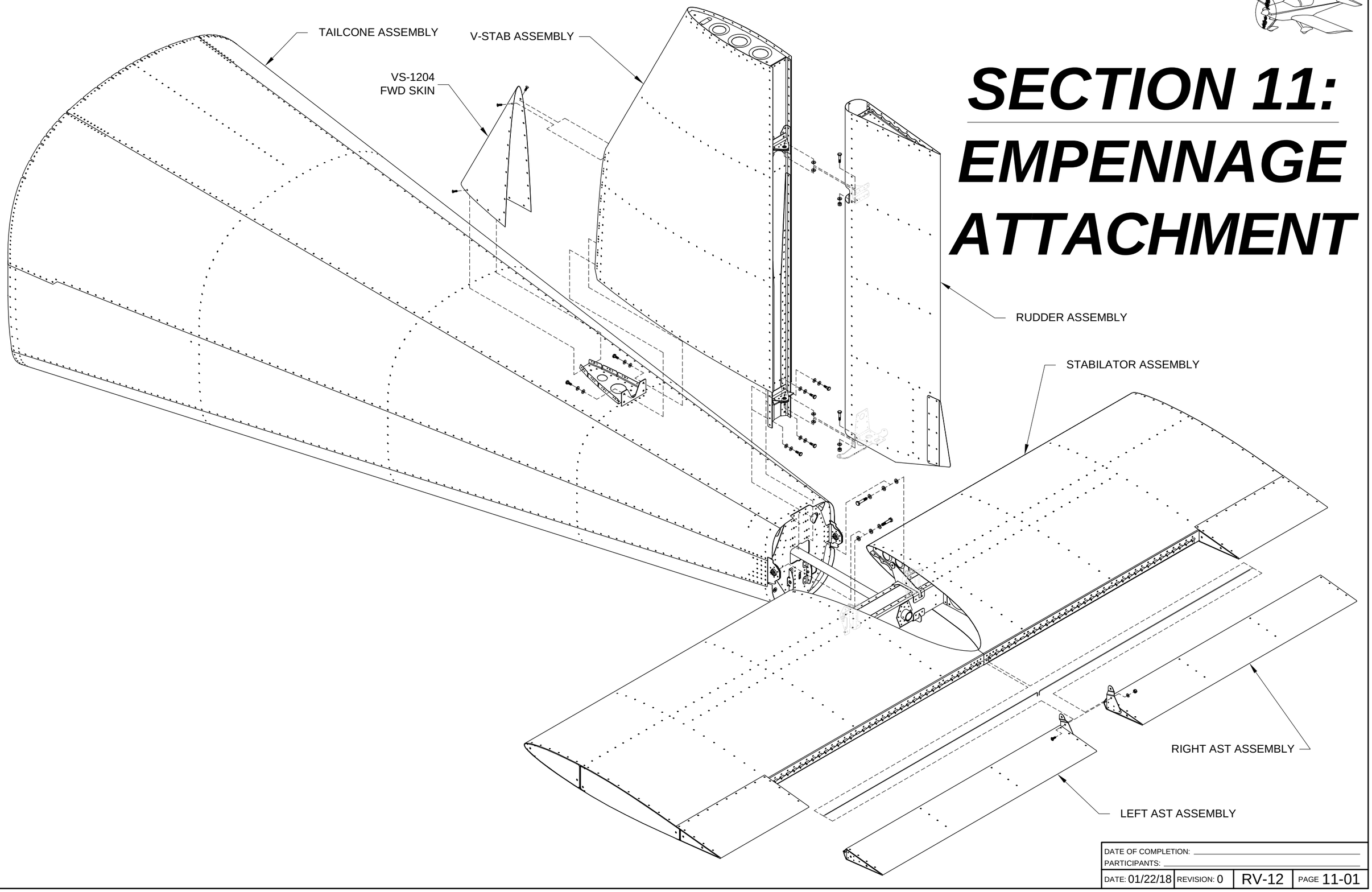
SECTION 11: EMPENNAGE ATTACHMENT

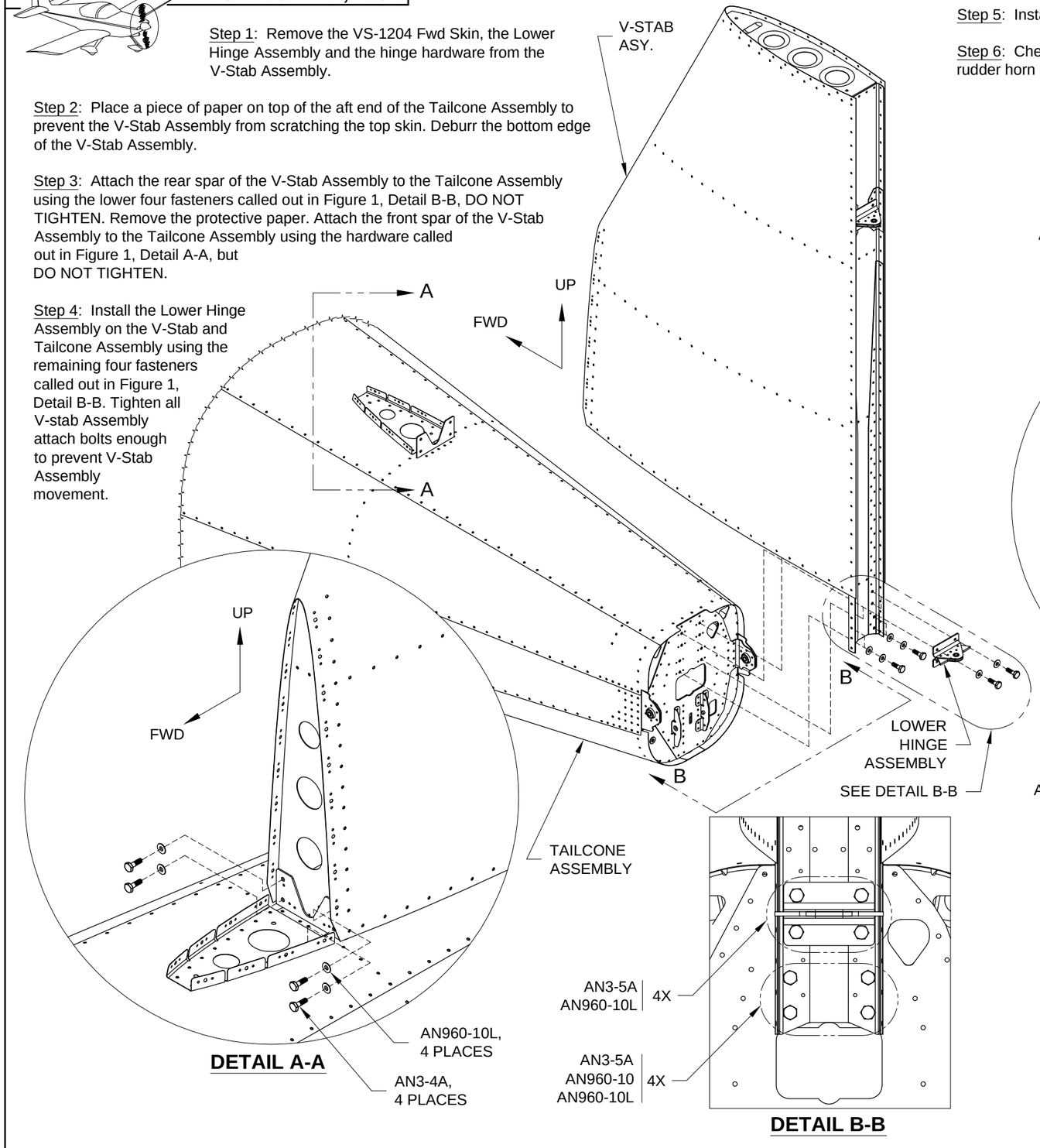


Step 1: Remove the VS-1204 Fwd Skin, the Lower Hinge Assembly and the hinge hardware from the V-Stab Assembly.

Step 2: Place a piece of paper on top of the aft end of the Tailcone Assembly to prevent the V-Stab Assembly from scratching the top skin. Deburr the bottom edge of the V-Stab Assembly.

Step 3: Attach the rear spar of the V-Stab Assembly to the Tailcone Assembly using the lower four fasteners called out in Figure 1, Detail B-B, DO NOT TIGHTEN. Remove the protective paper. Attach the front spar of the V-Stab Assembly to the Tailcone Assembly using the hardware called out in Figure 1, Detail A-A, but DO NOT TIGHTEN.

Step 4: Install the Lower Hinge Assembly on the V-Stab and Tailcone Assembly using the remaining four fasteners called out in Figure 1, Detail B-B. Tighten all V-stab Assembly attach bolts enough to prevent V-Stab Assembly movement.



DETAIL A-A

DETAIL B-B

FIGURE 1: V-STAB ASSEMBLY ATTACH

Step 5: Install the Rudder Assembly to the V-Stab Assembly using the hardware called out in Figure 2. Refer to Page 7-03.

Step 6: Check the Rudder Assembly to make sure it swings freely. Rudder travel in both directions should only be limited by the rudder horn contacting the rudder stop shown in Figure 2, Detail C-C.

