# FORWARD CABIN WINDOWS – IMPACT RESISTANT TRANSPARENCIES – MOD N452

## 1. PLANNING INFORMATION

### A. Effectivity

(1) Aircraft Affected

All Nomad N24–Series aircraft, except those aircraft fitted with Customer Option G390 or Customer Option G286, whose log books do not already record the embodiment of Mod N452 or compliance with Service Bulletin NMD–25–3.

Pre–certification implementation of the intent of this service bulletin is recorded in the airframe log book as Mod N452.

**NOTE**

(1) Mod N481 or Service Bulletin NMD–56–4 is a pre–requisite of Service Bulletin NMD–25–3

(2) Refer to Service Bulletin NMD–25–5 for N24–Series aircraft fitted with Customer Option G390 or Customer option G286.

(2) Spares Affected

| Nomenclature | Part Number | Recommended Disposition |
|---|---|---|
| Window Blind Assembly | 1/N–18–235 | * Rework (Ref Para 2B(2)) |

* Window Blind Assembly PN 1/N–18–235 is only to be reworked if a replacement is required at the LH or RH forward cabin window position.

### B. Reason

N24–Series aircraft have the forward cabin windows in line with the plane of rotation of the propellers. An incident has occurred in which ice, shed from a propeller, broke the adjacent forward cabin window and entered the cabin.

### C. Description

The forward outer and inner passenger cabin windows at Sta 150.0 are replaced by windows made of 0.125 inch thick, clear high impact resistant polyearbonate material.

Option G390 is one of several options and modifications forming an approved ice protection system (G286) for N24–Series aircraft. Refer to Service Bulletin NMD–25–5 for Mod N464 to Customer Option G390.

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D. **Compliance**

At the next 100 hour service, after receipt of this bulletin, subject to availability of parts.

(1) All N24–Series aircraft not certificated to fly into forecast icing conditions and which do not have Option G390 (Post Mod N464) or G286 certified in the airframe log book – replace the outer and inner window panels at the forward cabin window positions.

(2) It is recommended that compliance with this bulletin be accomplished at the same time as Service Bulletin NMD–56–4 (Mod N481) (Additional Support for Window Security).

**NOTE**

Operators are advised that if an aircraft may encounter icing conditions, passengers should not be seated in the forward passenger seats, unless Mod N452 has been embodied or the accomplishment instructions of this bulletin have been complied with.

E. **Approval**

The modification detailed herein has been approved pursuant to Air Navigation Regulation 40 and conforms with the type certification requirements.

F. **Manpower**

6 manhours total.

G. **Material, Price and Availability**

The parts required to incorporate the modification detailed in this Service Bulletin are available free of charge as Kit No. NMD–25–3–1 from the operator's local distributor. Distributors are to place a 'No Charge' purchase order on GAF. through the normal procurement procedure. Purchase orders are to quote the Aircraft Serial Number and Service Bulletin No. NMD–25–3. This Kit will be available ex–factory from May 1983.

H. **Tooling, Price and Availability**

Ref Figure 1 for templates.

I. **Weight and Balance**

Negligible effect on aircraft balance.

J. **References**

Maintenance Manual

Illustrated Parts Catalogue.

K. **Publications Affected**

Illustrated Parts Catalogue.

2. **ACCOMPLISHMENT INSTRUCTIONS**

A. **Remove Forward Cabin Windows LH and RH**

(1) Remove the forward cabin window lining LH and RH (Ref MM Chap 25–20–00).

(2) Remove the strip of adhesive tape at the top of the window surround. (This tape seals the joint between the top edges of the surround and the inner window).

(3) Remove the window blind assembly. (Ref MM Chap 25–20–00).

(4) Mark the position of the outer window panel on the inner surface of the aircraft skin.

(5) **(Pre–Mod N481)** Remove the outer window panel and the window surround as an assembly from the fuselage skin by breaking the adhesion of the double sided adhesive gaskets.

**(Post Mod N481)** Remove the four self–locking nuts, washers and screws holding the retaining brackets at each corner of the window surround and then break the adhesion of the double sided adhesive gaskets. Discard the four screws and self–locking nuts.

(6) Separate the outer window panel from the window surround. These are adhered together by double sided adhesive gaskets.

(7) Remove the double sided adhesive gaskets from the fuselage skin/outer window panel mating surfaces and also from the outer window panel/window surround mating surfaces as appropriate. Take care not to remove the position marks made in step (4). Return the inner and outer window panels to store.

(8) Remove the weather proofing fillet of PR1221 sealing compound from the edges of the window aperture in the fuselage skin.

