



# **SECTION 44BiS:**

# **GARMIN**

# **DUAL AXIS**

# **AUTOPILOT**

GARMIN GMC 507  
CONTROL PANEL  
(OPTIONAL)

AUTOPILOT DISCONNECT  
SWITCH

F-1292  
PITCH SERVO  
PUSHROD

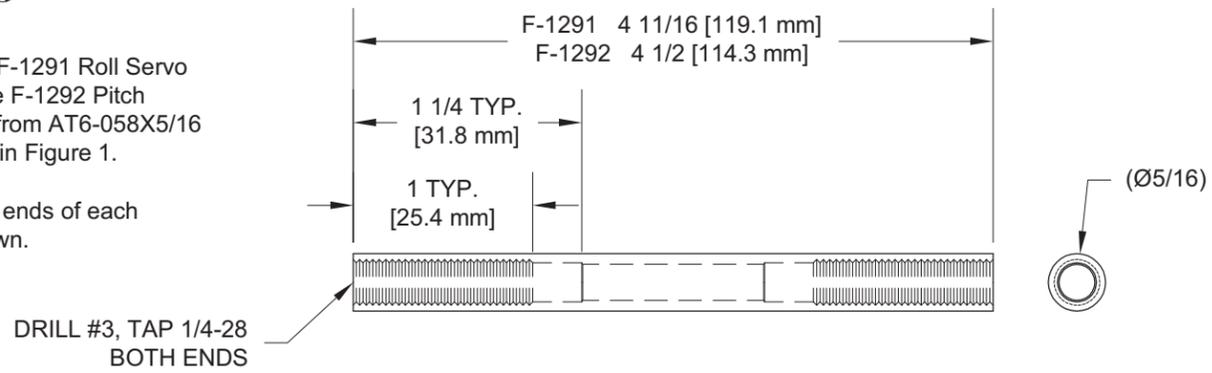
GARMIN GSA 28  
SMART AUTOPILOT (PITCH) SERVO

F-1291  
ROLL SERVO  
PUSHROD

GARMIN GSA 28  
SMART AUTOPILOT (ROLL) SERVO

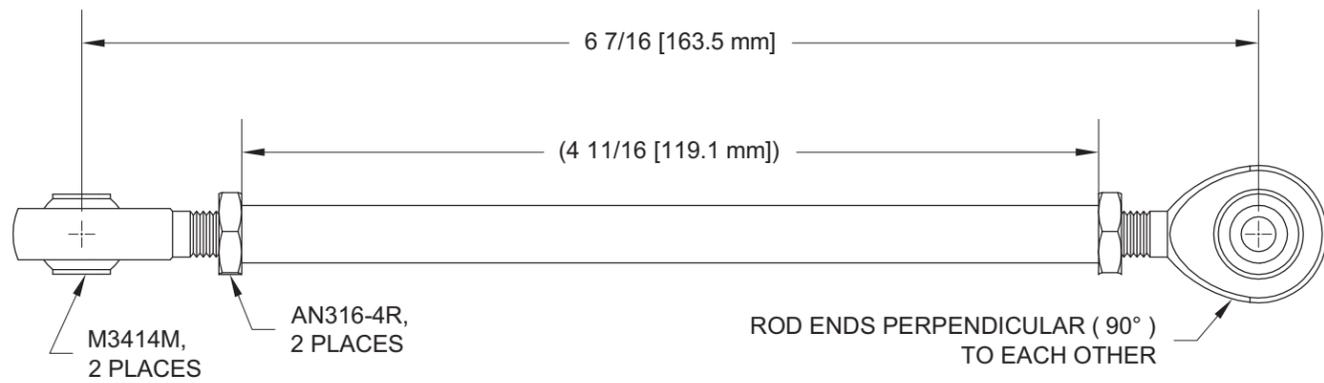
Step 1: Cut the F-1291 Roll Servo Pushrod and the F-1292 Pitch Servo Pushrod from AT6-058X5/16 Tube as shown in Figure 1.

Drill and tap the ends of each pushrod as shown.



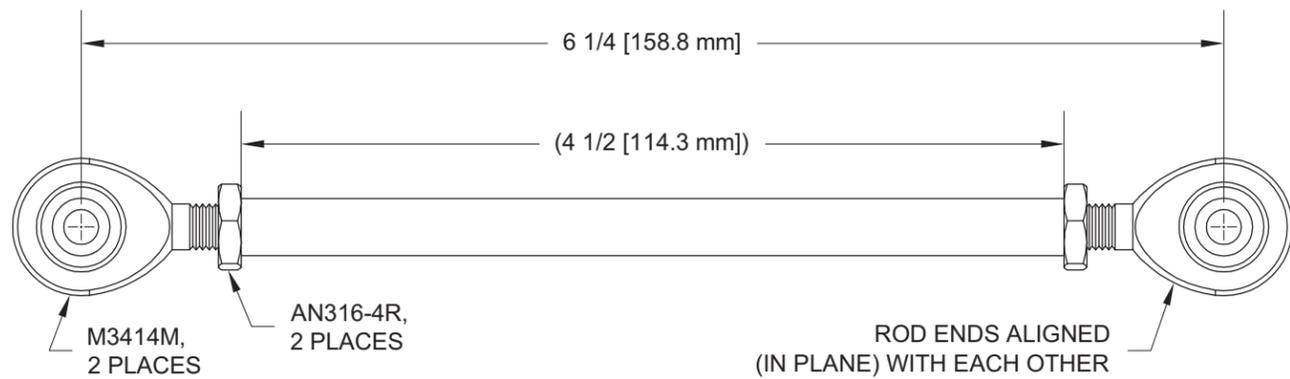
**FIGURE 1: MAKING THE PUSHROD TUBES**

Step 2: Assemble the F-1291 Roll Servo Pushrod and hardware as shown in Figure 2 to make the Roll Servo Pushrod Assembly.



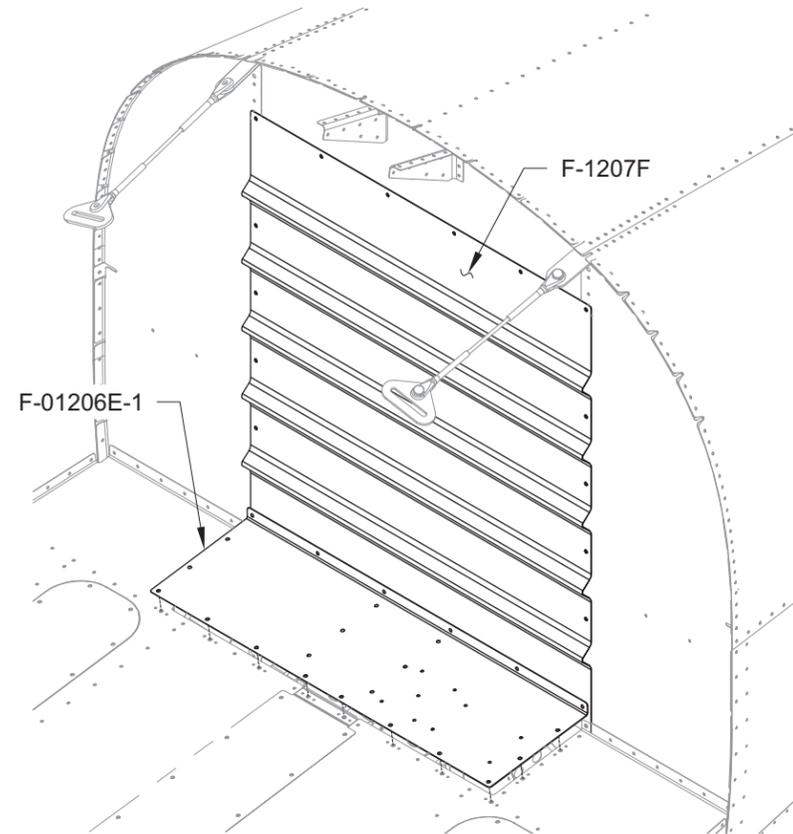
**FIGURE 2: ROLL SERVO PUSHROD ASSEMBLY**

Step 3: Assemble the F-1292 Pitch Servo Pushrod and hardware as shown in Figure 3 to make the Pitch Servo Pushrod Assembly.



