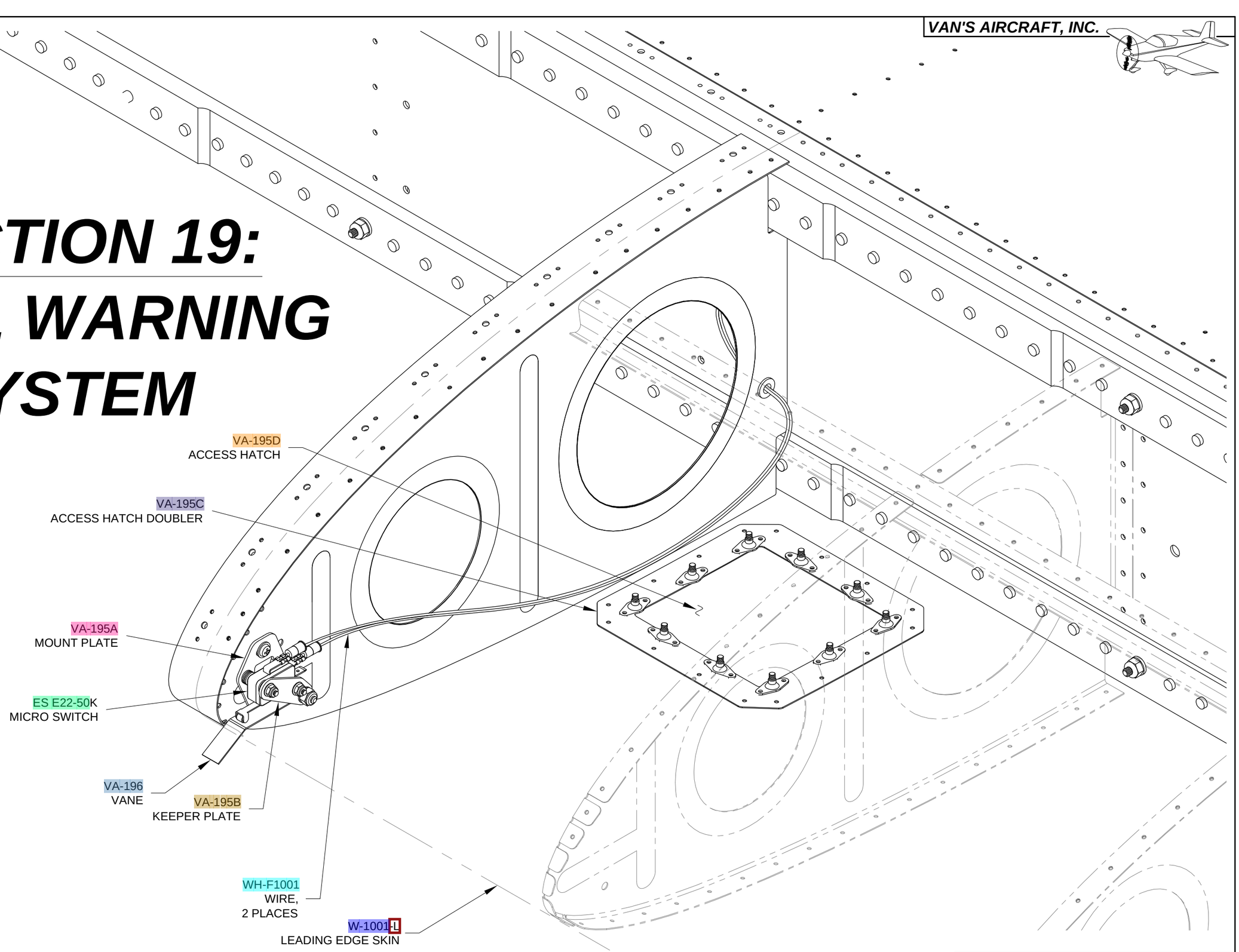
# SECTION 19:
# STALL WARNING SYSTEM



**CAUTION! Only modify the left W-1001-L Leading Edge Skin for the stall warning system and access hatch.**

Step 1: Remove the fuel tank from the left wing assembly.

