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DATE: Sep.17/07

V2500-D5 SERIES PROPULSION SYSTEMS SERVICE BULLETIN

This document transmits Revision 1 to Service Bulletin NV2500-78-0229 and Revision 1 to the Supplement

Document History

Service Bulletin Revision Status		Supplement Revision Status	
Initial Issue	Jul.5/07	Initial Issue	Jul.5/07

Bulletin Revision 1

Remove	Incorporate	Reason for change
All pages of the Service Bulletin	Pages 1 to 18 of the Service Bulletin	To correct Material Information and references in Accomplishment Instructions and Illustrations

Supplement Revision 1

Remove	Incorporate	Reason for change
All pages	Page 1	To correct Material Information and references in Accomplishment Instructions and Illustrations

V2500-NAC-78-0229

CHECK THAT ALL PREVIOUS TRANSMITTALS HAVE BEEN INCORPORATED
If any have not been received please advise Customer Data Services, Rolls-Royce plc, Derby, England

LIST OF EFFECTIVE PAGES

The effective pages to this Service Bulletin following incorporation of Revision 1 to the Bulletin and Revision 1 to the Supplement are as follows:

	Page	Revision Number	Revision Date
	Bulletin		
R	1	1	Sep.17/07
R	2	1	Sep.17/07
R	3	1	Sep.17/07
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R	10	1	Sep.17/07
R	11	1	Sep.17/07
R	12	1	Sep.17/07
R	13	1	Sep.17/07
R	14	1	Sep.17/07
R	15	1	Sep.17/07
R	16	1	Sep.17/07
R	17	1	Sep.17/07
R	18	1	Sep.17/07
	Supplement		
R	1	1	Sep.17/07

International Aero Engines

SERVICE BULLETIN

NACELLE - EXHAUST - TRANSLATING SLEEVE, LOWER - DRAIN TUBE MODIFICATION, THRUST REVERSER

1. Planning Information

A. Effectivity

(1) Boeing MD-90

(a) V2500-D5 Engines

(2) Nacelle

(a) All V2500-D5 lower thrust reverser halves.

B. Concurrent Requirements

Incorporation of this Service Bulletin must be accomplished only in conjunction with Boeing Aircraft Company Service Bulletin MD90 78-058 which received exclusive FAA approval for MD-90 Series Aircraft.

C. Reason

(1) Problem

Undetected leaks in the engine core region during reverse thrust can cause hazardous fluids to pool in the lower translating sleeve of the thrust reverser.

The reason for the problem is during reverse thrust, the translating sleeve translates, causing the aft drain hole of the sleeve to move away from its fixed structure core drain tube interface. This can result in hazardous fluid pooling within the sleeve during reverse thrust operation.

(2) Evidence

One operator reported one incident of fire in and outside the fire zone of the thrust reverser. The fire outside the fire zone was attributed to the pooling of fuel in the translating sleeve.

(3) Objective

The changes in configuration recommended in this Service Bulletin are intended to prevent hazardous fluids from collecting (in the event of a leak) in the thrust reverser translating sleeve during reverse thrust by adding a drain tube at the low point in the lower sleeve.

(4) Substantiation

During reverse thrust, the inner diameter of the new drain tube is sized to drain fluid from the translating sleeve at the same rate fluid enters the translating sleeve from the core of the engine.

(5) Effect of Bulletin on:

(a) Operation

Not affected

(b) Maintenance

Not affected

(c) Overhaul

Not affected

(d) Repair Schemes

Not affected

(e) Interchangeability

Not affected

(f) Fit & Clearances

Not affected

(6) Supplemental Information

None

D. Description

This service bulletin provides authority to install a new drain tube on the lower LH and RH translating sleeves. The purpose of this modification is to significantly reduce the potential of hazardous fluids from pooling in the translating sleeve in the event of a leak the engine core region during thrust reverser deployment.

E. Compliance

Category 3

Accomplish before February 28th, 2009.

F. Approval

The part number changes and/or part modifications described in sections 2 and 3 of this Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA-APPROVED for the engine model(s) listed.

G. Manpower

Estimated Man-hours to incorporate the full intent of this Bulletin:

(1) In Service

Total - 7 hours 30 minutes

(a) To gain access - 30 minutes

(b) To rework - 6 hours 30 minutes

(c) To return to service - 30 minutes

(2) At Overhaul

To modify

5-7 hours per nacelle

NOTE: Man-hour estimate is provided for planning purposes only. No labor reimbursement is offered as a result of this service bulletin.

H. Material Price and Availability

(1) Modification Kit

(a) Modification kit V2578229-551 is required to accomplish this Service Bulletin. For the modification kit prices and availability refer to the Supplement of this Service Bulletin.

