LEONARDO HELICOPTERS

LEONARDO MALAYSIA SDN. BHD.

WORKSHEET

SERVICE ORDER :	9	0	0	2	5	5	6	6	WORKSHEET NUMBER :	2022/31763/007-87	
AIRCRAFT REGISTRATION :	9M-BGH	AIRCRAFT SERIAL NUMBER :	31763	AIRFRAME HOURS :	300:40	LANDINGS :	838				
#1 ENGINE SERIAL NO.:	PCE-KB1931	#1 ENGINE HOURS :	300:40	#2 ENGINE SERIAL NO.:	PCE-KB1885	#2 ENGINE HOURS :	300:40	APU SERIAL NO.:	N/A	APU HOURS :	N/A
CRITICAL MAINTENANCE TASK REQUIREMENT	YES		NO	X	RAISED BY :	SYAQIRA	RAISED DATE :	17-11-2022			

DESCRIPTION / WORK TO BE CARRIED OUT	CORRECTIVE ACTION TAKEN
EASA AD NO.: 2008-0108 ISSUED: 05 JUNE 2008 (BT 139-129 DATE: JUNE 3,	NOT APPLICABLE BY HELICOPTER S/N.
2008 REV. : A – JULY 14, 2008) ATA 56- COCKPIT DOORS WINDOWS	
REPLACEMENT TO BE CARRIED I.A.W EASA AD AND BT ATTACHED.	
	MECHANIC SIGN: N/A — N/A

MAINTENANCE ACTIVITIES ABOVE ARE PERFORMED IN ACCORDANCE WITH: (CIRCLE THE SELECTED MODEL WHERE APPLICABLE)

AIRCRAFT MAINTENANCE MANUAL	AW189|AW169|AW139|A119|A109S/AW109SP IETP N/A ISSUE: N/A UPDATED: N/A
ENGINE MAINTENANCE MANUAL	GE CT7-2E|PW210A|PT6C-67C|PT6B-37A|PW206C/PW207C MM REV./ISSUE NO. N/A DATED: N/A
APU MAINTENANCE MANUAL	DT13-01_eAPU60-MLE 342 ISSUE NO.: N/A DATED: N/A
OTHER APPROVED MAINTENANCE DATA	EASA AD NO.: 2008-0108 ISSUED: 05 JUNE 2008

INDEPENDENT INSPECTION / RE-INSPECTION I.A.W MOE 2.23

DESCRIPTION OF CRITICAL MAINTENANCE TASK REQUIREMENT AREA :

AUTHORISATION HOLDER

NAME	STAMP	SIGNATURE	DATE

INDEPENDENT INSPECTOR

NAME	STAMP	SIGNATURE	DATE

PARTS / MATERIAL USED / COMPONENT CHANGE RECORD (IF APPLICABLE)

DESCRIPTION	PART NO.	REMOVED		INSTALLED		RELEASE DOCUMENT
		SERIAL NO.	TSN/TSO	SERIAL NO.	TSN/TSO	
			N/A	LCI LCA		

☐ ADDITIONAL PARTS / MATERIAL USED / COMPONENT CHANGE RECORD HAVE BEEN RAISED AND ATTACHED.

☐ CALIBRATED / SPECIAL TOOLS RECORD SHEET HAVE BEEN RAISED AND ATTACHED.

* CERTIFYING STAFF HAVE VERIFIED THAT ALL TOOLS, EQUIPMENT AND OTHER EXTRANEOUS PART OF MATERIALS ARE CLEARED AND ALL TASKS OR INSPECTIONS HAVE BEEN CARRIED OUT TO THE REQUIRED STANDARD. TASK HAS BEEN PERFORMED I.A.W. MAINTENANCE MANUAL SPECIFIED ABOVE.

CERTIFICATE OF RELEASE TO SERVICE

* CERTIFYING STAFF NAME	SIGNATURE	STAMP	LOCATION	DATE
S. ELCER		LCI LCA	SZB	22/12/22

CAAM (MALAYSIA) AMO/2016/40 - CERTIFIES THAT THE WORK SPECIFIED, EXCEPT AS OTHERWISE SPECIFIED, WAS CARRIED OUT IN ACCORDANCE WITH CAA MALAYSIA REQUIREMENTS AND IN RESPECT TO THAT WORK THE AIRCRAFT / AIRCRAFT COMPONENT IS CONSIDERED READY FOR RELEASE TO SERVICE.

EASA	AIRWORTHINESS DIRECTIVE
	AD No.: 2008-0108 **Date: 05 June 2008** Note: This Airworthiness Directive (AD) is issued by EASA, acting in accordance with Regulation (EC) No 216/2008 on behalf of the European Community, its Member States and of the European third countries that participate in the activities of EASA under Article 66 of that Regulation.

This AD is issued in accordance with EC 1702/2003, Part 21A.3B. In accordance with EC 2042/2003 Annex I, Part M.A.301, the continuing airworthiness of an aircraft shall be ensured by accomplishing any applicable ADs. Consequently, no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of that Airworthiness Directive unless otherwise specified by the Agency [EC 2042/2003 Annex I, Part M.A.303] or agreed with the Authority of the State of Registry [EC 216/2008, Article 14(4) exemption].

Type Approval Holder's Name :	**Type/Model designation(s) :**
Agusta S.p.A.	AB139 and AW139 helicopters

TCDS Number :	EASA R.006
Foreign AD :	Not applicable
Supersedure :	This AD supersedes EASA AD 2008-0011 dated 14 January 2008

ATA 56	**Windows – Cockpit Door Windows – Replacement**
Manufacturer(s):	Agusta S.p.A.
Applicability:	AB139 helicopters from serial number (s/n) 31005 to s/n 31054 (included) except s/n 31007; AW139 helicopters from s/n 31055 to 31131 (included) except s/n 31094 and s/n 31124, from s/n 31201 to 31209 (included) and from s/n 41001 to s/n 41013 (included) except s/n 41012.
Reason:	Operators had reported a number of occurrences of in-flight losses of cockpit door windows, both left and right side. This condition, if not corrected, could result in damage to critical components. As this unsafe condition was likely to occur in other helicopters of the same type design, EASA Airworthiness Directive (AD) 2007-0142 required a dimensional check and, if necessary, the repair of the cockpit door installation and the replacement of the window seal. After the issuance of AD 2007-0142 cases of cracks on sliding windows leading to loss of part of the window have been reported on cockpit doors to which actions required by this AD were applied. Therefore the AD 2008-0011 superseded AD 2007-0142 taking over its requirements and mandated, as an additional action, a reinforcement of the sliding windows in the area where cracks had developed. Additional cases of in flight breakage of cockpit door windows have been reported in service for cockpit doors to which the AD 2008-0011 was applied. Further investigation showed that cracks had originated in a different area of the windows with respect to the previous cases, suggesting a different route to failure. This AD supersedes AD 2008-0011 and provides instructions to remove the pilot