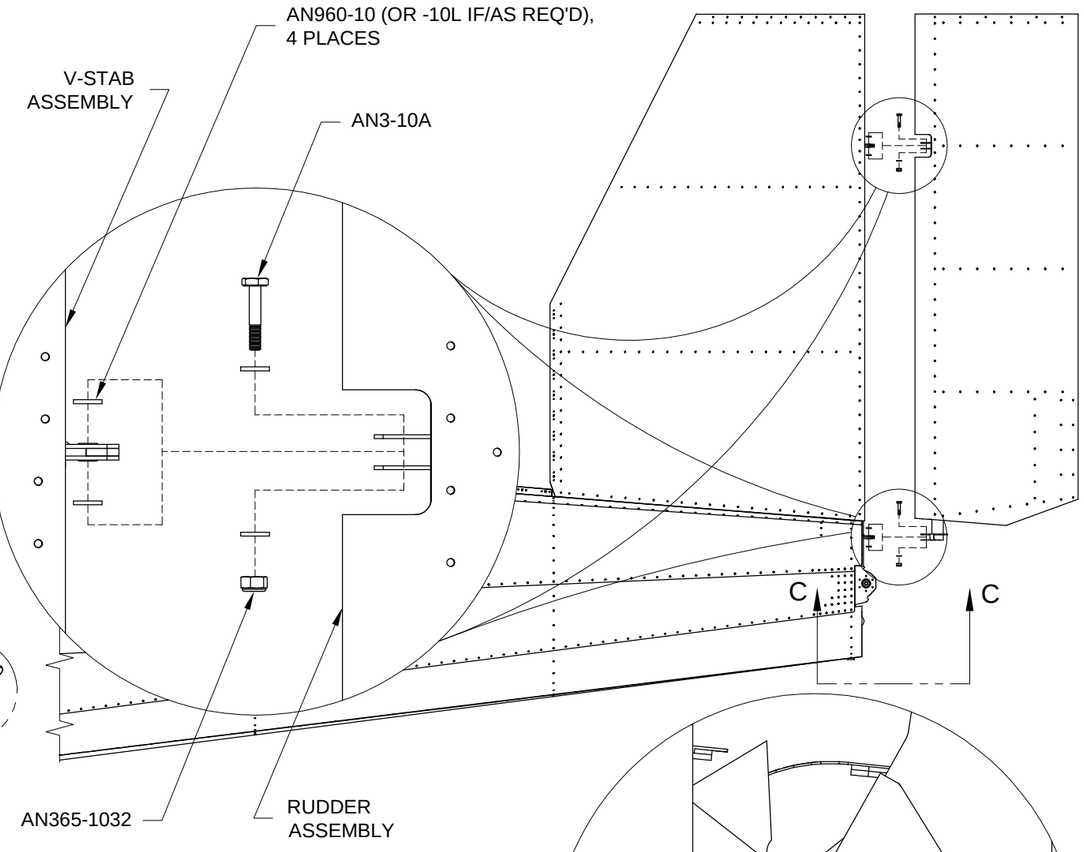
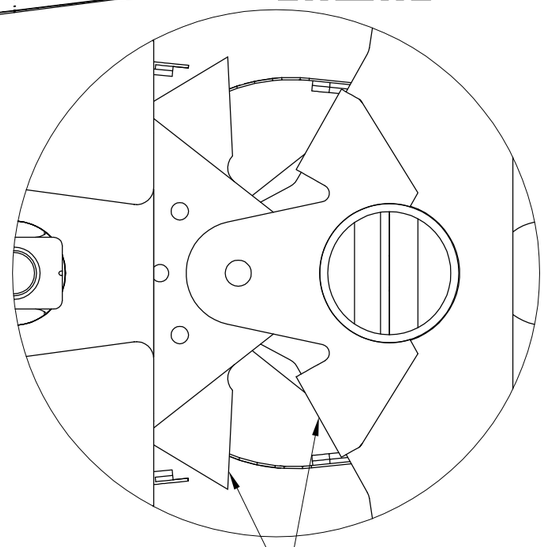


FIGURE 2: RUDDER ATTACH



DETAIL C-C

Step 1: Remove the AN4 bolt, used to locate the glued washers, from each of the stabilator hinge brackets, refer to Figure 2. Mark "top" on the WD-1223 Counterbalance Arm near the spar. Temporarily remove the counterbalance arm hardware used to install the counterbalance arm to the Stabilator Assembly as shown in Figure 1.

Step 2: Rotate the WD-1223 Counterbalance Arm 90°, keep the counterbalance arm within both WD-1222 Counterbalance Brackets. Insert the lead weights into the hole in the aft bulkhead of the Tailcone Assembly. Turn the counterbalance arm back to the original position as indicated by "top" from the previous step. Re-install the counterbalance arm hardware called out in Figure 1.

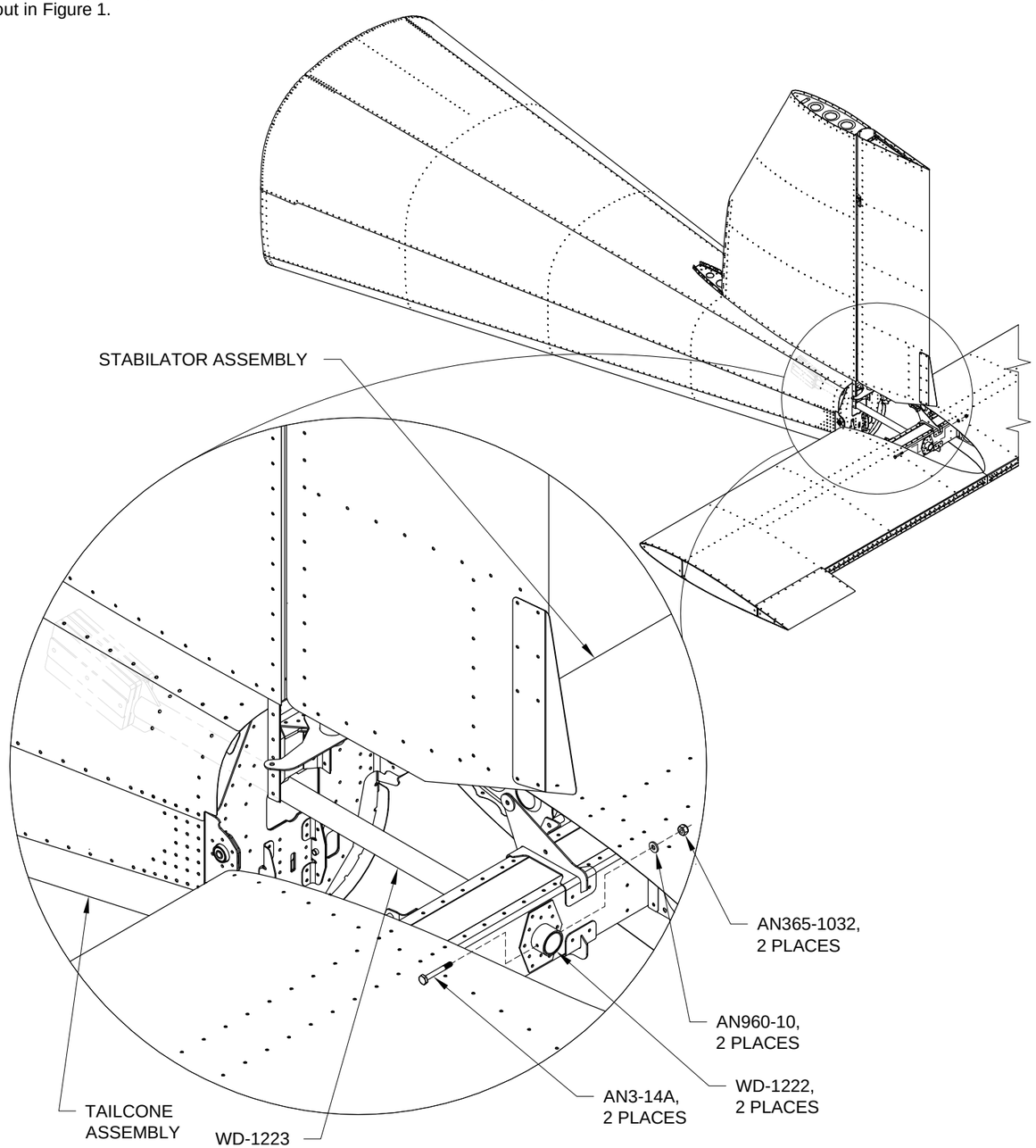
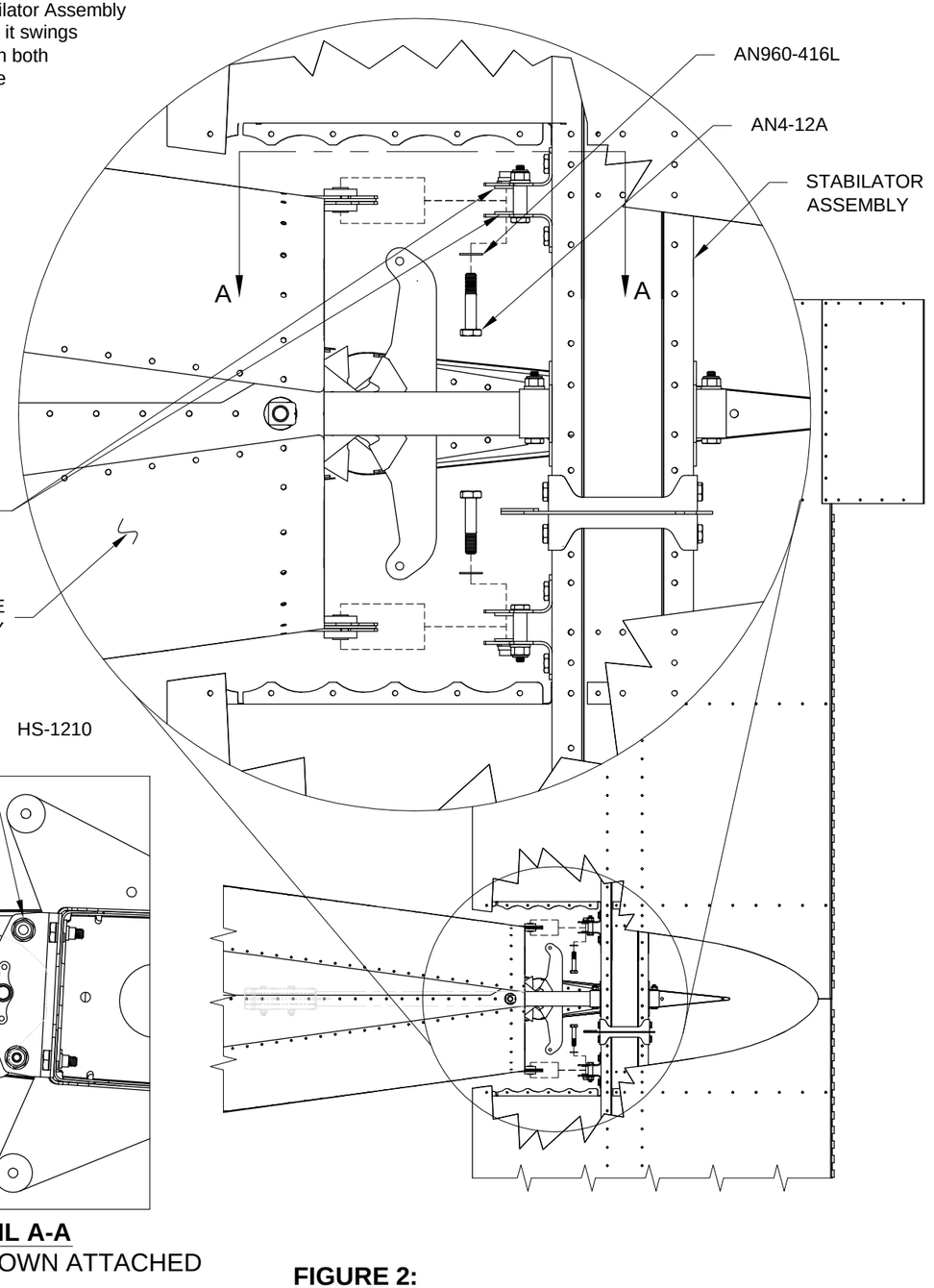