**FIGURE 3: PITCH SERVO PUSHROD ASSEMBLY**

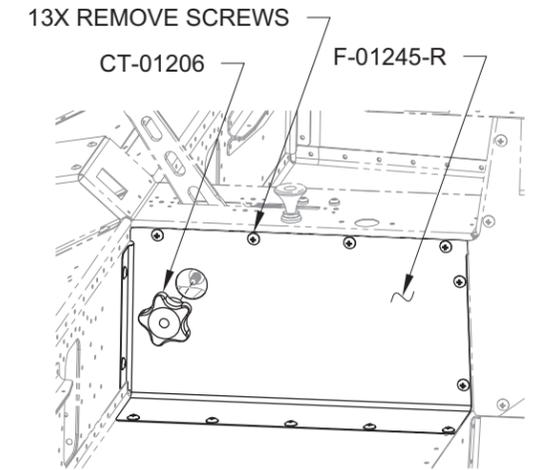
Step 4: Remove the F-01206E-1 Baggage Floor Cover and F-1207F Baggage Bulkhead Corrugation. See Figure 4.



**FIGURE 4: REMOVE ACCESS COVERS**

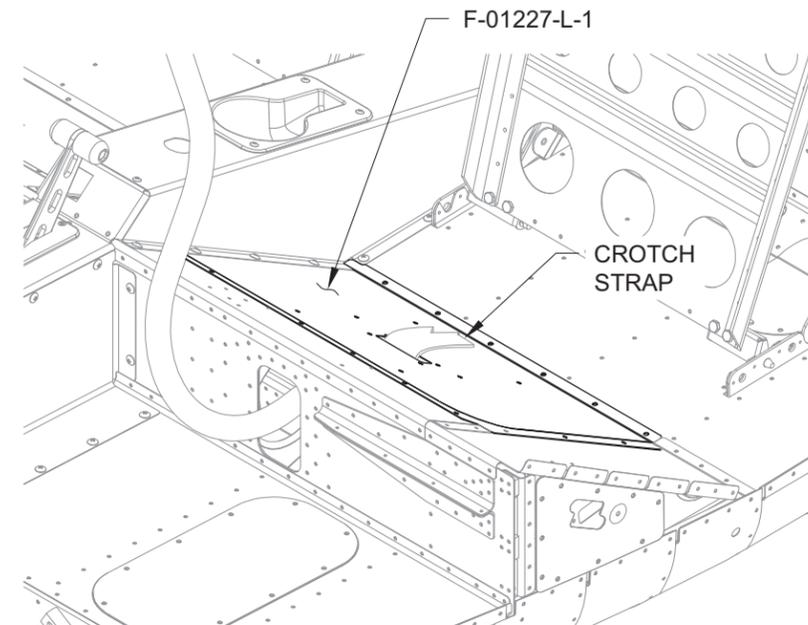
**NOTE: Use caution when removing CT-01206 to prevent loss of the spring/hardware.**

Step 5: Remove the CT-01206 1/4-20 Knob and the F-01245-R. See Figure 5.



**FIGURE 5: REMOVE THE TUNNEL COVER**

Step 6: Remove the F-01227-L-1 Seat Ramp Cover. See Figure 6.



**FIGURE 6: REMOVE THE LEFT SEAT RAMP COVER**



**NOTE: The d-sub connectors for the roll and pitch servos are an integral part of the main wiring harness and have been labeled by the manufacturer.**

**Step 1:** Locate the previously installed G3X Harness roll servo d-sub connector and remove the backshell. See section 5.21 for backshell details.

**Step 2:** Deburr the edges of the notch in the hole where the servo wires penetrate the F-01207B-1 Baggage Bulkhead. See Figure 1.

**Step 3:** Orient the d-sub receptacle as shown in the detail, clocking it so the wires align with the small notch in the bulkhead as shown. If necessary file the cutout in the bulkhead just enough to permit installation.

**Step 4:** Replace the backshell.

**Step 5:** Bolt the Roll Servo Pushrod Assembly to the servo arm's center hole using the called out hardware.

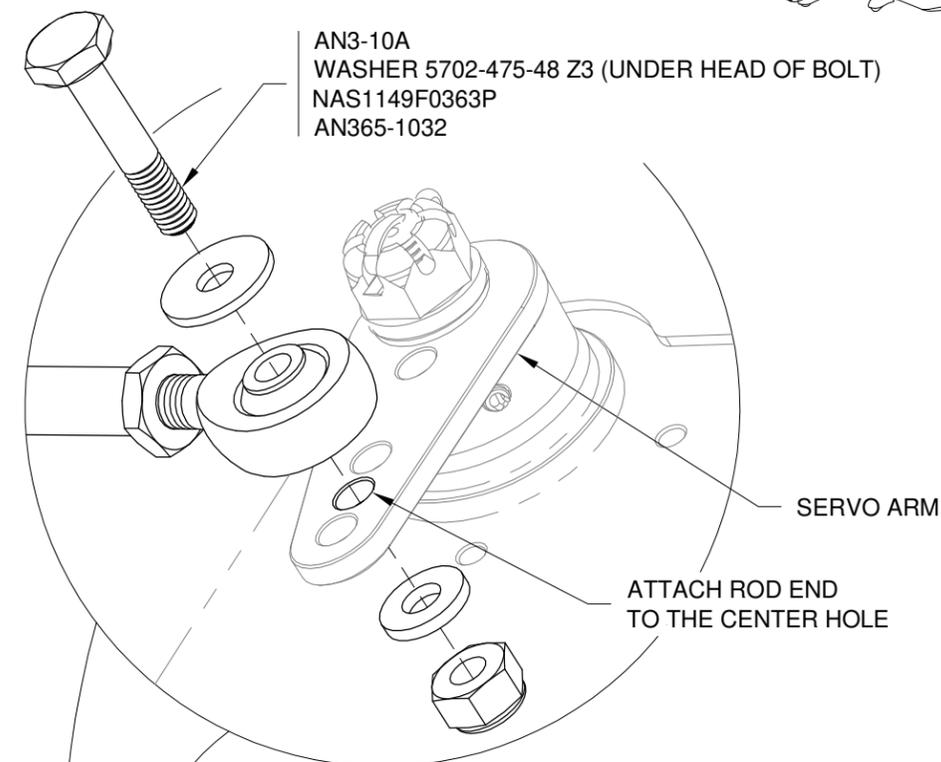
**Step 6:** Install the d-sub connector to the GSA 28.

**Step 7:** Slit then install the snap bushing onto the wire bundle and insert the bushing into the F-01207B-1 as shown.

**Step 8:** Feed the Roll Servo Pushrod Assy fwd through the F-01207B lightening hole and bolt the servo to the F-01286B-L-1 and -R-1 Servo Angles using the called out hardware.

