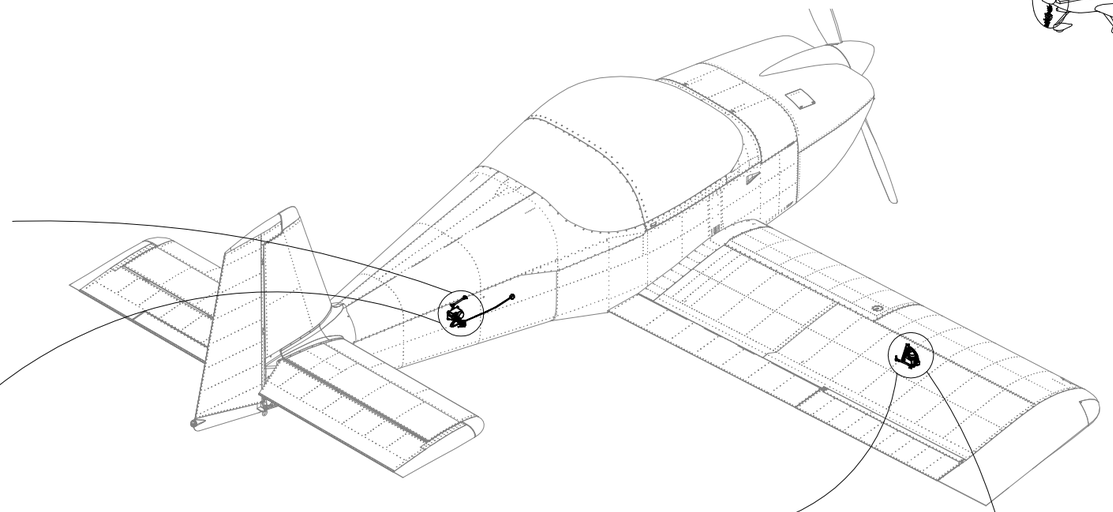
TOTAL PERFORMANCE
VAN'S AIRCRAFT
14401 Keil Road NE, Aurora, Oregon, USA 97002
PHONE 503-678-6545 • FAX 503-678-6560 • www.vansaircraft.com • info@vansaircraft.com
Service Letters and Bulletins: www.vansaircraft.com/public/service.htm

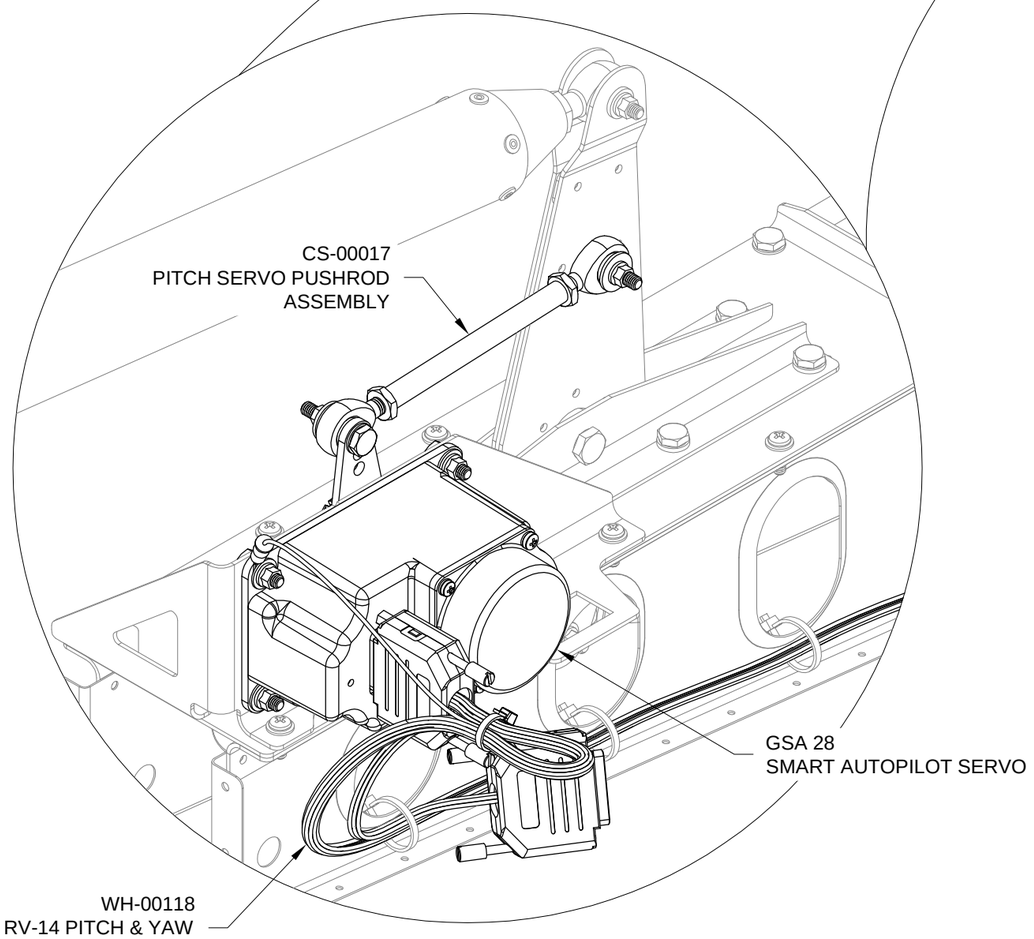
REVISION DESCRIPTION:

