# Temporary Maintenance Instruction
# TMI 139-545

# Upper LH /RH Longeron Assy
# P/N 3G5350A00335 / 3G5350A00535
# Replacement Procedure

## All AW139 equipped with Tailboom P/N 3G5350A00135

*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: July 15th 2022.*

**2021-07-15**

## Introduction

This TMI provides the instructions and requirements to replace the AW139 LH/RH longeron assy P/N 3G5350A00335 / 3G5350A00535 installed on tail boom assy P/N 3G5350A00135.

The procedures contained in this TMI are not included in any existing DM.

The content of this TMI will be endorsed within the Structural Repair Publication at the earliest opportunity.

# Left/right upper longeron - Replacement (remove and install a new item)

## Table of contents



## List of tables



## List of figures

## *References*

*Table 1 References*

| Data Module | Title |
|---|---|
| No References | |

*Table 2 Access points*

| Access Panel / Door Id | Data Module |
|---|---|
| No Access Point | |

*Table 3 Zones*

| Access Panel / Door Id | Data Module |
|---|---|
| No Zones | |

## *Preliminary Requirements*

### Required Conditions

*Table 4 Required Conditions*

| Conditions | Data Module/Technical Publication |
|---|---|
| Applicability: P/N 3G5350A00135. Additional effectivity restrictions: none. | |
| The helicopter must be safe for maintenance | 39-A-00-20-00-00A-120A-A |
| The tail section must be removed | 39-A-53-40-00-00A-520B-A |

*Table 4 Required Conditions*

| Conditions | Data Module/Technical Publication |
|---|---|
| The access panels 311AL, 311BL, 311CL, 312AL, 312BL and 312CL must be removed | 39-A-06-41-00-00A-010A-A |
| The front cover must be removed | 39-A-53-41-01-00A-520A-A |

## Support Equipment

*Table 5 Support Equipment*

| Nomenclature | Identification No. | Qty |
|---|---|---|
| Positioning and Drilling Tool Kit | 3G5350A00133A005A | 1 |
| Starting Drill | CBSD-4-3-N-1 | 1 |
| Starting Reamer | CBSR-4-3-N-1 | 1 |
| Starting Reamer | CBG-4-3-N-1 | 1 |
| Flared Split Sleeve | CBS-4-3-N-16F | 200 |
| Mandrel | CBM-4-3-N-1-30-VI | 2 |
| Mandrel | CBR-4-3-N-1-M4.775 | 1 |
| Mandrel Check Fixture | CBMG-4-3-N | 1 |
| Assy, Modular Nosecap | MEN-14A-0423F | 1 |
| Assy, Lb Puller | LB-20 | 1 |
| Hand Puller | HP-20 | 1 |
| Nose Cap Assy | FT-20 | 1 |

## Supplies

*Table 6 Supplies*

| Nomenclature | Identification No. | Qty |
|---|---|---|
| Sealant | C465 | AR |
| Sealing compound | C274 | AR |
| Oil | C139 | AR |
| Aliphatic naphtha | C059 | AR |
| Rivet (P/N HL20RB-6-6) | Local supply | AR |
| Rivet (P/N HL20RB-6-5) | Local supply | AR |
| Rivet (P/N HL20RB-6-4) | Local supply | AR |
| Rivet (P/N HL20RB-6-9) | Local supply | AR |
| Rivet (P/N HL20RB-6-8) | Local supply | AR |
| Rivet (P/N HL20RB-6-7) | Local supply | AR |
| Collar (P/N HL86W-6) | Local supply | AR |

*Table 6 Supplies*

| Nomenclature | Identification No. | Qty |
|---|---|---|
| Rivet (P/N A297A06TW13) | Local supply | AR |
| Rivet (P/N A298A05TW05) | Local supply | AR |
| Rivet (P/N A298A06TW13) | Local supply | AR |
| Rivet (P/N AGS4719-508) | Local supply | AR |
| Rivet (P/N AGS4719-512) | Local supply | AR |
| Rivet (P/N AGS4720-512) | Local supply | AR |
| Rivet (P/N AS46788-512) | Local supply | AR |
| Rivet (P/N MS90353S0603) | Local supply | AR |
| Rivet (P/N MS90353S0604) | Local supply | AR |
| Rivet (P/N NAS1721H5L3A) | Local supply | AR |
| Rivet (P/N NAS9301BNS-5-03) | Local supply | AR |
| Rivet (P/N NAS9301BNS-6-03) | Local supply | AR |
| Rivet (P/N NAS9301BNS-6-04) | Local supply | AR |
| Rivet (P/N NAS9301BNS-6-05) | Local supply | AR |
| Rivet (P/N NAS9301BNS-6-12) | Local supply | AR |
| Rivet (P/N NAS9302BNS-4-02) | Local supply | AR |
| Rivet (P/N NAS9302BNS-6-04) | Local supply | AR |
| Rivet (P/N NAS9302BNS-6-05) | Local supply | AR |
| Rivet (P/N NAS9302BNS-6-12) | Local supply | AR |

## Spares

*Table 7 Spares*

| Nomenclature | Identification No. | Qty |
|---|---|---|
| LH upper longeron assembly | 3G5350A00335 | 1 |
| RH upper longeron assembly | 3G5350A00535 | 1 |
| Bushing | 3G5350A10451 | AR |
| LH upper longeron assembly (productive) | 3G5350A00335A1 | 1 |
| RH upper longeron assembly (productive) | 3G5350A00535A1 | 1 |

## Safety Conditions

**WARNING**

**The materials that follow are dangerous. Before you do this procedure, make sure that you know all the safety precautions and first aid instructions for these materials:**

- **Sealant (C465)**
- **Sealing compound (C274)**
- **Oil (C139)**
- **Aliphatic naphtha (C059) .**

## *Procedure*

**Note**

1. 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.
2. Shape the cables in order to prevent interference with the structure and the other existing installations, using where necessary suitable lacing cords.
3. During drilling operations pay extreme attention in order to prevent instruments, cables and hosing damage. After drilling, clean the area and remove sharp edges. Apply on bare metal a light film of primer unless the hole is used for ground connection.
4. Perform cold working on Aluminium Alloy structure holes for fasteners type "Hi-Lok".
5. Use Aliphatic naphtha (C059) to degrease. Cleaned surfaces shall be allowed to air dry for at least 30 minutes before bonding.
6. Let adhesive cure at room temperature for at least 24 hours unless otherwise specified.
7. All dimensions are in mm.

1 During this procedure:

- Refer to CSRP for all the processes described in this DM.
- Protect bare metal surfaces with Primer
- Deburr new fastener holes
- Break sharp edges with radius 0.13 thru 0.38 mm
- Select actual fastener grip at installation
- Dip the shank of fasteners into Sealant (C465) before installation.

2 Get access to the left upper side of the tailboom.

3 Install the Positioning and Drilling Tool Kit (3G5350A00133A005A) ( Figure 2) on the tailboom. To do this, proceed as follows:

**Note**

1. The side of the positioning and drilling tool kit with the label “TAIL AFTER” must be in contact with the tailboom (the label “REAR FWD” must be visible).
2. Install the spacer (ITEM 20, Figure 2/Sheet 1) with the boss in contact with the fitting plate.
3. The nuts (ITEM X1) must be tightened by hand only with the special PIN (ITEM 10). Use suitable wrench to lock the nut.

3.1 Put the positioning and drilling tool kit in its position on the tailboom.

3.2 Secure the plate of the tool kit in the points 2-3-4-5-6. To do this, install the items that follow:

- the five special pins (ITEM 10)
- the five spacers (ITEM 20)
- the five washers (ITEM X2)
- the five nuts (ITEM X1).

4 Measure the distance between the upper right tail fitting front surface and the plate of the positioning and drilling tool kit in the four indicated positions. Record the distance measures in the relevant table of Figure 2/Sheet 10.

5 Remove the positioning and drilling tool kit from the tailboom. To do this, proceed as follows:

5.1 Unsecure the plate of the tool kit in the points 2-3-4-5-6. To do this, remove the items that follow:

- the five nuts (ITEM X1)
- the five washers (ITEM X2)
- the five spacers (ITEM 20)
- the five special pins (ITEM 10).

5.2 Remove the positioning and drilling tool kit from the tailboom.

6 Remove the left upper longeron ( Figure 1) from the tailboom as follows:

6.1 Remove all the rivets that attach the left upper machined up to the left upper longeron and to the tailboom.

6.2 Remove the left upper machined up from the tailboom.

6.3 Remove all the rivets that attach the left upper machined down to the left upper longeron and to the tailboom.

6.4 Remove the left upper machined down from the tailboom.

6.5 Remove all the rivets that attach the left upper longeron assembly to the tailboom.

6.6 Remove the left upper longeron assembly from the tailboom.

**Note**

Part required to replace the left upper longeron: 3G5350A00335. Productive P/N 3G5350A00335A1 shall be provided.

7 Temporarily put the new LH upper longeron assembly (3G5350A00335) , the left upper machined up and the left upper machined down in their correct position on the tailboom.

**CAUTION**

**Pay attention during the longeron assembly positioning operation. If possible, perform little adjustment to find the best longeron assembly installation position that ensure the minimum edge margin requirement with existing rivet holes.**

8 Do the steps that follow to temporarily lock the longeron assembly to the positioning and drilling tool kit:

8.1 Repeat the step 3.1 to install the positioning and drilling tool kit.

**Note**

1. Install the spacer (ITEM 18, Figure 2/Sheet 1) with the boss in contact with the fitting plate.
2. The nuts (ITEM X1) must be tightened by hand only with the special PIN (ITEM 15). Use suitable wrench to lock the nut.

8.2 Secure the plate of the tool kit in the points 2-3-4-5-6. To do this, install the items that follow:

- the five special pins (ITEM 15)
- the five spacers (ITEM 18)
- the five washers (ITEM X2)
- the five nuts (ITEM X1).

