ALPINE AEROTECH LTD.
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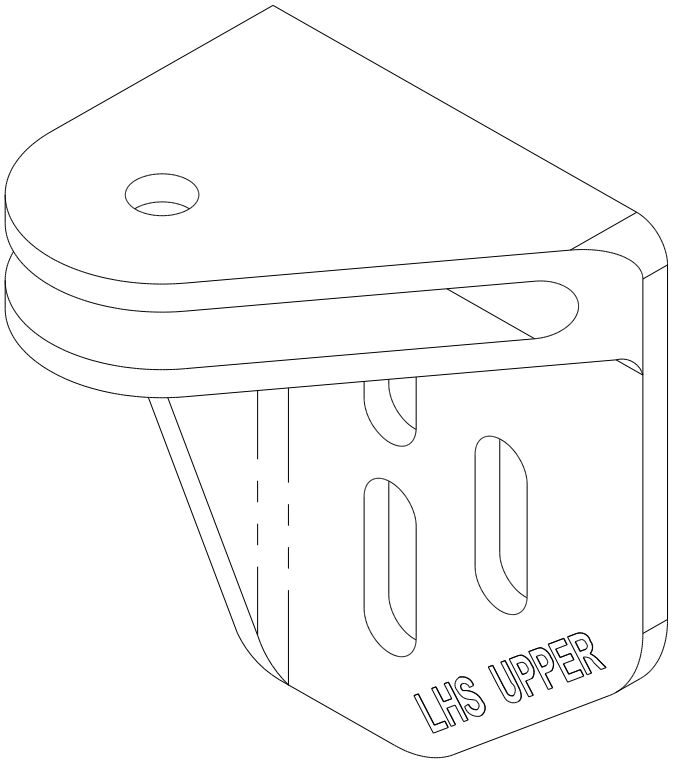

OIL COOLER SUPPORT BRACKET, KIT INSTALLATION INSTRUCTIONS

MODELS: BELL 212, 412, 412CF & 412EP

Read all of the installation instructions thoroughly
prior to the installation of this product

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Weight & Balance

Part Number	Description	Weight	Long. Arm	Lat. Arm
AAL-214-010-001	Oil Cooler Support Bracket, Kit	0.74*‡	202.96	0.00 BL
		0.33 (Kg)	*5.16 (m)*	*0.00 (m) BL*

* Average increase in weight to aircraft.
‡ Total range of increase in weight to aircraft is 0.30lb.

General Notes

1. All Installation Instructions shall be accomplished in accordance with (IAW) standard aircraft practices. Refer to the current revision of the FAA manuals AC 43.13-1B and AC 43.13-2B for details on standard aircraft practices.

2. All Hardware shall be torqued to standard aircraft specifications. Refer to the current revision of the FAA manuals AC 43.13-1B and AC 43.13-2B for details on standard torque specifications.

3. All Dimensions are in imperial measures (inches/pounds).

4. Refer to the current revision of the Oil Cooler Support Bracket, Kit Illustrated Parts Breakdown for the part numbers of the item(s) referenced within this document.

5. Refer to the current revision of the Oil Cooler Support Bracket, Kit Maintenance Manual Supplement for instructions on continuing airworthiness for the item(s) referenced within this document.

6. If changes to this document are required, Alpine Aerotech Ltd. shall revise all pages and reissue the entire document.

7. Alpine Aerotech Ltd. shall make any subsequent revisions of this document available free of charge upon request. Alpine Aerotech Ltd. also recommends that the end user of this product periodically verify the revision level f this document.

Installation Notes

△1 Apply Sealant (Item 51) to faying surfaces, 100% coverage, Max .050” total thickness.

△2 Apply Sealant (Item 51) to upper edges and feather out.

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Installation Instructions

1. Gain access to the Combining Gearbox compartment.

2. **Refer to Appendix A to determine appropriate Shim, Assy prior to going on to step 3**.

3. Remove the Exhaust Ejectors and discard all hardware common to the Exhaust Ejector Flanges and Exhaust Ejector Links. Reference Figures 1 & 5.

   NOTE: Leave Exhaust Ejector Links attached to the Oil Cooler Support Brackets at this stage.

