

Nomad SERVICE BULLETIN

FUSELAGE — STUB WING — WING STRUT FITTING ASSEMBLY— LOOSE ATTACHMENT BOLTS — REPAIR

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 so modified are excluded from the serial number applicability above.

B. Reason

During manufacture, the bolt holes in stub wing/wing strut attachment fittings PN 1/N-11-544 and 1/N-11-545 (2/N-11-541 and 2/N-11-542 Post-Mod N831) may not have been chamfered to accommodate the radius fillet under the NAS shear bolt heads. Unchamfered holes cause wear to occur and the attachment bolts to become loose.

Revision 1

Boeing Aerospace Support – ASTA has assigned part numbers to the special spanners required for this job and is offering them for sale or loan as required by operators.

Revision 2

Further investigation of the loose bolt occurrences has shown that the grip length of the bolts has been incorrectly specified such that thread binding may occur if sufficient washers are not placed under the nut during assembly.

Corrective action amended. Visual inspection introduced to assess the need for corrective action. Pod removal procedures revised to simplify operation.

C. Description

Perform a visual inspection and torque test of bolts and brackets as per Para 2.A. Perform corrective action as detailed in Para 2.B. as required.

D. Compliance

Incorporation of this Service Bulletin is MANDATORY.

(1) Initial Inspection.

At next 300 hr inspection, perform a visual inspection of forward bracket (RH and LH landing gear pods) for signs of movement and/or fretting and torque test bolt heads for movement as described in Para 2.A.(3). If any of the above are found carry out corrective action as detailed in Para 2.B.

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(2) Repeat Inspection.

Repeat inspections every 1800 hrs until repaired in accordance with the corrective action (Ref Para 2.B.(10)) detailed in Revision 2 of this Service Bulletin.

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**

Inspection: 1 man-hour.

Incorporation: 80 man-hours.

G. **Materials — Price and Availability**

Obtain from own stock or local sources.

H. **Tooling — Price and Availability**

Special wrenches (Ref Fig 4 to 8).

Special reamers (Ref Para 4.C.).

I. **Weight and Balance**

None.

J. **References**

Maintenance Manual, Chapters 7-00-00 and 32-10-15

K. **Publications Affected**

Illustrated Parts Catalogue

Service Letter 89-01

2. ACCOMPLISHMENT INSTRUCTIONS

A. **Inspection.**

- (1) Gain access to the undercarriage pod interior via the undercarriage aperture by disconnecting the undercarriage door link.
- (2) Visually inspect the bracket and bolts for signs of fretting and/or movement of the bracket relative to the bolts or front spar (Ref Fig. 2 and 3).
- (3) Apply a **test torque of 10 lb.in** to the bolt heads.
- (4) Any signs of bracket movement, bolt fretting or bolt rotation under torque test is cause for corrective action (Ref Para 2.B.) to be applied to **ALL** bolts irrespective.
- (5) If all bolts pass inspection, reconnect the undercarriage door and return to airworthy condition. (Ref Para 1.D.(2) for Repeat Inspection interval).

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B. Corrective Action.

- (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 isolate electrical power from the aircraft.
- (3) Disconnect and remove main landing gear doors (Ref MM Chap 32-10-15).
- (4) Remove main landing gear drag links (Ref MM Chap 32-10-12).
- (5) Remove main landing gear oleo leg (Ref MM Chap 32-10-11).
- (6) Remove main landing gear drag link pivot shaft (Ref MM Chap 32-30-11).
- (7) Remove the wing strut and fairings (Ref MM Chap 57-40-00).
- (8) Remove the LH landing gear pod as follows (Ref Fig 1):
 - (a) Disconnect and blank off the wheel brake pipeline at the connection in the pod at sta 181.30 (N22) or 209.30 (N24).
 - (b) Release fasteners and open the pod nose.
 - (c) Disconnect the battery electrical connector and vent tubes, release clamps and remove the battery with its case.
 - (d) Disconnect the battery earth wires and external power unit earth wires from their attachment points on the airframe.
 - (e) Disconnect both wires which are attached to the busbar connecting the battery and external power relays.
 - (f) Disconnect and label all wires from the pod which pass through the stub wing leading edge.
 - (g) Loosen or remove wiring loom clamps as required to enable pod to be removed.
 - (h) With the pods suitably supported remove rivets from fairing PN 1/N-11-617.
 - (i) Remove the blind rivets attaching the tail fairing PN 1/N-11-615 to the stub wing.
 - (j) Remove rivets from gusset plate PN 1G/N-11-697 and the tucker pop rivets in the vicinity of the stub wing rear spar attachment.
 - (k) Remove blind rivets from angle PN 1/N-11-733.
 - (l) Remove rivets attaching angle PN 1F/N-11-697 to the stub wing top skin.
 - (m) Remove rivets and bolts attaching the pod diaphragms to the stub wing angle PN 1A/N-11-1133.
 - (n) Check that all structural fittings and fasteners are released to allow free movement of the pod from the stub wing.
 - (o) Move the pod away from the stub wing structure, ensuring that electrical wiring does not foul the pod on removal.

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- (9) Remove the RH landing gear pod as follows (Ref Fig 1):
- (a) Disconnect and blank off the wheel brake pipeline at the connection in the pod at sta 181.30 (N22) or 209.30 (N24).
 - (b) Disconnect and label all wires from the pod which pass through the stub wing leading edge.
 - (c) With the pods suitably supported, remove rivets from fairing PN 1/N-11-618.
 - (d) Remove the blind rivets attaching the tail fairing PN 1/N-11-616 to the stub wing.
 - (e) Remove rivets from gusset plate PN 1G/N-11-697 and the tucker pop rivets in the vicinity of the stub wing rear spar attachment.
 - (f) Remove blind rivets from angle PN 1/N-11-734.
 - (g) Remove rivets attaching angle PN 1F/N-11-697 to the stub wing top skin.
 - (h) Remove rivets and bolts attaching the pod diaphragms to the stub wing angle PN 1B/N-11-1133.
 - (i) Check that all structural fittings and fasteners are released to allow free movement of the pod from the stub wing.
 - (j) Move the pod away from the stub wing structure, ensuring that electrical wiring does not foul the pod on removal.

- (10) Replace Attachment Fitting Bolts (Ref Fig 2 and 3).

For each bolt position in turn:

- (a) Remove bolt from fitting.

NOTE

Access to nuts and washers is gained via the drag link pivot shaft bearing hole.

Care should be taken to avoid damage to bearing surface whilst gaining access to nuts and washers (Ref Fig 4 to 8 for special wrench details).

