WINGS - FLIGHT CONTROLS — FLAPS - MODIFIED OUTBOARD FORWARD FLAP LINKAGE MODIFICATION N953

1. PLANING 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 109 to 114, 116, 118, 125,126, 131 to 134, 136 to 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, 139, 140, 142.

(2) Spares

Not applicable

B. Reason

(1) The unique configuration of the double-slotted wing flaps of the Nomad result in the aft Flaps being pivoted on the structure of the forward Flap. Recent studies have shown that unacceptable flexibility exists in the outboard forward Flap operating mechanism, such as to allow flutter to occur in extreme circumstances. Modification N953 introduces changes to the linkage assembly to restore the necessary rigidity to the outboard forward Flap, and hence the outboard aft Flap (Aileron).

C. Description

(1) This Alert Service Bulletin requires the fitment of a modified Flap actuation linkage to the outboard forward Flap assembly. Modification N953 introduces modifications to this linkage assembly to restore the necessary rigidity for the pivot of the outboard aft Flap (Aileron).

(2) This Alert Service Bulletin further addresses a modification to the outboard aft Flap (Aileron) Mass Balance, resulting in a minor increase in weight.

D. Compliance

(1) Compliance with Alert Service Bulletin ANMD-27-53 is mandatory. It shall be implemented within 12 months following receipt of this Alert Service Bulletin or sooner if an operational requirement exists that requires the use of 38° Flap.

(2) Compliance with Alert Service Bulletin ANMD-27-53 cancels the limitations imposed by Alert Service Bulletin ANMD-57-18, such that there will no longer be a restriction on the use of 38° Flap.

(3) Aircraft N22C-108 and N24A-60 have the intent of this Alert Service Bulletin incorporated by Hawker de Havilland Engineering Notes NFT/734 and NFT/735 respectively, and require only the rework detailed in Para 4.I. of this Alert Service Bulletin in order to achieve compliance.

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.

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F. **Manpower**

72 Manhours

G. **Material – Price and availability**

Modification Kits are to be supplied by Gippsland Aeronautics.

H. **Tooling**

Standard Rigging Pins are utilised plus special Bullet (Ref Fig 3)

I. **Weight and Balance Change**

None

J. **References**

Maintenance Manual Chapter 27 and Chapter 57

Illustrated Parts Catalogue Chapter 27 and Chapter 57

Structural Repair Manual Chapter 57

K. **Publications Affected**

Maintenance Manual

Illustrated Parts Catalogue

Structural Repair Manual

2. **ACCOMPLISHMENT INSTRUCTIONS**

For convenience many of the existing parts involved in the preparation for and installation of Modification N953 may be found in the Illustrated Parts Catalogue and the references below should be visited prior to commencment.

Those aircraft not fitted with Customer Option G99, Auxulliary Fuel Tanks, may require an additional underwing access panel to be fitted (Ref Fig 4). This panel is required to provide access for the installation of a bracket to support a duplicated Idler Arm.

While some illustrations in this Alert Service Bulletin show the LH Wing Flap/Aileron operating mechanism, it is implicit that Modification N953 is installed on both wings

A. **Initial Component Removal Sequence**

(1) Remove Ailerons (outboard Aft Flaps) in accordance with MM Chapter 57-50-00, Para 1.E.

(2) Remove outboard Forward Flaps in accordance with MM Chapter 57-50-00, Para 1.G.

(3) Remove Fairings from Flap Hinge Brackets #3 and #4 (Ref IPC Chap 57-30-01, Fig 1 Sheet 1).

(4) Open wing trailing edge doors.

(5) At outboard Flap Bellcrank Wsta 119.05 remove bolt (Ref IPC Chap 27-50-02, Fig 3, item 43) attaching outboard Flap Rod to the inboard Flap Rod. This allows the Flap/Aileron controls to be moved without the need to run the Flap Actuator.

B. **Removal of #3 Flap Hinge Bracket, WSTA 172.75 (Ref MM Chap 57-40-00, Para 1.A)**

NOTE

Removal of the #3 Hinge Bracket gives good access for removing and installing items affected by Mod N953.

(1) Remove lower bolt (Ref IPC Chap 27-10-01, Fig 4, Item 15) at Aileron Lever Arm.

(2) Remove fwd bolt at Flap Bellcrank; this is the lower bolt in (Ref IPC Chap 27-50-02, Fig 4, Item 16).

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(3) Remove Pivot Pin (Ref IPC Chap 27-50-02, Fig 6, item 43) and withdraw Flap Control Bellcrank and Aileron Lever from Hinge Bracket.

CAUTION

THERE ARE 3 SPACERS (ITEMS 44 (2 OFF) AND 45 (REF IPC CHAP 27-50-02, FIG 6)) THAT ARE LIKELY TO FALL OUT.

(4) Remove Flap Hinge Bracket (Ref Fig 1) lower attaching bolt (Ref IPC Chap 57-54-00 Fig 1, Item 7) first, this allows pivoting of hinge bracket for easier removal of top bolt (Item 11).

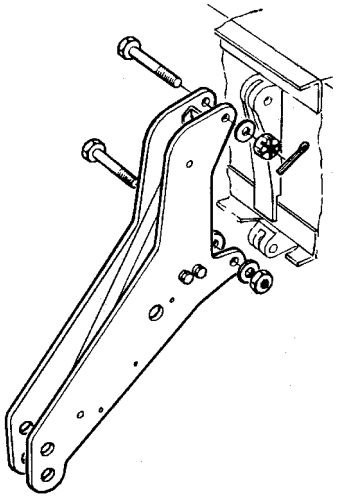

Figure 1 Flap Hinge Bracket Removal (Typical)

(5) As the split pin securing the nut on the top bolt is difficult to manipulate, the short section of fluted trailing edge skin above (Ref Fig 2) may be partially de-riveted and lifted to allow access. Remove split pin, nut, washer and bolt and remove the Hinge Bracket.

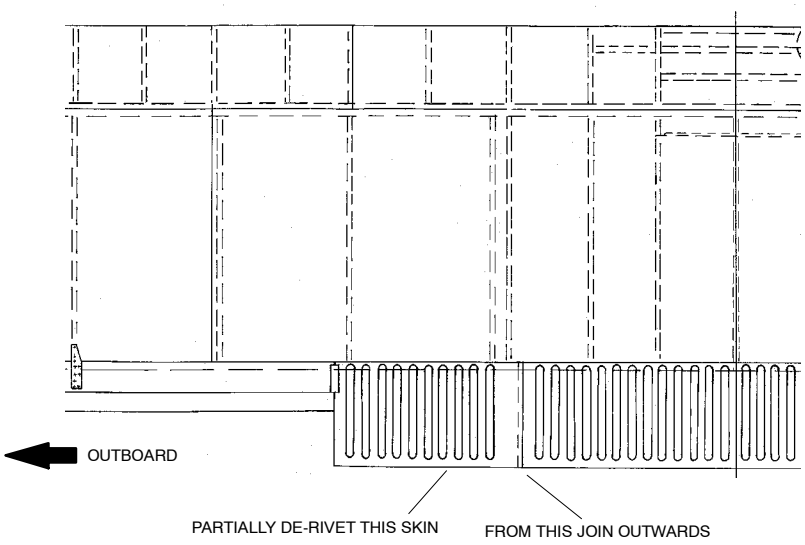

Figure 2 Wing TE Skins - LH Wing Shown, RH Similar

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C. **Removal of Aileron and Flap Bellcrank assemblies at WSTA 175.97 (Ref IPC 27-50-02 Fig 4)**

(1) Remove cotter pin and nut (Ref IPC Chap 27-50-02, Fig 4, Items 19 and 20).

(2) Disconnect upper aileron Bellcrank Bolt (Ref IPC Chap 27-10-01, Fig 3, Item21) and leave Rod (Item 23) connected to Aileron Lever (Item 34).

(3) Remove inboard aileron lever bolt (Ref IPC Chap 27-10-01, Fig 4, Item 33), support and remove Flap Hinge Lever (Item 53) and remove Bellcrank (Ref IPC Chap 27-10-01, Fig 3, Item 44).

(4) Remove Bolts (Ref IPC Chap 27-50-02, Fig 4, Items 5, 15, and 31) and the Bolt of link to Cam Follower Arm (Ref inboard bolt in IPC Chap 27-10-02, Fig 1 Item 4) and remove Spacer and Bellcrank Assy (Ref IPC Chap 27-50-02, Fig 4, Items 21, -17 and -18).

D. **Removal of Cam Follower Arm WSTA 181.97.**

(1) Remove Bolt (Ref IPC Chap 27-10-02, Fig 1, Item 28), and leave Aileron Link (Item 24) attached to Link of interchange mechanism (Item 31).

(2) Remove Cotter Pin and Nut (Ref IPC Chap 27-10-01, Fig 3, Items 28 and 29) and remove Aileron Lever (Item 34).

(3) Remove Bolt (Ref IPC Chap 27-10-02, Fig 1, Item 35 inboard) from Cam Lever and keep Links (Item 31) and Fork End (Item 24) attached to outboard Lever (Item 44). This will allow easier removal of roller assy. Refit Bolt and Spacer Washers to Links.

NOTE

Spacer Washers (Item 34, 2 off) may fall. out.

(4) Remove Bolt (Ref IPC Chap 27-10-02, Fig 1, Item 21) and Roller Assy (Items 22 and 23), clean regrease Needle Roller Bearing (Item 23). Replace bearing if unserviceable.

(5) Remove Cotter Pin and Nut (Ref IPC Chap 27-10-02, Fig 1, Items 10 and 11) remove Cam Follower Arm (Item 17).

E. **Removal of Idler Arm WSTA 146.98 and outboard Flap Control Rod.**

(1) in order to access the head of the existing bolt that secures this Idler Arm, an access panel (P/N 1D/N-20-615) must be present (consistent with the fitment of Customer Option G99, Auxilliary Fuel Tanks) or be installed as follows (Ref Fig 4):

(a) Cut hole in skin to match Access Panel, position as shown. Deburr and treat edges as per SRM Chapter 51-30-00, Paras 3. and 4.

(b) Remove 3 rivets past each edge of the intended position of Reinforcing Plate (P/N 1C/N-20-615).

(c) Pass Reinforcing Plate through cut-out in skin, and place into position.

(d) Drill through existing rivet holes.

(e) Re-rivet (using Rivets MS20470AD4-3 or MS20470AD4-4 as required) to complete assembly.

