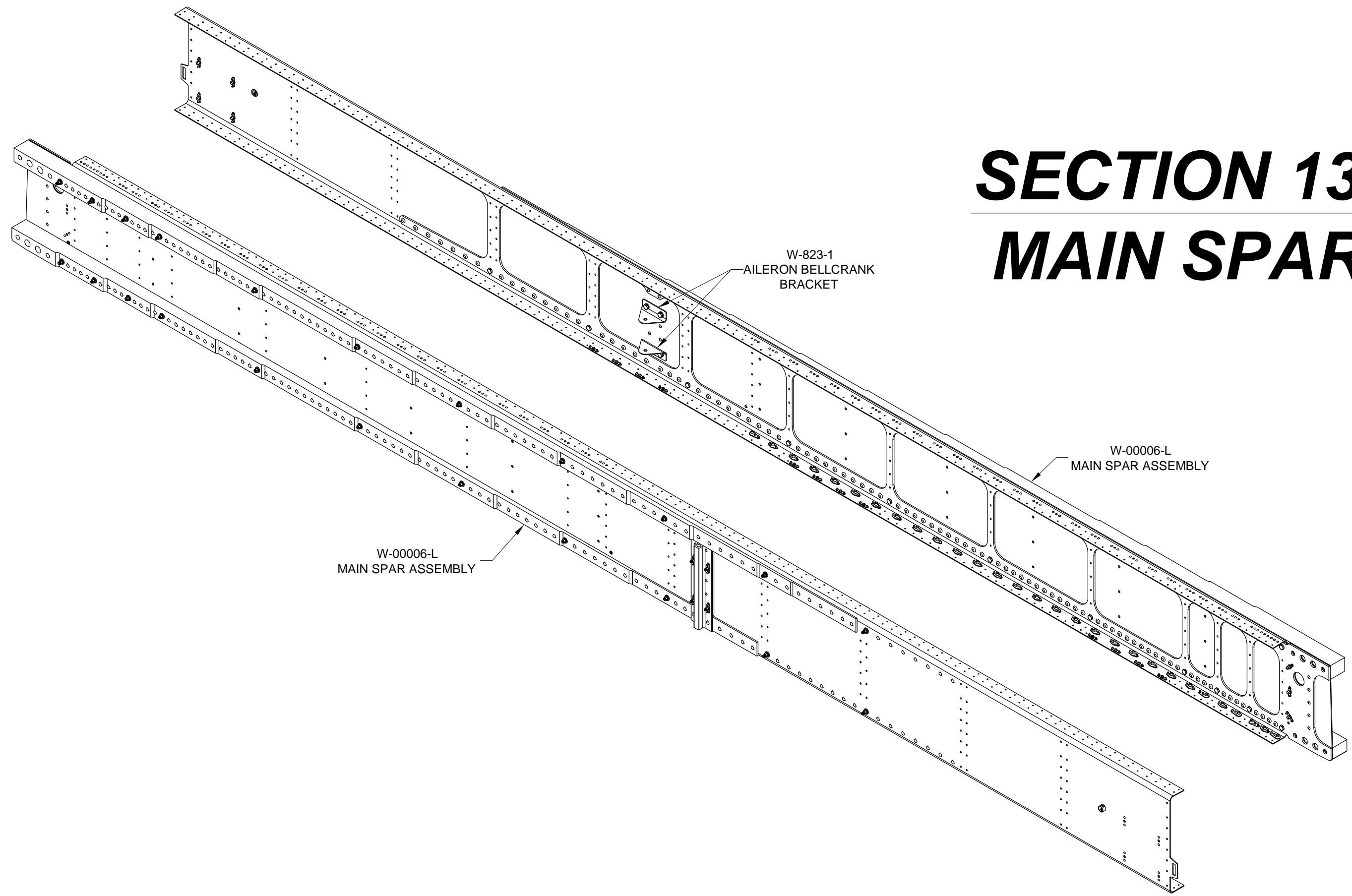


SECTION 13: MAIN SPAR



NOTE: The Main Spar is supplied assembled and clear anodized for corrosion resistance. The spar assembly consists of upper and lower step bars attached to one side of a C-channel spar web with a doubler plate attached to the other side of the web. The flanges of the C-channel spar web face aft. The inboard end of the spar has large holes for attaching to the fuselage. The upper spar step bar is longer and thicker than the lower spar step bar, and the lower spar step bar has a small chamfer.

BE SURE THAT YOU ARE AWARE OF "UP", "DOWN", "INBOARD", & "OUTBOARD" ON YOUR SPAR ASSEMBLY.

