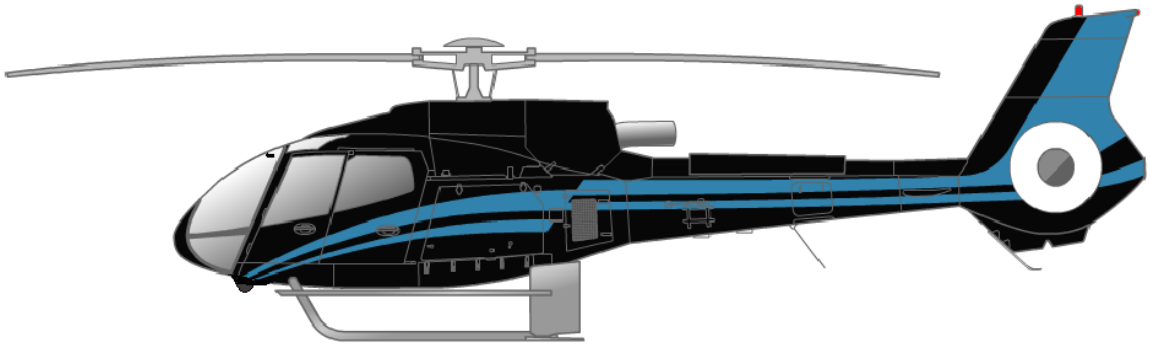
PSG
PRODUCTS INC.

Air Conditioning System

Installation Manual

for



130-00-031-HP
Corporate Version

(Revised: June 12, 2015, Rev: E)

RECORD OF REVISIONS

Revision	Description	Date	Revised By
IR	Initial Release	10 June, 2003	IFS
A	Additions and Corrections	30 June 2006	IFS
B	Revisions and Additions	22 Feb, 2007	IFS
C	Revised Cont. Airworthiness	13 Aug, 2009	IFS
D	Incorporated STC Changes	04 Nov, 2009	IFS
E	Formatted document to RSG Products	01 Jun. 2015	RSG

LIST OF EFFECTIVE PAGES

Rev	Section	Pgs	Description	Date
B	1	Insert	Revised Parts List	05/20/11
E	1	Insert	Revised Parts List and added MSDS docs.	06/12/15
A	2	1-4	Revised for Clarity	06/30/06
A	3	1-3	Revised for Clarity	06/30/06
A	4	1-8	Revised for Clarity	06/30/06
B	5	1-14	Added Resistor Mount	11/04/09
G	5	Insert	Updated drawings	06/01/15
A	6	1-7	Revised for Clarity	06/30/06
G	6	Insert	Updated drawings	06/01/15
A	7	1-10	Revised for Clarity	06/30/06
G	7	Insert	Updated drawings	06/01/15
A	8	1-5	Revised for Clarity	06/30/06
G	8	Insert	Updated drawings	06/01/15
B	9	1-3	Added Switch Panel 540012	11/04/09
G	9	Insert	Updated drawings	06/01/15
A	10	1-7	Revised for Clarity	06/30/06
G	10	Insert	Updated drawings	06/01/15
B	11	1-2	Added Brazilian STC	2/22/07
G	11	2	Updated to RSG	06/01/15
G	11	Insert	Updated STC Cover Sheet	06/01/15
C	12	1-16	Revised for Clarity	11/04/09
G	12	Insert	Updated ICA	06/01/15
A	13	1-2	Revised for Clarity	06/30/06
G	13	1-5	Updated to RSG	06/01/15

C	14	1-8	Revised Warranty	08/22/08
	15	Insert	Revised TS Guide	01/29/09

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.

Step	**Procedure**	**Mech**	**Insp**
5.1	Position the aft evaporator doubler, P/N 261370, on the upper transmission deck per the dimensions shown on drawing number 4-1-EC130. Mark and remove all existing rivets, bolts, and nut plates to allow the doubler to sit flat on deck. (Ref photo 501)		

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

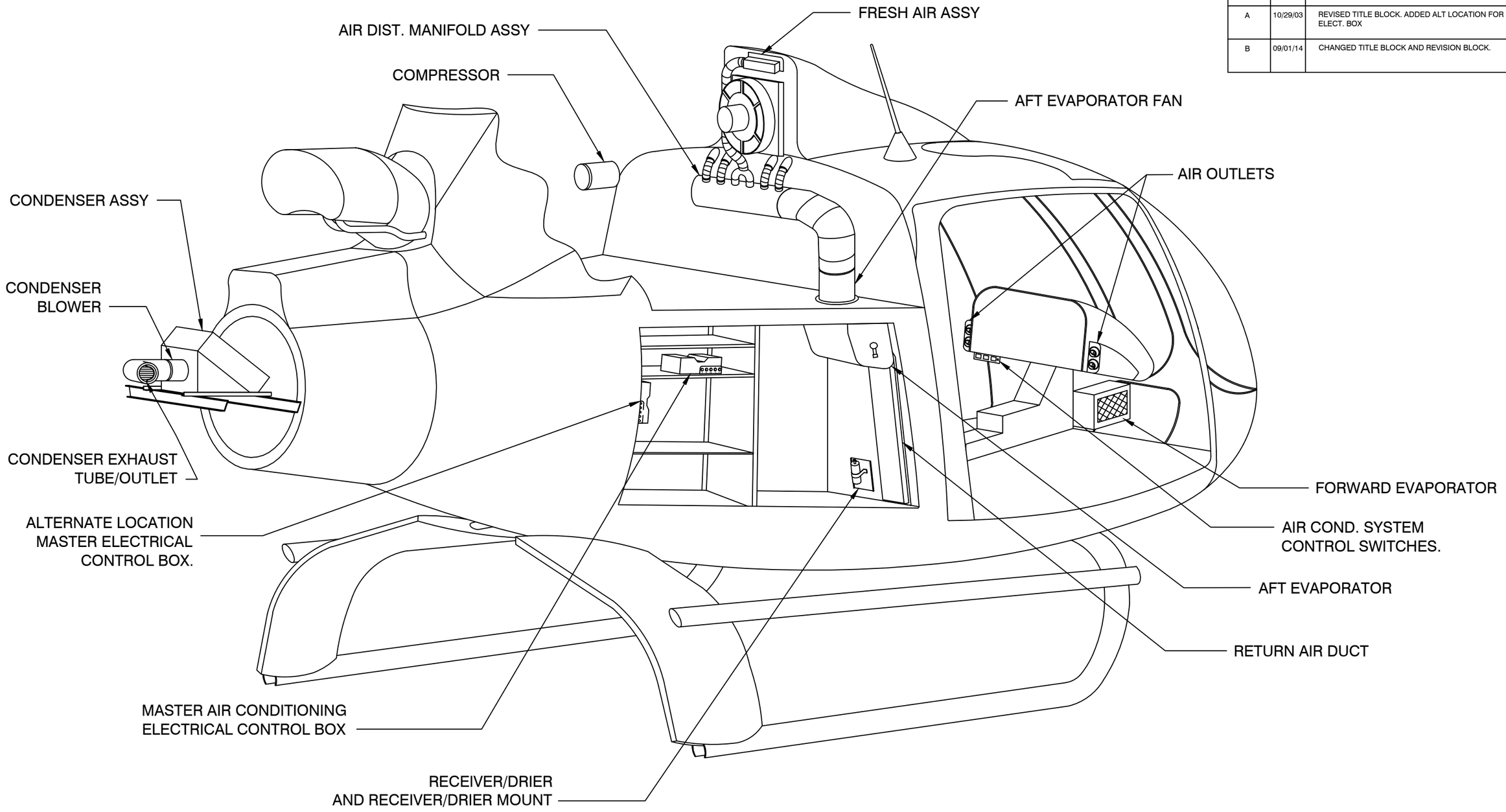
Phone: 1-888-545-8371 E-Mail: info@rotorcraftservices.com
Fax: 1-800-624-6603

Required Tools

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) 200inch 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
21.	6 oz. 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

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/29/03	REVISED TITLE BLOCK. ADDED ALT LOCATION FOR ELECT. BOX		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
AIR CONDITIONING OVERVIEW

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 1-1-EC130

PSG PRODUCTS INC.

Step 1

Kit Inventory

P/N 130-00-031-HP

Corporate Version

(Rev. J)

June 11, 2015

RECORD OF REVISIONS

Revision	Description	Date	Revised By
IR	Initial Release	22 December 2008	IFS
A	Part Number Correction	06 May 2009	IFS
B	Opt. Switch and Mount Added to list	04 Nov. 2009	IFS
C	Optional Switch Removed	02 Feb. 2010	IFS
D	Corrected Screw Step 5.11	03 May 2010	IFS
E	Added EMI-RFI filter & ring terminals	16 Feb. 2011	IFS
F	Part Number Correction	02 Feb. 2014	RSG
G	Updated Compressor Bracket Kit	30 May 2014	RSG
H	Added Brushless Motor option & Alt. Config. Switch Panels	19 August 2014	RSG
J	Formatted to RSG Products. Updated P/N's.	11 June 2015	RSG

LIST OF EFFECTIVE PAGES

Rev	Pgs	Description	Date
A	2	Added List of Revisions	05/06/09
A	5	Added Screw AN525-10R6 Step 5.13	05/06/09
A	5	Corrected Duct PN's Step 5.14, 15 and 18	05/06/09
A	6	Removed Clamp PN Step 6.12	05/06/09
B	9	Added alternate Switch Assy. 540012	11/04/09
B	5	Added Resistor Mount Assy. 510463	11/04/09
C	9	Removed alternate Switch Assy. 540012	02/22/09
D	5	MS35206-244 is now MS35206-230	03/05/10
E	8	Added EMI-RFI filter (P/N: LS03-01012)	02/16/11
E	8	Added 2 ring terminals (P/N: AP35110)	02/16/11
F	8	Corrected Comp. Bracket Kit P/N Step 8.9	02/02/2014

F	9	Corrected Ring Terminal P/N Step 9.5	02/02/2014
F	9	Corrected Switch Assy. P/N Step 9.8	02/02/2014
G	13	Corrected P/N of Compressor Bracket Kit	05/30/2014
H	5	Added optional Brushless Blower Motors in Step 5.11 (P/N: IFSS 050143, -1, -2, -3 DCB)	08/19/2014
H	8	Removed Step 7.9 and associated unneeded parts	08/19/2014
H	10	Corrected P/N in Step 9.5 (P/N: was 050015-2 is ANL-50)	08/19/2014
H	10	Added alternate switch assembly options Step 9.8 (P/N: 540011-02 and 540012)	08/19/2014
H	11	Added additional hardware	08/19/2014
H	11	Added optional EMI filters for Brushless Motors	08/19/2014
J	9	Formatted to RSG Products.	06/11/2015
J	10	Corrected part names Step 9.8	06/11/2015

Kit Configuration Inventory List: 130-00-031-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:

Condenser Blower S/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	Right Half Doubler, Fan	261370	1		
5.4	Right Half Fan Doubler Shim	261371	1		
5.4	Rivet	MS20470AD4-4	55		
5.4	Rivet	MS20470AD4-5	50		
5.4	Rivet	MS20470AD4-6	15		
5.4	Rivet	MS20470AD5-5	15		
5.4	Rivet	MS20470AD5-6	15		
5.5	Return Air Duct	110015	1		
5.6	Aft Evaporator Assembly	560016-O-1	1		
			1		
5.7	Bolt	AN3-5A	4		
5.7	Washer	AN960-10	4		
5.9	Aft Return Air Screen Doubler	110008	1		
5.9	Aft Return Air Screen	080010	1		
5.9	Nut	MS21083-N3	20		
5.9	Screw	AN525-10R12	12		
5.9	Screw	AN525-10R8	8		
5.9	Washer	AN960-10	8		
5.9	Washer	AN970-3	20		
5.10	Aluminum Foil Tape	070076	60' ft.		
5.11	5" Vane Axial Blower Assy.***(Brushed)	050143	1		
5.11	5" Vane Axial Blower Assy.*** (Brushless – dual speed)	IFSS 050143-2 DCB	1		
5.11	Bolt	AN3-5A	5		
5.11	Washer	AN960-10	5		

Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
5.11	Resistor Assembly (optional)	540020	1		
5.11	Resistor Mount Assembly (optional)	510463	1		
5.11	Rivet (optional)	CR3243-4-02	6		
5.11	Screw (optional)	MS35206-230	4		
5.11	Washer (optional)	AN960-6	4		
5.12	Air Distribution Manifold Assy. Comp.	520003-130	1		
5.13	Washer	AN960-10	4		
5.13	Screw	AN525-10R6	4		
5.14	Foam Insulation Tape	070078	30' ft.		
5.14	2.5" Duct	060025	52" in.		
5.14	3" Band Clamps	060036	16		
5.15	5" Duct	060004	36" in.		
5.15	6" Band Clamp	060035	2		
5.17	Fresh Air Screen	080008	1		
5.17	Fresh Air Intake Assy.	540007	1		
5.18	3" Duct	060024	36" in.		
5.18	3" Band Clamp	060036	2		
6.1	Forward Brace, Condenser	261360	1		
6.2	Condenser Assembly	550003-0	1		
6.3	Aft Brace, Condenser	261361	1		
6.6	Bolt	AN4-5A	4		
6.6	Washer	AN960-416	8		
6.6	Nut	MS21044N4	4		

Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
6.7	Bolt	AN4-5A	4		
6.7	Washer	AN960-416	8		
6.7	Nut	MS21044N4	4		
6.8	Bolt	AN4-6A	4		
6.8	Washer	AN960-416	8		
6.8	Nut	MS21044N4	4		
6.8	Washer	AN960-416L	12		
6.10	Condenser Exhaust Assembly	520001	1		
6.11	Condenser Exhaust Tube	250444	1		
6.12	7-8" Band Clamp	060038	1		
6.14	Air Inlet Screen	080040	1		
6.14	Camloc	2600-9	6		
7.1	Nutplate Strip Assy. Fwd. Evap.	510373	1		
7.1	Rivet	CR3212-4-3	2		
7.2	Fwd Evaporator Assy	560004	1		
7.2	Fwd Evaporator Mount Shim	261357	1		
7.2	Bolt	AN3-5A	5		
7.2	Washer	AN960-10	5		
7.3	Fwd Evap. Support Vertical Member	260486-1	1		
7.3	Rivet	CR3212-4-3	2		
7.5	Bolt	AN3-4A	3		
7.5	Nut	MS21044N3	3		
7.5	Washer	AN960-10	6		

Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
7.6	Fwd. Evap. Support Assy., Upper	510379	1		
7.6	Bolt	AN3-3A	2		
7.6	Washer	AN960-10	4		
7.6	Fwd. Evap. Support Assy., Lower	510380	1		
7.7	Washer	AN970-3	2		
7.7	Bolt	AN3-3A	2		
7.7	Nut	MS21044N3	2		
7.7	Washer	AN960-10	2		
7.12	Air Outlet Mount, Left Side	250447	1		
7.14	Bolt	AN3-4A	1		
7.14	Washer	AN970-3	2		
7.14	Nut	MS21083-N3	1		
7.15	Rivnut	A10K80	3		
7.15	Screw	AN525-10R7	3		
7.15	Left Side Air Outlet Assembly	500001	1		
7.16	Air Outlet Mount, Right Side	250448	1		
7.18	Bolt	AN3-4A	1		
7.18	Washer	AN970-3	2		
7.18	Nut	MS21083-N3	1		
7.19	Rivnut	A10K80	3		
7.19	Screw	AN525-10R7	3		
7.19	Right Air Outlet Assembly	500002	1		
7.20	3" Band Clamp	060036	2		
7.21	Inner Closeout Skirt	110018	1		
7.21	Outer Closeout Skirt	110019	1		

Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
8.5	4 Groove Belt	060005	2		
8.6	Cotter Pin	MS24665-151	6		
8.9	Compressor Bracket kit	130-11-031	1		
8.10	SD-507 Compressor Assy.(Grooved)	590008-1	1		
9.1	Electric Box Shelf	261375	1		
9.2	Electrical Box Assembly	540009	1		
9.3	Screw	AN525-10R6	3		
9.4	Harness Assembly	540010	1		
9.4	Ring Terminal	AP35110	2		
9.5	Harness Assembly	540045-1	1		
9.5	Ring Terminal	050020-9	1		
9.5	Limiter 50 AMP	ANL-50	1		
9.7	Battery Comp. Shelf Angle Fwd. Assy.	510265	2		
9.7	Battery Comp. Shelf Angle Fwd.	260335	2		
9.7	Bolt	AN3-3A	10		
9.7	Nut	MS21044N3	4		
9.7	Washer	AN960-10	18		
9.8	Switch Assembly***	540011	1		
	(Config. -01 for non-microswitch Config. -02 for microswitch)				
9.8	Panel Mount Switch Assembly*** (optional non-microswitch switch assy.)	540012	1		

Kit Configuration Inventory List

STEP	PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
10.1	Mount Plate Assembly	510381	1		
10.1	Screw	AN525-10R7	4		
10.1	Washer	AN960-10	8		
10.1	Nut	MS21044N3	4		
10.1	3" Band Clamp	060036	1		
10.1	Receiver/Drier	090016-5	1		
10.2	#6 'O' Ring	090092	5		
10.2	#8 'O' Ring	090093	3		
10.2	#10 'O' Ring	090094	3		
10.3	Return Hose #10 Assembly	570105	1		
10.3	Hose Disconnect Bracket	04-130-21-107-01	2		
10.4	High Pressure Hose, #6 Assembly	570103	1		
10.5	1" Band Clamp	060037	1		
10.5	Cork Insulation Tape	070078-0	6 ft.		
10.6	Hose Assembly #8 Comp. Discharge	570070-"O"-A	1		
10.7	Cond. to Rec/Drier Hose, #6 Assy.	570104	1		

Kit Configuration Inventory List

PART NAME	PART NUMBER	QTY	CHK'D BY	VERF'D BY
Tie Wraps (packs of 100)	MS3367-1-0	3		
Tie Blocks	ZZCR4HM	50		
Adel Clamps	MS21919-WDG12	9		
Spiral Wrap	SW12BKV	24'		
Grommet	MS35489-20	2		
Touch Up Paint, Teal	070073	1		
Touch Up Paint, Grey	070003-1	1		
Foam Insulation Tape	070078	20' ft.		
Low Pressure Switch	050107	1		
High Pressure Switch	090004	1		
Hand Shake Splice	050020-1	14		
Ring Terminal	050020-8	10		
Drain Hose 1/2"	090018-1	10' ft.		
Bolt	AN3-4A	4		
Bolt	AN3-5A	4		
Bolt	AN4-6A	8		
Screw	AN525-10R8	4		
Washer	AN960-10	8		
Washer	AN960-416L	24		
Rivets	MS20470AD4-3	5		
Nut	MS21083-N3	4		
Clamp	MS21919WDG11	1		
EMI Filter *** (optional – for brushless motors)				
EMI Filter	13619-RF16883	2		
Screw	MS27039-0807	4		
Washer	NAS620-8L	4		

*** Indicates it has alternate or optional configuration.

DRAWING LIST

DRAWING NAME	DRAWING #	QTY	CHK'D BY	VERF'D BY
AIR CONDITIONING OVERVIEW	1-1-EC130	1		
ELECTRICAL ROUTING	2-1-EC130	1		
RESERVED	2-2-EC130	1		
ELECTRICAL DIAGRAM	2-3-EC130-01	1		
ELECTRICAL DIAGRAM	2-3-EC130-02	1		
PLUMBING DIAGRAM	3-1-EC130	1		
PLUMBING ROUTING	3-2-EC130	1		
AFT EVAPORATOR INSTALL (SHEET 1 OF 2)	4-1-EC130	1		
AFT EVAPORATOR INSTALL (SHEET 2 OF 2)	4-1-EC130	1		
AFT EVAPORATOR INSTALL	4-2-EC130	1		
EVAPORATOR INSTALL, FWD (SHEET 1 OF 2)	4-3-EC130	1		
EVAPORATOR INSTALL, FWD (SHEET 2 OF 2)	4-3-EC130	1		
FWD DRAIN HOSE INSTALL	4-4-EC130	1		
AIR DISTRIBUTION	5-1-EC130	1		
AIR DISTRIBUTION	5-2-EC130	1		
AIR DISTRIBUTION	5-3-EC130	1		
PANEL MOUNT SWITCH INSTL	5-4-EC130	1		
COMPRESSOR INSTALLATION	6-1-EC130	1		
COMPRESSOR INSTALLATION	6-2-EC130	1		
COMPRESSOR INSTALLATION	6-3-EC130	1		
BELT TENSION	6-5-EC130	1		
AFT CONDENSER INSTALLATION	7-1-EC130	1		
AFT CONDENSER EXHAUST INSTALLATION	7-2-EC130	1		
INSTALLATION, AIR INLET DOUBLER	7-3-EC130	1		
ELECTRICAL BOX, SHELF INSTALLATION	8-1-EC130	1		
ELECTRICAL BOX INSTALLATION	8-2-EC130	1		

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		

COMPRESSOR BRACKET INSTALLATION KIT
PN: 130-11-031

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	2	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

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)**

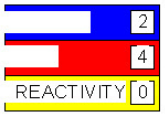
Health = 2
Fire = 4
Reactivity = 0

(Contd. on page 2)

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 1)

· **HMIS-ratings (scale 0 - 4)**



Health = 2
Fire = 4
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:** CO2, 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)

(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/m³, 1000 ppm
REL ()	590 mg/m³, 250 ppm
TLV ()	Short-term value: 1782 mg/m³, 750 ppm Long-term value: 1188 mg/m³, 500 ppm BEI
74-98-6 propane	
PEL ()	1800 mg/m³, 1000 ppm
REL ()	1800 mg/m³, 1000 ppm
TLV ()	(4508) mg/m³, (2500) ppm
78-93-3 butanone	
PEL ()	590 mg/m³, 200 ppm
REL ()	Short-term value: 885 mg/m³, 300 ppm Long-term value: 590 mg/m³, 200 ppm
TLV ()	Short-term value: 885 mg/m³, 300 ppm Long-term value: 590 mg/m³, 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 trough time has to be found out by the manufacturer of the protective gloves and has to be observed.

(Contd. on page 4)

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/cm³
· **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/gl

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)

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)

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)

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 Propietary Inhibitor Package Mixture	0-20	Not Listed	Not Listed	Not Listed
Ester Propietary Base Stock Mixture	20-80	Not Listed	Not Listed	Not Listed

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

Component	ACGIH TLV TWA	ACGIH TLV STEL	ACGIH TLV Ceiling
Ester Propietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Propietary 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.

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 (H20=1): 1.04 @ 60F
Viscosity: 100 cSt @ 40C
Evaporation Rate: Not Determined
VOC Content(%): Not determined.
Decomposition Temperature: Not Known

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 Propietary Inhibitor Package Mixture	Inhalation	Rats	Not known.
Ester Propietary Base Stock Mixture	Inhalation	Rats	Not known.

Carcinogenicity:

Component	IARC	NTP	OSHA
Ester Propietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed
Ester Propietary 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 difinitions 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 Propietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Propietary 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 Catagories: 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 Propietary Inhibitor Package Mixture	Not Listed	Not Listed	Not Listed	Not Listed
Ester Propietary 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: Do not allow undiluted material or large quantities to reach groundwater, bodies of water or sewer system.
Disclaimer: 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

Aircraft Pre-Inspection

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

General Safety Instructions

STEP	PROCEDURE	Mech	Insp
	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 is 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

STEP	PROCEDURE	Mech	Insp
	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

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 rear seat pallets.		
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	Remove the tail boom left hand access panel (rectangle).		
3.11	Remove the tail boom left hand access panel (rectangle).		
3.12	Remove the right hand transmission cowling.		
3.13	Remove the left hand transmission cowling.		
3.14	Remove lower nose right window.		
3.15	Remove the front belly cowling.		
3.15a	Remove the center front belly cowling.		
3.15b	Remove the right middle belly cowling.		
3.15c	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. **NOTE:** Determine location for air conditioning power hook up. Reinstall cover to prevent FOD.		
3.19	Remove the rear cargo compartment forward floor panel.		

NOTE:

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

Step 4

Removal of Factory Installed Components

Removal of Factory Installed Components

STEP	PROCEDURE	MECH	INSP
4.1	Remove left and right condenser brackets from the tail boom. (Ref photo 401, 402) By removing 10 each Rivets and 4 each Bolts per side (if installed)		
4.2	Remove right hand lower bracket from the tail boom. (Ref photo 403). Coax splitter.		
4.3	Remove 7-3/4 inch ring from the upper, right hand, and forward transmission deck. (Ref photo 404)		
4.4	Remove ¾ inch tube from the upper right hand forward transmission deck. (Ref photo 404)		
4.5	Remove two each stiffeners from lower right hand forward transmission deck. (Ref photo 405)		
4.6	Remove four each caps from air distribution ducts located on the aft side of the cabin bulkhead. (Ref photo 406)		

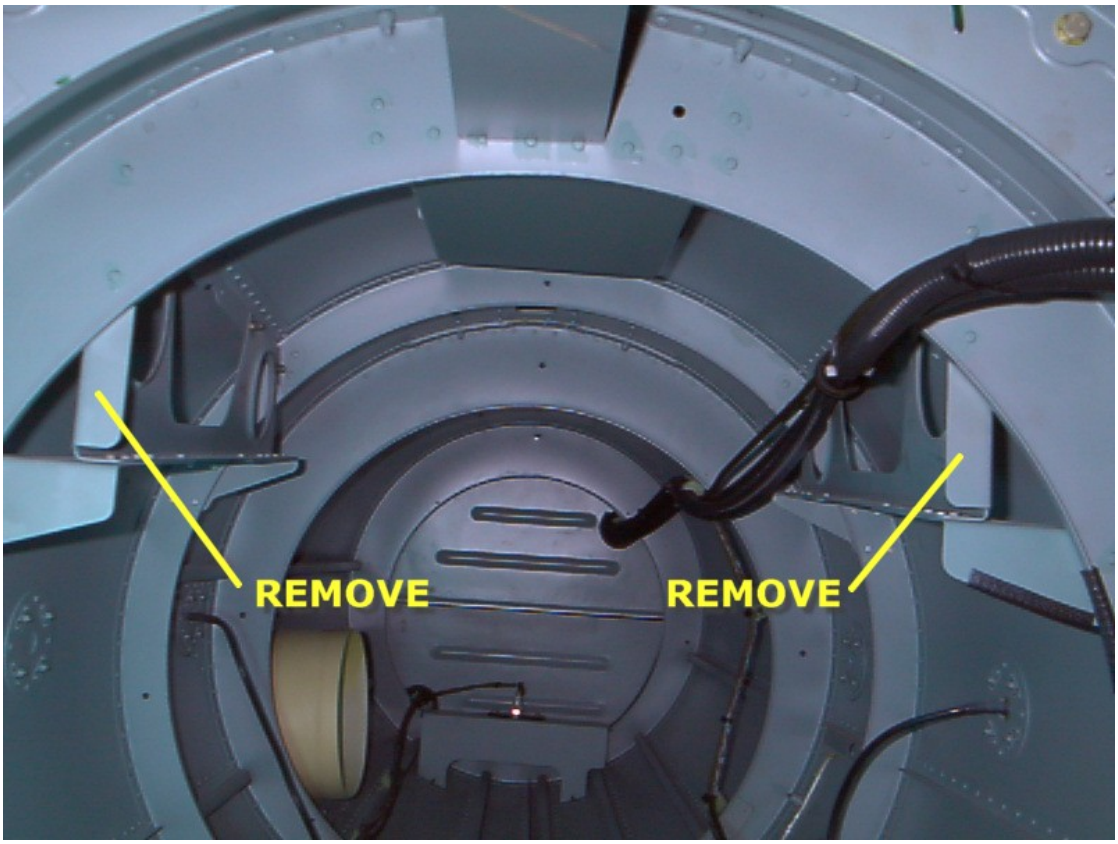


Photo 401

Removal of Condenser Brackets

Photo 402

Condenser Brackets
Removed

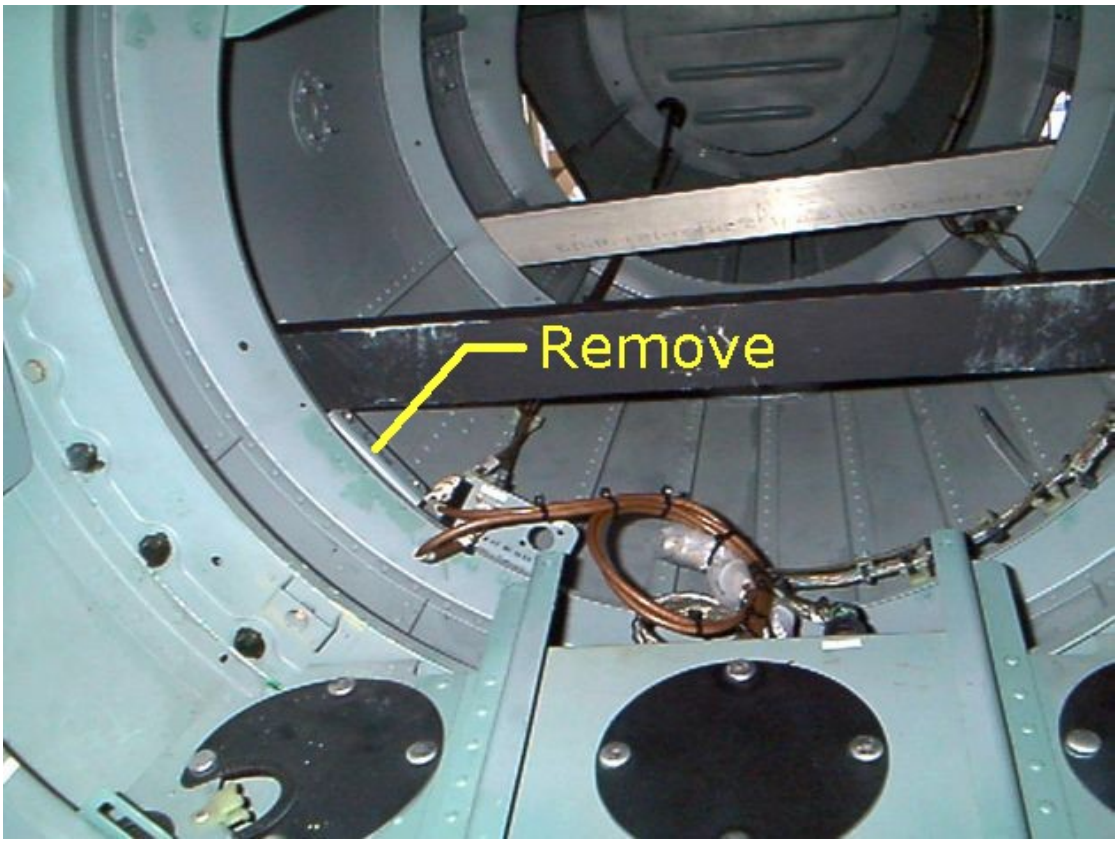


Photo 403

Removal of
Additional Bracket

Photo 404

Removal of Blocking Plate and Ring

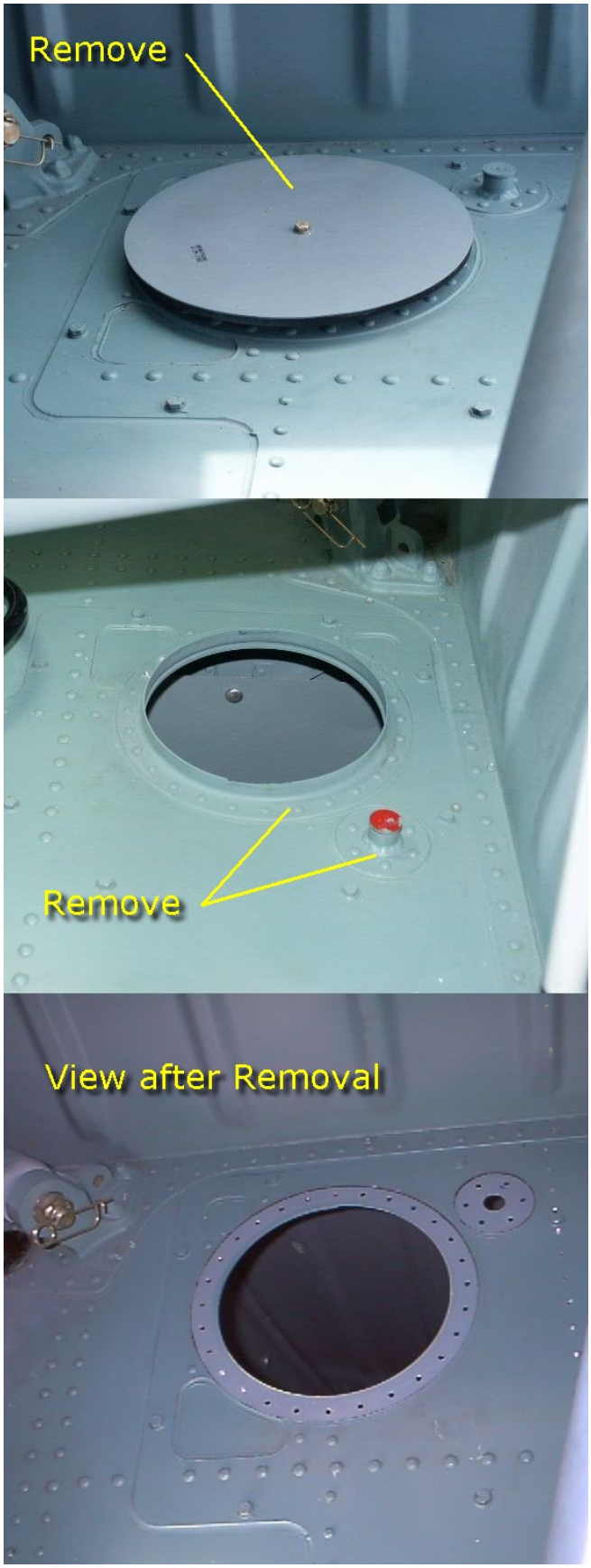


Photo 405

Remove 2 Existing Stringers.

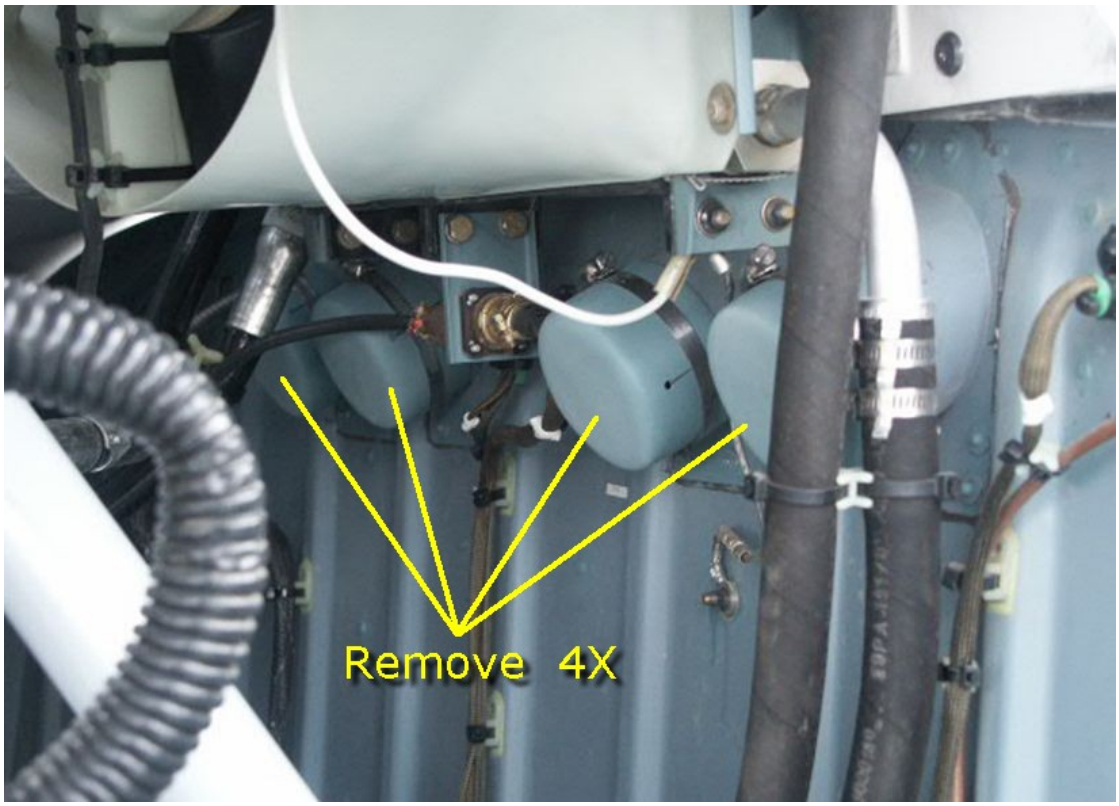


Photo 406

Remove Existing 4 Caps

Step 5

Installation of Aft Evaporator

Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.1	Position the aft evaporator doubler, P/N 261370, on the upper transmission deck per the dimensions shown on drawing number 4-1-EC130. Mark and remove all existing rivets, bolts, and nut plates to allow the doubler to sit flat on deck. (Ref photo 501)		
5.2	Drill through deck using pilot holes in doubler. Back drill the doubler from existing holes in the deck. (Ref photo 502)		
5.3	Mark and cut openings in the transmission deck using doubler, P/N 261370, as a template. (Ref photo 503)		
5.4	Install aft evaporator doubler, P/N 261370, and shim, P/N 261371 on right hand upper transmission deck in accordance with drawing number 4-1-EC130 using rivets.		
5.5	Position the aft evaporator return air duct, P/N 110015, in the right side baggage compartment as shown on drawing 4-2-EC130. Use the existing return air opening to locate the return air duct. Trim the return air duct as required to fit. (Ref photo 504)		
5.6	Remove the access panel from the outboard side of the aft evaporator, P/N 560016-O-1.		
5.7	Temporarily install the aft evaporator, P/N 560016-O-1 using 4 each. P/N AN3-5A, bolts, and P/N AN960–10, washers. (Ref photo 505)		
5.8	Locate and drill the holes for mounting the aft evaporator return air duct.		
5.9	Attach return Air Duct, P/N 110015 per print 4-1-EC130 sheet 2 of 2. Aft return doubler P/N 110008, and return air screen P/N 080010 per Print 5-3-EC130.		
5.10	SEAL THE EVAPORATOR TO THE RETURN AIR DUCT WITH ALUMINUM FOIL TAPE by reaching through the outboard opening in the evaporator. Install the aft evaporator access panel.		

STEP	PROCEDURE	MECH	INSP
5.11	Install the aft evaporator fan assembly, P/N 050143, using five each, P/N AN3-5A, bolts, and P/N AN960–10 washers. Attach Resistor Mount Assy. P/N 510463 and Resistor Assembly P/N 540020 Per Print 4-1-EC130.		
5.12	Position the aft evaporator air distribution manifold, P/N 520003, on the aft cabin wall to the dimensions shown on drawing 4-1-EC130. Align outlets on the air distribution duct with the existing openings in the aft cabin wall. Mark and drill 4 holes. (Ref photo 506) **NOTE: MAY NEED TO REMOVE/REINSTALL OIL COOLER BLOWER TO FACILITATE INSTALL.**		
5.13	Install the aft evaporator air distribution duct on the aft cabin wall using four each, P/N AN525-10R6, screws and four each P/N AN960-10 washers.		

STEP	PROCEDURE	MECH	INSP
5.14	Cut and attach 4 pieces of 2 1/2 inch flex duct P/N 060025-52 to the existing openings in the aft cabin wall to the existing openings in the air distribution duct. Cut and attach 4 pieces of 2 1/2 inch flex duct P/N 060025, connect one end to the existing opening in the cabin headliner and the other to the existing air distribution system in the headliner (* may have to cut wire back in 2 ½" tube to obtain sealed clamp up). Secure each end with 3" band clamps. Insulate the duct in the deck area with foam tape, P/N 070078, and wrap with aluminum tape, P/N 070076. (Ref photo 506 & 507)		
5.15	Install a 5-inch flex duct P/N 060004-36, from the aft evaporator fan assembly to the aft evaporator air distribution duct and secure each end with two each 6" band clamps P/N 060035. Insulate the duct with foam tape and wrap with aluminum tape. (Ref photo 508)		
5.16	Remove the cover plate AEC, P/N 350A580483.20A or fresh air duct, from the fresh air opening located on the upper center of the Doghouse cowling. (Ref photo 509) Use cover plate to locate mounting holes.		
5.17	Install the fresh air intake assembly, P/N 540007, using the existing hardware with screen P/N 080008. (Ref photo 510) Per drawing 4-1-EC130 sheet 2 of 2.		
5.18	Install 3-inch flex duct from the fresh air inlet valve assembly to the 3-inch opening in the aft evaporator air distribution duct. Secure each end of the duct with two each 3 inch band clamps.		

Photo 501

Removal of all rivets for
Doubler installation.

Photo 502

Back Drill for Doubler Installation.

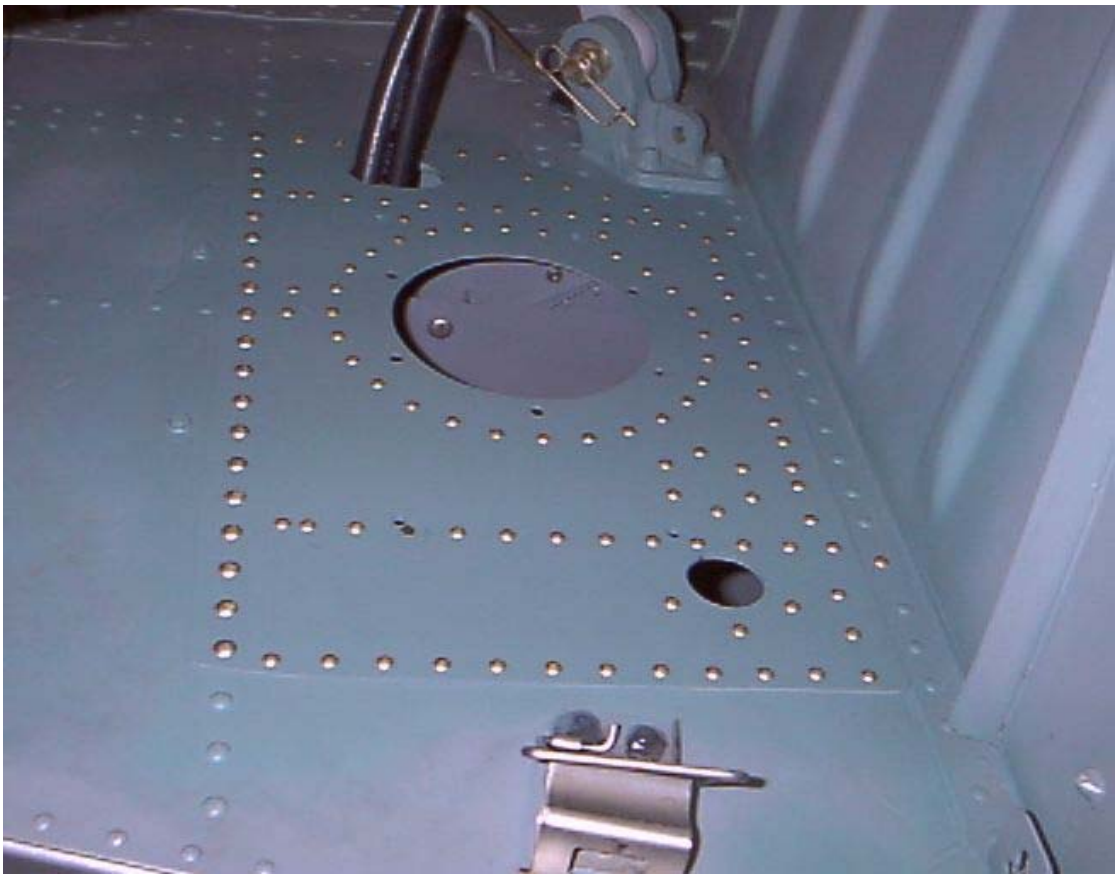


Photo 503

Doubler Installed
P/N 261370

Photo 504

Return Air Duct

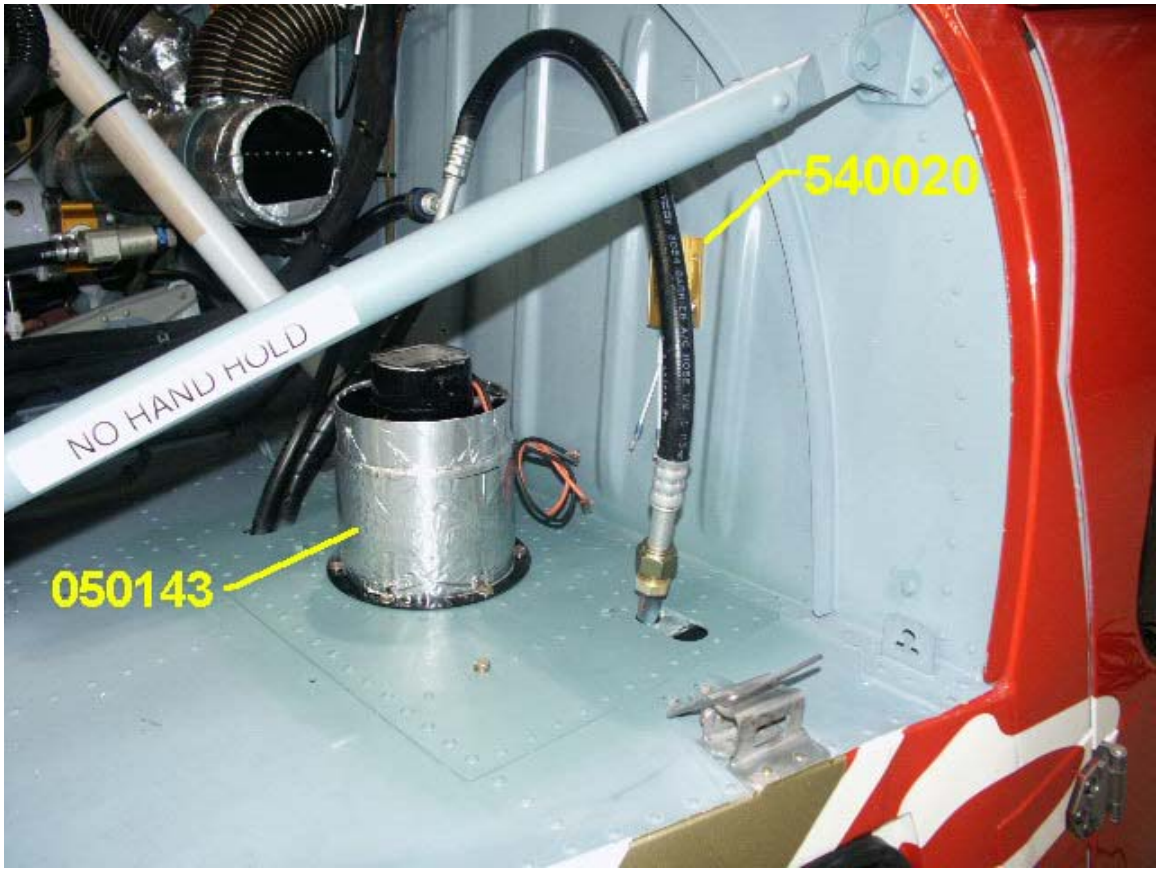


Photo 505
(Resistor Mount Not Shown)
5” Blower installation
Aft Evaporator

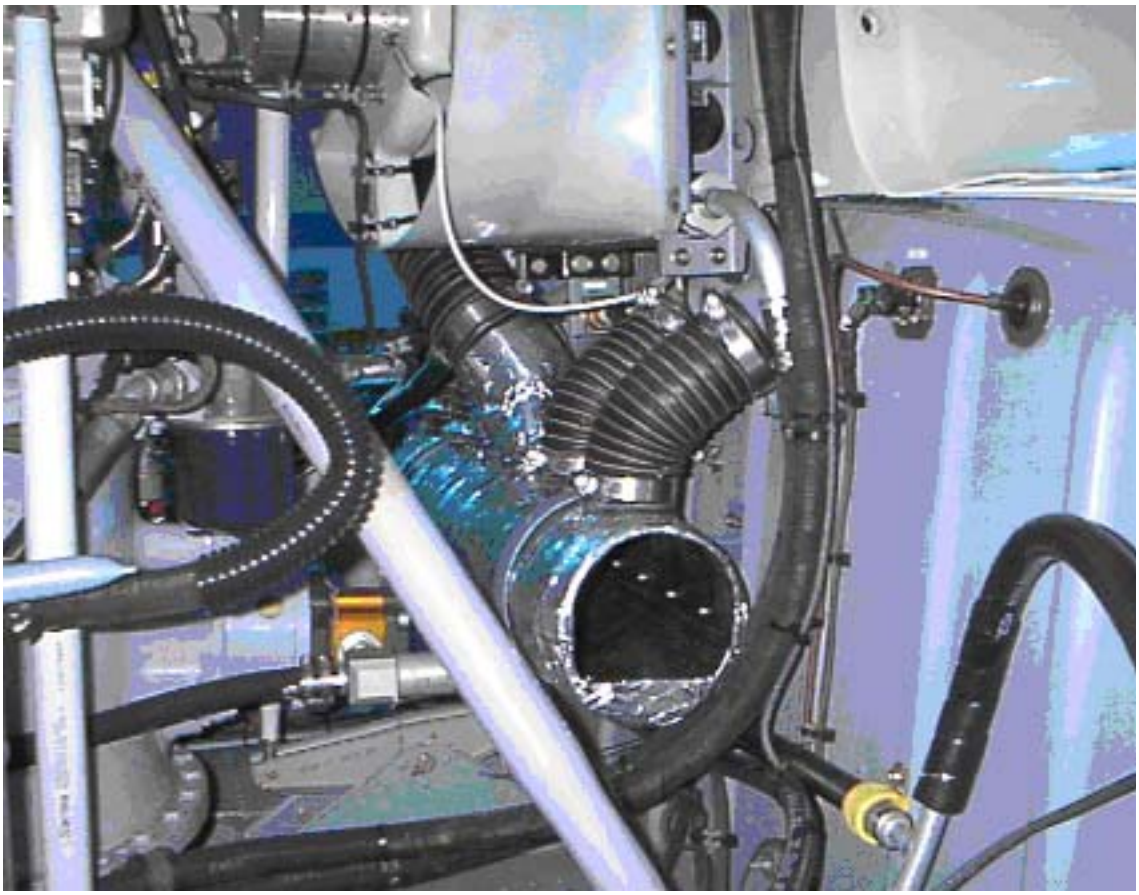


Photo 506

Air Distribution
Manifold

Photo 507

Air Distribution Manifold
With Connections
Attached.

Photo 508

Air Ducts Insulated
and Wrapped.

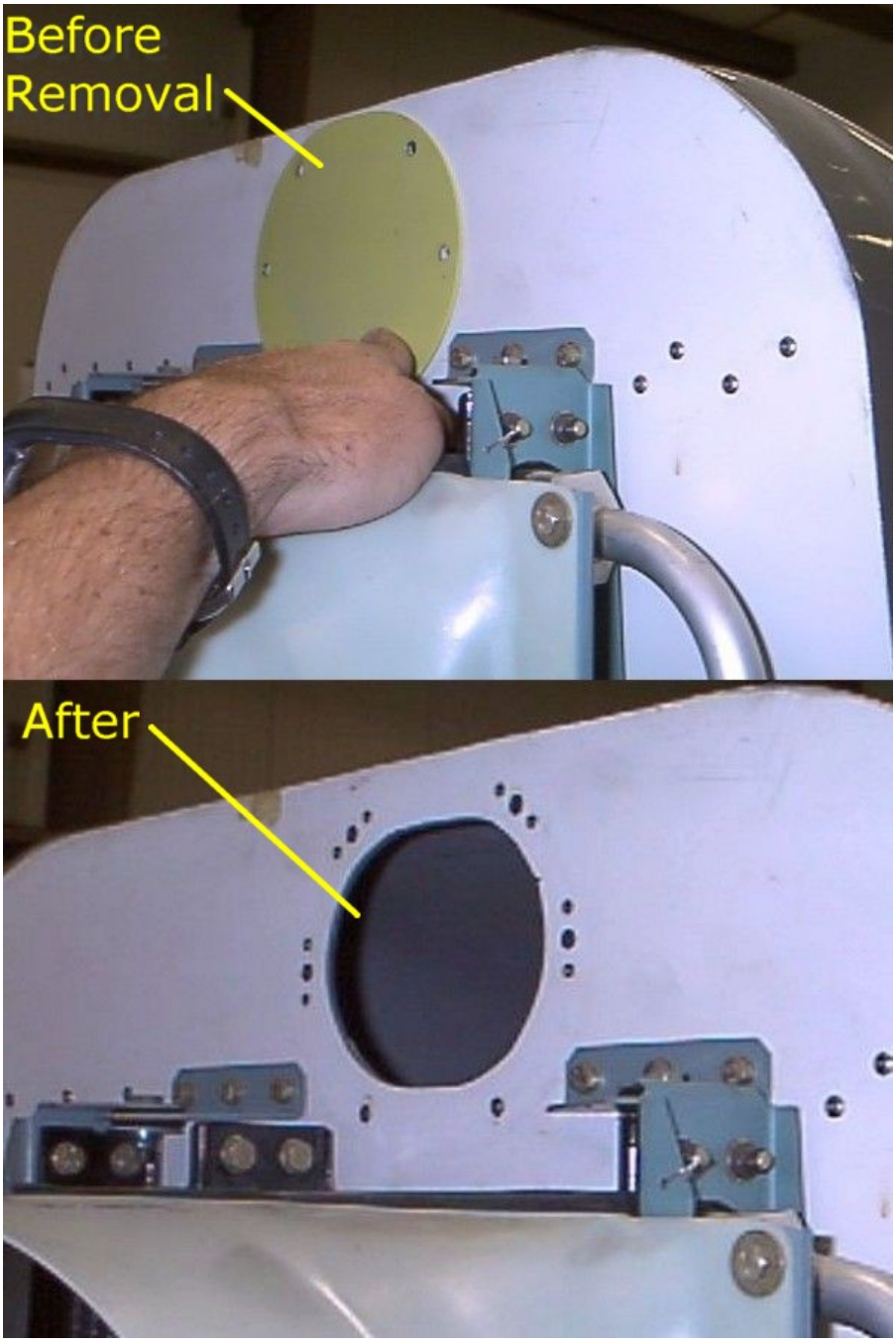


Photo 509

Removal of Fresh Air Plate

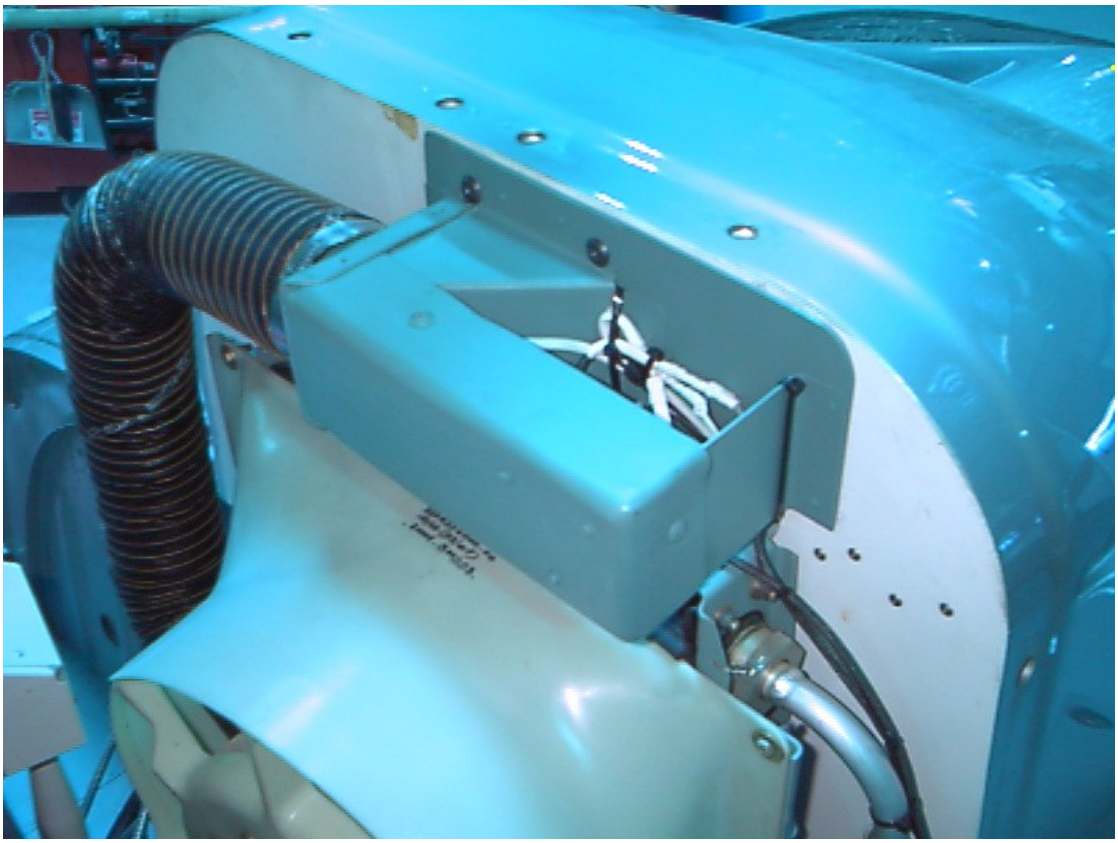
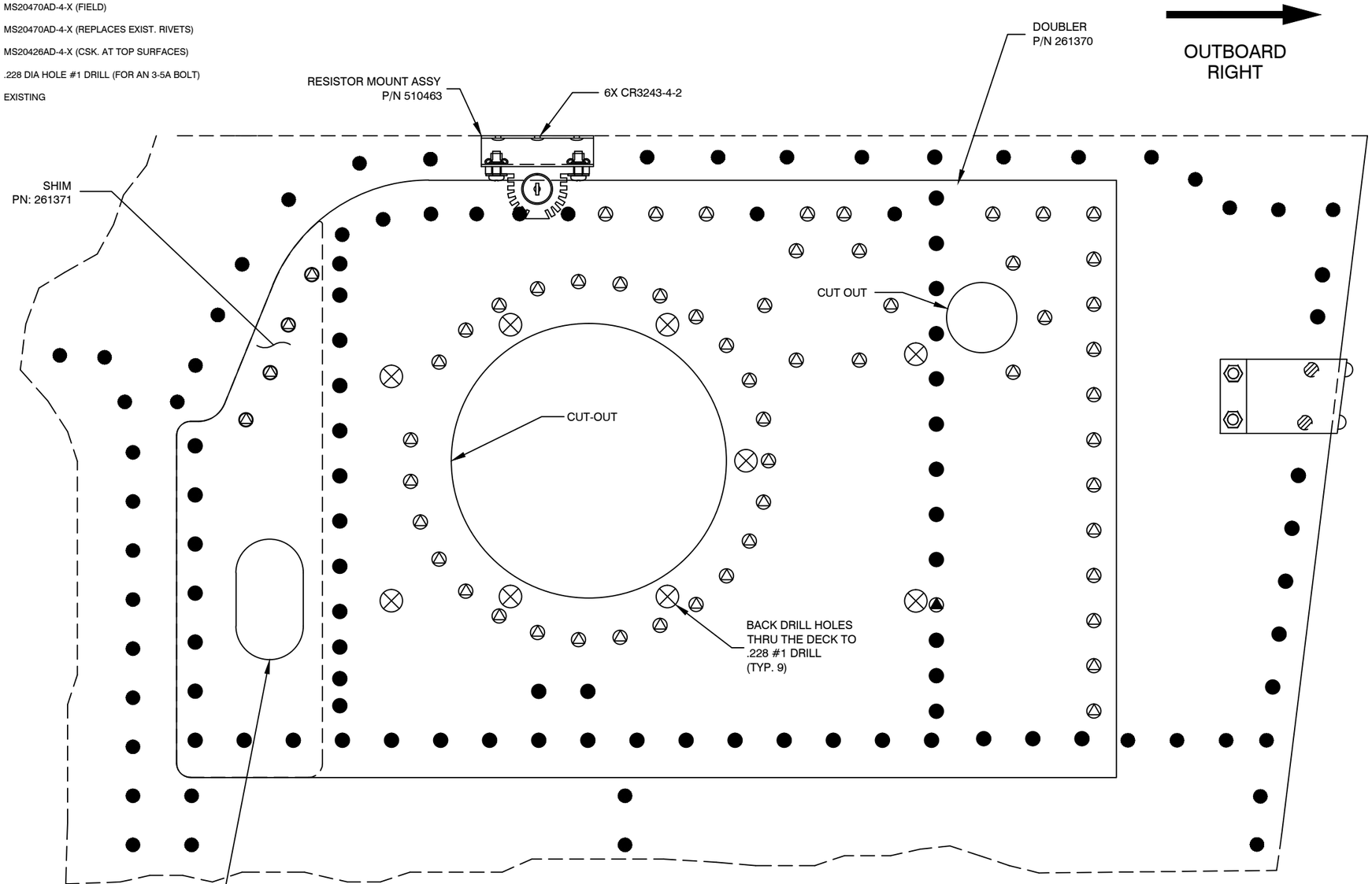


Photo 510

Installation of Fresh Air
Valve and 3” Duct

NOTE:
RIVET LENGTH MAYBE DETERMINED UPON INSTALLATION.
INTERCHANGEABILITY BETWEEN MS20470AD-4-X RIVETS AND CR3242-4-X RIVETS IS APPROVED.

