Nomad
SERVICE BULLETIN

FUSELAGE — STUB WING — STRUT PICK-UP FITTING — FATIGUE CRITICAL INSPECTION

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, 63, 65 to 70, 82, 84 to 88, 90 to 95, 97, 100, 102 to 104, 106, 108 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.

(c) Note that aircraft modified in accordance with Wipline STC No SA428GL (Floatplane) have a different strut pick-up fitting which is not addressed by this Service Bulletin,and those aircraft known to have been modified are excluded from the serial number applicability above.

(d) Note that aircraft fitted with 1st oversize bolt through strut pick-up fitting per Service Bulletin NMD–53–14, require approval from ASTA Engineering prior to replacement of strut pick-up fittings per Para 2.D.

B. Reason

(1) Revision 5 to IRM introduces a series of inspections in fatigue critical areas. One of these inspections is for the stub wing strut pick-up fitting which requires the removal and replacement of the steel bushes installed in the strut pick-up fitting. Removal and installation of these bushes is carried out using a special tool.

(2) Reason for Revision 1

Revised accomplishment instructions for disassembly to cover removal of landing gear and pod to gain access to the strut pick-up fitting. Cautions on use of adjustable spacer clarified. Requirement for pick-up fittings to be replaced as a pair included in the inspection paragraph. Caution covering reassembly of the new bush clarified. Reassembly procedure amended to cover installation of pod and landing gear components. Material Information revised. Effectivity changed to indicate aircraft line sequence numbers and note referring to 1st oversize bolts added.

C. Description

The steel bushes are to be removed from the stub wing strut pick-up fittings using the special tool (Kit PN NMD–53–18–1) and the holes in the stub wing strut pick-up fitting inspected in accordance with IRM Part 4. Following inspection, new bushes are fitted using the same special tool and line reamed to suit the attachment bolts.

This inspection replaces the 300 hourly visual inspection required in NMD–5–1.

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D. **Compliance**

(1) Compliance with this Service Bulletin is mandatory.

(2) For aircraft with less than 5400 hrs TTIS:

Perform inspection at or before 5400 hrs TTIS and repeat every 1800 hrs TIS thereafter.

(3) For aircraft with more than 5400 hrs TTIS:

Perform inspection at next 300 hourly inspection and repeat every 1800 hrs TIS thereafter.

(4) For aircraft with strut pick-up fitting replaced as a result of this Service Bulletin:

Perform inspection of new fittings after 5400 hrs TIS since replacement and repeat every 1800 hrs TIS thereafter.

E. **Approval**

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

F. **Manpower**

(1) Inspection 16 man-hours

(2) Replacement 80 man-hours

G. **Materials Price and Availability**

Contact Boeing Aerospace Support - ASTA Customer Spares for price and availability of parts.

H. **Tooling Price and Availability**

(1) Special tool kit PN NMD-53-18-1 and the special piloted reamers PN 1/N-88-264, 1/N-88-267, 5/N-88-267 and 6/N-88-267 specified in this Service Bulletin are available for purchase or on lease from Boeing Aerospace Support - ASTA. Cost available on application.

(2) Locally obtain 39/64 in standard hand reamer and 0.75 in dia dowel pin (Ref Fig 3 and Para 3.B.(4)).

(3) 1/4 in, 5/16 in and 3/8 in standard hand reamers are to be locally obtained if required.

NOTE

Special piloted reamers PN 1/N-88-267, 5/N-88-267 and 6/N-88-267, the standard hand reamers specified in Figure 3 and 0.75 in dowel pin will only be necessary if the stub wing strut pick-up fittings are unserviceable (Ref Para 2.B.).

(4) Locally obtain drill bushes required for transfer of holes from old fitting to new fitting (Ref Fig 3).

I. **Weight and Balance**

None.

J. **References**

Inspection Requirements Manual Part 4 - Fatigue Critical Inspection.

K. **Publications Affected**

Structural Repair Manual.

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Disassembly for Inspection**

(1) Jack the aircraft until the wheels are clear of the ground and shore wings (Ref MM Chap 7–00–00).

(2) Trip the landing gear control and actuation circuit breakers and remove electrical power from the aircraft.

(3) Disconnect and remove main landing gear doors (Ref MM Chap 32–10–15).

(4) Remove upper and lower wing strut fairings (Ref MM Chap 57-40-00).

(5) Remove upper wing strut attachment bolt and support strut (Ref MM Chap 57-40-00).

(6) Remove lower wing strut attachment bolt. Remove strut by carefully withdrawing from pod.

(7) Assemble the bush extractor tool as shown in Figure 1 Operation 1.

CAUTION

- ENSURE THE EDGE OF THE ADJUSTABLE SPACER LINES UP WITH THE STRUT PICK-UP FITTING SO THE CAVITY OF THE SPACER ALIGNS WITH THE BUSHES.
- DO NOT OVERTIGHTEN THE ADJUSTABLE SPACER. IF THE STRUT PICK-UP FITTING FLANGES ARE FORCED APART, THEY MAY BE OVERSTRESSED.
- ENSURE THE ADJUSTABLE SPACER IS ADJUSTED TO SUPPORT THE STRUT PICK-UP FITTING FLANGES, AS THE BUSHES ARE REMOVED. IF BUSH REMOVAL CAUSES THE STRUT PICK-UP FITTING FLANGES TO BE FORCED TOGETHER, THEY MAY BE OVERSTRESSED.

