Nomad
SERVICE BULLETIN

Reference No 262

TRANSMITTAL LETTER
FOR
SERVICE BULLETIN ANMD-55-31 REV 1

STABILISERS - HORIZONTAL STABILISER - CONTROL ROD TRUNNION GAP - INSPECTION AND REPAIR

Reason

1. There have been reports that the trunnion gap does not meet specified limits. This revision introduces a repair scheme for horizontal front spar assemblies which do not meet the required trunnion gap of 0.270 to 0.355 in.

Instructions

2. Insert Service Bulletin ANMD-55-31 Revision 1, dated 5 Jul 94, into the Service Bulletin Publication and annotate the index accordingly.

Revision Status

Original	11 Sep 92
Revision 1	5 Jul 94

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TECHNICAL SERVICES MANAGER

Nomad
SERVICE BULLETIN

STABILISERS — HORIZONTAL STABILISER — CONTROL ROD TRUNNION GAP — INSPECTION AND REPAIR

1. PLANNING INFORMATION

A. Effectivity

(1) All horizontal stabilisers fitted with horizontal stabiliser front spar assembly PN 1/N–30–310, 2/N–30–310, 3/N–30–310 and 4/N–30–310 RETRO.

(2) All horizontal stabiliser front spar assemblies identified above not yet fitted to a horizontal stabiliser.

NOTE

The above front spar assemblies are associated with the incorporation of modification N663. Refer to Service Bulleting ANMD–55–26.

(3) Horizontal front spar assemblies identified with the serial numbers listed below are exempt from inspection. This list includes ASTA held spares.

GA AMAS/ 22	GA AMAS/ 36	GA AMAS/ 37	GA AMAS/ 41
GA AMAS/ 44	GA AMAS/ 45	GA AMAS/ 48	GA AMAS/ 49
GA AMAS/ 50	GA AMAS/ 51	GA AMAS/ 52	GA AMAS/ 53
GA AMAS/ 54	GA AMAS/ 55	GA AMAS/ 56	GA AMAS/ 57
GA AMAS/ 59	GA AMAS/ 60	GA AMAS/ 61	GA AMAS/ 62
GA AMAS/ 63	GA AMAS/ 64	GA AMAS/ 65	GA AMAS/ 66
GA AMAS/ 67	GA AMAS/ 68	GA AMAS/ 69	GA AMAS/ 70
GA PAC/ 75	GA PAC/ 76	GA PAC/ 77	GA PAC/78
GA PAC/ 79	GA PAC/ 80		

(4) The following aircraft are also exempt from this inspection.

LS–26 LS–42 LS–55

(5) Horizontal stabilisers and front spar assemblies already measured and where the gap has been reported being within tolerance to ASTA Defence (Logistics), are exempt from Part 1 — Inspection.

(6) Horizontal stabilisers and front spar assemblies which conform to the gap requirement, are exempt from Part 2 — Repair.

B. Reason

(1) Instances have been reported where the trunnion gap does not meet limits.

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(2) Reason for Revision 1

This revision introduces a repair scheme for horizontal front spar assemblies (Ref Sect 1A), which do not meet the required trunnion gap of 0.270 to 0.355 in.

C. **Description**

(1) Part 1 — Inspection

The control rod is removed and the trunnion gap dimension measured and reported to ASTA Defence (Logistics).

(2) Part 2 — Repair

The trunnion blocks and trunnion diaphragms are replaced while ensuring that the correct trunnion gap is maintained during the rivetting process.

D. **Compliance**

The inspection and the repair, if needed, are mandatory.

(1) Part 1 — Inspection

(a) At or before the next 100 hourly service (or 150 hourly, depending on operators maintenance schedule) for horizontal stabiliser front spar assemblies already fitted to aircraft.

(b) Before fitting horizontal stabiliser to aircraft.

(c) Before fitting front spar assembly to horizontal stabiliser.

(2) Part 2 — Repair

(a) When repair is necessary, within 150 hours TIS after receipt of Revision 1 to this Service Bulletin for in-service horizontal stabilisers.

(b) Before fitment to aircraft for all spare horizontal stabilisers.

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) Part 1 — Inspection

3 manhours

(2) Part 2 — Repair

28 manhours

G. **Materials — Price and Availability**

(1) Where repair is necessary.

Upon receipt of this Service Bulletin place a one time only Free of Charge (FOC) purchase order on ASTA Defence (Logistics) for the repair kit. Ensure the purchase order clearly states:

(a) that the repair is to be carried out within 150 hrs TIS following the inspection,

(b) delivery address for each kit required,

(c) quantity of kit(s) required,

(d) identification (manufacturing Line Sequence (LS) No and/or Registration No) of each aircraft affected, and

(e) identification (S/N) of horizontal stabilisers which are:

1 fitted to aircraft,

2 held as spares, and

3 spar assemblies not yet fitted to horizontal stabilisers.

H. **Tooling — Price and Availability**

(1) Part 1 — Inspection

None required.

(2) Part 2 — Repair

Field Jig PN 1630–3510 is available for "on loan" use. Refer also to Figures 5 and 6 for locally manufactured tools.

I. **Weight and Balance**

None.

J. **References**

Maintenance Manual Chap 27–40–00, 27–40–05, 55–20–00 and 55–30–00

Service Bulletin ANMD–55–26

Service Bulletin ANMD–55–30

K. **Publications Affected**

None.

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Part 1 — Inspection**

(1) Remove dorsal fin (Ref MM Chap 55–30–00).

(2) Disconnect horizontal stabiliser control rod (Ref MM Chap 27–40–05).

(3) Using feeler gauges or a ball gauge and micrometer, measure and record the dimension of the trunnion gap (Ref Fig 1).

NOTE

The acceptable trunnion gap is 0.270 to 0.355 in.

(4) Reconnect horizontal stabiliser control rod (Ref MM Chap 27–40–05).

(5) Refit dorsal fin (Ref MM Chap 55–30–00).

(6) Report results of inspection to ASTA Defence (Logistics) within 48 hours of inspection and include front spar assembly Serial No and trunnion gap dimension.

