Nomad
SERVICE BULLETIN

INSPECTION OF STUB WING UPPER FRONT SPAR CAP FLANGES - REVISED INSPECTION PROCEDURE

1. **PLANNING INFORMATION**

A. **Effectivity**

(1) Aircraft affected:

(a) **N22 Series** line sequence numbers 1 to 9, 11 to 29, 31, 33, 35, 37, 39 to 41, 43, 45, 47 to 59, 61, 63, 65 to 70, 82 to 88, 90 to 95, 97, 100, 102 to 114, 116, 118, 125,126, 131 to 134, 136 to 138, 141, 143 to 170.

(b) **N24 Series** line sequence numbers 10, 30, 32, 34, 36, 38, 42, 44, 46, 60, 62, 64, 71 to 81, 89, 96, 98, 99, 101, 115, 117, 119 to 124, 127 to 130, 135, 139, 140, 142.

(2) Spares

Not applicable

B. **Reason**

(1) Service Bulletin NMD-53-6 introduced inspection of the stub wing upper front spar by visual and by eddy current method to detect defects and cracks in the spar cap. The procedure required the removal of the Huck bolts with the possibility of damage to the holes and a requirement to fit oversize bolts.

(2) The intent of this Service Bulletin is to introduce a revised, simplified visual inspection which does not require the removal of the Huck bolts. The inspection is accomplished via an inspection hole in the Stub Wing Bottom Skin, aft of the spar cap and can reliably be carried out to detect cracks in the spar cap adjacent to the 6 Huck bolt tails. This inspection procedure will greatly alleviate the possibility of damaging holes with the subsequent requirement to fit oversize Huck bolts.

C. **Description**

(1) A 1.00 in diameter hole is drilled/bored in the lower skin panel aft of the front spar flange to allow for inspection of the area concerned. On completion of inspection, the hole is fitted with a special purpose removeable plug to restore the structural integrity of the skin panel.

D. **Compliance**

Compliance with this Service Bulletin is mandatory at or before the next scheduled inspection related to Service Bulletin NMD-53-6 is due.

Following the inspection detailed in Para 2.B.(2) of Service Bulletin NMD-53-22, the interval between repeat inspections is 600 hours for all Nomad variants and flight profiles.

E. **Approval**

The requirement detailed herein has been approved by a person authorised under Civil Aviation Regulation 35 and conforms to the type certification requirements.

F. **Manpower**

As required.

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G. **Material**

Kit PN NMD-53-22-1 Qty 1. Contact ASTA for price and availability.

H. **Tooling**

None

I. **Weight and Balance Change**

None

J. **References**

Maintenance Manual Chapter 32

Inspection Requirements Manual Part 4

Structural Repair Manual Chapter 51

Service Bulletin NMD-53-6

K. **Publications Affected**

Inspection Requirements Manual

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Drilling/Boring of Inspection Hole**

CAUTION

BEFORE PERFORMING ANY WORK ON THE AIRCRAFT, ENSURE THAT THE BATTERY SWITCH ON THE OVERHEAD CONSOLE IS SET TO OFF AND THAT THE INTERNAL AIRCRAFT BATTERY AND EXTERNAL POWER IS DISCONNECTED FROM THE AIRCRAFT.

(1) To provide for better access to the Stub Wing Lower Skin it is recommended that the Control Rod for the Forward Pod Door be disconnected at the upper end (Ref MM Chap 32-10-15, Fig 4) and the Door allowed to hang down from its hinge (Ref Fig 1).

(2) Looking up through the landing gear pod, mark position for the inspection hole on the Stub Wing Bottom Skin (Ref Figs 2 and 3). Using a Hole Saw (or similar) drill/bore hole 1.000/1.030 in. diameter.

(3) Remove all burrs and sharp edges, and touch up with alodine and prime (Ref SRM Chap 51-30-00, Paras 3. and 4.).

(4) Repeat on other side.

B. **Front Spar Cap Inspection**

(1) An exterior inspection should be completed along the upper forward face of the stub wing front spar just inboard of the inner end of the wing strut attachment fitting as shown in Figure 4.

