



# SERVICE BULLETIN

No. 420

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

"FAA DOA EA-1 Approved"

August 7, 1974

Subject: Inspection of Heated Windshield

Models Affected: Serial Numbers Affected:  
PA-31P Navajo 31P-1 to 31P-7400210 incl.

NOTE: Factory records indicate that suspect windshields were not installed in production aircraft prior to serial number 31P-7300121; however, due to the possibility of a replacement windshield having been installed in a PA-31P with a serial number earlier than 31P-7300121, check the windshield serial number -- easily readable from inside the aircraft utilizing a flashlight:

1. The pilot's heated windshield - the serial number is located at the bottom right adjacent to the power terminal box;
2. The co-pilot's heated windshield - serial number located at bottom left adjacent to the power terminal box.

The windshields are identified as follows: PPG AIRCON FLEXSEAL 45213-00 (or 45213-01); the next sequence of letters and numbers are critical -- the suspect windshields are identified with the letter "H" (which may appear to be an 11) appearing in the second line of order. Typical serial number; 1-H-6-25-72.

Only windshields bearing the above identifying characteristics and containing a letter "H" must be inspected per this service release.

Compliance Time: At the next 100 hour inspection or annual inspection, not to exceed the next fifty hours of operation.

Purpose: A few reports have been received of cracks appearing in the outer ply of the heated pilot's and/or co-pilot's windshield during flight. Subsequent investigation revealed that the fracture was caused by static electricity buildup (on the outer windshield surface) with a resulting discharge through the outer ply to ground through the electrical heating system of the windshield. Normally, since the windshield is manufactured with a

Purpose: (continued)

Permanent anti-static coating on the external surface (which permits static drain through a grounding tab to the negative windshield terminal), this situation would not occur. However a cracked windshield recently examined was found to have been insufficiently coated for adequate static protection.

This service release recommends that electric heated windshields (pilot's and/or co-pilot's) which fall into the above referenced category must be inspected to determine that adequate anti-static properties exist on the external windshield surface.

Instructions:

1. The instructions attached to this service release relative to the test procedure for determining adequacy of the windshield anti-static coating is recommended by the manufacturer of the subject heated windshield assemblies, PPG Industries Incorporated.
2. Should windshield replacement be necessary as a result of this test procedure, refer to the current PA-31P Navajo Service Manual, Section IV, for windshield removal/installation instructions.

Material Required:

1. One (1) each per aircraft Heated Windshield, Pilot's and Co-Pilot's, Piper part numbers 45213-00 and/or 45213-01, respectively -- as determined by the results of the test procedure referenced herein.
2. One (1) each per aircraft Piper Kit No. 760 882, Heated Windshield Ground Connection (this kit contains material necessary to conduct the referenced test procedure).

Availability of Parts:

Your Piper Field Service Facility.

Effectivity Date:

This Service Bulletin is effective upon receipt.

Summary:

Please contact your Piper Field Service Facility to make arrangements for compliance with this service release in accordance with Compliance Time, above. Replacement windshield(s) and installation time relative to windshield(s) replaced in accordance with the provisions of this service release will be accomplished free of charge through your Piper Field Service Facility.

A Service Publication Compliance form is enclosed with each copy of this service release mailed to affected owners of re- this form is to be filled out according to instructions on the form reverse side and left with the Piper Field Service Facility performing the modification.

## PA-31P HEATED WINDSHIELD INSPECTION

Heated windshields shall be checked for anti-static coating as follows:

### CAUTION

Exercise care on all following procedures to avoid scratching the windshield.

1. Clean the windshield to remove dust and dirt.
2. Using approximately 1/2" wide masking tape, define the windshield heated area into eight approximately equal sized areas. (See sketch.)
3. Using an ultra high sensitivity volt-ohm micro ammeter such as a Simpson 269, set the range dial to 100 K. Next, zero the meter reading. Then connect the alligator clip of one of the test leads to the windshield ground power terminal (or APU ground connection on PA-31P). Connect the alligator clip of the other test lead to the pure copper puff supplied in kit.

