

TOTAL PERFORMANCE
VAN'S AIRCRAFT

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NOTIFICATION 14-05-22

Date Released: May 22, 2014

Date Effective: May 22, 2014

Subject: Canopy Latch Warning

Affected Models: All RV-12 SkyView or G3X Touch equipped aircraft.

Required Action: Add a switch wired into the SkyView or Garmin G3X Touch systems to alert a pilot if the canopy is unlatched or latched improperly when engine RPM goes above a set limit. This modification is not available for RV-12 aircraft equipped with Dynon D-180 EFIS units.

Time of Compliance: To be accomplished as soon as practical.

Supercedes Notice: None

Labor Required: NA

Level of Certification: For SLSA...LSA Repairman Maintenance, A&P
For ELSA...Not applicable

Synopsis:

It is the responsibility of the pilot to ensure that the canopy is latched properly prior to take-off. A new switch installation has been designed to warn the pilot if the canopy is unlatched or improperly latched at engine RPMs exceeding 3700 RPM. Warnings are both visual via the EFIS screen and audio via the intercom. The canopy latch block and latch arm have also been changed to improve functionality. Installation of this modification requires a new flight training supplement (FTS) and Pilot Operating Handbook (POH). Both can be downloaded from the Van's Aircraft website.

Method of Compliance:

Step 1: Remove the F-1237 Seat Backs, F-1230 Tunnel Cover, VA-104-3 Knob (from the fuel valve handle), F-1214 Step Floor Cover and F-1227 Seat Ramp Cover. See KAI Sections 26 and 33.

Remove the EFIS display as shown in KAI Section 42C.

Step 2 (SkyView): See KAI Section 42C as reference for this step. Download and use as reference the electrical schematic for your aircraft's configuration from the Downloads page of the Van's Aircraft web site.

Remove the WH-00020 SkyView SV-D1000 Harness 37-pin d-sub labeled "EMS" from the SV-EMS-220 Engine Monitoring Module. Remove the backshell.

Slip the WH-00110 wire (WHT) (both ends are the same) supplied with the canopy latch kit through the heat shrink then insert the wire into pin 12. Install the backshell. Install the d-sub back onto the EMS module.

Remove the 50-pin d-sub connector labeled "EFIS" from the AV-50000A Control Module. Remove the backshell.

Route the WH-00110 wire (WHT) along the SkyView harness and through the heat shrink near the "EFIS" d-sub. Insert the wire into pin 27. Install the backshell. Install the d-sub back onto the control module.

Step 3: Remove the WH-00046 harness 37-pin d-sub labeled "FUSELAGE" from the AV-50000A Control Module.

If your kit used the update harnesses installed in KAI Section 42D remove the WH-00036 37-pin d-sub labeled "FUSELAGE" from the control module.

Remove the backshell from the d-sub. Slip the end of the WH-00109 wire (WHT) with a d-sub pin through the heat shrink on the harness. Insert the wire into pin 8. Install the backshell. Install the d-sub back onto the control module.

Step 4: Route the WH-00109 wire (WHT) along the routing of the WH-L435 (YEL/PRP) Cockpit Light Power wire to the base of the roll bar. See KAI Section 31B. If your kit used update harnesses (KAI Section 42D) then use the above instructions as reference. A stiff piece of wire can be used as a pull tool to route the wire through the F-1204Y Wire Run Conduit.

Step 5: Install the EFIS display F-1227 Seat Ramp Cover, F-1214 Step Floor Cover, F-1230 Tunnel Cover and VA-104-3 Knob. See KAI Section 33.

Step 6: Route the WH-00109 wire (WHT) through the snap bushing in the F-1205B Roll Bar Attach Plate as shown in Figure 3.

Step 7: Remove the snap bushing installed in the bottom center of the roll bar for the WH-L435 (YEL/PRP) Cockpit Light Power Wire and WH-L436 (YEL/GRN) Cockpit Ground Wire. See Figure 3.

Push upwards on the lower end of the F-12126 Wire Tube. Using light from below you should be able to see the end of the wire tube through the snap bushing hole in the bottom center of the roll bar.

Cover the end of a piece of safety wire with tape. Route the wire up through the snap bushing hole then through and out the bottom of the wire tube. If unsuccessful using safety wire ingest a mellowing agent of your choice and try again with stiff fishing line.

