

AERO PLASTICS INC.

Single Piece Extra Thick Windshield

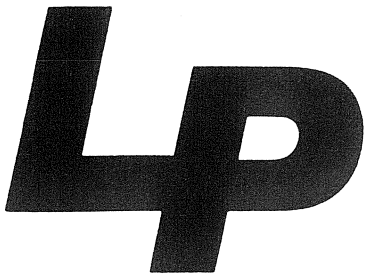
Report No. 269/CON

Installation Drawing List

Applicable Aircraft Models

Beechcraft 35-33 thru 35-C33	s/n CD-1 thru CD-1118, except CD-982
E33	s/n CD-1119 thru CD-1234
35-C33A	s/n CE-1 thru CE-179
E33A	s/n CE-180 thru CE-289
E33C	s/n CJ-1 thru CJ-25
F33	s/n CD-1235 thru CD-1254
G33	s/n CD-1255 thru CD-1304
F33A	s/n CE-290 and up
F33C	s/n CJ-26 and up
35 thru S35	s/n D-1 thru D-7976
V35	s/n D-7977 thru D8598
V35A	s/n D-8599 thru D-9068
V35B	s/n D-9069 and up
35R	s/n D-25R1 and up
36	s/n E-1 thru E-184
A36	s/n E-185 and up
A36TC	s/n EA-1 thru EA-241
	s/n EA-243 thru EA-272
B36TC	s/n EA-242, EA-273 and up
95-55 thru 95-B55	s/n TC-1 thru TC-1042, except TC-350
95-B55 & 95-B55A	s/n TC-1043 and up
95-C55	s/n TC-350, TE-1 thru TE-451, except TE-50
D55 & D55A	s/n TE-452 thru TE-767
E55 & E55A	s/n TE-768 and up
56TC	s/n TG-2 thru TG-83
A56TC	s/n TG-84 thru TG-94
58 & 58A	s/n TH-1 and up
58TC & 58TCA	s/n TK-1 and up
95 thru E95	s/n TD-2 thru TD-721

Page Numbers 1 through 25 inclusive 4/28/01

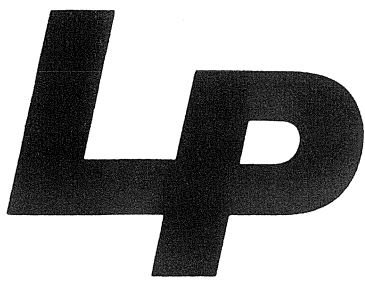


AERO PLASTICS INC.

Report No. 269/CON
4/28/01
Page 2

Revision Control Page

Revision	Date	Pages Affected	Remarks
1	12/10/92	Pg. 3, 3A	Para. 5: added - possible trimming of inner windshield frame needed
2	2/24/94	Pg. 3, 3A, 4, 5, 8	Revised frame removal instructions to include splitting frame with putty knife. Added page 8, figure 3, putty knife drawing.
3	3/22/96	Pg. 4, 9, 10, 11, 12, 13	Added Bostik 1100 FS sealant. Added frameless windshield removal and installation instructions.
4	4/28/01	Pg 1- 14 Added 15- 25	Expanded the applicability to include all earlier serial numbers and aircraft models.



AERO PLASTICS INC.

INSTALLATION & REMOVAL INSTRUCTIONS FOR EXTRA THICK WINDSHIELDS (P/N 269, 269.312, 269.375, and 269.500) USING THE ORIGINAL BEECHCRAFT WINDSHIELD FRAME

Beechcraft	E33	s/n CD-1119 thru CD-1234
	E33A	s/n CE-180 thru CE-289
	E33C	s/n CJ-1 thru CJ-25
	F33	s/n CD-1235 thru CD-1254
	G33	s/n CD-1255 thru CD-1304
	F33A	s/n CE-290 and up
	F33C	s/n CJ-26 and up
	V35A	s/n D-8599 thru D-9068
	V35B	s/n D-9069 and up
	36	s/n E-1 thru E-184
	A36	s/n E-185 and up
	A36TC	s/n EA-1 thru EA-241
		s/n EA-243 thru EA-272
	B36TC	s/n EA-242, EA-273 and up
	95-B55 & 95-B55A	s/n TC-1043 and up
	D55 & D55A	s/n TE-452 thru TE-767
	E55 & E55A	s/n TE-768 and up
	A56TC	s/n TG-84 thru TG-94
	58 & 58A	s/n TH-1 and up
	58TC & 58TCA	s/n TK-1 and up
	E95	s/n TD-708 thru TD-721

ONE PIECE WINDSHIELD REPLACEMENT INSTALLATION - TWO OPTIONS

1. Follow the Beechcraft service manual for removal of the windshield and frame from the airframe. Make sure that you mark the positions of all the trim strip mounting clips for proper positioning during installation. Numbering the tabs is recommended. After the glare shield has been removed, cover this area with a cloth to prevent debris from dropping on the instruments.

OPTION 1

- 2A. After the windshield has been removed from the aircraft carefully cut the center of the frame at both the top and bottom. This will allow the frame to be removed from the windshield as a right and left half. Use a hack saw to make these cuts. See figure 1. When cutting, allow sufficient room to permit 4 diameters clearance between both the doubler rivet holes and the existing fasteners. See figure 2 & instruction 7A.
- 3A. Two persons are required for this step. Utilizing a heat gun and at least two pairs of sheet metal type wide-billed vise grip pliers, grip the flat edge of the frame starting at the top cut. Space the pliers

approximately 6" apart. Heat the metal frame on both the top and bottom to soften the sealant inside the frame. At this time one person must grip the windshield while the second pulls with the pliers, separating the windshield from the frame. A sharpened putty knife may be drawn between the windshield and the frame to aid in breaking loose the sealant. Work the frame off in this manner all the way around. Heating one foot at a time. Care must be taken not to bend or stretch the aluminum frame during this removal process. You will be reinstalling it on the new windshield.

- 4A. Once both halves of the frame have been removed from the windshield, use MEK or any other solvent to clean the inside of the frame, removing all the old sealant. Some sealants are polysulfide based (Pro Seal, PRC, Chemseal, etc.) and can best be removed using a polysulfide sealant remover, such as Eldorado SR-125A manufactured by Eldorado Chemical Co., San Antonio, TX.
- 5A. Check the fit of this frame to the new windshield by sliding both halves of the frame onto the edges. The windshield is trimmed and the edge of the inside surface is milled to fit the frame at our factory, however a sander or file may be used to remove any excess acrylic. The inner aluminum frame inside edge varies in size and may need to be trimmed, if when fitted to the windshield, a gap wider than the saw kerf is left between the halves of the frame. If the gap is too wide, inner frame is hitting the flange of the windshield. This trimming will allow the windshield to slide into the full engagement of the frame. Smooth the inside edges of the frame after trimming to prevent the frame from biting into the windshield radius cuts. With the frame in final position, apply masking tape to the windshield just to the edge of the frame and also apply masking tape to the frame. This will protect both from the excess sealant. If a double layer of masking tape is used, the sealant may be smoothed with your fingers or a spatula while still wet, and the outer layer of tape can be removed leaving a clean layer to protect your surfaces during curing.
- 6A. Place sealant (GE RTV 108, Dow Corning RTV 732, Bostik 1100 FS or equivalent) in the channel of the frame. The new windshield should now be fitted into the frame, allowing the excess sealant to be squeezed onto the tape. A layer of masking tape can be placed over the joints while fitting to prevent any oozing sealant from getting on your fingers and contaminating other surfaces. This layer may then be removed to allow you to smooth the sealant around all edges leaving a good fillet. Remove the top layer of masking tape with excess sealant.
- 7A. Once the frame is in position on the new windshield, rivet (MS20426AD4 or equivalent) a 1" x 7/16" x .040" nominal size, 6061 T3 aluminum (or equivalent) doubler to the inside of the frame joining both left and right halves on both the top and bottom joints using flush type rivets. These holes must be carefully countersunk, 100 degrees, on the outside frame. This joint is non-structural. See figure 2.

OPTION 2

As an alternate to cutting the frame at top and bottom, the frame can be separated into inner and outer sections. This method allows much easier cleaning of the old sealant from the frame. **This is the preferred method of mounting the windshield**

- 2B. Drill through the center of each spot weld using a #40 drill bit. Mark each of these holes so that they can be flush riveted back together on the new windshield and will not be confused with the frame mounting rivet holes. After drilling, the welds may be broken with a thin, sharpened putty knife struck

sharply with a mallet. See figure 3. Exercise care not to distort the frame. Countersink the outside of the holes that were drilled through the spot welds.