(2) Remove Nut (Ref IPC Chap 27-50-02, Fig 3, Item 53). Through the under wing access panel, carefully remove and discard loctited pivot Bolt. Remove Spacer (Item 56), lower and rotate Idler Arm to gain access to bolt attaching inboard flap control rod.

(3) Remove and discard Bolt (Ref IPC Chap 27-50-02, Fig 3 ,Item 46) and remove and retain Idler Arm (Item 57).

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F. **Removal of Flap Control Rod WSTA 146.98 -175.97.**

(1) Remove Bolt connecting the two flap rods (Ref IPC Chap 27-50-02, Fig 4, Item 4) and remove the outboard Flap Control Rod (Item -IA).

G. **Removal of Flap Control Bellcrank and #4 Flap Hinge Bracket WSTA 259.64**

(1) Remove forward Bolt at Flap Bellcrank, this is the lower bolt in (Ref IPC Chap 27-50-02, Fig 5, item 43).

(2) Remove Pivot Pin (Ref IPC Chap 27-50-02, Fig 6, Item 5) and withdraw Flap Control Bellcrank (Item 13) and Spacers (Item 8).

(3) Remove Flap Hinge lower attaching Bolt (Ref IPC Chap 57-54-00, Fig 1, Item 16) first, this allows pivoting of hinge bracket for easier removal of top bolt (Item 20) and remove Hinge Bracket.

3. **REQUIRED REWORK**

NOTE

All areas subject to rework require to be treated as per SRM Chapter 51-30-00, Paras 3. and 4.

A. **Rework #3 Flap Hinge Bracket**

(1) Rework Rear Web of Hinge Bracket (Ref Fig 5) to provide clearance for Goosecrank link.

(2) Rework inboard Side Plate (P/N 1E/N-20-199) of hinge bracket assy (Ref Fig 5) to provide clearance between side plate and bolt fitted in new Bellcrank (P/N 1/N-45-1771) at wsta 175.97.

(3) Chamfer Spacer Block (P/N 1/N-20-208) in hinge bracket (Ref Fig 5), to provide clearance for new Goosecrank (P/N 1/N-45-1765).

B. **Rework #4 Flap Hinge Bracket**

(1) Rework Rear Web of Hinge Bracket (Ref Fig 5) to provide clearance for Goosecrank link.

(2) Chamfer Spacer Block (P/N 1/N-20-208) in hinge bracket (Ref Fig 5), to provide clearance for new Goosecrank (P/N 1/N-45-1765).

C. **Rework Rib WSTA 170.11**

(1) Rework lightening hole in T/E Rib 1C/N-20-459/460 (Ref Fig 6), to provide clearance for new Flap Control Rod with Flaps extended.

D. **Rework Diaphragm WSTA 146.98**

(1) Rework lower flange of diaphragm P/N 1M/N-20-459/460 per Figure 7, to provide clearance between flange of diaphragm and the additional Idler Arm (P/N 1/N-45-415) at wsta 146.98)

E. **Installation of Folded Bracket for new additional Idler Arm at WSTA 146.98 (Ref Fig 8)**

(1) Reaming/cleaning out of bolt hole may be required in order to remove old loctite, prior to fitting bolt .

(2) Fit new Bolt (P/N NAS6605-52) via the under wing access panel at WSTA 146 (Ref Para 2.E.(1)).

(3) On Folded Bracket mark off hole centre as per Figure 8. Drill 8 mm, deburr and retreat.

(4) With reference to Figure 8, loosely fit new Folded Bracket (P/N 1/N-45-1783/4) on bolt shank and locate Folded Bracket and new Packer (P/N 1/N-45-1785), match drill 0.1900 - 0.1907 in dia through web of diaphragm, 2 places.

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NOTE

A short drill bit and right angle drill is required for this.

(5) Install Bolts (2 off, P/N NAS6203-3), Washers (P/N NAS1149D0332K) and Nuts (P/N MS21042L3), and remove Bolt NAS6605-52.

4. **INSTALLATION**

A. **Installation of Flap Control Rod and Idler Arms**

(1) Insert new Flap Control Rod P/N 1/N-45-1779) through lightening holes and attach to the inboard Flap Control Rod (P/N 1/N-45-520) with Bolt (NAS1305-11), Washer (NAS1149D0563K) and Nut (MS21083-N5); torque tighten to 60-65 lb in.

(2) Fit the two Idler Arm assemblies (P/N 1/N-45-415) to the inboard Flap Control Rod (P/N 1/N-45-520) (Ref Fig 8) Loosely fit the new spacer (P/N 1/N-45-1786) between the idler arms.

(3) Loosely re-fit new Bolt NAS6605-52 through the under wing access panel through the two Idler Arms, Spacer and Support Bracket. Nut, washers and existing Spacer 1/N-45-1267 need not be fitted at this stage.

NOTE

This process is only to keep the idler arms in position.

(4) DO NOT attach the inboard end of flap rod (P/N 1/N-45-520) to flap rod at Bellcrank WSTA 119.05 at this stage.

B. **Installation of new Flap Bellcrank WSTA 175.97.**

(1) Fit new Bellcrank (P/N 1/N-45-1771/2) on spigot.

(2) Attach existing outboard Flap Control Rod (P/N 1/N-45-518), new inboard Flap Control Rod (P/N 1/N-45-1779), existing fixed Link (P/N 1/N-45-1037) to the Bellcrank (P/N 1/N-45-1771/2) (Ref Fig 9).

(3) Insert Rigging Pin (P/N 1/N-88-84) through new Bellcrank (Ref also MM Chap 27-50-00 Fig 201). Check that the bolt head for the new inboard Flap Control Rod clears the wing hinge bracket fitting. If required locally chamfer flange of fitting to provide 0.06 in minimum clearance.

(4) Insert Rigging Link (P/N 1/N-88-86) (Ref MM 27-10-06 Fig 201) to upper end of Cam Lever to new Cam Follower Arm and adjust new Adjustable Link (P/N 1/N-45-1787) to fit new Bellcrank.

(5) Fit spacer 1/N-45-676 and existing Aileron Bellcrank 1/N-45-671/2 on spigot (ref Fig 10).

(6) Attach aileron lever adjustable Link 1/N-45-1061 and Link (1/N-45-328) with the attached Aileron Control Lever 1/N-45-1045/6 to the Aileron Bellcrank.

(7) Fit existing Special Nut 1/N-45-1166 and torque tighten to 60-65 lb in. and fit Cotter Pin.

NOTE

If necessary drill 0.0965 in (2.45 mm) as diametrically opposite as possible to any existing redundant hole.

(8) Remove rigging pin and link inserted in step (3) and (4) above.

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C. **Installation of new Cam Follower Arm WSTA 181.97 (Ref Fig 9).**

(1) Fit new Cam Follower Arm l/N-45-1775/6 (Item 6/7) over lower spigot, attach using existing Special Nut 1/N-40-683. Torque tighten to 45-55 lb in. and fit Cotter Pin.

NOTE

If necessary drill 0.0965 in (2.45 mm) as diametrically opposite as possible to any existing redundant hole.

(2) Refit Needle Roller Bearing and Retaining Washers into existing Cam 1/N-45-1070, rotate Cam Follower Arm over bearing, install bolt.

(3) Attach Adjustable Link 1/N-45-1787 to inboard end of Cam Follower Arm with Bolt, (NAS1304-9) with head facing aft, Washer (NAS1149D0463K) and Nut (MS21083-N4). Connect lower end of Adjustable Link to Flap Bellcrank with Bolt, (NAS1304-9) with head facing aft, Washer (NAS1149D0463K) and Nut (MS21083-N4), torque tighten to 30-40 lb in.

(4) Refit Link Assy and Special Washers 1/N-45-607 to lower end of Cam WSTA 187.78 (Ref MM Chap 27-10-06, Fig 201, Section B B).

(5) Refit Aileron Lever 1/N-45-1055/6 to upper spigot.

(6) Refit Link l/N-45-1072 to lower end of Aileron Lever.

(7) Fit existing Special Nut 1/N-45-1039. Torque tighten to 45-55 in lb. and fit Cotter Pin.

NOTE

If necessary drill 0.0965 in (2.45 mm) as diametrically opposite as possible to any existing redundant hole.

D. **Preliminary Clearance Check – N24A.**

(1) With Flap Control Rod NOT connected to the Bellcrank at WSTA, and if the inboard flaps are not fully down, ”inch” the flaps in steps to 38° as follows:

(a) Confirm the aircraft battery switch is OFF.

(b) Close the rear cabin door to allow activation of the Flap Down control circuit.

(c) Verify the flaps are clear to be lowered.

(d) Set the FLAP ACT circuit breaker, and trip the FLAP CONT circuit breaker, on the Overhead Console Circuit Breaker Panel.

(e) Apply 27.5 vDC power to the aircraft and set the BATTERY switch in the Overhead Console to ON.

(f) Position the FLAP CONTROL switch to DOWN.

(g) Using the FLAP CONT circuit breaker ”inch” the flaps to the fully down position by ”beeping” the circuit breaker control button whilst a watch is kept on the flap mechanisms in the left hand and right hand wing trailing edges to confirm a fouling condition does not occur between the disconnected Flap Control Rod and the flap system Bellcrank.

(h) Set the BATTERY switch to OFF, trip the FLAP ACT circuit breaker, and remove DC power from the aircraft.

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(2) Manually move the outboard flap controls to flap down, CHECK clearance for the new Flap Control Rod with the reworked Rib IC/N-20-459/460 at WSTA 170.11 and the lower flange of the reworked diaphragm 1M/N-20-459/460. If required trim and or reshape the lower flange of diaphragm until bolt can be fitted to the Flap control Rod at Bellcrank at WSTA 119.05.

(3) Disconnect the bolt and leave the inboard flaps in extended position.

E. **Preliminary Clearance Check – N22B & N22C.**

(1) With Flap Control Rod NOT connected to the Bellcrank at WSTA, and if the inboard flaps are not fully down, "inch" the flaps in steps to 38° as follows:

(a) Ensure main cabin doors are closed.

(b) Verify the flaps are clear to be lowered.

(c) Set both FLAP ACT and FLAP CONT circuit breakers, on the Overhead Console Circuit Breaker Panel.

(d) Set both Power Levers to Ground Idle.

(e) Apply 27.5 vDC power to the aircraft and set the BATTERY switch in the Overhead Console to ON.

