

Temporary Maintenance Instruction TMI 139-488 Rev B

Tail section - Bonded skin panels – Detailed inspection

All AW139 Helicopters

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

The present TMI will be evaluated for its introduction in the standard set of Technical Publication.

*If no further notice is received, the present document expires on: **January, 18th 2022.***

2021-01-18

Introduction

This TMI provides the instructions and requirements to perform the detailed inspection of the bonded skin panels installed on the tail section. All the information reported in the subsequent pages will be introduced into the IETP revision 39.

Tail section - Bonded skin panels - Detailed inspection

Table of contents

References
 Preliminary Requirements
 Procedure
 Requirements After Job Completion

List of tables

1 References
 2 Access points
 3 Zones
 4 Required Conditions
 5 Support Equipment
 6 Supplies
 7 Spares

List of figures

1 Tail section - Bonded skin panels - Detailed inspection (Sheet 1 of 6)
 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 2 of 6)
 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 3 of 6)
 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 4 of 6)
 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 5 of 6)
 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 6 of 6)
 2 How to measure the distance between debondings (example)

References

Table 1 References

Data Module	Title
39-A-00-20-00-00A-120A-A	Helicopter safety - Pre-operation (make helicopter safe for maintenance)
39-A-53-41-02-00A-520A-A	Strake – Remove Procedure
39-A-53-41-02-00A-720A-A	Strake - Install procedure

Table 2 Access points

Access Panel / Door Id	Data
Module No Access Point	

Table 3 Zones

Zone ID	Data Module
No Zones	

Preliminary Requirements

Required Conditions

Table 4 Required Conditions

Conditions	Data Module/Technical
Publication	The helicopter must be safe for maintenance 39-A-00-20-00-00A-120A-A

Support Equipment

Table 5 Support Equipment

Nomenclature	Identification No.	Qty
Ladders, step	GG-07-00	1
Hammer, aluminum	GF-06-00	1

Supplies

Table 6 Supplies

Nomenclature
No Supplies

Spares

Table 7 Spares

Nomenclature
No Spares

Safety Conditions

No Safety Condition

Procedure

- 1 Put the Ladders, step (GG-07-00) adjacent to the left side of the tail section.
- 2 Get access to the skin of the tail section.
- 3 If the helicopter installs the tail boom assembly P/N 3G5350A00136 go to the Step 5. In different conditions continue with the Step 4.
- 4 Examine the skin surface (Figure 1 Sheet 1 thru 4) (between STA 8700 and STA 12317.0). Use the Hammer, aluminum (GF-06-00) (large end of the head) and carefully tap the skin surface.

Notes

1. Refer to Step 4.1.1 (sheets 1 and 2 of Figure 1) when the Retro Modification P/N 3G5309P01812 is not installed on the tail section.
 2. Refer to Step 4.1.2 (sheets 3 and 4 of Figure 1) when the Retro Modification P/N 3G5309P01812 is installed on the tail section (on production helicopters or on helicopters modified by applicable Technical Bulletin). This is applicable also to all successive part numbers of the retro modification with the same first ten digits and different last two digits (e.g.: 3G5309P01813).
- 4.1 Obey the applicable sequence that follows:
- 4.1.1 Refer to sheets 1 and 2 of Figure 1 for AREA examination:
- AREA 1 (Do not examine the areas around the supports of the VOR/LOC antenna (3))
 - AREA 2 (Do not examine the area around the center support of the HF antenna (4) (if installed))
 - AREA 3
 - AREA 4 (Do not examine the areas of the longerons (5) and around the forward support of the HF antenna (4) (if installed))
 - AREA 5
 - AREA 6
- 4.1.2 Refer to sheets 3 and 4 of Figure 1 for AREA examination:
- AREA 1 (Do not examine the areas around the supports of the VOR/LOC antenna (3))
 - AREA 2
 - AREA 3
 - AREA 4 (Do not examine the area of the longeron (5).)
 - AREA 5 (Do not examine the areas of the longerons (5))
 - AREA 6 (Do not examine the areas of the longerons (5) and the area around the center support of the HF antenna (4) (if installed))
 - AREA 7
 - AREA 8

Note

During the subsequent operation you will listen for the discontinuity of bonding. A discontinuity is apparent by a change in the tone or different frequency of sound made compared to that made on a serviceable area. For example, a bond separation will give a hollow or dull sound, whereas a good bond will make a solid or clear sound.

