

Nomad

SERVICE BULLETIN

WINGS - DEACTIVATION OF DE-ICE AND OTHER SYSTEMS

1. PLANING INFORMATION

A. Effectivity

- (1) Aircraft affected:
N22B-26, FAA Registration N5190Y only
- (2) Spares
Not applicable

B. Reason

To remove all external items of Customer Options G18 and G99, and some internal components, and return the wing configuration to normal N22B standard.

C. Description

- (1) This aircraft presently has a part-fit of Customer Options G18 (Airframe De-Icing) and G99 (Auxiliary Fuel Tanks). To render the aircraft to a balanced symmetrical condition the external features and some of the internal components are removed and made electrically safe.
- (2) A procedure is provided for initial fitment of a metal Stall Breaker Strip to the RH wing.
- (3) Procedures are also provided for pre-flight test, flight test of the Stall Warning System and flight tests for determining the final position of the Stall Breaker Strips.

D. Compliance

The provisions of this Service Bulletin shall be complied with prior to next flight.

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

Not Applicable

G. Material – Price and availability

None

H. Tooling

None

Page No	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Rev No	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Nomad

SERVICE BULLETIN

I. **Weight and Balance Change**

- (1) See Para 2.A.(13).
- (2) See Para 2.E.(1).

J. **References**

- (1) Nomad N22 Series Maintenance Manual (MM)
- (2) Nomad N22 Series Illustrated Parts Catalogue (IPC)
- (3) Nomad N22 Series Customer Option G18 Data (Feb 28/75 attached at Annex A)
- (4) Nomad N22 Series Customer Option G99 Data
- (5) Nomad N22 & N24 Structural Repair Manual (SRM)
- (6) Nomad N22 Series Wiring Diagram Manual (WDM)
- (7) Service Bulletin NMD-27-50

K. **Publications Affected**

None

2. **ACCOMPLISHMENT INSTRUCTIONS**



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.

A. **Part 1 - Deactivation of Airframe De-icing System (Customer Option G18)**

- (1) Remove De-icer Boots as per Ref (3) MM data Para 1.A. Touch up with Alodine, Prime and Paint as required as per Ref (5) Chapter 51-30-00.
- (2) Repair holes for bleed air connections from the de-icer boots in Wing Leading Edge as per Ref (5), Chapter 57-30-00 Figure 3, in Tailplane as per Ref (5), Chapter 55-10-11, Figure 4 and in Fin as per Ref (5), Chapter 55-30-11, Figure 3.
- (3) Remove Regulator Valve (Ref (3) MM data, Fig 3) per Ref (3) MM, Para 1.D.
- (4) Remove Relief Valve (Ref (3) MM data, Fig 3) per Ref (3), Para 1.F.
- (5) Remove Wing Ejector Flow Control Valve and its earth wire (Ref (3) MM data, Fig 3) per Ref (3) MM Para 1.H. Cap and stow wire H20E22 onto adjacent wiring in accordance with accepted aircraft practice.
- (6) Remove Wing Pressure Switch and its earth wire H23A22N (Ref (3), MM Fig 3) per Ref (3), MM para 1.L. Cap and stow wire H22B22 onto adjacent wiring in accordance with accepted aircraft practice.
- (7) With reference to Ref (3) IPC Fig 3, Sheet 2 - Remove Vent Tube Assy (Index 57/-57A), Elbow (Index 59) and associated earthing hardware.
- (8) With reference to Ref (3), IPC Fig 3, Sheet 2 - Remove Supply Tube Assy (Index 36/-37) and associated earthing.

24 June 2005

Nomad

SERVICE BULLETIN

- (9) Either:
- remove Tube Assembly 1/N-72-67/68 (from Ejector Flow Control Valve to Approx WSTA 71) or
 - cut Tube Assembly 1/N-72-67/68 (from Ejector Flow Control Valve to Approx WSTA 71) inboard of P-Clip at WSTA 44.

NOTE

The Tube Assembly 1/N-72-67/68 is shown in Ref (3) Section IPC, Figure 3 Sheet 1, as Index 1B but is called out as Index 1F/-1G in the IPC Parts Listing section.

- (10) With reference to Ref (3), IPC Fig 3, Sheet 2 - Remove High Pressure Bleed Pipes (Index 23/-24 and 27), Wig-O-Flex Coupling Tee (Index 25, 26) and Adaptor (Index 28).
- (11) Install basic aircraft Bleed Air Pipe 1/N-74-202 using existing Wig-O-Flex Coupling per Ref 1, Chap 21-20-00, Page 201, Paras 1.B. and 1.D.
- (12) Rework Overhead Console electrics as follows:
- (a) Remove Airframe De-ice CB, item 10 and bridging link Page 4 of Ref (3), and plug redundant hole with Plug Button item 43 of Ref (2) Chap 39-10-03 Page 29. Cap and stow wire H16A22 on adjacent wiring in accordance with accepted aircraft practice.
 - (b) Remove Airframe De-ice switch, item 11 Page 4 of Ref (3), and plug redundant hole with Plug Button item 43 of Ref (2) Chap 39-10-03 Page 29. Cap and stow wires H16A22, H17A22 and H18A22 on adjacent wiring in accordance with accepted aircraft practice.
 - (c) Remove three Airframe De-ice lights, item 12 Page 4 of Ref (3), together with wires H16B, C and D22, H24A22N, H27A22N, and wire H30A22N. Plug redundant holes with Plug Button item 44 of Ref (2) Chap 39-10-03 Page 29. Cap and stow wires H22A22, H25A22 and H28A22, on adjacent wiring in accordance with accepted aircraft practice.
- (13) Following the removal of de-icing boots and other components from the horizontal stabiliser and carrying out any repairs consequent to this, a Static Balance Check shall be carried out in accordance with the Structural Repair Manual, Chapter 55-10-00, Para 3.

