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AgustaWestland Products

SERVICE BULLETIN

N° 139-406

DATE: June 9, 2021

REV. : /

TITLE

ATA 97 - KIT EXTERNAL VIDEO CAMERA

REVISION LOG

First Issue

1. PLANNING INFORMATION

A. EFFECTIVITY

Part I: all AW139 helicopters from S/N 31201 to S/N 31398 and from S/N 41201 to S/N 41299.

Part II: all AW139 helicopters from S/N 31400 to S/N 31699 and from S/N 41300 to S/N 41499.

Part III: AW139 helicopters from S/N 31201 to S/N 31398 and from S/N 41201 to S/N 41299, AW139 helicopters from S/N 31400 to S/N 31699 and from S/N 41300 to S/N 41499.

B. COMPLIANCE

At Customer's option.

C. CONCURRENT REQUIREMENTS

N.A.

D. REASON

This Service Bulletin is issued in order to provide the necessary instruction on how to perform the installation of kit external video camera P/N 4G9750F00211 or P/N 4G9750F00212.

E. DESCRIPTION

The purpose of the External Video Camera system is to ensure, from the top of the tail, the visibility of the entire AW139 helicopter in forward direction, displaying the images on the Multifunctional display during the flight or taxing operation.

The External Video Camera system is integrated with the Honeywell Primus Epic System and includes a color camera with related power supply.

Part I and II provide information on how to install the External Video Camera provisions.

Part III allows the External Video Camera equipment installation.

NOTE

As a mandatory prerequisite of this Service Bulletin, the helicopter has to be already equipped with:

- Kit Video Module Interface P/N 4G9310F00211 for helicopters from S/N 31201 to S/N 31398 and from S/N 41201 to S/N 41299 (Refer to SB 139-385).

- Kit Video Module Interface P/N 4G9310F00212 for helicopters from S/N 31400 to S/N 31699 and from S/N 41300 to S/N 41499 (Refer to SB 139-385).

F. APPROVAL

The technical content of this Service Bulletin is approved under the authority of DOA nr. EASA.21.J.005. For helicopters registered under other Aviation Authorities, before applying the Service Bulletin, applicable Aviation Authority approval must be checked within Leonardo Helicopters customer portal.

EASA states mandatory compliance with inspections, modifications or technical directives and related time of compliance by means of relevant Airworthiness Directives.

If an aircraft listed in the effectivity embodies a modification or repair not LHD certified and affecting the content of this Service Bulletin, it is responsibility of the Owner/Operator to obtain a formal approval by Aviation Authority having jurisdiction on the aircraft, for any adaptation necessary before incorporation of the present Service Bulletin.

G. MANPOWER

To comply with this Service Bulletin MMH are deemed necessary:

Part I: approximately seventy-five (75) MMH.

Part II: approximately seventy-five (75) MMH.

Part III: approximately three (3) MMH.

MMH are based on hands-on time and can change with personnel and facilities available.

H. WEIGHT AND BALANCE

PART I

WEIGHT (Kg)	1.911	
	ARM (mm)	**MOMENT (Kgmm)**
LONGITUDINAL BALANCE	9206.8	17594.2
LATERAL BALANCE	-173.6	-331.7

PART II

WEIGHT (Kg)	1.650	
	ARM (mm)	**MOMENT (Kgmm)**
LONGITUDINAL BALANCE	9206.8	15191.2
LATERAL BALANCE	-173.6	-286.4

PART III

WEIGHT (Kg)		0.610
	ARM (mm)	**MOMENT (Kgmm)**
LONGITUDINAL BALANCE	11016.4	6720.0
LATERAL BALANCE	-146.2	-89.2

I. REFERENCES

1) PUBLICATIONS

Following Data Modules refer to AMP:

DATA MODULE		DESCRIPTION	PART
DM01	39-A-00-20-00-00A-120A-A	Helicopter on ground for a safe maintenance	I, II, III
DM02	39-A-06-41-00-00A-010A-A	Access doors and panels - General data	I, II, III
DM03	39-A-11-00-01-00A-720A-A	Decal - Install procedure	I, II, III
DM04	39-A-24-91-04-00A-920A-K	Integrally lighted panel - Replacement	I, II
DM05	39-A-52-44-01-00A-520A-A	Access panels - Remove procedure	I, II
DM06	39-A-52-44-01-00A-720A-A	Access panels - Remove procedure	I, II

Following Data Modules refer to CSRP:

DATA MODULE		DESCRIPTION	PART
DM07	CSRP-A-51-42-00-00A-720A-D	Potted Inserts - Install procedure	I, II

2) ACRONYMS & ABBREVIATIONS

AMDI	Aircraft Material Data Information
AMP	Aircraft Maintenance Publication
AR	As Required
ATP	Acceptance Test Procedure
CB	Circuit Breaker
DM	Data Module
DOA	Design Organization Approval
EASA	European Aviation Safety Agency
ITEP	Illustrated Tool and Equipment Publication
LHD	Leonardo Helicopters Division
MAU	Modular Avionic Unit
MMH	Maintenance Man Hours
SB	Service Bulletin

3) ANNEX

Annex A External View FIN Camera - Acceptance Test Procedure

J. PUBLICATIONS AFFECTED

AMP Aircraft Maintenance Publication

K. SOFTWARE ACCOMPLISHMENT SUMMARY

N.A.

2. MATERIAL INFORMATION

A. REQUIRED MATERIALS

1) PARTS

PART I

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
1	**4G9750F00211**		**KIT EXTERNAL VIDEO CAMERA**	**REF**	**.**		**-**
2	**4G9750A00211**		**EXTERNAL VIDEO CAMERA COMPLETE PROVISION**	**REF**	**..**		**-**
3	**3G5310A65911**		**EXTERNAL CAMERA STRUCTURAL PROVISION**	**REF**	**...**		**-**
4	3G5316A55231		Video camera support assy	1	....		139-406L1
5	3G5315A32534		Molding assy	1	....		139-406L1
6	3G5316A87851		External molding	1	....		139-406L1
7	AN525-10R11		Screw	8	....		139-406L1
8	SL10429-06-3S	TYE2202-06-7	Insert	4	....		139-406L1
9	NAS1720C5L3P		Rivet	6	....		139-406L1
10	**4G9750A00311**		**EXTERNAL VIDEO CAMERA ELECTRICAL PROVISION**	**REF**	**...**		**-**
11	222S121-25S	222S121-25C-0	Screened boot	1	....		139-406L1
12	3G9B01A35901	4G9750A00311A10R	External video camera C/A (B1A359)	1	....		139-406L1
13	3G9C01A23701		External video camera C/A (C1A237)	1	....		139-406L1
14	3G9C03A20601	3G9C03A20601A10R	External video camera C/A (C3A206)	1	....		139-406L1
15	3G9D02A20401	3G9D02A20401A12R	External video camera C/A (D2A204)	1	....		139-406L1
16	999-1700-03-1	AW002FT1	Grommet	1	....		139-406L1
17	999-1700-03-102	AW002FT102	Grommet	9	....		139-406L1
18	999-1700-03-102	AW002FT102	Grommet	6	....	(1)	-
19	999-1700-03-105	AW002FT105	Grommet	1	....		139-406L1
20	A10099		Metallic band	1	....		139-406L1
21	A366A3E12C75		Stud adhesive bonded	1	....		139-406L1
22	A388A3E08C		Standoff	3	....		139-406L1
23	A388A3E08C75		Standoff	3	....		139-406L1
24	A631A01A		Spacer	1	....		139-406L1
25	AW001CL001-N6		Cable support	1	....		139-406L1
26	AW001CL001-N6		Cable support	5	....	(1)	-
27	AW001CL002B-X1		Cable support	7	....		139-406L1
28	AW001CL509-N6		Cable support	2	....		139-406L1
29	AW001CL509-N6		Cable support	1	....	(1)	-
30	AW001TL3A08		Cable support	1	....		139-406L1
31	M85049/93-04		Shield support ring	1	....		139-406L1
32	MS21042L3		Nut	4	....		139-406L1
33	MS21919WDG2	AS21919WDG02	Clamp	23	....		139-406L1
34	MS21919WDG4	AS21919WDG04	Clamp	15	....		139-406L1
35	MS25036-108		Terminal lug	1	....		139-406L1
36	MS35207-263		Screw	1	....		139-406L1
37	MS90376-12R		Cap	1	....		139-406L1
38	MS9592-022		Bracket	1	....		139-406L1

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
39	MS9592-027		Bracket	1	....		139-406L1
40	MS9592-382		Bracket	1	....		139-406L1
41	NAS1149D0332J		Washer	15	....		139-406L1
42	NAS1190E3P10AK		Screw	1	....		139-406L1
43	NAS1190E3P14AK		Screw	3	....		139-406L1
44	NAS1190E3P20AK		Screw	1	....		139-406L1
45	NAS1190E3P28AK		Screw	1	....		139-406L1
46	NAS1190E3P5AK		Screw	4	....		139-406L1
47	NAS1801-3-10		Screw	1	....		139-406L1
48	NAS1801-3-20		Screw	2	....		139-406L1
49	NAS1801-3-24		Screw	5	....		139-406L1
50	NAS1801-3-28		Screw	8	....		139-406L1
51	NAS1801-3-8		Screw	2	....		139-406L1
52	NAS43DD3-15N		Spacer	1	....		139-406L1
53	NAS43DD3-35N		Spacer	1	....		139-406L1
54	NAS43DD3-40N		Spacer	3	....		139-406L1
55	NAS43DD3-45N		Spacer	1	....		139-406L1
56	NAS43DD3-55N		Spacer	6	....		139-406L1
57	NAS43DD3-60N		Spacer	1	....		139-406L1
58	NAS43DD3-90N		Spacer	1	....		139-406L1
59	NAS813-8		Cap	3	....		139-406L1
60	3G2490LXXXXX		Panel integrally lighted aux breaker	1	.	(2)	-
61	MS3320-1		Circuit breaker	1	.		139-406L1
62	ED300CB202		Decal	1	.		139-406L1
63	MS27722-23		Switch	1	.		139-406L1
64	ED300S137		Decal	1	.		139-406L1
65	AS46789-510	NAS1720C5L3P	Rivet	10	.		139-406L1
66	A236A02AB		Adhesive rubber	10.8 m	.		139-406L1
67	A575A-107	AW002XM107B	Tubular metal braid	10 m	.		139-406L1
68	A582A08	EN6049-006-08-5	Tubular braid	10 m	.		139-406L1
69	A556A-T22		Electrical wire	2.5 m	.		139-406L1
70	M39029/1-102		Electrical contact	2	.		139-406L1
71	M39029/56-351		Electrical contact	1	.		139-406L1
72	M39029/56-352		Electrical contact	2	.		139-406L1
73	MS25036-149		Terminal lug	1	.		139-406L1
74	A523A-A05		Electrical contact	4	.		139-406L1
75	FCC4102D		Electrical contact	1	.		139-406L1
76	M39029/56-348		Electrical contact	4	.		139-406L1
77	M39029/58-364		Electrical contact	2	.		139-406L1

PART II

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
78	**4G9750F00212**		**KIT EXTERNAL VIDEO CAMERA**	**REF**	**.**		**-**
79	**4G9750A00212**		**EXTERNAL VIDEO CAMERA COMPLETE PROVISION**	**REF**	**..**		**-**
80	**3G5310A65911**		**EXTERNAL CAMERA STRUCTURAL PROVISION**	**REF**	**...**		**-**
81	3G5316A55231		Video camera support assy	1	....		139-406L2
82	3G5315A32534		Molding assy	1	....		139-406L2
83	3G5316A87851		External molding	1	....		139-406L2
84	AN525-10R11		Screw	8	....		139-406L2
85	SL10429-06-3S	TYE2202-06-7	Insert	4	....		139-406L2
86	NAS1720C5L3P		Rivet	6	....		139-406L2

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
87	**4G9750A00312**		**EXTERNAL VIDEO CAMERA ELECTRICAL PROVISION**	**REF**	**...**		**-**
88	222S121-25S	222S121-25C-0	Screened boot	1	....		139-406L2
89	3G9B01A35901	3G9B01A35901A10R	External video camera C/A (B1A359)	1	....		139-406L2
90	3G9C01A23701	3G9C01A23701A10R	External video camera C/A (C1A237)	1	....		139-406L2
91	3G9C03A20601	3G9C03A20601A10R	External video camera C/A (C3A206)	1	....		139-406L2
92	3G9D02A20401	3G9D02A20401A12R	External video camera C/A (D2A204)	1	....		139-406L2
93	999-1700-03-1	AW002FT1	Grommet	1	....		139-406L2
94	999-1700-03-2	AW002FT2	Grommet	1	....		139-406L2
95	A10099		Metallic band	1	....		139-406L2
96	A366A3E12C75		Stud adhesive bonded	1	....		139-406L2
97	A388A3E08C		Standoff	1	....		139-406L2
98	A388A3E08C75		Standoff	2	....		139-406L2
99	AW001CB02H		Clamp	9	....		139-406L2
100	AW001CB03H		Clamp	7	....		139-406L2
101	AW001CB05H		Clamp	7	....		139-406L2
102	AW001CL000A-X3		Cable support	3	....		139-406L2
103	AW001CL002A-X1		Cable support	1	....		139-406L2
104	AW001CL509-N6		Cable support	2	....		139-406L2
105	M85049/93-04		Shield support ring	1	....		139-406L2
106	MS21042L3		Nut	3	....		139-406L2
107	MS25036-108		Terminal lug	1	....		139-406L2
108	MS90376-12R		Cap	1	....		139-406L2
109	MS9592-022		Bracket	1	....		139-406L2
110	MS9592-027		Bracket	1	....		139-406L2
111	NAS1149D0332J		Washer	8	....		139-406L2
112	NAS1190E3P14AK		Screw	3	....		139-406L2
113	NAS1190E3P16AK		Screw	1	....		139-406L2
114	NAS1190E3P20AK		Screw	4	....		139-406L2
115	NAS1190E3P28AK		Screw	1	....		139-406L2
116	NAS1190E3P7AK		Screw	6	....		139-406L2
117	NAS1801-3-28		Screw	1	....		139-406L2
118	NAS1801-3-8		Screw	1	....		139-406L2
119	NAS1802-3-22		Screw	1	....		139-406L2
120	NAS1802-3-24		Screw	1	....		139-406L2
121	NAS1802-3-8		Screw	1	....		139-406L2
122	NAS43DD3-15N		Spacer	1	....		139-406L2
123	NAS43DD3-35N		Spacer	1	....		139-406L2
124	NAS43DD3-40N		Spacer	3	....		139-406L2
125	NAS43DD3-45N		Spacer	2	....		139-406L2
126	NAS43DD3-60N		Spacer	2	....		139-406L2
127	NAS43DD3-90N		Spacer	1	....		139-406L2
128	NAS813-8		Cap	3	....		139-406L2
129	3G2490LXXXXX		Panel integrally lighted aux breaker	1	.	(2)	-
130	MS3320-1		Circuit breaker	1	.		139-406L2
131	ED300CB202		Decal	1	.		139-406L2
132	MS27722-23		Switch	1	.		139-406L2
133	ED300S137		Decal	1	.		139-406L2
134	A236A02AB		Adhesive rubber	10.8 m	.		139-406L2
135	A575A-107	AW002XM107B	Tubular metal braid	10 m	.		139-406L2
136	A582A08	EN6049-006-08-5	Tubular braid	10 m	.		139-406L2

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
137	A556A-T22		Electrical wire	2.5 m	.		139-406L2
138	M39029/1-102		Electrical contact	2	.		139-406L2
139	M39029/56-351		Electrical contact	1	.		139-406L2
140	M39029/56-352		Electrical contact	2	.		139-406L2
141	MS25036-149		Terminal lug	1	.		139-406L2
142	A523A-A05		Electrical contact	4	.		139-406L2
143	FCC4102D		Electrical contact	1	.		139-406L2
144	M39029/56-348		Electrical contact	4	.		139-406L2
145	M39029/58-364		Electrical contact	2	.		139-406L2

PART III

#	P/N	ALTERNATIVE P/N	DESCRIPTION	Q.TY	LVL	NOTE	LOG P/N
146	**4G9750A00111**		**EXTERNAL VIDEO CAMERA FULL INSTALLATION**	**REF**	**.**		**-**
147	ED300DS117		Decal	1	..		139-406L3
148	ED300PS24		Decal	1	..		139-406L3
149	MS35206-226		Screw	4	..		139-406L3
150	MS35207-265		Screw	4	..		139-406L3
151	NAS1149DN616J		Washer	4	..		139-406L3
152	NAS1149DN632J		Washer	4	..		139-406L3
153	RPC-651ER/3,0		Utility camera	1	..		139-406L3
154	RPS-77E		Power supply 28VDC	1	..		139-406L3

2) CONSUMABLES

The following consumable materials, or equivalent, are necessary to accomplish this Service Bulletin:

#	Spec./LHD code number	DESCRIPTION	Q.TY	NOTE	PART
155	500218739	Sealing S1125 (C373)	AR	(4)	I, II
156	500218745	Adhesive S1184 (C327)	AR	(4)	I, II
157	M23053/5-107-0	Heat shrinkable tubing	AR	(4)	I, II
158	MMM-A-132, Type 2, Class II 199-05-002, Type I, Class 2 Code No. 900004603	Adhesive EA934NA (C057)	AR	(4)	I, II
159	MMM-A-132, Type 2, Class II 199-05-002, Type I, Class 2 Code No. 900000581	Adhesive EA9309.3NA (C021)	AR	(4)	I, II
160	MIL-S-8802, Type II, Class B2/ Code No. 900001586 (AMS-S-8802)	Sealing compound Proseal 890B2 (C153)	AR	(4) (3)	I, II
161	A582A32 or EN6049-006-32-5	Nomex fiber sleeve	AR	(4)	I, II
162	900004953 or AW001CK03LC	Tie strap	AR	(4)	I, II
163	A575A-107 or AW002XM107B	Tubular metal braid	AR	(4)	I, II

Refer also to AMDI for the consumable materials required to comply with the AMP DM referenced in the accomplishment instructions.

3) LOGISTIC MATRIX

In order to apply this Service Bulletin, the following Logistic P/N can be ordered in accordance with the applicable notes:

LOGISTIC P/N	Q.TY (PER HELO)	NOTE	PART
139-406L1	1		I
999-1700-03-102 or AW002FT102	6	(1)	
AW001CL001-N6	5	(1)	
AW001CL509-N6	1	(1)	
3G2490LXXXXX	1	(2)	
139-406L2	1		II
3G2490LXXXXX	1	(2)	
139-406L3	1		III

NOTES

(1) This item has to be supplied only if TCAS electrical provision is not installed.

(2) The P/N is not properly completed because it is depending on the helicopter configuration. Customers must contact AW139 Product Support Engineering (engineering.support.lhd@leonardocompany.com) to request the new auxiliary CB panel at least three months in advance from the scheduled application of this Service Bulletin.

(3) Adhesive MC780 B-2, Code No. 999999999000015245 can be used as a valid alternative.

(4) Item to be procured as local supply.

B. SPECIAL TOOLS

The following special tools, or equivalent, are necessary to accomplish this Service Bulletin:

#	P/N	DESCRIPTION	Q.TY	NOTE	PART
164	3G5310H65911A005A	Lower Tool	1		I, II
165	3G5310H13212A005A	Upper Tool	1		I, II

Refer also to ITEP for the special tools required to comply with the AMP DM referenced in the accomplishment instructions.

C. INDUSTRY SUPPORT INFORMATION

Customization.

3. ACCOMPLISHMENT INSTRUCTIONS

GENERAL NOTES

a) Place an identification tag on all components that are re-usable, including the attaching hardware that has been removed to gain access to the modification area and adequately protect them until their later re-use.
b) Shape the cables in order to prevent interference with the structure and the other existing installations, using where necessary suitable lacing cords.
c) Exercise extreme care during drilling operations to prevent instruments, cables and hoses damage.
d) After drilling, remove all swarf and sharp edges. Apply on bare metal a light film of primer unless the hole is used for ground connection.
e) During the installation of bonding braids or components requiring grounding, clean the surface structure in order to obtain a good ground contact.
f) Let adhesive cure at room temperature for at least 24 hours unless otherwise specified.
g) Exposed thread surface and nut must be protect using a layer of tectyl according to MIL-C-16173 grade I.
h) All lengths are in mm.

PART I

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 1 and 4, gain access to the area affected by the installation and perform external camera structural provision P/N 3G5310A65911 as described in the following procedure:
   2.1 With reference to Figure 1 Detail A and Section B-B, drill n°4 holes Ø 10.31÷10.39 through left panel skin and honeycomb.

2.2 In accordance with CSRP DM CSRP-A-51-42-00-00A-720A-D and with reference to Figure 1 Detail A and Section B-B, install n°4 inserts P/N SL10429-06-3S by means of adhesive EA934NA (C057).

2.3 With reference to Figure 4, position the lower tool P/N 3G5310H65911A005A according to the existing pilot hole present on the longeron matching it with the existing structure hole. Secure the lower tool by means of locking pin A.

2.4 With reference to Figure 2 view E and Figure 4, drill n°6 holes Ø 3.28÷3.35 through the longeron by means of lower tool P/N 3G5310H65911A005A.

NOTE

As a mandatory prerequisite for the use of upper tool, lower tool has to be already installed.

2.5 In accordance with applicable steps of AMP DM 39-A-52-44-01-00A-720A-A, temporarily locate the up leading edge fairing assy (360AL) on the proper installation position, by means of existing hardware.

2.6 With reference to Figure 4, position the upper tool P/N 3G5310H13212A005A on the up leading edge fairing assy and assemble with lower tool by means of locking pin B.

2.7 With reference to Figure 4, drill n°2 holes Ø 2.5 through the up leading edge fairing assy in the corresponding position of the upper tool locking pins B and C.

2.8 With reference to Figure 4, secure the upper tool P/N 3G5310H13212A005A to the up leading edge fairing assy by means of locking pins C and D.

2.9 With reference to Figure 4, drill n°6 pilot holes Ø 2.5 through the up leading edge fairing assy by means of the upper tool P/N 3G5310H13212A005A.

2.10 With reference to Figure 4 and Figure 3 detail G, countermark the position of cut out on the up leading edge fairing assy by means of the upper tool P/N 3G5310H13212A005A.