(8) Position the adjustable spacer between the flanges of the strut pick-up fitting and adjust it (hand tighten only) to support the flanges while the bushes are withdrawn.

(9) Rotate the bolt while holding the nut stationary to extract forward bush.

(10) Disassemble the special tool and discard the bush.

(11) Reassemble the bush extractor tool as shown in Figure 1 Operation 2.

(12) Carry out steps (8) to (10) to remove the aft bush.

B. **Inspection**

(1) Clean hole bores with Scotchbrite.

(2) Measure hole diameters (must be between 0.7500 and 0.7508 in).

(3) Perform the fatigue inspection detailed in IRM Revision 7 Part 4 – Fatigue Critical Areas, Para 8. item (8). If a crack is detected, then the stub wing strut pick-up fittings are to be replaced with new items. If a crack is detected in only one fitting, both the forward and aft fittings are to be replaced as a pair.

(4) Report the results of inspection, whether cracking is detected or not, to Nomad Operations Manager – Boeing Aerospace Support – ASTA.

(5) If the stub wing strut pick-up fittings are to be replaced proceed to 2.D. Otherwise continue.

NOTE

Stub wing strut pick-up fittings must be replaced in pairs.

C. **Reassembly after Inspection**

(1) If the stub wing strut pick-up fitting is serviceable (no cracks are detected) apply a thin film of sealing compound PR 1436G to the faying surfaces of the bores of the fitting immediately before reassembly.

(2) Using a new bush, assemble the bush inserter tool as shown in Figure 2 Operation 3.

CAUTION

- DO NOT OVERTIGHTEN THE ADJUSTABLE SPACER. IF THE STRUT PICK-UP FITTING FLANGES ARE FORCED APART, THEY MAY BE OVERSTRESSED.
- ENSURE THE ADJUSTABLE SPACER IS ADJUSTED TO SUPPORT THE STRUT PICK-UP FITTING FLANGES, AS THE BUSHES ARE REMOVED. IF BUSH REMOVAL CAUSES THE STRUT PICK-UP FITTING FLANGES TO BE FORCED TOGETHER, THEY MAY BE OVERSTRESSED.

(3) Position the adjustable spacer between the flanges of the strut pick-up fitting and adjust it (hand tighten only) to support the flanges while the bushes are inserted.

NOTE

- Ensure that the bush seats correctly on the bush inserter PN 1H/N–88–263 prior to installation (Ref Fig 2 Operation 3).
- Ensure the OD chamfer of the bush faces the entry to the hole in the strut pick-up fitting (Ref Fig 2, Operation 3).

(4) Rotate the bolt while holding the nut stationary to insert the aft bush.

(5) Disassemble the tool and reassemble in the manner shown in Figure 2 Operation 4 to insert the forward bush.

NOTE

Ensure that the bush seats correctly on the bush inserter PN 1H/N–88–263 prior to installation (Ref Fig 2 Operation 4).

(6) Rotate the bolt while holding the nut stationary to insert the forward bush.

(7) Disassemble the tool and remove the adjustable spacer.

CAUTION

TAKE EXTREME CARE TO ENSURE THAT SIDE FORCES ARE NOT APPLIED TO THE REAMER SHANK OTHERWISE AN OVERSIZE HOLE WILL RESULT.

NOTE

- It is essential to use a lubricant when reaming. The reamer must be removed every 4 to 6 turns to remove the cuttings from the reamer flutes and to reapply lubricant. Use low pressure compressed air to remove cuttings from the reamer flutes.
- To remove the reamer during reaming operation rotate the reamer in cutting direction and apply pressure to the pilot end of the reamer to push it out from the hole.

(8) Line ream the bushes installed in steps (3) and (5) using a standard 39/64 in (0.609 in) reamer. Use an open ended spanner to turn the reamer whilst applying thumb pressure to feed the reamer. Lubricate the reamer.

CAUTION

TAKE CARE NOT TO ROTATE THE REAMER BACKWARD, OTHERWISE DAMAGE TO CUTTING EDGES WILL OCCUR.

(9) Line ream the bushes with the special reamer PN 1/N-88-264.

(10) Deburr the bushes and remove all swarf (cuttings) from the internal areas.

CAUTION

ENSURE THE AREAS CONCERNED ARE CLEAN AND FREE FROM FOREIGN OBJECTS BEFORE REASSEMBLY.

(11) Refit the wing strut and fairings (Ref MM Chap 57-40-00).

(12) Refit the main landing gear doors (Ref MM Chap 32-10-15).

(13) Remove the trestles and shoring and lower aircraft from the jacks.

(14) Inspection complete.

D. **Stub Wing Strut Pick-up Fitting Replacement**

NOTE

- Stub wing strut pick-up fittings must be replaced in pairs.
- This procedure assumes that the aircraft is jacked with wings shored.

(1) Remove main landing gear drag links (Ref MM Chap 32-10-12).

(2) Remove main landing gear oleo leg (Ref MM Chap 32-10-11).

(3) Remove main landing gear drag link pivot shaft (Ref MM Chap 32-30-11).

(4) Remove the LH landing gear pod. Follow the steps for LH landing gear pod removal in Service Bulletin NMD-53-14.

(5) Remove the RH landing gear pod. Follow the steps for RH landing gear pod removal in Service Bulletin NMD-53-14.