- ○ 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



VIEW LOOKING DOWN AT TRANSMISSION DECK

FORWARD
OUTBOARD

REVISION RECORD

REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/15/03	CORECTED COUBLER TO MATCH MFG DRAWING. ADDED NOTE FOR CUTOUT.		JTYE
B	03/31/09	REVISED TITLE BLOCK. ADDED SHIM PN: 261371 TO SHEET 1, CORRECTED VERTICAL DIMENSION ON SHEET 2. CORRECTED RIVET LEGEND ON SHEET 1. REMOVED ADAPTERS AND CORRECTED HOSE AND BAND CLAMP CALLAOUTS ON SHEET 2. ADDED TAG FOR VIEW A-A. ADDED ALT PN'sl FSS 050143, -1, -2, -3 DCB, TO SHEET 2 OF 2. ADDED RESISTOR MOUNT ASSEMBLYPN: 520463. RECONFIGURED HARDWARE ACCORDINGLY.		JTYE
C	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0484.		AJC

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

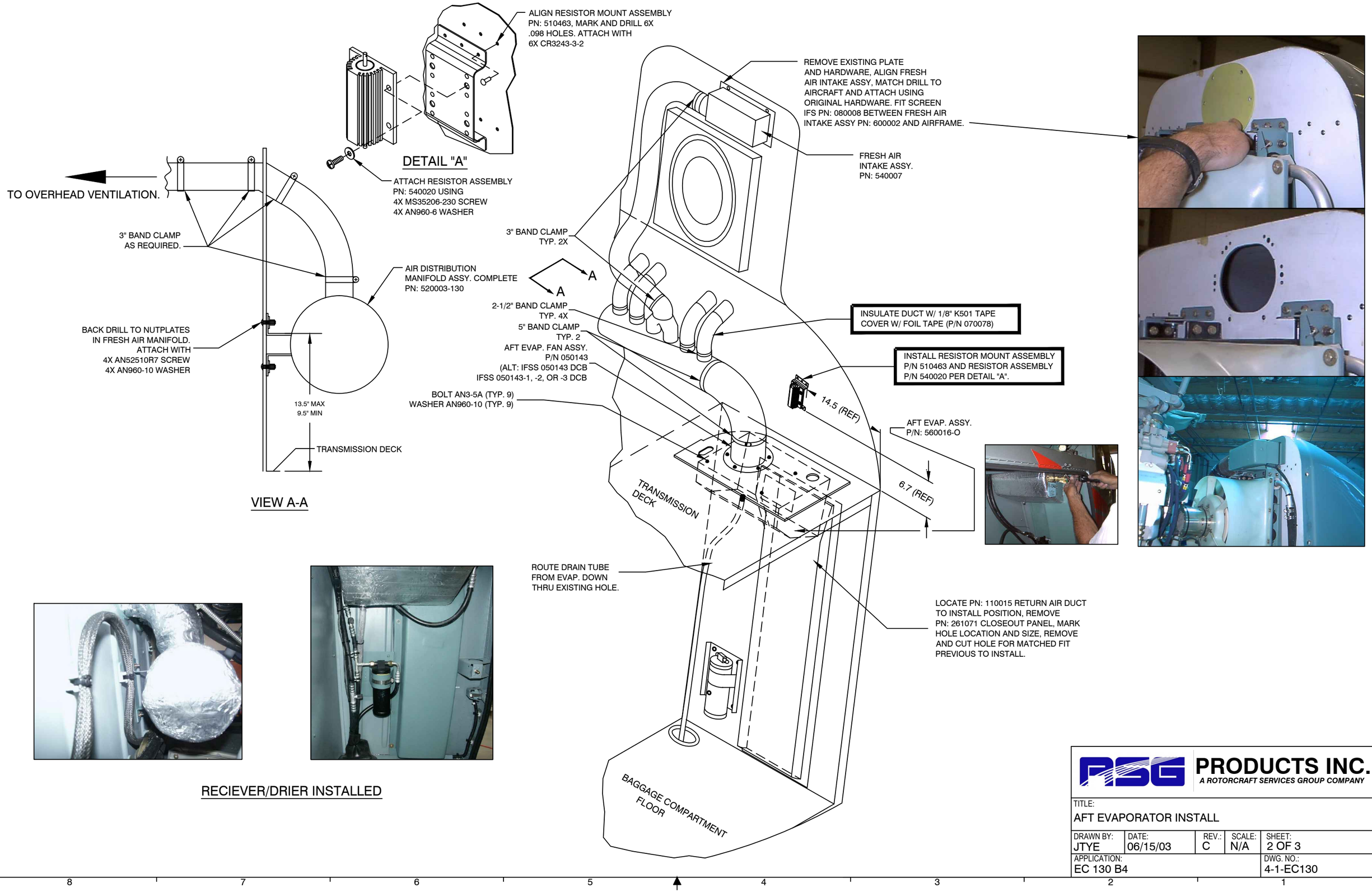
RSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: AFT EVAPORATOR INSTALL

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	1 OF 3

APPLICATION: EC 130 B4

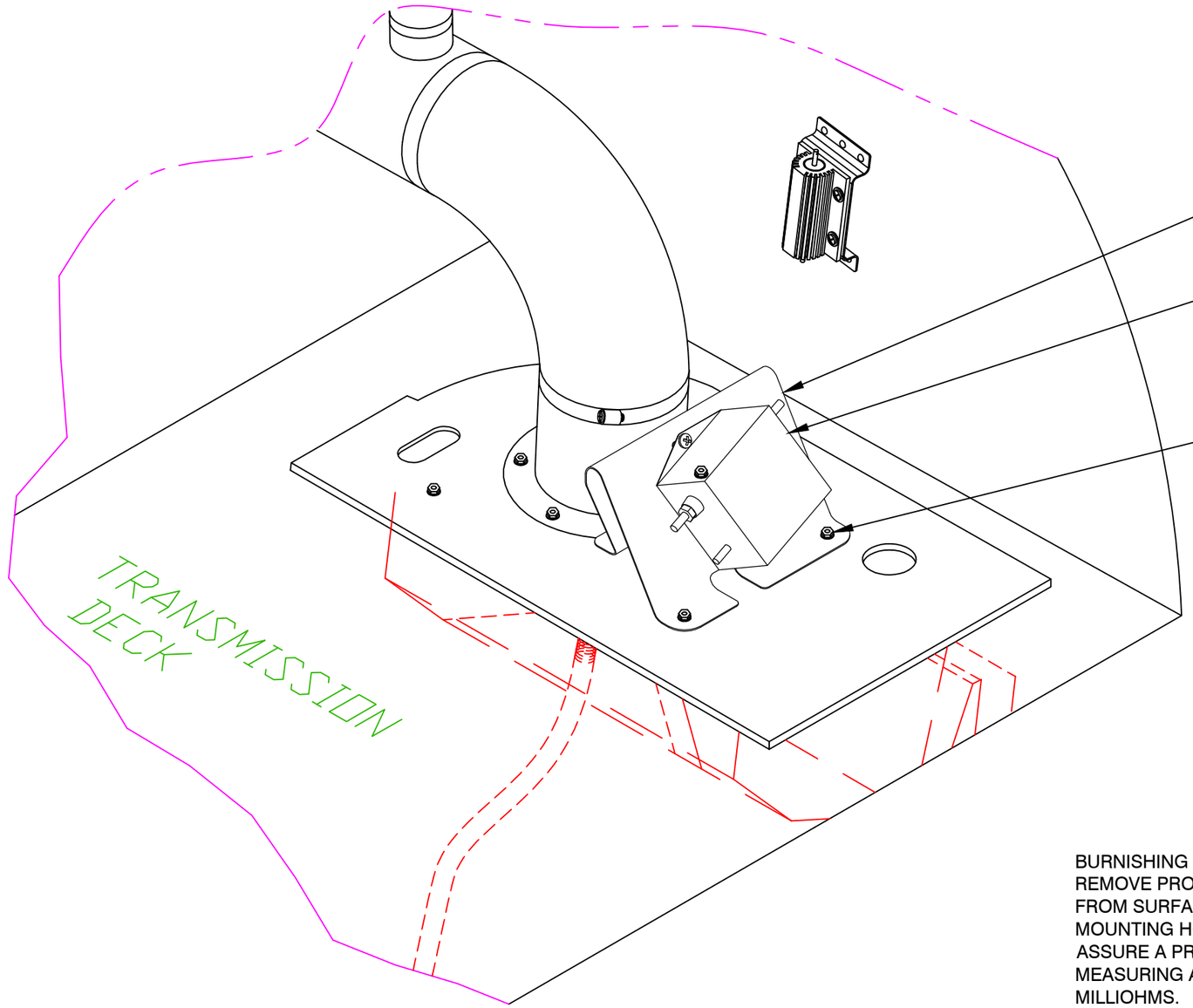
DWG. NO.: 4-1-EC130



RECIEVER/DRIER INSTALLED

PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: AFT EVAPORATOR INSTALL				
DRAWN BY: JTYE	DATE: 06/15/03	REV.: C	SCALE: N/A	SHEET: 2 OF 3
APPLICATION: EC 130 B4				DWG. NO.: 4-1-EC130



OPTIONAL INSTALL FOR NOISE REDUCTION WHEN BRUSHLESS MOTORS ARE INSTALLED; P/Ns: IFSS 050143 DCB, -1 DCB, -2 DCB, AND -3 DCB. INSTALL THE FOLLOWING, MAINTAINING BURNISHING REQ:

04-350-21-108-01 (AFT EVAP EMI FILTER BRACKET) 1EA

13619-RF16883 (EMI FILTER) 1EA
MS21075-3N (NUTPLATE) 2EA
CCR264CS-3-02 (RIVET) 4EA
MS27039-0807 (SCREW) 2EA
NAS620-8L (WASHER) 2EA

FOR BRACKET ATTACHMENT USE EXISTING AN3-5A BOLTS, 3 PLACES

BURNISHING REQUIREMENTS:
REMOVE PROTECTIVE FINISH LOCALLY FROM SURFACES WHERE EQUIPMENT MOUNTING HOLES ARE LOCATED, TO ASSURE A PROPER ELECTRICAL BOND MEASURING A MAXIMUM OF 2.5 MILLIOHMS.

PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: AFT EVAPORATOR INSTALL				
DRAWN BY: JTYE	DATE: 06/15/03	REV.: C	SCALE: N/A	SHEET: 3 OF 3
APPLICATION: EC 130 B4				DWG. NO.: 4-1-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/17/03	REVISED TITLE BLOCK. CHANGED NO. OF BOLTS TO 4 ON INBOAD AND 5 ON OUTBOARD SIDE OF AIR DUCT. ADJUSTED INSTRUCTIONS ACCORDINGLY. CORRECTED PN: 560016-O, IS NOW PN: 560016-O-1 DUE TO PN CONFLICT.		JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC

INSTALLATION INSTRUCTIONS:

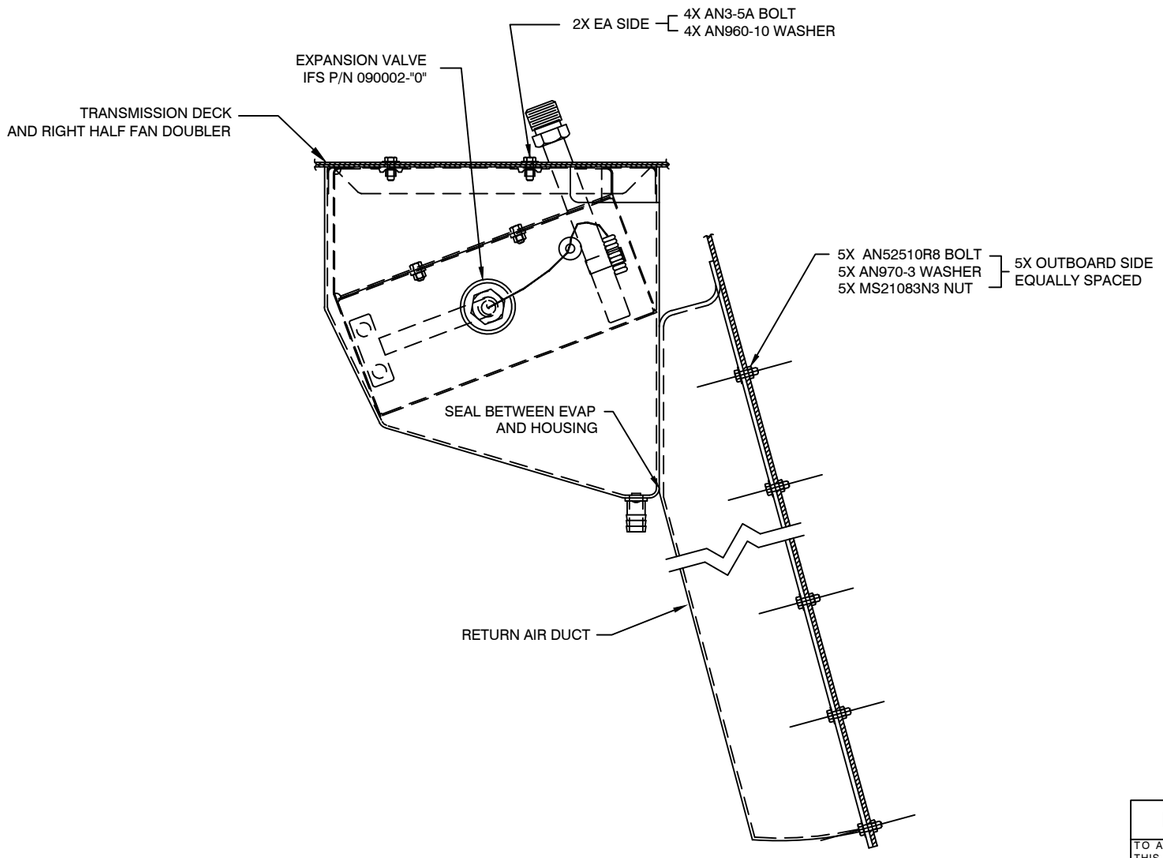
1. AFT EVAPORATOR AND RETURN AIR DUCT INSTALLATION:
2. TRIAL FIT EVAPORATOT ASSEMBLY, P/N 560016-O-1 UNDER NEWLY INSTALLED COUBLER WITH 4X AN3-5A BOLTS AND 4X AN960-10 WASHERS AS SHOWN.
3. LOCATE A LINE ONE (1) INCH ABOVE THE LOWER/FORWARD FACE OF THE EVAPORATOR..
4. TRIAL FIT RETURN AIR DUCT P/N 110015. LOCATE AND DRILL AT FOUR PLACES ON INBOARD SIDE, EQUALLY SPACED, AT INBOARD EDGE OF RETURN AIR DUCT FLANGE. DRILL 5 PLACES, EQUALLY SPACED, ON OUTBOARD EDGE OF RETURN SECTION.
5. INSTALL DRAIN LINE AND ROUTE AS SHOWN. SECURE DRAIN LINE WITH ADEL CLAMPS OR TIE WRAPS AND ROUTE TO A LOCATION OUTBOARD OF THE BELLY PANEL.

NOTE:

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

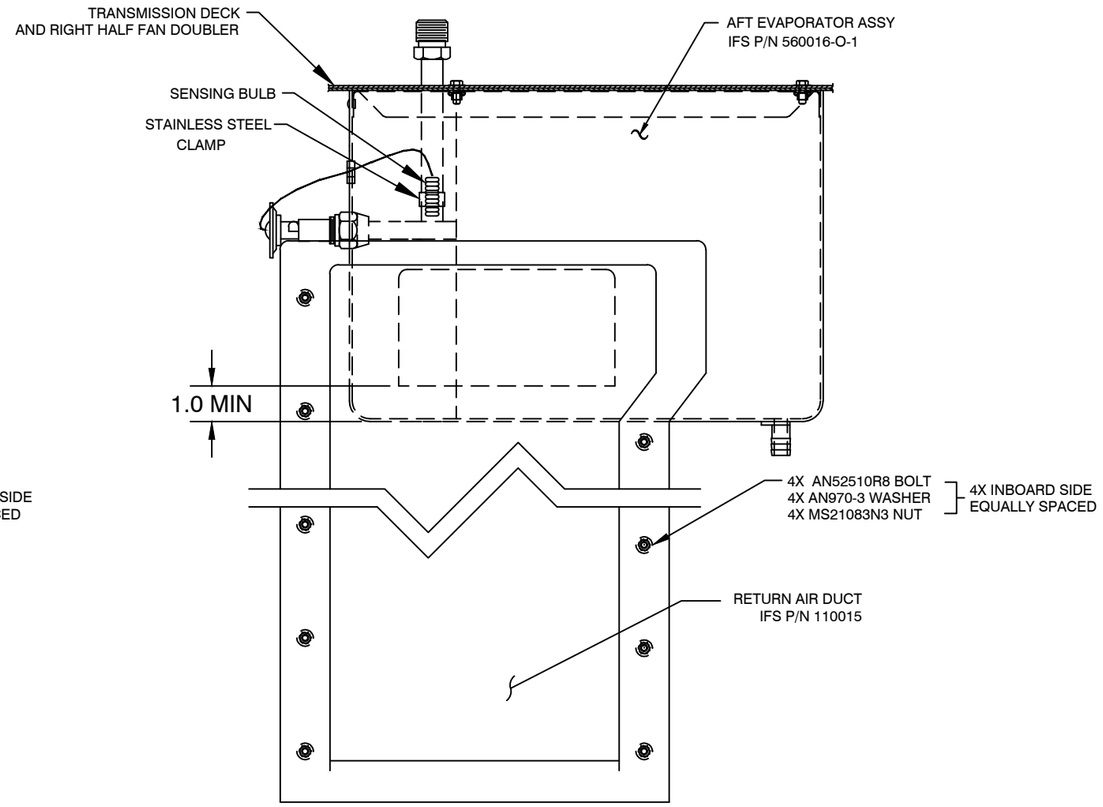
CAUTION:

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.



VIEW OUTBOARD
LOOKING INBOARD

NOTE: ENSURE THAT DRILLING DOES NOT HIT COIL



VIEW LOOKING AFT

FOR USE WITH AFT EVAPORATOR
ASSEMBLY IFS P/N 560016-O

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

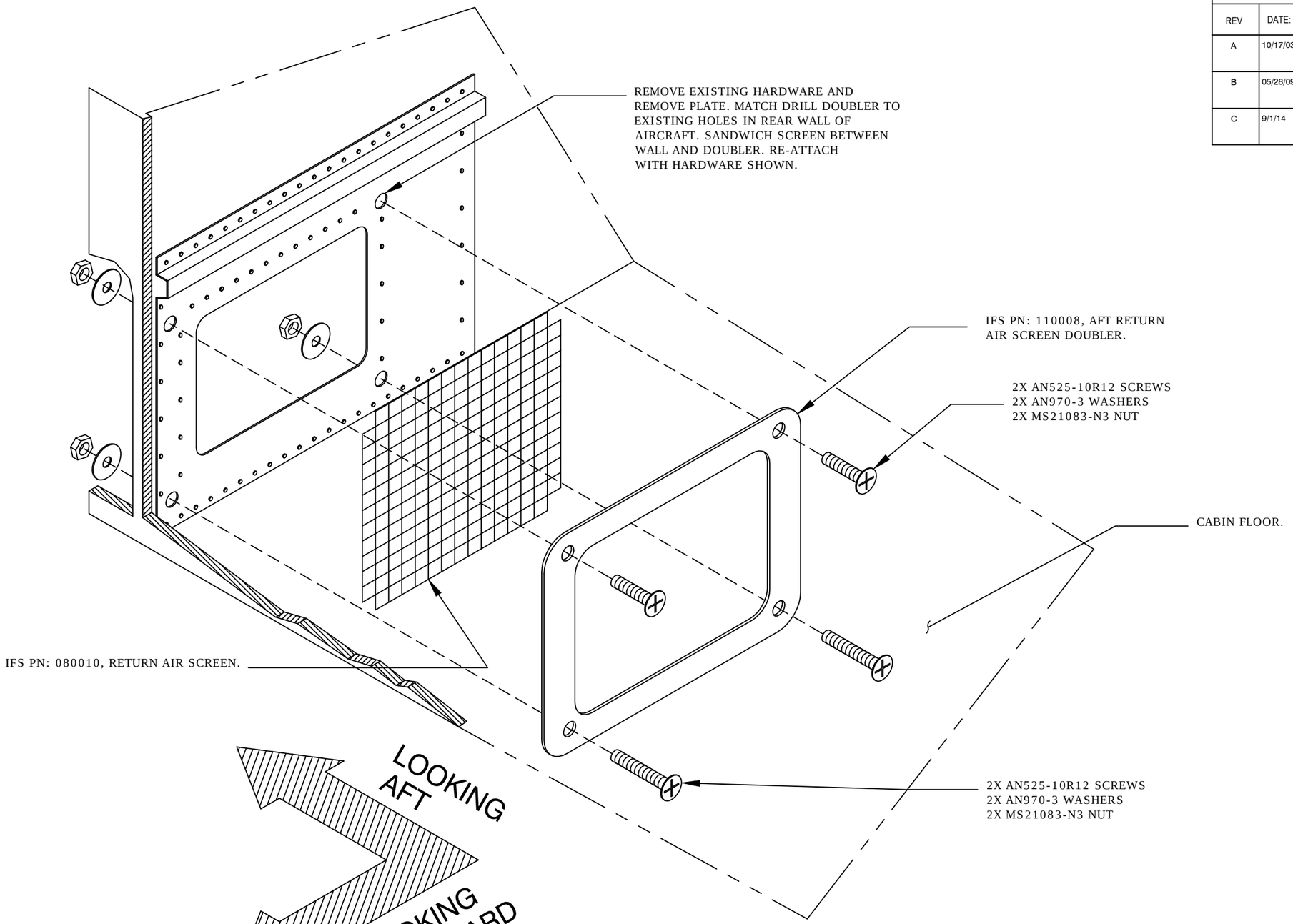
TITLE:
AFT EVAPORATOR INSTALL

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 4-2-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/17/03	CHANGED HARDWARE CALLOUT DUE TO LENGTH ISSUES WITH EXISTING HARDWARE. CHANGED SCREEN CORNERS TO MATCH MFG DRAWING.	LA	JTYE
B	05/28/09	REVISED TITLE BLOCK.	MLD	JTYE
C	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



NEXT ASSY.

APPROVED BY:

DATE:

TOLERANCES EXCEPT AS SHOWN

.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
AIR DISTRIBUTION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	1 OF 1

APPLICATION:	DWG. NO.:
EC 130 B4	5-3-EC130

Step 6

Installation of Condenser

Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.0	**NOTE: TO INSTALL BRACKETS PARALLEL.**		
6.1	Locate the forward condenser support angle, P/N 261360. Per Drawing 7-1-EC130. Align reference hole in support angle tooling hole tail boom rib. Level support to aircraft. Mark and drill 4 each, ¼-inch mount holes in support. Transfer drill holes to tail boom rib. (Ref Print 7-1-EC130 and 7-2-EC130).		
6.2	Temporarily remove 7-inch blower assembly from Condenser Assy. P/N 550003-O. Position condenser in tail boom.		
6.3	Locate AFT condenser support angle, P/N 261361. Per Drawing 7-1-EC130. Ensure gap exists between support and tail boom skin.		
6.4	Position forward condenser support and condenser. Use condenser to position AFT support. Mark and drill 4 each ¼-inch mount holes in aft support and transfer to tail boom rib. NOTE: May need to relocate tie off points for supports to be low enough.		
6.5	Position condenser approximately 2.5-inches from right side of tail boom rib at forward support, and square to forward support. Mark and drill 4 each, ¼-inch mount holes in condenser and support angles. (Ref Photo 602)		
6.6	Mount AFT condenser support using 4 each, P/N AN4-5A, bolts, 8 each, P/N AN960-416, or P/N AN960-416L, washers, and 4 each, P/N MS21044-N4, nuts.		
6.7	Position condenser and forward support in tail boom. Mount forward support using 4 each, P/N AN4-5A, bolts, 8 each, P/N AN960-416 or AN960-416L, washers.		
6.8	Mount condenser to supports using 4 each, P/N AN4-6A, bolts, 8 each, P/N AN960-416 or AN960-416L, washers, and 4 each, P/N MS21044-N4, nuts.		
6.9	Reinstall 7-inch blower assembly to condenser.		

Installation of Condenser

STEP	PROCEDURE	MECH	INSP
6.10	Fit condenser air outlet, P/N 520001 to right side of tail boom opening drill to match nut plates.		
6.11	Fit condenser exhaust tube, P/N 250444, trim as necessary		
6.12	Install the exhaust tube through the round opening in the tail boom. Slide the exit duct over the 7-inch blower assembly and clamp with 1 each 7-inch band clamp (Ref Photo 604/Print 7-2-EC130). NOTE: Duct does not interfere with wires for blower.		
6.13	Install condenser air outlet, P/N 520001 over round hole in the right side of tail boom Per drawing 7-2-EC130, (verify that existing hardware is not too short).		
6.14	Modification of tail boom access panel screen, P/N 080040, and camlocks P/N 2600-9. Per Print 7-3-EC130.		

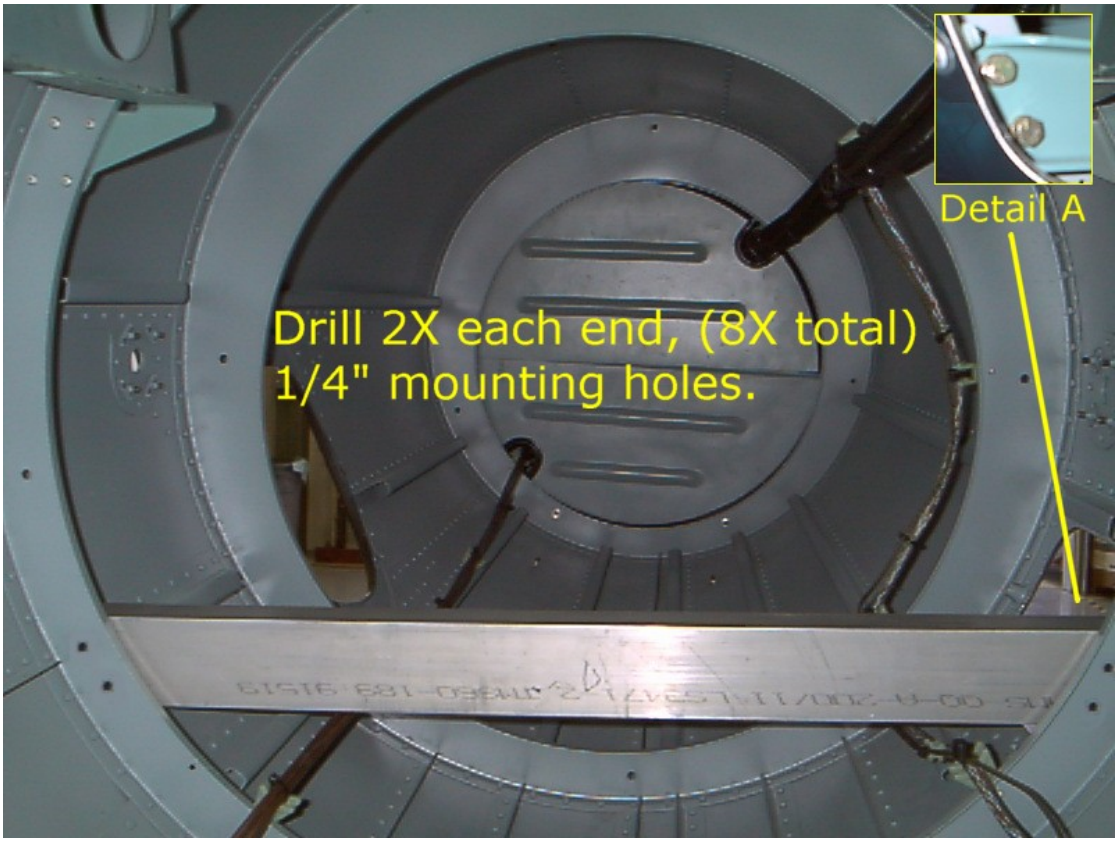


Photo 601

Locate, Drill and
Attach Condenser Support
Angles.

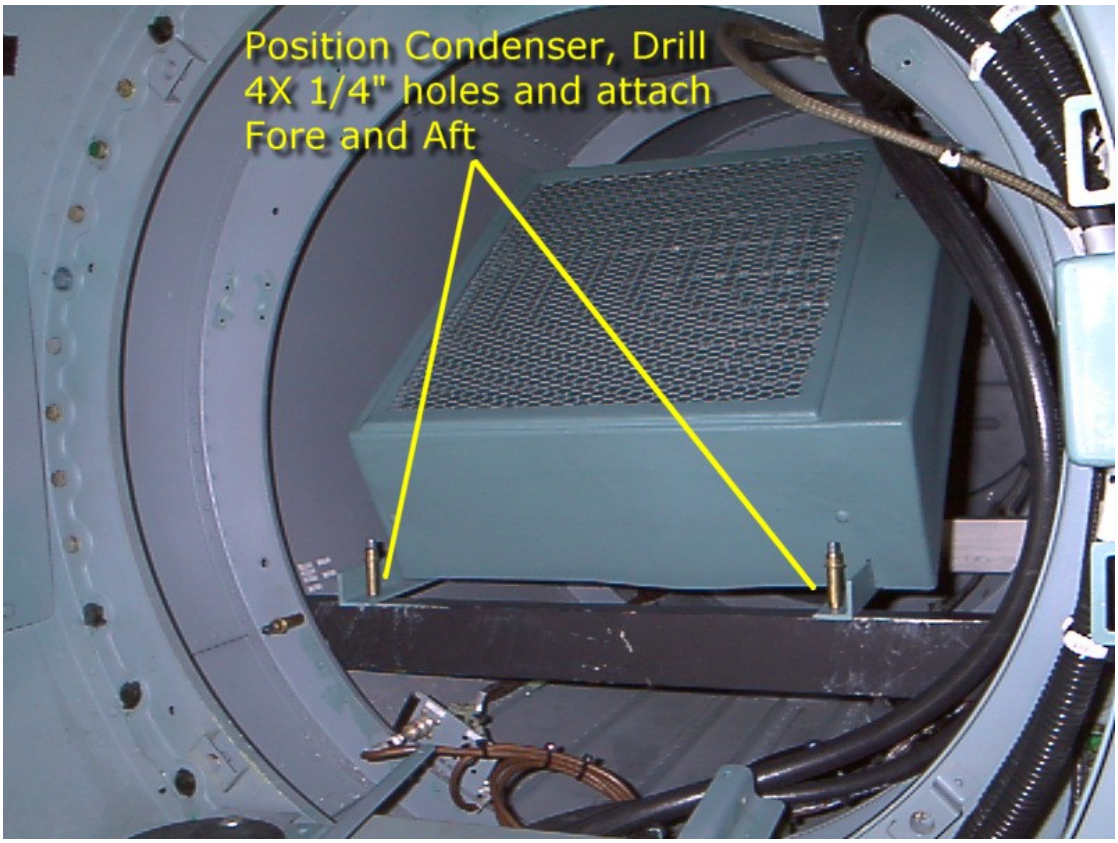


Photo 602

Condenser positioned
on Mounting Angles.
Not bolted.

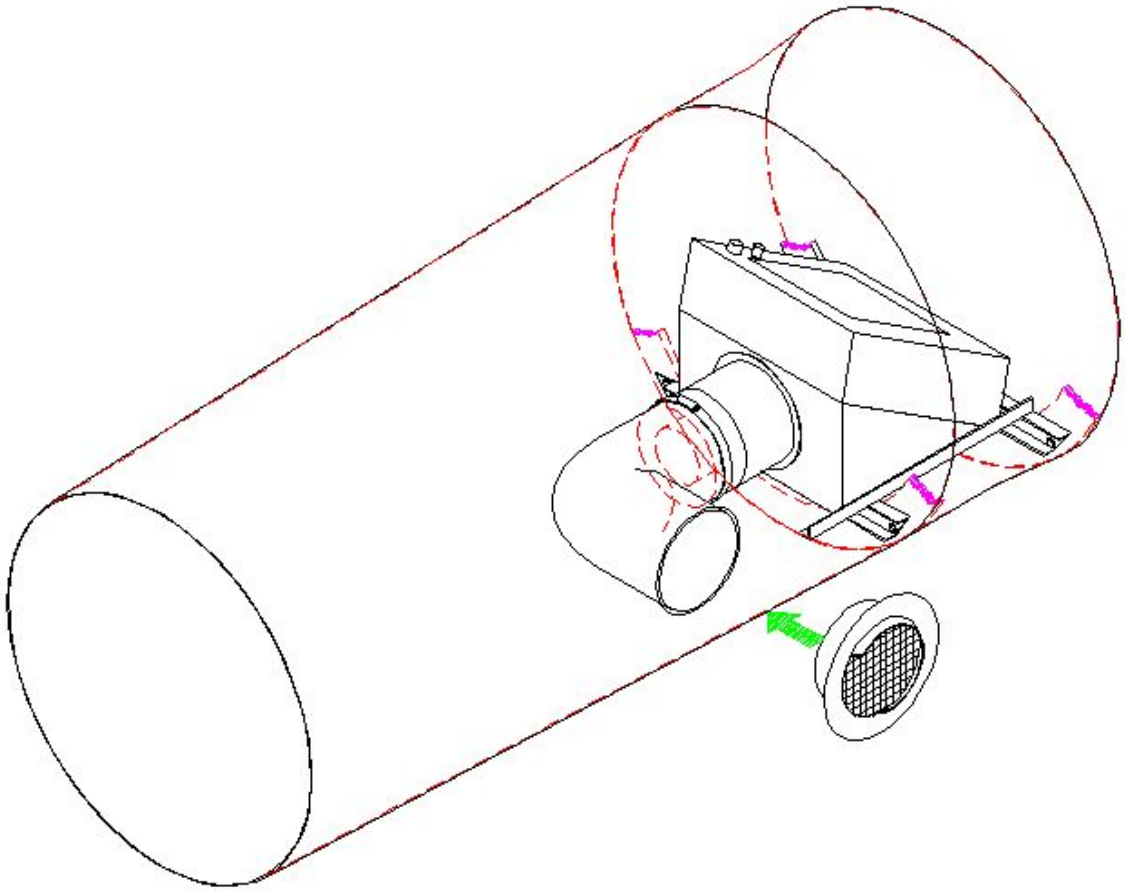


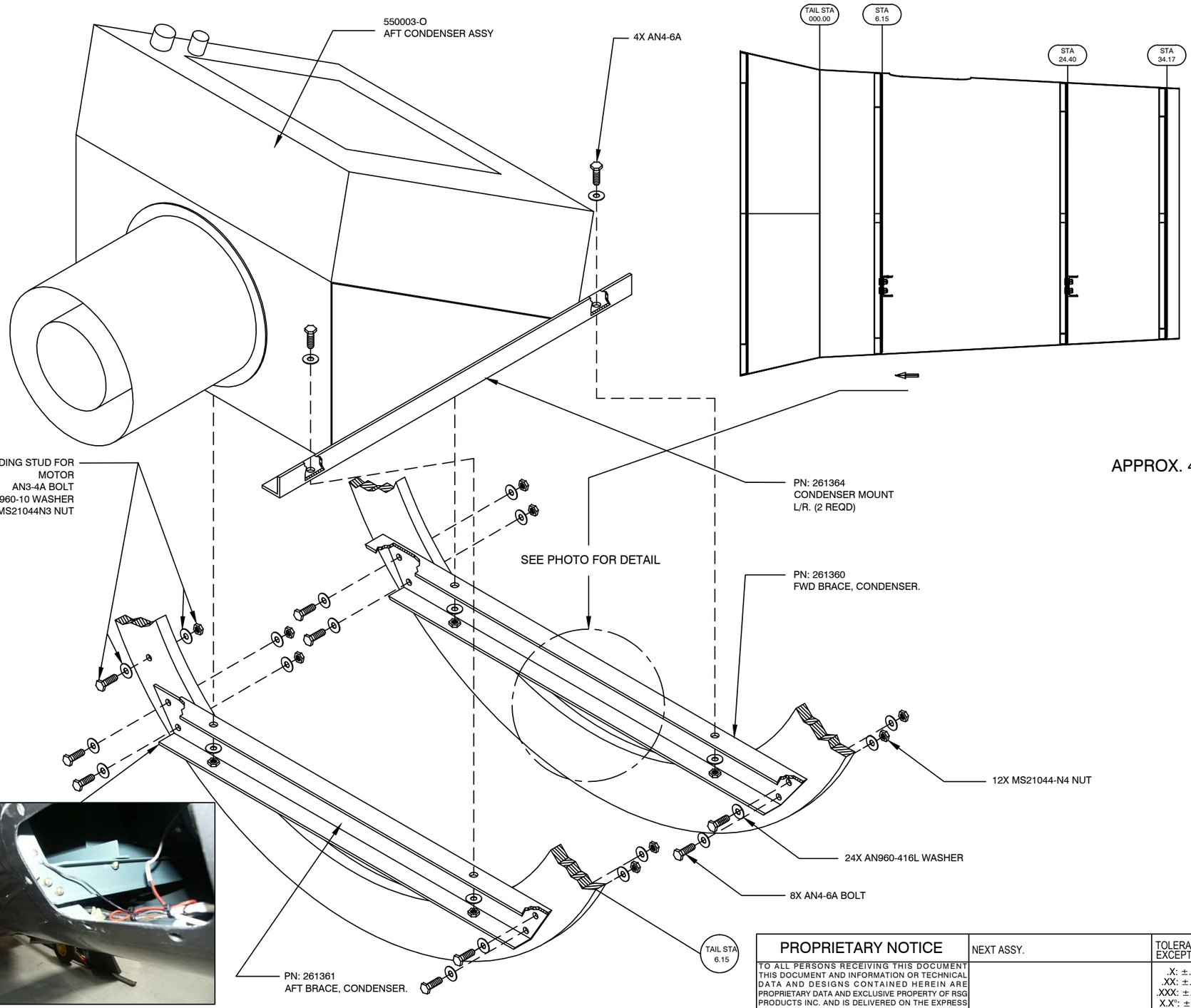
Photo 603

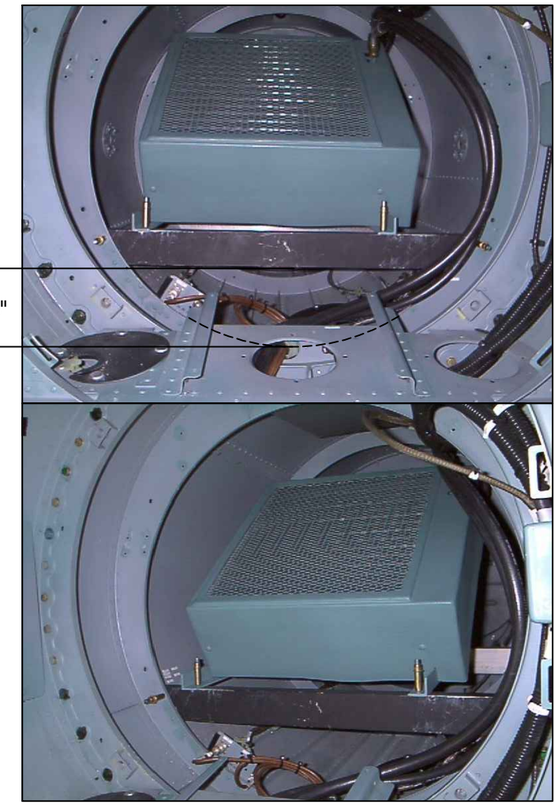
Condenser Exhaust Tube

Photo 604

Condenser Air Outlet

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/20/03	REVISED TITLE BLOCK. ADDED PN's FOR CLARITY, CHANGED ALL MOUNTING BOLTS TO SAME SIZE. ADDED GROUNDING STUD FOR MOTOR. ADDED 4.75" DIM. FOR CLARITY, CHANGED TITLE BLOCK PER ECO 0103. CORRECTED QTY OF AN3-4A BOLT AND MS21044N3 NUT.	LA	JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC





NEXT ASSY.

APPROVED BY: LA

DATE: 10/20/03

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: AFT CONDENSER INSTALLATION

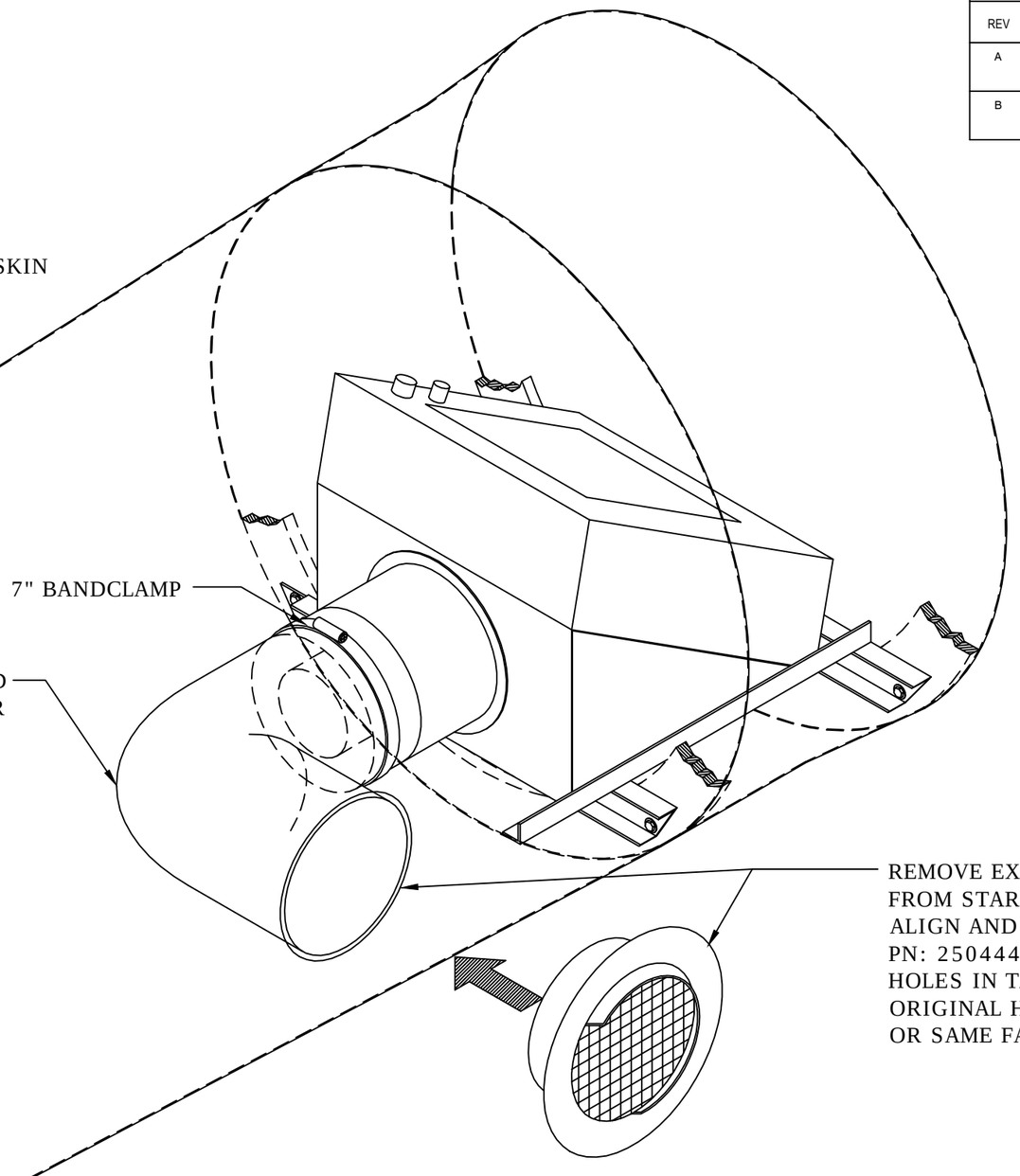
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

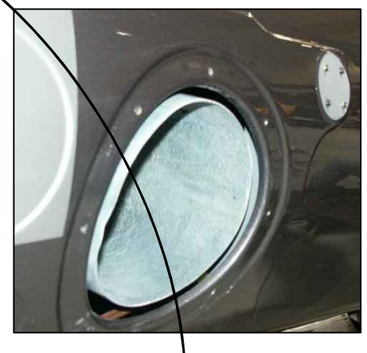
DWG. NO.: 7-1-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/20/03	REVISED INSTRUCTIONS TO INCLUDE HARDWARE OF ALTERNATE LENGTH. REVISED TITLE BLOCK.		JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC

PRE-INSTALLATION



SLIDE PN: 250444 THROUGH EXISTING OPENING ON STARBOARD SIDE OF TAILBOOM, FIT TUBE OVER 7" VANE AXIAL BLOWER. ATTACH WITH 7" BANDCLAMP. TRIM TO FIT ON EXTERIOR OF TAILBOOM.



REMOVE EXISTING COVER PLATE FROM STARBOARD SIDE OF TAILBOOM, ALIGN AND INSERT PN: 520001 INTO PN: 250444. MATCH DRILL TO HOLES IN TAILBOOM AND ATTACH WITH ORIGINAL HARDWARE FASTENERS, OR SAME FASTENERS OF APPROPRIATE LENGTH.

NEXT ASSY.

APPROVED BY:

DATE:

TOLERANCES EXCEPT AS SHOWN

.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
AFT CONDENSER EXHAUST INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

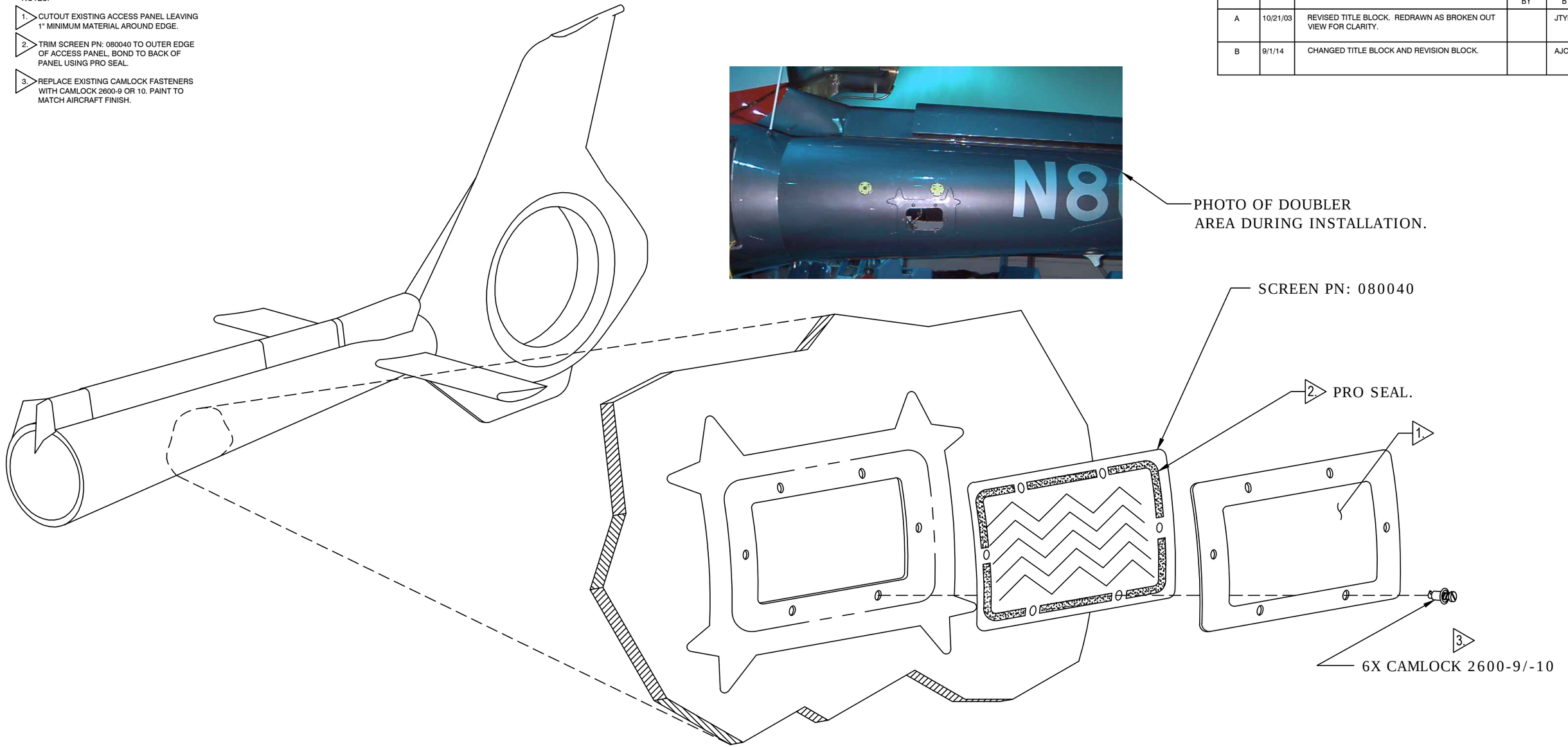
DWG. NO.: 7-2-EC130

NOTES:

1. CUTOUT EXISTING ACCESS PANEL LEAVING 1" MINIMUM MATERIAL AROUND EDGE.
2. TRIM SCREEN PN: 080040 TO OUTER EDGE OF ACCESS PANEL, BOND TO BACK OF PANEL USING PRO SEAL.
3. REPLACE EXISTING CAMLOCK FASTENERS WITH CAMLOCK 2600-9 OR 10. PAINT TO MATCH AIRCRAFT FINISH.

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/21/03	REVISED TITLE BLOCK. REDRAWN AS BROKEN OUT VIEW FOR CLARITY.		JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC

PHOTO OF DOUBLER AREA DURING INSTALLATION.



NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
INSTALLATION AIR INLET DOUBLER

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC130 B4

DWG. NO.: 7-3-EC130

Step 7

Installation of Forward Evaporator

Installation of Forward Evaporator

STEP	PROCEDURE	MECH	INSP
7.1	Locate and install nut plate assembly, P/N 510373, on the right inside panel of the forward instrument console using 2 each, P/N CR3242-4-3, cherry max rivets. (Per Drawing 4-3-EC130 sheet 2 of 2)		
7.2	Position the forward evaporator, P/N 560004, and shim, P/N 261357, match drill the aft mounting flange to the mounting holes in the right side instrument console and nut pate assembly installed in step 7.1. Mount the forward evaporator using five each, P/N AN3-5A, and five each, P/N AN960-10, washers. (Ref photo 701)		
7.3	Locate the forward evaporator support bracket, P/N 260486-1, as shown in drawing 4-3-EC130 sheet 2 of 2. Remove rivet to allow the bracket to lay flat to the aircraft structure. Replace with, P/N CR3212-4-3, cherry max rivet.		
7.4	Remove two existing screws and match drill the aft flange on the forward evaporator support bracket, P/N 260486-1. Mount the bracket using the two original screws removed. (Ref photo 702)		
7.5	Match drill the flange on the forward evaporator support bracket to the forward evaporator lower mount. Locate the left hand lower evaporator mount to the forward mounting hole in the forward evaporator lower mount. Install three each AN3-4A bolts, 6 each AN960-10 washers and 3 each MS21044-N3 nuts. (Ref photo 703)		
7.6	Install the upper and lower evaporator braces, P/N 510379/510380, to the evaporator mount plate P/N 261363 using, 2 each P/N AN3-3A, bolt and 2 each P/N AN960-10 washer. Per Print 4-3-EC130 sheet 1 of 2.		

7.7	Drill holes in the forward side of the instrument console using the upper and lower bracket, P/N 510379/510380, as a guide. Install 2 each P/N AN970-3 washer and 2 each AN3-3A bolt inside of console. Install 2 each AN960-10 washer and 2 each P/N 21044-N3 nut outside console. (Ref photo 701) Print 4-3-EC130 sheet 1 of 2.		
7.8	Remove the forward evaporator after locating holes to facilitate hose install.		
7.9	Install the forward evaporator resistor assembly, P/N 050024-2, using screws. Per Print 4-3-EC130 sheet 1 of 2.		
7.10	Install the forward evaporator using the process described in steps 7.3 through 7.9. Per Print 4-3-EC130 sheet 1 of 2. Attach and route drain hose Per Print 4-4-EC130.		
7.11	Remove two screws from each side of the glare shield.		
7.12	Locate the left air outlet mount, P/N 250447, to the left side of the glare shield as per drawing 5-1-EC130. (Ref photo 704)		
7.13	Match drill the left air outlet assembly mounts to the existing glare shield mounting holes. Attach with screws removed from glare shield Per drawing 5-1-EC130.		
7.14	Install one, bolt, P/N AN3-4A, 2 ea. washer, P/N AN970-3, and nut, P/N MS21083-N3 Per drawing 5-1-EC130.		
7.15	Install the left air outlet assembly P/N 500001 using 3X A10K80 rivnuts and 3X AN525-10R7 screws per Print 5-1-EC130.		
7.16	Locate the right air outlet assembly mount, P/N 250448, to the right side of the glare shield as per drawing 5-1-EC130. (Ref photo 705)		
7.17	Match drill the right air outlet assembly mount to the existing glare shield mounting holes. Attach with screws removed from glare shield Per drawing 5-1-EC130.		
7.18	Install 1X bolt, P/N AN3-4A, 2X washer, P/N AN970-3, and 1X nut, P/N MS21083-N3 Per drawing 5-1-EC130.		

Air Distribution

STEP	PROCEDURE	MECH	INSP
7.19	Install the right air outlet assembly P/N 500002 using 3X A10K80 rivnuts and 3X AN525-10R7 screws per Print 5-1-EC130.		
7.20	Install 2 ½ inch flex hose from the outlets on the forward evaporator fan to the inlets on the left and right air outlets secure each end with a 2-½ inch band clamp. (Ref photo 706) Print 5-2-EC130.		
7.21	Install close out skirt panels, P/N 110018 & P/N 110019. Per Print 4-3-EC130.		

