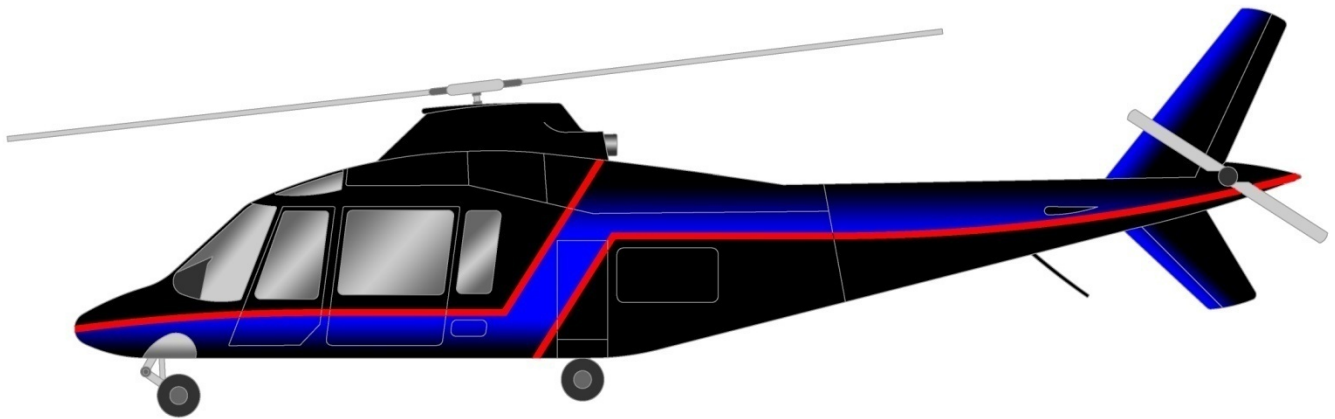




Air Conditioning System Installation Manual For



A109-00-011

(IM-A109-00-011 Rev C, 07 March 2011)

Notice of Terms and Conditions

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

Table of Contents

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

RECORD OF REVISIONS

Revision	Description	Date	Revised By
N/C	Initial Release	1 August, 2007	IFS
A	Revised Hardware Callouts	7 July, 2009	IFS
B	Added A109A	24 Sept. 2009	IFS
C	Section 1 & 5 Revised	7 March, 2011	IFS

LIST OF EFFECTIVE PAGES

Rev	Sect.	Page	Description	Date
C	1	Insert	Revised Parts List	03/07/11
N/C	2	1-2	Aircraft Pre-inspection	08/01/07
N/C	3	1-2	Aircraft Preparation	08/01/07
N/C	4	1-2	Removal of Factory Components	08/01/07
B	5	1-7	Revised Instructions	03/07/11
N/C	6	1-2	Installation of Condenser	08/01/07
N/C	7	1-1	Section Not Used	08/01/07
A	8	1-3	Installation of Compressor	07/06/09
N/C	9	1-3	Installation of Electrical	08/01/07
N/C	10	1-2	Installation of Hoses	08/01/07
N/C	11	1-2	Paperwork	08/01/07
N/C	12	1-15	Instructions for Cont. Airworthiness	08/01/07
N/C	13	1-6	Parts Breakdown	08/01/07
B	14	1-6	Revised Warranty/Repair	08/22/08
N/C	15	Insert	Trouble Shooting Guide.	08/01/07

Getting Started

The air conditioning system installation instructions are laid out step-by-step starting with one (1) through ten (9), for installation and eleven (11) through fifteen (15) for care and airworthiness, the instructions are designed to be easy – to – use.

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

Example: A. In the step below there is a number **5.2** The “5” stands for step 5 and the “1” stands for direction 2.

Installation of Aircraft Systems

Example: B. When the parts are called out in a step: **5.2**, locate the part and

<u>Step</u>	<u>Procedure</u>	<u>Mech</u>	<u>Insp</u>
5.2	Position Cockpit Air Duct Assembly P/N 520062 using drawings 8-A109 Sheet 1 of 1 and 5-A109 Sheet 3 of 4. For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1 and 5-1-A109P Sheet 3 of 4.		

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



STEP: [5.2](#)

QUANTITY: [1](#)

PART NAME: Cockpit Air Duct Assembly

PART NUMBER: [520062](#)

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

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

E-Mail: info@integratedflightsys.com

Integrated Flight Systems
REQUIRED TOOLS/CONSUMABLES – A109 Air-Conditioning

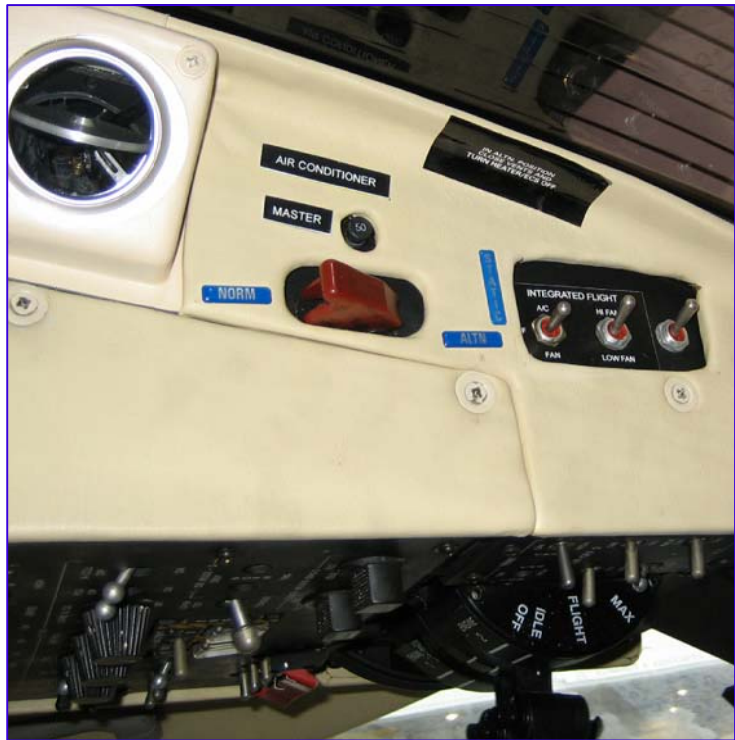
Tools and Consumables Required to Complete the Job

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

Integrated Flight Systems
REQUIRED TOOLS/CONSUMABLES – A109 Air-Conditioning

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

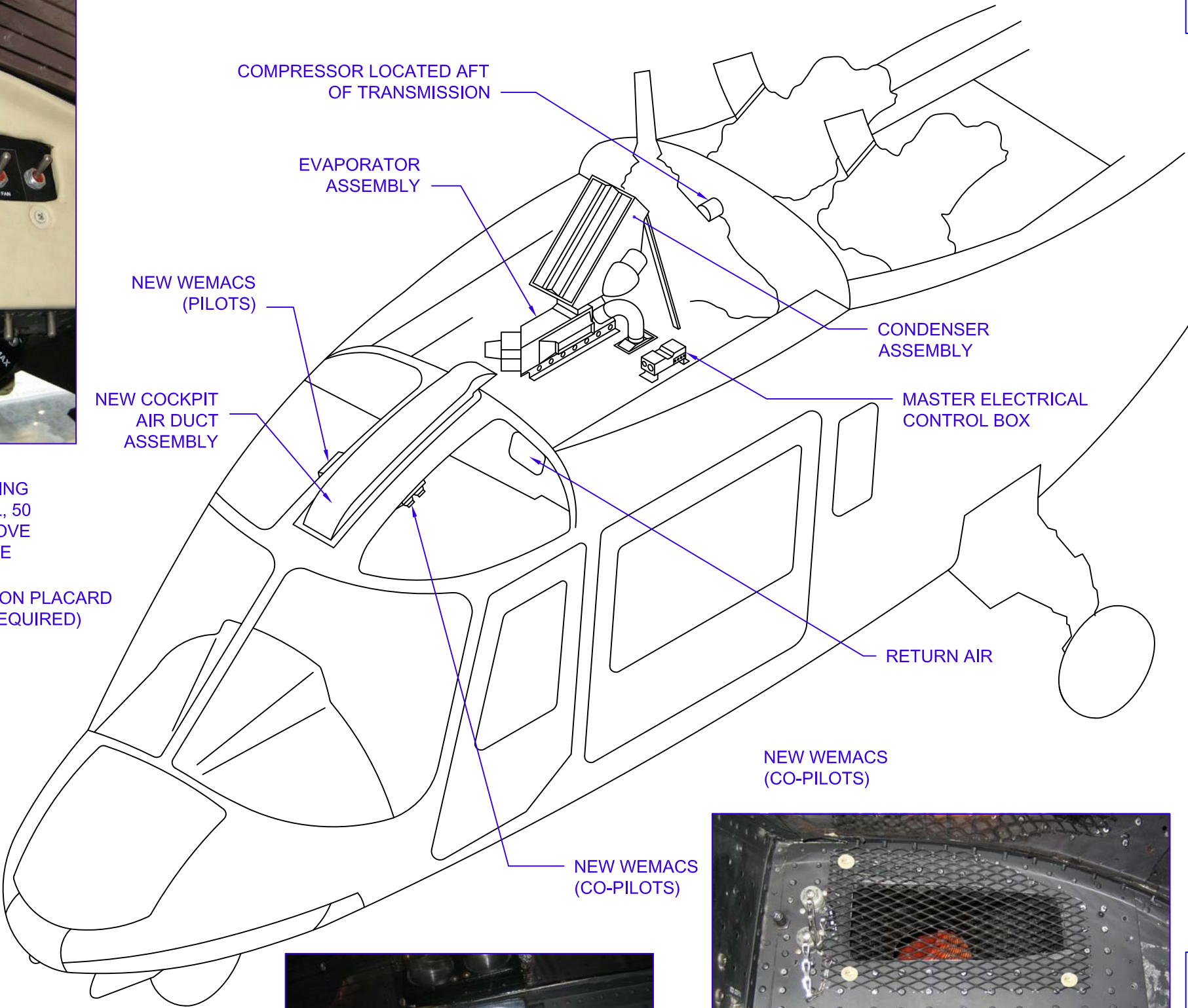
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



LOCATION FOR MASTER AIR CONDITIONING
CONTROLS & FWD FAN SPEED CONTROL, 50
AMP CIRCUIT BREAKER PN: 050012-9 ABOVE
PILOTS HEAD AND RIGHT OF THROTTLE
PLACARD PN: 120009-2 (SHOWN)

A/C MASTER

(POSITION PLACARD
IF/AS REQUIRED)



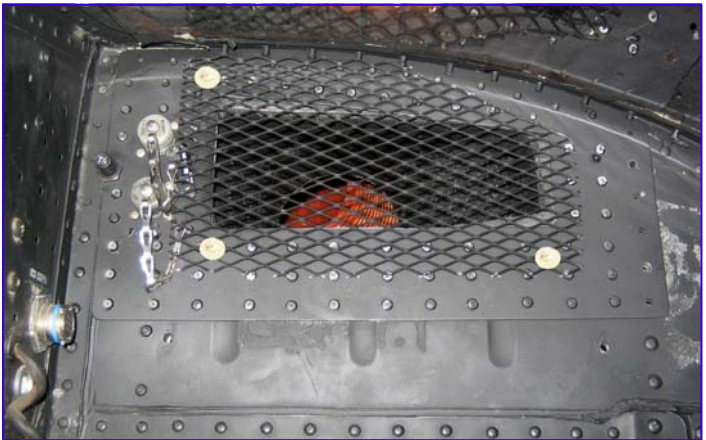
COMPRESSOR

NEW WEMACS
(CO-PILOTS)

NEW WEMACS
(CO-PILOTS)



NEW CO-PILOTS WEMACS
(PILOTS OPPOSITE)



RETURN AIR SCREEN PN: 080036-P
ABOVE AND BEHIND CO-PILOTS HEAD.

AGUSTA A109E
(POWER)



TITLE: AIR CONDITIONING
OVERVIEW

DRAWN BY: JTYE	DATE: 08/01/07	REV IR	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AGUSTA A109E			DWG No. 1-1-A109P	

Step 1

Kit Inventory

KIT INVENTORY LIST

Sales Order Number: _____

Shipping Date: _____

Kit S/N Number: _____

Kit Model Number: _____

Customer: _____

Customer PO: _____

Kit Specifies: _____

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
5.2	COCKPIT AIR DUCT ASSEMBLY	520062	1		
5.7	EVAPORATOR ASSEMBLY	560043-0	1		
5.8	CONDENSER LEG SUPPORT ASSY.	510227-1	1		
5.9	CONDENSER ASSEMBLY	550022-0	1		
5.13	SHURLOCK	SL601-3-3A	6		
	(ALTERNATE: DELRON INSERT)	(504SE1032-06-02)	(6)		
5.15	"Y" DRAIN	100181	2		
	DRAIN HOSE	090018-1	4' ft		
5.16	BOLT	AN3-5A	6		
	WASHER	AN960-10	6		
5.21	NUTPLATE	MS21059-L3	14		
	RIVET	CCR264-SS3-3	28		
	(ALT: RIVNUT)	A10K80	14		
	SCREW	AN525-10R8	12		
5.23	AIR DEFLECTOR R.H.	260916	1		
	AIR DEFLECTOR L.H	260917	1		
	RIVET	CR3243-4-4	8		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
5.23 (A109 E)	AIR DEFLECTOR R.H.	260916-P	1		
	AIR DEFLECTOR L.H.	260917-P	1		
	RIVET	CR3243-4-4	4		
5.26	WEMAC DOUBLER L.H.	260889	1		
	WEMAC DOUBLER R.H.	260890	1		
5.26 (A109 E)	WEMAC DOUBLER L.H.	260889-P	1		
	WEMAC DOUBLER R.H.	260890-P	1		
5.28	RIVET	MS20470AD4-3	40		
	RIVET	MS20470AD4-4	40		
	RIVET	MS20426AD4-3	30		
	RIVET	MS20426AD4-4	30		
5.28 (A109 E)	RIVET	MS20470AD4-3	40		
	RIVET	MS20470AD4-4	40		
5.29	WEMAC SUPPORT	250276	2		
	NUTPLATE	MS21059-L3	8		
	RIVET	CCR264-SS3-3	16		
5.30	AIR DUCT	250275	4		
	RIVET	ABA4-4	16		

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KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
5.33	SCREW	AN525-10R8	14		
	WASHER	AN960-10L	14		
	BAND CLAMP	060035	2		
	DUCT 7"	060007	6" In.		
5.34	WEMAC	030012-1	4		
	SCREW	AN525-10R8	16		
	NUT	MS21044N3	16		
5.35	SCREW	AN525-10R8	8		
5.36	CO-PILOTS BULKEAD DOUBLER	260866	1		
5.36 (A109 E)	CO-PILOTS BULKEAD DOUBLER	260866-P	1		
5.41	RIVET	MS20470AD4-3	30		
	RIVET	MS20470AD4-4	30		
	RIVET	MS20470AD4-5	20		
	RIVET	MS20470AD4-6	15		
5.42	RETURN AIR DUCT ASSEMBLY	520061-109	1		
	SCREEN 9.8 x 7.4 RETURN AIR	080036	1		
	SCREW	AN525-10R8	4		
	CLIP NUT	RM52LHA4972-10-02	4		
	WASHER	AN970-3	4		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd	Verf'd By
5.42 (A109 E)	RETURN AIR DUCT ASSEMBLY	520061-P	1		
	SCREEN 9.8 x 7.4 RETURN AIR	080036	1		
	SCREW	AN525-10R8	3		
	CLIP NUT	RM52LHA4972-10-02	3		
	WASHER	AN970-3	3		
5.43	RETURN AIR DUCT-LOWER	250286	1		
5.45	O.B. VERTICAL SUPPORT ASSEMBLY	510231	1		
	I.B. VERTICAL SUPPORT ASSEMBLY	510230	1		
5.46	PLATE ASSEMBLY	510232	2		
	RIVET	ABA4-4	8		
	DUCT MOUNT	260912-1	1		
	RIVET	CR3243-4-4	2		
5.48	RETURN AIR DUCT - UPPER	250285	1		
5.51	RIVET	ABA4-4	40		
5.52	SHURLOCK	SL601-3-3A	6		
	(ALTERNATE: DELRON INSERT)	(504SE1032-06-02)	(6)		
5.53 (A109 E)	RETURN AIR ADAPTER	110100-P	1		
	RIVET	ABA4-4	4		
5.54 (A109 E)	DUCT 4"	060012	60" in		
	BAND CLAMP	060035	2		
5.55 (A109 E)	3.4 NIPPLE	250279-P	1		
5.56	3.4 NIPPLE	250279	1		
5.57	DOUBLER	261510	2		
5.57	RIVET	CR3243-4-2	48		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
5.58	BOLT	AN3-13A	3		
5.58	NUT	AN365-1032	3		
5.58	WASHER	AN970-4	3		
5.58	WASHER	AN960-10	3		
5.59	AIR DUCT 3-1/2" X 24"	060024-1	24" in		
	BAND CLAMP	060040	2		
5.63	DZUS SUPPORT ASSEMBLY	510300	2		
	CAMLOC	50-052-1	2		
	RIVET	MS20426AD3-4	8		
5.64	CAMLOC	50-052-5-1	2		
5.65	AFT CABIN DUCT ASSEMBLY (For A109A MODEL ONLY)	520066-A	1		
	AFT CABIN DUCT ASSEMBLY	520066	1		
	DUCT PLACARD	120071	2		
	SHURLOCK (ALTERNATE: DELRON INSERT)	SL601-3-3A (504SE1032-06-02)	6		
	AFT CABIN DUCT BRACKET	261009	6		
	SCREW	AN525-10R8	6		
	WASHER	AN960-10	6		
5.66	3" HOSE NIPPLE	250509	1		
	RIVET	ABA4-4	4		
5.67	SCREW	AN525-10R8	6		
	WASHER	AN960-10	15		
5.68	BOLTS	AN3-4A	2		
	WASHER	AN960-10	2		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
6.0	3" DOUBLER	260867	4		
6.1	BOLTS	AN3-4A	8		
	NUTS (ALT: MS21044-N3)	AN365-1032	6		
	BOLT	AN3-13A	2		
	WASHER	AN970-4	4		
8.4	COMP. BRKT. ASSY.	510255	1		
8.4 (A109E)	COMP. BRKT. ASSY.	510255-P	1		
8.5	DRIVE PULLEY	300333-2	1		
	BELTS ½" X 30.5	060031	2		
	(A109E) BELTS	060031-1	2		
	BOLTS	NAS1304-4H	5		
	WASHER (ALT: AN960-416)	NAS1149F0463P	5		
	WASHER (ALT: AN960-416L)	NAS1149F0432P	5		
8.6	BOLT	AN4H7A	4		
	BOLT	AN4H10A	4		
	WASHER (ALT: AN960-416)	NAS1149F0463P	8		
	WASHER (ALT: AN960-416L)	NAS1149F0432P	8		
	NUT (ALT: MS20364-424C)	MS21044-N4	4		
8.7	FIREWALL BOX ASSEMBLY	530089	1		
8.8	COMPRESSOR	010001-3-O	1		
	BOLT	AN6-H10A	2		
	WASHER (ALT: AN960-616)	NAS1149F0663P	2		
	WASHER (ALT: AN960-616L)	NAS1149F0632P	2		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
8.12	SHIM CALIPER	261012-1	2		
	SHIM CALIPER	261013-1	2		
	SHIM CALIPER	261014-1	2		
8.13	STRUT BRACE	300330	1		
	BOLT	AN4H11A	2		
	WASHER (ALT: AN960-416)	NAS1149F0463P	1		
8.14	FITTING 90°	AN833-4D	1		
	NUT	AN924-4D	1		
8.15	BOLT	AN3H11A	2		
	WASHER (ALT: AN960-10)	NAS1149F0363P	4		
	NUT	MS21044-N3	2		
	SPACER	3/16" I.D. X .5"	2		
	SPACER	3/16" I.D. X .7"	2		
8.16	BOLT	AN3-3A	17		
	WASHER (ALT: AN960-10)	NAS1149F0363P	14		
	ADEL CLAMP	MS21919WDG-10	3		
	NUT	AN365-1032A	3		
8.17	FIREWALL ANGLE	300337	1		
	BOLT	AN3-3A	4		
	WASHER (ALT: AN960-10)	NAS1149F0363P	4		
	RIVET	MS20615-3M3	12		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
8.18	BELT ADJUSTMENT ASSEMBLY	530088	1		
	BELT BRACKET ASSEMBLY	510263	1		
	BELT BRACKET ASSEMBLY (A109 E)	510263-P	1		
	NUT	MS21044N8	3		
	WASHER (ALT: AN960-816)	NAS1149F0863P	3		
	BOLT	AN6H10A	2		
	WASHER (ALT: AN960-616)	NAS1149F0663P	2		
	WASHER (ALT: AN960-616L)	NAS1149F0632P	2		
	WASHER (ALT: AN960-616LL)	NAS1149F0616P	2		
9.1	ELECT. PANEL ASSEMBLY	540028-C-3	1		
9.3	SHURLOCK	SL601-3-3A	4		
	(ALTERNATE: DELRON INSERT)	(504SE1032-06-02)			
9.4	BOLT	AN3-4A	4		
	WASHER	AN960-10	4		
9.5	HARNESS ASSEMBLY	540045-1	1		
	HARNESS ASSEMBLY	540059-1	1		
9.10	BOLT	AN3-4A	1		
	NUTPLATE	MS21059-L3	1		
	RIVET	CCR264-SS3-3	4		
	WASHER	AN960-10	1		
9.11	HI PRESSURE SWITCH	090004	1		
	LOW PRESSURE SWITCH	050107	1		
	HANDSHAKE	14-16	6		
	HEATSHRINK	¼" X 6"	4		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf'd By
9.15	C/B 50 AMP	050012-9	1		
	PLACARD	120205	1		
	WIRE #8	WAJ-8133-9	6'		
	RING TERMINAL	#8 X 8	2		
	RING TERMINAL	#8 X 3/8	1		
9.17	FWD SWITCH ASSEMBLY	540060	1		
	HEAT SHRINK	¼ X 6"	2		
9.18	AFT SWITCH ASSEMBLY	540061	1		
	HEAT SHRINK	¼ X 6"	2		
10.0	HOSE ASSEMBLY	570053-0	1		
10.1	HOSE ASSEMBLY	570058-1-0	1		
	ADEL CLAMP	MS21919WDG-14	4		
	SCREW	MS35207-265	4		
	WASHER	AN960-10	4		
10.1 (A109E)	HOSE ASSEMBLY	570058-1-0-P	1		
	ADEL CLAMP	MS21919WDG-14	4		
	SCREW	MS35207-265	4		
	WASHER	AN960-10	4		
10.2	HOSE ASSY #10 COMP. TO EVAP.	570059-1-0	1		
	ADEL CLAMP	MS21919WDG-16	4		
	SCREW	MS35207-265	4		
	WASHER	AN960-10	4		
	NUT	AN365-1032A	4		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

KIT INVENTORY LIST

STEP	PART NAME	PART #	QTY	Chk'd By	Verf' d
10.3	HOSE ASSY. #6 EVAP. TO DRIER	570052-0	1		
10.3	ADEL CLAMP	MS21919WDG-10	1		
10.3	SCREW	AN525-10R7	1		
10.3	WASHER	AN960-10	1		
	CORK INSULATION TAPE	070078-O	2'		
	FOAM INSULATION TAPE	070078	60'		
	PROSEAL™	PR 1440 B 1/2 Pint Kit	1 Pint		
	ALUMINUM FOIL TAPE	070076	100'		
	CHERRY MAX RIVET	CR3243-4-3	20		
	CHERRY MAX RIVET	CR3243-4-4	20		
	CHERRY POP RIVETS	CCR264-SS3-6	10		
	TIE WRAP	3LP20	100		
	TIE BLOCKS	ZZCR4HM	25		
	3/4" SPIRAL WRAP	050020-12	8'		
	METALSET™ (1 Qt. ea. Part A & B)	66000149	2 Qt.		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

DRAWING LIST

DRAWING LIST	DRAWING #	REV	QTY	Chk'd By	Verf'd By
AIR CONDITIONING OVERVIEW	1-1-A109 (1 of 1)	A	1		
ELECTRICAL ROUTING	2-1-A109 (1 of 3)	A	1		
ELECTRICAL DIAGRAM	2-1-A109 (2 of 3)	A	1		
ELECTRICAL DIAGRAM	2-1-A109 (3 of 3)	A	1		
PLUMBING DIAGRAM	3-1-A109 (1 of 3)	A	1		
PLUMBING DIAGRAM	3-1-A109 (2 of 3)	A	1		
PLUMBING ROUTING	3-1-A109 (3 of 3)	A	1		
EVAPORATOR INSTALL	4-A109 (1 of 2)	B	1		
EVAPORATOR INSTALL	4-A109 (2 of 2)	B	1		
AIR DISTRIBUTION	5-A109 (1 of 4)	B	1		
AIR DISTRIBUTION	5-A109 (2 of 4)	B	1		
AIR DISTRIBUTION	5-A109 (3 of 4)	B	1		
AIR DISTRIBUTION	5-A109 (4 of 4)	B	1		
COMPRESSOR INSTALLATION	6-1-A109 (1 of 3)	B	1		
COMPRESSOR INSTALLATION	6-1-A109 (2 of 3)	B	1		
COMPRESSOR INSTALLATION	6-1-A109 (3 of 3)	B	1		
CONDENSER INSTALL	7-A109 (1 of 2)	B	1		
CONDENSER INSTALL	7-A109 (2 of 2)	B	1		
COWLING MODIFICATION	8-A109 (1 of 1)	B	1		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

A109E (Power) DRAWING LIST

DRAWING LIST	DRAWING #	REV	QTY	Chk'd By	Verf'd By
AIR CONDITIONING OVERVIEW	1-1-A109P (1 of 1)	IR	1		
ELECTRICAL ROUTING	2-1-A109P (1 of 3)	IR	1		
ELECTRICAL DIAGRAM	2-1-A109P (2 of 3)	IR	1		
ELECTRICAL DIAGRAM	2-1-A109P (3 of 3)	IR	1		
PLUMBING DIAGRAM	3-1-A109P (1 of 3)	IR	1		
PLUMBING DIAGRAM	3-1-A109P (2 of 3)	IR	1		
PLUMBING ROUTING	3-1-A109P (3 of 3)	IR	1		
EVAPORATOR INSTALL	4-1-A109P (1 of 2)	IR	1		
EVAPORATOR INSTALL	4-1-A109P (2 of 2)	IR	1		
AIR DISTRIBUTION	5-1-A109P (1 of 4)	IR	1		
AIR DISTRIBUTION	5-1-A109P (2 of 4)	IR	1		
AIR DISTRIBUTION	5-1-A109P (3 of 4)	IR	1		
AIR DISTRIBUTION	5-1-A109P (4 of 4)	IR	1		
COMPRESSOR INSTALLATION	6-1-A109P (1 of 3)	A	1		
COMPRESSOR INSTALLATION	6-1-A109P (2 of 3)	A	1		
COMPRESSOR INSTALLATION	6-1-A109P (3 of 3)	IR	1		
CONDENSER INSTALL	7-1-A109P (1 of 2)	IR	1		
CONDENSER INSTALL	7-1-A109P (2 of 2)	IR	1		
COWLING MODIFICATION	8-1-A109P (1 of 1)	IR	1		

Integrated Flight Systems
KIT INVENTORY LIST – A109-00-011 Air Conditioning

DOCUMENT LIST

DOCUMENT LIST	DOCUMENT #	QTY	Chk'd By	Verf'd By
INSTALLATION INSTRUCTIONS	Sect 5 - 10	1		
ICA-A109-00-011 Rev IR Dated: 11/01/08	Sect 12	1		
SUPPLEMENTAL TYPE CERTIFICATE (SR00060DE)	Sect 11	1		
RFMS-A109-00-011 Rev A	Sect 11	1		
MASTER PARTS LIST	Sect 13	1		
WARRANTY CLAIMS FORM	Sect 14	1		

MAJOR COMPONENTS SERIAL NUMBERS:

Condenser Blower S/N: _____

Condenser Blower S/N: _____

Aft Evaporator Blower S/N: _____

Compressor S/N: _____

1 Identification of substance

· Product details

· Trade name: 61003 Multi-Coat Blank Aerosol

· Article number: 61003

· Manufacturer/Supplier:

SEM Products, Inc.
651 Michael Wylie Dr.
Charlotte, NC 28217
USA
(704)522-1006

· Information department: 24HR EMERGENCY CHEMTREC 800-424-9300

2 Composition/Data on components

· Chemical characterization

· Description: Mixture of the substances listed below with nonhazardous additions.

· Dangerous components:

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

3 Hazards identification

· Hazard description:



Irritant
Extremely flammable

· Information pertaining to particular dangers for man and environment:

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

Warning! Pressurized container.

Has a narcotizing effect.

Extremely flammable.

Irritating to eyes, respiratory system and skin.

Vapours may cause drowsiness and dizziness.

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

100.0 % by mass of the contents are flammable

Keep out of the reach of children.

· Classification system:

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

· NFPA ratings (scale 0 - 4)



Health = 2
Fire = 4
Reactivity = 0

THIS INFORMATION PERTAINS TO:
IFS PN: 070003 TOUCH UP PAINT - TEAL
IFS PN: 070003-1 TOUCH UP PAINT-GREY

Material Safety Data Sheet

acc. to ISO/DIS 11014



Printing date 07/28/2005

Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 1)

· HMIS-ratings (scale 0 - 4)

	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)



Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 2)

Protect from heat and direct sunlight.

8 Exposure controls and personal protection

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

· **Components with limit values that require monitoring at the workplace:**

67-64-1 acetone

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

74-98-6 propane

PEL ()	1800 mg/m ³ , 1000 ppm
REL ()	1800 mg/m ³ , 1000 ppm
TLV ()	(4508) mg/m ³ , (2500) ppm

78-93-3 butanone

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

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

· **Personal protective equipment:**

· **General protective and hygienic measures:**

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

· **Breathing equipment:**

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

· **Protection of hands:**



Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
 Due to missing tests no recommendation to the glove material can be given for the product/ the preparation/ the chemical mixture.

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

· **Material of gloves**

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

· **Penetration time of glove material**

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

(Contd. on page 4)

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/gal

10 Stability and reactivity

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

11 Toxicological information

· **Acute toxicity:**

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

67-64-1 acetone

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

(Contd. on page 5)

THIS INFORMATION PERTAINS TO:
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Material Safety Data Sheet

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Printing date 07/28/2005

Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 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)

THIS INFORMATION PERTAINS TO:
IFS PN: 070003 TOUCH UP PAINT - TEAL
IFS PN: 070003-1 TOUCH UP PAINT-GREY

Material Safety Data Sheet

acc. to ISO/DIS 11014



Printing date 07/28/2005

Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 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
· Proper shipping name: AEROSOLS

· Air transport ICAO-TI and IATA-DGR:



· ICAO/IATA Class: 2.1
· UN/ID Number: 1950
· Label: 2.1
· Packaging group: -
· Proper 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)



Printing date 07/28/2005

Reviewed on 02/07/2005

Trade name: 61003 Multi-Coat Blank Aerosol

(Contd. of page 6)

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

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

67-64-1 acetone

A4

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

None of the ingredients is listed.

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

None of the ingredients is listed.

· **Product related hazard informations:**

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

· **Hazard symbols:**

Irritant

Extremely flammable

· **Risk phrases:**

Extremely flammable.

Irritating to eyes, respiratory system and skin.

Vapours may cause drowsiness and dizziness.

· **Safety phrases:**

Keep in a cool place.

Keep container in a well-ventilated place.

Use only in well-ventilated areas.

This material and its container must be disposed of as hazardous waste.

· **Special labeling of certain preparations:**

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

100.0 % by mass of the contents are flammable

Keep out of the reach of children.

16 Other information

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

· **Department issuing MSDS:** Environment protection department.

· **Contact:** Mr. George Wallace

MATERIAL SAFETY DATA SHEET

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

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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

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

2. COMPOSITION/INFORMATION ON INGREDIENTS

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

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

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

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

3. HAZARDS IDENTIFICATION

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

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

4. FIRST AID MEASURES

Eye Contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Seek medical attention if irritation persists.

Ingestion: DO NOT INDUCE VOMITING. Give nothing by mouth. Get medical attention! If vomiting occurs, keep head lower than hips to prevent aspiration.

Inhalation: If inhaled, remove to fresh air. If not breathing give artificial respiration, preferably mouth-to-mouth. If breathing is difficult give oxygen. Get medical attention.

Skin Contact: Remove contaminated clothing and shoes, and launder before reuse. Get medical attention if irritation persists. Wash with soap and water. Use skin cream for defatted areas.

MATERIAL SAFETY DATA SHEET

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

5. FIRE FIGHTING MEASURES

Flammable Properties

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

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

6. ACCIDENTAL RELEASE MEASURES

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

7. HANDLING AND STORAGE

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

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

9. PHYSICAL AND CHEMICAL PROPERTIES

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

MATERIAL SAFETY DATA SHEET

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

10. STABILITY AND REACTIVITY

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

11. TOXICOLOGICAL INFORMATION

Toxicological Data:

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

Carcinogenicity:

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

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

12. ECOLOGICAL INFORMATION

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

13. DISPOSAL CONSIDERATION

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

14. TRANSPORTATION INFORMATION

U.S. DOT:

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

IMDG:

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

MATERIAL SAFETY DATA SHEET

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

15. REGULATORY INFORMATION

US Federal Regulations:

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

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

State Regulations:

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

U.S. TSCA: One or more components of this product is not listed on the TSCA Inventory.
Canadian Inventory: One or more components of this product is not listed on the Canadian DSL or NDSL Inventory.
Consumer Product Safety Improvement Act of 2008 General Conformity Certification

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

16. OTHER INFORMATION

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

Step 2

Aircraft Pre-Inspection

Aircraft Pre-Inspection

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

This kit is eligible for installation in an Agusta A109A, A109A II, A109C, A109K2 or A109E.

