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V2500-D5 SERIES PROPULSION SYSTEM SERVICE BULLETIN

Printed in Great Britain

This document transmits Revision 2 to Service Bulletin NV2500-71-0232 and the Initial Issue of the Supplement

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Initial Issue Jun.18/99
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Supplement Revision Status

Bulletin Revision 2

Remove	Incorporate Page 1 and 2 of the Summary	Reason for change To revise effectivity. To add concurrent statement. To revise approval statement. To revise warnings. To revise references and other publications affected. To add summary and supplement.
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CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
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All pages of the
Service Bulletin

Pages 1 to 17 of the
Service Bulletin

To revise effectivity. To
add concurrent statement.
To revise approval
statement. To revise
warnings. To revise
references and other
publications affected. To
add summary and supplement.

Supplement Initial Issue

Remove

Incorporate
Page 1

Reason for change
To revise effectivity. To
add concurrent statement.
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LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 2 to the Bulletin and the Initial Issue of the Supplement are as follows:

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NACELLE – NOSE COWL – FORWARD BULKHEAD FITTING, THERMAL ANTI-ICE DUCT –
MODIFICATION OF

SUMMARY

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R 1. PLANNING

R A. EFFECTIVITY

R Aircraft

R Boeing MD90

R Nacelle

R V2500-D5 nose cowl serial numbers prior to 0470001.

R B. CONCURRENT REQUIREMENTS

R Incorporation of this Service Bulletin must be accomplished only in
R conjunction with Boeing Service Bulletin MD90 71-011.

R C. REASON/PROBLEM

R Condition

R Nose cowl T.A.I. duct installations have been found with wear to the
R forward bulkhead fitting anti-rotation pin and inner duct.

R Background

R The nose cowl T.A.I forward bulkhead fitting anti-rotation pin and inner
R duct can become worn in service. Wear of the pin allows air to accumulate
R in the space between the inner and outer duct.

R Objective

R To modify the T.A.I duct installation to modify or remove the forward
R bulkhead fitting anti-rotation pin.

R D. DESCRIPTION

R This Service Bulletin instructs the following activity:

R The nose cowl T.A.I duct is removed.

R The nose cowl forward bulkhead fitting is removed.

R If the anti-rotation pin is present and firmly installed, it is trimmed.

R If the anti-rotation pin is not present or firmly installed, the forward
R bulkhead fitting is returned to Rohr for modification.

R The modified forward bulkhead fitting is installed.

R The T.A.I. duct is installed with new seals and D-rings.

R E. COMPLIANCE

R Category 4

R Accomplish at the first visit of the nacelle or nacelle component to a
R maintenance base capable of compliance with the accomplishment instructions
R regardless of the planned maintenance action for the nacelle or nacelle
R component.

R F. MANPOWER

R In Service

R (1)To gain access

R 1.0 Man-hour

R (2)To rework

R 8.0 Man-hours

R (3)To return to service

R 1.0 Man-hour

R Total

R 10.0 Man-hours

R NOTE Man-hours provided for planning purposes only.

R 2. MATERIAL INFORMATION

R Kits Associated with this Bulletin:

				Unit Price
R	Part No.	Qty	Description	US Dollars
R	V2571232-553	1	Kit	10,573.00

NACELLE – NOSE COWL – FORWARD BULKHEAD FITTING, THERMAL ANTI-ICE DUCT –
MODIFICATION OF

1. Planning Information

A. Effectivity

(1) Aircraft

(a) Boeing MD90

(2) Nacelle

R (a) V2500-D5 nose cowl serial numbers prior to 0470001.

R B. Concurrent Requirements

R Incorporation of this Service Bulletin must be accomplished only in conjunction
R with Boeing Service Bulletin MD90 71-011.

C. Reason

(1) Condition

Nose cowl T.A.I. duct installations have been found with wear to the forward bulkhead fitting anti-rotation pin and inner duct.

(2) Background

The nose cowl T.A.I forward bulkhead fitting anti-rotation pin and inner duct can become worn in service. Wear of the pin allows air to accumulate in the space between the inner and outer duct.

(3) Objective

To modify the T.A.I duct installation to modify or remove the forward bulkhead fitting anti-rotation pin.

(4) Substantiation

Not applicable.

(5) Effect of Bulletin on:

(a) Removal/Installation

Affected

(b) Disassembly/Assembly

Affected

(c) Cleaning

Not Affected

(d) Inspection/Check

Not Affected

(e) Repair

Not Affected

(f) Testing

Not Affected

D. Description

This Service Bulletin instructs the following activity:

- (1) The nose cowl T.A.I duct is removed.
- (2) The nose cowl forward bulkhead fitting is removed.
- (3) If the anti-rotation pin is present and firmly installed, it is trimmed.
- (4) If the anti-rotation pin is not present or firmly installed, the forward bulkhead fitting is returned to Rohr for modification.
- (5) The modified forward bulkhead fitting is installed.
- (6) The T.A.I. duct is installed with new seals and D-rings.