Step 2: Cleco the VA-195C Access Hatch Doubler to the W-1001-L Leading Edge Skin as shown in Figure 1 and Figure 2. Note that the front reference tab has three holes. Ignore the front two holes.

Step 3: Match-Drill #40 the four corner radius pilot holes and the sixteen VA-195C Access Hatch Doubler attach holes indicated in Figure 2 into the W-1001-L Leading Edge Skin.

Final-Drill #40 the nutplate attach holes along the inside edge of the access hatch doubler.

Step 4: Use a Unibit to enlarge the four corner pilot holes created in Step 3 to 1/2 diameter. Cut between the quadrants of the four corner holes to create the cutout for the access hatch.

Step 5: Remove the reference tabs indicated in Figure 2 from the VA-195C Access Hatch Doubler.

Step 6: Remove the vinyl from the VA-195C Access Hatch Doubler and VA-195D Access Hatch. Deburr the edges and holes of both parts.

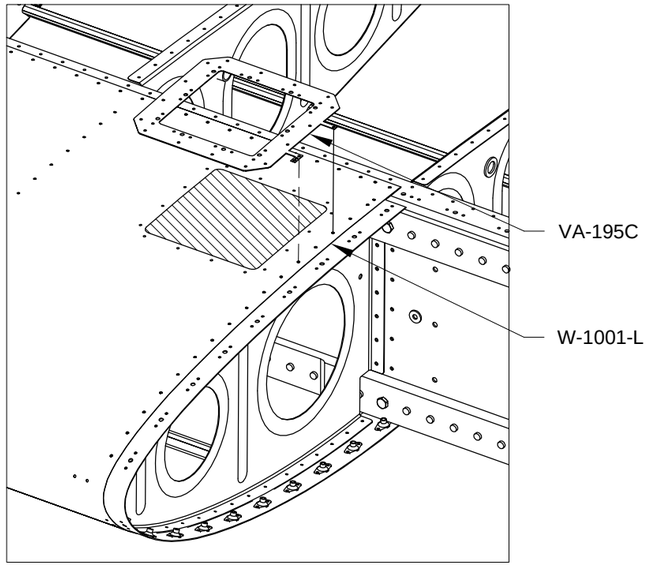



**FIGURE 1:** ACCESS HATCH CUTOUT
(WING SHOWN UPSIDE DOWN)

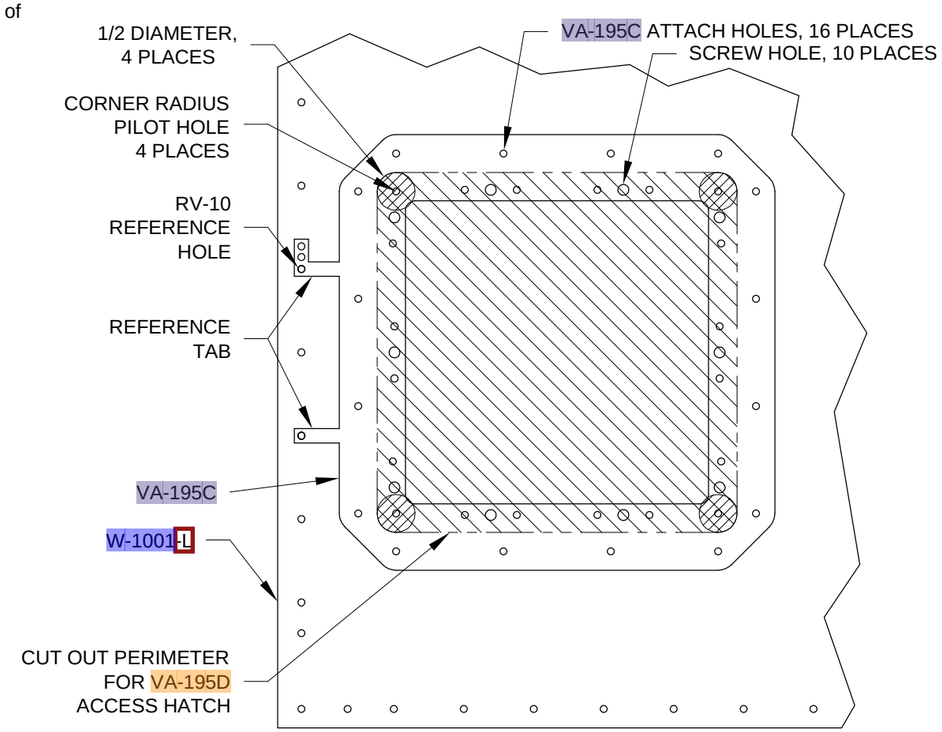



**FIGURE 2:** SKIN DETAIL
(ALL PARTS SHOWN FLAT)

Step 6 (Continued): Dimple the screw holes in the access hatch for the head of a #6 flush head screw. Dimple the screw holes in the doubler for the dimples in the access hatch. Dimple the remaining holes in both parts and the W-1001-L Leading Edge Skin for the head of an AN426AD3 Rivet.