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

General Safety Instructions

PROCEDURE
<u>WARNING:</u> Always handle the refrigerant fluids carefully.
<u>WARNING:</u> 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.
<u>WARNING:</u> When the system must be opened to do maintenance, before you do the work, you must drain the air conditioning system.
<u>WARNING:</u> When you open the system, you must collect the refrigerant in accordance with Federal and Local regulations.
<u>WARNING:</u> 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.
<u>WARNING:</u> Avoid skin and eye contact with R-134a. The liquid R-134a, at normal atmospheric temperatures evaporates so quickly that it will freeze anything it comes in contact with.
<u>WARNING:</u> Wear safety goggles when servicing any part of the refrigerant system.
<u>WARNING:</u> Never heat a R-134a supply cylinder to produce additional pressure or attempt to empty the container completely.
<u>WARNING:</u> Insure adequate ventilation when servicing the refrigerant system.
<u>WARNING:</u> If the R-134a and lubrication oil are mixed with water they make hydrochloric acid. This will cause corrosion of the system components.

Integrated Flight Systems
AIRCRAFT PRE-INSPECTION – A109 Air Conditioning

General Safety Instructions

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

Step 3

Aircraft Preparation

Aircraft Preparation

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

STEP	PROCEDURE	MECH	INSP
3.0	Remove or disconnect the battery.		
3.1	Remove pilot and co-pilots door.		
3.2	Remove rear doors as needed.		
3.3	Remove left and right cockpit overhead electrical panel covers.		
3.4	Remove the cabin headliner.		
3.5	Remove the transmission cowling.		
3.6	Remove the engine cowling.		
3.7	Remove the center firewall between engines.		
3.8	Remove the tail rotor drive shaft cover between engines.		
3.9	Remove right hand engine air inlet assembly.		

NOTE:

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

Step 4

Removal of Factory Installed Components

Removal of Factory Installed Components

NOTE: Step 4 to be completed in accordance with applicable Agusta service manuals.

STEP	PROCEDURE	MECH	INSP
4.1	If installed, remove the ram air scoop on forward transmission deck.		

Step 5

Installation of Evaporators

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

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

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

NOTE: Torque all fasteners with applicable Agusta service manuals or utilize AC 43.13.

STEP	PROCEDURE	MECH	INSP
5.1	For proper installation of evaporator, condenser and condenser mount, the following steps should be followed in order.		
5.2	Position Cockpit Air Duct Assembly P/N 520062 using drawings 8-A109 Sheet 1 of 1 and 5-A109 Sheet 3 of 4. For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1 and 5-1-A109P Sheet 3 of 4.		
5.3	Using the Cockpit air Duct Assembly P/N 520062, mark each side of the flange where it will be cut. Remove Duct.		
5.4	Reserved		
5.5	Cut off flange from aircraft as shown in drawing 8-A109 Sheet 1 of 1. Duct sides should clear by 0.10". Save Camloc from removed flange. For A109 E Installation utilize drawing 8-1-A109P Sheet 1 of 1.		
5.6	Temporarily install and align duct. Lay out and drill mounting holes through duct and top of helicopter as shown in drawing 5-A109 Sheet 3 of 4, Cleco in place. For A109 E Installation utilize drawing 5-1-A109P Sheet 3 of 4. Remove all shavings or debris.		
5.7	Now that the duct is temporarily in place, position the Evaporator Housing Assembly P/N 560043-O and align with duct. See drawing 4-A109 Sheet 1 of 2. For A109 E Installation utilize drawing 4-1-A109P Sheet 1 of 2 (DO NOT drill any holes at this time)		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.8	Now position the Condenser Leg Support Assy. P/N 510227-1 as shown in drawing 7-A109 Sheet 1 of 2 and 7-A109 Sheet 2 of 2. For A109 E Installation utilize drawings 7-1-A109P Sheets 1 and 2 of 2. (DO NOT drill any holes yet)		
5.9	Clamp condenser assembly P/N 550022-O to evaporator assembly and condenser mount.		
5.10	<u>Warning: Check all flight controls. Move the cyclic, collective and anti-torque pedals. Reposition evaporator, condenser and condenser mount as necessary to maintain .15 clearance of flight controls.</u>		
5.11	Align Fwd. Evap. Fan with cockpit air duct. Mark or drill all mount holes to deck. Then scribe condenser nut plate holes to mount bracket.		
5.12	Back drill 4 each #10 holes in condenser lower mount to evaporator upper support. See “View Looking Aft Cowling Removed” Dwg 7-A109 Sheet 2 of 2. For A109 E Installation utilize drawing 7-1-A109P Sheet 2 of 2. Remove all shavings or debris.		
5.13	Remove evaporator, condenser and condenser support mount. Drill out and pot holes for evaporator and install Shurlock’s or Delron inserts Per Dwg 4-A109 Sheet 2 of 2. For A109 E Installation utilize drawing 4-1-A109P Sheet 2 of 2. Allow Metalset™ to cure per manufacturers instructions. Remove all shavings or debris.		
5.14	Drill out and pot holes for Condenser Leg Support Assembly PN: 510227-1. Allow Metalset™ to fully cure. Re-drill holes for Condenser Leg Support after potting dries. See “View B-B” 7-A109 Sheet 2 of 2. For A109 E Installation utilize drawing 7-1-A109P Sheet 2 of 2, View “B-B” Remove all shavings or debris.		
5.15	Connect drain lines PN: 090018-1 to two (2) 90° drain nipples under evaporator and connect to drain “Y’s” PN: 100181. Just aft of the evaporator, under resistor. See drawing 4-A109 Sheet 1 of 2 “Drain Line Detail”. For A109 E Installation utilize drawing 4-1-A109P Sheet 1 of 2 “Drain Line Detail”.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.16	Install evaporator with hardware called out in drawing 4-A109 Sheet 2 of 2. For A109 E Installation utilize drawing 4-1-A109P Sheet 2 of 2. Connect drain line to evaporator blower and connect to drain “Y” with other drain line from evaporator.		
5.17	Remove duct P/N 520062. Install upper transmission cowling and mark duct as required to cut out cowling. Remove cowling. Begin a small cut out on cowling as shown in drawing 8-A109 Sheet 1 of 1. See step 5.19 (Save Camloc®). For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1.		
5.18	Re-install duct P/N 520062 temporarily.		
5.19	Start a small cut-out, remove material as necessary to fit around duct. Repeat step 5.18 as necessary to achieve proper fit. View on drawing 8-A109 Sheet 1 of 1, is inside looking up. The curve cut-out runs to the right side of aircraft. For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1.		
5.20	With duct in place, fit cowl leaving .10 clearance around duct. Remove duct.		
5.21	Install MS21059-L3 nutplates when possible or use A10K80 Rivnuts for final installation of duct. Attach with 12 each AN525-10R8 screws. Remove all shavings or debris.		
5.22	Cut out holes as shown in drawing 5-A109 Sheet 2 of 4. For A109 E Installation utilize drawings 5-1-A109P Sheet 2 of 4. For air supply to cockpit. Remove all shavings or debris.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.23	Install air deflectors P/N's 260916 and 260917 as shown in drawing 5-A109 Sheet 3 of 4. Trim deflectors as necessary to clear inner fairing and new duct. Rivet in place with CR3243-4-4. Remove all shavings or debris.		
5.23 (A109 E)	Install air deflectors P/N's 260916-P and 260917-P as shown in drawing 5-1-A109P Sheet 3 of 4. Rivet to Air Duct as shown in drawing. Remove all shavings or debris.		
5.24	Block inside of duct, just forward of forward hole, with foam tape. Build up a dam with foam tape P/N 070078, cover with aluminum tape P/N 070076 over the foam tape. Lay a layer of foam tape over the top to seal to the aircraft skin. This will keep air from running to end of duct, and direct it into the holes.		
5.25	DO NOT install duct yet.		
5.26	Locate doublers P/N 260889 and 260890 in position as shown in drawing 5-A109 Sheet 2 of 4. These holes should line up with holes cut out in upper skin. Relocate heater control as necessary to provide for doubler installation.		
5.26 (A109 E)	Locate doublers P/N 260889-P and 260890-P in position as shown in drawing 5-1-A109P Sheet 2 of 4. These holes should line up with holes cut out in upper skin.		
5.27	Mark around doubler. Drill out rivets inside marking. DO NOT drill wires and lines inside overhead panel. Back drill other holes. Remove all shavings or debris. Maintain 2X diameter edge distance.		
5.28	Cut out holes and rivet doublers in place. Use flush rivets on lower row. per Dwg 5-A109 Sheet 2 of 4. Remove all shavings or debris. Maintain 2X diameter edge distance.		
5.28 (A109 E)	Cut out holes and rivet doublers in place per Dwg 5-1-A109P Sheet 2 of 4. Remove all shavings or debris. Maintain 2X diameter edge distance.		
5.29	Fit Wemac Support P/N 250276. Drill mounting holes. Install MS21059-L3 Nutplates per Dwg 5-A109 Sheet 2 of 4 For A109 E Installation utilize drawings 5-1-A109P Sheet 2 of 4. DO NOT INSTALL SUPPORT. Remove all shavings or debris.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.30	Fit and trim as necessary air ducts P/N 250275 in place as shown in drawing 5-A109 Sheet 2 of 4. Re-position lines and wires as necessary. Rivet in place. For A109 E Installation utilize drawings 5-1-A109P Sheet 2 of 4. Remove all shavings or debris.		
5.31	Reserved		
5.32	Secure/seal air ducts all the way around with ProSeal™ 890 B2 or B-1/2		
5.33	After sealing, install Cockpit Air Duct PN: 520062 per drawing 5-A109 Sheet 3 of 4. For A109 E Installation utilize drawings 5-1-A109P Sheet 3 of 4. Seal with ProSeal™ 890 B2 or B-1/2 all around duct. Strip inner wire from Air Duct PN: 060007, then install from Evaporator blower to Cockpit Upper Air Duct as shown in 5-A109 Sheet 1 of 4. using (2 each) 6” Band clamps PN: 060035. Wrap with foam insulation tape and aluminum foil tape.		
5.34	Install 4 ea. Wemac P/N 030012-1 in assemblies with AN525-10R8 screws and MS21044N3 nuts.		
5.35	Install Wemac Support Panels overhead per drawing 5-A109 sheet 2 of 4, attach with AN525-10R8 screws. For A109 E Installation utilize drawings 5-1-A109P Sheet 2 of 4.		
5.36	Position Co-Pilots Bulkhead Doubler P/N 260866 as shown in drawing 5-A109 Sheet 1 of 4. Mark around outside and inside edge of doubler.		
5.36 (A109 E)	Position Co-Pilots Bulkhead Doubler P/N 260866-P as shown in drawing 5-1-A109 Sheet 1 of 4. Mark around outside and inside edge of doubler.		
5.37	Remove ground buss from upper deck as shown in drawing 5-A109 Sheet 1 of 4. Move existing wire from forward bulkhead. For A109 E Installation Disregard this Step.		
5.38	Next, drill out rivets inside marked area. (Step 5.36) Remove all shavings or debris.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

Installation of Aft Evaporator

STEP	PROCEDURE	MECH	INSP
5.39	Back drill existing holes in doubler to aircraft, back drill holes in aircraft to doubler. . Maintain 1.5X edge distance. Remove all shavings or debris.		
5.40	Cut out return air hole. Remove all shavings or debris.		
5.41	Rivet doubler in place per drawing 5-A109 Sheet 1 of 4. For A109 E Installation utilize drawings 5-1-A109P Sheet 1 of 4		
5.42	Position return air duct P/N 520061-109. Trim as necessary to fit. Drill (4 each) # 10 mount holes. See drawing 5-A109 Sheet 1 of 4 for hole location. Install (4) RM52LHA4972-10-02 Nutclips on P/N 520061-109. Seal duct to wall with ProSeal™ 890 B-2 or B1/2. Attach Screen P/N 080036, to bulkhead and duct using (4 each) AN525-10R10 Screws, (4 each) AN970-3 Washers.		
5.42 (A109 E)	Position return air duct P/N 520061-P. Trim as necessary to fit. Drill (3 each) # 10 mount holes. See drawing 5-A109 Sheet 1 of 4 for hole location. Install (3) RM52LHA4972-10-02 Nutclips on P/N 520061-P. Seal duct to wall with ProSeal™ 890 B-2 or B1/2. Attach Screen P/N 080036, to bulkhead and duct using (3 each) AN525-10R10 Screws, (3 each) AN970-3 Washers.		
5.43	Position Return Air Duct-Lower P/N 250286 as shown in drawing 5-A109 Sheet 1 of 4. Trim as necessary. For A109 E Disregard this step.		
5.44	Caution: Check all flight controls, move cyclic, collective and anti-torque pedals, be sure duct clears control tubes by .15. For A109 E Disregard this step.		
5.45	Position duct supports P/N's 510230 and 510231 as shown in drawing 5-A109 Sheet 1 of 4. Drill and Cleco in place to deck. Remove all shavings or debris. For A109 E Disregard this step.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.46	Install Plate Assembly P/N 510232 with ABA4-4 rivets to Return Air Duct Lower P/N 250286, Install Duct Mount PN: 260912-1 to outboard plate assembly as shown in drawing 5-A109 Sheet 1 of 4. For A109 E Disregard this step.		
5.47	Mark inside of lower duct, using Return Air Duct Assembly PN: 520061-109 lower aft lip as guide. For A109 E Disregard this step.		
5.48	Next, fit Return Air Duct-Upper P/N 250285 in place. Trim as necessary to fit. Drill and Cleco in place around duct every 2". For A109 E Disregard this step.		
5.49	Un-Cleco ducts and remove. Cut off marked piece on lower duct. For A109 E Disregard this step.		
5.50	Cleco ducts together and re-install. Trim as necessary to make duct removable as one piece. For A109 E Disregard this step.		
5.51	Rivet duct together using ABA4-4 rivets while duct is in place. For A109 E Disregard this step.		
5.52	Remove duct assembly. Insulate assembly with Foam Tape PN: 070078, cover with Aluminum Foil Tape PN: 070076. Install 2 Delrons or Shurlocks for mounting duct supports P/N's 510230, 510231. Per instruction and Detail "A" on drawing 4-A109 Sheet 2 of 2. For A109 E Disregard, See Step 5.53.		
5.53 (A109 E)	Install Return Air Adapter PN: 110100-P to Evaporator Housing Assy. PN: 560043-O using (4) ABA4-4 rivets, (2) on top and (1) on each side. Cover seam around adapter with foam tape PN: 070078 and cover foam around adapter with Aluminum Foil tape PN: 070076 per Drawing 4-1-A109P Sheet 2 of 2.		
5.54 (A109 E)	Install Return Air Duct PN: 060012. Attach each end with 1 each band clamp PN: 060035. Insulate Air Duct with Foam Tape PN: 070078 and wrap duct with aluminum foil tape PN: 070076. Secure middle with 2 each tie wraps per Drawing 4-1-A109P Sheet 2 of 2.		

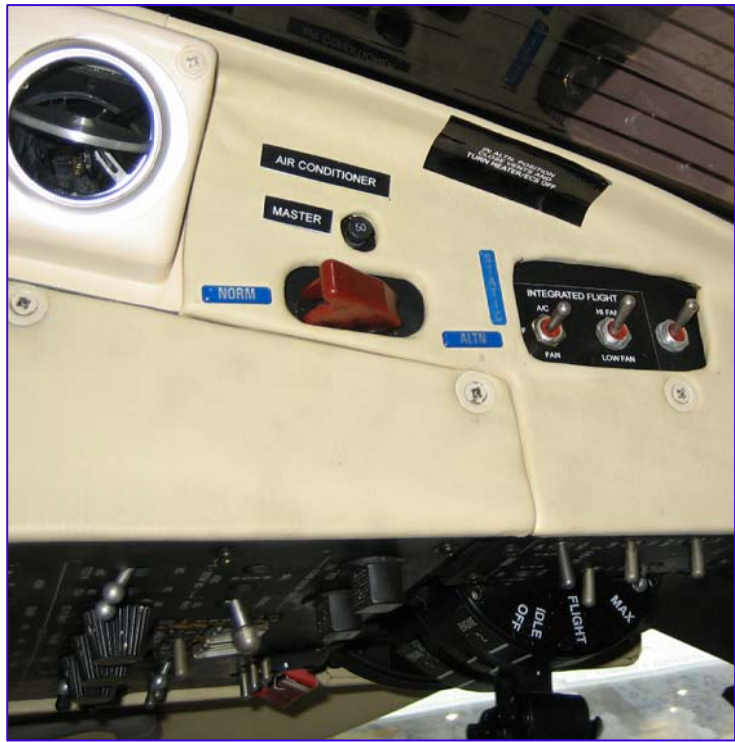
Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
<p style="text-align: center;"><u>AFT CABIN VENTILATION NOTE:</u></p> <p style="text-align: center;">For models NOT equipped with a factory aft cabin ventilation system utilize drawing 4-A109 Sheet 2 of 2 and 5-A109 Sheet 4 of 4.</p> <p style="text-align: center;">For models pre-equipped with aft cabin ventilation system this is an optional installation only, the aft cabin air duct PN: 520066 is not required.</p> <p style="text-align: center;">Utilize drawings 4-1-A109P and 5-1-A109P sheet 4 of 4.</p>			
5.55	If required, enlarge fresh air inlet hole in deck from 2-1/2" to 3-1/2". See drawing 4-A109 Sheet 2 of 2 Detail "B". For A109 E Installation utilize drawings 4-1-A109P Sheet 2 of 2.		
5.55 (A109 E)	If fresh air inlet exists on deck, remove the inner part to remove air restriction, shown on drawing 4-1-A109P Sheet 2 of 2. Attach 3.4 Nipple P/N: 250279-P to the fresh air port. Attach elbow from Evaporator Assy. PN: 560043-O, wrap with foam insulation PN: 070078 and cover in aluminum foil tape PN: 070076 per drawing 4-1-A109P Sheet 2 of 2.		
5.56	If no hole exists, align 3.4 Nipple P/N 250279 to clear controls and align with aft fan elbow. Mark position. Should be centered between fore and aft in cabin within .5" +/- .5"		
5.57	Cut 3-1/2" hole and cut back inner core 1". Rivet in place aft air duct doublers P/N 261510 with CR3243-4-2 rivets (24 places) and fill with Metalset™. Allow Metalset™ to cure per manufacturer's instructions. Remove all shavings or debris.		
5.58	Drill 3 each #10 holes through Install hose nipple P/N 250279 with (3) AN3-13A bolts, (3) MS21044-N3 nuts, (3) AN960-10 Washers and (3) AN970-4 Washers. Remove all shavings or debris.		
5.59	Connect 3.5 inch hose P/N 060024-1 from fan elbow to hose nipple on deck using (2 each) 4" Band Clamps PN: 060040.		
5.60	Wrap 3.5 inch hose P/N 060024-1 with foam insulation tape P/N 070078, then cover with aluminum foil tape P/N 070076.		

Integrated Flight Systems
INSTALLATION OF EVAPORATORS – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
5.61	Connect evaporator drain line “Y” P/N 100181 to tube from fan elbow using tube P/N 090018-1. See drawing 4-A109 Sheet 1 of 2 for detail. For A109 E Installation utilize drawings 4-1-A109P Sheet 1 of 2.		
5.62	PROSEAL™ 890 B-2 or B-1/2 around all bolt heads above deck and any fastener on cabin ceiling.		
5.63	Install DZUS support assemblies P/N 510300 with MS20426-3-X rivets in aircraft flange. Then install Camloc P/N 50-052-1. See drawing 8-A109 Sheet 1 of 1. For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1.		
5.64	Install Camloc P/N 50-052-5-1 in aircraft cowl. See drawing 8-A109 Sheet 1 of 1. For A109 E Installation utilize drawings 8-1-A109P Sheet 1 of 1.		
5.65	If existing aft cabin ventilation system is not installed. Position aft cabin duct P/N 520066 as shown in drawing 5-A109 Sheet 4 of 4. For A109 AII, C or K2 Model		
5.65 (A109 E)	If existing aft cabin ventilation system is not installed. Position aft cabin duct P/N 520066 as shown in drawing 5-A109P Sheet 4 of 4. For A109E Model		
5.65 (A109 A)	If existing aft cabin ventilation system is not installed. Position aft cabin duct P/N 520066-A as shown in drawing 5-A109 Sheet 4 of 4. For A109A Model		
5.65 (A109 E)	For aircraft with existing aft cabin ventilation system utilize drawings 5-1-A109P Sheet 4 of 4.		
5.66	Install Hose Nipple PN: 250509 per drawing 5-A109 Sheet 4 of 4. For pre existing ventilation system utilize drawings 5-1-A109P Sheet 4 of 4.		
5.67	Install duct per drawing 5-A109 Sheet 4 of 4 if ventilation duct is required. For pre existing ventilation system utilize drawings 5-1-A109P Sheet 4 of 4. Attach with (6) AN525-10R8 Screws and (6) AN960-10 Washers. Shim with washers as needed. Attach 2 each placards PN: 120071 as shown in drawing.		
5.68	Re-install duct PN: 520061-109. Wrap ends of duct at attachment points with aluminum tape PN: 070076. Attach supports with AN3-4A bolts and AN960-10 washers. Caution: Make sure all controls clear duct by .15 minimum.		

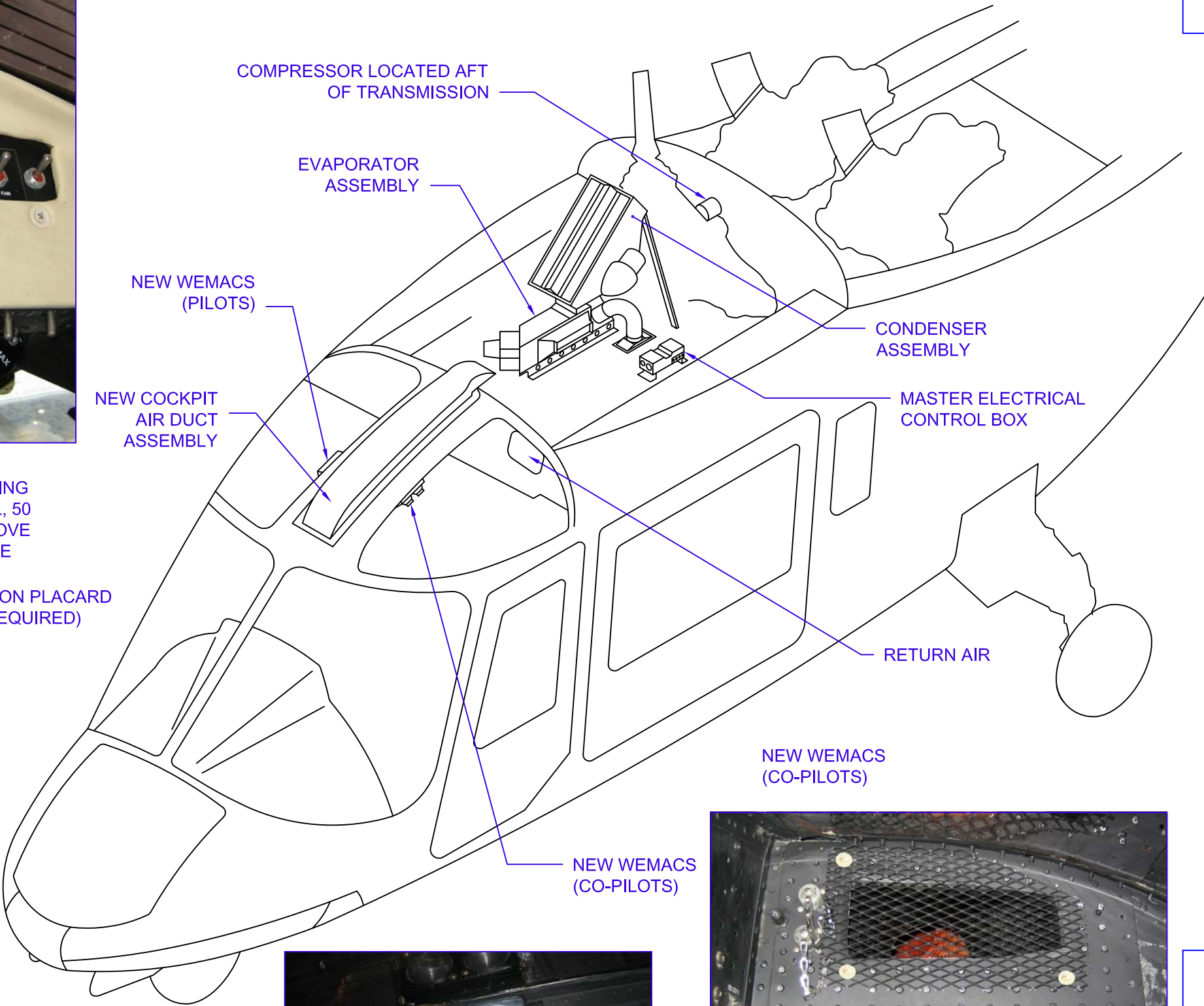
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DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



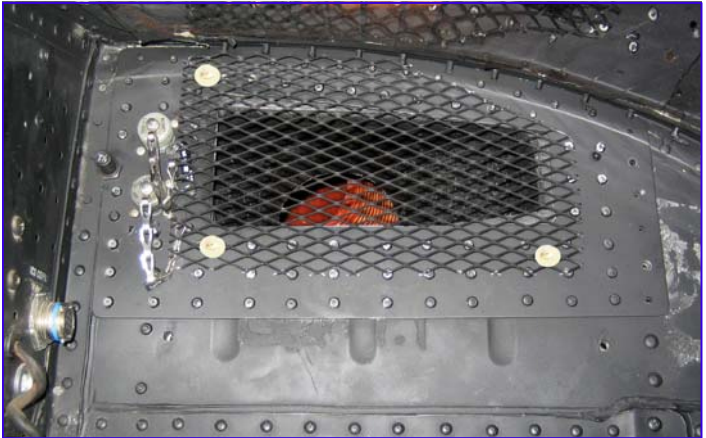
LOCATION FOR MASTER AIR CONDITIONING
CONTROLS & FWD FAN SPEED CONTROL, 50
AMP CIRCUIT BREAKER PN: 050012-9 ABOVE
PILOTS HEAD AND RIGHT OF THROTTLE
PLACARD PN: 120009-2 (SHOWN)

A/C MASTER

(POSITION PLACARD
IF/AS REQUIRED)



COMPRESSOR



RETURN AIR SCREEN PN: 080036-P
ABOVE AND BEHIND CO-PILOTS HEAD.



NEW CO-PILOTS WEMACS
(PILOTS OPPOSITE)

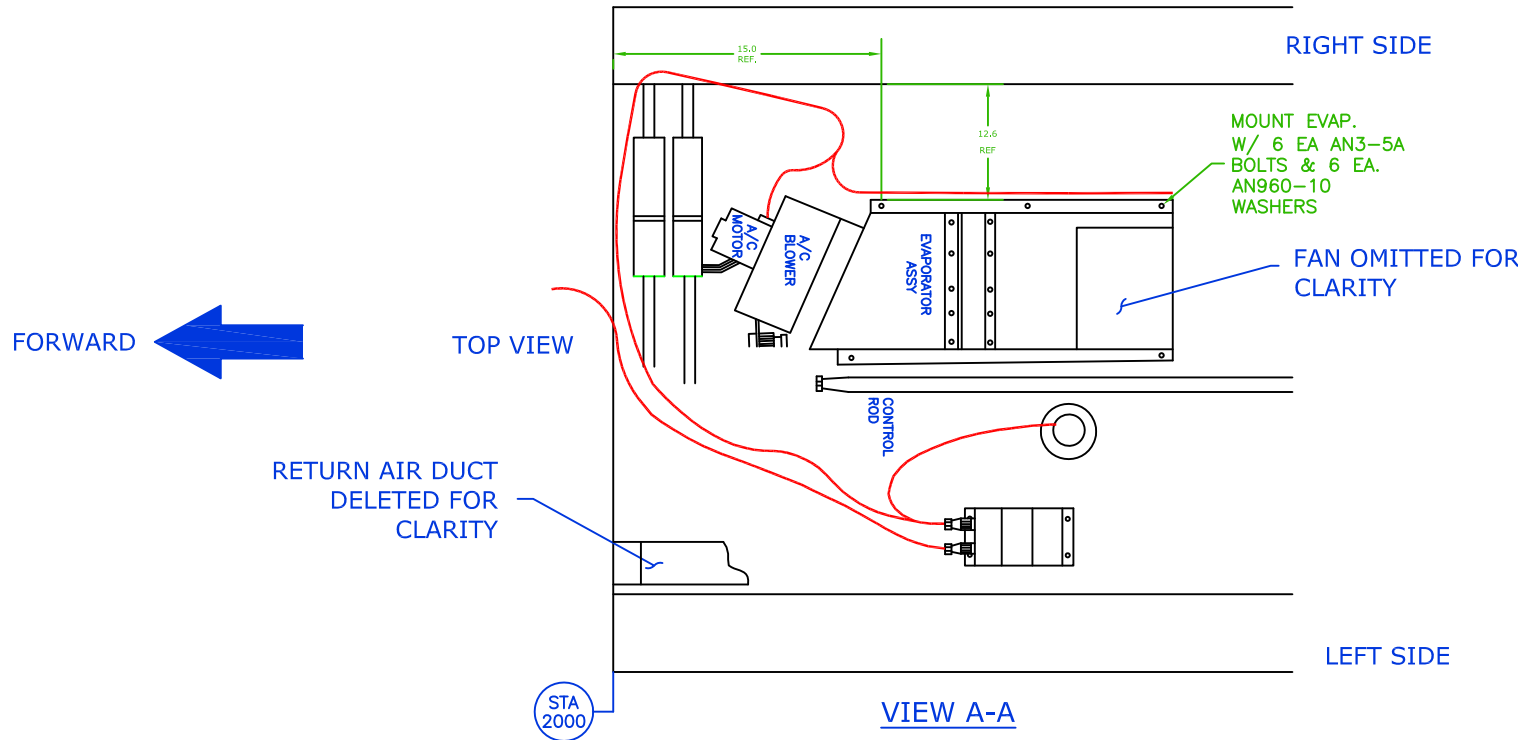
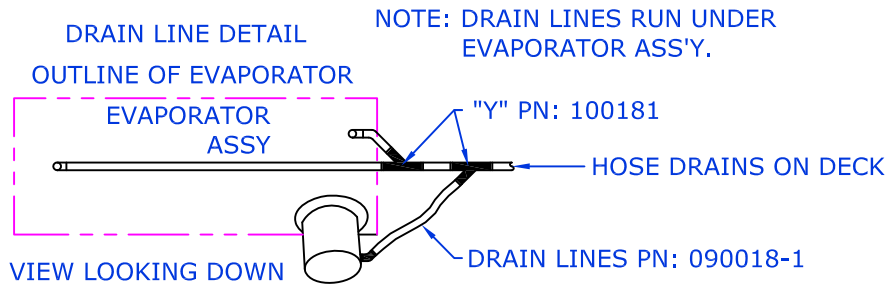
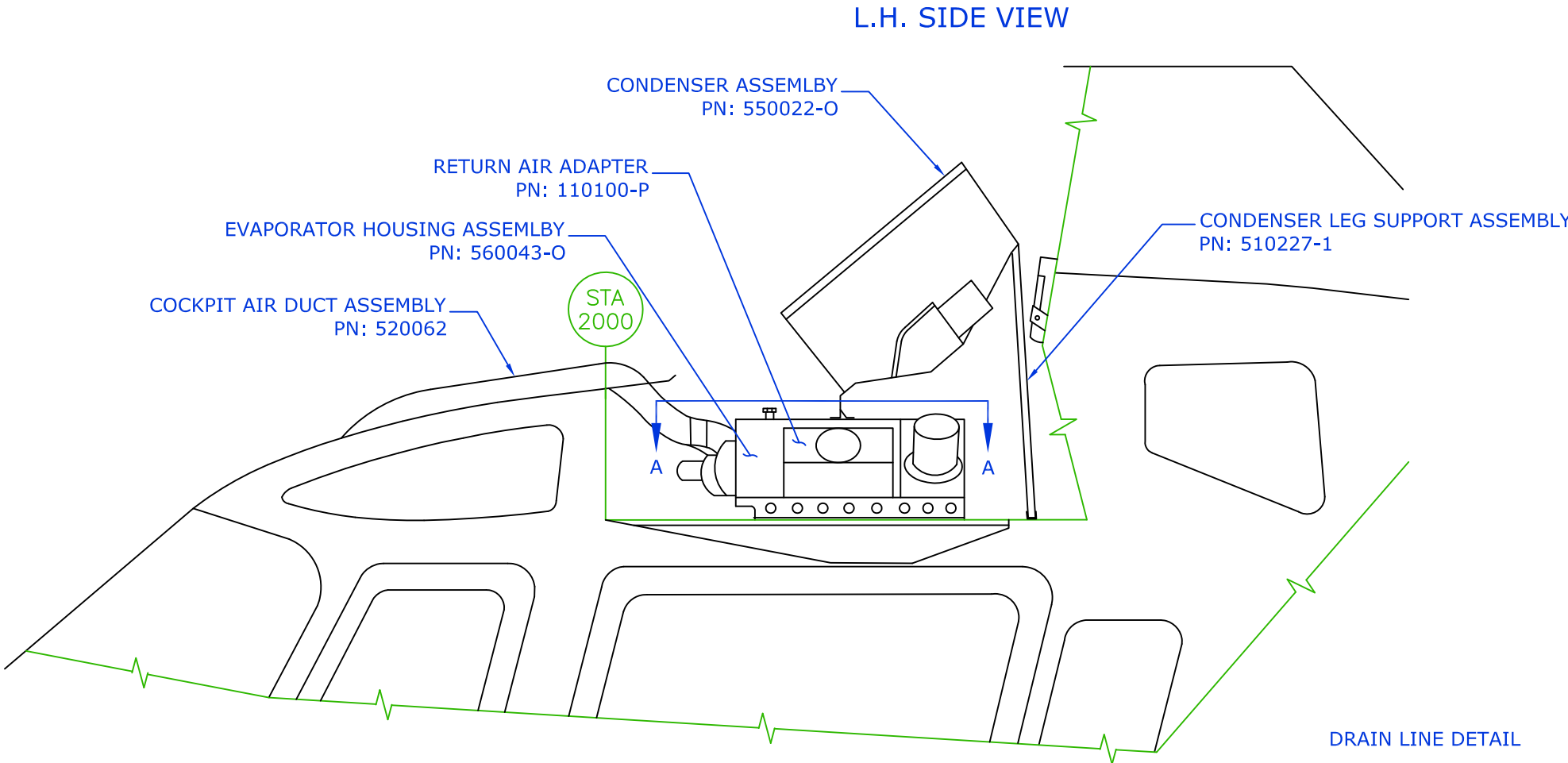
AGUSTA A109E
(POWER)



TITLE: AIR CONDITIONING
OVERVIEW

DRAWN BY: JTYE	DATE: 08/01/07	REV IR	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AGUSTA A109E			DWG No. 1-1-A109P	

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



AGUSTA A109E
(POWER)



TITLE: EVAPORATOR INSTALL				
DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AGUSTA A109E			DWG No. 4-1-A109P	

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



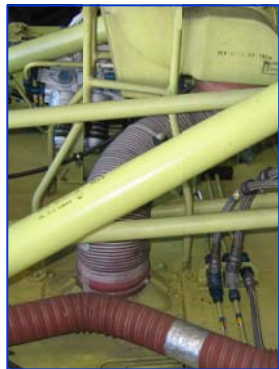
STA
2000

FORWARD

FWD FAN GROUND
WIRE CONNECTED
TO AN3-5A BOLT

RIGHT SIDE, LOOKING IN

WIRE HARNESS GROUND LEADS.
GROUND AT THIS LOCATION.