2.11 With reference to Figure 4, remove the upper tool.

2.12 In accordance with applicable steps of AMP DM 39-A-52-44-01-00A-520A-A, remove the up leading edge fairing assy.

2.13 With reference to Figure 4, remove the lower tool.

2.14 With reference to Figure 3 view G, perform the previously countermarked cut out on the up leading edge fairing assy.

2.15 With reference to Figure 3 section D-D, enlarge the n°8 previously performed pilot holes to Ø 4.90 ÷ 5.03 on up leading edge fairing assy.

2.16 With reference to Figure 3 section D-D and schematic section D-D, install the molding assy P/N 3G5315A32534 and the external molding P/N 3G5316A87851 by means of n°8 screws P/N AN525-10R11 and sealing compound Proseal 890B2 (C153).

2.17 With reference to Figure 2 detail C and View E, install video camera support assy P/N 3G5316A55231 on the longeron by means of rivets P/N NAS1720C5L3P.

3. In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 5 thru 11 gain access to the area affected by the installation and perform the external camera electrical provision P/N 4G9750A00311, as described in the following procedure:

3.1 With reference to Figure 6, at position n°1 install grommet P/N 999-1700-03-102 and spacer P/N A631A01A.

3.2 With reference to Figure 6, at positions n°2 and n°3 remove the existing grommets P/N 999-1700-03-103 and install n°2 grommets P/N 999-1700-03-102.

3.3 With reference to Figure 6, at position n°5 install grommet P/N 999-1700-03-105.

3.4 With reference to Figure 6, at position n°6 install cable support P/N AW001CL509-N6 by means of adhesive EA9309.3NA (C021) and grommet P/N 999-1700-03-102.

3.5 With reference to Figure 6, at positions n°7, 8 and 9 install n°3 cable supports P/N AW001CL002B-X1 by means of adhesive EA9309.3NA (C021) and n°3 grommets P/N 999-1700-03-102.

3.6 With reference to Figure 6 View D, at position n°10 install cable support P/N AW001CL509-N6 by means of adhesive EA9309.3NA (C021) and grommet P/N 999-1700-03-102.

3.7 With reference to Figure 6, at position n°11 install grommet P/N 999-1700-03-102 on the existing cable support P/N A630A12.

3.8 With reference to Figure 7, at position n°13 install on existing support the clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-40N and screw P/N NAS1801-3-20.

3.9 With reference to Figure 7, at positions n°14 and n°15 install on existing support n°2 clamps P/N MS21919WDG2.

3.10 With reference to Figure 7, at position n°16 install on existing support clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-55N and screw P/N NAS1801-3-24.

3.11 With reference to Figure 7, at positions n°17,18 and 19 install on existing hardware n°3 clamps P/N MS21919WDG2.

3.12 With reference to Figure 7, at position n°20 install on existing support the clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-55N and screw P/N NAS1801-3-24.

3.13 With reference to Figure 7, at positions n°21 and n°22 install n°2 clamp P/N MS21919WDG2.

3.14 With reference to Figure 7, at position n°23 install on existing hardware clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-55N and screw P/N NAS1801-3-24.

3.15 With reference to Figure 7 View F, at positions n°24 and n°25 install on existing hardware n°2 clamps P/N MS21919WDG2 by means of n°2 spacers P/N NAS43DD3-55N and n°2 screws P/N NAS1801-3-24.

NOTE

Perform the steps 3.16 and 3.17 only if TCAS electrical provision is not installed otherwise use existing supports and skip to step 3.18.

3.16 With reference to Figure 7 View F, at position 26 install plastic support P/N AW001CL509-N6 by means of adhesive EA9309.3NA (C021) and grommet P/N 999-1700-03-102.

3.17 With reference to Figure 8 View G-G, at positions n° 27, 28, 29, 30 and 31 install n°5 plastic supports P/N AW001CL001-N6 by means of adhesive EA9309.3NA (C021) and n°5 grommets P/N 999-1700-03-102.

3.18 With reference to Figure 8, at position n°32 install on existing hardware clamp P/N MS21919WDG2 by means of bracket P/N MS9592-382, screw P/N NAS1801-3-8, nut P/N MS21042L3 and n°2 washers P/N NAS1149D0332J.

3.19 With reference to Figure 8, at position n°33 install on existing hardware clamp P/N MS21919WDG2 by means of bracket P/N MS9592-022, screw P/N NAS1801-3-8, nut P/N MS21042L3 and n°2 washers P/N NAS1149D0332J.

3.20 With reference to Figure 8, at position n°34 install support P/N AW001TL3A08 by means of adhesive EA9309.3NA (C021) and clamp P/N MS21919WDG2 by means of screw P/N MS35207-263 and washer P/N NAS1149D0332J.

3.21 With reference to Figure 8, at positions n° 35, 36 and 37 install n°3 standoff P/N A388A3E08C by means of adhesive EA9309.3NA (C021) and n°3 clamps P/N MS21919WDG2 by means of n°3 screws P/N NAS1190E3P5AK and n°3 washers P/N NAS1149D0332J.

3.22 With reference to Figure 8, at position n°38 install on existing hardware clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-45N and screw P/N NAS1801-3-20.

3.23 With reference to Figure 8, at position n°39 install grommet P/N 999-1700-03-1.

3.24 With reference to Figure 8, at position n°40 install on existing hardware clamp P/N MS21919WDG2 by means of screw P/N NAS1190E3P10AK.

3.25 With reference to Figure 8, at position n°41 install adhesive rubber P/N A236A02AB.

3.26 With reference to Figure 8, at position n°41 install stud adhesive bonded P/N A366A3E12C75, clamp P/N MS21919WDG2 and bracket P/N MS9592-027 by means of spacer NAS43DD3-15N, n°2 nuts P/N MS21042L3, screw P/N NAS1801-3-10 and n°2 washers P/N NAS1149D0332J.

3.27 With reference to Figure 10 view looking tail cone LH side, at position n°42 install on existing hardware clamp P/N MS21919WDG2 by means of spacer P/N NAS43DD3-35N and screw NAS1190E3P14AK.

3.28 With reference to Figure 10 view looking tail cone LH side, at positions n°43, 44 and 45 install n°3 supports P/N AW001CL002B-X1 by means of adhesive EA9309.3NA (C021).

3.29 With reference to Figure 10 view looking tail cone LH side, at position n° 46 install on existing hardware clamp P/N MS21919WDG4 by means of spacer P/N NAS43DD3-40N and screw NAS1190E3P14AK.

3.30 With reference to Figure 10 view looking tail cone LH side, at positions n° 47 and 48, install on existing hardware n°2 clamps P/N MS21919WDG4.

3.31 With reference to Figure 11 view looking tail cone LH side, at position n° 49 install on existing hardware clamp P/N MS21919WDG4 by means of spacer P/N NAS43DD3-40N and screw P/N NAS1190E3P14AK.

3.32 With reference to Figure 11, at position n°50 install on existing hardware clamp P/N MS21919WDG4 by means of spacer P/N NAS43DD3-55N, screw P/N NAS1801-3-28 and washer P/N NAS1149D0332J.

3.33 With reference to Figure 11, at position n°51 install stud P/N A388A3E08C75 by means of adhesive EA9309.3NA (C021) and clamp P/N MS21919WDG4 by means of spacer P/N NAS43DD3-90N, screw P/N NAS1190E3P28AK and washer P/N NAS1149D0332J.

3.34 With reference to Figure 11, at position n°52 install stud P/N A388A3E08C75 by means of adhesive EA9309.3NA (C021) and clamp P/N MS21919WDG4 by means of spacer P/N NAS43DD3-60N, screw P/N NAS1190E3P20AK and washer P/N NAS1149D0332J.

3.35 With reference to Figure 11, at positions n°53, 54, 55, 56, 57 and n°58 install on existing hardware n°6 clamps P/N MS21919WDG4 by means of n°6 screws P/N NAS1801-3-28.

3.36 With reference to Figure 11, at position n°59 install on existing hardware clamp P/N MS21919WDG4 by means of screw P/N NAS1801-3-28.

3.37 With reference to Figure 11 View J, at position n°60 install stud P/N A388A3E08C75 by means of adhesive EA9309.3NA (C021) and clamp P/N MS21919WDG4 by means of screw P/N NAS1190E3P5AK and washer P/N NAS1149D0332J.

3.38 With reference to Figure 11 View J, at position n°61 install cable support P/N AW001CL001-N6 by means of adhesive EA9309.3NA (C021).

3.39 With reference to Figure 11 View J, install protective rubber P/N A236A04AB154.

3.40 With reference to Figures 5 thru 11 lay down the following cable assemblies following the existing route unless otherwise indicated on the figures:

- External video camera P/N 3G9B01A35901 (B1A359);
- External video camera P/N 3G9C01A23701 (C1A237);
- External video camera P/N 3G9C03A20601 (C3A206);
- External video camera P/N 3G9D02A20401 (D2A204).

Secure the cable by means of existing hardware and lacing cord.

3.41 With reference to Figure 9, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A B1A359 between sectioning connector J213 and circuit breaker panel connector PL1P1.

3.42 With reference to Figure 9, Figure 24 and Figure 10 and Figure 23 wiring diagram, perform the electrical connection of C/A C1A237 between:

- terminal board TB315;
- ground terminal by means of terminal lug P/N MS25036-108, metallic band P/N A10099, tubular metal braid P/N A575A-107, shield support ring P/N M85049/93-04 and tubular braid A582A08;
- power supply connector PS24P6 by means of tubular metal braid P/N A575A-107 and tubular braid A582A08;
- sectioning connector P213.

3.43 With reference to Figures 6 thru 8, Figure 10, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A C3A206 between MAU 1 connector A1-3P3 and power supply connector PS24P2.

3.44 With reference to Figure 10, Figure 11, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A D2A204 between:

- video camera connector DS117P1 by means of heat shrinkable tubing P/N M23053/5-107-0, screened boot 222S121-25S and adhesives S1125 and S1184;
- power supply connector PS24P7.

3.45 Modify the auxiliary CB panel on the overhead panel, as described in the following procedure:

NOTE

Customer must contact AW139 PSE at least 3 months in advance of embodiment date of this Service Bulletin in order to collect the exact W/D applicable to helicopter configuration.

3.45.1 With reference to AMP DM 39-A-24-91-04-00A-920A-K, remove from the Overhead CB panel the existing integrally-lighted panel and install the new integrally- lighted panel P/N 3G2490LXXXXX.

3.45.2 In accordance with AMP DM 39-A-11-00-01-00A-720A-A, install n°1 circuit breaker P/N MS3320-1 in “EXTERNAL VIDEO CAMERA” position, on the new integrally- lighted panel P/N 3G2490LXXXX. Apply decal P/N ED300CB202 in an adjacent area.

3.45.3 In accordance with AMP DM 39-A-11-00-01-00A-720A-A, install n°1 switch S137 P/N MS27722-23 and n°1 decal P/N ED300S137 in an adjacent area.

3.45.4 Perform electrical connection between switch S137 and overhead circuit breaker connector PL1J11 pin N, by means of electrical wire A556A-T22. Use electrical contact P/N M39029/1-102 for switch S137 and electrical contact P/N M39029/56-351 for sectioning connector PL1J11.

3.45.5 Perform electrical connection between switch S137 and CB202 by means of A556AT-22 wire. Use terminal lug P/N MS25036-149 for pin 2 of circuit breaker CB202 and electrical contact P/N M39029/1-102 for switch S137.

3.45.6 Perform electrical connection between CB202 to 28V DC Main Bus 1 W21A.

3.46 Perform a pin-to-pin continuity check of all the electrical connections previously performed.

NOTE

Perform the following steps 3.47 and 3.48 only if Part III of this Service Bulletin is not intended to be embodied immediately after Part I, otherwise skip to step 4.

3.47 With reference to Figure 10 Detail H, protect and stow the power supply connectors PS24P2, PS24P6 and PS24P7 as described in the following procedure:

3.47.1 Apply the applicable protective cap on the connector.

3.47.2 Cover with nomex fiber sleeves P/N A582A32 and use tie straps P/N 900004953 to firmly tie down the sleeves on the connector.

3.48 With reference to Figure 11 Detail L, protect and stow the video camera connector DS117P1 as described in the following procedure:

3.48.1 Apply the applicable protective cap on the connector.

3.48.2 Cover with nomex fiber sleeves P/N A582A32 and use tie straps P/N 900004953 to firmly tie down the sleeves on the connector.

4. In accordance with weight and balance changes, update the Chart A (see Rotorcraft Flight Manual, Part II, section 6).

5. Return the helicopter to flight configuration and record for compliance with Part I of this Service Bulletin on the helicopter logbook.

6. Send the attached compliance form to the following mail box:

engineering.support.lhd@leonardocompany.com

As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

PART II

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 1 and 4, gain access to the area affected by the installation and perform external camera structural provision P/N 3G5310A65911 as described in the following procedure:
   - 2.1 With reference to Figure 1 Detail A and Section B-B, drill n°4 holes Ø 10.31÷10.39 through left panel skin and honeycomb.
   - 2.2 In accordance with CSRP DM CSRP-A-51-42-00-00A-720A-D and with reference to Figure 1 Detail A and Section B-B, install n°4 inserts P/N SL10429-06-3S by means of adhesive EA934NA (C057).
   - 2.3 With reference to Figure 4, position the lower tool P/N 3G5310H65911A005A according to the existing pilot hole present on the longeron matching it with the existing structure hole. Secure the lower tool by means of locking pin A.
   - 2.4 With reference to Figure 2 view E and Figure 4, drill n°6 holes Ø 3.28÷3.35 through the longeron by means of lower tool P/N 3G5310H65911A005A.

NOTE

As a mandatory prerequisite for the use of upper tool,
lower tool has to be already installed.

   - 2.5 In accordance with applicable steps of AMP DM 39-A-52-44-01-00A-720A-A, temporarily locate the up leading edge fairing assy (360AL) on the proper installation position, by means of existing hardware.
   - 2.6 With reference to Figure 4, position the upper tool P/N 3G5310H13212A005A on the up leading edge fairing assy and assemble with lower tool by means of locking pin B.
   - 2.7 With reference to Figure 4, drill n°2 holes Ø 2.5 through the up leading edge fairing assy in the corresponding position of the upper tool locking pins B and C.
   - 2.8 With reference to Figure 4, secure the upper tool P/N 3G5310H13212A005A to the up leading edge fairing assy by means of locking pins C and D.
   - 2.9 With reference to Figure 4, drill n°6 pilot holes Ø 2.5 through the up leading edge fairing assy by means of the upper tool P/N 3G5310H13212A005A.
   - 2.10 With reference to Figure 4 and Figure 3 detail G, countermark the position of cut out on the up leading edge fairing assy by means of the upper tool P/N 3G5310H13212A005A.
   - 2.11 With reference to Figure 4, remove the upper tool.

2.12 In accordance with applicable steps of AMP DM 39-A-52-44-01-00A-520A-A, remove the up leading edge fairing assy.

2.13 With reference to Figure 4, remove the lower tool.

2.14 With reference to Figure 3 view G, perform the previously countermarked cut out on the up leading edge fairing assy.

2.15 With reference to Figure 3 section D-D, enlarge the n°8 previously performed pilot holes to Ø 4.90 ÷ 5.03 on up leading edge fairing assy.

2.16 With reference to Figure 3 section D-D and schematic section D-D, install the molding assy P/N 3G5315A32534 and the external molding P/N 3G5316A87851 by means of n°8 screws P/N AN525-10R11 and sealing compound Proseal 890B2 (C153).

2.17 With reference to Figure 2 detail C and View E, install video camera support assy P/N 3G5316A55231 on the longeron by means of rivets P/N NAS1720C5L3P.

3. In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 12 thru 20, gain access to the area affected by the installation and perform the external camera electrical provision P/N 4G9750A00312 as described in the following procedure:

3.1 With reference to Figure 14 view looking floor area LH side, remove existing grommet and install grommet P/N 999-1700-03-2.

3.2 With reference to Figure 15, at position n°1 install on existing hardware clamp P/N AW001CB02H by means of bracket MS9592-022, screw P/N NAS1801-3-8, nut P/N MS21042L3 and n°2 washers P/N NAS1149D0332J.

3.3 With reference to Figure 15, at position n°2 install on existing hardware clamp P/N AW001CB02H by means of spacer P/N NAS43DD3-60N and screw P/N NAS1802-3-24.

3.4 With reference to Figure 15, at positions n°3,4 and 5 install on existing hardware n°3 clamps P/N AW001CB02H by means of n°3 screws P/N NAS1190E3P20AK.

3.5 With reference to Figure 15, at position n°6 install on existing hardware clamp P/N AW001CB02H by means of spacer P/N NAS43DD3-45N and screw P/N NAS1802-3-22.

3.6 With reference to Figure 16, at position n°7 install grommet P/N 999-1700-03-1.

3.7 With reference to Figure 16, at position n°8 install cable support P/N A388A3E08C by means of adhesive EA9309.3NA (C021) and clamp P/N AW001CB02H by means of spacer P/N NAS43DD3-40N, washer P/N NAS1149D0332J and screw P/N NAS1190E3P16AK.

3.8 With reference to Figure 16, at position n°9 install adhesive rubber P/N A236A02AB and install cable support P/N A366A3E12C75 and clamp P/N AW001CB02H by means of spacer P/N NAS43DD3-15N, bracket P/N MS9592-027, n°2 nuts P/N MS21042L3, screw P/N NAS1802-3-8 and n°3 washers P/N NAS1149D0332J.

3.9 With reference to Figure 17, at position n°10 install on existing hardware clamp P/N AW001CB02H by means of spacer P/N NAS43DD3-35N and screw P/N NAS1190E3P14AK.

3.10 With reference to Figure 17, at positions n°11, 12 and 13 install n°3 supports P/N AW001CL000A-X3 by means of adhesive EA9309.3NA (C021).

3.11 With reference to Figure 17, at position n°14 install on existing hardware clamp P/N AW001CB03H by means of spacer P/N NAS43DD3-40N and screw P/N NAS1190E3P14K.

3.12 With reference to Figure 17, at positions n°15 and 16, install on existing hardware n°2 clamps P/N AW001CB03H.

3.13 With reference to Figure 17, at position n°17 install on existing hardware clamp P/N AW001CB03H by means of spacer P/N NAS43DD3-40N and screw P/N NAS1190E3P14AK.

3.14 With reference to Figure 18, at position n°18 install on existing hardware clamp P/N AW001CB03H by means of spacer P/N NAS43DD3-45N and screw P/N NAS1801-3-28.

3.15 With reference to Figure 18, at position n°19 install adhesive stud P/N A388A3E08C75 by means of adhesive EA9309.3NA (C021) and clamp P/N AW001CB03H by means of spacer P/N NAS43DD3-90N, screw P/N NAS1190E3P28AK and washer P/N NAS1149D0332J.

3.16 With reference to Figure 18, at position n°20 install adhesive stud P/N A388A3E08C75 by means of adhesive EA9309.3NA (C021) and clamp P/N AW001CB03H by means of spacer P/N NAS43DD3-60N, screw P/N NAS1190E3P20AK and washer P/N NAS1149D0332J.

3.17 With reference to Figure 18, at positions n°21, 22, 23, 24, 25 and n°26 install on existing hardware n°6 clamp AW001CB05H by means of n°6 screws P/N NAS1190E3P7AK.

3.18 With reference to Figure 19, at position n°27 remove existing clamp and install on existing hardware clamp P/N AW001CB05H.

3.19 With reference to Figure 19, at positions n°28 and 29 install n°2 supports P/N AW001CL509-N6 by means of adhesive EA9309.3NA (C021).

3.20 With reference to Figure 19, at position n°30 install n°1 supports P/N AW001CL002A-X1 by means of adhesive EA9309.3NA (C021).

3.21 With reference to Figures 12 thru 20 lay down the following cable assemblies following the existing route unless otherwise indicated on the figures:

- External video camera P/N 3G9B01A35901 (B1A359);
- External video camera P/N 3G9C01A23701 (C1A237);
- External video camera P/N 3G9C03A20601 (C3A206);
- External video camera P/N 3G9D02A20401 (D2A204).

Secure the cable by means of existing hardware and lacing cord.

3.22 With reference to Figure 20, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A B1A359 between sectioning connector J213 and circuit breaker panel connector PL1P1.

3.23 With reference to Figure 16, Figure 17, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A C1A237 between:

- terminal board TB315;
- ground terminal by means of terminal lug P/N MS25036-108, metallic band P/N A10099, tubular metal braid P/N A575A-107, shield support ring P/N M85049/93-04 and tubular braid A582A08;
- power supply connector PS24P6 by means of tubular metal braid P/N A575A-107 and tubular braid A582A08;
- sectioning connector P213.

3.24 With reference to Figures 13 thru 17, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A C3A206 between MAU 1 connector A1-3P3 and power supply connector PS24P2.

3.25 With reference to Figure 17 thru 19, Figure 24 and Figure 23 wiring diagram, perform the electrical connection of C/A D2A204 between:

- video camera connector DS117P1 by means of heat shrinkable tubing P/N M23053/5-107-0, screened boot 222S121-25S and adhesives S1125 and S1184;
- power supply connector PS24P7.

3.26 Modify the auxiliary CB panel on the overhead panel, as described in the following procedure:

NOTE

Customer must contact AW139 PSE at least 3 months in advance of embodiment date of this Service Bulletin in order to collect the exact W/D applicable to helicopter configuration.

3.26.1 With reference to AMP DM 39-A-24-91-04-00A-920A-K, remove from the Overhead CB panel the existing integrally-lighted panel and install the new integrally- lighted panel P/N 3G2490LXXXXX.

3.26.2 In accordance with AMP DM 39-A-11-00-01-00A-720A-A, install n°1 circuit breaker P/N MS3320-1 in “EXTERNAL VIDEO CAMERA” position, on the new integrally- lighted panel P/N 3G2490LXXXX. Apply decal P/N ED300CB202 in an adjacent area.

3.26.3 In accordance with AMP DM 39-A-11-00-01-00A-720A-A, install n°1 switch S137 P/N MS27722-23 and n°1 decal P/N ED300S137 in an adjacent area.