(b) Mod. Kit V2578229-551 consists of:

PART NUMBER	QTY	PART TITLE
290-0557-501	1	Tube, Drain
CR3523-5-1	9*	Rivet, Blind

*= 3 extra rivets supplied with kit

I. Tooling - Cost and Availability

None required.

J. Industry Support Information

Not applicable.

K. Weight and Balance

(1) Weight Change

(a) Drain tube

Plus 0.23 lbs. (0.104 kg).

(b) Total

Plus apx. 0.5 lbs. (0.226 kg).

(2) Moment Arm

56.2 in. (1.427,5 mm) rearward.

(3) Datum

Engine Front Mount Centreline (Power Plant Station (PPS) 100).

L. Electrical Load Data

Not Affected.

M. Software Accomplishment Summary

Not Applicable.

N. References

(1) MD90 Aircraft Illustrated Parts Catalogue, Chapter 78-32-00.

(2) IAE V2500 Standard Practices/Processes Manual (SPP-V2500-1IA), Chapter 70-09-00.

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

(4) IAE V2500 Thrust Reverser Maintenance Manual (CMM-TR-V2500-3IA), Chapter 78-30-00.

(5) IAE V2500 Engine Illustrated Parts Catalogue (S-V2500-3IA), Chapter 78-32-00.

(6) Internal Reference

Engineering Change 06VN175.

(7) ATA Locator - 78-30-00

O. Other Publications Affected

Acoustic Effects:

This modification once incorporated, decreases the limitations for blocked acoustic area on the thrust reverser per SRM Vol. IV, Sec. 54-01-00, Fig. 2,
R page 8 from 225 square in.(1452 square cm) to 219 square in. (1413 square cm)
R Individual Limit and from 1360 square in.(8774 square cm) to 1354 square in.
R (8735 square cm) Cumulative Limit. Evaluate all future repairs based on these limits. The SRM will be updated at the next issue to reflect these changes.

P. Interchangeability of Part

Not affected.

2. Material Information

A. The kit required consists of the following parts:

For V2500-D5 Nacelle Lower Thrust Reversers:

Modification kit V2578229-551 consists of the parts that follow:

	FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	INSTR DISP
	-	290-0557 -501	1	Tube, Drain	-
R	-	CR3523-5-1	9	Rivet, Blind	-

B. Parts affected and re-identified by this Service Bulletin:

NOTE: All 290-0003 lower thrust reverser assemblies are affected. For all 290-0003 lower thrust reverser assemblies not listed below, record only the service bulletin number per 3.C. after Service Bulletin incorporation.

FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
78-30-00						
10-350	290-0651 -511	1	Translating Sleeve Assy-LH,- lwr		290-0651 -509	(1D)(2D)(S1)
11-350	290-0651 -512	1	Translating Sleeve Assy-RH,- lwr		290-0651 -510	(1D)(2D)(S1)
01-030	290-0003 -541	1	Thrust Reverser Assy-LH, lwr	-	290-0003 -533	(1D)(4D)(S1)
01-040	290-0003 -543	1	Thrust Reverser Assy-RH, lwr	-	290-0003 -535	(1D)(4D)(S1)

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C. New Production Parts

	FIG ITEM NO.	NEW PART NO.	QTY	PART TITLE	MAT	OLD PART NO.	INSTR DISP
	-	290-0557 -501	1	Tube, Drain	-	-	-
R	-	CR3523-5-1	6	Rivet, Blind	-	-	-

D. Redundant parts:

None.

E. Instruction/Disposition Code Statements

(1D) Old part will no longer be available.

(2D) Old part listed in 2.B can be re-worked and re-identified to the new part number in 2.B.

(3D) For old part not listed in 2.B, rework and record modification accomplishment per 3.B. and 3.C.

(4D) Old part listed in 2.B can be reworked and reidentified to the new part number in 2.B and record modification accomplishment per 3.C.

(S1) One way interchangeable. New parts must replace old parts. Old parts cannot replace new parts.

3. Accomplishment Instructions

A. Rework Instructions

(1) None.

B. Assembly Instructions

(1) General

NOTE: IN ORDER TO REDUCE THE POTENTIAL FOR MULTIPLE ENGINE IN-FLIGHT SHUT DOWN, POWER LOSS, OR OTHER ANOMALIES DUE TO MAINTENANCE ERROR, IAE RECOMMENDS THAT OPERATORS AVOID PERFORMING MAINTENANCE ON MULTIPLE ENGINES INSTALLED ON THE SAME AIRCRAFT AT THE SAME TIME. IF IT IS NOT POSSIBLE TO AVOID MAINTENANCE ON MORE THAN ONE ENGINE AT THE SAME TIME, IAE RECOMMENDS THAT ADDITIONAL CONTROLS BE APPLIED IN ORDER TO ENSURE THAT MAINTENANCE TASKS HAVE BEEN COMPLETED AS DEFINED. MAINTENANCE GUIDELINES SHOULD BE REVISED WHERE POSSIBLE, TO PROMOTE THIS RECOMMENDATION.