(6) Tag and identify the location of the strut pick-up fittings, then remove the attachment bolts (7 off) and withdraw the fittings from the aircraft.

(7) Take a new fitting and align it back-to-back to the old fitting (old front fitting aligned with new rear fitting and old rear fitting aligned with new front fitting) using 0.75 in dowel pin through lug holes (Refer Fig 3).

(8) Lining up the edges of the fittings, firmly clamp the fittings together and pilot drill each attachment hole in a drill press using appropriate size drill bushes.

(9) In a drill press, open up pilot holes drilled at step (2) to standard sizes using appropriate size drills. Refer Figure 3 for standard hole sizes.

(10) Disassemble the fittings, remove the dowel pin and deburr the holes.

(11) Carry out steps (7) to step (10) for the other fitting of the pair being replaced.

(12) Position the new fittings on the stub wing front spar with the dowel pin through both lug bores and attach to spar using as many of the previously removed standard size bolts as fit easily. Do not fit 3/8 inch bolt at this stage. Tighten the nuts to clamp the fittings firmly to the spar.

NOTE

- Use of a lubricant is essential and the reamer must be removed every 4 to 6 turns to remove the cuttings from the reamer flutes and to reapply lubricant. Use low pressure compressed air to remove cuttings from the flutes.
- To remove the reamer during reaming operation rotate the reamer in cutting direction and apply pressure to the pilot end of the reamer to push it out from the hole.

(13) Hand ream 3/8 inch hole using a 3/8 inch standard hand reamer and final ream the hole to 1st oversize using piloted reamer PN 5/N-88-267. Make chamfer 0.025-0.035 in X 45° on hole edge to clear bolt head radius.

CAUTION

USE OF 2ND OVERSIZE IS NOT PERMITTED WITHOUT PRIOR APPROVAL FROM ASTA ENGINEERING.

(14) Insert 1st oversize bolt (Ref Para 3.A.(2) for part number) into the hole reamed in step (13) and tighten the nut.

(15) Remove one bolt at a time and hand ream the hole to standard size, then to 1st oversize using appropriate size special reamer (See notes and caution given in step (8). Refer Figure 3 for reamer sizes. Make chamfer 0.025-0.035 in X 45° on hole edge to clear bolt head radius.

(16) Insert 1st oversize bolt into the hole reamed to 1st oversize and tighten the nut.

(17) Repeat step (15) and (16) for the remaining attachment holes.

(18) Disassemble the fittings and deburr the holes.

(19) Remove all swarf (cuttings) from the internal areas.

(20) Wet assemble the fittings using epoxy primer. Use 1st oversize bolts to attach the fittings. Ensure a countersunk washer is fitted under the head of the bolt (Ref Service Bulletin NMD-53-14).

NOTE

Enlarge the washer hole as required to suit the 1st oversize bolts.

(21) Torque tighten the nuts in accordance with Figures 3 and 4.

(22) Carry out steps 2.C.(1) to 2.C.(10) to install new bushes into the fitting.

(23) Reassemble the LH landing gear pod. Follow the steps for LH landing gear pod reassembly in Service Bulletin NMD-53-14.

(24) Reassemble the RH landing gear pod. Follow the steps for RH landing gear pod reassembly in Service Bulletin NMD-53-14.

NOTE

Use PR1221, PR1222 or PR1422 as weather proofing seal for joints.

(25) Refit the wing strut and fairings (Ref MM Chap 57-40-00).

(26) Refit the main landing gear drag link pivot shaft (Ref MM Chap 32-30-11).

(27) Refit the landing gear oleo leg (Ref MM 32-10-11).

(28) Refit the main landing gear drag links (Ref MM Chap 32-10-12).

(29) Refit the main landing gear door (Ref MM Chap 32-10-15).

(30) Connect electrical power to aircraft and reset control and actuation circuit breakers.

(31) Perform undercarriage retraction tests (Ref MM Chap 32-30-00).

(32) Remove the trestles and shoring and lower aircraft from the jacks.

3. MATERIALS INFORMATION

A. Parts Required per Aircraft

(1) The following parts are required for each aircraft (following inspection with no cracking found) and are available from Boeing Aerospace Support - ASTA.

New Part No	Qty	Description	Old Part No	Instruction/Disposition
1/N-11-543	4	Bush, Steel	1/N-11-543	Discard used bushes

(2) The following additional parts are required per fitting pair, if the fittings are to be replaced and are available from Boeing Aerospace Support – ASTA.

New Part No	Qty	Description	Old Part No	Instruction/Disposition
2/N-11-541	1	Fitting, Strut pick-up less bush	1/N-11-541	Discard damaged fittings
2/N-11-542	1	Fitting, Strut pick-up less bush	1/N-11-542	Discard damaged fittings
NAS6204-14X	2	Bolt, Hex head, 1st oversize	NAS1104-14	Replace
NAS6204-21X	2	Bolt, Hex head, 1st oversize	NAS1104-21	Replace
NAS6205-16X	1	Bolt, Hex head, 1st oversize	NAS1105-16	Replace
NAS6205-21X	1	Bolt, Hex head, 1st oversize	NAS1105-21	Replace
NAS6206-19X	1	Bolt, Hex head, 1st oversize	NAS1106-19	Replace
MS21042L4	4	Nut	MS21042L4	Replace
MS21041L5	2	Nut	MS21041L5	Replace
MS21042L6	1	Nut	MS21042L6	Replace
AN960-416	4	Washer, Plain	AN960-416	Replace
AN960-516	2	Washer, Plain	AN960-516	Replace
AN960-616	1	Washer, Plain	AN960-616	Replace

(3) Refer to Service Bulletin NMD-53-14 Revision 2, Para 3.B. (For aircraft NOT modified to the Original Issue of this Service Bulletin) for parts listing of the oversize fasteners required for installation of replacement stub wing strut pick-up fittings.