(a) Using a flashlight, visually inspect for possible cracks on the upper forward face of the stub wing front spar caps just inboard of the inner end of the wing strut attachment pick-up fittings (Ref Figs 4).

(b) If any doubt exists, a magnifying glass, dye penetrant method, or eddy current method should be used.

(2) An internal inspection should be carried out through the drilled inspection hole to examine for cracks in the upper Spar Cap around the upper Huck bolts (Ref Fig 8).

Areas around all six Huck bolts should be inspected using borescope or visually with the aid of powerful light source (Ref Fig 5) inserted via the clearance holes around the stub wing pickup fitting. A digital camera held at the inspection hole and using the light source will also assist in identifying defects.

The suggested light form is that of a low voltage Quartz Halogen lamp attached to flying leads and powered from either battery or transformer. The light source should be manoeuvred to prevent shadow from falling over the particular area to be inspected.

Potential cracks are most likely to form at the most inboard Huck bolts, with decreased likelihood at the others. Analysis has shown that the cracks are likely to grow toward the free edge before growing toward the spar cap as shown in Figure 8.

If any doubt exists as to the possibility of a crack, further examination should be undertaken by an appropriately qualified person, using a suitable eddy current pencil surface probe inserted through the access hole. It may be necessary to use a borescope in combination with the surface probe to correctly position the tip of the probe.

NOTE

If, subsequent to the inspections above, doubt still exists as to the existence of a defect at a fastener, then it is possible to remove the fastener and inspect the hole. ASTA should be contacted for further information and advice on the removal process, as cases will need to be addressed on an individual basis.

(3) Following the inspection the plug should be replaced (Ref Para 2.C.).

(4) Re-connect the Forward Pod Door Control Rod; torque tighten connecting bolt to 30–40 lb in.

(5) Repeat on other side.

C. **Plugging of Inspection Hole**

(1) After Inspection, plug the 1.00 in hole using the Inspection Plug Assembly 1/N–11–1565.

(a) Insert the Slotted Nut edgewise in through the 1.00 in. diameter hole (Ref Fig 7), rotate till it is inside the Lower Skin and pull down on Lanyard.

(b) Offer up the keyed Grommet to matching slot in the Nut.

(c) Hold in place and screw in Bolt, torque tighten to 120–180 Lb in.

(d) Secure Lanyard to slots in keyed Grommet and safety wire (Ref Fig 3) (Refer also Fig 7. less safety wire).

D. **Subsequent Removal of Inspection Bolt**

Removal of the Blind Bolt is reverse of the installation procedure. However, it is more difficult to manoeuvre and remove the Slotted Nut. To ease this removal, it is recommended that a pair of long nosed pliers is used, cushioned with tape to minimise damage to the threads.

For subsequent inspections it may not be necessary to remove the Blind Bolt assembly completely if a Borescope is used, as this would fit within the threaded portion of the slotted nut.

3. **MATERIALS INFORMATION**

A. **Parts required per Aircraft**

Kit PN NMD-53-22-1 Qty 1 consists of the following.

Part No	Qty	Description
1/N–11–1565	2	Inspection Plug - Assembly

4. **SPECIAL TOOLS AND EQUIPMENT**

None

5. **RECORDING ACTION**

Record compliance with Service Bulletin NMD-53-22 in the Airframe Log Book.

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Figure 1 LH Landing Gear Pod Door - Disconnected (RH Similar)

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Figure 2 LH Stub Wing Inspection Hole (RH Similar)