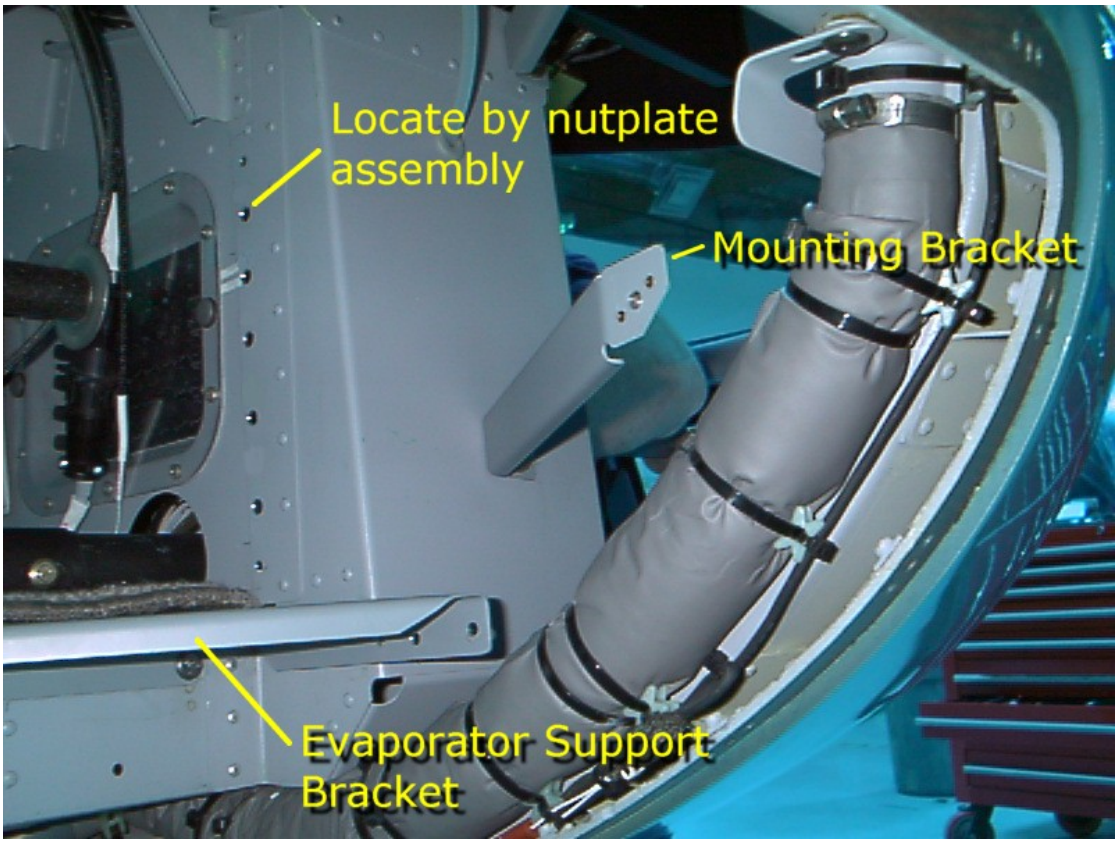


Photo 701

Forward Evaporator
Mounting Holes

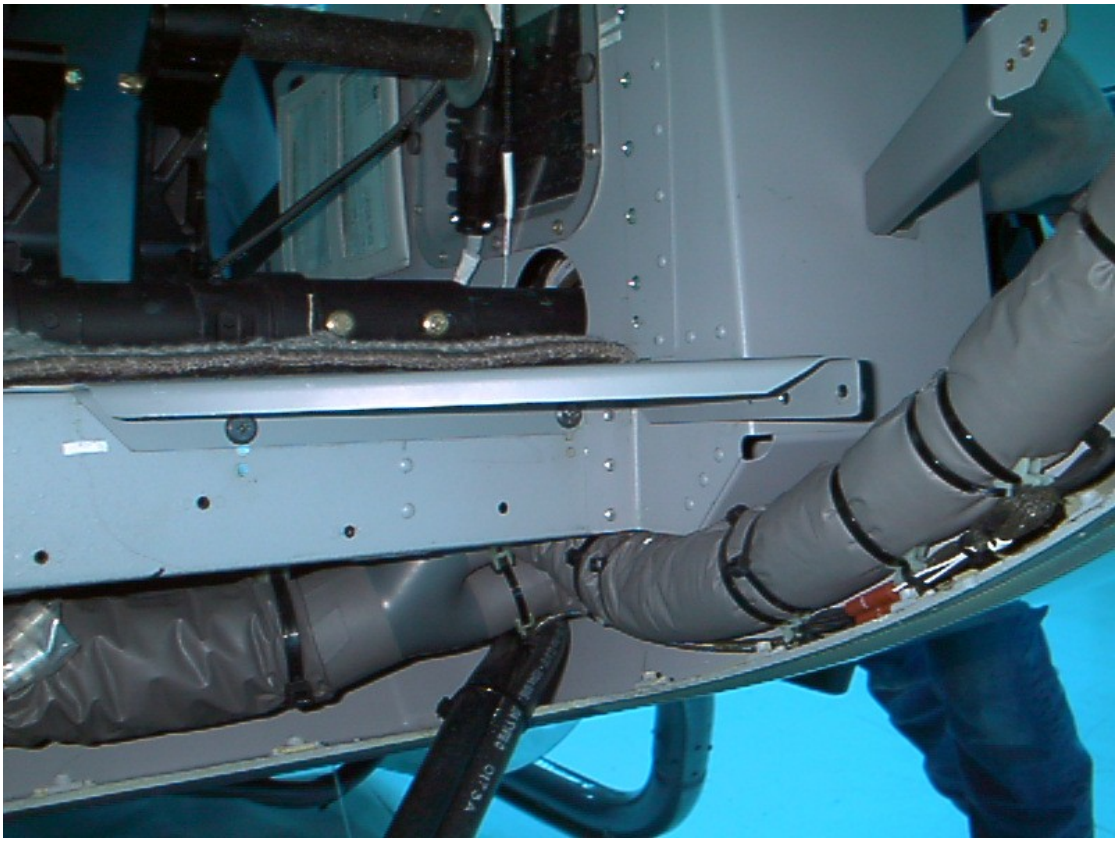


Photo 702

Forward Evaporator
Lower Support

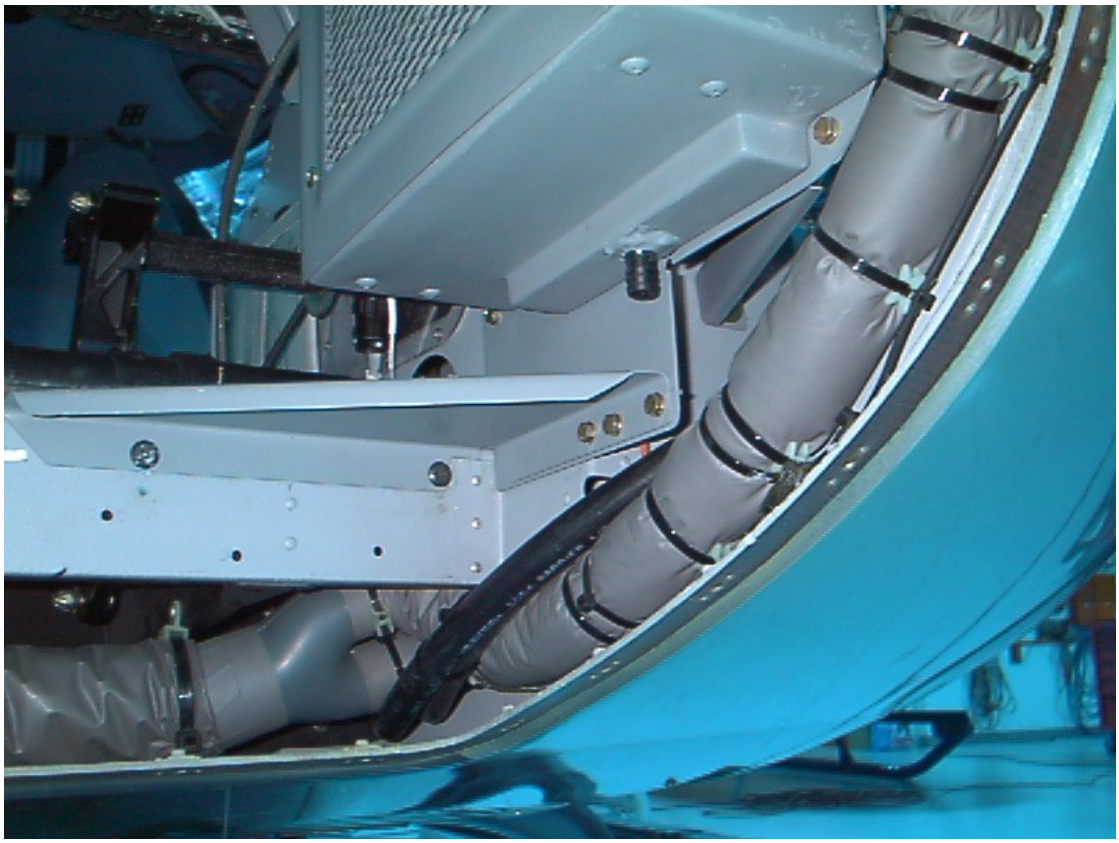


Photo 703

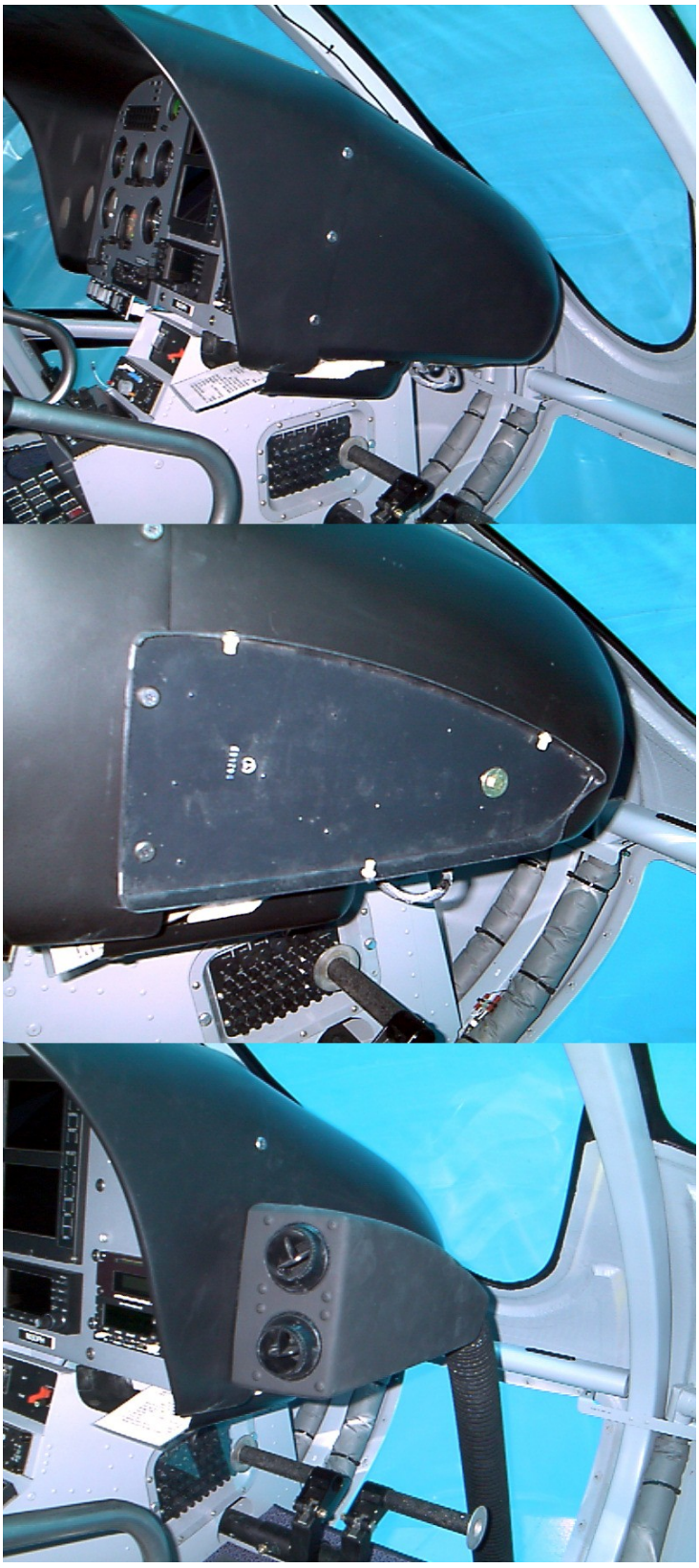
Forward Evaporator
Mounting

Photo 704

Left Hand Side Air Outlet Mounting

Photo 705

Connecting Air Tubes For Forward Air Outlets.



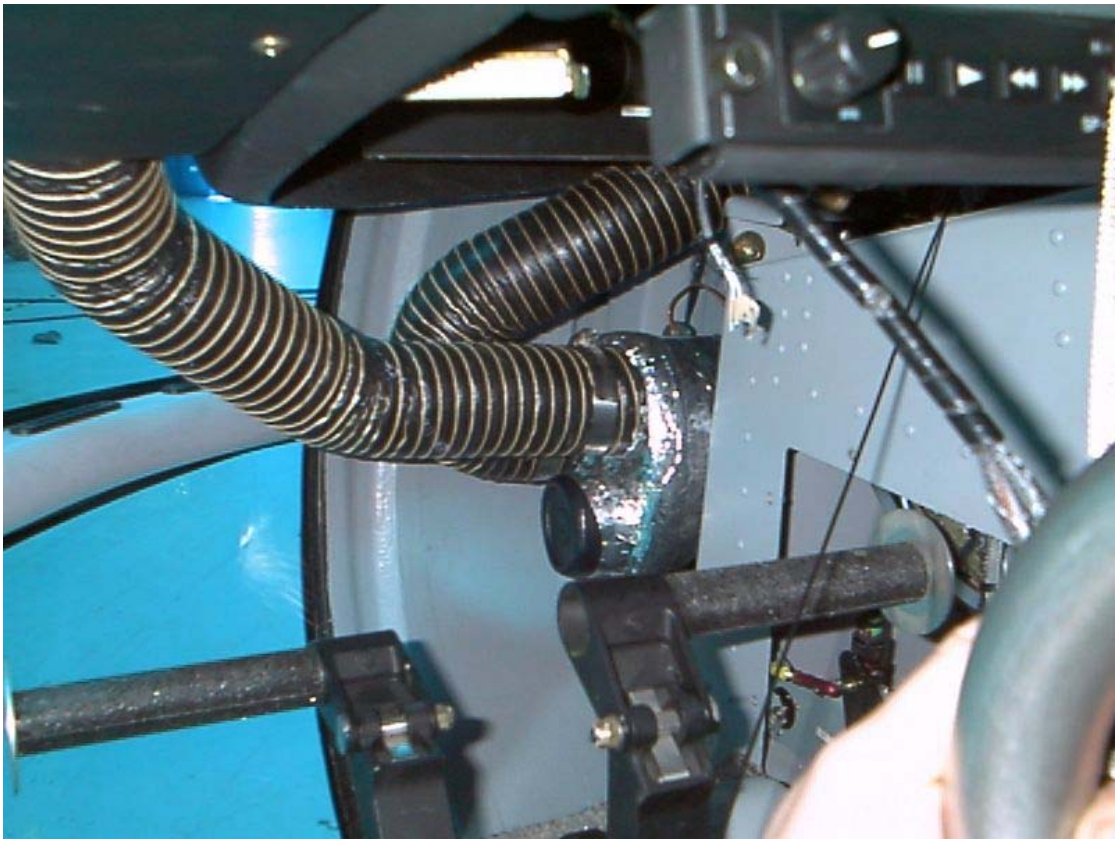


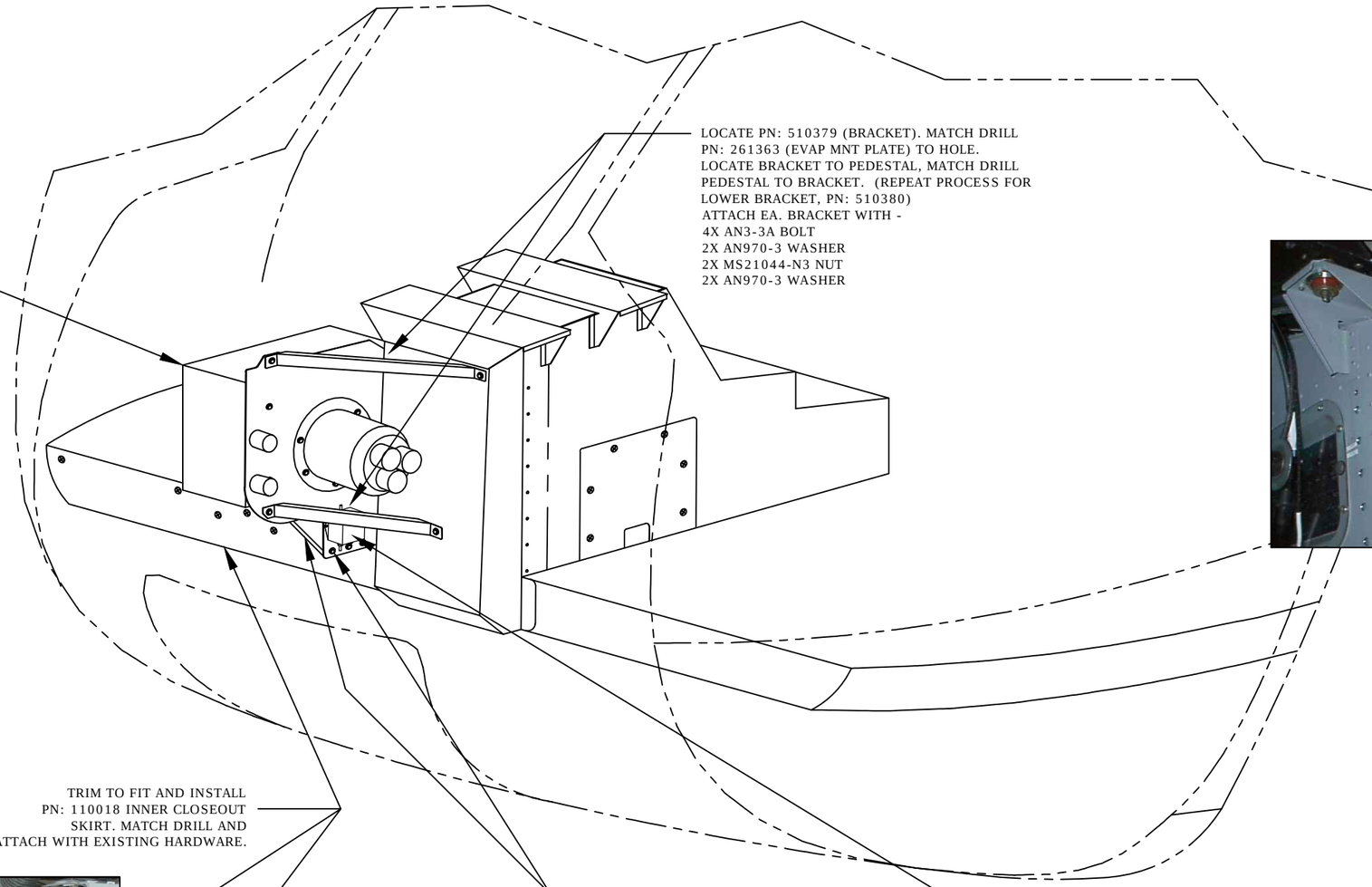
Photo 706

Connecting Air Tubes For
Forward Air Outlets.

NOTES:

MINOR HAND FORMING MAY BE NEEDED TO OBTAIN A FLUSH FIT FOR FASTENERS.

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	02/10/04	REVISED TITLE BLOCK. ADDED DETAIL "A" AND DIMENSIONS FOR CLARITY. MOVED RESISTOR PN:, IS NOW 540020. ADDED NOTE ABOUT HAND FORMING, CHANGED BOLT CALL OUT FROM: 2X AN3-5 TO: 2X AN3-3A AND FROM: 3X AN3-5A TO: 3X AN3-4A PER ECO 0101. ADDED AN970-3 WASHERS AND MS21044-N3 NUTS.	LA	GB
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0553.	-	AJC



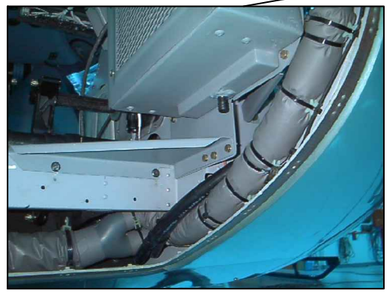
FORWARD EVAPORATOR ASSEMBLY PN: 560004.

LOCATE PN: 510379 (BRACKET). MATCH DRILL PN: 261363 (EVAP MNT PLATE) TO HOLE. LOCATE BRACKET TO PEDESTAL, MATCH DRILL PEDESTAL TO BRACKET. (REPEAT PROCESS FOR LOWER BRACKET, PN: 510380)
ATTACH EA. BRACKET WITH -
4X AN3-3A BOLT
2X AN970-3 WASHER
2X MS21044-N3 NUT
2X AN970-3 WASHER

BURNISHING REQUIREMENTS:
REMOVE PROTECTIVE FINISH LOCALLY FROM SURFACES WHERE EQUIPMENT MOUNTING HOLES ARE LOCATED, TO ASSURE A PROPER ELECTRICAL BOND MEASURING A MAXIMUM OF 2.5 MILLIOHMS.

TRIM TO FIT AND INSTALL PN: 110018 INNER CLOSEOUT SKIRT. MATCH DRILL AND ATTACH WITH EXISTING HARDWARE.

VIEW OF ACTUAL INSTALL



LOCATE PN: 260486-1 (SUPPORT). MATCH DRILL TO EXISTING HOLES IN AIRFRAME. ATTACH WITH - ORIGINAL HARDWARE.
LOCATE AND DRILL PN: 260486-1 (SUPPORT) TO PN: 261363 (EVAP MNT PLATE) AND ATTACH WITH
3X AN3-4A BOLT
6X AN960-10 WASHER
3X MS21044N3 NUT

OPTIONAL INSTALL FOR NOISE REDUCTION WHEN BRUSHLESS MOTORS ARE INSTALLED; P/Ns: IFSS 050143 DCB, -1 DCB, -2 DCB, AND -3 DCB.
INSTALL THE FOLLOWING, MAINTAINING BURNISHING REQ:
13619-RF16883 (EMI FILTER) 2EA
MS27039-0807 (SCREW) 4EA
NAS620-8L (WASHER) 4EA

NEXT ASSY.
4-3-EC130 SH 2 OF 2

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
FORWARD EVAPORATOR INSTALL

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 2

APPLICATION: EC 130 B4

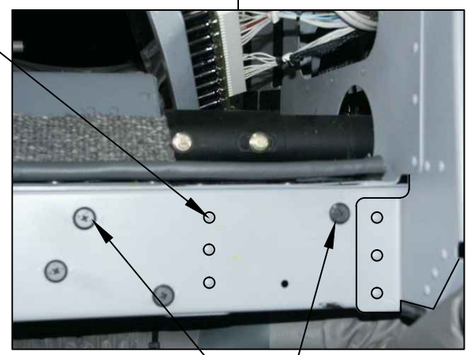
DWG. NO.: 4-3-EC130

ALIGN EDGE OF PN: 510373 TO SIT FLUSH
ON BACKSIDE OF PANEL (NOT ON OVERLAPPED SKIN)
AND FLUSH BOTTOM TO FLOOR. MATCH DRILL TO
INSTRUMENT PEDESTAL. ATTACH AT EACH END WITH
2X CR3212-4-3 RIVET.

MATCH DRILL PN: 261357 (MOUNT SHIM) AND
PN: 261363 (MOUNT PLATE) TO HOLES IN
INSTURMENT PEDESTAL, ALIGN SHIM TO BE
FLUSH WITH PLATE, AND ATTACH WITH
5X AN3-5A BOLT
5X AN960-10 WASHER

AFTER MOUNT PLATE IS INSTALLED, MATCH DRILL
PN: 260486-1 SUPPORT TO AIRFRAME, LOCATE AND
DRILL 3X #10 HOLES IN TAB AND PN: 261363
MOUNT PLATE. ATTACH TO MOUNT PLATE WITH-
3X AN3-4A BOLT
6X AN960-10 WASHER
3X MS21044N3 NUT
SECURE TO EXISTING AIRFRAME WITH
ORIGINAL HARDWARE REMOVED FOR DRILLING.

REPLACE EXISTING
BUTTON HEAD RIVET
WITH FLUSH HEAD
CCR3212-4-03 RIVET,
(TOP RIVET ONLY).



TRIM TO FIT AND INSTALL
PN: 110019 OUTER CLOSEOUT
SKIRT. MATCH DRILL AND
ATTACH WITH EXISTING HARDWARE.

REMOVE AND MATCH DRILL PN:260486-1. TRIM REAR
TAB AROUND PEDESTAL TAB IN THE RIGHT CORNER.
TOP OF PLATE FLUSH WITH TOP OF DECK.

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
FORWARD EVAPORATOR INSTALL

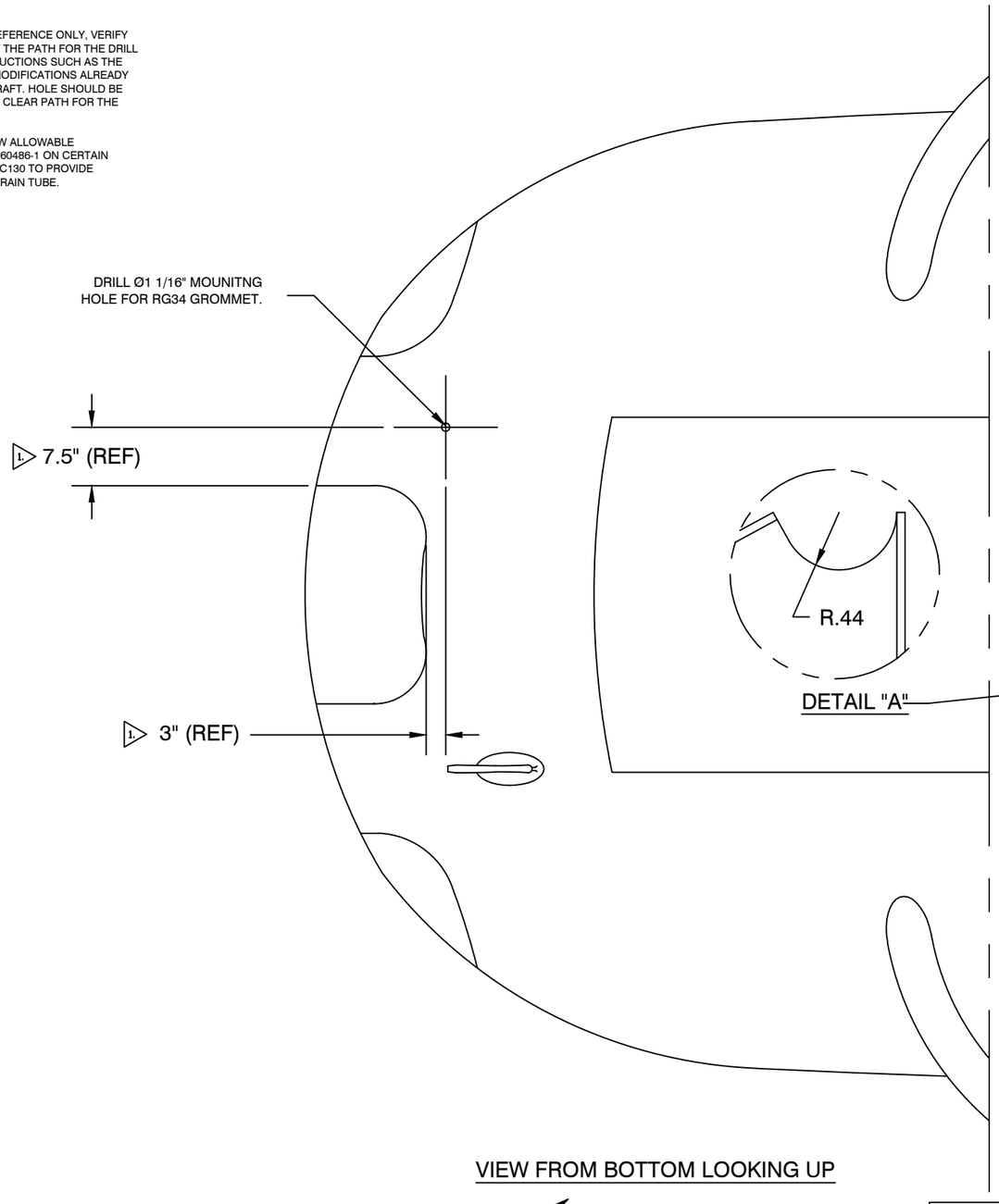
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	2 OF 2

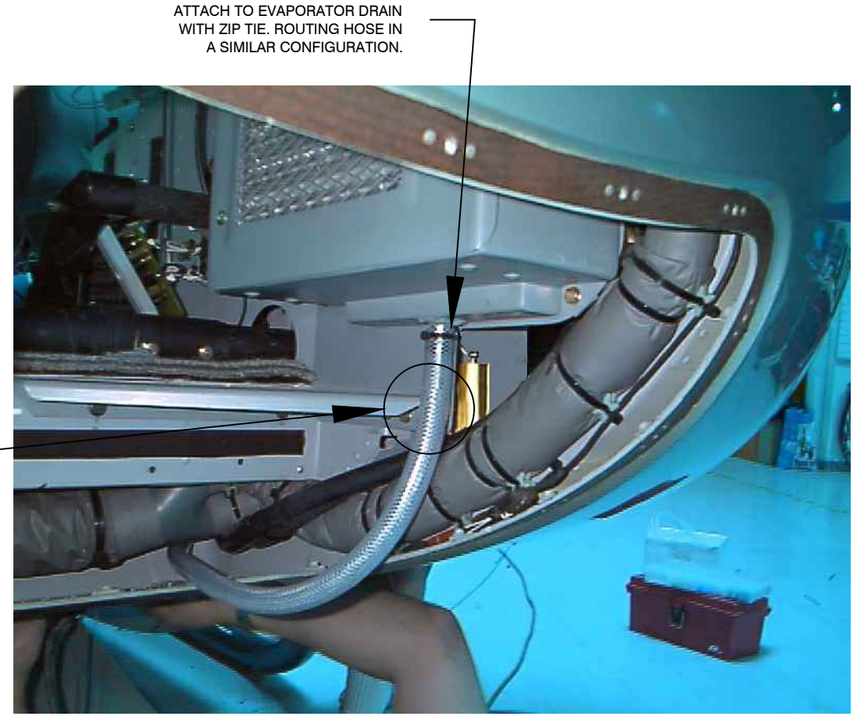
APPLICATION:	DWG. NO.:
EC 130 B4	4-3-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.	-	AJC

NOTES:

1. DIMENSION ARE FOR REFERENCE ONLY, VERIFY BEFORE DRILLING THAT THE PATH FOR THE DRILL BIT IS CLEAR OF OBSTRUCTIONS SUCH AS THE AIRCRAFT FRAME, OR MODIFICATIONS ALREADY EXISTING ON THE AIRCRAFT. HOLE SHOULD BE LOCATED TO ENSURE A CLEAR PATH FOR THE DRAIN HOSE.
2. SEE DETAIL "A" TO SHOW ALLOWABLE MODIFICATION TO PN: 260486-1 ON CERTAIN CONFIGURATIONS OF EC130 TO PROVIDE CLEARANCE FOR THE DRAIN TUBE.





NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: FWD DRAIN HOSE INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	10/28/03	A	N/A	1 OF 1

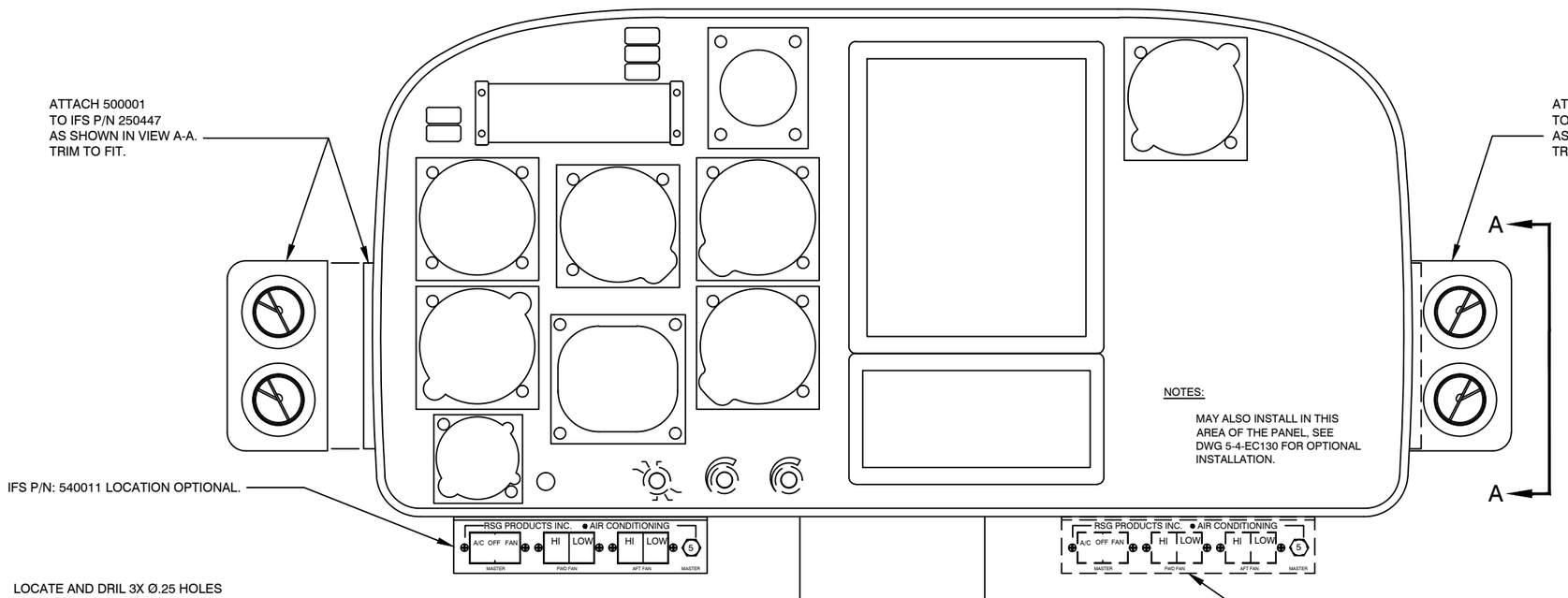
APPLICATION: EC 130 B4

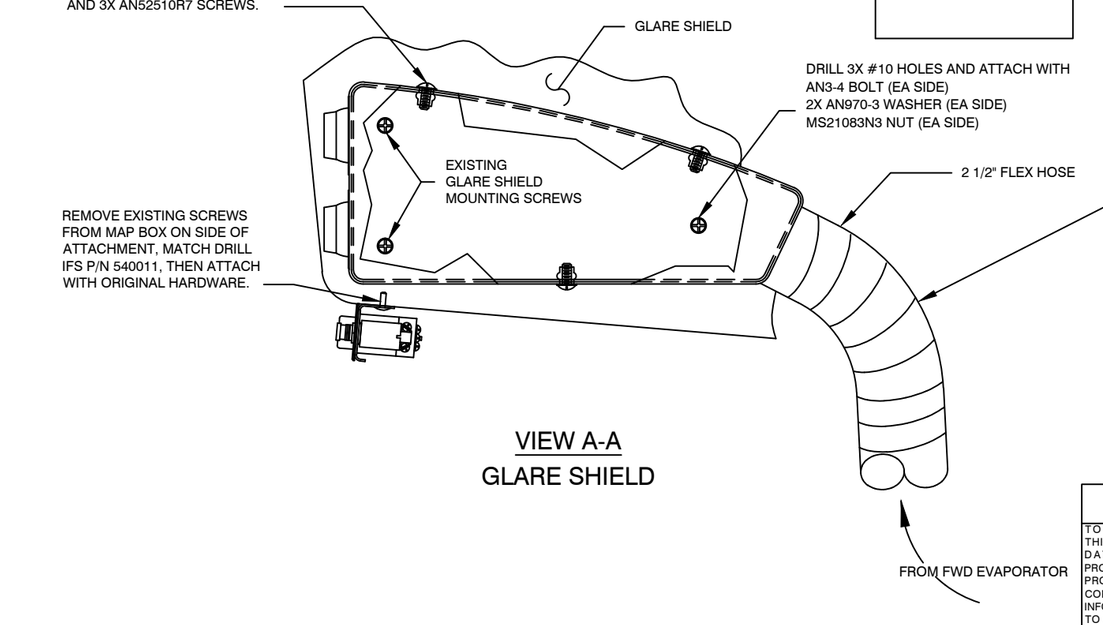
DWG. NO.: 4-4-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	12/05/03	ADDED ALTERNATE LOCATION AND DWG NOTE.	LA	JTYE
B	05/28/09	REVISED TITLE BLOCK.	MLD	JTYE
C	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC

AIR OUTLET INSTALLATION

VIEW LOOKING FORWARD AT INSTRUMENT PANEL





VIEW A-A
GLARE SHIELD

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

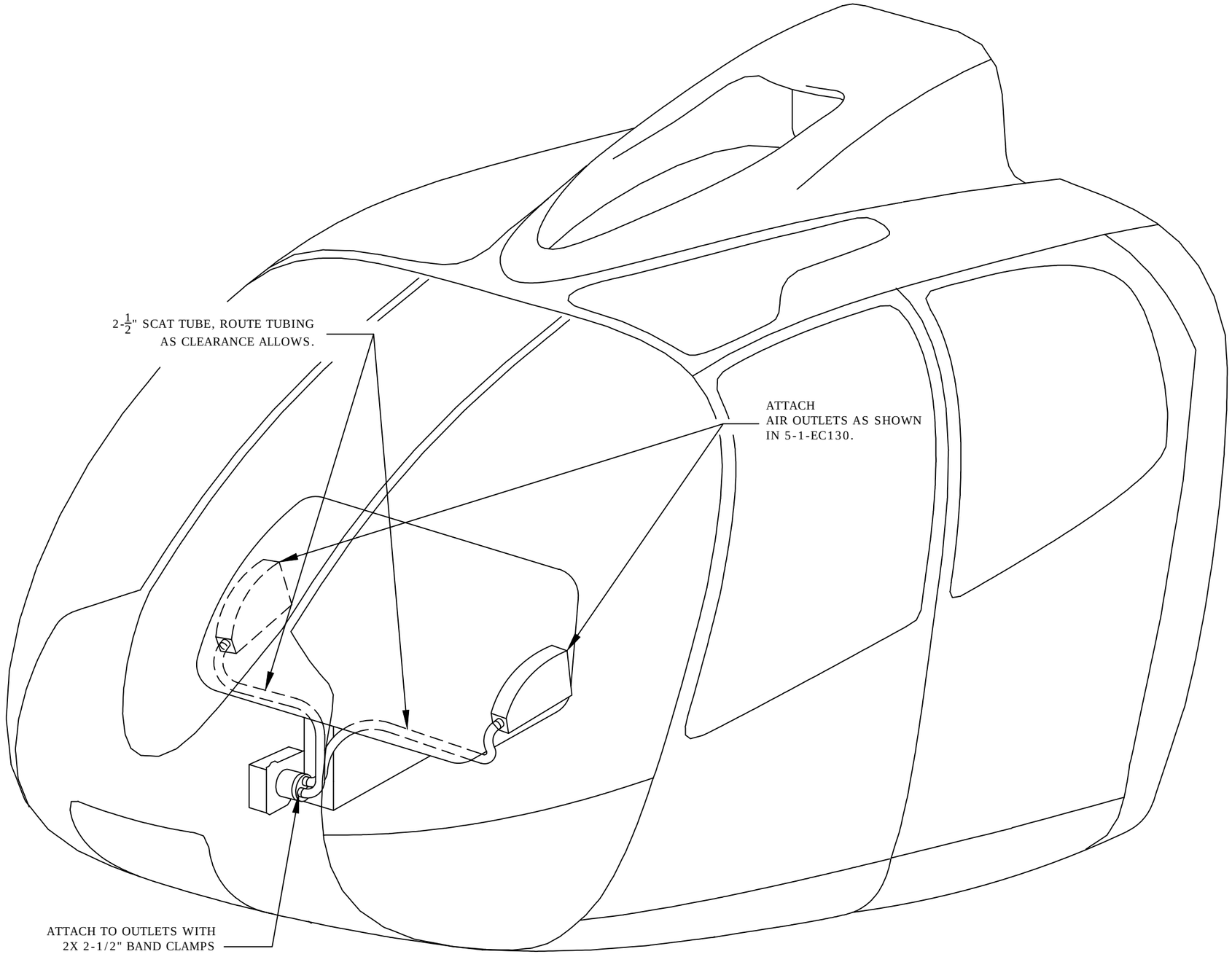
TITLE:
AIR DISTRIBUTION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 5-1-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	05/28/09	REVISED TITLE BLOCK.	MLD	JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

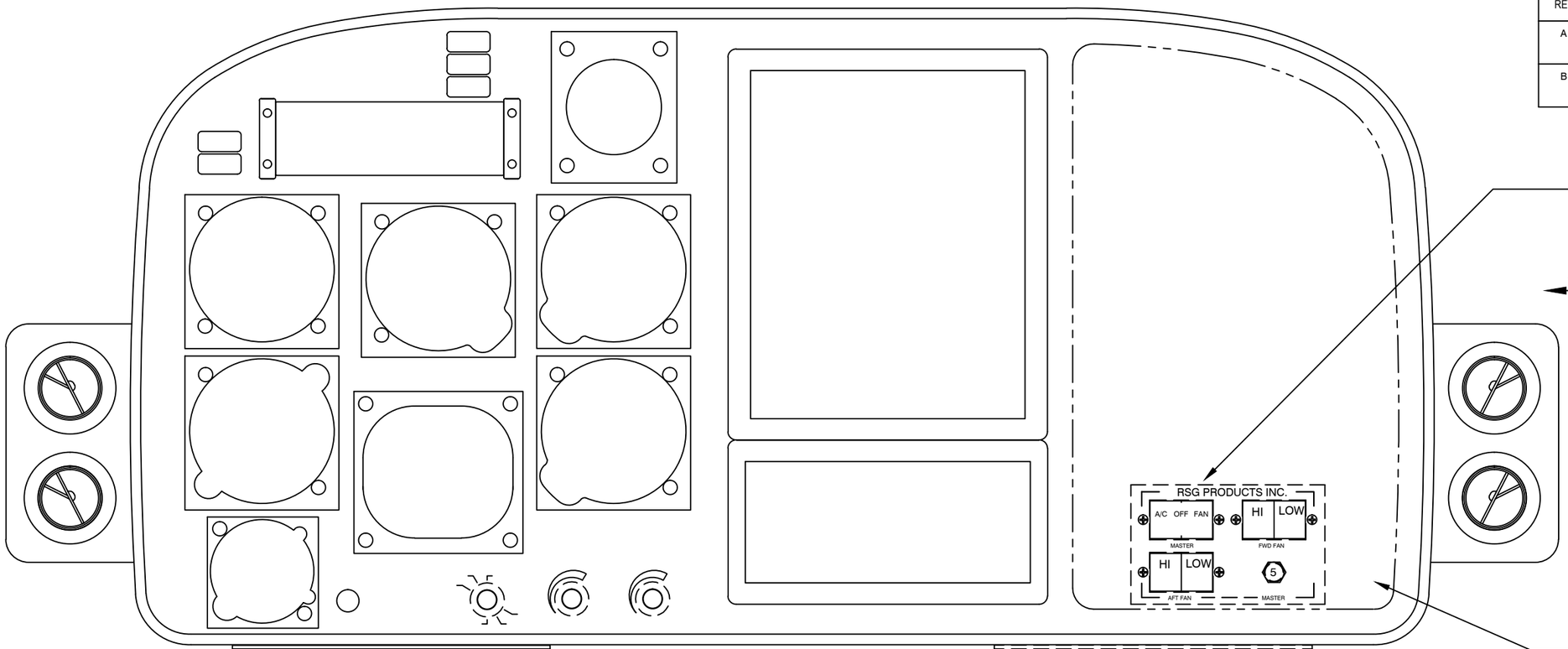
TITLE:
AIR DISTRIBUTION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 5-2-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	05/28/09	REVISED TITLE BLOCK. ADDED OPTIONAL SWITCH LOCATION AS SHOWN IN FLIGHT MANUAL SUPPLEMENT.	MLD	JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



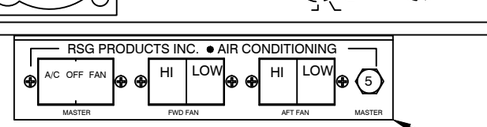
IFS P/N: 120152 LOCATE AS TO NOT OBSTRUCT OTHER INSTRUMENTATION USE PLACARDS AS TEMPLATE FOR DRILLING DO NOT USE PLACARD AS JIG FOR DRILLING.

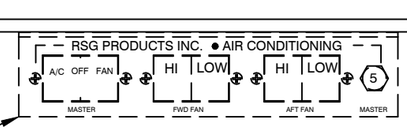
ATTACH WITH EXISTING HARDWARE FROM PN: 540011.

A

INSTALLATION PERMISSABLE IN THIS AREA, ALLOWING FOR OTHER COMPONENT INSTALLATIONS.

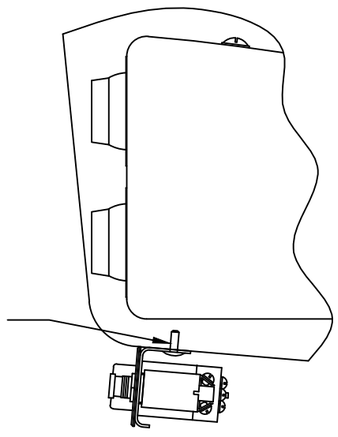
A





IFS P/N: 540011
LOCATION OPTIONAL.

REMOVE EXISTING SCREWS FROM MAP BOX ON SIDE OF ATTACHMENT, MATCH DRILL IFS P/N 540011, THEN ATTACH WITH ORIGINAL HARDWARE.



VIEW A-A

NEXT ASSY.

APPROVED BY: MLD

DATE: 05/28/09

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: A/C INSTRUMENTATION CONFIGURATIONS

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	12/03/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 5-4-EC130

Step 8

Installation of Compressor

Installation of Compressor

STEP	PROCEDURE	MECH	INSP
8.0	**NOTE: MUST BE PERFORMED IN ACCORDANCE WITH CURRENT EUROCOPTER TECHNICAL DATA.**		
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, P/N 060005.		
8.6	Reassemble the Thomas coupling per **AEC Specifications. Torque and Safety Coupling!! Torque Mark all bolts.**		
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. **NOTE: THE CURRENT BELT HAS NO SPECIFIC DIRECTION OF ROTATION.**		
8.8	Install the "Gimble Ring" pins and cotter pins. Remove supports.		
8.9	Installation of Bracket Kit P/N 130-11-031 in accordance with drawing numbers: 6-1-EC130, 6-2-EC130 and 6-3-EC130.		
8.10	Install the forward compressor bracket, P/N 300067-1, and compressor standoffs, P/N 261007 and Compressor P/N 590008-1. Per drawing numbers: 6-1-EC130, 6-2-EC130 and 6-3-EC130.		

Installation of Compressor

STEP	PROCEDURE	MECH	INSP
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 has approximately 30 pounds of tension. Tighten the lower forward mounting bolt. (Ref photo 802).		
8.12	This tension may be performed by either pull scale or measuring belt deflection.		
8.13	30 lbs pull tension at tension adjustment bolt should provide adequate belt tension. Verify tension .25 inch deflection at mid span of belt with 10 lbs pull on belt. Per drawing number 6-5-EC130.		

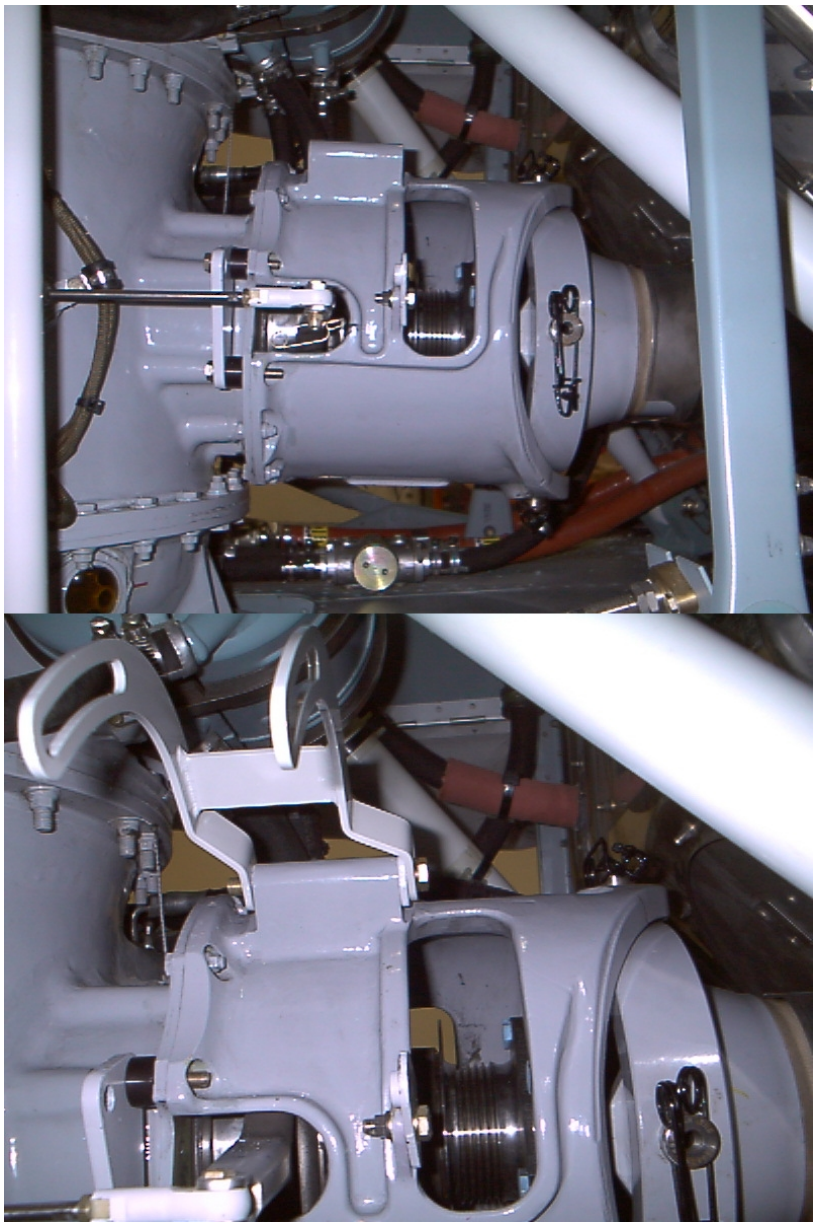


Photo 801

Compressor Bracket Installation

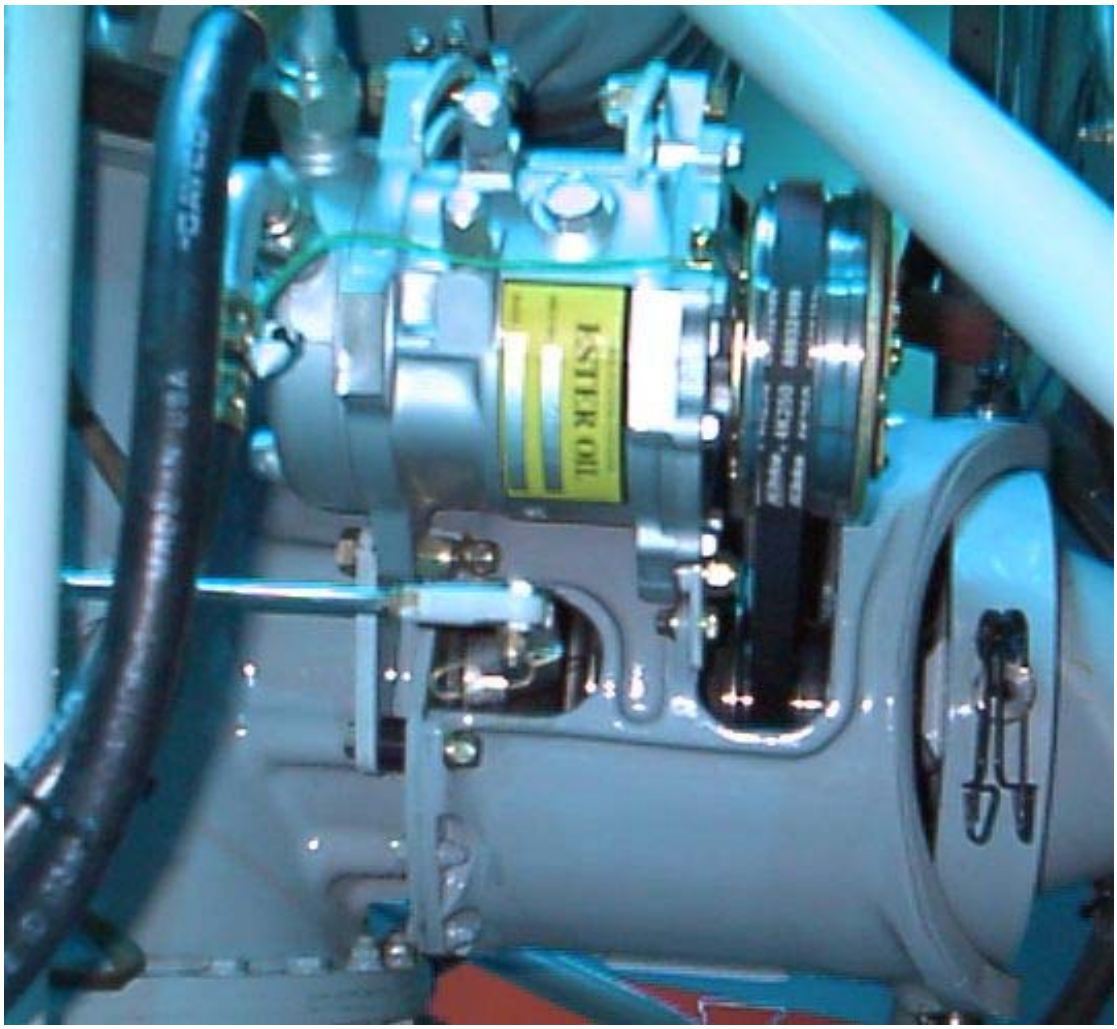


Photo 802

Compressor installation

INSTALLATION INSTRUCTIONS

1) THE ABOVE KIT UTILIZES THE COMPRESSOR P/N: 590008-1.

2) THE BELT P/N:060005 IS USED 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: 261007 BETWEEN THE "STAND OFF" P/N: 300067-1 AND THE TRANSMISSION HOUSING. TWO (2) EACH AN4-14A BOLTS MUST BE USED.

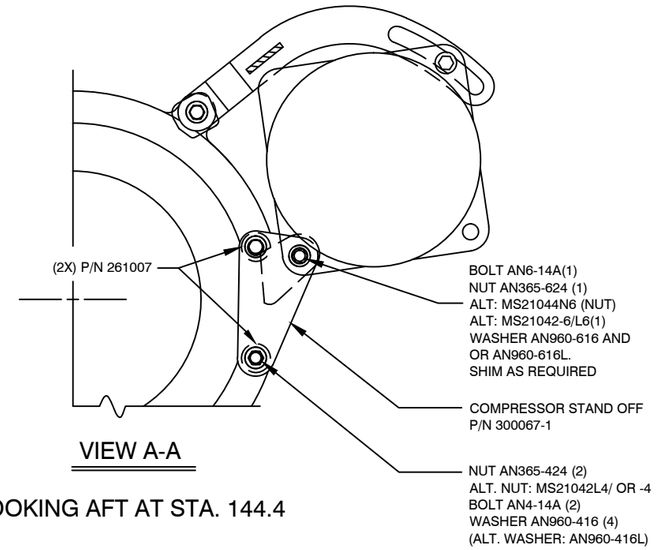
6) THE FORWARD, UPPER INBOARD COMPRESSOR EAR IS ALIGNED WITH THE COMPRESSOR UNIT ASSEMBLY BY PLACING A "BUSHING", P/N 261008 BETWEEN THE AFT SIDE OF THE EAR AND THE MOUNT ASSEMBLY.

7) AN6-12A BOLTS ARE USED TO ENSURE BELT TENSION. A MINIMUM THREAD PROTRUSION ON THE FORWARD UPPER BOLT REQUIRES THAT A STEEL SELF LOCKING NUT P/N: MS20364-624C OR ALTERNATE MUST BE UTILIZED.

8) FOR ALTERNATE INSTALL USING 04-130-21-101-01 BRACKET SEE -02 CONFIGURATION ON SHEET 2.

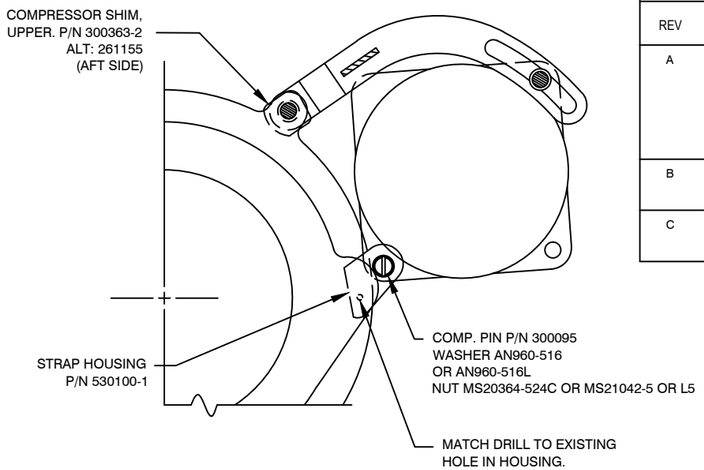
9) REAM BUSHING IN 530100-1 STRAP HOUSING FOR PROPER FIT OF 300095 PIN USING REAMING TOOL RANGE (.302-N TO .3594-23/64).

10) AFTER REAMING, USE CORROSION PROTECTANT.



