

Nomad SERVICE BULLETIN

STRUCTURES GENERAL — FASTENERS — IMPROVED RIVETING OF SKINS (MODIFICATION N406 PART A)

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, 137, 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, 136, 139, 140, 142.

Pre-certification implementation of the intent of this Service Bulletin is recorded in the Airframe Log Book as Mod N406 Part A.

(2) Spares Affected

Nomenclature	Part Number	Recommended Disposition
N22/N22B/N24		
Wing	1/N-20-651/652	Rework
Rudder	3/N-33-125	Rework
Aileron	1/N-24-101/102	Rework
Rear Flap	1/N-24-103/104	Rework
Landing Gear Pod	1/N-11-601/602	Rework
N24A		
Wing	201/N-20-1000/1001	Rework
Rudder	201/N-33-185	Rework
Aileron	1/N-24-139/140	Rework
Rear Flap	1/N-24-141/142	Rework
Landing Gear Pod	1/N-40-912/913	Rework

Page No	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Rev No	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3

Nomad

SERVICE BULLETIN

B. Reason

A modification program has been undertaken to improve the durability of the riveting associated with the use of AGS 2050 type rivets, countersunk rivets in thin skins, and skin panel flexing.

Reason For Revision 2

List of affected N22 aircraft revised. Reference to certification of the intent of this Service Bulletin in the Log Book is revised. Reference to aircraft fitted with de-icing boots included. Doubler plate part numbers 1J/N-72-50 and 1D/N-72-52 added. Minor amendments to illustrations.

Reason For Revision 3

Part 5 has been deleted by revision 3, as the reinforcing plate (1A/NR11384) is removed by SB ANMD-53-15. Alternative parts listed for Doubler Plates 1AB/N-03-597. Title corrected to ATA 100 format. Material price and availability details changed.

C. Description

- (1) The wings, rudder, flaps, flap/ailerons and landing gear pods have many of the AGS 2050 type rivets replaced by solid and cherry type rivets.
- (2) Access panels have been incorporated to permit the installation of these new rivet types in the wings.

D. Compliance

- (1) Existing rivets found loose are to be replaced with types specified herein.
- (2) It is recommended that on receipt of the modification kit, operators instigate a progressive accomplishment program based on the periodic inspection period (100 hourly), to complete the modification before the aircraft achieves a further 500 hours in service.
- (3) The progressive accomplishment programs should be implemented in the following order of priority:
 - (a) Wing spar and leading edge in the propeller wash zone, areas C and D of the table in Figure 1.
 - (b) Rudder - Para L Part 2.
 - (c) Flap and Flap/Ailerons - Para L Part 3.
 - (d) Landing Gear Pod - Para L Part 4.
 - (e) Remainder of Wing - Para L Part 1.
- (4) Aircraft fitted with de-icing boots will not require replacement of rivets under the boots until the next boot removal.

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SERVICE BULLETIN

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**

160 man hours (minimum team of 2 men).

G. **Material Price and Availability**

Price and availability of parts will be provided by Boeing Aerospace Support - ASTA upon request.

H. **Tooling, Price and Availability**

Standard workshop equipment.

I. **Weight and Balance**

Negligible effect on aircraft balance.

J. **References**

IPC - Illustrated Parts Catalogue

MM - Maintenance Manual

SRM - Structural Repair Manual

K. **Publication Affected**

Illustrated Parts Catalogue.

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Part 1 - Wings (Mod N389).**

General Note:

On the undersurface of the wings AGS 2050 rivets in the designated areas (Ref Fig 1) are replaced on a size-for-size basis with those nominated in Figure 1. Aircraft not fitted with the airframe de-icing option G18 (N22 Series) or G18-24 (N24 Series) and auxiliary fuel tank option G99 will require access panels to be installed in the wings to facilitate the rivet replacement. Solid rivets should be used in preference to cherry rivets, where access panels make this possible.

The accomplishment of this section of the modification may be broken into a series of work packages to enable the implementation to be spread over a number of inspection periods.

Nomad

SERVICE BULLETIN

- (1) Shore the aircraft (Ref MM 7-00-00 Maintenance Practices).

NOTE

If the nominated support stands are not available support the aircraft as detailed in the procedure using felt covered contour boards manufactured from 2½ inch (65 mm) material.

- (2) Gain access to the interior of the landing gear pods by partially retracting the landing gear.
- (3) Disconnect the upper and lower LH wing lift strut fairings from the wing and stub wing respectively and slide the fairings towards the centre of the strut.
- (4) Remove the LH wing to strut attachment bolt (Ref IPC 57-40-01 Figure 1 item 15) and lower the outer end of the lift strut sufficiently to permit access to the LH lower wing spar cap rivets between WSTA 115.4 and WSTA 134.93.



THE DISTANCE THE STRUT MAY BE LOWERED WILL BE LIMITED BY THE LANDING GEAR POD CUT OUT. TIE THE STRUT TO THE WING TIE DOWN FITTING TO HOLD IT IN THIS POSITION AS ANY OVERTRAVEL COULD DAMAGE THE STRUT TO STUB WING END FITTING AND/OR THE POD CUT OUT SHEET METAL.

- (5) Replace the existing skin to spar cap AGS 2050 rivets as designated in Figure 1 on a size-for-size basis with the nominated cherry type rivets or the approved alternative (Ref Part 6).
- (6) Refit lift strut (Ref MM 57-00-00 Maintenance Practices, Page 207, steps (14) and (15)).
- (7) Repeat steps 3, 4, 5 and 6 for the RH wing.
- (8) Install access panels in the lower wing surface as detailed in Figures 1, 2, 3, 4, and 5. Use the relevant access door to locate the anchor nuts P/N MS21077-3K on the doubler. Attach the anchor nuts using MS20470AD3-3 rivets. In some instances the anchor nuts will have to be installed after the installation of the doubler. Rivet the doublers in place using MS20470AD4-3 rivets into the skin areas and MS20470AD5-7 rivets into the spar caps. Wet assemble all doublers using barium chromate pigmented jointing compound or equivalent.
- (9) Replace the existing AGS 2050 pop rivets, as designated in Figure 1 that are accessible through the access panels, with solid rivets P/N MS20470AD on a size-for-size basis. Replace the other rivets designated in Figure 1 with the specified cherry type rivet or the approved substitute (Ref Part 6).
- (10) Remove all rivet tails from the interior of the wing.
- (11) Apply a bead of sealing compound type PR 1422 or PR 1440 or equivalent on each access panel doubler and spread to form a gasket using the process detailed in Figure 1.
- (12) Install the applicable access panels as detailed in Figure 1 using screws P/N MS27039.