Prime both parts if/as desired.

Step 7: Rivet the nutplates onto the VA-195C Access Hatch Doubler. See Figure 3.

Rivet the access hatch doubler onto the W-1001-L Leading Edge Skin. See Figure 3.

Rivet the two holes left open in the leading edge skin and W-1008-R Splice Rib that were used to locate the reference tabs in Step 2 with AN426AD3-4 rivets.

Step 8: Install the VA-195D Access Hatch using the hardware called out in Figure 3.

Step 9: Final-Drill the aft tooling hole in the W-1008-R Splice Rib to 3/8 diameter. Install the snap bushing indicated in Figure 3.

Step 10: Final-Drill #40 the two sets of nutplate attach holes near the nose of the W-1008-R Splice Rib. Final-Drill the screw holes for these two nutplates to #19. See Figure 3.

Step 12: Dimple both sets of nutplate attach holes in the nose of the W-1008-R Splice Rib.

Step 13: Rivet the nutplates onto the W-1008-R Splice Rib using the rivets called out in Figure 3.

Step 14: Final-Drill #10 both stall warning guide holes in the W-1001-L Leading Edge Skin. See Figure 3.

Step 15: Remove the hatched area as shown in Figure 3, between the quadrants of the stall warning guide holes with a file. Deburr the final edge.

