INSTALLATION MANUAL

Openable Window
PART No. NE-1

Approved Under STC Number: SA02771LA

Issue Date: 01 APR 2020

Textron Aviation (Beech) 35 (TCDS A-777)
Textron Aviation (Beech) 33, 35 & 36 (TCDS 3A15)
Textron Aviation (Beech) 50 (5A4)
Textron Aviation (Beech) 55, 56, 58 & 95 (3A16)
Textron Aviation (Beech) 99 & 100 (A14CE)
Textron Aviation (Beech) 65, 70 & E90 (3A20)
Textron Aviation (Beech) 76 (A29CE)
Textron Aviation (Cessna) 310 (3A10)
Textron Aviation (Cessna) 320 & 335 (3A15)
Textron Aviation (Cessna) 401, 402 & 411 (A7CE)
Aero Commander 10, 10A, 100, 100A & 100-180 (1A21)
Commander Aircraft 112/114 (TCDS A12SO)
Grumman Cougar GA-7 (A4SO)
Mooney Aircraft 20 (TCDS A2)
Piper PA-24 (TCDS 1A15)
Piper Aircraft PA-28 (TCDS 2A13)
Piper Aircraft PA-32 (TCDS 3SO)
Piper Aircraft PA-23 (1A7)
Piper Aircraft PA-38 & -39 (A1EA)
Piper Aircraft PA-31 (A20SO & A8EA)
Piper Aircraft PA-34 (A7SO)
Piper Aircraft PA-44 (A19SO)
Piper Aircraft PA-46R-350T (A25SO)
Twin Commander 500 & 560 (6A1)
Twin Commander 560 & 680 (2A4)

Ellis & Associates CADD/Technical Illustration
621 Begonia Ave, Corona del Mar, California 92653-1161 USA

RECORD OF REVISIONS

	LOCATION
ASSIGNED TO (JOB TITLE)	

REV. NO.	INSERTION DATE	BY	REV. NO.	INSERTION DATE	BY	REV. NO.	INSERTION DATE	BY
A	01 APR 2020	NE						
B	24 FEB 2023 DCN 000008	NE						

RETAIN THIS RECORD IN THE FRONT OF MANUAL OR CHAPTER.
ON RECEIPT OF REVISIONS, INSERT REVISED PAGES IN THE MANUAL, AND ENTER REVISION NUMBER, DATE INSERTED, AND INITIALS

RECORD OF TEMPORARY REVISIONS

REV. NO.	DATE INSERTED	DATE REMOVED	PAGE NO.	REV. NO.	DATE INSERTED	DATE REMOVED	PAGE NO.

SERVICE BULLETIN LIST

SERVICE BULLETIN NUMBER	ORIGINAL ISSUE DATE	REVISION NUMBER AND DATE	DATE BULLETIN INCORPORATED INTO MANUAL

LIST OF EFFECTIVE PAGES

SUBJECT	PAGE	DATE	SUBJECT	PAGE	DATE
Title	T-1	01 APR 2020			
Record of Revisions	RR-1	01 APR 2020			
Record of Temporary Revisions	TR-1	01 APR 2020			
Service Bulletin List	SB-1	01 APR 2020			
List of Effective Pages	LEP-1	01 APR 2020			
Table of Contents	TC-1	01 APR 2020			
Scope	1	01 APR 2020			
Continued Airworthiness	1	01 APR 2020			
Specific Application	1	01 APR 2020			
Mechanical / Structural	1	01 APR 2020			
List of Material	2	10 MAY 20[illegible]			
General Removal and Installation Methods and Procedures	3	10 M[illegible] 20[illegible]3			
Figure 1	[illegible]	0[illegible] APR 2020			
Figure 2	5	1 AP[illegible] 2020			
Figure 3	6	0[illegible] R 2020			
Figure 4	7	01 APR 2020			
Figure 5	8	01 APR 2020			
Figure 6	9	01 APR 2020			
Figure 7	10	01 APR 2020			
Supplemental Data	11	01 APR 2020			

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

1.0 SCOPE

This manual describes the installation of the Ellis & Associates CADD/Technical Illustration, Part Number NE-1, Openable Window for approved aircraft. This manual consists of eight sections.

The Openable Window installation process is carried out by fabricating the window assembly parts using the existing cabin skin and window without modifying the structure. There are no modification of the cabin door and/or structure. Then, parts are installed, according to the installation instructions. The openable window in the cabin provides for better ventilation to the cockpit, as well as the other advantages.

Refer to the Table of Contents for the page location of applicable sections.

The manual shall be revised as necessary to reflect current information.

The procedures described in this manual have been verified by actual modification and installation.