	and co-pilot cockpit door windows and replace them with new parts of improved design.
Effective Date:	19 June 2008
Required action(s) and Compliance Time(s):	Required as indicated, unless accomplished previously, within 200 flight hours or 6 months (whichever occurs first) after the effective date of this AD: In accordance with Agusta Bollettino Tecnico (BT) 139-129 replace the currently installed cockpit door windows on the left and right hand side with windows p/n 3P5211A10152A1 (left hand side) and p/n 3P5211A48131A1 (right hand side). Moreover, install an additional strap and a new external placard as per instructions of the same Agusta BT.
Ref. Publications:	Agusta Bollettino Tecnico 139-129. The use of later approved revisions of this document is acceptable for compliance with the requirements of this AD.
Remarks :	1. If requested and appropriately substantiated, EASA can approve Alternative Methods of Compliance for this AD. 2. The required actions and the risk allowance have granted the issuance of a Final AD with Request for Comments, postponing the public consultation process after publication. 3. Enquiries regarding this AD should be referred to the Airworthiness Directives, Safety Management & Research Section, Certification Directorate, EASA. E-mail ADs@easa.europa.eu 4. For any questions concerning the technical content of the requirements in this AD, please contact: Agusta, Customer Support Engineering, E-mail: aw139.mbx@agustawestland.com

AGUSTA

Via Giovanni Agusta, 520
21017 Cascina Costa di Samarate (VA) Italy
Tel.: +39 0331-229111 - Fax: +39 0331-229605/222595

AN AGUSTAWESTLAND COMPANY

BOLLETTINO TECNICO

N° **139-129**

The technical content of this document is approved under the authority of DOA nr. EASA.21J.005

DATE June 3, 2008

REV. **A** – July 14, 2008

Compliance with this bulletin is: **MANDATORY**

SUBJECT: **COCKPIT DOORS WINDOWS REPLACEMENT**

REASON: some cases of in flight breakage of cockpit doors windows have been reported in service. This Bollettino provides the necessary instructions to upgrade the aircraft configuration with an improved design.

NOTE

This Bollettino supersedes BT 139-087 Rev. A.
If BT 139-129 rev./ has been accomplished with, no action is required to accomplish REV. A.

HELICOPTERS AFFECTED: AB139/AW139 helicopters from S/N 31005 to S/N 31131 (except S/N 31007, 31094 and 31124), from S/N 31201 to S/N 31209 and from S/N 41001 to S/N 41013 (except S/N 41012).

COMPLIANCE: within 200 FH or 6 months from receipt of this Bollettino, whichever comes first.

DESCRIPTION: this Bollettino prescribes the replacement of the cockpit doors windows with a more robust design.

Moreover an additional strap to allow immediate jettison in emergency is installed together with a new external placard.

In order to expedite parts availability to the customer, for the time being also the aircraft having the optional LHS sliding windows will receive a plain LHS improved window for the upgrade. This is reflected in the list of required materials.

REQUIRED MANPOWER: it is estimated that in order to accomplish this Bollettino five (5) man-hours are necessary.

Man-hours are based on hands-on time and may vary with personnel and facilities available.

WARRANTY:

- ✓ Upon request, the parts required to apply this Bollettino shall be supplied on a free of charge basis by Agusta, except for the consumable materials.
- ✓ Upon application of this Bollettino, Customers are requested to submit to Agusta Warranty Administration a Maintenance Malfunction Information Report duly completed in all its parts.

REQUIRED MATERIALS: the following materials, necessary to accomplish this bollettino, can be required to AgustaWestland:

P/N		DESCRIPTION	Q.TY
3P5211A48131A1	(1)	Storm Window Assy RHS	1
3P5211A10152A1	(1)	Cockpit Door Window LHS	1
212-072-636-109		Decal	2
A181A001E1		Decal	2
999-1700-48-101G		Seal	2
999-1700-49-101G	(2)	Filler wedge	AR
3G5610A04751		Strap	2
MS35214-26		Bolt	2
A436A06A2		Nut	2
A994A15T010D		Washer	4

Moreover, the following consumable materials, necessary to accomplish this bollettino, can be required to AgustaWestland:

P/N		DESCRIPTION	Q.TY
590210190	(2)	Cloth, CCC-C-46 (C011)	1
900002980	(2)	Adhesive, RTV 732, 199-05-152 Ty. I cl. II (C126)	AR
32002675	(2)	Solvent, commercial, Methyl-ethyl-ketone (MEK) (C005)	AR
531050415		Ethyl Alcohol, commercial	AR
590160418		Abrasive Paper, P-C-451, 320 grit grade (C017)	AR

SPECIAL TOOLS: the following special tools are required to accomplish this Bollettino:

P/N		DESCRIPTION	Q.TY
3G5605G00132		Tool kit, windows installation (GF-94-00)	1
composed by:			
3G5605G00251		Hook, seal expander	.1
3G5605G00551	(3)	Tool, seal wedge installation	.1
Local supply	(2)	Plastic scraper	1
Local supply		Non alcoholic pencil	1
Local supply		Hand saw	1
Local supply		Clamp	1
Local supply		Digital caliper	1

Customer must order the tools to AgustaWestland, if required.

Notes: (1) Contact AW139 Customer Support Engineering (aw139.mbx@agustawestland.com) for details on optional LHS storm windows and spare parts.

(2) Depending on existing seal / filler wedge condition (refer to step 4). Quantity to be considered is 2.5 m for each P/N to be replaced for each window.

(3) Tool P/N CP293 can be used as an alternative to P/N 3G5605G00551.

WEIGHT AND BALANCE CHANGES: N.A.

REFERENCES:

- ✓ AW139 Material Data Information (AMDI)
- ✓ AW139 Aircraft Maintenance Publication (AMP)
- ✓ AW139 Illustrated Tools and Equipment Publication (ITEP)

PUBLICATIONS AFFECTED:

- ✓ AW139 Aircraft Maintenance Publication (AMP)
- ✓ AW139 Illustrated Parts Data (IPD)

COMPLIANCE INSTRUCTIONS:

1. Prepare the helicopter for a safe ground maintenance. Disconnect the battery and all the electrical power sources and/or the external power supply. Refer to AMP, see data module n° 39-A-00-20-00-00A-120A-A.
2. With reference to figure 1, gain access to the cockpit door window (1) on the left side of the aircraft.
3. With reference to figure 1, remove the cockpit door window (1) as follows:
   - 3.1 Remove the red strap (3) from the clinch stud (7).
   - 3.2 Pull the red strap (3) and fully remove the filler wedge (5) from the seal (6).
   - 3.3 Hold the transparent (2) to make sure that it does not fall down.

CAUTION

Make sure you do not damage the transparent when you remove it from door. It will be useful to help new cockpit door window installation.

   - 3.4 Carefully push the transparent (2) inboard. Remove the transparent (2) and the seal (6) from the door structure (4). Hold the seal (3) to use it at step 5.1.
   - 3.5 Do a visual inspection of the filler wedge for damage and condition. If you find that the filler wedge is damaged or not in good condition, replace the filler wedge with a new one when you install it at step 9.
4. With reference to figure 3, carefully remove the paint from both sides of the lip up to a width of 9 mm. Use abrasive paper (C017) to do this. The door lip has to come back in the produced configuration.