B. Part 2 - De-activation of Auxiliary Fuel Tank (Customer Option G99) in LH Wing

(1) Fuel Vent Line

The wing tip tank (CO G99) is vented via a 3/8 in (ID) line to the Aux. Fuel Syphon Breaker Assy 1/N-57-268 located just outboard of the outer Main Tank, the vent is interconnected with the Syphon Breaker (1/N-57-187) for the basic aircraft fuel tanks.

The connection between the wing tip tank vent line and the Aux Fuel Syphon is a 3/8 in (ID) x 2.75 in length rubber hose clamped to the swaged aluminium tube ends with hose clamps.

Proposed fix:

- (a) Disconnect the wing tip tank vent line from the rubber hose at the Aux Fuel Syphon Breaker and replace with 3/8 in Blanking Plug (Ref Fig 1). The existing hose clamp may be re-used if in satisfactory condition.

NOTE

The Wing Tip Vent line and/or the rubber hose may be trimmed to accommodate Blanking Plug

(2) Fuel Supply Line

Nomad

SERVICE BULLETIN

Fuel is transferred/pumped from the Wing Tip Tank to the outer Main Tank through a single 1/2 in (ID) fuel supply line.

The connection between the wing tip tank fuel supply line and the outer Main Tank is a 1/2 in (ID) x 3.0 in length rubber hose clamped to the swaged aluminium tube ends with hose clamps.

Proposed fix:

- (a) Disconnect the wing tip tank fuel supply line from the rubber hose at the outer Main Tank and replace with 0.5 in Blanking Plug (Ref Fig 1). The existing hose clamp may be re-used if in satisfactory condition.

NOTE

The Wing Tip Fuel Supply line and/or the rubber hose may be trimmed to accommodate Blanking Plug

(3) Fuel Return Lines

Excess fuel from the outer Main Tank is returned to the Wing Tip Tank via two 0.75 in (ID) return lines.

The connections between the wing tip tank fuel return lines and the outer Main Tank is 2 off 0.75 in (ID) x 3.0 in length rubber hoses clamped to the swaged aluminium tube ends with hose clamps.

Proposed fix:

- (a) Disconnect the wing tip tank fuel return lines from the rubber hose at the outer Main Tank and replace with 0.75 in Blanking Plugs (Ref Fig 1). The existing hose clamp may be re-used if in satisfactory condition.

NOTE

The Wing Tip Fuel Return line and/or the rubber hose may be trimmed to accommodate Blanking Plug

(4) Electrical Rework

At the fuel contents transmitter, remove and discard wire Q48A22N back to its ground termination. Cap and stow wire Q47B22 in accordance with accepted aircraft practice.

At Fuel Pressure switch, cap and stow connector and harness branch (consisting of cores Q44B22 and Q45A22N) in accordance with accepted aircraft practice.

Remove fuel pump and wires Q41C20 and Q42A20 attached to TB37 terminals 1 and 2 respectively. Re-fit nuts to TB37 securing remaining wires Q41B20 and Q42B20N, and re-fit terminal block cover.

(5) Fuel Filler (Ref Fig 2)

De-rievet the rectangular 0.040 in plate on top of the wing and remove Fuel Cap Adapter Sealing Valve, rivet new rectangular plate 0.040 in 2024-T3 (same size) in its place using Cherrymax CR rivets of appropriate diameter and length, picking up existing hole pattern. Wet Assemble as per Ref. (1) Chapter 20-30-00.

(6) Sump (Ref Fig 3)

Remove plastic fairing. Then remove metal tray (1/N-20-793) and rivet in place 0.040 in 2024-T3 plate (approx 6.5 in by 9.5 in) using Cherrymax CR rivets of appropriate diameter and length. Wet assemble as per Ref (1) Chapter 20-30-00. Replace original fairing screws to plug anchor nuts.

Nomad

SERVICE BULLETIN

(7) Fuel Contents Transmitter (Ref Fig 3)

Remove, and bolt on blanking plate, approx 3.0 in diameter 0.040 in 2024-T3, with original screws.

(8) Drain Holes (Ref Fig 4)

As tank bay was sealed, new drain holes must be drilled. Drill 6 off 3/16 in holes in bottom skin at WSTN 261.2, midway between each pair of stringers, and between spar caps and adjacent stringer. Brush alodine exposed metal and touch up with epoxy primer per Ref. (5). Chapter 51-30-00.