3.26.4 Perform electrical connection between switch S137 and overhead circuit breaker connector PL1J11 pin N, by means of electrical wire A556A-T22. Use electrical contact P/N M39029/1-102 for switch S137 and electrical contact P/N M39029/56-351 for sectioning connector PL1J11.

3.26.5 Perform electrical connection between switch S137 and CB202 by means of A556AT-22 wire. Use terminal lug P/N MS25036-149 for pin 2 of circuit breaker CB202 and electrical contact P/N M39029/1-102 for switch S137.

3.26.6 Perform electrical connection between CB202 to 28V DC Main Bus 1 W21A.

3.27 Perform a pin-to-pin continuity check of all the electrical connections previously performed.

NOTE

Perform the following step 3.28 and 3.29 only if Part III of this Service Bulletin is not intended to be embodied immediately after Part II, otherwise skip to step 4.

3.28 With reference to Figure 17 Detail B, protect and stow the power supply connectors PS24P2, PS24P6 and PS24P7 as described in the following procedure:

3.28.1 Apply the applicable protective cap on the connector.

3.28.2 Cover with nomex fiber sleeves P/N A582A32 and use tie straps P/N 900004953 to firmly tie down the sleeves on the connector.

3.29 With reference to Figure 19 Detail E, protect and stow the video camera connector DS117P1 as described in the following procedure:

3.29.1 Apply the applicable protective cap on the connector.

3.29.2 Cover with nomex fiber sleeves P/N A582A32 and use tie straps P/N 900004953 to firmly tie down the sleeves on the connector.

4. In accordance with weight and balance changes, update the Chart A (see Rotorcraft Flight Manual, Part II, section 6).
5. Return the helicopter to flight configuration and record for compliance with Part II of this Service Bulletin on the helicopter logbook.
6. Send the attached compliance form to the following mail box:

   engineering.support.lhd@leonardocompany.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

PART III

1. In accordance with AMP DM 39-A-00-20-00-00A-120A-A, prepare the helicopter on ground for a safe maintenance. Disconnect the battery, all electrical power sources and/or the external power supply.
2. In accordance with AMP DM 39-A-06-41-00-00A-010A-A and with reference to Figures 21 and 22, gain access to the area affected by the installation and perform the external video camera full installation P/N 4G9750A00111 as described in the following procedure:

NOTE

If the connectors DS117P1, PS24P2, PS24P6 and PS24P7 are protected and stowed, remove the sleeve and the protective plug (Refer to Figure 22 Detail D).

2.1 With reference to Figure 22 View A, install the power supply P/N RPS-77E by means of n°4 washers P/N NAS1149DN616J and n°4 screws P/N MS35206-226.

2.2 In accordance with AMP DM 39-A-11-00-01-00A-720A-A and with reference to Figure 22 View A, install decal P/N ED300PS24 in an area adjacent to previously installed power supply.

2.3 With reference to Figure 22 View B, install the video camera P/N RPC-651ER/3.0 on the video camera support assy P/N 3G5316A55231 by means of n°4 washers P/N NAS1149D0332J and n°4 screws P/N MS35207-265.

2.4 In accordance with AMP DM 39-A-11-00-01-00A-720A-A and with reference to Figure 22 View B, install decal P/N ED300DS117 in an area adjacent to previously installed video camera.

2.5 With reference to Figure 22 View A, connect the video camera connector DS117P1 to the video camera DS117.

2.6 With reference to Figure 22 View B, connect the power supply connectors PS24P2, PS24P6 and PS24P7 to the power supply PS24.

2.7 With reference to Figure 21 Detail C, gain access to the overhead circuit breaker panel and remove the lock ring P/N Y30700501 from the EXT VIEW CAMERA breaker.

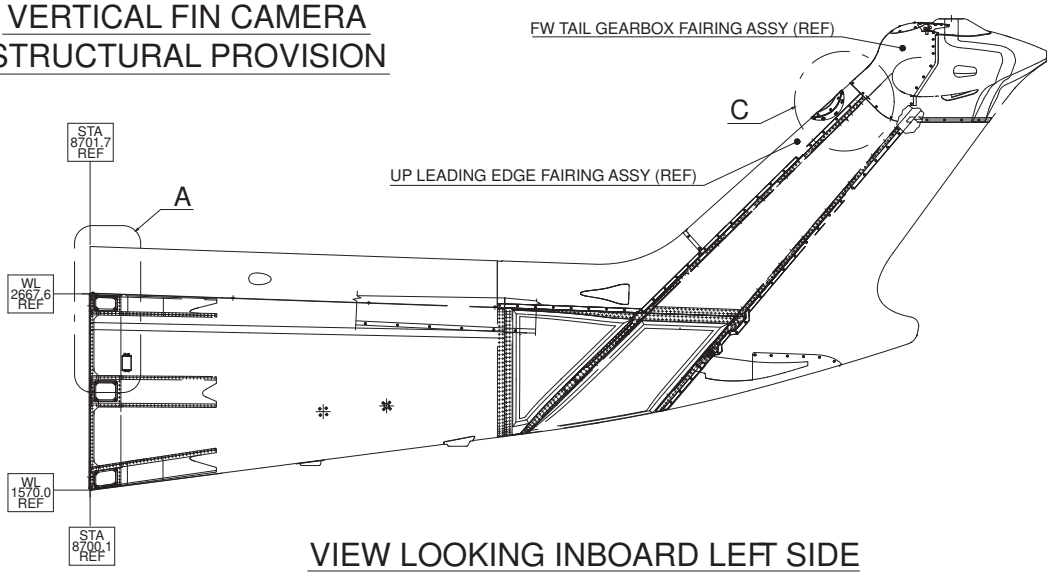
3. In accordance with Annex A, perform the acceptance test procedure for the external video camera system.
4. In accordance with weight and balance changes, update the Chart A (see Rotorcraft Flight Manual, Part II, section 6).
5. Return the helicopter to flight configuration and record for compliance with Part III of this Service Bulletin on the helicopter logbook.

6. Send the attached compliance form to the following mail box:

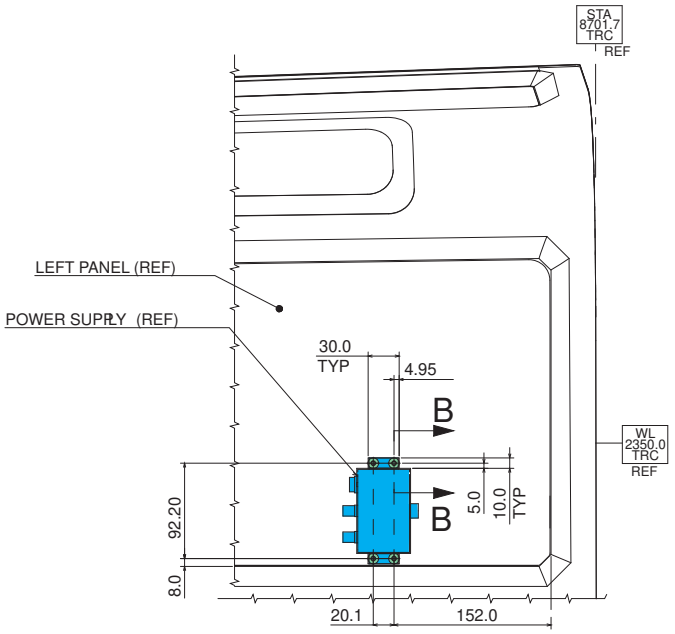
   engineering.support.lhd@leonardocompany.com

   As an alternative, gain access to My Communications section on Leonardo WebPortal and compile the “Service Bulletin Application Communication”.

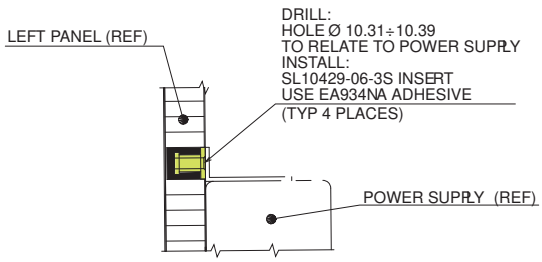
3G5310A65911
VERTICAL FIN CAMERA
STRUCTURAL PROVISION



VIEW LOOKING INBOARD LEFT SIDE

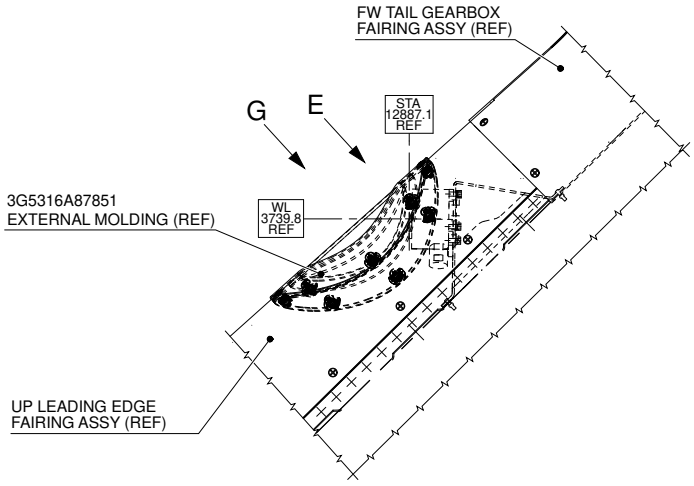


DETAIL A
LOOKING OUTBOARD LEFT SIDE
PANEL PLANE NORMAL DIRECTION



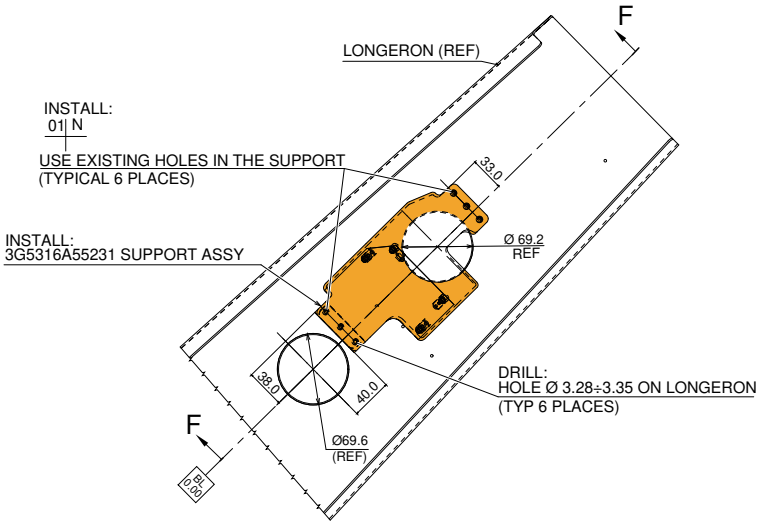
SECTION B-B
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 1



DETAIL C

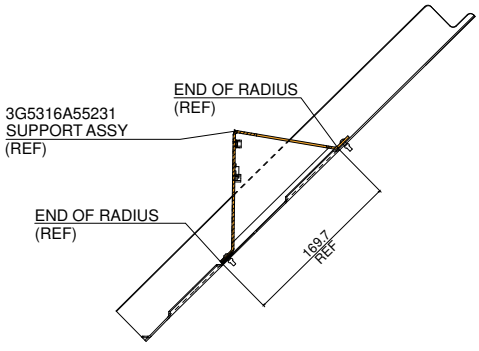
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE



RIVET REFERENCE TABLE	
REF. N°	RIVET P/N
01	NAS1720C5L3P
N	PRE-FORMED HEAD IS ON NEAR SIDE
F	PRE-FORMED HEAD IS ON FAR SIDE
▽	COUNTERSINK (100° ONLY) IS ON NEAR SIDE
△	COUNTERSINK (100° ONLY) IS ON FAR SIDE

VIEW E

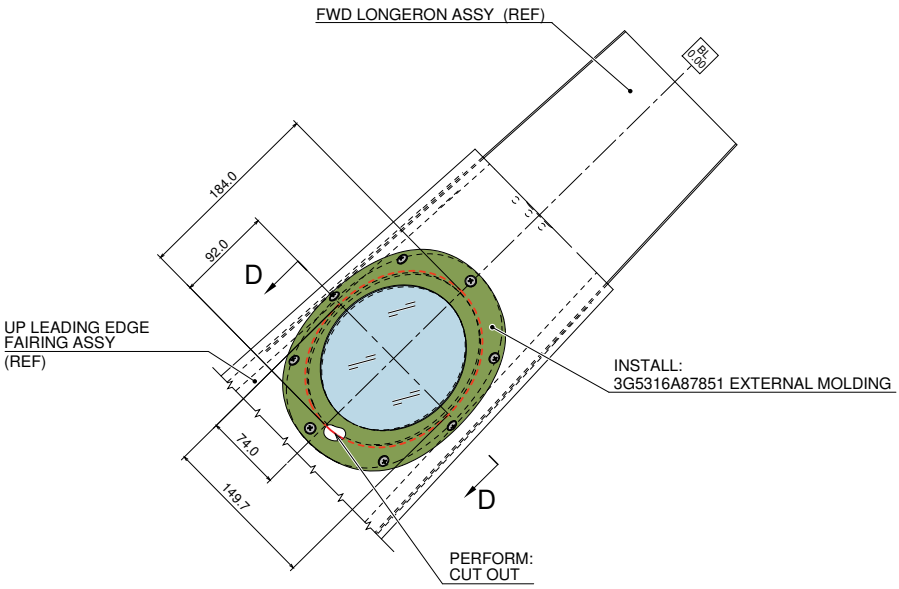
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE



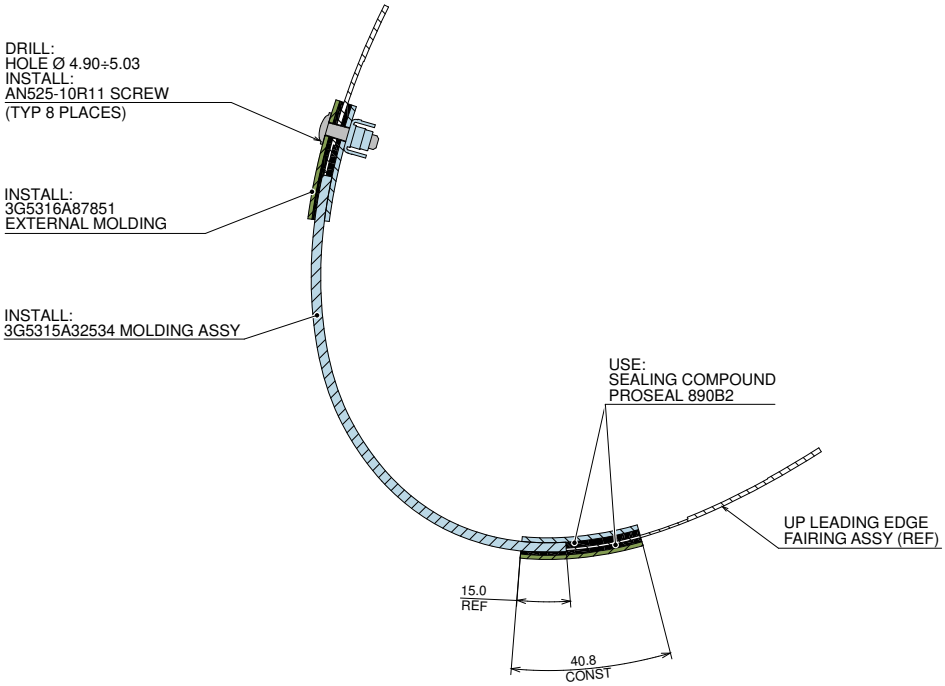
SECTION F-F

STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 2

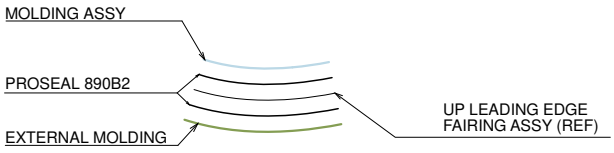


VIEW G



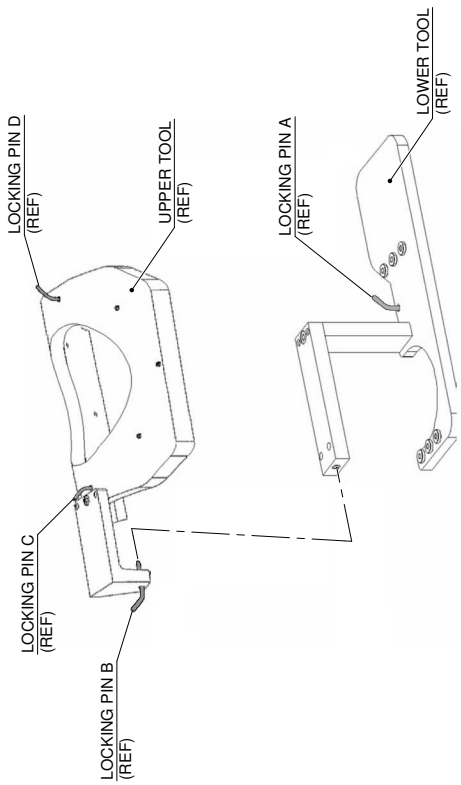
SECTION D-D

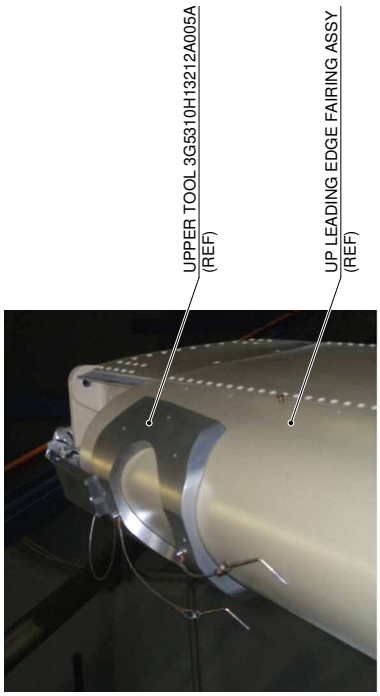
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE



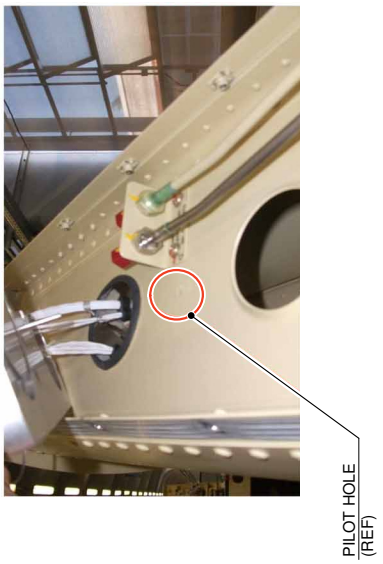
SCHEMATIC SECTION D-D

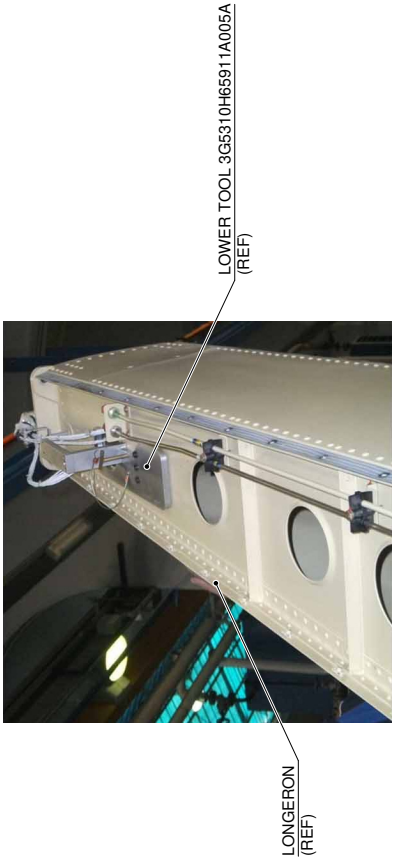
Figure 3





INSTALLATION OF UPPER TOOL





INSTALLATION OF LOWER TOOL

Figure 4

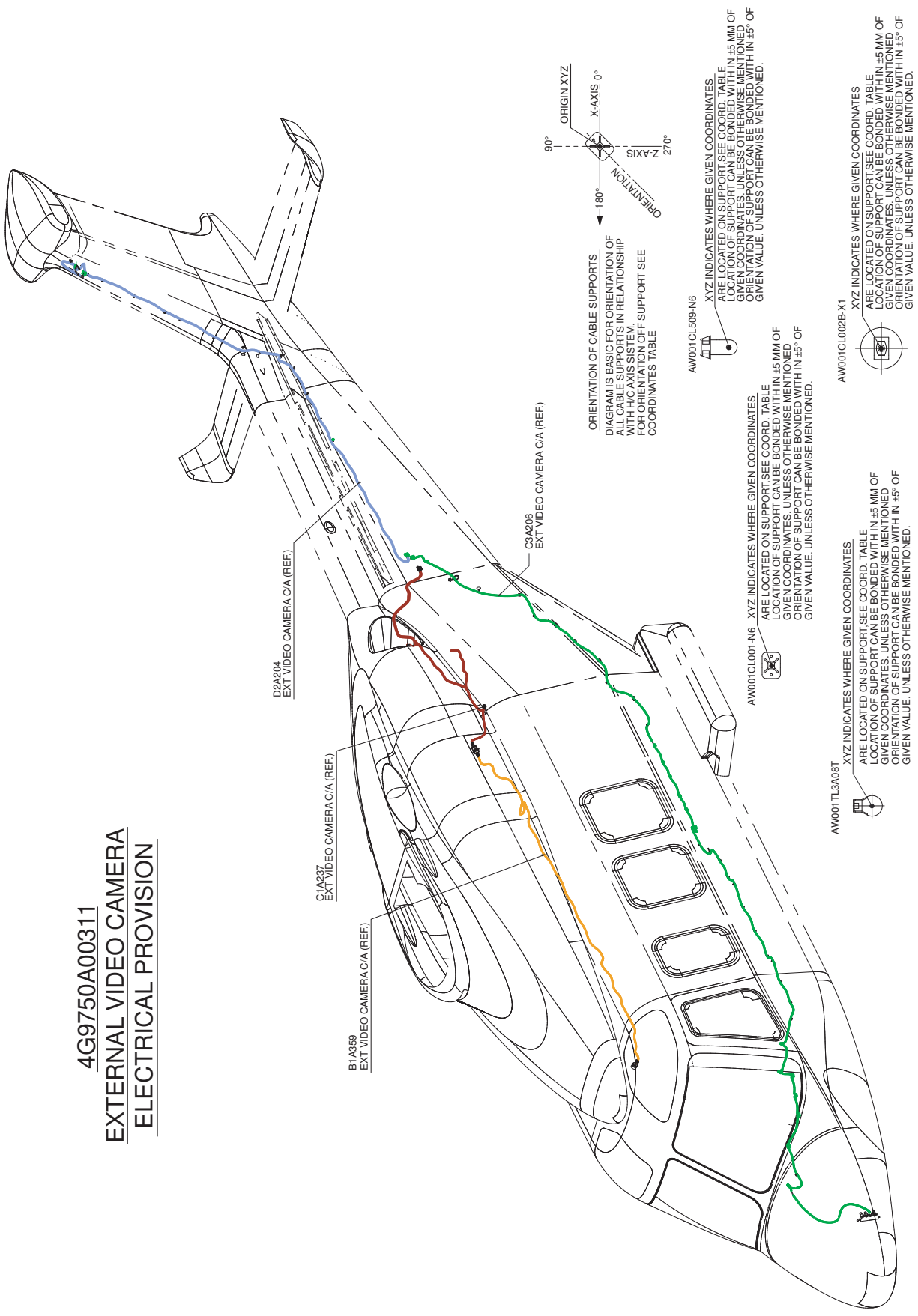
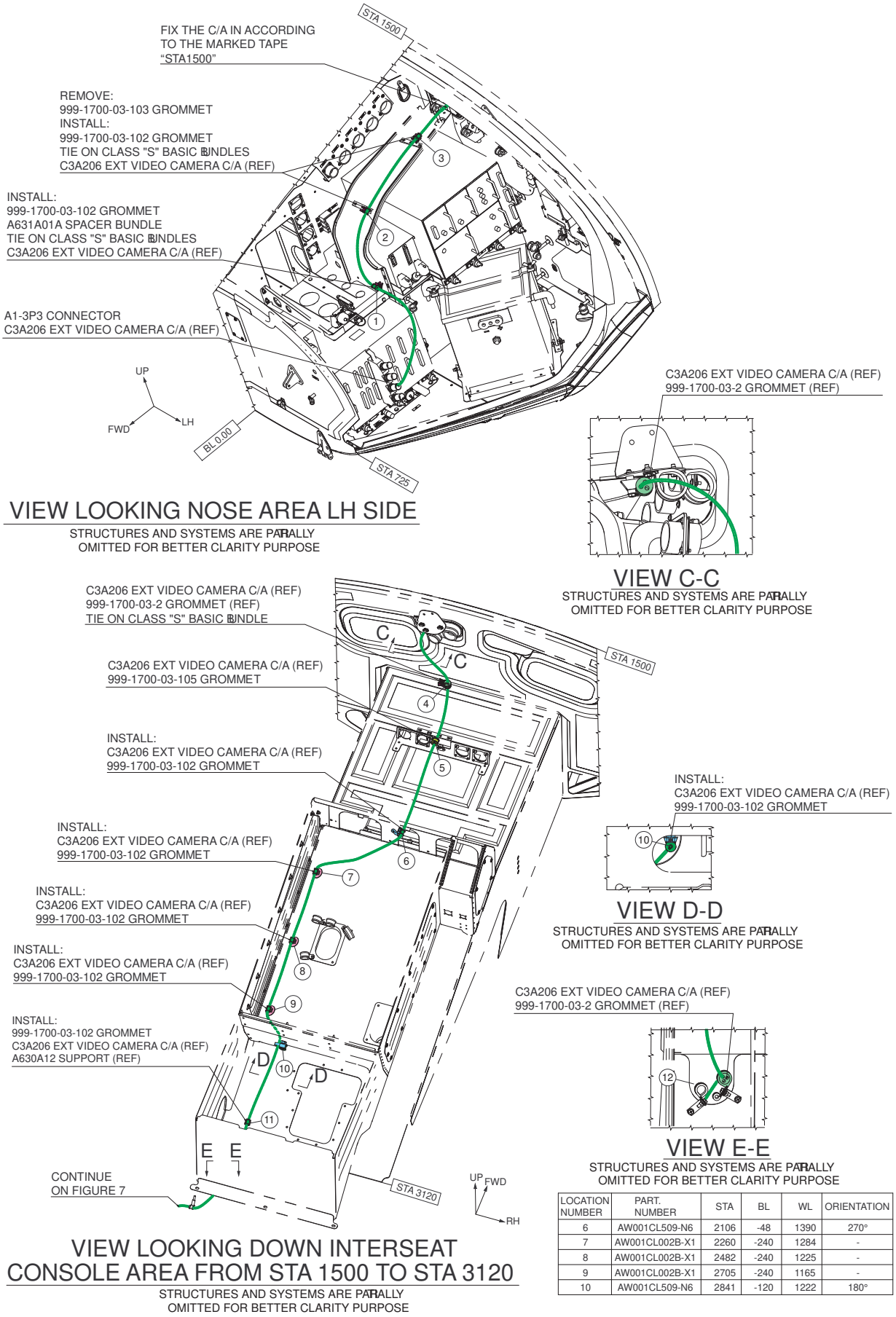

4G9750A00311
EXTERNAL VIDEO CAMERA
ELECTRICAL PROVISION
D2A204
EXT VIDEO CAMERA C/A (REF.)
C3A206
EXT VIDEO CAMERA C/A (REF.)
C1A237
EXT VIDEO CAMERA C/A (REF.)
B1A359
EXT VIDEO CAMERA C/A (REF.)
ORIGIN XYZ
X-AXIS 0°
Z-AXIS 270°
90°
180°
ORIENTATION
ORIENTATION OF CABLE SUPPORTS
DIAGRAM IS BASIC FOR ORIENTATION OF ALL CABLE SUPPORTS IN RELATIONSHIP WITH H/C AXIS SISTEM.
FOR ORIENTATION OFF SUPPORT SEE COORDINATES TABLE
AW001CL509-N6
XYZ INDICATES WHERE GIVEN COORDINATES ARE LOCATED ON SUPPORT.SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001CL001-N6
XYZ INDICATES WHERE GIVEN COORDINATES ARE LOCATED ON SUPPORT.SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001CL002B-X1
XYZ INDICATES WHERE GIVEN COORDINATES ARE LOCATED ON SUPPORT.SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001 TL3A08T
XYZ INDICATES WHERE GIVEN COORDINATES ARE LOCATED ON SUPPORT.SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF GIVEN VALUE. UNLESS OTHERWISE MENTIONED.

Figure 5



LOCATION NUMBER	PART. NUMBER	STA	BL	WL	ORIENTATION
6	AW001CL509-N6	2106	-48	1390	270°
7	AW001CL002B-X1	2260	-240	1284	-
8	AW001CL002B-X1	2482	-240	1225	-
9	AW001CL002B-X1	2705	-240	1165	-
10	AW001CL509-N6	2841	-120	1222	180°

Figure 6

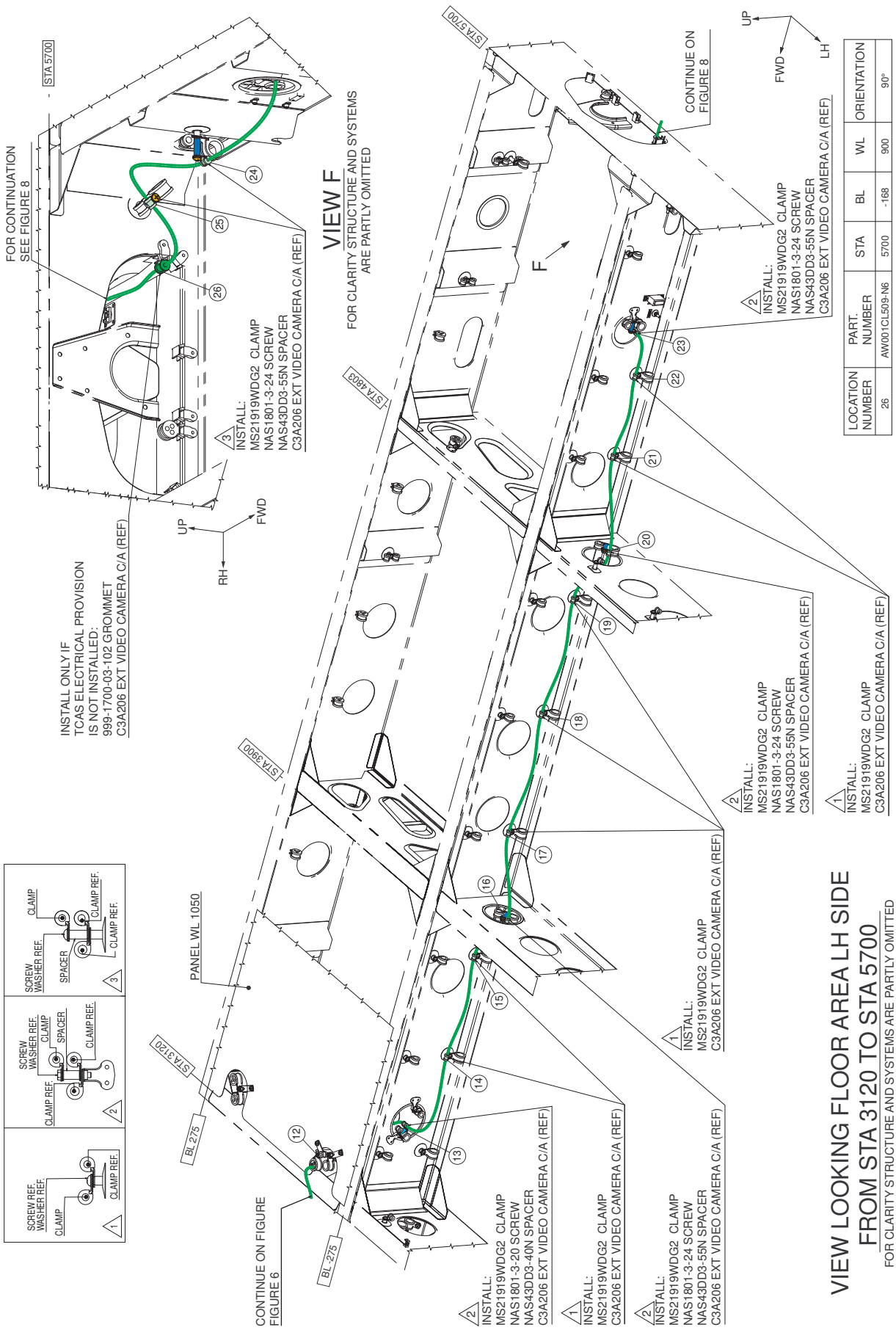
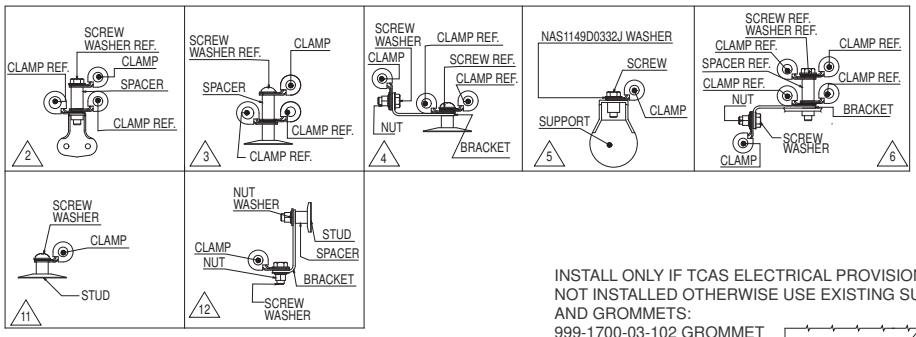
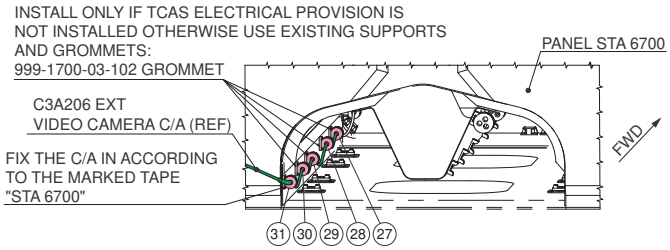

VIEW LOOKING FLOOR AREA LH SIDE
FROM STA 3120 TO STA 5700
FOR CLARITY STRUCTURE AND SYSTEMS ARE PARTLY OMITTED
VIEW F
FOR CLARITY STRUCTURE AND SYSTEMS
ARE PARTLY OMITTED
CONTINUE ON FIGURE 6
CONTINUE ON FIGURE 8
FOR CONTINUATION SEE FIGURE 8
INSTALL ONLY IF TCAS ELECTRICAL PROVISION IS NOT INSTALLED: 999-1700-03-102 GROMMET C3A206 EXT VIDEO CAMERA C/A (REF)
PANEL WL 1050
STA 3120
STA 3900
STA 4803
STA 5700
BL 275
BL -275
UP
FWD
RH
LH
F
SCREW REF.
WASHER REF.
CLAMP
CLAMP REF.
SPACER
INSTALL:
MS21919WDG2 CLAMP
NAS1801-3-20 SCREW
NAS43DD3-40N SPACER
C3A206 EXT VIDEO CAMERA C/A (REF)
INSTALL:
MS21919WDG2 CLAMP
NAS1801-3-24 SCREW
NAS43DD3-55N SPACER
C3A206 EXT VIDEO CAMERA C/A (REF)
INSTALL:
MS21919WDG2 CLAMP
C3A206 EXT VIDEO CAMERA C/A (REF)
LOCATION NUMBER
PART. NUMBER
STA
BL
WL
ORIENTATION
26
AW001CL509-N6
5700
-168
900
90°

Figure 7

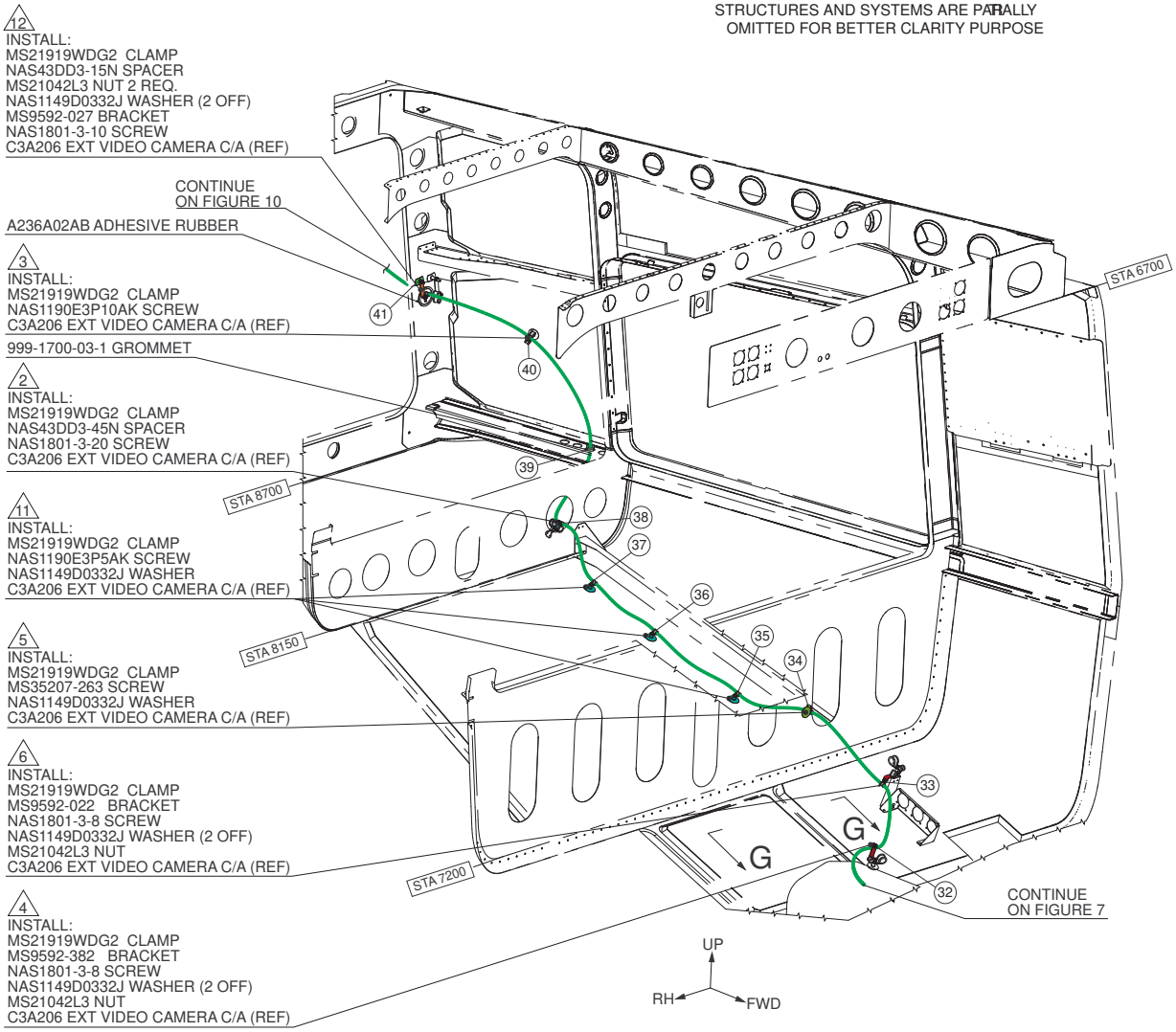


LOCATION NUMBER	PART. NUMBER	STA	BL	WL	ORIENTATION
27	AW001CL001-N6	5920	-154	882	90°
28	AW001CL001-N6	6080	-154	882	90°
29	AW001CL001-N6	6320	-154	882	90°
30	AW001CL001-N6	6480	-154	882	90°
31	AW001CL001-N6	6685	-154	882	90°
34	AW001TL3A08	7200	-401	1189	90°
35	A388A3E08C	7492	-407	1138	-
36	A388A3E08C	7785	-365	1246	-
37	A388A3E08C	8010	-345	1330	-
41	A366A3E12C75	8698	-315	2050	-



VIEW G-G

STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE



VIEW LOOKING DOWN REAR AREA LH SIDE

STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 8

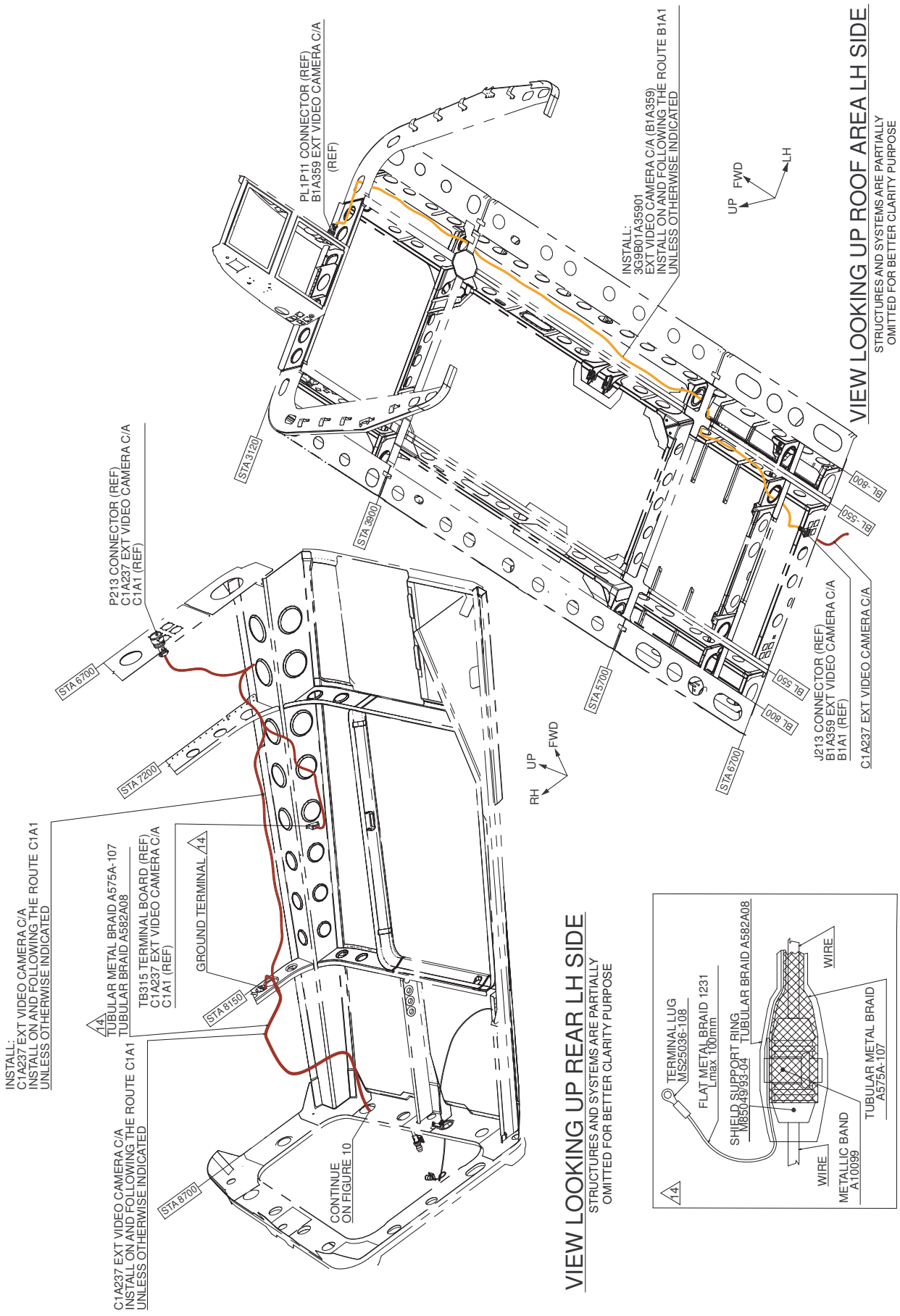
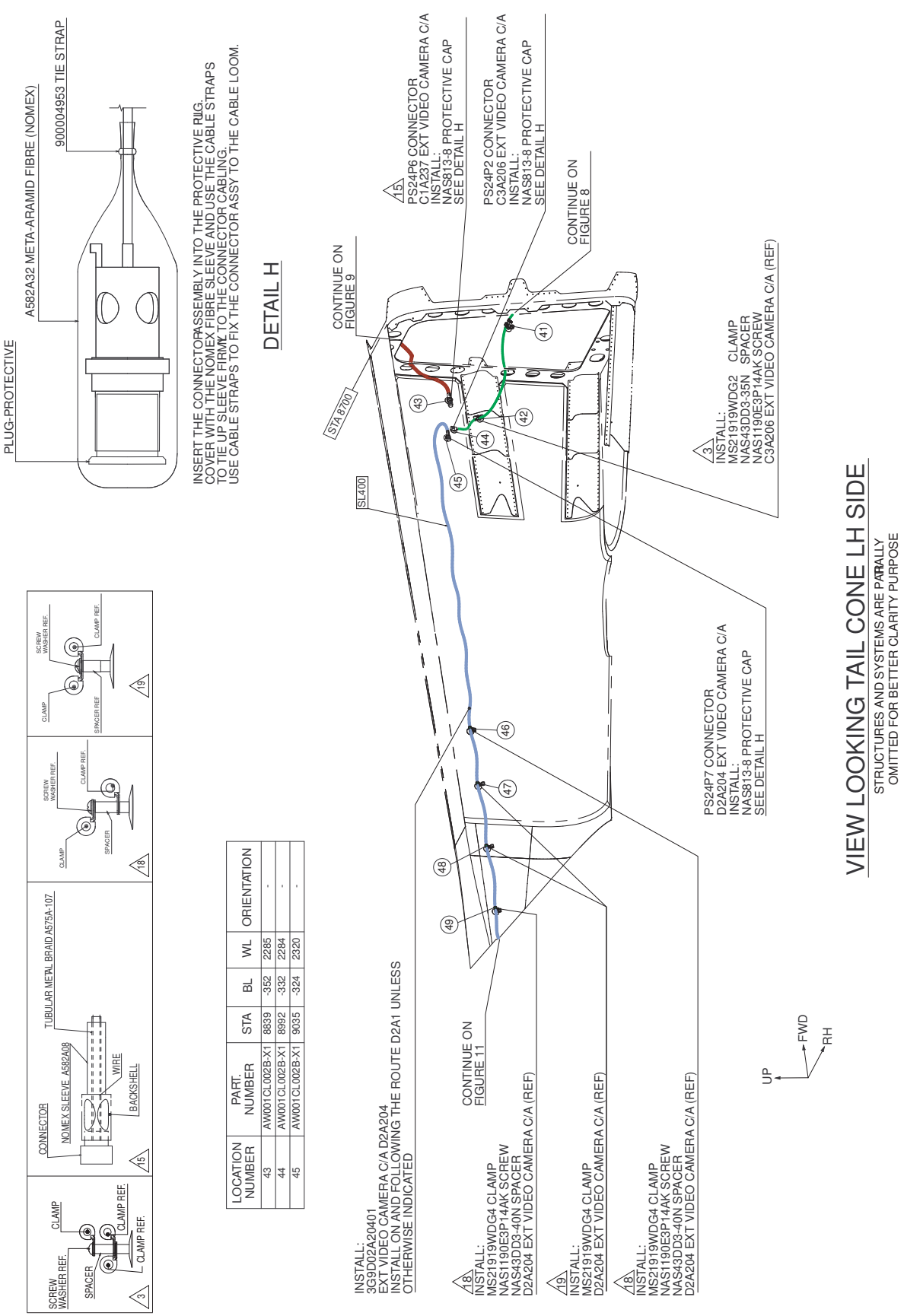

