



# **Air Conditioning System**

## **Installation Manual**

**For**



**350-00-011-HP Corporate  
Version**

(Revised: 26 March 2014 Rev: F)

<b>1</b>	<b>KIT INVENTORY</b>
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## RECORD OF REVISIONS

Revision	Description	Date	Revised By
IR	Initial Release	8 Aug 2007	IFS
A	Revised to Single Config./TS Guide Revised	13 Sept 2009	IFS
B	Revised ICA/STC Update	21 Oct 2009	IFS
C	Added AEC Improvements Warranty Revised	4 Nov 2009	IFS
D	Revised Compressor Install	5 Feb 2010	IFS
E	Added EMI-RFI filter	28 Jan 2011	IFS
F	Updated Kit Inventory List	26 Mar 2014	RSG

## LIST OF EFFECTIVE PAGES

Rev	Section	Pgs	Description	Date
F	1	Insert	Updated Kit Inventory List	03/26/14
IR	2	1-4	Initial Release	08/08/06
IR	3	1-3	Initial Release	08/08/06
IR	4	1-2	Initial Release	08/08/06
A	5	1-5	Revised Parts and Drawing #'s	9/13/09
IR	6	1-5	Initial Release	08/08/06
A	7	1-3	Removed Multiple Config.	09/13/09
A	8	1-5	Revised Instructions	02/05/10
B	9	1-2	Added EMI-RFI filter	01/28/11
IR	10	1-3	Initial Release	08/08/06
IR	11	1-2	Initial Release	08/08/06
C	12	1-12	Refrigerant/oil charge changed	10/21/09
B	13	4-5	Revised Parts List	01/28/11
C	14	1-6	Warranty Revised	11/04/09
A	15	Insert	Troubleshooting Revised	11/04/09

# Getting Started

The air conditioning system installation instructions are laid out step-by-step starting with one (1) thru nine (9) for installation and ten (10) thru 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 1.

## Installation of Aircraft Systems

**Example:** B. When the parts are called out in a step: **5.1**, locate the part and parts that go with this step (5.1). It is best to organize your parts by step numbers so they can be drawn from as needed.

5.1	Position the aft evaporator doubler, P/N 261370, on the upper transmission deck per the dimensions shown on drawing number 4-1EC130. Mark and remove all existing rivets, bolts, and nut plates to allow the doubler to sit flat on deck.		

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

Phone: 1-888-545-8371  
Fax: 1-817-624-6603

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

Integrated Flight Systems  
REQUIRED TOOLS – AS350 Air-Conditioning

## Tools Required to Complete the Job

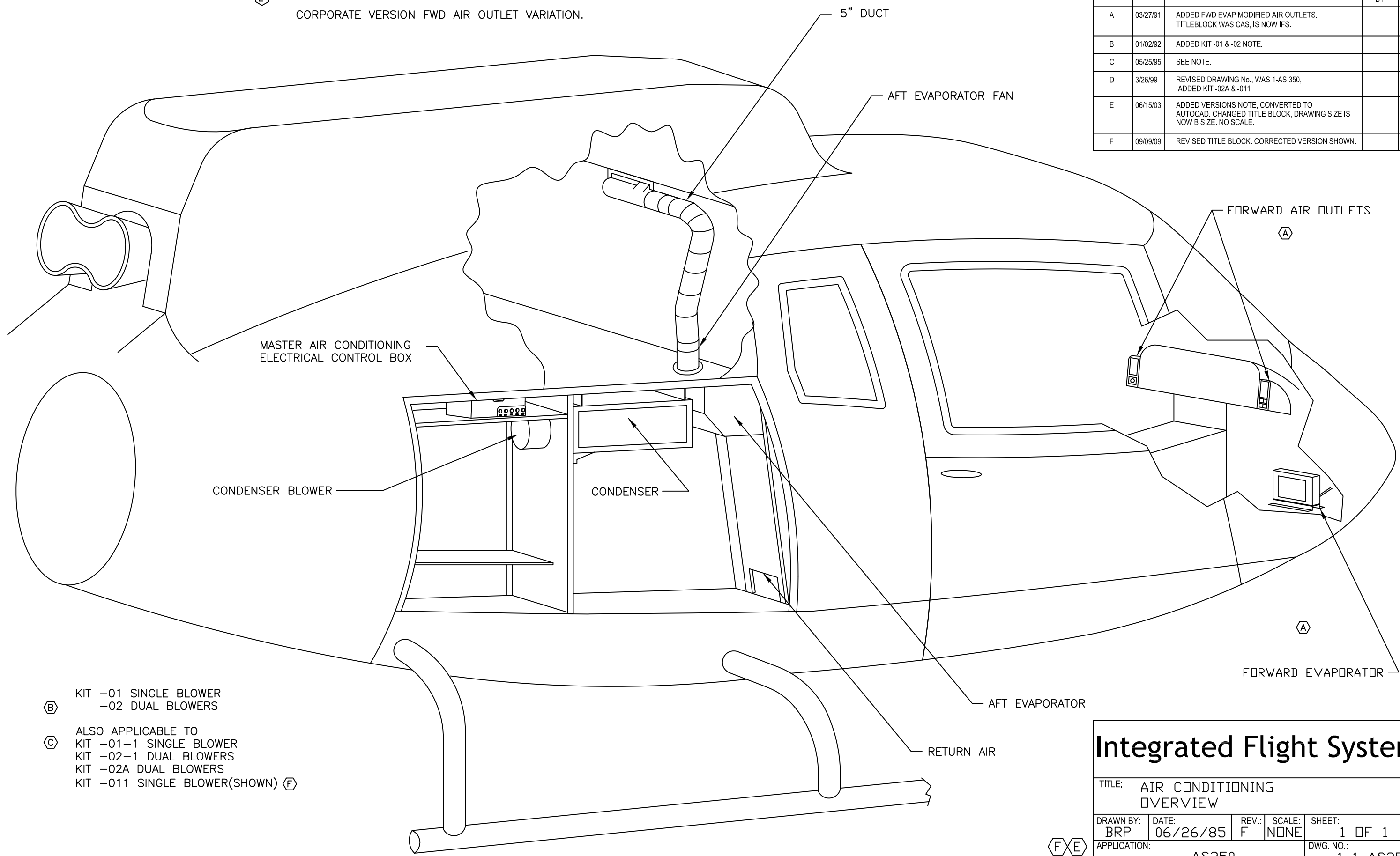
1.	Drill ¼ or 3/8 Capacity / Straight and 90 degrees
2.	Rivet Gun - #4 & #5 Rivet Set
3.	Blind Rivet Puller
4.	Assorted Drill Bits - 40, 30, 10, ¼, & 21
5.	Standard Wrenches - ¼, 1-¼
6.	Metric Wrenches - 5mm to 19mm
7.	Standard Sockets - ¼ to ¾ cap Ratchet & Extensions
8.	Metric Sockets - 5mm to 19mm
9.	Torque Wrench (For Coupling) 200 <u>inch</u> 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 – AS350 Air-Conditioning

21.	6oz Ballpeen Hammer for Removing Rivets
22.	Assorted Bucking Bars
23.	Safety Wire .032
24.	Wire Twisters
25.	Steel Ruler
26.	Spring scale
27.	Adjust Wrench Cap 1-1/2
28.	Vacuum Pump
29.	Gauge Manifold
30.	Nitrogen
31.	R-134A
32.	Blocks for Supporting Forward Engine
33.	Vacuum Cleaner
34.	Rivnut Puller

Ⓔ UTILIZED WITH:  
CORPORATE VERSION FWD AIR OUTLET VARIATION.

REVISION RECORD				
DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	03/27/91	ADDED FWD EVAP MODIFIED AIR OUTLETS. TITLEBLOCK WAS CAS, IS NOW IFS.		
B	01/02/92	ADDED KIT -01 & -02 NOTE.		
C	05/25/95	SEE NOTE.		
D	3/26/99	REVISED DRAWING No., WAS 1-AS 350, ADDED KIT -02A & -011		
E	06/15/03	ADDED VERSIONS NOTE, CONVERTED TO AUTOCAD. CHANGED TITLE BLOCK, DRAWING SIZE IS NOW B SIZE. NO SCALE.		JTYE
F	09/09/09	REVISED TITLE BLOCK. CORRECTED VERSION SHOWN.		JTYE



- Ⓔ KIT -01 SINGLE BLOWER
- Ⓔ KIT -02 DUAL BLOWERS
- Ⓕ ALSO APPLICABLE TO
- Ⓕ KIT -01-1 SINGLE BLOWER
- Ⓕ KIT -02-1 DUAL BLOWERS
- Ⓕ KIT -02A DUAL BLOWERS
- Ⓕ KIT -011 SINGLE BLOWER(SHOWN) Ⓔ

PROPRIETARY INFORMATION OF INTEGRATED FLIGHT SYSTEMS.

**Integrated Flight Systems**

TITLE: AIR CONDITIONING OVERVIEW

DRAWN BY: BRP	DATE: 06/26/85	REV.: F	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: 1-1-AS350	

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Integrated Flight Systems Vapor Cycle Air Conditioning System  
Kit Part Number: 350-00-011-HP Corporate Version Rev K

# **Step 1**

## **Kit Inventory**

### **P/N 350-00-011-HP Corporate Version**

**(Rev. K)**

**March 13, 2014**



**RECORD OF REVISIONS**

<b>Revision</b>	<b>Description</b>	<b>Date</b>	<b>Revised By</b>
IR	Initial Release	Dec. 22, 2008	IFS
A	Rev. Per 8110 Appv.	Apr. 23, 2009	IFS
B	Separated Pulley and Comp. Config.	Aug. 25, 2009	IFS
C	Incorporated AEC Improvements	Nov. 04, 2009	IFS
D	Removed Flat Comp/Belt	Feb. 02, 2010	IFS
E	Corrected Screw Callout Step 5.10/5.17	May 03, 2010	IFS
F	Corrected Screw Callout Step 6.10	May 04, 2011	IFS
G	Added Compressor Bracket Kit Upgrades	Jan. 07, 2013	RSG
H	Added rivets to hardware pg. 12	Feb. 8, 2014	RSG
K	Added Brushless motor option; corrected part numbers; added optional EMI filter	Mar. 13, 2014	RSG

**LIST OF EFFECTIVE PAGES**

<b>Rev</b>	<b>Page</b>	<b>Description</b>	<b>Date</b>
A	6	Added RH Air Exit Doubler PN: 261100-1	04/23/09
A	6	Added LH Air Exit Doubler PN: 261101-1	04/23/09
A	6	LH Strap PN: 261511	04/23/09
A	6	Added RH Strap PN: 261512	04/23/09
A	6	Added Filler PN: 261512	04/23/09
A	6	Added Rivets PN: MS20470E5-6	04/23/09
A	6	Added Rivets PN: MS20470E5-7	04/23/09
A	8	Removed (Ester Oil), added PN: (Alt: 590008-1) to SD-507 Comp. Assy.	04/23/09
A	8	Changed Part Name "Belt" to "Flat Belt", added PN: (Alt: 060005, Groove Belt)	04/23/09
B	8	Separated Alternate configuration Parts and Numbers to different rows, ship per customer choice	08/25/09
C	5	Resistor Mount Assy. added 510463	11/04/09
C	6	Air Inlet Doubler R.H. added 261013-2	11/04/09



Integrated Flight Systems Vapor Cycle Air Conditioning System  
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D	8	Removed P/N's 590008 and 060018-1	02/02/10
E	5	MS35206-244 is now MS35206-230	05/03/10
E	4	AN525-10R6 is now AN525-10R7	05/03/10
F	6	Was: AN525-832R8, Is: AN525-832R10	05/04/11
G	14	Changed Kit List for: Compressor Bracket Installation Kit (Was: IFS-350/130-507, Is: 350-11-031-02)	02/07/13
G	10	Added Hose Disconnect Bracket to Step 10.3 (P/N:04-130-21-107-01)	02/07/13
G	9	Changed P/N for Step 8.9 (Was: IFS-350/130-507, Is: 350-11-031-02)	02/07/13
H	12	Added rivets hardware	02/08/2014
K	5	ABA4-4 is now AD44ABS	03/13/2014
K	6	060004 is now CAT 20	03/13/2014
K	6	Added optional brushless blower motor 490017-1-2	03/13/2014
K	8	Added optional brushless blower motor IFSS 050084-7-2	03/13/2014
K	8	7-8" Band Clamp is now 060038	03/13/2014
K	8	Changed Fiberglass Cloth from 10 oz. to 7.5 oz.	03/13/2014
K	10	22CR4HM is now ZZCR4HM	03/13/2014
K	10	Corrected part numbers in Step 9.4 and 9.5	03/13/2014
K	11	Added optional EMI filter and EMI filter kit	03/13/2014



## Kit Configuration Inventory List: 350-00-011-HP Corporate Version

### Customer Information

Sales Order Number:

Shipping Date:

Customer:

Customer P.O. Number:

Notes:

### Kit Specifics

Kit S/N:

Condenser Blower S/N:

Cond. Blower P/N:

Aft Evaporator Blower S/N:

Compressor S/N:



### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
5.1	Aft Evaporator Fan Doubler	260328-1	1		
5.4	Rivets	MS20470AD4-4	100		
5.4	Rivets	MS20470AD4-5	25		
5.4	Rivets	MS20426AD4-4	15		
5.4	Rivets	CR3243-4-03	2		
5.4	Caterpillar Grommet	1/16" I.D.	18" in		
5.5	Aft Evaporator Assembly	560010-O-5	1		
5.5	Bolt	AN3-5A	4		
5.5	Washer	AN960-10	4		
5.6	Doubler, Return Air	260322-1	1		
5.8	Angle	260322-2	1		
5.8	Rivets	MS20470AD4-3	25		
5.8	Rivets	CR3243-4-03	25		
5.8	Rivets	CR3243-4-04	25		
5.8	Rivets	MS20470AD4-4	10		
5.8	Rivets	MS20426AD4-4	10		
5.9	Return Air Screen	080022-1	1		
5.9	Chrome Screw	050020-4	4		
5.9	Chrome Washer	050020-5	4		
5.10	Angle Return Air Connector Assembly	510261	1		
5.10	Rivets	AD44ABS	15		
5.10	Screw	AN525-10R7	2		
5.10	Return Air Cover Connector	250166	1		
5.11	Return Air Duct	250149	1		





### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
5.15	Rivnut	A10K80	3		
5.15	Screws	AN525-10R6	3		
5.15	Screws	AN525-10R10	4		
5.15	Clip Nut	RM52LHA4972-10-02	4		
5.16	Aluminum Foil Tape	070076	30' ft.		
5.16	Cork Insulation Tape	070078-0	6' ft.		
5.17	Aft Evaporator Fan Assembly * (Brushless)	490017-1-02	1		
	Aft Evaporator Fan Assembly* (Brushed)	490017-1	1		
5.17	Bolt	AN3-5A	5		
5.17	Washer	AN960-10	5		
5.17	Resistor Assembly	540020	1		
5.17	Resistor Mount Assembly	510463	1		
5.17	Rivet	CR3243-4-02	6		
5.17	Screw	MS35206-230	4		
5.17	Washer	AN960-6	4		
5.18	Aft Transition Elbow Assembly	520036-3	1		
5.20	Bolt	AN3-6A	6		
5.20	Nut	MS21044N3	6		
5.20	Washer	AN960-10	12		
5.20	Transition Elbow Strap	261299	1		
5.21	6" Band clamp	060035	2		
5.21	Ø5.0" Duct 25" Long	CAT 20	25" in		
5.21	Insulation Foam Tape	070078	20' ft.		
5.22	Air Duct Closure Assembly	510092	1		
5.23	Hose Doubler, Baggage Comp.	260369	1		
5.23	Rivets	MS20470AD4-4	10		



### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
6.1	Condenser Fan Mount	260148-3	1		
6.1	Fan Channel Base Angle	260020	1		
6.3	Filler	260862	1		
6.4	Battery Compartment Shelf	260333	1		
6.4	Battery Comp. Shelf Angle Fwd. / Aft	260335	2		
6.6	Electrical Panel Assembly	540028-C-2-A	1		
6.6	Bolt	AN3-4A	3		
6.6	Washer	AN960-10	3		
6.7	Rivets	MS20470AD4-3	30		
6.7	Rivets	MS20470AD4-4	10		
6.7	Bolt	AN3-3A	5		
6.7	Bolt	AN3-4A	3		
6.7	Bolt	AN3-5A	3		
6.7	Washer	AN960-10	20		
6.7	Nut	MS21044N3	20		
6.7	Screw	AN507-1032R10	18		
6.7	Rivet	CR3243-4-03	6		
6.7	Battery Comp. Shelf Angle Fwd. Assy.	510265	1		
6.8	Aft Condenser Channel Assembly	510007	1		
6.8	Fwd. Condenser Channel Assembly	510008	1		
6.10	Rivet	MS20470AD4-4	30		
6.10	Rivet	MS20470AD4-5	30		
6.11	Nutplate	MS21059-L3	1		
6.11	Rivet	CCR264SS3-3	2		
6.11	Rivet	MS20470AD4-4	30		
6.11	Rivet	MS20470AD4-5	30		
6.12	Condenser Mount Angle	260002	1		
6.12	Bolt	AN3-4A	2		
6.12	Washer	AN960-10	2		



### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
6.13	Condenser Mount Angle	260002	1		
6.13	Bolt	AN3-4A	2		
6.13	Washer	AN960-10	2		
6.14	Condenser Assembly	550007-1	1		
6.14	Bolts	AN3-5A	6		
6.14	Washer	AN960-10	6		
6.14	Rivet	CCR264SS3-3	8		
6.15	Condenser Air Intake Assembly (Low)	520071-1	1		
	Condenser Air Intake Assy (High)	520071			
6.19	Screen Assembly, Condenser Exhaust	520052-2	1		
6.20	Fiberglass Cloth 7.5 oz. 18" x 38"	7.5 oz. 18" x 38"	2		
6.22	Screw	AN525-10R8	5		
6.22	Washer	AN970-3	5		
6.22	Tinnerman Countersunk Washer	A3235-020-24A	16		
6.22	Screw (Alt: NAS517-3-11)	MS24693S276	16		
6.22	Washer	AN960-10	16		
6.22	Nut (Alt: MS21083N3)	MS20364-1032C	16		
6.22	Delron Insert	405SE1032-06-2	5		
	(Alt. Shurlock SL601-3-3A)	(Alt. NAS1832-3-3)			
6.24	Battery Door Angle	260339	1		
6.24	Battery Door Decal	120087	1		
6.25	Rivet	MS20470AD4-3	10		
6.26	Ø7.0" Vane Axial Blower* (Brushed)	050084-6**	1		
	Ø7.0" Vane Axial Blower* (Brushless) (Alt)	IFSS 050084-7**			
6.26	Condenser Exhaust Elbow Assy.	520032-1	1		
6.26	7-8" Band Clamp	060038	1		
6.26	3/8" I.D. Drain Hose	090018	5' Ft.		

\*\*Or Approved Alternate 7 Inch Blower Assembly



### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
7.3	Forward Evaporator Assembly (560025-O-01 low hat, 560025-O-02 high hat)	560025-O	1		
7.4	Nut Plate	MS21059-L3	1		
7.4	Rivet	CCR264SS3-3	3		
7.5	Doubler	260373-1	1		
7.5	Rivets	CR3243-4-03	18		
7.7	½" Drain Hose	090018-1	10'-0"		
7.7	Grommet	MS35489-135	1		
7.8	Bolt	AN3-4A	4		
7.8	Washer	AN960-10	4		
7.8	Band Clamp 1"	060037	1		
7.8	Nut	MS21044N3	3		
7.9	R/H Air Outlet Assembly	500010-1	1		
7.9	L/H Air Outlet Assembly	500011-1	1		
7.9	Screw	AN525-10R10	2		
7.9	Screw	AN525-10R8	4		
7.9	Washer	AN970-3	6		
7.9	3" Band Clamp	060036	5		
7.9	Cat Tubing 2-1/2"	060025	10'-0"		
8.5	4 Groove Belt	060005	2		
	Flat Belt (Alt)	060018-1			
8.9	Compressor Bracket Kit (See pg 14)	350-11-031-02	1		
8.10	SD-507 Compressor Assy. (Grooved)	590008-1	1		
	Smooth belt compressor (Alt)	590008			



Integrated Flight Systems Vapor Cycle Air Conditioning System  
 Kit Part Number: 350-00-011-HP Corporate Version Rev K

**Kit Configuration Inventory List**

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
9.4	Tie Wrap	10" Length Min.	100		
9.4	Tie Block	ZZCR4HM	25		
9.4	Butt Splice	050020-1	2		
9.4	Ring Terminal	MS25036-154	2		
9.4	Knife Splice	050020-6	2		
9.4	Ring Terminal	050020-8	2		
9.4	Knife Splice	050020-2	6		
9.4	1/4" Heat Shrink 4" inches long	070077	1		
9.4	Electrical Harness	540044-4	1		
9.5	Harness Assembly	540045-1	1		
9.5	Ring Terminal	050020-9	1		
9.7	Aft Evap Switch Assembly	540089	1		
10.3	Hose Assy Fwd Evap to Aft. Evap To Comp	570087-O-A	1		
10.3	#10 "O" Ring	090094	3		
10.3	Adel Clamp	MS21919WDG12	6		
10.3	Nut	MS21044N3	6		
10.3	Screw	AN525-10R10	6		
10.3	Washer	AN960-10	12		
10.3	Hose Disconnect Bracket	04-130-21-107-01	2		
10.4	Hose Assy. #6 Fwd. Evap. To Drier	570072-O-A	1		
10.4	#6 "O" Ring	090092	2		
10.4	Adel Clamp	MS21919WDG10	6		
10.4	Nut	MS21044N3	6		
10.4	Screw	AN525-10R10	6		
10.4	Washer	AN960-10	12		





### Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
10.6	Hose Assembly #8 Comp. to Cond.	570024-O-A	1		
10.6	#8 "O" Ring	090093	3		
10.6	Adel Clamp	MS21919WDG11	4		
10.6	Nut	MS21044N3	4		
10.6	Screw	AN525-10R10	4		
10.6	Washer	AN960-10	8		
10.7	Receiver/Drier Bottle "O" Type	090016-5	1		
10.7	Band Clamp 3"	060036	1		
10.7	Rec/Drier Mount Bracket	260123-2	1		
10.7	Bolt	AN3-5A	2		
10.7	Nut	MS21044N3	2		
10.7	Washer	AN960-10	4		
10.8	Hose Assembly #6 Condenser to Drier	570020-"O"-A	1		
10.8	#6 "O" Ring	090092	3		
10.9	Low Pressure Switch	050107	1		
10.9	High Pressure Switch	090004	1		
	Spiral Wrap Ø3/4"	SW12BKV	12' ft.		
	Touch up Paint (Teal)	070003	1		
	Fwd Evap EMI Filter * (optional – for brushless motors)				
	EMI Filter	13619-RF16883	1		
	Screw	MS27039-0807	4		
	Washer	NAS620-8L	4		
	Aft Evap EMI Filter Kit * (optional - for brushless motors)	050143-2	1		



### DRAWING LIST

DRAWING NAME	DRAWING #	QTY	CHK'D BY	VERF'D BY
AIR CONDITIONING OVERVIEW	1-1-AS350	1		
ELECTRICAL ROUTING	2-8-AS350	1		
ELECTRICAL DIAGRAM	2-11-AS350	1		
ELECTRICAL DIAGRAM	2-21-AS350	1		
PLUMBING DIAGRAM	3-4-AS350	1		
PLUMBING DIAGRAM	3-14-AS350	1		
AFT EVAPORATOR INSTALL, SHEET 1 of 2	4-3-AS350	1		
AFT EVAPORATOR INSTALL, SHEET 2 of 2	4-3-AS350	1		
AFT EVAPORATOR INSTALL	4-13-AS350	1		
FORWARD EVAPORATOR INSTALL	4-21-AS350	1		
AIR DISTRIBUTION	5-1-AS350	1		
AIR DISTRIBUTION	5-12-AS350	1		
AIR DISTRIBUTION	5-21-AS350	1		
COMPRESSOR INSTALLATION	6-2-AS350	1		
COMPRESSOR INSTALLATION	6-12-AS350	1		
COMPRESSOR INSTALLATION	6-21-AS350	1		
COMPRESSOR INSTALLATION*	6-3-AS350*	1*		
COMPRESSOR INSTALLATION*	6-13-AS350*	1*		
COMPRESSOR INSTALLATION*	6-22-AS350*	1*		
CONDENSER INSTALL, SHEET 1 of 2	7-2-AS350	1		
CONDENSER INSTALL, SHEET 2 of 2	7-2-AS350	1		
CONDENSER INSTALL	7-11-AS350	1		
		1		
BAGGAGE COMPARTMENT MOD SHEET 1 of 2	8-2-AS350	1		
BAGGAGE COMPARTMENT MOD SHEET 2 of 2	8-2-AS350	1		
BAGGAGE COMPARTMENT MOD	8-11-AS350	1		

\* Indicates drawings required for newer Gimble Housing design



**DOCUMENT LIST**

DOCUMENT DESCRIPTION	LOCATION	QTY	CHK'D BY	VERF'D BY
KIT CONFIGURATION INVENTORY LIST (IFS 33.41)	SECTION 1	1		
MAT'L SAFETY DATA SHEETS	SECTION 1	1 EA.		
AIRCRAFT PRE-INSPECTION	SECTION 2	1		
AIRCRAFT PREPERATION	SECTION 3	1		
REMOVAL OF FACTORY INSTALLED COMPONENTS	SECTION 4	1		
INSTALLATION OF AFT EVAPORATOR	SECTION 5	1		
INSTALLATION OF CONDENSER	SECTION 6	1		
INSTALLATION OF FORWARD EVAPORATOR	SECTION 7	1		
INSTALLATION OF COMPRESSOR	SECTION 8	1		
INSTALLATION OF ELECTRICAL	SECTION 9	1		
INSTALLATION OF HOSES	SECTION 10	1		
STC# SH3509SW	SECTION 11	1		
WEIGHT AND BALANCE	SECTION 11	1		
RFMS FOR AS350B, BA, B1, B2, B3, C, D AND D1	SECTION 11	1 EA.		
FOREIGN APPVS, CANADIAN, ANAC AND EASA	SECTION 11	1 EA.		
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS	SECTION 12	1		
MASTER PARTS LIST	SECTION 13	1		
ILLUSTRATED PARTS CATALOG	SECTION 13	1		
WARRANTY AND REPAIR	SECTION 14	1		
TROUBLE SHOOTING GUIDE	SECTION 15	1		
AIR CONDITIONING PERFORMANCE CHECK	SECTION 15	1		



Integrated Flight Systems Vapor Cycle Air Conditioning System  
 Kit Part Number: 350-00-011-HP Corporate Version Rev K

**COMPRESSOR MOUNT BRACKET KIT**  
**RSG PN: 350-11-031-02**

ITEM DESCRIPTION	Part Number	QTY	Comment
COMPRESSOR MOUNT BRACKET	04-130-21-101-01	1	
COMPRESSOR MOUNT TENSION BOLT	04-130-21-102-01	1	
JAM NUT DRILLED	04-130-21-104-01	2	
COMPRESSOR CLAMP	04-130-21-105-01	2	
BUSHING, SD 507	261007	2	
COMPRESSOR STAND OFF	300067-1	1	
SHIM	300363-2	2	Alternate (261155)
THREADED ROD END	2434K39	1	
PIN	300095	1	
STRAP HOUSING	530100-1	1	
WASHER	NAS1149D0416H	1	Or NAS Hardware equivalent
WASHER	NAS1149D0632H	6	Or NAS Hardware equivalent
WASHER	NAS1149D0532H	2	Or NAS Hardware equivalent
WASHER	AN960-416	4	Alternate (AN960-416L)
WASHER	AN960-516L	1	Alternate (AN960-516)
WASHER	AN960-616L	2	Alternate (AN960-616)
NUT	MS21042-L5	2	Alternate (MS20364-524C)
NUT	MS21042-L4	3	Alternate (AN365-424)
NUT	MS21042L6	4	Or NAS Hardware equivalent
BOLT	AN4-5A	1	Or NAS Hardware equivalent
BOLT	AN4-14A	2	Or NAS Hardware equivalent
BOLT	AN5-34A	1	Or NAS Hardware equivalent
BOLT	AN6-13A	2	Or NAS Hardware equivalent
BOLT HEX DRIVE	AN6-12	1	Or NAS Hardware equivalent
BOLT	AN6-33A	1	Or NAS Hardware equivalent

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: Johnsen's Ester 100  
Chemical Family: Refrigeration Oil  
Synonyms: None  
Emergency Telephone (24 hr.): CHEMTREC 1-800-424-9300

Supplier: Technical Chemical Company, P.O. Box 139, Cleburne, Texas 76033

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	OSHA TWA	OSHA STEL	OSHA SKIN
Ester Proprietary Inhibitor Package Mixture	0-20	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	20-80	Not Listed	Not Listed	Not Listed

Component	Weight %	OSHA Z PEL	OSHA Z TWA	OSHA Z Ceiling
Ester Proprietary Inhibitor Package Mixture	0-20	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	20-80	Not Listed	Not Listed	Not Listed

Component	ACGIH TLV TWA	ACGIH TLV STEL	ACGIH TLV Ceiling
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed

Other: Contains no ingredients in concentrations greater than 0.1% that are now known to be hazardous as defined by OSHA.

## 3. HAZARDS IDENTIFICATION

Emergency Overview: Ingestion of this product may cause gastrointestinal distress with symptoms of nausea, vomiting, diarrhea and abdominal pain. May cause irritation to skin and eyes.

HMIS Classification: Health: 1 Flammability: 1 Physical Hazard: 0  
NFPA Rating: Health: 1 Flammability: 1 Reactivity: 0

## 4. FIRST AID MEASURES

**Eye Contact:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Seek medical attention if irritation persists.  
**Ingestion:** DO NOT INDUCE VOMITING. Give nothing by mouth. Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.  
**Inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.  
**Skin Contact:** Remove contaminated clothing and shoes, and launder before reuse. Get medical attention if irritation persists. Wash with soap and water. Use skin cream for defatted areas.



# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed 12/30/2008

## 5. FIRE FIGHTING MEASURES

### Flammable Properties

Flash Point °F(°C): >482 (<250)  
Flash Point Method: COC  
Flammable Limits in Air - Lower (%): Not Determined  
Flammable Limits in Air - Upper (%): Not Determined  
Autoignition Temperature °F(°C): Not Determined  
Extinguishing Media: Carbon dioxide. Dry chemical. Foam.  
Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Wear approved positive-pressure self-contained breathing apparatus and protective clothing. Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity.  
Hazardous Combustion Products: Oxides of carbon, nitrogen and phosphorus.  
Aerosol Comments: Not Applicable

## 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective clothing and equipment to prevent skin and eye contact.  
Spill Procedures: Wear protective equipment specified. Contain any liquid from leaking containers.  
Action to be taken if material is released or spilled: Absorb spills on inert material such as perlite, vermiculite, sand or dirt. Place in double polyethylene bags. Isolate from other waste materials. Wash walking surfaces with detergent and water to reduce slipping hazard.  
Environmental Precautions: Do not allow to enter sanitary drains, sewer or surface and subsurface waters.

## 7. HANDLING AND STORAGE

Handling and Storage: Avoid contact with eyes. Keep containers tightly closed when not in use. Use only in a well ventilated area. Good hygienic practices should be observed. Work clothes should be washed separately at the end of each work day. Contaminated disposable clothing should be discarded in accordance with local, state and federal rules. Wash thoroughly after handling. Do Not Swallow. Store at room temperature. Avoid prolonged/repeated breathing of vapors, mists or fumes.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Eyewash stations. Showers. Use local exhaust.  
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.  
Skin Protection: Neoprene coated apron or clothing.  
Respiratory Protection: Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear to light yellow liquid  
Odor: MILD ETHER  
pH Value: Not Determined  
Vapor Pressure: Not Determined  
Vapor Density (Air=1): Not Determined  
Boiling Point (°F): >300 C.  
Melting/Freezing Point: Not Determined  
Solubility in Water: INSOLUBLE  
Bulk Density at 20°C: Not Determined  
Molecular Weight: Mixture  
Specific Gravity (H2O=1): 1.04 @ 60F  
Viscosity: 100 cSt @ 40C  
Evaporation Rate: Not Determined  
VOC Content(%): Not determined.  
Decomposition Temperature: Not Known

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal conditions of handling, use and transportation.  
**Conditions to Avoid:** High temperatures.  
**Materials to Avoid:** Strong oxidizing agents.  
**Hazardous Decomposition Products:** Oxides of nitrogen. Oxides of carbon. Oxides of sulfur.  
**Hazardous Polymerization:** WILL NOT OCCUR

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Data:

Component	Route	Species	Dose
Ester Proprietary Inhibitor Package Mixture	Inhalation	Rats	Not known.
Ester Proprietary Base Stock Mixture	Inhalation	Rats	Not known.

### Carcinogenicity:

Component	IARC	NTP	OSHA
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed

**Comments:** No component known to be present in this product at >.1% is presently listed as a carcinogen by IARC, NTP or OSHA.

## 12. ECOLOGICAL INFORMATION

**Remarks:** Ecological testing has not been conducted on this product.

## 13. DISPOSAL CONSIDERATION

**Waste Classification:** This product as purchased does not fall under current U.S. EPA RCRA definitions of hazardous waste. Under RCRA it is the generator's responsibility to determine the status of the waste at the time of its disposal. This product does not contain any CERCLA regulated materials.  
**Waste Management:** Not determined.  
**Disposal Method:** Disposal of this material to the land may be banned by federal law (40 CFR 268).

## 14. TRANSPORTATION INFORMATION

**U.S. DOT:**  
**Proper Shipping Name:** Not Regulated  
**Hazard Class:** Not Applicable  
**UN/NA Number:** Not Applicable  
**DOT Packing Group:** Not Applicable

**IMDG:**  
**Proper Shipping Name:** Not Regulated  
**Hazard Class:** Not Applicable  
**Hazard Subclass:** Not Applicable  
**UN No.:** Not Applicable  
**Packing Group:** Not Applicable  
**Marine Pollutant:** No

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 15. REGULATORY INFORMATION

### US Federal Regulations:

Component	SARA 313	SARA 302	TPQ	RQ
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed	Not Listed

**US OSHA HEALTH CLASSIFICATION:** Hazardous per OSHA 29 CFR 1910.1200  
**SARA 311/312 Hazard Categories:** Immediate Health: Yes, Delayed Health: No, Fire: No, Reactive: No, Pressure: No.

### State Regulations:

Component	California Prop. 65 Cancer list	California - Prop 65 Developmental Toxicity	California Prop. 65 Reproductive Female	California Prop. 65 Reproductive Male
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed	Not Listed

**U.S. TSCA:** One or more components of this product is not listed on the TSCA Inventory.  
**Canadian Inventory:** One or more components of this product is not listed on the Canadian DSL or NDSL Inventory.

### Consumer Product Safety Improvement Act of 2008 General Conformity Certification

The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product container.

## 16. OTHER INFORMATION

### General Notes: Disclaimer:

Do not allow undiluted material or large quantities to reach groundwater, bodies of water or sewer system. The information and recommendations contained herein are based upon tests believed to be reliable. However, the manufacturer/distributor of this product does not guarantee their accuracy or completeness NOR SHALL ANY OF THIS INFORMATION CONSTITUTE A WARRANTY, WHETHER EXPRESSED OR IMPLIED, AS TO THE SAFETY OF THE GOODS, THE MERCHANTABILITY OF THE GOODS, OR THE FITNESS OF THE GOODS FOR A PARTICULAR PURPOSE. Adjustment to conform to actual conditions of usage may be required. The manufacturer/distributor assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

## **Step 2**

# **Aircraft Pre-Inspection**

Integrated Flight Systems  
AIRCRAFT PRE-INSPECTION – AS350 Air Conditioning

## Aircraft Pre-Inspection

<b>STEP</b>	<b>PROCEDURE</b>	<b>MECH</b>	<b>INSP</b>
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.		

## General Safety Instructions

### PROCEDURE

**WARNING:** Always handle the refrigerant fluids carefully.

**WARNING:** 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.

**WARNING:** When the system must be opened to do maintenance, before you do the work, you must drain the air conditioning system.

**WARNING:** When you open the system, you must collect the refrigerant in accordance with Federal and Local regulations.

**WARNING:** 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.

**WARNING:** 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.

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

**WARNING:** Never heat a R-134a supply cylinder to produce additional pressure or attempt to empty the container completely.

**WARNING:** Insure adequate ventilation when servicing the refrigerant system.

**WARNING:** 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

**WARNING:** You must replace the filter drier each time you open the system.

**WARNING:** Comply with the regulations in force in the country where the aircraft is operated when working on the air conditioning system.

**WARNING:** Only use nitrogen or Alcohol to clean the system components.

**WARNING:** 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**



Integrated Flight Systems  
 AIRCRAFT PREPARATION – AS350 Air Conditioning

## Aircraft Preparation

STEP	PROCEDURE	MECH	INSP
3.0	Remove or disconnect the battery.		
3.1	Remove pilot and co-pilots doors.		
3.2	Remove right rear door as needed.		
3.3	Remove rear seats.		
3.4	Remove co-pilot anti-torque pedals.		
3.5	Drop the cabin headliner.		
3.6	Remove the two side screws from both sides of the glare shield.		
3.7	Remove back wall covering.		
3.8	Remove the right side baggage door.		
3.9	Remove the forward closeout panel in the right hand baggage compartment.		
3.10	Access panel Aft of landing light.		
3.11	Remove the right hand transmission cowling.		
3.12	Remove the left hand transmission cowling.		
3.13	Remove lower nose right window.		
3.14	Remove the front belly cowling.		
3.15	Remove the center belly cowling.		
3.15a	Remove the right middle belly cowling.		
3.15b	Lower the rear belly cowling.		

## Aircraft Preparation

STEP	PROCEDURE	MECH	INSP
3.16	Remove the cargo net from the rear baggage compartment. (If installed)		
3.17	Remove the rear cargo compartment floor.		
3.18	Remove the electrical compartment cover. <b>NOTE:</b> Determine location for air conditioning power hook up. Reinstall cover to prevent FOD.		
3.19	Remove the rear cargo compartment forward floor panel.		
<p><b><u>NOTE:</u></b></p> <p><b>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.</b></p>			

## **Step 4**

# **Removal of Factory Installed Components**

### Removal of Factory Installed Components

STEP	PROCEDURE	MECH	INSP
4.1	Unbolt oil cooling fan and shroud tiewrap to transmission.		
4.2	Disconnect oil cooler assembly from aft cabin wall and the wrap to transmission. Do not disconnect oil lines.		
4.3	Remove fresh air duct between oil cooler and discard.		
4.4	Remove aft right side seat mount bracket for installation of doubler. Ref 5-21-AS350		
4.5	Remove channel P/N 2105000001 located in right hand baggage compartment and discard.		
4.6	Remove warning horn forward of co-pilots feet. Hold for reinstallation.		
4.7	Remove NR digital indicator box forward of co-pilots feet. Hold for reinstallation.		
4.8	Remove glare shield.		
4.9	Remove T4 correction chart holder. Hold for reinstallation.		

## **Step 5**

# **Installation of Aft Evaporator**

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.1	Remove Right Hand Transmission Cowling Forward latch. (See photo 1). Hold for reinstallation. Position the aft evaporator doubler P/N 260328-1 on the upper transmission deck per drawing 4-3-AS350 sheet 1 of 2. Mark around doubler and remove all existing rivets, bolts, and nut plates to allow the doubler to sit flat on deck.		
5.2	Drill through deck using pilot holes in doubler. Back drill the doubler from existing holes in the deck.		
5.3	Mark and cut openings in the transmission deck using doubler P/N 260328-1 as a template.		
5.4	Install aft evaporator doubler P/N 260328-1 on right hand upper transmission deck in accordance with drawing 4-3-AS350 sheet 1 of 2 using rivets as shown. Re-install Right Hand Transmission Cowling Forward latch as shown in drawing 4-3-AS350 sheet 1 of 2.		
5.5	Next temporarily install Aft evaporator assembly P/N 560010-“O”-5 with 4 ea. AN3-5A bolts and 4 ea. AN960-10 washers per drawing 4-13-AS350.		
5.6	Position return air doubler P/N 260322-1 against aft cabin bulk head as shown in drawing 5-21-AS350 trace outline on bulkhead. Remove doubler and drill out rivets inside trace.		
5.7	Reposition doubler P/N 260322-1. Back drill all holes and Clelo in place. Using doubler as guide pen route out return air hole.		
5.8	Remove doubler, clean holes. Install doubler P/N 260322-1 and angle P/N 260322-2 rivet in place per drawing 5-21-AS350.  <b>NOTE: Two different situations, requiring different doublers are utilized depending on the type and location of the aft seat harness reel (if installed). See drawing for specifics.</b>		

Integrated Flight Systems  
INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning



**PHOTO 1**

Integrated Flight Systems  
 INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.9	Install return air screen P/N 080022-1 as per drawing 5-21-AS350.		
<p><b><u>NOTE:</u> Before final install of evaporator. Install condenser channels P/N 510007 and P/N 510008. (See condenser install: Step 6)</b></p>			
5.10	<p>Locate “Return Air Connector” P/N 250166. Trial fit to the aft side of the cabin wall, immediately in front of the aft evaporator. The open side of the connector must face aft. Slide the connector upward until it contacts the forward side of the evaporator. Mark with a pencil, the inside of the connector position on to the evaporator. Remove the connector and evaporator. Reference drawing 4-13-AS350.</p> <p>Draw a line one (1) inch above the lower/forward face of the evaporator case. Trial fit “Return Air Connector” to the evaporator, ensuring that the flanges of the connector <b>DO NOT go past the inboard/outboard sides of the evaporator.</b></p> <p>Confirm the pencil lines. Remove the connector. Cut out the area within the pencil lines, leaving the one (1) inch lower lip on the evaporator case as a drain seal.</p> <p><b>NOTE: ENSURE DURING DRILLING THAT THE COIL INSIDE THE CASE IS NOT DAMAGED.</b></p> <p>Seal and secure the Return Air Duct Connector PN: 250166 with rivets to the Evaporator PN: 560010-O-5 case per drawing 4-13-AS350. Next install the connector angle assembly P/N 501261, per drawing 4-3-AS350 Sheet 1 of 2 and 4-13-AS350. This holds the upper part of the return air duct.</p>		
5.11	Position the aft evaporator return air duct P/N 250149 in the right side baggage compartment as shown on drawing 4-13-AS350. Use the return air opening to locate the return air duct. Trim the return air duct as required to fit.		
5.12	Remove the access panel from the outboard side of the aft evaporator P/N 560010-O-5.		
5.13	Temporarily install the aft evaporator, P/N 560010-O-5 using 4 each, AN3-5A, bolts and AN960-10, washers.		

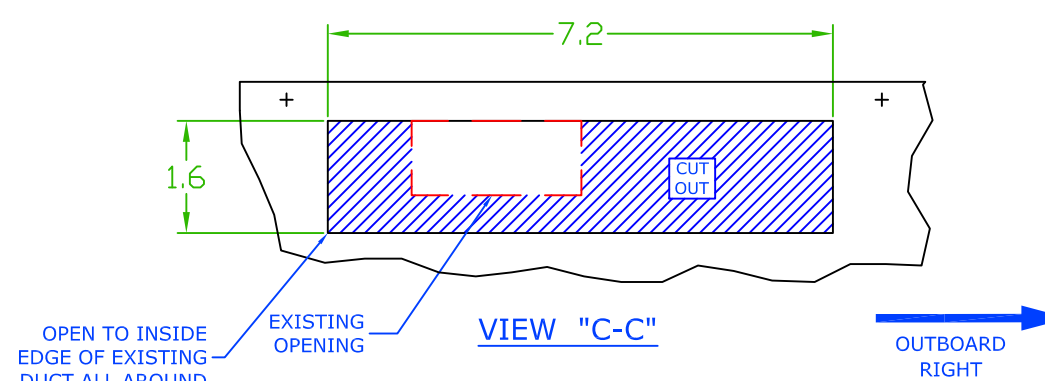


Integrated Flight Systems  
 INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.14	Locate and drill the holes for mounting the aft evaporator return air duct connector P/N 250166. Ref. 4-13-AS350		
5.15	Attach Return Air Duct P/N 250149 per drawings 4-3- AS350 sheet 1 of 2 and 4-13-AS350.		
5.16	<u>SEAL THE EVAPORATOR TO THE RETURN AIR DUCT WITH ALUMINUM FOIL TAPE IFS</u> PN: 070076 as required by reaching through the outboard opening in the evaporator. Re-install the aft evaporator access panel.		
5.17	Install the Aft Evaporator Fan Assembly, P/N 490017-1, using five each AN3-5A bolts, and 5 ea. AN960-10 washers. Attach Resistor Mount Assembly P/N 510463 and Resistor Assembly P/N 540020 per drawing 4-3-AS350 Sheet 2 of 2.		
5.18	Locate Transition Elbow P/N 520036-3. This will be mounted on upper Aft Cabin Wall on transmission side. See drawing 4-3-AS350 Sheets 1 and 2. Remove oil coolers from upper deck dog house. <b>(Do Not Disconnect oil Lines)</b> Position as to be able to modify Aft cabin wall. Do Not Re-install until step 5.22.		
5.19	Mark hole to be cut out in aft cabin wall per drawing 4-3-AS350 Sheet 1 of 2. Be careful not to but the cabin air duct bonded to aft cabin wall. Drill a couple of # 40 holes to see if you clear duct.		
5.20	Cut out hole and mount elbow as shown in drawing No. 4-3-AS350 Sheet 1 and 2.		
5.21	Install a 5-inch flex duct (25”in) long from the aft evaporator fan assembly to the aft air distribution elbow end with two each 6” band clamps P/N 060035. Insulate the duct with foam tape P/N 070078 and wrap with aluminum tape P/N 070076.		
5.22	Modify over head wemac’s as shown in drawing 5-12-AS350 if S/N 1302 or lower. Remove existing spacer air duct between oil coolers. Install new Air Duct Closure Assembly PN: 510092 using existing hardware. Re-nstall oil cooler assembly.		
5.23	Install hose doubler P/N 260369 per drawing 3-14-AS350.		

**AFT SIDE CABIN WALL**



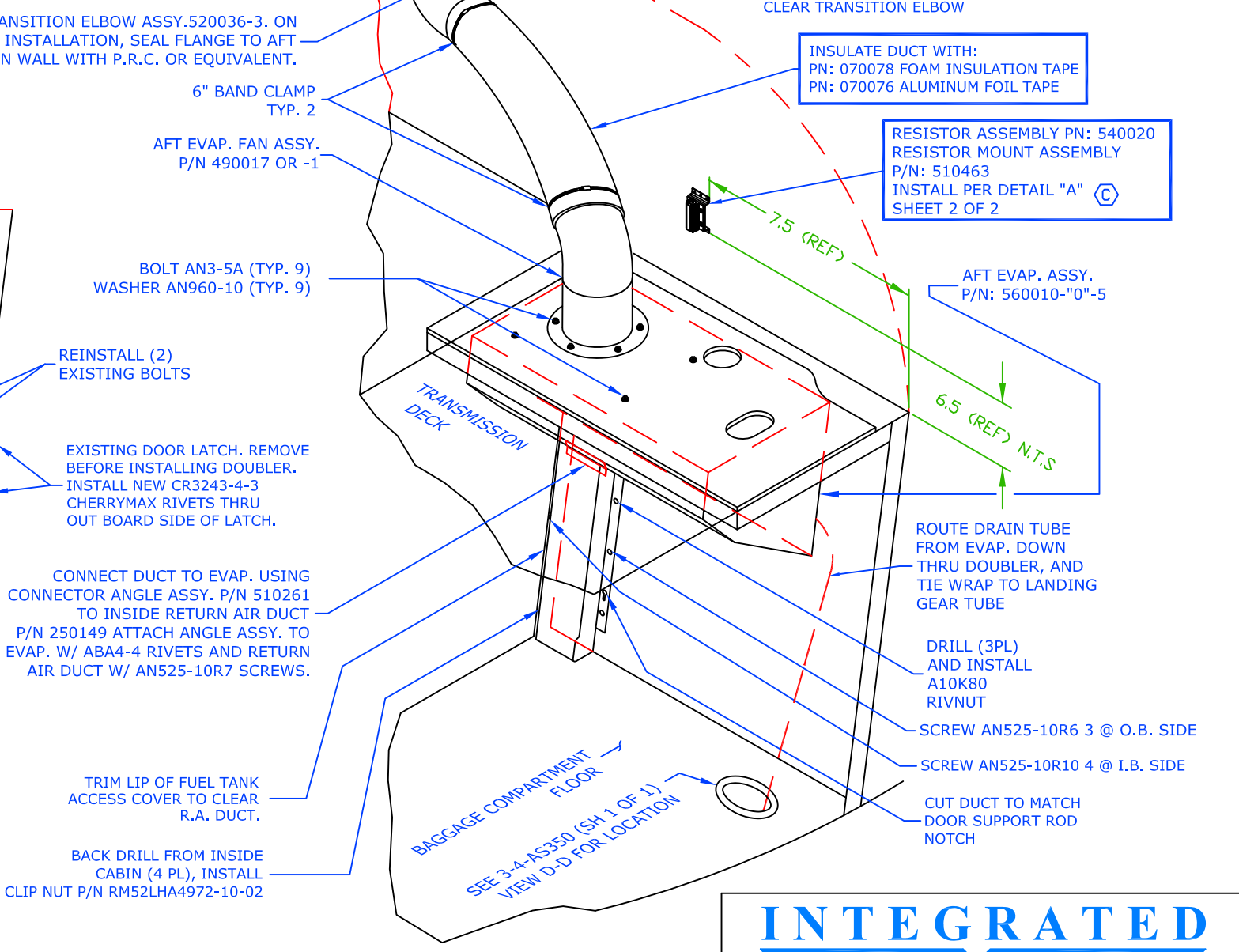
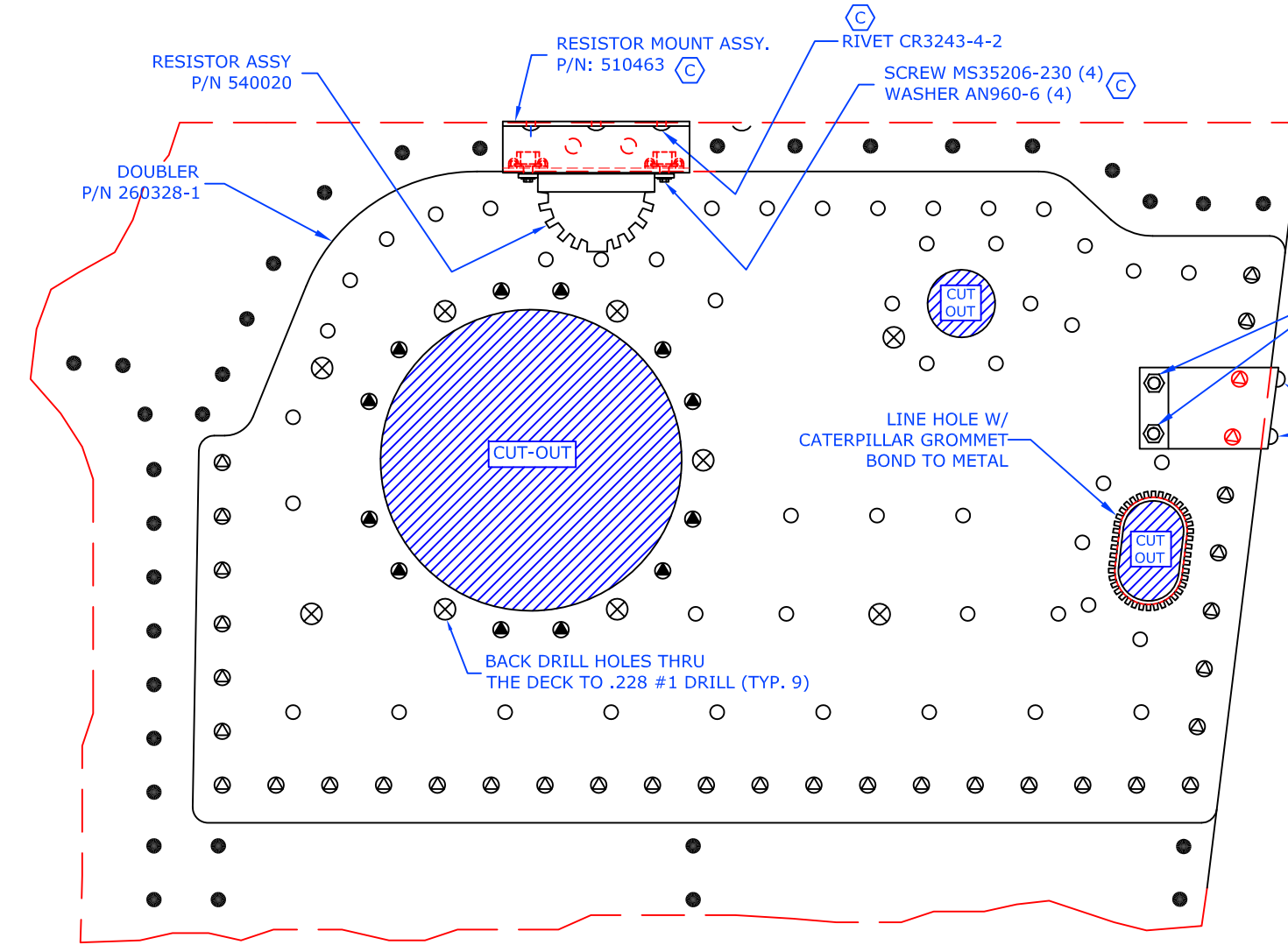
AFTER B3, S/N: 3322, REMOVE GROMMET IN P/N 520036-3. CUT OUT OPENING TO 1.6 X 7.2 OR TO MATCH DUCT OPENING AS IN VIEW C-C. ROUTE PUSH/PULL CABLES AND ELECTRICAL HARNESS TO LEFT AND TIE WRAP TOGETHER.

ⓑ SLOT THE TRANSITION ELBOW AS REQUIRED, TYP. B3 MODELS (SEE PAGE 2 OF 2 FOR ALTERNATE INSTALL.) SLIDE TRANSITION ELBOW OVER CABLES AND PLACE ELBOW IN POSITION AGAINST AFT CABIN WALL. BACK DRILL 6 EACH MOUNTING HOLES. REMOVE AND SEAL FLANGE TO AFT CABIN WALL WITH P.R.C. OR EQUIVALENT. REINSTALL DUCT TO AFT CABIN WALL USING HARDWARE CALLED OUT.

USING STRAP, P/N 261299 SANDWICH DUCT TO AFT CABIN WALL BY USING TOP AND TOP/LEFT HAND MOUNTING HOLES AS SHOWN.

REINSTALL GROMMET AND COVER ENTIRE AREA WITH FOIL TAPE.

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/06/01	CONVERTED TO AUTOCAD		-
B	01/03/07	ADDED SHEET 2 OF 2 TO INCLUDE SLOTTING INFORMATION FOR B3		JTYE
C	02/23/09	REVISED TITLE BLOCK. SHEET 1 AND 2 NOW ONE FILE. ADDED RESISTOR MOUNT ASSEMBLY, P/N: 510463.		DWE



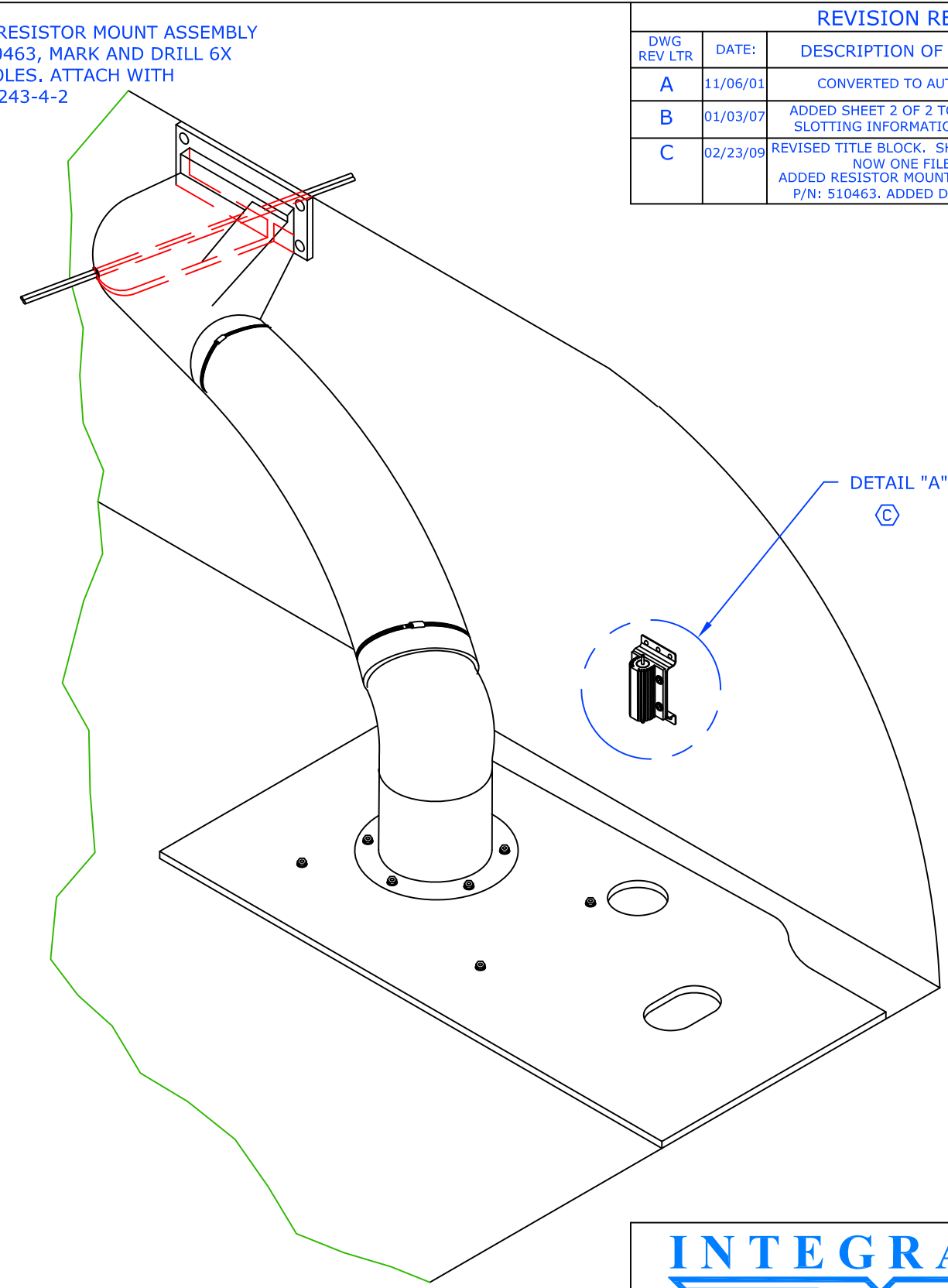
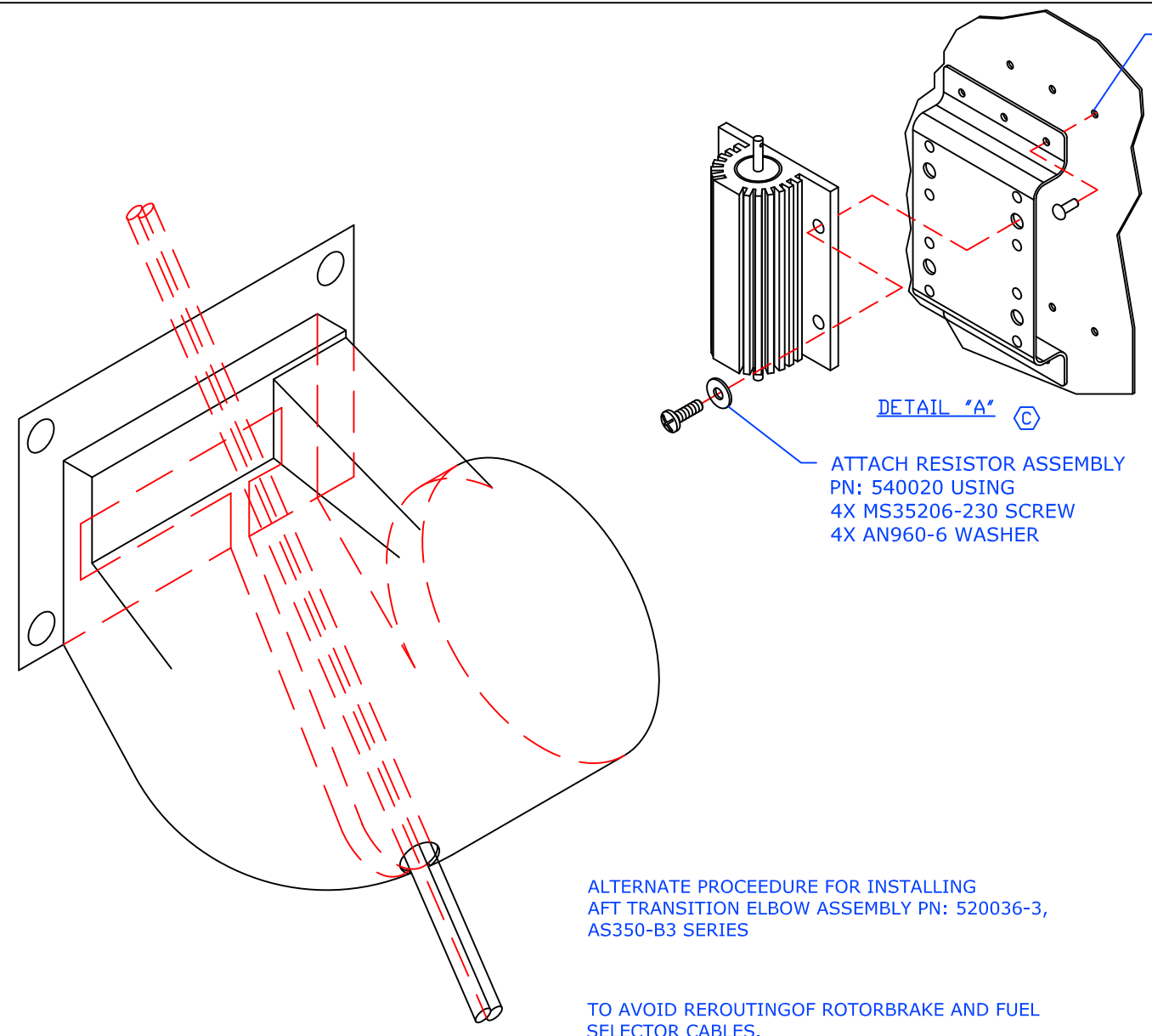
- MS20470AD-4-X (FIELD)
  - ⊗ MS20470AD-4-X (REPLACES EXIST. RIVETS)
  - ⊙ MS20426AD-4-X (CSK. AT TOP SURFACES)
  - ⊗ .228 DIA HOLE #1 DRILL (FOR AN 3-5A BOLT)
  - EXISTING
- NOTE:  
RIVET LENGTH MAYBE DETERMINED UPON INSTALLATION. INTERCHANGEABILITY BETWEEN MS20470AD-4-X RIVETS AND CR3242-4-X RIVETS IS APPROVED.

ECO# 0204



TITLE: AFT EVAPORATOR INSTALL				
DRAWN BY: JDS	DATE: 11/06/01	REV C	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AS350 SERIES			DWG No. 4-3-AS350	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/06/01	CONVERTED TO AUTOCAD	-	-
B	01/03/07	ADDED SHEET 2 OF 2 TO INCLUDE SLOTTING INFORMATION FOR B3	-	JTYE
C	02/23/09	REVISED TITLE BLOCK. SHEET 1 AND 2 NOW ONE FILE. ADDED RESISTOR MOUNT ASSEMBLY, P/N: 510463. ADDED DETAIL "A".	-	DWE



1. TRIM MATING SURFACES OF ELBOW FOR ALIGNMENT OF ELBOW TO CABIN DUCT.
2. POSITION ELBOW ABOVE CABLES AND ALIGN WITH CABIN DUCT.
3. TRACE CABLE ROUTING ONTO LOWER SIDE OF ELBOW.
4. CUT ELBOW TO ALLOW CABLES TO PASS THROUGH WITHOUT INTERFERENCE.
5. OPEN AFT END OF CUT TO APPROX 1" AND INSTALL GROMMET.
6. INSTALL ELBOW TO CABIN AFT WALL PER STANDARD INSTALLATION INSTRUCTIONS.
7. SEAL OPENINGS BOTH INSIDE AND OUT WITH ALUMINUM FOIL, SEAL AREA BETWEEN CABLES AND GROMMET WITH SEALING CORK PN: 070078-6 OR PROSEAL 890 TO ENSURE THAT ELBOW IS AIR TIGHT.

ECO# 0204



TITLE: AFT EVAPORATOR INSTALL				
DRAWN BY: JTYE	DATE: 05/27/04	REV C	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AS350 SERIES			DWG No. 4-3-AS350	



## Engineering Change Order

ECO No.  
0204

Drawing Number	Revision	Drawing Title
4-3-AS350	C	AFT EVAPORATOR INSTALLATION
4-1-EC130	B	AFT EVAPORATOR INSTALLATION
261585	NC	RESISTOR MOUNT

Reason for Change: Rivet callout on drawings not correct. Screw length is incorrect.

Description of Change:

1. 4-3-AS350 and 4-1-EC130, sheet 1 of 2:  
Was: CR3243-3-2, Is: CR3243-4-2
  
2. 4-3-AS350 and 4-1-EC130, sheet 2 of 2:  
Was: MS35206-244 Screw, Is: MS35206-230.
  
3. 4-3-AS350, sheet 2 of 2:  
Callout Was: "See 3-4-AS350 (SH 1 of 1)  
View D-D for location"  
  
Callout Is: "See 3-4-AS350 (SH 1 of 1) or  
See 3-5-AS350 (SH 1 of 1)  
View D-D for location"
  
4. Drawing 261585:  
Was: 10 #40 holes  
  
Is now: 4 #40 holes and 6 #30 holes

----- LAST ITEM -----

Engineering Review Board Approval

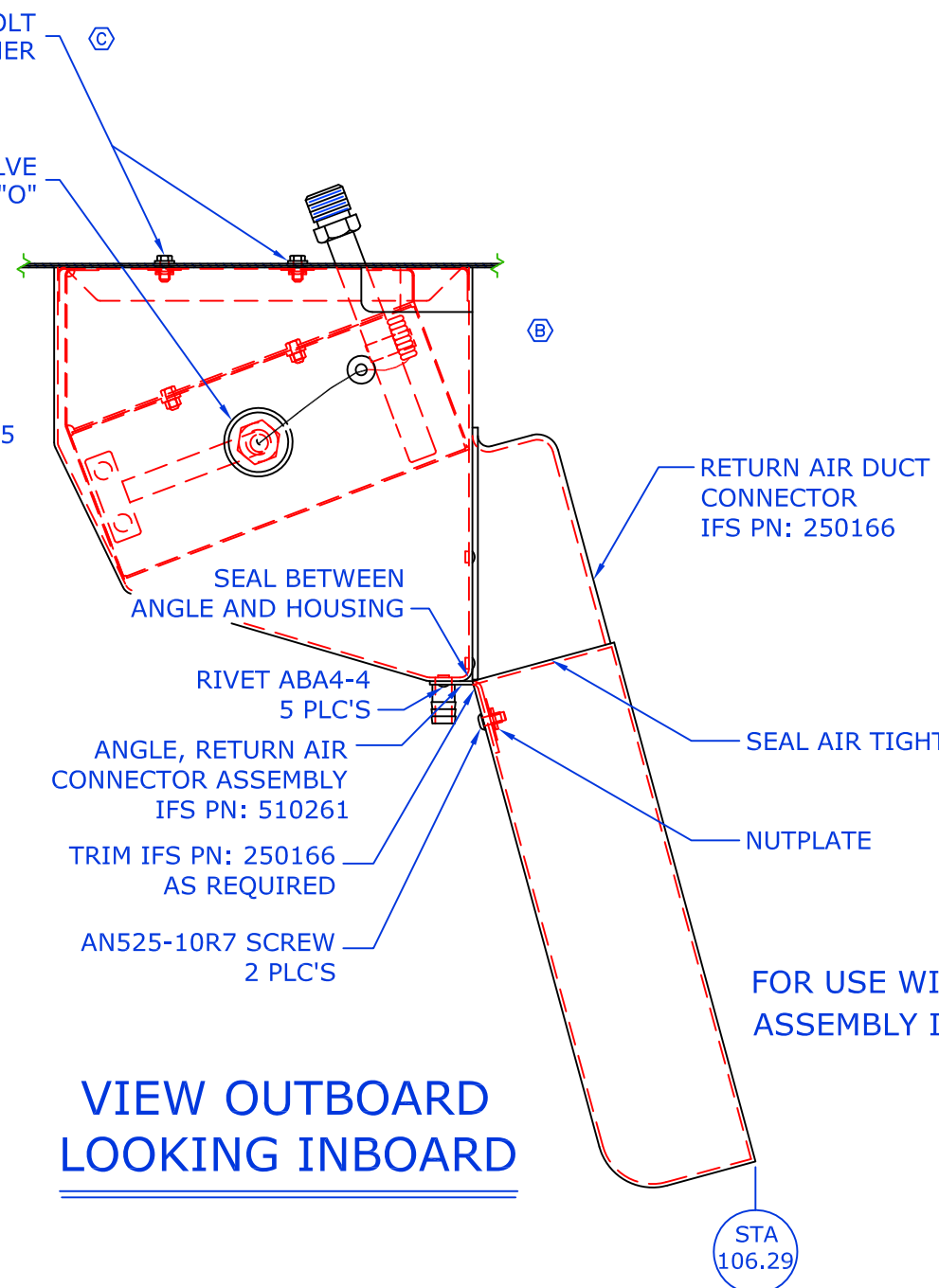
Signature	Stamp	Date	Comment
	ERB02	11/17/09	
	MRB06	11/17/09	
	MRB05	11/17/09	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/07/01	CONVERTED TO AUTOCAD		
B	01/03/07	CORRECTED SENSING BULB POSITION TO MATCH MFG DWGS. REMOVED NOTES CONCERNING SENSING BULB ATTACHMENT, IT IS NOW INSTALLED AT THE ASSEMBLY STAGE, ADDED ALT. CLIPNUT P/N'S SL215-3-1 OR 130062 CHANGED FONT, ADDED DETAILS TO VIEWS TO SHOW INSTALLED. REVISED TITLE BLOCK.		JTYE

## INSTALLATION INSTRUCTIONS:

- AFT EVAPORATOR AND RETURN AIR DUCT INSTALLATION:
- TEMPORARILY INSTALL EVAPORATOR ASSEMBLY, P/N 560010-"O"-5 UNDER NEWLY INSTALLED DOUBLER WITH 4X AN3-5A BOLTS AND 4X AN960-10 WASHERS AS SHOWN.
- LOCATE "RETURN AIR CONNECTOR" P/N 250166. TRIAL FIT TO THE AFT SIDE OF THE CABIN WALL, IMMEDIATELY IN FRONT OF THE AFT EVAPORATOR. THE OPEN SIDE OF THE CONNECTOR MUST FACE AFT. SLIDE THE CONNECTOR UPWARD UNTIL IT CONTACTS THE FORWARD SIDE OF THE EVAPORATOR. MARK WITH A PENCIL, THE INSIDE OF THE CONNECTORS POSITION ON TO THE EVAPORATOR. REMOVE THE CONNECTOR AND EVAPORATOR. NOTE: THIS HOLE MAY ALREADY EXIST IF IFS HAS TEST RUN SYSTEM AT IT'S LOCATION.
- LOCATE A LINE ONE (1) INCH ABOVE THE LOWER/FORWARD FACE OF THE EVAPORATOR. TRIAL FIT CONNECTOR TO THE EVAPORATOR, ENSURING THAT THE FLANGES OF THE CONNECTOR DO NOT GO PAST THE INBOARD/OUTBOARD SIDES OF THE EVAPORATOR.
- CONFIRM THE PENCIL LINES. REMOVE THE CONNECTOR. CUT OUT THE AREA WITHIN THE PENCIL LINES, LEAVING THE ONE (1) INCH LOWER LIP ON THE EVAPORATOR AS A DRAIN SEAL. SEAL AND SECURE WITH RIVETS, THE CONNECTOR TO THE EVAPORATOR PER THE DRAWING.
- TRIAL FIT RETURN AIR DUCT P/N 250149. BACK DRILL FROM INSIDE THE CABIN AT FOUR PLACES, EQUALLY SPACED, AT INBOARD EDGE OF RETURN AIR DUCT FLANGE. DRILL THREE PLACES, EQUALLY SPACED, ON OUTBOARD EDGE OF RETURN AIR DUCT FLANGE, THROUGH FLANGE INTO AIRCRAFT BOX SECTION.
- REMOVE DUCT AND INSTALL THREE EACH A10K80 RIVNUTS UNDER OUTBOARD FLANGE LOCATION, INTO AIRCRAFT BOX SECTION. INSTALL FOUR EACH CLIPNUTS, P/N RM52LHA4972-  
 (B) 10-02, (ALT. PN: SL215-3-1 OR 130062), ONTO INBOARD FLANGE OF RETURN AIR DUCT. INSTALL RETURN AIR DUCT WITH SEVEN EACH AN525-10R10 SCREWS (FOUR FROM INSIDE CABIN FOR CLIPNUTS), USING K501 TAPE UNDER BOTH DUCT FLANGES AS SEALANT.



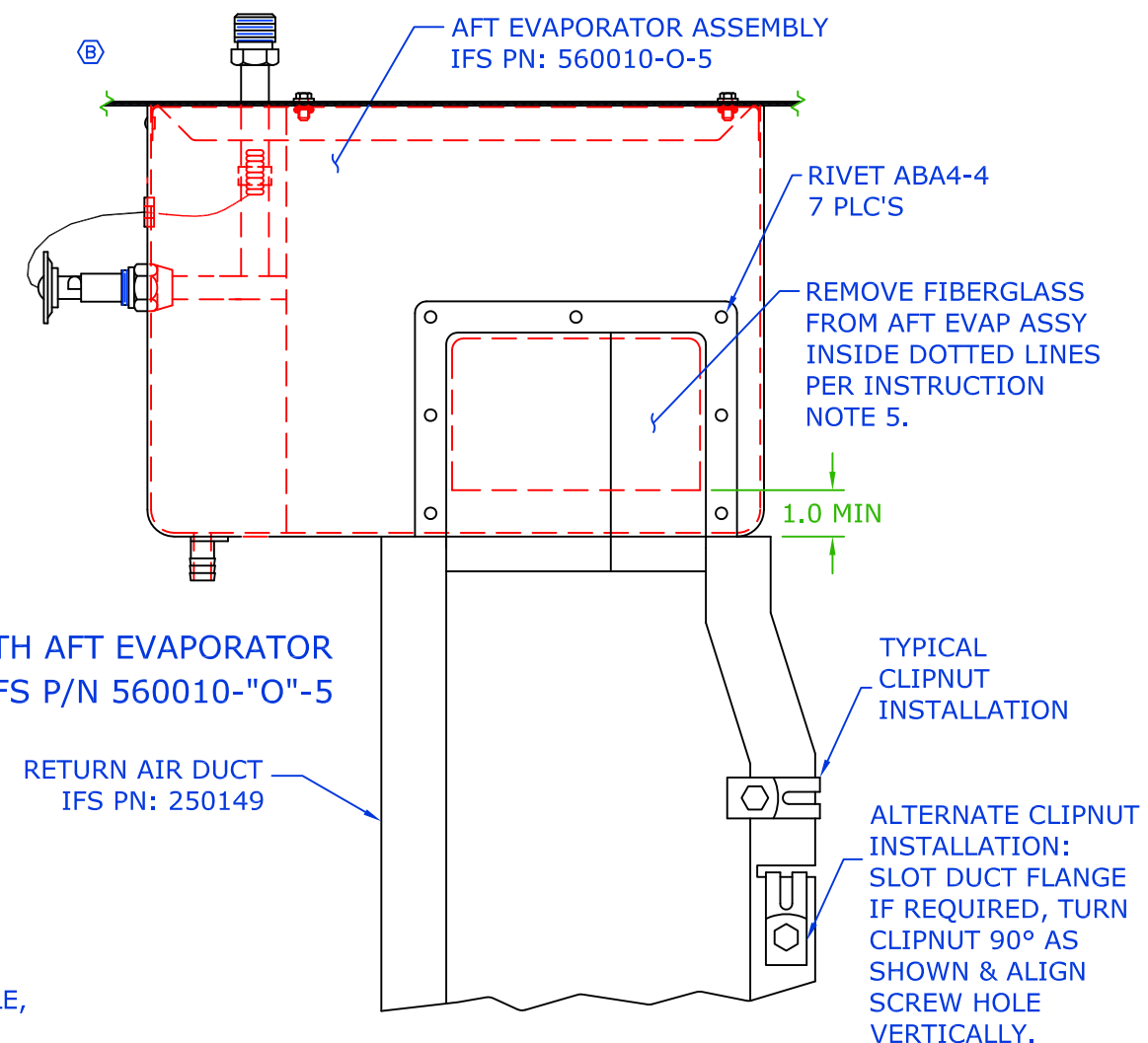
**VIEW OUTBOARD  
LOOKING INBOARD**

- CONNECT RETURN AIR DUCT TO AFT EVAPORATOR USING ANGLE, RETURN AIR CONNECTOR ASSEMBLY, P/N 510261. USE POP RIVETS, NUTPLATES AND SCREWS. SEAL ANGLE TO RETURN AIR DUCT AND AFT EVAPORATOR HOUSING.
- INSTALL DRAIN LINE AND ROUTE AS SHOWN IN DRAWING 4-3-AS350 SHEET 1 OF 2. SECURE DRAIN LINE WITH ADEL CLAMPS OR TIE WRAPS AND ROUTE TO A LOCATION OUTBOARD OF THE BELLY PANEL. TIE WRAP TO LANDING GEAR CROSS MEMBER ON AFT SIDE.

**NOTE:** ENSURE THAT DRAIN LINE IS NOT CRIMPED WHEN BELLY PANEL IS RE-INSTALLED.

**CAUTION:** BE SURE THAT THE DRAIN LINE IS PROPERLY SECURED AND LONG ENOUGH SO THAT CONDENSATION DOES NOT FLOW FROM THE LINE, AFT INTO THE BAGGAGE COMPARTMENT.

**NOTE:** ENSURE THAT DRILLING DOES NOT HIT COIL



**VIEW LOOKING AFT**



**TITLE: AFT EVAPORATOR  
INSTALL**

DRAWN BY: TMUZZY	DATE: 11/07/01	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 4-13-AS350	



Engineering Change Order

ECO No.  
0231

Drawing Number	Revision	Drawing Title
4-13-AS350	B	Aft Evaporator Install

Reason for Change: Correct hardware callout on drawing.

Description of Change:

- Drawing: 2X AN525-10R7 attaching angle, is now 2X AN525-10R6.

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
		05/04/10	
		05/04/10	
		05/04/10	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS350, SHEET NO WAS 2 OF 3		-
B	04/12/02	COMPUTERIZED		-
C	01/03/07	ADJUSTED DWG FOR MULTIPLE CONFIGURATIONS, CHANGED TITLE BLOCK		JTYE
D	02/26/09	ADDED VIEW C-C AND NOTE FOR INSTALLATION AIR DUCT CLOSURE.		DWE

AIR DUCT CLOSURE ASSY PN: 510092  
REMOVE AND DISCARD EXISTING FRESH AIR INLET, INSTALL CLOSURE ASSY USING EXISTING HARDWARE

TRIM ANGLE IF NECESSARY TO FIT PN: 510092.

VIEW C-C  
LOOKING FWD

TAP EXISTING AIR OUTLET MOUNTS TO 8-32 UNF.  
INSTALL WEMAC USING 4 EA. MS24693-S55  
SNAP ON DECOR RING PN: 7194-1

TRIM HEADLINER AND CABIN STRUCTURE TO FIT WEMAC.

ROTATE NEW WEMAC 90°  
MATCH DRILL NEW HOLES (CSK) IN WEMAC TO MATCH AIRFRAME

WEMAC No. 2368-503 (CLEAR)  
NOTE: APPLIES TO AIRCRAFT W. SMALL ADH AIR OUTLETS.

VIEW B-B

HEADLINER

REPLACE EXISTING AIR OUTLETS WITH WEMAC NO 2368-503 (4)

NOTE: APPLIES TO SN 1302 & DOWN ONLY

NOT REQUIRED IF LATE MODEL ADH AIR OUTLETS ARE IN PLACE

VIEW A-A

SWITCH ASSY  
PN: 540089

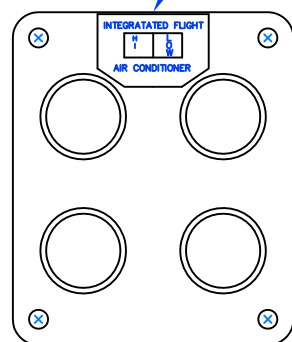
BACKING PLATE  
PN: 260351

TRIM PLACARD TO FIT AS REQUIRED

ROUTE 2-1/2" FLEX DUCT AS REQUIRED PER AIR OUTLET CONFIGURATION.

NOTE: IF REQUIRED CUT 3" HOLE IN TRAY TO ALLOW FLEX DUCT TO CONNECT TO L.H. AIR OUTLET. INSTALL BLACK EDGE TRIM AROUND HOLE.

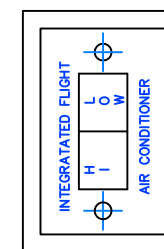
FWD



DETAIL C

VIEW LOOKING UP AT SWITCH LOCATION, 1995 AND PRIOR.

NOTE: AFT SWITCH INSTALLATION NOT APPLICABLE TO TOUR 1 CONFIGURATION.



DETAIL C

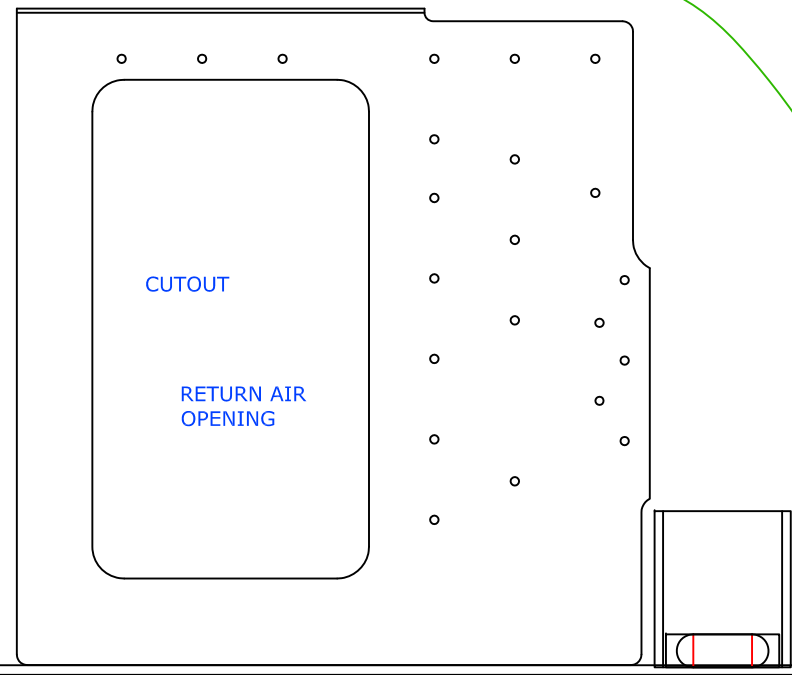
LOCATE AFT & LEFT OR RIGHT OF EXISTING AIR OUTLETS 1995 & ON



TITLE: AIR DISTRIBUTION

DRAWN BY: BT	DATE: 06/20/85	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-12-AS350	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	03/27/91	TITLE BLOCK WAS CAS, IS NOW IFS		
B	11/15/95	ADD REEL HARNESS		
C	08/16/00	REVISED DWG No. WAS 5-AS350 SHEET 3 OF 3		
D	04/12/02	COMPUTERIZED		
E	04/16/02	ADDED 260322, OPTIONAL.		
F	01/03/07	CORRECTED PN'S, ADDED PHOTO AND TRIMMING NOTATION. REVISED TITLE BLOCK.		JTYE

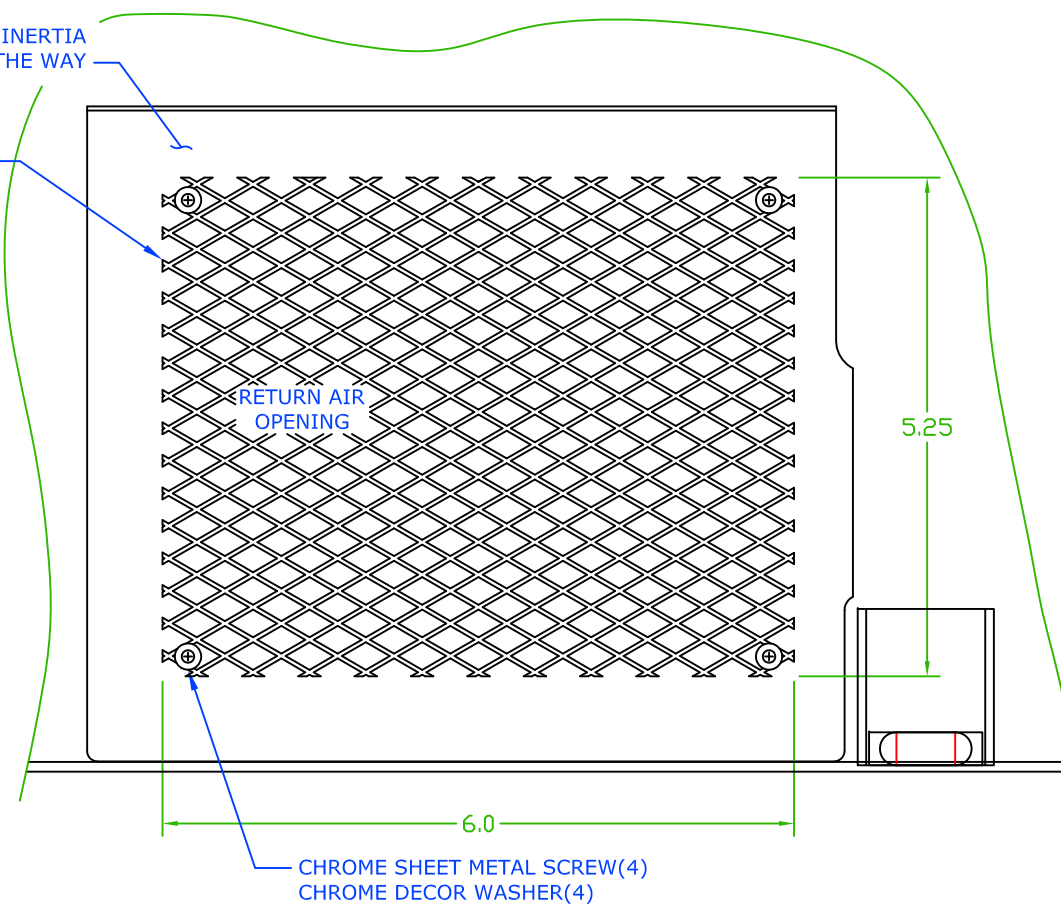


STEP 2  
MATCH DRILL DOUBLER TO AIRFRAME & AIRFRAME TO DOUBLER  
RIVET IN PLACE

STEP 3  
NOTE: ADD SCREEN SCREWS & SEAL EDGES

260322 (OPTIONAL) IF INERTIA WHEEL IS NOT IN THE WAY

EXPANDED ALUMINUM SCREEN PN 080022



STEP 1

NOTE: CUT OPENING IN INTERIOR AFT BULKHEAD PANEL TO MATCH RETURN AIR DOUBLER

OUTBOARD, RIGHT

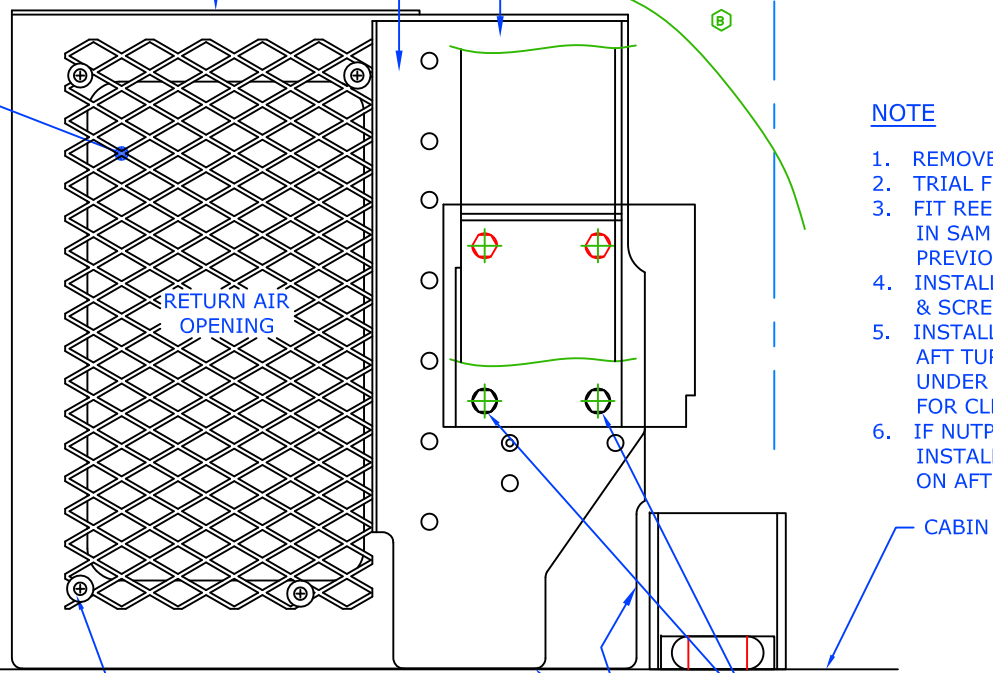
EXPANDED ALUMINUM SCREEN PN: 080022-1

DOUBLER, RETURN AIR PN: 260322-1

ANGLE PN: 260322-2

AFT BULKHEAD, MATCH DRILL NEW RIVET HOLES TO DOUBLER AND ANGLE.

AIRCRAFT



NOTE

1. REMOVE REEL
2. TRIAL FIT DOUBLER ASSY
3. FIT REEL TO DOUBLER ASSY IN SAME LOCATION AS PREVIOUSLY MOUNTED
4. INSTALL DOUBLER ASSY & SCREEN
5. INSTALL REEL, TRIMMING AFT TURNED LIP OF DOUBLER UNDER HARNESS, AS NECESSARY, FOR CLEARANCE
6. IF NUTPLATES(TYP 4)ARE NOT INSTALLED, ADD PN MS21059-L3 ON AFT SIDE OF WALL

RIVET LEGEND

- -MS20470 AD4(IN NEW HOLE)
- ⊗ -CR 3243-4(IN NEW HOLE)
- ⊙ -CR 3243-4(IN EXISTING HOLE)
- -MS20426AD4-X(FLUSH RIVET)

NOTE: INTERCHANGEABILITY BETWEEN MS20470 AD RIVETS & CR 3243 RIVETS ALLOWABLE, DIA AND LENGTH MAY BE DETERMINED BY THE INSTALLER

NOTE: STEPS #1 & #2 PERTAIN TO BOTH DOUBLER INSTALLATIONS



CHROME SHEET METAL SCREW(4)  
CHROME DECOR WASHER(4)

INSTALL HARDWARE PER AEC KIT

AFT CABIN BULKHEAD  
VIEW LOOKING AFT AT STA 106.29

TRIM OR ADJUST AS REQUIRED TO ACHIEVE BEST FIT.



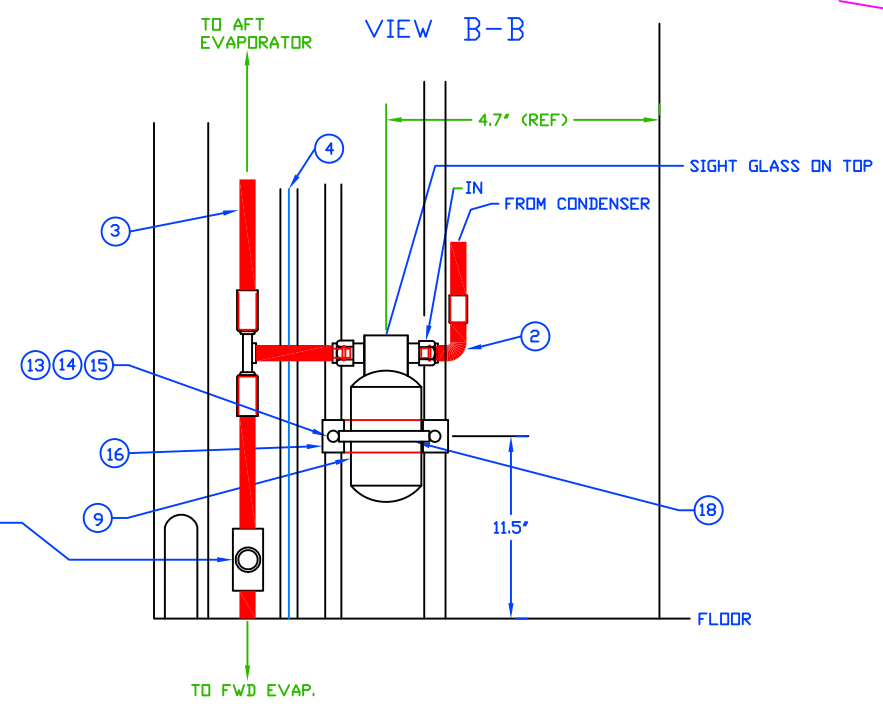
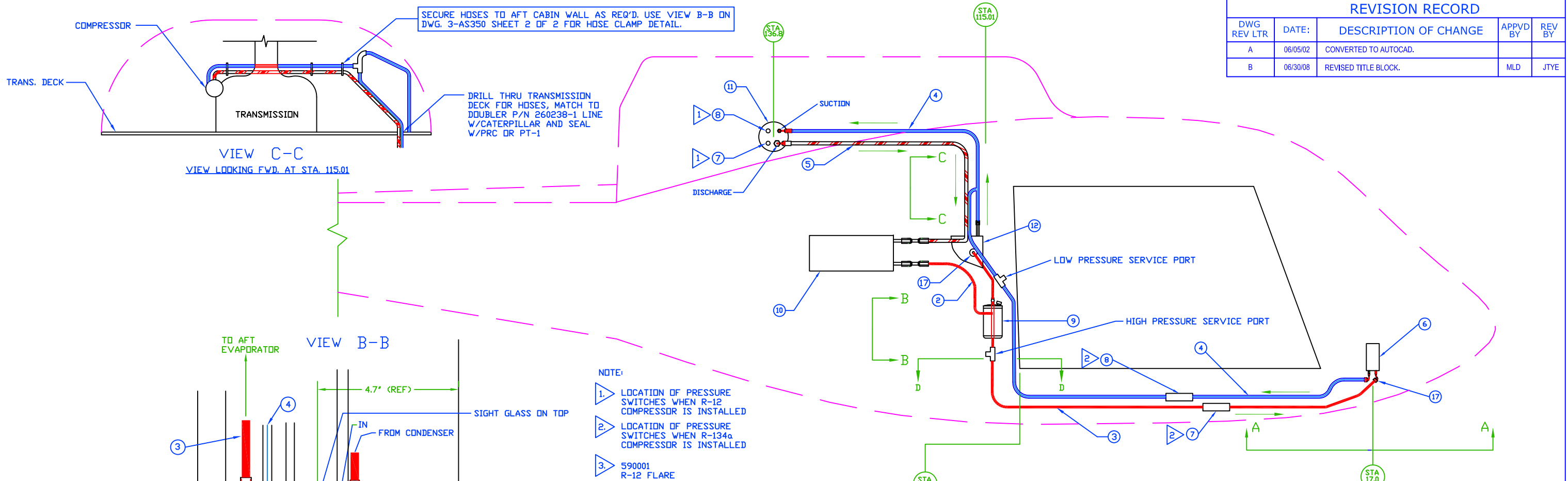
TITLE: AIR DISTRIBUTION

DRAWN BY: BP	DATE: 04/12/85	REV F	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-21-AS350	

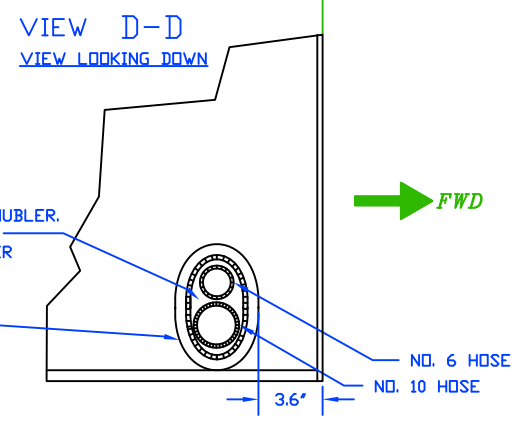


REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE

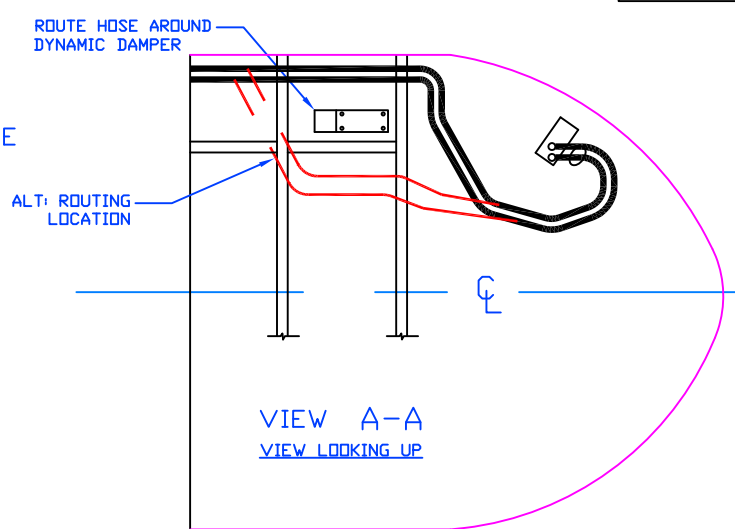


- NOTE:
- 1. LOCATION OF PRESSURE SWITCHES WHEN R-12 COMPRESSOR IS INSTALLED
  - 2. LOCATION OF PRESSURE SWITCHES WHEN R-134a COMPRESSOR IS INSTALLED
  - 3. 590001 R-12 FLARE  
590001-0" R-12 "O" RING  
590001-1" R-134a W/ESTER OIL  
590001-2" R-134a W/SP-20 OIL  
590008 ALT: 590008-1 R-134a W/ESTER OIL



QTY	ITEM	PART NUMBER	DESCRIPTION
1	18	060036	3 INCH BAND CLAMP
2	17	090002-0	EXPANSION VALVE
1	16	260123-2	RECEIVER DRIER MOUNT
2	15	MS21044-N3	NUT
4	14	AN960-10	WASHER
2	13	AN3-5A	BOLT
1	12	560010-O-5	AFT EVAPORATOR
1	11	590008	COMPRESSOR 24 VDC R-134a O-RING
1	10	550007-1	CONDENSER (ALT: 550007-2 FOR DUAL BLOWERS)
1	9	090016-5	RECEIVER DRIER BOTTLE
1	8	050107	LOW PRESSURE SWITCH
1	7	090004	HIGH PRESSURE SWITCH
1	6	560025-O	FORWARD EVAPORATOR
1	5	570024-O-A	HOSE ASSY COMPRESSOR TO CONDENSER
1	4	570087-O-A	HOSE ASSY FWD EVAPORATOR TO AFT EVAPORATOR
1	3	570072-O-A	HOSE ASSY. AFT EVAP TO FWD. EVAP TO REC/DRIER
1	2	570020-O-A	HOSE ASSY. COND. TO REC./DRIER
-	1	RESERVED	-

- NOTE:
- ALTERNATE HOSE:  
1991-ON NEOPRENE BARRIER TYPE
- #6 P/N 090078 BASIC
  - #8 P/N 090079 PRODUCT
  - #10 P/N 090080 IFS P/N
- 1995-ON NEOPRENE REDUCED BARRIER TYPE
- #6 P/N 090089
  - #8 P/N 090090
  - #10 P/N 090091
- FERRULES FOR ABOVE
- #6 P/N 090081 BASIC
  - #8 P/N 090082 PRODUCT
  - #10 P/N 090083 IFS P/N
- MUST USE ATCO REDUCED BARRIER TYPE FITTINGS & ATCO CRIMPER P/N 3700 OR MASTERCODL P/N 71500



#10 HOSE	
#8 HOSE	
#6 HOSE	



TITLE: PLUMBING DIAGRAM

DRAWN BY: N.DEAN	DATE: 06/05/02	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350		DWG No. 3-4-AS350		

## **Step 6**

# **Installation of Condenser**

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

## Installation of Condenser

STEP	PROCEDURE	MECH	INSP
<p><b><u>NOTE:</u></b> Do not install P/N 260148-3 before installing mount channels P/N 510007 and 510008. Complete steps 6.8 thru 6.11 prior to step 6.7.</p>			
6.1	Locate Condenser Fan Mounting Channel P/N 260148-3 and Fan Channel Base Angle P/N 260020 these will be mounted in the right hand baggage compartment.		
6.2	Remove support channel AEC P/N 2105000001 per drawing 7-2-AS350 Sheet 1 of 2.		
6.3	Position in place P/N 260148-3 and P/N 260020 as shown in drawing 7-2-AS350 Sheet 1 of 2. Back drill in place and cleco. Fit filler P/N 260862 and drill in place per drawing 7-2-AS350 Sheet 1 and 2.		
6.4	Position Battery compartment shelf P/N 260333 with mount angles, P/N 260335, drill in place, see drawing 7-2-AS350 Sheet 1 of 2.		
6.5	Be sure to pick up all holes as shown in drawing 7-2-AS350 Sheet 1 of 2, including upper shelf shown in drawing 7-11-AS350.		
6.6	Align electrical panel assembly P/N 540028-C-2-A as shown in drawing 7-11-AS350. Create paper template for hole pattern on bottom of electrical panel assy. Use template to mark and drill shelf, mount P/N 540028-C-2-A using 3 ea AN3-4A bolts.		
6.7	Remove all parts, clean holes, reinstall and rivet in place, as shown in drawings 7-2-AS350, Sheets 1 and 2 of 2.		
6.8	Locate forward and aft condenser channel assemblies, P/N 510008 and P/N 510007. These will be located in the upper right hand baggage compartment.		
6.9	Position forward channel P/N 510008 as shown in drawing 7-2-AS350 Sheet 2 of 2. Back drill all holes.		

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.10	Remove and clean holes and rivet in place as per drawing 7-2-AS350 Sheet 2 of 2.		
6.11	Repeat steps 6.9 and 6.10 for P/N 510007 install nutplate to channel and install per drawing 7-2-AS350 sheet 2 of 2.		
6.12	Installing mount angle P/N 260002 on condenser: Measure 1.5” from aft (left) of condenser, draw a line parallel to aft end. Center mount angle over existing 3 holes on top of condenser. Align vertical flange over line drawn on condenser. Now transfer 3 holes to mount angle. Drill holes in mount angle. Next mount angle to condenser with 3 ea. AN3-4A bolts and 3 ea AN960-10 washers as shown in drawing 7-11-AS350.		
6.13	Position the other mount angle P/N 260002 in fwd overhead channel as shown in drawing 7-2-AS350 Sheet 2 of 2, and adjust height as shown in drawing 7-11-AS350. Position condenser assembly in aircraft using previously installed (aft) angle as a guide and slide it up into the aft channel assembly. When condenser is level and at the correct height, check and make sure aft end of condenser is tight against condenser fan channel P/N 260148-3. If not, adjust aft mount angle.		
6.14	Now mark aft mount angle using 2 holes in aft channel assembly P/N 510007 as shown in drawing 7-2-AS350 sheet 1 of 2. Remove condenser and drill holes. Reinstall condenser assembly and temporarily bolt into position. Next mark position of fwd mount angle onto condenser, also mark 7” diameter fan hole along with 4 ea. mounting holes using condenser fan mounting channel 260148-3 as a guide. Remove condenser assembly, position fwd mounting angle on condenser using marking as a guide. Pick up existing 3 holes on condenser. Drill and mount angle using 3 ea AN3-4A bolts and 3 ea. AN960-10 washers. Now cut out 7” diameter hole as marked and drill out 4 mounting holes. <b>NOTE: Be careful not to cut or drill condenser coil inside condenser, You have about 1” clearance from the end of the housing to the coil.</b> Now mount existing fan mount ring inside of the end of the condenser using drilled mount holes to align ring. Install 4 ea. screws or bolts. Drill 2 ea. #40 holes on either side of each screw (do not drill through nutplates on mount ring) and install with CCR264SS3-3 rivets. Install condenser assembly.		

Integrated Flight Systems  
INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

6.15	Locate condenser air intake assembly P/N 520071 or 520071-1. This will be installed in right baggage door per drawing 8-2-AS350, 1 and 2 of 2.		
6.16	Temporarily install right baggage door. Take measurements from door frame to find center of condenser. Mark this center on door. Cut 4” Dia. Hole on center. Put hand through hole and using condenser cut out as guide to mark back of door. Remove door, place air intake assembly P/N 520071(-1) on back of door with lip towards door. Aligning the Aft Lip to mark on door. <b>NOTE:</b> The lip is the part that will be inserted into the door, not the mounting flange. Adjust up and down. See if top line is 3.2” down from top of door. Fit inside of top and bottom marks. Make sure you keep Air Intake level with tip edge of door. Now trace around lip.		

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.17	Cut out hole using marks. Cut inside marks, and cut or sand as necessary to fit air intake.		
6.18	Temporarily install door. Insert air intake. Adjust cutout in condenser as necessary to fit air intake. Do not cut beyond Aft face of condenser. Leave flange going towards condenser. The Fwd end of the condenser can be cut as necessary. The bottom flange of condenser can be trimmed a little, but, leave at least .75" lip. Top can be trimmed almost to top of flange.		
6.19	Mark and cut out fan outlet hole per drawing 8-2-AS350 Sheet 1 of 2. Fit Screen Assy. Cond. Exhaust PN: 520052-1 or -2, adjust holes as necessary. Position Screen Assy. as shown in drawing 8-2-AS350 sheet 2 of 2 and drill 5 holes as shown in drawing 8-2-AS350 sheet 1 of 2.		
6.20	Lay 2 layers of 10 oz. Cloth with resin as shown per drawing 8-2-AS350 sheet 1 of 2.		
6.21	Remove door inner core 1" inside of both cut outs. Next fill in with Hysol 960 or Metalset A-4.		
6.22	Reinstall inlet and outlet. Drill mounting holes and install with MS24693S276 screws, Tinnerman washers A3235-020-24A and nuts MS20364-1032C.		
6.23	Paint to match.		
6.24	Modify battery cover, P/N 260339 per drawing 8-2-AS350 Sheet 2 of 2.		
6.25	Modify cargo net as shown in drawing 8-11-AS350. Install as shown.		
6.26	When condenser assembly P/N 550007-1 is installed, mount condenser fan assembly, P/N 050084-6 and elbow assembly P/N 520032-1. See drawing 7-2-AS350 Sheet 1 of 2. Install Drain Hose P/N 090018.		

INSTRUCTIONS:

- 1 PLACE MOUNTING CHANNEL AS HIGH AS POSSIBLE. INSPECT FOR EXISTING RIVETS THAT MIGHT HOLD CHANNEL OFF DECK.
- 2 TRIM/NOTCH CHANNEL AROUND RIVETS.
- 3 RE-FIT BEFORE MATCH DRILLING AS IN (4).
- 4 MATCH DRILL COND FAN MT CHAN TO EXISTING MOUNT ANGLE INSTALL RIVETS CR 3243-4-X
- 5 TRIM ELBOW FLANGE AS NECESSARY TO ACCOMODATE CONTROL BOX ON BRUSHLESS MOTORS.

RELOCATE FASTENER TO LOWER RIGHT. (SEE 8-11-AS350, SHEET 1 OF 2, BAGGAGE COMPARTMENT MOD FOR ACTUAL LOCATION)



AN3-5A(3)  
AN960-10(6)  
MS21044-N3(3)  
LOCATE NUT ON FWD SIDE

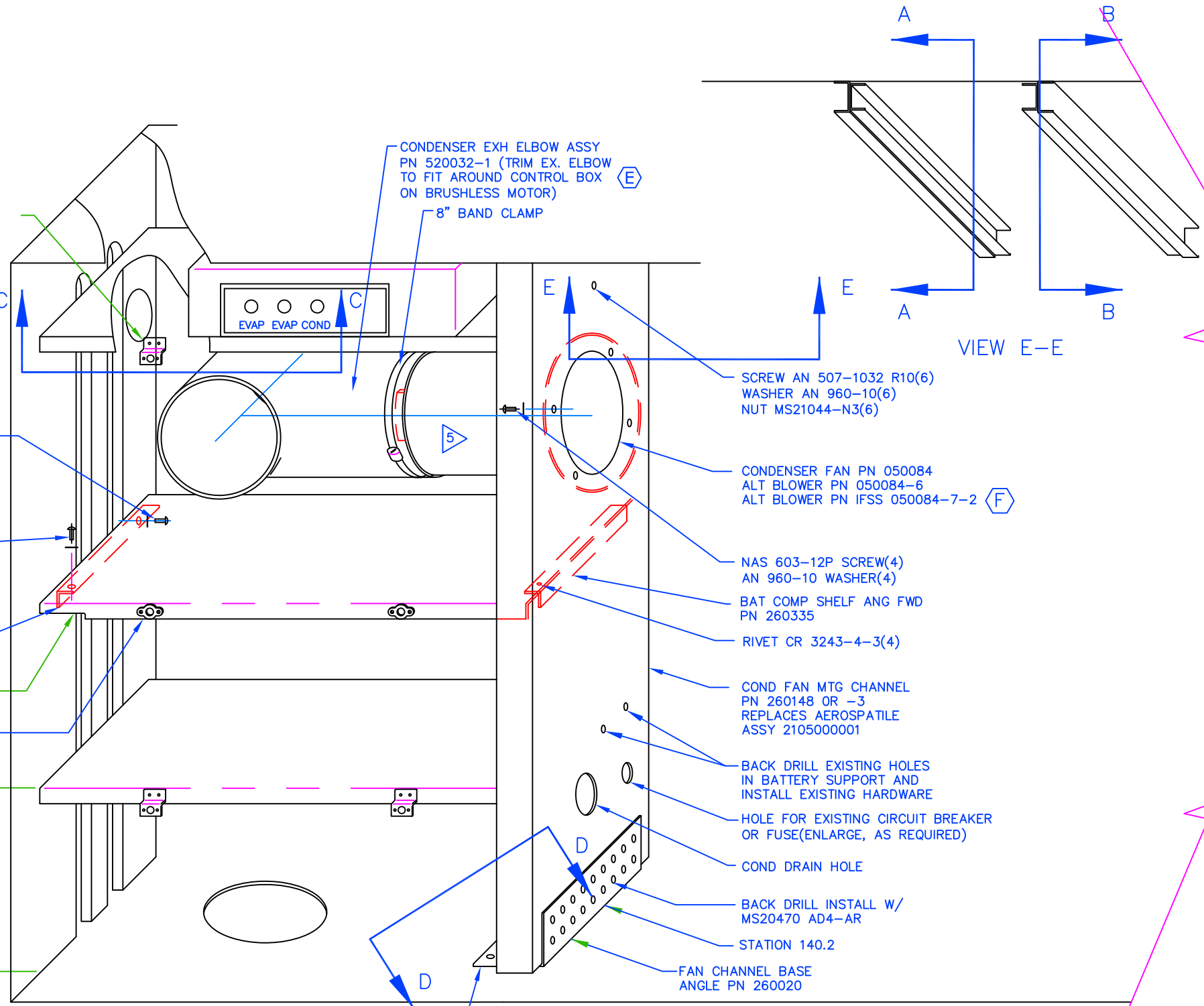
AN3-3A(5)  
AN960-10(10)  
AN365-1032(5)  
ALT NUT MS21044-N3

BAT COMP SHELF ANG AFT  
PN 260335

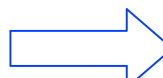
BAT COMP SHELF PN 260333

RELOCATE FASTENERS TO MATCH COMPARTMENT COVER (TYP 2 PL)

16.5 FLOOR



RIGHT BAGGAGE COMPARTMENT



FWD

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	03/27/91	ADDED CP102 AND CP103, INTEGRATED FLIGHT WAS CONSOLIDATED AIRE, TITLE BLOCK WAS CAS, IS IFS.	-	-
B	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS 350; SHEET NUMBER WAS 1 OF 3, ADDED NOTE	-	-
C	04/12/02	COMPUTERIZED, REVISED TITLE BLOCK.	-	-
D	01/03/07	CORRECTED DRAWING No. REF. WAS 8-AS350, SHEET 1 OF 2. IS 8-11-AS350 SHEET 1 OF 2.	-	-
E	06/30/08	ADDED NOTE 5. REVISED TITLE BLOCK. ADDED TRIM ANNOTATION TO COND. ELBOW ASSY. ADDED INTERCHANGEABLE BLOWERS.	-	JTYE
F	03/04/10	DELETED BLOWER P/N: IFSS 050084-7 WITH BLOWER P/N: IFSS 050084-7-2	-	JM
G	04/08/10	DELETED BLOWER P/N: IFSS 050084-7-1 WITH BLOWER P/N: IFSS 050084-7-3	-	JM

INTERCHANGEABLE 7" BLOWERS

050084-1
050084-4
050084-6
050084-7
610000 BRUSHLESS
620000 BRUSHLESS
630000
640000
IFSS 050084-1
IFSS 050084-4
IFSS 050084-6
IFSS 050084-6-1
IFSS 050084-7 BRUSHLESS
IFSS 050084-7-1 BRUSHLESS
IFSS 050084-7-2 BRUSHLESS
IFSS 050084-7-3 BRUSHLESS

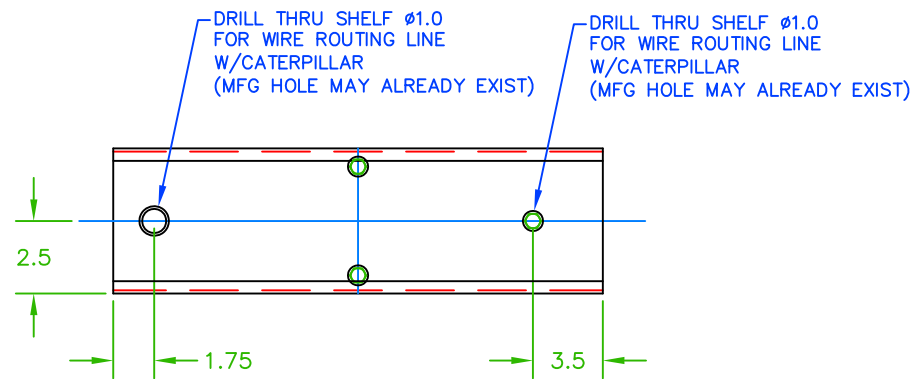


TITLE: CONDENSER INSTALL

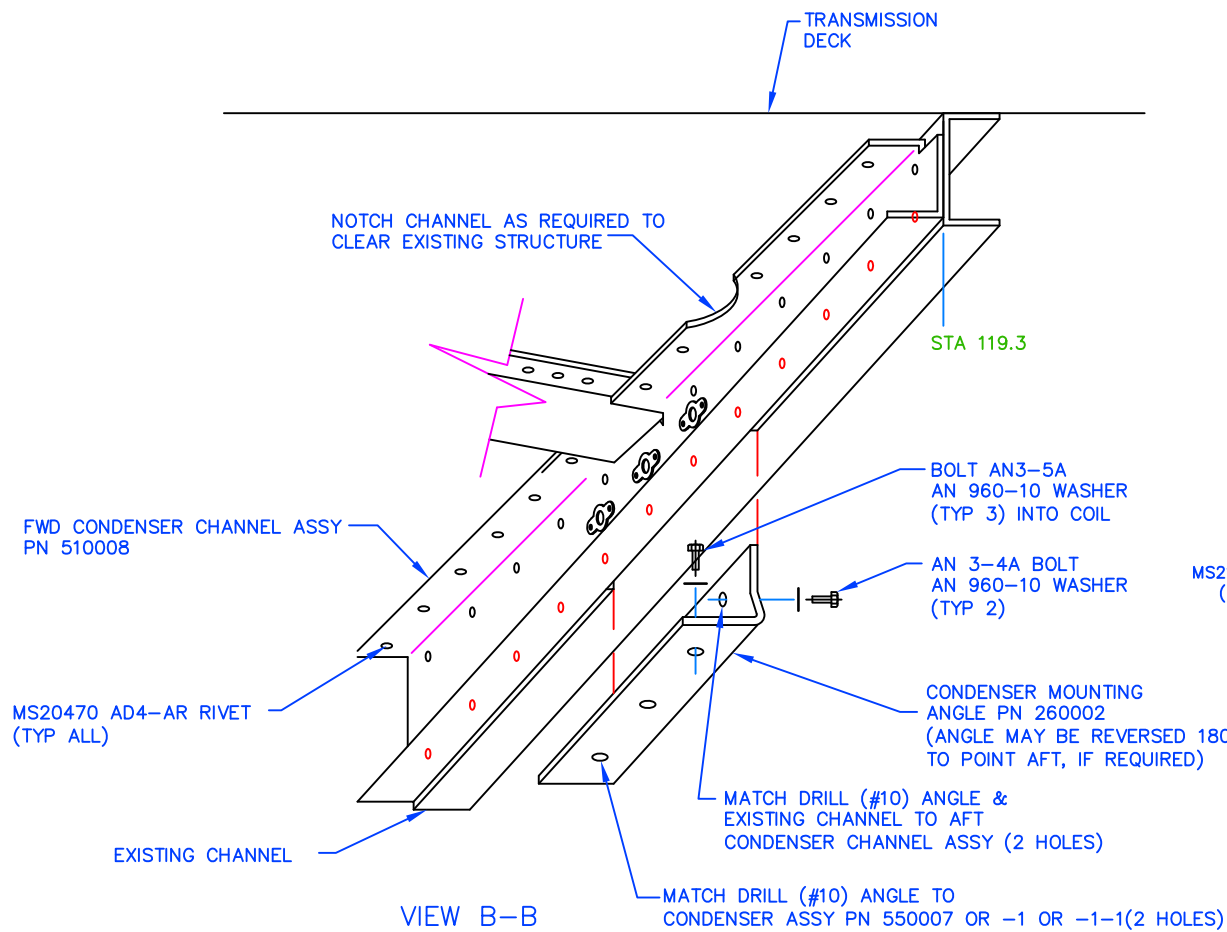
DRAWN BY: BRP	DATE: 05/25/95	REV G	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AS350			DWG No. 7-2-AS350	



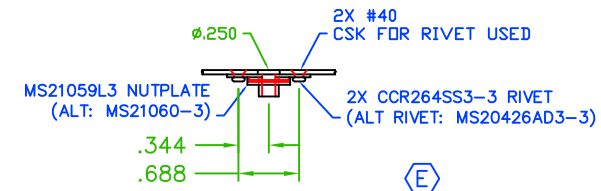
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	05/10/99	ADDED ALT BLOWER PN:050084-6	-	-
B	06/28/00	ADDED ALT BLOWER PN 050084-7	-	-
C	08/16/00	REVISED DRAWING NUMBER WAS 7-AS350 SHEET No. WAS 1 OF 2	-	-
D	04/17/02	COMPUTERIZED, REVISED TITLE BLOCK	-	-
E	06/30/08	ADDED NOTATION FOR NUTPLATE INSTALL AND DETAIL "A" REVISED TITLE BLOCK, SHEETS 1 AND 2 OF 2 NOW IN ONE CAD FILE	-	JTYE
G	04/08/10	SEE SHEET 1 FOR REVISION	-	JM



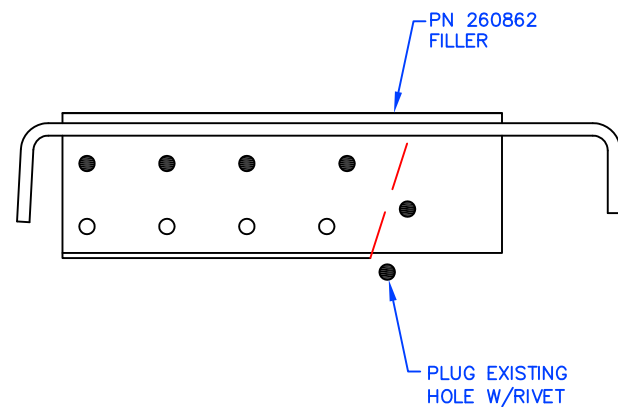
VIEW C-C  
LOOKING UP



VIEW B-B

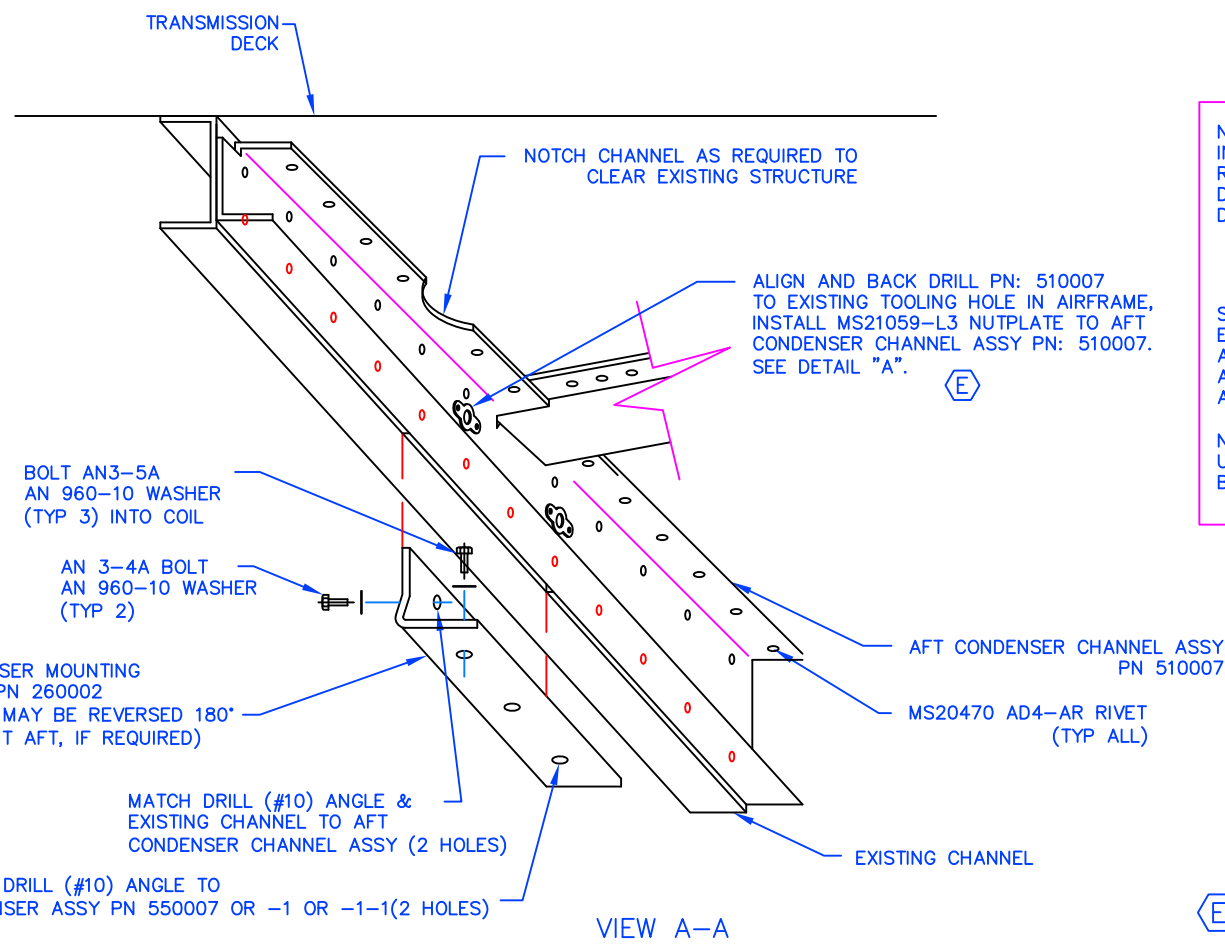


DETAIL "A"  
TYPICAL NUTPLATE INSTALLATION  
NOT TO SCALE



VIEW D-D  
LOOKING DOWN

- CR3243-4-3 RIVET DRILL THRU NEW PART FROM ABOVE USE #27 DRILL
- CR3243-4-3 RIVET BACK DRILL
- #27 HOLE THRU EXISTING HOLE INTO NEW PART
- CR3243-4-4 BACK DRILL #27 THRU EXISTING HOLE



VIEW A-A

NOTE:  
INTERCHANGABILITY BETWEEN MS20470AD RIVETS AND CR3243 RIVETS ALLOWABLE. DIAMETER AND LENGTH MAY BE DETERMINED BY INSTALLER.

SINGLE CONDENSER BLOWER ENVIRO SYSTEMS INC  
ALT BLOWER: PN 050084-6  
ALT BLOWER: PN 050084-7  
AIR MOVERS, LLC

NOTE A:  
USE CAUTION TO AVOID DAMAGE TO EXISTING WIRE BUNDLE WHEN INSTALLING SHELF



TITLE: CONDENSER INSTALL				
DRAWN BY: BRP	DATE: 05/25/95	REV G	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AS350			DWG No. 7-2-AS350	





Engineering Change Order

ECO No.  
0289

Drawing Number	Revision	Drawing Title
7-2-AS350	G	Condenser Install

Reason for Change: To add alternate washer for blower installation. To removed the deletion of the blowers deleted by Rev. F & Rev. G for field maintainability. Added blowers IFSS 050084-7-2 & IFSS 050084-7-3, description in Rev. F & Rev. G should not be "with blowers", should show "added blowers".

Description of Change:

1. On sheet 1 of 2, added alternate washer: NAS620-10, Qty. (4) required for IFSS 050084-7-2 & IFSS 050084-7-3.

Was:

NAS 603-12P SCREW(4)  
AN 960-10 WASHER(4)

Is:

NAS 603-12P SCREW(4)  
AN 960-10 WASHER(4)  
ALT: NAS620-10 WASHER(4) — REQUIRED WITH  
IFSS 050084-7-2,  
BAT COMP SHELF ANG FWD IFSS 050084-7-3

2. On sheet 1 of 2, removed lines for deleting IFSS 050084-7 brushless & IFSS 050084-7-1 brushless.

Was:

IFSS 050084-6-1	
<del>IFSS 050084-7 BRUSHLESS</del>	(F)
<del>IFSS 050084-7-1 BRUSHLESS</del>	(G)
IFSS 050084-7-2 BRUSHLESS	(F)
IFSS 050084-7-3 BRUSHLESS	(G)

Is:

IFSS 050084-6-1	
IFSS 050084-7 BRUSHLESS	(F)
IFSS 050084-7-1 BRUSHLESS	(G)
IFSS 050084-7-2 BRUSHLESS	(F)
IFSS 050084-7-3 BRUSHLESS	(G)

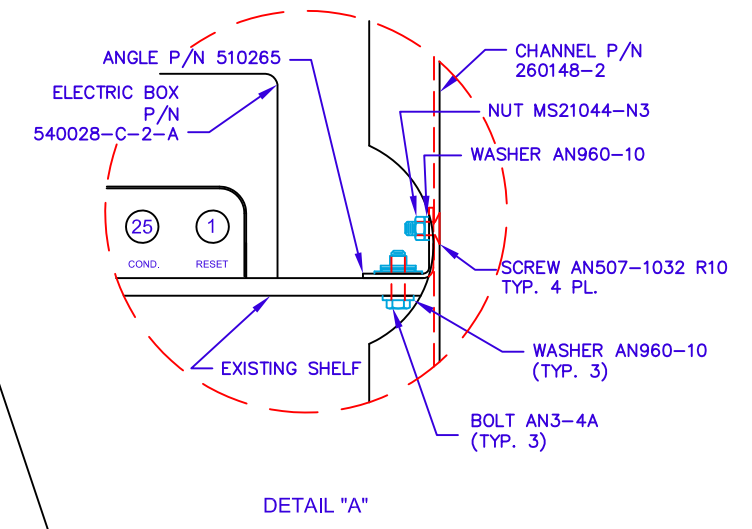
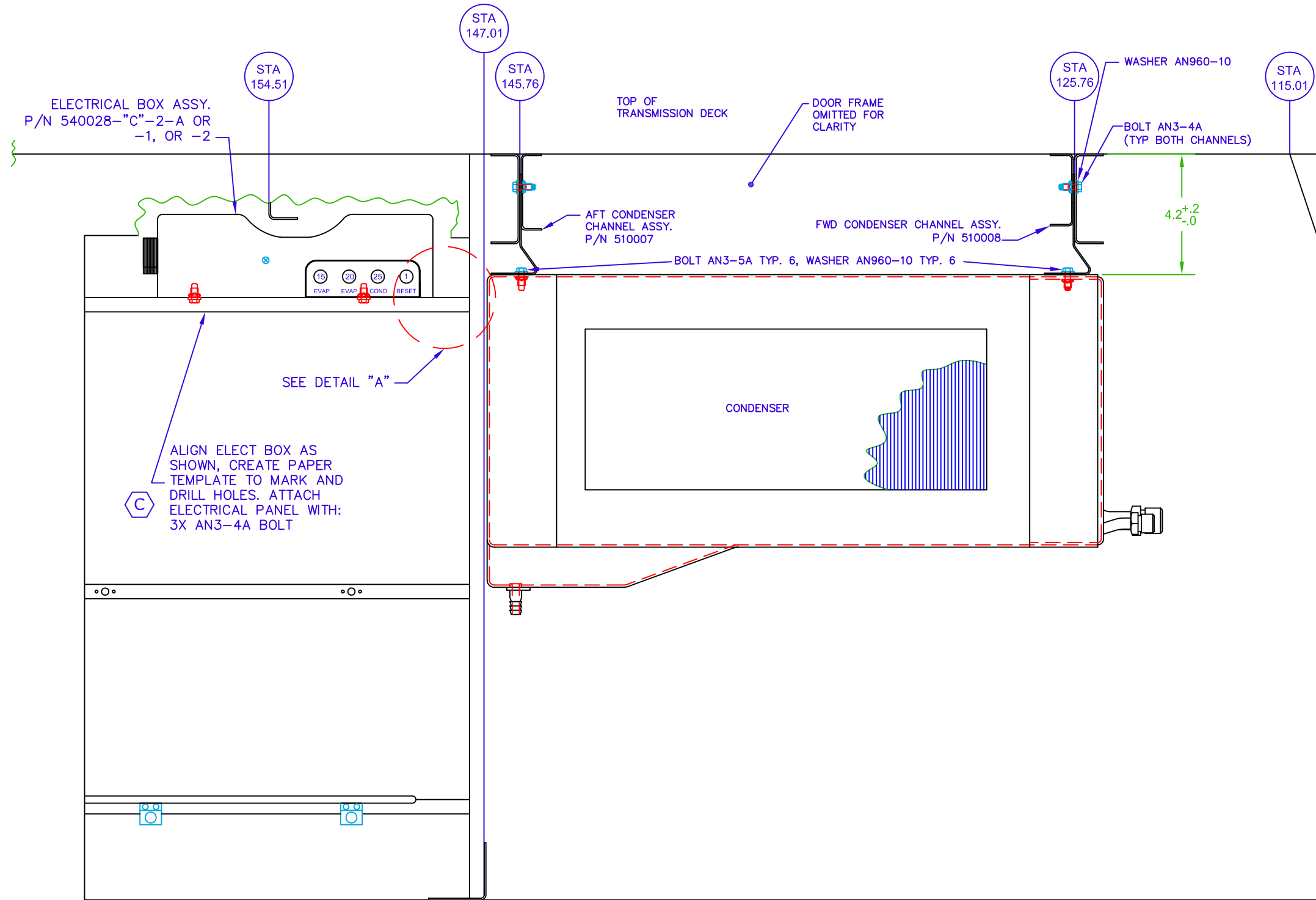
Sheet 2 of 2 had no changes.

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eijman</i>	ERB02	01/12/11	
<i>Scott</i>	MRB06	01/12/11	
<i>Scott</i>	MRB05	01/12/11	

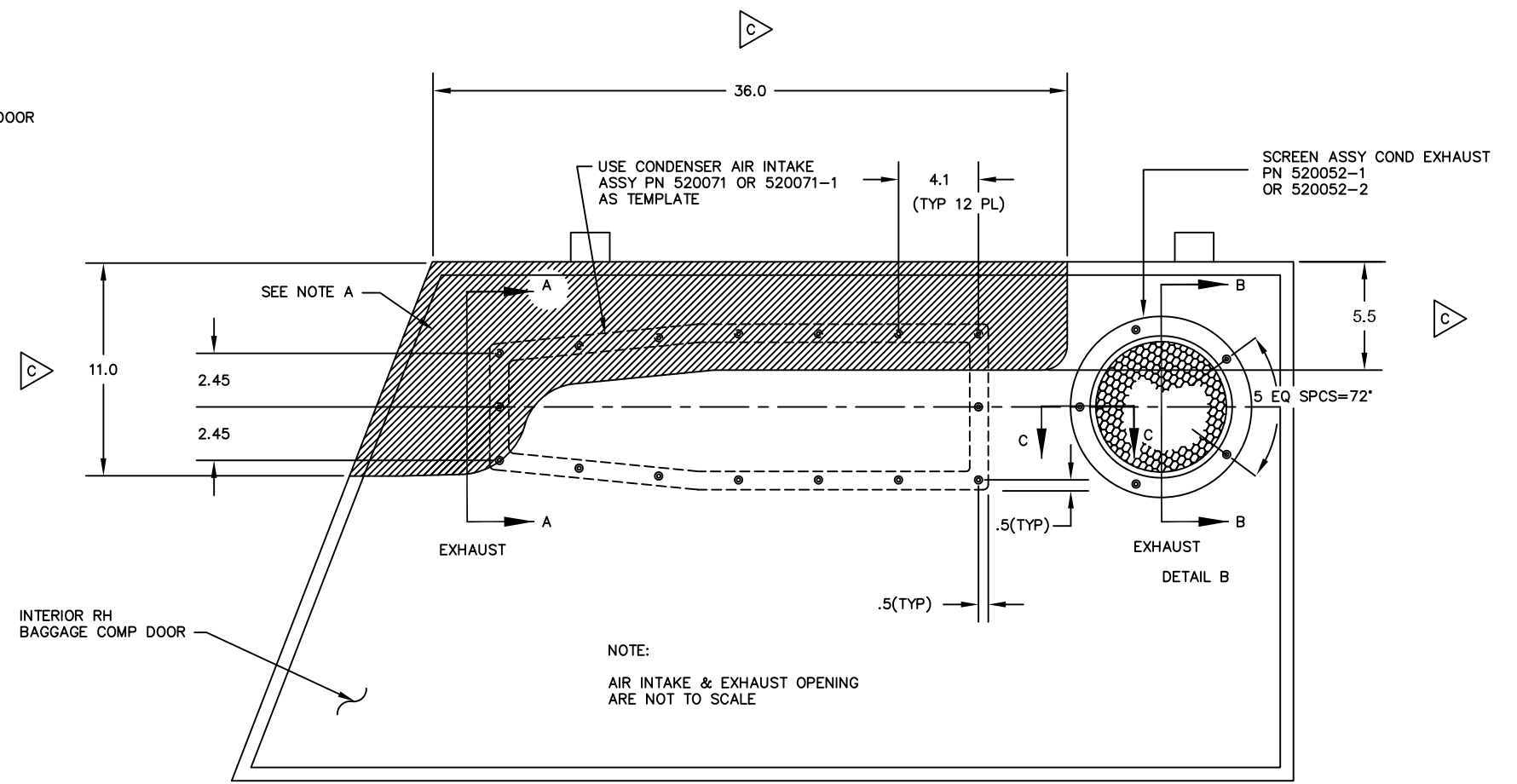
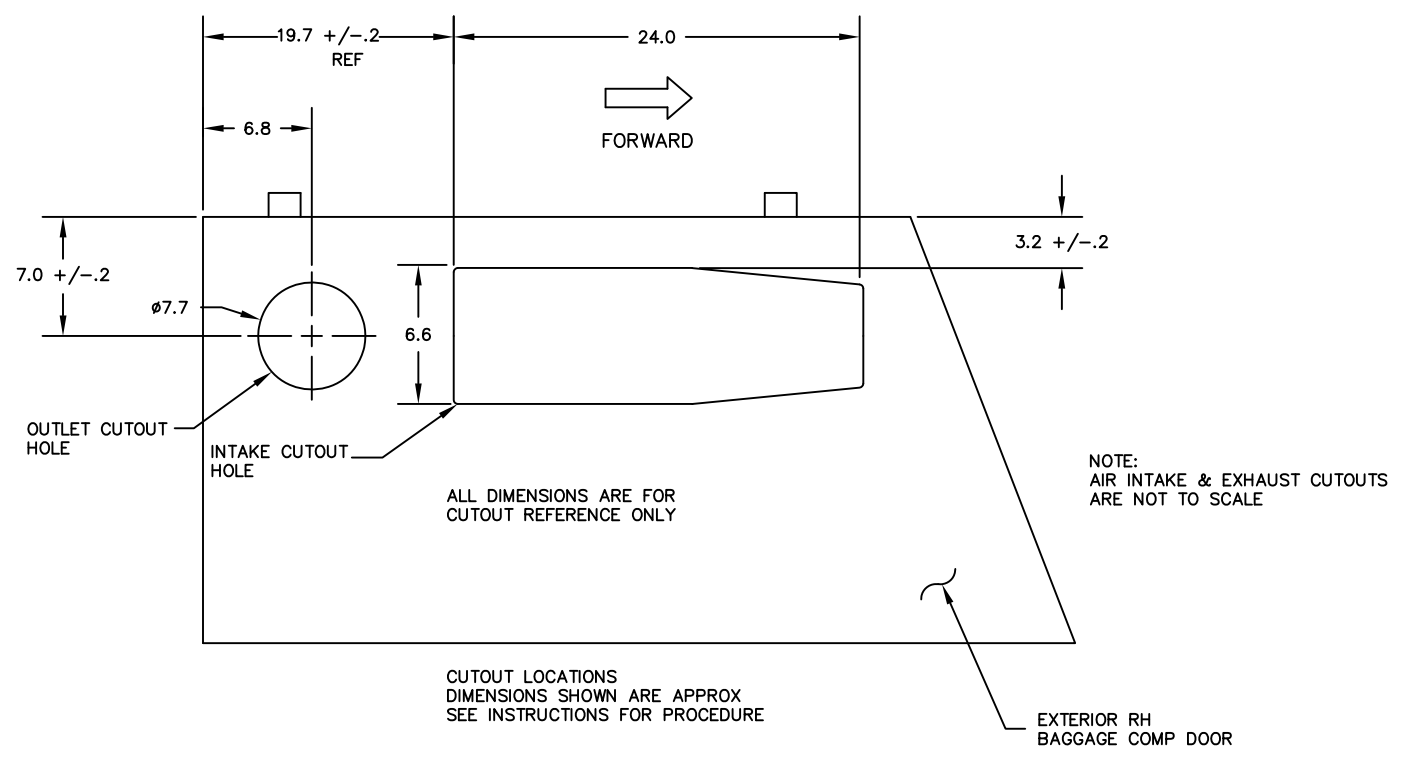
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/07/01	REVISED DRAWING NUMBER. WAS 7-AS350, WAS SHEET 2 OF 2.	-	-
B	03/09/05	COMPUTERIZED, REVISED TITLE BLOCK.	-	JTYE
C	01/03/07	ADDED ELECTRIC BOX DRILLING AND ATTACHMENT NOTATION. REVISED TITLE BLOCK.	-	JTYE



TITLE: CONDENSER INSTALL				
DRAWN BY: K.A.	DATE: 05/25/95	REV C	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 7-11-AS350	

C

REV.	DESCRIPTION	DATE	APPV.	E
A	REVISED DRAWING NUMBER, WAS 8-AS 350; SHEET NUMBER WAS 1 OF 2.	08/16/00		
B	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG.	04/19/02		
C	CHANGED NOTE TO ALLOW 520071 AND 520071-1 TO BE UTILIZED WITH OR WITHOUT SLIDING DOOR	5/7/02		
D	REDRAWN AND REDIMENSIONED FOR CLARITY. REVISED TITLE BLOCK.	05/16/02		
E	CORRECTED NOTE B 2 TO REFLECT PN: 520071-1. REVISED NOTATION. REVISED TITLE BLOCK.	11/28/07		



NOTE A:

- 1 REMOVE HINGE HARDWARE FROM INSIDE DOOR.
- 2 LAY UP 2 LAYERS OF 100Z FIBERGLASS CLOTH WITH RESIN IN AREA SHOWN ON INSIDE ONLY
- 3 ALLOW FIBERGLASS TO CURE
- 4 REINSTALL HARDWARE

NOTE B:

- 1 TRIM CONDENSER AIR INTAKE OPENING, FORWARD, UP & DOWN AS REQUIRED TO ACCEPT AIR INTAKE ASSY PN 520071 OR 520071-1. (E)
- 2 TRIM AIR INTAKE ASSY ON INSIDE TO FIT INSIDE CONDENSER AIR INLET OPENING

NOTE C:

THESE DIMENSIONS REFERENCE FIBERGLASS REINFORCEMENT AREA.