E. Approval

R This Service Bulletin has been reviewed by Boeing and the FAA. The repairs and
R modifications herein comply with CFR 25.1093 and are on record with the
R supplier as FAA approved for installation on the MD-90 Series aircraft.

F. Compliance

Category 4

Accomplish at the first visit of the nacelle or nacelle component to a maintenance base capable of compliance with the accomplishment instructions regardless of the planned maintenance action for the nacelle or nacelle component.

G. Manpower**(1) In Service****(a) To gain access****1.0 Man-hour****(b) To rework****8.0 Man-hours****(c) To return to service****1.0 Man-hour****Total****10.0 Man-hours****NOTE Man-hours provided for planning purposes only.****H. Material Cost and Availability**

The parts to accomplish this Service Bulletin are available from the supplier as kit V2571232-553 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 only the kit part number listed herein. Operators will have one year from the issue date of this service bulletin to place an order. Upon receipt of purchase order, Rohr shall provide a delivery schedule for kits ordered. After one year, kits may no longer be available and operators may have to order parts individually at catalog prices. Fleet-wide incorporation of this service bulletin is highly recommended.

Direct Purchase Order to:

Rohr, Inc.

850 Lagoon Drive

Chula Vista, CA 91910-2098

U.S.A.

Attn: Airline Account Manager - MZ-107A

(Ref. Service Bulletin V2500-NAC-71-0232)

NOTE: Please do not send orders for kits via Spec 2000 ordering system.

NOTE: Because it is difficult to successfully perform the modification procedure for bulkhead fittings with missing or loosely installed anti-rotation pins, operators must return these bulkhead fitting to Rohr for modification. To minimize aircraft down time, Rohr has made available a rotatable pool of 290-3004-1AE forward bulkhead fittings. Operators should contact Rohr Aero Services Asia Pte Ltd to obtain their allotment of the 290-3004-1AE forward bulkhead fittings and for modification of their 290-3395-503 bulkhead fittings.

Rohr Aero Services – Asia Pte Ltd

BFGoodrich MRO Group

1 Loyang Way 2

Singapore 507103

Attn: Andy Kwek – Sales Manager Tel: (65) 548-0702 Fax: (65) 542-9646

I. Tooling – Cost and Availability

None.

J. Weight and Balance

(1) Weight change

None

(2) Moment arm

No effect

(3) Datum

Engine Front Mount Centreline (Powerplant Station PPS 100.0)

K. Electrical Load Data

Not affected.

L. References

(1) MD90 Aircraft Maintenance Manual Chapter/Section 71-11-01.

(2) IAE V2500 Standard Practices/Processes Manual (SPP-V2500-1IA)
Chapter/Section 70-09-00 and 70-23-05.

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

R (4) Internal Reference No. - 98VN818E.

R (5) ATA Locator - 78-00-00.

R (6) Boeing Service Bulletin MD90 71-011.

M. Other Publications Affected

(1) MD90/V2500D5 Nose Cowl Component Maintenance Manual (CMM-NC-V2500-3IA)
Chapter/Section 71-11-11.

R (2) Illustrated Parts Catalogue will be revised.

2. Material Information

A. Kits Associated with this Bulletin:

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

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
	V2571232-553	1	Kit			(A)
	Consisting of:					
	A19791/D	2	Seal, D-Ring			
	A19791/A	2	Seal, 3-Ring			
	A19792/D	1	Seal, D-Ring			
	A19792/A	1	Seal, 3-Ring			

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B. Parts affected by this Bulletin:

71-11-11

R R R	FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
R	12-185	290-3395-505	1	Fitting, bulkhead	-	290-3395-503	(B)(C) (1D)(2D) (3D)
R	12-185	290-3004-1AE			-	-	(D)

C. Instruction/Disposition Code Statements

(A) Kit is available.

(B) New part is available.

(C) Old part will no longer be available.

(D) 290-3004-1AE is introduced as an alternate to 290-3395-505.

(1D) Old part can be re-worked by Rohr, re-identified as 290-3004-1AE, and then can be used as an alternate to the 290-3395-505.

(2D) Old part number can no longer be used. Old and new parts must be replaced with the new part number or 290-3004-1AE.

(3D) If anti-rotation pin is present and firmly installed, old part number can be re-worked and re-identified as 290-3395-505.

D. Materials Required to Incorporate this Service Bulletin:

CoMat 01-438	Solvent
CoMat 02-099	Lint free cloth
CoMat 04-005	Jointing compound
CoMat 08-092	Silicone sealant (alternate for CoMat 04-004)
CoMat 03-392	Filler wire, stainless steel (Type 410, AMS 5776)

NOTE: To identify the consumable materials, refer to the Overhaul Processes and Consumable Index PCI-V2500-1IA.

3. Accomplishment Instructions

A. Pre-requisite Instructions

- (1) Remove the fifteen NAS720U45 bolts and the 290-3183-501 thermal anti-ice (T.A.I.) access panel from the nose cowl. Refer to Figure 1.
- (2) Open the fan cowl doors. Refer to the MD-90 Aircraft Maintenance Manual, Chapter 71-11-11, page block 201.