WARNING: DO NOT TOUCH THE ENGINE COMPONENTS FOR A SHORT TIME AFTER THE ENGINE IS SHUT DOWN. THE COMPONENTS STAY HOT AND CAN CAUSE INJURY.

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

(a) Obey all the WARNINGS and CAUTIONS in the procedures that are referred to.

(b) Consumable Materials

(i) Refer to the table that follows:

COMAT NO.	DESIGNATION
01-438	Solvent
02-099	Lint free cloth
02-178	Masking tape
07-139	Catalyst
07-140	Epoxy primer
07-144	Thinner
07-106	Cromate conversion coating for aluminum
07-146	Primer
07-147	Catalyst
08-104	Epoxy paste adhesive

R

08-141	Sealant

For the details of the consumable material given in the table above refer to the Overhaul Processes and Consumables Index.

(ii) For further consumable materials refer also to the related Manual tasks given in this instruction.

(c) Tools and Equipment

(i) Refer to the the table that follow:

REFERENCE	DESIGNATION
Drill	No. F size drill (0.25 in. (6.350 mm))
Drill	No. 20 size drill (0.160-0.164 in. (4.064-4.166 mm))

(ii) For further consumable materials refer also to the related Manual tasks given in this instruction.

(2) Get access to the lower translating sleeve of the thrust reverser.

(a) Open the upper fan cowl door (Refer to the Aircraft Maintenance Manual, TASK 71-13-00-010-801).

(b) Open the lower fan cowl door (Refer to the Aircraft Maintenance Manual, TASK 71-13-00-010-802).

(c) Open the thrust reverser halves (Refer to the Aircraft Maintenance Manual, TASK 78-32-00-010-801).

(3) Modify the lower translating sleeve to add the drain tube. (Refer to Figure 1)

NOTE: This procedure is the same for the left and right thrust reversers.

(a) To locate the drain tube, locate the drain mast support, P/N 290-0645 on the lower inner acoustic panel of the translating sleeve. Measure from the forward edge of the drain mast support 29.10 +/- 0.20 in. (739.140 +/- 5.080 mm) forward along the surface of the part at BL 100.00 to locate the center of the new drain hole. BL 100.00 runs normal (90 deg.) from center of the forward edge of drain mast support.

NOTE: Care must be taken to maintain alignment between the pilot holes drilled in the inner acoustic and outer bond panels. This could be accomplished by ensuring that the drill position is still in line and normal to the inner acoustic bond panel when drilling through the outer bond panel.

(b) Use a No. F size drill. Drill a 0.25 in. (6.350 mm) pilot hole through the translating sleeve inner acoustic panel normal to the perforated skin and through the outer bond panel. Maintain alignment between the two pilot holes drilled by ensuring that the drill position is still in line and normal to the inner acoustic bond panel when drilling through the outer bond panel.

NOTE: When drilling through the outer bond panel, ensure that the drill orientation is as shown in Figure 2(a). The tool used to drill the final size hole (1.250 in. +0.020 /-0.010 (31.750 mm +0.508 /-0.254) diameter hole) should have a 0.25 in. (6.350 mm) diameter by 6.00 in. (152.400 mm) long drill guide.

(c) Drill through the outer bond panel only a 1.250 in. +0.020 /-0.010 (31.750 mm +0.508/-0.254) diameter hole. See Figure 2(a) for proper tool orientation before drilling.

NOTE: When drilling through the inner acoustic panel, ensure that the drill position is normal to the perforated skin as shown in Figure 2(b). The tool used to drill the final size hole (1.187 in. +0.020 /- 0.005 (30.150 mm +0.508/-0.127) diameter hole) should have a 0.25 in. (6.350 mm) diameter by 6.00 in. (152.400 mm) long drill guide. A shorter length drill guide may be used for this operation only.

(d) Drill through the translating sleeve inner acoustic panel only normal to the perforated skin a 1.187 in. +0.020 /-0.005 (30.150 mm +0.508/-0.127) diameter hole. See Figure 2(b) for proper tool orientation before drilling.

(e) Remove all burrs from the drilled holes.

(f) Vacuum or remove any loose debris from the translating sleeve where ever possible.

(g) Clean modification area surfaces with lint free cloth (CoMat 02-099) made moist with solvent (CoMat 01-438). Wipe the surfaces dry before the solvent becomes dry.