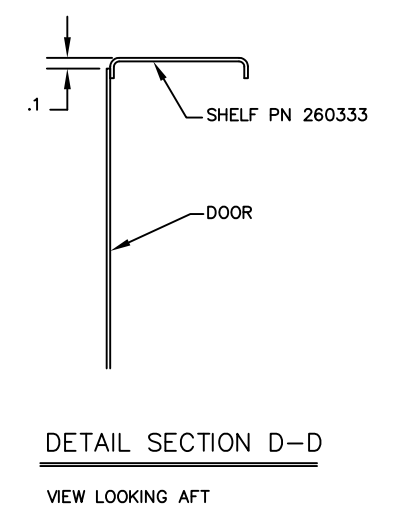
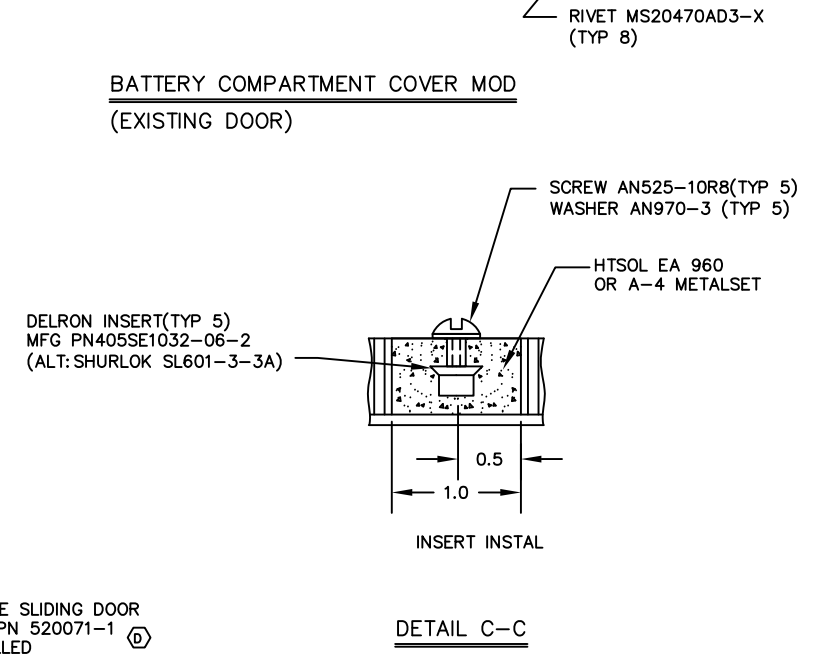
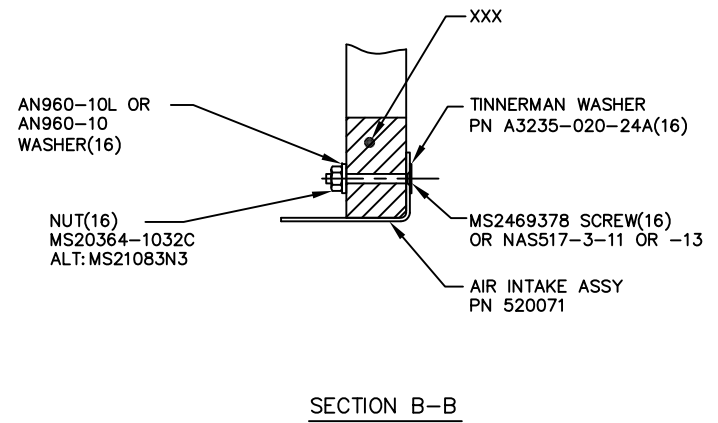
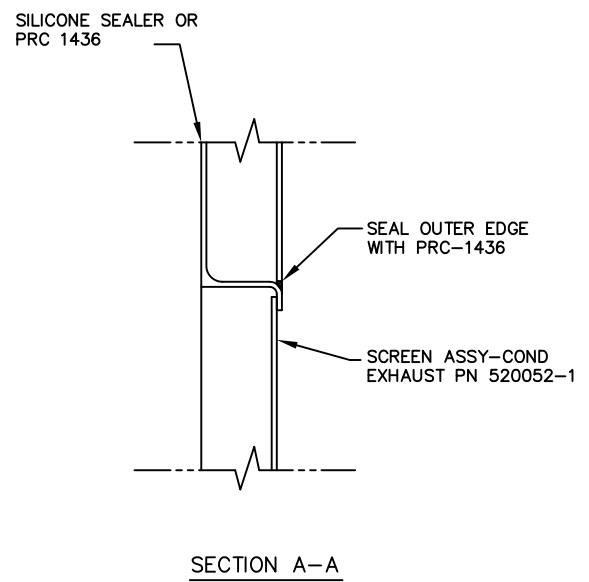
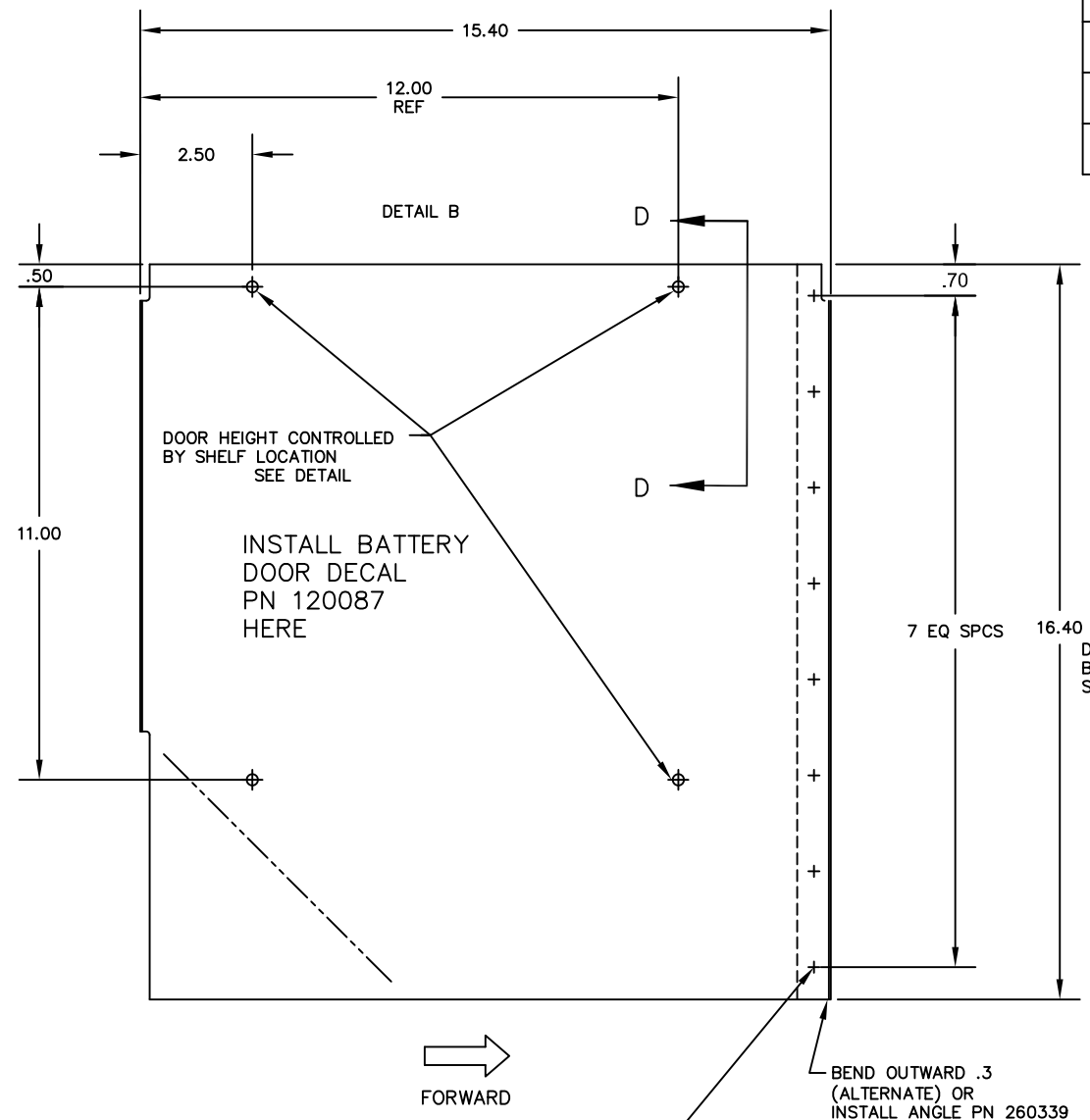
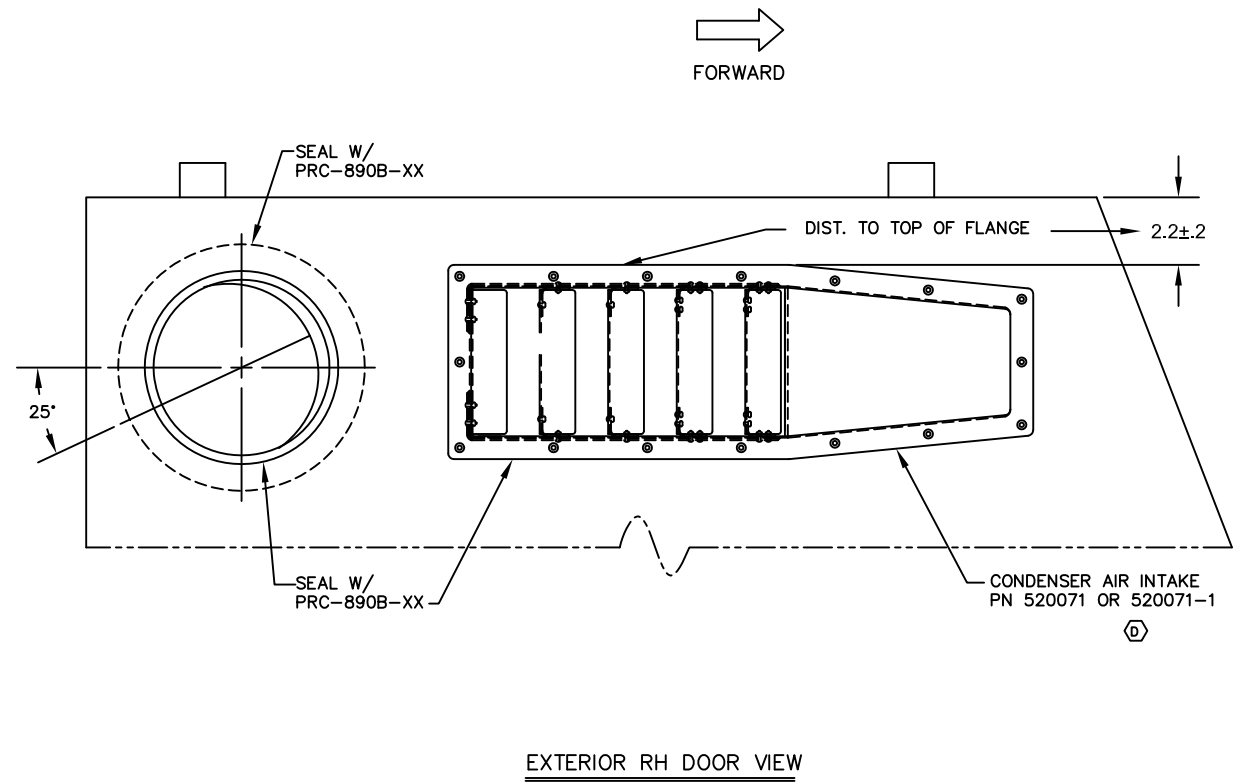
NOTE:

IF RIGHT SIDE SLIDING DOOR IS INSTALLED PN:520071-1 MUST BE INSTALLED FOR CLEARANCE. (E)(D)

(E)(D)

<b>INTEGRATED FLIGHT SYSTEMS</b>				
DATE 11/15/95	APPROVED BY	SHEET 1 OF 2	DRAWING SIZE	DRAWN BY K.A.
SCALE NTS				
TITLE BAGGAGE COMPARTMENT MOD.				
APPLICATION AS 350		DRAWING NO. 8-2-AS350		

REV.	DESCRIPTION	DATE	APPV.
A	REVISED DRAWING NUMBER, WAS 8-AS 350; SHEET NUMBER WAS 1 OF 2.	08/16/00	
B	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG.	4/16/02	
C	REVISED TITLE BLOCK, REMOVED PAG.	06/15/03	
D	ADDED CONDENSER AIR INTAKE ASSEMBLY PN: 520071-1. REVISED NOTATION. REVISED TITLE BLOCK.	11/28/07	

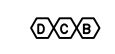


NOTE A:  
1 REMOVE HINGE HARDWARE FROM INSIDE DOOR.  
2 LAY UP 2 LAYERS OF 100Z FIBERGLASS CLOTH WITH RESIN IN AREA SHOWN ON INSIDE ONLY  
3 ALLOW FIBERGLASS TO CURE  
4 REINSTALL HARDWARE

NOTE B:  
1 TRIM CONDENSER AIR INTAKE OPENING, FORWARD, UP & DOWN AS REQUIRED TO ACCEPT AIR INTAKE ASSY PN 520071 OR 520071-1.  
2 TRIM AIR INTAKE ASSY ON INSIDE TO FIT INSIDE CONDENSER AIR INLET OPENING

NOTE:  
WHEN RIGHT SIDE SLIDING DOOR IS INSTALLED, PN 520071-1 MUST BE INSTALLED TO ENSURE CLEARANCE

<b>INTEGRATED FLIGHT SYSTEMS</b>				
DATE 04-16-02	APPROVED BY	SHEET 2 OF 2	DRAWING SIZE	DRAWN BY BT
SCALE NONE				
TITLE BAGGAGE COMPARTMENT MOD.				
APPLICATION AS 350			DRAWING NO. 8-2-AS350	





# Engineering Change Order

ECO No.  
0290

Drawing Number	Revision	Drawing Title
8-2-AS350	D	Baggage Compartment Mod.

Reason for Change: To restore original notations from hand drawing to C.A.D. drawing.

Description of Change:

Dimension

Was:

Is:

CS

16.40

DOOR HEIGHT CONTROLLED  
BY SHELF LOCATION  
SEE DETAIL

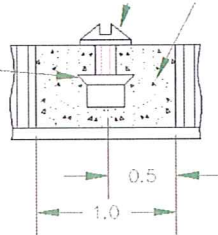
16.40 REF  
DOOR HEIGHT CONTROLLED  
BY SHELF LOCATION  
SEE DETAIL

Detail

Was:

Is:

DELRON INSERT(TYP 5)  
MFG PN405SE1032-06-2  
(ALT: SHURLOK SL601-3-3A)

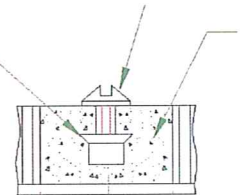


INSERT INSTALL

DETAIL C-C

DELRON INSERT(TYP 5)  
MFG PN 405 SE 1032-06-2  
(ALT: SHURLOK SL601-3-3A)

ALT: SECTION C-C  
USE SAME SCREW, NUT &  
WASHERS AS SHOWN IN SECTION  
A-A, (TYP. 5 PLC'S)



INSERT INSTALL

C-C

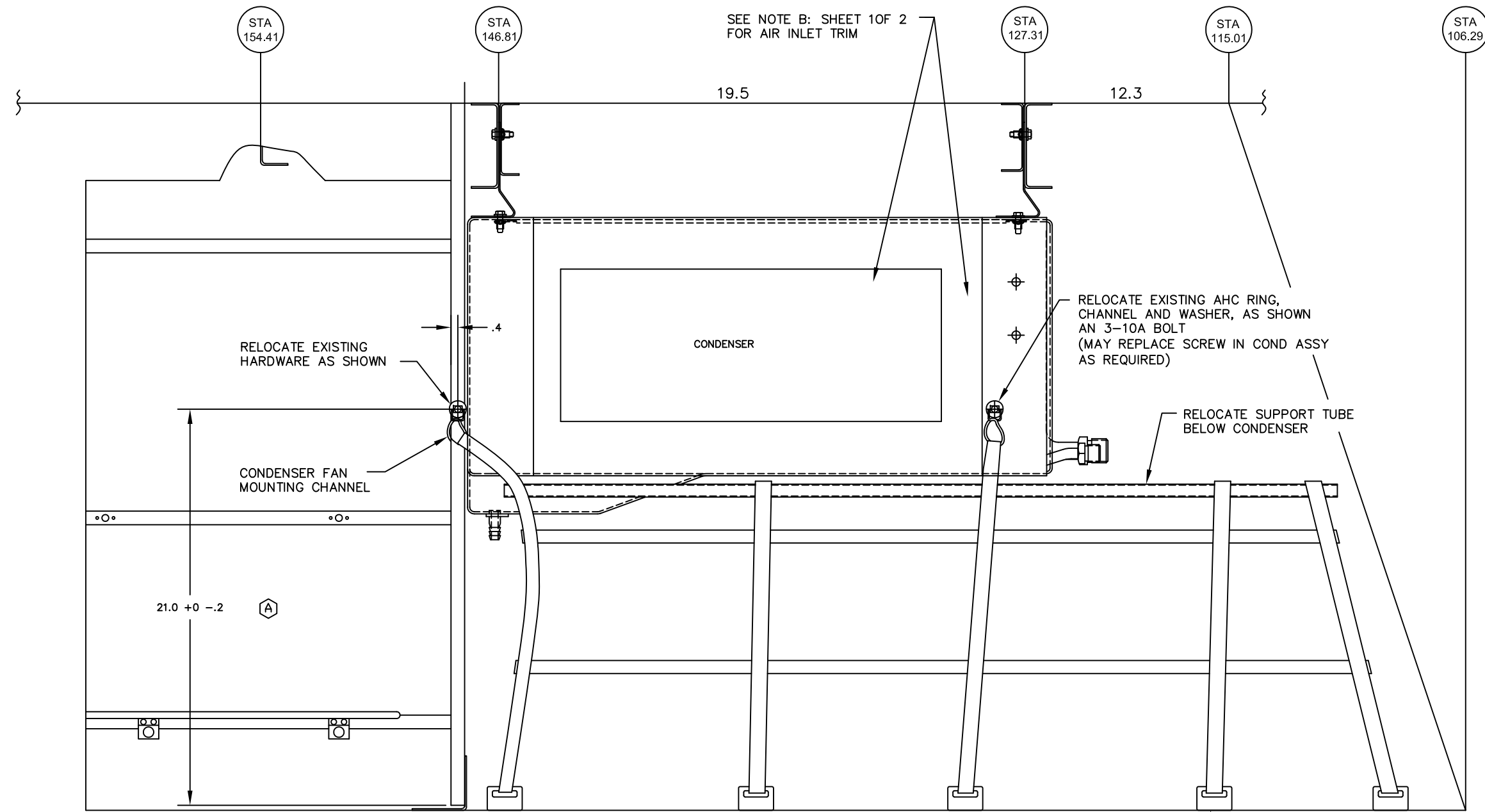
SLIDING DOOR  
N 520071-1  
FD

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eiferman</i>	ERB02	02/09/10	
<i>Scott [unclear]</i>	MRB06	02/09/10	
<i>Scott [unclear]</i>	MRB05	02/09/10	

REV.	DESCRIPTION	DATE	APPV.
A	WAS 22.4 ± .2 IS 21.0 +0 -.2 CHANGED ALL STA'S TITLE BLOCK WAS CAS, IS IFS	03/27/91	
B	REVISED DRAWING NUMBER WAS 8-AS 350; SHEET NUMBER WAS 2 OF 2	08/16/01	
C	COMPUTERIZED, REVISED TITLE BLOCK.	04/17/02	
D	REVISED TITLE BLOCK.	09/09/09	



SEE NOTE B: SHEET 10F 2  
FOR AIR INLET TRIM

RELOCATE EXISTING AHC RING,  
CHANNEL AND WASHER, AS SHOWN  
AN 3-10A BOLT  
(MAY REPLACE SCREW IN COND ASSY  
AS REQUIRED)

RELOCATE EXISTING  
HARDWARE AS SHOWN

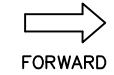
CONDENSER FAN  
MOUNTING CHANNEL

CONDENSER

RELOCATE SUPPORT TUBE  
BELOW CONDENSER

21.0 +0 -.2

A



NOTE:  
SHORT CARGO NET TO ACCOMODATE  
A/C INSTALL BY ELIMINATING LOWER  
MOST HORIZONTAL STRAP AND  
RELOCATING HARDWARE, AS SHOWN

CARGO NET MODIFICATION  
AS 350  
RIGHT SIDE LOOKING INBOARD

INTEGRATED FLIGHT SYSTEMS

DATE: 05/30/85	APPROVED BY:	SHEET: 1 OF 1	SIZE: D	DRAWN BY: BRP
SCALE: 1/8				

TITLE:  
**BAGGAGE COMPARTMENT MOD**

APPLICATION: AS350      DRAWING NUMBER: 8-11-AS350



## **Step 7**

# **Installation of Forward Evaporator**

Integrated Flight Systems  
 INSTALLATION OF FORWARD EVAPORATOR – AS350 Air Conditioning

## Installation of Forward Evaporator

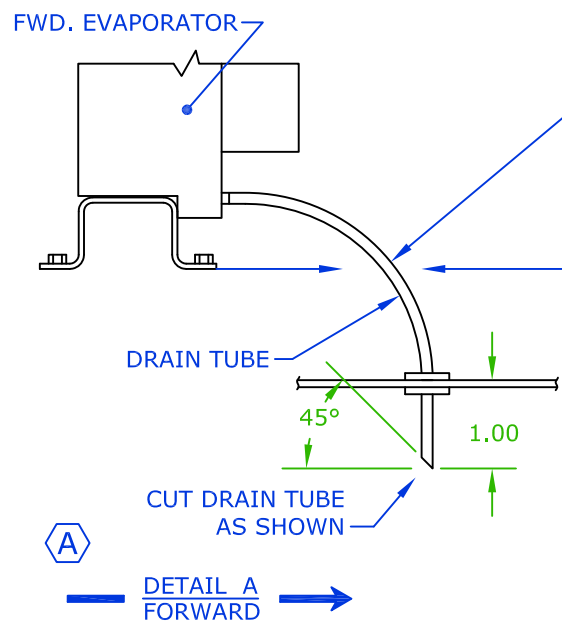
STEP	PROCEDURE	MECH	INSP
7.1	Relocate NR digital indicator. Higher 12” min., and aft of pitot static lines, using assisting hardware. See note on drawing 4-21-AS350.		
7.2	Relocate warning horn up and forward as required.		
7.3	Position forward evaporator assembly, P/N 560025-O, as shown in drawing 4-21-AS350. Mark rivets to be drilled out and existing bolts that will be used to mount evaporator. Also mark location on inboard forward mount hole on floor as shown in note on drawing 4-21-AS350.		
7.4	Remove and drill out rivets and marked hole. Install nut plate on evaporator.		
7.5	Position doubler P/N 260373-1 as shown in drawing 4-21-AS350, drill and install as shown. Cut out center. Line hole with Caterpillar, bond to edge of metal.		
7.6	Do not install evaporator until Freon lines are connected.		
7.7	Install drain line from the evaporator out through the cabin floor. The existing hole normally found in the aircraft skin (right forward side) can be utilized. Cutting of the aircraft skin will not usually be required. “IF” no vacant hole is found, locate and drill a hole according to the detail “A” on drawing 4-21-AS350. Secure drain line and cut off at a negative angle.		
7.8	When connecting Freon lines, make sure you install sensing bulb on #10 line. Wrap cork tape around fittings. See drawing 4-21 AS350 “Expansion Valve Detail”. After all lines are attached install Fwd Evaporator with hardware per drawing 4-21-AS350.		
7.9	For mounting forward outlet assemblies, make a template marking the shape of the shape of the housing assembly and 3 mount holes. Position template on glare shield as shown in drawing 5-1-AS350. Drill hole and install with hardware as shown, P/N 500010-1 and P/N 500011-1.		



Integrated Flight Systems  
INSTALLATION OF FORWARD EVAPORATOR – AS350 Air Conditioning

**Air Distribution**

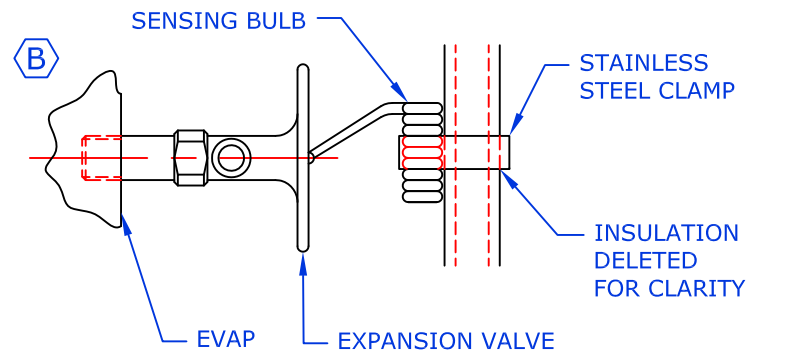
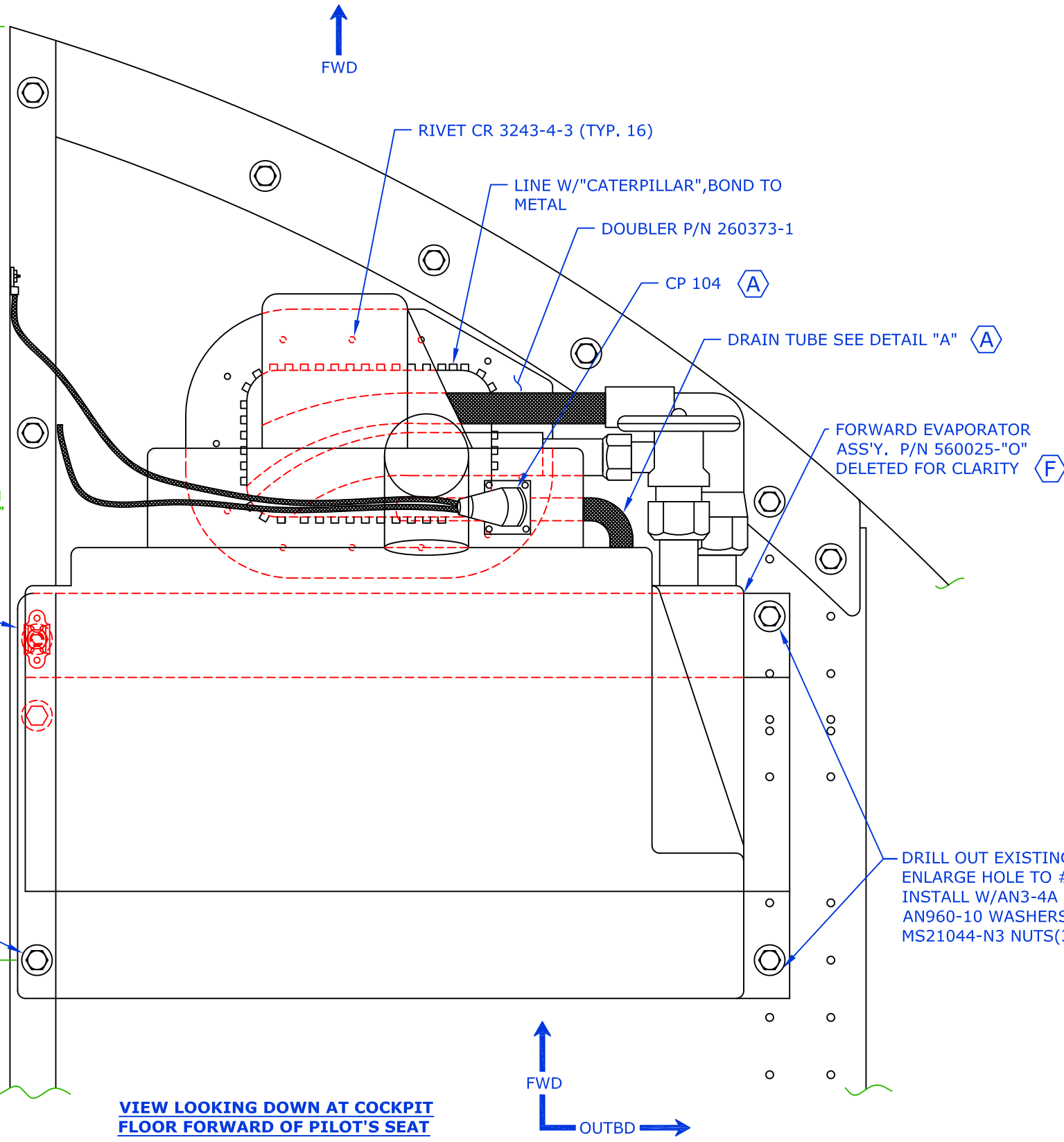
STEP	PROCEDURE	MECH	INSP
7.9 Cont.	<p>After installation of air outlet assemblies, attach 2 ½” flex hoses from the assemblies to the evaporator. The hose to the right hand air outlet is very straight forward.</p> <p>The installation of the left side flexible air hose can vary according to the avionics package installed. In some aircraft, it is quite simple to route the hose aft of the radio stack through existing holes in the vertical sheet metal aircraft parts. In other aircraft, due to the type of radios installed, it will be necessary to cut a round hole in the vertical aircraft sheet metal components and route the flex hose through this hole after lining the edges with Caterpillar for protection against chafing of the hose.</p>		



NOTE:  
IF EXISTING GROMMET IS NOT AVAILABLE, INSTALL NEW GROMMET MS35489-135 2" AFT OF EXISTING FOR A/C DRAIN.

NOTE:  
RELOCATE WARNING HORN UP & FORWARD, AS REQUIRED

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	05/27/91	REPOSITIONED EVAPORATOR AND LINES. ADDED DETAIL "A" AND NOTES. TITLE BLOCK WAS "CAS" IS NOW "IFS". WAS 2 OF 2, IS NOW 3 OF 3	MD	
B	11/15/99	ADDED NUTPLATE AND NOTE.	JHK	
C	01/25/99	SEE NR NOTE.	JHK	
D	08/16/00	REVISED DRAWING NUMBER, WAS 4-AS350 SHEET 3 OF 3. IS NOW 4-21-AS350	JHK	
E	04/12/02	COMPUTERIZED, CHANGED TITLE BLOCK		JDB
F	01/03/07	CORRECTED FWD EVAP PN: 560025-1-O TO 560025-O. REVISED TITLE BLOCK.	IFS	JTYE



EXPANSION VALVE DETAIL (B)  
SCALE: NONE  
INSULATE SENSION BULB BEFORE CHARGING WITH REFRIGERENT.

INSTALL EVAP TEMPORALLY AND LOCATE FWD INBOARD NUTPLATE LOCATION. REMOVE EVAP AND INSTALL NUTPLATE MS21059L3 W/2 EA. RIVET CCR264SS3-3

USE 5TH BOLT FROM CORNER 12"

INSTALL W/EXISTING AIRCRAFT FASTENER

NOTE: B3 ONLY  
RELOCATE NR DIGITAL INDICATOR MOUNTED NEAR FLOOR, ON RIGHT SIDE OF CONSOLE PANEL UP 12.0" MIN. FROM FLOOR AND AFT OF PITOT STATIC LINES USING EXISTING HARDWARE. REROUTE NR WIRE TO ACCOMODATE NEW NR LOCATION.

**VIEW LOOKING DOWN AT COCKPIT FLOOR FORWARD OF PILOT'S SEAT**

**EXTREMELY IMPORTANT !!**

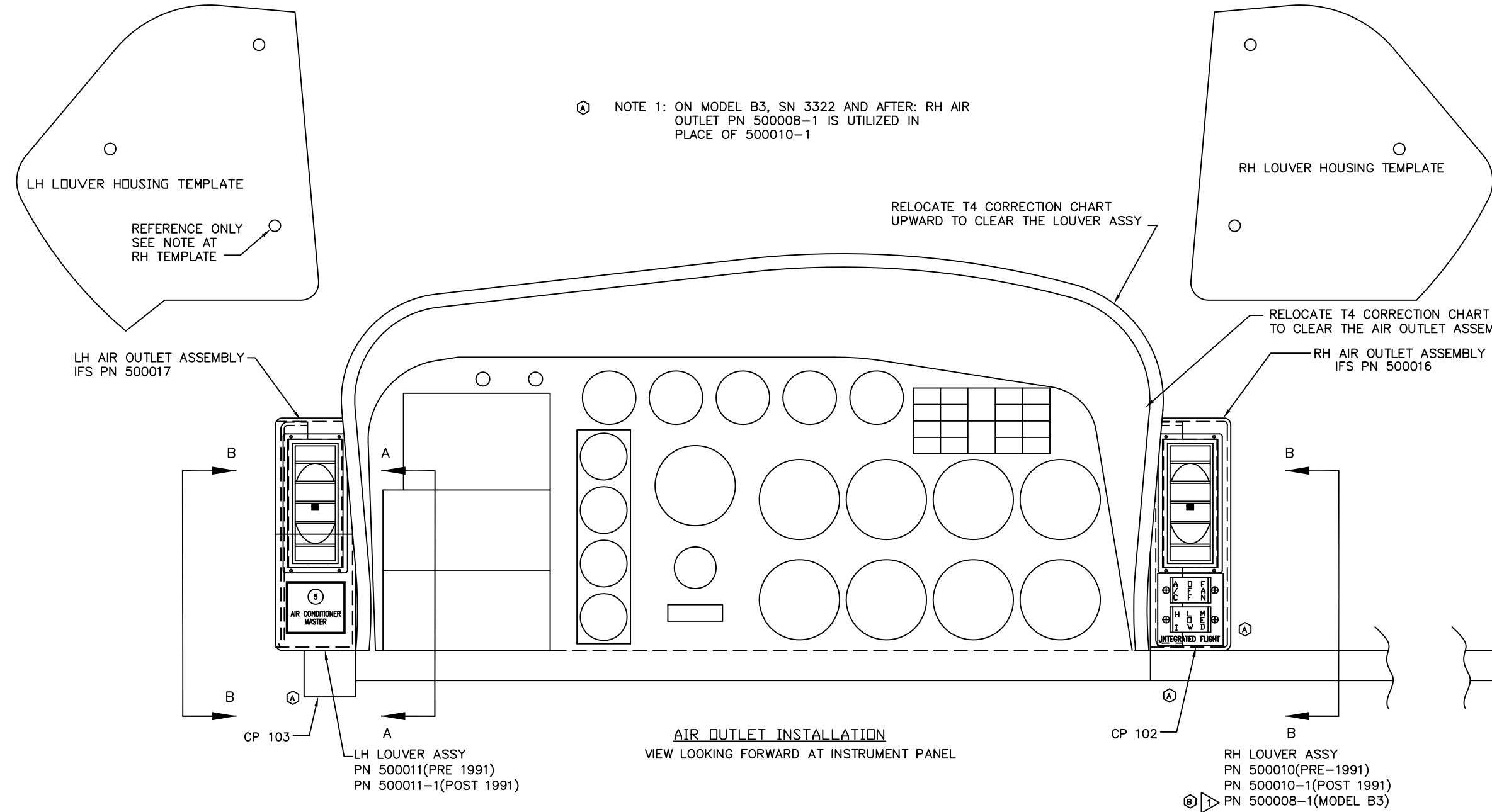
FAILURE TO SECURE EXPANSION VALVE SENSING BULB, TIGHTLY, TO THE RETURN LINE HOSE FITTING (#10) WITH A STAINLESS STEEL CLAMP (AND INSULATE SENSING BULB & LINE) WILL DRAMATICALLY DECREASE THE PERFORMANCE OF THE AFT EVAPORATOR (NOT FORWARD)



TITLE: FORWARD EVAPORATOR INSTALL				
DRAWN BY: JEL	DATE: 06/20/85	REV F	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 4-21-AS350	

REV.	DESCRIPTION	DATE	APPV.	D
A	ADDED CP102 AND C0103 INTEGRATED FLIGHT WAS CONSOLIDATED AIR TITLE BLOCK WAS CAS, IS IFS	03/27/91		
B	REVISED DRAWING NUMBER, WAS 5-AS 350; SHEET NUMBER WAS 1 OF 3, ADDED NOTE	08/16/00		
C	COMPUTERIZED, REVISED TITLE BLOCK.	04/12/02		
D	ADDED CONFIGURATION NOTATION FOR CLARITY. REVISED TITLE BLOCK.	12/29/08		

- REFERENCE ONLY(3 PLCS)
- 1 COPY TEMPLATE
  - 2 TAPE TEMPLATE INSIDE ACTUAL PART(BOTH LH & RH)
  - 3 LOCATE HOLES IN COPY TO ACTUAL HOLES IN CLIP NUT, USE ACTUAL HOLES IN PART TO LOCATE & MOUNT COMPONENTS



NOTE 1: ON MODEL B3, SN 3322 AND AFTER: RH AIR OUTLET PN 500008-1 IS UTILIZED IN PLACE OF 500010-1

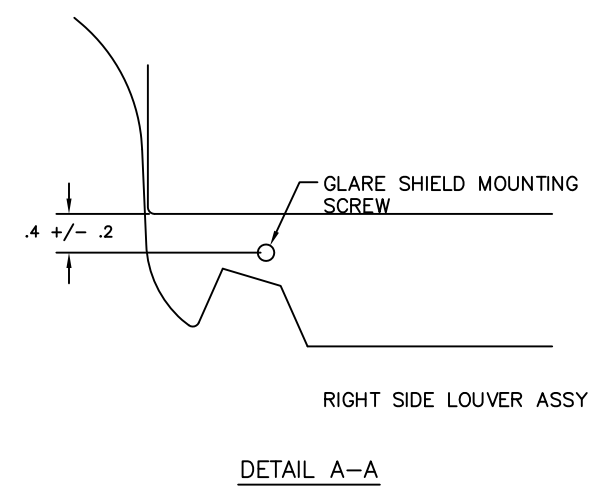
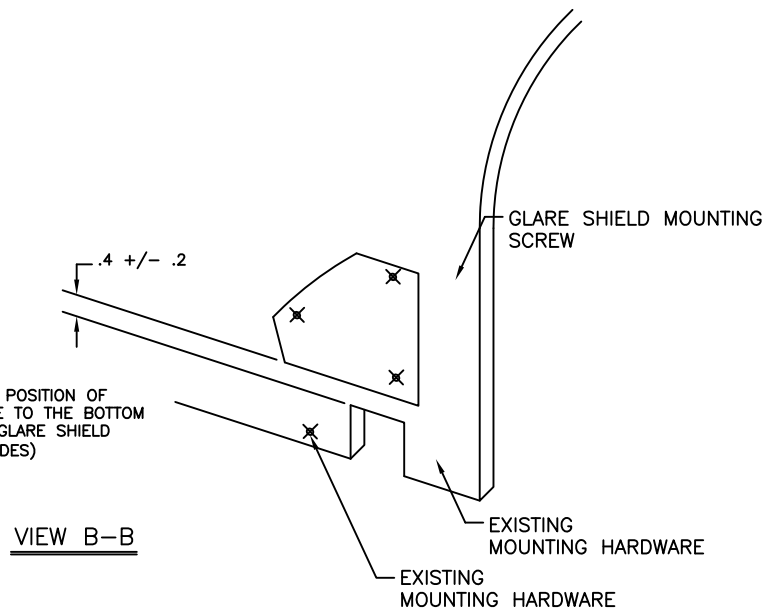
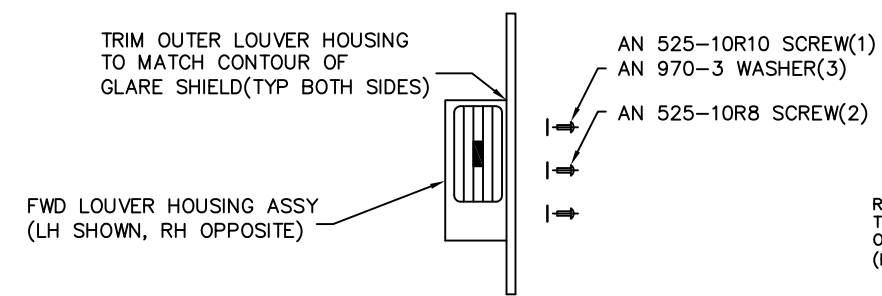
RELOCATE T4 CORRECTION CHART UPWARD TO CLEAR THE LOUVER ASSY

RELOCATE T4 CORRECTION CHART UPWARD TO CLEAR THE AIR OUTLET ASSEMBLY.

**AIR OUTLET INSTALLATION**  
VIEW LOOKING FORWARD AT INSTRUMENT PANEL

LH LOUVER ASSY  
PN 500011(PRE 1991)  
PN 500011-1(POST 1991)

RH LOUVER ASSY  
PN 500010(PRE-1991)  
PN 500010-1(POST 1991)  
PN 500008-1(MODEL B3)



UTILIZED WITH:  
CORPORATE VERSION

<b>INTEGRATED FLIGHT SYSTEMS</b>				
DATE: 04/12/02	APPROVED BY:	SHEET: 1 OF 1	SIZE: D	DRAWN BY: BT
SCALE: 1/8				
TITLE: <b>AIR DISTRIBUTION</b>				
APPLICATION: AS350		DRAWING NUMBER: 5-1-AS350		

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS350, SHEET NO WAS 2 OF 3		-
B	04/12/02	COMPUTERIZED		-
C	01/03/07	ADJUSTED DWG FOR MULTIPLE CONFIGURATIONS, CHANGED TITLE BLOCK		JTYE
D	02/26/09	ADDED VIEW C-C AND NOTE FOR INSTALLATION AIR DUCT CLOSURE.		DWE

AIR DUCT CLOSURE ASSY PN: 510092  
REMOVE AND DISCARD EXISTING FRESH AIR INLET, INSTALL CLOSURE ASSY USING EXISTING HARDWARE

TRIM ANGLE IF NECESSARY TO FIT PN: 510092.

VIEW C-C  
LOOKING FWD

TAP EXISTING AIR OUTLET MOUNTS TO 8-32 UNF.  
INSTALL WEMAC USING 4 EA. MS24693-S55  
SNAP ON DECOR RING PN: 7194-1

TRIM HEADLINER AND CABIN STRUCTURE TO FIT WEMAC.

ROTATE NEW WEMAC 90°  
MATCH DRILL NEW HOLES (CSK) IN WEMAC TO MATCH AIRFRAME

WEMAC No. 2368-503 (CLEAR)  
NOTE: APPLIES TO AIRCRAFT W. SMALL ADH AIR OUTLETS.

VIEW B-B

HEADLINER

REPLACE EXISTING AIR OUTLETS WITH WEMAC NO 2368-503 (4)

NOTE: APPLIES TO SN 1302 & DOWN ONLY

NOT REQUIRED IF LATE MODEL ADH AIR OUTLETS ARE IN PLACE

VIEW A-A

SWITCH ASSY  
PN: 540089

BACKING PLATE  
PN: 260351

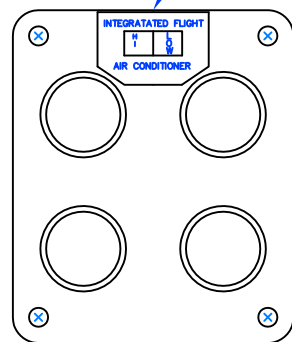
TRIM PLACARD TO FIT AS REQUIRED

ROUTE 2-1/2" FLEX DUCT AS REQUIRED PER AIR OUTLET CONFIGURATION.

NOTE: IF REQUIRED CUT 3" HOLE IN TRAY TO ALLOW FLEX DUCT TO CONNECT TO L.H. AIR OUTLET. INSTALL BLACK EDGE TRIM AROUND HOLE.



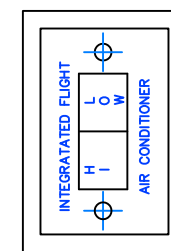
FWD



DETAIL C

VIEW LOOKING UP AT SWITCH LOCATION, 1995 AND PRIOR.

NOTE: AFT SWITCH INSTALLATION NOT APPLICABLE TO TOUR 1 CONFIGURATION.



DETAIL C

LOCATE AFT & LEFT OR RIGHT OF EXISTING AIR OUTLETS 1995 & ON



TITLE: AIR DISTRIBUTION

DRAWN BY: BT	DATE: 06/20/85	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-12-AS350	

## **Step 8**

# **Installation of Compressor**

## Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.0	<b>NOTE: MUST BE PERFORMED IN ACCORDANCE WITH CURRENT EUROCOPTER TECHNICAL DATA.</b>		
8.1	Place a support on the transmission deck to support the engine drive while the shaft is disconnected for belt installation.		
8.2	Remove the cotter pins from the four pins holding the “Gimble Ring” at the Thomas coupling.		
8.3	Slide the “Gimble Ring” aft to gain access to the Thomas coupling.		
8.4	Remove the 6 bolts and Thomas coupling connecting the drive shaft and shift slightly aft.		
8.5	Install two (2) Compressor Drive belts		
8.6	Reassemble the Thomas coupling per <b>AEC Specifications. Torque and Safety Coupling!! Torque Mark all bolts.</b>		
8.7	Secure 1 belt to the outside of the drive shaft cover for a spare and slip one through the housing and over the drive pulley.  <b>NOTE: THE CURRENT BELT P/N 060018-1 HAS A SPECIFIC DIRECTION OF ROTATION. (See figure 1, page 3)</b>  <b>NOTE: THE CURRENT BELT P/N 060005 HAS NO SPECIFIC DIRECTION OF ROTATION.</b>		

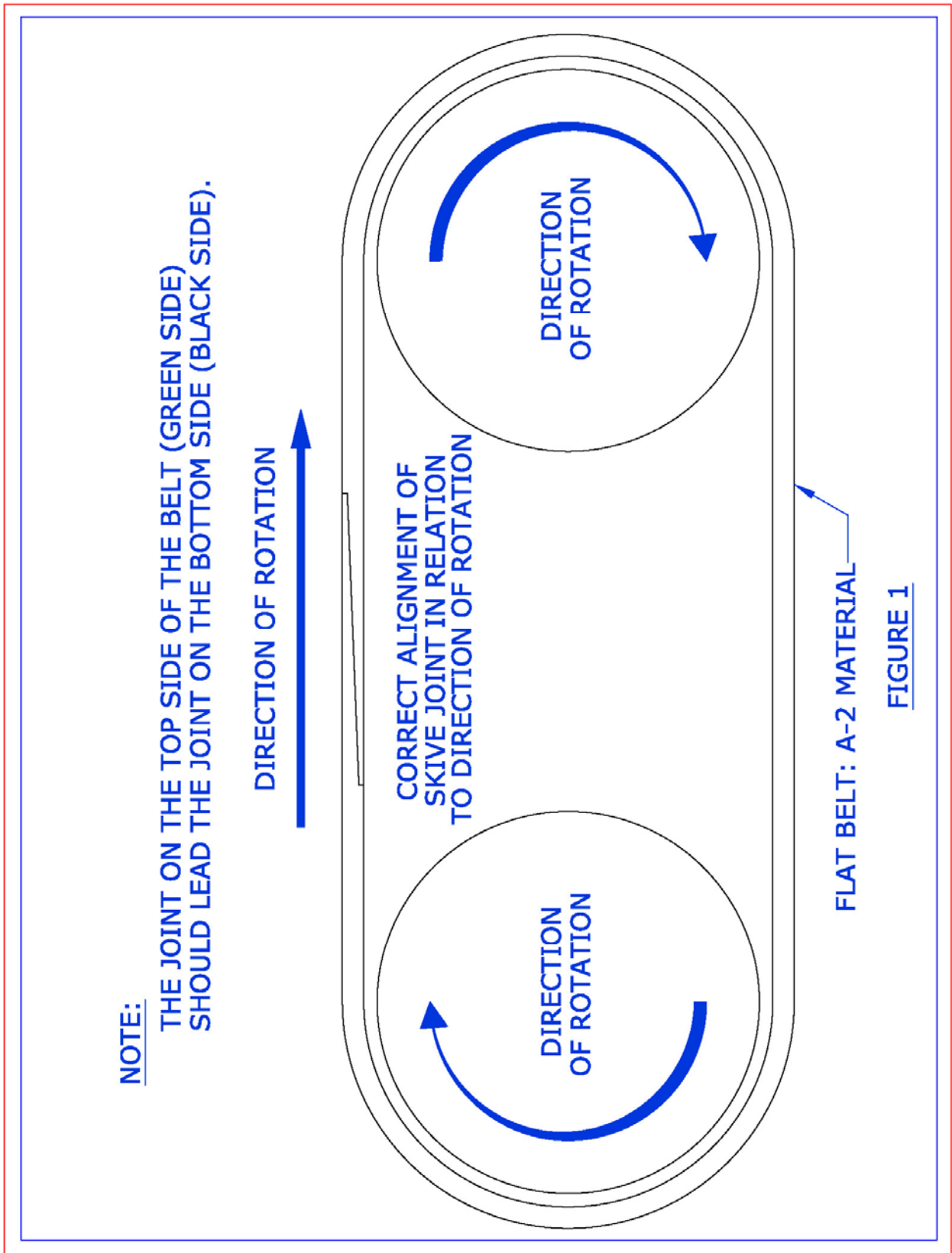


FIGURE 1

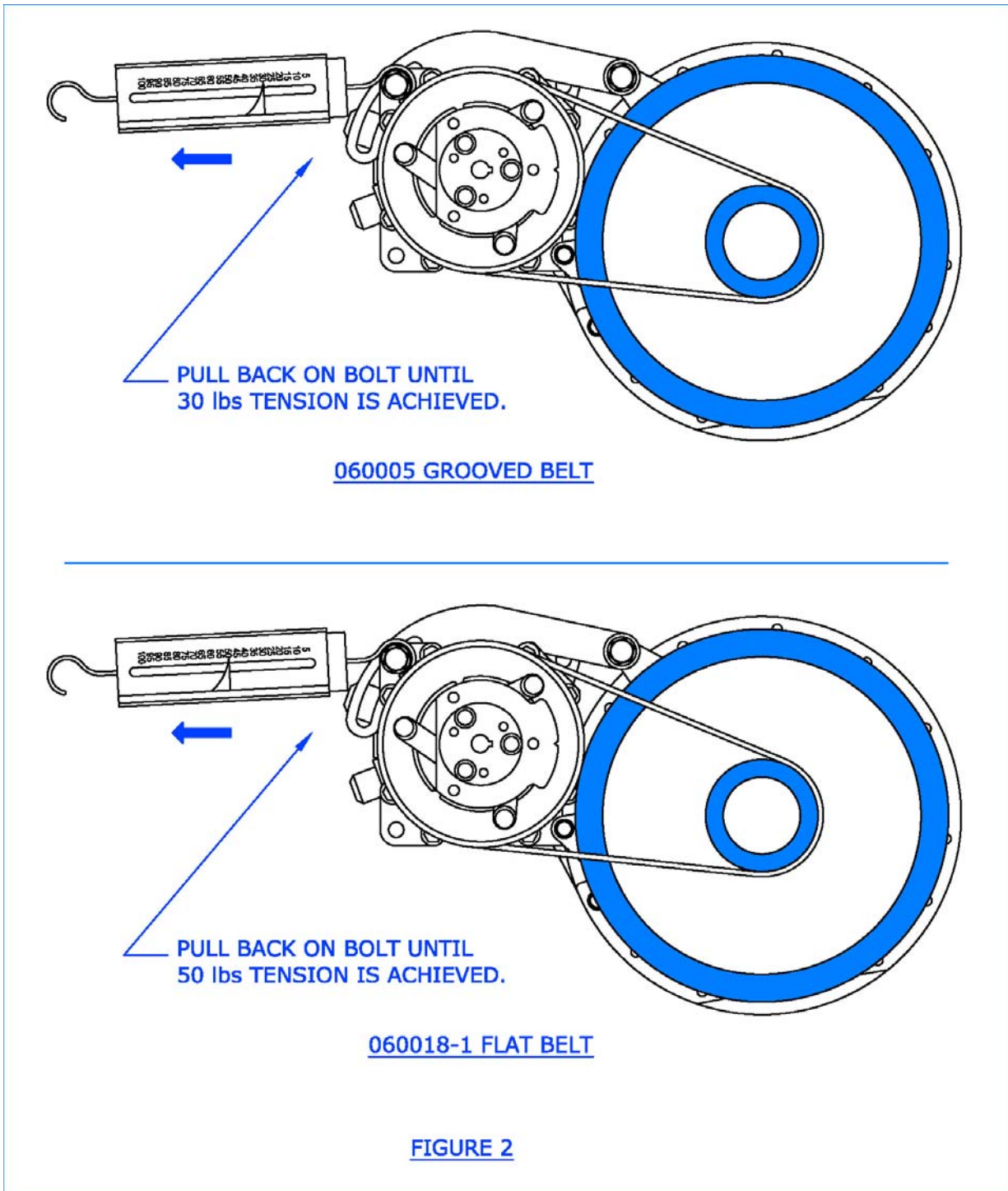
Integrated Flight Systems  
 INSTALLATION OF COMPRESSOR – AS350 Air Conditioning

## Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.8	Install the “Gimble Ring” pins and cotter pins. Remove supports.		
8.9	Installation of Bracket Kit P/N IFS-350/130-507 in accordance with: 6-2-AS350, 6-12-AS350 and 6-21-AS350 or 6-3-AS350, 6-13-AS350 and 6-22-AS350.		
8.10	Install the Forward Compressor Bracket, Compressor Standoffs and Compressor per Drawings:  6-2-AS350, 6-12-AS350 and 6-21-AS350 or 6-3-AS350, 6-13-AS350 and 6-22-AS350		
8.11	Install the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. Tighten the lower forward mounting bolt.		
8.12	This tension may be performed by either pull scale. (See Belt Tension Recommendation)		
8.13	50/30 lbs pull tension at tension adjustment bolt should provide adequate belt tension. (See figure 2, page 5)		
<p><b><u>BELT TENSION RECOMMENDATION:</u></b></p> <p><b>FLAT BELT IFS P/N 060018-1 _____ TENSION TO 50lbs</b></p> <p><b>GROOVED BELT IFS P/N 060005 _____ TENSION TO 30lbs</b></p>			



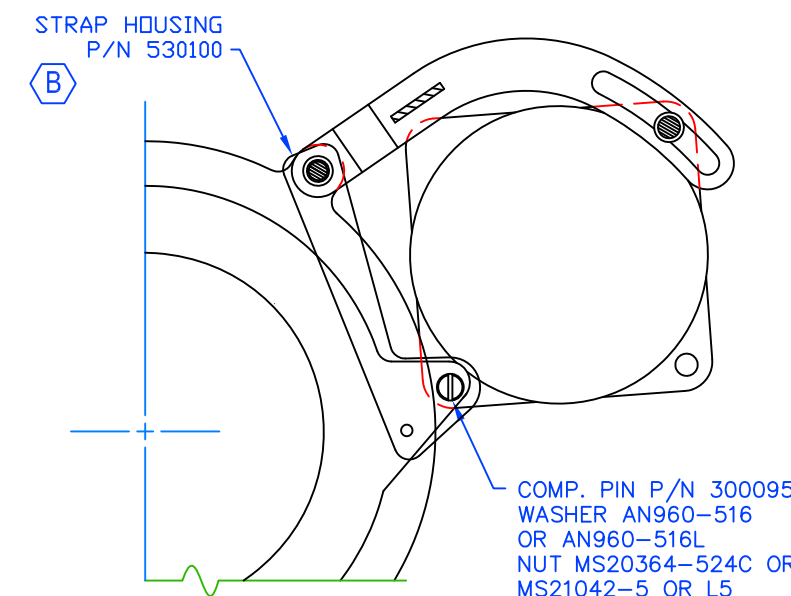
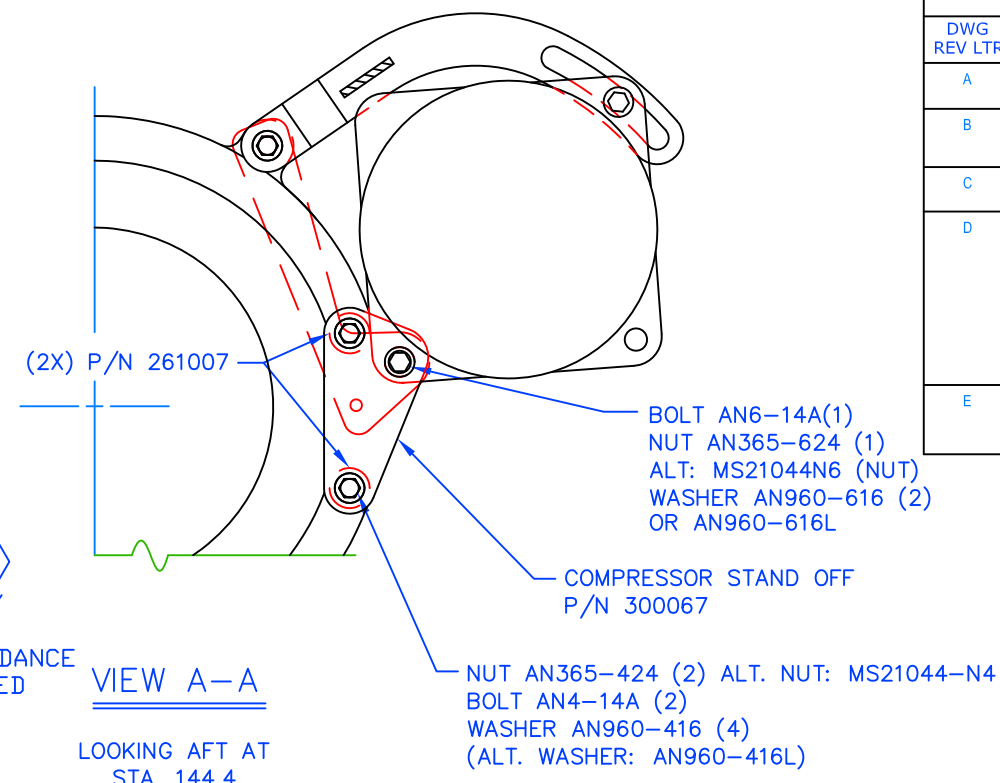
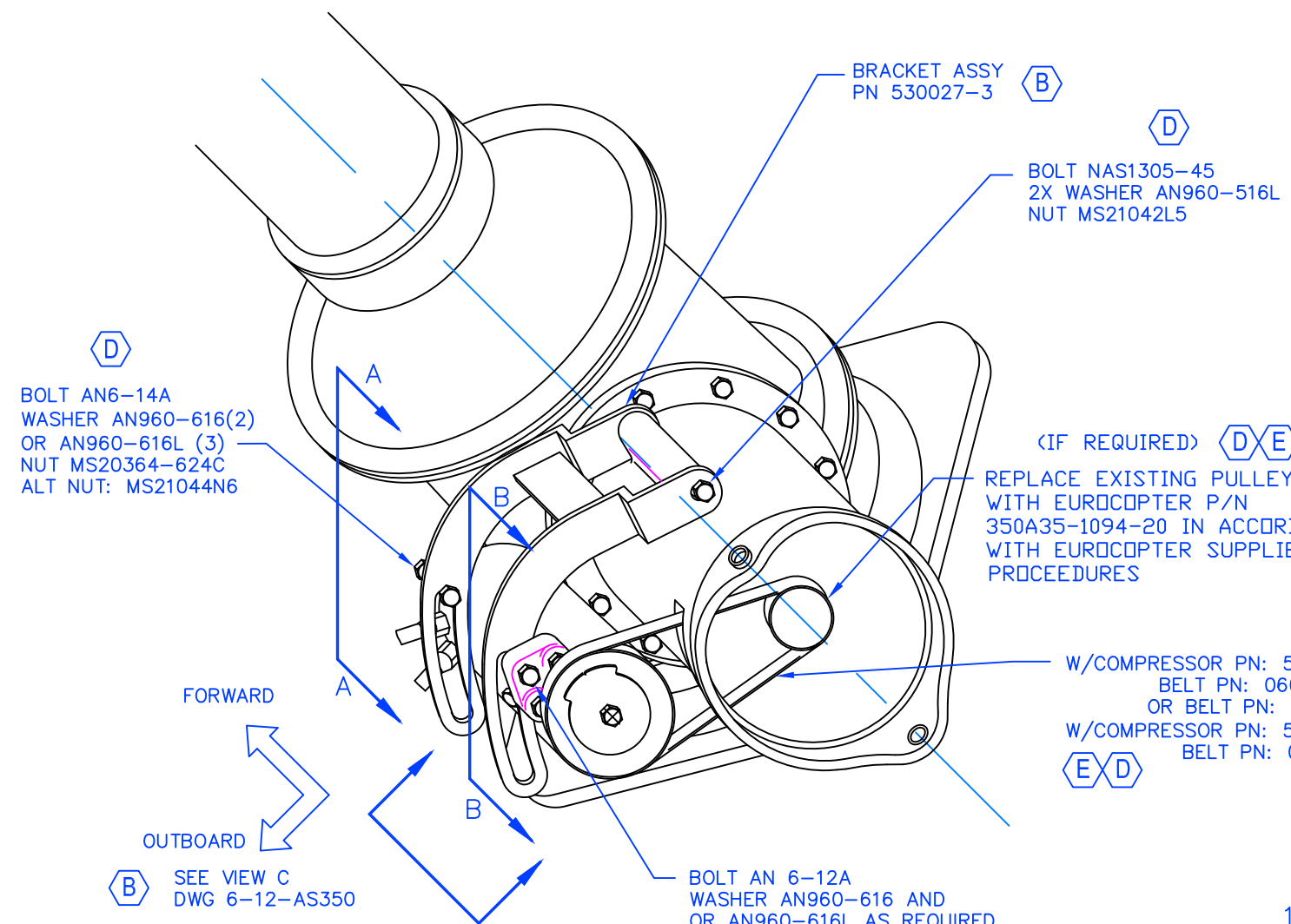
Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – AS350 Air Conditioning



REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 6-AS350 SHEET NUMBER WAS 1 OF 3.	-	-
B	04/15/02	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG. ADDED VIEW OF P/N 530100. CHANGED 530027-1 TO 530027-3.	-	-
C	07/15/02	CHANGED PN: 261008 TO 2X PN: 261007, REVISED TITLE BLOCK.	-	-
D	01/30/06	CHANGED BOLT, NAS1305-44 TO NAS1305-45 FOR EXTRA LENGTH. ADDED BELT PN 060018-1 TO ADDRESS LENGTH ISSUE. CHANGED NO. OF WASHERS. ADDED "AS REQUIRED" TO WASHER NOTATION. ADDED COMPRESSOR PN: 590008-1 ADDED BELTS PN's 060005 AND 060006 FOR ALT. COMPRESSOR INSTALLATION. ADDED NOTATION TO CHANGE PULLEY ON TAIL ROTOR DRIVE SHAFT. REVISED APPLICABLE NOTATION.	-	JTYE
E	06/30/08	AEC PN: 350A351094 IS NOW PN: 350A35-1094-20. CORRECTED TO MATCH AEC IPC. REMOVED BELT PN: 060006. CORRECTED NOTE 2 TO MATCH. REVISED TITLE BLOCK.	-	JTYE

ECO# 0260



VIEW B-B

LOOKING AFT AT STA. 151.2

UTILIZED WITH:  
1. AS 350 WITH OLDER TRANSMISSION HOUSING DESIGN.

INSTALLATION INSTRUCTIONS

KIT P/N: 350-00-011HP OR -031HP (HIGH PERFORMANCE)

- (D) 1) THE ABOVE TWO (2) KITS UTILIZE THE SANDEN SD-507 COMPRESSOR IFS PN: 590008 OR COMPRESSOR PN: 590008-1 IN LIEU OF THE SANDEN SD-505 IFS P/N: 590001-1-"O". AN INCREASE OF 2 CUBIC INCHES IN DISPLACEMENT IS ACHIEVED. BOTH UNITS HAVE THE SAME "FOOT PRINT". HOWEVER, THE SD-507 IS SLIGHTLY LONGER.
- (E)(D) 2) THE SAME BELT P/N's: 060018 OR 060018-1 ARE UTILIZED IN THIS INSTALLATION WITH COMPRESSOR PN: 590008. BELT PN's: 060005 WILL BE UTILIZED WITH COMPRESSOR PN: 590008-1.
- 3) THE SAME COMPRESSOR MOUNT ASSEMBLY P/N: 530027-3, PIN P/N: 300095, AND COMPRESSOR STAND OFF P/N: 300067 ARE UTILIZED IN THIS INSTALLATIONS.
- 4) THE AFT, INBOARD COMPRESSOR MOUNTING POINT IS RELOCATED FORWARD BY PLACING TWO ALUMINUM "BUSHINGS", P/N: 2610007 BETWEEN THE "STAND OFF" P/N: 300067 AND THE TRANSMISSION HOUSING. TWO (2) EACH AN4-15A BOLTS MUST BE UTILIZED IN LIEU OF THE AN4-11A FORMERLY USED.
- 6) THE FORWARD, UPPER INBOARD COMPRESSOR EAR IS ALIGNED WITH THE COMPRESSOR UNIT ASSEMBLY BY PLACING A "BUSHING", P/N 261008 BETWEEN THE AFT SIDE OF THE EAR AND THE MOUNT ASSEMBLY.
- 7) AN6-12A BOLTS ARE USED TO ENSURE BELT TENSION IN THE SAME MANNER AS WITH THE SD-505 COMPRESSOR. A MINIMUM THREAD PROTRUSION ON THE FORWARD UPPER BOLT REQUIRES THAT A STEEL SELF LOCKING NUT P/N: MS20364-624C MUST BE UTILIZED.



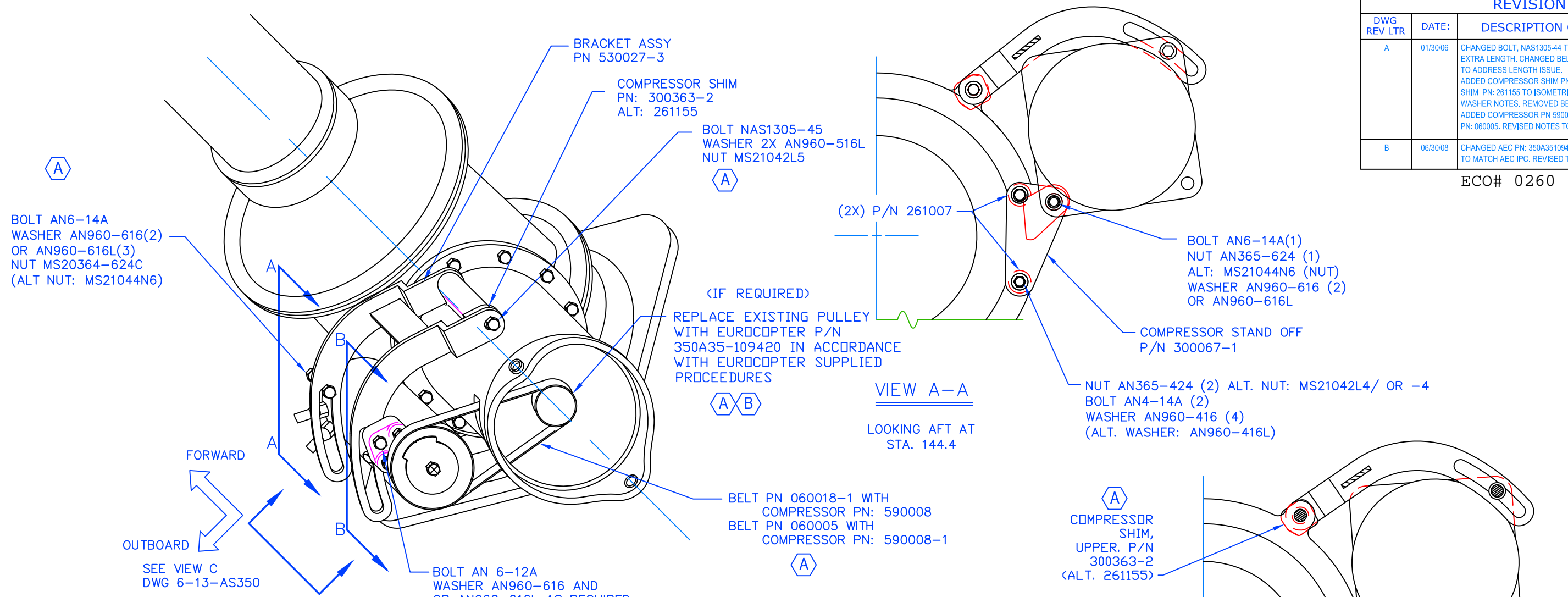
(E)

TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: BRP	DATE: 11/10/96	REV E	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-2-AS350	

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED BOLT, NAS1305-44 TO NAS1305-45 FOR EXTRA LENGTH. CHANGED BELT TO 060018-1 TO ADDRESS LENGTH ISSUE. ADDED COMPRESSOR SHIM PN: 300363-2 AND SHIM PN: 261155 TO ISOMETRIC VIEW. CHANGED WASHER NOTES, REMOVED BEVELED EDGE NOTE. ADDED COMPRESSOR PN 590008-1. ADDED BELT PN: 060005. REVISED NOTES TO MATCH.		JTYE
B	06/30/08	CHANGED AEC PN: 350A351094 TO PN: 350A35-1094-20 TO MATCH AEC IPC. REVISED TITLE BLOCK.		JTYE

ECO# 0260



INSTALLATION INSTRUCTIONS

KIT P/N: 350-00-011HP OR -031HP (HIGH PERFORMANCE)

- 1) THE ABOVE TWO (2) KITS UTILIZE THE SANDEN SD-507 IFS COMPRESSOR P/N: 590008 OR IFS COMPRESSOR PN: 590008-1 IN LIEU OF THE SANDEN SD-505 IFS P/N: 590001-1-"O". AN INCREASE OF 2 CUBIC INCHES IN DISPLACEMENT IS ACHIEVED. BOTH UNITS HAVE THE SAME "FOOT PRINT". HOWEVER, THE SD-507 IS SLIGHTLY LONGER.
- 2) ONLY BELT P/N: 060018-1 MAY BE UTILIZED W/PN 590008 IN THIS INSTALLATION. ONLY BELT PN: 060005 MAY BE UTILIZED W/PN 590008-1 IN THIS INSTALLATION.
- 3) THE SAME COMPRESSOR MOUNT ASSEMBLY P/N: 530027-3, PIN P/N: 300095, AND COMPRESSOR STAND OFF P/N: 300067-1 ARE UTILIZED IN ALL INSTALLATIONS.
- 4) THE AFT, INBOARD COMPRESSOR MOUNTING POINT IS RELOCATED FORWARD BY PLACING TWO ALUMINUM "BUSHINGS", P/N: 2610007 BETWEEN THE "STAND OFF" P/N: 300067-1 AND THE TRANSMISSION HOUSING. TWO (2) EACH AN4-15A BOLTS MUST BE UTILIZED IN LIEU OF THE AN4-11A FORMERLY USED.
- 6) THE FORWARD, UPPER INBOARD COMPRESSOR EAR IS ALIGNED WITH THE COMPRESSOR UNIT ASSEMBLY BY PLACING A "BUSHING", P/N 261008 BETWEEN THE AFT SIDE OF THE EAR AND THE MOUNT ASSEMBLY.
- 7) AN6-12A BOLTS ARE USED TO ENSURE BELT TENSION IN THE SAME MANNER AS WITH THE SD-505 COMPRESSOR. A MINIMUM THREAD PROTRUSION ON THE FORWARD UPPER BOLT REQUIRES THAT A STEEL SELF LOCKING NUT P/N: MS20364-624C MUST BE UTILIZED.

UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 11/10/96	REV B	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-3-AS350	





# Engineering Change Order

ECO No.  
0260

Drawing Number	Revision	Drawing Title
6-2-AS350	E	Compressor Installation
6-3-AS350	B	Compressor Installation

**Reason for Change:** To add an alternate nut (MS21042-6/L6) for keeping minimum thread protrusion. To correct a few errors in "Installation Instructions" notes (see below for corrections) on both drawings.

**Description of Change:** In "Installation Instructions" notes, made the following spelling corrections:

Drawing 6-2-AS350 only, Was: (High Performace), Is: (High Performance)

Note 4), Was: "P/N: 2610007", Is: "P/N: 261007"

Note 6), Was: "Alighned", Is: "Aligned"

Note 7), Was: "Minumum", Is: "Minimum"

Note 7), Was: "P/N: MS20364-624C must be utilized", Is: "P/N: MS20364-624C or alternate must be utilized"

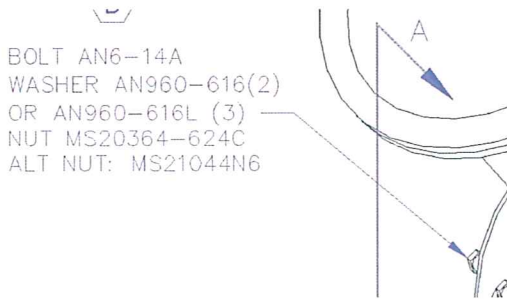
Note 1), Removed: "Sanden SD-507", "Sanden SD-505"

Note 1), Was: "However, the SD-507 is slightly longer.", Is: "However, the 590008 & 590008-1 is slightly longer."

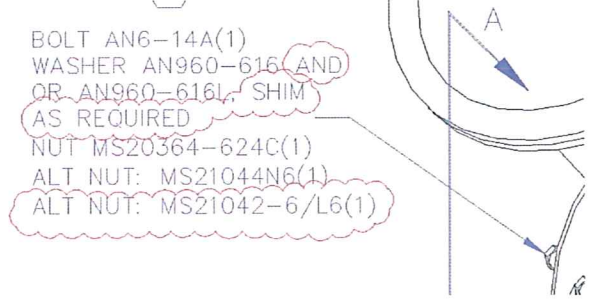
Added the quantity of (1) on all bolt & nut callouts to keep consistency.

Removed quantity (X) on all washer callouts and added "And or" & "Shim As Required" for washers (used for alignment of belt).

Was:



Is:



Was:



Is:



Was:



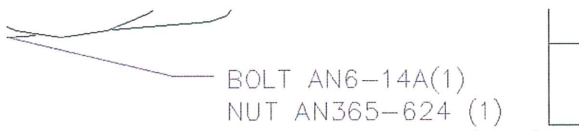
BOLT AN 6-12A  
WASHER AN960-616 AND  
OR AN960-616L AS REQUIRED  
NUT MS20364-624C  
(ALTERNATE)  
NUT MS21044N6 D

Is:



BOLT AN 6-12A(1)  
WASHER AN960-616 AND  
OR AN960-616L, SHIM AS REQUIRED  
NUT MS20364-624C(1)  
ALT NUT: MS21044N6(1) D  
ALT NUT: MS21042-6/L6(1) D

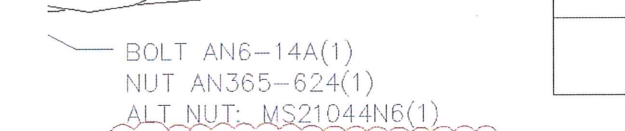
Was:



BOLT AN6-14A(1)  
NUT AN365-624 (1)  
ALT: MS21044N6 (NUT)  
WASHER AN960-616 (2)  
OR AN960-616L

COMPRESSOR STAND OFF

Is:



BOLT AN6-14A(1)  
NUT AN365-624(1)  
ALT NUT: MS21044N6(1)  
ALT NUT: MS21042-6/L6(1)  
WASHER AN960-616 AND  
OR AN960-616L, SHIM AS REQUIRED

COMPRESSOR STAND OFF

----- LAST ITEM -----

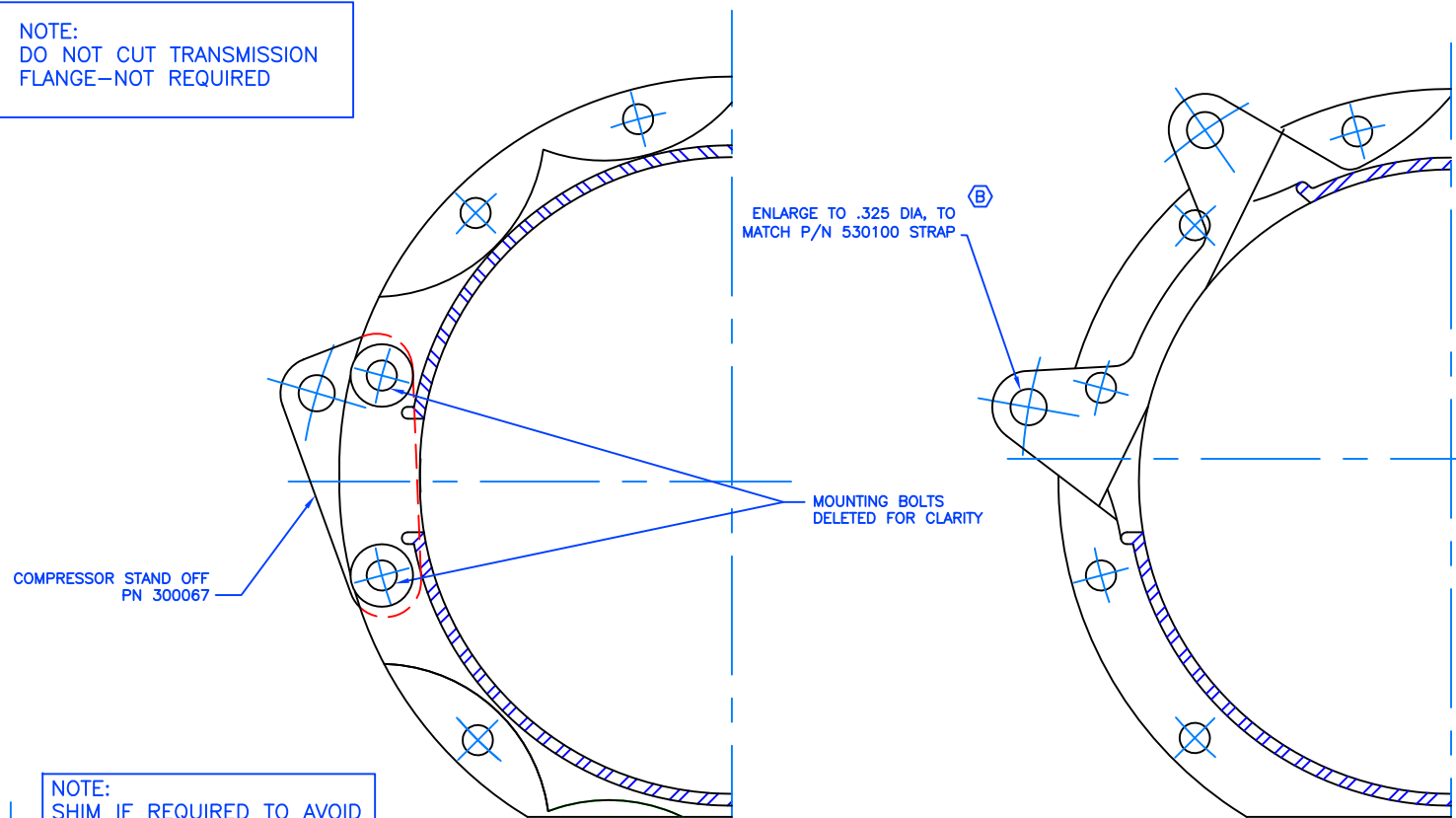
Engineering Review Board Approval

Signature	Stamp	Date	Comment
	ERB02	05/04/11	
	MRB05	05/04/11	
	MRB06	05/04/11	

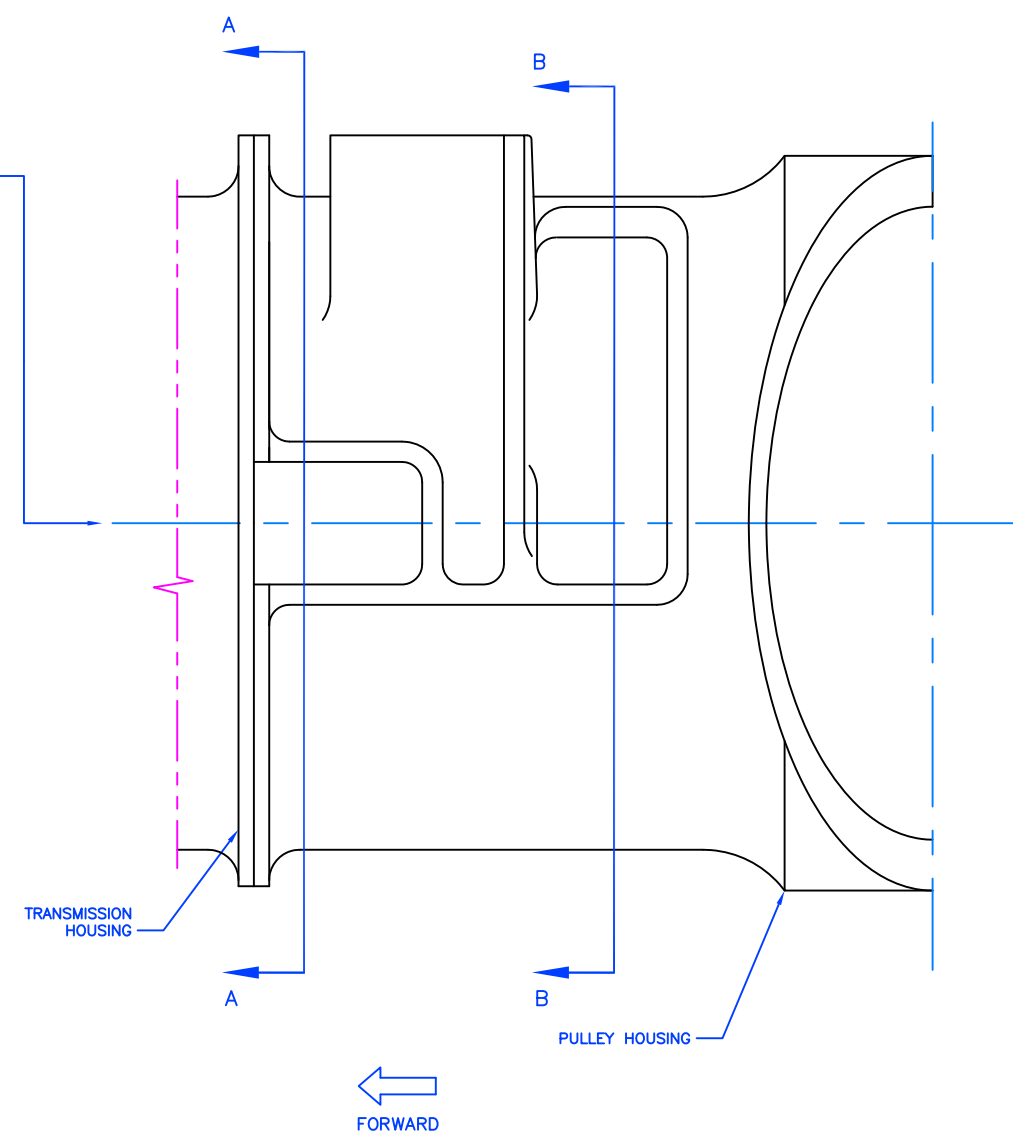
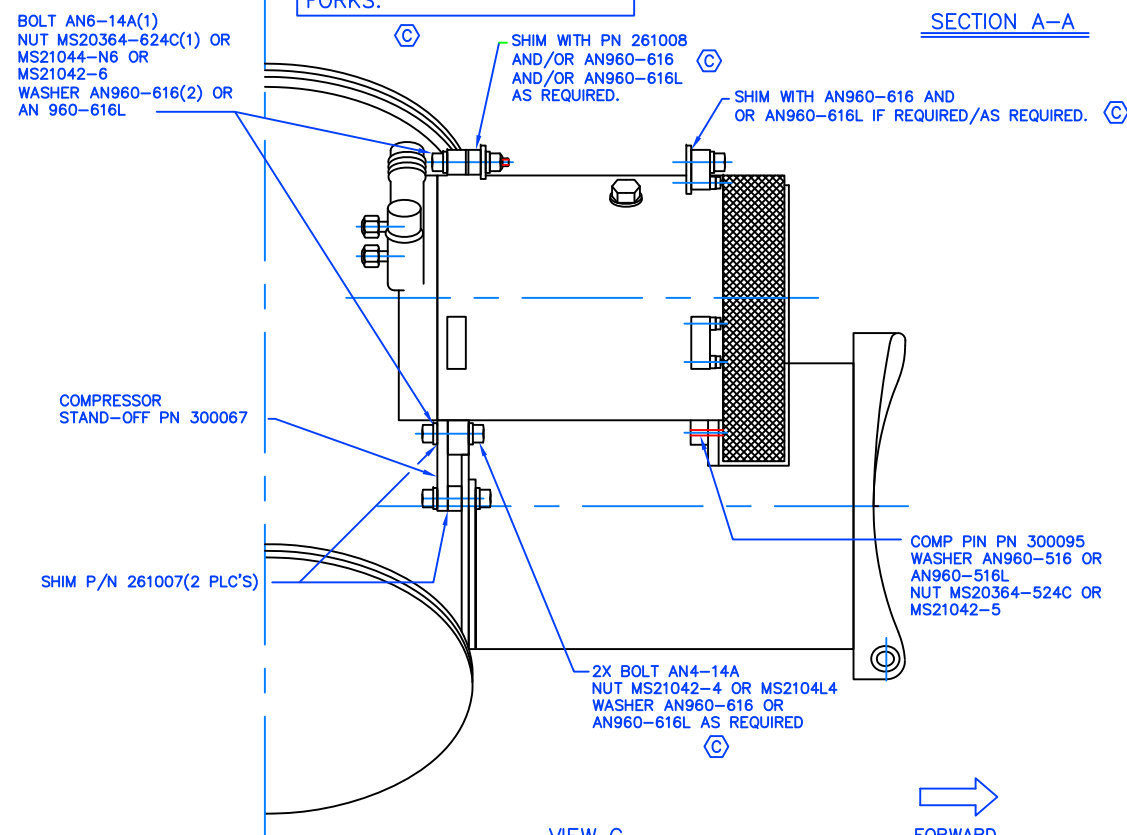
REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 6-AS350, SHEET No. WAS 2 OF 3.	-	-
B	04/16/02	COMPUTERIZED, CLARIFIED NOTE, REVISED TITLE BLOCK	-	-
C	01/30/06	CHANGED NOTES, ADDED PRELOAD NOTE. ADDED SHIMMING NOTES.	-	JTYE
D	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
DO NOT CUT TRANSMISSION  
FLANGE—NOT REQUIRED



NOTE:  
SHIM IF REQUIRED TO AVOID  
PRE-LOADING OF BRACKET  
FORKS.



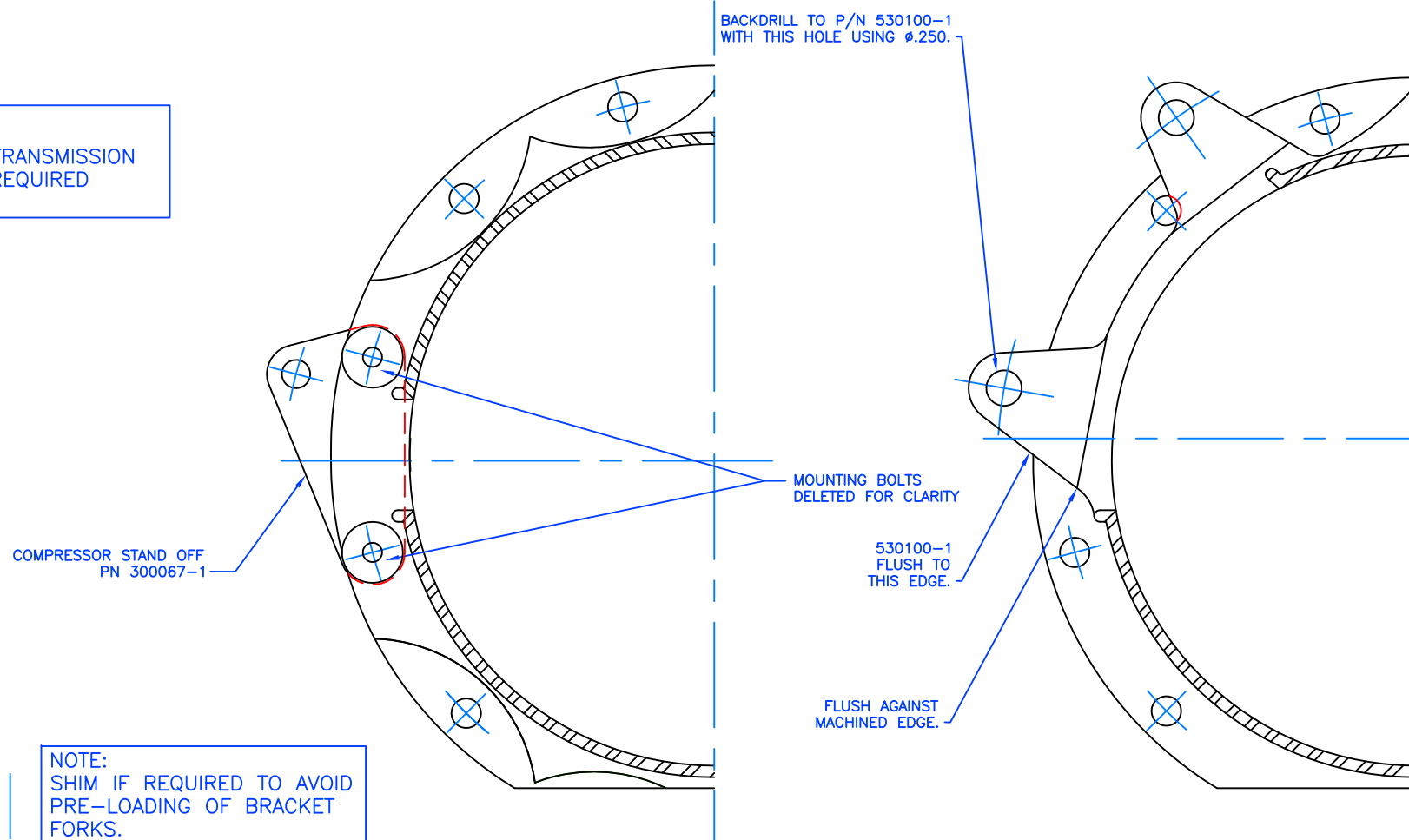
D

TITLE: COMPRESSOR INSTALLATION

DRAWN BY: BT	DATE: 11/10/96	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350		DWG No. 6-12-AS350		

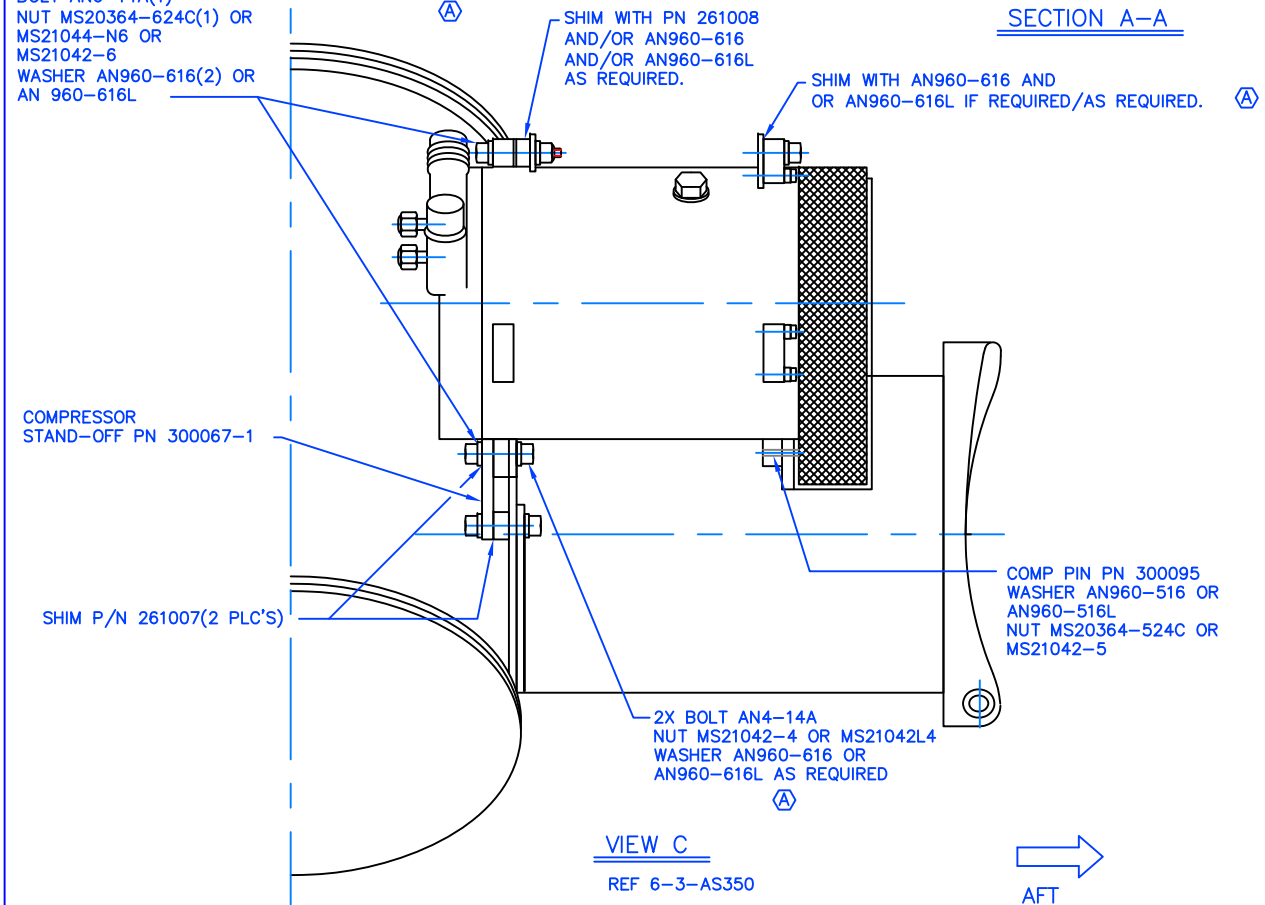
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED WASHER NOTES FOR PRE-LOADING OF BRACKET	-	JTYE
B	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
DO NOT CUT TRANSMISSION  
FLANGE—NOT REQUIRED

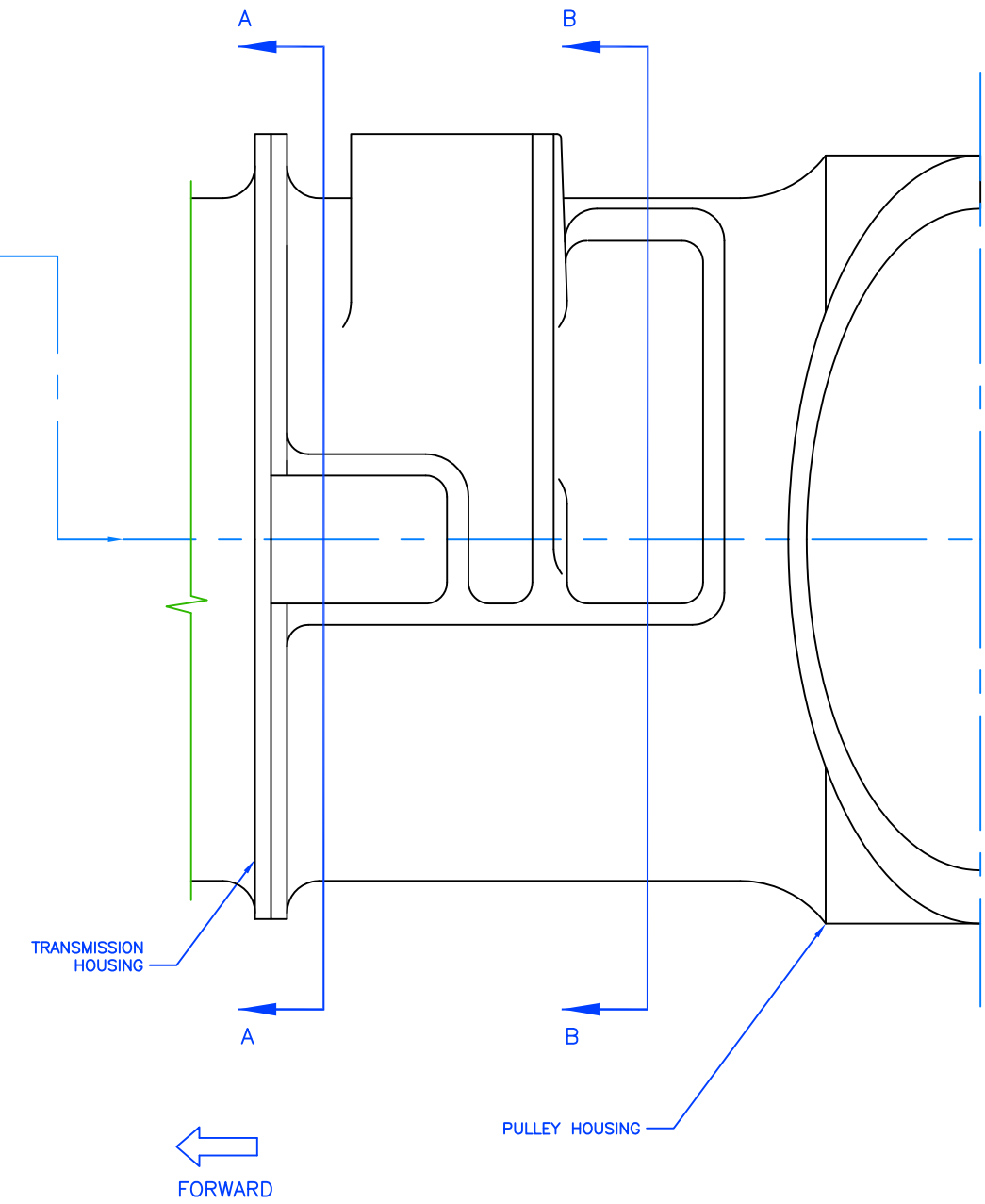


NOTE:  
SHIM IF REQUIRED TO AVOID  
PRE-LOADING OF BRACKET  
FORKS.

BOLT AN6-14A(1)  
NUT MS20364-624C(1) OR  
MS21044-N6 OR  
MS21042-6  
WASHER AN960-616(2) OR  
AN 960-616L



UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 05/28/03	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-13-AS350	



## Engineering Change Order

ECO No.  
0261

Drawing Number	Revision	Drawing Title
6-12-AS350	D	Compressor Installation
6-13-AS350	B	Compressor Installation

Reason for Change: To add an alternate nut (MS21042-6/L6) for keeping minimum thread protrusion. The nut MS21042-6 is already on drawing, adding "/L6" to nut part number. Correcting callout to keep consistency with drawing 6-2-AS350.

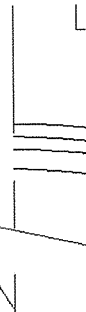
Description of Change: Add "/L6" to nut MS21042-6. Showed "Alt Nut:" and made callout same as on drawings 6-2-AS350 & 6-3-AS350.

Added the quantity of (1) on all bolt & nut callouts to keep consistency.

Removed quantity (X) on all washer callouts and added "And or" & "Shim As Required" for washers (used for alignment of belt).

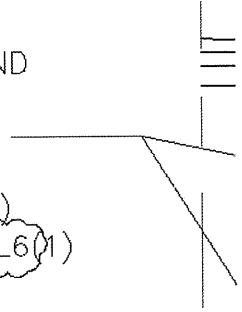
Was:

BOLT AN6-14A(1)  
NUT MS20364-624C(1) OR  
MS21044-N6 OR  
MS21042-6  
WASHER AN960-616(2) OR  
AN 960-616L



Is:

BOLT AN6-14A(1)  
WASHER AN960-616 AND  
OR AN960-616L SHIM  
AS REQUIRED  
NUT MS20364-624C(1)  
ALT NUT: MS21044N6(1)  
ALT NUT: MS21042-6/L6(1)



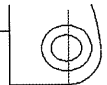
Was:

2X BOLT AN4-14A  
NUT MS21042-4 OR MS2104L4  
WASHER AN960-616 OR  
AN960-616L AS REQUIRED



Is:

2X BOLT AN4-14A  
NUT MS21042-4 OR MS2104L4  
WASHER AN960-616 (AND) OR  
AN960-616L AS REQUIRED



----- LAST ITEM -----

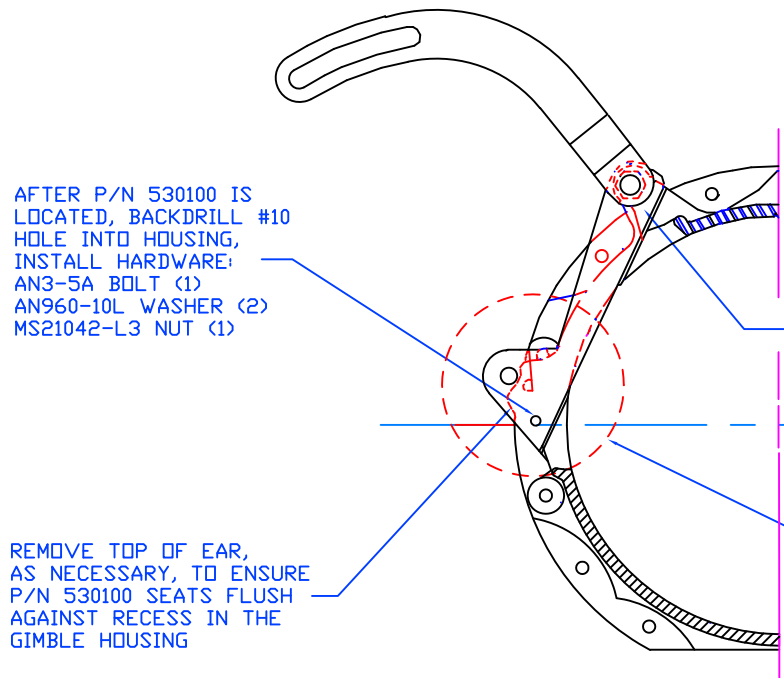
### Engineering Review Board Approval

Signature	Stamp	Date	Comment
	<b>ERB02</b>	04/21/11	
	<b>MRB05</b>	04/21/11	
	<b>MRB06</b>	04/21/11	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REDRAWN INTO AUTOCAD. REVISED DRAWING No. WAS 6-AS350; SHEET No. WAS 3 OF 3. ADDED ITEMS 6 TO "INSTRUCTIONS". CHANGED "CASING" TO "HOUSING". ADDED VIEW A, B AND C.	-	-
B	05/08/02	REVISED TITLE BLOCK. CHANGED 530027-2 TO 530027-3. CONVERTED TO AUTOCAD.	-	-
C	01/30/06	CHANGED NAS1305-44 BOLT TO NAS1305-45 FOR LENGTH.	-	JTJE

NOTE:  
COMPRESSOR REMOVED FOR CLARITY



AFTER P/N 530100 IS LOCATED, BACKDRILL #10 HOLE INTO HOUSING, INSTALL HARDWARE: AN3-5A BOLT (1) AN960-10L WASHER (2) MS21042-L3 NUT (1)

REMOVE TOP OF EAR, AS NECESSARY, TO ENSURE P/N 530100 SEATS FLUSH AGAINST RECESS IN THE GIMBLE HOUSING

P/N 530100 IS LOCATED BETWEEN GIMBLE HOUSING & P/N 530027-3

(1) NAS1305-45 BOLT

(C)

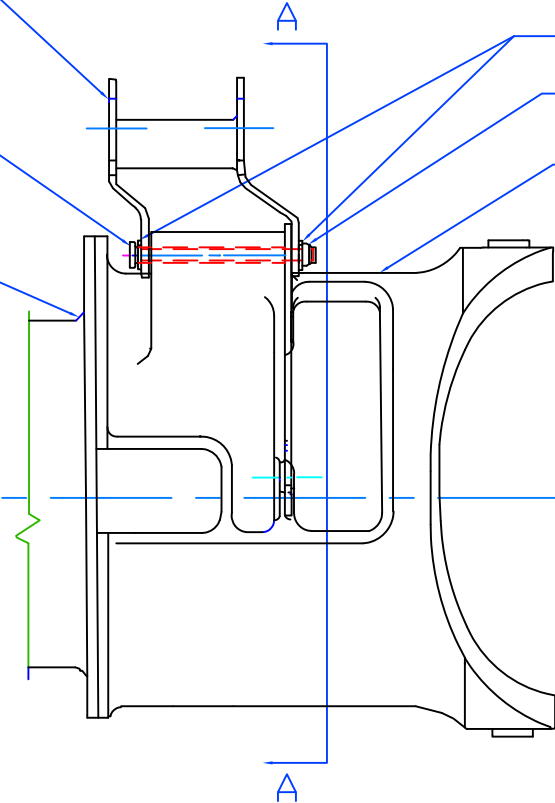
TRANSMISSION HOUSING

A

(2) AN960-516L WASHER  
ALT: MS21042L5

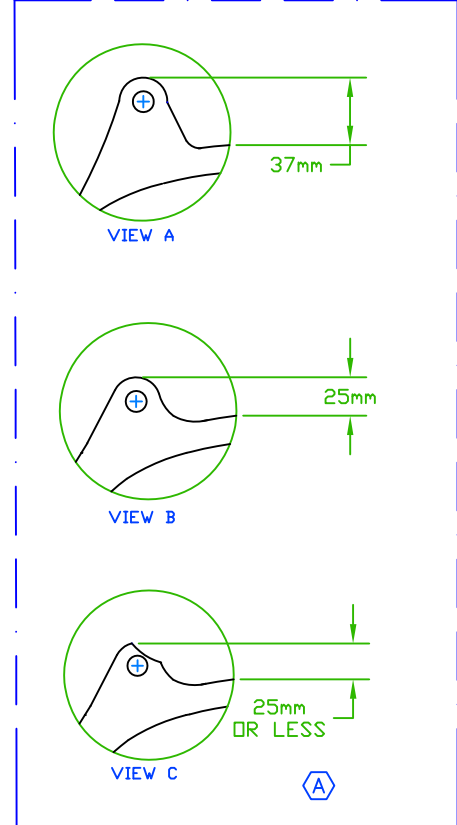
(1) MS20364-524C NUT

PULLEY HOUSING



SECTION A-A

VIEW A, B, C



INSTALLATION INSTRUCTIONS

KIT P/N: 350-00-01, -011, -031, -011HP, AND -031HP

- 1) THE ABOVE KITS UTILIZE THE SANDEN SD-505 OR SD-507 COMPRESSOR (SEE DRAWING 350-00-011HP OR -031HP FOR DETAILS OF SD-507 INSTALLATION).
- 2) IN EARLY 1997 IT WAS NOTICED BY AMERICAN EUROCOPTER AND LATER EUROCOPTER CANADA, LTD. THAT A FEW AS350 MODELS WERE ARRIVING WITH A DIFFERENT "ENGINE TO MAIN GEAR BOX COUPLING CASING", COMMONLY CALLED A "HOUSING", INSTALLED. THE PART NUMBER SHOWN IN THE EUROCOPTER IPC WAS: 350A35-1104-03. THIS COMPONENT HAS "EARS" EXTENDING OFF THE "HOUSING", ON BOTH SIDES, 37 mm IN LENGTH (SEE VIEW "A")
  - (A) THE NEW "HOUSING" PART NUMBER IS 350A08-1635-21. IT HAS ONE EAR ON THE LEFT SIDE THAT IS ONLY 25 mm LONG. (SEE VIEW "B")
  - THE 25 mm LONG EAR WILL NOT ALLOW AN INTEGRATED FLIGHT SYSTEMS, INC. SD-505 OR SD-507 COMPRESSOR TO BE INSTALLED IN IT'S USUAL LOCATION.
- 3) THE "LOGICAL ANSWER" WAS TO LOCATE THE "MOUNTING POINT" OF THE COMPRESSOR(S) SO THAT A DIFFERENT LENGTH BELT, ETC. WOULD NOT BE REQUIRED.

- 4) ONLY TWO (2) PART CHANGES WERE REQUIRED TO ALLOW ITEM 3 TO OCCUR.
  - a.) COMPRESSOR MOUNT ASSEMBLY 530027-1 WAS CHANGED TO -2 (.125 WIDER AT THE TOP MOUNTING POINT).
  - b.) A NEW COMPONENT, NOT PREVIOUSLY USED, "STRAP, HOUSING MOD. ASSEMBLY", P/N: 530100 IS UTILIZED TO LOCATE THE COMPRESSOR MOUNTING POINT BACK TO IT'S ORIGINAL LOCATION.
  - c.) A AN3-5A BOLT AND ASSOCIATED HARDWARE SECURES THE "STRAP" TO THE "HOUSING".
- 5) IN SOME CASES IT MAY BE NECESSARY TO REMOVE A SMALL AMOUNT OF MATERIAL FROM THE OUTER EDGE OF THE 25 mm EAR TO ALLOW THE "NEW" IFS COMPONENT TO LAY IN IT'S PROPER LOCATION. THIS IS DUE TO THE "SHIM" WELDED ON THE FORWARD SIDE OF THE COMPONENT WHICH ALLOWS ALIGNMENT TO THE COMPRESSOR EAR. ANY PAINT REMOVED FROM THE "HOUSING" EAR MUST BE TOUCHED UP BEFORE INSTALLING THE IFS PARTS.
- (A) 6) IF AERO AIRE OR OTHER SIMILAR TYPE A/C COMPRESSOR HAS BEEN PREVIOUSLY INSTALLED PER VIEW "B" or "C", IT MAY BE NECESSARY TO FOLLOW THE STEPS IN ITEM 5 FOR CORRECT CLEARANCE.

VIEW LOOKING INBOARD  
FORWARD

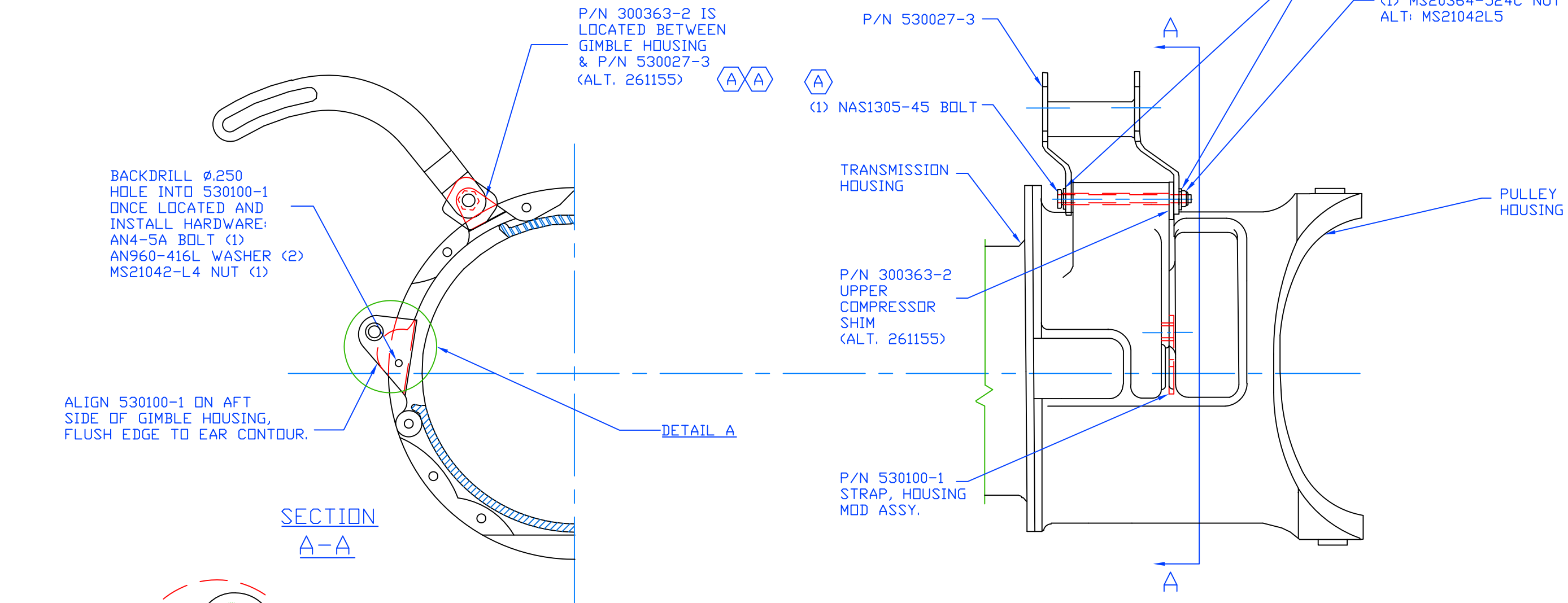


TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: KLM	DATE: 11/10/96	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-21-AS350	

(D)(C)(B)

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED NAS1305-44 BOLT TO NAS1305-45 FOR LENGTH, ADDED ALT. COMPRESSOR SHIMS. REMOVED BEVELED EDGE NOTATION FOR ALIGNMENT.	-	JTYE
B	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
COMPRESSOR REMOVED FOR CLARITY



BACKDRILL  $\phi$ .250 HOLE INTO 530100-1 ONCE LOCATED AND INSTALL HARDWARE: AN4-5A BOLT (1) AN960-416L WASHER (2) MS21042-L4 NUT (1)

ALIGN 530100-1 ON AFT SIDE OF GIMBLE HOUSING, FLUSH EDGE TO EAR CONTOUR.

P/N 300363-2 IS LOCATED BETWEEN GIMBLE HOUSING & P/N 530027-3 (ALT. 261155)

P/N 530027-3  
(1) NAS1305-45 BOLT

TRANSMISSION HOUSING

P/N 300363-2 UPPER COMPRESSOR SHIM (ALT. 261155)

P/N 530100-1 STRAP, HOUSING MOD ASSY.

(2) AN960-516L WASHER

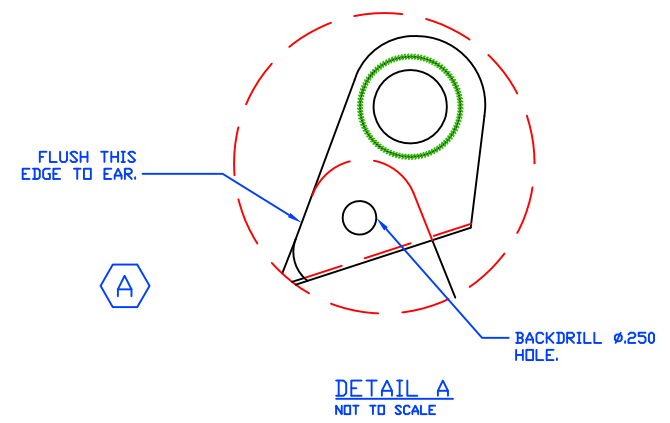
(1) MS20364-524C NUT ALT: MS21042L5

PULLEY HOUSING

SECTION A-A

DETAIL A

VIEW LOOKING INBOARD  
← FORWARD



UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 05/28/03	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-22-AS350	

## **Step 9**

# **Installation of Electrical**

Integrated Flight Systems  
INSTALLATION OF ELECTRICAL – AS350 Air Conditioning

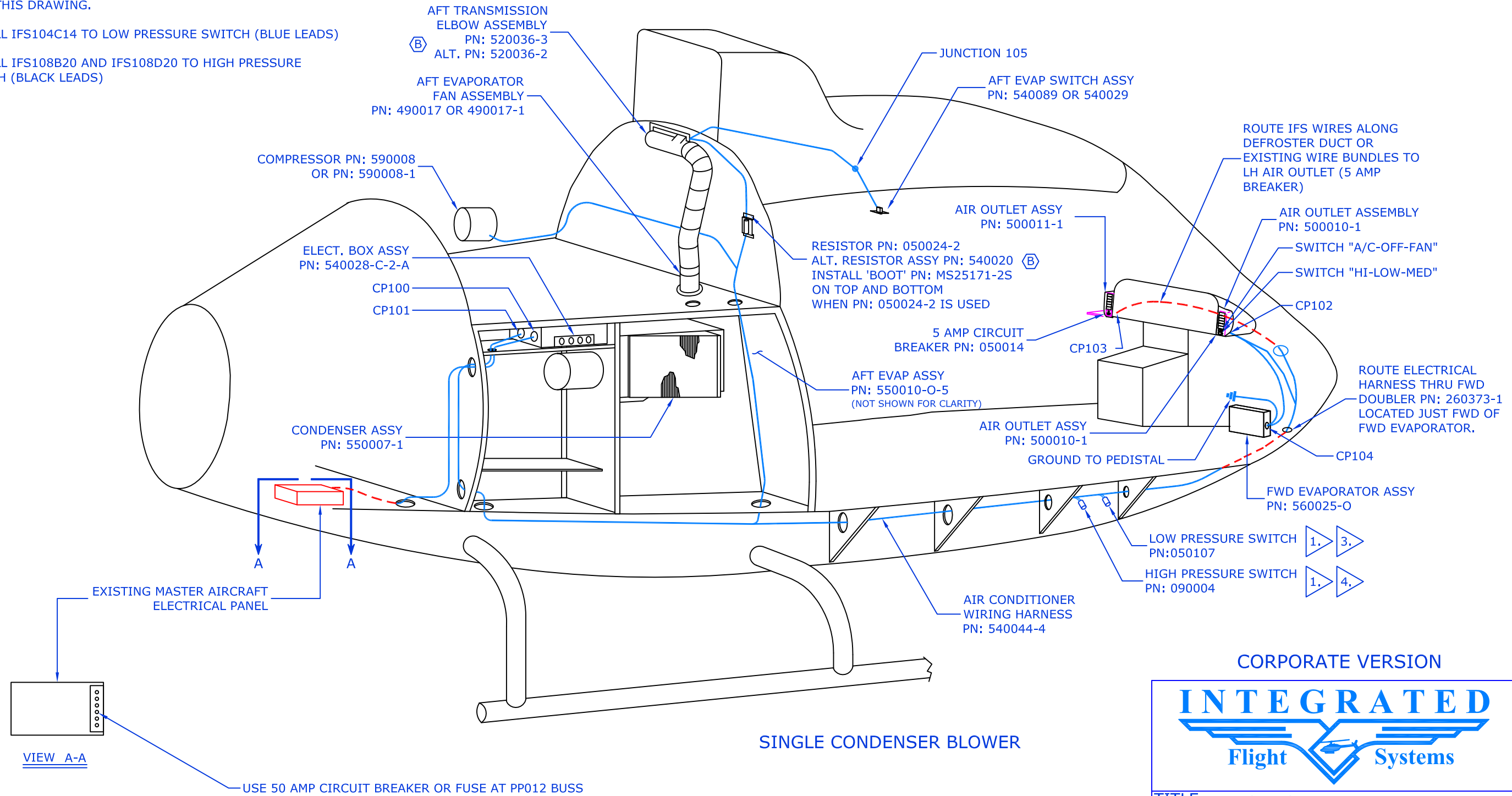
### Installation of Electrical

<b>STEP</b>	<b>PROCEDURE</b>	<b>MECH</b>	<b>INSP</b>
9.1	(Intentionally left blank)		
9.2	(Intentionally left blank)		
9.3	(Intentionally left blank)		
9.4	Install and route the electrical harness, P/N 540044-4, per Drawing 2-8-AS350, 2-11-AS350 and 2-21 AS350. Install EMI-RFI filter per drawing 2-11-AS350 View A with hardware shown.		
9.5	Install and route electrical harness P/N 540045-1 using 1 ea. 8 x #10 ring terminal and ANL-50 Limiter (not incl.).		
9.6	(Reserved)		
9.7	Install aft switch assembly P/N 540089 per drawings 5-12-AS350, 2-8-AS350, 2-11-AS350 and 2-21-AS350		

**NOTE:**  
 USE EXISTING LIGHTENING HOLES ONLY FOR ALL ROUTING, OR  
 SECURE WIRES TO EXISTING BUNDLES OR REFRIGERATION HOSE  
 USING TY-WRAPS, STAND-OFFS, AND SPACER BLOCKS AS  
 REQUIRED.

- 1. LOCATION OF PRESSURE SWITCHES  
 WHEN R-134a IS UTILIZED.
- 2. ON B3 MODELS ALL IFS WIRE ROUTING MUST BE IN ACCORDANCE  
 WITH THIS DRAWING.
- 3. INSTALL IFS104C14 TO LOW PRESSURE SWITCH (BLUE LEADS)
- 4. INSTALL IFS108B20 AND IFS108D20 TO HIGH PRESSURE  
 SWITCH (BLACK LEADS)

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	07/02/02	DWG NUMBER WAS 2-2-AS350, IS NOW 2-8-AS350. CHANGED TO INCORPORATE LH AIR OUTLET PN: 500011-1. REDRAWN INTO CAD, CHANGED TITLE BLOCK.		-
B	04/09/09	CHANGED AFT TRANSITION ELBOW PN FROM 520036-2 TO 520036-3. ADDED ALTERNATE RESISTOR ASSEMBLY 540020. ADDED PN'S TO DESCRIPTIONS. REVISED TITLE BLOCK.		JTYE



**CORPORATE VERSION**

**INTEGRATED**  
 Flight Systems

**TITLE: ELECTRICAL  
ROUTING**

<b>DRAWN BY:</b> MAH	<b>DATE:</b> 11/10/96	<b>REV</b> B	<b>SCALE:</b> NONE	<b>SHEET:</b> 1 OF 1
<b>APPLICATION:</b> AS350			<b>DWG No.</b> 2-8-AS350	

**B A**



LS03-010112 EMI-RFI FILTER  
2X AP35110 TERMINALS

14-16 x #10  
RING TERMINAL

IFSS 261323 3-PIN  
CONNECTOR ASSEMBLY

VIEW A

IFSS 050084-7-2 BLOWER  
(SHORT HOUSING)  
IFSS 050084-7-3 BLOWER  
(LONG HOUSING)

INTERCHANGEABLE 5" BLOWERS (F)

050143
050085-1
IFSS 050143-1 DCB
IFSS 050143-2 DCB

G	03/04/10	DELETED IFSS 050084-7 BLOWER AND REPLACE WITH IFSS 050084-7-2 BLOWER.	-	JM
H	04/08/10	DELETED IFSS 050084-7-1 BLOWER AND REPLACE WITH IFSS 050084-7-3 BLOWER.	-	JM
J	08/03/10	ADDED EMI-RFI FILTER TO VIEW A	-	JM

ECO# 0242  
ECO# 0276

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/21/99	ADDED T-4, T-5, F8, AND F9 TO NOTE 3, REWORDED NOTE 1. CHANGED PP-2 TO PP-12. ADDS B3.		
B	05/10/99	ADDED ALT BLOWER IFS PN: 050084-6, EVAP BREAKER WAS 15 AMP, IS 20 AMP. CHANGED LOCATION OF LOW SWITCH.		
C	08/16/00	ADDED ALT BLOWER IFS PN: 050084-7, REVISED DRAWING NUMBER, WAS 2-AS350 SHEET 1 OF 3. CORRECTED NOTES 1, 2 AND 3. ADDED NOTE 4.		
D	04/15/02	CONVERTED TO AUTOCAD.		
E	01/03/07	ADDED ALT. RESISTOR ASSEMBLY PN: 540020. REDRAWN FOR CLARITY. REVISED TITLE BLOCK.	LA	JTYE
F	03/31/09	ADDED LISTING OF INTERCHANGEABLE 5 AND 7" BLOWER ASSEMBLIES. OLD CONFIGURATION JUMPER NOTE ADDED.	MLD	JTYE

COMPRESSOR

14-16 WIRE SPLICE

14-16 HANDSHAKE SPLICE (3 REQD)

AFT EVAP SPEED  
CONTROL SWITCH  
PN: 540089 OR PN: 540029

ELECTRICAL BOX  
ASSEMBLY  
PN: 540028-C-2-A

14-16 HANDSHAKE  
3 REQD.

RESISTOR ASSY  
PN: 540020  
(2 OHM, 100)  
OR RESISTOR  
PN: 050024-2

A/C-OFF-FAN SWITCH

CIRCUIT BREAKERS

AFT EVAP  
MOTOR  
J106

FWD EVAP SPEED  
CONTROL SWITCH  
PN: 050001  
OR PN: 050006

CP100

PN: 540045-1

PP12 BUS

CP101

12-10 AWG  
BUTT SPLICE  
1 REQ'D

8 x #10  
RING TERMINAL  
(1 REQD)

14-16 x #10  
RING TERMINAL

CONDENSER BLOWER  
PN: 050084-4  
ALT 050084-6  
ALT 050084-7-2  
ALT 050084-7-3

INTERCHANGEABLE 7" BLOWERS (F)

050084-1
050084-4
050084-6
050084-7
610000 BRUSHLESS
620000 BRUSHLESS
630000
640000
IFSS 050084-1
IFSS 050084-4
IFSS 050084-6
IFSS 050084-6-1
<del>IFSS 050084-7 BRUSHLESS</del>
<del>IFSS 050084-7-1 BRUSHLESS</del>
IFSS 050084-7-2 BRUSHLESS
IFSS 050084-7-3 BRUSHLESS

NOTE: JUMPER THROUGH CP103  
NOT USED AFTER 2004, IFS104B14  
NOW RUNS STRAIGHT THROUGH TO  
LOW PRESSURE SWITCH. OLD CONFIG.  
SHOWN WITH DASHED LINES.

NOTE:

- 1 ALL WIRE MIL-W-22759/16.  
ALL WIRE 14ga UNLESS OTHERWISE SPECIFIED.
- 2 FUSES MAY BE USED, P/N 100FU01-050 (50AMP).
- 3 LOCATE #8 WIRE AT T4, T5, T6, OR T7 (INSTALL 50AMP FUSE IF NOT PRESENT, SEE NOTE 2).
- 4 WHEN ALL EUROCOPTER FUSES OR C/B LOCATIONS ARE UTILIZED, A "AUX" CURRENT LIMITER BASE FU1541-501, BRACKET/SUPPLY BAR AND CURRENT LIMITER MAY BE INSTALLED AT F9 OR F10 PER EUROCOPTERS COMPONENT MAINTENANCE MANUAL. IFS P/N FOR LIMITER BASE IS 050023. IFS P/N FOR LIMITER, 50 AMP IS 050015-2.

## AS350 ELECTRICAL WIRING DIAGRAM

(CORP, EMS, TOUR 2, LAW ENF.)

FOR SINGLE CONDENSER BLOWER  
ADDS B3 TO PREVIOUS APPROVALS



TITLE: ELECTRICAL  
DIAGRAM

DRAWN BY: MAH	DATE: 04/15/02	REV J	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 2-11-AS350	





## Engineering Change Order

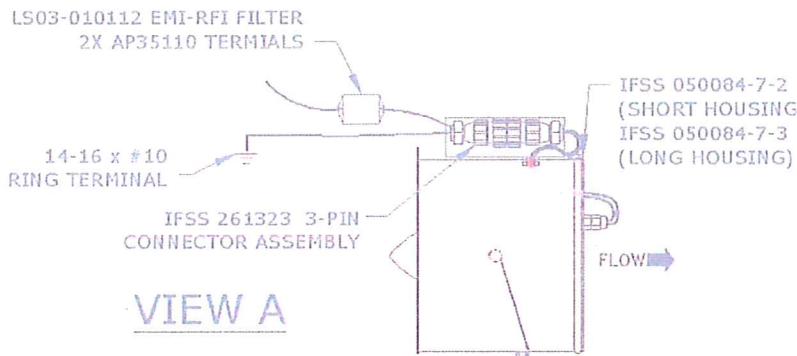
ECO No.  
0242

Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

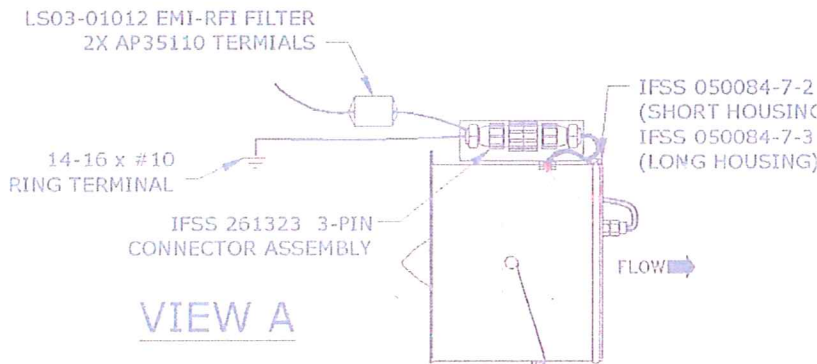
Reason for Change: Correcting P/N of EMI-RFI Filter for blower assembly.

Description of Change: In view-A, changed the P/N: LS03-010112 to LS03-01012.

WAS:



IS:



----- LAST ITEM -----

### Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eijman</i>	ERB02	12/20/10	
<i>Wesley</i>	MRB06	12/20/10	
<i>Scott</i>	MRB06	12/20/10	



Engineering Change Order

ECO No.  
0276

Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

Reason for Change: To remove the deletion of the blowers by Rev. G & H for field maintainability. Added Blowers IFSS 050084-7-2 & IFSS 050084-7-3.

Description of Change: Remove deletion lines from IFSS 050084-7 Brushless & IFSS 050084-7-1 Brushless.

Was:

Is:

IFSS 050084-6	
IFSS 050084-6-1	
<del>IFSS 050084-7 BRUSHLESS</del>	G
<del>IFSS 050084-7-1 BRUSHLESS</del>	
IFSS 050084-7-2 BRUSHLESS	G
IFSS 050084-7-3 BRUSHLESS	H

IFSS 050084-6	
IFSS 050084-6-1	
IFSS 050084-7 BRUSHLESS	G
IFSS 050084-7-1 BRUSHLESS	
IFSS 050084-7-2 BRUSHLESS	G
IFSS 050084-7-3 BRUSHLESS	H

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Euphan</i>	ERB02	01/14/11	
<i>Scott Carr</i>	MRB05	01/14/11	
<i>have to go</i>	MRB06	01/14/11	



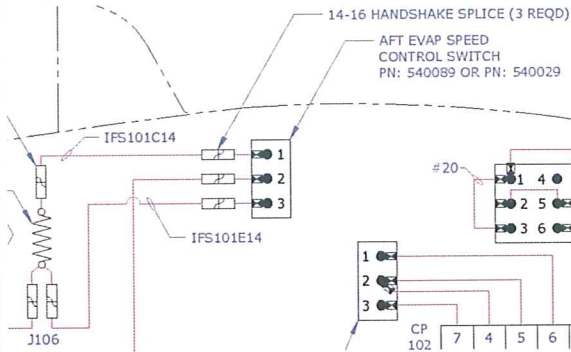
Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

**Reason for Change:** Added shielded wiring for reduction of noise in aircraft comm. systems. These changes reflect what has been done on the wiring harness drawing.

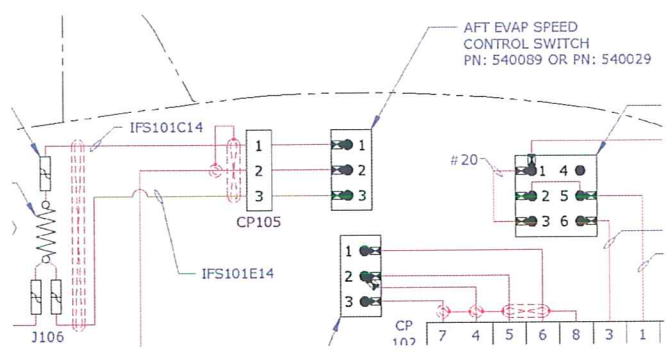
**Description of Change:**

1. Note 1 Was: ALL WIRE MIL-W-22759/16., Is: ALL WIRE MIL-W-22759/16 & MIL-W-22759/18.
2. Handshakes are removed at three places (J105), replaced with cannon plug (CP105).

Was:

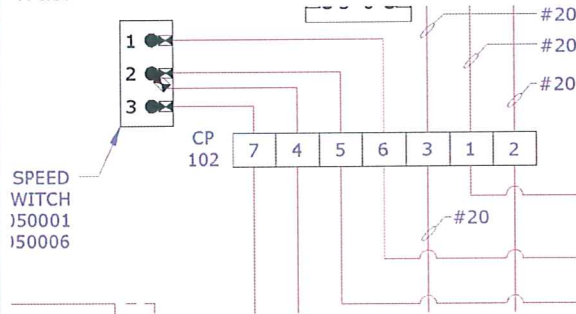


Is:

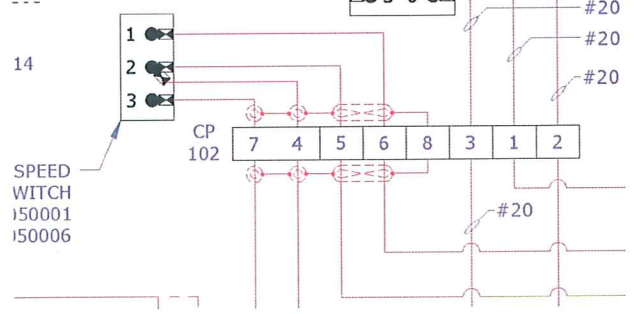


3. At CP102, added pin# 8 for shielding.

Was:

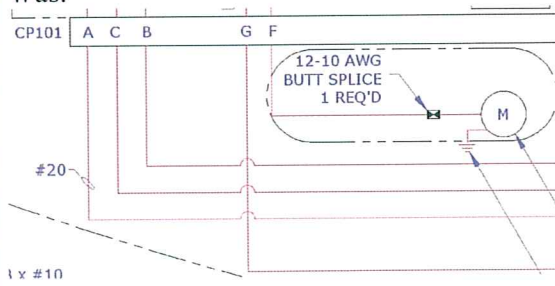


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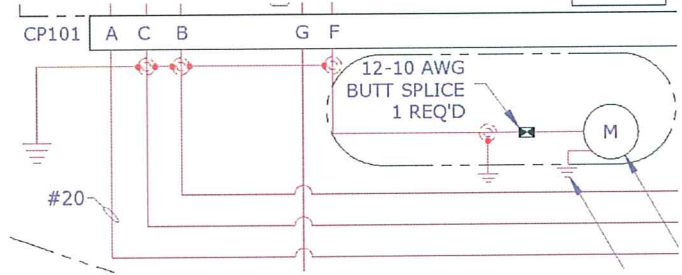


4. At CP101, shielding as shown.

Was:



Is:

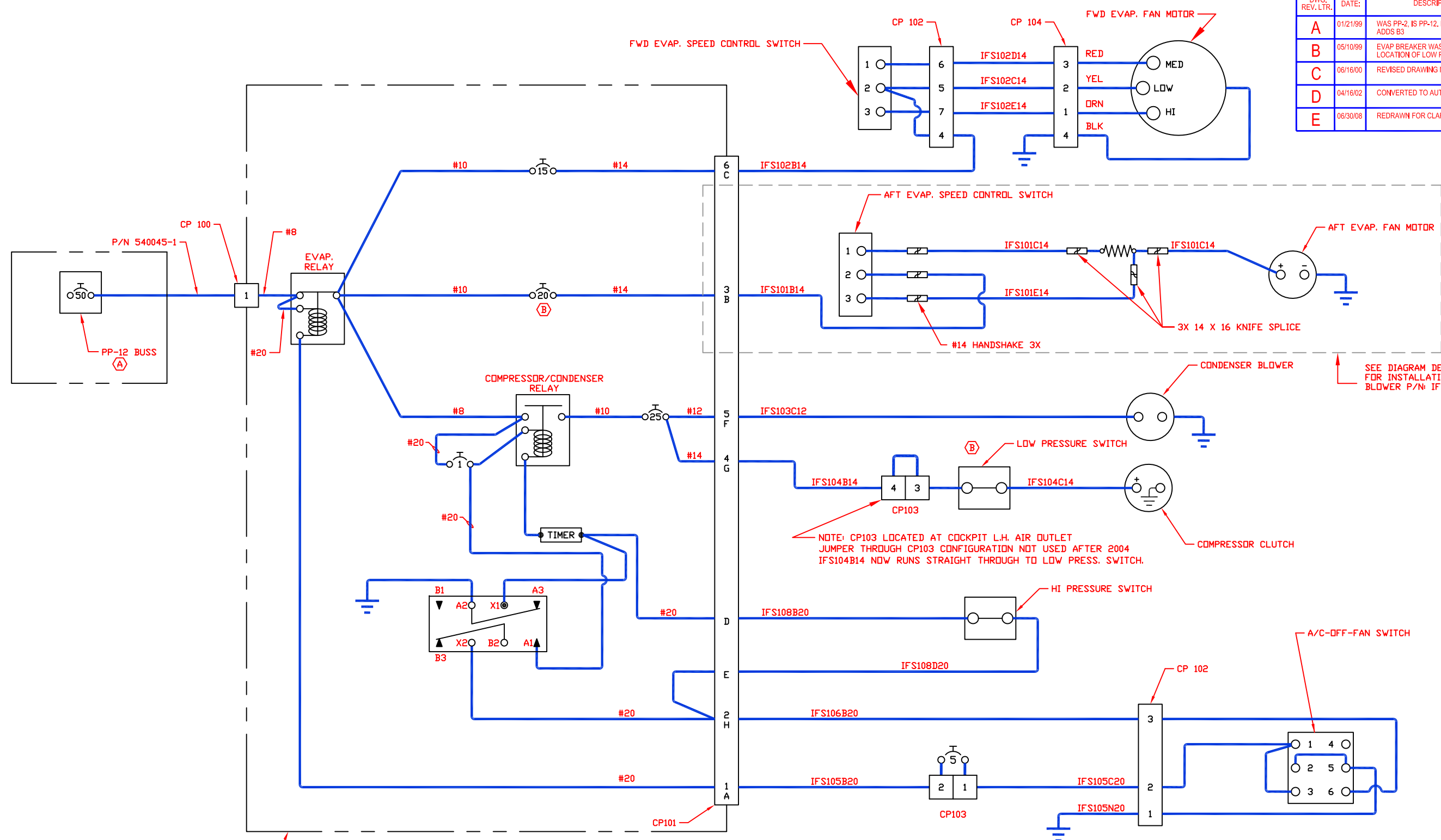


----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eidma</i>	ERB02	05/13/11	
<i>Travis Jones</i>	MRB06	05/13/11	
<i>Scott Lewis</i>	MRB05	05/13/11	

REVISION RECORD				
DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/21/99	WAS PP-2, IS PP-12, DELETED REMAINDER OF NOTE. ADDS B3		
B	05/10/99	EVAP BREAKER WAS 15 AMP, IS 20 AMP, CHANGED LOCATION OF LOW PRESSURE SWITCH.		
C	06/16/00	REVISED DRAWING No. WAS 2-AS350 SH 3 OF 3.		
D	04/16/02	CONVERTED TO AUTOCAD.		
E	06/30/08	REDRAWN FOR CLARITY, REVISED TITLE BLOCK.		JTYE



SEE DIAGRAM DETAIL SHEET 2 OF 2 FOR INSTALLATION OF IFSS 5" DC BRUSHLESS BLOWER P/N IFSS 050143-1 OR -2 DCB

NOTE: CP103 LOCATED AT COCKPIT L.H. AIR OUTLET JUMPER THROUGH CP103 CONFIGURATION NOT USED AFTER 2004 IFS104B14 NOW RUNS STRAIGHT THROUGH TO LOW PRESS. SWITCH.

ELECT. PANEL ASSY. P/N: 540028-C-2-A

**AS350  
ELECTRICAL WIRING DIAGRAM**  
SINGLE CONDENSER BLOWER  
(A) ADDS B3 TO PREVIOUS APPROVALS  
(CORP. EMS, TOUR 2, BASIC AND LAW ENF.)  
SEQUENCE (N INDICATES GROUND)

**NOTE:**  
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.  
2. WIRE SPEC: MIL-W-22759/16  
WIRE NO. IFS XXX X XX

GROUP  
SEQUENCE  
GAUGE

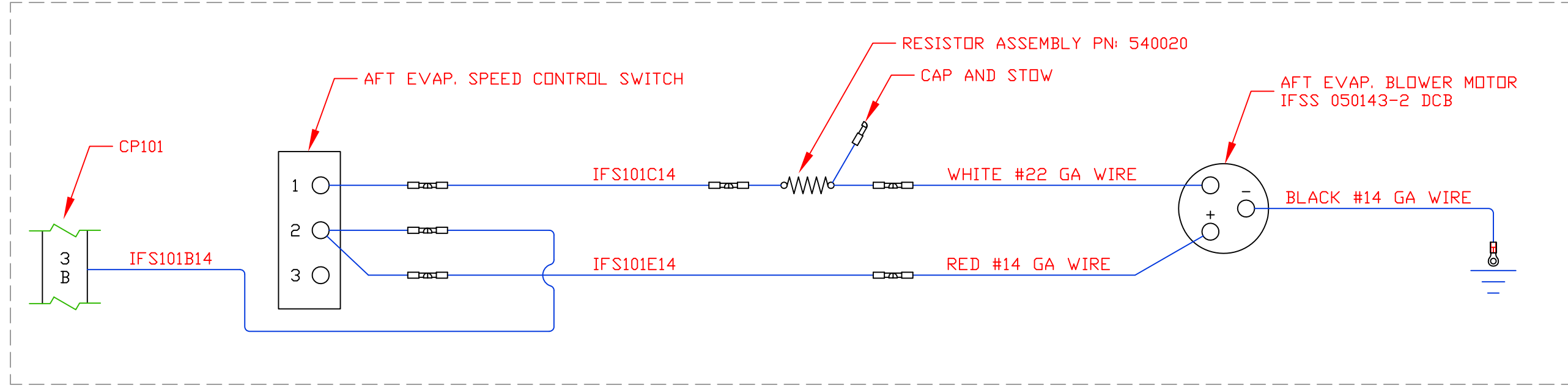
(C)(D)(E)

**INTEGRATED**  
Flight Systems

TITLE: ELECTRICAL DIAGRAM

DRAWN BY: MAH	DATE: 04/16/02	REV.: E	SCALE: NTS	SHEET: 1 OF 2
APPLICATION: AS350			DWG. NO.: 2-21-AS350	

REVISION RECORD				
DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/21/99	WAS PP-2, IS PP-12. DELETED REMAINDER OF NOTE. ADDS B3		
B	05/10/99	EVAP BREAKER WAS 15 AMP. IS 20 AMP. CHANGED LOCATION OF LOW PRESSURE SWITCH.		
C	06/16/00	REVISED DRAWING No. WAS 2-AS350 SH 3 OF 3.		
D	04/16/02	CONVERTED TO AUTOCAD.		
E	06/30/08	REDRAWN FOR CLARITY. REVISED TITLE BLOCK.		JTYE



**DIAGRAM DETAIL FOR INSTALLATION OF IFSS 050143-1 DCB OR IFSS 050143-2 DCB  
2 SPEED AFT EVAPORATOR BLOWER ASSY**

Ⓢ ⓓ ⓔ



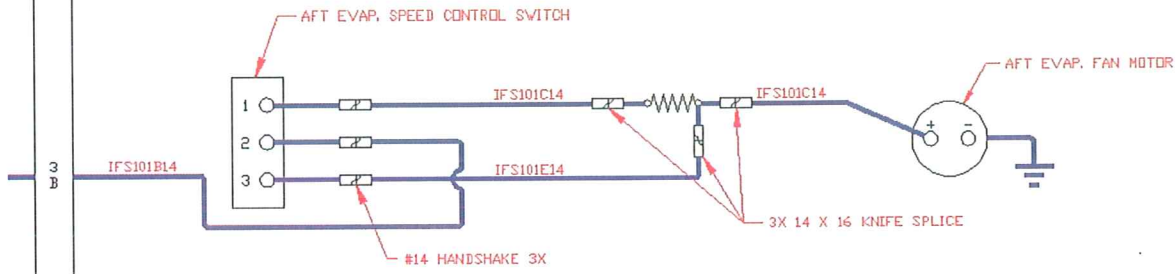
TITLE: ELECTRICAL DIAGRAM				
DRAWN BY: MAH	DATE: 04/16/02	REV.: E	SCALE: NTS	SHEET: 2 OF 2
APPLICATION: AS350			DWG. NO.: 2-21-AS350	

Drawing Number	Revision	Drawing Title
2-21-AS350	E	Electrical Diagram

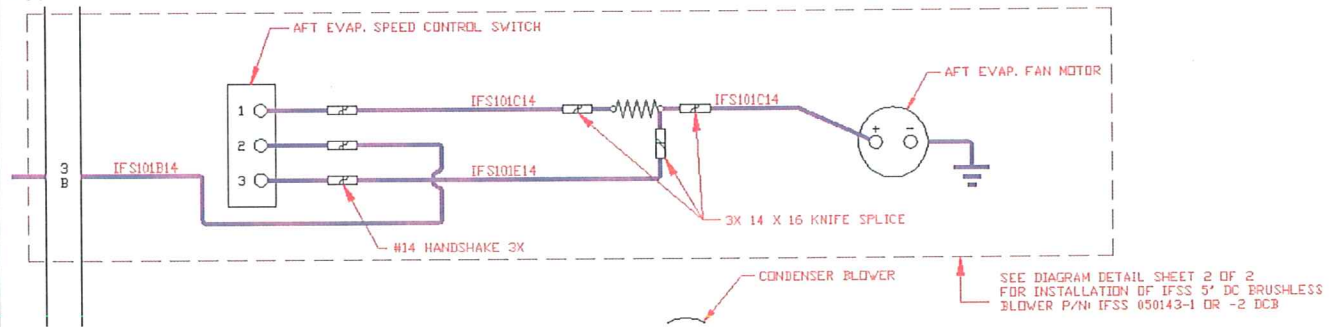
Reason for Change: Added alternate DC Brushless motors wiring diagram.

Description of Change: On sheet 1, added a border around motor connection and callout for diagram on sheet 2.

WAS:



IS:



Description of Change: Added sheet 2, adding a wiring diagram for a p/n IFSS 050143-1 or -2 DC Brushless.

New:

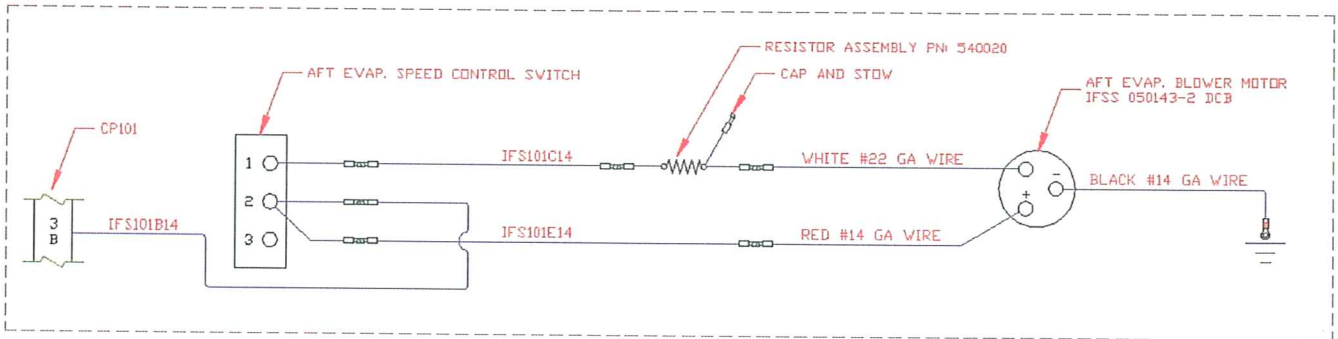


DIAGRAM DETAIL FOR INSTALLATION OF IFSS 050143-1 DCB OR IFSS 050143-2 DCB  
2 SPEED AFT EVAPORATOR BLOWER ASSY

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eipman</i>	ERB02	12/23/10	
<i>Steve Carl</i>	MRB05	12/23/10	
<i>Travis Young</i>	MRB06	12/23/10	



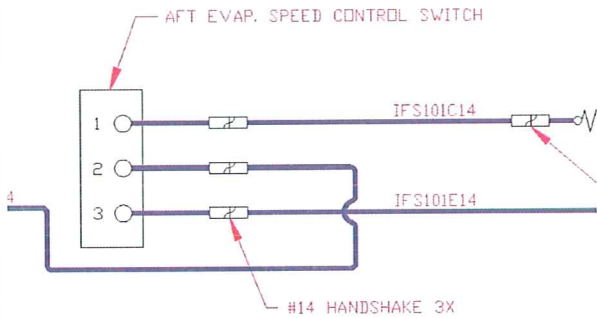
Drawing Number	Revision	Drawing Title
2-21-AS350	E	Electrical Diagram

**Reason for Change:** Added shielded wiring for reduction of noise in aircraft comm. systems. These changes reflect what has been done on the wiring harness drawing.

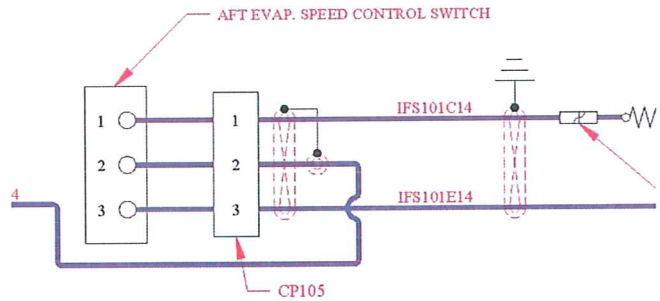
**Description of Change:**

- Note 2 Was: WIRE SPEC: MIL-W-22759/16., Is: WIRE SPEC: MIL-W-22759/16 & MIL-W-22759/18.
- At AFT Evap. speed control switch, handshakes are removed (J105), replaced with cannon plug (CP105) on sheets 1 & 2 of 2.

Was:

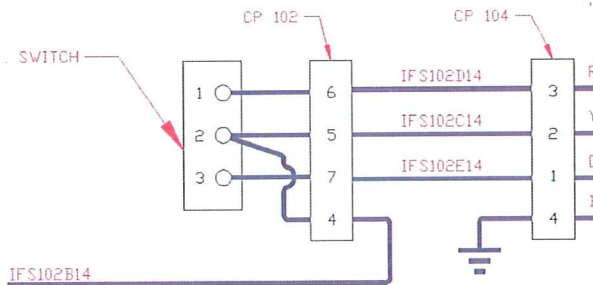


Is:

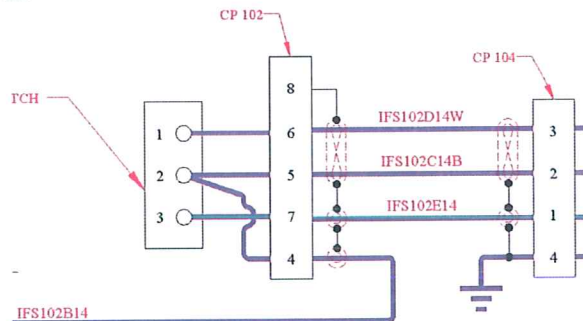


- At CP102, added pin# 8 for shielding.

Was:



Is:



----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eidman</i>	ERB02	05/13/11	
<i>Leona...</i>	MRB06	05/13/11	
<i>Scott...</i>	MRB05	05/13/11	

# Step 10

## Installation of Hoses



Integrated Flight Systems  
 INSTALLATION OF HOSES – AS350 Air Conditioning

### Installation of Hoses

STEP	PROCEDURE	MECH	INSP
10.1	Review Install Drawings 3-4-AS350 and 3-14-AS350.		
10.2	<b><u>WARNING: Before connecting hoses, be sure all fittings have R134 approved “O”Rings” installed.</u></b>		
10.3	Route evaporator return line hose assembly #10 suction hose (tee fitting above deck), P/N 570087-“O”-A, from the upper transmission deck down through the right side baggage compartment, through the existing opening in the baggage compartment floor, under the floor forward to the forward evaporator. The short length of hose connects to the aft evaporator return fitting above the transmission deck. The longer length above the transmission deck is routed against the cabin back wall to the compressor suction fitting located on the left side of the transmission.		
10.4	Route the evaporator expansion valve supply line high pressure hose assembly #6, P/N 570072 – “O”-A, from the baggage department down through the existing opening in the baggage compartment floor, under the floor forward to the forward evaporator. The tee fitting connects to the “out” or supply fitting on the dryer bottle. The short length to the evaporator.		
10.5	Clamp the coil on the end of the expansion valve to the return hose fitting (#10 large line) with a 1-inch band clamp. Assure the fitting is clean where the coil is clamped. Insulate the coil completely with cork tape, P/N 070078-0.		
10.6	Route the condenser supply line hose assembly #8, P/N 570024-“O”-A, from the compressor discharge fitting against the cabin back wall to the right side of the transmission deck. Route down the same opening in the transmission deck as the return hose was routed. Connect to condenser. Ref. Drawing No. 3-4-AS350.		