B. Remove the T.A.I. Duct

- (1) Loosen the P29C43 V-clamp at the forward bulkhead fitting.
- (2) Disconnect the tubes from the tee on the T.A.I. duct just aft of the rear bulkhead.
- (3) Disconnect the tube from the anti-ice valve.
- (4) Disconnect the electrical connector from the anti-ice valve.
- (5) Remove the two couplings, two e-seals, and anti-ice valve from the T.A.I. duct.
- (6) Remove the fifteen NAS6703U8 bolts and AN960C10L washers that attach the T.A.I. duct and the 290-3231-501 support bracket to the aft bulkhead.
- (7) Remove the T.A.I. duct aft through the nose cowl aft bulkhead.

NOTE: You may find wear to the anti-rotation pin slot in the inner duct caused by the forward bulkhead fitting anti-rotation pin. This is acceptable. Remove any rough edges or burrs from the inner duct alignment pin slot before you install the duct.

C. Remove the Forward Bulkhead Fitting

- (1) Remove the NAS6703U3 bolts, NAS6703U4 bolts, AN960C10L washers, and the 290-3395-503 bulkhead fitting from the forward bulkhead.
- (2) Remove the A19791/A 3-ring seal and the A19791/D d-ring seal from the 290-3395-503 bulkhead fitting.

D. Examine the Forward Bulkhead Fitting Anti-Rotation Pin

- (1) If the anti-rotation pin is present (not missing) and firmly installed, modify the forward bulkhead fitting as instructed in Paragraph E.
- (2) If the anti-rotation pin is not present (missing) or not firmly installed, modify the forward bulkhead fitting as instructed in Paragraph F.

E. Modify the Forward Bulkhead Fitting (if the anti-rotation pin is present and firmly installed)

- (1) Cut the anti-rotation pin as shown in Figure 4.
- (2) Re-identify the 290-3395-503 bulkhead fitting as 290-3395-505. Use a rubber stamp and black ink (CoMat 06-073). Refer to the IAE Standard Practices/Processes Manual, Chapter 70-09-00.

F. Modify the Forward Bulkhead Fitting (if the anti-rotation pin is not present or not firmly installed)

NOTE: Because it is difficult to successfully perform this modification procedure operators must return the 290-3395-503 bulkhead fitting to Rohr for modification. To minimize aircraft down time, Rohr has made available a rotatable pool of 290-3004-1AE forward bulkhead fittings. Operators should contact Rohr Aero Services Asia Pte Ltd to obtain their allotment of the 290-3004-1AE forward bulkhead fittings and for modification of their 290-3395-503 bulkhead fittings.

Rohr Aero Services – Asia Pte Ltd

BFGoodrich MRO Group

1 Loyang Way 2

Singapore 507103

Attn: Andy Kwek – Sales Manager Tel: (65) 548-0702 Fax: (65) 542-9646

- (1) Remove the anti-rotation pin from the 290-3395-503 bulkhead fitting.
- (2) Fill the anti-rotation pin hole in the forward bulkhead fitting with stainless steel 410 filler wire (CoMat 03-392).
 - (a) Heat the fitting to 400-500 degrees F (205-260 degrees C) in an oven.
 - (b) Do the weld procedure within 10 minutes and do not allow the fitting to cool below 400 degrees F (205 degrees C). Use stainless steel 410 filler wire (CoMat 03-092). Cover the fitting with a heat blanket, if necessary.
 - (c) Heat the fitting in a furnace at 1300 degrees F (705 degrees C) for one (1) hour.
 - (d) Cool the fitting in a furnace to 1100 degrees F (593 degrees C). Then, air cool fitting to room temperature.
 - (e) Grind both sides of the weld flush to within 0.025 inch (0.64 mm).

(f) Do a high sensitivity fluorescent dye penetrant inspection of all welds on the fitting. No cracks are allowed. Refer to the Standard Practices Manual Task 70-23-05-501.

- (3) Re-identify the 290-3395-503 bulkhead fitting as 290-3004-1AE. Use a rubber stamp and black ink (CoMat 06-073). Refer to the IAE Standard Practices/Processes Manual, Chapter 70-09-00.

G. Install the Forward Bulkhead Fitting

R **WARNING:** BEFORE YOU USE CHEMICALS, READ, UNDERSTAND, AND OBEY ALL SAFETY
R INSTRUCTIONS FOR THE CHEMICALS. THESE INSTRUCTIONS INCLUDE INSTRUCTIONS
R FROM THE MANUFACTURER, THE MATERIAL SAFETY DATA SHEETS (MSDS), AND
R GOVERNMENT REGULATIONS. CHEMICALS MAY CAUSE INJURY TO YOU OR MAKE YOU
R SICK WHEN SAFETY INSTRUCTIONS ARE NOT OBEYED. AN MSDS GIVES INSTRUCTIONS
R ON HOW TO USE, KEEP AND DISCARD CHEMICALS. GET INSTRUCTIONS FROM YOUR
R EMPLOYER ON HOW YOU MUST SAFELY USE, KEEP AND DISCARD CHEMICALS.

