

**International
Aero Engines**

V2500 Propulsion System — Nacelle

SERVICE BULLETIN

Date: March 26, 1998

Subject: Transmittal of Revision 3 to Service Bulletin Number V2500-NAC-78-0140

Service Bulletin Revision History:

<u>Event</u>	<u>Date</u>
Basic Issue	Apr. 03/97
Revision 1	Apr. 07/97
Revision 2	Dec. 03/97
Revision 3	Mar. 26/98

Reasons for Issuance of Revision

(1) To make minor revisions to the text and illustrations.

Effect on Past Compliance

(1) None.

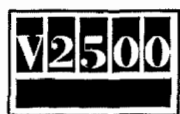
List of Effective Pages:

<u>Page No.</u>	<u>Rev. No.</u>	<u>Date</u>
1	3	Mar. 26/98
2 thru 9	Basic	Apr. 03/97
10	3	Mar. 26/98
11	Basic	Apr. 03/97
12	3	Mar. 26/98
13	Basic	Apr. 03/97
14	1	Apr. 07/97
15 and 16	Basic	Apr. 03/97
17 thru 19	2	Dec. 03/97

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Transmittal

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NACELLE - EXHAUST - CASCADE-TO-AFT CASCADE SUPPORT RING ATTACHMENT -
MODIFICATION OF

MODEL APPLICATION

V2500 D5

BULLETIN INDEX LOCATOR

78-32-00

Compliance Category Code

4

Internal Reference No.

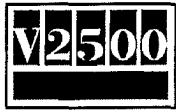
JG/LL 97VN802/A

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1. Planning Information

A. Effectivity

(1) Aircraft:

(a) MD90

(2) Nacelle: V2500 D5 thrust reverser serial numbers 0021001 thru 0256001.

B. Reason

(1) Condition

The thrust reverser cascade-to-aft cascade ring attach bolts have been found to interfere with the inner surface of the translating sleeve bond panel during certain phases of aircraft operation.

(2) Background

Operators have experienced interference between the cascade-to-aft cascade ring bolts attach bolts and the translating sleeve bond panel.

(3) Objective

Modify the cascade-to-aft cascade ring installation to eliminate interference with the translating sleeve bond panel.

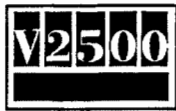
(4) Substantiation

Not applicable.

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(5) Impact of Bulletin on Workshop Procedures:

Removal/Installation	Affected
Disassembly/Assembly	Affected
Cleaning	Affected
Inspection/Check	Affected
Repair	Affected
Testing	Not Affected

(6) Supplemental Information

It is recommended, for convenience, that Service Bulletins V2500-NAC-78-0132, V2500-NAC-78-0134, and V2500-NAC-78-0137 be incorporated at the same time as this service bulletin.

C. Description

The thrust reverser cascades are removed. The cascade attach nutplates are removed from the aft cascade ring. The nutplate attach rivet holes are filled with rivets. The translating sleeve bond panel is examined for damage caused by the cascade attach bolts. Any damage is repaired. Then the cascades are installed and attached to the aft cascade ring with bolts, washers, and nuts.

D. Approval

Incorporation of this Service Bulletin must be accomplished only in conjunction with Douglas Aircraft Company Service Bulletin MD90-78-019 which has received exclusive FAA approval for MD-90 Series Aircraft.

E. Compliance maintenance action for the nacelle or nacelle component.

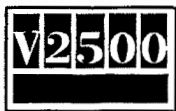
Category 4

Accomplish at the first visit of the nacelle or nacelle component to a maintenance base capable of compliance with the

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accomplishment instructions regardless of the planned maintenance action for the nacelle or nacelle component.

F. Manpower

Estimated manhours per nacelle to incorporate the full intent of this Bulletin:

<u>VENUE</u>	<u>ESTIMATED MANHOURS</u>
(1) In Service	Not Applicable
(2) In Shop	
(a) To Rework	<u>8.0 M/Hrs.</u>
Total	8.0 M/Hrs

NOTE: After incorporation of this modification, a maximum of 16.0 manhours for labor will be reimbursed by Rohr, as a labor credit allowance per affected aircraft to obtain a labor credit allowance after procurement of noted material. Labor claims should reference this service bulletin number and aircraft fuselage number and be submitted to:

Rohr, Inc.
850 Lagoon Drive
Chula Vista, CA 91910-2098
Attn: Airline Support Manager - Bldg 107A
Warranty Department
(Ref. Service Bulletin V2500-NAC-78-0140)

G. Material - Cost and Availability

The parts to accomplish this Service Bulletin are available from the supplier as kit V2578140-551 at no cost to the operator.