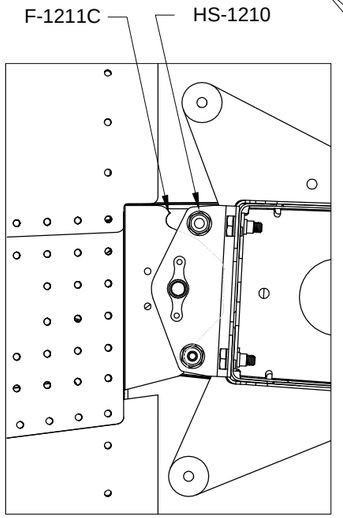
FIGURE 1:
STABILATOR COUNTERBALANCE

Step 3: Install the Stabilator Assembly to the Tailcone Assembly using hardware called out in Figure 2.

Refer to Page 10-05 for previous information about the glued washers.

Step 4: Check the Stabilator Assembly movement to make sure it swings freely. Stabilator travel in both directions should only be limited by the HS-1210 Hinge stops contacting the F-1211C Hinge Bracket shown in Figure 2, Detail A-A.





DETAIL A-A
STABILATOR SHOWN ATTACHED

FIGURE 2:
STABILATOR ATTACH
BOTTOM VIEW

Step 1: Retrieve the hinge pin that was set aside on Page 8-3, Step 5. Fabricate two hinge pins per the dimensions given in Figure 1. File a dull point at one end and bend the other.

Step 2: Install the Left and Right AST Assemblies to the Stabilator assembly, using the hinge pins fabricated in Step 1 as shown in Figure 2.

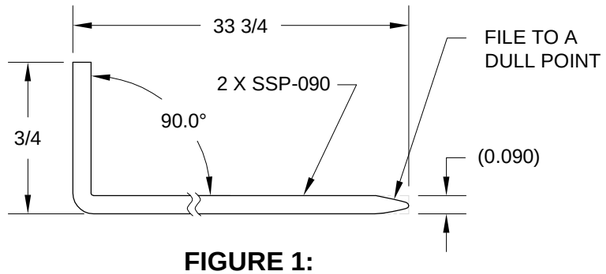


FIGURE 1:
HINGE PIN FABRICATION

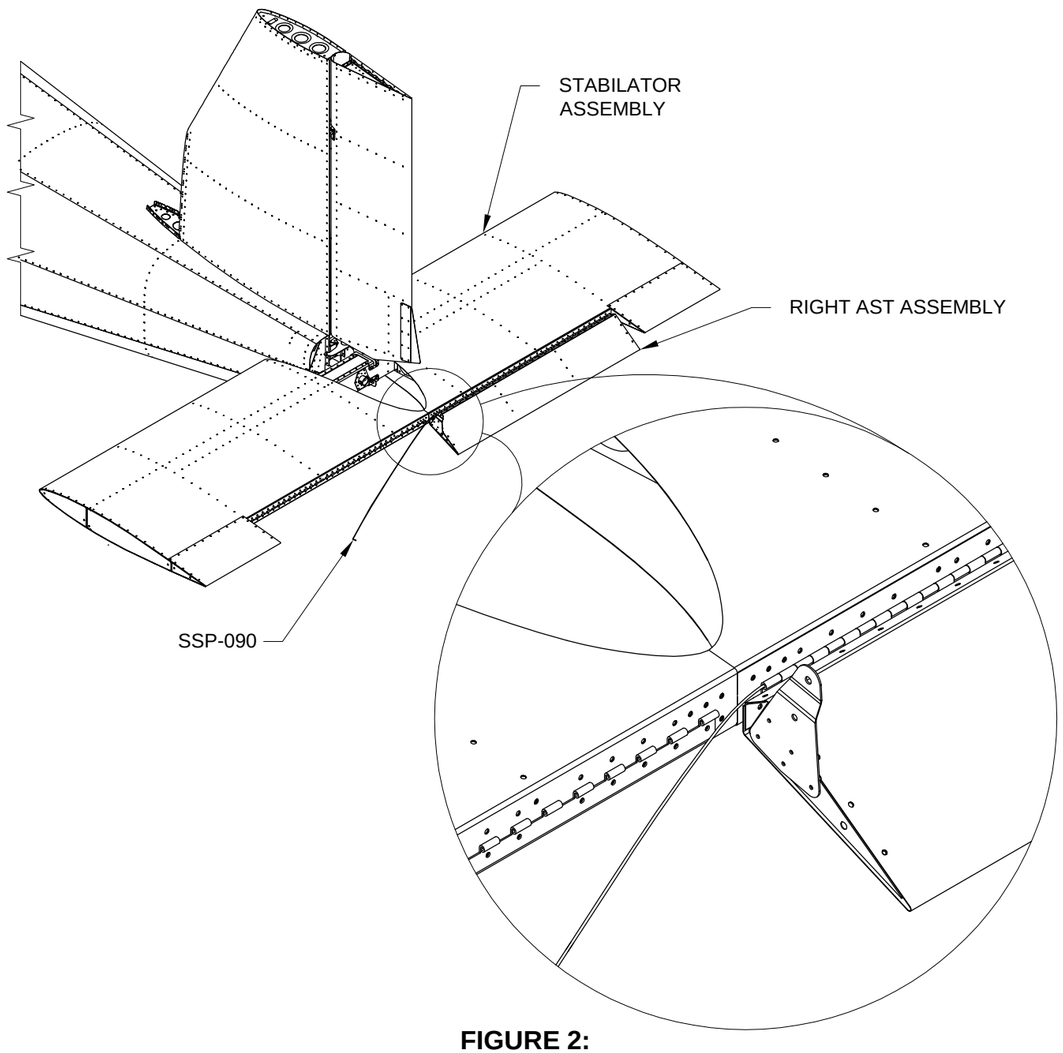
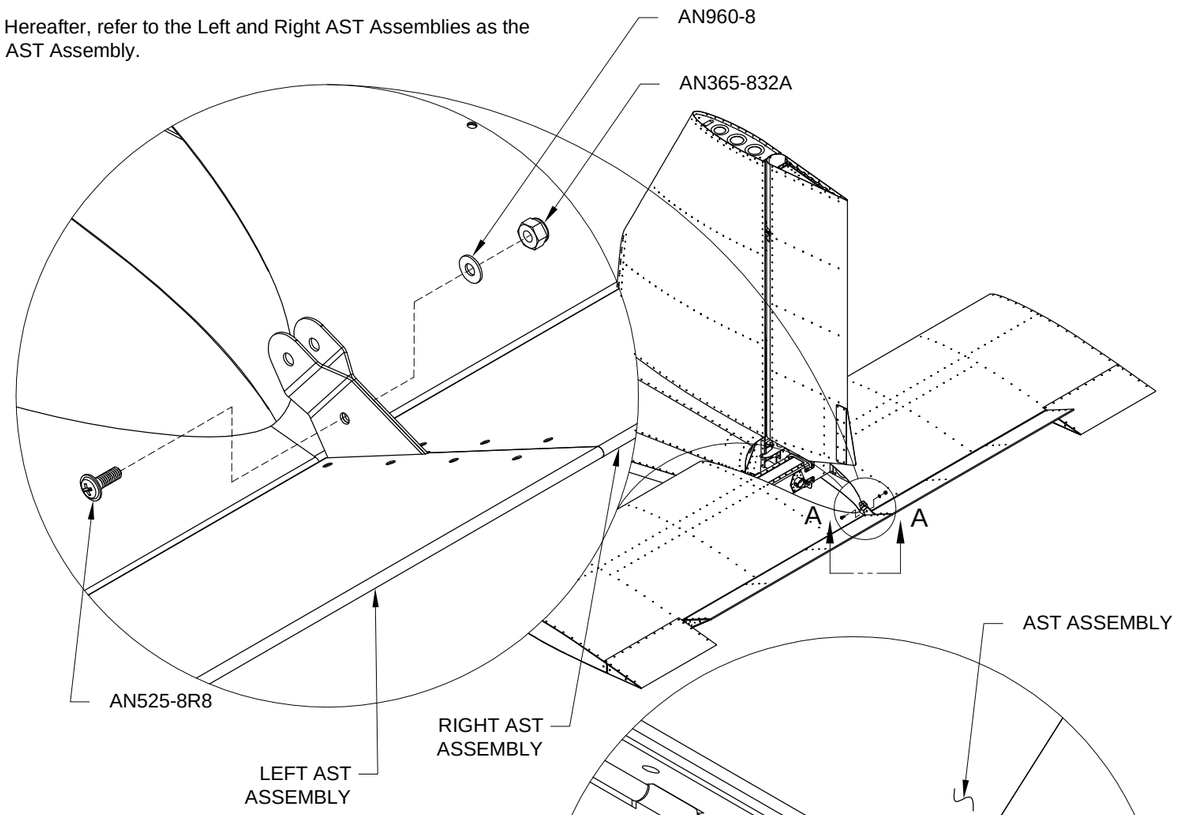