C. Re-Installation/Adjustment of Stall Breaker Strip on RH Wing.

Figures 5 and 6 are provided for reference. It is suggested that prior to the removal of the De-Icing boots from the right wing leading edge, measurements are taken of the position of the existing rubber Stall Breaker Strip. These measurements may be compared with similar measurements from the LH wing.

- (1) For reference the inboard edge of the Stall Breaker Strip is at wsta 99.0 in (Ref Fig 5 and the position of the apex of the Strip on the leading edge of the wing is 10.4 in forward of the leading edge skin line (Ref Fig 5).
- (2) A new Stall Breaker Strip (Part Number 1M/N-20-610) should be offered up to the RH wing leading edge in as near as possible to the measurements taken above, and attached with double-sided adhesive tape. The object being to position the apex of the new metal Stall Breaker Strip as near to the position of the rubber Stall Breaker Strip.
- (3) The procedure for conducting flight tests to determine the correct final position of the Stall Breaker Strip is detailed in Para 3.A.(2).
- (4) On satisfactory completion of the above tests the Stall Breaker Strip should be finally fastened to the wing leading edge skin as follows (Ref Fig 6):
 - (a) Locate Stall Breaker Strip in final position.
 - (b) At wing rib positions (wstas 104.62 and 114.15) drill out existing rivets and back-drill (#30) into Stall Breaker Strip.
 - (c) Drill (#30) wing leading edge skin from rest of holes in Stall Breaker strip.
 - (d) Deburr all holes. Wet assemble and rivet in position.
 - (e) Touch-up prime and paint as required.

D. Rework to Stall Warning System

WARNING

DO NOT OPERATE THE FLIGHT CONTROLS WHEN THE COMPONENTS ARE DISCONNECTED OR WHEN PERSONNEL ARE WORKING IN THE AREA CONCERNED. SERIOUS INJURY TO PERSONNEL AND OR DAMAGE TO COMPONENTS AND STRUCTURE COULD OCCUR.

It is assumed the replacement LH wing incorporates the basic aircraft Stall Warning switches (two off, A11 and A12), the Stall Warning change over switch (S4) in the Flap Cam box, and the Basic wiring associated with these components. Refer schematic shown to the right of the Wing Break connectors of Ref (6) Chap 27-50-00 Sheet 2 page 5/6. (Refer also to Service Bulletin NMD-27-50, Mod N835 if fitted).

24 June 2005

NMD-57-20

Page 5 of 14

Nomad

SERVICE BULLETIN

- (1) In the Overhead console, remove the Stall Warning Heat switch and the Stall Warning Heat circuit breaker. Plug the redundant holes with Plug item 43 of Ref (2) Chap 39-10-03 Page 29. Either, remove wire W86A20 entirely, or cap and stow both ends of wire onto adjacent wiring in accordance with accepted aircraft practice.
- (2) Re-route existing wire W10A20 from the removed Stall Warning Heat switch and re-terminate it to terminal 2 of the existing Pitot Heat switch, with existing wire F2A20, in accordance with Ref (6) Chap 27-50-00 Sheet 2 page 5/6. Secure wire onto adjacent wiring in accordance with accepted aircraft practice.
- (3) At the Front Wing Break connector for the LH Wing, remove wire W87A22 from contact "T" and remove the wire from the aircraft, back to its destination on the Aural Warning Unit terminal "STALL-".
- (4) Identify a new length of 22AWG wire (type M22759/34-22-9) as W16A22. Terminate one end to suit the Aural Warning Unit "STALL-" terminal and route wire to the Rear Wing Break connector for the LH Wing and attach to contact "9". Secure wire onto adjacent wiring in accordance with accepted aircraft practice. Refer Ref (6) Chap 27-50-00 Sheet 2 page 5/6.
- (5) Identify two new lengths of 22AWG wire (type M22759/34-22-9) as W17B22 and W18B22. Route the two new wires between the LH wing Front and Rear Wing Break connectors. Secure the wires onto adjacent wiring in accordance with accepted aircraft practice. At the Front Wing Break connector, attach W17B22 to contact "U" and W18B22 to contact "T". At the Rear Wing Break connector, attach W17B22 to contact "10" and W18B22 to contact "11". Refer Ref (6) Chap 27-50-00 Sheet 2 page 5/6.
- (6) Verify the functionality of the re-wired systems as follows:
 - (a) Perform continuity tests of the Stall Warning Heat and Aural Alarm system in accordance with Ref (6) Chap 27-50-00 Sheet 2 page 5/6.
 - (b) Connect the aircraft battery in the LH pod.
 - (c) Set the BATTERY switch on the Overhead Console to ON.
 - (d) Turn the PITOT HEAT switch on the Overhead Console to ON.

WARNING

DO NOT LEAVE THE PITOT HEAT SWITCH SET TO ON FOR AN EXTENDED TIME AS THE PITOT HEAD WILL BECOME EXTREMELY HOT, WHICH MAY RESULT IN SEVERE BURNS IF INADVERTENT CONTACT IS MADE WITH IT, AND MAY ALSO RESULT IN DAMAGE TO THE HEAD AND ELEMENT.