Operators with units listed in Paragraph 1.A should submit a no-charge purchase order for the applicable quantity of kits. The purchase order must specify this service bulletin number and

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only the parts listed herein. Operators will have one year from the issue date of the Service Bulletin to place an order. After one year, kits will no longer be available and operators will have to order parts individually at catalog prices, if they desire to incorporate the change.

Direct Purchase Order to:

Rohr, Inc.
P.O. Box 878
Chula Vista, CA 91912
U.S.A.
Attn: Airline Support Manager - Bldg. 107A
(Ref. Service Bulletin No. V2500-NAC-78-0140)

H. Tooling - Cost and Availability

None required.

I. Weight and Balance

- (1) Weight changeNone
- (2) Moment armNone
- (3) DatumFront Engine Mount Centerline
.....(Power Plant Station (PPS) 100.00)

J. Electrical Load Data

Not Applicable.

K. References

Chapter/Section

Overhaul Processes and Consumable
Index (PCI-V2500-1IA)

IAE V2500 Standard Practices/Processes
Manual (SPP-V2500-1IA)

70-09-00
70-23-05

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MD-90 Aircraft Maintenance Manual

78-32-15

L. Other Publications Affected

MD90 Engine Illustrated Parts Catalog
(S-V2500-3IA)

78-32-15

MD90/V2500D5 Thrust Reverser Component
Maintenance Manual(CMM-TR-V2500-3IA)

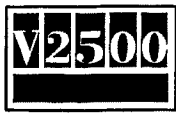
78-32-15

78-32-23

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2. Accomplishment Instructions

A. Pre-requisite Instructions

- (1) Remove the thrust reverser cascades and blank cascades. Refer to the MD-90 Aircraft Maintenance Manual, Page Block 401.

B. Rework or Modification Instructions

- (1) Inspect the translating sleeve bond panel for damage caused by interference with the cascade attach bolts. Refer to Figure 1.
- (2) If damage is found, repair as follows:
 - a. Make the area around the damage rough with silicon carbide abrasive paper (CoMat 05-081).
 - WARNING:** SOLVENT (01-438) IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH RECOMMENDATIONS.
 - b. Clean the damage area with a lint free cloth (CoMat 02-099) made moist with solvent (CoMat 01-438). Wipe the surfaces dry before the solvent becomes dry.
 - c. Make the repair doublers from .032 inch thick 2024-T3 material. Form the doublers to match the contour of the skin in the repair area. Make the mating surface of the doublers rough with silicon carbide abrasive paper (CoMat 05-081). Drill pilot holes for CR3243-4-1 rivets at each corner of the doublers. Refer to Figure 2.

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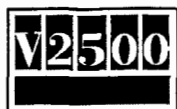
WARNING: ADHESIVE (08-028) IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH RECOMMENDATIONS.

- d. Mix the adhesive (CoMat 08-028). Refer to the manufacturer's instructions.
- e. Apply a thin layer of adhesive (CoMat 08-028) to the mating surfaces of the doublers.
- f. Put the doublers into position over the damaged area. Apply pressure to the doublers with a sand bag or similar to make sure there is good adhesion. Put a piece of nonporous parting film (CoMat 02-168) between the sand bag and the repair area to keep the bag from sticking to the repair.
- g. Cure the adhesive. Refer to the manufacturer's instructions.
- h. Remove the sand bags and the nonporous parting film.
- i. Drill 0.143-0.146 inch (3.63-3.71 mm) diameter holes through the solid skin and the doublers at the pilot hole locations.

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WARNING: THINNER (COMAT 07-116), CATALYST (COMAT 07-139) AND EPOXY PRIMER (07-140) ARE CLASSIFIED AS HAZARDOUS MATERIALS WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THESE PRODUCTS SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THESE PRODUCTS, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH RECOMMENDATIONS.

