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DATE: Oct. 2/08

V2500-D5 SERIES PROPULSION SYSTEM NON-MODIFICATION SERVICE BULLETIN

Printed in Great Britain

This document transmits the Initial Issue of Non-Modification Service Bulletin V2500-NAC-78-0233

Service Bulletin Initial Issue

Remove	Incorporate	Reason for change
	Pages 1 to 11 of the Service Bulletin	Initial Issue

V2500-NAC-78-0233

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

International Aero Engines

SERVICE BULLETIN

NON-MODIFICATION SERVICE BULLETIN - NACELLE - COMMON NOZZLE ASSEMBLY - EXIT NOZZLE INNER SKIN - INSPECTION OF RIVETS

1. Planning Information

A. Effectivity

(1) Aircraft

(a) Boeing MD-90.

(2) Nacelle

(a) All V2500-D5 Common Nozzle Assemblies (CNA)(in-service only).

B. Concurrent Requirements

(1) It is recommended that SB-V2500-NAC-78-0119 be accomplished at the next CNA shop visit (if not already accomplished) to eliminate possible outer skin deformation, which leads to increased stresses at the inner skin forward exit nozzle attach fasteners.

C. Reason

(1) Condition

The forward circumferential row of blind rivets of the CNA nozzle inner skin may be loosening, allowing the inner skin forward edge to lift into the wind. Once the skin has lifted the exhaust stream air can scoop under the localized lifted skin. This overloads the fasteners locally, which leads to a zipper type failure of the forward row, followed by the aft row, and ultimately the liberation of the skin.

(2) Background

In the past two years, 2 MD-90 operators have had an incident where the entire exhaust nozzle inner skin of the common nozzle assembly of one of the engines was liberated from both of the aircraft. The inner skins of the affected engine for both aircraft were later found on the airport runway or taxiway. It has been proposed that as the forward circumferential row of blind rivets of the inner skin loosens, this allows the inner skin forward edge to lift into the wind. Once the skin has lifted, the exhaust stream air can scoop under the localized lifted skin and overload the fasteners locally. This could potentially lead to a zipper type failure of the forward row of fasteners, followed by the aft row and ultimately the liberation of the entire exhaust nozzle inner skin.

(3) Objective

This Non-Modification Service Bulletin introduces a one time Inspection of the CNA exhaust nozzle inner and outer skin to preclude further parts from being liberated from the aircraft and to gather important data necessary to determine the failure mechanism.

(4) Substantiation

The intent of the Non-Modification Service Bulletin is to verify that the current part is in accordance with FAA approved design. The design of the part is not being altered. Inspection and repair procedure have been verified to accomplish the intent of the Non-Modification Service Bulletin.

D. Description

The Common Nozzle Assembly is examined for distortion and for any loose or missing fasteners on and off wing in accordance with the instructions in this Non-Modification Service Bulletin.

(1) To Inspect the CNA for deformation of the outer skin at the 90° and 270° radial positions of the exhaust nozzle outer skin, if Service Bulletin V2500-NAC-78-0119 has not been incorporated.

If CNA part number is 290-1201-513, then the incorporation of Service Bulletin V2500-NAC-78-0119 is not required.

(2) To Inspect the forward and aft row of fasteners, whether they are loose or missing, on the CNA nozzle inner skin and replace fasteners as required.

(3) To Inspect whether forward edge of CNA nozzle inner skin meets aerodynamic smoothness mismatch (step) requirements at locations where missing or loose fasteners are discovered. Mismatch to be verified after rivet replacement. If aerodynamic "step" falls outside requirement, contact Goodrich for disposition.

(4) To Fill out Proforma data sheet within this Non-Modification Service Bulletin and provide results to Goodrich.

E. Approval

The compliance statement and the procedures described in this Non-Modification Service Bulletin have been shown to comply with the applicable Federal Aviation Regulations and are FAA approved for the engine model(s) listed.

F. Compliance

Category 3

Accomplish within 3A check from Non-Modification Service Bulletin issue date.

G. Manpower

Estimated man-hours to incorporate the full intent of this Non-Modification Service Bulletin.

(1) In Service

Inspection Time

4 hours per CNA.

(2) At Overhaul

Inspection Time

4 hours per CNA.