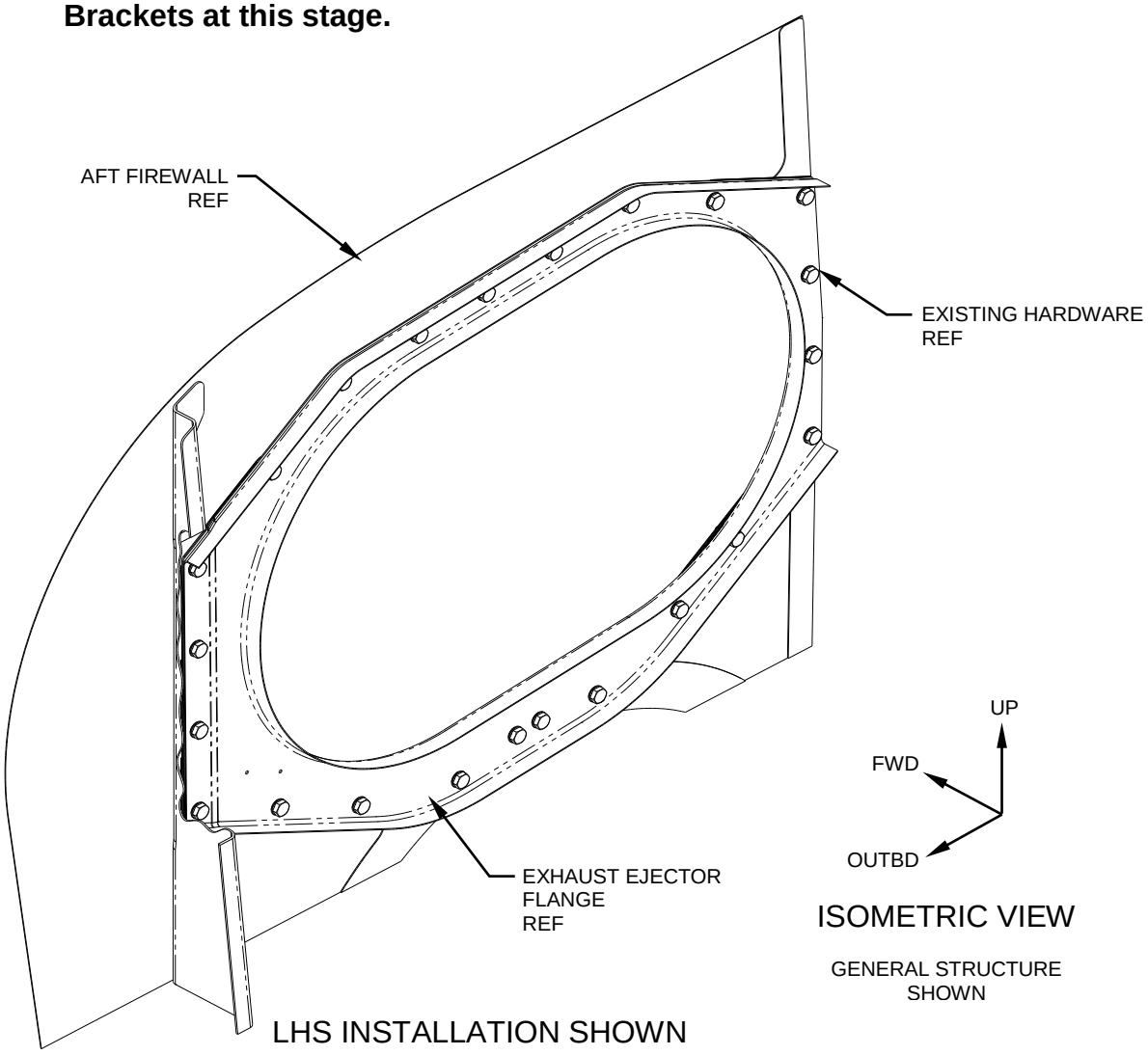

Figure 1

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Installation Instructions

4. Prepare the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) and Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) by cleaning the faying surfaces (stepped surfaces) with methyl ethyl ketone (MEK). Reference Figure 2.

5. Prepare the LHS and RHS of the AFT Firewall by removing any residual gasket material, dirt, etc. and wipe the faying surfaces clean with MEK. Reference Figure 3.

6. Temporarily install the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) on the LHS of the AFT Firewall with the faying surface (stepped surface) facing FWD. Reference Figure 3.