- j. Mix the thinner (CoMat 07-116), catalyst (CoMat 07-139), and epoxy primer (CoMat 07-140). Refer to the manufacturer's instructions.
- k. Wet install the CR3243-4-1 rivets with primer mix.
- l. Use a lint free cloth (CoMat 02-099) made moist with solvent (CoMat 01-438). Wipe the surfaces dry before the solvent becomes dry.

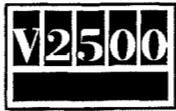
WARNING: CONVERSION COATING (COMAT 07-106) IS CLASSIFIED AS A HAZARDOUS MATERIAL WHICH MAY CAUSE INJURY OR ILLNESS IF NOT PROPERLY USED. THIS PRODUCT SHOULD BE USED ONLY IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFIC SAFETY AND HEALTH RECOMMENDATIONS. PRIOR TO USE OF THIS PRODUCT, CAREFULLY READ THE APPLICABLE "MATERIAL SAFETY DATA SHEET" AND FOLLOW ALL LISTED SAFETY AND HEALTH RECOMMENDATIONS.

- m. Apply the conversion coating (CoMat 07-106) to the exposed aluminum surfaces. Refer to the manufacturer's instructions.
- n. Apply the primer to the repair area.
- o. Cure the primer. Refer to the manufacturer's instructions.

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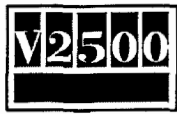
- (3) Drill out the rivets and remove the cascade and blank cascade attach nutplates from the aft cascade ring.
- (4) Dye penetrant inspect for cracks any rivet holes in the aft cascade ring which have been made larger or otherwise damaged. Refer to the IAE V2500 Standard Practices/Processes Manual, Chapter 70-23-05.
 - a. If cracks are found, you may enlarge the holes to .125 inch (3.18 mm) diameter to remove the cracks. If the cracks are still present after hole enlargement, you must replace the aft cascade ring.
- (5) Fill the rivet holes with MS20426AD3-6 rivets (or larger if the holes are enlarged). Wet install the rivets with the primer mix. Install the rivets flush with the outboard surface of the cascade ring.
- (6) Reidentify the 290-0017-501 aft cascade ring assembly as the 290-0017-503. Use a rubber stamp and CoMat 06-073 metal marking ink. Refer to the IAE V2500 Standard Practices/Processes Manual, Chapter 70-09-00.
- (7) Install the cascades and blank cascades.
 - a. At the forward end, attach each cascade or blank cascade with four NAS1587-4C washers and four NAS6404U11 bolts. Refer to Figure 1.
 - b. At the aft end, attach each cascade or blank cascade to the aft cascade ring with four NAS6404U11 bolts, four NAS1149C0463R washers, four NAS1587-4C washers, and four MS21043-4 nuts. Install the bolts with the heads inboard as shown in Figure 1.
 - c. Torque the NAS6404U11 bolts and the MS21043-4 nuts to 50-70 in-lbs (5.7-7.9 Nm).

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C. Recording Instructions

- (1) A record of accomplishment is necessary. Write in the applicable records and metal stamp, vibroetch, or electroetch on the thrust reverser data plate that Service Bulletin V2500-NAC-78-0140 has been done. Refer to the IAE V2500 Standard Practices/Processes Manual, Chapter 70-09-00.

D. Post-requisite Instructions

None.