5. With reference to figure 5, check the gap between the door structure and the new cockpit window P/N 3P5211A10152A1 as follows:

   5.1 Get six pieces of seal (2) of sufficient length from the seal removed at step 3.4.

   5.2 Temporarily put the six pieces of seal (2) in position on the window frame (1).

   5.3 Temporarily install the window (3) on the six pieces of seal (2).

NOTE

The measurement of the "Z" dimension (gap) has to be taken with a Digital Caliper.

   5.4 Measure the clearance between the door structure and the cockpit window ("Z"). Make sure that it is 7.2 – 8 mm along the whole perimeter.

   5.5 If the dimension "Z" is within the above mentioned limits, go to step 7.

   5.6 If the dimension "Z" is above 8 mm, contact AW139 Customer Support Engineering (aw139.mbx@agustawestland.com).

   5.7 If the dimension "Z" is below 7.2 mm, do step 6.

6. Prepare transparent to be installed as follows:

NOTE

A trim of the window contour is required in order to restore the gap between the door and the window.

   6.1 Put in place the transparent on the cockpit door. If necessary sustain the transparent from the bottom with two stripes.

   6.2 Place the transparent so that the same distance is maintained from the door frame sides.

   6.3 Fix the transparent with tape to the door frame, fix the tape only to a depth of about 5 mm on transparent surface.

   6.4 Measure from the window frame 7.5 - 8 mm along the perimeter and sign the new boundary with a non alcoholic pencil.

CAUTION

Do not engrave the transparent.

   6.5 Remove the transparent from the door and place it on a suitable bench.

   6.6 Trim the transparent to the new marked contour. Use a hand saw (and NOT a circular automatic saw) to cut the material in excess.

6.7 With reference to figure 9 and figure 10 section Z-Z, install strap P/N 3G5610A04751 on the transparent using bolt P/N MS35214-26, nut P/N A436A06A2 and two washers P/N A994A15T010D.

7. With reference to figure 3, install a new seal P/N 999-1700-48-101G as follows:

WARNING

THE SOLVENT (C005) IS A DANGEROUS MATERIAL. BEFORE YOU USE IT, MAKE SURE THAT YOU KNOW ALL THE SAFETY PRECAUTIONS AND FIRST AID INSTRUCTIONS FOR THIS MATERIAL. REFER TO AMDI (SEE DATA MODULE N. 39-A-00-50-00-00A-074A-D).

7.1 If necessary, remove the rubber particles with the Plastic Scraper. Clean the seal seat on the door structure with the Cloth (C011) and the Solvent (C005). Dry the cleaned area with the clean cloth.

CAUTION

With reference to figure 2, make sure that the seal and the filler wedge length is 2320 mm.

7.2 Make a little mark at the middle of the top window frame. Cut the seal P/N 999-1700-48-101G and keep it at the middle with your hands.

7.3 Clean the seal with ethyl alcohol before installation. Make sure that the seal grooves are free from dirt.

WARNING

THE ADHESIVE (C126) IS A DANGEROUS MATERIAL. BEFORE YOU USE IT, MAKE SURE THAT YOU KNOW ALL THE SAFETY PRECAUTIONS AND FIRST AID INSTRUCTIONS FOR THIS MATERIAL. REFER TO AMDI (SEE DATA MODULE N. 39-A-00-50-00-00A-074A-D).

7.4 With reference to figures 3 and 4, bond the groove of the seal over the whole perimeter on fuselage side only with Adhesive (C126).

NOTE

The seal must be installed with the filler groove on the door inside surface and with the knurled groove on the cockpit window side. Refer to figures 8 and 9.

7.5 Carefully put the seal on the door structure. Start from the middle top of the window frame. Make sure that the middle of the seal is aligned with the mark on the window frame. Refer to figure 2 to check the correct seal position.

CAUTION

Do not pull the seal while you install it on the door structure. Be careful when you install the seal on the curves of the window frame.

7.6 At the end of the installation you have the seal butt joint at the middle bottom of the window frame. Refer to figure 2 to check the correct seal position.

CAUTION

The butt joint must have no clearance between the two seal heads.

7.7 If there is clearance between the two seal heads, contact AW139 Customer Support Engineering (aw139.mbx@agustawestland.com).

8. With reference to figure 3, install the cockpit door window in the groove of the seal as follows:

8.1 Clean the cockpit door window with ethyl alcohol and grind with abrasive paper (C017) on internal and external side by a depth of 5 mm. Remove sharp corners from the window. Chamfering is allowed up to a maximum of 0.5 mm.

8.2 Put the cockpit door window in its position against the seal. Hold the cockpit door window and, at the same time, lock the cockpit door with your hands.

8.3 Open the lip of the seal with the Hook P/N 3G5605G00251. Start from the top and carefully install the cockpit door window in the seal. Continue until all the window edge is in the groove of the seal.

8.4 Use protective tape to protect the adjacent surfaces that can be damaged when you use the adhesive (C126). Refer to figure 12 for details.

8.5 Bond the seal on the cockpit door over the whole perimeter with Adhesive (C126). Make sure that the seal lips are fully bonded to the cockpit door. Refer to figure 12 for details.

9. With reference to figure 1, install the filler wedge in the related groove of the seal as follows:

9.1 Keep the filler wedge at its middle with your hands.

9.2 Clean the filler wedge with ethyl alcohol before installation.

9.3 With reference to figure 1, put the filler wedge (5) in the related eyelet of the red strap (3). Move the red strap (3) in the middle position of the filler wedge (5).

CAUTION

An improper usage of the seal wedge installation tool can cause damage to the seal. It is suggested to get used to the filler installation procedure before applying it on the window. Refer to figure 6 for details.

CAUTION

Do not pull the filler wedge to make its installation easier. If you pull it a deformation will occur along the filler wedge contour. This deformation decreases the seal strength.

CAUTION

Do not pull the filler wedge while you install it in the seal. Do not torque the filler wedge when you install it in the curves of the seal.

9.4 Carefully put the filler wedge in the related groove of the seal with the Tool P/N 3G5605G00551. Start from the middle bottom of the seal and go on until the filler wedge is near the strap P/N 3G5610A04751 position. Refer to figures 7 and 8 for details.

9.5 With reference to figures 9 and 10, insert the filler wedge in the related eyelet of the strap P/N 3G5610A04751. Adjust the strap position as required and go on with filler wedge installation.

9.6 At the end of installation you have the seal butt joint in position indicated in figure 2. Refer to figure 2 to check the correct filler wedge position.

CAUTION

The butt joint must have no clearance between the two filler heads.

9.7 If there is clearance between the two filler heads, contact AW139 Customer Support Engineering (aw139.mbx@agustawestland.com).