- (e) The Pitot Head shall become hot and both stall detector vanes shall become warm after a short time.
- (f) Switch OFF the Pitot Heat switch.
- (g) Ensure the Flaps are fully UP, then set the BATTERY switch on the Overhead Console to OFF.
- (h) With the Flaps positioned UP, push the vane of the outboard stall detector UP. Verify the Aural Horn in the cockpit emits a continuous 2000Hz tone whilst the vane is held UP.
- (i) Set the BATTERY switch on the Overhead Console to ON and position the Flaps fully DOWN. Set the BATTERY switch to OFF.

Nomad

SERVICE BULLETIN

- (j) With the Flaps positioned DOWN, push the vane of the inboard stall detector UP. Verify the Aural Horn in the cockpit emits a continuous 2000Hz tone whilst the vane is held UP.
- (k) With the BATTERY switch on the Overhead Console set to ON, activate the flaps over their full operating range and verify that the Outboard vane, when pushed UP, causes the Aural Alarm to sound whilst the flaps are within the range Fully UP to 15 degrees down, and the Inboard vane causes the alarm to sound over the flap range 23 degrees Down, to fully Down.
- (l) Set the BATTERY switch on the Overhead Console to OFF and disconnect the aircraft battery, if required.

E. Aircraft Weighing

- (1) On completion of all work the aircraft shall be subjected to a full weight and balance procedure (Ref Maintenance Manual Chap 8-10-00).

3. FLIGHT TESTS AND LIMITATIONS

A. Flight Tests

The aircraft shall be operated in accordance with, but not limited to, FAR Part 91.407. If further detail is sought regarding any of the following contact ASTA.



AS THE FOLLOWING FLIGHT TESTS REQUIRE OPERATION OF THE FLAPS TO 38° THE OPERATOR WILL REQUIRE TO OBTAIN A DISPENSATION FROM THE FAA, FROM THE LIMITATIONS OF ALERT SERVICE BULLETIN ANMD-57-18.

- (1) For the adjustment of Stall Warning Vanes refer to Ref (1), Chapter 31-52-00.
- (2) The procedure for determining final placement of RH Stall Breaker Strip is as follows:
 - (a) Carry out checks of the Stall Warning System (Ref MM Chap 31-52-00, Para 2.B.).
 - (b) Carry out an engine run (Ref MM Chap 71-00-00) checking for and if necessary adjusting the Flight Idle propeller blade angles (Ref MM Chap 61-20-00).

NOTE

It is essential for the following flight tests that the left and right engines/propellers, at Flight Idle, are symmetrical within the prescribed tolerances.

- (c) From the Flight Manual (Pub 12.28F-1, Section 3, Figure 3.1) determine the scheduled stalling speeds for the expected weight of the aircraft in flight. Stall warning can be expected at between 5 and 10 KIAS above the stall speed for each flap setting.
- (d) At a altitude not less than 5000 ft AGL in clear undisturbed air, carry out stalls in each flap configuration with Flight Idle power with 100% N₂ set.
 - 1 Trim the aircraft in each condition at 1.5 V_S (150% of scheduled stall speed), then reduce speed at no greater than 1 Knot/sec.
 - 2 Expect the stall warning horn to sound at between 5 and 10 KIAS above the scheduled stall speed.
 - 3 At the stall there should be a gentle nose down pitch possibly accompanied by random but controllable lateral activity (Ref FM Section 3, Para 3.19).

24 June 2005

NMD-57-20

Nomad

SERVICE BULLETIN

- 4 A more severe or apparently uncontrollable wing drop at or well before the stall is indicative of the breaker strip on that side requiring to be adjusted.

(e) Adjustment

The following instruction set assumes that the stall breaker Strip on the LH wing is correctly positioned:

- 1 If a RH wing drop occurred before the scheduled stalling speed:
 - (i) The Stall Breaker Strip should be moved down the leading edge by 0.25 in (6.50 mm).
- 2 If the LH wing stalled (dropped) at the scheduled stall speed it is likely the RH Stall Breaker Strip is too low.
 - (i) In this case the Stall Breaker Strip should be moved up the leading edge by 0.25 in (6.50 mm).
- 3 Small lateral perturbations, controllable with aileron and/or rudder may be accepted as being within the tolerance of stall handling characteristics.

When the above has been satisfactorily accomplished, the Stall Warning Vanes may need to be further adjusted (Ref Para 3.A.(1)).

4. **MATERIAL INFORMATION**

A. **Parts Required per Aircraft**

Not Applicable.