B. **Install the High Impact Polycarbonate Windows (Ref Figure 2)**

**CAUTION**

ALTHOUGH THE POLYCARBONATE MATERIAL HAS EXCEPTIONALLY HIGH IMPACT STRENGTH, THIS CAN BE DEGRADED BY SHARP SCRATCHES OR NICKS OR BY THE EFFECTS OF CERTAIN SOLVENTS. EXTREME CARE SHOULD BE TAKEN NOT TO DAMAGE THE WINDOWS DURING INSTALLATION.

(1) Drill out the two rivets attaching the hook bracket PN 1D/N–18–232 to the top of the window surround, remove and discard the hook bracket.

(2) Locate the new bracket PN 1A/N–18–1204 over the existing rivet holes in the window surround, drill holes in the bracket from the rivet holes in the window surround using a No.30 drill. Remove the bracket from the window surround and deburr the holes. Relocate the bracket on the window surround and rivet up using rivets PN MS20426AD4–4.

**WARNING**

DO NOT ALLOW SOLVENTS OR OILS TO COME IN CONTACT WITH THE POLYCARBONATE PANELS AS POLYCARBONATE IS ATTACKED BY ALCOHOL AND HYDROCARBONS, IF NECESSARY, USE WARM SOAPY WATER FOR CLEANING.

(3) Clean the mating surfaces of the fuselage skin and the window surround with petroleum ether. Ensure that the position marks on the inner surface of the skin (Ref Para 2. Part B. (4) are not removed. Clean the high impact polycarbonate outer window panels with warm soapy water if required.

**NOTE**

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

(4) When the cleaned surfaces are dry, remove the protective paper from one side of the eight new sections of the Scotchmount double sided adhesive gaskets and adhere them to the inner surface of the fuselage skin around the window aperture.

**NOTE**

Double sided adhesive gaskets are manufactured from PN 4032 Scotchmount double coated adhesive tape 2 inches wide and 1/32 inch thick using the templates in Figure 1.

(5) Remove the protective paper from the other side of the gaskets, align the new high impact polyearbonate outer window panel with the position marks on the inner surface of the fuselage skin and apply firm pressure around the edges of the window panel and the window aperture to ensure satisfactory adhesion of the window panel to the fuselage skin.

(6) Apply a fillet of PR1221B or PR1222B sealing compound around the external joint between the fuselage skin and the outer window panel. The fillet is not to extend more than 1/16 inch beyond the edge of the skin onto the window panel.

**WARNING**

DO NOT ALLOW SOLVENTS OR OILS TO COME IN CONTACT WITH THE POLYCARBONATE PANELS AS POLYCARBONATE IS ATTACKED BY ALCOHOL AND HYDROCARBONS, IF NECESSARY, USE WARM SOAPY WATER FOR CLEANING.

(7) Clean the internal surface of the outer window panel.

(8) Secure the window surround to the outer window panel by removing the protective paper from one side of the double sided adhesive gaskets and pressing them firmly in position on the outer face of the window surround. Remove the protective paper from the other side of the adhesive gaskets and then press the window surround firmly into position on the outer window panel, ensuring that good adhesion is obtained. Using the brackets, new screws, washers and new self–locking nuts (Ref Service Bulletin NMD–56–4), secure the window surround and the outer window panel to the fuselage skin. Torque tighten the self–locking nuts to between 12 and 15 pound inches.

(9) Ensure that the extruded seal is positioned correctly (butt joint at the top) around the flange of the window surround, to effect a continuous seal between the inner window panel and the window surround.

(10) Assemble the replacement inner window panel to the roller blind frame so that the six holes in the inner window panel align with those in the roller blind frame assembly. Position the complete assembly to the window surround.

(11) Ensure that the inner window panel and the roller blind assembly fully engage the hook bracket on top of the window surround.

(12) Attach the inner window panel and the roller blind frame to the window surround with the six screws and washers removed on disassembly. Torque tighten the screws to between 12 and 15 pound inches.

(13) Seal the top edge of the joint between the window surround and the inner window panel with Scotchcal No.3655 one inch wide tape or a suitable alternative.

(14) Refit the window lining panel (Ref MM Chap 25–20–00).

3. **MATERIAL INFORMATION**

A. **Parts Required per Aircraft**

(1) One Kit PN NMD–25–3–1 is required per aircraft.

(2) Each Kit PN NMD–25–3–1 comprises the following items:

| Item PN | Qty | Title |
|---|---|---|
| 1/N–18–1202 | 2 | Window Panel, Inner |
| 1/N–72–100 | 2 | Window Panel, Outer |
| 1A/N–18–1204 | 2 | Bracket, Hook |
| M835206–249 | 12 | Screw, Panhead |
| 4032 x 2″ | 16ft | Scotchmount Tape, Double Coated |
| 3655 X 1″ | 44in | Scotcheal Tape |

(3) The following items are to be procured from the operator's stock or local sources.

| Item PN | Qty | Title |
|---|---|---|
| MS20426AD4–4 | 4 | Rivet, 100° Countersunk |
| PR1222B | AR | Sealing Compound |
| PR1221B (ALT) | AR | Sealing Compound |

B. **Parts Modified and Re–identified by Operator**

None.