VIEW A-A

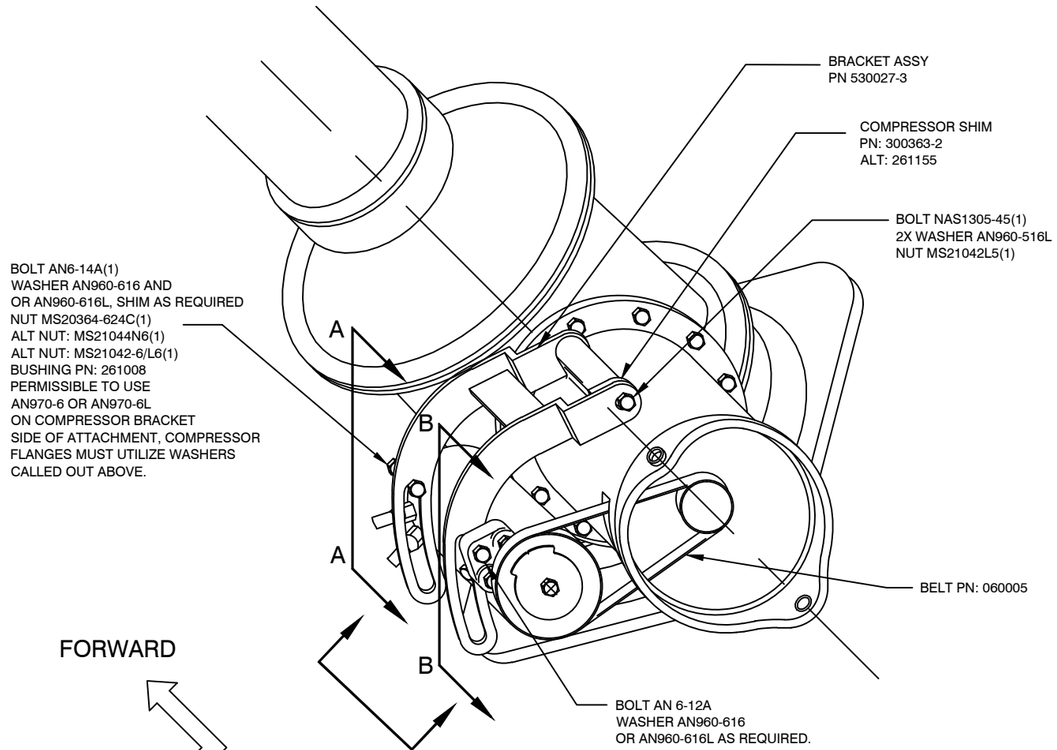
LOOKING AFT AT STA. 144.4



VIEW B-B

LOOKING AFT

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/30/06	REVISED PART NO's AND INSTRUCTIONS TO MATCH. INCREASED BOLT LENGTH TO -45. WAS -44. ADDED ALTERNATE COMPRESSOR SHIM PART NO. 261155. DELETED ALTERNATE BELT PN. REMOVED BEVELED EDGE NOTATION. REMOVED ADDITIONAL PN:261007 AT WRONG LOCATION. CHANGED WASHER NOTES PER ECO # 0126.	-	JTYE
B	08/25/09	REVISED TITLE BLOCK. REMOVED ALTERNATE BELT PN: 060006, CHANGED NOTE 2 TO REFLECT ONLY 060005 BELT.	MLD	JTYE
C	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. ADDED ALTERNATE NUMBERS AND CONFIGURATION -02, AND REVISED NOTES PER ECO # 0262, 0375, & 0431.		AJC



SEE VIEW C
DWG 6-2-AS350

UTILIZED WITH:

1. EC 130 B4

QTY	ITEM	PART NUMBER	DESCRIPTION	Vendor
1	23	NAS1305-45	BOLT	
2	22	MS20364-624C	NUT (ALT. MS21044N6)	
1	21	MS20364-524C	NUT (ALT. MS21042L5/ OR -5)	
1	20	AN365-624	NUT (ALT. MS21044N6)	
1	19	MS21042L5	NUT	
2	18	AN365-424	NUT (ALT. MS21042L4/ OR -4)	
AR	17	AN960-616	WASHER (ALT. AN960-616L)	
3	16	AN960-516	WASHER (ALT. AN960-516L)	
4	15	AN960-416	WASHER (ALT. AN960-416L)	
1	14	AN6-12A	BOLT	
2	13	AN4-14A	BOLT	
2	12	AN6-14A	BOLT	
1	11	261008	BUSHING	
1	10	060005	BELT	
1	9	300363-2	COMPRESSOR SHIM	
1	8	530027-3	BRACKET ASSEMBLY	
2	7	261007	BUSHING	
1	6	300067-1	COMPRESSOR STAND OFF	
1	5	300363-2	COMPRESSOR SHIM (ALT. 261155)	
1	4	530100-1	STRAP HOUSING	
1	3	300095	COMPRESSOR PIN	
1	2	590008	COMPRESSOR	
--	1	-01	COMPRESSOR INSTALLATION	

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
COMPRESSOR INSTALLATION

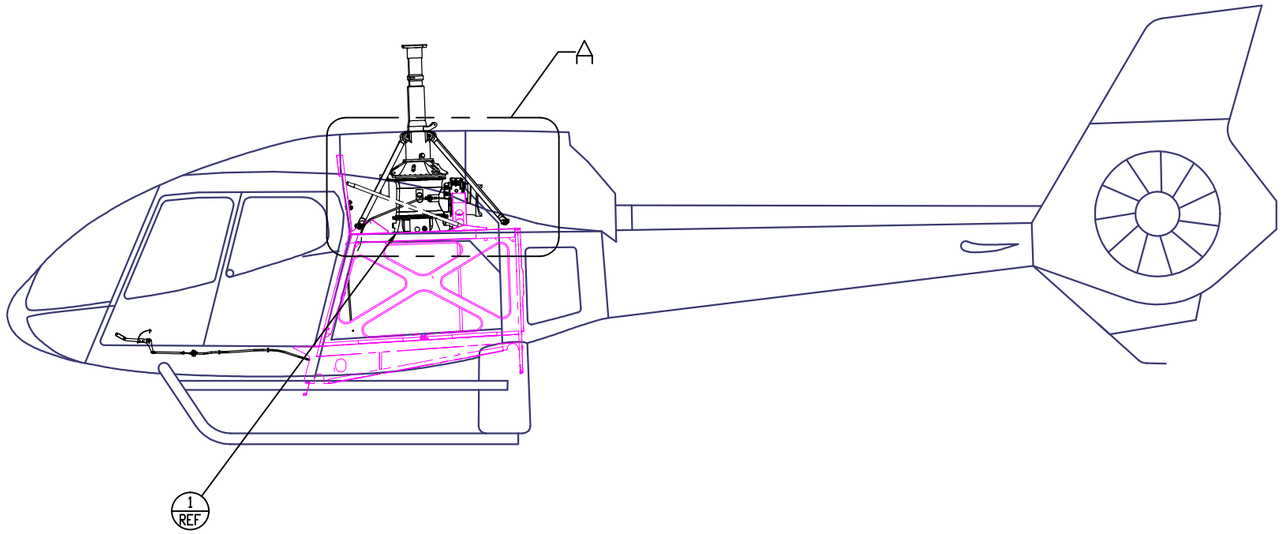
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	1 OF 4

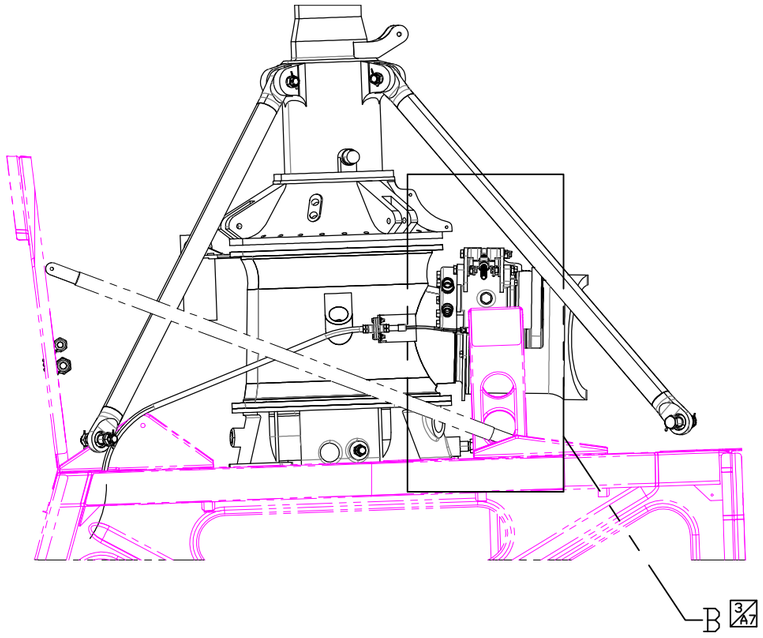
APPLICATION: EC 130 B4

DWG. NO.: 6-1-EC130

NOTES:

1. INSTALL HARDWARE IAW RSG AERODESIGN DOCUMENT NUMBER 20R00510001.
2. USE ITEM 4 TO TENSION BELT TO F= 30 LBS. DEFLECTION AT CENTER OF THE BELT TO BE .10 INCHES UNDER 5 LB LOAD.
3. TIGHTEN BOTH NUTS AGAINST THE COMP MOUNT TENSION BOLT. SAFETY WIRE NUTS USING ITEM 25 IAW MS33540
4. ENSURE PLANAR TOLERANCE BETWEEN THE TAIL ROTOR AND COMPRESSOR PULLEY CENTERLINE IS ±.100 INCHES. ALIGNMENT CAN BE ADJUSTED BY CHANGING THE WASHER STACKUP BETWEEN ITEM 9 & THE GEAR BOX COUPLING CASE.
5. REAM ITEM 11 BUSHING FOR PROPER FIT OF ITEM 10 PIN USING REAMING TOOL RANGE (.302-N TO .3594-23/64).
6. PERMISSIBLE TO USE ALTERNATE COTTER PIN TYPE HARDWARE: BOLT ANX-XX, NUT AN310-X, COTTER PIN MS24665-XXX.
7. IDENTIFY & MARK ASSEMBLY IAW RSG AERODESIGN DOCUMENT NUMBER 20R00110001. LOCATION, CHARACTER HEIGHT & PROCESS AS REQUIRED. MARK IN CONTRASTING COLOR.





DETAIL A

(SOME A/C STRUCTURES REMOVED FOR CLARITY)

AFT

QTY	ITEM	PART NUMBER	DESCRIPTION	Vendor	WEIGHT
6	26	NAS1149D0632H	WASHER		
2	25	NAS1149D0532H	WASHER		
4	24	MS21042L6	NUT		
2	23	MS21042L5	NUT		
2	22	MS21042L4	NUT		
A/R	21	MS20995C32	SAFETY WIRE		
2	20	AN960-616L	WASHER		
1	19	AN960-516L	WASHER		
4	18	AN960-416	WASHER		
1	17	AN6-33A	BOLT		
1	16	AN6-14A	BOLT		
2	15	AN6-13A	BOLT		
1	14	AN5-34A	BOLT		
2	13	AN4-14A	BOLT		
1	12	590008	COMPRESSOR		12.85 LB
1	11	530100-1	STRAP HOUSING		
1	10	300095	PIN		
1	9	300067-1	COMPRESSOR STAND OFF		
2	8	261007	BUSHING		
1	7	2434K39	THREADED ROD END	McMASTER CARR	
1	6	060018-1	BELT		
2	5	04-130-21-105-01	COMPRESSOR CLAMP		
2	4	04-120-21-104-01	JAM NUT, DRILLED		0.02
1	3	04-130-21-102-01	COMP MOUNT TENSION BOLT		
1	2	04-130-21-101-01	COMPRESSOR MOUNT BRACKET		0.52
--	1	-02	COMPRESSOR INSTALLATION		

△6 (ITEMS 24, 23, 22)

△6 (ITEMS 17, 16, 15, 14, 13)

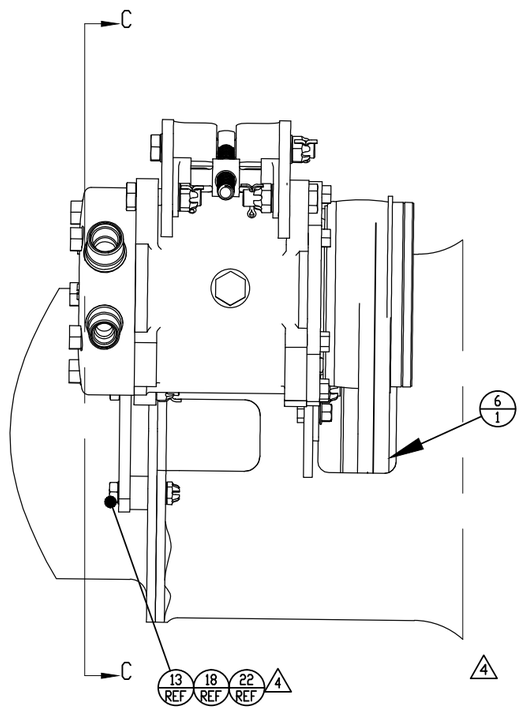
PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
COMPRESSOR INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	2 OF 4

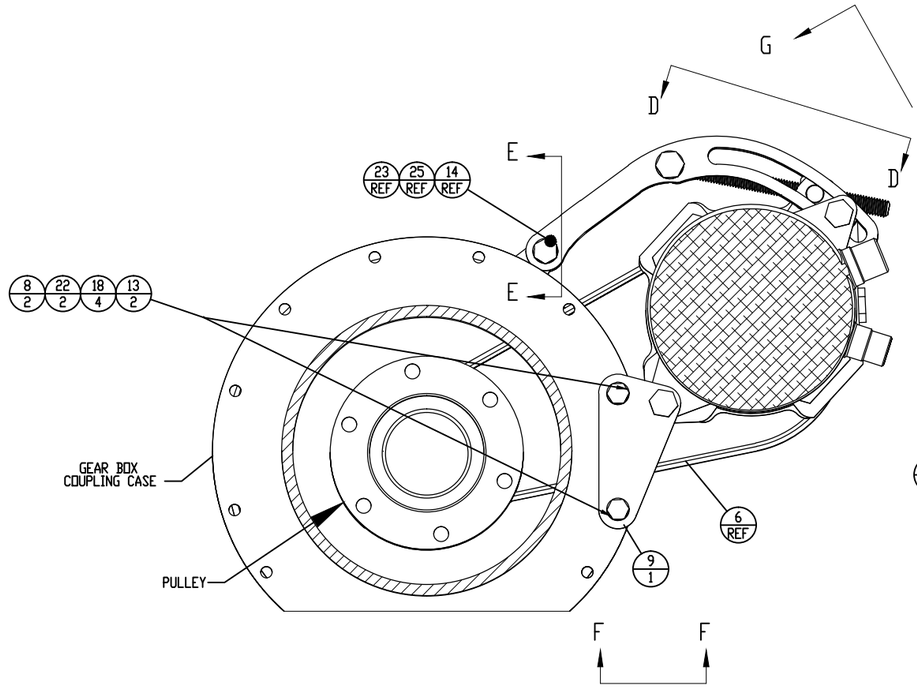
APPLICATION: EC 130 B4

DWG. NO.: 6-1-EC130



AFT ⇨ 6 DETAIL B 1/AS

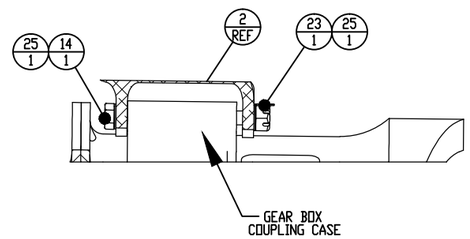
(SHOWN WITH COTTER PIN TYPE HARDWARE)



SECTION C-C 6

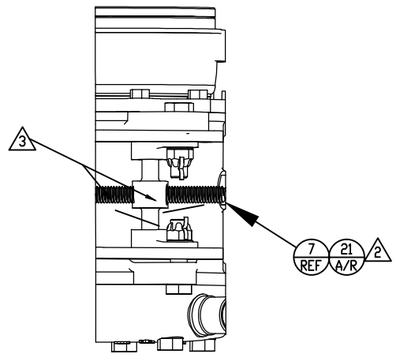
(VIEW LOOKING AFT)

(SHOWN WITH COTTER PIN TYPE HARDWARE)



SECTION E-E 6

(SHOWN WITH COTTER PIN TYPE HARDWARE)

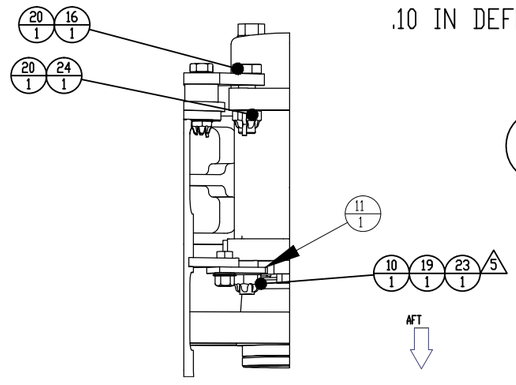


SECTION D-D 6

(VIEW LOOKING DOWN)

AFT

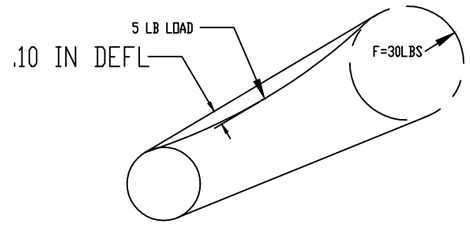
(SHOWN WITH COTTER PIN TYPE HARDWARE)



SECTION F-F 6

(VIEW LOOKING UP.)

(SHOWN WITH COTTER PIN TYPE HARDWARE)



2 BELT TENSIONING

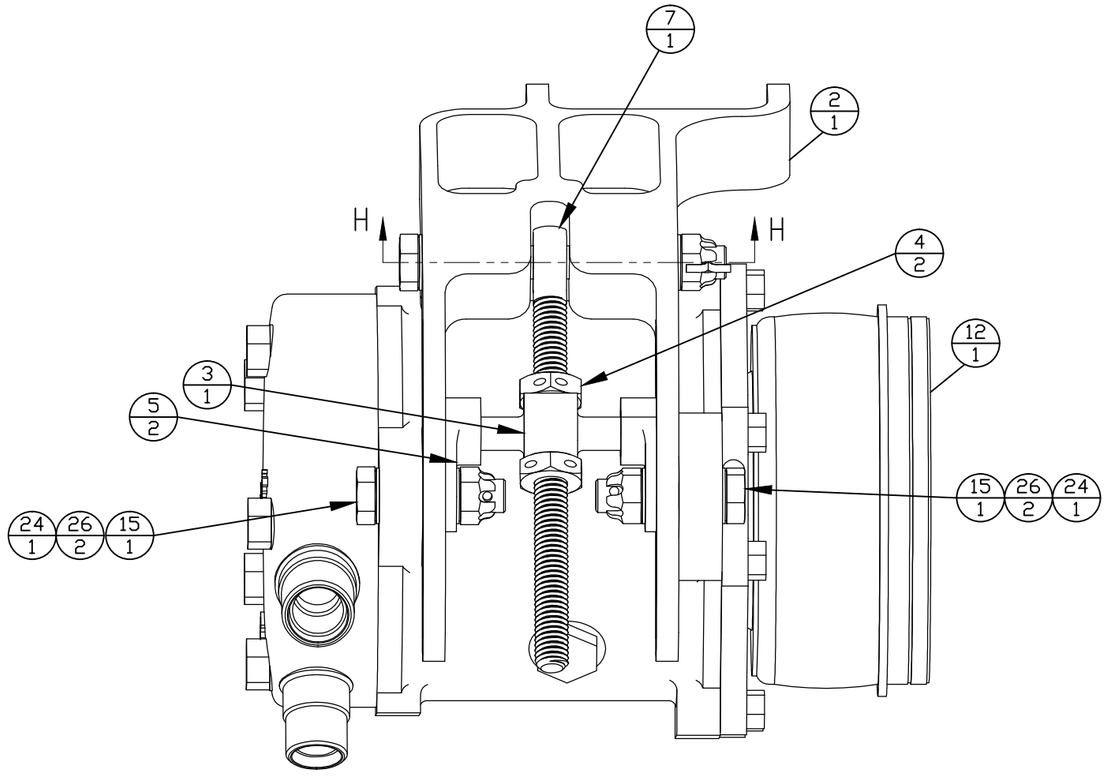
PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: COMPRESSOR INSTALLATION

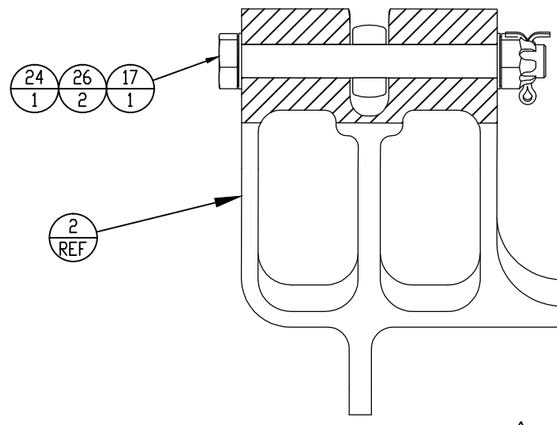
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	3 OF 4

APPLICATION: EC 130 B4

DWG. NO.: 6-1-EC130



VIEW G-G 6
(SHOWN WITH COTTER PIN TYPE HARDWARE)



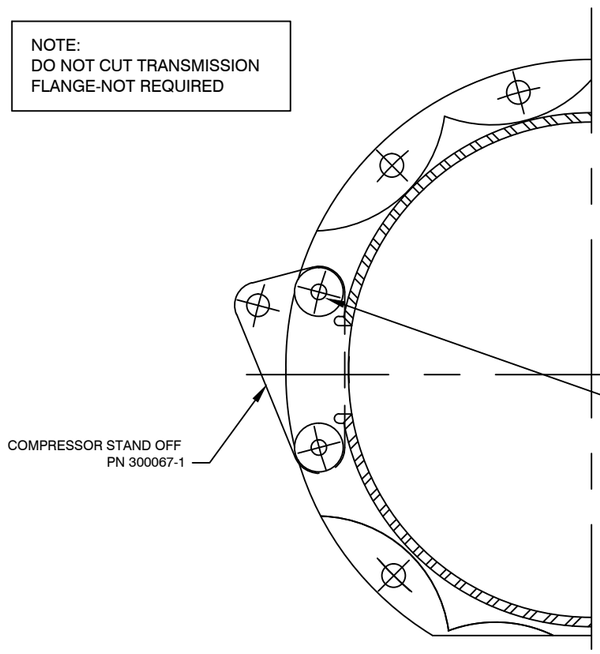
SECTION H-H 6
(SHOWN WITH COTTER PIN TYPE HARDWARE)

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

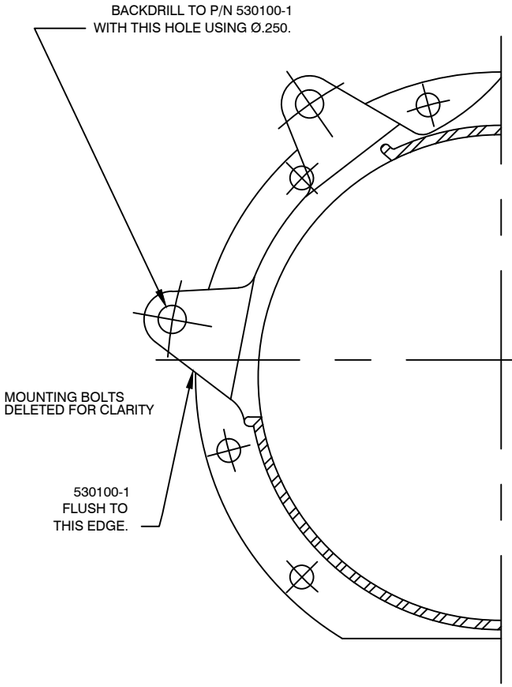
TITLE: COMPRESSOR INSTALLATION				
DRAWN BY: JTYE	DATE: 06/15/03	REV.: C	SCALE: N/A	SHEET: 4 OF 4
APPLICATION: EC 130 B4				DWG. NO.: 6-1-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/30/06	REVISED TITLE BLOCK. REMOVED BEVELED EDGE NOTATION. ADDED SHIM NOTES. REMOVED ADDITIONAL PN:261007 AT WRONG LOCATION. PER ECO # 106. REVISED PN's FOR ACCURACY.		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. REVISED PART NUMBERS UNDER CALL OUTS PER ECO #'s 0262 & 0375.		AJC

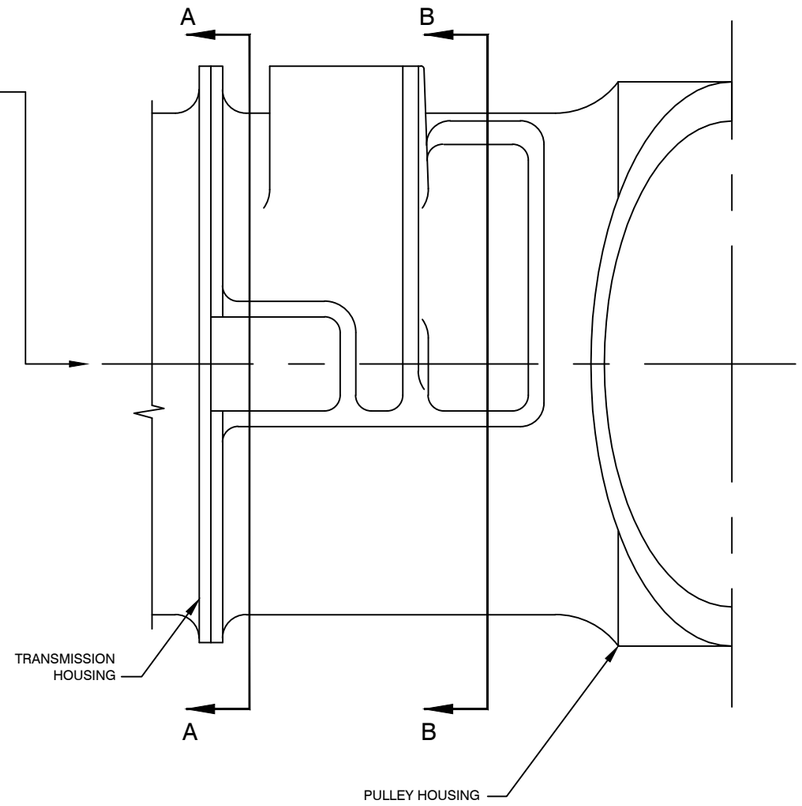
NOTE:
DO NOT CUT TRANSMISSION FLANGE-NOT REQUIRED



SECTION A-A

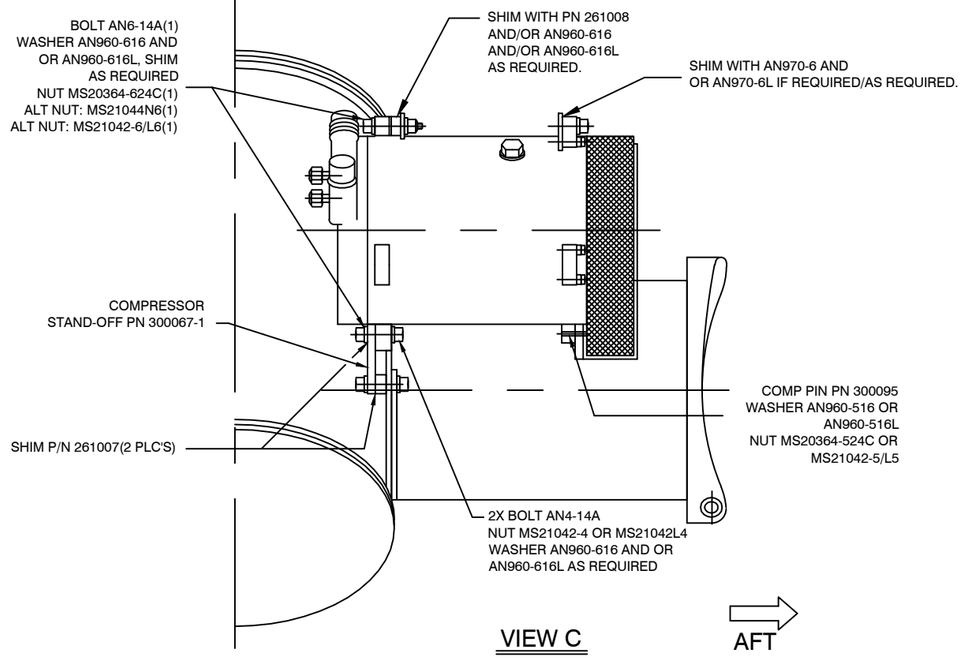


SECTION B-B



FORWARD
VIEW LOOKING INBOARD

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



VIEW C
REF 6-3-AS350

AFT

UTILIZED WITH:
1. EC 130 B4.

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

RSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
COMPRESSOR INSTALLATION

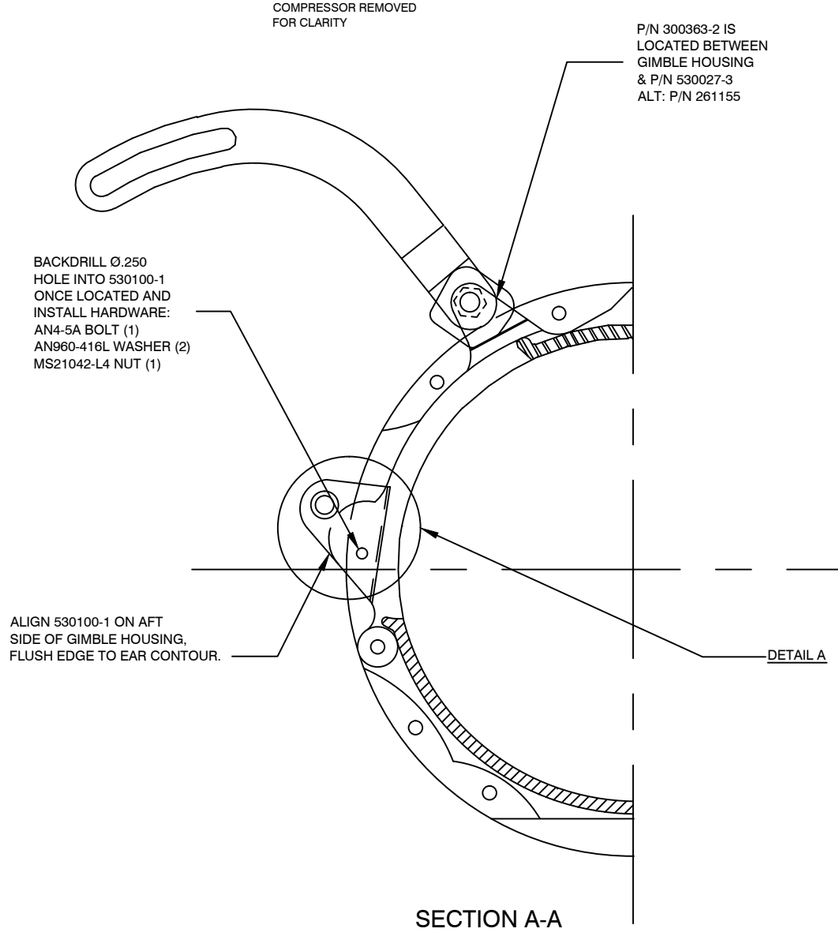
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4
DWG. NO.: 6-2-EC130

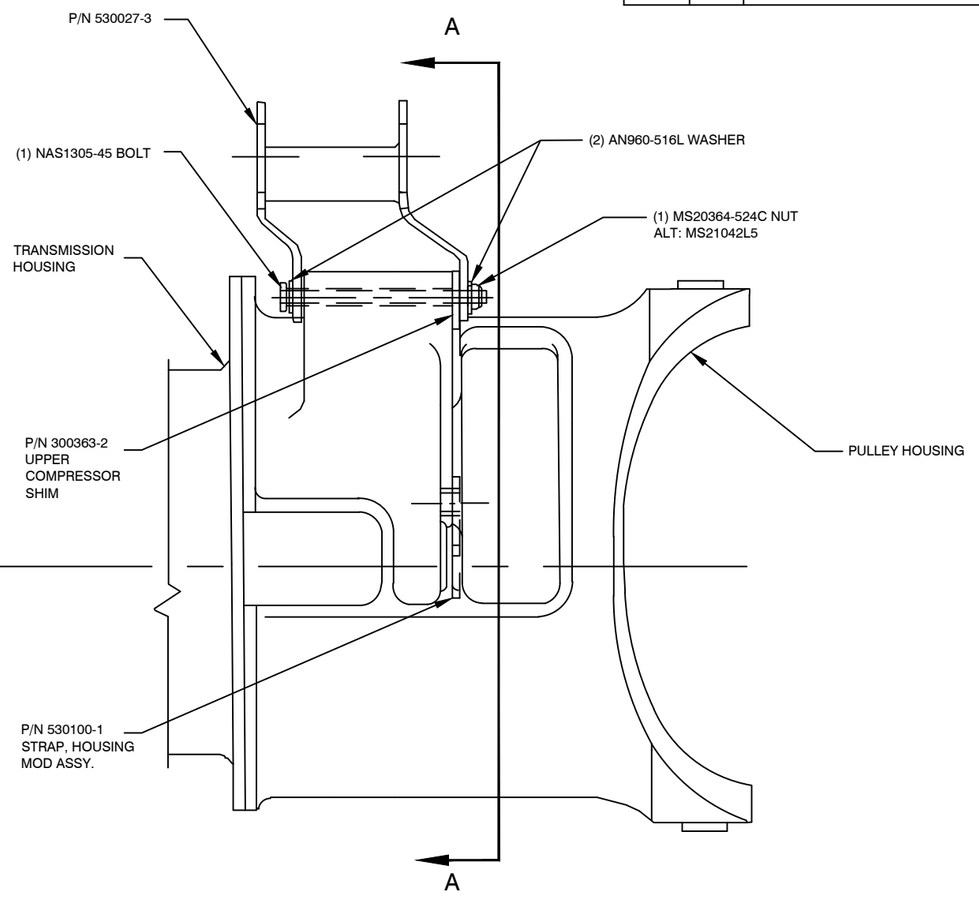
REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	01/30/06	CHANGED NAS1305-44 BOLT TO -45, FOR LENGTH. ADDED ALTERNATE COMPRESSOR SHIM PN: 261155. REMOVED BEVELED EDGE NOTATIONS. REVISED TITLE BLOCK.		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC

NOTE:

COMPRESSOR REMOVED FOR CLARITY

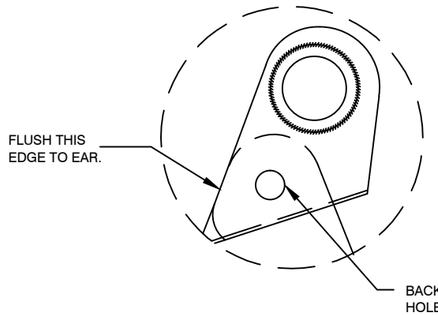


SECTION A-A



VIEW LOOKING INBOARD

FORWARD



DETAIL A

NOT TO SCALE

UTILIZED WITH:

1. EC 130 B4.

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN

.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

RSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

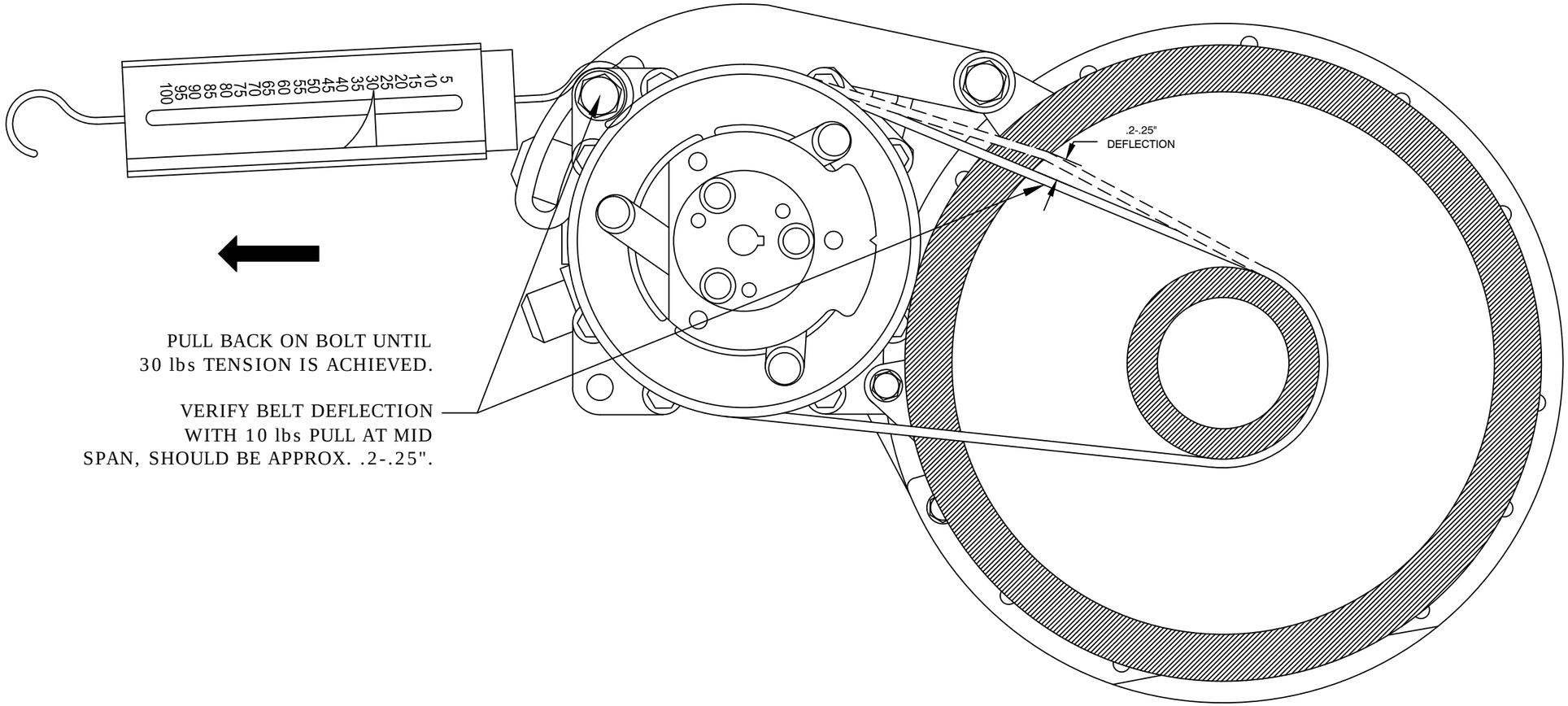
TITLE: COMPRESSOR INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 6-3-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	08/25/09	REVISED TITLE BLOCK.		DWE
B	09/01/14	CHANGE TITLE BLOCK AND REVISION BLOCK.		AJC



PULL BACK ON BOLT UNTIL
30 lbs TENSION IS ACHIEVED.

VERIFY BELT DEFLECTION
WITH 10 lbs PULL AT MID
SPAN, SHOULD BE APPROX. .2-.25".

NEXT ASSY.

APPROVED BY:

DATE:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
BELT TENSION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 6-5-EC130

Step 9

Installation of Electrical

Installation of Electrical

STEP	PROCEDURE	MECH	INSP
9.1	Locate the electrical box support shelf, P/N 261375, per drawing 8-1-EC130 – Page 1.		
9.2	Locate the electrical box, P/N 540009, on the support shelf and match drill three each #10 holes. (Ref photo 901). Print 8-1-EC130		
9.3	Install the electrical box using three each, P/N AN525-10R6, screws.		
9.4	Install and route the electrical harness, P/N 540010 per drawing 2-1-EC130.		
9.5	Install and route electrical harness P/N 540045-1 using 8 x #10 ring terminal and P/N ANL-50 limiter per drawing 2-1-EC130.		
9.6	**NOTE**: Alternate mounting of electrical box may be performed if shelving is not installed at time of manufacture of aircraft.		
9.7	Install angle brackets, P/N 510265, P/N 260335. Per Print 8-2-EC130.		
9.8	Switch panel, P/N 540011, mounted under panel. Per Print 5-1-EC130, or Switch Panel P/N 540012 mounted in Instrument Panel.		

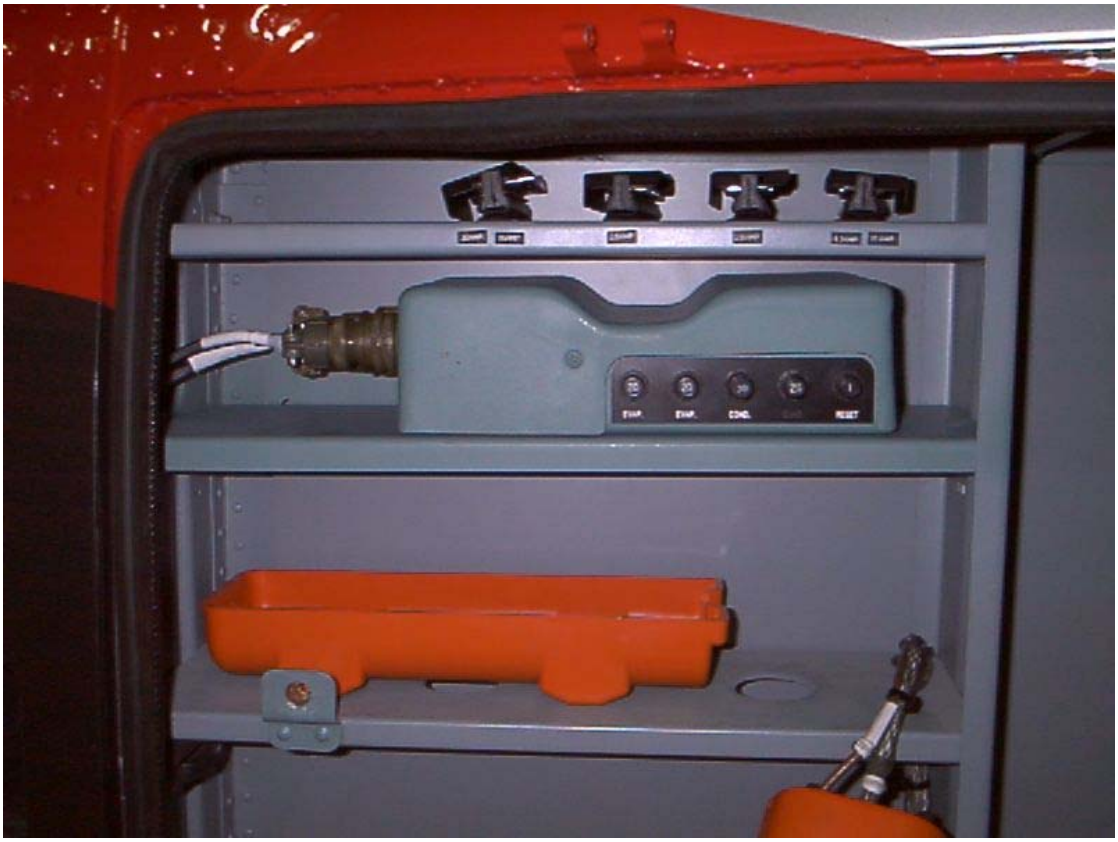


Photo 901

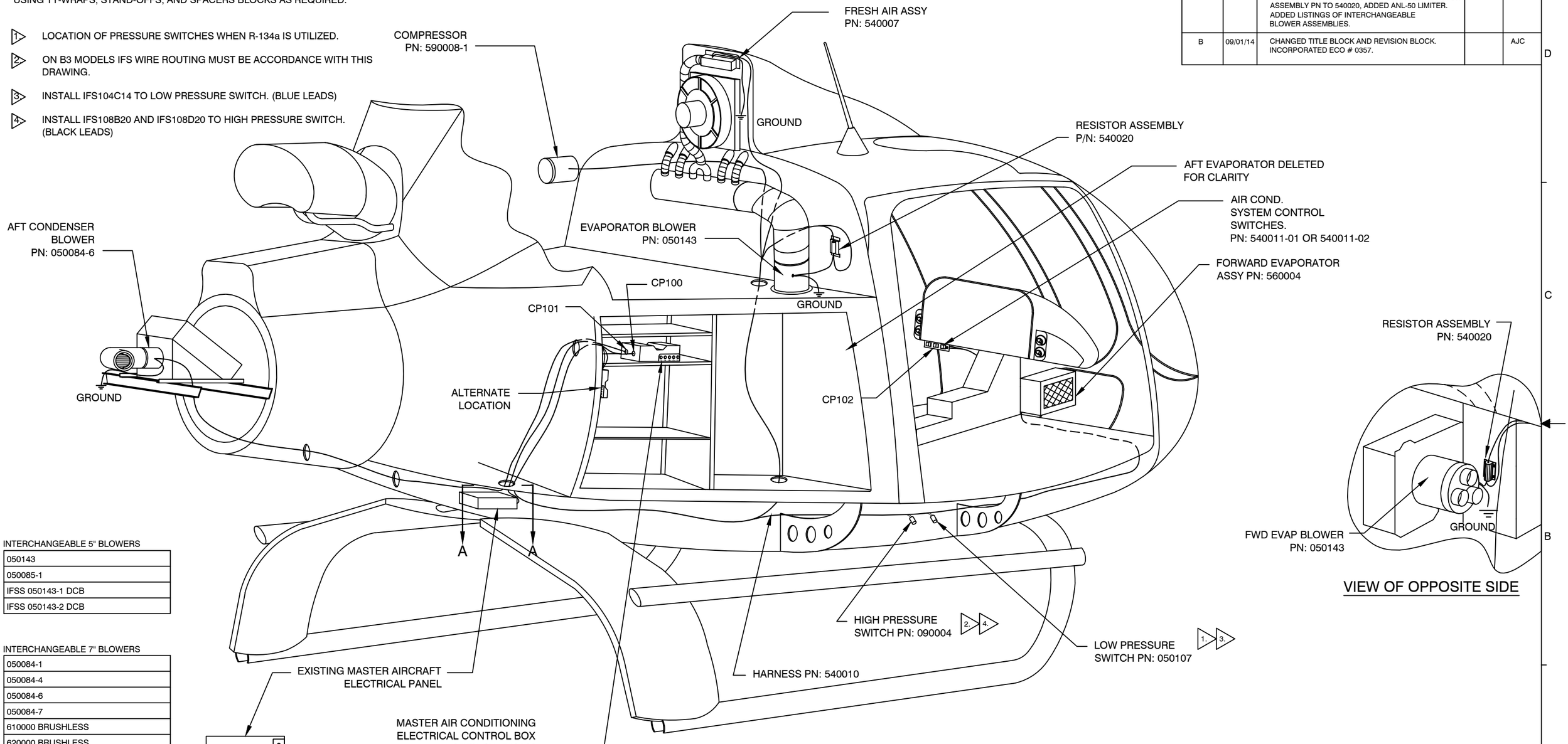
Electrical Box and Shelf Installation

NOTES:

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

1. LOCATION OF PRESSURE SWITCHES WHEN R-134a IS UTILIZED.
2. ON B3 MODELS IFS WIRE ROUTING MUST BE 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				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	08/14/09	REVISED TITLE BLOCK. EVAPORATOR BLOWER PART NO. WAS 490017 OR 490017-1, IS NOW 050143. ADDED ALTERNATE LOCATION FOR ELECTRICAL BOX. REVISED ELECTRICAL ROUTING. CHANGED RESISTOR ASSEMBLY PN TO 540020, ADDED ANL-50 LIMITER. ADDED LISTINGS OF INTERCHANGEABLE BLOWER ASSEMBLIES.		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0357.		AJC



VIEW A-A

VIEW OF OPPOSITE SIDE

INTERCHANGEABLE 5" BLOWERS

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

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

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: ELECTRICAL ROUTING

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

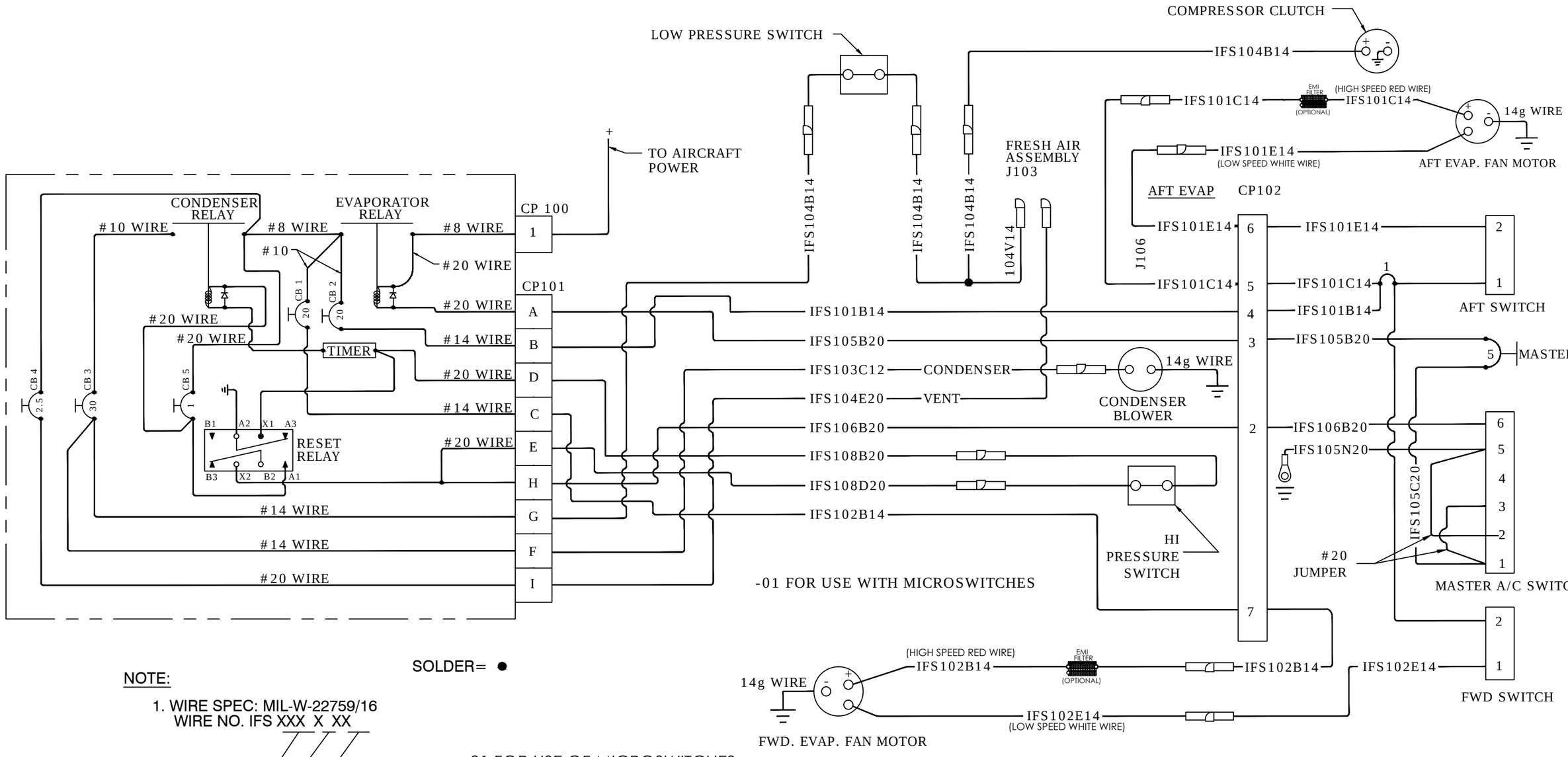
APPLICATION: EC 130 B4

DWG. NO.: 2-1-EC130

NOTES:

1. FOR BRUSHLESS MOTORS: (P/N: IFSS 050143-1 DCB, IFSS 050143-2 DCB). WHEN EMI FILTER MODEL NUMBER 13619-RF16883 IS INSTALLED, TERMINATE FILTER INPUT AND OUTPUT TERMINALS WITH P/N: 51864-2, & GROUND TERMINAL WITH P/N: 51864-1. REFERENCE DRAWING 4-1-EC130 & 4-3-EC130 FOR MECHANICAL INSTALLATION OF EMI FILTER WHEN REQUIRED.

