Challenger Hinged Windscreen:

Read these instructions in their entirety before starting the installation process.

This modification is made AFTER your windscreen has been completely fitted to your aircraft. When we assemble them here at our facility, we completely install the windscreen to the aircraft (with Clecos), then (at the appropriate time in the installation of this modification) we remove the rivet holding the right windscreen down tube to the fuselage side, and the rivet holding the windscreen down tube to the fiberglass wing gap cover. If you are retrofitting this modification (and it is not difficult to do so) you will simply have to remove additional rivets during the process to allow you to cut the windscreen. Every windscreen installed on a Challenger is slightly different than all others. Thus, the tubes and components supplied with the hinged windscreen kit may require slight forming, trimming, etc.

These instructions are written for the standard (sloping) side rail fuselage. If you have the high side rails (which are the standard configuration on the Clipped Wing model), you will have to alter the installation slightly to fit your windscreen/side rails.

IMPORTANT: The supplied Piano Hinge may have to be cut to length for your aircraft, and thus it does not have the ends crimped and the hinge pin secured in the hinge. YOU MUST shorten the hinge pin (steel wire inside the barrels on which the hinge pivots), reinsert, and crimp the barrels on each end prior to final installation on your aircraft.

1. The standard nose cones are specifically designed for the high side rails of the Clipped Wing aircraft. We suggest that you trim the sides of your fiberglass nose cone as indicated in Photo HW-A to facilitate easier installation. If you choose not to do so, you may need to do additional fitting and bending of the supplied components to accommodate the hinged windscreen.

2. Position the piano hinge on the windscreen above or just outboard of the diagonal down tube running from the root tube to the longeron (Challenger 2DT-1). (The hinged windscreen is normally installed on the side of the aircraft opposite the throttle levers, to minimize the chance of damaging the throttle levers when entering or exiting. However, it can be applied to either or both sides). The top of the piano hinge should be just below the Fiberglass Wing Gap Cover and the bottom of the hinge should positioned so that when completed, the inboard reinforcing tube (HW-1) will be close enough to the airframe down tube (Challenger 2DT-1) to allow the installation of the small piece of flat bar (see step 28 and Photo E below)

3. Remove hinge from windscreen. Mark and drill 1/8" holes in the piano hinge at a pitch of 90 mm (approximately 3.5"). Debur the holes.

4. Tape the hinge back on the windscreen, using duct tape or other suitable tape. (It is very helpful to have Clecos to use in this process).

5. Drill the corresponding holes through the Lexan windscreen.

6. Measure and cut tubes HW-1 and HW-2 to the appropriate size to correspond to your hinge length.

7. Holding tubes on the bottom of the windscreen/hinge, drill corresponding holes into the HW-1 and HW-2. (If you do not have any Clecos, we suggest marking all holes in each tube with a marker and drilling them removing it from the aircraft to drill).

8. With the hinge still in place, mark the gap between the hinge barrel sides on the windscreen. (Put a small mark at the top and bottom of the hinge, on each side. You will draw lines on the windscreen between these marks in a later step). Remove the hinge from the aircraft and

9. Remove the windscreen from the aircraft. (If you are retrofitting this modification, drill out all of the rivets attaching the windscreen to the fiberglass wing gap cover outboard (to the right) of the hinge location, and complete the Steps 10, 11 with the windscreen on the aircraft)

10. Mark the area of the windscreen to be removed for the hinge barrel (using the marks you placed on the windscreen in Step 8). Extend the lines to the edges of the windscreen.

11. Cut out the area of the windscreen for the hinge barrel, and de-bur the edges.

12. Reposition the hinge, HW-1, HW-2 and the right windscreen frame tube back on the aircraft and Cleco in place. IMPORTANT: The hinge barrel faces up and the hinge is now on the INSIDE of the windscreen.

13. Position HW-3 on the inside of the windscreen, extending from HW-1 to the bottom of the windscreen/fuselage side intersection. Trim and fit HW-1 as necessary so the length is appropriate to accommodate HW-4 (installed in the next step) and the contour matches the contour of the windscreen.

14. Drill through the windscreen and into HW-3 and Cleco in place. (Rivet spacing of 80 mm or 3")

15. Position HW-4 on the inside of the windscreen. Trim as necessary so that HW-4 spans between HW-3 and the right windscreen frame tube.

16. Drill through the windscreen and into HW-4. Drill 3 or 4 holes, equally spaced.

17. Position HW-5 on the inside of the windscreen, extending from HW-1 to the right windscreen frame tube. Trim and fit HW-5 as necessary so the length is appropriate and the contour matches the contour of the windscreen/wing gap cover.

18. Remove HW-3, HW-4 and HW-5 and de-burr the holes.

19. Reposition all tubes.

20. Rivet in place, using long aluminum rivets on HW-1 and HW-2, and short aluminum rivets at all other locations.

21. Position gussets (as indicated on drawing HW-D1) at the appropriate intersection on the INSIDE of the frame. NOTE: For Gussets WG-2 and WG-5, install gusset plates on BOTH sides of the frame (see Step 25 below). Drill and rivet each gusset in place. *IMPORTANT: Install the gussets with the windscreen in the CLOSED position. Slight bends to form the gussets to the hinged windscreen frame are acceptable as necessary.*

22. Position HW-6 at the bottom of HW-3 with the lower edge of the hook approximately 1" above HWG-2. Drill and rivet HW-6 in place, using 2 long stainless 1/8" rivets.