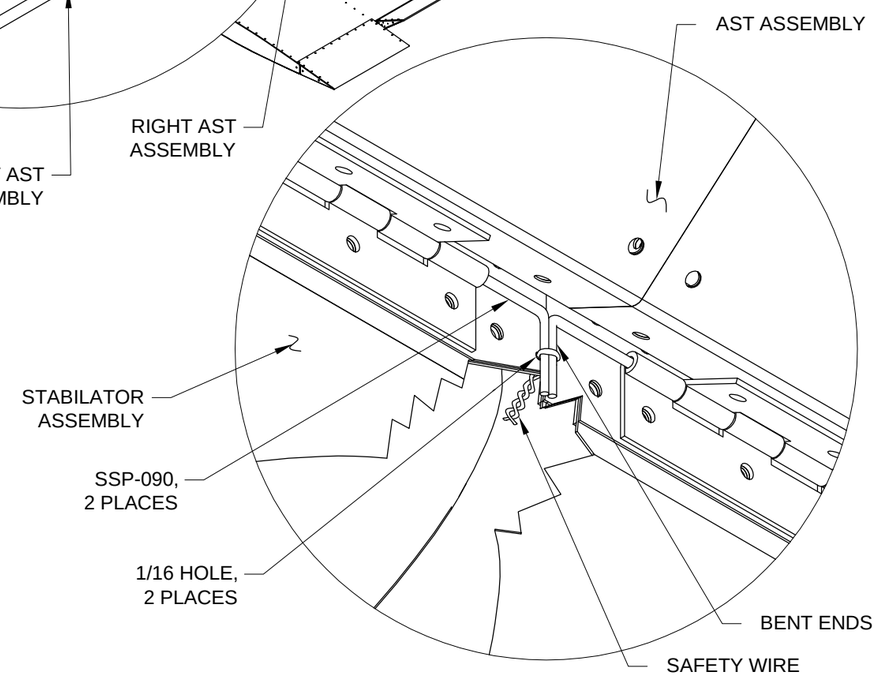
FIGURE 2:
AST ASSEMBLY ATTACH

Step 3: Attach the Left and Right AST Assemblies together using the hardware called out in Figure 3.

Step 4: Rotate the hinge pins so the bent ends lay against the Stabilator Assembly. Fasten the bent ends of both hinge pins with safety wire through the holes called out in Figure 3, Detail A-A. Twist the safety wire on the inboard side of the Stabilator Assembly as shown.

Hereafter, refer to the Left and Right AST Assemblies as the AST Assembly.





DETAIL A-A

FIGURE 3:
AST ASSEMBLY SAFETY WIRE

Step 1: Separate the F-1287J Doublers from the F-1287A-1 Servo Tray by removing the material called out in Figure 1.

Deburr the parts.

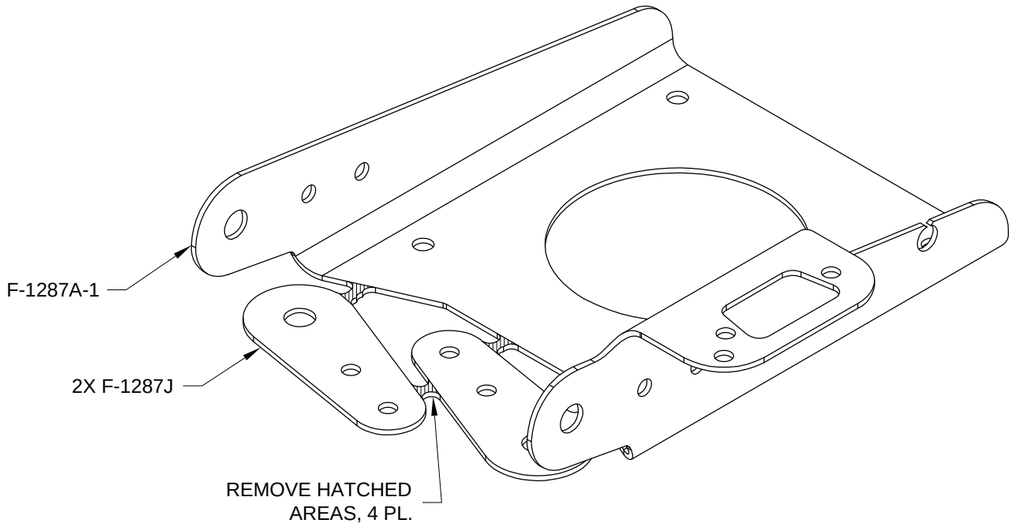


FIGURE 1:
SEPARATING DOUBLERS FROM SERVO TRAY

Step 2: Mark then separate the F-1287D-L & -R Clevis Plates by removing the material called out in Figure 2.

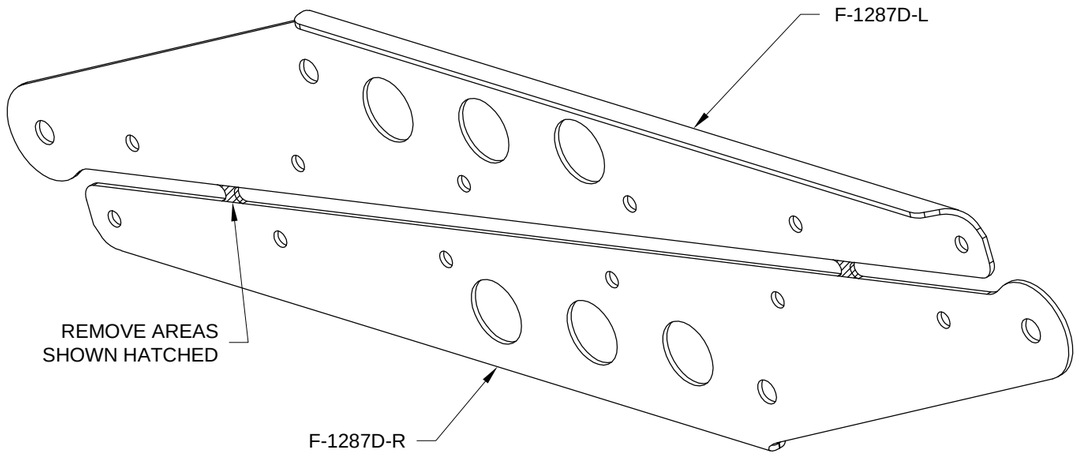


FIGURE 2:
F-1287D CLEVIS PLATE SEPARATION

Step 3: Fabricate the F-1287G and F-1287H Spacers from AT6-058 X 5/16 aluminum tube per the dimensions shown in Figure 3.