(h) Fill exposed edges of core and cavities of inner and outer bond panels with epoxy paste adhesive EA9394 (CoMat 08-104). Cure adhesive per
R manufacturer's instructions. (Refer to Figure 1, Sheet 3, View C-C)

(i) Temporarily install the new drain tube, P/N 290-0557-501 in place. Rotate tube so the end trim is even with the outer bond panel outer surface. It is acceptable to trim the end of the drain tube to match the outer bond panel outer surface to within +0.000/-0.030 in.
R (+0.000/-0.762 mm). (Refer to Figure 1, Sheet 4, View D)

CAUTION: DRILL THROUGH THE PERFORATED SKIN ONLY, AND NOT THROUGH THE INNER BOND PANEL SOLID SKIN. SEE FIG. 2(B).

(j) Drill six holes at the existing pilot hole locations in the flange through drain tube, P/N 290-0557-501 flange and mating perforated skin only. Use a No. 20 drill (0.160-0.164 in. diameter (4.064-4.166 mm diameter)).

(k) Remove drain tube and deburr all holes.

(l) Vacuum or remove any loose debris from the translating sleeve where ever possible.

(m) Clean modification area surfaces with lint free cloth (CoMat 02-099) made moist with solvent (CoMat 01-438). Wipe the surfaces dry before the solvent becomes dry.

(n) Use masking tape (CoMat 02-178) to make a border around the drain tube flange, P/N 290-0557-501.

R (o) Apply sealant to the faying surfaces of the drain tube flange and the perforated skin (CoMat 08-141). (Refer to Figure 1, Sheet 4)

(p) Install the new drain tube P/N 290-0557-501 (orient the tube so the end trim is even with the outer bond panel outer surface) by wet installing the six new blind rivets, P/N CR3523-5-1 through the previously drilled six holes in the tube flange and the acoustic perforated skin. Wet install fasteners using sealant (CoMat 08-141). Wipe any excess sealant around the tube flange before sealant becomes dry.

(q) Remove the masking tape.

R (r) Fill the gap between the drain tube assembly and outer bond panel using sealant (CoMat 08-141). Cure per manufacturer's instructions. (Refer to Figure 1, Sheet 4, View D)

(s) Touch-up conversion coating (CoMat 07-106) any bare metal in the modification area. Refer to the manufacturer's instructions.

(t) Mix the catalyst (CoMat 07-139), epoxy primer (CoMat 07-140), and thinner (CoMat 07-144). Refer to the manufacturer's instructions.

(u) Touch-up primer any bare metal in the modification area on the inner bond panel acoustic perforated skin.

(v) Mix the catalyst (CoMat 07-147) and primer (CoMat 07-146). Refer to the manufacturer's instructions.

(w) Touch-up prime any bare metal in the modification area on the outer bond panel external skin.

(x) Touch-up finish paint external surface of translating sleeve as required by the operator.

(y) Mark on the translating sleeve ID plate that Service Bulletin V2500-NAC-78-0229 has been accomplished. (Refer to Paragraph. 2.E and 3.C for details)

(4) Make sure that the work area is clean and clear of tools, equipment and other unwanted materials.

(5) Close the access to the lower translating sleeve of the thrust reverser.

(a) Close the thrust reverser halves (Refer to the Aircraft Maintenance Manual, TASK 78-32-00-410-801).

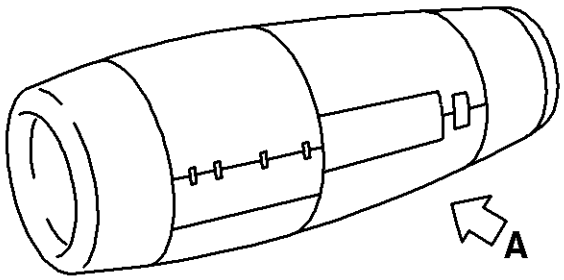
(b) Close the lower fan cowl door (Refer to the Aircraft Maintenance Manual, TASK 71-13-00-410-802).

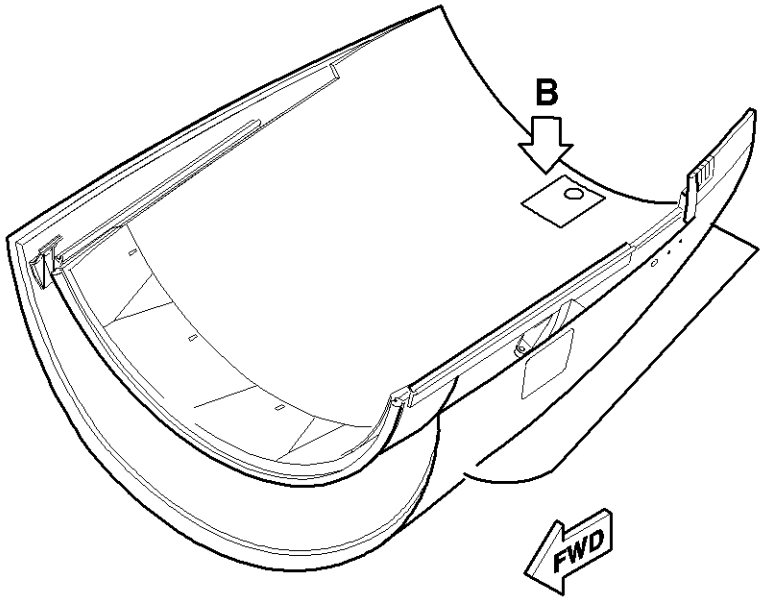
(c) Close the upper fan cowl door (Refer to the Aircraft Maintenance Manual, TASK 71-13-00-410-801).