- 3B. Once the inner and outer sections are separated, remove all old sealer with MEK or other solvent. Some sealants are polysulfide based (Pro Seal, PRC, Chemseal, etc.) and can best be removed using a polysulfide sealant remover, such as Eldorado SR-125A manufactured by Eldorado Chemical Co., San Antonio, TX.
 - 4B. Fit the frame to the new windshield, trimming the windshield and inner edge of the frame (extra-thick windshields) as necessary. The windshield is trimmed and the edge of the inside surface is milled to fit the frame at our factory, however a sander or file may be used to remove any excess acrylic. The inner aluminum frame inside edge varies in size and may need to be trimmed, if when fitted to the windshield the frame hits a portion of the acrylic which has not been milled. Smooth the inside edges of the frame after trimming to prevent the frame from biting into the windshield radius cuts.
 - 5B. Cleco the inner and outer frames together. These holes must be carefully countersunk, 100 degrees, on the outside frame. With the frame in final position, apply masking tape to the windshield just to the edge of the frame and also apply masking tape to the frame. This will protect both from the excess sealant. If a double layer of masking tape is used, the sealant may be smoothed with your fingers or a spatula while still wet, and the outer layer of tape can be removed leaving a clean layer to protect your surfaces during curing.
 - 6B. Place sealant (GE RTV 108, Dow Corning RTV 732, Bostik 1100 FS or equivalent) in the channel of the frame. The new windshield should now be fitted into the frame, allowing the excess sealant to be squeezed onto the tape. Rivet the two halves together using MS20426-A4 rivets or equivalent. A layer of masking tape can be placed over the joints while fitting to prevent any oozing sealant from getting on your fingers and contaminating other surfaces. This layer may then be removed to allow you to smooth the sealant around all edges leaving a good fillet. Remove the top layer of masking tape with excess sealant.
 - 7B. Fit the windshield into the aircraft and cleco it into place, allowing the sealant to cure. Remove the masking tape and excess sealant.
-
8. After curing, remove the windshield. Mask the airframe as you did the windshield. Apply sealant as recommended by the Beechcraft service manual. The windshield and frame assembly may now be reinstalled on the airframe and the installation completed using the Beechcraft recommended installation instructions in the Beechcraft service manual. Replace the glare shield and remove all the masking.
 9. Follow the guidelines on acceptable maintenance procedures in the FAA Advisory Circular AC 43.13-1A, or latest revision, in completing all phases of the installation. Complete 337 form. The weight of the original windshield in .250" thickness is approximately 13.75 lbs. The weight of the replacement windshield is approximately 17.25 lbs. in .312" thickness, 20.75 lbs. in .375" thickness, and 26.25 lbs. in .500" thickness. Account for the additional weight for operation performance in the weight and balance calculations.

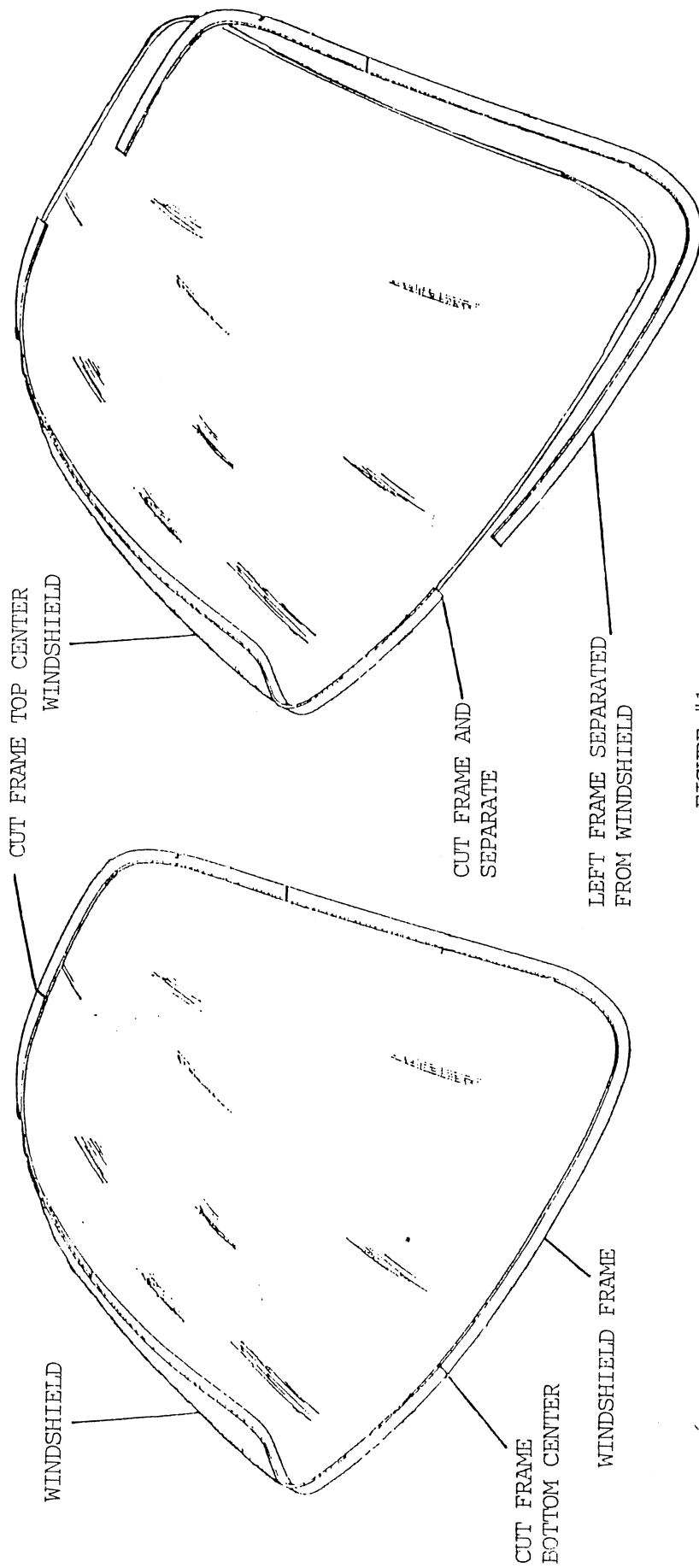
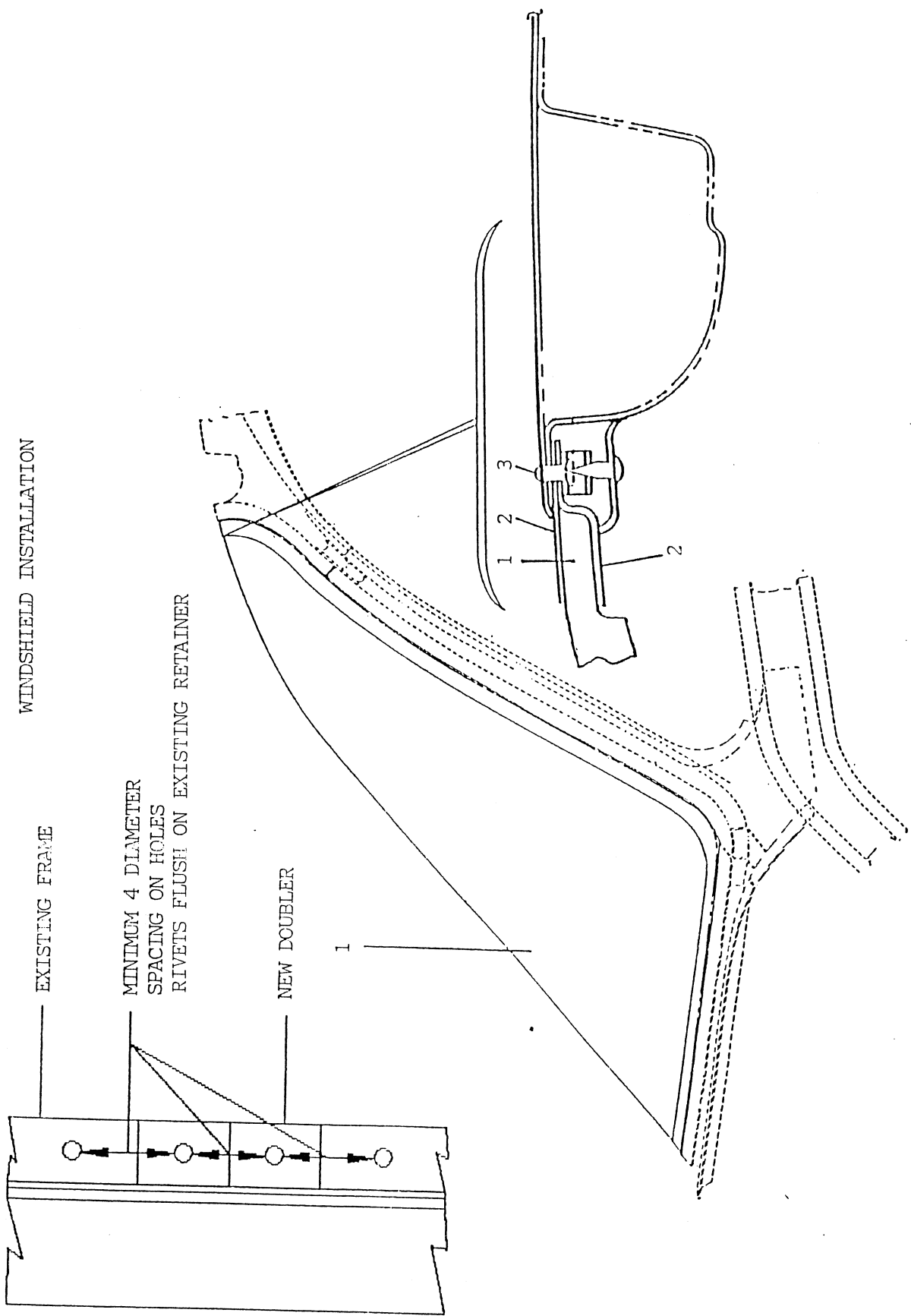