FORWARD

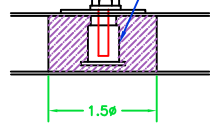
OUTBOARD
RIGHT

SEE DETAIL "A"
MOUNT FAN SUPPORT INTO
SHURLOK SL601-3-3A
ALT: DELRON PN: 504SE1032-06-02
WITH
1 EA. AN3-5A BOLT & 1 EA.
AN960-10 WASHER
MOUNT INTO FAN HOUSING
WITH 1 EA. AN3-4A BOLT &
1 EA. AN960-10 WASHER



REMOVE THIS INNER PART.

SHURLOK INSERT PN: SL601-3-3A
ALT: DELRON INSERT PN: 504SE1032-06-02
AN3J-4A BOLTS
AN960-10 WASHERS
TYP. (6 PLS)



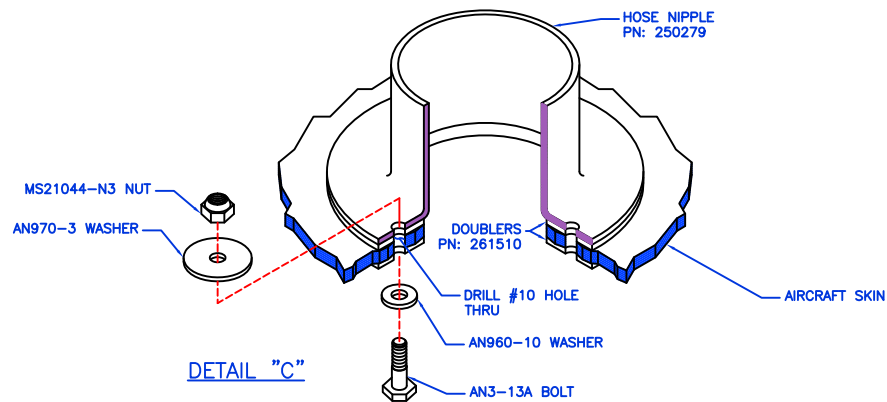
FILL W/A-4
METAL SET
TYP. 4

DETAIL "A"

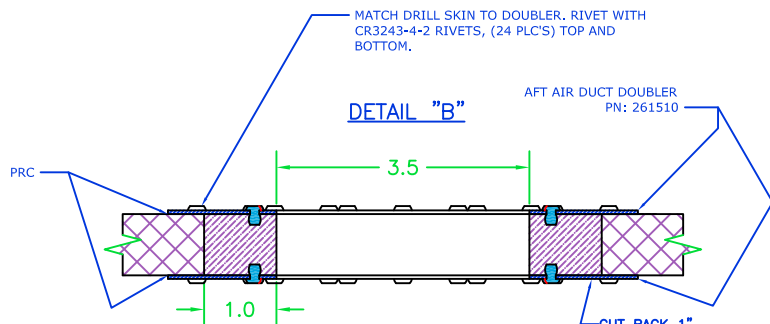
INTERCHANGABILITY BETWEEN MS20470AD/MS20426AD RIVETS AND
CR3243/CR3242 RIVETS ALLOWABLE. GRIP LENGTH OF RIVET TO BE
DETERMINED BY INSTALLER. INSTALL IN ACCORDANCE WITH AC 43.13-
1A, CHAPTER 2, SECTION 3, 99. RIVETING a, b, c, d, FIGURE 2.19,
CHAPTER 5, SECTION 1, 232 TYPE OF RIVETS, a, e, f, DATED 1972.

OPTIONAL MODIFICATION

IF NO AIR SYSTEM IS INSTALLED FOR CABIN.



DETAIL "C"



DETAIL "B"

INSTALL RETURN
AIR ADAPTER
P/N 110100-P
DRILL AND ATTACH
WITH ABA4-4 RIVETS
AS REQUIRED
FOAM AND FOIL
TAPE. SECURE
RETURN AIR DUCTING
PN: 060012
WITH 6" BAND CLAMP
PN: 060035.



INSTALL 3.4" NIPPLE
P/N 250279-P

INSERT INSTALLATION INSTRUCTIONS

1. MATCH DRILL COMPONENTS UNDER DETAIL "A" AND "B" TO HELICOPTER CABIN ROOF USING #10 HOLES.
2. SPOT FACE UPPER FACE SKIN TO 9/16" DIAMETER AT EACH #10 HOLE.
3. USING A 90° ANGLE TOOL, REMOVE CORE OF CABIN ROOF TO A DIAMETER OF 1.5" FROM UNDERSIDE OF UPPER SKIN TO UPPER SIDE OF LOWER SKIN.
4. VACUUM OUT ALL CORE MATERIALS REMOVED.
5. TRAIL FIT SUR-LOK INSERT, P/N SL601-3-3A. (ALT: DELRON INSERT PN: 504SE1032-06-02) ENSURE THAT INSERT WILL FIT FLUSH WITH UPPER SKIN SURFACE.
6. OBTAIN METALSET™ A-4 AND MIX ACCORDING TO MANUFACTURER'S DIRECTIONS.
7. FILL EACH CAVITY WITH METALSET™ A-4 AND INSTALL SUR-LOK INSERT INTO THE METAL SET. ENSURE THAT INSERT IS TOTALLY ENCAPSULATED.
8. ENSURE THAT INSERT CENTER THREAD OPENING DOES NOT BECOME CLOGGED WITH METAL SET. ALLOW METAL SET TO FULLY CURE BEFORE INSTALLING EVAPORATOR TO ASSEMBLY OR MASTER A/C ELECTRICAL PANEL.
9. RETAIN A SAMPLE OF THE METALSET™ A-4 USED IN THIS INSTALLATION FOR A PERIOD OF 24 HOURS. ENSURE THAT CURING AND BONDING PROPERTIES DEVELOP IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



TITLE: EVAPORATOR INSTALL

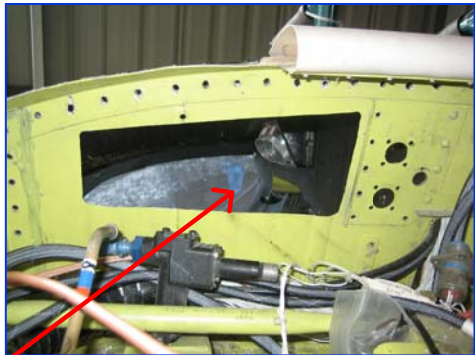
DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AGUSTA A109E			DWG No. 4-1-A109P	

AGUSTA A109E
(POWER)

TOP VIEW

FORWARD

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

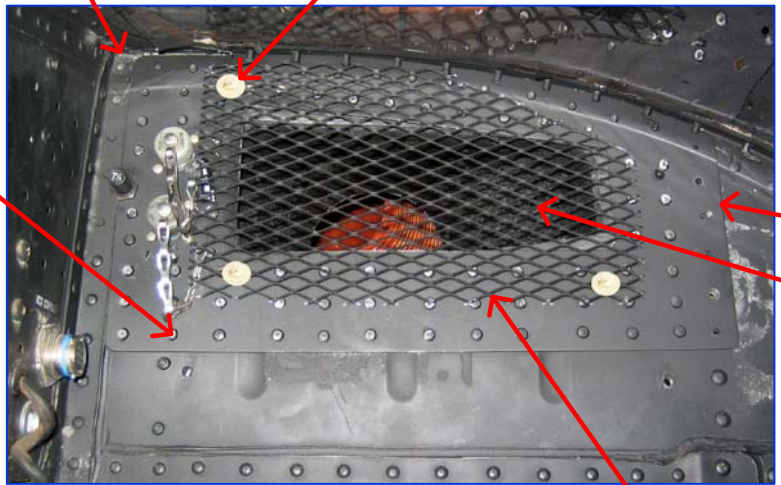


RETURN AIR DUCT CUT-OUT,
AFT OF CO-PILOTS BULKHEAD.



POSITION DOUBLER AS SHOWN,
JUST BELOW HOLES ON UPPER SKIN.

STA
2000



SECURE RETURN AIR DUCT TO BULKHEAD
WITH (3 EA.) AN525 10R10 SCREWS,
(3 EA.) AN970-3 WASHERS,
(3 EA.) CLIP NUT

RIVETS
MS20470AD-4-X

RETURN AIR DOUBLER
P/N 260866-P

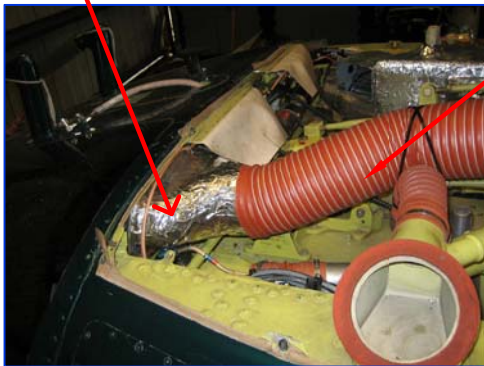
RETURN AIR SCREEN
P/N 080036-P

TOUCH UP PAINT ON DOUBLER,
RIVETS AND SCREWS AFTER
COMPLETION.

FORWARD SIDE CO-PILOTS
BULKHEAD

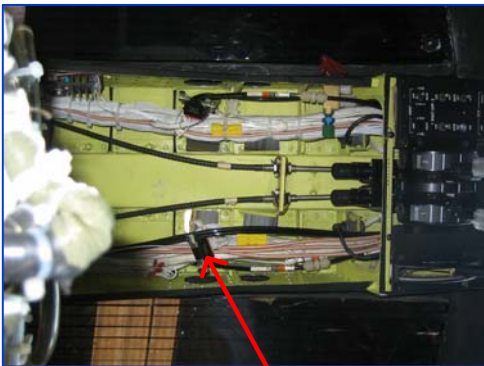
PRC AROUND SCREEN
TO SECURE IN PLACE.

RETURN AIR DUCT
P/N 520061-P



POSITION DUCT TO CLEAR
CONTROLS AND STRUCTURE.

RETURN AIR
DUCT



RELOCATE RELAY FORWARD TO
NEW LOCATION AS SHOWN

COVER DUCT WITH FOAM
AND ALUMINUM TAPE.



STRIP WIRE FROM DUCT PN: 060007
AND INSTALL WITH (2 EACH)
6" IN. BAND CLAMPS.
COVER WITH FOAM AND ALUMINUM TAPE.

AGUSTA A109E (POWER)



TITLE: AIR DISTRIBUTION

DRAWN BY: KML	DATE: 08/01/07	REV IR	SCALE: NONE	SHEET: 1 OF 4
APPLICATION: AGUSTA A109E			DWG No. 5-1-A109P	

REVISION RECORD

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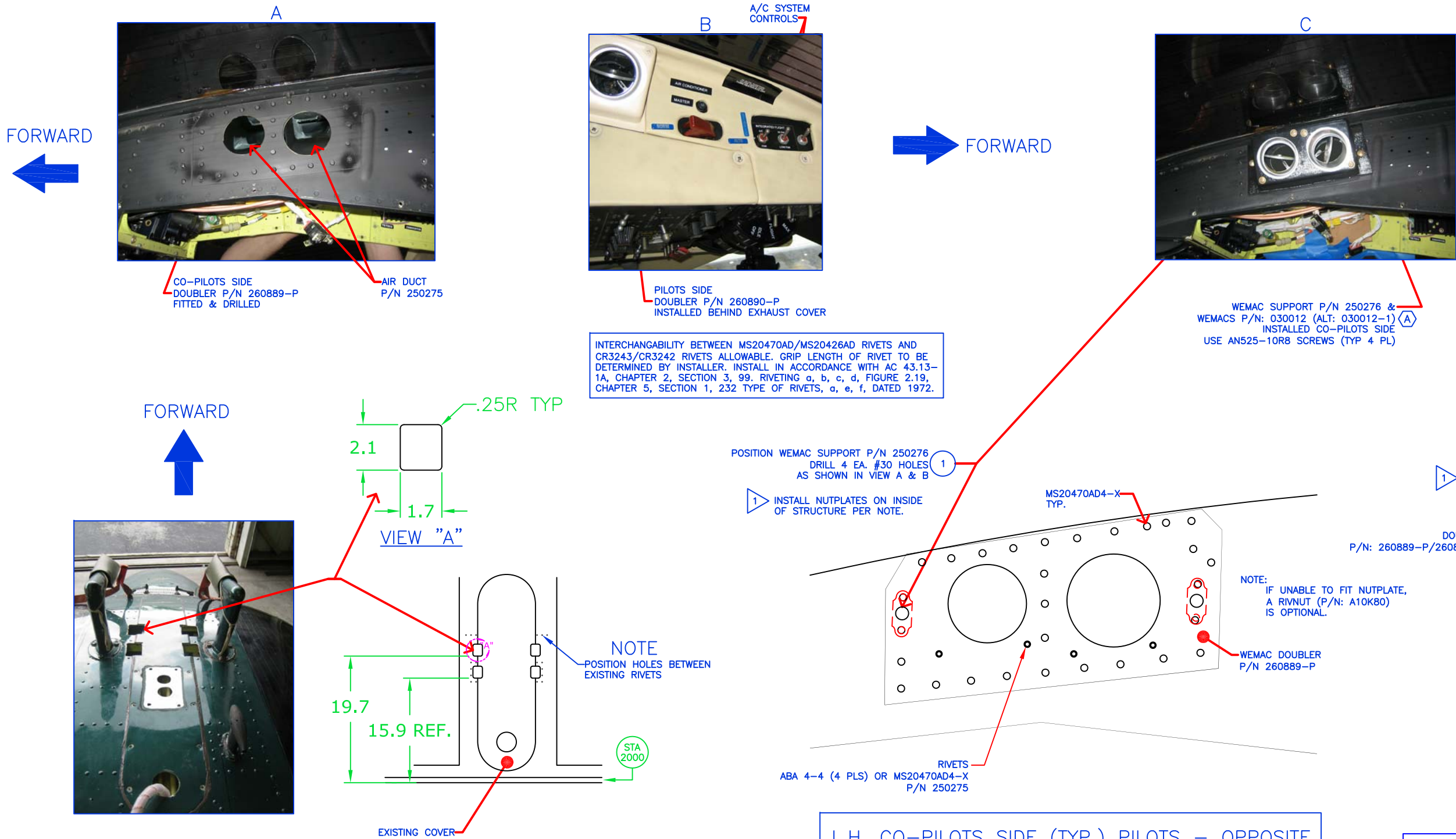
AGUSTA A109E
(POWER)

INTEGRATED

Flight Systems

TITLE: AIR DISTRIBUTION

DRAWN BY: KML	DATE: 08/01/07	REV A	SCALE: NONE	SHEET: 2 OF 4
APPLICATION: AGUSTA A109E			DWG No. 5-1-A109P	





COCKPIT AIR DUCT ASSY.
P/N 520062

PITOT TUBES DELETED
FOR CLARITY

FWD ←

A
A

LEFT SIDE LOOKING IN

ALIGN DEFLECTORS BETWEEN
HOLES. DRILL AND ATTACH
PER VIEW A-A LEFT SIDE SHOWN
RIGHT SIDE OPPOSITE.

AFT HOLE

FWD HOLE

FORWARD

AIR DEFLECTOR
(R/H SIDE SHOWN
P/N 260916-P)

BUILD UP FOAM TAPE
AIR DAM. JUST FOWARD
OF MOST FORWARD HOLES.
COVER WITH ALUMINUM TAPE.
SEAL WITH STRIP OF FOAM
TAPE.

FWD
↑

AIR DEFLECTOR
(L/H SIDE SHOWN
P/N 260917-P)

VIEW A-A
COCKPIT AIR DUCT ASSY.
LOOKING UPSIDE DOWN

MATCH DRILL AIR DUCT
TO DEFLECTORS ATTACH
WITH 2X CR3243-4-4 RIVETS
EACH SIDE

NOTE: CUT DUCT FLANGE
TO FIT PITOT BASE
BOTH SIDES.
INSPECT UNDER ROOF PRIOR TO DRILLING.
USE "STOP DRILL", WHEN DRILLING ALL
HOLES THRU ROOF.

BUILD UP FOAM TAPE
COVER WITH ALUMINUM
TAPE. SEAL TO SKIN WITH
FOAM TAPE.

STA
2000

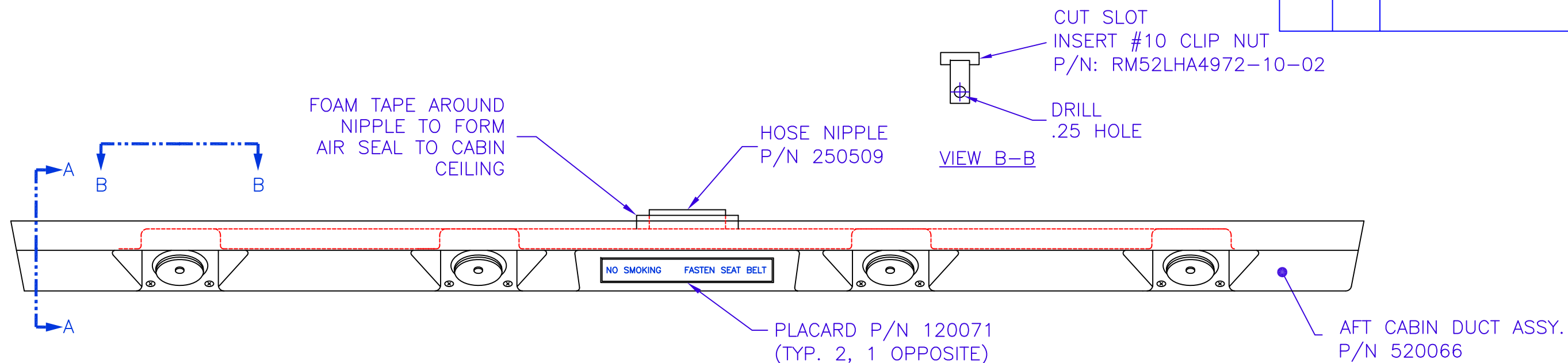
AGUSTA A109E
(POWER)



TITLE: AIR DISTRIBUTION

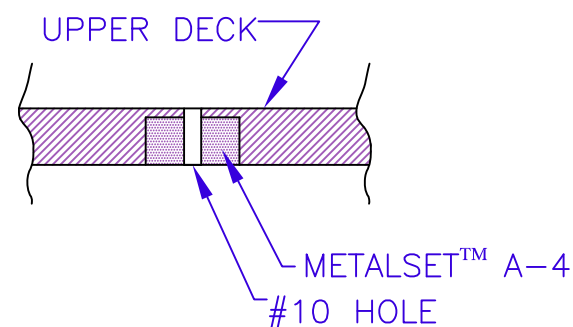
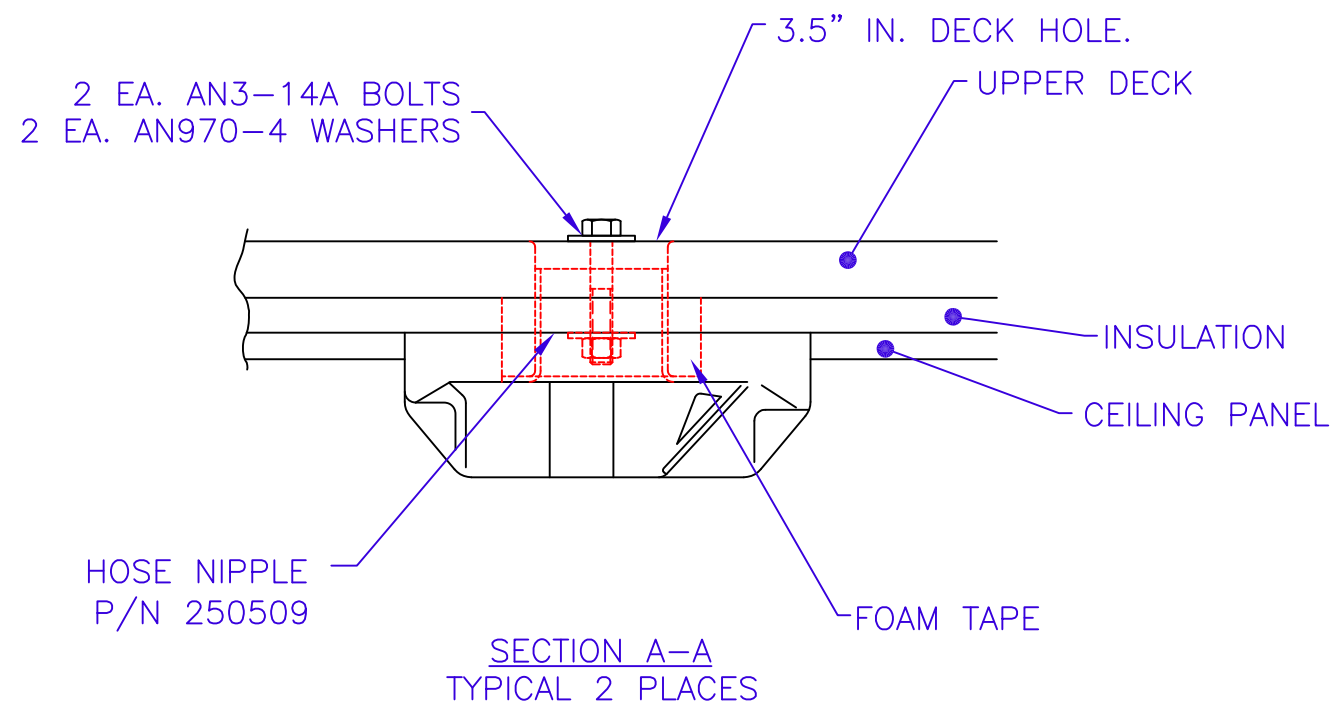
DRAWN BY: KML	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 3 OF 4
APPLICATION: AGUSTA A109E			DWG No. 5-1-A109P	

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



NOTES:

1. REMOVE AFT CABIN DUCT AND HEADLINER, AS REQUIRED.
2. IF ELECTRICALLY ACTUATED EXISTING SIGNS (PLACARDS) BY AGUSTA ARE IN AIRCRAFT, INSTALL IFS P/N 120071 TO DUCT. IF ELECTRICALLY ACTUATED SIGNS (PLACARDS) BY AGUSTA ARE IN AIRCRAFT, REMOVE & INSTALL ON ASSY. P/N 520066.
3. DRILL 2 EA. HOLES THROUGH DECK INTO DECK ASS'Y. AT EACH END. THEN INSTALL 2 EA. CLIP NUTS AS SHOWN.
4. POSITION UNDER 3.5" HOLE UNDER DECK. CENTER ON INTERNAL DUCT. MARK HOLE TO DUCT. REMOVE DUCT ASSEMBLY. CUT HOLE. RIVET HOSE NIPPLE P/N 250509 TO DUCT WITH ABA 4-4 RIVETS.
5. ADD FOAM TAPE AROUND HOSE NIPPLE.
6. ATTACH P/N 520066 TO A/C USING AN3-14A BOLTS.



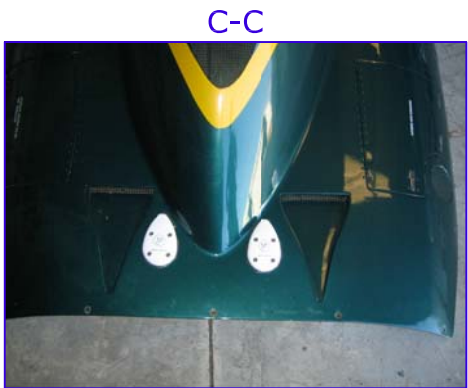
OPTIONAL DUCT INSTALL
IF NO CABIN AIR SYSTEM IS INSTALLED.

AGUSTA A109E
(POWER)



TITLE: AFT CABIN DUCT INSTALL

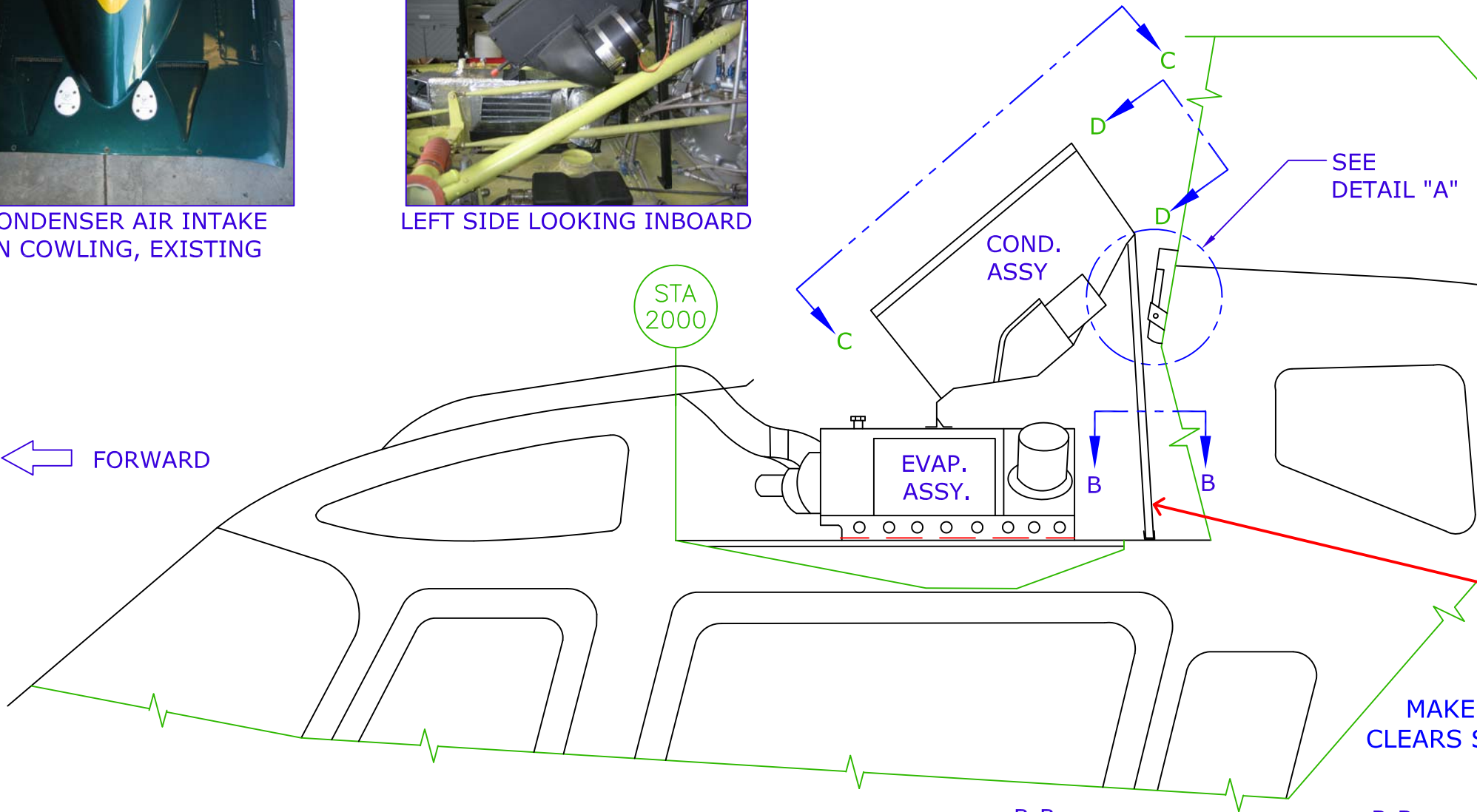
DRAWN BY: MGV	DATE: 08/01/07	REV IR	SCALE: NONE	SHEET: 4 OF 4
APPLICATION: AGUSTA A109E			DWG No. 5-1-A109P	



C-C
CONDENSER AIR INTAKE
IN COWLING, EXISTING



LEFT SIDE LOOKING INBOARD



D-D
AFT SIDE OF CONDENSER

AN3-4A BOLTS
AN960-10 WASHERS
4 EA.