C. Recording Instructions

(1) A record of accomplishment is required.

Write in the applicable records and metal stamp, vibroetch, or electro etch on the thrust reverser assembly data plate that Service Bulletin V2500-NAC-78-0229 has been done. Reidentify assemblies per section 2.E. of this Service Bulletin. Refer to IAE V2500 Standard Practices/Processes Manual, Chapter 70-09-00.





A

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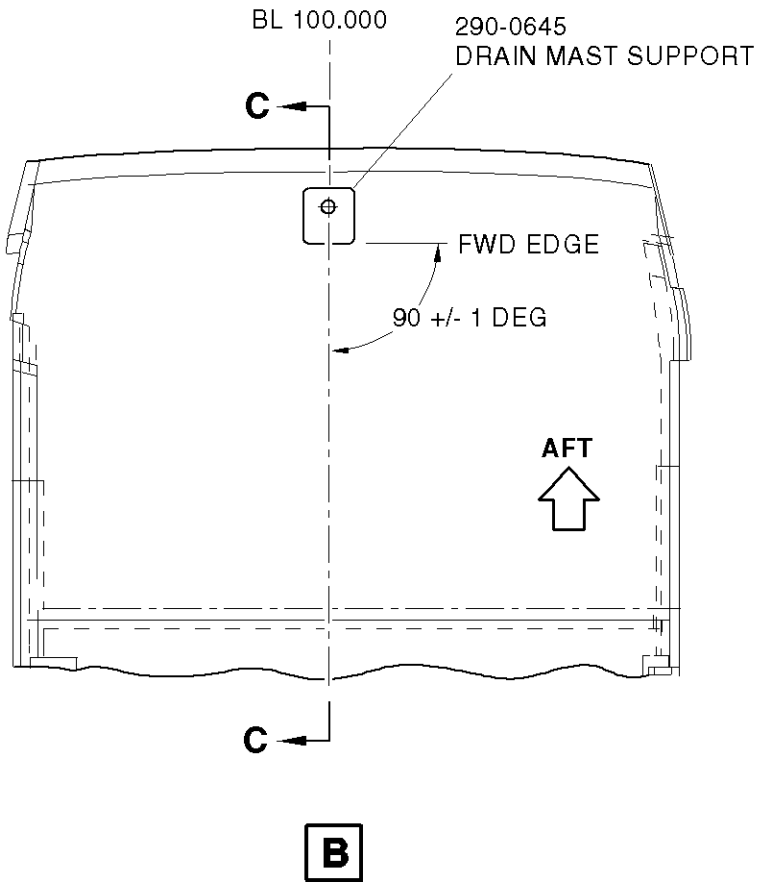
Lower Translating Sleeve New Drain Installation
Figure 1 (sheet 1)



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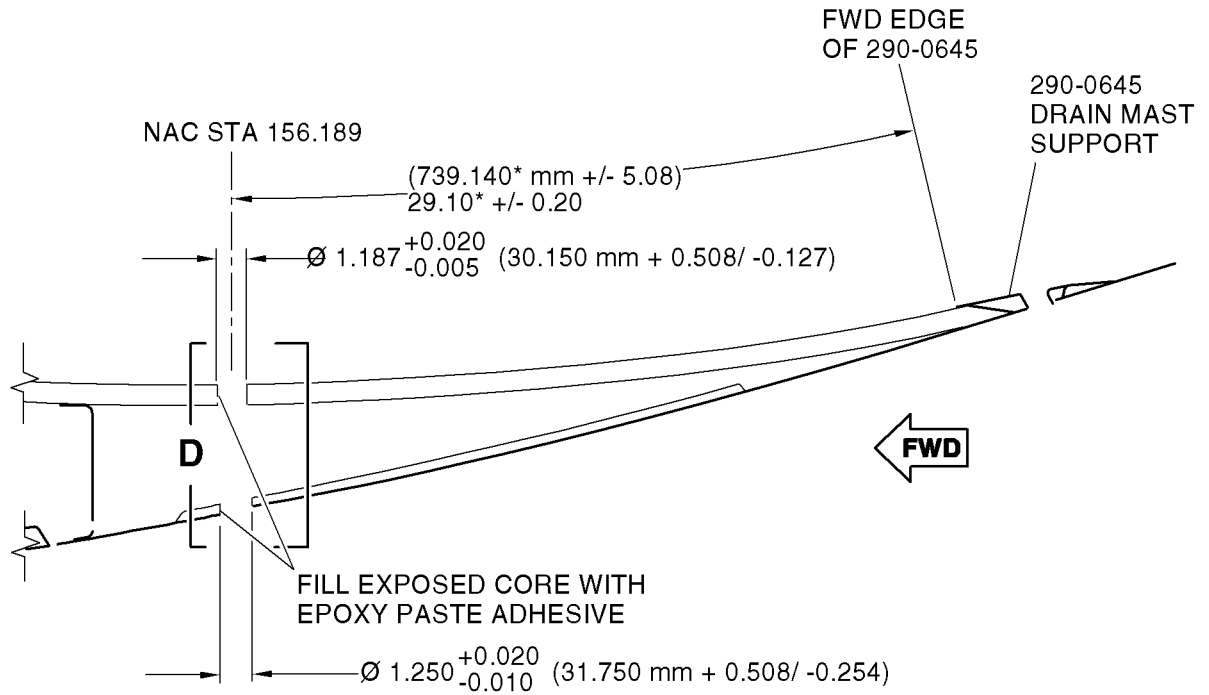
Lower Translating Sleeve New Drain Installation
Figure 1 (sheet 2)