9 Countermark on the longeron assembly the position of the rivets and the existing holes of the tailboom skin.

10 Remove the left upper machined up and the left upper machined down from the longeron assembly and the tailboom.

11 Remove the longeron assembly from the positioning and drilling tool kit.

12 Drill on the longeron assembly the holes that you have countermarked.

13 Apply Sealing compound (C274) on the mating surfaces between the longeron assembly and the tailboom skin.

14 Put the longeron assembly in its position on the tailboom.

15 Repeat the step 8 to lock the longeron assembly to the positioning and drilling tool kit.

16 Install all the rivets that attach the longeron assembly to the tailboom. Use the rivets shown in the tables of Figure 1.

17 Apply Sealing compound (C274) on the mating surfaces between the left upper machined up and:
- the longeron assembly and
- the tailboom skin.

18 Apply Sealing compound (C274) on the mating surfaces between the left upper machined down and:
- the longeron assembly and
- the tailboom skin.

19 Put the left upper machined up and the left upper machined down in their position on the longeron assembly and the tailboom.

20 Install all the rivets that attach the left upper machined up and the left upper machined down to the longeron assembly and to the tailboom.

21 Seal:
- the longeron assembly
- the left upper machined down
- the left upper machined up

with the Sealant (C465) .

22 Remove the items that follow from the positioning and drilling tool kit at the left upper fitting point:
- the special pin (ITEM 15)
- the spacer (ITEM 18)
- the washer (ITEM X2)
- the nut (ITEM X1).

23 Install the drilling tool (11.8 mm diameter) (ITEM 13) and the three special screws (ITEM 5) on the positioning and drilling tool kit at the left upper fitting point.

24 Drill the fitting hole on the new longeron assembly through the drilling tool (11.8 mm diameter) (ITEM 13). To do this, use the reamer (11.8 mm diameter).

25 Remove the drilling tool (11.8 mm diameter) (ITEM 13) from the positioning and drilling tool kit.

26 Install the drilling tool (32 mm diameter) (ITEM 13) on the positioning and drilling tool kit.

**Note**
The maximum tolerance on the face of the boss with respect to the measure taken is 0.1 mm.

27 Spot-face the fitting boss to the measure recorded at the step 4. To do this, use the 32 mm spot-facer.

28 Remove the drilling tool (32 mm diameter) (ITEM 13) from the positioning and drilling tool kit.

29 Install the drilling tool (12.3 mm diameter) (ITEM 13) on the positioning and drilling tool kit.

30 Drill the fitting hole on the new longeron assembly through the drilling tool (12.3 mm diameter) (ITEM 13). To do this, use the reamer (12.3 mm diameter).

31 Remove the drilling tool (12.3 mm diameter) (ITEM 13) from the positioning and drilling tool kit.

32 Install the drilling tool (12.6 mm diameter) (ITEM 13) on the positioning and drilling tool kit.

33 Drill the fitting hole on the new longeron assembly through the drilling tool (12.6 mm diameter) (ITEM 13). To do this, use the reamer (12.6 mm diameter).

34 Remove the drilling tool (12.6 mm diameter) (ITEM 13) from the positioning and drilling tool kit.

35 Install the drilling tool (12.75 mm diameter) (ITEM 13) on the positioning and drilling tool kit.

36 Drill the fitting hole on the new longeron assembly through the drilling tool (12.75 mm diameter) (ITEM 13). To do this, use the reamer (12.75 mm diameter).

37 Remove the drilling tool (12.75 mm diameter) (ITEM 13) and the three special screws (ITEM 5) from the positioning and drilling tool kit.

38 With reference to the previous steps, do the steps that follow through the plate of the positioning and drilling tool kit:

38.1 Ream the fitting hole to 13.8 mm in diameter.

38.2 Ream the fitting hole to 14.5 mm in diameter.

38.3 Ream the fitting hole to 14.615 - 14.620 mm in diameter.

39 Remove the positioning and drilling tool kit from the tailboom.

40 Install the Bushing (3G5350A10451) in the fitting hole prepared. Do the steps that follow:

40.1 Clean the bushing and the fitting hole surface.

40.2 Decrease the temperature of the bushing. To do this, put the bushing in a fridge for the necessary time.

40.3 Heat the housing of the bushing with a suitable heat gun.

40.4 Apply a film of Oil (C139) on the bushing with a dampened cloth.

40.5 Install the Bushing (3G5350A10451) in the fitting hole of the new longeron assembly.

40.6 Measure the bushing internal diameter. If necessary, ream the bushing hole to 12.750 – 12.820 mm diameter.

**Note**

Part required to replace the right upper longeron: 3G5350A00535. Productive P/N 3G5350A00535A1 shall be provided.

41 To replace the RH upper longeron assembly (3G5350A00535) , do the step 2 thru the step 40 on the right upper side of the tailboom.

