Nomad
SERVICE BULLETIN

Reference No. 191

TRANSMITTAL SHEET FOR NOMAD SERVICE BULLETIN

SERVICE BULLETIN NO: NMD-57-6 DATED: 8th October, 1989

TITLE: Wings - Flap Seal Rubbing Strip Installation and Flap Upper Skin Repair (Mod N474 and Mod N474A)

REVISION NO: 1 DATE: 8th September, 1989

ACTION: Insert Service Bulletin NMD-57-6 into Service Bulletin publication and annotate index accordingly.

REASON: An alternative tape is added having a more fuel-resistant adhesive, to cater for those aircraft having Option G99 type wing-tip tanks, where fuel spillage onto the wings causes tape lifting.

REMARKS: The alternative tape may be used on any aircraft where tape lifting has been a problem.

Nomad
SERVICE BULLETIN

WINGS - FLAP SEAL RUBBING STRIP INSTALLATION AND FLAP UPPER SKIN REPAIR (MOD N474 AND MOD N474A)

1. PLANNING INFORMATION

A. Effectivity

(1) Aircraft Affected

(A) Parts 1, 2 and 3.

All Nomad N24 Series and N22 Series aircraft whose log books do not already record the embodiment of Mod N474 or compliance with Service Bulletin NMD-57-6.

Pre-certification implementation of the intent of this Service Bulletin is recorded in the airframe log book as Mod N474.

(B) Part 4

All Nomad N24 Series and N22 Series aircraft whose log books do not already record the embodiment of Mod N474A or compliance with Service Bulletin NMD-57-6 Part 4 and which have suffered from lifting of the Permacel or Tooltec tape.

Pre-certification implementation of the intent of this Service Bulletin is recorded in the airframe log book as Mod N474A.

(2) Spares Affected

P/N	Description
2/N-24-103	Inboard Flap Assembly, LH
2/N-24-104	Inboard Flap Assembly, RH
2/N-25-51	Inboard Flap Assembly, LH
2/N-25-52	Inboard Flap Assembly, RH
2/N-25-53	Outboard Flap Assembly, LH
2/N-25-54	Outboard Flap Assembly, RH

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Rev No	1	1	1	1	1	1	1	1	1	1	1	1	1	1						

B. Reason

Instances have occurred of wear to the upper skin of the flaps in the areas in contact with the flap seals (Ref Figure 3.)

Revision 1: An alternative tape is added having a more fuel-resistant adhesive, to cater for those aircraft having Option G99 type Wing-Tip Tanks, where fuel spillage on to the wings causes tape lifting.

The alternative tape may be utilised on any aircraft where tape lifting has been a problem.

C. Description

PART 1. The upper skin of the flap is inspected for wear and/or damage.

PART 2. A repair scheme is carried out to rectify existing wear where it occurs.

PART 3. Permacel or Tooltec tape is adhered to the flap skin over the rubbing area between the flap seal and the flap upper skin.

PART 4. As for Part 3, but Polyurethane tape is used having a more fuel-resistant adhesive.

D. Compliance

Parts 1 and 2 - Within the next 10 hours Time in Service following receipt of this Service Bulletin.

Part 3 - Record Purposes Only.

Part 4 - At the operator's earliest convenience.

E. Approval

The modification detailed herein has been approved pursuant to Civil Aviation Regulation 35 and conforms with the type certification requirements.

F. Manpower

Part 1	-	1/2 hour
Part 2	-	Depending on extent of required repair.
Part 3	-	2 hours
Part 4	-	2 hours

G. Material - Price and Availability

Refer to Para 3.

H. Tooling - Price and Availability

None required.

J. Weight and Balance

Refer to Accomplishment Instructions.

K. References

Mod N474 data, ASTA Engineering Orders ND15830, ND16940 and ND16941.