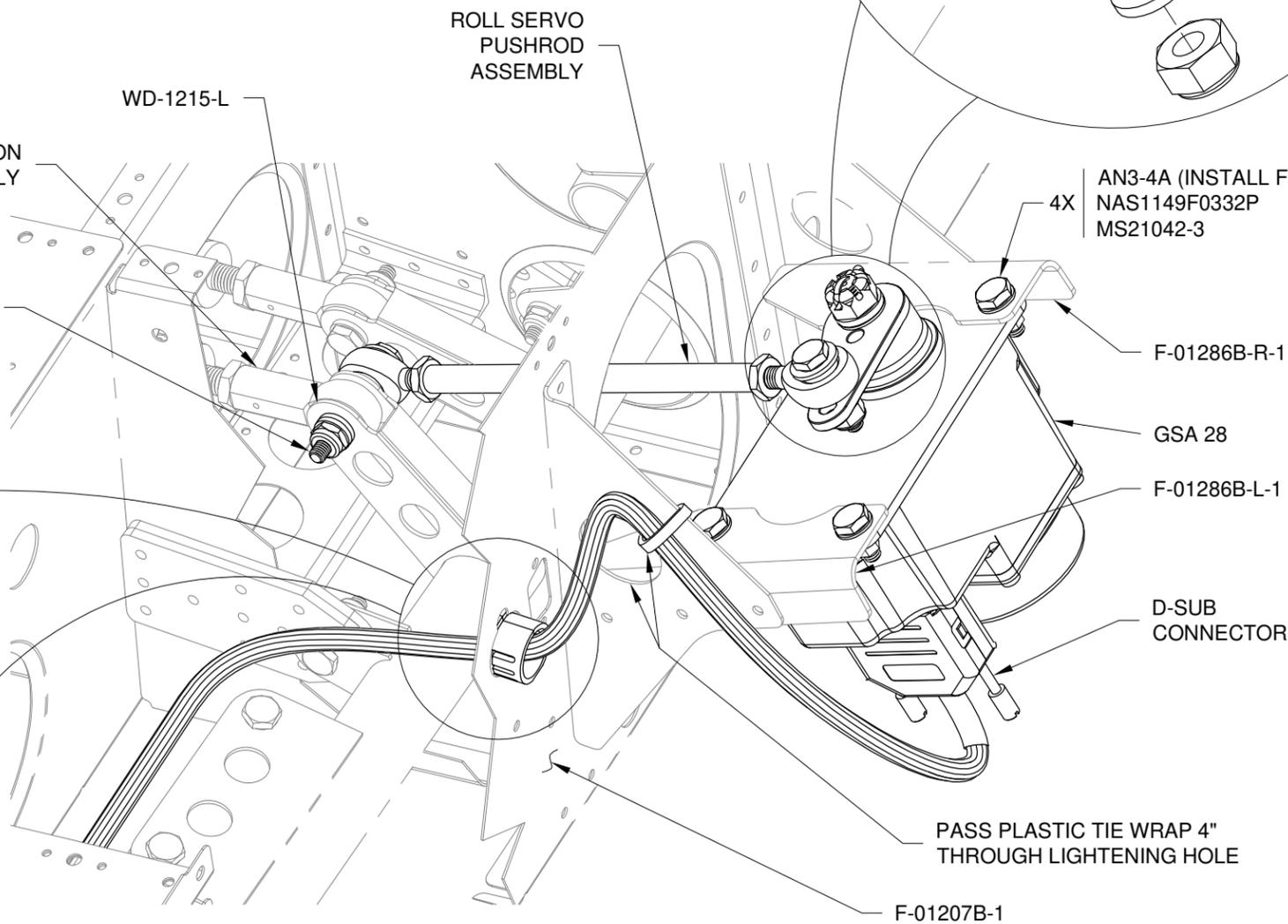
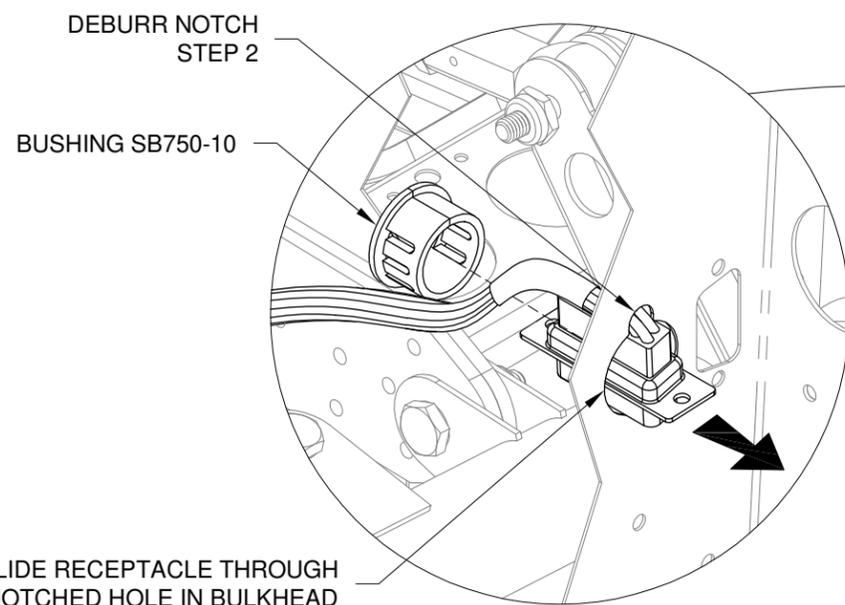
**Step 9:** Remove the hardware attaching the left Flaperon Pushrod Assembly to the WD-1215-L Flaperon Torque Arm.

**Step 10:** Attach the Roll Servo Pushrod Assembly and reattach the Left Flaperon Pushrod Assembly to the WD-1215-L using the called out hardware.



AN3-14A (REPLACES EXISTING BOLT)  
WASHER 5702-475-48 Z3 (UNDER HEAD OF BOLT)  
2X NAS1149F0363P (UNDER NUT)  
MS21083-N3