## *Requirements After Job Completion*

1 Install the tail section Refer to 39-A-53-40-00-00A-720B-A

2 Install the access panels 311AL, 311BL, 311CL, 312AL, 312BL and 312CL. Refer to 39-A-06-41-00-00A-010A-A

3 Install the front cover Refer to 39-A-53-41-01-00A-720A-A

4 Remove all the tools and other items from the work area.

5 Make sure that the work area is clean.

6 Do a loose object check.

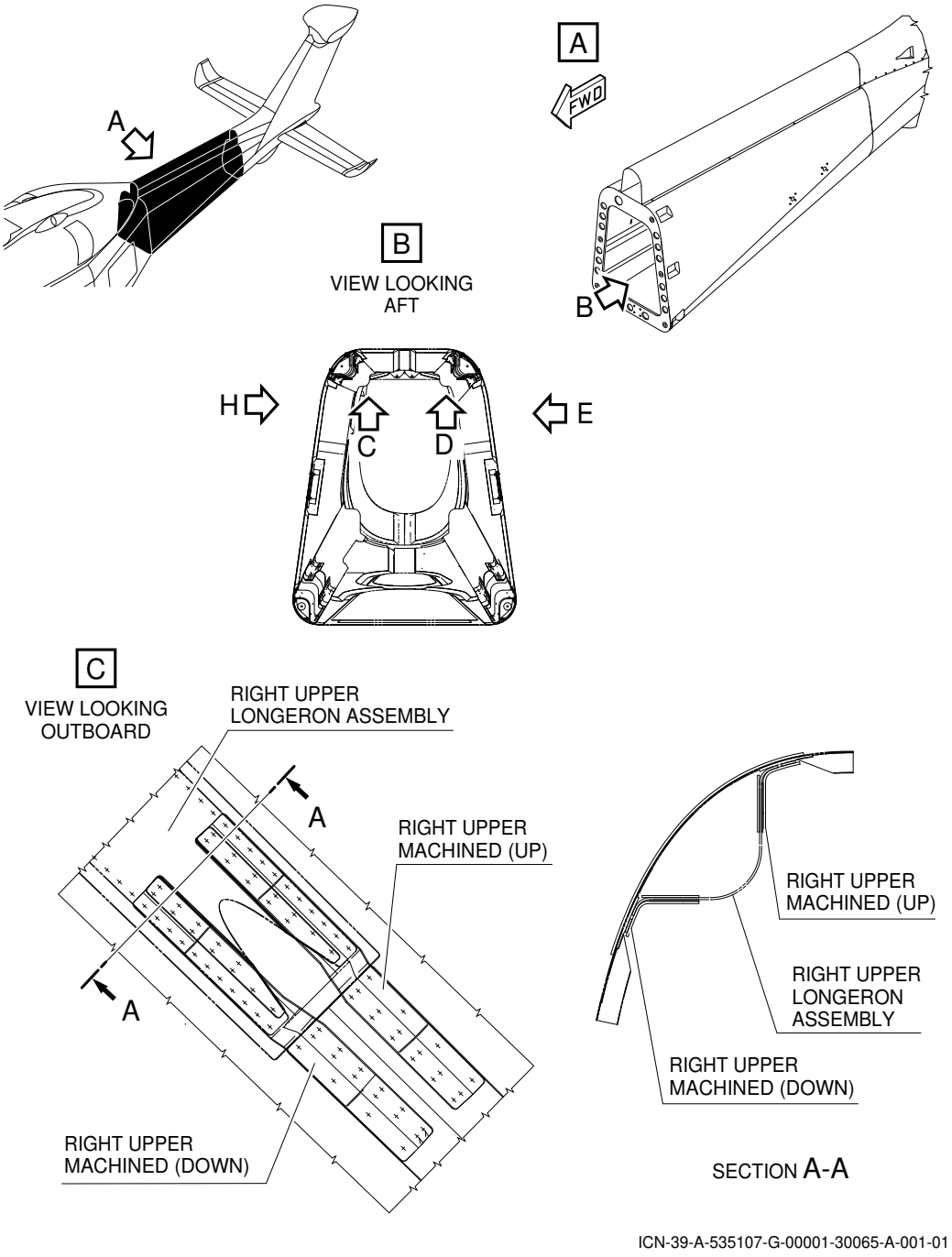


*Figure 1 (Sheet 1 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

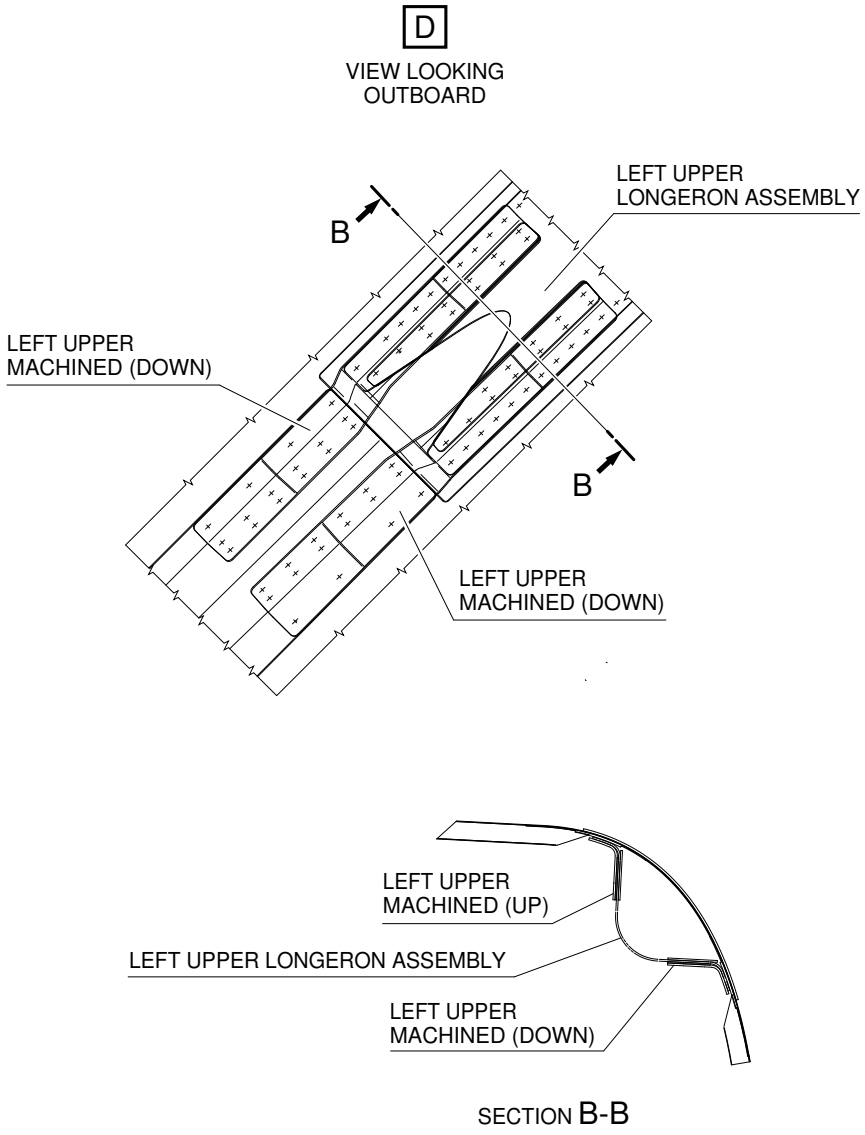


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*Figure 1 (Sheet 2 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

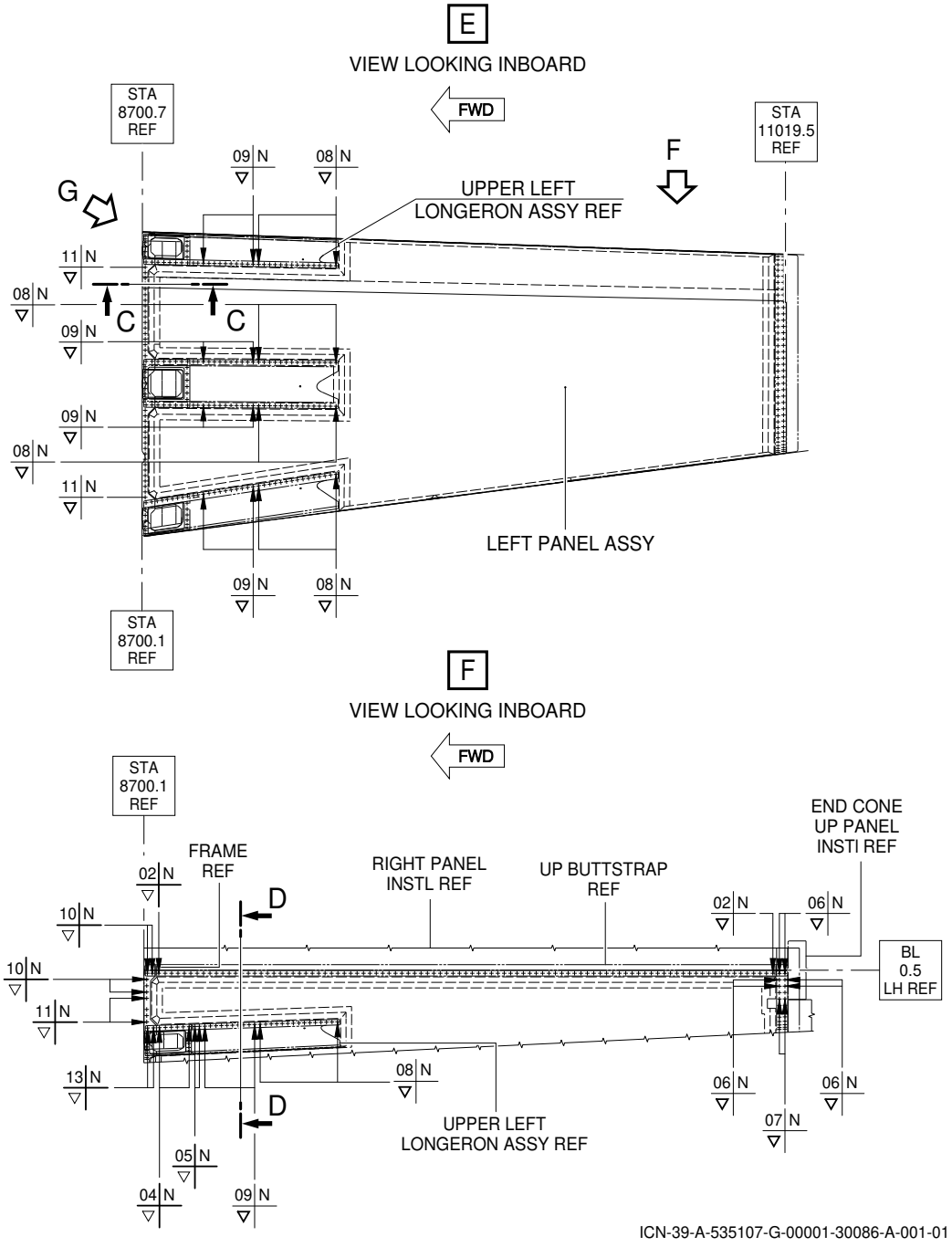
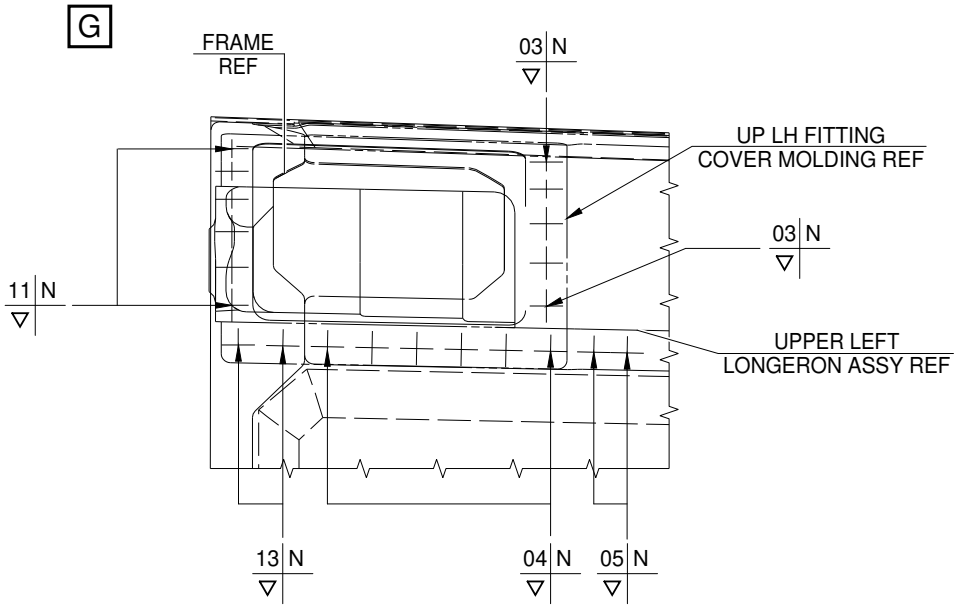



*Figure 1 (Sheet 3 of 8) Left/right upper longeron - Replacement (remove and install a new item)*




RIVET CODE IN ACCORDANCE WITH NTA018R

REF. NUMBER | ORIENTATION

COUNTERSINK | BLANK

NOTE:
EDGE DISTANCE FROM CENTERLINE EXCEPT WHERE INDICATED OTHERWISE

NON-COMPOSITE:
UNIVERSAL HEAD 2 TIMES SHANK DIA. COUNTSINK HEAD 2.5 TIMES SHANK DIA.

COMPOSITE:
UNIVERSAL HEAD 2.5 TIMES SHANK DIA. COUNTSINK HEAD 3 TIMES SHANK DIA.

| REF.No | RIVET PART NUMBER | REF.No | RIVET PART NUMBER |
|---|---|---|---|
| 01 | AGS4719-512 | 08 | NAS9302BNS-6-03 |
| 02 | AGS4719-508 | 09 | NAS9302BNS-6-04 |
| 03 | AGS4720-512 | 10 | A297A05TW03 |
| 04 | MS90353S0604 | 11 | A298A05TW02 |
| 05 | MS90353S0603 | 12 | A298A05TW04 |
| 06 | AS46788-512 | 13 | A298A05TW05 |
| 07 | AS46790-512 | 14 | NAS1721H5L3A |

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*Figure 1 (Sheet 4 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