10. If you have made a small area of the door dirty with adhesive (C126), clean the dirty area with the Cloth (C011) immediately.
11. Let the Adhesive (C126) cure for 24 hours.
12. Let the cockpit door window, the related filler wedge and seal assembly become stable. Do a check of the filler wedge butt joint and of the seal butt joint. Make sure that there is no clearance.
13. With reference to figure 1, attach the red strap (3) to the clinch stud (7).
14. With reference to figure 11, do as follows:
    14.1 Install decal P/N A181A001E1 (1) on FWD lower corner of cockpit door window internal side. Refer to AMP, see DM n° 39-A-11-00-01-00A-520B-A.
    14.2 Replace decal P/N 999-2701-45-509 (2) with new one P/N 212-072-636-109 on cockpit door external side. Refer to AMP, see DM n° 39-A-11-00-01-00A-520A-A and DM n° 39-A-11-00-01-00A-720A-A.
15. With reference to figure 1, gain access to the cockpit door window (1) on the right side of the aircraft and repeat steps 3. thru 14. to install the right cockpit door window P/N 3P5211A48131A1.
16. Return helicopter to flight configuration and record for compliance of this bollettino.

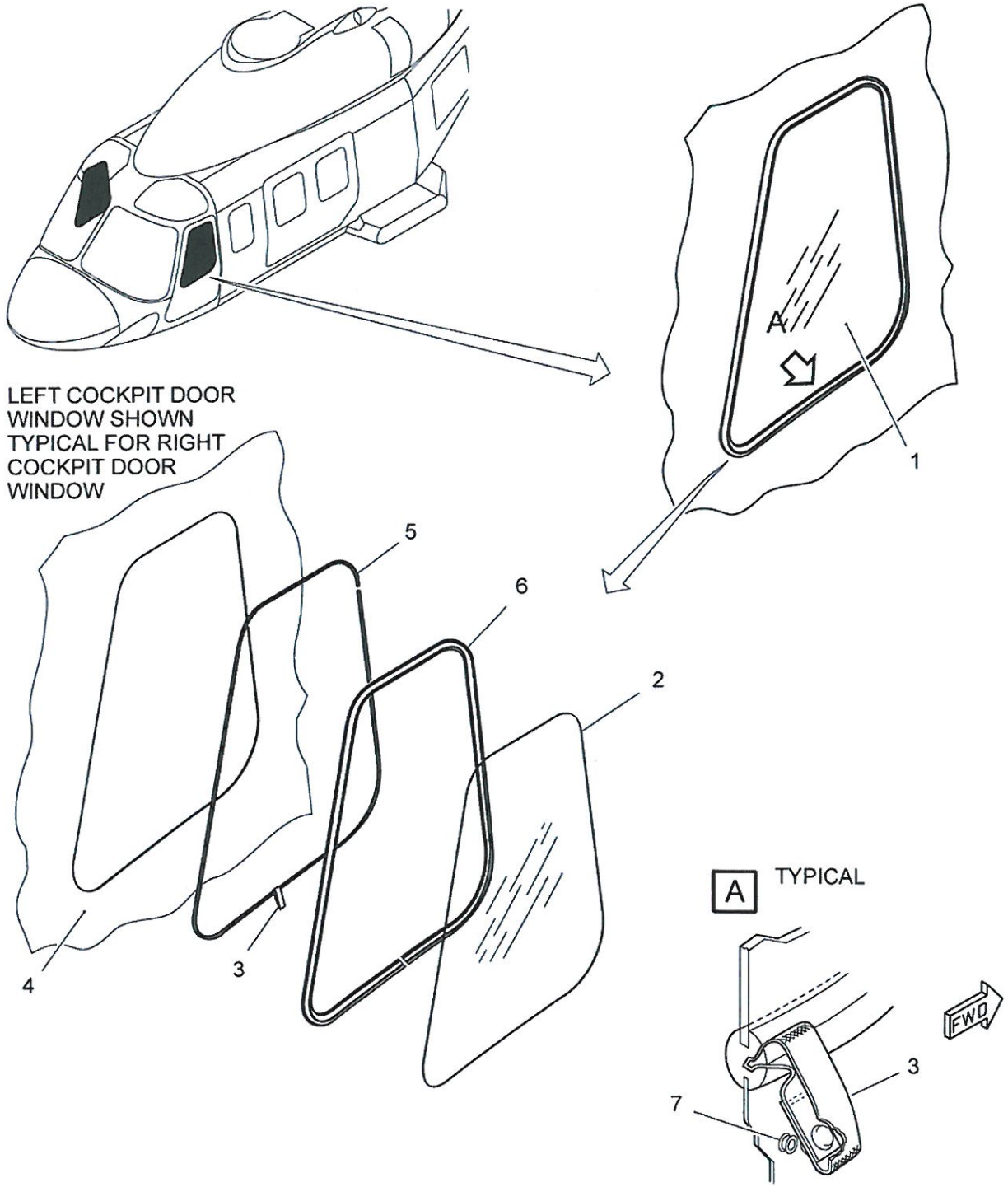
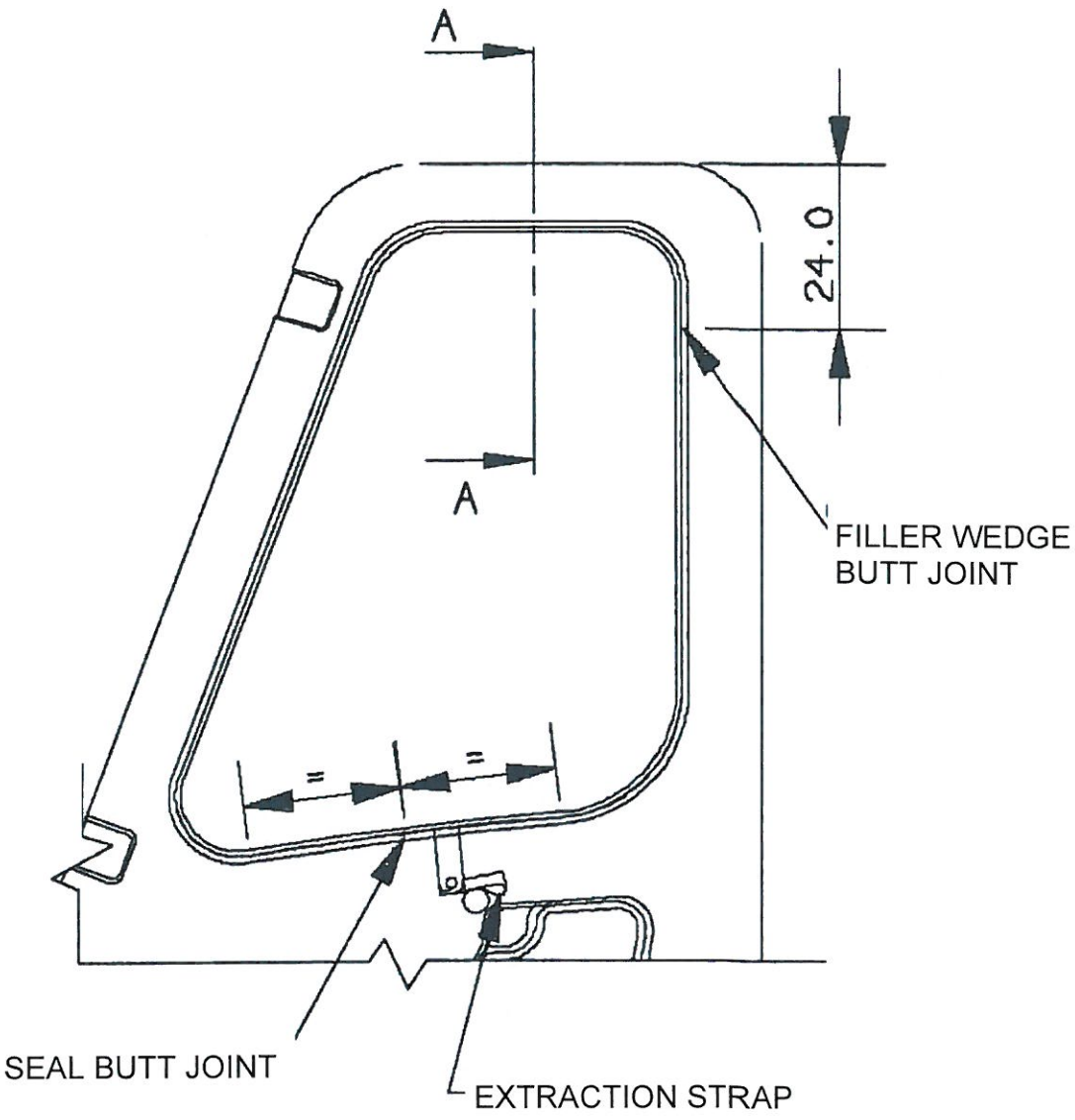
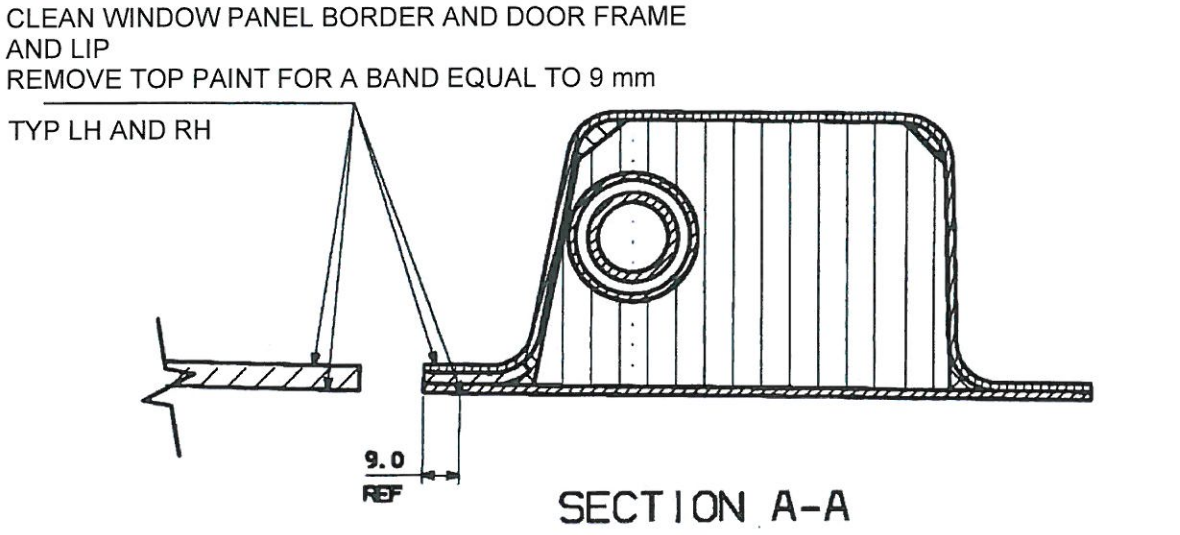