AN3-4A (INSTALL FORWARD TWO BOLTS FIRST)  
NAS1149F0332P  
MS21042-3

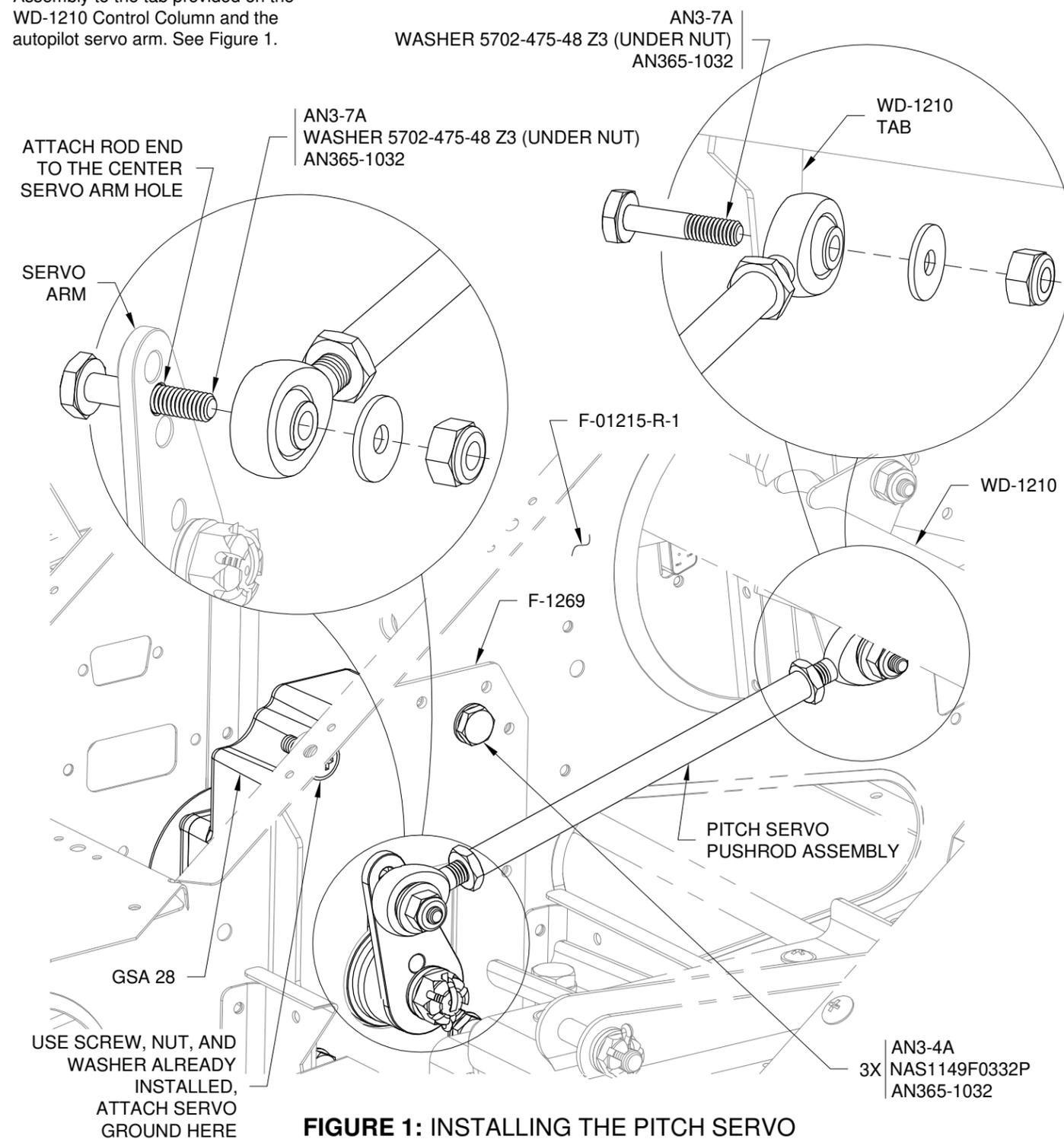


**FIGURE 1: INSTALLING THE ROLL SERVO**

**Step 1:** Insert the bolt that will attach the Pitch Servo Pushrod Assembly to the arm of the Garmin GSA 28 Autopilot Servo.

**Step 2:** Attach the autopilot servo to the F-01215-R-1 Seat Rib and F-1269 Servo Doubler using the hardware called out in Figure 1. Attach the servo ground wire as shown.

**Step 3:** Connect the Pitch Servo Pushrod Assembly to the tab provided on the WD-1210 Control Column and the autopilot servo arm. See Figure 1.



**FIGURE 1: INSTALLING THE PITCH SERVO**

**Step 4:** Locate the pitch servo d-sub and remove the backshell.

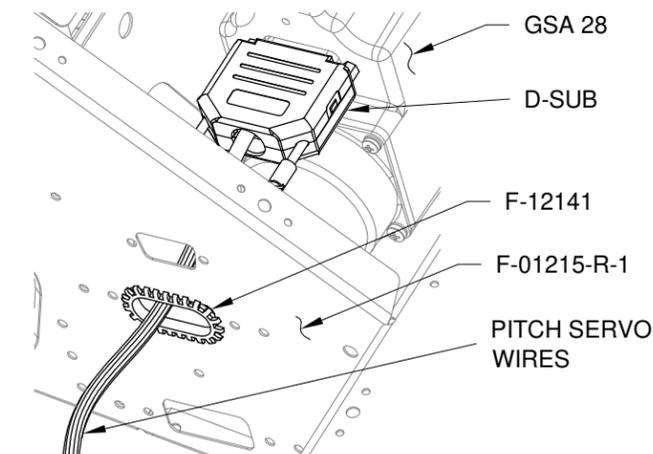
**Step 5:** Feed the d-sub receptacle through F-01215-R-1.

**Step 6:** Replace the backshell.

**Step 7:** Connect the d-sub to the GSA 28 as shown.

**Step 8:** Fabricate the F-12141 Grommet by cutting a 3 in. [76.2 mm] piece of MS21266-1N Grommet Strip.

Install F-12141 into the hole where the wires penetrate rib F-01215-R-1 as shown in Figure 2.



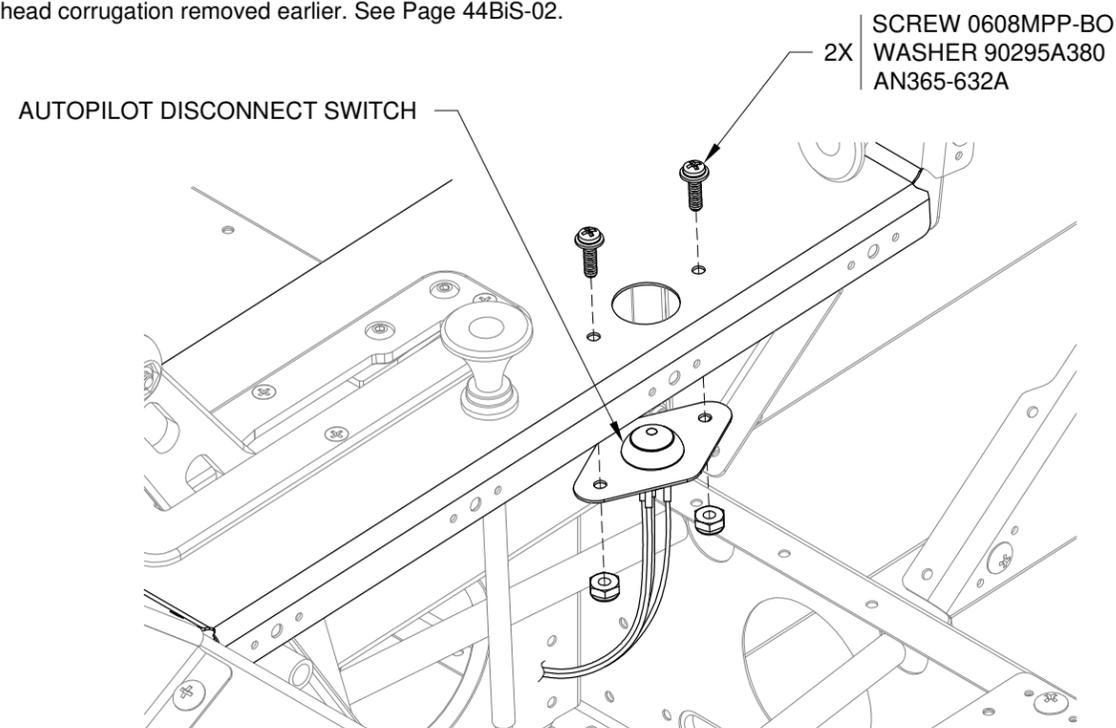
**FIGURE 2: D-SUB & GROMMET STRIP INSTALLATION**

**NOTE:** The autopilot disconnect switch is an integral part of the G3X Harness.

**Step 9:** If not already installed, locate the autopilot disconnect switch and attach it to the underside of the center console using the hardware called out in Figure 3.

**WARNING:** WHEN FINISHED INSTALLING THE AUTOPILOT SERVOS, MOVE THE CONTROL STICK THROUGHOUT ITS ENTIRE RANGE OF TRAVEL MANY TIMES (WITH FLAPS UP AND WITH FLAPS DOWN) TO CHECK FOR AN OVER-CENTER CONDITION OF THE AUTOPILOT SERVOS (A CONDITION WHERE THE SERVO ARM AND PUSHROD BECOME CLOSE TO PARALLEL AND THE CONTROL SYSTEM LOCKS).