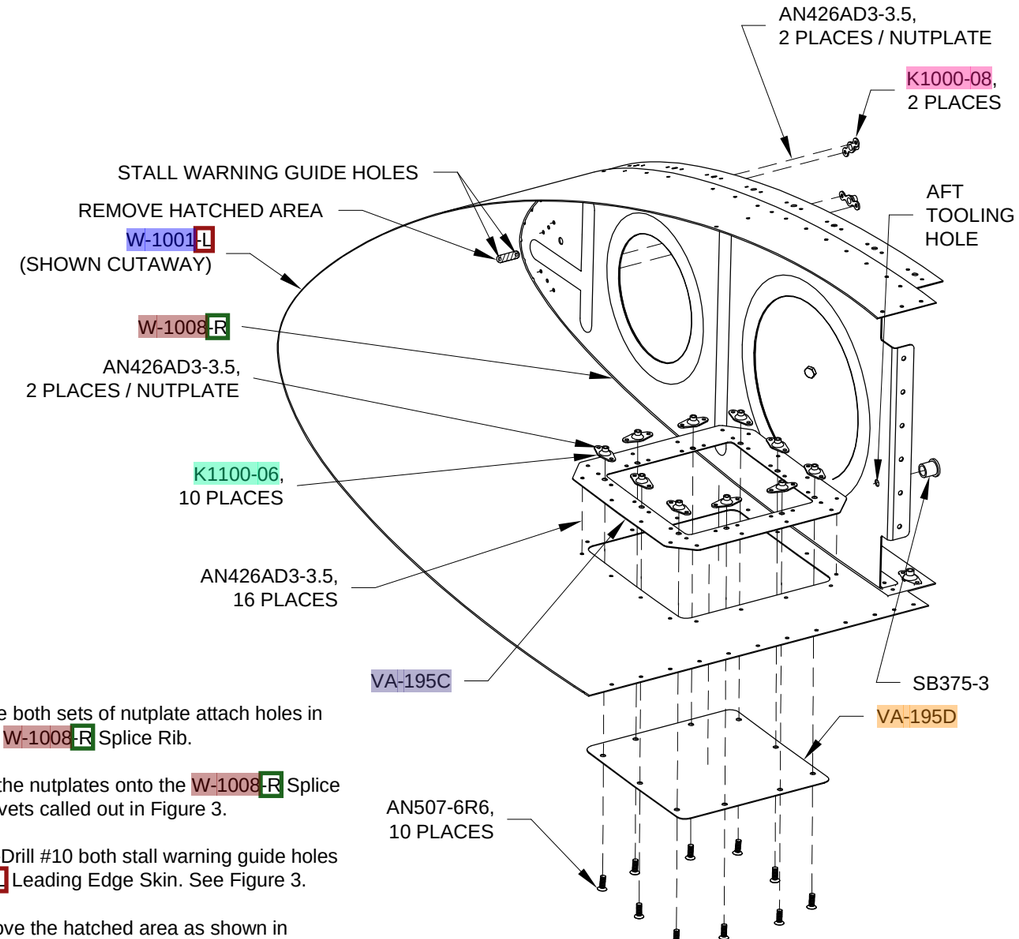



**FIGURE 3:** ACCESS HATCH INSTALLATION AND SPLICE RIB MODIFICATION
(SOME PARTS OF THE WING ASSEMBLY HAVE BEEN OMITTED FOR CLARITY)

Step 1: Final-Drill #31 the holes in the VA-195A Mount Plate and VA-195B Keeper Plate that are used to mount the ES E22-50K Micro Switch. Machine countersink both holes of the mount plates inboard side for the flush head of a #4 screw. See Figure 1.

Step 2: Final-Drill #19 the hole in the VA-195A Mount Plate and VA-195B Keeper Plate that holds the #8 screw on which the VA-196 Stall Warning Vane pivots. Machine countersink this hole in the mount plate on the inboard side for the flush head of a #8 screw. See Figure 1.

Step 3: Deburr all holes and edges.

Prime the parts if/as desired.

Step 4: Assemble the Stall Warning Subassembly as shown in Figure 1. Do not over-torque the nut on the screw about which the vane pivots. Insure that the vane can rotate freely.