B. **Part 2 — Repair**

(1) Use repair kit PN ANMD–55–31–1.

NOTE

- Use 3.3 mm dia or No 30 drill for 1/8 in dia rivet holes.
- Use 4.0 mm dia or No 22 drill for 5/32 in dia rivet holes.
- Damaged rivet holes may be drilled to accept the next larger size rivet provided minimum edge distance requirements are met (ie 0.21 in for 1/8 in fasteners and 0.26 in for 5/32 in fasteners).
- Wet assemble blind rivets using a suitable epoxy polyamide primer (eg Mastinox, Duralac etc) or Polysulphide Rubber Compound (type PR1422 A2) or a suitable similar alternative.
- Wet assemble faying surfaces (diaphragm to diaphragm, diaphragm to plates) using polysulphide rubber compound PR1436–G B–2, PR1422 B2 or a suitable and similar alternative.
- If solid rivets cannot be fitted as shown in Figures 1 and 2, then alternative Cherrymax rivets may be used at the locations shown in Figures 3 and 4.
- Deburr all fastener holes prior to final assembly.
- When removing old diaphragms and angles, take care to drill off the rivet heads only, then, using a suitable support, punch remainder of the rivet through.

  This will help avoid unnecessary replacement of vertical angles PN 1/N–30–275 and 1/N–30–292 and also ensure that the replacement diaphragms are correctly located.
- Locally manufacture tooling according to Figures 5 and 6 before starting repairs.

(2) Remove dorsal fin (Ref MM Chap 55–30–00).

(3) Disconnect horizontal stabiliser control rod (Ref MM Chap 27–40–05).

NOTE

For aircraft fitted with Customer Option G18, G18–24, R18A and R18B (airframe de-icing) fitted, disconnect airframe de-icing hardware and remove mounting bracket tee piece PN 1/N–72–238 to gain access for rivetting.

(4) Remove the trim tabs and the horizontal stabiliser (Ref MM Chap 55–20–00).

(5) Place the horizontal stabiliser on suitable firm supports and ensure that the top surface is uppermost.

(6) Fit Jig PN 1630–3510, picking up the horizontal stabiliser mounting brackets and control rod trunnions and ensuring that the jig trunnion pin is fully located.

(7) Adjust the upper and lower stop bolts, using the attached plates as protection between the stop bolts and spar caps. Ensure firm, but not heavy, contact and lock the bolts in position with the locknuts supplied.

(8) Remove the jig and put aside, taking care not to change the position of the stop bolts.

(9) Remove mass balance weights and studs. Retain all attaching hardware except the self-locking nuts. Mark front and upper edges of weights to ensure correct reassembly.

NOTE

Keep the mass balance weights in order of removal.

(10) Remove the mass balance block from the mass balance. Mark the front and upper surfaces to assist in correct assembly.

(11) Derivet and identify upper mass balance channel PN 1/N–30–263 (Ref Fig 1 Sht 1).

(12) Remove the three forward gust damper mounting bolts and countersunk washers and retain for later reinstallation.

CAUTION

RECORD LOCATION OF ALL GUST DAMPER MOUNTING BOLTS. (IF IN DOUBT REFER TO SB ANMD–55–30).

(13) Derivet LHS mass balance web PN 1/N–30–265 (Ref Fig 1 Sht 1).

NOTE

This is required to gain access to the LHS trunnion diaphragm PN 1/N–30–267 (Ref Fig 1 Sht 1). Do not remove the last row (closest to spar) of rivets attaching the LHS mass balance web (Ref Fig 1 Sht 2 NOTE).

(14) Derivet gust stop damper rear support diaphragm PN 1/N–30–293 (Ref Fig 1 Sht 1).

(15) Derivet lower and aft ends of both trunnion diaphragms PN 1/N–30–267 LH and 1/N–30–268 RH and forward damper support diaphragm PN 1/N–30–296 (Ref Fig 1 Sht 1).

(16) Remove diaphragms and damper from the mass balance arm and on a work bench, remove the gust stop damper PN 1/N–30–270 (Ref Fig 1 Sht 1).

(17) On a work bench derivet trunnion diaphragms from angles PN 1/N–30–292 and 1/N–30–275. Scrap trunnion diaphragms.

NOTE

Angles PN 1/N–30–292 and PN 1/N–30–275 MUST remain attached to rear support diaphragm PN 1/N–30–293. Use 3/16 in skin pins to retain angle PN 1/N–30–292.

(18) Temporarily reinstall damper rear support diaphragm PN 1/N–30–293 (Ref Fig 1 Sht 1) and using skin pins repin the LHS mass balance web.

(19) Refit Jig PN 1630–3510 without the use of the supplied trunnion pin.

(20) Install to jig a new trunnion block PN 1/N–30–299 on RHS (Ref Fig 1 Sht 1) using the locally manufactured trunnion pin (Ref Fig 5).

(21) Install the new trunnion diaphragm (RHS) PN 1/N–30–268 and then clamp, ensuring a flush fit with the horizontal stabiliser spar, the lower mass balance channel and trunnion.

NOTE

The correct and careful placement of the new diaphragms and trunnions is the key to ensure an acceptable trunnion gap at the conclusion of this repair. Any forcing and/or distortion during assembly of parts will cause undesirable gaps and stresses after rivetting (Ref Fig 1 Sht 1).

(22) Mark through and drill the new trunnion diaphragm.

(23) Remove the diaphragm, then deburr and remove all swarf. Reinstall the new diaphragm and reclamp as detailed in step 21 using skin pins.

(24) Using the locally manufactured trunnion pin (Ref Fig 5) and ensuring it has a sharp point, insert the pin through Jig PN 1630–3510 and trunnion and with a slight tap centre mark the RHS diaphragm installed in step 23.

(25) Remove the trunnion pin and diaphragm and drill a 0.375 (3/8) in hole at the marked location.

(26) With the other locally manufactured tool (Ref Fig 6) drill plate, and the old RHS diaphragm removed in step 15, backdrill the trunnion periphery rivet holes into the tool.