B. **Special Tools and Equipment**

Following special tools are required to incorporate this Service Bulletin.

(1) Line reamer PN 1/N-88-264 (for reaming the bush).

(2) Special tool kit PN NMD-53-18-1.
The Special tool kit PN NMD-53-18-1 consists of the following items:

Part No	Qty	Description	Remarks	
1A/N-88-263	1	Bush, Extractor		NOTE 1
1C/N-88-263	1	Support		NOTE 1
1D/N-88-263	1	Spacer, Bearing		NOTE 1 & 2
1E/N-88-263	1	Bolt		NOTE 1 & 2
1F/N-88-263	1	Support		NOTE 1 & 2
1G/N-88-263	1	Bush, Extractor		NOTE 1
1/2 in Flat Washer	1	Flat Washer	1/2 in ID Flat Washer - Carbon steel	NOTE 1 & 2
1/2 in Nut	1	Nut	1/2 in -13 UNC Nut - Carbon steel	NOTE 1 & 2
A4050	1	Bearing Cone		NOTE 1 & 2
A4138	1	Bearing Cup		NOTE 1 & 2
1H/N-88-263	1	Bush, Inserter		NOTE 2
1J/N-88-263	1	Bush, Inserter		NOTE 2
1K/N-88-263	1	Spacer, Adjustable		NOTE 1 & 2
1L/N-88-263	1	Spacer, Adjustable		NOTE 1 & 2

NOTE

1. Indicates items required for removal of stub wing wing strut pick-up fittings forward and aft bush.

2. Indicates items required for insertion of stub wing wing strut pick-up fittings forward and aft bush.

(3) Following special reamers are required if the strut pick-up fittings to be replaced.

(a) 5/N-88-267 Special reamer 25/64 in dia.

(b) 1/N-88-267 Special reamer 21/64 in dia.

(c) 6/N-88-267 Special reamer 17/64 in dia.

(4) Locally manufacture a 0.7500-0.7505 in diameter dowel pin (Ref Fig 3) from mild steel or alloy steel commercial.

(5) Following special wrenches are required for disassembly and reassembly. Refer Service Bulletin NMD-53-14 for manufacturing details.

(a) Special Wrench PN NMD-53-14-1T (Ref SB NMD-53-14 Fig 2).

(b) Special Wrench PN NMD-53-14-2T (Ref SB NMD-53-14 Fig 3).

(c) Special Wrench PN NMD-53-14-3T (Ref SB NMD-53-14 Fig 4).

(d) Special Wrench PN NMD-53-14-4T (Ref SB NMD-53-14 Fig 5).

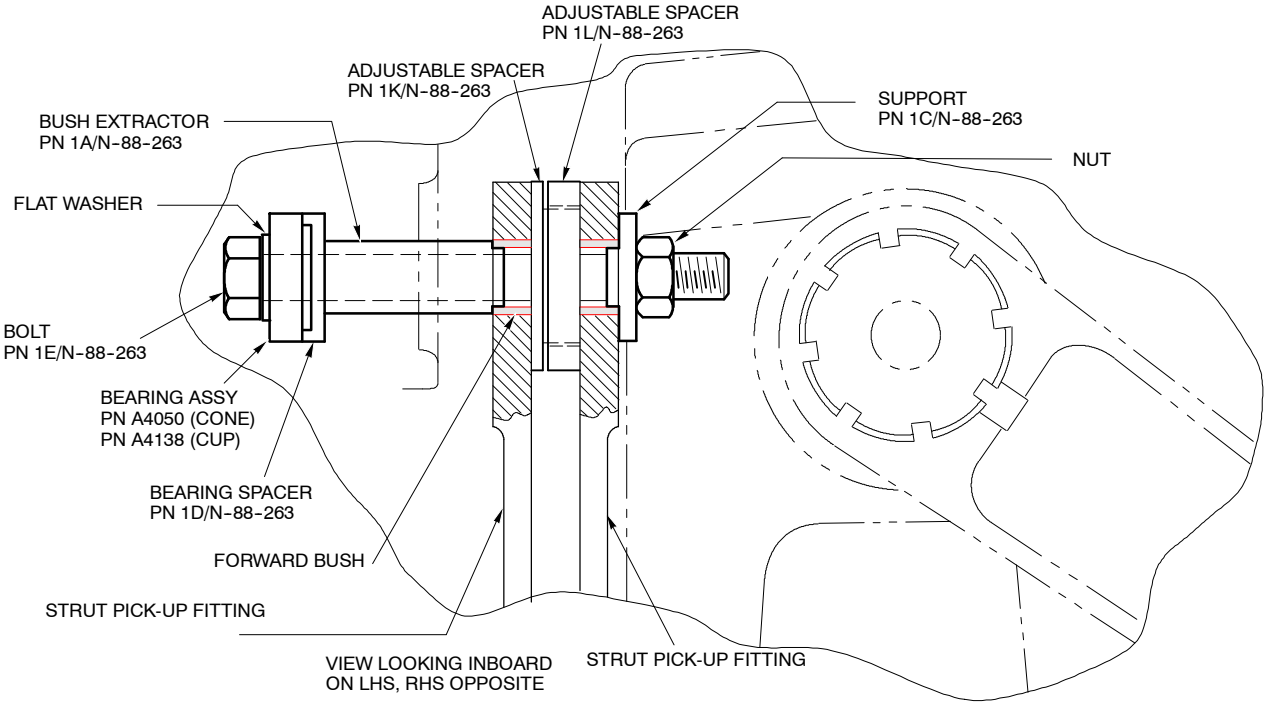
(e) Special Wrench PN NMD-53-14-5T (Ref SB NMD-53-14 Fig 6).

