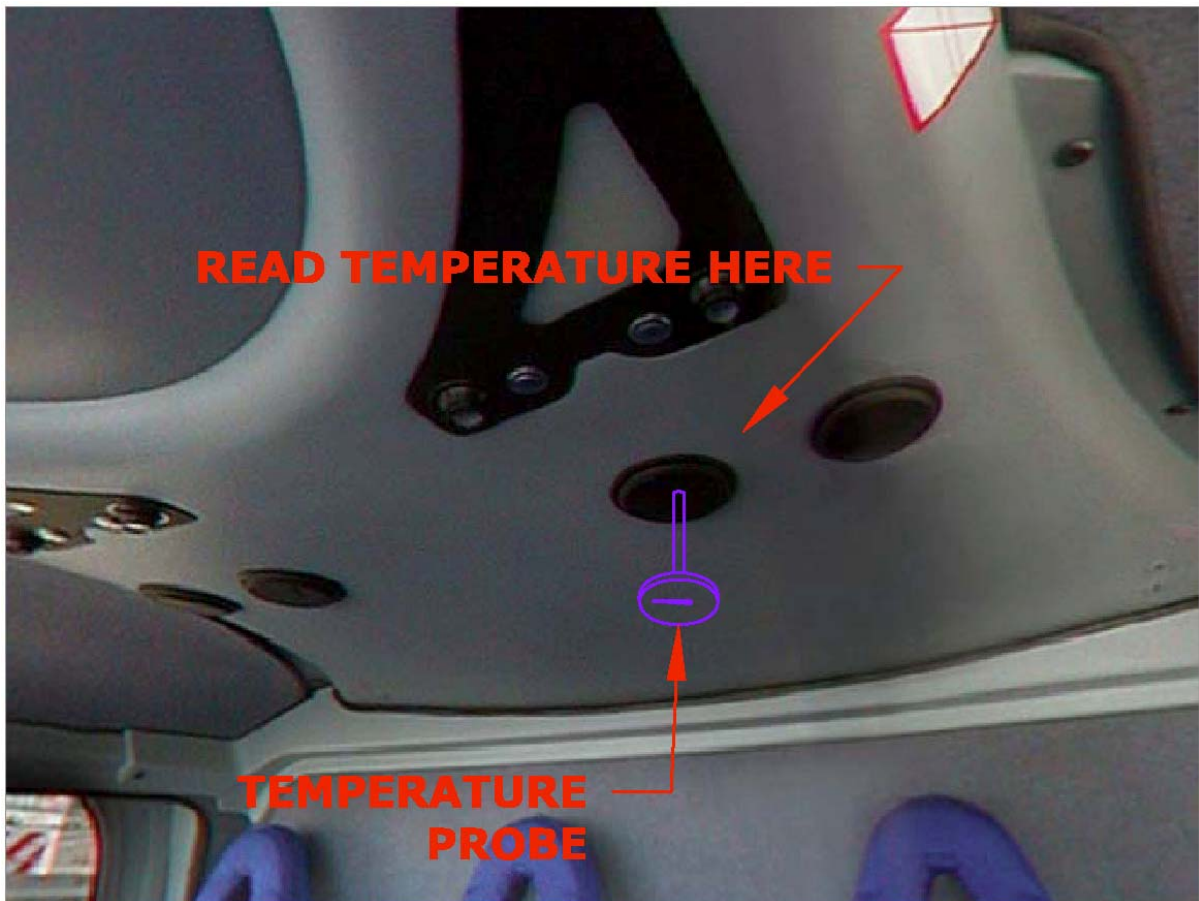
EC130 B4 Shown. Other Aircraft Similar





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9. Outlet Temp. – Place temperature probe in overhead wemac as shown.