(27) With the drill plate referred to in the previous step, locate the new trunnion block, align the rivet holes, then clamp and drill the 0.375 (3/8) in trunnion bolt hole into the drill plate.

(28) Attach the drill plate to the new diaphragm (1/N–30–268), aligning the trunnion bolt hole and transfer the rivet attach holes through to the diaphragm.

(29) Open 0.375 (3/8) in hole drilled in step 25 to 0.406 (13/32) in.

(30) Using a new LHS diaphragm PN 1/N–30–267 repeat steps 20 to 29 with the exception of steps 26 and 27.

(31) Wet assemble and rivet the trunnion block, PN 1/N–30–299, and new anchor nut PN MS21059–L6 to the RHS diaphragm.

(32) Wet assemble and rivet the trunnion block PN 1/N–30–299 to LHS diaphragm.

(33) Reassemble and pin the LHS and RHS diaphragms to the horizontal stabiliser spar mass balance arm exactly according to Figure 1 (Ref NOTE following step 21).

(34) Check the trunnion gap and trunnion alignment, using pin supplied with Jig PN 1630–3510, to ensure gap is 0.320 in.

(35) Obtain angle PN 1/N–30–276 and on the slightly longer side flange, drill 4 holes (3.3 mm) at equal pitch along centre line of flange, maintaining a minimum edge distance of 2D, (unless previously marked) and deburr.

(36) Remove pins installed in step 18 and reinstall the upper mass balance channel previously removed in step 11.

NOTE

Do not repin LHS mass balance web at this stage.

(37) With the shorter flange of angle PN 1/N–30–276 (Ref Step 35) to the top, centralise the angle on the outboard side of the LH diaphragm and hold the angle up against the upper mass balance channel, reinstalled in step 36.

(38) Using a drill, mark the LH angle PN 1/N–30–276 (Ref Step 36 and 37) through the upper mass balance channel, remove the angle and drill the angle out to 3.3 mm. Reinstall the angle with skin pins.

(39) Backdrill through the installed angle into the LHS diaphragm, dismantle, deburr and repin the angle to the diaphragm and upper mass balance channel.

(40) Pin the LHS mass balance web to the arm and spar.

(41) Derivet the RHS mass balance web and lower mass balance channel.

NOTE

Do not remove the last row (closest to spar) of rivets attaching the RHS mass balance web (Ref NOTE on Fig 1 Sht 2).

(42) Obtain the second angle PN 1/N–30–276 and on the longer flange drill 4 holes (3.3 mm) at equal pitch (unless previously marked) and deburr.

(43) With the shorter flange of angle PN 1/N–30–276 to the top, centralise the angle on the outboard side of the RH diaphragm and hold the angle against the upper mass balance channel.

(44) Using a drill mark the RH angle P/N 1/N–30–276 through the upper mass balance channel, remove the angle and drill the angle out to 3.3 mm. Reinstall the angle using skin pins.

(45) Backdrill through the installed angle into the RHS diaphragm, dismantle, deburr and repin the angle to the diaphragm and upper mass balance channel.

(46) Remove Jig PN 1630–3510.

(47) Repin the RHS mass balance web.

(48) Turn the horizontal stabiliser over so that the side of the arm through which the operating rod is normally inserted is uppermost.

(49) Disassemble side balance arm webs, upper mass balance channel and rear support diaphragm P/N 1/N–30–293.

NOTE

Solid rivets are preferred (Ref Fig 1 and 2) however, alternative Cherrymax rivets (Ref Fig 3 and 4) may be used where access is difficult.

(50) Wet assemble and rivet angles PN 1/N–30–276 (LH and RH) to diaphragms PN 1/N–30–267 and PN 1/N–30–268 (Ref Fig 1).

(51) Remove angles PN 1/N–30–275 and PN 1/N–30–292 from rear support diaphragm PN 1/N–30–293.

(52) Wet assemble angle PN 1/N–30–275 (removed in step 51) to diaphragm PN 1/N–30–267 and then rivet assembly to main spar (LHS of BL.O) (Ref Fig 1 Sht 1).

(53) Wet assemble angle PN 1/N–30–292 (removed in step 51) to diaphragm PN 1/N–30–268 (Ref Fig 1 Sht 1).

NOTE

If the aft row of gust damper attachment bolts is too close to the bend radius of the angle for satisfactory rivetting and wirelocking in situ then wet assemble the angle to diaphragm P/N 1/N–30–268 on the workbench.

(54) Whilst on the workbench wet assemble new RHS trunnion diaphragm assembly to rear support diaphragm PN 1/N–30–293 and gust damper and wirelock.

NOTE

Refer to SB ANMD-55-30 for installation instructions.

(55) Wet assemble and install items assembled in steps 53 and 54 (Ref Fig 1 Sht 1).

(56) Rivet the forward end of the LH diaphragm P/N 1/N–30–267 to the assembly installed in step 55.

(57) Attach the forward lateral diaphragm P/N 1/N–30–296 to the gust damper using the mounting hardware retained in step 12.

NOTE

Refer to SB ANMD-55-30 for installation instructions.

(58) Wet assemble the lower mass balance channel to the LH and RH mass balance webs and the structure installed in step 53 and 55. Use rivets according to Figure 1 starting at the lower flanges of diaphragms PN 1/N–30–267 and PN 1/N–30–268.

NOTE

Cherrymax rivets CR3523–4–2 may be used where the LH mass balance web butts against the aft lateral diaphragm PN 1/N–30–293.

(59) Turn the horizontal stabiliser over again ensuring that the top skin is now uppermost.

(60) Reinstall jig PN 1630–3510 and recheck the trunnion gap and trunnion alignment.

(61) Clean and apply protective coating where required to the mass balance area prior to wet assembling the upper mass balance channel to the balance arm.

(62) Wet assemble and rivet the upper mass balance channel to the balance arm structure.

(63) Reinstall the mass balance weights studs and attaching hardware in the same order to that found and recorded prior to their removal (Ref Step 9 and 10).