4. **RECORDING ACTION**

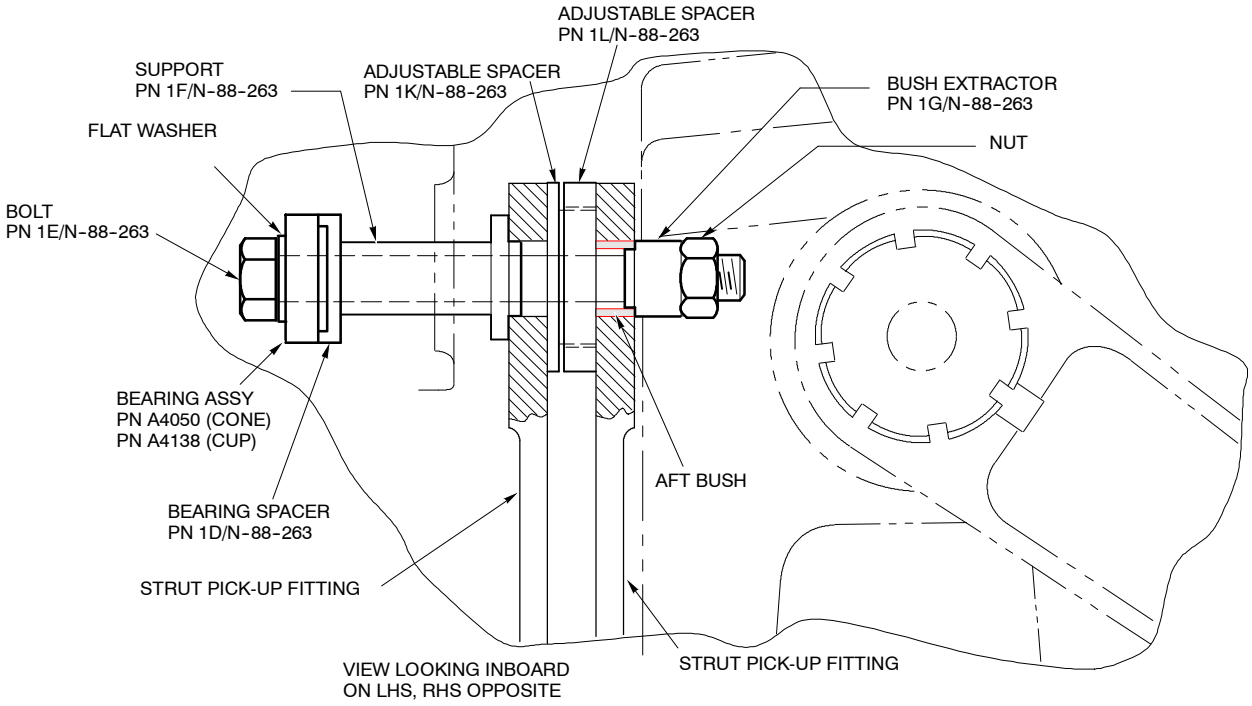
Record compliance in the Airframe Log Book as follows:

(a) If not replacing fittings, record compliance with NMD-53-18 Rev 1 part 2A-C.

(b) If replacing fittings, record compliance with NMD-53-18 Rev 1 part 2.D., LH and/or RH as applicable.



OPERATION 1 – REMOVAL OF THE FORWARD BUSH



OPERATION 2 – REMOVAL OF THE AFT BUSH

Figure 1 Removal of the Forward and Aft Bushes – Stub Wing Wing Strut Pick-up Fitting