- 4.2 Systematically tap the skin surface.
- 4.3 Listen the sound caused by the taps and identify when there is a change in the tone or frequency.
- 4.4 If bond separation is apparent, carefully use the aluminum hammer (small end of the head) to carefully identify the edges of the defective area.
- 4.5 Use an applicable marking pen or a chalk and do a mark along the edge of the defective area.
- 4.6 Measure the surface of each bond separation area. Each maximum permitted debonding area must not be more than 320 mm² (0.5 in²).
- 4.7 Measure the distance between the edges of the defective areas. The minimum permitted distance must be three times the largest debond dimension measured on a line between centers of two debonding areas. See the example shown in Figure 2 to help you during this check.
- 4.8 No debondings at a distance less than 3 mm (0.12 in) from the bond joint edges are permitted.
- 4.9 Get a note of each defective area you found that is more than the given limits.
- 4.10 Examine the skin surface above and below the strake (2). Do not remove the strake (2) at this time. Use the Hammer, aluminum (GF-06-00) (large end of the head) and carefully tap the skin surface.
- 4.11 If you find that the defective area goes below the strake (2), remove it. Refer to 39-A-53-41-02-00A-520A-A. This is to identify the edge of the defective area correctly. Repeat steps from 4.2 thru 4.9 also for the area below the strake (2).
- 4.12 If necessary, install the strake (2, Figure 1) if you found no bond separation or the found defects are in the given limits. Refer to 39-A-53-41-02-00A-720A-A.
- 4.13 Move the Ladders, step (GG-07-00) in a position adjacent to the right side of the tail section.
- 4.14 Get access to the skin of the tail section.
- 4.15 Continue the same procedure given in the Step 4 for the right side of the tail section. Only do the operations applicable to the right side of the tail section.
- 4.16 Tell the Manufacturer if, at the end of this inspection, you found defects that are more than the given limits.

Note

The subsequent procedure is applicable only if the helicopter installs the tail boom assembly P/N 3G5350A00136. Refer to sheets 5 and 6 of Figure 1 .

- 5 Examine the skin surface as follows:
 - 5.1 Get access to the skin panels (2), (11) and (12) (Figure 1 sheet 5) on the left side of the tail section. Use the Hammer, aluminum (GF-06-00) (large end of the head) and carefully tap the skin panels (2), (11) and (12) (Figure 1 sheet 5). Do not examine the areas around the rear support of the VOR/LOC antenna (3).

Note

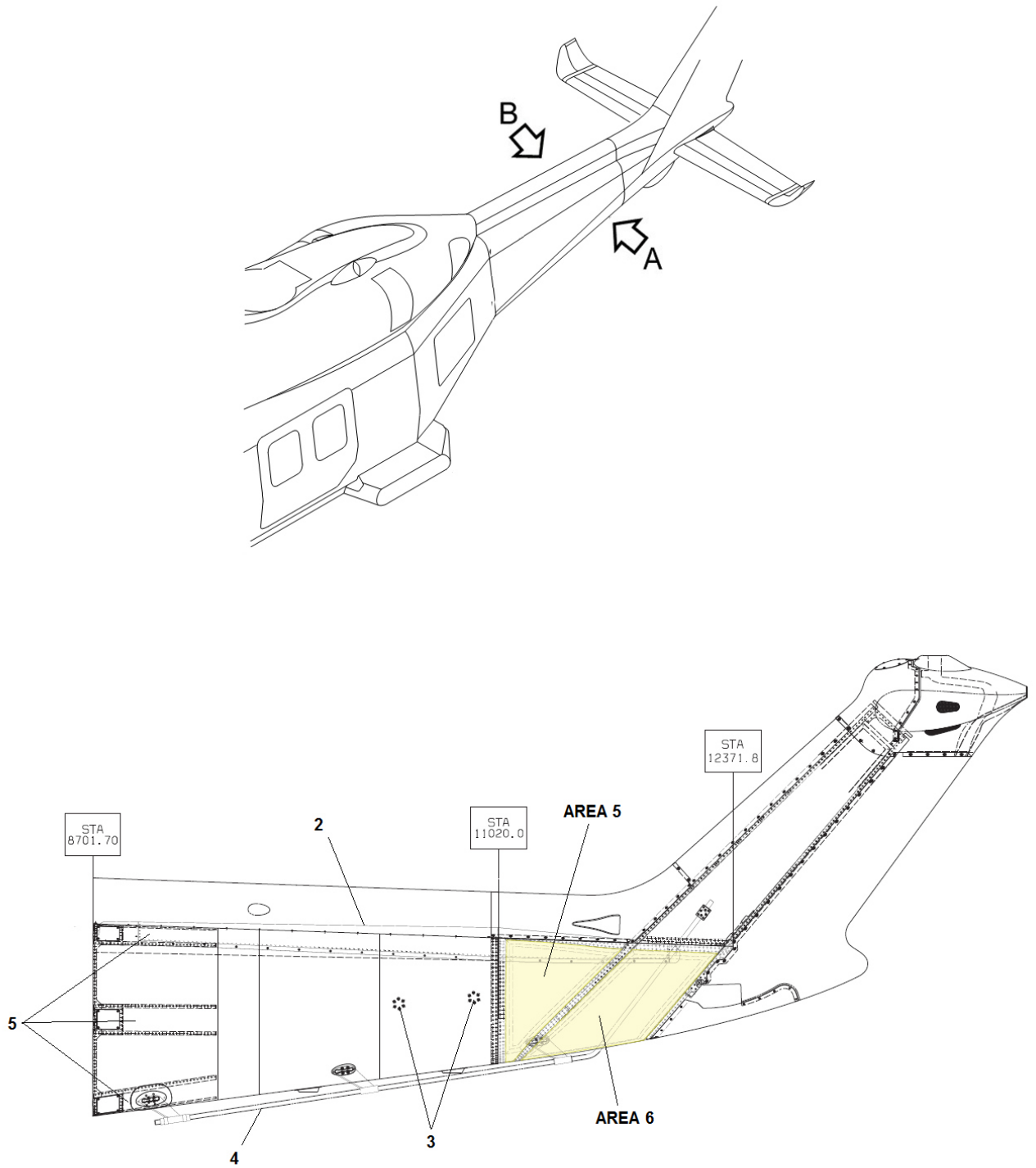
During the subsequent operation you will listen for the discontinuity of bonding. A discontinuity is apparent by a change in the tone or different frequency of sound made compared to that made on a serviceable area. For example, a bond separation will give a hollow or dull sound, whereas a good bond will make a solid or clear sound.