VIEW LOOKING UP ROOF AREA LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
PL1P11 CONNECTOR (REF)
B1A359 EXT VIDEO CAMERA C/A
(REF)
INSTALL:
3G9B01A35901
EXT VIDEO CAMERA C/A (B1A359)
INSTALL ON AND FOLLOWING THE ROUTE B1A1
UNLESS OTHERWISE INDICATED
UP FWD LH
STA 3120
STA 3900
STA 5700
STA 6700
BL -600
BL -550
BL 550
BL 600
J213 CONNECTOR (REF)
B1A359 EXT VIDEO CAMERA C/A
B1A1 (REF)
C1A237 EXT VIDEO CAMERA C/A
P213 CONNECTOR (REF)
C1A237 EXT VIDEO CAMERA C/A
C1A1 (REF)
STA 6700
STA 7200
STA 8700
UP FWD RH
VIEW LOOKING UP REAR LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
INSTALL:
C1A237 EXT VIDEO CAMERA C/A
INSTALL ON AND FOLLOWING THE ROUTE C1A1
UNLESS OTHERWISE INDICATED
TUBULAR METAL BRAID A575A-107
TUBULAR BRAID A582A08
TB315 TERMINAL BOARD (REF)
C1A237 EXT VIDEO CAMERA C/A
C1A1 (REF)
GROUND TERMINAL
STA 8150
C1A237 EXT VIDEO CAMERA C/A
INSTALL ON AND FOLLOWING THE ROUTE C1A1
UNLESS OTHERWISE INDICATED
CONTINUE
ON FIGURE 10
TERMINAL LUG
MS25036-108
FLAT METAL BRAID 1231
Lmax 100mm
SHIELD SUPPORT RING
M85049/93-04
TUBULAR BRAID A582A08
WIRE
WIRE
METALLIC BAND
A10099
TUBULAR METAL BRAID
A575A-107

Figure 9



LOCATION NUMBER	PART NUMBER	STA	BL	WL	ORIENTATION
43	AW001CL002B-X1	8839	-352	2285	-
44	AW001CL002B-X1	8992	-332	2284	-
45	AW001CL002B-X1	9035	-324	2320	-

Figure 10

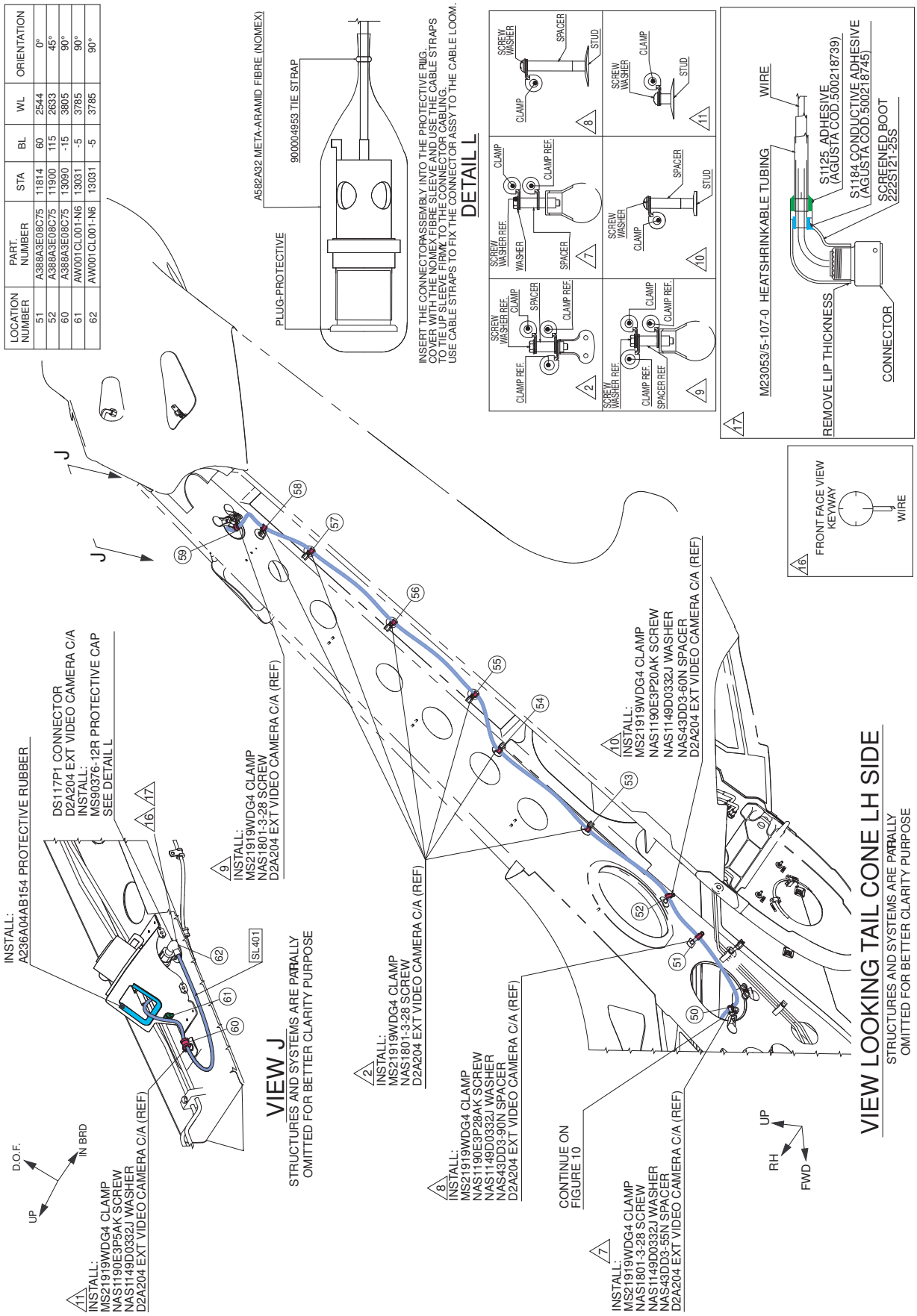

LOCATION NUMBER | PART NUMBER | STA | BL | WL | ORIENTATION
51 | A388A3E08C75 | 11814 | 60 | 2544 | 0°
52 | A388A3E08C75 | 11900 | 115 | 2633 | 45°
60 | A388A3E08C75 | 13090 | -15 | 3805 | 90°
61 | AW001CL001-N6 | 13031 | -5 | 3785 | 90°
62 | AW001CL001-N6 | 13031 | -5 | 3785 | 90°
A582A32 META-ARAMID FIBRE (NOMEX)
900004953 TIE STRAP
PLUG-PROTECTIVE
INSERT THE CONNECTOR ASSEMBLY INTO THE PROTECTIVE PLUG. COVER WITH THE NOMEX FIBRE SLEEVE AND USE THE CABLE STRAPS TO TIE UP SLEEVE FIRMLY TO THE CONNECTOR CABLING. USE CABLE STRAPS TO FIX THE CONNECTOR ASSY TO THE CABLE LOOM.
DETAIL L
M23053/5-107-0 HEATSHRINKABLE TUBING
WIRE
S1125 ADHESIVE (AGUSTA COD.500218739)
S1184 CONDUCTIVE ADHESIVE (AGUSTA COD.500218745)
REMOVE LIP THICKNESS
SCREENED BOOT 222ST121-2S
CONNECTOR
FRONT FACE VIEW KEYWAY
WIRE
INSTALL: A236A04AB154 PROTECTIVE RUBBER
DS117P1 CONNECTOR D2A204 EXT VIDEO CAMERA C/A INSTALL: MS90376-12R PROTECTIVE CAP SEE DETAIL L
INSTALL: MS21919WDG4 CLAMP NAS1801-3-28 SCREW D2A204 EXT VIDEO CAMERA C/A (REF)
INSTALL: MS21919WDG4 CLAMP NAS1801-3-28 SCREW D2A204 EXT VIDEO CAMERA C/A (REF)
INSTALL: MS21919WDG4 CLAMP NAS1190E3P20AK SCREW NAS1149D0332J WASHER NAS43DD3-60N SPACER D2A204 EXT VIDEO CAMERA C/A (REF)
INSTALL: MS21919WDG4 CLAMP NAS1190E3P28AK SCREW NAS1149D0332J WASHER NAS43DD3-90N SPACER D2A204 EXT VIDEO CAMERA C/A (REF)
INSTALL: MS21919WDG4 CLAMP NAS1801-3-28 SCREW NAS1149D0332J WASHER NAS43DD3-55N SPACER D2A204 EXT VIDEO CAMERA C/A (REF)
INSTALL: MS21919WDG4 CLAMP NAS1190E3P5AK SCREW NAS1149D0332J WASHER D2A204 EXT VIDEO CAMERA C/A (REF)
VIEW J
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
CONTINUE ON FIGURE 10
VIEW LOOKING TAIL CONE LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
D.O.F.
UP
IN BRD
UP
RH
FWD

Figure 11

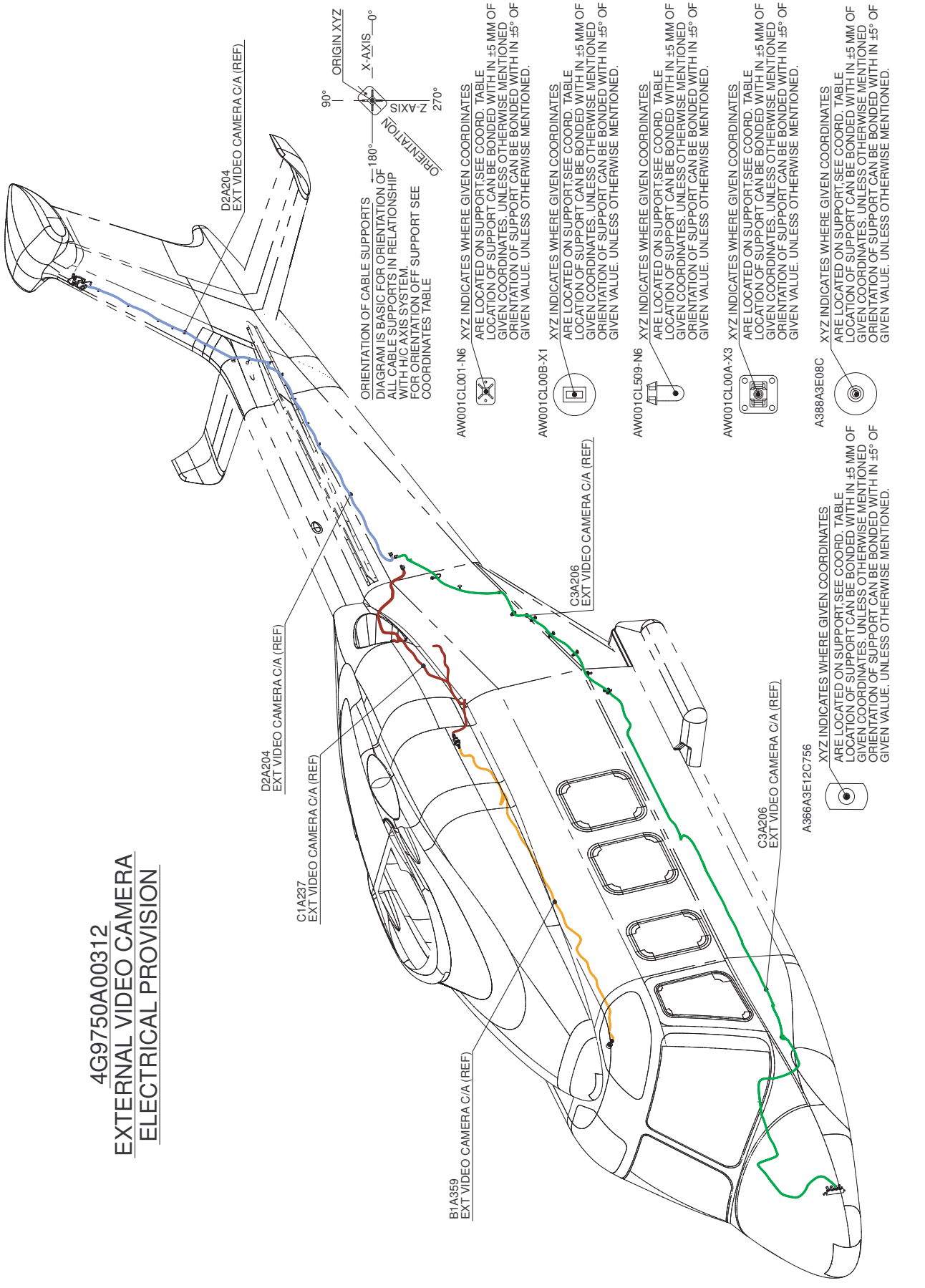

4G9750A00312
EXTERNAL VIDEO CAMERA
ELECTRICAL PROVISION
D2A204
EXT VIDEO CAMERA C/A (REF)
ORIGIN XYZ
X-AXIS
Z-AXIS
ORIENTATION
90°
180°
270°
0°
ORIENTATION OF CABLE SUPPORTS
DIAGRAM IS BASIC FOR ORIENTATION OF
ALL CABLE SUPPORTS IN RELATIONSHIP
WITH H/C AXIS SYSTEM.
FOR ORIENTATION OFF SUPPORT SEE
COORDINATES TABLE
AW001CL001-N6
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001CL00B-X1
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001CL509-N6
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
AW001CL00A-X3
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
A388A3E08C
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
A366A3E12C756
XYZ INDICATES WHERE GIVEN COORDINATES
ARE LOCATED ON SUPPORT,SEE COORD. TABLE
LOCATION OF SUPPORT CAN BE BONDED WITH IN ±5 MM OF
GIVEN COORDINATES. UNLESS OTHERWISE MENTIONED
ORIENTATION OF SUPPORT CAN BE BONDED WITH IN ±5° OF
GIVEN VALUE. UNLESS OTHERWISE MENTIONED.
C3A206
EXT VIDEO CAMERA C/A (REF)
C1A237
EXT VIDEO CAMERA C/A (REF)
B1A359
EXT VIDEO CAMERA C/A (REF)

Figure 12

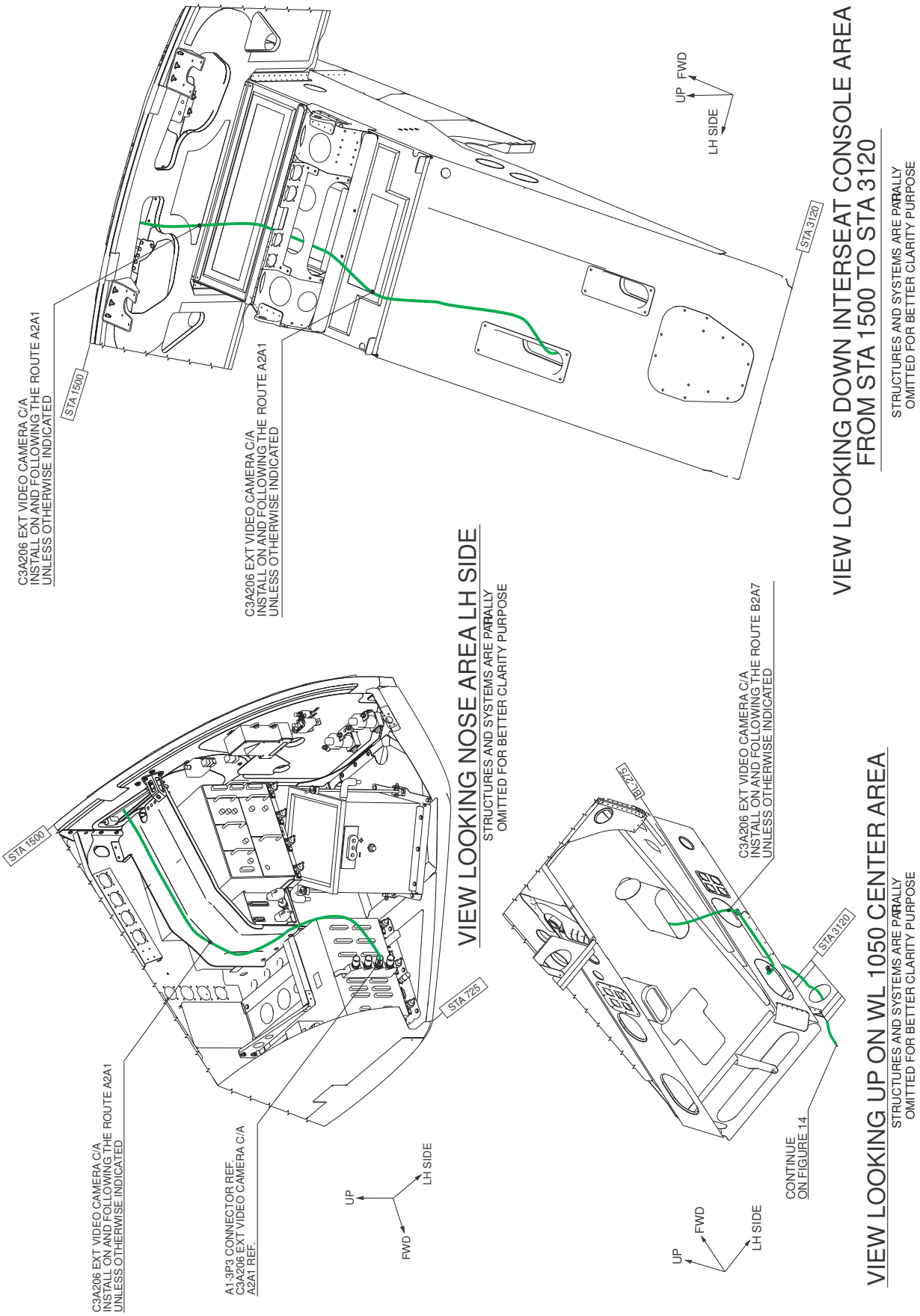

VIEW LOOKING DOWN INTERSEAT CONSOLE AREA FROM STA 1500 TO STA 3120
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
C3A206 EXT VIDEO CAMERA C/A INSTALL ON AND FOLLOWING THE ROUTE A2A1 UNLESS OTHERWISE INDICATED
STA 1500
STA 3120
UP FWD
LH SIDE
VIEW LOOKING NOSE AREA LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
C3A206 EXT VIDEO CAMERA C/A INSTALL ON AND FOLLOWING THE ROUTE A2A1 UNLESS OTHERWISE INDICATED
A1-3P3 CONNECTOR REF. C3A206 EXT VIDEO CAMERA C/A A2A1 REF.
STA 725
UP
FWD
LH SIDE
VIEW LOOKING UP ON WL 1050 CENTER AREA
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
C3A206 EXT VIDEO CAMERA C/A INSTALL ON AND FOLLOWING THE ROUTE B2A7 UNLESS OTHERWISE INDICATED
STA 3120
CONTINUE ON FIGURE 14
UP
FWD
LH SIDE