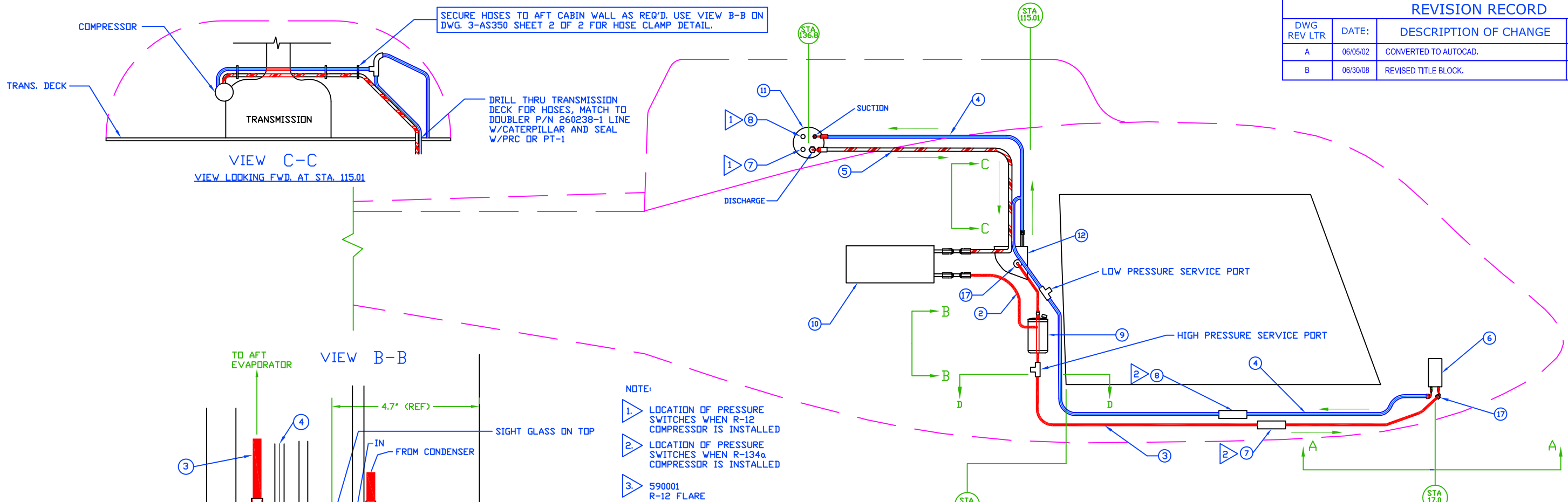
Integrated Flight Systems  
INSTALLATION OF HOSES – AS350 Air Conditioning

**Installation of Hoses**

<b>STEP</b>	<b>PROCEDURE</b>	<b>MECH</b>	<b>INSP</b>
10.7	Install drier mount bracket, P/N 260123-2. per Drawing No. 3-4-AS350 and drier bottle, P/N 090016-5		
10.8	Do not connect drier bottle up until all lines are connected and you are ready to vacuum down system. Install hose assembly, P/N 570020-“O”-A.		
10.9	Connect high and low pressure switches. Be sure to connect the correct wire to each switch. Low pressure SW. P/N 050107, High pressure switch, P/N 90004.		

REVISION RECORD

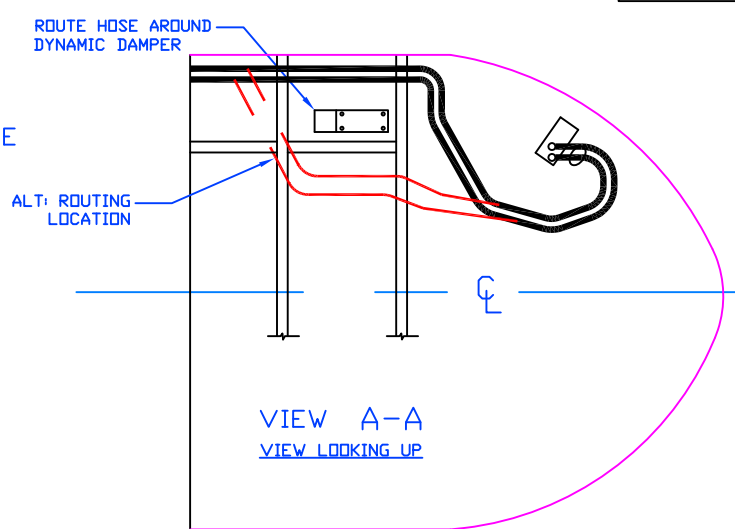
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE



- NOTE:
- 1. LOCATION OF PRESSURE SWITCHES WHEN R-12 COMPRESSOR IS INSTALLED
  - 2. LOCATION OF PRESSURE SWITCHES WHEN R-134a COMPRESSOR IS INSTALLED
  - 3. 590001 R-12 FLARE  
590001-1 "O" R-12 "O" RING  
590001-2 "O" R-134a W/SP-20 OIL  
590008 ALT: 590008-1 R-134a W/ESTER OIL

QTY	ITEM	PART NUMBER	DESCRIPTION
1	18	060036	3 INCH BAND CLAMP
2	17	090002-O	EXPANSION VALVE
1	16	260123-2	RECEIVER DRIER MOUNT
2	15	MS21044-N3	NUT
4	14	AN960-10	WASHER
2	13	AN3-5A	BOLT
1	12	560010-O-5	AFT EVAPORATOR
1	11	590008	COMPRESSOR 24 VDC R-134a O-RING
1	10	550007-1	CONDENSER (ALT: 550007-2 FOR DUAL BLOWERS)
1	9	090016-5	RECEIVER DRIER BOTTLE
1	8	050107	LOW PRESSURE SWITCH
1	7	090004	HIGH PRESSURE SWITCH
1	6	560025-O	FORWARD EVAPORATOR
1	5	570024-O-A	HOSE ASSY COMPRESSOR TO CONDENSER
1	4	570087-O-A	HOSE ASSY FWD EVAPORATOR TO AFT EVAPORATOR
1	3	570072-O-A	HOSE ASSY. AFT EVAP TO FWD. EVAP TO REC/DRIER
1	2	570020-O-A	HOSE ASSY. COND. TO REC./DRIER
-	1	RESERVED	-

- NOTE:
- ALTERNATE HOSE:  
1991-ON NEOPRENE BARRIER TYPE
- #6 P/N 090078 BASIC
  - #8 P/N 090079 PRODUCT
  - #10 P/N 090080 IFS P/N
- 1995-ON NEOPRENE REDUCED BARRIER TYPE
- #6 P/N 090089
  - #8 P/N 090090
  - #10 P/N 090091
- FERRULES FOR ABOVE
- #6 P/N 090081 BASIC
  - #8 P/N 090082 PRODUCT
  - #10 P/N 090083 IFS P/N
- MUST USE ATCO REDUCED BARRIER TYPE FITTINGS & ATCO CRIMPER P/N 3700 OR MASTERCODL P/N 71500



#10 HOSE	
#8 HOSE	
#6 HOSE	

**INTEGRATED**  
Flight Systems

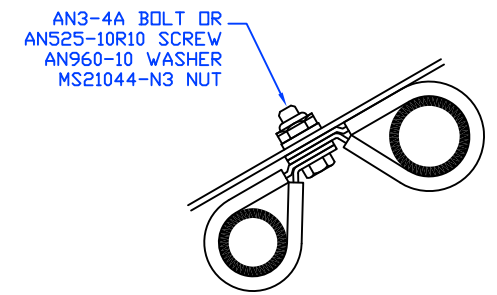
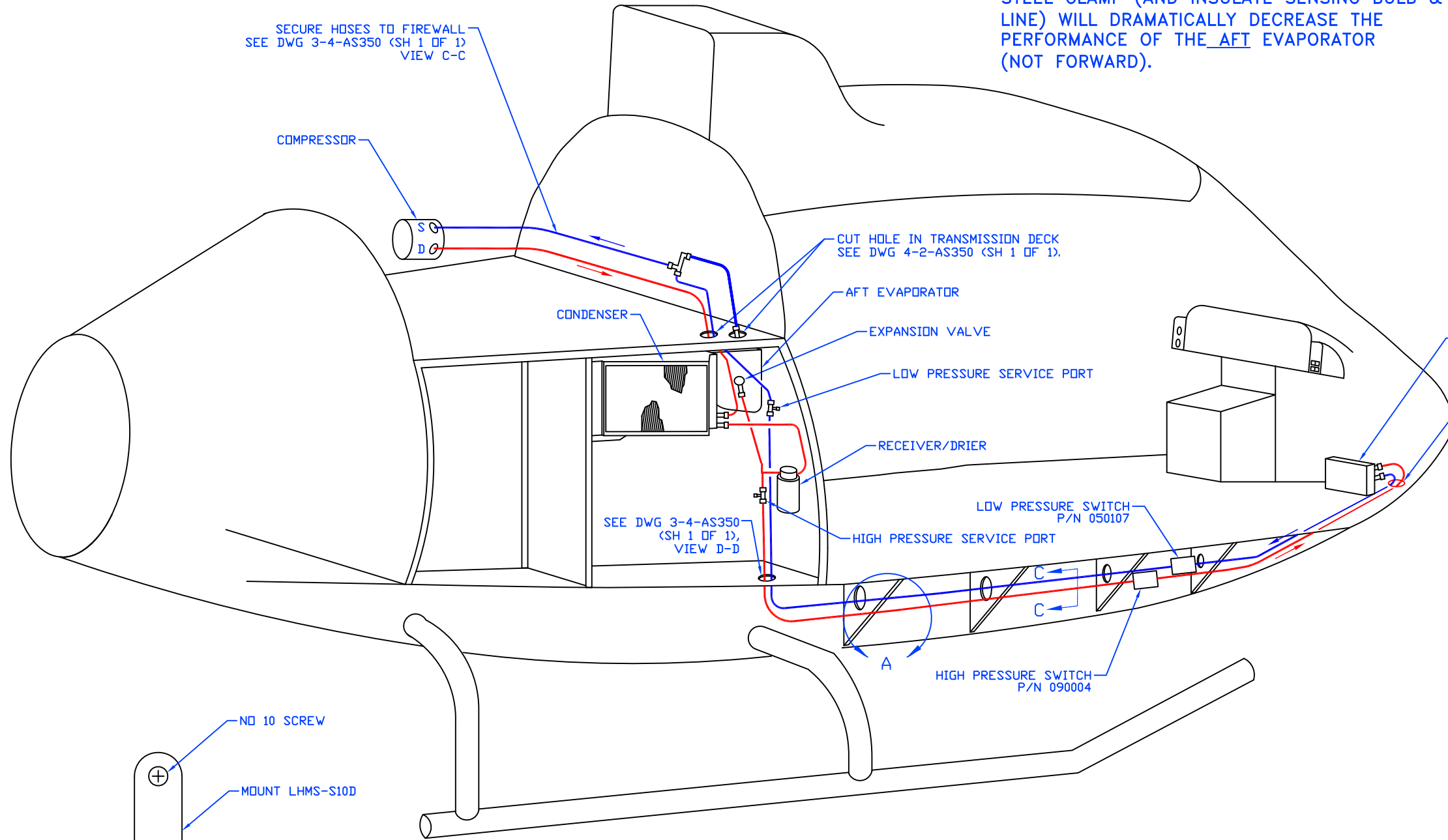
TITLE: PLUMBING DIAGRAM

DRAWN BY: N.DEAN	DATE: 06/05/02	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350		DWG No. 3-4-AS350		

**EXTREMELY IMPORTANT**

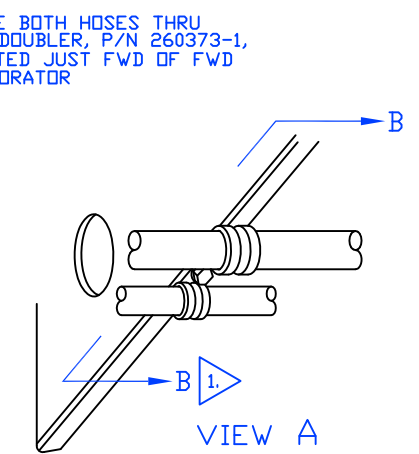
FAILURE TO SECURE EXPANSION VALVE SENSING BULB, TIGHTLY, TO THE RETURN LINE HOSE FITTING (#10) WITH A STAINLESS STEEL CLAMP (AND INSULATE SENSING BULB & LINE) WILL DRAMATICALLY DECREASE THE PERFORMANCE OF THE AFT EVAPORATOR (NOT FORWARD).

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE



VIEW B-B

1. ALTERNATE: P/N LHMS-S10D MOUNT USE #10 SCREW OR AN3 BOLT WITH TIE WRAP & ZZCR4HM BLOCK IF DESIRED (SEE VIEW B-B "ALTERNATE")



VIEW A

TYPICAL HOSE INSTALLATION:  
 FOR #6 HOSE ATTACH WITH ADEL CLAMP MS21919DG10 & HARDWARE AS SHOWN  
 FOR #8 HOSE ATTACH WITH ADEL CLAMP MS21919DG11 & HARDWARE AS SHOWN  
 FOR #10 HOSE ATTACH WITH ADEL CLAMP MS21919DG12 & HARDWARE AS SHOWN  
 NOTE, INWARD PLACEMENT OF CLAMPS TO FACILITATE INSTALLATION USING ONLY ONE SCREW, WASHER & NUT SET-UP.

SECURE HOSES TO FIREWALL SEE DWG 3-4-AS350 (SH 1 OF 1) VIEW C-C

COMPRESSOR

CONDENSER

CUT HOLE IN TRANSMISSION DECK SEE DWG 4-2-AS350 (SH 1 OF 1).

AFT EVAPORATOR

EXPANSION VALVE

LOW PRESSURE SERVICE PORT

RECEIVER/DRIER

SEE DWG 3-4-AS350 (SH 1 OF 1), VIEW D-D

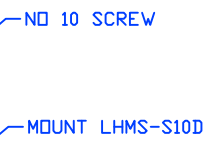
HIGH PRESSURE SERVICE PORT

LOW PRESSURE SWITCH P/N 050107

HIGH PRESSURE SWITCH P/N 090004

FWD EVAPORATOR

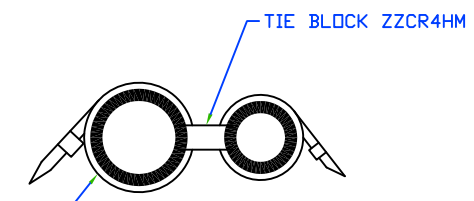
ROUTE BOTH HOSES THRU FWD DOUBLER, P/N 260373-1, LOCATED JUST FWD OF FWD EVAPORATOR



VIEW B-B

"ALTERNATE"

NOTE:  
 USE EXISTING LIGHTENING HOLES ONLY FOR ALL ROUTING (PREFERRED).  
 INSTALL PER VIEW B-B OR ALTERNATE VIEW B-B OR VIEW C-C



VIEW C-C



TITLE: PLUMBING ROUTING				
DRAWN BY: MAH	DATE: 11/01/99	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 3-14-AS350	



## Engineering Change Order

ECO No.  
0288

Drawing Number	Revision	Drawing Title
3-4-AS350	B	Plumbing Diagram

Reason for Change: To add O-Rings to B.O.M. & added alternate compressor assembly to Item 11.

Description of Change:

1. Added item 19: 090092, #6 O-Ring, Qty. 4
2. Added item 20: 090093, #8 O-Ring, Qty. 3
3. Added item 21: 090094, #10 O-Ring, Qty. 3
4. Item 11 description Was: COMPRESSOR 24 VDC R-134a O-RING  
Is: COMPRESSOR 24 VDC R-134a O-RING (590008-1 GROOVED)

----- LAST ITEM -----

**Engineering Review Board Approval**

Signature	Stamp	Date	Comment
	ERB02	06/08/11	
	MRB06	06/08/11	
	MRB05	06/08/11	

# Step 11

# Paperwork

Integrated Flight Systems  
 PAPERWORK – AS350 Air Conditioning  
 DETAILED WEIGHT AND BALANCE DATA

FOR

**INTEGRATED FLIGHT SYSTEMS**

FREON AIR CONDITIONING

UNIT INSTALLED IN A

TYPICAL HELICOPTER, MODEL AS350 B, BA, B1, B2, B3, C, D OR D1

**PERTAINS TO KIT #350-00-011**

ITEM	WEIGHT	ARM	MOMENT
Forward Evaporator Assembly	10.0	19.00	190.00
Forward Air Outlets	4.0	31.32	125.28
Aft Evaporator and Return Air	9.0	120.00	1080.90
Aft Evaporator Blower	6.0	120.85	725.10
Condenser Coil and Mount	20.0	133.80	2676.00
Condenser Blower and Mount	8.0	148.60	1188.80
Compressor and Mount	12.0	147.80	1773.60
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	6.0	76.90	461.40
<hr/>			
Sub Total: (Air Conditioner)	79.0	111.85	8835.88

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**

United States of America  
Department of Transportation -- Federal Aviation Administration

# Supplemental Type Certificate

*Number* SH3509SW

PE: AG  
PROJ: SA3109RC-R

*This certificate issued to*

Integrated Flight Systems, Inc.  
3900 Falcon Way West, Hangar 16S  
Fort Worth, TX 76106

*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 27 of the Federal Aviation Regulations.*

*Original Product -- Type Certificate Number :* H9EU  
*Make :* Eurocopter France  
*Model :* AS-350 B, B1, B2, B3, BA, C, D, D1; EC130B4

*Description of Type Design Change:* Installation of a Single and Dual Condenser Blower Air Conditioning System in accordance with Integrated Flight Systems (IFS) Master Drawing List (MDL), Document No. DL-9 (Vapor Cycle Air Conditioning System with Belt Driven Compressor Utilizing Refrigerant R134a), Rev. R, dated 8/30/2010, or later FAA approved revision.

(See continuation sheet 3 of 3)

*Limitations and Conditions:*

The installer must determine whether this design change is compatible with previously approved modifications. If the holder agrees to permit another person to use this certificate to alter a product, the holder must 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 :* September 10, 1984

*Date reissued :* April 30, 1991; August 22, 2001; October 23, 2008

*Date of issuance :* September 20, 1985

*Date amended :* February 11, 1999;  
February 9, 2009; February 23, 2009;  
November 5, 2010



*By direction of the Administrator*

(Signature)

James A. Richmond, Acting Manager  
Rotorcraft Certification Office  
Southwest Region



United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**  
(Continuation Sheet)

---

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

United States of America  
Department of Transportation -- Federal Aviation Administration

**Supplemental Type Certificate**  
(Continuation Sheet)

*Number* SH3509SW

Date of Issuance: September 20, 1985

Date Amended: November 5, 2010

*Description of Type Design Change* (Continued):

FAA approved helicopter Flight Manual Supplement (FMS) dated 6/26/85, or later FAA approved revision is required for Models AS350B, C, D, and D1. Model AS350B1, requires FAA approved helicopter FMS dated 10/27/8, or later FAA approved revision. Model AS350B2 requires FAA approved Helicopter FMS dated 4/30/91, or later FAA approved revision. Model AS350BA requires FAA approved helicopter FMS dated 5/15/92, or later FAA approved revision. Model AS350B3 requires FAA approved Helicopter FMS dated 2/8/99, or later FAA approved revision. Model EC130B4 requires FAA approved Helicopter FMS dated 2/6/04, or later FAA approved revision.

Instructions for Continued Airworthiness, IFS Document No. IFSE-0007, Rev. C, dated 8/12/2010, or later revision is required.



Transport  
Canada  
Civil Aviation

Transports  
Canada  
Aviation Civile

Suite 620  
800 Burrard Street  
Vancouver, B.C.  
V6Z 2J8

Your file    Votre référence

Our file    Notre référence  
P-03-0350

July 8, 2003

Integrated Flight Systems, subsidiary  
of Platinum Aviation Group, Inc.  
4655 Aircenter Circle  
Reno, Nevada 89502

**Attn:** Mr. Leroy Aday, President

**Subject:** Acceptance of FAA STCs SH3509SW and SH5947SW

Dear Mr. Aday:

This letter is in response to your application for Canadian acceptance of FAA STCs SH3509SW and SH5947SW, submitted to our office June 13, 2003, by the FAA Los Angeles Aircraft Certification Office.

In accordance with current Transport Canada policy concerning review of FAA-issued STCs for non-US state-of-design Normal Category rotorcraft, both STCs have been accepted in Canada without having to issue corresponding Canadian certificates.

Both FAA STC's will be entered into the national index of STCs that have been reviewed and accepted by Transport Canada for installation on Canadian-registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

If you have any questions concerning this matter, I can be contacted by telephone at (604) 666-5269.

Yours truly,

David Bafia

For Regional Manager,  
Aircraft Certification

Canada 



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

## CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

**NÚMERO** 2006S12-08  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to:)  
4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions thereof as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

**Produto Original - Número do Certificado de Tipo:** 84 (FN 157).  
(Original Product - Type Certificate No:)

**Fabricante:** Eurocopter France.  
(Manufacturer:)

**Modelo(s):** AS 350 B.  
(Model(s):)

### DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO: (Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

### LIMITAÇÕES E CONDIÇÕES: (Limitations and Conditions:)

See continuation sheet for applicable data.

### DATAS: (Dates of:)

**Do Requerimento:** 28 Aug. 2006  
(Application:)

**Da emissão:** 13 Dec. 2006  
(Issue:)

**Da reemissão:**  
(Reissue:)

  
**CLÁUDIO PASSOS SIMÃO**

Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

  
**MILTON ZUANAZZI**  
Diretor-Presidente  
(Director President)



## AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

Folha de Continuação ao  
(Continuation Sheet to)

### CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO (Supplemental Type Certificate)

**NÚMERO 2006S12-08**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), Rev. B, dated 30 Apr. 1991, or later approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----

*Lawson* *JP*



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO** 2006S12-09  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to:) 4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

**Produto Original - Número do Certificado de Tipo:** 8812 (ANAC).  
(Original Product - Type Certificate No:)

**Fabricante:** Eurocopter France.  
(Manufacturer:)

**Modelo(s):** AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA and.  
(Model(s):) EC 130 B4.

**DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:**  
(Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

See continuation sheet for applicable data.

**DATAS:**  
(Dates of:)

**Do Requerimento:** 28 Aug. 2006  
(Application:)

**Da emissão:** 13 Dec. 2006  
(Issue:)

**Da reemissão:**  
(Reissue:)

  
**CLÁUDIO PASSOS SIMÃO**

Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

  
**MILTON ZUANAZZI**  
Diretor-Presidente  
(Director President)





**AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL**

Folha de Continuação ao  
(Continuation Sheet to)

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO 2006S12-09**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), as applicable:
  - Model AS 350 B1, requires FMS, Rev. A, dated 30 Apr. 1991 or later FAA approved revision;
  - Model AS 350 B2, requires FMS, Rev. NC, dated 30 Apr. 1991 or later FAA approved revision;
  - Model AS 350 B3, requires FMS, Rev. NC, dated 8 Feb. 1999 or later FAA approved revision;
  - Model AS 350 BA, requires FMS, Rev. NC, dated 15 May 1992 or later FAA approved revision;
  - Model EC 130 B4, requires FMS, Rev. NC, dated 6 Feb. 2004 or later FAA approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO** 2006S12-10  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to:) 4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

Produto Original - Número do Certificado de Tipo: 8001 (ANAC).  
(Original Product - Type Certificate No:)

Fabricante: Helicópteros do Brasil S/A.  
(Manufacturer:)

Modelo(s): HB-350B.  
(Model(s):)

**DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:**  
(Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

See continuation sheet for applicable data.

**DATAS:**  
(Dates of:)

Do Requerimento: 28 Aug. 2006  
(Application:)

Da emissão: 13 Dec. 2006  
(Issue:)

Da reemissão:  
(Reissue:)

  
CLÁUDIO PASSOS SIMÃO

Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

  
MILTON ZUAZZINI  
Diretor-Presidente  
(Director President)





**AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL**

Folha de Continuação ao  
(Continuation Sheet to)

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO 2006S12-10**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions.)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), Rev. B, dated 30 Apr. 1991, or later approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----

*Paulo* *P*



European Aviation Safety Agency

## SUPPLEMENTAL TYPE CERTIFICATE

**EASA.IM.R.S.01243**

This certificate, established in accordance with Regulations (EC) No 1592/2002 and (EC) No 1702/2003 and issued to:

**Integrated Flight Systems Corp.**

4607 B Aircentre Circle

Reno

Nevada 89502

USA

certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable type certification basis and environmental protection requirements when operated within the conditions and limitations specified below:

**Original Product Type Certificate number:** *EASA TCDS EASA.R.008*

**Manufacturer:** *Eurocopter*

**Model:** *AS 350 B, B1, B2, B3, BA, D, EC130B4*

**Original STC Number:** *SH3509SW*

**Description of Design Change:**

Installation of a Belt Driven Freon Air Conditioning System (FAA STC SH3509SW).



## European Aviation Safety Agency

### Associated Technical Documentation:

- DL-9 rev A dated 12 Sept 1985 – Drawing List, Single Condenser Blower
- DL-9-1 rev N/C dated 10 Jan 1992 – Drawing List, Dual Condenser Blowers
- Models AS350B & D, FMS dated 26 June 1985 or later approved revision
- Model AS 350B1, FMS dated 27 October 1988 or later approved revision
- Model AS350B2, FMS dated 30 April 1991 or later approved revision
- Model AS350BA, FMS dated 15 May 1992 or later approved revision
- Model AS350B3, FMS dated 8 February 1999 or later approved revision
- Model EC130B4, RFM-130-00-031HP rev Original dated 6 February 2004 or later approved revision

### Limitations and Conditions:

1. VFR Operations only
2. This STC is approved only for the product configuration as defined in the approved design data referred to in the paragraphs "Description" and "Associated Technical Documentation". Compatibility with other aircraft/engine configurations shall be determined by the installer.

This certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,  
Date of Issue: 26 April 2007

Massimo Mazzoletti  
Certification Manager  
Rotorcraft, Balloons & Airships

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350B, C, D AND D1

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350 B,C,D,D1

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated June 7, 1978, when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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 Michael H. Borfitz,  
Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: June 26, 1985

Revision: April 30, 1991

Air Conditioning

MODEL AS350 B,C,D,D1  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: June 26, 1985

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
1 thru 8	original	June 26, 1985	<i>jtj</i>
1 thru 2	"A" reissued	Oct. 27, 1988	<i>jtj</i>
Company name was: Consolidated Aire Systems			
Company name is: Av-Aire Corporation			
1 thru 2	"B" reissued	April 30, 1991	<i>jtj</i>
Company name was: Av-Aire Corporation			
Company name is: Integrated Flight Systems, Inc.			

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

FAA Approved: June 26, 1985  
Revision: April 30, 1991

Page 2 of 8

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2.0 Normal Procedures..... 5

3.0 Emergency Procedures..... 6

4.0 Performance..... 6

**APPENDIX**

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A.2 Weight & Balance..... 8



**1.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.



2.0 NORMAL PROCEDURES

2.1 GROUND OPERATION

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

2.2 NORMAL PROCEDURES

GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

**3.0 EMERGENCY PROCEDURES**

**3.1 EMERGENCY PROCEDURES**

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

**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 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**A-1 ELECTRICAL LOADING**

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

Condenser Blowers	1 each	@ 14 amps	= 14 amps
Compressor	1 each	@ 3 amps	= 3 amps
Evaporator Fan	1 each	@ 7 amps	= 7 amps
Evaporator Fan	1 each	@ 13 amps	= <u>13 amps</u>
		<b>TOTAL</b>	<b>37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350BA

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

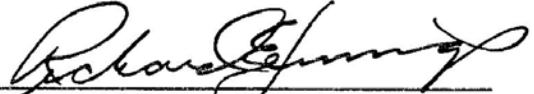
FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350BA

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated March 11, 1992 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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:   
Richard E. Jennings, Supervisor  
Denver Aircraft Certification  
Field Office  
Northwest Mountain Region  
Denver, Colorado 80207

Date: May 15, 1992

MODEL AS350BA  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: May 15, 1992

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
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## 1.0 GENERAL

The installation consists of a belt driven vapor-cycle (freon) air conditioning system.

## 2.0 OPERATING LIMITATIONS

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

### 3.0 EMERGENCY PROCEDURES

#### 3.1 EMERGENCY PROCEDURES

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

#### 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**

##### **2.1 GROUND OPERATION**

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

##### **2.2 NORMAL PROCEDURES**

###### **GROUND AND FLIGHT OPERATIONS**

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

#### **5.0 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**A-1 ELECTRICAL LOADING**

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

Condenser Blowers	1 each	@ 14 amps	= 14 amps
Compressor	1 each	@ 3 amps	= 3 amps
Evaporator Fan	1 each	@ 7 amps	= 7 amps
Evaporator Fan	1 each	@ 13 amps	= <u>13 amps</u>
		<b>TOTAL</b>	<b>37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350B1

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED

HELICOPTER FLIGHT MANUAL SUPPLEMENT

FOR

AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350B1

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated February 13, 1987 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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:

*David T. Grossman*  
for Michael H. Borfitz,  
Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: October 27, 1988

REVISION: April 30, 1991

MODEL AS350B1  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: October 27, 1988

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
1 thru 7	original	October 27, 1988	<i>dtg</i>
1 thru 2	"A" reissued	April 30, 1991	<i>dtg</i>
Company name was: Av-Aire Corporation			
Company name is: Integrated Flight Systems, Inc.			

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



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**1.0 GENERAL**

The installation consists of a belt driven vapor-cycle (freon) air-conditioning system.

**2.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**3.0 EMERGENCY PROCEDURES**

**3.1 EMERGENCY PROCEDURES**

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

**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

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

4.2 NORMAL PROCEDURES

GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired (Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

5.0 PERFORMANCE:

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle (freon) air-conditioning 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 to the right of the instrument panel. 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 dual evaporator fans, condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. Another evaporator fan speed switch is located in the aft cabin. It provides two speed selections. Thermostatic temperature control is not provided. A 5 amp circuit breaker below the left air outlet disconnects power to all relays.

A high pressure safety switch, located on the condenser, disengages the compressor and stops operation of the system in the event of excessive freon pressure. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself and the system will cycle on again when the pressures are reduced below a predetermined point.

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 2 each 15 amp and 1 each 20 amp circuit breakers. Labeled CONDENSER FAN and EVAPORATOR FANS, in the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

**A-1 ELECTRICAL LOADING**

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

Condenser Blower	1 each @ 14 amps = 14 amps
Compressor	1 each @ 3 amps = 3 amps
Evaporator Fan	1 each @ 7 amps = 7 amps
Evaporator Fan	1 each @ 13 amps = <u>13 amps</u>
	<b>TOTAL      37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning kit weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL

SUPPLEMENT

FOR

AS350B2

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

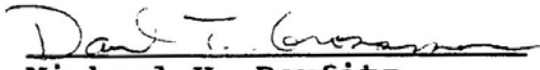
MODEL: AS350B2

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated June 8, 1990 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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 Michael H. Borfitz,  
Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: April 30, 1991

Air Conditioning

MODEL AS350B2

FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: April 30, 1991

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1.0 GENERAL

The installation consists of a belt driven vapor-cycle (freon) air-conditioning system.

2.0 OPERATING LIMITATIONS

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.

3.0 EMERGENCY PROCEDURES

3.1 EMERGENCY PROCEDURES

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

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**

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

**4.2 NORMAL PROCEDURES**

**GROUND AND FLIGHT OPERATIONS**

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

**5.0 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**Single 7" Vane Axial Condenser Blower (1):**

System electrical protection is provided by 2 each 15 amp, 1 each 25 amp, and 1 each 1 amp circuit breakers. Labeled EVAP, EVAP, COND, and RESET on the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

Electrical "soft start" is provided. When the "A/C" switch is positioned to "ON", both evaporator fan/blowers immediately start causing a 20 amp draw. A timer delays the condenser blower and clutch operation for about 4 seconds, when an additional 21 amps are added to the system load.

**A-1 ELECTRICAL LOADING (7" Enviro System, Inc. blower)**

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

Condenser Blower	1 each @	19 amps	=	19 amps
Compressor	1 each @	2 amps	=	2 amps
Evap. Fan (Fwd)	1 each @	7 amps	=	7 amps
Evap. Fan (Aft)	1 each @	13 amps	=	<u>13 amps</u>

**TOTAL 41 amps**

**LOAD SHEDDING**

Automatic electrical load shedding will not occur if a D.C. generator failure occurs.

**NOTE:** \*\*During conditions of high D.C. current use, such as battery recharging after engine start, use of landing lights, etc., it is possible that the electrical power requirements with the air conditioning "ON" may exceed the rated output of the generator (150 amps, max.).

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed.  
 Approximate weight is 79 pounds.  
 See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350B3

INTEGRATED FLIGHT SYSTEMS, INC.  
MEADOW LAKE AIRPORT  
8345 BLUE GILL DRIVE  
FALCON, CO 80831

FAA APPROVED

HELICOPTER FLIGHT MANUAL SUPPLEMENT

FOR

EUROCOPTER HELICOPTER CORPORATION

MODEL: AS350B3

REGISTRATION NO.: \_\_\_\_\_

SERIAL NO.: \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual May 7, 1998 when an Integrated Flight Systems, Inc., air conditioning system is installed in accordance with Supplemental Type Certificate number SH3509SW. 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: 

Mr. Carl Mittag  
Manager, Southwest Region  
Certification Office ASW-170  
Ft. Worth, Texas 76193-170

DATE: FEB 08 1999

Page 1 of 7

Integrated Flight Systems, Inc.  
Meadow Lake Airport  
8345 Blue Gill Dr.  
Falcon, CO 80831

Rotorcraft Flight Manual  
Supplement for AS350B3  
Air Conditioning

**MODEL AS350B3**

**LOG OF REVISIONS**

Original. . .

Dated: \_\_\_\_\_

<u>PAGE</u>	<u>REVISION NO.</u>
1 thru 7	Original

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



Integrated Flight Systems, Inc.  
Meadow Lake Airport  
8345 Blue Gill Dr.  
Falcon, CO 80831

Rotorcraft Flight Manual  
Supplement for AS350B3  
Air Conditioning

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## 1.0 GENERAL

The installation consists of a belt drive vapor-cycle air conditioning system.

## 2.0 OPERATING LIMITATIONS

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the total electrical load will exceed 150 amps, continuous or if generator is inoperative.
- "MAG" compass deviation may be excessive with air conditioner or fans - "ON". Turn air conditioner "OFF" to read MAG compass.

## 3.0 EMERGENCY PROCEDURES

### 3.1 EMERGENCY PROCEDURES

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

### 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

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "OFF" - Move switch To "AC".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

##### 4.2 Normal Procedures

###### GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired (Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

#### 5.0 PERFORMANCE

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7,000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

FAA APPROVED: **FEB 08 1999**

**Single 7" Vane Axial Condenser Blower (1):**

System electrical protection is provided by 2 each 15 amp, 1 each 25 amp, and 1 each 1 amp circuit breakers. Labeled EVAP, EVAP, COND, and RESET on the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

Electrical "soft start" is provided. When the "A/C" switch is positioned to "ON", both evaporator fan/blowers immediately start causing a 20 amp draw. A timer delays the condenser blower and clutch operation for about 4 seconds, when an additional 21 amps are added to the system load.

**A-1 ELECTRICAL LOADING (7" Enviro System, Inc. blower)**

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

Condenser Blower	1 each @	19 amps	=	19 amps
Compressor	1 each @	2 amps	=	2 amps
Evap. Fan (Fwd)	1 each @	7 amps	=	7 amps
Evap. Fan (Aft)	1 each @	13 amps	=	<u>13 amps</u>

**TOTAL 41 amps**

**LOAD SHEDDING**

Automatic electrical load shedding will not occur if a D.C. generator failure occurs.

NOTE:      \*\*During conditions of high D.C. current use, such as battery recharging after engine start, use of landing lights, etc., it is possible that the electrical power requirements with the air conditioning "ON" may exceed the rated output of the generator (150 amps, max.).

**A-2 WEIGHT AND BALANCE**

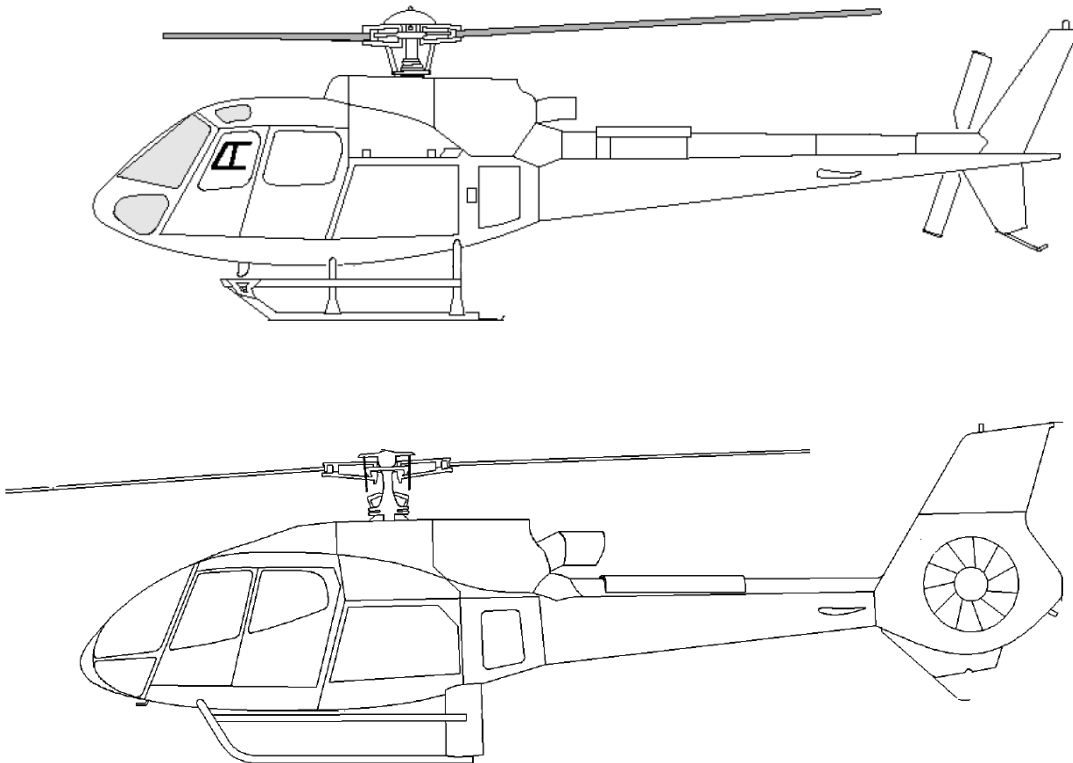
Weight and Balance must be computed with air conditioning system installed.  
 Approximate weight is 79 pounds.  
 See Installation Instructions supplied with kit for actual weight.

# Step 12

## Continued Airworthiness



Instructions for Continued  
Airworthiness for the  
Eurocopter AS-350C, D, D1, B1, B2, B3, BA & EC-130 B4  
Air Conditioning System Installation



PROJECT: SA3109RC-R  
STC: SH3509SW



## LOG OF REVISIONS

Instructions for Continued Airworthiness for the Eurocopter AS-350C, D, D1, B, B1, B2, B3, BA and EC-130B4 Air Conditioning System Installation have been reviewed and found to be acceptable to the Administrator. For the purpose of these Instructions for Continued Airworthiness (ICA), acceptable to the Administrator means the ICA contains the applicable requirements specified in Appendix A to Federal Aviation Regulations Part 27 or 29, as appropriate, do not contain any incorrect terminology or incorrect references, and contain a Cover Page, Log of Accepted Revisions, Revision Control Procedure and Record of Temporary Revisions, a list of Effective Pages, and a Table of Contents.

REV.	Date	Description	Written By	Checked By	FAA Approval	Approval Date
-	05/03/10	Original Issue	E. Sherrill	P. Ban		
A	06/11/10	Incorporated FAA redlines	E. Sherrill	K. Sheridan		
B	08/08/10	Revised to add Brushless Motor part information, page 87	E. Sherrill	P. Ban		
C	08/12/10	Incorporated FAA redlines	E. Sherrill	P. Ban		





## RECORD OF TEMPORARY REVISIONS

Rev. No.	Issue Date	Date Inserted	By	Rev. No.	Issue Date	Date Inserted	By



## LIST OF EFFECTIVE PAGES

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LIST OF REVISIONS

Revision C

August 12, 2010

LIST OF EFFECTIVE PAGES

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Cover	i	C
Log of Revisions	ii	C
Record of Temporary Revisions	iii	C
List of Effective Pages	iv	C
Table of Contents	v through vi	C
Chapter 1 Introduction	1	C
Chapter 4 Airworthiness Limitation	2	C
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## Chapter 1

### Section 01-00-00 Introduction

These are accepted Instructions for Continued Airworthiness for modifications performed in accordance with the Eurocopter AS-350C, D, D1, B, B1, B3, BA and EC-130B4 Belt-Driven Vapor Cycle Air Conditioning System Installation. All references to the Air Conditioning System in this document will refer to the Belt-Driven Air Conditioning System Installation and other related components specified in STC – SH3509SW. Whether modified by Integrated Flight Systems Corp. or by another Agency with expressed permission from IFS these Instructions for Continued Airworthiness (ICA) should be supplied to the owner/operator of the STC at the time of completion. Subsequent accepted changes to the ICA will be submitted by Integrated Flight Systems, Corp for distribution to owners and operators of the STC.

This, Instructions for Continued Airworthiness, is intended to supplement the AS-350C, D, D1, B, B1, B2, B3, BA, and EC-130B4 rotorcraft maintenance manuals provided by Eurocopter The information, procedures, requirements, and limitations contained in this, Instructions for Continued Airworthiness, for this type design change supersede the information, procedures, requirements, and limitations contained in the rotorcraft's maintenance manual when the type design change is installed on the Type Certificate Holder's rotorcraft.



## Chapter 4

### Section 04-00-00 Airworthiness Limitations

There are no additional airworthiness limitations associated with the Air Conditioning System Installation.

There are no life limited components associated with the Air Conditioning System Installation.

## Chapter 5

### Section 05-00-00 Continued Airworthiness Inspections

#### 1. General

This chapter contains time limit intervals for the Component Overhaul Schedule and Scheduled Inspections for the Air Conditioning System. This chapter is to be added to the approved scheduled inspection for the rotorcraft.

#### 2. Scheduled Inspections Overview

This chapter describes the inspections that must be accomplished on the Air Conditioning System Installation at Scheduled Inspection intervals. Scheduled Inspection requirements must be complied with at the hourly and/or calendar time intervals specified. Refer to Tables 5-01 and 5-02, in Section 05-20-00 for hourly and/or calendar inspection schedules.

#### 3. Conditional Inspection

After any operational incident involving hard landings, sudden stoppage of the drive train or water immersions the system must not be operated and an Annual/100 flight hour inspection is required.

#### 4. Documentation

Aircraft mechanics, owners, or operators are required to keep records of the aircraft systems inspections and repairs. This includes, but is not limited to, airworthiness directives, service notices, scheduled inspections and records.

#### 5. Definitions and Abbreviations

The following is short descriptions of words and terms used in the procedures for the required scheduled inspections.

##### Definitions:

- **Ambient air temperature:** The temperature of the air surrounding a person.
- **Charging station:** An air conditioning system service.
- **Cold:** The absence of heat.
- **Condensation:** The process of changing a vapor into a liquid.
- **Condition:** The state of an item or component compared to a known standard.
- **Damage:** Physical deterioration of a component.
- **Desiccant:** A material used in the receiver/dryer bottle, to absorb moisture from the refrigerant.

- **Evaporate:** To change from a liquid into a vapor.
- **Examine:** Look carefully to find the condition of the component. Find how that condition is related to a specific standard.
- **Heat load:** The amount of heat which the air conditioner is required to remove from the aircraft cabin.
- **Inches of Mercury:** A measurement of pressure normally used for pressures below atmospheric, one i-h of mercury is equal to approximately one half pound per square i-h.
- **Inspection:** A procedure that includes checking, inspecting and examining a system or component.
- **Maintenance:** The servicing and/or repair of a rotorcraft, a system or a component that keeps it serviceable.
- **Pressure, ambient:** The pressure of the air surrounding a body, normally measured in Pounds per Square i-h, or PSIG.
- **Refrigerant:** A fluid which is used in an air conditioning system to absorb heat from the cabin and carry it outside the helicopter where it can be transferred to the outside air.
- **Relative Humidity:** The ratio of the amount of water vapor in the air to the amount of water vapor required to saturate the air at the existing temperature.
- **Scheduled Inspection:** An inspection procedure that must occur at a specified calendar interval or at specific operational time intervals. Scheduled Inspections are required to help ensure the rotorcraft stays airworthy.
- **Security:** Term used for inspection of hardware and components to make sure they are properly attached and tightened.
- **Temperature Differential :** Difference in temperature.
- **Thermostat:** An air condition control which senses the temperature of the evaporator coil and causes the system to cycle or by-pass to maintain the proper temperature of cooling air.
- **Vacuum:** A negative pressure, or pressure below atmospheric; it is usually expressed in inches of mercury.
- **Vapor:** The gaseous state of a material.

#### **Abbreviations:**

- **ICA:** Instructions for Continued Airworthiness
- **TD:** Temperature differential
- **In:** Inches
- **InHg:** Inches of Mercury
- **lbs:** Pounds





- **oz:** Ounces
- **Psig:** Pounds per Square I-h (gauge)
- **gr:** Grams
- **kg:** Kilograms
- **kgcm:** Kilograms Per Centimeter
- **ml:** Milliliters
- **mm:** Millimeters
- **N-m:** Newton-meters

## **Section 05-20-00 Continued Airworthiness Scheduled Inspections**

### **1. General**

This section contains requirements for scheduled inspections.

### **2. Scheduled Inspection Program**

The Air Conditioning System Installation requires scheduled inspections in order to maintain continued airworthiness. Every effort should be made to perform the inspections with the aircraft placed in a clean well lit environment. There are two different scheduled inspections required for the Air Conditioning System Installation.

#### **a) 50-Hour Inspection**

The 50-hour inspection is required to be performed every 50 hours of rotorcraft time-in service. Inspection Table 5-01 specifies the requirements of the 50-hour inspection. The 50 hour inspection does not require any component removal unless a discrepancy is encountered.

#### **b) 1 Year (annual)/ 100-Hr Inspection**

The 1 year (annual) inspection is required to be performed every 1 year period of calendar elapsed time, as well as every 100 hours of rotorcraft time-in service. Inspection Table 5-02 specifies the requirements of the 1 year (annual) inspection.

### **3. Tools and Special Tools for Scheduled Inspection**

Although not necessarily considered special tools, the adjustable ball swivel mirror and bright flashlight and / or drop light are standard requirements for doing inspections. These items should be used freely and frequently to enhance inspection quality and help ensure discrepancies are not missed. It is important to have adequate lighting for all phases of the inspection.

The special tools necessary for the Air Conditioning System Installation inspection are listed as follows:

- a) Vacuum Pump
- b) Gauge Manifold
- c) Vacuum Cleaner
- d) Pull Scale

**Table 5-01 50- Hour Inspection**

<ul style="list-style-type: none"> <li>• The 50-hour inspection shall be accomplished each 50 hours time-in-service.</li> <li>• Initial each item after accomplishing the inspection.</li> <li>• Record all findings and attach a copy of findings to this inspection form.</li> <li>• After correction of all findings, make maintenance record entry.</li> </ul>		
Registration No.	Serial No.	Helicopter Total Hours
<b>PRE-INSPECTION</b>	<b>Initial each item after accomplishment</b>	<b>Initial</b>
1. Review Airworthiness Directives.		
2. Review records and overhaul schedule.		
3. Review log books for discrepancies.		
<b>INSPECTION</b>	<b>Initial each item after accomplishment</b>	<b>Initial</b>
1. Access the condenser (Ref. Section 6-00-00 Dimensions and Access). Check the entire condenser assembly for security, including support brackets and attachment fittings. Visually inspect the condenser blower mount.		
2. Access the compressor (Ref. Section 6-00-00 Dimensions and Access). Visually inspect the security of the compressor and mount.		
3. Inspect the condition of the belt for cracks, deterioration, separation and worn or flat spots. Change belt if necessary. Check belt for proper tension (Ref. 12-60-00 Belt Tension).		
4. Access the evaporators (Ref. 6-00-00 Dimensions and Access). Visually inspect for security.		
5. Inspect air outlets for condition.		
6. Test normal operation functions. (Ref. Section 12-50-00 Normal Operation Function Test)		

**Table 5-02 1 Year (Annual)/100 Hour Inspection Schedule**

<ul style="list-style-type: none"> <li>The 1 Year/100 Hour inspection shall be accomplished at least at an interval of once every year of elapsed calendar time and every 100 hours time-in-service.</li> <li>Initial each item after accomplishing the inspection.</li> <li>Record all findings and attach a copy of findings to this inspection form.</li> <li>After correction of all findings, make maintenance record entry.</li> </ul>		
Registration No.	Serial No.	Helicopter Total Hours
<b>PRE-INSPECTION</b>	<b>Requirement</b>	<b>Initial</b>
	1. Review Airworthiness Directives.	
	2. Review records for the Air Conditioning System	
	3. Review log books for discrepancies.	
<b>INSPECTION</b>	<b>Requirement</b>	<b>Initial</b>
	1. Perform an operational test of the system in accordance with Section 12-50-00	
	2. Complete the 50 Flight Hour Scheduled Inspection found in Table 5-01	
	3. Access the compressor drive belt (Ref. Section 6-00-00 Dimensions and Access) and change the drive belt. (Ref. Section 12-70-00 Drive Belt Change Procedures) Check the belt for proper tension. (Ref. 12-60-00 Belt Tension)	
	4. Inspect the compressor for a true turning and free clutch. One mechanic should turn the main rotor blade while another observes the belt and clutch faceplate. Turn system to "A/C" and check magnetic operation of clutch faceplate. An independent #14 wire may be necessary from the compressor to an airframe ground in order to endure that the clutch engages in a positive manner. If clutch plate and pulley show signs of excessive heat, replace clutch pulley assembly, bearing and coil (Ref. Section 12-20-00 Clutch Servicing Procedures)	
	5. Inspect the compressor clutch bearing. It is <b>not mandatory</b> to grease the bearing. If the bearing is greased use a hypodermic needle, without removing the bearing using 3 to 5cc of Mobil 25 grease. This has proven to be satisfactory when performed at regularly	

<p>scheduled inspections of 500 hours. Some operators flying as much as 200 hours per month have found that re-greasing can occur at more than 500 hour intervals, provided they <b>DO NOT OVER PACK THE BEARING.</b></p> <p><b>100% capacity packing of the bearing can cause a failure to occur in 1 to 1 ½ hours.</b></p>	
<p>5. Inspect hoses for general condition, cuts or swelling. Replace as required.</p>	
<p>6. Check for security of all plumbing fittings (Ref. Section 12-40-00 Fitting Torque Procedures). Replace fittings as needed. Check security of clamps and anti-chaff material. Perform system leak check (Ref. 12-30-00 System leak check).</p>	
<p>7. Access the Aft Evaporator (Ref. Section 6-00-00 Dimensions and Access) Aft evaporator motor has two (2) removable brushes. Detach elbow from top of blower assembly. 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).</p> <p>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>8. Access the condenser (Ref. Section 6-00-00 Dimensions and Access). Check the fins of the condenser coil for cleanliness and ensure that they are straight. If damage has occurred to the fins, a fin comb should be utilized to put them in like new condition.</p>	
<p>9. If the kit installed has a condenser motor with brushes: Two (2) brushes are located under caps on each side of the motor. Inspect brushes every 300 hours. Replace brushes with 5/16" or less.</p> <p><b>NOTE: TAKE CARE WHEN INSTALLING BRUSHES THAT BRAIDED POSITIVE LEAD DOES NOT CONTACT HOUSING, CAUSING A SHORT</b></p>	

## Chapter 6

### Section 06-00-00 Dimensions and Access

#### 1. Access Methods

##### a) Access Item Identification (Ref. figures 6-01 & 6-02)

- **Condenser**- The condenser is located in one of two positions depending on kit part number (Ref. Section 21.00.00 System Description). The aft mounted condenser (Kit numbers 350-00-031HP and 130-00-031HP) (Ref. figure 6-02) is mounted in the tail boom mounted 5 in. above the baggage floor and is accessed by removing the tail boom closeout panel. The side mounted condenser is located in the right baggage compartment (Ref. figure 6-01) and is accessed by removing to baggage compartment close out panel.
- **Compressor**- The compressor is located aft and to the left side on main transmission deck. It is accessed by opening the upper transmission cowling.
- **Aft Evaporator**- The aft evaporator is located on the right hand upper transmission deck in all configurations. It is accessed by opening the right hand transmission cowling forward latch.
- **Forward Evaporator**- In the AS-350 series, the forward evaporator is located on the cockpit floor forward of the pilots' controls. In the EC-130, it is located on the cockpit floor forward of the pedestal and mounted to the pedestal. No additional access method is required.

##### b) Removal and Installation Methods

Caution: Use of power tools during removal or installation of panels and attaching hardware may damage nut plates or deform holes in composite doors, covers, panels, and fairings.

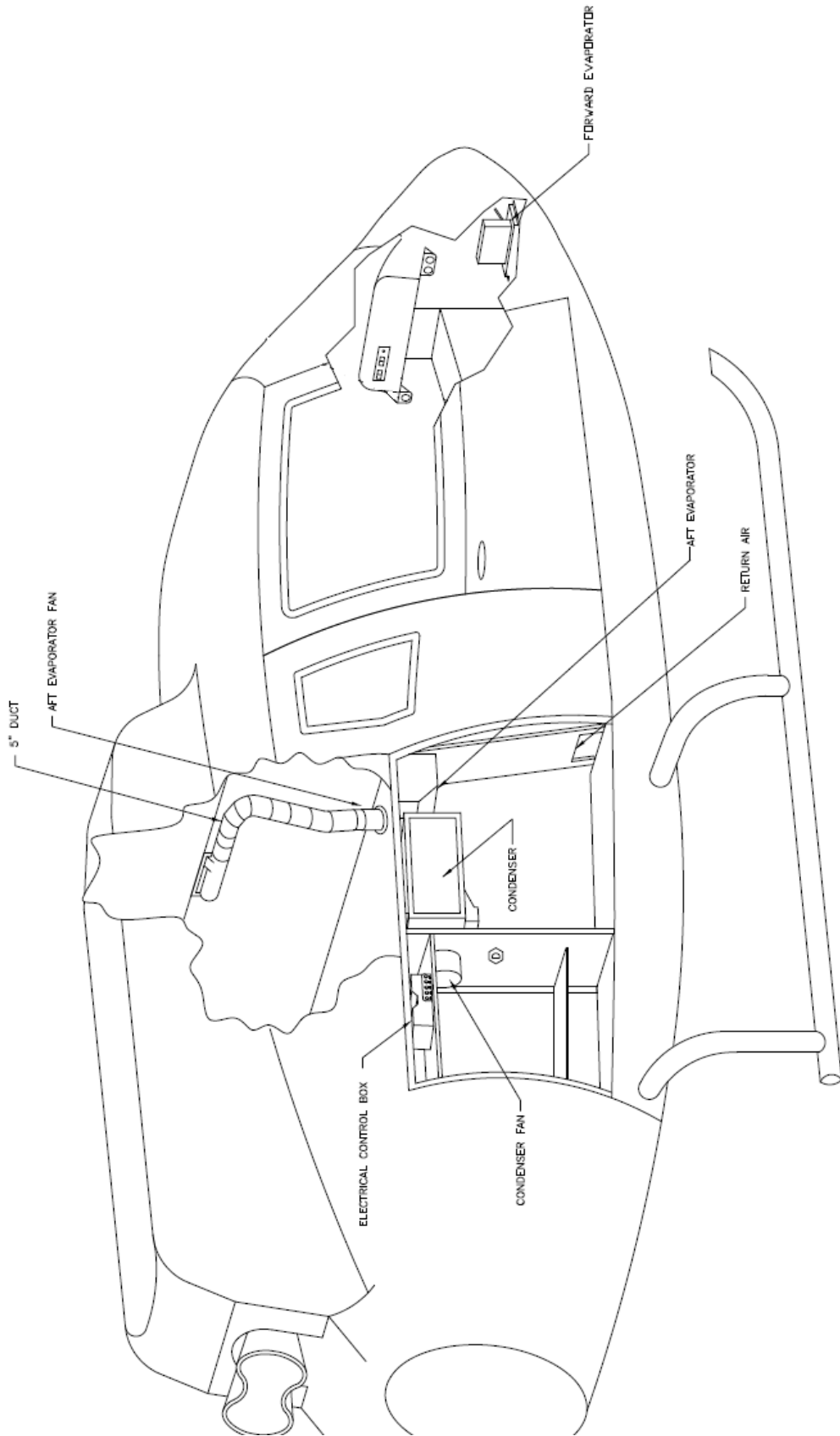


Figure 6-01

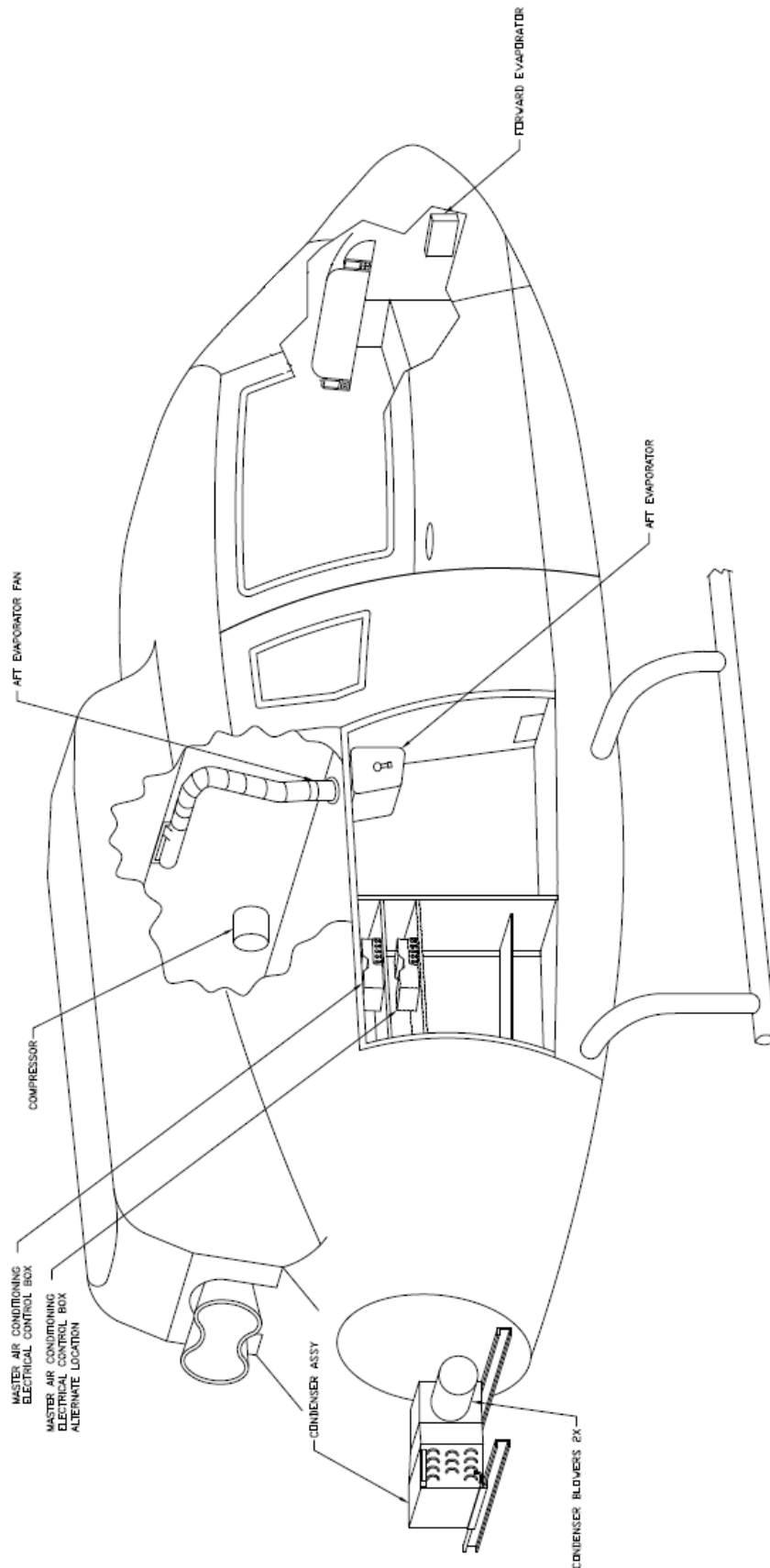


Figure 6-02





## Chapter 11

### Section 11-00-00 Placards and Markings

#### 1. Placards and Decals

The Air Conditioning System Installation does not require any additional placards or decals to be installed with this system.



## Chapter 12

### Section 12-00-00 Servicing Maintenance Practices

#### 1. General

It is assumed in the following practices that the personnel engaged in Charging, Servicing, or Maintenance of the system will be either an experienced air conditioning mechanic under the supervision of a qualified A & P mechanic or an A & P mechanic possessing good air conditioning skills.

## Section 12-10-00 Charging Practices

### 1. Reclaiming

- (1) Connect the EPA approved recovery unit services hoses, which shall have shut-off valves to the aircraft air conditioning system service ports.
- (2) Operate the recovery equipment as covered by the equipment manufacturers recommended procedure.
- (3) Start the recovery process and remove the refrigerant from the aircraft air conditioning system. Operate the recovery unit until the aircraft system has been reduced from a pressure to a vacuum. With the recovery unit shut off for at least 5 minutes, determine that there is not refrigerant remaining in the aircraft air conditioning system. If the aircraft system has pressure, additional recover operation is required to remove the remaining refrigerant. Repeat the operation until the aircraft air conditioning system vacuum level remains stable for two minutes.
- (4) Close the valves in the service lines and then remove the service lines from the aircraft system. Proceed with the repair/service. If the recovery equipment has automatic closing valves, be sure they are properly operating.

### 2. Charging

#### a) *Prior to Charging the System*

Prior to charging the system with R-134a, the evaporator fan/blower 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.

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. All evaporator blowers and the forward evaporator fan should start immediately. The 7" condenser blower and clutch will not engage until after approximately 4 seconds after evaporator fan start. **NOTE: SYSTEM MUST HAVE MINIMUM 30 PSI CHARGE**

Check airflow of each evaporator fan/blower. Determine that air is coming out of the cockpit and the cabin air outlets.

Check airflow into and out of condenser air openings.

**b) Charging the System**

\*NOTE: All evaporators' fan/blower, condenser blowers, and controls are 28 volt DC.

**DANGER:** 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. A flame-type leak detector should **never be used** because of the danger of fire or explosion around an aircraft. Several electronic leak detectors are available on the market.

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.**

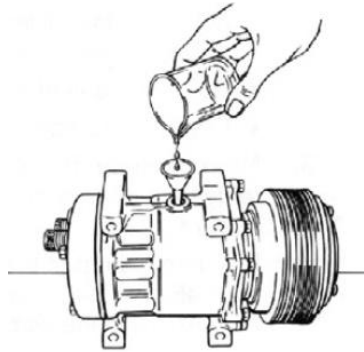
Never attempt to repair a leak requiring brazing or soldering within the aircraft structure as fire or explosion can result. Remove the entire assembly from the aircraft to a safe location before attempting such a procedure.

**CAUTION:** Should R-134a come in contact with the eyes or skin, **Do Not 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.**

**The refrigerant used in this system 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.

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.

Prior to charging each newly installed system with R-134a, obtain **FOUR (4) ounces (118.29 ml) of ESTER type oil as shown on the compressor label.** This oil should be added to the compressor prior to charging the system. **Do not add additional oil if replacing a compressor in an existing system.**



**Figure 12-01**  
Adding oil to the compressor

**c) Initial Charging**

Tighten any leaking connections or make repairs as necessary to eliminate leaks. Shut off and disconnect hose from the refrigerant cylinder. Connect the hose to a regulator mounted on a cylinder of dry nitrogen. Purge the regulator to center manifold hose. **Close low side valve (left) at manifold. Failure to do so can cause pressure to flow to the low side (left) gauge. Failure of gauge can result.**

**Pressurize system to 250-PSI minimum, 300-PSI maximum.**

After the system has been rechecked with the 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 collected into an EPA approved recycling until (expelling of refrigerant is not allowed).

Connect a vacuum pump to the center manifold hose. Open both valves and evacuate the system for a minimum of twenty minutes. (**NOTE:** For each 1,000 foot rise in altitude above sea level, a decrease below 30" of vacuum of 1" per one thousand feet rise in altitude will occur).

**d) Adding R134a Refrigerant**

Close both the manifold valves and connect the center charging hoses to a cylinder of R-134a. Open the valves of the cylinder. Purge the charging hose by loosening it at the charging manifold's center hose. **ONLY THE HIGH SIDE VALVE OF THE CHARGING MANIFOLD MAY NOW BE OPENED**

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, **on the high side only**, without the compressor running. If a scale is available, the cylinder may be pre-weighted and **2.0 pounds of refrigerant R-134a added to the system**. No additional refrigerant should be added after the system is in operation. Close manifold.

The system is now ready for operation. **This must be performed on the flight line with the engine at 100%.** As soon as the "A/C" Master Control Switch is turned to "A/C" all 28 VDC evaporator fans will immediately begin operations.

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 28 VDC power is available for control circuitry. Check operations of the relays and contacts

After the compressor has come on line, the entire system is operational with the manifold valve closed 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, if additional R-134a is needed.

The sight glass located in the top of the receiver/dryer may be easily seen with a flashlight and inspection mirror. The sight glass should be closely monitored and a stream of what would appear to be air bubbles may be noted at this time, **DO NOT** continue charging the system with vapor R-134a.

Should additional charging be required, do so with the cylinder in the upright position. Charging the system, if required, until the system of bubbles disappears and the sight glass becomes clear. It should be noted that pressure on the low side with the R-134a cylinder valve closed and vary depending on the temperature in the cabin and the O.A.T.

At the point, the recommended amount of R-134a is in the system and charging should cease.

If the outside air temperature is 83 degrees F or more MAX CHARGE is 2.0 lbs. If the outside air temperature is 82 degrees F or less MAX CHARGE is 2.5 lbs.

The optimum method of determining the correct charge using at least two digital thermometers and place them near the return air and the discharge air of each evaporator. 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. **THE REFRIGERANT CHARGE SHOULD NOT EXCEED 2.5 POUNDS AT ANY TIME**

A test sheet should be completed noting the average cabin temperature, the temperature on 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 20 degrees Fahrenheit with a humidity of 30% or less 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 20 degrees Fahrenheit temperature difference may be recorded at humidity of 30% or less. This is due to less dense air moving more rapidly through the evaporators.

***e) Effect of Humidity on TD***

It should be noted that in measurements taken and entered on a test sheet that similar measurements made at a later date, when the humidity is considerably higher, would dramatically change the T.D.

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 "SENSIBLE HEAT" is being removed. With higher humidity, a different condition exists. It requires that "LATENT HEAT" containing moisture borne heat must first be removed prior to the removal of the sensible heat

If the system is found to be completely empty of R-134a, a set of charging gauges should be connected to both 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.

***f) Recharging the System***

After the leaks have been found and corrected, pressurize the system with dry nitrogen. Re-check for leaks. Connect a vacuum pump to the system 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 is to be replaced.

It is always good air conditioning practice to replace the receiver/drier whenever it is suspected that moisture has contaminated the system.

The balance of the recharging procedure is exactly the same as pointed out previously under the **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.

## Section 12-20-00 Clutch Servicing Practices

### 1. General

These clutch servicing practices are applicable to all compressors that can be installed with the Air Conditioning System Installation.

#### a) *Clutch Armature Assembly Removal*

- (1) If armature dust cover is present, remove the 3 or 6 bolts holding it in place and remove cover. If auxiliary sheet metal pulley is present, remove the screws holding it in place. Then remove pulley
- (2) Insert pins of armature plate spanner into threaded holes of armature assembly.
- (3) Hold armature assembly stationary while removing retaining nut with 3/4 in, 19 mm or 14 mm socket wrench as appropriate. (Ref. Figure 12-02)

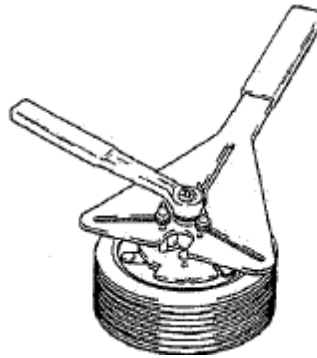


Figure 12-02

- (4) Remove armature assembly using puller. Thread 3 puller bolts into the threaded holes in the armature assembly. Turn center screw clockwise until armature assembly comes loose. (Ref. Figure 12-03)

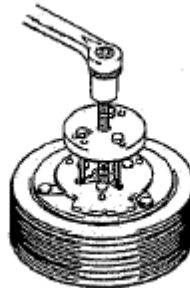
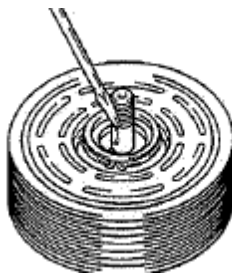


Figure 12-03



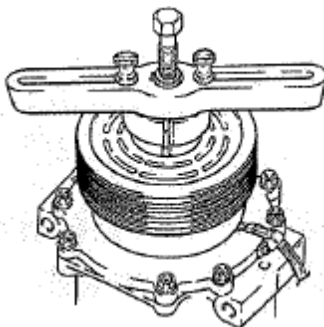
- (5) If shims are above shaft key, the key and bearing dust cover (if present) must be removed before the shims can be removed.
- (6) Remove bearing dust cover (if present). Use caution to prevent distorting cover when removing it.
- (7) Remove shaft key by tapping loose with a flat blade screwdriver and hammer.
- (8) Remove shims. Use a pointed tool and a small screwdriver to prevent the shims from binding on the shaft.



**Figure 12-04**

***b) Rotor Assembly Removal***

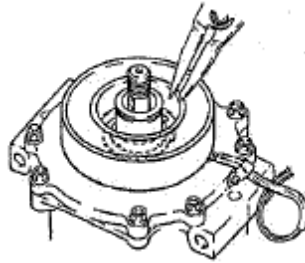
- (1) If bearing dust cover has not been removed, remove it now.
- (2) If internal snap ring for bearing is visible above the bearing, remove it with internal snap ring pliers.
- (3) Remove rotor snap ring.
- (4) Remove shaft key.
- (5) Remove rotor assembly: insert the lip of the jaws into the snap ring groove, place rotor puller shaft protector (puller set) over the exposed shaft, align thumb screws to puller jaws and finger tighten and turn puller center bolt clockwise using a socket wrench until rotor pulley is free. (Ref. Figure 12-05)



**Figure 12-05**

**c) Field Coil Assembly Removal**

- (1) Loosen lead wire clamp screw with #2 Phillips screwdriver until wire(s) can be slipped out from under clamp.
- (2) Undo any wire connections on the compressor which would prevent removal of the field coil assembly.
- (3) Remove snap ring.
- (4) Remove the field coil assembly. (Ref. Figure 12-06)



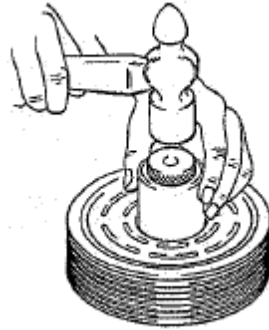
**Figure 12-06**

**d) Field Coil Assembly Installation**

- (1) Reverse the steps of the field coil assembly removal. Protrusion on underside of coil ring must match hole in front housing to prevent movement and correctly locate lead wire(s).

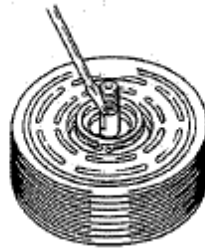
**e) Rotor Assembly Installation**

- (1) Place compressor on support stand, supported at rear end of compressor. If the compressor must be clamped in a vice, clamp only on the mounting ears, never on the body of the compressor.
- (2) Set rotor squarely over the front housing boss.
- (3) Place the rotor installer ring into the bearing bore. Ensure that the edge rests only on the inner race of the bearing, not on the seal, pulley, or outer race of the bearing.
- (4) Place the driver into the ring and drive the rotor down onto the front housing with a hammer or arbor press. Drive the rotor against the front housing step. A distinct change of sound can be heard when using a hammer to install the rotor. (Ref. figure 12-07).



**Figure 12-07**

- (5) Reinstall rotor bearing snap ring, if it has been removed, with internal snap ring pliers. (Ref. figure 12-08)

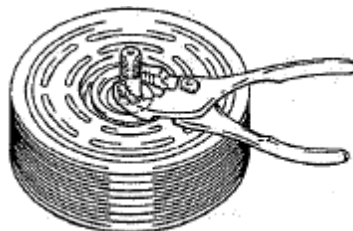


**Figure 12-08**

- (6) Reinstall rotor retaining snap ring with external snap ring pliers. If a bevel is present in the snap ring, it should be face up (away from the body of the compressor).  
(7) Reinstall rotor bearing dust cover (if present) by gently tapping it into place.

***f) Armature Assembly Installation***

- (1) Install shaft key with pliers. (Ref. figure 12-09)



**Figure 12-09**

- (2) Install clutch shims. NOTE: Clutch air gap is determined by shim thickness. When installing a clutch on a used compressor, try the original shims first. When installing a clutch on a

compressor that has not had a clutch installed before, first try 0.04 in, 0.02 in and 0.004 in (1.0, 0.5, 0.1 mm) shims.

- (3) Align keyway in armature assembly to shaft key. Using driver and a hammer or arbor press, drive the armature assembly down over the shaft until it bottoms on the shims. A distinct sound change will be noted if driving with a hammer. (Ref. figure 12-10)

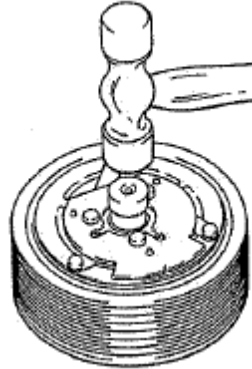


Figure 12-10

- (4) Replace retaining nut and torque to specification

**1/2-20:** 20-25 ft\*lb (27-34 N\*m)

**M8:** 11-15 ft\*lb (15-21 N\*m)

- (5) Check air gap with a feeler gauge. Specification is 0.011-0.019 in (0.3-0.5mm). If gap is not even around the clutch, gently tap down at the high spots. If the overall gap is out of spec, remove the armature assembly and change shims as necessary.

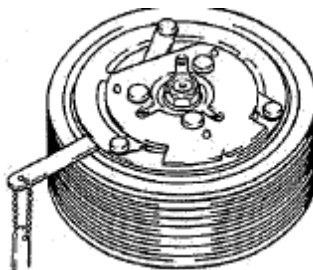


Figure 12-11

(6) Replace armature dust cover (if used) and torque 3 or 6 bolts to specification below.

**3-1/4-20 bolts:** 2-4 ft\*lb (2-5 N\*m)

**6-M5 bolts:** 5-8 ft\*lb (7-11 N\*m)

NOTE: Over torque of dust cover bolts will cause air gap to become out of spec.

## Section 12-30-00 System Leak Check

### 1. General

Identification and elimination of system fitting leaks is extremely important to the operation of this air conditioning system installation

A system which contains a partial charge of refrigerant can be leak tested with the aid of an electronic leak detector and be recharged without evacuating the system

A new or empty system can be pressurized with nitrogen 70-80 psi (5.1-5.6 kgcm) or R134a 50 psi to conduct a leak survey. Do not use compressed air, for it can introduce moisture into the system causing degradation to the operation of the system.

The preferred method is to use an electronic leak detector in conjunction with a small charge of R134a refrigerant. All checks done in this manner should be conducted with the air conditioner off. Since the refrigerant is heavier than air, leaks are most likely to be detected on the underside of the hoses and fittings. Refrigerants will collect in low areas and provide erroneous leak detection. A stream of compressed air from a nozzle may be useful in clearing the area just prior to conducting a leak test.

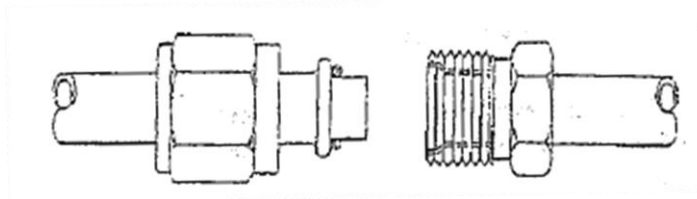
If the nitrogen method is used, it will be necessary to mix together a water and mild soap solution. Each fitting or suspected leak area should be brushed with this soap solution and watched for evidence of bubbles formed by the escaping nitrogen.

If a leak is detected at an O-ring fitting, check to insure proper torque has been applied to the fitting. If the system continues to leak, evacuate the system of refrigerant and install a new O-ring. NOTE: be sure that the O-ring is lubricated with refrigerant oil prior to its installation.

A small amount of leakage (approximately one ounce per year) past the compressor shaft seal is normal. Most leak detectors are sensitive enough to show a leak a magnitude.

## Section 12-40-00 Fitting Torque Procedures

### 1. Fitting Torque Procedures and Torque Values



**Figure 12-12**  
Insert O-Ring Fittings

- (1) Confirm there is no damage on fittings.
- (2) Apply a thin coating of refrigerant oil to O-ring and female side of fitting.
- (3) Slide B-nut back away from the end of the tube so the O-ring can be seen as the fitting is being slide together. Be careful not to pinch the O-ring during assembly.
- (4) Engage the male end into the female fitting being careful to maintain alignment.
- (5) The male flange should seat fully against the female fitting without the O-ring being pinched.
- (6) It is important to hold the fitting together while sliding the B-nut forward and engaging the threads. Tighten the B-nut by hand and torque per table 12-01. **DO NOT OVER TORQUE.**

**Table 12-01 Fitting Torque Values**

Fitting #	Torque Value in/lbs (Nm)
#6	30-35 (3.4-4.0)
#8	40-45 (4.6-5.1)
#10	50-55 (5.7-6.3)

## Section 12-50-00 Normal Operation Functional Test

1. With the aircraft engine operating, electrical system on and functioning normally, move the air conditioner control switch to the "FAN" position.
2. Move the cockpit fan switch from "LOW" to "HIGH" speed and ensure that air output is present in all the forward air outlets. Repeat the test using the aft cabin fan speed selector switch for the aft cabin air outlets.
3. Reposition the air conditioner control switch to the "A/C" position and repeat Step 2 above. Cool air should be supplied to the cockpit and cabin vents after a time delay of 4 to 8 seconds.
4. Turn air conditioner switch to "OFF" or the center position. Entire system should shut down.



## Section 12-60-00 Belt Tension Procedure

With the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. Tighten the lower forward mounting bolt. Use a pull scale to measure the tension. (Ref. figure 12-13). Recommended belt tension values if using a grooved belt is 30 lbs and if using a flat belt is 50 lbs.

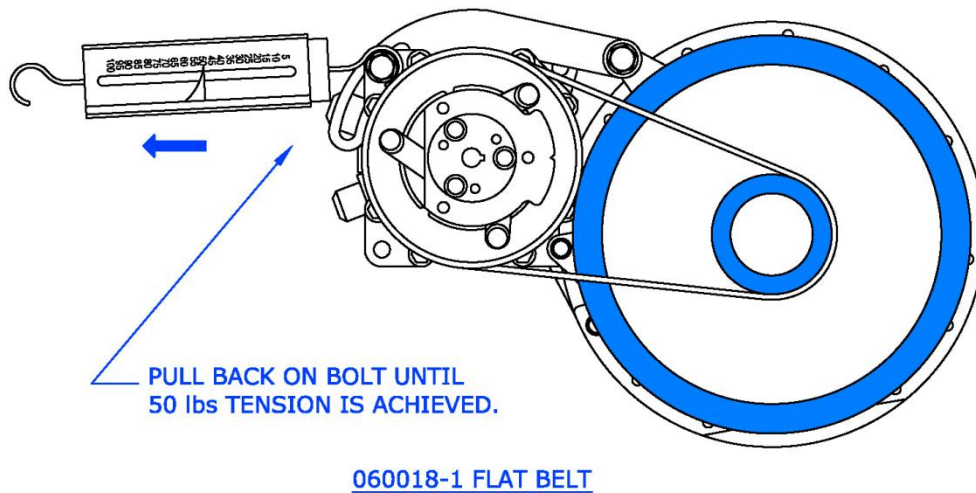
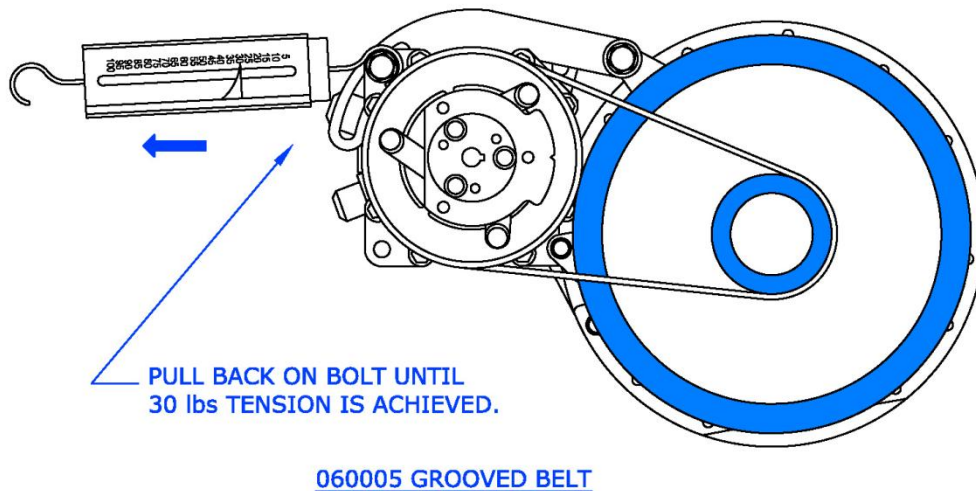


Figure 12-13

## **Section 12-70-00 Drive Belt Change Procedure**

Access the compressor installation (ref. Section 6-00-00 Dimensions and Access). For compressor information reference Section 21-00-00 Air Conditioning.

Place a support on the transmission deck to support the engine drive while the shaft is disconnected for belt installation

Remove the cotter pins from the four pins holding the "Gimble Ring" at the Thomas coupling.

Slide the "Gimble Ring" aft to gain access to the Thomas coupling.

Remove the 6 bolts and Thomas coupling connecting the drive shaft and shift slightly aft.

Install two (2) Compressor Drive belts

Reassemble the Thomas coupling

Secure 1 belt to the outside of the drive shaft cover for a spare and slip one through the housing and over the drive pulley.

Install the "Gimble Ring" pins and cotter pins. Remove supports

Install the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. (Ref. Section 12-60-00 Belt Tension Procedure). Tighten the lower forward mounting bolt.



## Chapter 20

### Section 20-00-00 Standard Practices

This chapter contains maintenance information and procedures that are common standard practices. Information contained in this chapter is standard torque charts and application procedures, corrosion prevention, painting, mechanical fastener sealing, and dye penetrant inspection techniques.

## Section 20-10-00 Torques Maintenance Practices


### 1. Torque Wrenches

#### a) Torque Wrench Accuracy


Torque wrenches must be of good quality and calibrated at least once a year. Any torque wrench that has been dropped or abused should be calibrated to ensure continued accuracy.

#### b) Application of Torque Wrench Loads


- (1) Be sure the bolt and nut and the surface they bear on are clean and dry, unless otherwise specified by the manufacturer.
- (2) Run the nut down to near contact with the washer or bearing surface and check the friction drag torque required to turn the nut. Add the friction drag torque to the desired torque to arrive at the "final torque" to be registered on the torque wrench indicator.
- (3) Whenever possible, apply the torque to the nut instead of the bolt. This will reduce rotation of the bolt in the hole and reduce wear.
- (4) Apply a smooth even pull when applying torque pressure.
- (5) If special adapters are used which will change the effective length of the torque wrench, the final torque indication or wrench setting must be adjusted accordingly. To determine the torque wrench setting or indication with adapter installed reference Figure 20-01.



**Short Open End Adapter**



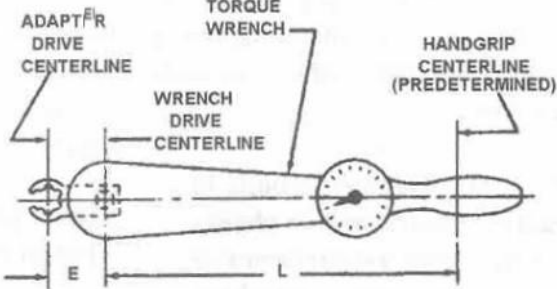
**Set Screw Adapter**



**Hose Clamp Adapter**

NOTE

WHEN USING A TORQUE WRENCH ADAPTER WHICH CHANGES THE DISTANCE FROM THE TORQUE WRENCH DRIVE TO THE ADAPTER DRIVE, APPLY THE FOLLOWING FORMULAS TO OBTAIN THE CORRECTED TORQUE READING:



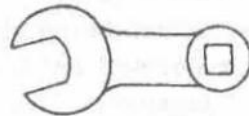
FORMULA  $\frac{T \times L}{L + E} = Y$

EXAMPLE: (WITH "E" AS PLUS DIMENSION)

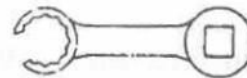
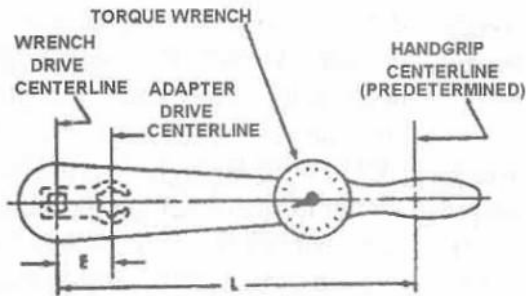
T = 135 LB. IN.	Y = $\frac{135 \times 10}{10 + 1.5} = \frac{1350}{11.5} = 117.39$
Y = UNKNOWN	
L = 10.0 IN.	
E = 1.5 IN.	Y = 117 LB. IN.

LEGEND

T = ACTUAL (DESIRED) TORQUE  
Y = APPARENT (INDICATED) TORQUE  
L = EFFECTIVE LENGTH LEVER  
E = EFFECTIVE LENGTH OF EXTENSION



**Open-End Wrench Adapter**

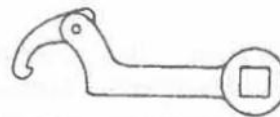


**Flare Nut Wrench Adapter**

FORMULA  $\frac{T \times L}{L - E} = Y$

EXAMPLE: (WITH "E" AS MINUS DIMENSION)

T = 135 LB. IN.	Y = $\frac{135 \times 10}{10 - 1.5} = \frac{1350}{8.5} = 158.82$
Y = UNKNOWN	
L = 10.0 IN.	
E = 1.5 IN.	Y = 159 LB. IN.



**Spanner Wrench Adapter**

**Figure 20-01 Torque Wrenches**

## 2. Torque Values

**Warning: Do not exceed maximum allowable torque value. Overstressing of fastener may result.**

Standard hardware torque values are given in the following tables 20-01 through table 20-03. Table 20-1 gives recommended torque values for fine thread fasteners, shear and tension applications. Table 20-2 gives recommended torque values for coarse thread fasteners, shear and tension applications. Table 20-3 gives recommended torque values for Phillips head screws.

**Table 20-1- Recommended Torque Values for Fine Thread Fasteners**

Thread Size Fractional (decimal)	Shear		Tension	
	Recommended in-lb (N m)	Maximum in-lb (N m)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-36 (0.1640-36)	7-9 (0.79-1.02)	12 (1.36)	12-15 (1.36-1.69)	20 (2.26)
10-32 (0.1900-32)	12-15 (1.36-1.69)	25 (2.82)	20-25 (2.25-2.82)	40 (4.51)
¼-28 (0.2500-28)	30-40 (3.38-4.51)	60 (6.77)	50-70 (5.64-7.90)	100 (11.29)
5/16-24 (0.3125-24)	60-85 (6.77-9.60)	140 (15.81)	100-140 (11.29-15.81)	225 (25.41)
3/8-24 (0.3750-24)	95-110 (10.73-12.42)	240 (27.11)	160-190 (18.07-21.46)	390 (44.05)
7/16-20 (0.4375-20)	270-300 (30.49-33.88)	500 (56.48)	450-500 (50.83-56.48)	840 (94.88)
½-20 (0.5000-20)	290-410 (32.75-46.31)	660 (74.55)	480-690 (54.22-77.94)	1,100 (124.25)
9/16-18 (0.5625-18)	480-600 (54.22-67.77)	960 (108.44)	800-1,000 (90.36-112.96)	1,600 (180.73)
5/8-18 (0.6250-18)	660-780 (74.55-88.10)	1,400 (158.14)	1,100-1,300 (124.25-146.84)	2,400 (271.10)
¾-16 (0.7500-16)	1,300-1,500 (146.84-169.44)	3,000 (338.88)	2,300-2,500 (259.80-282.40)	5,000 (564.80)
7/8-14 (0.8750-14)	1,500-1,800 (169.44-203.32)	4,200 (474.43)	2,500-3,000 (282.40-338.88)	7,000 (790.72)
1-12 (1.0000-12)	2,200-3,300 (248.51-372.76)	6,000 (677.76)	3,700-5,500 (417.95-621.28)	10,000 (1129.6)
1-1/8-12 (1.1250-12)	3,000-4,200 (338.88-474.43)	9,000 (1016.6)	5,000-7,000 (564.80-790.72)	15,000 (1694.4)
1-1/4-12 (1.2500-12)	5,400-6,600 (609.98-745.53)	15,000 (1694.4)	9,000-11,000 (1016.6-1242.6)	25,000 (2824.0)

**Table 20-02 Recommended Torque Values for Coarse Thread Fasteners**

Thread Size Fractional (decimal)	Shear		Tension	
	Recommended in-lb (N m)	Maximum in-lb (N m)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-32 (0.1640-32)	7-9 (0.79-1.02)	12 (1.36)	12-15 (1.36-1.69)	20 (2.26)
10-24 (0.1900-24)	12-15 (1.36-1.69)	21 (2.37)	20-25 (2.25-2.82)	35 (3.95)
¼-20 (0.2500-20)	25-30 (2.82-3.38)	45 (5.08)	40-50 (4.51-5.64)	75 (8.47)
5/16-18 (0.3125-18)	48-55 (5.42-6.21)	100 (11.29)	80-90 (9.03-10.16)	160 (18.07)
3/8-16 (0.3750-16)	95-100 (10.73-11.29)	170 (19.20)	160-185 (18.07-20.89)	275 (31.06)
7/16-14 (0.4375-14)	140-155 (15.81-17.50)	280 (31.62)	235-255 (26.54-28.8)	475 (53.65)
½-13 (0.5000-13)	240-290 (27.11-32.75)	520 (58.73)	400-480 (45.18-54.22)	880 (99.40)
9/16-12 (0.5625-12)	300-420 (33.88-47.44)	650 (73.42)	500-700 (56.48-79.07)	1,100 (124.25)
5/8-11 (0.6250-11)	420-540 (47.44-60.99)	900 (101.66)	700-900 (79.07-101.66)	1,500 (169.44)
¾-10 (0.7500-10)	700-950 (79.07-107.31)	1,500 (169.44)	1,150-1,600 (129.90-180.73)	2,500 (282.40)
7/8-9 (0.8750-9)	1,300-1,800 (146.84-203.32)	2,700 (474.43)	2,200-3,000 (248.51-338.88)	4,600 (519.61)
1-8 (1.0000-8)	2,200-3,000 (248.51-338.88)	4,500 (508.32)	3,700-5,000 (417.95-564.80)	7,600 (858.49)
1-1/8-8 (1.1250-8)	3,300-4,000 (372.76-451.84)	7,200 (813.31)	5,500-6,500 (621.28-734.24)	12,000 (1355.5)
1-1/4-8 (1.2500-8)	4,000-5,000 (451.84-564.80)	10,000 (1129.6)	6,500-8,000 (734.24-903.68)	16,000 (1807.4 N m)

**Table 20-3 Recommended Torque Values for Phillips Head Fasteners**

Thread Size Fractional (decimal)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-32 (0.1640-32)	12-15 (1.36-1.69)	23 (2.59)
10-32 (0.1900-32)	20-25 (2.25-2.82)	35 (3.95)
¼-28 (0.2500-28)	60-70 (6.77-7.90)	90 (10.16)
5/16-24 (0.3125-24)	110-125 (12.42-14.12)	150 (16.94)
3/8-24 (0.3750-24)	150-175 (16.94-19.76)	225 (25.41)
7/16-20 (0.4375-20)	230-280 (25.98-31.62)	450 (50.83)
½-20 (0.5000-20)	550-650 (62.12-73.42)	850 (96.01)
9/16-18 (0.5625-18)	750-900 (84.72-101.66)	1,200 (135.55)
5/8-18 (0.6250-18)	1,100-1,300 (124.25-146.84)	1,600 (180.73)

## Section 20-30-00 Painting Maintenance Practices

The following procedures should be used to touch-up paint flaking, scratches, nicks, and gouges.

**Warning: Cleaning solvents and epoxy primer are flammable. Cleaning solvents, epoxy primer, and alodine can cause burns and irritation when skin is contacted. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Cleaning solvents and alodine are poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Cleaning solvents, epoxy primer and alodine.**

### 1. Paint Touch-Up of Small Areas

Use the following procedures to touch-up paint of small sanded areas and Nicks, Scratches, Gouges, Etc., that do not go through paint and primer to bare metal.

- a. Wipe surface clean with trichloroethane, MIL-T-81533, or equivalent cleaning solvent, and wipe dry immediately.
- b. Apply coat of epoxy polyimide primer, MIL-P-23377F or equivalent, to match original. Feather primer coating onto surrounding color coat. Allow primer to air dry for 30 minutes.
- c. Apply topcoat to match original finish.



## Section 20-40-00 Corrosion Control Maintenance Practices

### 1. Corrosion Control

The components that are fabricated of steel and aluminum should be inspected regularly for any signs of corrosion. The following procedures should be used for removing corrosion and treating affected areas.

### 2. Corrosion Removal

Remove corrosion by either chemical or mechanical means.

a) Paint Removal, Chemical

**Caution: Do not use chemical paint stripper on composite materials. Chemical paint strippers can cause composite components to debond and / or loose adhesion of the epoxy matrix.**

- (1) Mask all non-metallic surfaces in area to be stripped as well as areas where solution may get entrapped.

**Warning: Paint stripper can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Paint stripper is poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with paint stripper.**

- (2) Using a fiber brush, apply sufficient paint stripper, (Turco 5873), to cover area of removal.

**Note:** If paint stripper evaporates quickly or works slowly, cover area with plastic sheet.

- (3) Allow paint remover to remain on surface for a time sufficient to cause wrinkling and lifting of paint (about 10-30 minutes).

- (4) Using non-metallic scraper or abrasive pads, (3M scotchbrite 63), scrub area to further loosen paint.
- (5) Reapply paint stripper, (Turco 5873), as necessary in areas where paint remains tightly adherent.
- (6) Wash and scrub surface with demineralized water and alkaline cleaner to neutralize paint stripper.
- (7) Remove masking materials and any residual paint or stripper
- (8) Rinse with demineralized water.

b) Paint Removal, Mechanical

**Caution: Do not sand into or expose composite fibers. Do not remove more material than necessary. Do not use aluminum oxide abrasive materials on epoxy/graphite materials.**

Use abrasive flap wheel, abrasive disk, abrasive paper, or plastic media blast to remove paint.

c) Corrosion Removal

**Note:** Aircraft shall be electrically grounded during corrosion removal operations. When removing exterior corrosion from electronic boxes, the unit case shall be electrically grounded during the complete operation.

- (1) Corrosion shall be removed by the mildest method possible.
  - (a) Hand scrub with dry non-metallic brush/pad. (3M scotchbrite 63 cellulose/nylon scouring pad).
  - (b) Use abrasive cloth. (Aluminum oxide 240 grit). Caution: Do not use on epoxy/graphite materials.
  - (c) Use 320 grit sandpaper.
  - (d) Glass bead blast.
  - (e) Use 240 grit abrasive wheel.

**Note:** On high strength steel, do not use power tools other than a flap brush or mandrel with abrasive mat; overheating and notching may occur.

- (2) Ensure all active corrosion and corrosion products have been removed.
- (3) Using 320 grit sandpaper blend edges of paint (if applicable) surrounding repair area to create a smooth transition. Vacuum area thoroughly to remove all contaminants.
- (4) Apply aluminum surface treatment if applicable. (Ref. Item 4. Below).
- (5) Touch-up primer and paint to match original

### **3. Mechanical Defects (Nicks, Scratches, Gouges, Etc.)**

- a) Determine if damage is through the paint. If not touch-up the paint (Ref. Section 20-30-00).
- b) If damage is through the paint surface prepare area for paint touch-up using following methods.

**Note:** On high strength steel, do not use power tools other than a flap brush or mandrel with abrasive mat; overheating and notching may occur.

- (1) Remove defect using flap wheel, abrasive disk, abrasive paper, or plastic media blast.
- (2) Using 320 grit sandpaper, blend edges of paint surrounding repair area to create a smooth transition.
- (3) Apply aluminum surface treatment if applicable (Ref. Aluminum Alloy Surface Touch-Up Treatment in Section 20-40-00)
- (4) Touch-up primer and paint to match original.

#### 4. Aluminum Alloy Surface Touch-Up Treatment

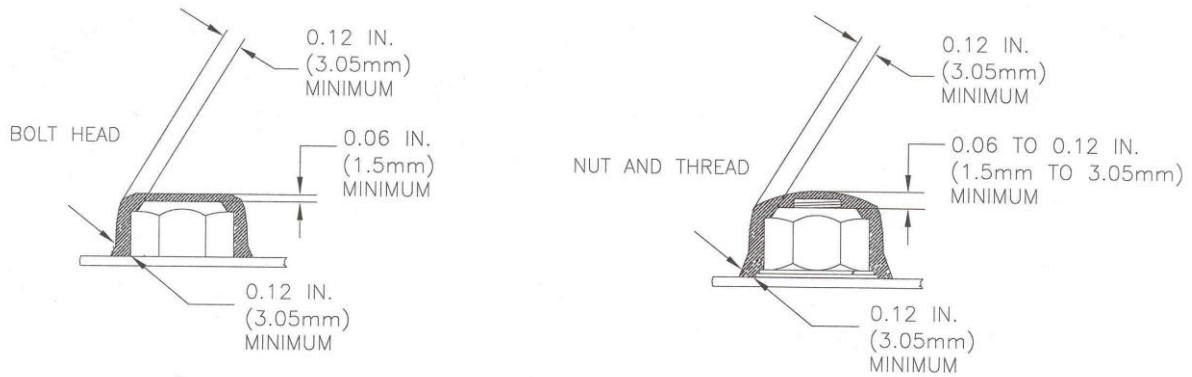
**Note:** If there is any question of whether or not the protective coating is removed, surface treatment shall be applied.

**Warning:** Alodine and solvents can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Alodine is poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Solvents and alodine. Solvent cleaners are flammable.

- a) Scuff surface using 3M scotchbrite 63 cellulose/nylon scouring pad.
- b) Wipe exposed surface with isopropyl alcohol or aliphatic naphtha. Allow area to air dry for 10 minutes. Do not touch or otherwise contaminate surface after solvent wipe.
- c) Apply Alodine 1200 or equivalent with cotton swap, non-metallic brush, or by dipping. Maintain moist surface for 1-3 minutes with repeated application. Surface will become amber or brown in color.
- d) Irrigate surface with demineralized or distilled water, to remove surface treatment chemical. Allow to air dry for approximately 1 hour.
- e) If there are any surface without color change, repeat procedure.
- f) Apply paint touch-up as required. (Ref Section 20-30-00).

## Section 20-50-00 Mechanical Fastener Sealing Methods

Seal mechanical fasteners as shown.



**Figure 20-02. Mechanical Fastener Sealing**

## Section 20-90-00 Dye Penetrant Inspection Methods

**Warning:** solvents can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Solvents. Solvent cleaners are flammable.

Use the following steps to perform dye penetrant inspection:

1. Using cleaning solvent trichloroethane, MIL-T-81533, clean area to be inspected.

**Note:** Parts to be inspected must be dry and heated to at least 70° F (21.1° C), but not over 130° F (54.4° C).

**Note:** Manufacturers instructions on Dye Penetrant Kit take precedence over the following instructions.

2. Apply penetrant from dye penetrant kit, MIL-25135, by brushing, spraying, or by dipping. Allow to stand for a minimum of 2 minutes.
3. Remove excess penetrant with remover (available with dye penetrant kit), or by cleaning with plain water. Allow part to dry.
4. Apply a light even layer of developer from dye penetrant kit by brushing, spraying, or by dipping. When dipping, avoid excess quantity.
5. Penetrant, which has penetrated into cracks (or other openings) in the surface of the part will be drawn out by the developer resulting in a bright red indication.
6. If part is serviceable or repairable, clean part free of penetrant and developer with trichloroethane, MIL-T-81533 cleaning solvent

## Chapter 21

### Section 21-00-00 Air Conditioning

#### 1. Description and Operation

The Air Conditioning System Installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant. The air conditioning system provides for cabin comfort during all operations, both in the ground and in flight. During ground operations when the engines are running, cooling may be provided.

This system consists of 4 major components:

- **Condenser**- The condenser is located in one of two positions depending on kit part number (Ref. table 21.1). The aft mounted condenser (Ref. figure 21-01) is mounted in the tail boom mounted 5 in. above the baggage floor. The side mounted condenser is located in the right baggage compartment (Ref. figure 21-02). The EC-130 condenser is only located in the aft mounted configuration. The aft mounted condenser assembly has two blower motors, where as the side mounted condenser assembly only has one blower motor.
- **Compressor**- The compressor is located aft and to the left side on main transmission deck. The belt is secured to the outside of the drive shaft, in all configurations. If designated by the kit part number (Ref. tables 21-01 & 21-02), either a smooth pulley compressor or a grooved double V-belt pulley compressor is installed.
- **Aft Evaporator**- The aft evaporator is located on the right hand upper transmission deck in all configurations.
- **Forward Evaporator**- In the AS-350 series, the forward evaporator is located on the cockpit floor forward of the pilots' controls. In the EC-130 kits, it is located forward of the pedestal and mounted to the pedestal.

Controls for the air conditioning system are located around or in the instrument panel, the specific location depending on the Kit number part as described in tables 21-01 and 21-02. All kits contain a Master Control Selector, which consists of a rocker type switch labeled, "A/C", "OFF" and "FAN." Selecting the "A/C" turns on the system's dual evaporator fans, compressor and condenser blower. The second rocker switch, also included with every kit, is for "HIGH," "MED" and "LOW" evaporator fan speed selection for the forward cockpit. An additional 2 position switch for the aft evaporator fan speed "HI/LOW" is present depending on the kit part numbers and the switch is located per that kit.

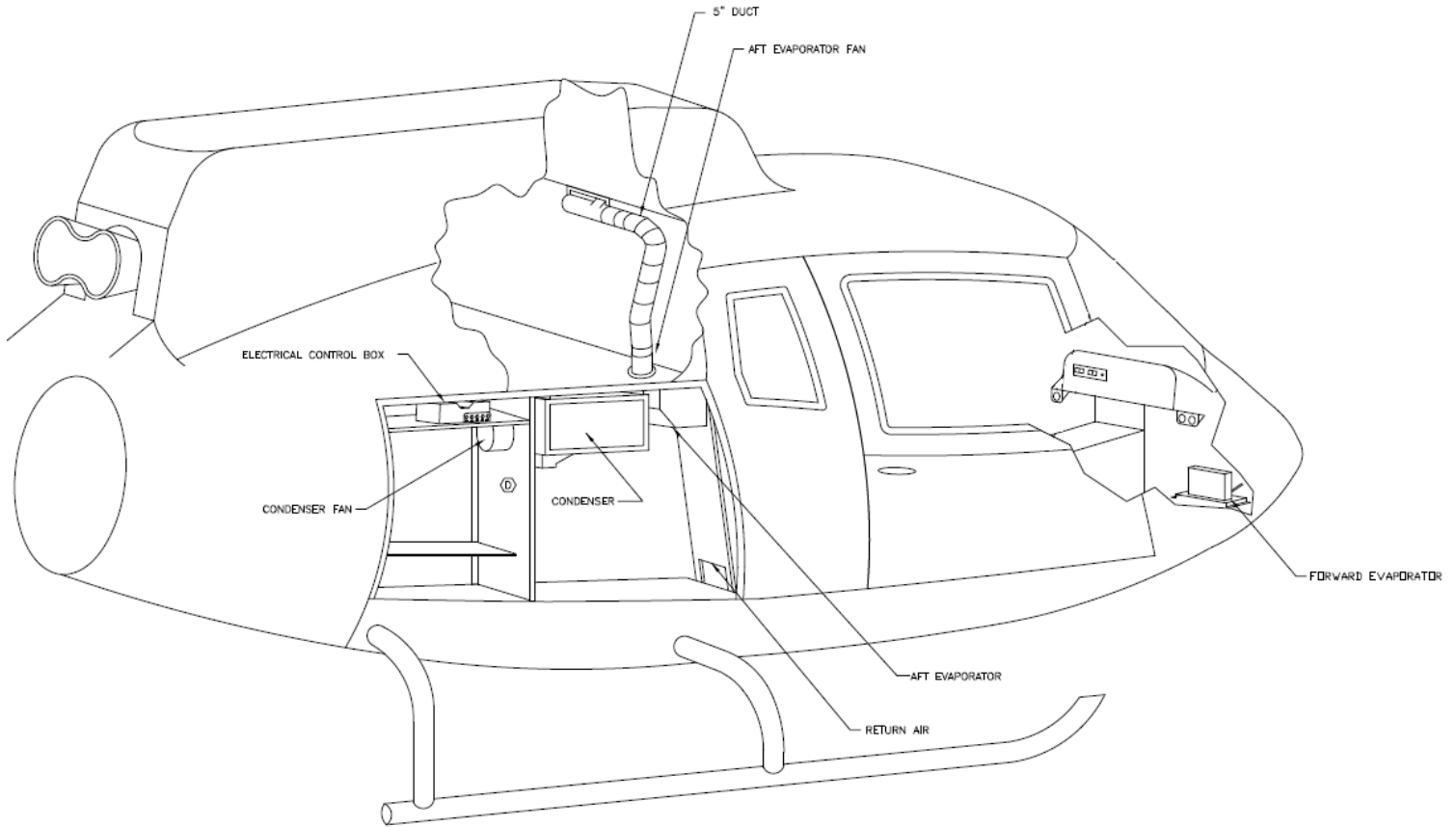
**Table 21-1 Air Condition System Installation Kit Part Number Description AS-350 Series**

<b>AS-350 Series</b>	
<b>BASE KIT NUMBERS:</b>	
350-00-011-HP	Side Mounted Condenser (Ref Figure 21-01)
350-00-031-HP	Aft Mounted Condenser (Ref Figure 21-02)
<b>CUSTOM CONFIGURATIONS:</b>	
350-00-011-HP-01* 350-00-031-HP-01*	AEC Basic Configuration (Ref Figure 21-03)
350-00-011-HP-11* 350-00-031-HP-11*	Corporate Configuration (Ref Figure 21-04)
350-00-011-HP-21* 350-00-031-HP-21*	EMS 1 Configuration (Ref Figure 21-05)
350-00-011-HP-22* 350-00-031-HP-22*	EMS 2 Configuration (Ref Figure 21-06)
350-00-011-HP-31* 350-00-031-HP-31*	ECL Tour 1 Configuration (Ref Figure 21-07)
350-00-011-HP-32* 350-00-031-HP-32*	ECL Tour 2 Configuration (Ref Figure 21-08)
350-00-011-HP-41* 350-00-031-HP-41*	Law Enforcement Configuration (Ref Figure 21-09)
* the addition of s to the end of the part number denotes a smooth pulley compressor	

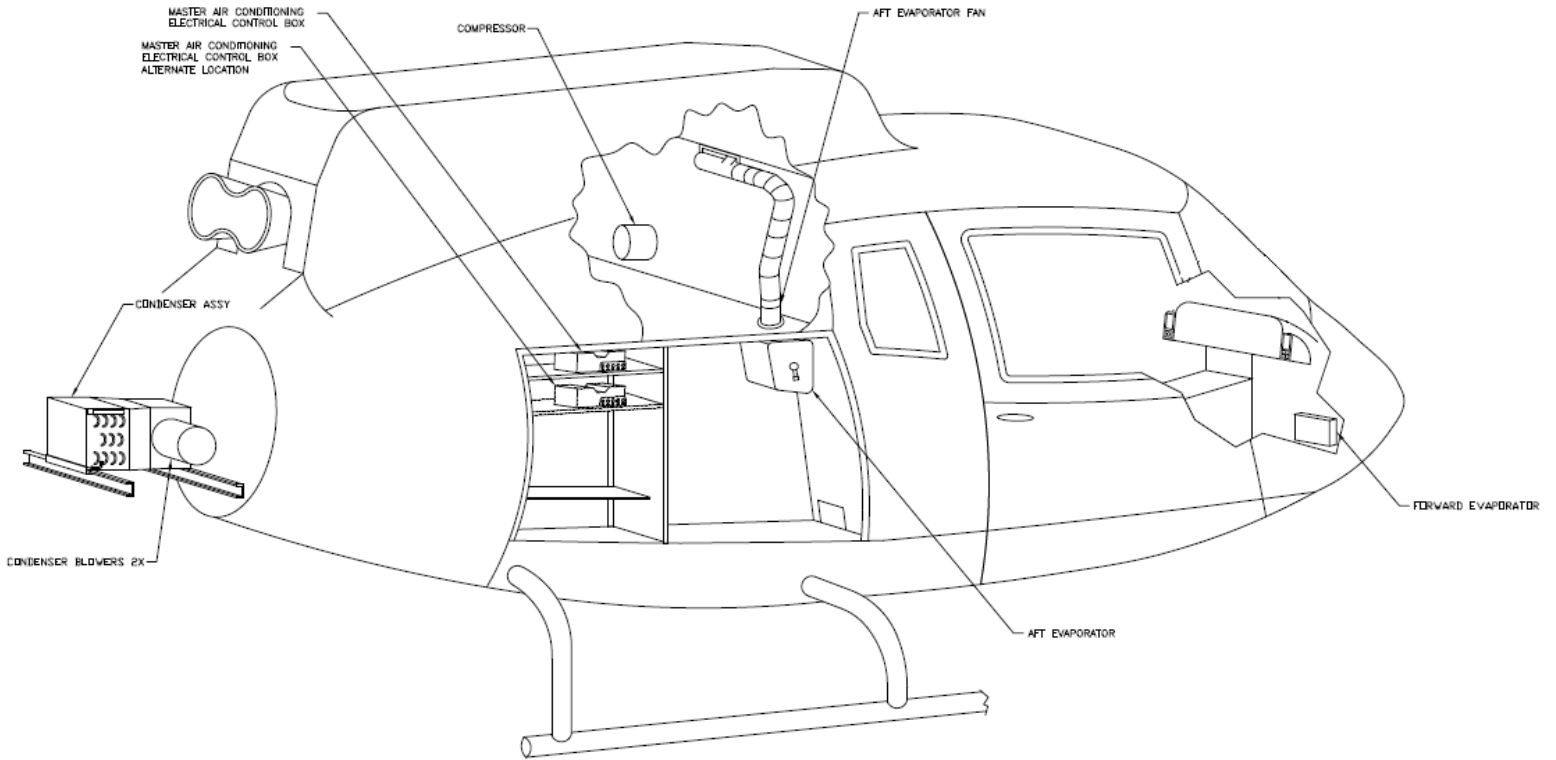


**Table 21-2 Air Condition System Installation Kit Part Number Description AS-350 Series**

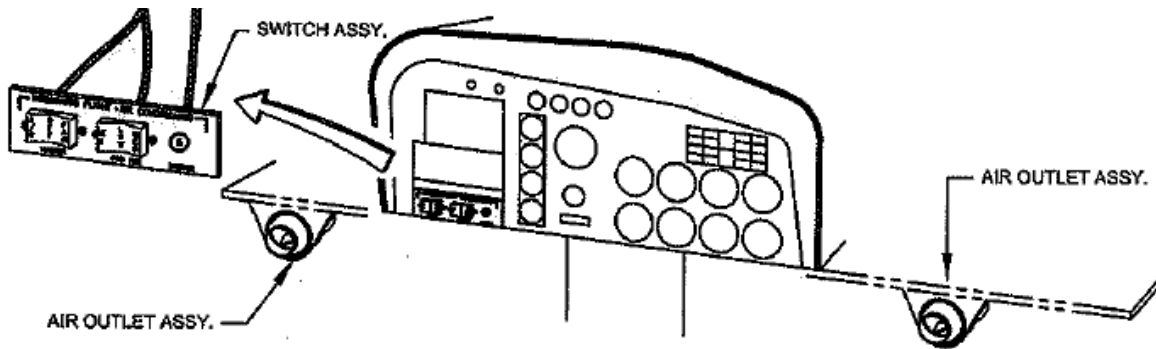
<b>EC-130B4</b>	
<b>BASE KIT NUMBER:</b>	
130-00-031-HP*	Aft Mounted Condenser (Ref Figure 21-02)
<b>CUSTOM CONFIGURATIONS:</b>	
Corporate 1 Configuration (Ref Figure 21-10)	
Corporate 2 Configuration (Ref Figure 21-11)	
* the addition of s to the end of the part number denotes a smooth pulley compressor	



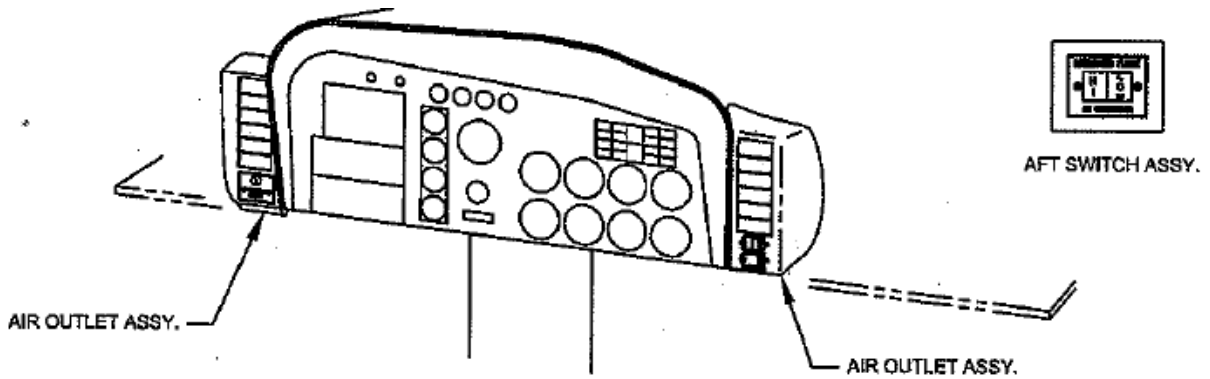
**Figure 21-01**  
Equipment locations for Air Conditioning System Installation with the -011 Configuration  
(Side Mounted Condenser)



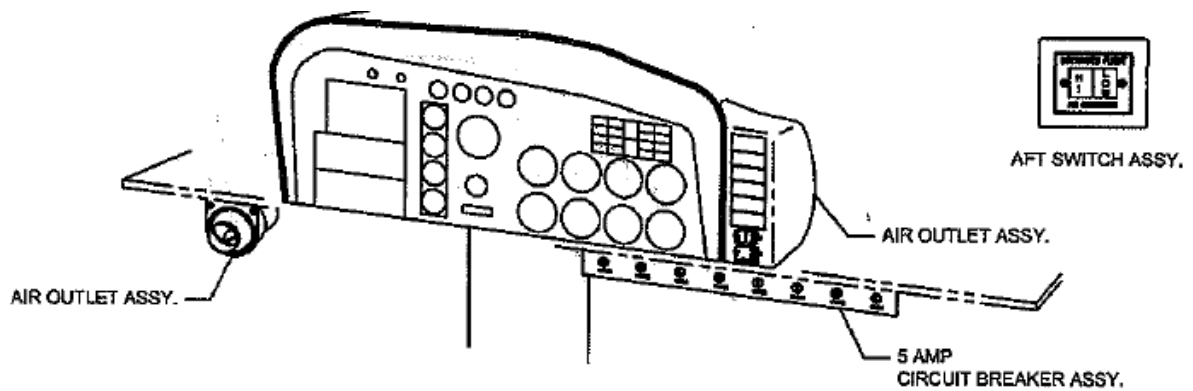
**Figure 21-02**  
Equipment locations for Air Conditioning System Installation  
-031 Configuration (Aft Mounted Condenser)



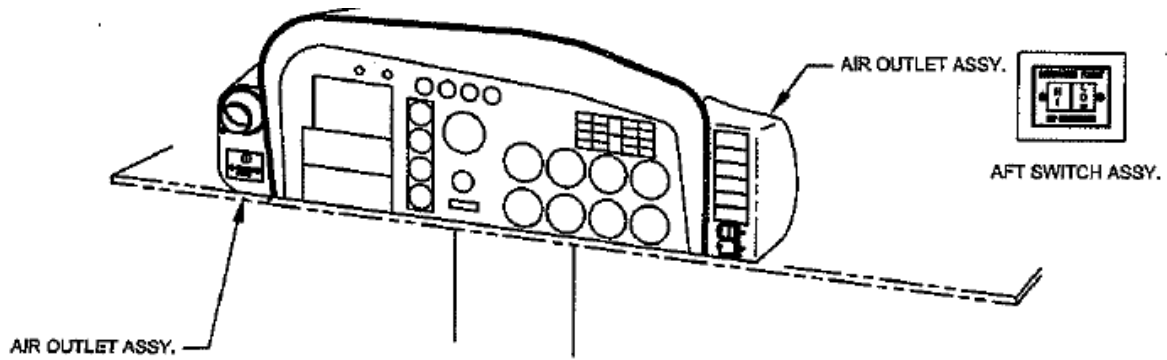
**Figure 21-03**  
-01 AEC Basic Configuration



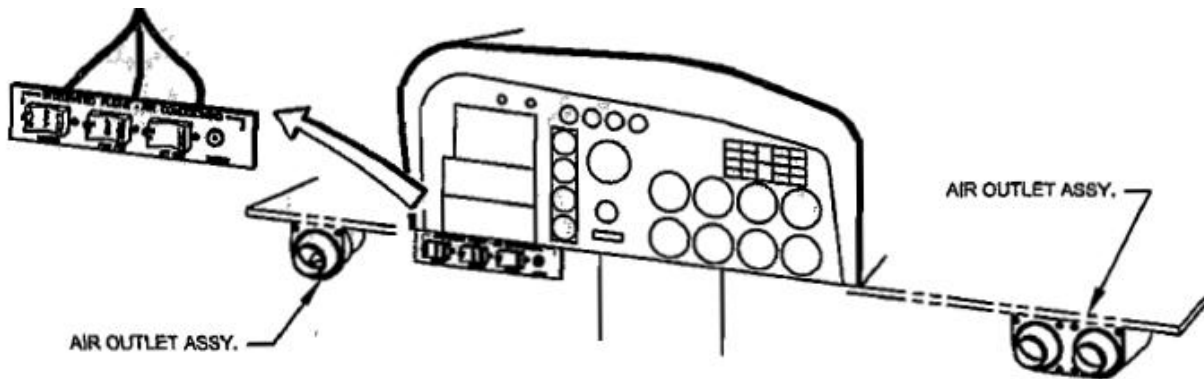
**Figure 21-04**  
-11 Corporate Configuration



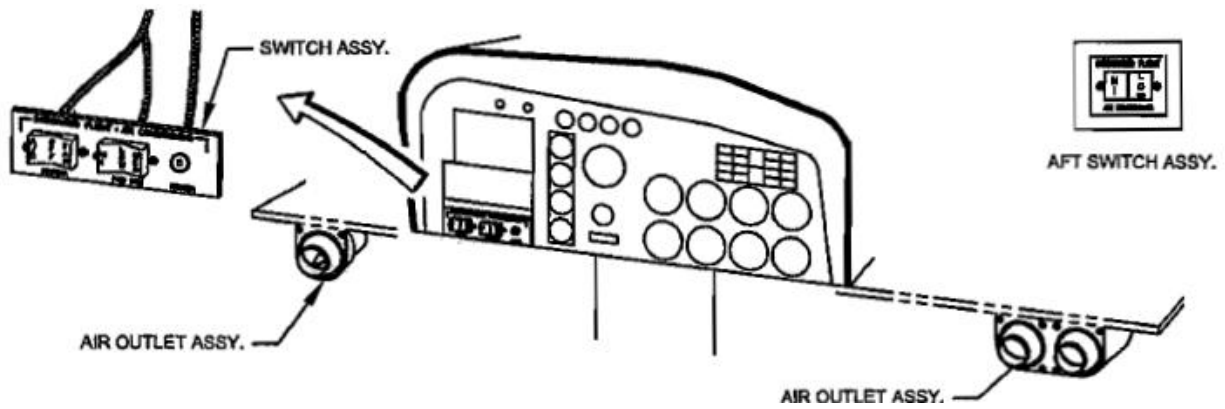
**Figure 21-05**  
-21 EMS 1 Configuration



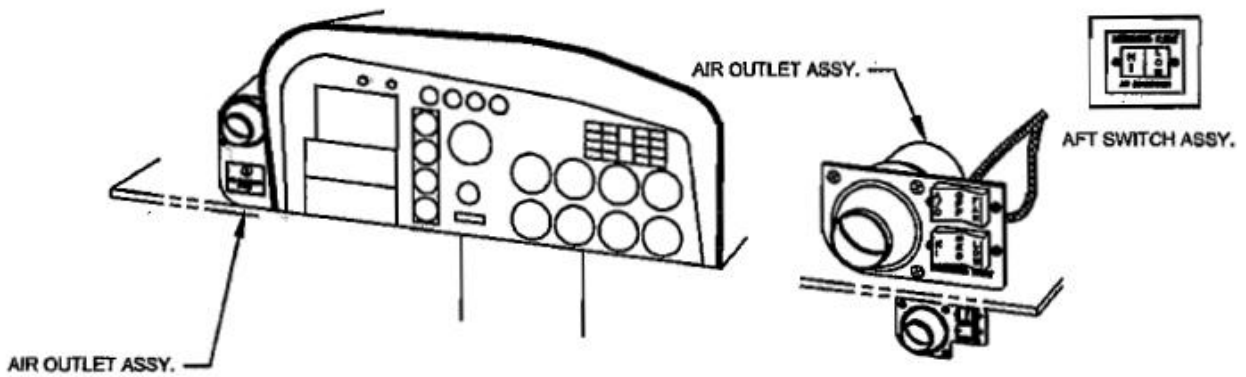
**Figure 21-06**  
-22 EMS 2 Configuration



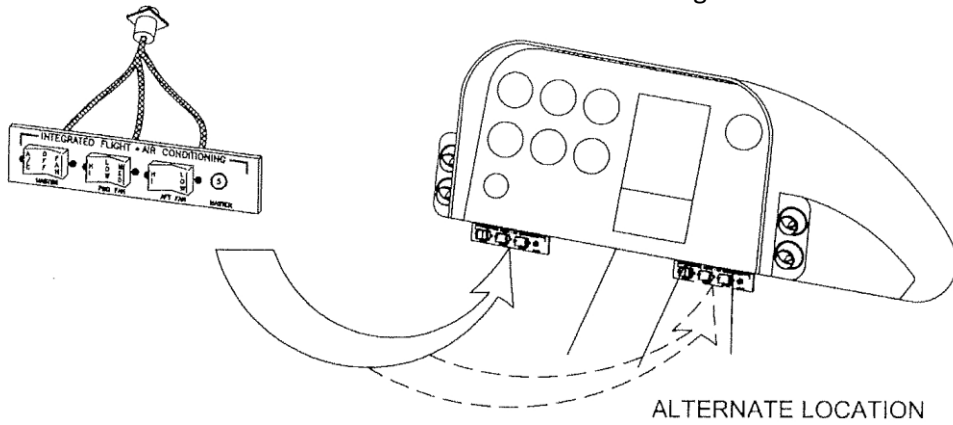
**Figure 21-07**  
-31 ECL Tour 1 Configuration



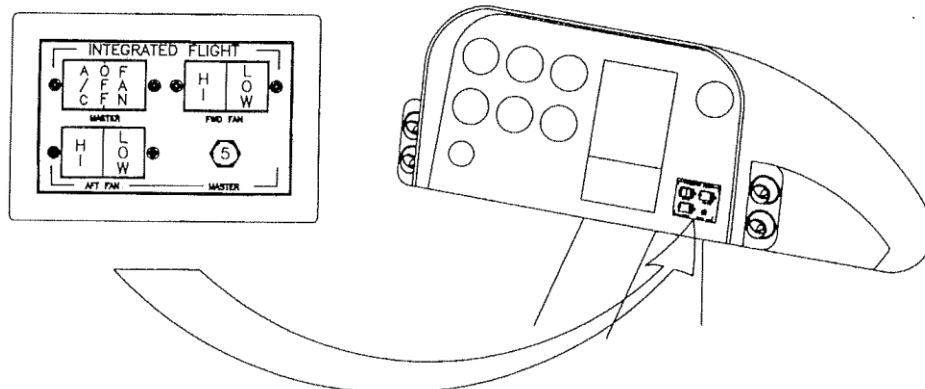
**Figure 21-08**  
-32 ECL Tour 2 Configuration



**Figure 21-09**  
-41 Law Enforcement Configuration



**Figure 21-10**  
Corporate 1 Configuration (EC-130B4)



**Figure 21-11**  
Corporate 2 Configuration (EC-130B4)

## 2. Removal/ Installation Forward Evaporator

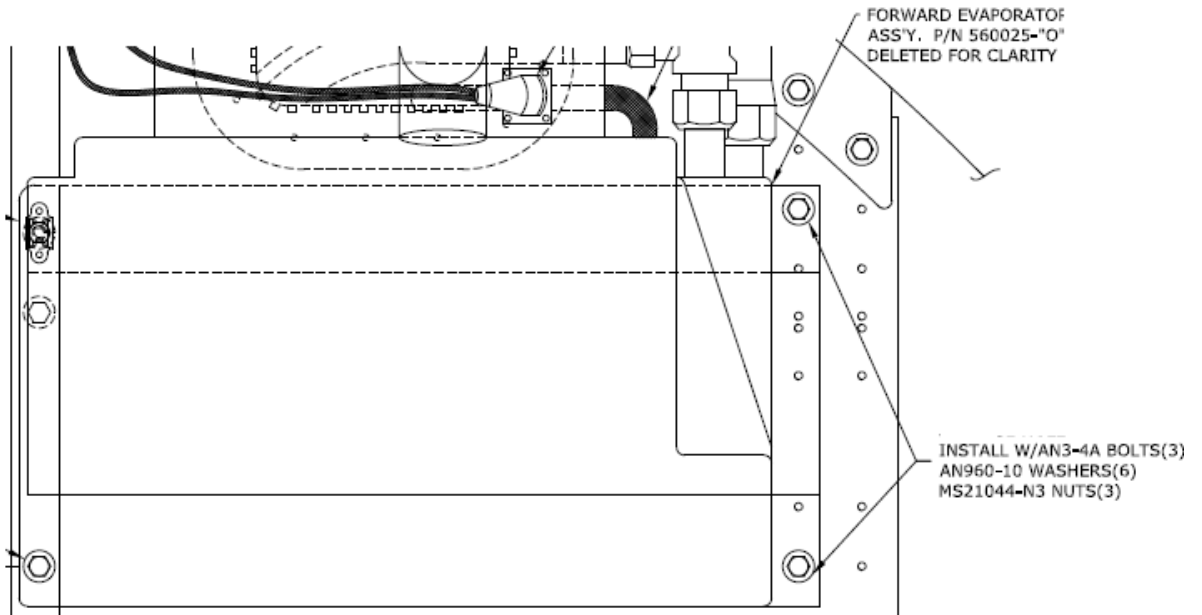
(Ref. figures 21-12 and 21-13)

### a) *Removal*

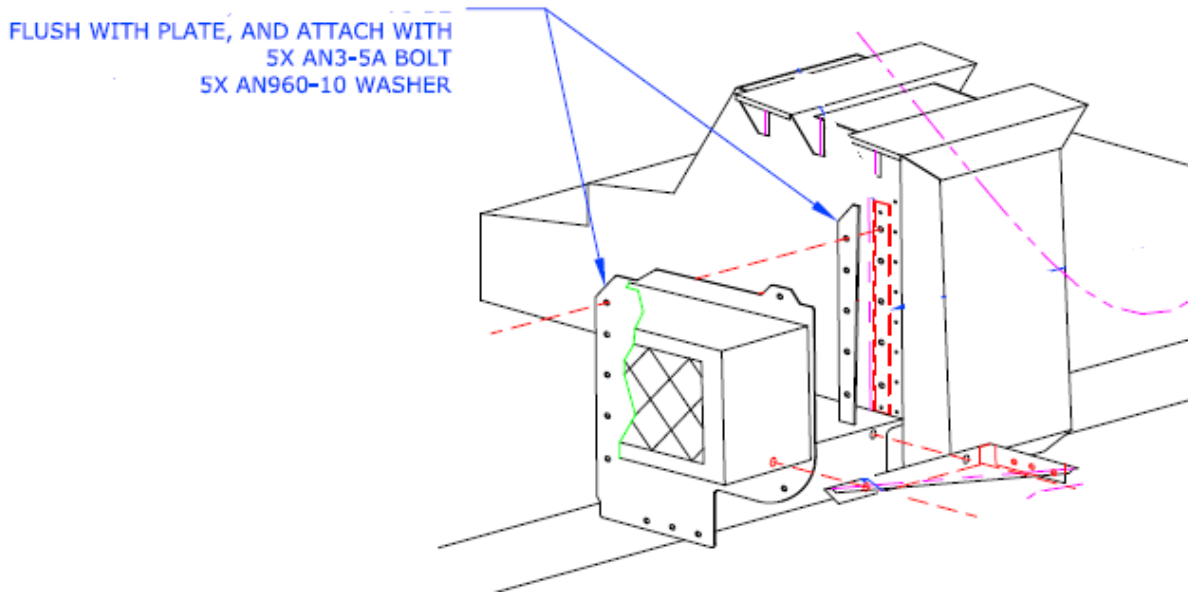
- 1) Access forward evaporator per Section 6-00-00 Dimensions and Access.
- 2) Connect refrigerant reclaimer to system in accordance with Section 21-00-00 and remove coolant from system. Comply with all Federal, State, and Local rules governing refrigerant handling.
- 3) Remove bolts securing evaporator.
- 4) Remove evaporator assembly.
- 5) Support evaporator while removing lines and other duct work.
- 6) Remove evaporator from aircraft.
- 7) Cap all open lines on unit and aircraft.
- 8) Disconnect electrical connections and remove evaporator fan.

### b) *Installation*

- 1) Reinstall fan in aircraft and connect electrical connections.
- 2) Position evaporator against fan assembly and loosely install with securing hardware. Secure mounting hardware.
- 3) Reinstall drain line.
- 4) Connect duct work.
- 5) Ensure refrigerant o-rings are installed and in good condition. Replace as necessary. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor. Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs.
- 6) After completing other system functions and maintenance, charge system in accordance with Section 12-10-00.
- 7) Check for leaks per section 12-30-00



**Figure 21-12**  
Forward Evaporator (AS-350)



**Figure 21-13**  
Forward Evaporator (EC-130)



### 3. Removal/ Installation Aft Evaporator

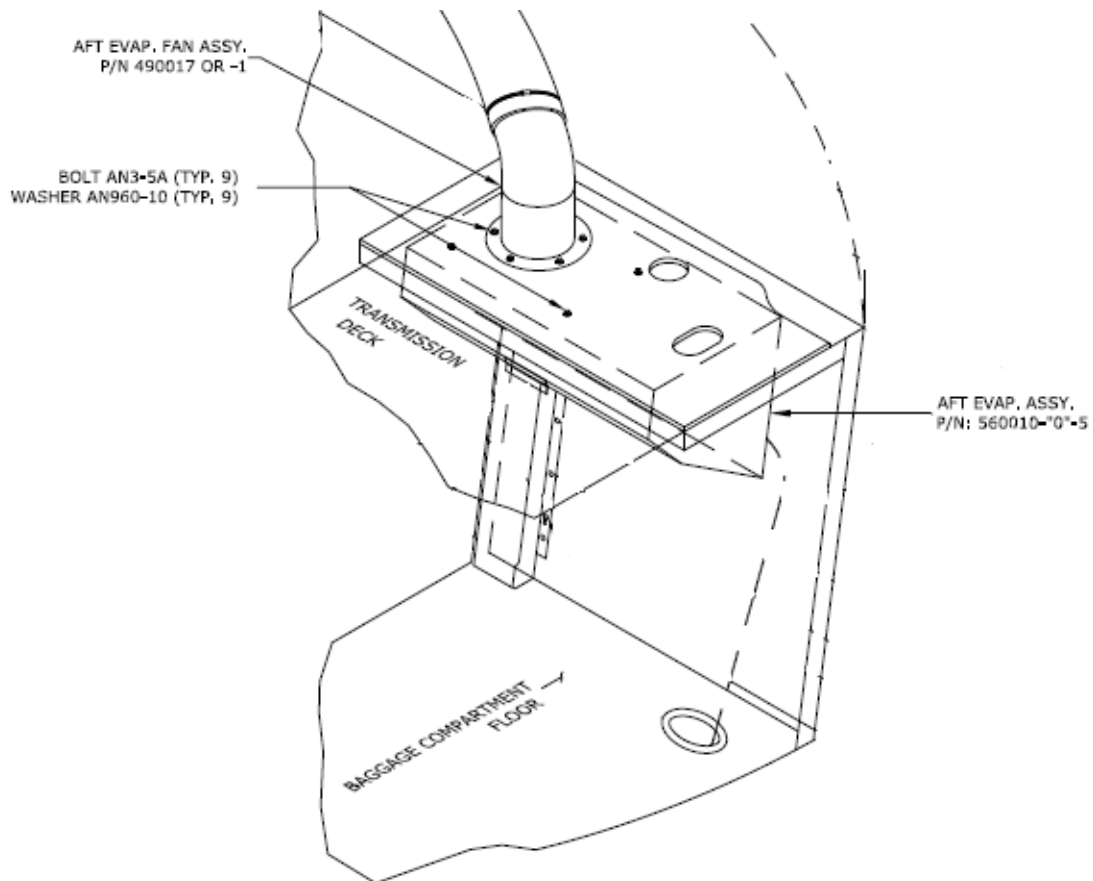
(Ref Figure 21-14)

#### a) Removal

- 1) Access aft evaporator (Ref. Section 6-00-00 Dimensions and access) and remove electrical connections.
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Support evaporator while removing lines and duct work.
- 4) Cap all open lines on unit and aircraft.

#### b) Installation

- 1) Reinstall fan/evaporator and connect electrical connections.
- 2) Position evaporator and loosely install with securing hardware. Secure mounting hardware.
- 3) Reinstall drain line.
- 4) Connect duct work.
- 5) Ensure refrigerant o-rings are installed and in good condition. Replace as necessary. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor. Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs.
- 6) After completing other system functions and maintenance, charge system in accordance with Section 12-10-00.
- 7) Check for leaks per section 12-30-00.



**Figure 21-14**  
Aft Evaporator

#### 4. Removal / Installation - Condenser

(Ref figures 21-15 and 21-16)

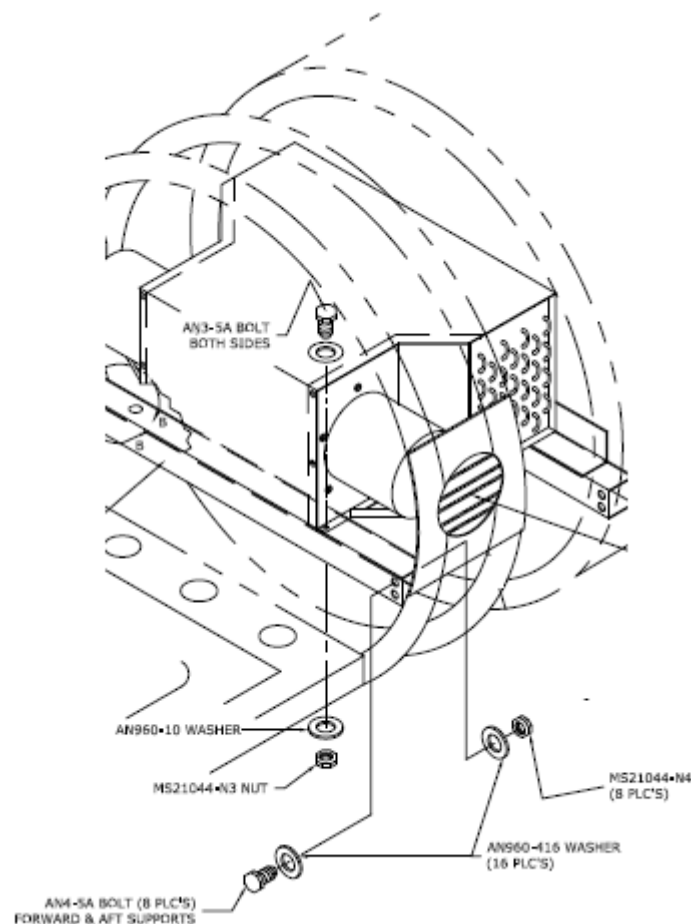
##### a) Removal

- 1) Access the condenser (Ref Section 6-00-00 Dimensions and Access)
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Remove hardware securing condenser assembly. Disconnect blower wires and refrigerant hoses.

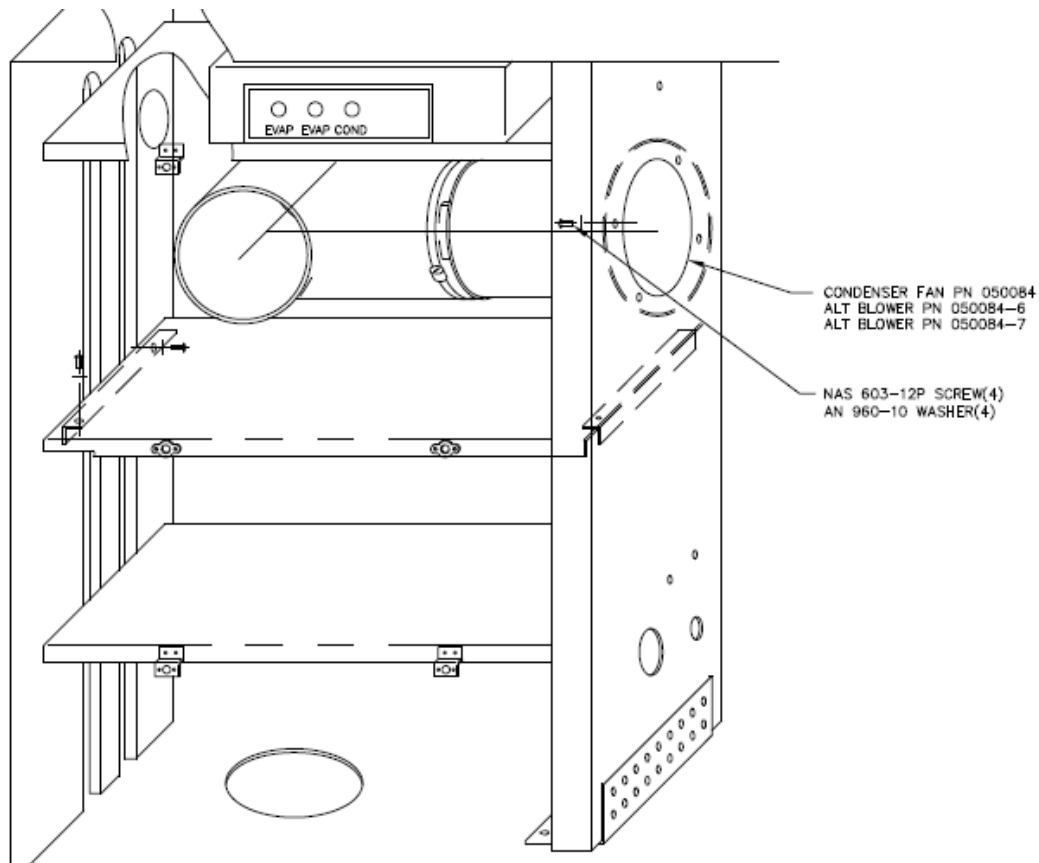
- 4) Remove condenser and cap all open lines on condenser and airframe.

**b) Installation**

- 1) Place condenser back in location.
- 2) Loosely install all hardware securing condenser assembly. Tighten mounting hardware only after all other hardware is installed.
- 3) Remove protective caps from refrigerant lines. Inspect that o-rings are installed and in good condition. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor.
- 4) Install refrigerant lines. Torque refrigerant lines as follows: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs. Do not over tighten.
- 5) Charge system in accordance with Section 12-10-00



**Figure 21-15**  
Aft Mounted Condenser (AS-350, EC-130)



**Figure 21-16**  
Side Mounted Condenser (AS-350)

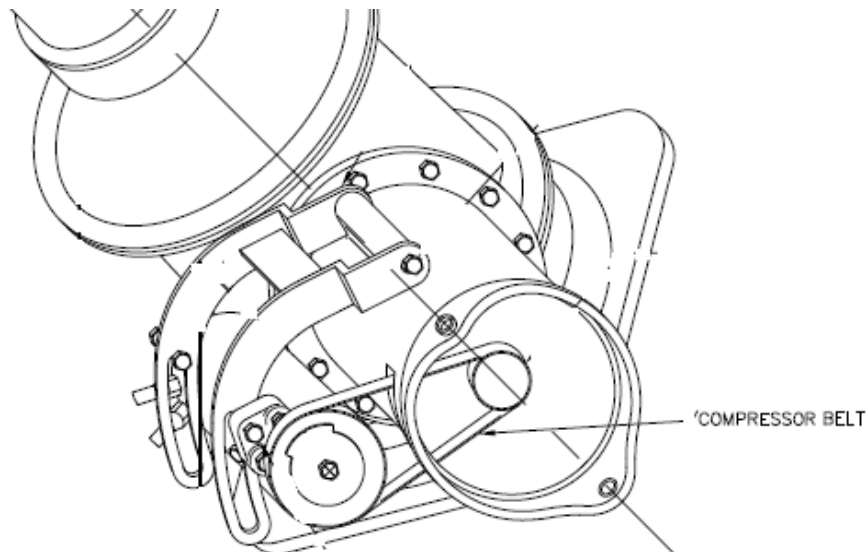
**5. Removal / Installation - Compressor**  
(Ref figure 21-17)

**a) Removal**

- 1) Access the compressor (Ref Section 6-00-00 Dimensions and Access)
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Remove refrigerant lines from compressor and install protective caps to protect from foreign material entering system and compressor.
- 4) Disconnect drive belt to compressor.
- 5) Remove bolts securing compressor to mount and remove compressor.

**b) Installation**

- 1) Install compressor loosely on support frame with attaching hardware.
- 2) Install drive belt.
- 3) Tighten compressor bolts allowing compressor to "Seek" its own natural position on the frame. Tighten compressor belt tensioning bolt to 50 lbs. belt tension.
- 4) Tighten and safety all compressor mounting bolts.
- 5) Remove protective caps from refrigerant lines and compressor. Inspect the o-rings from installation and condition. Replace as necessary.
- 6) Oil all fittings and o-rings.
- 7) Install refrigerant lines.
- 8) Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs. Do not over tighten.
- 9) Charge system in accordance with Section 12-00-00.
- 10) Install previously removed cowlings.



**Figure 21-17**  
Compressor

## 6. Troubleshooting guide

Symptoms	Trouble	Cause	Correction
<ul style="list-style-type: none"> <li>-Insufficient cooling</li> <li>-Low-side pressure too low</li> <li>-High -side pressure too low</li> <li>-Receiver/drier sight glass shows a stream of bubbles</li> <li>-Air in ducts only slightly cool</li> </ul>	Low or partial refrigerant charge	Leak	Find and fix the leak. If there was a loss of oil, be sure to check to compressor oil level. Evacuate and recharge per section 12.10.00
<ul style="list-style-type: none"> <li>- Insufficient cooling during hottest part of the day or during extended flying.</li> <li>- Low-side pressure normal, though it may be too low or even a vacuum</li> <li>- High-side pressure normal, though it may be low-at the same time low side is low</li> <li>-- Air in the ducts is usually cold, but becomes warm when pressure reading drop</li> </ul>	Excessive moisture in the system	The desiccant in the drier/receiver is saturated	Replace or rebuild the receiver/drier. Evacuate and recharge per section 12.10.00
<ul style="list-style-type: none"> <li>- Insufficient cooling</li> <li>- Low-side pressure normal, but does not drop when the clutch cycles</li> <li>- High-side pressure high</li> <li>- Receiver/drier sight glass shows occasional bubbles (Note again that with HFC-134A the sight glass should be milky when the system is fully charged.)</li> <li>- Air in ducts only slight cool</li> </ul>	Air in the System	Refrigerant contains non-condensable in the form of air moisture	Leak test, watch for bad compressor seals. Drain the system. Repair leaks as needed. Replace or rebuild the receiver-drier. Check the compressor oil. Evacuate and recharge per section 12.10.00.
<ul style="list-style-type: none"> <li>- No cooling</li> <li>- Low-side pressure too high</li> <li>- High-side pressure too high</li> <li>- Receiver/drier sight glass may show occasional bubbles</li> <li>- Liquid line very hot</li> <li>- Air in ducts is warm</li> </ul>	Condenser malfunction or system overcharge	Condenser malfunction or system overcharge	Evacuate and recharge per section 12.10.00 or replace condenser.



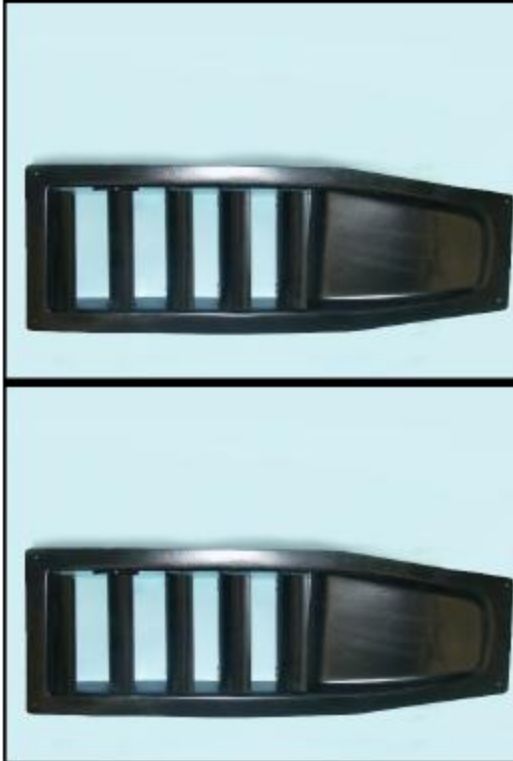
## Illustrated Parts List

### 1. General

This section contains information on parts for the Air Conditioning System, for use in ordering replacements if necessary.