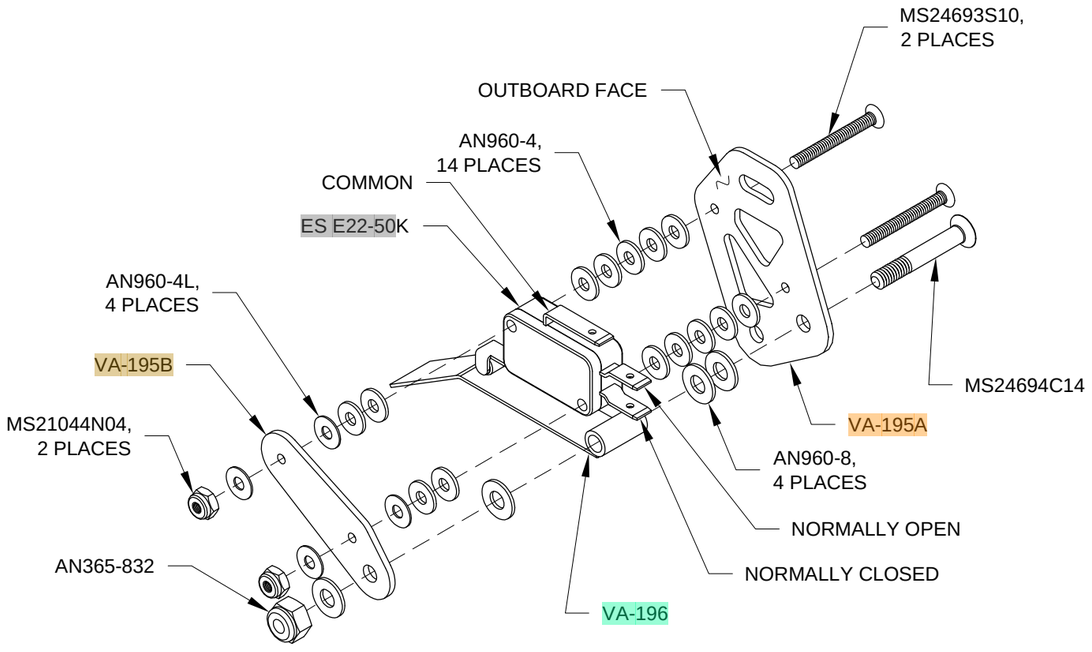



**FIGURE 1:** STALL WARNING SUBASSEMBLY

Step 5: Install the Stall Warning Subassembly on the W-1008-R Splice Rib as shown in Figure 2. The upper screw goes through the slot in the VA-195A Mount Plate and allows the angle of the Stall Warning Subassembly to be adjusted. Adjust the subassembly until the VA-196 Vane activates and deactivates the ES E22-50K micro switch with the minimum travel possible (it is permissible to bend the arm on the micro switch if/as required).

Step 6: Double check that the VA-196 Vane in the at rest position is perpendicular to the surface of the wing skin. If the vane is not perpendicular, remove the Stall Warning Subassembly and bend the vane as required. See Figure 3.

Step 7: Make the WH-F1001 Wires by cutting two #18 gauge wires 100 inches long. Install an ES DV18-188M female spade connector on one end of each wire. Double check that the spade connector is properly installed!

Step 8: Install the WH-F1001 Wires to the COM. (common) and N.O. (normally open) terminals of the ES E22-50K Micro Switch. Rout the wires inboard through the snap bushing in the W-1008-R Splice Ribs aft tooling hole. See Figure 2.