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B. Part 2 - Rudder (Mod N399)

Replace the AGS 2050 pop rivets with CR 3223 cherry rivets or the approved substitute (Ref Part 6) on a size-for-size basis on and between rudder ribs between WLs 192.65 and 140.56 as shown in Figure 6 using the following procedure:

- (1) Rework only one face of the rudder at a time.
- (2) On the face being reworked (with the exception of the trailing edge between WLs 165.95 and 192.65 (Ref NOTE following step (4)) remove every second rivet and install the replacement cherry rivets.
- (3) After accomplishment of step (2) remove remaining AGS 2050 pop rivets from the face being reworked and install the replacement cherry rivets.
- (4) Repeat the rivet replacement procedure for the other face of the rudder.

NOTE

- Along the trailing edge between WLs 165.95 and 192.65 ensure that the cherry rivets are installed opposite the AGS 2050 pop rivets on the first reworked face to obtain tail clearance between the two rivets (Ref Fig 6, Detail A-A and Scrap View on B).
- If either of the lower skins (between WLs 110.38 and 165.95 is removed to carry out other repairs, the AGS 2050 pop rivets in the installed lower skin may be replaced with solid rivets P/N MS20470AD on a size-for-size basis. The removed skin is to be installed using CR 3223 cherry rivets or the approved substitute (Ref Part 6) on a size-for-size basis.

WARNING

REFER TO MANUFACTURER'S HANDLING INSTRUCTIONS WHEN USING SOLVENT.

NOTE

The blue strippable coating should have been removed from the skin lap joints during the original assembly. It is unlikely that the coating has been left in the joint, however, if found to be present remove using Methyl Ethyl Ketone (MEK) or acetone solvent prior to the re-riveting. Treat any bare metal faces with barium chromate pigmented jointing compound before riveting together. To accomplish this task it may be necessary to release sufficient rivets in a line to gain access to the joint faces without stretching the skin.

- (5) Wet assemble all rivets using barium chromate pigmented jointing compound or equivalent.
- (6) Remove all rivet tails from the rudder interior.

C. Part 3 - Flaps and Flap/ Ailerons (Mod N400)

- (1) Remove the flaps (IPC 57-52-00 Figure 1 items 2 and 3) and flap/aileron (IPC 57-50-00 Figure 1 Items 2 and 3). (Ref MM 57-50-00 Maintenance Practices).

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SERVICE BULLETIN

- (2) Replace the AGS 2050 pop rivets in the lower flap and flap/aileron panel surface as designated in Figure 7 with CR 3223 cherry rivets or the approved substitute (Ref Part 6) on a size-for-size basis.

WARNING

REFER TO MANUFACTURER'S HANDLING INSTRUCTIONS WHEN USING SOLVENT.

NOTE

The blue strippable coating should have been removed from the skin lap joints during the original assembly. It is unlikely that the coating has been left in the joint, however, if found to be present remove using MEK or acetone solvent prior to the re-riveting. Treat any bare metal face with barium chromate pigmented jointing compound before riveting together. To accomplish this task it may be necessary to release sufficient rivets in a line to gain access to the joint faces without stretching the skin.

- (3) Wet assemble all rivets using barium chromate pigmented jointing compound.
- (4) Remove all rivet tails from the interior of each panel assembly.
- (5) Refit flaps and flap/ailerons (Ref MM 57-50-00 Maintenance Practices).

D. Part 4 - Landing Gear Pod (Mod N419)

Reinforce the LH and RH main landing gear pivot access panel cut outs (IPC 53-16-01 Figure 3 items 13 and 14) using the following procedure:

- (1) Remove the aft fibreglass pod fairings to gain access to the aft section of the landing gear pods.
- (2) Install the reinforcing angles P/N 1E/N-03-595 and 1B/N-03-595 as detailed in Figure 8.
- (3) Refit the aft pod fairings reinforcing the attachment rivets using the 0.040 in metal strap as detailed in Figure 8 view X-X. Attach the fairing using solid rivets P/N MS20470AD-4 where possible. CR 3223 cherry rivets or the approved substitutes may also be used.

NOTE

Some sections of this reinforcing modification have been embodied during production.

E. Part 5 - Deleted

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SERVICE BULLETIN

F. Part 6 - Alternative Rivets

The following rivets are approved alternatives to the blind rivets specified in this bulletin and may be substituted as permitted in the instructions on a size-for-size basis. The manufacturer's drill size and rivet length data must be observed.

Nominal	Oversize
CR 3213*	CR 3243*
CR 3223	CR 3253
NAS 1738B	
NAS 1738E*	
NAS 1738MW	
*Stem requires protective treatment - e.g. paint	

3. MATERIAL INFORMATION

A. Parts Required Per Aircraft

Part Number	Quantity	Nomenclature
WINGS (N389)		
1AB/N-20-709	5	Access door
1D/N-20-615	6	Access door
1C/N-20-615	2	Doubler plate
1D/N-20-781	4	Doubler plate
1E/N-72-50	1	Doubler plate
1J/N-72-50	1	Doubler plate
1D/N-72-52	1	Doubler plate
1A/N-03-597 (Alternative 1B/N-20-869)	1	Doubler plate
1B/N-03-597 (Alternative 1C/N-20-869)	1	Doubler plate
MS21077-34	66	Anchor nut
MS21059-3K	Alternative	Anchor nut
MS35207-262	66	Screw
MS27039-1-08	Alternative	Screw
Landing Gear Pod (N419)		
1A/N-03-595	2	Packer
1B/N-03-595	2	Angle
1C/N-03-595	2	Strip
1D/N-03-595	2	Cleat
1E/N-03-595	2	Angle
Rudder (N399)	Kit is made up of rivets only	
Flaps and Flap/Ailerons (N400)	Kit is made up of rivets only	

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SERVICE BULLETIN

B. Parts Required for Modify Spares

Nil.