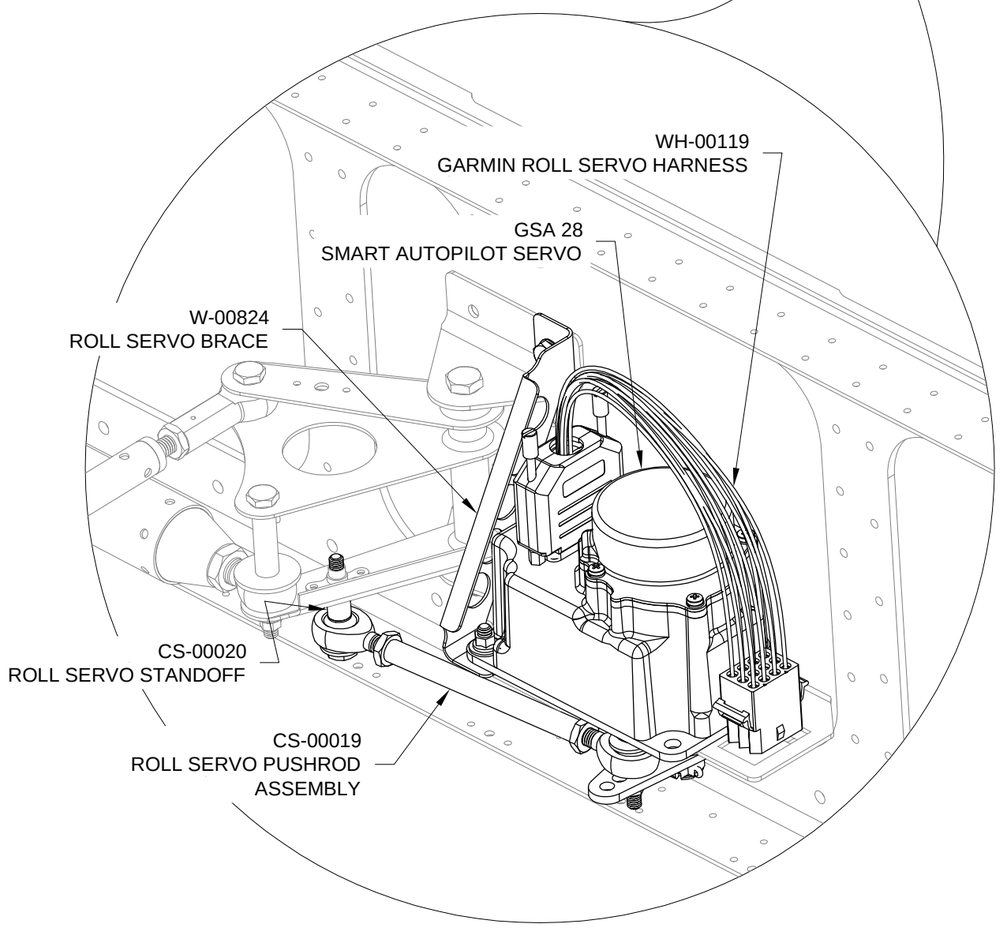
Page: 56-02 Memo: In items to be purchased from your avionics supplier, deleted:

QTY	ITEM
1	WH-00118 Garmin RV-14 Pitch & Yaw Servo Harness
1	WH-00119 Garmin Roll Servo Harness

SECTION 56:
GARMIN AUTOPILOT SERVOS







NOTE: Refer to the WH-00125 RV-14 Common Fuselage Harness drawing available on the Van's Aircraft website Downloads page for autopilot wiring diagrams (including the WH-00118 and WH-00119 harnesses).