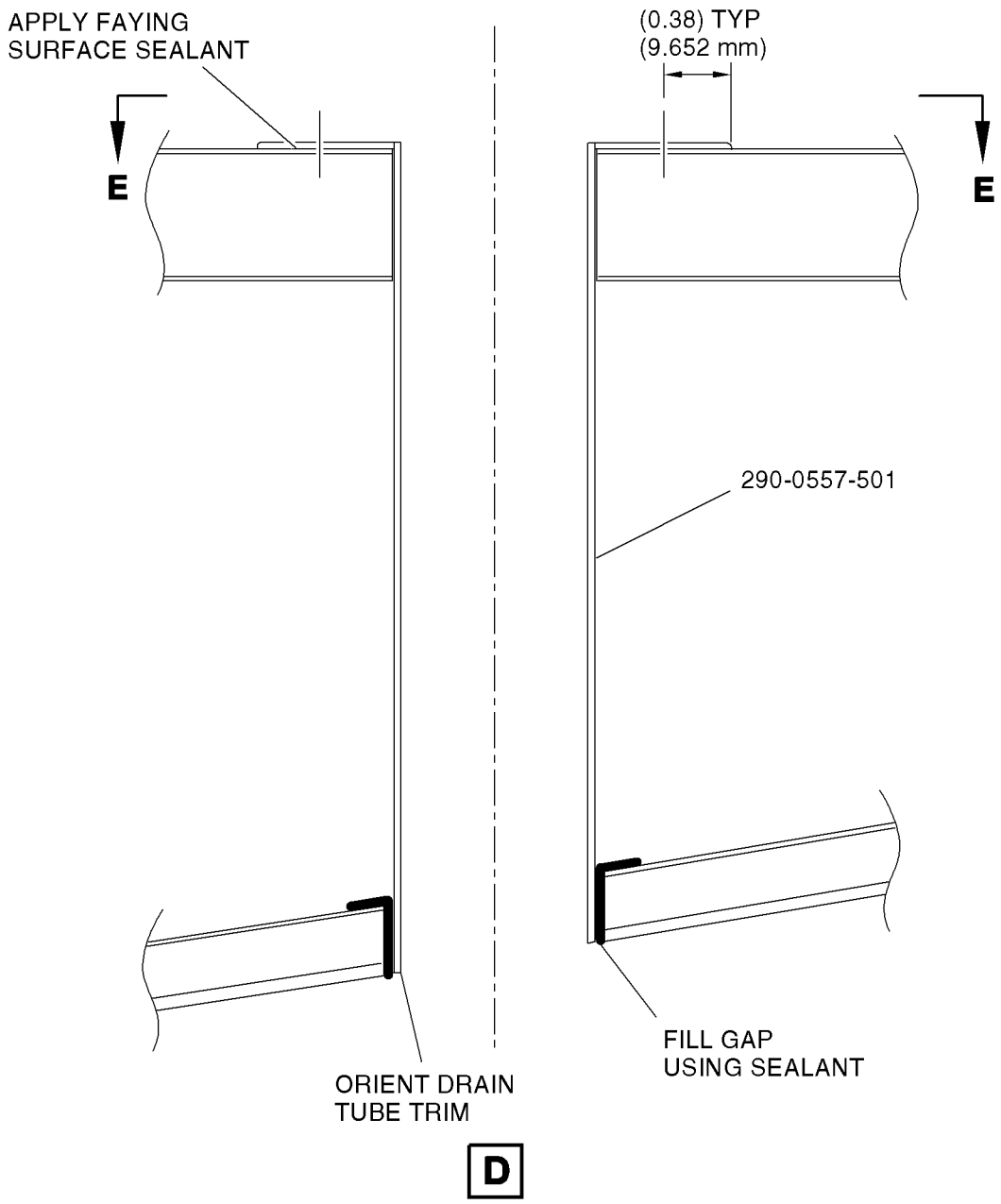
*DIMENSION IS ON THE SURFACE OF THE PART.