2.0 INSTRUCTION FOR CONTINUED AIRWORTHINESS

Instructions for Continued Airworthiness see Document: 56-26-00 CAW

3.0 SPECIFIC APPLICATION

AIRCRAFT / MAKE AND MODEL :

AIRCRAFT SERIAL NUMBER :

DATE OF INSTALLATION :

SIGNATURE :

ISSUE NUMBER :

PART NUMBER : ELLIS & ASSOCIATES CADD/TECHNICAL ILLUSTRATION, NE-1 Openable.

4.0 MECHANICAL STRUCTURE

All materials used shall conform to aircraft standards in accordance to Part 23.2260, AC20-62D and AC43-13-1B Chapter 7.

Fabrication shall conform to the principles and practices set forth in Part 23.2255 and AC 43.13-1B, with particular reference to Chapter 4, Section 4, Metal Repair Procedures.

All fabricated assemblies shall be protected against corrosion, and finished in accordance per Part 23.2255 and AC 43.13-1B, Chapter 6, Section 1 and 8.

5.0 LIST OF MATERIAL

The following is a list of all of the parts of part number NE-1 Installation Kit for the Openable Window Assembly. Part numbers listed are of aircraft standard. Only aircraft standard parts are used in the installation of NE-1. **Note,** quantities of rivets vary per individual aircraft.

Description	Part Number	Qty	Usable on Code
KEEPER (SOUTHCO)	TL-17-201-07	2	
LATCH (SOUTHCO)	TL-20-102-07	2	
TAPE-FOAM SEALING	SP-FT116 (OR EQUIV)	A/R	
HINGE	MS20257P4	2	
RIVET	MS20426AD5	8	
RIVET	MS20426AD3	A/R	
SEALANT (PRC/DESOTO)	PR1425 (OR EQUIV)	A/R	
SEALANT (PRC/DESOTO)	PR1422 (OR EQUIV)	A/R	
ALUMINUM 2024-T3, .032 THICK ALCAD	AMS-QQ-A-250/5	A/R	
ALUMINUM 2024-T3, .040 THICK ALCAD	AMS-QQ-A-250/5	A/R	
ALUMINUM 5052H-32, .032 THICK ALCAD	AMS-QQ-A-250/8 (OPTIONAL)	A/R	
ALUMINUM 5052H-32, .040 THICK ALCAD	AMS-QQ-A-250/8 (OPTIONAL)	A/R	
HANDLE ASSY (PIPER AIRCRAFT)	464-412 (OR EQUIV)	1	
PAN HEAD PHILLIPS MACHINE SCREW	MS3[illegible]206	2	
NUT-LOW PROFILE ELASTIC STOP	AN364	2	
WASHER-FLAT	MS[illegible]95	2	

6.0 GENERAL REMOVAL AND INSTALLATION METHODS AND PROCEDURES

General removal and installation methods and procedures must conform to the principles and practices contained in AC 43.13-1B Chapter 3, Section 1 and 2, Chapter 4, Section 4 (Acceptable Methods, Techniques, And Practices - Aircraft Inspection, Repair and Alteration). No special tools are required, however, standard sheet metal shop aircraft repair tools are required. Use only EPA approved solvent, such as PS661 or equivalent. Follow the safety precautions and use instructions provided by the manufacturers of sealants, solvents, etc.

Insure that all rivet holes are properly sized and matched. It is permissible to use oversize rivets provided all provisions of AC 43.13-1B Chapter 4, Section 4 are strictly observed. Do not exceed two (2) rivets over sizes. Length of the rivets must be determined upon assembly by thickness of the assembly. **Note,** length of rivets not to exceed one and half (1.5) times the rivet diameter.

Note, Left Hand Modification same as Right Hand mirror. This modification cannot be installed on aircraft with left or right vent window mounted to fuselage/door.

6.1.0 Removal of Cabin Fixed Window:

6.1.1 Remove Fix Window Assembly from aircraft per Service Manual.

6.1.2 Outline window opening using tape on existing window.

6.1.3 Remove cabin window molding and window.

6.1.4 Remove and clean sealant around window opening. Retain the window for, template, modification and reinstallation.

6.2.0 Installation of Openable Window:

6.2.1 Inner and Outer Window Frame and Window Retainer Fabrication:

See Section 5.0 for materials used in this section.

6.2.1.1 Use the outside surface of the existing window, as removed from the aircraft, fabricate and form the Outer Window Frame following the window contour all the way around with a .04 clearance from existing window opening as shown in Figure 1, View A and D for handle. Use Aluminum 2024-T3, .032 Thick ALCAD or using Aluminum 5052H-32, .040 Thick ALCAD.