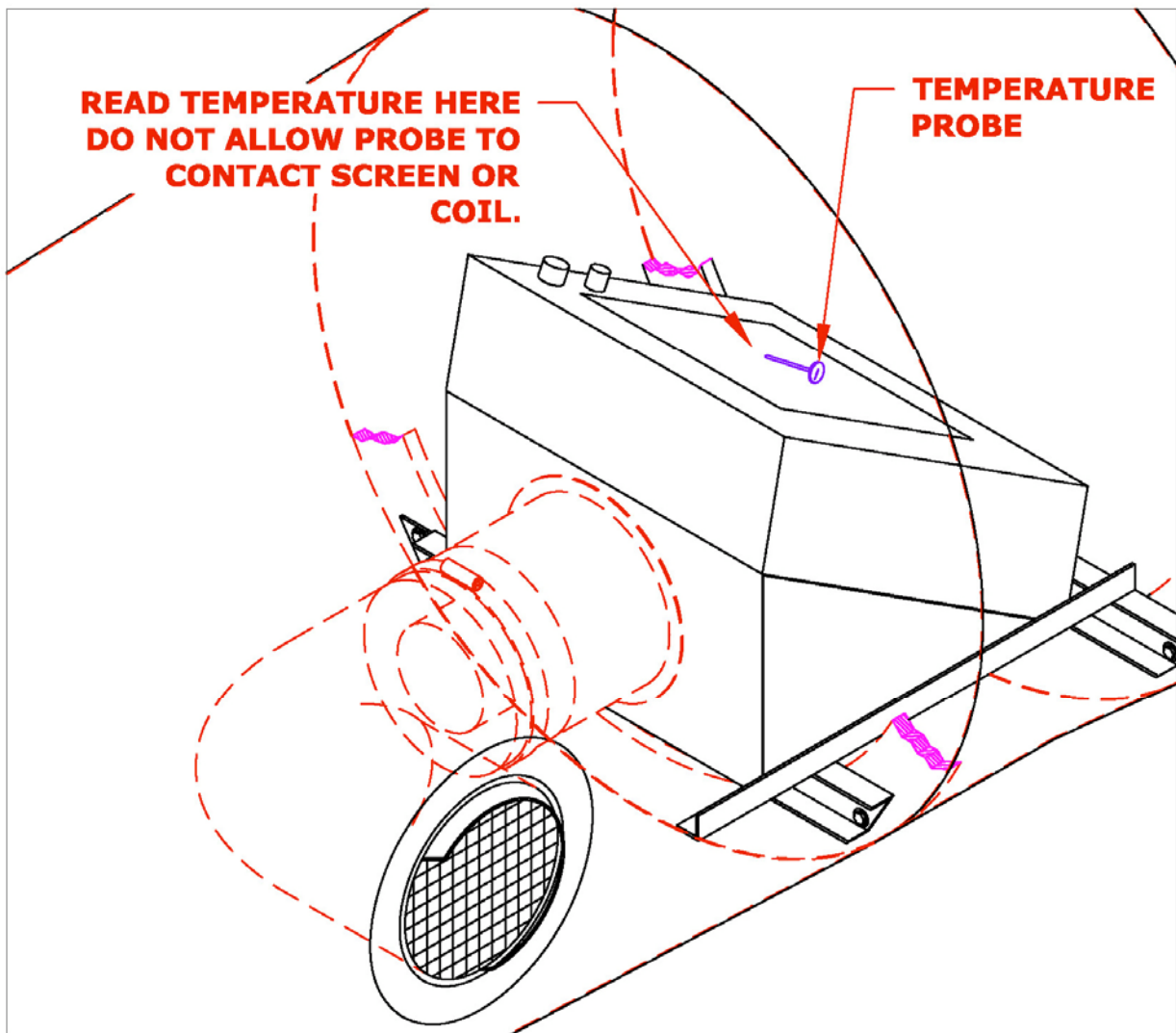


EC130 B4 Shown. Other Aircraft Similar

10. Temp Delta – Subtract return air inlet temperature from overhead outlet temperature. The difference is the "Delta".

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11. Freon Added – This will be the amount of Freon you added to obtain these pressures and temperatures.
12. Cond Inlet Temp – This is the air temperature measured just in front of the condenser inlet screen.  
Do not contact screen or coil.