C-C
ROTATED CW 90 DEG.
NEW DRAIN TUBE REMOVED FOR CLARITY

gc00vsb982-01

R Lower Translating Sleeve New Drain Installation
R Figure 1 (sheet 3)

R



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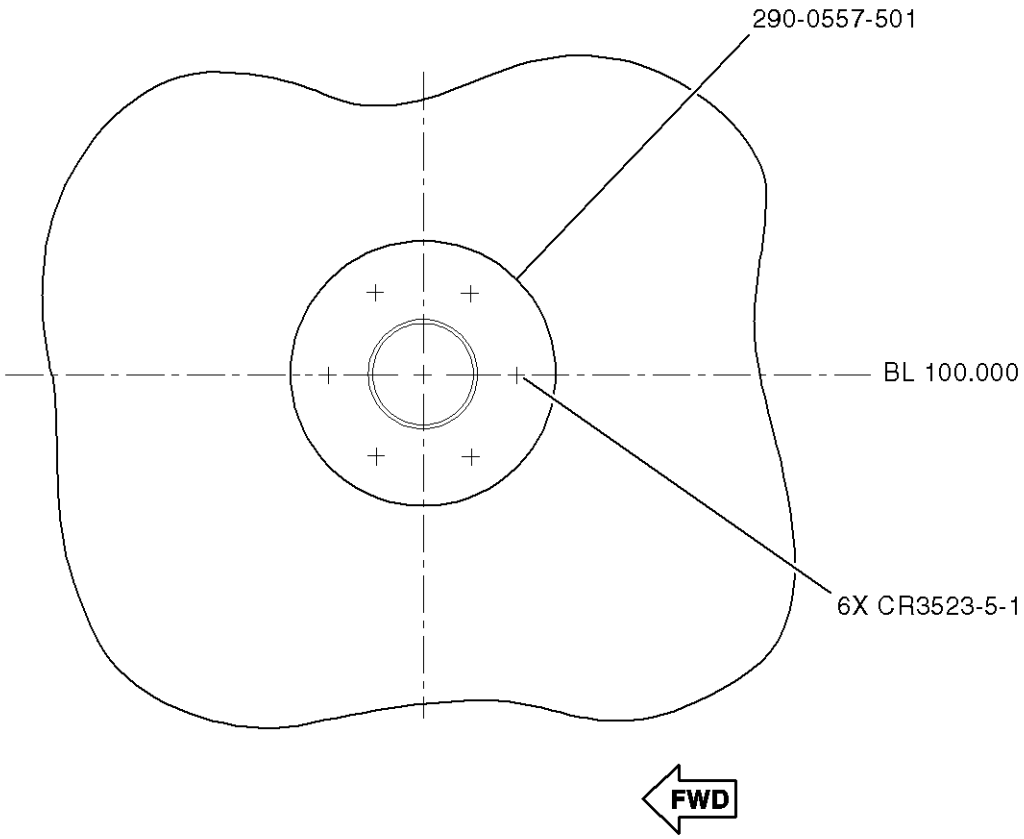
R Lower Translating Sleeve New Drain Installation
R Figure 1 (sheet 4)



E-E

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Lower Translating Sleeve New Drain Installation
Figure 1 (sheet 5)