6.2.1.2 Use the inside surface of the Outer Window Frame to fabricate and form the Inner Window Frame following the contour all the way around with a .04 clearance from the Doubler as shown in Figure 1, View B, and Figure 4. **Note:** Locate View D 1.00 inches prior to Window Opening Radius front and rear locations of upper Outer and Inner Window Frame as shown in Figure 1. **Note:** Trim and match Outer and Inner Window Frame window opening. Use Aluminum 2024-T3, .032 Thick ALCAD or using Aluminum 5052H-32, .032 Thick ALCAD.

6.2.1.3 Fabricate Doubler to match profile of Inner Window Frame as shown in Figure 1, View E. Use Aluminum 2024-T3, .040 Thick ALCAD as shown in Figure 1, View E.

6.2.1.4 Match drill Doubler to Inner Frame .094 Diameter, Countersink Doubler and Dimple. Duplicate existing rivet pattern on window opening. **Note:** Dimple on the outside side of the Inner Window Frame, protruding rivets face inward.

6.2.1.5 Install Doubler to Inner Window Frame using MS20426AD3 Rivets as shown in Figure 1, View E.

6.2.1.6 Use the inside surface of the window opening to fabricate the Window Retainer in sections following the window opening contour all the way around, extending 0.25 inward from window opening as shown in Figure 1, View C. **Note:** Length of Retainer to be determine on aircraft with edge distance of .22 as shown in Figure 2. Use Aluminum 2024-T3, .032 Thick ALCAD or using Aluminum 5052H-32, .040 Thick ALCAD

6.2.1.7 Match drill Retainer to existing holes in window opening. Remove retainer and Dimple.

6.2.1.8 Apply PR1422 to sides of Retainer on installation. Clean excess Sealant after installation.

6.2.1.9 Rivet Window Retainer to window opening between outer and inner skin using Rivet MS20426AD3 as shown in Figure 2. **Note:** Do not rivet Retainer at Hinge and Latch location.

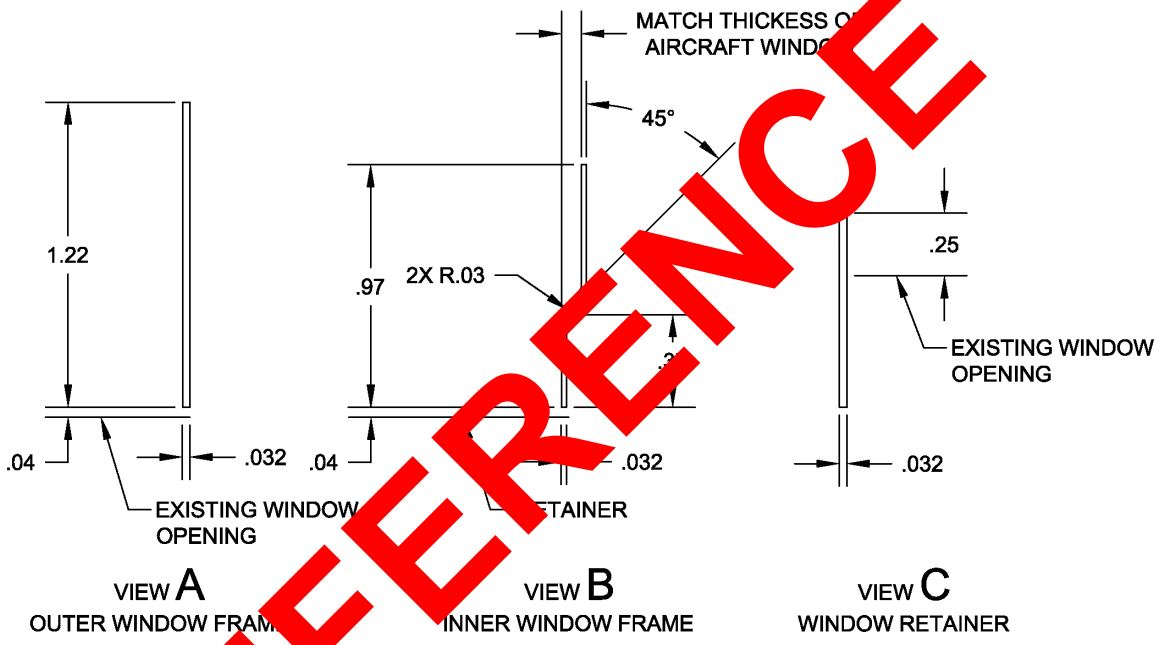
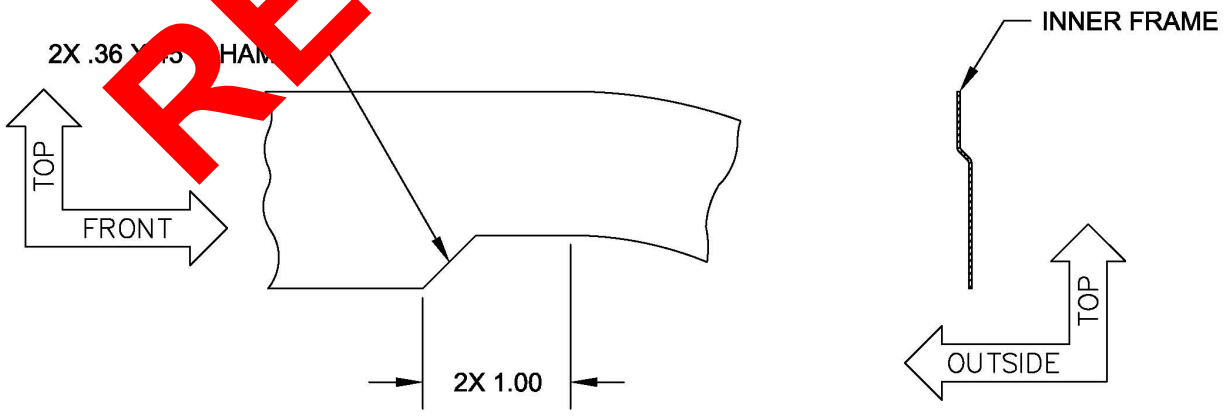
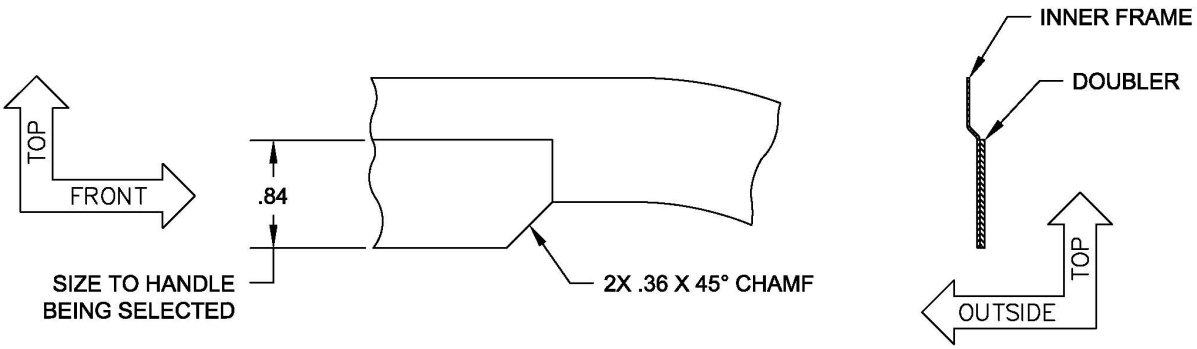