NOTE

Use new self-locking nuts when clamping the installed weights (Ref SB ANMD–55–30 Fig 1).

(64) Using indelible ink, re-identify the mass balance arm structure by marking the upper surface of the mass balance arm with the Service Bulletin number, ANMD–55–31.

(65) Carry out a static balance check (Ref Table 1).

NOTE

The static balance may be carried out with the horizontal stabiliser assembly installed on the aircraft in a still air environment, preferably in a closed hangar, if balance fixture PN 1600–0003 is not available.

Table 1 Horizontal Stabiliser Weight Details

Horizontal Stabiliser Configuration	Weight of Balanced Horizontal Stabiliser		Total Weight of Mass Balance	
	lb	kg	lb	kg
Standard (ie 2 coats of polyurethane or acrylic paint)	158.7 ±3.1	72.0 ±1.4	18.1 ±0.95	8.2 ±0.43
Standard plus option G18 (de-icing boots)	162.9 ±3.1	73.9 ±1.4	15.4 ±0.95	7.0 ±0.43
Standard plus option R18A (military de-icing kit)	162.3 ±3.1	73.6 ±1.4	17.4 ±0.95	7.9 ±0.43
Standard plus option R18B (military de-icing kit)	160.9 ±3.1	73.0 ±1.4	17.9 ±0.95	8.1 ±0.43

NOTE

Standard tailplanes fitted with CO G288, Static Discharge Wicks, are allowed a total weight of 0.7 kg above that listed in Table 1. The mass balance must be within the limits listed for the respective tailplane configuration.

(66) Install the horizontal stabiliser (Ref MM Chap 55-20-00 and SB ANMD-55-26).

(67) Check the rigging of the horizontal stabiliser in accordance with Service Bulletin ANMD–55–26 Section 2.C.(16).

(68) Operate the horizontal stabiliser and check for full and free movement.

(69) Carry out a breakout check (Ref MM Chap 27–40–00).

(70) Perform a dual inspection of the horizontal stabiliser and pitch trim systems.

(71) Install dorsal fin (Ref MM Chap 55–30–00).

3. **MATERIAL INFORMATION**

A. **Part Required per Aircraft**

Modification parts kit PN ANMD-55-31-1 is available from ASTA Defence (Logistics).

New Part No	Qty	Description	Old Part No	Instruction/Disposition
Contents of Service Bulletin kit ANMD–55–31–1				
1/N–30–267	1	Diaphragm	1/N–30–267	Scrap old part
1/N–30–268	1	Diaphragm	1/N–30–268	Scrap old part
1/N–30–275	1	Angle	1/N–30–275	Scrap old part
1/N–30–276	2	Angle	1/N–30–276	Scrap old part
1/N–30–292	1	Angle	1/N–30–292	Scrap old part
1/N–30–299	2	Trunnion	1/N–30–299	Scrap old part
CR3523–4–2	70	Rivet, Blind, Univ Hd		Altve to MS20470AD–4–4 and MS20470AD–4–5
CR3523–5–3	10	Rivet, Blind, Univ Hd		Altve to MS20470AD–5–6
MS20470AD–4–4	40	Rivet, Solid, Univ Hd		
MS20470AD–4–5	130	Rivet, Solid, Univ Hd		
MS20470AD–4–6	20	Rivet, Solid, Univ Hd		
MS20470AD–5–5	30	Rivet, Solid, Univ Hd		
MS20470AD–5–6	30	Rivet, Solid, Univ Hd		
MS20470AD–6–6	30	Rivet, Solid, Univ Hd		
MS20470AD–6–7	40	Rivet, Solid, Univ Hd		
MS20470AD–6–8	30	Rivet, Solid, Univ Hd		
MS21059–L6	1	Nut, Anchor	MS21059–L6	Scrap old part
Parts obtained from own stock or local source				
MS20995 C20	A/R	Lockwire		
MS20995 C32	A/R	Lockwire (Altve)		

B. **Special Tools and Equipment**

New Part No	Qty	Description	Old Part No	Instruction/Disposition
1630–3510	1	Jig, Field		Loan from ASTA

4. **RECORDING**

Record compliance with Service Bulletin ANMD–55–31 in the aircraft Log Book and specify either "Inspection" or "Repair" in the Log Book Statement.