L. Publications Affected

MM	-	Chap. 57-50-00, Page 2, Figs 201, 202 and 207.
IPC	-	Chap. 57-50-02, Fig 1, Page 1.
		Chap. 57-52-01, Fig 1, Page 1.
		Chap. 57-52-02, Fig 1, Page 1.
SRM	-	Structural Repair Manual, Chap. 57-50-11.

2. ACCOMPLISHMENT INSTRUCTIONS

PART 1.

Inspection

(1) Fully extend the flaps (Ref MM 27-50-00).

(2) Inspect the forward inboard and outboard flaps and the rear inboard flaps of both wings for wear or damage to the flap upper skin in the areas in contact with the flap seal.

(3) If no damage is evident and wear is less than 0.005 inch install the Permocel or Tooltec adhesive tape (Ref Part 3), or Polyurethane tape (Ref Part 4) if applicable.

(4) If damage is evident or wear exceeds 0.005 inch on the rear inboard flaps proceed with the rework detailed in Part 2.A. If damage, or wear in excess of 0.005 inch, is evident on the forward inboard or outboard flaps, rework as detailed in Part 2.B.

(5) The total weight and balance effect resulting from the accomplishment of this Service Bulletin is the sum of the weights and index units of Parts 2A(9), 2B(8), 3(6) or 4 as appropriate.

PART 2

A. Repair of the Rear Inboard Flaps (Ref Figure 1) (IPC 57-52-00, Page 0, Fig 1, Items 2 and -3).

(1) Remove the damaged flap for repair (Ref MM 57-50-00).

(2) Stop drill any cracks in the badly worn sections in the rubbing area of the flap upper skin using a 6.5 mm dia drill.

(3) Make a reinforcing plate of material Spec. QQA250/5 T3 0.020 inch thick or suitable alternative and form to the contour of flap. The plate should be 4.3 inches wide and of sufficient length to cover the damaged or worn area and to allow each end of the plate to pick up on a flap rib. If the damaged or worn area of the flap skin extends across a rib the reinforcing plate must be long enough to reach the next rib which is in an undamaged area.

(4) Using a No. 30 drill, drill out the existing rivets in the flap upper skin in the area to be covered by the reinforcing plate.

(5) Position the reinforcing plate over the damaged area and using a hole-finder spot the existing rivet holes from the flap upper skin onto the reinforcing plate. Mark out two rows of rivet holes with a pitch of 1.6 inches (approximately) in the forward edge of the reinforcing plate, maintaining an edge distance of .30 inch. The two rows of rivets should be staggered as shown in Figure 1.

(6) Drill all the spotted out rivet holes and the pitched rivet holes in the reinforcing plate using a No. 30 drill for the new rivet holes and a No. 27 drill for the existing rivet holes. Remove the reinforcing plate and deburr the holes in the plate and flap top skin.

(7) Wet assemble the reinforcing plate to the flap upper skin using a pigmented joining compound and rivet up using rivets P/N NAS1738E4-1 in the existing rivet holes and rivets P/N MS20600B4-1 in the new rivet holes.

(8) Prime the reinforcing plate with an approved epoxy primer and paint to suit the aircraft finish.

(9) The weight of reinforcing panel(s) and the effect on aircraft balance can be calculated using the following equations:-

A - IMPERIAL UNITS

WEIGHT (lb.) = 0.0092 x Total Panel(s) Length (ins.)
= .....lb.

INDEX UNITS

N22 Series - IU = WEIGHT (lb.) x 0.230 = ...(lb. in.)/1000

N24 Series - IU = WEIGHT (lb.) x 0.258 = ...(lb. in.)/1000

B - METRIC UNITS

WEIGHT (kg.) = 0.164 x Total Panel(s) Length (metres)
= .....kg.

INDEX UNITS

N22 Series - IU = WEIGHT (kg.) x 5.842 = ...(kg. mm.)/1000

N24 Series - IU = WEIGHT (kg.) x 6.553 = ...(kg. mm.)/1000

B. Forward Inboard and Outboard Flaps (Ref Figure 2) (IPC 57-52-00, Page 0, Fig 1, Items 13 & -14 and IPC 57-50-00, Page 0, Fig 1, Items 13 & -14).