CONDENSER LEG SUPPORT ASSEMBLY
P/N 510227-1

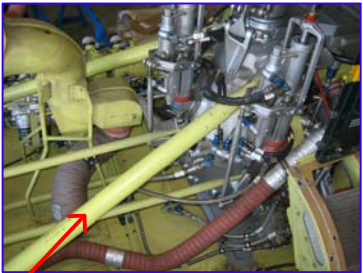
MAKE SURE CONTROL
CLEARS SUPPORT STAND



DETAIL "A"

COND. SUPPORT
MUST CLEAR ALL
CONTROLS

COND. SUPPORT
MUST CLEAR
TRANSMISSION
SUPPORTS



OUTBOARD RIGHT



OUTBOARD RIGHT



OUTBOARD LEFT



RIGHT SIDE

CONDENSER MUST
CLEAR ALL HYDRAULIC
OIL TUBING
BY .10 MIN

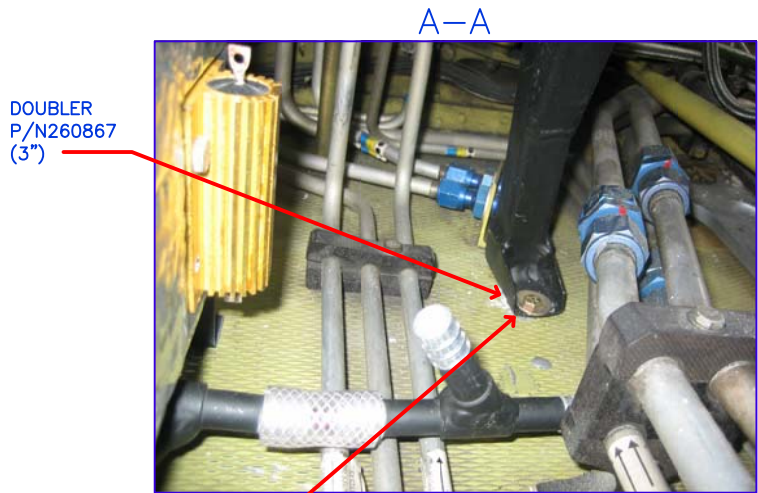


TITLE: CONDENSER INSTALL

AGUSTA A109E
(POWER)

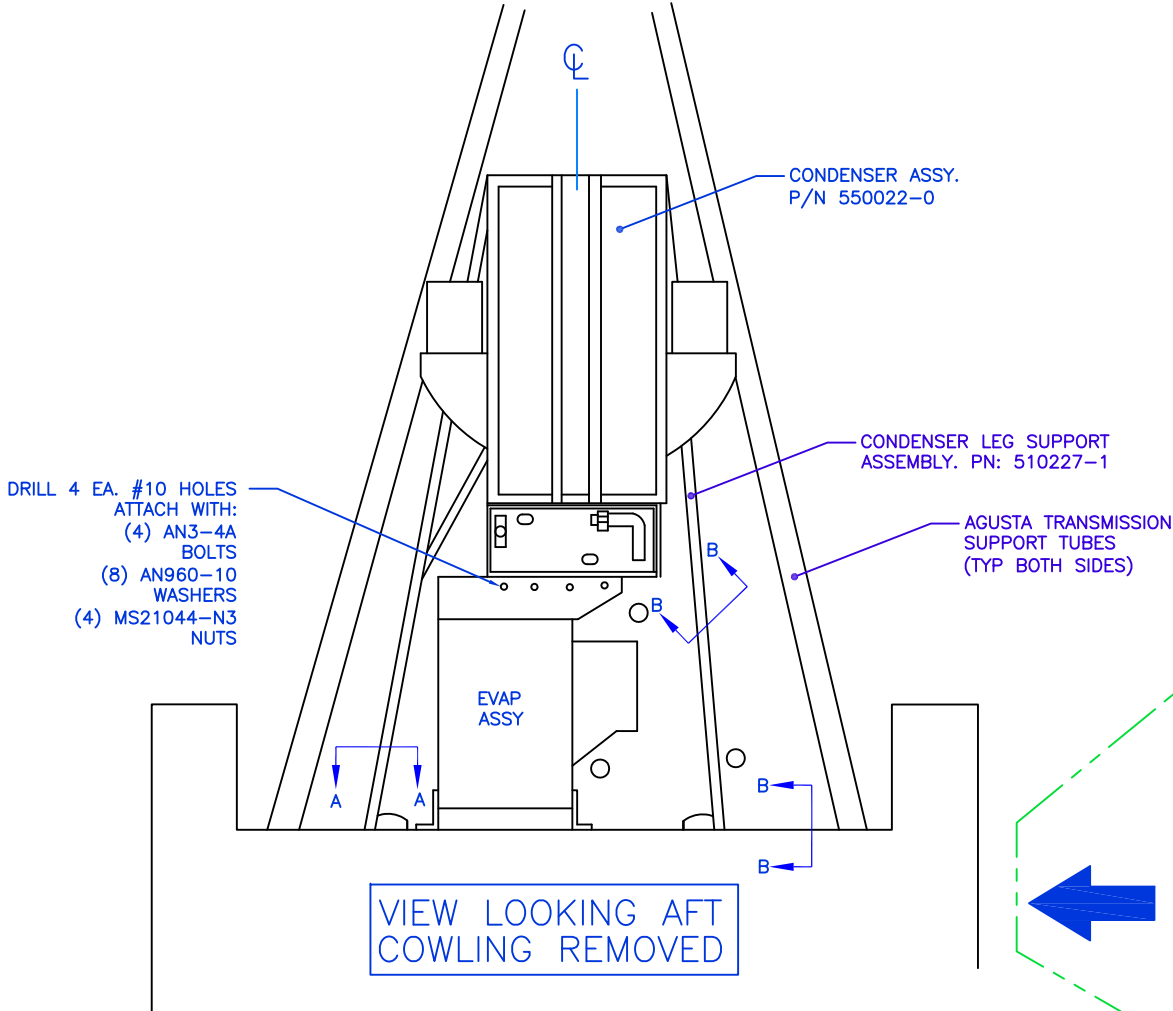
DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AGUSTA A109E			DWG No. 7-1-A109P	

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

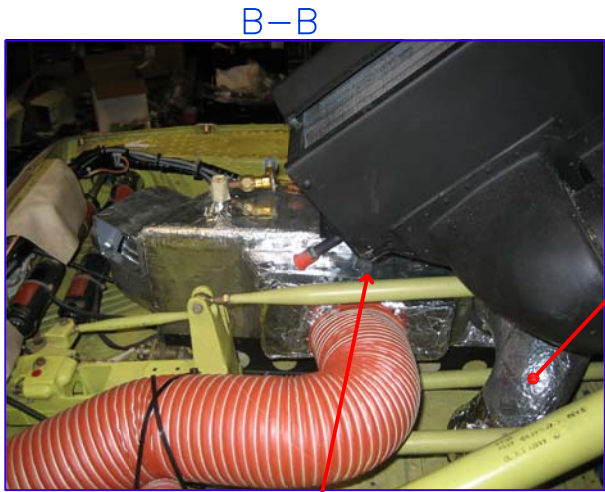


DOUBLER
P/N 260867
(3")

RIGHT/AFT CONDENSER SUPPORT
FOOT LOCATION. INSTALL AN3-13A
BOLT THRU ROOF.



VIEW LOOKING AFT
COWLING REMOVED

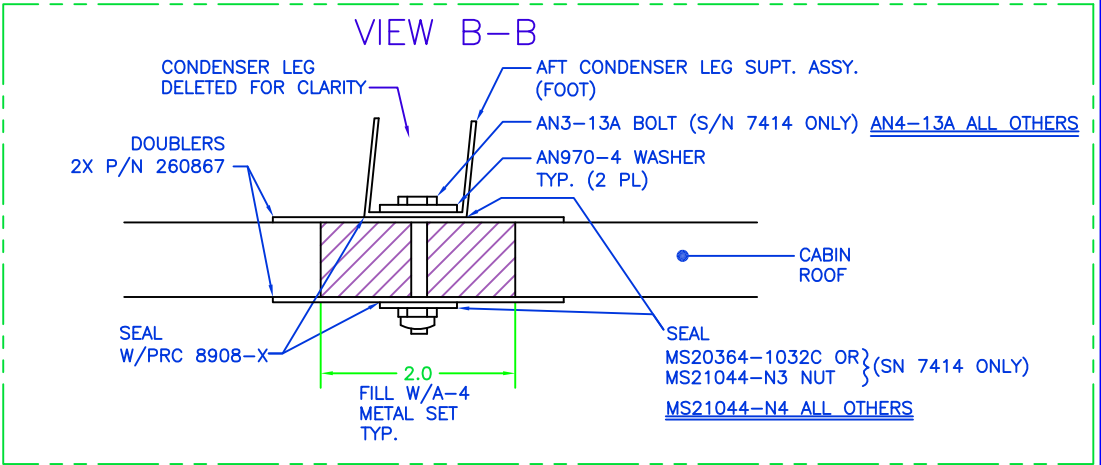


BLOWER
HOUSING L.H. (SHOWN, R.H. OPPOSITE)
ENSURE .1 CLEARANCE TO TRANSMISSION
SUPPORT TUBE.

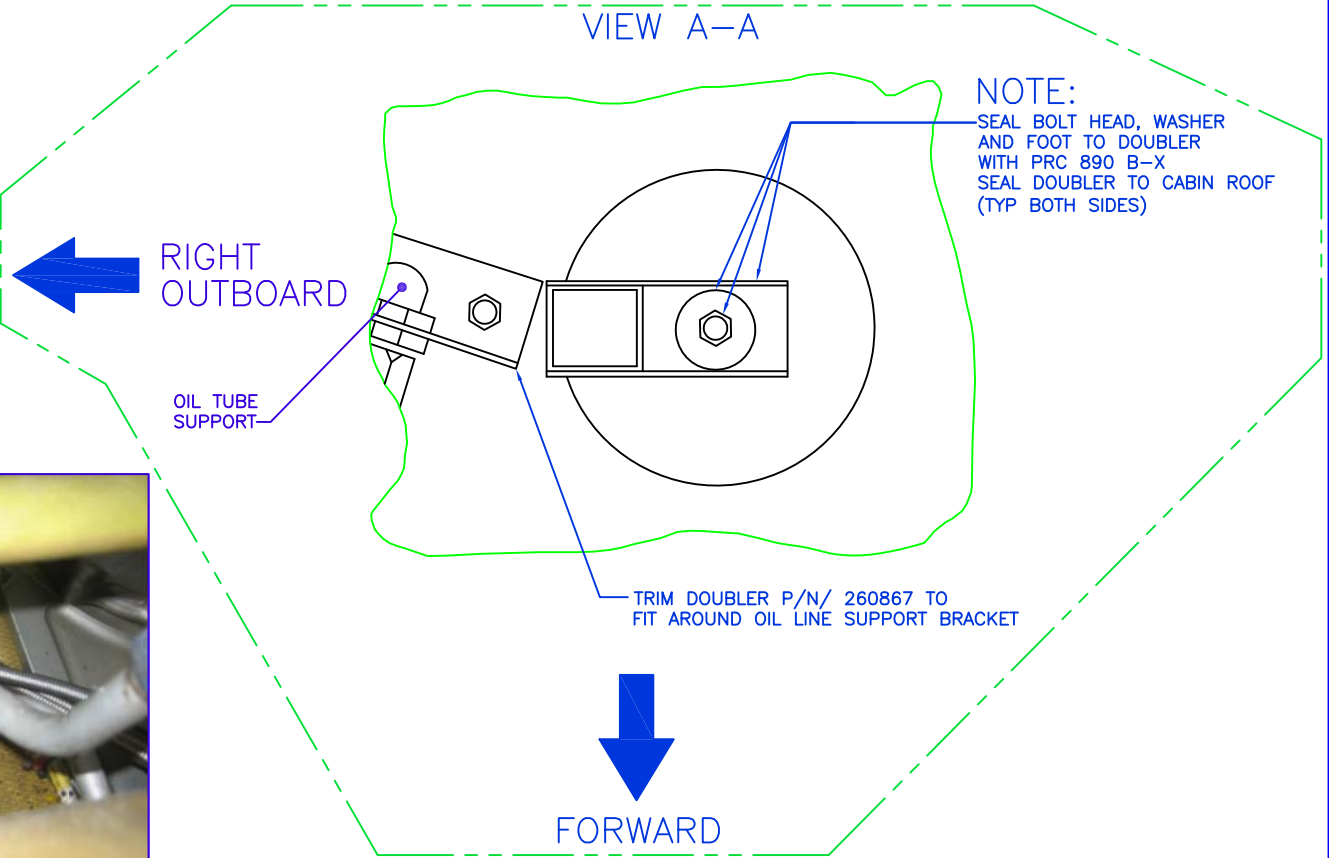
ENSURE .5 CLEARANCE
BLOWER HOUSING BOTTOM
TO CONTROL TUBE



RIGHT/AFT CONDENSER SUPPORT
FOOT LOCATION. INSTALL AN3-13A



VIEW A-A

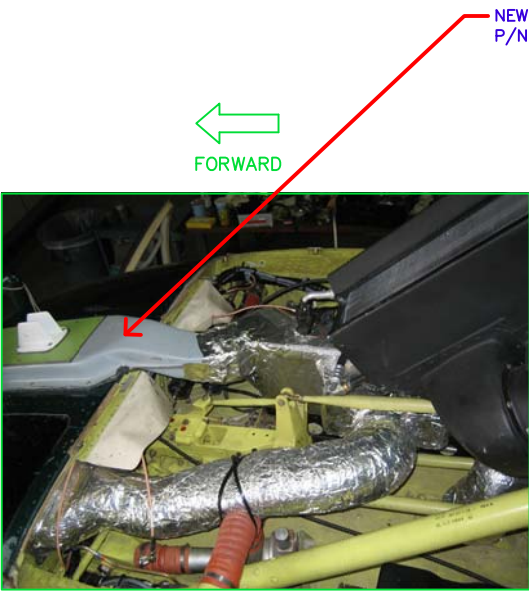


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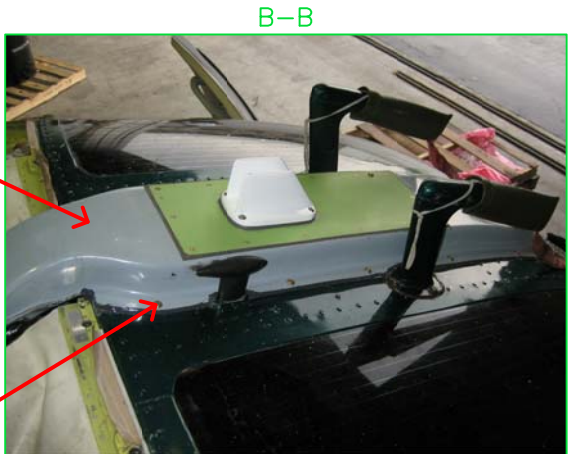
AGUSTA A109E
(POWER)

DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AGUSTA A109E			DWG No. 7-1-A109P	

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

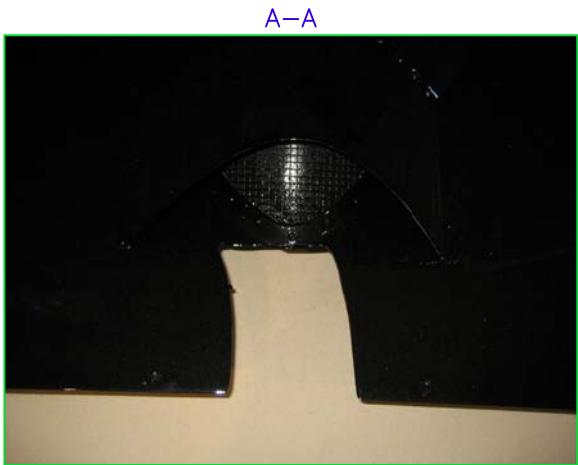


NEW OVERHEAD DUCT
P/N 520062



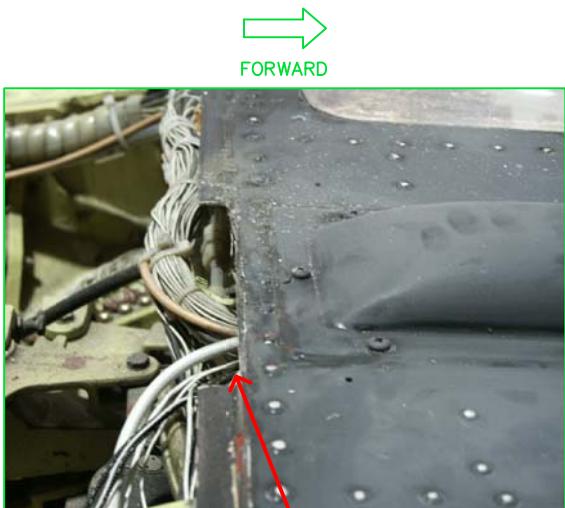
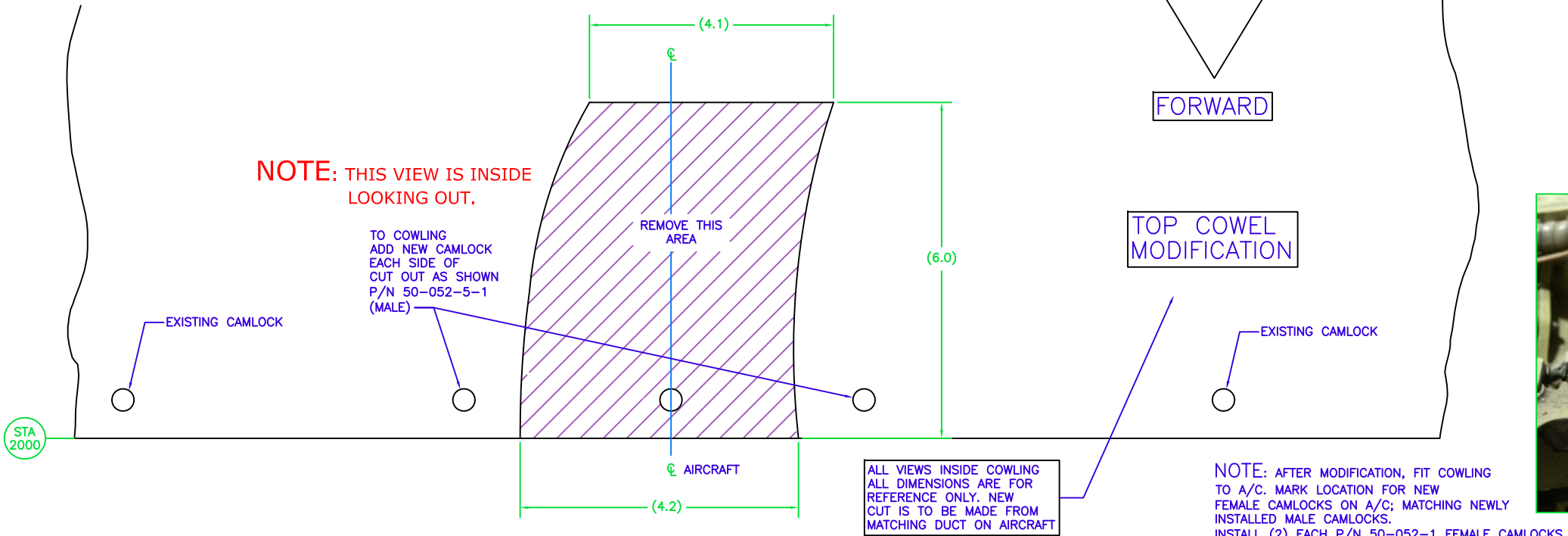
AN 525-10R8
SCREWS (12 PL.)

FORWARD

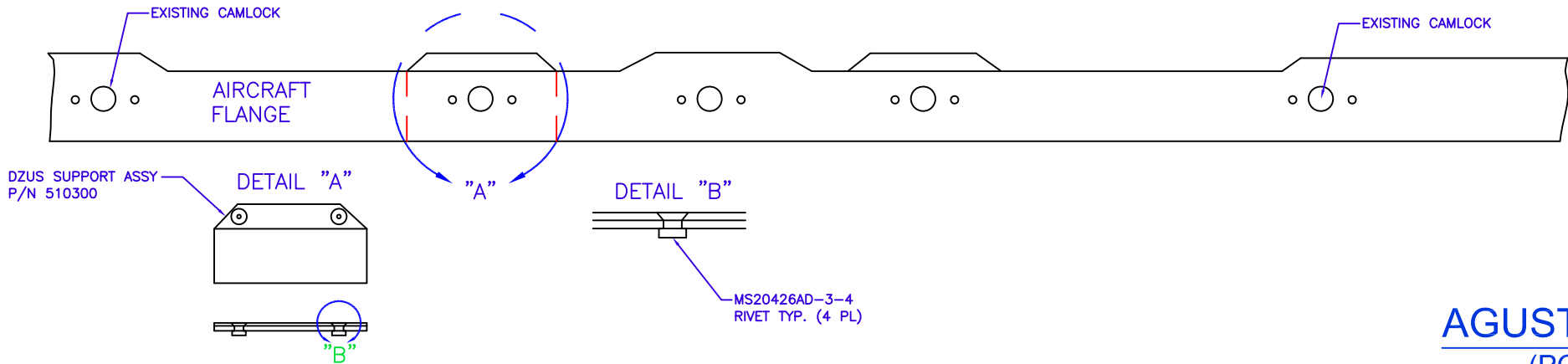


A-A

TOP VIEW OF COWLING
CUT W/REMOVED PORTION



FLANGE MODIFICATION



AGUSTA A109E
(POWER)



TITLE: COWLING MODIFICATION

DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: AGUSTA A109E			DWG No. 8-1-A109P	

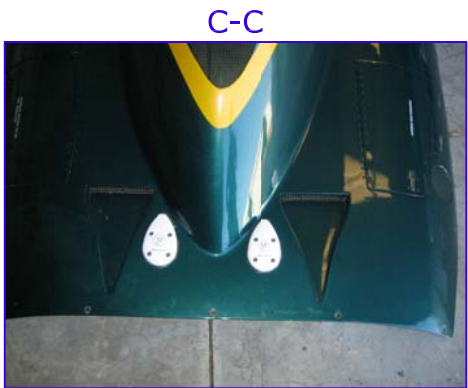
Step 6

Installation of Condenser

Integrated Flight Systems
 INSTALLATION OF CONDENSER – A109 Air Conditioning

Installation of Condenser

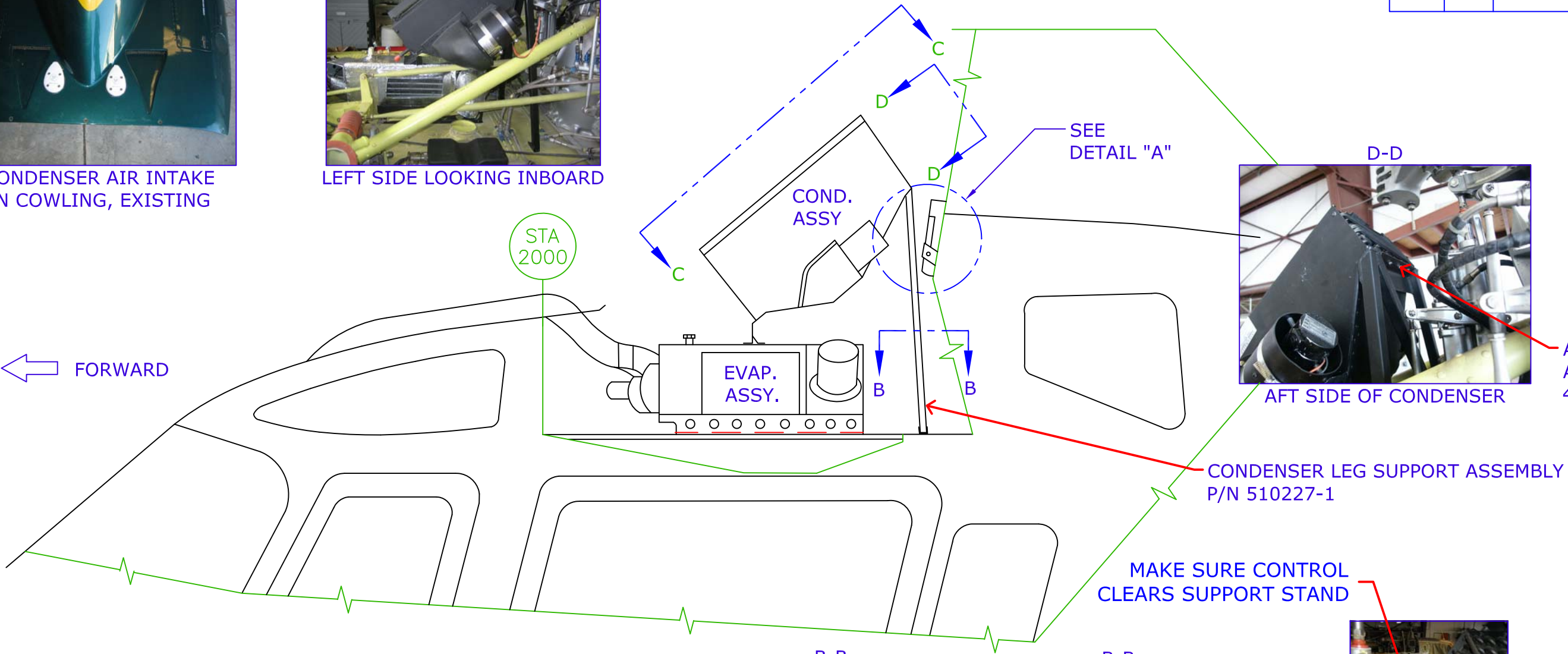
STEP	PROCEDURE	MECH	INSP
6.0	Position and bolt in condenser mount to deck P/N 510227-1 as shown in drawings (1 and 2) of 7-A109. For A109 E Installation utilize drawings 7-1-A109P. Bond in doublers P/N 260867 with PROSEAL™ 890 B-2 or B-1/2 , top deck and cabin roof.		
6.1	Position condenser assembly in place. Install (8) ea. AN3-4A bolts in lower and upper condenser flanges. See drawings (1 and 2) of 7-109A. For A109 E Installation utilize drawings 7-1-A109P.		
6.2	<u>Caution:</u> Check all flight controls, move cyclic, collective and anti-torque pedals, be sure duct clears control tubes by .15.		
6.3	<u>Caution:</u> Make sure deck lines clear condenser mount.		



C-C
CONDENSER AIR INTAKE
IN COWLING, EXISTING



LEFT SIDE LOOKING INBOARD



DETAIL "A"

COND. SUPPORT
MUST CLEAR ALL
CONTROLS

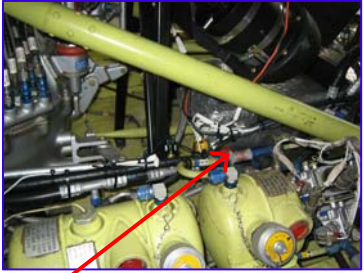
COND. SUPPORT
MUST CLEAR
TRANSMISSION
SUPPORTS



OUTBOARD RIGHT



OUTBOARD RIGHT



OUTBOARD LEFT

CONDENSER MUST
CLEAR ALL HYDRAULIC
OIL TUBING
BY .10 MIN



RIGHT SIDE



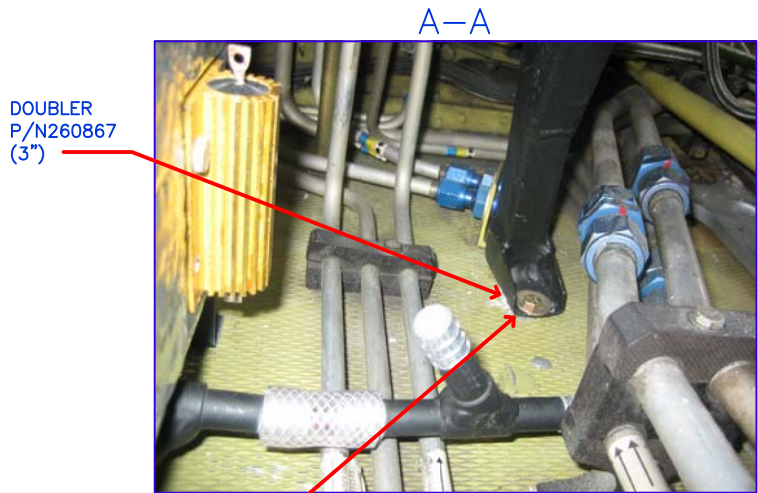
TITLE: CONDENSER INSTALL

AGUSTA A109E
(POWER)

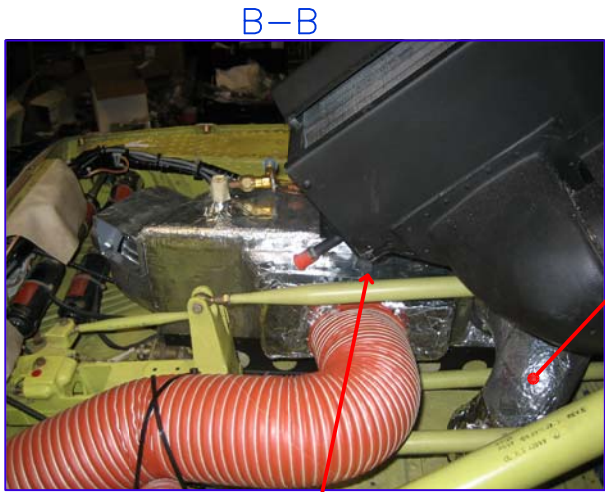
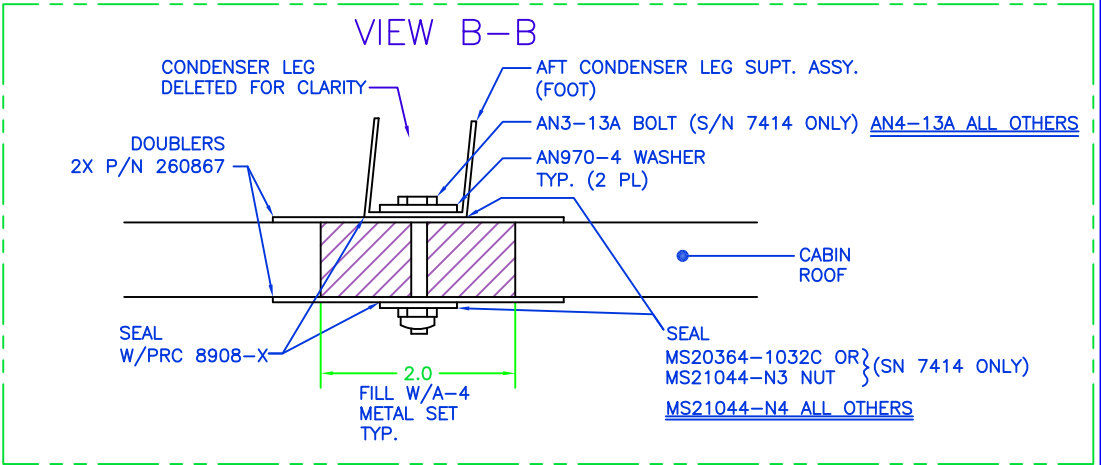
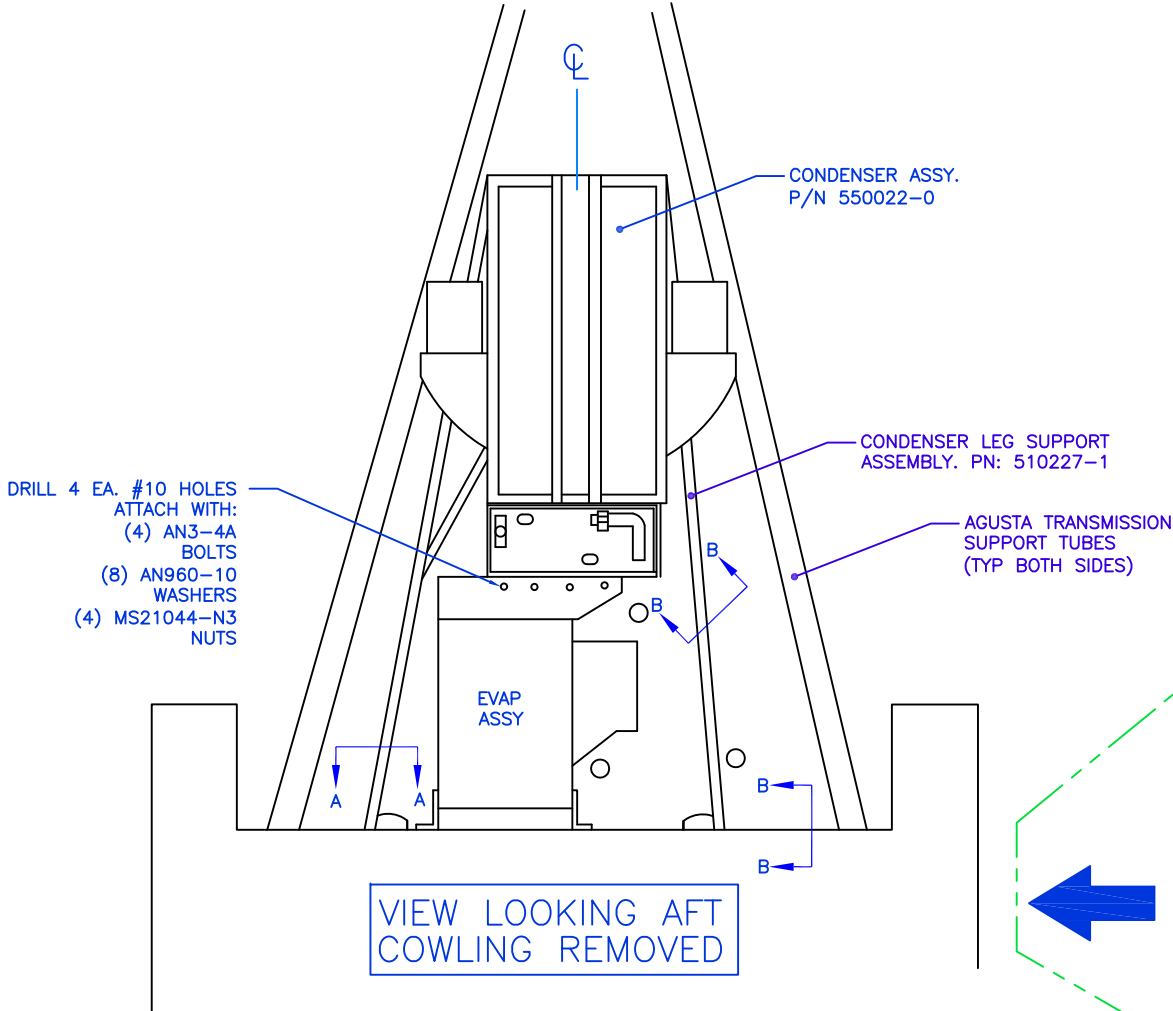
DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 2
APPLICATION: AGUSTA A109E			DWG No. 7-1-A109P	

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

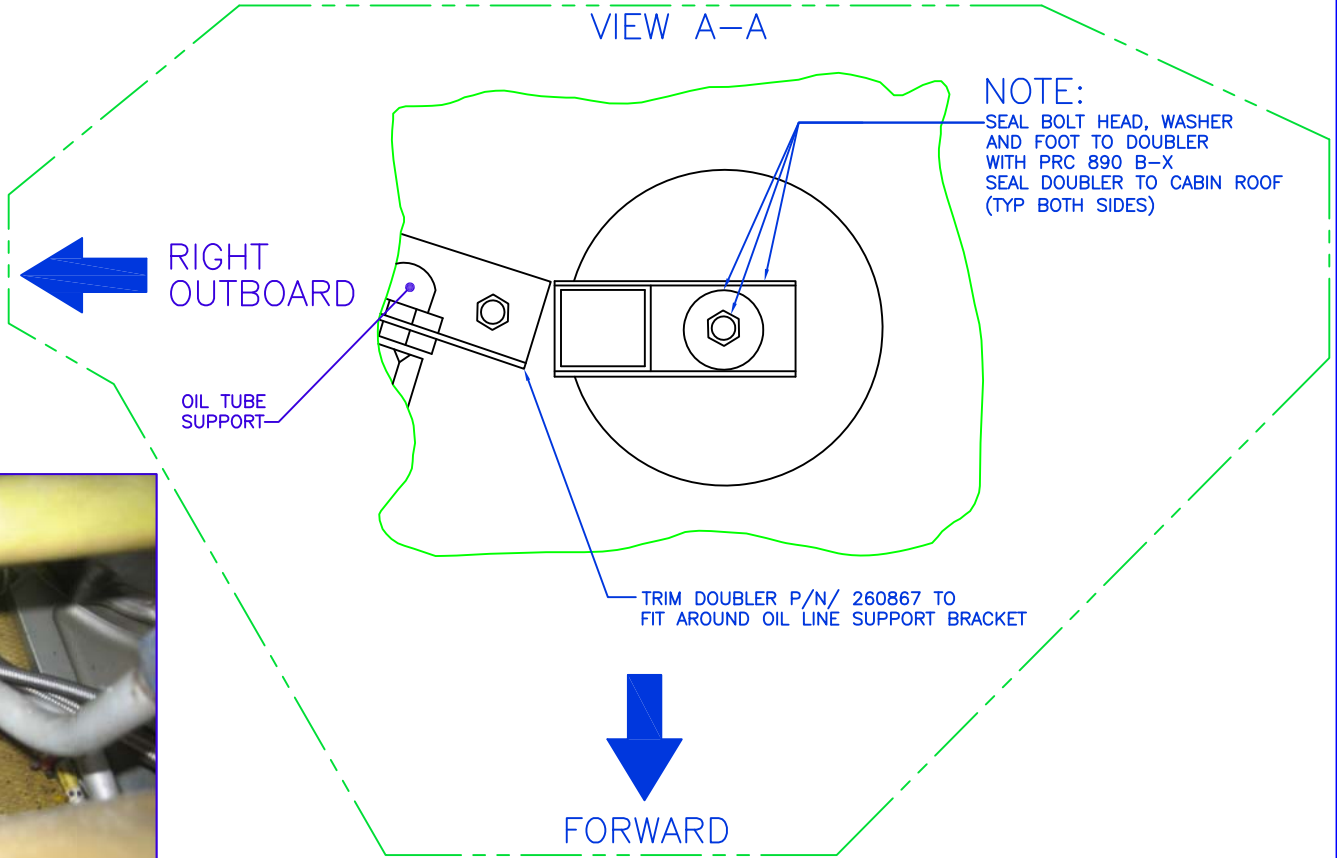
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



RIGHT/AFT CONDENSER SUPPORT
FOOT LOCATION. INSTALL AN3-13A
BOLT THRU ROOF.