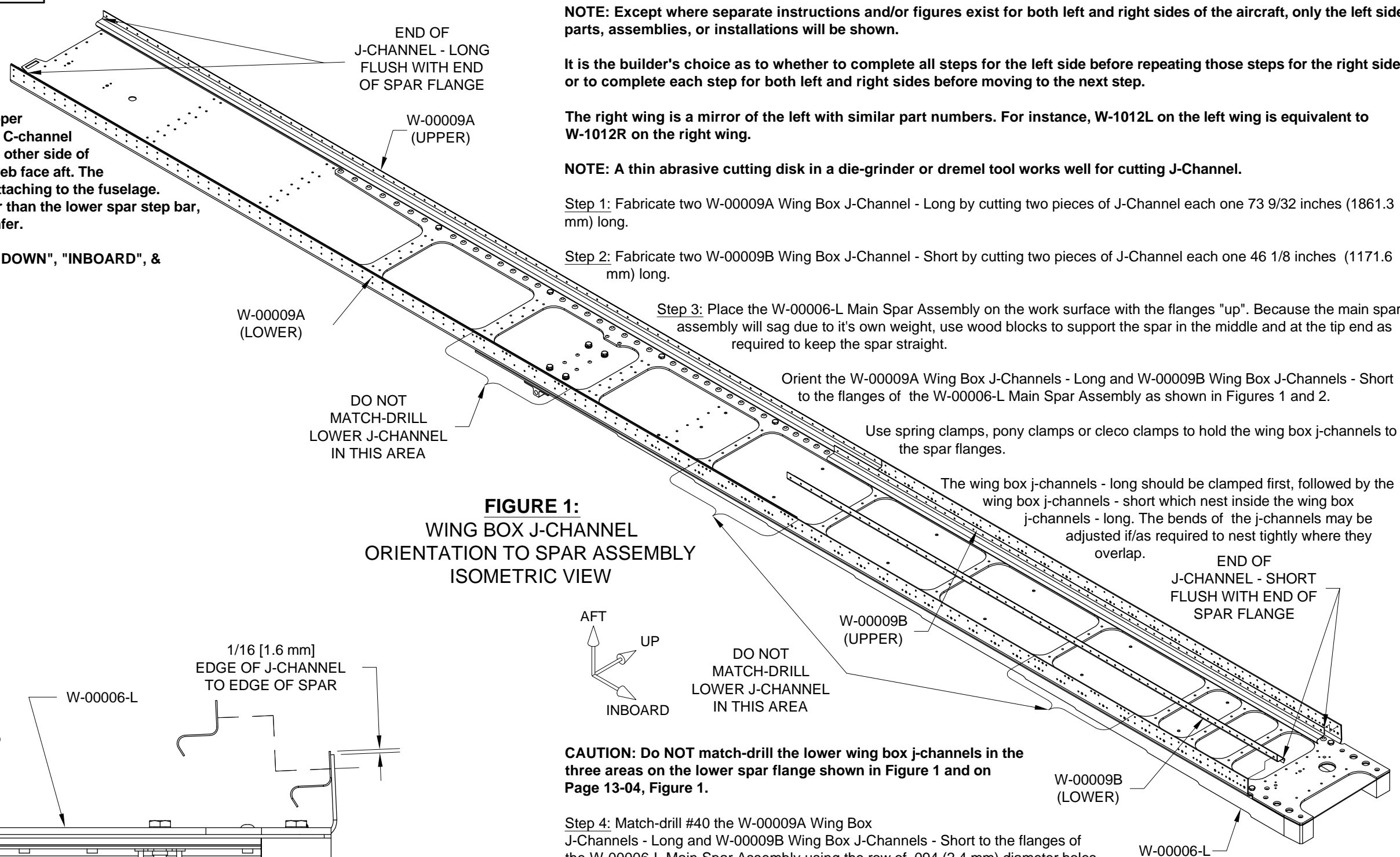


FIGURE 1:
WING BOX J-CHANNEL
ORIENTATION TO SPAR ASSEMBLY
ISOMETRIC VIEW

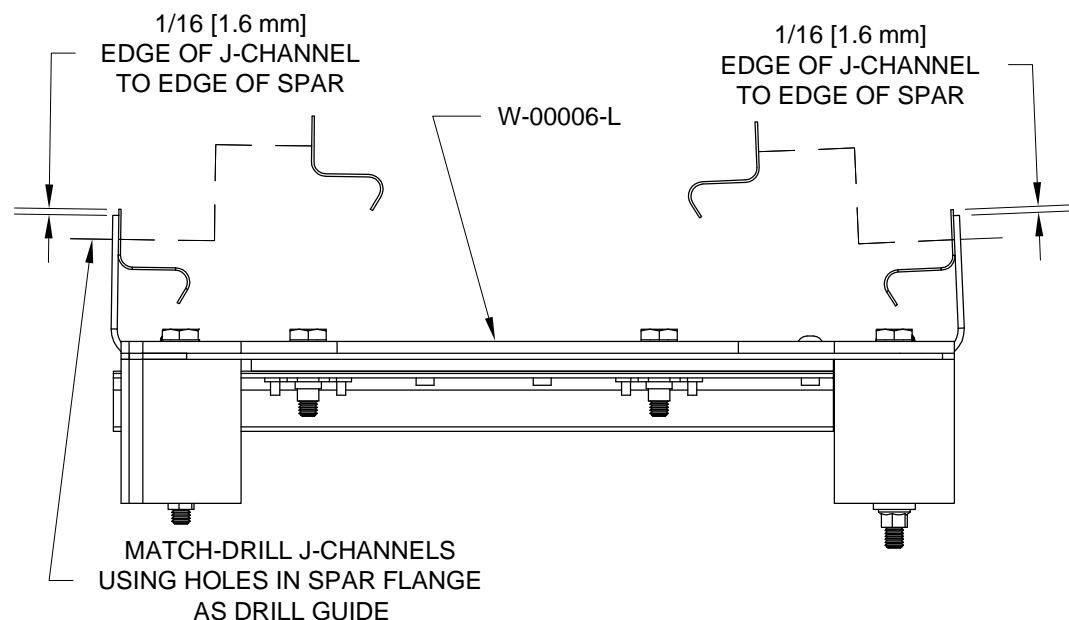


FIGURE 2:
WING BOX J-CHANNEL
ORIENTATION TO SPAR ASSEMBLY
END VIEW

NOTE: Except where separate instructions and/or figures exist for both left and right sides of the aircraft, only the left side parts, assemblies, or installations will be shown.

It is the builder's choice as to whether to complete all steps for the left side before repeating those steps for the right side or to complete each step for both left and right sides before moving to the next step.

The right wing is a mirror of the left with similar part numbers. For instance, W-1012L on the left wing is equivalent to W-1012R on the right wing.

NOTE: A thin abrasive cutting disk in a die-grinder or dremel tool works well for cutting J-Channel.

Step 1: Fabricate two W-00009A Wing Box J-Channel - Long by cutting two pieces of J-Channel each one 73 9/32 inches (1861.3 mm) long.

Step 2: Fabricate two W-00009B Wing Box J-Channel - Short by cutting two pieces of J-Channel each one 46 1/8 inches (1171.6 mm) long.

Step 3: Place the W-00006-L Main Spar Assembly on the work surface with the flanges "up". Because the main spar assembly will sag due to its own weight, use wood blocks to support the spar in the middle and at the tip end as required to keep the spar straight.

Orient the W-00009A Wing Box J-Channels - Long and W-00009B Wing Box J-Channels - Short to the flanges of the W-00006-L Main Spar Assembly as shown in Figures 1 and 2.

Use spring clamps, pony clamps or cleco clamps to hold the wing box j-channels to the spar flanges.

The wing box j-channels - long should be clamped first, followed by the wing box j-channels - short which nest inside the wing box j-channels - long. The bends of the j-channels may be adjusted if/as required to nest tightly where they overlap.

CAUTION: Do NOT match-drill the lower wing box j-channels in the three areas on the lower spar flange shown in Figure 1 and on Page 13-04, Figure 1.