- (1) Clean the mating surfaces of the parts with a clean lint free cloth (CoMat 02-099) and solvent (CoMat 01-438). Wipe the surfaces dry before the solvent becomes dry.

R **WARNING:** BEFORE YOU USE CHEMICALS, READ, UNDERSTAND, AND OBEY ALL SAFETY
R INSTRUCTIONS FOR THE CHEMICALS. THESE INSTRUCTIONS INCLUDE
R INSTRUCTIONS FROM THE MANUFACTURER, THE MATERIAL SAFETY DATA
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R INJURY TO YOU OR MAKE YOU SICK WHEN SAFETY INSTRUCTIONS ARE NOT
R OBEYED. AN MSDS GIVES INSTRUCTIONS ON HOW TO USE, KEEP AND
R DISCARD CHEMICALS. GET INSTRUCTIONS FROM YOUR EMPLOYER ON HOW
R YOU MUST SAFELY USE, KEEP AND DISCARD CHEMICALS.

- (2) Apply jointing compound (CoMat 04-005) to the eight NAS6703U3 bolts, the eight NAS6703U4 bolts, and mating surfaces of the 290-3004-IAE or 290-3395-505 fitting and the forward bulkhead.
- (3) Install one each of the 2.75 inch (69,85 mm) diameter A19791/D d-ring seal in the forward recess and one 2.75 inch (69,85 mm) diameter A19791/A 3-ring seal in the aft recess of the 290-3004-1AE or 290-3395-505 fitting. Make sure the gaps on the 3-ring seals are rotated 120 degrees from each other.
- (4) Install the 290-3004-1AE or 290-3395-505 fitting on the forward bulkhead with the AN960C10L washers, NAS6703U3 bolts, and NAS6703U4 bolts. Torque the bolts to 40 in-lbs (4,52 Nm).

H. Install the T.A.I. Duct

- (1) Install the 290-3416-501 inner duct and then the 290-3417-503 outer duct on the fitting at the forward bulkhead. Make sure the seals remain in the proper position when you install the ducts.



- (2) Loosely install the P29C43 V-clamp on the forward end of the 290-3417-503 duct and flange of the 290-3004-1AE or 290-3395-505 fitting at the forward bulkhead. Position the tightening feature of the clamp so it is accessible from the access panel opening.
- (3) Install the 3.75 inch (95.25 mm) diameter A19792/D d-ring seal (aft most recess on the 290-3394-501 outer duct) and the 3.75 inch (95.25 mm) diameter A19792/A 3-ring (forward most recess on the outer duct). Make sure the gaps on the 3-ring seal are rotated 120 degrees from each other.
- (4) Install the 2.75 inch (69.85 mm) diameter A19791/D d-ring seal (aft most recess on the 290-3398-501 inner rear bulkhead assembly) and the 2.75 inch (69.85 mm) diameter A19791/A 3-ring (forward most recess on the rear inner bulkhead assembly). Make sure the gaps on the 3-ring seals are rotated 120 degrees from each other.
- (5) Apply jointing compound (CoMat 04-005) to the mating surfaces of the 290-3394-501 outer rear bulkhead duct assembly and the 290-3398-501 inner rear bulkhead assembly.
- (6) Put the 290-3394-501 outer rear bulkhead duct assembly on the aft end of the 290-3417-503 duct. Put the 290-3398-501 inner rear bulkhead assembly on the 290-3416-501 duct. Make sure the attach holes of the two fittings align.
- (7) Make sure the inner and outer ducts are properly positioned on both sides of the rear bulkhead fittings.
- (8) Apply jointing compound (04-005) to the bolts and the mating surfaces of the duct assembly and the aft bulkhead.
- (9) Attach the entire aft end of the duct assembly to the aft bulkhead with eleven NAS6703U8 bolts and AN960C10L washers. Torque the bolts to 40 in-lbs (4.52 Nm).
- (10) Tighten the P29C43 V-clamp at the forward bulkhead. Torque the set screw to 35-40 in-lbs (3.95-4.52 Nm).
- (11) Make sure all unwanted material and tools are removed from inside the nose cowl. If it becomes necessary, the thermal anti-ice outlet panel and grille can be removed to get access to unwanted material or tools which have dropped into the bottom of the nose cowl.
- (12) Install the 290-3231-501 support bracket on the inner rear bulkhead assembly with four NAS6703U8 bolts and AN960C10L washers. Torque the bolts to 40 in-lbs (4.52 Nm).
- (13) Install the tubes on the tee. Torque the b-nuts of the tubes to 200-210 lbfin (22.6-23.7 Nm).

- (14) Install the anti-ice valve, two e-seals and two couplings. Torque the couplings to 75-90 lbfin (8.5 11.7 Nm).
- (15) Install the tube on the anti-ice valve.
- (16) Install the electrical connector on the anti-ice valve.