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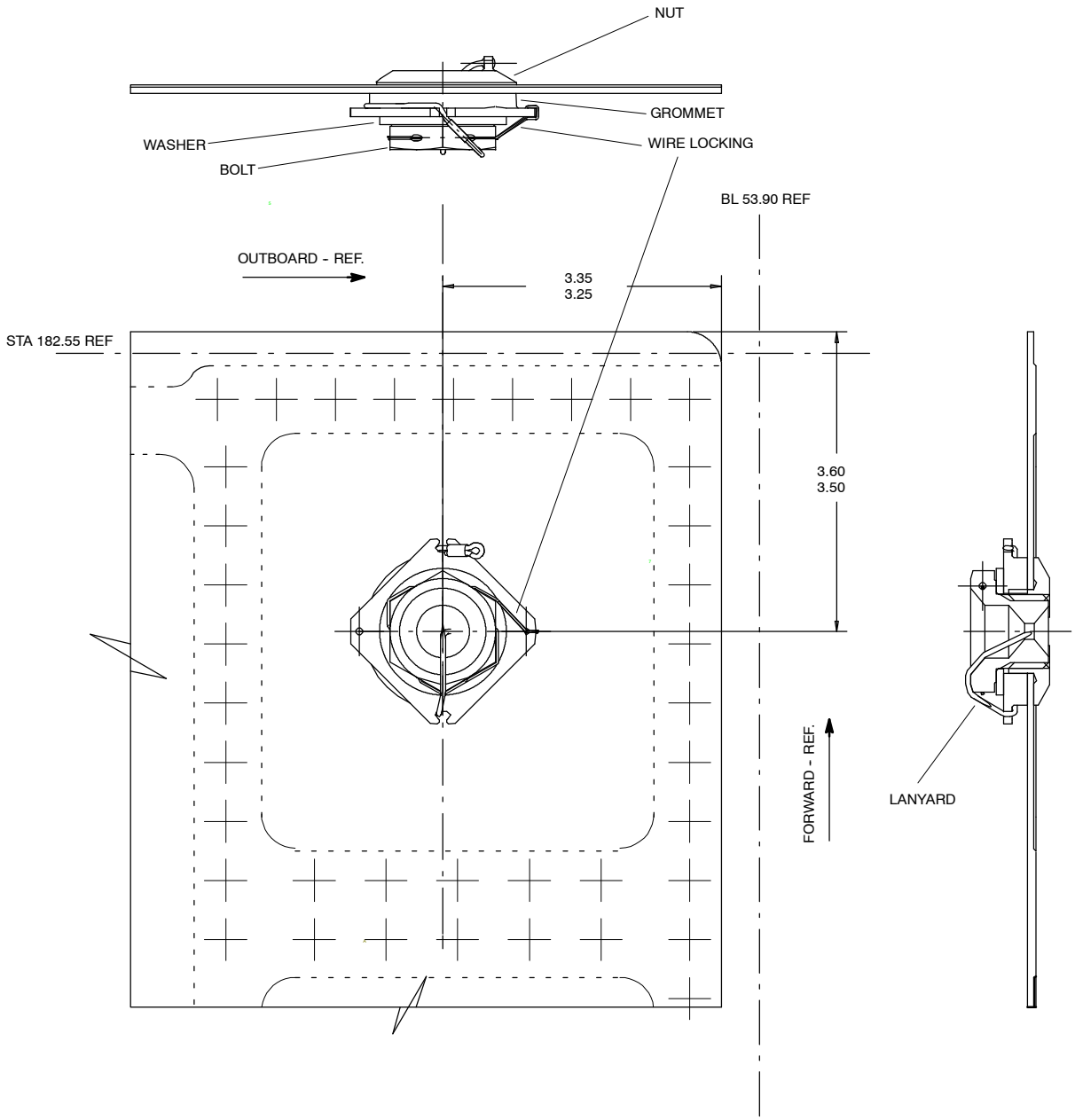