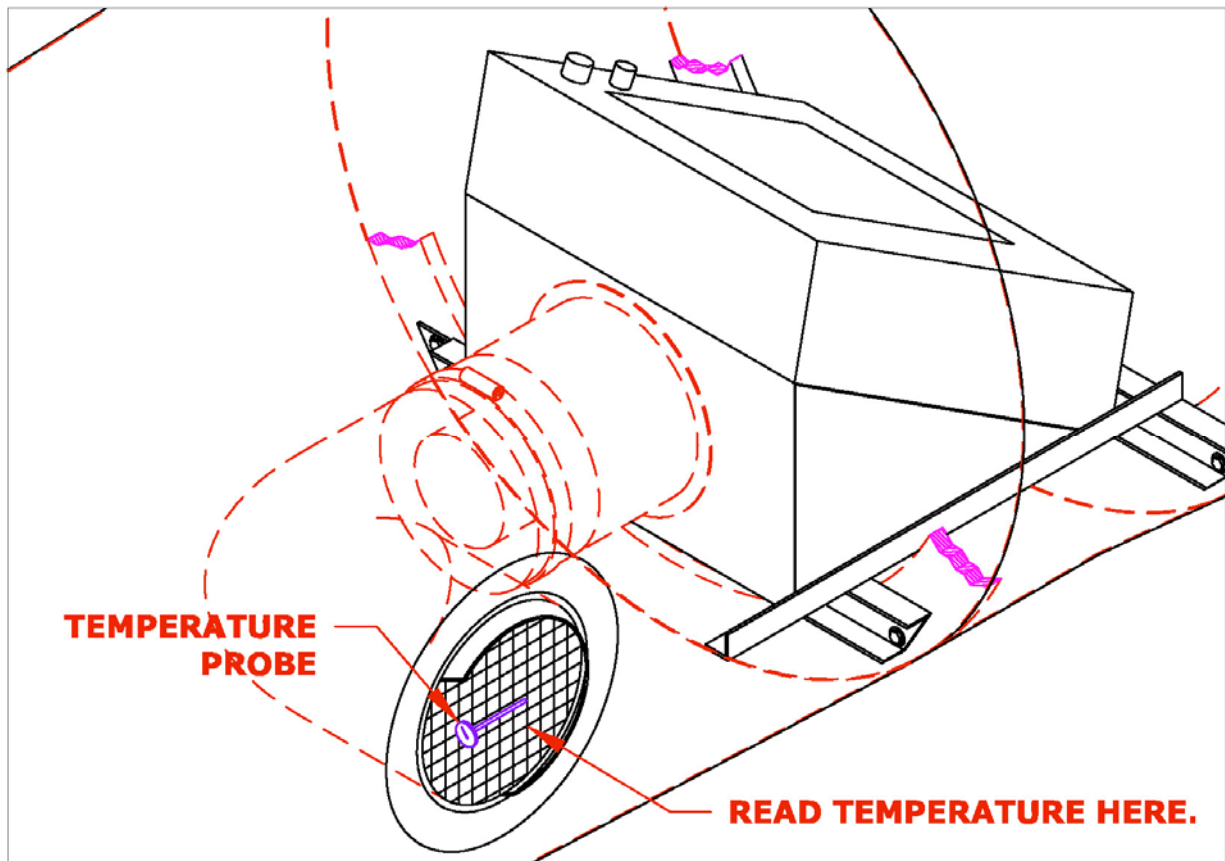


EC130 B4 Shown. Other Aircraft Similar



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13. Cond Outlet Temp – Taken at the condenser air outlet/exhaust as shown.