(f) Inch the flaps down by momentarily activating the FLAP CONTROL switch to the DOWN position whilst a watch is kept on the flap mechanisms in the left hand and right hand wing trailing edges to confirm a fouling condition does not occur between the disconnected Flap Control Rod and the flap system Bellcrank.

(g) Set the BATTERY switch to OFF, trip the FLAP ACT and FLAP CONT circuit breakers, and remove DC power from the aircraft.

(2) Manually move the outboard flap controls to flap down, CHECK clearance for the new Flap Control Rod with the reworked Rib IC/N-20-459/460 at WSTA 170.11 and the lower flange of the reworked diaphragm 1M/N-20-459/460. If required trim and or reshape the lower flange of diaphragm until bolt can be fitted to the Flap control Rod at Bellcrank at WSTA 119.05.

(3) Disconnect the bolt and leave the inboard flaps in extended position.

F. **Installation of #4 Flap Hinge Bracket (wsta 259.60)**

(1) On bench, using the Bullet (Ref Fig 3, drilled hole inboard) as a shaft offered through the side plate of the Hinge Bracket, assemble the Goosecrank (P/N 1/N-45-1769) and spacers (1/N-45-1266) in correct order onto it (Ref Fig 12). When satisfied prepare the Pivot Pin (1/N-45-1168) for wet assembly (Ref MM Chap 20-30-00). Then place the threaded end into the drilled hole of the Bullet and push it through. Fit the Special Washer (P/N 1/N-45-691) and new self-locking nut (MS21044N4) and torque tighten to 30-40 lb in. Ensure Adjustable Link (P/N 1/N-45-1781) protrudes through slot in rear web and that the Goosecrank rotates through the enlarged slot.

(2) Loosely attach Flap Hinge Bracket to wing (Ref MM Chap 57-40-00, Para 1.B.(1)).

(3) Attach Fixed Link (P/N 1/N-45-1037) to Goosecrank (Ref Fig an) with bolt (P/N NAS1304-10), Washer (P/N NAS1149D0463K) and nut (P/N MS21083-N4). Torque tighten to 30-40 lb in.

G. **Installation of #3 Flap Hinge Bracket (wsta 172.75)**

(1) Attach new Goosecrank (P/N 1/N-45-1765/6) to Fixed Link (P/N 1/N-45-1037) from the new Bellcrank (P/N 1/N-45-1771/2) at WSTA 175.97, with Special Bolt (P/N 1/N-45-1791), Washer (P/N NAS1149F0432P) and nut (P/N MS21083-N4). Torque tighten to 30-40 lb in.

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(2) Loosely attach Flap Hinge Bracket to wing (Ref MM Chap 57-40-00, Para 1.B.). Using the Bullet (Ref Fig 3, drilled hole inboard) as a shaft offered through the side plate of the hinge fitting, assemble the Goosecrank (P/N 1/N-45-1765 LH, or 1/N-45-1766 RH), Aileron Lever (1/N-45-1045 LH or 1/N-45-1046 RH) and spacers 1/N-45-560, 2 off, and 1/N-45-691) in correct order onto it (Ref Fig 11). When satisfied prepare the Pivot Pin (P/N 1/N-45-1167) for wet assembly (Ref MM Chap 20-30-00). Then place the threaded end into the drilled hole of the Bullet and push it through. Fit the Special Washer (P/N 1/N-45-695) and new self-locking nut (P/N MS21044N4) and torque tighten to 30-40 lb in. Ensure that the Adjustable Link (P/N 1/N-45-1781) on the Goosecrank protrudes through the enlarged slot in rear web of the hinge bracket.

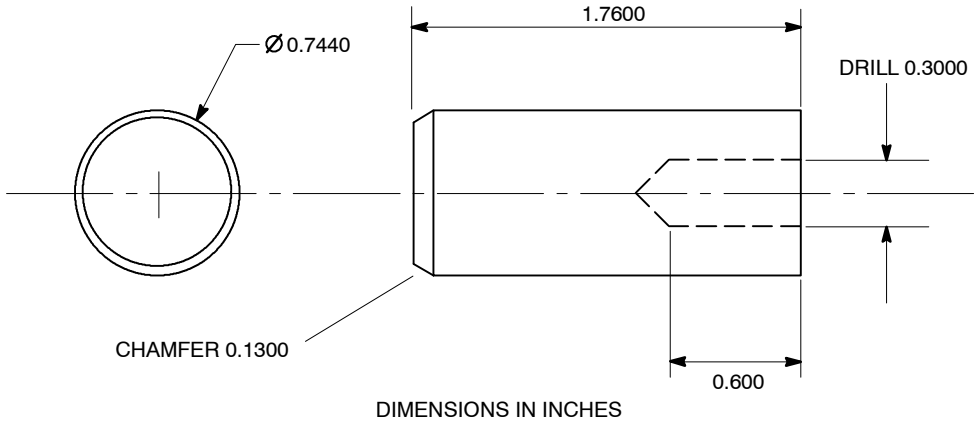

Figure 3 Bullet for Fitment of Goosecranks.

H. **Preliminary Clearance Check**

(1) Whilst ensuring the Links attached to the two new Goosecranks do not interfere with the slots in the hinge bracket rear webs, manually move the outboard flap control system to Flaps Up and insert Rigging Pin (P/N 1/N-88-84) through the new Bellcrank WSTA 175.97.

(2) Check clearance between the upper forward edge of the new Goosecranks to the spacer block between the two side plates of the Hinge Brackets.

(3) Remove rigging pin and manually move the outboard flap control system to Flaps Down. Check for clearance where the Goosecranks go through the slots in the rear web of Flap Hinge Brackets and for clearance between bolt tail for new Flap Control Rod on new Bellcrank as it passes the reworked inboard side plate of Flap Hinge Bracket when re-attaching the two flap control rods at Bellcrank WSTA 119.05.

I. **Modify outboard aft Flap (Aileron) Mass Balance**

(1) Unfasten Nuts (discard) and remove Washers and Bolts (discard), retaining Mass Balance weights (1/N-24-50) and any shim plates (1/N-24-129).

(2) Inspect the aileron to ensure that all extraneous objects have been removed.

(3) Mount the aileron assembly, without the balance weights (PN 1/N-24-50) on balancing fixture PN 1600-0003 (Ref Fig 14 or see SRM Chap 57-50-21 for alternative fixture). Ensure that aileron pivots freely.

NOTE

The aileron is mounted in an inverted position in the fixture.

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(4) Suspend a bob weight of 29.98 ± 0.09 oz (0.850 ± 0.0025 kg) from the trailing edge of the aileron by a string taped to the uppermost surface and draped over the trailing edge.

(5) Re-assemble Mass Balance with approximately 16 additonal Plates (1/N-24-129) added equally each side of Mass Balance Arm, and Bolts (1/N-45-1792) and new Nuts (MS21083-D4) and Washers (NAS1149D0563K).

NOTE

Mod N953 requires the Mass Balance, Bobweight and total Aileron weight to be increased.

(6) Allow the aileron to pivot freely in the fixture.

(7) Add or remove mass balance plates (PN 1/N-24-129 Post-Mod N56) equally on both sides of the mass balance arm until the aileron trailing edge rises slightly above the reference marker on the balancing fixture.

(8) Remove the mass balance weights, mass balance plates and attaching parts from the aileron, and weigh and record their total weight.

(9) Using pigmented jointing compound, wet assemble the balance plates and mass balance weights to the mass balance arm with bolts, washers and stiffnuts. Torque tighten the stiffnuts to between 30 and 40 lb in; wipe off excess jointing compound.

NOTE

When fitting the bolts, the bolt heads are to face inboard and packing washers placed under the heads of the bolts and stiffnuts as required to centralise the bolts within the mass balance assembly.

(10) Remove the bob weight from the aileron trailing edge then remove the aileron from the balancing fixture, and weigh the aileron as removed from the fixture. Check that the point of intersection of the total weight of the aileron with the total Mass Balance weight is within the boundary of the envelope in Figure 15.

(11) Record all weights.

J. **Finalisation**

(1) Secure #4 Flap Hinge Bracket (Ref MM Chap 57-40-00, Para 1.B.(2) and (3)).

(2) Secure #3 Flap Hinge Bracket (Ref MM Chap 57-40-00, Para 1.B.(2) and (3)).

(3) Re-rivet Trailing Edge skin using CherryMax CR3223 rivets (Ref SRM Chap 51-10-00), diameter and grip length to be determined in situ.

(4) Reconnect Flap Rod at WSTA 119 using bolt P/N NAS 1305-11.

(5) At duplicated Idler Arms (wsta 146.98) fit Spacer (P/N 1/N-45-1267) if not already in place, Washer (P/N NAS1149D0563K) and Nut (P/N MS21083-N5) and torque tighten to 60-65 lb in.

(6) At attachment of duplicated Idler Arms to Flap Control Rod (P/N 1/N-45-520) torque tighten Bolt/Nut to 30-40 lb in.

(7) Fit/Re-fit underwing panel using (6 off) Screws P/N MS27309-1-08.

(8) Refit Outboard forward flaps in accordance with MM Chapter 57-50-00, Para 1.H.

(9) Refit Ailerons in accordance with MM Chapter 57-50-00, Para 1.F.

(10) Refit Flap Hinge Bracket Fairings.

(11) Carry out rigging check of flap system in accordance with MM Chapter 27-50-00 Pages 201 to 206.

(12) Close and fasten wing trailing edge doors.

(13) Raise Flaps.