NOTE: ALL DIMENSIONS IN INCHES

VIEW LOOKING UP FROM UNDERNEATH LH STUB WING - RH SIMILAR

Figure 3 Location of Inspection Plug

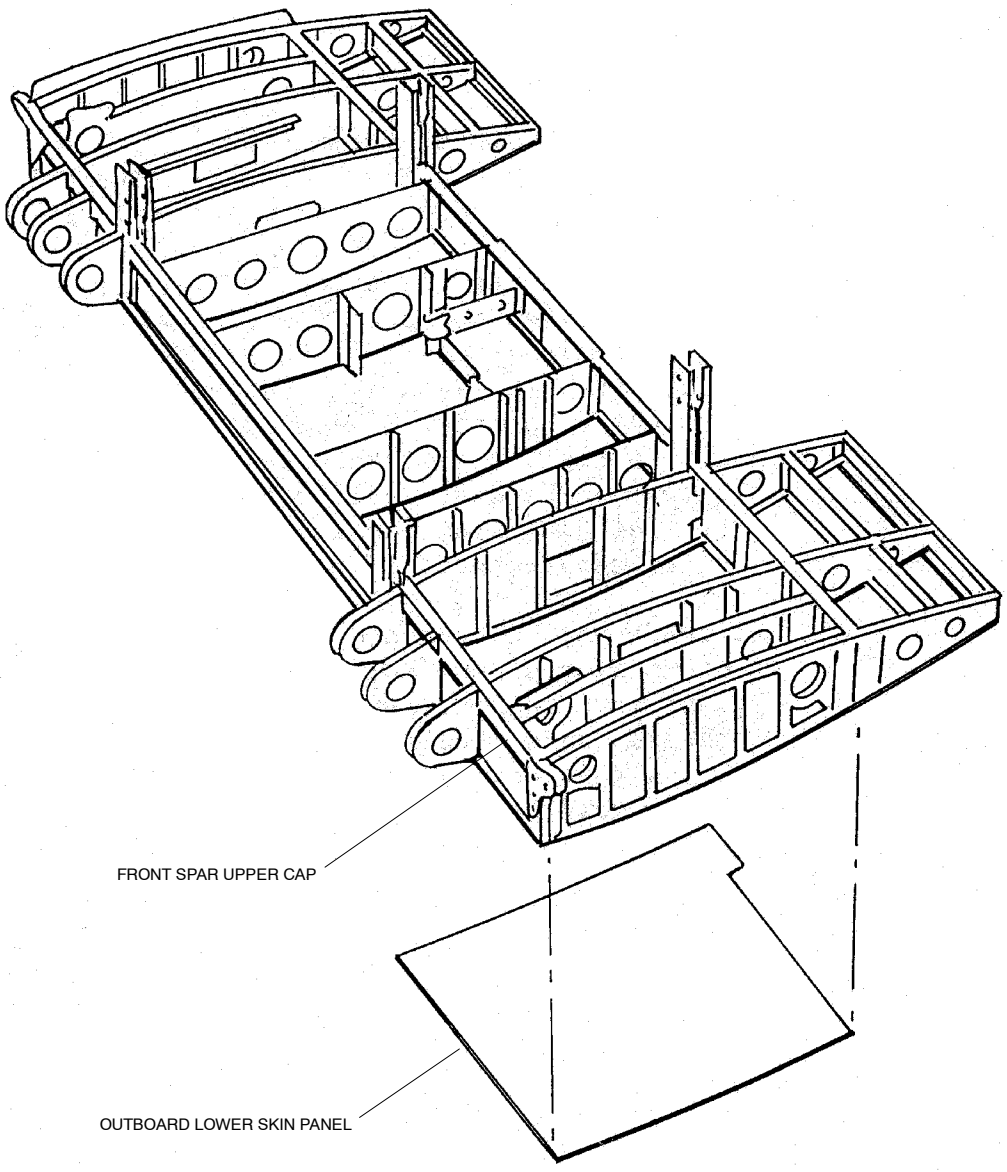
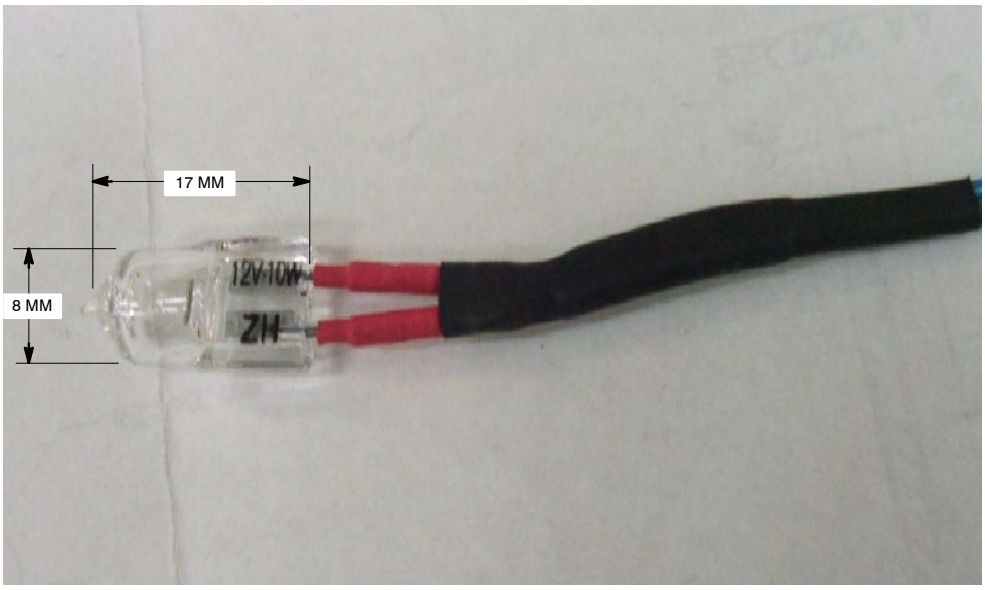