- 5.2 Systematically tap the skin panels surface.
- 5.3 Listen the sound caused by the taps and identify when there is a change in the tone or frequency.
- 5.4 If bond separation is apparent, carefully use the aluminum hammer (small end of the head) to carefully identify the edges of the defective area.
- 5.5 Use an applicable marking pen or a chalk and do a mark along the edge of the defective area.
- 5.6 Measure the surface of each bond separation area. Each maximum permitted debonding area must not be more than 320 mm² (0.5 in²).
- 5.7 Measure the distance between the edges of the defective areas. The minimum permitted distance must be three times the largest debond dimension measured on a line between centers of two debonding areas. See the example shown in Figure 2 to help you during this check.
- 5.8 No debondings at a distance less than 3 mm (0.12 in) from the bond joint edges are permitted.
- 5.9 Get a note of each defective area you found that is more than the given limits.
- 5.10 Examine the skin surface above and below the rear strake, part of the Strake (1). Do not remove the rear strake at this time. Use the Hammer, aluminum (GF-06-00) (large end of the head) and carefully tap the skin surface (11 and 12, Figure 1 sheet 5).
- 5.11 If you find that the defective area goes below the rear strake, part of the Strake (1), remove it. Refer to applicable steps of 39-A-53-41-02-00A-520A-A. This is to identify the edge of the defective area correctly.
- 5.12 If necessary, install the rear strake, part of the Strake (1), if you found no bond separation or the found defects are in the given limits. Refer to applicable steps of 39-A-53-41-02-00A-720A-A.
- 6 Move the Ladders, step (GG-07-00) in a position adjacent to the right side of the tail section.
- 7 Continue the same procedure given in the Step 5 for the skin panels (2), (11) and (12) (Figure 1 sheet 5) of the right side of the tail section. Only do the operations applicable to the right side of the tail section.
- 8 Get access to the top side of the tail section (Figure 1 sheet 6).
- 9 Open the access door 310AL. Refer to 39-A-06-41-00-00A-010A-A.
- 10 Do the same procedure given in the Step 5 for the skin panels (4) , (5) and (6) (Figure 1 sheet 6) on the top side of the tail section. Only do the operations applicable to the top side of the tail section.
- 11 Close the access door 310AL. Refer to 39-A-06-41-00-00A-010A-A.
- 12 Move the ladders away from the tail section.

- 13 Get access to the bottom side of the tail section (Figure 1 sheet 6).
- 14 Do the same procedure given in the Step 5 for the skin panels (7) , (8), (9) and (10) (Figure 1 sheet 6) on the bottom side of the tail section. Only do the operations applicable to the bottom side of the tail section.
- 15 Tell the Manufacturer if, at the end of this inspection, you found defects that are more than the given limits.