**Step 10:** Reinstall the three covers and the baggage bulkhead corrugation removed earlier. See Page 44BiS-02.



**FIGURE 3: INSTALLING THE AP DISCONNECT SWITCH**

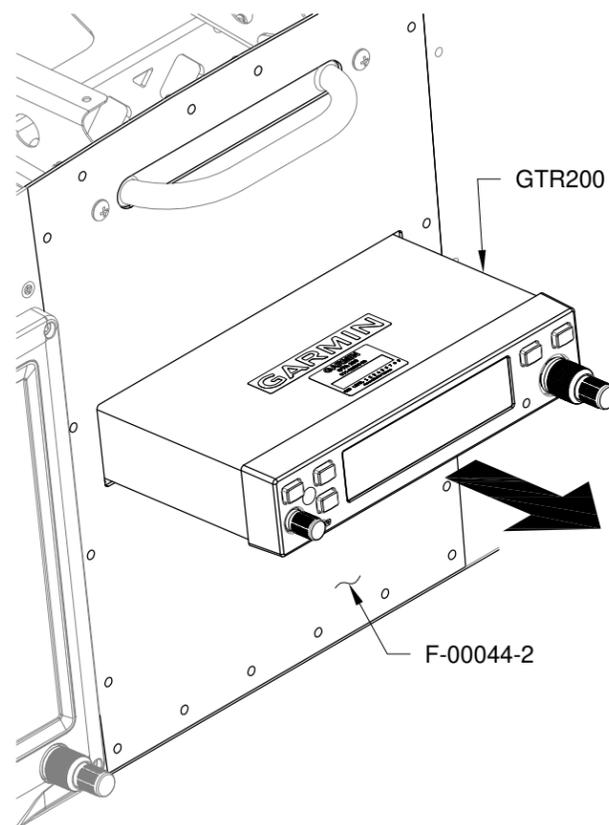


**Step 1:** Remove the AV Garmin GTR200 Com Radio from the center panel and tray per the instructions provided with the com radio. See Figure 1.

**Step 2:** Remove the F-00044-2 RV-12 GTR200 Cntr Inst Panel if installed. See Figure 1.

**Step 3:** Locate the previously installed G3X Harness and find the attached 15-pin d-sub connector labeled "GMC 507".

Pre-position the "GMC 507" d-sub so that it can be reached after the center panel has been installed.



**FIGURE 1: REMOVE GTR200**

**NOTE:** There are three center panel options available for use when installing the GMC 507. They include a 'ready to install' option (Figure 2), a 'bare' option (Figure 3) and the 'standard' center panel (Figure 4) provided with the finish kit.

**Step 4 (F-00044G-2):** Order then install this panel per the corresponding instructions in Section 42NiS. This center panel is included with other finished parts as part of a larger kit.

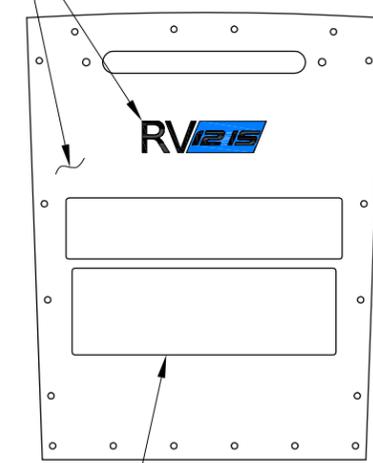
After installation skip to Page 44BiS-07, Step 1.

**Step 4 (F-00044GXXX-2):** Order then install this panel per the corresponding instructions in Section 42NiS.

After installation skip to Page 44BiS-07, Step 1.

**Step 4 (F-00044-2):** Cut out the template at the end of this section.

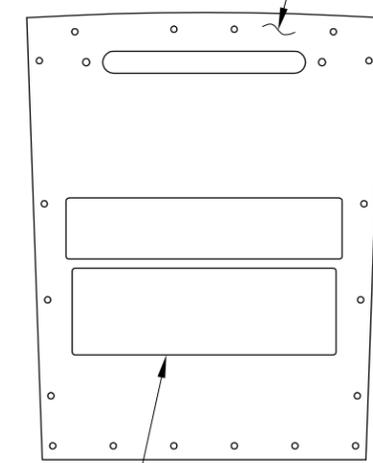
POWDER COATED & SCREEN PRINTED



HOLE PROVIDED

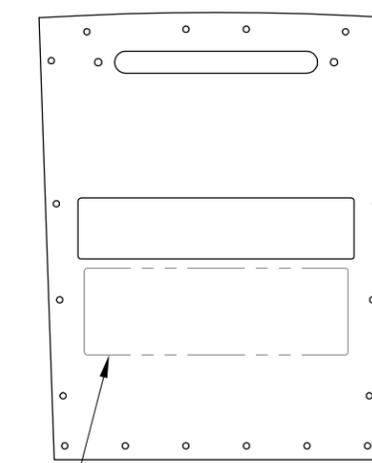
**FIGURE 2: F-00044G-2  
(SPECIAL ORDER)**