Figure 4 Stub Wing



EXAMPLE OF LIGHT SOURCE

LIGHT SOURCE INSERTED INTO STUB WING BAY

Figure 5 Stub Wing Bay Illumination

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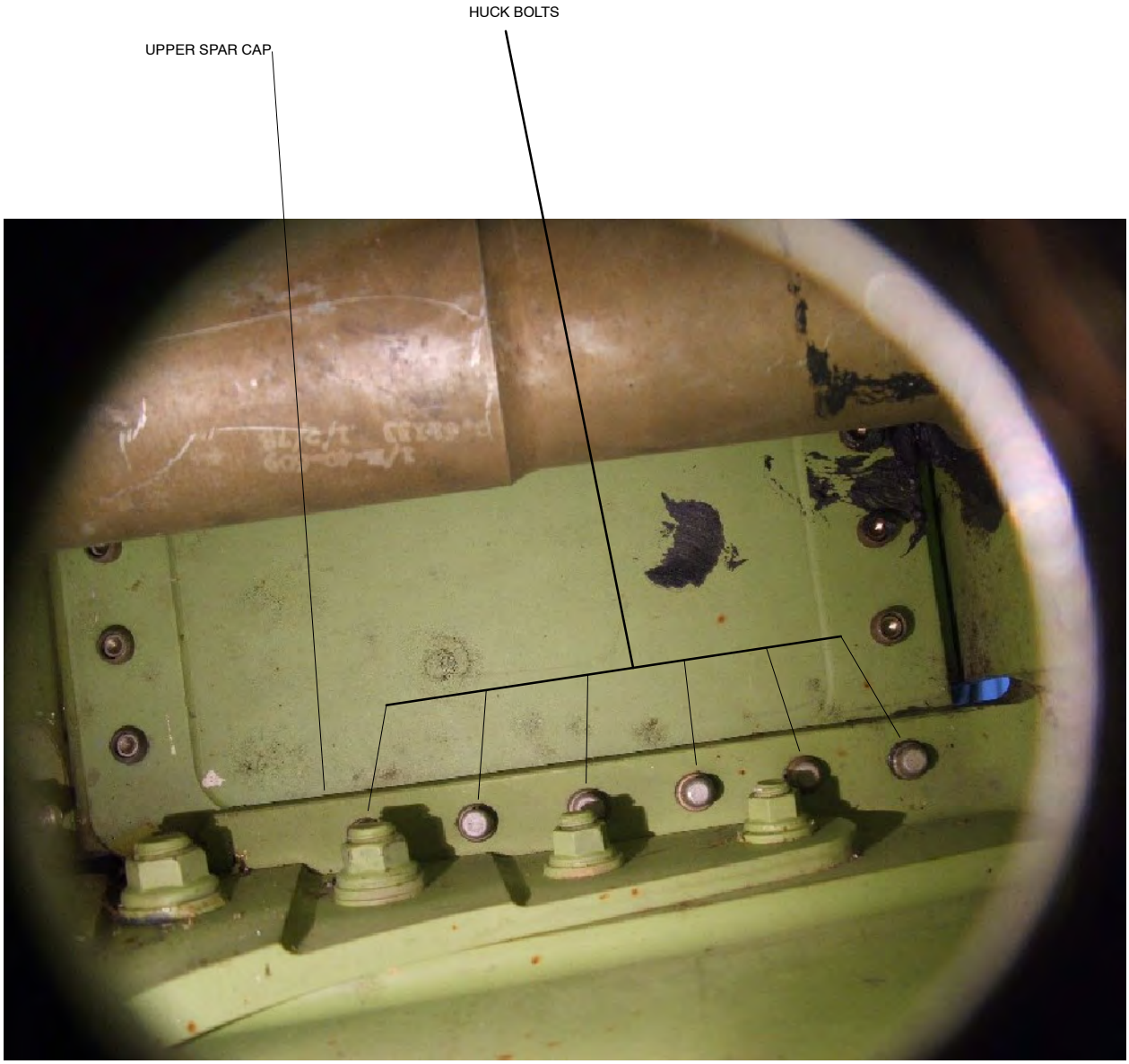
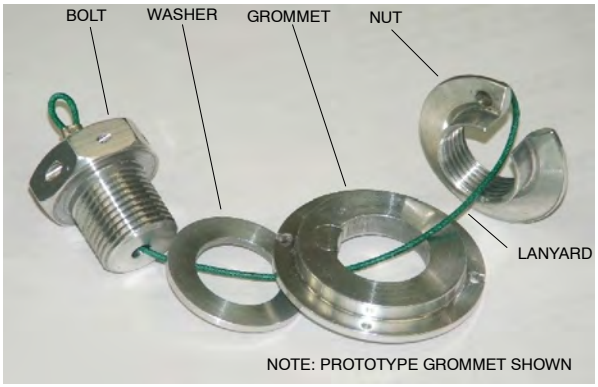