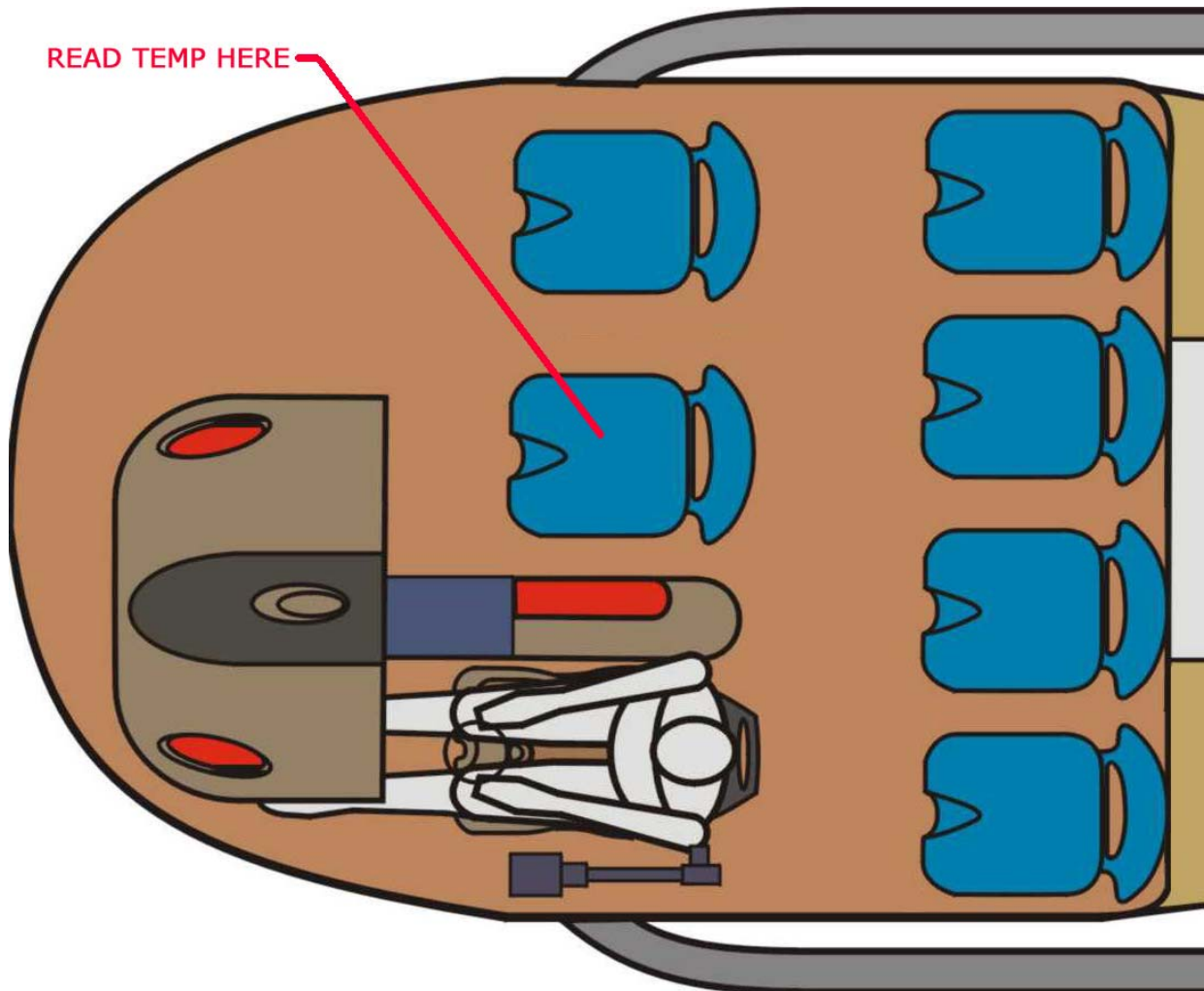
EC130 B4 Shown. Other Aircraft Similar

14. Temp Delta – Subtract the intake temperature from the exhaust temperature. This is the "Delta".



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15. Cabin Temp Front – Temperature where shown.