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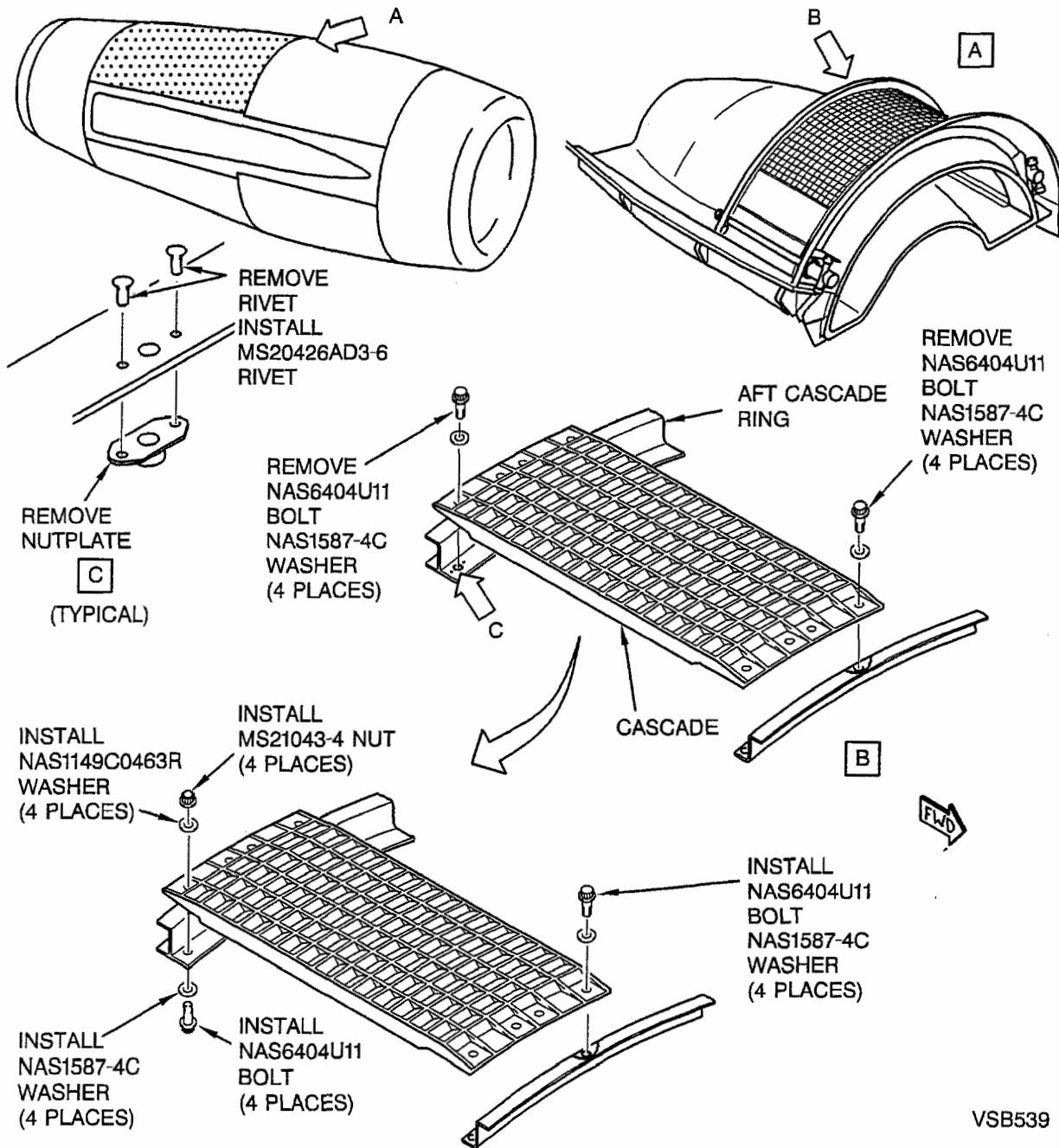
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VSB539