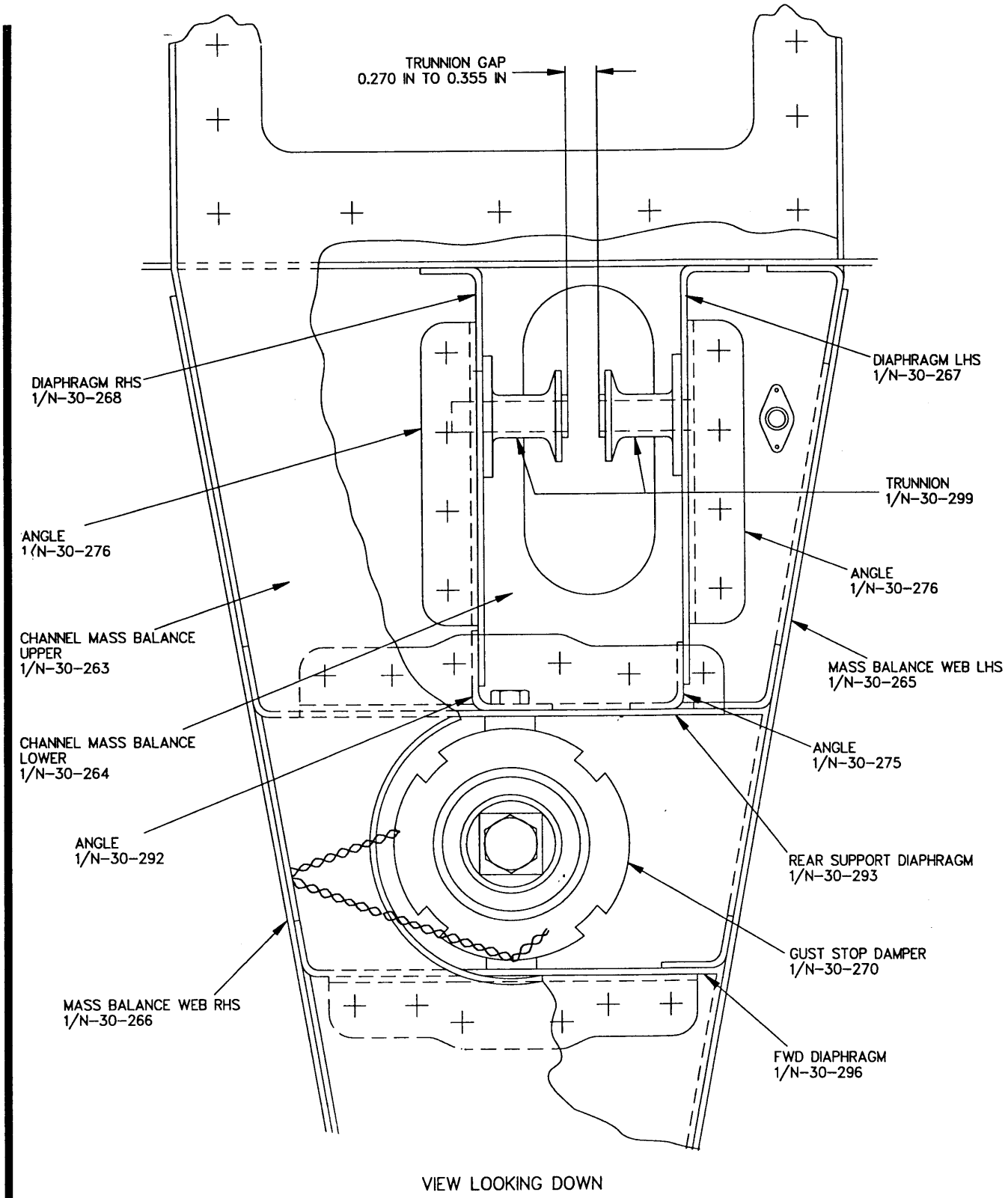


Figure 1 Horizontal Stabiliser Mass Balance Arm (Sht 1 of 2)