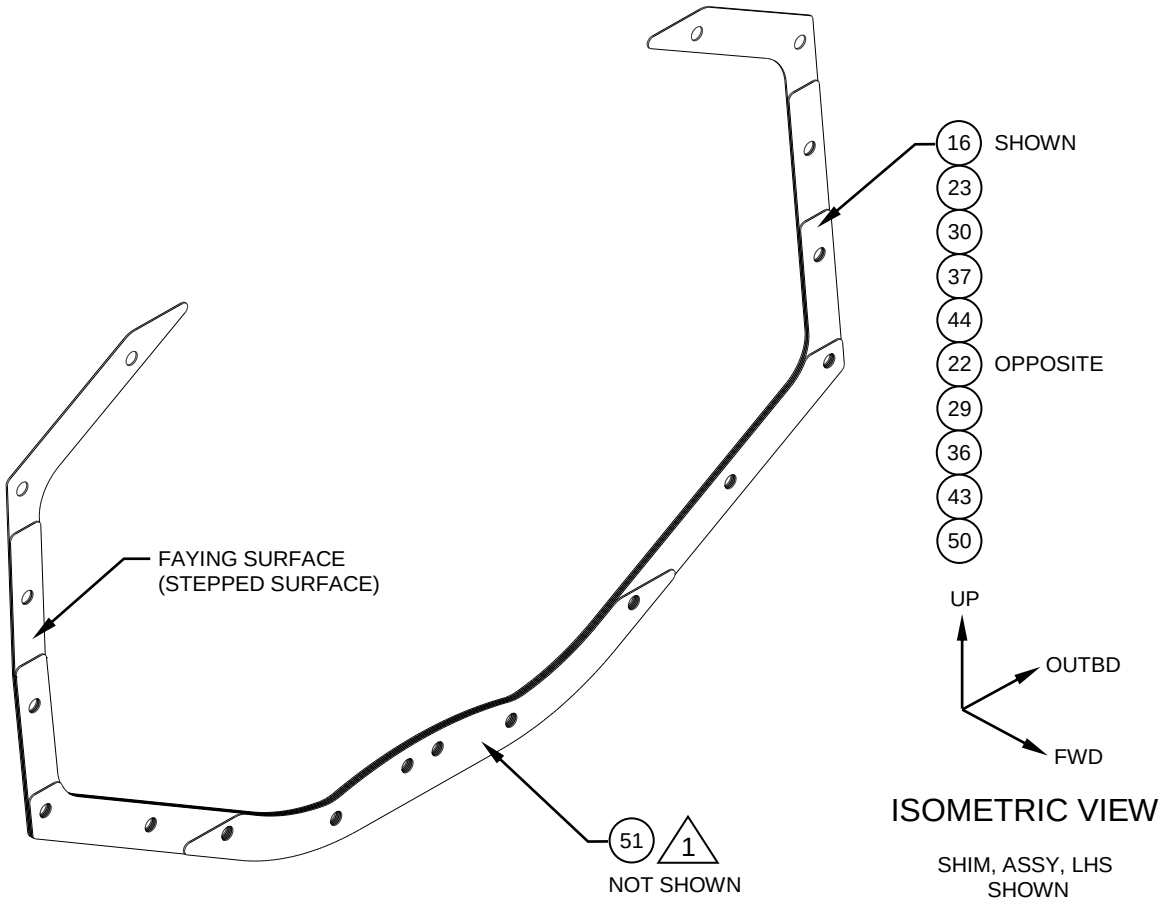

Figure 2

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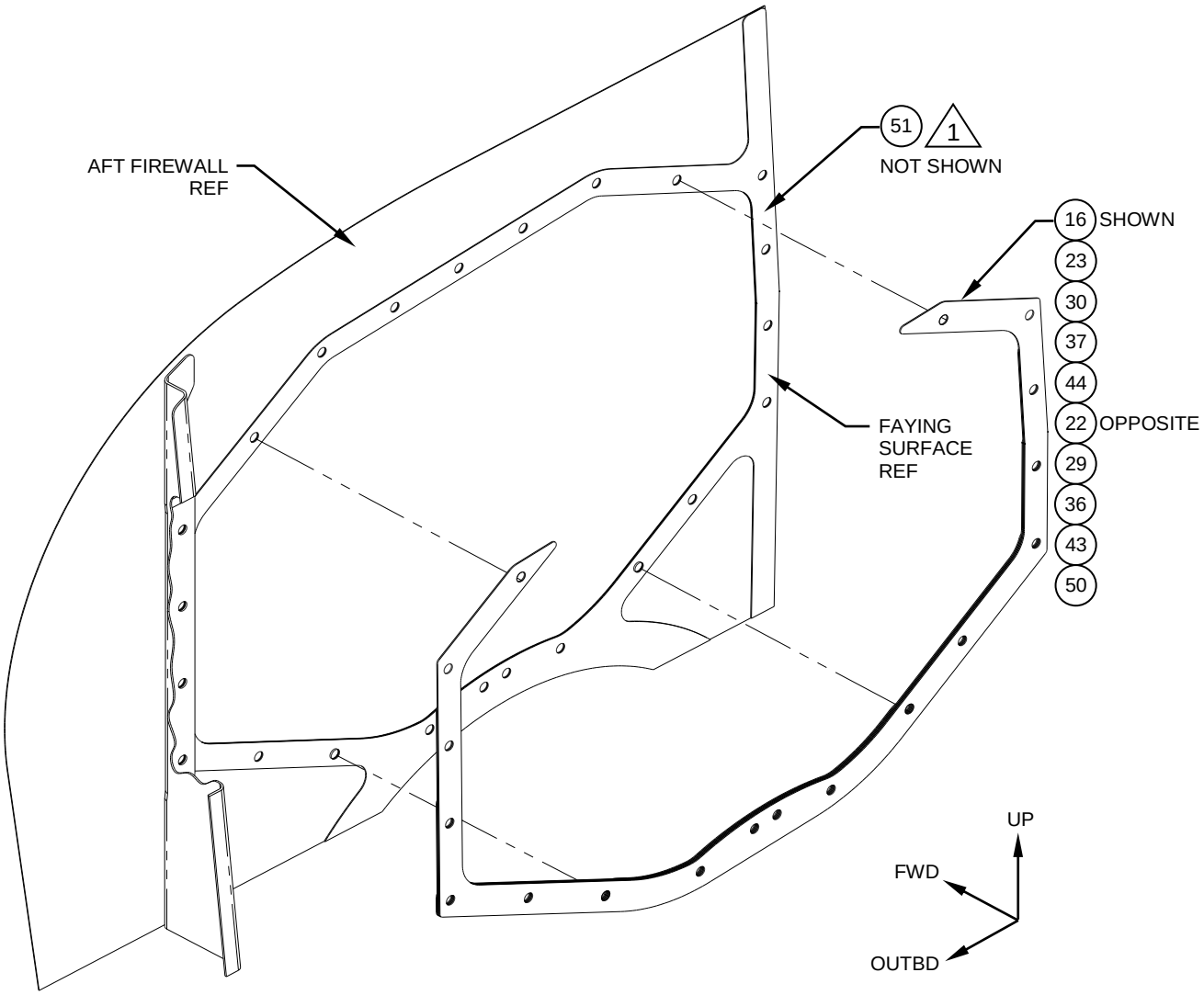
Installation Instructions

7. Ensure that all holes and features of the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) are in alignment with the LHS of the AFT Firewall. Mark the perimeter of the Shim, Assy on the AFT Firewall and remove the Shim, Assy. Reference Figures 3 & 4.

8. Temporarily install the Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) on the RHS of the AFT Firewall with the faying surface (stepped surface) facing FWD. Reference Figure 3.



LHS INSTALLATION SHOWN
RHS INSTALLATION OPPOSITE

ISOMETRIC VIEW

INSTALLATION SHOWN

Figure 3

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Installation Instructions

9. Ensure that all holes and features of the Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) are in alignment with the RHS of the AFT Firewall. Mark the perimeter of the Shim, Assy on the AFT Firewall and remove the Shim, Assy. Reference Figures3 & 4.

10. Apply the Sealant (Item 51) to the faying surface (stepped surface) of the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) and the LHS of the AFT Firewall (100% coverage, Max .050" total thickness). Reference Figures 2 & 3.