- (b) Solvent clean bolt and around bolt hole. Ensure all contact surfaces are free of old jointing compound.
- (c) Check condition of bolt hole.
 - 1 Visually inspect around bolt hole for deformation, cracking or fretting.
 - 2 If fretting exists, ream hole to first oversize (Ref Para 4.C. for reamer details).
 - 3 Perform a borescope or eddy current inspection of the bolt hole.
 - 4 If cracks are found, report to Boeing Aerospace Support - ASTA prior to crack repair.

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- (d) Check condition of bolt. If the bolt shows no sign of wear or damage and the hole remains in tolerance, original bolts may be reused.

NOTE

If any bolt holes are oversize, new 1st oversize bolts must be fitted at these locations (Ref Para 3.A. and B. for appropriate bolt part numbers).

- (e) For aircraft previously modified to the Original Issue of this Service Bulletin:

- 1 Ensure the bolt is clean and free of old jointing compound.
- 2 Clean and refit the countersunk washer under the head of the bolt.

NOTE

Ream washers to suit if oversize bolts are used (Ref Para 4.C. for reamer details).

- 3 Proceed to step (g).

- (f) For aircraft NOT modified to the original Issue of this Service Bulletin:

- 1 Make chamfer 0.025 - 0.035 x 45° on hole edge to clear the radius under the bolt head.
- 2 Clean all swarf and burrs from the hole.
- 3 Proceed to step (g).

- (g) Measure the bolt grip length to ensure sufficient washers are installed under the nut prior to assembly as per step (i).

NOTE

The grip requirements are that no bolt threads are allowed within the bracket and the nut must be in safety with at least 1-2 full bolt threads protruding at the specified torque.

The bolt grip length shown in Figures 2 and 3 is for aircraft previously modified to the original issue of this Service Bulletin. For aircraft NOT modified to the original issue the bolt grip length in Figures 2 and 3 is 1 (one) less than shown.

- (h) Refit bolt (wet assemble in accordance with MM Chap 20-30-00).

- (i) Assemble new nut and washers onto bolt.

NOTE

Ensure sufficient washers are installed under the nut to allow full clamp up with no thread binding and ensure the nut is in safety.

Ream washers using special reamers if oversize bolts are used (Ref Para 4.C. for reamer details).

- (j) Torque tighten bolts at the bolt head in accordance with Figure 2 and 3.

- (k) Repeat steps (a) to (j) until all the affected bolts have been replaced.

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- (11) Reassemble the LH landing gear pod.

The LH Pod reassembly is the reverse procedure to Pod Removal (Ref Para 2.B.(8)).

- (12) Reassemble the RH landing gear pod.

The RH landing gear pod reassembly is the reverse procedure to Pod Removal (Ref Para 2.B.(9)).

NOTE

Use PR1422B or PR1440B as weather proofing seal for joints.

- (13) Refit the wing strut and fairings (Ref MM Chap 57-40-00).
- (14) Refit the main landing gear drag link pivot shaft (Ref MM Chap 32-30-11).
- (15) Refit the landing gear oleo leg (Ref MM 32-10-11).
- (16) Refit the main landing gear drag links (Ref MM Chap 32-10-12).
- (17) Refit the main landing gear door (Ref MM Chap 32-10-15).
- (18) Reconnect electrical power to aircraft and reset control and actuation circuit breakers.
- (19) Connect external power to the aircraft.
- (20) Perform undercarriage retraction tests (Ref MM Chap 32-30-00).
- (21) Remove the trestles and shoring and lower aircraft from the jacks.

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3. MATERIALS INFORMATION

A. Parts Required Per Aircraft.

For aircraft previously modified to the Original Issue of this Service Bulletin.

New Part No	Qty	Description	Old Part No	Instruction/Disposition
Parts to be obtained from own stock or local source				
AN960-10	12*	Washer, Plain	AN960-10	Reuse
AN960-416	12*	Washer, Plain	AN960-416	Reuse
AN960-516	4*	Washer, Plain	AN960-516	Reuse
AN960-616	2*	Washer, plain	AN960-616	Reuse
MS21299-C3	12	Washer, Countersunk	MS21299-C3	Reuse
MS21299-C4	12	Washer, Countersunk	MS21299-C4	Reuse
MS21299-C5	4	Washer, Countersunk	MS21299-C5	Reuse
MS21299-C6	2	Washer, Countersunk	MS21299-C6	Reuse
MS21042-L3	12	Nut	MS21042-L3	Replace
MS21042-L4	12	Nut	MS21042-L4	Replace
MS21042-L5	4	Nut	MS21042-L5	Replace
MS21042-L6	2	Nut	MS21042-L6	Replace
NAS6204-15	4	Bolt, Hex head, Std Size	NAS6204-15 or	Reuse/Replace
NAS1104-15	4	Bolt, Hex head, Alternative	NAS1104-15	Reuse/Replace
NAS6204-15X	4	Bolt, Hex head, 1st Oversize		
NAS6204-16	4	Bolt, Hex head, Std Size	NAS6204-16 or	Reuse/Replace
NAS1104-16	4	Bolt, Hex head, Alternative	NAS1104-16	Reuse/Replace
NAS6204-16X	4	Bolt, Hex head, 1st Oversize		
NAS6204-22	4	Bolt, Hex head, Std Size	NAS6204-22 or	Reuse/Replace
NAS1104-22	4	Bolt, Hex head, Alternative	NAS1104-22	Reuse/Replace
NAS6204-22X	4	Bolt, Hex head, 1st Oversize		
NAS6205-17	2	Bolt, Hex head, Std Size	NAS6205-17 or	Reuse/Replace
NAS1105-17	2	Bolt, Hex head, Alternative	NAS1105-17	Reuse/Replace
NAS6205-17X	2	Bolt, hex head, 1st Oversize		
NAS6205-22	2	Bolt, Hex head, Std Size	NAS6205-22 or	Reuse/Replace
NAS1105-22	2	Bolt, Hex head, Alternative	NAS1105-22	Reuse/Replace
NAS6205-22X	2	Bolt, Hex head, 1st Oversize		
NAS6206-20	2	Bolt, Hex head, Std Size	NAS6206-20 or	Reuse/Replace
NAS1106-20	2	Bolt, Hex head, Alternative	NAS1106-20	Reuse/Replace
NAS6206-20X	2	Bolt, Hex head, 1st Oversize		
NAS6603-6	12	Bolt, Hex head, Std Size	NAS6603-6 or	Reuse/Replace
NAS1303-6	12	Bolt, Hex head, Alternative	NAS1303-6	Reuse/Replace
NAS6603-6X	12	Bolt, Hex head, 1st Oversize		

NOTE

* Total number of washers required for standard installation. Any extra washers required to ensure full clamp up are in addition to the quantities quoted.