Purchase the following items from your avionics supplier:

QTY	ITEM
2	Garmin GSA 28 Smart Autopilot Servo

Step 1: Fabricate two servo pushrod tubes from AT6-058X5/16 aluminum tube as shown in Figure 1.

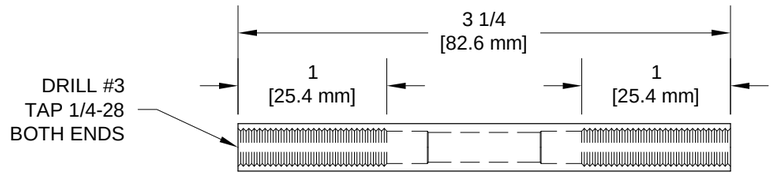


FIGURE 1: SERVO PUSHROD TUBE

Step 2: Assemble the CS-00017 Pitch Servo Pushrod Assembly as shown in Figure 2. Tighten the two nuts to 14-20 in.-lb.

Label the pushrod assembly "CS-00017".

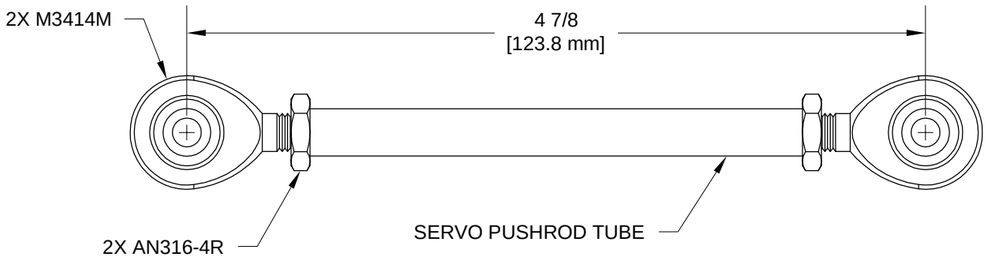


FIGURE 2: PITCH SERVO PUSHROD ASSEMBLY

Step 3: Assemble the CS-00019 Roll Servo Pushrod Assembly as shown in Figure 3. Tighten the two nuts to 14-20 in.-lb.

Label the pushrod assembly "CS-00019".

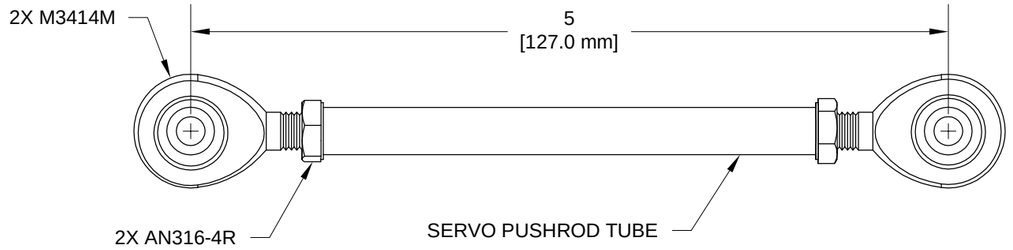


FIGURE 3: ROLL SERVO PUSHROD ASSEMBLY

Step 4: Fabricate one CS-00020 Roll Servo Standoff from AT6-058X5/16 aluminum tube as shown in Figure 4.

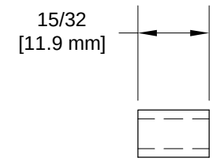


FIGURE 4: ROLL SERVO STANDOFF

NOTE: Use the Garmin "G3X Installation Manual" as a reference during servo installation.

Step 1: If desired, install the optional autopilot yaw servo support, plate, and spacer in accordance with Section 58.

Step 2: Remove the servo arm from a GSA 28 Smart Autopilot Servo. See Figure 1.

Step 3: In the aft fuselage, attach the servo to the F-14184 Pitch Servo Bracket as shown in Figure 1. Leave the upper aft attach hole empty for now.