FIG 1



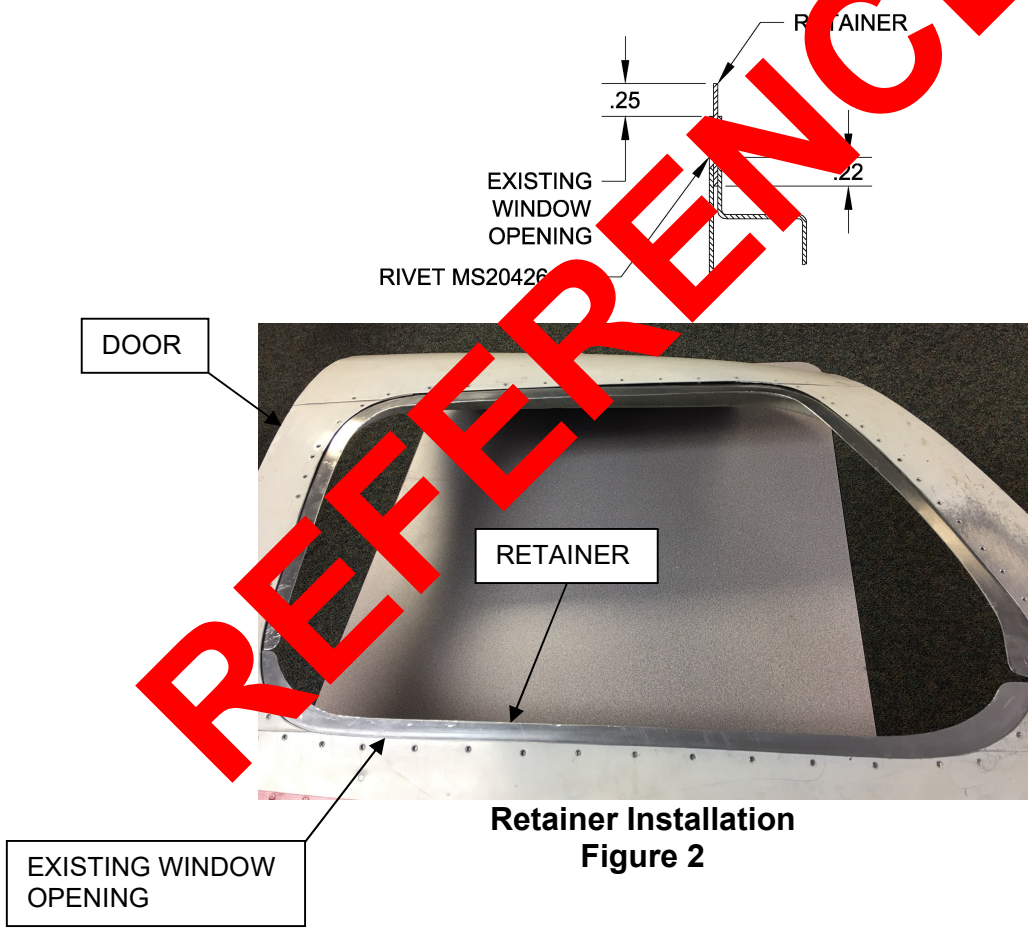
VIEW D

Inner and Outer Window Frame & Window Retainer Fabrication
Figure 1



VIEW E

Inner and Outer Window Frame & Window Retainer Fabrication
Figure 1 (Cont)



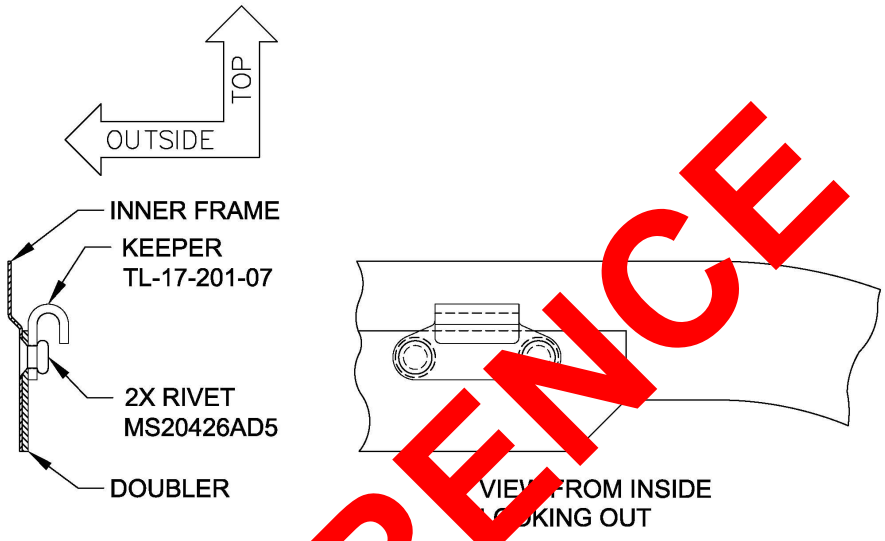
Retainer Installation
Figure 2

6.2.2 Keeper Installation:

6.2.2.1 Locate Keeper TL-17-201-07 on Inner Window Frame as shown in Figure 3. **Note:** Locate vertically where the Latch will be located over three (3) existing rivet hole location. See Section 6.2.6.

6.2.2.2 Match drill ø.156 thru, Counter Sink ø.288 X 100° on Inner Window Frame far side.

6.2.2.3 Rivet MS20426AD5 four (4) times, two (2) places Keeper to Inner Window Frame.



Keeper Installation
Figure 3

6.2.3 Window Assembly:

6.2.3.1 Trim Window and Chamfer .03 X 45° on inside Window all around window to fit new size of Inner Window Frame as shown in Figure 4. **Note:** Window shall be flush with Inner Frame as shown in Figure 4. Relocate existing storm window if applicable in new window.