The bolt grip lengths listed are nominal and may vary with individual stack-up tolerances. Refer to Para 2.B.(10)(g) to determine the exact washer/bolt combination required.

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B. Parts Required Per Aircraft.

For aircraft NOT modified to the Original Issue of this Service Bulletin.

New Part No	Qty	Description	Old Part No	Instruction/Disposition
Parts to be obtained from own stock or local source				
AN960-10	12*	Washer, Plain	AN960-10	Reuse
AN960-416	12*	Washer, Plain	AN960-416	Reuse
AN960-516	4*	Washer, Plain	AN960-516	Reuse
AN960-616	2	Washer, Plain	AN960-516L	Discard
	2*	Washer, plain	AN960-616	Reuse
AN960-616	2	Washer, Plain	AN960-616L	Discard
	12	Nut	MS21042-L3	Replace
MS21042-L3	12	Nut	MS21042-L4	Replace
MS21042-L4	4	Nut	MS21042-L5	Replace
MS21042-L5	2	Nut	MS21042-L6	Replace
MS21042-L6	4	Bolt, Hex head, Std Size	NAS1104-14	Reuse/Replace
NAS1104-14	4	Bolt, Hex head, Alternative	NAS1104-14	Reuse/Replace
NAS6204-14	4	Bolt, Hex head, 1st Oversize		
NAS6204-14X	4	Bolt, Hex head, 1st Oversize		
NAS1104-15	4	Bolt, Hex head, Std Size	NAS1104-15	Reuse/Replace
NAS6204-15	4	Bolt, Hex head, Alternative	NAS1104-15	Reuse/Replace
NAS6204-15X	4	Bolt, Hex head, 1st Oversize		
NAS1104-21	4	Bolt, Hex head, Std Size		
NAS6204-21	4	Bolt, Hex head, Alternative	NAS1104-21	Reuse/Replace
NAS6204-21X	4	Bolt, Hex head, 1st Oversize		
NAS1105-16	2	Bolt, Hex head, Std Size		
NAS6205-16	2	Bolt, Hex head, Alternative	NAS1105-16	Reuse/Replace
NAS6205-16X	2	Bolt, hex head, 1st Oversize		
NAS1105-21	2	Bolt, Hex head, Std Size		
NAS6205-21	2	Bolt, Hex head, Alternative	NAS1105-21	Reuse/Replace
NAS6205-21X	2	Bolt, Hex head, 1st Oversize		
NAS1106-19	2	Bolt, Hex head, Std Size		
NAS6206-19	2	Bolt, Hex head, Alternative	NAS1106-19	Reuse/Replace
NAS6206-19X	2	Bolt, Hex head, 1st Oversize		
NAS1303-5	12	Bolt, Hex head, Std Size		
NAS6603-5	12	Bolt, Hex head, Alternative	NAS1303-5	Reuse/Replace
NAS6603-5X	12	Bolt, Hex head, 1st Oversize		

NOTE

* Total number of washers required for standard installation. Any extra washers required to ensure full clamp up are in addition to the quantities quoted.

The bolt grip lengths listed are nominal and may vary with individual stack-up tolerances. Refer to Para 2.B.(10)(g) to determine the exact washer/bolt combination required.

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4. SPECIAL TOOLS AND EQUIPMENT

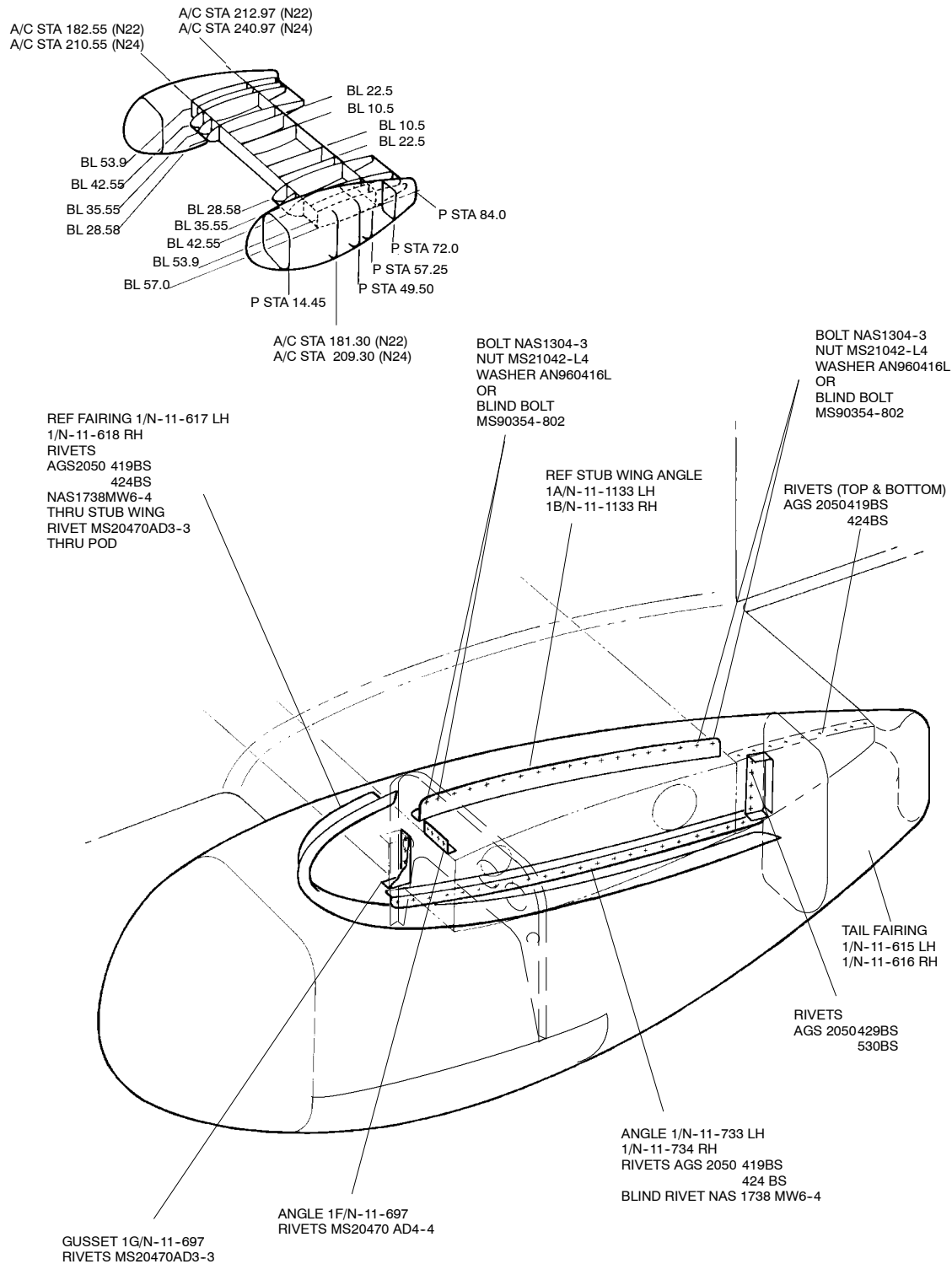
- A. Five special wrenches, for easier access to nuts and bolts, may be manufactured in accordance with Figures 4 to 8.
- B. Alternatively, the five special wrenches may be purchased from Boeing Aerospace Support - ASTA, Customer Spares under the following Part Numbers (price upon application).
 - (1) Special Wrench - Square Section, PN NMD-53-14-1T (Ref Fig 4)
 - (2) Special Wrench - 3/8 in AF, Left Hand, PN NMD-53-14-2T (Ref Fig 5)
 - (3) Special Wrench - 3/8 in AF, Right Hand, PN NMD-53-14-3T (Ref Fig 6)
 - (4) Special Wrench - 5/16 in AF, Left Hand, PN NMD-53-14-4T (Ref Fig 7)
 - (5) Special Wrench - 5/16 in AF, Right Hand, PN NMD-53-14-5T (Ref Fig 8)
- C. Special reamers are required where standard bolts are replaced with oversize items.
 - (1) 5/N-88-267 Special reamer 25/64 in dia.
 - (2) 1/N-88-267 Special reamer 21/64 in dia.
 - (3) 6/N-88-267 Special reamer 17/64 in dia.
 - (4) 7/N-88-267 Special reamer 13/64 in dia.