LEFT COCKPIT DOOR
WINDOW SHOWN
TYPICAL FOR RIGHT
COCKPIT DOOR
WINDOW
A
1
5
6
2
4
3
A TYPICAL
FWD
3
7

Figure 1



NOTE: **LENGTH OF COCKPIT DOOR WINDOW FILLER WEDGE MUST BE 2320 mm**

Figure 2


CLEAN WINDOW PANEL BORDER AND DOOR FRAME
AND LIP
REMOVE TOP PAINT FOR A BAND EQUAL TO 9 mm
TYP LH AND RH
9.0
REF
SECTION A-A

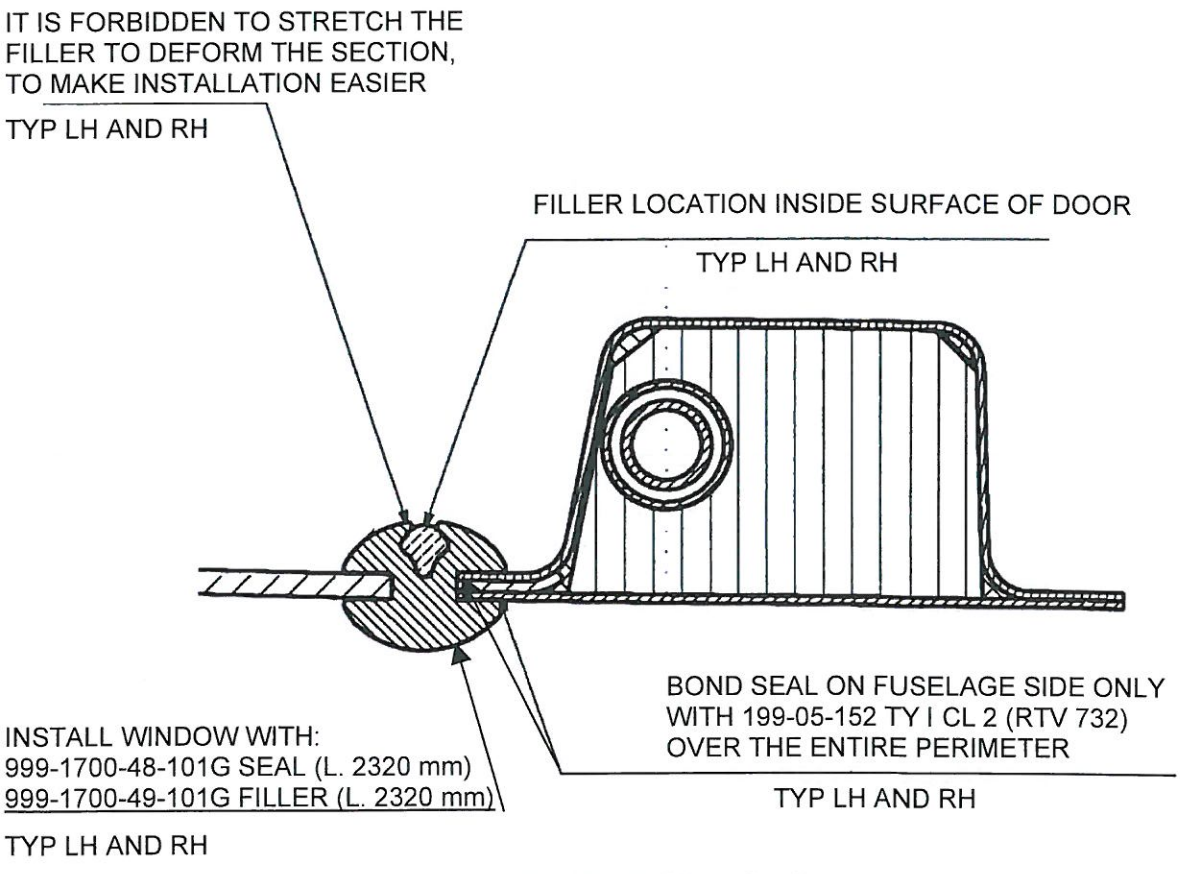
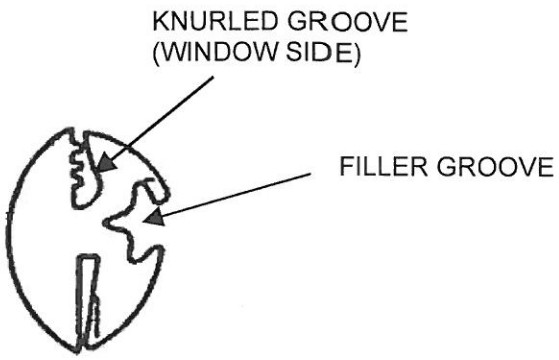
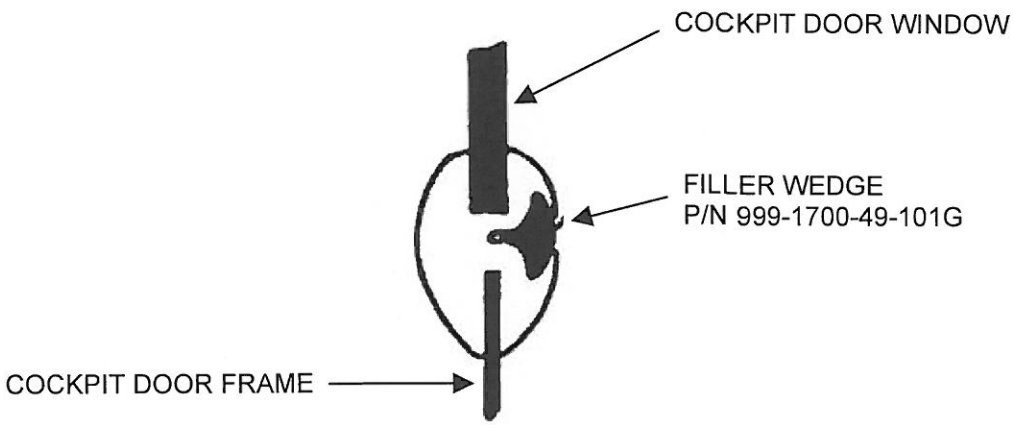

IT IS FORBIDDEN TO STRETCH THE
FILLER TO DEFORM THE SECTION,
TO MAKE INSTALLATION EASIER
TYP LH AND RH
FILLER LOCATION INSIDE SURFACE OF DOOR
TYP LH AND RH
BOND SEAL ON FUSELAGE SIDE ONLY
WITH 199-05-152 TY I CL 2 (RTV 732)
OVER THE ENTIRE PERIMETER
TYP LH AND RH
INSTALL WINDOW WITH:
999-1700-48-101G SEAL (L. 2320 mm)
999-1700-49-101G FILLER (L. 2320 mm)
TYP LH AND RH
SECTION A-A