(1) Remove the damaged flap (Ref MM 57-50-00).

(2) Stop drill the ends of any cracks in the badly worn sections in the rubbing area of the flap upper skin using a 6.5 mm dia drill.

(3) Make a reinforcing plate of material QQA250/5 T3 0.020 inch thick and form to the contour of the flap. The plate is to be 4.0 inches wide and of sufficient length to cover the damaged or worn area and to allow each end of the reinforcing plate to pick up on a flap rib. If the damaged or worn area of the flap upper skin extends across a rib the reinforcing plate must be long enough to reach the next rib in an undamaged area.

(4) Using a No. 30 drill, drill out the existing rivets in the flap ribs in the area to be covered by the reinforcing plate.

(5) Position the reinforcing plate over the damaged area with its rear edge located 4.05 inches from the trailing edge of the flap. Using a hole-finder, spot the reinforcing plate from the existing rivet holes in the flap ribs. Mark out two rows of rivets with a pitch of 1.6 inches (approximately). One row .30 inch from the rear edge of the plate and the inner row .70 inch from the edge. The inner row to be staggered with the outer row (Ref Figure 2). Mark out two more rows of rivets in the forward edge of the reinforcing plate in the same manner as the two rows in the rear edge. Drill the four rows of rivet hole positions marked, using a No. 30 drill and the spotted rivet holes using a No. 27 drill.

(6) Remove the reinforcing plate and deburr the holes in the flap top skin and the reinforcing plate. Wet assemble the reinforcing plate to the flap using pigmented jointing compound and rivet up using rivets P/N NAS1738E4-1 in the existing holes through rib and rivets P/N MS20600B4-1 in the new rivet holes.

(7) Prime the reinforcing plate with an approved epoxy primer and paint to suit the aircraft finish.

(8) The weight of reinforcing panel(s) and the effect on aircraft balance can be calculated using the following equations:-

A - IMPERIAL UNITS

WEIGHT (lb.) = 0.0092 x Total Panel(s) Length (ins.)
= .....lb.

INDEX UNITS

N22 Series - IU = WEIGHT (lb.) x 0.225 = ...$\frac{\text{(lb. in.)}}{1000}$

N24 Series - IU = WEIGHT (lb.) x 0.253 = ...$\frac{\text{(lb. in.)}}{1000}$

B - METRIC UNITS

WEIGHT (kg.) = 0.164 x Total Panel(s) Length (metres)
= .....kg.

INDEX UNITS

N22 Series - IU = WEIGHT (kg.) x 5.715 = ...$\frac{\text{(kg. mm.)}}{1000}$

N24 Series - IU = WEIGHT (kg.) x 6.426 = ...$\frac{\text{(kg. mm.)}}{1000}$

PART 3

Installation of Permacel or Tooltec Adhesive Tape (Ref Figure 3)

(1) Clean the top skin of the rear inboard, forward outboard and forward inboard flaps in the rubbing area using white spirit or other suitable degreasant prior to adhering the rubbing tape.

NOTE: Clean a small area at a time ensuring that the solvent does not dry on the surface being cleaned.

(2) Adhere the Permacel tape P/N P440 or Tooltec tape P/N A005 to the top skin of the rear inboard flap in lengths of approximately 30 inches, ensuring the tape is centrally positioned over the rubbing area along the full length of the flap. If the tape passes over any rivet heads, trim the tape to clear the rivet and allow the tape to lie flat on the skin.

NOTE: Trim the corners of each segment to approximately 0.25 inch radius.

(3) Repeat step (2) for the forward inboard flaps and for the first 50 inches from the inboard end of the forward outboard flaps.

(4) Refit the flaps (Ref MM 57-50-00).

(5) Rig and test the flaps (Ref MM 27-50-00).