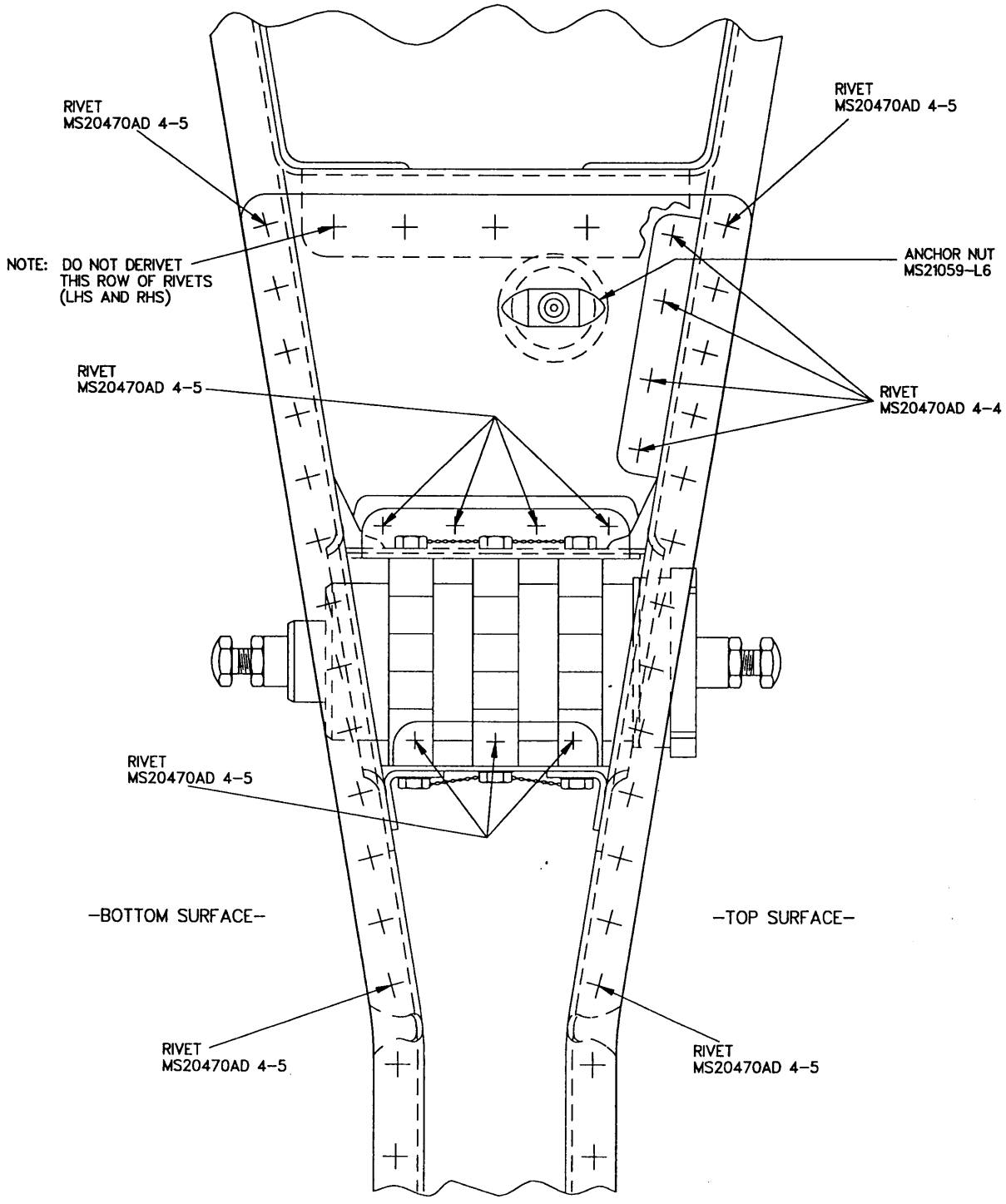
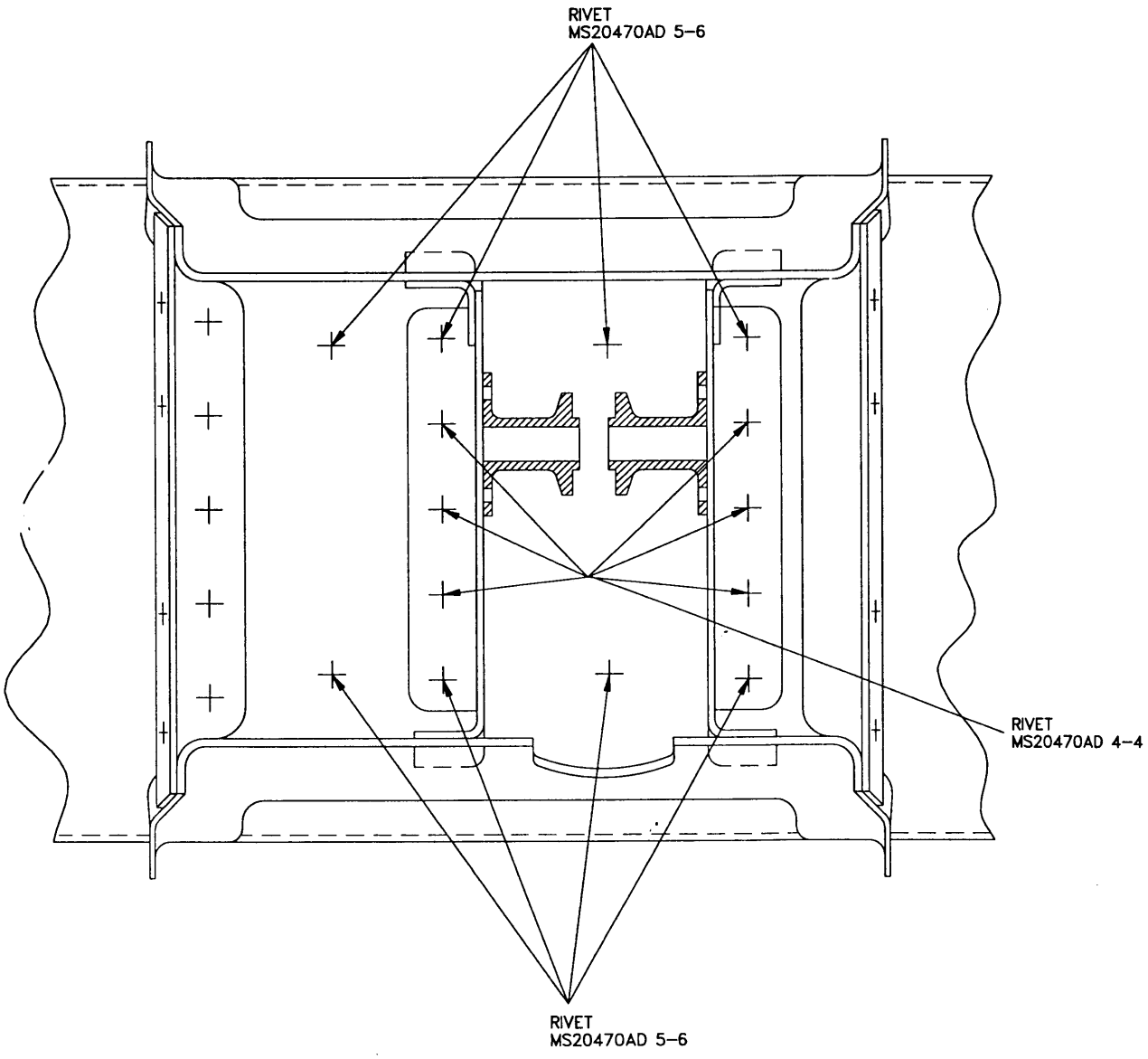