Figure 3



SEAL P/N 999-1700-48-101G



SEAL P/N 999-1700-48-101G
INSTALLED

Figure 4

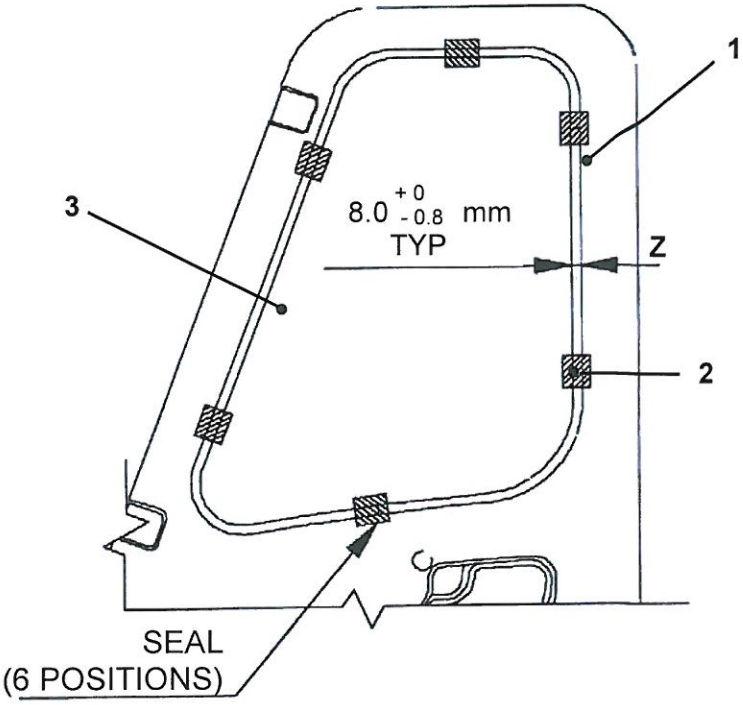


Figure 5

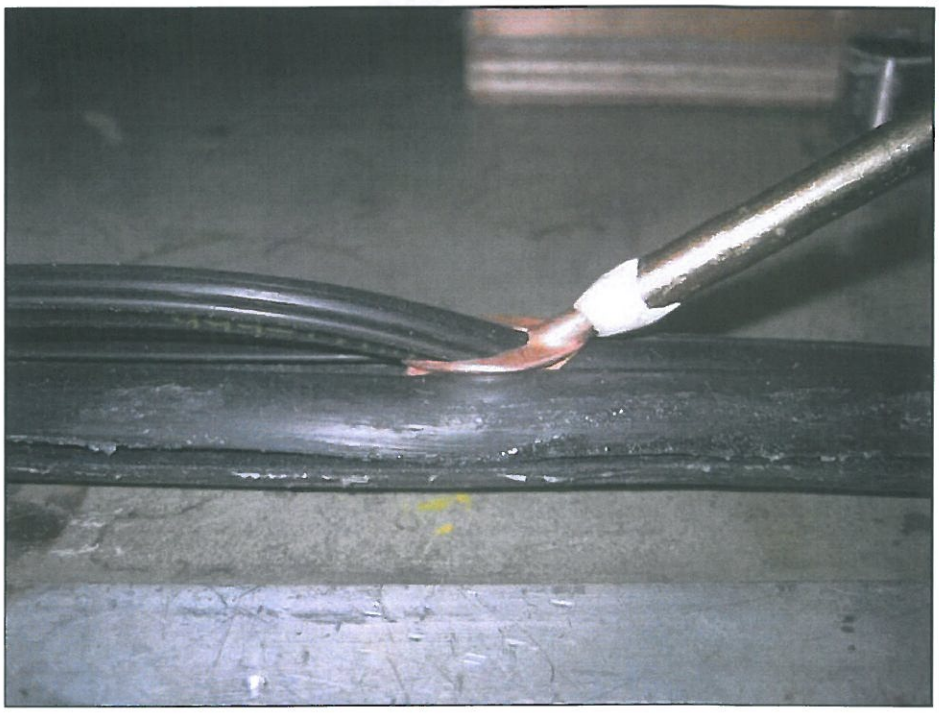