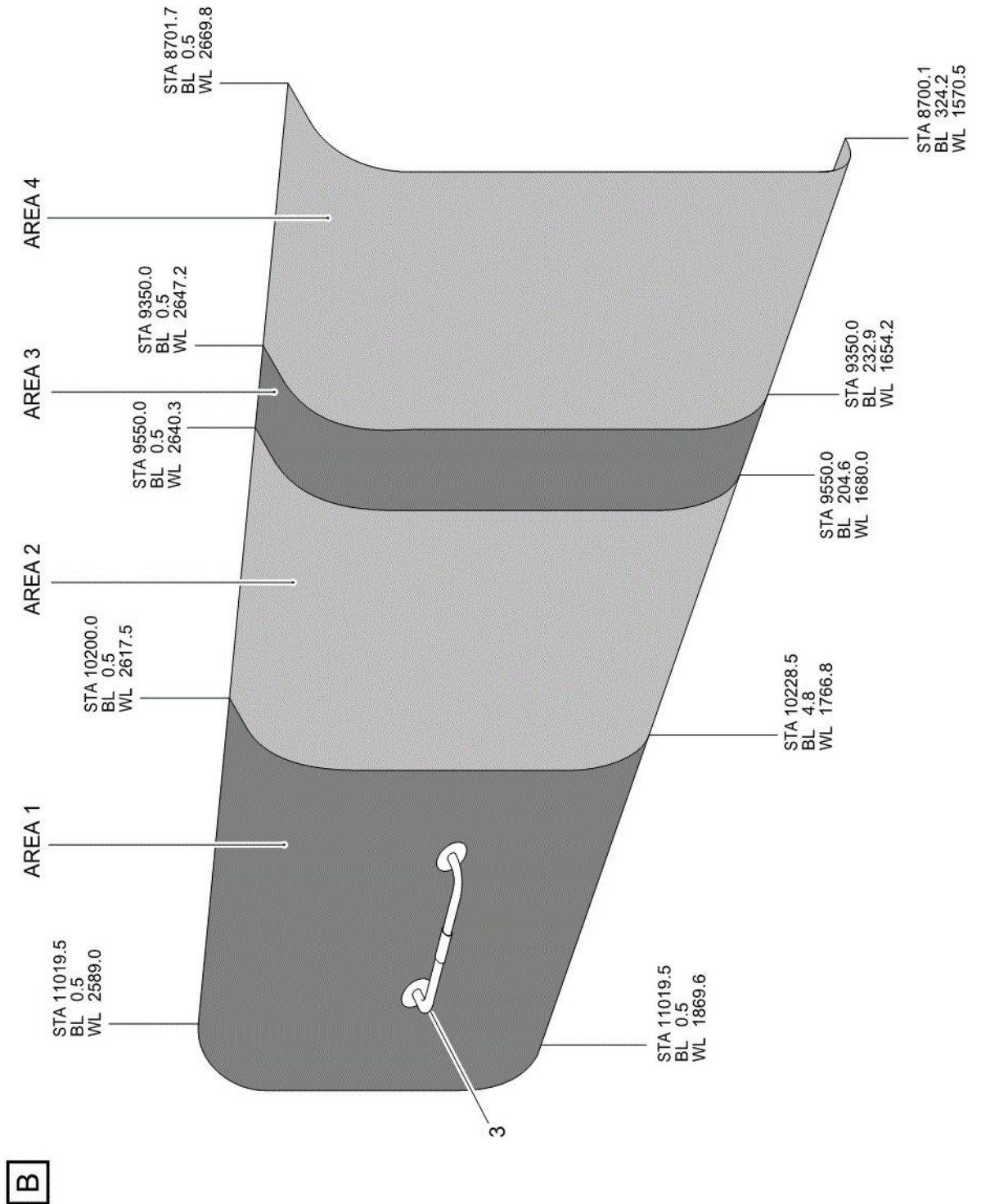
Requirements After Job Completion

- 1 Remove all the tools and the other items from the work area. Make sure that the work area is clean.
- 2 If necessary, remove the ladder from the tail section.