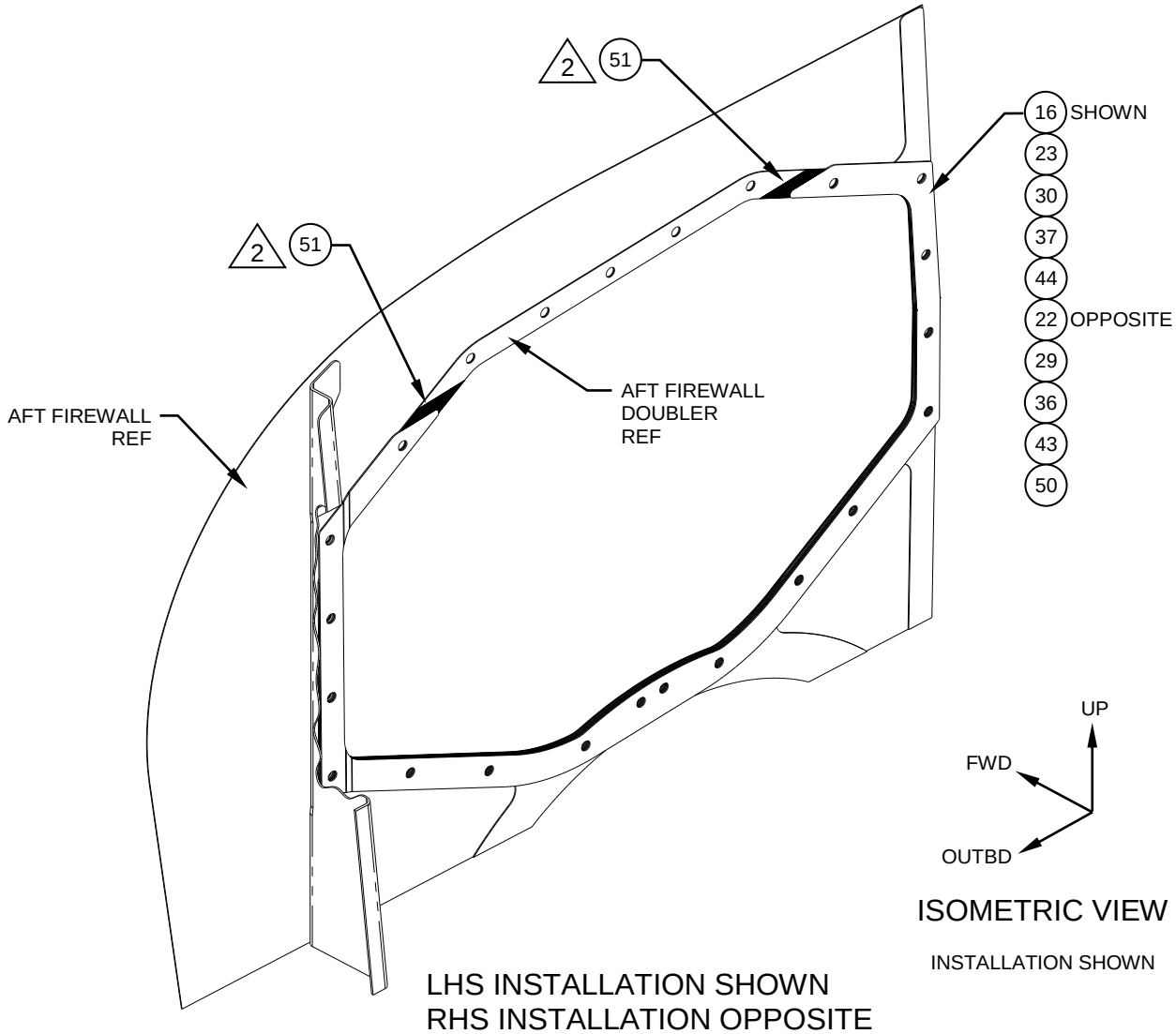

Figure 4

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Installation Instructions

11. Install the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) on the LHS of the AFT Firewall as shown. Reference Figures 3 & 4.

    NOTE: Apply sufficient even pressure to ensure proper adhesion.

12. Apply the Sealant (Item 51) to the faying surface (stepped surface) of the Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) and the RHS of the AFT Firewall (100% coverage, Max .050" total thickness). Reference Figures 2 & 3.

13. Install the Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) on the RHS of the AFT Firewall as shown. Reference Figures 3 & 4.

    NOTE: Apply sufficient even pressure to ensure proper adhesion.

14. Apply Sealant (Item 51) to the upper edges of the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) and feather the sealant out along the AFT Firewall Doubler. Reference Figure 4.

15. Apply Sealant (Item 51) to the upper edges of the Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) and feather the sealant out along the AFT Firewall Doubler. Reference Figure 4.

16. Remove any Sealant (Item 51) squeeze-out and maintain pressure on the Shim, Assy, LHS (Item 16, 23, 30, 37, or 44 as determined be appendix A) and Shim, Assy, RHS (Item 22, 29, 36, 43, or 50 as determined be appendix A) as required until the Sealant has cured.

17. Remove and discard the existing Oil Cooler Support Brackets, Exhaust Ejector Links and all associated hardware.

18. Perform a detailed inspection on the Oil Cooler Support Structure in the general vicinity of the existing Oil Cooler Support Brackets for evidence of cracking and distortion. If cracking and distortion is evident, complete all necessary repairs to the Oil Cooler Support Structure prior to continuing with the installation as follows.

19. Install the Bracket, Detail, Upper, LHS (Item 5), Bracket, Detail, Lower, LHS (Item 4), and the supplied hardware on the Oil Cooler Support Structure in the locations and orientations as shown. Reference Figure 5.

    NOTE: Do <u>NOT</u> fully tighten the fasteners at this stage.