### CAUTION

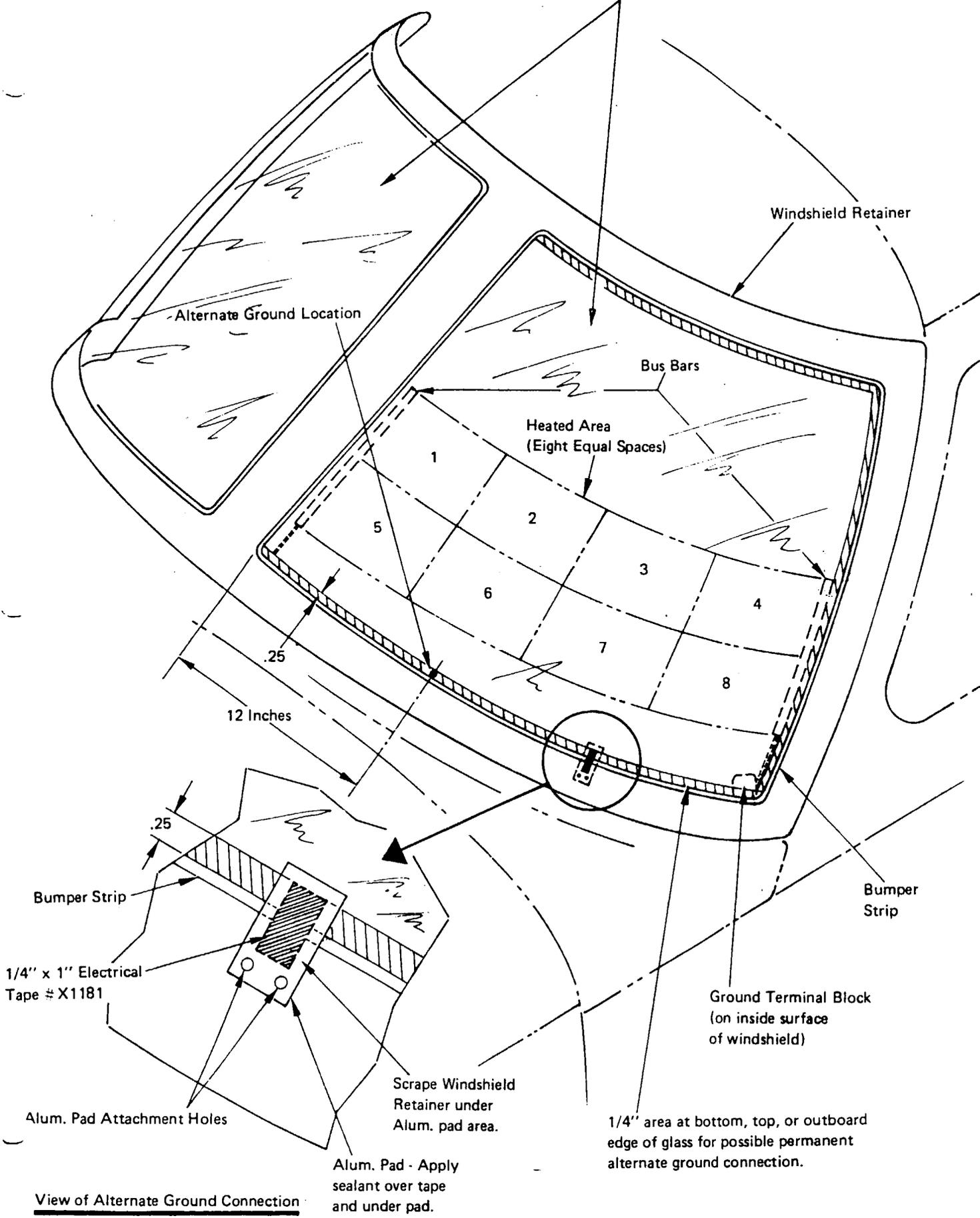
Wear gloves from this point on to guarantee electrical isolation.

4. Contact the windshield surface within each of the eight areas with the copper puff surface. If six or more of the eight areas indicate a meter reading of 100,000,000 ohms (reads "1K" on the Simpson 269) or less, the windshield is completely acceptable for anti-static protection, and no further action is necessary.
5. If three or more of the areas do not indicate a reading of 100,000,000 ohms or less, move the puff around thoroughly within the suspect area to determine if the acceptable reading can be found anywhere within the area. If a reading of 100,000,000 ohms or less can be found within a suspect area, using this procedure, then this area is acceptable. This procedure should be repeated for each suspect area. The final tally should show six or more of the eight areas to be acceptable in order for the windshield to be completely acceptable for anti-static coating protection, thus requiring no further action.
6. If three or more of these eight areas do not meet the requirement, there may be a faulty connection to ground. It is then recommended the following additional check procedure be used:

Disconnect the alligator clip from the ground terminal (or APU ground), and use it to contact the outer glass surface within 1/4" of the lower edge of the glass, approximately 12 inches from the centerpost. (See sketch.) With the other contact that is still connected to the copper puff, repeat the eight area check procedure defined in Step 4. If three or more of the eight areas are not acceptable, proceed to Step 9. If six or more of the eight areas are acceptable, a new ground connection can now be made as follows:

7. For future reference, place a mark on the retainer collar, adjacent to the contact point at the lower glass edge. Scrape the paint and primer from the retainer collar at this marked position, to expose the bare metal in an area 1/4" x 1/4". (See sketch.) Apply a 1" long x 1/4" wide strip of Scotch electrical tape #X1181 (supplied with kit), 1/4" onto the glass surface and extending back across the bumper strip onto the scraped retainer collar area. The new ground connection has been made.
8. The Scotch electrical tape must be permanently protected from weathering as follows: Using the sandblasted aluminum pad (supplied with kit) locate the hole positions on the retainer collar that would completely cover the X1181 tape. Next, drill and tap the two holes in the retainer. Using RTV 106 or PR 1422 soft weather sealant, pot the pad on over the tape. Then permanently connect the pad to the retainer collar with the screws supplied with kit. The new permanent ground connection is now complete.
9. If upon completion of the eight area survey of Step 6 three or more areas are not acceptable, an alternate ground location may still be available. Move the alligator clip, without copper puff, along the bottom glass edge to various positions and conduct the eight area survey of Step 4. If still three or more of the eight areas are unacceptable, continue the survey by probing along the outboard glass edge and the top glass edge while surveying the eight areas. If an acceptable location for an alternate ground tab is found, Steps 7 and 8 should be followed. If no satisfactory alternate location is found, you should contact the windshield vendor PPG Industries to discuss your survey and determine if windshield should be removed and replaced. Contact Bill Heidish at PPG, 205-539-8121.

Heated Windshields - Exterior View



View of Alternate Ground Connection

Alum. Pad - Apply sealant over tape and under pad.