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5. **MATERIALS INFORMATION**

A. **Contents of Service Bulletin Kit P/N ANMD-27-53-1 (Quantities are for one aircraft)**

Part No	Qty	Description
1/N-45-1765	1	Goosecrank Assembly wsta 172.75 LH
1/N-45-1766	1	Goosecrank Assembly wsta 172.75 RH
1/N-45-1769	2	Goosecrank Assembly wsta 259.60
1/N-45-1771	1	Bellcrank Assembly wsta 175.97 LH
1/N-45-1772	1	Bellcrank Assembly wsta 175.97 RH
1/N-45-1775	1	Arm Assembly wsta 181.97 LH
1/N-45-1776	1	Arm Assembly wsta 181.97 RH
1/N-45-1779	2	Flap Control Rod
1/N-45-1783	1	Folded Bracket - Idler Arm Support LH
1/N-45-1784	1	Folded Bracket - Idler Arm Support RH
1/N-45-1785	2	Packer
1/N-45-1786	2	Spacer Tube
1/N-45-415	2	Idler Arm
1/N-45-1787	2	Link Assembly - Adjustable
1/N-45-1791	2	Bolt - Special
1/N-24-129	A/R	Balance Weight Plate
1/N-45-1792	4	Bolt - Special
NAS6203-3	4	Bolt - Tension, Hex Head
NAS6604-14	2	Bolt - Hex Head, Close Tolerance
NAS6605-10	2	Bolt - Hex Head, Close Tolerance
NAS6605-52	2	Bolt - Hex Head, Close Tolerance
NAS1304-9	4	Bolt - Tension, Hex Head
NAS1304-10	4	Bolt - Tension, Hex Head (Alt NAS6604-10)
NAS1305-10	2	Bolt - Tension, Hex Head
NAS1305-11	2	Bolt - Tension, Hex Head
NAS1305-13	4	Bolt - Tension, Hex Head
NAS1306-16	2	Bolt - Tension, Hex Head
NAS1149F0432P	2	Washer - Flat (Alt AN960-416L)
NAS1149D0332K	4	Washer - Flat (Alt AN960KD10L)
NAS1149D0463K	14	Washer - Flat (Alt AN960K416)
NAS1149D0563K	24	Washer - Flat (Alt AN960KD516)
NAS1149D0663K	2	Washer - Flat
MS21042L3	4	Nut - Self-Locking, Reduced Height
MS21044-N4	4	Nut - Self-Locking

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Part No	Qty	Description
MS21083-N4	12	Nut - Self-Locking, Low Height
MS21083-D4	A/R	Nut - Self-Locking (AL alloy)
MS21083-N5	12	Nut - Self-Locking, Low Height
MS21083-N6	2	Nut - Self-Locking, Low Height
MS24665-285	4	Pin - Cotter (Split Pin)
MS24665-289	2	Pin - Cotter (Split Pin)

B. **Additional Parts Required if CO G99 Not Fitted (Ref Para 2.E.(1))**

Part No	Qty	Description
1D/N-20-615	2	Access Panel
1C/N-20-615	2	Reinforcing Plate Assembly
MS20470AD4-3	A/R	Rivet
MS20470AD4-4	A/R	Rivet
MS35207-262	12	Screw - Pan Head (Alt MS27039-1-08)
MS21077-3K	12	Anchor Nut (Alt MS21059-3K)
MS20426AD3-5	24	Rivet 100° Countersunk Head

C. **Existing Parts Re-identified after Rework**

Old Part Number	Description	New Part Number	Paragraph Reference
1M/N-20-459	Diaphragm	1A/N-45-1763	3.D.(1) and Fig 7
1M/N-20-460	Diaphragm	1A/N-45-1764	3.D.(1) and Fig 7
1/N-20-208	Spacer	1B/N-45-1763	3.A.(3) and Fig 5
1B/N-20-199	Reinforcing Angle	1C/N-45-1763	3.A.(1) and Fig 5
1B/N-20-200	Reinforcing Angle	1C/N-45-1764	3.A.(1) and Fig 5
1C/N-20-199	Reinforcing Angle	1D/N-45-1763	3.B.(1) and Fig 5
1C/N-20-200	Reinforcing Angle	1D/N-45-1764	3.B.(1) and Fig 5
1E/N-20-199	Side Plate	1E/N-45-1763	3.A.(2) and Fig 5
1C/N-20-459	Rib - Modified	1F/N-45-1763	3.C.(1) and Fig 6
1C/N-20-460	Rib - Modified	1F/N-45-1764	3.C.(1) and Fig 6

D. **Kits fitted to N22C-108 (VH-ATO) and N24A-60 (ZK-NMD)**

Part No	Qty	Description
N953/EN/NS/740/LSN108	1	Kit, Modification N953, Rework iaw EN NS/740
N953/EN/NS/740/LSN60	1	Kit, Modification N953, Rework iaw EN NS/740

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E. **Discarded Parts**

Part No	Qty	Description
1/N-45-1021	1	Bellcrank Assembly LH
1/N-45-1022	1	Bellcrank Assembly RH
1/N-45-1074	1	Cam Follower Assembly RH
1/N-45-1075	1	Cam Follower Assembly LH
1/N-45-519	2	Flap Control Rod
1/N-45-1050	2	Bellcrank Assembly
1/N-45-1053	1	Bellcrank Assembly LH
1/N-45-1054	1	Bellcrank Assembly RH
1/N-45-1023	1	Bellcrank Assembly LH
1/N-45-1024	1	Bellcrank Assembly RH
1/N-45-1066	4	Adjustable Link Assembly
1/N-45-1063	2	Adjustable Link Assembly

6. **SPECIAL TOOLS AND EQUIPMENT**

Refer to Figure 3

7. **RECORDING ACTION**

Record compliance with Alert Service Bulletin ANMD–27-53 in the Airframe Log Book.

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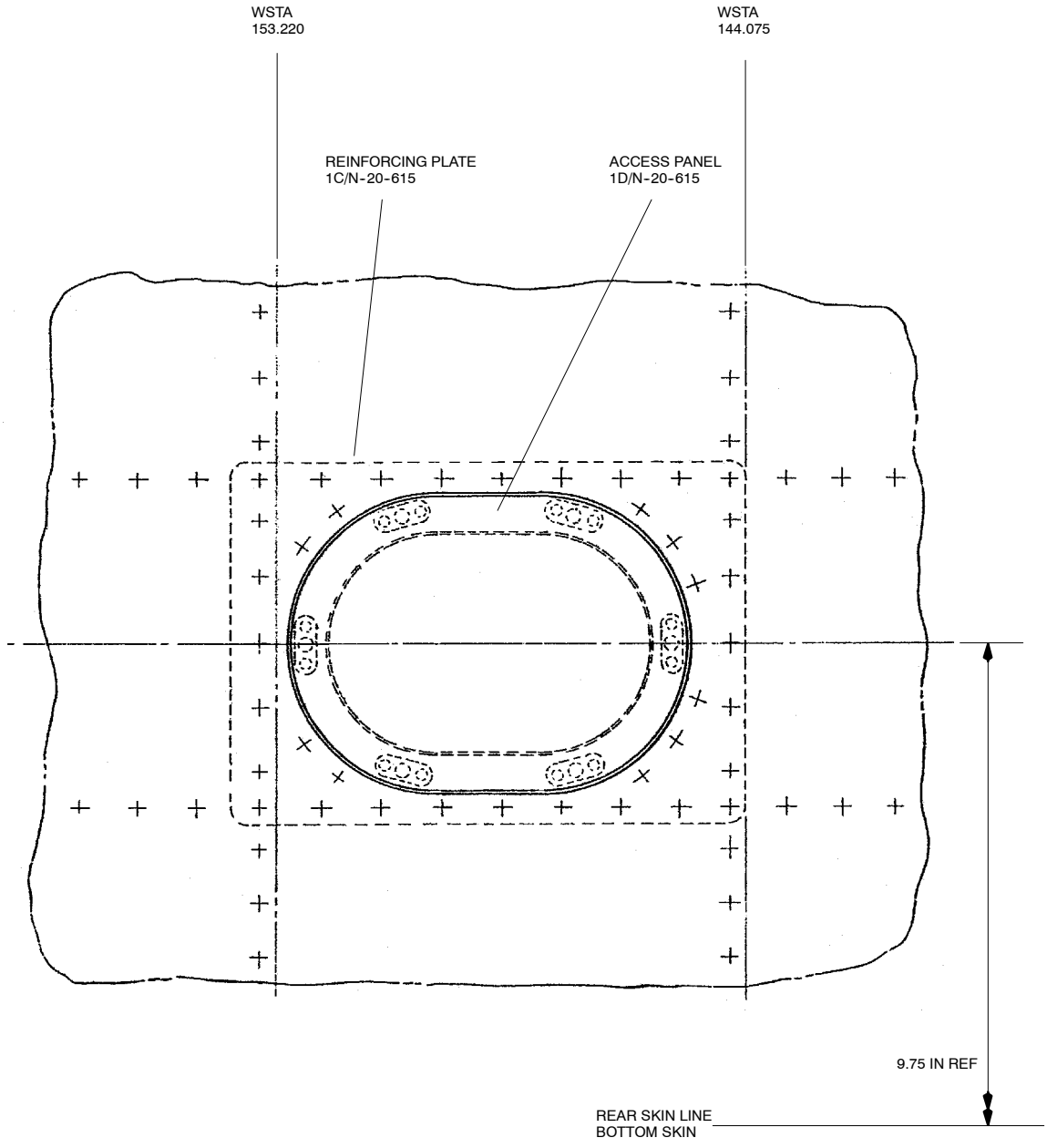