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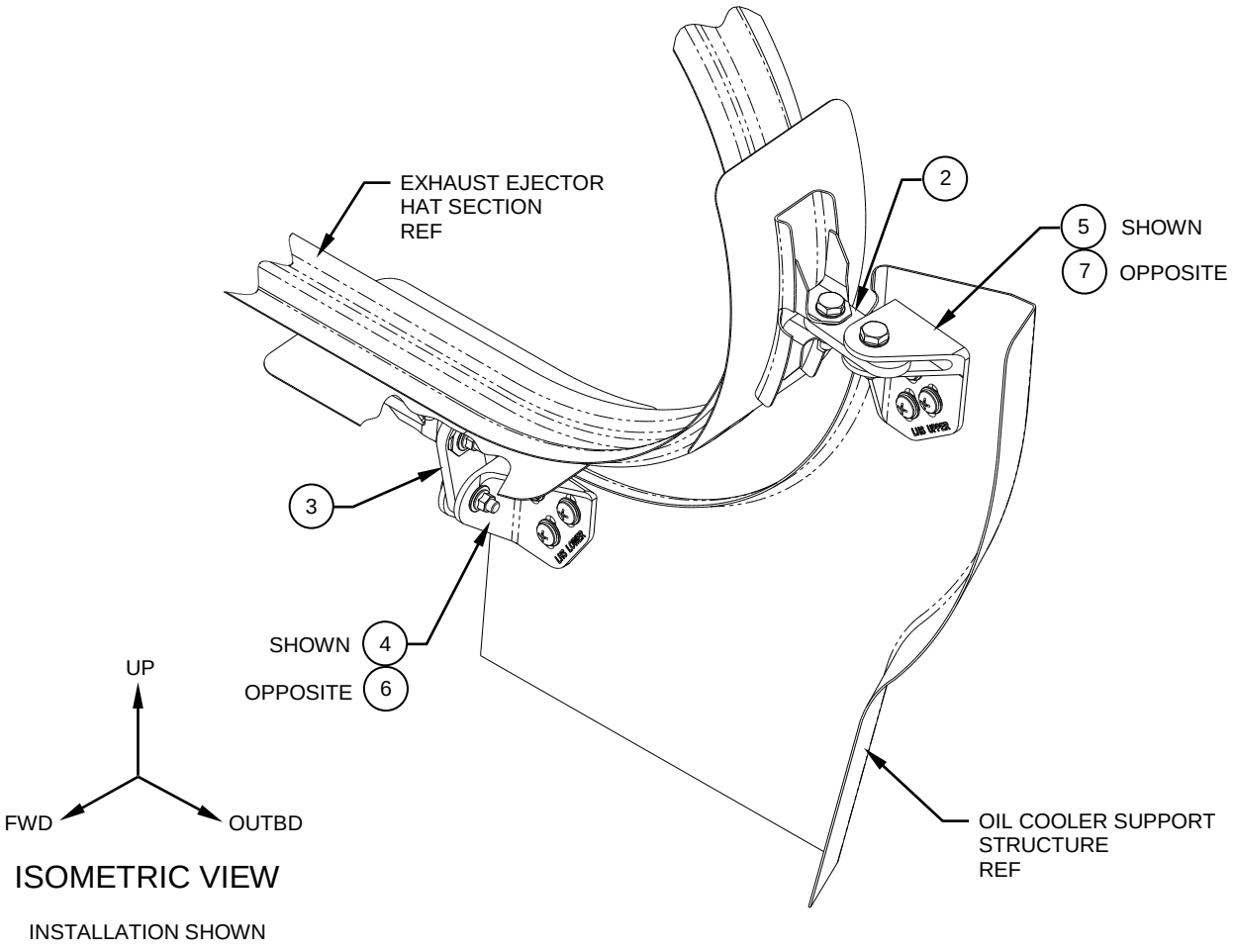
Installation Instructions

20. Install the Bracket, Detail, Upper, RHS (Item 7), Bracket, Detail, Lower, RHS (Item 6) and the supplied hardware on the Oil Cooler Support Structure in the locations and orientations as shown. Reference Figure 5.

    NOTE: Do NOT fully tighten the fasteners at this stage.



LHS INSTALLATION SHOWN
RHS INSTALLATION OPPOSITE

Figure 5

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Installation Instructions

21. Install the Link, Detail, Lower (Item 3), Link, Detail, Upper (Item 2) and the supplied hardware to the Bracket, Details in the locations and orientations as shown. Reference Figures 5, 7 & 8.

    NOTE: Do NOT fully tighten the fasteners at this stage.

22. Re-install the Exhaust Ejectors and the supplied hardware common to the Exhaust Ejector Flange in the appropriate locations as shown. Tighten the hardware. Reference Figures 1 & 6.