ENSURE .5 CLEARANCE
BLOWER HOUSING BOTTOM
TO CONTROL TUBE



TITLE: CONDENSER INSTALL

AGUSTA A109E
(POWER)

DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AGUSTA A109E			DWG No. 7-1-A109P	

Step 7

**This Step is not
Utilized in this
Installation**

Step 8

Installation of Compressor

Integrated Flight Systems
INSTALLATION OF COMPRESSOR – A109 Air Conditioning

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

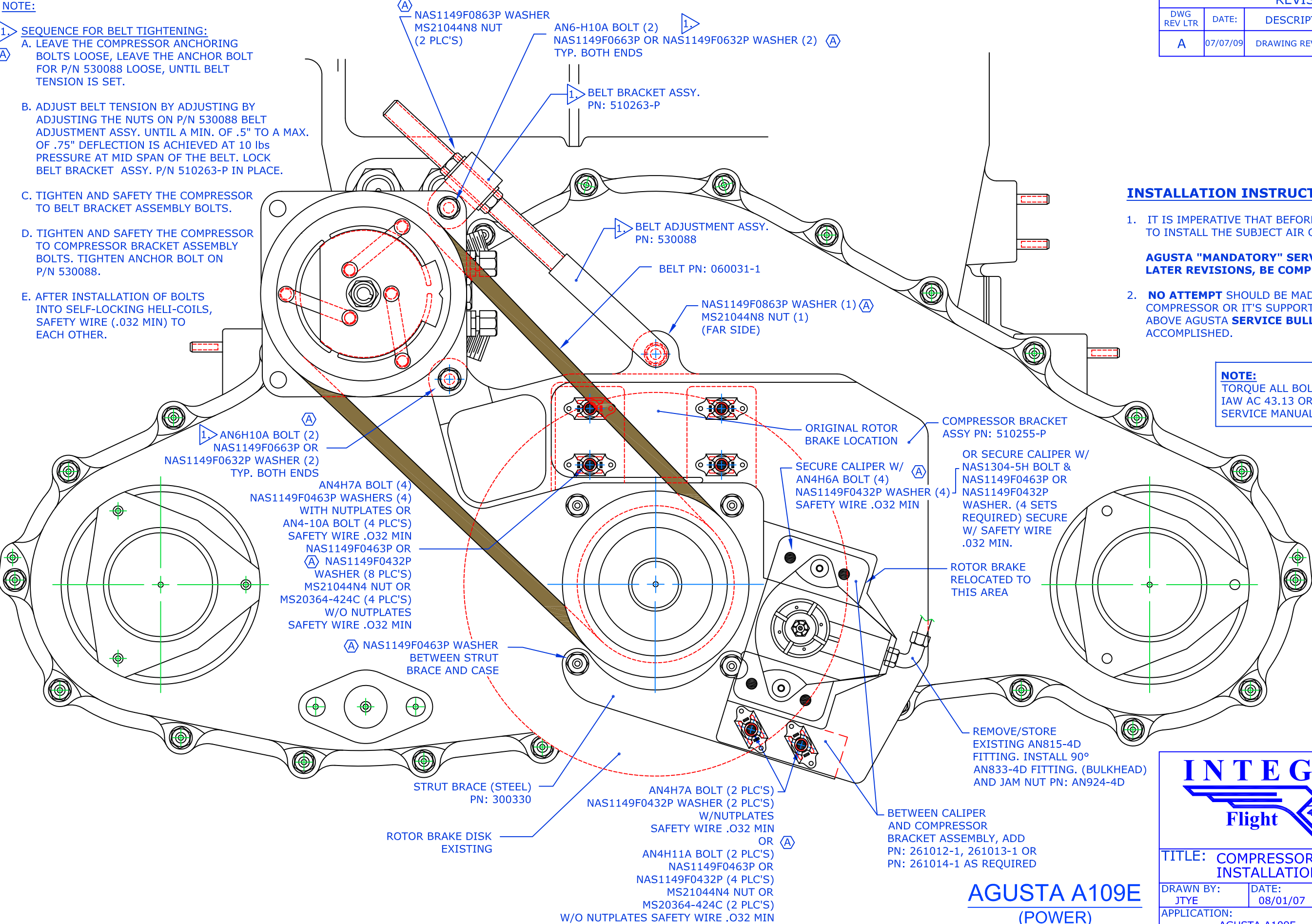
STEP	PROCEDURE	MEC H	INSP
8.0	Remove right hand engine air inlet and screen assembly. <u>Caution:</u> Tape over Turbine Intakes		
8.1	Remove rotor brake caliper assembly. Cap line.		
8.2	Remove center firewall between engines.		
8.3	Unbolt rotor brake disc. Disconnect tail rotor drive shaft per Agusta Service Manual.		
8.4	Install compressor mount bracket P/N 510255 in place. See drawing 6-1-A109 Sheets 1, 2 and 3 of 3. Make sure bracket fits flush with rotor brake mount points. Adjust bracket to fit flush by removing metal from bracket. Remove bracket.		
8.4 (A109E)	Install compressor mount bracket P/N 510255-P in place. See drawing 6-1-A109P Sheets 1, 2 and 3 of 3. Make sure bracket fits flush with rotor brake mount points. Adjust bracket to fit flush by removing metal from bracket. Remove bracket.		
8.5	Install drive pulley P/N 300333-2, rotor disc and both belts P/N 060031(060031-P for A109E) in place. See drawing 6-1-A109 Sheets 1, 2 and 3 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheet 1, 2 and 3 of 3. Safety wire bolts per drawing.		
8.6	Position compressor bracket with 4 each AN4H7A, 4 each NAS1149F0463P or NAS1149F0432P washers 4 each MS21044-N4 nuts (alt: AN4H10A, W/MS20364-424C) if no nutplates present.		
8.7	Make cut out in forward engine firewall per drawing 6-1-A109 sheet 3 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheet 3 of 3. Remove all shavings or debris.		
8.8	Temporarily install compressor PN: 010001-3-O per drawing 6-1-A109 Sheets 1 and 2 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheets 1 and 2 of 3. Check belt fit and alignment. Do not safety wire at this time. Remove compressor.		
8.9	Re-install tail rotor drive shaft per Agusta Service manual.		
8.10	Remove compressor bracket and bolt caliper in place loosely.		

Integrated Flight Systems
INSTALLATION OF COMPRESSOR – A109 Air Conditioning

STEP	PROCEDURE	MECH	INSP
8.11	Install compressor bracket and bolt in place per drawing 6-1-A109 sheet 1 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheet 1 of 3.		
8.12	Check alignment between caliper and rotor disc IAW 6-1-A109 Sheet 2 of 3. For A109E utilize 6-1-A109P. Center caliper to disc with shims, P/N's 261012-1, 261013-1, 261014-1 as necessary.		
8.13	Mark and Drill strut brace P/N 300330 to existing nutplates on bracket P/N 510255 as shown in 6-1-A109 (For A109E use 6-1-A109P). Bolt to transmission case and bracket as shown in drawing. Remove all shavings or debris.		
8.14	Replace straight fitting on caliper with 90° fitting AN833-4D and nut AN924-4D as shown on drawing 6-1-A109 Sheet 1 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheet 1 of 3.		
8.15	Connect brake line to new fitting per drawing 6-1-A109 sheets 1 and 2 of 3. For A109 E Installation utilize drawings 6-1-A109P Sheets 1 and 2 of 3. Rotate existing adel clamps 180°, standoff with 3/16" I.D. x .5"/.7" spacers. Attach with (2) AN3H11A bolts, (4) NAS1149F0363P washers and (2) MS21044-N3 nuts. Safety wire .032 min. Re-service system if necessary, and check operation of brake IAW Agusta Service Manual.		
8.16	Back drill in place and install firewall box P/N 530089. Using AN3-3A bolts and NAS1149F0363P washers. Secure spare belt P/N 060031(P/N 530089-P and 060031-1 for A109E). Remove all shavings or debris.		
8.17	Modify center firewall per drawing 6-1-A109 Sheet 3 of 3 and install. Install firewall angle P/N 300337. Rivet in place. Back drill and install with AN3H3A bolts and AN960-10 washers. For A109E, disregard this step.		
8.18	Install compressor P/N 010001-3-0 and Belt Adjustment Assy. P/N 530088, and Belt Bracket Assy. P/N 510263 per drawing 6-1-A109 sheet 1 and 2 of 3. For A109 E Installation utilize Belt Adjustment Assy. P/N 510263-P and drawings 6-1-A109P Sheets 1 and 2 of 3. Safety wire Compressor bolts and Bracket Assy. bolts at this time.		
8.19	Caution: (Un-tape Engine Inlet) Re-install engine air inlet box assembly and screen.		

NOTE:

1. SEQUENCE FOR BELT TIGHTENING:
- A. LEAVE THE COMPRESSOR ANCHORING BOLTS LOOSE, LEAVE THE ANCHOR BOLT FOR P/N 530088 LOOSE, UNTIL BELT TENSION IS SET.
- B. ADJUST BELT TENSION BY ADJUSTING BY ADJUSTING THE NUTS ON P/N 530088 BELT ADJUSTMENT ASSY. UNTIL A MIN. OF .5" TO A MAX. OF .75" DEFLECTION IS ACHIEVED AT 10 lbs PRESSURE AT MID SPAN OF THE BELT. LOCK BELT BRACKET ASSY. P/N 510263-P IN PLACE.
- C. TIGHTEN AND SAFETY THE COMPRESSOR TO BELT BRACKET ASSEMBLY BOLTS.
- D. TIGHTEN AND SAFETY THE COMPRESSOR TO COMPRESSOR BRACKET ASSEMBLY BOLTS. TIGHTEN ANCHOR BOLT ON P/N 530088.
- E. AFTER INSTALLATION OF BOLTS INTO SELF-LOCKING HELI-COILS, SAFETY WIRE (.032 MIN) TO EACH OTHER.



REVISION RECORD

DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	07/07/09	DRAWING REVISED PER ECO #0192	MLD	JTYE

INSTALLATION INSTRUCTIONS

1. IT IS IMPERATIVE THAT BEFORE ANY ATTEMPT IS MADE TO INSTALL THE SUBJECT AIR CONDITIONING KIT THAT.
- AGUSTA "MANDATORY" SERVICE BULLETIN 109-82 OR LATER REVISIONS, BE COMPLIED WITH.**
2. **NO ATTEMPT** SHOULD BE MADE TO INSTALL THE COMPRESSOR OR IT'S SUPPORTING BRACKET UNTIL THE ABOVE AGUSTA **SERVICE BULLETIN** HAS BEEN ACCOMPLISHED.

NOTE:
TORQUE ALL BOLTS AND FASTENERS IAW AC 43.13 OR APPLICABLE AIRCRAFT SERVICE MANUALS.

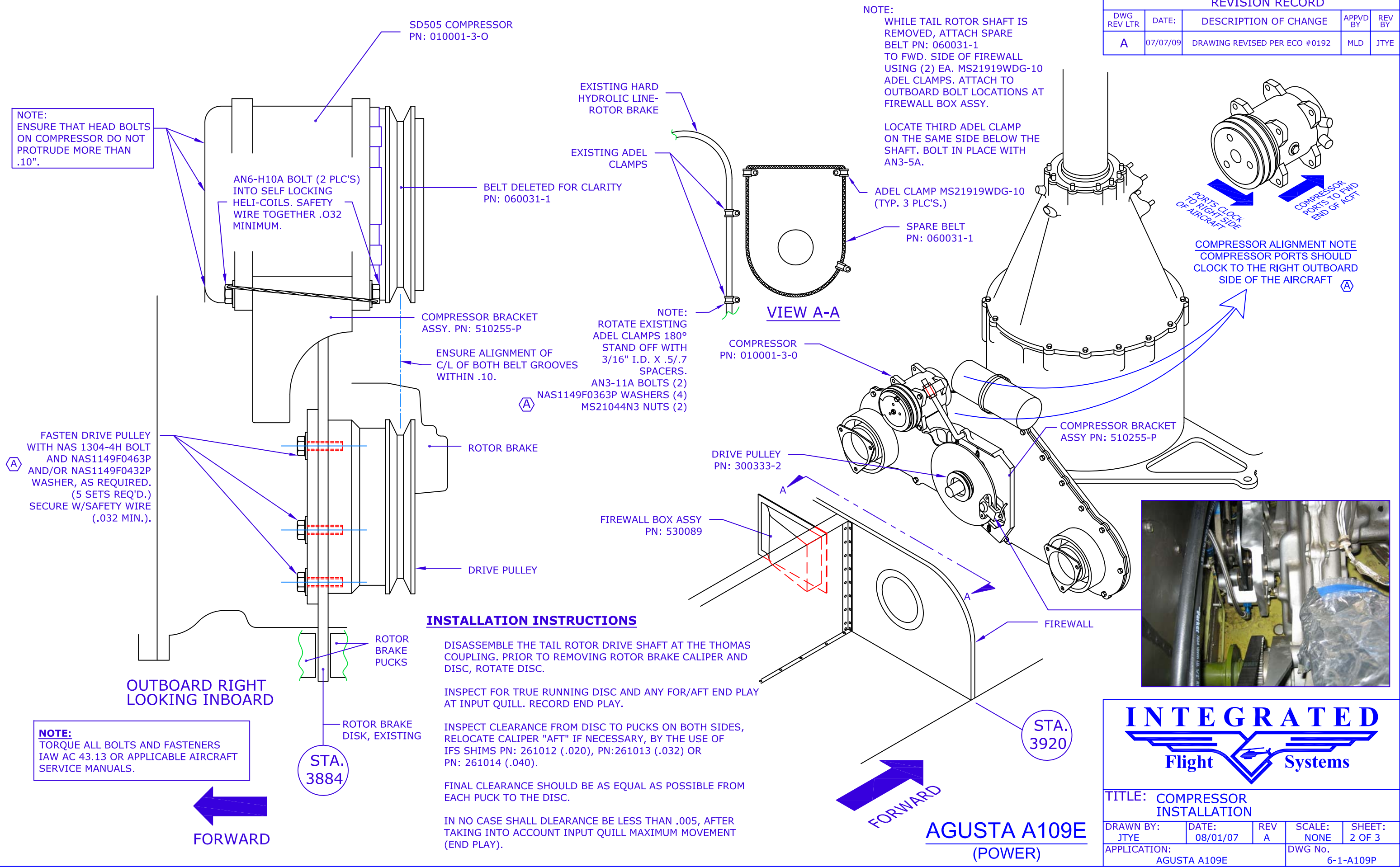


TITLE: COMPRESSION
INSTALLATION

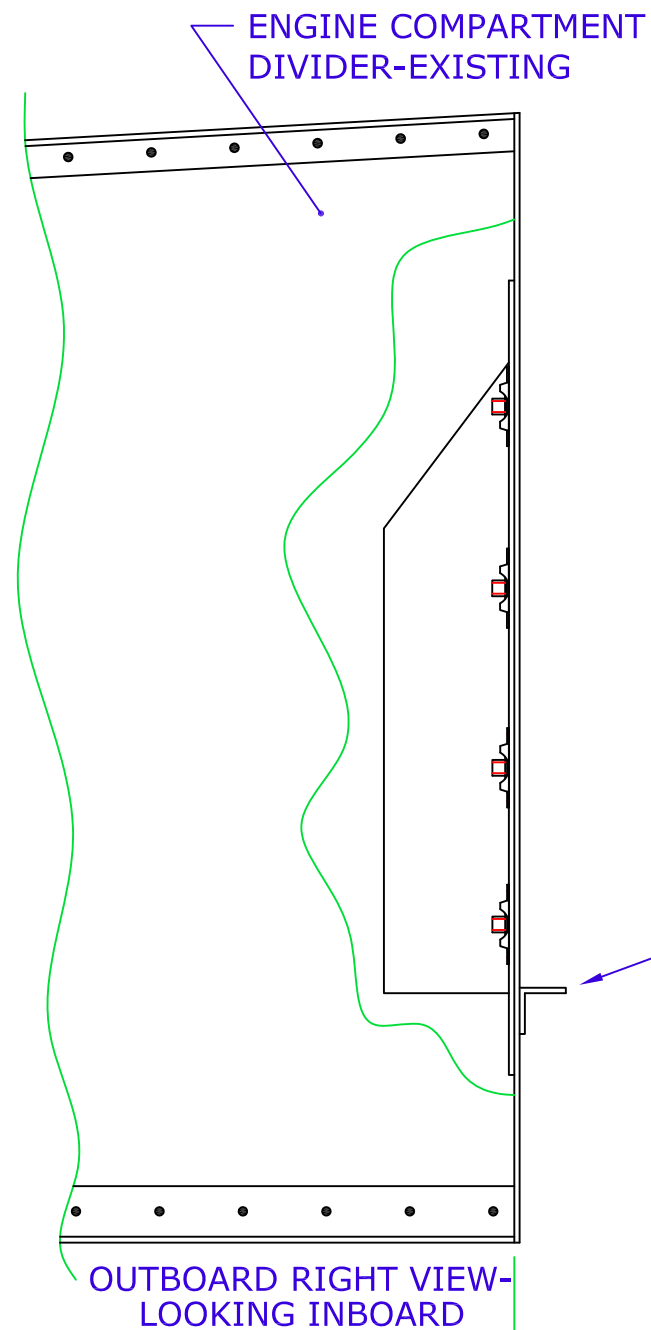
DRAWN BY: JTYE	DATE: 08/01/07	REV A	SCALE: NONE	SHEET: 1 OF 3
APPLICATION: AGUSTA A109E			DWG No. 6-1-A109P	

AGUSTA A109E
(POWER)

REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY
A	07/07/09	DRAWING REVISED PER ECO #0192	MLD	JTYE



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

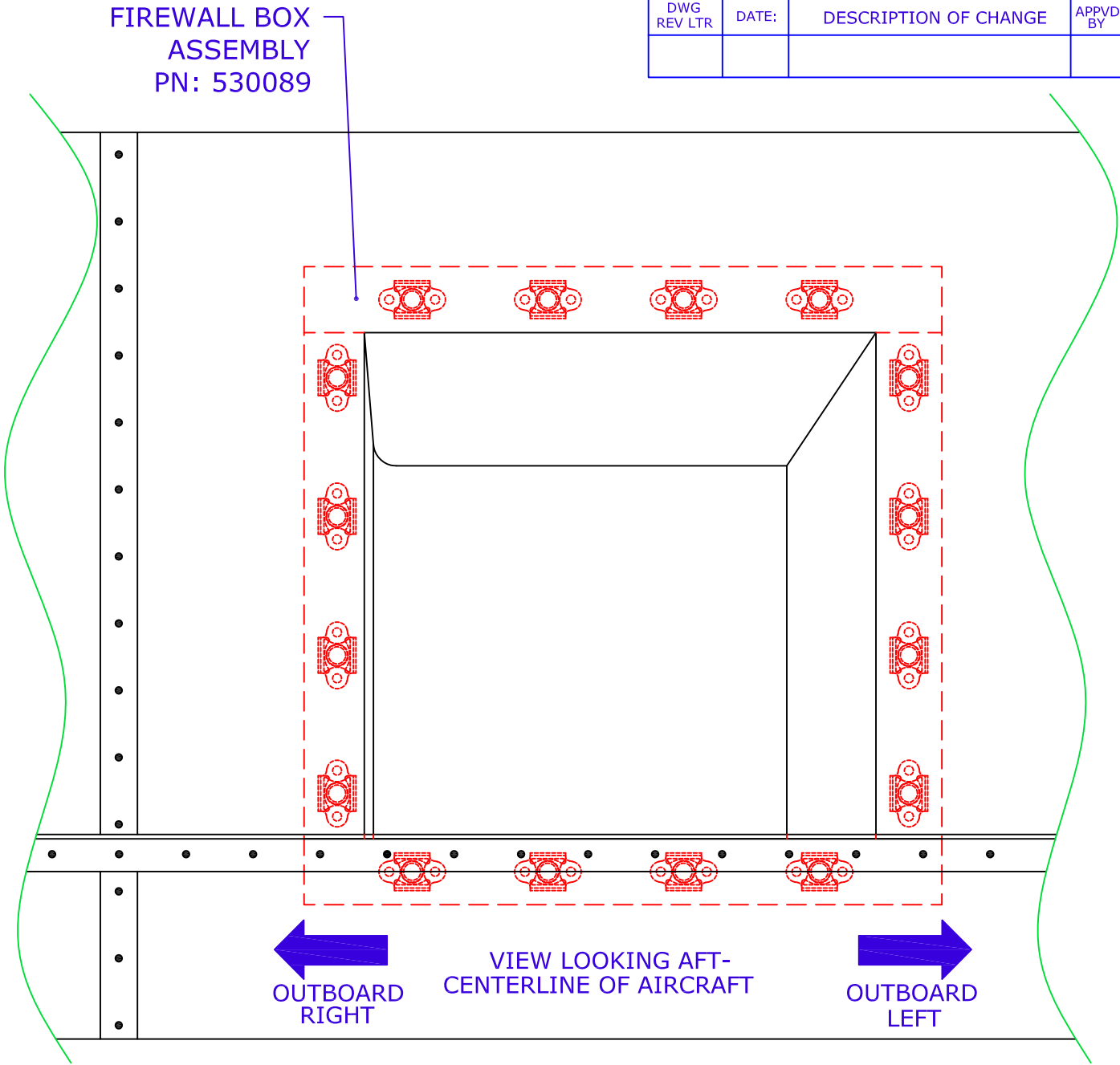


STA.
3920

- (1) TEMPORARILY POSITION
COMPRESSOR IN PLACE.
MARK AROUND PULLEY ON TO
FIREWALL.
- (2) REMOVE COMPRESSOR AND
CUT FWD FIREWALL
SO COMPRESSOR WILL CLEAR
FIRE WALL WHEN TEMPORARY
INSTALLED.
- (3) CUT FIREWALL
USING BOX ASSEMBLY
PN: 530089 AS
A TEMPLATE. CUT HOLE
FLUSH TO THE TOP OF
LOWER STIFFENER ON THE
FWD SIDE OF THE
FIREWALL.

NOTE:
TORQUE ALL BOLTS AND FASTENERS
IAW AC 43.13 OR APPLICABLE AIRCRAFT
SERVICE MANUALS.

AGUSTA A109E
(POWER)



REMOVE THIS PANEL AND HOLD
FOR REINSTALLATION AFTER
FIREWALL BOX INSTALLATION.



TITLE: COMPRESSOR
INSTALLATION

DRAWN BY: JTYE	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 3 OF 3
APPLICATION: AGUSTA A109E			DWG No. 6-1-A109P	

Step 9

Installation of Electrical

Integrated Flight Systems
INSTALLATION OF ELECTRICAL – A109 Air Conditioning

NOTE: Rout all wires along side of existing harnessing, secure every 6 to 8” with ZZCR4HM tie blocks and TY5224M zip ties.

STEP	PROCEDURE	MECH	INSP
9.1	Position master electric control box P/N 540028-C-3 as shown in drawing 2-1-A109 Sheet 3 of 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 3 of 3.		
9.2	Mark hole locations on transmission deck, drill 4 each .515 diameter holes. Remove all shavings or debris.		
9.3	Pot in Shurloks or Delrons P/N504SE-1032-06-02 or SL601-3-3A as shown in detail “A” 2-1-A109, allow Metalset™ to cure per manufacturers instructions. For A109E utilize drawing 2-1-A109P.		
9.4	Install electric box with AN4-4A bolts and AN960-10 washers.		
9.5	Connect wire harness assembly P/N 540059-1 and P/N 540045-1. See 2-1-A109 Sheet 1 thru 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 1 thru 3.		
9.6	Run wires left side of aircraft forward and across to evaporator. Tie off with Zip ties and Tie blocks.		
9.7	Run CP102 and power wire P/N 540045-1 through cockpit overhead electric panel.		
9.8	Run J104 wire from electric box direct to aft evaporator air supply hole in center of deck.		
9.9	Connect CP103 to forward evaporator fan.		
9.10	Ground both ground wires to deck as shown in drawing 4-A109 Sheet 2 of 2. For A109 E Installation utilize drawings 4-1-A109P Sheet 2 of 2. Burnish mounting spot for ground. Install Nutplate PN: MS21059-L3.		
9.11	Run high and low pressure switch wires. Install High Pressure Switch PN: 090004 and Low Pressure Switch PN: 050107 and connect wires, see drawing 2-1-A109 Sheet 2 of 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 2 of 3.		
9.12	Run condenser fan wires J106 and J105 to condenser fans per labeling on wire leads.		
9.13	Run aft evaporator fan wires to resistor on evaporator assembly. Connect wires per labeling on wiring leads. See drawing 2-1-A109 Sheet 2 of 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 2 of 3.		

Integrated Flight Systems
INSTALLATION OF ELECTRICAL – A109 Air Conditioning

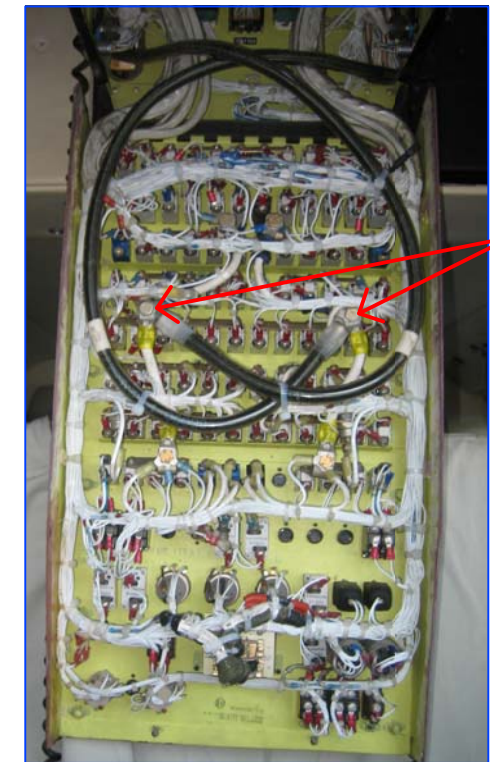
9.14	Run #14 wire from low pressure switch to compressor.		
9.15	Install 50 Amp circuit breaker P/N 050012-9 as shown in drawing 2-1-A109 Sheet 1 of 3, and placard P/N 120205. For A109 E Installation utilize drawings 2-1-A109P Sheet 1 of 3.		
9.16	Connect #8 wire from P/N 540045-1 to 50 Amp circuit breaker. Run a #8 wire from 50 Amp circuit breaker P/N 050012-9 to master overhead electric panel and connect to aircraft buss as shown in drawing 2-1-A109 Sheet 1 of 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 1 of 3.		
9.17	Connect CP102 from wire harness to master switch assembly P/N 540060 as shown in drawing 2-1-A109 Sheet 1 of 3. For A109 E Installation utilize drawings 2-1-A109P Sheet 2 of 3.		
9.18	Connect J104 to aft switch assembly P/N540061.		

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

INSTALL INSTRUCTIONS

CONNECTION OF AIR CONDITIONING POWER WIRE

BEFORE CONNECTING THE #8 MAIN
AIR CONDITIONING POWER LEAD
TO THE AIRCRAFT "BUSS" REFER
TO THE "AGUSTA MAINTENANCE MANUAL"
FOR THE SERIAL NUMBER OF THE
AIRCRAFT INVOLVED.



#8 A/C WIRE TO A/C
50 AMP C/B IN AUX.
ELECTRICAL PANEL.
CHECK LOAD OF
A/C AND USE BUSS
NO. 1 OR NO. 2,
WHICH EVER HAS
LEAST AMP LOAD.

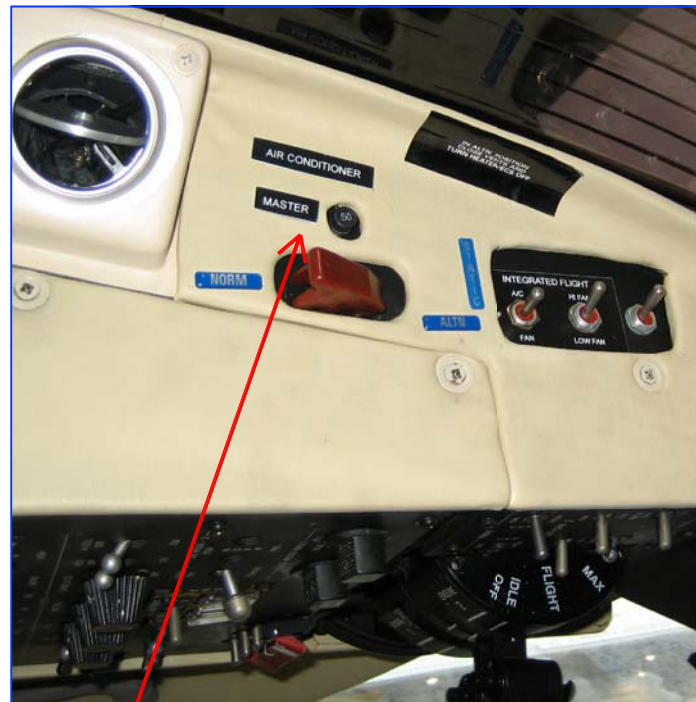
MASTER AIRCRAFT OVERHEAD
ELECTRICAL PANEL

LOOKING AFT



TITLE: ELECTRICAL
ROUTING

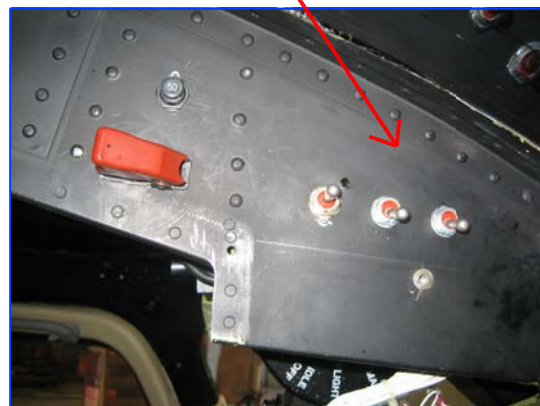
DRAWN BY: JTYE	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 3
APPLICATION: AGUSTA A109E			DWG No. 2-1-A109P	



AIR CONDITIONING MASTER
(50 AMP) CIRCUIT BREAKER
LOCATION, ABOVE PILOTS HEAD.