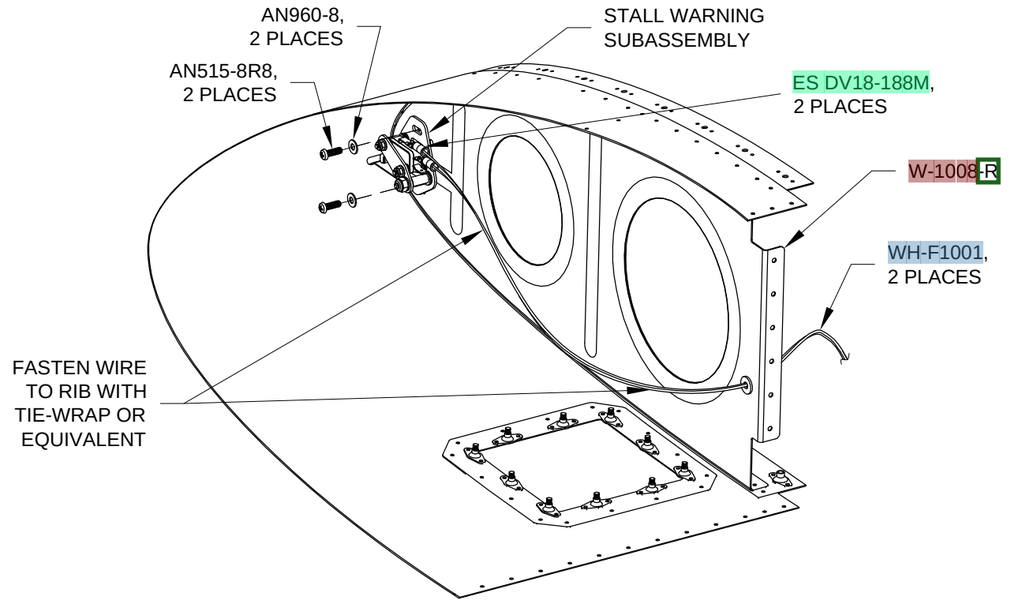



**FIGURE 2:** INSTALLING THE STALL WARNING SUBASSEMBLY

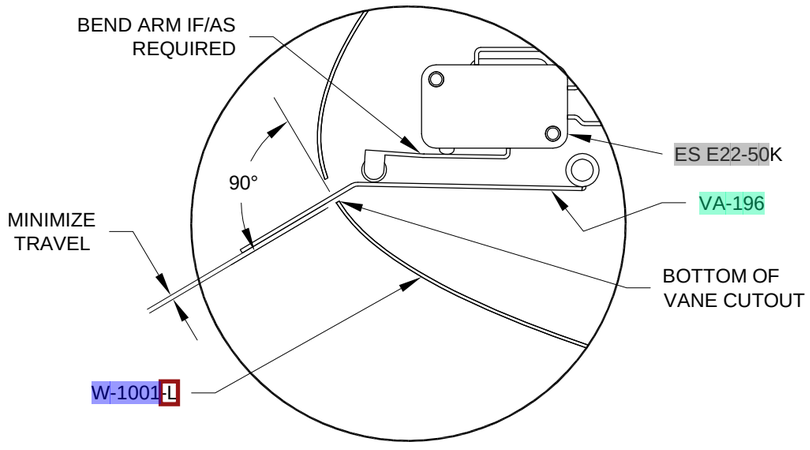



**FIGURE 3:** ACTIVATING THE MICRO SWITCH

Step 1: Route both WH-F1001 Wires through the snap bushing in the main spar assembly as shown in Figure 1.

Step 2: Coil and temporarily tape the wire to a rib in the main rib bay. The wires will be run to the root end of the wing on Page 20-3 after the Pitot Tube has been installed.