5. RECORDING ACTION

- Record compliance with Service Bulletin NMD-53-14 Revision 2, Inspection and/or Repair (full or partial, LH and/or RH Pod) in Airframe Log Book.

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LH POD SHOWN, RH OPPOSITE

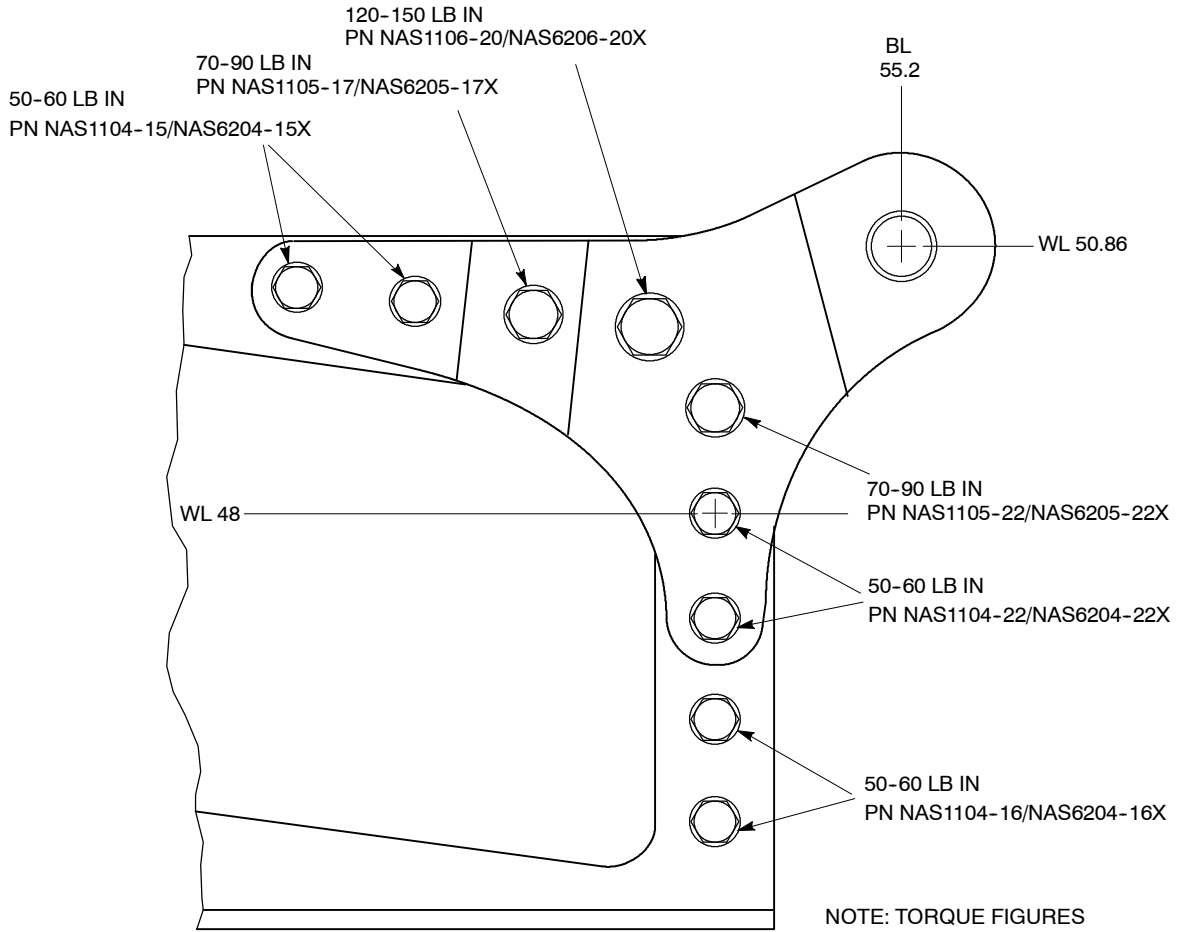
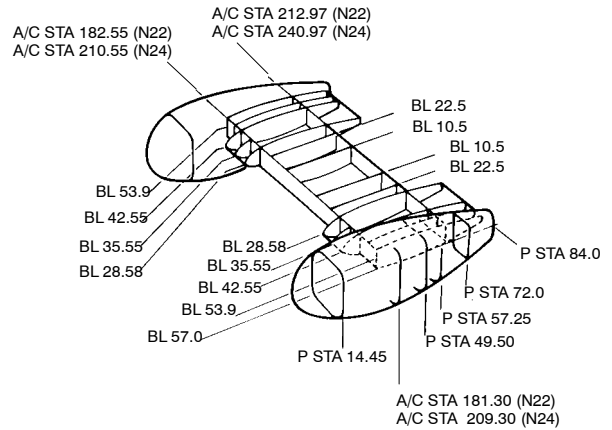
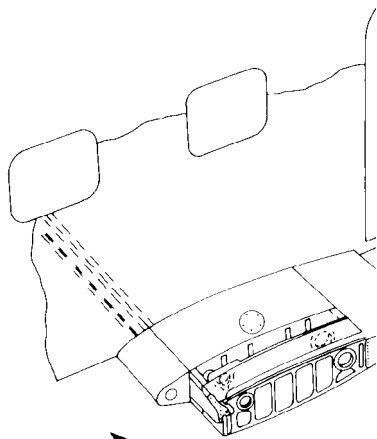
Figure 1 Stub Wing/Landing Gear Pod Attachment