BARE



HOLE PROVIDED

**FIGURE 3: F-00044G-2XXX  
(SPECIAL ORDER)**

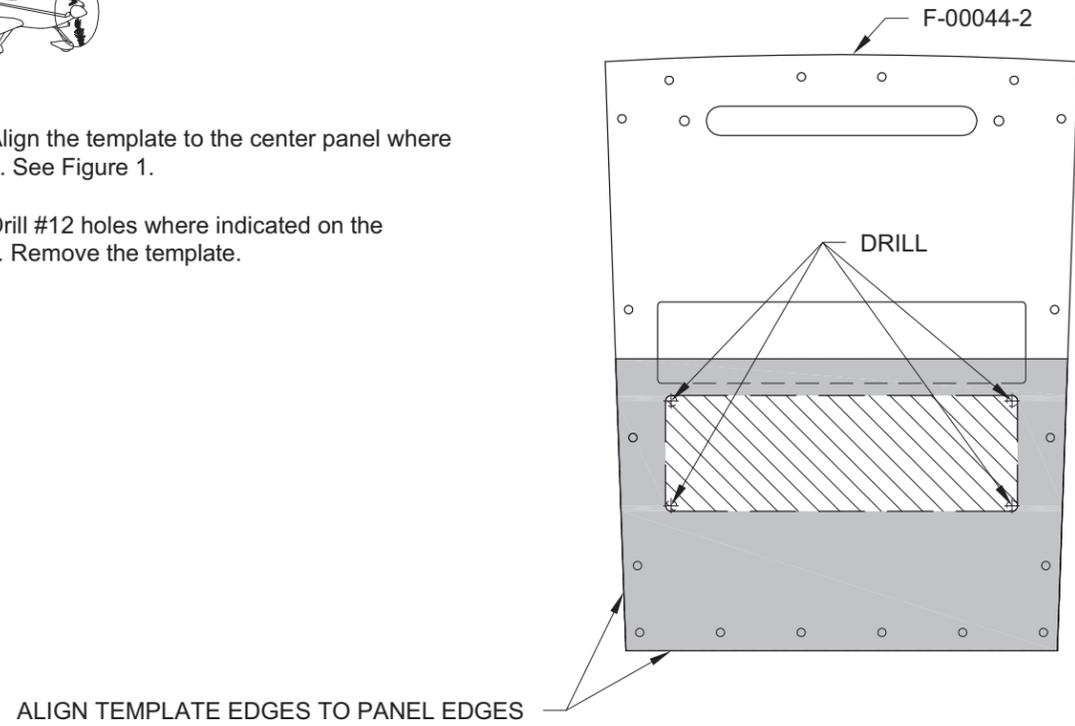


NEEDS HOLE CUT HERE

**FIGURE 4: F-00044-2  
(STANDARD)**

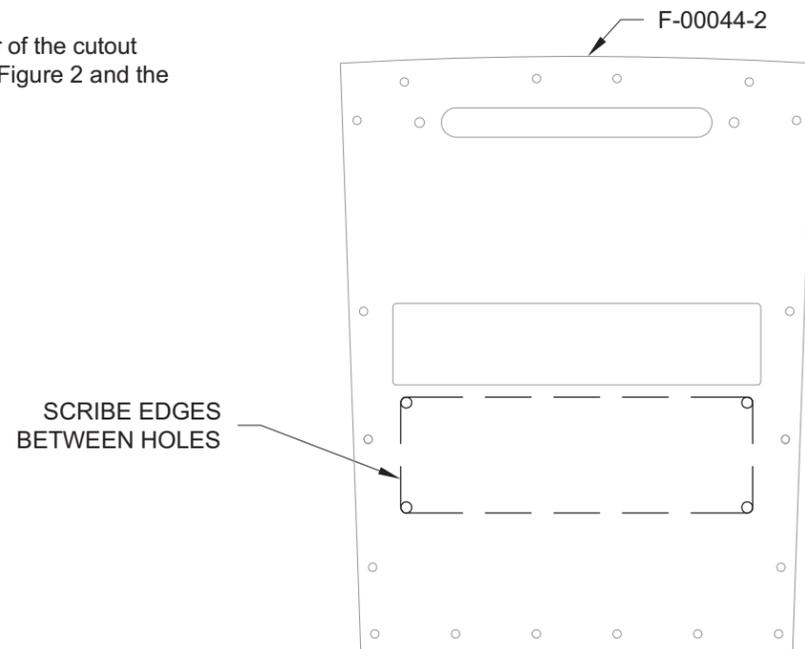
**Step 1:** Align the template to the center panel where indicated. See Figure 1.

**Step 2:** Drill #12 holes where indicated on the template. Remove the template.



**FIGURE 1: DRILLING PANEL**

**Step 3:** Mark the outside perimeter of the cutout with a sharp scribe and ruler. See Figure 2 and the example in Figure 3.



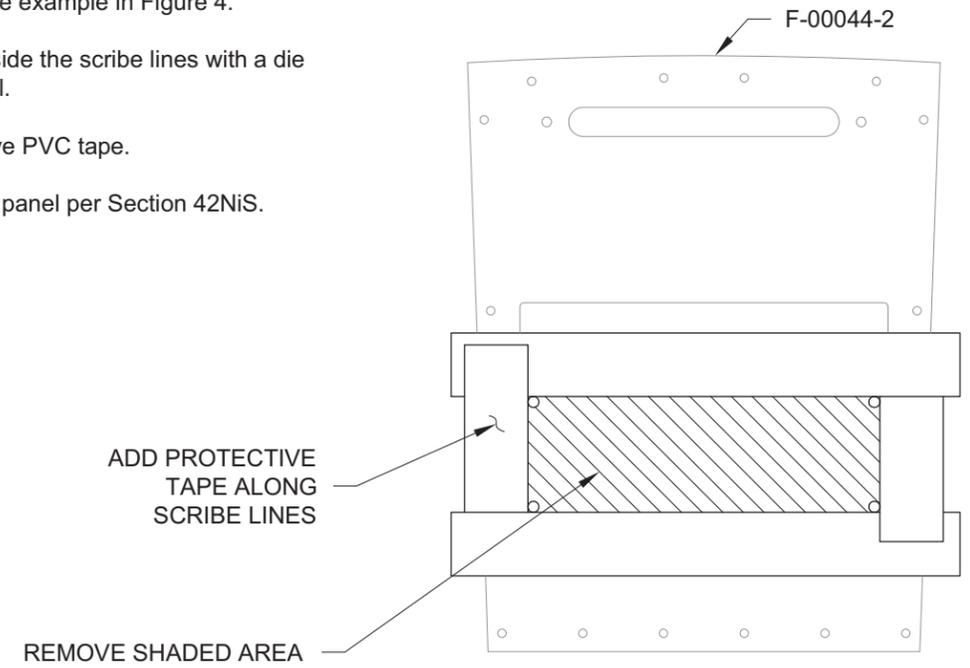
**FIGURE 2: SCRIBING PANEL**

**Step 4:** Add tough PVC tape along outer scribe lines as shown in Figure 3 and the example in Figure 4.

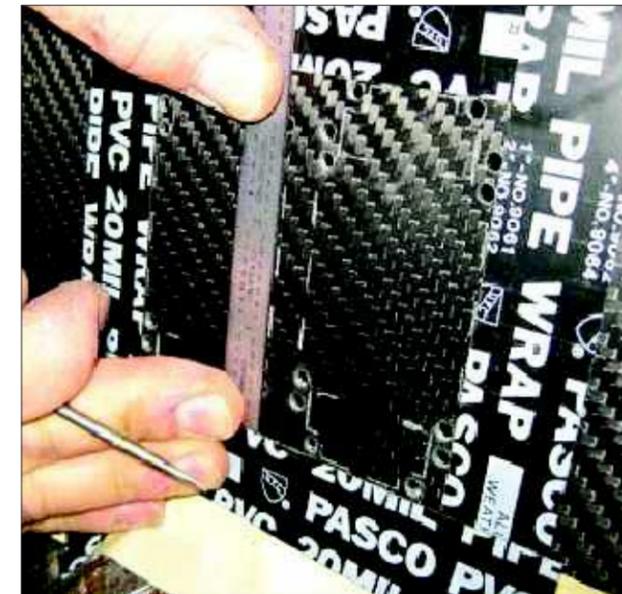
**Step 5:** Remove area inside the scribe lines with a die grinder and cutting wheel.

Deburr edges and remove PVC tape.

**Step 6:** Install the center panel per Section 42NiS.



**FIGURE 3: CUTTING THE OPENING**



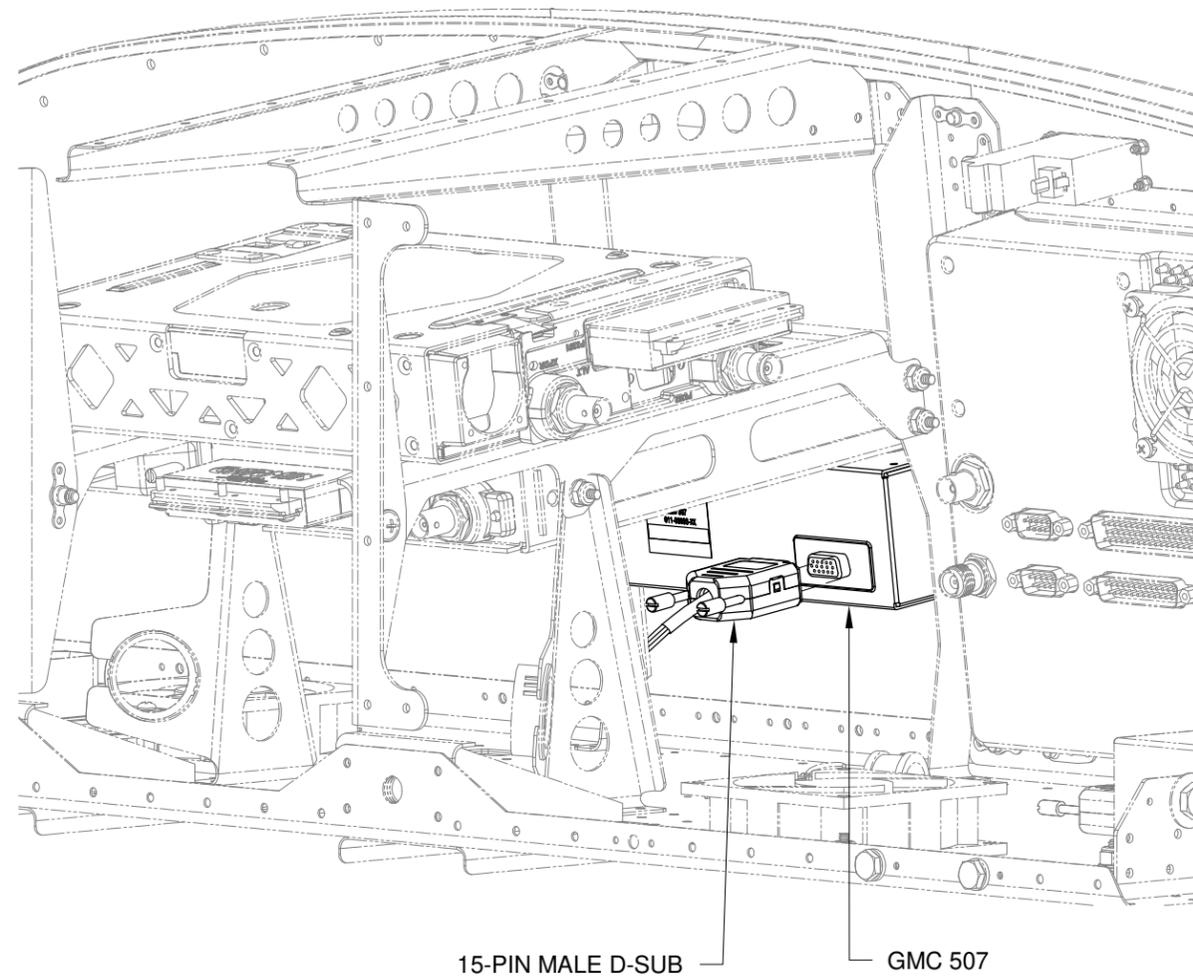
**FIGURE 4: SCRIBING & TAPING EXAMPLE**  
(SKYVIEW INSTALLATION SHOWN)