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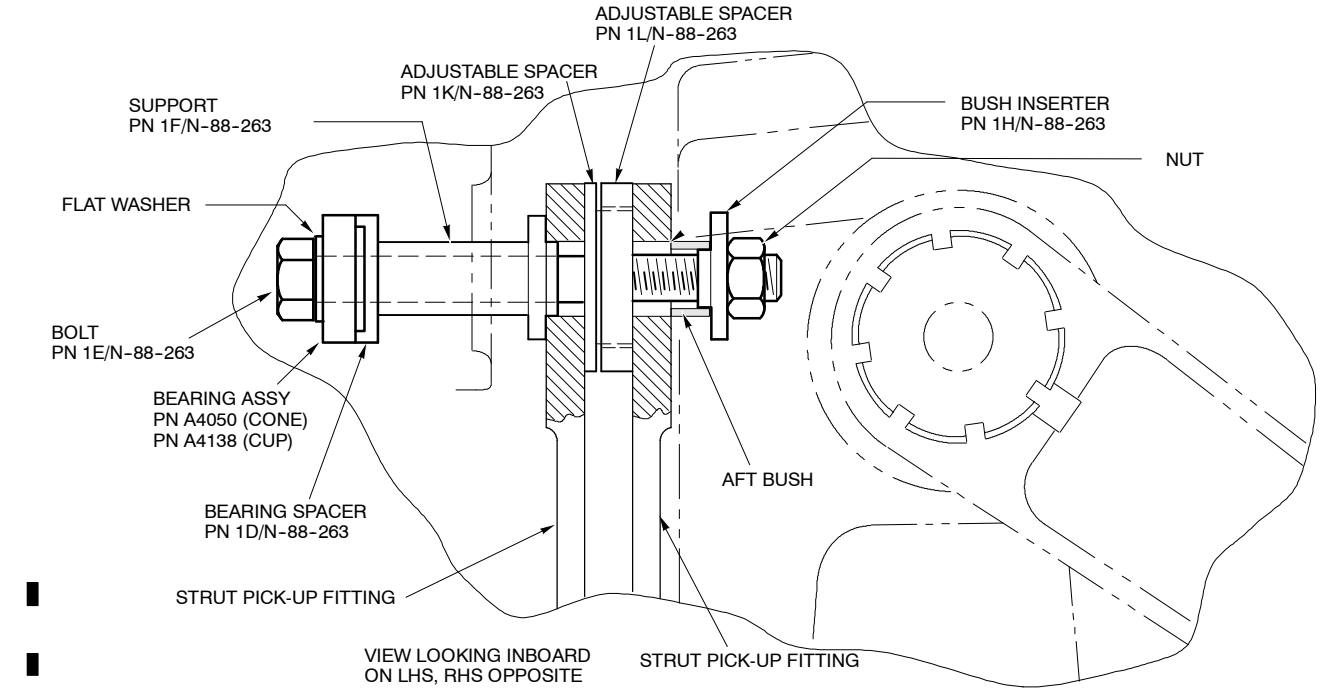
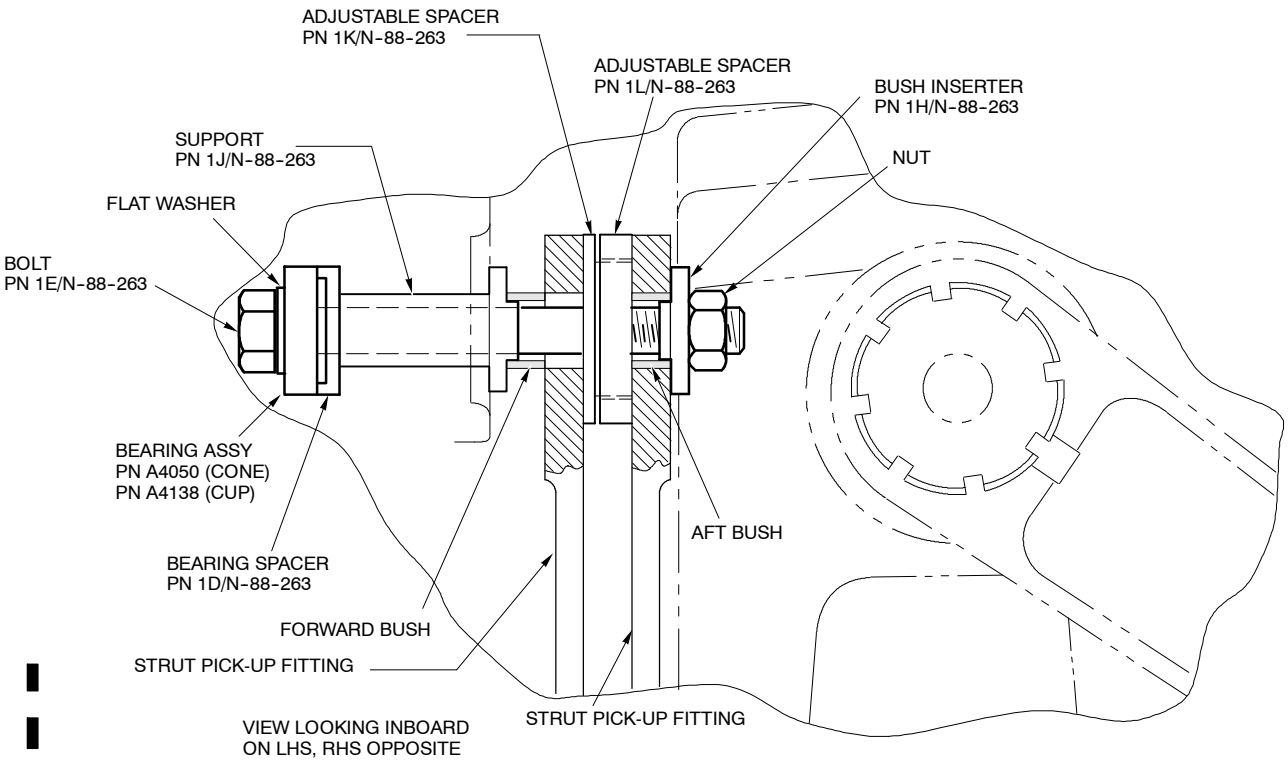


