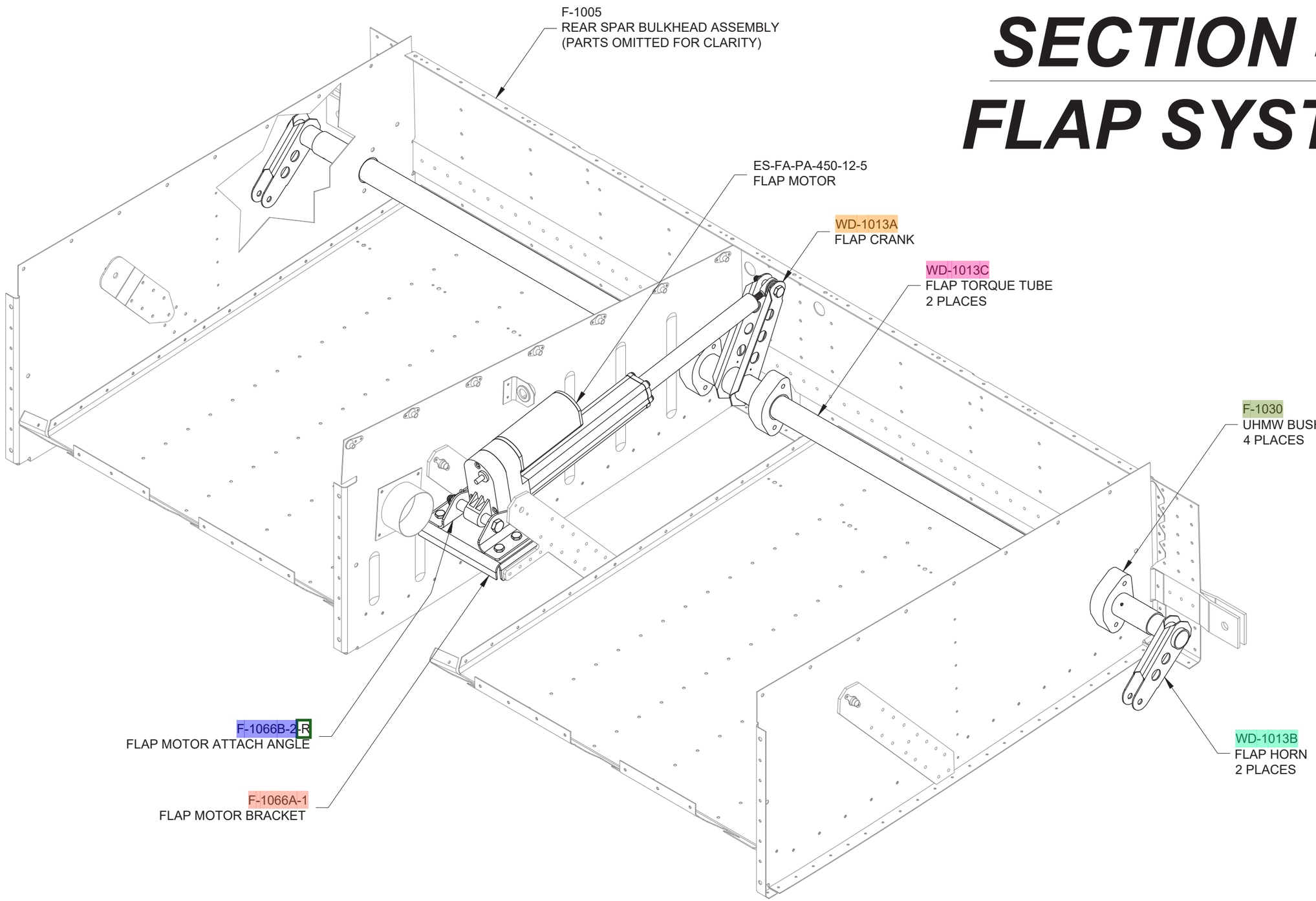
SECTION 40:
FLAP SYSTEM



NOTE: There are only two pre drilled holes at the inboard end of WD-1013C Flap Torque Tube and four pre drilled holes at the outboard end.

Step 1: Study Figure 1 carefully.

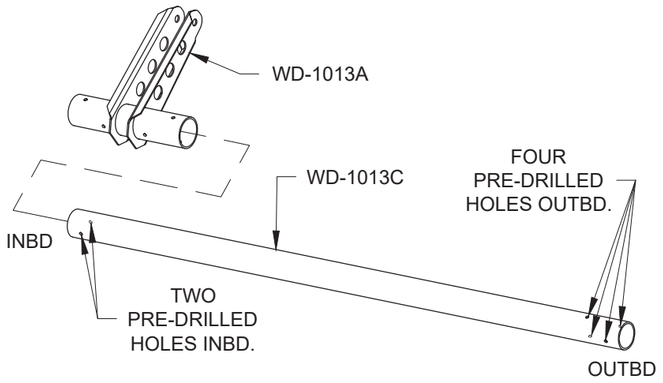


FIGURE 1:
FLAP TORQUE TUBE ORIENTATION

Step 2: Slide a WD-1013C Flap Torque Tube into the WD-1013A Flap Crank and align them by using the pre-drilled holes as shown in Figure 2.