Step 4: Reinstall the servo arm with the arm pointing upward as shown in Figure 1.

Tighten the castle nut until the split washer is fully compressed but do not exceed 20 in.-lb.

Loosen the castle nut until the nearest castellation (i.e. slot) aligns with the hole in the shaft and then install the cotter pin. Use a new cotter pin.

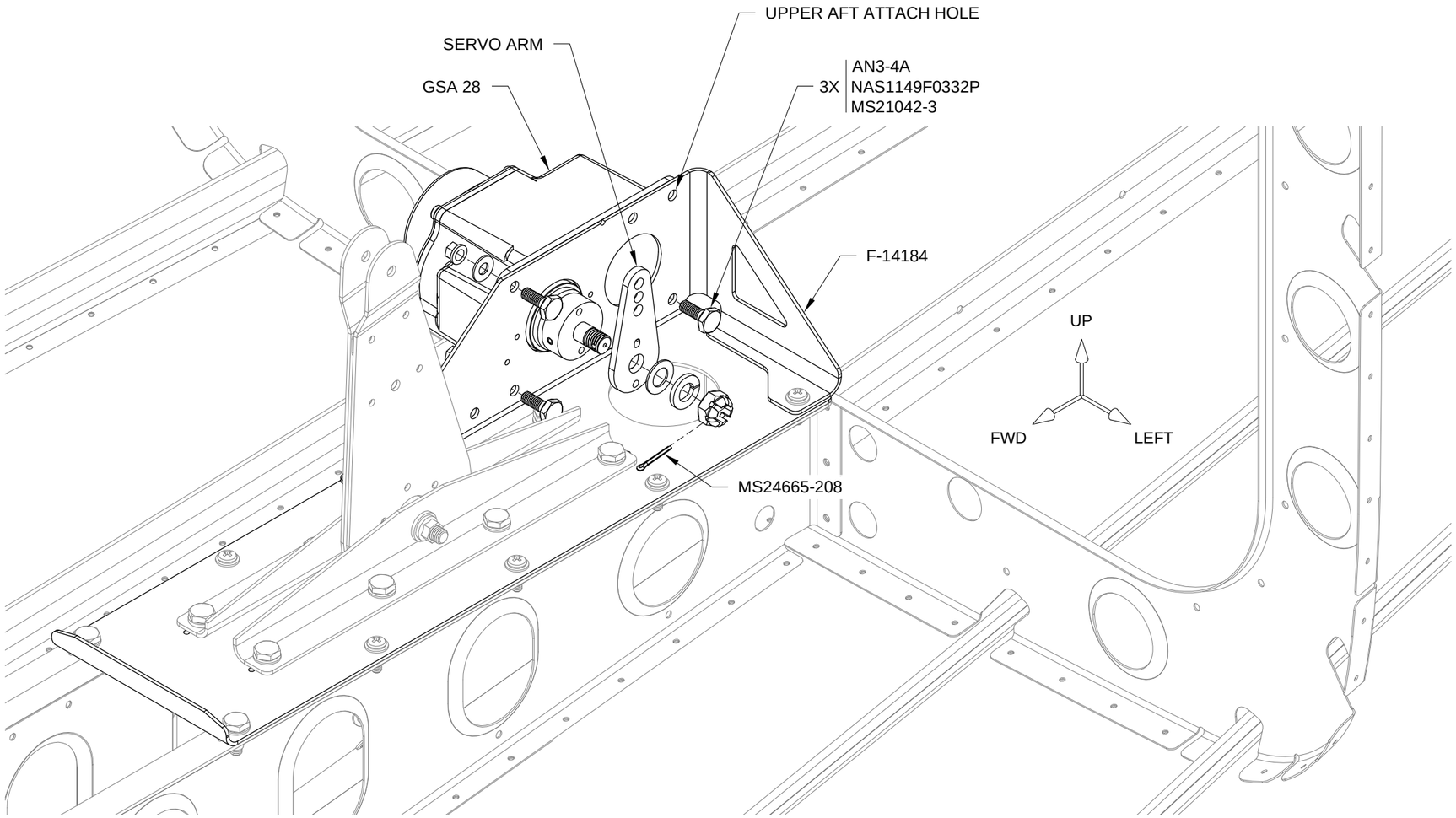


FIGURE 1: INSTALL PITCH SERVO

Step 1: Detach the ends of the C1036 (WHT) and C1037 (WHT) wires that were adhered previously to the forward side of the F-01406B Bulkhead. Refer to Page 10-25.