FIGURE #1

LP AERO PLASTICS, INC.
3/12/92
SCALE - NONE
REPORT NO. 269/CON

WINDSHIELD INSTALLATION

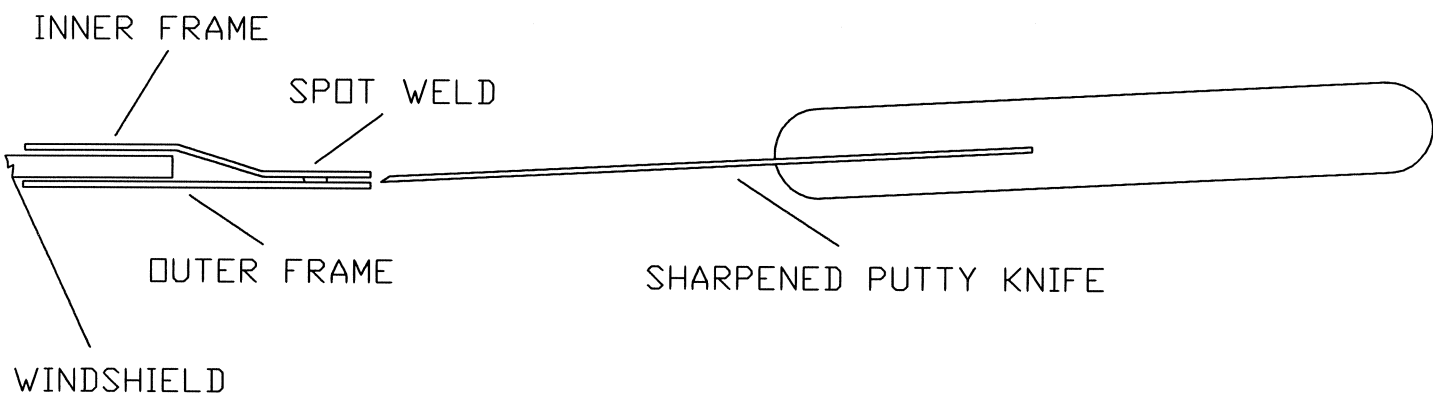


#1 WINDSHIELD P/N 269.312
 269.375
 269.500

#2 ALUMINUM RETAINING WINDSHIELD FRAME
 #3 RIVETS ATTACHING FRAME TO FUSELAGE

FIGURE 2

LP AERO PLASTICS, INC.
 4/28/92
 SCALE - NONE
 REPORT NO. 269/CON



LP AERO PLASTICS, INC.	
JEANNETTE, PA	
WINDSHIELD FRAME SEPARATION	
DRAWN BY GAM	
CK BY JP	FIGURE 3
DATE 2/24/94	PAGE 8
SCALE - NONE	REPORT NO. 269/CON

INSTALLATION & REMOVAL INSTRUCTIONS FOR EXTRA THICK FRAMELESS WINDSHIELDS (P/N 981, 981.312, 981.375, and 981.500) ELIMINATING THE ORIGINAL BEECHCRAFT WINDSHIELD FRAME

Beechcraft	E33	s/n CD-1119 thru CD-1234
	E33A	s/n CE-180 thru CE-289
	E33C	s/n CJ-1 thru CJ-25
	F33	s/n CD-1235 thru CD-1254
	G33	s/n CD-1255 thru CD-1304
	F33A	s/n CE-290 and up
	F33C	s/n CJ-26 and up
	V35A	s/n D-8599 thru D-9068
	V35B	s/n D-9069 and up
	36	s/n E-1 thru E-184
	A36	s/n E-185 and up
	A36TC	s/n EA-1 thru EA-241
		s/n EA-243 thru EA-272
	B36TC	s/n EA-242, EA-273 and up
	95-B55 & 95-B55A	s/n TC-1043 and up
	D55 & D55A	s/n TE-452 thru TE-767
	E55 & E55A	s/n TE-768 and up
	A56TC	s/n TG-84 thru TG-94
	58 & 58A	s/n TH-1 and up
	58TC & 58TCA	s/n TK-1 and up
	E95	s/n TD-708 thru TD-721

1. This windshield is trimmed larger than the original windshield to allow the windshield to be fastened directly to the airframe, thus eliminating the aluminum mounting frame. Read and thoroughly understand all of the following instructions before proceeding with the installation.
2. Follow the Beechcraft service manual for removal of the windshield and frame from the airframe. Remove all old sealant. Make sure that you mark the positions of all the interior trim mounting tabs for proper positioning during installation. Numbering the tabs is recommended. After the glare shield has been removed, cover this area with a cloth to prevent debris from dropping on the instruments.
3. The windshield has been trimmed closely to fit the airframe, but it may require a final trim to fit. If required this can best be done by using a belt sander or body grinder. Both of these will remove the material slowly and help prevent over trimming. Be sure to break all edges and sand smooth using 150 grit or finer sand paper. **A paper overlay pattern must be made of the original windshield to the outside edge of the frame.** Do not attempt a trial and error fitting technique, you will probably cut the windshield too short. The paper must cover the entire surface tightly. Stretch the paper to the top and bottom center and right and left center then tape it in place. Darts must be cut in the paper to allow it to lay flat against the acrylic. These darts must then be secured with masking tape. When the paper pattern matches the contour of the original windshield and frame exactly, run a razor knife around the entire edge of the windshield cutting the paper to the exact size. Make sure that you take the time to make an exact pattern. Do not rush this and get sloppy. It will save you a great deal of time and frustration later as you try to fit the new windshield. This paper pattern must be placed over the outside of the new windshield and a trim line transferred to the new windshield using a grease pencil or permanent marker. If you noted any shortages of material on the original installation, add to the new

windshield at this time to correct these errors. Trim the new windshield to this size. **TRUST THE PATTERN!**

4. The frame around the original windshield must be split so that the outside section can be used for the new installation. This outside frame need only be used in the installation if it is required to cover the exposed interior trim panels as viewed from the outside of the aircraft through the windshield. See figure 5. If the outside frame is not needed, you may disregard any reference to the outside frame piece in these instructions. Drill the center of each of the spot welds using a #40 drill. After drilling, the welds may be broken with a thin, sharpened putty knife struck sharply with a mallet. See figure 3. Exercise care not to distort the frame. The inside section of the frame may be discarded.
5. All mounting holes in the aircraft skin must be dimpled to accept the flush mounting screws (MS24693C or equivalent). You may use a truss head screw (AN526C-632 or equivalent) to eliminate the need to dimple the skin. Prime each hole with zinc chromate primer if the paint has been removed.
6. Place the outside frame sections, if required, in position from the inside of the fuselage and use tape to hold them there during the windshield fitting operation.
7. The windshield is placed in position from the inside. Rotate the windshield into position with the right side of the windshield placed to the left of the instrument panel and moving it in a clockwise motion until it is aligned. Remember that the hat section is narrow and where the windshield fits against the skin it is wider. Do not over trim to get the windshield past the hat section. The windshield will now need to be pressed past the hat section to fit against the outer skin. This is a tight fit. A bottle jack may be used to aid in pressing the windshield into position. With the front seats removed, a wooden platform with an angled block can be made to hold a bottle jack. A wooden 2" x 4" brace with a 10" diameter padded block mounted on the end can then be used to press against the center of the windshield. Slowly pump the jack and it will push the windshield into the opening. Rapping the windshield with the palm of your hand along the edges will snap it into final position.
8. The windshield should not rest on the radius of the hat section. See figure 5. Mark any areas which need trimmed that will allow it to be drawn against the skin by the fasteners. If trimming is necessary, push the lower corner of the pilots side of the windshield from the outside to disengage it. A second person should be on the inside of the aircraft to support the windshield as it comes free. Sand smooth all edges and radius all corners with 150 grit or finer sand paper. Once trimmed and sanded, reposition the windshield back in the opening.
9. Use a hollow punch to align the windshield frame with the skin. It is best to have an assistant on the inside of the aircraft using a well padded push stick to force the windshield against the skin for proper hole alignment while drilling. Drill through both the top and bottom center mounting holes using a 5/32" "ACRYLIC" drill bit. **REMEMBER THAT YOU ONLY GET ONE CHANCE TO DRILL A HOLE WITHOUT CRACKING THE WINDSHIELD - USE THE CORRECT DRILL BIT!!** When drilling, use a high speed and **NO PRESSURE**. Let the drill bit do the work. These drill bits scrape a hole through the acrylic similar to a wood spade bit, they do not cut. Practice drilling some holes in your old windshield. The assistant will hold the tinnerman nuts to the screws during tightening. Insert a #6 machine screw and tighten snug with a tinnerman nut to

secure the windshield in position. If the windshield is tight against the skin, you may alternate drilling every other hole location and tighten these screws. When completed you may go back and drill all skipped holes. With the windshield held in the final position, apply masking tape to the windshield just to the edge of the frame allowing room for the sealant to be filleted and also apply masking tape to the aircraft skin. This will protect both from the excess adhesive. If a double layer of masking tape is used, the adhesive may be smoothed with your fingers, a spatula, or a pencil eraser while still wet. The outer layer of tape can be removed leaving a clean layer to protect your surfaces during curing. Remove all screws and remove the windshield from the airframe. All holes must be oversized using a 1/4" "ACRYLIC" drill bit. Each hole must be chamfered on both sides using either a countersink or a grinding stone. Smooth all edges.