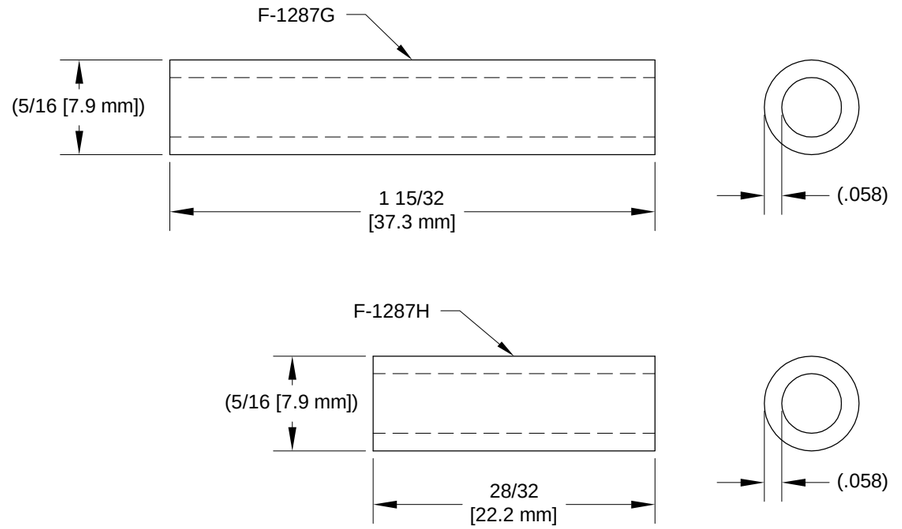


FIGURE 3: SPACER FABRICATION
(2X FULL SCALE)

Step 1: Rivet the F-1287J Doublers to the F-1287A-1 Servo Tray. Orient and use rivets as called out in Figure 1.

CAUTION: After drilling, carefully deburr the 1/4 in. hole to remove only the burr without creating a chamfer.

Step 2: Final-Drill .250 and deburr the pivot holes in the Servo Tray and in the F-1287C Link per the call-outs in Figures 1 and 3.

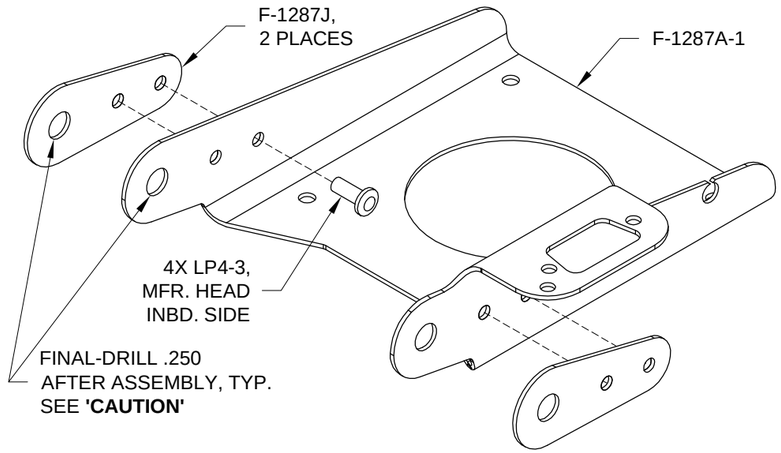


FIGURE 1: INSTALL DOUBLERS

Step 3: Insert the small plastic snap bushing into the opening in F-1287A-1 as shown in Figure 2.

Step 4: Insert the polymer bushings into the F-1287A-1 Servo Tray as shown in Figure 2.

Step 5: File the polymer bushings inserted in the previous step. The bushings must be **greater than** the thickness of the part and **less than or equal to** the dimension given in the detail.

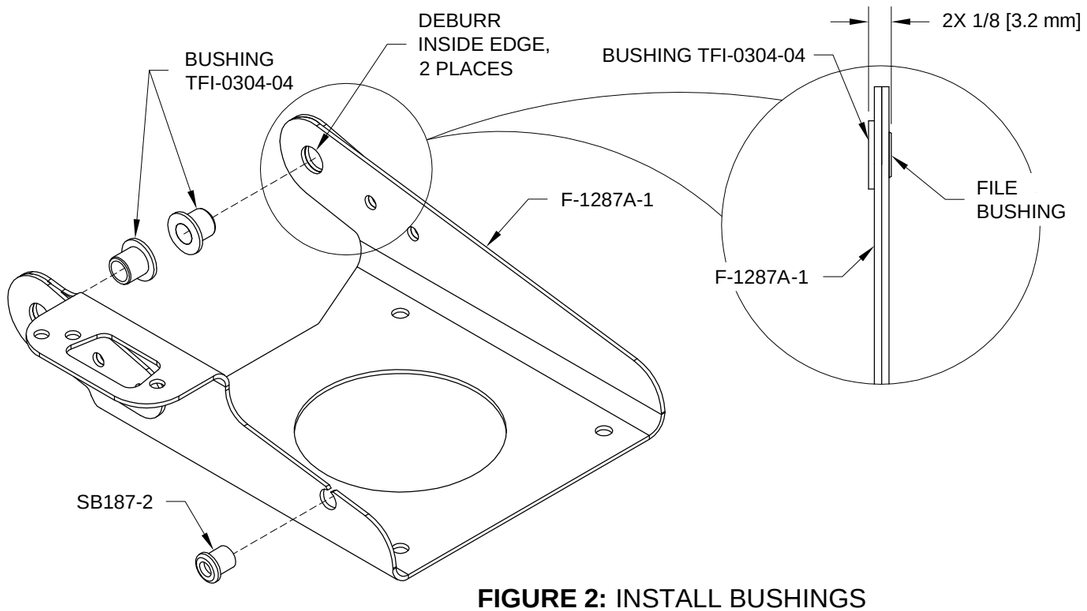


FIGURE 2: INSTALL BUSHINGS

Step 6: Deburr the F-1287C Link called out in Figure 3.

Step 7: Insert the polymer bushing into the F-1287C Link as shown in Figure 3.

Step 8: File the polymer bushings inserted in the previous step. The bushings must be **greater than** the thickness of the part and **less than or equal to** the dimension given in the detail.

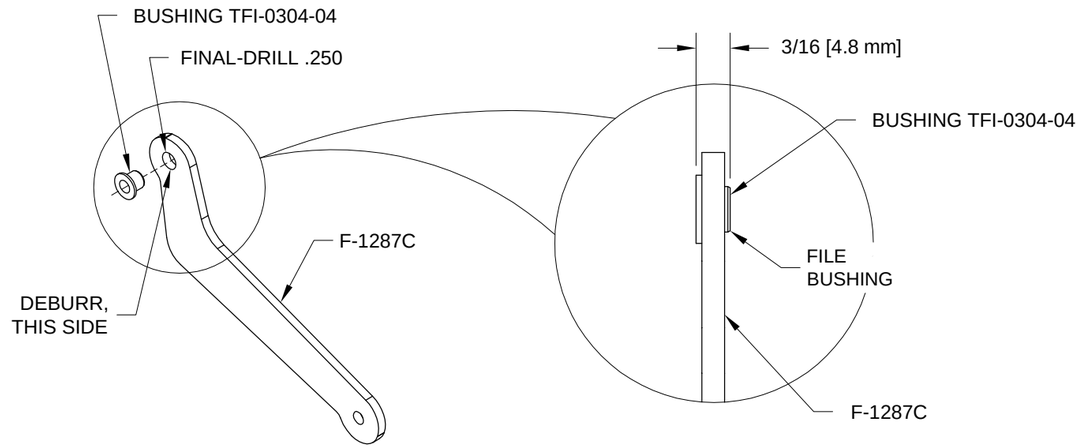


FIGURE 3: INSTALL BUSHING

NOTE: The servo may be labeled B6-7T.

Step 9: Verify the length of the ES MSTS-B6-7T-165 servo shaft per the dimension shown in Figure 4. If the shaft exceeds this dimension, cut off the excess from the end marked "CUT THIS END" using a hacksaw and deburr. Since nothing will be connected to the cut end 'clean' threads are not required.

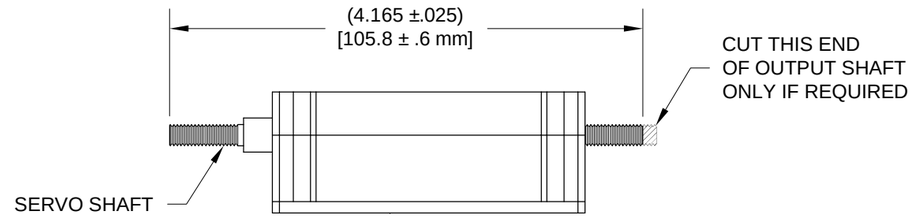


FIGURE 4: SERVO SHAFT LENGTH VERIFICATION

Step 1: String the wires of the ES MSTS-B6-7T-165 through the snap bushing as shown in Figure 1.

Step 2: Install the Pitch Trim Servo to the F-1287A-1 Servo Tray using the hardware called out in Figure 1.