Tape the WH-00109 wire (WHT) to the end of the safety wire then pull the wire up through the wire tube and out through the snap bushing hole in the bottom of the roll bar.

Re-Install the snap bushing.

Step 8: Cut a 5" piece from the end of the WH-00109 wire. This will be used in Step 21. Crimp a female spade connector onto the WH-00109 wire (WHT). See Figure 4.

Step 9: Remove and discard the C-1205 Latch Block. See KAI Section 34.

Step 10: Machine countersink the C-1205-1 Latch Block in two places to fit the head of a #8 screw. Slightly too deep is preferable to any protrusion of the screw head. See Figure 2.

Final-Drill #19 both holes in the latch block

Screw the latch block to the roll bar using the hardware called out in Figure 2.

Step 11: Use a #30 drill bit to remove the four LP4-4 rivets holding the F-1231F Latch Plate. See figures below and KAI Section 24 for reference.

Discard the latch plate with attached C-1214 Latch Block.

Step 12: Cleco the F-1231F-1 Latch Plate to the F-1231A-AR Roll Bar Frame and aft F-1231E Splice Plate. Match-Drill #43 a hole in the roll bar frame and splice plate using the switch mounting hole as a guide. See the detail view in Figure 1.

Step 13: Uncleco the F-1231F-1 Latch Plate. Final-Drill #30 the hole just created in the F-1231A-AR Roll Bar Frame and F-1231E Splice Plate. Deburr the latch plate.

Step 14: Tap #4-40 the switch mounting hole in the F-1231F-1 Latch Plate.

Step 15: Curve the arm of the F-1231F-1 Latch Plate forward starting at the bend line shown in the detail view in Figure 1 until a 1/8 inch gap exists between the tip of the arm and a flat surface.

Step 16: Close the canopy and latch it shut. The flat portion of the WD-1218 Canopy Latch should slide down the ramp of the C-1205-1 Latch Block. There should be little or no friction between the canopy latch and the F-1231F-1 Latch Plate arm. See Figure 1.

If excessive friction exists, a file may be used to remove a small amount of material (not more than .020) from the latch plate arm.

Step 17: Fabricate the C-1214 Latch Block from PS UHMW-125X1/2X2 by match-drilling three #30 holes using the F-1231F-1 Latch Plate arm as a drill guide. Countersink the leftmost hole so that the head of a CS4-4 Blind Rivet will be below flush. Trim the ends of the latch block to match the shape of the latch plate. Blind rivet the latch block to the latch plate as shown in Detail A in Figure 4.

The latch block will need to be chamfered to facilitate latching of the WD-1218 Canopy Latch. See Figure 4, Detail A.

Step 18: Rivet the F-1231F-1 Latch Plate to the F-1231A-AR Roll Bar Frame and aft F-1231E Splice Plate as shown in the detail view in Figure 1.

For aesthetic purposes, blind rivet heads can be painted prior to installation to match the color of the roll bar: (1) paint the rivet head, (2) allow the paint to dry, (3) apply protective tape to the rivet head, (4) install the rivet, (5) remove the protective tape.

Step 19: Remove/cut the roller from the end of the ES E22-50K Micro Switch arm but leave the switch arm as long as possible. Install the ES E22-50K Micro Switch on the F-1231F-1 Latch Plate as shown in Figure 4. Insert the screws into the micro switch mounting holes and thread on the two lock nuts. Orient the lock nuts so that the flanges will contact the latch plate. **DO NOT** apply more than 3 in.-lb beyond prevailing torque to the two lock nuts against the switch.

While keeping the end of the lower screw in the kidney-shaped slot, thread the end of the upper screw into the tapped switch mounting hole in the latch plate until the lock nut flanges contact the latch plate. Loosely install the washer and lock nut on the lower screw.

Step 20: Close the canopy and latch it shut. Rotate the ES E22-50K Micro Switch about the upper screw. Align the micro switch so that the switch is only activated (noted by a small clicking sound) when the WD-1218 Canopy Latch is fully latched.

Secure the micro switch by tightening the lock nut against the washer on the forward side of the F-1231F-1 Latch Plate. See Figure 4, Detail B.

Step 21: Fabricate the WH-W1115 (WHT) Canopy Latch Switch Ground Wire using the wire cut in Step 8. Strip both ends of the ground wire. Crimp a female spade connector to one end of the ground wire. Crimp a ring terminal to the other end of the ground wire. See Figure 4.