5. **SPECIAL TOOLS AND EQUIPMENT**

None

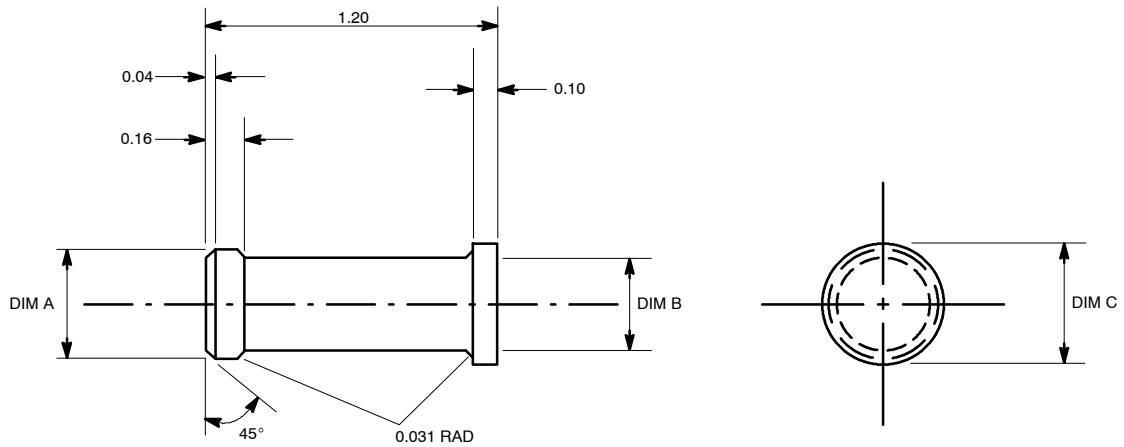
6. **RECORDING ACTION**

Record compliance with Service Bulletin NMD-57-20 in the Airframe Log Book.

Nomad

SERVICE BULLETIN

ALL DIMENSIONS IN INCHES



HOSE SIZE	DIM A DIA	DIM B DIA	DIM C DIA
3/8"	0.45	0.370/0.380	0.50
1/2"	0.560/0.575	0.495/0.505	0.75
3/4"	0.810/0.825	0.745/0.755	1.00

MATERIAL: AL. ALLOY BAR

QQ-A-225/6-T6
 QQ-A-225/4-T6
 QQ-A-225/4-T651
 QQ-A-225/6-TT851

ANODISE AFTER MACHINING

Figure 1 Blanking Plug

24 June 2005

NMD-57-20

Page 9 of 14

Nomad SERVICE BULLETIN

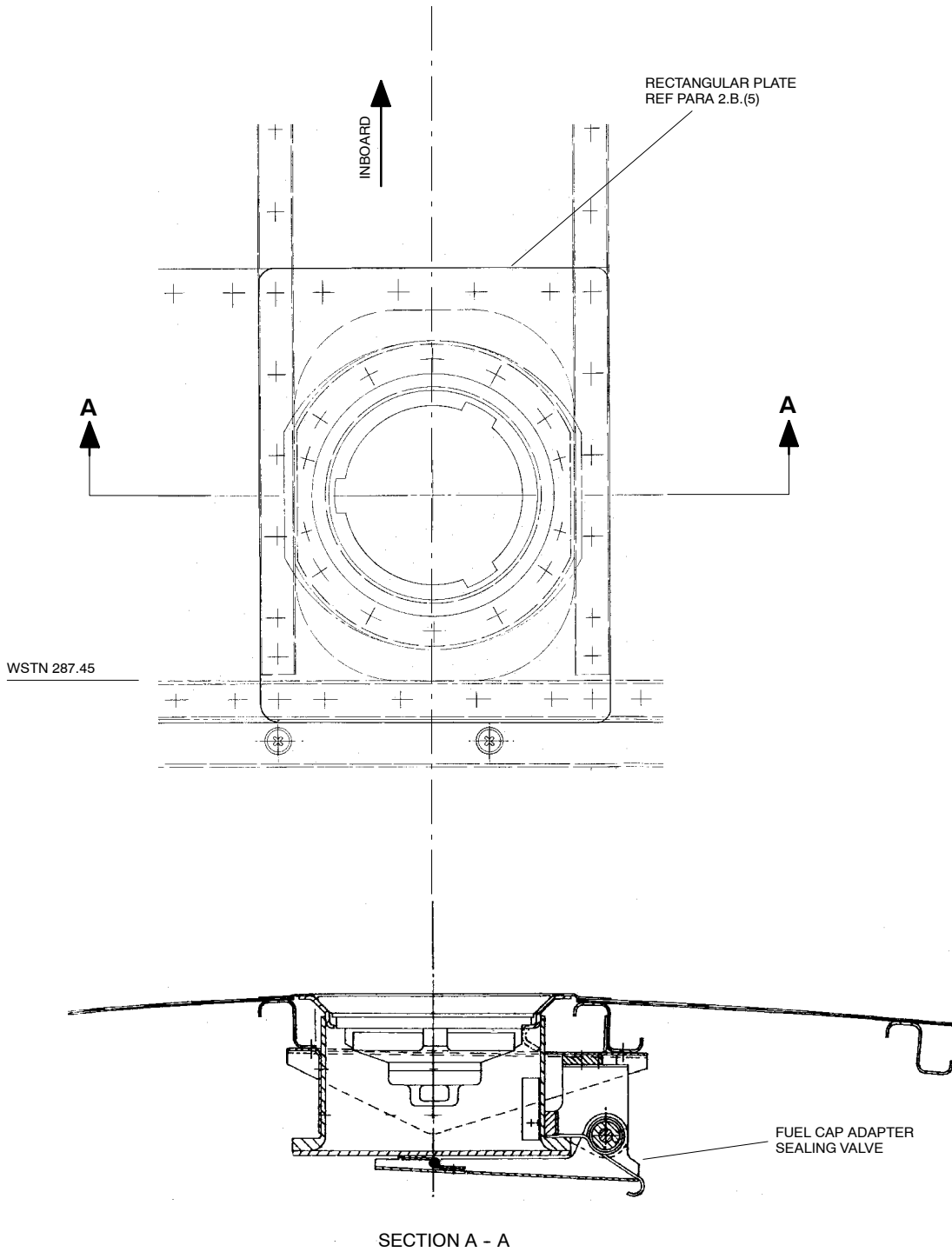


Figure 2 Fuel Cap Adapter (Sealing Valve)