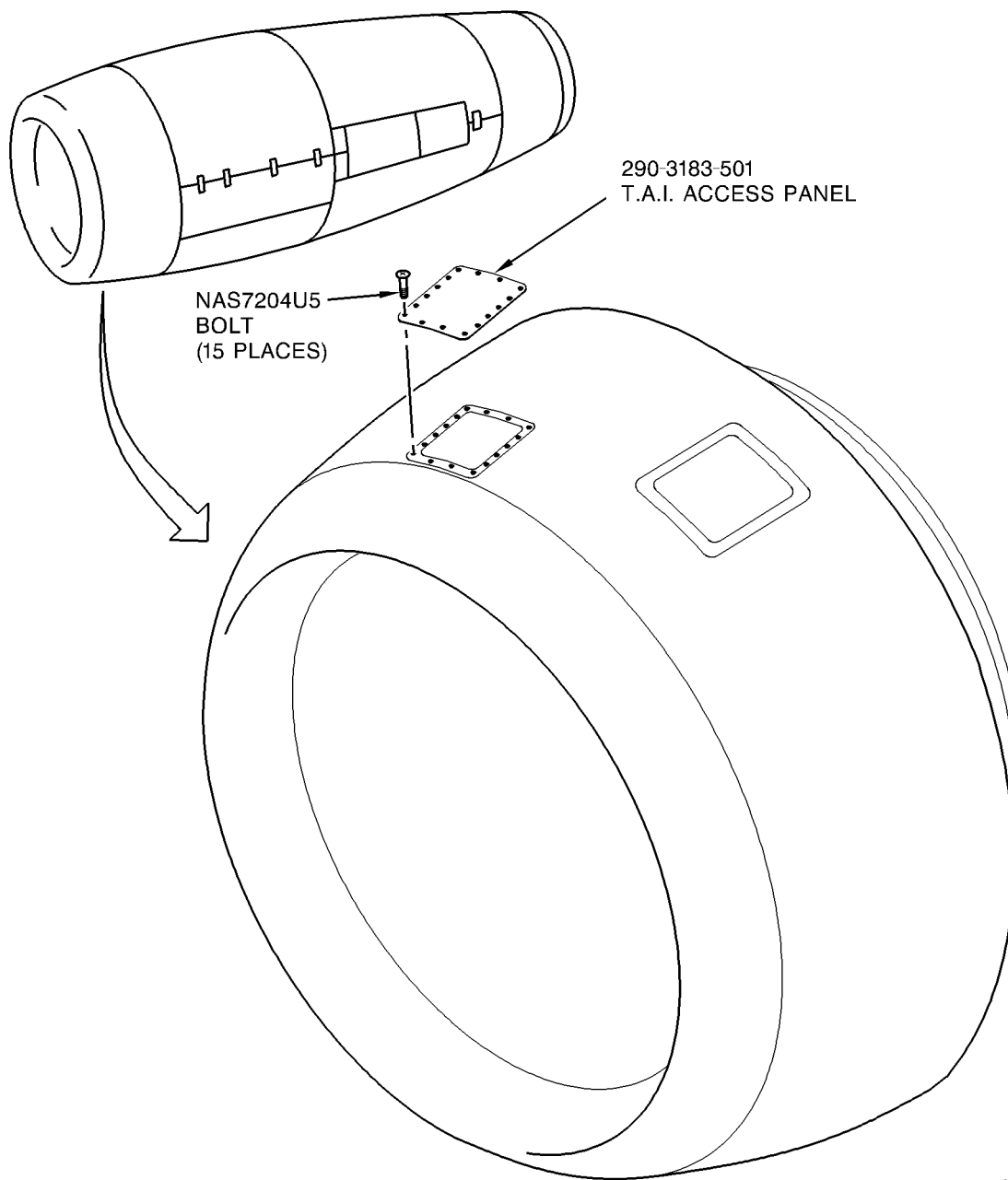
I. Post-requisite Instructions

- (1) Install the T.A.I. access cover and fifteen NAS7204U5 attach bolts. Wet install the bolts with jointing compound (CoMat 04-005). Torque the bolts to 20-25 lbfin (2.62-2.82 Nm).
- (2) Close the fan cowl doors. Refer to the MD-90 Aircraft Maintenance Manual, Chapter 71-11-01, page block 201.

J. Recording Instructions

A record of accomplishment is necessary. Write in the applicable records and metal stamp, vibroetch, or electro etch on the nose cowl data plate that Service Bulletin V2500-NAC-71-0232 has been done. Refer to IAE V2500 Standard Practices/Processes Manual, Chapter 70-09-00.