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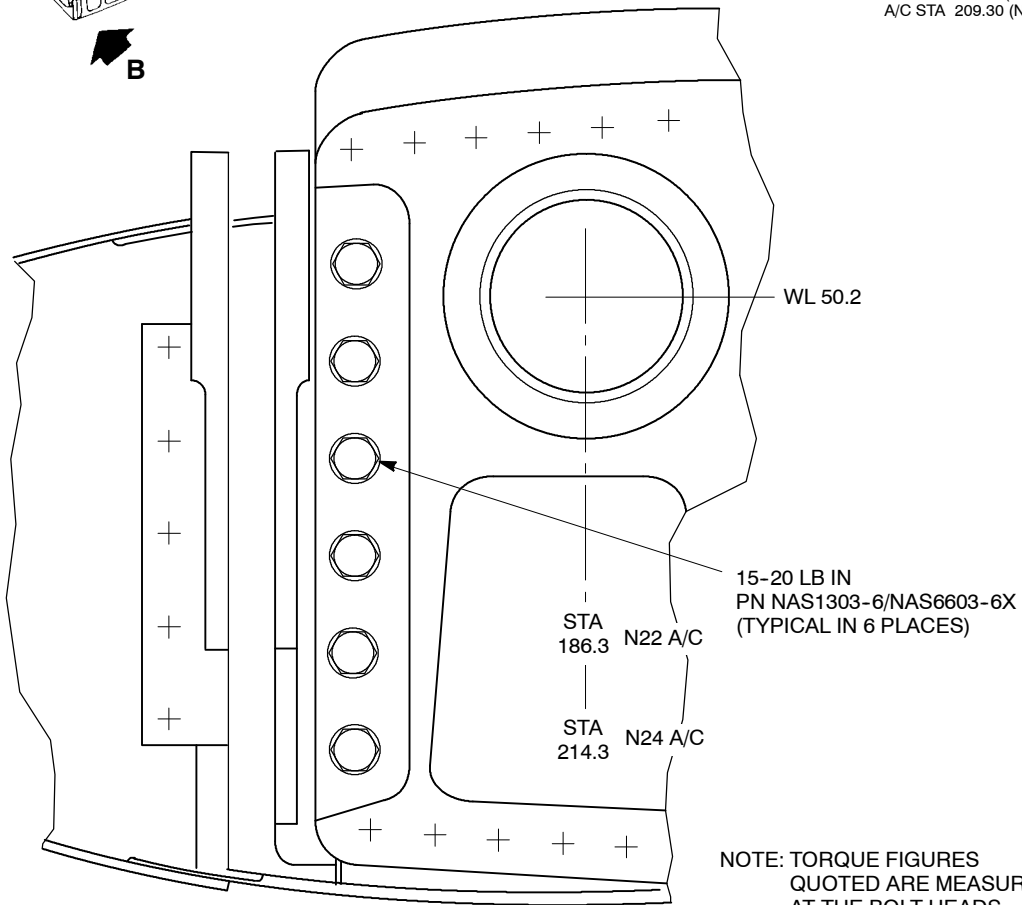
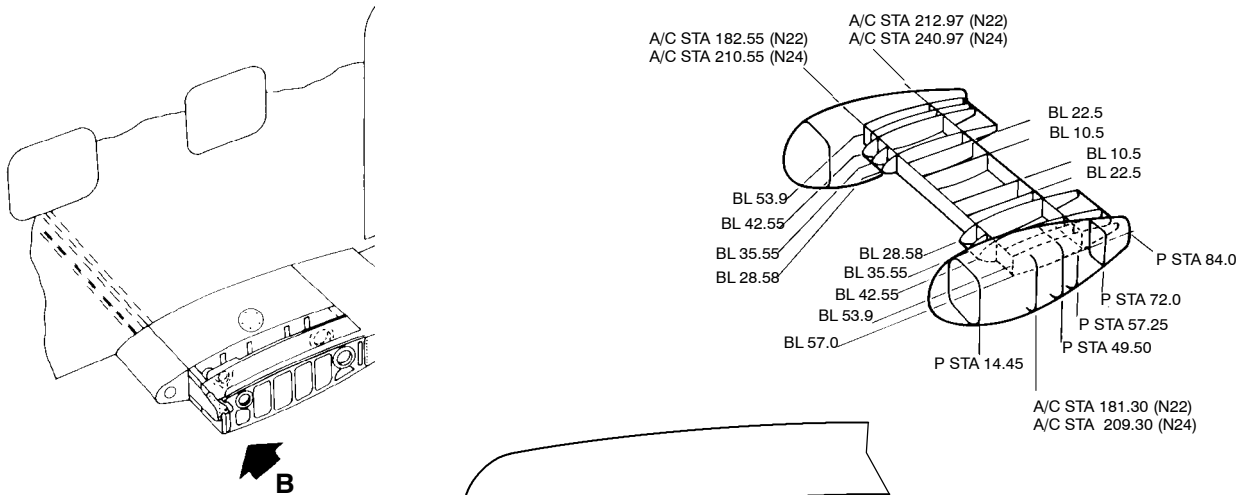
NOTE: TORQUE FIGURES
QUOTED ARE MEASURED
AT THE BOLT HEADS

VIEW IN DIRECTION OF ARROW A

Figure 2 Torque Schedule

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VIEW IN DIRECTION OF ARROW B