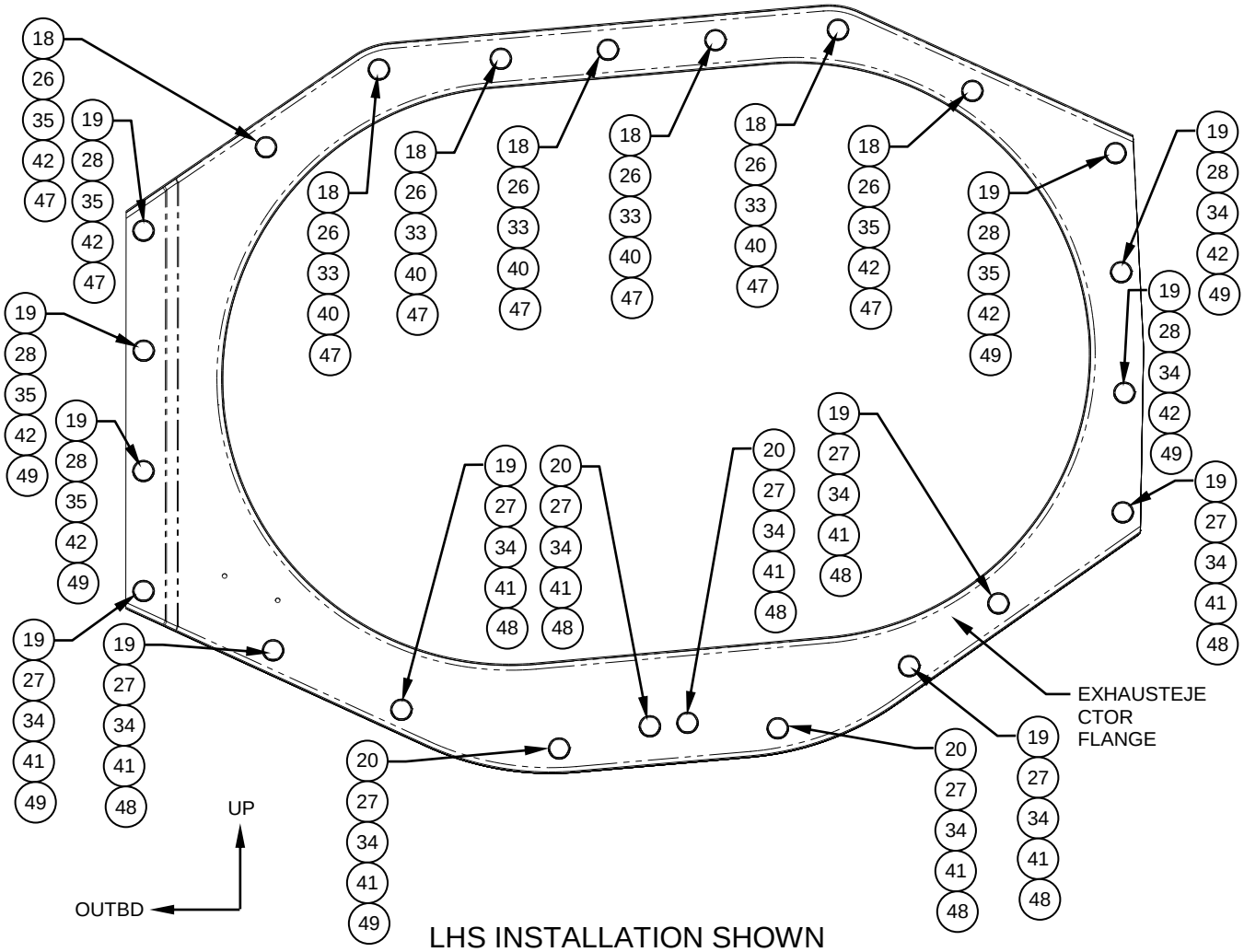

Figure 6

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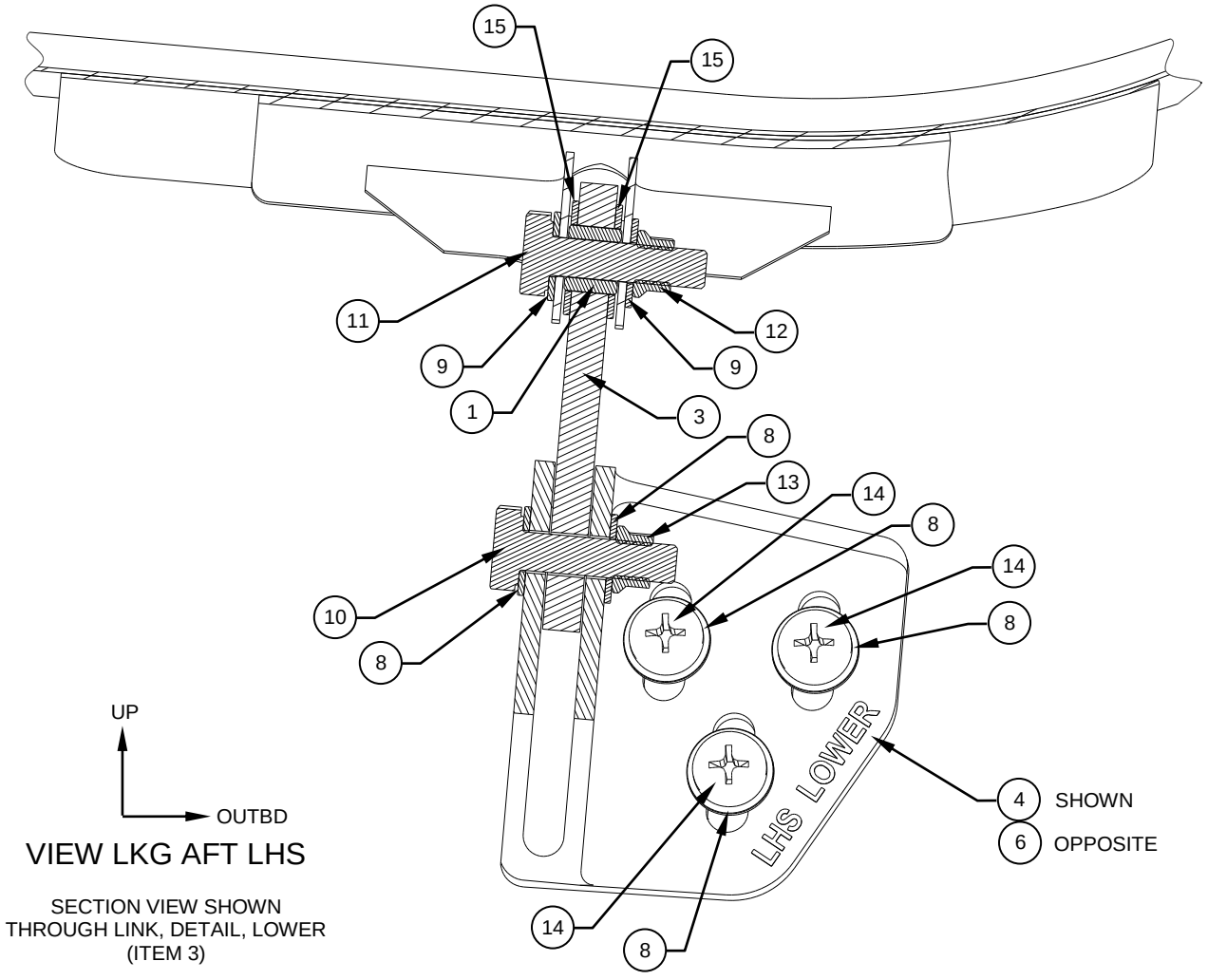
Installation Instructions

23. Locate the Link, Detail, Lower (Item 3) to the LHS Exhaust Ejector and install the supplied hardware as shown. Reference Figures 5 & 7.

24. Locate the Link, Detail, Lower (Item 3) to the RHS Exhaust Ejector and install the supplied hardware as shown. Reference Figures 5 & 7.