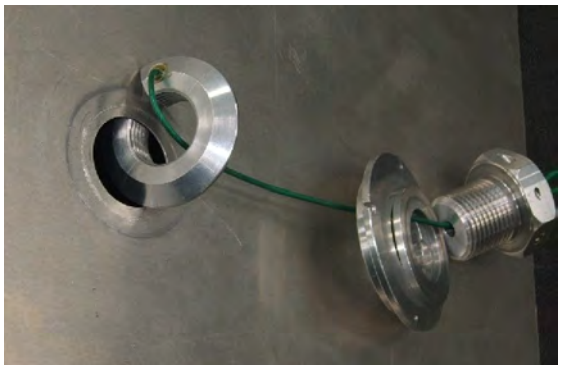
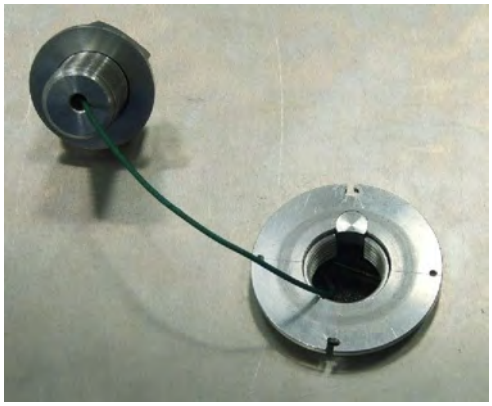


Figure 6 Upper Spar Cap Viewed through Inspection Hole





NOTE:
SEE PARA 2.C.(1)(a)



NOTE:
SEE PARA 2.C.(1)(b)

NOTE:
SEE PARA 2.C.(1)(c) AND (d)