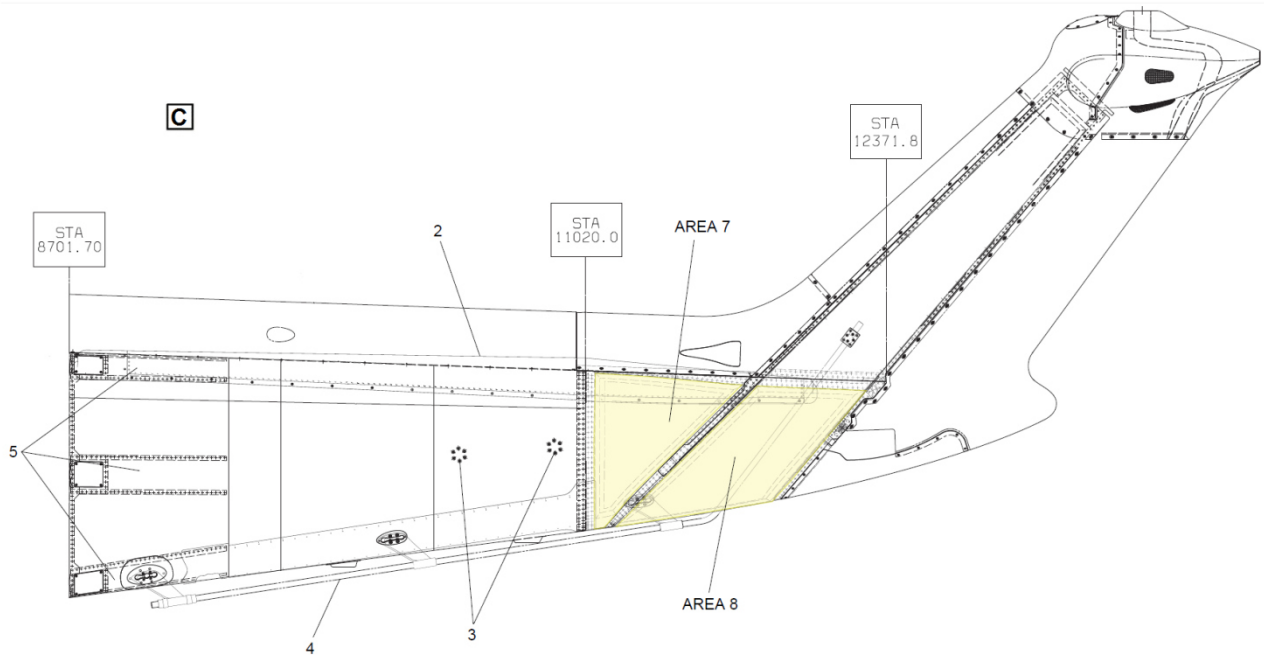
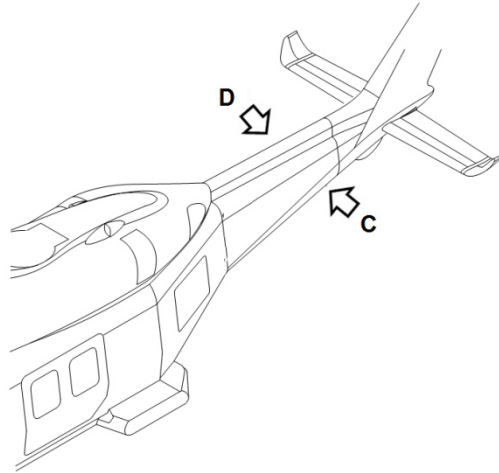
FOR AREA DELIMITATIONS SEE SHEET 2

Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 1 of 6)