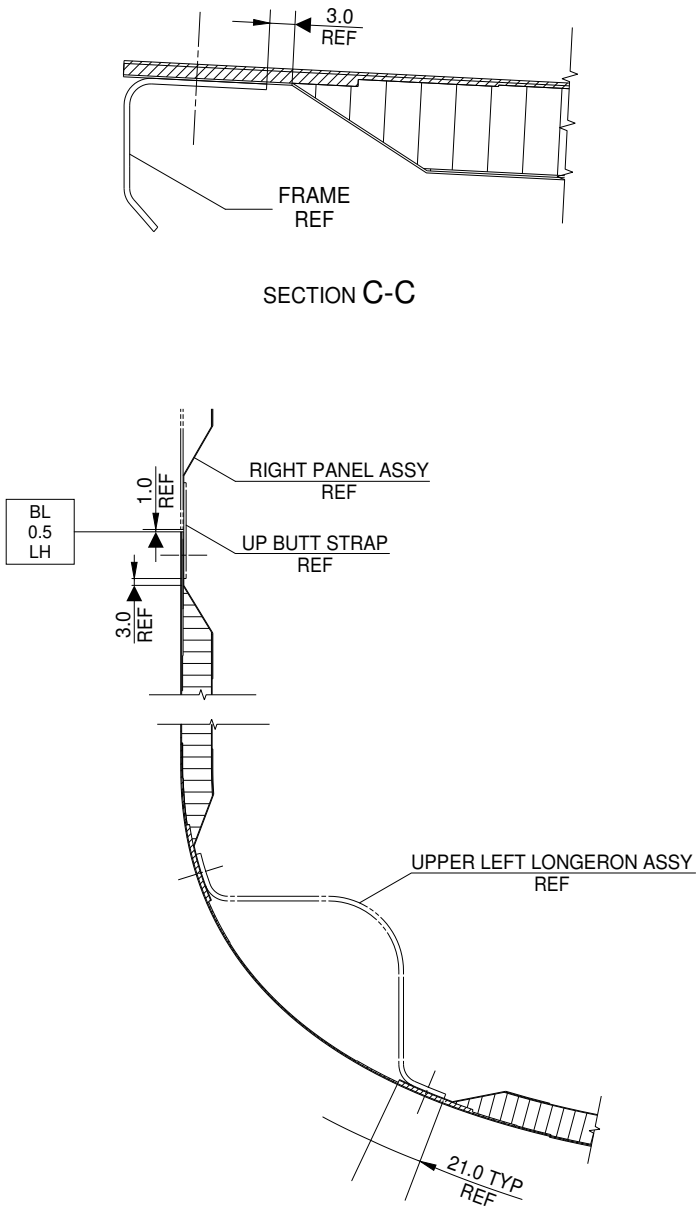



*Figure 1 (Sheet 5 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

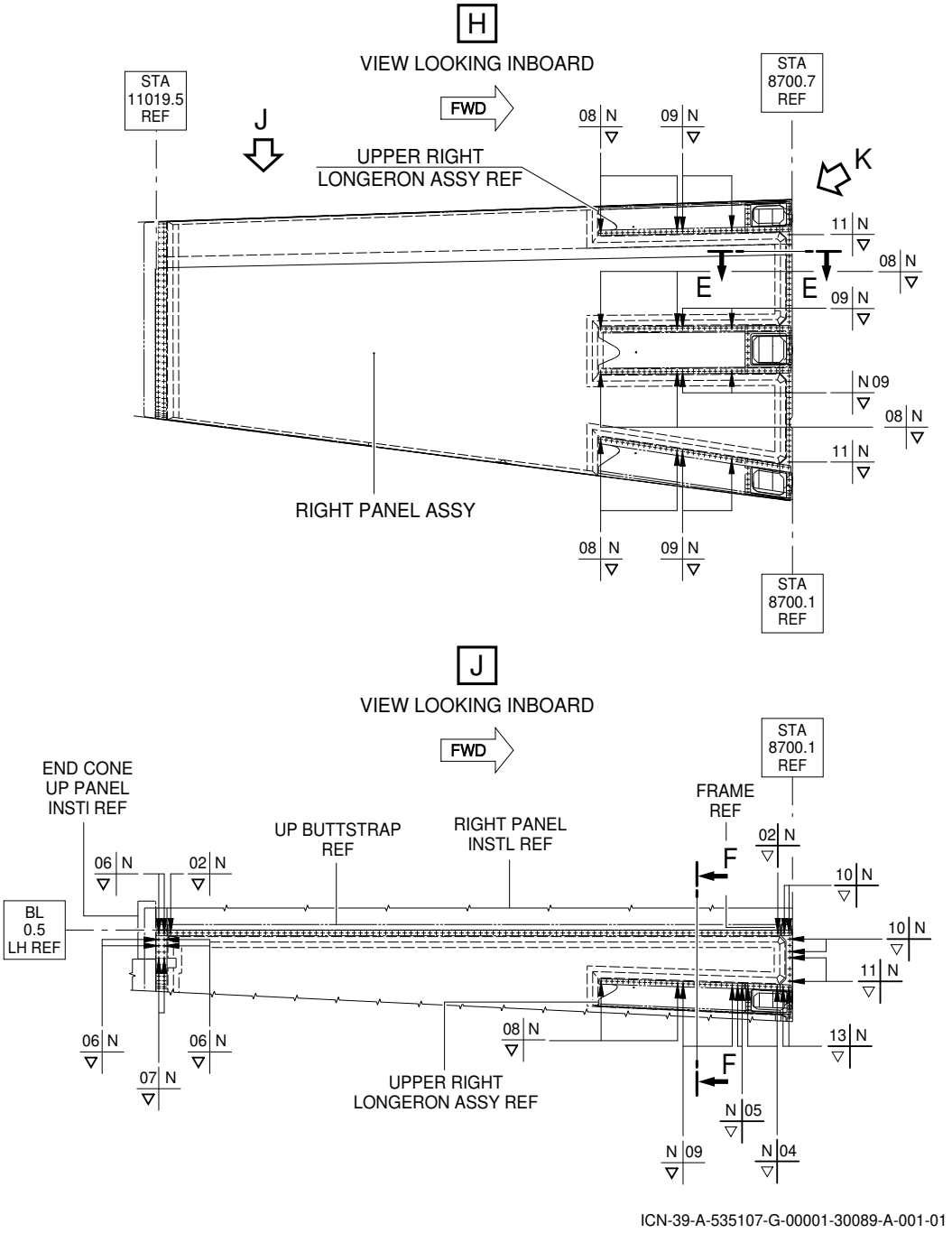
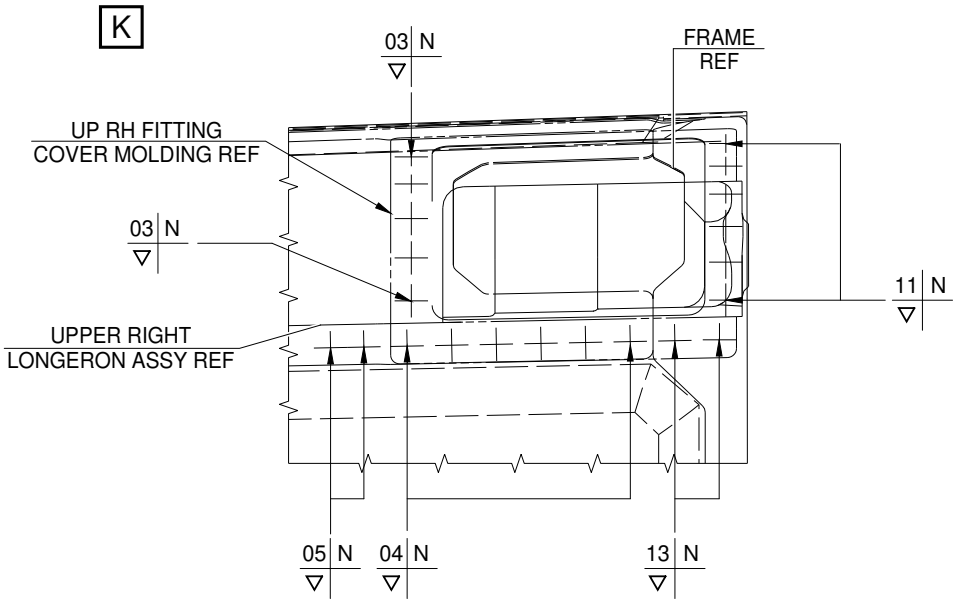



*Figure 1 (Sheet 6 of 8) Left/right upper longeron - Replacement (remove and install a new item)*




RIVET CODE IN ACCORDANCE WITH NTA018R

REF. NUMBER | ORIENTATION

COUNTERSINK | BLANK

NOTE:
EDGE DISTANCE FROM CENTERLINE EXCEPT WHERE INDICATED OTHERWISE

NON-COMPOSITE:
UNIVERSAL HEAD 2 TIMES SHANK DIA. COUNTSINK HEAD 2.5 TIMES SHANK DIA.

COMPOSITE:
UNIVERSAL HEAD 2.5 TIMES SHANK DIA. COUNTSINK HEAD 3 TIMES SHANK DIA.

| REF.No | RIVET PART NUMBER | REF.No | RIVET PART NUMBER |
|---|---|---|---|
| 01 | AGS4719-512 | 08 | NAS9302BNS-5-03 |
| 02 | AGS4719-508 | 09 | NAS9302BNS-5-04 |
| 03 | AGS4720-512 | 10 | A297A05TW03 |
| 04 | MS90353S0604 | 11 | A298A05TW02 |
| 05 | MS90353S0603 | 12 | A298A05TW04 |
| 06 | AS46788-512 | 13 | A298A06TW05 |
| 07 | AS46790-512 | 14 | NAS1721H5L3A |

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*Figure 1 (Sheet 7 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