USE (2)EA. MS20659 INSULATED RING
TERMINALS AT C/B PN: 050012-9
(#8 SCREW HOLE #8 WIRE)

AIR CONDITIONING MASTER
CONTROL PANEL. (ABOVE
AND LEFT OF PILOTS HEAD)



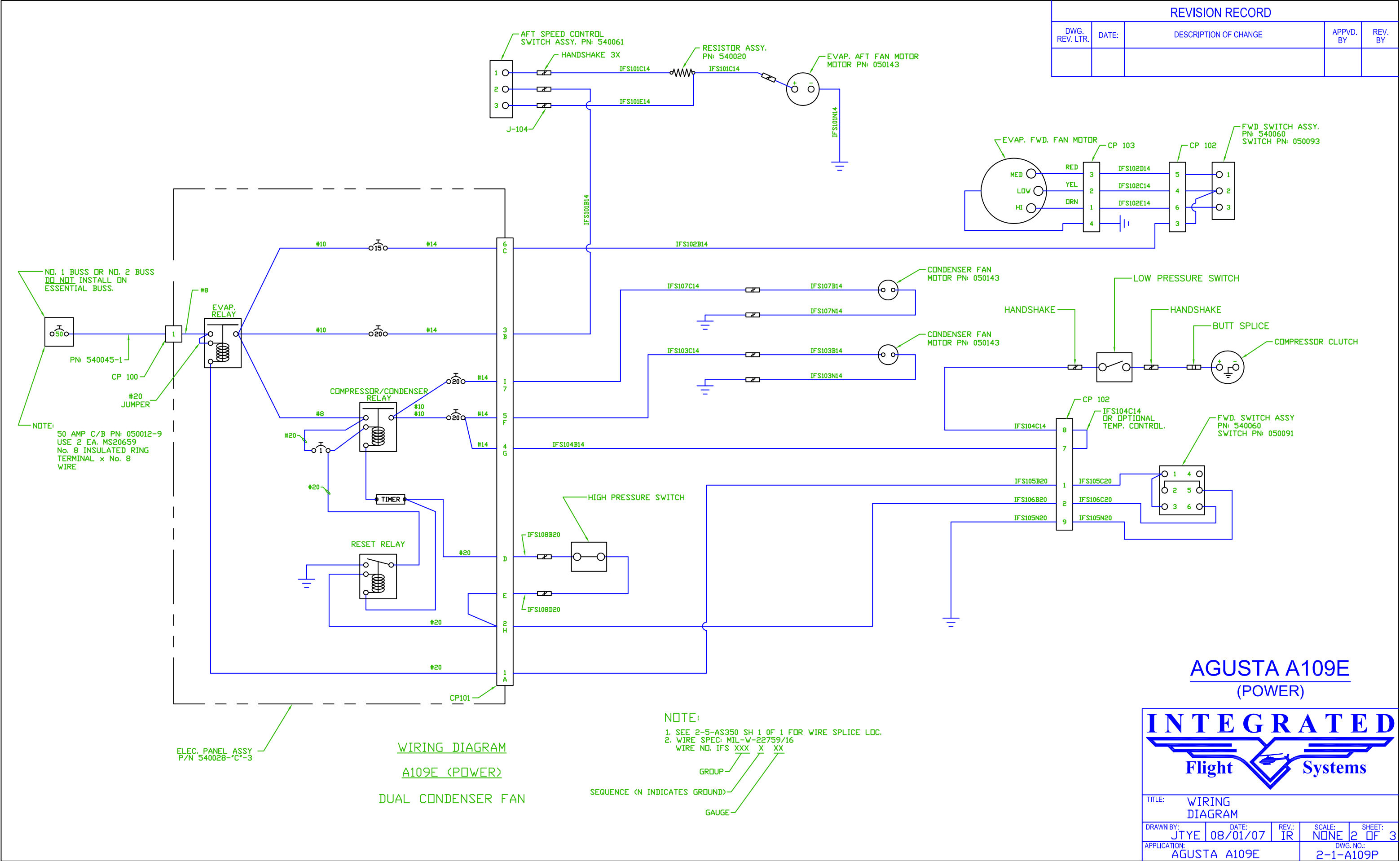
A/C MASTER
50 AMP C/B
LOCATION

BUSS

ALTERNATE LOCATION FOR AFT
EVAPORATOR FAN SWITCH.

AGUSTA A109E
(POWER)

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

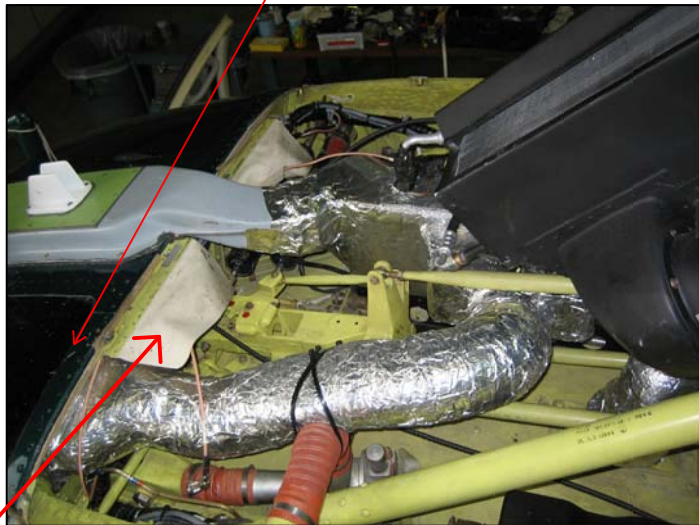


AGUSTA A109E
(POWER)



TITLE: WIRING DIAGRAM				
DRAWN BY: JTye	DATE: 08/01/07	REV: IR	SCALE: NONE	SHEET: 2 OF 3
APPLICATION: AGUSTA A109E			DWG. NO.: 2-1-A109P	

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



WIRE RUNS ACROSS UNDER BLANKET

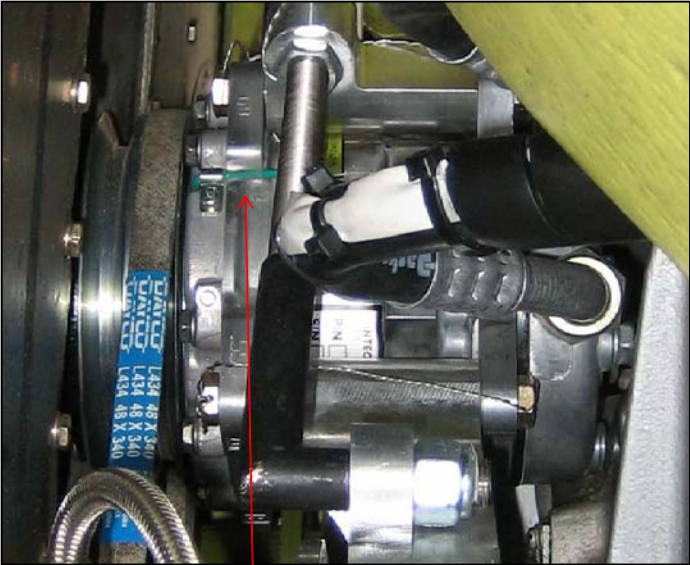
AIR CONDITIONER MASTER ELECTRICAL BOX W/HARNESS ASSY'S CONNECTED PN: 540028-C-3

HARNESS ASSEMBLY PN: 540059-1

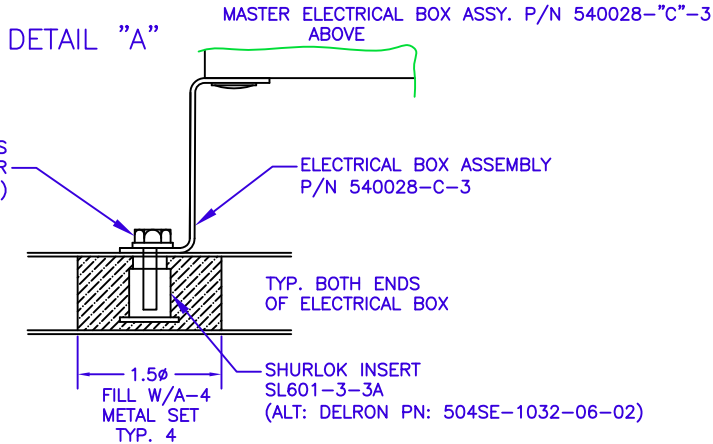


HARNESS ASSEMBLY PN: 540045-1

AN3-4A BOLT WITH AN960-10 WASHER INTO SHURLOCK PN: SL601-3-3A POTTED FITTING (TYP. 4)



A/C CLUTCH WIRE IN LINE WITH HIGH PRESSURE AND LOW PRESSURE SWITCHES.



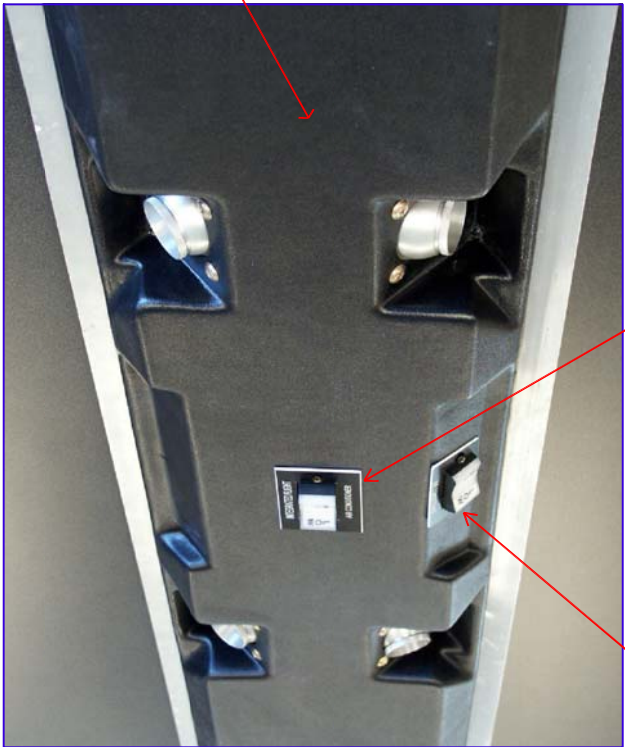
(.5")

(1")

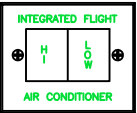
OUTBOARD LOOKING IN AT A/C MASTER ELECTRICAL BOX INSTALLATION.

OPTIONAL DUCT IF VENTILATION SYSTEM IS NOT PRE-INSTALLED.

FWD

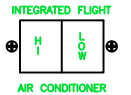


AFT CABIN A/C SPEED CONTROL SWITCH ASS'Y PN: 540061



DETAIL "A"

ALTERNATE LOCATION TRIM PLACARD AS NECESSARY.



A/C SPEED CONTROL RESISTOR PN: 050024-2



R.H. CONDENSER WIRES

COMPRESSOR WIRE RUNS AFT. WITH FREON LINES TO COMPRESSOR

FWD



TITLE: WIRE ROUTING

DRAWN BY: JTye	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 3 OF 3
APPLICATION: AGUSTA 109E			DWG No. 2-1-A109P	

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

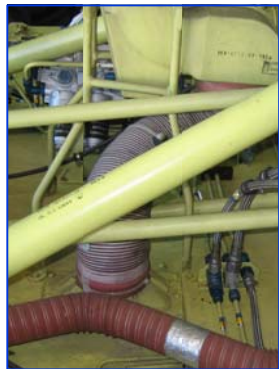


RIGHT SIDE, LOOKING IN

WIRE HARNESS GROUND LEADS. GROUND AT THIS LOCATION.

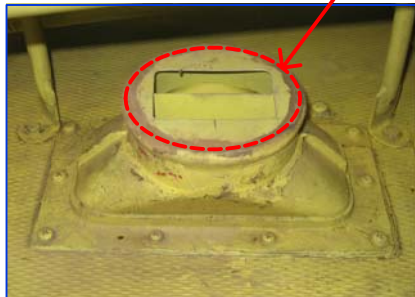
FORWARD

SEE DETAIL "A"
MOUNT FAN SUPPORT INTO SHURLOK SL601-3-3A
ALT: DELRON PN: 504SE1032-06-02
WITH
1 EA. AN3-5A BOLT & 1 EA. AN960-10 WASHER
MOUNT INTO FAN HOUSING WITH 1 EA. AN3-4A BOLT & 1 EA. AN960-10 WASHER



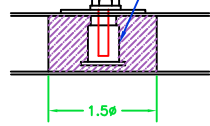
FORWARD

OUTBOARD RIGHT



REMOVE THIS INNER PART.

SHURLOK INSERT PN: SL601-3-3A
ALT: DELRON INSERT PN: 504SE1032-06-02
AN3J-4A BOLTS
AN960-10 WASHERS
TYP. (6 PLS)



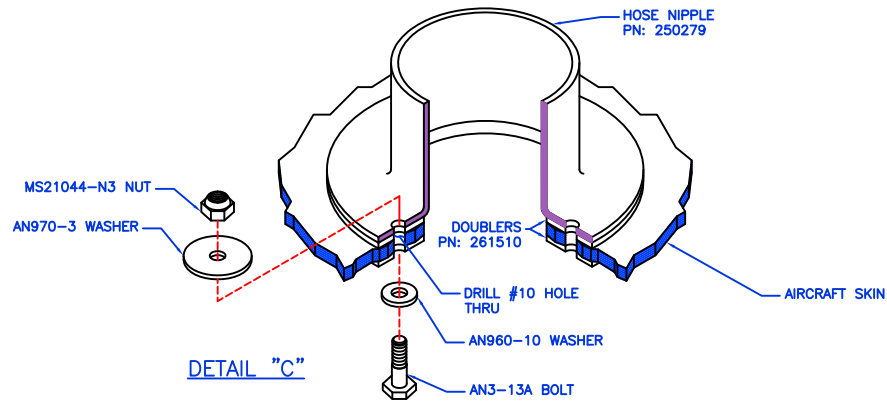
FILL W/A-4 METAL SET TYP. 4

DETAIL "A"

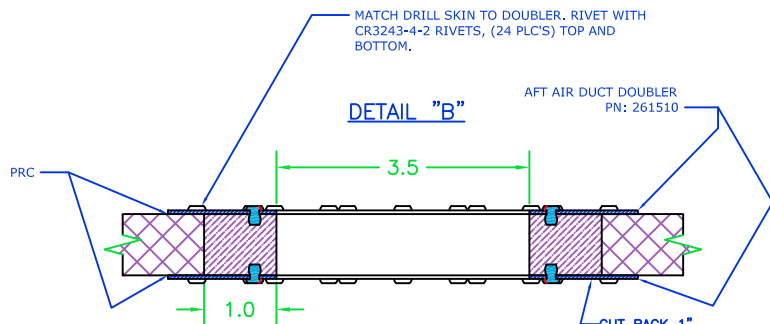
INTERCHANGABILITY BETWEEN MS20470AD/MS20426AD RIVETS AND CR3243/CR3242 RIVETS ALLOWABLE. GRIP LENGTH OF RIVET TO BE DETERMINED BY INSTALLER. INSTALL IN ACCORDANCE WITH AC 43.13-1A, CHAPTER 2, SECTION 3, 99. RIVETING a, b, c, d, FIGURE 2.19, CHAPTER 5, SECTION 1, 232 TYPE OF RIVETS, a, e, f, DATED 1972.

OPTIONAL MODIFICATION

IF NO AIR SYSTEM IS INSTALLED FOR CABIN.



DETAIL "C"



INSTALL RETURN AIR ADAPTER P/N 110100-P
DRILL AND ATTACH WITH ABA4-4 RIVETS AS REQUIRED
FOAM AND FOIL TAPE. SECURE RETURN AIR DUCTING PN: 060012 WITH 6" BAND CLAMP PN: 060035.



INSTALL 3.4" NIPPLE P/N 250279-P

INSERT INSTALLATION INSTRUCTIONS

1. MATCH DRILL COMPONENTS UNDER DETAIL "A" AND "B" TO HELICOPTER CABIN ROOF USING #10 HOLES.
2. SPOT FACE UPPER FACE SKIN TO 9/16" DIAMETER AT EACH #10 HOLE.
3. USING A 90° ANGLE TOOL, REMOVE CORE OF CABIN ROOF TO A DIAMETER OF 1.5" FROM UNDERSIDE OF UPPER SKIN TO UPPER SIDE OF LOWER SKIN.
4. VACUUM OUT ALL CORE MATERIALS REMOVED.
5. TRAIL FIT SUR-LOK INSERT, P/N SL601-3-3A. (ALT: DELRON INSERT PN: 504SE1032-06-02) ENSURE THAT INSERT WILL FIT FLUSH WITH UPPER SKIN SURFACE.
6. OBTAIN METALSET™ A-4 AND MIX ACCORDING TO MANUFACTURER'S DIRECTIONS.
7. FILL EACH CAVITY WITH METALSET™ A-4 AND INSTALL SUR-LOK INSERT INTO THE METAL SET. ENSURE THAT INSERT IS TOTALLY ENCAPSULATED.
8. ENSURE THAT INSERT CENTER THREAD OPENING DOES NOT BECOME CLOGGED WITH METAL SET. ALLOW METAL SET TO FULLY CURE BEFORE INSTALLING EVAPORATOR TO ASSEMBLY OR MASTER A/C ELECTRICAL PANEL.
9. RETAIN A SAMPLE OF THE METALSET™ A-4 USED IN THIS INSTALLATION FOR A PERIOD OF 24 HOURS. ENSURE THAT CURING AND BONDING PROPERTIES DEVELOP IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



TITLE: EVAPORATOR INSTALL

DRAWN BY: K.A.	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 2 OF 2
APPLICATION: AGUSTA A109E			DWG No. 4-1-A109P	

AGUSTA A109E
(POWER)

TOP VIEW

FORWARD

Step 10

Installation of Hoses

Integrated Flight Systems
INSTALLATION OF HOSES – A109 Air Conditioning

INSTALLATION OF HOSES

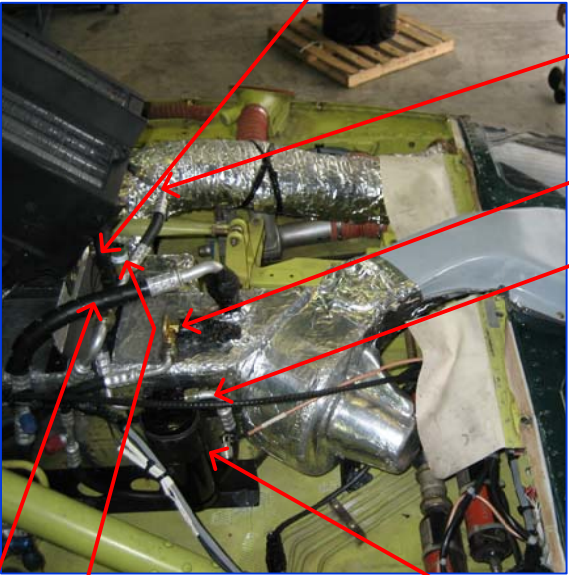
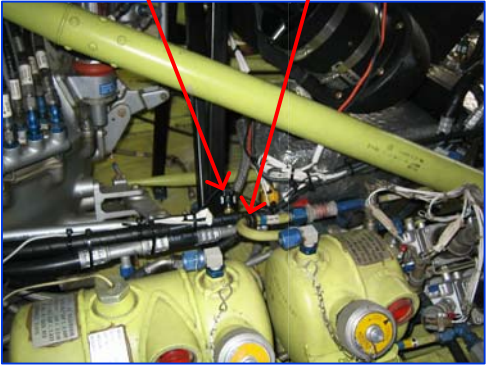
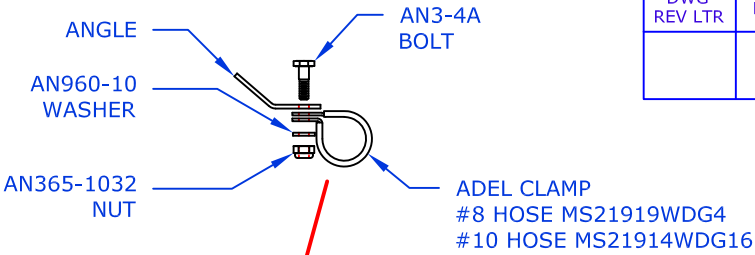
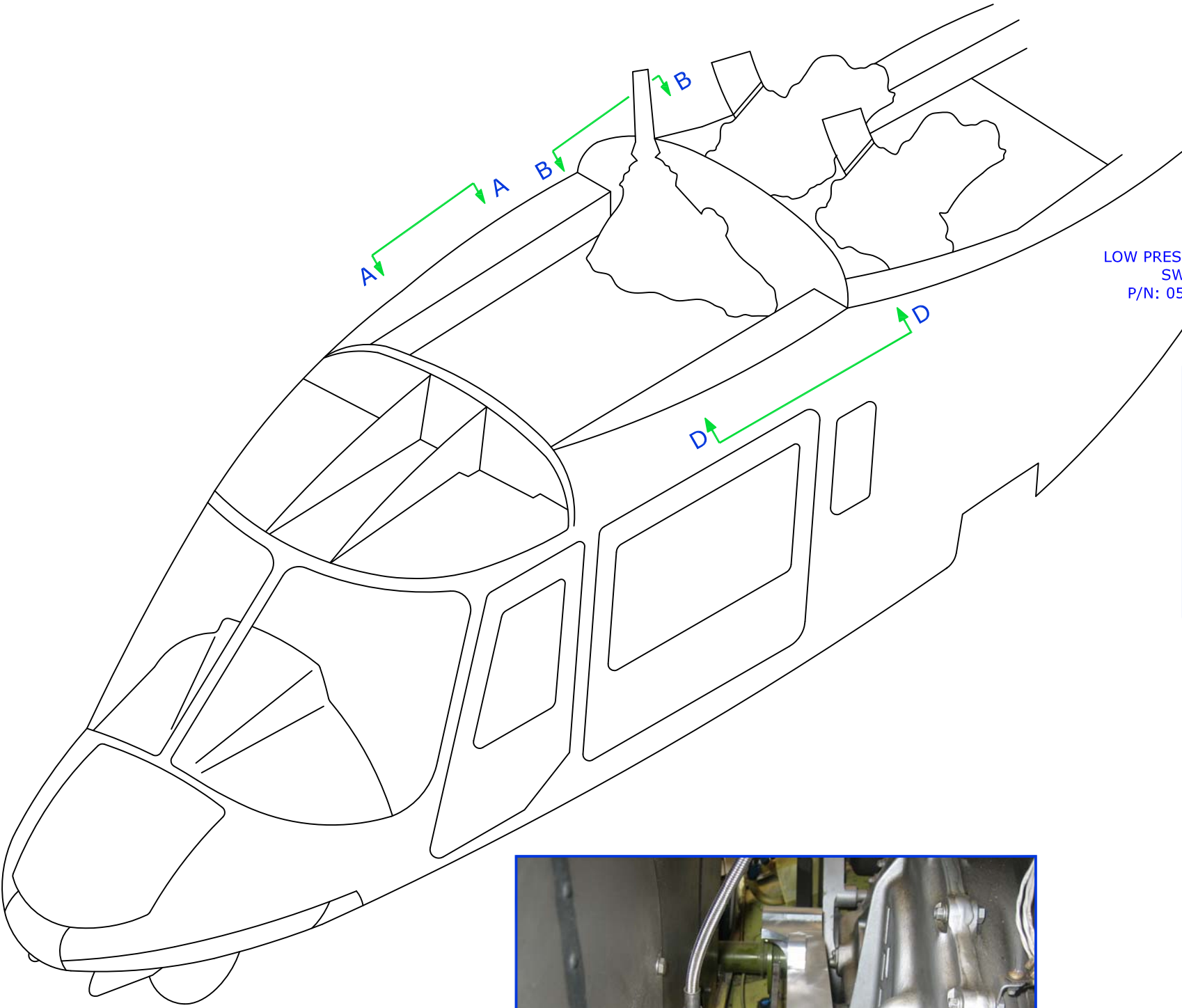
(Drawings required: 3-1-A109 Sheets 1 thru 3)

(For A109E Drawings required: 3-1-A109P Sheets 1 thru 3)

NOTE: Rout all Hoses along side of existing harnessing, secure every 6 to 8 “ with ZZCR4HM tie blocks and TY5224M zip ties.

STEP	PROCEDURE	MECH	INSP
10.0	Connect hose assembly P/N 570053-0 to condenser and run to drier bottle. Connect Hi pressure switch P/N 090004 to hose assembly.		
10.1	Connect hose assembly P/N 570058-1-0 to condenser assembly and run to compressor.		
10.1 (A109E)	Connect hose assembly P/N 570058-1-0-P to condenser assembly and run to compressor.		
10.2	Connect hose assembly P/N 570059-1-0 to evaporator and run to compressor. Connect Low Pressure Switch P/N 050107 to hose assembly.		
10.3	After those lines are tight, connect line on evaporator assembly to drier bottle P/N 570052-0.		
10.4	Service system after all lines are tight and check for leaks. Follow procedure in Section 12. Instructions for Continued Airworthiness.		

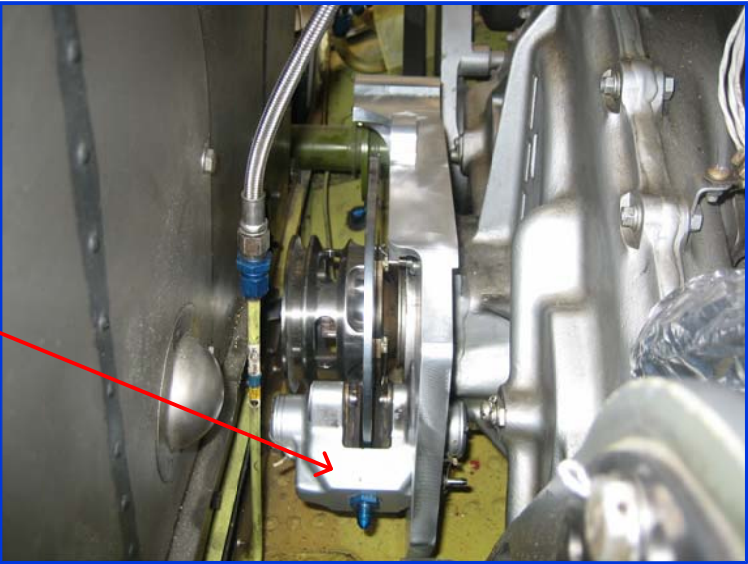
REVISION RECORD				
DWG REV LTR	DATE:	DESCRIPTION OF CHANGE	APPVD BY	REV BY



VIEW A-A
LEFT SIDE, FWD OF FWD
ENGINE FIREWALL

#10 HOSE ASS'Y
P/N: 5700059-O-P
HIGH PRESSURE SWITCH
P/N: 090004

NEW LOCATION OF
ROTOR BRAKE



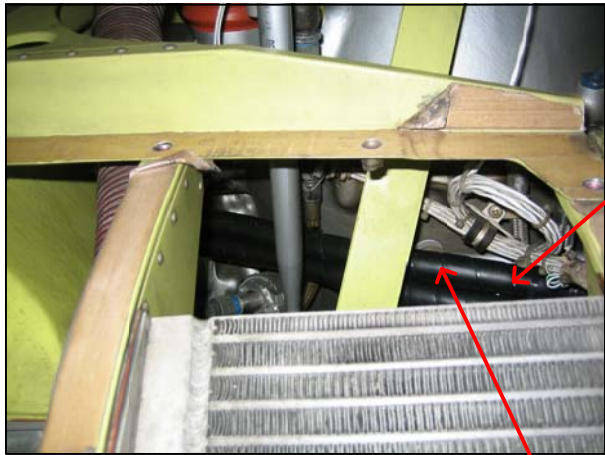
AGUSTA A109E
(POWER)



TITLE: PLUMBING
DIAGRAM

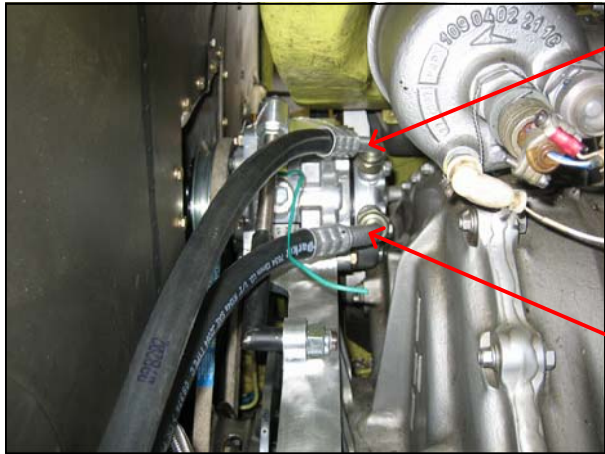
DRAWN BY: JTye	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 1 OF 3
APPLICATION: AGUSTA A109E			DWG No. 3-1-A109P	

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



SPIRAL WRAP LINE AND SECURE.
CHECK CONTROL ROD CLEARANCES.

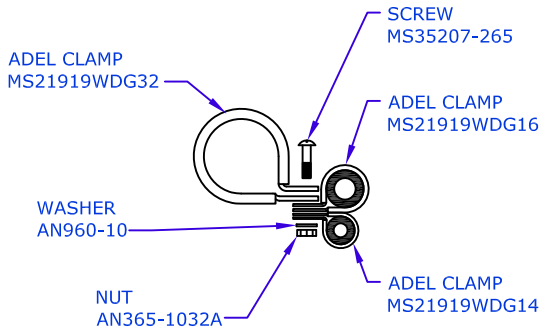
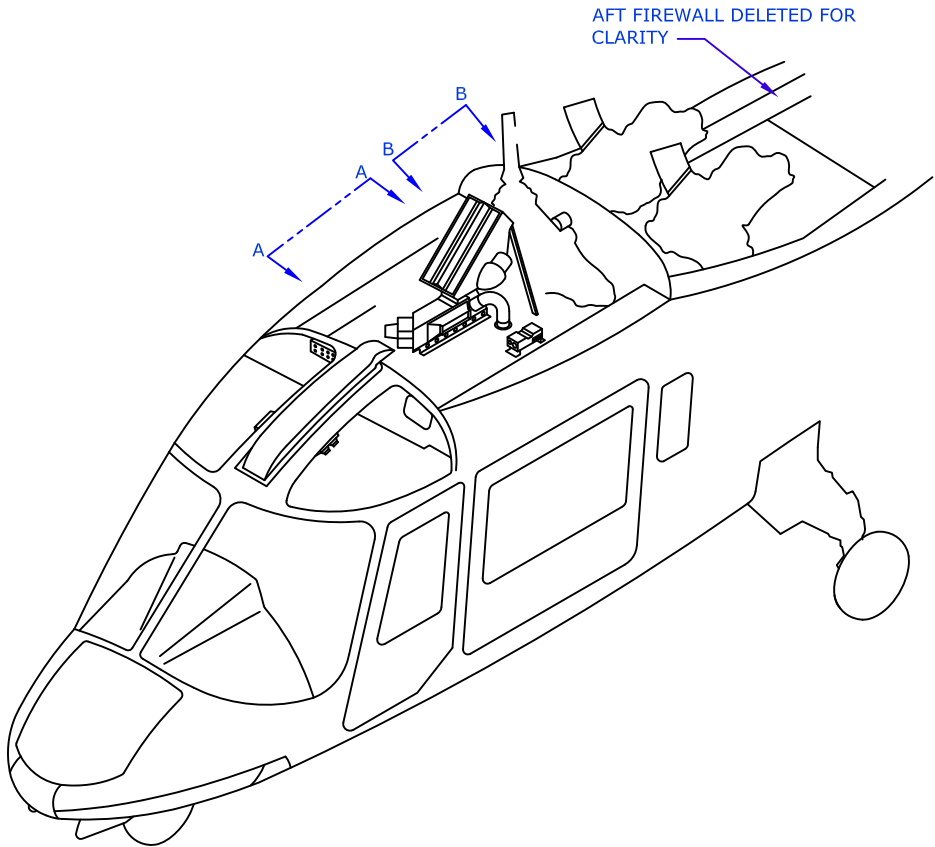
#8 AND #10
FREON LINES RUNNING
TO COMPRESSOR



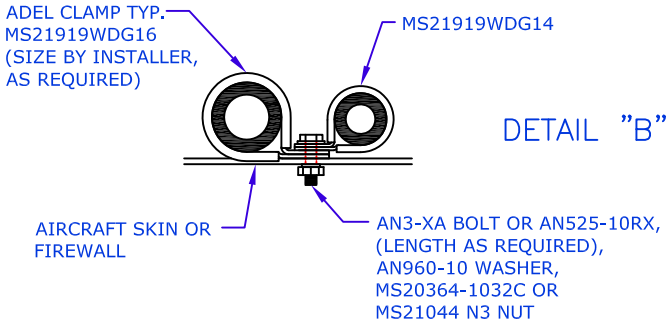
#8 HIGH PRESSURE
CONNECTION TO
COMPRESSOR

#10 LOW PRESSURE
CONNECTION TO
COMPRESSOR

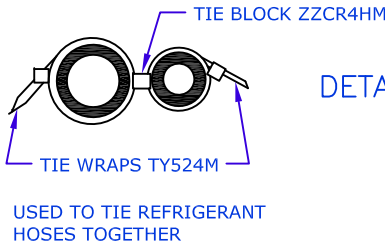
VIEW B-B



DETAIL "A"



DETAIL "B"



DETAIL "C"

AGUSTA A109E
(POWER)



TITLE: PLUMBING ROUTING

DRAWN BY: MGV	DATE: 08/01/07	REV 1R	SCALE: NONE	SHEET: 3 OF 3
APPLICATION: AGUSTA A109E			DWG No. 3-1-A109P	

HIGH PRESSURE
SERVICE PORT

SIGHT GLASS

LOW PRESSURE
SERVICE PORT

DRIER BOTTLE



VIEW A-A

Step 11

Paperwork

Integrated Flight Systems
PAPERWORK – AS109 Air Conditioning
DETAILED WEIGHT AND BALANCE DATA
FOR

INTEGRATED FLIGHT SYSTEMS

FREON AIR CONDITIONING

UNIT INSTALLED IN A

TYPICAL HELICOPTER, MODEL A109A, A109A II, A109C, A109E and
A109K2

PERTAINS TO KIT #A109-00-011

Weights and Moments

ITEM	WEIGHT	ARM	MOMENT
Evaporator, Condenser Assembly	38.00	128.8	4894.0
Compressor Assembly	13.00	144.3	1875.9
Compressor Mounting Bracket	2.00	142.0	284.0
Freon Hose Assembly	6.00	138.0	828.0
Hardware, Ducts and Electric	10.0	120.0	1200.0
<hr/>			
Sub Total: (Air Conditioner)	69.0	131.62	9082.3

United States Of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate

Number SR00060DE

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

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 27* of the Federal Aviation Regulations.