LHS INSTALLATION SHOWN
RHS INSTALLATION OPPOSITE

Figure 7

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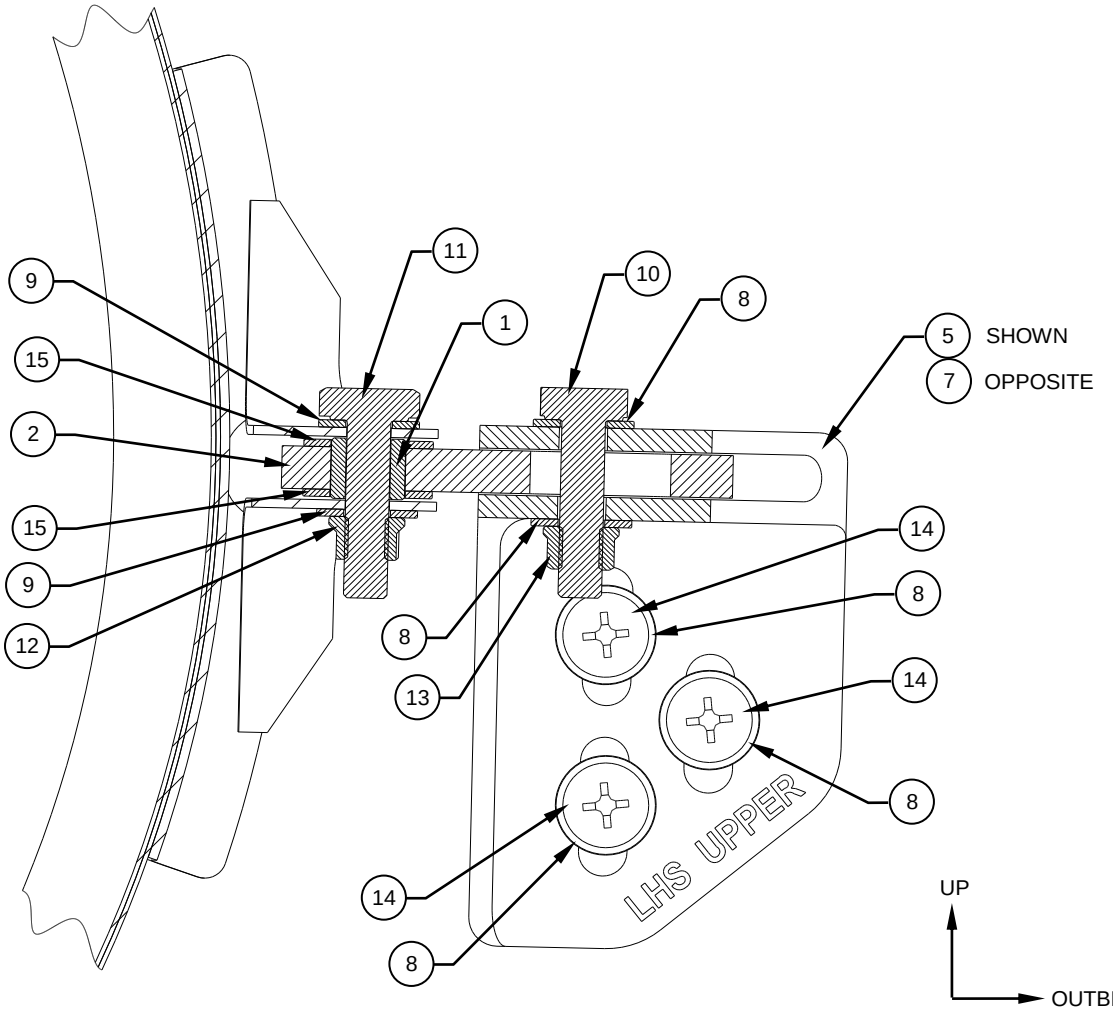
Installation Instructions

25. Locate the Link, Detail, Upper (Item 2) to the LHS Exhaust Ejector and install the supplied hardware as shown. Reference Figures 5 & 8.

26. Locate the Link, Detail, Upper (Item 2) to the RHS Exhaust Ejector and install the supplied hardware as shown. Reference Figures 5 & 8.



VIEW LKG AFT LHS

LHS INSTALLATION SHOWN
RHS INSTALLATION OPPOSITE

SECTION VIEW SHOWN
THROUGH LINK, DETAIL, UPPER
(ITEM 2)

Figure 8

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Installation Instructions

27. Tighten the fasteners common to the Bracket, Details, while maintaining adequate clearance between the bottom of the Exhaust Ejectors and top of the Oil Cooler Support Structure Blower Cover(s). Reference Figures 5, 7 & 8.

28. Tighten all of the fasteners common to the Link Details. Reference Figures 5, 7 & 8.

    NOTE: Confirm clearance between the bottom of the Exhaust Ejectors and top of the Oil Cooler Support Structure Blower Cover(s).