Figure 7 Sequence of Installing Plug Components

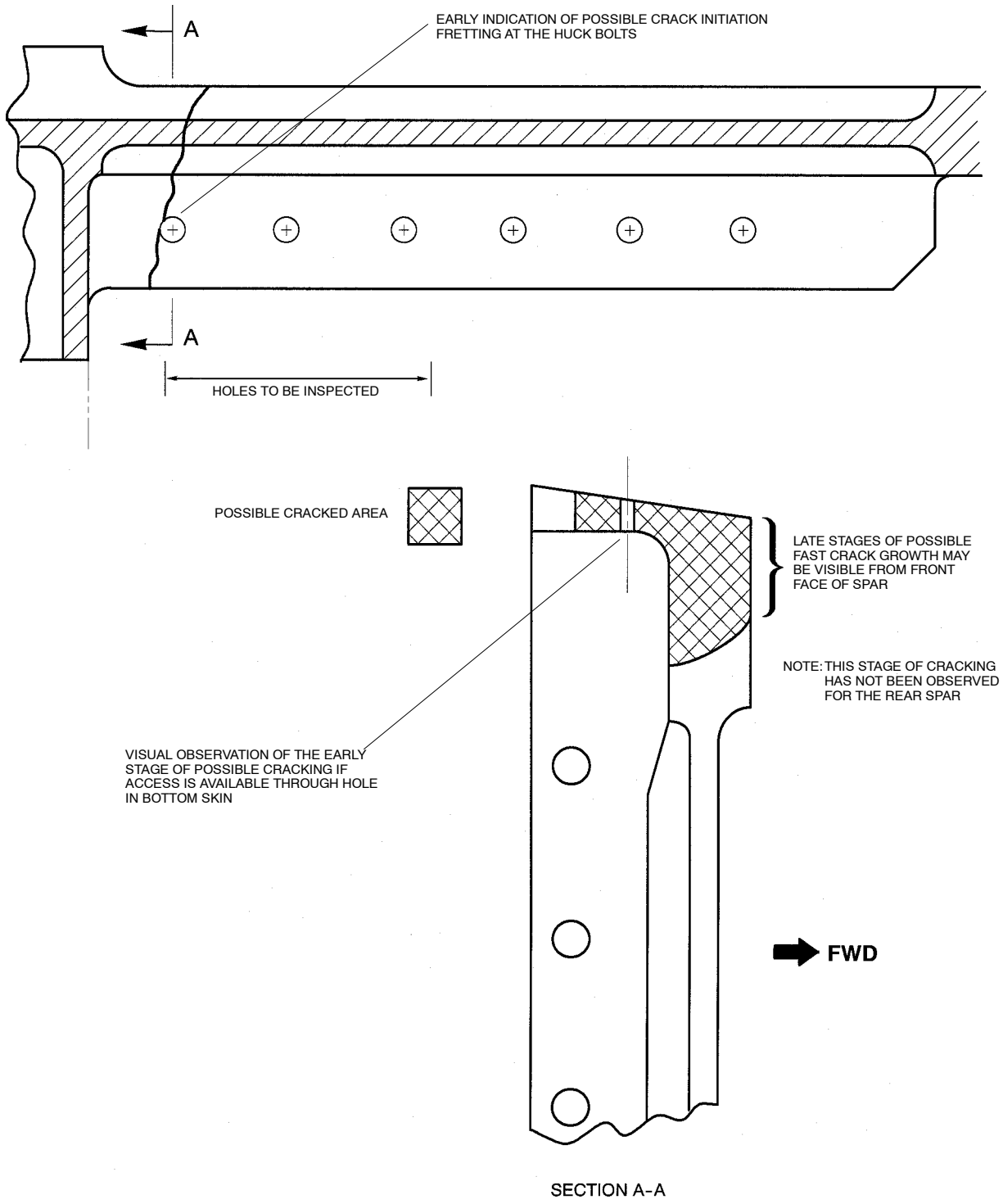


Figure 8 Likely Areas of Cracking