## **Air Intake Assemblies**



**IFS PN: 520071**

**Condenser Air  
Intake Assembly  
(Hi Profile)**

**AS350** 

**IFS PN: 520071-1**

**Condenser Air  
Intake Assembly  
Low Profile (Sliding Door)**

**AS350** 





## Air Outlets



**IFS PN: 500001**

**Left Side  
Air Outlet**

**EC130** 



**IFS PN: 500002**

**Right Side Air Outlet**

**EC130** 



**IFS PN: 500008-1**

**Louver Assembly  
Right Half**

**AS350** 



**IFS PN: 500010-1**

**Louver Assembly  
Right Half**

**AS350** 



## Air Outlets



**IFS PN: 500011-1**

**Louver Assembly  
Left Half**

**AS350** 



**IFS PN: 500018**

**Air Outlet Assembly  
Right Half**

**AS350** 



**IFS PN: 500018-2**

**Air Outlet Assembly  
Right Half**

**AS350** 



**IFS PN: 510259**

**Air Outlet  
Assembly**

**AS350** 



## Air Outlets



**IFS PN: 510259-1**

**Louver Assembly  
Right Half, Lower**

**AS350** 

**IFS PN: 510259-2**

**Air Outlet  
Assembly**

**AS350** 



## **Blower Motors**



**IFS PN: 050143**

**5" Vane Axial  
Blower Assembly**

AS350   
EC130 



**IFS PN: 050084**

**FAN, VANE AXIAL  
7", 24 VDC (Dynamic)**

AS350   
EC130 



**IFS PN: 050084-6**

**7" Vane Axial  
Blower Assembly (Enviro Motor)**

AS350   
EC130 



**IFS PN: 610000**

**7" Blower Assembly  
DC Brushless**

AS350   
EC130 





## **Blower Motors**



**IFS PN: 630000**

**7" Blower Assembly  
(Ampflow Motor)**

**AS350** 

**EC130** 



**IFS PN: 640000**

**7" Blower Assembly  
(Ampflow Motor)**

**AS350** 

**EC130** 



**IFS PN: 050052-1**

**Blower Motor,  
Modified Right Half**

**AS350** 



**IFS PN: 490017-1**

**Aft Evaporator Fan  
Assembly**

**AS350** 



## Blower Motor Parts



**IFS PN: 580000**

**5" Hub  
& Propeller Assembly**

AS350 

EC130 



**IFS PN: 250371**

**5" Propeller**

AS350 

EC130 



**IFS PN: 261176**

**Fan Blade Hub**

AS350 

EC130 



**IFS PN: 040004-8**

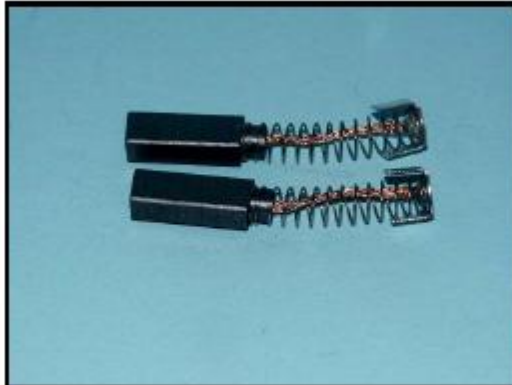
**Fan Wheel CW**

AS350 

EC130 



# Blower Motor Parts

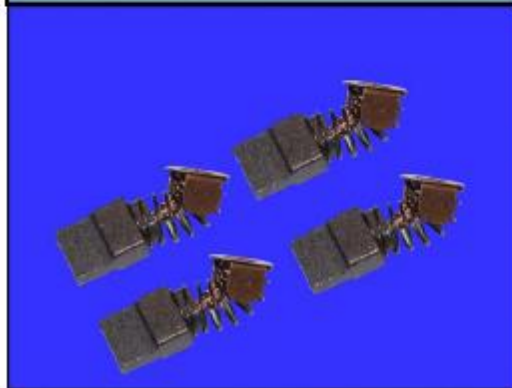


**IFS PN: 050031**

**5" Motor Brushes**

AS350 

EC130 



**IFS PN: 610000-8**

**7" Motor Brushes  
(Amp Flow)**

AS350 

EC130 

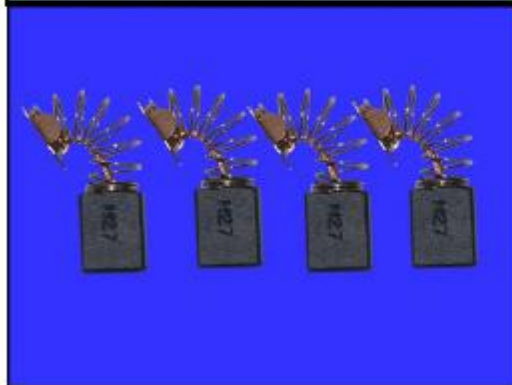


**IFS PN: 050038**

**7" Motor Brushes  
(Enviro)**

AS350 

EC130 



**IFS PN: A20420**

**7" Motor Brushes  
(Dynamic)**

AS350 

EC130 



## **Blower Motor Parts**



**IFS PN: 050032**

**5" Motor Brush  
Caps**

AS350   
EC130 

**IFS PN: 0941101-1-5**

**5" Motor  
Armature**

AS350 





# Compressor and Parts



**IFS PN: 590008**



**Compressor Assembly**

**AS350** 



**IFS PN: 590008-1**



**Compressor Assembly**

**EC130**   
**AS350** 



**IFS PN: 010015**

**Face Plate**  
(A3G/A2Y/1BQ/005 prefix stamped on face of rim) 0.501 shaft

**AS350**   
**EC130** 



**IFS PN: 010013**

**Face Plate**  
(A6H prefix stamped on face of rim) keyed- 0.430 shaft

**AS350**   
**EC130** 



## Compressor and Parts



**IFS PN: 300355-2**

**Pulley**

**AS350** 



**IFS PN: 300396**

**Pulley**

**EC130** 

**AS350** 



**IFS PN: 010011**

**Bearing**

**AS350** 

**EC130** 



**IFS PN: 050033**

**Coil, 24VDC**

**AS350** 

**EC130** 



## Compressor and Parts



### SHIM AND NUT KIT

(keyed- 0.430 shaft)  
NUT FITS ALL SHAFT SIZES

AS350



EC130



IFS PN: 060005

24.3" 4 Groove  
Serpentine Belt

EC130



IFS PN: 060006

25.3" 5 Groove  
Serpentine Belt

EC130



IFS PN: 060018 25-1/4"

IFS PN: 060018-1 25"

Flat Belt

AS350







# Compressor Bracket/Parts



**IFS PN: IFS-350/130-507**

**Compressor Bracket Kit**

**AS350**



**EC130**



**IFS PN: 530027-3**

**Compressor Mount Assembly**

**AS350**



**EC130**



**IFS PN: 530100**

**Strap, Housing Mod Assembly**

**AS350**



**EC130**



**IFS PN: 530100-1**

**Strap Housing Mod Assembly**

**AS350**



**EC130**





## Compressor Bracket/Parts



**IFS PN: 300363-2**  
**(ALT: 261155 not shown)**

**Compressor Shim,  
Upper**

**AS350** 

**EC130** 



**IFS PN: 300067-1**  
**Compressor Standoff**

**AS350** 

**EC130** 



**IFS PN: 300067**  
**Compressor Standoff**

**AS350** 

**EC130** 



**IFS PN: 261007**  
**Bushings, SD507**

**AS350** 

**EC130** 



## Compressor Bracket/Parts



**IFS PN: 261008**

**Bushing, SD507**

**AS350** 

**EC130** 

**IFS PN: 300095**

**Compressor Pin**

**AS350** 

**EC130** 

# Condenser/Evaporator



**IFS PN: 090002-0**

**Expansion Valve**

AS350 

EC130 



**IFS PN: 090016-5**

**Receiver/Drier**

AS350 

EC130 



**IFS PN: 550003-0**

**Aft Condenser  
Assembly**

EC130 



**IFS PN: 550007-1**

**Side Condenser  
Assembly**

AS350 





## Condenser/Evaporator



**IFS PN: 550022**

**Aft Condenser  
Assembly**

**AS350** 



**IFS PN: 560004**

**Fwd Evaporator  
Assembly**

**EC130** 



**IFS PN: 560010-O-5**

**Aft Evaporator  
Assembly**

**AS350** 



**IFS PN: 560016-O-1**

**Aft Evaporator  
Assembly**

**EC130** 



## Condenser/Evaporator



**IFS PN: 560025-0**

**Fwd Evaporator  
Assembly**

**AS350** 



## Electrical Parts



**IFS PN: 540009**

**Electrical Box  
Assembly**

**EC130** 



**IFS PN: 540028-C-2-A**

**Electrical Box  
Assembly**

**AS350** 



**IFS PN: 540011**

**Instrument Panel  
Switch**

**EC130** 



**IFS PN: 540020**

**Resistor Assembly**

**EC130** 



## Electrical Parts



**IFS PN: 540044-5**

**Instrument Panel  
Switch**

**AS350** 



**IFS PN: 540044-8**

**Instrument Panel  
Switch**

**AS350** 



**IFS PN: 540044-9**

**5 amp Breaker  
Assembly**

**AS350** 

**EC130** 



**IFS PN: 540089**

**Aft Evaporator  
Switch Assembly**

**AS350** 



## Electrical Parts



**IFS PN: 050000**

**Switch with  
Button**

**AS350**



**EC130**



**IFS PN: 050001**

**Switch without  
Button**

**AS350**



**EC130**



**IFS PN: 050006**

**Switch without  
Button**

**AS350**



**IFS PN: 050006-1**

**Switch with  
Button**

**AS350**








# Electrical Parts



**IFS PN: 050006-2**

**Switch with  
Button**

AS350   
EC130 



**IFS PN: 050006-3**



**Switch without  
Button**

AS350   
EC130 



**IFS PN: 050007-1**

**Button**

AS350   
EC130 



**IFS PN: 050007-3**

**Button**

AS350 



## Electrical Parts



**IFS PN: 050007-4**


**Button**

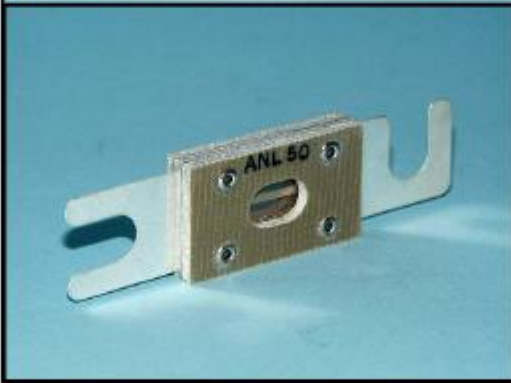
AS350   
EC130 



**IFS PN: 050008**



**Relay**

AS350   
EC130 



**IFS PN: 050015-2**

**50 AMP Limiter**

AS350   
EC130 



**IFS PN: 050024-2**

**Resistor**

AS350 



## Electrical Parts



**IFS PN: 050026**

**Timer**

**AS350**



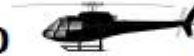
**EC130**



**IFS PN: 050107**

**Low Pressure  
Switch**

**AS350**



**EC130**



**IFS PN: 090004**

**High Pressure  
Switch**

**AS350**



**EC130**







## EC130 Hoses



**IFS PN: 570103**

**High Pressure  
Hose # 6  
Assembly**

EC130



**IFS PN: 570104**

**Condenser to  
Receiver/Drier Hose  
# 6 Assembly**

EC130



**IFS PN: 570105**

**Return Hose  
# 10 Assembly**

EC130



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

EC130





## AS350 Hoses Aft Mount Condenser



**IFS PN: 570067-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350** 



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350** 



**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350** 



**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350** 



## AS350 Hoses Side Mount Condenser



**IFS PN: 570020-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350** 

**IFS PN: 570024-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350** 

**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350** 

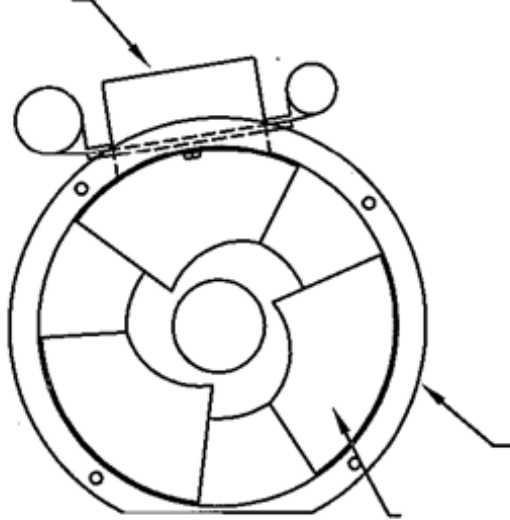
**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350** 

## BRUSHLESS BLOWER MOTORS AND PARTS

IFS PN 540126-1 CONTROLLER ASSY



**IFS PN 050084-7-2 7" DC BRUSHLESS  
BLOWER ASSEMBLY SHORT**

**AS350**



**EC130**



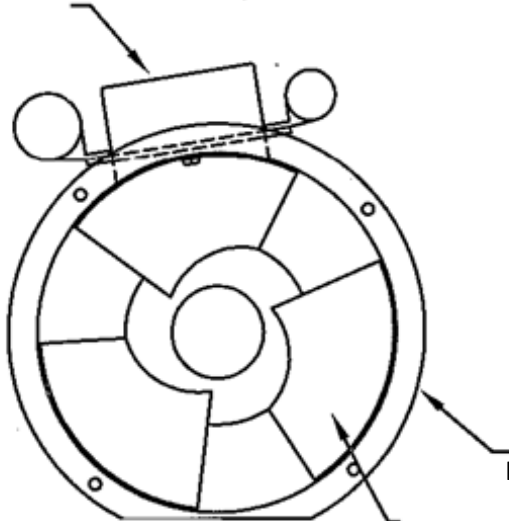
IFS PN 040020 7" BLOWER HOUSING,

IFS PN 040019 7" PROPELLER

IFS PN 050176-1 7" PROPELLER HUB ASSY

IFS PN 050193 7" DC BRUSHLESS MOTOR

IFS PN 540126-1 CONTROLLER ASSY



**IFS PN 050084-7-3 7" DC BRUSHLESS  
BLOWER ASSEMBLY LONG**

**AS350**



**EC130**



IFS PN 040021 7" BLOWER HOUSING,

IFS PN 040019 7" PROPELLER

IFS PN 050176-1 7" PROPELLER HUB ASSY

IFS PN 050193 7" DC BRUSHLESS MOTOR

**LIST OF CONSUMABLE MATERIALS**

<b>DESCRIPTION</b>	<b>P/N</b>	<b>VENDOR/SPECIFICATION</b>
THREAD LOCK	242	LOCTITE
ADHESIVE	1300L	3M
Cleaning cloth, Low-Lint	--	Commercial
Mineral Spirits, Cleaning Solvent	--	MIL-PRF-680, TYP II OR ASTM-D235
Alodine	Alodine 1200	--
Alodine	Iridite 14-2	--
Paint Stripper	Turco 5873	--
Polyamide Paint Primer	--	--
Dye Penetrant Kit	--	--
Acetone	--	ASTM-D329
Isopropyl Alcohol	--	TT-I-735
Trichloroethane	--	MIL-T-81533
Nylon Scouring Pad	(3M) Scotchbrite 63	3M
240 Grit Sandpaper	--	Commercial
320 Grit Sandpaper	--	Commercial
240 Grit Aluminum Oxide Abrasive	--	Commercial
Cloth	--	Commercial
Sealant	--	MIL-S-8802
Adhesive transfer tape 950 (2")	70-0060-3057-4	3M
Refrigerant	R134a	--

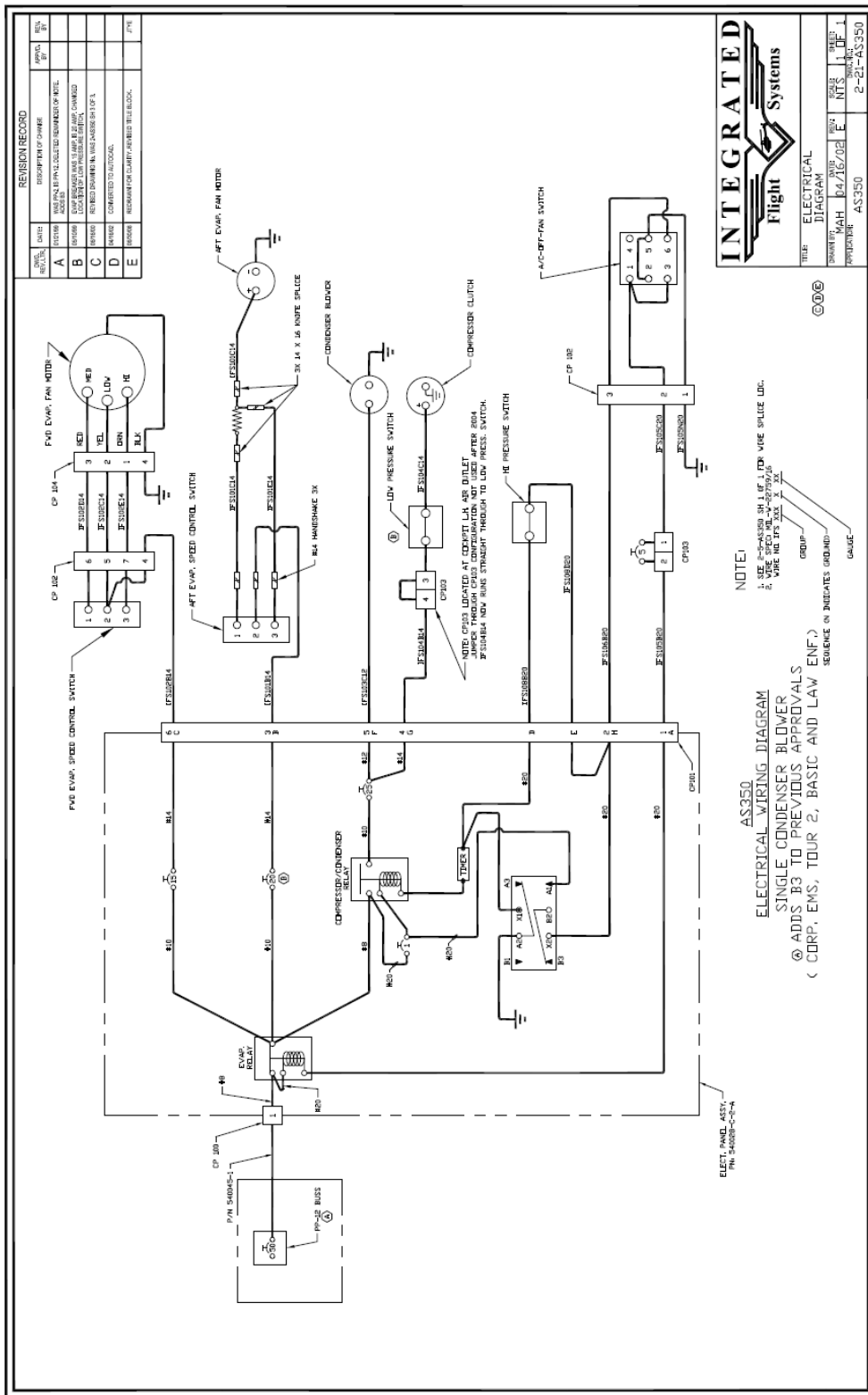


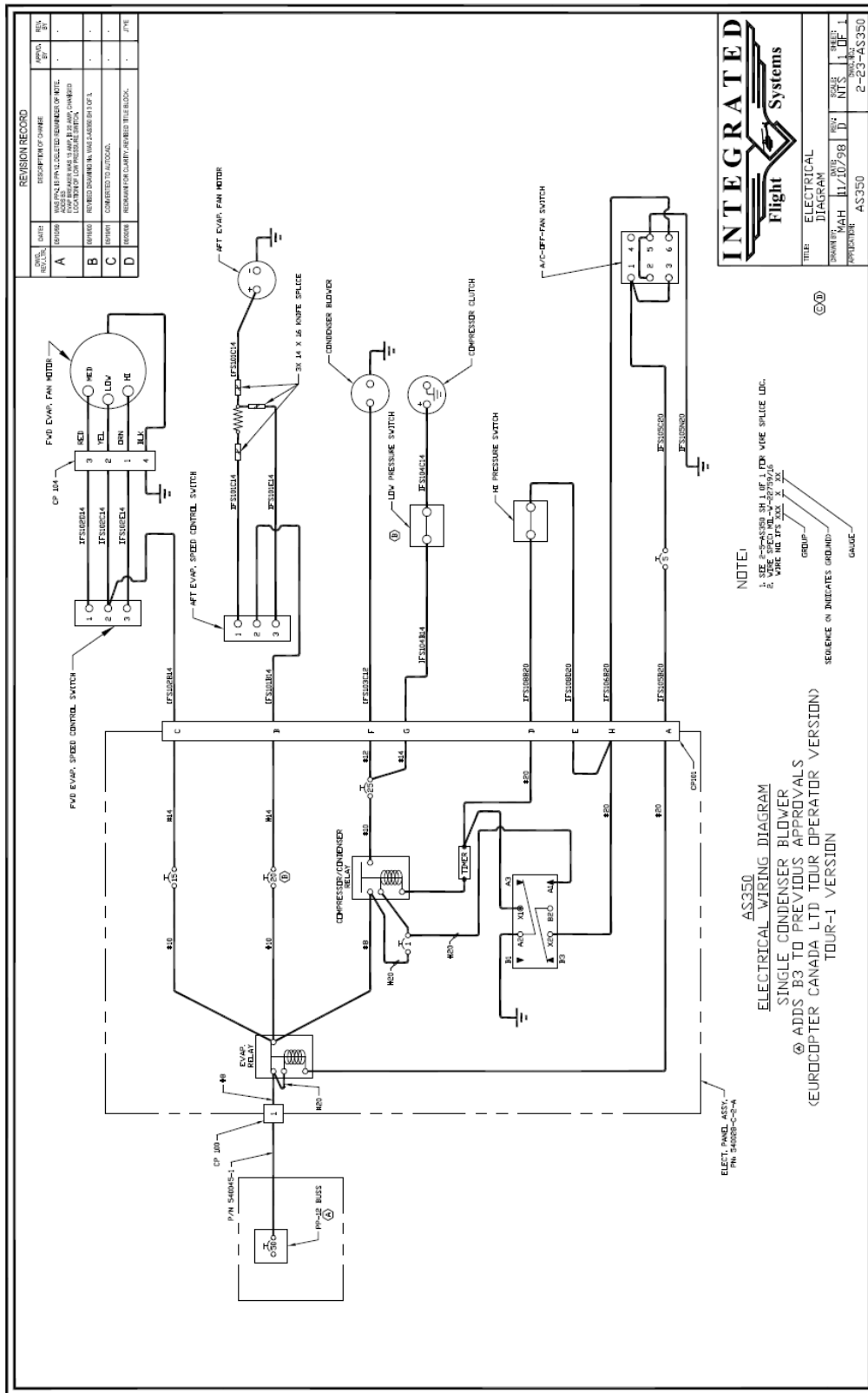
## Chapter 98

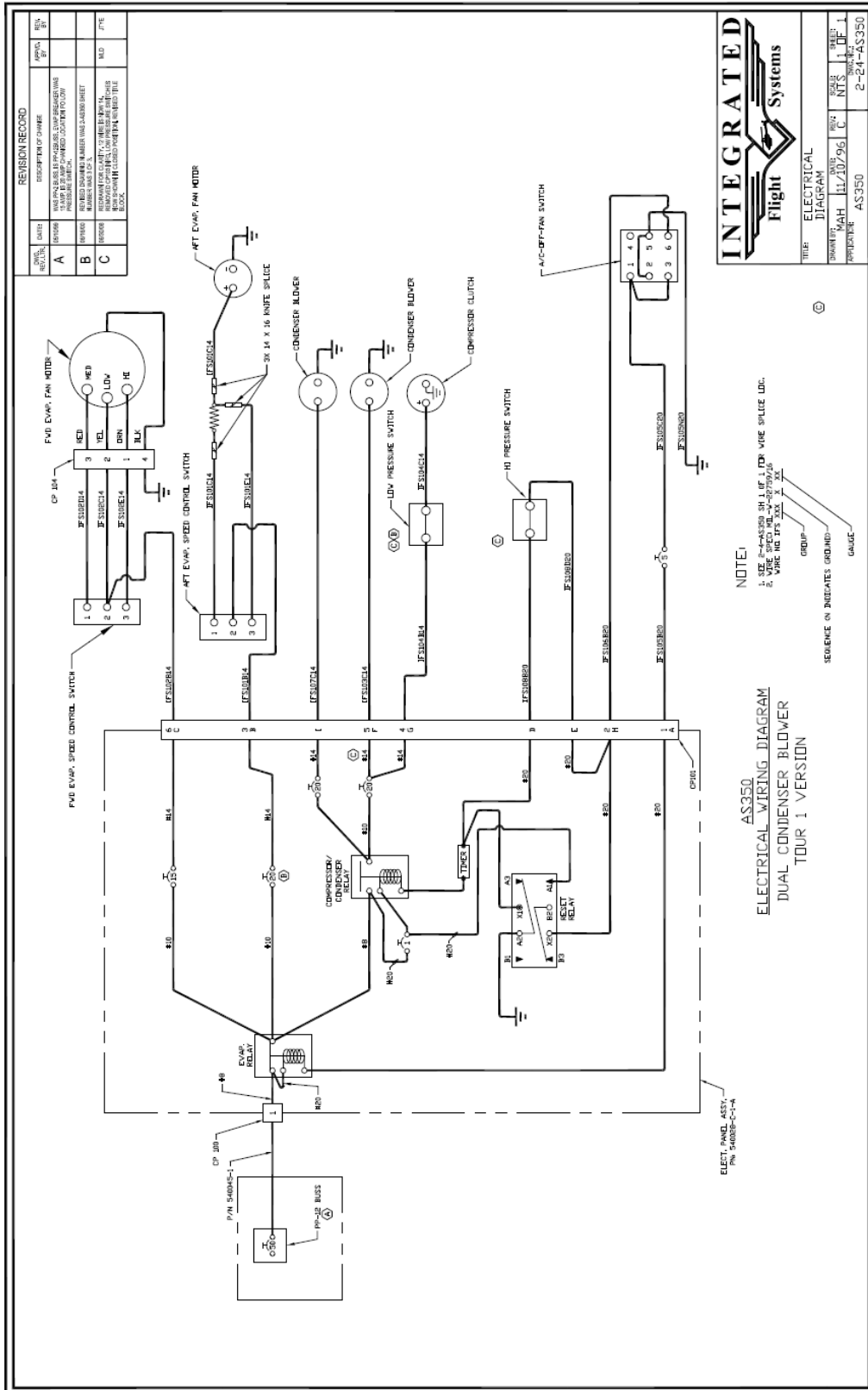
### Section 98-00-00 Wiring Diagrams and Plumbing Schematics

This section contains all applicable wiring diagrams and plumbing schematics.

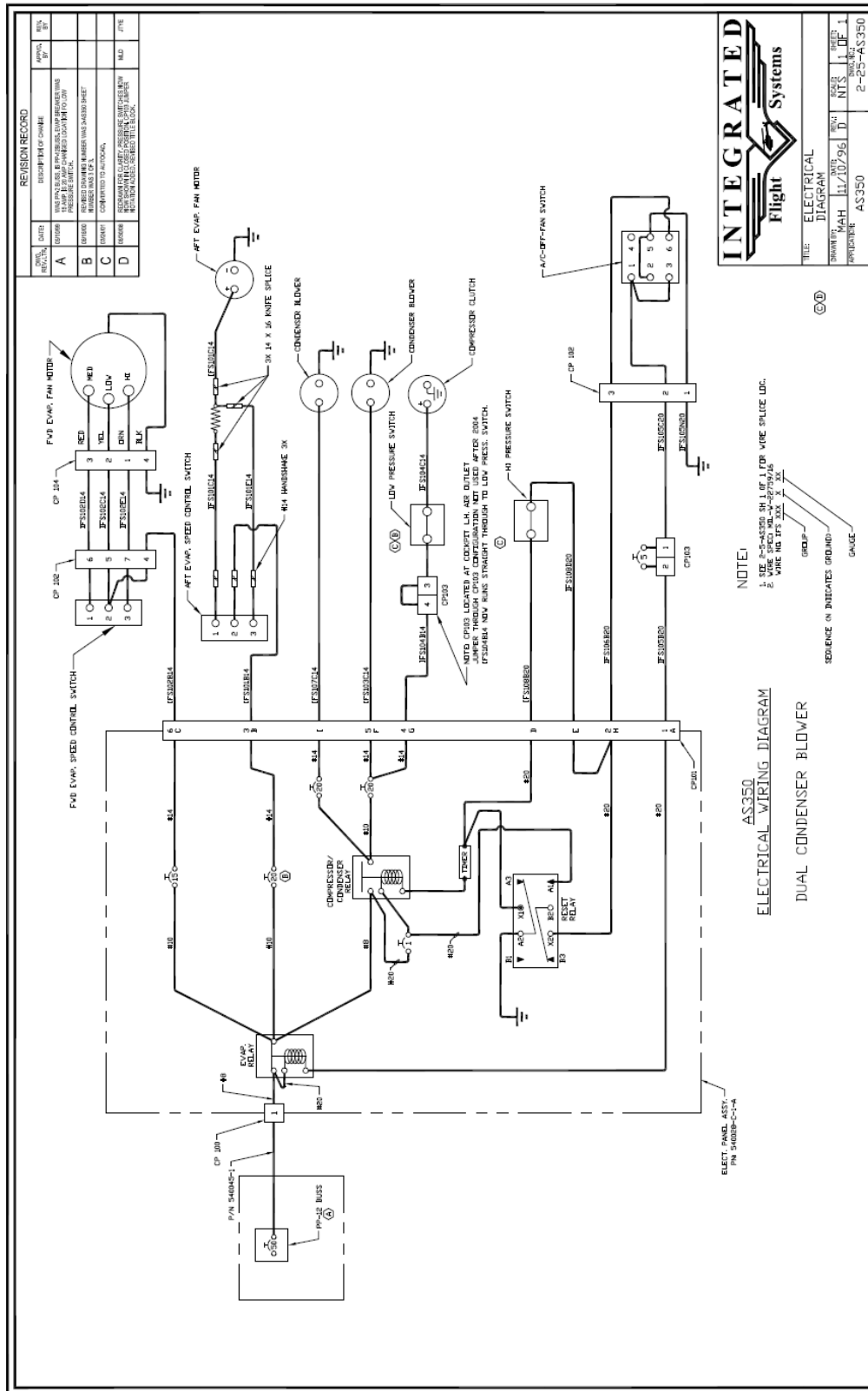
Section 98-10-00 Wiring Diagrams





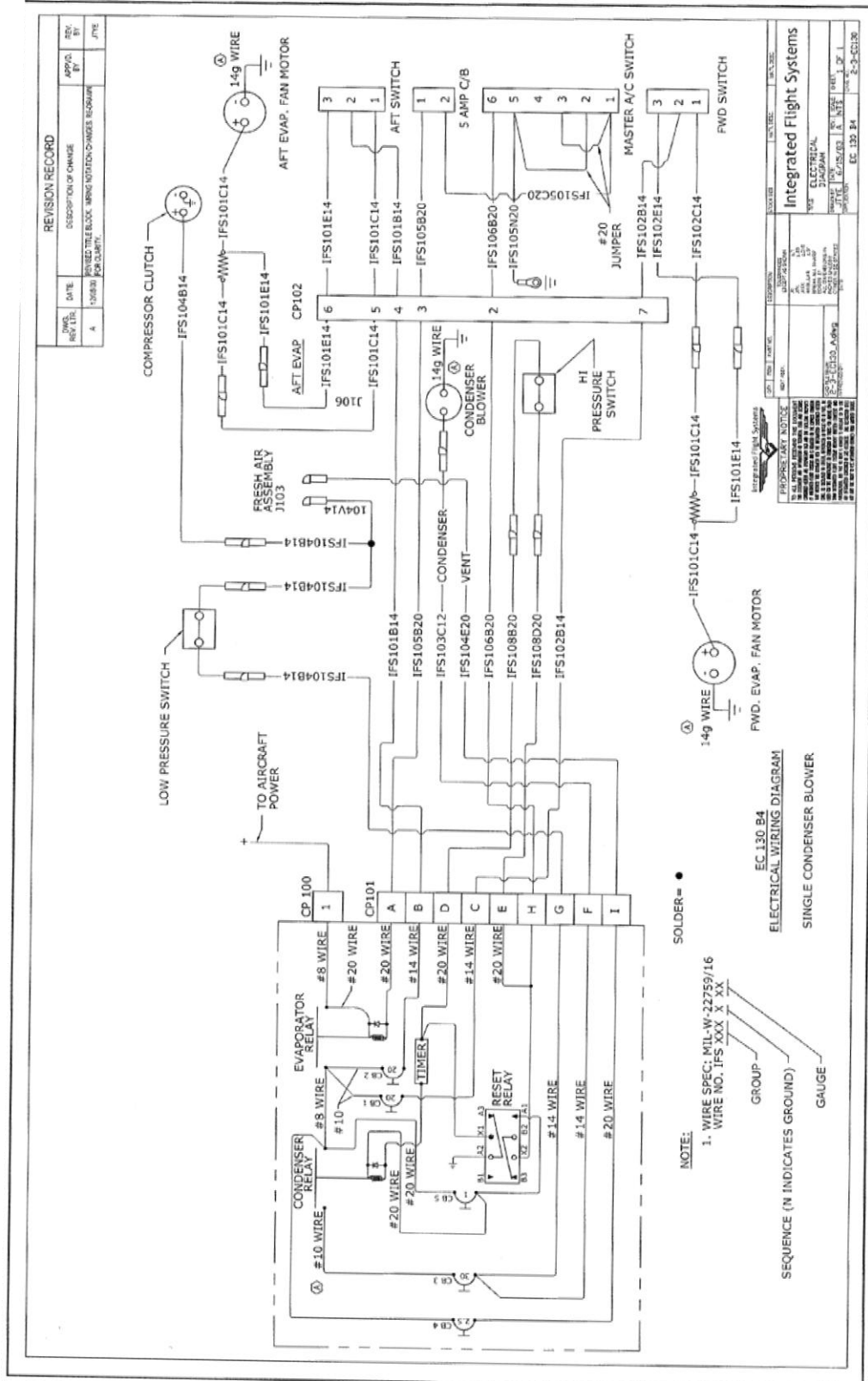




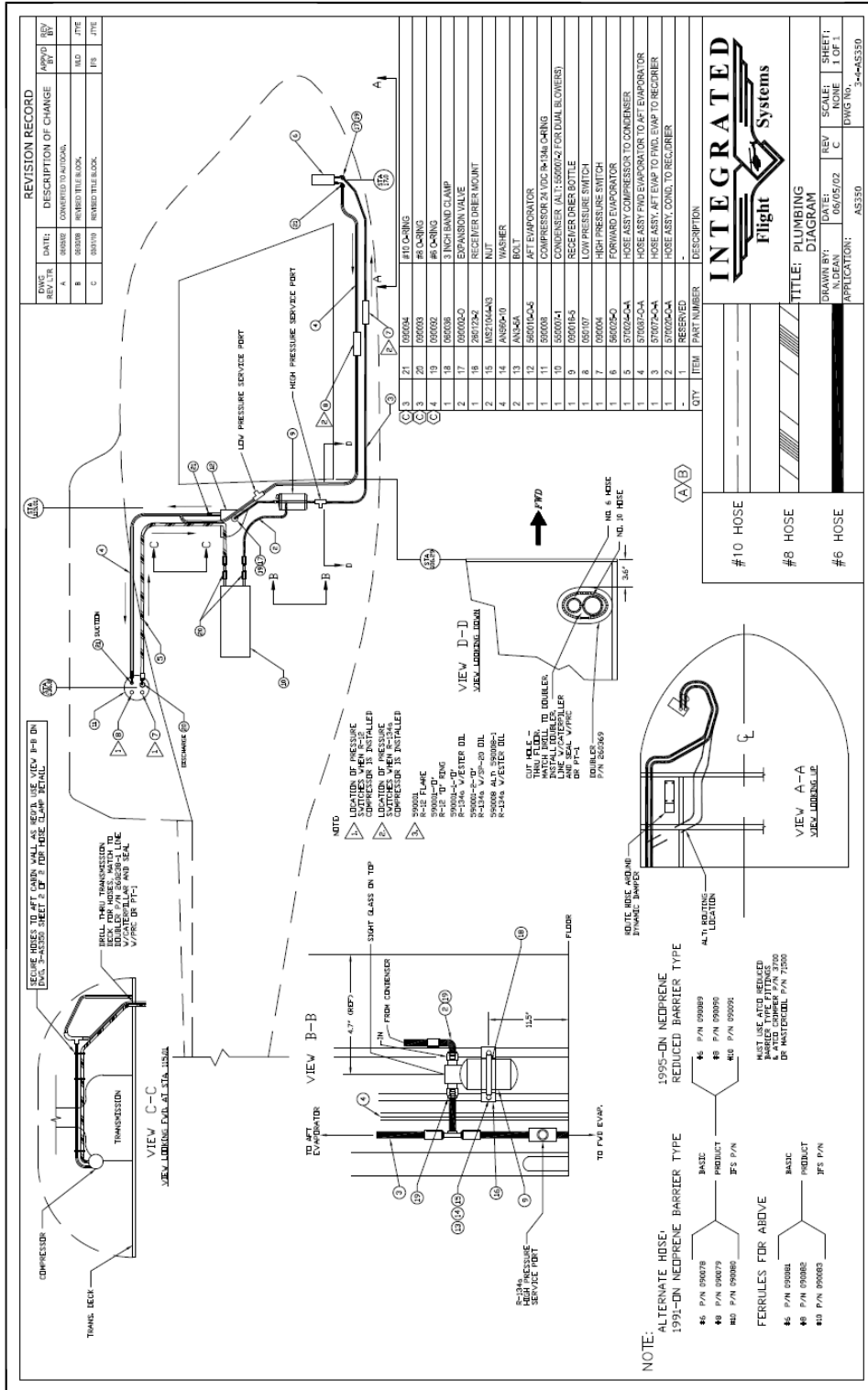


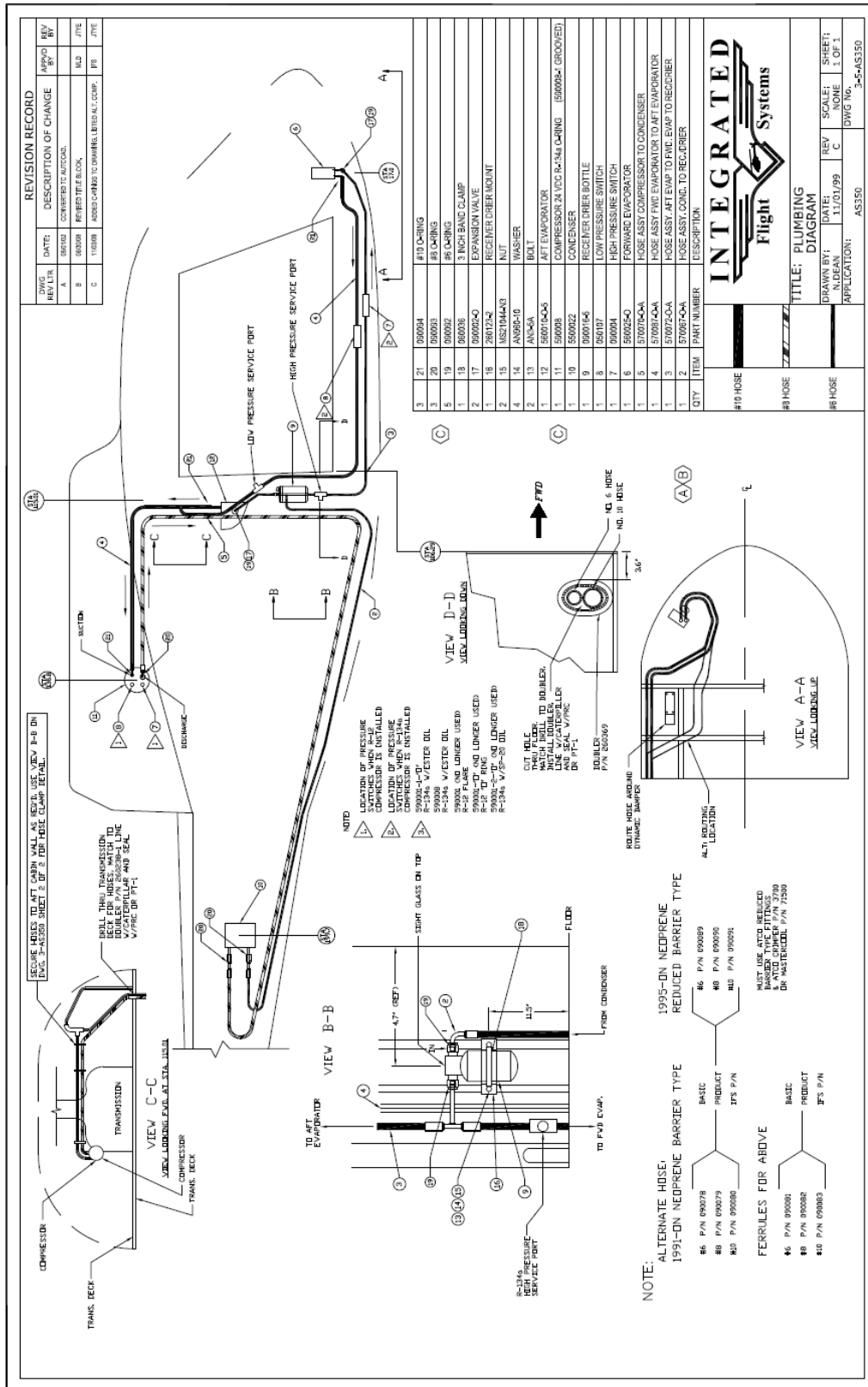
**INTEGRATED Flight Systems**

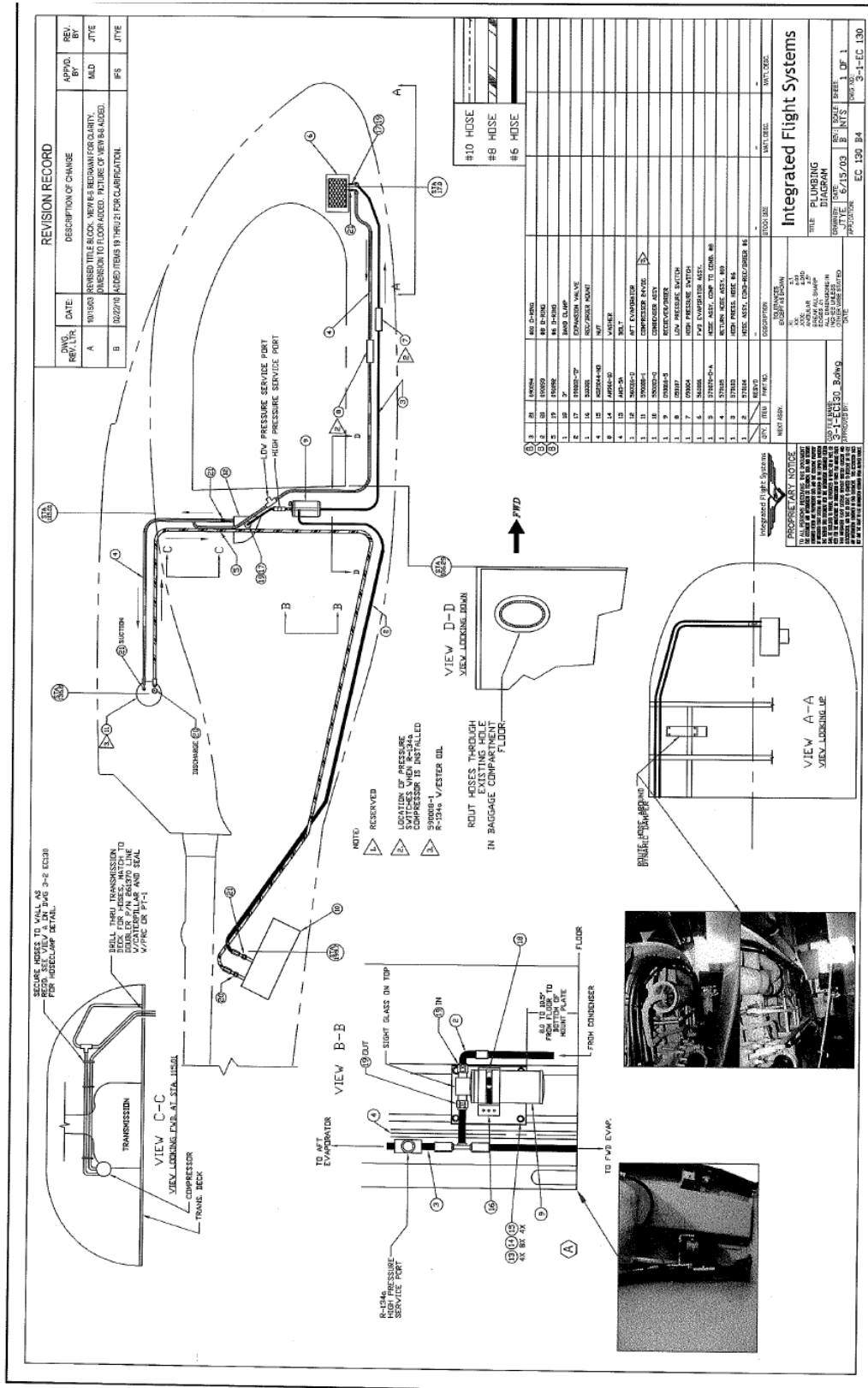
TITLE: ELECTRICAL DIAGRAM  
 DRAWN BY: MAH 11/20/96  
 CHECKED BY: NTS 11/20/96  
 APPROVED BY: AS350 2-25-AS350



Section 98-20-00 Plumbing Schematics









## APPENDIX A      Weight and Balance

### PERTAINS TO KIT #350-00-011

ITEM	WEIGHT	ARM	MOMENT
Forward Evaporator Assembly	10.0	19.00	190.00
Forward Air Outlets	4.0	31.32	125.28
Aft Evaporator and Return Air	9.0	120.00	1080.90
Aft Evaporator Blower	6.0	120.85	725.10
Condenser Coil and Mount	20.0	133.80	2676.00
Condenser Blower and Mount	8.0	148.60	1188.80
Compressor and Mount	12.0	147.80	1773.60
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	6.0	76.90	461.40
<hr/>			
Sub Total:	79.0	111.85	8835.88
(Air Conditioner)			

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**



**PERTAINS TO KIT #350-00-031**

<b>ITEM</b>	<b>WEIGHT</b>	<b>ARM</b>	<b>MOMENT</b>
Forward Evaporator Assembly	10.00	19.00	190.00
Forward Air Outlets	4.00	31.32	125.28
Aft Evaporator and Return Air	9.00	120.00	1080.90
Aft Evaporator Blower	6.00	120.85	725.10
Condenser Assy. & Mount w/ Dual condenser blowers	28.20	201.80	5690.76
Compressor and Mount	15.00	147.80	2217.00
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	9.00	76.90	692.10
<hr/>			
Sub Total:	85.20	133.05	11,335.94
(Air Conditioner)			

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**



**PERTAINS TO KIT # 130-00-031**

<b>ITEM</b>	<b>WEIGHT</b>	<b>ARM</b>	<b>MOMENT</b>
FWD. EVAP ASSY W/ MOTOR	12.0	24.0	288
FWD AIR OUTLETS (x2) W/ DUCTING	3.0	33.29	99.87
AFT EVAP W/ MOTOR & DUCTS	16.0	120.5	1928
CONDENSER ASSY W/ MOTOR & AIR DISCHARGE	33.0	223.3	7368.9
COMPRESSOR W/ MOUNTING KIT	14.0	147.8	2069.2
ELECTRICAL CONTROL BOX	4.0	153.7	614.8
REFRIGERANT HOSES	5.0	76.9	384.5
ELECTRICAL HARNESS	3.5	70.0	245
<hr/>			
INSTALLATION TOTALS	90.5	143.62	12998.27

ENGINE OIL  
 TRANSMISSION OIL  
 PILOTS (2)  
 FUEL

**FAA APPROVED DATA**



# Step 13

## Parts Break Down

# **MASTER PARTS LIST**

IN

**ALL AS350 SERIES**

FOR

**KIT # 350-00-011-HP**

**with**

**(SINGLE CONDENSER BLOWER)**

**"ESTER OIL EQUIPPED COMPRESSOR"**

**Model: SD-507**

**Revised: January 28, 2011  
November 4, 2009  
August 28, 2006  
February 1, 2002  
March 1, 2001  
August 6, 2001**

## MASTER PARTS LIST

AS350 SERIES

KIT #350-00-011HP

SINGLE CONDENSER BLOWER

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
1.	<b>BELT - FLAT</b>	060018-1 060018 (Alt)
	<b>BELT – GROOVED</b>	060005
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>	590008
	<b>SD-507 COMPRESSOR ASSEMBLY</b> COMPLETE W/ GROOVED PULLEY, 24 VDC COIL <b>(FOR USE WITH R-134a ONLY,</b> <b>"ESTER oil equipped)</b>	590008-1

### COMPRESSOR PARTS

FOR: SD-507 W/ 5.0" CLUTCH

3.	<b>BEARING (ONLY): SD-507</b> COMPRESSOR W/ 5.0" CLUTCH	010011
4.	<b>24 VDC COIL (GREEN WIRE)</b>	050033

Integrated Flight Systems  
Parts Break Down – 350-00-011 Air Conditioning

**COMPRESSOR PARTS**

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
5.	<b>IFS PULLEY (FLAT)</b>  <b>IFS PULLEY (GROOVED)</b>	300355 (Alt) 300355-2  300396
6.	<b>PULLEY FACE PLATE 5.0" (A6H)</b>	010013
7.	<b>PULLEY FACE PLATE 5.0" (A3G/A2Y)</b>	010015

**EVAPORATOR BLOWER PARTS**

8.	<b>5" VANE AXIAL BLOWER ASSY.</b> (SINGLE FLANGE W/NYLON BLADE) For: AFT EVAPORATOR BLOWER ASSY. IFS P/N 490017-1	050143
9.	<b>MOTOR: 5" VANE AXIAL BLOWER</b>	050145
10.	<b>NYLON BLADE AND HUB ASSY.</b> FITS 5" VANE AXIAL BLOWER,	580000
11.	<b>BRUSHES (2 EACH)/MOTOR</b>	050031
12.	<b>MOTOR, FORWARD EVAPORATOR</b> 24VDC, single shaft, right hand	050052-1
13.	<b>WHEEL, FORWARD EVAPORATOR, fan,</b> metal, CC rotation, 5/16" bore	040004-8

**CONDENSER BLOWER PARTS**

14.	<b>7" DC BRUSHLESS BLOWER ASSY.</b> (Short Housing)	IFSS 050084-7-2
15.	<b>7" DC BRUSHLESS BLOWER ASSY.</b> (Long Housing)	IFSS 050084-7-3

Integrated Flight Systems  
Parts Break Down – 350-00-011 Air Conditioning

**MISC. PARTS**

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
16.	<b>RECEIVER/DRIER 1991 &amp; ON - "O" RING TYPE</b>	090016-5
17.	<b>EXPANSION VALVE 1992 &amp; ON - FWD. AND AFT EVAP. "O" RING TYPE</b>	090002-"O"
18.	<b>HIGH PRESSURE SAFETY SWITCH (ALL YEARS)</b>	090004
19.	<b>LOW PRESSURE SAFETY SWITCH 1991 &amp; ON - NON-ADJUSTABLE (7 OUT/22 IN)</b>	050107

# *Integrated Flight Systems*

## *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

### **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

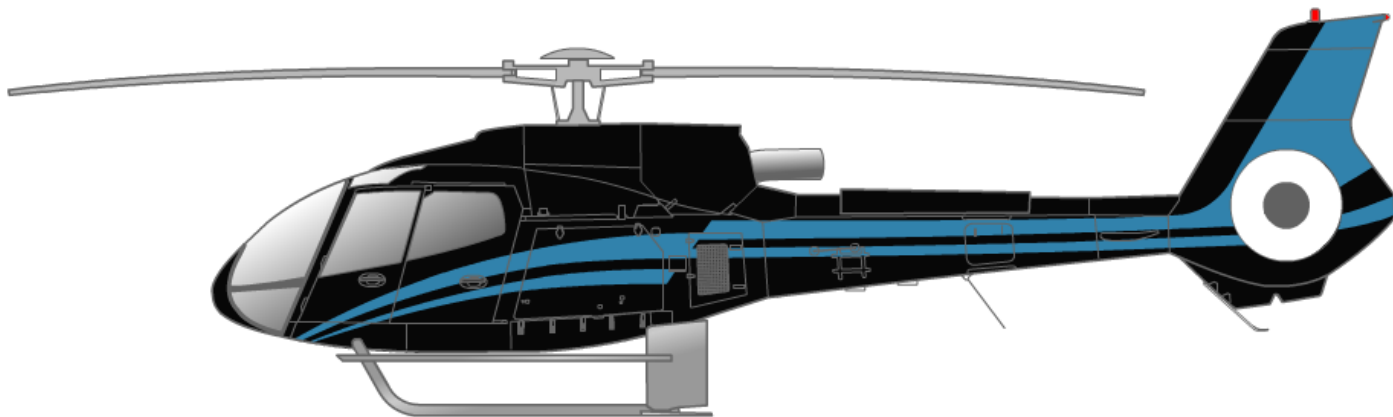
Flight

Systems

## Air Conditioning Parts Catalog



**AS350 Series**



**EC130 B4**



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# Air Intake Assemblies



**IFS PN: 520071**

**Condenser Air  
Intake Assembly  
(Hi Profile)**

**AS350**



**IFS PN: 520071-1**

**Condenser Air  
Intake Assembly  
Low Profile (Sliding Door)**

**AS350**



# Air Outlets



**IFS PN: 500001**

**Left Side  
Air Outlet**

**EC130** 



**IFS PN: 500002**

**Right Side Air Outlet**

**EC130** 



**IFS PN: 500008-1**

**Louver Assembly  
Right Half**

**AS350** 



**IFS PN: 500010-1**

**Louver Assembly  
Right Half**

**AS350** 

# Air Outlets



**IFS PN: 500011-1**

**Louver Assembly  
Left Half**

**AS350** 



**IFS PN: 500018**

**Air Outlet Assembly  
Right Half**

**AS350** 



**IFS PN: 500018-2**

**Air Outlet Assembly  
Right Half**

**AS350** 

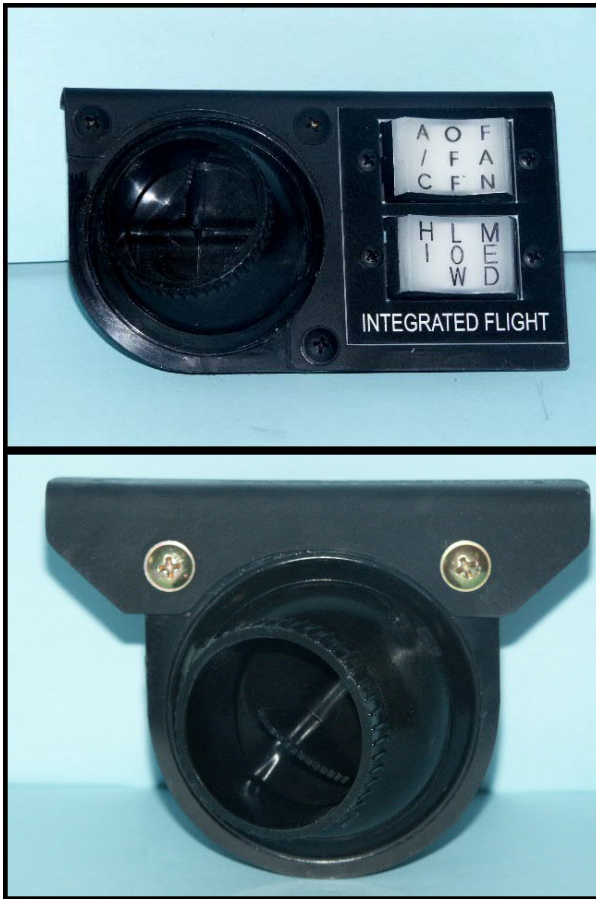


**IFS PN: 510259**

**Air Outlet  
Assembly**

**AS350** 

# Air Outlets



**IFS PN: 510259-1**

**Louver Assembly  
Right Half, Lower**

**AS350**



**IFS PN: 510259-2**

**Air Outlet  
Assembly**

**AS350**





# Blower Motors



**IFS PN: 050143**

**5" Vane Axial  
Blower Assembly**

**AS350**



**EC130**



**IFS PN: 050084**

**FAN, VANE AXIAL  
7", 24 VDC (Dynamic)**

**AS350**



**EC130**



**IFS PN: 050084-6**

**7" Vane Axial  
Blower Assembly (Enviro Motor)**

**AS350**



**EC130**



**IFS PN: 050084-7**

**7" Blower Assembly  
DC Brushless**

**AS350**



**EC130**



# Blower Motors



**IFS PN: 050052-1**

**Blower Motor,  
Modified Right Half**

**AS350**



**IFS PN: 490017-1**

**Aft Evaporator Fan  
Assembly**

**AS350**



# Blower Motor Parts



**IFS PN: 580000**

**5" Hub  
& Propeller Assembly**

**AS350**



**EC130**



**IFS PN: 250371**

**5" Propeller**

**AS350**



**EC130**



**IFS PN: 261176**

**Fan Blade Hub**

**AS350**



**EC130**



**IFS PN: 040004-8**

**Fan Wheel CW**

**AS350**

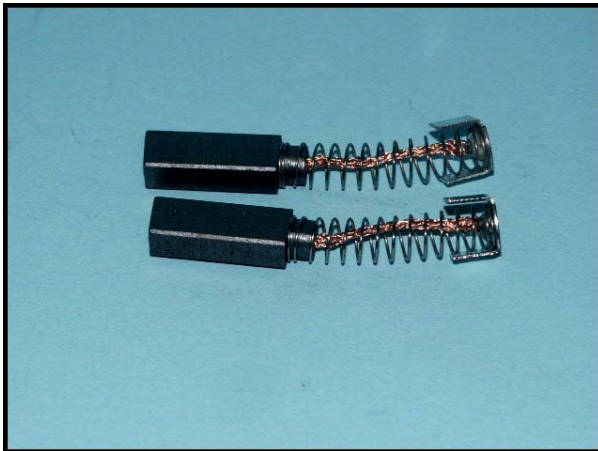


**EC130**





# Blower Motor Parts



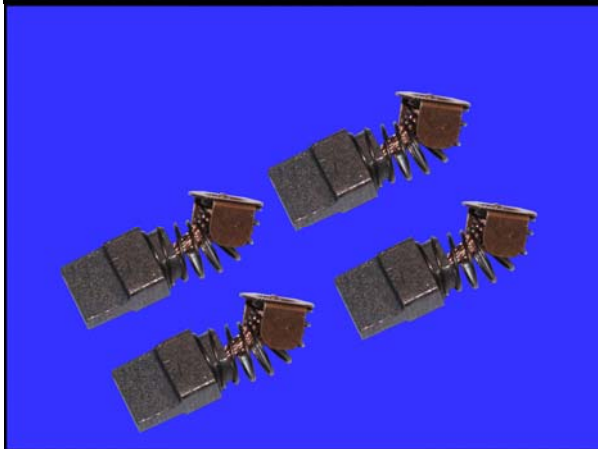
IFS PN: 050031

5" Motor Brushes

AS350



EC130



IFS PN: 610000-8

7" Motor Brushes  
(Amp Flow)

AS350



EC130



IFS PN: 050038

7" Motor Brushes  
(Enviro)

AS350



EC130



IFS PN: 420A-20

7" Motor Brushes  
(Dynamic)

AS350



EC130





# Blower Motor Parts



IFS PN: 050032

5" Motor Brush  
Caps

AS350



EC130



# Compressor and Parts



**IFS PN: 590008**

**Compressor Assembly**

**AS350**



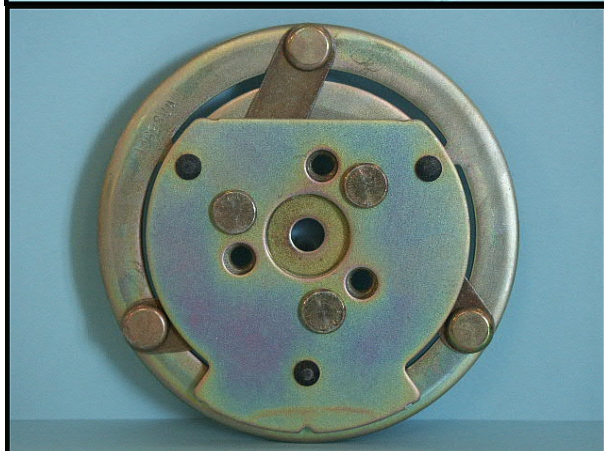
**IFS PN: 590008-1**

**Compressor Assembly**

**EC130**



**AS350**



**IFS PN: 010015**

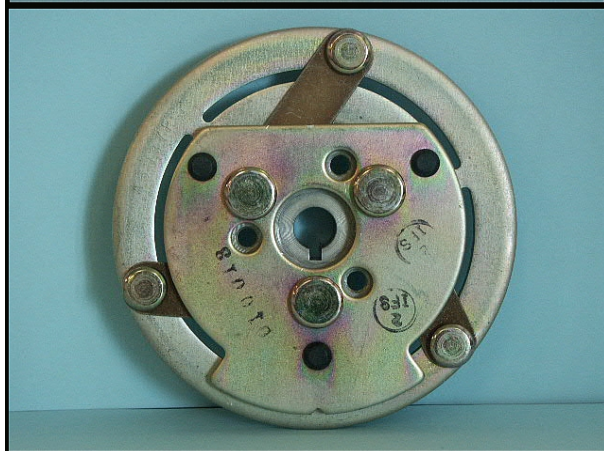
**Face Plate**

(A3G/A2Y/1BQ/005 prefix stamped on face of rim) Ø.501 shaft

**AS350**



**EC130**



**IFS PN: 010013**

**Face Plate**

(A6H prefix stamped on face of rim)  
keyed- Ø.430 shaft

**AS350**



**EC130**



# Compressor and Parts



**IFS PN: 300355-2**



**Pulley**

**AS350** 



**IFS PN: 300396**


**Pulley**

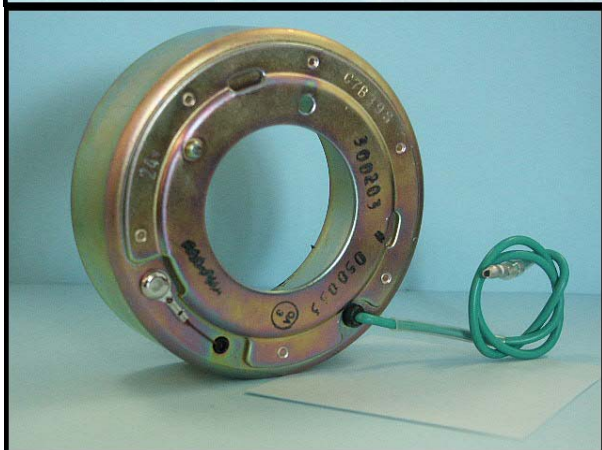
**EC130**   
**AS350** 



**IFS PN: 010011**



**Bearing**

**AS350**   
**EC130** 



**IFS PN: 050033**

**Coil, 24VDC**

**AS350**   
**EC130** 



# Compressor and Parts



## SHIM AND NUT KIT

(keyed- Ø.430 shaft)  
NUT FITS ALL SHAFT SIZES

AS350



EC130



## IFS PN: 060005

24.3" 4 Groove  
Serpentine Belt

EC130



## IFS PN: 060018 25-1/4"

## IFS PN: 060018-1 25"

Flat Belt

AS350



# Compressor Bracket/Parts



**IFS PN: IFS-350/130-507**

## **Compressor Bracket Kit**

**AS350**



**EC130**



**IFS PN: 530027-3**

## **Compressor Mount Assembly**

**AS350**



**EC130**



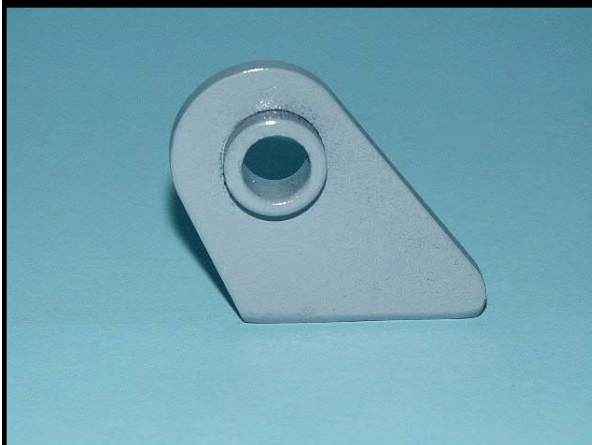
**IFS PN: 530100**

## **Strap, Housing Mod Assembly**

**AS350**



**EC130**



**IFS PN: 530100-1**

## **Strap Housing Mod Assembly**

**AS350**



**EC130**



# Compressor Bracket/Parts



**IFS PN: 300363-2**  
**(ALT: 261155 not shown)**

**Compressor Shim,  
Upper**

**AS350**



**EC130**



**IFS PN: 300067-1**

**Compressor Standoff**

**AS350**



**EC130**



**IFS PN: 300067**

**Compressor Standoff**

**AS350**



**EC130**



**IFS PN: 261007**

**Bushings, SD507**

**AS350**



**EC130**



# Compressor Bracket/Parts



**IFS PN: 261008**

**Bushing, SD507**

**AS350**



**EC130**



**IFS PN: 300095**

**Compressor Pin**

**AS350**



**EC130**





# Condenser/Evaporator



**IFS PN: 090002-O**

**Expansion Valve**

**AS350**



**EC130**



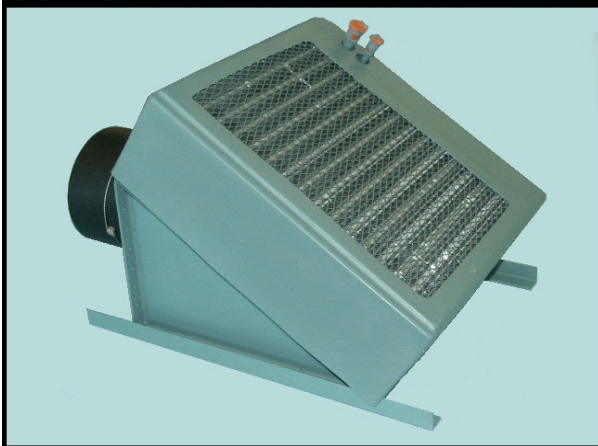
**IFS PN: 090016-5**

**Receiver/Drier**

**AS350**



**EC130**



**IFS PN: 550003-O**

**Aft Condenser  
Assembly**

**EC130**



**IFS PN: 550007-1**

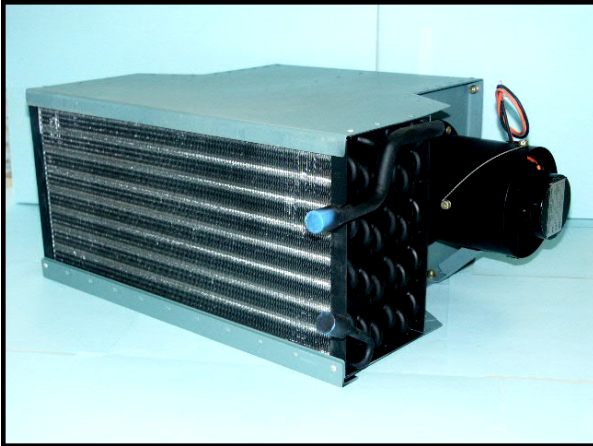
**Side Condenser  
Assembly**

**AS350**





# Condenser/Evaporator



**IFS PN: 550022**

**Aft Condenser  
Assembly**

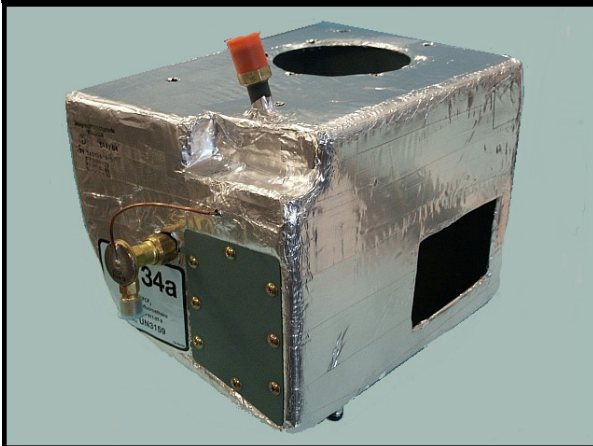
**AS350**



**IFS PN: 560004**

**Fwd Evaporator  
Assembly**

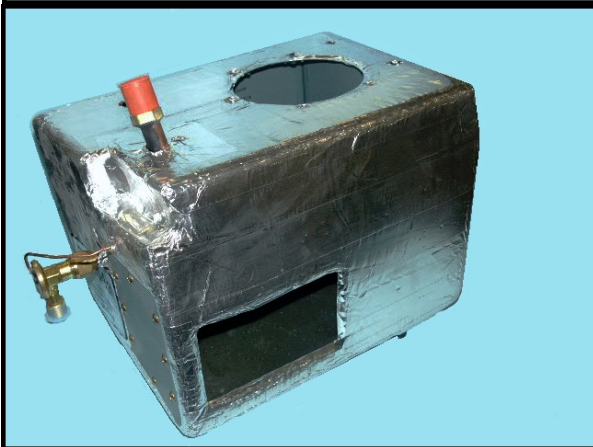
**EC130**



**IFS PN: 560010-O-5**

**Aft Evaporator  
Assembly**

**AS350**



**IFS PN: 560016-O-1**

**Aft Evaporator  
Assembly**

**EC130**



# Condenser/Evaporator



IFS PN: 560025-0

Fwd Evaporator  
Assembly

AS350



# Electrical Parts



**IFS PN: 540009**

**Electrical Box  
Assembly**

**EC130**



**IFS PN: 540028-C-2-A**

**Electrical Box  
Assembly**

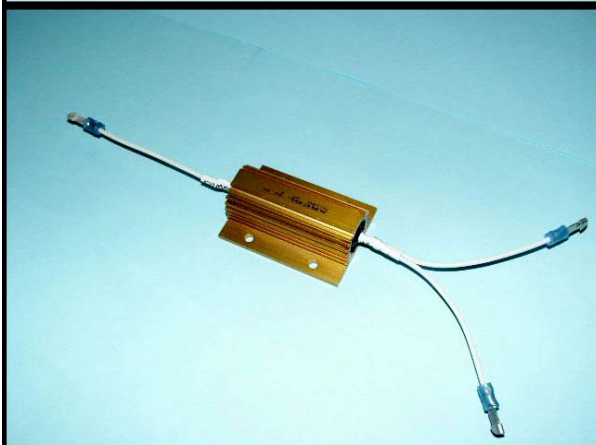
**AS350**



**IFS PN: 540011**

**Instrument Panel  
Switch**

**EC130**



**IFS PN: 540020**

**Resistor Assembly**

**EC130**





# Electrical Parts



**IFS PN: 540044-5**

**Instrument Panel  
Switch**

**AS350**



**IFS PN: 540044-8**

**Instrument Panel  
Switch**

**AS350**



**IFS PN: 540044-9**

**5 amp Breaker  
Assembly**

**AS350**



**EC130**



**IFS PN: 540089**

**Aft Evaporator  
Switch Assembly**

**AS350**



# Electrical Parts



**IFS PN: 050001**

3 POSITION DPDT "ON-OFF-ON"

**Switch without  
Button**

AS350



EC130



**IFS PN: 050006**

3 POSITION SPDT "ON-OFF-ON"

**Switch without  
Button**

AS350



**IFS PN: 050006-3**

2 POSITION SPST "ON-NONE-ON"

**Switch without  
Button**

AS350



EC130



**IFS PN: 050007-1**

**Button**

AS350



EC130



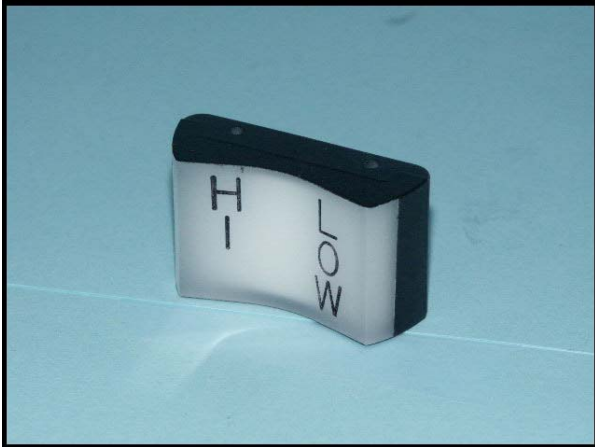
# Electrical Parts



**IFS PN: 050007-3**

**Button**

**AS350** 



**IFS PN: 050007-4**

**Button**

**AS350** 

**EC130** 

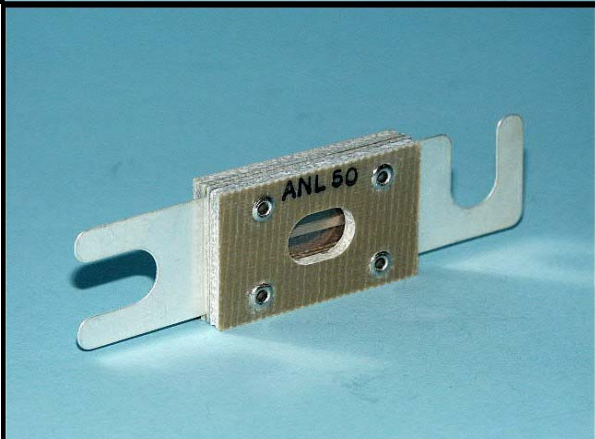


**IFS PN: 050008**

**Relay**

**AS350** 

**EC130** 



**IFS PN: 050015-2**

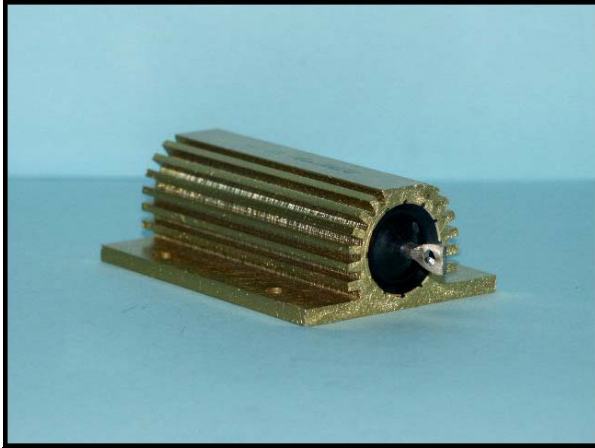
**50 AMP Limiter**

**AS350** 

**EC130** 



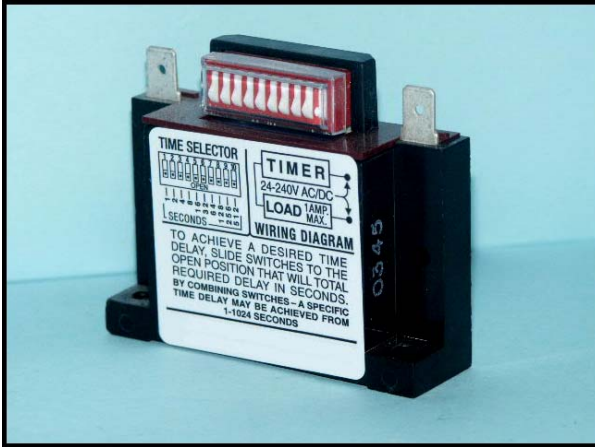
# Electrical Parts



IFS PN: 050024-2



Resistor

AS350 



IFS PN: 050026



Timer

AS350   
EC130 



IFS PN: 050107



Low Pressure  
Switch

AS350   
EC130 



IFS PN: 090004

High Pressure  
Switch

AS350   
EC130 

# EC130 Hoses



IFS PN: 570103

High Pressure  
Hose # 6  
Assembly

EC130 



IFS PN: 570104

Condenser to  
Receiver/Drier Hose  
# 6 Assembly

EC130 



IFS PN: 570105

Return Hose  
# 10 Assembly

EC130 



IFS PN: 570070-O-A

Hose Assembly  
#8 Compressor Discharge

EC130 



# AS350 Hoses Aft Mount Condenser



**IFS PN: 570067-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350**



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350**



**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350**



**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350**



# AS350 Hoses Side Mount Condenser



**IFS PN: 570020-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350**



**IFS PN: 570024-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350**



**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350**



**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350**



# 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.



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## 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: \_\_\_\_\_

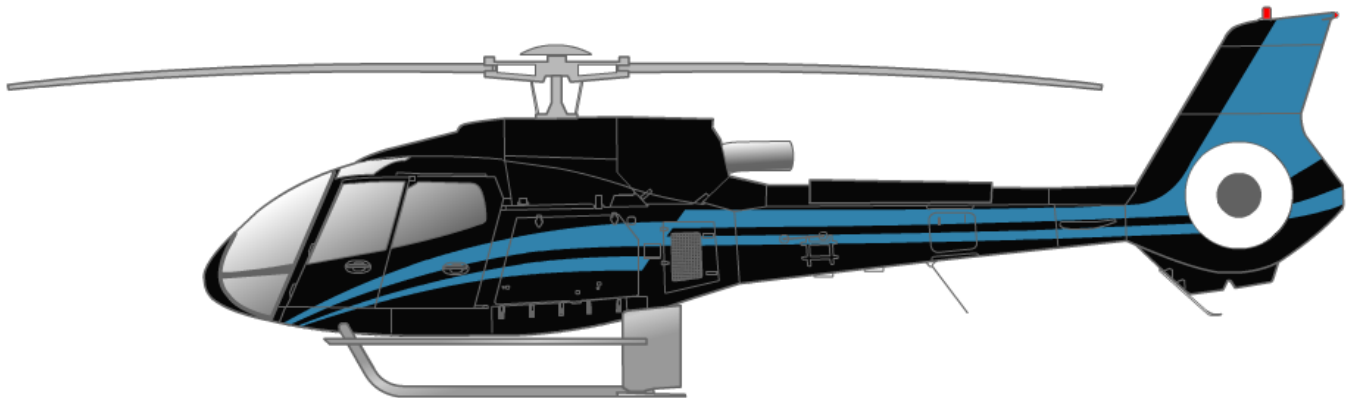
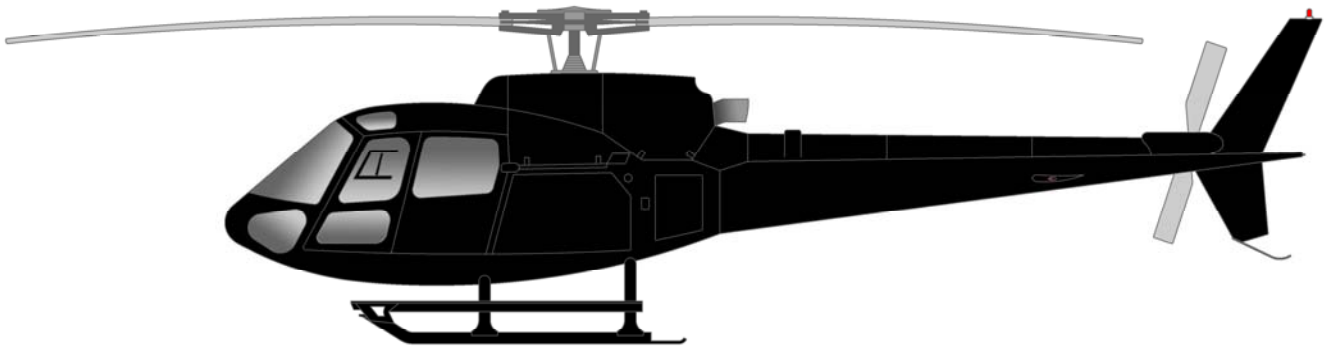
Warranty Accepted: \_\_\_ YES \_\_\_ NO

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

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

\_\_\_\_\_





## **Servicing and Trouble Shooting Guide**

**AS350 (Series) and EC130 B4**

**Air Conditioning System**

## TROUBLESHOOTING YOUR AIR CONDITIONING SYSTEM

The following consists of some basic information on Freon System Operation.

We should probably define “cold”. Actually, for our purpose, “cold” is a relative term. Your air conditioner should produce air (measured at the duct) that is:

- • 36° to 50° F at 70° ambient temperature.
- • 40° to 52° F at 80° ambient temperature.
- • 46° to 60° F at 90° ambient temperature.
- • 50° to 75° F at 100° ambient temperature.

### An Empty System

If the system is empty, the search for leaks should begin with a good visual check. Is it a fast leak or a slow leak? When was the system last charged? If it's a newly installed and filled system, then look for obvious leaks like a chaffed, punctured or ruptured hose, or a loose fitting. (See the recharge and leak testing section for hints on charging new systems.)

Freon leaks can be very tough to find. Freon is colorless, odorless, heavier than air, and it evaporates as soon as it hits the atmosphere. The only helpful thing about it is the fact that the oil carried with the refrigerant, so any sizable leak will leave a trail of oil at the offending hose or fitting. It will often just be a dark area, and the amount of oil might be slight. But if you find an air conditioning fitting with an oily residue and the area around it is dry, you've probably found your leak. A good electron detector can verify your visual diagnosis.

Because the system carries the oil in suspension with the refrigerant, any sizable leak will leak oil as well as refrigerant. Very slow leaks will usually only vent refrigerant and not oil, but a fast leak like a ruptured hose or a very loose fitting, will leak the refrigerant so fast that the oil is carried out of the system as well. If your system has suffered a major leak, be sure to check the oil level in the compressor before refilling the system.

## Troubleshooting

**Trouble:** **Low or partial refrigerant charge**

**Symptoms:**

- Insufficient cooling
- Low-side pressure too low
- High-side pressure too low
- Receiver/drier sight glass shows a stream of bubbles
- Air in ducts only slightly cool

**Cause:** The system is low on refrigerant, probably caused by a leak.

**Correction:** Find and fix the leak. If there was a loss of oil, be sure to check the compressor oil level. Evacuate and recharge.

## A System Full of Refrigerant

First, you should double-check all the obvious things (i.e. the compressor clutch, the belt tension, and the operation of the evaporator blower). Next, establish some baseline conditions for your testing: run aircraft, high blower and coldest thermostat setting, doors and windows closed, ambient temperature of 70° F or above.

Situations do occur where the system is full of refrigerant, yet the sight glass remains cloudy. The first thing to consider is whether the receiver/drier is installed backwards. Be sure the line from the condenser goes to the port marked “in” on the receiver/drier. The other condition that might give you a cloudy glass (on a full system) is a restriction in the liquid line from the condenser to the receiver/drier. On some new receiver/driers the filter screen could be pushed up so the bottom of the screen is blocking the liquid pickup tube. You will have to cut open the receiver-drier to confirm your diagnosis.

You should test next for a system that is overcharged. If the sight glass is clear, but the high- and low pressure gauge readings are high (300 or more on the high side, 50 or more on the low side), disconnect the compressor clutch. (Note that on HFC-134A systems, milky is the normal look for a correctly charged system.) The refrigerant should foam and then settle away from the glass in less than forty-five seconds. If the sight glass remains clear for more than forty-five seconds you have an overcharged condition and will have to remove Freon.

## **Trouble: Excessive moisture in the system**

### **Symptoms:**

- Insufficient cooling during hottest part of the day or during extended flying.
- Low-side pressure normal, though it may be too low or even a vacuum
- High-side pressure normal, though it may be low-at the same time low side is low
- Receiver-drier sight glass may show tiny bubbles  
(*Note:* This could be a tough call with HFC-134A since the sight glass is always milky).
- Air in the ducts is usually cold, but becomes warm when pressure reading drop

**Cause:** Excessive moisture in the system. The drying agent in the receiver-drier is saturated with moisture, which is released to the system when outside temperature increased. Moisture in the system collects and freezes on the expansion valve, stopping the flow of refrigerant.

**Correction:** Suck all the CFC-12 from the system. Replace or rebuild the receiver-drier. Evacuate and recharge.

## **Trouble: Air in the system**

### **Symptoms:**

- Insufficient cooling
- Low-side pressure normal, but does not drop when the clutch cycles
- High-side pressure high
- Receiver/drier sight glass shows occasional bubbles (Note again that with HFC-134A the sight glass should be milky when the system is fully charged.)
- Air in ducts only slight cool

**Cause:** Refrigerant contains non-condensable in the form of air and moisture.

**Correction:** Leak test, watch for bad compressor seals. Drain the system. Repair leaks as needed. Replace or rebuild the receiver-drier. Check the compressor oil. Evacuate and recharge.

**Trouble: Condenser malfunction or system overcharge**

**Symptoms:**

- No cooling
- Low-side pressure too high
- High-side pressure too high
- Receiver/drier sight glass may show occasional bubbles
- Liquid line very hot
- Air in ducts is warm

**Cause:** The condenser is not function properly because of high head pressure. System may be overcharged.

(**Note:** Technicians will have to be especially careful to avoid overcharging HFC-134A systems. Because the sight glass is hard to read and the volume given is slightly lower with HFC-134A).

## NOTE:

### Cloudy Sight Glass

A cloudy sight glass indicates a system that is only partially full of refrigerant (with a few exceptions). A perfectly clear sight glass (use a light to get a good look) means the system is either full or empty. Note, with HFC-134A the glass appears milky when properly charged, and may show occasional bubbles.

# AS350 Trouble Shooting Guide



1. System has no electrical power to air conditioner master control box:
  - A) Check 50 amp circuit breaker or fuse in aircraft electrical bus.
  
2. System has power but will not turn on:
  - A) Check 5 amp circuit breaker on switch assembly.
  - B) Check ground lead on cannon plug 102 wire IFS105N20.
  - C) Check evaporator fan relay in air conditioner master control box.
  
3. Forward evaporator fan will not turn on, but aft fan runs:
  - A) Check 20 amp circuit breaker in master electrical box.
  - B) Check ground wire from evaporator motor.
  - C) AS350 disconnect CP104 and check for power on pin 2. On AS350 or EC130 B4 by checking ground lead from master switch.
    - 1) If you have power, your motor is bad.
    - 2) If no power, disconnect CP101 cannon plug and check continuity from pin 6/c on CP101 to cannon plug CP104 pin 2. If no power, check cannon plugs and switch.
  - D) EC130 B4 check for power on wire IFS 101C14 at resistor assembly P/N 540020 if no power, trace through the fan switch for power.
  
4. Aft evaporator fan will not run, but forward evaporator runs:
  - A) Check 20 amp circuit breaker on master electrical box.
  - B) Check ground wire from fan.
  - C) Check Brushes.
  - D) AS350 check for power on wire IFS 101C14 at resistor assembly P/N 540020 or resistor P/N 050024-2 (parts are two way interchangeable).
    - 1) If you have power, your motor is bad.
    - 2) If no power trace through fan switch for power.
    - 3) If no power disconnect cannon plug CP101 and check continuity from pin 3/B of CP101 to wire IFS101C14 on resistor with fan switch on "Low".
  - E) EC130 B4 check for power on wire IFS 101C14 at resistor assembly P/N 540020.
    - 1) If you have power your motor is bad.
    - 2) If no power trace through fan switch for power.
    - 3) If no power disconnect cannon plug CP101 and check continuity from pin 3/B of CP101 to pin 4 of cannon plug 102.

# AS350 Trouble Shooting Guide



## 5. Condenser fan/fans do not operate:

- A) Check 20 amp circuit breaker.
- B) Check 1 amp circuit breaker.

- 1) If popped, reset.
  - a) Check brushes.
  - b) Check power.
  - c) Check ground.
  - d) Check fins for blockage in air condenser assembly.
- 2) Run air conditioning system.
  - a) Check pressures, If pressure is running higher than normal, then continue with b), ect...
  - b) System may be over-serviced.
  - c) System may be contaminated by improper Freon or a mix of Freon's.

- 1) **NOTE:** This has happened more than once. The service carts are great for servicing systems, but there is a danger in its misuse. Untrained operators or an individual who wants to service his car, truck, motor home or even his room A/C can pump down their system into your tank. It can have any number of different Freon's. It could also be contaminated by a failed compressor, dryer bottle, wrong oil or any number of things. This has happened to a company with brand new equipment just 3 weeks old. There were large warning signs on this service cart, designated HELICOPTER SERVICE ONLY. They had one for ground equipment. All of the mechanics were well trained except for the management, janitors and their family members of the company. It can happen to any operator.

## 6. Compressor clutch does not engage, but air conditioner fans work.

- A) Check clutch for power.

- 1) If power, clutch coil may be bad or air gap in clutch face may be too excessive.
- 2) If NO power check system for total Freon loss.
- 3) If system is serviced and still no Power and you have an optional temperature controller, you can bypass by jumping pins 3 and 4 on CP102 to check if faulty.

# AS350 Trouble Shooting Guide



## 7. System not cooling:

- A) Check that air condenser fan/fans are blowing.
- B) Check clutch engagement. Is clutch staying engaged or cycling? Check belt tension.
- C) Check to see if air condenser coil is free from debris and fins are clean and not rolled over blocking air flow.
- D) Check evaporator return air inlets, that they are not blocked and fins are clean and not rolled over blocking airflow.
- E) Put gauges on system. Run system and check pressures also measure Delta temperature from both evaporators. (Measure inlet temperature and outlet temperature to get Delta. This is a must, do not rely on just using your hand and guessing).
- F) Check sight glass.

(NOTE: There are several ways to service Freon systems:

- 1) Service system to a clear sight glass R12.  
**Note:** On 134a systems the sight glass appears milky when properly charged, though there may be occasional bubbles in the sight glass.
- 2) Service system by weight. If you have a service station or scale, you can add the proper amount by weight.

82° F or higher service with 2.0 lbs max Freon.

Below 82° F service with 2.5 lbs max Freon.

- 3) The optimum method for best performance is to use at least two mechanical thermometers and place them near the return air and the discharge air of each evaporator. 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. At any time the high pressure gauge reaches 280 psi, stop servicing. Do not exceed 3.0 lbs of refrigerant..
- 4) Service according to a standard pressure temperature chart.)

## 8. One evaporator is cooling, one is not.

- A) One expansion valve may be blocked from contamination.
- B) One expansion valve may be locked full open.  
(NOTE: The one valve that is full open is causing the problem. It may make it seem like the other valve is bad and not working.)
- C) One of the sensing bulbs on expansion valves may become loose from suction side of coil. Also check to see if sensing bulb is mounted to the correct evaporator tube. The bulb should be mounted at 9 or 3 o'clock position.
- D) Hose may be crimped, kinked or have a fitting bent over blocking flow.



## AS350 Trouble Shooting Guide



- E) (**NOTE:** The recommended fix is to pump down system. Change BOTH expansion valves and dryer bottle. Make sure to mount sensing bulb on suction side of coil and when possible at 9 or 3 o'clock position on tube. Re-service system.)

9. Compressor clutch failure:

- A) Low Freon in system. This causes the system to low pressure out through the low pressure switch. It will cycle the clutch on and off until it heats up causing the coil to overheat and fail, or heat up the bearing to the point the grease will liquefy and run out. This will add to the heat and help fail coil or bearing.
- B) Air gap on clutch may have changed.
- C) Coil may have weakened.
- D) Bearing may have failed, causing clutch to slip and fail coil.  
**NOTE:** If ongoing maintenance is not maintained on compressor clutch bearing as prescribed in IFS maintenance manual, bearing may fail.

10. Compressor failed:

- A) Loss of oil or insufficient oil.
- B) Low Freon in system, causing insufficient flow of oil lubricant.
- C) Contamination in system.
- D) Compressor bearing failed.
- E) Over servicing of system to the point of liquid lock.  
**(NOTE:** This has happened.)

11. Compressor belt failure:

- A) Low Freon in system. Cause: low pressure switch to cycle the clutch on and off excessively.
- B) Insufficient belt tension.
- C) Clutch bearing dragging or failing. This causes excessive belt slipping.
- D) Over service of system.
- E) Air gap excessive, causes clutch to slip heating pulley. This will stretch belt making it slip.

12. Air conditioner runs, but pops 1 amp circuit breaker:

- A) Check condenser fan or fans for operation.
- B) Check blockage of air flow in and out of condenser.
- C) Check coil to see if fins are clean or rolled over.
- D) Check for over service of Freon.
- E) Put gauges on and run system.
  - 1) Is system popping 1 amp circuit breaker at 350 or higher?
    - a. If not change high pressure switch.
- F) Check expansion valves and make sure sensing bulbs are mounted to suction lines.
  - 1) Measure Delta of both evaporators.
    - a. If Delta is over 32° F expansion valve may not be working. If expansion valve is not throttling it will dump too much Freon. This can add excessive heat to condenser and can also freeze up coil.
  - 2) If Delta is below 14° F. Change valves, they may be blocked internally.

# AS350 Trouble Shooting Guide



## 13. Fresh air supply valve inoperable. EC130 B4 only

- A) If valve fails to open.
  - 1) Check 2 ½ amp CB
  - 2) Check for power at wire IFS 104V20
    - a. If power, check for power on wire IFS 104E20
      - 1. If no power motor/controller is bad
      - 2. If power trace back to source
    - b. If no power check continuity to Pin 1 on cannon plug CP101.
    - c. If no continuity check low pressure switch for ON.
- B) If valve fails to close
  - 1) Check for power on wires at valve IFS 104V20 and IFS 104E20
    - a. If power, both motor /controller is bad.
    - b. If no power on wire IFS 104V20.
      - a. Check 2 ½ amp CB.
      - b. Check to see if low pressure switch is open.
      - c. Check continuity from valve wire IFS 104V20 to Pin 1 on cannon plug CP101.

**NOTE:** When running in “A/C” mode and you switch straight to “OFF” the Fresh Air Valve will stay in the closed position. You will need to switch to the “Fan” position to reset the Fresh Air valve to the open position.

## 14. Blower Motor Brush Inspection

- A) Ø 5.0” Blower motors have brushes 13/16” long. Brushes should be inspected every 200 hours. When brushes wear down to 5/16”, replace them.
- B) Ø 7.0” 2 Brush Blower motors have brushes 3/4” long. They should be inspected every 300 hours. These brushes should be replaced at 1/2” or less.
- C) Ø 7.0” 4 Brush Blower motors have brushes 9/16” long. They should be inspected every 300 hours. These brushes should be replaced at 5/16” or less.

## **MANUFACTURERS NOTICE**

THE BRUSHES IN THESE FAN MODELS ARE DESIGNED AND MANUFACTURED TO PROVIDE 500 HOURS OF SERVICE LIFE.

BRUSHES ARE A WEAR ITEM AND REQUIRE REGULAR INSPECTION AND MAINTENANCE! SINCE BRUSH LIFE VARIES GREATLY FOR EACH APPLICATION OR INSTALLATION, WE RECOMMEND INSPECTION AT REGULAR INTERVALS, SPECIFICALLY:

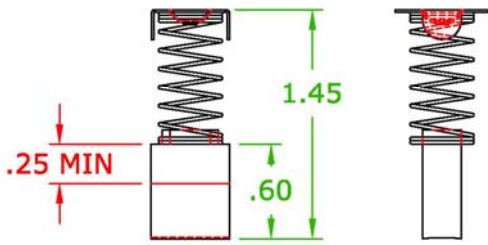
### **IN ORDER TO KEEP YOUR WARRANTY IN EFFECT FOR THE FULL TERM OF THE WARRANTY**

- A.) IFS PN: 050143 5" BLOWER MOTORS HAVE BRUSHES .75" LONG. BRUSHES MUST BE INSPECTED EVERY 200 HOURS AND REPLACED WHEN WEAR IS DOWN TO .30" OR LESS.
  - a. SEE CHART "C". BRUSH PN: 050031
- B.) IFS PN: 050084-6 7" - 2 BRUSH BLOWER MOTORS HAVE BRUSHES .90" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .40" OR LESS.
  - a. SEE CHART "D". BRUSH PN: 050038
- C.) IFS PN: 050084 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .60" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "A". BRUSH PN: 420A-20
- D.) IFS PN: 630000 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .53" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "B". BRUSH PN: 610000-8
- E.) IFS PN: 640000 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .53" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "B". BRUSH PN: 610000-8

## **NOTICE**

## A

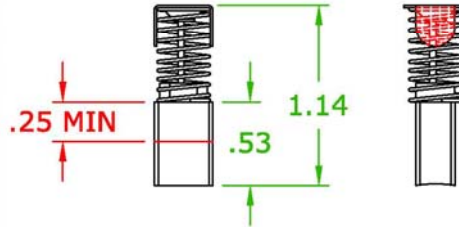
7" IFS MOTOR PN: 050084  
 FAN MODEL NO.: M6921N-9A)  
 (ALT: M6921N-9B)



"DYNAMIC" BRUSH 420A-20

## B

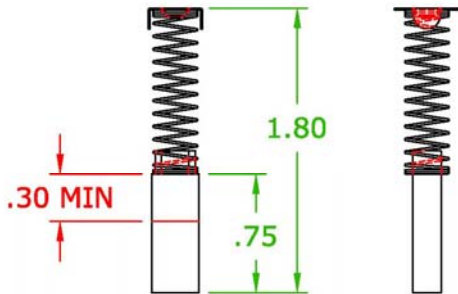
7" IFS MOTOR PN: 630000  
 7" IFS MOTOR PN: 640000



"AMPFLOW" BRUSH 610000-8

## C

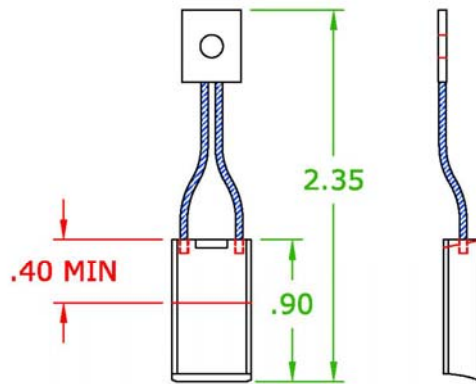
5" INCH IFS MOTOR PN: 050143



5" BRUSH 050031

## D

7" INCH IFS MOTOR PN: 050084-6

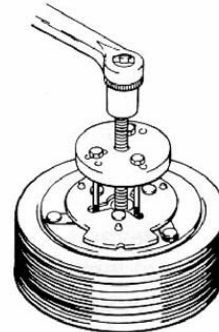
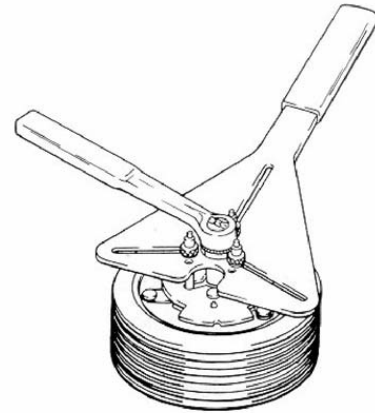


"ENVIRO" BRUSH 050038

## SERVICE OPERATIONS CLUTCH

### 14.1 Armature Assembly Removal

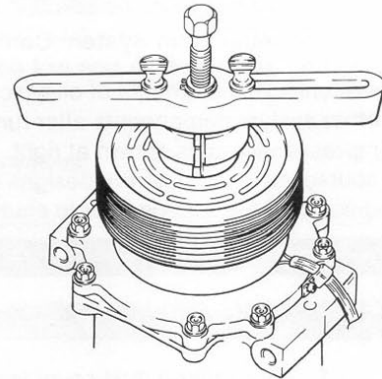
1. If armature dust cover is present, remove the 3 or 6 bolts holding it in place and remove cover. If auxiliary sheet metal pulley is present, remove the screws holding it in place. Then remove pulley.
2. Insert pins of armature plate spanner into threaded holes of armature assembly.
3. Hold armature assembly stationary while removing retaining nut with 3/4", 19mm, or 14mm socket wrench, as appropriate.
4. Remove armature assembly using puller. Thread 3 puller bolts into the threaded holes in the armature assembly. Turn center screw clockwise until armature assembly comes loose.
5. If shims are above shaft key, remove them now. If shims are below shaft key, the key and bearing dust cover (if present) must be removed before the shims can be removed.
6. Remove bearing dust cover (if present). Use caution to prevent distorting cover when removing it.
7. Remove shaft key by tapping loose with a flat blade screwdriver and hammer.
8. Remove shims. Use a pointed tool and a small screwdriver to prevent the shims from binding on the shaft.



## SERVICE OPERATIONS - CLUTCH

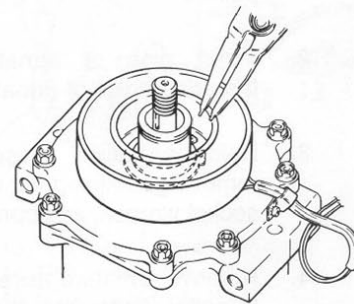
### 14.2. Rotor Assembly Removal

1. If bearing dust cover has not been removed, remove it now. See step 6 of Section 14.1, for Armature Assembly Removal.
2. If internal snap ring for bearing is visible above the bearing, remove it with internal snap ring pliers.
3. Remove rotor snap ring.
4. Remove shaft key.
5. Remove rotor pulley assembly:
  - Insert the lip of the jaws into the snap ring groove
  - Place rotor puller shaft protector (Puller set) over the exposed shaft.
  - Align thumb screws to puller jaws and finger tighten.
  - Turn puller center bolt clockwise using a socket wrench until rotor pulley is free.



### 14.3 Field Coil Assembly Removal

1. Loosen lead wire clamp screw with #2 Phillips screwdriver until wire(s) can be slipped out from under clamp.
2. Undo any wire connections on the compressor which would prevent removal of the field coil assembly.
3. Remove snap ring.
4. Remove the field coil assembly.

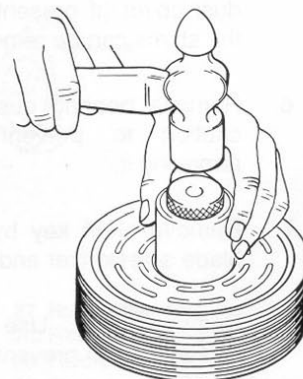


### 14.4 Field Coil Assembly Installation

Reverse the steps of Section 14.3. Protrusion on underside of coil ring must match hole in front housing to prevent movement and correctly locate lead wire(s).

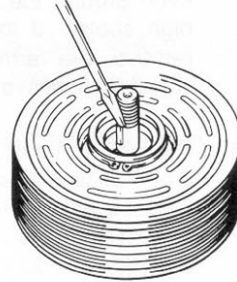
### 14.5 Rotor Assembly Installation

1. Place compressor on support stand, supported at rear end of compressor. If the compressor must be clamped in a vice, clamp only on the mounting ears, never on the body of the compressor.
2. Set rotor squarely over the front housing boss.
3. Place the rotor installer ring into the bearing bore. Ensure that the edge rests only on the inner race of the bearing, not on the seal, pulley, or outer race of the bearing.



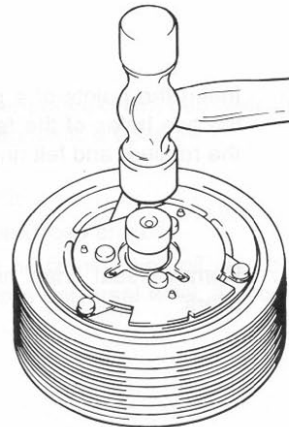
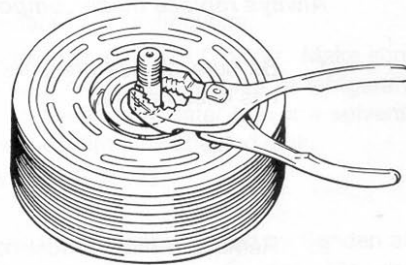
## SERVICE OPERATIONS - CLUTCH

4. Place the driver into the ring and drive the rotor down onto the front housing with a hammer or arbor press. Drive the rotor against the front housing step. A distinct change of sound can be heard when using a hammer to install the rotor.
5. Reinstall rotor bearing snap ring, if it has been removed, with internal snap ring pliers.
6. Reinstall rotor retaining snap ring with external snap ring pliers. If a bevel is present on the snap ring, it should face up (away from the body of the compressor).
7. Reinstall rotor bearing dust cover (if present) by gently tapping it into place.



### 14.6 Armature Assembly Installation

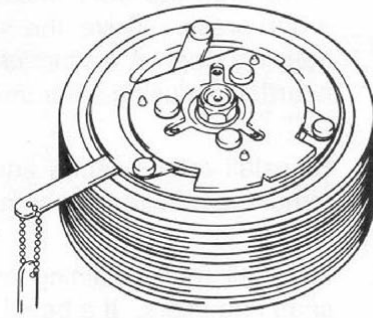
1. Install shaft key with pliers.
2. Install clutch shims. NOTE: Clutch air gap is determined by shim thickness. When installing a clutch on a used compressor, try the original shims first. When installing a clutch on a compressor that has not had a clutch installed before, first try 0.04", 0.02", and 0.004" (1.0, 0.5, 0.1 mm) shims.
3. Align keyway in armature assembly to shaft key. Using driver and a hammer or arbor press, drive the armature assembly down over the shaft until it bottoms on the shims. A distinct sound change will be noted if driving with a hammer.
4. Replace retaining nut and torque to specification.  
**1/2-20:** 20-25 ft•lb (27-34 N•m, 270-350 kg•cm)  
**M8:** 11-15 ft•lb (15-21N•m, 150-210kg•cm)





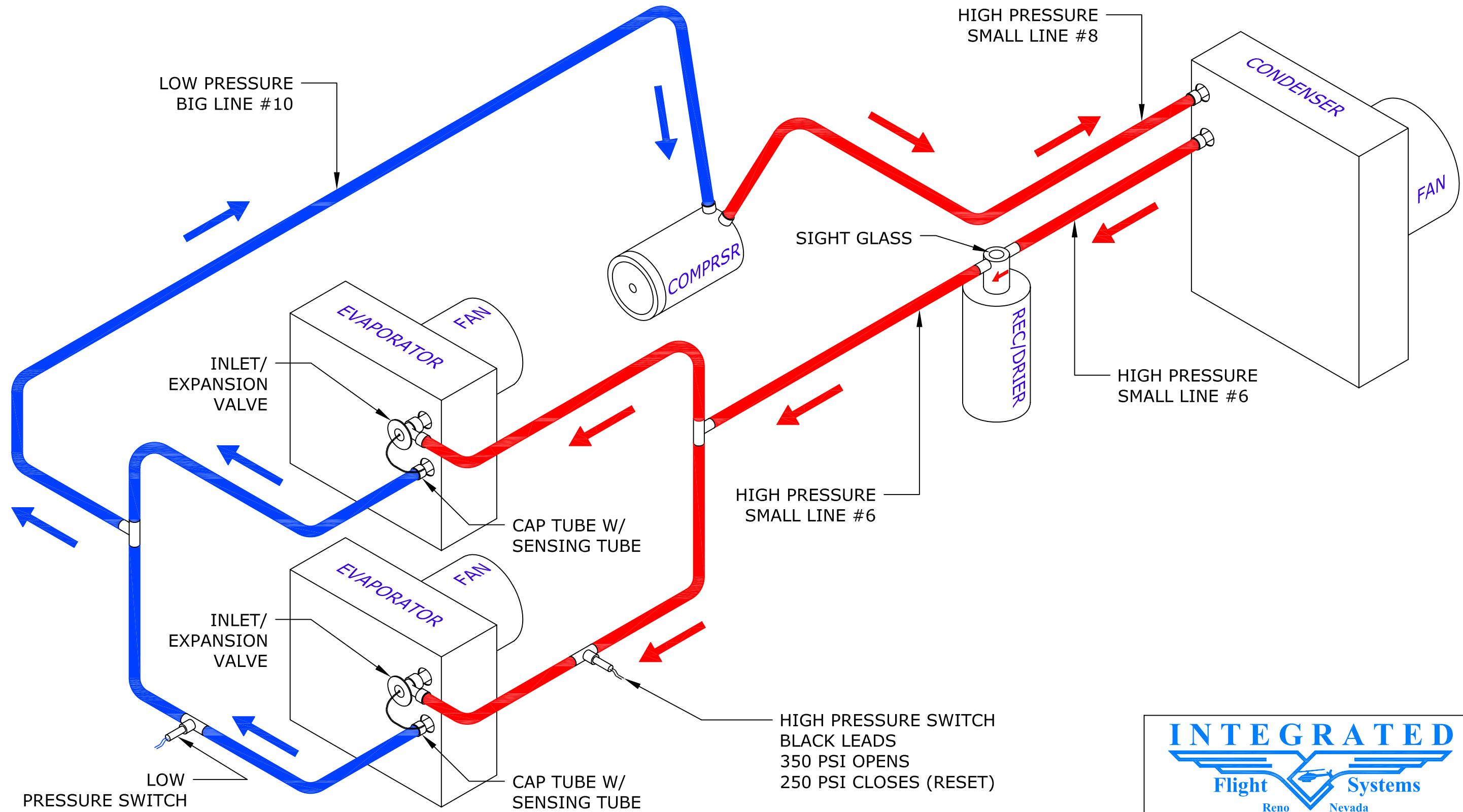
## SERVICE OPERATIONS - CLUTCH

5. Check air gap with a feeler gauge. Specification is 0.011" - 0.019" (0.3 - 0.5mm). If gap is not even around the clutch, gently tap down at the high spots. If the overall gap is out of spec., remove the armature assembly and change shims as necessary.
  
6. Replace armature dust cover (if used) and torque 3 or 6 bolts to specification below.  
3 - 1/4-20 bolts (SD-5): 2-4 ft•lb  
(2-5 N•m, 25-50 kgf•cm)  
6 - M5 bolts (SD-7): 5-8 ft•lb  
(7-11 N•m, 70-110 kgf•cm)



Note: Over torque of SD508/5H14 dust cover bolts will cause air gap to become out of spec.

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



**INTEGRATED**  
Flight Systems  
Reno Nevada

**TITLE: SIMPLE AIR CONDITIONING SCHEMATIC**

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

LOW PRESSURE SWITCH  
BLUE LEADS  
22 PSI CLOSSES  
7 PSI OPENS

HIGH PRESSURE SWITCH  
BLACK LEADS  
350 PSI OPENS  
250 PSI CLOSSES (RESET)

LOW PRESSURE  
BIG LINE #10

HIGH PRESSURE  
SMALL LINE #8

HIGH PRESSURE  
SMALL LINE #6

SIGHT GLASS

HIGH PRESSURE  
SMALL LINE #6

CAP TUBE W/  
SENSING TUBE

CAP TUBE W/  
SENSING TUBE

INLET/  
EXPANSION  
VALVE

INLET/  
EXPANSION  
VALVE

EVAPORATOR

EVAPORATOR

COMPRSR

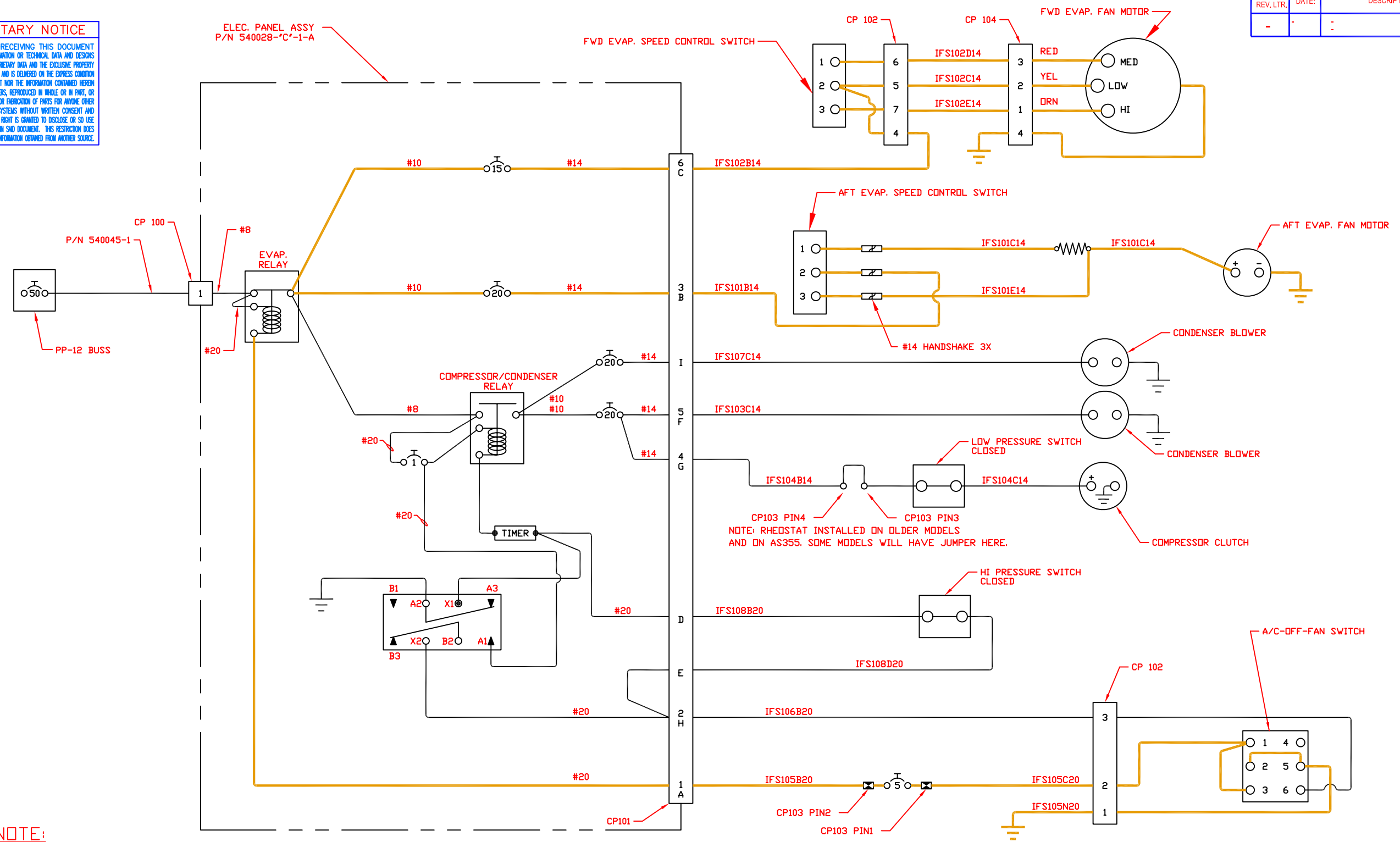
RECIPIER

CONDENSER

FAN

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

**PROPRIETARY NOTICE**  
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- NOTE:**
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON.
  2. THE "A/C", "OFF", "FAN" SWITCH IS SELECTED TO FAN.
  3. THE "ORANGE" LINES SHOW THE FAN CIRCUIT.

**AS350  
 ELECTRICAL WIRING DIAGRAM  
 DUAL CONDENSER BLOWER**

- NOTE:**
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
  2. WIRE SPEC: MIL-W-22759/16  
 WIRE NO. IFS XXX X XX
- GROUP \_\_\_\_\_  
 SEQUENCE (N INDICATES GROUND) \_\_\_\_\_  
 GAUGE \_\_\_\_\_

**INTEGRATED**  
 Flight Systems  
 Reno Nevada

TITLE: ELECTRICAL DIAGRAM

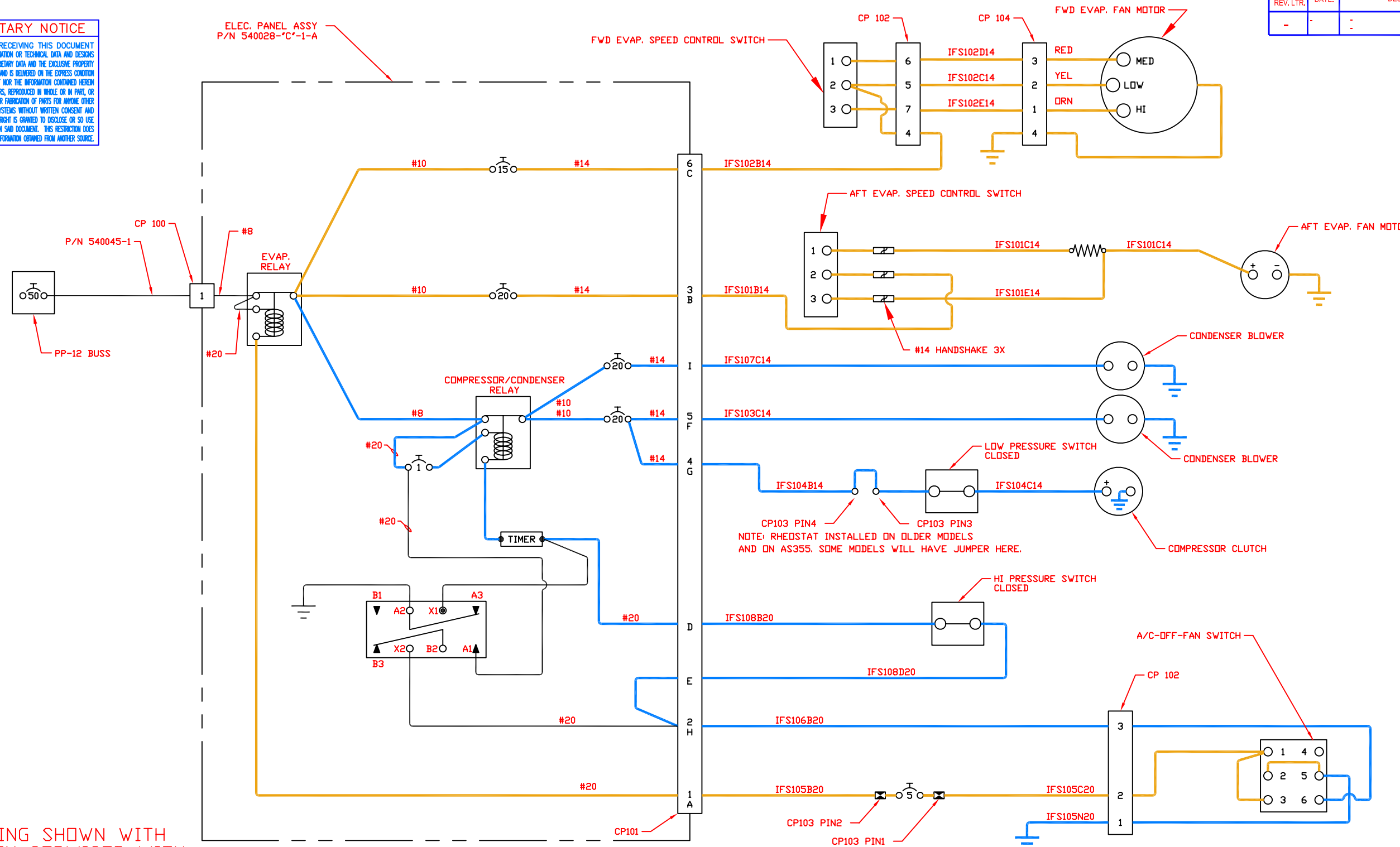
DRAWN BY: JTYE	DATE: 0202/05	REV: IR	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: DIAGRAM 1	

REVISION RECORD

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

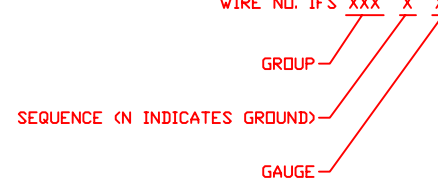
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON.
2. THE "A/C", "OFF", "FAN" SWITCH IS SET TO "A/C". THIS WILL TURN ON THE EVAPORATOR FANS, (ORANGE LINES), THE CONDENSER FANS AND COMPRESSOR CLUTCH, (BLUE LINES).

AS350  
ELECTRICAL WIRING DIAGRAM

DUAL CONDENSER BLOWER

NOTE:

1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
2. WIRE SPEC: MIL-W-22759/16  
WIRE NO. IFS XXX X XX



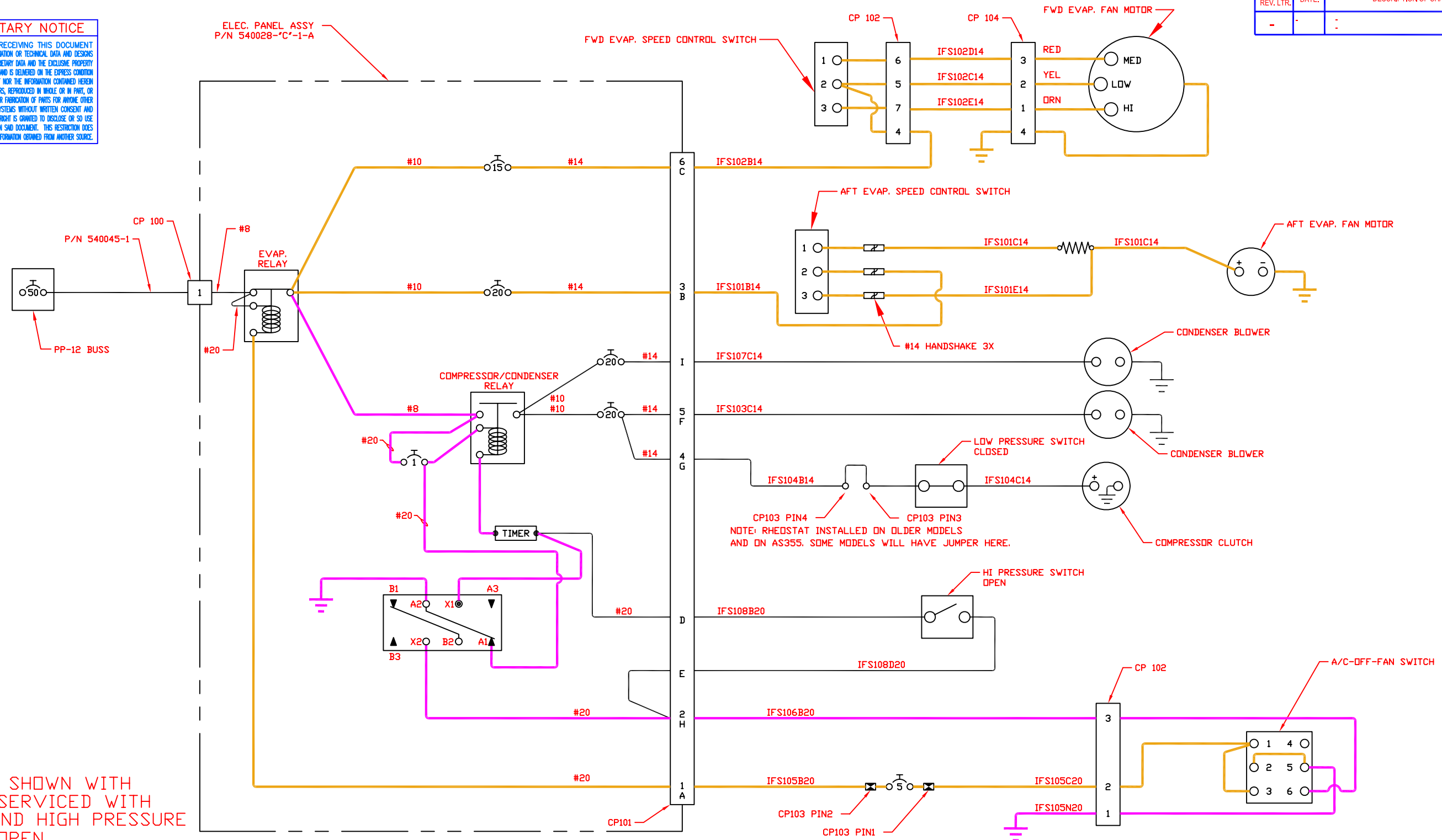
TITLE: ELECTRICAL DIAGRAM				
DRAWN BY: JTYE	DATE: 0202/05	REV: IR	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: DIAGRAM 2	

REVISION RECORD

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

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NOTE:

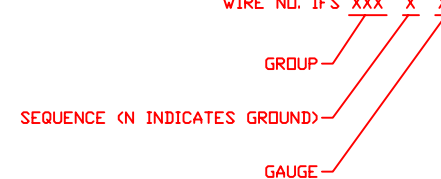
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON, AND HIGH PRESSURE SWITCH OPEN.
2. PINK LINES INDICATE THE CIRCUIT THAT IS ACTIVATED WHEN THE HIGH PRESSURE SWITCH OPENS.
3. THE RESET RELAY CLOSSES AND RUNS THE CURRENT TO GROUND OPENING THE 1 AMP CIRCUIT BREAKER. ORANGE LINES INDICATE THAT THE EVAPORATOR FANS ARE ON.

AS350 ELECTRICAL WIRING DIAGRAM

DUAL CONDENSER BLOWER

NOTE:

1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
2. WIRE SPEC: MIL-W-22759/16  
WIRE NO. IFS XXX X XX

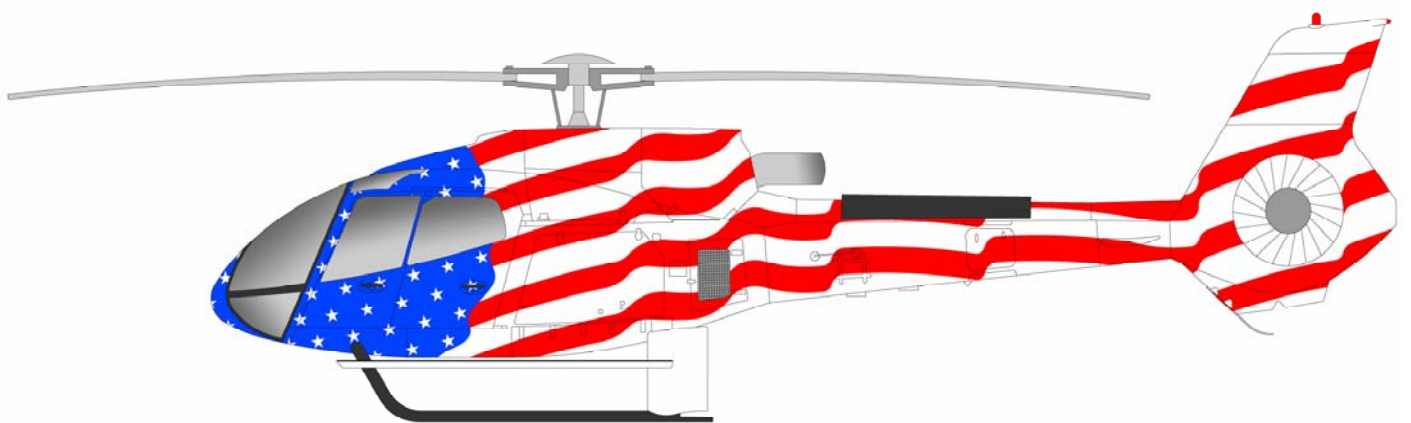


**INTEGRATED**  
Flight Systems  
Reno Nevada

TITLE: ELECTRICAL DIAGRAM #3

DRAWN BY: JTYE	DATE: 0202/05	REV: IR	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: DIAGRAM 3	

# INTEGRATED



## Air Conditioning Performance Test Procedure

(22 September 2006)



# 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: \_\_\_\_\_



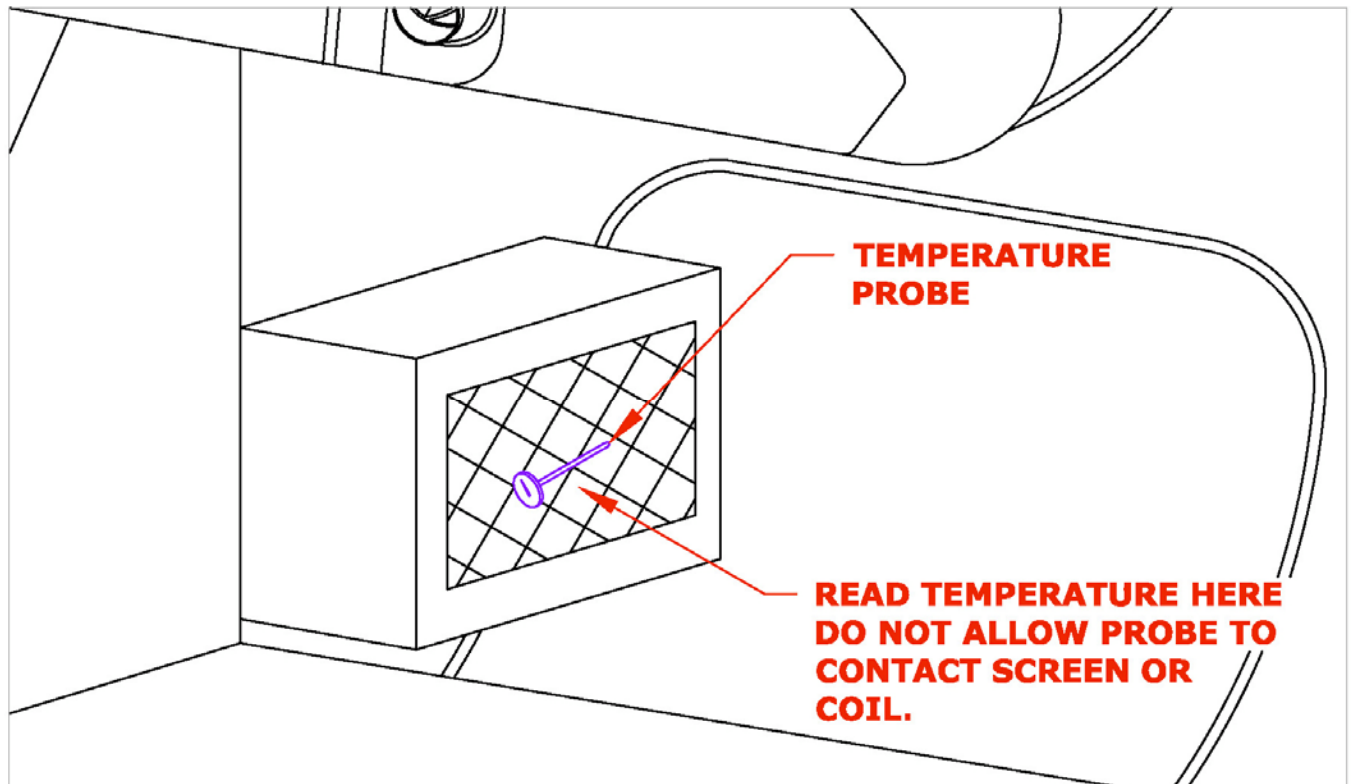
# Integrated Flight Systems

## 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)



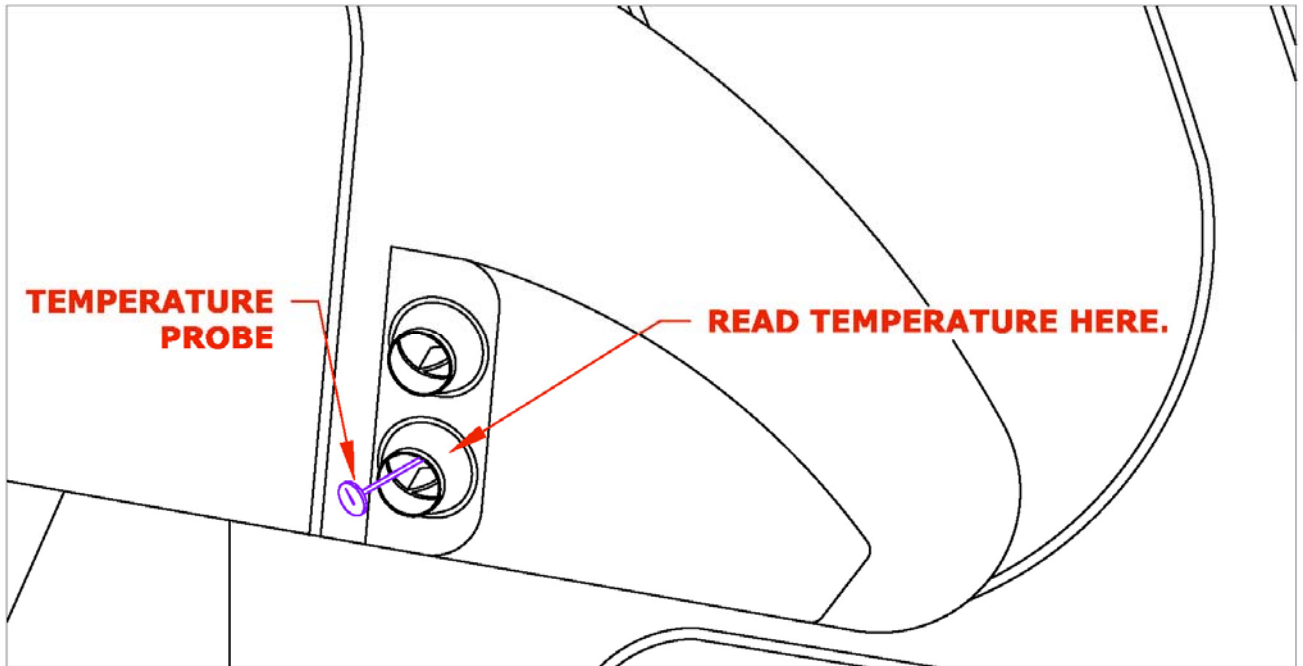
EC130 B4 Shown. Other Aircraft Similar





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



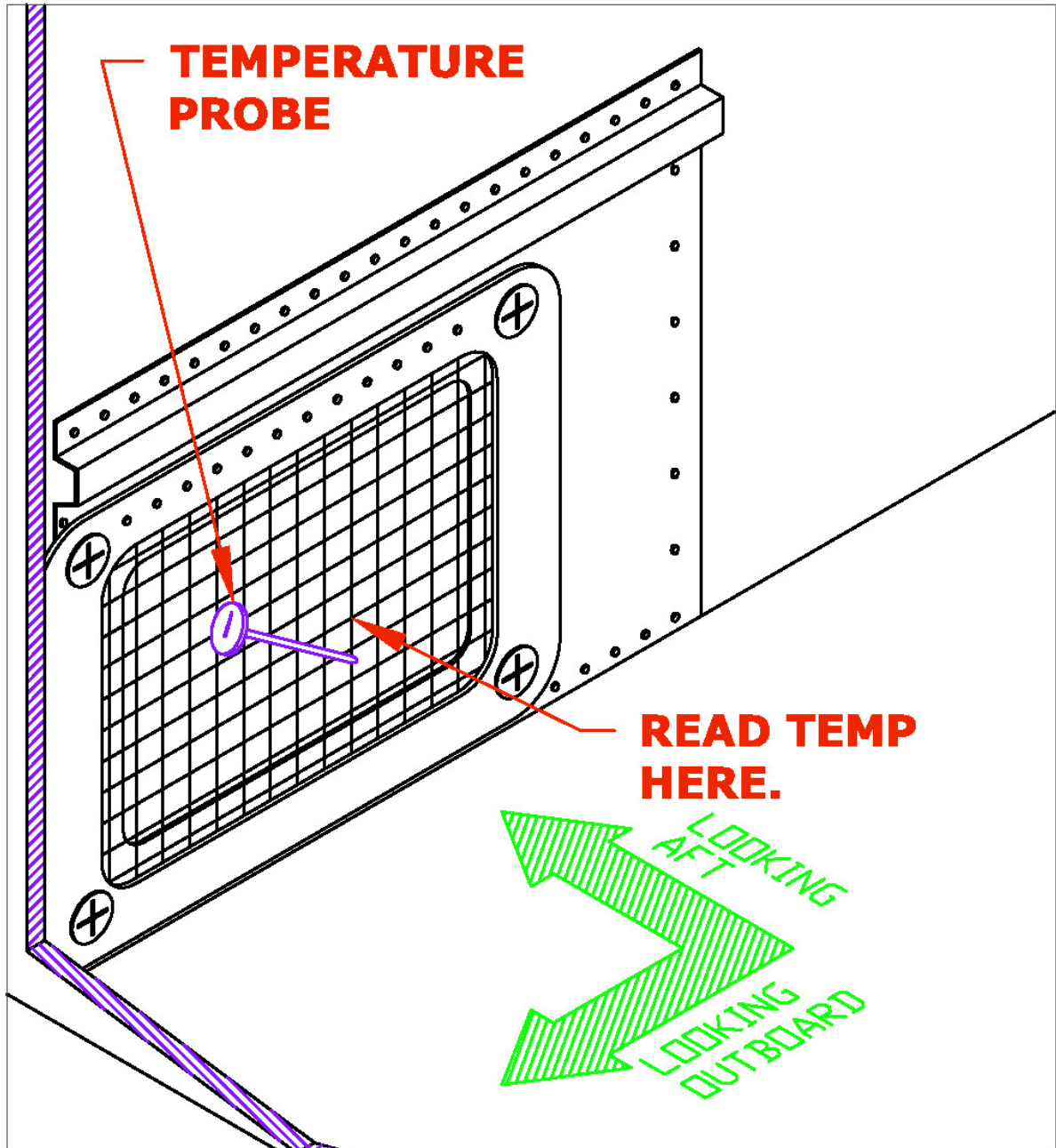
EC130 B4 Shown. Other Aircraft Similar

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.

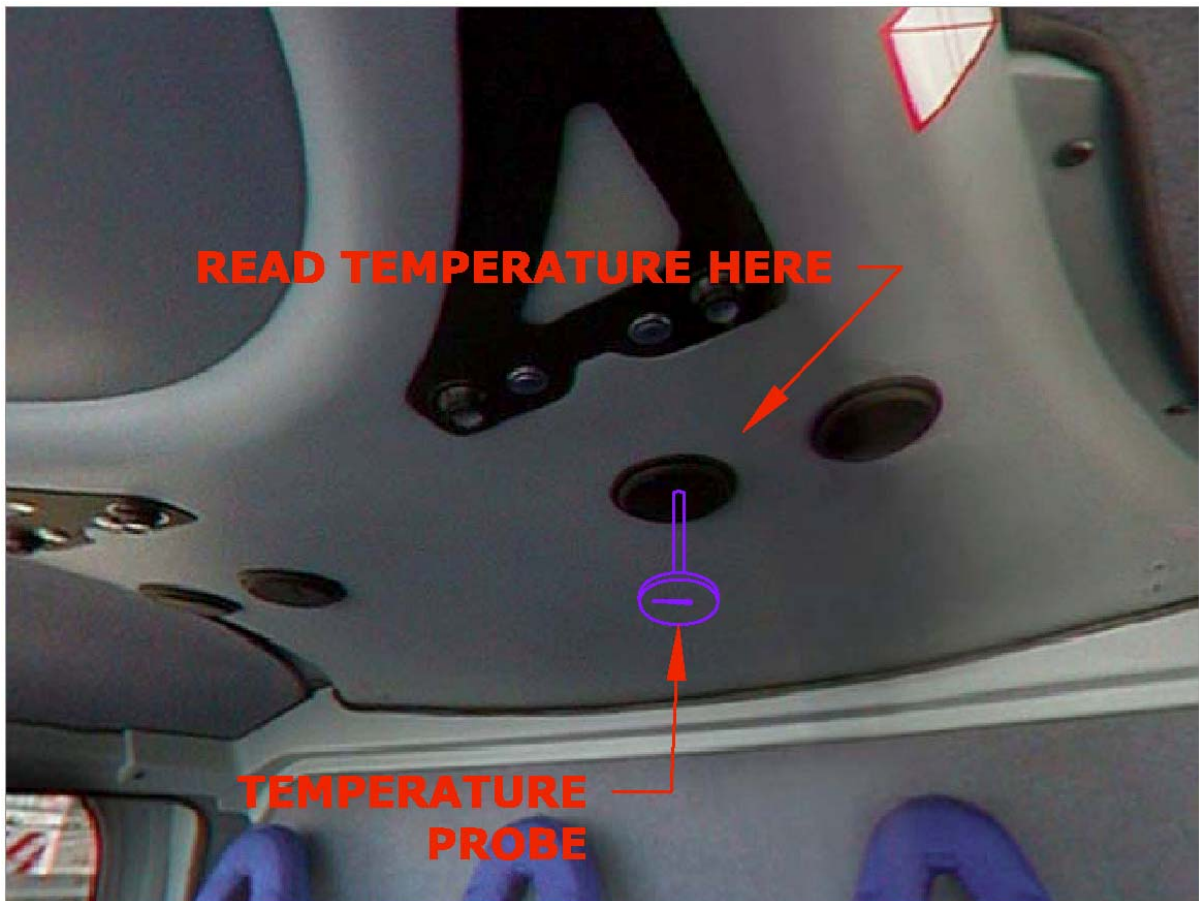


EC130 B4 Shown. Other Aircraft Similar



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



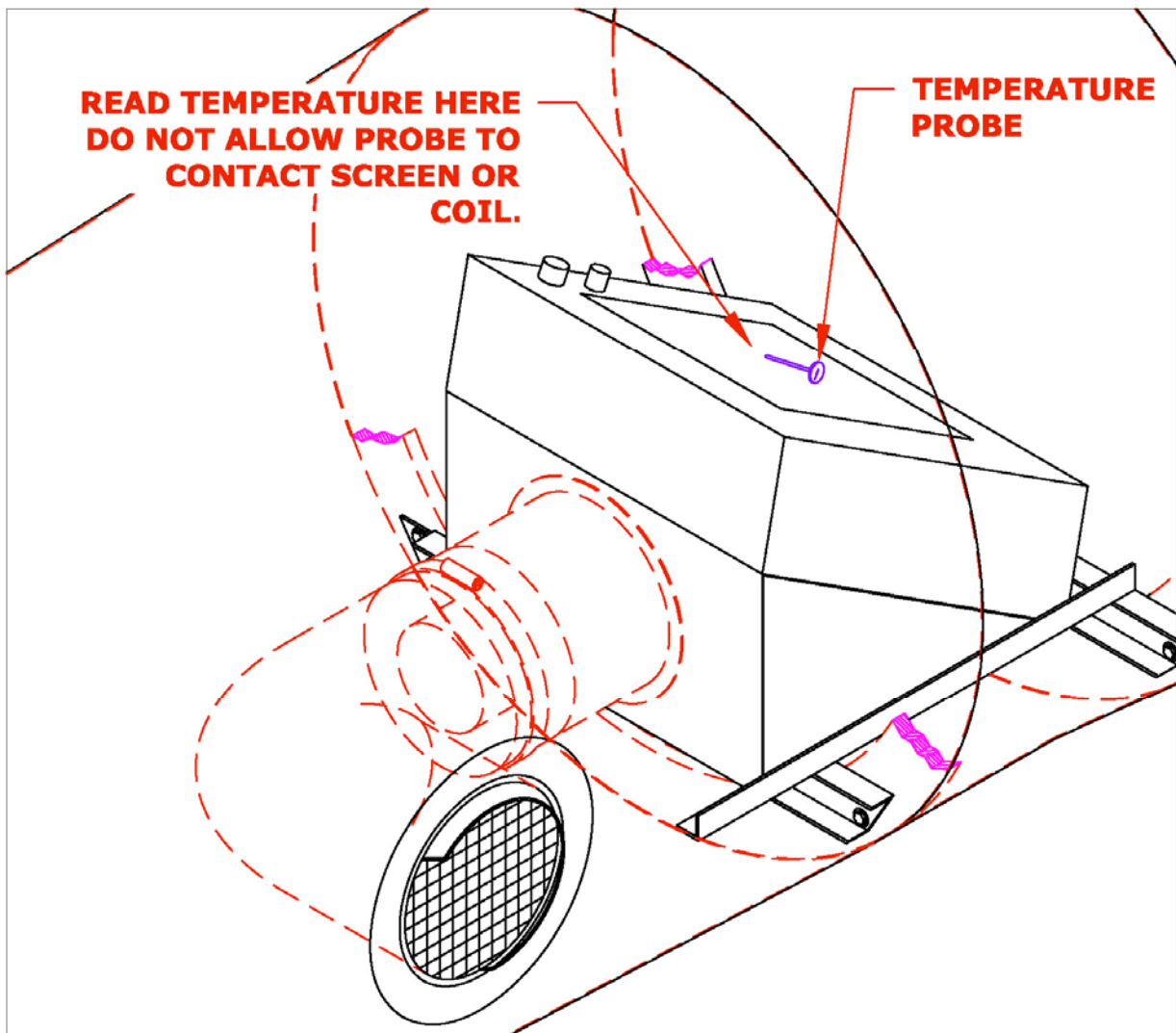
EC130 B4 Shown. Other Aircraft Similar

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.