10. Each hole must have a minimum edge distance of 1/4". If any hole has less than the required 1/4", the hole may be notched and a backing support, may be used. This may be in the form of a backup aluminum angle cut to length, or large washers (AN970-6 or equivalent), or a combination of large washers (AN970-6 or equivalent) and 1/4" aluminum tube cut to the same length as the thickness of the acrylic and used as a spacer. Trim any oversized washers to clear any interior trim panels. See Figure 4.

11. **DO NOT USE ANY SEALANT OTHER THAN THOSE RECOMMENDED OR THEIR EQUIVALENTS! THE SEALANTS MUST MEET MILITARY SPECIFICATION MIL-S-8802E TYPE II, CLASS B.** The following is a partial list of approved sealants:

<u>Manufacturer</u>	<u>Sealant</u>
Chemseal Corp. (Sealpak Company, Inc.)	CS 3204 B-2
Essex Chemical Corp.	Pro Seal 711
Goal Chemical and Sealants Corp.	GC-408B-2 or -4
Morton International, Inc.	Thiokol MC-236 B-2
Products Research & Chemical Corp. (PRC)	P/S 890 B-2 OR -4
(Courtlands Aerospace)	PR-1440 B-1 OR -2 OR -4

The dash number on these sealants is the working time. We recommend that the 2 hour work time be used. This will give you sufficient time to make any adjustments and smooth out the fillets at the joints. The sealant is a two part system which requires a thorough mix prior to use. It is available in both small cans, which need applied by using a 1" putty knife or in cartridges which require a special hand application gun, similar to a caulking gun. The cartridges contain both components along with a plunger for ease of mixing and application. This is a much cleaner and faster application method. Remember to protect all surfaces from these sealants by covering and masking. The solvents needed for clean up will probably attack the surfaces you need to clean. Complete all masking.

12. Remove the outer frame sections from the airframe. Apply a layer of sealant to the hat section of the fuselage in a heavy enough bead that when squeezed, will completely cover the outer frame sealing sections. Tape these sections into position. Apply a second bead of sealant to the inside surface of the outside frame in a sufficient amount to cover the mounting edge of the windshield and extend into the mounting holes. With one person on the outside of the fuselage and the second on the inside, press the windshield into position. Locate the top and bottom center holes and place a

screw in each. Make sure that each hole or notch is totally filled with sealant. Place a washer and tinnerman on each and draw down snugly. Hold the tinnerman with pliers to avoid sealant contact with your skin. Work your way around each side alternating with a top and bottom screw until you reach the lower corner of each side. All screws should be drawn snug. Each hole and the underside of each tinnerman nut should be completely filled with sealant. Leaks will be prevented by completely following these instructions.

13. Remember to attach your interior trim mounting tabs to the correct screws during installation of each. Check the position of each by positioning the interior trim panels while the sealant is still wet. This will avoid having to try breaking them loose later.
14. Smooth the sealant in each joint and peel the top layer of masking tape. A pencil eraser will work well to smooth a fillet along each joint. Once dried, the last layer of masking tape may be removed. Cut each mounting screw close to the tinnerman nut to avoid any interference with the interior trim panels. Reinstall the interior trim panels, glare shield and any other items which may have been removed during the installation. Allow the sealant to fully cure prior to your initial flight. ***STEP BACK AND ADMIRE YOUR WORK.***
15. Follow the guidelines on acceptable maintenance procedures in the FAA Advisory Circular AC 43.13-1A, or latest revision, in completing all phases of the installation. Complete 337 form. The weight of the original windshield in .250" thickness is approximately 13.75 lbs. The weight of the replacement windshield is approximately 14.5 lbs in .250" thickness, 22 lbs. in .375" thickness, and 28 lbs. in .500" thickness. Account for the additional weight for operational performance in the weight and balance calculations.