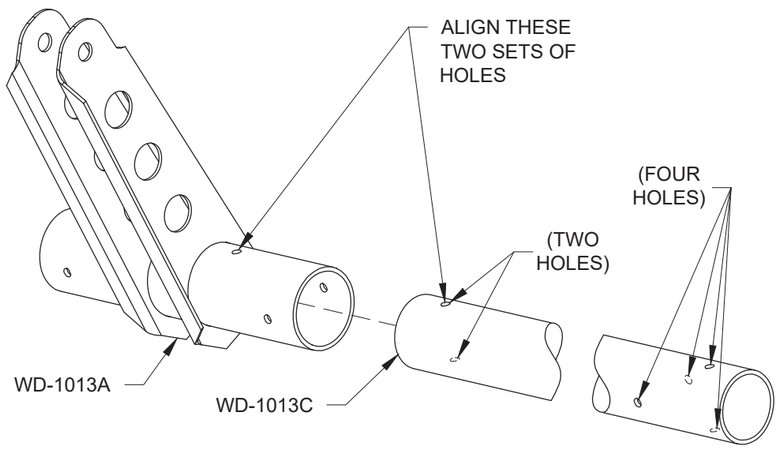


FIGURE 2: ASSEMBLE FLAP CRANK
AND FLAP TORQUE TUBE

Step 3: Cleco the WD-1013C Flap Torque Tube to the inboard most set of holes in the WD-1013A Flap Crank as shown in Figure 3. Match-Drill the flap torque tube as per the call-out. Match-Drill both 1/8 diameter holes from the outside in, using the pre-drilled holes in the flap crank as guides.

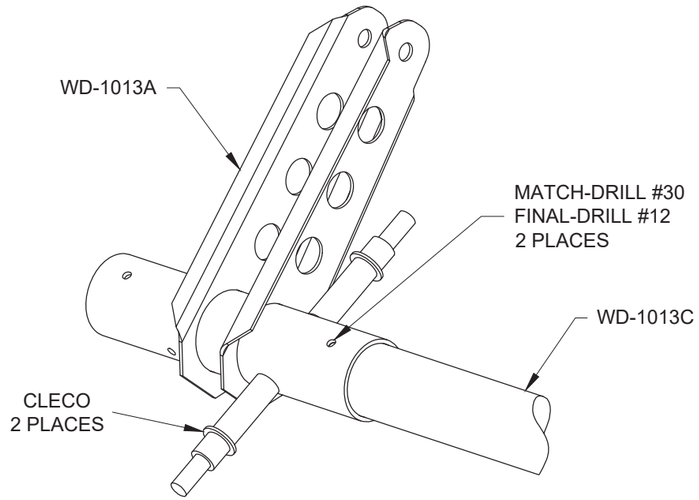


FIGURE 3:
MATCH AND FINAL-DRILL FLAP CRANK
AND FLAP TORQUE TUBE

Step 4: Bolt the WD-1013A Flap Crank to the WD-1013C Flap Torque Tube as shown in Figure 4. Remove the clecos. Drill as per the call-out. Install a second set of hardware like the first in this hole.

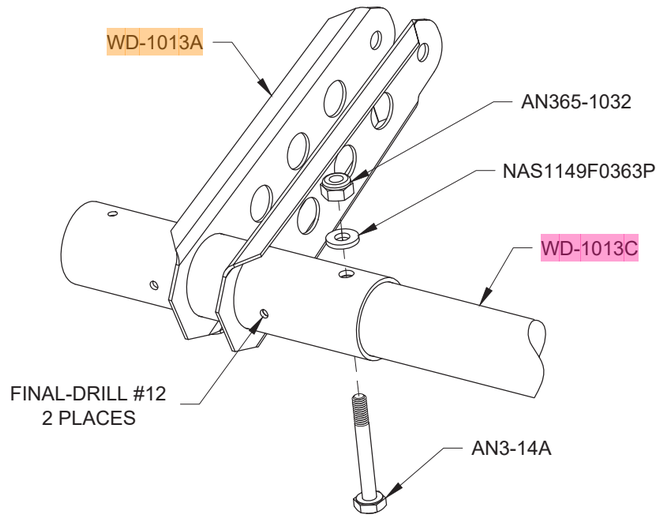


FIGURE 4:
BOLT AND DRILL FLAP CRANK AND FLAP TORQUE TUBE

Step 5: Slide a WD-1013B Flap Horn into the WD-1013C Flap Torque Tube as shown in Figure 5.