*Certification basis is set forth in Type Certificate Data Sheet.

Original Product Type Certificate Number: H7EU

Make: Agusta S.p.A.

Model: A109A, A109AII, A109C, A109K2, A109E

Description of Type Design Change: Installation of Belt-Driven Vapor Cycle Air Conditioning System Kit P/N A109-00-011 with dual condenser blower configuration in accordance with FAA approved Integrated Flight Systems, Inc. Master Drawing List Report Number DL-38, Revision A, dated February 23, 1993, or later FAA approved revision.

Limitations and Conditions: See Continuation Sheet

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: December 11, 1992

Date reissued: August 22, 2001

Date of issuance: October 19, 1993

Date amended: September 2, 2009, July 19, 2010



By direction of the Administrator


(Signature)

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

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

United States Of America
Department of Transportation - Federal Aviation Administration

Supplemental Type Certificate
(Continuation Sheet)

Number SR00060DE

Limitations and Conditions:

- 1) FAA Approved Rotorcraft Flight Manual Supplement (RFMS), dated October 14, 1993, or later FAA approved revision is required with this installation.
- 2) This installation should not be incorporated in any aircraft unless it is determined that the interrelationship between this installation and any previously approved configuration will not introduce any adverse effect upon the airworthiness of the aircraft. 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 this permission.
- 3) A copy of this certificate and FAA Approved RFMS-A109-00-011, dated October 14, 1993, or later FAA approved revision must be maintained as part of the permanent records for the modified aircraft.
- 4) This approval requires the inspections and overhaul schedules to be performed as mandated by Integrated Flight Systems, Inc. Instructions for Continued Airworthiness, ICA-A109-00-011, Revision IR, dated November 8, 2008, or later FAA accepted revision.

-----END-----

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

Integrated Flight Systems
1900 Flightline Drive, Suite 3
Lincoln, CA 95648
Supplement No.: RFMS-A109-00-011

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

TO THE AGUSTA S.p.A. MODEL

A109AII, A109C, A109K2 & A109E

Agusta Approved Rotorcraft Flight Manual
when equipped with

Integrated Flight Systems, Inc. Air Conditioning System

Registration # _____ Serial # _____

This supplement must be attached to the Agusta Approved Rotorcraft Flight Manual when the rotorcraft is modified by the installation of Integrated Flight Systems, Inc. Air Conditioning System in accordance with

STC No. SR00060DE

The information contained herein supplements or supersedes the basic manual only in those areas listed herein. For limitations, procedures, and performance information not contained in this supplement, consult the basic Rotorcraft Flight Manual.

FAA Approved


Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration
Los Angeles Aircraft Certification Office
Transport Aircraft Directorate


FAA Approved Date June 18, 2009

Original issue date: October 14, 1993

Integrated Flight Systems
1900 Flightline Drive, Suite 3
Lincoln, CA 95648
Supplement No.: RFMS-A109-00-011

RFM Supplement to the Agusta Model A109AII,
A109C, A109K2 & A109E Flight Manual
Integrated Flight Systems Air Conditioner
STC No. SR00060DE

RECORD OF REVISIONS

Rev.	Pg.	Date	Description	FAA Approval
Orig.	Title Log Cont 1 - 8	10/14/93	Initial Release	Richard E. Jennings Manager, Denver ACFO, NM Region, Date: 10/14/93
A	Title Log Cont 1 - 8	6/18/09	Updated company address, added A109E Model, added RFMS Number, Repaginated, removed density altitude chart from section 4.	 Mgr. Flight Test Br., ANM- 160L, FAA, Los Angeles ACO, Transport Aircraft Directorate Date <u>6-18-2009</u>

Integrated Flight Systems
1900 Flightline Drive, Suite 3
Lincoln, CA 95648
Supplement No.: RFMS-A109-00-011

RFM Supplement to the Agusta Model A109All,
A109C, A109K2 & A109E Flight Manual
Integrated Flight Systems Air Conditioner
STC No. SR00060DE

TABLE OF CONTENTS

LOG OF REVISIONS	2
TABLE OF CONTENTS	3
SECTION I – Operating Limitations	4
SECTION II – Normal Procedures	4
Ground Operation – One Engine (#1 Required) – One Generator	4
Ground and Flight Operations	4
SECTION III – Emergency Procedures	5
DC Generator Failure	5
Excessive Temperature, Fire, Smoke	5
SECTION IV – Performance	6
SECTION V – Weight and Balance	6
SECTION VI – Manufacturer's Information	7
Systems & Description	7
Electrical Loading	8

SECTION I – OPERATING LIMITATIONS

- The air conditioner system must be turned “OFF” during engine start.
- Operation of the air conditioner system is prohibited on one generator if the total electrical load will exceed 115 amps (except model K2 and E, 130 amps continuous).

SECTION II – NORMAL PROCEDURES

Ground Operation – One Engine (#1 required) – One Generator

- To turn air conditioner “ON”, move switch to “A/C”. Prior to “ON”, ensure ammeter indicates 65 amps or less (K2 and E model – 80 amps or less).
- To turn air conditioner “OFF”, move switch to “OFF”.
- For air circulation without cooling, move switch to “FAN”.
- Select desired blower speed for cockpit.
- Select desired blower speed for cabin.
- Do not start #2 engine with air conditioner “ON”.

Ground and Flight Operations

- Ventilation Control – As desired. (Close for cockpit/cabin cooling).
- Air Conditioning Control Switch – As desired.
- Air Conditioning Fan Speed Control Switches – As desired (Cockpit and cabin).
- Turn air conditioner “OFF” to obtain correct Magnetic Compass heading.

SECTION III – EMERGENCY PROCEDURES

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

3.1 D.C. Generator Failure

- Air Conditioning "OFF".
Note: Auto Load Shedding of the Air Conditioning System is not provided.
- Ammeter 65 Amps or less (K2 and E Model – 80 amps or less)
- Reduce electrical load
- Air Conditioning "ON", as desired
- Ammeter – monitor – 115 amps maximum continuous (Except K2 and E Model, 130 amps continuous)

3.2 Excessive Temperature, Fire, Smoke

- In the event of the following, turn Air Conditioner "OFF":
 - Cabin or other fire
 - Presence of smoke

SECTION IV – PERFORMANCE

- With the Air Conditioner “ON”, decrease Rotorcraft Flight Manual data by:
 - Reduce Hover Gross Weight by 100 pounds
 - Reduce Rate of Climb by 50 feet per minute

NOTE:

1. Engine Anti-Ice “OFF”
2. Indicates performance degradation when operating on an engine power limit (i.e., TOT/N1).

SECTION V – WEIGHT AND BALANCE

- Weight and Balance must be computer with air conditioning system installed. Ensure that empty weight and CG of aircraft is within manufacturer’s limits per the FAA Approved Flight Manual.

SECTION VI – MANUFACTURER’S INFORMATION

6.1 Systems & Description

The Air Conditioning System consists of a belt-driven vapor cycle (R134a) air conditioning system.

The system, as supplied, may be used without any heater installed. The Agusta Bleed Air Heater, Casey Shroud Heater, or other FAA Approved heaters may be utilized.

The Air Conditioning System provides for cabin comfort during all operations, both on the ground and in flight. During ground operations when only the #1 engine is running, cooling may be provided. Controls for the Air Conditioning System are over the pilot’s head. Two switches are provided. The Master Control Selector consists of a toggle type switch, labeled “A/C”, “OFF”, and “FAN”. Selecting the “A/C” position turns on the system’s evaporator fans, condenser blowers, and belt driven compressor clutch. The second toggle switch provides for “HIGH”, “LOW”, and “MED” evaporator fan speed selection for the cockpit. A rocker switch in the aft cabin provides blower speed control for passengers.

A high pressure safety switch disengages the compressor and stops operation of the refrigeration cycle in the event of excessive refrigerant pressure. This can occur due to a failure of the condenser blowers or restricted condenser intake. A low pressure switch of similar design protects the system due to loss of refrigerant. Both switches will automatically reset and the system will cycle on again when the pressures are again at a preset point.

The evaporator fan system may be used any time air circulation is desired. This is accomplished by placing the selector switch in the “FAN” position.

System electrical protection is provided by two circuit breakers (15A and 20A), labeled “EVAP/EVAP”, and two circuit breakers (20A and 20A) labeled “COND/COND”. These circuit breakers are located in the Air Conditioning Master Electrical Panel. This panel is located on the transmission deck. A circuit breaker (1A) also protects the Condenser Fans and Compressor Clutch. If a high pressure occurs in the system, the High Pressure Switch will open the 1A circuit breaker. The condenser fans and compressor clutch will then shut off, but the cabin fans will continue to operate.

6.1 Systems & Description (cont)

A Master Air Conditioning System Circuit Breaker is provided in the aircraft's auxiliary electrical panel located behind and above the pilot's head. If this circuit breaker is pulled for any reason, all electrical power to the Air Conditioning System is disconnected.

A "Soft Start Mode" is provided electrically for this system. When the Master Control Selector, labeled "A/C", is turned "ON", both evaporator fans, having a total electrical requirement of 20 amps is immediately energized. A few seconds later, the dual condenser blowers and compressor clutch are energized, which requires another 28 amps of electrical system capacity. Due to this "Delay Feature", electrical "soft start" is provided.

6.2 Electrical Loading

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

Condenser Blower	2 each @ 13 amps	= 26 amps
Compressor	1 each @ 2 amps	= 2 amps
Evaporator Fan (Fwd)	1 each @ 13 amps	= 13 amps
Evaporator Fan (Aft)	1 each @ 7 amps	= 7 amps
Total System		48 amps

Step 12

Continued Airworthiness

Integrated Flight Systems Air Conditioning System Instructions for Continued Airworthiness For Agusta S.p.A.

A109A II
A109C
A109K2
A109E

RECORD OF REVISIONS

Revision	Description	Date	Approval
IR	Initial Release	11/01/08	L. Aday

LIST OF EFFECTIVE PAGES

PAGE	REVISION	DATE
1	IR	11/01/08
2	IR	11/01/08
3	IR	11/01/08
4	IR	11/01/08
5	IR	11/01/08
6	IR	11/01/08
7	IR	11/01/08
8	IR	11/01/08
9	IR	11/01/08
10	IR	11/01/08

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
FOR INTEGRATED FLIGHT SYSTEMS
AGUSTA S.p.A. A109A II, A109C, A109K2, AND A109E
AIR CONDITIONING SYSTEM

Aircraft Make: Agusta S.p.A

Aircraft Model: A109A II, A109C, A109K2, A109E

- 1. Introduction:** Kit #109-00-011 is applicable to the specified models of the Agusta A109 series helicopter. It is a system utilizing R-134a (non-CFC type) refrigerant. This kit is compatible with utility, corporate, and EMS configurations. An Integrated Flight Systems unit is designated to be as maintenance free as possible. It incorporates in the design components that have proven themselves to be highly reliable.
- 2. Description:** The Integrated Flight Systems (IFS) Air Conditioning System is a vapor (R134a refrigerant) recovery system. The compressor uses an IFS bracket attached to mounting points on the transmission case. A single evaporator is used for this system, mounted on the cabin roof in the "doghouse". A single 24-volt fan motor is used to circulate the cabin air through the evaporator. Air distribution is accomplished through the ducts in the cabin. The ducts are equipped with directional valves. The condenser is also mounted on the cabin roof in the "doghouse". Another 24-volt fan motor circulates air through the condenser. The air enters through the intake screen in a scoop on the aircraft.

The system is activated by an On/Off switch in the pilot's compartment and a selector switch to provide high or low air velocity distribution options.
- 3. Operation:** 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 engines are running, cooling may be provided. Controls for the air conditioning system are located on the switch panel in the cabin overhead. Two switches are provided. The Master Control Selector consists of a rocker type switch, labeled "A/C", "OFF", and "FAN". Selecting the "A/C" position turns on the system's evaporator fan, condenser blower, and belt driven compressor. The second rocker switch is "HIGH", "LOW" evaporator fan speed selection for the forward cockpit.

4. **Servicing Information:** All components are readily accessible for inspection or servicing. Major components are accessed as follows:
- A. Compressor: Remove transmission cowling in accordance with the Agusta Maintenance Manual.
 - B. Condenser/Condenser Blower: Remove "doghouse" in accordance with Agusta Maintenance Manual.
 - C. Evaporator/Evaporator Blower: Remove "doghouse" in accordance with Agusta Maintenance Manual.
 - D. Service Ports/Sight Glass: Remove "doghouse" in accordance with Agusta Maintenance Manual.

Charging Refrigerant (R-134a) Into System:

- A. **The refrigerant used in this system is R-134a and no other refrigerant is to be considered.** Normal safety practices, such as wearing of gloves and the use of goggles should be utilized.
- B. 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.
- C. The sight glass is located in the #6 line in the "doghouse" on the cabin roof.
- D. Charge the system in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

Oil Charging: R-134a Refrigerant

- A. Prior to the use of R-134a refrigerant, R-12 refrigerant was used in all IFS systems. **The PROPERTIES OF R-134a REFRIGERANT AND THE VARIOUS TYPES OF OIL USED WITH THIS REFRIGERANT ARE COMPLETELY DIFFERENT.**
- B. **The Sanden compressor uses a 500 viscosity SP-20 type oil (ISO 100 100° O.A.T. or higher/ISO 68 100° or lower) or an "ESTER" type oil (yellow label). No other type oil can be utilized.**
- C. Charge the system in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

Initial Charging:

- A. Charge the system in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

Adding R-134a Refrigerant to System:

- A.** 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.
- B.** Service the system in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

- 5. Maintenance Instructions:** An Integrated Flight Systems unit is designed to be as maintenance free as possible. It incorporates design components that have proven themselves to be highly reliable. It is suggested that at each periodic inspection, whether at 50 or 100 hour intervals, at least a visual inspection be accomplished to the following items; to fulfill with inspection criteria per Appendix D, Far-43: Para A, Para B, 2, Para C, 1, 7, Para D, 2, 7, 9, and Para F, G, I, 2, 3, J.

- A. Compressor
- B. Compressor Clutch Bearing
- C. Compressor Mount
- D. Refrigerant Hose and Fittings
- E. Evaporator Fan and Mounting
- F. Condenser Blower and Mounting
- G. Condense/Evaporator Coils

Compressor:

- i) In addition to the above inspection, the compressor should be inspected 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 plate. An independent #14 wire may be necessary from the compressor to an airframe ground in order to ensure that the clutch engages in a positive manner.
- ii) If clutch plate and pulley show signs of excessive heat, replace clutch pulley assembly, bearing, and coil.
- iii) The compressor mounts should be inspected for possible cracks, deterioration and that all bolts are firmly attached.
- iv) Check condition of belt. Inspect for cracks, deterioration, separation, worn or flat spots. Change belt whenever any of these conditions exist. or one thousand hours, whichever comes first.

Hoses:

- i) Inspect hoses for general condition, cuts or swelling. Replace as required. Check security of clamps and anti-chaff material.

Evaporator:

- i) The evaporator blower motor is a permanent magnetic type. No repair is recommended other than replacement of the brushes. Unit should be returned to IFS for overhaul. If brush height is 5/16" or less, replace. Inspect every 200 hours.
- ii) Run the evaporator blower in the "FAN" position and perform visual inspection of the assembly to see that foreign materials have not been ingested into the blower, which might cause blade damage. The blower should also be run at the various speeds available to check motor operation.

Condenser:

- i) Either four (4) or two (2) brushes are located under caps on each side of the motor. Inspect brushes every 400 hours for wear. If brush length is 3/8" or less, replace brush.
- ii) NOTE: TAKE CARE WHEN INSTALLING BRUSHES THAT BRAIDED POSITIVE LEAD DOES NOT CONTACT HOUSING, CAUSING SHORT.
- iii) The fins of the condenser coil as well as the evaporator coil should be checked for cleanliness and that they are straight. If damage has occurred to the fins, a fin comb should be utilized to put them in like new condition.

6. Troubleshooting Information:

General:

- A. Should the system not perform as expected, either because of unreasonably erratic pressure readings, total lack of cooling or reduced cooling, it will be necessary to use the trouble shooting procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.
- B. The high and low-pressure switches should be checked if electrical power is lost to the compressor clutch. These are in series, and they should be checked from their electrical source, which is the 50-amp condenser blower circuit breaker.
- C. Always check system R-134a pressure first, as leaking unit may have caused the low-pressure switch to open. This switch is set to open at 8 PSI and close at 22 PSI.

- D. Failure of the condenser blower or coil blockage could result in high side pressure switch opening. Both switches are designed to reset automatically.
- E. **NOTE:** Internal blockage of the high-pressure side of the refrigerant system can cause a very low-pressure reading at the "low side" service gage and may also cause a low-pressure reading at the "high side" service gage. This can occur when either (or both) of the two (2) expansion valves in the system closes or when the receiver/drier becomes clogged.

Compressor:

- A. The compressor installed is manufactured by Sanden International.
- B. A copy of Sanden Service Manual can be found on the Sanden website at www.sanden.com.
- C. No maintenance, other than "clutch bearing" or "coil replacement" should be attempted in the field.

Evaporator:

- A. If the evaporator blower fails to run, confirm that the Aircraft Master Switch is in the "ON" position and the Air Conditioning control Switch is placed in the "FAN" position. If the fan/blower still does not run, determine that electrical power is available to the aircraft from an outside power source, such as a GPU or the aircraft power source. If power is available, it will be necessary to test with a voltmeter that electrical power is being supplied directly to the motor by the appropriate wire. If power is being supplied, and the motor is properly grounded, then it can be assumed that the motor has failed.
- B. On the blower, P/N 490029, the blower may be disassembled to allow removal of the motor, P/N 050052-1. The motor may be obtained from Integrated Flight Systems and installed in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

Condenser:

- A. The condenser blower may be checked by placing the Aircraft Master Switch "ON" and then placing the Air Conditioning Control Switch to the "A/C" position and the override switch "ON". If the 50-amp circuit breaker is not open, then power should be supplied directly to the condenser blower, which is mounted below the aft baggage area.
- B. If air is not being exhausted, a voltmeter should be utilized to determine if the power is being supplied through the switch and relay to the appropriate wire. Check that all electrical terminals are secure and that power is directed to the motor's terminals. Inspect ground. If it is determined that the motor has failed, the screws holding the blower assembly in place should be removed. The blower assembly must be removed as an entire assembly and replaced in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011.

Receiver/Drier:

- A. The receiver/drier may be replaced, if required, by discharging the R-134a from the system through a refrigerant hose or set of charging gauges. Again, all R-134a refrigerants **MUST BE CAPTURED**. Normally, the receiver/drier will not need replacement unless one of two factors is present:
 - i) The system has been left open for sometime and may be contaminated by air and/or moisture.
 - ii) The receiver/drier has become plugged which is evident by a large temperature differential on either side of the receiver/drier. Normally, the liquid line to and from it would be of approximately equal temperature and will be quite warm. IF one side is relatively warm and the other side is very cool or attempts to frost, then blockage of the receiver/drier has been determined. The receiver/drier should be removed and a new one installed in its place. The P/N is 090016-5 ("O" ring type). The charging instructions should be followed in recharging the system.

Expansion Valve:

- A. The Expansion Valve is of "O" ring type, P/N 090002-"O".
- B. NOTE: THE EXPANSION VALVE OF THE ABOVE PART NUMBER CONTAINS A "CHARGE" IN THE HEAD OF THE VALVE, CONTAINING R-134A.
- C. It is EXTREMELY IMPORTANT that the sensing bulb be clamped tightly to the suction return line in the same manner as removed. Also, the line is to be clean, so good contact takes place between the sensing bulb and the line. This area must be re-insulated as in the original manner. Leak test and recharge in accordance with the procedures outlined in the IFS Maintenance Manual Document Number MM-109-00-011 and applicable sections of this Document.

Hoses:

- A. Nylon "barrier type" hoses with "Bubble" crimped ferrules are utilized with "O" ring fittings. They are found at all fitting locations and should be inspected for security, crimped fitting for leakage, and obvious defects.

Low Pressure Switch:

- A. This switch is a non-adjustable type (normally open) and is located in the engine compartment near the compressor. P/N 050107 (set at 7 PSI out, 22 PSI in) is utilized. The switch will automatically reset to the closed position as soon as pressure is applied in PSI, greater than the cut-in point.

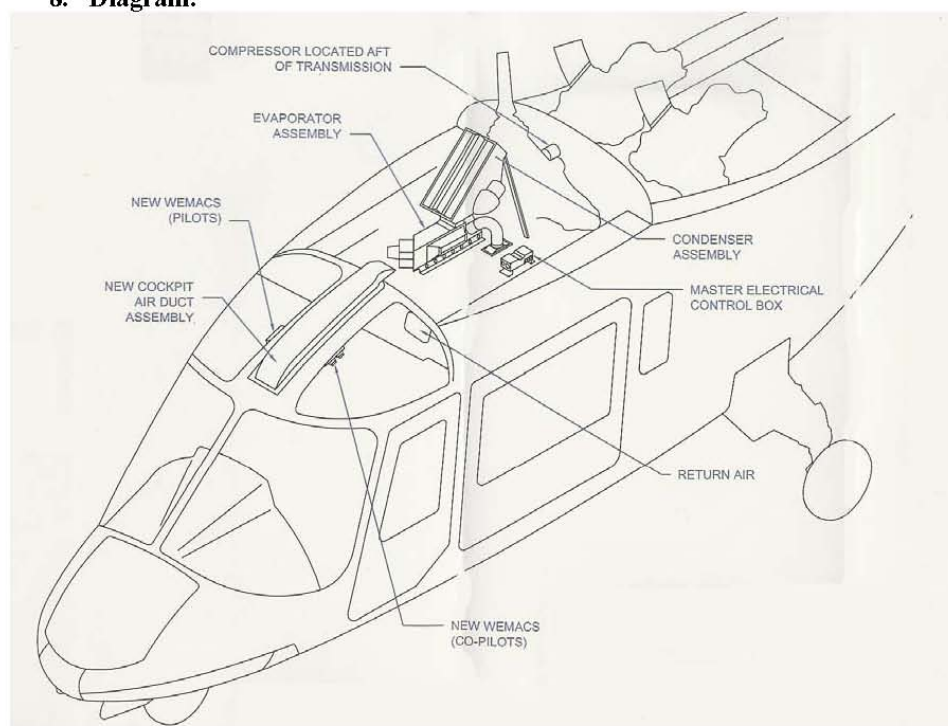
High Pressure Switch:

- A. High-pressure switch is identified under P/N 090004. It is also located in the engine compartment near the compressor. It is a “normally closed” switch, which “opens” on a rise in pressure that exceeds the switches upper limit. Once the pressure has been reduced below the switches upper design point, it will again close, automatically.

System Operation Limitations:

- A. Below 60 degrees Fahrenheit, it may be found that the air conditioning compressor will not come on line and remain in operation. This is due to that fact that coolness of the air available across the condenser does not allow the refrigerant system to maintain sufficient low side pressure to keep the safety low-pressure switch from tripping the compressor “off line”. The system should not be operated in temperatures below 66°F, except for re-circulation of air only.

- 7. Removal and Replacement Information:** The Integrated Flight Systems Air Conditioning Kit Part Number A109-00-011 is installed and removed in accordance with Installation Instructions Document Number IM-A109-00-011.

8. Diagram:

- 9. Special Inspection Requirements:** No special inspections are required for this system.
- 10. Application of Protective Treatments:** No special treatments are required after inspection and/or maintenance.
- 11. Data:** Torque values for all attachment hardware are listed in the Integrated Flight Systems Installation Instructions Document Number IM-A109-00-011.
- 12. List of Special Tools:** No special tools are required for inspection or maintenance of this system.
- 13. Recommended Overhaul Periods:** No additional overhaul time limitations are required for this system.
- 14. Airworthiness Limitation:** No additional Airworthiness Limitations are required for this system.

NOTE:

The Airworthiness Limitations section is FAA Approved and specifies maintenance required under § 43.16 and § 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA Approved.

- 15. ICA Revision:** Any revisions to these instructions will be made available at the Production Approval Holders website: www.integratedflightsys.com.

Step 13

Parts Break Down

MASTER PARTS LIST

IN

ALL A109 SERIES

FOR

KIT # 109-00-011-HP

with

(DUAL CONDENSE BLOWER)

"ESTER OIL EQUIPPED COMPRESSOR"

Model: SD-505

Revised:

MASTER PARTS LIST

A109 SERIES

KIT #109-00-011

DUAL CONDENSER BLOWER

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
1.	BELT	060030 060031 (Alt) 060031-1 (A109E)
2.	SD-505 COMPRESSOR COMPLETE W/ PULLEY, 24 VDC COIL (FOR USE WITH R-134a ONLY, "ESTER oil equipped)	010001-3-O

COMPRESSOR PARTS

FOR: SD-505 W/ 5.0" CLUTCH

3.	BEARING (ONLY): SD-505 COMPRESSOR W/ 5.0" CLUTCH
4.	24 VDC COIL (GREEN WIRE)
5.	IFS PULLEY
6.	PULLEY FACE PLATE 5.0"

Integrated Flight Systems
Parts Break Down – A109-00-011 Air Conditioning

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
EVAPORATOR BLOWER PARTS		
7.	5" VANE AXIAL BLOWER ASSY. (SINGLE FLANGE W/NYLON BLADE)	050143
8.	MOTOR: 5" VANE AXIAL BLOWER	050145
9.	NYLON BLADE AND HUB ASSY. FITS 5" VANE AXIAL BLOWER,	580000
10.	BRUSHES (2 EACH)/MOTOR	050031
11.	MOTOR, FORWARD EVAPORATOR 24VDC, single shaft, right hand	050052-1
12.	WHEEL, FORWARD EVAPORATOR, fan, metal, CC rotation, 5/16" bore	040004-8
CONDENSER BLOWER PARTS		
13.	CONDENSER BLOWER	050143
14.	NYLON BLADE AND HUB ASSY.	580000
15.	BRUSHES (2 Brush motor)	050031

Integrated Flight Systems
Parts Break Down – A109-00-011 Air Conditioning

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>PART #</u>
MISC. PARTS		
16.	RECEIVER/DRIER 1991 & ON - "O" RING TYPE	090016-5
17.	EXPANSION VALVE 1992 & ON - FWD. AND AFT EVAP. "O" RING TYPE	090002-"O"
18.	HIGH PRESSURE SAFETY SWITCH (ALL YEARS)	090004
19.	LOW PRESSURE SAFETY SWITCH 1991 & ON - NON-ADJUSTABLE (7 OUT/22 IN)	050107

Integrated Flight Systems

Pressure Switch Identification

for all

vapor cycle air conditioning kits

using R-134a

Low Pressure Switch: IFS P/N 050107

Leads are: **BLUE** in color

Mfg. P/N on switch: 20PS003MA022C007C

Opens: 7PSI Closes: 22 PSI

High Pressure Switch: IFS P/N 090004

Leads are: **BLACK** in color

Mfg. P/N on switch: 20PS002MB375K265K

Opens: 375 PSI Closes: 265 PSI

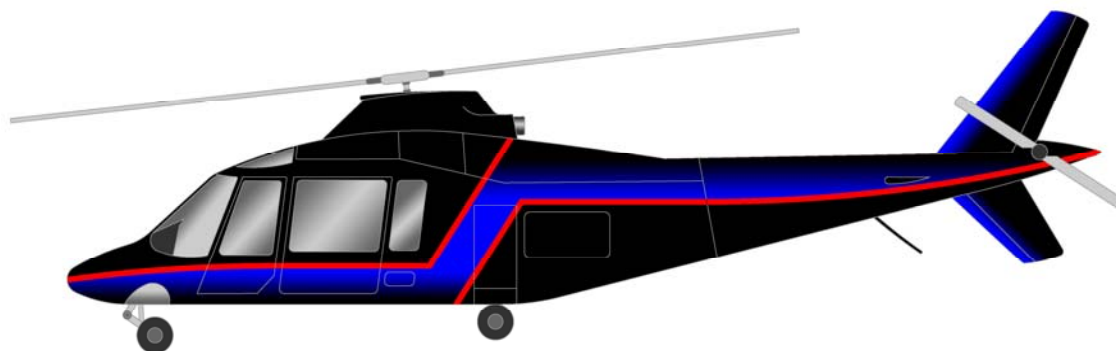
ALT. Mfg. P/N on switch: 20PS104MB350K250K

Opens: 350 PSI Closes: 250 PSI

IFS P/N 090004 (Both Types)



Air Conditioning Parts Catalog



Agusta 109 Series



Pricing Available Upon Request

**Within USA
24 Hours 7 days a week**

Phone: 1-817-624-6600

Kit / Parts Order Fax: 1-817-624-6601

Accounting Fax: 1-817-624-6603

**International
24 Hours 7 days a week**

Phone: 1-817-624-6600

Kit / Parts Order Fax: 1-817-624-6601

Accounting 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
Ft. Worth, Texas 76161-3976**

**Physical Shipping Address:
Address:**

**3900 Falcon Way West Hanger 16S
Ft. Worth, Texas 76106**

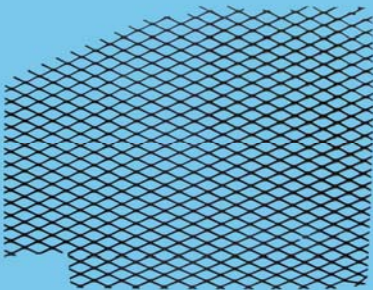
We gladly accept Visa, Master Card or American Express