Figure 13

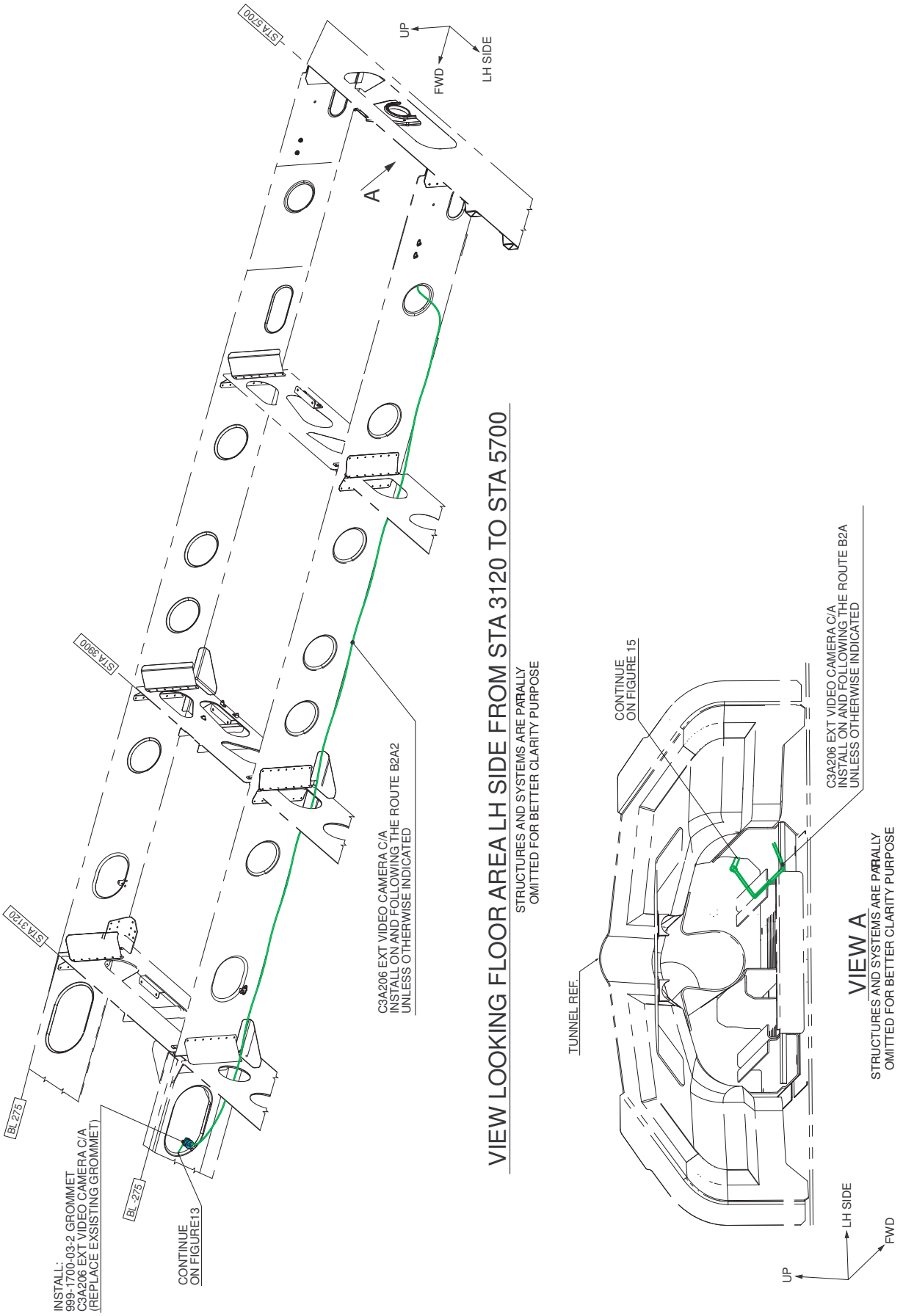
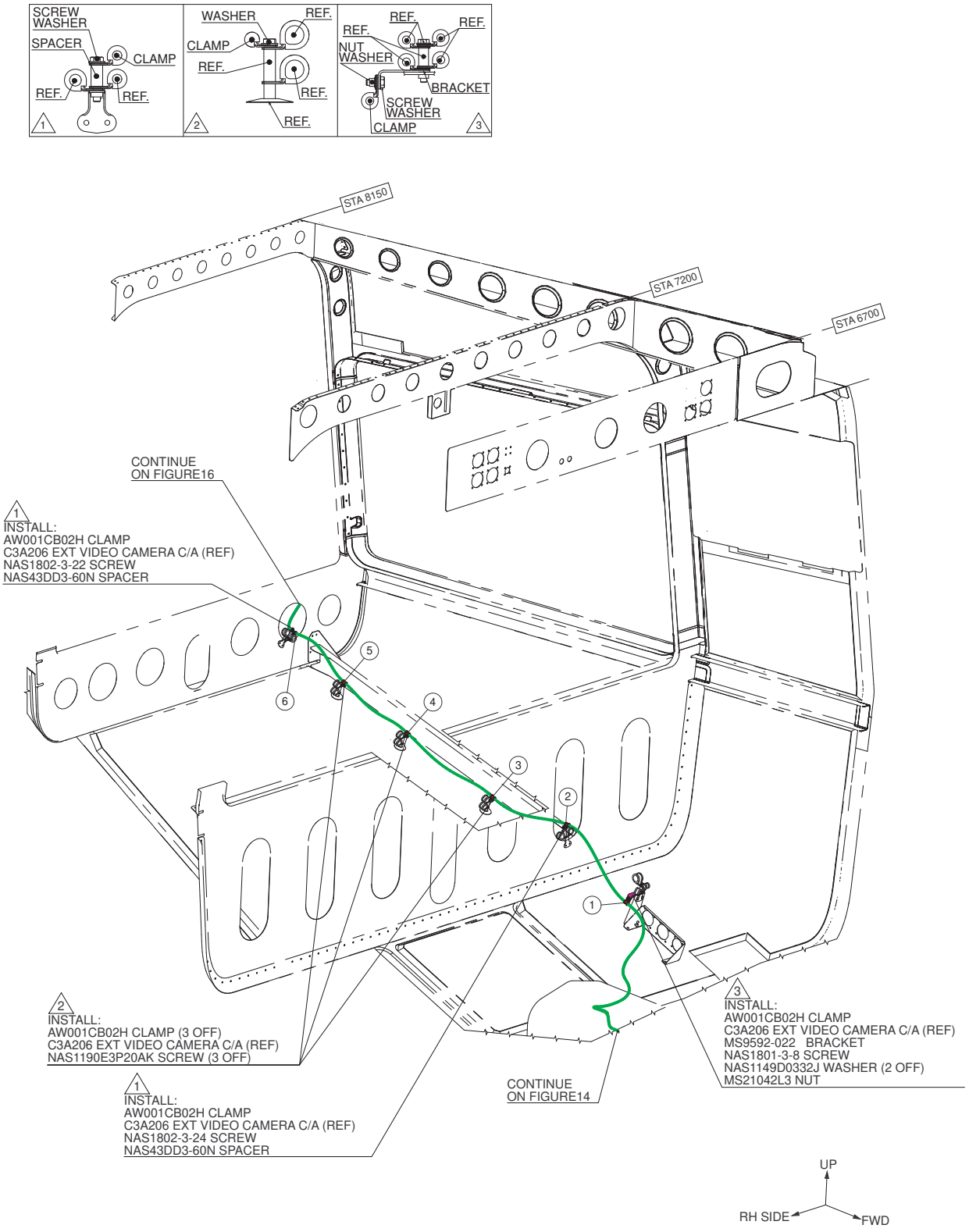

STA 5700
UP
FWD
LH SIDE
A
STA 3900
STA 3120
BL 275
BL 275
INSTALL:
999-1700-03-2 GROMMET
C3A206 EXT VIDEO CAMERA C/A
(REPLACE EXSISTING GROMMET)
CONTINUE
ON FIGURE13
C3A206 EXT VIDEO CAMERA C/A
INSTALL ON AND FOLLOWING THE ROUTE B2A2
UNLESS OTHERWISE INDICATED
VIEW LOOKING FLOOR AREA LH SIDE FROM STA 3120 TO STA 5700
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE
CONTINUE
ON FIGURE 15
TUNNEL REF.
C3A206 EXT VIDEO CAMERA C/A
INSTALL ON AND FOLLOWING THE ROUTE B2A
UNLESS OTHERWISE INDICATED
VIEW A
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE
UP
LH SIDE
FWD

Figure 14



VIEW LOOKING DOWN REAR AREA LH SIDE

STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 15

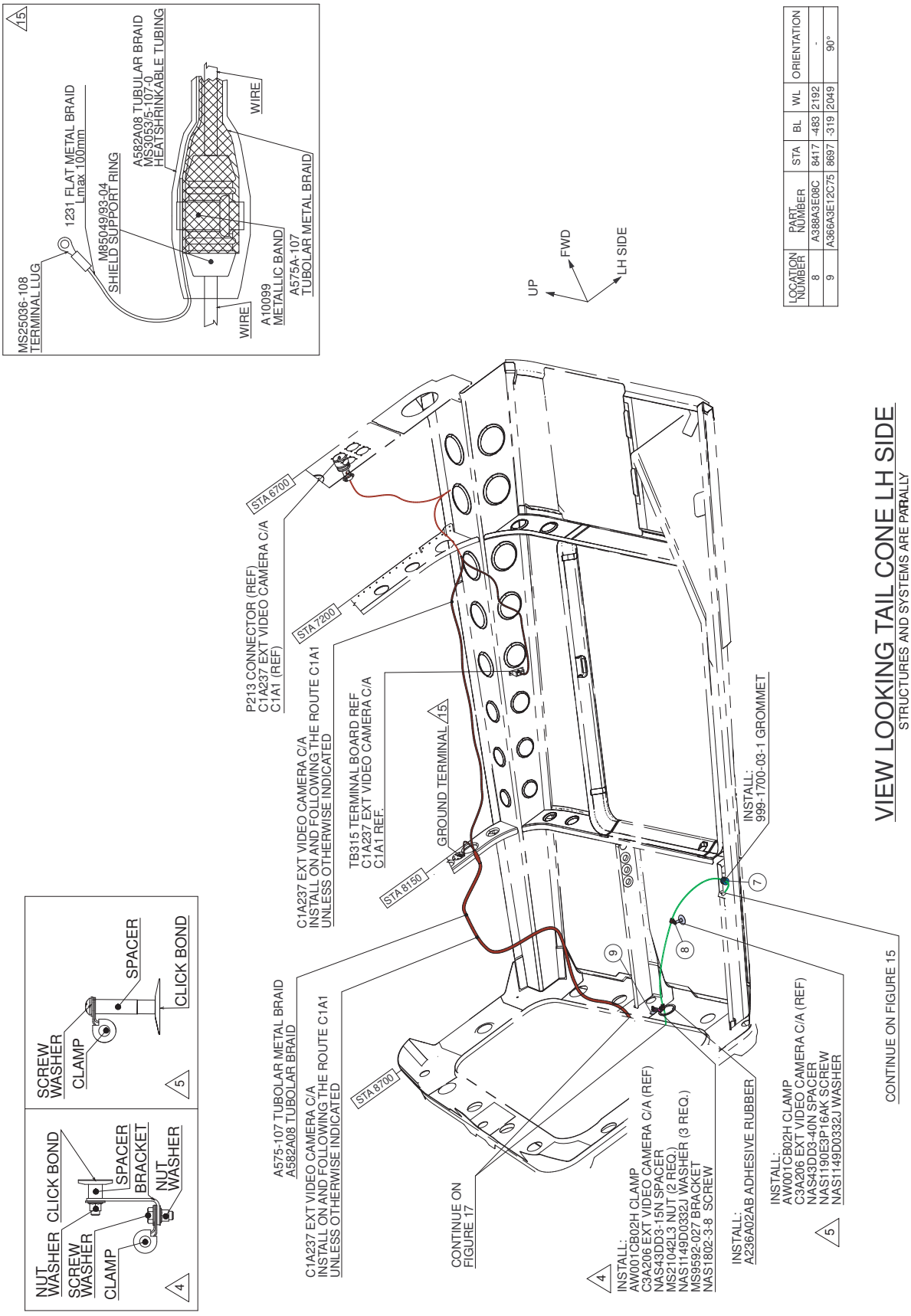
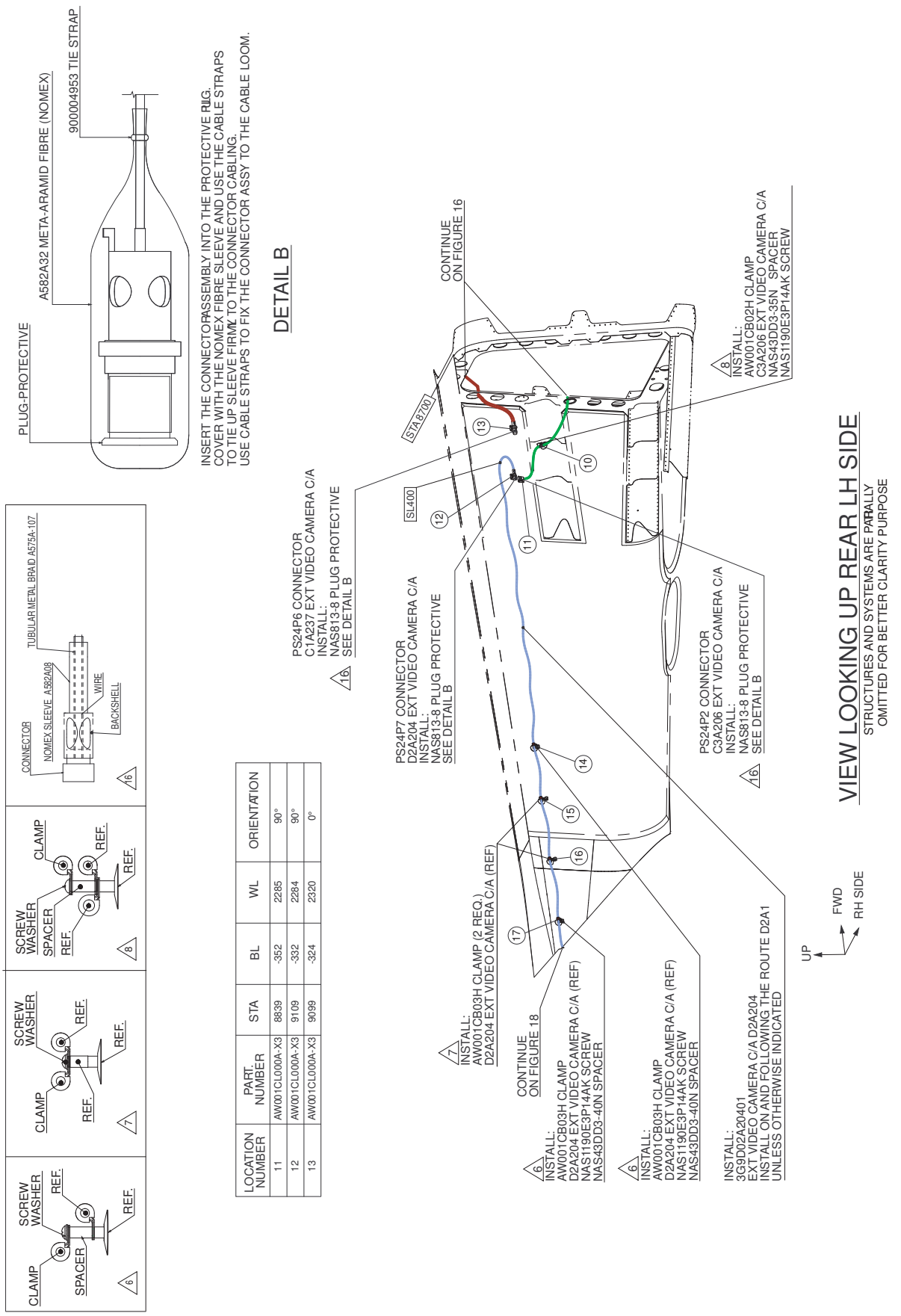

VIEW LOOKING TAIL CONE LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
UP
FWD
LH SIDE
LOCATION NUMBER
PART NUMBER
STA
BL
WL
ORIENTATION
8
A388A3E08C
8417
-483
2192
-
9
A366A3E12C75
8697
-319
2049
90°
15
MS25036-108 TERMINAL LUG
1231 FLAT METAL BRAID max 100mm
M85049/93-04 SHIELD SUPPORT RING
A582A08 TUBULAR BRAID MS3053/5-107-0 HEATSHRINKABLE TUBING
WIRE
A10099 METALLIC BAND
A575A-107 TUBOLAR METAL BRAID
WIRE
P213 CONNECTOR (REF) C1A237 EXT VIDEO CAMERA C/A C1A1 (REF)
STA 6700
STA 7200
C1A237 EXT VIDEO CAMERA C/A INSTALL ON AND FOLLOWING THE ROUTE C1A1 UNLESS OTHERWISE INDICATED
TB315 TERMINAL BOARD REF C1A237 EXT VIDEO CAMERA C/A C1A1 REF.
GROUND TERMINAL 15
STA 8150
INSTALL: 999-1700-03-1 GROMMET
A575-107 TUBOLAR METAL BRAID A582A08 TUBOLAR BRAID
C1A237 EXT VIDEO CAMERA C/A INSTALL ON AND FOLLOWING THE ROUTE C1A1 UNLESS OTHERWISE INDICATED
STA 8700
CONTINUE ON FIGURE 17
CONTINUE ON FIGURE 15
4
INSTALL: AW001CB02H CLAMP C3A206 EXT VIDEO CAMERA C/A (REF) NAS43DD3-15N SPACER MS21042L3 NUT (2 REQ.) NAS1149D0332J WASHER (3 REQ.) MS9592-027 BRACKET NAS1802-3-8 SCREW
INSTALL: A236A02AB ADHESIVE RUBBER
5
INSTALL: AW001CB02H CLAMP C3A206 EXT VIDEO CAMERA C/A (REF) NAS43DD3-40N SPACER NAS1190E3P16AK SCREW NAS1149D0332J WASHER
NUT
WASHER
CLICK BOND
SCREW
WASHER
CLAMP
SPACER
BRACKET
NUT
WASHER
4
SCREW
WASHER
CLAMP
SPACER
CLICK BOND
5

Figure 16



LOCATION NUMBER	PART NUMBER	STA	BL	WL	ORIENTATION
11	AW001CL000A-X3	8839	-352	2285	90°
12	AW001CL000A-X3	9109	-332	2284	90°
13	AW001CL000A-X3	9099	-324	2320	0°

Figure 17

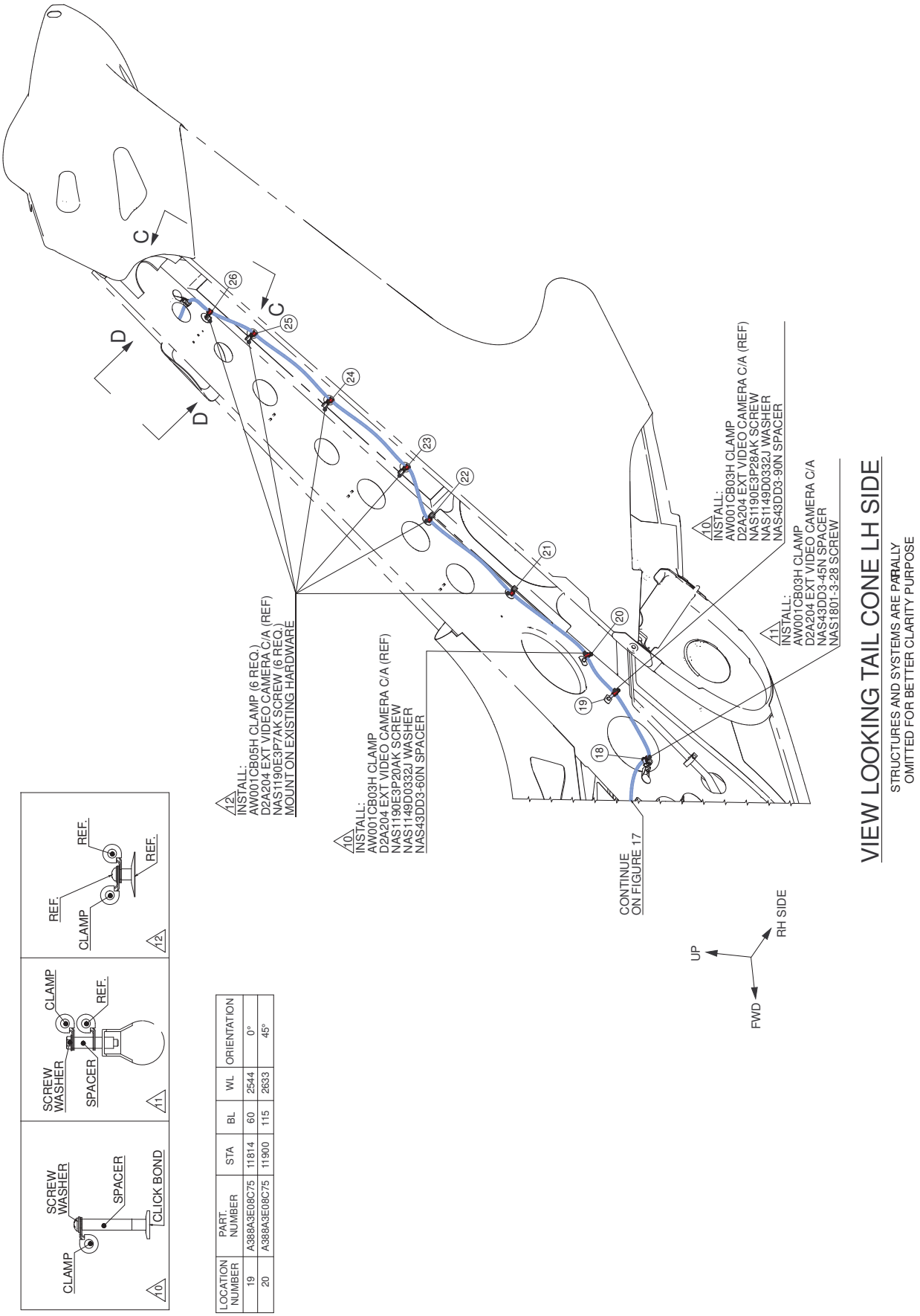

VIEW LOOKING TAIL CONE LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
12 INSTALL: AW001CB05H CLAMP (6 REQ.) D2A204 EXT VIDEO CAMERA C/A (REF) NAS1190E3P7AK SCREW (6 REQ.) MOUNT ON EXISTING HARDWARE
10 INSTALL: AW001CB03H CLAMP D2A204 EXT VIDEO CAMERA C/A (REF) NAS1190E3P20AK SCREW NAS1149D0332J WASHER NAS43DD3-60N SPACER
10 INSTALL: AW001CB03H CLAMP D2A204 EXT VIDEO CAMERA C/A (REF) NAS1190E3P28AK SCREW NAS1149D0332J WASHER NAS43DD3-90N SPACER
11 INSTALL: AW001CB03H CLAMP D2A204 EXT VIDEO CAMERA C/A NAS43DD3-45N SPACER NAS1801-3-28 SCREW
CONTINUE ON FIGURE 17
UP
RH SIDE
FWD
SCREW WASHER
CLAMP
SPACER
CLICK BOND
REF.
CLAMP
SCREW WASHER
SPACER
REF.
REF.
REF.
LOCATION NUMBER | PART NUMBER | STA | BL | WL | ORIENTATION
19 | A388A3E08C75 | 11814 | 60 | 2544 | 0°
20 | A388A3E08C75 | 11900 | 115 | 2633 | 45°