Thrust Reverser Cascade Attachment Modification
Figure 1

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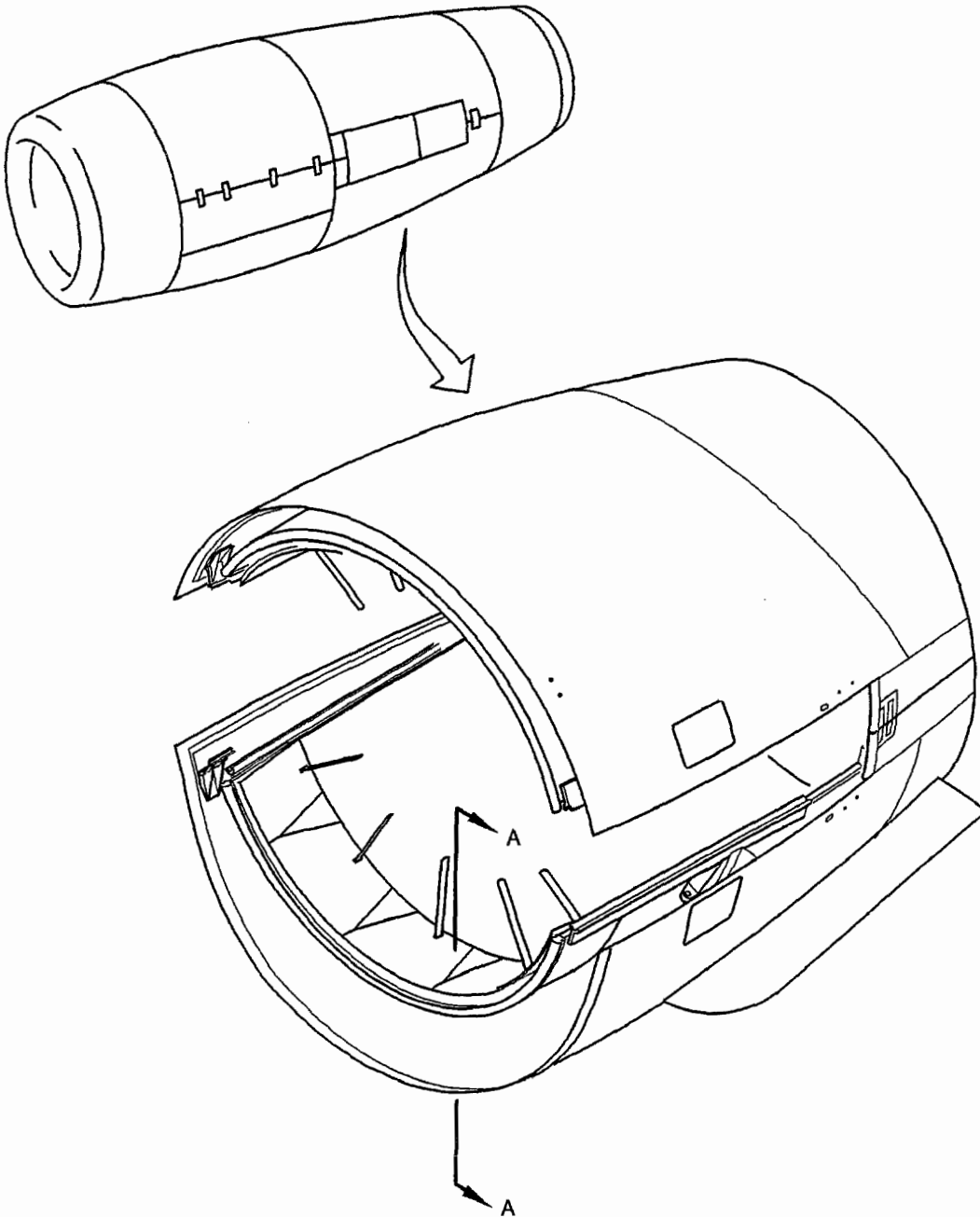
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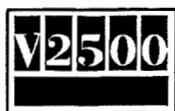
VSB540

Translating Sleeve Bond Panel Bolt Interference Damage Repair
Figure 2 (Sheet 1)