OPERATION 3 – INSERTION OF THE AFT BUSH



OPERATION 4 – INSERTION OF THE FORWARD BUSH

Figure 2 Insertion of the Forward and Aft Bushes – Stub Wing Strut Pick-up Fitting

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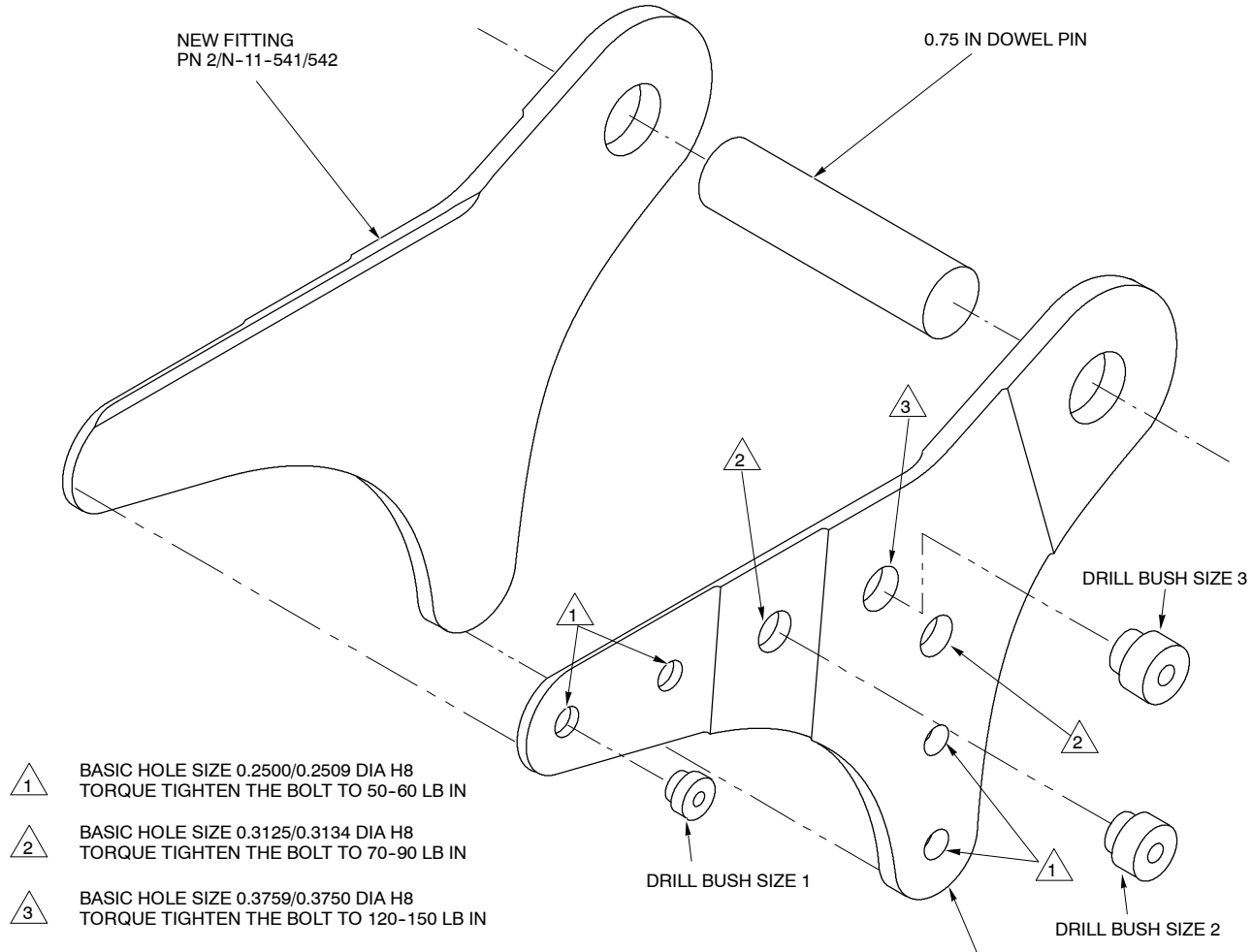
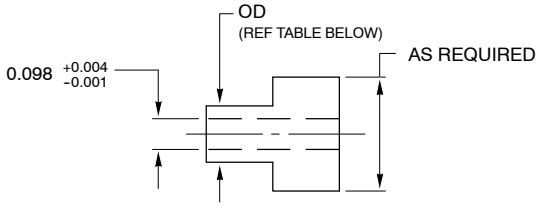