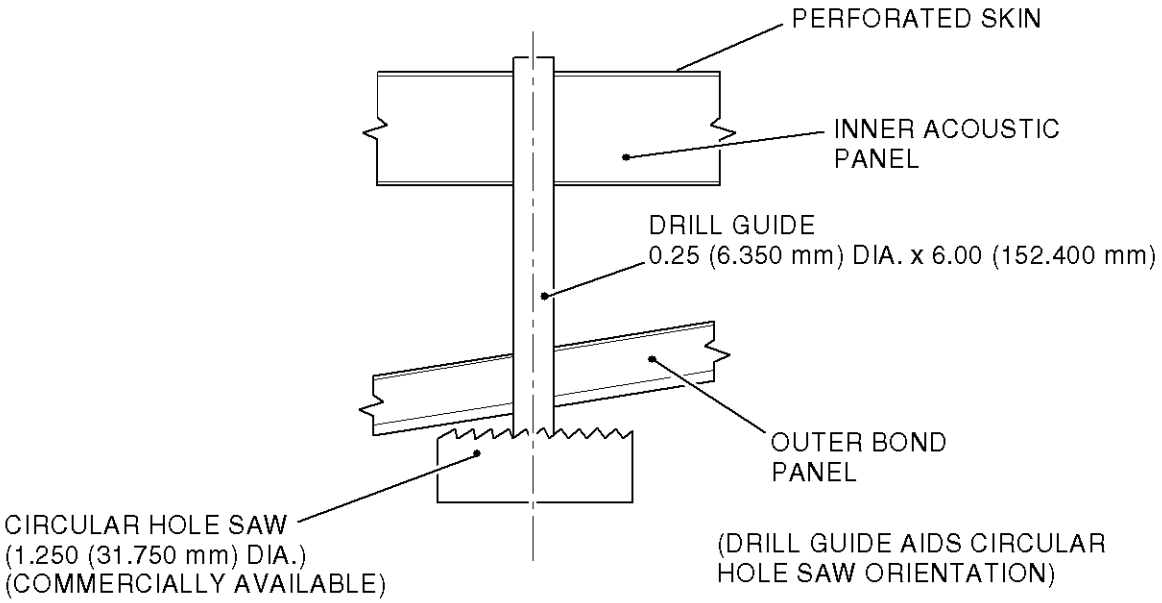

FIG. 2(a)

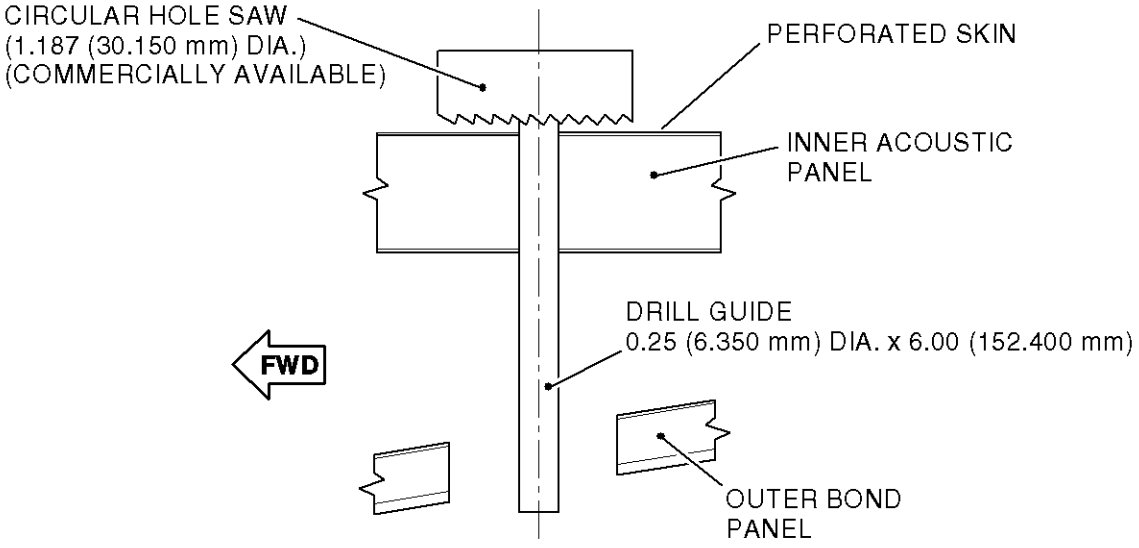

FIG. 2(b)

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Drill Guide and Hole Saw Orientation
Figure 2 (Sheet 1)

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SERVICE BULLETIN

NACELLE - EXHAUST - TRANSLATING SLEEVE, LOWER - DRAIN TUBE MODIFICATION, THRUST REVERSER

SUPPLEMENT - PRICES AND AVAILABILITY

The prices to accomplish this Service Bulletin are available from the supplier as kit V2578229-551. The 2007 base year retail price of the subject kit is $2,970.00. The price listed below is a campaign incentive price provided at a 50% reduction (based on 2007 US dollars) to encourage operator incorporation of the subject modification. The campaign incentive pricing structure shall remain in effect through the recommended incorporation period ending Feb. 28, 2009.

The purchase order must specify this Service Bulletin and kit V2578229-551. Operators will have until Feb. 28, 2009 to place an order, after which, the kits will no longer be available at incentive pricing. Operators placing orders after Feb. 28, 2009 may be required to order kit or individual detail parts (if kit no longer available) at current year price and lead time.

1. Modification Kit:

Part No.	Description	Unit Price US Dollars
V2578229-551	Kit	1,485.00

2. New Production Parts:

None.

3. Tools

None.

For Service Bulletin incorporation direct purchase order to:

Goodrich Aerostructures

850 Lagoon Drive

Chula Vista, CA 91910-2098

Attn: Regional Business Mgr-MZ107A

Please list Service Bulletin number, kit number and required kits with each purchase order.