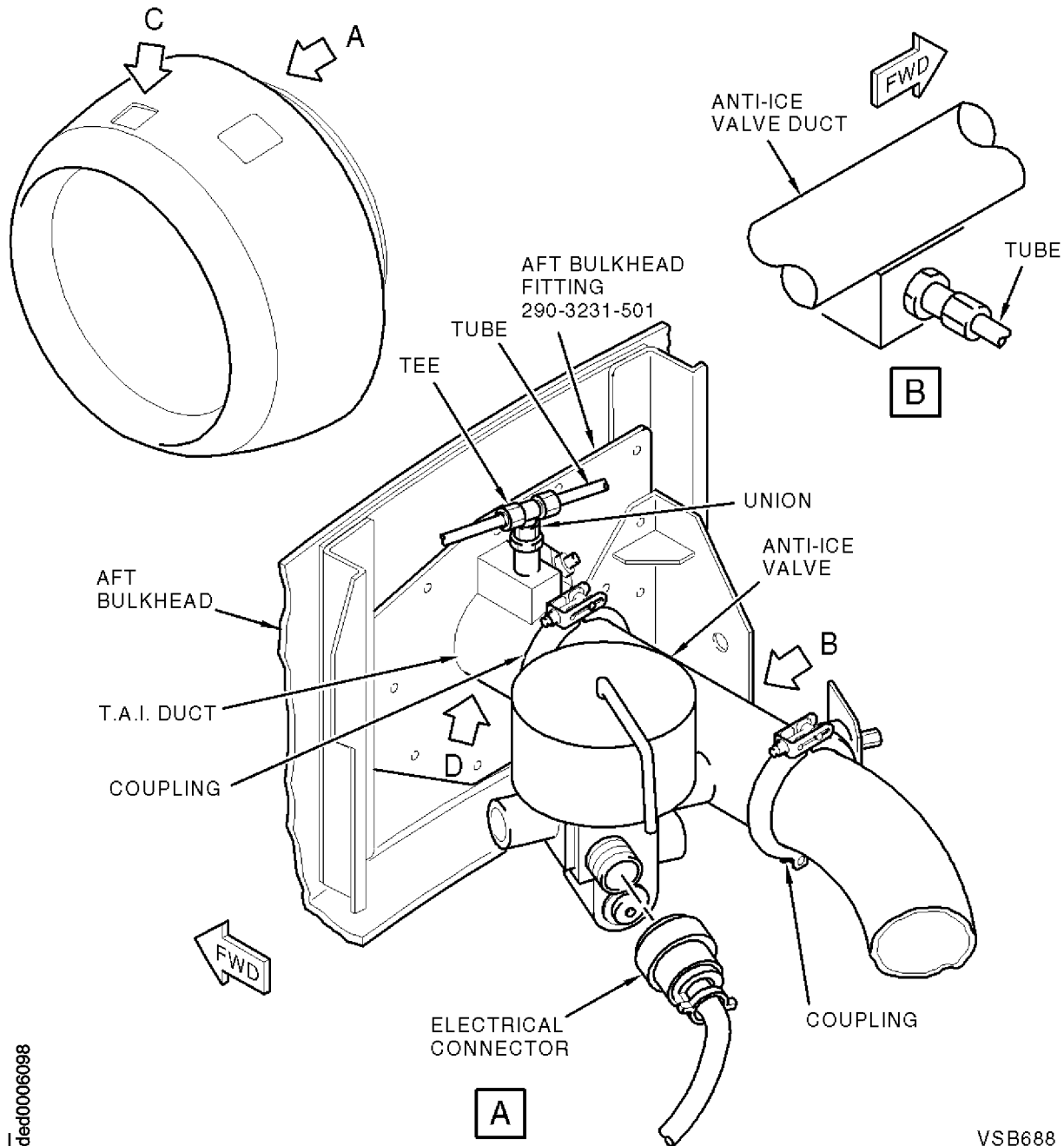
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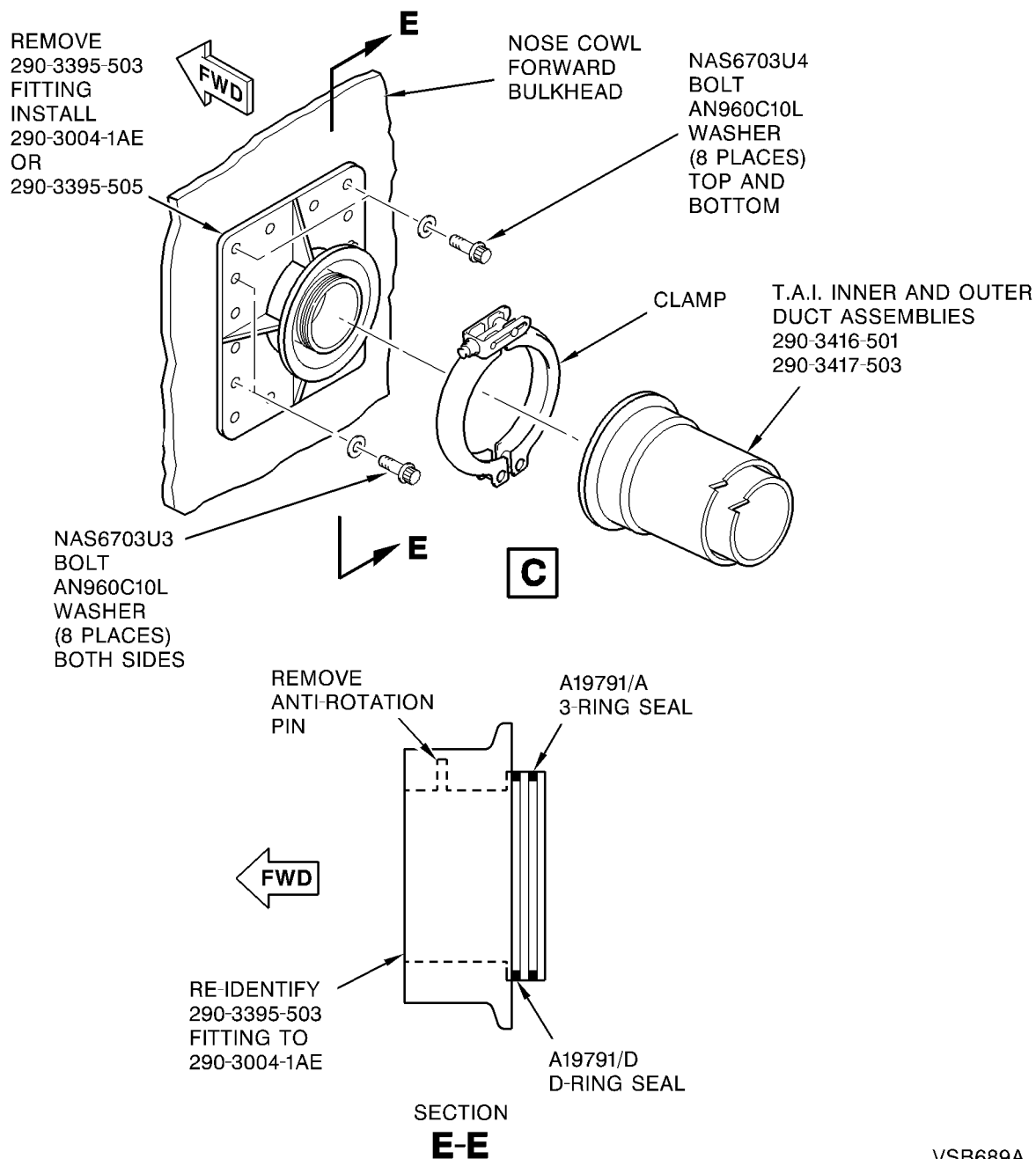
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T.A.I. Access Panel Removal/Installation
Figure 1