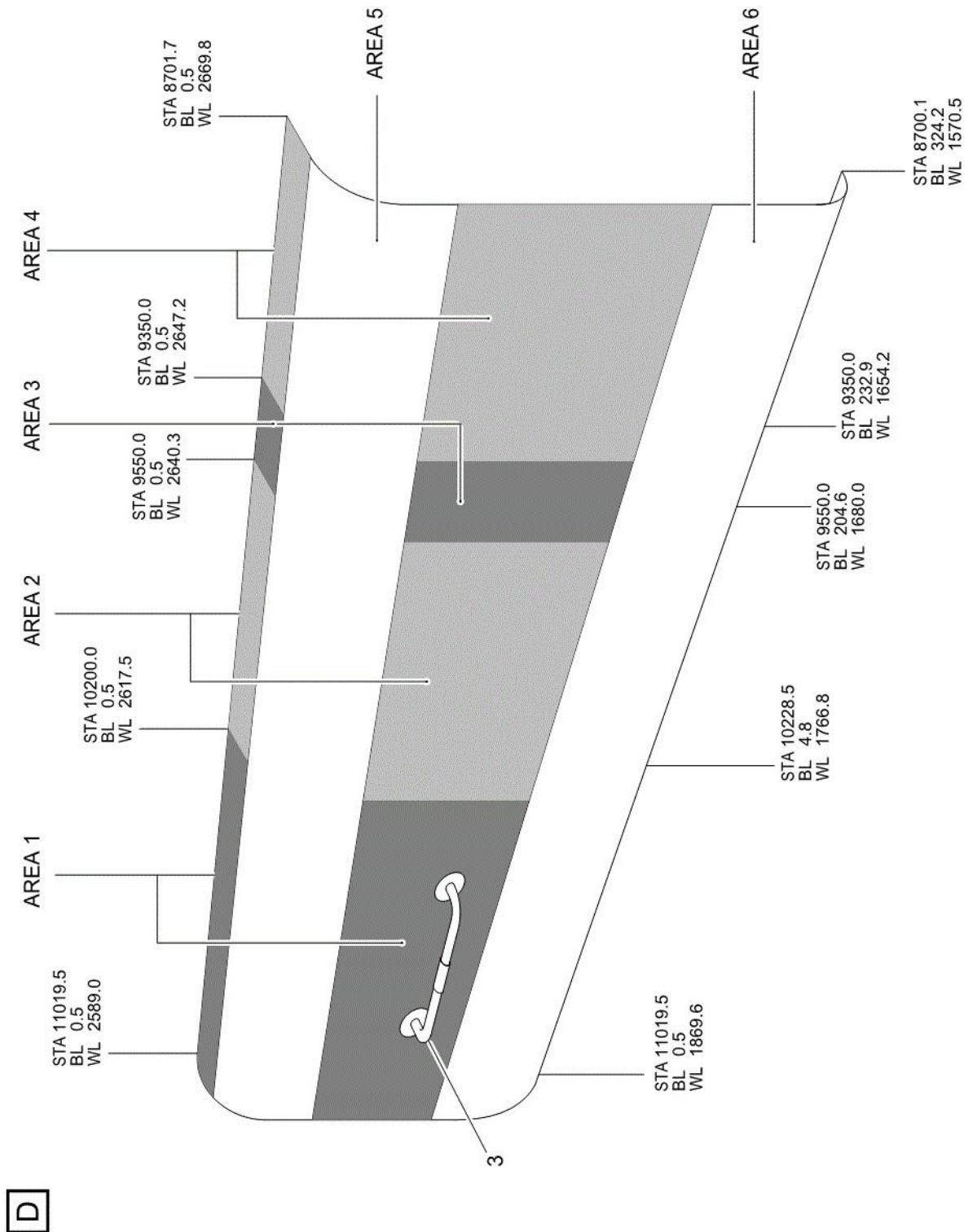
ICN-39-A-534000-G-00001-09000-A-002-01

Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 2 of 6)



FOR AREA DELIMITATIONS SEE ALSO SHEET 4

Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 3 of 6)



D

ICN-39-A-534000-G-00001-08957-A-001-01

Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 4 of 6)