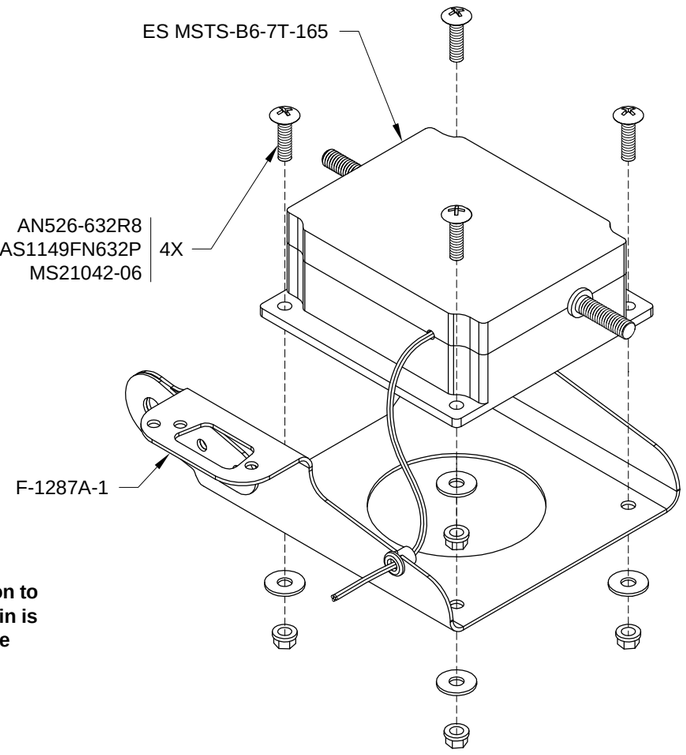


FIGURE 1: INSTALL SERVO

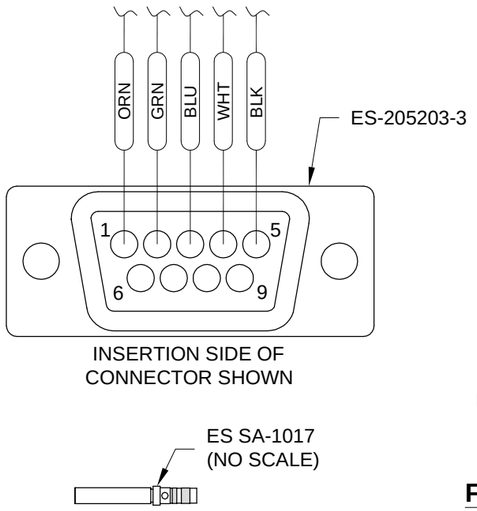
NOTE: When installing wire pins into D-Sub connectors, gently pull test each wire after insertion to verify it has hooked into the connector body. If a pin is inserted into the wrong location remove it using the TOOL ICM INSRT/EXTRCT D-sub Tool available through Van's Aircraft.

NOTE: See Section 5.21 for more information on crimping D-Sub terminals.

Step 3: Crimp ES SA-1017 Socket Pins (20-24) onto the ends of the wires coming out of the ES MSTS-B6-7T-165 Pitch Trim Servo.

Twist all the wires together coming from the servo.

Insert the sockets pins into an ES-205203-3 Female D-Sub 9 pin connector per the locations shown in Figure 2.



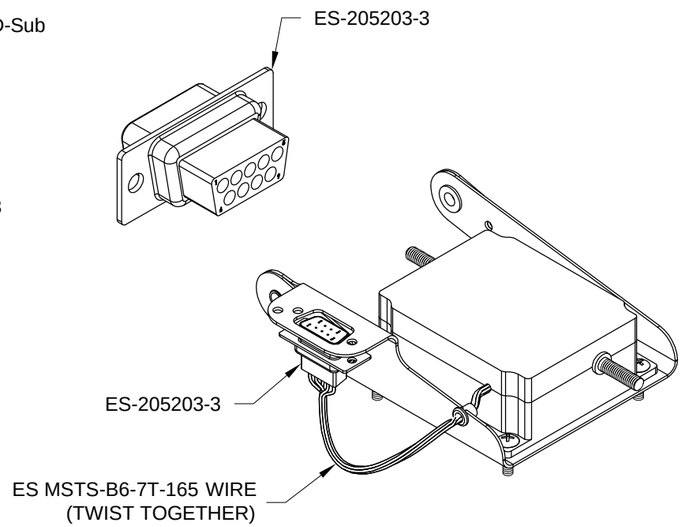


FIGURE 2: INSERTING CONNECTORS

CAUTION: Install castle nuts in this section finger tight, to eliminate lateral play but allow freedom of movement, then install the cotter pin.

Step 4: Attach the F-1287D-L & -R Clevis Plates together using the parts and hardware called out in Figure 3. Pay attention to the orientation of the clevis plates in relation to the F-1287C Link. Cleco the clevis plates to the F-1287E Pushrod. Pay attention to the orientation of the pushrod in relation to the clevis plates.

Step 5: Match-Drill the holes in each of the F-1287D-L & -R Clevis Plates into the F-1287E Pushrod as called out in Figure 3. Remove the clevis plates **with** the hardware still attached. Clear away chips.

Step 6: Clamp the F-1287F Threaded Insert into the curved end of the F-1287E Pushrod as shown in Figure 3. Use a rivet or similar to align the holes in the threaded insert with the holes in the pushrod.

Step 7: Match-Drill the holes from the F-1287E Pushrod and the F-1287F Threaded Insert into the pushrod as called out in Figure 3.

Step 8: Rivet the F-1287D-L & -R Clevis Plates to the F-1287E Pushrod using hardware called out in Figure 3. Apply pressure toward the clevis plate while setting each rivet. Rivet the F-1287F Threaded Insert to the pushrod using rivets called out in Figure 3.

Hereafter refer to the pushrod, clevis plates and threaded insert as the Pushrod Assembly.

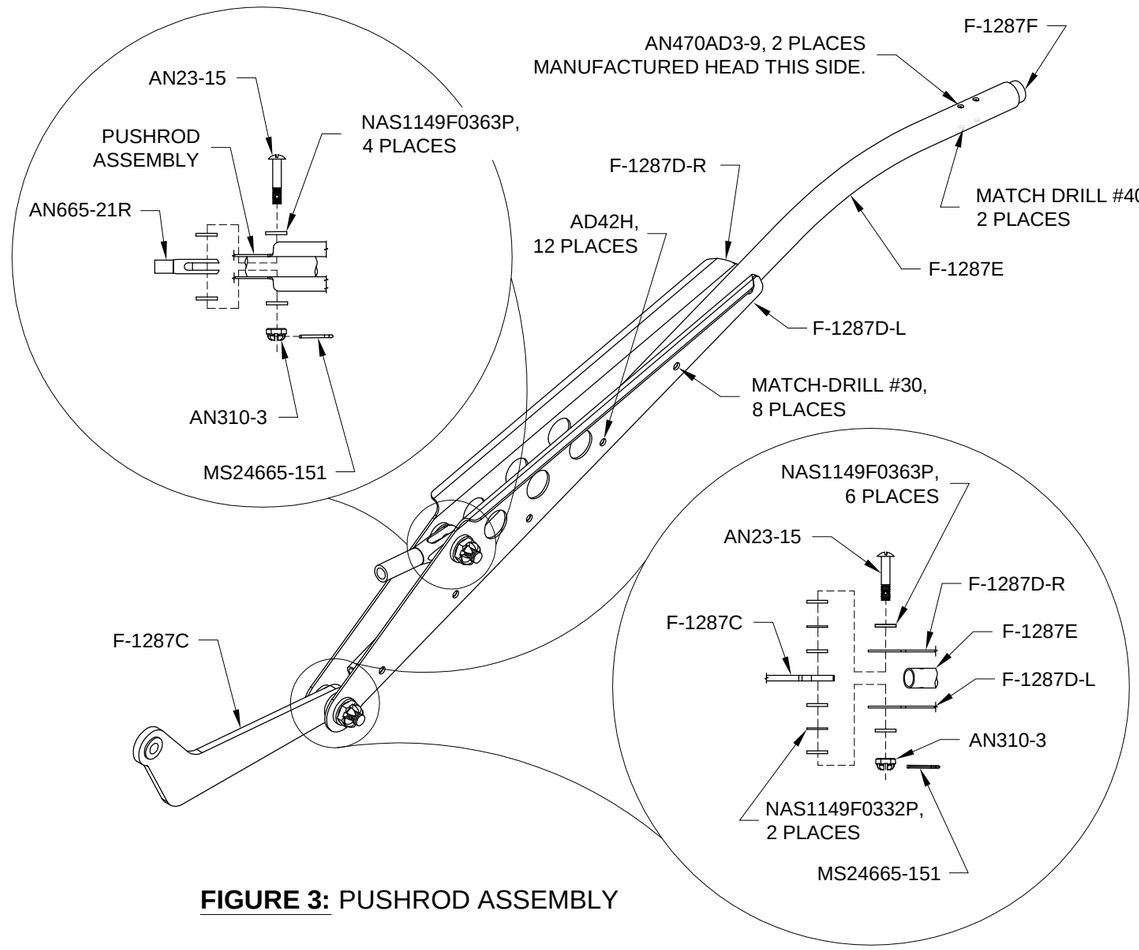


FIGURE 3: PUSHROD ASSEMBLY

Step 1: Install the called out rod end bearing and jam nut into the F-1287F Threaded Insert per dimensions in Figure 1. Achieve the dimension given then rotate the bearing body to align with the centerline of the Pushrod Assembly as shown in Figure 1.

Step 2: Thread the jam nut onto the ES MSTS-B6-7T-165 Pitch Trim Servo shaft until it stops.

Thread the clevis rod end of the Pushrod Assembly onto the pitch trim servo shaft until it contacts the jam nut.

Back the clevis rod end off one full turn.

Tighten the jam nut against the clevis rod end.