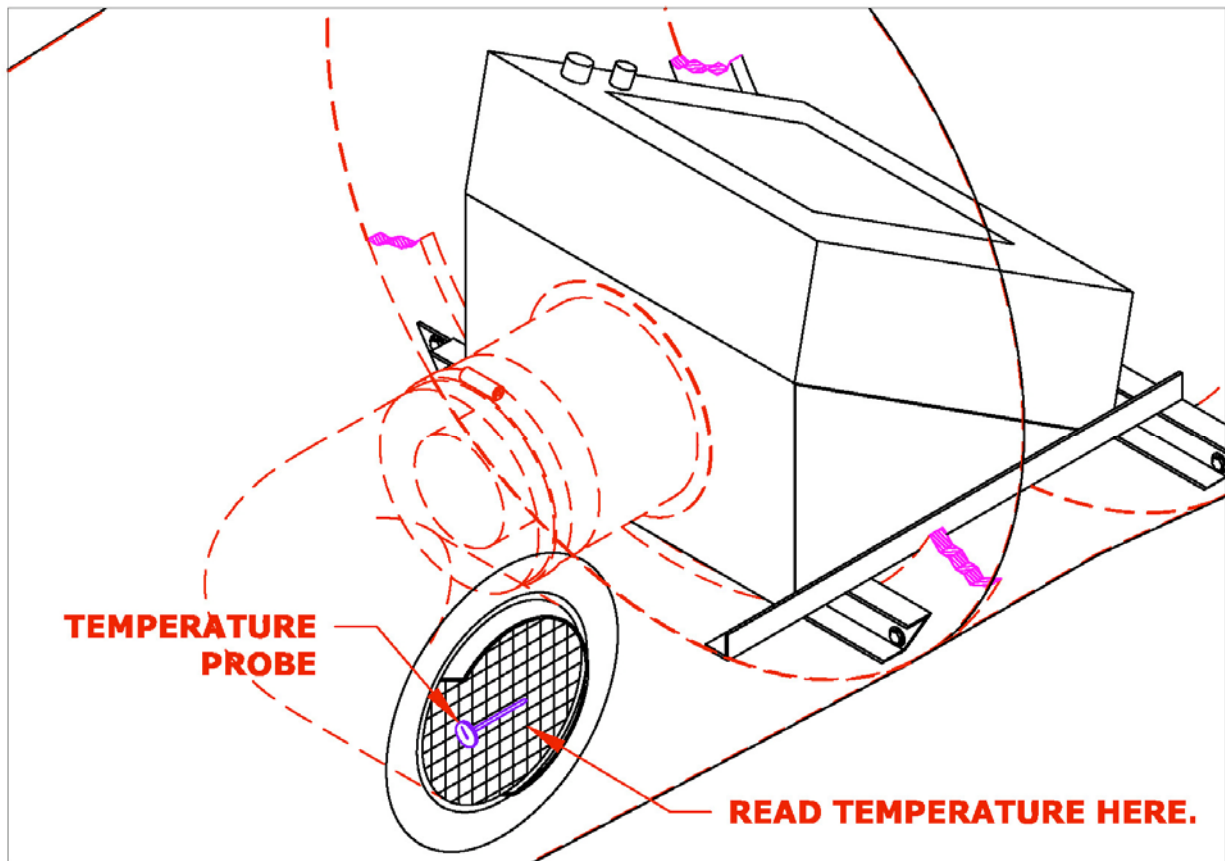


EC130 B4 Shown. Other Aircraft Similar



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



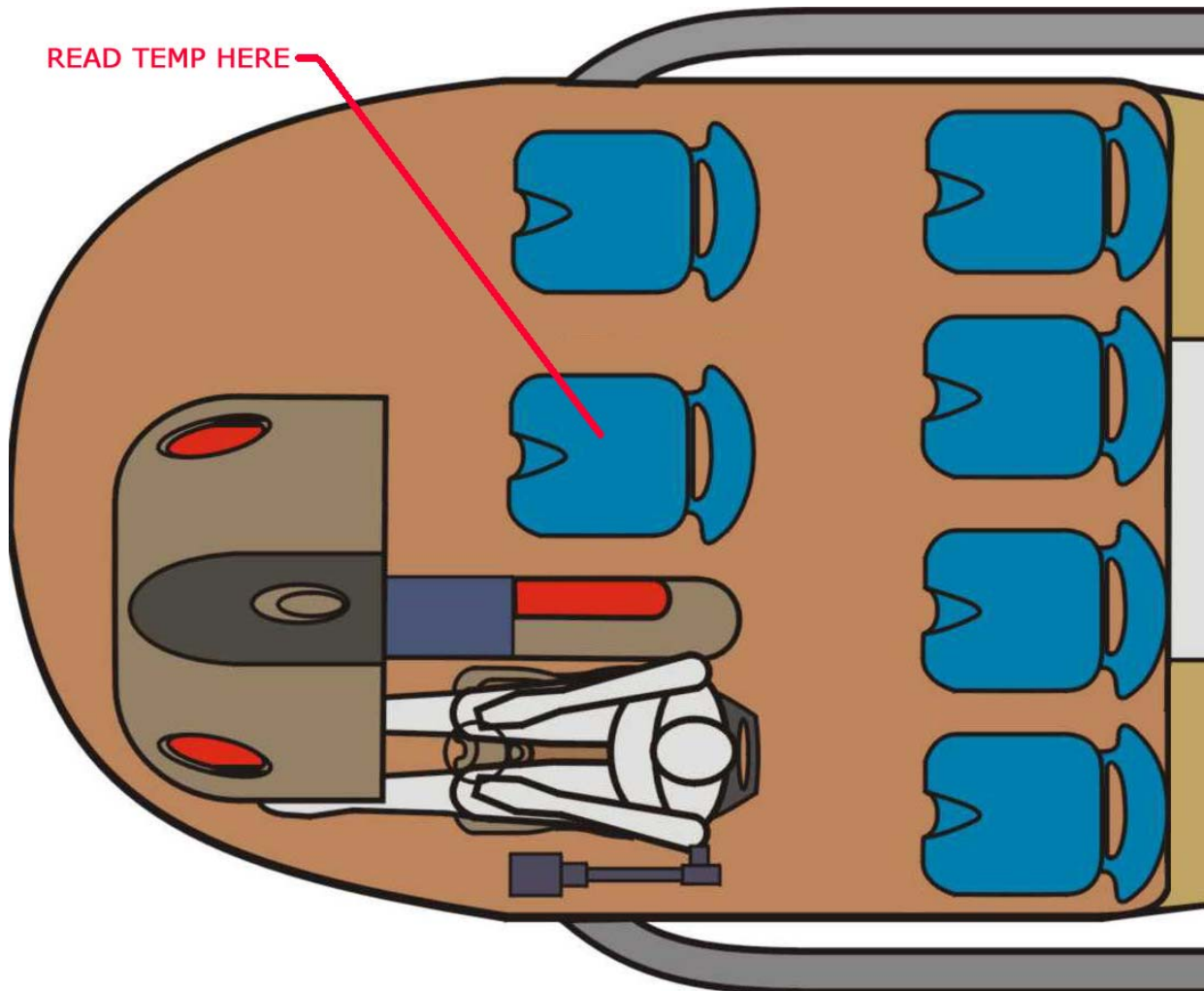
EC130 B4 Shown. Other Aircraft Similar

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

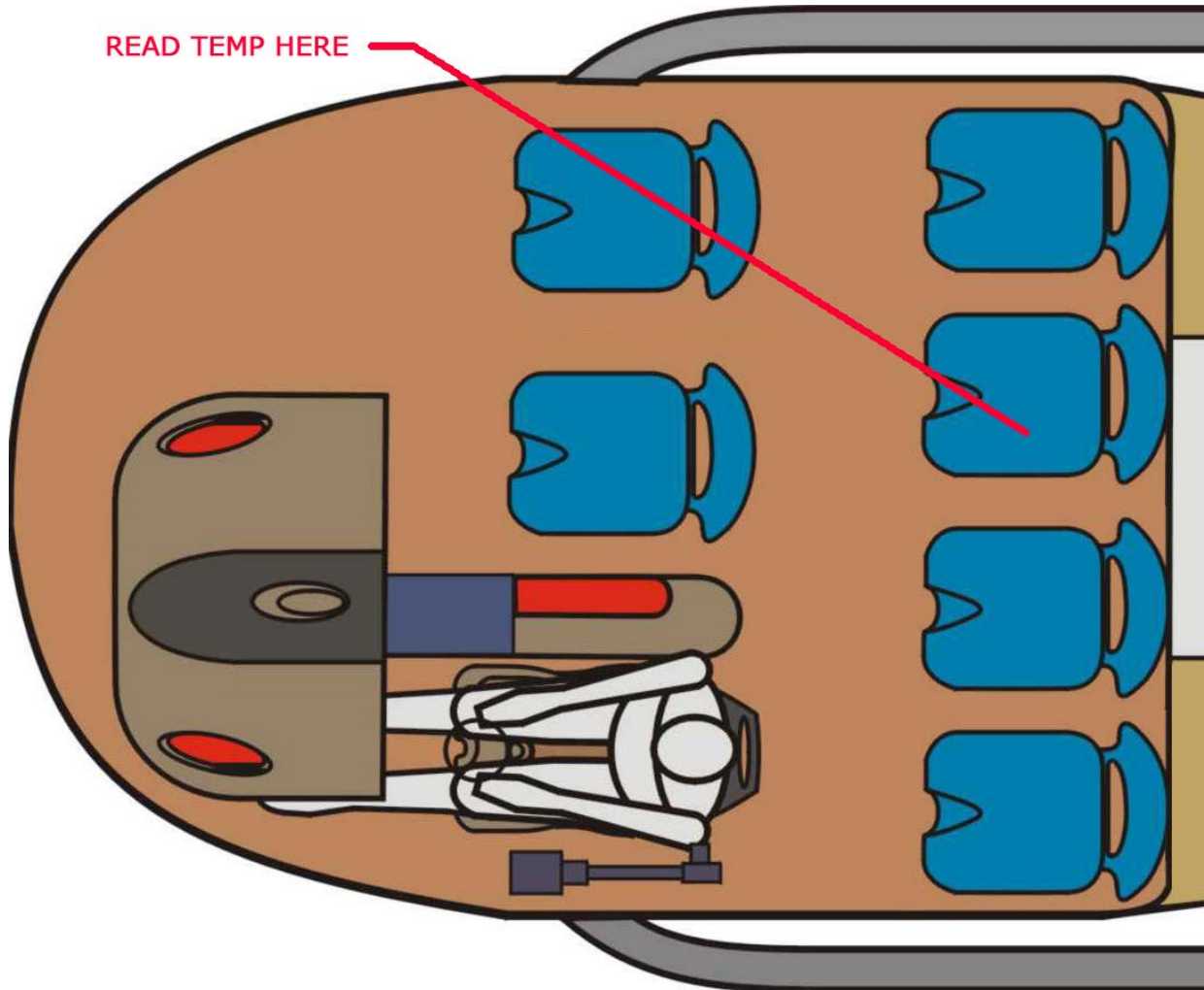
*"We Cool the World"...*





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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.





## 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

THIS INFORMATION PERTAINS TO:  
 IFS PN: 070003 TOUCH UP PAINT - TEAL  
 IFS PN: 070003-1 TOUCH UP PAINT-GREY

**Material Safety Data Sheet**  
*acc. to ISO/DIS 11014*



Printing date 07/28/2005

Reviewed on 02/07/2005

**Trade name: 61003 Multi-Coat Blank Aerosol**

(Contd. of page 1)

**· HMIS-ratings (scale 0 - 4)**

2	Health = 2
4	Fire = 4
REACTIVITY 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.

(Contd. on page 3)

**Trade name: 61003 Multi-Coat Blank Aerosol**

(Contd. of page 2)

Protect from heat and direct sunlight.

## 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 () (4508) 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)

THIS INFORMATION PERTAINS TO:  
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**Material Safety Data Sheet**  
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Printing date 07/28/2005

Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. 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°C (< 32°F)

· **Flash point:** < 0°C (< 32°F)

· **Ignition temperature:** 465.0°C (869°F)

· **Auto igniting:** Product is not selfigniting.

· **Danger of explosion:**

· **Explosion limits:**  
**Lower:** 1.7 Vol %  
**Upper:** 13.0 Vol %

· **Vapor pressure at 20°C (68°F):** 8300.0 hPa (6226 mm Hg)

· **Density at 20°C (68°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)

(Contd. 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 5F Gases
- **Danger code (Kemler):** 23
- **UN-Number:** 1950
- **Packaging group:** -
- **Label:** 2.1

(Contd. on page 6)

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Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 5)

· **Description of goods:** 1950 AEROSOLS

· **Maritime transport IMDG:**



· **IMDG Class:** 2.1  
 · **UN Number:** 1950  
 · **Label:** 2.1  
 · **Packaging group:** -  
 · **EMS Number:** F-D,S-U  
 · **Marine pollutant:** No  
 · **Propper shipping name:** AEROSOLS

· **Air transport ICAO-TI and IATA-DGR:**



· **ICAO/IATA Class:** 2.1  
 · **UN/ID Number:** 1950  
 · **Label:** 2.1  
 · **Packaging group:** -  
 · **Propper shipping name:** AEROSOLS, flammable

## 15 Regulations

· **Sara**

· **Section 355 (extremely hazardous substances):**

None of the ingredient is listed.

· **Section 313 (Specific toxic chemical listings):**

78-93-3 butanone

· **TSCA (Toxic Substances Control Act):**

All ingredients are listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

None of the ingredients is listed.

· **Chemicals known to cause reproductive toxicity:**

None of the ingredients is listed.

· **Cancerogenity categories**

· **EPA (Environmental Protection Agency)**

67-64-1 acetone

D

78-93-3 butanone

D

· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

(Contd. on page 7)

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**Material Safety Data Sheet**  
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Reviewed on 02/07/2005

**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*

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: Johnsen's Ester 100  
Chemical Family: Refrigeration Oil  
Synonyms: None  
Emergency Telephone (24 hr.): CHEMTREC 1-800-424-9300

Supplier: Technical Chemical Company, P.O. Box 139, Cleburne, Texas 76033

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Weight %	OSHA TWA	OSHA STEL	OSHA SKIN
Ester Proprietary Inhibitor Package Mixture	0-20	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	20-80	Not Listed	Not Listed	Not Listed

Component	Weight %	OSHA Z PEL	OSHA Z TWA	OSHA Z Ceiling
Ester Proprietary Inhibitor Package Mixture	0-20	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	20-80	Not Listed	Not Listed	Not Listed

Component	ACGIH TLV TWA	ACGIH TLV STEL	ACGIH TLV Ceiling
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed

Other: Contains no ingredients in concentrations greater than 0.1% that are now known to be hazardous as defined by OSHA.

## 3. HAZARDS IDENTIFICATION

Emergency Overview: Ingestion of this product may cause gastrointestinal distress with symptoms of nausea, vomiting, diarrhea and abdominal pain. May cause irritation to skin and eyes.

HMIS Classification: Health: 1 Flammability: 1 Physical Hazard: 0  
NFPA Rating: Health: 1 Flammability: 1 Reactivity: 0

## 4. FIRST AID MEASURES

**Eye Contact:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Seek medical attention if irritation persists.  
**Ingestion:** DO NOT INDUCE VOMITING. Give nothing by mouth. Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.  
**Inhalation:** If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.  
**Skin Contact:** Remove contaminated clothing and shoes, and launder before reuse. Get medical attention if irritation persists. Wash with soap and water. Use skin cream for defatted areas.



# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed 12/30/2008

## 5. FIRE FIGHTING MEASURES

### Flammable Properties

Flash Point °F(°C): >482 (<250)  
Flash Point Method: COC  
Flammable Limits in Air - Lower (%): Not Determined  
Flammable Limits in Air - Upper (%): Not Determined  
Autoignition Temperature °F(°C): Not Determined  
Extinguishing Media: Carbon dioxide. Dry chemical. Foam.  
Protection Of Fire-Fighters:

Special Fire-Fighting Procedures: Wear approved positive-pressure self-contained breathing apparatus and protective clothing. Do not direct a solid stream of water or foam into hot, burning pools; this may cause frothing and increase fire intensity.  
Hazardous Combustion Products: Oxides of carbon, nitrogen and phosphorus.  
Aerosol Comments: Not Applicable

## 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear appropriate protective clothing and equipment to prevent skin and eye contact.  
Spill Procedures: Wear protective equipment specified. Contain any liquid from leaking containers.  
Action to be taken if material is released or spilled: Absorb spills on inert material such as perlite, vermiculite, sand or dirt. Place in double polyethylene bags. Isolate from other waste materials. Wash walking surfaces with detergent and water to reduce slipping hazard.  
Environmental Precautions: Do not allow to enter sanitary drains, sewer or surface and subsurface waters.

## 7. HANDLING AND STORAGE

Handling and Storage: Avoid contact with eyes. Keep containers tightly closed when not in use. Use only in a well ventilated area. Good hygienic practices should be observed. Work clothes should be washed separately at the end of each work day. Contaminated disposable clothing should be discarded in accordance with local, state and federal rules. Wash thoroughly after handling. Do Not Swallow. Store at room temperature. Avoid prolonged/repeated breathing of vapors, mists or fumes.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Eyewash stations. Showers. Use local exhaust.  
Eyes: Chemical goggles; also wear a face shield if splashing hazard exists.  
Skin Protection: Neoprene coated apron or clothing.  
Respiratory Protection: Appropriate respiratory protection shall be worn when applied engineering controls are not adequate to protect against inhalation exposure.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Clear to light yellow liquid  
Odor: MILD ETHER  
pH Value: Not Determined  
Vapor Pressure: Not Determined  
Vapor Density (Air=1): Not Determined  
Boiling Point (°F): >300 C.  
Melting/Freezing Point: Not Determined  
Solubility in Water: INSOLUBLE  
Bulk Density at 20°C: Not Determined  
Molecular Weight: Mixture  
Specific Gravity (H2O=1): 1.04 @ 60F  
Viscosity: 100 cSt @ 40C  
Evaporation Rate: Not Determined  
VOC Content(%): Not determined.  
Decomposition Temperature: Not Known

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal conditions of handling, use and transportation.  
**Conditions to Avoid:** High temperatures.  
**Materials to Avoid:** Strong oxidizing agents.  
**Hazardous Decomposition Products:** Oxides of nitrogen. Oxides of carbon. Oxides of sulfur.  
**Hazardous Polymerization:** WILL NOT OCCUR

## 11. TOXICOLOGICAL INFORMATION

### Toxicological Data:

Component	Route	Species	Dose
Ester Proprietary Inhibitor Package Mixture	Inhalation	Rats	Not known.
Ester Proprietary Base Stock Mixture	Inhalation	Rats	Not known.

### Carcinogenicity:

Component	IARC	NTP	OSHA
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed

**Comments:** No component known to be present in this product at >.1% is presently listed as a carcinogen by IARC, NTP or OSHA.

## 12. ECOLOGICAL INFORMATION

**Remarks:** Ecological testing has not been conducted on this product.

## 13. DISPOSAL CONSIDERATION

**Waste Classification:** This product as purchased does not fall under current U.S. EPA RCRA definitions of hazardous waste. Under RCRA it is the generator's responsibility to determine the status of the waste at the time of its disposal. This product does not contain any CERCLA regulated materials.  
**Waste Management:** Not determined.  
**Disposal Method:** Disposal of this material to the land may be banned by federal law (40 CFR 268).

## 14. TRANSPORTATION INFORMATION

**U.S. DOT:**  
**Proper Shipping Name:** Not Regulated  
**Hazard Class:** Not Applicable  
**UN/NA Number:** Not Applicable  
**DOT Packing Group:** Not Applicable

**IMDG:**  
**Proper Shipping Name:** Not Regulated  
**Hazard Class:** Not Applicable  
**Hazard Subclass:** Not Applicable  
**UN No.:** Not Applicable  
**Packing Group:** Not Applicable  
**Marine Pollutant:** No

# MATERIAL SAFETY DATA SHEET

Trade Name: Johnsen's Ester 100  
MSDS NO. 6711  
Revision Date: 03/26/2007  
Date Printed: 12/30/2008

## 15. REGULATORY INFORMATION

### US Federal Regulations:

Component	SARA 313	SARA 302	TPQ	RQ
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed	Not Listed

**US OSHA HEALTH CLASSIFICATION:** Hazardous per OSHA 29 CFR 1910.1200  
**SARA 311/312 Hazard Categories:** Immediate Health: Yes, Delayed Health: No, Fire: No, Reactive: No, Pressure: No.

### State Regulations:

Component	California Prop. 65 Cancer list	California - Prop 65 Developmental Toxicity	California Prop. 65 Reproductive Female	California Prop. 65 Reproductive Male
Ester Proprietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Proprietary Base Stock Mixture	Not Listed	Not Listed	Not Listed	Not Listed

**U.S. TSCA:** One or more components of this product is not listed on the TSCA Inventory.  
**Canadian Inventory:** One or more components of this product is not listed on the Canadian DSL or NDSL Inventory.

### Consumer Product Safety Improvement Act of 2008 General Conformity Certification

The Supplier identified in Section 1 of this MSDS has evaluated this product and certifies it to be labeled and packaged in compliance with the applicable provisions of the Federal Hazardous Substance Act as stated in 16 CFR 1500 and enforced by the Consumer Product Safety Commission, and where applicable the products that require Child Resistant Closures are packaged in accordance with the Poison Prevention Packaging Act as stated in 16 CFR 1700 and enforced by the Consumer Product Safety Commission. All closures have been tested in accordance with the latest protocols. No other testing is required to certify compliance with the above. The date of manufacture is stamped on the product container.

## 16. OTHER INFORMATION

### General Notes: Disclaimer:

Do not allow undiluted material or large quantities to reach groundwater, bodies of water or sewer system. The information and recommendations contained herein are based upon tests believed to be reliable. However, the manufacturer/distributor of this product does not guarantee their accuracy or completeness NOR SHALL ANY OF THIS INFORMATION CONSTITUTE A WARRANTY, WHETHER EXPRESSED OR IMPLIED, AS TO THE SAFETY OF THE GOODS, THE MERCHANTABILITY OF THE GOODS, OR THE FITNESS OF THE GOODS FOR A PARTICULAR PURPOSE. Adjustment to conform to actual conditions of usage may be required. The manufacturer/distributor assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied.

## **Step 2**

# **Aircraft Pre-Inspection**

Integrated Flight Systems  
AIRCRAFT PRE-INSPECTION – AS350 Air Conditioning

## Aircraft Pre-Inspection

<b>STEP</b>	<b>PROCEDURE</b>	<b>MECH</b>	<b>INSP</b>
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.		

## General Safety Instructions

### PROCEDURE

**WARNING:** Always handle the refrigerant fluids carefully.

**WARNING:** 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.

**WARNING:** When the system must be opened to do maintenance, before you do the work, you must drain the air conditioning system.

**WARNING:** When you open the system, you must collect the refrigerant in accordance with Federal and Local regulations.

**WARNING:** 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.

**WARNING:** 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.

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

**WARNING:** Never heat a R-134a supply cylinder to produce additional pressure or attempt to empty the container completely.

**WARNING:** Insure adequate ventilation when servicing the refrigerant system.

**WARNING:** 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

**WARNING:** You must replace the filter drier each time you open the system.

**WARNING:** Comply with the regulations in force in the country where the aircraft is operated when working on the air conditioning system.

**WARNING:** Only use nitrogen or Alcohol to clean the system components.

**WARNING:** 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**



Integrated Flight Systems  
 AIRCRAFT PREPARATION – AS350 Air Conditioning

## Aircraft Preparation

STEP	PROCEDURE	MECH	INSP
3.0	Remove or disconnect the battery.		
3.1	Remove pilot and co-pilots doors.		
3.2	Remove right rear door as needed.		
3.3	Remove rear seats.		
3.4	Remove co-pilot anti-torque pedals.		
3.5	Drop the cabin headliner.		
3.6	Remove the two side screws from both sides of the glare shield.		
3.7	Remove back wall covering.		
3.8	Remove the right side baggage door.		
3.9	Remove the forward closeout panel in the right hand baggage compartment.		
3.10	Access panel Aft of landing light.		
3.11	Remove the right hand transmission cowling.		
3.12	Remove the left hand transmission cowling.		
3.13	Remove lower nose right window.		
3.14	Remove the front belly cowling.		
3.15	Remove the center belly cowling.		
3.15a	Remove the right middle belly cowling.		
3.15b	Lower the rear belly cowling.		

## Aircraft Preparation

STEP	PROCEDURE	MECH	INSP
3.16	Remove the cargo net from the rear baggage compartment. (If installed)		
3.17	Remove the rear cargo compartment floor.		
3.18	Remove the electrical compartment cover. <b>NOTE:</b> Determine location for air conditioning power hook up. Reinstall cover to prevent FOD.		
3.19	Remove the rear cargo compartment forward floor panel.		
<p><b><u>NOTE:</u></b></p> <p><b>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.</b></p>			

## **Step 4**

# **Removal of Factory Installed Components**

### Removal of Factory Installed Components

STEP	PROCEDURE	MECH	INSP
4.1	Unbolt oil cooling fan and shroud tiewrap to transmission.		
4.2	Disconnect oil cooler assembly from aft cabin wall and the wrap to transmission. Do not disconnect oil lines.		
4.3	Remove fresh air duct between oil cooler and discard.		
4.4	Remove aft right side seat mount bracket for installation of doubler. Ref 5-21-AS350		
4.5	Remove channel P/N 2105000001 located in right hand baggage compartment and discard.		
4.6	Remove warning horn forward of co-pilots feet. Hold for reinstallation.		
4.7	Remove NR digital indicator box forward of co-pilots feet. Hold for reinstallation.		
4.8	Remove glare shield.		
4.9	Remove T4 correction chart holder. Hold for reinstallation.		

## **Step 5**

# **Installation of Aft Evaporator**

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.1	Remove Right Hand Transmission Cowling Forward latch. (See photo 1). Hold for reinstallation. Position the aft evaporator doubler P/N 260328-1 on the upper transmission deck per drawing 4-3-AS350 sheet 1 of 2. Mark around doubler and remove all existing rivets, bolts, and nut plates to allow the doubler to sit flat on deck.		
5.2	Drill through deck using pilot holes in doubler. Back drill the doubler from existing holes in the deck.		
5.3	Mark and cut openings in the transmission deck using doubler P/N 260328-1 as a template.		
5.4	Install aft evaporator doubler P/N 260328-1 on right hand upper transmission deck in accordance with drawing 4-3-AS350 sheet 1 of 2 using rivets as shown. Re-install Right Hand Transmission Cowling Forward latch as shown in drawing 4-3-AS350 sheet 1 of 2.		
5.5	Next temporarily install Aft evaporator assembly P/N 560010-“O”-5 with 4 ea. AN3-5A bolts and 4 ea. AN960-10 washers per drawing 4-13-AS350.		
5.6	Position return air doubler P/N 260322-1 against aft cabin bulk head as shown in drawing 5-21-AS350 trace outline on bulkhead. Remove doubler and drill out rivets inside trace.		
5.7	Reposition doubler P/N 260322-1. Back drill all holes and Clelo in place. Using doubler as guide pen route out return air hole.		
5.8	Remove doubler, clean holes. Install doubler P/N 260322-1 and angle P/N 260322-2 rivet in place per drawing 5-21-AS350.  <b>NOTE: Two different situations, requiring different doublers are utilized depending on the type and location of the aft seat harness reel (if installed). See drawing for specifics.</b>		

Integrated Flight Systems  
INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning



**PHOTO 1**

Integrated Flight Systems  
 INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.9	Install return air screen P/N 080022-1 as per drawing 5-21-AS350.		
<p><b><u>NOTE:</u> Before final install of evaporator. Install condenser channels P/N 510007 and P/N 510008. (See condenser install: Step 6)</b></p>			
5.10	<p>Locate “Return Air Connector” P/N 250166. Trial fit to the aft side of the cabin wall, immediately in front of the aft evaporator. The open side of the connector must face aft. Slide the connector upward until it contacts the forward side of the evaporator. Mark with a pencil, the inside of the connector position on to the evaporator. Remove the connector and evaporator. Reference drawing 4-13-AS350.</p> <p>Draw a line one (1) inch above the lower/forward face of the evaporator case. Trial fit “Return Air Connector” to the evaporator, ensuring that the flanges of the connector <b>DO NOT go past the inboard/outboard sides of the evaporator.</b></p> <p>Confirm the pencil lines. Remove the connector. Cut out the area within the pencil lines, leaving the one (1) inch lower lip on the evaporator case as a drain seal.</p> <p><b>NOTE: ENSURE DURING DRILLING THAT THE COIL INSIDE THE CASE IS NOT DAMAGED.</b></p> <p>Seal and secure the Return Air Duct Connector PN: 250166 with rivets to the Evaporator PN: 560010-O-5 case per drawing 4-13-AS350. Next install the connector angle assembly P/N 501261, per drawing 4-3-AS350 Sheet 1 of 2 and 4-13-AS350. This holds the upper part of the return air duct.</p>		
5.11	Position the aft evaporator return air duct P/N 250149 in the right side baggage compartment as shown on drawing 4-13-AS350. Use the return air opening to locate the return air duct. Trim the return air duct as required to fit.		
5.12	Remove the access panel from the outboard side of the aft evaporator P/N 560010-O-5.		
5.13	Temporarily install the aft evaporator, P/N 560010-O-5 using 4 each, AN3-5A, bolts and AN960-10, washers.		

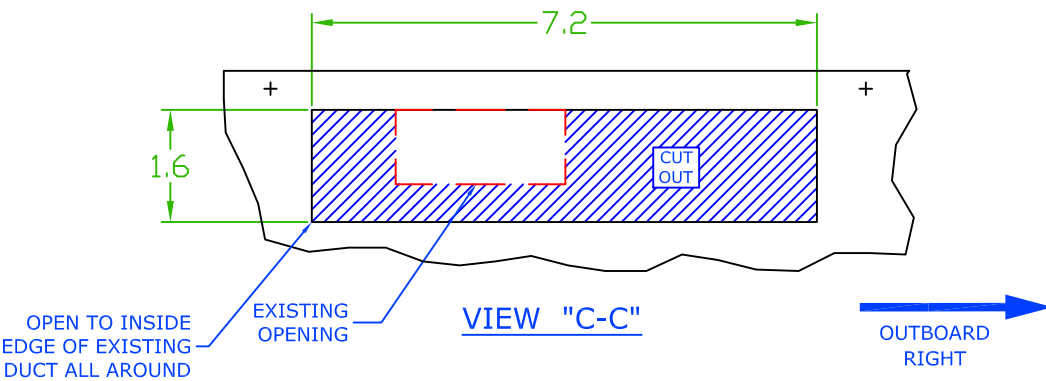


Integrated Flight Systems  
 INSTALLATION OF AFT EVAPORATOR – AS350 Air Conditioning

### Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.14	Locate and drill the holes for mounting the aft evaporator return air duct connector P/N 250166. Ref. 4-13-AS350		
5.15	Attach Return Air Duct P/N 250149 per drawings 4-3- AS350 sheet 1 of 2 and 4-13-AS350.		
5.16	<u>SEAL THE EVAPORATOR TO THE RETURN AIR DUCT WITH ALUMINUM FOIL TAPE IFS</u> PN: 070076 as required by reaching through the outboard opening in the evaporator. Re-install the aft evaporator access panel.		
5.17	Install the Aft Evaporator Fan Assembly, P/N 490017-1, using five each AN3-5A bolts, and 5 ea. AN960-10 washers. Attach Resistor Mount Assembly P/N 510463 and Resistor Assembly P/N 540020 per drawing 4-3-AS350 Sheet 2 of 2.		
5.18	Locate Transition Elbow P/N 520036-3. This will be mounted on upper Aft Cabin Wall on transmission side. See drawing 4-3-AS350 Sheets 1 and 2. Remove oil coolers from upper deck dog house. <b>(Do Not Disconnect oil Lines)</b> Position as to be able to modify Aft cabin wall. Do Not Re-install until step 5.22.		
5.19	Mark hole to be cut out in aft cabin wall per drawing 4-3-AS350 Sheet 1 of 2. Be careful not to but the cabin air duct bonded to aft cabin wall. Drill a couple of # 40 holes to see if you clear duct.		
5.20	Cut out hole and mount elbow as shown in drawing No. 4-3-AS350 Sheet 1 and 2.		
5.21	Install a 5-inch flex duct (25”in) long from the aft evaporator fan assembly to the aft air distribution elbow end with two each 6” band clamps P/N 060035. Insulate the duct with foam tape P/N 070078 and wrap with aluminum tape P/N 070076.		
5.22	Modify over head wemac’s as shown in drawing 5-12-AS350 if S/N 1302 or lower. Remove existing spacer air duct between oil coolers. Install new Air Duct Closure Assembly PN: 510092 using existing hardware. Re-nstall oil cooler assembly.		
5.23	Install hose doubler P/N 260369 per drawing 3-14-AS350.		

**AFT SIDE CABIN WALL**



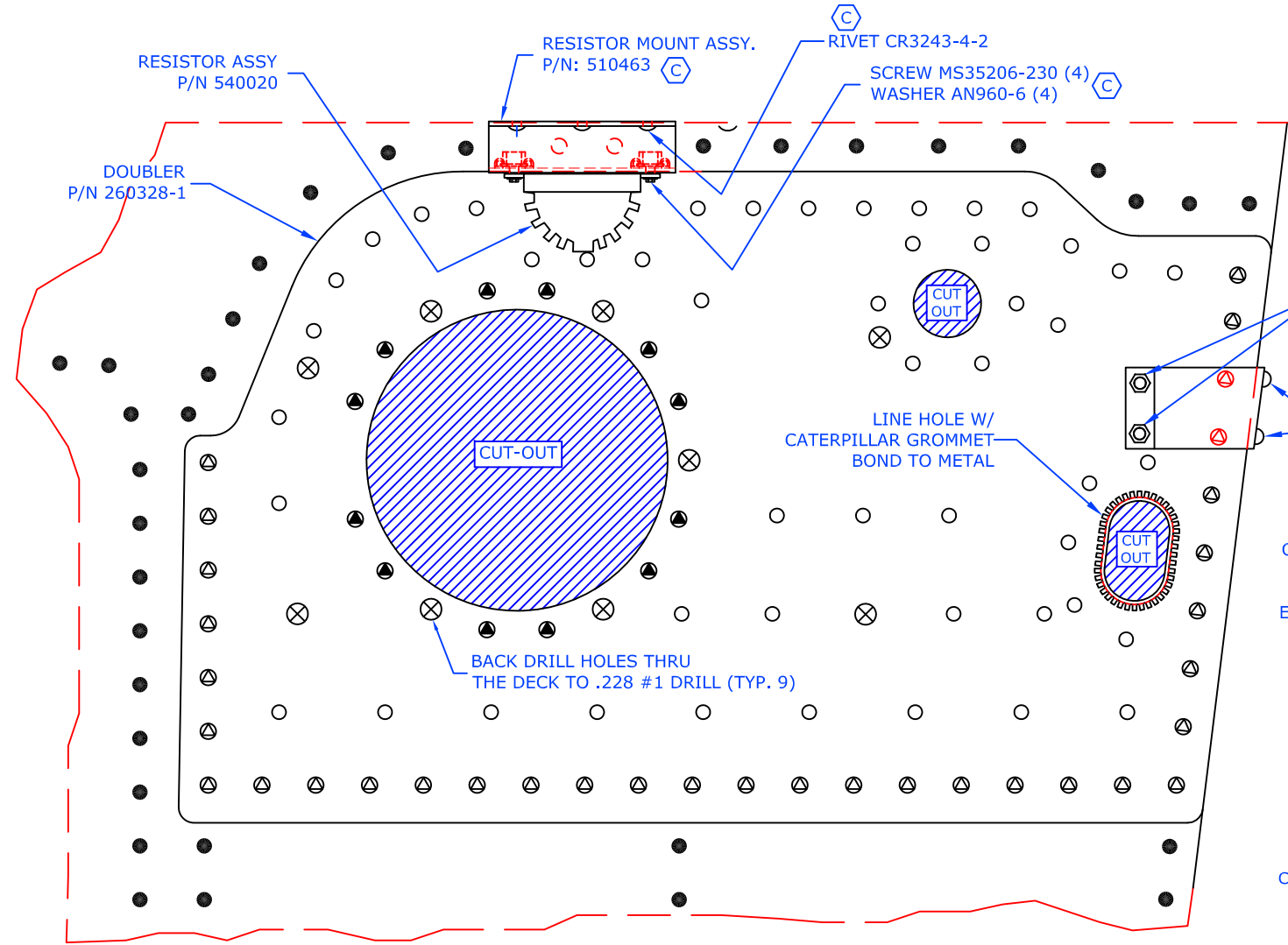
AFTER B3, S/N: 3322, REMOVE GROMMET IN P/N 520036-3. CUT OUT OPENING TO 1.6 X 7.2 OR TO MATCH DUCT OPENING AS IN VIEW C-C. ROUTE PUSH/PULL CABLES AND ELECTRICAL HARNESS TO LEFT AND TIE WRAP TOGETHER.

ⓑ SLOT THE TRANSITION ELBOW AS REQUIRED, TYP. B3 MODELS (SEE PAGE 2 OF 2 FOR ALTERNATE INSTALL.) SLIDE TRANSITION ELBOW OVER CABLES AND PLACE ELBOW IN POSITION AGAINST AFT CABIN WALL. BACK DRILL 6 EACH MOUNTING HOLES. REMOVE AND SEAL FLANGE TO AFT CABIN WALL WITH P.R.C. OR EQUIVALENT. REINSTALL DUCT TO AFT CABIN WALL USING HARDWARE CALLED OUT.

USING STRAP, P/N 261299 SANDWICH DUCT TO AFT CABIN WALL BY USING TOP AND TOP/LEFT HAND MOUNTING HOLES AS SHOWN.

REINSTALL GROMMET AND COVER ENTIRE AREA WITH FOIL TAPE.

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/06/01	CONVERTED TO AUTOCAD		-
B	01/03/07	ADDED SHEET 2 OF 2 TO INCLUDE SLOTTING INFORMATION FOR B3		JTYE
C	02/23/09	REVISED TITLE BLOCK. SHEET 1 AND 2 NOW ONE FILE. ADDED RESISTOR MOUNT ASSEMBLY, P/N: 510463.		DWE



**VIEW LOOKING DOWN AT TRANSMISSION DECK**



AFT. TRANSITION ELBOW ASSY.520036-3. ON FINAL INSTALLATION, SEAL FLANGE TO AFT CABIN WALL WITH P.R.C. OR EQUIVALENT.

6" BAND CLAMP TYP. 2

AFT EVAP. FAN ASSY. P/N 490017 OR -1

BOLT AN3-5A (TYP. 9)  
WASHER AN960-10 (TYP. 9)

REINSTALL (2) EXISTING BOLTS

EXISTING DOOR LATCH. REMOVE BEFORE INSTALLING DOUBLER. INSTALL NEW CR3243-4-3 CHERRYMAX RIVETS THRU OUT BOARD SIDE OF LATCH.

CONNECT DUCT TO EVAP. USING CONNECTOR ANGLE ASSY. P/N 510261 TO INSIDE RETURN AIR DUCT P/N 250149 ATTACH ANGLE ASSY. TO EVAP. W/ ABA4-4 RIVETS AND RETURN AIR DUCT W/ AN525-10R7 SCREWS.

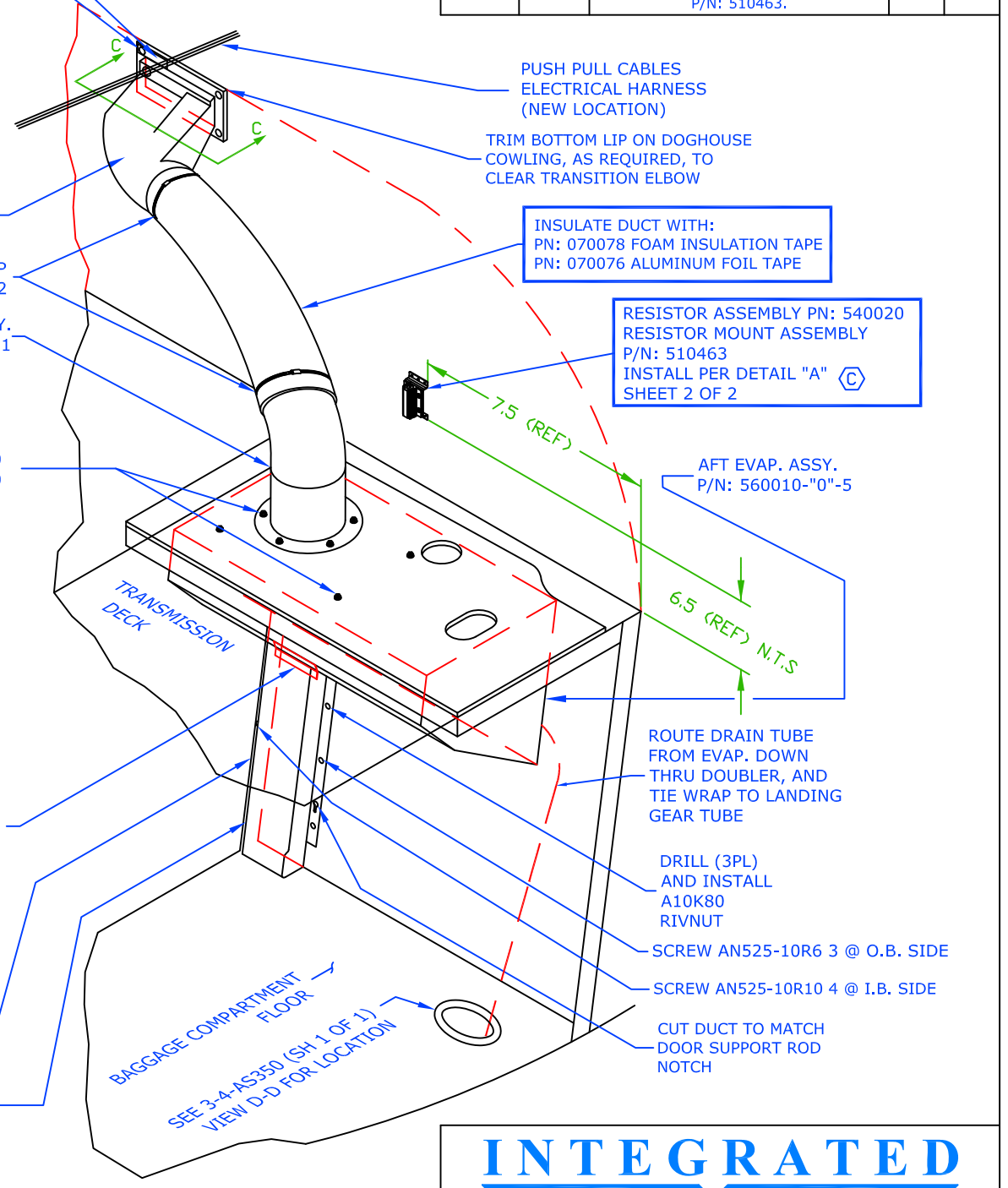
TRIM LIP OF FUEL TANK ACCESS COVER TO CLEAR R.A. DUCT.

BACK DRILL FROM INSIDE CABIN (4 PL), INSTALL CLIP NUT P/N RMS2LHA4972-10-02

- MS20470AD-4-X (FIELD)
- ⊗ MS20470AD-4-X (REPLACES EXIST. RIVETS)
- ⊙ MS20426AD-4-X (CSK. AT TOP SURFACES)
- ⊗ .228 DIA HOLE #1 DRILL (FOR AN 3-5A BOLT)
- EXISTING

NOTE:  
RIVET LENGTH MAYBE DETERMINED UPON INSTALLATION. INTERCHANGEABILITY BETWEEN MS20470AD-4-X RIVETS AND CR3242-4-X RIVETS IS APPROVED.

- AN3-6A (BOLTS) 6 EA.
- MS21044-N3 (NUT) 6 EA.
- AN960-10 (WASHERS) 12 EA.
- TRANSITION ELBOW STRAP P/N 261299 FOR USE IF ELBOW IS SLOTTED. ⓑ SEE PAGE 2 OF 2 FOR ALTERNATE INSTALL.

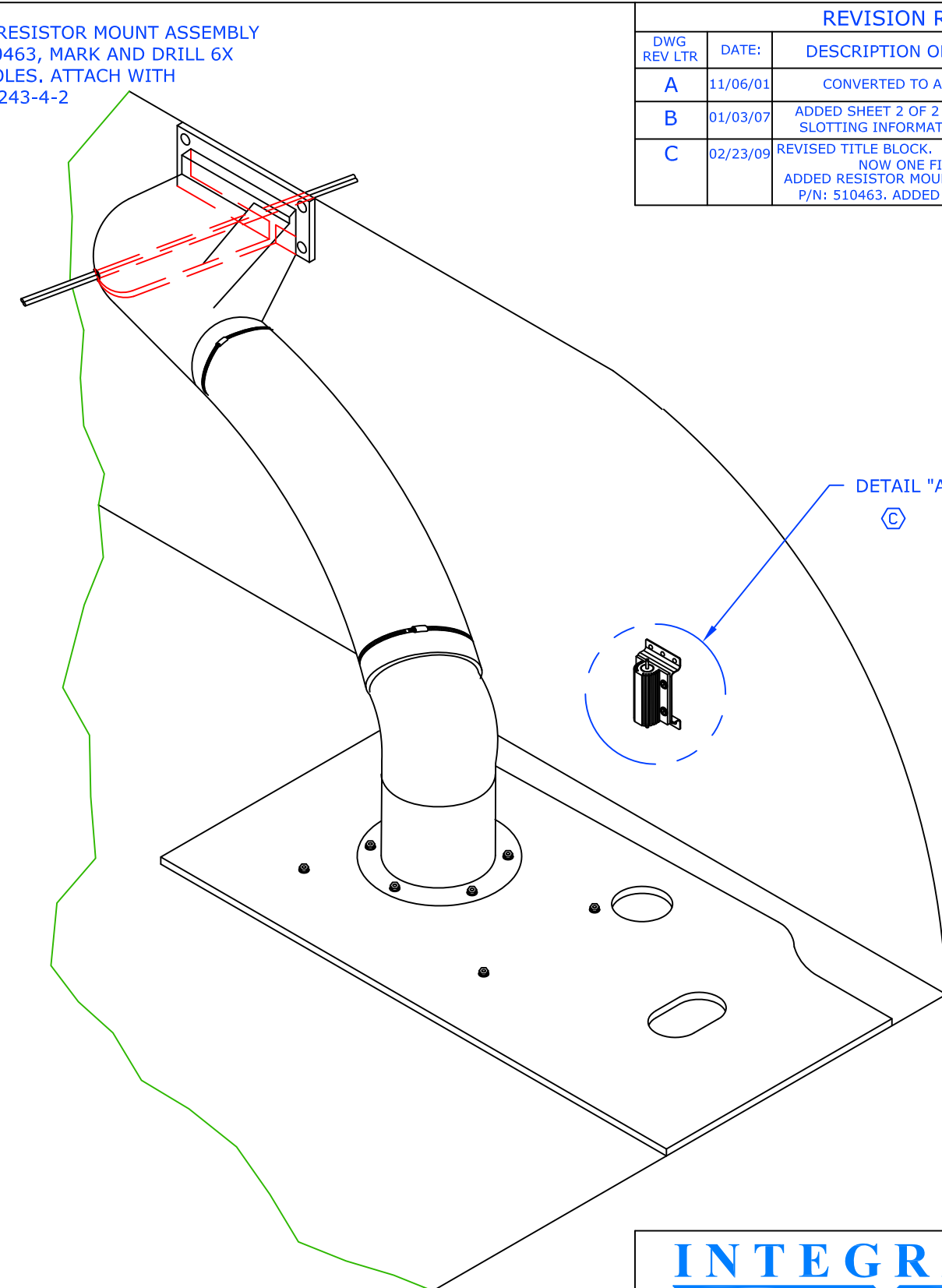
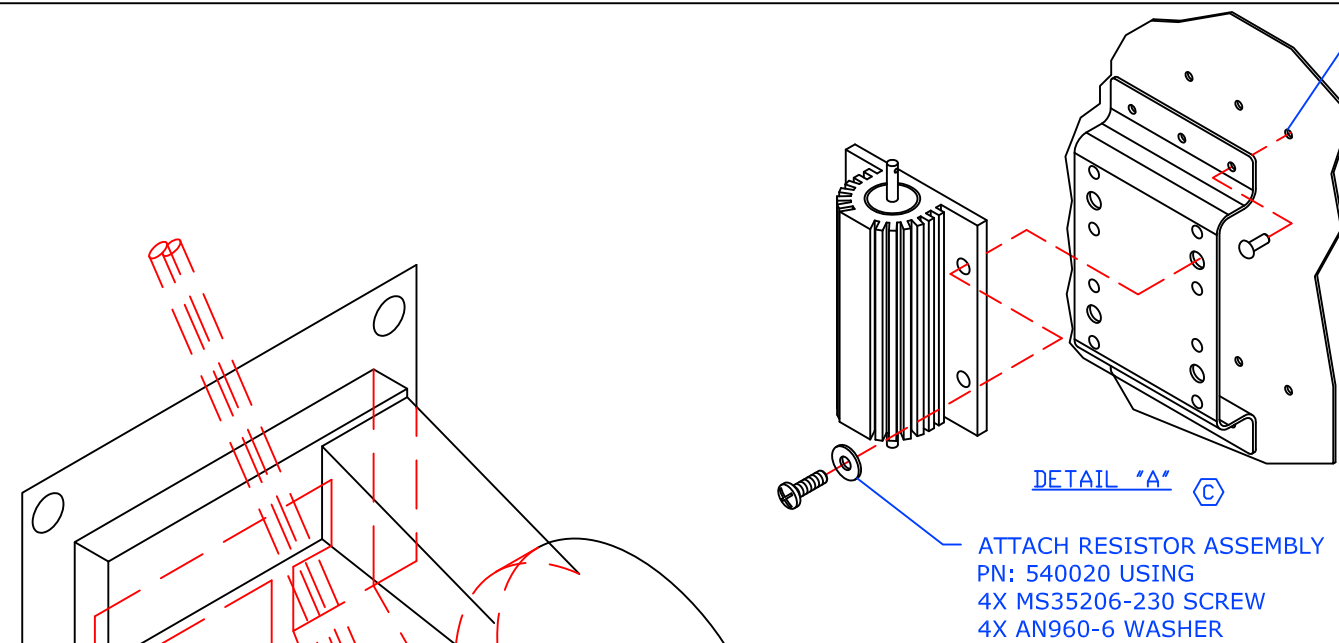


ECO# 0204



<b>TITLE: AFT EVAPORATOR INSTALL</b>				
DRAWN BY: JDS	DATE: 11/06/01	REV C	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AS350 SERIES			DWG No. 4-3-AS350	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/06/01	CONVERTED TO AUTOCAD	-	-
B	01/03/07	ADDED SHEET 2 OF 2 TO INCLUDE SLOTTING INFORMATION FOR B3	-	JTYE
C	02/23/09	REVISED TITLE BLOCK. SHEET 1 AND 2 NOW ONE FILE. ADDED RESISTOR MOUNT ASSEMBLY, P/N: 510463. ADDED DETAIL "A".	-	DWE



ALTERNATE PROCEEDURE FOR INSTALLING  
AFT TRANSITION ELBOW ASSEMBLY PN: 520036-3,  
AS350-B3 SERIES

TO AVOID REROUTING OF ROTORBRAKE AND FUEL  
SELECTOR CABLES.

1. TRIM MATING SURFACES OF ELBOW FOR ALIGNMENT OF ELBOW TO CABIN DUCT.
2. POSITION ELBOW ABOVE CABLES AND ALIGN WITH CABIN DUCT.
3. TRACE CABLE ROUTING ONTO LOWER SIDE OF ELBOW.
4. CUT ELBOW TO ALLOW CABLES TO PASS THROUGH WITHOUT INTERFERENCE.
5. OPEN AFT END OF CUT TO APPROX 1" AND INSTALL GROMMET.
6. INSTALL ELBOW TO CABIN AFT WALL PER STANDARD INSTALLATION INSTRUCTIONS.
7. SEAL OPENINGS BOTH INSIDE AND OUT WITH ALUMINUM FOIL, SEAL AREA BETWEEN CABLES AND GROMMET WITH SEALING CORK PN: 070078-6 OR PROSEAL 890 TO ENSURE THAT ELBOW IS AIR TIGHT.

ECO# 0204



TITLE: AFT EVAPORATOR  
INSTALL

DRAWN BY: JTYE	DATE: 05/27/04	REV C	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AS350 SERIES			DWG No. 4-3-AS350	



## Engineering Change Order

ECO No.  
0204

Drawing Number	Revision	Drawing Title
4-3-AS350	C	AFT EVAPORATOR INSTALLATION
4-1-EC130	B	AFT EVAPORATOR INSTALLATION
261585	NC	RESISTOR MOUNT

Reason for Change: Rivet callout on drawings not correct. Screw length is incorrect.

Description of Change:

1. 4-3-AS350 and 4-1-EC130, sheet 1 of 2:  
Was: CR3243-3-2, Is: CR3243-4-2
  
2. 4-3-AS350 and 4-1-EC130, sheet 2 of 2:  
Was: MS35206-244 Screw, Is: MS35206-230.
  
3. 4-3-AS350, sheet 2 of 2:  
Callout Was: "See 3-4-AS350 (SH 1 of 1)  
View D-D for location"  
  
 Callout Is: "See 3-4-AS350 (SH 1 of 1) or  
See 3-5-AS350 (SH 1 of 1)  
View D-D for location"
  
4. Drawing 261585:  
Was: 10 #40 holes  
  
 Is now: 4 #40 holes and 6 #30 holes

----- LAST ITEM -----

Engineering Review Board Approval

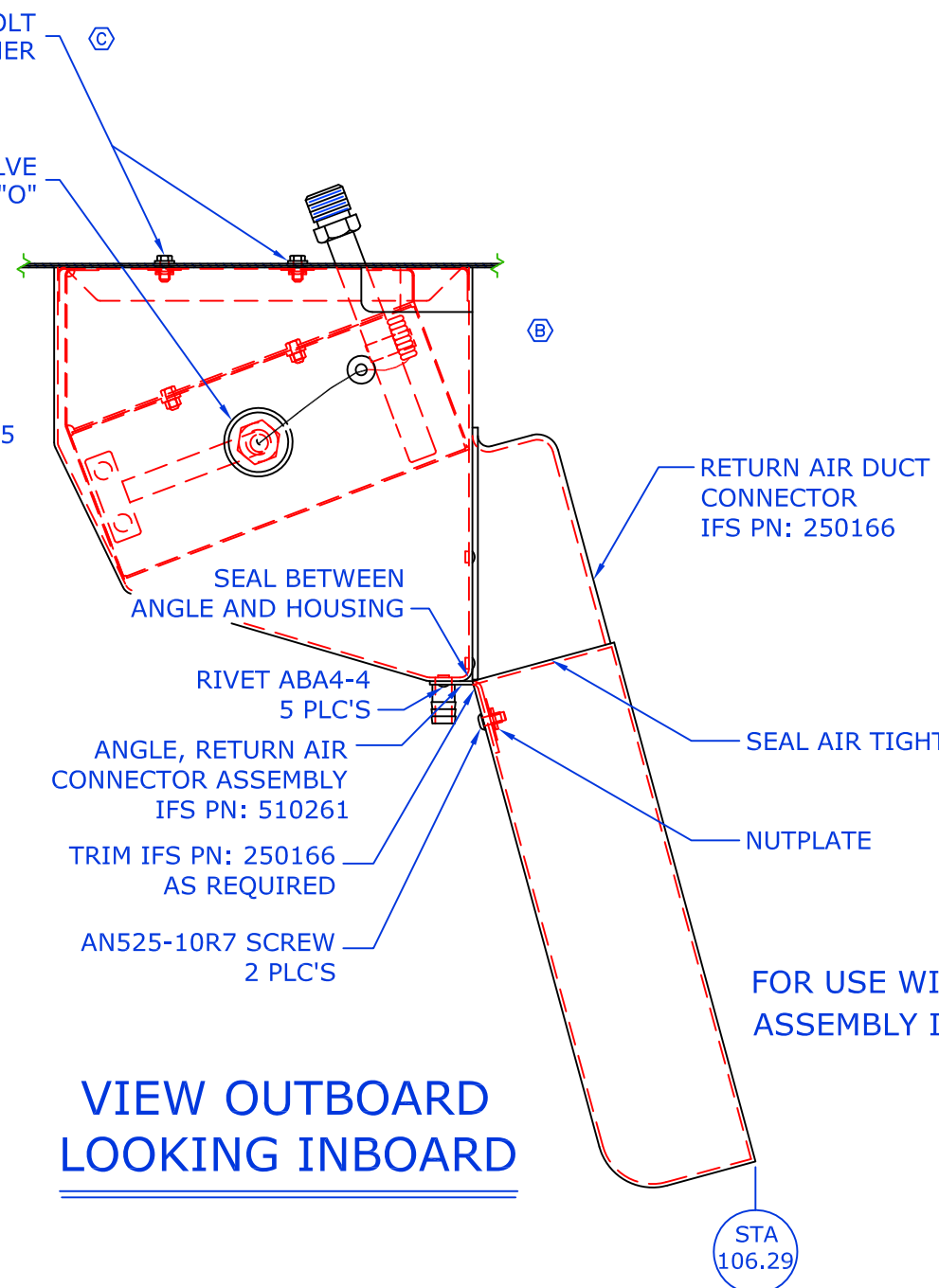
Signature	Stamp	Date	Comment
	ERB02	11/17/09	
	MRB06	11/17/09	
	MRB05	11/17/09	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/07/01	CONVERTED TO AUTOCAD		
B	01/03/07	CORRECTED SENSING BULB POSITION TO MATCH MFG DWGS. REMOVED NOTES CONCERNING SENSING BULB ATTACHMENT, IT IS NOW INSTALLED AT THE ASSEMBLY STAGE, ADDED ALT. CLIPNUT P/N'S SL215-3-1 OR 130062 CHANGED FONT, ADDED DETAILS TO VIEWS TO SHOW INSTALLED. REVISED TITLE BLOCK.		JTYE

## INSTALLATION INSTRUCTIONS:

- AFT EVAPORATOR AND RETURN AIR DUCT INSTALLATION:
- TEMPORARILY INSTALL EVAPORATOR ASSEMBLY, P/N 560010-"O"-5 UNDER NEWLY INSTALLED DOUBLER WITH 4X AN3-5A BOLTS AND 4X AN960-10 WASHERS AS SHOWN.
- LOCATE "RETURN AIR CONNECTOR" P/N 250166. TRIAL FIT TO THE AFT SIDE OF THE CABIN WALL, IMMEDIATELY IN FRONT OF THE AFT EVAPORATOR. THE OPEN SIDE OF THE CONNECTOR MUST FACE AFT. SLIDE THE CONNECTOR UPWARD UNTIL IT CONTACTS THE FORWARD SIDE OF THE EVAPORATOR. MARK WITH A PENCIL, THE INSIDE OF THE CONNECTORS POSITION ON TO THE EVAPORATOR. REMOVE THE CONNECTOR AND EVAPORATOR. NOTE: THIS HOLE MAY ALREADY EXIST IF IFS HAS TEST RUN SYSTEM AT IT'S LOCATION.
- LOCATE A LINE ONE (1) INCH ABOVE THE LOWER/FORWARD FACE OF THE EVAPORATOR. TRIAL FIT CONNECTOR TO THE EVAPORATOR, ENSURING THAT THE FLANGES OF THE CONNECTOR DO NOT GO PAST THE INBOARD/OUTBOARD SIDES OF THE EVAPORATOR.
- CONFIRM THE PENCIL LINES. REMOVE THE CONNECTOR. CUT OUT THE AREA WITHIN THE PENCIL LINES, LEAVING THE ONE (1) INCH LOWER LIP ON THE EVAPORATOR AS A DRAIN SEAL. SEAL AND SECURE WITH RIVETS, THE CONNECTOR TO THE EVAPORATOR PER THE DRAWING.
- TRIAL FIT RETURN AIR DUCT P/N 250149. BACK DRILL FROM INSIDE THE CABIN AT FOUR PLACES, EQUALLY SPACED, AT INBOARD EDGE OF RETURN AIR DUCT FLANGE. DRILL THREE PLACES, EQUALLY SPACED, ON OUTBOARD EDGE OF RETURN AIR DUCT FLANGE, THROUGH FLANGE INTO AIRCRAFT BOX SECTION.
- REMOVE DUCT AND INSTALL THREE EACH A10K80 RIVNUTS UNDER OUTBOARD FLANGE LOCATION, INTO AIRCRAFT BOX SECTION. INSTALL FOUR EACH CLIPNUTS, P/N RM52LHA4972-  
 (B) 10-02, (ALT. PN: SL215-3-1 OR 130062), ONTO INBOARD FLANGE OF RETURN AIR DUCT. INSTALL RETURN AIR DUCT WITH SEVEN EACH AN525-10R10 SCREWS (FOUR FROM INSIDE CABIN FOR CLIPNUTS), USING K501 TAPE UNDER BOTH DUCT FLANGES AS SEALANT.



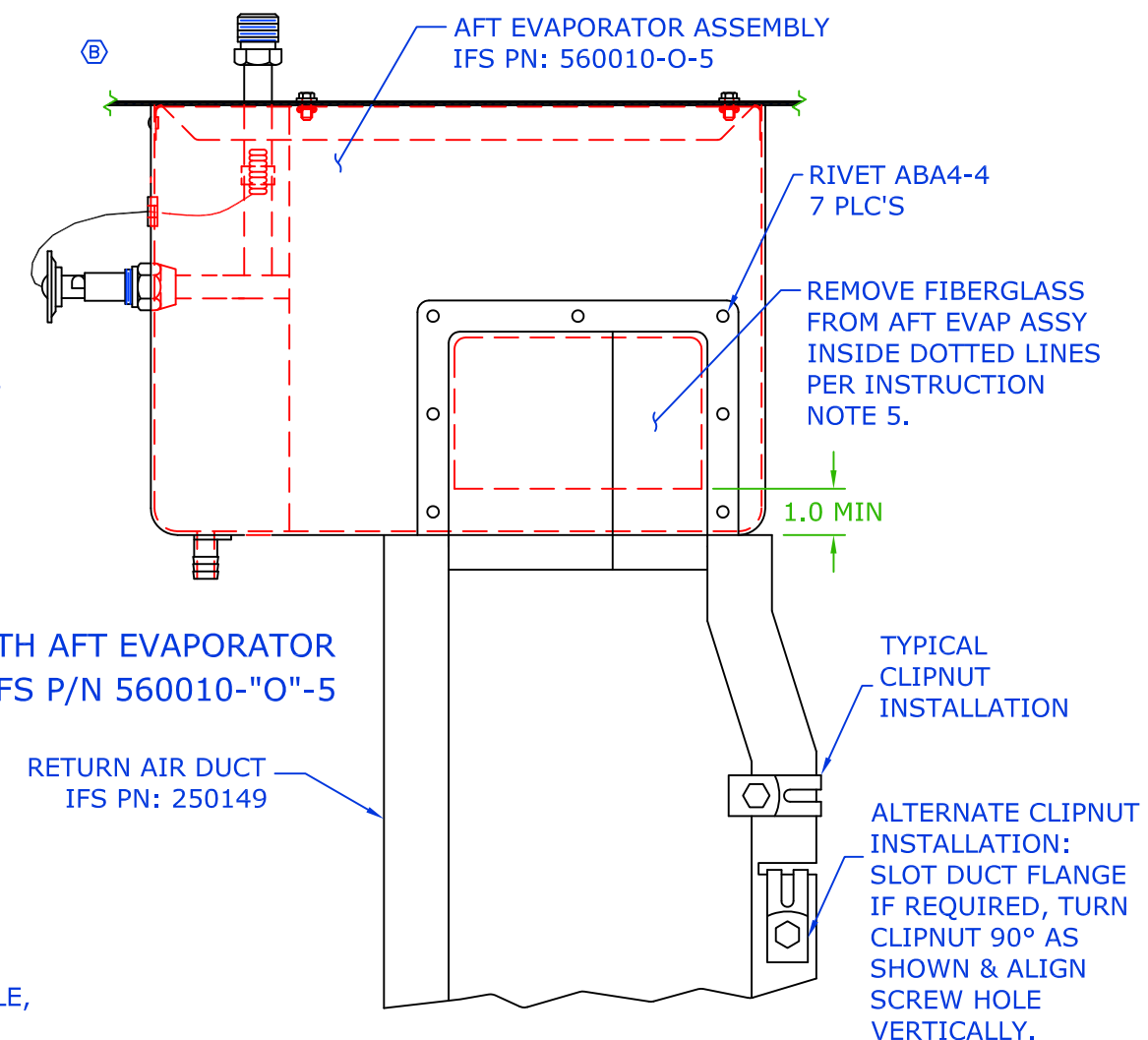
**VIEW OUTBOARD  
LOOKING INBOARD**

- CONNECT RETURN AIR DUCT TO AFT EVAPORATOR USING ANGLE, RETURN AIR CONNECTOR ASSEMBLY, P/N 510261. USE POP RIVETS, NUTPLATES AND SCREWS. SEAL ANGLE TO RETURN AIR DUCT AND AFT EVAPORATOR HOUSING.
- INSTALL DRAIN LINE AND ROUTE AS SHOWN IN DRAWING 4-3-AS350 SHEET 1 OF 2. SECURE DRAIN LINE WITH ADEL CLAMPS OR TIE WRAPS AND ROUTE TO A LOCATION OUTBOARD OF THE BELLY PANEL. TIE WRAP TO LANDING GEAR CROSS MEMBER ON AFT SIDE.

**NOTE:** ENSURE THAT DRAIN LINE IS NOT CRIMPED WHEN BELLY PANEL IS RE-INSTALLED.

**CAUTION:** BE SURE THAT THE DRAIN LINE IS PROPERLY SECURED AND LONG ENOUGH SO THAT CONDENSATION DOES NOT FLOW FROM THE LINE, AFT INTO THE BAGGAGE COMPARTMENT.

**NOTE:** ENSURE THAT DRILLING DOES NOT HIT COIL



**VIEW LOOKING AFT**



**TITLE: AFT EVAPORATOR  
INSTALL**

DRAWN BY: TMUZZY	DATE: 11/07/01	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 4-13-AS350	



Engineering Change Order

ECO No.  
0231

Drawing Number	Revision	Drawing Title
4-13-AS350	B	Aft Evaporator Install

Reason for Change: Correct hardware callout on drawing.

Description of Change:

- Drawing: 2X AN525-10R7 attaching angle, is now 2X AN525-10R6.

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
		05/04/10	
		05/04/10	
		05/04/10	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS350, SHEET NO WAS 2 OF 3		-
B	04/12/02	COMPUTERIZED		-
C	01/03/07	ADJUSTED DWG FOR MULTIPLE CONFIGURATIONS, CHANGED TITLE BLOCK		JTYE
D	02/26/09	ADDED VIEW C-C AND NOTE FOR INSTALLATION AIR DUCT CLOSURE.		DWE

AIR DUCT CLOSURE ASSY PN: 510092  
REMOVE AND DISCARD EXISTING FRESH AIR INLET, INSTALL CLOSURE ASSY USING EXISTING HARDWARE

TRIM ANGLE IF NECESSARY TO FIT PN: 510092.

VIEW C-C  
LOOKING FWD

TAP EXISTING AIR OUTLET MOUNTS TO 8-32 UNF.  
INSTALL WEMAC USING 4 EA. MS24693-S55  
SNAP ON DECOR RING PN: 7194-1

TRIM HEADLINER AND CABIN STRUCTURE TO FIT WEMAC.

ROTATE NEW WEMAC 90°  
MATCH DRILL NEW HOLES (CSK) IN WEMAC TO MATCH AIRFRAME

WEMAC No. 2368-503 (CLEAR)  
NOTE: APPLIES TO AIRCRAFT W. SMALL ADH AIR OUTLETS.

VIEW B-B

HEADLINER

REPLACE EXISTING AIR OUTLETS WITH WEMAC NO 2368-503 (4)

NOTE: APPLIES TO SN 1302 & DOWN ONLY

NOT REQUIRED IF LATE MODEL ADH AIR OUTLETS ARE IN PLACE

VIEW A-A

SWITCH ASSY  
PN: 540089

BACKING PLATE  
PN: 260351

TRIM PLACARD TO FIT AS REQUIRED

ROUTE 2-1/2" FLEX DUCT AS REQUIRED PER AIR OUTLET CONFIGURATION.

NOTE: IF REQUIRED CUT 3" HOLE IN TRAY TO ALLOW FLEX DUCT TO CONNECT TO L.H. AIR OUTLET. INSTALL BLACK EDGE TRIM AROUND HOLE.

FWD

NOTE: AFT SWITCH INSTALLATION NOT APPLICABLE TO TOUR 1 CONFIGURATION.

DETAIL C

VIEW LOOKING UP AT SWITCH LOCATION, 1995 AND PRIOR.

DETAIL C

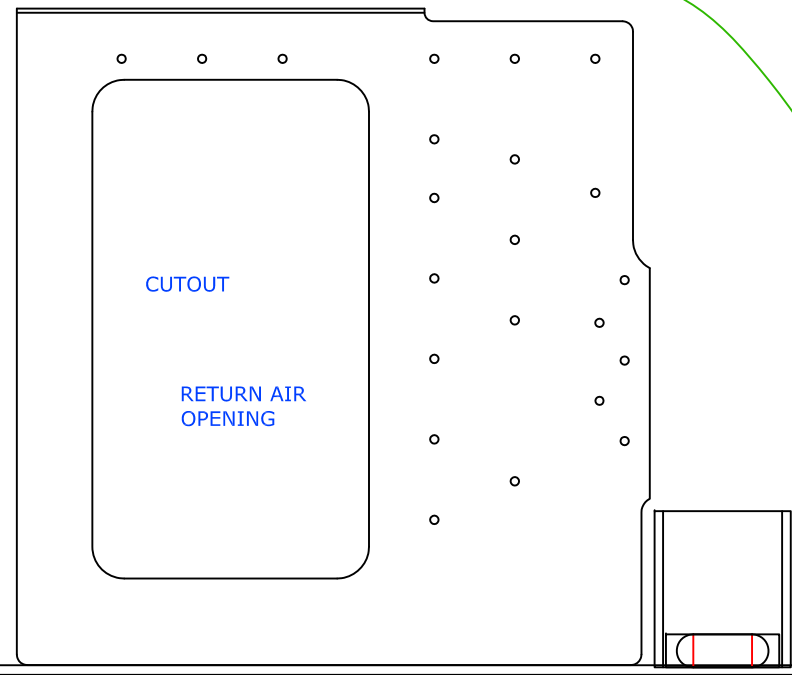
LOCATE AFT & LEFT OR RIGHT OF EXISTING AIR OUTLETS 1995 & ON



TITLE: AIR DISTRIBUTION

DRAWN BY: BT	DATE: 06/20/85	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-12-AS350	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	03/27/91	TITLE BLOCK WAS CAS, IS NOW IFS		
B	11/15/95	ADD REEL HARNESS		
C	08/16/00	REVISED DWG No. WAS 5-AS350 SHEET 3 OF 3		
D	04/12/02	COMPUTERIZED		
E	04/16/02	ADDED 260322, OPTIONAL.		
F	01/03/07	CORRECTED PN'S, ADDED PHOTO AND TRIMMING NOTATION. REVISED TITLE BLOCK.		JTYE

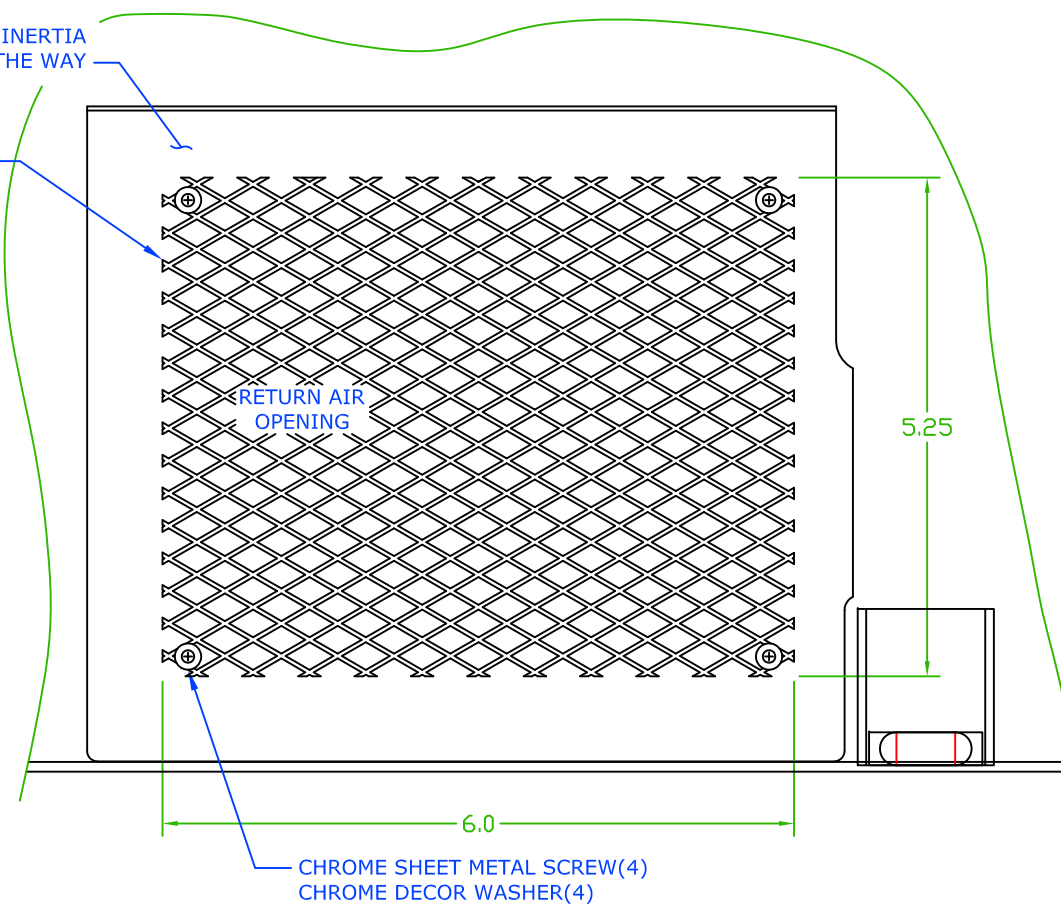


STEP 2  
MATCH DRILL DOUBLER TO AIRFRAME & AIRFRAME TO DOUBLER  
RIVET IN PLACE

STEP 3  
NOTE: ADD SCREEN SCREWS & SEAL EDGES

260322 (OPTIONAL) IF INERTIA WHEEL IS NOT IN THE WAY

EXPANDED ALUMINUM SCREEN PN 080022



STEP 1

NOTE: CUT OPENING IN INTERIOR AFT BULKHEAD PANEL TO MATCH RETURN AIR DOUBLER

OUTBOARD, RIGHT

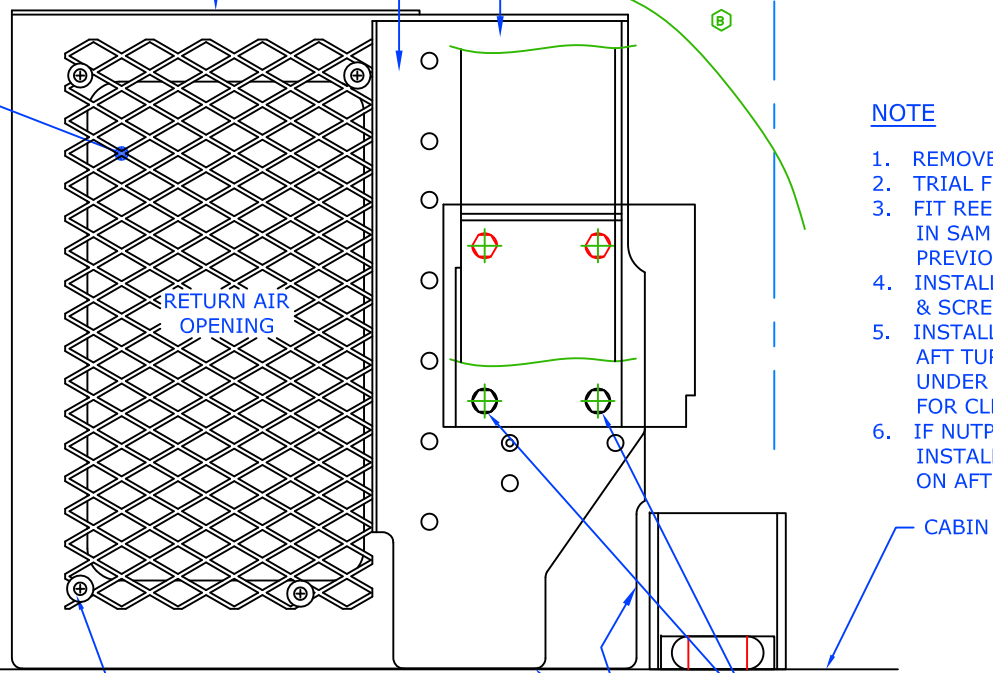
EXPANDED ALUMINUM SCREEN PN: 080022-1

DOUBLER, RETURN AIR PN: 260322-1

ANGLE PN: 260322-2

AFT BULKHEAD, MATCH DRILL NEW RIVET HOLES TO DOUBLER AND ANGLE.

AIRCRAFT



CHROME SHEET METAL SCREW(4)  
CHROME DECOR WASHER(4)

AFT CABIN BULKHEAD  
VIEW LOOKING AFT AT STA 106.29

TRIM OR ADJUST AS REQUIRED TO ACHIEVE BEST FIT.

NOTE

1. REMOVE REEL
2. TRIAL FIT DOUBLER ASSY
3. FIT REEL TO DOUBLER ASSY IN SAME LOCATION AS PREVIOUSLY MOUNTED
4. INSTALL DOUBLER ASSY & SCREEN
5. INSTALL REEL, TRIMMING AFT TURNED LIP OF DOUBLER UNDER HARNESS, AS NECESSARY, FOR CLEARANCE
6. IF NUTPLATES(TYP 4)ARE NOT INSTALLED, ADD PN MS21059-L3 ON AFT SIDE OF WALL

RIVET LEGEND

- -MS20470 AD4(IN NEW HOLE)
- ⊗ -CR 3243-4(IN NEW HOLE)
- ⊙ -CR 3243-4(IN EXISTING HOLE)
- -MS20426AD4-X(FLUSH RIVET)

NOTE: INTERCHANGEABILITY BETWEEN MS20470 AD RIVETS & CR 3243 RIVETS ALLOWABLE, DIA AND LENGTH MAY BE DETERMINED BY THE INSTALLER

NOTE: STEPS #1 & #2 PERTAIN TO BOTH DOUBLER INSTALLATIONS



TITLE: AIR DISTRIBUTION

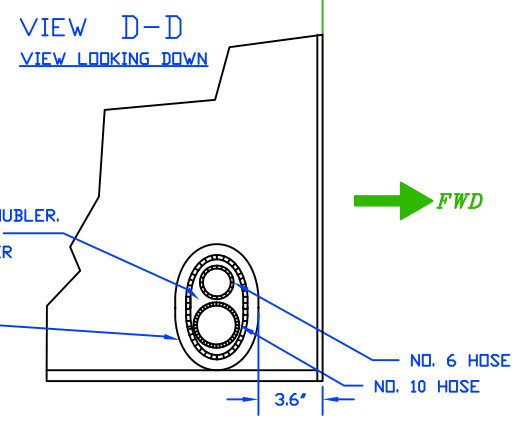
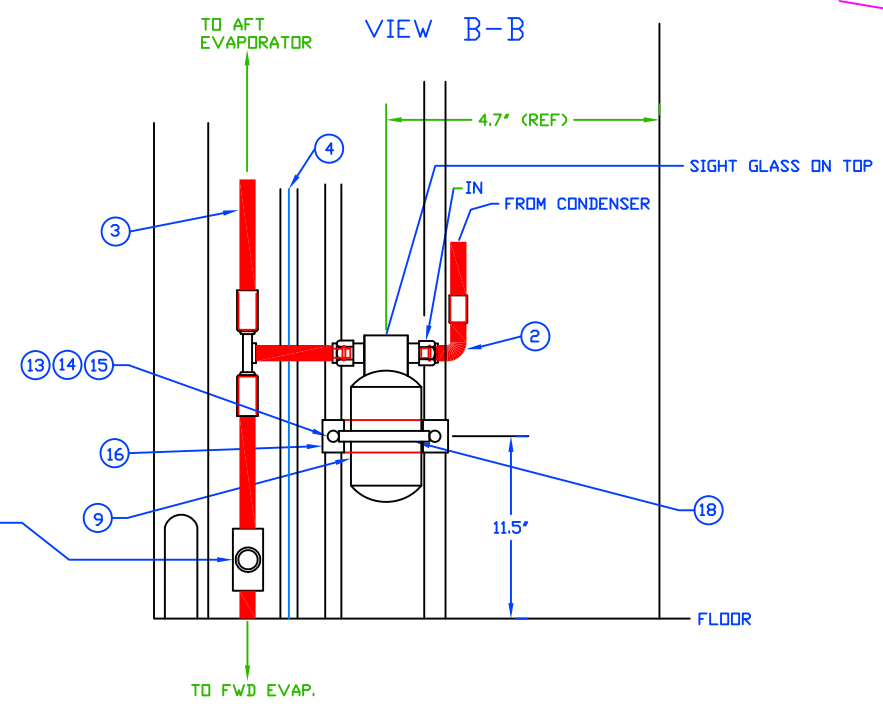
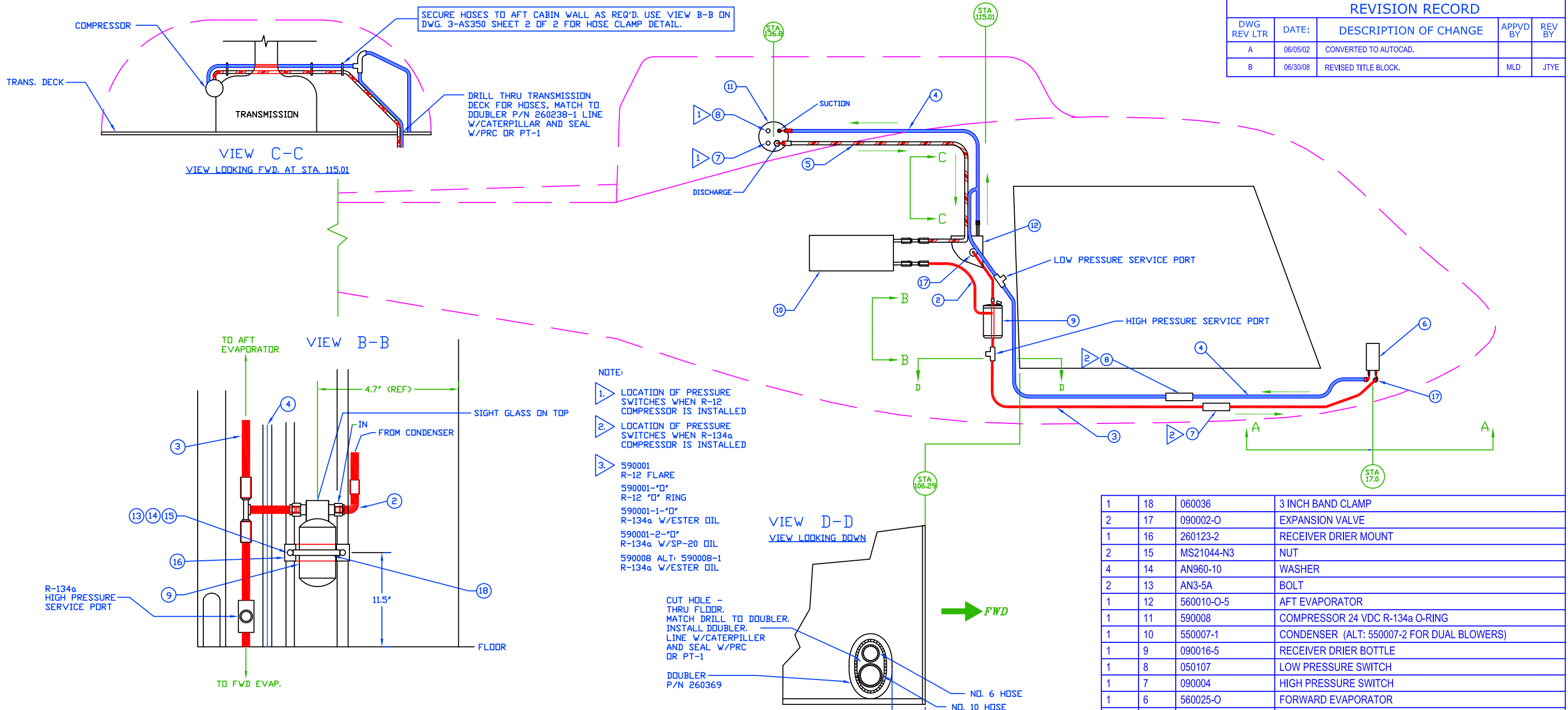
DRAWN BY: BP	DATE: 04/12/85	REV F	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-21-AS350	





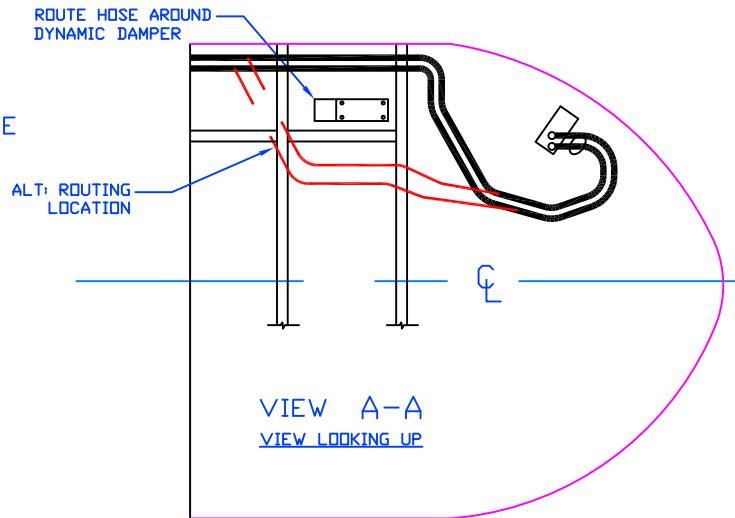
REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE



QTY	ITEM	PART NUMBER	DESCRIPTION
1	18	060036	3 INCH BAND CLAMP
2	17	090002-O	EXPANSION VALVE
1	16	260123-2	RECEIVER DRIER MOUNT
2	15	MS21044-N3	NUT
4	14	AN960-10	WASHER
2	13	AN3-5A	BOLT
1	12	560010-O-5	AFT EVAPORATOR
1	11	590008	COMPRESSOR 24 VDC R-134a O-RING
1	10	550007-1	CONDENSER (ALT: 550007-2 FOR DUAL BLOWERS)
1	9	090016-5	RECEIVER DRIER BOTTLE
1	8	050107	LOW PRESSURE SWITCH
1	7	090004	HIGH PRESSURE SWITCH
1	6	560025-O	FORWARD EVAPORATOR
1	5	570024-O-A	HOSE ASSY COMPRESSOR TO CONDENSER
1	4	570087-O-A	HOSE ASSY FWD EVAPORATOR TO AFT EVAPORATOR
1	3	570072-O-A	HOSE ASSY. AFT EVAP TO FWD. EVAP TO REC/DRIER
1	2	570020-O-A	HOSE ASSY. COND. TO REC./DRIER
-	1	RESERVED	-

- NOTE:  
ALTERNATE HOSE:  
1991-ON NEOPRENE BARRIER TYPE
- #6 P/N 090078 BASIC
  - #8 P/N 090079 PRODUCT
  - #10 P/N 090080 IFS P/N
- 1995-ON NEOPRENE REDUCED BARRIER TYPE
- #6 P/N 090089
  - #8 P/N 090090
  - #10 P/N 090091
- FERRULES FOR ABOVE
- #6 P/N 090081 BASIC
  - #8 P/N 090082 PRODUCT
  - #10 P/N 090083 IFS P/N
- MUST USE ATCO REDUCED BARRIER TYPE FITTINGS & ATCO CRIMPER P/N 3700 OR MASTERCODL P/N 71500



#10 HOSE	
#8 HOSE	
#6 HOSE	



TITLE: PLUMBING DIAGRAM

DRAWN BY: N.DEAN	DATE: 06/05/02	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350		DWG No. 3-4-AS350		

## **Step 6**

# **Installation of Condenser**

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

## Installation of Condenser

STEP	PROCEDURE	MECH	INSP
<p><b><u>NOTE:</u></b> Do not install P/N 260148-3 before installing mount channels P/N 510007 and 510008. Complete steps 6.8 thru 6.11 prior to step 6.7.</p>			
6.1	Locate Condenser Fan Mounting Channel P/N 260148-3 and Fan Channel Base Angle P/N 260020 these will be mounted in the right hand baggage compartment.		
6.2	Remove support channel AEC P/N 2105000001 per drawing 7-2-AS350 Sheet 1 of 2.		
6.3	Position in place P/N 260148-3 and P/N 260020 as shown in drawing 7-2-AS350 Sheet 1 of 2. Back drill in place and cleco. Fit filler P/N 260862 and drill in place per drawing 7-2-AS350 Sheet 1 and 2.		
6.4	Position Battery compartment shelf P/N 260333 with mount angles, P/N 260335, drill in place, see drawing 7-2-AS350 Sheet 1 of 2.		
6.5	Be sure to pick up all holes as shown in drawing 7-2-AS350 Sheet 1 of 2, including upper shelf shown in drawing 7-11-AS350.		
6.6	Align electrical panel assembly P/N 540028-C-2-A as shown in drawing 7-11-AS350. Create paper template for hole pattern on bottom of electrical panel assy. Use template to mark and drill shelf, mount P/N 540028-C-2-A using 3 ea AN3-4A bolts.		
6.7	Remove all parts, clean holes, reinstall and rivet in place, as shown in drawings 7-2-AS350, Sheets 1 and 2 of 2.		
6.8	Locate forward and aft condenser channel assemblies, P/N 510008 and P/N 510007. These will be located in the upper right hand baggage compartment.		
6.9	Position forward channel P/N 510008 as shown in drawing 7-2-AS350 Sheet 2 of 2. Back drill all holes.		

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.10	Remove and clean holes and rivet in place as per drawing 7-2-AS350 Sheet 2 of 2.		
6.11	Repeat steps 6.9 and 6.10 for P/N 510007 install nutplate to channel and install per drawing 7-2-AS350 sheet 2 of 2.		
6.12	Installing mount angle P/N 260002 on condenser: Measure 1.5” from aft (left) of condenser, draw a line parallel to aft end. Center mount angle over existing 3 holes on top of condenser. Align vertical flange over line drawn on condenser. Now transfer 3 holes to mount angle. Drill holes in mount angle. Next mount angle to condenser with 3 ea. AN3-4A bolts and 3 ea AN960-10 washers as shown in drawing 7-11-AS350.		
6.13	Position the other mount angle P/N 260002 in fwd overhead channel as shown in drawing 7-2-AS350 Sheet 2 of 2, and adjust height as shown in drawing 7-11-AS350. Position condenser assembly in aircraft using previously installed (aft) angle as a guide and slide it up into the aft channel assembly. When condenser is level and at the correct height, check and make sure aft end of condenser is tight against condenser fan channel P/N 260148-3. If not, adjust aft mount angle.		
6.14	Now mark aft mount angle using 2 holes in aft channel assembly P/N 510007 as shown in drawing 7-2-AS350 sheet 1 of 2. Remove condenser and drill holes. Reinstall condenser assembly and temporarily bolt into position. Next mark position of fwd mount angle onto condenser, also mark 7” diameter fan hole along with 4 ea. mounting holes using condenser fan mounting channel 260148-3 as a guide. Remove condenser assembly, position fwd mounting angle on condenser using marking as a guide. Pick up existing 3 holes on condenser. Drill and mount angle using 3 ea AN3-4A bolts and 3 ea. AN960-10 washers. Now cut out 7” diameter hole as marked and drill out 4 mounting holes. <b>NOTE: Be careful not to cut or drill condenser coil inside condenser, You have about 1” clearance from the end of the housing to the coil.</b> Now mount existing fan mount ring inside of the end of the condenser using drilled mount holes to align ring. Install 4 ea. screws or bolts. Drill 2 ea. #40 holes on either side of each screw (do not drill through nutplates on mount ring) and install with CCR264SS3-3 rivets. Install condenser assembly.		

Integrated Flight Systems  
INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

6.15	Locate condenser air intake assembly P/N 520071 or 520071-1. This will be installed in right baggage door per drawing 8-2-AS350, 1 and 2 of 2.		
6.16	<p>Temporarily install right baggage door. Take measurements from door frame to find center of condenser. Mark this center on door. Cut 4” Dia. Hole on center. Put hand through hole and using condenser cut out as guide to mark back of door. Remove door, place air intake assembly P/N 520071(-1) on back of door with lip towards door. Aligning the Aft Lip to mark on door.</p> <p><b>NOTE:</b> The lip is the part that will be inserted into the door, not the mounting flange.</p> <p>Adjust up and down. See if top line is 3.2” down from top of door. Fit inside of top and bottom marks. Make sure you keep Air Intake level with tip edge of door. Now trace around lip.</p>		

Integrated Flight Systems  
 INSTALLATION OF CONDENSER – AS350 Air Conditioning

### Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.17	Cut out hole using marks. Cut inside marks, and cut or sand as necessary to fit air intake.		
6.18	Temporarily install door. Insert air intake. Adjust cutout in condenser as necessary to fit air intake. Do not cut beyond Aft face of condenser. Leave flange going towards condenser. The Fwd end of the condenser can be cut as necessary. The bottom flange of condenser can be trimmed a little, but, leave at least .75" lip. Top can be trimmed almost to top of flange.		
6.19	Mark and cut out fan outlet hole per drawing 8-2-AS350 Sheet 1 of 2. Fit Screen Assy. Cond. Exhaust PN: 520052-1 or -2, adjust holes as necessary. Position Screen Assy. as shown in drawing 8-2-AS350 sheet 2 of 2 and drill 5 holes as shown in drawing 8-2-AS350 sheet 1 of 2.		
6.20	Lay 2 layers of 10 oz. Cloth with resin as shown per drawing 8-2-AS350 sheet 1 of 2.		
6.21	Remove door inner core 1" inside of both cut outs. Next fill in with Hysol 960 or Metalset A-4.		
6.22	Reinstall inlet and outlet. Drill mounting holes and install with MS24693S276 screws, Tinnerman washers A3235-020-24A and nuts MS20364-1032C.		
6.23	Paint to match.		
6.24	Modify battery cover, P/N 260339 per drawing 8-2-AS350 Sheet 2 of 2.		
6.25	Modify cargo net as shown in drawing 8-11-AS350. Install as shown.		
6.26	When condenser assembly P/N 550007-1 is installed, mount condenser fan assembly, P/N 050084-6 and elbow assembly P/N 520032-1. See drawing 7-2-AS350 Sheet 1 of 2. Install Drain Hose P/N 090018.		

INSTRUCTIONS:

- 1 PLACE MOUNTING CHANNEL AS HIGH AS POSSIBLE. INSPECT FOR EXISTING RIVETS THAT MIGHT HOLD CHANNEL OFF DECK.
- 2 TRIM/NOTCH CHANNEL AROUND RIVETS.
- 3 RE-FIT BEFORE MATCH DRILLING AS IN (4).
- 4 MATCH DRILL COND FAN MT CHAN TO EXISTING MOUNT ANGLE INSTALL RIVETS CR 3243-4-X
- 5 TRIM ELBOW FLANGE AS NECESSARY TO ACCOMODATE CONTROL BOX ON BRUSHLESS MOTORS.

RELOCATE FASTENER TO LOWER RIGHT. (SEE 8-11-AS350, SHEET 1 OF 2, BAGGAGE COMPARTMENT MOD FOR ACTUAL LOCATION)



AN3-5A(3)  
AN960-10(6)  
MS21044-N3(3)  
LOCATE NUT ON FWD SIDE

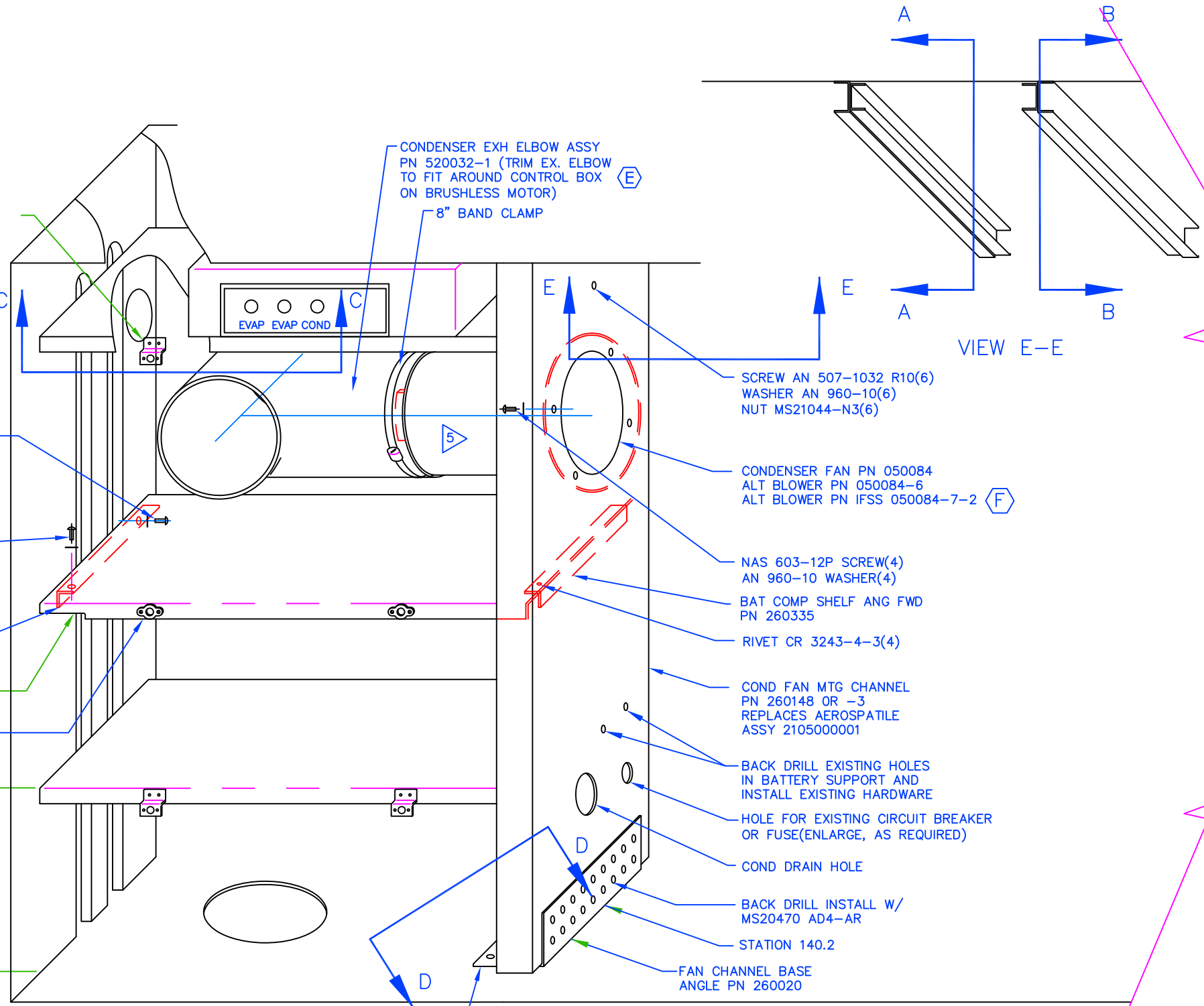
AN3-3A(5)  
AN960-10(10)  
AN365-1032(5)  
ALT NUT MS21044-N3

BAT COMP SHELF ANG AFT  
PN 260335

BAT COMP SHELF PN 260333

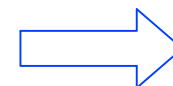
RELOCATE FASTENERS TO MATCH COMPARTMENT COVER (TYP 2 PL)

16.5 FLOOR



ADD FILLER  
PN 260862

RIGHT BAGGAGE COMPARTMENT



FWD

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	03/27/91	ADDED CP102 AND CP103, INTEGRATED FLIGHT WAS CONSOLIDATED AIRE, TITLE BLOCK WAS CAS, IS IFS.	-	-
B	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS 350; SHEET NUMBER WAS 1 OF 3, ADDED NOTE	-	-
C	04/12/02	COMPUTERIZED, REVISED TITLE BLOCK.	-	-
D	01/03/07	CORRECTED DRAWING No. REF. WAS 8-AS350, SHEET 1 OF 2. IS 8-11-AS350 SHEET 1 OF 2.	-	-
E	06/30/08	ADDED NOTE 5. REVISED TITLE BLOCK. ADDED TRIM ANNOTATION TO COND. ELBOW ASSY. ADDED INTERCHANGEABLE BLOWERS.	-	JTYE
F	03/04/10	DELETED BLOWER P/N: IFSS 050084-7 WITH BLOWER P/N: IFSS 050084-7-2	-	JM
G	04/08/10	DELETED BLOWER P/N: IFSS 050084-7-1 WITH BLOWER P/N: IFSS 050084-7-3	-	JM

INTERCHANGEABLE 7" BLOWERS

050084-1
050084-4
050084-6
050084-7
610000 BRUSHLESS
620000 BRUSHLESS
630000
640000
IFSS 050084-1
IFSS 050084-4
IFSS 050084-6
IFSS 050084-6-1
IFSS 050084-7 BRUSHLESS
IFSS 050084-7-1 BRUSHLESS
IFSS 050084-7-2 BRUSHLESS
IFSS 050084-7-3 BRUSHLESS

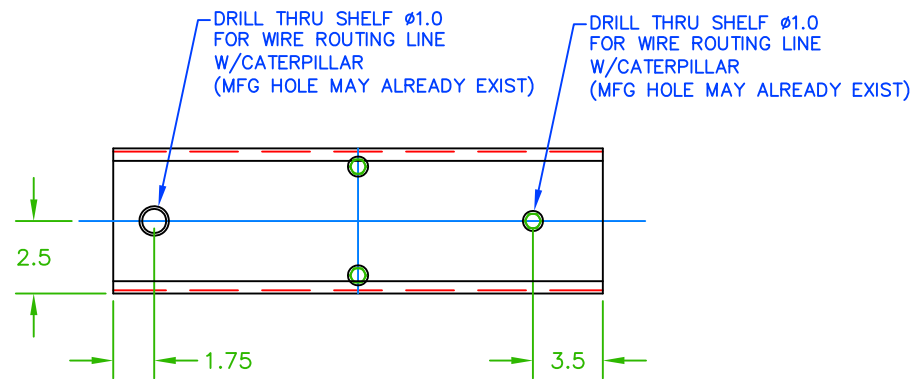


TITLE: CONDENSER INSTALL

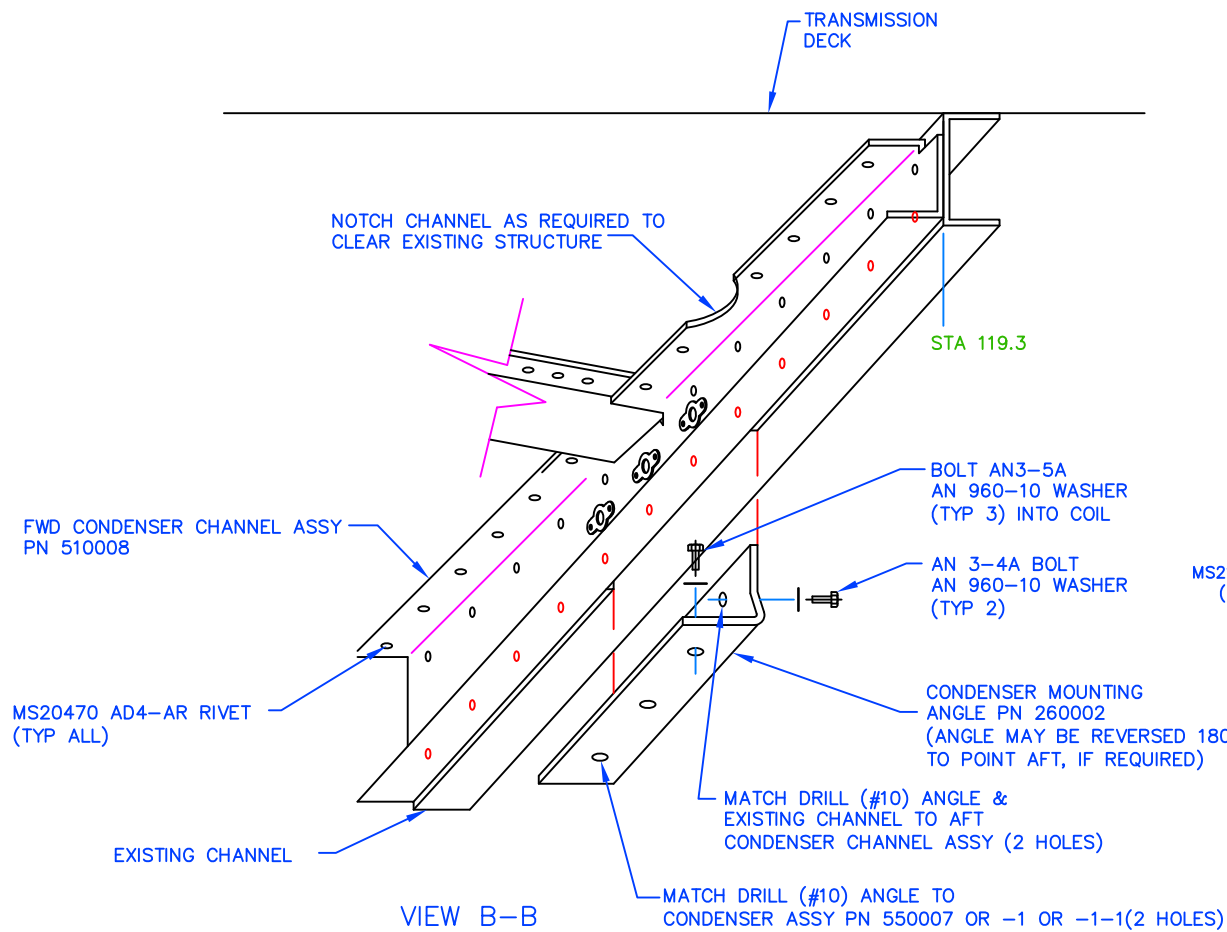
DRAWN BY: BRP	DATE: 05/25/95	REV G	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AS350			DWG No. 7-2-AS350	



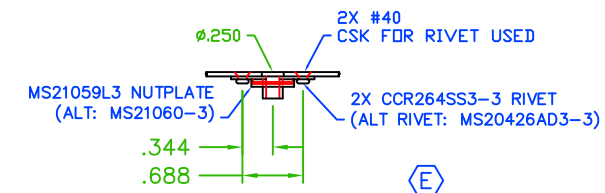
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	05/10/99	ADDED ALT BLOWER PN:050084-6	-	-
B	06/28/00	ADDED ALT BLOWER PN 050084-7	-	-
C	08/16/00	REVISED DRAWING NUMBER WAS 7-AS350 SHEET No. WAS 1 OF 2	-	-
D	04/17/02	COMPUTERIZED, REVISED TITLE BLOCK	-	-
E	06/30/08	ADDED NOTATION FOR NUTPLATE INSTALL AND DETAIL "A" REVISED TITLE BLOCK, SHEETS 1 AND 2 OF 2 NOW IN ONE CAD FILE	-	JTYE
G	04/08/10	SEE SHEET 1 FOR REVISION	-	JM



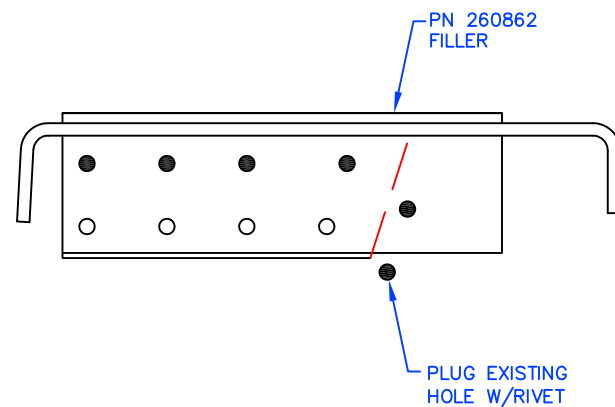
VIEW C-C  
LOOKING UP



VIEW B-B

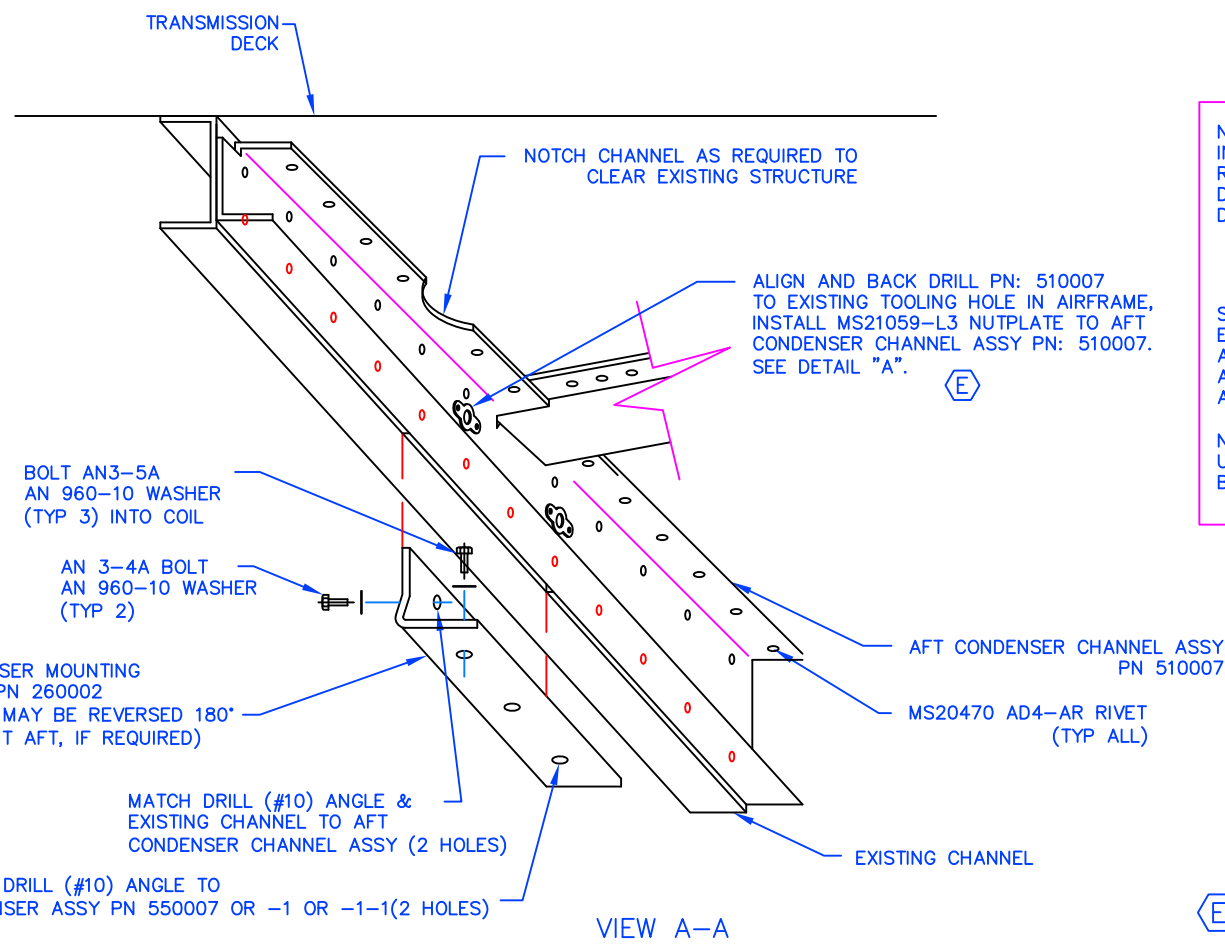


DETAIL "A"  
TYPICAL NUTPLATE INSTALLATION  
NOT TO SCALE



VIEW D-D  
LOOKING DOWN

- CR3243-4-3 RIVET DRILL THRU NEW PART FROM ABOVE USE #27 DRILL
- CR3243-4-3 RIVET BACK DRILL
- #27 HOLE THRU EXISTING HOLE INTO NEW PART
- CR3243-4-4 BACK DRILL #27 THRU EXISTING HOLE



VIEW A-A

NOTE:  
INTERCHANGABILITY BETWEEN MS20470AD RIVETS AND CR3243 RIVETS ALLOWABLE. DIAMETER AND LENGTH MAY BE DETERMINED BY INSTALLER.

SINGLE CONDENSER BLOWER  
ENVIRO SYSTEMS INC  
ALT BLOWER: PN 050084-6  
ALT BLOWER: PN 050084-7  
AIR MOVERS, LLC

NOTE A:  
USE CAUTION TO AVOID DAMAGE TO EXISTING WIRE BUNDLE WHEN INSTALLING SHELF



TITLE: CONDENSER INSTALL				
DRAWN BY: BRP	DATE: 05/25/95	REV G	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AS350			DWG No. 7-2-AS350	





Engineering Change Order

ECO No.  
0289

Drawing Number	Revision	Drawing Title
7-2-AS350	G	Condenser Install

Reason for Change: To add alternate washer for blower installation. To removed the deletion of the blowers deleted by Rev. F & Rev. G for field maintainability. Added blowers IFSS 050084-7-2 & IFSS 050084-7-3, description in Rev. F & Rev. G should not be "with blowers", should show "added blowers".

Description of Change:

- On sheet 1 of 2, added alternate washer: NAS620-10, Qty. (4) required for IFSS 050084-7-2 & IFSS 050084-7-3.

Was:

NAS 603-12P SCREW(4)  
AN 960-10 WASHER(4)

Is:

NAS 603-12P SCREW(4)  
AN 960-10 WASHER(4)  
ALT: NAS620-10 WASHER(4) — REQUIRED WITH  
IFSS 050084-7-2,  
BAT COMP SHELF ANG FWD IFSS 050084-7-3

- On sheet 1 of 2, removed lines for deleting IFSS 050084-7 brushless & IFSS 050084-7-1 brushless.

Was:

IFSS 050084-6-1	
<del>IFSS 050084-7 BRUSHLESS</del>	(F)
<del>IFSS 050084-7-1 BRUSHLESS</del>	(G)
IFSS 050084-7-2 BRUSHLESS	(F)
IFSS 050084-7-3 BRUSHLESS	(G)

Is:

IFSS 050084-6-1	
IFSS 050084-7 BRUSHLESS	(F)
IFSS 050084-7-1 BRUSHLESS	(G)
IFSS 050084-7-2 BRUSHLESS	(F)
IFSS 050084-7-3 BRUSHLESS	(G)

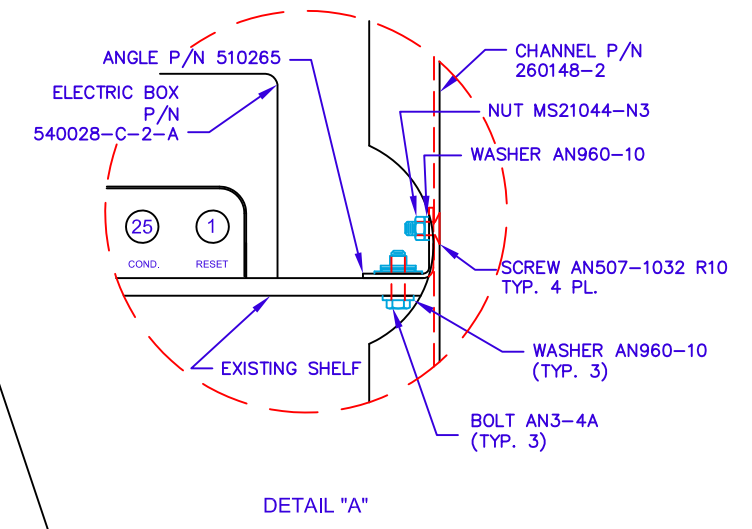
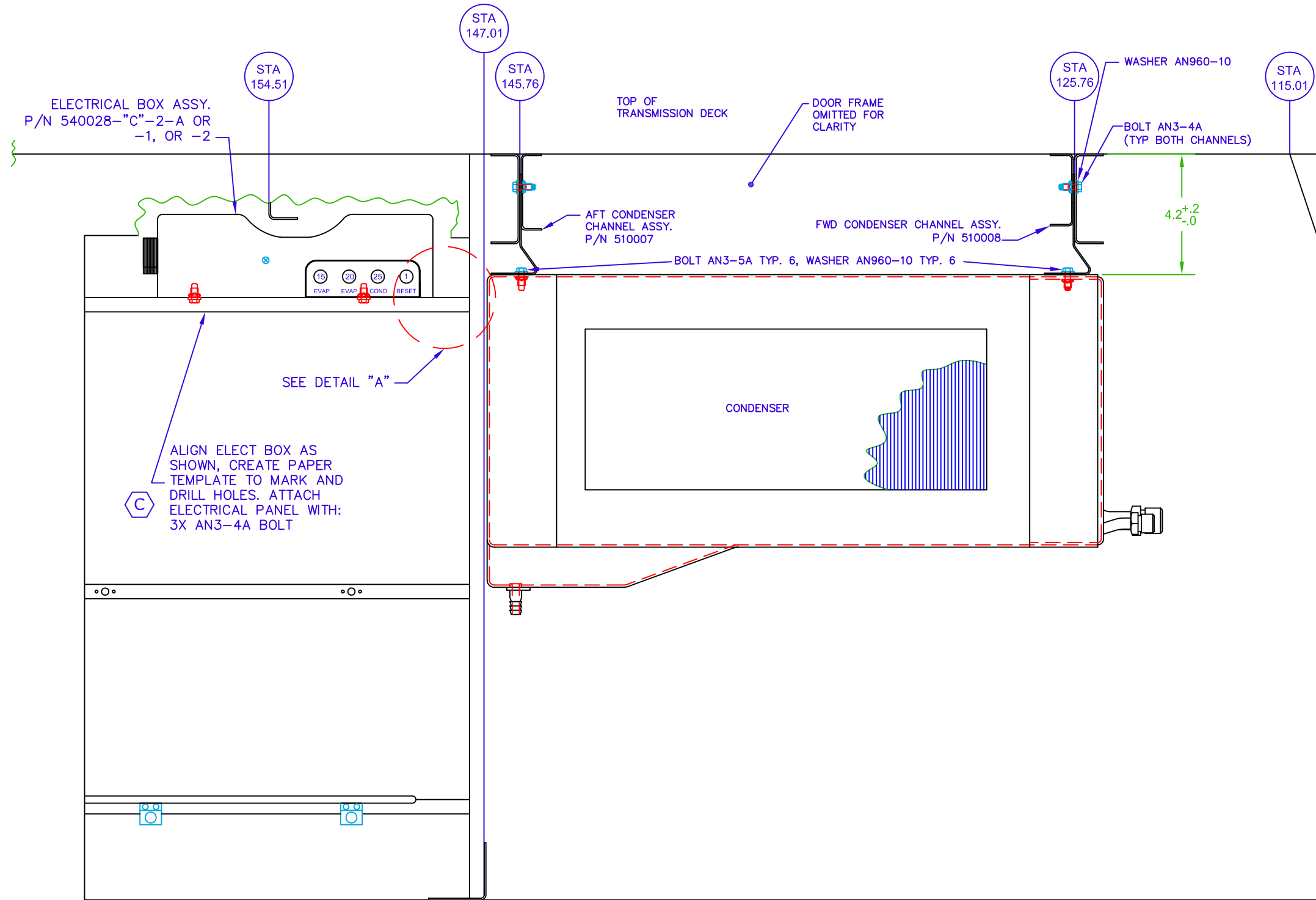
Sheet 2 of 2 had no changes.

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eijman</i>	ERB02	01/12/11	
<i>Scott</i>	MRB06	01/12/11	
<i>Scott</i>	MRB05	01/12/11	

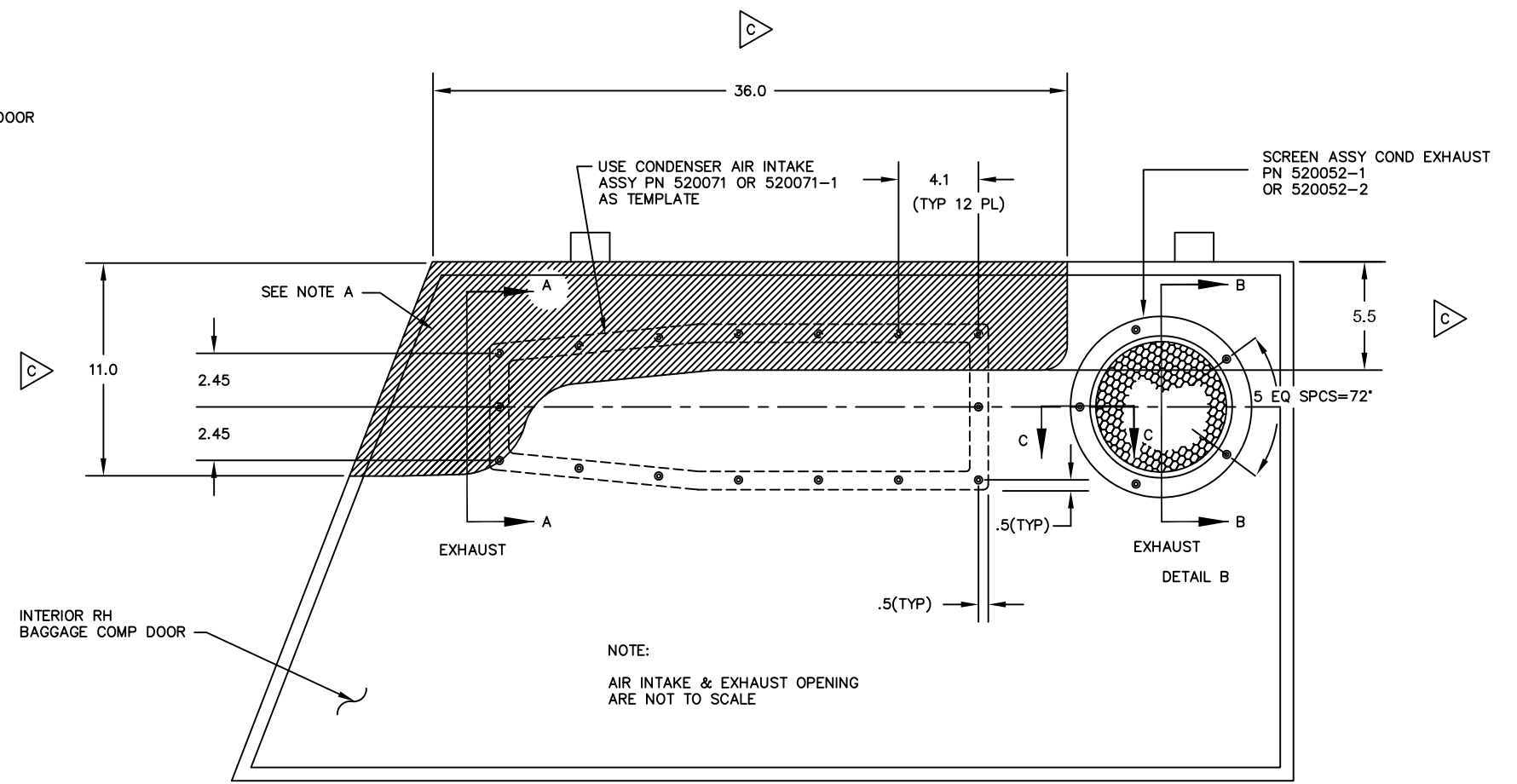
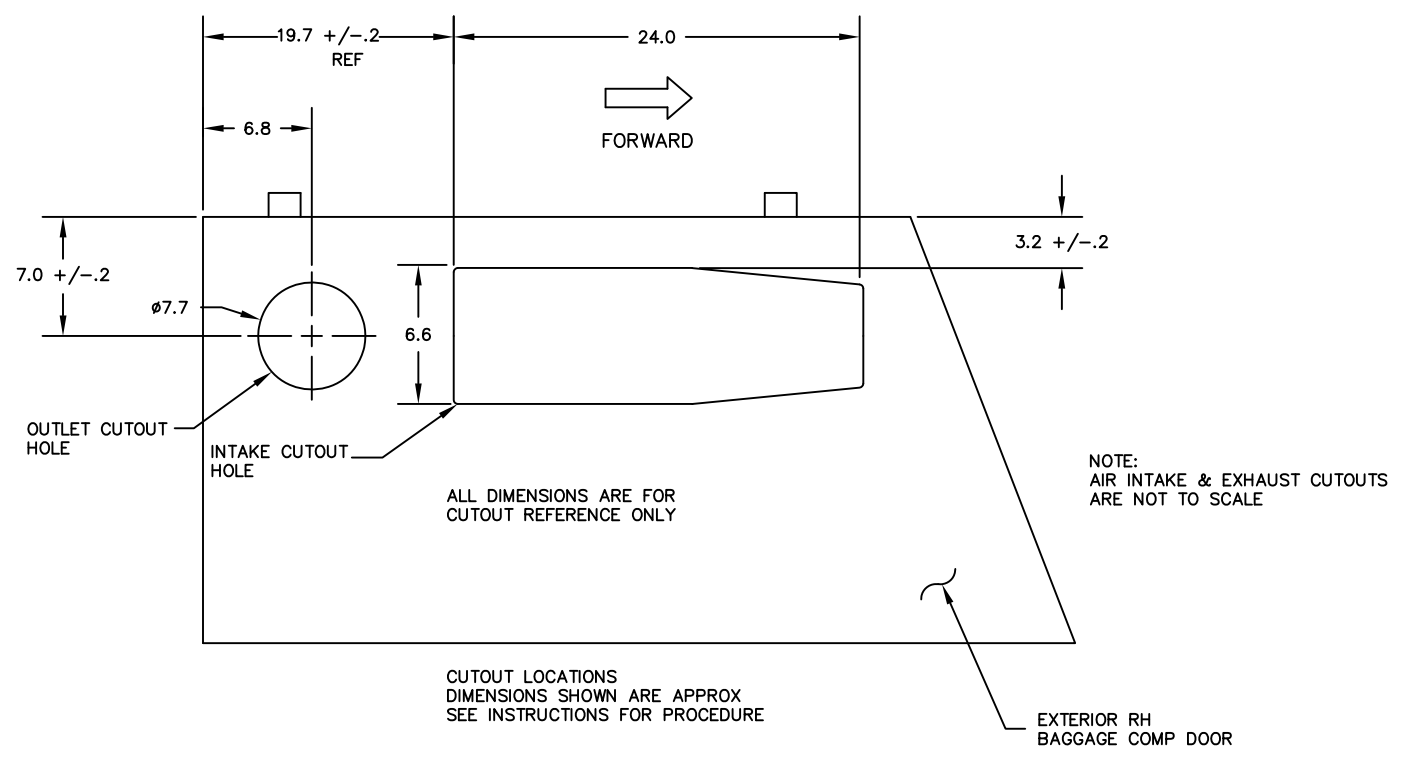
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	11/07/01	REVISED DRAWING NUMBER. WAS 7-AS350, WAS SHEET 2 OF 2.	-	-
B	03/09/05	COMPUTERIZED, REVISED TITLE BLOCK.	-	JTYE
C	01/03/07	ADDED ELECTRIC BOX DRILLING AND ATTACHMENT NOTATION. REVISED TITLE BLOCK.	-	JTYE



TITLE: CONDENSER INSTALL				
DRAWN BY: K.A.	DATE: 05/25/95	REV C	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 7-11-AS350	

C

REV.	DESCRIPTION	DATE	APPV.	E
A	REVISED DRAWING NUMBER, WAS 8-AS 350; SHEET NUMBER WAS 1 OF 2.	08/16/00		
B	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG.	04/19/02		
C	CHANGED NOTE TO ALLOW 520071 AND 520071-1 TO BE UTILIZED WITH OR WITHOUT SLIDING DOOR	5/7/02		
D	REDRAWN AND REDIMENSIONED FOR CLARITY. REVISED TITLE BLOCK.	05/16/02		
E	CORRECTED NOTE B 2 TO REFLECT PN: 520071-1. REVISED NOTATION. REVISED TITLE BLOCK.	11/28/07		



NOTE A:

- 1 REMOVE HINGE HARDWARE FROM INSIDE DOOR.
- 2 LAY UP 2 LAYERS OF 100Z FIBERGLASS CLOTH WITH RESIN IN AREA SHOWN ON INSIDE ONLY
- 3 ALLOW FIBERGLASS TO CURE
- 4 REINSTALL HARDWARE

NOTE B:

- 1 TRIM CONDENSER AIR INTAKE OPENING, FORWARD, UP & DOWN AS REQUIRED TO ACCEPT AIR INTAKE ASSY PN 520071 OR 520071-1. (E)
- 2 TRIM AIR INTAKE ASSY ON INSIDE TO FIT INSIDE CONDENSER AIR INLET OPENING

NOTE C:

THESE DIMENSIONS REFERENCE FIBERGLASS REINFORCEMENT AREA.

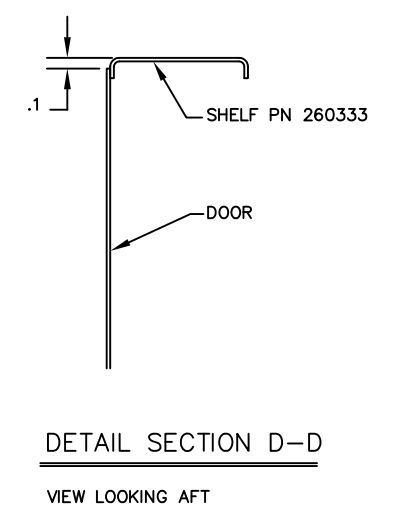
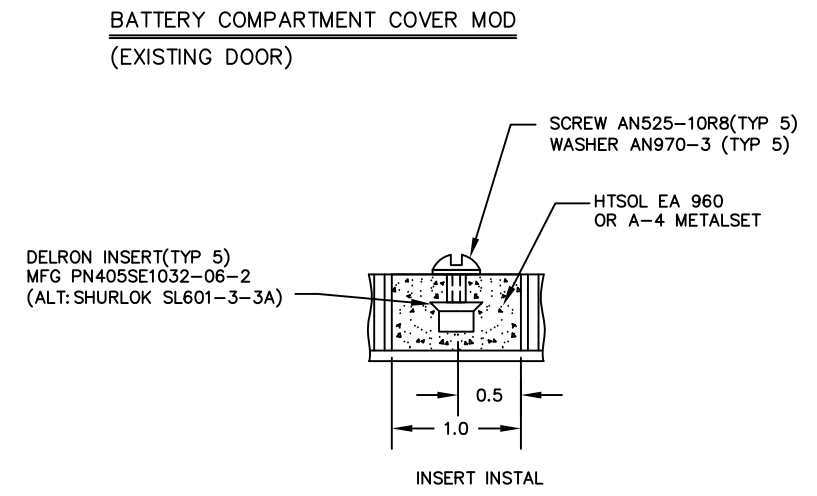
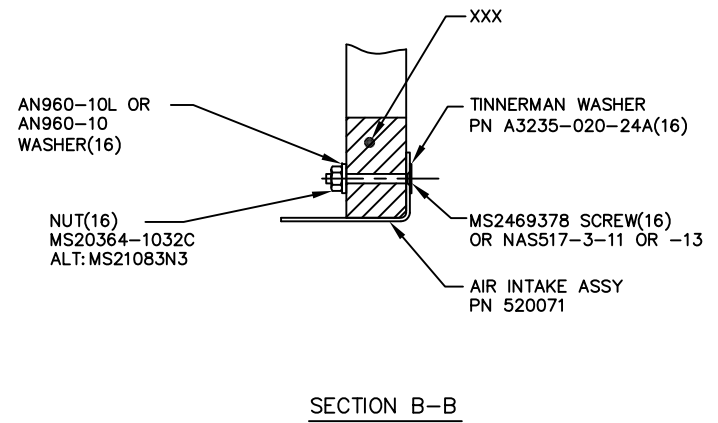
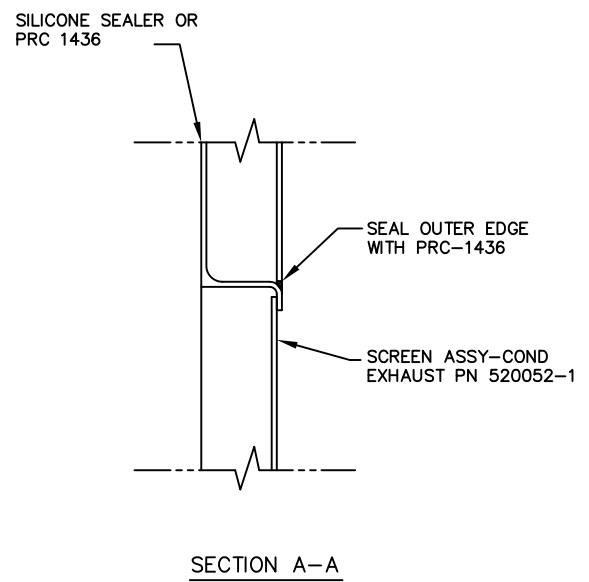
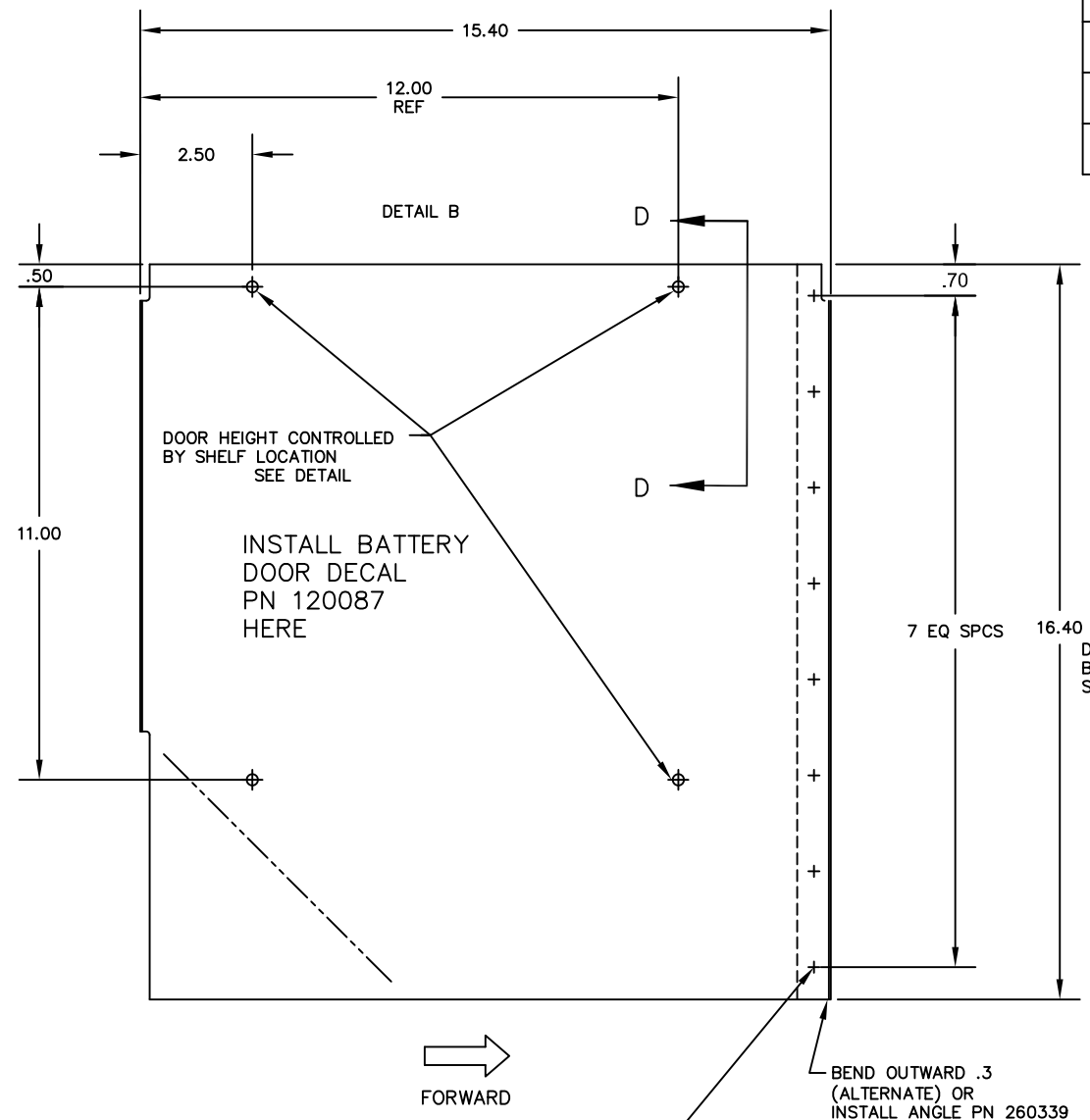
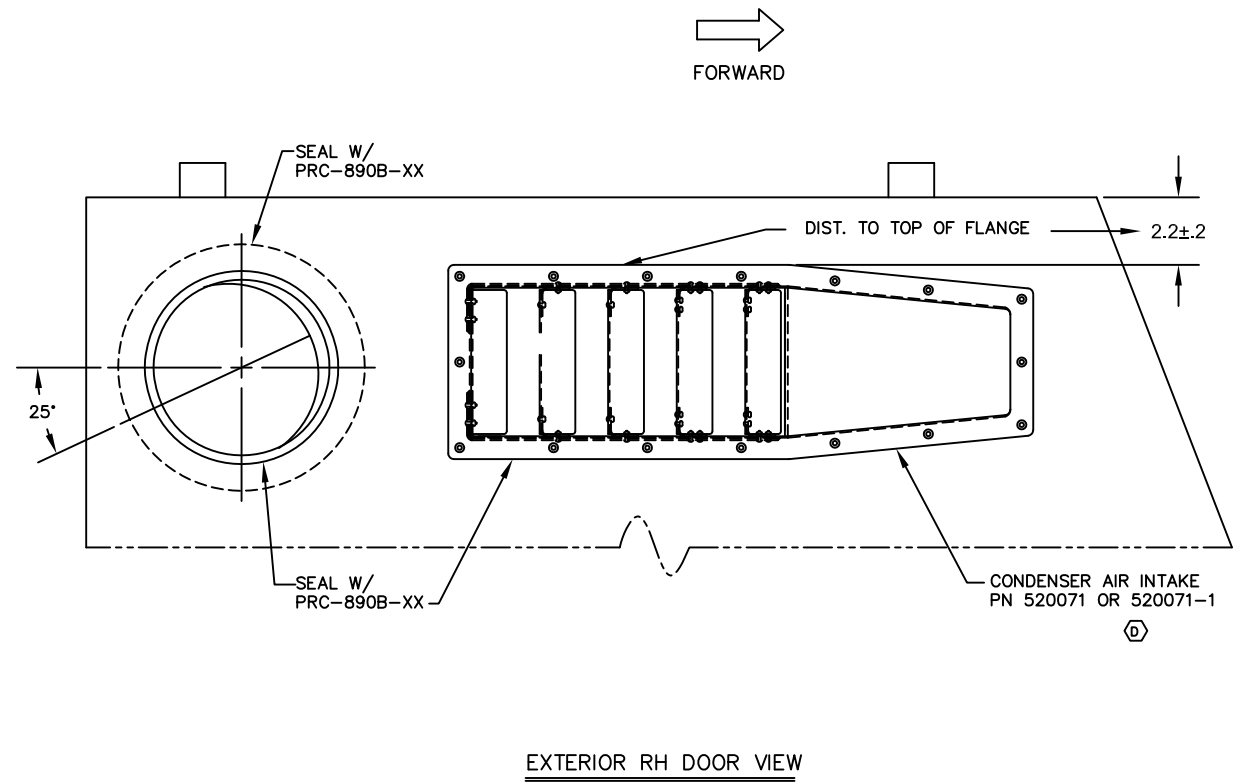
NOTE:

IF RIGHT SIDE SLIDING DOOR IS INSTALLED PN:520071-1 MUST BE INSTALLED FOR CLEARANCE. (E)(D)

(E)(D)

<b>INTEGRATED FLIGHT SYSTEMS</b>				
DATE 11/15/95	APPROVED BY	SHEET 1 OF 2	DRAWING SIZE	DRAWN BY K.A.
TITLE BAGGAGE COMPARTMENT MOD.				
APPLICATION AS 350		DRAWING NO. 8-2-AS350		

REV.	DESCRIPTION	DATE	APPV.
A	REVISED DRAWING NUMBER, WAS 8-AS 350; SHEET NUMBER WAS 1 OF 2.	08/16/00	
B	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG.	4/16/02	
C	REVISED TITLE BLOCK, REMOVED PAG.	06/15/03	
D	ADDED CONDENSER AIR INTAKE ASSEMBLY PN: 520071-1. REVISED NOTATION. REVISED TITLE BLOCK.	11/28/07	



NOTE A:

- REMOVE HINGE HARDWARE FROM INSIDE DOOR.
- LAY UP 2 LAYERS OF 100Z FIBERGLASS CLOTH WITH RESIN IN AREA SHOWN ON INSIDE ONLY ALLOW FIBERGLASS TO CURE
- REINSTALL HARDWARE

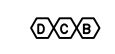
NOTE B:

- TRIM CONDENSER AIR INTAKE OPENING, FORWARD, UP & DOWN AS REQUIRED TO ACCEPT AIR INTAKE ASSY PN 520071 OR 520071-1.
- TRIM AIR INTAKE ASSY ON INSIDE TO FIT INSIDE CONDENSER AIR INLET OPENING

NOTE:

WHEN RIGHT SIDE SLIDING DOOR IS INSTALLED, PN 520071-1 MUST BE INSTALLED TO ENSURE CLEARANCE

INTEGRATED FLIGHT SYSTEMS				
DATE 04-16-02	APPROVED BY	SHEET 2 OF 2	DRAWING SIZE	DRAWN BY BT
SCALE NONE				
TITLE BAGGAGE COMPARTMENT MOD.				
APPLICATION AS 350	DRAWING NO. 8-2-AS350			





# Engineering Change Order

ECO No.  
0290

Drawing Number	Revision	Drawing Title
8-2-AS350	D	Baggage Compartment Mod.

Reason for Change: To restore original notations from hand drawing to C.A.D. drawing.

Description of Change:

Dimension

Was:

Is:

CS

16.40

DOOR HEIGHT CONTROLLED  
BY SHELF LOCATION  
SEE DETAIL

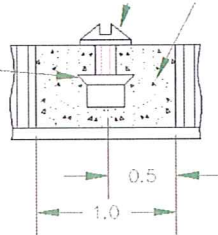
16.40 REF  
DOOR HEIGHT CONTROLLED  
BY SHELF LOCATION  
SEE DETAIL

Detail

Was:

Is:

DELRON INSERT(TYP 5)  
MFG PN405SE1032-06-2  
(ALT: SHURLOK SL601-3-3A)

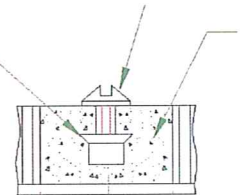


INSERT INSTAL

DETAIL C-C

DELRON INSERT(TYP 5)  
MFG PN 405 SE 1032-06-2  
(ALT: SHURLOK SL601-3-3A)

ALT: SECTION C-C  
USE SAME SCREW, NUT &  
WASHERS AS SHOWN IN SECTION  
A-A, (TYP. 5 PLC'S)



INSERT INSTAL

C-C

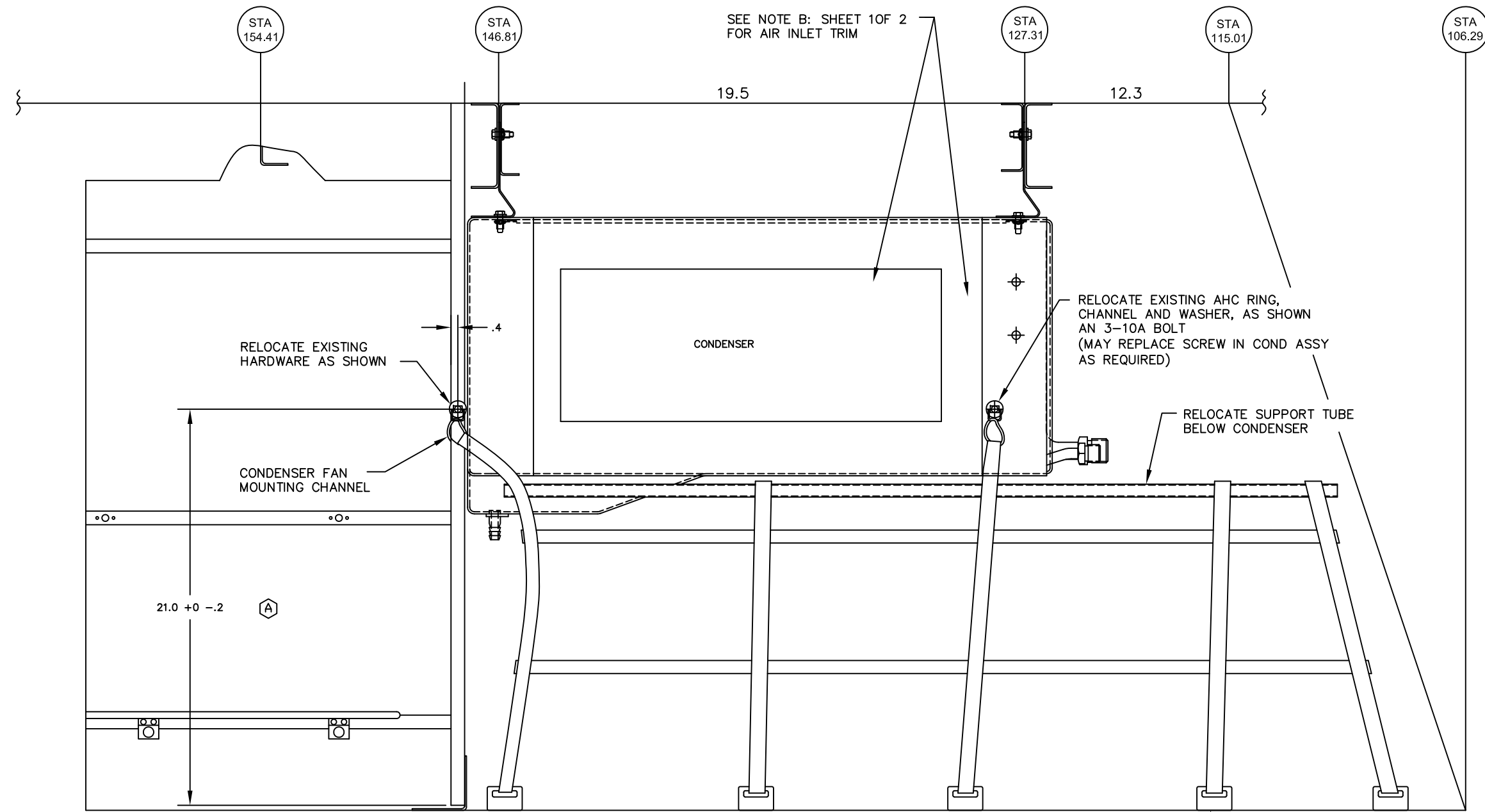
SLIDING DOOR  
N 520071-1  
FD

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eiferman</i>	ERB02	02/09/10	
<i>Scott [unclear]</i>	MRB06	02/09/10	
<i>Scott [unclear]</i>	MRB05	02/09/10	

REV.	DESCRIPTION	DATE	APPV.
A	WAS 22.4 ± .2 IS 21.0 +0 -.2 CHANGED ALL STA'S TITLE BLOCK WAS CAS, IS IFS	03/27/91	
B	REVISED DRAWING NUMBER WAS 8-AS 350; SHEET NUMBER WAS 2 OF 2	08/16/01	
C	COMPUTERIZED, REVISED TITLE BLOCK.	04/17/02	
D	REVISED TITLE BLOCK.	09/09/09	



SEE NOTE B: SHEET 10F 2  
FOR AIR INLET TRIM

RELOCATE EXISTING AHC RING,  
CHANNEL AND WASHER, AS SHOWN  
AN 3-10A BOLT  
(MAY REPLACE SCREW IN COND ASSY  
AS REQUIRED)

RELOCATE EXISTING  
HARDWARE AS SHOWN

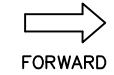
CONDENSER FAN  
MOUNTING CHANNEL

CONDENSER

RELOCATE SUPPORT TUBE  
BELOW CONDENSER

21.0 +0 -.2

A



NOTE:  
SHORT CARGO NET TO ACCOMODATE  
A/C INSTALL BY ELIMINATING LOWER  
MOST HORIZONTAL STRAP AND  
RELOCATING HARDWARE, AS SHOWN

CARGO NET MODIFICATION  
AS 350  
RIGHT SIDE LOOKING INBOARD

INTEGRATED FLIGHT SYSTEMS

DATE: 05/30/85	APPROVED BY:	SHEET:	SIZE:	DRAWN BY:
SCALE: 1/8		1 OF 1	D	BRP

TITLE:  
**BAGGAGE COMPARTMENT MOD**

APPLICATION: AS350	DRAWING NUMBER: 8-11-AS350
-----------------------	-------------------------------



## **Step 7**

# **Installation of Forward Evaporator**

Integrated Flight Systems  
 INSTALLATION OF FORWARD EVAPORATOR – AS350 Air Conditioning

## Installation of Forward Evaporator

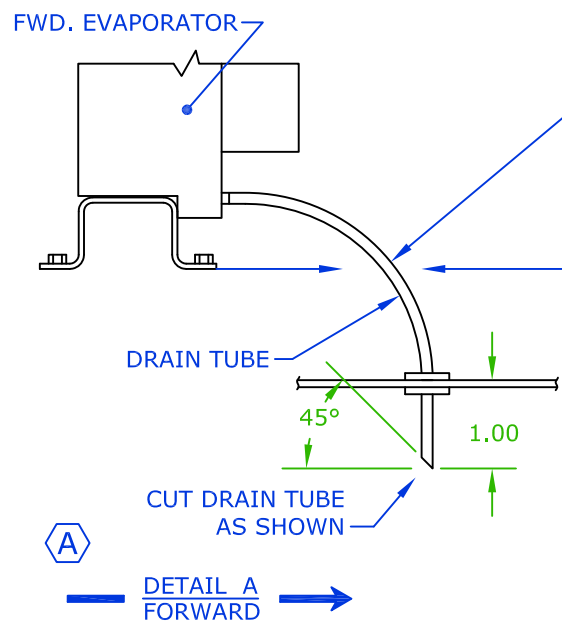
STEP	PROCEDURE	MECH	INSP
7.1	Relocate NR digital indicator. Higher 12” min., and aft of pitot static lines, using assisting hardware. See note on drawing 4-21-AS350.		
7.2	Relocate warning horn up and forward as required.		
7.3	Position forward evaporator assembly, P/N 560025-O, as shown in drawing 4-21-AS350. Mark rivets to be drilled out and existing bolts that will be used to mount evaporator. Also mark location on inboard forward mount hole on floor as shown in note on drawing 4-21-AS350.		
7.4	Remove and drill out rivets and marked hole. Install nut plate on evaporator.		
7.5	Position doubler P/N 260373-1 as shown in drawing 4-21-AS350, drill and install as shown. Cut out center. Line hole with Caterpillar, bond to edge of metal.		
7.6	Do not install evaporator until Freon lines are connected.		
7.7	Install drain line from the evaporator out through the cabin floor. The existing hole normally found in the aircraft skin (right forward side) can be utilized. Cutting of the aircraft skin will not usually be required. “IF” no vacant hole is found, locate and drill a hole according to the detail “A” on drawing 4-21-AS350. Secure drain line and cut off at a negative angle.		
7.8	When connecting Freon lines, make sure you install sensing bulb on #10 line. Wrap cork tape around fittings. See drawing 4-21 AS350 “Expansion Valve Detail”. After all lines are attached install Fwd Evaporator with hardware per drawing 4-21-AS350.		
7.9	For mounting forward outlet assemblies, make a template marking the shape of the shape of the housing assembly and 3 mount holes. Position template on glare shield as shown in drawing 5-1-AS350. Drill hole and install with hardware as shown, P/N 500010-1 and P/N 500011-1.		