(6) Weight and balance information for Permacel P440 or Tooltec A005 tape application can be calculated using the following equations:-

A - IMPERIAL UNITS

FORWARD FLAPS - WEIGHT(lb.) = 0.0007 x Tape Length(in.) = ...(1)
REAR FLAPS - WEIGHT(lb.) = 0.0007 x Tape Length(in.) = ...(2)

INDEX UNITS

N22 Series -

$$IU = (WEIGHT(1) \times 0.225) + (WEIGHT(2) \times 0.230) = \ldots\ldots \frac{(lb.\ in.)}{1000}$$

N24 Series -

$$IU = (WEIGHT(1) \times 0.253) + (WEIGHT(2) \times 0.258) = \ldots\ldots \frac{(lb.\ in.)}{1000}$$

B - METRIC UNITS

FORWARD FLAPS - WEIGHT(kg.) = 0.0125 x Tape Length(metres)=...(1)
REAR FLAPS - WEIGHT(kg.) = 0.0125 x Tape Length(metres)=...(2)

INDEX UNITS

N22 Series -

$$IU = (WEIGHT\ (1) \times 5.715) + (WEIGHT\ (2) \times 5.842) = \frac{(kg.\ mm.)}{1000}$$

N24 Series -

$$IU = (WEIGHT\ (1) \times 6.426) + (WEIGHT\ (2) \times 6.553) = \frac{(kg.\ mm.)}{1000}$$

PART 4

Installation of 3M Polyurethane Tape (Ref Figure 3).

(1) With the flaps in the "UP" position, mark the flap upper surfaces to enable correct location of the tape.

(2) Fully extend the flaps and clean the top skin of the rear inboard, forward outboard and forward inboard flaps in the rubbing area using white spirit or other suitable degreasant prior to adhering the rubbing tape.

NOTE: Clean a small area at a time ensuring that the solvent does not dry on the surface being cleaned.

(3) Adhere the 3M Polyurethane tape P/N 8592 to the top skin of the rear inboard flap in lengths of approximately 30 inches, ensuring the tape is centrally positioned over the rubbing area along the full length of the flap. If the tape passes over any rivet heads, trim the tape to clear the rivet and allow the tape to lie flat on the skin.

NOTE: Trim the corners of each segment to approximately 0.25 inch radius.

(4) Repeat step (3) for the forward inboard flaps and for the first 50 inches from the inboard end of the forward outboard flaps.

(5) Retract the flaps.

(6) Weight and balance information for 3M Polyurethane type 8592 tape application can be calculated using the following equations:-

A - IMPERIAL UNITS

FORWARD FLAPS - WEIGHT(lb) = 0.0011 x Tape Length(in) = ...(1)
REAR FLAPS - WEIGHT(lb) = 0.0011 x Tape Length(in) = ...(2)

INDEX UNITS

N22 Series -

$$IU = (WEIGHT(1) \times 0.225) + (WEIGHT(2) \times 0.230) = \ldots\ldots \frac{(lb.\ in.)}{1000}$$

N24 Series

$$IU = (WEIGHT(1) \times 0.253) + (WEIGHT(2) \times 0.258) = \ldots\ldots \frac{(lb.\ in.)}{1000}$$

B - METRIC UNITS

FORWARD FLAPS - WEIGHT(kg.) = 0.0196 x Tape Length(metres)=...(1)
REAR FLAPS - WEIGHT(kg.) = 0.0196 x Tape Length(metres)=...(2)

INDEX UNITS

N22 Series -

$$IU = (WEIGHT\ (1) \times 5.715) + (WEIGHT\ (2) \times 5.842) = \frac{(kg.\ mm.)}{1000}$$

N24 Series -

$$IU = (WEIGHT\ (1) \times 6.426) + (WEIGHT\ (2) \times 6.553) = \frac{(kg.\ mm.)}{1000}$$

3. MATERIAL INFORMATION

A. Parts Required for Aircraft

(1) The following items are required and are to be supplied from the operator's stock or local sources.