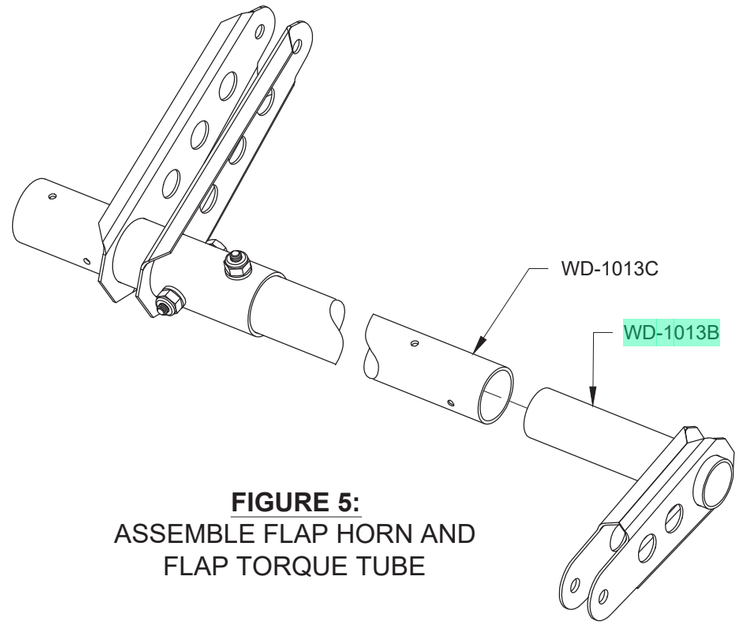


FIGURE 5:
ASSEMBLE FLAP HORN AND
FLAP TORQUE TUBE

NOTE: The center portion of the flap crank (along welded seam) may not be flush with the table due to the weld. This has been taken into account. Do not modify the weldment!

Step 1: Clamp the WD-1013A Flap Crank to a flat surface as shown in Figure 1.

Step 2: Find the W-730 Bellcrank Jig (see Figure 2) and bolt it to the WD-1013B Flap Horn using the hardware shown. This will set the angle of the flap horn relative to the flap crank.

Step 3: Set the lateral position of the flap horn as shown in Figure 3.

Step 4: Clamp the flap horn into this position using a vise-grip (with padded jaws) placed over the inboard set of 1/8 diameter holes.

Step 5: Leave this vise-grip in place while removing the other clamps holding the assembly to the table.

Step 6: Match-Drill #30 the flap horn using the outboard set of 1/8 diameter holes in the WD-1013C Flap Torque Tube as guides.

Step 7: Continue drilling to final size as per the call-out.
Insert hardware as per Figure 1.

Step 8: Remove the clamp.