Step 22: Connect the spade connector end of the WH-00109 (WHT) Canopy Latch Switch Terminal Wire to the N.O. (normally open) terminal of the ES E22-50K Micro Switch. See Figure 4, Detail B.

Connect the spade terminal end of the WH-W1115 (WHT) Canopy Latch Switch Ground Wire to the COM (common/ground) terminal of the micro switch. See Figure 4, Detail B.

Step 23: Drill #19 a hole in the side of the F-1232A Roll Bar Brace midway between the top and bottom of the brace and approximately 2.5 inches from the face of the F-1231A-AR Roll Bar Frame. Remove any paint from around the hole on the inboard side of the roll bar brace to ensure good conductivity with the ES 31890 Ring Terminal.

Step 24: Install the ring terminal end of the WH-W1115 (WHT) Canopy Latch Switch Ground Wire on the inboard side of the roll bar brace as shown in Figure 2.

Step 25: Tie-Wrap the canopy switch and lighting wires as required.

Step 26 (SkyView): Download and install the latest SkyView firmware and settings file from the Downloads page of the Van's Aircraft web site.

Step 27: Taxi the aircraft to a suitable area and perform a run-up with the brakes set. Confirm a visual and audible warning when the rpm is above 3700 rpm and the canopy is unlatched. The visual warning will appear as on the EMS portion of the screen (SkyView only) or a TAS message on the right side of the PFD (Garmin G3X).

Rotate the WD-1218 Canopy Latch handle back and forth in the recessed groove within the C-1205-1 Latch Block to insure that no condition exists in which the canopy is latched but the switch shows the canopy open.

Reduce the power below 3700 rpm then unlatch the canopy. The EFIS will display that the canopy is open as before in the EMS (SkyView) or TAS message (Garmin G3X) but neither system will give an audible warning.

Step 28: Make appropriate entry in airframe logbook. See example below:

Installed Canopy Latch Warning in accordance with Van's Aircraft N 14-05-22 and confirmed proper operation.

Signature _____ Certificate # _____

Step 29: Place a copy of this notification in the back of the maintenance manual for your aircraft.

Note the addition of this notification to the bottom of the Maintenance Manual table of contents.