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	12/05/03	REVISED TITLE BLOCK. WIRING NOTATION CHANGES. RE-DRAWN FOR CLARITY		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0613.		AJC



NOTE:

1. WIRE SPEC: MIL-W-22759/16
WIRE NO. IFS XXX X XX

GROUP

SEQUENCE (N INDICATES GROUND)

GAUGE

-01 FOR USE OF MICROSWITCHES

EC 130 B4
ELECTRICAL WIRING DIAGRAM

SINGLE CONDENSER BLOWER

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

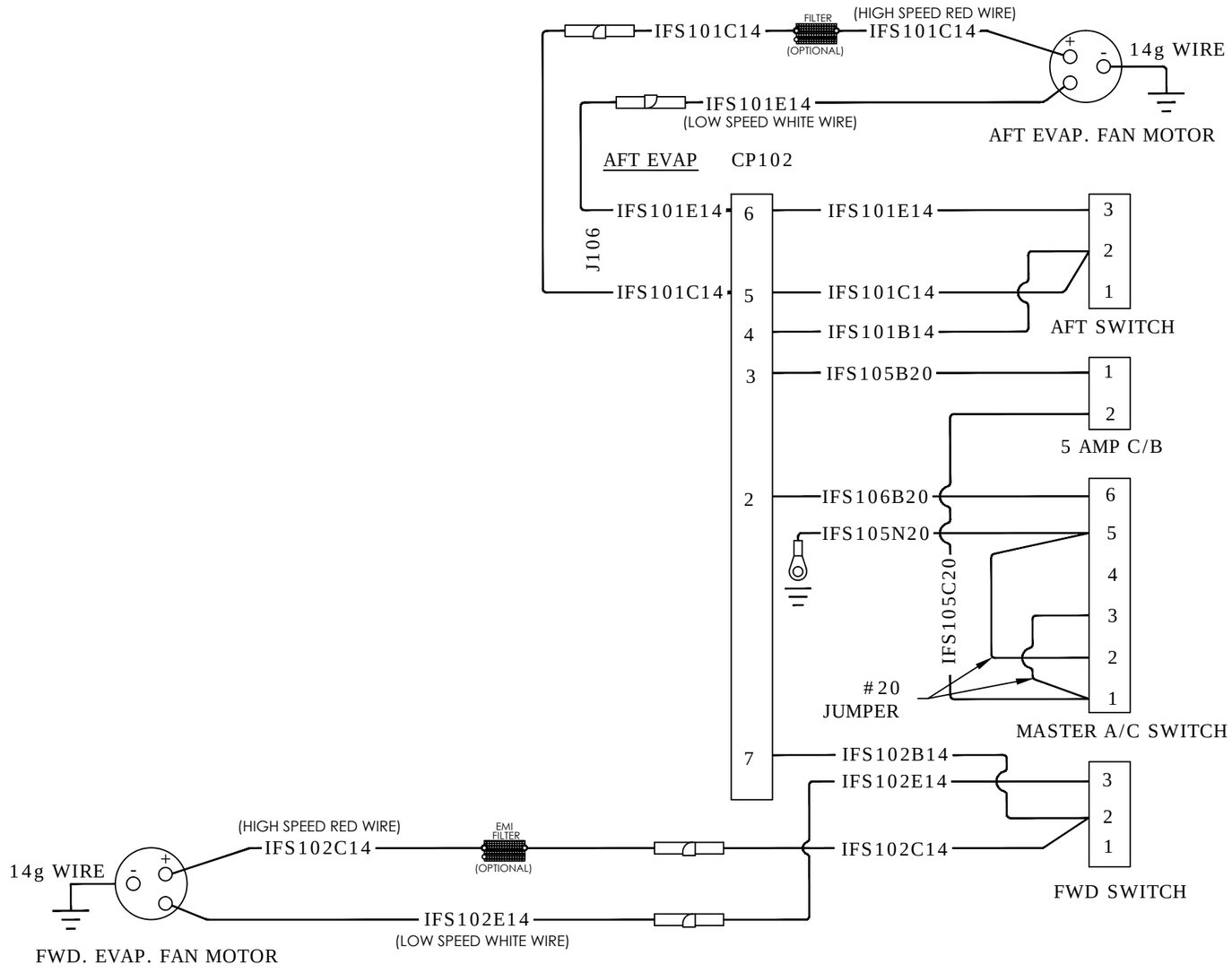
PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: ELECTRICAL DIAGRAM

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 2

APPLICATION: EC 130 B4

DWG. NO.: 2-3-EC130



-02 FOR THE USE OF OLD STYLE SWITCHES

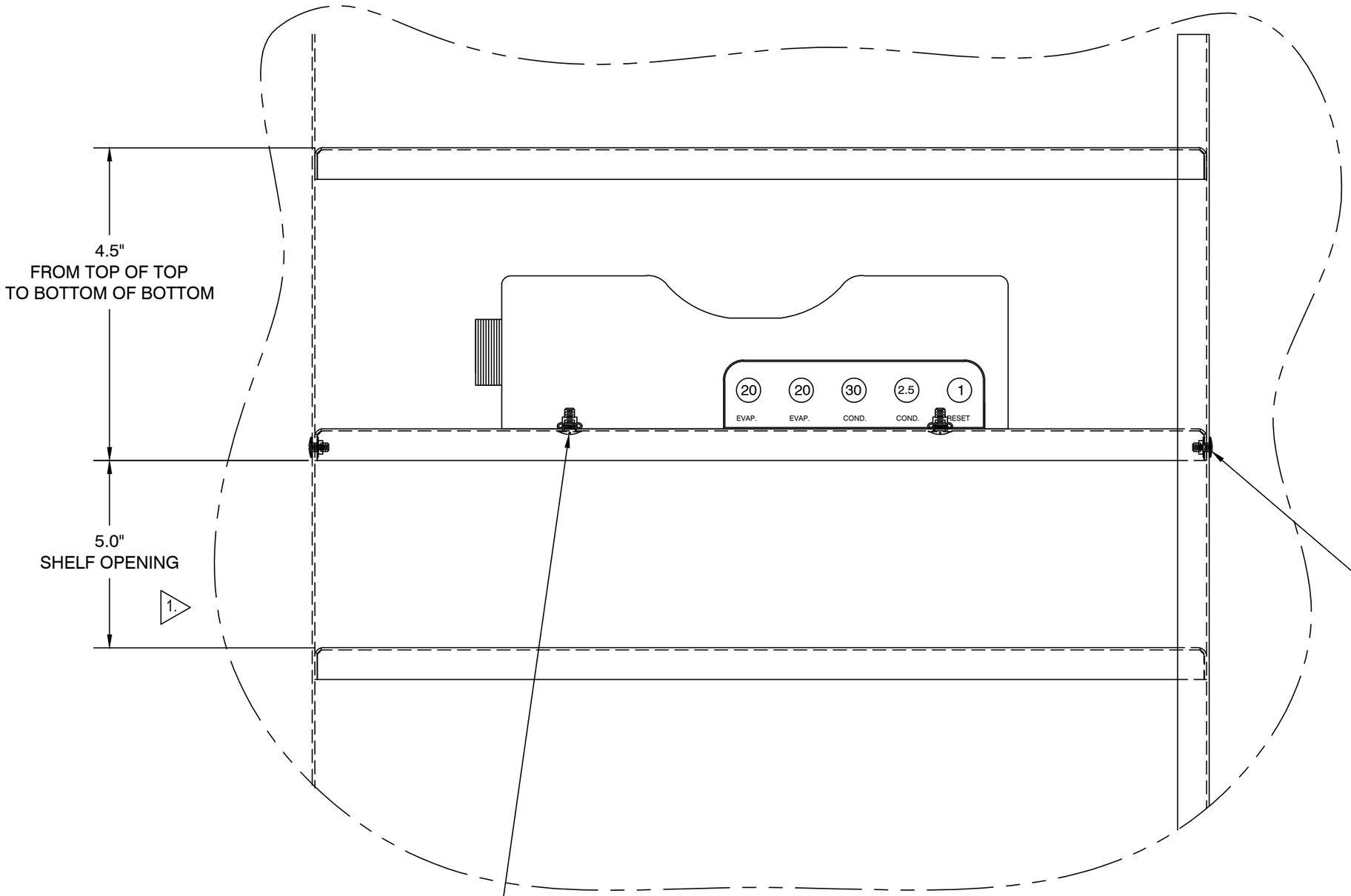
PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: ELECTRICAL DIAGRAM				
DRAWN BY: JTYE	DATE: 6/15/03	REV.: B	SCALE: N/A	SHEET: 2 OF 2
APPLICATION: EC 130 B4				DWG. NO.: 2-3-EC130

NOTES:

1. DO NOT INSTALL TOO LOW, ALLOW CLEARANCE TO INSTALL ELT.

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/21/03	ADDED DIMENSIONS AND FLAG NOTE 1. ADDED DRILLINGDIRECTIONS FOR ELECT. BOX SHELF PN: 261375.		JTYE
B	02/11/04	REVISED TITLE BLOCK. CHANGE SCREW CALL OUT FROM: 3X AN52510R7 TO: 3X AN52510R6 PER ECO 0104.		GB
C	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
ELECTRIC BOX SHELF INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	C	N/A	1 OF 1

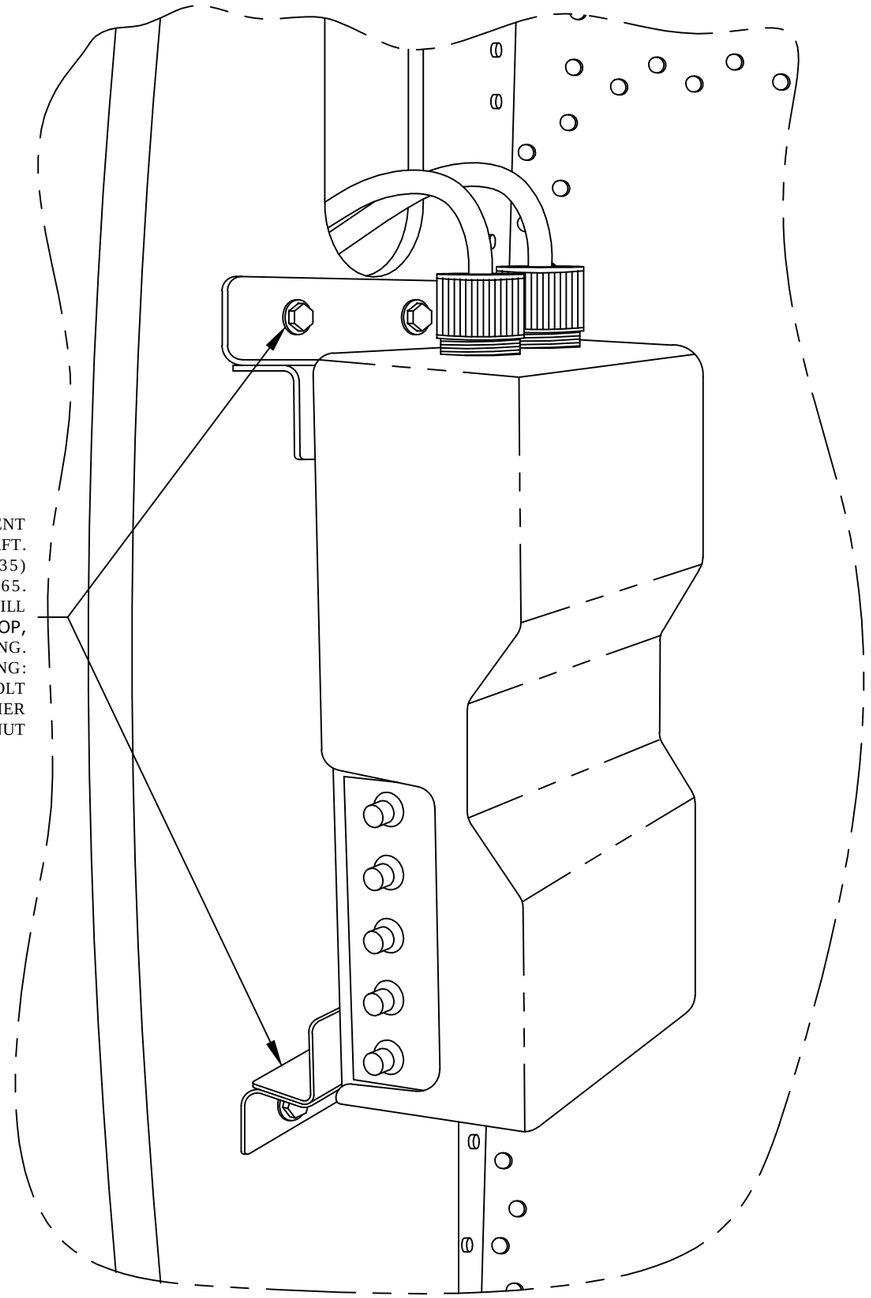
APPLICATION: EC 130 B4

DWG. NO.: 8-1-EC130

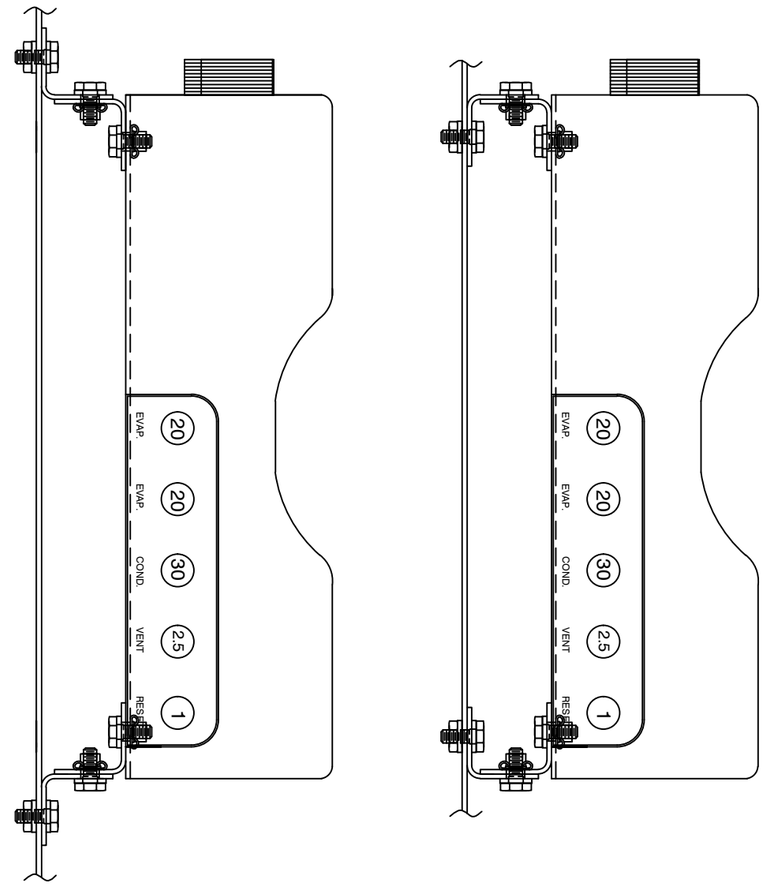
NOTE:

MOUNT TO BULKHEAD TO ENSURE CLEARANCE OF ANY EXISTING HARDWARE OR OTHER MODIFICATIONS.

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	11/03/04	REVISED TITLE BLOCK. ADDED 2 POSSIBLE MOUNTING CONFIGURATIONS.		JTYE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC



WHEN NO BATTERY COMPARTMENT SHELF IS PRESENT IN AIRCRAFT. UTILIZE 2X PN: 261334 (ALT:261335) AND 2X PN: 510265. LOCATE ELECTRICAL BOX AND DRILL 4X Ø.25 HOLES, 2X ON TOP, 2X ON BOTTOM, AT EQUAL SPACING. ATTACH USING:
4X- AN3-4A BOLT
8X- AN960-10 WASHER
4X- MS21044N3 LOCKNUT



2 POSSIBLE MOUNTING CONFIGURATIONS SHOWN.

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
ELECTRIC BOX VERTICAL INSTALLATION

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: AS350/355, EC 130 B4

DWG. NO.: 8-2-EC130

Step 10

Installation of Hoses

Installation of Hoses

STEP	PROCEDURE	MECH	INSP
10.1	Locate the Dryer bottle mounting assembly, P/N 510381, install per drawing 3-1-EC130.		
10.2	**WARNING: - Before connecting hoses be sure all fittings have R134 approved o-rings installed.**		
10.3	Route evaporator return line hose assembly #10 suction hose (tee fitting above deck), P/N 570105, 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. (Ref photo 1001)		
10.4	Route the evaporator expansion valve supply line high pressure hose assembly #6, P/N 570103, from the baggage compartment 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 570070-0-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 through the baggage compartment out the bottom forward existing opening. Route under the floor aft and up through the existing hole in the back of the baggage floor into the tail boom under the baggage floor and up to the condenser. (Ref photo 1002)		

Installation of Hoses

STEP	PROCEDURE	MECH	INSP
10.7	Route the line hose assembly, P/N 570104, down the existing forward opening in the baggage compartment. Route under the floor aft and up through the existing hole in the back of the baggage floor into the tail boom under the baggage floor and up to the condenser discharge fitting. (Ref photo 1003)		
10.8	Connect the hose end in the Baggage compartment to the "IN" or supply side of the dryer bottle 90-degree fitting. (Ref photo 1004)		

Photo 1001

Rec/Drier mounting

Photo 1002

Hose Routing

Photo 1003

Hose Routing

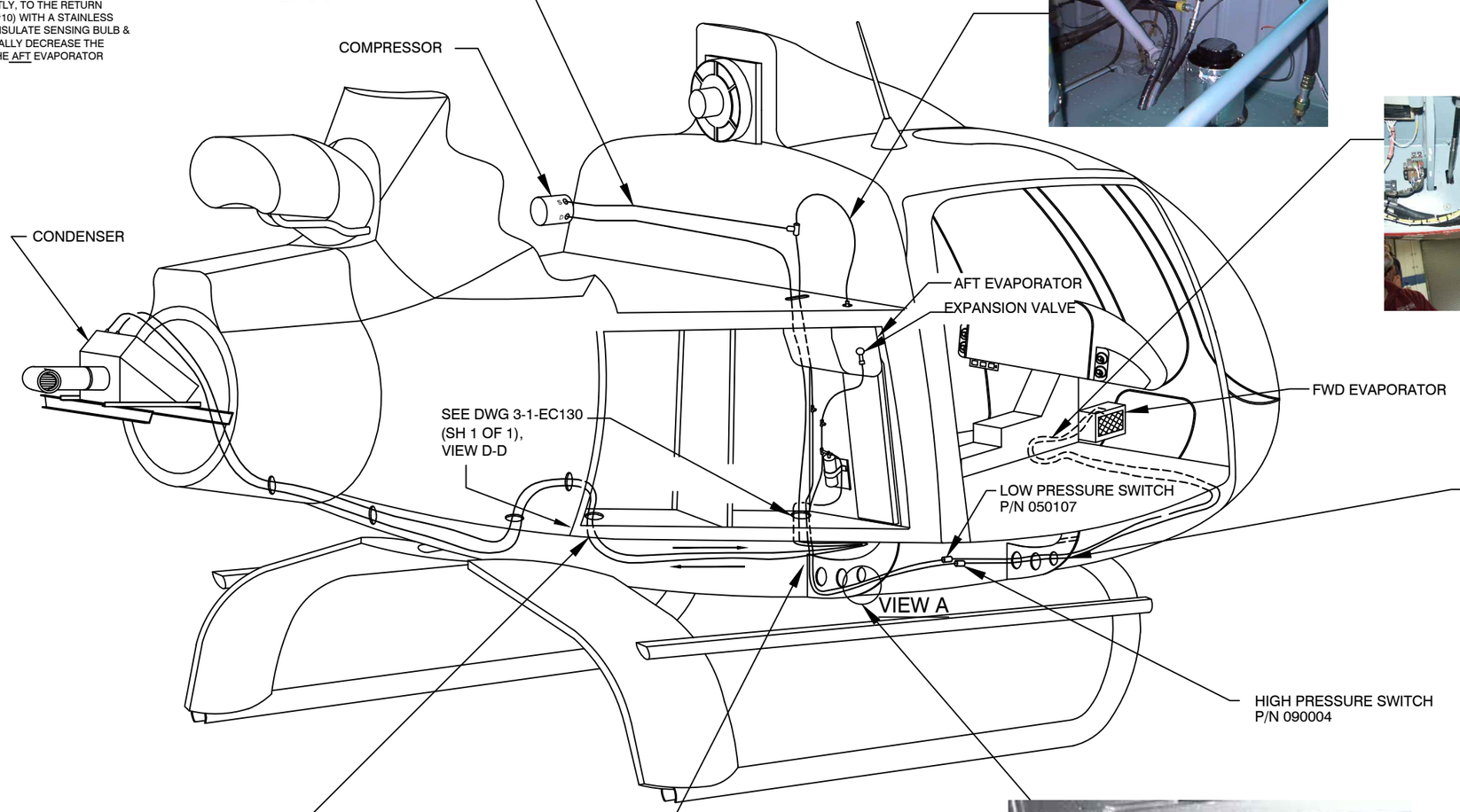
Photo 1004

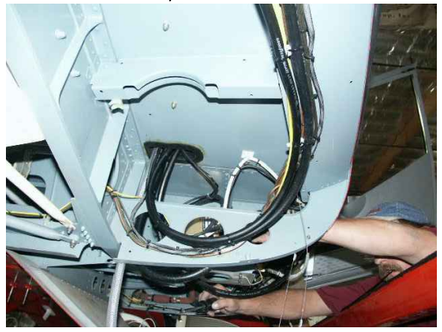
Rec/Drier “IN” Side

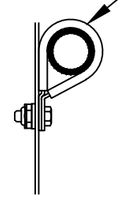
EXTREMELY IMPORTANT

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				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	03/31/09	REVISED TITLE BLOCK.		DWE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC







VIEW A

TYPICAL HOSE INSTALLATION:

FOR #6 HOSE ATTACH WITH TIE WRAP

FOR #8 HOSE ATTACH WITH TIE WRAP

FOR #10 HOSE ATTACH WITH ADEL CLAMP, TIE WRAP AND MS21919DG12 & HARDWARE AS SHOWN

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN

.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: PLUMBING ROUTING

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 3-2-EC130

Step 11

Paperwork

DETAILED WEIGHT AND BALANCE DATA

FOR

RSG PRODUCTS INC.

R-134a AIR CONDITIONING

UNIT INSTALLED IN A

TYPICAL HELICOPTER, MODEL EC130 B4

PERTAINS TO KIT #130-00-031

ITEM	WEIGHT	ARM	MOMENT
Fwd Evaporator Assy. w/ Motor	12.00	24.00	288.00
Fwd Air Outlets (x2) w/ Ducting	3.00	33.29	99.87
Aft Evap. Assy. w/ Motor and Ducts	16.00	120.50	1928.00
Condenser Assy. w/ Motor & Discharge	33.00	223.30	7368.90
507 Compressor w/ Mounting Kit	14.00	147.80	2069.20
Electrical Control Box	4.00	153.70	614.80
Refrigerant Hoses	5.00	76.90	384.50
Electrical Harness	3.50	76.90	384.50
Installation Totals	90.50	143.62	12998.27

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

Supplemental Type Certificate

Number SH3509SW

This certificate issued to

RSG Products Inc.
3900 Falcon Way West
Hangar 165
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:

(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 of issuance : September 20, 1985

Date reissued : April 30, 1991; August 22, 2001; October 23, 2008; August 26, 2011

Date amended : 2/11/99; 2/9/09; 2/23/09; 11/5/10

By direction of the Administrator

(*Signature*)

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

(*Title*)

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

This certificate may be transferred in accordance with FAR 21.47.

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
Date of Reissuance: August 26, 2011

Description of Type Design Change (Continued):
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.

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, required FAA approved helicopter FMS dated 10/27/88, 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
David Bafia

For Regional Manager,
Aircraft Certification

Canada

ANAC

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL - BRASIL

CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO

(Supplemental Type Certificate)

NÚMERO (Number) **2006S12-09**

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): (is granted to:) Integrated Flight Systems Corp.
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: (Original Product – Type Certificate No:) 8812 (ANAC).

Fabricante: (Manufacturer:) Eurocopter France.

Modelo(s): (Model(s):) AS 350 B1, AS 350 B2, AS 350 B3, AS 350 BA and. 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: (Application:) 28 Aug. 2006 **Da emissão**: (Issue:) 13 Dec. 2006 **Da reemissão**: (Reissue:)

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

MILTON ZUANAZZI
Diretor-Presidente
(Director President)

F-400-01C (05.06)

Fl. 1 de 2 (Sheet) (of)

H.02-2621-0

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

Folha de Continuação ao
(Continuation Sheet to)

CERTIFICADO DE HOMOLOGAÇÃO SUPLEMENTAR DE TIPO
(Supplemental Type Certificate)

NÚMERO (Number) **2006S12-09**

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 ----------

F-400-01C (05.06) Fl. 2 de 2 (Sheet) (of) H.02-2621-0

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).

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

EC130 B4

INTEGRATED FLIGHT SYSTEMS, INC.
4607 B AIRCENTER CIRCLE
RENO, NV 89502

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

FOR

EUROCOPTER FRANCE

MODEL: EC 130 B4

REGISTRATION NO.: _____

SERIAL NO.: _____

This supplement must be attached to the DGAC approved Rotorcraft Flight Manual, November 29, 2000 when 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: _____
acting Manager, Flight Test Branch,ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Directorate

Date: February 6, 2004

MODEL EC 130 B4

LOG OF REVISIONS

REVISION:ORIGINAL ISSUE

PAGE	DATE	REVISION NO.
1	February 6, 2004	Original
2	February 6, 2004	Original
3	February 6, 2004	Original
4	February 6, 2004	Original
5	February 6, 2004	Original
6	February 6, 2004	Original
7	February 6, 2004	Original
8	February 6, 2004	Original
9	February 6, 2004	Original

REVISED PAGES WILL BE DENOTED WITH " * " FOLLOWING PAGE NUMBER

FAA Approved: _____
Acting Manager, Flight Test Branch , ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Airplane Directorate

Date: Feb. 6, 2004

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

INDEX

1.0 GENERAL

The installation consists of a belt drive vapor-cycle air conditioning system driven at the transmission for further description refer to Appendix A.0 System & Description.

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 continuous load rating (green range) or if generator is inoperative.

.

3.0 EMERGENCY PROCEDURES

3.1 ENGINE or ELECRICAL FAILURE 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 FIRE or SMOKE in CABIN

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

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

4.0 NORMAL PROCEDURES

4.1 Ground Operation

Air conditioning system operation: The air conditioning control switches are located on or near the instrument console.

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

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

For air circulation with cooling – Move switch to "A/C"

Select desired blower speeds.

4.2 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

5.1 Hover In Ground Effect

If air conditioner is operating reduce gross weight capability determined from Figure 5-5 of the basic RFM by 30 pounds for pressure altitudes above 5,400 feet.

5.2 Hover Out of Effect

If air conditioner is operating reduce gross weight capability determined from Figure 5-6 of the basic RFM by 30 pounds.

APPENDIX

A.O 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 on or near the instrument panel. Three 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, and condenser blower, and belt driven compressor. The second rocker switch is "HIGH", "LOW" evaporator fan speed selection for the forward cockpit. A third rocker switch provides two (2) speed evaporator blower speed selection for the aft cabin. All three switches are located next to each other.

A 5-amp circuit breaker located with the switches disconnects 28 VDC power for controlling air conditioning system power relays placarded as "Master" if pulled the system will be disable electrically and will be inoperative at this time.

A high-pressure safety switch, located under cabin floor, outboard of the right side keel beam disengages the compressor clutch and stops operation of the system 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 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 the 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 disengaged 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 loads of the air conditioning system components:

Condenser blower	1 each @	19amps =	19 amps
Compressor clutch coil	1 each @	2amps =	2 amps
Evaporator fan (fwd)	1 each @	13amps =	13 amps
Evaporator fan (aft)	1 each @	13amps =	13 amps
Vent servo	1 each @	1 amp =	1 amp
	System	Total =	48 amps

Load Shedding

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

NOTE **During conditions of high DC current use, such as battery recharging after engine start or use of landing lights, it is possible that the electrical load requirements with the air conditioning operating may exceed the rated output of the DC generator system.

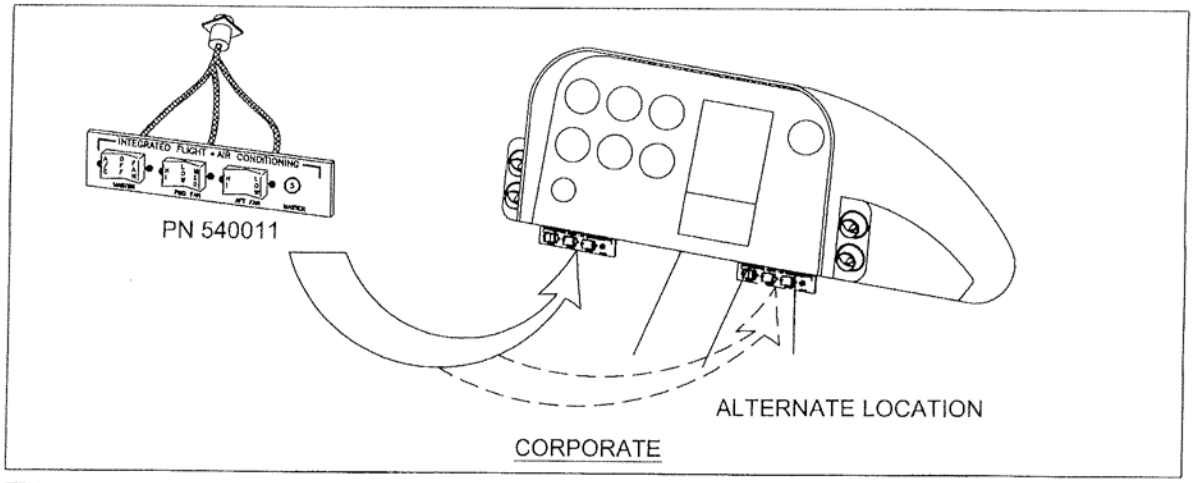
A.2 WEIGHT AND BALANCE

Weight and Balance must update to show air conditioning system installation once installation has been performed. Approximate weight is 89 pounds.

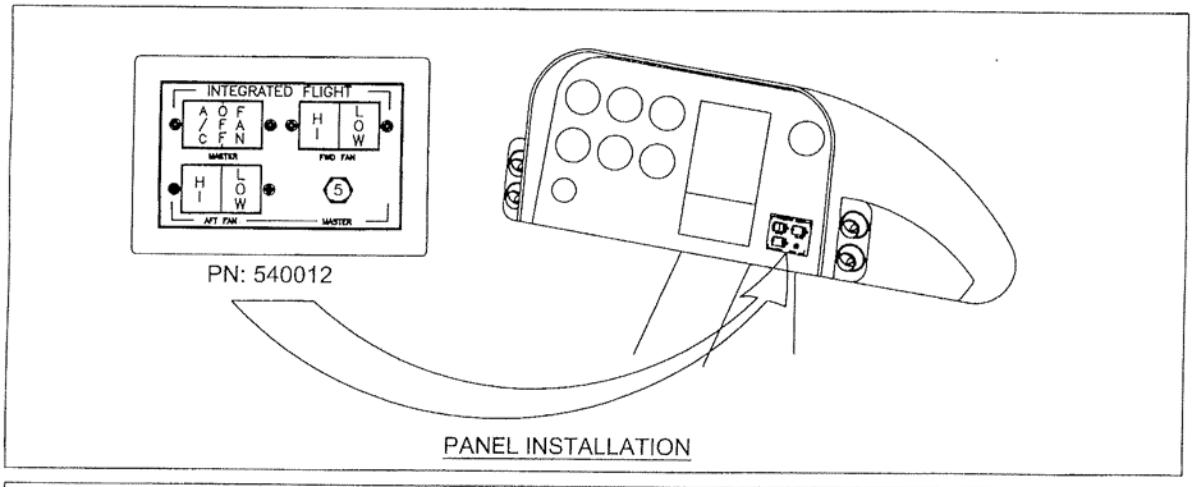
See Instructions supplied with kit for actual weights and moment information.

A.3 CONFIGURATIONS / OPTIONS

This system may be utilized in multiple applications. See the following possible Configurations and application for each specific installation possibility.



CORPORATE

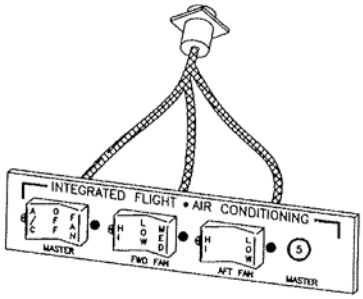


PANEL INSTALLATION

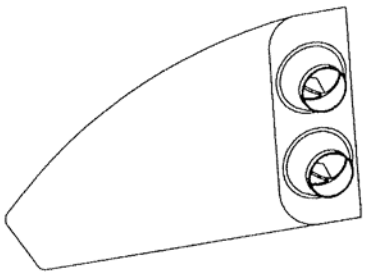
(FOR FUTURE CONFIG)

AIR DISTRIBUTION OPTIONS
EC 130

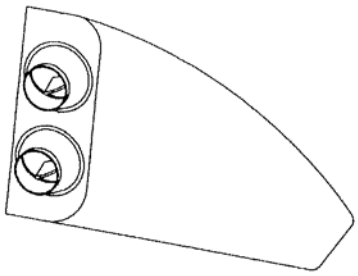
SPECIAL OPTIONS



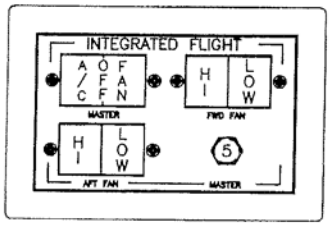
PN 540011: AIR CONDITIONING CONTROL SWITCHES



PN 500001: LEFT SIDE AIR OUTLET



PN 500002: RIGHT SIDE AIR OUTLET



PN: 540012 PANEL MOUNT SWITCH ASSEMBLY

(THESE ARE STANDARD ITEMS AT THE TIME OF THIS RELEASE, FUTURE CONFIGURATIONS AND OPTIONS WILL DEPEND ON CUSTOMER REQUEST AND EXISTING MODIFICATIONS TO AIRCRAFT.)

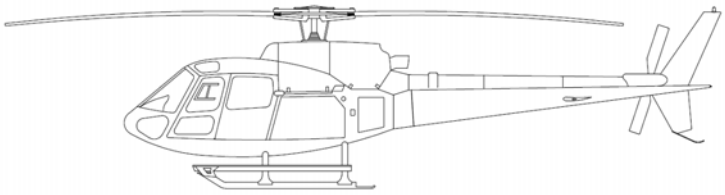
Step 12

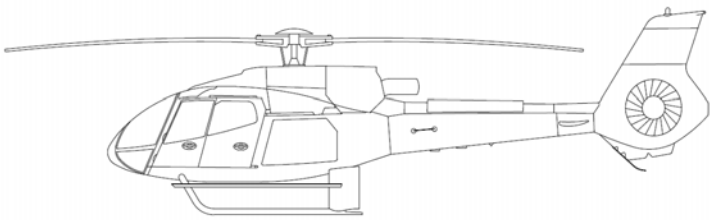
Continued Airworthiness

PRODUCTS INC.

Air Conditioning System Installation

Instructions for Continued Airworthiness
for
Airbus Helicopters AS-350 B, C, D, D1, B1, B2, B3, BA & EC-130 B4





FAA Project Number: SA3109RC-R
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LOG OF REVISIONS

Instructions for Continued Airworthiness for the Airbus Helicopters AS-350 B, C, D, D1, B, B1, B2, B3, BA and EC-130 B4 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, 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. Changes to this document will be distributed to owners of the kits within 10 days after the revision is approved. Changes to this document will be indicated by a revision letter in the header, in the Record of Revisions, and on the List of Effective Pages. Contact RSG Products by mail at 3900 Falcon Way West Hangar 16S, Fort Worth, TX, 76106. Or by phone at 817-624-6600.

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		
C-1	12/11/13	Revised Chapter 5, 100 hour inspection to change belt on condition. Changed Name.	A. Weidler	S. Weidler		
C-2	09/17/14	Revised Chapter 12 and 21. Removed paragraphs 7 - 9 of Section 12-10-02.d. Removed sight glass troubleshooting information Section 21-00-06 under symptoms.	A. Cuellar	S. Weidler		
C-3	09/30/14	Revised chapter 5 to increase inspection interval to 150 Hours +/- 15	S. Weidler	S. Weidler		
D	11/19/14	Changed Template. Changed Mfr. Name. Was: Eurocopter, Is: Airbus Helicopters. Updated parts list with newer configurations. Parts list is now under Chapter 31. Updated	S. Johnson	S. Thornton		

		electrical and plumbing diagrams and install drawings. Updated annual/150-hour inspection program in sections 05-00-00 and 05-10-00.				

RECORD OF TEMPORARY REVISIONS

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

LIST OF EFFECTIVE PAGES

LIST OF REVISIONS	Revision A	December 06, 2012
	Revision B	February 27, 2013
	Revision C	May 14, 2013
	Revision D	November 19, 2014

LIST OF EFFECTIVE PAGES

TITLE	PAGES	REV.No
Cover	i	D
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Record of Temporary Revisions	iv	D
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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 Airbus Helicopters AS-350 B, C, D, D1, B, B1, B3, BA and EC-130 B4 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 Rotorcraft Services Group. or by another Agency with expressed permission from RSG 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 Rotorcraft Services Group for distribution to owners and operators of the STC.

This, Instructions for Continued Airworthiness, is intended to supplement the AS-350 B, C, D, D1, B, B1, B2, B3, BA, and EC-130 B4 rotorcraft maintenance manuals provided by Airbus Helicopters. 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

"The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under §§43.16 and 91.403 of the Federal Aviation Regulation unless an alternative program has been FAA approved."

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. Component Overhaul Schedule & Scheduled Maintenance Practices

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 or 150 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, records and life limited components.

5. Definitions

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

- **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.

6. 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 05-10-00 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) Annual or 150-Hour Inspection

The inspection is required to be performed annually or every 150 hours of rotorcraft time-in-service, whichever comes first, +/- 15 hours. If inspection is overflown then overflown time must be deducted from the next inspection due. Inspection Table 5-02 specifies the requirements of the 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

Registration No.	Serial No.	Helicopter Total Hours	
• The 50-hour inspection shall be accomplished each 50 hours, time-in-service. • Initial each item after accomplishing the inspection. • Record all findings and attach a copy of findings to this inspection form. • After correction of all findings, make maintenance record entry.			
PRE-INSPECTION			**Initial**
1. Review Airworthiness Directives.			
2. Review records for the Air Conditioning System.			
3. Review log books for discrepancies.			
INSPECTION			**Initial**
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 Annual or 150 – Hour Inspection

Registration No.	Serial No.	Helicopter Total Hours	
• The inspection shall be accomplished annually or every 150 hours of rotorcraft time-in-service, whichever comes first, +/- 15 hours. • If inspection is overflown then overflown time must be deducted from the next inspection due. • Initial each item after accomplishing the inspection. • Record all findings and attach a copy of findings to this inspection form. • After correction of all findings, make maintenance record entry.			
PRE-INSPECTION			**Initial**
1. Review Airworthiness Directives.			
2. Review records for the Air Conditioning System.			
3. Review log books for discrepancies.			
INSPECTION			**Initial**
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. 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. 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 **not mandatory** 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 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 **DO NOT OVER PACK THE BEARING.** **100% capacity packing of the bearing can cause a failure to occur in 1 to 1 ½ hours.**			
5. Inspect hoses for general condition, cuts or swelling. Replace as required.			
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).			
7. For brushed motors only, 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). 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.	
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.	
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. **NOTE: TAKE CARE WHEN INSTALLING BRUSHES THAT BRAIDED POSITIVE LEAD DOES NOT CONTACT HOUSING, CAUSING A SHORT**	

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.

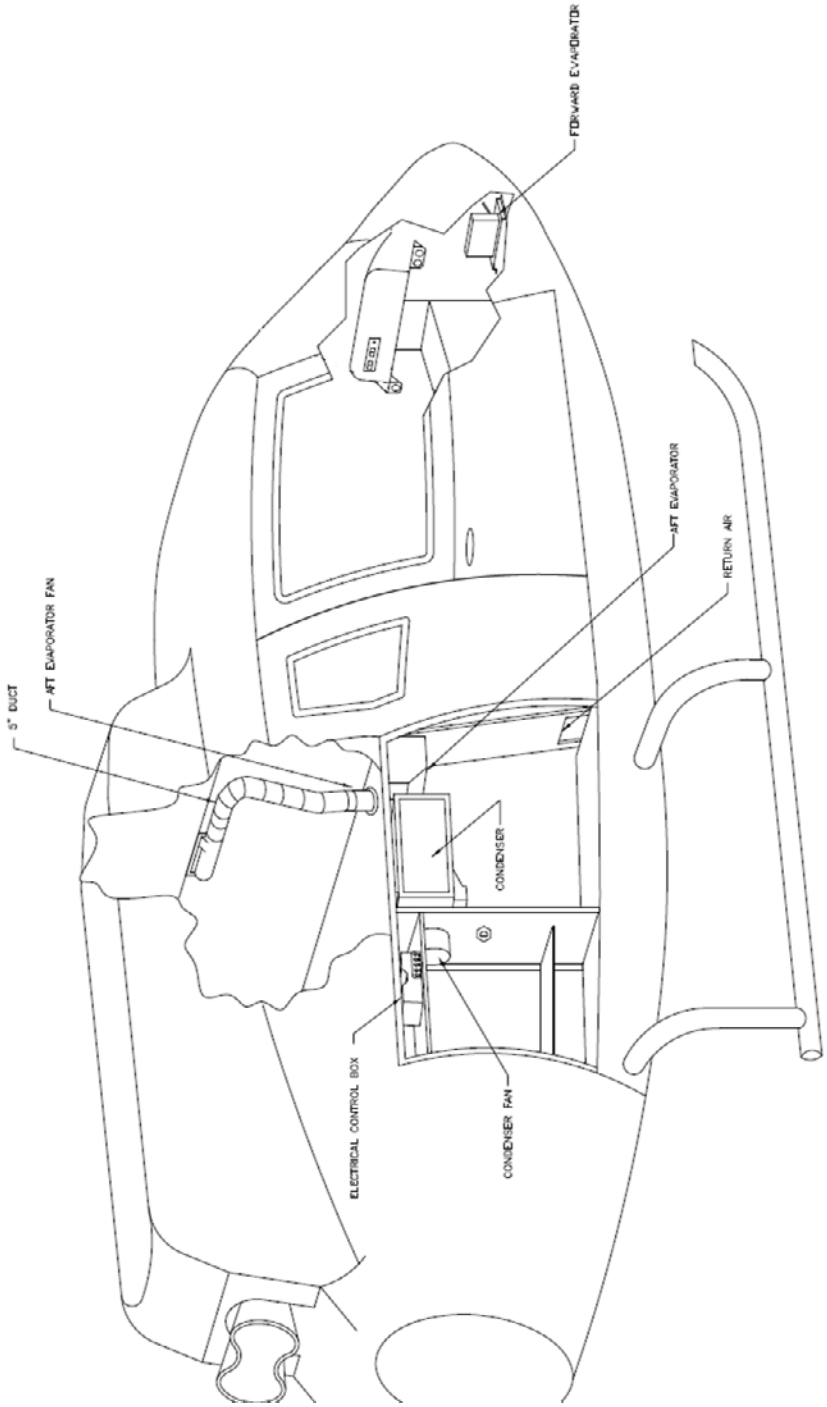


Figure 6-01: Side Mounted Condenser Configuration

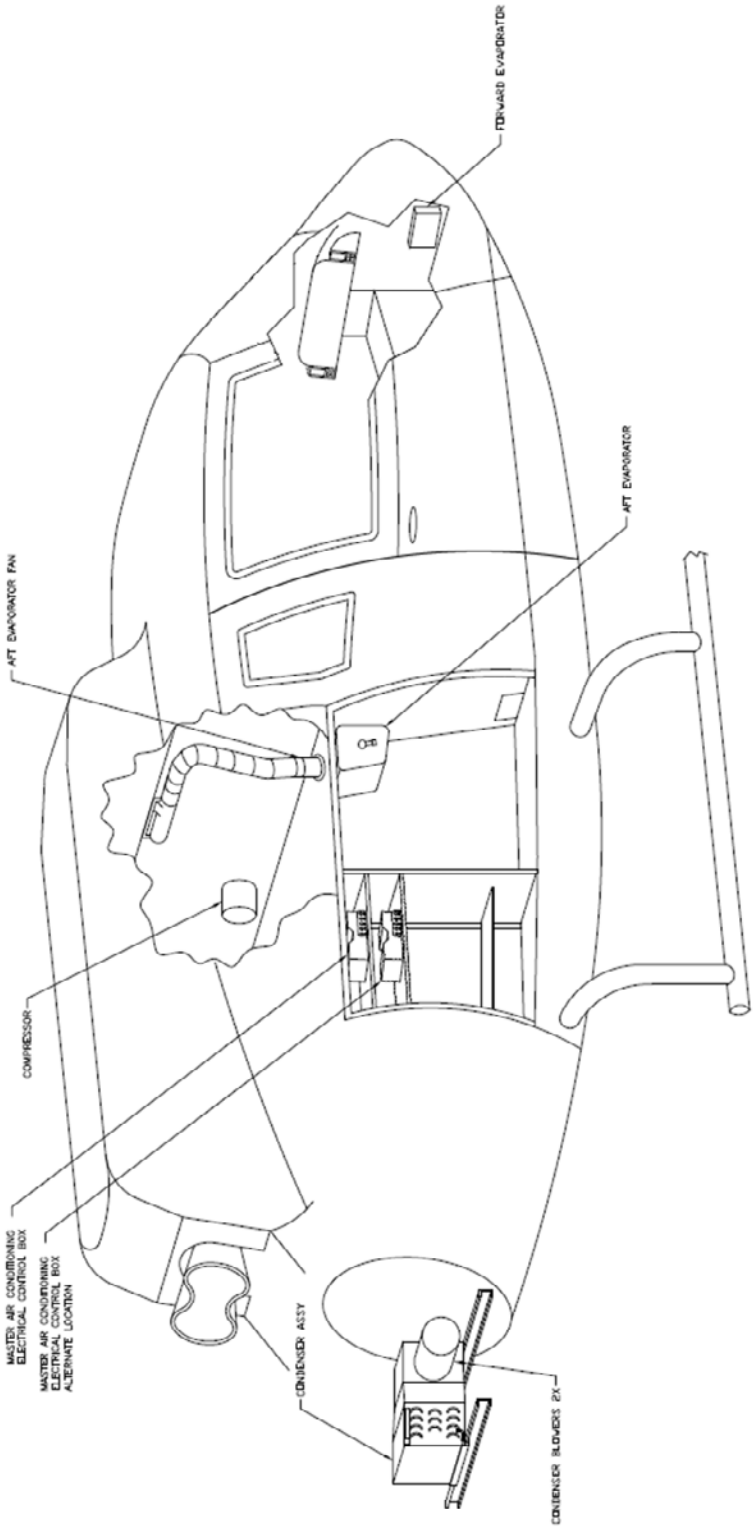
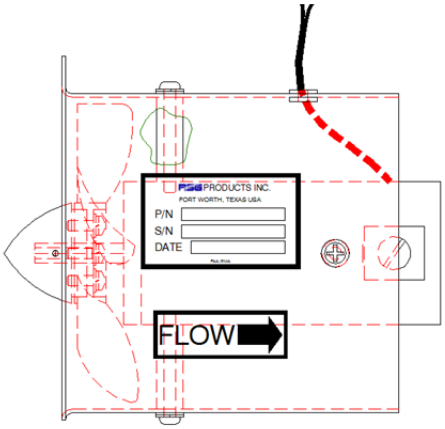


Figure 6-02: Aft Mounted Condenser Configuration

Chapter 11

Section 11-00-00 Placards and Markings

1. Placards and Decals



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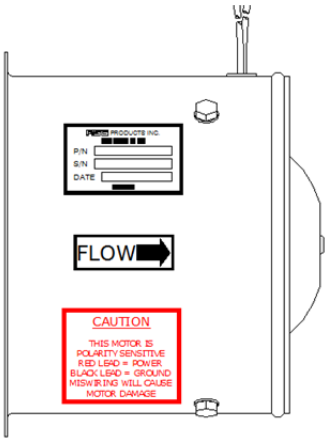

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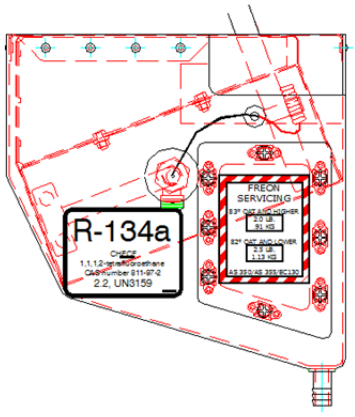

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For PN: 050145

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

a) Connect the EPA approved recovery unit services hoses, which shall have shut-off valves to the aircraft air conditioning system service ports.

b) Operate the recovery equipment as covered by the equipment manufacturers recommended procedure.

c) 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.

d) 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, **you will not need to charge compressor with oil since 7.5 ounces of ESTER oil has already been added. Do not add additional oil if replacing a compressor in an existing system.**

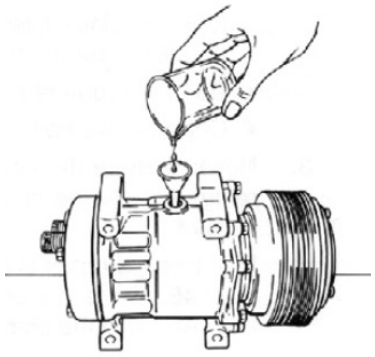


Figure 12 - 01: Adding Oil to the Compressor

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 R134-a 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. **Smoke test is no longer required for R-134a receiver/drier (without sigh glass) like it was for R-12 receiver/drier (with sight glass)**.
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 in 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.

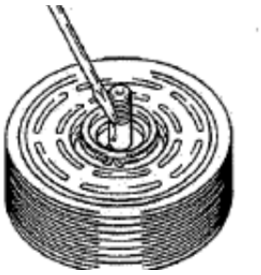


Figure 12 - 04

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)

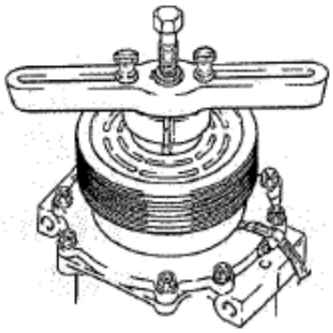


Figure 12 - 05

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)

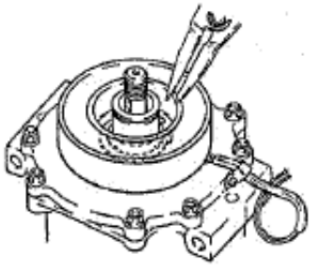


Figure 12 - 06

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)

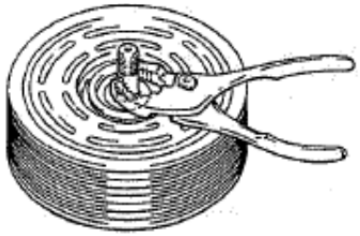


Figure 12 - 09

(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)

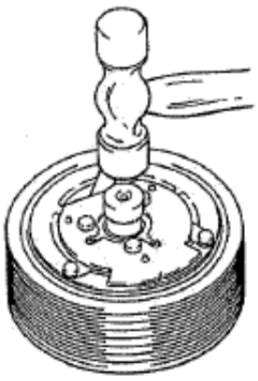


Figure 12 - 10

(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.

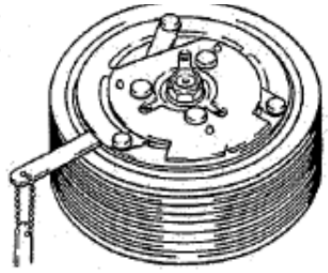


Figure 12 - 11

(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

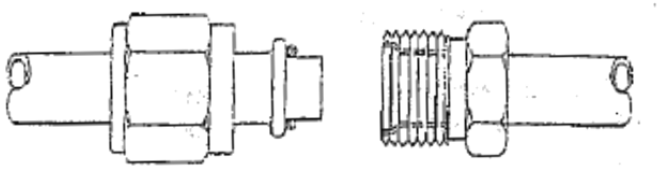


Figure 12 – 12: Insert O-Ring Fittings

(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

a. With the aircraft engine operating, electrical system on and functioning normally, move the air conditioner control switch to the "FAN" position.

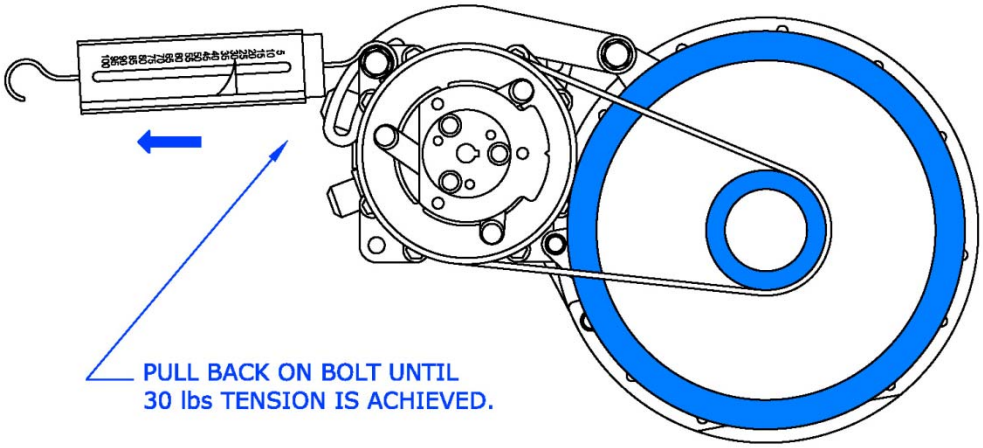
b. Move the cockpit fan switch from "LOW" to "HIGH" speed and ensure that air output is present in all the forward air outlets. Repeat the test using the aft cabin fan speed selector switch for the aft cabin air outlets.

c. 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.

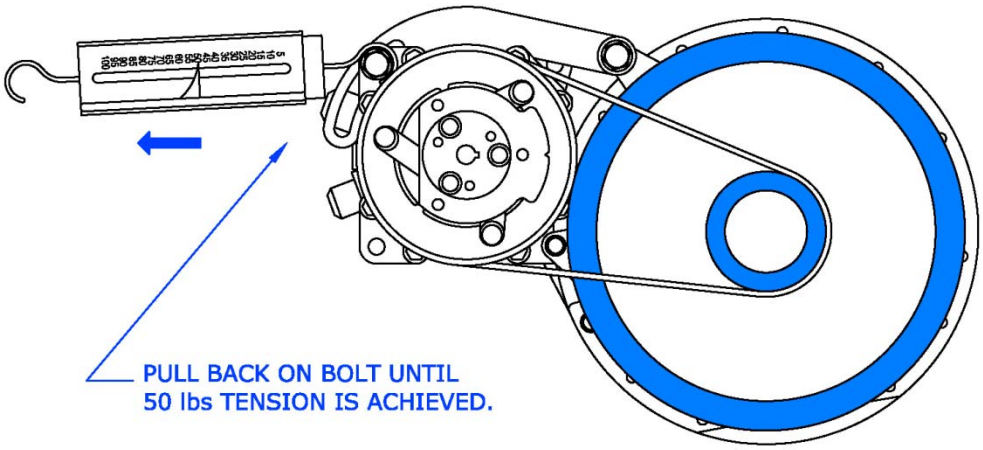
d. Turn air conditioner switch to "OFF" or the center position. Entire system should shut down.

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.



060005 GROOVED BELT



060018-1 FLAT BELT

Figure 12 – 13

Section 12-70-00 Drive Belt Change Procedure

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

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

c. Remove the cotter pins from the four pins holding the “Gimble Ring” at the Thomas coupling.

d. Slide the “Gimble Ring” aft to gain access to the Thomas coupling.

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

f. Install two (2) Compressor Drive belts.

g. Reassemble the Thomas coupling.

h. 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.

i. Install the “Gimble Ring” pins and cotter pins. Remove supports.

j. 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.

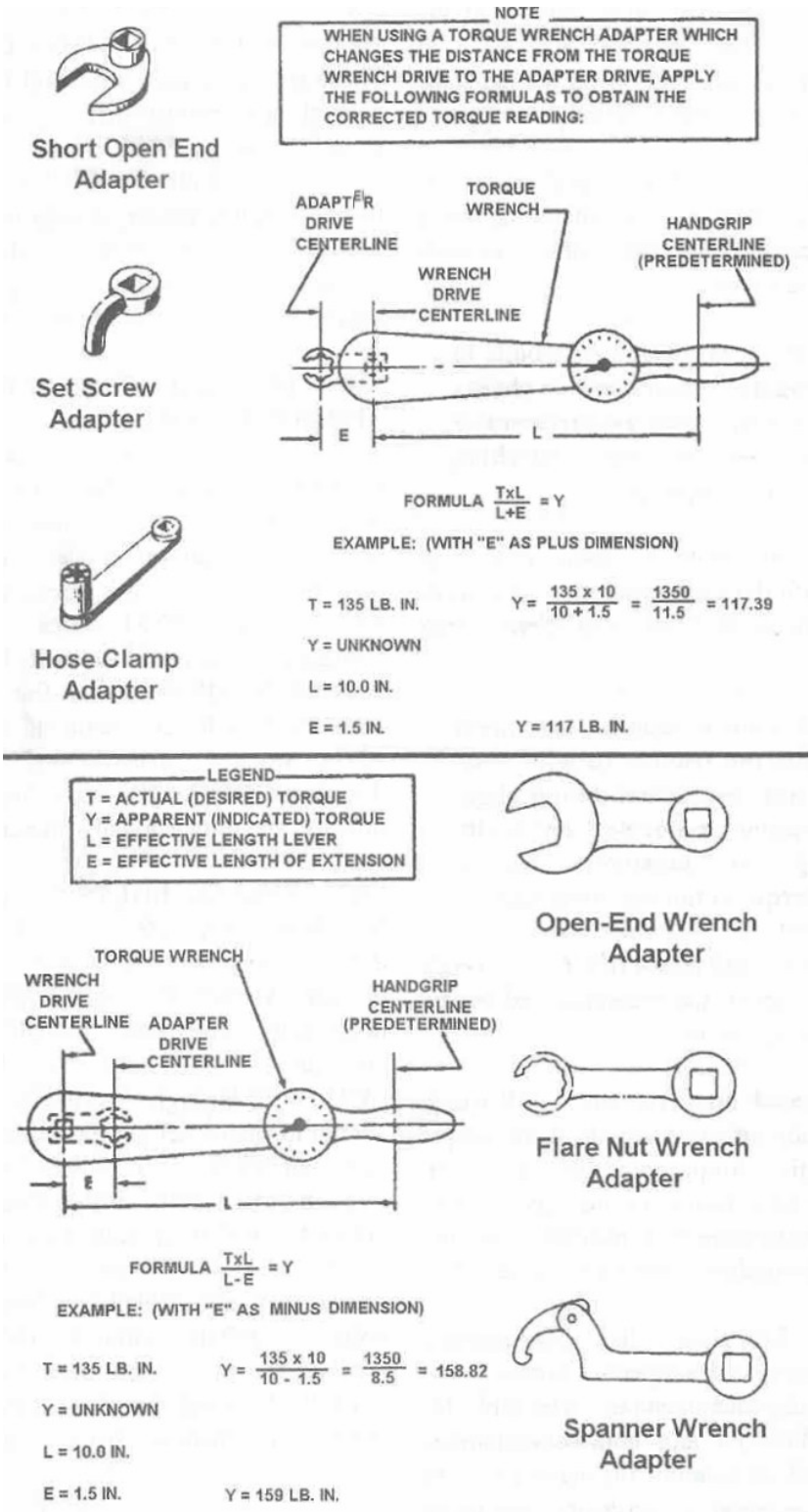


Figure 20 - 1: Torque Wrenches and Adapters

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 Table 20 - 1 through Table 20 - 3. 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 - 2: 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 in system components.

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 polymide 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 system components are fabricated primarily of steel and aluminum, and 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 de-bond and / or lose 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 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 material; 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 the area thoroughly to remove all contaminants.

(4) Apply aluminum surface treatment if applicable. (Ref. Section 4 of 20-40-00, Aluminum Alloy Surface Touch-Up Treatment).

(5) Touch-up primer and paint to match original.

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

a) Section 20-30-00 Painting Maintenance Practices).

b) If damage is through the paint surface, prepare area for paint touch-up using the following methods.

Note: On high-strength steel, do not use power tools other than a flap brush or mandrel with abrasive material; 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. Section 4 of 20-40-00, Aluminum Alloy Surface Touch-Up Treatment).

(4) Touch-up primer and paint to match original.

4. Aluminum Alloy Surface Touch-Up Treatment

Note: If there is any question as to 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 swab, 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 is any surface without color change, repeat procedure.

f) Apply paint touch-up as required (Ref Section 20-30-00 Painting Maintenance Practices).

Section 20-50-00 Mechanical Fastener Sealing Methods

Remove existing cracked, chipped or broken existing sealing compound and thoroughly clean with solvent. Reseal using MIL-S-8802, sealing compound, mixing per manufacturer's instructions.

Seal mechanical fasteners as shown:

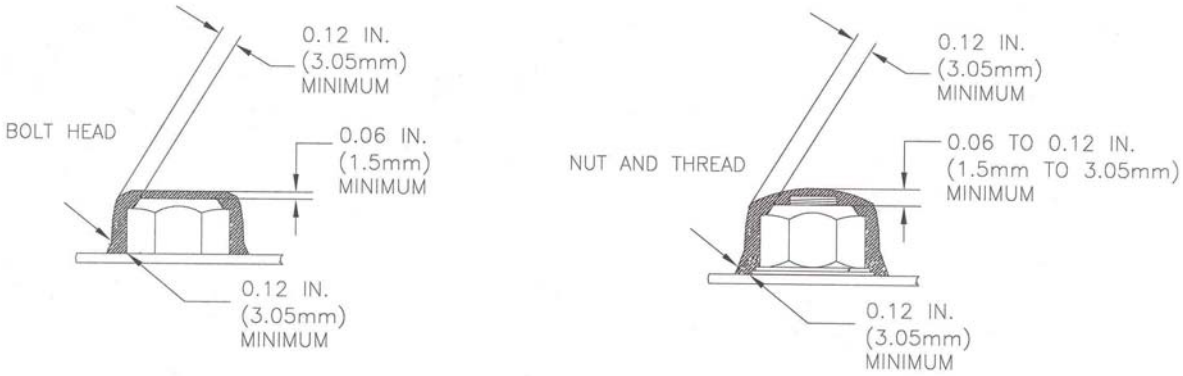


Figure 20 - 02: Mechanical Fastener Sealing

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: Manufacturer's instructions on Dye-Penetrant Kit take precedence over the following instructions.