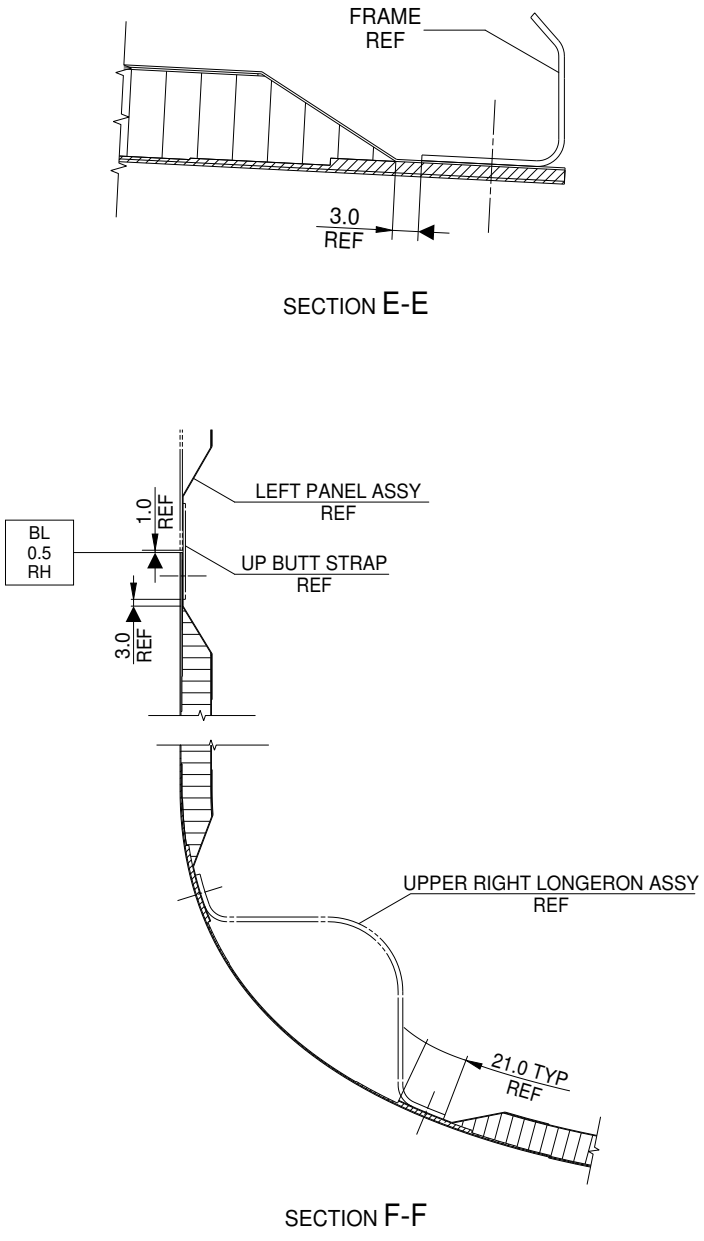


*Figure 1 (Sheet 8 of 8) Left/right upper longeron - Replacement (remove and install a new item)*