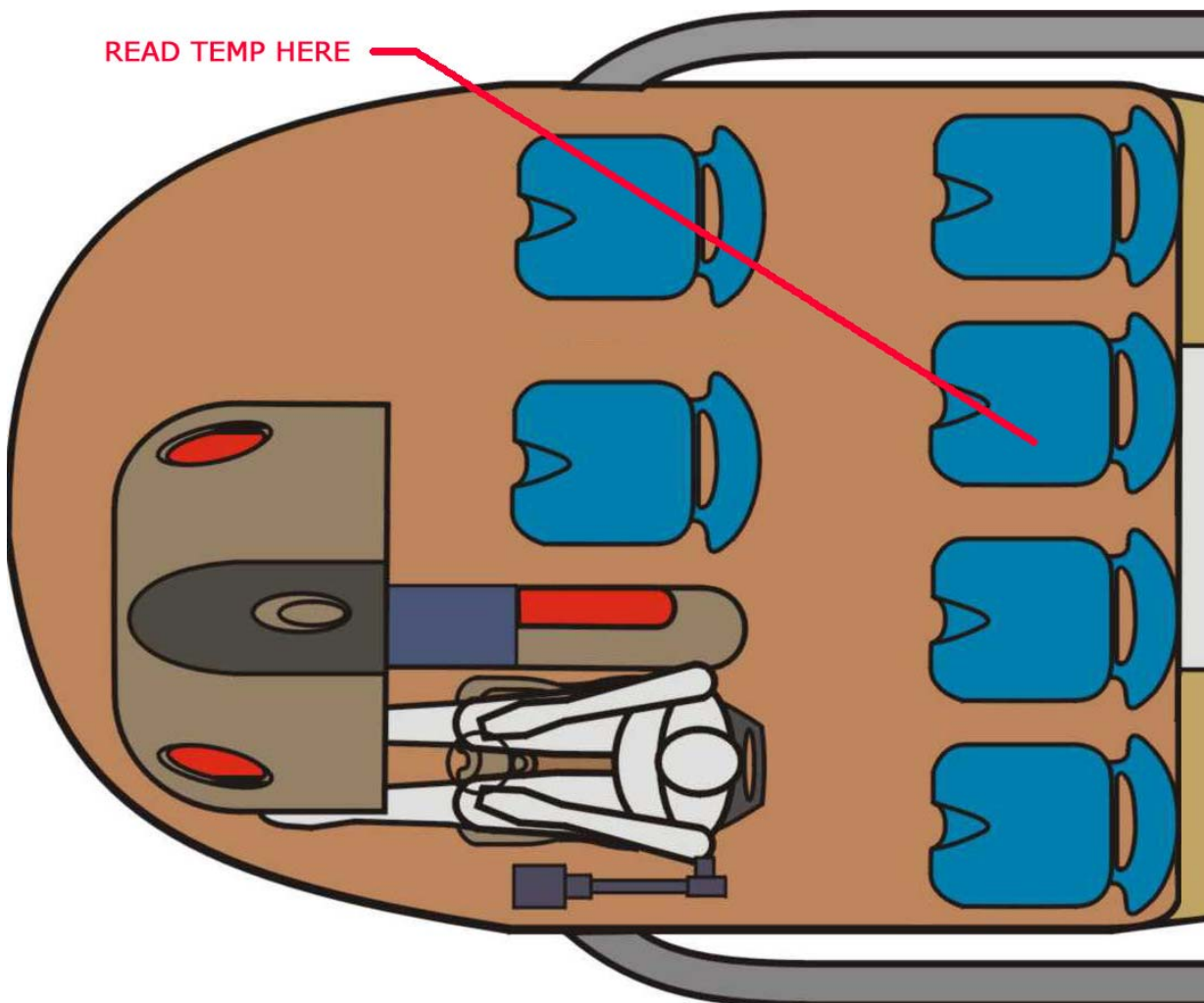
EC130 B4 Shown. Other Aircraft Similar

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16. Cabin Temp Back – Temperature where shown.



EC130 B4 Shown. Other Aircraft Similar





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17. Recommended Temperature Probe – Shown.



A minimum of two probes will be required.

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