Figure 1 Horizontal Stabiliser Mass Balance Arm (Sht 2 of 2)



VIEW LOOKING AFT

Figure 2 Trunnion

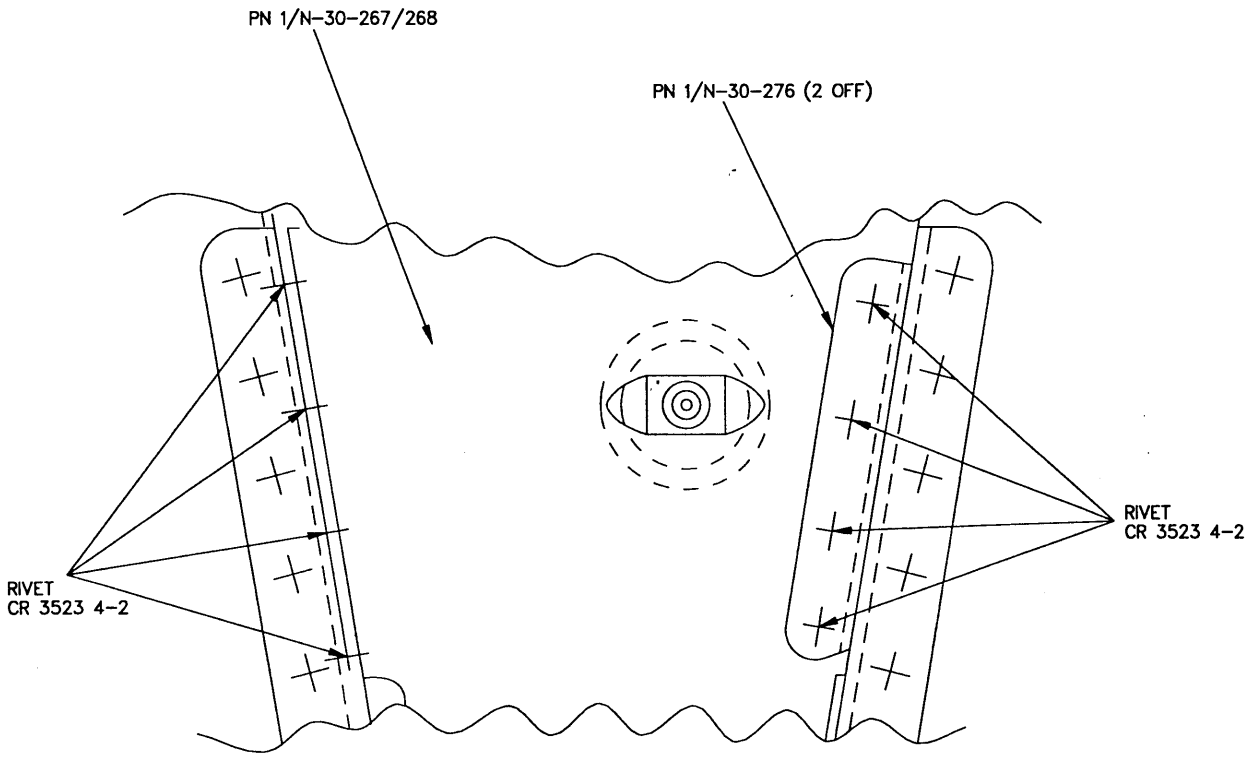


Figure 3 Mass Balance Arm — Alternative Rivetting Scheme (Sht 1 of 2)

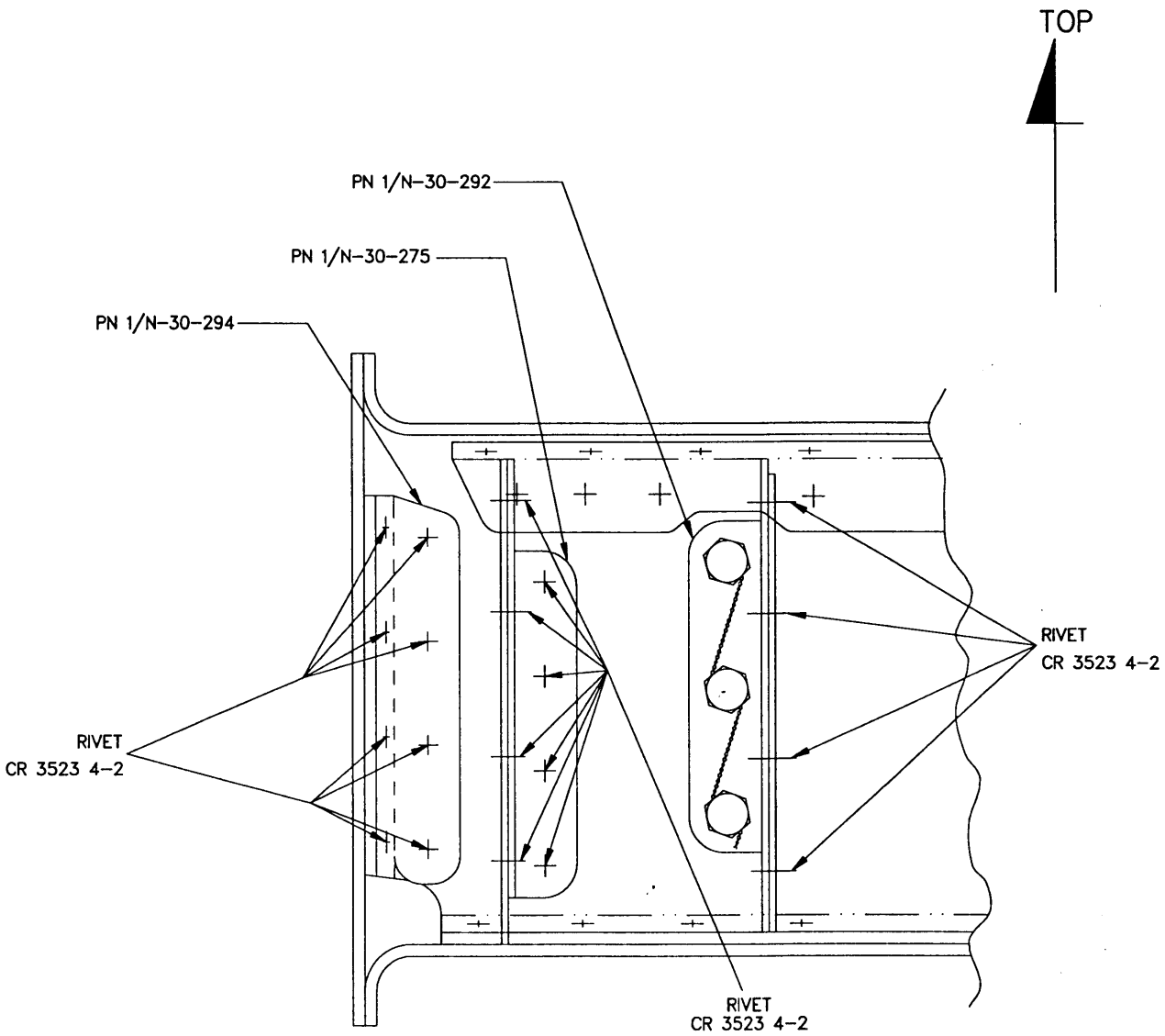


Figure 3 Mass Balance Arm — Alternative Rivetting Scheme (Sht 2 of 2)