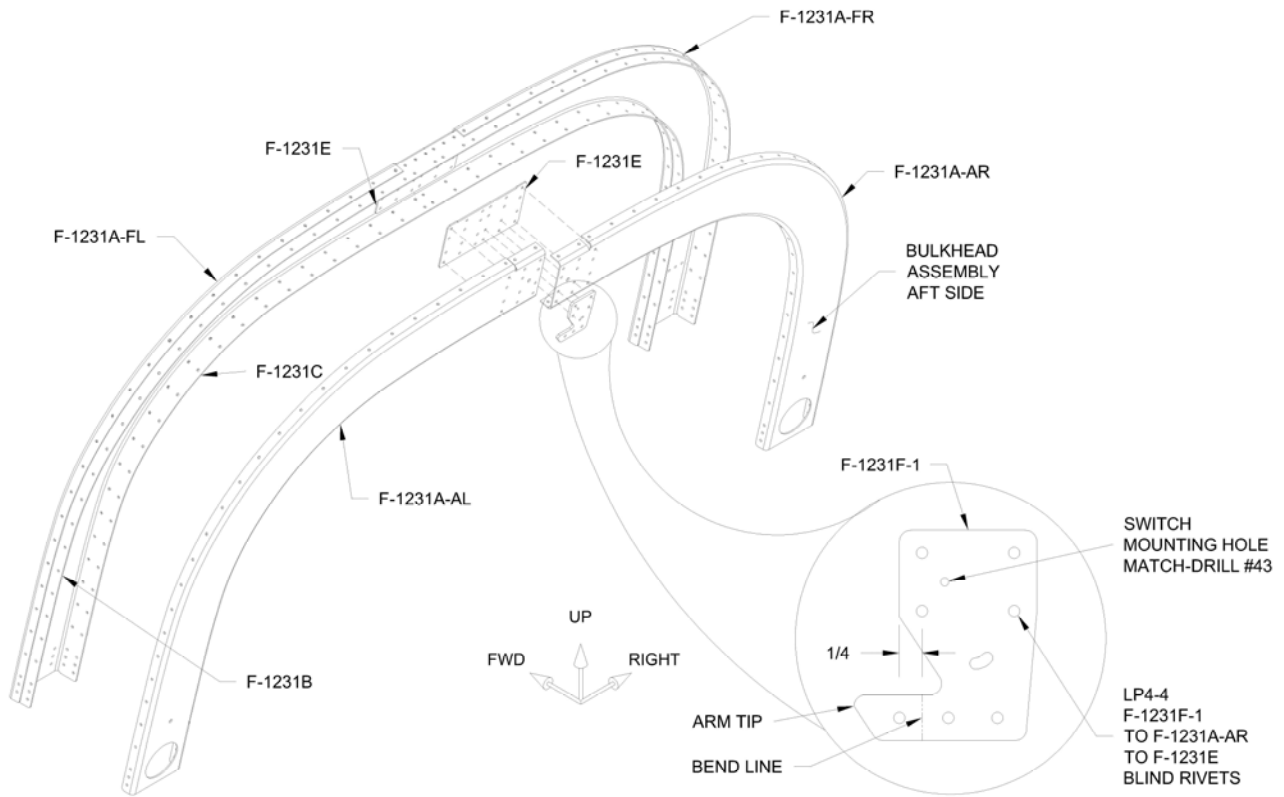


FIGURE 1: ADDING THE LATCH PLATE

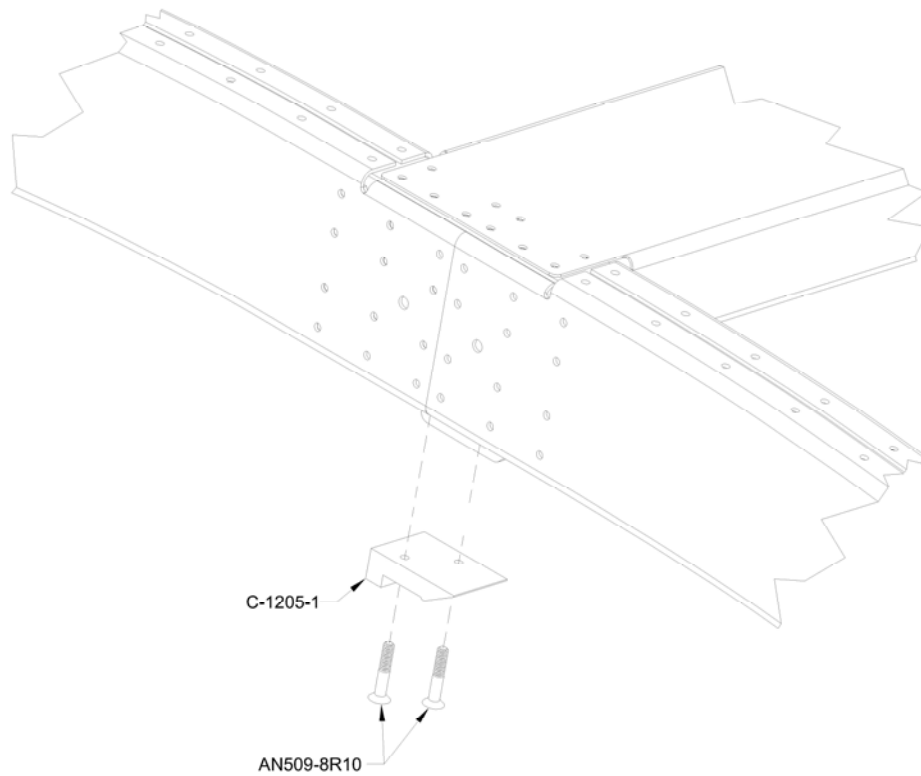


FIGURE 2: REPLACING THE LATCH BLOCK