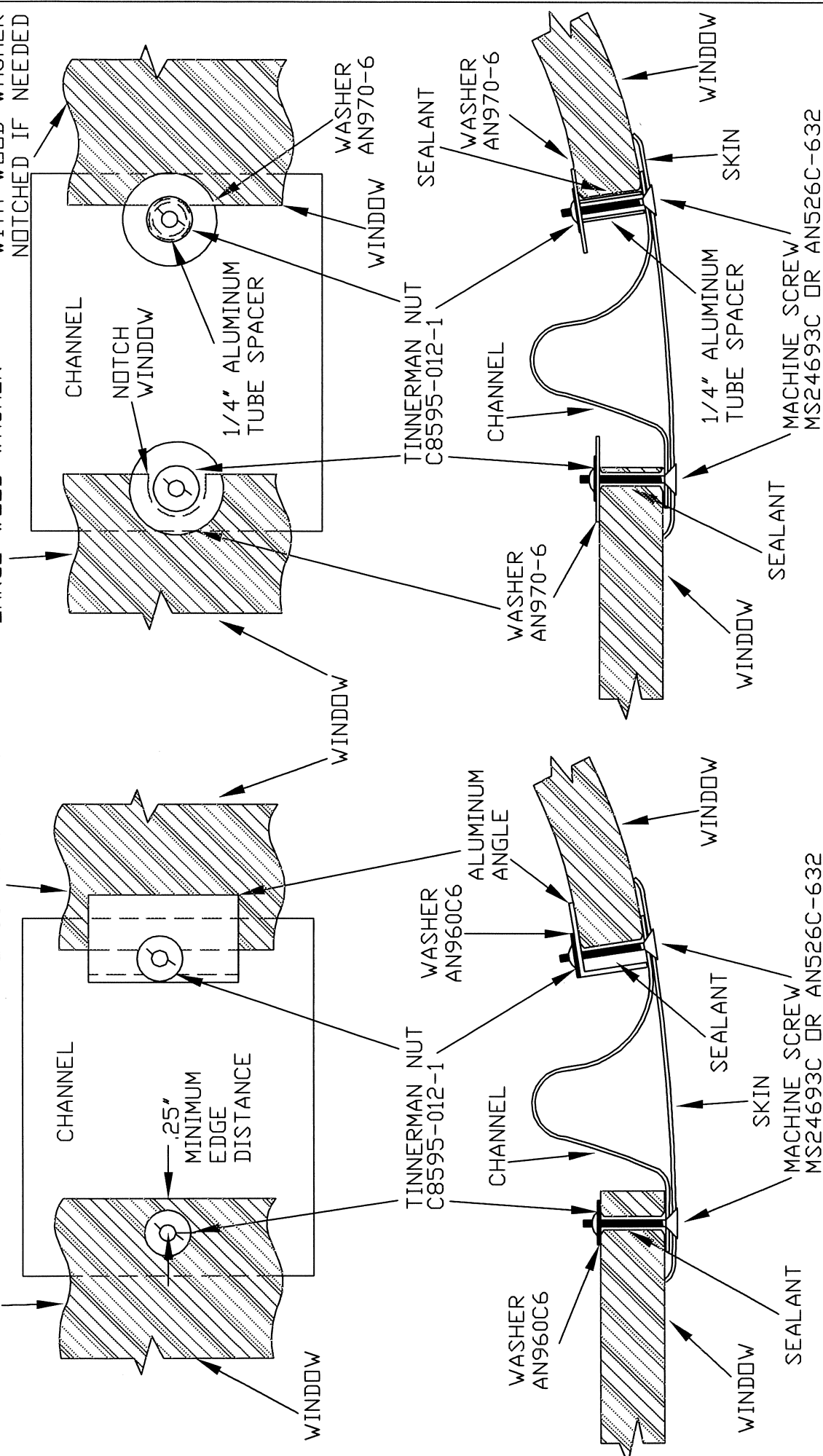
WINDSHIELD/WINDOW FASTNER PLACEMENT ALTERNATIVES

NORMAL
INSTALLATION

ALUMINUM ANGLE
EDGE REINFORCEMENT

NOTCHED EDGE WITH
LARGE WOOD WASHER

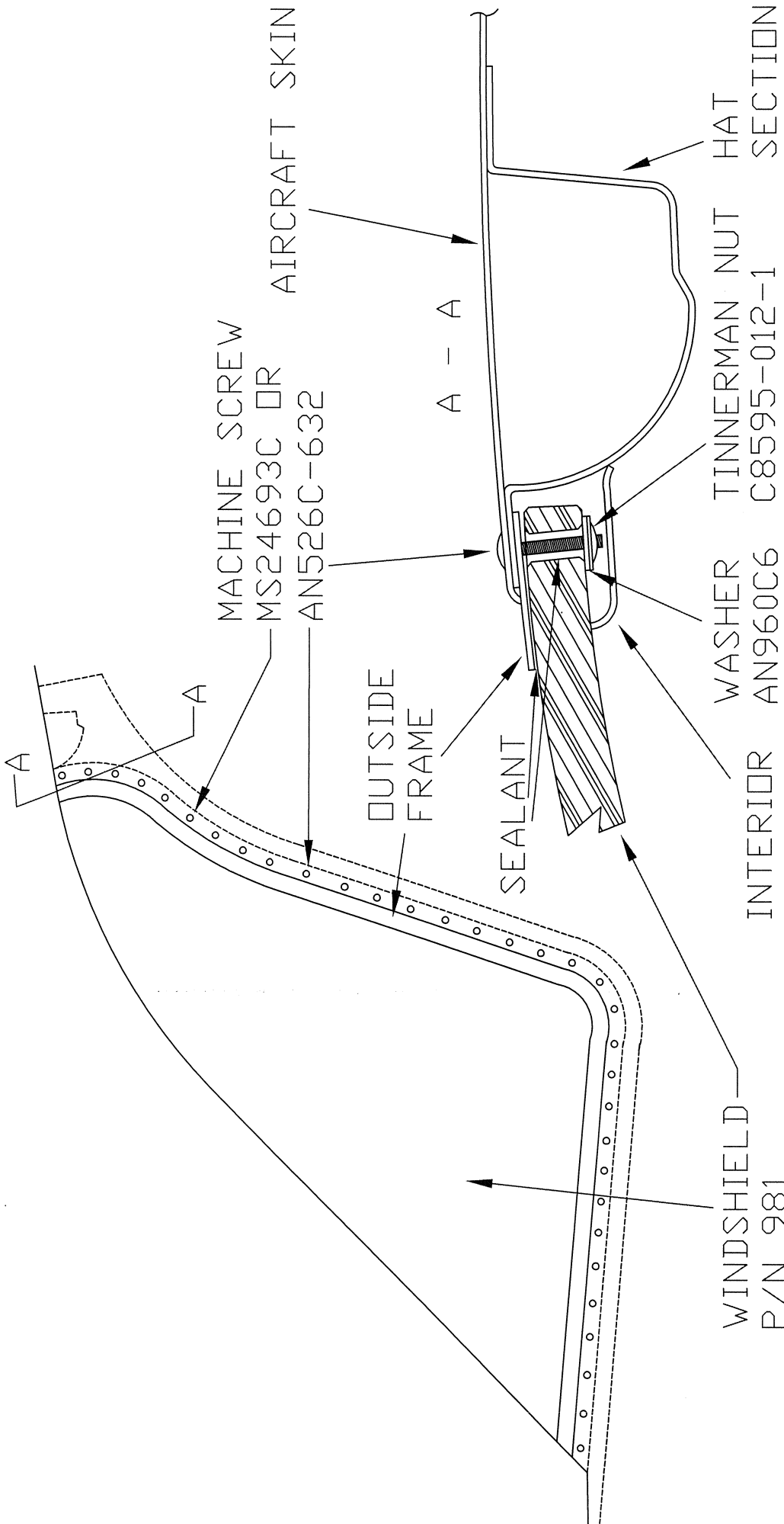
ALUMINUM SPACER
WITH WOOD WASHER
NOTCHED IF NEEDED



1. SEALANTS MUST FILL THE FASTNER HOLES COMPLETELY FOR A LEAK FREE INSTALLATION.
2. LARGE WASHERS MAY NEED TRIMMED TO GIVE CLEARANCE FOR BOTH CHANNEL AND INTERIOR TRIM.
3. TRIM SCREWS AFTER SEALANTS HAVE CURED.
4. AVOID OVERTRIMMING SO THAT NORMAL METHOD MAY BE USED.

LP AERO PLASTICS, INC.	
JEANNETTE, PA	
FASTNER ALTERNATIVES	
DRAWN BY	GAM
CK BY	JP
DATE	3/22/96
SCALE	- NONE
FIGURE	4
PAGE	13
REPORT NO.	269/CON

MACHINE SCREW
MS24693C OR AN526C-632



LP AERO PLASTICS, INC.
JEANNETTE, PA
WINDSHIELD INSTALLATION
DRAWN BY GAM
CK BY JP
DATE 3/22/96
SCALE - NONE
FIGURE 5
PAGE 14
REPORT 269/CON

1. 4/28/01 Added 981.312

INSTALLATION & REMOVAL INSTRUCTIONS FOR EXTRA THICK, SLOPPED, FRAMELESS WINDSHIELDS (P/N 977, 977.312, 977.375, and 977.500) ELIMINATING THE ORIGINAL BEEHCRAFT WINDSHIELD FRAME

Beechcraft	33 thru C33 C33A 35 thru S35 V35 and V35TC 35R 95-55 thru 95-B55 95 thru D95A 95-C55 and 95-C55A 56TC	s/n CD-1 thru CD-1118 except CD-982 s/n CE-1 thru CE-179 s/n D-1 thru D-7976 s/n D-7977 thru D-8598 s/n D-25R1 and up s/n TC-1 thru TC-1042 except TC-350 s/n TD-2 thru TD-707 s/n TC-350, TE-1 thru TE-451, Except TE-50 s/n TG-2 thru TG-83
-------------------	--	--

WINDSHIELD REMOVAL

1. Remove any items mounted on the glare shield. Remove any items mounted on the windshield or center post. (compass, OAT)
2. Remove all interior windshield trim moldings if present. The moldings from around the perimeter of the windshield will all be reused. Mark the exact position and location of each tab to which the interior moldings are fastened. Each one of these tabs must be installed in the same location and position for proper alignment and reinstallation of the moldings when completing the windshield installation. Locations may be marked with tape, grease pencil or marker. Number each tab and location for ease of identification.
3. Remove any screws or rivets which hold the windshield frame to the fuselage. REMOVE ONLY THE -4 RIVETS ACROSS THE BASE OF THE WINDSHIELD USING A #30 DRILL BIT. DO NOT REMOVE THE SMALLER -3 RIVETS. These smaller rivets do not attach to pass through the windshield frame. These hold the skin and hat section together. Remove the windshield from the opening. A putty knife may be used to separate the windshield frame from the fuselage if the sealant will not break loose. Use care not to cut any of the frame with the putty knife. From the outside of the aircraft draw the putty knife between the frame and fuselage around the perimeter of the windshield until the frame is loosened and the windshield can be removed.
4. Clean all old sealant from the fuselage windshield mounting hat sections.
5. The windshield will be reinstalled using MS24693 (#6) flat head machine screws, therefore the aircraft skin where each screw will be installed must be dimpled. You may use a truss head screw in place of the flat head if you do not wish to dimple the skin.
6. Remove the glare shield and cover this area to protect your radios and instruments from any falling debris.

GLARE SHIELD REMOVAL AND DEFROSTER INSTALLATION

7. The windshield must be prefitted to the fuselage in order to allow for the proper alignment of the defroster diffuser. The lower left and right hand corners of the aircraft skin must be trimmed to allow the windshield to transition from the inside of the vertical posts to the outside of the skin on the lower and forward edges of the windshield. See Dwg #D0001 sht. #3
8. Use a grease pencil to mark the center line on the upper surface of the defroster diffuser. Slide the new windshield into final mounting position and hold it in place. Mark the front edge of the windshield for positioning the front fairing strip. Position the new defroster (cover) diffuser on top of the skin forward of the original location of the defroster outlet. Move it forward until it is touching the inside surface of the windshield and align the center line of the diffuser with the center line of the fuselage. Once centered, slide the diffuser rearward $\frac{1}{2}$ " to $\frac{3}{4}$ ". Draw a pencil line around the rear edge of the diffuser and the front edge of the windshield fairing strip. Remove the windshield. Continue drawing the line around the diffuser and remove the diffuser. See Dwg #D0001 sht. #4
9. Early models, 35 through N35, are equipped with an aluminum plate under the glare shield. Remove the -3 rivets by grinding off the heads that attach the ducting to the lower forward hat section. There is a line of flush rivets extending out $10\frac{1}{2}$ " both to the right and left along the center line which must be drilled out using a #40 drill. This area may need cleaned to find all the rivet heads. Remove the four screws holding the floating panel and shock mounts to the face plate. There are "-3" flush rivets that attach the defroster to the face plate that must be removed. There may also be one additional screw, which must be removed, to the right of center which holds a clamp and also attaches to the battery box. The defroster assembly may now be removed by pulling the face plate forward and the defroster up. Replace the four shock mount screws. Two $\frac{1}{2}$ " x $\frac{1}{2}$ " x $\frac{1}{16}$ " 2024T3 aluminum braces, or equivalent, should be cut to attach to the face plate and forward skin. The ends of the angle should be notched and bent on angles to allow screwing or riveting in position to allow for equal spacing of the face plate and floating panel.
10. The defroster connector outlet (adapter) (one or two) must now be installed beneath the diffuser. All Beechcraft 55 and 95 models and some 33 and 35 models are equipped with only one outlet. The remaining 33 and 35 models are equipped with two outlets. A $2\frac{1}{2}$ " hole must be drilled to pass the outlet through the skin. Extreme care must be taken to position the outlet hole to avoid the hat section and any cross bracing. You may, if necessary, cut up to $\frac{1}{4}$ " into the front edge of the hat section. The 55 and 95 models have lines passing under the sheet metal which will require repositioning prior to drilling the hole. Push the defroster connector outlet through the opening. Drill four #30 holes positioned so that they do not fall under the attachment edge of the defroster (cover) diffuser. Rivet the outlet in place. Connect the defrost hose to the outlet using the original clamps. Be sure to tie the hose to avoid any interference with the movement of the control column.
11. The defroster diffuser may now be drilled for mounting. Position it within the previously drawn lines. Drill #30 holes on the center line, centered at the forward and rear mounting

flange and cleco in place. Drill one hole centered on the far left and right ends of the diffuser and cleco these holes. Evenly space two additional holes between each pair of cleco's for a total of twelve mounting holes. Remove the diffuser. See Dwg #D0001 sht. #4.