Figure 4 Installation of Underwing Access Panel

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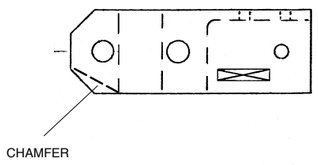
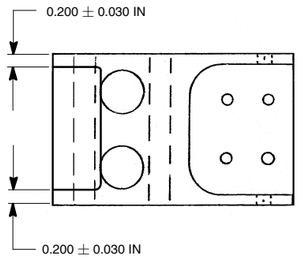
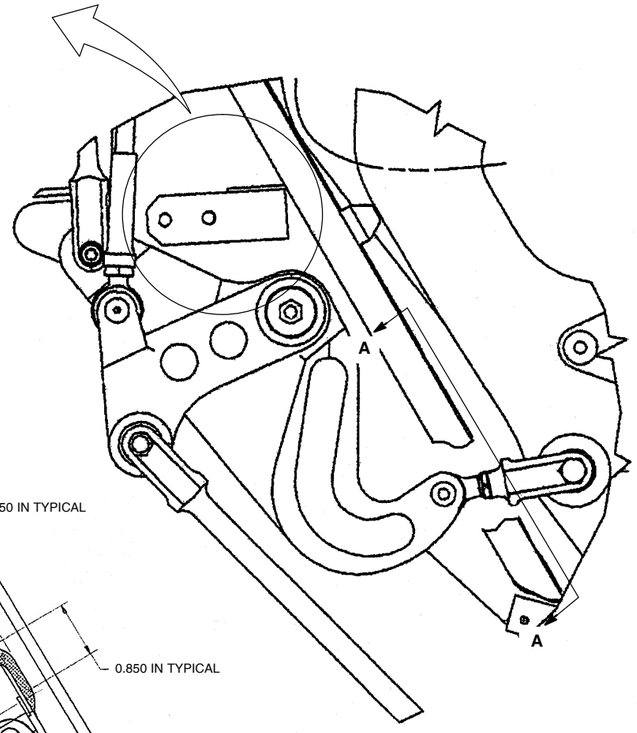
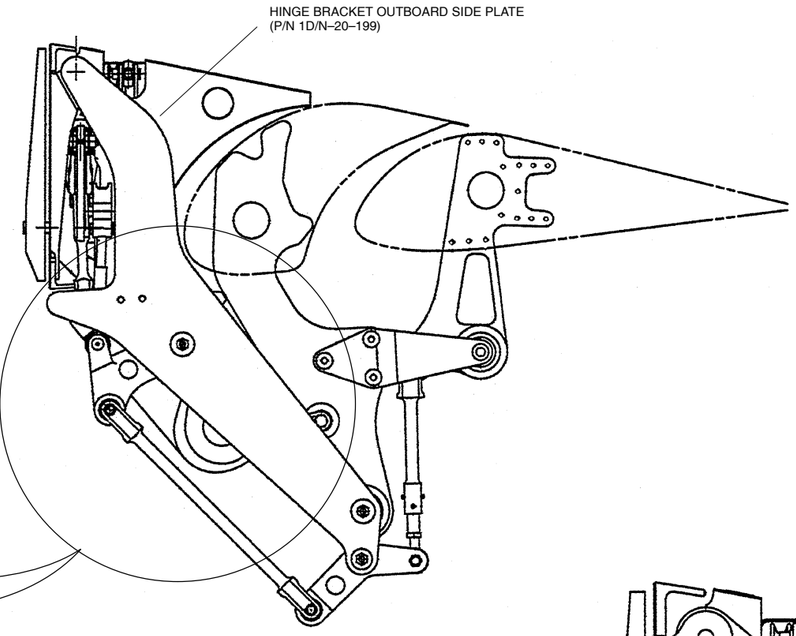
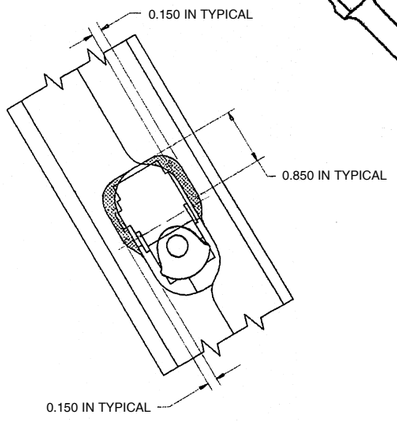




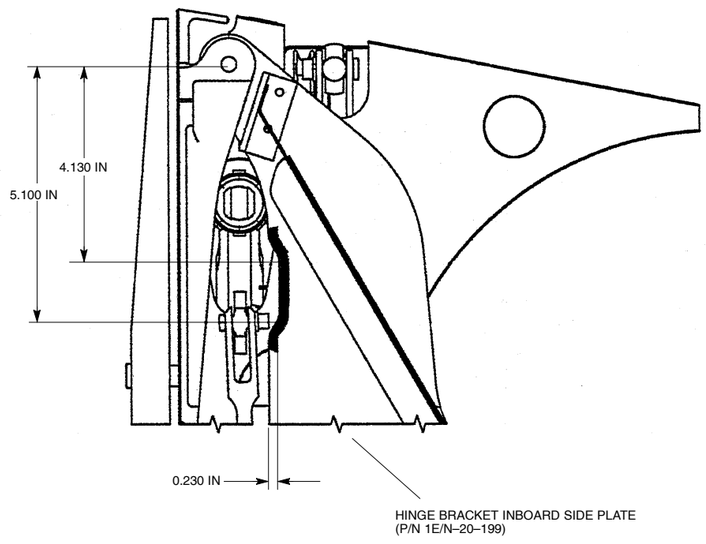
SPACER BLOCK (1/N–20–208 REF)







SECTION A–A



LH HINGE BRACKET SHOWN, RH SIMILAR

Figure 5 Flap Hinge Bracket at wsta 172.75 – Required Rework

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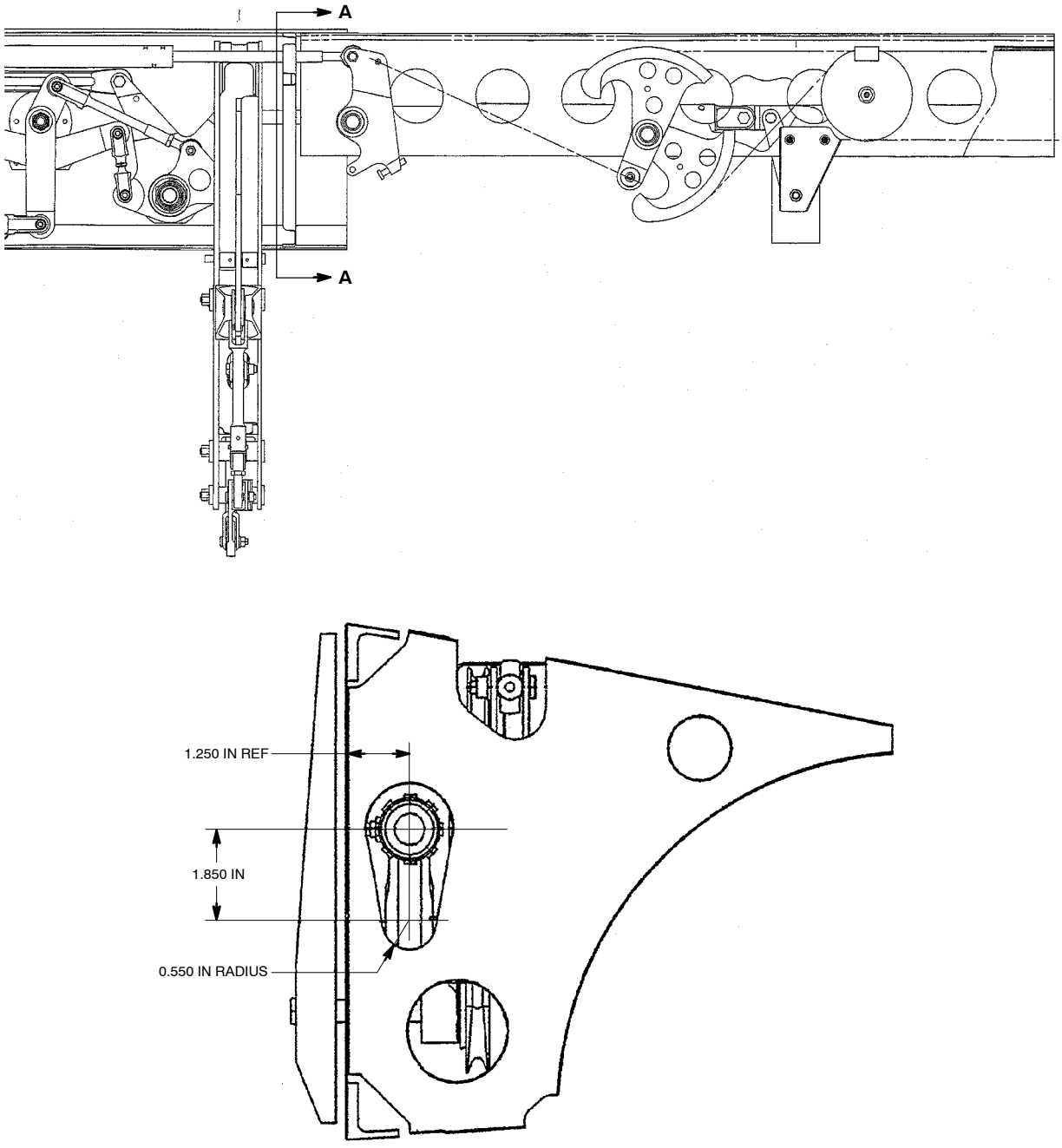

SECTION A - A

REWORK AS FOLLOWS:
1. REMOVE LIGHTENING HOLE FLANGE
2. OPEN OUT APERTURE AS PER THE DIMENSIONS SHOWN
3. CLEAN, DEBURR AND TREAT EXPOSED METAL PER SRM

Figure 6 Rework to Wing TE Rib 1C/N-20-459/460

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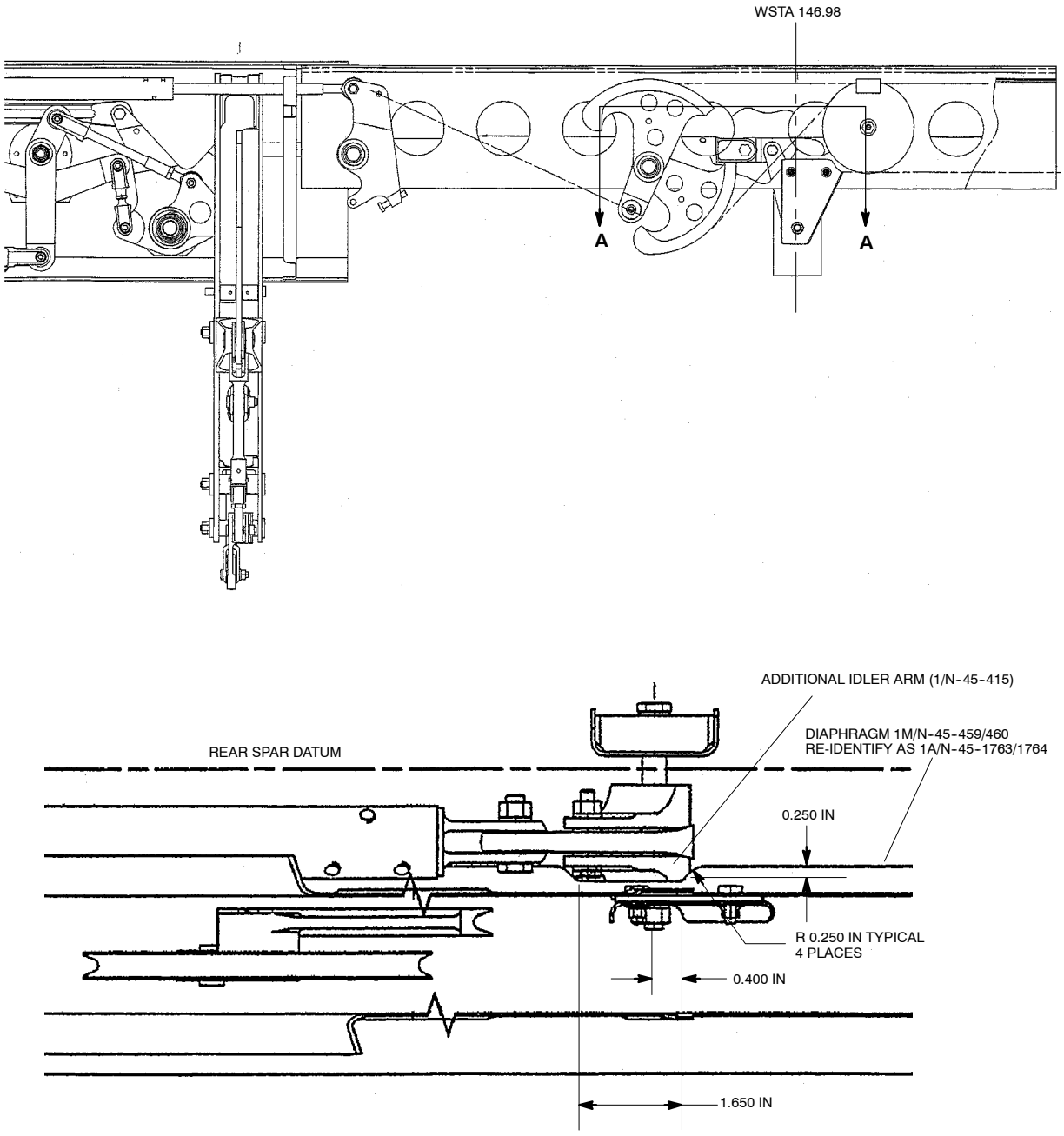