Step 2: Insert the C1036 (WHT) and C1037 (WHT) wires from the WH-00057 Aft Fuselage Harness into C411P as shown in Figure 2. Refer to Section 5.21 regarding Molex connectors and open barrel terminals as required.

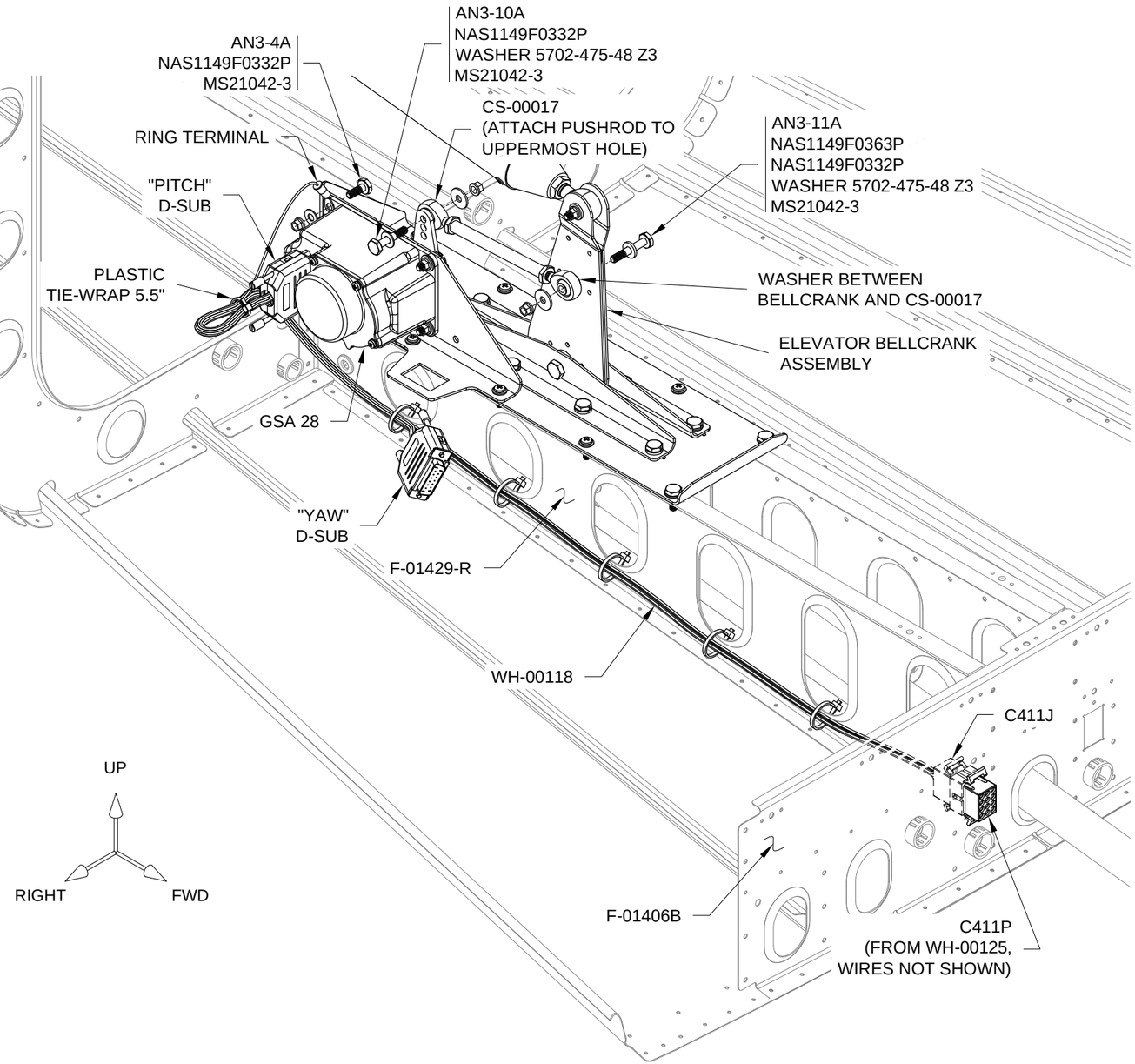


FIGURE 1: CONNECT PITCH SERVO

Step 3: Attach the CS-00017 Pitch Servo Pushrod Assembly to the GSA 28 Smart Autopilot Servo and to the Elevator Bellcrank Assembly as shown in Figure 1. Before installation, verify that the correct pushrod is being used by comparing the pushrod length with Figure 2 on Page 56-02.