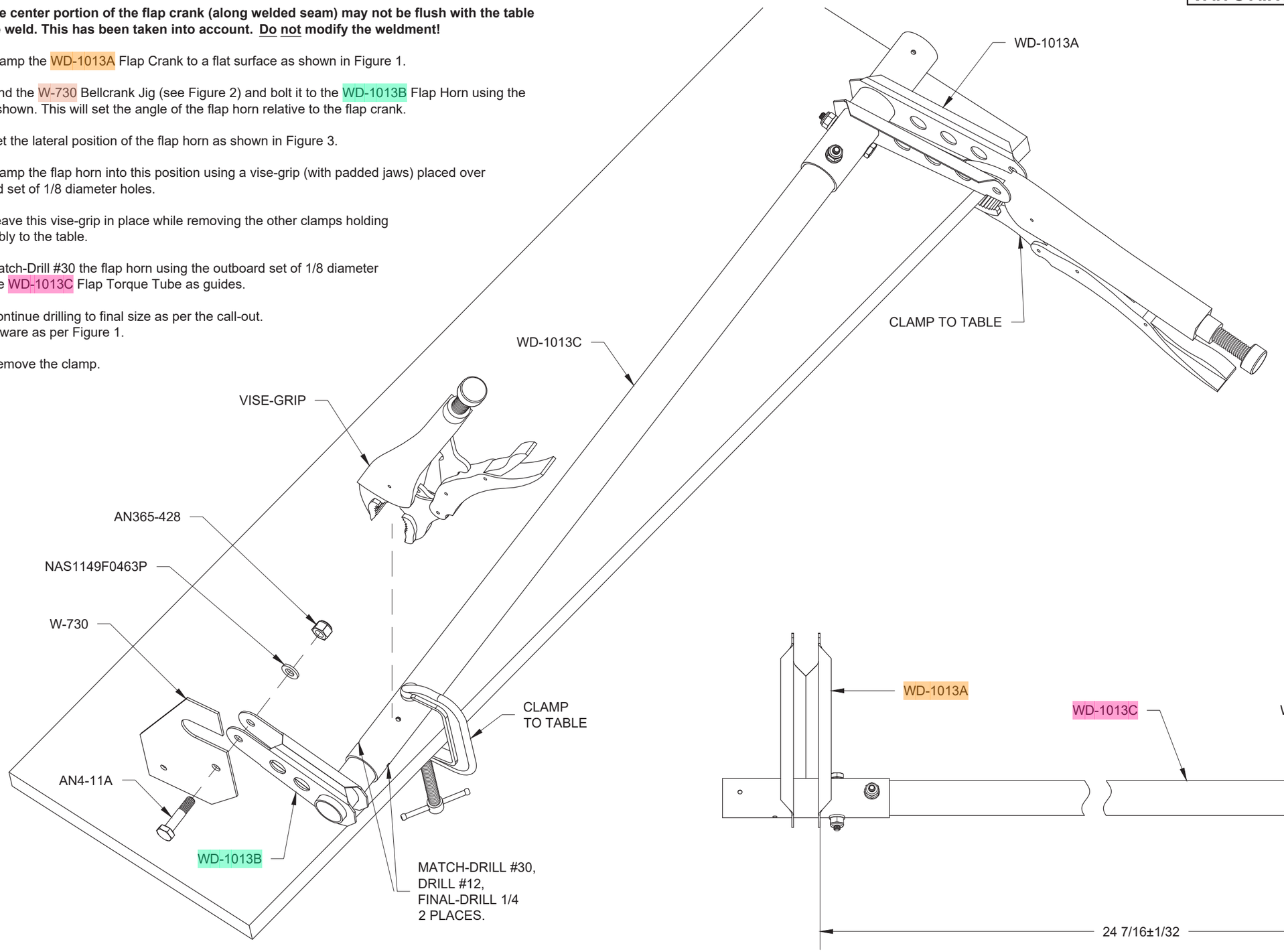


FIGURE 1:
DRILLING FLAP TORQUE TUBE AND FLAP HORN

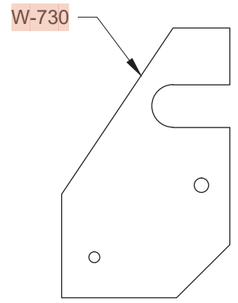


FIGURE 2:
BELLCRANK JIG

FIGURE 3:
LATERAL POSITION OF FLAP HORN

Step 1: Bolt the WD-1013B Flap Horn to the WD-1013C Flap Torque Tube as per Figure 1.

Match-Drill #30 the flap horn at two places using the torque tube as a guide. Drill #12 then final-drill 1/4.

Mark the parts so they can be reassembled as drilled and identified as the parts to be used on the left side of the aircraft.

Step 2: Disassemble and deburr all parts.

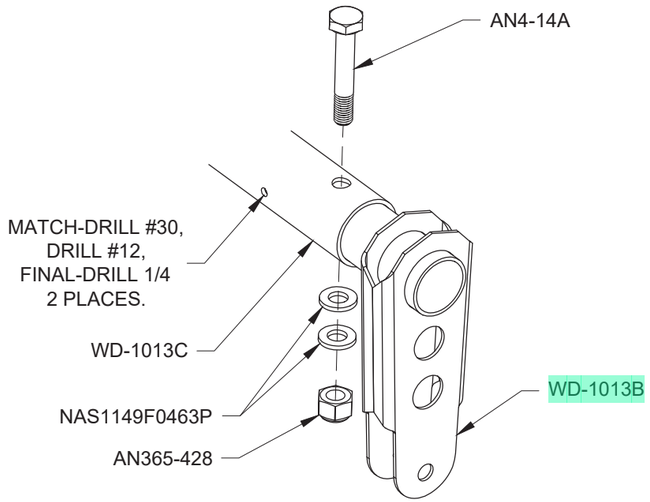


FIGURE 1:
BOLT AND DRILL FLAP TORQUE TUBE AND FLAP HORN

Step 3: Repeat Step 1, Page 40-2 through Step 1 on this page for the flap torque tube and flap horn on the right side of the plane. The right side is the mirror of the left.

Prime the inside of the tubes.

Step 4: Trim the four F-1030 UHMW Bushings as per the callouts in Figure 2. Only one area **must** be trimmed for clearance while the other two areas are optional for a small weight reduction. It is acceptable to radius the corners of the UHMW bushings approximately as shown in Figure 2.

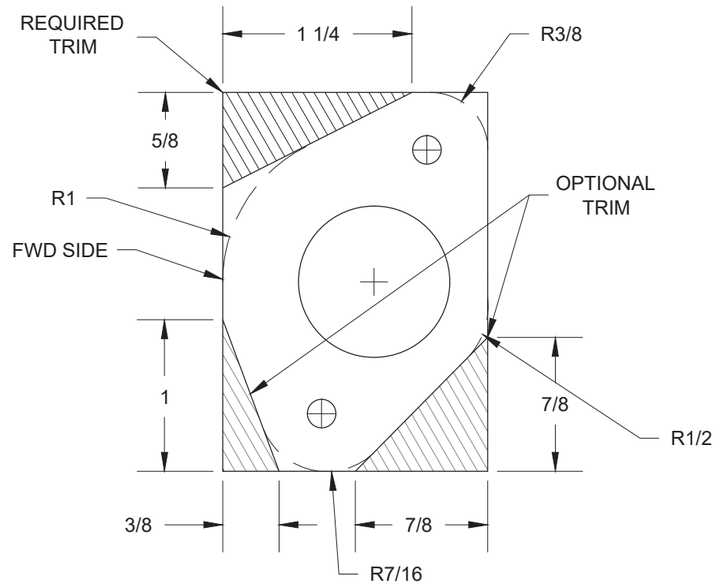


FIGURE 2: OPTIONAL TRIM OF UHMW BUSHING

Step 5: Slide one F-1030 UHMW Bushing onto each WD-1013C Flap Torque Tube as shown in Figure 3. This UHMW bushing will eventually be positioned to the inboard side of the system.

This will form the Right and Left Subassemblies. The Left Subassembly is shown in Figure 3.

NOTE: Remaining depictions of the UHMW bushing show optional rounded corners.