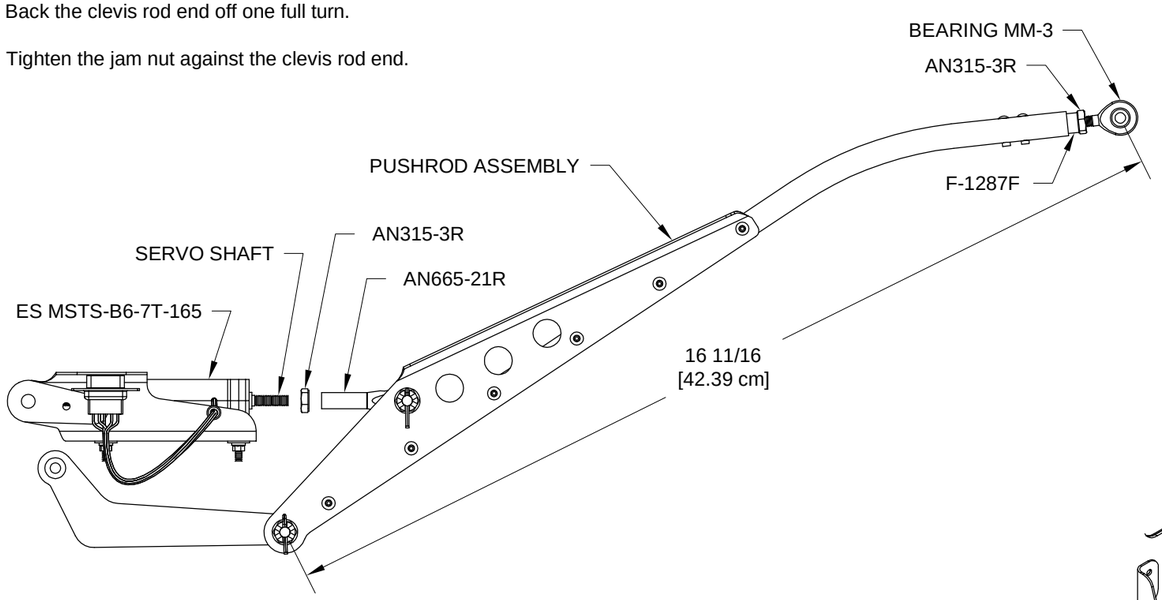


FIGURE 1: TRIM/SERVO ASSEMBLY

NOTE: The Rudder, V-Stab, and Stabilator Assemblies are not shown for clarity in Figure 2.

Step 3: From below the Stabilator Assembly, guide the rod end bearing of the Trim/Servo Assembly up between the stabilator main skins to the AST Assembly control horns as shown in Figure 2.

Step 4: Install the F-1287A-1 Servo Tray to the F-1211D Attach Brackets using the hardware called out in Figure 2. Prior to Section 38iS/U Airframe Assembly, separate the legs of the cotter pin only enough to hold it in the hole until final installation. Fully install this cotter pin after the tailcone is attached to the fuselage.

Step 5: Install the rod end bearing to the AST Assemblies using the hardware called out in Figure 2.

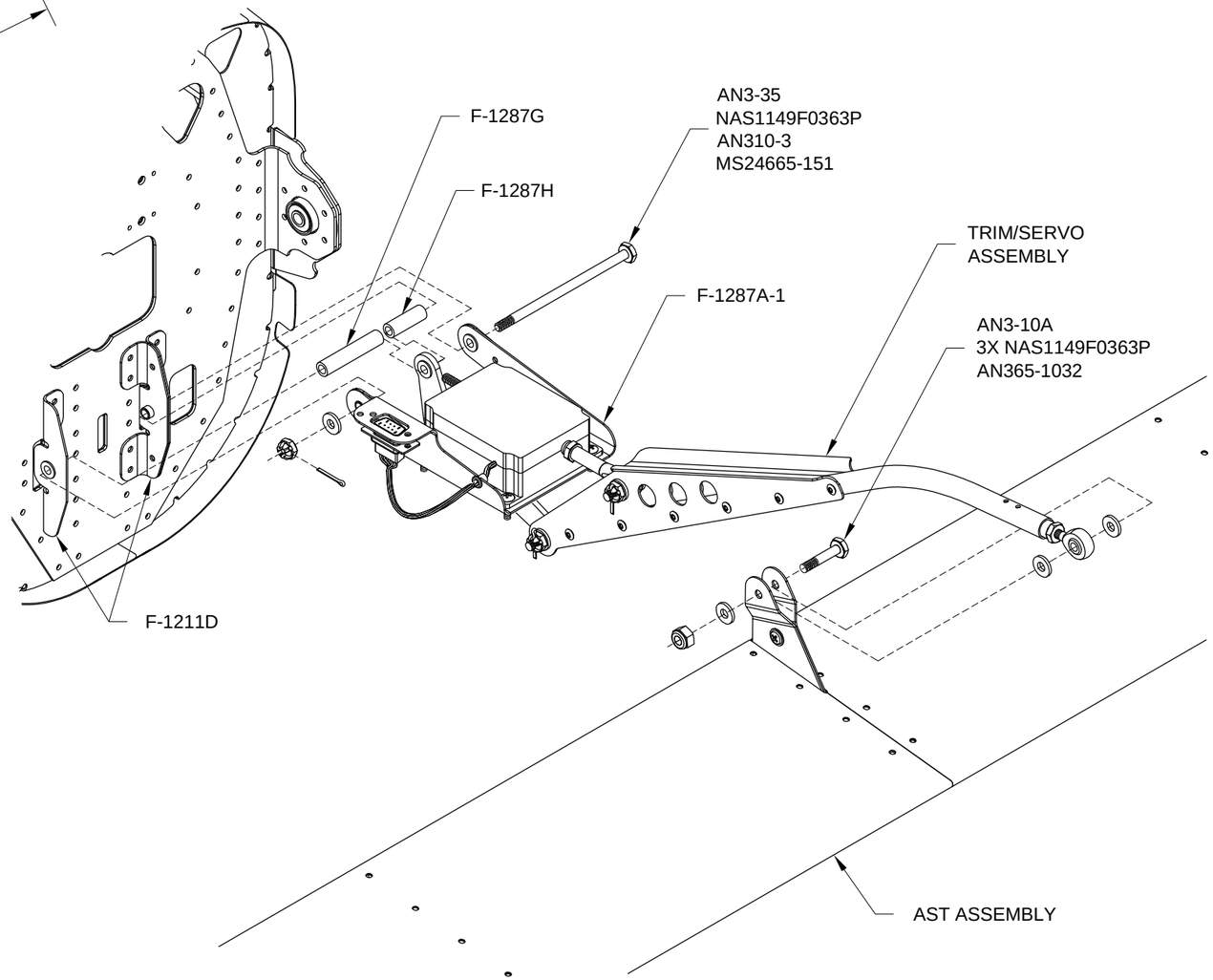


FIGURE 2: TRIM/SERVO ASSEMBLY INSTALLATION

Step 1: Temporarily connect 12 V+ to the black wire to fully extend the servo shaft, then disconnect the battery. (A 12-14V tool battery pack or 9 volt battery may be used for this purpose.)

Check the Stabilator Assembly movement to make sure it swings freely. Stabilator travel in both directions should be limited only by the stabilator hinge stops contacting the F-1211C tailcone hinge bracket. (Refer to Page 11-3, Figure 2, Detail A-A.)

If necessary, adjust the rod end bearing to achieve clearance between the AST and Stabilator Assembly hinge halves per dimensions given in the magnified view of Figure 1.

Step 2: Temporarily connect 12 V+ to the white wire to fully retract the servo shaft, then disconnect the battery.

Check the Stabilator Assembly movement to make sure it swings freely as in the previous step. Also make sure there is at least 1/4 in. [6.4 mm] between the F-1287E Pushrod and the rudder bottom in any position as shown in Figure 1.

Step 3: Seal all openings on the wire insertion side of the servo's D-Sub using RTV.

Step 4: Plug the connector on the end of the WH-P30-1 Trim Wires into the connector on the wires coming from the ES MSTS-B6-7T-165 Pitch Trim Servo. Install the called out hardware including the two wire tie-wraps as shown in Figure 2.