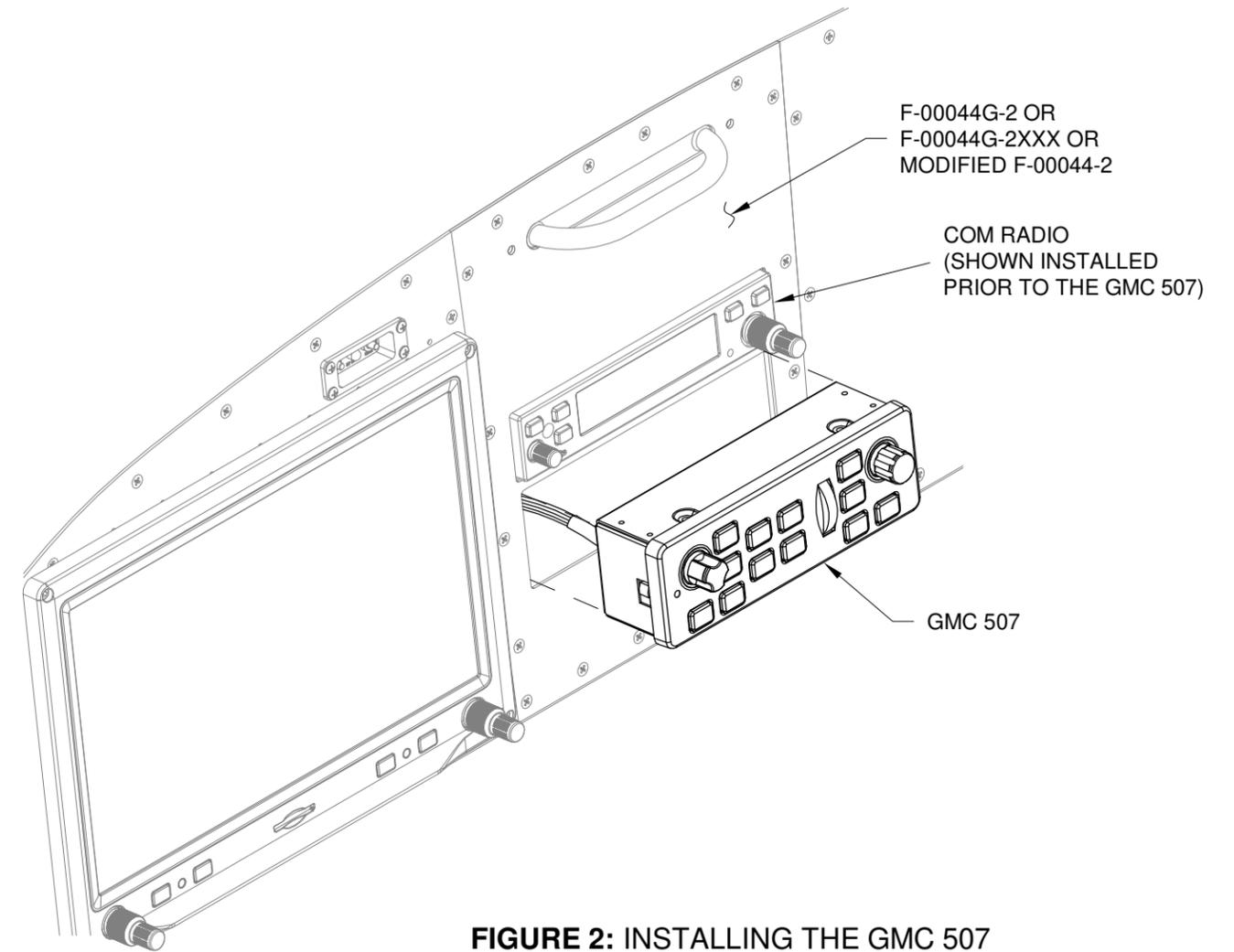
Step 1: Retrieve the 15-pin d-sub connector labeled "GMC 507" and connect to the 15-pin female d-sub receptacle on the forward side of the GMC 507. See Figure 1.

Step 2: Install the GMC 507 into the center panel per the manufacturer's directions. See Figure 2.

Step 3: Reinstall the com radio per the manufacturer's directions.



**FIGURE 1: CONNECTING THE GMC 507**  
(CENTER PANEL NOT SHOWN)



**FIGURE 2: INSTALLING THE GMC 507**



Step 1: Navigate to the Van's Aircraft web site downloads page.

Download and read the READ ME.doc document pertaining to performing a firmware update to the Garmin G3X Touch. Follow the instructions in this document to successfully install the .gca files.

**NOTE: The "Base Configuration" must precede the "AFCS Option".**

Download and install the latest "RV-12iS Base Configuration Rev X.gca" file.

Download and install from the same location the latest "RV-12iS AFCS Option.gca" file.

Complete the installation of these .gca files and autopilot set-up per the instructions in the Garmin installation guide. See the Garmin website.

Step 2: Download the latest RV-12iS overall Electrical Schematic from the Van's Aircraft web site.

**NOTE: If installing the GMC 507 with the Autopilot Servos, skip Step 3 through Step 8 and proceed to Step 9.**

**NOTE: Any weight and balance information recorded for the aircraft must be updated. Depending on the state of your kit some steps may not be applicable.**

Step 3: In the RV-12iS Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, add "AUTOPILOT SERVOS" to the "ITEM" column. On the same line add a checkmark to the "INSTALLED" column.

Enter 3.2 lb for "Weight", 101.9 in for "Location/Arm" and 330 in-lb "Moment" onto the same line as "AUTOPILOT SERVOS".

In the RV-12iS Pilot Operating Handbook (POH) "OPTIONAL EQUIPMENT LIST" table, add "AUTOPILOT SERVOS" to the "ITEM" column. On the same line add a checkmark to the "INSTALLED" column.

Enter 3.2 lb for "Weight", 101.9 in for "Location/Arm" and 330 in-lb "Moment" onto the same line as "AUTOPILOT SERVOS".

**NOTE: Steps 4-6 on this page are only applicable if a final weight and balance as specified in the PAP has been completed.**

Step 4: In the RV-12iS Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.