Step 4: Label the 12-pin Molex receptacle on the WH-00118 Garmin RV-14 Pitch & Yaw Servo Harness "C411J".

Step 5: Connect the 15-pin female d-sub labeled "PITCH" on the WH-00118 harness to the servo.

Step 6: Route C411J forward along the right side of the F-01429-R Bellcrank Rib and connect it to C411P as shown in Figure 1 and Figure 2.

Step 7: Attach the upper aft hole in the servo to the F-14184 Pitch Servo Bracket as shown in Figure 1. Place the ring terminal from the WH-00118 harness between the washer and the servo flange.

Step 8: If desired, install the optional autopilot yaw servo in accordance with Section 58.

Otherwise, tie-wrap the 15-pin female d-sub labeled "YAW" on the WH-00118 harness to the wire bundle along the right side of the bellcrank rib as shown in Figure 1.

Step 9: Tie-wrap the WH-00118 harness to itself and to the bellcrank rib as shown in Figure 1.

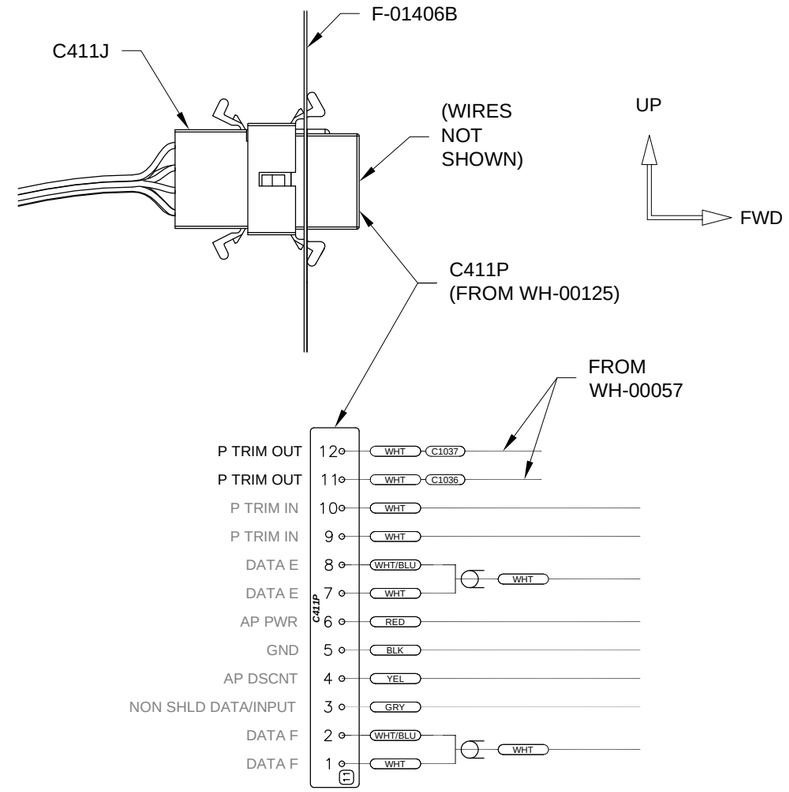


FIGURE 2: INSERT WIRES INTO RV-14 COMMON FUSELAGE HARNESS

Step 1: In the right wing, remove the bolt and washer called out in Figure 1.

Step 2: Remove the servo arm from a GSA 28 Smart Autopilot Servo.

Step 3: Attach the CS-00019 Roll Servo Pushrod Assembly to the servo arm as shown in Figure 3. Verify that the correct pushrod is being used by comparing the pushrod length with Figure 3 on Page 56-02.

Step 4: Reattach the servo arm to the servo. Use a new cotter pin.

Step 5: Attach the servo to the W-823-AP Aileron Bellcrank Bracket as shown in Figure 1.

Step 6: Final-Drill #12 the two attach holes in the W-00824 Roll Servo Brace.