12. Now is the time to paint the exposed skin between the glare shield and the windshield. Place a layer of 3/4" masking tape to the aft side of the windshield line which you drew earlier. This will be a clean sealing area for the windshield. Mask forward of this tape to protect the cowling from over spray. Cover any other areas to protect from over spray. Paint this area flat black.
13. Rivet the diffuser into position using #44 rivets.

WINDSHIELD INSTALLATION

14. The windshields are trimmed to size, but due to variances between fuselages, additional fitting may be required. Position the windshield by sliding it from the outside, under the skin on the left and right side and the top of the fuselage. Lift the bottom of the windshield so that the windshield contacts the hat section on the top and both sides. Check the windshield for proper fit around the entire perimeter. If any final adjustments are required, it must be done now. When satisfied with the overall trim, use 150 or 220 grit sand paper to sand all edges smooth, removing all saw and machining marks. Also break all edges. Place the windshield back in position making sure that the windshield is pushed up against the tophat section structure and side posts before drilling. **Drill a single hole in the top center of the windshield using a 1/8" acrylic drill bit. Use a high speed on the drill and no pressure on the drill at all. Let the drill bit do all the work. When drilled properly, you will not feel the drill pass through the back side of the windshield. If you "pop" through when drilling, you are pressing too hard and may fracture the holes. REMEMBER THAT YOU ONLY GET ONE CHANCE TO DRILL A HOLE WITHOUT CRACKING THE WINDSHIELD - USE THE CORRECT DRILL BIT!!** There is no warranty for cracks or breakage of the acrylic windshield. Insert a cleco to hold the windshield in position. Drill holes alternating left to right across the top and down each side. Place a cleco in each hole as drilled to maintain proper alignment.
15. The new front retainer fairing must be mark for hole placement. Use a pencil to mark parallel lines the length of the fairing, 1/4" from the upper edge of the fairing and 3/16" from the forward edge of the fairing. These will be your drill lines for the mounting holes. Center the front retainer fairing at the forward base of the windshield. Check that the spacing is even on both the left and right sides of the fairing. Adjust the position of the fairing up and down to get the best fit on airframe and windshield. Tape the fairing to hold this position. Drill a #30 hole at the fuselage center line and your 3/16" pencil line through the fairing and the aircraft skin and insert a cleco. Measure the spacing that is used on the holes across the top of the fuselage for mounting the windshield and mark that same spacing across the lines on this fairing. Drill the next holes to the left and right of the center hole skipping several holes and hold with cleco's. Clean each hole to avoid any build up of metal shavings. Drill corresponding holes through the upper portion of the fairing, but do not drill through the

acrylic windshield. You want to only spot the hole in the acrylic. You will use an acrylic drill bit to drill through the windshield. You may continue drilling the holes through the aluminum, skipping several holes each time and securing with cleco's until you reach each end of the fairing. Before drilling each hole, check the alignment of the fairing to avoid any movement which may occur and cause gapping around the windshield. Once you have drilled to each end of the fairing, you may go back and drill all holes that were skipped.

16. Preparation is the key to a well finished job. Stainless steel screws are used to attach the windshield to the aluminum skin. You should paint the heads of the screws with the appropriate color and all aluminum should be covered with chromate paint to prevent direct contact between the stainless steel and the aluminum when the fasteners are installed. The paint and sealant must be prevented from getting on the windshield, any painted surface or any other part of the aircraft that is not to have that coating. Most solvents required to remove the sealants or paints will also attack the acrylic and cause crazing or distortions. Use at least 3/4" masking tape to tape the windshield edge and the edge of the skin. Place a second layer of masking tape over the first. Remove the front fairing and dimple all of the holes which will pass through the windshield. Mask this edge of the fairing with a double layer of tape. Use masking paper or tape to cover all other areas. Spin a 100° by hand through the tape at each dimpled hole to permit each screw to clear the tape when installed.
17. Mark the windshield and front fairing by using a grease pencil to mark a few vertical lines crossing both surfaces. These will aid in establishing proper alignment when bonding the retainer to the windshield. Remove all cleco's and slide the windshield out of the aircraft. Use a 1/4" acrylic drill bit drill through the base of the windshield and oversize all holes up the sides and across the top. Use the same drilling technique as highlighted above. Once all holes are drilled you may use a four fluted countersink or tapered stone in your drill to bevel the holes both inside and out. Check all holes and the edges of the windshield to make sure that they are properly finished, removing all saw marks, chatter marks or other rough areas. Each hole must have a minimum edge distance of 1/4". If any hole has less than the required 1/4", the hole may be notched and a backing support, may be used. This may be in the form of a backup aluminum angle cut to length, or large washers (AN970-6 or equivalent), or a combination of large washers (AN970-6 or equivalent) and 1/4" aluminum tube cut to the same length as the thickness of the acrylic and used as a spacer. Trim any oversized washers to clear any interior trim panels. See Figure 4.
18. **DO NOT USE ANY SEALANT OTHER THAN THOSE RECOMMENDED OR THEIR EQUIVALENTS! THE SEALANTS MUST MEET MILITARY SPECIFICATION MIL-S-8802E TYPE II, CLASS B.** The following is a partial list of approved sealants:
- | <u>Manufacturer</u> | <u>Sealant</u> |
|--|-------------------------|
| Chemseal Corp. (Sealpak Company, Inc.) | CS 3204 B-2 |
| Essex Chemical Corp. | Pro Seal 711 |
| Goal Chemical and Sealants Corp. | GC-408B-2 or -4 |
| Morton International, Inc. | Thiokol MC-236 B-2 |
| Products Research & Chemical Corp. (PRC) | P/S 890 B-2 OR -4 |
| (Courtlands Aerospace) | PR-1440 B-1 OR -2 OR -4 |

The dash number on these sealants is the working time. We recommend that the 2 hour work time be used. This will give you sufficient time to make any adjustments and smooth out the fillets at the joints. The sealant is a two part system which requires a thorough mix prior to use. Follow the mixing directions on the containers. It is available in both small ½ pint cans, which need applied by using a 1" putty knife. It is also available in cartridges which require a special hand application gun, similar to a caulking gun. The cartridges contain both components along with a plunger for ease of mixing and application. This is a much cleaner and faster application method. Remember to protect all surfaces from these sealants by covering and masking. The solvents needed for clean up will probably attack the surfaces you need to clean. **Do not use sealants beyond their expiration date. This is a bonded installation and requires that the bonding directions be explicitly followed.**

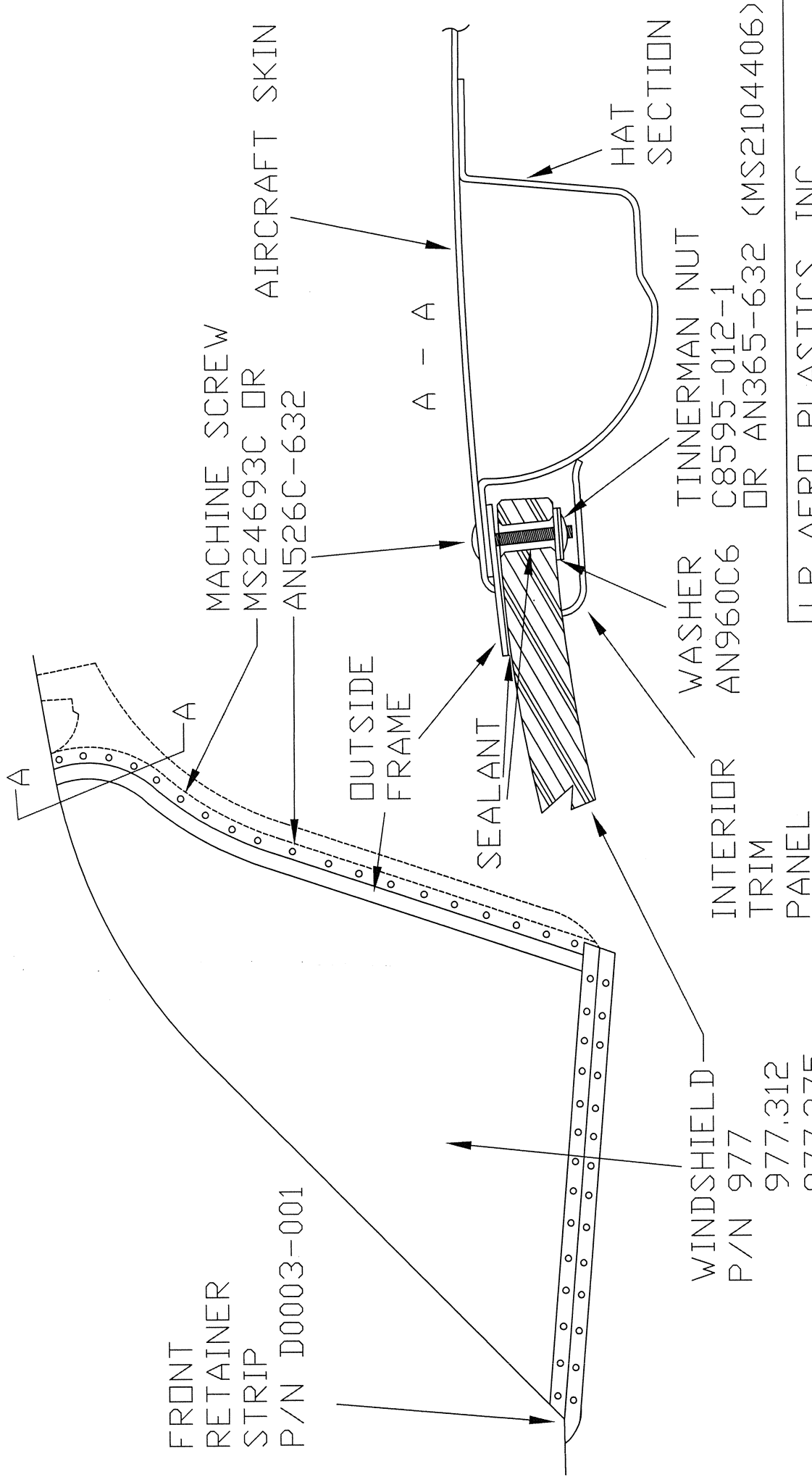
19. Place the windshield on a soft surface with the outside of the windshield face up. Place blocks of wood under the left and right sides to raise the bottom edge of the windshield thus allowing clearance for the attachment of the lower retainer. Clean the bonding edge of the windshield prior to applying any sealant. Mix the sealant and apply it to the bottom edge of the windshield along the entire area that will be fastened to the lower retainer. Position the retainer by lining up the alignment marks and insert screws through the center, far left and far right holes. Position a washer and tinnerman nut on each screw and snug each one. Insert the screws in each remaining hole and affix each with a washer and tinnerman nut. Alternate tightening each screw to a snug fit making sure that the sealant squeezes up through the fastening hole completely filling it. Use a sharp pair of side cutting pliers to cut away the excess length of each screw. The use of any other type nut will not permit sufficient clearance for the installation of the interior window moldings. Clear any drips of sealant with a rag wetted with isopropyl alcohol immediately.