2. Apply penetrant from dye-penetrant kit (MIL-I-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, whereas 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

AS-350 Series	
BASE KIT NUMBERS:	
350-00-011-HP	Side Mounted Condenser (Ref Figure 21-01)
350-00-031-HP	Aft Mounted Condenser (Ref Figure 21-02)
CUSTOM CONFIGURATIONS:	
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

EC-130B4	
BASE KIT NUMBER:	
130-00-031-HP*	Aft Mounted Condenser (Ref Figure 21-02)
CUSTOM CONFIGURATIONS:	
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	

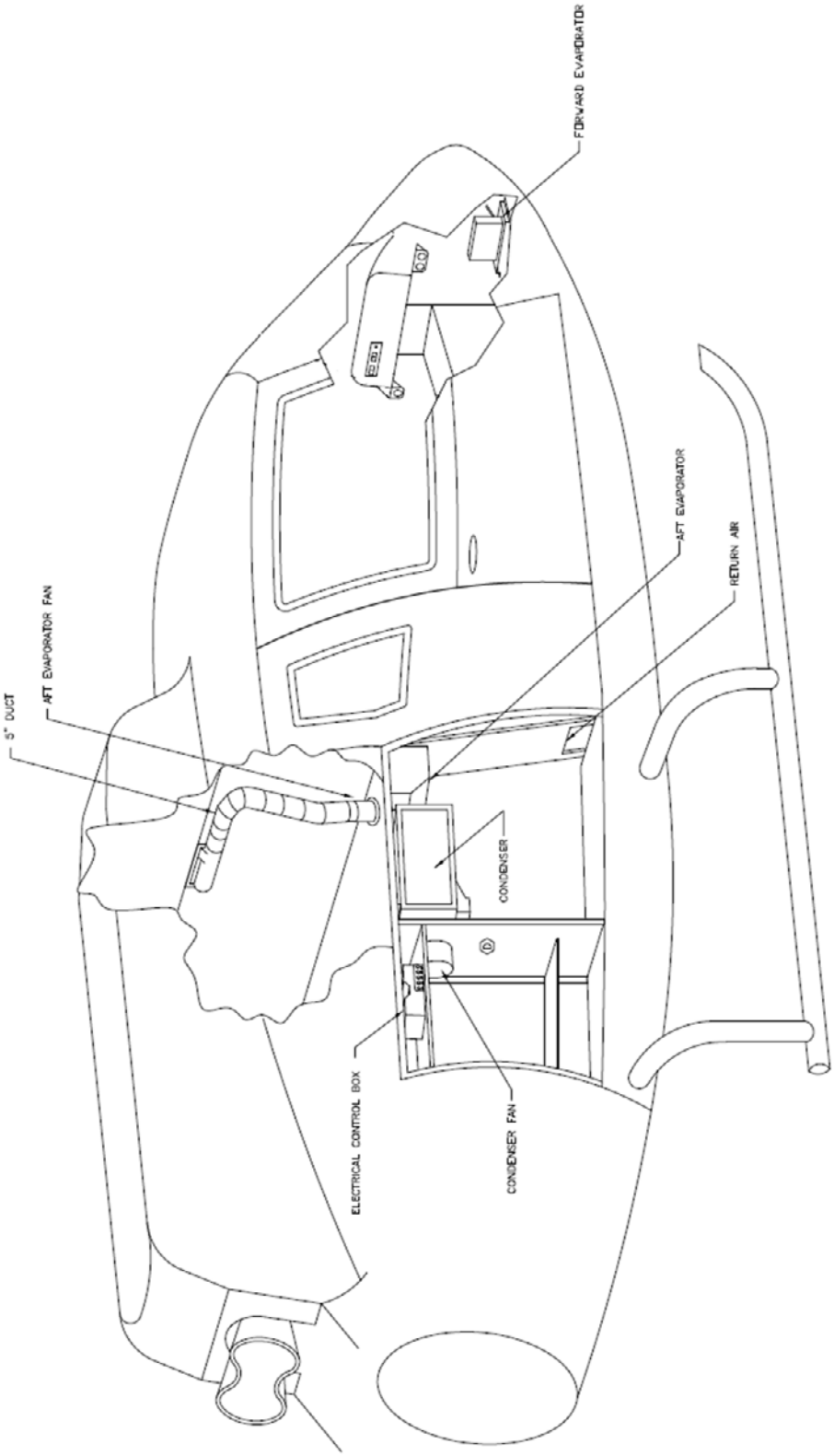


Figure 21-01: Equipment Locations for Air Conditioning System with the -011 Configuration (Side Mounted Condenser)

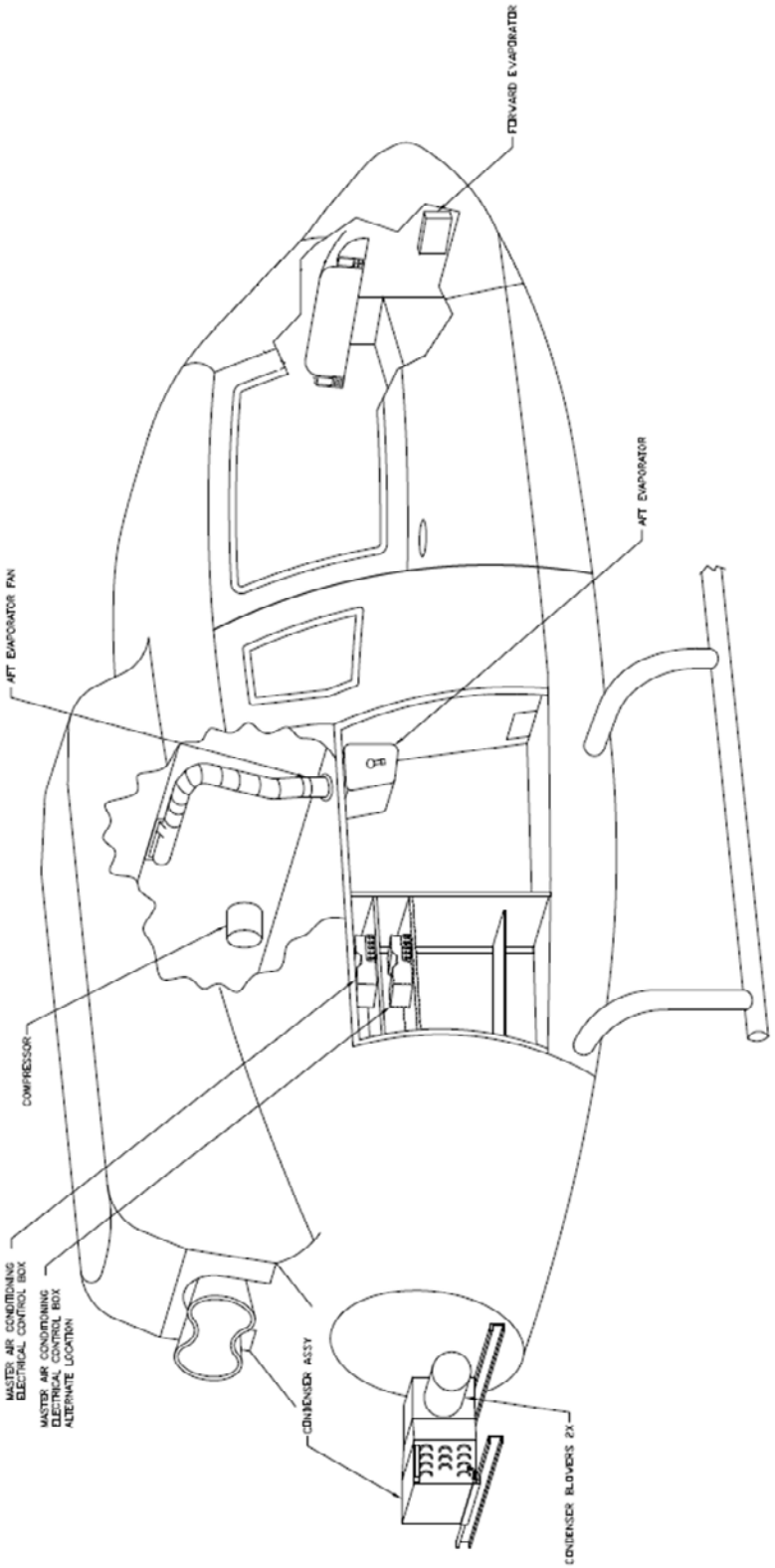


Figure 21-02: Equipment Locations for Air Conditioning System with the -031 Configuration (Aft Mounted Condenser)

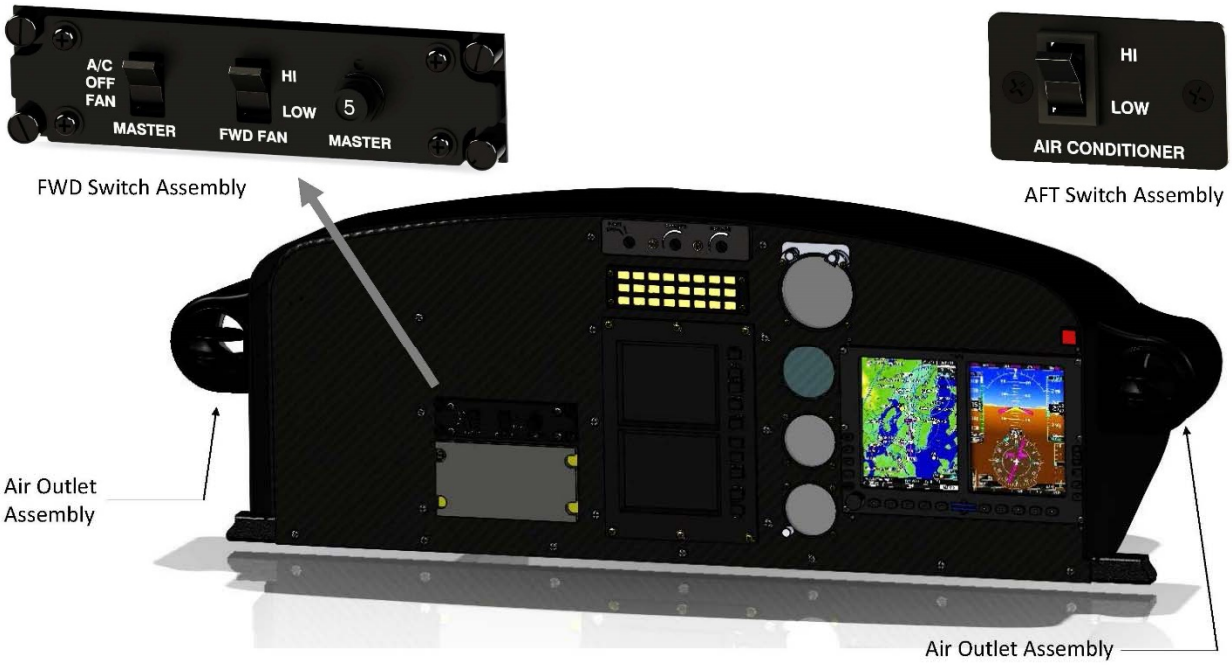


Figure 21 - 03: -01 AEC Basic Configuration

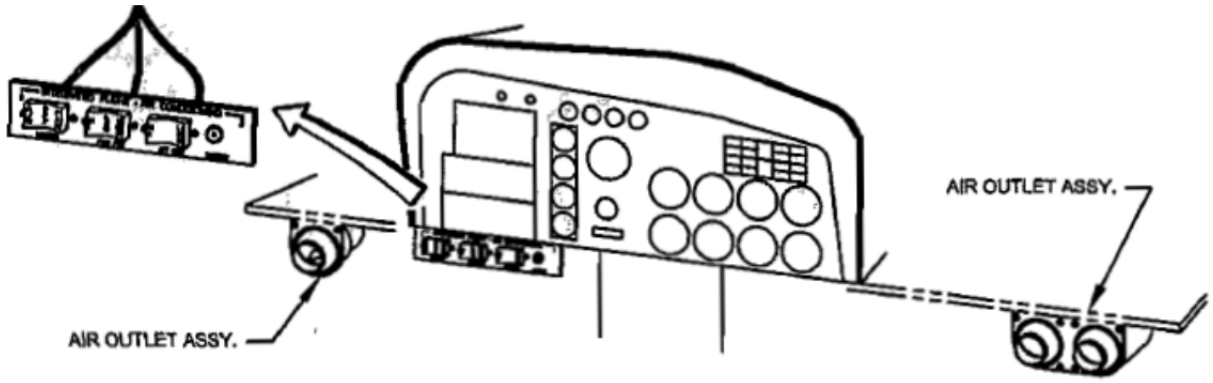


Figure 21 - 04: -31 ECL Tour 1 Configuration

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

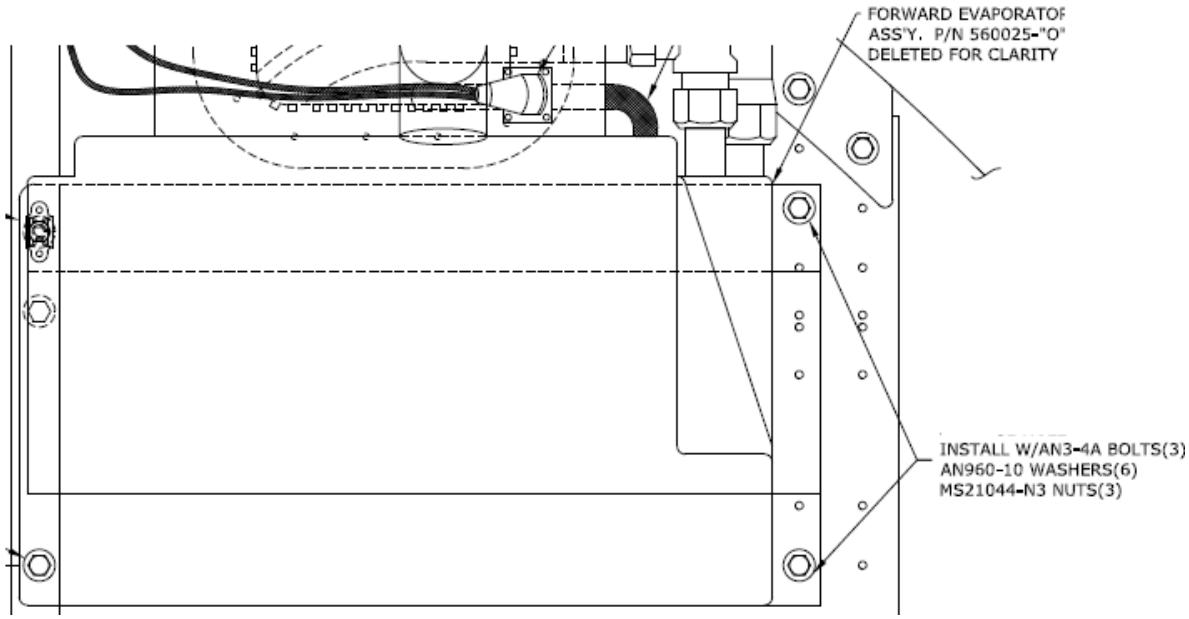


Figure 21 - 05: Forward Evaporator (AS-350)

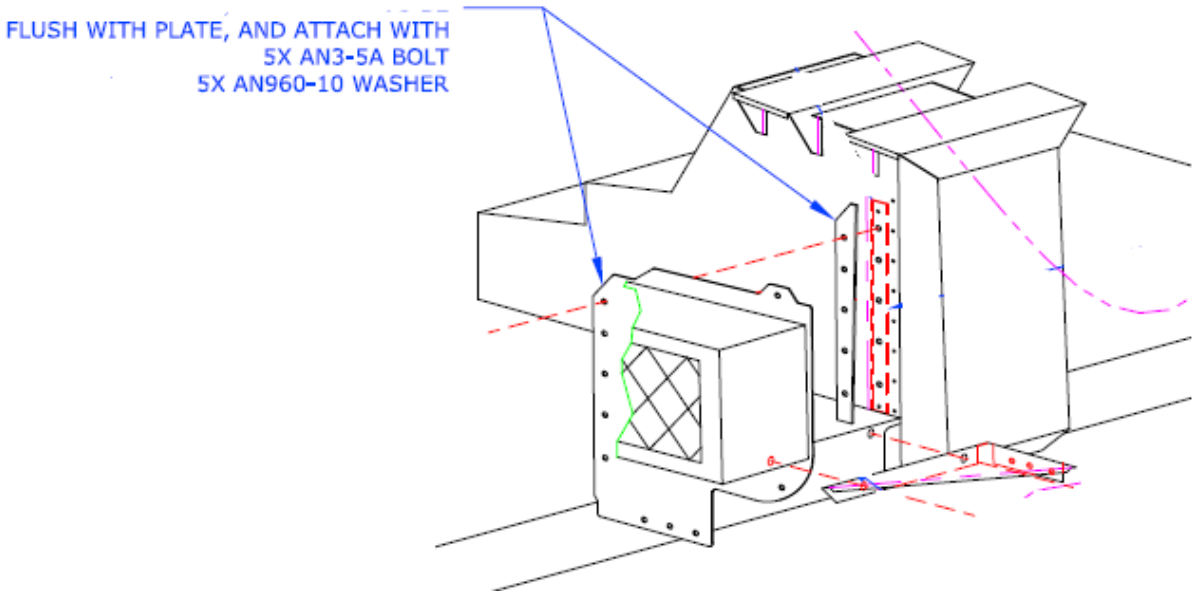


Figure 21 - 06: Forward Evaporator (EC-130)

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.

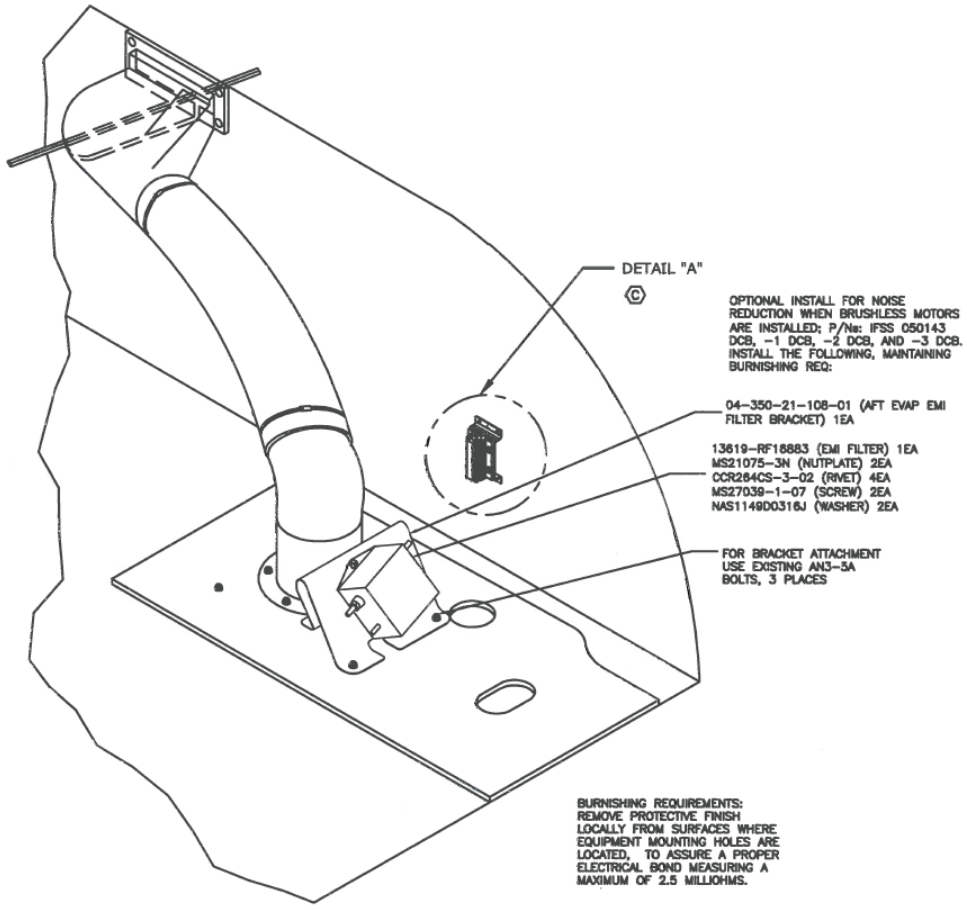


Figure 21 - 07: Aft Evaporator

4. Removal / Installation - Condenser

(Ref figures 21-08 and 21-09)

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

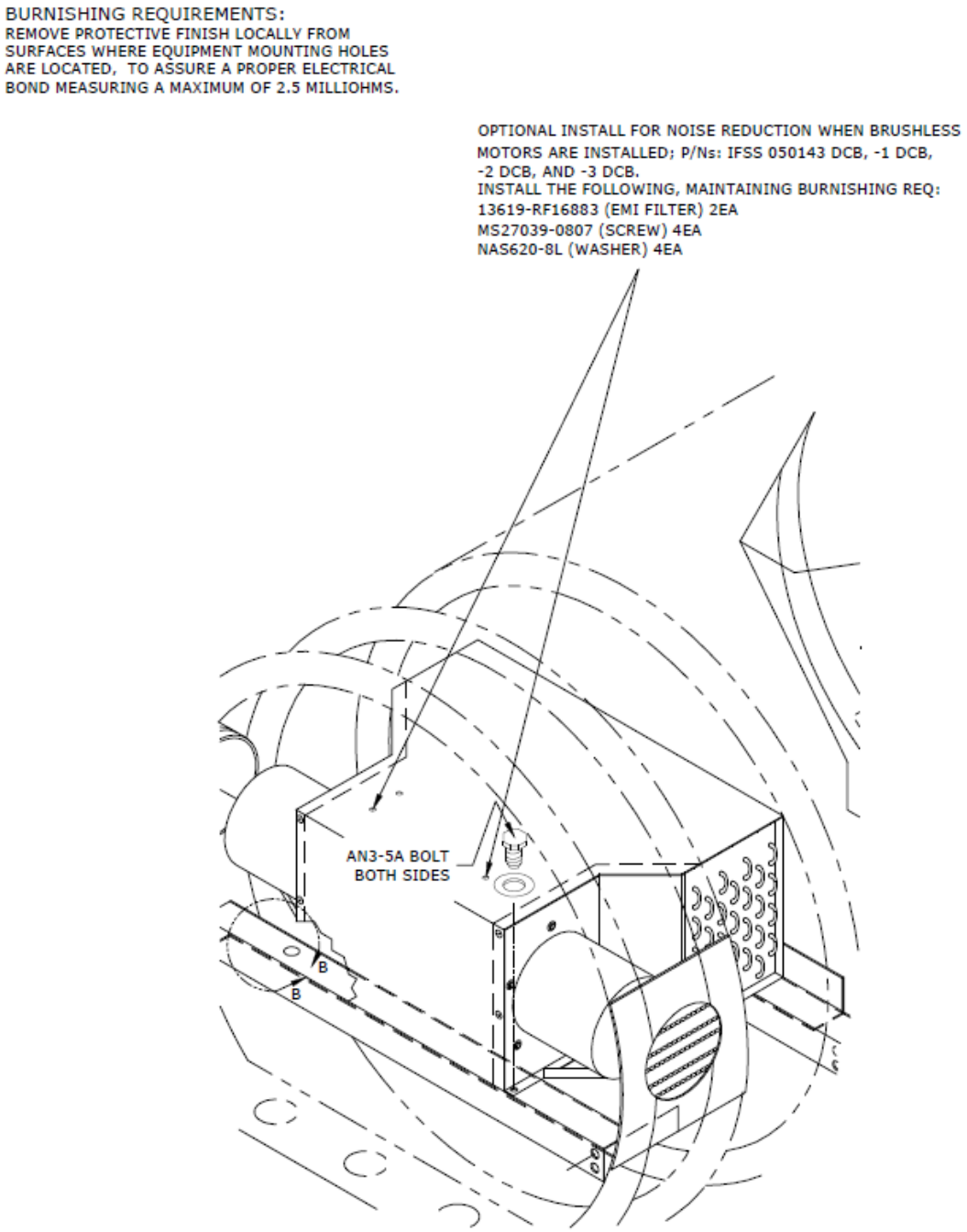


Figure 21 - 08: Aft Mounted Condenser (AS-350, EC-130)

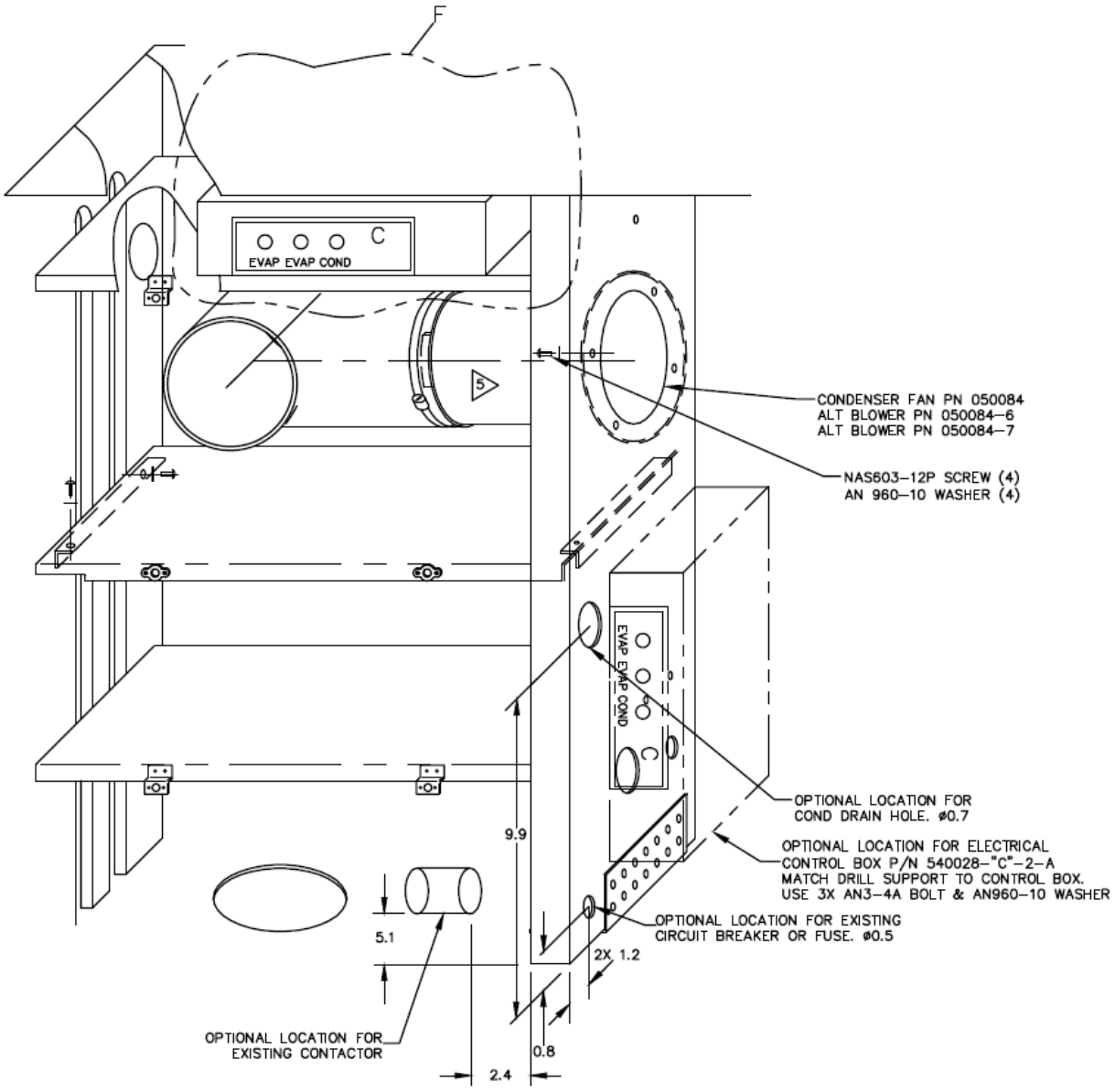


Figure 21 - 09: Side Mounted Condenser (AS-350)

5. Removal / Installation - Compressor

(Ref figure 21-10)

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 for PN 060018-1 Flat Belt, or 30 lbs tension for PN 060005 Grooved Belt.

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.

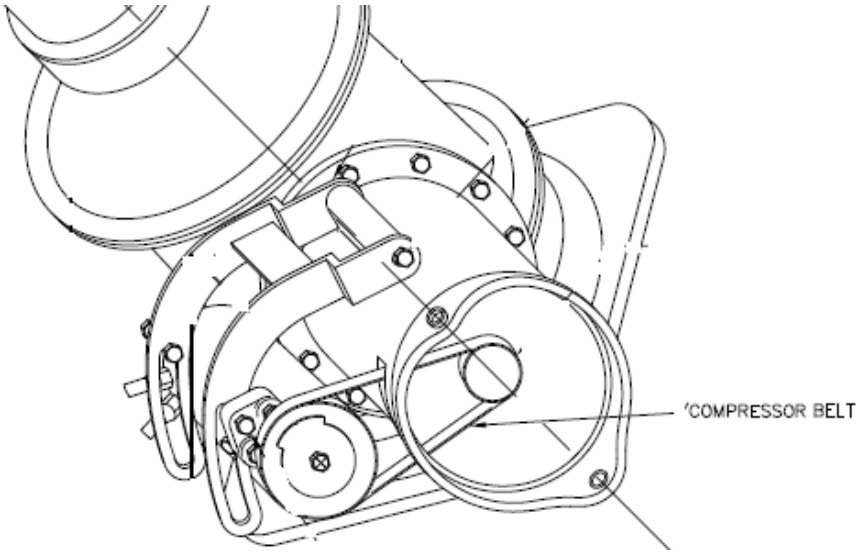


Figure 21 - 10: Compressor

6. Troubleshooting guide

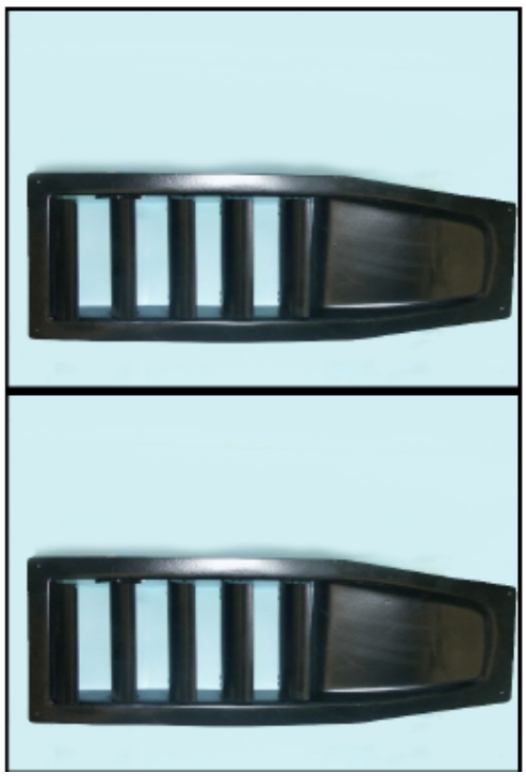
Symptoms	Trouble	Cause	Correction
-Insufficient cooling -Low-side pressure too low -High -side pressure too low -Air in ducts only slightly cool	Low or partial refrigerant charge	Leak	Find and fix the leak. If there was a loss of oil, be sure to check to compressor oil level. Evacuate and recharge per section 12.10.00
- 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 - Air in the ducts is usually cold, but becomes warm when pressure reading drop	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
- Insufficient cooling - Low-side pressure normal, but does not drop when the clutch cycles - High-side pressure high - Air in ducts only slight cool	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.
- No cooling - Low-side pressure too high - High-side pressure too high - Liquid line very hot - Air in ducts is warm	Condenser malfunction or system overcharge	Condenser malfunction or system overcharge	Evacuate and recharge per section 12.10.00 or replace condenser.

Section 21-10-00 Illustrated Parts List

1. General

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

Air Outlets



RSG PN: 520071-1
Condenser Air Intake Assembly Low Profile (Sliding Door)

AS350 

RSG PN: 520071
Condenser Air Intake Assembly (Hi Profile)

AS350 

Air Outlets

RSG PN: 500001
Left Side Air Outlet

EC130 

RSG PN: 500002
Right Side Air Outlet

EC130 

RSG PN: 500008-1
Louver Assembly
Right Side

AS350 

RSG PN: 500010-1
Louver Assembly
Right Side

AS350 

Air Outlets

RSG PN: 500011-1
Louver Assembly Left Side

AS350 

RSG PN: 500018
Air Outlet Assembly Right Side

AS350 

RSG PN: 500018-2
Air Outlet Assembly Right Side

AS350 

RSG PN: 510259
Air Outlet Assembly

AS350 

Air Outlets

RSG PN: 510259-1
Louver Assembly
Right Side, Lower

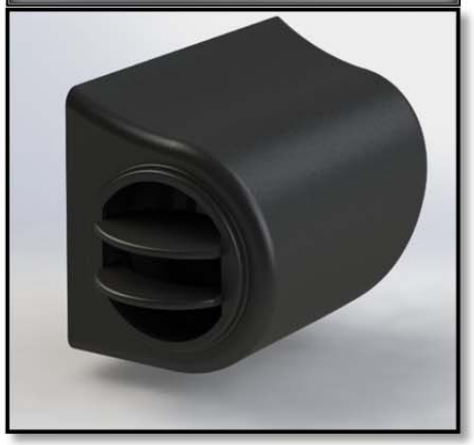
AS350

RSG PN: 510259-2
Air Outlet Assembly

AS350

RSG PN: 520156HP-01
Air Outlet L.H.

AS350



RSG PN: 520157HP-01
Air Outlet R.H.

AS350

Blower Motors

RSG PN: 050143
5” Vane Axial Blower Assembly

AS350 

EC130 

RSG PN: 050084
Fan, Vane Axial 7”, 24 VDC (Dynamic)

AS350 

EC130 

RSG PN: 050084-6
7” Vane Axial Blower Assembly (Enviro)

AS350 

EC130 

RSG PN: 610000
7” Blower Assembly DC Brushless

AS350 

EC130 

Blower Motors

RSG PN: 630000
7” Blower Assembly (Ampflow)

AS350 

EC130 

RSG PN: 640000
7” Blower Assembly (Ampflow)

AS350 

EC130 

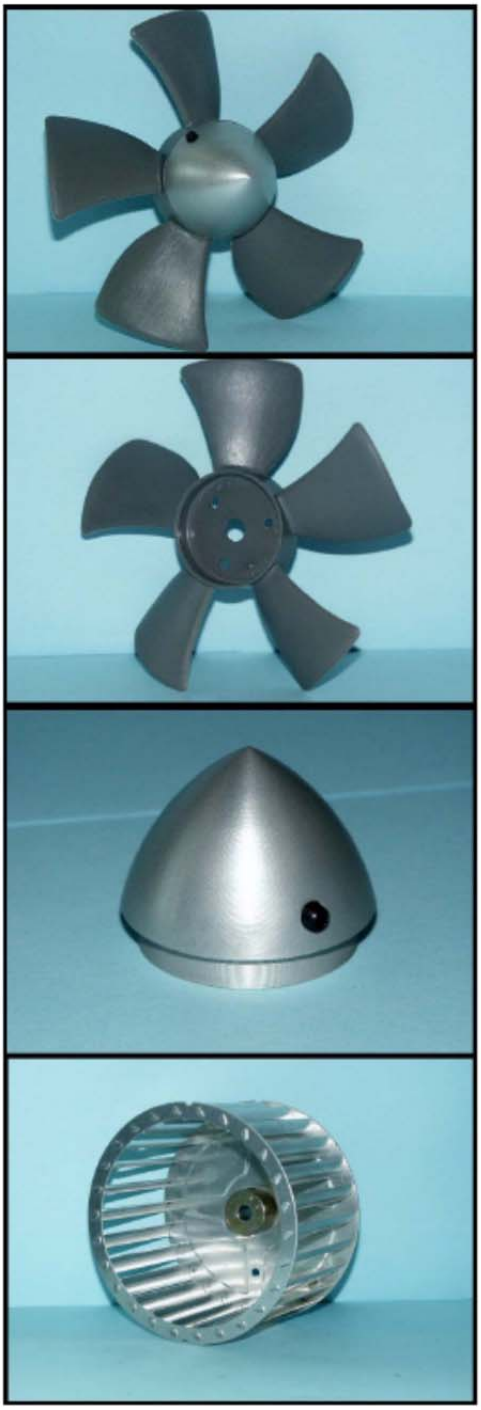
RSG PN: 050052-1
Blower Motor, Modified Right Half

AS350 

RSG PN: 490017-1
Aft Evaporator Fan Assembly

AS350 

Blower Motor Parts



RSG PN: 580000
5” Hub & Propeller Assembly

AS350 

EC130 

RSG PN: 250371
5” Propeller

AS350 

EC130 

RSG PN: 261176
Fan Blade Hub

AS350 

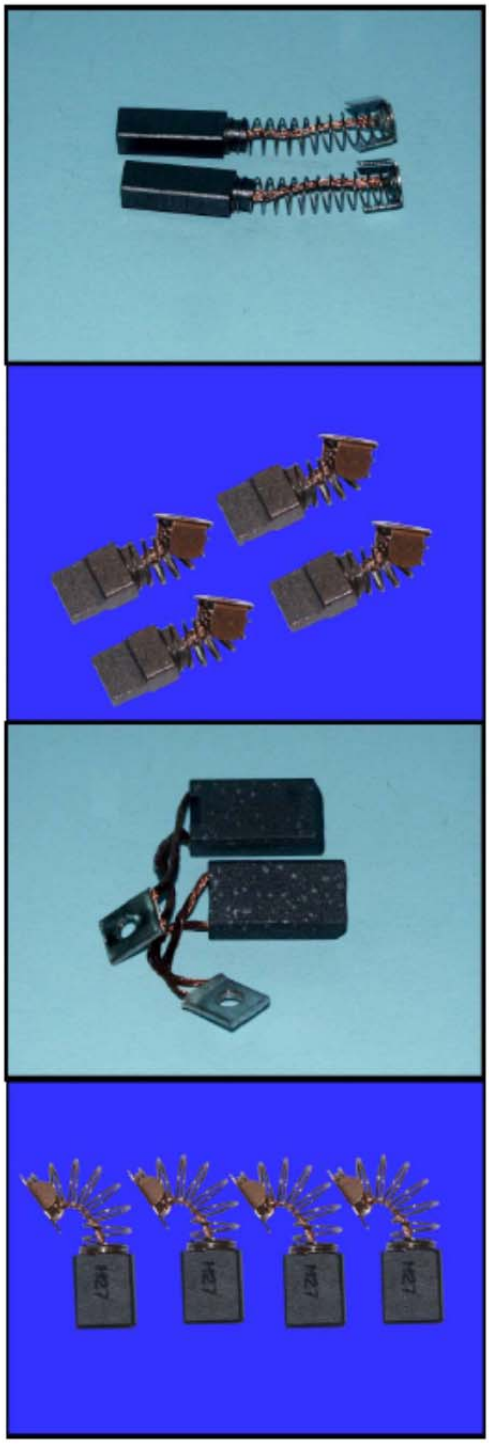
EC130 

RSG PN: 040004-8
Fan Wheel CW

AS350 

EC130 

Blower Motor Parts



RSG PN: 050031
5” Motor Brushes

AS350 

EC130 

RSG PN: 610000-8
7” Motor Brushes (Ampflow)

AS350 

EC130 

RSG PN: 050038
7” Motor Brushes (Enviro)

AS350 

EC130 

RSG PN: A20420
7” Motor Brushes (Dynamic)

AS350 

EC130 

Blower Motor Parts

RSG PN: 050032
5” Motor Brush Caps

AS350 

EC130 

RSG PN: 0941101-1-5
5” Motor Armature

AS350 

Compressor and Parts

RSG PN: 590008
Compressor Assembly

AS350

RSG PN: 590008-1
Compressor Assembly

AS350

EC130

RSG PN: 010015
Face Plate
(A3G/A2Y/1BQ/005 prefix stamped on face of rim) ∅.501 shaft

AS350

EC130

RSG PN: 010013
Face Plate
(A6H prefix stamped on face of rim keyed- ∅.430 shaft)

AS350

EC130

Compressor and Parts

RSG PN: 300355-2
Pulley

AS350 

RSG PN: 300396
Pulley

AS350 

EC130 

RSG PN: 010011
Bearing

AS350 

EC130 

RSG PN: 050033
Coil, 24 VDC

AS350 

EC130 

Compressor and Parts

Shim and Nut Kit

(keyed- ∅ .430 shaft)
Nut Fits All Shaft Sizes

AS350 

EC130 

RSG PN: 060005

24.3" 4 Groove Serpentine Belt

EC130 

RSG PN: 060006

25.3" 5 Groove Serpentine Belt

EC130 

RSG PN: 060018 25-1/4"
RSG PN: 060018-1 25"
Flat Belt

AS350 

EC130 

Compressor Bracket/Parts

RSG PN: 350-11-031-02
Compressor Bracket Kit

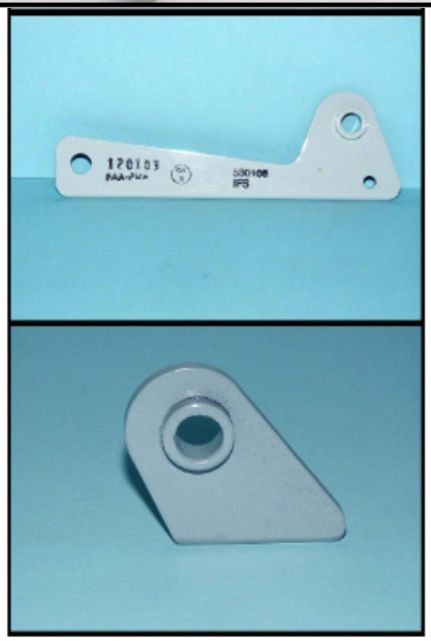
AS350

EC130

RSG PN: 04-130-21-101-01
Compressor Mount Bracket

AS350

EC130



RSG PN: 530100
Strap, Housing Mod Assembly

AS350

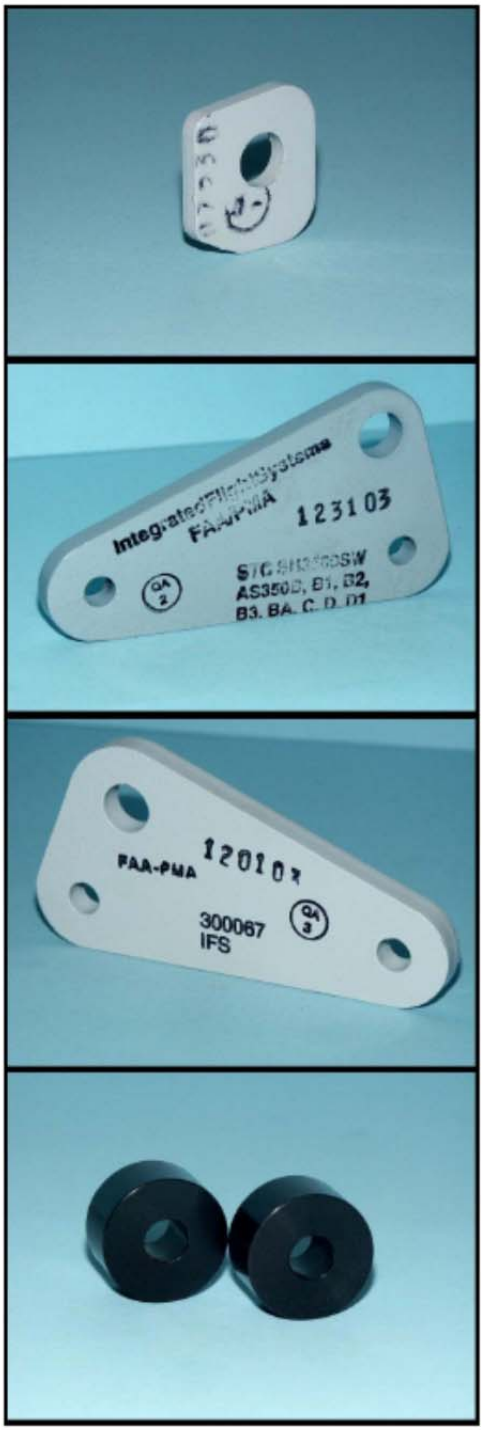
EC130

RSG PN: 530100-1
Strap, Housing Mod Assembly

AS350

EC130

Compressor Bracket/Parts



RSG PN: 300363-2
Compressor Shim, Upper
(Alt: 261155 not shown)

AS350

EC130

RSG PN: 300067-1
Compressor Standoff

AS350

EC130

RSG PN: 300067
Compressor Standoff

AS350

EC130

RSG PN: 261007
Bushings, SD507

AS350

EC130

Compressor Bracket/Parts

RSG PN: 261008
Bushings, SD507

AS350 

EC130 

RSG PN: 300095
Compressor Pin

AS350 

EC130 

Condenser/Evaporator

RSG PN: 090002-O
Expansion Valve

AS350 EC130

RSG PN: 090016-5
Receiver/Drier

AS350 EC130

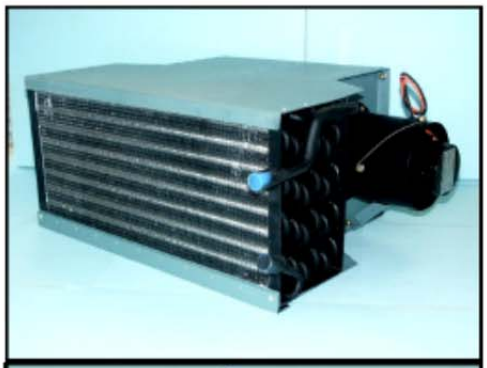
RSG PN: 550003-O
Aft Condenser Assembly

EC130

RSG PN: 550007-1
Side Condenser Assembly

AS350

Condenser/Evaporator



RSG PN: 550022
Aft Condenser Assembly
AS350

RSG PN: 560004
Fwd Evaporator Assembly
EC130

RSG PN: 560010-O-5
Aft Evaporator Assembly
AS350

RSG PN: 560016-O-1
Aft Evaporator Assembly
EC130

Condenser/Evaporator

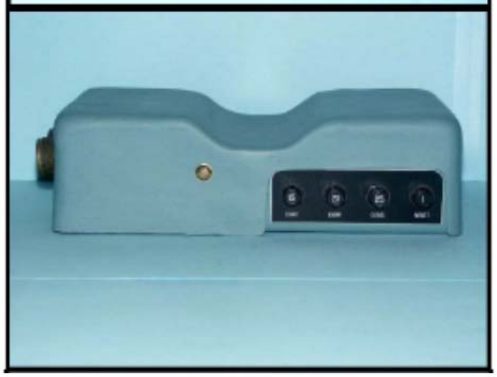
RSG PN: 560025-O
Fwd Evaporator Assembly

AS350 

Electrical Parts

RSG PN: 540009
Electrical Box Assembly

EC130

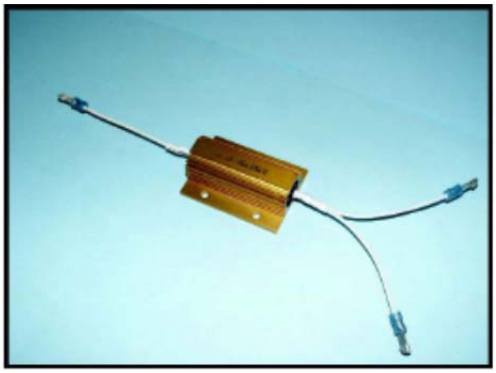


RSG PN: 540028-C-1-A
RSG PN: 540028-C-2-A
Electrical Box Assembly

AS350

RSG PN: 540011
Instrument Panel Switch

EC130



RSG PN: 540020
Resistor Assembly

EC130

Electrical Parts

RSG PN: 540044-5
Instrument Panel Switch

AS350

RSG PN: 540044-8
Instrument Panel Switch

AS350

RSG PN: 540044-9
5 amp Breaker Assembly

AS350

EC130

RSG PN: 540089
Aft Evaporator Switch Assembly

AS350

Electrical Parts

RSG PN: 050000
Switch with Button

AS350 

EC130 

RSG PN: 050001
Switch without Button

AS350 

EC130 

RSG PN: 050006
Switch without Button

AS350 

RSG PN: 050006-1
Switch with Button

AS350 

Electrical Parts

RSG PN: 050006-2
Switch with Button

AS350 

EC130 

RSG PN: 050006-3
Switch without Button

AS350 

EC130 

RSG PN: 050007-1
Button

AS350 

EC130 

RSG PN: 050007-3
Button

AS350 

Electrical Parts

RSG PN: 050007-4
Button

AS350 

EC130 

RSG PN: 050008
Relay

AS350 

EC130 

RSG PN: 050015-2
50 Amp Limiter

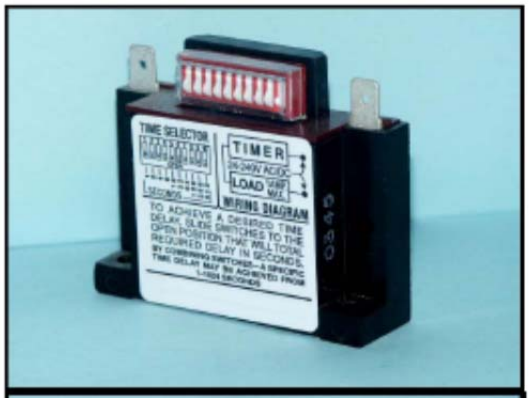
AS350 

EC130 

RSG PN: 050024
Resistor

AS350 

Electrical Parts



RSG PN: 050026
Timer

AS350 EC130

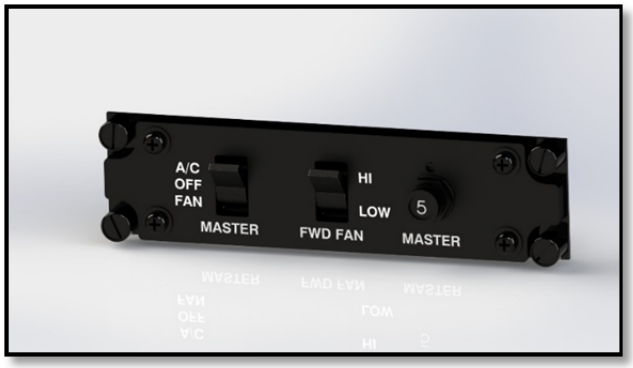
RSG PN: 050107
Low Pressure Switch

AS350 EC130

RSG PN: 090004
High Pressure Switch

AS350 EC130

Electrical Parts

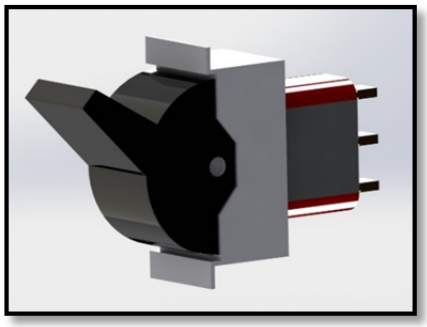


RSG PN: 540044-8-02
Instrument Panel Switch Assy.

AS350 

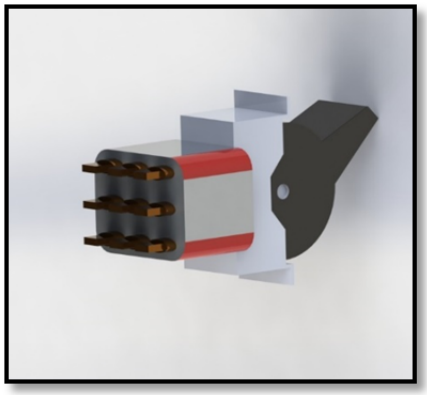
RSG PN: 540089-02
Aft Switch Assy.

AS350 



RSG PN: 7303J21ZQI22
Switch, 3PDT, 3 POS.

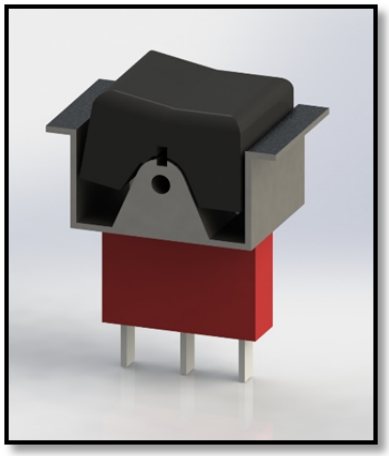
AS350 



RSG PN: 7301J21ZGE22
Switch, 3PDT, 3 POS.

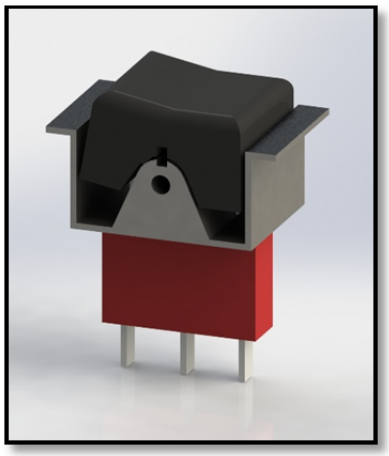
AS350 

Electrical Parts



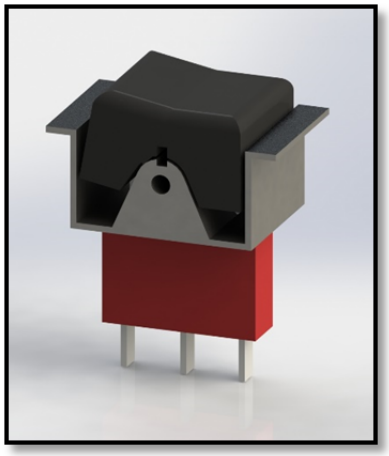
RSG PN: 7301J11ZQE22
Switch, SPST, 2 POS.

AS350 



RSG PN: 7101J51ZQE22
Switch, SPST, 2 POS.

EC130 



RSG PN: 7203J51ZQE22
Switch, DPDT, 2 POS.