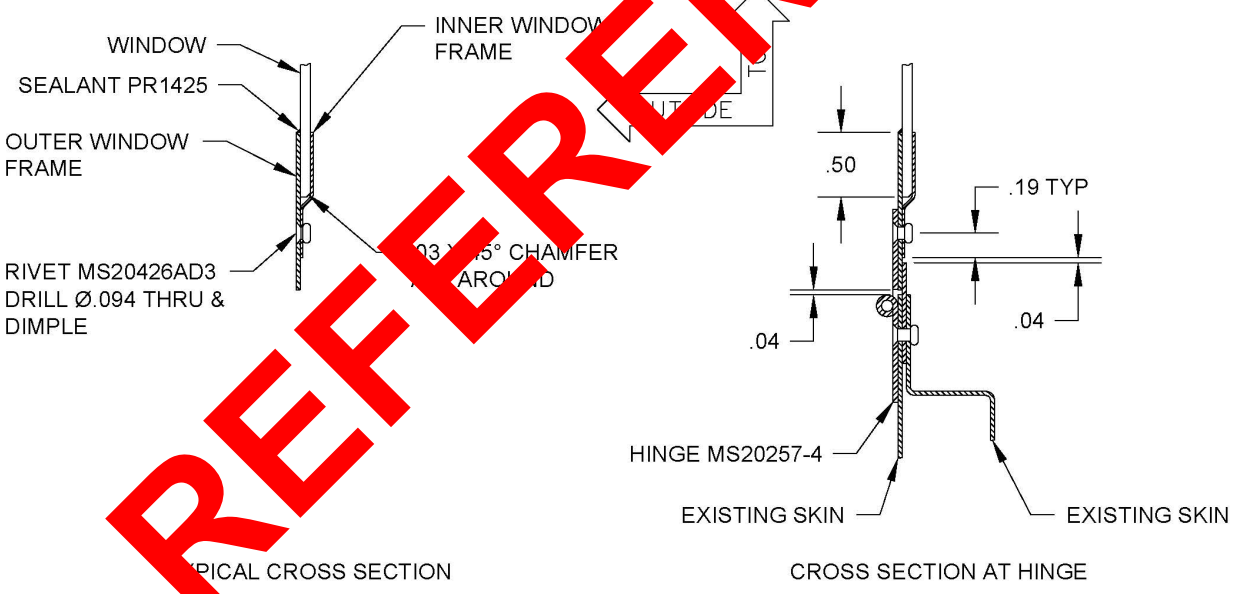
6.2.3.2 Duplicate existing rivet pattern on window opening to window assembly. Match Drill .094 Diameter thru Outer and Inner Window Frame as shown in Figure 4. Dimple Outer and Inner Window Frame. **Note:** Except at Hinge location.

6.2.3.3 Notch window two (2) places for mounting handle as shown in Figure 7, Section 6.2.6.

6.2.3.4 Fabricate two (2) Spacer Pads using G10/FR4 to fit inside notches in window as shown in Figure 7, Section 6.2.6.

6.2.3.5 Rivet MS20426AD3 Outer Frame, Inner Frame and Hinge MS20257-4 together with window and Spacer Pads inside assembly. **Note:** See Section 6.2.4 for Hinge location and attachment location. **Note:** Holes in Hinge for riveting to window opening shall be done prior to installing Hinge to Window as shown in Figure 5, Section 6.2.4.

6.2.3.6 Apply a fillet Sealant PR1425, on outside of window all the way around as shown in Figure 4.



Window Assembly
Figure 4

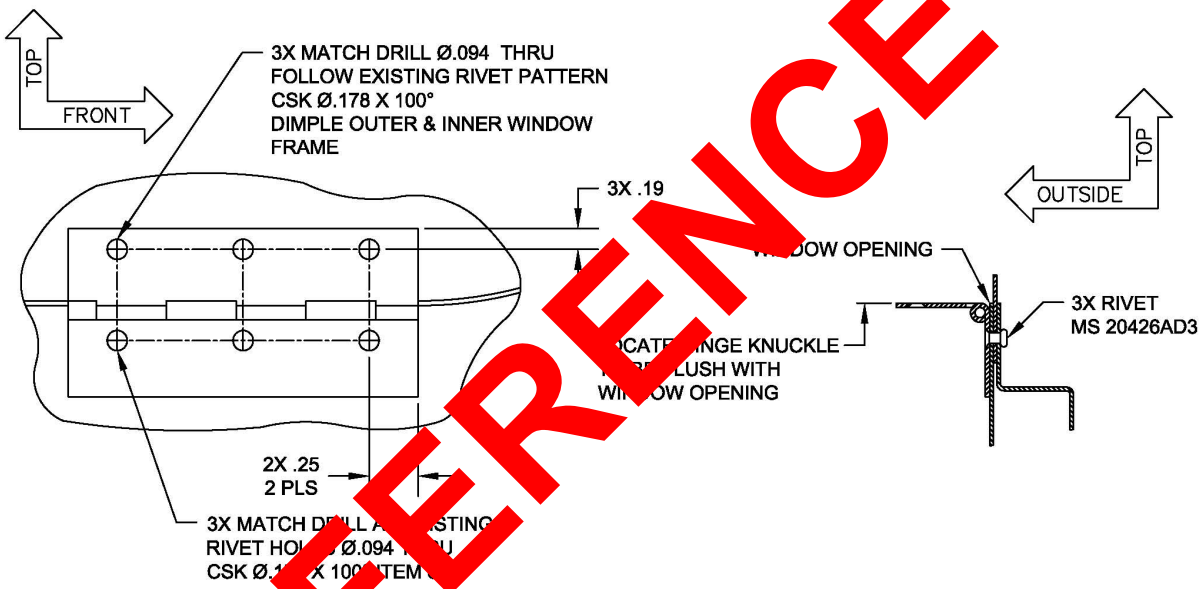
6.2.4 Hinge Installation:

6.2.4.1 Install Hinge, MS20257-4 as shown in Figure 5 two (2) places. **Note:** Minimum Hinge Length to cover three (3) existing rivet holes at the window opening plus an edge distance of .25 on each end of the hinge as shown in Figure 5.