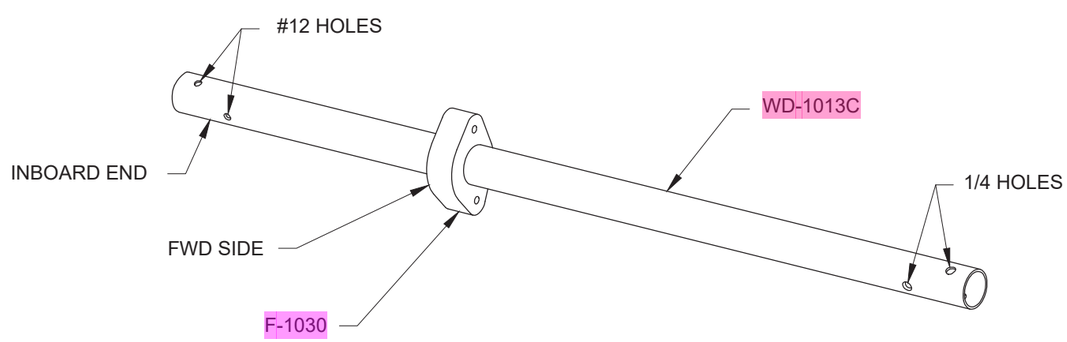
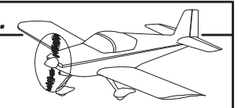


FIGURE 3: PRE-INSTALL UHMW BUSHING



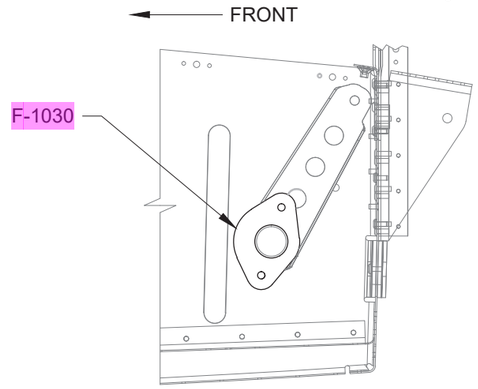


FIGURE 2:
UHMW BUSHING ORIENTATION
(LEFT SIDE VIEW)

FIGURE 1:
FLAP TORQUE TUBE AND UHMW BUSHING INSTALLATION
(SOME PARTS OMITTED FOR CLARITY)

Step 1: Install the Left Subassembly into the 1-1/8 diameter hole in the F-1016F-L Inbd Footwell Rib as shown in Figure 1.

Step 2: Pass the tube through the F-1016-L Outbd Footwell Rib and install a second F-1030 UHMW Bushing onto the Left Subassembly as shown in Figure 1.

Step 3: Repeat Steps 1 and 2 for the Right Subassembly.

Step 4: Slide the Left and Right Subassemblies outboard to make room for the WD-1013A Flap Crank. Refer to the depiction of the Right Subassembly in Figure 1.

Step 5: Lower the flap crank into position then insert the Left and Right Subassemblies into the flap crank.

Step 6: Rotate the F-1030 UHMW Bushings into position with the thicker wall forward. See Figure 2.

Step 7: Bolt the UHMW bushings in place using the hardware called out in Figure 1.

Step 1: Bolt the WD-1013A Flap Crank to the WD-1013C Flap Torque Tubes per the call-outs in Figure 1.

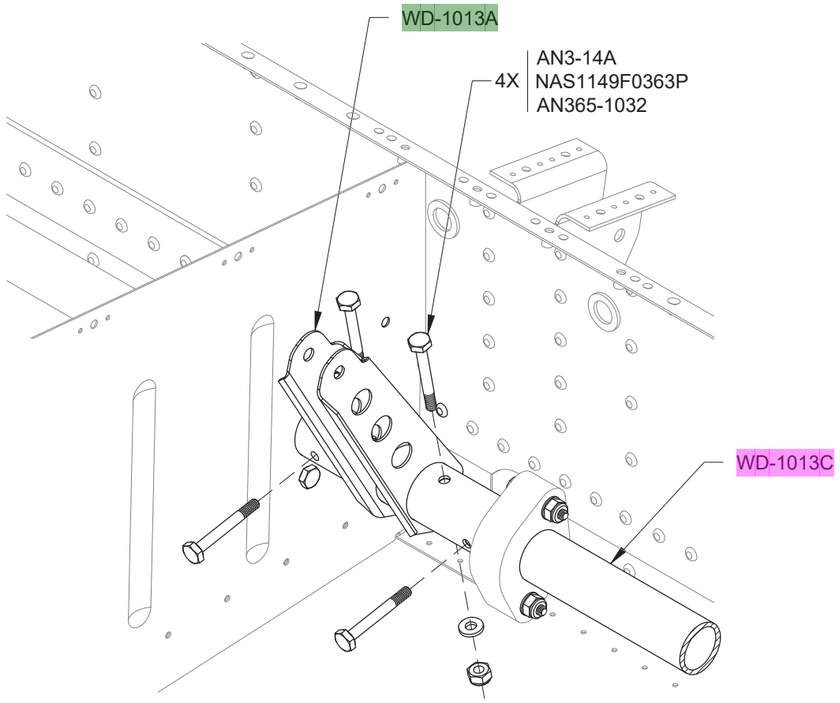


FIGURE 1:
FLAP CRANK & FLAP MOTOR ROD END INSTALLATION
(SOME PARTS NOT SHOWN FOR CLARITY)

Step 2: Separate the F-1066B-2 Angle into the F-1066B-2-L and F-1066B-2-R as shown in Figure 2.