EC130 

EC130 Hoses

RSG PN: 570103
High Pressure Hose #6 Assembly

EC130

RSG PN: 570104
Condenser to Receiver/Drier Hose #6 Assembly

EC130

RSG PN: 570105
Return Hose #10 Assembly

EC130

RSG PN: 570070-O-A
Hose Assembly #8 Compressor Discharge

EC130

AS350 Hoses Aft Mount Condenser

RSG PN: 570067-O-A
Hose Assembly #6
Condenser to Drier

AS350 

RSG PN: 570070-O-A
Hose Assembly #8
Compressor Discharge

AS350 

RSG PN: 570072-O-A
Hose Assembly #6 Fwd
Evaporator to Receiver/Drier

AS350 

RSG PN: 570087-O-A
Hose Assy. Fwd Evaporator
to Aft Evaporator to
Condenser

AS350 

AS350 Hoses Side Mount Condenser

RSG PN: 570020-O-A
Hose Assembly #6
Condenser to Drier

AS350

RSG PN: 570024-O-A
Hose Assembly #8
Compressor Discharge

AS350

RSG PN: 570072-O-A
Hose Assembly #6 Fwd
Evaporator to Receiver/Drier

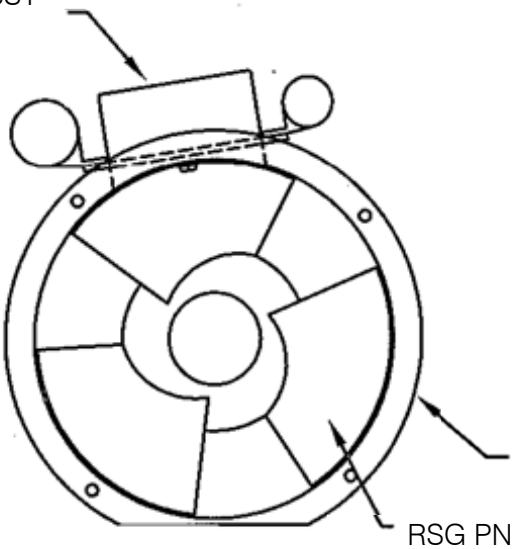
AS350

RSG PN: 570087-O-A
Hose Assembly Fwd
Evaporator to Aft Evaporator
to Compressor

AS350

BRUSHLESS BLOWER MOTORS AND PARTS

RSG PN 540126-1 CONTROLLER ASSY



RSG PN: 050084-7-2
7” DC Brushless Blower Assembly Short

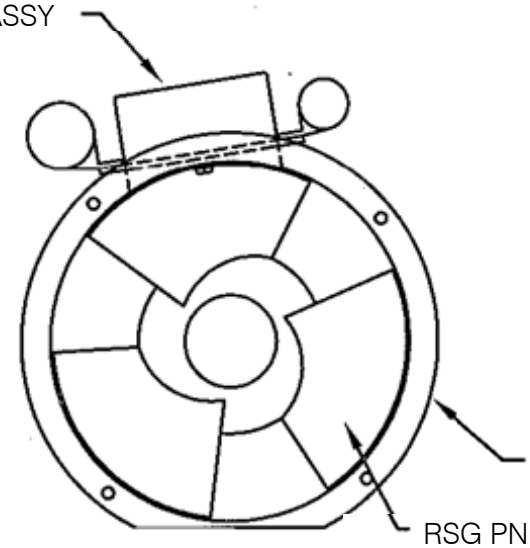
AS350

EC130

RSG PN 040020 7" BLOWER

RSG PN 040019 7" PROPELLER
RSG PN 050176-1 7" PROPELLER HUB ASSY
RSG PN 050193 7" DC BRUSHLESS MOTOR

RSG PN 540126-1 CONTROLLER ASSY



RSG PN: 050084-7-3
7” DC Brushless Blower Assembly Long

AS350

EC130

RSG PN 040021 7" BLOWER

RSG PN 040019 7" PROPELLER
RSG PN 050176-1 7" PROPELLER HUB ASSY
RSG PN 050193 7" DC BRUSHLESS MOTOR

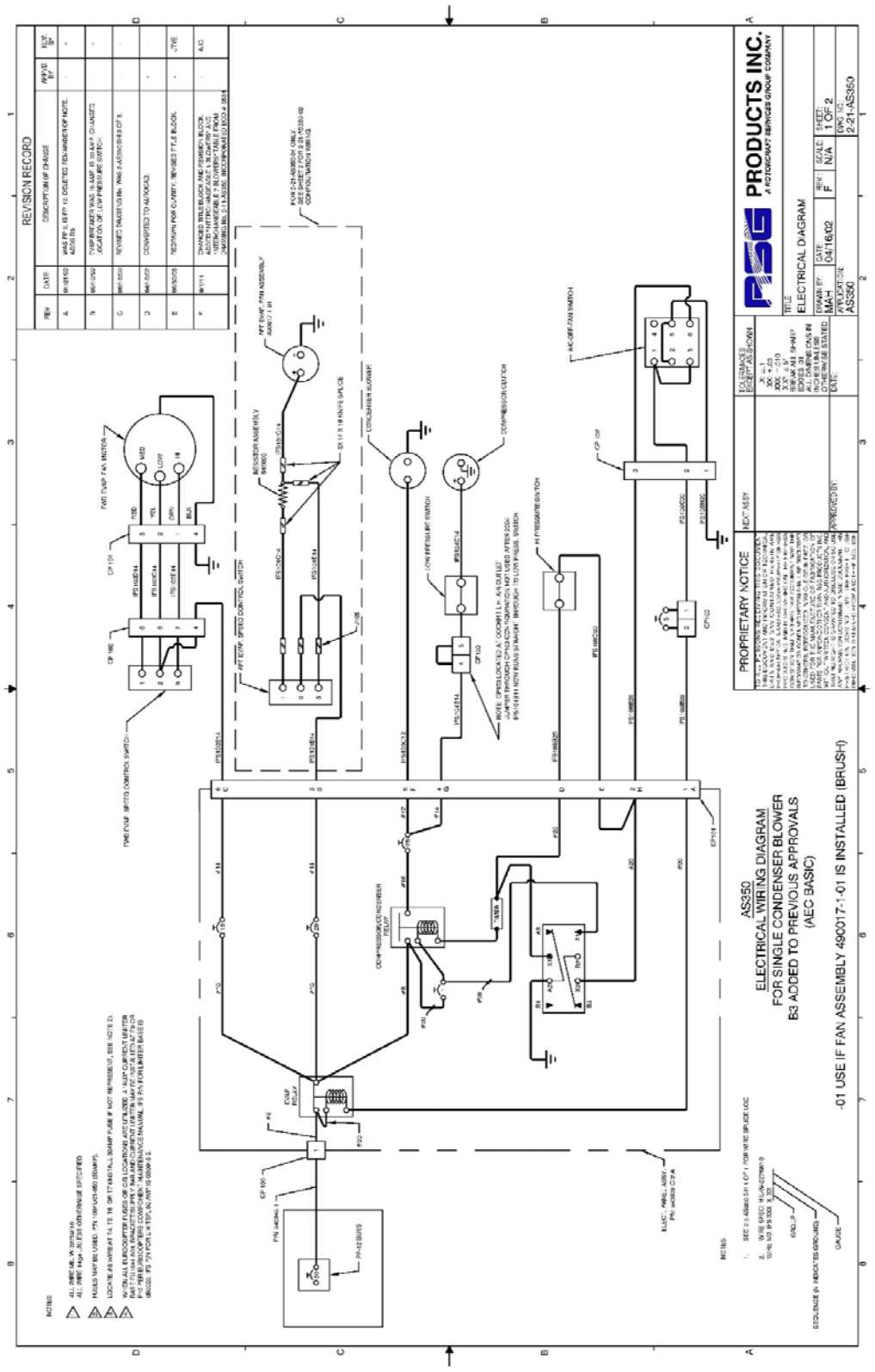
LIST OF CONSUMABLE MATERIALS

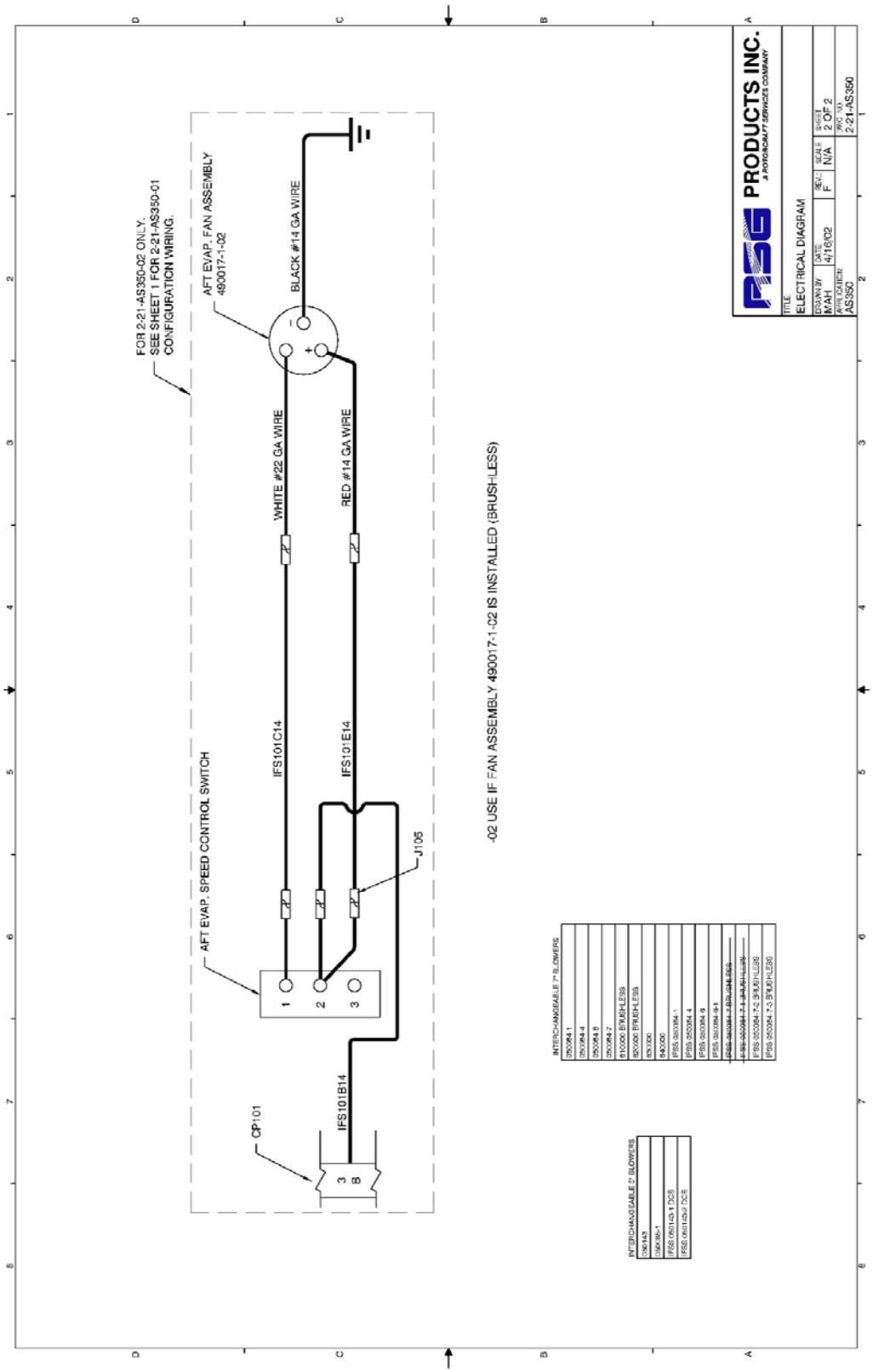
DESCRIPTION	P/N	VENDOR/SPECIFICATION
THREAD LOCK	242	LOCTITE
ADHESIVE	1300L	3M
Cleaning cloth, Low-Lint	--	Commercial
Mineral Spirits, Cleaning Solvent	--	MIL-PRF-680, TYP II OR ASTM-D235
Alodine	Alodine 1200	--
Alodine	Iridite 14-2	--
Paint Stripper	Turco 5873	--
Polyamide Paint Primer	--	--
Dye Penetrant 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	--

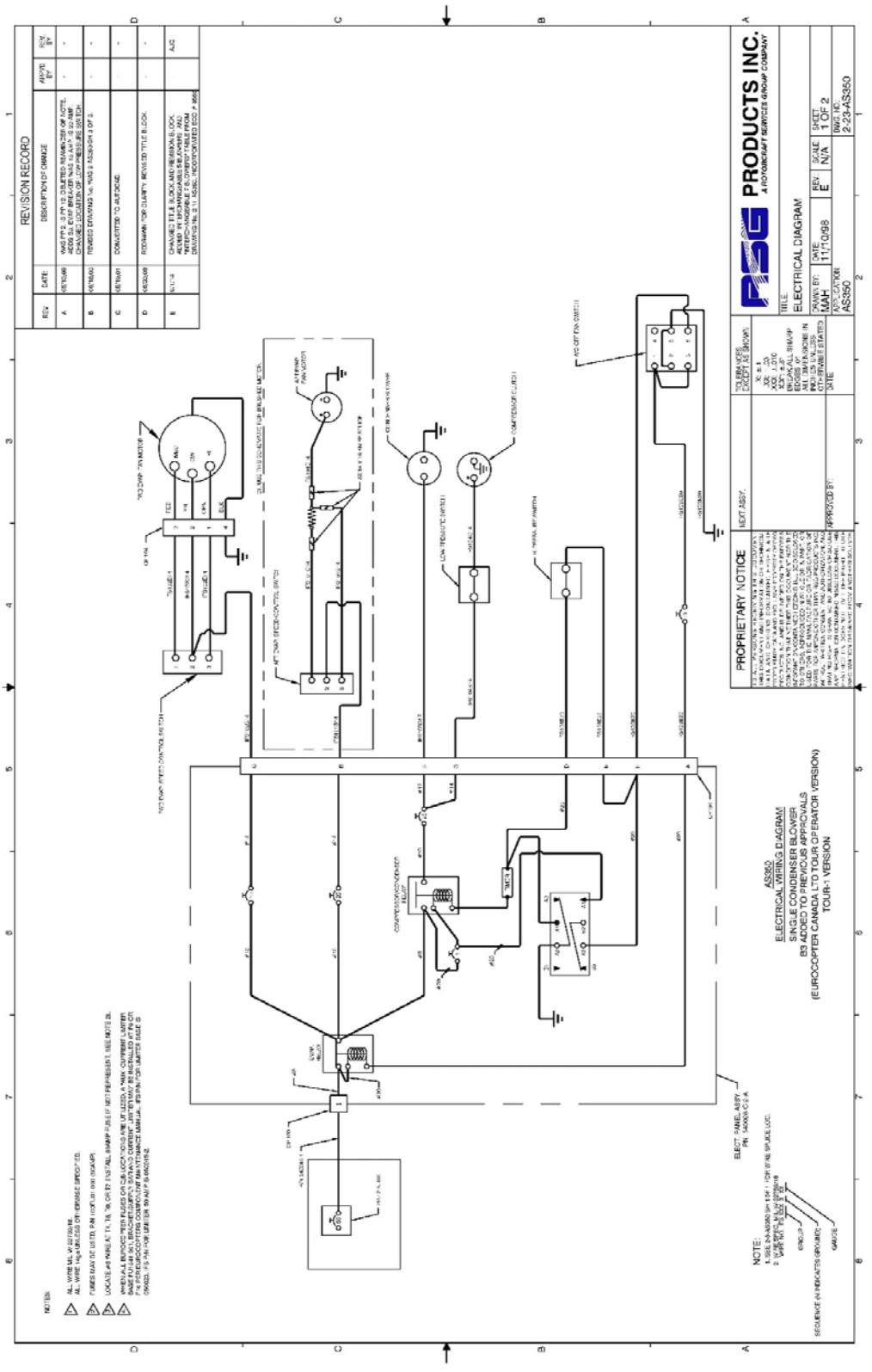
Chapter 98

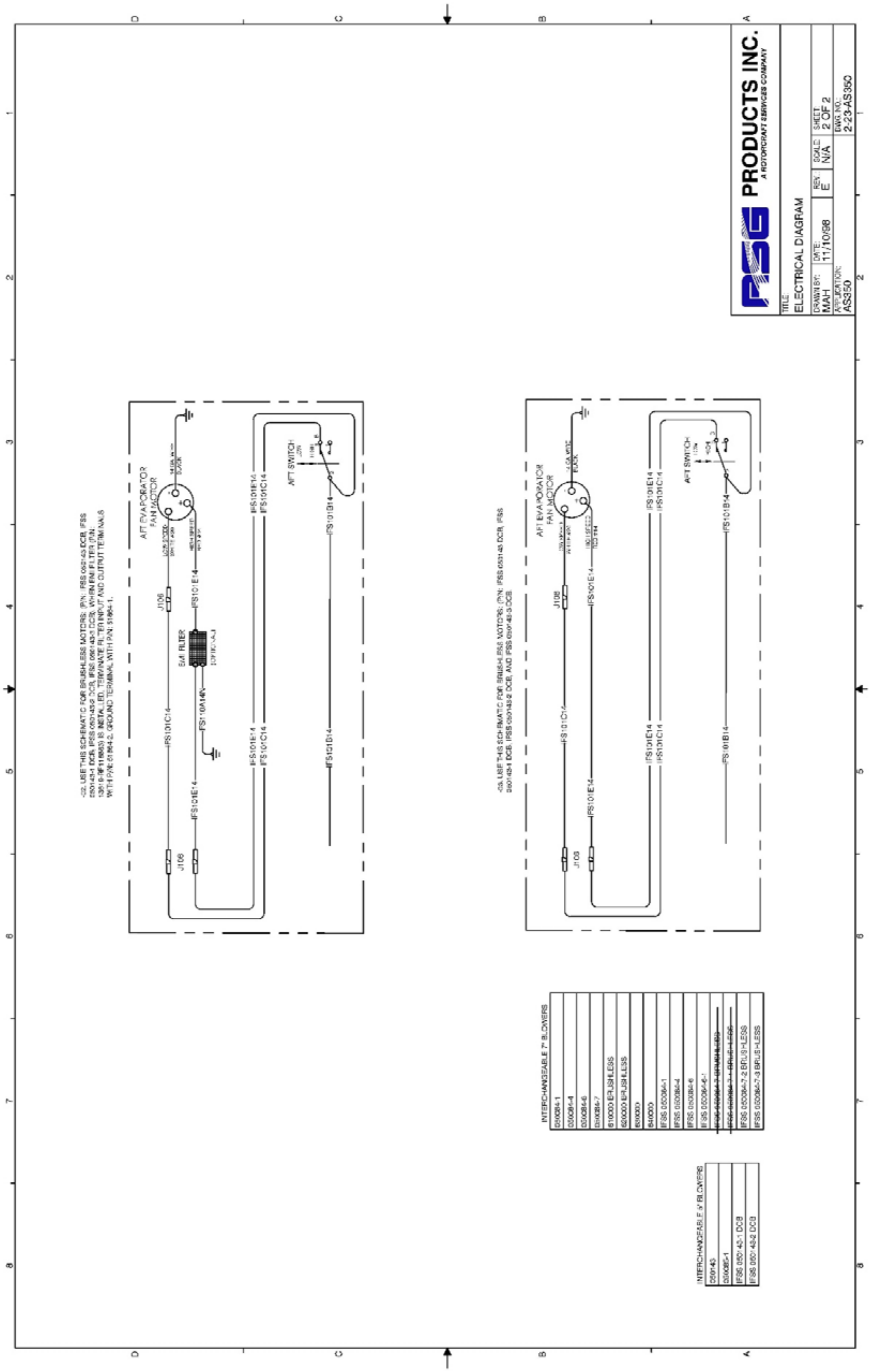
Section 98-00-00 Wiring Diagrams and Plumbing Schematics

This section contains all applicable wiring diagrams and plumbing schematics.

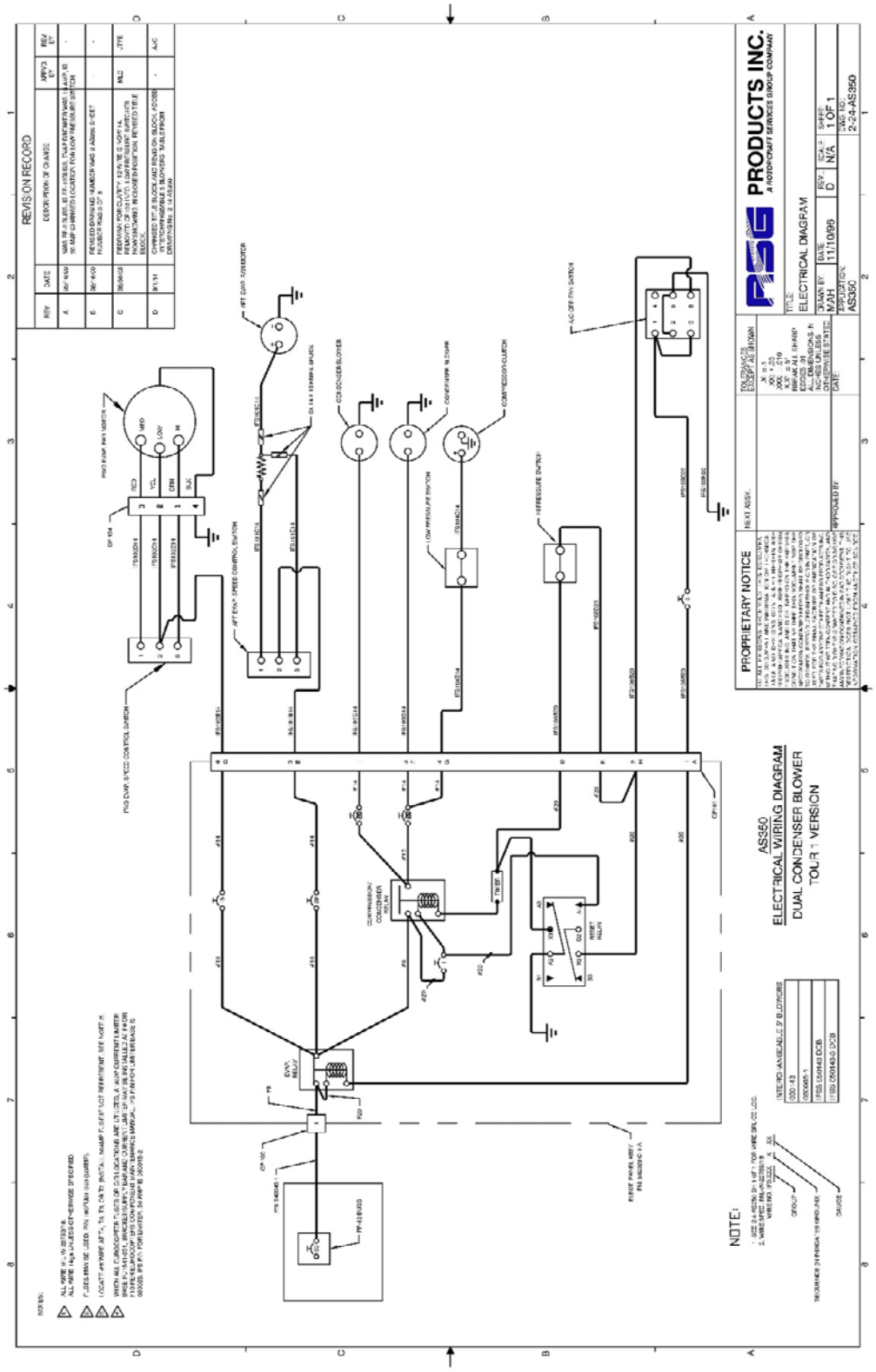

REVISION RECORD
PROPRIETARY NOTICE
PSG PRODUCTS INC.
TITLE
ELECTRICAL DIAGRAM
AS350
ELECTRICAL WIRING DIAGRAM
FOR SINGLE CONDENSER BLOWER
B3 ADDED TO PREVIOUS APPROVALS
(AEC BASIC)
-01 USE IF FAN ASSEMBLY 490017-1-01 IS INSTALLED (BRUSH)

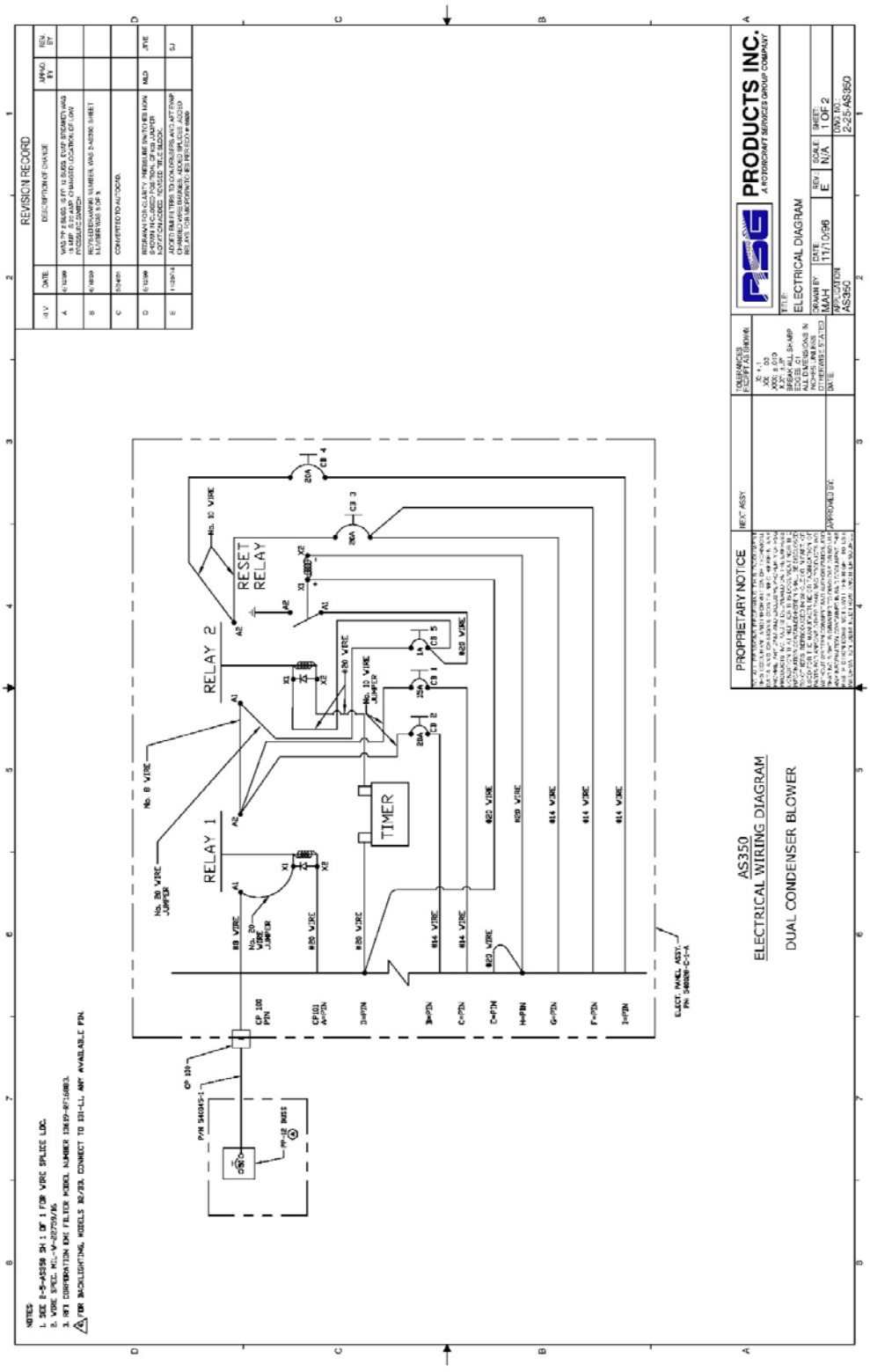

FOR 2-21-AS350-02 ONLY.
SEE SHEET 1 FOR 2-21-AS350-01
CONFIGURATION WIRING.
AFT EVAP. FAN ASSEMBLY
490017-1-02
BLACK #14 GA WIRE
WHITE #22 GA WIRE
RED #14 GA WIRE
IFS101C14
IFS101E14
J105
AFT EVAP. SPEED CONTROL SWITCH
1
2
3
IFS101B14
CP101
3
B
-02 USE IF FAN ASSEMBLY 490017-1-02 IS INSTALLED (BRUSHLESS)
PSG PRODUCTS INC.
A HONEYWELL AEROSPACE COMPANY
TITLE
ELECTRICAL DIAGRAM
DRAWN BY
M.AH
DATE
4/16/02
REV.
F
SCALE
N/A
SHEET
2 OF 2
A/C MODEL
AS350
DWG NO.
2-21-AS350

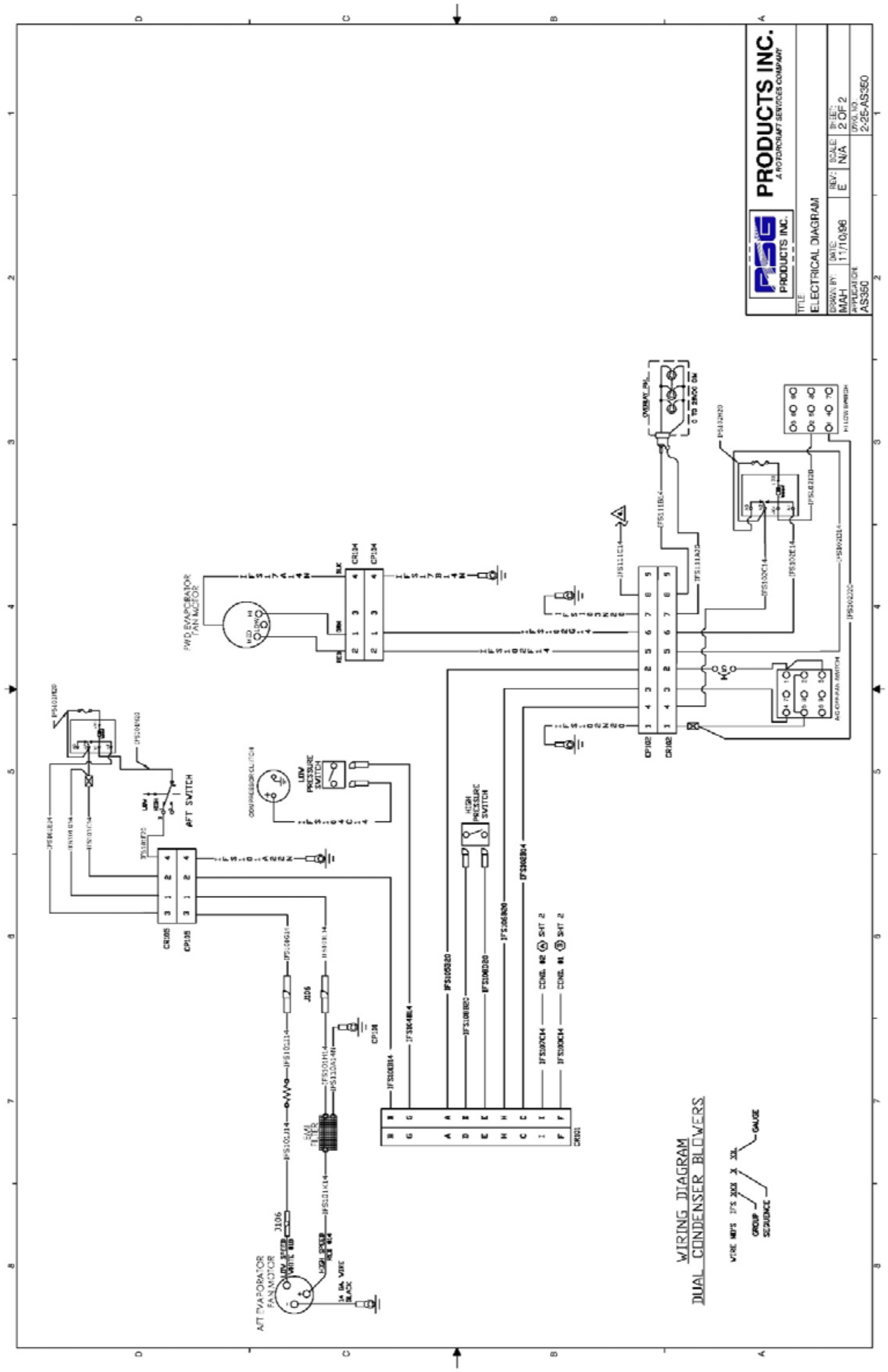

REVISION RECORD
PROPRIETARY NOTICE
PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
ELECTRICAL DIAGRAM
AS350
ELECTRICAL WIRING DIAGRAM
SINGLE CONDENSER BLOWER
B3 AIRCONDITIONER MODIFICATIONS
(EUROCOPTER CANADA LTD TOUR OPERATOR VERSION)
TOUR1 VERSION



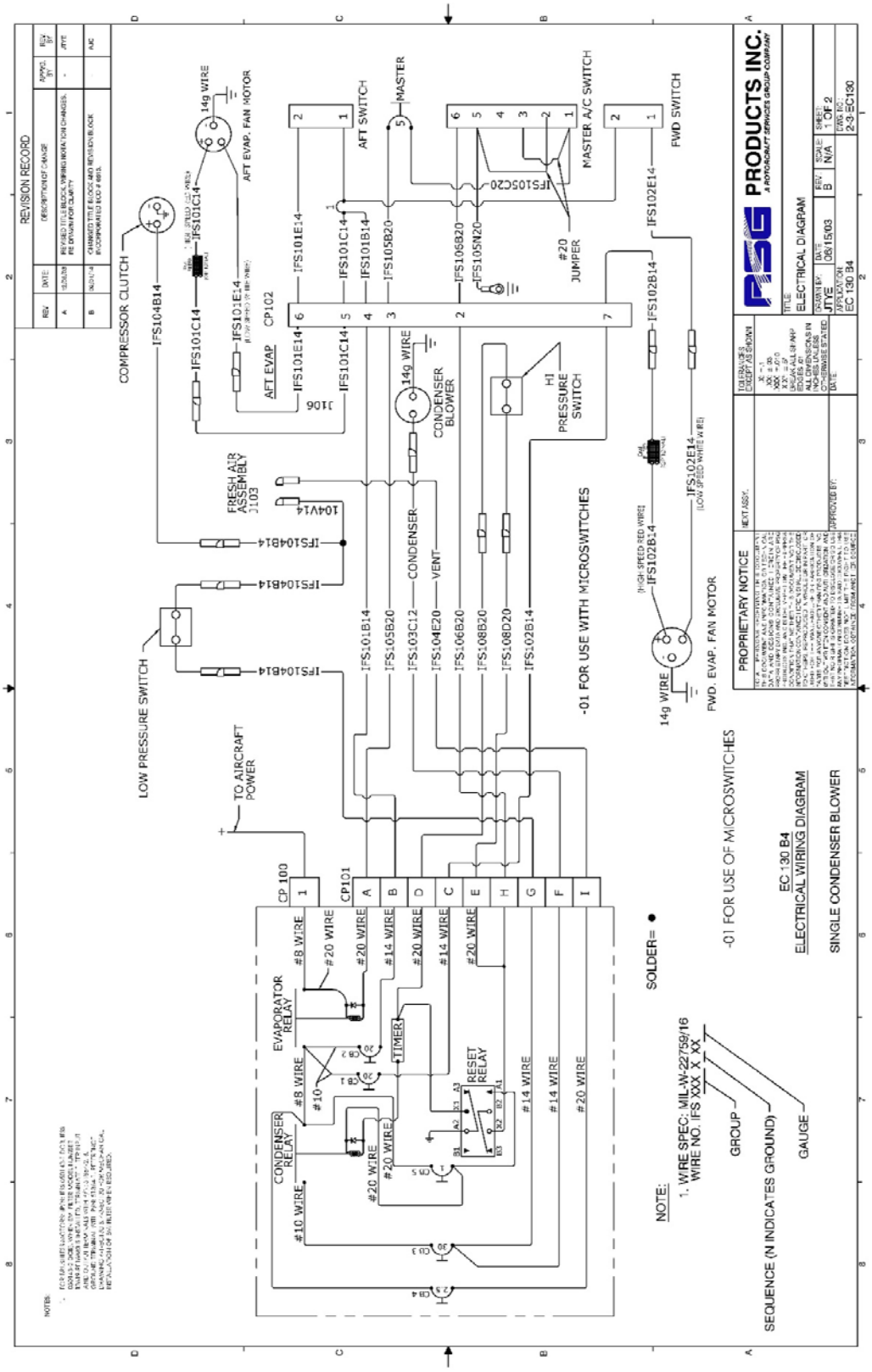
PRODUCTS INC.
A ROTORCRAFT SERVICES COMPANY
TITLE
ELECTRICAL DIAGRAM
DRAWN BY: MAH
DATE: 11/10/98
REV: E
SCALE: N/A
SHEET 2 OF 2
APPLICATION: AS350
DWG NO.: 2-23-AS350
AFT EVAPORATOR FAN MOTOR
AFT SWITCH
EMI FILTER
J106
INTERCHANGEABLE 7" BLOWERS
INTERCHANGEABLE 8" BLOWERS

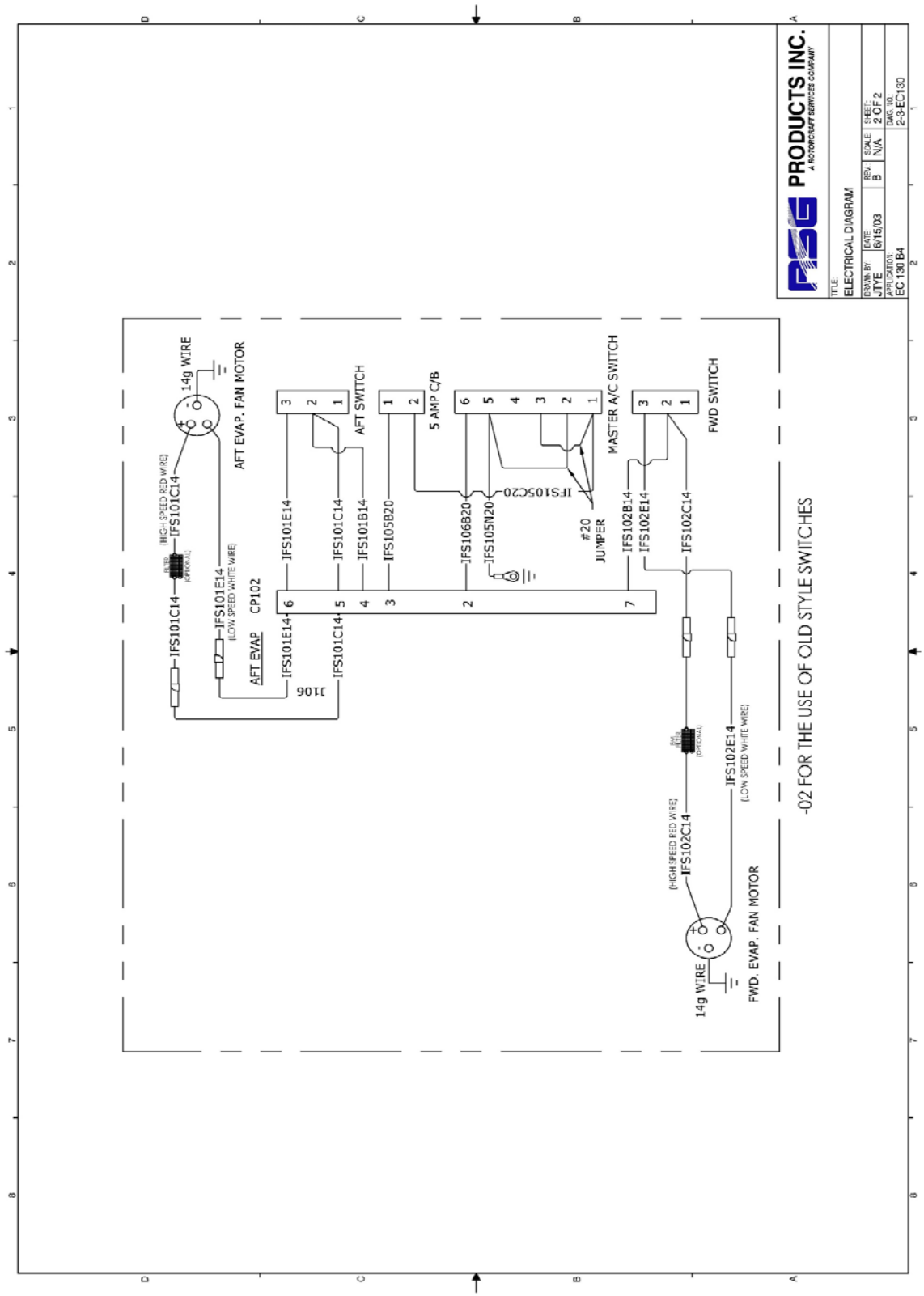

REVISION RECORD
PROPRIETARY NOTICE
PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
TITLE: ELECTRICAL DIAGRAM
AS350
ELECTRICAL WIRING DIAGRAM
DUAL CONDENSER BLOWER
TOUR 1 VERSION
NOTE:

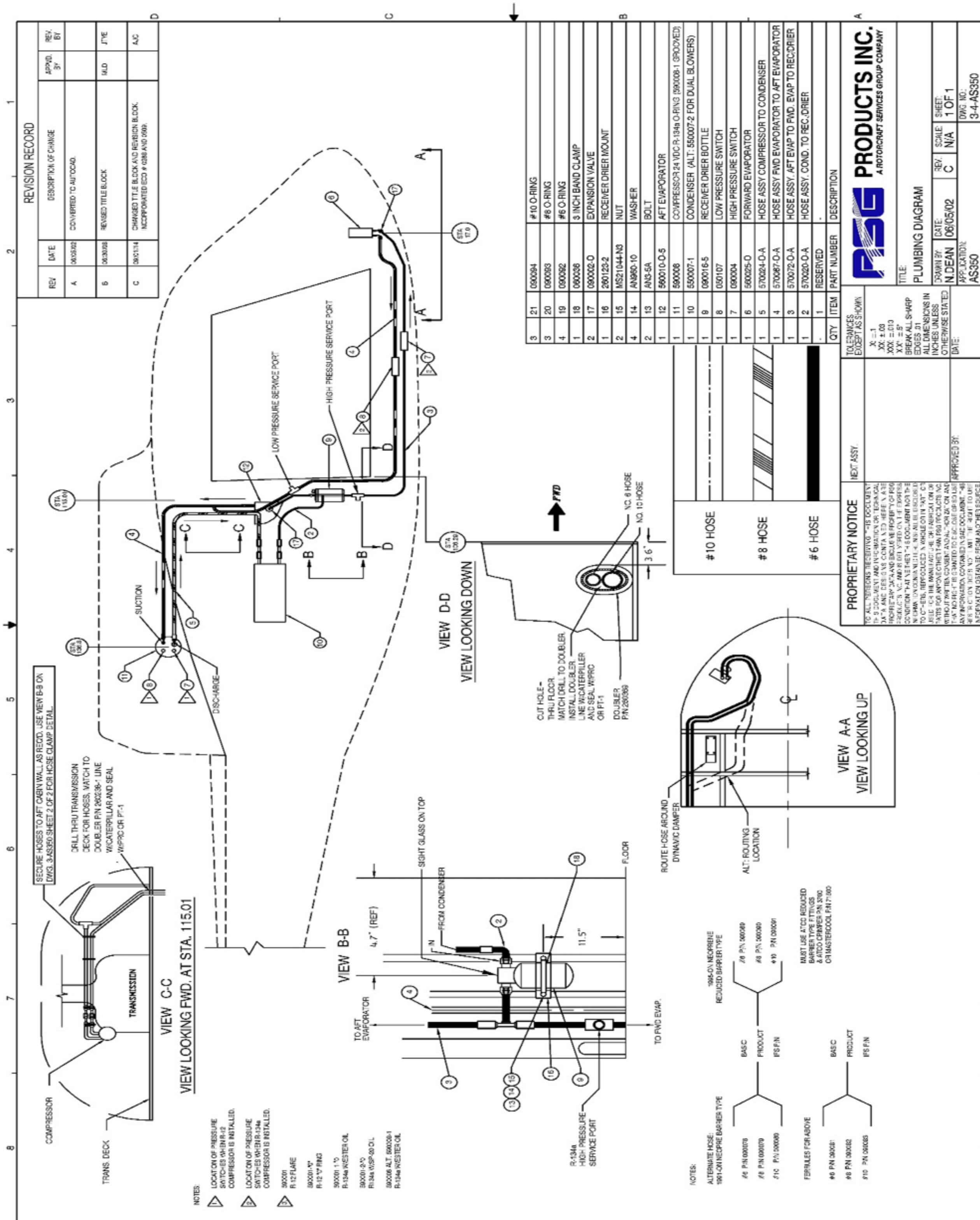

REVISION RECORD
PROPRIETARY NOTICE
PSG PRODUCTS INC.
AS350
ELECTRICAL WIRING DIAGRAM
DUAL CONDENSER BLOWER
RESET RELAY
RELAY 2
RELAY 1
TIMER
NOTES



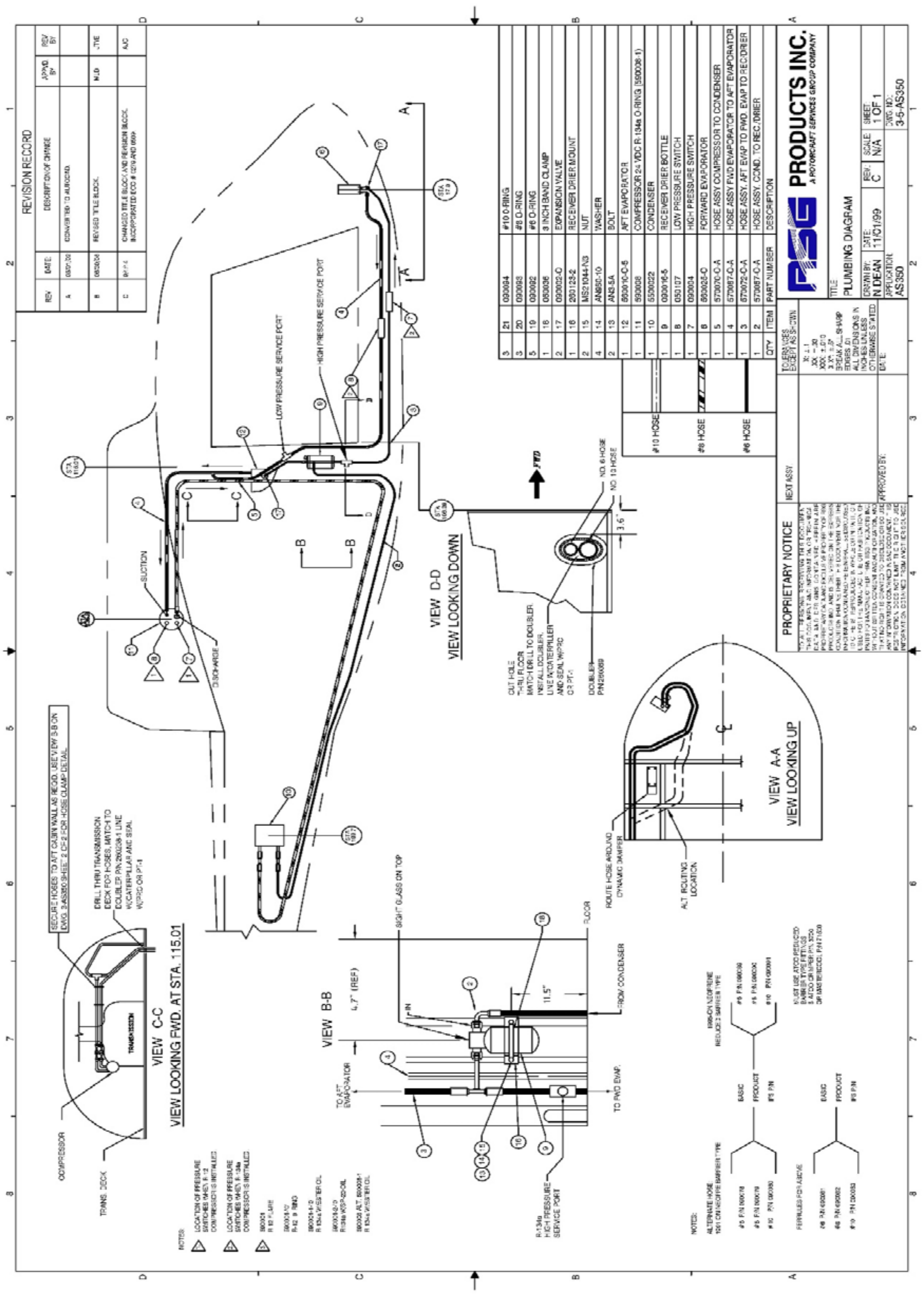
PRODUCTS INC.
ELECTRICAL DIAGRAM
WIRING DIAGRAM
DUAL CONDENSER BLOWERS

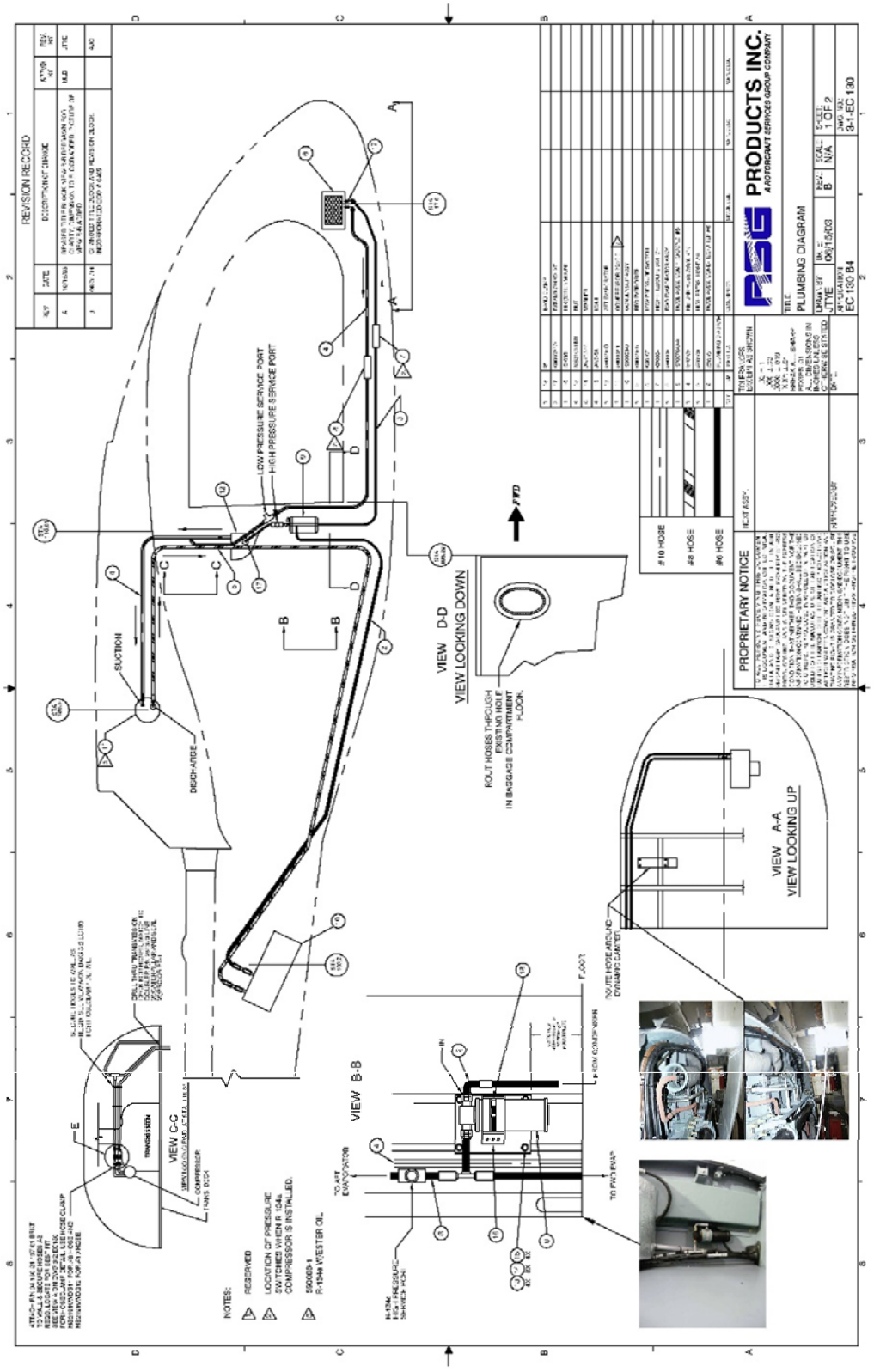

REVISION RECORD
PROPRIETARY NOTICE
PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
TITLE: ELECTRICAL DIAGRAM
EC 130 B4
ELECTRICAL WIRING DIAGRAM
SINGLE CONDENSER BLOWER
SEQUENCE (N INDICATES GROUND)
GAUGE
GROUP
NOTE:
1. WIRE SPEC: MIL-W-22759/16
WIRE NO. IFS XXX X XX
SOLDER= ●
-01 FOR USE OF MICROSWITCHES
-01 FOR USE WITH MICROSWITCHES
COMPRESSOR CLUTCH
AFT EVAP. FAN MOTOR
AFT EVAP
AFT SWITCH
MASTER
MASTER A/C SWITCH
FWD SWITCH
#20 JUMPER
CONDENSER BLOWER
HI PRESSURE SWITCH
FRESH AIR ASSEMBLY 2103
LOW PRESSURE SWITCH
TO AIRCRAFT POWER
FWD. EVAP. FAN MOTOR
EVAPORATOR RELAY
CONDENSER RELAY
RESET RELAY
TIMER
CONDENSER
VENT
CP 100
CP101
CP102
J106
14g WIRE
#20 WIRE
#14 WIRE
#10 WIRE
#8 WIRE


PSG PRODUCTS INC.
A ROTORCRAFT SERVICES COMPANY
TITLE
ELECTRICAL DIAGRAM
DRAWN BY
JTYE
DATE
6/15/03
REV.
B
SCALE
N/A
SHEET
2 OF 2
APPLICABILITY
EC-130 B4
DWG NO.
2-3-EC130
14g WIRE
AFT EVAP. FAN MOTOR
IFS101C14
IFS101E14
(LOW SPEED WHITE WIRE)
AFT EVAP
CP102
J106
IFS101E14
IFS101C14
IFS101B14
IFS105B20
AFT SWITCH
5 AMP C/B
IFS106B20
IFS105N20
IFS105C20
#20
JUMPER
MASTER A/C SWITCH
IFS102B14
IFS102E14
IFS102C14
FWD SWITCH
IFS102E14
(LOW SPEED WHITE WIRE)
IFS102C14
14g WIRE
FWD. EVAP. FAN MOTOR
-02 FOR THE USE OF OLD STYLE SWITCHES



REVISION RECORD
VIEW D-D
VIEW LOOKING DOWN
VIEW A-A
VIEW LOOKING UP
VIEW B-B
VIEW C-C
VIEW LOOKING FWD. AT STA. 115.01
LOW PRESSURE SERVICE PORT
HIGH PRESSURE SERVICE PORT
SUCTION
DISCHARGE
TRANSMISSION
COMPRESSOR
TRANS. DECK
SIGHT GLASS ON TOP
FROM CONDENSER
TO AFT EVAPORATOR
TO FWD EVAP.
FLOOR
#10 HOSE
#8 HOSE
#6 HOSE
3 090094 #10 O-RING
3 090093 #8 O-RING
4 090092 #6 O-RING
1 060036 3 INCH BAND CLAMP
2 090002-0 EXPANSION VALVE
1 260123-2 RECEIVER DRIER MOUNT
2 MS21044-N3 NUT
4 AN960-10 WASHER
2 AN3-5A BOLT
1 560010-0-5 AFT EVAPORATOR
1 590008 COMPRESSOR 24 VDC R-134a O-RING (590008-1 GROOVED)
1 550007-1 CONDENSER (ALT: 550007-2 FOR DUAL BLOWERS)
1 090016-5 RECEIVER DRIER BOTTLE
1 050107 LOW PRESSURE SWITCH
1 090004 HIGH PRESSURE SWITCH
1 560025-0 FORWARD EVAPORATOR
1 570024-0-A HOSE ASSY COMPRESSOR TO CONDENSER
1 570087-0-A HOSE ASSY FWD EVAPORATOR TO AFT EVAPORATOR
1 570072-0-A HOSE ASSY. AFT EVAP TO FWD. EVAP TO REC/DRIER
1 570020-0-A HOSE ASSY. COND. TO REC./DRIER
RESERVED
QTY ITEM PART NUMBER DESCRIPTION
PROPRIETARY NOTICE
PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
PLUMBING DIAGRAM
DRAWN BY: N.DEAN
DATE: 06/05/02
REV: C
SCALE: N/A
SHEET: 1 OF 1
APPLICATION: AS350
DWG. NO.: 3-4-AS350


REVISION RECORD
VIEW D-D
VIEW LOOKING DOWN
VIEW A-A
VIEW LOOKING UP
VIEW B-B
VIEW C-C
VIEW LOOKING FWD. AT STA. 115.01
SUCTION
DISCHARGE
LOW PRESSURE SERVICE PORT
HIGH PRESSURE SERVICE PORT
SIGHT GLASS ON TOP
FLOOR
FROM CONDENSER
TO FWD EVAP.
TO AFT EVAPORATOR
COMPRESSOR
TRANS. DECK
FWD
PROPRIETARY NOTICE
#10 HOSE
#8 HOSE
#6 HOSE
3 | 21 | 090094 | #10 O-RING
3 | 20 | 090093 | #8 O-RING
5 | 19 | 090092 | #6 O-RING
1 | 18 | 050036 | 3 INCH BAND CLAMP
2 | 17 | 090002-O | EXPANSION VALVE
1 | 16 | 280123-2 | 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 (590008-1)
1 | 10 | 5500022 | CONDENSER
1 | 9 | 090016-5 | RECEIVER DRIER BOTTLE
1 | 8 | 050107 | LOW PRESSURE SWITCH
1 | 7 | 090004 | HIGH PRESSURE SWITCH
1 | 6 | 560026-O | FORWARD EVAPORATOR
1 | 5 | 570070-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 | 570087-O-A | HOSE ASSY, COND. TO REC./DRIER
QTY | ITEM | PART NUMBER | DESCRIPTION
PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
TITLE: PLUMBING DIAGRAM
DRAWN BY: N.DEAN
DATE: 11/01/99
REV: C
SCALE: N/A
SHEET: 1 OF 1
APPLICATION: AS350
DWG. NO.: 3-5-AS350


REVISION RECORD
PSG PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY
PLUMBING DIAGRAM
EC 130 B4
VIEW D-D
VIEW LOOKING DOWN
VIEW A-A
VIEW LOOKING UP
VIEW B-B
VIEW C-C
SUCTION
DISCHARGE
LOW PRESSURE SERVICE PORT
HIGH PRESSURE SERVICE PORT
#10 HOSE
#8 HOSE
#6 HOSE
PROPRIETARY NOTICE
NOTES:
RESERVED
LOCATION OF PRESSURE SWITCHES WHEN R 134a COMPRESSOR IS INSTALLED.
590085-1
R-1344 WESTER OIL

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
Sub Total: (Air Conditioner)	79.0	111.85	8835.88

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
Sub Total: (Air Conditioner)	85.20	133.05	11,335.94

PERTAINS TO KIT # 130-00-031

ITEM	WEIGHT	ARM	MOMENT
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
INSTALLATION TOTALS	90.5	143.62	12998.27

Step 13

Parts Break Down

Parts break down consist of components and locations on sheet 2-1-EC130.

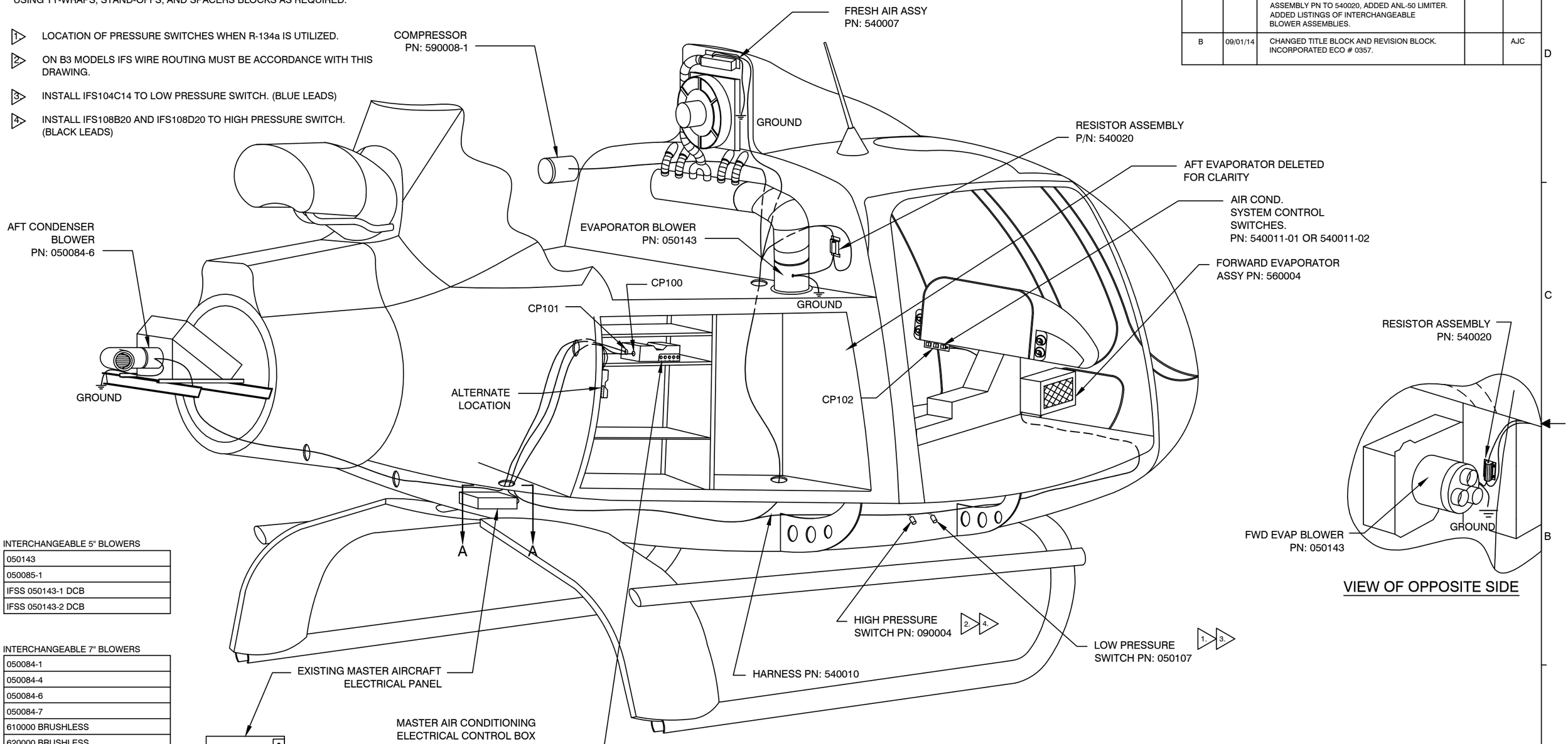
Hose and Routing on Sheet 3-1-EC130 and 3-2-EC130.