Step 5: In the RV-12iS POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.

Step 6: Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12iS Maintenance Manual as follows:

As of this date: \_\_\_/\_\_\_/\_\_\_ the following values represent current Weight and Balance calculations resulting from the installation of the Autopilot Servos Optional Kit.

Revised Empty Weight: \_\_\_\_\_ lbs  
Revised Empty Moment: \_\_\_\_\_ in-lbs  
Revised Empty Arm: \_\_\_\_\_ in  
Signed: \_\_\_\_\_

**NOTE: Step 7 is only applicable for aircraft which have passed a final airworthiness inspection.**

Step 7 (ELSA): Make an appropriate entry in the airframe logbook. See example below:

Installed the AUTOPILOT SERVOS option in accordance with Van's Aircraft KAI Section 44BiS and confirmed proper operation.

Signature \_\_\_\_\_ Certificate # \_\_\_\_\_

Step 7 (SLSA): Complete the notification N 18-11-14 (available from the Van's Aircraft web site) corresponding to the AUTOPILOT SERVOS installation.

Step 8: Section complete.

**NOTE: Any weight and balance information recorded for the aircraft must be updated. Depending on the state of your kit some steps may not be applicable.**

Step 9: In the RV-12iS Maintenance Manual (MM) "INSTALLED EQUIPMENT LIST" table, add "AUTOPILOT SERVOS AND GMC" to the "ITEM" column. On the same line add a checkmark to the "INSTALLED" column.

Enter 4.0 lb for "Weight", 94.1 in for "Location/Arm" and 379 in-lb "Moment" onto the same line as "AUTOPILOT SERVOS AND GMC 507".

**NOTE: Steps 10-12 on this page are only applicable if a final weight and balance as specified in the PAP has been completed.**

Step 10: In the RV-12iS Pilot Operating Handbook (POH) "YOUR AIRPLANE" table, enter the new total values for the arm, weight, and moment of the installed equipment.

Step 11: In the RV-12iS POH "YOUR AIRPLANE" table, recalculate and enter new values for the Empty Weight, Empty Moment, and Empty Arm.

Step 12: Make an entry, as calculated in the previous step, on the WEIGHT AND BALANCE RECORD page of the RV-12iS Maintenance Manual as follows:

As of this date: \_\_\_/\_\_\_/\_\_\_ the following values represent current Weight and Balance calculations resulting from the installation of the Autopilot Servos and GMC 507 Optional Kit.

Revised Empty Weight: \_\_\_\_\_ lbs  
Revised Empty Moment: \_\_\_\_\_ in-lbs  
Revised Empty Arm: \_\_\_\_\_ in  
Signed: \_\_\_\_\_

**NOTE: The remaining steps on this page are only applicable for aircraft which have passed a final airworthiness inspection.**

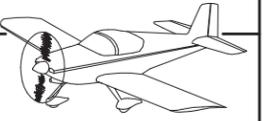
Step 13 (ELSA): Make an appropriate entry in the airframe logbook. See example below:

Installed the AUTOPILOT SERVOS AND GMC 507 option in accordance with Van's Aircraft KAI Section 44BiS and confirmed proper operation.

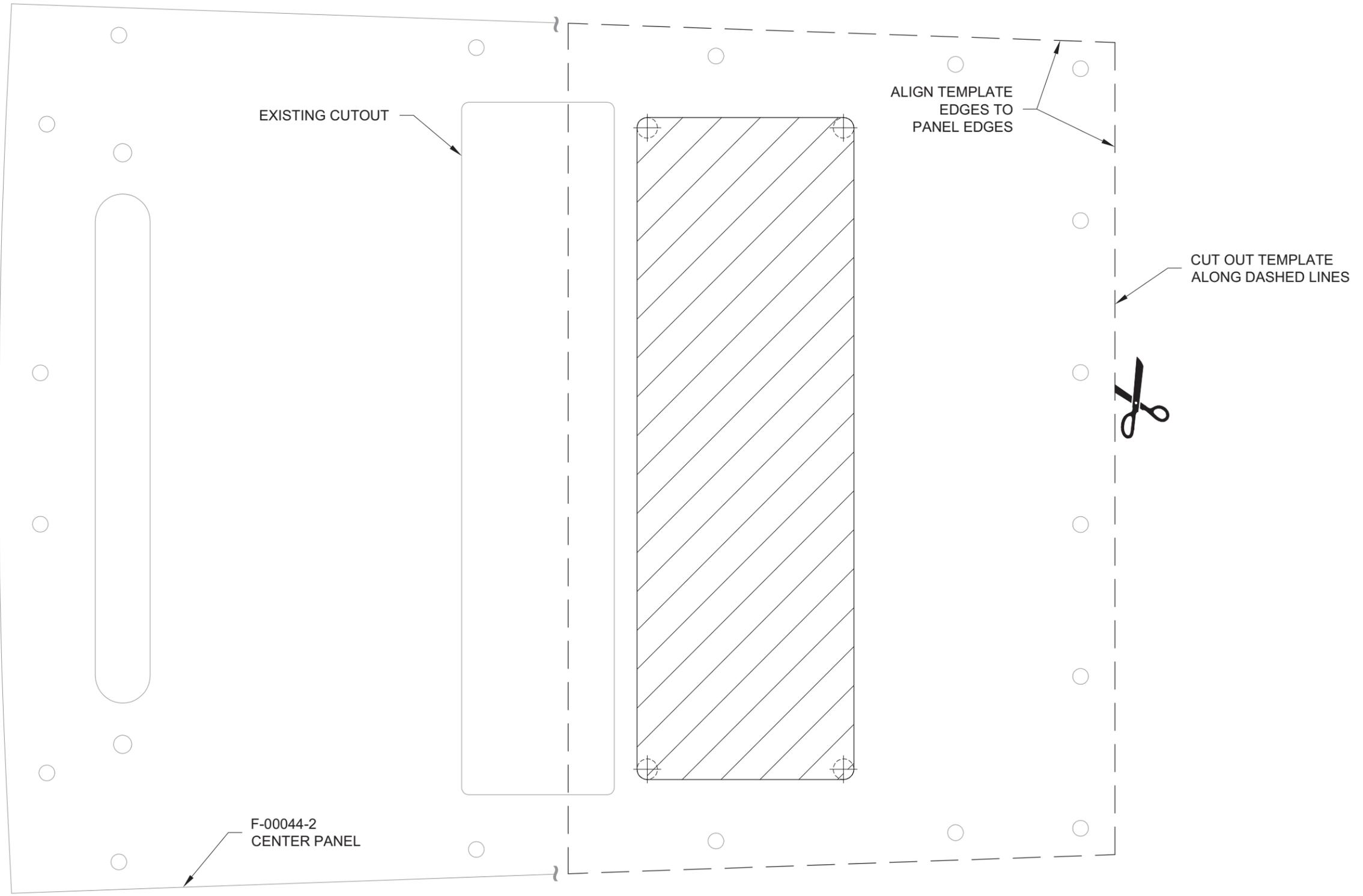
Signature \_\_\_\_\_ Certificate # \_\_\_\_\_

Step 13 (SLSA): Complete service letter SL-00016 (available from the Van's Aircraft website) corresponding to the AUTOPILOT SERVOS AND GMC 507 installation.

Step 14: Section complete.



10 9/16  
[268.3 mm]



EXISTING CUTOUT

ALIGN TEMPLATE  
EDGES TO  
PANEL EDGES

CUT OUT TEMPLATE  
ALONG DASHED LINES

F-00044-2  
CENTER PANEL

**FIGURE 1: TEMPLATE**

(NOTE: CHECK PRINTED SCALE 1:1 PER SECTION 3 BEFORE USING THE TEMPLATE!)

16  
[406.4 mm]



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