NOTE: Man-hours estimate is provided for planning purposes only. No labor reimbursement is provided under the terms of this Non-Modification Service Bulletin offering.

H. Material Price and Availability

No parts or materials are required to accomplish this Non-Modification Service Bulletin.

I. Tooling and Availability

Not applicable.

J. Weight and Balance

(1) Weight Change

None.

(2) Moment Arm

No effect.

(3) Datum

Engine front mount centerline (Power Plant Station (PPS) 100)

K. Electrical Load Data

Not applicable.

L. References

(1) IAE Service Bulletin V2500-NAC-78-0119 Nacelle - Exhaust - Outer Skin, Exit Nozzle, Common Nozzle Assembly (CNA) - Modification of

(2) Boeing MD-90 Structure Repair Manual SRM Section 51-30-00, Vol.2.

M. Other Publications Affected

(1) V2500-A1/A5 Common Nozzle Component Maintenance Manual (CMM-CN-V2500-3IA).

N. Interchangeability of Parts

Not applicable.

2. Material Information

None.

3. Accomplishment Instructions

These accomplishment instructions can be accomplished on wing or in shop.

Common Nozzle Assembly (CNA) Exit Nozzle Outer Skin Inspection

A. Verify on the CNA data plate or log records, that Service Bulletin V2500-NAC-78-0119 has been incorporated.

If the Service Bulletin V2500-NAC-78-0119 has been incorporated or the part number on the data plate is 290-1201-513, then proceed to step 3.B. of this Non-Modification Service Bulletin.
If the Service Bulletin V2500-NAC-78-0119 is not incorporated, visually inspect the outer skin of the exit nozzle at the 90° and 270° radial locations for signs of heat damage and/or distortion. See Figure 1 for locations.
If heat damage of distortion of the skin is witnessed, it is recommended that Service Bulletin V2500-NAC-78-0119 be incorporated.
If the subject Service Bulletin V2500-NAC-78-0119 cannot be incorporated at the time of inspection, contact Goodrich for disposition. It is recommended Service Bulletin V2500-NAC-78-0119 be incorporated at the CNA's next shop visit

CNA Exit Nozzle Inner Skin Fastener Inspection

B. Visually inspect for any missing rivets in the CNA exit nozzle inner skin forward circumferential pattern. Circle the locations with ink marker or equivalent for future fastener replacement and instructions called out in this Non-Modification Service Bulletin. See Figure 2 and 3 for location. Fill out the Proforma Data Sheet provided in this Non-Modification Service Bulletin.

C. Visually inspect for any missing rivets in the CNA exit nozzle inner skin aft circumferential pattern. Circle the locations with ink marker or equivalent for future fastener replacement and instructions called out in this Non-Modification Service Bulletin. See Figure 2 and 3 for location. Fill out the Proforma Data Sheet provided in this Non-Modification Service Bulletin.

D. Visually inspect for loose rivets on the CNA exit nozzle inner skin forward circumferential pattern (see Figure 2 for location) in the following manner. Use a screwdriver, punch or equivalent to put light side pressure on the head of the rivet. Any movement of the fastener head during this operation is considered loose. Circle the loose locations with ink marker or equivalent for future fastener replacement and instructions called out in this Non-Modification Service Bulletin. Fill out the Proforma Data Sheet provided in this Non-Modification Service Bulletin.

E. Visually inspect for loose rivets on the CNA exit nozzle inner skin aft circumferential pattern (see Figure 2 and 3 for location) in the following manner. Use a screwdriver, punch or equivalent to put light side pressure on the head of the rivet. Any movement of the fastener head during this operation is considered loose. Circle the loose locations with ink marker or equivalent for future fastener replacement and instructions called out in this Non-Modification Service Bulletin.

F. Visually inspect for missing or loose rivets on the CNA exit nozzle inner skin splice. Inspect for loose rivets in the following manner. Use a screwdriver, punch or equivalent to put light side pressure on the head of the rivet. Any movement of the fastener head during this operation is considered loose. Circle the loose or missing locations with ink marker or equivalent for future fastener replacement and instructions called out in this Non-Modification Service Bulletin. Fill out Proforma Data Sheet provided in this Non-Modification Service Bulletin.