Integrated Flight Systems  
INSTALLATION OF FORWARD EVAPORATOR – AS350 Air Conditioning

**Air Distribution**

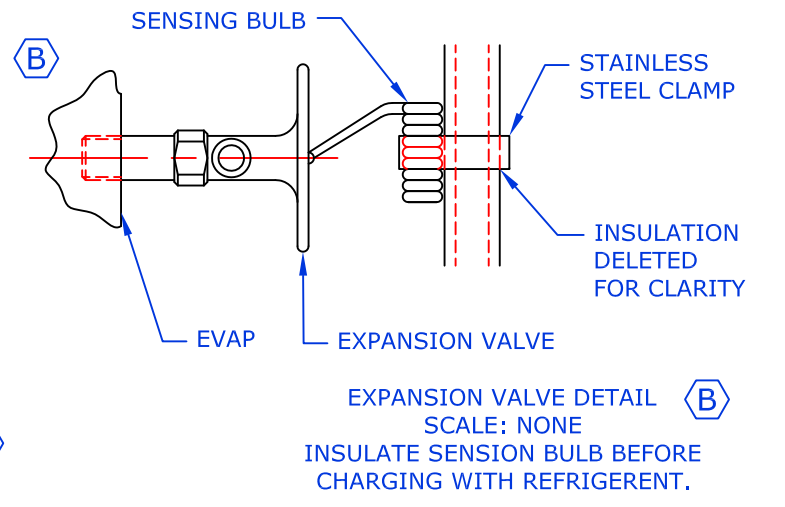
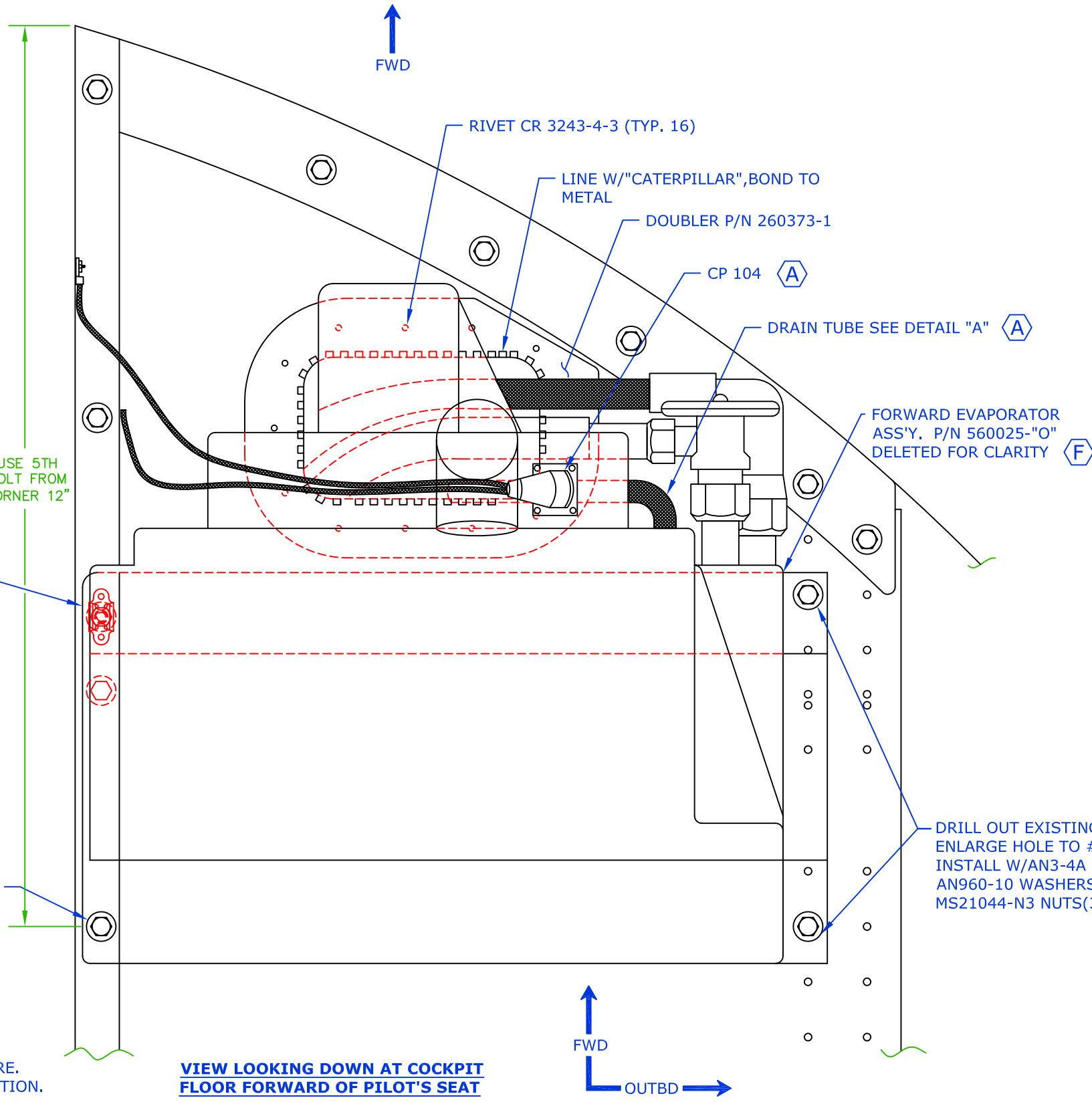
STEP	PROCEDURE	MECH	INSP
7.9 Cont.	<p>After installation of air outlet assemblies, attach 2 ½” flex hoses from the assemblies to the evaporator. The hose to the right hand air outlet is very straight forward.</p> <p>The installation of the left side flexible air hose can vary according to the avionics package installed. In some aircraft, it is quite simple to route the hose aft of the radio stack through existing holes in the vertical sheet metal aircraft parts. In other aircraft, due to the type of radios installed, it will be necessary to cut a round hole in the vertical aircraft sheet metal components and route the flex hose through this hole after lining the edges with Caterpillar for protection against chafing of the hose.</p>		



NOTE:  
IF EXISTING GROMMET IS NOT AVAILABLE, INSTALL NEW GROMMET MS35489-135 2" AFT OF EXISTING FOR A/C DRAIN.

NOTE:  
RELOCATE WARNING HORN UP & FORWARD, AS REQUIRED

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	05/27/91	REPOSITIONED EVAPORATOR AND LINES. ADDED DETAIL "A" AND NOTES. TITLE BLOCK WAS "CAS" IS NOW "IFS". WAS 2 OF 2, IS NOW 3 OF 3	MD	
B	11/15/99	ADDED NUTPLATE AND NOTE.	JHK	
C	01/25/99	SEE NR NOTE.	JHK	
D	08/16/00	REVISED DRAWING NUMBER, WAS 4-AS350 SHEET 3 OF 3. IS NOW 4-21-AS350	JHK	
E	04/12/02	COMPUTERIZED, CHANGED TITLE BLOCK		JDB
F	01/03/07	CORRECTED FWD EVAP PN: 560025-1-O TO 560025-O. REVISED TITLE BLOCK.	IFS	JTYE



**EXTREMELY IMPORTANT !!**

FAILURE TO SECURE EXPANSION VALVE SENSING BULB, TIGHTLY, TO THE RETURN LINE HOSE FITTING (#10) WITH A STAINLESS STEEL CLAMP (AND INSULATE SENSING BULB & LINE) WILL DRAMATICALLY DECREASE THE PERFORMANCE OF THE AFT EVAPORATOR (NOT FORWARD)

**INTEGRATED**  
Flight Systems

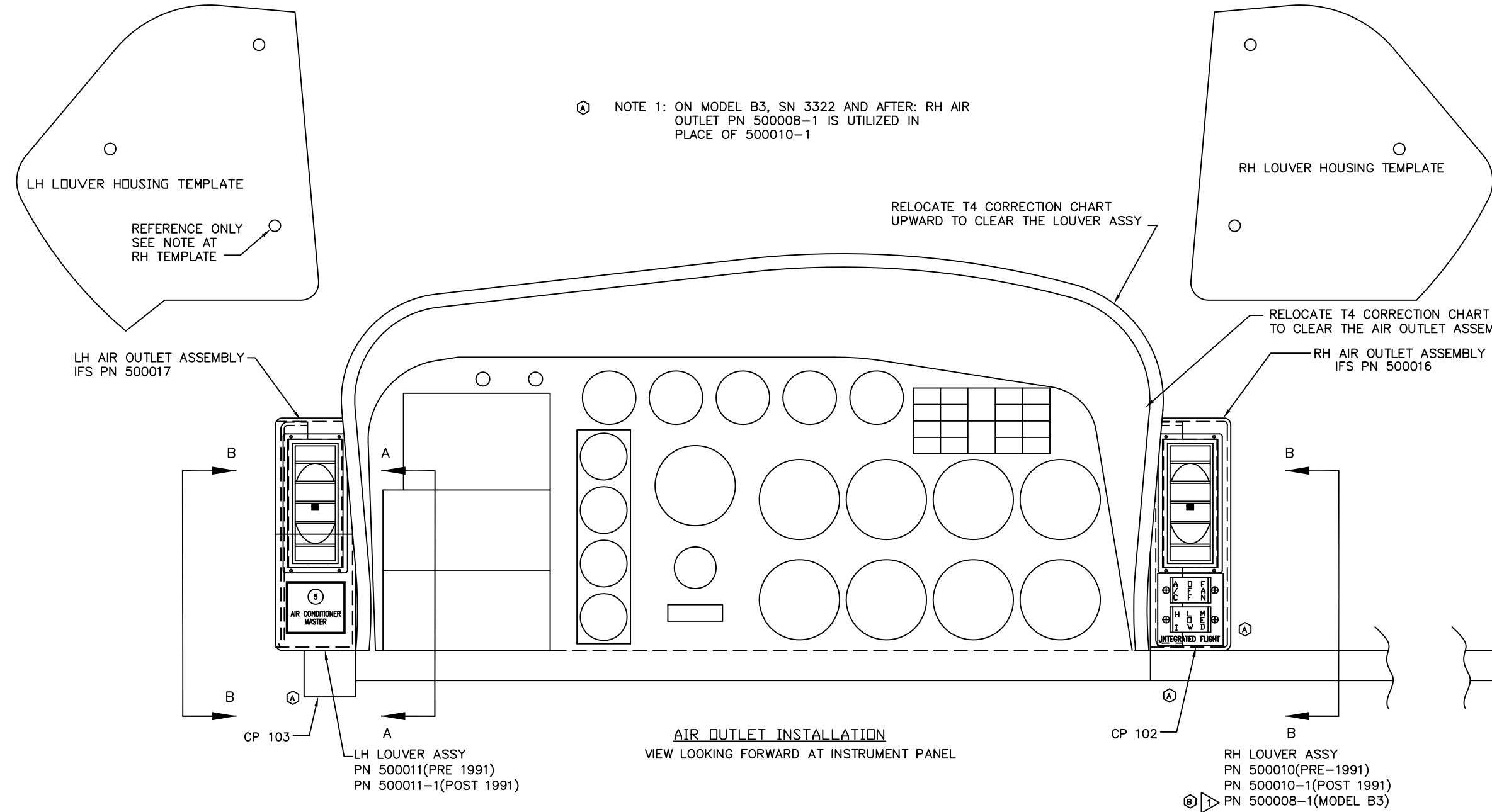
TITLE: FORWARD EVAPORATOR INSTALL

DRAWN BY: JEL	DATE: 06/20/85	REV F	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 4-21-AS350	

NOTE: B3 ONLY RELOCATE NR DIGITAL INDICATOR MOUNTED NEAR FLOOR, ON RIGHT SIDE OF CONSOLE PANEL UP 12.0" MIN. FROM FLOOR AND AFT OF PITOT STATIC LINES USING EXISTING HARDWARE. REROUTE NR WIRE TO ACCOMODATE NEW NR LOCATION.

REV.	DESCRIPTION	DATE	APPV.	D
A	ADDED CP102 AND C0103 INTEGRATED FLIGHT WAS CONSOLIDATED AIR TITLE BLOCK WAS CAS, IS IFS	03/27/91		
B	REVISED DRAWING NUMBER, WAS 5-AS 350; SHEET NUMBER WAS 1 OF 3, ADDED NOTE	08/16/00		
C	COMPUTERIZED, REVISED TITLE BLOCK.	04/12/02		
D	ADDED CONFIGURATION NOTATION FOR CLARITY. REVISED TITLE BLOCK.	12/29/08		

- REFERENCE ONLY(3 PLCS)
- 1 COPY TEMPLATE
  - 2 TAPE TEMPLATE INSIDE ACTUAL PART(BOTH LH & RH)
  - 3 LOCATE HOLES IN COPY TO ACTUAL HOLES IN CLIP NUT, USE ACTUAL HOLES IN PART TO LOCATE & MOUNT COMPONENTS



NOTE 1: ON MODEL B3, SN 3322 AND AFTER: RH AIR OUTLET PN 500008-1 IS UTILIZED IN PLACE OF 500010-1

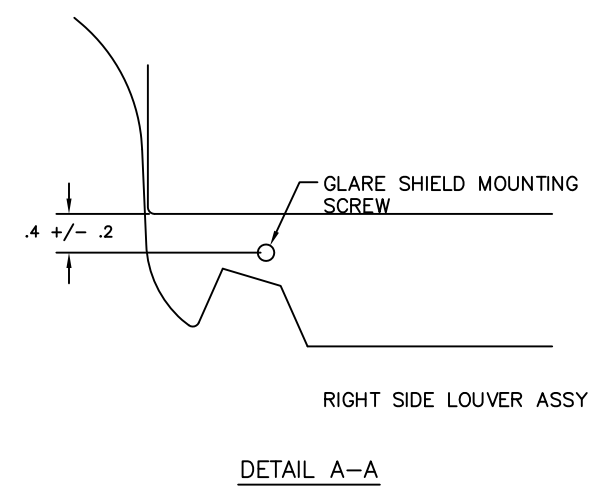
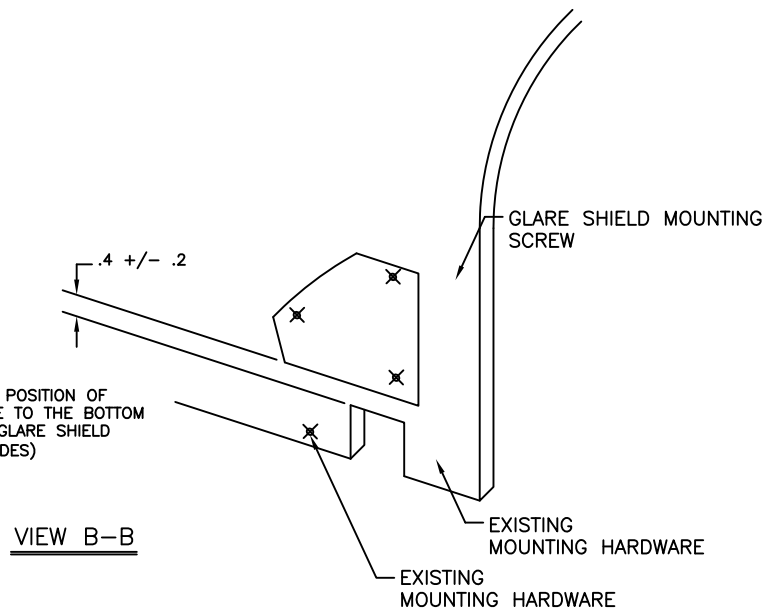
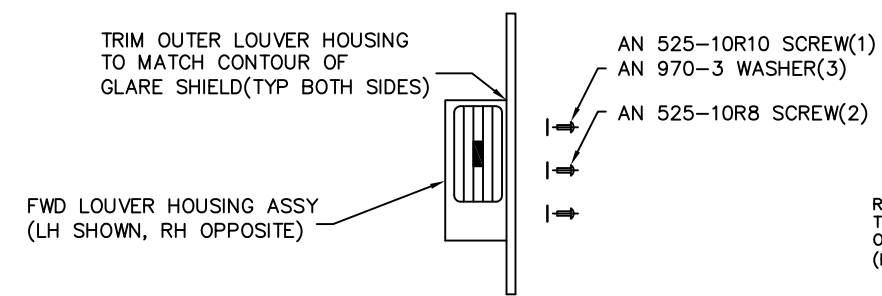
RELOCATE T4 CORRECTION CHART UPWARD TO CLEAR THE LOUVER ASSY

RELOCATE T4 CORRECTION CHART UPWARD TO CLEAR THE AIR OUTLET ASSEMBLY.

**AIR OUTLET INSTALLATION**  
VIEW LOOKING FORWARD AT INSTRUMENT PANEL

LH LOUVER ASSY  
PN 500011(PRE 1991)  
PN 500011-1(POST 1991)

RH LOUVER ASSY  
PN 500010(PRE-1991)  
PN 500010-1(POST 1991)  
PN 500008-1(MODEL B3)



UTILIZED WITH:  
CORPORATE VERSION

<b>INTEGRATED FLIGHT SYSTEMS</b>				
DATE: 04/12/02	APPROVED BY:	SHEET: 1 OF 1	SIZE: D	DRAWN BY: BT
SCALE: 1/8				
TITLE: <b>AIR DISTRIBUTION</b>				
APPLICATION: AS350			DRAWING NUMBER: 5-1-AS350	



REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 5-AS350, SHEET NO WAS 2 OF 3		-
B	04/12/02	COMPUTERIZED		-
C	01/03/07	ADJUSTED DWG FOR MULTIPLE CONFIGURATIONS, CHANGED TITLE BLOCK		JTYE
D	02/26/09	ADDED VIEW C-C AND NOTE FOR INSTALLATION AIR DUCT CLOSURE.		DWE

AIR DUCT CLOSURE ASSY PN: 510092  
REMOVE AND DISCARD EXISTING FRESH AIR INLET, INSTALL CLOSURE ASSY USING EXISTING HARDWARE

TRIM ANGLE IF NECESSARY TO FIT PN: 510092.

VIEW C-C  
LOOKING FWD

TAP EXISTING AIR OUTLET MOUNTS TO 8-32 UNF.  
INSTALL WEMAC USING 4 EA. MS24693-S55  
SNAP ON DECOR RING PN: 7194-1

TRIM HEADLINER AND CABIN STRUCTURE TO FIT WEMAC.

ROTATE NEW WEMAC 90°  
MATCH DRILL NEW HOLES (CSK) IN WEMAC TO MATCH AIRFRAME

WEMAC No. 2368-503 (CLEAR)  
NOTE: APPLIES TO AIRCRAFT W. SMALL ADH AIR OUTLETS.

VIEW B-B

HEADLINER

REPLACE EXISTING AIR OUTLETS WITH WEMAC NO 2368-503 (4)

NOTE: APPLIES TO SN 1302 & DOWN ONLY

NOT REQUIRED IF LATE MODEL ADH AIR OUTLETS ARE IN PLACE

VIEW A-A

SWITCH ASSY  
PN: 540089

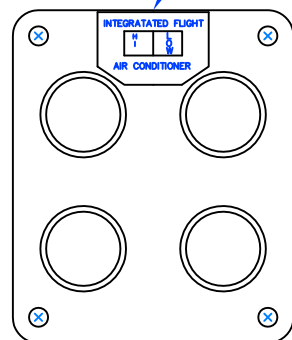
BACKING PLATE  
PN: 260351

TRIM PLACARD TO FIT AS REQUIRED

ROUTE 2-1/2" FLEX DUCT AS REQUIRED PER AIR OUTLET CONFIGURATION.

NOTE: IF REQUIRED CUT 3" HOLE IN TRAY TO ALLOW FLEX DUCT TO CONNECT TO L.H. AIR OUTLET. INSTALL BLACK EDGE TRIM AROUND HOLE.

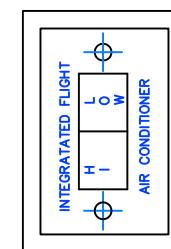
FWD



DETAIL C

VIEW LOOKING UP AT SWITCH LOCATION, 1995 AND PRIOR.

NOTE: AFT SWITCH INSTALLATION NOT APPLICABLE TO TOUR 1 CONFIGURATION.



DETAIL C

LOCATE AFT & LEFT OR RIGHT OF EXISTING AIR OUTLETS 1995 & ON



TITLE: AIR DISTRIBUTION

DRAWN BY: BT	DATE: 06/20/85	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 5-12-AS350	

## **Step 8**

# **Installation of Compressor**

## Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.0	<b>NOTE: MUST BE PERFORMED IN ACCORDANCE WITH CURRENT EUROCOPTER TECHNICAL DATA.</b>		
8.1	Place a support on the transmission deck to support the engine drive while the shaft is disconnected for belt installation.		
8.2	Remove the cotter pins from the four pins holding the “Gimble Ring” at the Thomas coupling.		
8.3	Slide the “Gimble Ring” aft to gain access to the Thomas coupling.		
8.4	Remove the 6 bolts and Thomas coupling connecting the drive shaft and shift slightly aft.		
8.5	Install two (2) Compressor Drive belts		
8.6	Reassemble the Thomas coupling per <b>AEC Specifications. Torque and Safety Coupling!! Torque Mark all bolts.</b>		
8.7	Secure 1 belt to the outside of the drive shaft cover for a spare and slip one through the housing and over the drive pulley.  <b>NOTE: THE CURRENT BELT P/N 060018-1 HAS A SPECIFIC DIRECTION OF ROTATION. (See figure 1, page 3)</b>  <b>NOTE: THE CURRENT BELT P/N 060005 HAS NO SPECIFIC DIRECTION OF ROTATION.</b>		

Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – AS350 Air Conditioning

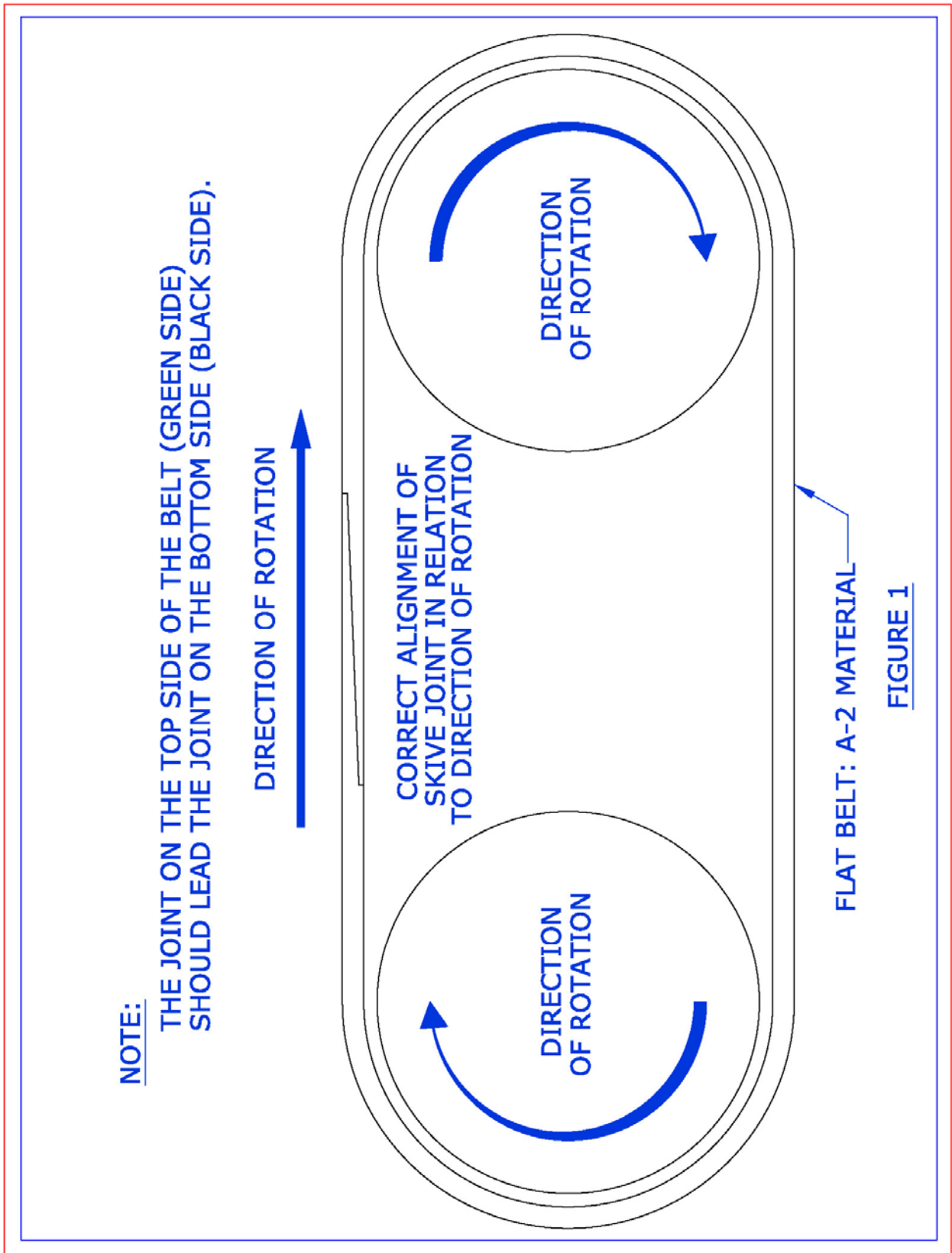


FIGURE 1

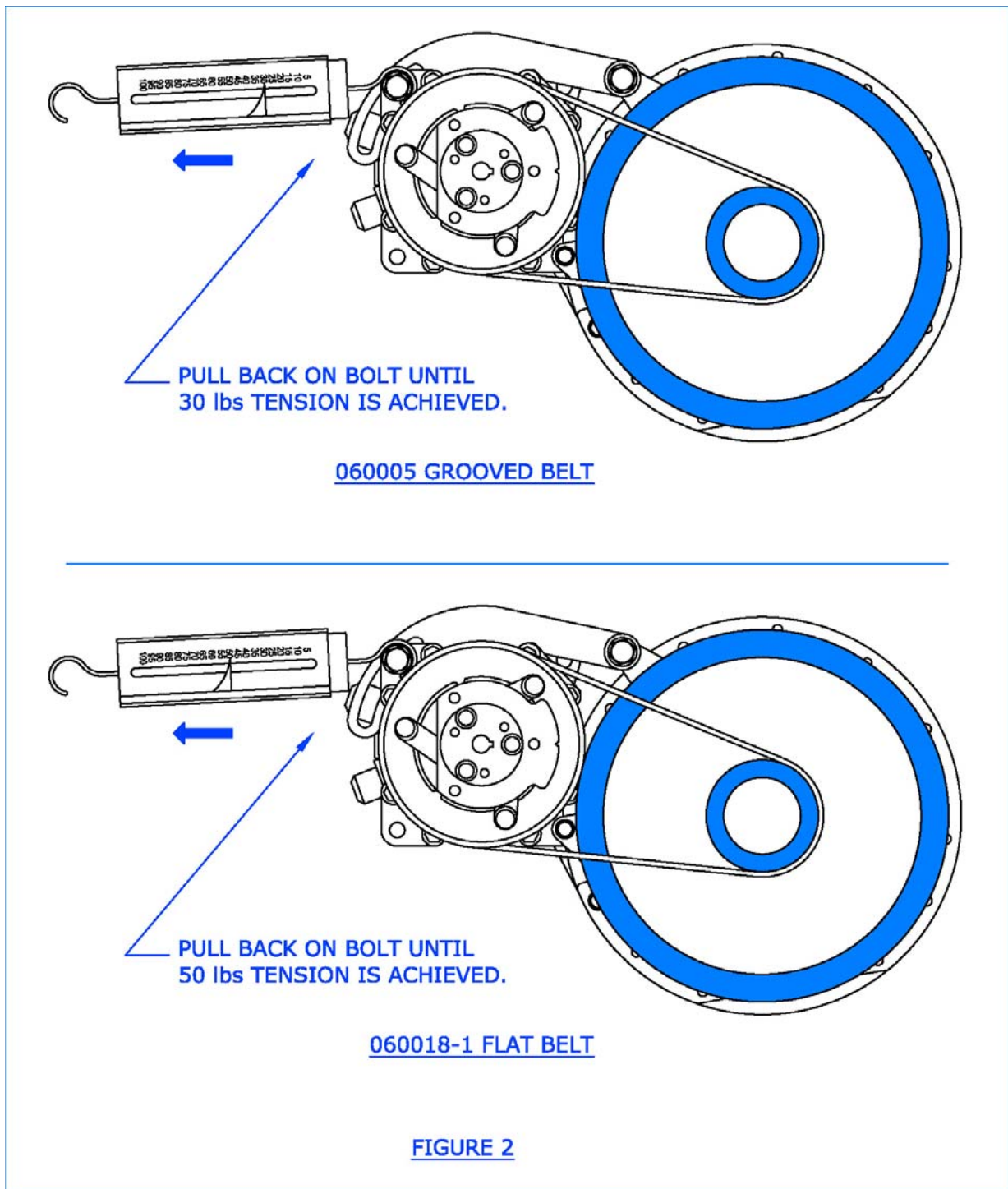
Integrated Flight Systems  
 INSTALLATION OF COMPRESSOR – AS350 Air Conditioning

## Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.8	Install the “Gimble Ring” pins and cotter pins. Remove supports.		
8.9	Installation of Bracket Kit P/N IFS-350/130-507 in accordance with: 6-2-AS350, 6-12-AS350 and 6-21-AS350 or 6-3-AS350, 6-13-AS350 and 6-22-AS350.		
8.10	Install the Forward Compressor Bracket, Compressor Standoffs and Compressor per Drawings:  6-2-AS350, 6-12-AS350 and 6-21-AS350 or 6-3-AS350, 6-13-AS350 and 6-22-AS350		
8.11	Install the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. Tighten the lower forward mounting bolt.		
8.12	This tension may be performed by either pull scale. (See Belt Tension Recommendation)		
8.13	50/30 lbs pull tension at tension adjustment bolt should provide adequate belt tension. (See figure 2, page 5)		
<p><b><u>BELT TENSION RECOMMENDATION:</u></b></p> <p><b>FLAT BELT IFS P/N 060018-1 _____ TENSION TO 50lbs</b></p> <p><b>GROOVED BELT IFS P/N 060005 _____ TENSION TO 30lbs</b></p>			



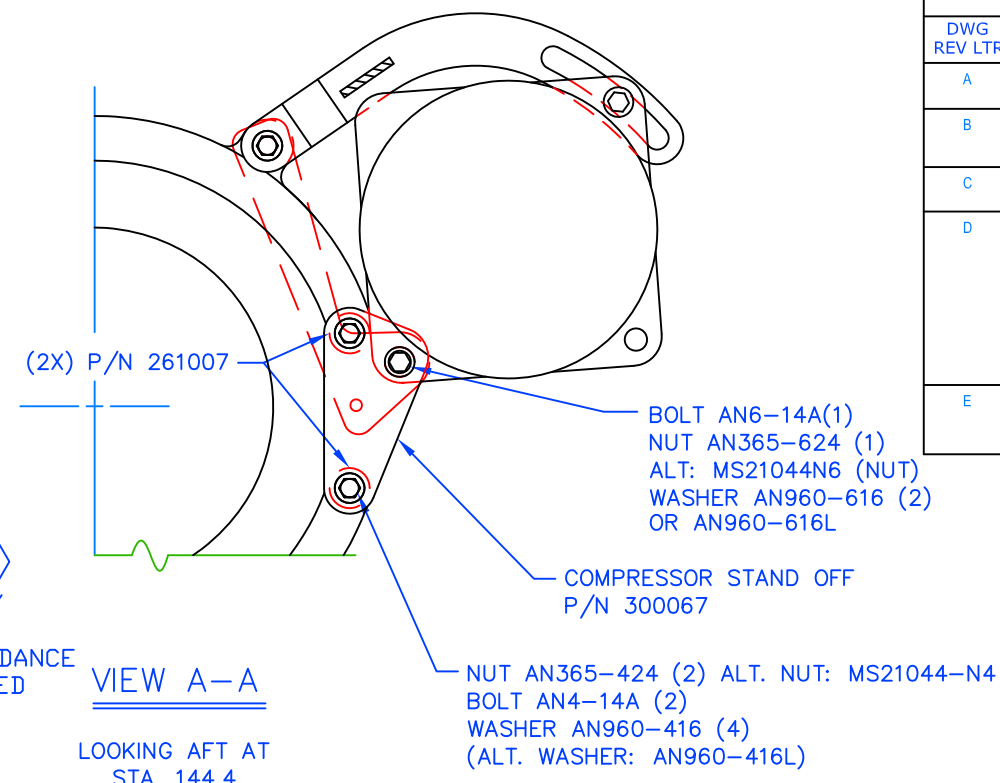
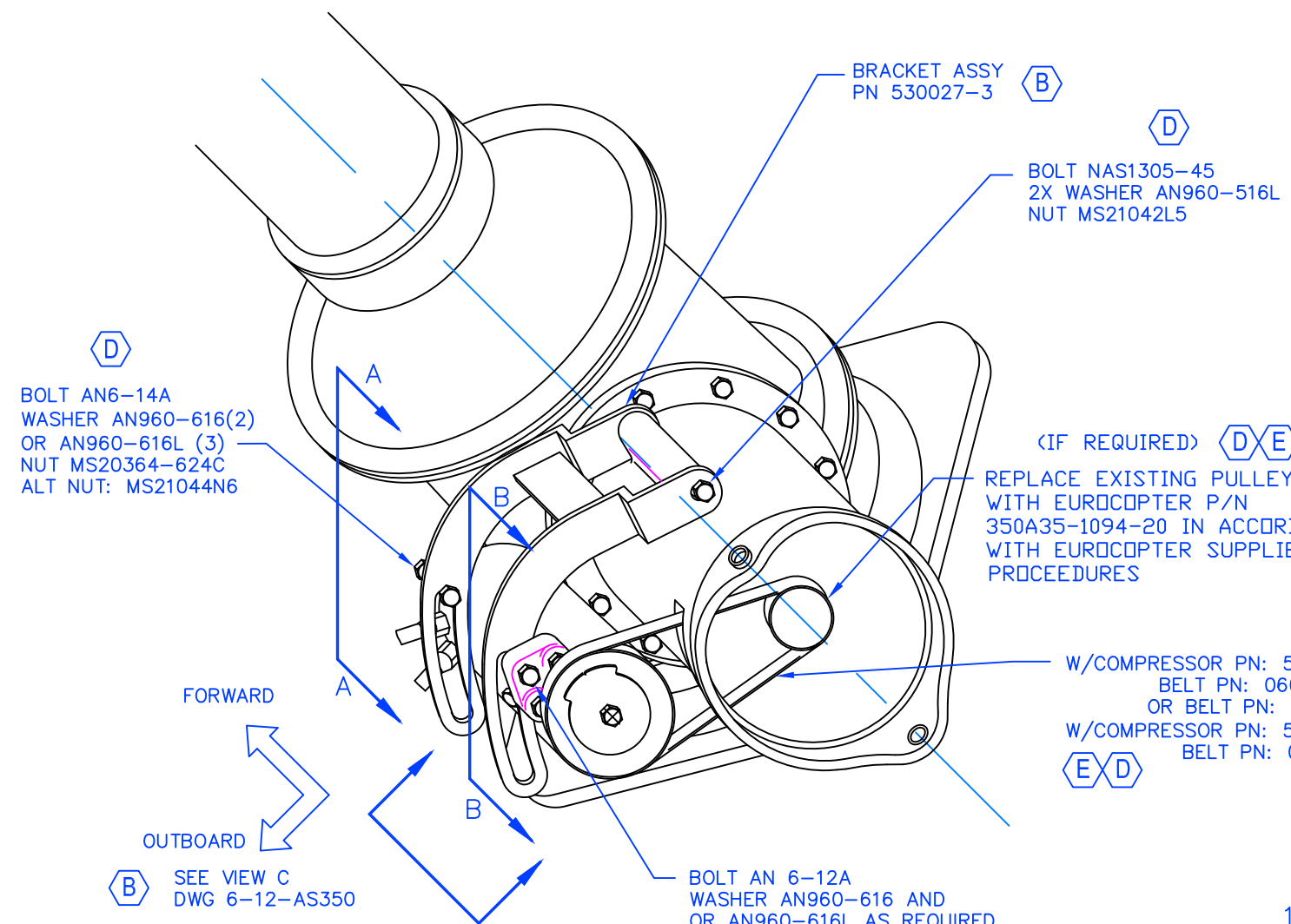
Integrated Flight Systems  
INSTALLATION OF COMPRESSOR – AS350 Air Conditioning



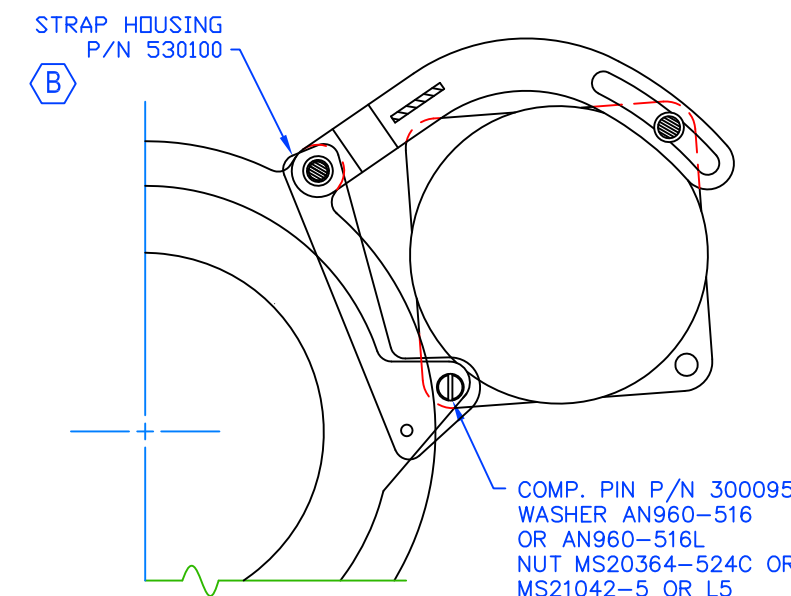
REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 6-AS350 SHEET NUMBER WAS 1 OF 3.	-	-
B	04/15/02	COMPUTERIZED, CHANGED TITLE BLOCK TO PAG. ADDED VIEW OF P/N 530100. CHANGED 530027-1 TO 530027-3.	-	-
C	07/15/02	CHANGED PN: 261008 TO 2X PN: 261007, REVISED TITLE BLOCK.	-	-
D	01/30/06	CHANGED BOLT, NAS1305-44 TO NAS1305-45 FOR EXTRA LENGTH. ADDED BELT PN 060018-1 TO ADDRESS LENGTH ISSUE. CHANGED NO. OF WASHERS. ADDED "AS REQUIRED" TO WASHER NOTATION. ADDED COMPRESSOR PN: 590008-1 ADDED BELTS PN's 060005 AND 060006 FOR ALT. COMPRESSOR INSTALLATION. ADDED NOTATION TO CHANGE PULLEY ON TAIL ROTOR DRIVE SHAFT. REVISED APPLICABLE NOTATION.	-	JTYE
E	06/30/08	AEC PN: 350A351094 IS NOW PN: 350A35-1094-20. CORRECTED TO MATCH AEC IPC. REMOVED BELT PN: 060006. CORRECTED NOTE 2 TO MATCH. REVISED TITLE BLOCK.	-	JTYE

ECO# 0260



UTILIZED WITH:  
1. AS 350 WITH OLDER TRANSMISSION HOUSING DESIGN.



VIEW B-B  
LOOKING AFT AT STA. 151.2

- (D) 1) THE ABOVE TWO (2) KITS UTILIZE THE SANDEN SD-507 COMPRESSOR IFS PN: 590008 OR COMPRESSOR PN: 590008-1 IN LIEU OF THE SANDEN SD-505 IFS P/N: 590001-1-"O". AN INCREASE OF 2 CUBIC INCHES IN DISPLACEMENT IS ACHIEVED. BOTH UNITS HAVE THE SAME "FOOT PRINT". HOWEVER, THE SD-507 IS SLIGHTLY LONGER.
- (E)(D) 2) THE SAME BELT P/N's: 060018 OR 060018-1 ARE UTILIZED IN THIS INSTALLATION WITH COMPRESSOR PN: 590008. BELT PN's: 060005 WILL BE UTILIZED WITH COMPRESSOR PN: 590008-1.
- 3) THE SAME COMPRESSOR MOUNT ASSEMBLY P/N: 530027-3, PIN P/N: 300095, AND COMPRESSOR STAND OFF P/N: 300067 ARE UTILIZED IN THIS INSTALLATIONS.
- 4) THE AFT, INBOARD COMPRESSOR MOUNTING POINT IS RELOCATED FORWARD BY PLACING TWO ALUMINUM "BUSHINGS", P/N: 2610007 BETWEEN THE "STAND OFF" P/N: 300067 AND THE TRANSMISSION HOUSING. TWO (2) EACH AN4-15A BOLTS MUST BE UTILIZED IN LIEU OF THE AN4-11A FORMERLY USED.
- 6) THE FORWARD, UPPER INBOARD COMPRESSOR EAR IS ALIGNED WITH THE COMPRESSOR UNIT ASSEMBLY BY PLACING A "BUSHING", P/N 261008 BETWEEN THE AFT SIDE OF THE EAR AND THE MOUNT ASSEMBLY.
- 7) AN6-12A BOLTS ARE USED TO ENSURE BELT TENSION IN THE SAME MANNER AS WITH THE SD-505 COMPRESSOR. A MINIMUM THREAD PROTRUSION ON THE FORWARD UPPER BOLT REQUIRES THAT A STEEL SELF LOCKING NUT P/N: MS20364-624C MUST BE UTILIZED.



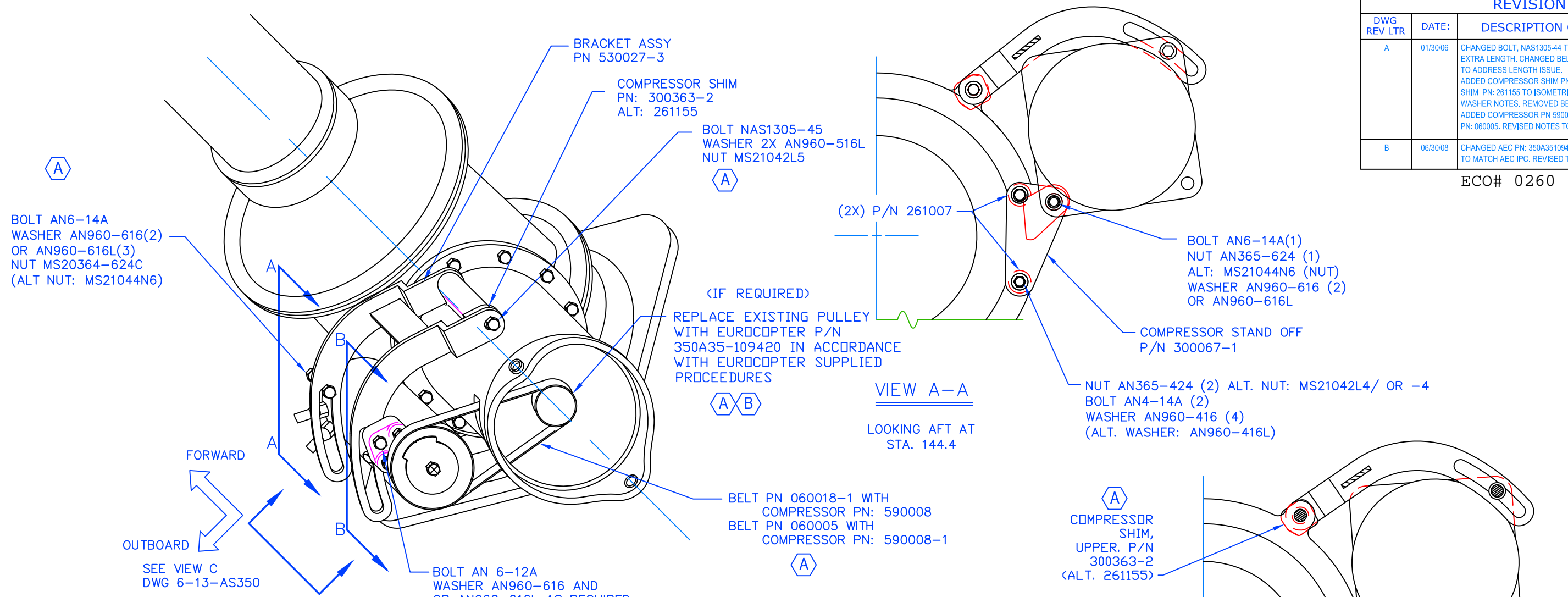
(E)

TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: BRP	DATE: 11/10/96	REV E	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-2-AS350	

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED BOLT, NAS1305-44 TO NAS1305-45 FOR EXTRA LENGTH. CHANGED BELT TO 060018-1 TO ADDRESS LENGTH ISSUE. ADDED COMPRESSOR SHIM PN: 300363-2 AND SHIM PN: 261155 TO ISOMETRIC VIEW. CHANGED WASHER NOTES, REMOVED BEVELED EDGE NOTE. ADDED COMPRESSOR PN 590008-1. ADDED BELT PN: 060005. REVISED NOTES TO MATCH.		JTYE
B	06/30/08	CHANGED AEC PN: 350A351094 TO PN: 350A35-1094-20 TO MATCH AEC IPC. REVISED TITLE BLOCK.		JTYE

ECO# 0260

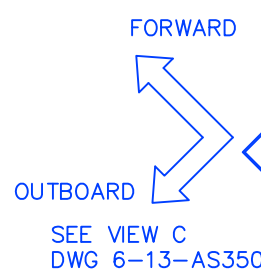


(IF REQUIRED)  
REPLACE EXISTING PULLEY WITH EUROCOPTER P/N 350A35-109420 IN ACCORDANCE WITH EUROCOPTER SUPPLIED PROCEDURES

VIEW A-A  
LOOKING AFT AT STA. 144.4

VIEW B-B  
LOOKING AFT AT STA. 151.2

UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



INSTALLATION INSTRUCTIONS

KIT P/N: 350-00-011HP OR -031HP (HIGH PERFORMANCE)

- 1) THE ABOVE TWO (2) KITS UTILIZE THE SANDEN SD-507 IFS COMPRESSOR P/N: 590008 OR IFS COMPRESSOR PN: 590008-1 IN LIEU OF THE SANDEN SD-505 IFS P/N: 590001-1-"O". AN INCREASE OF 2 CUBIC INCHES IN DISPLACEMENT IS ACHIEVED. BOTH UNITS HAVE THE SAME "FOOT PRINT". HOWEVER, THE SD-507 IS SLIGHTLY LONGER.
- 2) ONLY BELT P/N: 060018-1 MAY BE UTILIZED W/PN 590008 IN THIS INSTALLATION. ONLY BELT PN: 060005 MAY BE UTILIZED W/PN 590008-1 IN THIS INSTALLATION.
- 3) THE SAME COMPRESSOR MOUNT ASSEMBLY P/N: 530027-3, PIN P/N: 300095, AND COMPRESSOR STAND OFF P/N: 300067-1 ARE UTILIZED IN ALL INSTALLATIONS.
- 4) THE AFT, INBOARD COMPRESSOR MOUNTING POINT IS RELOCATED FORWARD BY PLACING TWO ALUMINUM "BUSHINGS", P/N: 2610007 BETWEEN THE "STAND OFF" P/N: 300067-1 AND THE TRANSMISSION HOUSING. TWO (2) EACH AN4-15A BOLTS MUST BE UTILIZED IN LIEU OF THE AN4-11A FORMERLY USED.
- 6) THE FORWARD, UPPER INBOARD COMPRESSOR EAR IS ALIGNED WITH THE COMPRESSOR UNIT ASSEMBLY BY PLACING A "BUSHING", P/N 261008 BETWEEN THE AFT SIDE OF THE EAR AND THE MOUNT ASSEMBLY.
- 7) AN6-12A BOLTS ARE USED TO ENSURE BELT TENSION IN THE SAME MANNER AS WITH THE SD-505 COMPRESSOR. A MINIMUM THREAD PROTRUSION ON THE FORWARD UPPER BOLT REQUIRES THAT A STEEL SELF LOCKING NUT P/N: MS20364-624C MUST BE UTILIZED.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 11/10/96	REV B	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-3-AS350	





## Engineering Change Order

ECO No.  
0260

Drawing Number	Revision	Drawing Title
6-2-AS350	E	Compressor Installation
6-3-AS350	B	Compressor Installation

**Reason for Change:** To add an alternate nut (MS21042-6/L6) for keeping minimum thread protrusion. To correct a few errors in "Installation Instructions" notes (see below for corrections) on both drawings.

**Description of Change:** In "Installation Instructions" notes, made the following spelling corrections:

Drawing 6-2-AS350 only, Was: (High Perfamce), Is: (High Performance)

Note 4), Was: "P/N: 2610007", Is: "P/N: 261007"

Note 6), Was: "Alighned", Is: "Aligned"

Note 7), Was: "Minumum", Is: "Minimum"

Note 7), Was: "P/N: MS20364-624C must be utilized", Is: "P/N: MS20364-624C or alternate must be utilized"

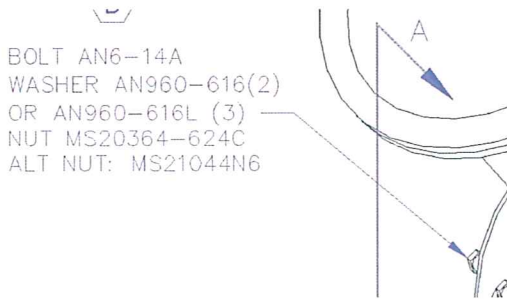
Note 1), Removed: "Sanden SD-507", "Sanden SD-505"

Note 1), Was: "However, the SD-507 is slightly longer.", Is: "However, the 590008 & 590008-1 is slightly longer."

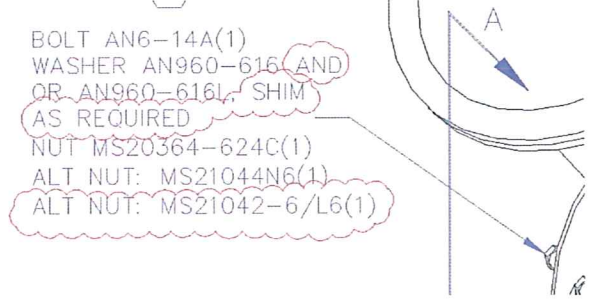
Added the quantity of (1) on all bolt & nut callouts to keep consistency.

Removed quantity (X) on all washer callouts and added "And or" & "Shim As Required" for washers (used for alignment of belt).

Was:



Is:



Was:



Is:



Was:



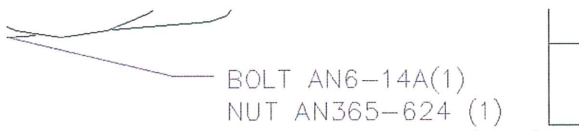
BOLT AN 6-12A  
WASHER AN960-616 AND  
OR AN960-616L AS REQUIRED  
NUT MS20364-624C  
(ALTERNATE)  
NUT MS21044N6 D

Is:



BOLT AN 6-12A(1)  
WASHER AN960-616 AND  
OR AN960-616L, SHIM AS REQUIRED  
NUT MS20364-624C(1)  
ALT NUT: MS21044N6(1) D  
ALT NUT: MS21042-6/L6(1)

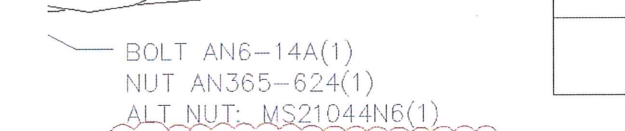
Was:



BOLT AN6-14A(1)  
NUT AN365-624 (1)  
ALT: MS21044N6 (NUT)  
WASHER AN960-616 (2)  
OR AN960-616L

COMPRESSOR STAND OFF

Is:



BOLT AN6-14A(1)  
NUT AN365-624(1)  
ALT NUT: MS21044N6(1)  
ALT NUT: MS21042-6/L6(1)  
WASHER AN960-616 (AND)  
OR AN960-616L, SHIM AS REQUIRED

COMPRESSOR STAND OFF

----- LAST ITEM -----

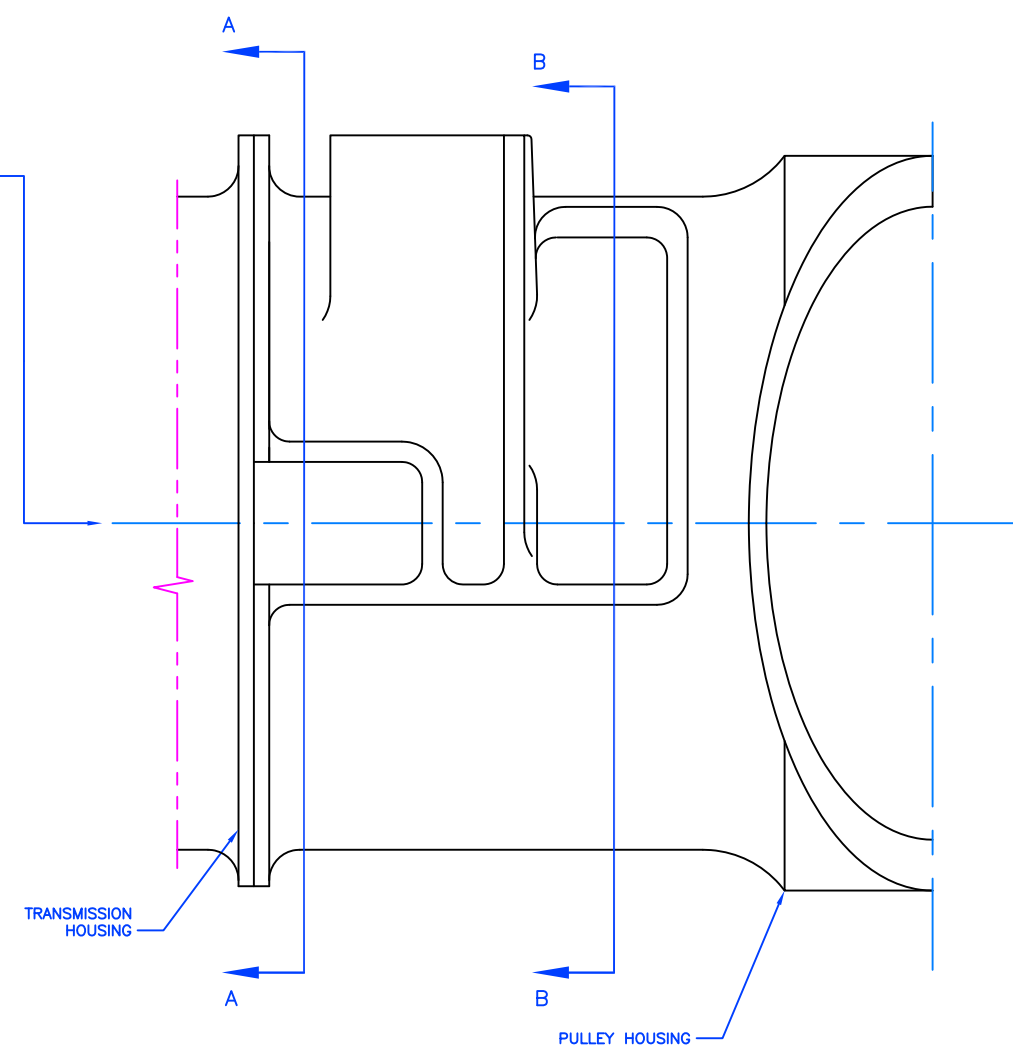
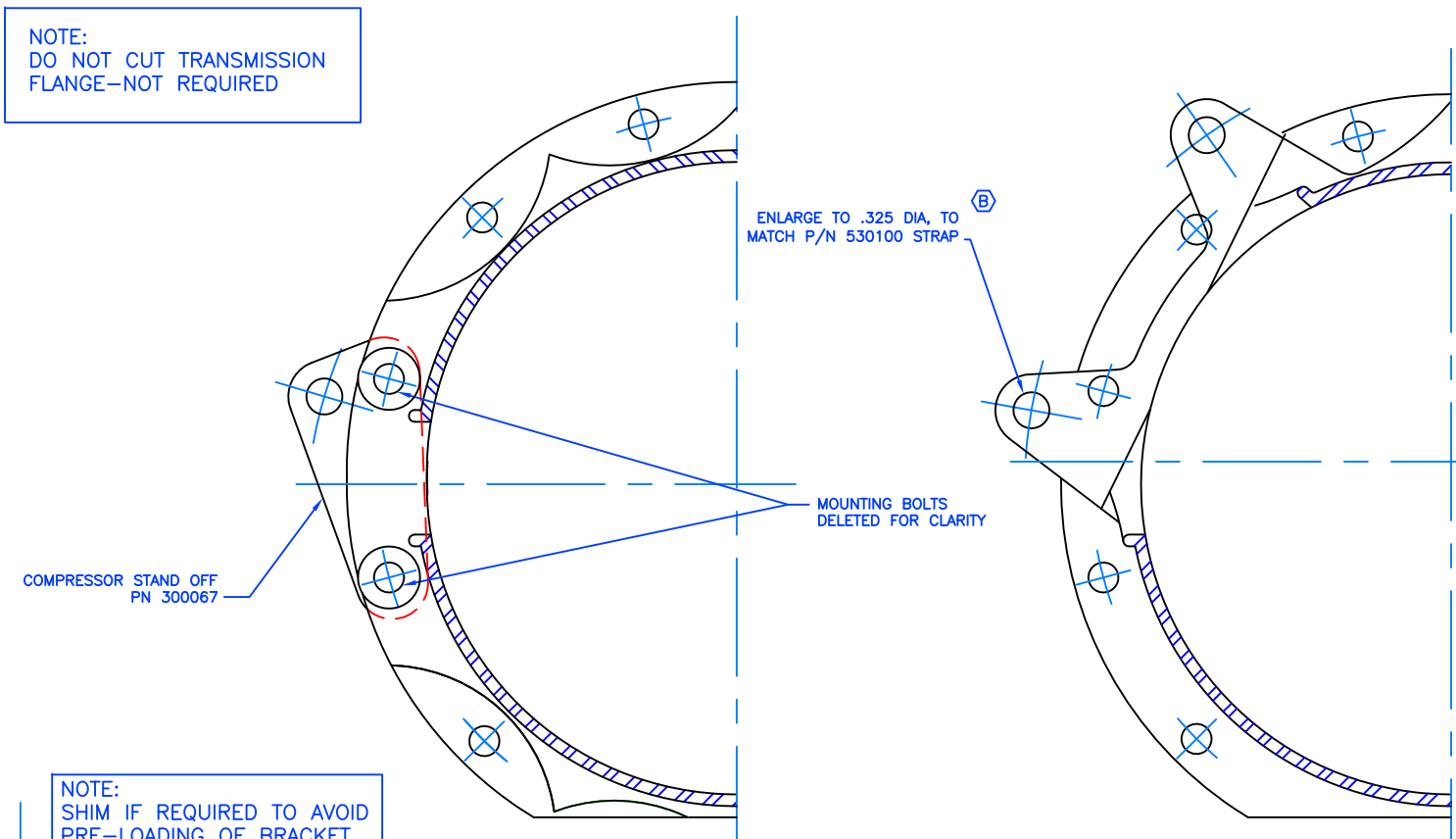
Engineering Review Board Approval

Signature	Stamp	Date	Comment
	ERB02	05/04/11	
	MRB05	05/04/11	
	MRB06	05/04/11	

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REVISED DRAWING NUMBER, WAS 6-AS350, SHEET No. WAS 2 OF 3.	-	-
B	04/16/02	COMPUTERIZED, CLARIFIED NOTE, REVISED TITLE BLOCK	-	-
C	01/30/06	CHANGED NOTES, ADDED PRELOAD NOTE. ADDED SHIMMING NOTES.	-	JTYE
D	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
DO NOT CUT TRANSMISSION  
FLANGE—NOT REQUIRED

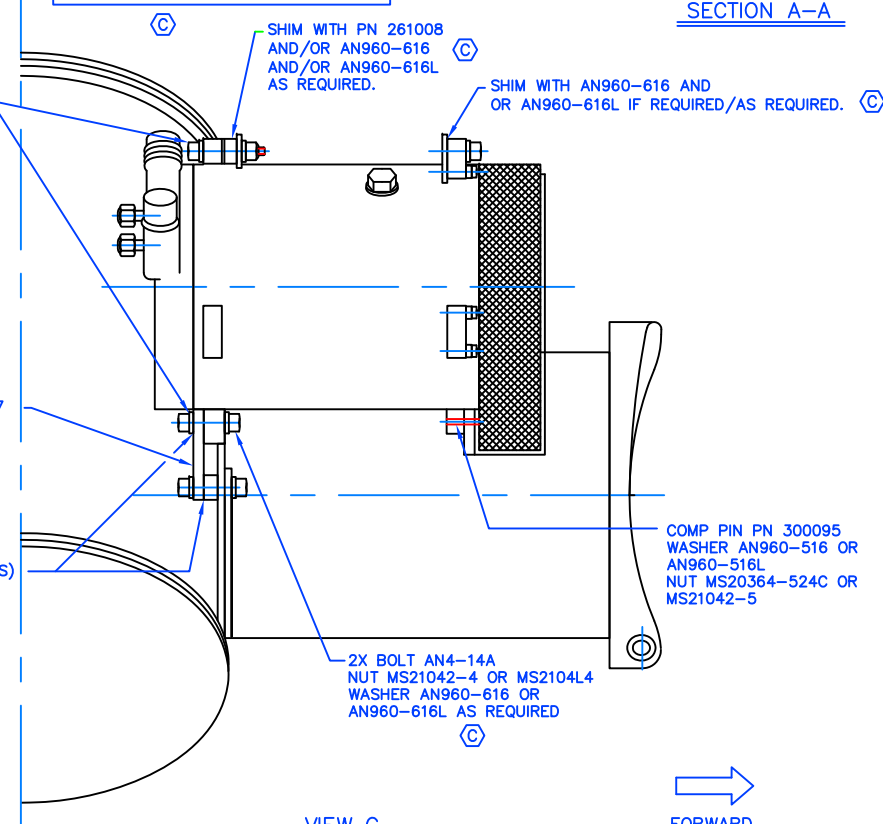


NOTE:  
SHIM IF REQUIRED TO AVOID  
PRE-LOADING OF BRACKET  
FORKS.

BOLT AN6-14A(1)  
NUT MS20364-624C(1) OR  
MS21044-N6 OR  
MS21042-6  
WASHER AN960-616(2) OR  
AN 960-616L

SHIM WITH PN 261008  
AND/OR AN960-616  
AND/OR AN960-616L  
AS REQUIRED.

SHIM WITH AN960-616 AND  
OR AN960-616L IF REQUIRED/AS REQUIRED.



COMP PIN PN 300095  
WASHER AN960-516 OR  
AN960-516L  
NUT MS20364-524C OR  
MS21042-5

2X BOLT AN4-14A  
NUT MS21042-4 OR MS2104L4  
WASHER AN960-616 OR  
AN960-616L AS REQUIRED

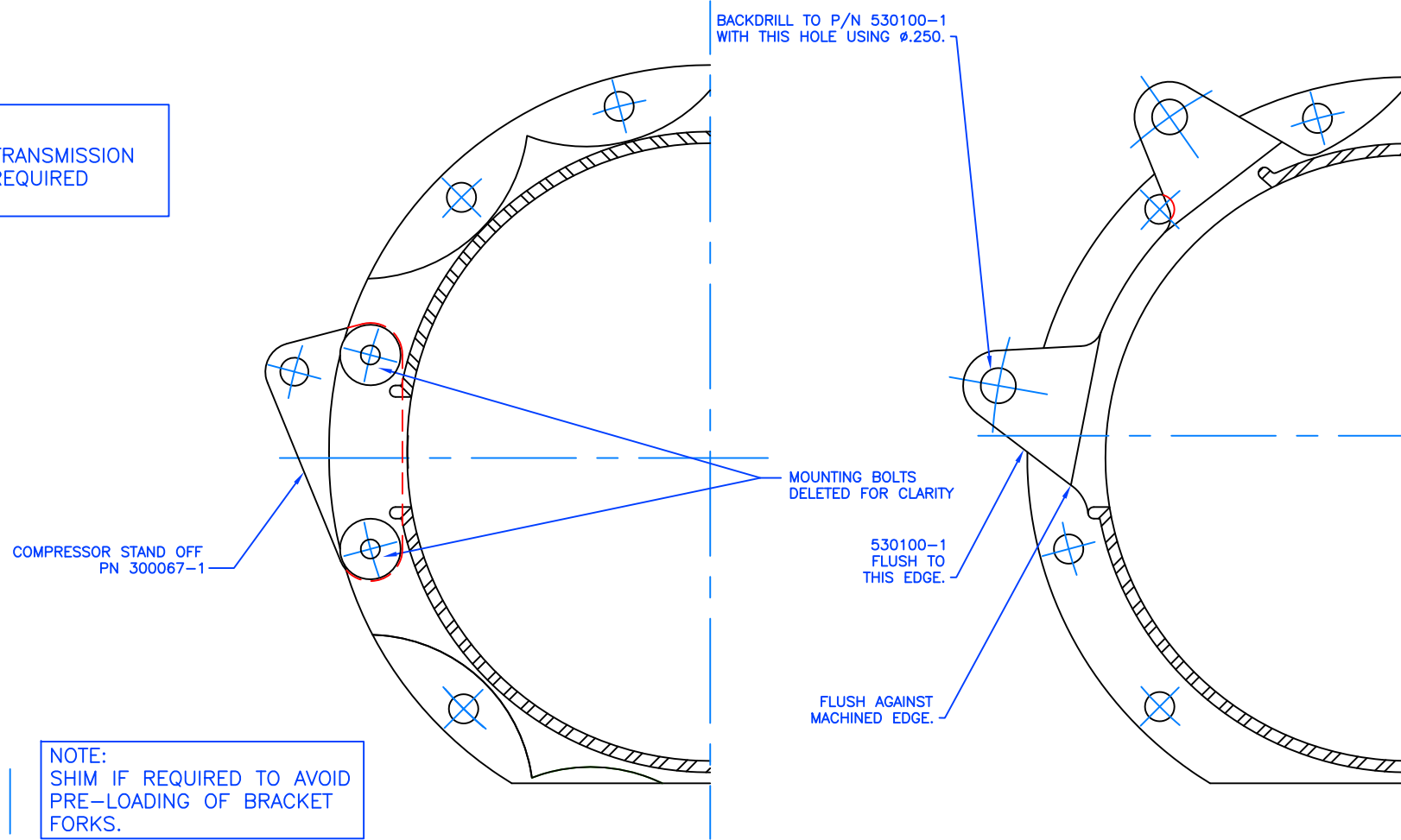
VIEW C  
REF 6-2-AS350



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: BT	DATE: 11/10/96	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-12-AS350	

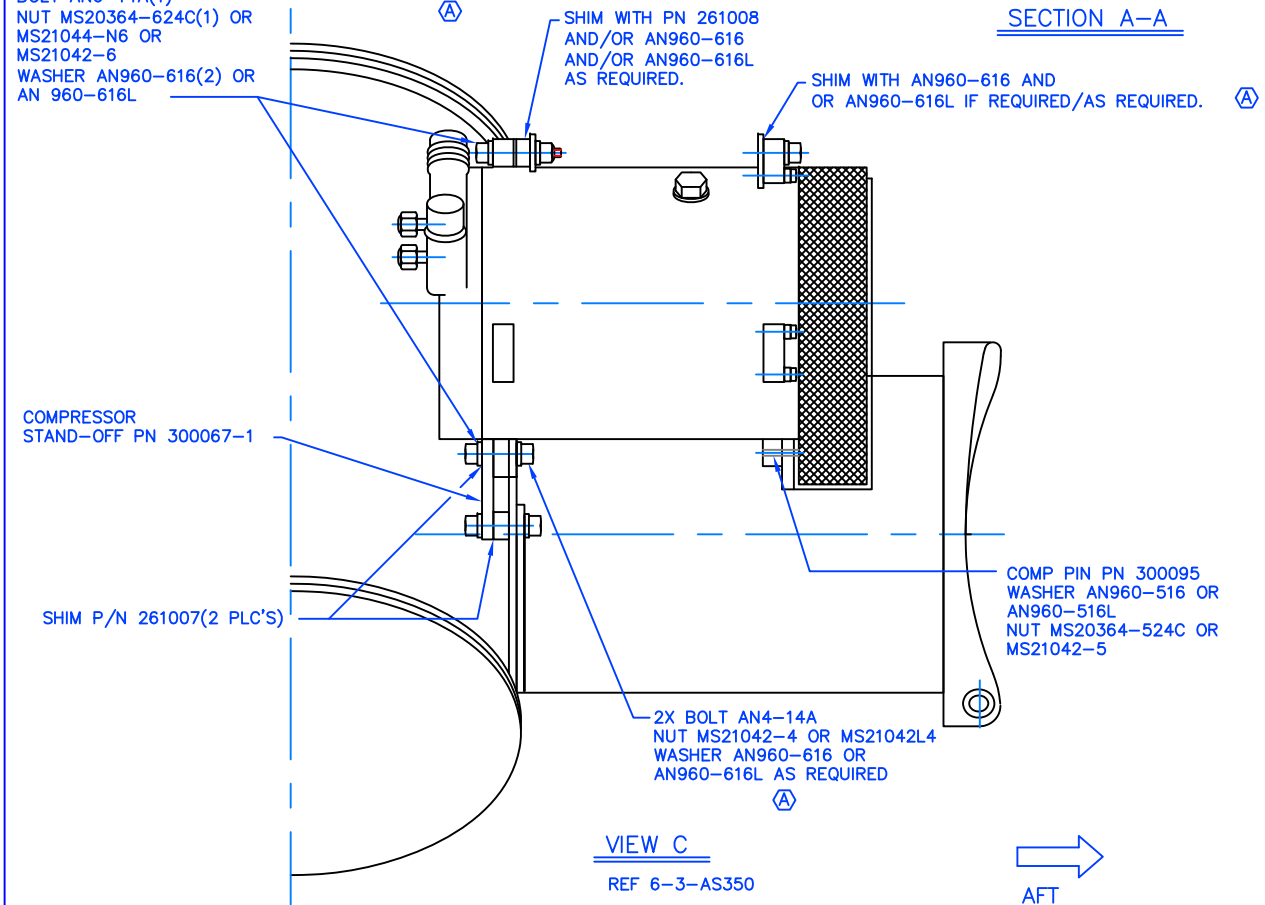
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED WASHER NOTES FOR PRE-LOADING OF BRACKET	-	JTYE
B	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
DO NOT CUT TRANSMISSION  
FLANGE—NOT REQUIRED

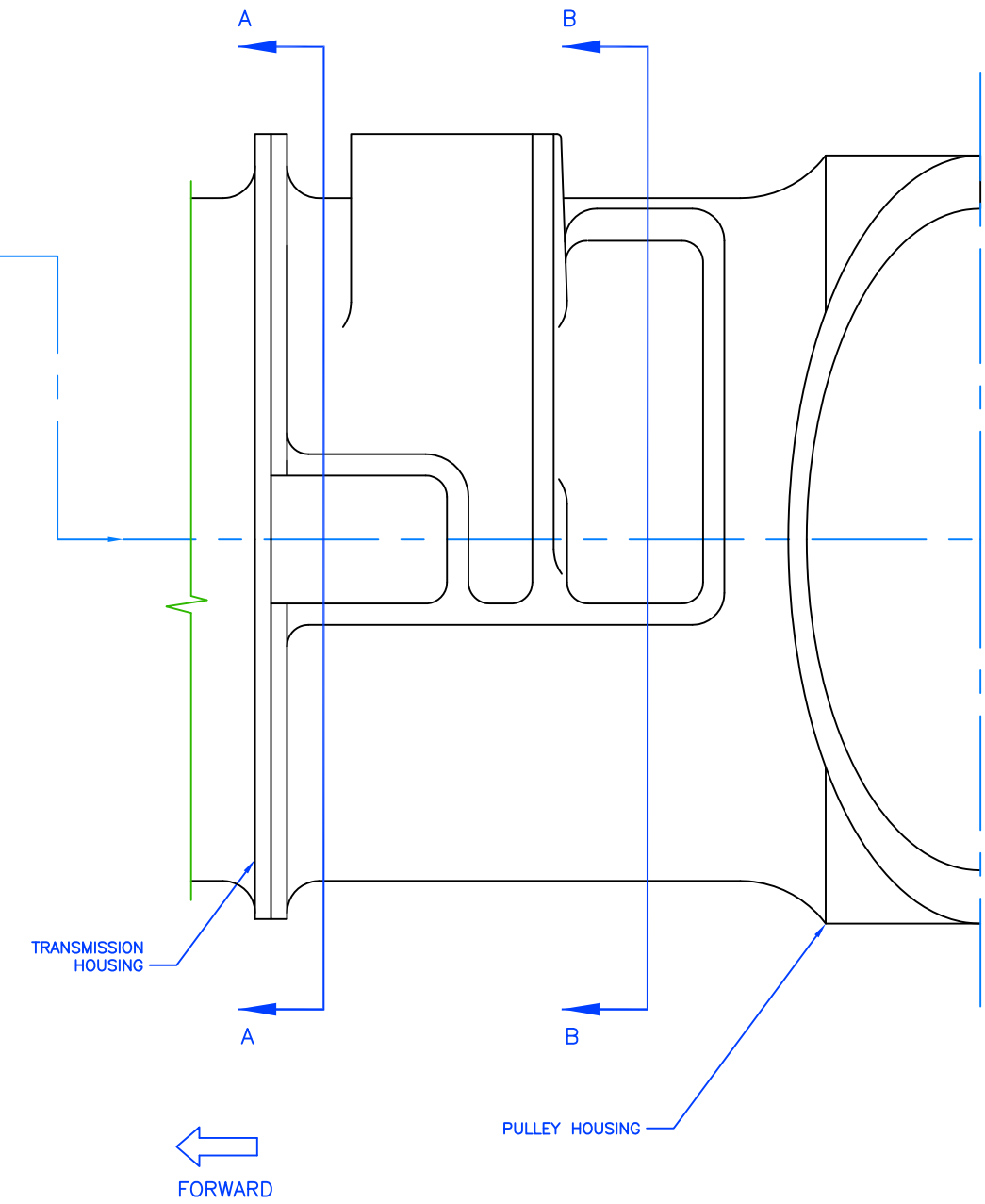


NOTE:  
SHIM IF REQUIRED TO AVOID  
PRE-LOADING OF BRACKET  
FORKS.

BOLT AN6-14A(1)  
NUT MS20364-624C(1) OR  
MS21044-N6 OR  
MS21042-6  
WASHER AN960-616(2) OR  
AN 960-616L



UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 05/28/03	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-13-AS350	



# Engineering Change Order

ECO No.  
0261

Drawing Number	Revision	Drawing Title
6-12-AS350	D	Compressor Installation
6-13-AS350	B	Compressor Installation

**Reason for Change:** To add an alternate nut (MS21042-6/L6) for keeping minimum thread protrusion. The nut MS21042-6 is already on drawing, adding "/L6" to nut part number. Correcting callout to keep consistency with drawing 6-2-AS350.

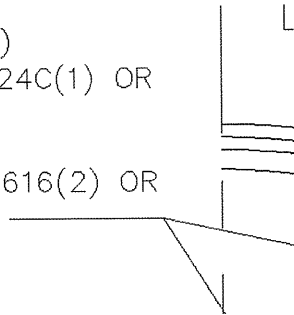
**Description of Change:** Add "/L6" to nut MS21042-6. Showed "Alt Nut:" and made callout same as on drawings 6-2-AS350 & 6-3-AS350.

Added the quantity of (1) on all bolt & nut callouts to keep consistency.

Removed quantity (X) on all washer callouts and added "And or" & "Shim As Required" for washers (used for alignment of belt).

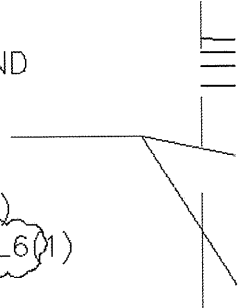
Was:

BOLT AN6-14A(1)  
NUT MS20364-624C(1) OR  
MS21044-N6 OR  
MS21042-6  
WASHER AN960-616(2) OR  
AN 960-616L



Is:

BOLT AN6-14A(1)  
WASHER AN960-616 AND  
OR AN960-616L SHIM  
AS REQUIRED  
NUT MS20364-624C(1)  
ALT NUT: MS21044N6(1)  
ALT NUT: MS21042-6/L6(1)



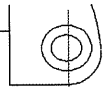
Was:

2X BOLT AN4-14A  
NUT MS21042-4 OR MS2104L4  
WASHER AN960-616 OR  
AN960-616L AS REQUIRED



Is:

2X BOLT AN4-14A  
NUT MS21042-4 OR MS2104L4  
WASHER AN960-616 (AND) OR  
AN960-616L AS REQUIRED



----- LAST ITEM -----

### Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David ...</i>	ERB02	04/21/11	
<i>Scott ...</i>	MRB05	04/21/11	
<i>Lawrence ...</i>	MRB06	04/21/11	



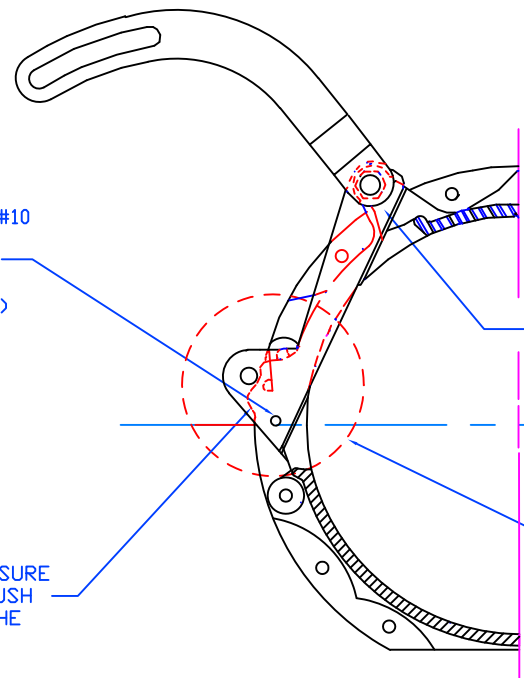
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	08/16/00	REDRAWN INTO AUTOCAD. REVISED DRAWING No. WAS 6-AS350; SHEET No. WAS 3 OF 3. ADDED ITEMS 6 TO "INSTRUCTIONS". CHANGED "CASING" TO "HOUSING". ADDED VIEW A, B AND C.	-	-
B	05/08/02	REVISED TITLE BLOCK. CHANGED 530027-2 TO 530027-3. CONVERTED TO AUTOCAD.	-	-
C	01/30/06	CHANGED NAS1305-44 BOLT TO NAS1305-45 FOR LENGTH.	-	JTJE

NOTE:  
COMPRESSOR REMOVED FOR CLARITY

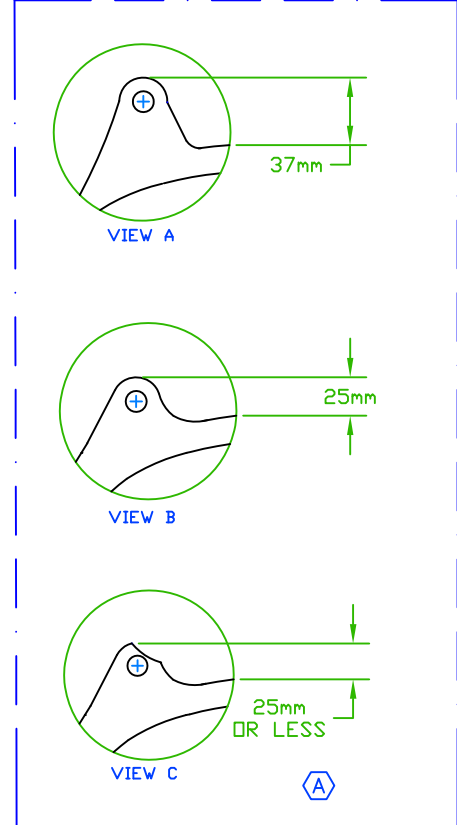
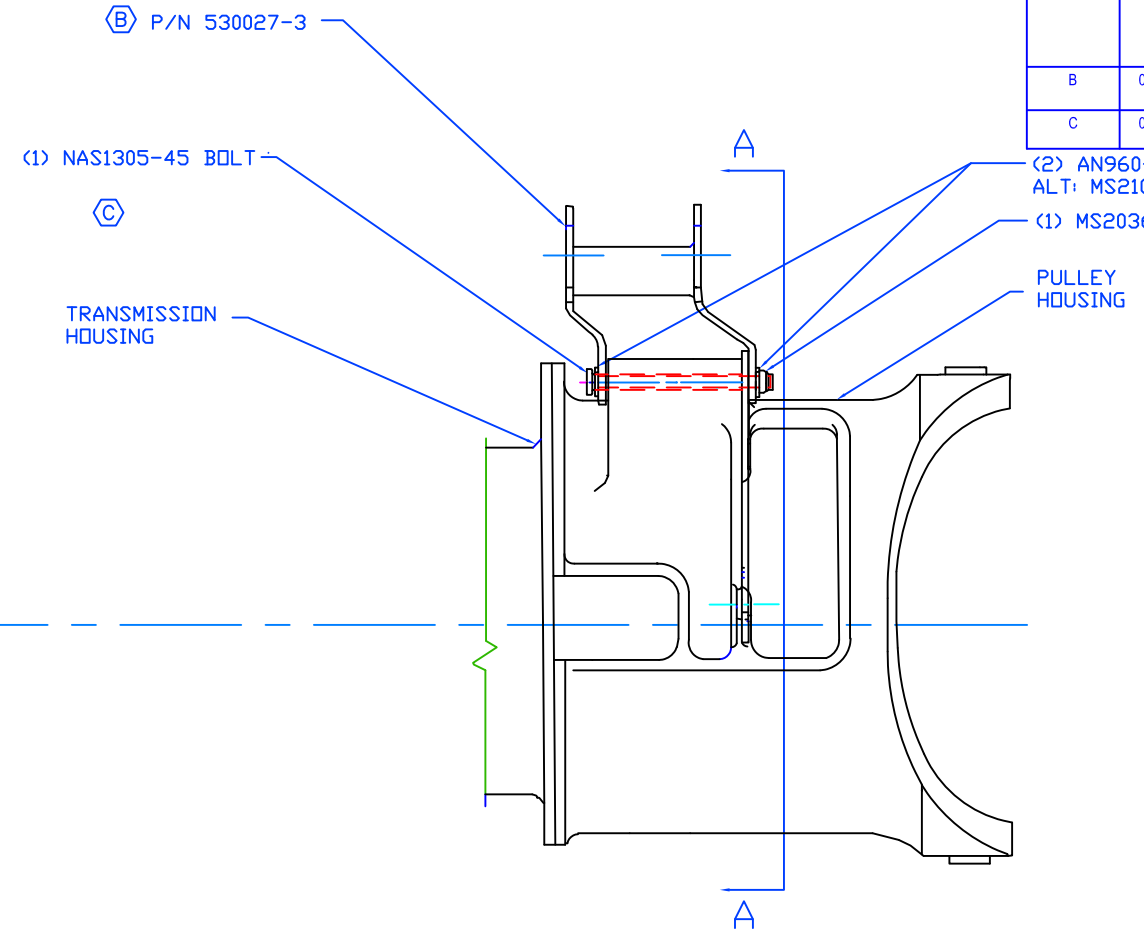
AFTER P/N 530100 IS LOCATED, BACKDRILL #10 HOLE INTO HOUSING, INSTALL HARDWARE: AN3-5A BOLT (1) AN960-10L WASHER (2) MS21042-L3 NUT (1)

REMOVE TOP OF EAR, AS NECESSARY, TO ENSURE P/N 530100 SEATS FLUSH AGAINST RECESS IN THE GIMBLE HOUSING

P/N 530100 IS LOCATED BETWEEN GIMBLE HOUSING & P/N 530027-3



SECTION A-A



VIEW LOOKING INBOARD  
FORWARD


**INSTALLATION INSTRUCTIONS**  
KIT P/N: 350-00-01, -011, -031, -011HP, AND -031HP

- 1) THE ABOVE KITS UTILIZE THE SANDEN SD-505 OR SD-507 COMPRESSOR (SEE DRAWING 350-00-011HP OR -031HP FOR DETAILS OF SD-507 INSTALLATION).
- 2) IN EARLY 1997 IT WAS NOTICED BY AMERICAN EUROCOPTER AND LATER EUROCOPTER CANADA, LTD. THAT A FEW AS350 MODELS WERE ARRIVING WITH A DIFFERENT "ENGINE TO MAIN GEAR BOX COUPLING CASING", COMMONLY CALLED A "HOUSING", INSTALLED. THE PART NUMBER SHOWN IN THE EUROCOPTER IPC WAS: 350A35-1104-03. THIS COMPONENT HAS "EARS" EXTENDING OFF THE "HOUSING", ON BOTH SIDES, 37 mm IN LENGTH (SEE VIEW "A")
  - (A) THE NEW "HOUSING" PART NUMBER IS 350A08-1635-21. IT HAS ONE EAR ON THE LEFT SIDE THAT IS ONLY 25 mm LONG. (SEE VIEW "B")
  - THE 25 mm LONG EAR WILL NOT ALLOW AN INTEGRATED FLIGHT SYSTEMS, INC. SD-505 OR SD-507 COMPRESSOR TO BE INSTALLED IN IT'S USUAL LOCATION.
- 3) THE "LOGICAL ANSWER" WAS TO LOCATE THE "MOUNTING POINT" OF THE COMPRESSOR(S) SO THAT A DIFFERENT LENGTH BELT, ETC. WOULD NOT BE REQUIRED.

- 4) ONLY TWO (2) PART CHANGES WERE REQUIRED TO ALLOW ITEM 3 TO OCCUR.
  - a.) COMPRESSOR MOUNT ASSEMBLY 530027-1 WAS CHANGED TO -2 (.125 WIDER AT THE TOP MOUNTING POINT).
  - b.) A NEW COMPONENT, NOT PREVIOUSLY USED, "STRAP, HOUSING MOD. ASSEMBLY", P/N: 530100 IS UTILIZED TO LOCATE THE COMPRESSOR MOUNTING POINT BACK TO IT'S ORIGINAL LOCATION.
  - c.) A AN3-5A BOLT AND ASSOCIATED HARDWARE SECURES THE "STRAP" TO THE "HOUSING".
- 5) IN SOME CASES IT MAY BE NECESSARY TO REMOVE A SMALL AMOUNT OF MATERIAL FROM THE OUTER EDGE OF THE 25 mm EAR TO ALLOW THE "NEW" IFS COMPONENT TO LAY IN IT'S PROPER LOCATION. THIS IS DUE TO THE "SHIM" WELDED ON THE FORWARD SIDE OF THE COMPONENT WHICH ALLOWS ALIGNMENT TO THE COMPRESSOR EAR. ANY PAINT REMOVED FROM THE "HOUSING" EAR MUST BE TOUCHED UP BEFORE INSTALLING THE IFS PARTS.
- (A) 6) IF AERO AIRE OR OTHER SIMILAR TYPE A/C COMPRESSOR HAS BEEN PREVIOUSLY INSTALLED PER VIEW "B" or "C", IT MAY BE NECESSARY TO FOLLOW THE STEPS IN ITEM 5 FOR CORRECT CLEARANCE.

(D)(C)(B)

# INTEGRATED



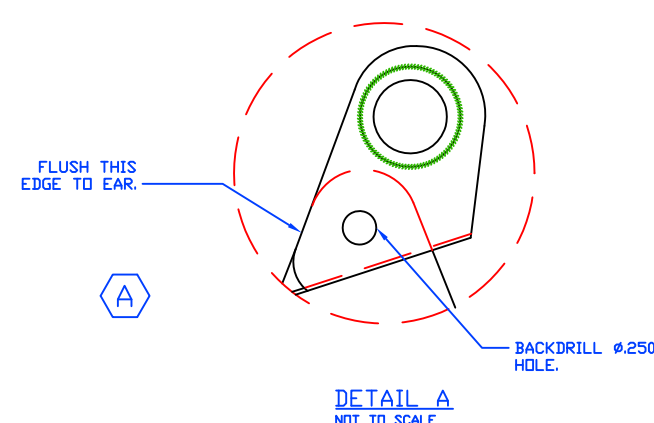
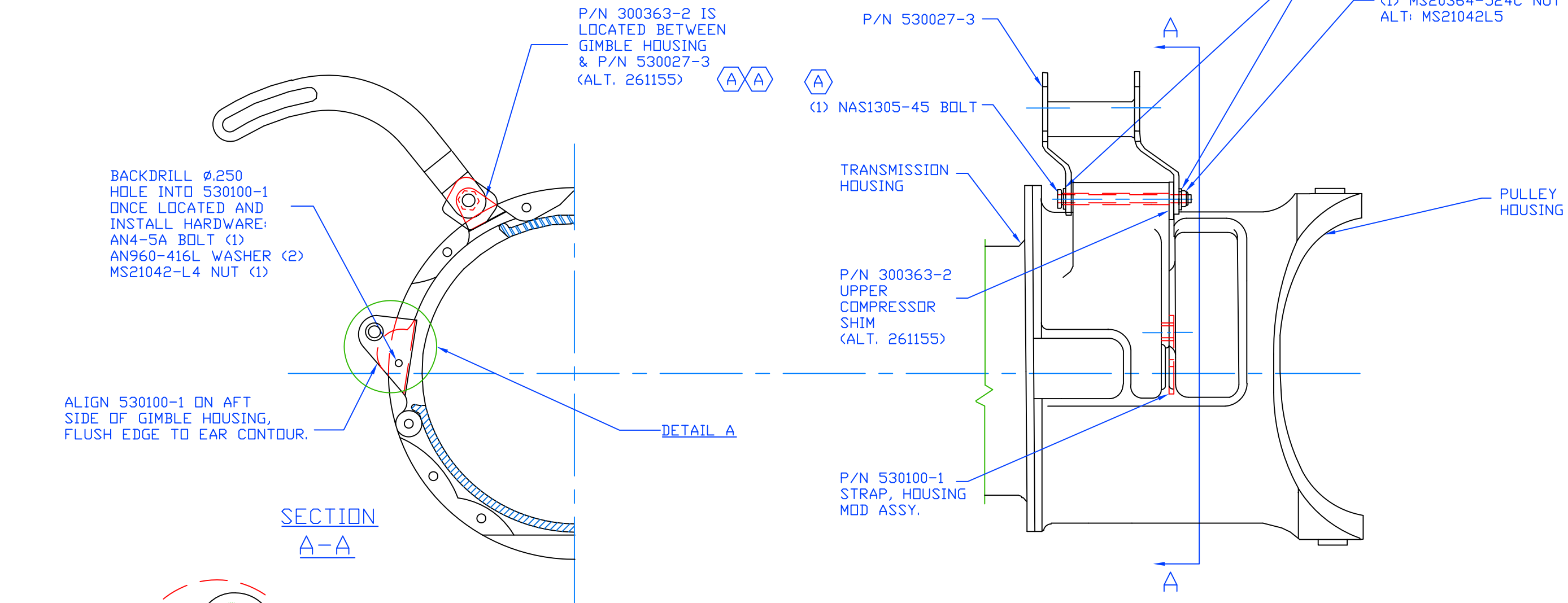
Flight Systems

**TITLE: COMPRESSOR INSTALLATION**

DRAWN BY: KLM	DATE: 11/10/96	REV D	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-21-AS350	

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/30/06	CHANGED NAS1305-44 BOLT TO NAS1305-45 FOR LENGTH, ADDED ALT. COMPRESSOR SHIMS. REMOVED BEVELED EDGE NOTATION FOR ALIGNMENT.	-	JTYE
B	06/30/08	REVISED TITLE BLOCK.	-	JTYE

NOTE:  
COMPRESSOR REMOVED FOR CLARITY



UTILIZED WITH:  
1. AS 350 WITH LATEST TRANSMISSION HOUSING DESIGN.



TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 05/28/03	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 6-22-AS350	

## **Step 9**

# **Installation of Electrical**

Integrated Flight Systems  
 INSTALLATION OF ELECTRICAL – AS350 Air Conditioning

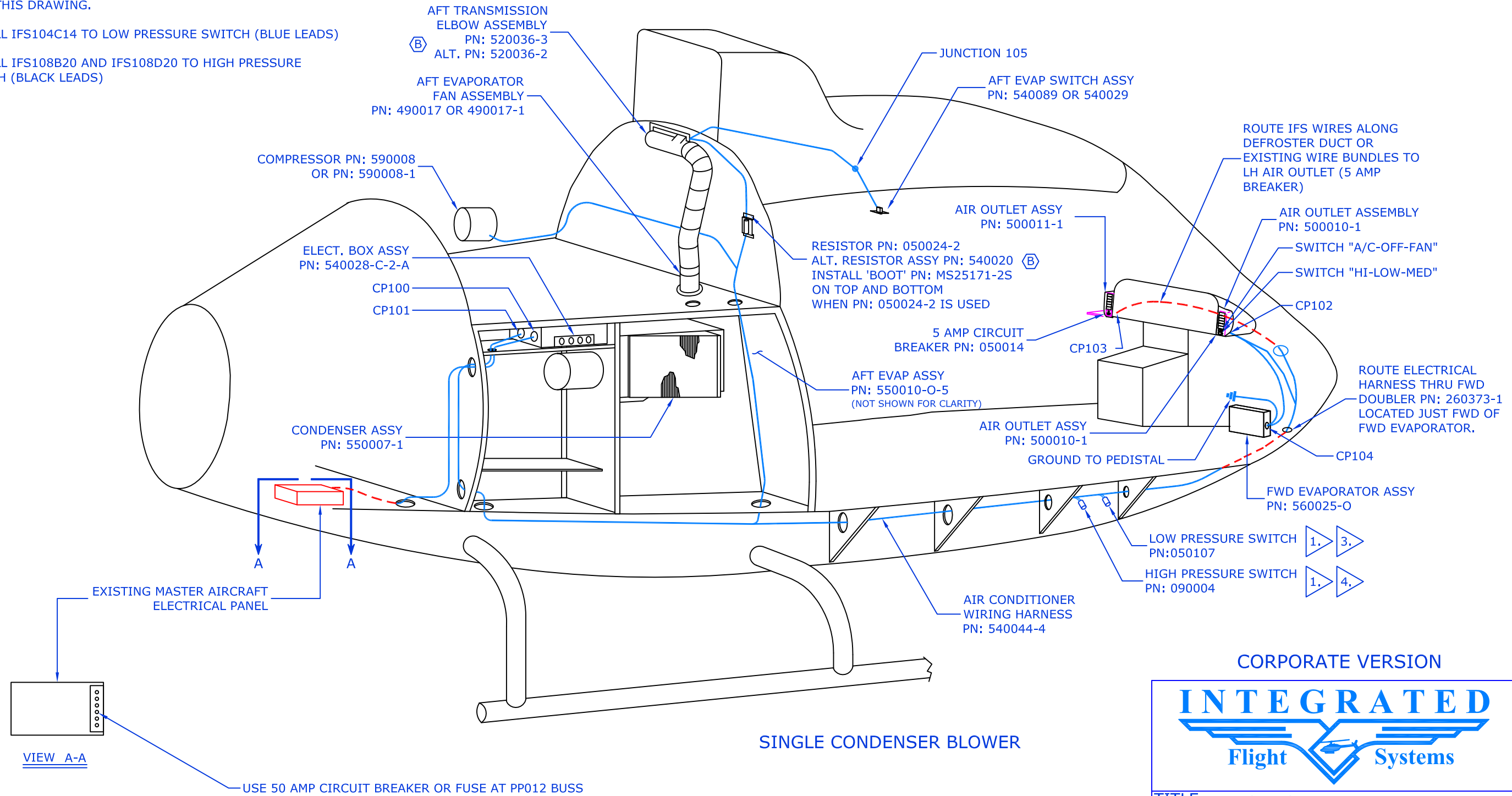
### Installation of Electrical

STEP	PROCEDURE	MECH	INSP
9.1	(Intentionally left blank)		
9.2	(Intentionally left blank)		
9.3	(Intentionally left blank)		
9.4	Install and route the electrical harness, P/N 540044-4, per Drawing 2-8-AS350, 2-11-AS350 and 2-21 AS350. Install EMI-RFI filter per drawing 2-11-AS350 View A with hardware shown.		
9.5	Install and route electrical harness P/N 540045-1 using 1 ea. 8 x #10 ring terminal and ANL-50 Limiter (not incl.).		
9.6	(Reserved)		
9.7	Install aft switch assembly P/N 540089 per drawings 5-12-AS350, 2-8-AS350, 2-11-AS350 and 2-21-AS350		

**NOTE:**  
 USE EXISTING LIGHTENING HOLES ONLY FOR ALL ROUTING, OR  
 SECURE WIRES TO EXISTING BUNDLES OR REFRIGERATION HOSE  
 USING TY-WRAPS, STAND-OFFS, AND SPACER BLOCKS AS  
 REQUIRED.

- 1. LOCATION OF PRESSURE SWITCHES  
 WHEN R-134a IS UTILIZED.
- A 2. ON B3 MODELS ALL IFS WIRE ROUTING MUST BE IN ACCORDANCE  
 WITH THIS DRAWING.
- 3. INSTALL IFS104C14 TO LOW PRESSURE SWITCH (BLUE LEADS)
- 4. INSTALL IFS108B20 AND IFS108D20 TO HIGH PRESSURE  
 SWITCH (BLACK LEADS)

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	07/02/02	DWG NUMBER WAS 2-2-AS350, IS NOW 2-8-AS350. CHANGED TO INCORPORATE LH AIR OUTLET PN: 500011-1. REDRAWN INTO CAD, CHANGED TITLE BLOCK.		-
B	04/09/09	CHANGED AFT TRANSITION ELBOW PN FROM 520036-2 TO 520036-3. ADDED ALTERNATE RESISTOR ASSEMBLY 540020. ADDED PN'S TO DESCRIPTIONS. REVISED TITLE BLOCK.		JTYE



B A

CORPORATE VERSION

**INTEGRATED**  
 Flight Systems

TITLE: ELECTRICAL  
 ROUTING

DRAWN BY: MAH	DATE: 11/10/96	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 2-8-AS350	



LS03-010112 EMI-RFI FILTER  
2X AP35110 TERMINALS

14-16 x #10  
RING TERMINAL

IFSS 261323 3-PIN  
CONNECTOR ASSEMBLY

VIEW A

IFSS 050084-7-2 BLOWER  
(SHORT HOUSING)  
IFSS 050084-7-3 BLOWER  
(LONG HOUSING)

INTERCHANGEABLE 5" BLOWERS (F)

050143
050085-1
IFSS 050143-1 DCB
IFSS 050143-2 DCB

G	03/04/10	DELETED IFSS 050084-7 BLOWER AND REPLACE WITH IFSS 050084-7-2 BLOWER.	-	JM
H	04/08/10	DELETED IFSS 050084-7-1 BLOWER AND REPLACE WITH IFSS 050084-7-3 BLOWER.	-	JM
J	08/03/10	ADDED EMI-RFI FILTER TO VIEW A	-	JM

ECO# 0242  
ECO# 0276

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	01/21/99	ADDED T-4, T-5, F8, AND F9 TO NOTE 3, REWORDED NOTE 1. CHANGED PP-2 TO PP-12. ADDS B3.		
B	05/10/99	ADDED ALT BLOWER IFS PN: 050084-6, EVAP BREAKER WAS 15 AMP, IS 20 AMP. CHANGED LOCATION OF LOW SWITCH.		
C	08/16/00	ADDED ALT BLOWER IFS PN: 050084-7, REVISED DRAWING NUMBER, WAS 2-AS350 SHEET 1 OF 3. CORRECTED NOTES 1, 2 AND 3. ADDED NOTE 4.		
D	04/15/02	CONVERTED TO AUTOCAD.		
E	01/03/07	ADDED ALT. RESISTOR ASSEMBLY PN: 540020. REDRAWN FOR CLARITY. REVISED TITLE BLOCK.	LA	JTYE
F	03/31/09	ADDED LISTING OF INTERCHANGEABLE 5 AND 7" BLOWER ASSEMBLIES. OLD CONFIGURATION JUMPER NOTE ADDED.	MLD	JTYE

COMPRESSOR

14-16 WIRE SPLICE

14-16 HANDSHAKE  
3 REQ'D.

14-16 HANDSHAKE SPLICE (3 REQ'D)

AFT EVAP SPEED  
CONTROL SWITCH  
PN: 540089 OR PN: 540029

A/C-OFF-FAN SWITCH

ELECTRICAL BOX  
ASSEMBLY  
PN: 540028-C-2-A

RESISTOR ASSY  
PN: 540020  
(2 OHM, 100)  
OR RESISTOR  
PN: 050024-2

CIRCUIT BREAKERS

IFS101C14

IFS101E14

AFT EVAP  
MOTOR

J106

14-16 x 10 RING TERMINAL  
(1 REQ'D) GROUND TO  
AIRFRAME.

FWD EVAP SPEED  
CONTROL SWITCH  
PN: 050001  
OR PN: 050006

GROUND TO AIRFRAME  
14-16 x #10 RING TERMINAL

CP100

PN: 540045-1

PP12 BUS

CP101

#20

8 x #10  
RING TERMINAL  
(1 REQ'D)

12-10 AWG  
BUTT SPLICE  
1 REQ'D

TIMER

COM

A C B G F D E H

LOW

HI

M

CONDENSER BLOWER

PN: 050084-4

ALT 050084-6

ALT 050084-7-2

ALT 050084-7-3

SEE VIEW A

SEE VIEW A

NOTE:

- ALL WIRE MIL-W-22759/16.  
ALL WIRE 14ga UNLESS OTHERWISE SPECIFIED.
- FUSES MAY BE USED, P/N 100FU01-050 (50AMP).
- LOCATE #8 WIRE AT T4, T5, T6, OR T7 (INSTALL 50AMP FUSE IF NOT PRESENT, SEE NOTE 2).
- WHEN ALL EUROCOPTER FUSES OR C/B LOCATIONS ARE UTILIZED, A "AUX" CURRENT LIMITER BASE FU1541-501, BRACKET/SUPPLY BAR AND CURRENT LIMITER MAY BE INSTALLED AT F9 OR F10 PER EUROCOPTERS COMPONENT MAINTENANCE MANUAL. IFS P/N FOR LIMITER BASE IS 050023. IFS P/N FOR LIMITER, 50 AMP IS 050015-2.

INTERCHANGEABLE 7" BLOWERS (F)

050084-1
050084-4
050084-6
050084-7
610000 BRUSHLESS
620000 BRUSHLESS
630000
640000
IFSS 050084-1
IFSS 050084-4
IFSS 050084-6
IFSS 050084-6-1
<del>IFSS 050084-7 BRUSHLESS</del>
<del>IFSS 050084-7-1 BRUSHLESS</del>
IFSS 050084-7-2 BRUSHLESS
IFSS 050084-7-3 BRUSHLESS

NOTE: JUMPER THROUGH CP103  
NOT USED AFTER 2004, IFS104B14  
NOW RUNS STRAIGHT THROUGH TO  
LOW PRESSURE SWITCH. OLD CONFIG.  
SHOWN WITH DASHED LINES.

EXA



TITLE: ELECTRICAL  
DIAGRAM

DRAWN BY: MAH	DATE: 04/15/02	REV J	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 2-11-AS350	

## AS350 ELECTRICAL WIRING DIAGRAM

(CORP, EMS, TOUR 2, LAW ENF.)

FOR SINGLE CONDENSER BLOWER  
ADDS B3 TO PREVIOUS APPROVALS

A





## Engineering Change Order

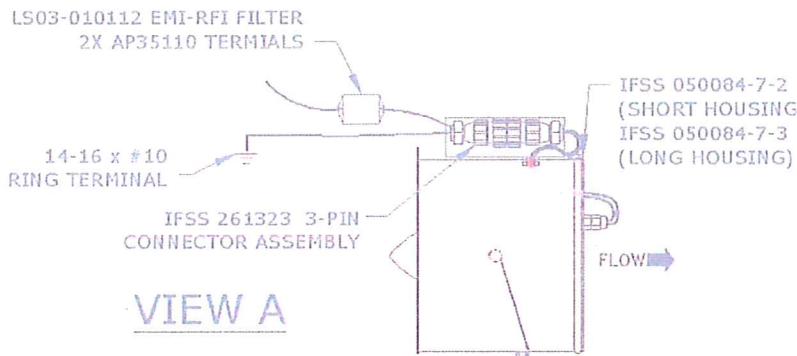
ECO No.  
0242

Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

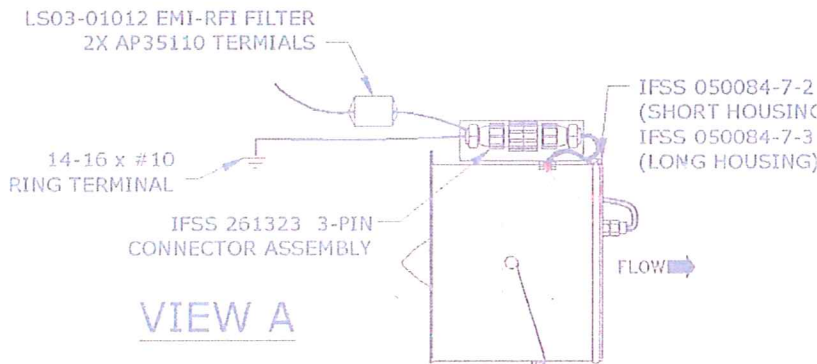
Reason for Change: Correcting P/N of EMI-RFI Filter for blower assembly.

Description of Change: In view-A, changed the P/N: LS03-010112 to LS03-01012.

WAS:



IS:



----- LAST ITEM -----

### Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eijman</i>	ERB02	12/20/10	
<i>Wesley</i>	MRB06	12/20/10	
<i>Scott</i>	MRB06	12/20/10	



# Engineering Change Order

ECO No.  
0276

Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

Reason for Change: To remove the deletion of the blowers by Rev. G & H for field maintainability. Added Blowers IFSS 050084-7-2 & IFSS 050084-7-3.

Description of Change: Remove deletion lines from IFSS 050084-7 Brushless & IFSS 050084-7-1 Brushless.

Was:

Is:

IFSS 050084-6	
IFSS 050084-6-1	
<del>IFSS 050084-7 BRUSHLESS</del>	G
<del>IFSS 050084-7-1 BRUSHLESS</del>	
IFSS 050084-7-2 BRUSHLESS	G
IFSS 050084-7-3 BRUSHLESS	H

IFSS 050084-6	
IFSS 050084-6-1	
IFSS 050084-7 BRUSHLESS	G
IFSS 050084-7-1 BRUSHLESS	
IFSS 050084-7-2 BRUSHLESS	G
IFSS 050084-7-3 BRUSHLESS	H

----- LAST ITEM -----

### Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Euphan</i>	ERB02	01/14/11	
<i>Scott Carr</i>	MRB05	01/14/11	
<i>Have [Signature]</i>	MRB06	01/14/11	



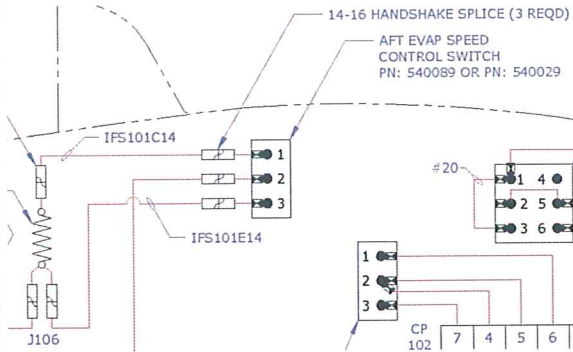
Drawing Number	Revision	Drawing Title
2-11-AS350	J	Electrical Diagram

**Reason for Change:** Added shielded wiring for reduction of noise in aircraft comm. systems. These changes reflect what has been done on the wiring harness drawing.

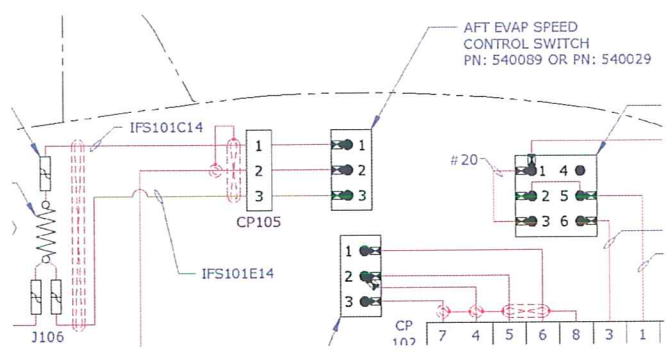
**Description of Change:**

- Note 1 Was: ALL WIRE MIL-W-22759/16., Is: ALL WIRE MIL-W-22759/16 & MIL-W-22759/18.
- Handshakes are removed at three places (J105), replaced with cannon plug (CP105).

Was:

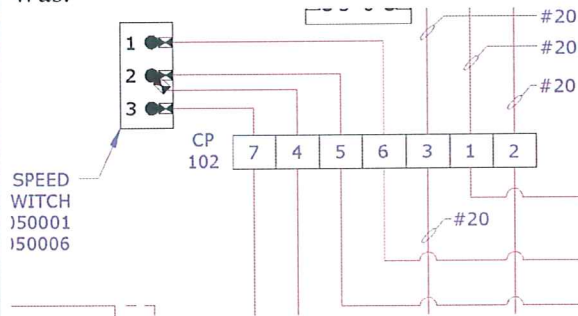


Is:

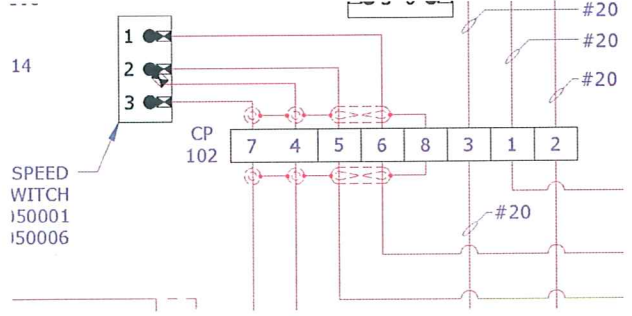


- At CP102, added pin# 8 for shielding.

Was:

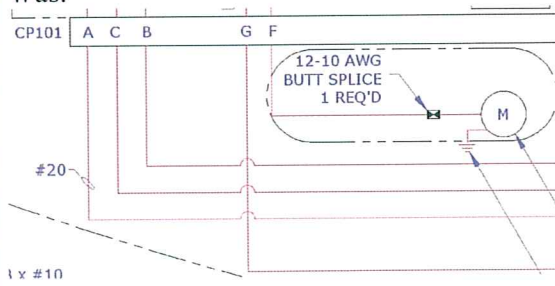


Is:

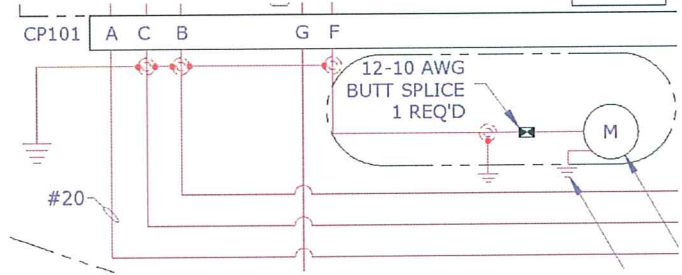


4. At CP101, shielding as shown.

Was:



Is:

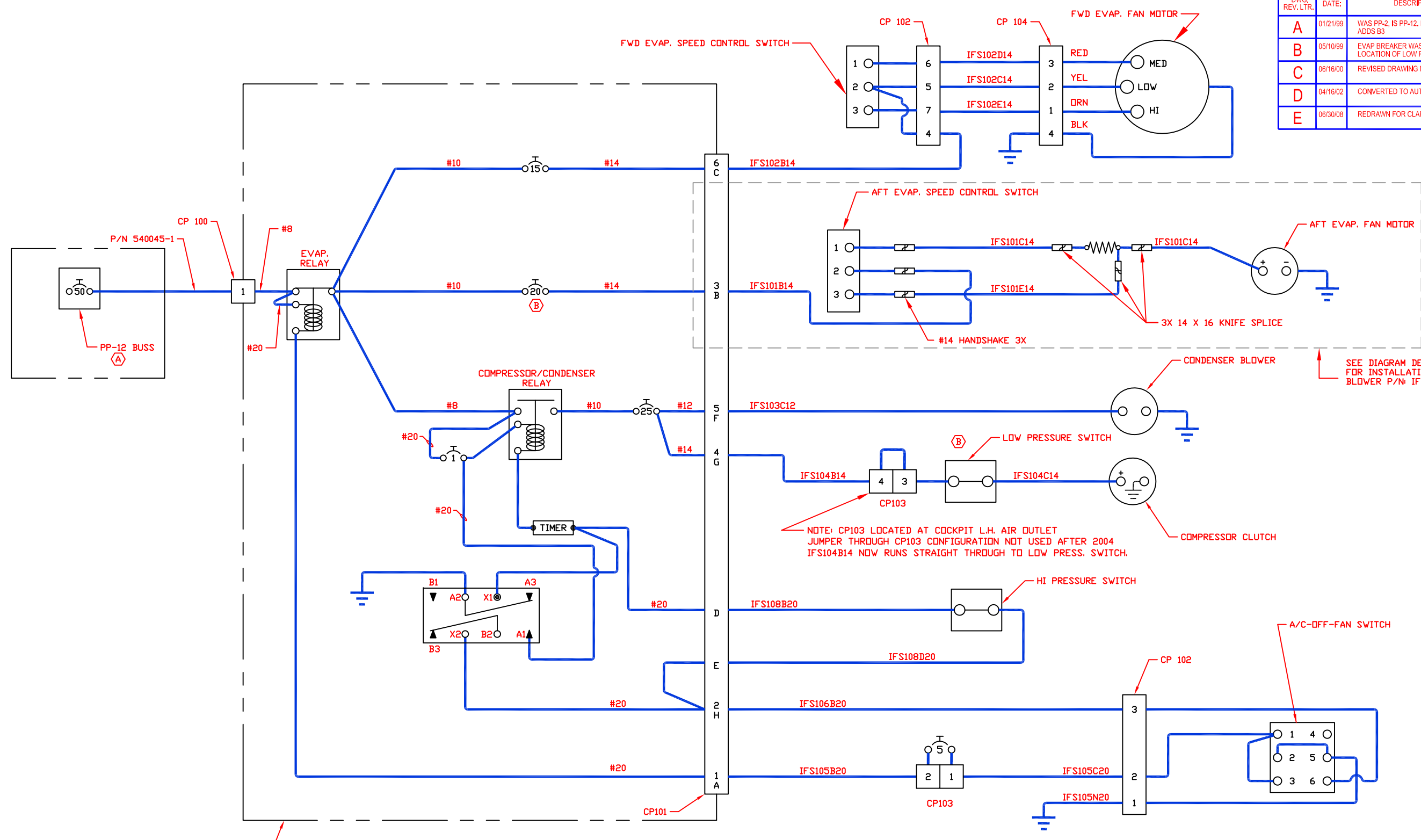


----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eidma</i>	ERB02	05/13/11	
<i>Travis Jones</i>	MRB06	05/13/11	
<i>Scott Lewis</i>	MRB05	05/13/11	

REVISION RECORD				
DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/21/99	WAS PP-2, IS PP-12, DELETED REMAINDER OF NOTE, ADDS B3		
B	05/10/99	EVAP BREAKER WAS 15 AMP, IS 20 AMP, CHANGED LOCATION OF LOW PRESSURE SWITCH.		
C	06/16/00	REVISED DRAWING No. WAS 2-AS350 SH 3 OF 3.		
D	04/16/02	CONVERTED TO AUTOCAD.		
E	06/30/08	REDRAWN FOR CLARITY, REVISED TITLE BLOCK.		JTYE



SEE DIAGRAM DETAIL SHEET 2 OF 2 FOR INSTALLATION OF IFSS 5" DC BRUSHLESS BLOWER P/N IFSS 050143-1 OR -2 DCB

NOTE: CP103 LOCATED AT COCKPIT L.H. AIR OUTLET JUMPER THROUGH CP103 CONFIGURATION NOT USED AFTER 2004 IFS104B14 NOW RUNS STRAIGHT THROUGH TO LOW PRESS. SWITCH.

ELECT. PANEL ASSY. P/N 540028-C-2-A

**AS350  
ELECTRICAL WIRING DIAGRAM**  
SINGLE CONDENSER BLOWER  
(A) ADDS B3 TO PREVIOUS APPROVALS  
(CORP. EMS, TOUR 2, BASIC AND LAW ENF.)  
SEQUENCE (N INDICATES GROUND)

**NOTE:**  
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.  
2. WIRE SPEC: MIL-W-22759/16  
WIRE NO. IFS XXX X XX

GROUP  
SEQUENCE (N INDICATES GROUND)  
GAUGE

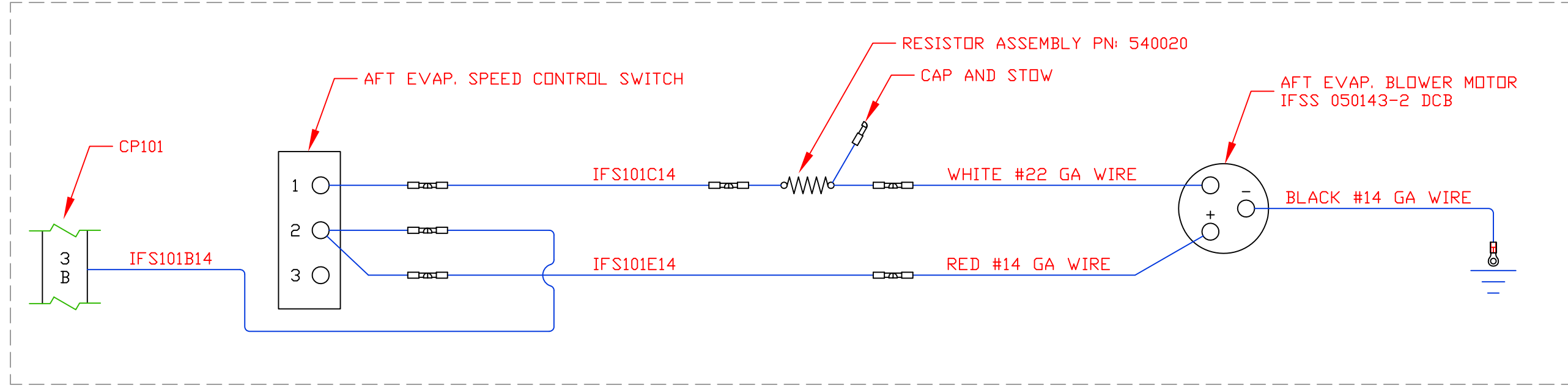
(C)(D)(E)

**INTEGRATED**  
Flight Systems

TITLE: ELECTRICAL DIAGRAM

DRAWN BY: MAH	DATE: 04/16/02	REV.: E	SCALE: NTS	SHEET: 1 OF 2
APPLICATION: AS350			DWG. NO.: 2-21-AS350	

REVISION RECORD				
DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/21/99	WAS PP-2, IS PP-12. DELETED REMAINDER OF NOTE. ADDS B3		
B	05/10/99	EVAP BREAKER WAS 15 AMP. IS 20 AMP. CHANGED LOCATION OF LOW PRESSURE SWITCH.		
C	06/16/00	REVISED DRAWING No. WAS 2-AS350 SH 3 OF 3.		
D	04/16/02	CONVERTED TO AUTOCAD.		
E	06/30/08	REDRAWN FOR CLARITY. REVISED TITLE BLOCK.		JTYE



**DIAGRAM DETAIL FOR INSTALLATION OF IFSS 050143-1 DCB OR IFSS 050143-2 DCB  
2 SPEED AFT EVAPORATOR BLOWER ASSY**

Ⓢ ⓓ ⓔ



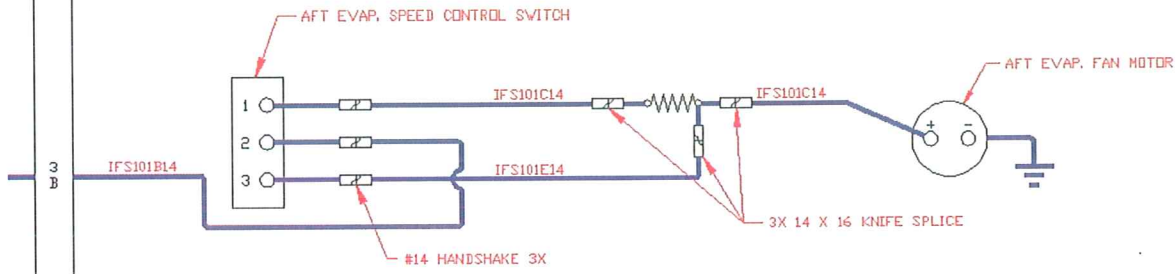
TITLE: ELECTRICAL DIAGRAM				
DRAWN BY: MAH	DATE: 04/16/02	REV.: E	SCALE: NTS	SHEET: 2 OF 2
APPLICATION: AS350			DWG. NO.: 2-21-AS350	

Drawing Number	Revision	Drawing Title
2-21-AS350	E	Electrical Diagram

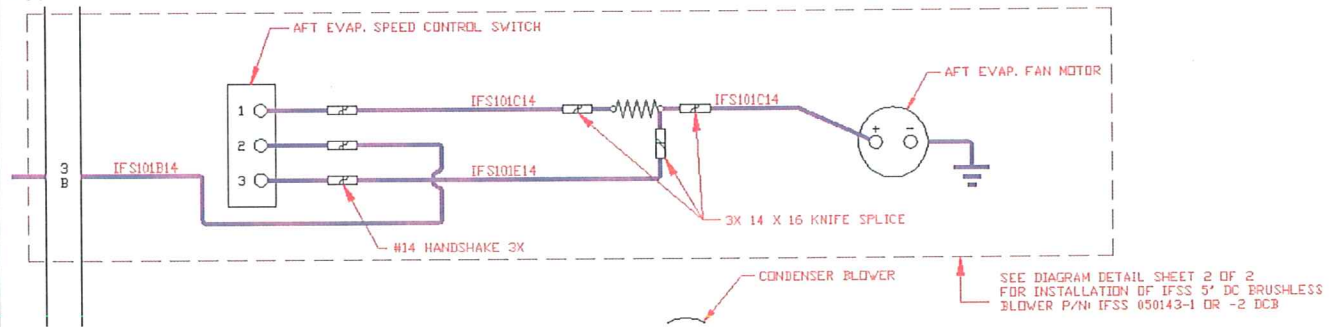
Reason for Change: Added alternate DC Brushless motors wiring diagram.

Description of Change: On sheet 1, added a border around motor connection and callout for diagram on sheet 2.

WAS:



IS:



Description of Change: Added sheet 2, adding a wiring diagram for a p/n IFSS 050143-1 or -2 DC Brushless.

New:

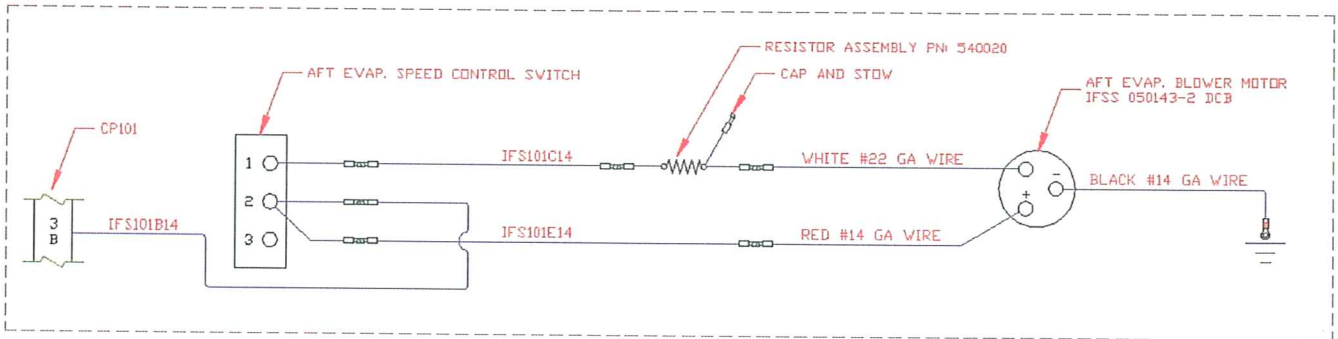


DIAGRAM DETAIL FOR INSTALLATION OF IFSS 050143-1 DCB OR IFSS 050143-2 DCB  
2 SPEED AFT EVAPORATOR BLOWER ASSY

----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eipman</i>	ERB02	12/23/10	
<i>Steve Carl</i>	MRB05	12/23/10	
<i>Travis Young</i>	MRB06	12/23/10	



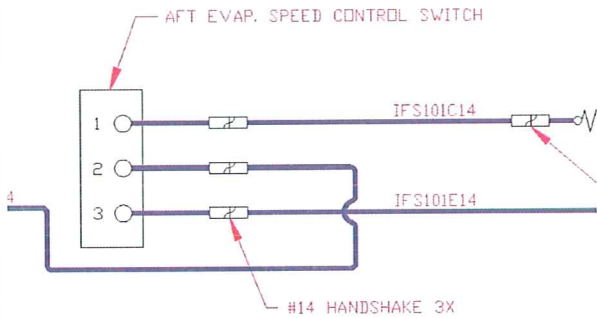
Drawing Number	Revision	Drawing Title
2-21-AS350	E	Electrical Diagram

**Reason for Change:** Added shielded wiring for reduction of noise in aircraft comm. systems. These changes reflect what has been done on the wiring harness drawing.

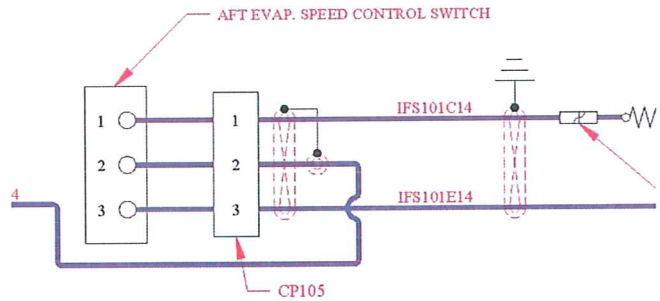
**Description of Change:**

- Note 2 Was: WIRE SPEC: MIL-W-22759/16., Is: WIRE SPEC: MIL-W-22759/16 & MIL-W-22759/18.
- At AFT Evap. speed control switch, handshakes are removed (J105), replaced with cannon plug (CP105) on sheets 1 & 2 of 2.

Was:

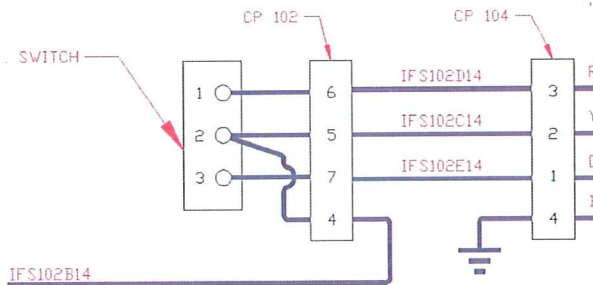


Is:

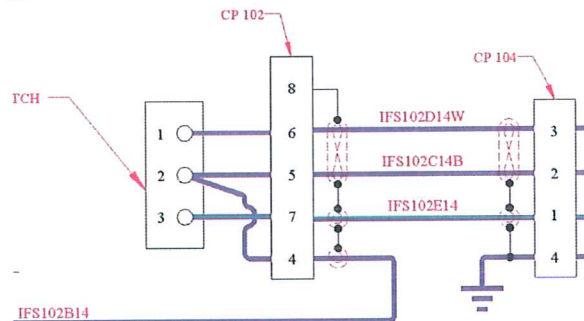


- At CP102, added pin# 8 for shielding.

Was:



Is:



----- LAST ITEM -----

Engineering Review Board Approval

Signature	Stamp	Date	Comment
<i>David Eidman</i>	ERB02	05/13/11	
<i>Levan Ap...</i>	MRB06	05/13/11	
<i>Scott...</i>	MRB05	05/13/11	

# Step 10

## Installation of Hoses



Integrated Flight Systems  
 INSTALLATION OF HOSES – AS350 Air Conditioning

### Installation of Hoses

STEP	PROCEDURE	MECH	INSP
10.1	Review Install Drawings 3-4-AS350 and 3-14-AS350.		
10.2	<b><u>WARNING: Before connecting hoses, be sure all fittings have R134 approved “O”Rings installed.</u></b>		
10.3	Route evaporator return line hose assembly #10 suction hose (tee fitting above deck), P/N 570087-“O”-A, from the upper transmission deck down through the right side baggage compartment, through the existing opening in the baggage compartment floor, under the floor forward to the forward evaporator. The short length of hose connects to the aft evaporator return fitting above the transmission deck. The longer length above the transmission deck is routed against the cabin back wall to the compressor suction fitting located on the left side of the transmission.		
10.4	Route the evaporator expansion valve supply line high pressure hose assembly #6, P/N 570072 – “O”-A, from the baggage department down through the existing opening in the baggage compartment floor, under the floor forward to the forward evaporator. The tee fitting connects to the “out” or supply fitting on the dryer bottle. The short length to the evaporator.		
10.5	Clamp the coil on the end of the expansion valve to the return hose fitting (#10 large line) with a 1-inch band clamp. Assure the fitting is clean where the coil is clamped. Insulate the coil completely with cork tape, P/N 070078-0.		
10.6	Route the condenser supply line hose assembly #8, P/N 570024-“O”-A, from the compressor discharge fitting against the cabin back wall to the right side of the transmission deck. Route down the same opening in the transmission deck as the return hose was routed. Connect to condenser. Ref. Drawing No. 3-4-AS350.		

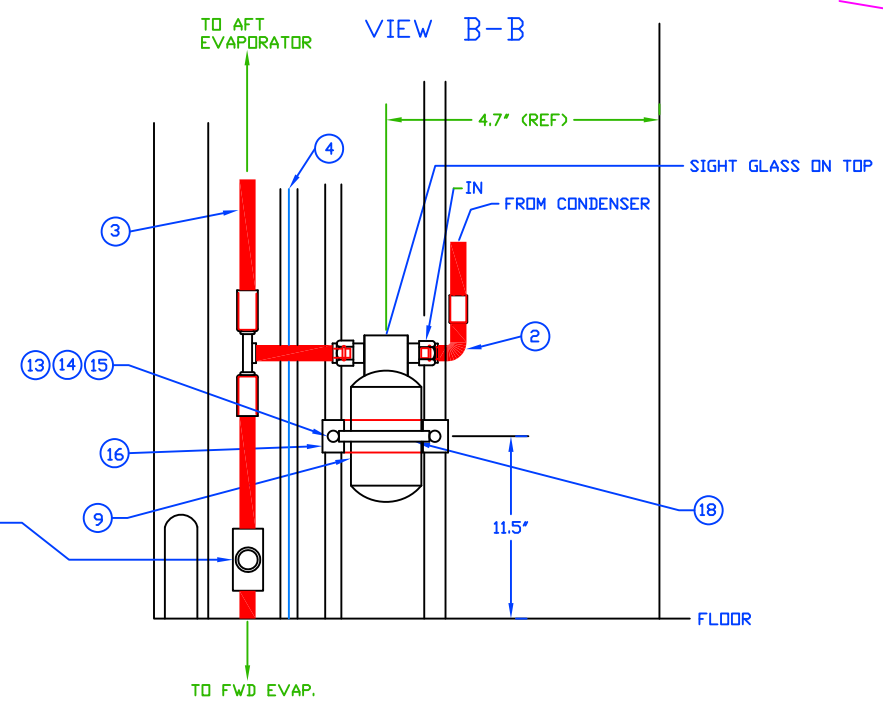
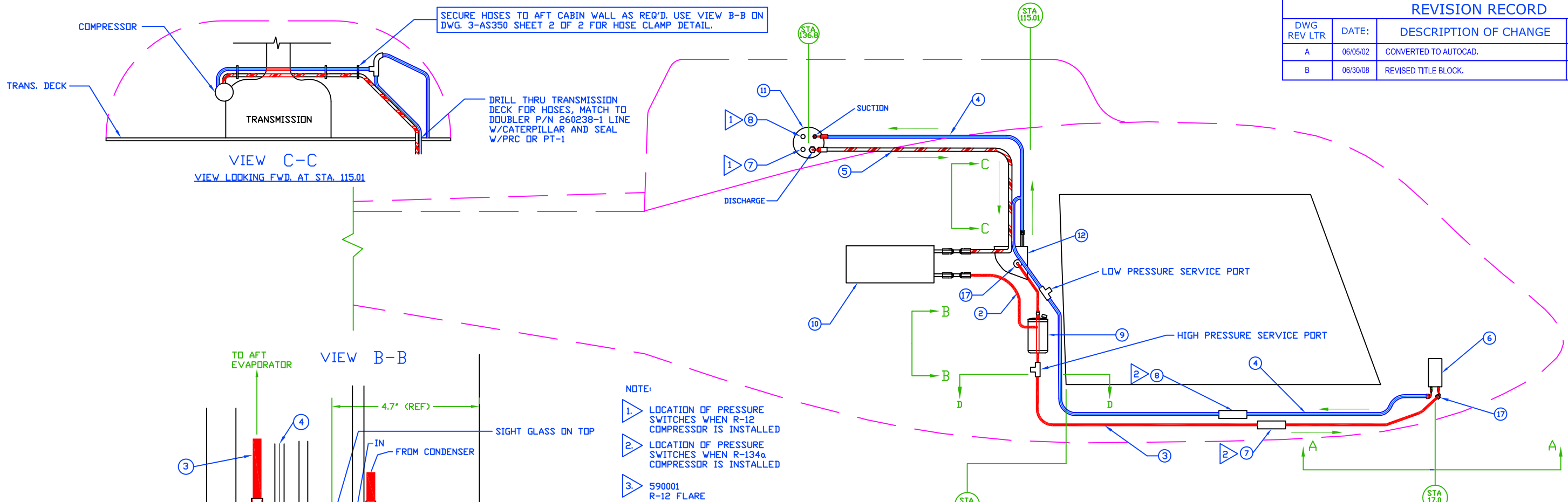
Integrated Flight Systems  
INSTALLATION OF HOSES – AS350 Air Conditioning

**Installation of Hoses**

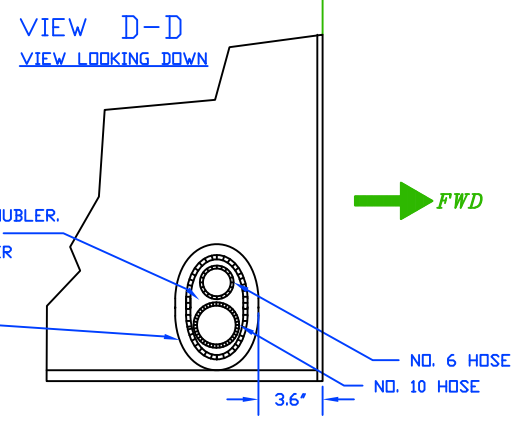
<b>STEP</b>	<b>PROCEDURE</b>	<b>MECH</b>	<b>INSP</b>
10.7	Install drier mount bracket, P/N 260123-2. per Drawing No. 3-4-AS350 and drier bottle, P/N 090016-5		
10.8	Do not connect drier bottle up until all lines are connected and you are ready to vacuum down system. Install hose assembly, P/N 570020-“O”-A.		
10.9	Connect high and low pressure switches. Be sure to connect the correct wire to each switch. Low pressure SW. P/N 050107, High pressure switch, P/N 90004.		

REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE

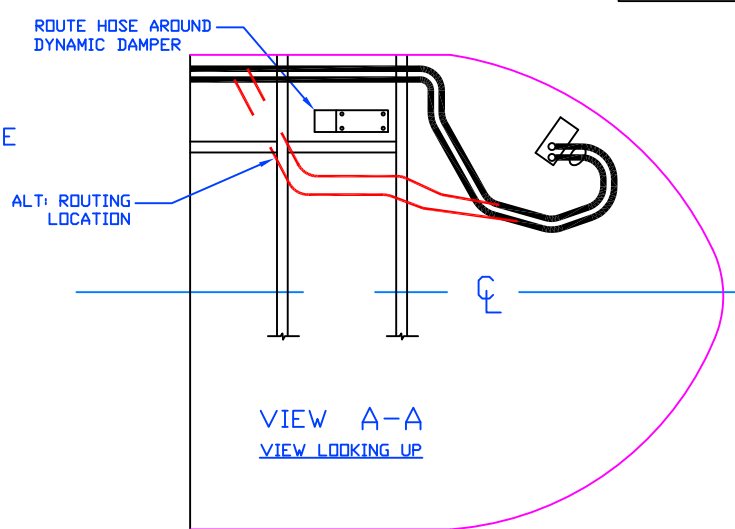


- NOTE:
- 1. LOCATION OF PRESSURE SWITCHES WHEN R-12 COMPRESSOR IS INSTALLED
  - 2. LOCATION OF PRESSURE SWITCHES WHEN R-134a COMPRESSOR IS INSTALLED
  - 3. 590001 R-12 FLARE  
590001-0" R-12 "O" RING  
590001-1" R-134a W/ESTER OIL  
590001-2" R-134a W/SP-20 OIL  
590008 ALT: 590008-1 R-134a W/ESTER OIL



QTY	ITEM	PART NUMBER	DESCRIPTION
1	18	060036	3 INCH BAND CLAMP
2	17	090002-O	EXPANSION VALVE
1	16	260123-2	RECEIVER DRIER MOUNT
2	15	MS21044-N3	NUT
4	14	AN960-10	WASHER
2	13	AN3-5A	BOLT
1	12	560010-O-5	AFT EVAPORATOR
1	11	590008	COMPRESSOR 24 VDC R-134a O-RING
1	10	550007-1	CONDENSER (ALT: 550007-2 FOR DUAL BLOWERS)
1	9	090016-5	RECEIVER DRIER BOTTLE
1	8	050107	LOW PRESSURE SWITCH
1	7	090004	HIGH PRESSURE SWITCH
1	6	560025-O	FORWARD EVAPORATOR
1	5	570024-O-A	HOSE ASSY COMPRESSOR TO CONDENSER
1	4	570087-O-A	HOSE ASSY FWD EVAPORATOR TO AFT EVAPORATOR
1	3	570072-O-A	HOSE ASSY. AFT EVAP TO FWD. EVAP TO REC/DRIER
1	2	570020-O-A	HOSE ASSY. COND. TO REC./DRIER
-	1	RESERVED	-

- NOTE:
- ALTERNATE HOSE:  
1991-ON NEOPRENE BARRIER TYPE
- #6 P/N 090078 BASIC
  - #8 P/N 090079 PRODUCT
  - #10 P/N 090080 IFS P/N
- 1995-ON NEOPRENE REDUCED BARRIER TYPE
- #6 P/N 090089
  - #8 P/N 090090
  - #10 P/N 090091
- FERRULES FOR ABOVE
- #6 P/N 090081 BASIC
  - #8 P/N 090082 PRODUCT
  - #10 P/N 090083 IFS P/N
- MUST USE ATCO REDUCED BARRIER TYPE FITTINGS & ATCO CRIMPER P/N 3700 OR MASTERCODL P/N 71500



#10 HOSE	
#8 HOSE	
#6 HOSE	



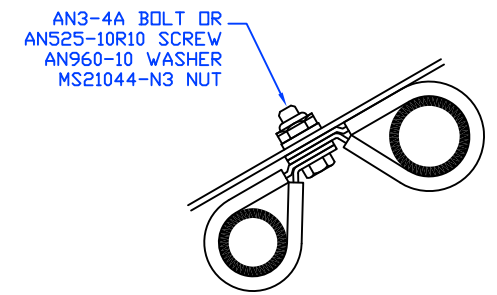
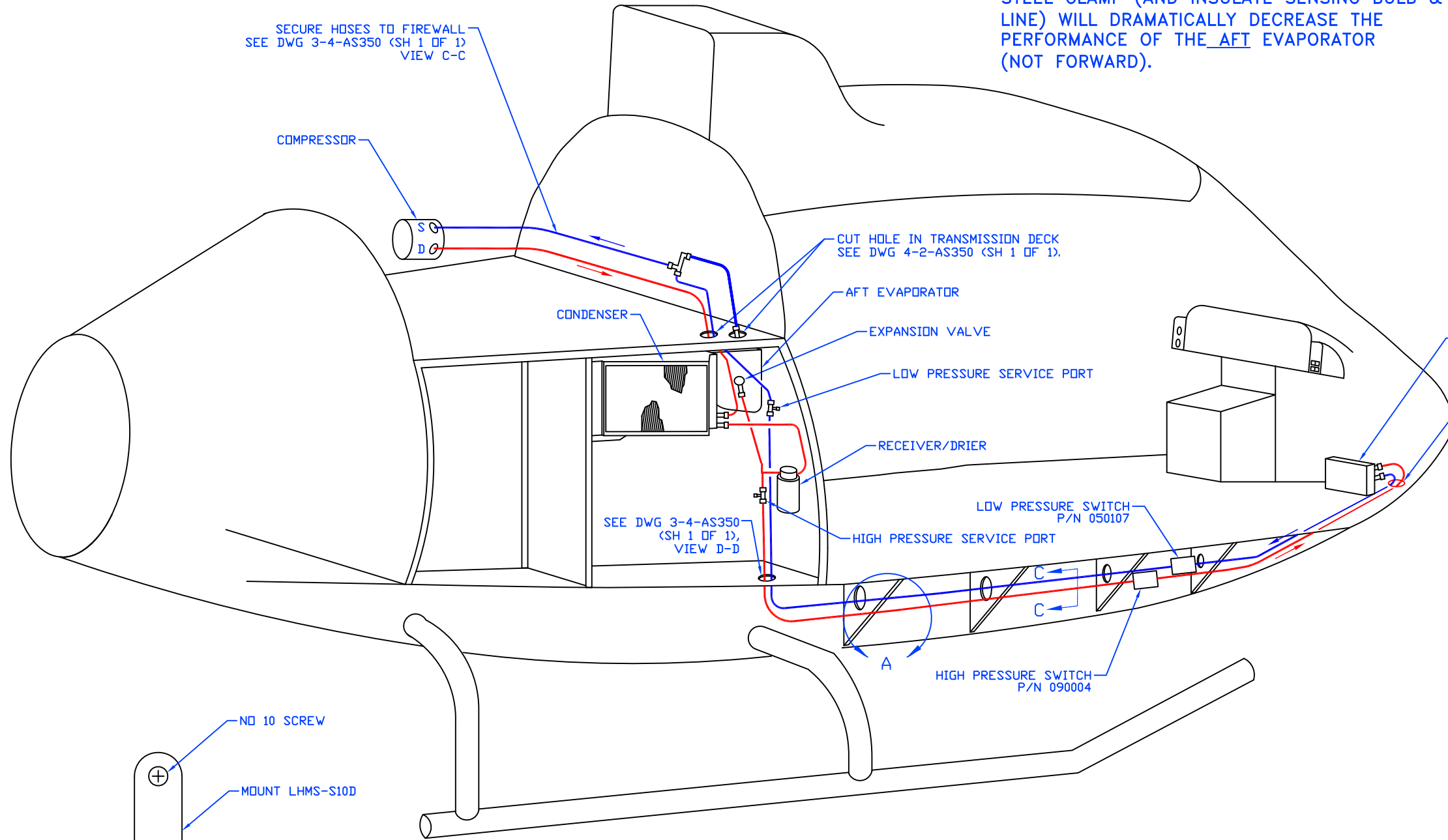
TITLE: PLUMBING DIAGRAM

DRAWN BY: N.DEAN	DATE: 06/05/02	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350		DWG No. 3-4-AS350		

**EXTREMELY IMPORTANT**

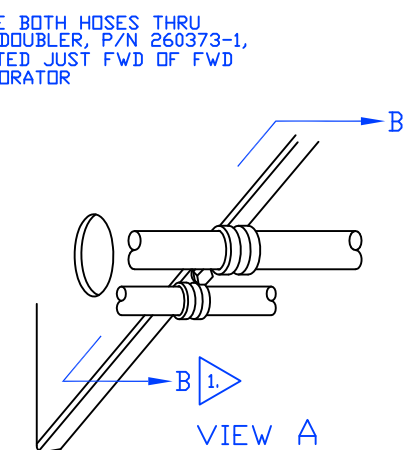
FAILURE TO SECURE EXPANSION VALVE SENSING BULB, TIGHTLY, TO THE RETURN LINE HOSE FITTING (#10) WITH A STAINLESS STEEL CLAMP (AND INSULATE SENSING BULB & LINE) WILL DRAMATICALLY DECREASE THE PERFORMANCE OF THE AFT EVAPORATOR (NOT FORWARD).