24 June 2005

Nomad

SERVICE BULLETIN

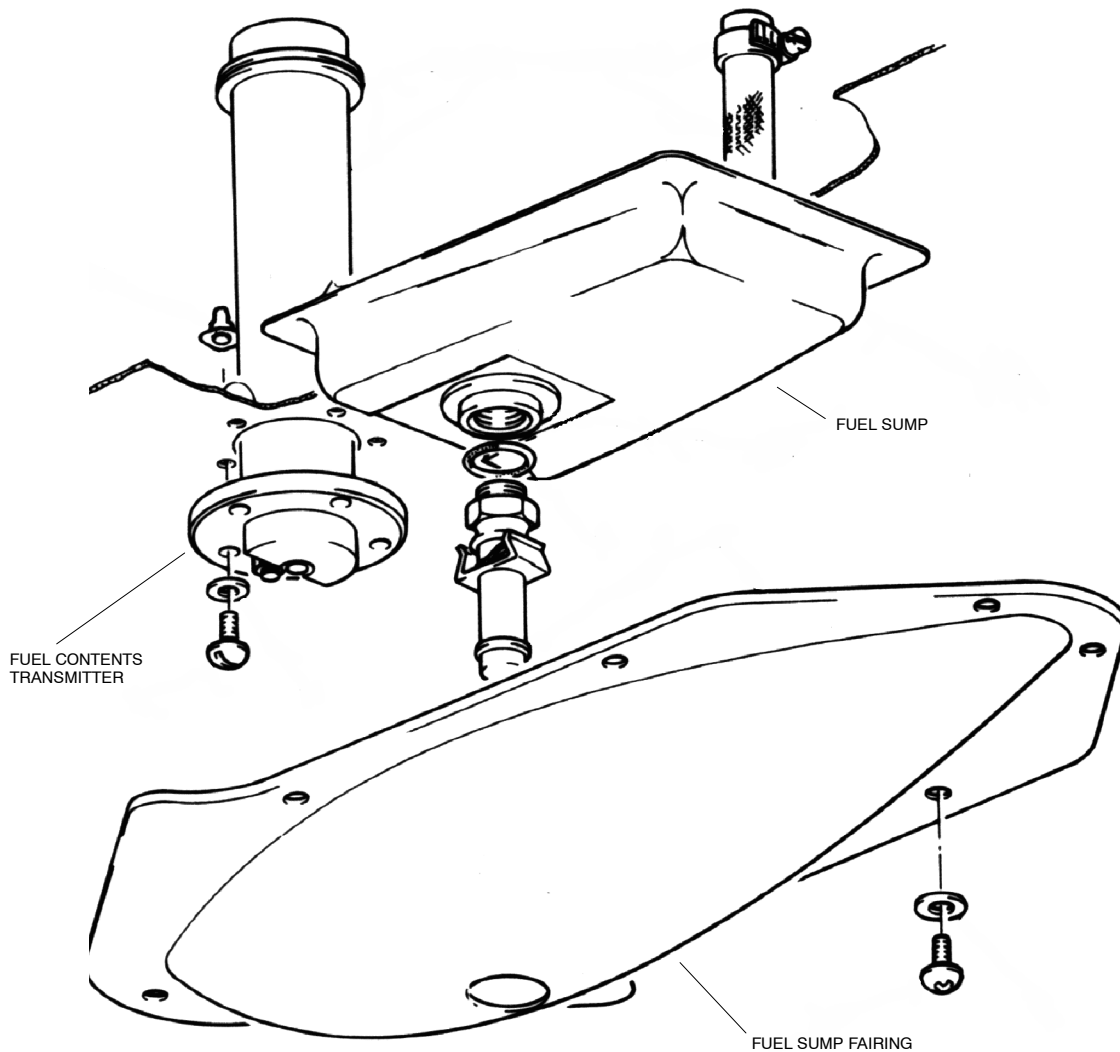


Figure 3 Fuel sump, Fairing and Contents Transmitter details