SECTION A - A

REWORK AS FOLLOWS:
1. NOTCH LOWER FLANGE OF DIAPHRAGM AS DETAILED
2. CLEAN, DEBURR AND TREAT EXPOSED METAL PER SRM

Figure 7 Rework to Diaphragm 1M/N-20-459/460

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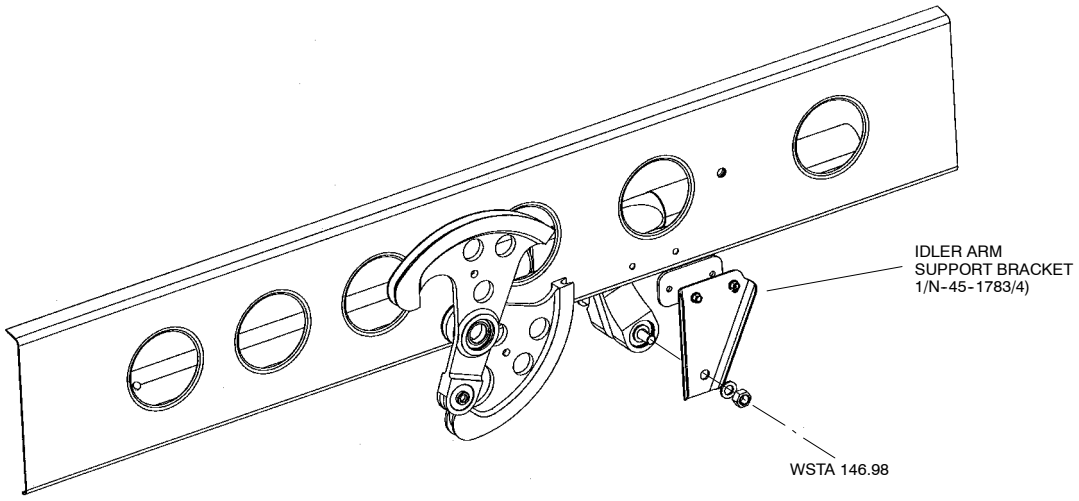

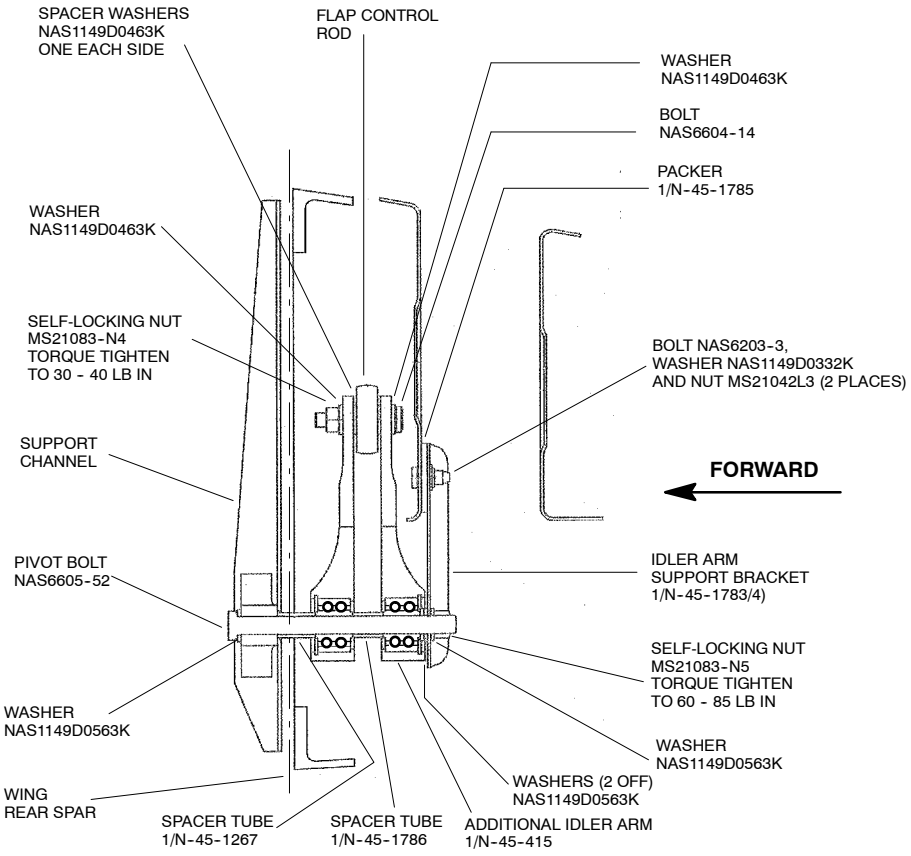

VIEW LOOKING INBOARD

Figure 8 Installation of Duplicated Idler Arms at WSTA 146.98

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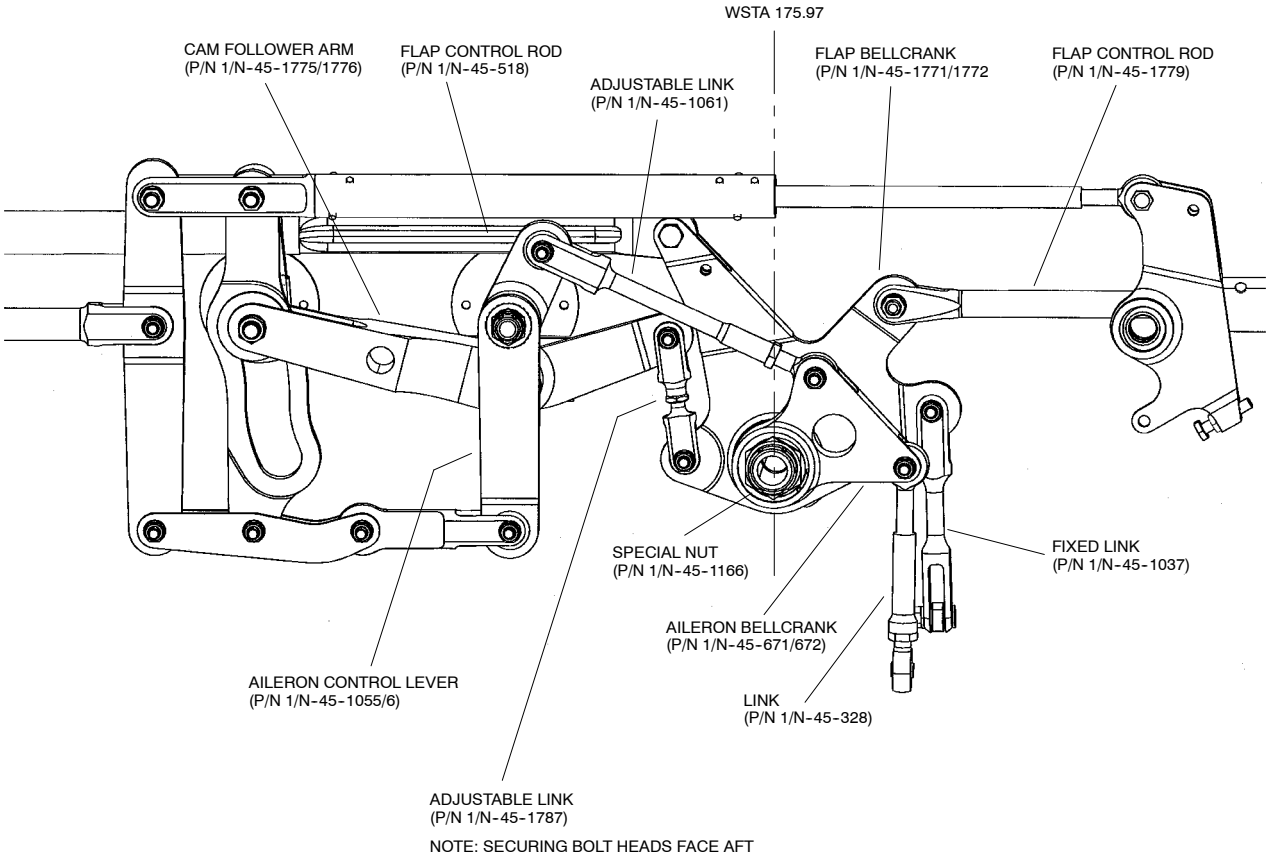

Figure 9 Installation of new Flap Bellcrank and new Cam Follower arm.