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	06/05/02	CONVERTED TO AUTOCAD.		
B	06/30/08	REVISED TITLE BLOCK.	MLD	JTYE



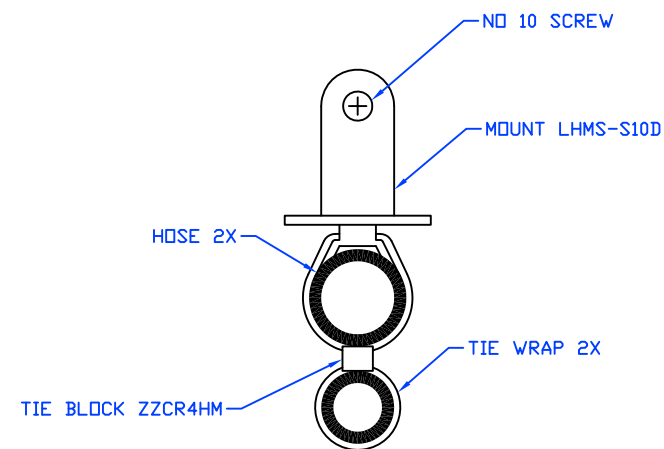
VIEW B-B

1. ALTERNATE: P/N LHMS-S10D MOUNT USE #10 SCREW OR AN3 BOLT WITH TIE WRAP & ZZCR4HM BLOCK IF DESIRED (SEE VIEW B-B "ALTERNATE")



VIEW A

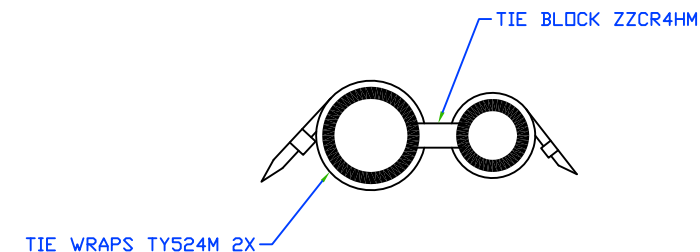
TYPICAL HOSE INSTALLATION:  
 FOR #6 HOSE ATTACH WITH ADEL CLAMP MS21919DG10 & HARDWARE AS SHOWN  
 FOR #8 HOSE ATTACH WITH ADEL CLAMP MS21919DG11 & HARDWARE AS SHOWN  
 FOR #10 HOSE ATTACH WITH ADEL CLAMP MS21919DG12 & HARDWARE AS SHOWN  
 NOTE, INWARD PLACEMENT OF CLAMPS TO FACILITATE INSTALLATION USING ONLY ONE SCREW, WASHER & NUT SET-UP.



VIEW B-B

"ALTERNATE"

NOTE:  
 USE EXISTING LIGHTENING HOLES ONLY FOR ALL ROUTING (PREFERRED).  
 INSTALL PER VIEW B-B OR ALTERNATE VIEW B-B OR VIEW C-C



VIEW C-C



TITLE: PLUMBING ROUTING				
DRAWN BY: MAH	DATE: 11/01/99	REV B	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AS350			DWG No. 3-14-AS350	



## Engineering Change Order

ECO No.  
0288

Drawing Number	Revision	Drawing Title
3-4-AS350	B	Plumbing Diagram

Reason for Change: To add O-Rings to B.O.M. & added alternate compressor assembly to Item 11.

Description of Change:

1. Added item 19: 090092, #6 O-Ring, Qty. 4
2. Added item 20: 090093, #8 O-Ring, Qty. 3
3. Added item 21: 090094, #10 O-Ring, Qty. 3
4. Item 11 description Was: COMPRESSOR 24 VDC R-134a O-RING  
Is: COMPRESSOR 24 VDC R-134a O-RING (590008-1 GROOVED)

----- LAST ITEM -----

**Engineering Review Board Approval**

Signature	Stamp	Date	Comment
	ERB02	06/08/11	
	MRB06	06/08/11	
	MRB05	06/08/11	

# Step 11

# Paperwork

Integrated Flight Systems  
PAPERWORK – AS350 Air Conditioning  
DETAILED WEIGHT AND BALANCE DATA

FOR

**INTEGRATED FLIGHT SYSTEMS**

FREON AIR CONDITIONING

UNIT INSTALLED IN A

TYPICAL HELICOPTER, MODEL AS350 B, BA, B1, B2, B3, C, D OR D1

**PERTAINS TO KIT #350-00-011**

<b>ITEM</b>	<b>WEIGHT</b>	<b>ARM</b>	<b>MOMENT</b>
Forward Evaporator Assembly	10.0	19.00	190.00
Forward Air Outlets	4.0	31.32	125.28
Aft Evaporator and Return Air	9.0	120.00	1080.90
Aft Evaporator Blower	6.0	120.85	725.10
Condenser Coil and Mount	20.0	133.80	2676.00
Condenser Blower and Mount	8.0	148.60	1188.80
Compressor and Mount	12.0	147.80	1773.60
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	6.0	76.90	461.40
<hr/>			
Sub Total: (Air Conditioner)	79.0	111.85	8835.88

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**

United States of America  
Department of Transportation -- Federal Aviation Administration

# Supplemental Type Certificate

*Number* SH3509SW

PE: AG  
PROJ: SA3109RC-R

*This certificate issued to*

Integrated Flight Systems, Inc.  
3900 Falcon Way West, Hangar 16S  
Fort Worth, TX 76106

*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 27 of the Federal Aviation Regulations.*

*Original Product -- Type Certificate Number :* H9EU  
*Make :* Eurocopter France  
*Model :* AS-350 B, B1, B2, B3, BA, C, D, D1; EC130B4

*Description of Type Design Change:* Installation of a Single and Dual Condenser Blower Air Conditioning System in accordance with Integrated Flight Systems (IFS) Master Drawing List (MDL), Document No. DL-9 (Vapor Cycle Air Conditioning System with Belt Driven Compressor Utilizing Refrigerant R134a), Rev. R, dated 8/30/2010, or later FAA approved revision.

(See continuation sheet 3 of 3)

*Limitations and Conditions:*

The installer must determine whether this design change is compatible with previously approved modifications. If the holder agrees to permit another person to use this certificate to alter a product, the holder must 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 :* September 10, 1984

*Date reissued :* April 30, 1991; August 22, 2001; October 23, 2008

*Date of issuance :* September 20, 1985

*Date amended :* February 11, 1999;  
February 9, 2009; February 23, 2009;  
November 5, 2010



*By direction of the Administrator*

(Signature)

James A. Richmond, Acting Manager  
Rotorcraft Certification Office  
Southwest Region



United States of America  
Department of Transportation -- Federal Aviation Administration  
**Supplemental Type Certificate**  
(Continuation Sheet)

---

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

United States of America  
Department of Transportation -- Federal Aviation Administration

**Supplemental Type Certificate**  
(Continuation Sheet)

*Number* SH3509SW

Date of Issuance: September 20, 1985

Date Amended: November 5, 2010

*Description of Type Design Change* (Continued):

FAA approved helicopter Flight Manual Supplement (FMS) dated 6/26/85, or later FAA approved revision is required for Models AS350B, C, D, and D1. Model AS350B1, requires FAA approved helicopter FMS dated 10/27/8, or later FAA approved revision. Model AS350B2 requires FAA approved Helicopter FMS dated 4/30/91, or later FAA approved revision. Model AS350BA requires FAA approved helicopter FMS dated 5/15/92, or later FAA approved revision. Model AS350B3 requires FAA approved Helicopter FMS dated 2/8/99, or later FAA approved revision. Model EC130B4 requires FAA approved Helicopter FMS dated 2/6/04, or later FAA approved revision.

Instructions for Continued Airworthiness, IFS Document No. IFSE-0007, Rev. C, dated 8/12/2010, or later revision is required.



Transport  
Canada  
Civil Aviation

Transports  
Canada  
Aviation Civile

Suite 620  
800 Burrard Street  
Vancouver, B.C.  
V6Z 2J8

Your file    Votre référence

Our file    Notre référence  
P-03-0350

July 8, 2003

Integrated Flight Systems, subsidiary  
of Platinum Aviation Group, Inc.  
4655 Aircenter Circle  
Reno, Nevada 89502

**Attn:** Mr. Leroy Aday, President

**Subject:** Acceptance of FAA STCs SH3509SW and SH5947SW

Dear Mr. Aday:

This letter is in response to your application for Canadian acceptance of FAA STCs SH3509SW and SH5947SW, submitted to our office June 13, 2003, by the FAA Los Angeles Aircraft Certification Office.

In accordance with current Transport Canada policy concerning review of FAA-issued STCs for non-US state-of-design Normal Category rotorcraft, both STCs have been accepted in Canada without having to issue corresponding Canadian certificates.

Both FAA STC's will be entered into the national index of STCs that have been reviewed and accepted by Transport Canada for installation on Canadian-registered aeronautical products.

This letter confirms formal acceptance of the referenced STC by Transport Canada.

If you have any questions concerning this matter, I can be contacted by telephone at (604) 666-5269.

Yours truly,

David Bafia

For Regional Manager,  
Aircraft Certification

Canada 



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

## CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

**NÚMERO** 2006S12-08  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to: 4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions thereof as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

**Produto Original - Número do Certificado de Tipo:** 84 (FN 157).  
(Original Product - Type Certificate No:)

**Fabricante:** Eurocopter France.  
(Manufacturer:)

**Modelo(s):** AS 350 B.  
(Model(s):)

**DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:**  
(Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

See continuation sheet for applicable data.

**DATAS:**  
(Dates of:)

**Do Requerimento:** 28 Aug. 2006  
(Application:)

**Da emissão:** 13 Dec. 2006  
(Issue:)

**Da reemissão:**  
(Reissue:)

  
**CLÁUDIO PASSOS SIMÃO**

Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

  
**MILTON ZUANAZZI**  
Diretor-Presidente  
(Director President)



## AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

Folha de Continuação ao  
(Continuation Sheet to)

### CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO (Supplemental Type Certificate)

**NÚMERO 2006S12-08**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), Rev. B, dated 30 Apr. 1991, or later approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----

*Lawyer* *SP*



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO** 2006S12-09  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to:) 4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

**Produto Original - Número do Certificado de Tipo:** 8812 (ANAC).  
(Original Product - Type Certificate No:)

**Fabricante:** Eurocopter France.  
(Manufacturer:)

**Modelo(s):** AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA and.  
(Model(s):) EC 130 B4.

**DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:**  
(Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

See continuation sheet for applicable data.

**DATAS:**  
(Dates of:)

**Do Requerimento:** 28 Aug. 2006  
(Application:)

**Da emissão:** 13 Dec. 2006  
(Issue:)

**Da reemissão:**  
(Reissue:)

**CLÁUDIO PASSOS SIMÃO**  
Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

**MILTON ZUANAZZI**  
Diretor-Presidente  
(Director President)





**AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL**

Folha de Continuação ao  
(Continuation Sheet to)

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO 2006S12-09**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), as applicable:
  - Model AS 350 B1, requires FMS, Rev. A, dated 30 Apr. 1991 or later FAA approved revision;
  - Model AS 350 B2, requires FMS, Rev. NC, dated 30 Apr. 1991 or later FAA approved revision;
  - Model AS 350 B3, requires FMS, Rev. NC, dated 8 Feb. 1999 or later FAA approved revision;
  - Model AS 350 BA, requires FMS, Rev. NC, dated 15 May 1992 or later FAA approved revision;
  - Model EC 130 B4, requires FMS, Rev. NC, dated 6 Feb. 2004 or later FAA approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----



AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO** 2006S12-10  
(Number)

Este certificado, emitido com base na Lei nº 7565 "Código Brasileiro de Aeronáutica", de 19 de dezembro de 1986,  
(This certificate, issued in the basis of the Law No. 7565 "Código Brasileiro de Aeronáutica", dated 19 December 1986,

é conferido ao (à): Integrated Flight Systems Corp.  
is granted to:) 4607 B. Aircenter Circle  
Reno, Nevada 89502  
USA

por ter a modificação ao projeto de tipo do produto abaixo citado, observadas as limitações e condições  
(for having the change to the type design of the product mentioned below, with the limitations and conditions therefor as)  
especificadas, satisfeito aos requisitos de aeronavegabilidade aplicáveis.  
(specified hereon, met the applicable airworthiness requirements.)

Produto Original - Número do Certificado de Tipo: 8001 (ANAC).  
(Original Product - Type Certificate No:)

Fabricante: Helicópteros do Brasil S/A.  
(Manufacturer:)

Modelo(s): HB-350B.  
(Model(s):)

**DESCRIÇÃO DA MODIFICAÇÃO AO PROJETO DE TIPO:**  
(Description of Type Design Change:)

Installation of a Belt-Driven Freon Air Conditioning System in accordance with Integrated Flight Systems Drawing List No. DL-9 (single Condenser blower), Rev. J, dated 5 Dec. 2003, or later approved revision or Drawing List No. DL-9-1 (Dual Condenser blower), Rev. NC, dated 1 Jan. 1992, or later approved revision.

This CHST validates in Brazil the STC # SH3509SW, issued by FAA (USA).

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions:)

See continuation sheet for applicable data.

**DATAS:**  
(Dates of:)

Do Requerimento: 28 Aug. 2006  
(Application:)

Da emissão: 13 Dec. 2006  
(Issue:)

Da reemissão:  
(Reissue:)

  
CLÁUDIO PASSOS SIMÃO

Gerente Geral, Certificação de Produtos Aeronáuticos  
(Manager, Aeronautical Products Certification)

  
MILTON ZUAZZINI  
Diretor-Presidente  
(Director President)





**AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL**

Folha de Continuação ao  
(Continuation Sheet to)

**CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO**  
(Supplemental Type Certificate)

**NÚMERO 2006S12-10**  
(Number)

**LIMITAÇÕES E CONDIÇÕES:**  
(Limitations and Conditions.)

- I. The approval of this type design change should not be extended to other aircraft of these models on which other previously approved modifications are incorporated unless it is determined by the installer that the relationship between this change and any of those other previously approved modifications, including changes in Type Design, will introduce no adverse effect upon the airworthiness of that aircraft.
- II. 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.
- III. This installation is approved only for VFR operations.
- IV. Operation must be performed in accordance with the FAA approved Helicopter Flight Manual Supplement (FMS), Rev. B, dated 30 Apr. 1991, or later approved revision.
- V. For the Instructions for Continued Airworthiness, see the Operators Manual supplied with the Air Conditioning Kits.
- VI. A copy of this Certificate and the Supplement referred on item IV above shall be maintained as part of the permanent records of the modified aircraft.

----- END -----

*Paulo* *P*



European Aviation Safety Agency

## SUPPLEMENTAL TYPE CERTIFICATE

**EASA.IM.R.S.01243**

This certificate, established in accordance with Regulations (EC) No 1592/2002 and (EC) No 1702/2003 and issued to:

**Integrated Flight Systems Corp.**

4607 B Aircentre Circle

Reno

Nevada 89502

USA

certifies that the change in the type design for the product listed below with the limitations and conditions specified meets the applicable type certification basis and environmental protection requirements when operated within the conditions and limitations specified below:

**Original Product Type Certificate number:** *EASA TCDS EASA.R.008*

**Manufacturer:** *Eurocopter*

**Model:** *AS 350 B, B1, B2, B3, BA, D, EC130B4*

**Original STC Number:** *SH3509SW*

**Description of Design Change:**

Installation of a Belt Driven Freon Air Conditioning System (FAA STC SH3509SW).



## European Aviation Safety Agency

### Associated Technical Documentation:

- DL-9 rev A dated 12 Sept 1985 – Drawing List, Single Condenser Blower
- DL-9-1 rev N/C dated 10 Jan 1992 – Drawing List, Dual Condenser Blowers
- Models AS350B & D, FMS dated 26 June 1985 or later approved revision
- Model AS 350B1, FMS dated 27 October 1988 or later approved revision
- Model AS350B2, FMS dated 30 April 1991 or later approved revision
- Model AS350BA, FMS dated 15 May 1992 or later approved revision
- Model AS350B3, FMS dated 8 February 1999 or later approved revision
- Model EC130B4, RFM-130-00-031HP rev Original dated 6 February 2004 or later approved revision

### Limitations and Conditions:

1. VFR Operations only
2. This STC is approved only for the product configuration as defined in the approved design data referred to in the paragraphs "Description" and "Associated Technical Documentation". Compatibility with other aircraft/engine configurations shall be determined by the installer.

This certificate shall remain valid unless otherwise surrendered or revoked.

For the European Aviation Safety Agency,  
Date of Issue: 26 April 2007

Massimo Mazzoletti  
Certification Manager  
Rotorcraft, Balloons & Airships

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350B, C, D AND D1

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350 B,C,D,D1

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated June 7, 1978, when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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 Michael H. Borfitz,

Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: June 26, 1985

Revision: April 30, 1991

Air Conditioning

MODEL AS350 B,C,D,D1  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: June 26, 1985

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
1 thru 8	original	June 26, 1985	<i>jtj</i>
1 thru 2	"A" reissued	Oct. 27, 1988	<i>jtj</i>
Company name was: Consolidated Aire Systems			
Company name is: Av-Aire Corporation			
1 thru 2	"B" reissued	April 30, 1991	<i>jtj</i>
Company name was: Av-Aire Corporation			
Company name is: Integrated Flight Systems, Inc.			

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

FAA Approved: June 26, 1985  
Revision: April 30, 1991

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4.0 Performance..... 6

**APPENDIX**

A.0 System & Description..... 7

A.1 Electrical Loading..... 8

A.2 Weight & Balance..... 8



**1.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.



2.0 NORMAL PROCEDURES

2.1 GROUND OPERATION

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

2.2 NORMAL PROCEDURES

GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

**3.0 EMERGENCY PROCEDURES**

**3.1 EMERGENCY PROCEDURES**

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

**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 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**A-1 ELECTRICAL LOADING**

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

Condenser Blowers	1 each	@ 14 amps	= 14 amps
Compressor	1 each	@ 3 amps	= 3 amps
Evaporator Fan	1 each	@ 7 amps	= 7 amps
Evaporator Fan	1 each	@ 13 amps	= <u>13 amps</u>
		<b>TOTAL</b>	<b>37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350BA

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

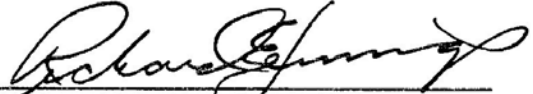
FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350BA

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated March 11, 1992 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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:   
Richard E. Jennings, Supervisor  
Denver Aircraft Certification  
Field Office  
Northwest Mountain Region  
Denver, Colorado 80207

Date: May 15, 1992

MODEL AS350BA  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: May 15, 1992

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
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**NOTE:** Revised portions of affected pages are identified by a vertical black line in the margin adjacent to the change.

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A.0 System & Description ..... 7

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A.2 Weight & Balance ..... 8



## **1.0 GENERAL**

The installation consists of a belt driven vapor-cycle (freon) air conditioning system.

## **2.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

### 3.0 EMERGENCY PROCEDURES

#### 3.1 EMERGENCY PROCEDURES

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

#### 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**

##### **2.1 GROUND OPERATION**

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

##### **2.2 NORMAL PROCEDURES**

###### **GROUND AND FLIGHT OPERATIONS**

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

#### **5.0 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**A-1 ELECTRICAL LOADING**

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

Condenser Blowers	1 each	@ 14 amps	= 14 amps
Compressor	1 each	@ 3 amps	= 3 amps
Evaporator Fan	1 each	@ 7 amps	= 7 amps
Evaporator Fan	1 each	@ 13 amps	= <u>13 amps</u>
		<b>TOTAL</b>	<b>37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL  
SUPPLEMENT  
FOR  
AS350B1

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED

HELICOPTER FLIGHT MANUAL SUPPLEMENT

FOR

AEROSPATIALE HELICOPTER CORPORATION

MODEL: AS350B1

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated February 13, 1987 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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:

*David T. Grossman*  
for Michael H. Borfitz,  
Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: October 27, 1988

REVISION: April 30, 1991

MODEL AS350B1  
FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: October 27, 1988

<u>PAGE</u>	<u>REVISION NO.</u>	<u>FAA APPROVED</u>	<u>INITIAL</u>
1 thru 7	original	October 27, 1988	<i>dy</i>
1 thru 2	"A" reissued	April 30, 1991	<i>dy</i>
Company name was: Av-Aire Corporation			
Company name is: Integrated Flight Systems, Inc.			

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



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**1.0 GENERAL**

The installation consists of a belt driven vapor-cycle (freon) air-conditioning system.

**2.0 OPERATING LIMITATIONS**

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.
- The air conditioning system must be turned "OFF" during take-off, approach and landing above 7000 feet density altitude.
- The air conditioning system must be turned "OFF" to obtain the FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**3.0 EMERGENCY PROCEDURES**

**3.1 EMERGENCY PROCEDURES**

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

**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

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

4.2 NORMAL PROCEDURES

GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired (Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

5.0 PERFORMANCE:

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle (freon) air-conditioning 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 to the right of the instrument panel. 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 dual evaporator fans, condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. Another evaporator fan speed switch is located in the aft cabin. It provides two speed selections. Thermostatic temperature control is not provided. A 5 amp circuit breaker below the left air outlet disconnects power to all relays.

A high pressure safety switch, located on the condenser, disengages the compressor and stops operation of the system in the event of excessive freon pressure. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself and the system will cycle on again when the pressures are reduced below a predetermined point.

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 2 each 15 amp and 1 each 20 amp circuit breakers. Labeled CONDENSER FAN and EVAPORATOR FANS, in the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

**A-1 ELECTRICAL LOADING**

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

Condenser Blower	1 each @ 14 amps = 14 amps
Compressor	1 each @ 3 amps = 3 amps
Evaporator Fan	1 each @ 7 amps = 7 amps
Evaporator Fan	1 each @ 13 amps = <u>13 amps</u>
	<b>TOTAL 37 amps</b>

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed. Approximate air conditioning kit weight is 80 pounds. See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL

SUPPLEMENT

FOR

AS350B2

INTEGRATED FLIGHT SYSTEMS, INC.  
POST OFFICE BOX 25687  
COLORADO SPRINGS, CO 80936

FAA APPROVED  
HELICOPTER FLIGHT MANUAL SUPPLEMENT  
FOR  
AEROSPATIALE HELICOPTER CORPORATION

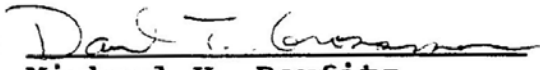
MODEL: AS350B2

Registration No. \_\_\_\_\_

Serial No. \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual, dated June 8, 1990 when an Integrated Flight Systems, Inc. air conditioning system is installed in accordance with STC No. SH3509SW. The information contained herein supplements or supersedes 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 Michael H. Borfitz,  
Supervisor, Denver Aircraft  
Certification Field Office  
2390 Sycrause  
Denver, Colorado 80207

Date: April 30, 1991

Air Conditioning

MODEL AS350B2

FLIGHT MANUAL SUPPLEMENT

LOG OF REVISIONS

Original.....

Dated: April 30, 1991

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1.0 GENERAL

The installation consists of a belt driven vapor-cycle (freon) air-conditioning system.

2.0 OPERATING LIMITATIONS

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the generator is inoperative.
- "MAG compass deviation may be excessive with air conditioner or fan - ON". Turn air conditioner "OFF" to read mag compass.

3.0 EMERGENCY PROCEDURES

3.1 EMERGENCY PROCEDURES

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

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**

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "ON" - Move switch to "A/C".
- To turn air conditioner "OFF" - Move switch to "OFF".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

**4.2 NORMAL PROCEDURES**

**GROUND AND FLIGHT OPERATIONS**

- Ventilation Control - As desired  
(Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

**5.0 PERFORMANCE:**

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

**Single 7" Vane Axial Condenser Blower (1):**

System electrical protection is provided by 2 each 15 amp, 1 each 25 amp, and 1 each 1 amp circuit breakers. Labeled EVAP, EVAP, COND, and RESET on the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

Electrical "soft start" is provided. When the "A/C" switch is positioned to "ON", both evaporator fan/blowers immediately start causing a 20 amp draw. A timer delays the condenser blower and clutch operation for about 4 seconds, when an additional 21 amps are added to the system load.

**A-1 ELECTRICAL LOADING (7" Enviro System, Inc. blower)**

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

Condenser Blower	1 each @	19 amps	=	19 amps
Compressor	1 each @	2 amps	=	2 amps
Evap. Fan (Fwd)	1 each @	7 amps	=	7 amps
Evap. Fan (Aft)	1 each @	13 amps	=	<u>13 amps</u>

**TOTAL 41 amps**

**LOAD SHEDDING**

Automatic electrical load shedding will not occur if a D.C. generator failure occurs.

NOTE:      \*\*During conditions of high D.C. current use, such as battery recharging after engine start, use of landing lights, etc., it is possible that the electrical power requirements with the air conditioning "ON" may exceed the rated output of the generator (150 amps, max.).

**A-2 WEIGHT AND BALANCE**

Weight and Balance must be computed with air conditioning system installed.  
 Approximate weight is 79 pounds.  
 See Installation Instructions supplied with kit for actual weight.

FLIGHT MANUAL

SUPPLEMENT

FOR

AS350B3

INTEGRATED FLIGHT SYSTEMS, INC.  
MEADOW LAKE AIRPORT  
8345 BLUE GILL DRIVE  
FALCON, CO 80831

FAA APPROVED

HELICOPTER FLIGHT MANUAL SUPPLEMENT

FOR

EUROCOPTER HELICOPTER CORPORATION

MODEL: AS350B3

REGISTRATION NO.: \_\_\_\_\_

SERIAL NO.: \_\_\_\_\_

This supplement must be attached to the DGAC/FAA approved Rotorcraft Flight Manual May 7, 1998 when an Integrated Flight Systems, Inc., air conditioning system is installed in accordance with Supplemental Type Certificate number SH3509SW. 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: 

Mr. Carl Mittag  
Manager, Southwest Region  
Certification Office ASW-170  
Ft. Worth, Texas 76193-170

DATE: FEB 08 1999

Page 1 of 7

Integrated Flight Systems, Inc.  
Meadow Lake Airport  
8345 Blue Gill Dr.  
Falcon, CO 80831

Rotorcraft Flight Manual  
Supplement for AS350B3  
Air Conditioning

**MODEL AS350B3**

**LOG OF REVISIONS**

Original. . .

Dated: \_\_\_\_\_

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



Integrated Flight Systems, Inc.  
Meadow Lake Airport  
8345 Blue Gill Dr.  
Falcon, CO 80831

Rotorcraft Flight Manual  
Supplement for AS350B3  
Air Conditioning

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## 1.0 GENERAL

The installation consists of a belt drive vapor-cycle air conditioning system.

## 2.0 OPERATING LIMITATIONS

- The air conditioning system must be "OFF" during engine start.
- Operation of the air conditioning system is prohibited if the total electrical load will exceed 150 amps, continuous or if generator is inoperative.
- "MAG" compass deviation may be excessive with air conditioner or fans - "ON". Turn air conditioner "OFF" to read MAG compass.

## 3.0 EMERGENCY PROCEDURES

### 3.1 EMERGENCY PROCEDURES

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

### 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

- Air conditioning system operation: The air conditioning control switches are located to the right of the instrument console.
- To turn air conditioner "OFF" - Move switch To "AC".
- For air circulation without cooling - Move switch to "FAN".
- Select desired blower speed.

##### 4.2 Normal Procedures

###### GROUND AND FLIGHT OPERATIONS

- Ventilation Control - As desired (Close for cockpit/cabin cooling)
- Air conditioning Control Switch - As desired.
- Air conditioning Fan Speed Control Switch - As desired.

#### 5.0 PERFORMANCE

The air conditioning system must be turned "OFF" to obtain FAA approved Rotorcraft Flight Manual performance above 7,000 feet density altitude.

**A.0 SYSTEM AND DESCRIPTION**

The air conditioning installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant.

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 below the IFS air vent on the right side of the instrument panel glare shield, when a STANDARD interior is installed. 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 dual evaporator fans, single condenser blower, and belt driven compressor. The second rocker switch provides for "HIGH", "LOW", AND "MED" evaporator fan speed selection for the cockpit. A third rocker switch, located in the aft cabin ceiling provides two (2) speed evaporator blower speed selection for the aft cabin.

A 5 amp circuit breaker located below the IFS air vent on the left side of the glare shield disconnects 28 VDC power to all air conditioning system power relays.

A high pressure safety switch, located on the compressor (or under the cabin floor, outboard of the right side keel beam on later kits) disengages the compressor clutch in the event of excessive refrigerant pressures. This can occur due to failure of the condenser blower or restricted air intake. The switch will automatically reset itself.

A low pressure safety switch is located on the compressor (or under the cabin floor, outboard of the right side keel beam). It opens and stops operation of the compressor clutch in the event refrigerant loss occurs. The switch will automatically reset.

Although both safety switches will reset, the occurrence of either fault causes a 1 amp circuit breaker in the "Master A/C Electrical Panel" to trip. The compressor clutch and condenser blower are electrically dis-engaged when this occurs. Maintenance personnel MUST correct the fault once the aircraft is on the ground.

Air circulation is still available, even if a fault occurs.

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

Temperature control is not provided.

FAA APPROVED: **FEB 08 1999**

**Single 7" Vane Axial Condenser Blower (1):**

System electrical protection is provided by 2 each 15 amp, 1 each 25 amp, and 1 each 1 amp circuit breakers. Labeled EVAP, EVAP, COND, and RESET on the Air Conditioning Electrical Control Panel. This panel is located in the right side baggage compartment above the battery.

Electrical "soft start" is provided. When the "A/C" switch is positioned to "ON", both evaporator fan/blowers immediately start causing a 20 amp draw. A timer delays the condenser blower and clutch operation for about 4 seconds, when an additional 21 amps are added to the system load.

**A-1 ELECTRICAL LOADING (7" Enviro System, Inc. blower)**

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

Condenser Blower	1 each @	19 amps	=	19 amps
Compressor	1 each @	2 amps	=	2 amps
Evap. Fan (Fwd)	1 each @	7 amps	=	7 amps
Evap. Fan (Aft)	1 each @	13 amps	=	<u>13 amps</u>

**TOTAL 41 amps**

**LOAD SHEDDING**

Automatic electrical load shedding will not occur if a D.C. generator failure occurs.

NOTE:      \*\*During conditions of high D.C. current use, such as battery recharging after engine start, use of landing lights, etc., it is possible that the electrical power requirements with the air conditioning "ON" may exceed the rated output of the generator (150 amps, max.).

**A-2 WEIGHT AND BALANCE**

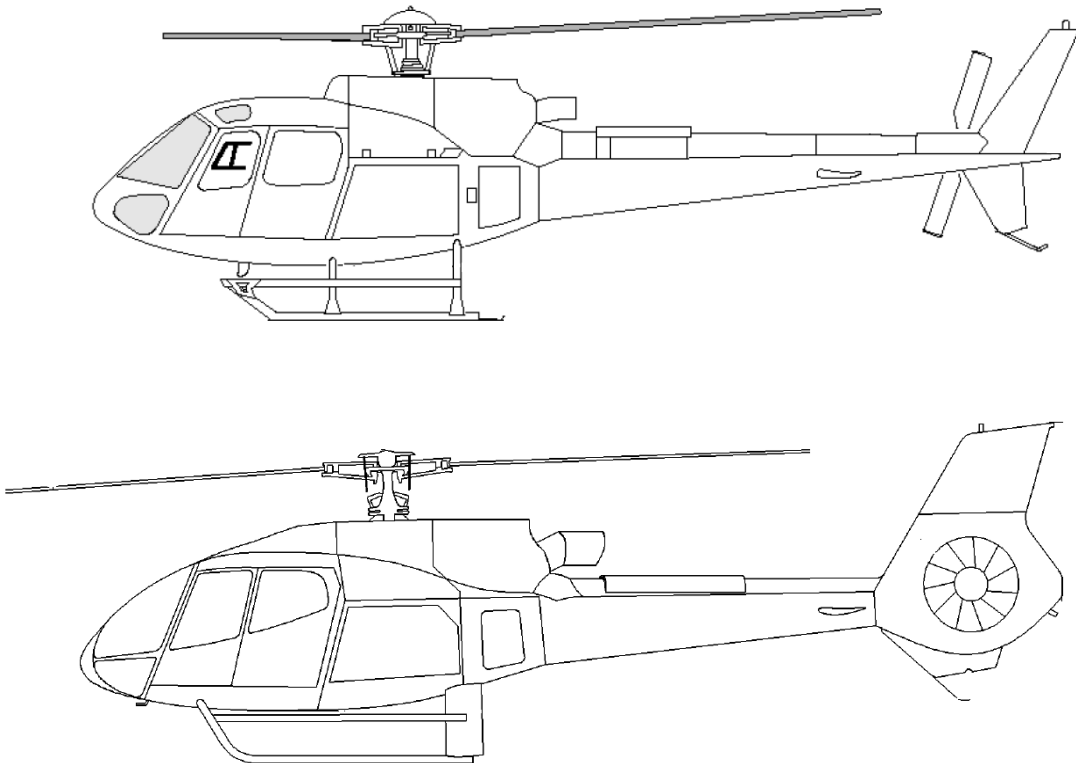
Weight and Balance must be computed with air conditioning system installed.  
 Approximate weight is 79 pounds.  
 See Installation Instructions supplied with kit for actual weight.

# Step 12

## Continued Airworthiness



Instructions for Continued  
Airworthiness for the  
Eurocopter AS-350C, D, D1, B1, B2, B3, BA & EC-130 B4  
Air Conditioning System Installation



PROJECT: SA3109RC-R  
STC: SH3509SW



## LOG OF REVISIONS

Instructions for Continued Airworthiness for the Eurocopter AS-350C, D, D1, B, B1, B2, B3, BA and EC-130B4 Air Conditioning System Installation have been reviewed and found to be acceptable to the Administrator. For the purpose of these Instructions for Continued Airworthiness (ICA), acceptable to the Administrator means the ICA contains the applicable requirements specified in Appendix A to Federal Aviation Regulations Part 27 or 29, as appropriate, do not contain any incorrect terminology or incorrect references, and contain a Cover Page, Log of Accepted Revisions, Revision Control Procedure and Record of Temporary Revisions, a list of Effective Pages, and a Table of Contents.

REV.	Date	Description	Written By	Checked By	FAA Approval	Approval Date
-	05/03/10	Original Issue	E. Sherrill	P. Ban		
A	06/11/10	Incorporated FAA redlines	E. Sherrill	K. Sheridan		
B	08/08/10	Revised to add Brushless Motor part information, page 87	E. Sherrill	P. Ban		
C	08/12/10	Incorporated FAA redlines	E. Sherrill	P. Ban		







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Revision C

August 12, 2010

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## Chapter 1

### Section 01-00-00 Introduction

These are accepted Instructions for Continued Airworthiness for modifications performed in accordance with the Eurocopter AS-350C, D, D1, B, B1, B3, BA and EC-130B4 Belt-Driven Vapor Cycle Air Conditioning System Installation. All references to the Air Conditioning System in this document will refer to the Belt-Driven Air Conditioning System Installation and other related components specified in STC – SH3509SW. Whether modified by Integrated Flight Systems Corp. or by another Agency with expressed permission from IFS these Instructions for Continued Airworthiness (ICA) should be supplied to the owner/operator of the STC at the time of completion. Subsequent accepted changes to the ICA will be submitted by Integrated Flight Systems, Corp for distribution to owners and operators of the STC.

This, Instructions for Continued Airworthiness, is intended to supplement the AS-350C, D, D1, B, B1, B2, B3, BA, and EC-130B4 rotorcraft maintenance manuals provided by Eurocopter The information, procedures, requirements, and limitations contained in this, Instructions for Continued Airworthiness, for this type design change supersede the information, procedures, requirements, and limitations contained in the rotorcraft's maintenance manual when the type design change is installed on the Type Certificate Holder's rotorcraft.



## Chapter 4

### Section 04-00-00 Airworthiness Limitations

There are no additional airworthiness limitations associated with the Air Conditioning System Installation.

There are no life limited components associated with the Air Conditioning System Installation.

## Chapter 5

### Section 05-00-00 Continued Airworthiness Inspections

#### 1. General

This chapter contains time limit intervals for the Component Overhaul Schedule and Scheduled Inspections for the Air Conditioning System. This chapter is to be added to the approved scheduled inspection for the rotorcraft.

#### 2. Scheduled Inspections Overview

This chapter describes the inspections that must be accomplished on the Air Conditioning System Installation at Scheduled Inspection intervals. Scheduled Inspection requirements must be complied with at the hourly and/or calendar time intervals specified. Refer to Tables 5-01 and 5-02, in Section 05-20-00 for hourly and/or calendar inspection schedules.

#### 3. Conditional Inspection

After any operational incident involving hard landings, sudden stoppage of the drive train or water immersions the system must not be operated and an Annual/100 flight hour inspection is required.

#### 4. Documentation

Aircraft mechanics, owners, or operators are required to keep records of the aircraft systems inspections and repairs. This includes, but is not limited to, airworthiness directives, service notices, scheduled inspections and records.

#### 5. Definitions and Abbreviations

The following is short descriptions of words and terms used in the procedures for the required scheduled inspections.

##### Definitions:

- **Ambient air temperature:** The temperature of the air surrounding a person.
- **Charging station:** An air conditioning system service.
- **Cold:** The absence of heat.
- **Condensation:** The process of changing a vapor into a liquid.
- **Condition:** The state of an item or component compared to a known standard.
- **Damage:** Physical deterioration of a component.
- **Desiccant:** A material used in the receiver/dryer bottle, to absorb moisture from the refrigerant.

- **Evaporate:** To change from a liquid into a vapor.
- **Examine:** Look carefully to find the condition of the component. Find how that condition is related to a specific standard.
- **Heat load:** The amount of heat which the air conditioner is required to remove from the aircraft cabin.
- **Inches of Mercury:** A measurement of pressure normally used for pressures below atmospheric, one i-h of mercury is equal to approximately one half pound per square i-h.
- **Inspection:** A procedure that includes checking, inspecting and examining a system or component.
- **Maintenance:** The servicing and/or repair of a rotorcraft, a system or a component that keeps it serviceable.
- **Pressure, ambient:** The pressure of the air surrounding a body, normally measured in Pounds per Square i-h, or PSIG.
- **Refrigerant:** A fluid which is used in an air conditioning system to absorb heat from the cabin and carry it outside the helicopter where it can be transferred to the outside air.
- **Relative Humidity:** The ratio of the amount of water vapor in the air to the amount of water vapor required to saturate the air at the existing temperature.
- **Scheduled Inspection:** An inspection procedure that must occur at a specified calendar interval or at specific operational time intervals. Scheduled Inspections are required to help ensure the rotorcraft stays airworthy.
- **Security:** Term used for inspection of hardware and components to make sure they are properly attached and tightened.
- **Temperature Differential :** Difference in temperature.
- **Thermostat:** An air condition control which senses the temperature of the evaporator coil and causes the system to cycle or by-pass to maintain the proper temperature of cooling air.
- **Vacuum:** A negative pressure, or pressure below atmospheric; it is usually expressed in inches of mercury.
- **Vapor:** The gaseous state of a material.

**Abbreviations:**

- **ICA:** Instructions for Continued Airworthiness
- **TD:** Temperature differential
- **In:** Inches
- **InHg:** Inches of Mercury
- **lbs:** Pounds





- **oz:** Ounces
- **Psig:** Pounds per Square I-h (gauge)
- **gr:** Grams
- **kg:** Kilograms
- **kgcm:** Kilograms Per Centimeter
- **ml:** Milliliters
- **mm:** Millimeters
- **N-m:** Newton-meters

## Section 05-20-00 Continued Airworthiness Scheduled Inspections

### 1. General

This section contains requirements for scheduled inspections.

### 2. Scheduled Inspection Program

The Air Conditioning System Installation requires scheduled inspections in order to maintain continued airworthiness. Every effort should be made to perform the inspections with the aircraft placed in a clean well lit environment. There are two different scheduled inspections required for the Air Conditioning System Installation.

#### a) 50-Hour Inspection

The 50-hour inspection is required to be performed every 50 hours of rotorcraft time-in service. Inspection Table 5-01 specifies the requirements of the 50-hour inspection. The 50 hour inspection does not require any component removal unless a discrepancy is encountered.

#### b) 1 Year (annual)/ 100-Hr Inspection

The 1 year (annual) inspection is required to be performed every 1 year period of calendar elapsed time, as well as every 100 hours of rotorcraft time-in service. Inspection Table 5-02 specifies the requirements of the 1 year (annual) inspection.

### 3. Tools and Special Tools for Scheduled Inspection

Although not necessarily considered special tools, the adjustable ball swivel mirror and bright flashlight and / or drop light are standard requirements for doing inspections. These items should be used freely and frequently to enhance inspection quality and help ensure discrepancies are not missed. It is important to have adequate lighting for all phases of the inspection.

The special tools necessary for the Air Conditioning System Installation inspection are listed as follows:

- a) Vacuum Pump
- b) Gauge Manifold
- c) Vacuum Cleaner
- d) Pull Scale

**Table 5-01 50- Hour Inspection**

<ul style="list-style-type: none"> <li>The 50-hour inspection shall be accomplished each 50 hours time-in-service.</li> <li>Initial each item after accomplishing the inspection.</li> <li>Record all findings and attach a copy of findings to this inspection form.</li> <li>After correction of all findings, make maintenance record entry.</li> </ul>		
Registration No.	Serial No.	Helicopter Total Hours
<b>PRE-INSPECTION</b>	<b>Initial each item after accomplishment</b>	<b>Initial</b>
1. Review Airworthiness Directives.		
2. Review records and overhaul schedule.		
3. Review log books for discrepancies.		
<b>INSPECTION</b>	<b>Initial each item after accomplishment</b>	<b>Initial</b>
1. Access the condenser (Ref. Section 6-00-00 Dimensions and Access). Check the entire condenser assembly for security, including support brackets and attachment fittings. Visually inspect the condenser blower mount.		
2. Access the compressor (Ref. Section 6-00-00 Dimensions and Access). Visually inspect the security of the compressor and mount.		
3. Inspect the condition of the belt for cracks, deterioration, separation and worn or flat spots. Change belt if necessary. Check belt for proper tension (Ref. 12-60-00 Belt Tension).		
4. Access the evaporators (Ref. 6-00-00 Dimensions and Access). Visually inspect for security.		
5. Inspect air outlets for condition.		
6. Test normal operation functions. (Ref. Section 12-50-00 Normal Operation Function Test)		

**Table 5-02 1 Year (Annual)/100 Hour Inspection Schedule**

<ul style="list-style-type: none"> <li>The 1 Year/100 Hour inspection shall be accomplished at least at an interval of once every year of elapsed calendar time and every 100 hours time-in-service.</li> <li>Initial each item after accomplishing the inspection.</li> <li>Record all findings and attach a copy of findings to this inspection form.</li> <li>After correction of all findings, make maintenance record entry.</li> </ul>		
Registration No.	Serial No.	Helicopter Total Hours
<b>PRE-INSPECTION</b>	<b>Requirement</b>	<b>Initial</b>
	1. Review Airworthiness Directives.	
	2. Review records for the Air Conditioning System	
	3. Review log books for discrepancies.	
<b>INSPECTION</b>	<b>Requirement</b>	<b>Initial</b>
	1. Perform an operational test of the system in accordance with Section 12-50-00	
	2. Complete the 50 Flight Hour Scheduled Inspection found in Table 5-01	
	3. Access the compressor drive belt (Ref. Section 6-00-00 Dimensions and Access) and change the drive belt. (Ref. Section 12-70-00 Drive Belt Change Procedures) Check the belt for proper tension. (Ref. 12-60-00 Belt Tension)	
	4. Inspect the compressor for a true turning and free clutch. One mechanic should turn the main rotor blade while another observes the belt and clutch faceplate. Turn system to "A/C" and check magnetic operation of clutch faceplate. An independent #14 wire may be necessary from the compressor to an airframe ground in order to endure that the clutch engages in a positive manner. If clutch plate and pulley show signs of excessive heat, replace clutch pulley assembly, bearing and coil (Ref. Section 12-20-00 Clutch Servicing Procedures)	
	5. Inspect the compressor clutch bearing. It is <b>not mandatory</b> to grease the bearing. If the bearing is greased use a hypodermic needle, without removing the bearing using 3 to 5cc of Mobil 25 grease. This has proven to be satisfactory when performed at regularly	

<p>scheduled inspections of 500 hours. Some operators flying as much as 200 hours per month have found that re-greasing can occur at more than 500 hour intervals, provided they <b>DO NOT OVER PACK THE BEARING.</b></p> <p><b>100% capacity packing of the bearing can cause a failure to occur in 1 to 1 ½ hours.</b></p>	
<p>5. Inspect hoses for general condition, cuts or swelling. Replace as required.</p>	
<p>6. Check for security of all plumbing fittings (Ref. Section 12-40-00 Fitting Torque Procedures). Replace fittings as needed. Check security of clamps and anti-chaff material. Perform system leak check (Ref. 12-30-00 System leak check).</p>	
<p>7. Access the Aft Evaporator (Ref. Section 6-00-00 Dimensions and Access) Aft evaporator motor has two (2) removable brushes. Detach elbow from top of blower assembly. 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).</p> <p>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>8. Access the condenser (Ref. Section 6-00-00 Dimensions and Access). Check the fins of the condenser coil for cleanliness and ensure that they are straight. If damage has occurred to the fins, a fin comb should be utilized to put them in like new condition.</p>	
<p>9. If the kit installed has a condenser motor with brushes: Two (2) brushes are located under caps on each side of the motor. Inspect brushes every 300 hours. Replace brushes with 5/16" or less.</p> <p><b>NOTE: TAKE CARE WHEN INSTALLING BRUSHES THAT BRAIDED POSITIVE LEAD DOES NOT CONTACT HOUSING, CAUSING A SHORT</b></p>	

## Chapter 6

### Section 06-00-00 Dimensions and Access

#### 1. Access Methods

##### a) Access Item Identification (Ref. figures 6-01 & 6-02)

- **Condenser**- The condenser is located in one of two positions depending on kit part number (Ref. Section 21.00.00 System Description). The aft mounted condenser (Kit numbers 350-00-031HP and 130-00-031HP) (Ref. figure 6-02) is mounted in the tail boom mounted 5 in. above the baggage floor and is accessed by removing the tail boom closeout panel. The side mounted condenser is located in the right baggage compartment (Ref. figure 6-01) and is accessed by removing to baggage compartment close out panel.
- **Compressor**- The compressor is located aft and to the left side on main transmission deck. It is accessed by opening the upper transmission cowling.
- **Aft Evaporator**- The aft evaporator is located on the right hand upper transmission deck in all configurations. It is accessed by opening the right hand transmission cowling forward latch.
- **Forward Evaporator**- In the AS-350 series, the forward evaporator is located on the cockpit floor forward of the pilots' controls. In the EC-130, it is located on the cockpit floor forward of the pedestal and mounted to the pedestal. No additional access method is required.

##### b) Removal and Installation Methods

Caution: Use of power tools during removal or installation of panels and attaching hardware may damage nut plates or deform holes in composite doors, covers, panels, and fairings.

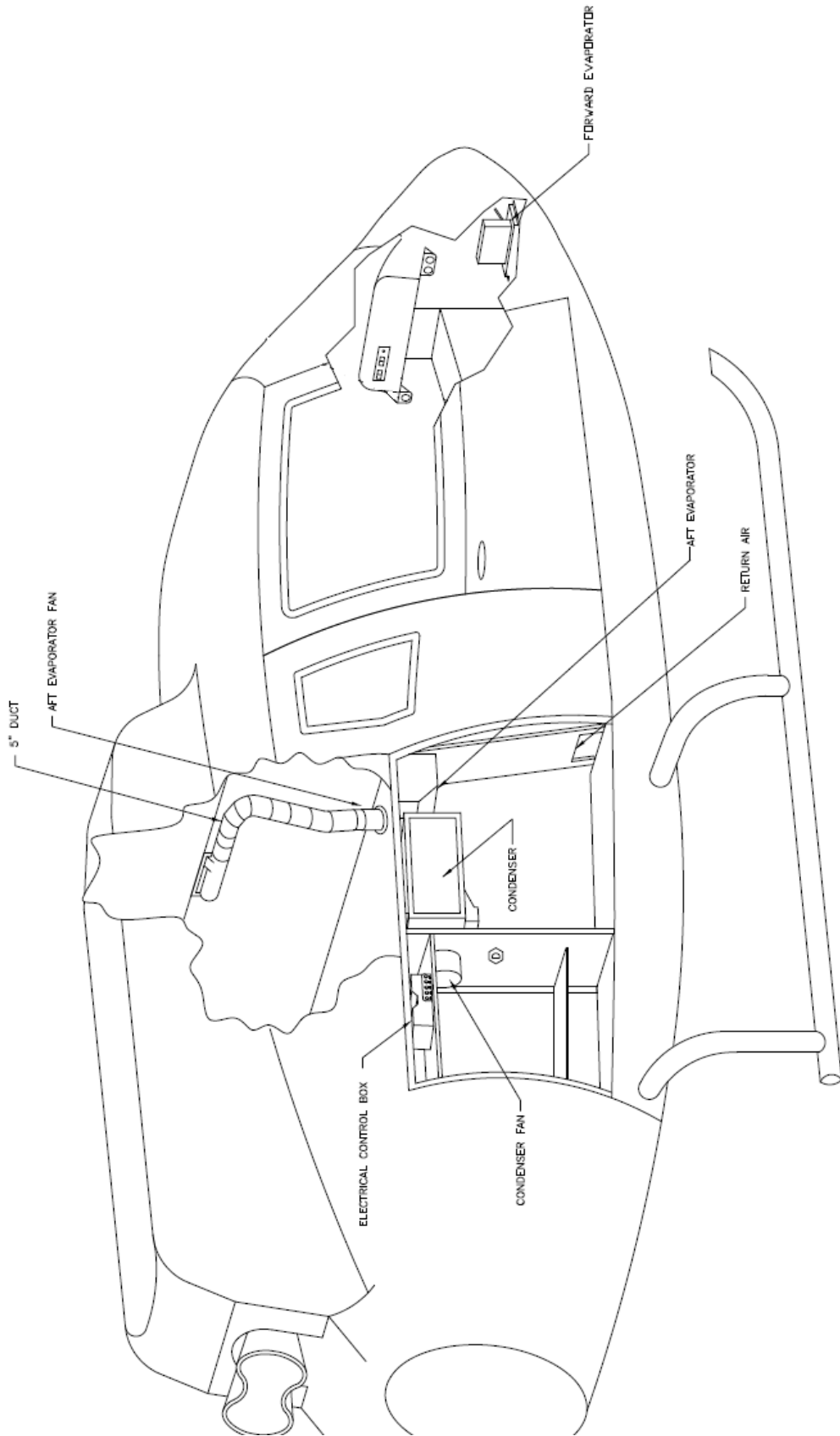


Figure 6-01

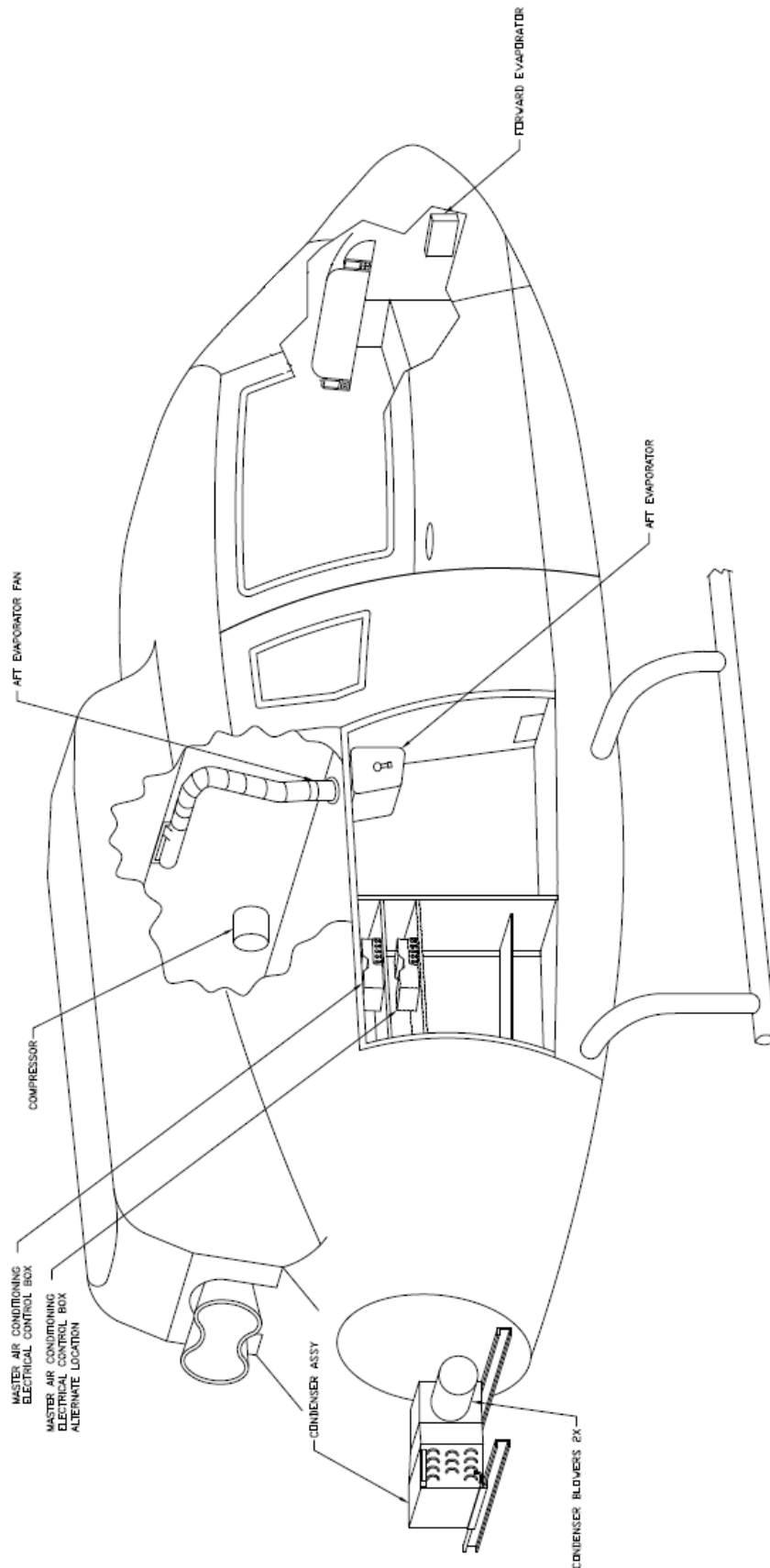


Figure 6-02





## Chapter 11

### Section 11-00-00 Placards and Markings

#### 1. Placards and Decals

The Air Conditioning System Installation does not require any additional placards or decals to be installed with this system.



## Chapter 12

### Section 12-00-00 Servicing Maintenance Practices

#### 1. General

It is assumed in the following practices that the personnel engaged in Charging, Servicing, or Maintenance of the system will be either an experienced air conditioning mechanic under the supervision of a qualified A & P mechanic or an A & P mechanic possessing good air conditioning skills.

## Section 12-10-00 Charging Practices

### 1. Reclaiming

- (1) Connect the EPA approved recovery unit services hoses, which shall have shut-off valves to the aircraft air conditioning system service ports.
- (2) Operate the recovery equipment as covered by the equipment manufacturers recommended procedure.
- (3) Start the recovery process and remove the refrigerant from the aircraft air conditioning system. Operate the recovery unit until the aircraft system has been reduced from a pressure to a vacuum. With the recovery unit shut off for at least 5 minutes, determine that there is not refrigerant remaining in the aircraft air conditioning system. If the aircraft system has pressure, additional recover operation is required to remove the remaining refrigerant. Repeat the operation until the aircraft air conditioning system vacuum level remains stable for two minutes.
- (4) Close the valves in the service lines and then remove the service lines from the aircraft system. Proceed with the repair/service. If the recovery equipment has automatic closing valves, be sure they are properly operating.

### 2. Charging

#### a) *Prior to Charging the System*

Prior to charging the system with R-134a, the evaporator fan/blower 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.

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. All evaporator blowers and the forward evaporator fan should start immediately. The 7" condenser blower and clutch will not engage until after approximately 4 seconds after evaporator fan start. **NOTE: SYSTEM MUST HAVE MINIMUM 30 PSI CHARGE**

Check airflow of each evaporator fan/blower. Determine that air is coming out of the cockpit and the cabin air outlets.

Check airflow into and out of condenser air openings.

**b) Charging the System**

\*NOTE: All evaporators' fan/blower, condenser blowers, and controls are 28 volt DC.

**DANGER:** 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. A flame-type leak detector should **never be used** because of the danger of fire or explosion around an aircraft. Several electronic leak detectors are available on the market.

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.**

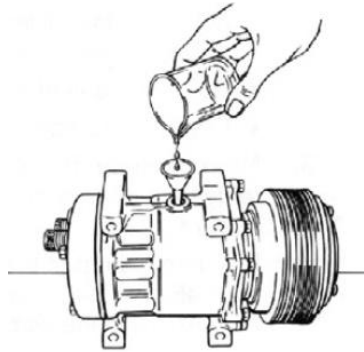
Never attempt to repair a leak requiring brazing or soldering within the aircraft structure as fire or explosion can result. Remove the entire assembly from the aircraft to a safe location before attempting such a procedure.

**CAUTION:** Should R-134a come in contact with the eyes or skin, **Do Not 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.**

**The refrigerant used in this system 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.

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.

Prior to charging each newly installed system with R-134a, obtain **FOUR (4) ounces (118.29 ml) of ESTER type oil as shown on the compressor label.** This oil should be added to the compressor prior to charging the system. **Do not add additional oil if replacing a compressor in an existing system.**



**Figure 12-01**  
Adding oil to the compressor

**c) Initial Charging**

Tighten any leaking connections or make repairs as necessary to eliminate leaks. Shut off and disconnect hose from the refrigerant cylinder. Connect the hose to a regulator mounted on a cylinder of dry nitrogen. Purge the regulator to center manifold hose. **Close low side valve (left) at manifold. Failure to do so can cause pressure to flow to the low side (left) gauge. Failure of gauge can result.**

**Pressurize system to 250-PSI minimum, 300-PSI maximum.**

After the system has been rechecked with the 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 collected into an EPA approved recycling until (expelling of refrigerant is not allowed).

Connect a vacuum pump to the center manifold hose. Open both valves and evacuate the system for a minimum of twenty minutes. (**NOTE:** For each 1,000 foot rise in altitude above sea level, a decrease below 30" of vacuum of 1" per one thousand feet rise in altitude will occur).

**d) Adding R134a Refrigerant**

Close both the manifold valves and connect the center charging hoses to a cylinder of R-134a. Open the valves of the cylinder. Purge the charging hose by loosening it at the charging manifold's center hose. **ONLY THE HIGH SIDE VALVE OF THE CHARGING MANIFOLD MAY NOW BE OPENED**

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, **on the high side only**, without the compressor running. If a scale is available, the cylinder may be pre-weighted and **2.0 pounds of refrigerant R-134a added to the system**. No additional refrigerant should be added after the system is in operation. Close manifold.

The system is now ready for operation. **This must be performed on the flight line with the engine at 100%.** As soon as the "A/C" Master Control Switch is turned to "A/C" all 28 VDC evaporator fans will immediately begin operations.

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 28 VDC power is available for control circuitry. Check operations of the relays and contacts

After the compressor has come on line, the entire system is operational with the manifold valve closed 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, if additional R-134a is needed.

The sight glass located in the top of the receiver/dryer may be easily seen with a flashlight and inspection mirror. The sight glass should be closely monitored and a stream of what would appear to be air bubbles may be noted at this time, **DO NOT** continue charging the system with vapor R-134a.

Should additional charging be required, do so with the cylinder in the upright position. Charging the system, if required, until the system of bubbles disappears and the sight glass becomes clear. It should be noted that pressure on the low side with the R-134a cylinder valve closed and vary depending on the temperature in the cabin and the O.A.T.

At the point, the recommended amount of R-134a is in the system and charging should cease.

If the outside air temperature is 83 degrees F or more MAX CHARGE is 2.0 lbs. If the outside air temperature is 82 degrees F or less MAX CHARGE is 2.5 lbs.

The optimum method of determining the correct charge using at least two digital thermometers and place them near the return air and the discharge air of each evaporator. 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. **THE REFRIGERANT CHARGE SHOULD NOT EXCEED 2.5 POUNDS AT ANY TIME**

A test sheet should be completed noting the average cabin temperature, the temperature on 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 20 degrees Fahrenheit with a humidity of 30% or less 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 20 degrees Fahrenheit temperature difference may be recorded at humidity of 30% or less. This is due to less dense air moving more rapidly through the evaporators.

***e) Effect of Humidity on TD***

It should be noted that in measurements taken and entered on a test sheet that similar measurements made at a later date, when the humidity is considerably higher, would dramatically change the T.D.

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 "SENSIBLE HEAT" is being removed. With higher humidity, a different condition exists. It requires that "LATENT HEAT" containing moisture borne heat must first be removed prior to the removal of the sensible heat

If the system is found to be completely empty of R-134a, a set of charging gauges should be connected to both 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.

***f) Recharging the System***

After the leaks have been found and corrected, pressurize the system with dry nitrogen. Re-check for leaks. Connect a vacuum pump to the system 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 is to be replaced.

It is always good air conditioning practice to replace the receiver/drier whenever it is suspected that moisture has contaminated the system.

The balance of the recharging procedure is exactly the same as pointed out previously under the **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.

## Section 12-20-00 Clutch Servicing Practices

### 1. General

These clutch servicing practices are applicable to all compressors that can be installed with the Air Conditioning System Installation.

#### a) *Clutch Armature Assembly Removal*

- (1) If armature dust cover is present, remove the 3 or 6 bolts holding it in place and remove cover. If auxiliary sheet metal pulley is present, remove the screws holding it in place. Then remove pulley
- (2) Insert pins of armature plate spanner into threaded holes of armature assembly.
- (3) Hold armature assembly stationary while removing retaining nut with 3/4 in, 19 mm or 14 mm socket wrench as appropriate. (Ref. Figure 12-02)

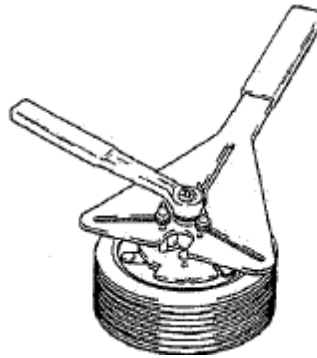


Figure 12-02

- (4) Remove armature assembly using puller. Thread 3 puller bolts into the threaded holes in the armature assembly. Turn center screw clockwise until armature assembly comes loose. (Ref. Figure 12-03)

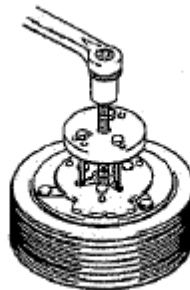
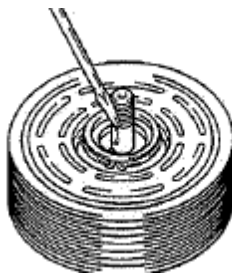


Figure 12-03



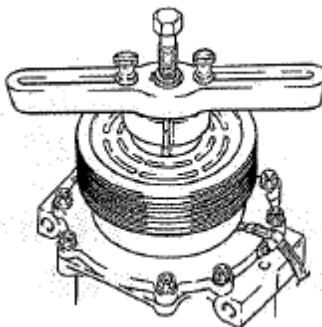
- (5) If shims are above shaft key, the key and bearing dust cover (if present) must be removed before the shims can be removed.
- (6) Remove bearing dust cover (if present). Use caution to prevent distorting cover when removing it.
- (7) Remove shaft key by tapping loose with a flat blade screwdriver and hammer.
- (8) Remove shims. Use a pointed tool and a small screwdriver to prevent the shims from binding on the shaft.



**Figure 12-04**

***b) Rotor Assembly Removal***

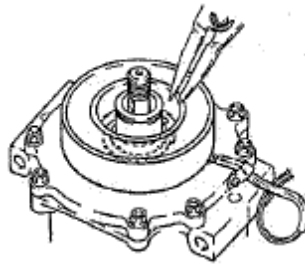
- (1) If bearing dust cover has not been removed, remove it now.
- (2) If internal snap ring for bearing is visible above the bearing, remove it with internal snap ring pliers.
- (3) Remove rotor snap ring.
- (4) Remove shaft key.
- (5) Remove rotor assembly: insert the lip of the jaws into the snap ring groove, place rotor puller shaft protector (puller set) over the exposed shaft, align thumb screws to puller jaws and finger tighten and turn puller center bolt clockwise using a socket wrench until rotor pulley is free. (Ref. Figure 12-05)



**Figure 12-05**

**c) Field Coil Assembly Removal**

- (1) Loosen lead wire clamp screw with #2 Phillips screwdriver until wire(s) can be slipped out from under clamp.
- (2) Undo any wire connections on the compressor which would prevent removal of the field coil assembly.
- (3) Remove snap ring.
- (4) Remove the field coil assembly. (Ref. Figure 12-06)



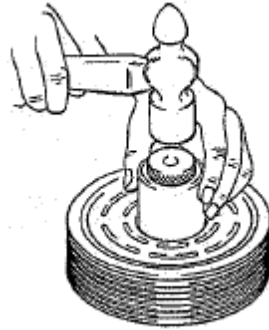
**Figure 12-06**

**d) Field Coil Assembly Installation**

- (1) Reverse the steps of the field coil assembly removal. Protrusion on underside of coil ring must match hole in front housing to prevent movement and correctly locate lead wire(s).

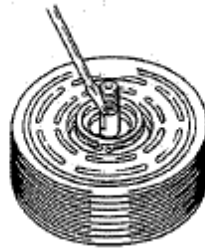
**e) Rotor Assembly Installation**

- (1) Place compressor on support stand, supported at rear end of compressor. If the compressor must be clamped in a vice, clamp only on the mounting ears, never on the body of the compressor.
- (2) Set rotor squarely over the front housing boss.
- (3) Place the rotor installer ring into the bearing bore. Ensure that the edge rests only on the inner race of the bearing, not on the seal, pulley, or outer race of the bearing.
- (4) Place the driver into the ring and drive the rotor down onto the front housing with a hammer or arbor press. Drive the rotor against the front housing step. A distinct change of sound can be heard when using a hammer to install the rotor. (Ref. figure 12-07).



**Figure 12-07**

- (5) Reinstall rotor bearing snap ring, if it has been removed, with internal snap ring pliers. (Ref. figure 12-08)

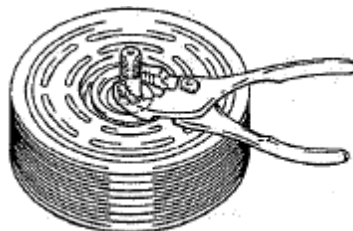


**Figure 12-08**

- (6) Reinstall rotor retaining snap ring with external snap ring pliers. If a bevel is present in the snap ring, it should be face up (away from the body of the compressor).  
(7) Reinstall rotor bearing dust cover (if present) by gently tapping it into place.

***f) Armature Assembly Installation***

- (1) Install shaft key with pliers. (Ref. figure 12-09)



**Figure 12-09**

- (2) Install clutch shims. NOTE: Clutch air gap is determined by shim thickness. When installing a clutch on a used compressor, try the original shims first. When installing a clutch on a

compressor that has not had a clutch installed before, first try 0.04 in, 0.02 in and 0.004 in (1.0, 0.5, 0.1 mm) shims.

- (3) Align keyway in armature assembly to shaft key. Using driver and a hammer or arbor press, drive the armature assembly down over the shaft until it bottoms on the shims. A distinct sound change will be noted if driving with a hammer. (Ref. figure 12-10)

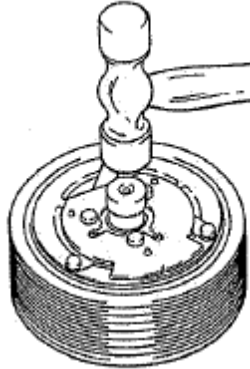


Figure 12-10

- (4) Replace retaining nut and torque to specification

**1/2-20:** 20-25 ft\*lb (27-34 N\*m)

**M8:** 11-15 ft\*lb (15-21 N\*m)

- (5) Check air gap with a feeler gauge. Specification is 0.011-0.019 in (0.3-0.5mm). If gap is not even around the clutch, gently tap down at the high spots. If the overall gap is out of spec, remove the armature assembly and change shims as necessary.

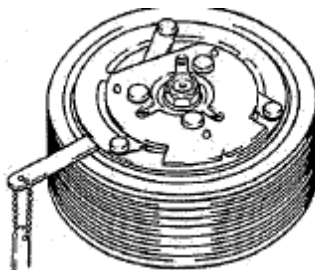


Figure 12-11

(6) Replace armature dust cover (if used) and torque 3 or 6 bolts to specification below.

**3-1/4-20 bolts:** 2-4 ft\*lb (2-5 N\*m)

**6-M5 bolts:** 5-8 ft\*lb (7-11 N\*m)

NOTE: Over torque of dust cover bolts will cause air gap to become out of spec.

## Section 12-30-00 System Leak Check

### 1. General

Identification and elimination of system fitting leaks is extremely important to the operation of this air conditioning system installation

A system which contains a partial charge of refrigerant can be leak tested with the aid of an electronic leak detector and be recharged without evacuating the system

A new or empty system can be pressurized with nitrogen 70-80 psi (5.1-5.6 kgcm) or R134a 50 psi to conduct a leak survey. Do not use compressed air, for it can introduce moisture into the system causing degradation to the operation of the system.

The preferred method is to use an electronic leak detector in conjunction with a small charge of R134a refrigerant. All checks done in this manner should be conducted with the air conditioner off. Since the refrigerant is heavier than air, leaks are most likely to be detected on the underside of the hoses and fittings. Refrigerants will collect in low areas and provide erroneous leak detection. A stream of compressed air from a nozzle may be useful in clearing the area just prior to conducting a leak test.

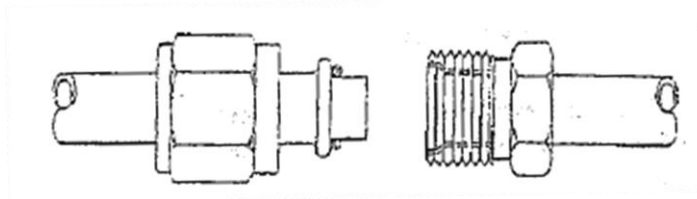
If the nitrogen method is used, it will be necessary to mix together a water and mild soap solution. Each fitting or suspected leak area should be brushed with this soap solution and watched for evidence of bubbles formed by the escaping nitrogen.

If a leak is detected at an O-ring fitting, check to insure proper torque has been applied to the fitting. If the system continues to leak, evacuate the system of refrigerant and install a new O-ring. NOTE: be sure that the O-ring is lubricated with refrigerant oil prior to its installation.

A small amount of leakage (approximately one ounce per year) past the compressor shaft seal is normal. Most leak detectors are sensitive enough to show a leak a magnitude.

## Section 12-40-00 Fitting Torque Procedures

### 1. Fitting Torque Procedures and Torque Values



**Figure 12-12**  
Insert O-Ring Fittings

- (1) Confirm there is no damage on fittings.
- (2) Apply a thin coating of refrigerant oil to O-ring and female side of fitting.
- (3) Slide B-nut back away from the end of the tube so the O-ring can be seen as the fitting is being slide together. Be careful not to pinch the O-ring during assembly.
- (4) Engage the male end into the female fitting being careful to maintain alignment.
- (5) The male flange should seat fully against the female fitting without the O-ring being pinched.
- (6) It is important to hold the fitting together while sliding the B-nut forward and engaging the threads. Tighten the B-nut by hand and torque per table 12-01. **DO NOT OVER TORQUE.**

**Table 12-01 Fitting Torque Values**

Fitting #	Torque Value in/lbs (Nm)
#6	30-35 (3.4-4.0)
#8	40-45 (4.6-5.1)
#10	50-55 (5.7-6.3)

## Section 12-50-00 Normal Operation Functional Test

1. With the aircraft engine operating, electrical system on and functioning normally, move the air conditioner control switch to the "FAN" position.
2. Move the cockpit fan switch from "LOW" to "HIGH" speed and ensure that air output is present in all the forward air outlets. Repeat the test using the aft cabin fan speed selector switch for the aft cabin air outlets.
3. Reposition the air conditioner control switch to the "A/C" position and repeat Step 2 above. Cool air should be supplied to the cockpit and cabin vents after a time delay of 4 to 8 seconds.
4. Turn air conditioner switch to "OFF" or the center position. Entire system should shut down.



## Section 12-60-00 Belt Tension Procedure

With the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. Tighten the lower forward mounting bolt. Use a pull scale to measure the tension. (Ref. figure 12-13). Recommended belt tension values if using a grooved belt is 30 lbs and if using a flat belt is 50 lbs.

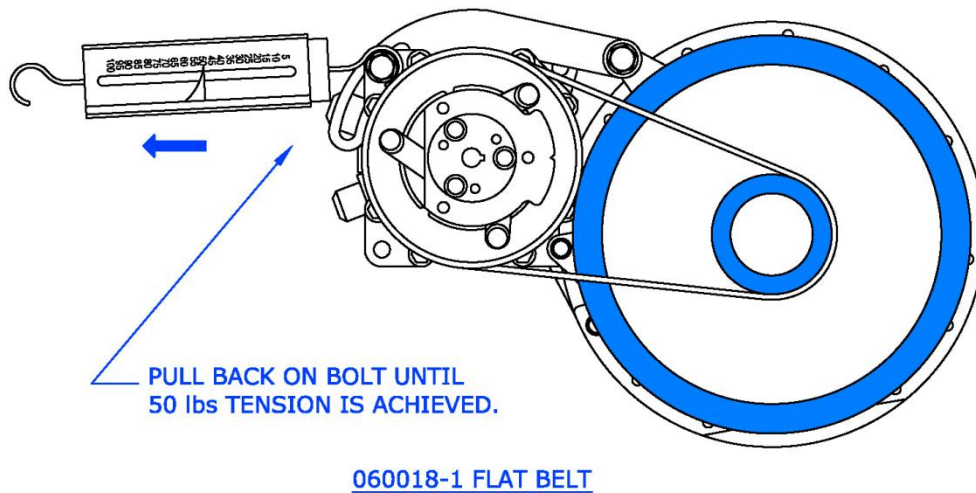
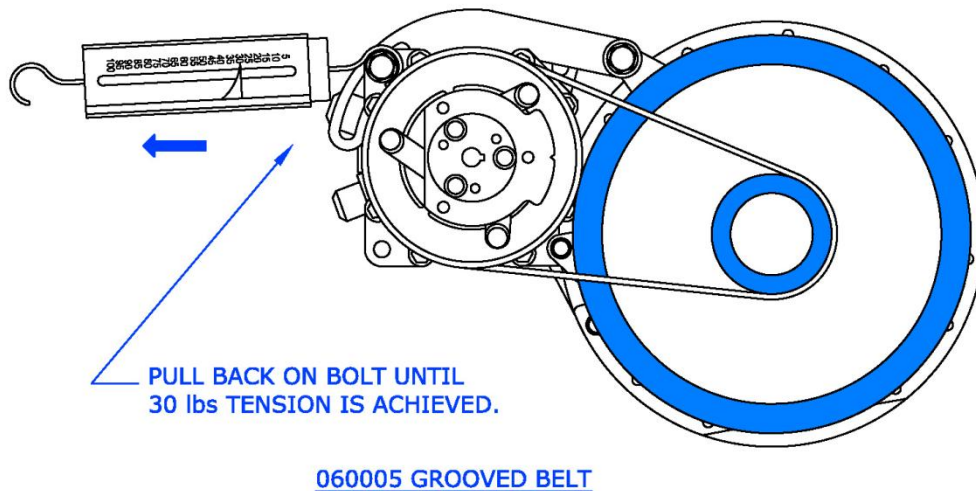


Figure 12-13

## **Section 12-70-00 Drive Belt Change Procedure**

Access the compressor installation (ref. Section 6-00-00 Dimensions and Access). For compressor information reference Section 21-00-00 Air Conditioning.

Place a support on the transmission deck to support the engine drive while the shaft is disconnected for belt installation

Remove the cotter pins from the four pins holding the "Gimble Ring" at the Thomas coupling.

Slide the "Gimble Ring" aft to gain access to the Thomas coupling.

Remove the 6 bolts and Thomas coupling connecting the drive shaft and shift slightly aft.

Install two (2) Compressor Drive belts

Reassemble the Thomas coupling

Secure 1 belt to the outside of the drive shaft cover for a spare and slip one through the housing and over the drive pulley.

Install the "Gimble Ring" pins and cotter pins. Remove supports

Install the compressor drive belt on the drive pulley and the compressor clutch pulley. Tighten bolts at the adjustment arm assuring the belt proper amount of tension. (Ref. Section 12-60-00 Belt Tension Procedure). Tighten the lower forward mounting bolt.



## Chapter 20

### Section 20-00-00 Standard Practices

This chapter contains maintenance information and procedures that are common standard practices. Information contained in this chapter is standard torque charts and application procedures, corrosion prevention, painting, mechanical fastener sealing, and dye penetrant inspection techniques.

## Section 20-10-00 Torques Maintenance Practices


### 1. Torque Wrenches

#### a) Torque Wrench Accuracy


Torque wrenches must be of good quality and calibrated at least once a year. Any torque wrench that has been dropped or abused should be calibrated to ensure continued accuracy.

#### b) Application of Torque Wrench Loads


- (1) Be sure the bolt and nut and the surface they bear on are clean and dry, unless otherwise specified by the manufacturer.
- (2) Run the nut down to near contact with the washer or bearing surface and check the friction drag torque required to turn the nut. Add the friction drag torque to the desired torque to arrive at the "final torque" to be registered on the torque wrench indicator.
- (3) Whenever possible, apply the torque to the nut instead of the bolt. This will reduce rotation of the bolt in the hole and reduce wear.
- (4) Apply a smooth even pull when applying torque pressure.
- (5) If special adapters are used which will change the effective length of the torque wrench, the final torque indication or wrench setting must be adjusted accordingly. To determine the torque wrench setting or indication with adapter installed reference Figure 20-01.



**Short Open End Adapter**



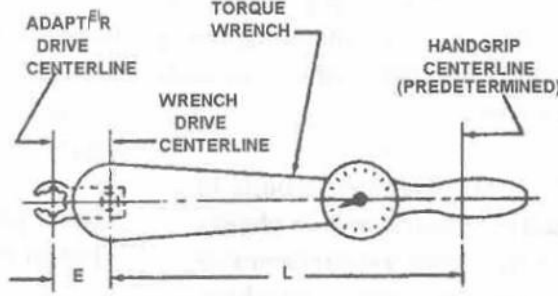
**Set Screw Adapter**



**Hose Clamp Adapter**

**NOTE**

WHEN USING A TORQUE WRENCH ADAPTER WHICH CHANGES THE DISTANCE FROM THE TORQUE WRENCH DRIVE TO THE ADAPTER DRIVE, APPLY THE FOLLOWING FORMULAS TO OBTAIN THE CORRECTED TORQUE READING:



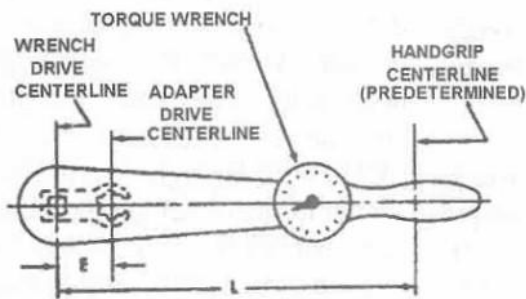
**FORMULA**  $\frac{T \times L}{L + E} = Y$

**EXAMPLE: (WITH "E" AS PLUS DIMENSION)**

T = 135 LB. IN.	Y = $\frac{135 \times 10}{10 + 1.5} = \frac{1350}{11.5} = 117.39$
Y = UNKNOWN	
L = 10.0 IN.	
E = 1.5 IN.	Y = 117 LB. IN.

**LEGEND**

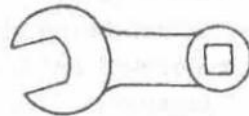
T = ACTUAL (DESIRED) TORQUE  
Y = APPARENT (INDICATED) TORQUE  
L = EFFECTIVE LENGTH LEVER  
E = EFFECTIVE LENGTH OF EXTENSION



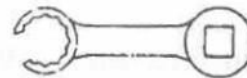
**FORMULA**  $\frac{T \times L}{L - E} = Y$

**EXAMPLE: (WITH "E" AS MINUS DIMENSION)**

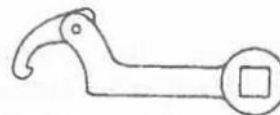
T = 135 LB. IN.	Y = $\frac{135 \times 10}{10 - 1.5} = \frac{1350}{8.5} = 158.82$
Y = UNKNOWN	
L = 10.0 IN.	
E = 1.5 IN.	Y = 159 LB. IN.



**Open-End Wrench Adapter**



**Flare Nut Wrench Adapter**



**Spanner Wrench Adapter**

**Figure 20-01 Torque Wrenches**

## 2. Torque Values

**Warning: Do not exceed maximum allowable torque value. Overstressing of fastener may result.**

Standard hardware torque values are given in the following tables 20-01 through table 20-03. Table 20-1 gives recommended torque values for fine thread fasteners, shear and tension applications. Table 20-2 gives recommended torque values for coarse thread fasteners, shear and tension applications. Table 20-3 gives recommended torque values for Phillips head screws.

**Table 20-1- Recommended Torque Values for Fine Thread Fasteners**

Thread Size Fractional (decimal)	Shear		Tension	
	Recommended in-lb (N m)	Maximum in-lb (N m)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-36 (0.1640-36)	7-9 (0.79-1.02)	12 (1.36)	12-15 (1.36-1.69)	20 (2.26)
10-32 (0.1900-32)	12-15 (1.36-1.69)	25 (2.82)	20-25 (2.25-2.82)	40 (4.51)
¼-28 (0.2500-28)	30-40 (3.38-4.51)	60 (6.77)	50-70 (5.64-7.90)	100 (11.29)
5/16-24 (0.3125-24)	60-85 (6.77-9.60)	140 (15.81)	100-140 (11.29-15.81)	225 (25.41)
3/8-24 (0.3750-24)	95-110 (10.73-12.42)	240 (27.11)	160-190 (18.07-21.46)	390 (44.05)
7/16-20 (0.4375-20)	270-300 (30.49-33.88)	500 (56.48)	450-500 (50.83-56.48)	840 (94.88)
½-20 (0.5000-20)	290-410 (32.75-46.31)	660 (74.55)	480-690 (54.22-77.94)	1,100 (124.25)
9/16-18 (0.5625-18)	480-600 (54.22-67.77)	960 (108.44)	800-1,000 (90.36-112.96)	1,600 (180.73)
5/8-18 (0.6250-18)	660-780 (74.55-88.10)	1,400 (158.14)	1,100-1,300 (124.25-146.84)	2,400 (271.10)
¾-16 (0.7500-16)	1,300-1,500 (146.84-169.44)	3,000 (338.88)	2,300-2,500 (259.80-282.40)	5,000 (564.80)
7/8-14 (0.8750-14)	1,500-1,800 (169.44-203.32)	4,200 (474.43)	2,500-3,000 (282.40-338.88)	7,000 (790.72)
1-12 (1.0000-12)	2,200-3,300 (248.51-372.76)	6,000 (677.76)	3,700-5,500 (417.95-621.28)	10,000 (1129.6)
1-1/8-12 (1.1250-12)	3,000-4,200 (338.88-474.43)	9,000 (1016.6)	5,000-7,000 (564.80-790.72)	15,000 (1694.4)
1-1/4-12 (1.2500-12)	5,400-6,600 (609.98-745.53)	15,000 (1694.4)	9,000-11,000 (1016.6-1242.6)	25,000 (2824.0)

**Table 20-02 Recommended Torque Values for Coarse Thread Fasteners**

Thread Size Fractional (decimal)	Shear		Tension	
	Recommended in-lb (N m)	Maximum in-lb (N m)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-32 (0.1640-32)	7-9 (0.79-1.02)	12 (1.36)	12-15 (1.36-1.69)	20 (2.26)
10-24 (0.1900-24)	12-15 (1.36-1.69)	21 (2.37)	20-25 (2.25-2.82)	35 (3.95)
¼-20 (0.2500-20)	25-30 (2.82-3.38)	45 (5.08)	40-50 (4.51-5.64)	75 (8.47)
5/16-18 (0.3125-18)	48-55 (5.42-6.21)	100 (11.29)	80-90 (9.03-10.16)	160 (18.07)
3/8-16 (0.3750-16)	95-100 (10.73-11.29)	170 (19.20)	160-185 (18.07-20.89)	275 (31.06)
7/16-14 (0.4375-14)	140-155 (15.81-17.50)	280 (31.62)	235-255 (26.54-28.8)	475 (53.65)
½-13 (0.5000-13)	240-290 (27.11-32.75)	520 (58.73)	400-480 (45.18-54.22)	880 (99.40)
9/16-12 (0.5625-12)	300-420 (33.88-47.44)	650 (73.42)	500-700 (56.48-79.07)	1,100 (124.25)
5/8-11 (0.6250-11)	420-540 (47.44-60.99)	900 (101.66)	700-900 (79.07-101.66)	1,500 (169.44)
¾-10 (0.7500-10)	700-950 (79.07-107.31)	1,500 (169.44)	1,150-1,600 (129.90-180.73)	2,500 (282.40)
7/8-9 (0.8750-9)	1,300-1,800 (146.84-203.32)	2,700 (474.43)	2,200-3,000 (248.51-338.88)	4,600 (519.61)
1-8 (1.0000-8)	2,200-3,000 (248.51-338.88)	4,500 (508.32)	3,700-5,000 (417.95-564.80)	7,600 (858.49)
1-1/8-8 (1.1250-8)	3,300-4,000 (372.76-451.84)	7,200 (813.31)	5,500-6,500 (621.28-734.24)	12,000 (1355.5)
1-1/4-8 (1.2500-8)	4,000-5,000 (451.84-564.80)	10,000 (1129.6)	6,500-8,000 (734.24-903.68)	16,000 (1807.4 N m)

**Table 20-3 Recommended Torque Values for Phillips Head Fasteners**

Thread Size Fractional (decimal)	Recommended in-lb (N m)	Maximum in-lb (N m)
8-32 (0.1640-32)	12-15 (1.36-1.69)	23 (2.59)
10-32 (0.1900-32)	20-25 (2.25-2.82)	35 (3.95)
¼-28 (0.2500-28)	60-70 (6.77-7.90)	90 (10.16)
5/16-24 (0.3125-24)	110-125 (12.42-14.12)	150 (16.94)
3/8-24 (0.3750-24)	150-175 (16.94-19.76)	225 (25.41)
7/16-20 (0.4375-20)	230-280 (25.98-31.62)	450 (50.83)
½-20 (0.5000-20)	550-650 (62.12-73.42)	850 (96.01)
9/16-18 (0.5625-18)	750-900 (84.72-101.66)	1,200 (135.55)
5/8-18 (0.6250-18)	1,100-1,300 (124.25-146.84)	1,600 (180.73)

## Section 20-30-00 Painting Maintenance Practices

The following procedures should be used to touch-up paint flaking, scratches, nicks, and gouges.

**Warning: Cleaning solvents and epoxy primer are flammable. Cleaning solvents, epoxy primer, and alodine can cause burns and irritation when skin is contacted. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Cleaning solvents and alodine are poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Cleaning solvents, epoxy primer and alodine.**

### 1. Paint Touch-Up of Small Areas

Use the following procedures to touch-up paint of small sanded areas and Nicks, Scratches, Gouges, Etc., that do not go through paint and primer to bare metal.

- a. Wipe surface clean with trichloroethane, MIL-T-81533, or equivalent cleaning solvent, and wipe dry immediately.
- b. Apply coat of epoxy polyimide primer, MIL-P-23377F or equivalent, to match original. Feather primer coating onto surrounding color coat. Allow primer to air dry for 30 minutes.
- c. Apply topcoat to match original finish.



## Section 20-40-00 Corrosion Control Maintenance Practices

### 1. Corrosion Control

The components that are fabricated of steel and aluminum should be inspected regularly for any signs of corrosion. The following procedures should be used for removing corrosion and treating affected areas.

### 2. Corrosion Removal

Remove corrosion by either chemical or mechanical means.

a) Paint Removal, Chemical

**Caution: Do not use chemical paint stripper on composite materials. Chemical paint strippers can cause composite components to debond and / or loose adhesion of the epoxy matrix.**

- (1) Mask all non-metallic surfaces in area to be stripped as well as areas where solution may get entrapped.

**Warning: Paint stripper can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Paint stripper is poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with paint stripper.**

- (2) Using a fiber brush, apply sufficient paint stripper, (Turco 5873), to cover area of removal.

**Note:** If paint stripper evaporates quickly or works slowly, cover area with plastic sheet.

- (3) Allow paint remover to remain on surface for a time sufficient to cause wrinkling and lifting of paint (about 10-30 minutes).

- (4) Using non-metallic scraper or abrasive pads, (3M scotchbrite 63), scrub area to further loosen paint.
- (5) Reapply paint stripper, (Turco 5873), as necessary in areas where paint remains tightly adherent.
- (6) Wash and scrub surface with demineralized water and alkaline cleaner to neutralize paint stripper.
- (7) Remove masking materials and any residual paint or stripper
- (8) Rinse with demineralized water.

b) Paint Removal, Mechanical

**Caution: Do not sand into or expose composite fibers. Do not remove more material than necessary. Do not use aluminum oxide abrasive materials on epoxy/graphite materials.**

Use abrasive flap wheel, abrasive disk, abrasive paper, or plastic media blast to remove paint.

c) Corrosion Removal

**Note:** Aircraft shall be electrically grounded during corrosion removal operations. When removing exterior corrosion from electronic boxes, the unit case shall be electrically grounded during the complete operation.

- (1) Corrosion shall be removed by the mildest method possible.
  - (a) Hand scrub with dry non-metallic brush/pad. (3M scotchbrite 63 cellulose/nylon scouring pad).
  - (b) Use abrasive cloth. (Aluminum oxide 240 grit). Caution: Do not use on epoxy/graphite materials.
  - (c) Use 320 grit sandpaper.
  - (d) Glass bead blast.
  - (e) Use 240 grit abrasive wheel.

**Note:** On high strength steel, do not use power tools other than a flap brush or mandrel with abrasive mat; overheating and notching may occur.

- (2) Ensure all active corrosion and corrosion products have been removed.
- (3) Using 320 grit sandpaper blend edges of paint (if applicable) surrounding repair area to create a smooth transition. Vacuum area thoroughly to remove all contaminants.
- (4) Apply aluminum surface treatment if applicable. (Ref. Item 4. Below).
- (5) Touch-up primer and paint to match original

### **3. Mechanical Defects (Nicks, Scratches, Gouges, Etc.)**

- a) Determine if damage is through the paint. If not touch-up the paint (Ref. Section 20-30-00).
- b) If damage is through the paint surface prepare area for paint touch-up using following methods.

**Note:** On high strength steel, do not use power tools other than a flap brush or mandrel with abrasive mat; overheating and notching may occur.

- (1) Remove defect using flap wheel, abrasive disk, abrasive paper, or plastic media blast.
- (2) Using 320 grit sandpaper, blend edges of paint surrounding repair area to create a smooth transition.
- (3) Apply aluminum surface treatment if applicable (Ref. Aluminum Alloy Surface Touch-Up Treatment in Section 20-40-00)
- (4) Touch-up primer and paint to match original.

#### 4. Aluminum Alloy Surface Touch-Up Treatment

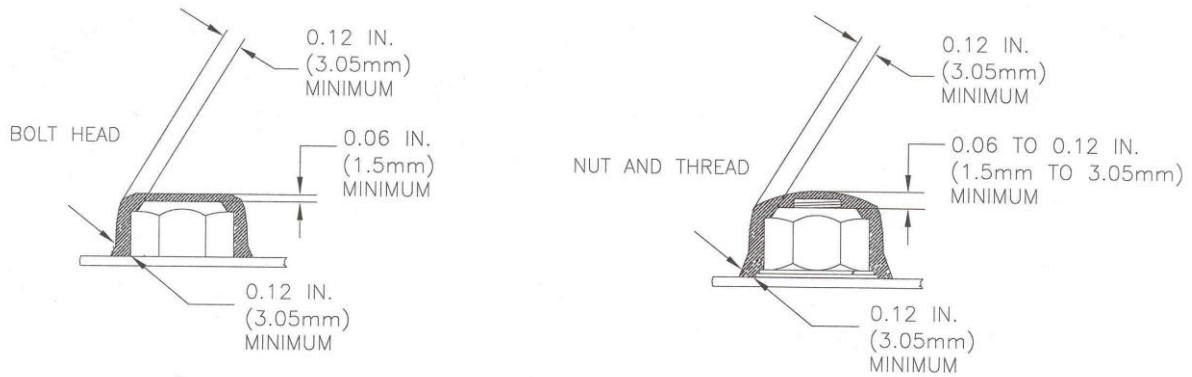
**Note:** If there is any question of whether or not the protective coating is removed, surface treatment shall be applied.

**Warning: Alodine and solvents can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Alodine is poisonous. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Solvents and alodine. Solvent cleaners are flammable.**

- a) Scuff surface using 3M scotchbrite 63 cellulose/nylon scouring pad.
- b) Wipe exposed surface with isopropyl alcohol or aliphatic naphtha. Allow area to air dry for 10 minutes. Do not touch or otherwise contaminate surface after solvent wipe.
- c) Apply Alodine 1200 or equivalent with cotton swap, non-metallic brush, or by dipping. Maintain moist surface for 1-3 minutes with repeated application. Surface will become amber or brown in color.
- d) Irrigate surface with demineralized or distilled water, to remove surface treatment chemical. Allow to air dry for approximately 1 hour.
- e) If there are any surface without color change, repeat procedure.
- f) Apply paint touch-up as required. (Ref Section 20-30-00).

## Section 20-50-00 Mechanical Fastener Sealing Methods

Seal mechanical fasteners as shown.



**Figure 20-02. Mechanical Fastener Sealing**

## Section 20-90-00 Dye Penetrant Inspection Methods

**Warning:** solvents can cause burns and irritation when it contacts skin; proper gloves should be worn. Vapors are harmful and caustic to eyes; Goggles must be worn for eye protection. Vapors are harmful to life or health; work should be performed with proper ventilation and / or respirators should be worn while working with Solvents. Solvent cleaners are flammable.

Use the following steps to perform dye penetrant inspection:

1. Using cleaning solvent trichloroethane, MIL-T-81533, clean area to be inspected.

**Note:** Parts to be inspected must be dry and heated to at least 70° F (21.1° C), but not over 130° F (54.4° C).

**Note:** Manufacturers instructions on Dye Penetrant Kit take precedence over the following instructions.

2. Apply penetrant from dye penetrant kit, MIL-25135, by brushing, spraying, or by dipping. Allow to stand for a minimum of 2 minutes.
3. Remove excess penetrant with remover (available with dye penetrant kit), or by cleaning with plain water. Allow part to dry.
4. Apply a light even layer of developer from dye penetrant kit by brushing, spraying, or by dipping. When dipping, avoid excess quantity.
5. Penetrant, which has penetrated into cracks (or other openings) in the surface of the part will be drawn out by the developer resulting in a bright red indication.
6. If part is serviceable or repairable, clean part free of penetrant and developer with trichloroethane, MIL-T-81533 cleaning solvent

## Chapter 21

### Section 21-00-00 Air Conditioning

#### 1. Description and Operation

The Air Conditioning System Installation consists of a belt driven vapor cycle air-conditioning system using R-134a as the refrigerant. The air conditioning system provides for cabin comfort during all operations, both in the ground and in flight. During ground operations when the engines are running, cooling may be provided.

This system consists of 4 major components:

- **Condenser**- The condenser is located in one of two positions depending on kit part number (Ref. table 21.1). The aft mounted condenser (Ref. figure 21-01) is mounted in the tail boom mounted 5 in. above the baggage floor. The side mounted condenser is located in the right baggage compartment (Ref. figure 21-02). The EC-130 condenser is only located in the aft mounted configuration. The aft mounted condenser assembly has two blower motors, where as the side mounted condenser assembly only has one blower motor.
- **Compressor**- The compressor is located aft and to the left side on main transmission deck. The belt is secured to the outside of the drive shaft, in all configurations. If designated by the kit part number (Ref. tables 21-01 & 21-02), either a smooth pulley compressor or a grooved double V-belt pulley compressor is installed.
- **Aft Evaporator**- The aft evaporator is located on the right hand upper transmission deck in all configurations.
- **Forward Evaporator**- In the AS-350 series, the forward evaporator is located on the cockpit floor forward of the pilots' controls. In the EC-130 kits, it is located forward of the pedestal and mounted to the pedestal.

Controls for the air conditioning system are located around or in the instrument panel, the specific location depending on the Kit number part as described in tables 21-01 and 21-02. All kits contain a Master Control Selector, which consists of a rocker type switch labeled, "A/C", "OFF" and "FAN." Selecting the "A/C" turns on the system's dual evaporator fans, compressor and condenser blower. The second rocker switch, also included with every kit, is for "HIGH," "MED" and "LOW" evaporator fan speed selection for the forward cockpit. An additional 2 position switch for the aft evaporator fan speed "HI/LOW" is present depending on the kit part numbers and the switch is located per that kit.

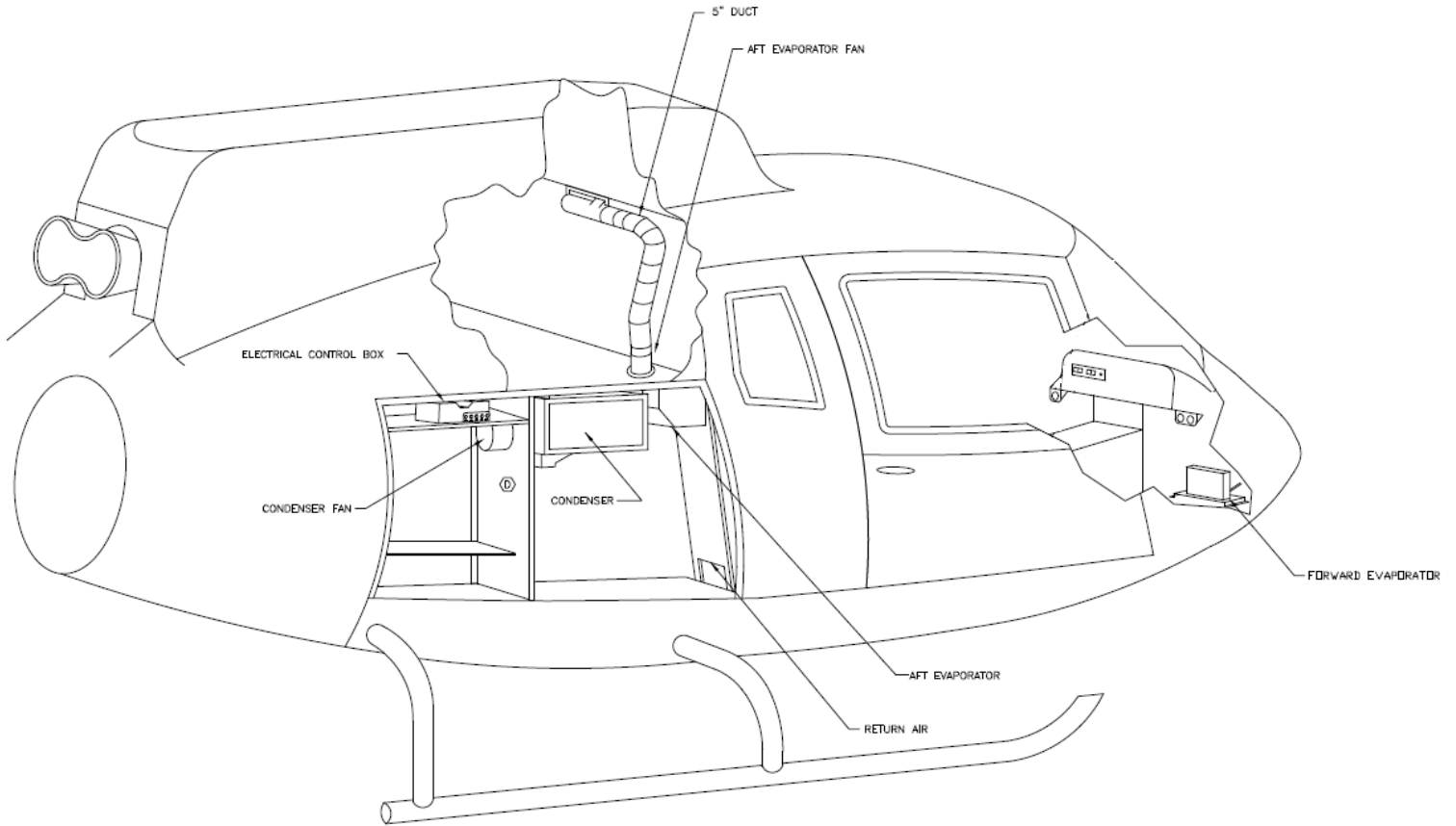
**Table 21-1 Air Condition System Installation Kit Part Number Description AS-350 Series**

<b>AS-350 Series</b>	
<b>BASE KIT NUMBERS:</b>	
350-00-011-HP	Side Mounted Condenser (Ref Figure 21-01)
350-00-031-HP	Aft Mounted Condenser (Ref Figure 21-02)
<b>CUSTOM CONFIGURATIONS:</b>	
350-00-011-HP-01* 350-00-031-HP-01*	AEC Basic Configuration (Ref Figure 21-03)
350-00-011-HP-11* 350-00-031-HP-11*	Corporate Configuration (Ref Figure 21-04)
350-00-011-HP-21* 350-00-031-HP-21*	EMS 1 Configuration (Ref Figure 21-05)
350-00-011-HP-22* 350-00-031-HP-22*	EMS 2 Configuration (Ref Figure 21-06)
350-00-011-HP-31* 350-00-031-HP-31*	ECL Tour 1 Configuration (Ref Figure 21-07)
350-00-011-HP-32* 350-00-031-HP-32*	ECL Tour 2 Configuration (Ref Figure 21-08)
350-00-011-HP-41* 350-00-031-HP-41*	Law Enforcement Configuration (Ref Figure 21-09)
* the addition of s to the end of the part number denotes a smooth pulley compressor	

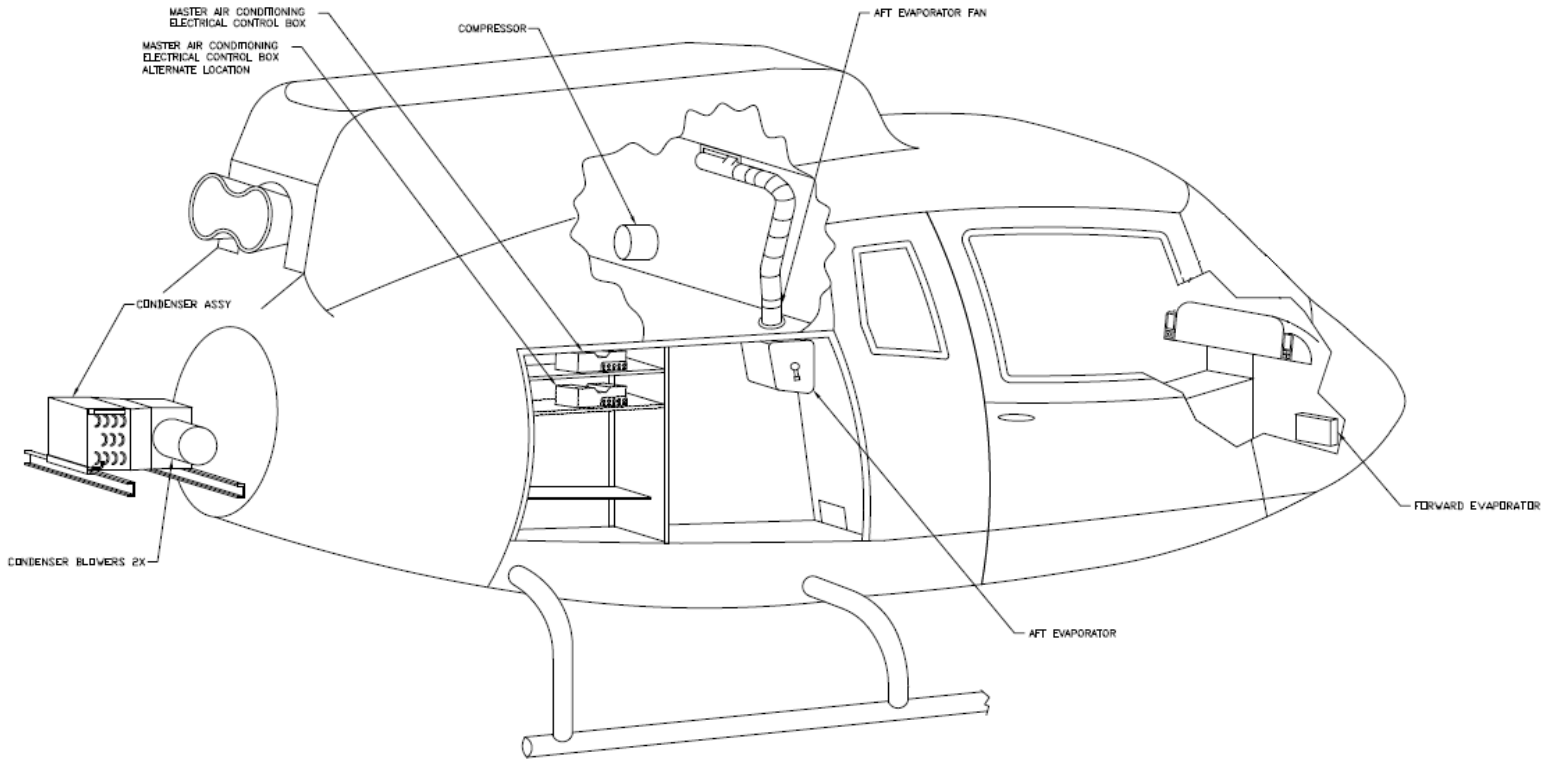


**Table 21-2 Air Condition System Installation Kit Part Number Description AS-350 Series**

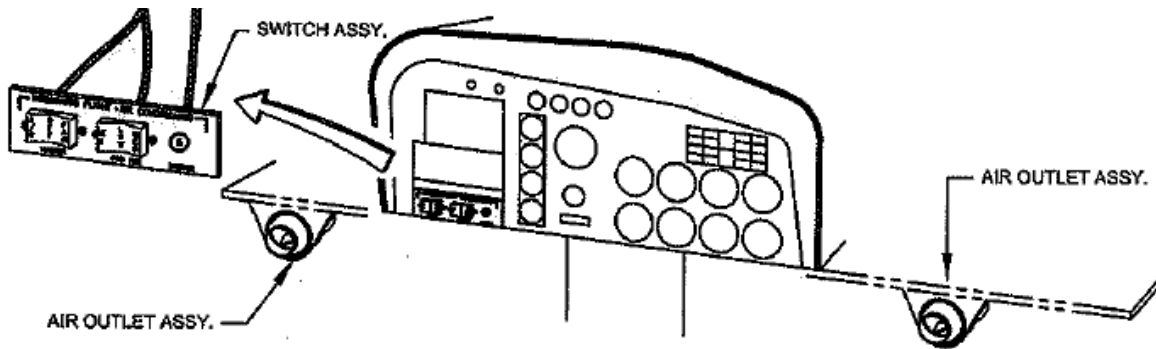
<b>EC-130B4</b>	
<b>BASE KIT NUMBER:</b>	
130-00-031-HP*	Aft Mounted Condenser (Ref Figure 21-02)
<b>CUSTOM CONFIGURATIONS:</b>	
Corporate 1 Configuration (Ref Figure 21-10)	
Corporate 2 Configuration (Ref Figure 21-11)	
* the addition of s to the end of the part number denotes a smooth pulley compressor	



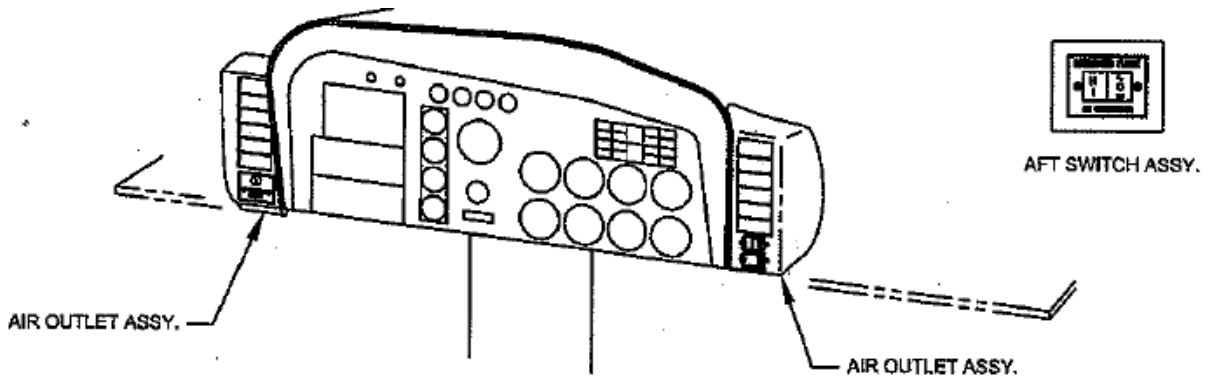
**Figure 21-01**  
Equipment locations for Air Conditioning System Installation with the -011 Configuration  
(Side Mounted Condenser)



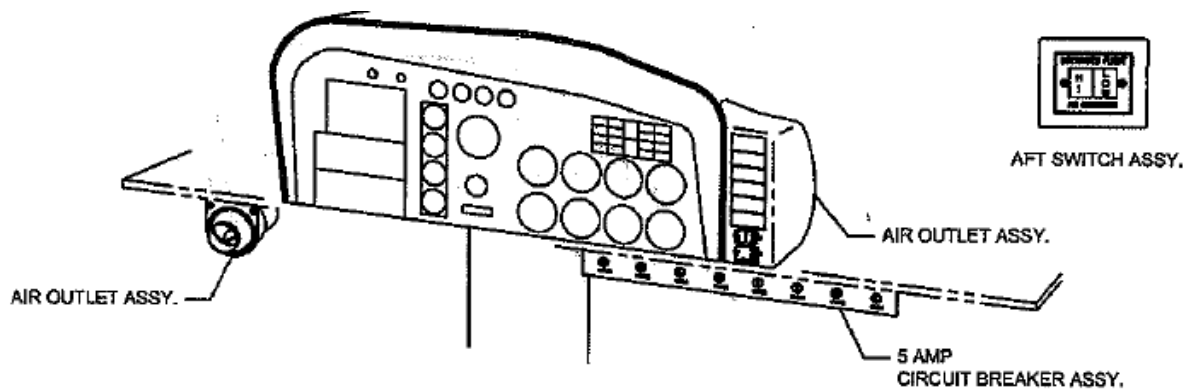
**Figure 21-02**  
Equipment locations for Air Conditioning System Installation  
-031 Configuration (Aft Mounted Condenser)



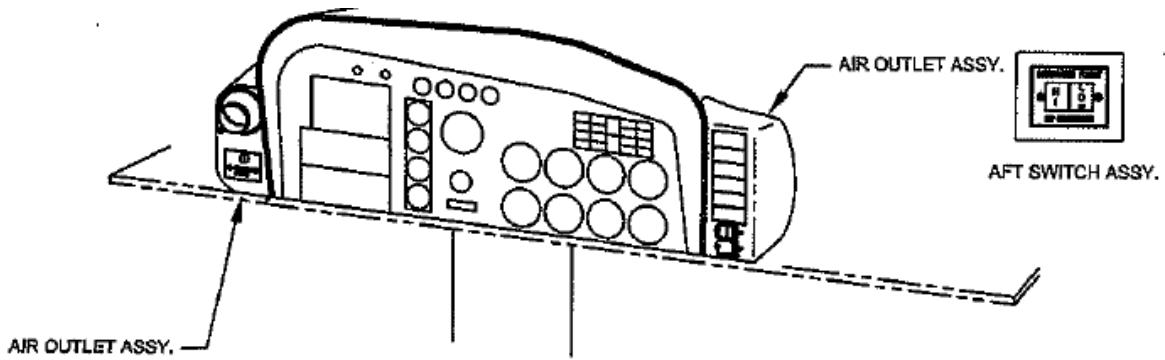
**Figure 21-03**  
-01 AEC Basic Configuration



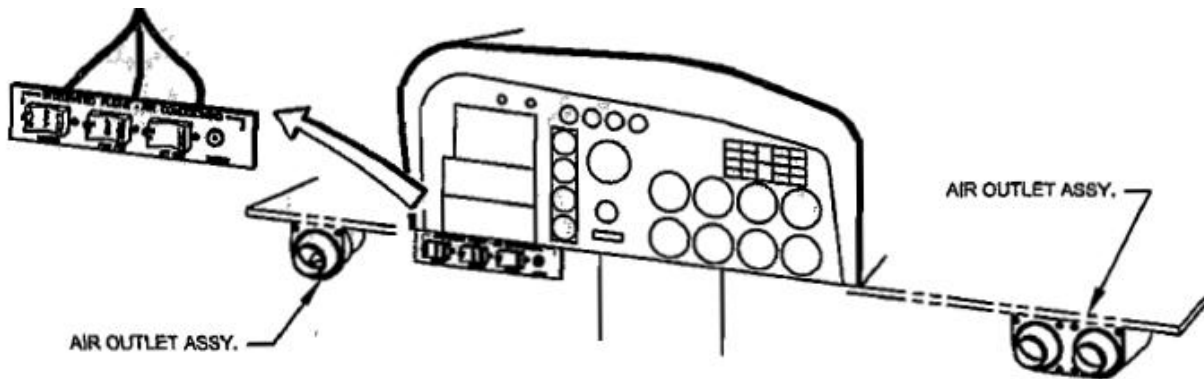
**Figure 21-04**  
-11 Corporate Configuration



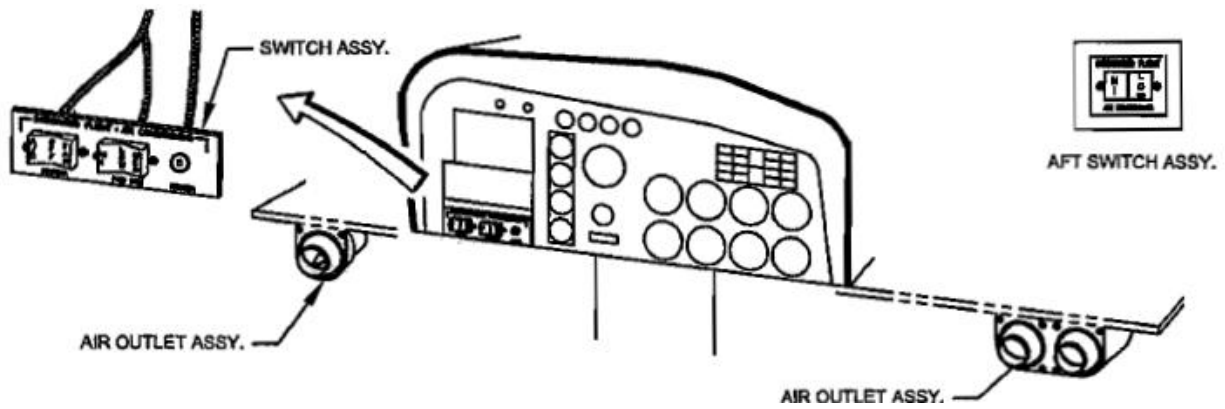
**Figure 21-05**  
-21 EMS 1 Configuration



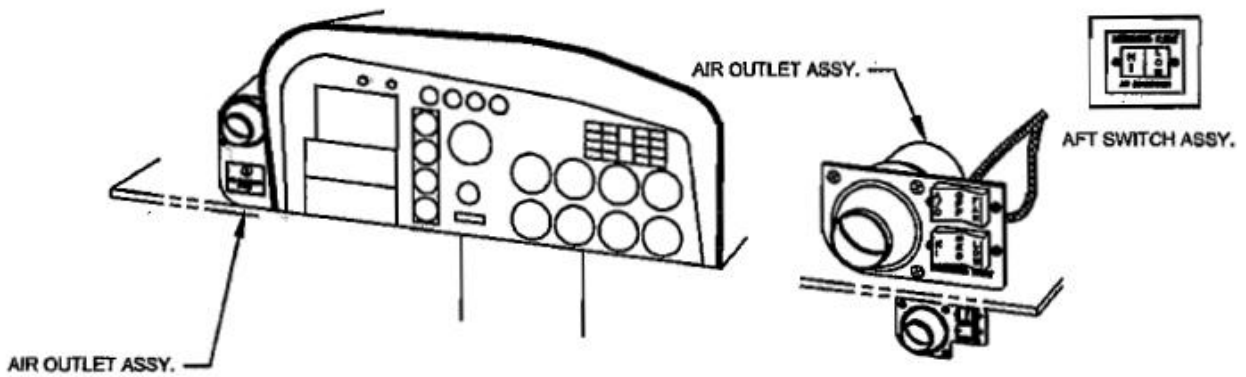
**Figure 21-06**  
-22 EMS 2 Configuration



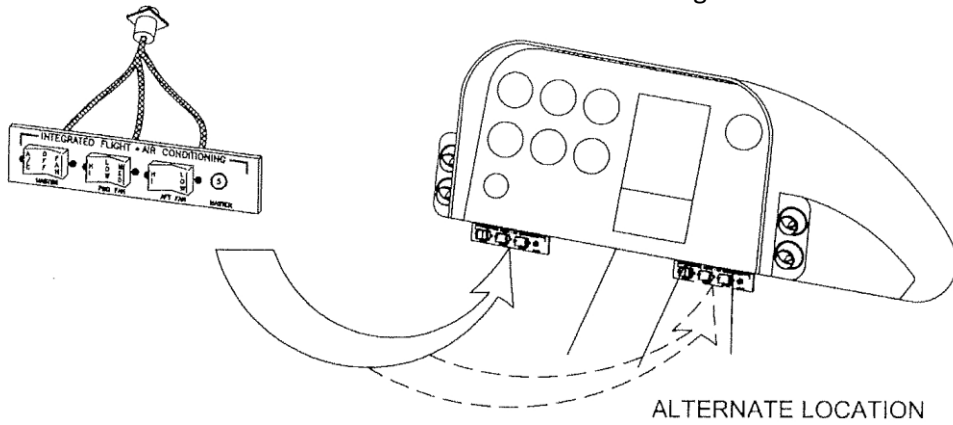
**Figure 21-07**  
-31 ECL Tour 1 Configuration



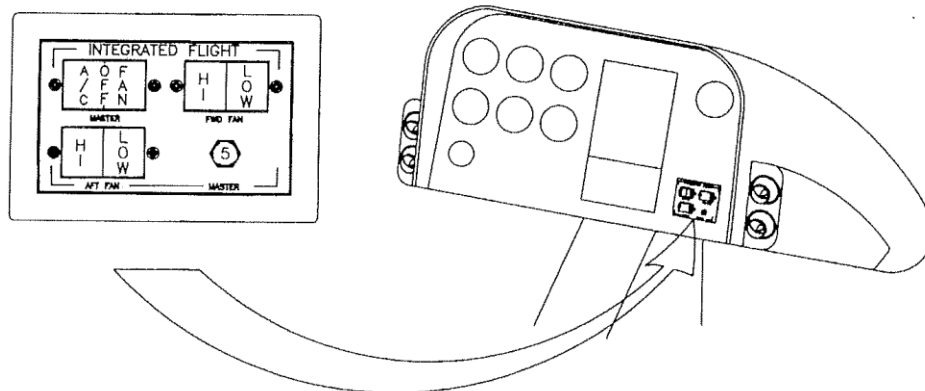
**Figure 21-08**  
-32 ECL Tour 2 Configuration



**Figure 21-09**  
-41 Law Enforcement Configuration



**Figure 21-10**  
Corporate 1 Configuration (EC-130B4)



**Figure 21-11**  
Corporate 2 Configuration (EC-130B4)

## 2. Removal/ Installation Forward Evaporator

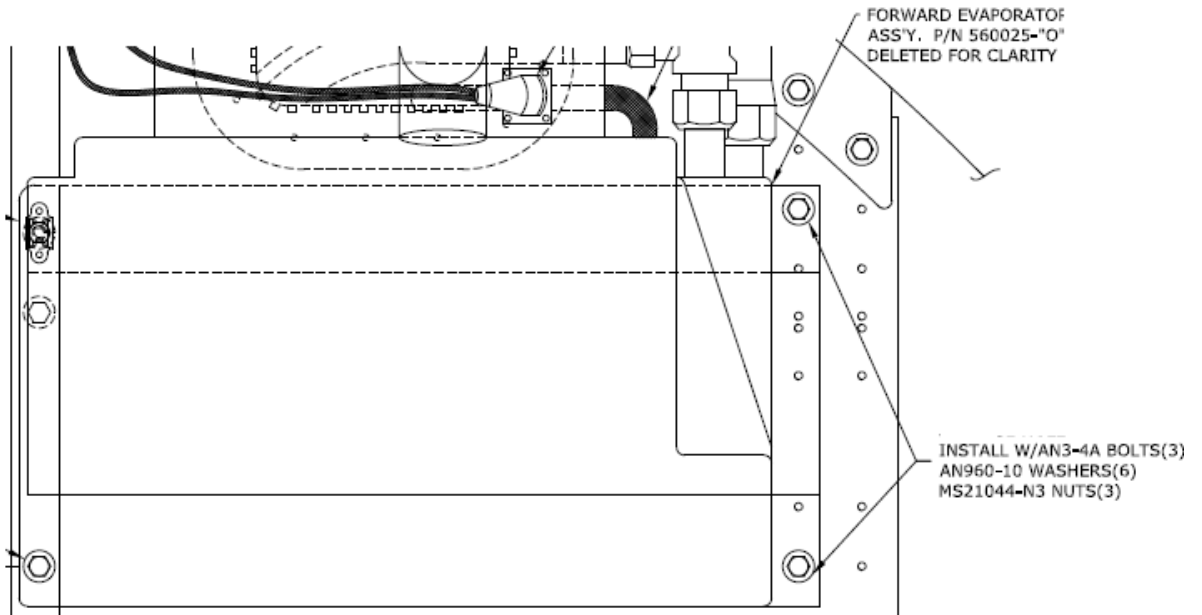
(Ref. figures 21-12 and 21-13)

### a) *Removal*

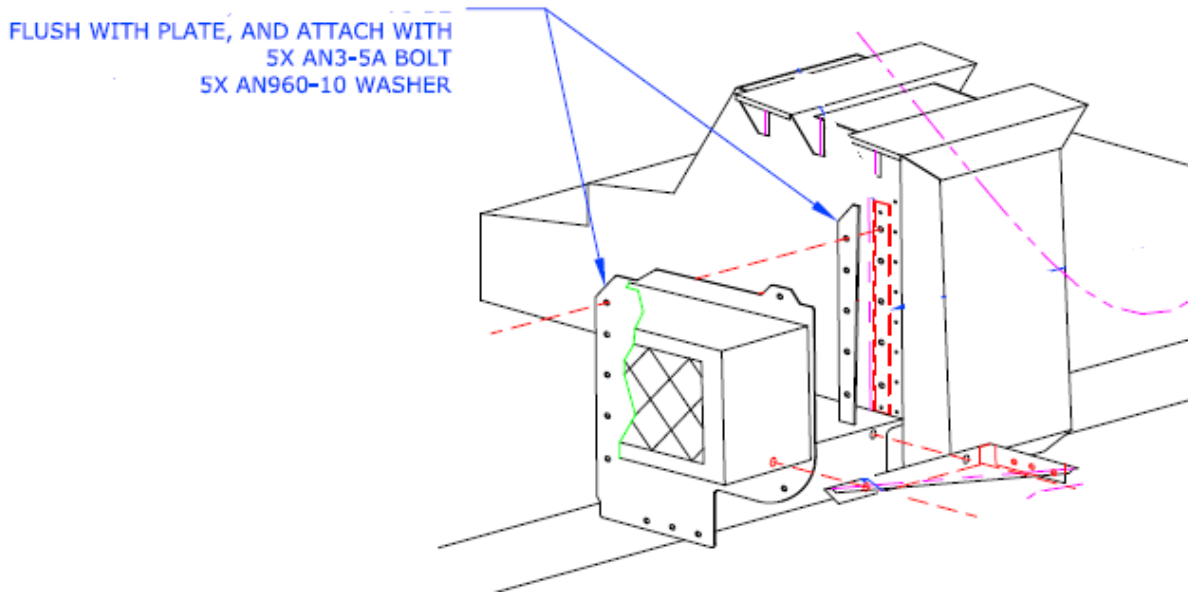
- 1) Access forward evaporator per Section 6-00-00 Dimensions and Access.
- 2) Connect refrigerant reclaimer to system in accordance with Section 21-00-00 and remove coolant from system. Comply with all Federal, State, and Local rules governing refrigerant handling.
- 3) Remove bolts securing evaporator.
- 4) Remove evaporator assembly.
- 5) Support evaporator while removing lines and other duct work.
- 6) Remove evaporator from aircraft.
- 7) Cap all open lines on unit and aircraft.
- 8) Disconnect electrical connections and remove evaporator fan.

### b) *Installation*

- 1) Reinstall fan in aircraft and connect electrical connections.
- 2) Position evaporator against fan assembly and loosely install with securing hardware. Secure mounting hardware.
- 3) Reinstall drain line.
- 4) Connect duct work.
- 5) Ensure refrigerant o-rings are installed and in good condition. Replace as necessary. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor. Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs.
- 6) After completing other system functions and maintenance, charge system in accordance with Section 12-10-00.
- 7) Check for leaks per section 12-30-00



**Figure 21-12**  
Forward Evaporator (AS-350)



**Figure 21-13**  
Forward Evaporator (EC-130)



### 3. Removal/ Installation Aft Evaporator

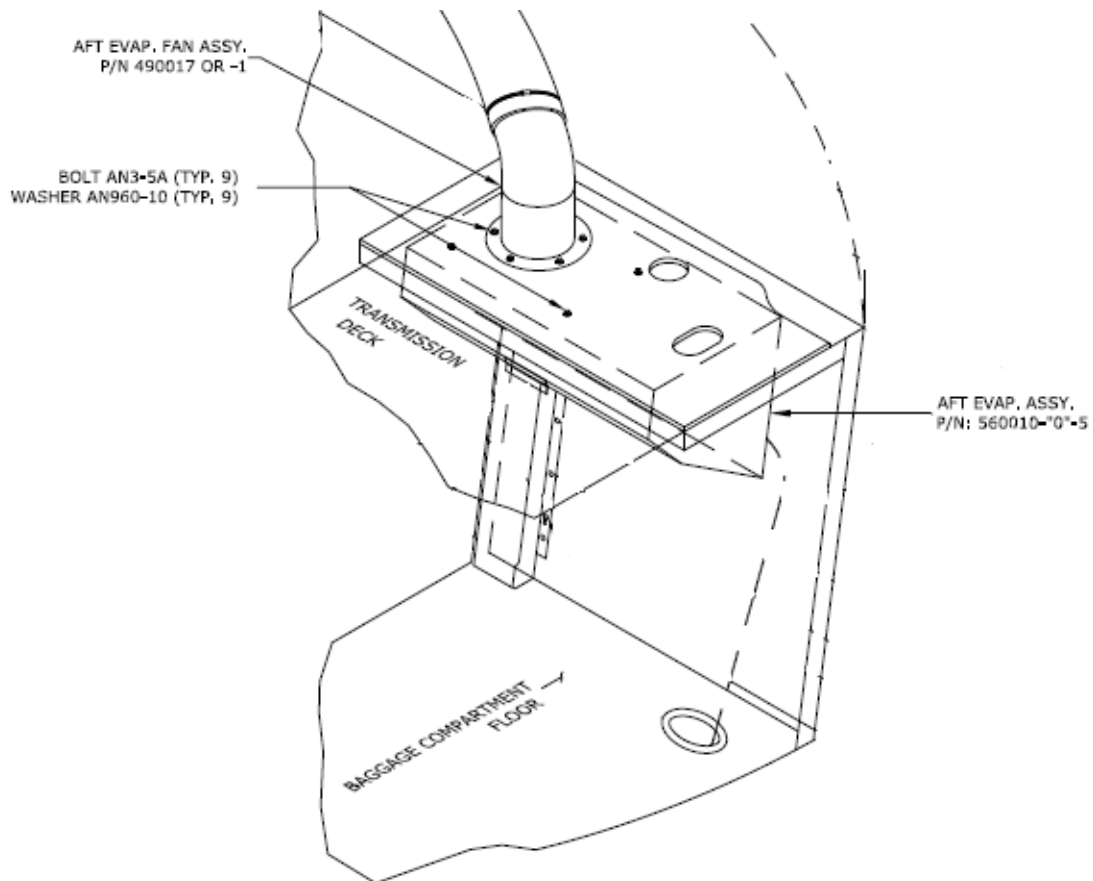
(Ref Figure 21-14)

#### *a) Removal*

- 1) Access aft evaporator (Ref. Section 6-00-00 Dimensions and access) and remove electrical connections.
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Support evaporator while removing lines and duct work.
- 4) Cap all open lines on unit and aircraft.

#### *b) Installation*

- 1) Reinstall fan/evaporator and connect electrical connections.
- 2) Position evaporator and loosely install with securing hardware. Secure mounting hardware.
- 3) Reinstall drain line.
- 4) Connect duct work.
- 5) Ensure refrigerant o-rings are installed and in good condition. Replace as necessary. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor. Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs.
- 6) After completing other system functions and maintenance, charge system in accordance with Section 12-10-00.
- 7) Check for leaks per section 12-30-00.



**Figure 21-14**  
Aft Evaporator

#### 4. Removal / Installation - Condenser

(Ref figures 21-15 and 21-16)

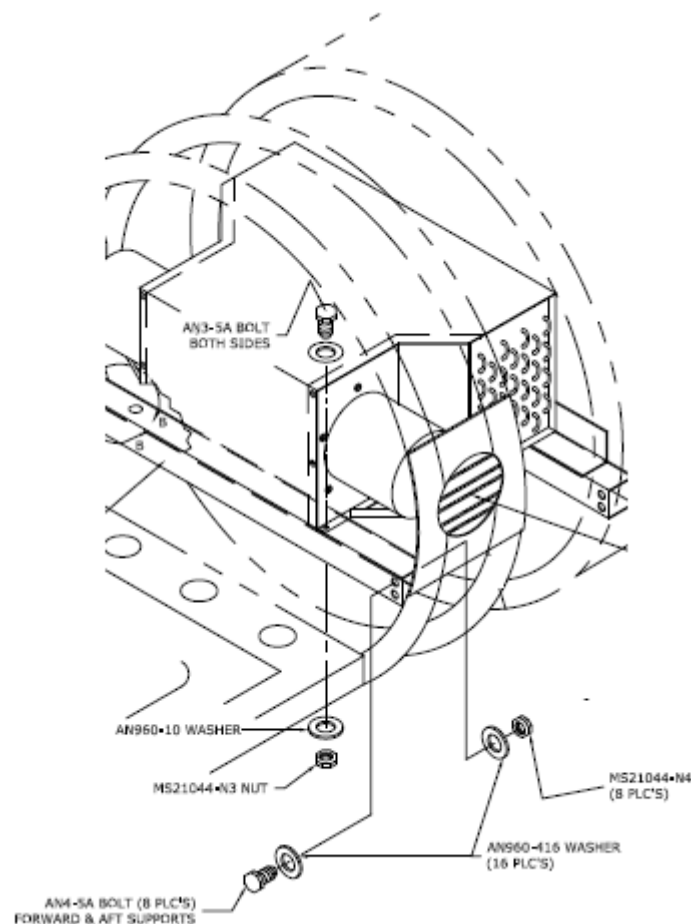
##### a) Removal

- 1) Access the condenser (Ref Section 6-00-00 Dimensions and Access)
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Remove hardware securing condenser assembly. Disconnect blower wires and refrigerant hoses.

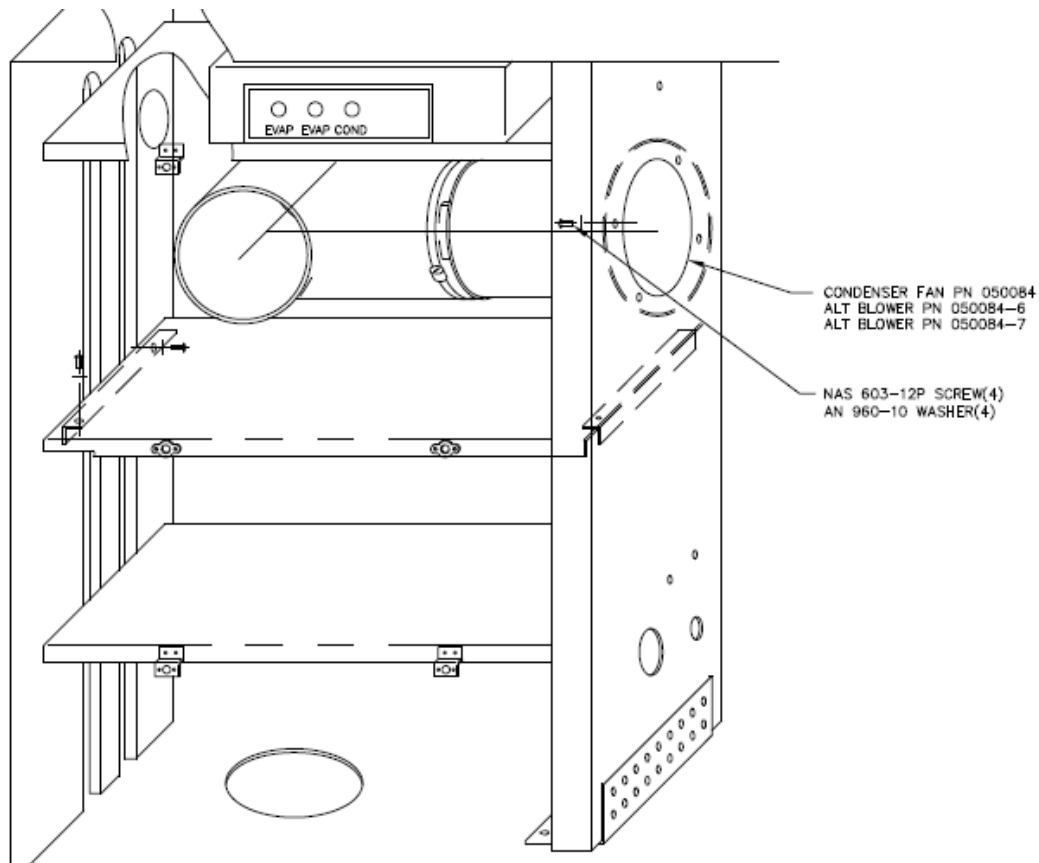
- 4) Remove condenser and cap all open lines on condenser and airframe.

**b) Installation**

- 1) Place condenser back in location.
- 2) Loosely install all hardware securing condenser assembly. Tighten mounting hardware only after all other hardware is installed.
- 3) Remove protective caps from refrigerant lines. Inspect that o-rings are installed and in good condition. Oil all o-rings and fittings with refrigerant oil of the same type listed on the compressor.
- 4) Install refrigerant lines. Torque refrigerant lines as follows: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs. Do not over tighten.
- 5) Charge system in accordance with Section 12-10-00



**Figure 21-15**  
Aft Mounted Condenser (AS-350, EC-130)



**Figure 21-16**  
Side Mounted Condenser (AS-350)

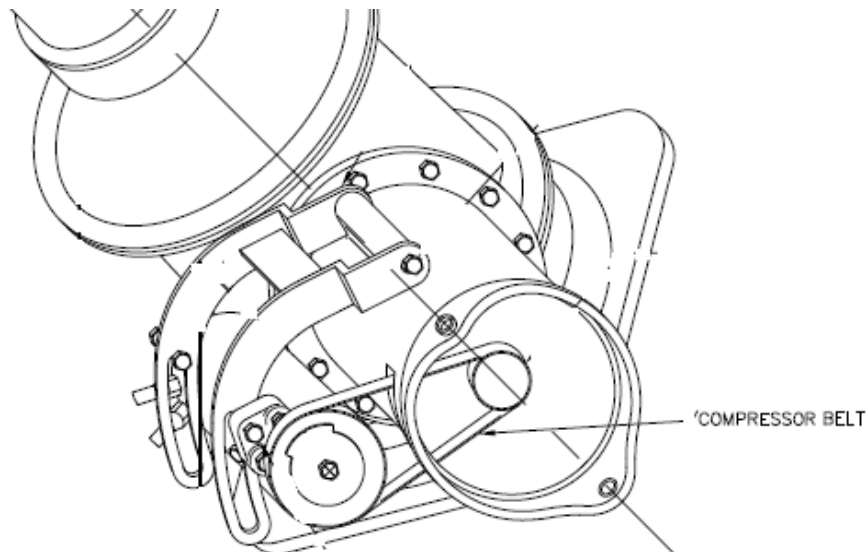
**5. Removal / Installation - Compressor**  
(Ref figure 21-17)

**a) Removal**

- 1) Access the compressor (Ref Section 6-00-00 Dimensions and Access)
- 2) Reclaim refrigerant in system in accordance with Section 12-10-00, to remove coolant from system.
- 3) Remove refrigerant lines from compressor and install protective caps to protect from foreign material entering system and compressor.
- 4) Disconnect drive belt to compressor.
- 5) Remove bolts securing compressor to mount and remove compressor.

**b) Installation**

- 1) Install compressor loosely on support frame with attaching hardware.
- 2) Install drive belt.
- 3) Tighten compressor bolts allowing compressor to "Seek" its own natural position on the frame. Tighten compressor belt tensioning bolt to 50 lbs. belt tension.
- 4) Tighten and safety all compressor mounting bolts.
- 5) Remove protective caps from refrigerant lines and compressor. Inspect the o-rings from installation and condition. Replace as necessary.
- 6) Oil all fittings and o-rings.
- 7) Install refrigerant lines.
- 8) Torque refrigerant lines: #6 11-13 ft/lbs.; #8 15-20 ft/lbs.; #10 21-27 ft/lbs. Do not over tighten.
- 9) Charge system in accordance with Section 12-00-00.
- 10) Install previously removed cowlings.



**Figure 21-17**  
Compressor

## 6. Troubleshooting guide

Symptoms	Trouble	Cause	Correction
<ul style="list-style-type: none"> <li>-Insufficient cooling</li> <li>-Low-side pressure too low</li> <li>-High -side pressure too low</li> <li>-Receiver/drier sight glass shows a stream of bubbles</li> <li>-Air in ducts only slightly cool</li> </ul>	Low or partial refrigerant charge	Leak	Find and fix the leak. If there was a loss of oil, be sure to check to compressor oil level. Evacuate and recharge per section 12.10.00
<ul style="list-style-type: none"> <li>- Insufficient cooling during hottest part of the day or during extended flying.</li> <li>- Low-side pressure normal, though it may be too low or even a vacuum</li> <li>- High-side pressure normal, though it may be low-at the same time low side is low</li> <li>-- Air in the ducts is usually cold, but becomes warm when pressure reading drop</li> </ul>	Excessive moisture in the system	The desiccant in the drier/receiver is saturated	Replace or rebuild the receiver/drier. Evacuate and recharge per section 12.10.00
<ul style="list-style-type: none"> <li>- Insufficient cooling</li> <li>- Low-side pressure normal, but does not drop when the clutch cycles</li> <li>- High-side pressure high</li> <li>- Receiver/drier sight glass shows occasional bubbles (Note again that with HFC-134A the sight glass should be milky when the system is fully charged.)</li> <li>- Air in ducts only slight cool</li> </ul>	Air in the System	Refrigerant contains non-condensable in the form of air moisture	Leak test, watch for bad compressor seals. Drain the system. Repair leaks as needed. Replace or rebuild the receiver-drier. Check the compressor oil. Evacuate and recharge per section 12.10.00.
<ul style="list-style-type: none"> <li>- No cooling</li> <li>- Low-side pressure too high</li> <li>- High-side pressure too high</li> <li>- Receiver/drier sight glass may show occasional bubbles</li> <li>- Liquid line very hot</li> <li>- Air in ducts is warm</li> </ul>	Condenser malfunction or system overcharge	Condenser malfunction or system overcharge	Evacuate and recharge per section 12.10.00 or replace condenser.



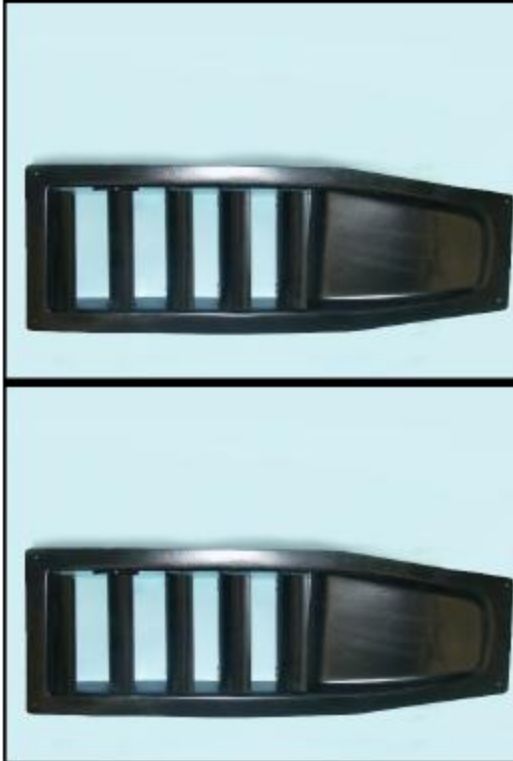
## Illustrated Parts List

### 1. General

This section contains information on parts for the Air Conditioning System, for use in ordering replacements if necessary.