29. Installation complete.

30. Perform a General Inspection of all items to ensure proper installation.

31. Update the aircraft logbook for the installation of the Oil Cooler Support Bracket, Kit.

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Appendix: A

Airframe Measurement Procedure

1. Gain access to the Combining Gearbox compartment.

2. Remove all fasteners common to the LHS Exhaust Ejector Flange except for the top 5. Reference Figure 1A.

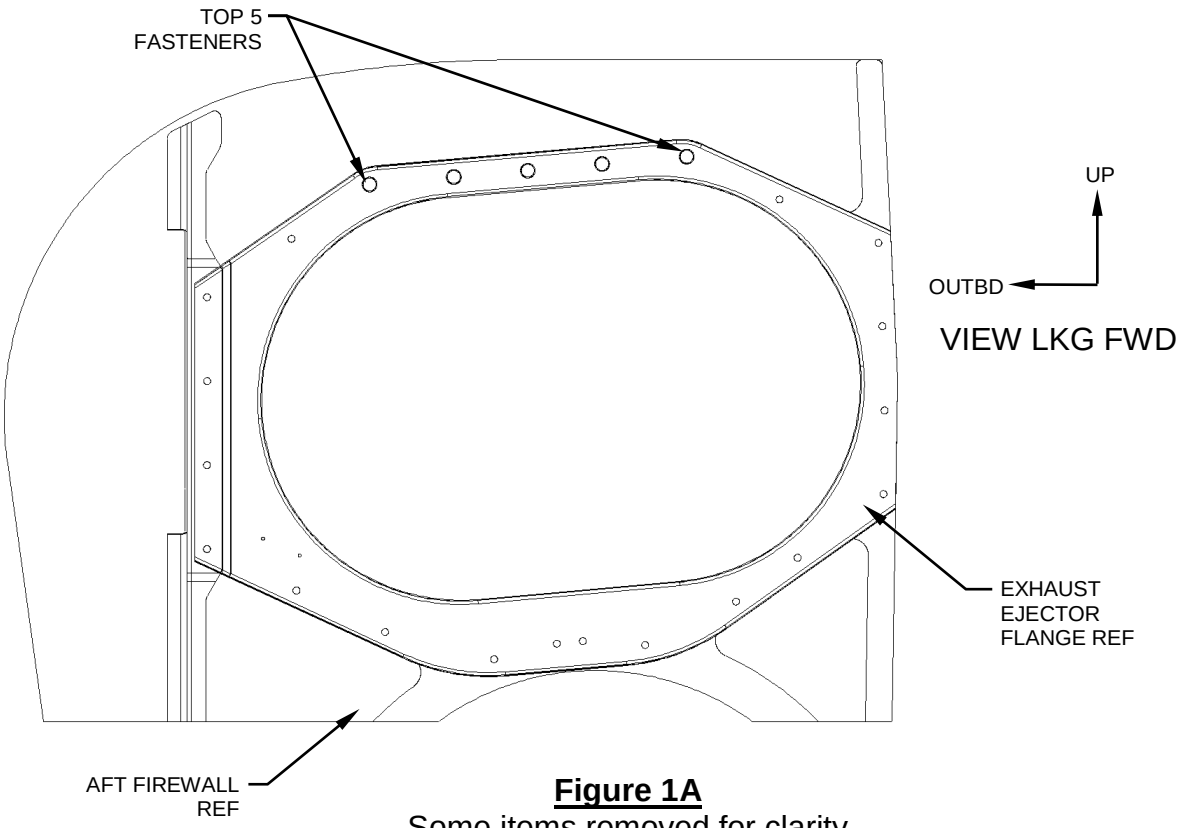

Figure 1A
Some items removed for clarity

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3. Detach the Exhaust Ejector links from the LHS Exhaust Ejector. Reference Figure 2a.

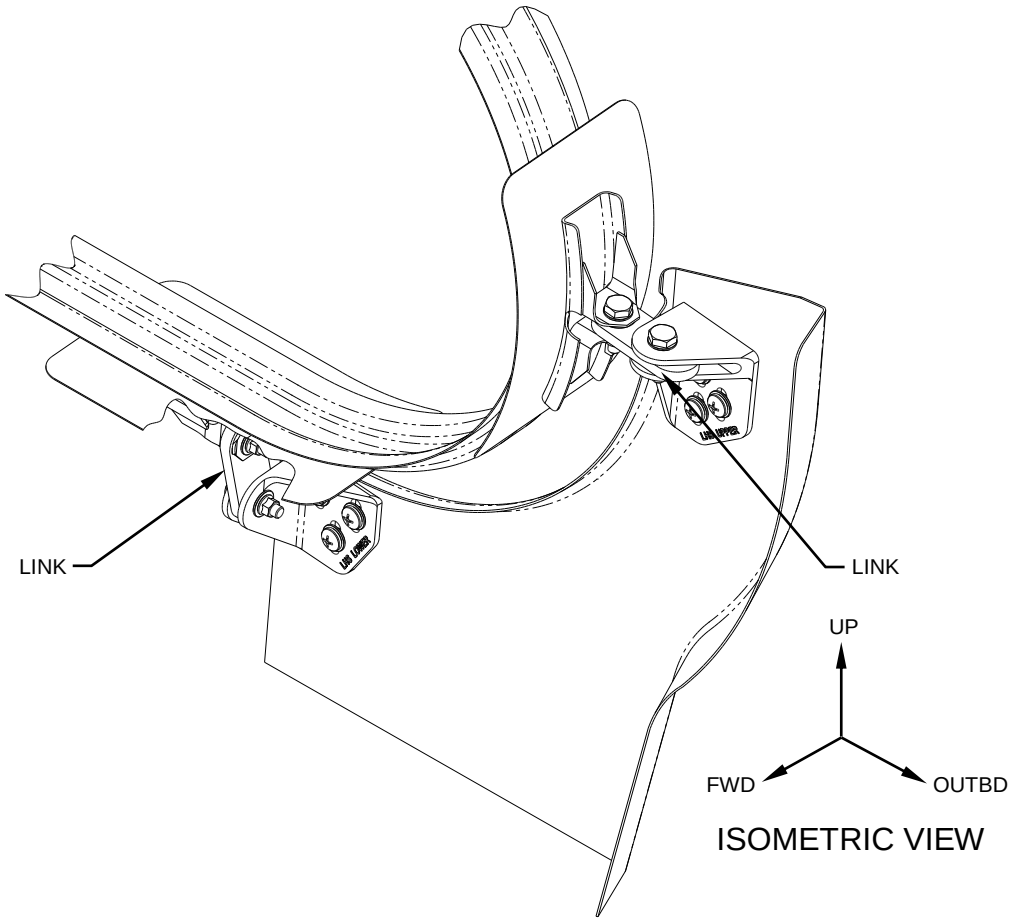

Figure 2A
Some items removed for clarity

4. Gently lift the AFT end of the ejector and insert a .320 spacer between the bottom of the LHS Exhaust Ejector and the oil cooler support structure blower cover(s).

   NOTE: The .320 spacer is not supplied. Fabricate the spacer locally.

5. Measure the maximum gap between the AFT firewall and the Exhaust Ejector Flange along the lower edge of the flange. Record the measured value.

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6. Repeat the above procedure on the RHS of the aircraft.

7. Use Table 1 and the recorded flange gap values to determine which Shim, Assys are appropriate for your aircraft. Discard all other Shim, Assys.

Table 1

MEASURED FLANGE GAP VALUE		LHS ITEM NUMBER	RHS ITEM NUMBER	HARDWARE KIT ITEM NUMBER
UP TO .160		16 (-001)	22 (-002)	17
.161 TO .193		23 (-003)	29 (-004)	24
.194 TO .225		30 (-005)	36 (-006)	31
.226 TO .257		37 (-007)	43 (-008)	38
.258 TO .290		44 (-009)	50 (-010)	45

8. Record which Shim, Assys are required for your aircraft here. Retain this document for your records.

   LHS Shim, Assy item number: _____

   RHS Shim, Assy item number: _____

9. Airframe Measurement Procedure complete.