Air Outlets/Air Flow



IFS PN: 030012-1

Wemac



IFS PN: 080036

**Return Air
Screen**



IFS PN: 060007

7" Duct



IFS PN: 250275

Air Duct

Air Outlets/Air Flow



IFS PN: 250276

Wemac Support



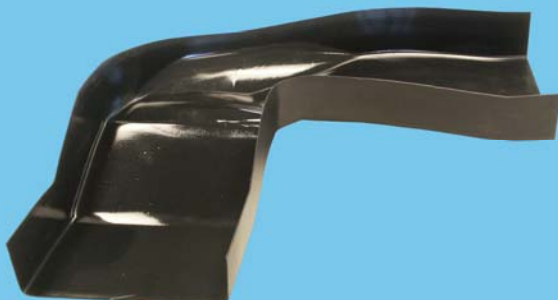
IFS PN: 250279

3.4 Nipple



IFS PN: 250285

**Return Air
Duct, Upper**



IFS PN: 250286

**Return Air
Duct, Lower**

Air Outlets/Air Flow



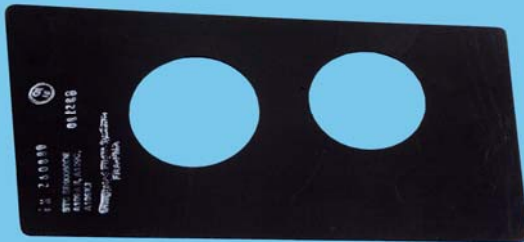
IFS PN: 250509

**3" Hose
Nipple**



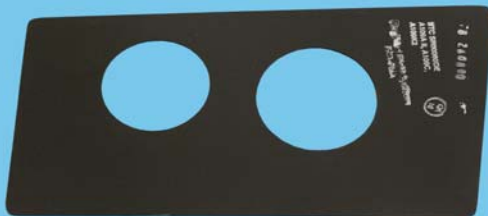
IFS PN: 260866

**Return Air
Doubler**



IFS PN: 260889

**Wemac
Doubler L.H.**



IFS PN: 260890

**Wemac
Doubler R.H.**

Air Outlets/Air Flow



IFS PN: 260912-1

Duct Mount



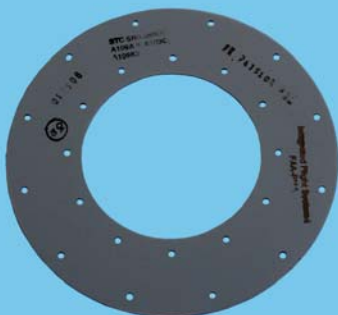
IFS PN: 260916

**Air Deflector
R.H.**



IFS PN: 260917

**Air Deflector
L.H.**



IFS PN: 261510

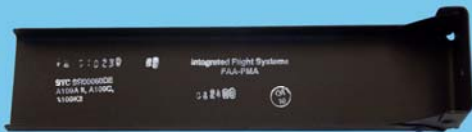
**Aft Air
Duct Doubler**

Air Outlets/Air Flow



IFS PN: 510230

**Inboard Vertical
Support Assembly**



IFS PN: 510231

**Outboard Vertical
Support Assembly**



IFS PN: 510232

Plate Assemblies



IFS PN: 520061-109

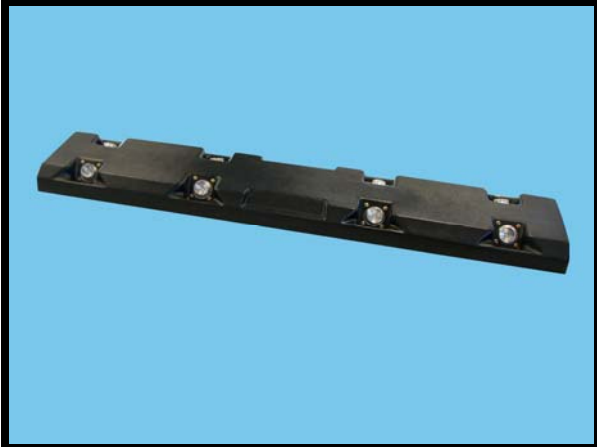
**Return Air
Duct**

Air Outlets/Air Flow



IFS PN: 520062

**Cockpit Air Duct
Assembly**



IFS PN: 520066

**Aft Cabin
Duct Assembly**

Blower Motors – Parts



IFS PN: 050143

**5" Vane Axial
Blower Assembly**



IFS PN: 580000

**5" Hub
& Propeller Assembly**



IFS PN: 250371

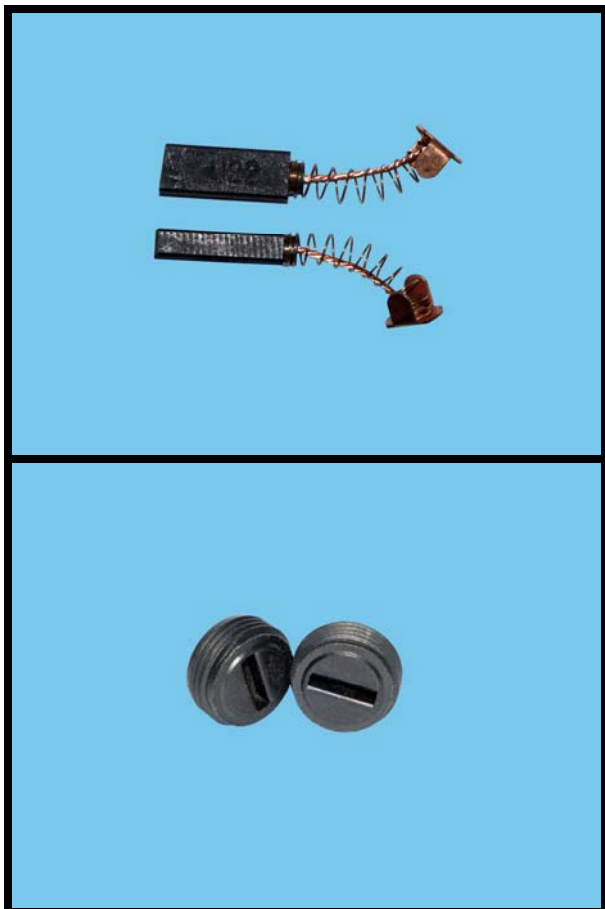
5" Propeller



IFS PN: 261176

Fan Blade Hub

Blower Motors – Parts



IFS PN: 050031

5" Motor Brushes

IFS PN: 050032

**5" Motor Brush
Caps**

Blower Motors - Parts



IFS PN: 050052-1

**Blower Motor
Modified R.H.**

IFS PN: 040004-8

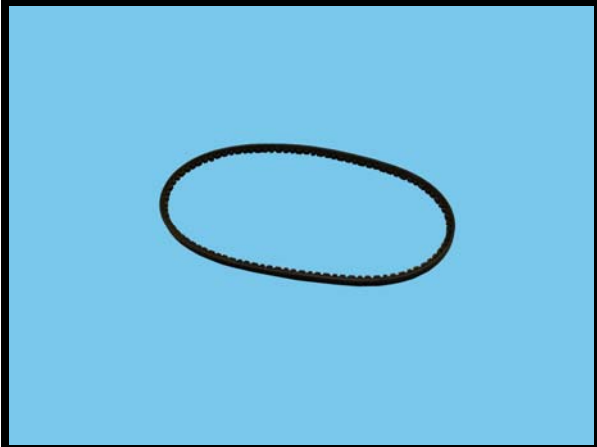
**Fan Wheel
CW**

Compressor and Parts



IFS PN: 010001-3-0

**505
Compressor**



IFS PN: 060031

**Compressor
Belt**

Condenser/Evaporator



IFS PN: 550022-O
Condenser Assembly



IFS PN: 560054-O
**Evaporator
Assembly**



IFS PN: 090016-5
**Receiver/Drier
Bottle**



IFS PN: 090002-O
Expansion Valve

Electrical Parts



IFS PN: 540028-C-3

**Electrical Panel
Assembly**



IFS PN: 540059-1

**Electrical Harness
Assembly**



IFS PN: 540060

**Fwd Evap.
Fan Switch
Assembly**

Electrical Parts



IFS PN: 050012-9

50 Amp
Circuit Breaker



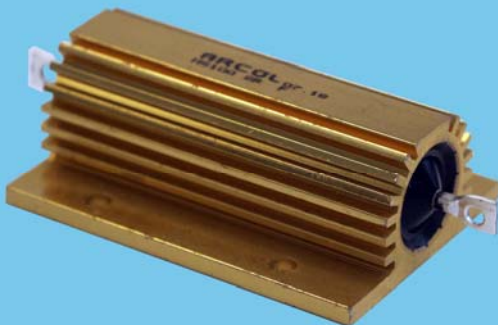
IFS PN: 050107

Low Pressure
Switch



IFS PN: 090004

High Pressure
Switch



IFS PN: 050024-2

Resistor

Step 14

Warranty/Repair

Integrated Flight Systems
Warranty/Repair – A109 Air Conditioning

Integrated Flight Systems Corporation
Standard Terms and Conditions of Sale

1. Terms of Payment: Unless prior arrangements are made to establish credit terms with Integrated Flight Systems Corp (“IFS”), all sales are prepaid in full prior to shipment. Payment may be made via cash, check or electronic transfer to IFS 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. Integrated Flight Systems Corp, Reno, Nevada, in accordance with standard packaging procedures.

5. Delays: IFS 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: IFS’ technical support staff is available for telephone consultation concerning the products it manufactures; however, IFS 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, IFS does not guarantee that Buyer has purchased the correct product or that a specified product will fit the intended aircraft. Further, IFS 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 IFS. If IFS does agree to accept a return, a twenty percent (20%) restocking fee will be charged. All items returned to IFS 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 IFS 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: IFS 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, IFS will either replace the item or adjust the matter fairly and promptly, but under no circumstances shall IFS 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 IFS harmless from, and release and not make claim or suit against IFS 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 IFS.

Integrated Flight Systems Warranty/Repair – A109 Air Conditioning

13. Warranty Registration and Claims: The terms of Integrated Flight Systems Corporation's Limited Warranty is written on the Warranty Registration Card and published on the IFS website www.integratedflightsys.com. The registration form must be completed and returned to IFS upon receipt of a product. The completed form may be faxed to +1 775 826 1067. Failure to complete the Warranty Registration Card may result in denial of a claim. In order to process a warranty claim, call IFS 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 IFS, and any attempt to alter or omit any of such terms shall be deemed a rejection and a counteroffer.

Integrated Flight Systems
Warranty/Repair – A109 Air Conditioning

Integrated Flight Systems, Corp.

Warranty Terms

Integrated Flight Systems Corporation, (“IFS”), 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 IFS and no substitute parts are installed in the Equipment without the prior written authorization from IFS. 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 Integrated Flight Systems Corp, 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 IFS 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 IFS 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 IFS.

The sole responsibility and liability of IFS 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 IFS with transportation, customs and any applicable import duties prepaid and provided that an inspection by IFS discloses that the equipment is defective and covered by this warranty. IFS 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 IFS 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 IFS as to certain equipment, the terms of that agreement shall supersede the warranty.

INTEGRATED FLIGHT SYSTEMS, CORP.

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 Installation for a period of one year or 1000 hours
Subject to the limitations identified in the attached Warranty Terms; effective 22 February
2007

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

WARRANTY CLAIM FORM

FILL OUT & FAX TO 817-624-6601

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: _____

DATE REMOVED: _____ T.T AT REMOVAL: _____

REASON FOR RETURNING COMPONENT: _____

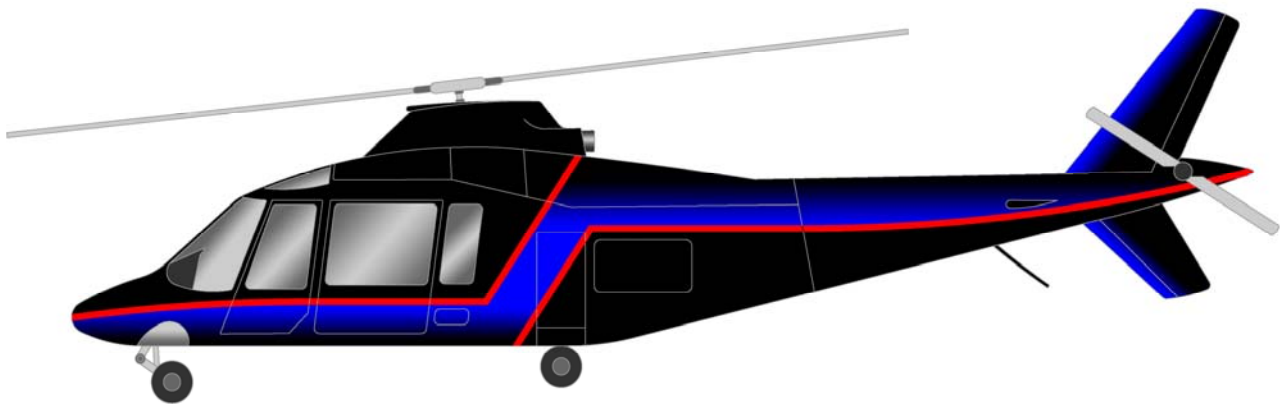
PLEASE ANSWER THE FOLLOWING QUESTIONS WITH RESPECT TO THE
ROTORCRAFT ON WHICH YOU SEEK WARRANTY ASSISTANCE:
HAVE ALL REQUIRED ROUTINE MAINTENANCES BEEN PERFORMED?

YES ☐ NO ☐ PLEASE PROVIDE COPIES OF T.T. LOG BOOK
ENTRIES TO THE ATTACHED FORM.

SIGNATURE: _____



**3900 Falcon Way West
Hanger 16S
Ft. Worth, Texas 76106**



Servicing and Trouble Shooting Guide

Agusta 109 Series

Air Conditioning System

MM-A109-00-011

TROUBLESHOOTING YOUR AIR CONDITIONING SYSTEM

The following consists of some basic information on Freon System Operation.

We should probably define “cold”. Actually, for our purpose, “cold” is a relative term. Your air conditioner should produce air (measured at the duct) that is:

- • 36° to 50° F at 70° ambient temperature.
- • 40° to 52° F at 80° ambient temperature.
- • 46° to 60° F at 90° ambient temperature.
- • 50° to 75° F at 100° ambient temperature.

An Empty System

If the system is empty, the search for leaks should begin with a good visual check. Is it a fast leak or a slow leak? When was the system last charged? If it's a newly installed and filled system, then look for obvious leaks like a chaffed, punctured or ruptured hose, or a loose fitting. (See the recharge and leak testing section for hints on charging new systems.)

Freon leaks can be very tough to find. Freon is colorless, odorless, heavier than air, and it evaporates as soon as it hits the atmosphere. The only helpful thing about it is the fact that the oil carried with the refrigerant, so any sizable leak will leave a trail of oil at the offending hose or fitting. It will often just be a dark area, and the amount of oil might be slight. But if you find an air conditioning fitting with an oily residue and the area around it is dry, you've probably found your leak. A good electron detector can verify your visual diagnosis.

Because the system carries the oil in suspension with the refrigerant, any sizable leak will leak oil as well as refrigerant. Very slow leaks will usually only vent refrigerant and not oil, but a fast leak like a ruptured hose or a very loose fitting, will leak the refrigerant so fast that the oil is carried out of the system as well. If your system has suffered a major leak, be sure to check the oil level in the compressor before refilling the system.

Troubleshooting

Trouble: **Low or partial refrigerant charge**

Symptoms:

- Insufficient cooling
- Low-side pressure too low
- High-side pressure too low
- Receiver/drier sight glass shows a stream of bubbles
- Air in ducts only slightly cool

Cause: The system is low on refrigerant, probably caused by a leak.

Correction: Find and fix the leak. If there was a loss of oil, be sure to check the compressor oil level. Evacuate and recharge.

A System Full of Refrigerant

First, you should double-check all the obvious things (i.e. the compressor clutch, the belt tension, and the operation of the evaporator blower). Next, establish some baseline conditions for your testing: run aircraft, high blower and coldest thermostat setting, doors and windows closed, ambient temperature of 70° F or above.

Situations do occur where the system is full of refrigerant, yet the sight glass remains cloudy. The first thing to consider is whether the receiver/drier is installed backwards. Be sure the line from the condenser goes to the port marked "in" on the receiver/drier. The other condition that might give you a cloudy glass (on a full system) is a restriction in the liquid line from the condenser to the receiver/drier. On some new receiver/driers the filter screen could be pushed up so the bottom of the screen is blocking the liquid pickup tube. You will have to cut open the receiver-drier to confirm your diagnosis.

You should test next for a system that is overcharged. If the sight glass is clear, but the high- and low pressure gauge readings are high (300 or more on the high side, 50 or more on the low side), disconnect the compressor clutch. (Note that on HFC-134A systems, milky is the normal look for a correctly charged system.) The refrigerant should foam and then settle away from the glass in less than forty-five seconds. If the sight glass remains clear for more than forty-five seconds you have an overcharged condition and will have to remove Freon.

Trouble: Excessive moisture in the system

Symptoms:

- Insufficient cooling during hottest part of the day or during extended flying.
- Low-side pressure normal, though it may be too low or even a vacuum
- High-side pressure normal, though it may be low-at the same time low side is low
- Receiver-drier sight glass may show tiny bubbles
(*Note:* This could be a tough call with HFC-134A since the sight glass is always milky).
- Air in the ducts is usually cold, but becomes warm when pressure reading drop

Cause: Excessive moisture in the system. The drying agent in the receiver-drier is saturated with moisture, which is released to the system when outside temperature increased. Moisture in the system collects and freezes on the expansion valve, stopping the flow of refrigerant.

Correction: Suck all the CFC-12 from the system. Replace or rebuild the receiver-drier. Evacuate and recharge.

Trouble: Air in the system

Symptoms:

- Insufficient cooling
- Low-side pressure normal, but does not drop when the clutch cycles
- High-side pressure high
- Receiver/drier sight glass shows occasional bubbles (Note again that with HFC-134A the sight glass should be milky when the system is fully charged.)
- Air in ducts only slight cool

Cause: Refrigerant contains non-condensable in the form of air and moisture.

Correction: Leak test, watch for bad compressor seals. Drain the system. Repair leaks as needed. Replace or rebuild the receiver-drier. Check the compressor oil. Evacuate and recharge.

Trouble: Condenser malfunction or system overcharge

Symptoms:

- No cooling
- Low-side pressure too high
- High-side pressure too high
- Receiver/drier sight glass may show occasional bubbles
- Liquid line very hot
- Air in ducts is warm

Cause: The condenser is not function properly because of high head pressure. System may be overcharged.

(**Note:** Technicians will have to be especially careful to avoid overcharging HFC-134A systems. Because the sight glass is hard to read and the volume given is slightly lower with HFC-134A).

NOTE:

Cloudy Sight Glass

A cloudy sight glass indicates a system that is only partially full of refrigerant (with a few exceptions). A perfectly clear sight glass (use a light to get a good look) means the system is either full or empty. Note, with HFC-134A the glass appears milky when properly charged, though there should be no bubbles in the sight glass.

Agusta 109 Series Trouble Shooting Guide



1. System has no electrical power to air conditioner master control box:
 - A) Check 50 amp circuit breaker.
2. System has power but will not turn on:
 - A) Check ground lead on cannon plug 102 wire IFS105N20.
 - B) 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) Disconnect CP103 and check for power on pin 2.
 - 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 CP103 pin 2. If no power, check cannon plugs and switch.
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) 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".

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.
 - 3) **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 should be no bubbles in the sight glass.
- 2) Service system by measuring temperature from evaporator. Add Freon while watching the temperature. As long as temperature keeps falling, add Freon. Once temperature stops dropping, holds or starts to rise, stop.
- 3) Service system by weight. If you have a service service station or scale, you can add the proper amount by weight.
- 4) Service according to a standard pressure temperature chart.)

82° F or higher service with 1.8 lbs max Freon.

Below 82° F service with 2.0 lbs max Freon.

8. One evaporator is not cooling.

- A) Expansion valve may be blocked from contamination.
- B) Hose may be crimped, kinked or have a fitting bent over blocking flow.
- C) (NOTE: The recommended fix is to pump down system. Change expansion valves and dryer bottle. Make sure to mount sensing bulb on suction side of coil and when possible at 9 or 3 o'clock position on tube. Re-service system.)

9. Compressor clutch failure:

- A) Low Freon in system. This causes the system to low pressure out through the low pressure switch. It will cycle the clutch on and off until it heats up causing the coil to overheat and fail, or heat up the bearing to the point the grease will liquefy and run out. This will add to the heat and help fail coil or bearing.
- B) Air gap on clutch may have changed.
- C) Coil may have weakened.
- D) Bearing may have failed, causing clutch to slip and fail coil.

NOTE: If ongoing maintenance is not maintained on compressor clutch bearing as prescribed in IFS maintenance manual, bearing may fail.

10. Compressor failed:

- A) Loss of oil or insufficient oil.
- B) Low Freon in system, causing insufficient flow of oil lubricant.
- C) Contamination in system.
- D) Compressor bearing failed.
- E) Over servicing of system to the point of liquid lock.

(**NOTE:** This has happened.)

11. Compressor belt failure:

- A) Low Freon in system. Cause: low pressure switch to cycle the clutch on and off excessively.
- B) Insufficient belt tension.
- C) Clutch bearing dragging or failing. This causes excessive belt slipping.
- D) Over service of system.
- E) Air gap excessive, causes clutch to slip heating pulley. This will stretch belt making it slip.

12. Air conditioner runs, but pops 1 amp circuit breaker:

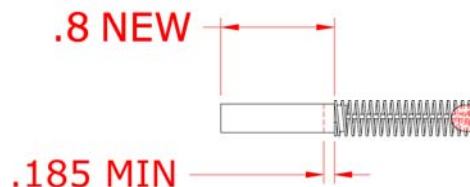
- A) Check condenser fan or fans for operation.
- B) Check blockage of air flow in and out of condenser.
- C) Check coil to see if fins are clean or rolled over.
- D) Check for over service of Freon.
- E) Put gauges on and run system.
 - 1) Is system popping 1 amp circuit breaker at 350 or higher?
 - a. If not change high pressure switch.
- F) Check expansion valves and make sure sensing bulbs are mounted to suction lines.
 - 1) Measure Delta of both evaporators.
 - a. If Delta is over 32° F expansion valve may not be working. If expansion valve is not throttling it will dump too much Freon. This can add excessive heat to condenser and can also freeze up coil.
 - 2) If Delta is below 14° F. Change valves, they may be blocked internally.

13. 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.

Blower motor Brush change Procedure

1. The following brush inspection/change procedure is applicable to the blowers listed below:
050143 series all dash numbers and/or applicable motors
2. Disassemble the motor for brush inspection or replacement as follows:
 - a. Remove the two each (5" Blower) Remove the brushes for inspection or discard.
 - b. Clean motor with dry compressed air by blowing air into the brush holder openings to remove any loose carbon dust as needed.
3. Reassemble the motor after brush inspection or replacement as follows:
 - a. Install new brushes and reinstall brush caps finger tight only.
 - b. Confirm that the motor turns freely and operates normally.
 - c. Run in the brushes for a minimum of five minutes to allow them to seat properly.
4. Brush inspection for length or damage is determined as follows:
 - a. Brush for 050143 5" Blower should not be less than .185 of an inch over all length. They should be inspected every 200 hours.



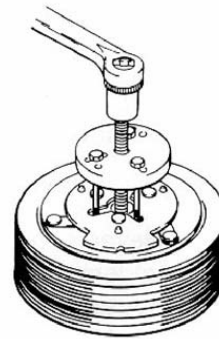
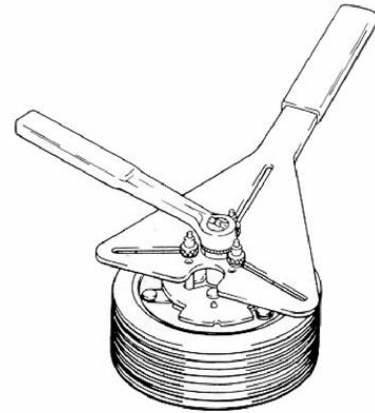
NOTE

IF THERE IS ANY SUSPECTED OR NOTICABLE DAMAGE AND/OR BRUSH LENGTH IS QUESTIONABLE THE BRUSHES ARE TO BE DISCARDED AND REPLACED WITH GENUINE INTEGRATED FLIGHT SYSTEMS PARTS

SERVICE OPERATIONS CLUTCH

14.1 Armature Assembly Removal

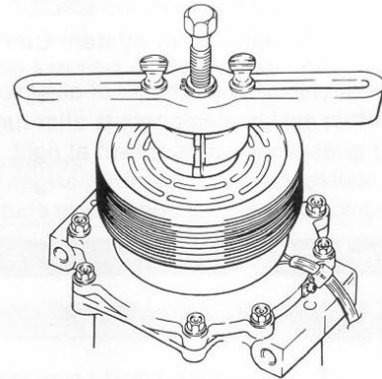
1. If armature dust cover is present, remove the 3 or 6 bolts holding it in place and remove cover. If auxiliary sheet metal pulley is present, remove the screws holding it in place. Then remove pulley.
2. Insert pins of armature plate spanner into threaded holes of armature assembly.
3. Hold armature 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

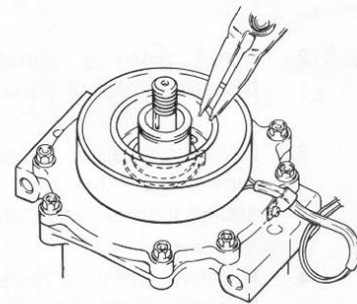
14.2. Rotor Assembly Removal

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.

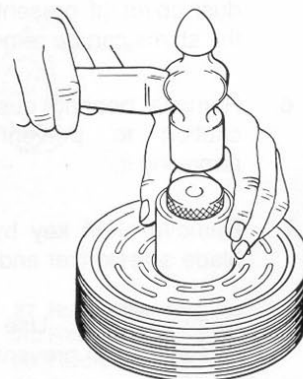


14.4 Field Coil Assembly Installation

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).

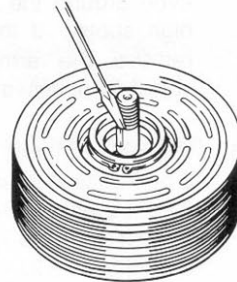
14.5 Rotor Assembly Installation

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.



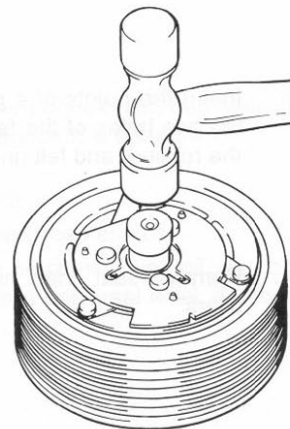
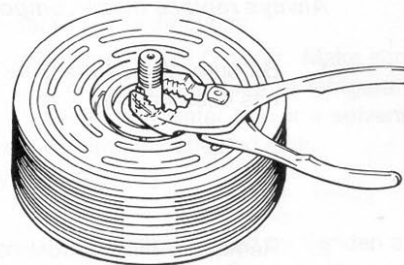
SERVICE OPERATIONS - CLUTCH

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

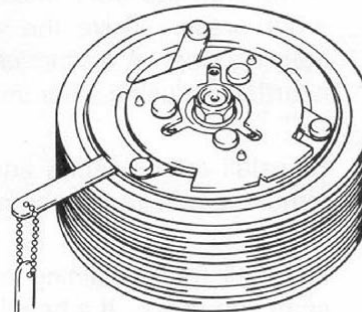
1. Install shaft key with pliers.
2. Install clutch shims. NOTE: Clutch air gap is determined by shim thickness. When installing a clutch on a used compressor, try the original shims first. When installing a clutch on a compressor that has not had a clutch installed before, first try 0.04", 0.02", and 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 (15-21 N•m, 150-210 kgf•cm)



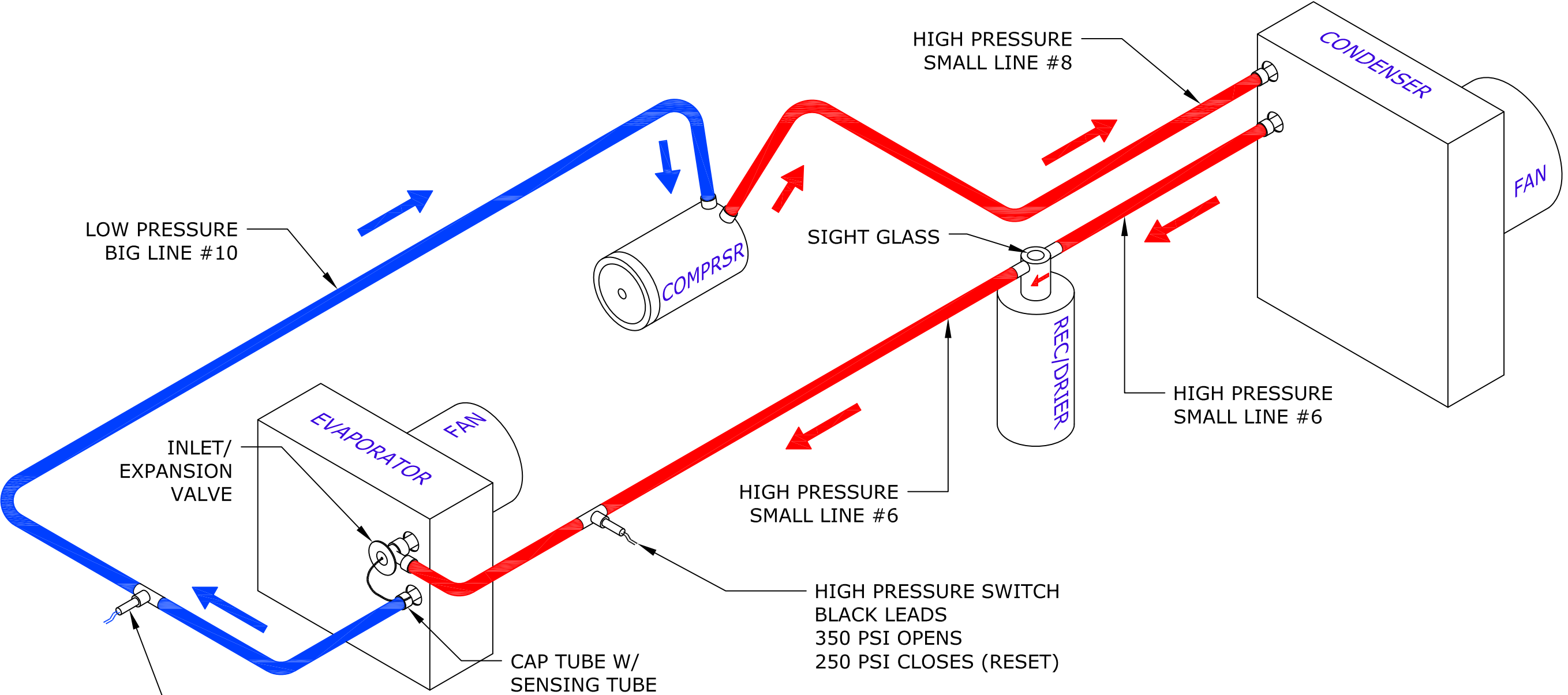
SERVICE OPERATIONS - CLUTCH


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





TITLE: SIMPLE AIR CONDITIONING SCHEMATIC

DRAWN BY: JTYE	DATE: 08/01/07	REV	SCALE: NONE	SHEET: 1 OF 1
APPLICATION: N/A			DWG No. A/C SCHEMATIC	

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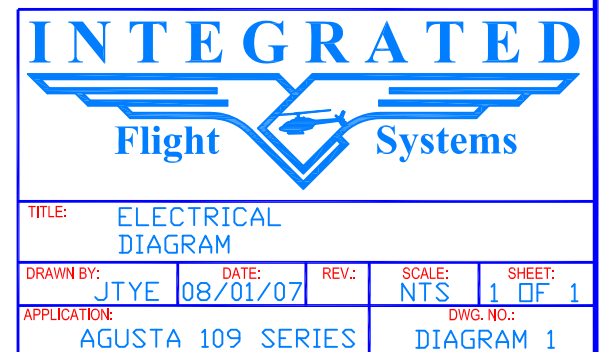
10. *Journal of the American Medical Association*, 2000; 284: 2689-2695.



- ## AGUSTA 109 SERIES ELECTRICAL WIRING DIAGRAM

NOTE:

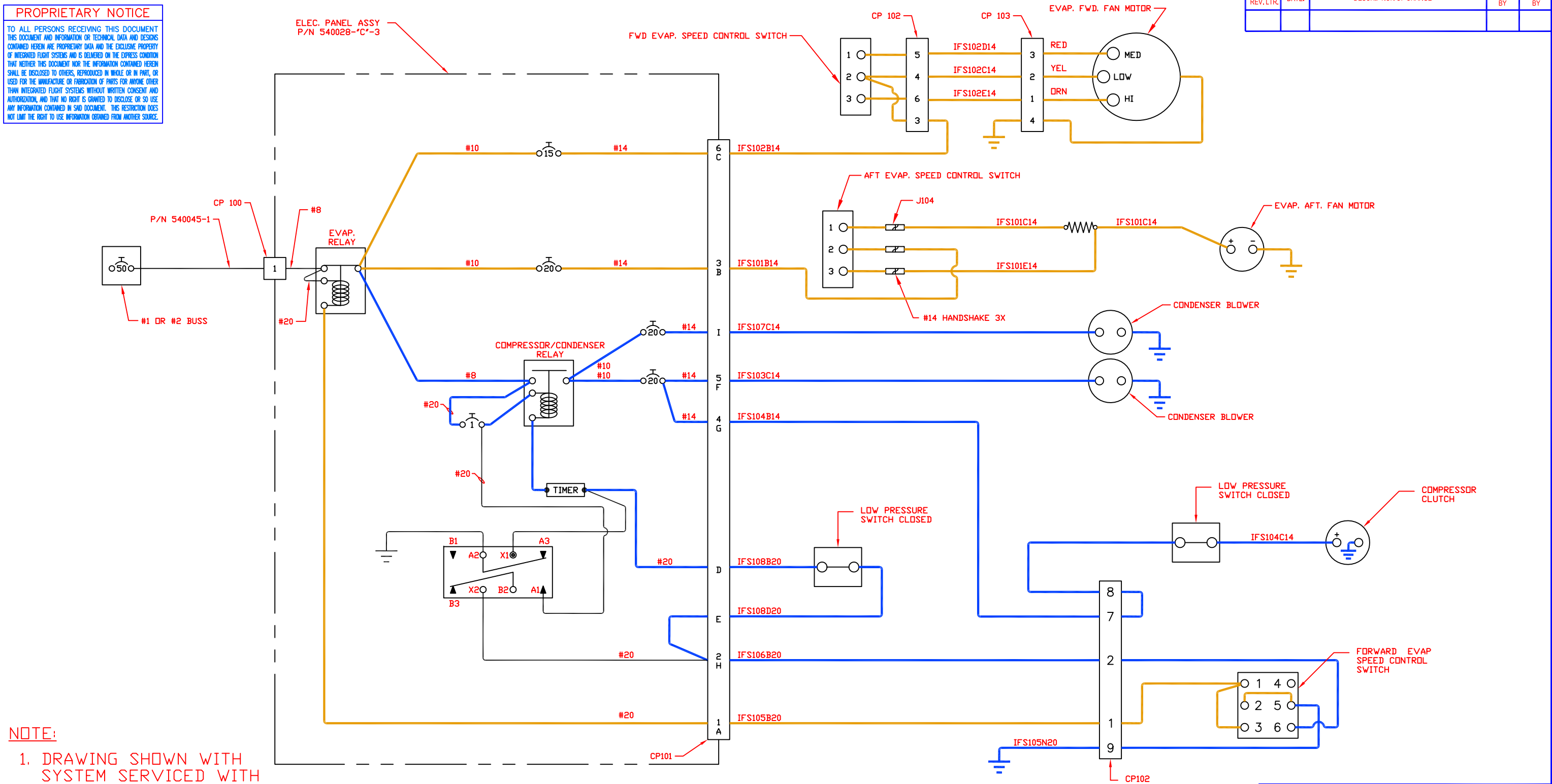
- WIRE NO. IFS XXX X X
 GROUP ————
 SEQUENCE (N INDICATES GROUP) ————
 GAUGE ————



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- NOTE:**
- DRAWING SHOWN WITH SYSTEM SERVICED WITH FREON.
 - THE "A/C", "OFF", "FAN" SWITCH IS SET TO "A/C". THIS WILL TURN ON THE EVAPORATOR FANS, (ORANGE LINES), THE CONDENSER FANS AND COMPRESSOR CLUTCH, (BLUE LINES).

**AGUSTA 109 SERIES
ELECTRICAL WIRING DIAGRAM**

DUAL CONDENSER BLOWER

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

GROUP
SEQUENCE (N INDICATES GROUND)
GAUGE

INTEGRATED
Flight Systems

TITLE: ELECTRICAL DIAGRAM				
DRAWN BY: JTye	DATE: 08/01/07	REV.: NTS	SCALE: 1 OF 1	SHEET: 1
APPLICATION: AGUSTA 109 SERIES			DWG. NO.: DIAGRAM 2	

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