C. Parts Removed

Nil.

D. Special Tools and Equipment

Nil.

E. Superseded Special Tools

4. RECORDING ACTION

Record compliance with modification N406 Part A in the airframe log book.

NOTE

Part B of this modification is incorporated with the intent of SB NMD-55-5 Revision 2. Production incorporation of mod N406 Part A will be detailed as mods N389, N399, N400, N419 in the airframe log book on the delivery of the aircraft from the manufacturer.

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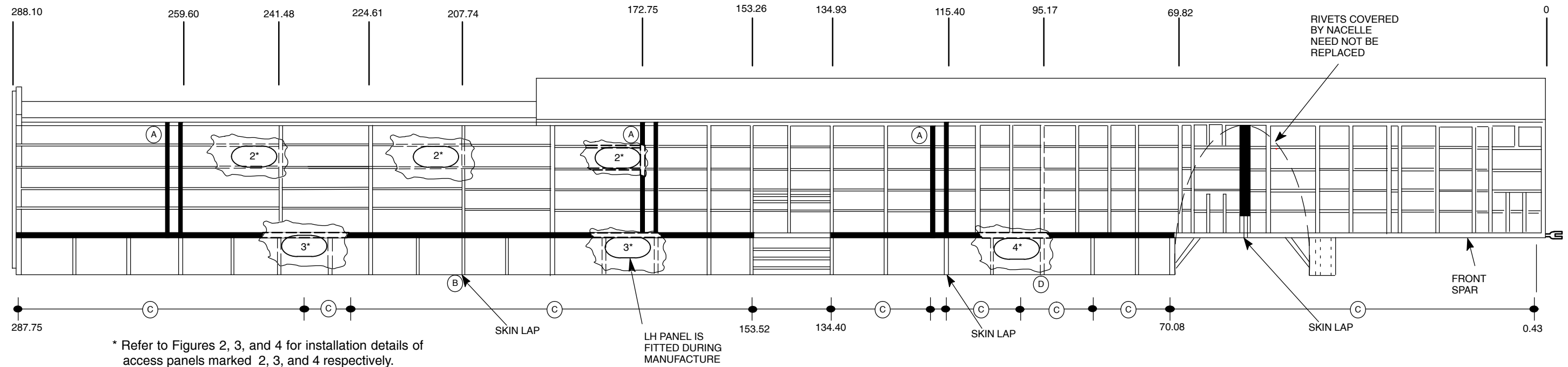
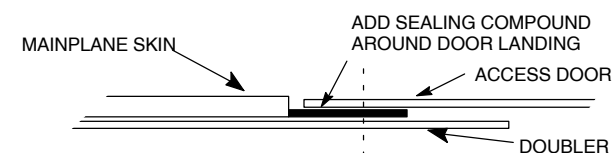


ILLUSTRATION SHOWS UNDERSIDE OF THE LEFT WING

NOTE

- Outer skin removed for clarity.
- Where accessible through access panels outboard of WSTA 114.15, pop rivets AGS2050-4-BS may be replaced with solid rivets MS20470AD-4-(4), (5), & (6) in lieu of Cherry or Cherry Max rivets.
- CR3213, CR3243 and NAS1738E have alloy steel stems and require painting to prevent corrosion.
- Rivet quantity and length are indicative of those used on current production wings retro-fitted by this instruction. Variations from wing to wing may occur. Ensure correct length with rivet gauge.
- Assembly notes:
 - Wet assemble all components with jointing compound.
 - Prime and paint to suit aircraft.
 - Seal all access holes using PR1422 or PR1440.



- Apply wax release agent OP QV10 or QZ11B (CIBA GEIGY) over door contact area.
- Close doors to approx 0.020 in from fully closed position. Leave in this position to cure.
- When finally cured, trim sealing compound to suit. Close doors fully.