G. Replace all missing and loose rivets identified in 3.B. through 3.F. of this Non-Modification Service Bulletin per Boeing MD-90 SRM Section 51-30-00, Vol. 2.

H. Once all missing and loose rivets have been replaced, visually inspect the CNA exit nozzle inner skin forward edge mismatch (step) with respect to the outer barrel inner skin at locations where loose or missing fasteners were identified. See Figure 3 for mismatch requirements. Please contact Goodrich for disposition for areas falling outside mismatch (step) tolerances shown in Figure 3.

I. Provide filled-out Proforma Data Sheet for each CNA to Goodrich Aftermarket local Airline Support Manager.

J. Recording Instructions

A record of accomplishment is required.

Record Non-Modification Service Bulletin number "SB-V2500-NAC-78-0233" on the nacelle component data plate.

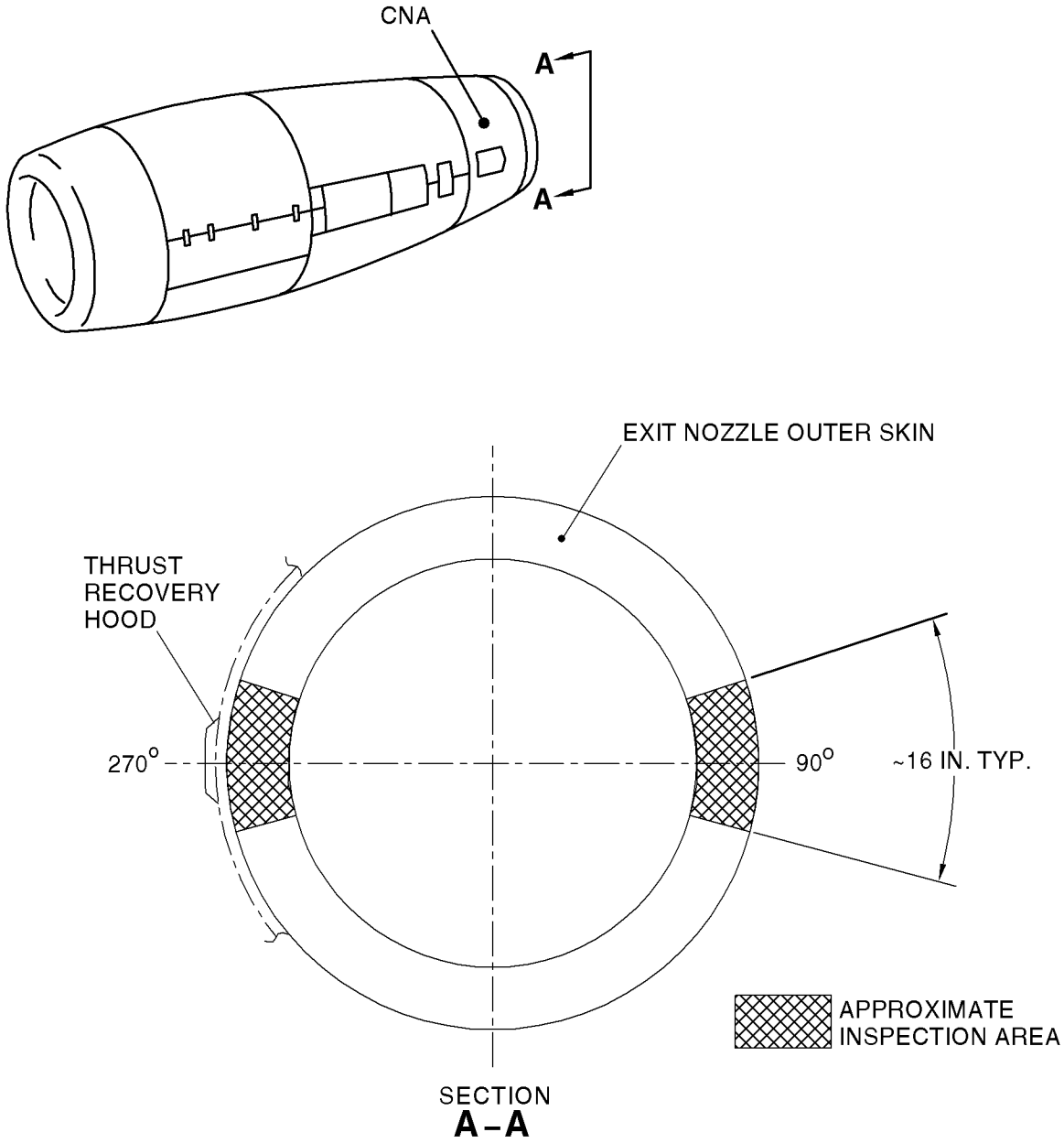


Figure 1
Exit Nozzle Outer Skin Inspection Location

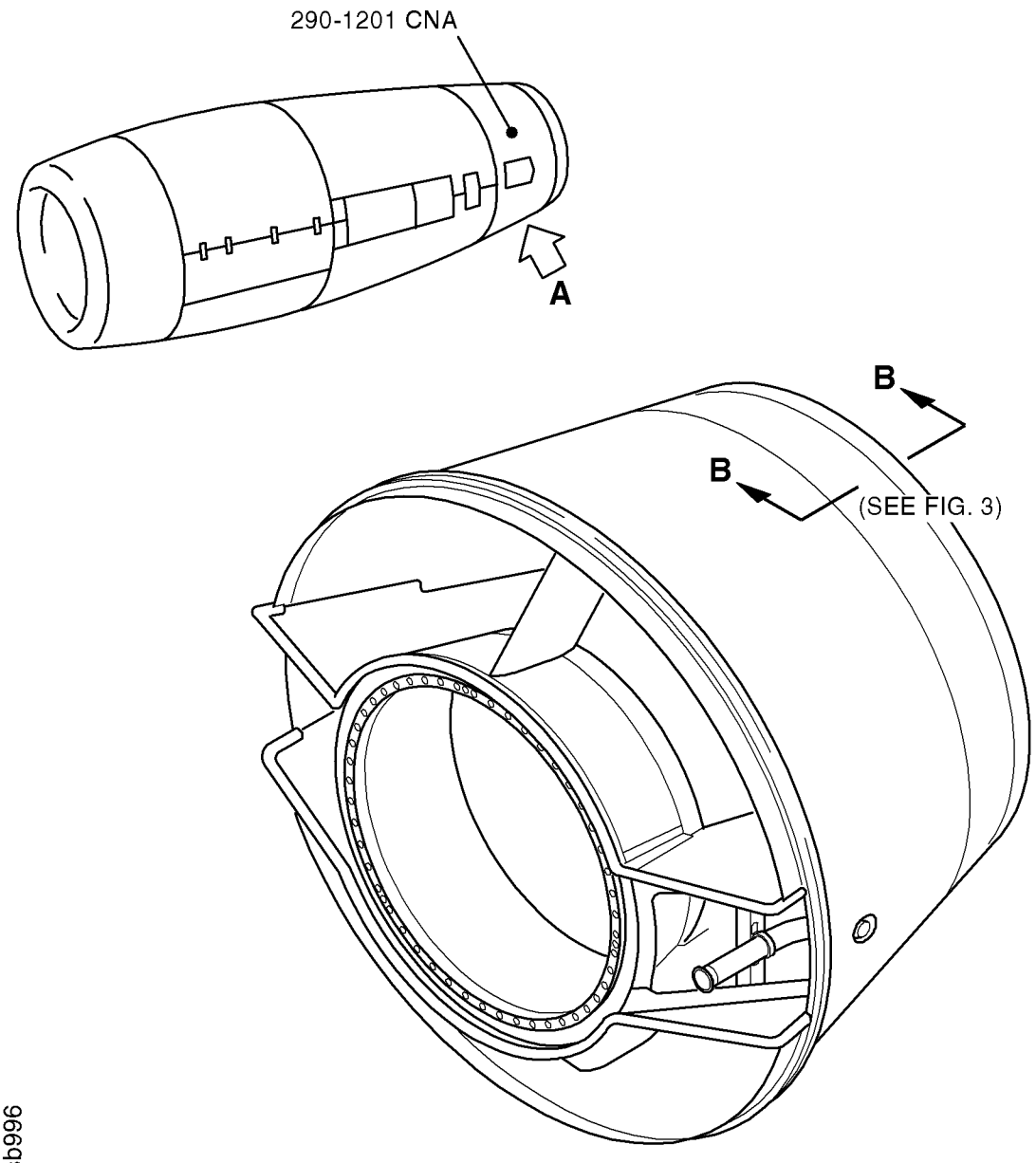


Figure 2
Common Nozzle Assembly Exit Nozzle Location

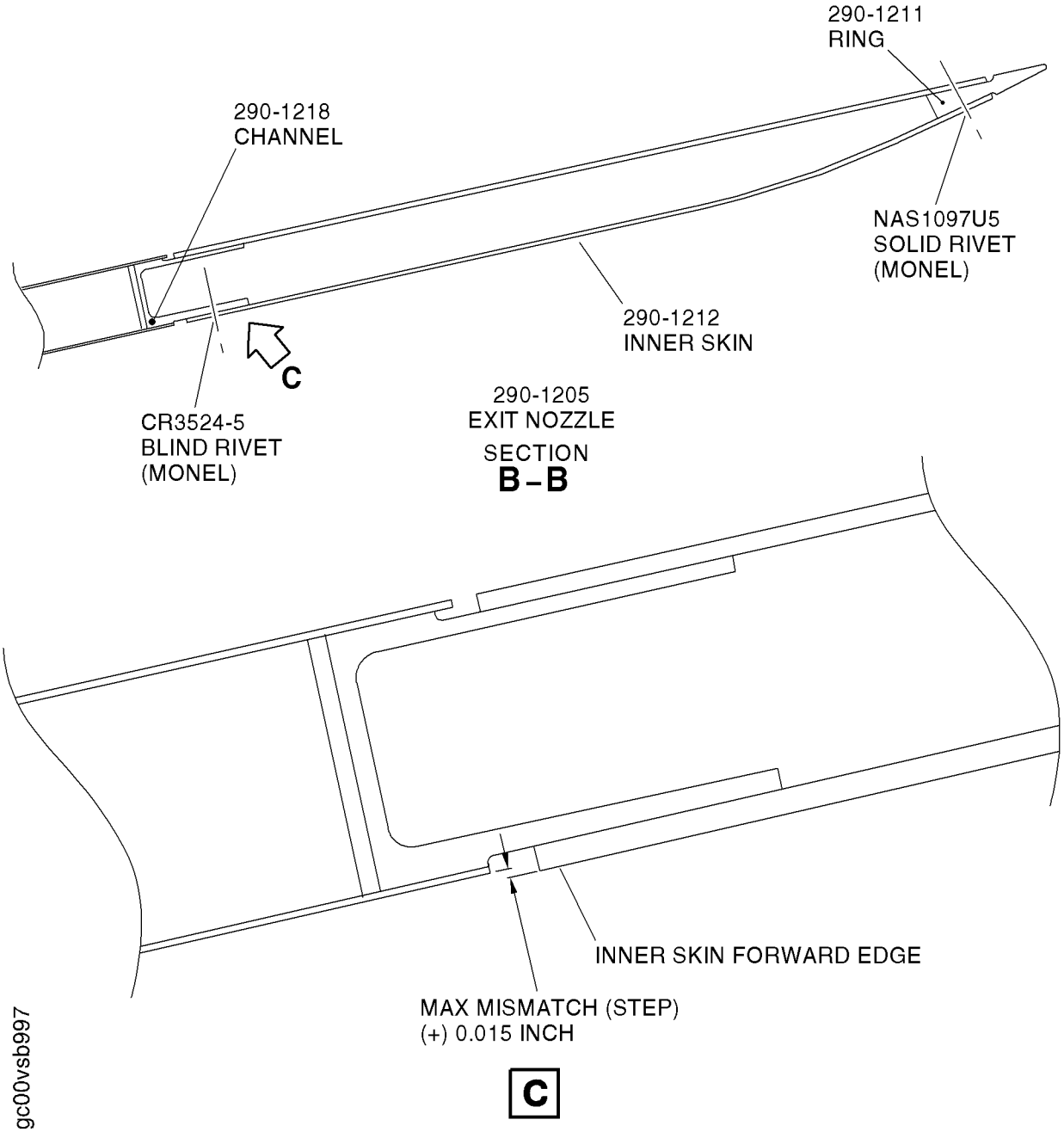


Figure 3
Exit Nozzle Inner Skin Inspection Locations

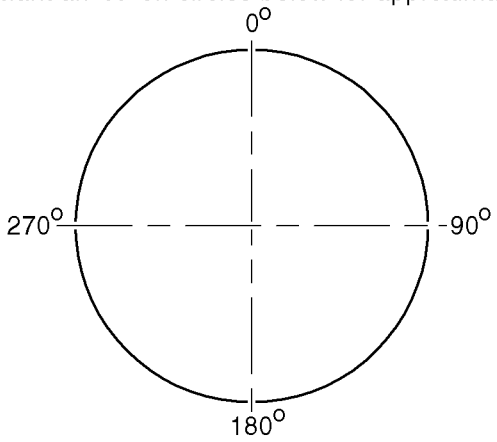