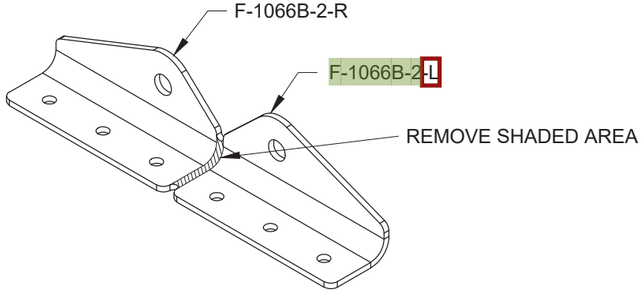


FIGURE 2: SEPARATE FLAP MOTOR ATTACH ANGLES

Step 3: Install the jam nut and rod end bearing into the shaft of the ES-FA-PA-450-12-5 flap motor as shown in Figure 3.

WARNING: At least seven rod end bearing threads must engage the flap motor shaft.

Step 4: With the flap motor shaft extended to its maximum length, adjust the rod end bearing to match the center to center distance shown in Figure 4. Add a drop of Blue Loctite to the rod end threads and tighten the jam nut against the face of the actuator shaft, keeping the rod end bearing face vertical as shown in Figure 4.

Step 5: Assemble the ES-FA-PA-450-12-5 Flap Motor, F-1066B-2-L and F-10966B-2-R using the hardware and bushings called out in Figure 3. Tighten the castle nut just enough to remove end play but not enough to add excessive friction. The cotter pin will be installed later.

Refer to this assembly hereafter as the Flap Motor Assembly.

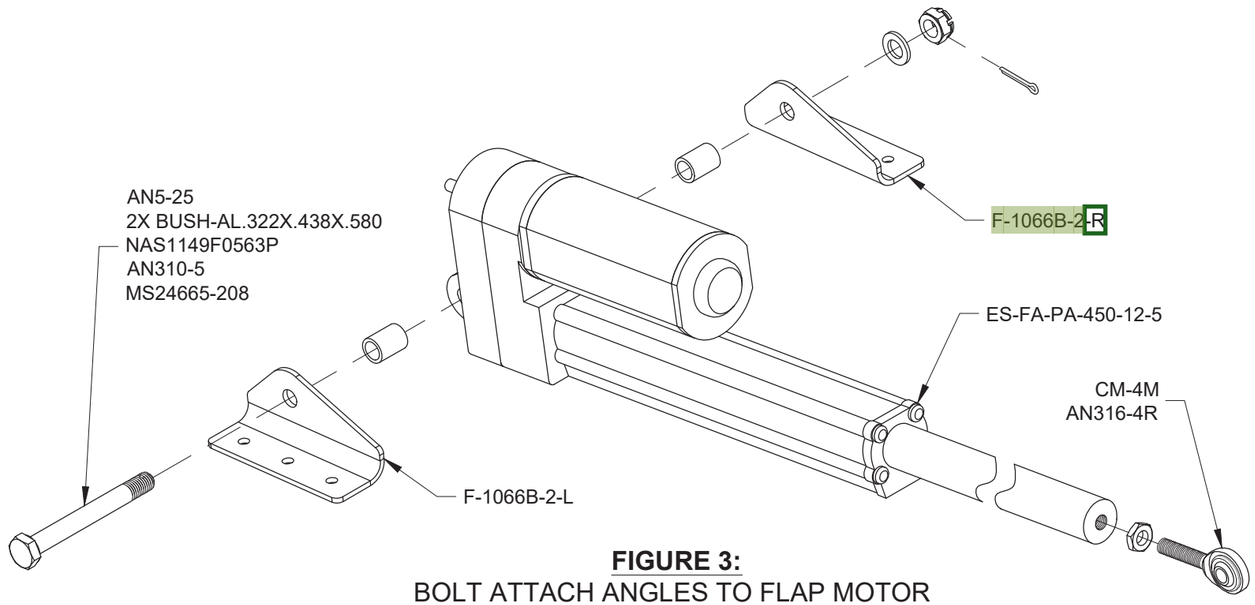


FIGURE 3:
BOLT ATTACH ANGLES TO FLAP MOTOR

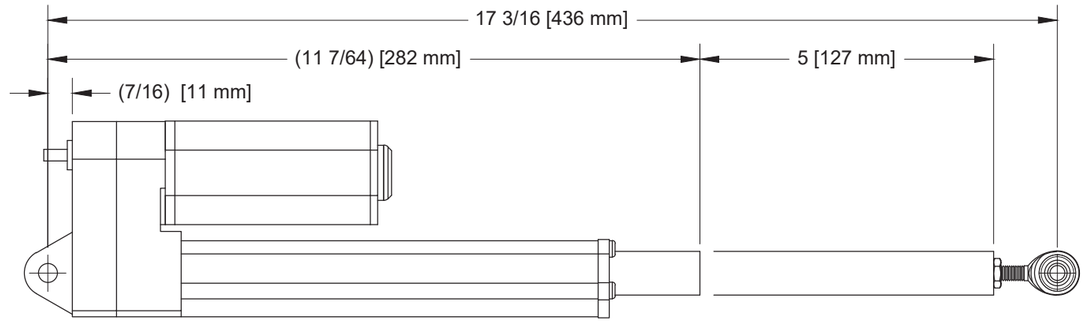


FIGURE 4: FLAP MOTOR EXTENDED & RETRACTED LENGTHS

Step 1: Lower the F-1066A-1 Flap Motor Bracket into position on top of the F-1066C-2-L and F-1066C-2-R Reinforcing Angles and align the six 3/16 holes.