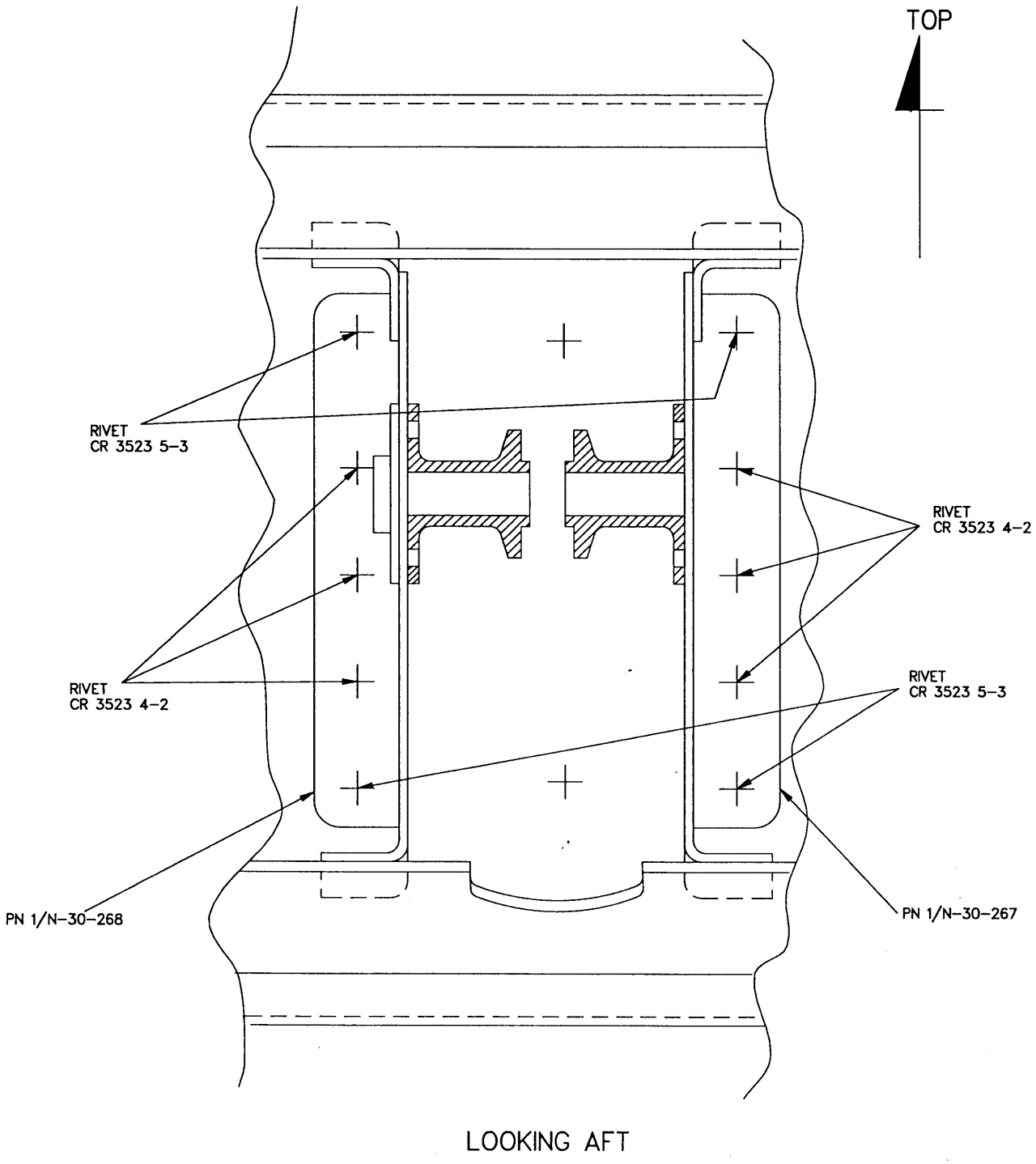
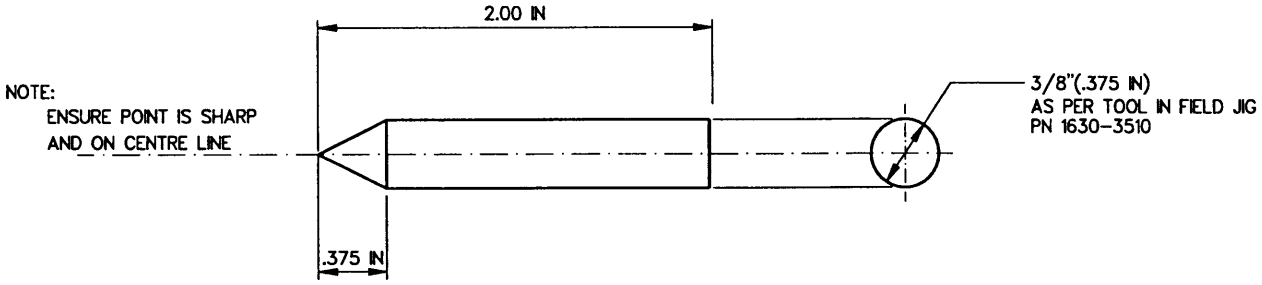
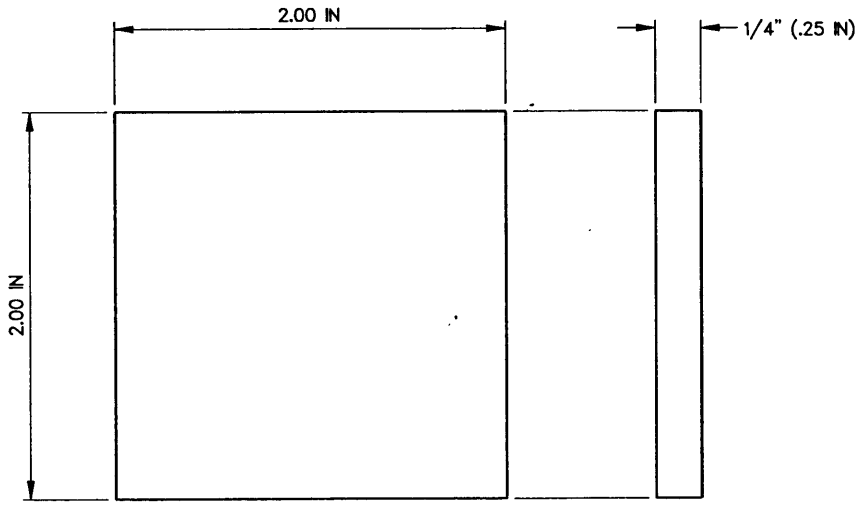


Figure 4 Trunnion — Alternative Rivetting Scheme



MATERIAL: STEEL

Figure 5 Trunnion Pin Manufacture



MATERIAL: ALLUMINIUM ALLOY

Figure 6 Drill Plate Manufacture