Figure 3 Torque Schedule

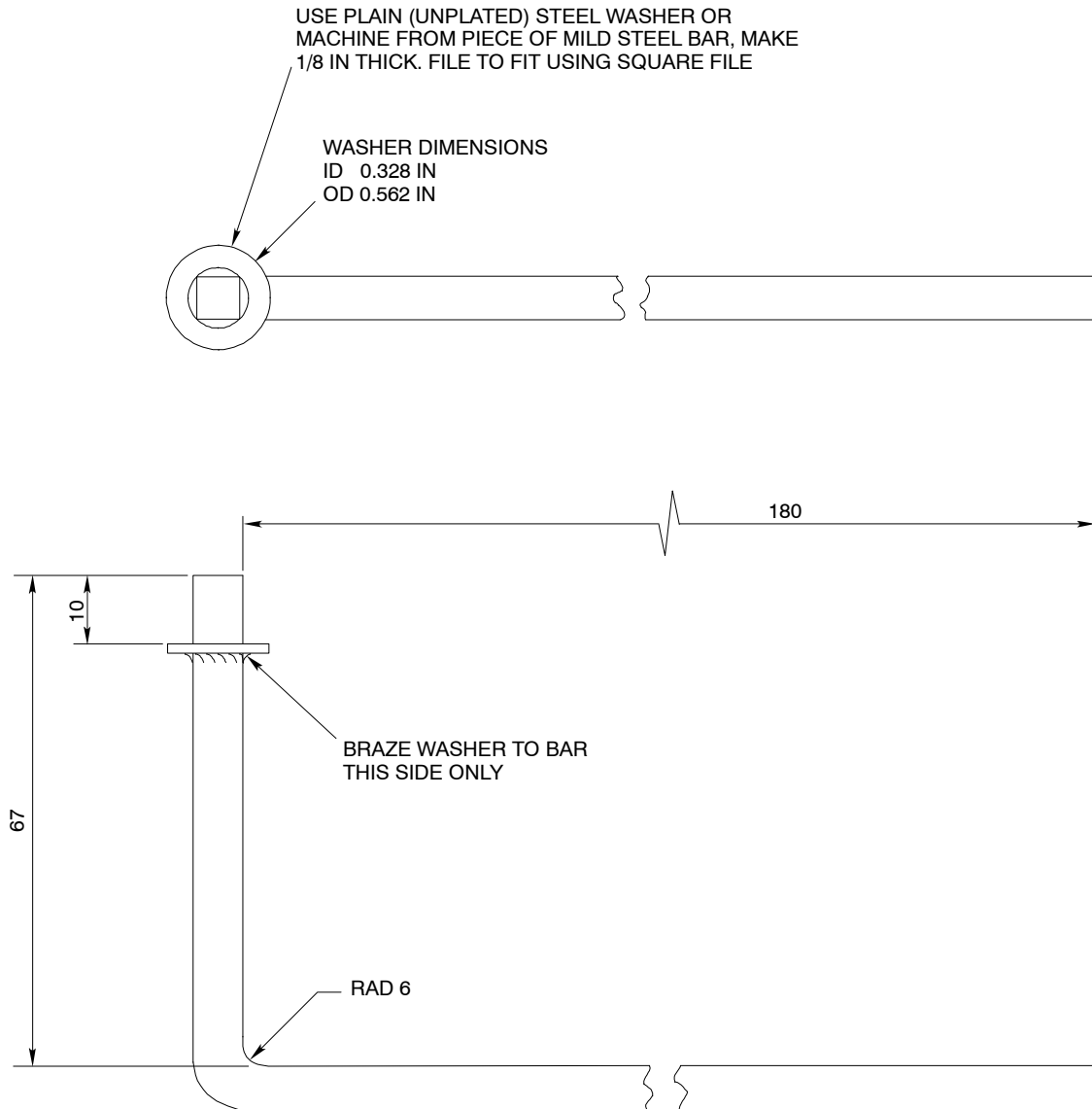
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NOTES:

- 1.. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED AND HAVE LIMITS OF ± 1 MILLIMETER
2. REMOVE SHARP EDGES

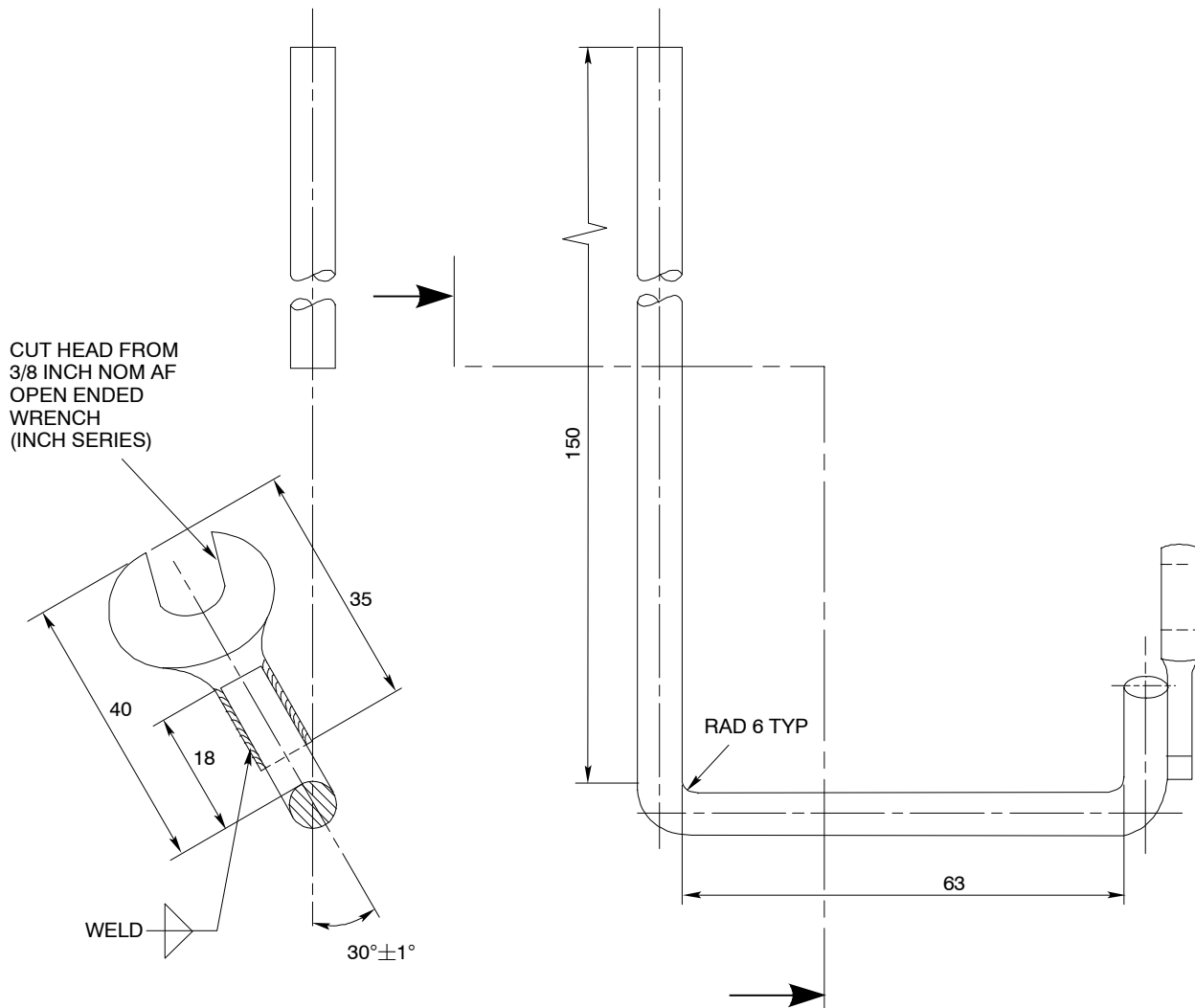
MATERIAL:

0.25 IN SQUARE BRIGHT MILD STEEL BAR OR EQUIVALENT

Figure 4 Special Wrench - Square Section (PN NMD-53-14-1T)

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NOTES:

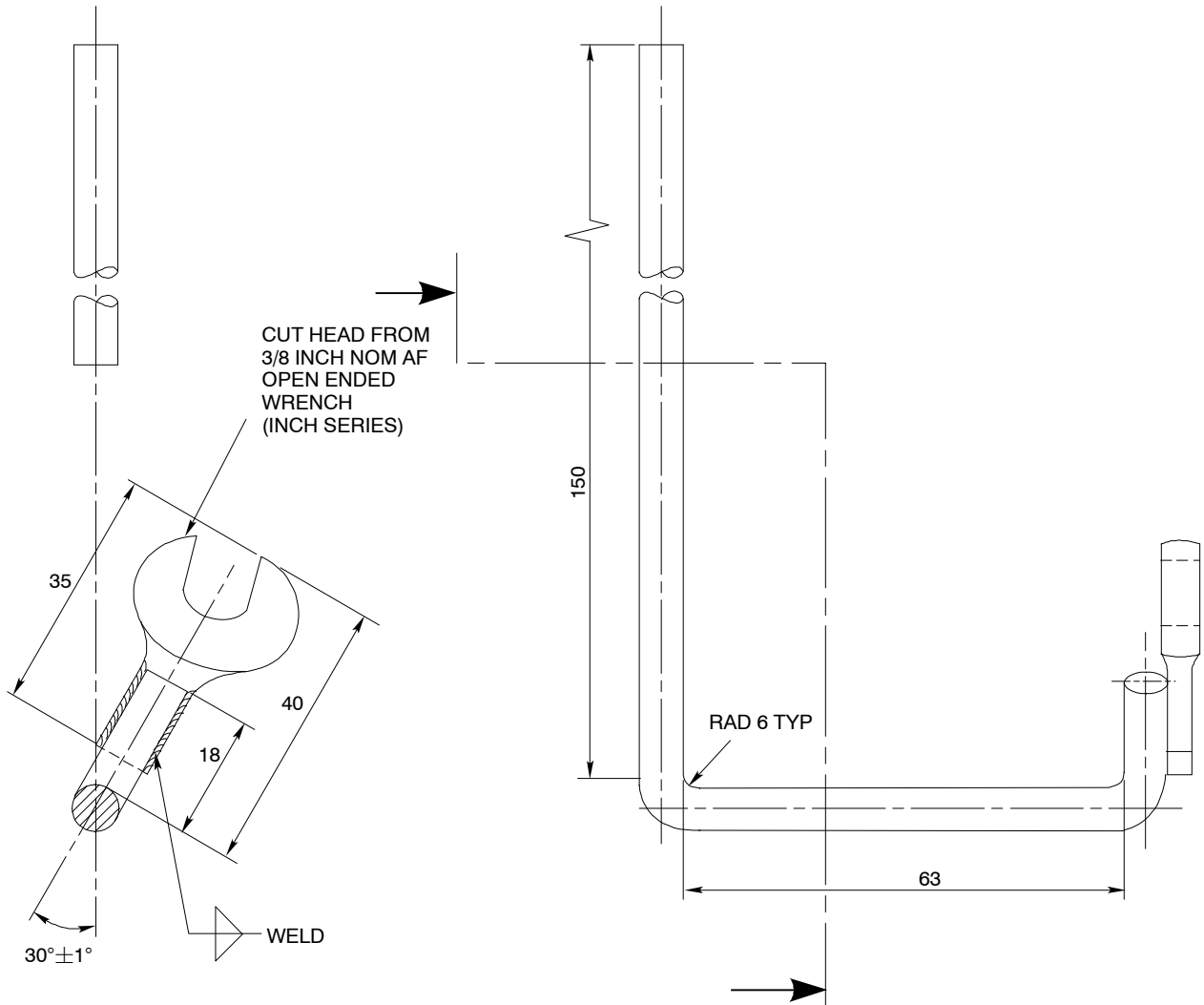
1. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED AND HAVE LIMITS OF ± 1 MILLIMETER
2. REMOVE SHARP EDGES

MATERIAL:

0.25 IN DIA BRIGHT MILD STEEL BAR OR EQUIVALENT

Figure 5 Special Wrench - 3/8 AF, Left Hand (PN NMD-53-14-2T)

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NOTES:

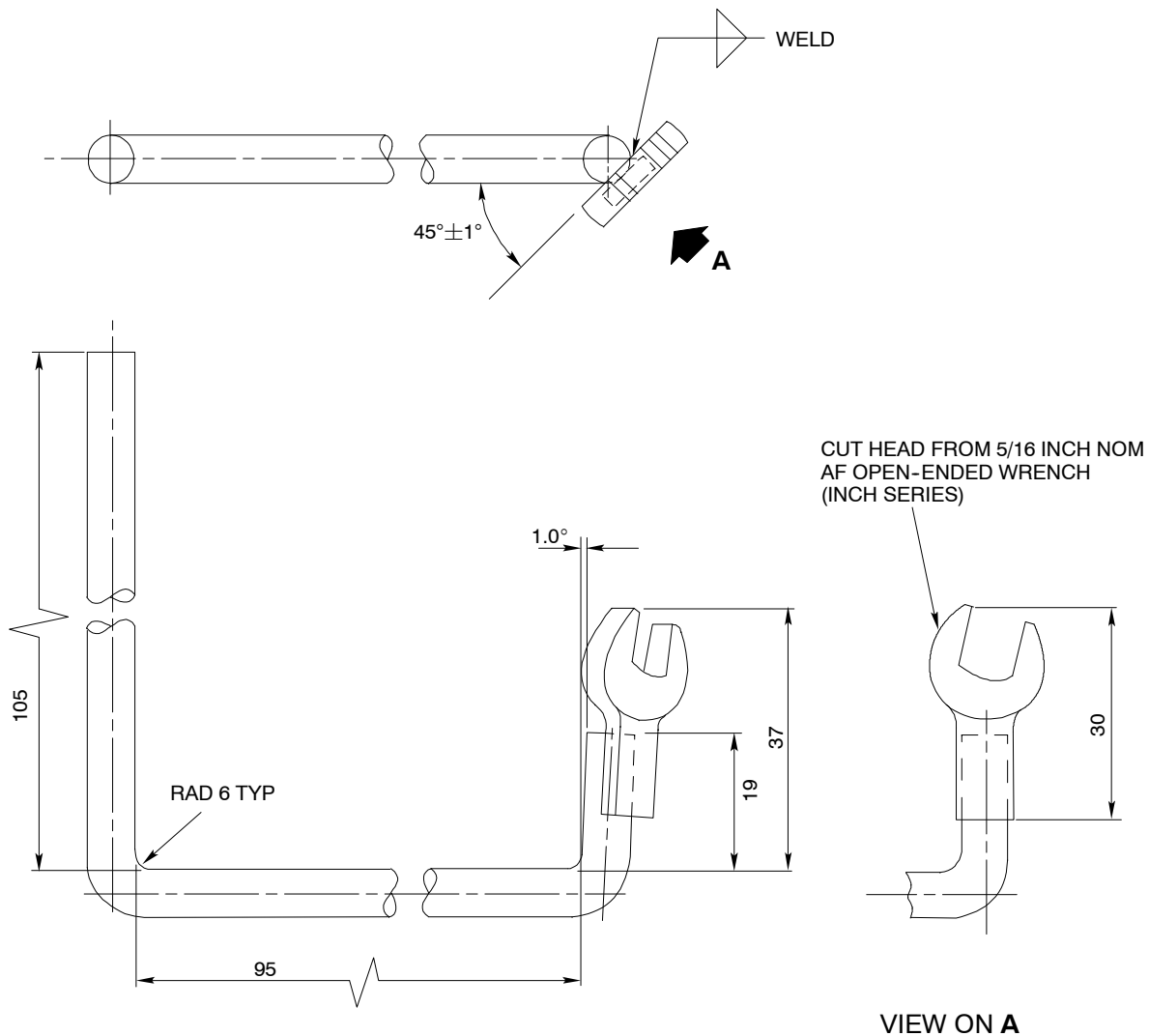
1. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED AND HAVE LIMITS OF ± 1 MILLIMETER
2. REMOVE SHARP EDGES