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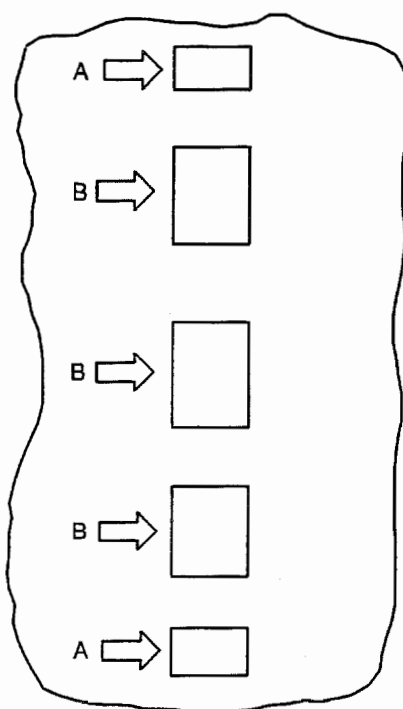
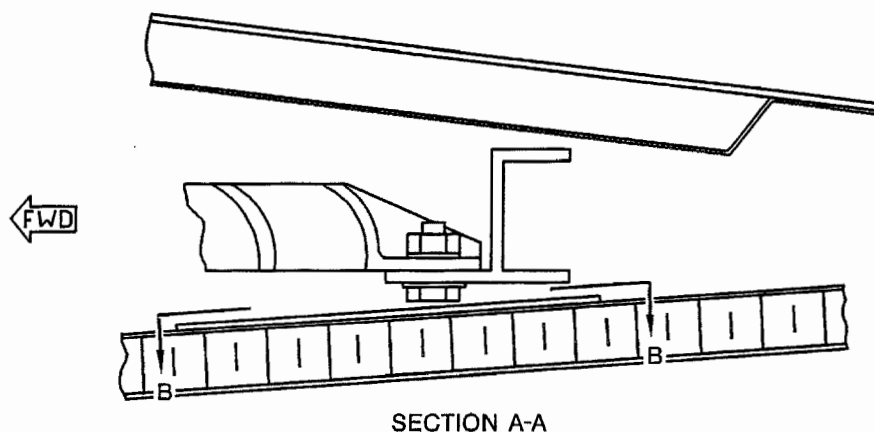
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VIEW B-B

VSB541

Translating Sleeve Bond Panel Bolt Interference Damage Repair
Figure 2 (Sheet 2)

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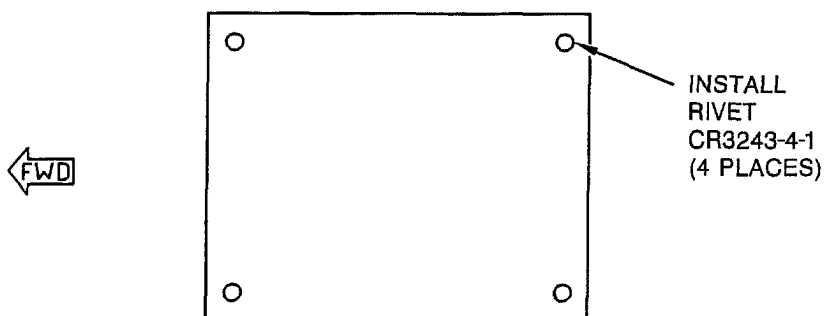
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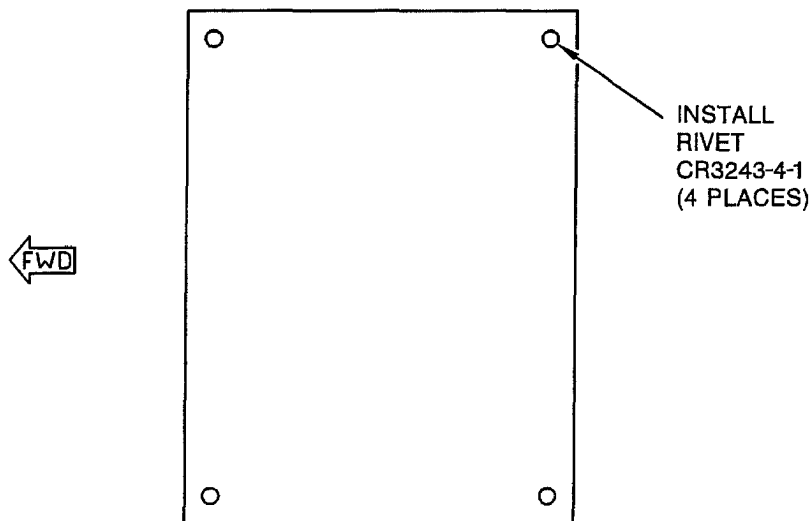
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A

DOUBLER FOR DAMAGE
CAUSED BY ONE BOLT
(TYPICAL)



B

DOUBLER FOR DAMAGE
CAUSED BY TWO ADJACENT
BOLTS (TYPICAL)

VSB542

Translating Sleeve Bond Panel Bolt Interference Damage Repair
Figure 2 (Sheet 3)