20. Apply sealant to the inside of the attachment surfaces of the fuselage, up the sides and across the top. Also apply sealant to the attachment edge around the cowling. The windshield now needs lifted into place. It is best to have assistance for this operation. Someone on the inside of the aircraft can support the top of the windshield while it is pushed in and up. Try to keep from touching and smearing the sealant with the windshield while positioning it. Slightly spreading the bottom corners of the skin will allow the windshield to fit inside without smearing this area. The top of the windshield can be pushed up into position and a screw slowly inserted with a washer and tinnerman nut attached as soon as the threads are exposed. This screw may then be snugged. Pliers may be used to hold the washers and tinnerman nuts. Slowly insert and snug several screws to the left and right of the center. Insert cleco's in the front retainer through the cowling to secure this position. Insert and snug the remaining screws, alternating left to right, across the top and sides of the fuselage. Each screw hole should be full of sealant. Remember to attach your interior trim mounting tabs, which were marked when the original windshield was removed, to the correct screws during installation of each. Check the position of each by positioning the interior trim panels while the sealant is still wet. This will avoid having to try breaking them loose later. When a tab is used on a screw, a washer is not needed beneath the tinnerman nut. Follow the alignment marks for each tab.

21. The front retainer fairing is riveted in place using closed-end sealing aluminum rivets. Pull the rivets slowly and allow the sealant to squeeze out while pressing down on the retainer. This will assure contact between the fairing and the skin with no gaps. Start at the center and alternate left and right to complete.
22. Adjust the tension of the screws at this time to avoid any puckering of the sheet metal. This must be done while the sealant is still wet. Once the sealant cures, all parts are bonded in that location. Cut all remaining screws to the proper length to avoid any interference with the interior trim panels.
23. Smooth all joints around the entire perimeter of the windshield. Peel the top layer of masking tape and allow the second layer to protect the surfaces from any additional seepage. Once the sealant begins to solidify, you may remove the remaining masking. Clean the windshield and surrounding areas.

COMPASS AND GLARE SHIELD INSTALLATION

24. Position the new glare shield on top of the instrument panel. Some aircraft will require the attachment of the spacer strips to the top face of the instrument panel. These spacer strips will not be required with the new style "floating Panel". If they are required, adjust the height to allow full coverage of the lighting for the instruments and rivet or screw in place. Drill a small mounting hole on both the left and right side to secure the glare shield with screws.
25. A glare shield mounted compass is recommended. Your original compass may, if it is the proper size, be mounted in an Airpath p/n C24-730A Bezel. Mount the compass with brass screws only. We can also supply an acrylic compass mount for the top of the glare shield. If lighted, reroute the wiring as needed. Swing the compass and make a new compass correction card.
26. Follow the guidelines on acceptable maintenance procedures in the FAA Advisory Circular AC 43.13-1A, or latest revision, in completing all phases of the installation. Complete 337 form. The weight of the original windshield in .150" thickness is approximately 8.7 lbs. and in .250" thickness is approximately 12.6 lbs. The weight of the replacement windshield is approximately 14.5 lbs in .250" thickness, 22 lbs. in .375" thickness, and 28 lbs. in .500" thickness. Account for the additional weight for operational performance in the weight and balance calculations. The effective change in the weight and balance is 4 lbs @ 64" for the .250" thickness, 8 lbs @ 64" for the .375" thickness and 16 lbs @ 64" for the .5" thickness. Allow the sealant to fully cure prior to your initial flight. ***STEP BACK AND ADMIRE YOUR WORK.***



LP AERO PLASTICS, INC.	
JEANNETTE, PA	
WINDSHIELD INSTALLATION	
DRAWN BY	GAM
CK BY	JP
DATE	4/28/01
SCALE	- NONE
REPORT 269/CON	
FIGURE 6	
PAGE 21	

See Note 1

Note 1: This is the same windshield as the 981, 981.312, 981.375, and 981.500, except that the bottom corners are trimmed to fit the fuselage.

REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED		
1	AR	1	D0001-101	ALUMINIUM EXT	5052-H32	040x43x20
6	AR	6	PRO SEAL 711	SEALANT	ESSEX CHEM CORP	
6	6	6	MS20426AD4	RIVET	DELETED	
60	60	60	AN365-632	DELETED		
60	60	60	MS24693-S274	NUT		
150	150	150	MS20600AD4	SCREW		
1	1	1	D0004-001	RIVET		
1	1	1	D0003-001	ADAPTER		
1	1	1	D0002-001	DEPROSTER COVER		
1	1	1	D0002-001	WINDSHIELD MOLD		
1	1	1	981.500	WINDSHIELD	LP AERO PLAST	
1	1	1	981.375	WINDSHIELD	LP AERO PLAST	
1	1	1	981	WINDSHIELD	LP AERO PLAST	
1	1	1	D0001-005	WINDSHIELD		
1	1	1	D0001-003	INST'L		
1	1	1	D0001-001	WINDSHIELD		
1	1	1	D0001-001	INST'L		
1	1	1	D0001-001	WINDSHIELD		
1	1	1	D0001-001	INST'L		
1	1	1	D0001-001	DESCRIPTION	MAT'L SPEC	STOCK

DRAWN	DATE	D'SHANNON BEECH MODS	
<i>JK</i>	1-10-99	P.O. BOX 167 CHESTERFIELD, MO 63006	
CHECKED	DATE	TITLE	
<i>AK</i>	1-15-99	WINDSHIELD INSTALLATION	
APPROVED	DATE	S/L	DWG NO
<i>JK</i>	1-15-99	A	D0001
TOLERANCES		SCALE	REV
XX 03" ± 0" 20"		NONE	
		SHEET 1 OF 4	

REVISIONS

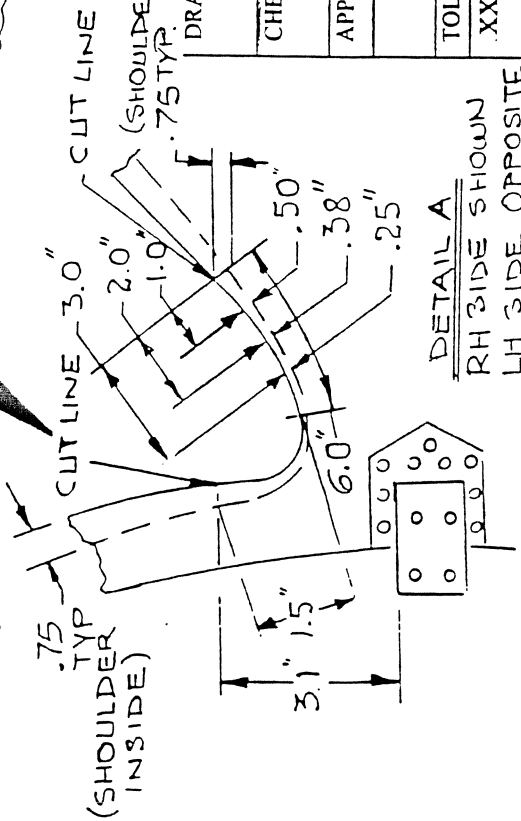
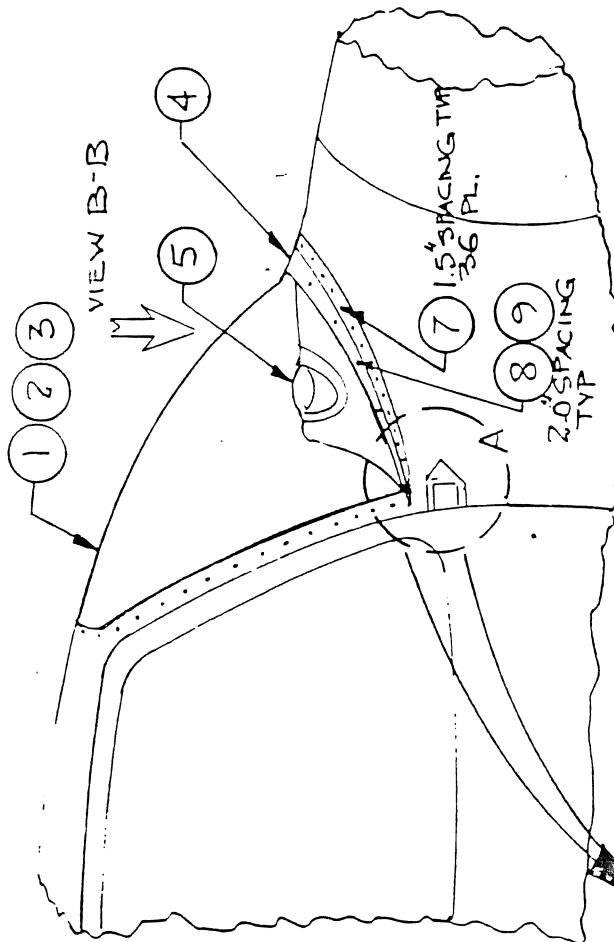
ZONE	REV	DESCRIPTION	DATE	APPROVED
------	-----	-------------	------	----------