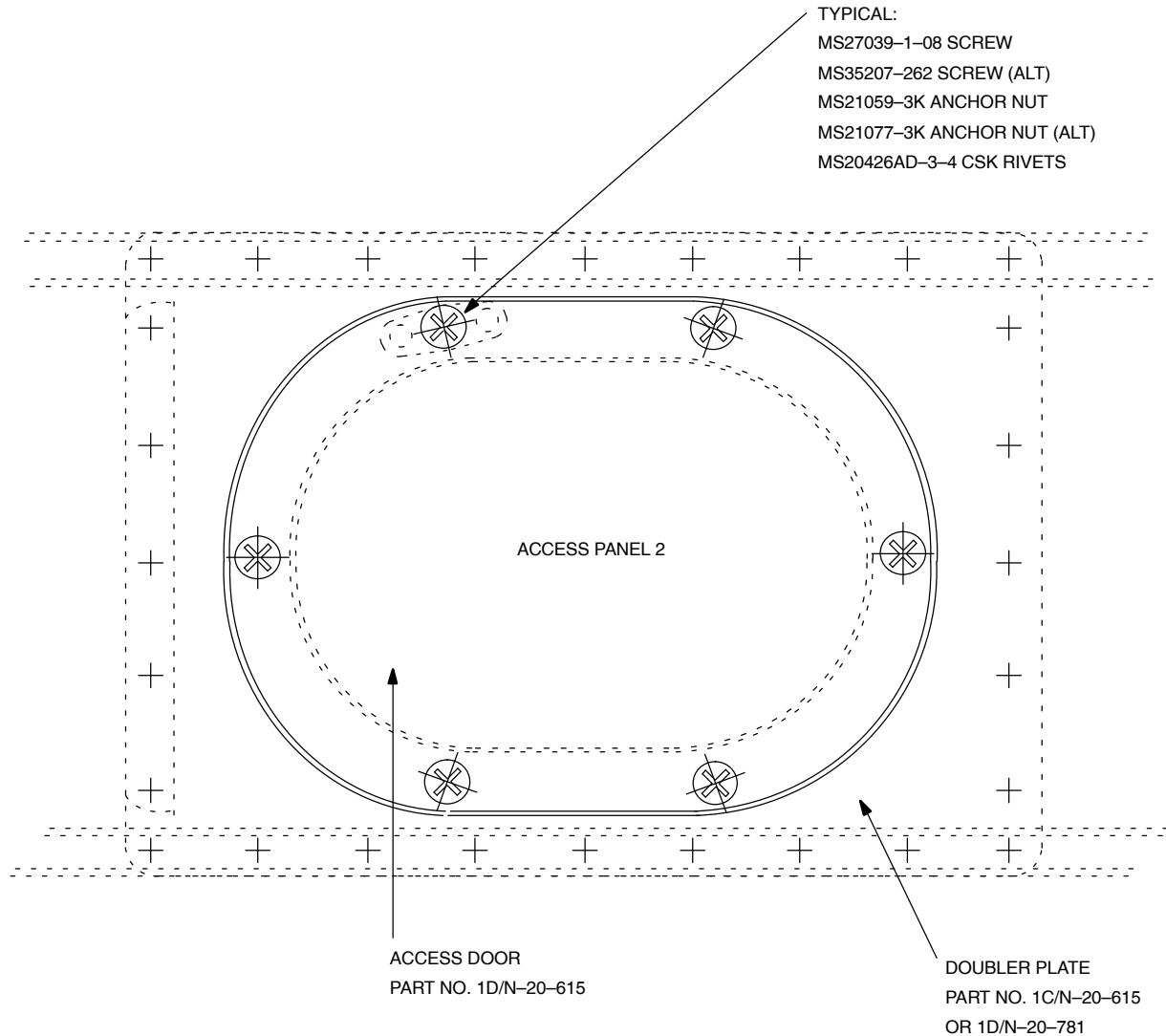
CODE	AREA	STATION POINT LOCATION	RIVET SPEC	QTY
(A)	RIVET SKINS TO DOUBLE RIB	115.40, 172.75, 259.60	CR3253-4-2	108
		172.75	CR3253-4-3	8
(B)	RIVET SKIN TO RIB	AT SKIN LAP 207.72	CR3253-4-2	51
(C)	RIVET SKINS TO SPAR	287.75 TO 247.40	CR3253-5-3	29
		245.99 TO 226.13	MS20470AD5-7	19
		224.91 TO 213.64	CR3253-5-3	9
		212.24 TO 191.17	CR3253-5-4	20
		190.06 TO 162.66	MS20470AD5-7	27
		161.64 TO 153.52	CR3253-5-4	9
		134.30 TO 114.45	CR3253-5-4	32
		113.66 TO 85.92	MS20470AD5-7	36
		85.12 TO 70.08	CR3253-5-4	20
		0.43	CR3253-5-4	1
(D)	RIVET L.E. SKIN TO L.E. RIB (FROM TOP TO BOTTOM)	ABOVE WING STATION 95.17	MS20470AD4-3	19
THE FOLLOWING RIVETS IN ORDER OF PREFERENCE MAY BE USED CR3243, NAS 1738E, NAS 1738B OR NAS 1738MW				

Figure 1 Underside of the Left Wing

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PICK UP EXISTING RIVET LOCATION.
REPLACE POP RIVETS WITH MS20470AD4-3 AND 4-4 AS REQUIRED.
DOUBLER PLATES TO BE INSERTED BETWEEN SKIN AND STRINGERS.
DOUBLERS MAY BE TRIMMED TO ACCOMMODATE LENGTH.



NOTE: AT WSTA 172.75 USE DOUBLER PLATE 1C/N-20-615
AT WSTA 207.74 AND WSTA 241.48 USE 1D/N-20-781.
EDGE TRIMMING OF DOUBLER PLATE IS PERMISSIBLE.

Figure 2 Access Panel 2

27 November 1979
Rev 3 21 Feb 2000

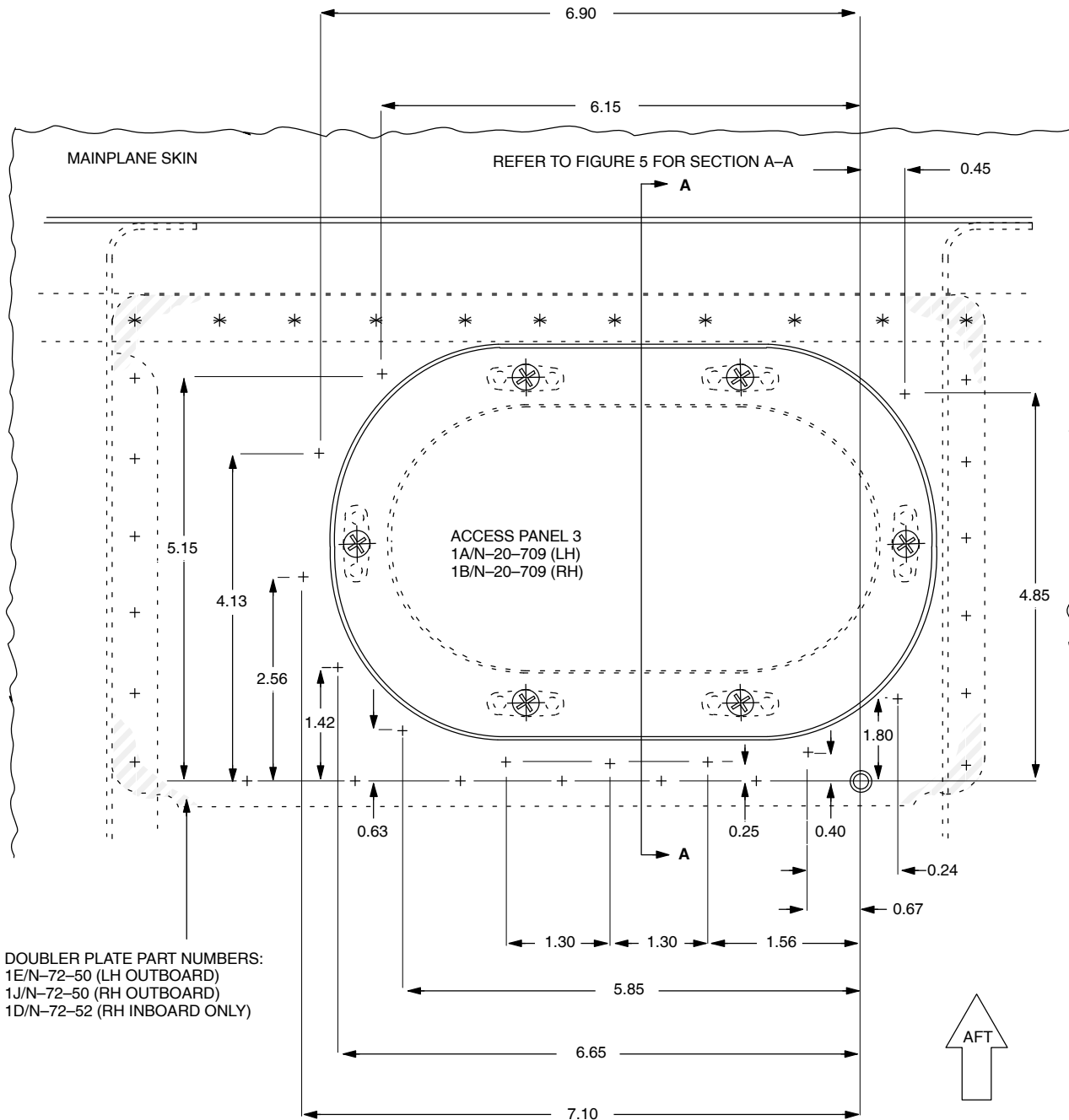
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Page 11 of 17