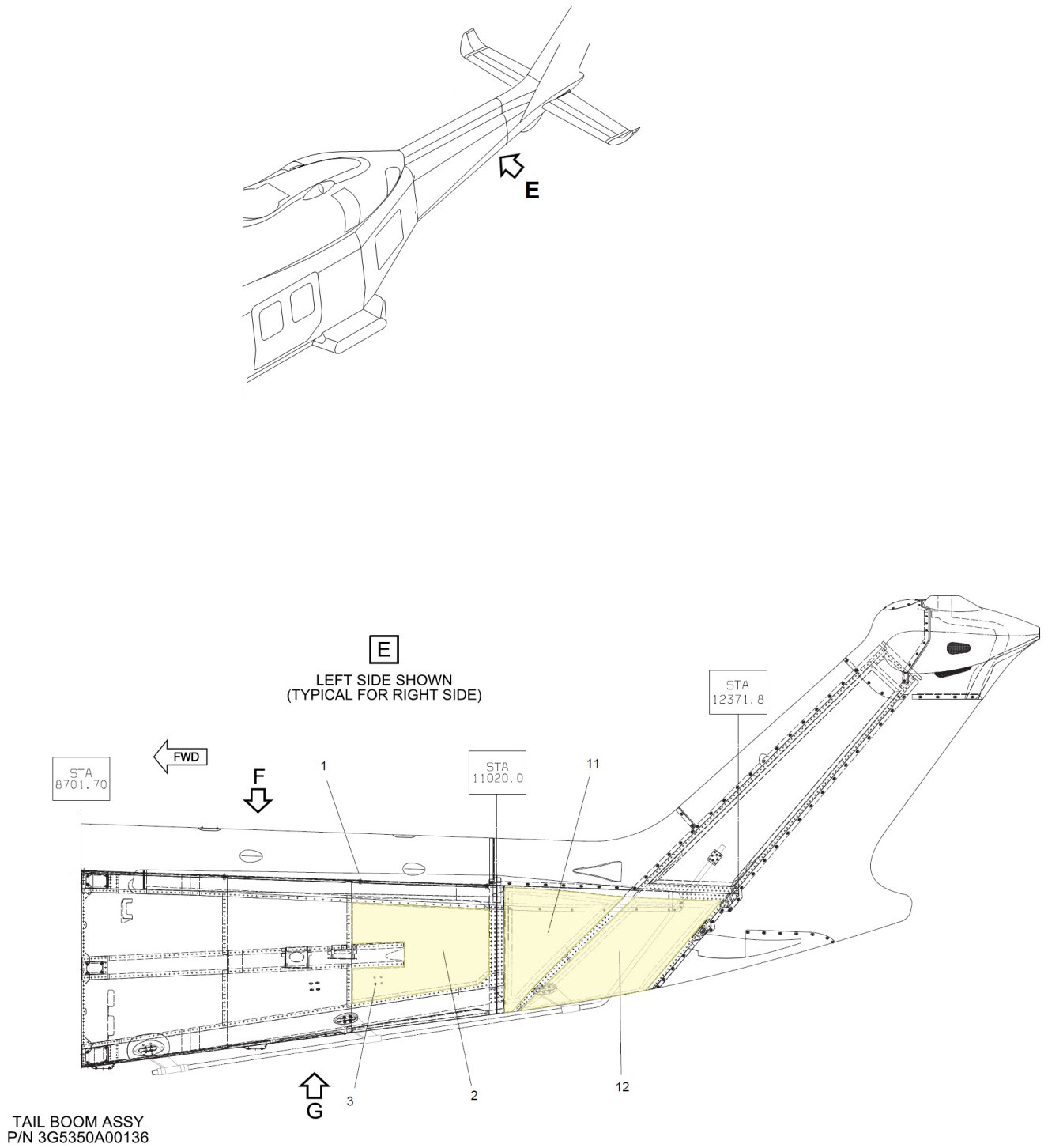
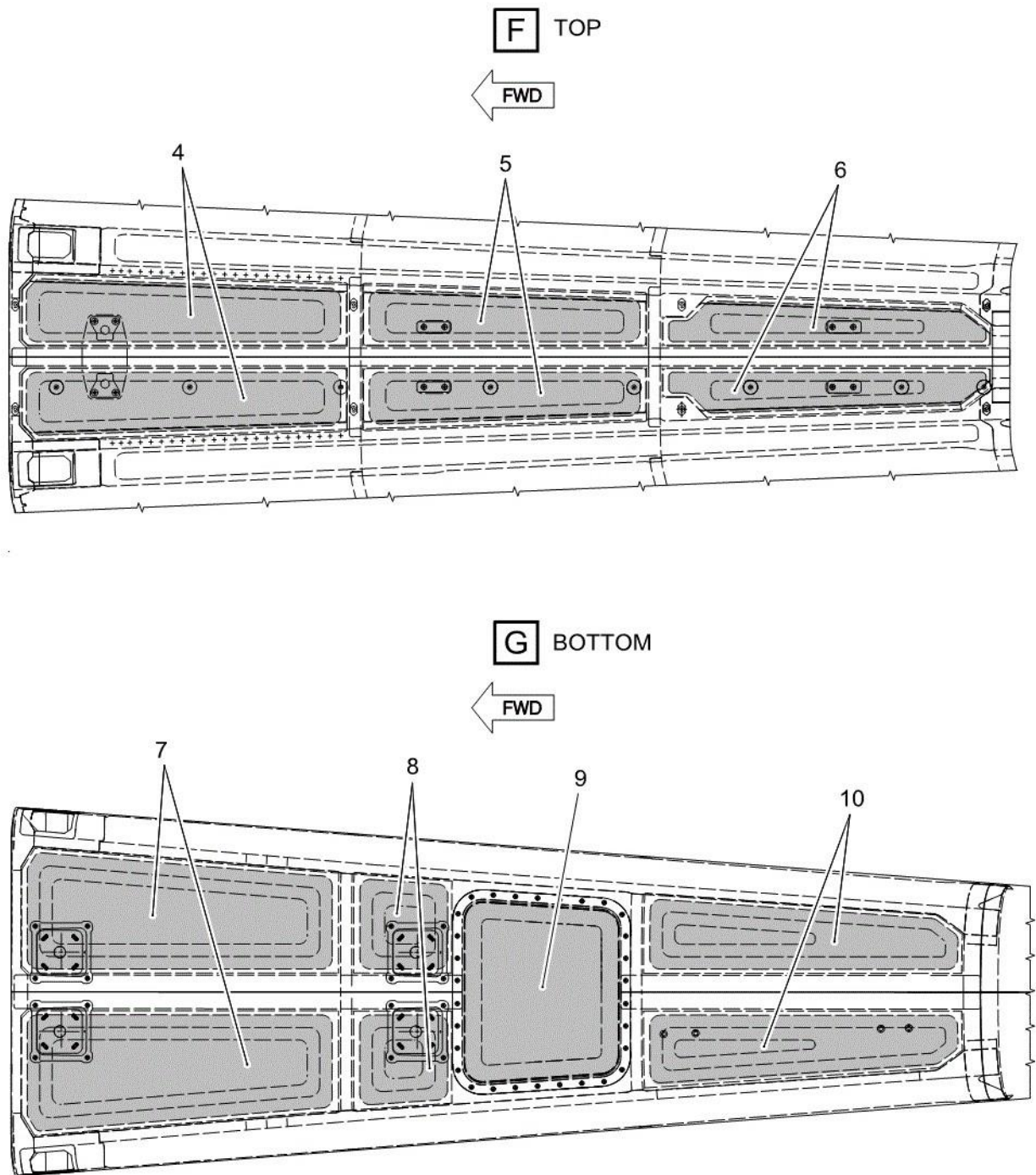