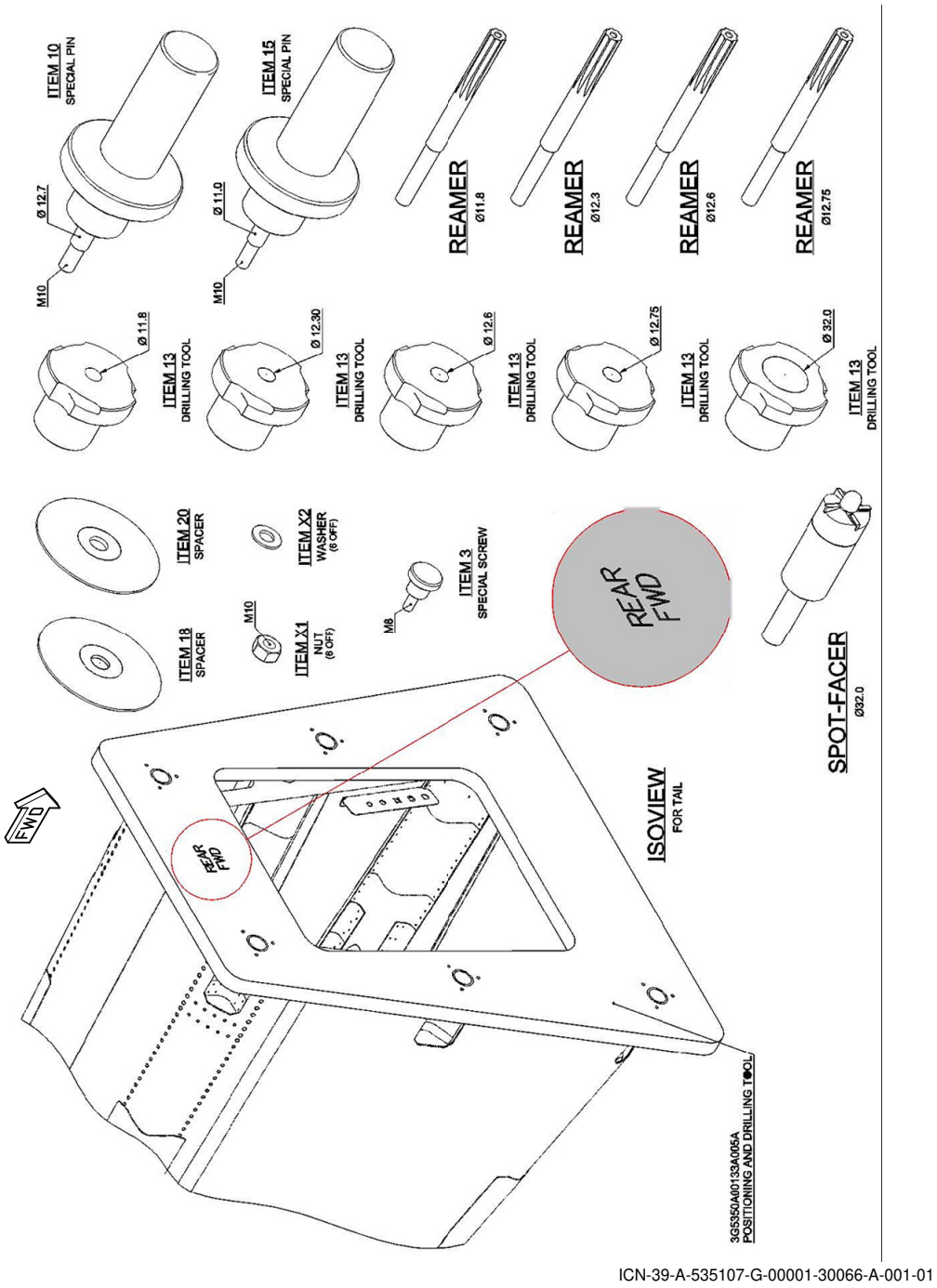


*Figure 2 (Sheet 1 of 10) Use of the positioning and drilling tool kit*

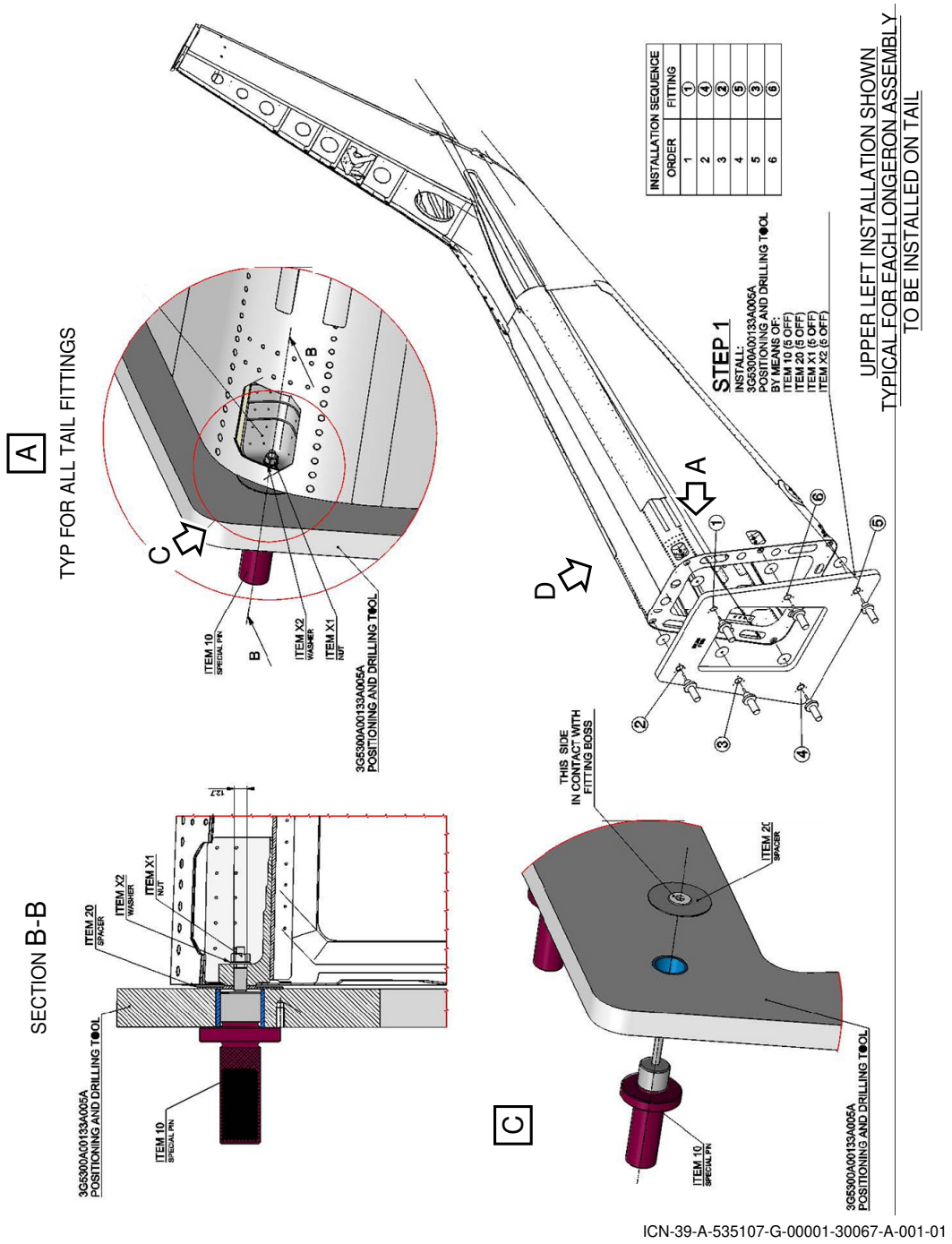


*Figure 2 (Sheet 2 of 10) Use of the positioning and drilling tool kit*

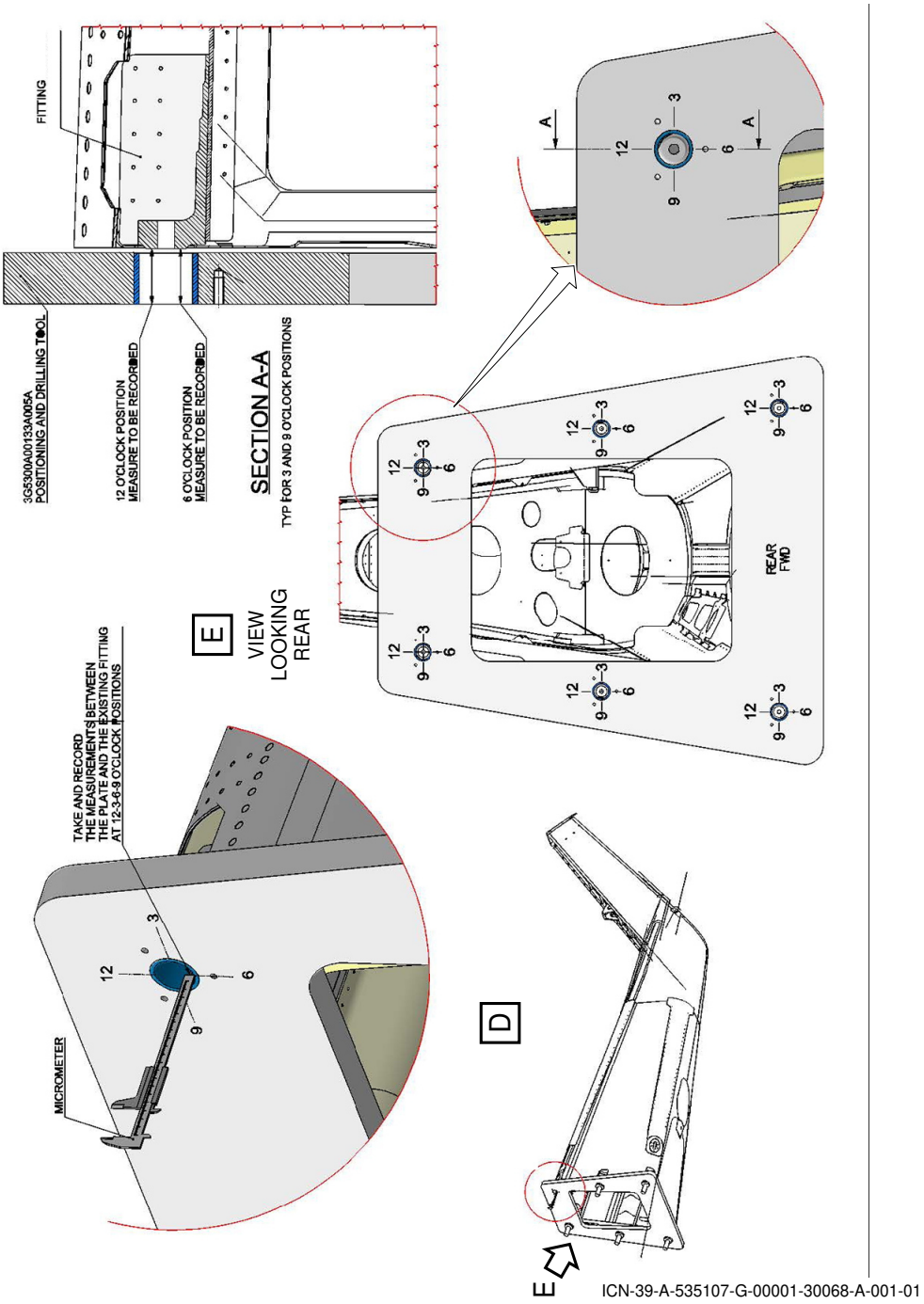


*Figure 2 (Sheet 3 of 10) Use of the positioning and drilling tool kit*

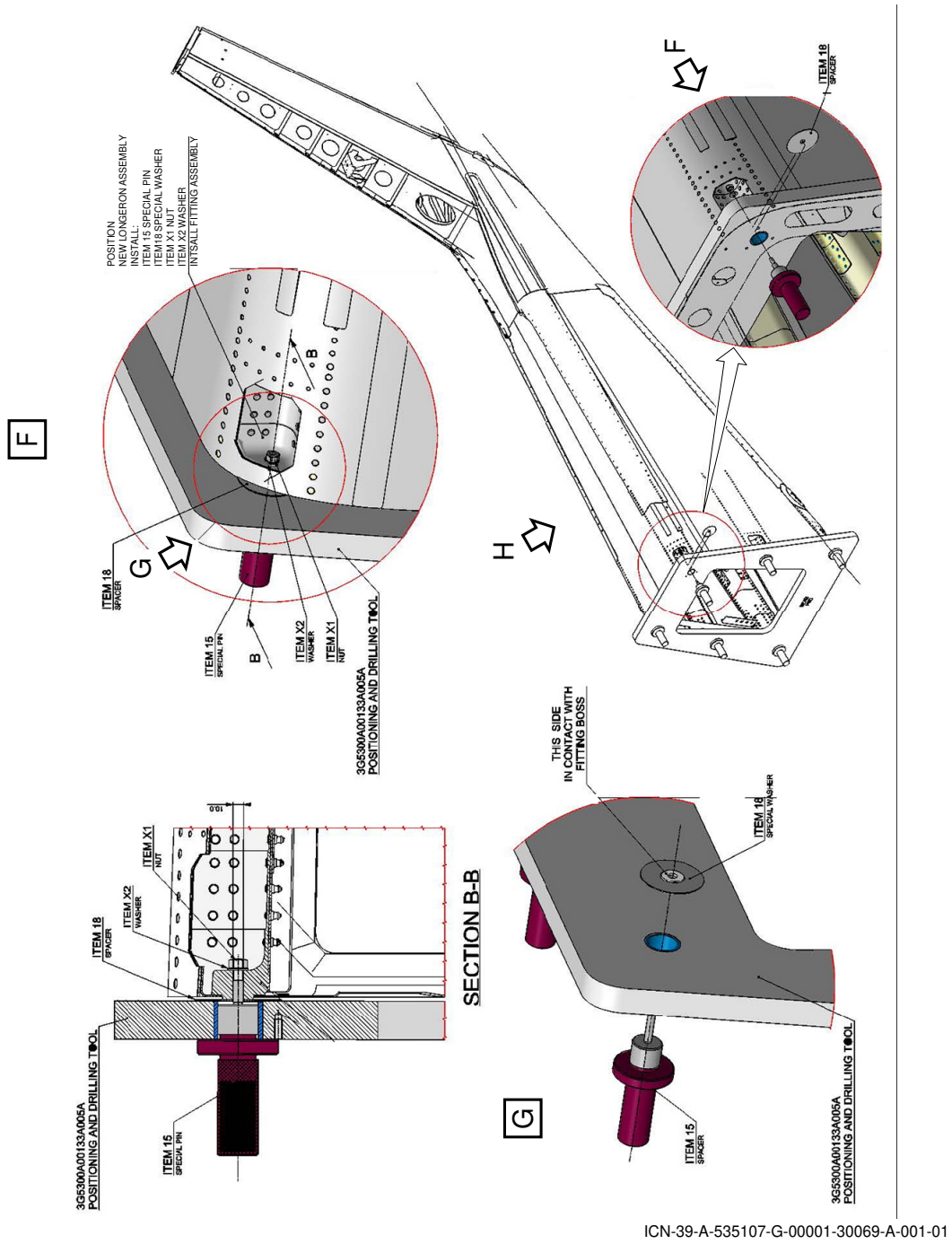