6.2.4.2 Center Hinge over existing rivet holes on window opening. Match drill and Countersink Hinge to existing rivet holes on window opening.

6.2.4.3 Edge of Hinge shall be prior to Window Opening Radius front and rear locations as shown in Figure 5.

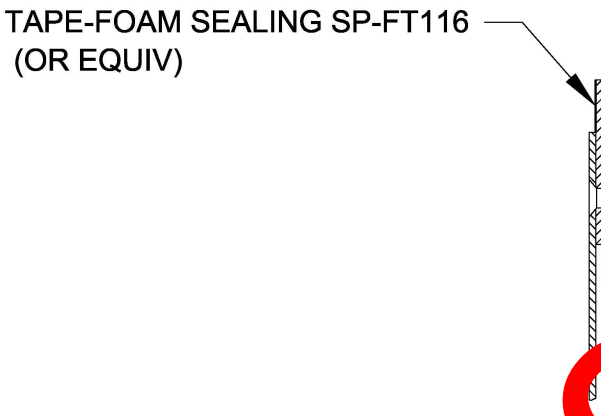
6.2.4.4 Rivet Window Assembly to the window opening using three (3), Rivet MS20426AD3 two (2) places as shown in Figure 5.



Hinge Installation
Figure 5

6.2.5 Retainer Seal Installation:

6.2.5.1 Install Tape-Foam Sealing SP-FT116 or equivalent to Retainer as shown in Figure 6. **Note:** Clean surface with denature alcohol prior to installation as shown in Figure 6.



Retainer Seal Installation
Figure 6

6.2.6 Latch and Handle Installation:

6.2.6.1 Locate Latch TL-20-102-07 vertically in line with Keeper on Retainer as shown in Figure 7.

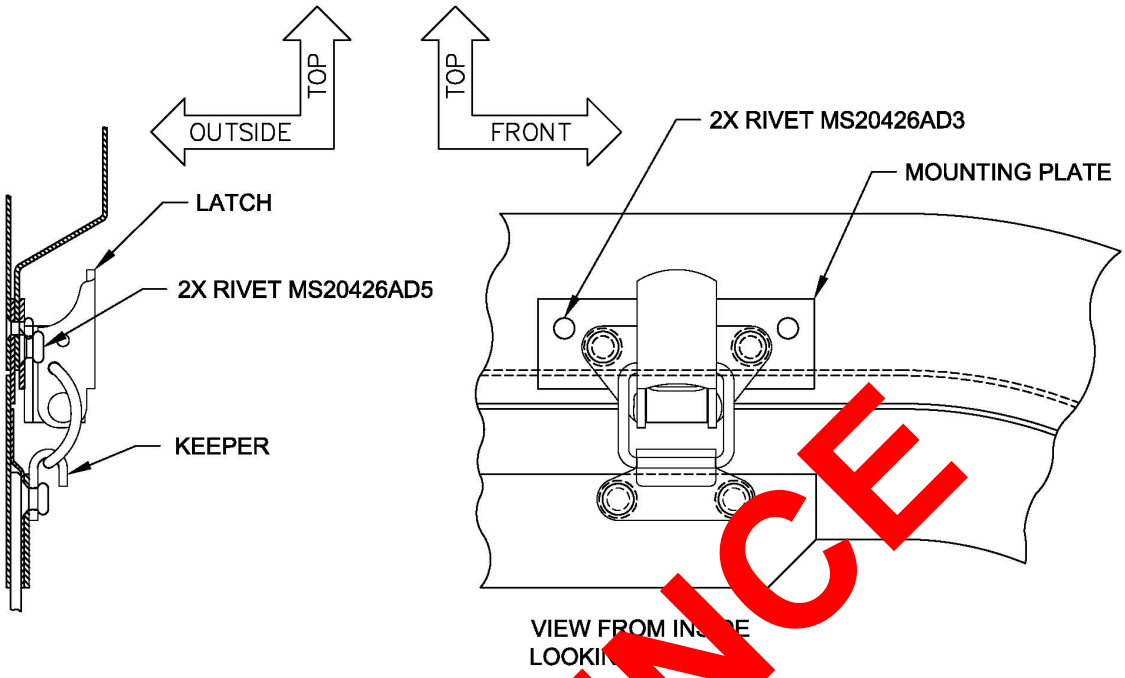
6.2.6.2 Fabricate Mounting Plate to mount Latch using Aluminum 2024-T3, .040 Thick ALCAD as shown in Figure 7. **Note:** Ensure proper Edge Distance of two times rivet diameter all around. **Note:** Ensure Mounting Plate length covers three (3) existing rivets on window opening to be mounted.