23. Form the tang of HW-7 to the radius of the longeron, and position it approximately 1" to 2" aft of the location of HW-6, so that the bungee closure will pull the hinged windscreen down and slightly aft when closed.

24. Drill and rivet HW-7 using 2 long stainless 1/8" rivets.

25. With hinged windscreen in the closed position, determine the location you will use to install the closure latch. It can be installed through WG-2 or WG-5.

26. Position the latch and verify it will move freely of any obstructions to latch and unlatch the door after installation (see Photos B, F and G).

27. Drill out the rivet on each side of the frame for latch installation, and drill the holes out to 3/16".

28. Install the latch using the AN3 Bolt, aluminum spacer, and fender washers as necessary to achieve proper spacing and allow a secure fit when hinged windscreen is in the closed position.

29. Install adhesive Velcro strip on area of latch that will contact the airframe when hinged windscreen is closed.

30. Install one or two 3/16 rivets, fender washers, and rubber shock washer to the fixed portion of the windscreen to hold it in place against the nose cone (in the area of the hinge) as shown in Photo D below.

31. Rivet small aluminum bar between HW-1 and forward cockpit down tube as shown in photo E below.

HW-PHOTO A

HW-PHOTO B

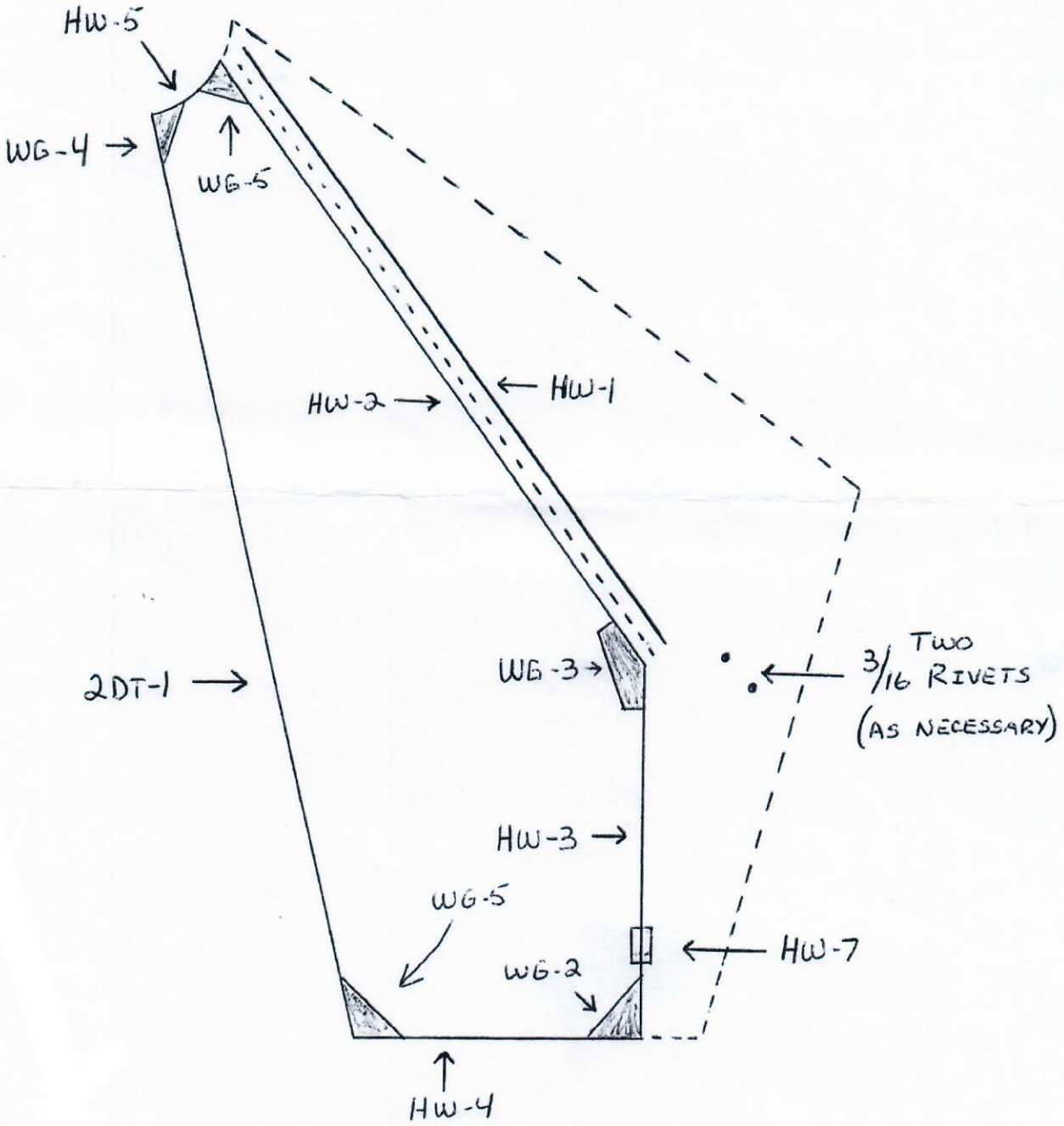
HW- PHOTO C

HW-PHOTO D

HW- PHOTO E

HW- PHOTO F

HW-PHOTO G


HW-5
WG-4
WG-5
HW-2
HW-1
2DT-1
WG-3
Two
3/16 RIVETS
(AS NECESSARY)
HW-3
WG-5
WG-2
HW-7
HW-4

HW-D1