Figure 6

Figure 7

Figure 8

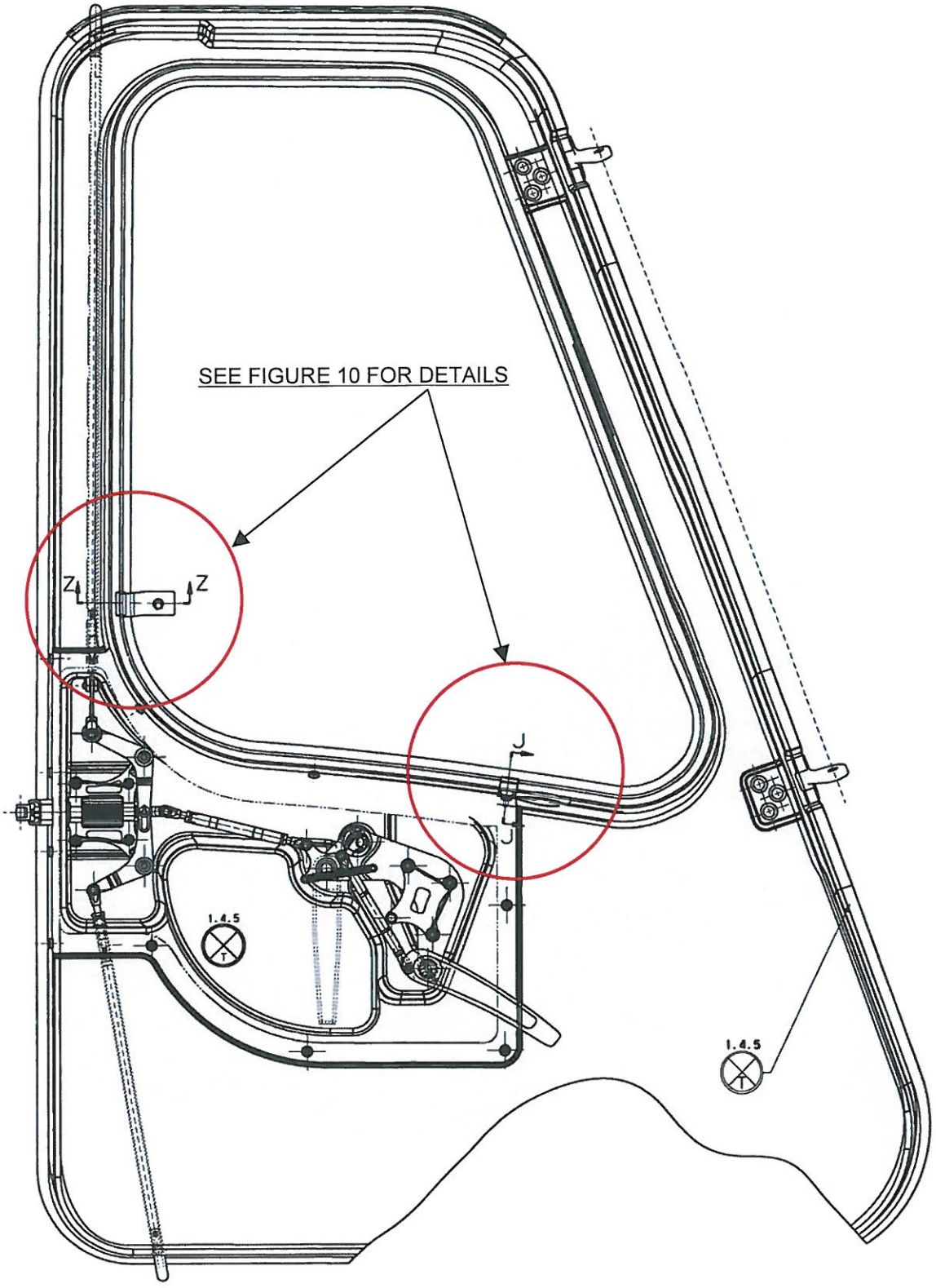
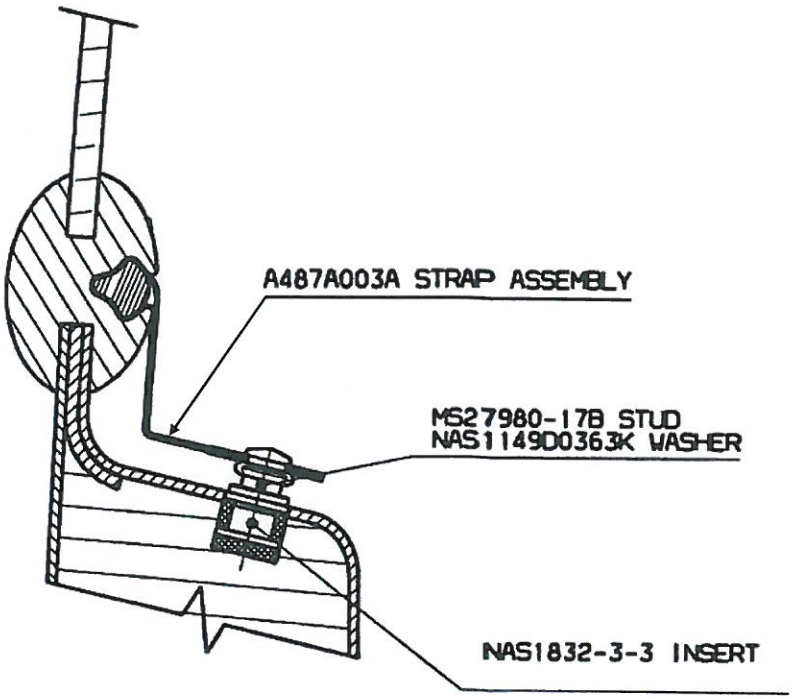
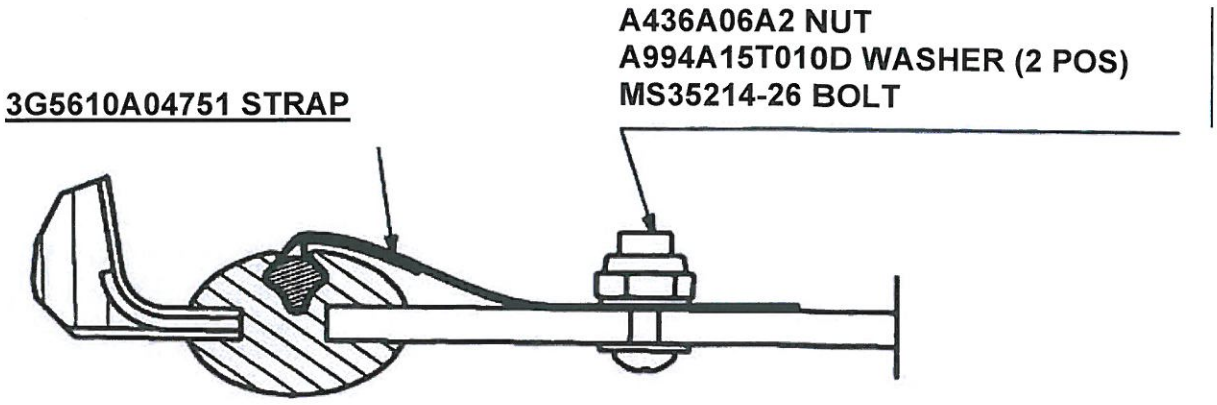