*Figure 2 (Sheet 4 of 10) Use of the positioning and drilling tool kit*

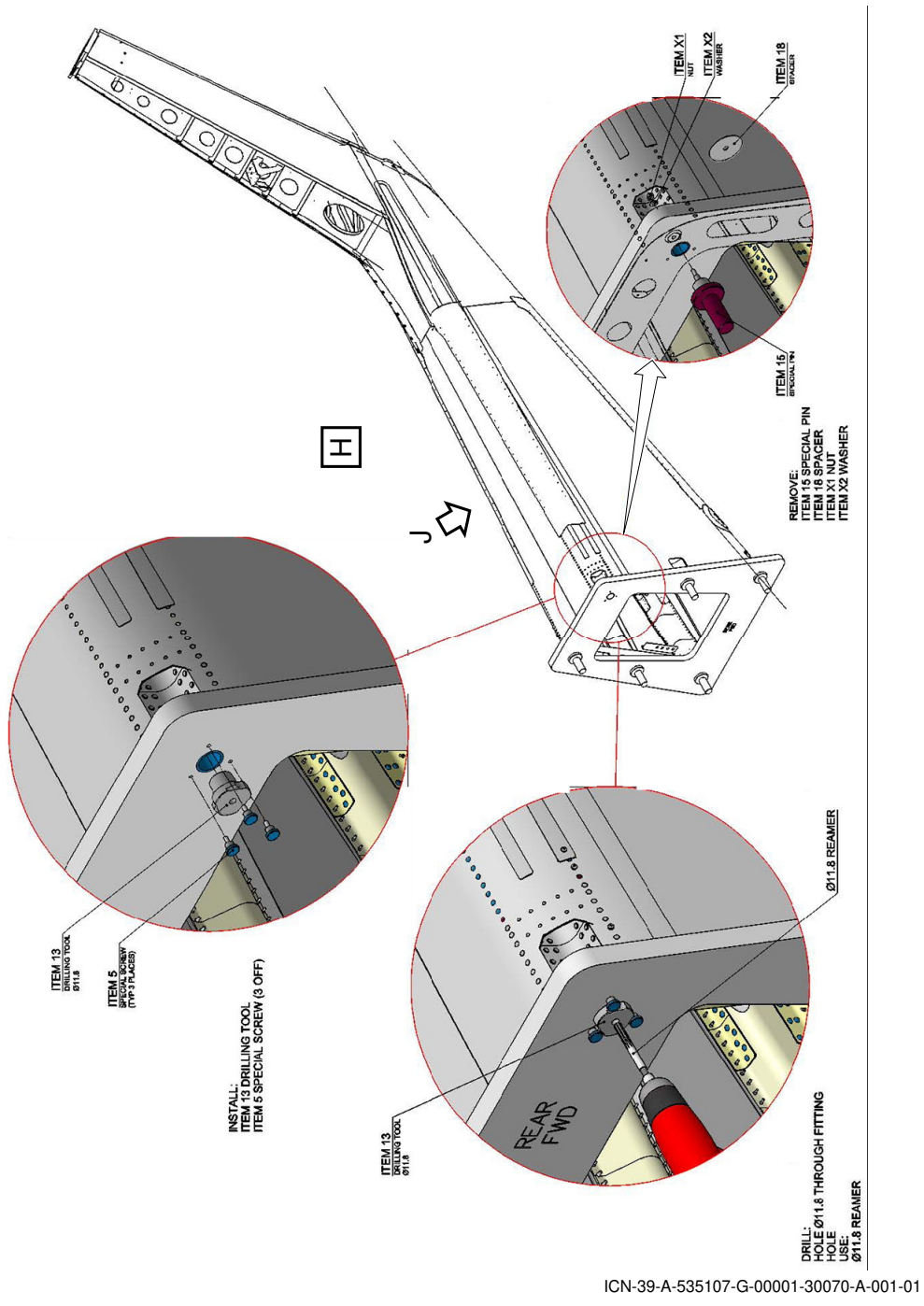


*Figure 2 (Sheet 5 of 10) Use of the positioning and drilling tool kit*

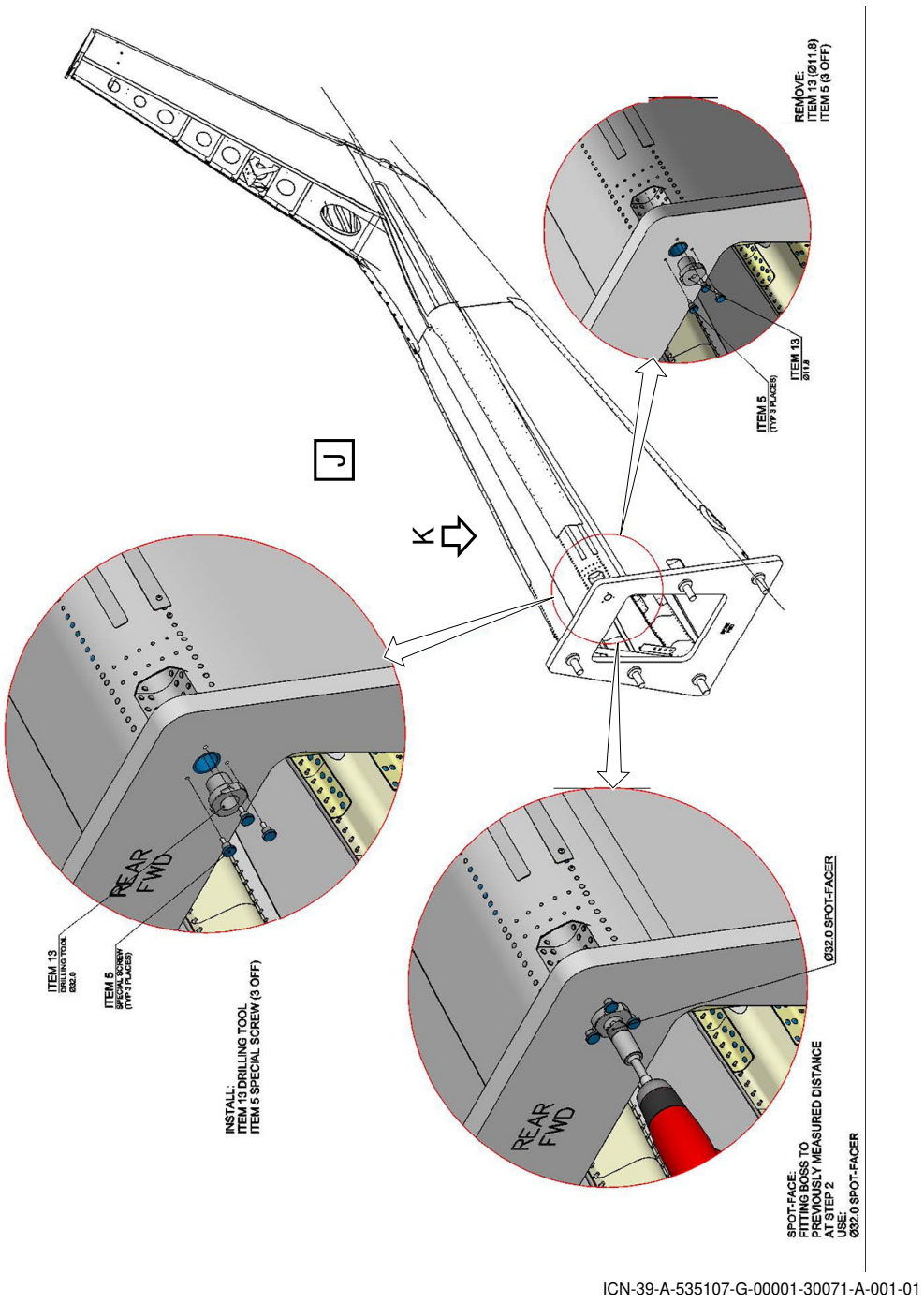


*Figure 2 (Sheet 6 of 10) Use of the positioning and drilling tool kit*

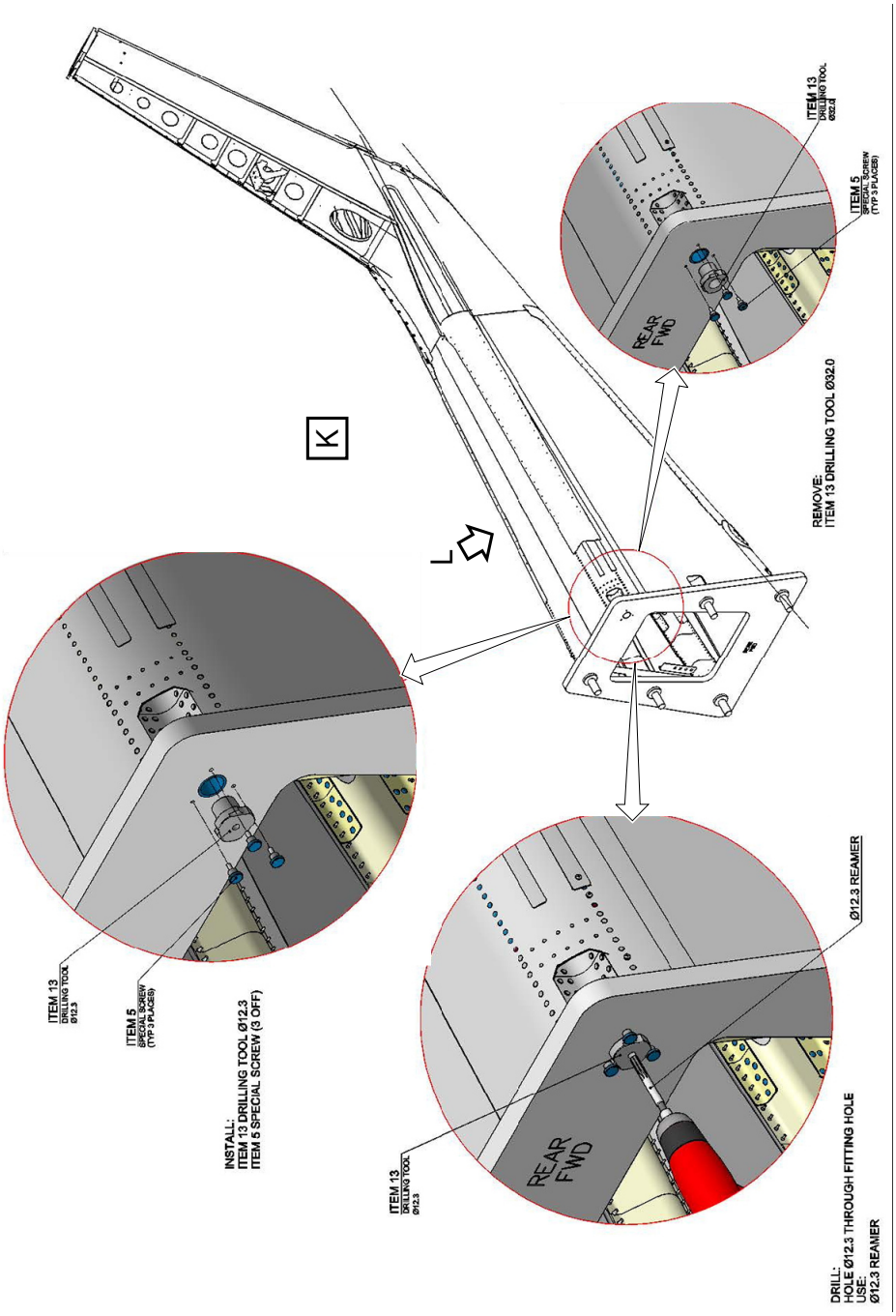


*Figure 2 (Sheet 7 of 10) Use of the positioning and drilling tool kit*