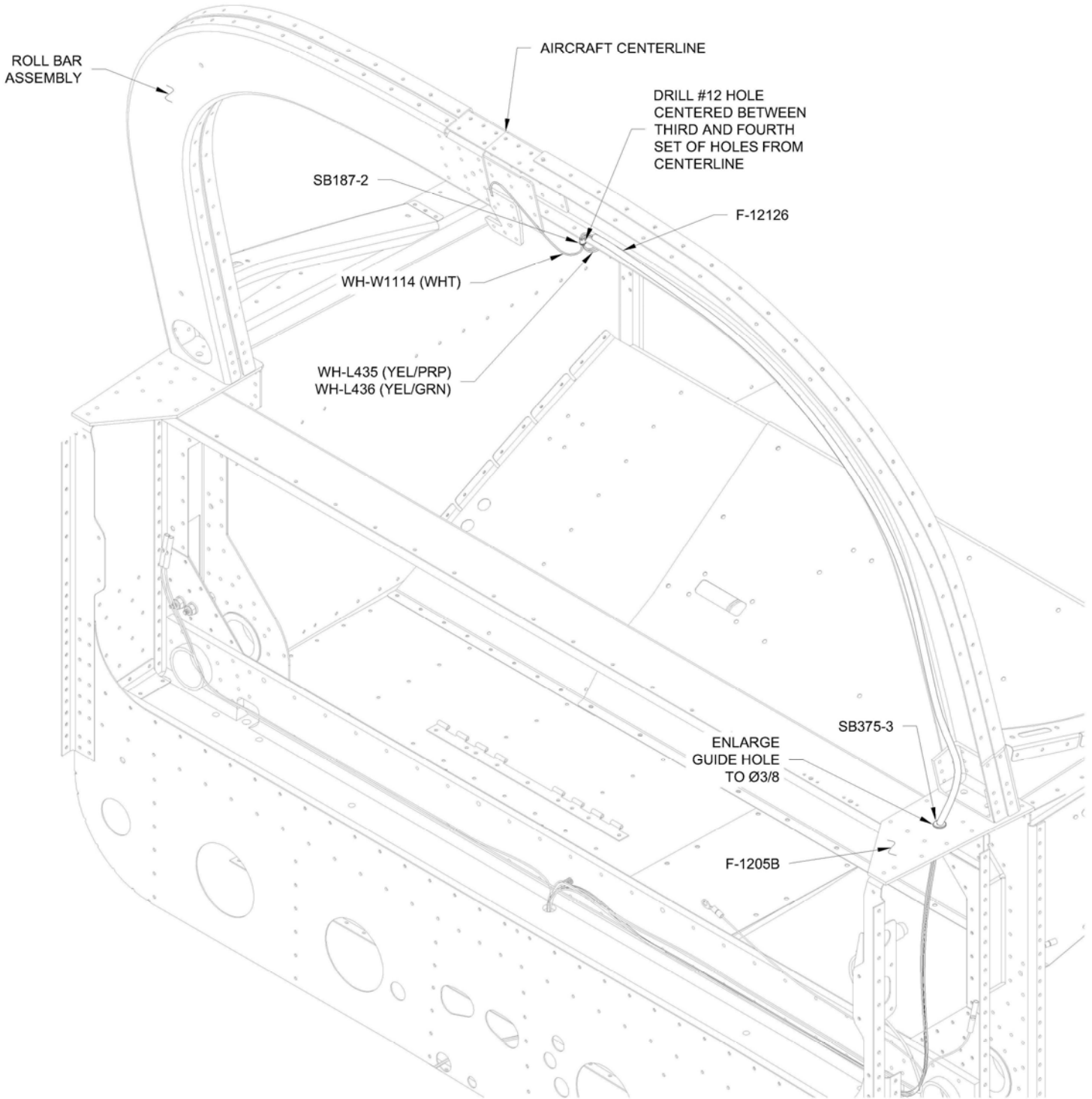


FIGURE 3: WIRE ROUTING
(AFT RIGHT PORTION OF ROLL BAR NOT SHOWN FOR CLARITY)