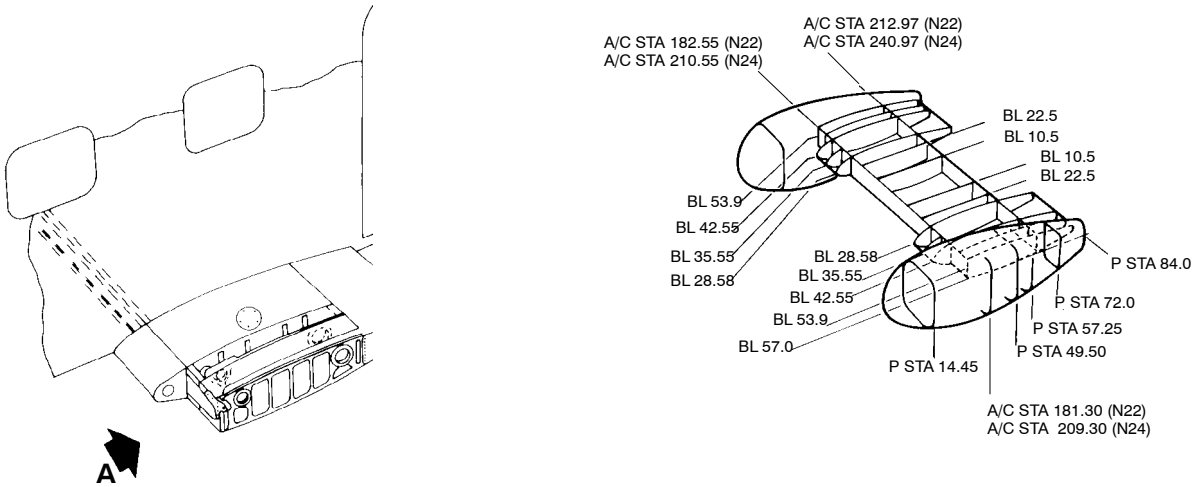


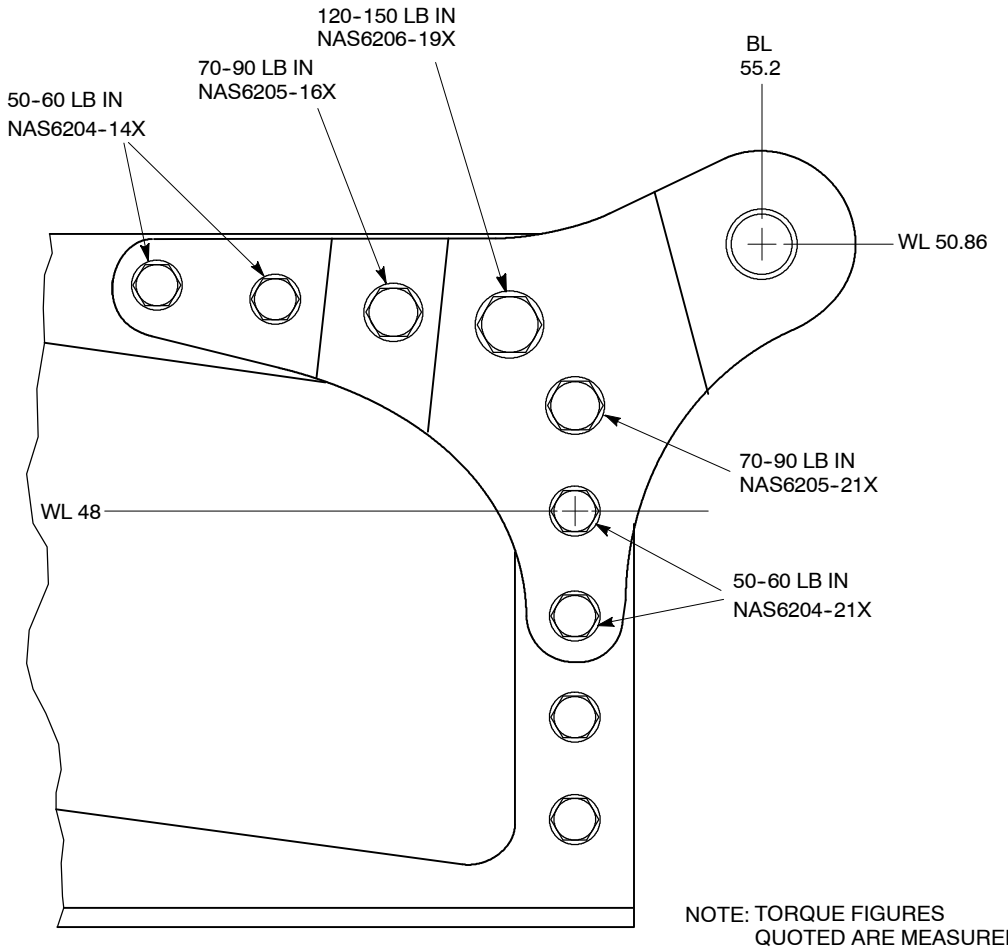
TYPICAL DRILL BUSH

ALL DIMENSIONS ARE GIVEN IN INCHES

ATTACHMENT HOLE	DRILL BUSH	STANDARD REAMER	SPECIAL REAMER
1	SIZE 1 OD 0.2500 $^{+0.0001}_{-0.0005}$	$\frac{1}{4}$ in DIA HAND REAMER	$\frac{17}{64}$ in DIA PN 6/N-88-267
2	SIZE 2 OD 0.3125 $^{+0.0001}_{-0.0005}$	$\frac{5}{16}$ in DIA HAND REAMER	$\frac{21}{64}$ in DIA PN 1/N-88-267
3	SIZE 3 OD 0.3750 $^{+0.0001}_{-0.0005}$	$\frac{3}{8}$ in DIA HAND REAMER	$\frac{25}{64}$ in DIA PN 5/N-88-267

Figure 3 Wing Strut Pick-up Fitting PN 1/N-11-544/545 Replacement





NOTE: TORQUE FIGURES QUOTED ARE MEASURED AT THE BOLT HEADS

VIEW IN DIRECTION OF ARROW **A**

Figure 4 Torque Schedule

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