Step 2: Lower the Flap Motor Assembly onto the F-1066A-1 and bolt in place using the hardware called out in Figure 2.

Step 3: Check for excessive friction and/or play. When satisfied install the cotter pin from Page 40-6, Figure 3.

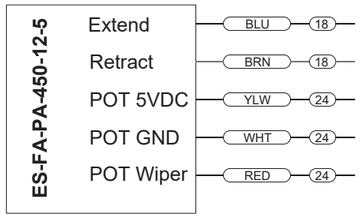


FIGURE 1: FLAP MOTOR WIRING

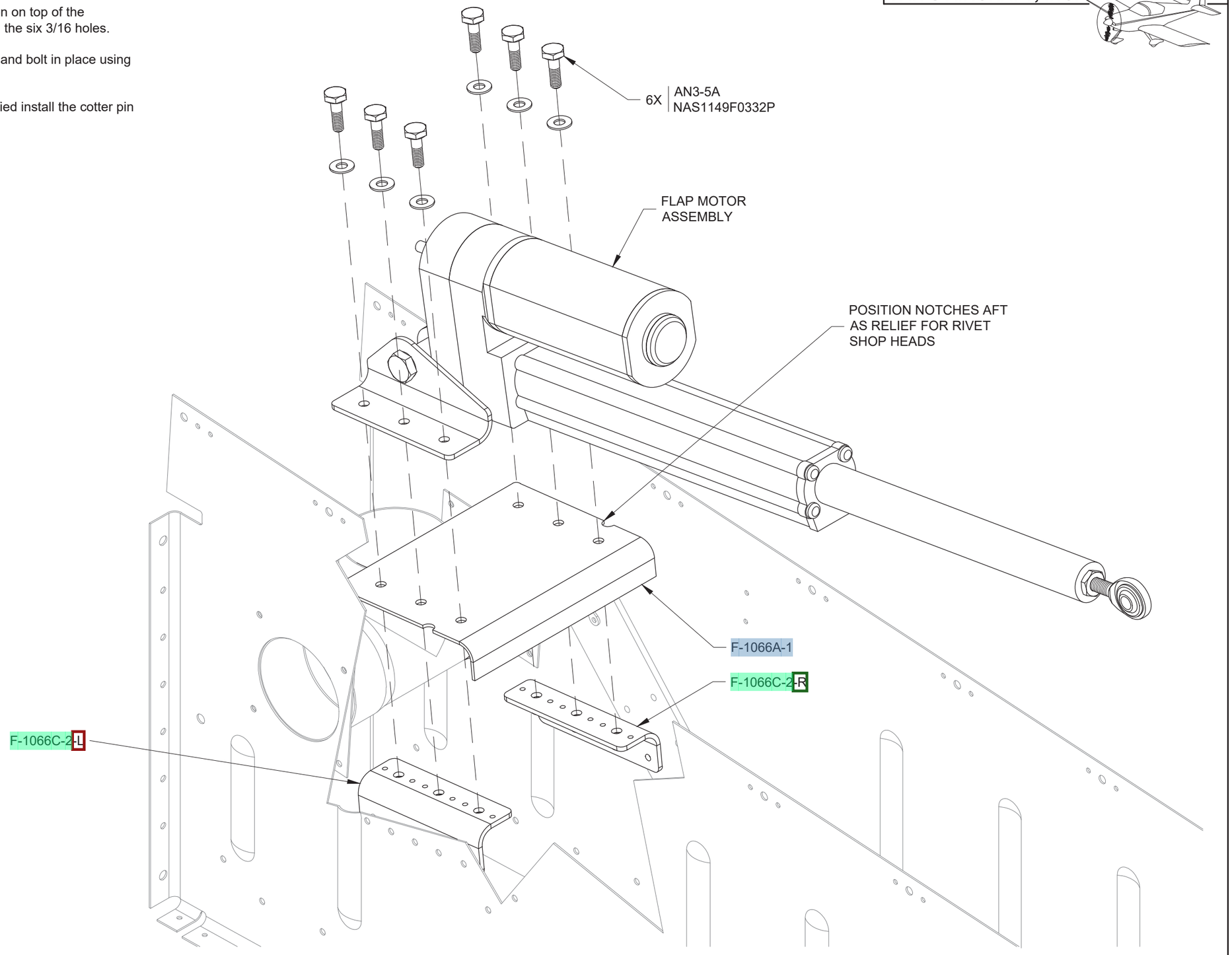


FIGURE 2: FLAP MOTOR ASSEMBLY INSTALLATION
(SOME PARTS NOT SHOWN FOR CLARITY)

NOTE: It is not necessary to safety-wire the flap motor shaft to the rod end attach bolt because the motor design prevents prohibits shaft rotation.

Step 1: Bolt the rod end bearing into the WD-1013A Flap Crank using the hardware shown in Figure 1.