T.A.I. Duct Removal/Installation
Figure 2 (sheet 1)

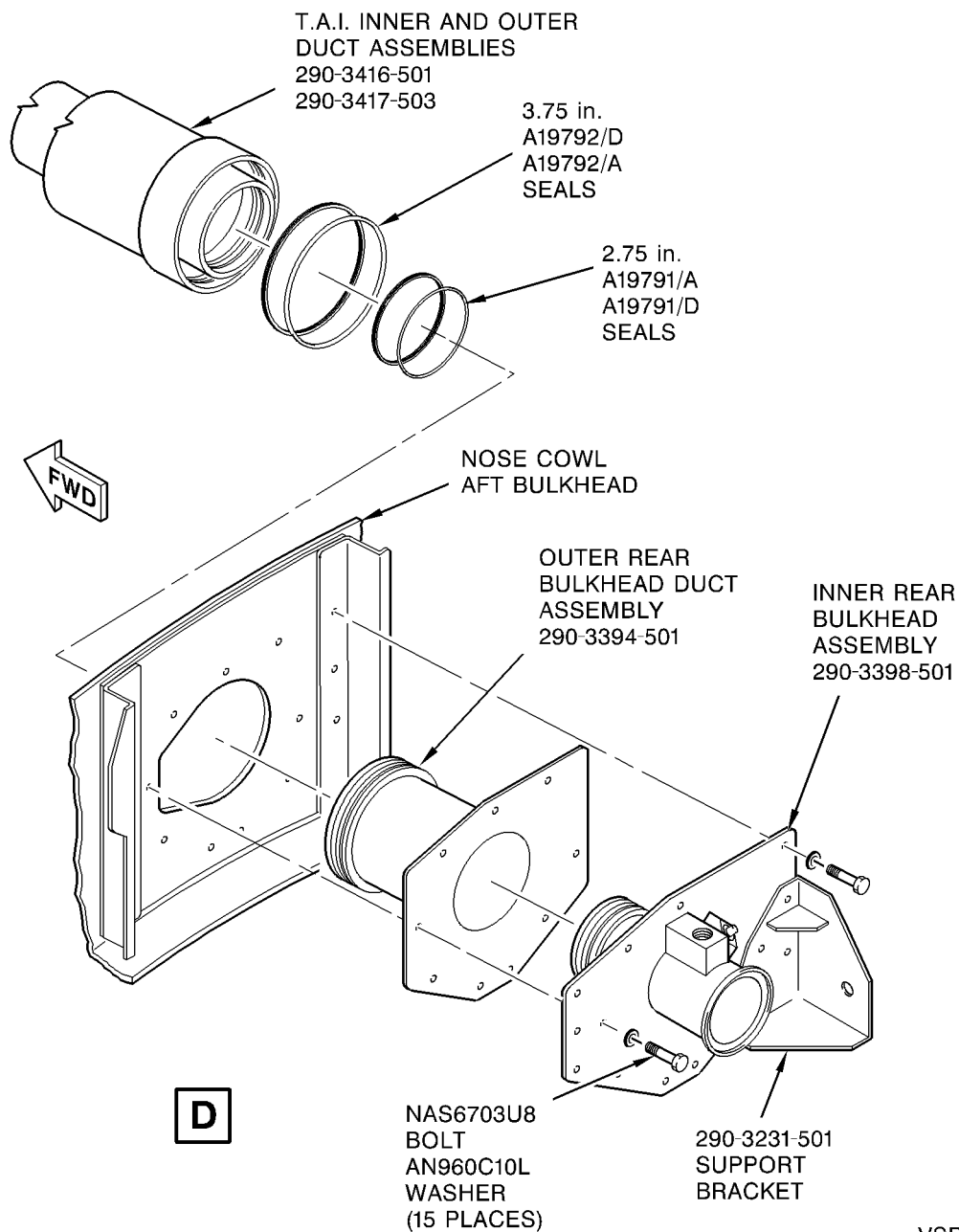
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T.A.I. Duct Removal/Installation
Figure 2 (sheet 2)