NOTES:

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

1. LOCATION OF PRESSURE SWITCHES WHEN R-134a IS UTILIZED.
2. ON B3 MODELS IFS WIRE ROUTING MUST BE 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				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	08/14/09	REVISED TITLE BLOCK. EVAPORATOR BLOWER PART NO. WAS 490017 OR 490017-1, IS NOW 050143. ADDED ALTERNATE LOCATION FOR ELECTRICAL BOX. REVISED ELECTRICAL ROUTING. CHANGED RESISTOR ASSEMBLY PN TO 540020, ADDED ANL-50 LIMITER. ADDED LISTINGS OF INTERCHANGEABLE BLOWER ASSEMBLIES.		JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0357.		AJC



VIEW A-A

VIEW OF OPPOSITE SIDE

INTERCHANGEABLE 5" BLOWERS

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

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

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: ELECTRICAL ROUTING

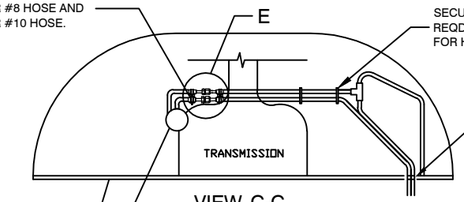
DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

DWG. NO.: 2-1-EC130

REVISION RECORD				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	10/15/03	REVISED TITLE BLOCK. VIEW B-B REDRAWN FOR CLARITY, DIMENSION TO FLOOR ADDED. PICTURE OF VIEW B-B ADDED.	MLD	JTYE
B	09/01/14	CHANGED TITLE BLOCK AND REVISION BLOCK. INCORPORATED ECO # 0405		AJC

ATTACH P/N 04-130-21-107-01 BRKT TO WALL & SECURE HOSES AS REQD. LOCATE FOR BEST FIT. SEE VIEW A ON DWG 3-2 EC130 FOR HOSECLAMP DETAIL. USE HOSE CLAMP MS21919WDG11 FOR #8 HOSE AND MS21919WDG12 FOR #10 HOSE.



SECURE HOSES TO WALL AS REQD. SEE VIEW A ON DWG 3-2 EC130 FOR HOSECLAMP DETAIL.

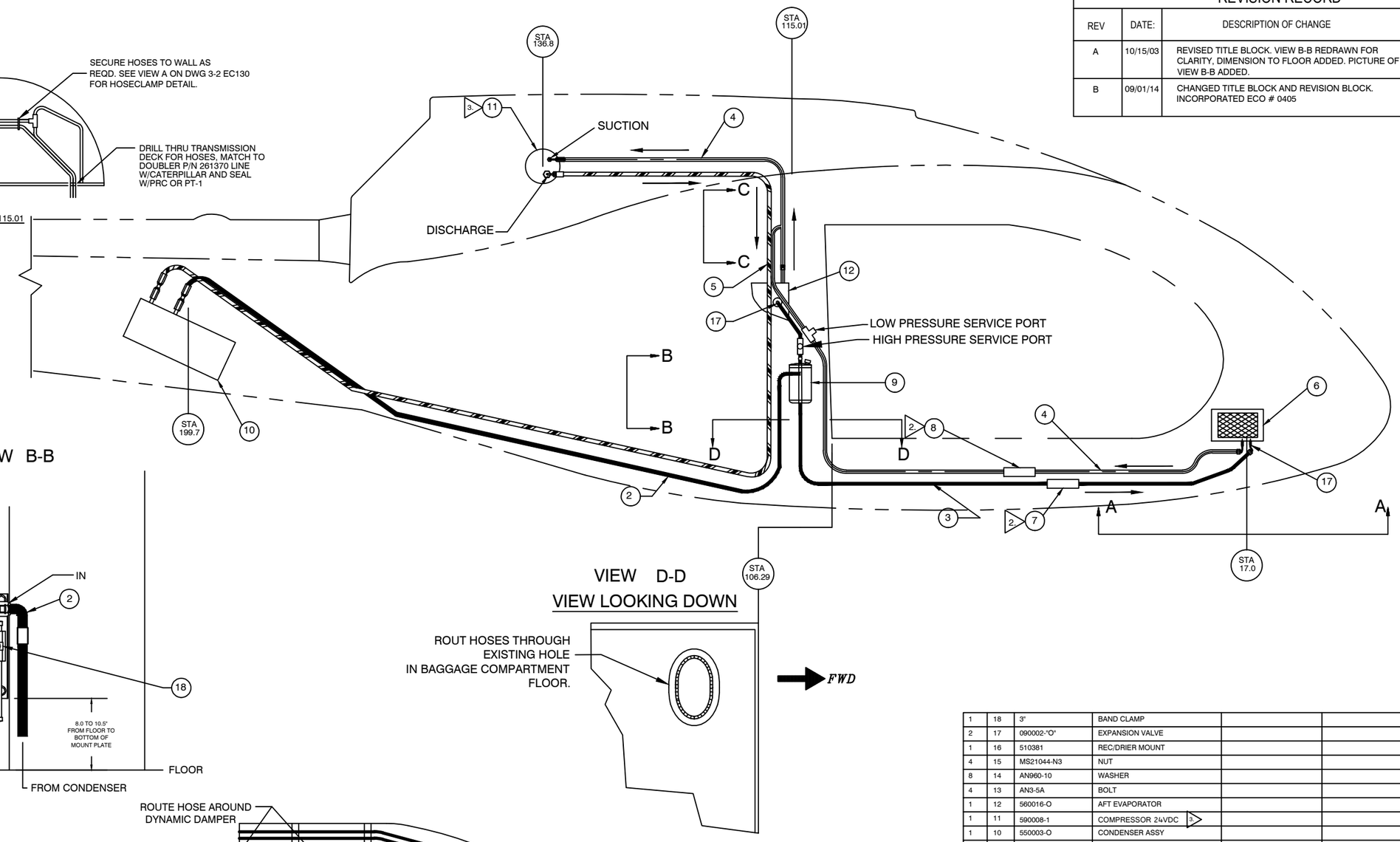
DRILL THRU TRANSMISSION DECK FOR HOSES, MATCH TO DOUBLER P/N 261370 LINE W/CATERPILLAR AND SEAL W/PRC OR PT-1

VIEW C-C
VIEW LOOKING FWD. AT STA. 115.01

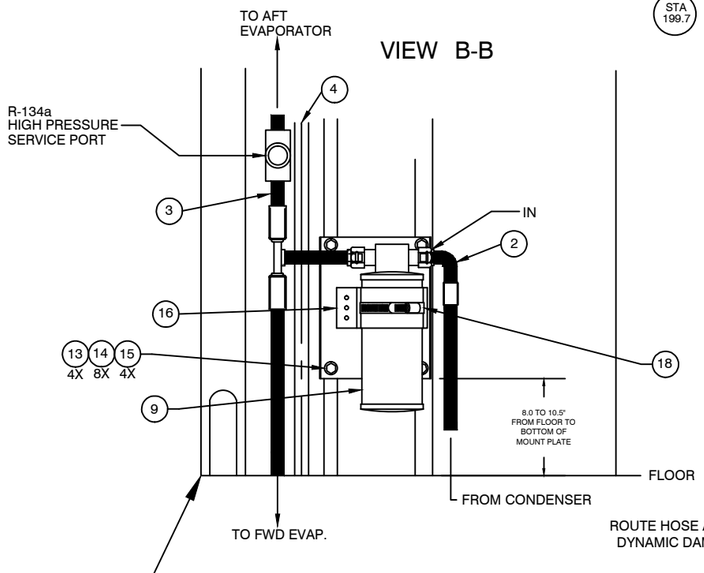
COMPRESSOR
TRANS. DECK

NOTES:

1. RESERVED
2. LOCATION OF PRESSURE SWITCHES WHEN R-134a COMPRESSOR IS INSTALLED.
3. 590008-1 R-134a W/ESTER OIL



VIEW B-B

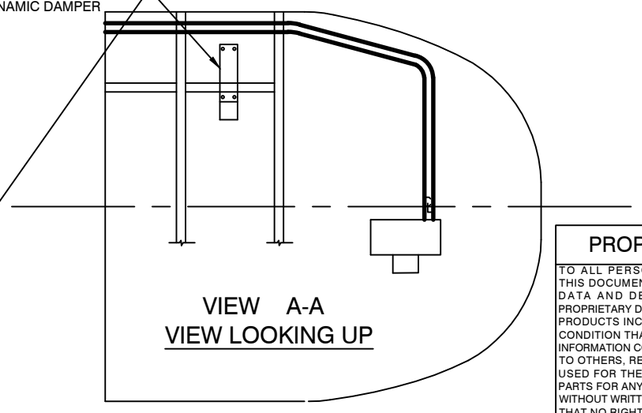


VIEW D-D
VIEW LOOKING DOWN

ROUT HOSES THROUGH EXISTING HOLE IN BAGGAGE COMPARTMENT FLOOR.

FWD

ROUTE HOSE AROUND DYNAMIC DAMPER



VIEW A-A
VIEW LOOKING UP

#10 HOSE
#8 HOSE
#6 HOSE

QTY.	ITEM	PART NO.	DESCRIPTION	STOCK SIZE	MAT'L DESC.	MAT'L DESC.
1	18	3"	BAND CLAMP			
2	17	090002-"O"	EXPANSION VALVE			
1	16	510381	REC/DRIER MOUNT			
4	15	MS21044-N3	NUT			
8	14	AN960-10	WASHER			
4	13	AN3-5A	BOLT			
1	12	560016-O	AFT EVAPORATOR			
1	11	590008-1	COMPRESSOR 24VDC 3.			
1	10	550003-O	CONDENSER ASSY			
1	9	090016-5	RECIEVER/DRIER			
1	8	050107	LOW PRESSURE SWITCH			
1	7	090004	HIGH PRESSURE SWITCH			
1	6	560006	FWD EVAPORATOR ASSY.			
1	5	570070-O-A	HOSE ASSY, COMP TO COND. #8			
1	4	570105	RETURN HOSE ASSY. #10			
1	3	570103	HIGH PRESS. HOSE #6			
1	2	570104	HOSE ASSY, COND-REC/DRIER #6			
			PLUMBING DIAGRAM			

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN
.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE:
PLUMBING DIAGRAM

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 2

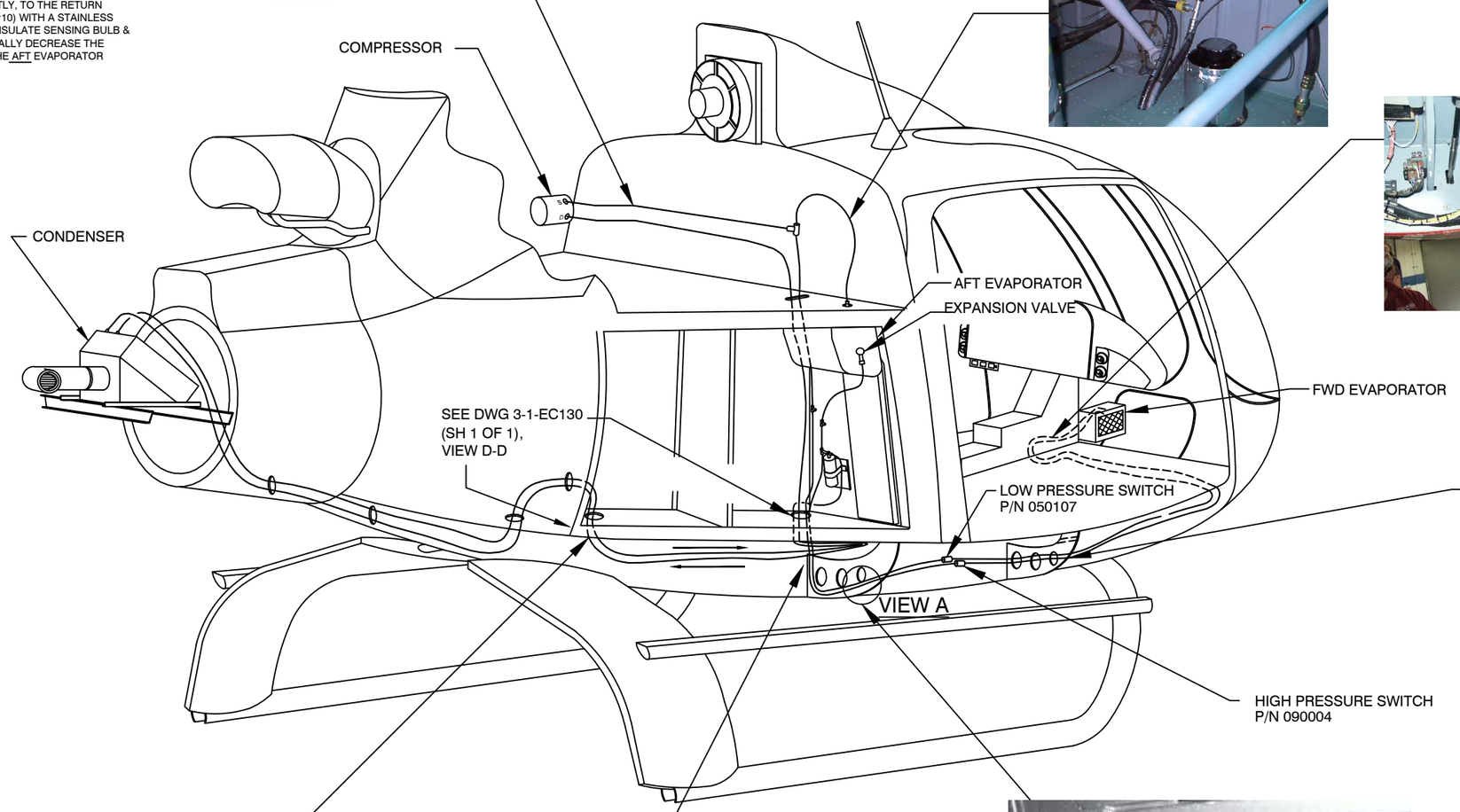
APPLICATION: EC 130 B4

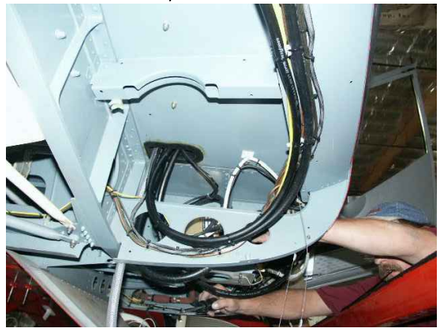
DWG. NO.: 3-1-EC 130

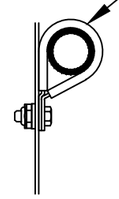
EXTREMELY IMPORTANT

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				
REV	DATE:	DESCRIPTION OF CHANGE	APPVD. BY	REV. BY
A	03/31/09	REVISED TITLE BLOCK.		DWE
B	9/1/14	CHANGED TITLE BLOCK AND REVISION BLOCK.		AJC







VIEW A

TYPICAL HOSE INSTALLATION:

FOR #6 HOSE ATTACH WITH TIE WRAP

FOR #8 HOSE ATTACH WITH TIE WRAP

FOR #10 HOSE ATTACH WITH ADEL CLAMP, TIE WRAP AND MS21919DG12 & HARDWARE AS SHOWN

NEXT ASSY.

APPROVED BY:

TOLERANCES EXCEPT AS SHOWN

.X: ±.1
.XX: ±.03
.XXX: ±.010
X.X°: ±.5°
BREAK ALL SHARP EDGES .01
ALL DIMENSIONS IN INCHES UNLESS OTHERWISE STATED

DATE:

PRODUCTS INC.
A ROTORCRAFT SERVICES GROUP COMPANY

TITLE: PLUMBING ROUTING

DRAWN BY:	DATE:	REV.:	SCALE:	SHEET:
JTYE	06/15/03	B	N/A	1 OF 1

APPLICATION: EC 130 B4

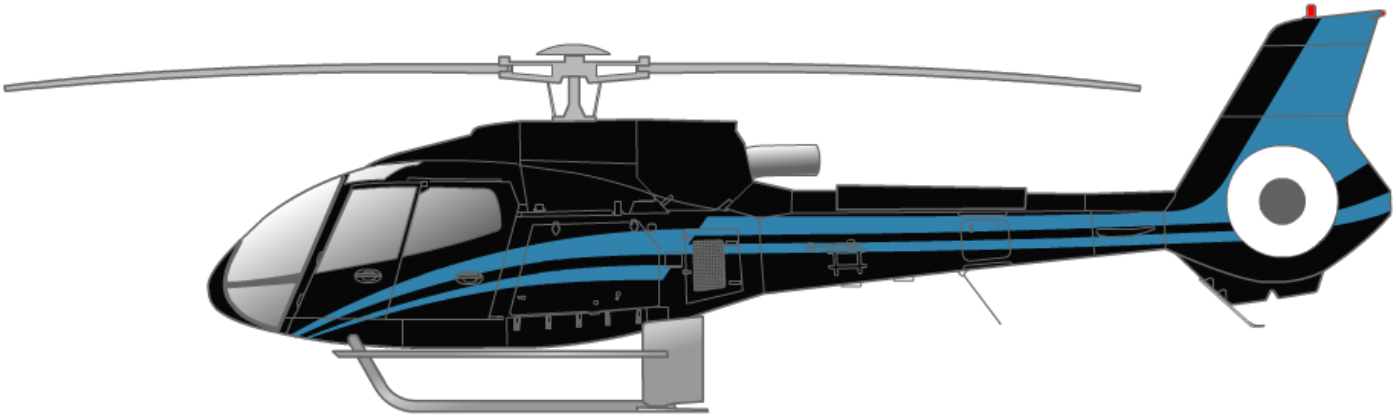
DWG. NO.: 3-2-EC130

INTEGRATED

Flight Systems

Air Conditioning Parts Catalog

AS350 Series



EC130 B4

INTEGRATED
Flight Systems

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

Phone: 1-817-624-6600

Kit / Parts Order Fax: 1-817-624-6603

Email: info@integratedflightsys.com

Internet: www.integratedflightsys.com

Ask for the following

Tech Support: Tech Support

Parts Support / Warranty: Parts Department

Kit Sales: Sales Department

Payables and Receivables:

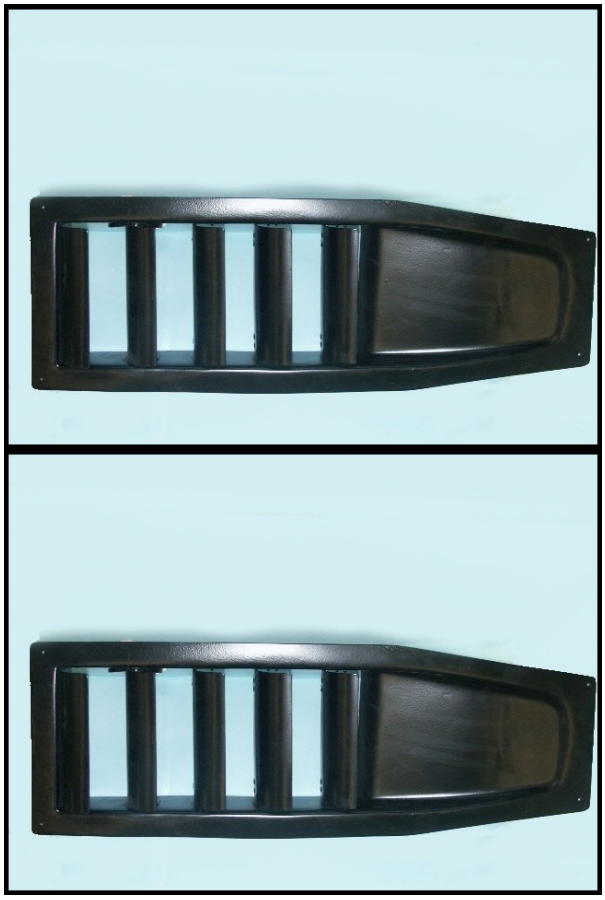
P.O. Box 163976
Fort Worth, Texas 76161-3976

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

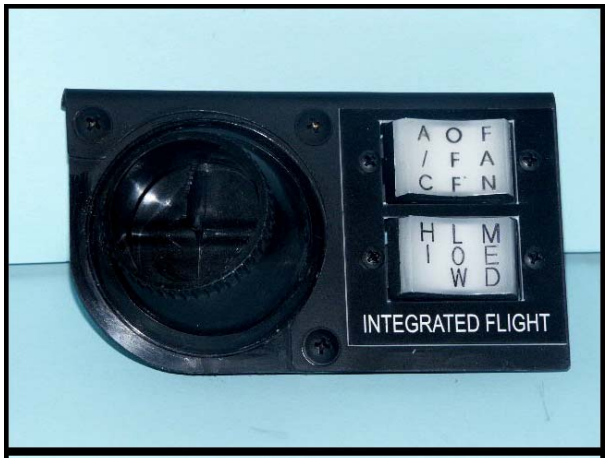
AS350

IFS PN: 510259

Air Outlet
Assembly

AS350

Air Outlets



IFS PN: 510259-1

Louver Assembly
Right Half, Lower

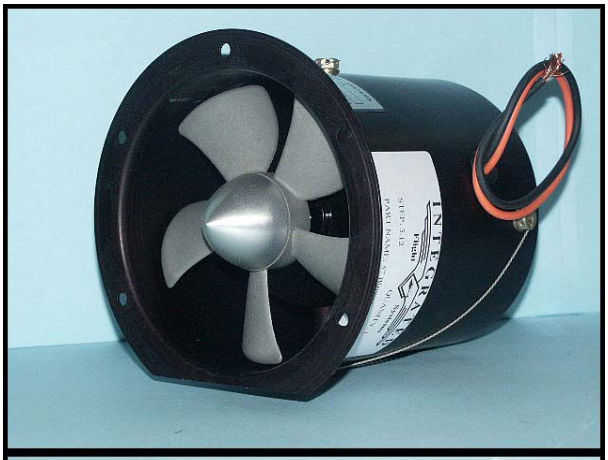
AS350

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

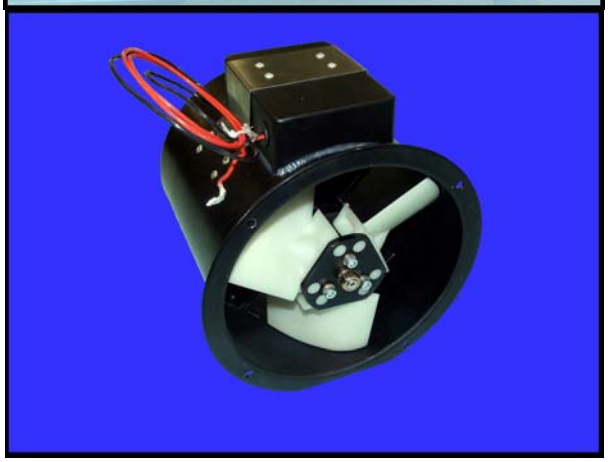
EC130

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

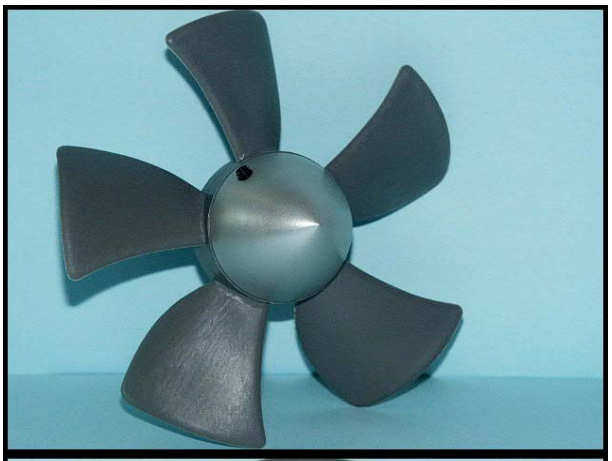
AS350

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

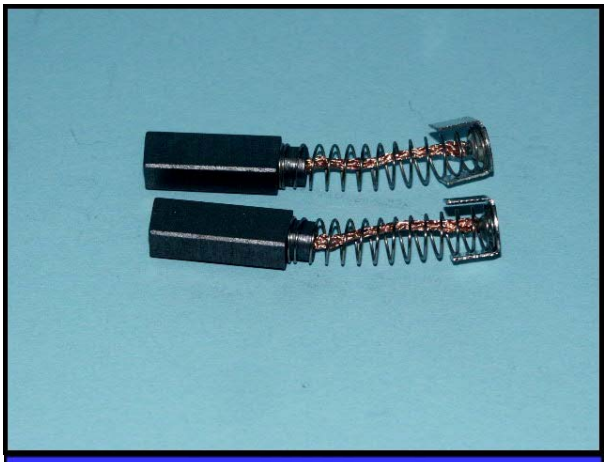
AS350
EC130

IFS PN: 040004-8

Fan Wheel CW

AS350
EC130

Blower Motor Parts

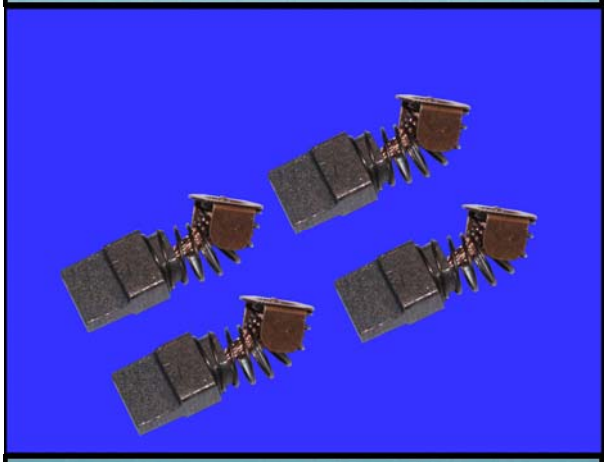


IFS PN: 050031

5” Motor Brushes

AS350

EC130



IFS PN: 610000-8

7” Motor Brushes (Amp Flow)

AS350

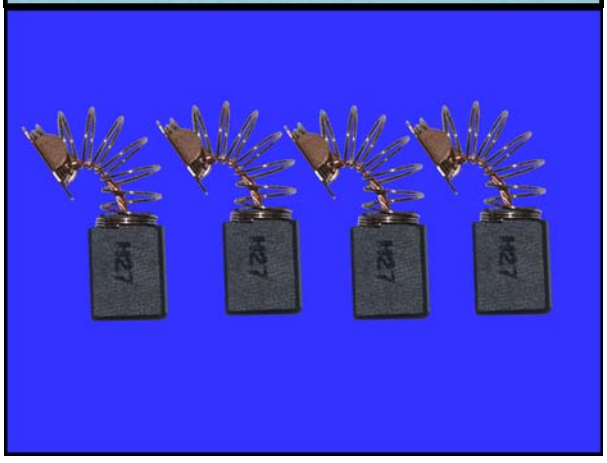
EC130

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

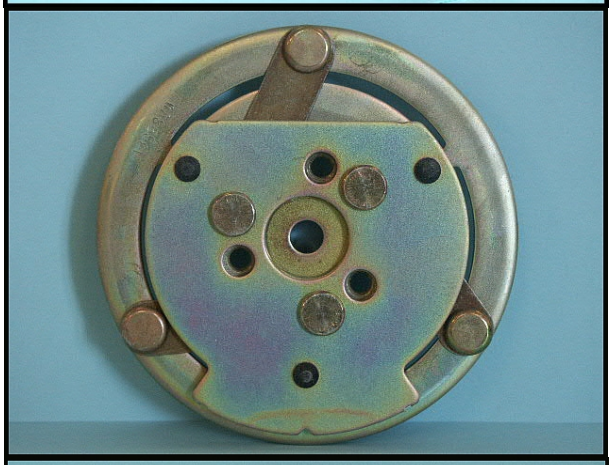
AS350

IFS PN: 590008-1

Compressor Assembly

EC130

AS350



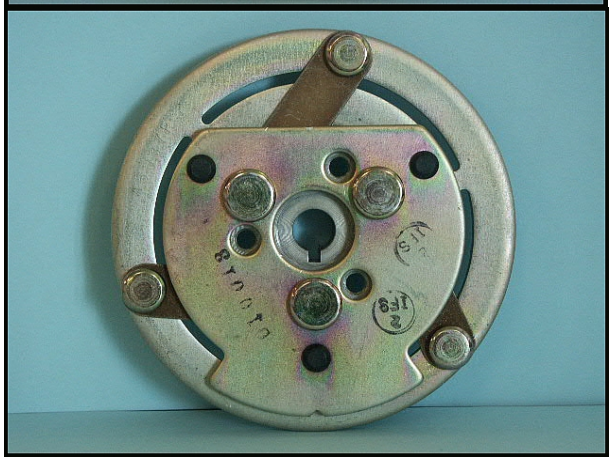
IFS PN: 010015

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

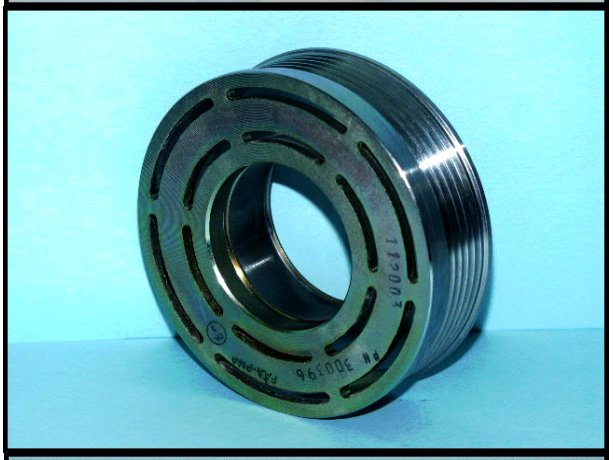
EC130

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

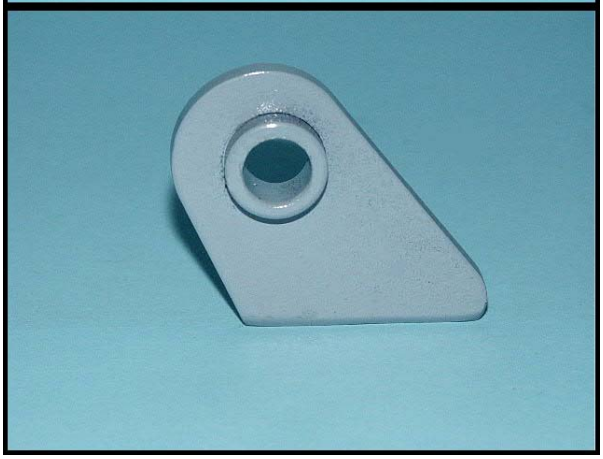
EC130

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

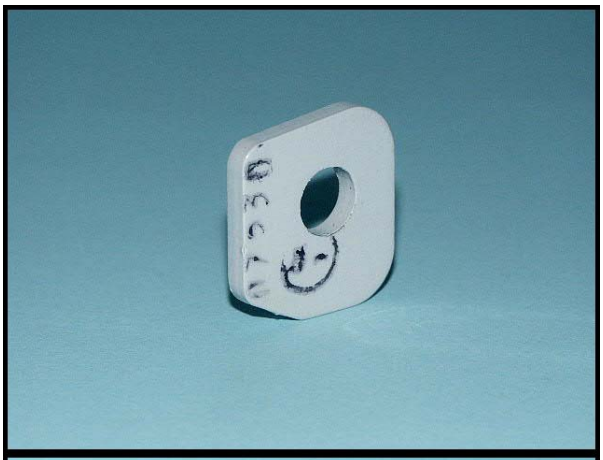
IFS PN: 530100-1

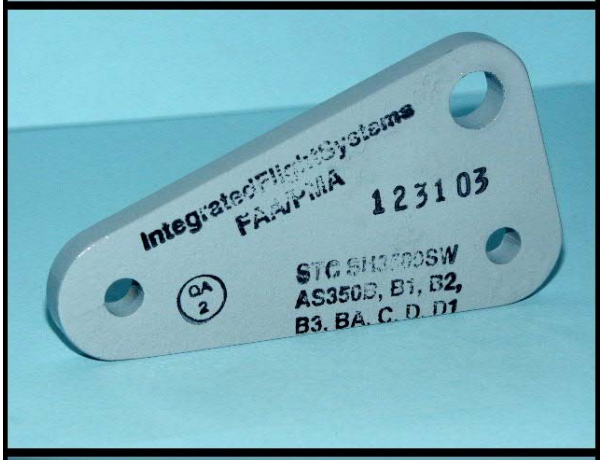
Strap Housing Mod Assembly

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

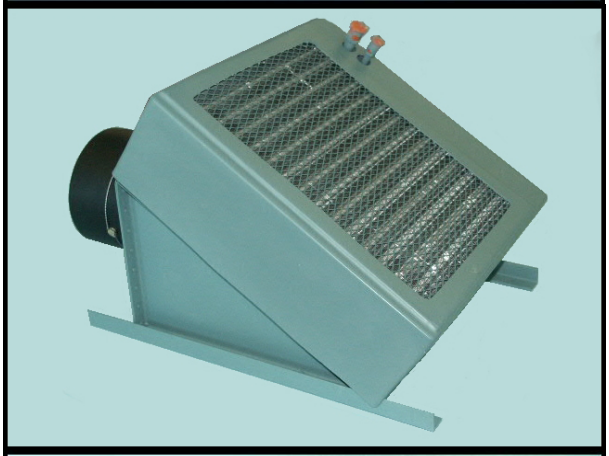
EC130

IFS PN: 090016-5

Receiver / Drier

AS350

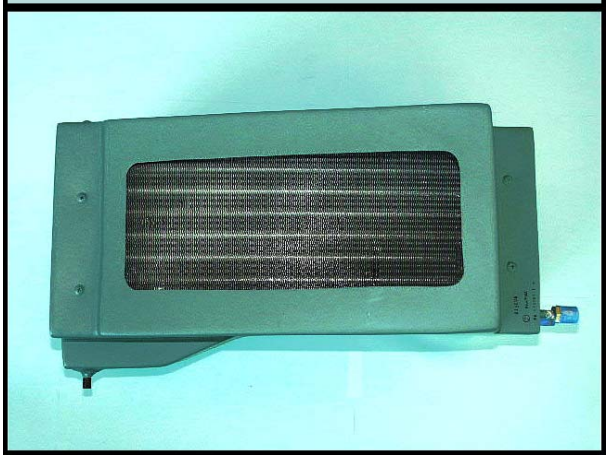
EC130



IFS PN: 550003-O

Aft Condenser Assembly

EC130

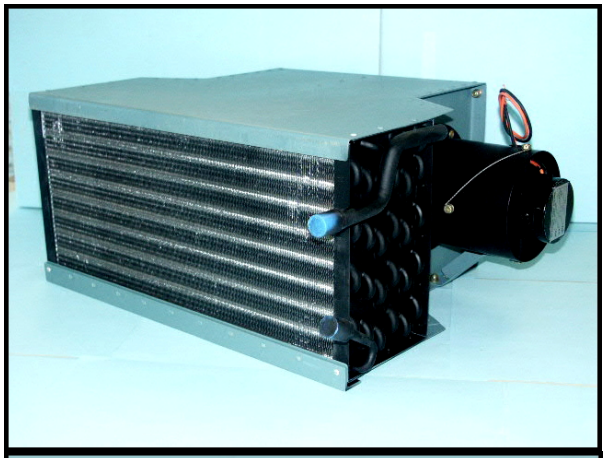


IFS PN: 550007-1

Side Condenser Assembly

AS350

Condenser / Evaporator



IFS PN: 550022

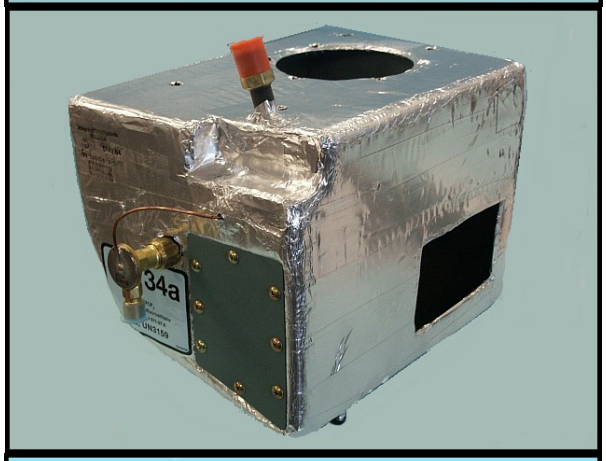
Aft Condenser Assembly

AS350

IFS PN: 560004

Fwd Evaporator Assembly

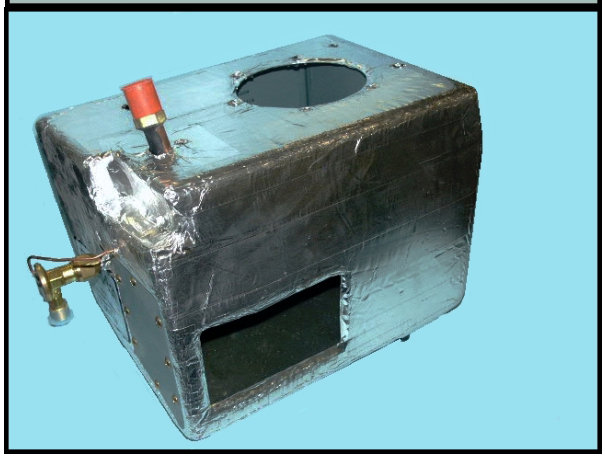
EC130



IFS PN: 560010-O-5

Aft Evaporator Assembly

AS350



IFS PN: 560016-O-1

Aft Evaporator Assembly

EC130

Condenser / Evaporator

IFS PN: 560025-O

Fwd Evaporator Assembly

AS350

Electrical Parts

IFS PN: 540009

Electrical Box Assembly

EC130

IFS PN: 540028-C-2-A

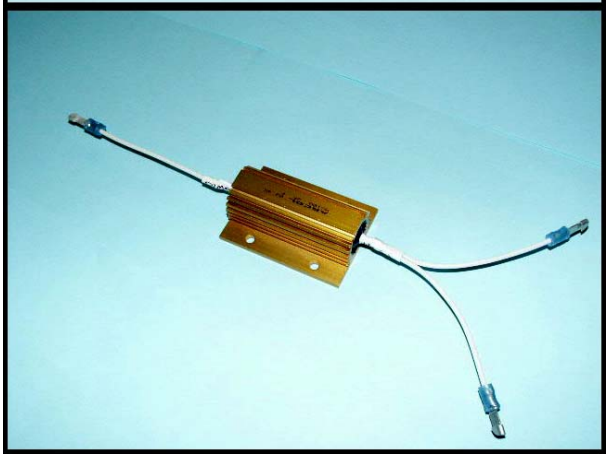
Electrical Box Assembly

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

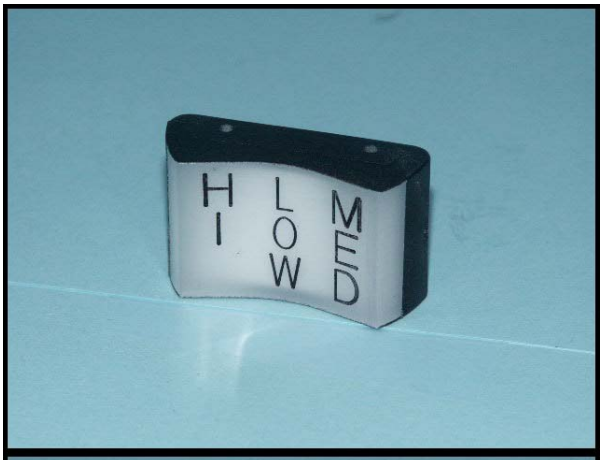
IFS PN: 050007-1

Button

AS350

EC130

Electrical Parts



IFS PN: 050007-3

Button

AS350

IFS PN: 050007-4

Button

AS350

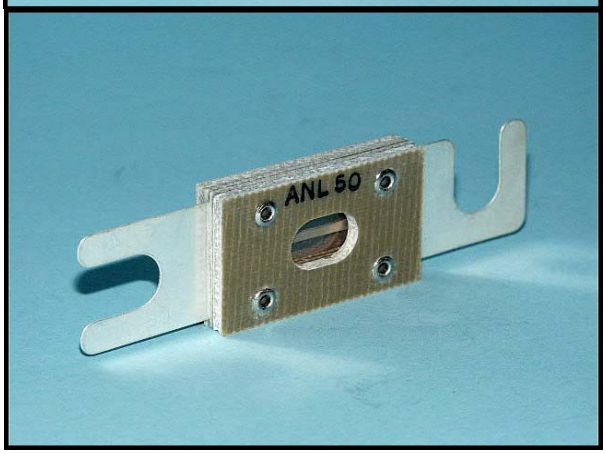
EC130

IFS PN: 050008

Relay

AS350

EC130



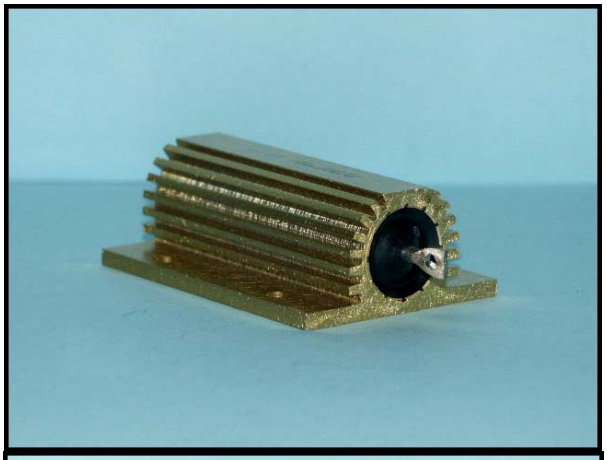
IFS PN: 050015-2

50 AMP Limiter

AS350

EC130

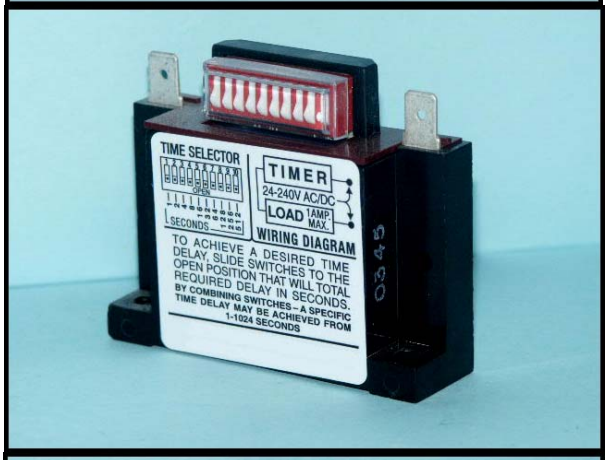
Electrical Parts



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

PRODUCTS INC.

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

Warranty Terms

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

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

THE FOREGOING WARRANTY IS EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES OR REMEDIES WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY, ANY AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, COURSE OF DEALING OR USAGE OF TRADE ARE HEREBY EXPRESSLY DISCLAIMED AND EXCLUDED. Acceptance of the Equipment by you shall constitute your acknowledgement and acceptance of the terms, provisions, limitations and exclusions set forth herein. Such term, provisions, limitations and exclusions shall not be modified, deleted or supplemented. In a case where the purchaser has negotiated warranty terms by express written agreement with RSG Products Inc. as to certain equipment, the terms of that agreement shall supersede the warranty.

WARRANTY REGISTRATION FORM

DATE: _____

CUSTOMER NAME:_____

ADDRESS:_____

CITY:_____ STATE:_____ ZIP:_____

PHONE NUMBER: (____) _____FAX NUMBER:(____)_____

COMPONENT NAME: _____

PART NUMBER:_____SERIAL NUMBER:_____

TYPE AIRCRAFT:_____ N#:_____S/N:_____

AIR CONDITIONING INSTALLATION DATE:_____

AIR CON. INSTALLATION COMPANY:_____

DATE INSTALLED:_____ T.T AT INSTALLATION:_____

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

This Form Must be received from the Owner of the Aircraft for the warranty to be active.
Warranty period extends from Date of Purchase for a period of one year or 1000 hours
Subject to the limitations identified in the attached Warranty Terms; effective 22 February 2007

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

PRODUCTS INC.

WARRANTY CLAIM FORM

DATE: _____ __ RMA#_____

CUSTOMER NAME: _____

ADDRESS: _____

CITY: _____ STATE:_____ ZIP:_____

PHONE NUMBER:(____)_____FAX NUMBER:(____)_____

COMPONENT NAME:_____

PART NUMBER: _____SERIAL NUMBER: _____

TYPE AIRCRAFT: _____ N#:_____S/N: _____

AIR CONDITIONING INSTALLATION DATE: _____

AIR CON. INSTALLATION COMPANY: _____

DATE INSTALLED: _____ T.T AT INSTALLATION: _____

DATE REMOVED: _____ T.T AT REMOVAL: _____

REASON FOR RETURNING COMPONENT: _____

For Company use only

Date Received: _____

Warranty Accepted: ____YES ____NO

Disposition of component: _____

Comments: _____

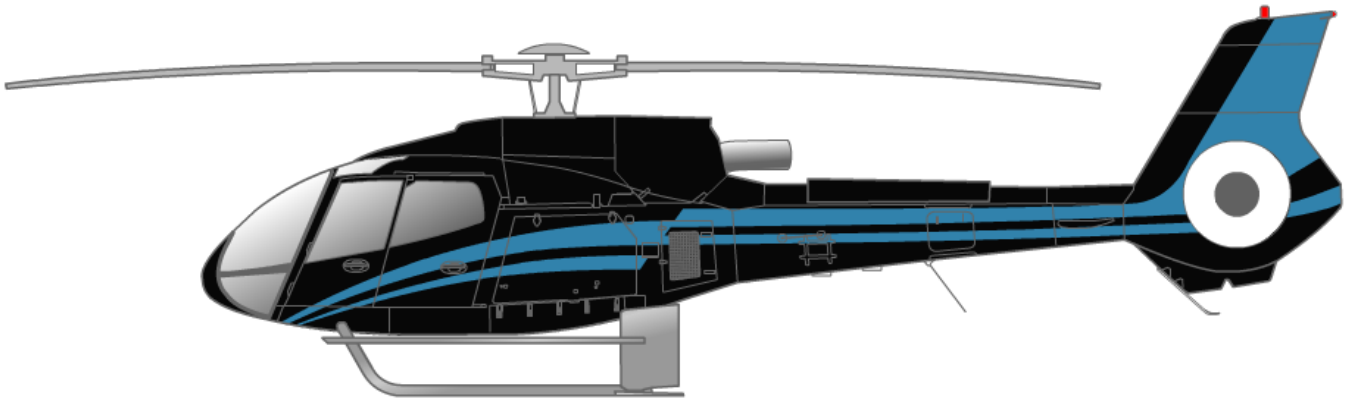
_____

Step 15

Trouble Shooting

Guide

INTEGRATED Flight Systems



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 and air conditioning fitting with an oily residue and the area around it is dry, you’ve probably found you 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 lose 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.

AS350 Trouble Shooting Guide

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 cause 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 install 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 charge system.) The refrigerant should foam and then settle away from the glass in less than forty-five seconds. If the sight glass remains clear foe more that 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 of 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) meaans 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.

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.

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 form 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.

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 of 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

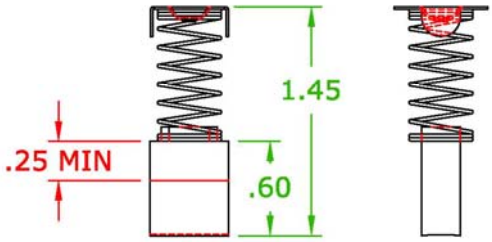
AS350 Trouble Shooting Guide

INTEGRATED Flight Systems

A

7" IFS MOTOR PN: 050084

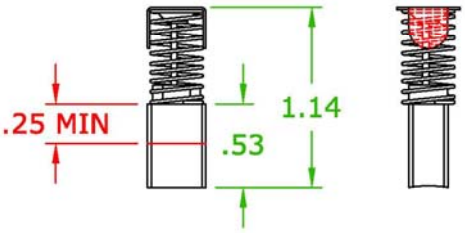
FAN MODEL NO.: M6921N-9A)
(ALT: M6921N-9B)



"DYNAMIC" BRUSH 420A-20

B

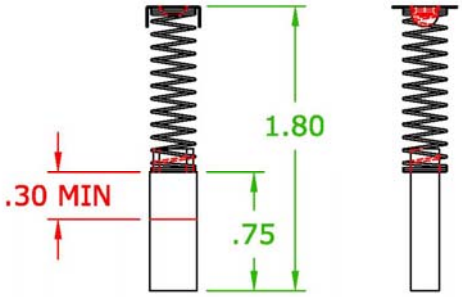
7" IFS MOTOR PN: 630000
7" IFS MOTOR PN: 640000



"AMPFLOW" BRUSH 610000-8

C

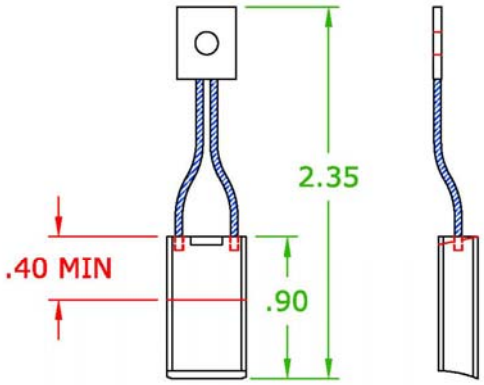
5" INCH IFS MOTOR PN: 050143



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.

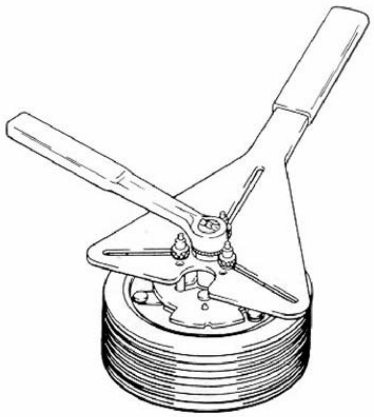
4. Remove armature assembly using puller. Thread 3 puller bolts into the threaded holes in the armature assembly. Turn center screw clockwise until armature assembly comes loose.

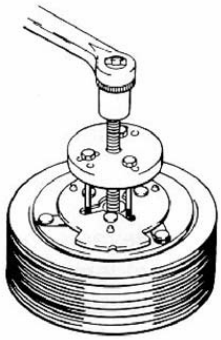
5. If shims are above shaft key, remove them now. If shims are below shaft key, the key and bearing dust cover (if present) must be removed before the shims can be removed.

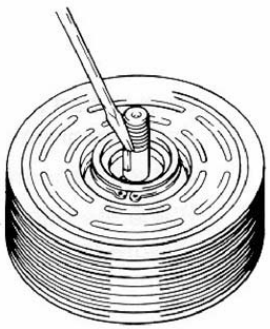
6. Remove bearing dust cover (if present). Use caution to prevent distorting cover when removing it.

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.

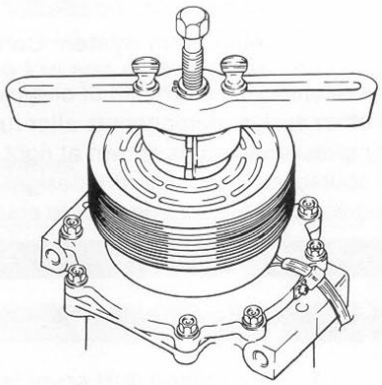






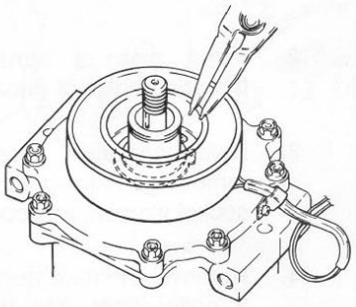
SERVICE OPERATIONS - CLUTCH

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.

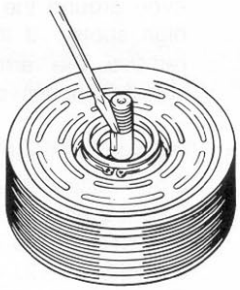
SERVICE OPERATIONS - CLUTCH

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.



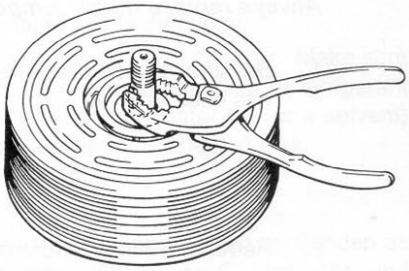
14.6 Armature Assembly Installation

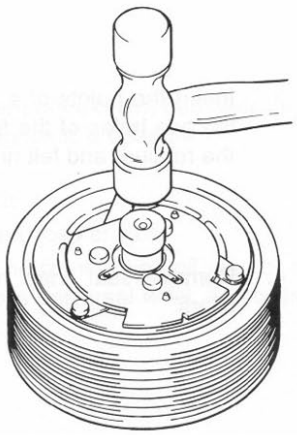
1. Install shaft key with pliers.

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.

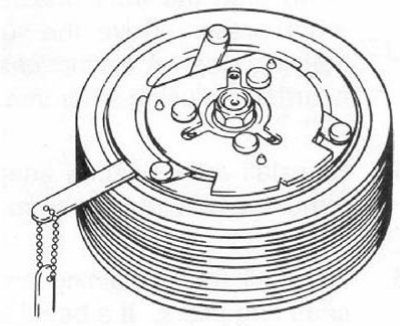
4. Replace retaining nut and torque to specification.
1/2-20: 20-25 ft•lb (27-34 N•m, 270-350 kg•cm)
M8: 11-15 ft•lb (15-21N•m, 150-210kgf•cm)





SERVICE OPERATIONS - CLUTCH

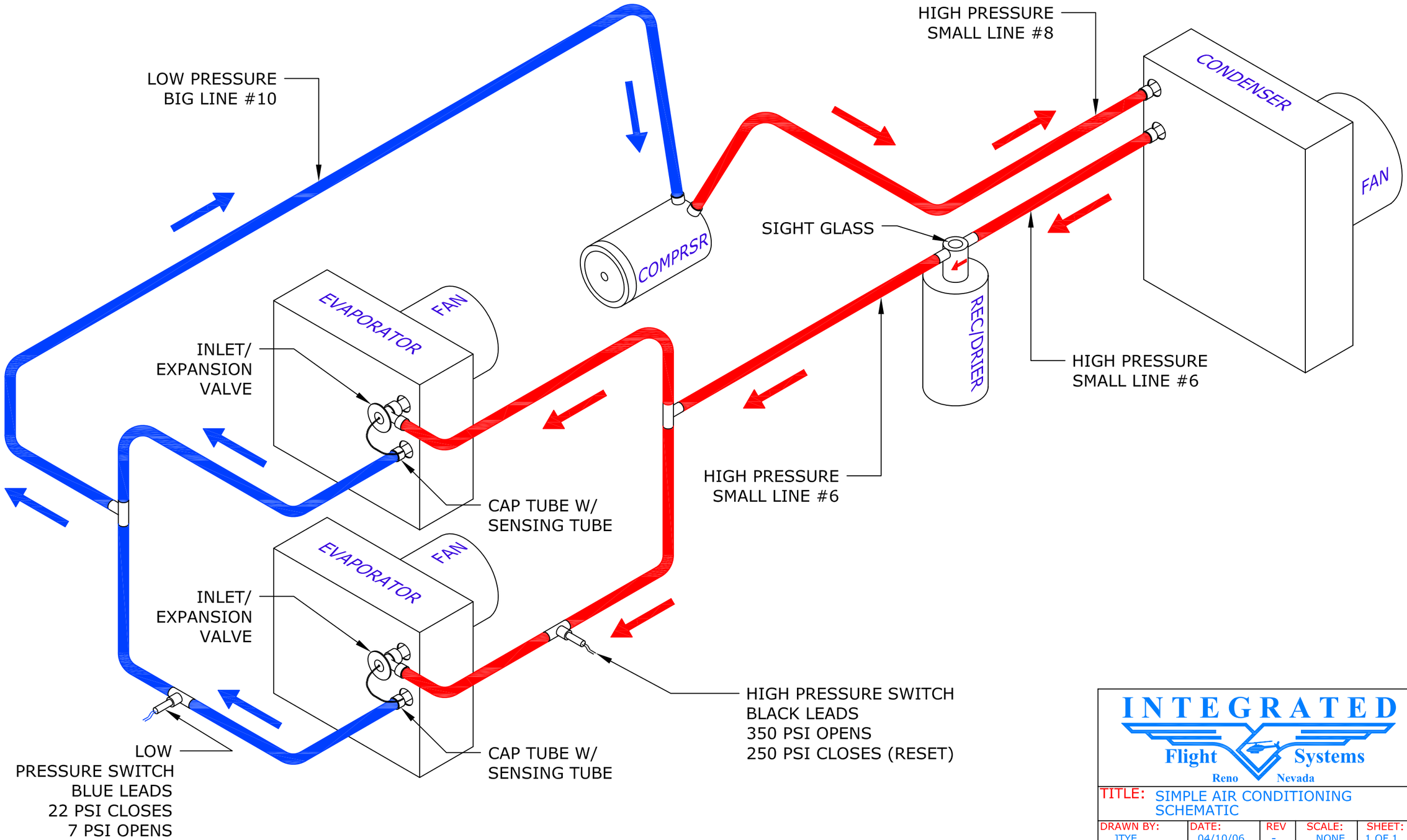
5. Check air gap with a feeler gauge. Specification is 0.011" - 0.019" (0.3 - 0.5mm). If gap is not even around the clutch, gently tap down at the high spots. If the overall gap is out of spec., remove the armature assembly and change shims as necessary.



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: JTYE	DATE: 04/10/06	REV --	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: N/A			DWG No. A/C SCHEMATIC	