P/N	TITLE	QTY
QQ-A-250/5-T3	Alclad Sheet 0.020 in Thick	A/R
P440	Tape, Permacel	A/R
A005	Tape, Tooltec (Alt)	A/R
8592	Tape, Polyurethane, 3M (48 mm wide)	A/R
NAS1738E4-1	Rivet, Cherry Lock	A/R
CR3243-4-1	Rivet, Cherry Max (Alt)	A/R

P/N	TITLE	QTY
MS20600B4-1	Rivet, Blind	A/R
CR3223-4-1	Rivet, Cherry Max (Alt)	A/R
--	Pigmented Jointing Compound	A/R
--	White Spirit	A/R

B. Parts Modified and Re-identified by Operator.

(1) Following embodiment of Part 3:-

Old P/N	Nomenclature	New P/N
2/N-24-103	Inboard Flap Assy - LH	2/N-24-103/NMD-57-6
2/N-24-104	Inboard Flap Assy - RH	2/N-24-104/NMD-57-6
2/N-25-51	Inboard Flap Assy - LH Fwd	2/N-25-51/NMD-57-6
2/N-25-52	Inboard Flap Assy - RH Fwd	2/N-25-52/NMD-57-6
Old P/N	Nomenclature	New P/N
2/N-25-53	Outboard Flap Assy - LH Fwd	2/N-25-53/NMD-57-6
2/N-25-54	Outboard Flap Assy - RH Fwd	2/N-25-54/NMD-57-6

(2) Following embodiment of Part 4:-

Old P/N	Nomenclature	New P/N
2/N-24-103	Inboard Flap Assy - LH	2/N-24-103/NMD-57-6PT4
2/N-24-104	Inboard Flap Assy - RH	2/N-24-104/NMD-57-6PT4
2/N-25-51	Inboard Flap Assy - LH Fwd	2/N-25-51/NMD-57-6PT4
2/N-25-52	Inboard Flap Assy - RH Fwd	2/N-25-52/NMD-57-6PT4
2/N-25-53	Outboard Flap Assy - LH Fwd	2/N-25-53/NMD-57-6PT4
2/N-25-54	Outboard Flap Assy - RH Fwd	2/N-25-54/NMD-57-6PT4

C. Parts required to Modify Spares.

Refer para 3.A.