Inspection Date (MD90/V2500-D5):

Engine Number: **CNA Life** (hours/cycles)**:**

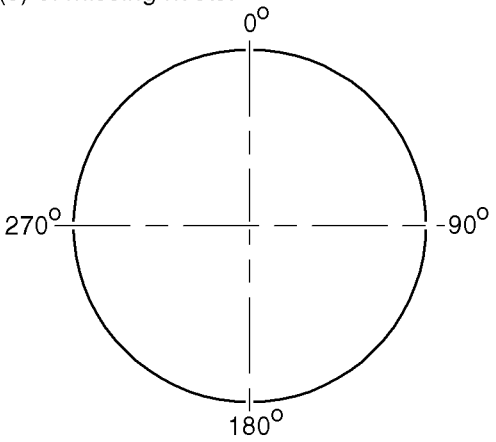
Engine Position: **A/C Life** (hours/cycles)**:**

Part 3B & 3C of Inspection Bulletin:

Inspection findings of missing rivets on the CNA exit nozzle inner skin circumferential pattern.
Mark an "X" on circles below for approximate location(s) of missing rivets.



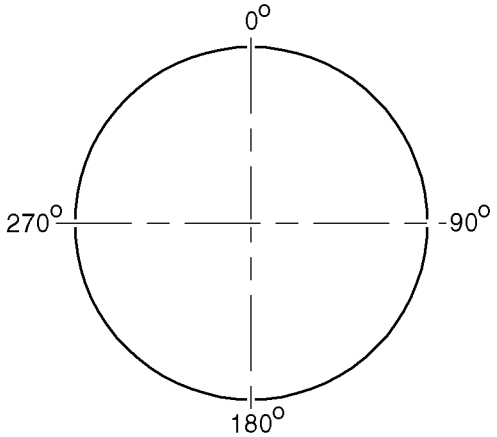
Forward Circumferential rivet pattern looking forward



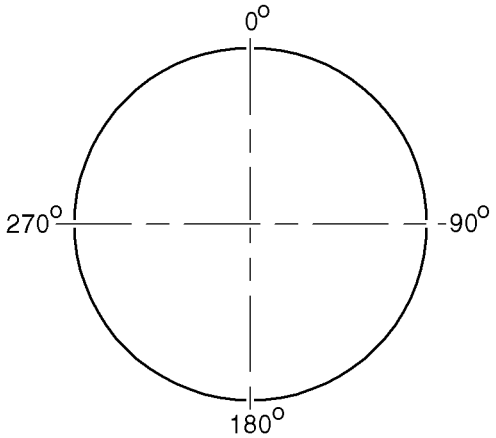
Aft Circumferential rivet pattern looking forward

Part 3D & 3E of Inspection Bulletin:

Inspection findings of loose rivets on the CNA exit nozzle inner skin circumferential pattern.
Mark an "X" on circles below for approximate location(s) of loose rivets.



Forward Circumferential rivet pattern looking forward



Aft Circumferential rivet pattern looking forward

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Part 3F of Inspection Bulletin:

Inspection findings of loose or missing rivets on the CNA exit nozzle inner skin splice.

Splice: Number of missing rivets on individual splice: _____
Number of loose rivets on individual splice: _____