Figure 9



SCHEMATIC SECTION J-J
SHOWN FOR REFERENCE ONLY



SECTION Z-Z

Figure 10

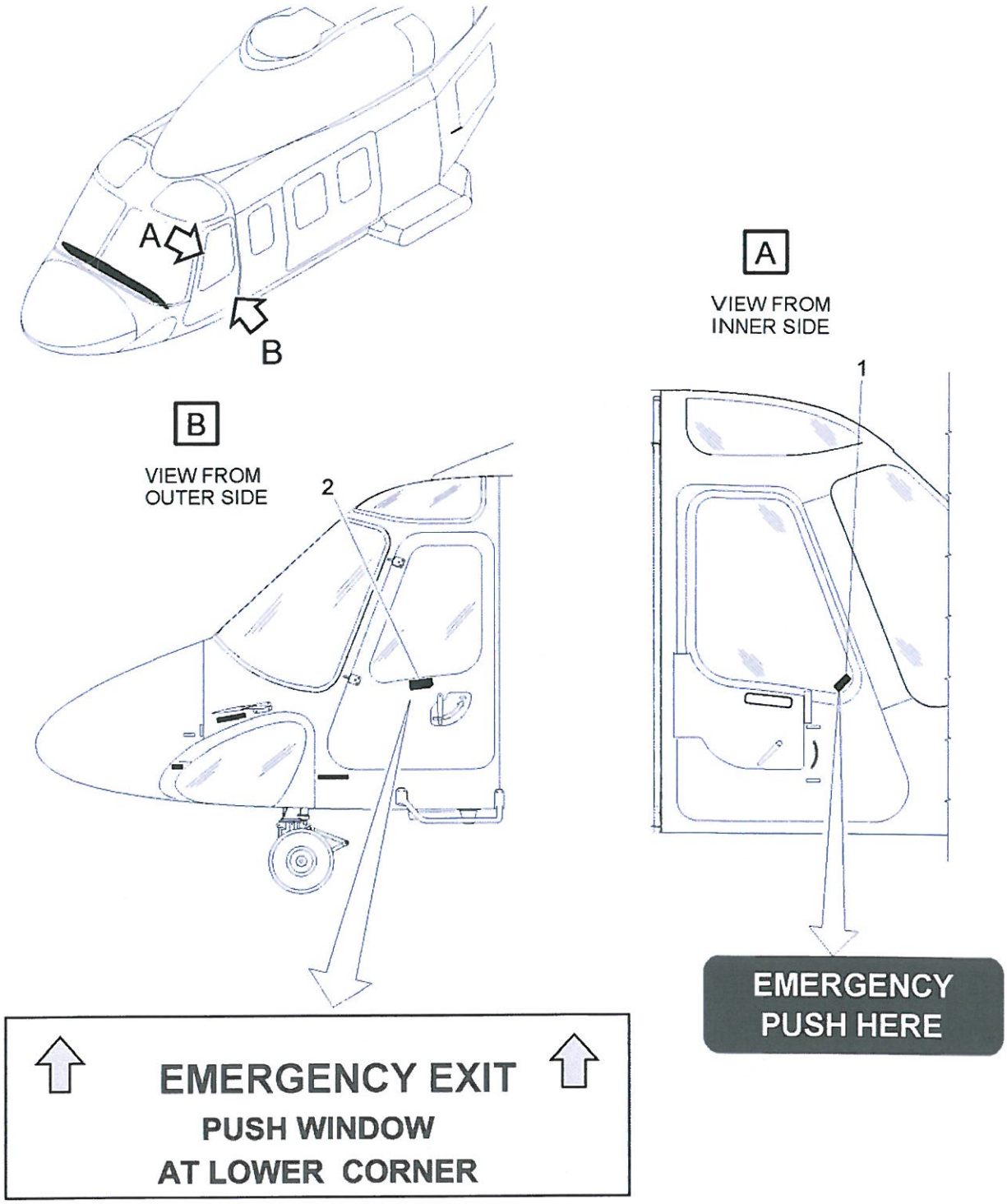

A
B
A
VIEW FROM
INNER SIDE
1
B
VIEW FROM
OUTER SIDE
2
EMERGENCY
PUSH HERE
EMERGENCY EXIT
PUSH WINDOW
AT LOWER CORNER

Figure 11

Figure 12

AGUSTA
AN AGUSTAWESTLAND COMPANY

Prego spedire a questo indirizzo: *Please send to the following address:* **AGUSTA S.p.A.** **PRODUCT SUPPORT ITALY** Via per Tornavento, 15 21019 Somma Lombardo (VA) - ITALY Tel.: +39 0331 711100 Fax: +39 0331 711180	**MODULO APPLICAZIONE BOLLETTINO TECNICO** *TECHNICAL BULLETIN COMPLIANCE FORM*	Data: *Date:*
	Numero: *Number:*	
	Revisione: *Revision:*	

Denominazione Cliente ed Indirizzo: *Customer Name and Address:*	Telefono: *Telephone:*	
	Fax:	
	Data Applicazione B.T.: *B.T. Compliance Date:*	

Modello Elicottero *Helicopter Model*	S/N	Matricola *Tail Number*	Ore Totali *Total Hours*	Ore D.U.R. *T.S.O.*

Note:
Remarks:

Informazioni:
Information:

Al fine di gestire le varianti alla configurazione base, in relazione all'emissione del Bollettino Tecnico, preghiamo di voler compilare il presente modulo in tutte le sue parti e spedirlo all'indirizzo sopra indicato. Si ringrazia per la gentile collaborazione data.

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. We thank you beforehand for the information given.