D. Removed Parts

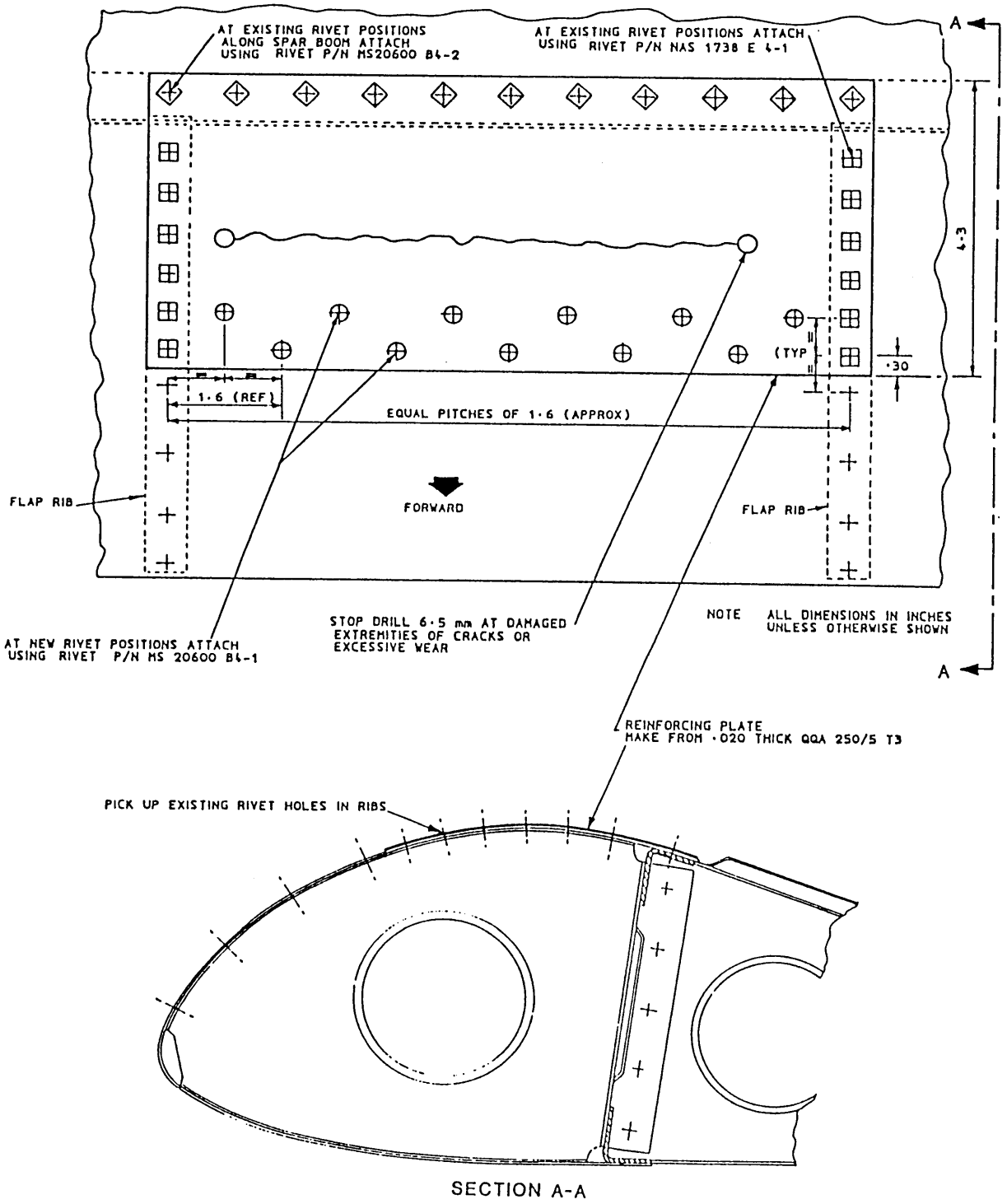
None.