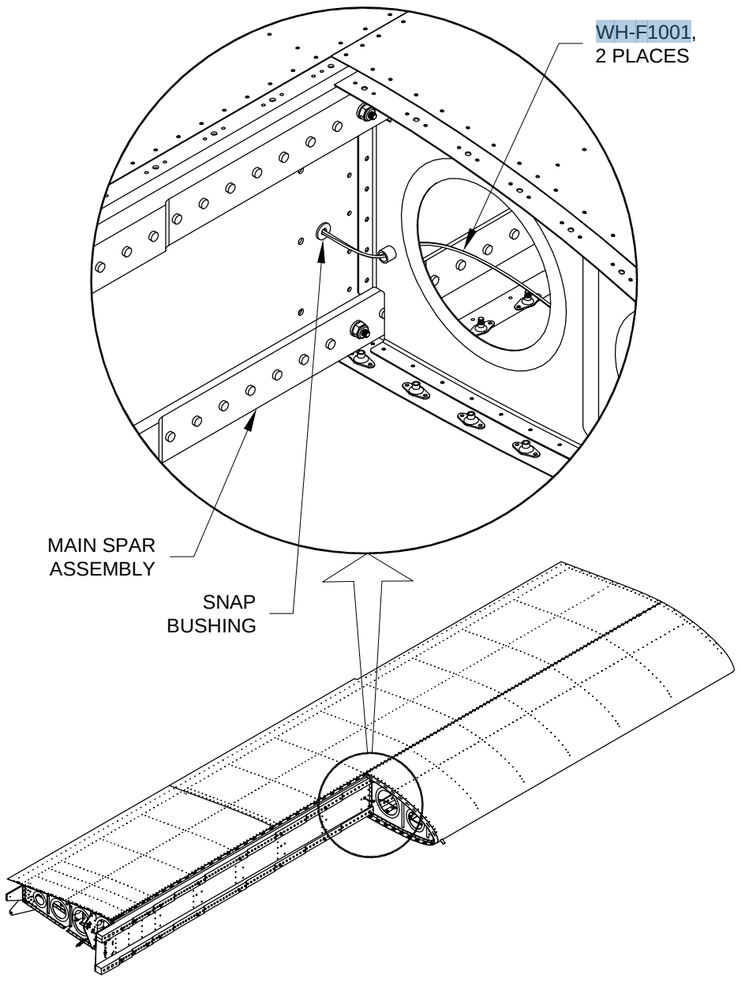



**FIGURE 1:** ROUTING WIRES THROUGH THE MAIN SPAR

**NOTE: Complete this page when wiring the fuselage. The ES Audio Warn may be located in the most convenient position. Allow additional wire as required.**

Step 1: Position the ES Audio Warn on the upper forward fuselage as shown in Figure 1. Final-Drill #27 the two screw holes in the ES Audio Warn into the upper forward fuselage. Deburr holes. See Figure 1.

Step 2: Install the ES Audio Warn with the hardware shown in Figure 1.

Step 3: Cut a 3 29/32 inch length of MS21266-1N to fit inside a lightening hole in the F-1015B-L Seat Rib Intercostal. Install the strip of MS21266-1N in the second lightening hole from the bottom. See Figure 1.

Step 4: Enlarge the wing wire run hole in the F-1070-L Mid Side Skin and F-1015A-L Outboard Seat Rib to a size large enough to accommodate the wires coming from the wing. Deburr the hole then install a snap bushing of appropriate size. See Page 29-15, Figure 1.

Step 5: Install an SB750-10 snap bushing in the F-1042-L Bulkhead Side Channel as shown in Figure 1.

Step 6: Make the B8 wire from #18 gauge wire. Install an ES 421-0108 spade connector on the end of B8. See Page 20-3, Figure 2. Double check that the spade connector is properly installed!

Step 7: Route B8 as shown in Figure 1 and as diagrammed in Figure 2. It does not matter which side of the ES E22-50K switch is connected to the ES PBB-2A CB circuit breaker or the ES Audio Warn.

Step 8: Connect ES Audio Warn to the audio system as shown in Figure 2.

Step 9: Test the installation by lifting the VA-196 Vane. A tone should sound when the vane is lifted.

Step 10: When properly adjusted, the stall warning will sound when approximately 10 mph above actual stall speed. Flight test and make adjustments as needed. Bend the VA-196 Vane up for higher speed activation, and down for lower speed activation. See Page 19-3 Figure 3.