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PICK UP EXISTING RIVET LOCATIONS AS SHOWN.
DOUBLER PLATES TO BE INSERTED BETWEEN SKIN AND STRINGERS.
DOUBLERS MAY BE TRIMMED TO ACCOMMODATE LENGTH.

USE MS20470AD4-3 AND 4-4 RIVETS AS REQUIRED

ALL DIMENSIONS IN INCHES

Figure 3 Access Panel 3

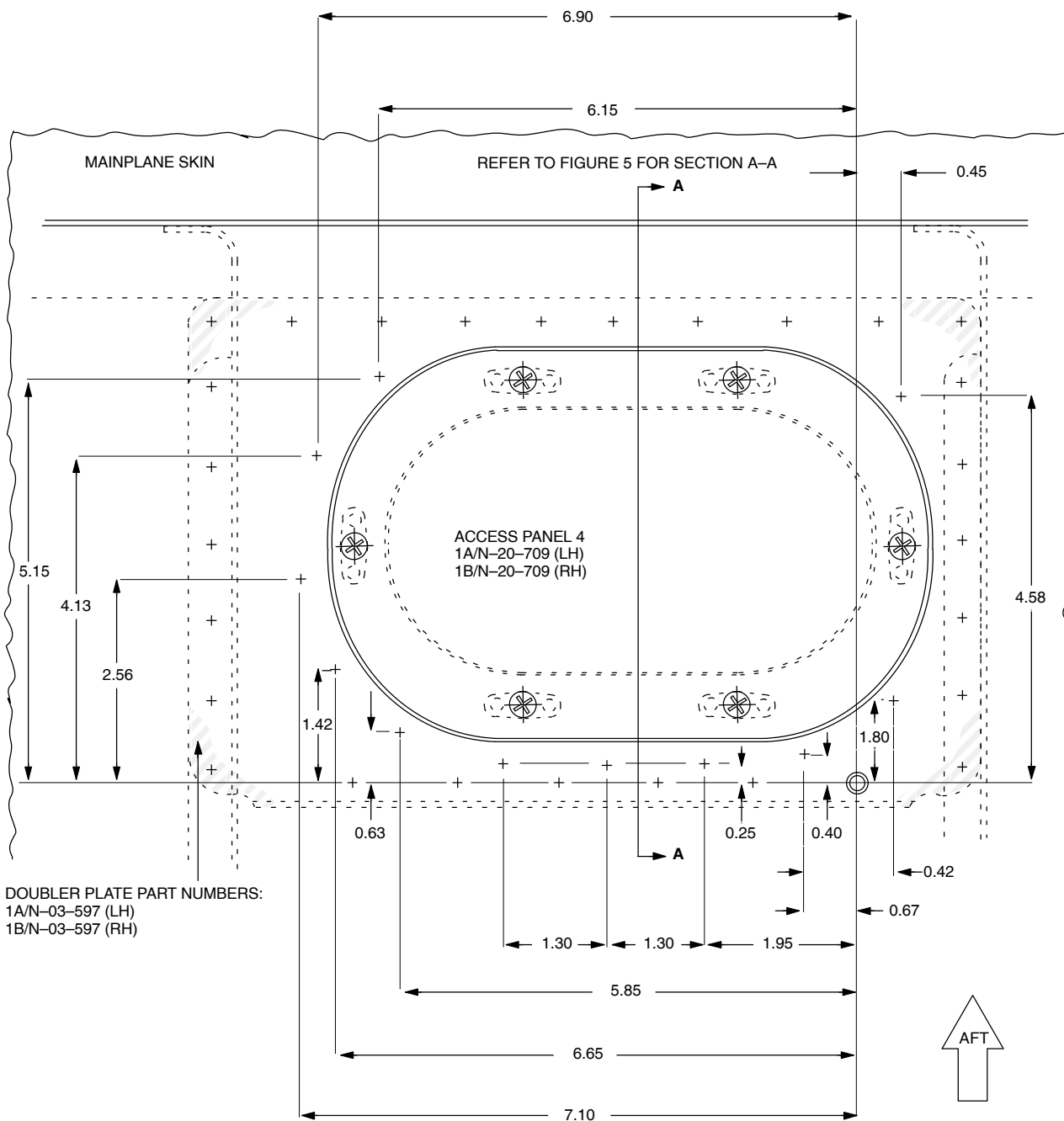
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NMD-51-1
Page 12 of 17

Nomad

SERVICE BULLETIN



PICK UP EXISTING RIVET LOCATIONS AS SHOWN.
DOUBLER PLATES TO BE INSERTED BETWEEN SKIN AND STRINGERS.
DOUBLERS MAY BE TRIMMED TO ACCOMMODATE LENGTH.