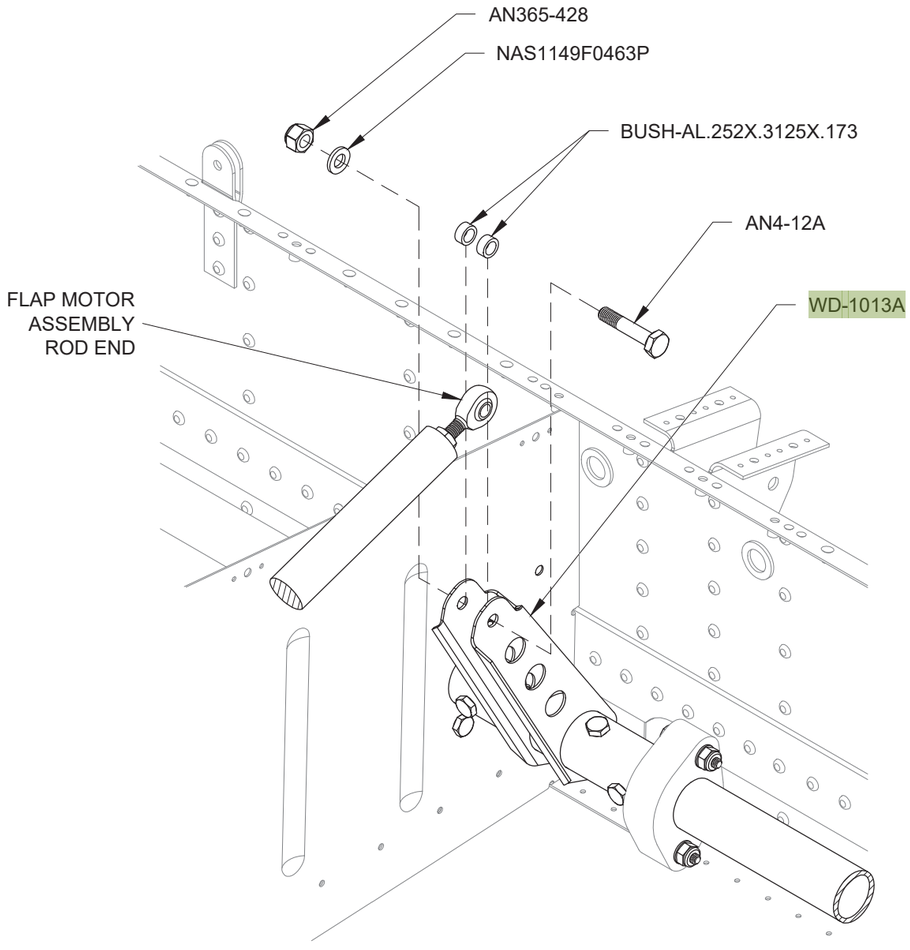


FIGURE 1:
ROD END TO FLAP CRANK INSTALLATION
(SOME PARTS NOT SHOWN FOR CLARITY)

Step 2: Bolt the WD-1013B Flap Horn to the WD-1013C Flap Torque Tube using the hardware called out in Figure 2.

Step 3: Repeat Step 2 for the right side of the aircraft.

End of section.

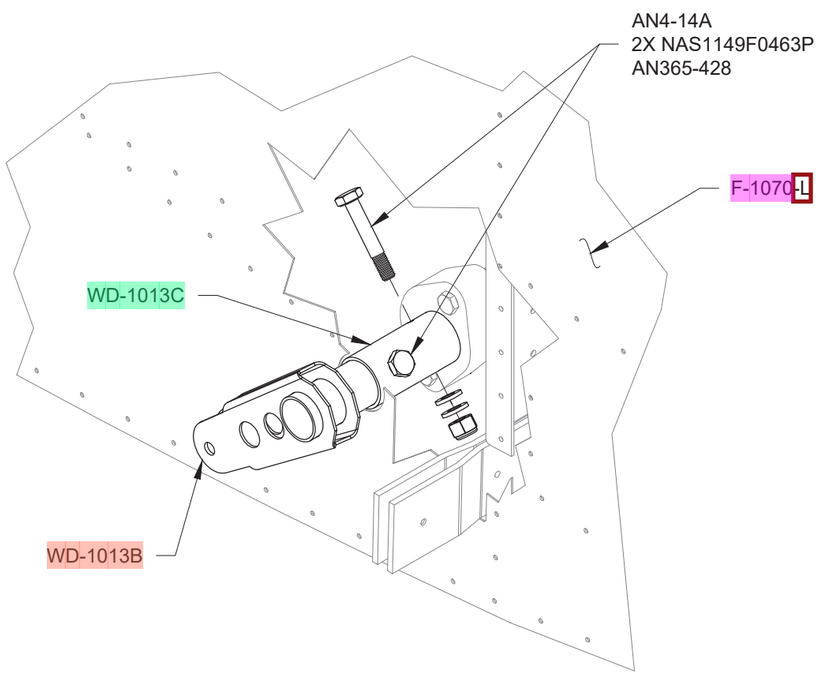


FIGURE 2:
ATTACHING THE LEFT SIDE FLAP HORN
(SOME PARTS OMITTED FOR CLARITY)