24 June 2005

Nomad

SERVICE BULLETIN

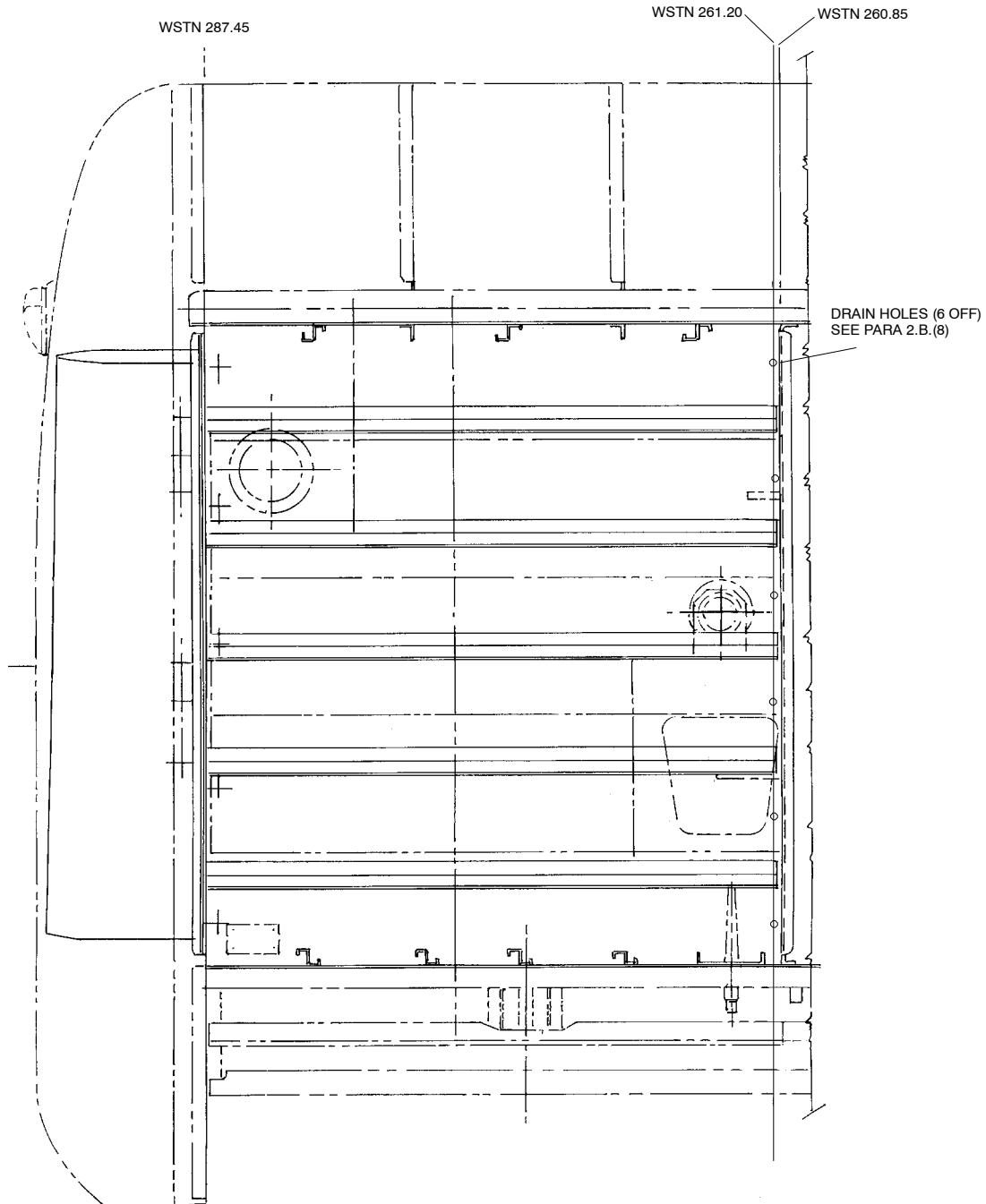


Figure 4 Tank Structure (viewed from above)