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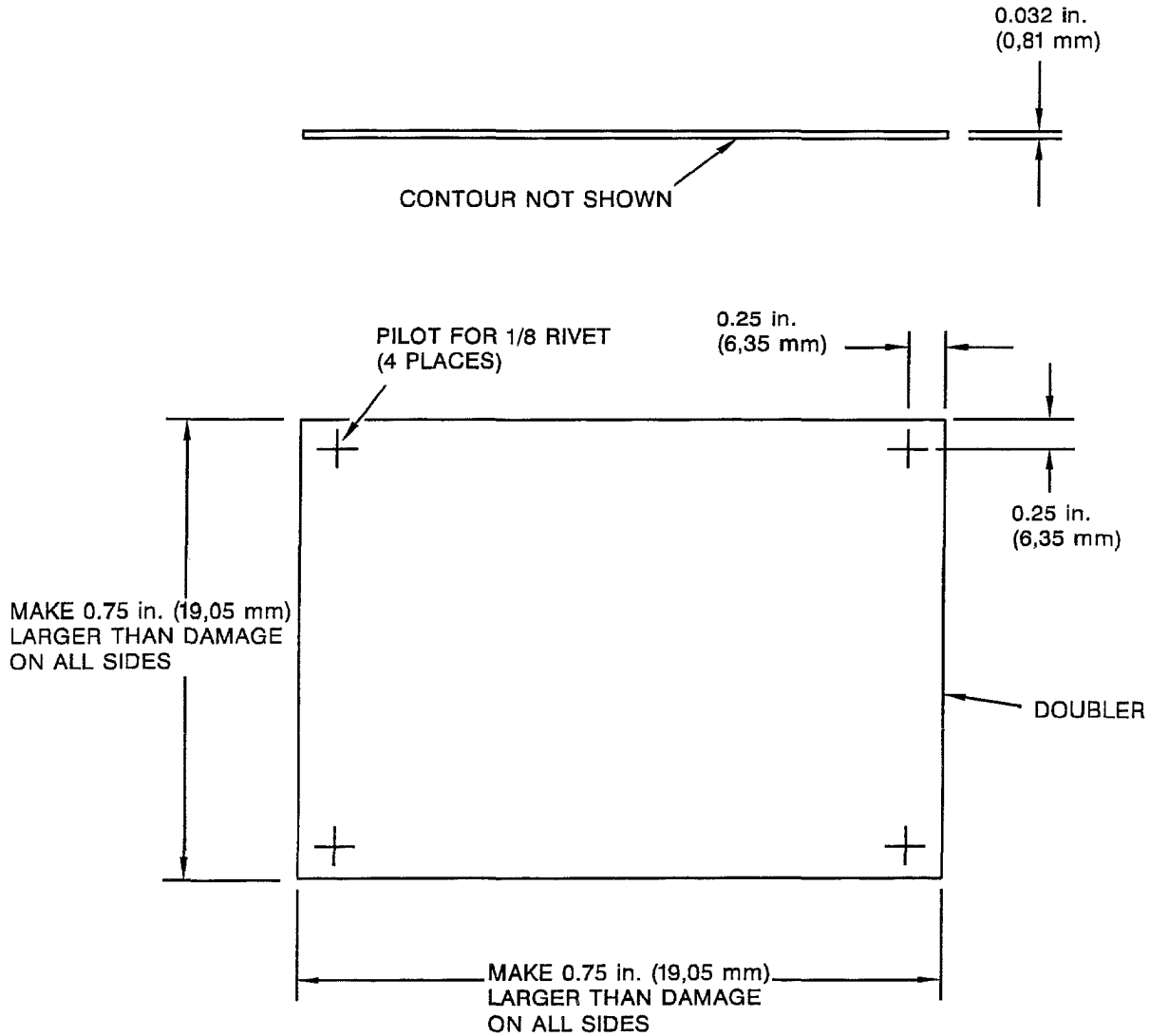
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NOTE: ONE DOUBLER CAN COVER
DAMAGE CAUSED BY TWO
ADJACENT BOLTS.

VSB543

Translating Sleeve Bond Panel Bolt Interference Damage Repair
Figure 2 (Sheet 4)

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3. Material Information

Applicability: For each V2500-D5 Nacelle to incorporate this Bulletin.