E. Special Tools and Equipment

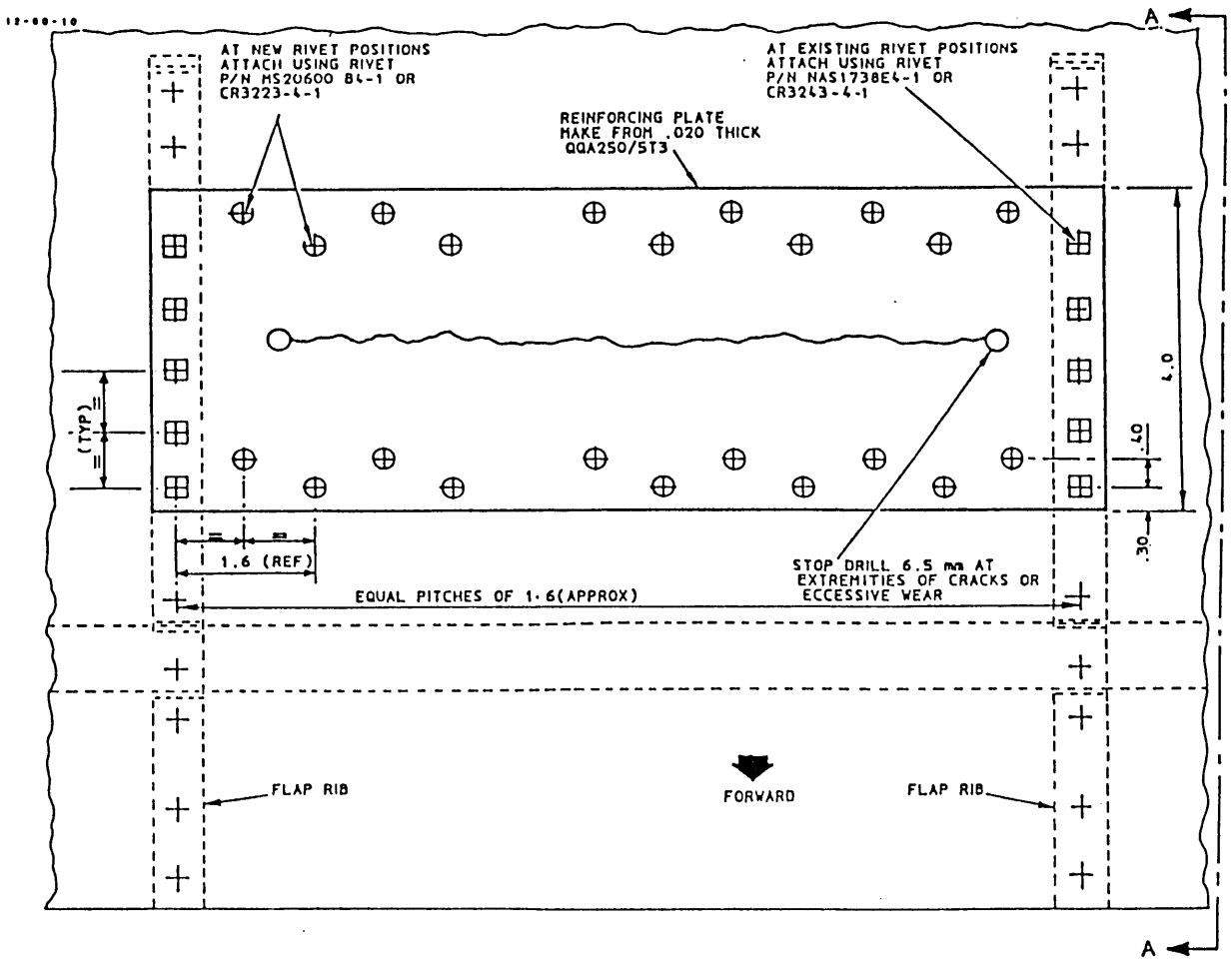
None.

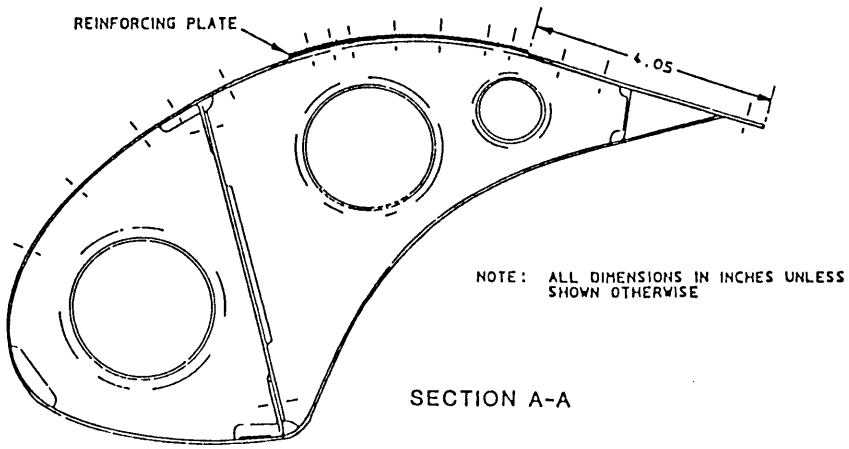
F. Recording Action

Record compliance with appropriate parts of Service Bulletin NMD-57-6 Rev. 1, in the airframe log book, listing Serial Numbers of components modified, and add Service Bulletin Number NMD-57-6 Part 4 adjacent to component part number as per Para 3B.