## Air Intake Assemblies



**IFS PN: 520071**

**Condenser Air  
Intake Assembly  
(Hi Profile)**

**AS350** 

**IFS PN: 520071-1**

**Condenser Air  
Intake Assembly  
Low Profile (Sliding Door)**

**AS350** 



## Air Outlets



**IFS PN: 500001**

**Left Side  
Air Outlet**

**EC130** 



**IFS PN: 500002**

**Right Side Air Outlet**

**EC130** 



**IFS PN: 500008-1**

**Louver Assembly  
Right Half**

**AS350** 



**IFS PN: 500010-1**

**Louver Assembly  
Right Half**

**AS350** 



## Air Outlets



**IFS PN: 500011-1**

**Louver Assembly  
Left Half**

**AS350** 



**IFS PN: 500018**

**Air Outlet Assembly  
Right Half**

**AS350** 



**IFS PN: 500018-2**

**Air Outlet Assembly  
Right Half**

**AS350** 



**IFS PN: 510259**

**Air Outlet  
Assembly**

**AS350** 



## Air Outlets



**IFS PN: 510259-1**

**Louver Assembly  
Right Half, Lower**

**AS350** 

**IFS PN: 510259-2**

**Air Outlet  
Assembly**

**AS350** 



## **Blower Motors**



**IFS PN: 050143**

**5" Vane Axial  
Blower Assembly**

**AS350** 

**EC130** 



**IFS PN: 050084**

**FAN, VANE AXIAL  
7", 24 VDC (Dynamic)**

**AS350** 

**EC130** 



**IFS PN: 050084-6**

**7" Vane Axial  
Blower Assembly (Enviro Motor)**

**AS350** 

**EC130** 



**IFS PN: 610000**

**7" Blower Assembly  
DC Brushless**

**AS350** 

**EC130** 





## Blower Motors



**IFS PN: 630000**

**7" Blower Assembly  
(Ampflow Motor)**

**AS350** 

**EC130** 



**IFS PN: 640000**

**7" Blower Assembly  
(Ampflow Motor)**

**AS350** 

**EC130** 



**IFS PN: 050052-1**

**Blower Motor,  
Modified Right Half**

**AS350** 



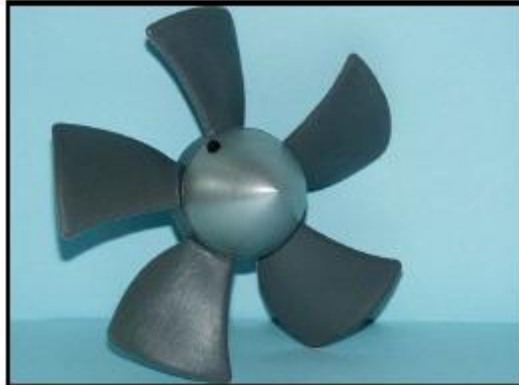
**IFS PN: 490017-1**

**Aft Evaporator Fan  
Assembly**

**AS350** 



## Blower Motor Parts



**IFS PN: 580000**

**5" Hub  
& Propeller Assembly**

**AS350** 

**EC130** 



**IFS PN: 250371**

**5" Propeller**

**AS350** 

**EC130** 



**IFS PN: 261176**

**Fan Blade Hub**

**AS350** 

**EC130** 



**IFS PN: 040004-8**

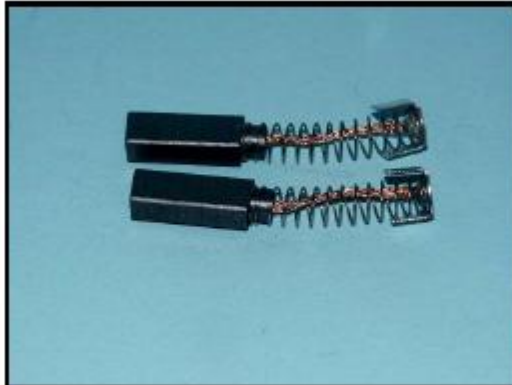
**Fan Wheel CW**

**AS350** 

**EC130** 



# Blower Motor Parts

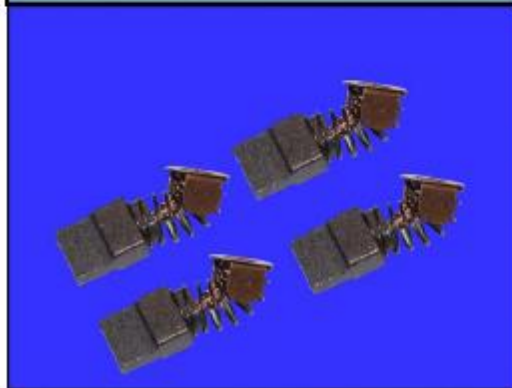


**IFS PN: 050031**

**5" Motor Brushes**

AS350 

EC130 



**IFS PN: 610000-8**

**7" Motor Brushes  
(Amp Flow)**

AS350 

EC130 

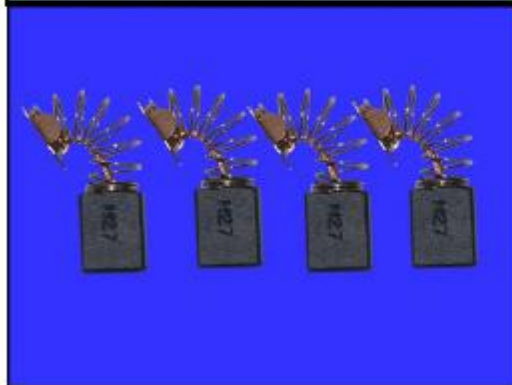


**IFS PN: 050038**

**7" Motor Brushes  
(Enviro)**

AS350 

EC130 



**IFS PN: A20420**

**7" Motor Brushes  
(Dynamic)**

AS350 

EC130 



## **Blower Motor Parts**



**IFS PN: 050032**

**5" Motor Brush  
Caps**

AS350   
EC130 

**IFS PN: 0941101-1-5**

**5" Motor  
Armature**

AS350 





# Compressor and Parts



**IFS PN: 590008**

**Compressor Assembly**

**AS350** 



**IFS PN: 590008-1**

**Compressor Assembly**

**EC130** 


**AS350** 



**IFS PN: 010015**

**Face Plate**

(A3G/A2Y/1BQ/005 prefix stamped on face of rim) 0.501 shaft

**AS350** 

**EC130** 



**IFS PN: 010013**

**Face Plate**

(A6H prefix stamped on face of rim) keyed- 0.430 shaft

**AS350** 

**EC130** 



## Compressor and Parts



**IFS PN: 300355-2**

**Pulley**

**AS350** 



**IFS PN: 300396**

**Pulley**

**EC130** 

**AS350** 



**IFS PN: 010011**

**Bearing**

**AS350** 

**EC130** 



**IFS PN: 050033**

**Coil, 24VDC**

**AS350** 

**EC130** 



# Compressor and Parts



## SHIM AND NUT KIT

(keyed- 0.430 shaft)  
NUT FITS ALL SHAFT SIZES

AS350



EC130



## IFS PN: 060005

24.3" 4 Groove  
Serpentine Belt

EC130



## IFS PN: 060006

25.3" 5 Groove  
Serpentine Belt

EC130



IFS PN: 060018 25-1/4"

IFS PN: 060018-1 25"

Flat Belt

AS350







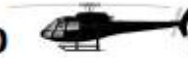
# Compressor Bracket/Parts



**IFS PN: IFS-350/130-507**

**Compressor Bracket  
Kit**

**AS350**



**EC130**



**IFS PN: 530027-3**

**Compressor Mount  
Assembly**

**AS350**



**EC130**



**IFS PN: 530100**

**Strap, Housing Mod  
Assembly**

**AS350**



**EC130**



**IFS PN: 530100-1**

**Strap Housing Mod  
Assembly**

**AS350**



**EC130**





## Compressor Bracket/Parts




**IFS PN: 300363-2**  
**(ALT: 261155 not shown)**


**Compressor Shim,  
Upper**

**AS350**   
**EC130** 



**IFS PN: 300067-1**  
**Compressor Standoff**

**AS350**   
**EC130** 

**IFS PN: 300067**  
**Compressor Standoff**

**AS350**   
**EC130** 

**IFS PN: 261007**  
**Bushings, SD507**

**AS350**   
**EC130** 



## Compressor Bracket/Parts



**IFS PN: 261008**

**Bushing, SD507**

**AS350** 

**EC130** 

**IFS PN: 300095**

**Compressor Pin**

**AS350** 

**EC130** 



# Condenser/Evaporator



**IFS PN: 090002-0**

**Expansion Valve**



**IFS PN: 090016-5**

**Receiver/Drier**



**IFS PN: 550003-0**

**Aft Condenser  
Assembly**



**IFS PN: 550007-1**

**Side Condenser  
Assembly**







## Condenser/Evaporator



**IFS PN: 550022**

**Aft Condenser  
Assembly**

**AS350** 



**IFS PN: 560004**

**Fwd Evaporator  
Assembly**

**EC130** 



**IFS PN: 560010-O-5**

**Aft Evaporator  
Assembly**

**AS350** 



**IFS PN: 560016-O-1**

**Aft Evaporator  
Assembly**

**EC130** 



## Condenser/Evaporator



**IFS PN: 560025-0**

**Fwd Evaporator  
Assembly**

**AS350** 



## Electrical Parts



**IFS PN: 540009**

**Electrical Box  
Assembly**

**EC130** 



**IFS PN: 540028-C-2-A**

**Electrical Box  
Assembly**

**AS350** 



**IFS PN: 540011**

**Instrument Panel  
Switch**

**EC130** 



**IFS PN: 540020**

**Resistor Assembly**

**EC130** 



## Electrical Parts



**IFS PN: 540044-5**

**Instrument Panel  
Switch**

**AS350** 



**IFS PN: 540044-8**

**Instrument Panel  
Switch**

**AS350** 



**IFS PN: 540044-9**

**5 amp Breaker  
Assembly**

**AS350** 

**EC130** 



**IFS PN: 540089**

**Aft Evaporator  
Switch Assembly**

**AS350** 



## Electrical Parts



**IFS PN: 050000**

**Switch with  
Button**

AS350   
EC130 



**IFS PN: 050001**

**Switch without  
Button**

AS350   
EC130 



**IFS PN: 050006**

**Switch without  
Button**

AS350 



**IFS PN: 050006-1**

**Switch with  
Button**

AS350 






# Electrical Parts



**IFS PN: 050006-2**

**Switch with  
Button**

AS350   
EC130 



**IFS PN: 050006-3**



**Switch without  
Button**

AS350   
EC130 



**IFS PN: 050007-1**

**Button**

AS350   
EC130 



**IFS PN: 050007-3**

**Button**

AS350 



## Electrical Parts



**IFS PN: 050007-4**

**Button**

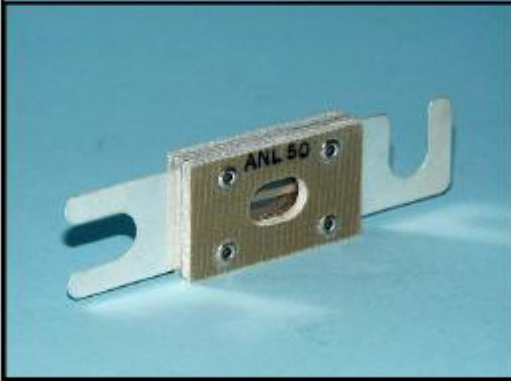
AS350   
EC130 



**IFS PN: 050008**


**Relay**

AS350   
EC130 



**IFS PN: 050015-2**

**50 AMP Limiter**

AS350   
EC130 



**IFS PN: 050024-2**

**Resistor**

AS350 



# Electrical Parts



**IFS PN: 050026**

**Timer**

**AS350**



**EC130**



**IFS PN: 050107**

**Low Pressure  
Switch**

**AS350**



**EC130**



**IFS PN: 090004**

**High Pressure  
Switch**

**AS350**



**EC130**







## **EC130 Hoses**



**IFS PN: 570103**

**High Pressure  
Hose # 6  
Assembly**

**EC130** 



**IFS PN: 570104**

**Condenser to  
Receiver/Drier Hose  
# 6 Assembly**

**EC130** 



**IFS PN: 570105**

**Return Hose  
# 10 Assembly**

**EC130** 



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**EC130** 





## AS350 Hoses Aft Mount Condenser



**IFS PN: 570067-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350** 



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350** 



**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350** 



**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350** 



## AS350 Hoses Side Mount Condenser



**IFS PN: 570020-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350** 

**IFS PN: 570024-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350** 

**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350** 

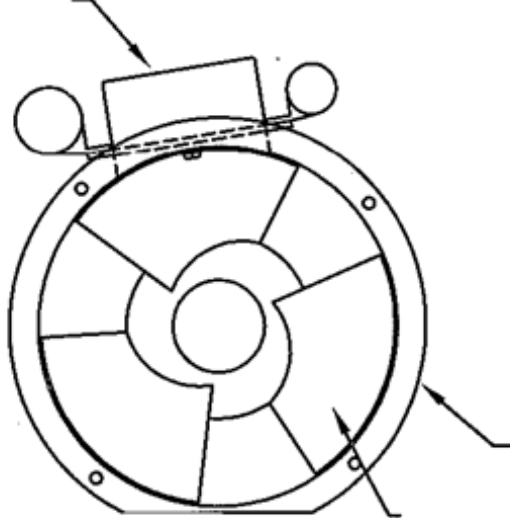
**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350** 

## BRUSHLESS BLOWER MOTORS AND PARTS

IFS PN 540126-1 CONTROLLER ASSY



**IFS PN 050084-7-2 7" DC BRUSHLESS  
BLOWER ASSEMBLY SHORT**

**AS350**



**EC130**



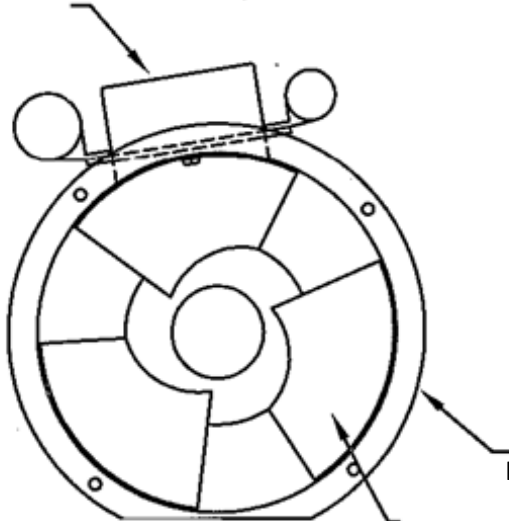
IFS PN 040020 7" BLOWER HOUSING,

IFS PN 040019 7" PROPELLER

IFS PN 050176-1 7" PROPELLER HUB ASSY

IFS PN 050193 7" DC BRUSHLESS MOTOR

IFS PN 540126-1 CONTROLLER ASSY



**IFS PN 050084-7-3 7" DC BRUSHLESS  
BLOWER ASSEMBLY LONG**

**AS350**



**EC130**



IFS PN 040021 7" BLOWER HOUSING,

IFS PN 040019 7" PROPELLER

IFS PN 050176-1 7" PROPELLER HUB ASSY

IFS PN 050193 7" DC BRUSHLESS MOTOR

**LIST OF CONSUMABLE MATERIALS**

<b>DESCRIPTION</b>	<b>P/N</b>	<b>VENDOR/SPECIFICATION</b>
THREAD LOCK	242	LOCTITE
ADHESIVE	1300L	3M
Cleaning cloth, Low-Lint	--	Commercial
Mineral Spirits, Cleaning Solvent	--	MIL-PRF-680, TYP II OR ASTM-D235
Alodine	Alodine 1200	--
Alodine	Iridite 14-2	--
Paint Stripper	Turco 5873	--
Polyamide Paint Primer	--	--
Dye Penetrant Kit	--	--
Acetone	--	ASTM-D329
Isopropyl Alcohol	--	TT-I-735
Trichloroethane	--	MIL-T-81533
Nylon Scouring Pad	(3M) Scotchbrite 63	3M
240 Grit Sandpaper	--	Commercial
320 Grit Sandpaper	--	Commercial
240 Grit Aluminum Oxide Abrasive	--	Commercial
Cloth	--	Commercial
Sealant	--	MIL-S-8802
Adhesive transfer tape 950 (2")	70-0060-3057-4	3M
Refrigerant	R134a	--

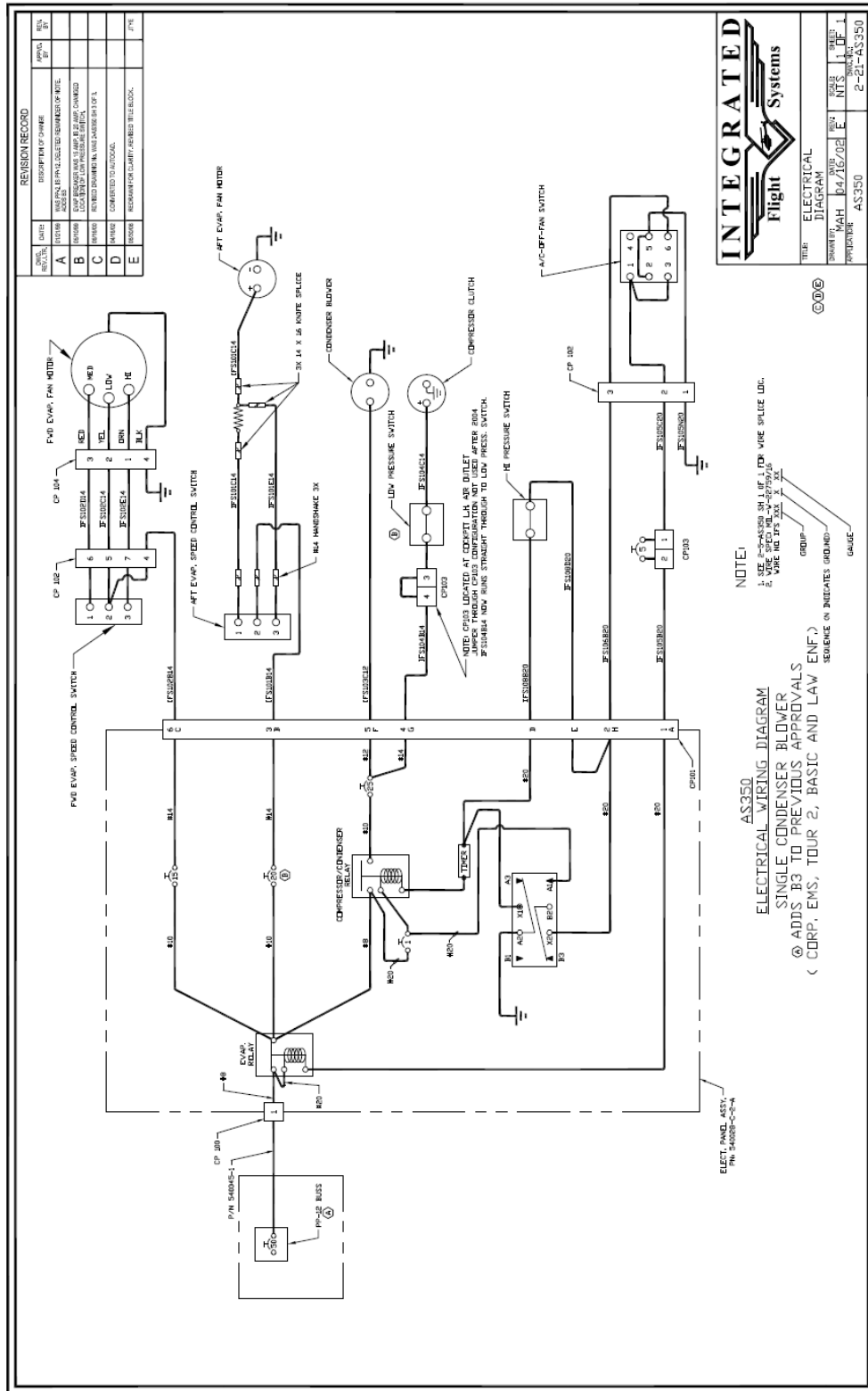


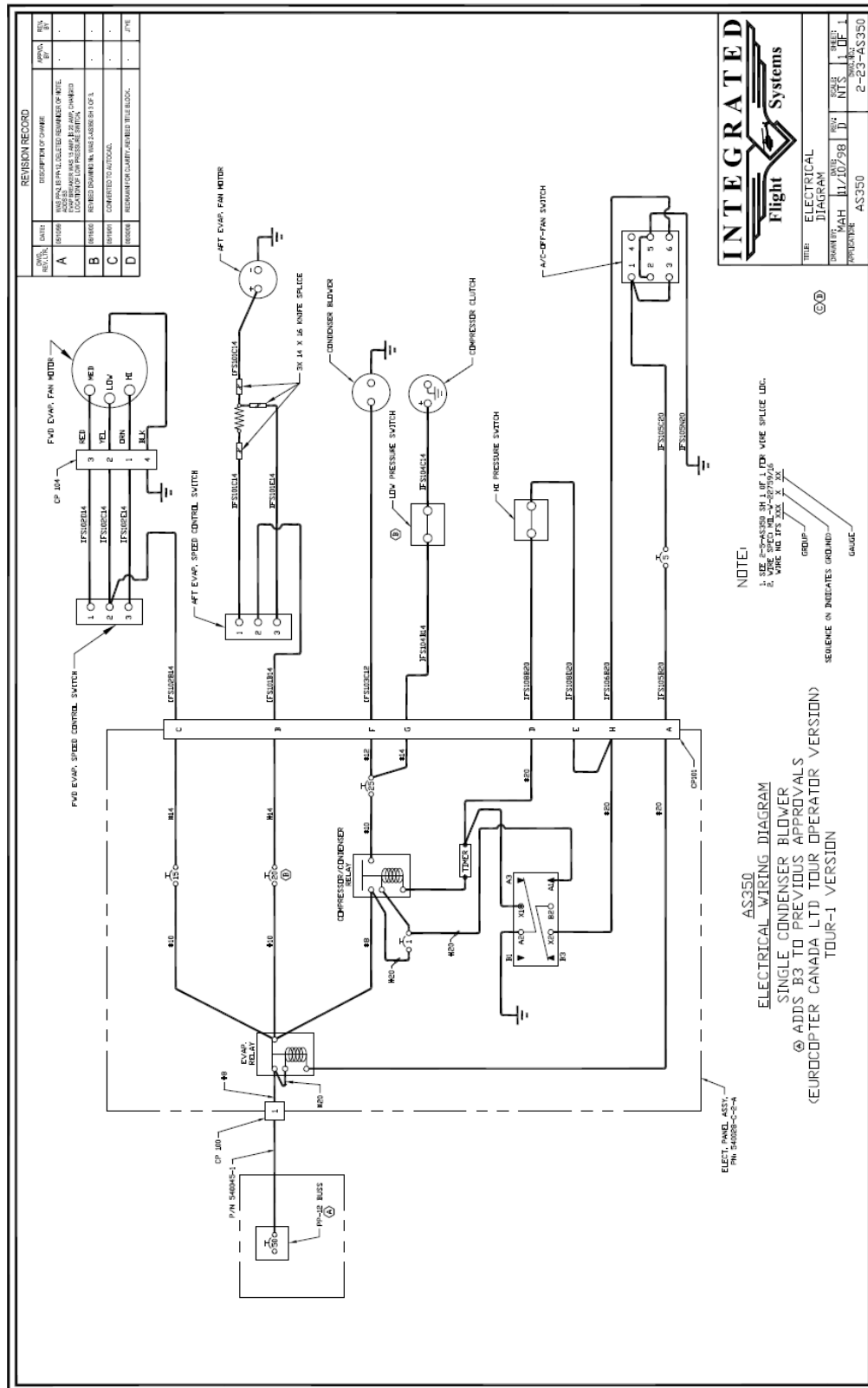
## Chapter 98

### Section 98-00-00 Wiring Diagrams and Plumbing Schematics

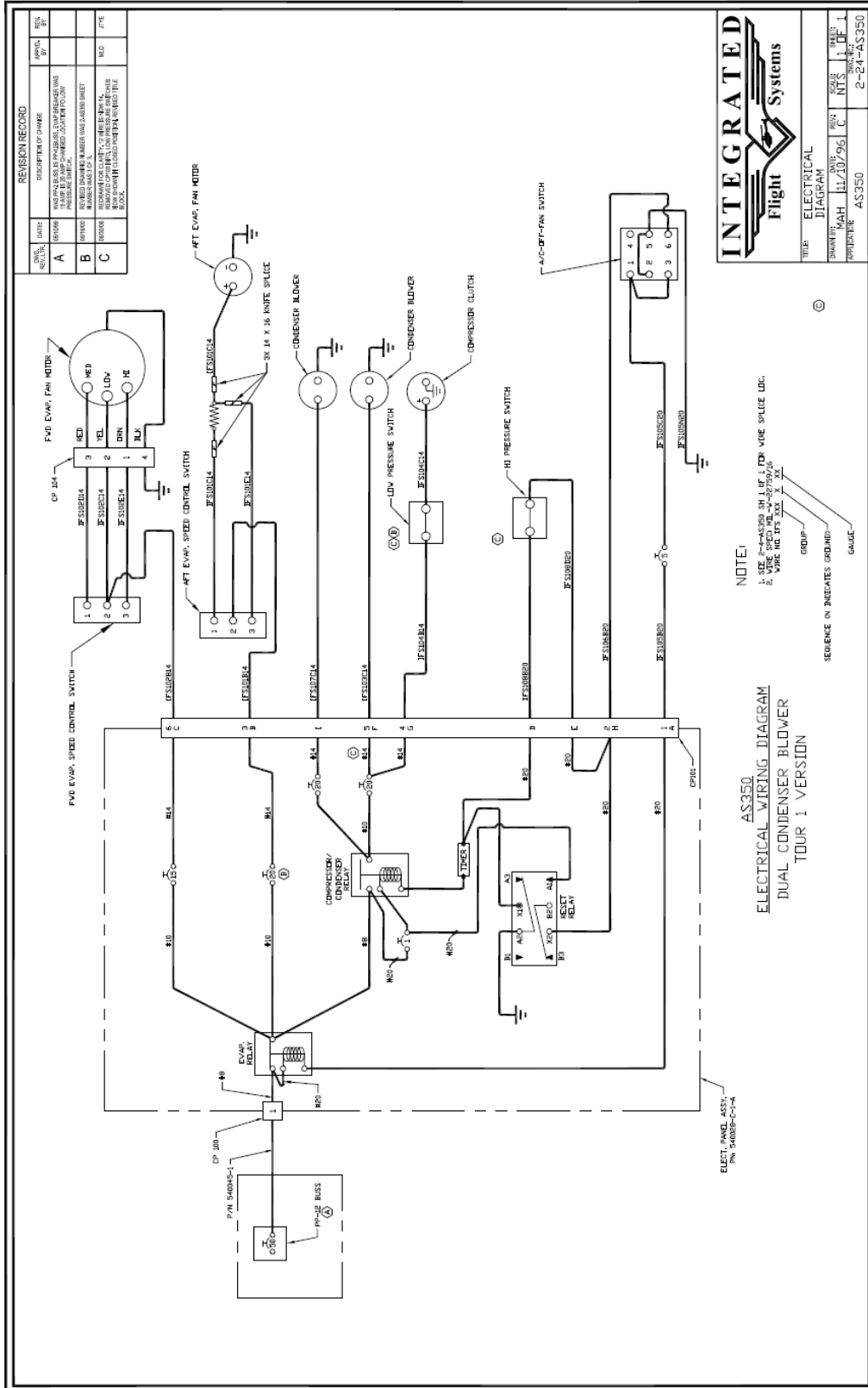
This section contains all applicable wiring diagrams and plumbing schematics.

Section 98-10-00 Wiring Diagrams

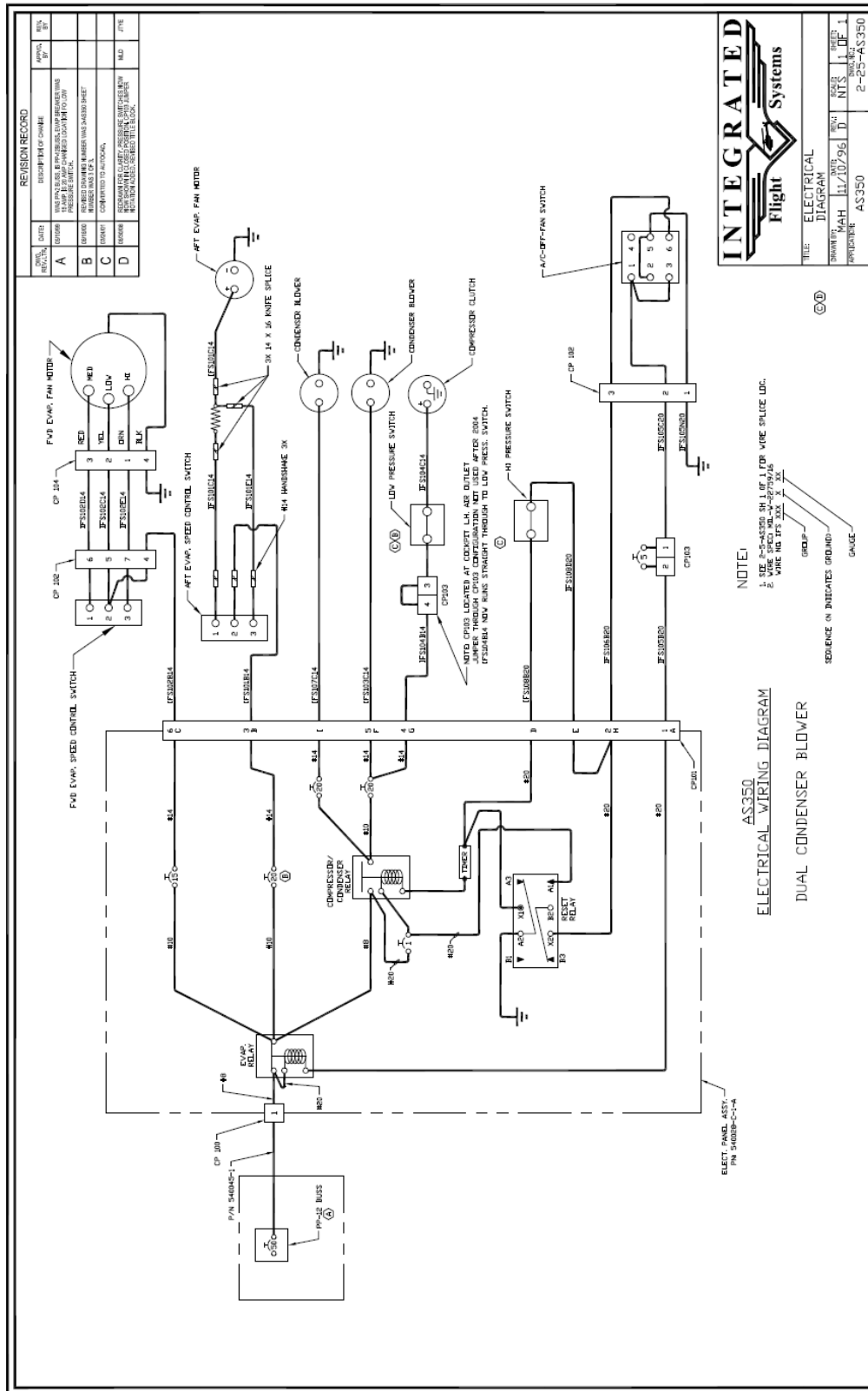




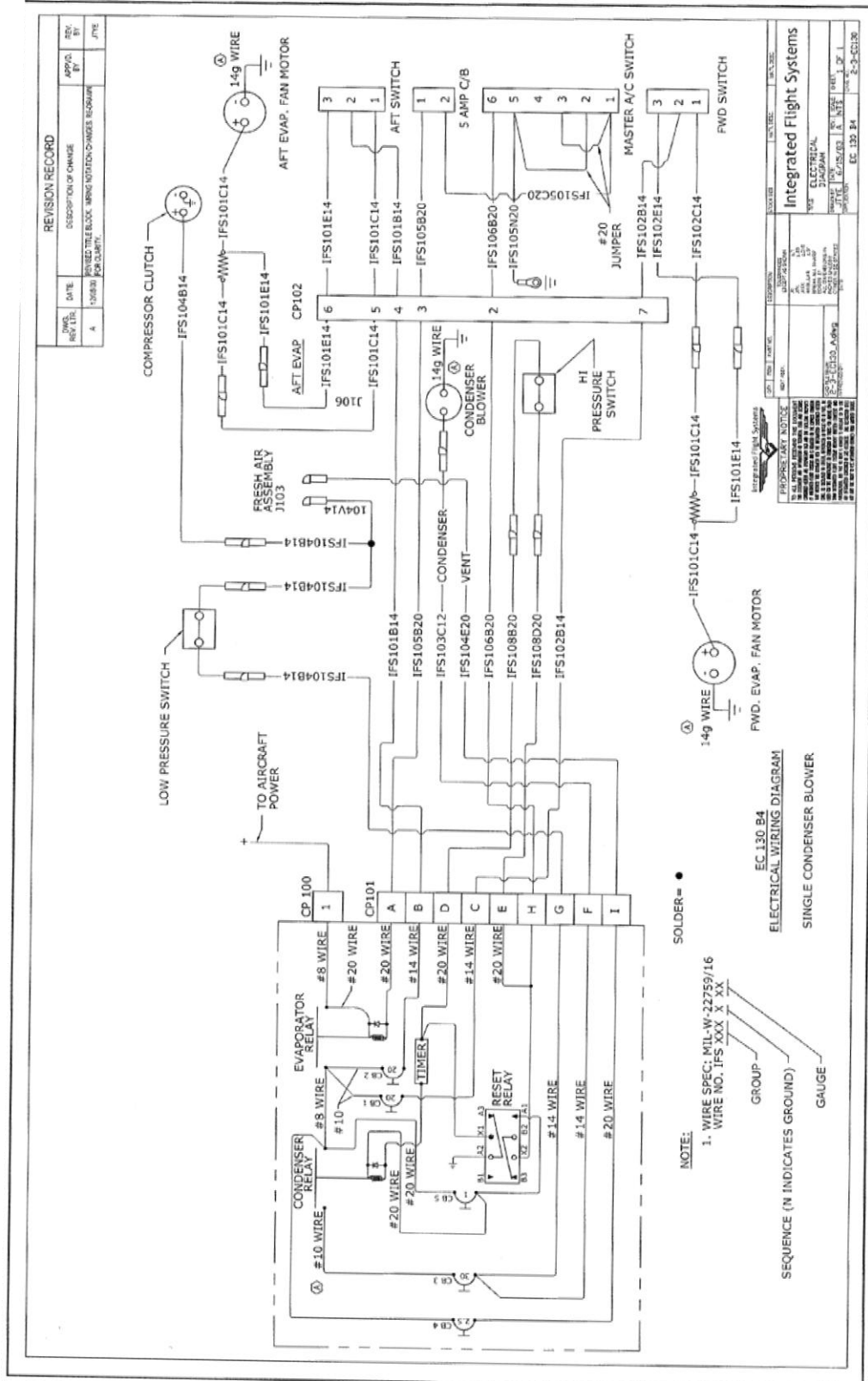
TYPE: ELECTRICAL DIAGRAM  
DRAWN BY: MAH 11/10/98  
CHECKED BY: NTS  
APPROVED BY: JDE  
PROJECT: AS350  
REV: 2-ES-AS350



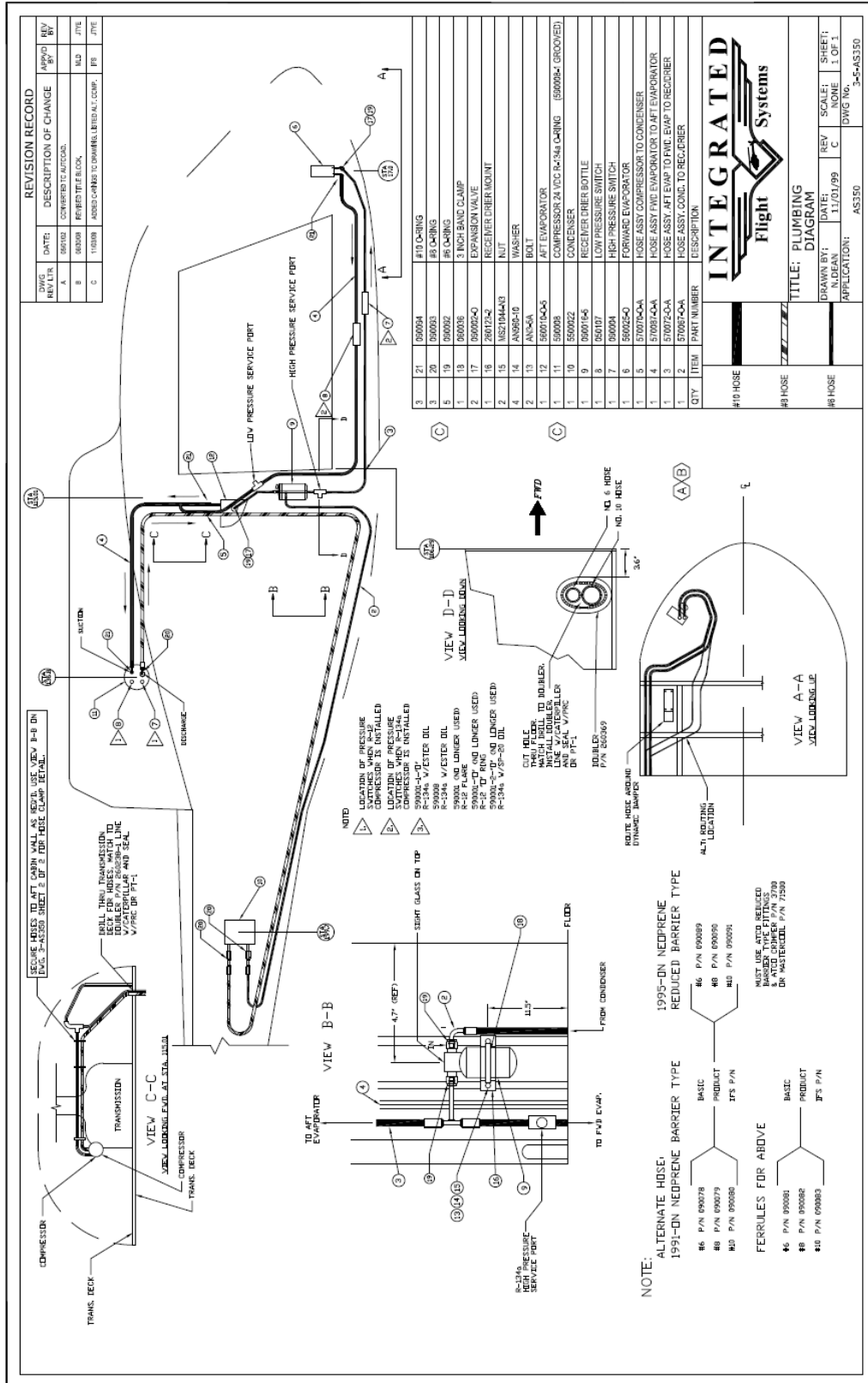


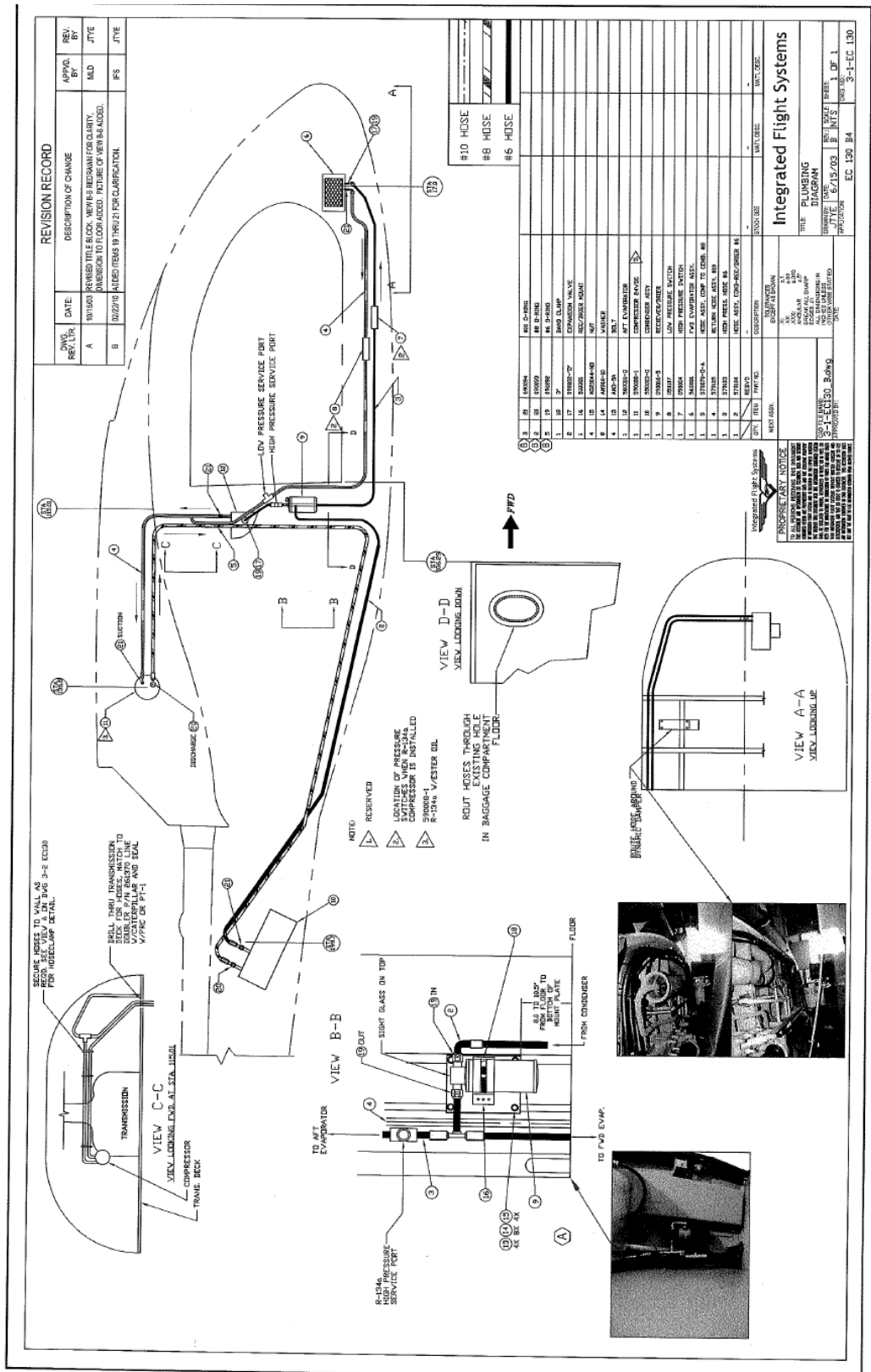


TITLE: ELECTRICAL DIAGRAM  
DRAWN BY: MAH 11/20/96  
CHECKED BY: NTS  
APPROVED BY: AS350  
2-25-AS350











## APPENDIX A      Weight and Balance

### PERTAINS TO KIT #350-00-011

ITEM	WEIGHT	ARM	MOMENT
Forward Evaporator Assembly	10.0	19.00	190.00
Forward Air Outlets	4.0	31.32	125.28
Aft Evaporator and Return Air	9.0	120.00	1080.90
Aft Evaporator Blower	6.0	120.85	725.10
Condenser Coil and Mount	20.0	133.80	2676.00
Condenser Blower and Mount	8.0	148.60	1188.80
Compressor and Mount	12.0	147.80	1773.60
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	6.0	76.90	461.40
<hr/>			
Sub Total:	79.0	111.85	8835.88
(Air Conditioner)			

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**



**PERTAINS TO KIT #350-00-031**

ITEM	WEIGHT	ARM	MOMENT
Forward Evaporator Assembly	10.00	19.00	190.00
Forward Air Outlets	4.00	31.32	125.28
Aft Evaporator and Return Air	9.00	120.00	1080.90
Aft Evaporator Blower	6.00	120.85	725.10
Condenser Assy. & Mount w/ Dual condenser blowers	28.20	201.80	5690.76
Compressor and Mount	15.00	147.80	2217.00
Electrical Relay Panes	4.0	153.70	614.80
Refrigerant, Hoses and Fittings	9.00	76.90	692.10
<hr/>			
Sub Total:	85.20	133.05	11,335.94
(Air Conditioner)			

Engine Oil

Transmission Oil

Pilots (2)

Fuel

**FAA APPROVED DATA**



**PERTAINS TO KIT # 130-00-031**

<b>ITEM</b>	<b>WEIGHT</b>	<b>ARM</b>	<b>MOMENT</b>
FWD. EVAP ASSY W/ MOTOR	12.0	24.0	288
FWD AIR OUTLETS (x2) W/ DUCTING	3.0	33.29	99.87
AFT EVAP W/ MOTOR & DUCTS	16.0	120.5	1928
CONDENSER ASSY W/ MOTOR & AIR DISCHARGE	33.0	223.3	7368.9
COMPRESSOR W/ MOUNTING KIT	14.0	147.8	2069.2
ELECTRICAL CONTROL BOX	4.0	153.7	614.8
REFRIGERANT HOSES	5.0	76.9	384.5
ELECTRICAL HARNESS	3.5	70.0	245
<hr/>			
INSTALLATION TOTALS	90.5	143.62	12998.27

ENGINE OIL  
TRANSMISSION OIL  
PILOTS (2)  
FUEL

**FAA APPROVED DATA**



# Step 13

## Parts Break Down

# **MASTER PARTS LIST**

IN

**ALL AS350 SERIES**

FOR

**KIT # 350-00-011-HP**

**with**

**(SINGLE CONDENSER BLOWER)**

**"ESTER OIL EQUIPPED COMPRESSOR"**

**Model: SD-507**

**Revised: January 28, 2011  
November 4, 2009  
August 28, 2006  
February 1, 2002  
March 1, 2001  
August 6, 2001**

## MASTER PARTS LIST

AS350 SERIES

KIT #350-00-011HP

SINGLE CONDENSER BLOWER

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
1.	<b>BELT - FLAT</b>	060018-1 060018 (Alt)
	<b>BELT – GROOVED</b>	060005
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>	590008
	<b>SD-507 COMPRESSOR ASSEMBLY</b> COMPLETE W/ GROOVED PULLEY, 24 VDC COIL <b>(FOR USE WITH R-134a ONLY,</b> <b>"ESTER oil equipped)</b>	590008-1

### COMPRESSOR PARTS

FOR: SD-507 W/ 5.0" CLUTCH

3.	<b>BEARING (ONLY): SD-507</b> COMPRESSOR W/ 5.0" CLUTCH	010011
4.	<b>24 VDC COIL (GREEN WIRE)</b>	050033

Integrated Flight Systems  
Parts Break Down – 350-00-011 Air Conditioning

**COMPRESSOR PARTS**

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
5.	<b>IFS PULLEY (FLAT)</b>  <b>IFS PULLEY (GROOVED)</b>	300355 (Alt) 300355-2  300396
6.	<b>PULLEY FACE PLATE 5.0" (A6H)</b>	010013
7.	<b>PULLEY FACE PLATE 5.0" (A3G/A2Y)</b>	010015

**EVAPORATOR BLOWER PARTS**

8.	<b>5" VANE AXIAL BLOWER ASSY.</b> (SINGLE FLANGE W/NYLON BLADE) For: AFT EVAPORATOR BLOWER ASSY. IFS P/N 490017-1	050143
9.	<b>MOTOR: 5" VANE AXIAL BLOWER</b>	050145
10.	<b>NYLON BLADE AND HUB ASSY.</b> FITS 5" VANE AXIAL BLOWER,	580000
11.	<b>BRUSHES (2 EACH)/MOTOR</b>	050031
12.	<b>MOTOR, FORWARD EVAPORATOR</b> 24VDC, single shaft, right hand	050052-1
13.	<b>WHEEL, FORWARD EVAPORATOR, fan,</b> metal, CC rotation, 5/16" bore	040004-8

**CONDENSER BLOWER PARTS**

14.	<b>7" DC BRUSHLESS BLOWER ASSY.</b> (Short Housing)	IFSS 050084-7-2
15.	<b>7" DC BRUSHLESS BLOWER ASSY.</b> (Long Housing)	IFSS 050084-7-3

Integrated Flight Systems  
Parts Break Down – 350-00-011 Air Conditioning

**MISC. PARTS**

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
16.	<b>RECEIVER/DRIER 1991 &amp; ON - "O" RING TYPE</b>	090016-5
17.	<b>EXPANSION VALVE 1992 &amp; ON - FWD. AND AFT EVAP. "O" RING TYPE</b>	090002-"O"
18.	<b>HIGH PRESSURE SAFETY SWITCH (ALL YEARS)</b>	090004
19.	<b>LOW PRESSURE SAFETY SWITCH 1991 &amp; ON - NON-ADJUSTABLE (7 OUT/22 IN)</b>	050107

# *Integrated Flight Systems*

## *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

### **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

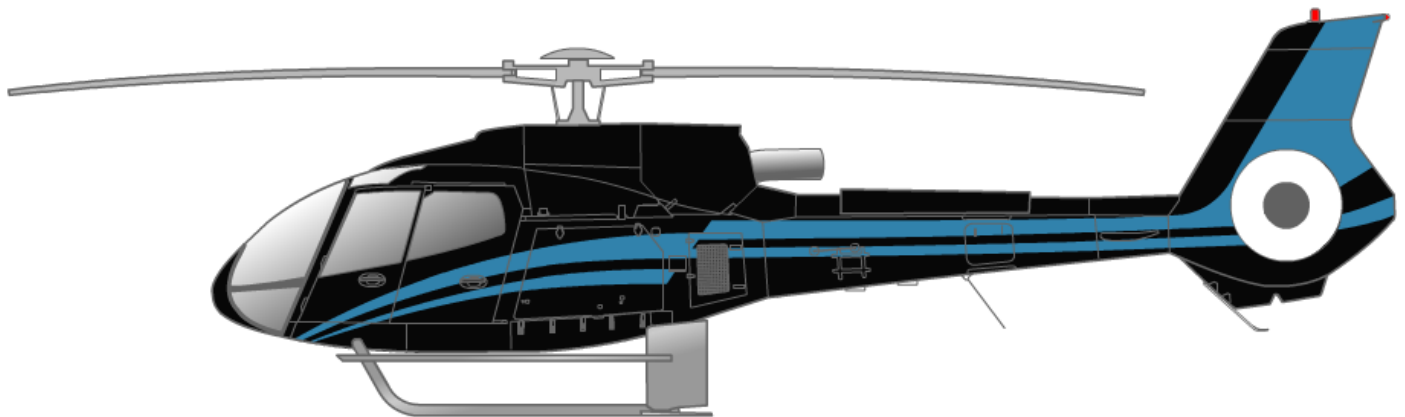
Flight

Systems

## Air Conditioning Parts Catalog



**AS350 Series**



**EC130 B4**



**Within USA**  
**24 Hours 7 days a week**

**Phone: 1-888-545-8371**

**Kit / Parts Order Fax: 1-800-225-8765**

**Accounting Fax: 1-817-624-6601**

**International**  
**24 Hours 7 days a week**

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**Email: [info@integratedflightsys.com](mailto:info@integratedflightsys.com)**

**Internet: [www.integratedflightsys.com](http://www.integratedflightsys.com)**

**Ask for the following**

**Tech Support: Tech Support**

**Parts Support / Warranty: Parts Department**

**Kit Sales: Sales Department**

**Payables and Receivables:**

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Fort Worth, Texas 76161-3976**

**Physical Shipping Address:  
Address:**

**3900 Falcon Way West  
Hanger 16S  
Fort Worth, Texas 76106**

**We gladly accept Visa or Master Card**



# Air Intake Assemblies



**IFS PN: 520071**

**Condenser Air  
Intake Assembly  
(Hi Profile)**

**AS350**



**IFS PN: 520071-1**

**Condenser Air  
Intake Assembly  
Low Profile (Sliding Door)**

**AS350**



# Air Outlets



**IFS PN: 500001**

**Left Side  
Air Outlet**

**EC130** 



**IFS PN: 500002**

**Right Side Air Outlet**

**EC130** 



**IFS PN: 500008-1**

**Louver Assembly  
Right Half**

**AS350** 



**IFS PN: 500010-1**

**Louver Assembly  
Right Half**

**AS350** 

# Air Outlets



IFS PN: 500011-1

Louver Assembly  
Left Half

AS350 



IFS PN: 500018

Air Outlet Assembly  
Right Half

AS350 



IFS PN: 500018-2

Air Outlet Assembly  
Right Half

AS350 

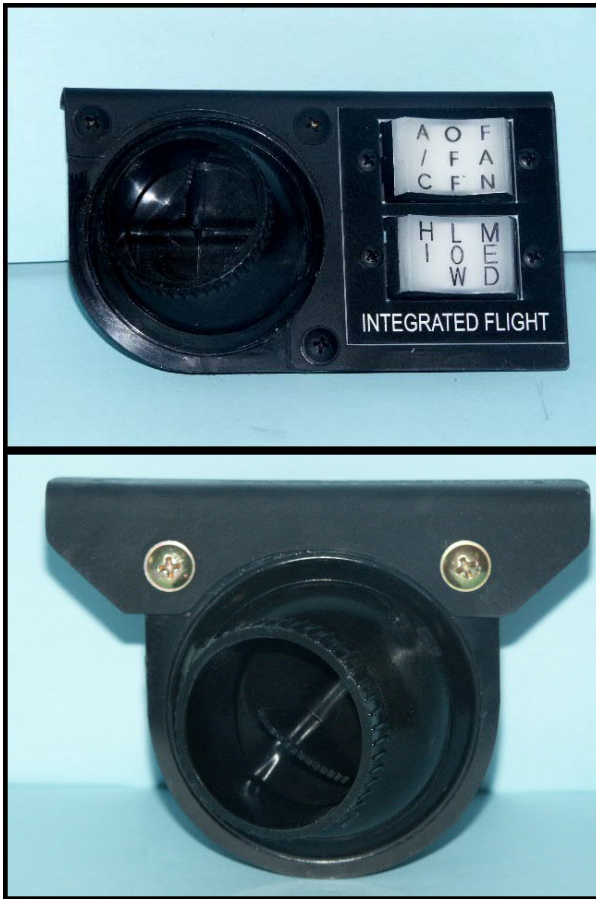


IFS PN: 510259

Air Outlet  
Assembly

AS350 

# Air Outlets



**IFS PN: 510259-1**

**Louver Assembly  
Right Half, Lower**

**AS350** 

**IFS PN: 510259-2**

**Air Outlet  
Assembly**

**AS350** 



# Blower Motors



**IFS PN: 050143**

**5" Vane Axial  
Blower Assembly**

**AS350**



**EC130**



**IFS PN: 050084**

**FAN, VANE AXIAL  
7", 24 VDC (Dynamic)**

**AS350**



**EC130**



**IFS PN: 050084-6**

**7" Vane Axial  
Blower Assembly (Enviro Motor)**

**AS350**



**EC130**



**IFS PN: 050084-7**

**7" Blower Assembly  
DC Brushless**

**AS350**



**EC130**



# Blower Motors



**IFS PN: 050052-1**

**Blower Motor,  
Modified Right Half**

**AS350**



**IFS PN: 490017-1**

**Aft Evaporator Fan  
Assembly**

**AS350**



# Blower Motor Parts



**IFS PN: 580000**

**5" Hub  
& Propeller Assembly**

**AS350**



**EC130**



**IFS PN: 250371**

**5" Propeller**

**AS350**



**EC130**



**IFS PN: 261176**

**Fan Blade Hub**

**AS350**



**EC130**



**IFS PN: 040004-8**

**Fan Wheel CW**

**AS350**

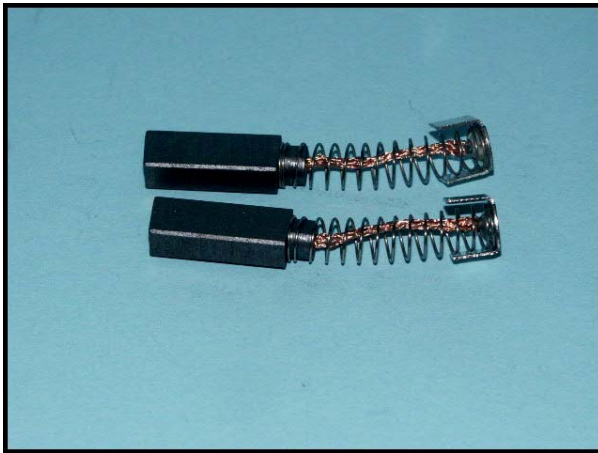


**EC130**





# Blower Motor Parts



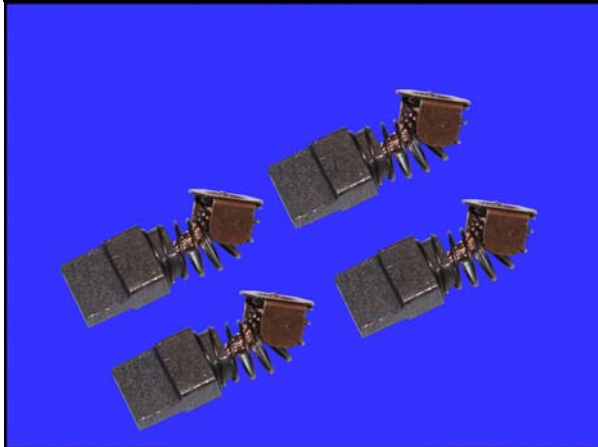
IFS PN: 050031

5" Motor Brushes

AS350



EC130



IFS PN: 610000-8

7" Motor Brushes  
(Amp Flow)

AS350



EC130



IFS PN: 050038

7" Motor Brushes  
(Enviro)

AS350



EC130



IFS PN: 420A-20

7" Motor Brushes  
(Dynamic)

AS350



EC130





# Blower Motor Parts



IFS PN: 050032

5" Motor Brush  
Caps

AS350



EC130



# Compressor and Parts



**IFS PN: 590008**

**Compressor Assembly**

**AS350**



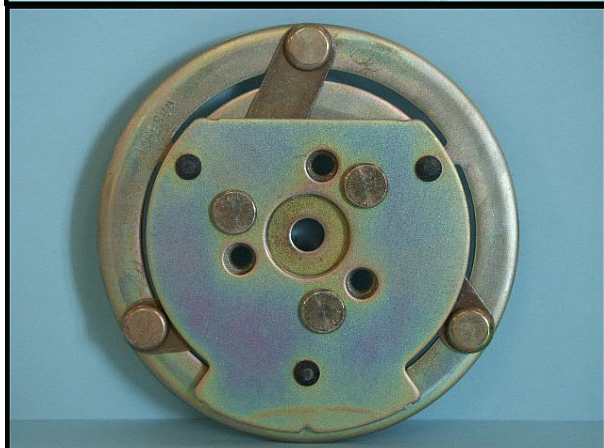
**IFS PN: 590008-1**

**Compressor Assembly**

**EC130**



**AS350**



**IFS PN: 010015**

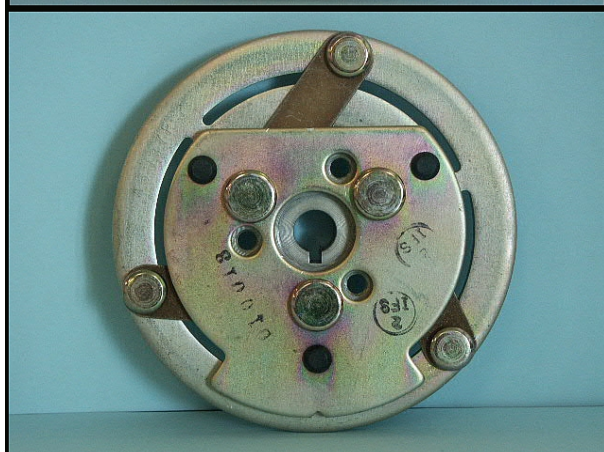
**Face Plate**

(A3G/A2Y/1BQ/005 prefix stamped on face of rim) Ø.501 shaft

**AS350**



**EC130**



**IFS PN: 010013**

**Face Plate**

(A6H prefix stamped on face of rim)  
keyed- Ø.430 shaft

**AS350**



**EC130**



# Compressor and Parts



**IFS PN: 300355-2**



**Pulley**

**AS350** 



**IFS PN: 300396**


**Pulley**

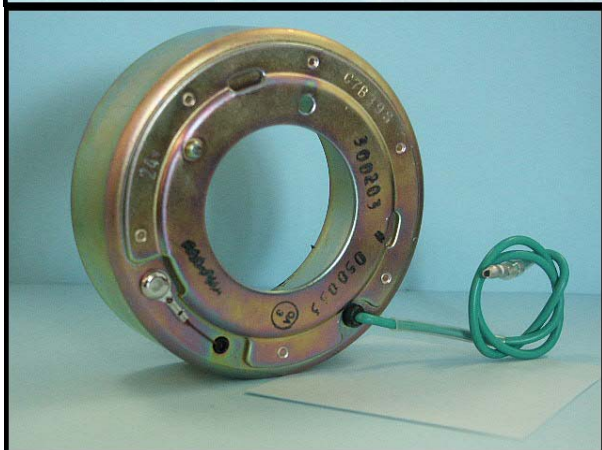
**EC130**   
**AS350** 



**IFS PN: 010011**



**Bearing**

**AS350**   
**EC130** 



**IFS PN: 050033**

**Coil, 24VDC**

**AS350**   
**EC130** 



# Compressor and Parts



## SHIM AND NUT KIT

(keyed- Ø.430 shaft)  
NUT FITS ALL SHAFT SIZES

AS350



EC130



## IFS PN: 060005

24.3" 4 Groove  
Serpentine Belt

EC130



## IFS PN: 060018 25-1/4"

## IFS PN: 060018-1 25"

Flat Belt

AS350



# Compressor Bracket/Parts



**IFS PN: IFS-350/130-507**

## **Compressor Bracket Kit**

**AS350**



**EC130**



**IFS PN: 530027-3**

## **Compressor Mount Assembly**

**AS350**



**EC130**



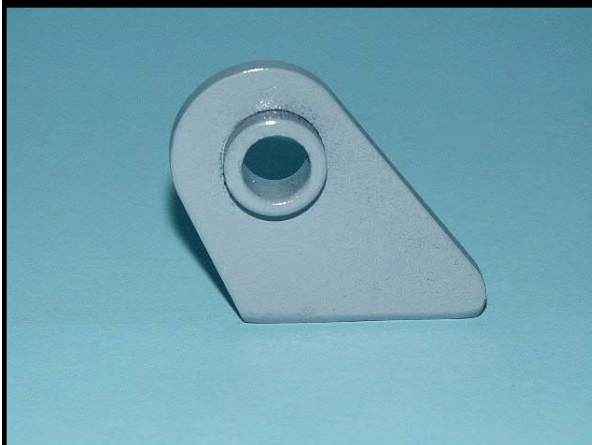
**IFS PN: 530100**

## **Strap, Housing Mod Assembly**

**AS350**



**EC130**



**IFS PN: 530100-1**

## **Strap Housing Mod Assembly**

**AS350**



**EC130**



# Compressor Bracket/Parts



**IFS PN: 300363-2**  
**(ALT: 261155 not shown)**

**Compressor Shim,  
Upper**

**AS350**



**EC130**



**IFS PN: 300067-1**

**Compressor Standoff**

**AS350**



**EC130**



**IFS PN: 300067**

**Compressor Standoff**

**AS350**



**EC130**



**IFS PN: 261007**

**Bushings, SD507**

**AS350**



**EC130**



# Compressor Bracket/Parts



**IFS PN: 261008**

**Bushing, SD507**

**AS350**



**EC130**



**IFS PN: 300095**

**Compressor Pin**

**AS350**



**EC130**





# Condenser/Evaporator



**IFS PN: 090002-O**

**Expansion Valve**

**AS350**



**EC130**



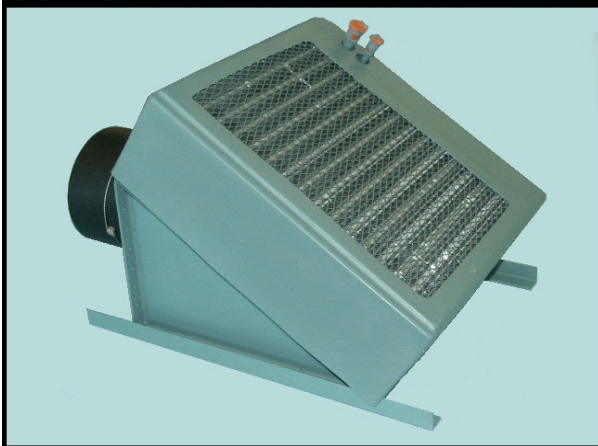
**IFS PN: 090016-5**

**Receiver/Drier**

**AS350**



**EC130**



**IFS PN: 550003-O**

**Aft Condenser  
Assembly**

**EC130**



**IFS PN: 550007-1**

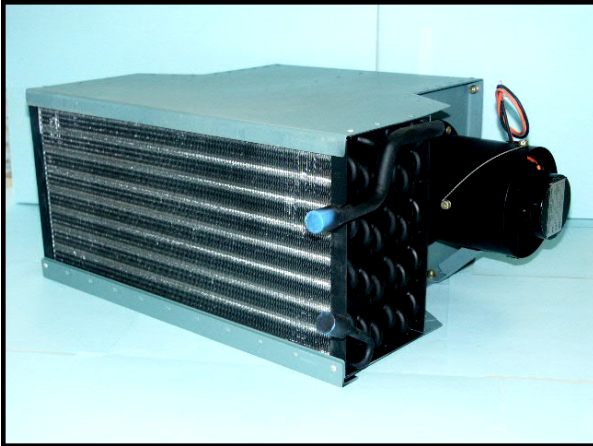
**Side Condenser  
Assembly**

**AS350**





# Condenser/Evaporator



**IFS PN: 550022**

**Aft Condenser  
Assembly**

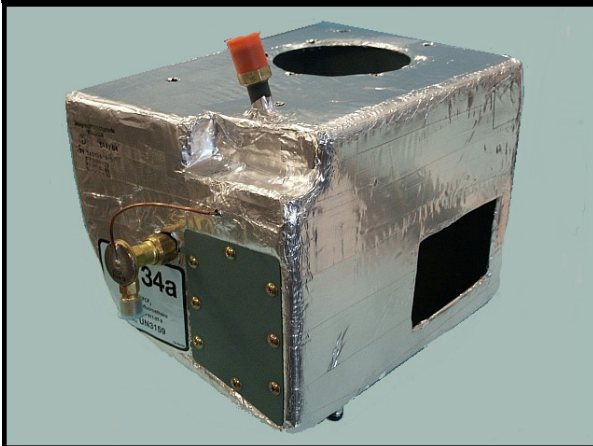
**AS350**



**IFS PN: 560004**

**Fwd Evaporator  
Assembly**

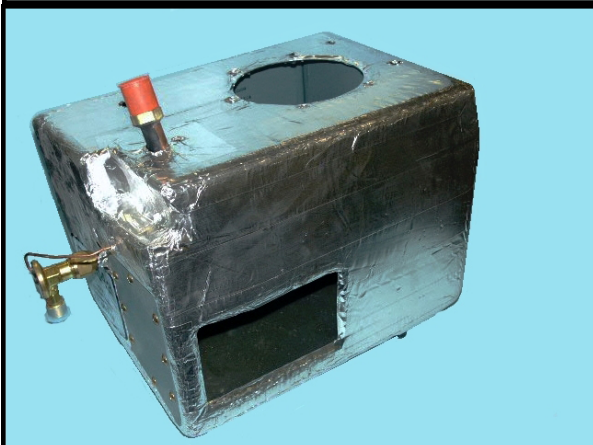
**EC130**



**IFS PN: 560010-O-5**

**Aft Evaporator  
Assembly**

**AS350**



**IFS PN: 560016-O-1**

**Aft Evaporator  
Assembly**

**EC130**



# Condenser/Evaporator



IFS PN: 560025-0

Fwd Evaporator  
Assembly

AS350



# Electrical Parts



**IFS PN: 540009**

**Electrical Box  
Assembly**

**EC130**



**IFS PN: 540028-C-2-A**

**Electrical Box  
Assembly**

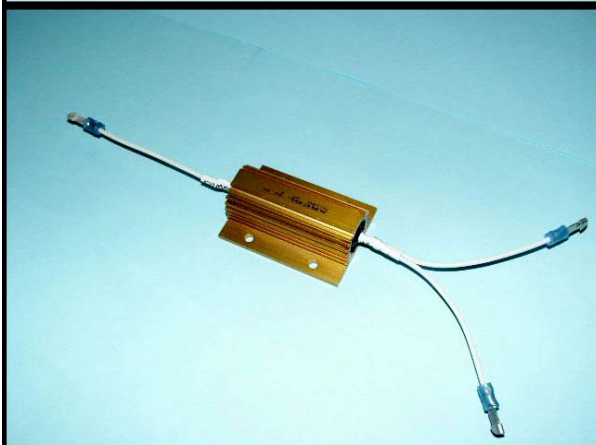
**AS350**



**IFS PN: 540011**

**Instrument Panel  
Switch**

**EC130**



**IFS PN: 540020**

**Resistor Assembly**

**EC130**





# Electrical Parts



**IFS PN: 540044-5**

**Instrument Panel  
Switch**

**AS350**



**IFS PN: 540044-8**

**Instrument Panel  
Switch**

**AS350**



**IFS PN: 540044-9**

**5 amp Breaker  
Assembly**

**AS350**



**EC130**



**IFS PN: 540089**

**Aft Evaporator  
Switch Assembly**

**AS350**



# Electrical Parts



**IFS PN: 050001**

3 POSITION DPDT "ON-OFF-ON"

**Switch without  
Button**

AS350



EC130



**IFS PN: 050006**

3 POSITION SPDT "ON-OFF-ON"

**Switch without  
Button**

AS350



**IFS PN: 050006-3**

2 POSITION SPST "ON-NONE-ON"

**Switch without  
Button**

AS350



EC130



**IFS PN: 050007-1**

**Button**

AS350



EC130



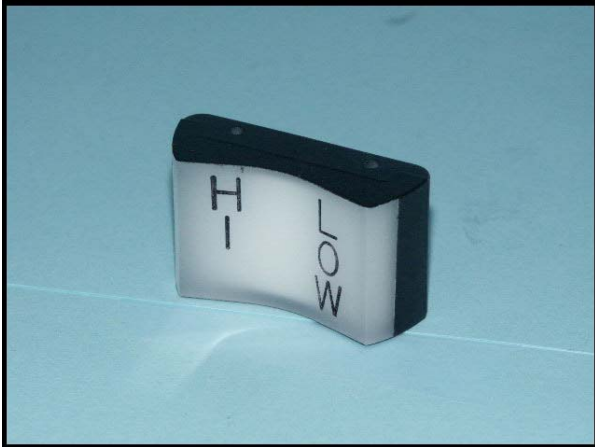
# Electrical Parts



**IFS PN: 050007-3**

**Button**

AS350 



**IFS PN: 050007-4**

**Button**

AS350 

EC130 

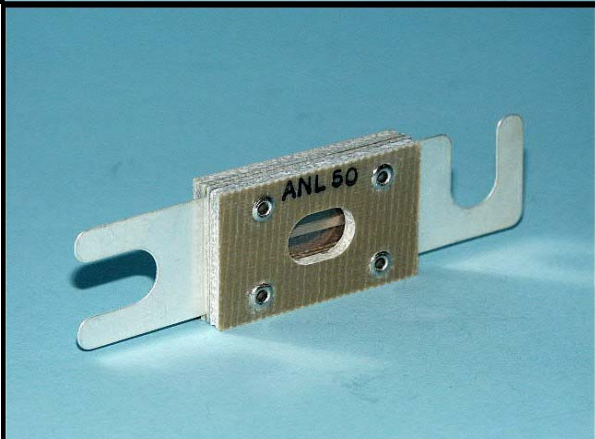


**IFS PN: 050008**

**Relay**

AS350 

EC130 



**IFS PN: 050015-2**

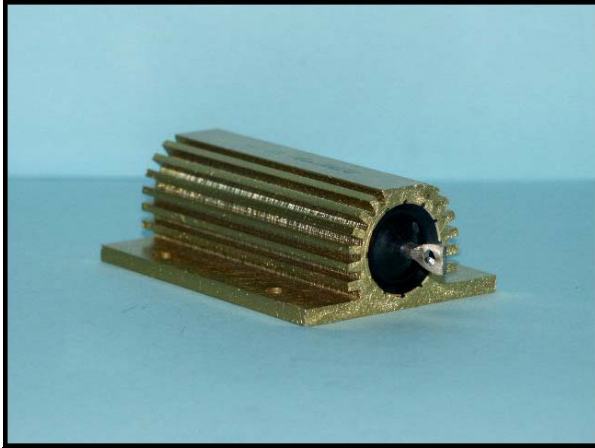
**50 AMP Limiter**

AS350 

EC130 



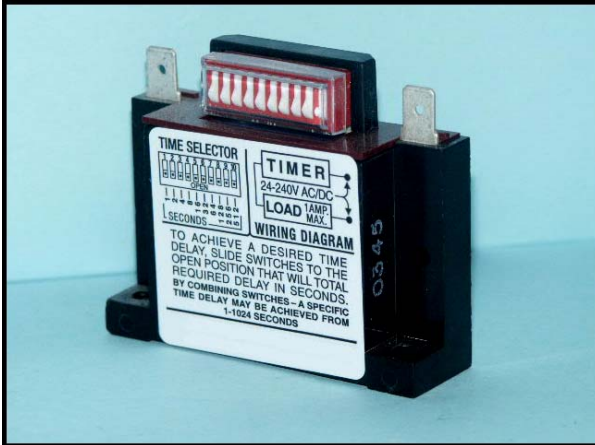
# Electrical Parts



IFS PN: 050024-2

Resistor

AS350 



IFS PN: 050026

Timer

AS350 

EC130 



IFS PN: 050107

Low Pressure  
Switch

AS350 

EC130 



IFS PN: 090004

High Pressure  
Switch

AS350 

EC130 

# EC130 Hoses



IFS PN: 570103

High Pressure  
Hose # 6  
Assembly

EC130 



IFS PN: 570104

Condenser to  
Receiver/Drier Hose  
# 6 Assembly

EC130 



IFS PN: 570105

Return Hose  
# 10 Assembly

EC130 



IFS PN: 570070-O-A

Hose Assembly  
#8 Compressor Discharge

EC130 



# AS350 Hoses Aft Mount Condenser



**IFS PN: 570067-O-A**

**Hose Assembly  
#6 Condenser to Drier**

**AS350**



**IFS PN: 570070-O-A**

**Hose Assembly  
#8 Compressor Discharge**

**AS350**



**IFS PN: 570072-O-A**

**Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier**

**AS350**



**IFS PN: 570087-O-A**

**Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor**

**AS350**



# AS350 Hoses Side Mount Condenser



IFS PN: 570020-O-A

Hose Assembly  
#6 Condenser to Drier

AS350



IFS PN: 570024-O-A

Hose Assembly  
#8 Compressor Discharge

AS350



IFS PN: 570072-O-A

Hose Assembly  
#6 Fwd Evaporator  
to Receiver/Drier

AS350



IFS PN: 570087-O-A

Hose Assembly  
Fwd Evaporator  
To Aft Evaporator  
To Compressor

AS350



# 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.



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## 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: \_\_\_\_\_

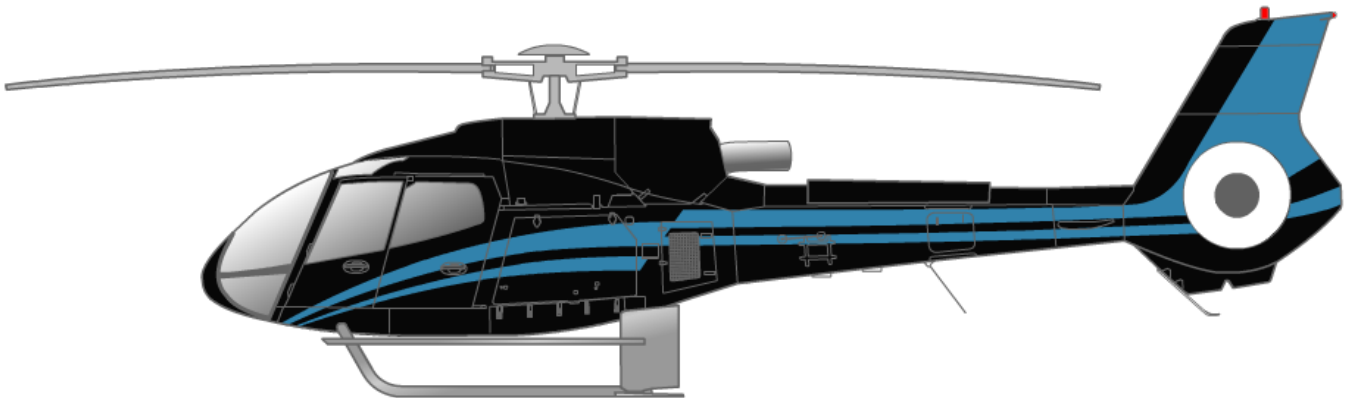
Warranty Accepted: \_\_\_ YES \_\_\_ NO

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

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

\_\_\_\_\_





## **Servicing and Trouble Shooting Guide**

**AS350 (Series) and EC130 B4**

**Air Conditioning System**

## **TROUBLESHOOTING YOUR AIR CONDITIONING SYSTEM**

The following consists of some basic information on Freon System Operation.

We should probably define “cold”. Actually, for our purpose, “cold” is a relative term. Your air conditioner should produce air (measured at the duct) that is:

- • 36° to 50° F at 70° ambient temperature.
- • 40° to 52° F at 80° ambient temperature.
- • 46° to 60° F at 90° ambient temperature.
- • 50° to 75° F at 100° ambient temperature.

### **An Empty System**

If the system is empty, the search for leaks should begin with a good visual check. Is it a fast leak or a slow leak? When was the system last charged? If it's a newly installed and filled system, then look for obvious leaks like a chaffed, punctured or ruptured hose, or a loose fitting. (See the recharge and leak testing section for hints on charging new systems.)

Freon leaks can be very tough to find. Freon is colorless, odorless, heavier than air, and it evaporates as soon as it hits the atmosphere. The only helpful thing about it is the fact that the oil carried with the refrigerant, so any sizable leak will leave a trail of oil at the offending hose or fitting. It will often just be a dark area, and the amount of oil might be slight. But if you find an air conditioning fitting with an oily residue and the area around it is dry, you've probably found your leak. A good electron detector can verify your visual diagnosis.

Because the system carries the oil in suspension with the refrigerant, any sizable leak will leak oil as well as refrigerant. Very slow leaks will usually only vent refrigerant and not oil, but a fast leak like a ruptured hose or a very loose fitting, will leak the refrigerant so fast that the oil is carried out of the system as well. If your system has suffered a major leak, be sure to check the oil level in the compressor before refilling the system.

## Troubleshooting

**Trouble:** **Low or partial refrigerant charge**

**Symptoms:**

- Insufficient cooling
- Low-side pressure too low
- High-side pressure too low
- Receiver/drier sight glass shows a stream of bubbles
- Air in ducts only slightly cool

**Cause:** The system is low on refrigerant, probably caused by a leak.

**Correction:** Find and fix the leak. If there was a loss of oil, be sure to check the compressor oil level. Evacuate and recharge.

## A System Full of Refrigerant

First, you should double-check all the obvious things (i.e. the compressor clutch, the belt tension, and the operation of the evaporator blower). Next, establish some baseline conditions for your testing: run aircraft, high blower and coldest thermostat setting, doors and windows closed, ambient temperature of 70° F or above.

Situations do occur where the system is full of refrigerant, yet the sight glass remains cloudy. The first thing to consider is whether the receiver/drier is installed backwards. Be sure the line from the condenser goes to the port marked “in” on the receiver/drier. The other condition that might give you a cloudy glass (on a full system) is a restriction in the liquid line from the condenser to the receiver/drier. On some new receiver/driers the filter screen could be pushed up so the bottom of the screen is blocking the liquid pickup tube. You will have to cut open the receiver-drier to confirm your diagnosis.

You should test next for a system that is overcharged. If the sight glass is clear, but the high- and low pressure gauge readings are high (300 or more on the high side, 50 or more on the low side), disconnect the compressor clutch. (Note that on HFC-134A systems, milky is the normal look for a correctly charged system.) The refrigerant should foam and then settle away from the glass in less than forty-five seconds. If the sight glass remains clear for more than forty-five seconds you have an overcharged condition and will have to remove Freon.

## **Trouble: Excessive moisture in the system**

### **Symptoms:**

- Insufficient cooling during hottest part of the day or during extended flying.
- Low-side pressure normal, though it may be too low or even a vacuum
- High-side pressure normal, though it may be low-at the same time low side is low
- Receiver-drier sight glass may show tiny bubbles  
(*Note:* This could be a tough call with HFC-134A since the sight glass is always milky).
- Air in the ducts is usually cold, but becomes warm when pressure reading drop

**Cause:** Excessive moisture in the system. The drying agent in the receiver-drier is saturated with moisture, which is released to the system when outside temperature increased. Moisture in the system collects and freezes on the expansion valve, stopping the flow or refrigerant.

**Correction:** Suck all the CFC-12 from the system. Replace or rebuild the receiver-drier. Evacuate and recharge.

## **Trouble: Air in the system**

### **Symptoms:**

- Insufficient cooling
- Low-side pressure normal, but does not drop when the clutch cycles
- High-side pressure high
- Receiver/drier sight glass shows occasional bubbles (Note again that with HFC-134A the sight glass should be milky when the system is fully charged.)
- Air in ducts only slight cool

**Cause:** Refrigerant contains non-condensable in the form of air and moisture.

**Correction:** Leak test, watch for bad compressor seals. Drain the system. Repair leaks as needed. Replace or rebuild the receiver-drier. Check the compressor oil. Evacuate and recharge.

**Trouble: Condenser malfunction or system overcharge**

**Symptoms:**

- No cooling
- Low-side pressure too high
- High-side pressure too high
- Receiver/drier sight glass may show occasional bubbles
- Liquid line very hot
- Air in ducts is warm

**Cause:** The condenser is not function properly because of high head pressure. System may be overcharged.

(**Note:** Technicians will have to be especially careful to avoid overcharging HFC-134A systems. Because the sight glass is hard to read and the volume given is slightly lower with HFC-134A).

## NOTE:

### Cloudy Sight Glass

A cloudy sight glass indicates a system that is only partially full of refrigerant (with a few exceptions). A perfectly clear sight glass (use a light to get a good look) means the system is either full or empty. Note, with HFC-134A the glass appears milky when properly charged, and may show occasional bubbles.

# AS350 Trouble Shooting Guide



1. System has no electrical power to air conditioner master control box:
  - A) Check 50 amp circuit breaker or fuse in aircraft electrical bus.
  
2. System has power but will not turn on:
  - A) Check 5 amp circuit breaker on switch assembly.
  - B) Check ground lead on cannon plug 102 wire IFS105N20.
  - C) Check evaporator fan relay in air conditioner master control box.
  
3. Forward evaporator fan will not turn on, but aft fan runs:
  - A) Check 20 amp circuit breaker in master electrical box.
  - B) Check ground wire from evaporator motor.
  - C) AS350 disconnect CP104 and check for power on pin 2. On AS350 or EC130 B4 by checking ground lead from master switch.
    - 1) If you have power, your motor is bad.
    - 2) If no power, disconnect CP101 cannon plug and check continuity from pin 6/c on CP101 to cannon plug CP104 pin 2. If no power, check cannon plugs and switch.
  - D) EC130 B4 check for power on wire IFS 101C14 at resistor assembly P/N 540020 if no power, trace through the fan switch for power.
  
4. Aft evaporator fan will not run, but forward evaporator runs:
  - A) Check 20 amp circuit breaker on master electrical box.
  - B) Check ground wire from fan.
  - C) Check Brushes.
  - D) AS350 check for power on wire IFS 101C14 at resistor assembly P/N 540020 or resistor P/N 050024-2 (parts are two way interchangeable).
    - 1) If you have power, your motor is bad.
    - 2) If no power trace through fan switch for power.
    - 3) If no power disconnect cannon plug CP101 and check continuity from pin 3/B of CP101 to wire IFS101C14 on resistor with fan switch on "Low".
  - E) EC130 B4 check for power on wire IFS 101C14 at resistor assembly P/N 540020.
    - 1) If you have power your motor is bad.
    - 2) If no power trace through fan switch for power.
    - 3) If no power disconnect cannon plug CP101 and check continuity from pin 3/B of CP101 to pin 4 of cannon plug 102.

# AS350 Trouble Shooting Guide



## 5. Condenser fan/fans do not operate:

- A) Check 20 amp circuit breaker.
- B) Check 1 amp circuit breaker.

- 1) If popped, reset.
  - a) Check brushes.
  - b) Check power.
  - c) Check ground.
  - d) Check fins for blockage in air condenser assembly.
- 2) Run air conditioning system.
  - a) Check pressures, If pressure is running higher than normal, then continue with b), ect...
  - b) System may be over-serviced.
  - c) System may be contaminated by improper Freon or a mix of Freon's.

- 1) **NOTE:** This has happened more than once. The service carts are great for servicing systems, but there is a danger in its misuse. Untrained operators or an individual who wants to service his car, truck, motor home or even his room A/C can pump down their system into your tank. It can have any number of different Freon's. It could also be contaminated by a failed compressor, dryer bottle, wrong oil or any number of things. This has happened to a company with brand new equipment just 3 weeks old. There were large warning signs on this service cart, designated HELICOPTER SERVICE ONLY. They had one for ground equipment. All of the mechanics were well trained except for the management, janitors and their family members of the company. It can happen to any operator.

## 6. Compressor clutch does not engage, but air conditioner fans work.

- A) Check clutch for power.

- 1) If power, clutch coil may be bad or air gap in clutch face may be too excessive.
- 2) If NO power check system for total Freon loss.
- 3) If system is serviced and still no Power and you have an optional temperature controller, you can bypass by jumping pins 3 and 4 on CP102 to check if faulty.

# AS350 Trouble Shooting Guide



## 7. System not cooling:

- A) Check that air condenser fan/fans are blowing.
- B) Check clutch engagement. Is clutch staying engaged or cycling? Check belt tension.
- C) Check to see if air condenser coil is free from debris and fins are clean and not rolled over blocking air flow.
- D) Check evaporator return air inlets, that they are not blocked and fins are clean and not rolled over blocking airflow.
- E) Put gauges on system. Run system and check pressures also measure Delta temperature from both evaporators. (Measure inlet temperature and outlet temperature to get Delta. This is a must, do not rely on just using your hand and guessing).
- F) Check sight glass.

(NOTE: There are several ways to service Freon systems:

- 1) Service system to a clear sight glass R12.  
**Note:** On 134a systems the sight glass appears milky when properly charged, though there may be occasional bubbles in the sight glass.
- 2) Service system by weight. If you have a service station or scale, you can add the proper amount by weight.

82° F or higher service with 2.0 lbs max Freon.

Below 82° F service with 2.5 lbs max Freon.

- 3) The optimum method for best performance is to use at least two mechanical thermometers and place them near the return air and the discharge air of each evaporator. 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. At any time the high pressure gauge reaches 280 psi, stop servicing. Do not exceed 3.0 lbs of refrigerant..
- 4) Service according to a standard pressure temperature chart.)

## 8. One evaporator is cooling, one is not.

- A) One expansion valve may be blocked from contamination.
- B) One expansion valve may be locked full open.  
(NOTE: The one valve that is full open is causing the problem. It may make it seem like the other valve is bad and not working.)
- C) One of the sensing bulbs on expansion valves may become loose from suction side of coil. Also check to see if sensing bulb is mounted to the correct evaporator tube. The bulb should be mounted at 9 or 3 o'clock position.
- D) Hose may be crimped, kinked or have a fitting bent over blocking flow.



## AS350 Trouble Shooting Guide



- E) (**NOTE:** The recommended fix is to pump down system. Change BOTH expansion valves and dryer bottle. Make sure to mount sensing bulb on suction side of coil and when possible at 9 or 3 o'clock position on tube. Re-service system.)

9. Compressor clutch failure:

- A) Low Freon in system. This causes the system to low pressure out through the low pressure switch. It will cycle the clutch on and off until it heats up causing the coil to overheat and fail, or heat up the bearing to the point the grease will liquefy and run out. This will add to the heat and help fail coil or bearing.
- B) Air gap on clutch may have changed.
- C) Coil may have weakened.
- D) Bearing may have failed, causing clutch to slip and fail coil.  
**NOTE:** If ongoing maintenance is not maintained on compressor clutch bearing as prescribed in IFS maintenance manual, bearing may fail.

10. Compressor failed:

- A) Loss of oil or insufficient oil.
- B) Low Freon in system, causing insufficient flow of oil lubricant.
- C) Contamination in system.
- D) Compressor bearing failed.
- E) Over servicing of system to the point of liquid lock.  
**(NOTE:** This has happened.)

11. Compressor belt failure:

- A) Low Freon in system. Cause: low pressure switch to cycle the clutch on and off excessively.
- B) Insufficient belt tension.
- C) Clutch bearing dragging or failing. This causes excessive belt slipping.
- D) Over service of system.
- E) Air gap excessive, causes clutch to slip heating pulley. This will stretch belt making it slip.

12. Air conditioner runs, but pops 1 amp circuit breaker:

- A) Check condenser fan or fans for operation.
- B) Check blockage of air flow in and out of condenser.
- C) Check coil to see if fins are clean or rolled over.
- D) Check for over service of Freon.
- E) Put gauges on and run system.
  - 1) Is system popping 1 amp circuit breaker at 350 or higher?
    - a. If not change high pressure switch.
- F) Check expansion valves and make sure sensing bulbs are mounted to suction lines.
  - 1) Measure Delta of both evaporators.
    - a. If Delta is over 32° F expansion valve may not be working. If expansion valve is not throttling it will dump too much Freon. This can add excessive heat to condenser and can also freeze up coil.
  - 2) If Delta is below 14° F. Change valves, they may be blocked internally.

## 13. Fresh air supply valve inoperable. EC130 B4 only

### A) If valve fails to open.

- 1) Check 2 ½ amp CB
- 2) Check for power at wire IFS 104V20
  - a. If power, check for power on wire IFS 104E20
    1. If no power motor/controller is bad
    2. If power trace back to source
  - b. If no power check continuity to Pin 1 on cannon plug CP101.
  - c. If no continuity check low pressure switch for ON.

### B) If valve fails to close

- 1) Check for power on wires at valve IFS 104V20 and IFS 104E20
  - a. If power, both motor /controller is bad.
  - b. If no power on wire IFS 104V20.
    - a. Check 2 ½ amp CB.
    - b. Check to see if low pressure switch is open.
    - c. Check continuity from valve wire IFS 104V20 to Pin 1 on cannon plug CP101.

### NOTE:

When running in “A/C” mode and you switch straight to “OFF” the Fresh Air Valve will stay in the closed position. You will need to switch to the “Fan” position to reset the Fresh Air valve to the open position.

## 14. Blower Motor Brush Inspection

- A) Ø 5.0” Blower motors have brushes 13/16” long. Brushes should be inspected every 200 hours. When brushes wear down to 5/16”, replace them.
- B) Ø 7.0” 2 Brush Blower motors have brushes 3/4” long. They should be inspected every 300 hours. These brushes should be replaced at 1/2” or less.
- C) Ø 7.0” 4 Brush Blower motors have brushes 9/16” long. They should be inspected every 300 hours. These brushes should be replaced at 5/16” or less.

## **MANUFACTURERS NOTICE**

THE BRUSHES IN THESE FAN MODELS ARE DESIGNED AND MANUFACTURED TO PROVIDE 500 HOURS OF SERVICE LIFE.

BRUSHES ARE A WEAR ITEM AND REQUIRE REGULAR INSPECTION AND MAINTENANCE! SINCE BRUSH LIFE VARIES GREATLY FOR EACH APPLICATION OR INSTALLATION, WE RECOMMEND INSPECTION AT REGULAR INTERVALS, SPECIFICALLY:

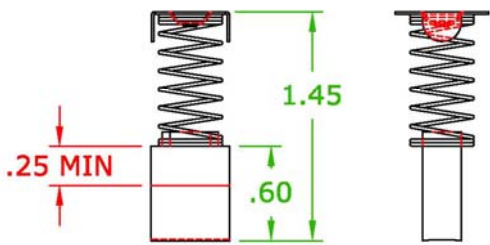
### **IN ORDER TO KEEP YOUR WARRANTY IN EFFECT FOR THE FULL TERM OF THE WARRANTY**

- A.) IFS PN: 050143 5" BLOWER MOTORS HAVE BRUSHES .75" LONG. BRUSHES MUST BE INSPECTED EVERY 200 HOURS AND REPLACED WHEN WEAR IS DOWN TO .30" OR LESS.
  - a. SEE CHART "C". BRUSH PN: 050031
- B.) IFS PN: 050084-6 7" - 2 BRUSH BLOWER MOTORS HAVE BRUSHES .90" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .40" OR LESS.
  - a. SEE CHART "D". BRUSH PN: 050038
- C.) IFS PN: 050084 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .60" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "A". BRUSH PN: 420A-20
- D.) IFS PN: 630000 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .53" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "B". BRUSH PN: 610000-8
- E.) IFS PN: 640000 7"- 4 BRUSH BLOWER MOTORS HAVE BRUSHES .53" LONG. BRUSHES MUST BE INSPECTED EVERY 300 HOURS AND REPLACED WHEN WEAR IS DOWN TO .25" OR LESS.
  - a. SEE CHART "B". BRUSH PN: 610000-8

## **NOTICE**

## A

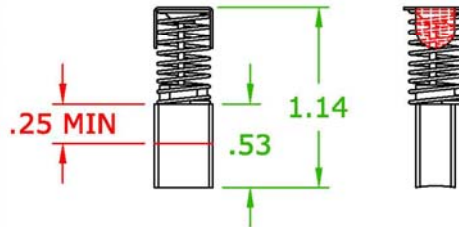
7" IFS MOTOR PN: 050084  
 FAN MODEL NO.: M6921N-9A)  
 (ALT: M6921N-9B)



"DYNAMIC" BRUSH 420A-20

## B

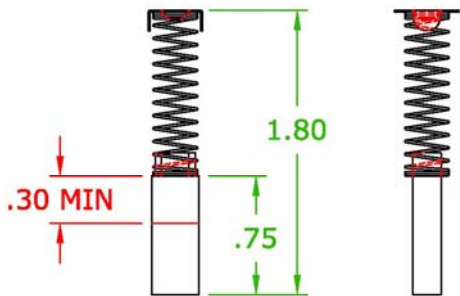
7" IFS MOTOR PN: 630000  
 7" IFS MOTOR PN: 640000



"AMPFLOW" BRUSH 610000-8

## C

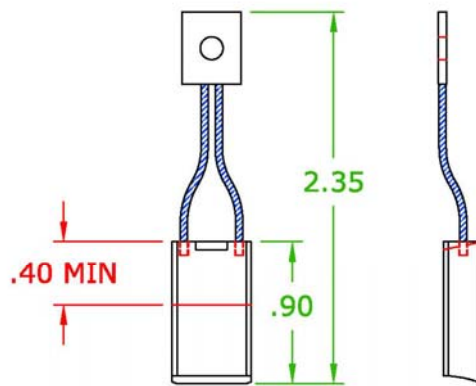
5" INCH IFS MOTOR PN: 050143



5" BRUSH 050031

## D

7" INCH IFS MOTOR PN: 050084-6

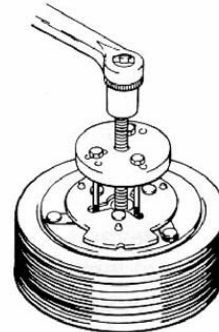
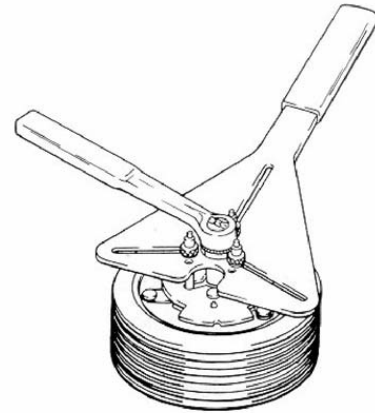


"ENVIRO" BRUSH 050038

## SERVICE OPERATIONS CLUTCH

### 14.1 Armature Assembly Removal

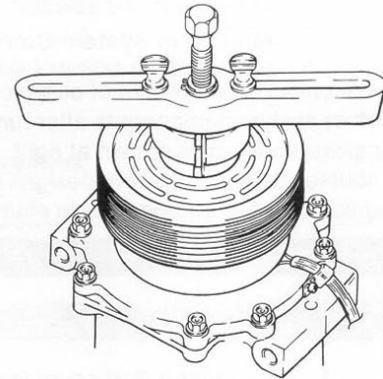
1. If armature dust cover is present, remove the 3 or 6 bolts holding it in place and remove cover. If auxiliary sheet metal pulley is present, remove the screws holding it in place. Then remove pulley.
2. Insert pins of armature plate spanner into threaded holes of armature assembly.
3. Hold armature assembly stationary while removing retaining nut with 3/4", 19mm, or 14mm socket wrench, as appropriate.
4. Remove armature assembly using puller. Thread 3 puller bolts into the threaded holes in the armature assembly. Turn center screw clockwise until armature assembly comes loose.
5. If shims are above shaft key, remove them now. If shims are below shaft key, the key and bearing dust cover (if present) must be removed before the shims can be removed.
6. Remove bearing dust cover (if present). Use caution to prevent distorting cover when removing it.
7. Remove shaft key by tapping loose with a flat blade screwdriver and hammer.
8. Remove shims. Use a pointed tool and a small screwdriver to prevent the shims from binding on the shaft.



## SERVICE OPERATIONS - CLUTCH

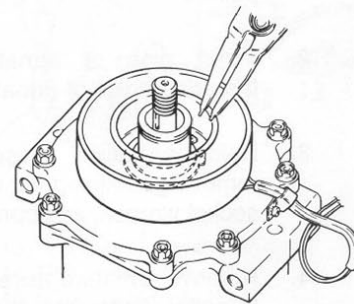
### 14.2. Rotor Assembly Removal

1. If bearing dust cover has not been removed, remove it now. See step 6 of Section 14.1, for Armature Assembly Removal.
2. If internal snap ring for bearing is visible above the bearing, remove it with internal snap ring pliers.
3. Remove rotor snap ring.
4. Remove shaft key.
5. Remove rotor pulley assembly:
  - Insert the lip of the jaws into the snap ring groove
  - Place rotor puller shaft protector (Puller set) over the exposed shaft.
  - Align thumb screws to puller jaws and finger tighten.
  - Turn puller center bolt clockwise using a socket wrench until rotor pulley is free.



### 14.3 Field Coil Assembly Removal

1. Loosen lead wire clamp screw with #2 Phillips screwdriver until wire(s) can be slipped out from under clamp.
2. Undo any wire connections on the compressor which would prevent removal of the field coil assembly.
3. Remove snap ring.
4. Remove the field coil assembly.

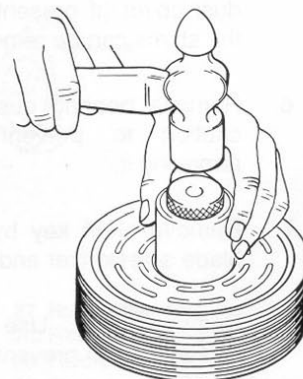


### 14.4 Field Coil Assembly Installation

Reverse the steps of Section 14.3. Protrusion on underside of coil ring must match hole in front housing to prevent movement and correctly locate lead wire(s).

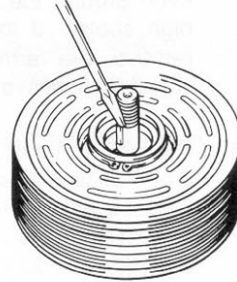
### 14.5 Rotor Assembly Installation

1. Place compressor on support stand, supported at rear end of compressor. If the compressor must be clamped in a vice, clamp only on the mounting ears, never on the body of the compressor.
2. Set rotor squarely over the front housing boss.
3. Place the rotor installer ring into the bearing bore. Ensure that the edge rests only on the inner race of the bearing, not on the seal, pulley, or outer race of the bearing.



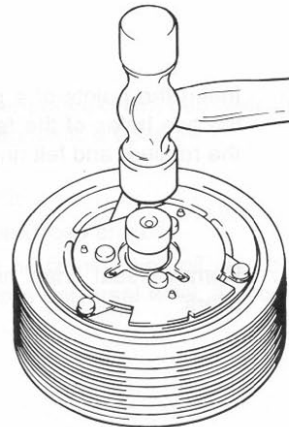
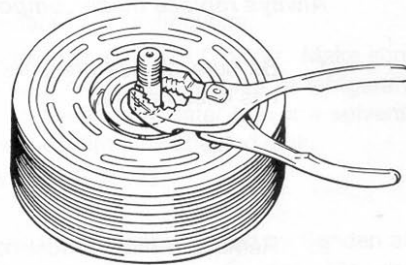
## SERVICE OPERATIONS - CLUTCH

4. Place the driver into the ring and drive the rotor down onto the front housing with a hammer or arbor press. Drive the rotor against the front housing step. A distinct change of sound can be heard when using a hammer to install the rotor.
5. Reinstall rotor bearing snap ring, if it has been removed, with internal snap ring pliers.
6. Reinstall rotor retaining snap ring with external snap ring pliers. If a bevel is present on the snap ring, it should face up (away from the body of the compressor).
7. Reinstall rotor bearing dust cover (if present) by gently tapping it into place.



### 14.6 Armature Assembly Installation

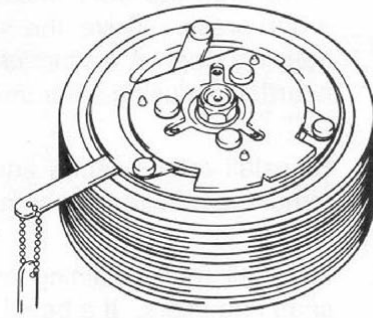
1. Install shaft key with pliers.
2. Install clutch shims. NOTE: Clutch air gap is determined by shim thickness. When installing a clutch on a used compressor, try the original shims first. When installing a clutch on a compressor that has not had a clutch installed before, first try 0.04", 0.02", and 0.004" (1.0, 0.5, 0.1 mm) shims.
3. Align keyway in armature assembly to shaft key. Using driver and a hammer or arbor press, drive the armature assembly down over the shaft until it bottoms on the shims. A distinct sound change will be noted if driving with a hammer.
4. Replace retaining nut and torque to specification.  
**1/2-20:** 20-25 ft•lb (27-34 N•m, 270-350 kg•cm)  
**M8:** 11-15 ft•lb (15-21N•m, 150-210kg•cm)





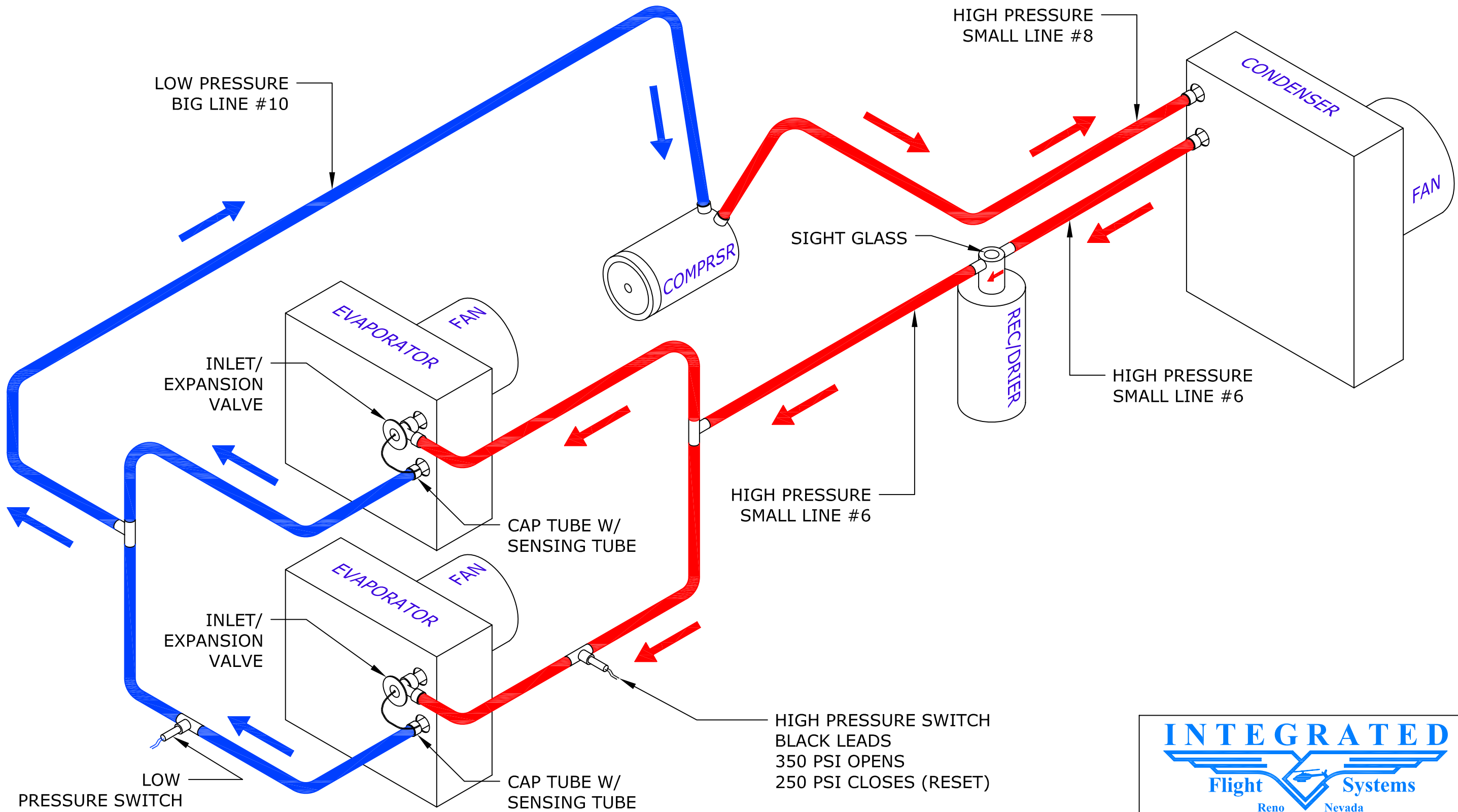
## SERVICE OPERATIONS - CLUTCH

5. Check air gap with a feeler gauge. Specification is 0.011" - 0.019" (0.3 - 0.5mm). If gap is not even around the clutch, gently tap down at the high spots. If the overall gap is out of spec., remove the armature assembly and change shims as necessary.
  
6. Replace armature dust cover (if used) and torque 3 or 6 bolts to specification below.  
3 - 1/4-20 bolts (SD-5): 2-4 ft•lb  
(2-5 N•m, 25-50 kgf•cm)  
6 - M5 bolts (SD-7): 5-8 ft•lb  
(7-11 N•m, 70-110 kgf•cm)



Note: Over torque of SD508/5H14 dust cover bolts will cause air gap to become out of spec.

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



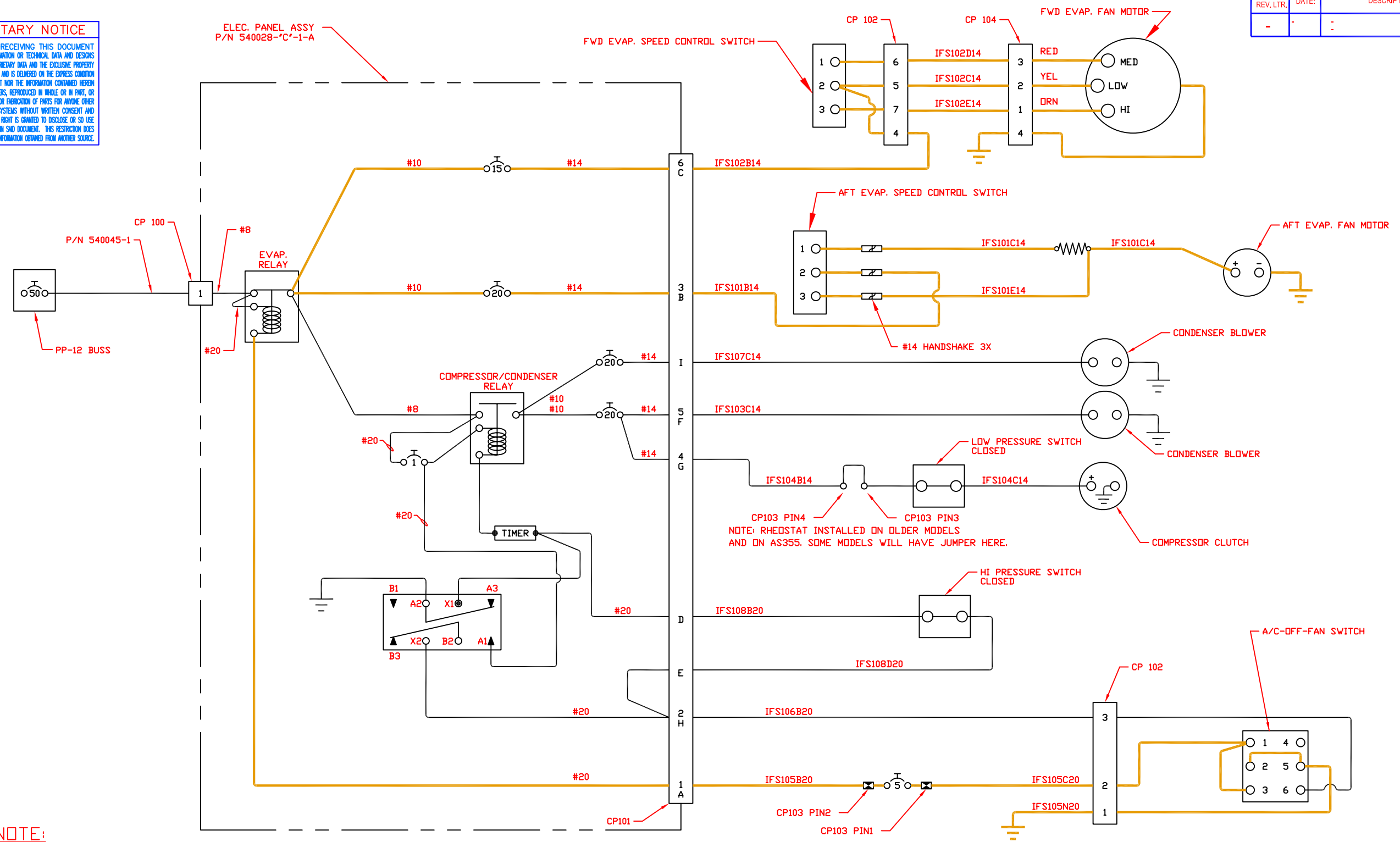
**INTEGRATED**  
Flight Systems  
Reno Nevada

**TITLE: SIMPLE AIR CONDITIONING SCHEMATIC**

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

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

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- NOTE:**
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON.
  2. THE "A/C", "OFF", "FAN" SWITCH IS SELECTED TO FAN.
  3. THE "ORANGE" LINES SHOW THE FAN CIRCUIT.

**AS350  
 ELECTRICAL WIRING DIAGRAM  
 DUAL CONDENSER BLOWER**

- NOTE:**
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
  2. WIRE SPEC: MIL-W-22759/16  
 WIRE NO. IFS XXX X XX
- GROUP  
 SEQUENCE (N INDICATES GROUND)  
 GAUGE

**INTEGRATED**  
 Flight Systems  
 Reno Nevada

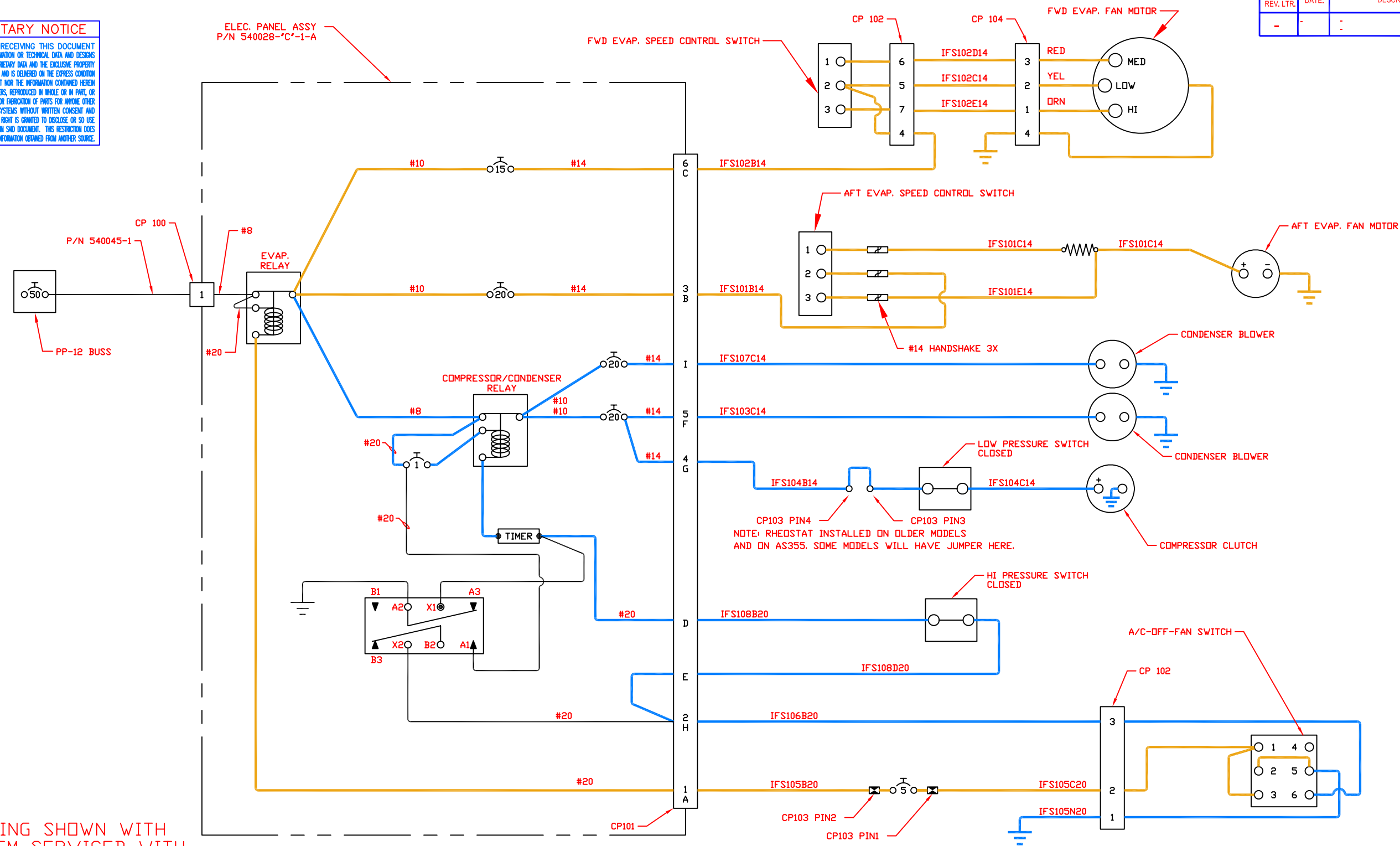
TITLE: ELECTRICAL DIAGRAM

DRAWN BY: JTYE	DATE: 0202/05	REV: IR	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: DIAGRAM 1	

REVISION RECORD

DWG. REV. LTR.	DATE:	DESCRIPTION OF CHANGE	APPVD. BY:	REV. BY:
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- NOTE:**
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON.
  2. THE "A/C", "OFF", "FAN" SWITCH IS SET TO "A/C". THIS WILL TURN ON THE EVAPORATOR FANS, (ORANGE LINES), THE CONDENSER FANS AND COMPRESSOR CLUTCH, (BLUE LINES).

**AS350  
 ELECTRICAL WIRING DIAGRAM  
 DUAL CONDENSER BLOWER**

- NOTE:**
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
  2. WIRE SPEC: MIL-W-22759/16  
 WIRE NO. IFS XXX X XX
- GROUP  
 SEQUENCE (N INDICATES GROUND)  
 GAUGE

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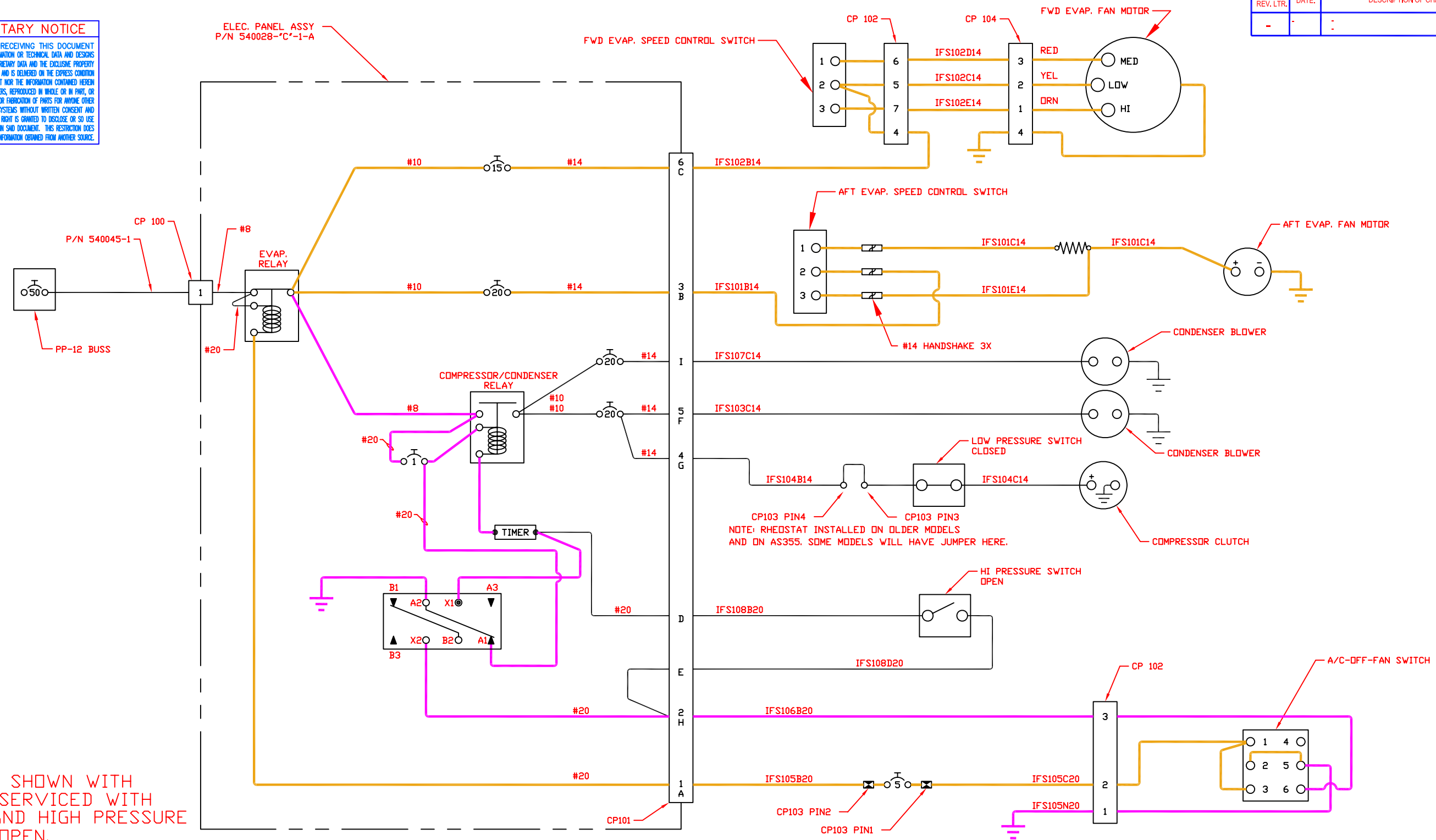
TITLE: ELECTRICAL DIAGRAM

DRAWN BY: JTYE DATE: 0202/05 REV: IR SCALE: NTS SHEET: 1 OF 1  
 APPLICATION: AS350 DWG. NO.: DIAGRAM 2

REVISION RECORD

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

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- NOTE:**
1. DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON, AND HIGH PRESSURE SWITCH OPEN.
  2. PINK LINES INDICATE THE CIRCUIT THAT IS ACTIVATED WHEN THE HIGH PRESSURE SWITCH OPENS.
  3. THE RESET RELAY CLOSES AND RUNS THE CURRENT TO GROUND OPENING THE 1 AMP CIRCUIT BREAKER. ORANGE LINES INDICATE THAT THE EVAPORATOR FANS ARE ON.

**AS350  
 ELECTRICAL WIRING DIAGRAM  
 DUAL CONDENSER BLOWER**

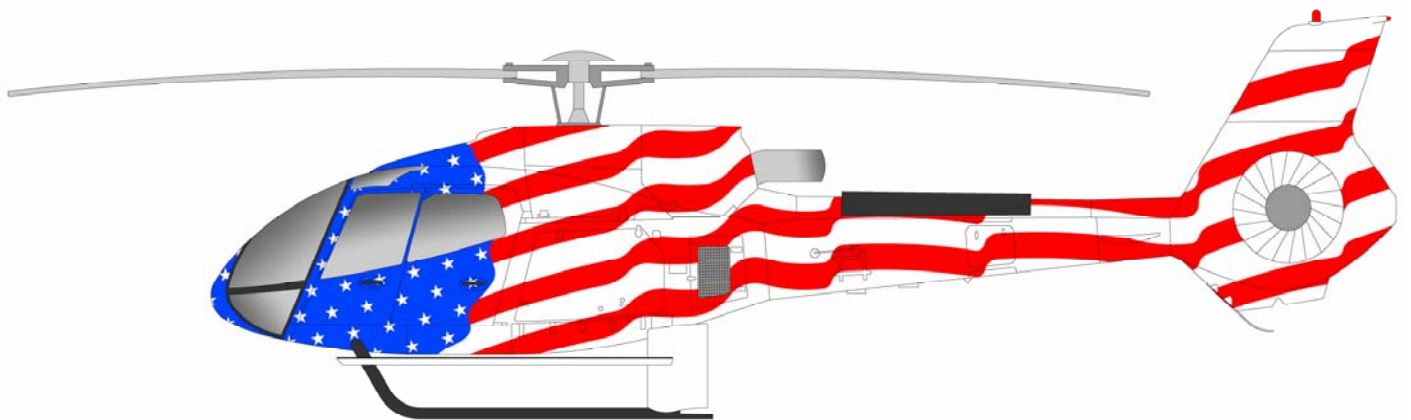
- NOTE:**
1. SEE 2-5-AS350 SH 1 OF 1 FOR WIRE SPLICE LOC.
  2. WIRE SPEC: MIL-W-22759/16  
 WIRE NO. IFS XXX X XX
- GROUP  
 SEQUENCE (N INDICATES GROUND)  
 GAUGE

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 Flight Systems  
 Reno Nevada

TITLE: ELECTRICAL DIAGRAM #3

DRAWN BY: JTYE	DATE: 0202/05	REV: IR	SCALE: NTS	SHEET: 1 OF 1
APPLICATION: AS350			DWG. NO.: DIAGRAM 3	

# INTEGRATED



## Air Conditioning Performance Test Procedure

(22 September 2006)



# 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: \_\_\_\_\_



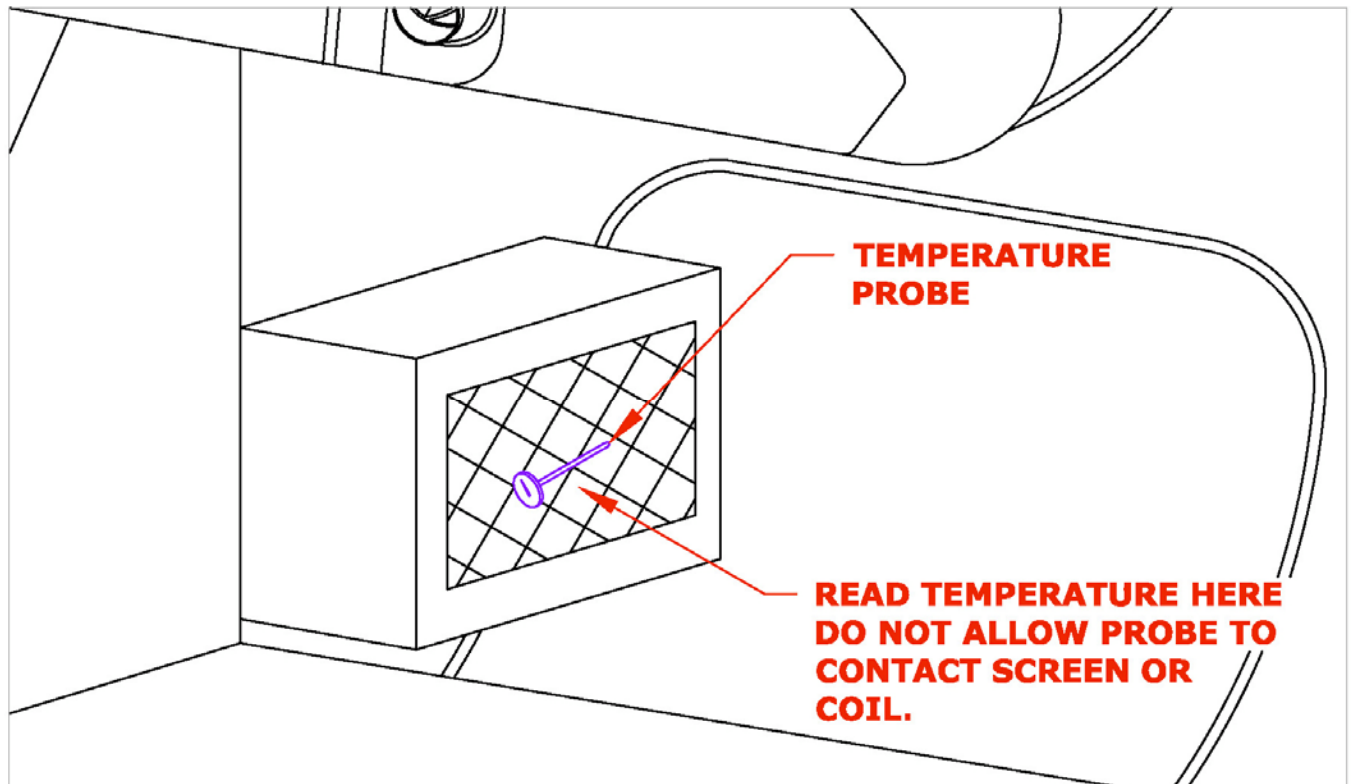
# Integrated Flight Systems

## 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)



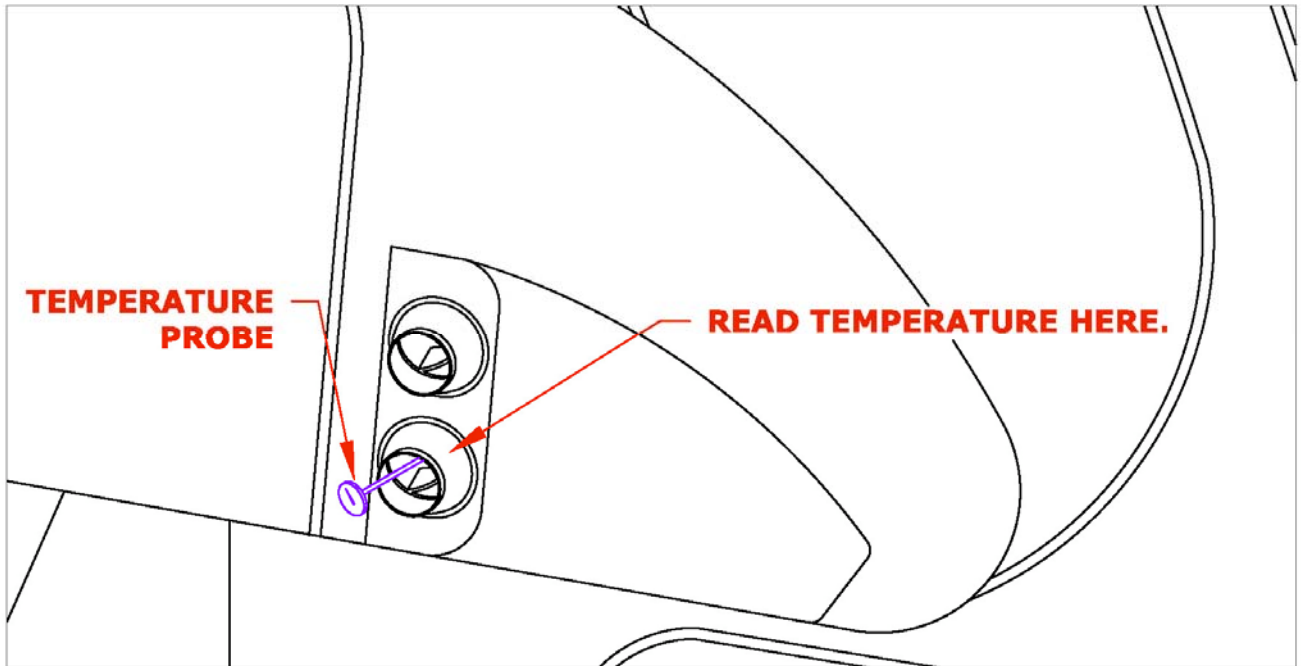
EC130 B4 Shown. Other Aircraft Similar





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



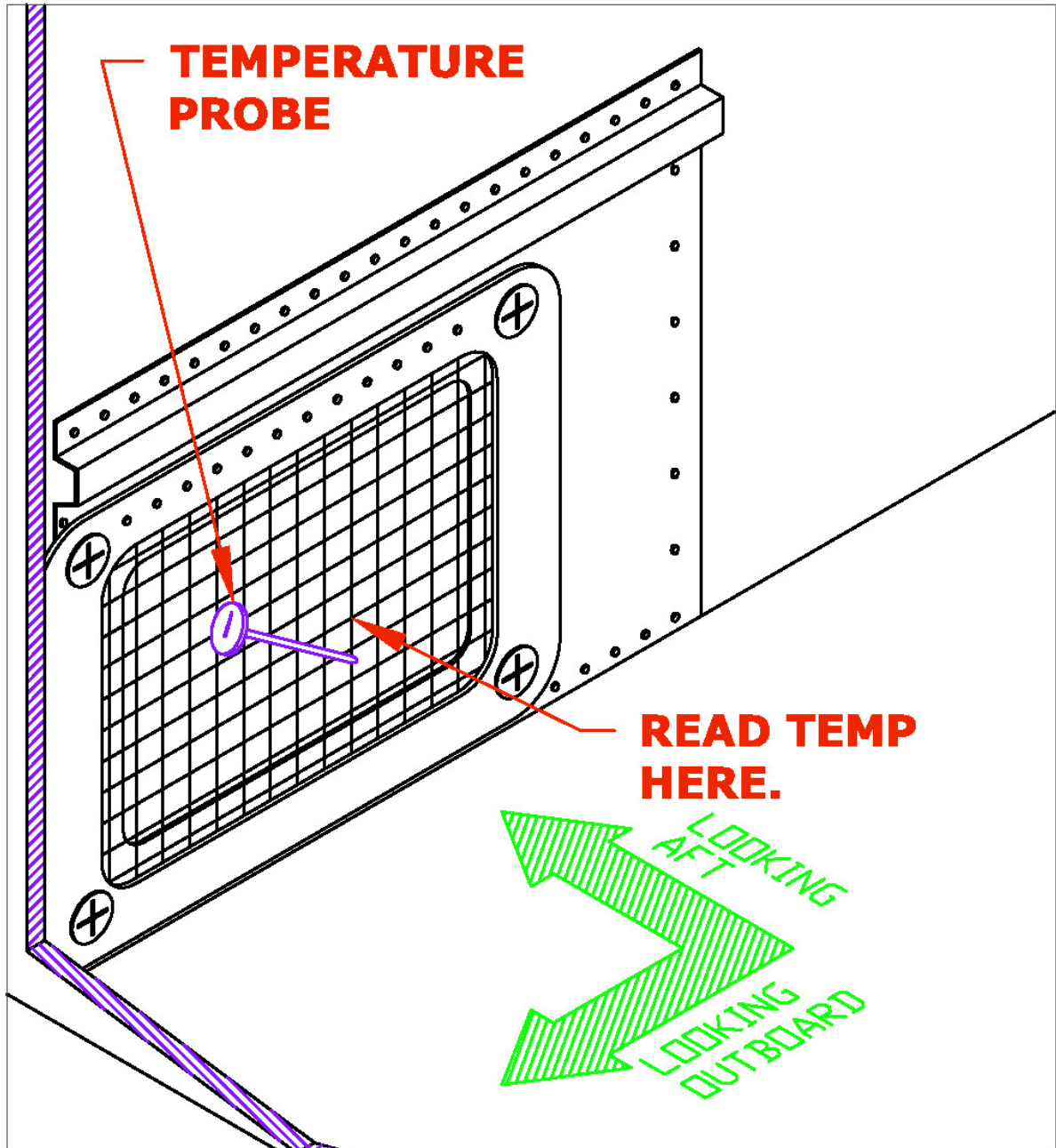
EC130 B4 Shown. Other Aircraft Similar

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.

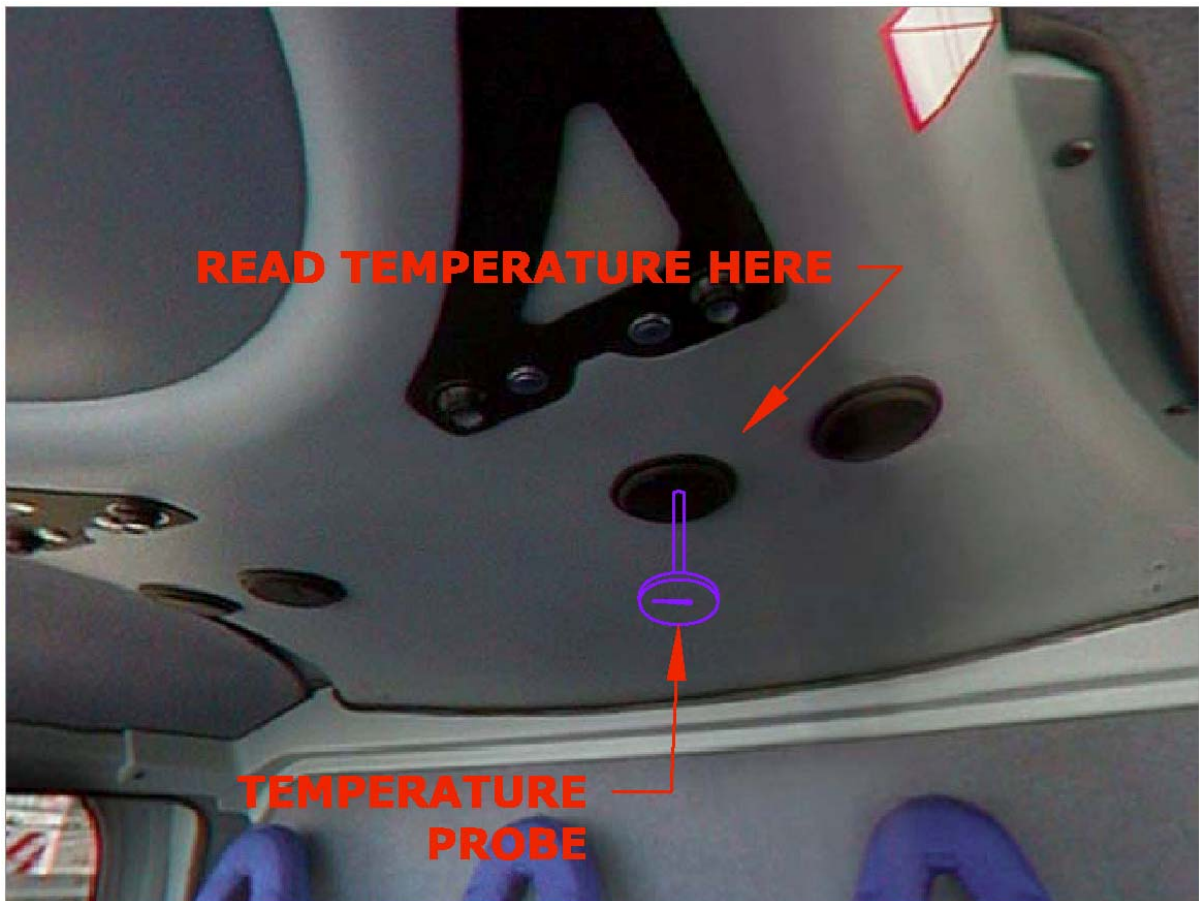


EC130 B4 Shown. Other Aircraft Similar



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



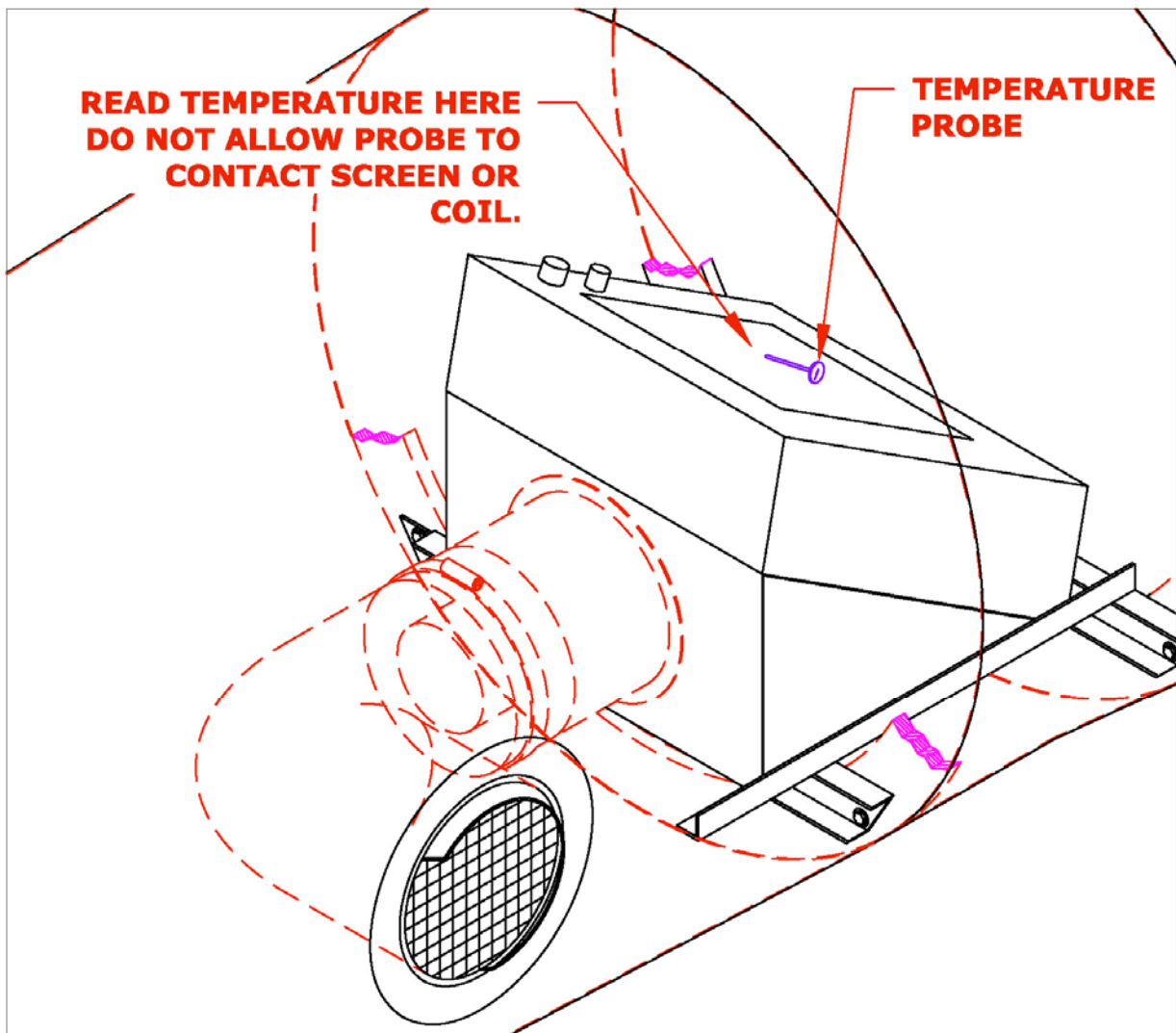
EC130 B4 Shown. Other Aircraft Similar

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.

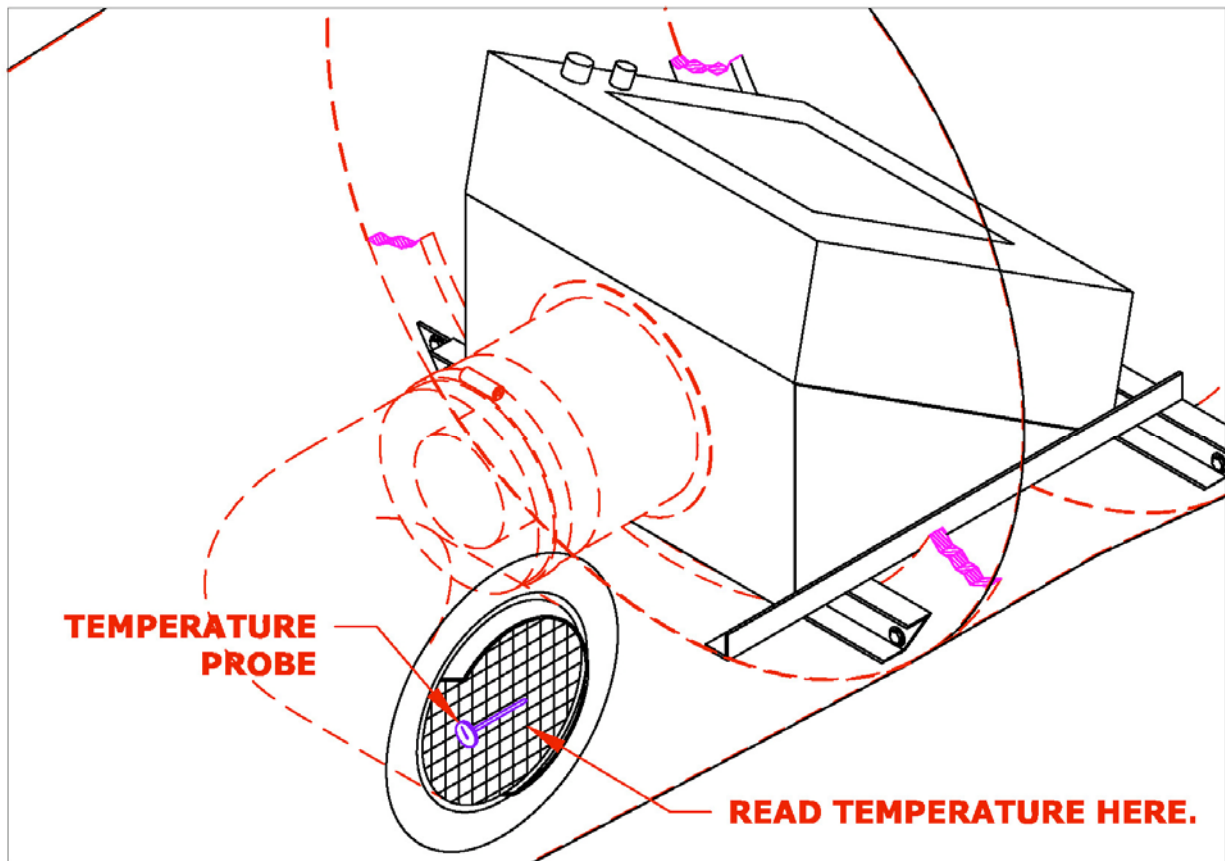


EC130 B4 Shown. Other Aircraft Similar



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



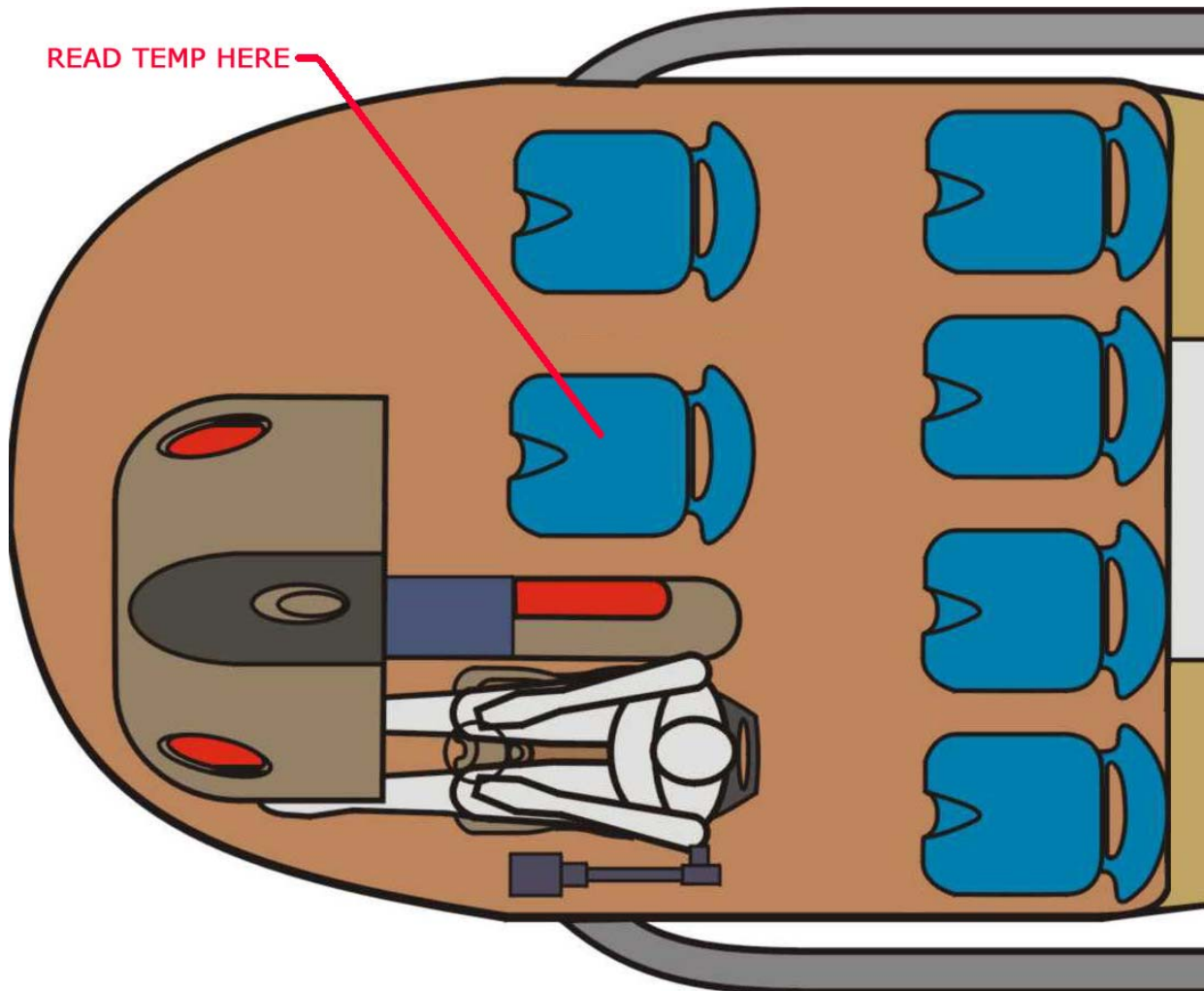
EC130 B4 Shown. Other Aircraft Similar

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

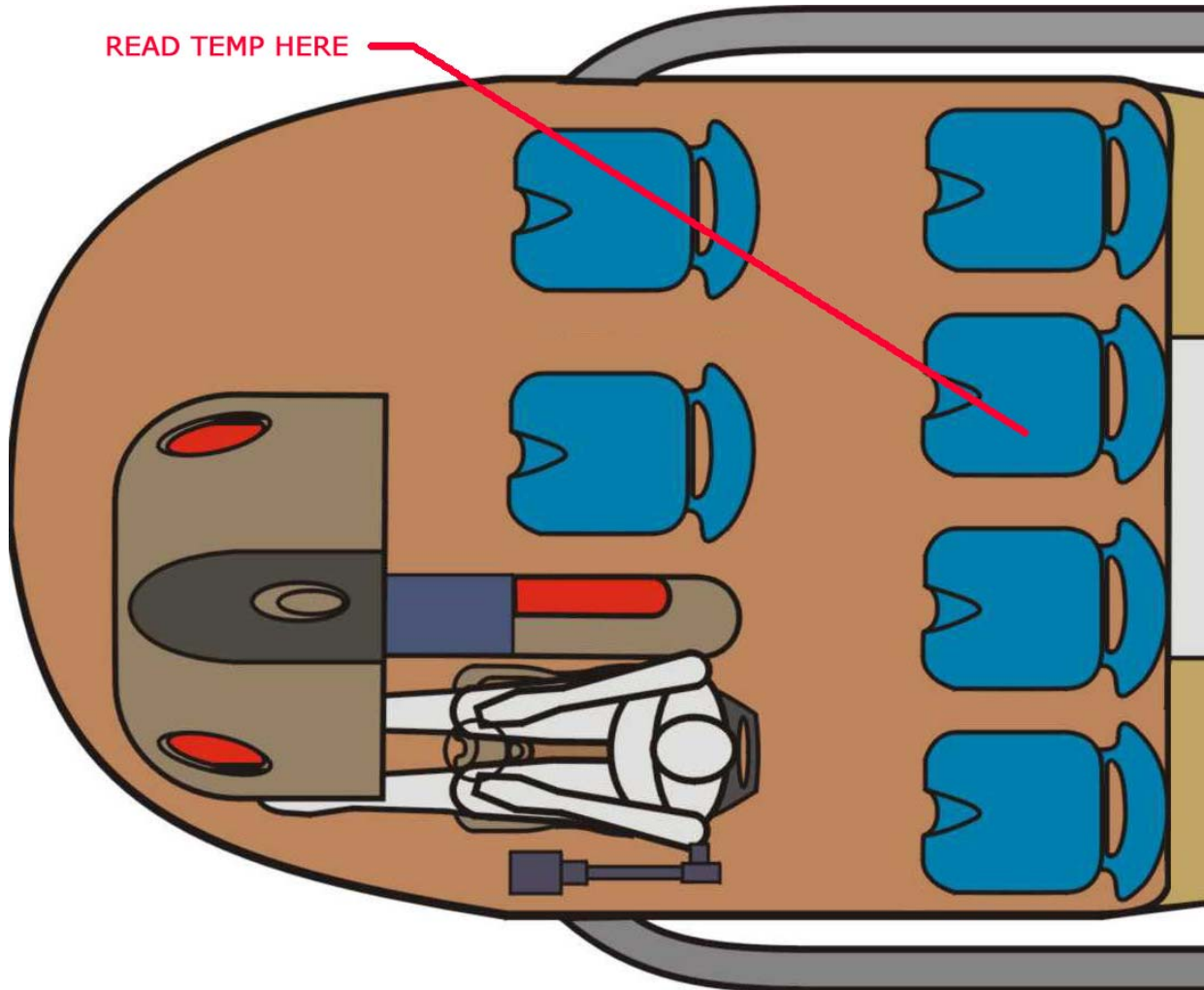
*"We Cool the World"...*





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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.