6.2.6.3 Center Latch on Mounting Plate and match drill Latch Ø.156 thru, Counter Sink Ø.288 X 100° in Mounting Plate far side as shown in Figure 7.

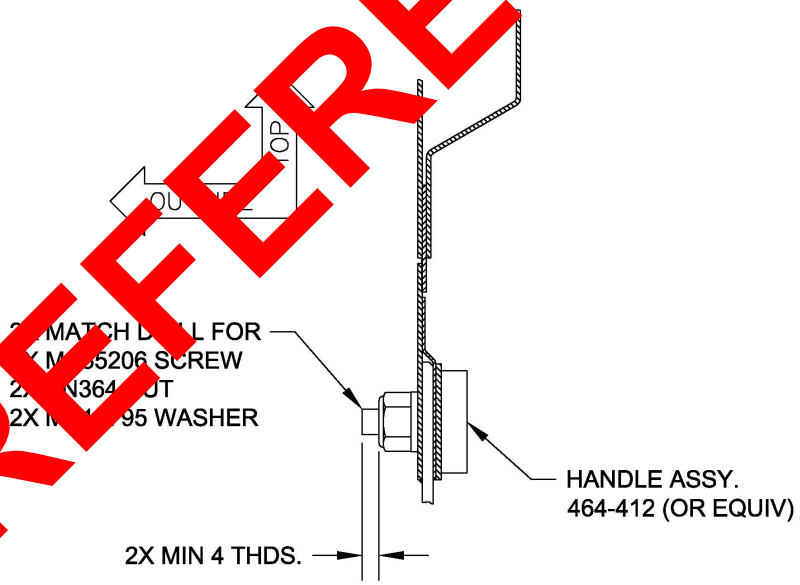
6.2.6.4 Install Latch to Mounting Plate Rivet MS20426AD5 two (2) places as shown in Figure 7.

6.2.6.5 Install Mounting Plate on inside at window opening using existing rivets in three places as shown in Figure 7. **Note:** Ensure Mounting plate is centered over Three (3) existing rivets. **Note:** Latch shall be aligned properly with Keeper. **Note:** Ensure proper tension is applied to Keeper when Window Assembly is in the closed position. **Note:** Outer Window Frame shall be flush with skin when Window Assembly is in the closed position.

6.2.6.6 Match Drill and install Handle Assembly (PIPER AIRCRAFT), 464-412 (OR EQUIV) using Pan Head Phillips Machine Screw MS35206 two (2) places, Nut-Low Profile Elastic Stop AN364 two (2) places, Washer-Flat MS15795 two (2) places as shown in Figure 7. **Note:** Holes drilled in acrylic should be oversize. Screws should be snug only. **Note:** Ensure four (4) Threads are protruding from MS35206 Screw after assembling AN364 Nut and MS15795 Washer, Two (2) Places.



Latch and Han e Ins allation
F ure



Latch and Handle Installation
Figure 7 (Cont)

6.3.0 Final Assembly:

6.3.1 Check for; Form, Fit and Function. **Note:** Ensure Window Assembly does not bind on opening while operating window and flush with skin when latched.

6.3.2 Install aircraft interior molding and trim to fit modification as required.

6.3.3 Install window assembly to aircraft per Service Manual.

6.3.4 Ensure all tools and remaining parts have been removed from aircraft.

6.3.5 Complete aircraft logbook entry of modification and update aircraft equipment list.

6.3.6 Complete FAA Form 337 and return aircraft to service.

7.0 SUPPLEMENTAL DATA

The cabin openable window provides an openable window to the cab.

7.1 EMERGENCY / ABNORMAL PROCEDURES

There is no change to the aircraft emergency procedures when the openable window is installed

7.2 NORMAL PROCEDURES

There is no change to the aircraft normal procedures when the openable window is installed

7.3 PERFORMANCE

There is no change to the aircraft performance when the openable window is installed

7.4 WEIGHT AND BALANCE

There is no change to the aircraft weight and balance when the openable window is installed.

7.5 PLACARDS AS FOLLOWS:

Textron Aviation Commander, Mooney & Piper Models:

DO NOT OPERATE ABOVE WHITE ARC (V_{FE})