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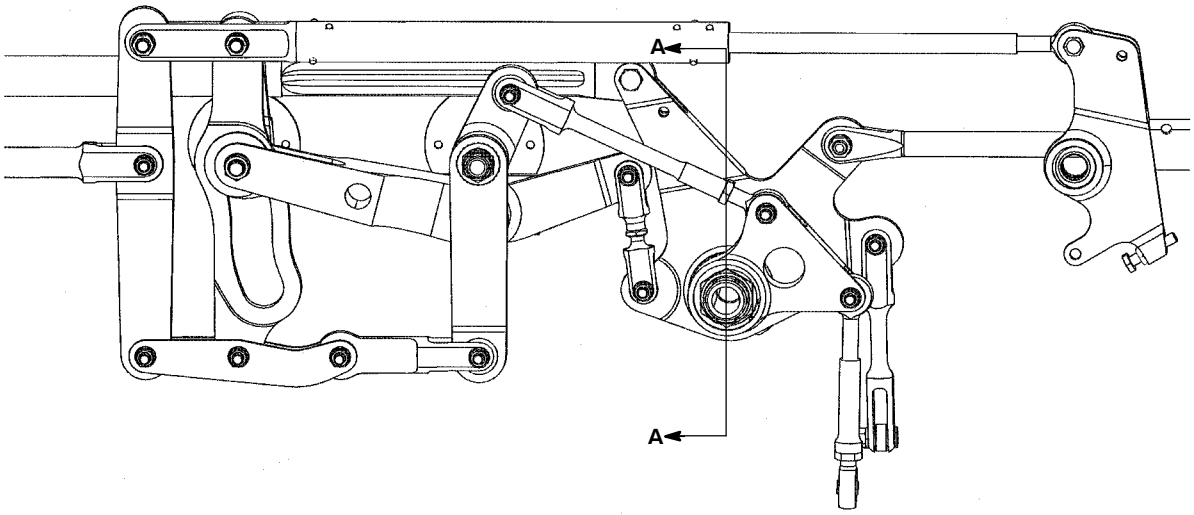

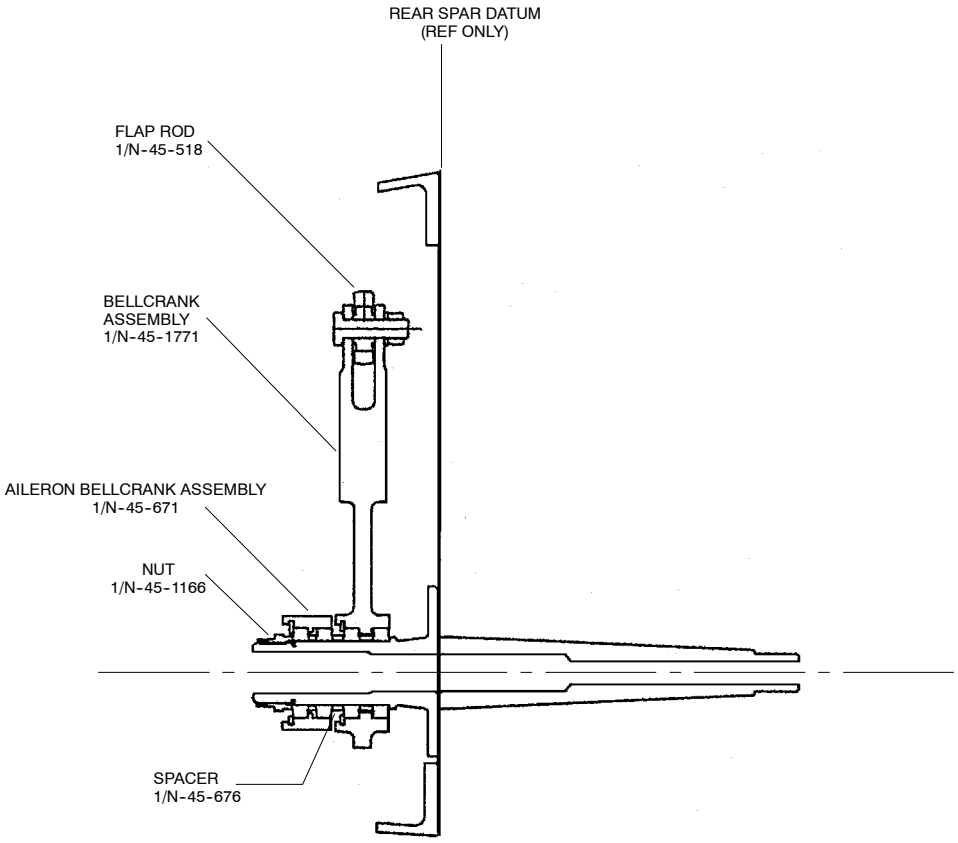

SECTION A - A

Figure 10 Installation of Bellcrank Assembly

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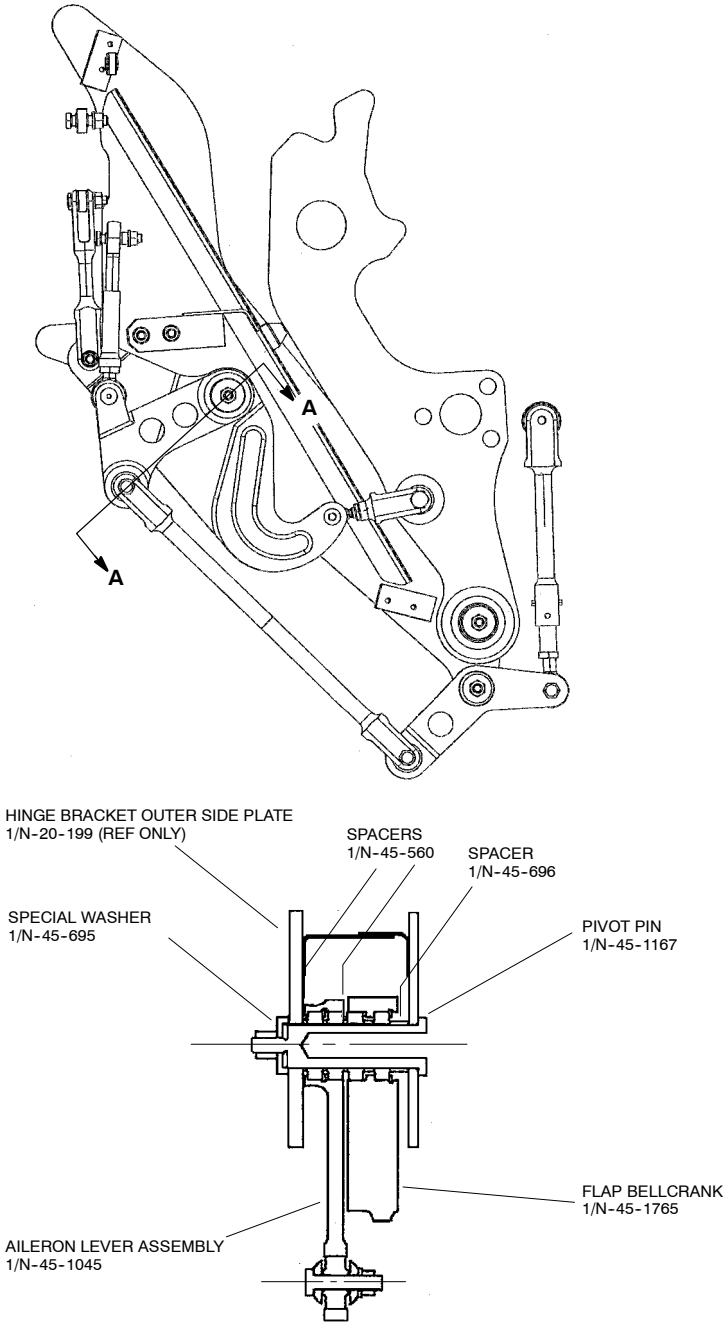

Figure 11 Lever/Bellcrank Assembly in #3 Hinge bracket

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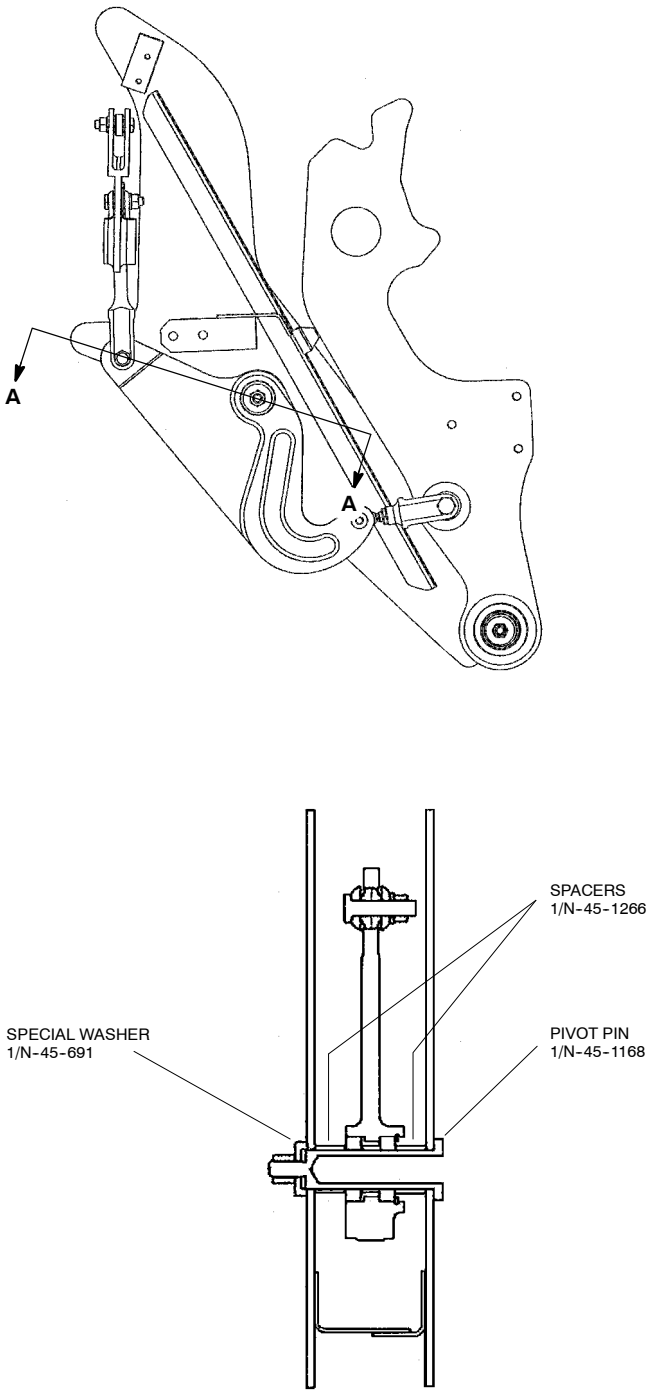