USE MS20470AD4-3 AND 4-4 RIVETS AS REQUIRED

ALL DIMENSIONS IN INCHES

Figure 4 Access Panel 4

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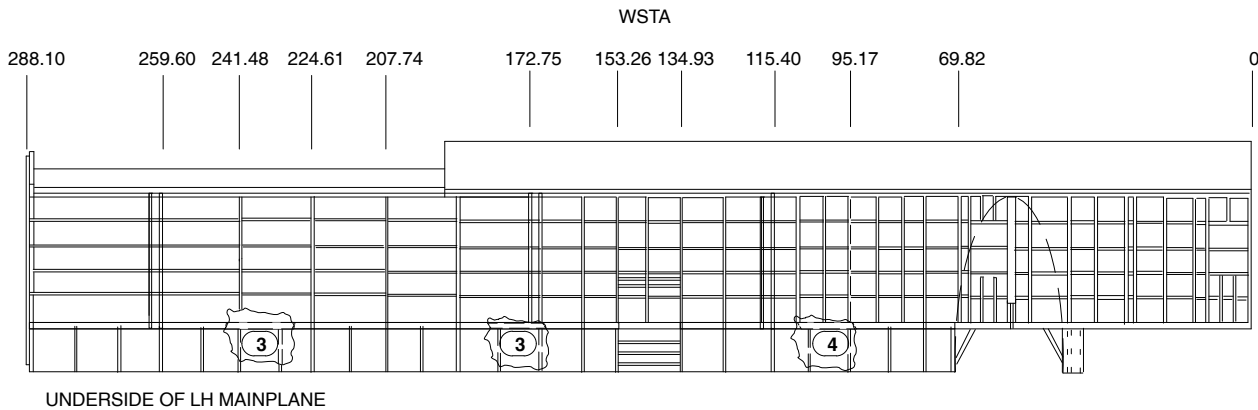
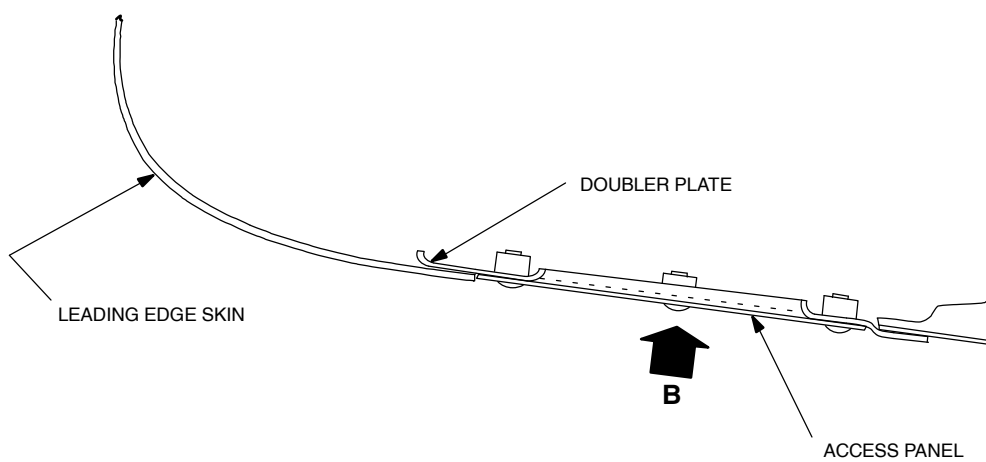
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Page 13 of 17

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SERVICE BULLETIN



VIEW ON ARROW B SHOWING LOCATION OF LEADING EDGE ACCESS PANELS

Figure 5 Access Panel Section A-A

27 November 1979
Rev 3 21 Feb 2000

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NMD-51-1
Page 14 of 17

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IN SHADED ZONE REPLACE POP RIVETS WITH CHERRY RIVETS
CR 3223-4-1 AND CR 3223-4-2 WET ASSEMBLE USING JOINTING
COMPOUND.

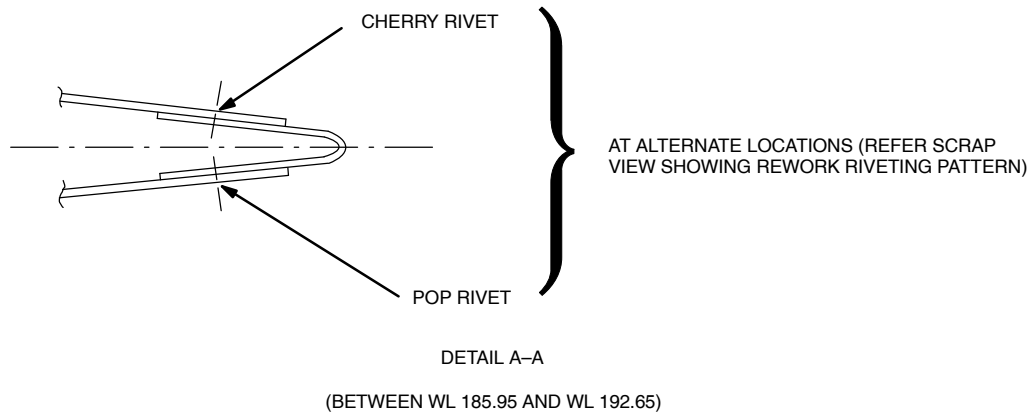
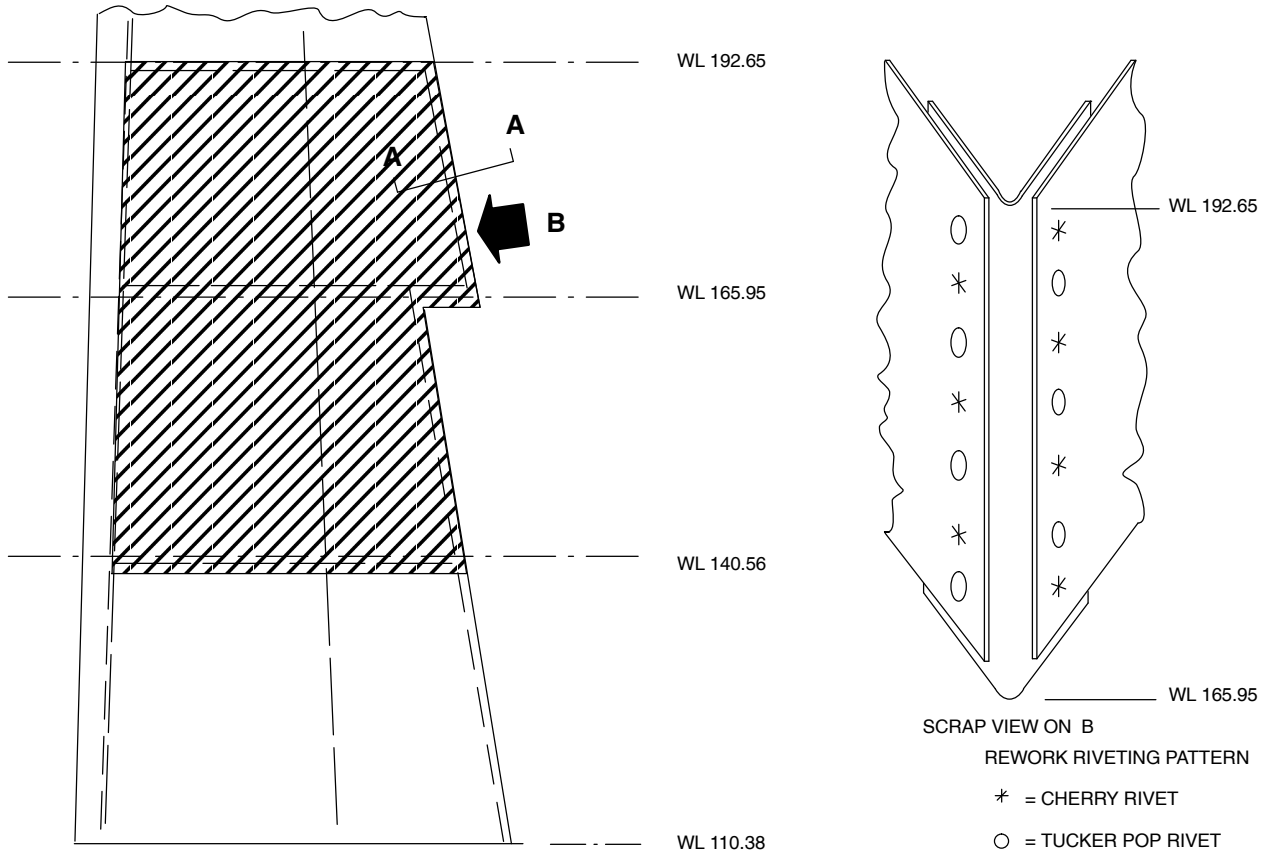