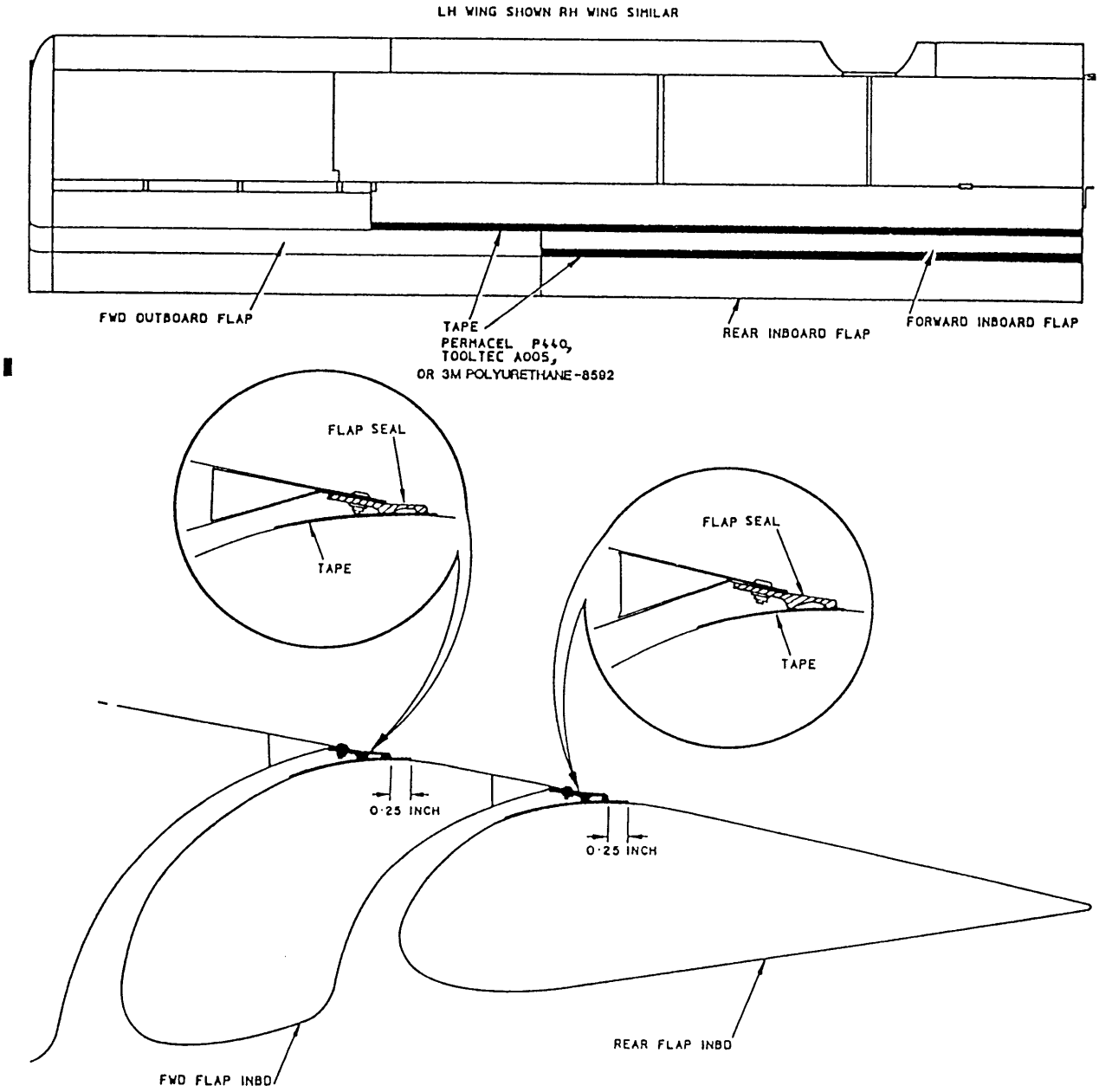


Rework to Rear Inboard Flap
Figure 1





Rework to Forward Inboard and
Forward Outboard Flaps
Figure 2



Installation of Mod N474
Figure 3