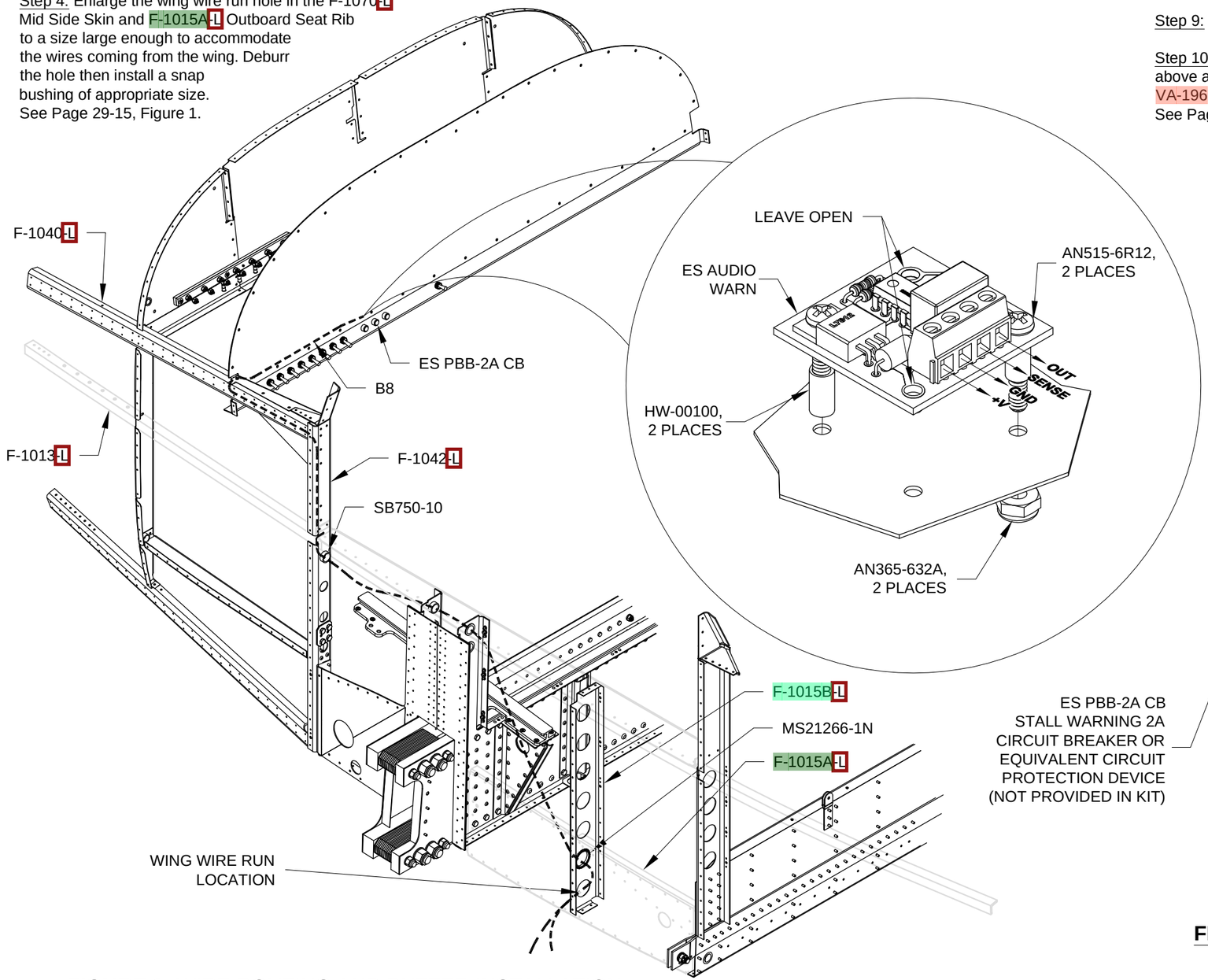
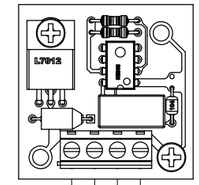



**FIGURE 1:** WIRE ROUTING AND BUZZER INSTALLATION



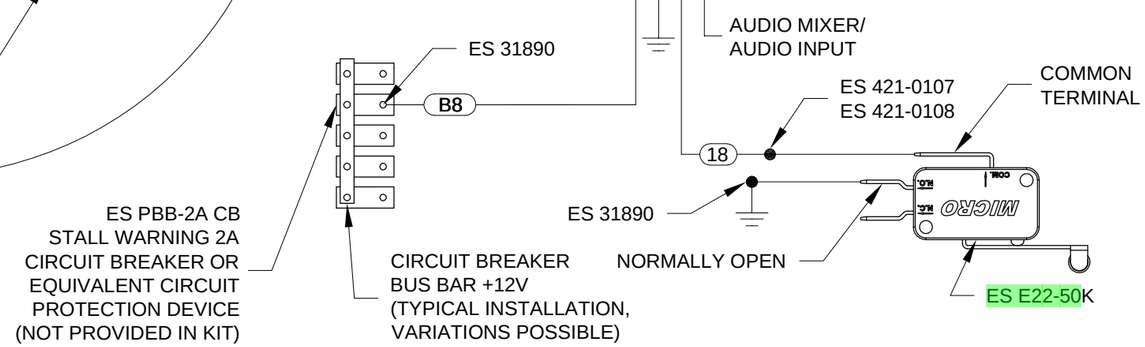




**FIGURE 2:** STALL WARNING SYSTEM WIRING SCHEMATIC

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