Figure 6 Rudder Skin Rework

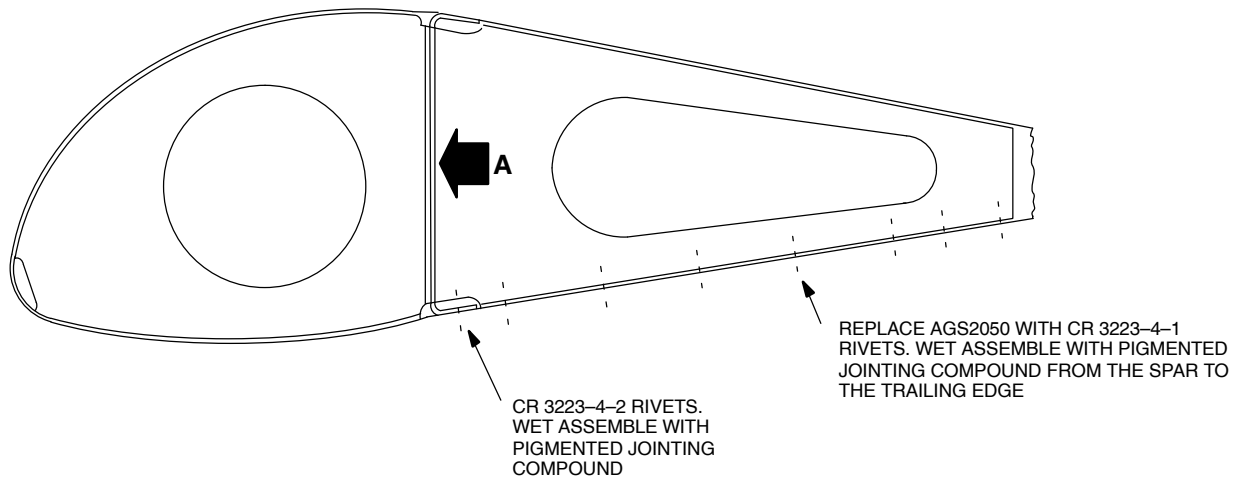
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Rev 3 21 Feb 2000