Figure 12 Bellcrank Assembly in #4 Hinge Bracket

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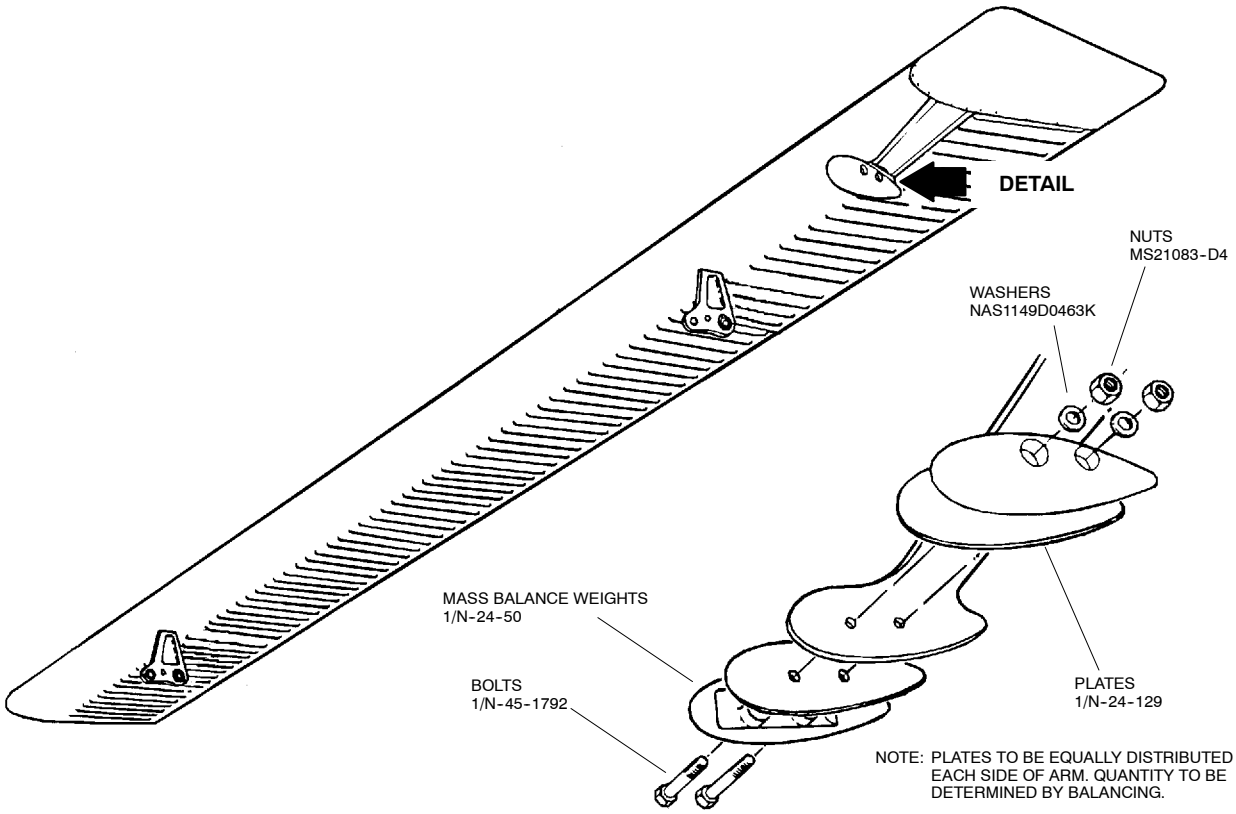

LH OUTBOARD AFT FLAP (AILERON)
(RH SIMILAR)

Figure 13 Modified Mass Balance

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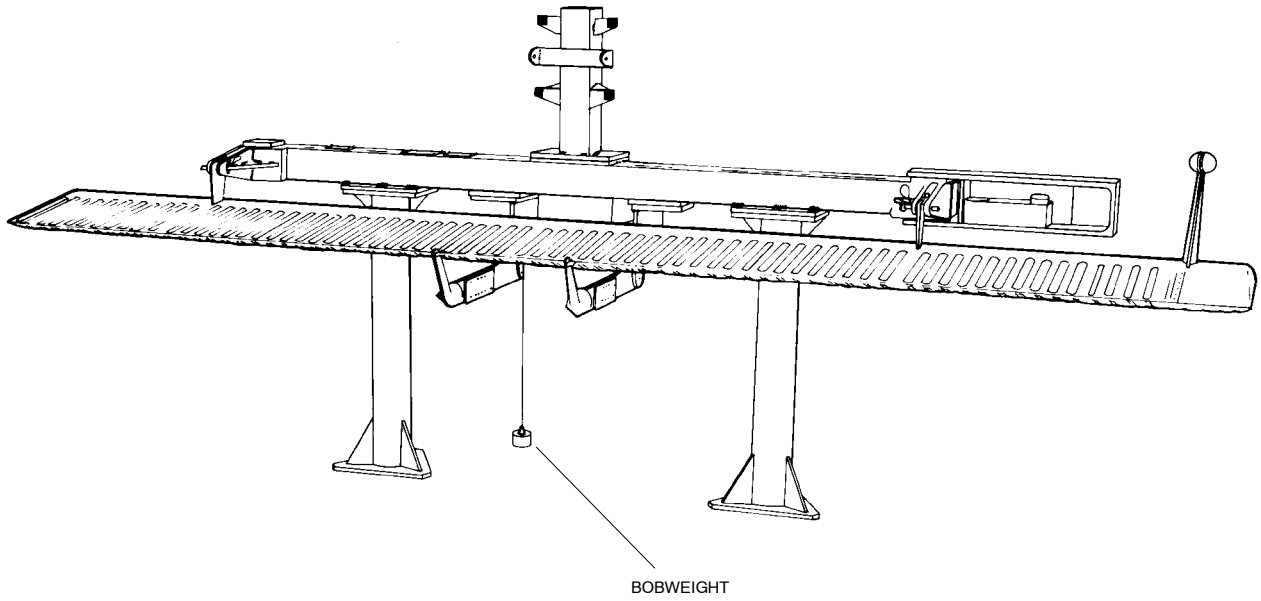

Figure 14 Aileron in Balancing Fixture

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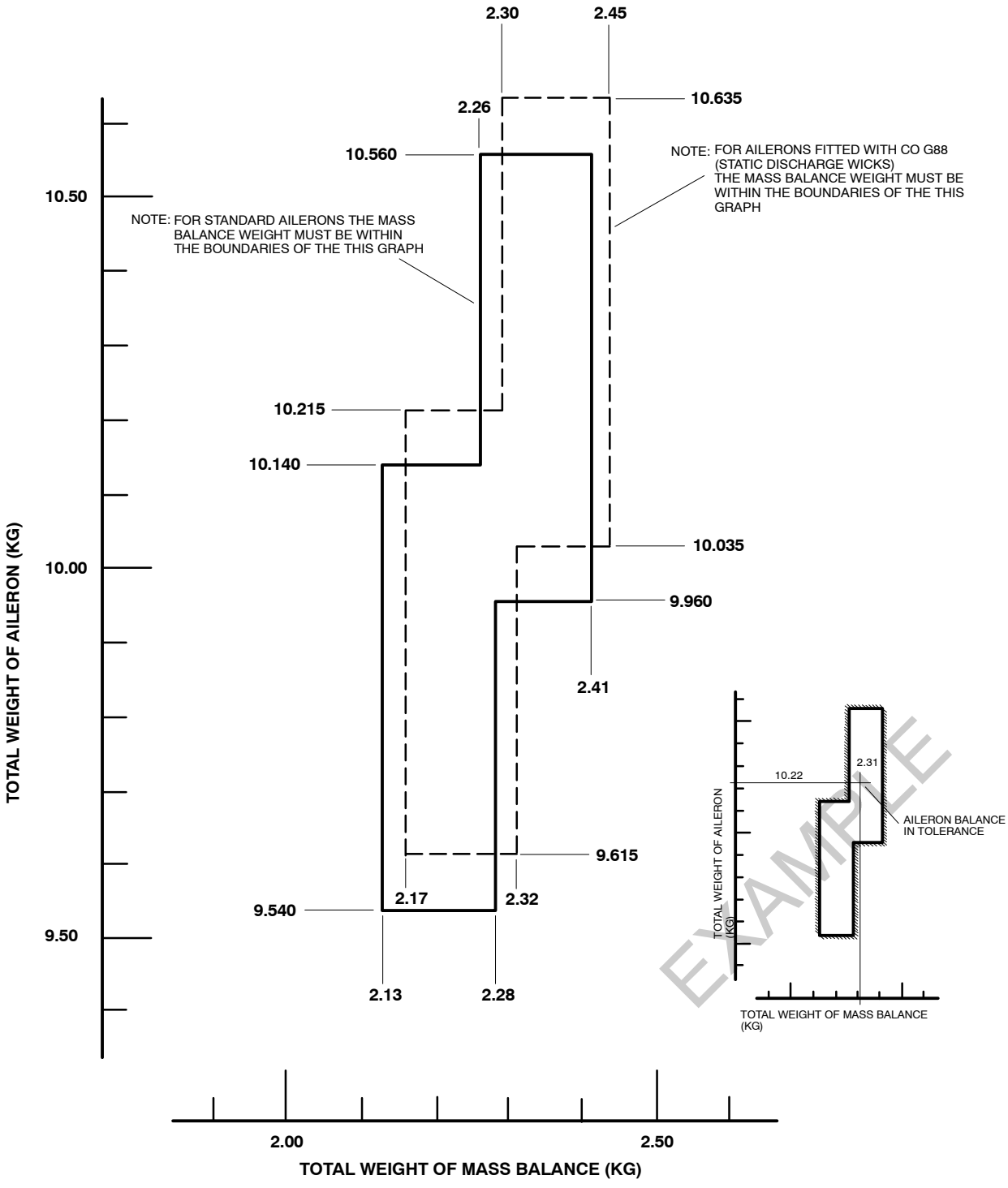

Figure 15 Aileron Balance Graph - Boundary Envelope

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