C. **Parts Required to Modify Spares**

None.

D. **Removed Parts**

| New Part No | Qty | Description | Instruction/Disposition |
|---|---|---|---|
| 1/N–11–558 | 2 | Window Panel, Inner | Retain for Spares |
| 1/N–18–248 | 2 | Window Panel, Outer | Retain for Spares |
| 1D/N–18–232 | 2 | Bracket | Scrap |
| MS35206–248 | 12 | Screw, Panhead | Scrap |

4. **SPECIAL TOOLS AND EQUIPMENT**

None.

5. **RECORDING ACTION**

Record compliance with Service Bulletin NMD–25–3 in the airframe log book.



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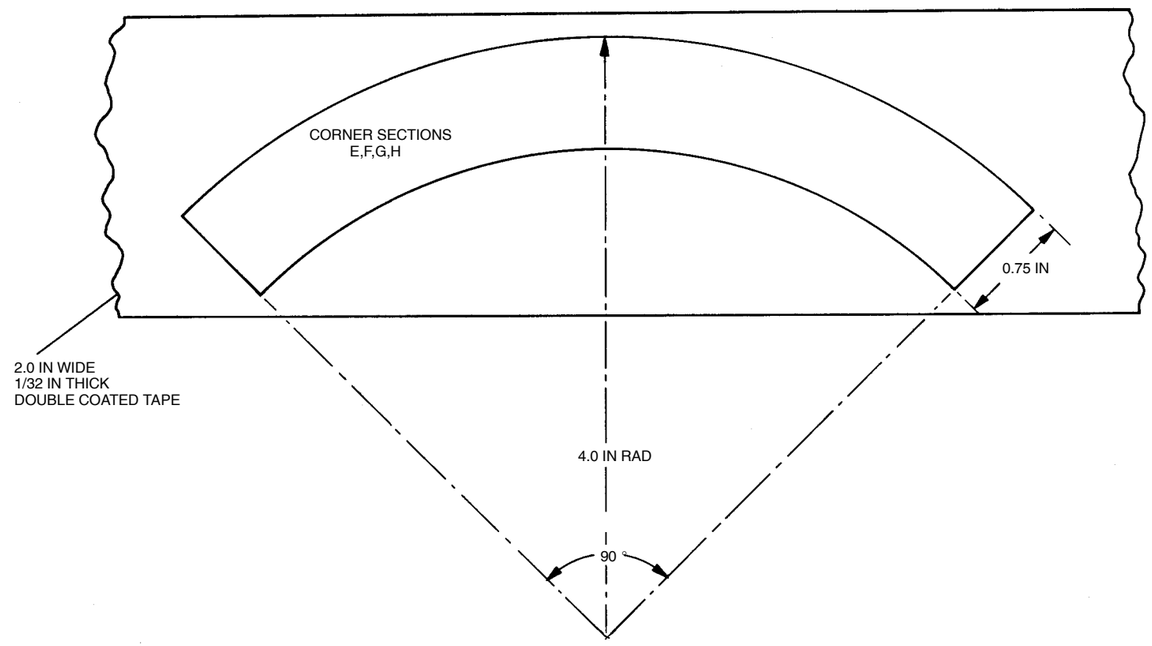
NOTE: MANUFACTURE ALL SECTIONS FROM MMM'S SCOTCHMOUNT DOUBLE COATED TAPE 4032