Step 7: Attach the roll servo brace to the servo and W-823-1 Aileron Bellcrank Bracket as shown in Figure 2. Apply Loctite 242 or an equivalent medium strength threadlocker to the bolt threads before insertion.

Step 8: Label the 12-pin Molex receptacle on the WH-00119 Garmin Roll Servo Harness "C430J".

Step 9: Connect the 15-pin female d-sub labeled "ROLL" on the WH-00119 harness to the servo as shown in Figure 2.

Step 10: If present, remove and discard the WH-00077 Autopilot Termination (refer to Page 19-06).

Step 11: Connect C430J to C407P as shown in Figure 2.

Step 12: Attach the roll servo pushrod assembly to the W-421-L Aileron Bellcrank as shown in Figure 2 and Figure 3.

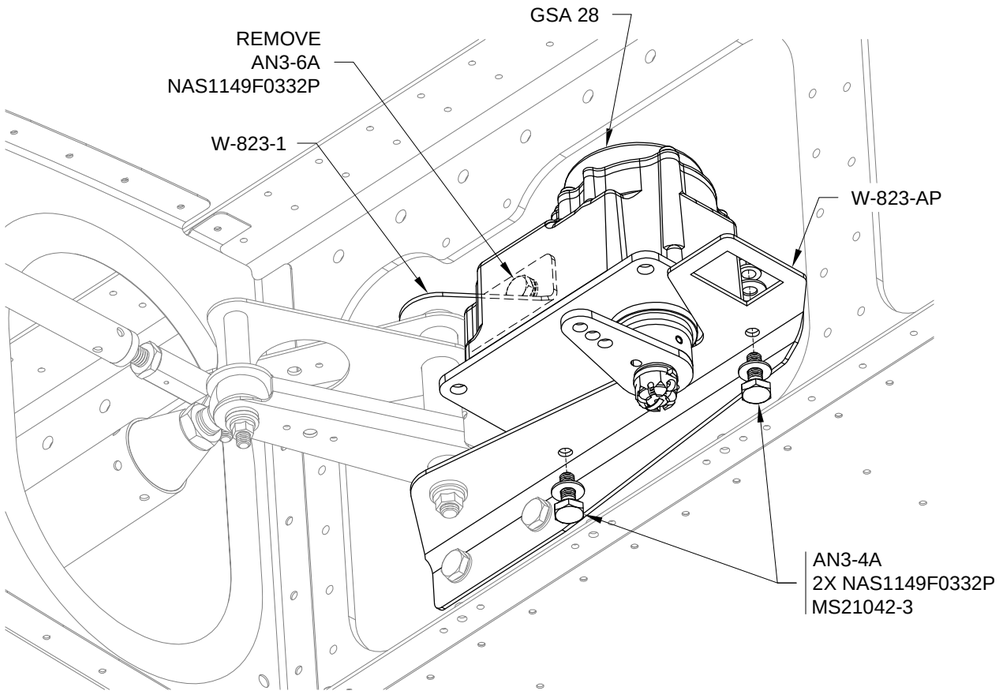


FIGURE 1: INSTALL ROLL SERVO