24 June 2005

Nomad

SERVICE BULLETIN

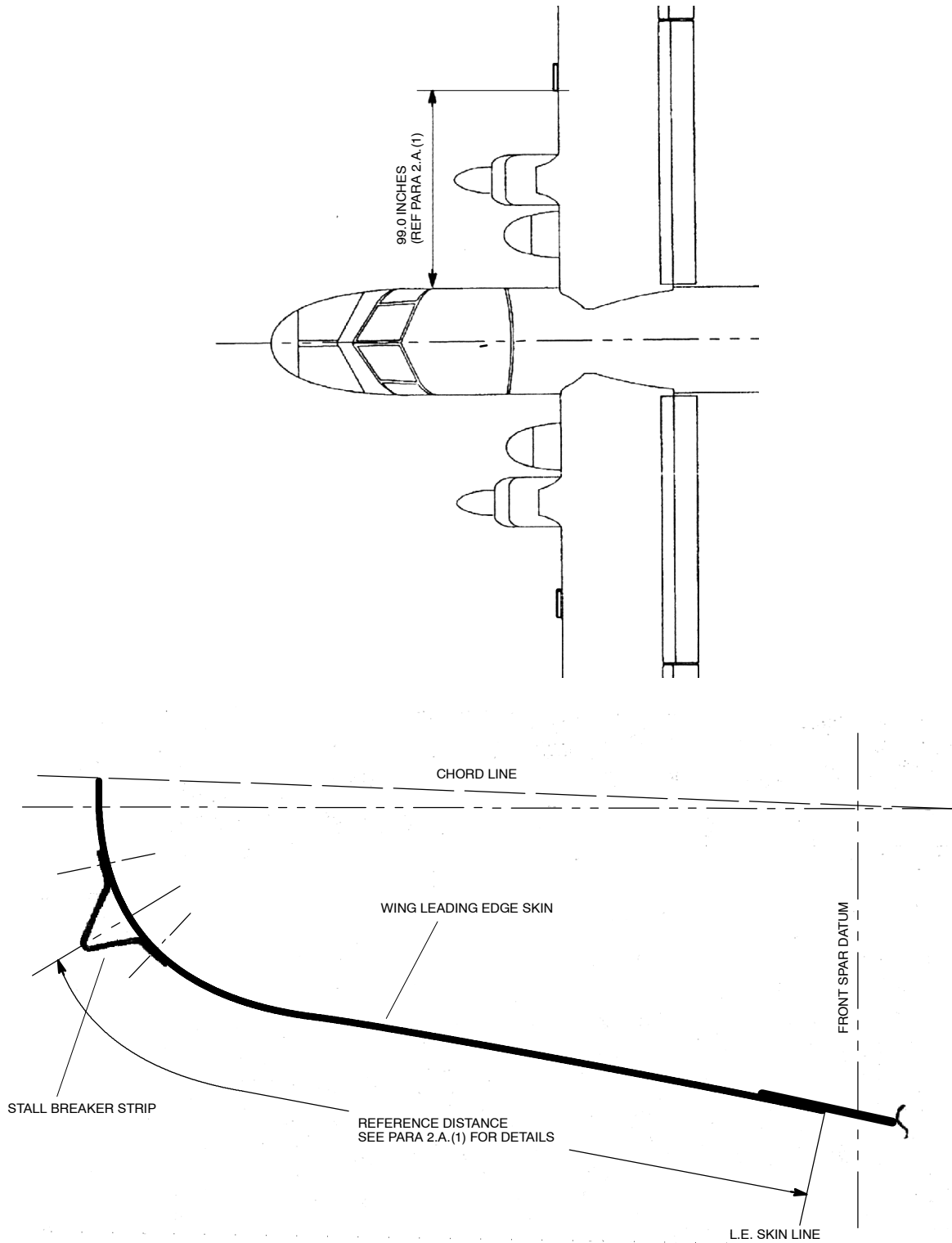


Figure 5 View Showing Stall Breaker Strip Location

24 June 2005

Nomad

SERVICE BULLETIN

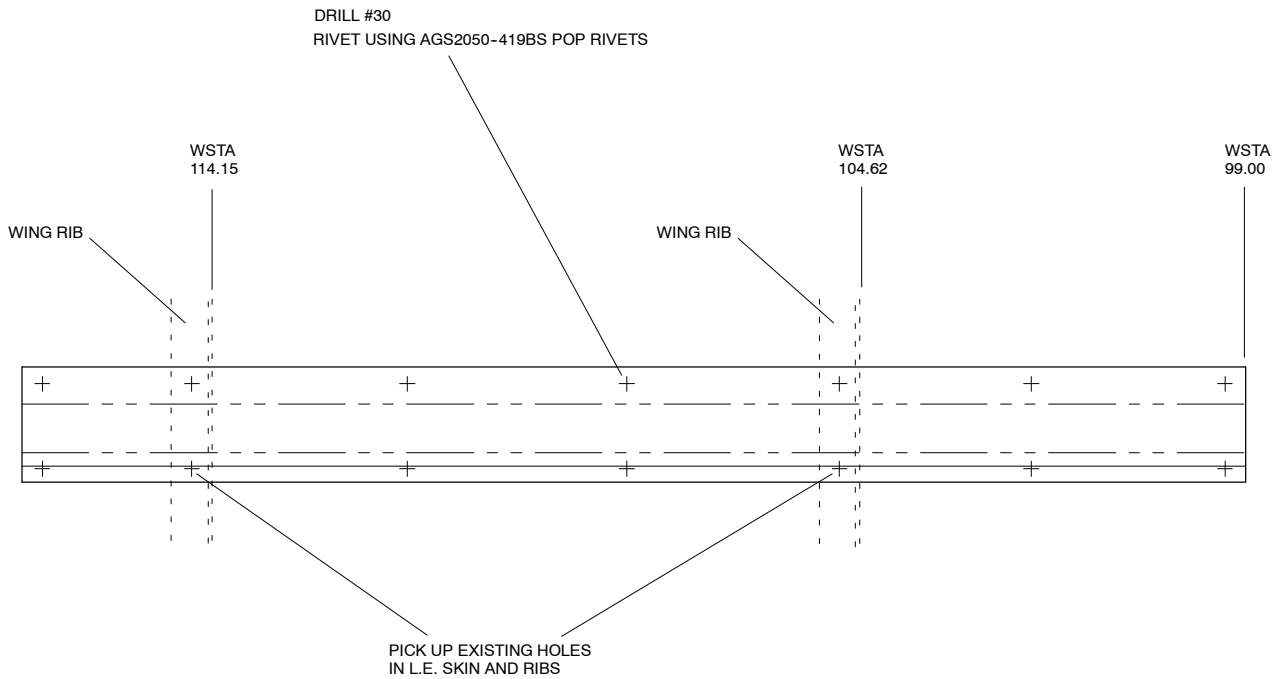


Figure 6 Detail of Stall Breaker Strip Attachment (RH Wing)

24 June 2005