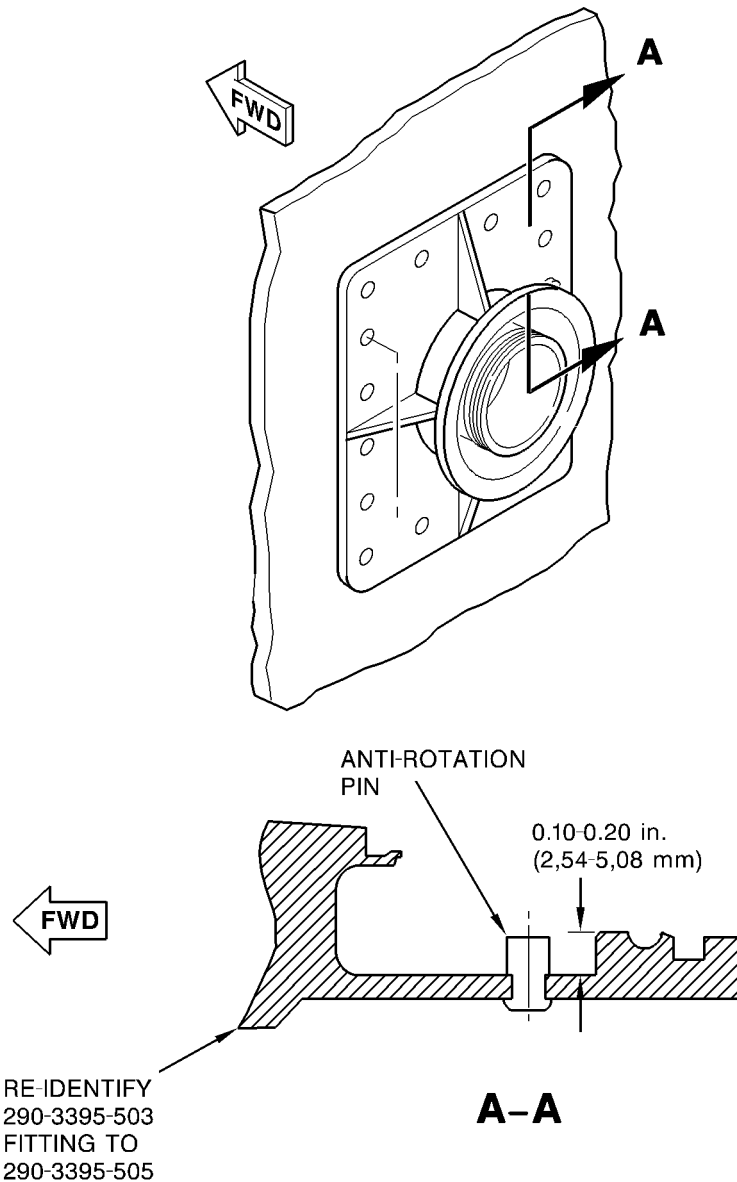


VSB690

T.A.I. Duct Fitting Modification
Figure 3

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VSB818

T.A.I. Duct Fitting Modification (if anti-rotation pin is present and firmly installed)
Figure 4

NACELLE – NOSE COWL – FORWARD BULKHEAD FITTING, THERMAL ANTI-ICE DUCT –
MODIFICATION OF

R SUPPLEMENT – PRICES AND AVAILABILITY

Printed in Great Britain

R NOTE: The estimated 1999 unit prices shown are provided for planning purposes only
R and do not constitute a firm quotation. Consult the Rohr Price Catalog or
R contact Rohrs Customer Support Department for information concerning firm
R prices.

R 1. Modification Kit:

R				Unit Price
R	Part No.	Qty	Description	US Dollars
R	V2571232-553	1	Kit	10,573.00
R	Consisting of:			
R	A19791/D	2	Seal, D-ring	
R	A19791/A	2	Seal, 3-ring	
R	A19792/D	1	Seal, D-ring	
R	A19792/A	1	Seal, 3-ring	

R 2. Parts required:

R			Unit Price
R	Part No.	Description	US Dollars
R	290-3395-505	Fitting, bulkhead	
R	290-3004-1AE	Fitting, bulkhead	