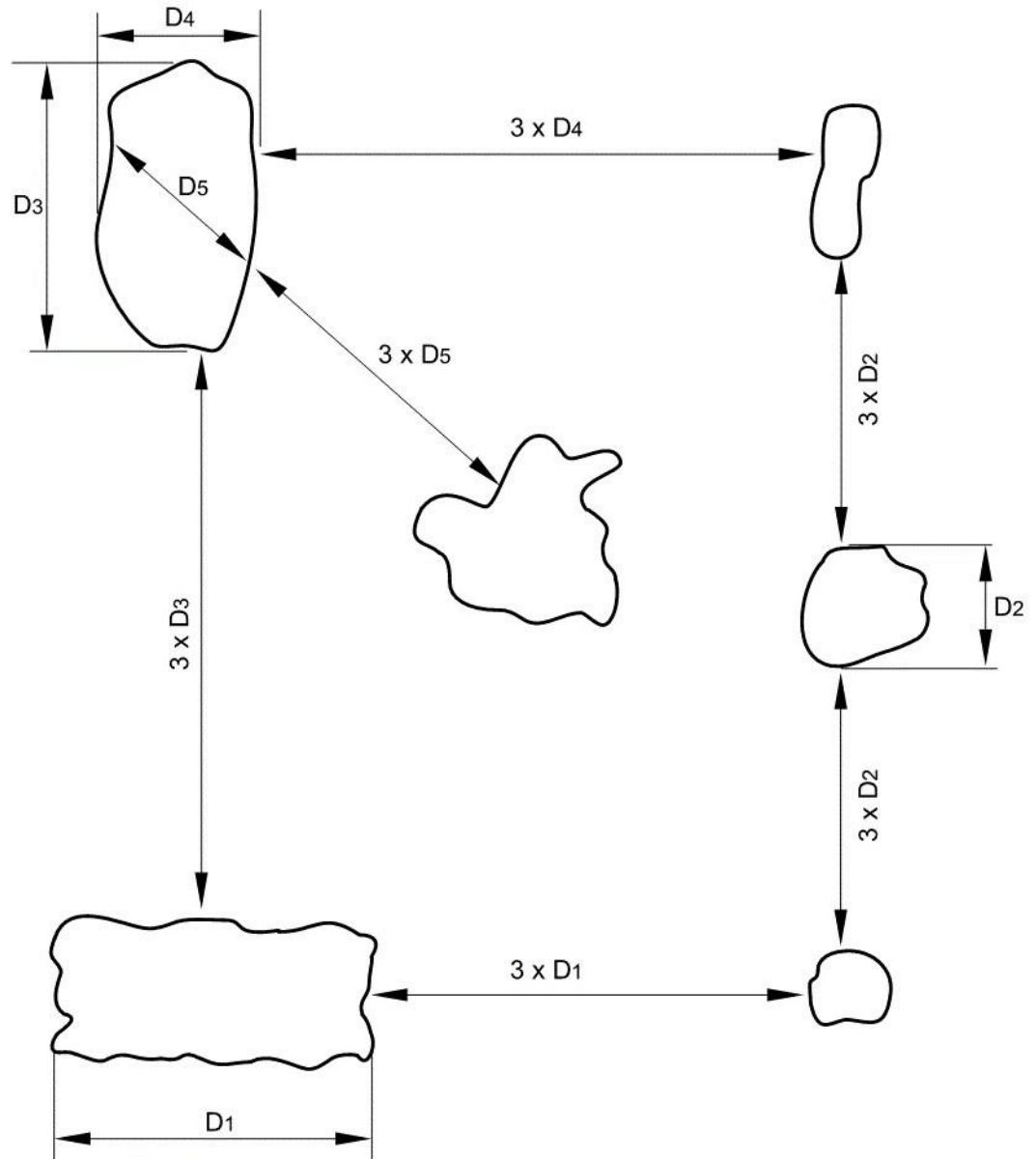
Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 5 of 6)



TAIL BOOM ASSY
P/N 3G5350A00136

ICN-39-A-534000-G-00001-29106-A-001-01

Figure 1 Tail section - Bonded skin panels - Detailed inspection (Sheet 6 of 6)



ICN-39-A-534000-G-00001-08694-A-001-01

Figure 2 How to measure the distance between debondings (example)