Figure 18

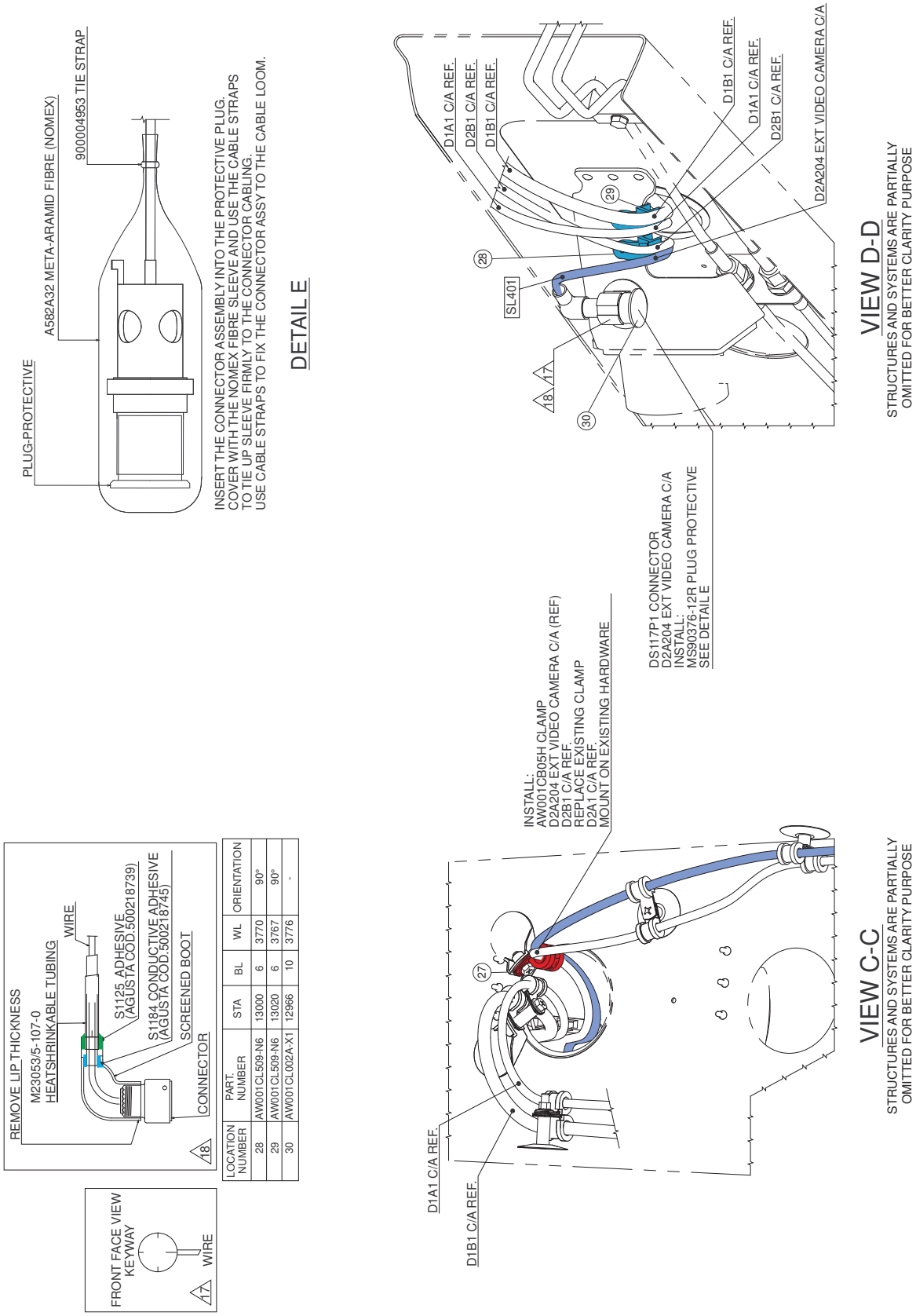

PLUG-PROTECTIVE
A582A32 META-ARAMID FIBRE (NOMEX)
900004953 TIE STRAP
INSERT THE CONNECTOR ASSEMBLY INTO THE PROTECTIVE PLUG, COVER WITH THE NOMEX FIBRE SLEEVE AND USE THE CABLE STRAPS TO TIE UP SLEEVE FIRMLY TO THE CONNECTOR CABLING. USE CABLE STRAPS TO FIX THE CONNECTOR ASSY TO THE CABLE LOOM.
DETAIL E
REMOVE LIP THICKNESS
M23053/5-107-0
HEATSHRINKABLE TUBING
WIRE
S1125 ADHESIVE (AGUSTA COD.500218739)
S1184 CONDUCTIVE ADHESIVE (AGUSTA COD.500218745)
SCREENED BOOT
CONNECTOR
18
FRONT FACE VIEW KEYWAY
WIRE
17
LOCATION NUMBER | PART NUMBER | STA | BL | WL | ORIENTATION
28 | AW001CL509-N6 | 13000 | 6 | 3770 | 90°
29 | AW001CL509-N6 | 13020 | 6 | 3767 | 90°
30 | AW001CL002A-X1 | 12966 | 10 | 3776 | -
D1A1 C/A REF.
D2B1 C/A REF.
D1B1 C/A REF.
D1B1 C/A REF.
D1A1 C/A REF.
D2B1 C/A REF.
D2A204 EXT VIDEO CAMERA C/A
SL401
28
29
17
18
30
VIEW D-D
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE
INSTALL:
AW001CB05H CLAMP
D2A204 EXT VIDEO CAMERA C/A (REF)
D2B1 C/A REF.
REPLACE EXISTING CLAMP
D2A1 C/A REF.
MOUNT ON EXISTING HARDWARE
DS117P1 CONNECTOR
D2A204 EXT VIDEO CAMERA C/A
INSTALL:
MS90376-12R PLUG PROTECTIVE
SEE DETAIL E
D1A1 C/A REF.
D1B1 C/A REF.
27
VIEW C-C
STRUCTURES AND SYSTEMS ARE PARTIALLY OMITTED FOR BETTER CLARITY PURPOSE

Figure 19

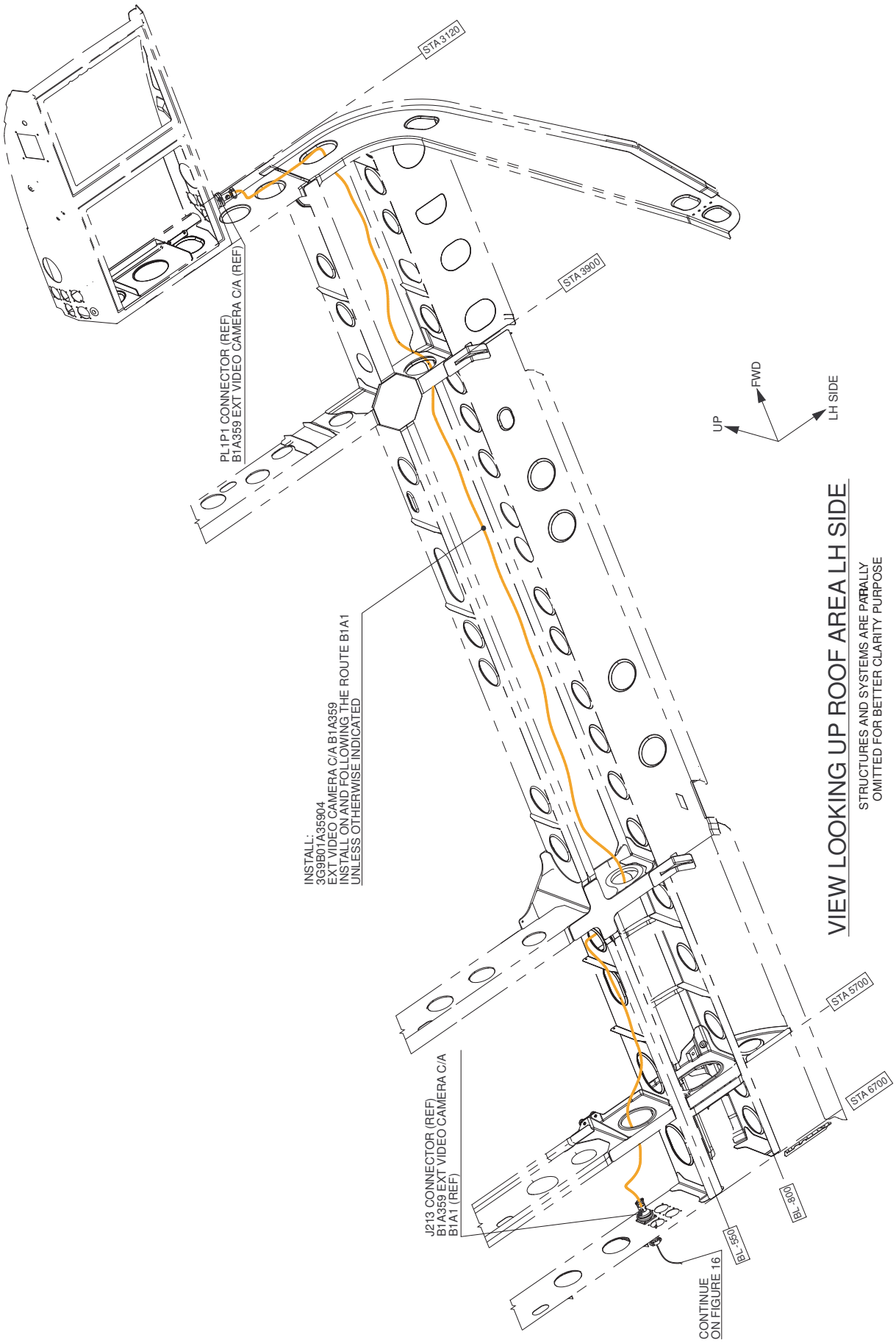

STA 3120
STA 3900
STA 5700
STA 6700
BL -800
BL -550
PL1P1 CONNECTOR (REF)
B1A359 EXT VIDEO CAMERA C/A (REF)
INSTALL:
3G9B01A35904
EXT VIDEO CAMERA C/A B1A359
INSTALL ON AND FOLLOWING THE ROUTE B1A1
UNLESS OTHERWISE INDICATED
J213 CONNECTOR (REF)
B1A359 EXT VIDEO CAMERA C/A
B1A1 (REF)
CONTINUE
ON FIGURE 16
UP
FWD
LH SIDE
VIEW LOOKING UP ROOF AREA LH SIDE
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 20

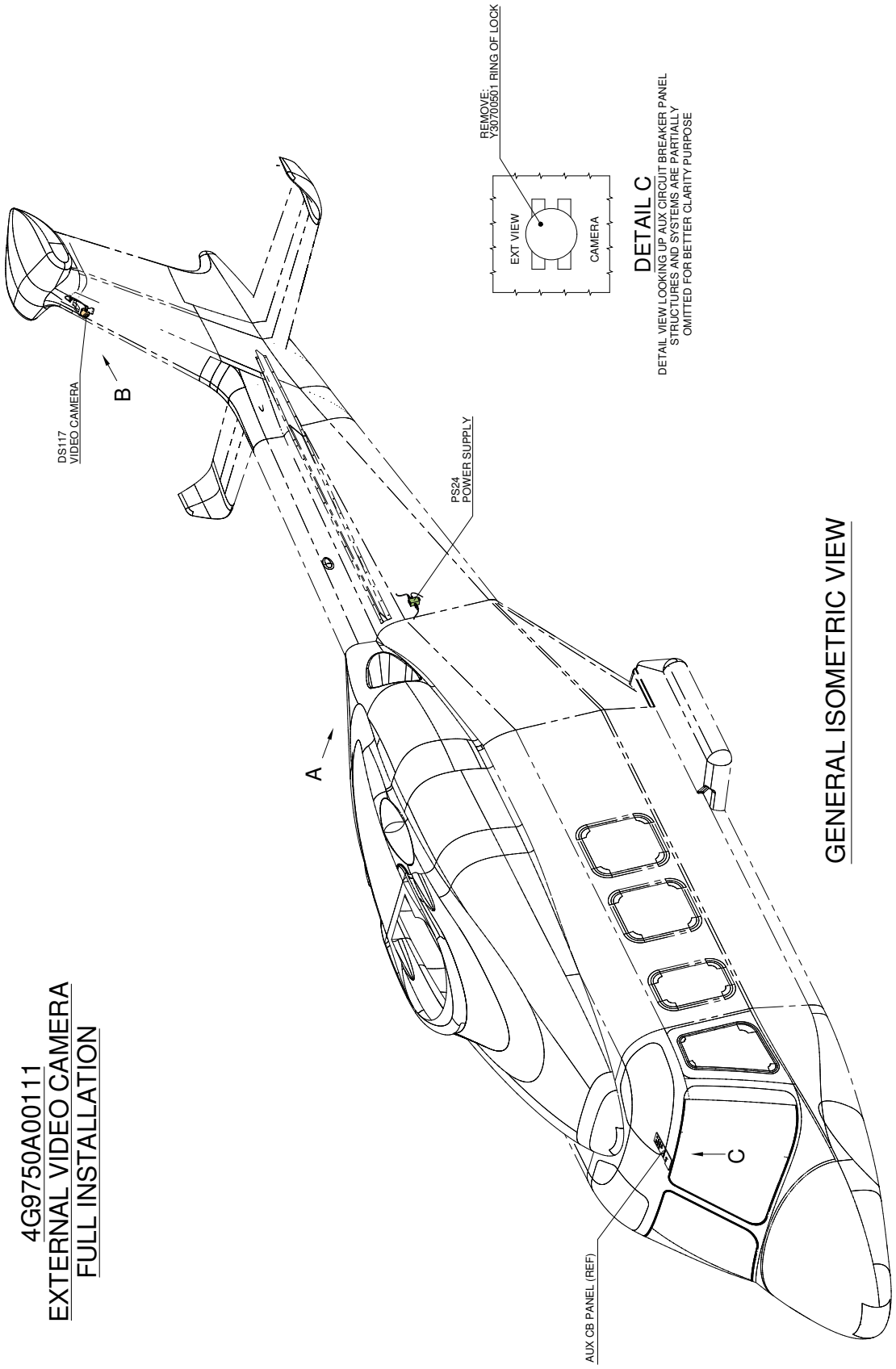

4G9750A00111
EXTERNAL VIDEO CAMERA
FULL INSTALLATION
GENERAL ISOMETRIC VIEW
DS117
VIDEO CAMERA
PS24
POWER SUPPLY
AUX CB PANEL (REF)
A
B
C
REMOVE:
V307700501 RING OF LOCK
EXT VIEW
CAMERA
DETAIL C
DETAIL VIEW LOOKING UP AUX CIRCUIT BREAKER PANEL
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 21

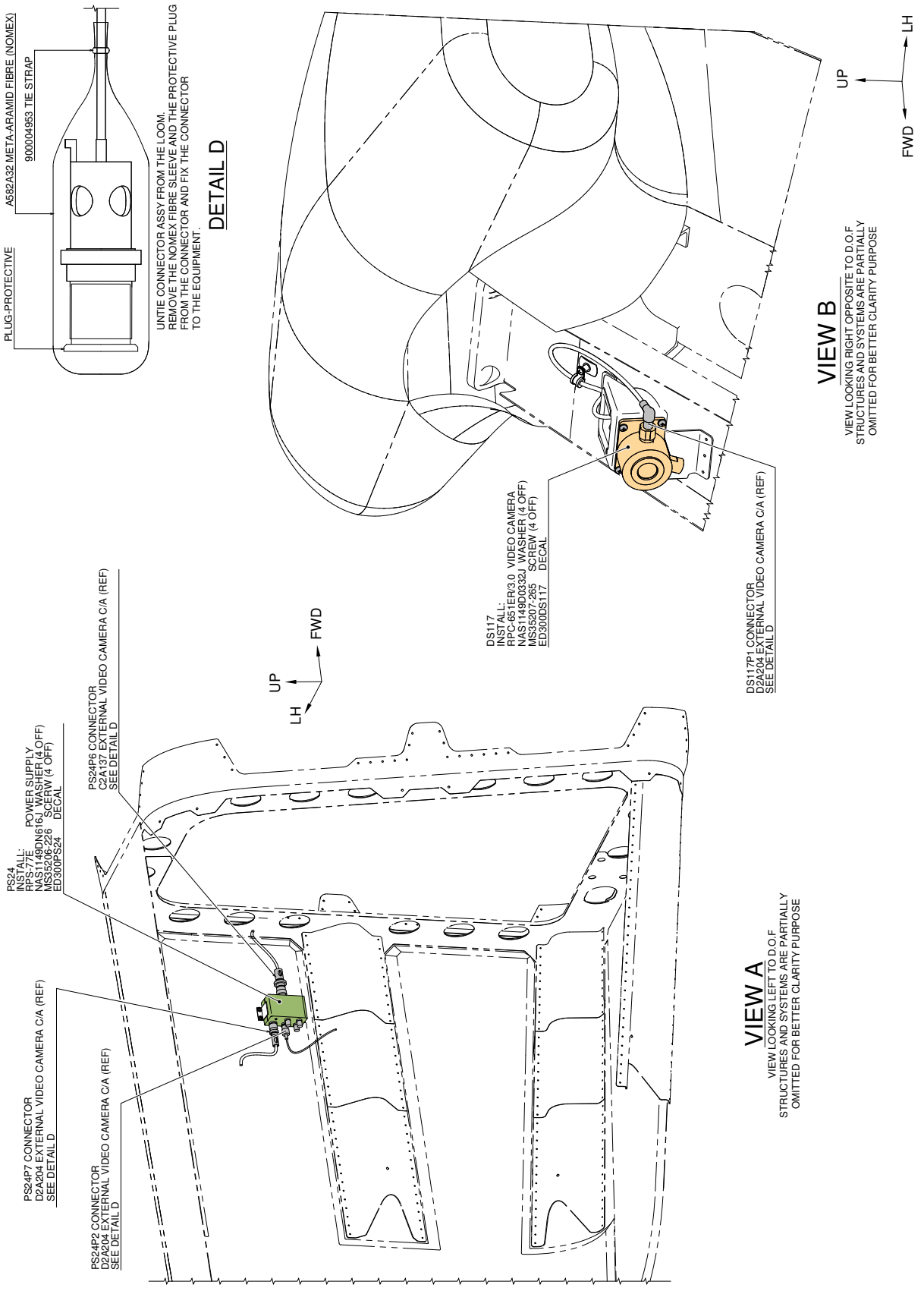
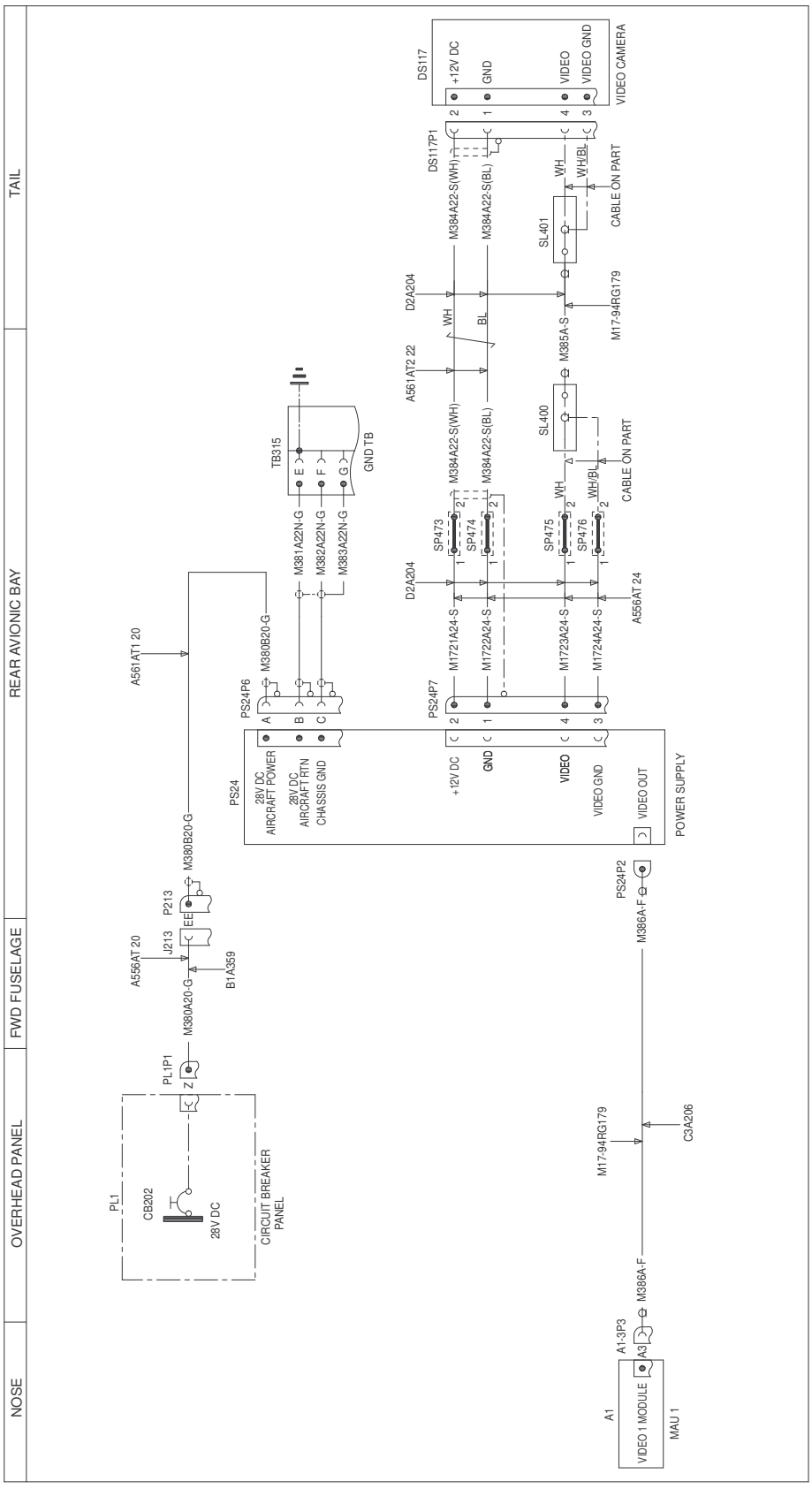