MATERIAL:

0.25 IN DIA BRIGHT MILD STEEL BAR OR EQUIVALENT

Figure 6 Special Wrench - 3/8 AF, Right Hand (PN NMD-53-14-3T)

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NOTES:

1. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED AND HAVE LIMITS OF ± 1 MILLIMETER
2. REMOVE SHARP EDGES

MATERIAL:

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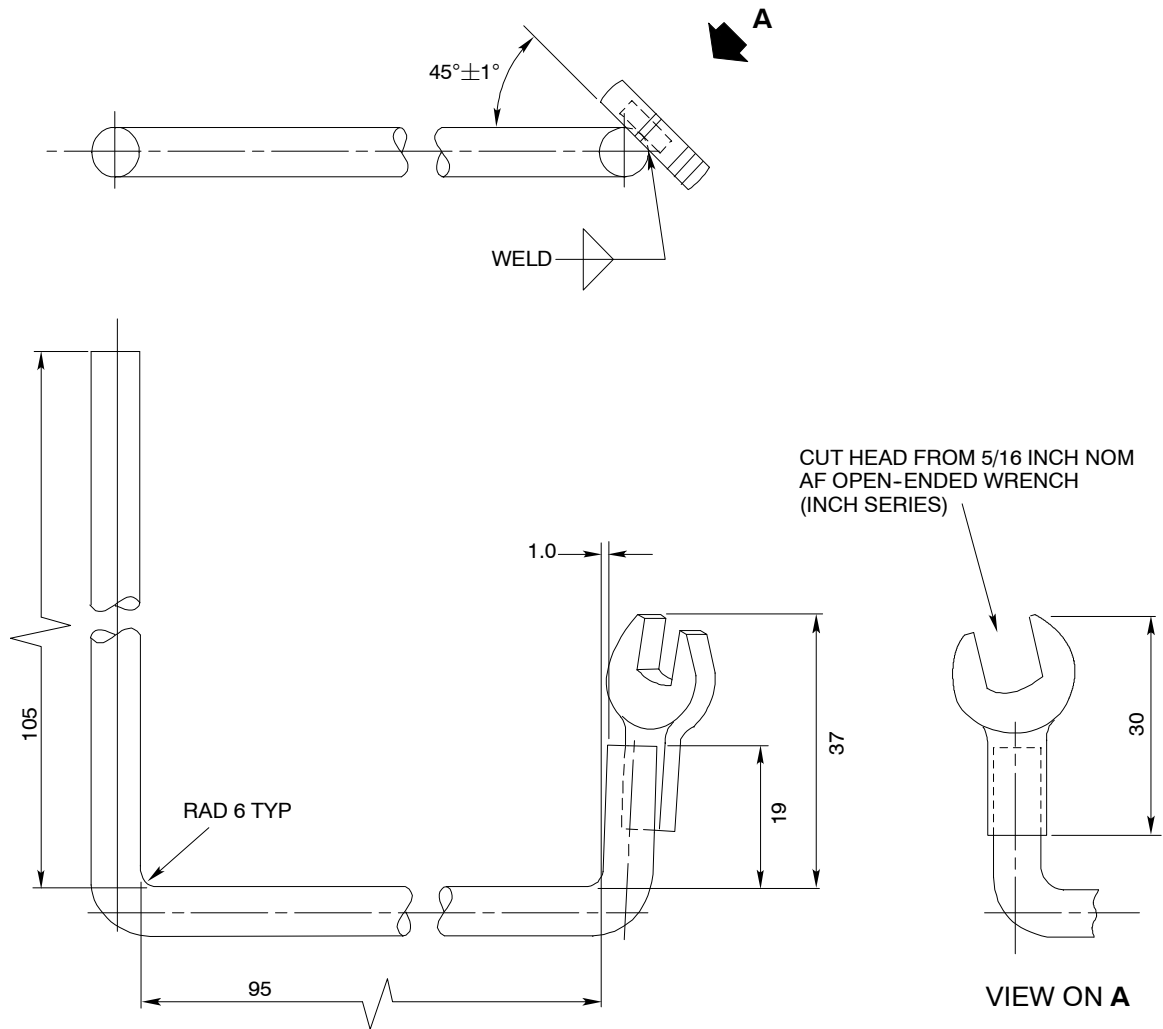
Figure 7 Special Wrench - 5/16 AF, Left Hand (PN NMD-53-14-4T)

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NOTES:

1. DIMENSIONS IN MILLIMETERS UNLESS OTHERWISE SPECIFIED AND HAVE LIMITS OF ±1 MILLIMETER
2. REMOVE SHARP EDGES

MATERIAL:

0.25 IN DIA BRIGHT MILD STEEL BAR OR EQUIVALENT

Figure 8 Special Wrench - 5/16 AF, Right Hand (PN NMD-53-14-5T)