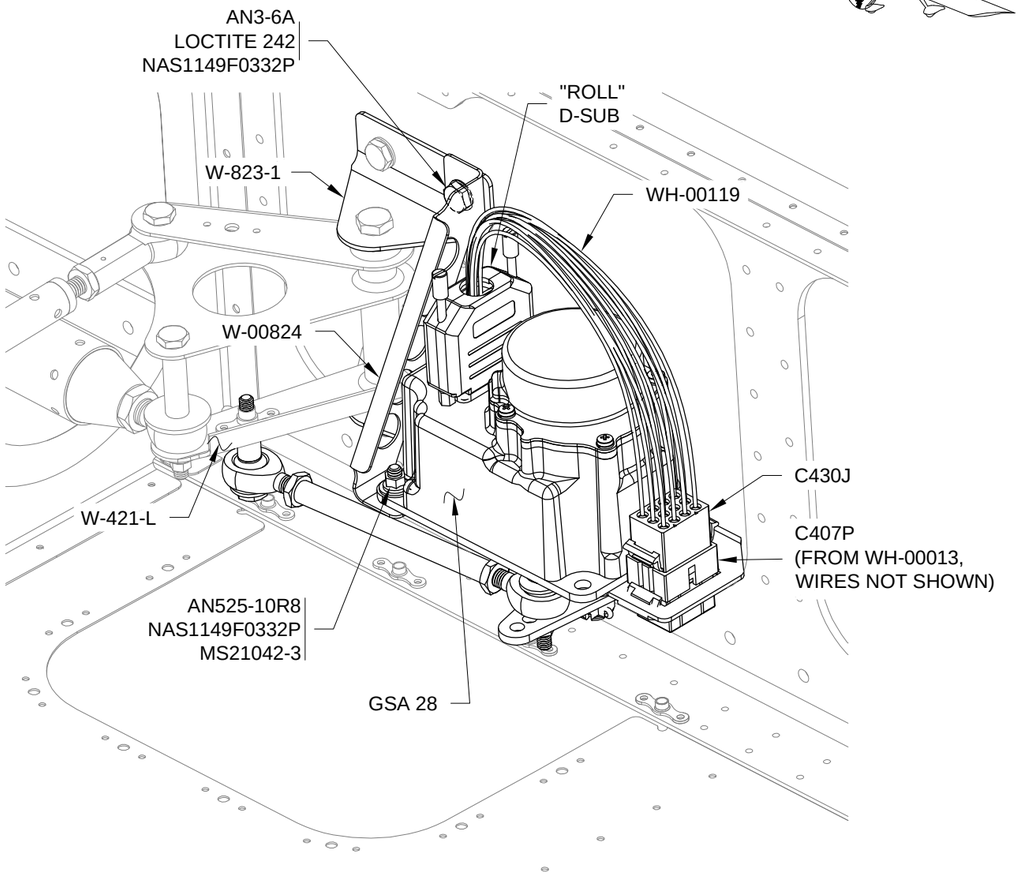


FIGURE 2: CONNECT ROLL SERVO

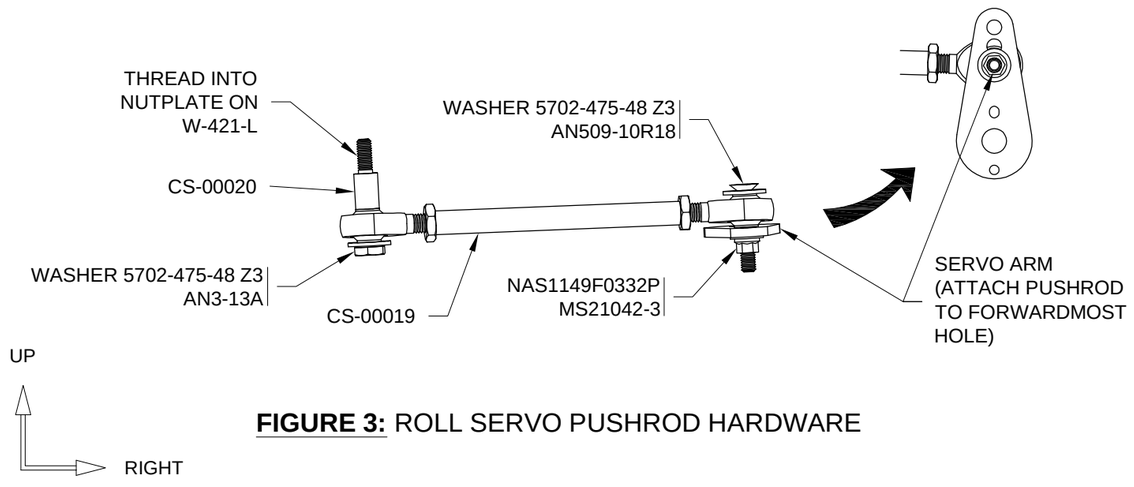


FIGURE 3: ROLL SERVO PUSHROD HARDWARE

WARNING: IF A SERVO ARM BECOMES PARALLEL WITH ITS PUSHROD, AN OVER-CENTER CONDITION CAN DEVELOP IN WHICH THE FLIGHT CONTROLS JAM.

Step 1: Move the control stick throughout its entire range of travel many times to verify that there is no binding, interference, or over-center condition with either servo. Correct any deficiencies.

Step 2: Configure your avionics to control the servos in accordance with your avionics manufacturer's documentation.

Step 3: If installation of the pitch and roll servos was done as a retrofit, update the aircraft weight and balance and make a logbook entry.