GENERAL NOTES

1. INSTALL LP AERO PLASTICS WINDSHIELD 269.XXX IN ACCORDANCE WITH LP AERO PLASTICS INSTALLATION DRAWING, REPORT NO 269/CON REV 2, EXCEPT AT THE LOWER FRAME SECTION; INSTALL IAW THIS DRAWING INSTRUCTIONS.
2. ALL WORK TO BE ACCOMPLISHED IAW FAA ADVISORY CIRCULAR AC 43.13-1A & -2A.
3. THE EXISTING DASH PANEL MUST BE MODIFIED AS FOLLOWS TO ALLOW THE INSTALLATION OF THE NEW WINDSHIELD FORWARD OF THE INSTRUMENT PANEL.
 - A. REMOVE FORWARD EDGE OF UPHOLSTERY FROM EXISTING PANEL AND ATTACHED ALUMINUM EXTENSION, ITEM 13, WITH TWO ROWS OF BLIND RIVETS.
 - B. FIT THE NEW SECTION AND TRIM TO NEW INSIDE CONTOUR JUST PRIOR TO NEW WINDSHIELD INSTALLATION.
 - C. INSTALL NEW DEFROSTER COVER TO THE NEW EXTENSION SECTION AS SHOWN ON SHEET 4.
 - D. RE-UPHOLSTER MODIFIED DASH PANEL AS EXISTING DASH PANEL.
4. MAINTAIN 2D EDGE DISTANCE AND 4D FASTENER SPACING UNLESS OTHERWISE SPECIFIED.
5. FOLLOW BEACHCRAFT SERVICE MANUAL FOR REMOVAL AND INSTALLATION OF AIRCRAFT COMPONENTS.
6. ADJUST SCREW LENGTHS FOR THE DIFFERENT WINDSHIELD THICKNESSES.
7. PERFORM OPERATIONAL CHECK OF CONTROL COLUMN AFTER INSTALLATION PER BEACHCRAFT SERVICE MANUAL. VISUALLY INSPECT ALL HARNESSES FOR INTERFERENCE WITH MOVING PARTS.

DRAWN	DATE	D'SHANNON BEECH MODS		
CHECKED	DATE	P.O. BOX 167 CHESTERFIELD, MO 63006		
APPROVED	DATE	TITLE	WINDSHIELD INSTALLATION	
		SIZE	DWG NO	REV
		A	D0001	
TOLERANCES				
.XX - .03", 0 - 0° 20'		SCALE	SHEET 2 OF 4	
		NONE		

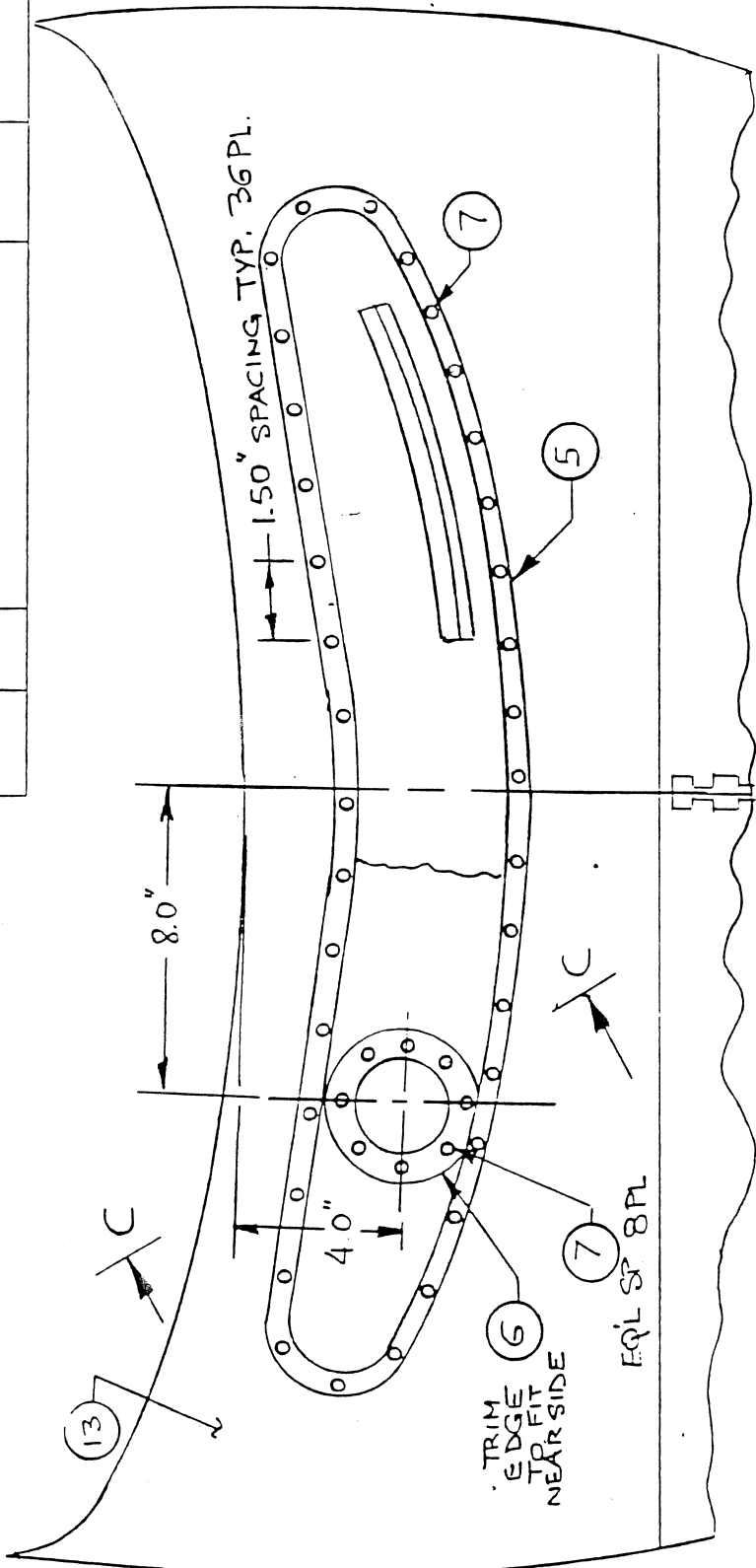
REVISIONS				
ZONE	REV	DESCRIPTION	DATE	APPROVED
	1			
	2			
	3			



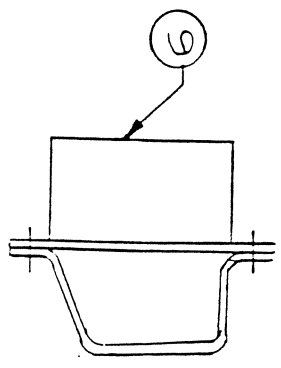
DRAWN		DATE	D'SHANNON BEECH MODS	
CHECKED		DATE	P.O. BOX 167 CHESTERFIELD, MO 63006	
APPROVED		DATE	TITLE	
TOLERANCES		XX - .03", 0 - 0".20"	WINDSHIELD INSTALLATION	
SHOULDER INSIDE)		.75 TYP	SIZE	DWG NO
SHOULDER INSIDE)		.75 TYP	A	D0001
SHOULDER INSIDE)		.75 TYP	REV	
SHOULDER INSIDE)		.75 TYP	SCALE	SHEET 3 OF 4
SHOULDER INSIDE)		.75 TYP	NONE	

REVISIONS

ZONE REV DESCRIPTION DATE APPROVED



VIEW B-B



DRAWN	DATE	D'SHANNON BEECH MODS	
CHECKED	DATE	P.O. BOX 167 CHESTERFIELD, MO 63006	
APPROVED	DATE	TITLE	WINDSHIELD INSTALLATION
TOLERANCES		SIZE	DWG NO
XX - .03", 0 - 0° 20'		A	D0001
		REV	
		SCALE	NONE
		SHEET 4 OF 4	