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NMD-51-1

Page 15 of 17

Nomad SERVICE BULLETIN



TYPICAL RIVET CALL-UP: SKIN TO RIB AND SKIN TO BOOM

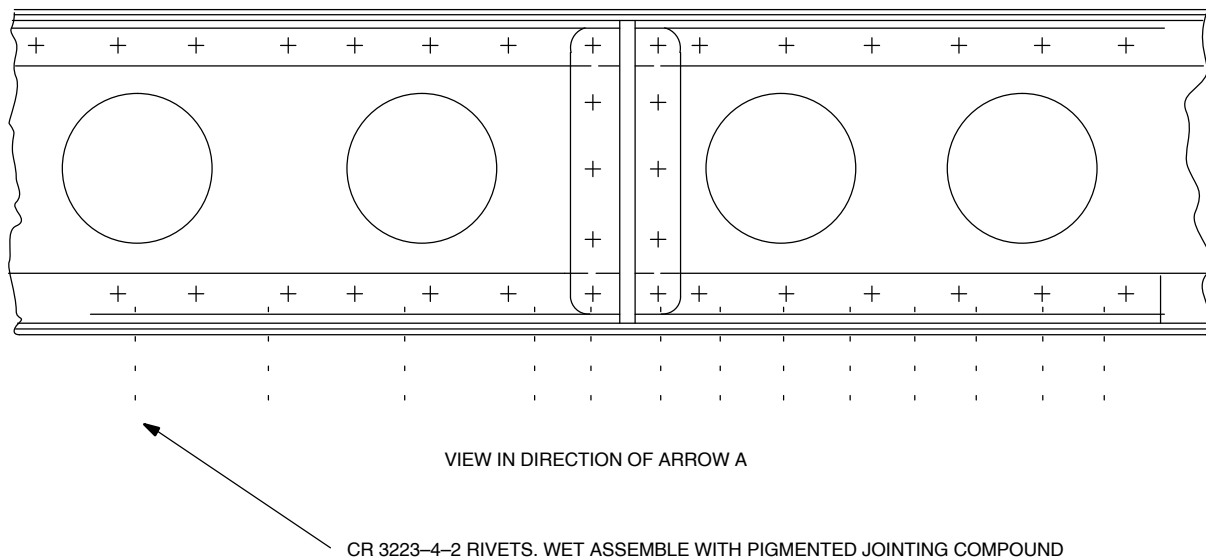


Figure 7 Flap and Flap/Aileron Skin Rework

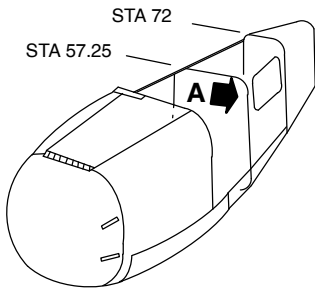
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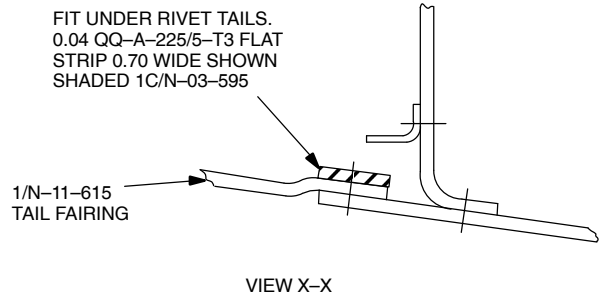
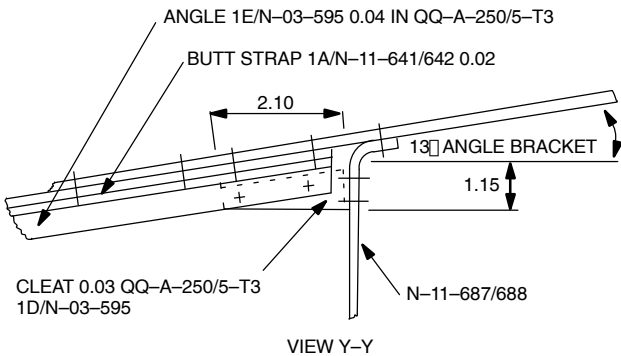
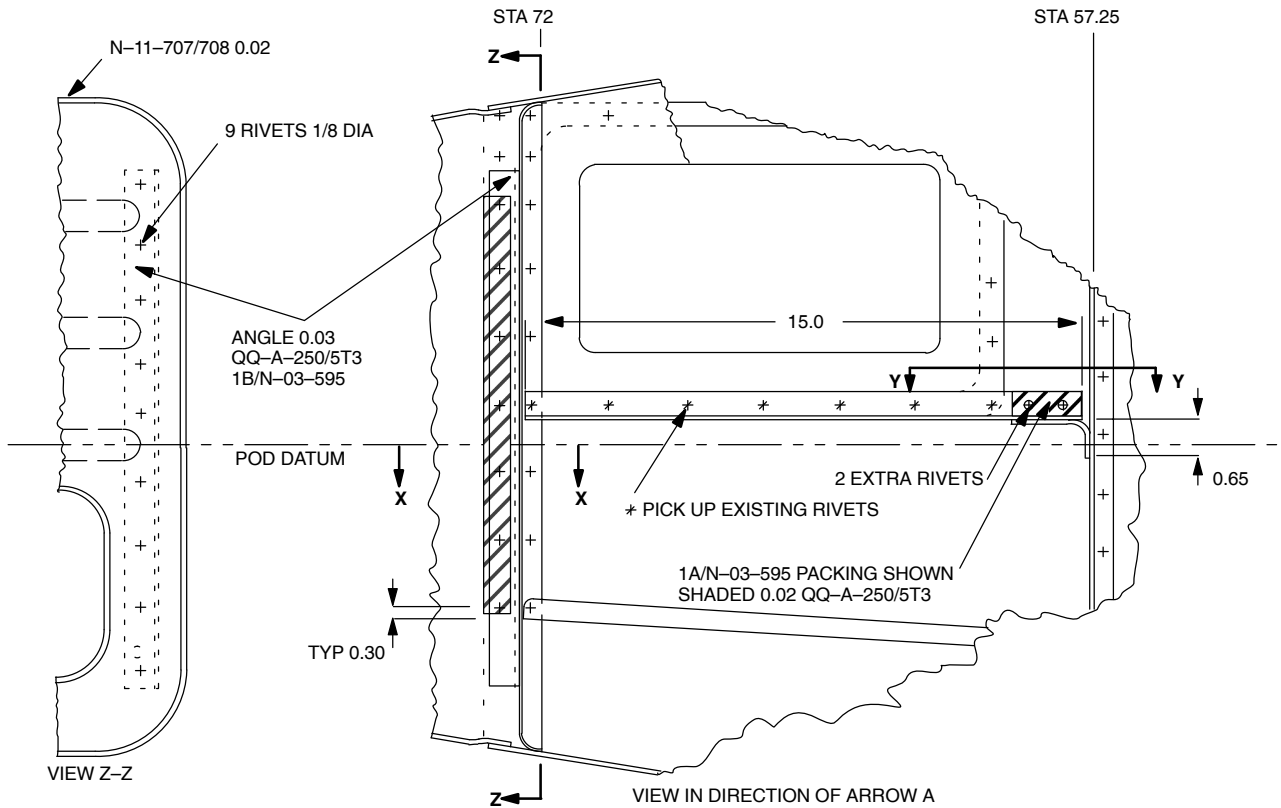
NMD-51-1
Page 16 of 17

Nomad

SERVICE BULLETIN



WHERE POSSIBLE USE MS20470AD 1/8 DIAMETER RIVETS, IF NOT ACCESSIBLE USE AGS 2050 1/8 DIAMETER POP OR MS20600AD 1/8 BLIND RIVETS.



DIMENSIONS IN INCHES

Figure 8 Landing Gear Pod Skin Rework

27 November 1979
Rev 3 21 Feb 2000

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NMD-51-1

Page 17 of 17