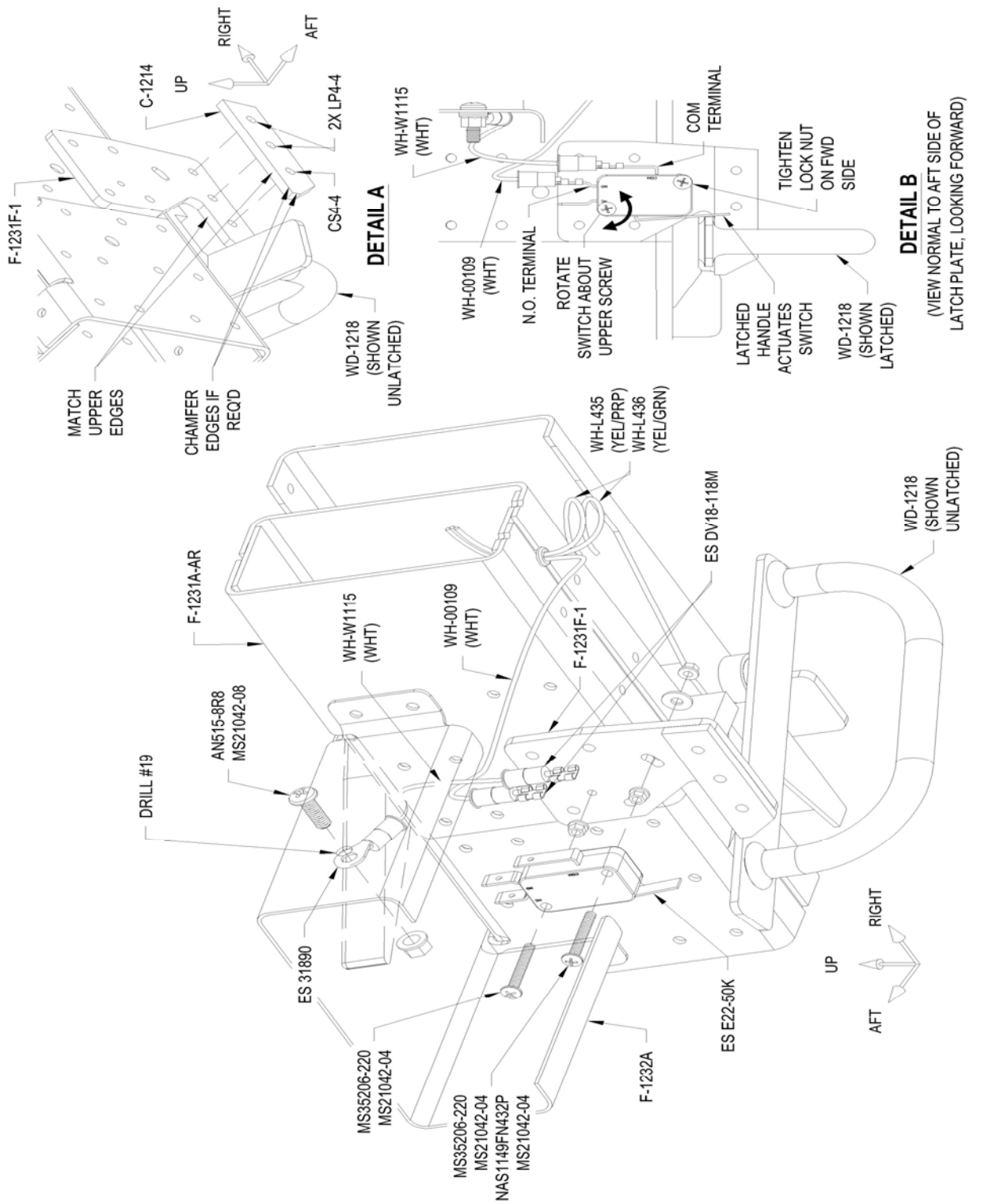


FIGURE 4: SWITCH INSTALLATION

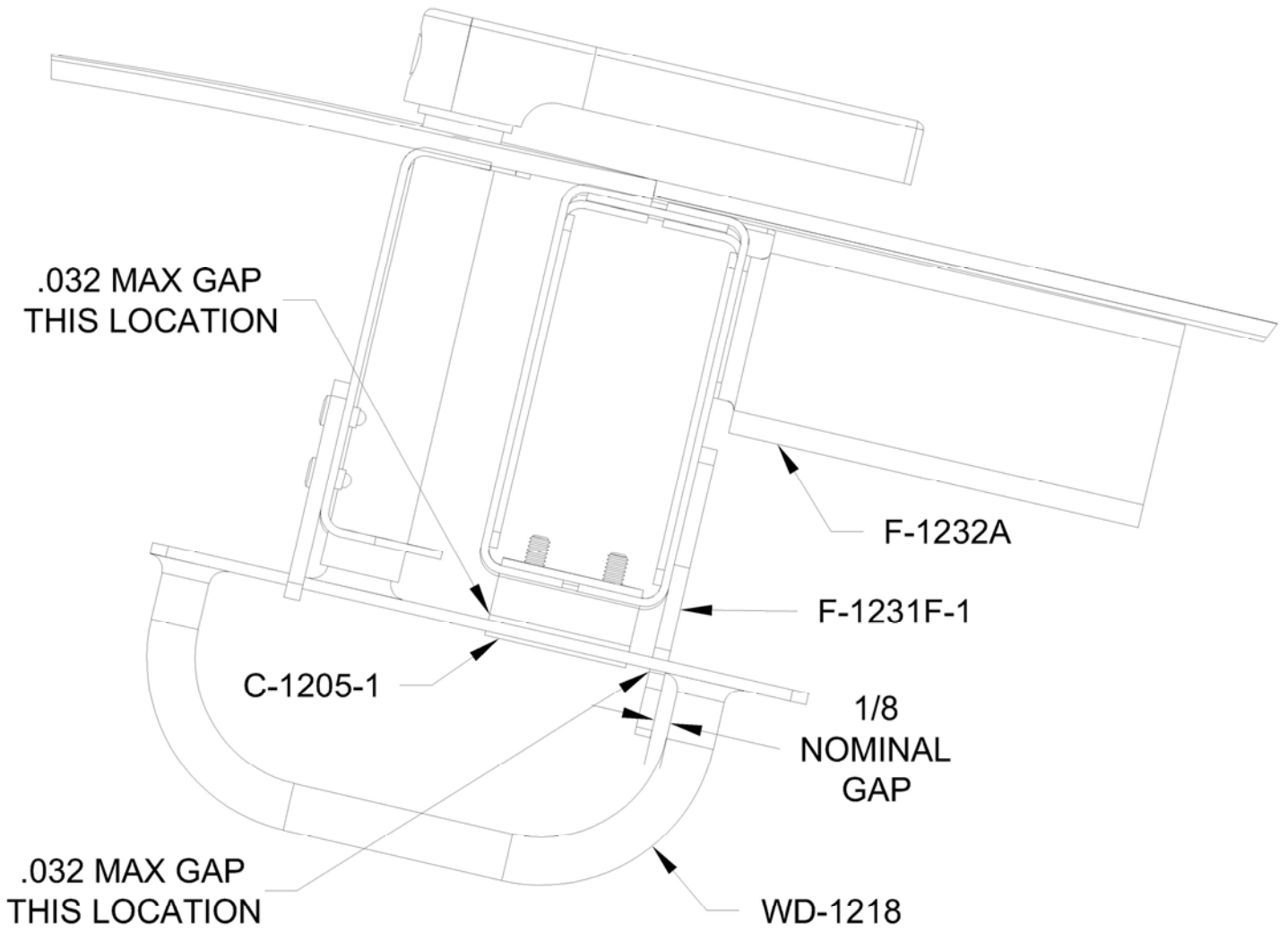


FIGURE 5: CANOPY HANDLE DETAILS



FIGURE 6: COMPLETED INSTALLATION

PART NUMBER

ES-00300 Canopy Latch Switch Retrofit Kit:

1.000 BAG 2859	CANOPY LATCH HWR
1.000 BAG 598	CANOPY SWITCH RETRO
1.000 DOC N 14-05-22	CANOPY LATCH WARN-12
1.000 PT-035X1/4X4'	LO PRES-BRKE RES.TUBE

BAG 2859	CANOPY LATCH HWR
2.000 MS35206-220	SCREW PAN HD 4-40 7/8
1.000 AN515-8R8	SCREW,ROUND HD
2.000 NAS1149FN432P	REPLACES AN960-4
3.000 MS21042-04	METAL LOCK NUT #4
1.000 MS21042-08	8-32 METAL LOCK NUT
1.000 ES E22-50K MICRO	LONG ARM MICRO SWITCH
1.000 BUSHING SB187-2	SNAP-IN 1/8ID 3/16OD
2.000 ES DVI8-188B-M	MOTOR CONNECTORS
1.000 ES 31890	#18-22WIRE/#8 RING

BAG 598	CANOPY SWITCH RETRO
1.000 F-1231F-1	LATCH PLATE
1.000 C-1205-1	LATCH BLOCK
1.000 PS UHMW-125X1/2X2	PLASTIC STRIP
2.000 ES-00141	SPLICE 22-26G
1.000 WH-00109	12 CANOPY HARNESS
1.000 WH-00110	12 CANOPY HARNESS
7.000 RIVET LP4-4	POP RIVET
2.000 RIVET CS4-4	POP RIVET
4.000 PLASTIC TIE WRAP 4 4"	PLASTIC ZIP TIE