A582A32 META-ARAMID FIBRE (NOMEX)
900004953 TIE STRAP
PLUG-PROTECTIVE
UNTIE CONNECTOR ASSY FROM THE LOOM.
REMOVE THE NOMEX FIBRE SLEEVE AND THE PROTECTIVE PLUG
FROM THE CONNECTOR AND FIX THE CONNECTOR
TO THE EQUIPMENT.
DETAIL D
UP
LH
FWD
VIEW B
VIEW LOOKING RIGHT OPPOSITE TO D.O.F
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE
DS117
INSTALL:
RPC-651ER/3.0 VIDEO CAMERA
NAS1149D0332J WASHER (4 OFF)
MS35207-265 SCREW (4 OFF)
ED300DS117 DECAL
DS1117P1 CONNECTOR
D2A204 EXTERNAL VIDEO CAMERA C/A (REF)
SEE DETAIL D
PS24
INSTALL:
RPS-77E POWER SUPPLY
NAS1149DN616J WASHER (4 OFF)
MS35206-226 SCERW (4 OFF)
ED300PS24 DECAL
PS24P6 CONNECTOR
C2A137 EXTERNAL VIDEO CAMERA C/A (REF)
SEE DETAIL D
PS24P7 CONNECTOR
D2A204 EXTERNAL VIDEO CAMERA C/A (REF)
SEE DETAIL D
PS24P2 CONNECTOR
D2A204 EXTERNAL VIDEO CAMERA C/A (REF)
SEE DETAIL D
VIEW A
VIEW LOOKING LEFT TO D.O.F
STRUCTURES AND SYSTEMS ARE PARTIALLY
OMITTED FOR BETTER CLARITY PURPOSE

Figure 22



3G9750W00111

WIRING DIAGRAM EXTERNAL VIDEO CAMERA

FUNCTIONAL NOTES
ALL CABLES ARE IN LOOM C1A237 UNLESS SPECIFIED
ALL CABLES ARE OF TYPE A561AT1 22 UNLESS SPECIFIED

Figure 23

KIT EXTERNAL VIDEO CAMERA						
Cable Assy	Wire		From	Electrical Contact	To	Electrical Contact
	ID	Col.	Ref Des		Ref Des	
3G9B01A35901 (B1A359)	M380A20-G		PL1P1	M39029/58-364	J213	M39029/56-352
3G9C01A23701 (C1A237)	M380B20-G		PS24P6	N.A.	P213	M39029/58-364
	M381A22N-G		PS24P6	N.A.	TB315	A523A-A05
	M382A22N-G		PS24P6	N.A.	TB315	A523A-A05
	M383A22N-G		TB315	A523A-A05	TB315	A523A-A05
3G9C03A20601 (C3A206)	M386A-F		A1-3P3	FCC4102D	PS24P2	N.A.
3G9D02A20401 (D2A204)	M1721A24-S		PS24P7	N.A.	SP473	N.A.
	M1722A24-S		PS24P7	N.A.	SP474	N.A.
	M1723A24-S		PS24P7	N.A.	SP475	N.A.
	M1724A24-S		PS24P7	N.A.	SP476	N.A.
	M384A22-S	WH	SP473	N.A.	DS117P1	M39029/56-348
		BL	SP474	N.A.	DS117P1	M39029/56-348
	M385A-S		SL400	N.A.	SL401	N.A.
	NO-MARKED	WH	SL400	N.A.	SP475	N.A.
	NO-MARKED	WHBL	SL400	N.A.	SP476	N.A.
	NO-MARKED	WH	SL401	N.A.	DS117P1	M39029/56-348
	NO-MARKED	WHBL	SL401	N.A.	DS117P1	M39029/56-348

Figure 24

ANNEX A

EXTERNAL VIEW FIN CAMERA

ACCEPTANCE TEST PROCEDURE

1. SCOPE

This document defines the Acceptance Test Procedure for the optional kit External View Fin Camera, featured in the AW139 helicopter. The ATP consists of tests to be performed following the installation of the External View Camera on the aircraft, as a means of verifying the panel installation and the physical connections of systems.
The test procedures have been compiled on the basis of the interface requirements for the system and on the basis of the assumption that the tests are performed by individuals having general knowledge of the Primus EPIC™ avionics system, the test equipment required for the tests (as specified herein), and the AW139 helicopter systems.

2. APPLICABILITY

This document is applicable to all Leonardo HD AW139 production helicopters where External View Fin Camera is installed. This document is applicable if Primus EPIC™ S/W rel. 4.8 or successive is installed and the correct Option File, which enables the Video Module.

2.1 APPLICABLE KIT

This document is also applicable to all kits listed in the table below.

DOCUMENT NUMBER	DOCUMENT TITLE
4G9750F00211	KIT EXTERNAL VIDEO CAMERA
4G9750F00212	KIT EXTERNAL VIDEO CAMERA
4G9750F00213	KIT EXTERNAL VIDEO CAMERA

3. GENERAL

3.1 REFERENCE DOCUMENTS

The documents listed in Table 3.1 constitute references for this document.

Table 3.1 Leonardo HD Reference Documents

REF	DOCUMENT NUMBER	DOCUMENT TITLE
1	3G9750W00111	W/D External Video Camera
2	139G4600M001	AB 139 PRIMUS EPIC Software Installation Procedure
3	139G4600D001	AW 139 AVIONICS ACCEPTANCE TEST PRCEDURE
4	139G2430D001	AW 139 ELECTRICAL POWER GENERATION AND DISTRIBUTION SYSTEM ACCEPTANCE TEST PROCEDURE

3.2 ACRONIMS AND ABBREVIATIONS

The following acronyms and abbreviations are utilized throughout the document:

Table 3.1 Acronyms and Abbreviations

ACRONYM / ABBREVIATION	DESCRIPTION / DEFINITION
APM	Aircraft Personality Module
CB	Circuit Breaker
CCD	Cursor Control Device
CMC	Central Maintenance Computer
CPLT	Copilot
EDS	Electronic Display System
LRU	Line Replaceable Unit
MAU	Modular Avionics Unit
MFD	Multi Function Display
PFD	Primary Flight Display
PLT	Pilot

4. SYSTEM DESCRIPTION

The External View Camera system, installed as kit on the AW139 helicopter, is integrated with the Honeywell PRIMUS EPIC SYSTEM. The External View Camera utilities includes a color camera with related power supply. The system also includes the installation of a CB (CB202) and a switch (S137) to allow the Pilot to activate/deactivate the camera. Figure 4 shows a schematic system representation and the auxiliary CB Panel. In the figure, they are also highlighted the CB and Switch used.
The purpose of the system is to ensure, from the top of the tail, visibility of the entire AW139 helicopter in forward direction from PLT and CPLT MFD during the flight or taxi operation.

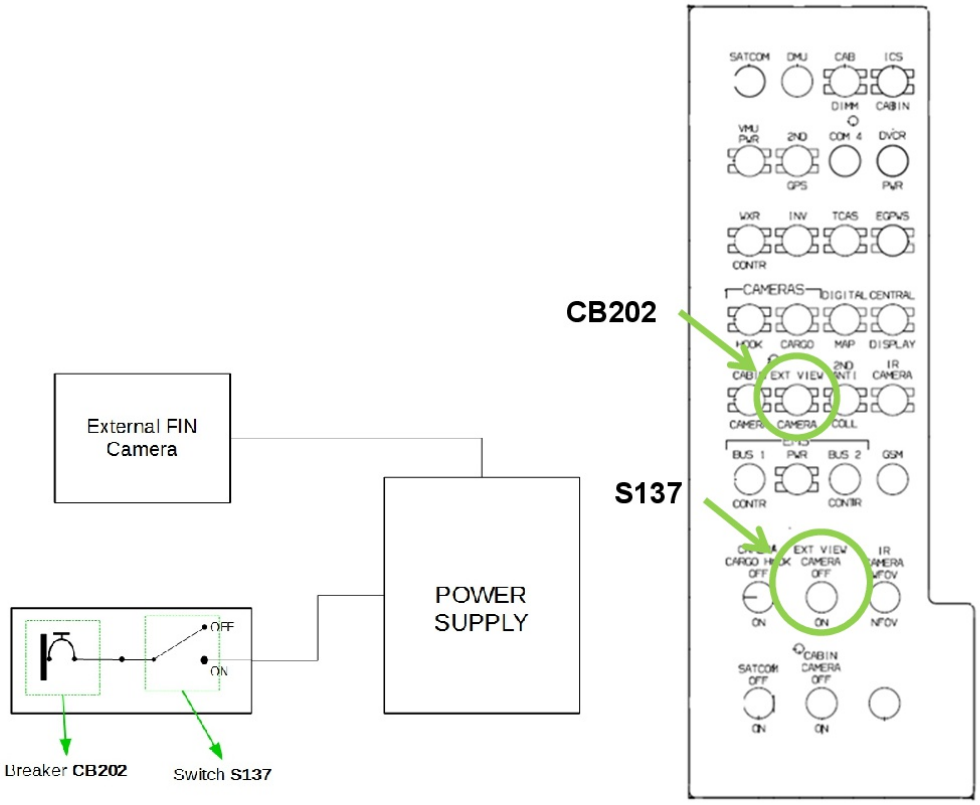
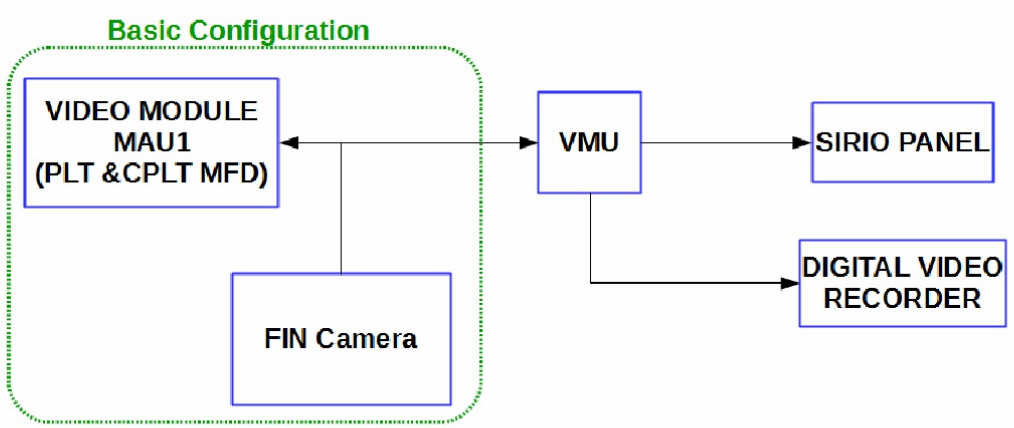


Figure 4 External FIN Camera System rapresentation (LEFT).Aux CB Panel (RIGHT).

4.1 ARCHITECTURE

Figure 4.1 shows a representation of a fully equipped system for the kit installed. The basic configuration, highlighted in green, consists of the connection with the MAU 1 equipment. The video produced by the FIN Camera is shown on both PLT and CPLT MFDs.

Figure 4.1 FIN Camera, video customization example.



4.2 SYSTEM COMPONENTS

The View External FIN Camera installed on the AW139 consists of two units: a Color Camera and one power supply. All components are provided by Sekai.
Equipment of the External Camera kit are listed in Table4.4.

Table 4.4 View External Camera LRUs

DESCRIPTION	PART NUMBER	QUANTITY	SUPPLIER	NOTES
Ruggedized Color Camera	RCP-651ER/3.0	1	Sekai	FIN Camera
Power Supply	RPS-77E	1	Sekai	Power Supply for FIN Camera

5. SYSTEM TEST PROCEDURE

5.1 SAFETY PROVISION

	CHECK	
1.	Disconnect (if installed) the connectors from the fire extinguishing bottles and suitably stow them. If other Electro-Explosive Devices (EEDs) are fitted, ensure that they are electrically disconnected.	❒
2.	When required for continuity testing, a low voltage tester shall be used.	❒
3.	Any other form of probe is allowed under no circumstances.	❒
4.	When testing at pins and sockets of plug and receptacle connectors is required, the contact shall be made by means of the correct mating socket or pin.	❒
5.	Do not handle and operate plug/receptacle connectors with voltage presence.	❒
6.	During the test (with the helicopter electrically powered) the “IGN #1/2” and “START #1/2” CBs shall be pulled OUT.	❒

5.2 TEST EQUIPMENTS

The following test equipment is required for the test procedure:

Table 5.1 System Test Equipment List

DEVICE	Check/Note
DC External Power Bench (28VDC)	
DC Voltmeter for troubleshooting operations	
Conductor Pins and Wire Extensions for troubleshooting operations	
Bondimeter	
MINIMUM TOOLS ACCURACY: +/- 2%	

5.3 TEST PREREQUISITES

The following requirements shall be fulfilled prior to proceeding with the test procedures described within this document:

HARNESS CHECKS		
1.	Visually verify the proper installation of the following components: • Fin Color Camera (P/N RCP-651ER/3.0) • Airborne Power Supply (P/N RPS-77E) Check the correct mechanical installation and fixing; Check the electrical wires installation; Check that all the connectors are properly plugged and fastened. Use W/D listed in Table 3.1 as reference document.	☐
2.	Harness tested for: • insulation resistance • voltage strength • continuity (pin to pin) in accordance to the referenced Wiring Diagram	☐
3.	The electrical wiring harness shall have been successfully tested for proper isolation resistance, electrical voltage and continuity between end points (DIT-MCO) In the event of a system failure or system malfunction, perform a pin-to-pin check (ref 1 Table 3.1 for the applicable wiring) to confirm that all wires terminate in their proper location, the power and ground are applied only where required and all data/audio bus connections are shielded and properly grounded	☐
4.	Before all the test procedures verify that the External Power Bench is operative and set to the appropriate voltage (28 VDC).	☐
EPIC CHECKS		
5.	Ensure Primus EPIC™ S/W rel. 4.8 or successive is installed	☐
6.	Verify that the APM Option File with the Video Module 1 installed is *installed*	☐
7.	Verify that in the MFD System Config pages the “Video 3 Menu” is enabled.	☐
8.	Verify that in the MFD System Menu the “FIN CAMERA” video option is present. The Name for Video Matrix is Cameras.	☐
EQUIPMET ATPs		
9.	The AB139 Avionics Acceptance Test Procedure (139G4600D001) shall be successfully executed (at least the EDS)	☐
10.	The AW 139 Electrical Power Generation and Distribution System ATP ref 4 Table 3.1 shall be successfully executed.	☐
ELECTRICAL SETTINGS		
11.	Verify that all the electrical Power Distribution System CBs are pushed IN except the EXT VIEW CAMERA CB (CB202) which is pulled OUT	☐
12.	Verify that the EXT VIEW CAMERA CB rate is 1 Ampere	☐
13.	Verify that all the Avionic Devices CBs are pushed IN	☐
14.	The helicopter external power unit port shall be connected to the External Power Bench set to 28VDC output. Power up the External Power Bench before starting with the test procedure.	☐

5.4 PRELIMINARY CHECKS

	BONDING CHECK	
1.	Verify that the EXT VIEW CAMERA CB (CB202) is pulled OUT and EXT VIEW CAMERA SWITCH (S137) is in OFF position. Disconnect the following mating connector belonging to Power Supply: - POWER CONNECTOR: **PS24P6**	☐
2.	With the helicopter powered off verify the proper bonding of the following equipment: - Fin Color Box Camera - Airborne Power Supply Box The DC resistance between connector shell and the case bonding (fixing point rear the Dzus) is lower than 2.5mΩ Take the (-) negative pole on GND point near the FIN CAMERA zone and near power supply box zone. Refer to the "AB139 Avionic Bonding ATP" Rev. D (139G0630D002)	☐
	POWER SUPPLY CHECK	☐
3.	Verify continuity between pin **B-PS24P6** of the Power Supply mating connector and **GND**	☐
4.	Verify continuity between pin **C-PS24P6** of the power Supply mating connector and **GND**	☐
5.	Push IN the EXT VIEW CAMERA CB (CB202)	☐
6.	With the helicopter electrically powered and EXT VIEW CAMERA SWITCH (S137) is in ON position, verify that the voltage between pin **A-PS24P6** of the Power Supply mating connector and **GND** is 28 VDC.	☐
7.	With the helicopter electrically powered and EXT VIEW CAMERA SWITCH (S137) is in OFF position, verify that the voltage between pin **A-PS24P6** of the Power Supply mating connector and **GND** is 0 VDC.	☐
8.	Reconnect the **PS24P6** connector	☐
9.	Pull OUT the EXT VIEW CAMERA CB (CB202). Disconnect the following mating connector belonging to the Camera: Video/Power Connector: **DS117P1**	☐
10.	Verify continuity between pin **1-DS117P1** of the Power/Video mating connector and **GND**	☐
11.	Push IN the EXT VIEW CAMERA CB (CB202) and EXT VIEW CAMERA SWITCH (S137) in ON position. With the helicopter electrically powered verify that the voltage between pin **2-DS117P1** of the Power/Video mating connector and **GND** is 12 VDC.	☐
12.	EXT VIEW CAMERA SWITCH (S137) in OFF position. With the helicopter electrically powered verify that the voltage between pin **2-DS117P1** of the Power/Video mating connector and **GND** is 0 VDC.	☐

13.	Pull OUT the EXT VIEW CAMERA CB (CB202) and Power OFF the Helicopter	☐
14.	Disconnect the following mating connector: **PS24P7**	☐
15.	Check the electrical continuity between pins: **4-DS117P1** and **4-PS24P7**	☐
16.	Check the electrical continuity between pins: **3-DS117P1** and **3-PS24P7**	☐
17.	Reconnect the **PS24P7** connector	☐
18.	Reconnect the **DS117P1** connector	☐

5.5 TEST PROCEDURE

FUNCTIONAL TEST		
1.	Power the helicopter	☐
2.	Push IN the EXT VIEW CAMERA CB (CB202)	☐
3.	EXT VIEW CAMERA SWITCH in ON position	☐
4.	By means of the CCD, on the CPLT MFD System Menu, select: SYSTEM ➔ CAMERAS➔ FIN CAMERA	☐
5.	Verify that the video is correctly displayed in the video matrix	☐
6.	With the video matrix displayed, select by CPLT CCD the “FIN CAMERA” square and press enter to verify that the selected camera passes to full-screen display mode on CPLT MFD	☐
7.	Press enter again and verify that the visualization return in the matrix mode	☐
8.	By means of the CCD CPLT select: SYSTEM ➔ FIN CAMERA, and verify that the video is correctly displayed	
9.	Repeat all the operations from point 4 to point 8 for PLT MFD	☐

6. IN SERVICE TEST

The aim of this section is to provide technical advice regarding the methods of testing systems in-service or subsequent to the initial build as defined in this ATP. This advice does not constitute part of the formal clearance of the rotorcraft.

AFTER THE REPLACEMENT OR RE-INSTALLATION OF THE COMPONENTS:

It is recommended that this ATP could be used in-service following the replacement of Electrical / Avionics system components as Connectors, Cables, LRUs, etc.

Table 6-1 In service test requirements

COMPONENT REPLACED	PN	TEST REQUIRED
FIN CAMERA	RCP-651ER/3.0	5.5
Power Supply	RPS-77E	5.5

7. TEST RESULTS

Table 7-1 Cabin Camera Test Results

139G9770D002 **Helicopter S/N:_____** **External View FIN Camera** **Acceptance Test Procedure**				
REF.	***DESCRIPTION***	***OPERATOR***	***DATE***	***REMARKS***
5.1	SAFETY PROVISION			
5.2	TEST EQUIPMENTS			
5.3	TEST PREREQUISITES			
5.4	PRELIMINARY CHECK			
5.5	TEST PROCEDURE			
Engineering dpt signature(if required):				
Quality dpt approval:				

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Please send to the following address: **LEONARDO S.p.A.** **CUSTOMER SUPPORT & SERVICES - ITALY** **PRODUCT SUPPORT ENGINEERING & LICENSES DEPT.** Via Giovanni Agusta, 520 21017 Cascina Costa di Samarate (VA) - ITALY Tel.: +39 0331 225036 Fax: +39 0331 225988	**SERVICE BULLETIN COMPLIANCE FORM**	Date:
	Number:	
	Revision:	

Customer Name and Address:	Telephone:
	Fax:
	B.T. Compliance Date:

Helicopter Model	S/N	Total Number	Total Hours	T.S.O.

Remarks:

Information:

We request your cooperation in filling this form, in order to keep out statistical data relevant to aircraft configuration up-to-date. The form should be filled in all its parts and sent to the above address or you can communicate the application also via Technical Bulletin Application Communication Section placed in Leonardo AW Customer Portal - MyCommunications Area. We thank you beforehand for the information given.