A. Kits associated with this Bulletin:

<u>NEW PART NO</u> <u>(ATA NO)</u>	<u>QTY</u>	<u>EST'D</u> <u>UNIT</u> <u>PRICE</u>	<u>KEYWORD</u>	<u>OLD PART NO</u> <u>(IPC NO)</u>	<u>INSTR/</u> <u>DISPOS</u>
V2578140-551 Consisting of	2		Kit		(A)
NAS1149C0463R	28		Washer		
MS21043-4	28		Nut		
MS20426AD3-6	56		Rivet		

B. Parts affected by this Bulletin:

<u>NEW PART NO</u> <u>(ATA NO)</u>	<u>QTY</u>	<u>EST'D</u> <u>UNIT</u> <u>PRICE</u>	<u>KEYWORD</u>	<u>OLD PART NO</u> <u>(IPC NO)</u>	<u>INSTR/</u> <u>DISPOS</u>
NAS1149C0463R (78-32-15)	4		Washer	---	(B)(C) (S1)
	4			(01-015)	
	4			(01-035)	
	4			(01-053)	
	4			(01-075)	
	4			(01-095)	
	4			(01-115)	
	4			(01-135)	
	4			(02-015)	
	4			(02-035)	
	4			(02-053)	
	4			(02-075)	
	4			(02-095)	
	4			(02-115)	
	4			(02-135)	
	8			(03-015)	
	4			(03-035)	

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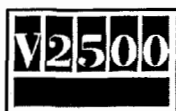
<u>NEW PART NO</u> <u>(ATA NO)</u>	<u>QTY</u>	<u>EST'D</u> <u>UNIT</u> <u>PRICE</u>	<u>KEYWORD</u>	<u>OLD PART NO</u> <u>(IPC NO)</u>	<u>INSTR/</u> <u>DISPOS</u>
	4			(03-053)	
	4			(03-075)	
	4			(03-095)	
	4			(03-115)	
	8			(04-015)	
	4			(04-035)	
	4			(04-053)	
	4			(04-075)	
	4			(04-095)	
	4			(04-115)	
MS21043-4 (78-32-15)			Nut	---	(B)(C) (S1)
	4			(01-016)	
	4			(01-036)	
	4			(01-054)	
	4			(01-076)	
	4			(01-096)	
	4			(01-116)	
	4			(01-137)	
	4			(02-016)	
	4			(02-036)	
	4			(02-054)	
	4			(02-076)	
	4			(02-096)	
	4			(02-116)	
	4			(02-137)	
	8			(03-016)	
	4			(03-036)	
	4			(03-054)	
	4			(03-076)	
	4			(03-116)	
	8			(04-016)	
	4			(04-036)	
	4			(04-054)	
	4			(04-076)	
	4			(04-096)	

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NEW PART NO (ATA NO)	QTY	EST'D UNIT PRICE	KEYWORD	OLD PART NO (IPC NO)	INSTR/ DISPOS
	4			(04-116)	
290-0017-503			Ring Assy,	290-0017-501	(B)(C)
R (78-32-23)	1		Aft Cascade	(01-020)	(S1)(1D)
R	1			(03-020)	

C. Instructions/Disposition Code Statements:

- (A) Kit will be available April 1997.
- (B) Part is supplied as a detail of the kit.
- (C) Old part will no longer be available.
- (S1) Parts coded S1 must be replaced in complete sets.
- (1D) Old part may be re-worked to new configuration.

D. Materials Required to Incorporate This Bulletin:

CoMat 01-438	Solvent
CoMat 02-099	Lint Free Cloth
CoMat 02-168	Non-porous Parting Film
CoMat 05-020	Waterproof Silicon Carbide Abrasive Paper
CoMat 05-081	Waterproof Silicon Carbide Abrasive Paper
CoMat 06-073	Metal Marking Ink
CoMat 07-116	Thinner
CoMat 07-139	Catalyst
CoMat 07-140	Epoxy Primer
CoMat 08-028	Adhesive
N/A	.032 inch thick 2024-T3 aluminum sheet
N/A	CR3243-4-1 Rivets (100 per nacelle)

NOTE: To identify the consumable materials, refer to the Overhaul Processes and Consumable Index PCI-V2500-11A.

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