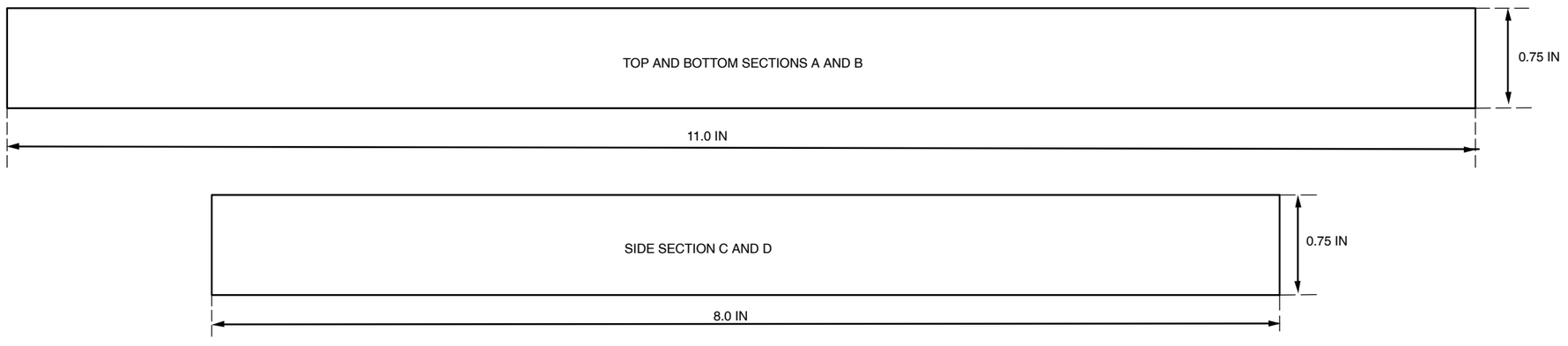




**Figure 1 Templates for Manfacture of Cabin Window Gasket**



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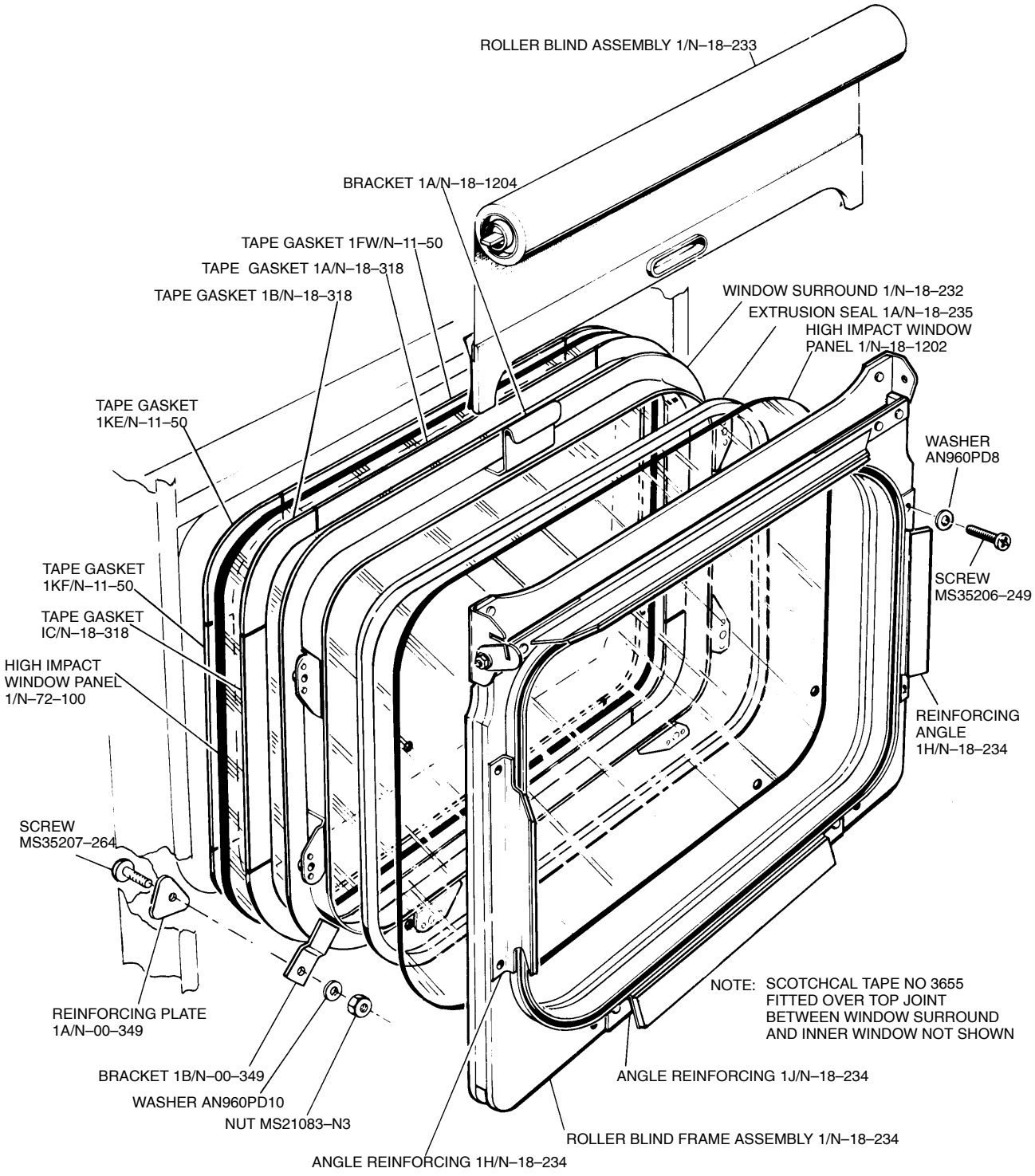


**Figure 2 Window Installation**



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