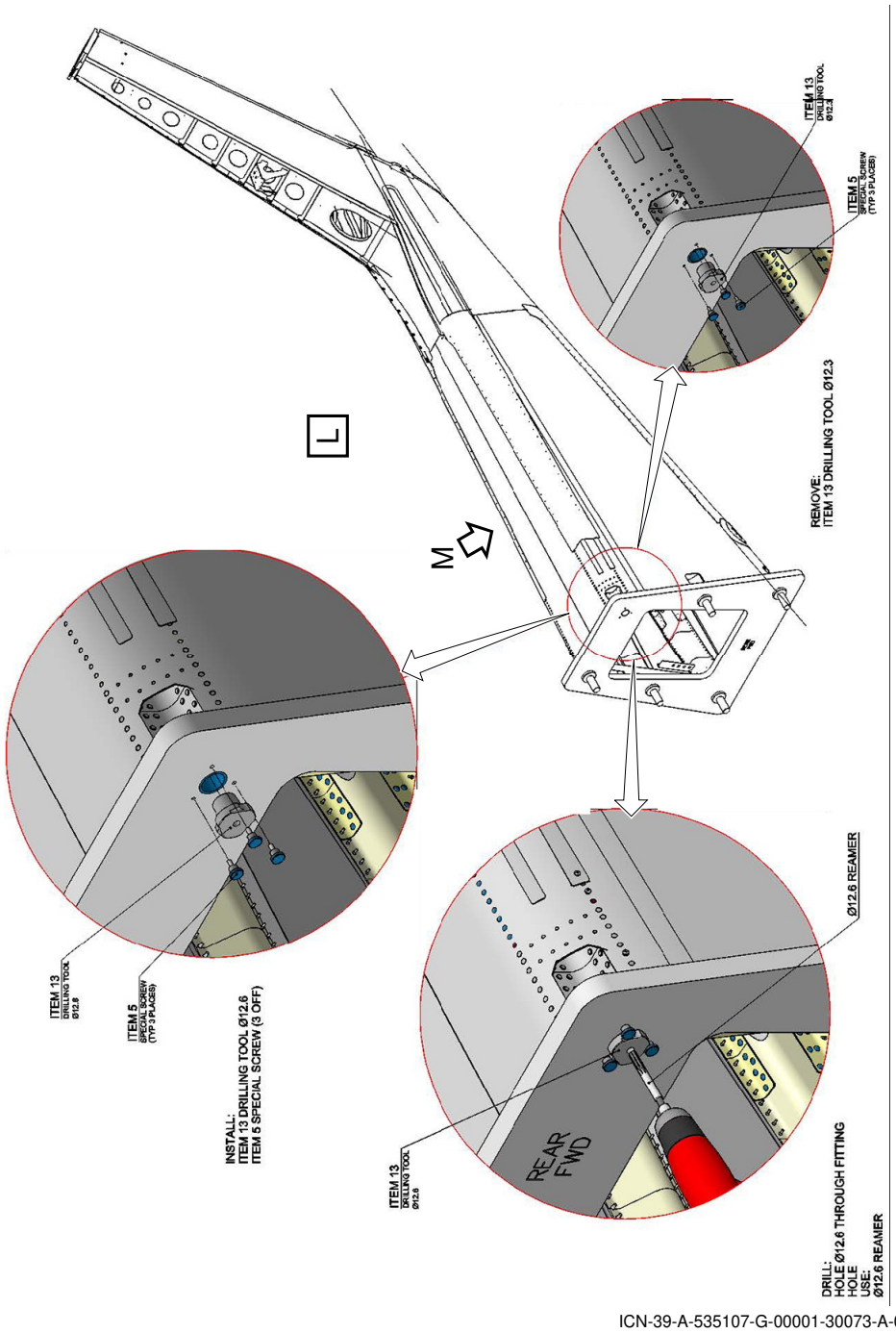


*Figure 2 (Sheet 8 of 10) Use of the positioning and drilling tool kit*

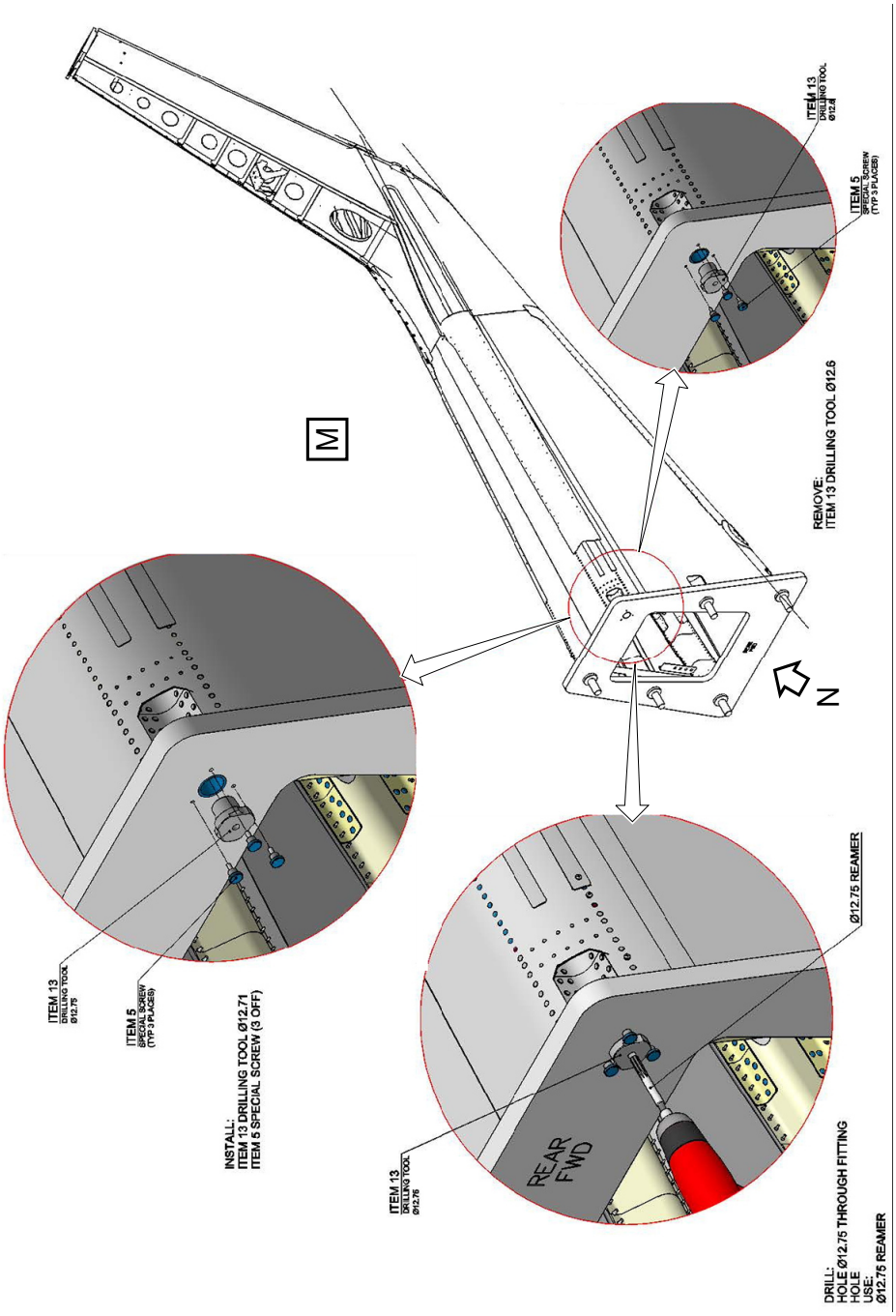


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*Figure 2 (Sheet 9 of 10) Use of the positioning and drilling tool kit*

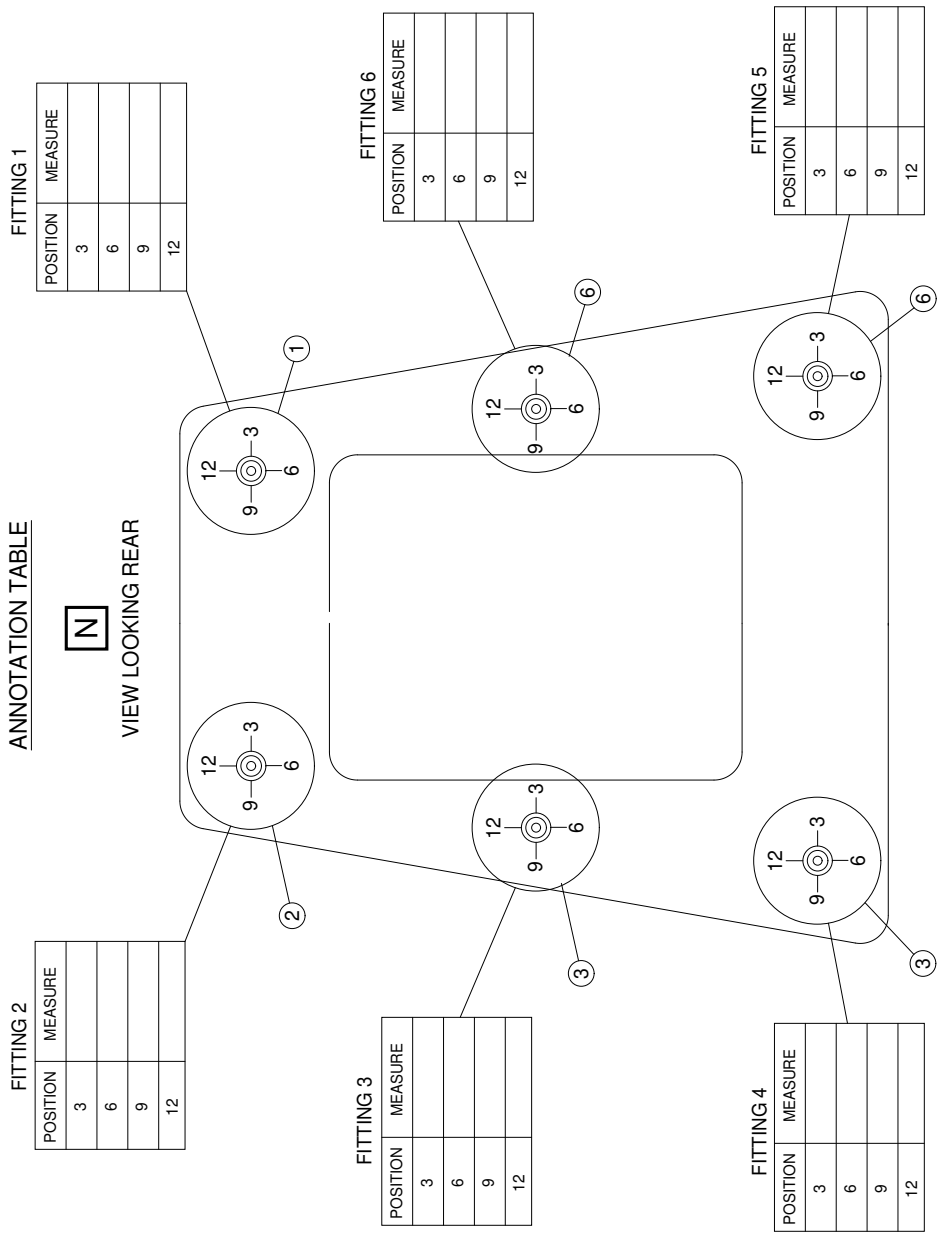


*Figure 2 (Sheet 10 of 10) Use of the positioning and drilling tool kit*

**End of Data Module**