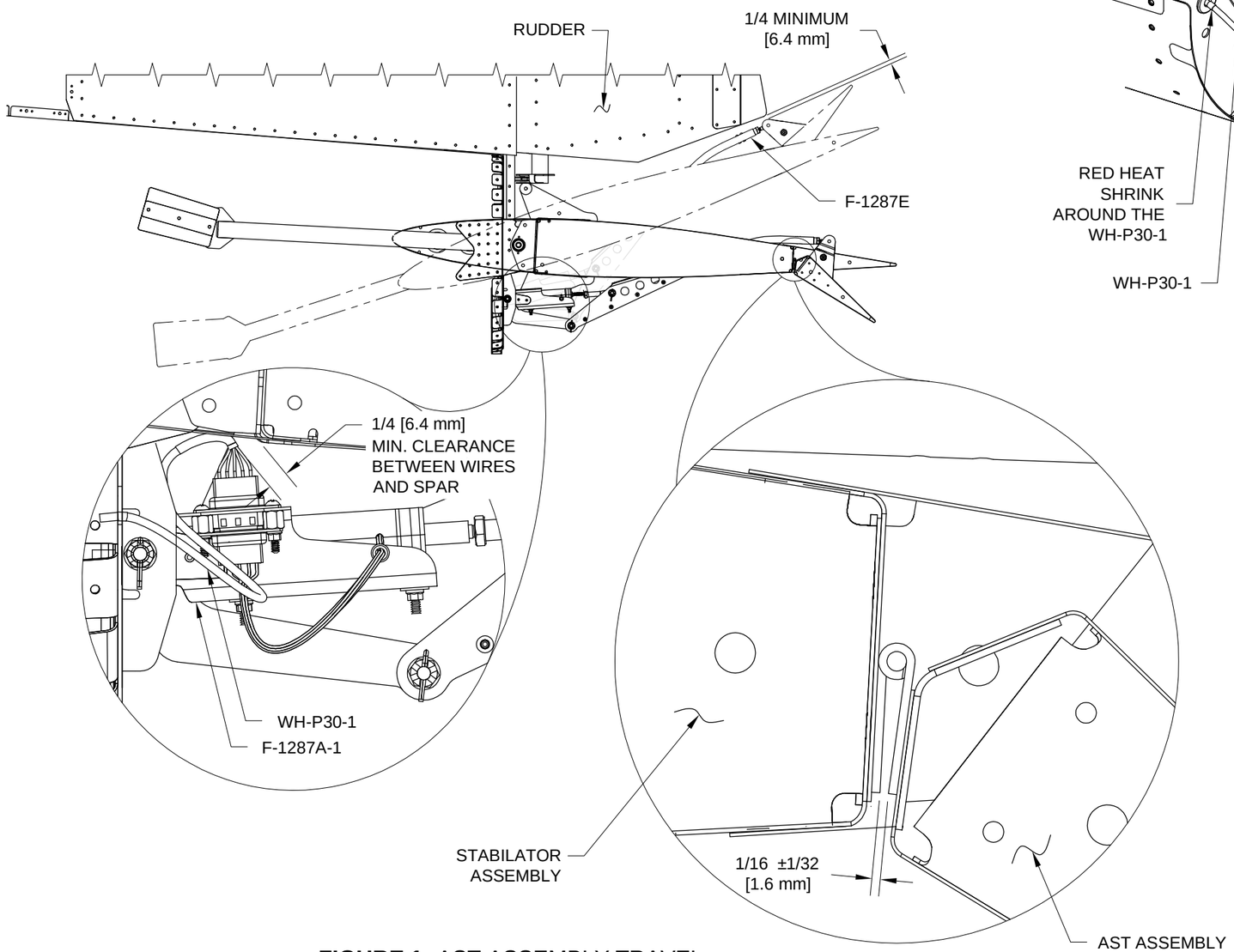


FIGURE 1: AST ASSEMBLY TRAVEL

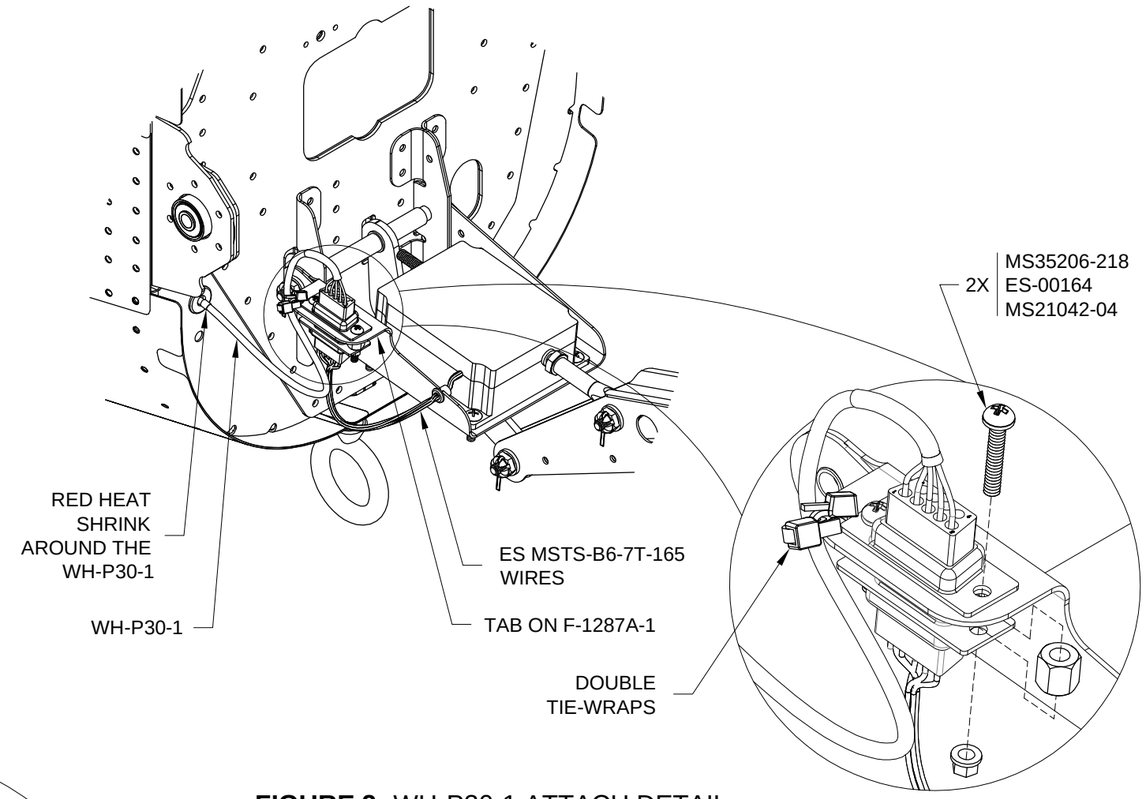


FIGURE 2: WH-P30-1 ATTACH DETAIL

Step 1: Install the VS-1204 Fwd Skin to the V-Stab Assembly and the F-12106 using the hardware called out in Figure 1.

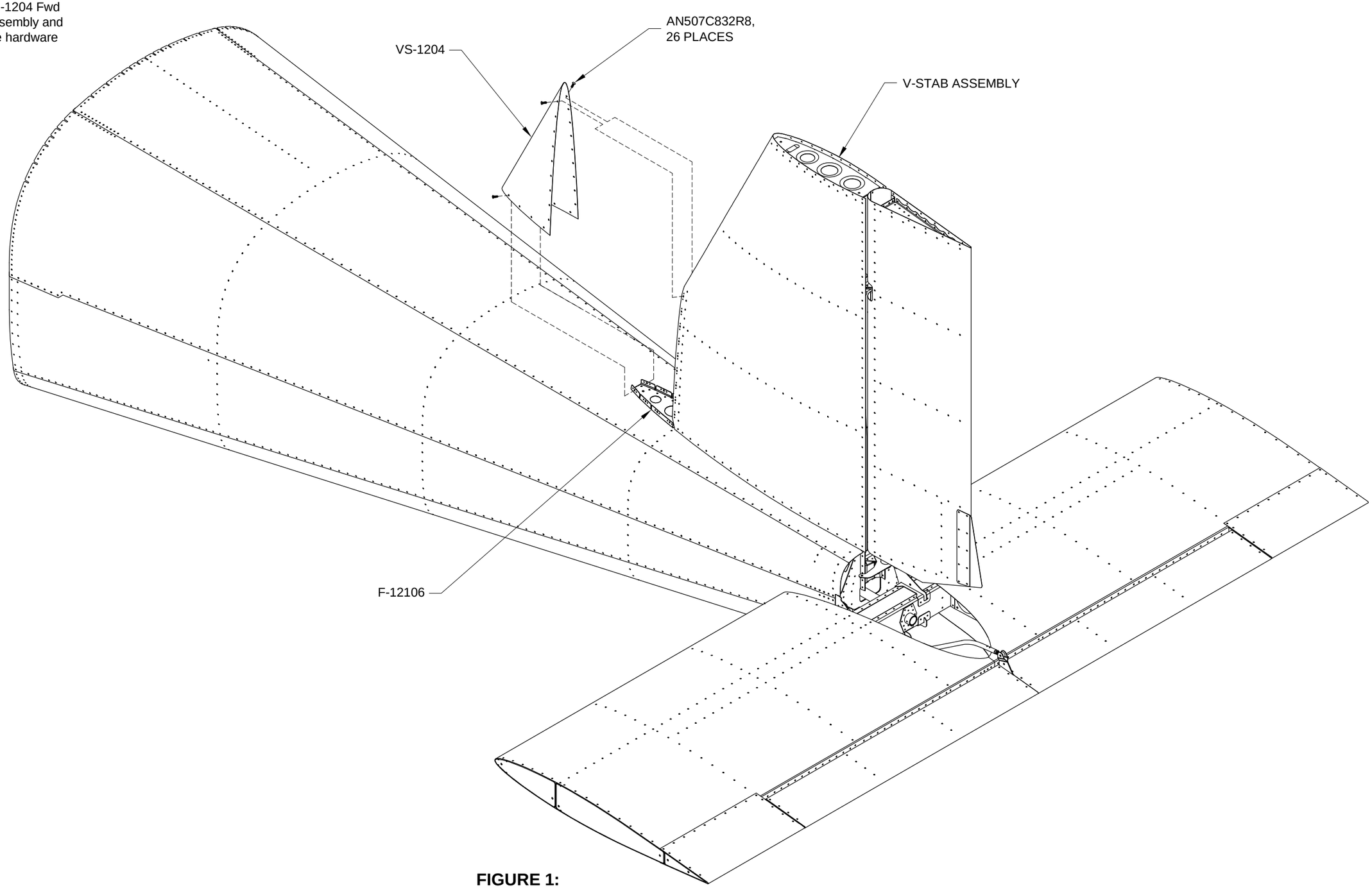


FIGURE 1:
FORWARD SKIN ATTACH