Step 4: Match-drill #40 the W-00009A Wing Box J-Channels - Long and W-00009B Wing Box J-Channels - Short to the flanges of the W-00006-L Main Spar Assembly using the row of .094 (2.4 mm) diameter holes nearest the spar flange edge as drill guides. See Figure 2.

Insert clecos in the holes as match-drilling progresses along the length of the wing box j-channels. Monitor the position of the wing box j-channel relative to the spar flange (see Figure 2) as match-drilling progresses and make corrections as required.

After match-drilling, unclenco the upper wing box j-channels, mark them for the left wing - upper, then set them aside for later use in Section 16 - Top Wing Skins.

Step 5: Uncleco the lower W-00009A and W-00009B Wing Box J-Channels, roll them 180° and re-cleco them onto the upper spar flange.

Match-Drill #40 the lower wing box j-channels in the three areas not previously match-drilled while clamped to the lower spar flange.

After match-drilling, unclenco the lower wing box j-channels, mark them for the left wing - lower, then set them aside for later use in Section 20 - Bottom Wing Skins.



NOTE: Use Page 13-04, Figure 1 as a guide to hole locations referenced on this page.

Step 1: Except for holes already match-drilled on Page 13-02, Step 4, final-drill #40 all the .094 (2.4 mm) holes in the flanges of the W-00006-L Main Spar Assembly.

Final-Drill #40 the .094 (2.4 mm) nutplate attach rivet holes near the tip of the main spar assembly as shown in Figure 2 and at the root of the main spar assembly as shown on Page 13-05, Figure 1.

NOTE: Countersink just deep enough to fit the head of an AN426AD3 rivet. Read Section 5.5 for more information on countersinking and dimpling.

Step 2: Machine countersink the nutplate attach rivet holes in the flanges of the W-00006-L Main Spar Assembly. See Figure 1, Figure 2, and Page 13-04, Figure 1.

Machine countersink the nutplate attach rivet holes near the tip of the main spar assembly as shown in Figure 2 and at the root of the main spar assembly as shown on Page 13-05, Figure 1.

NOTE: Machine countersink in all rib locations.

Step 3: Machine countersink the #40 holes indicated in Figure 2.

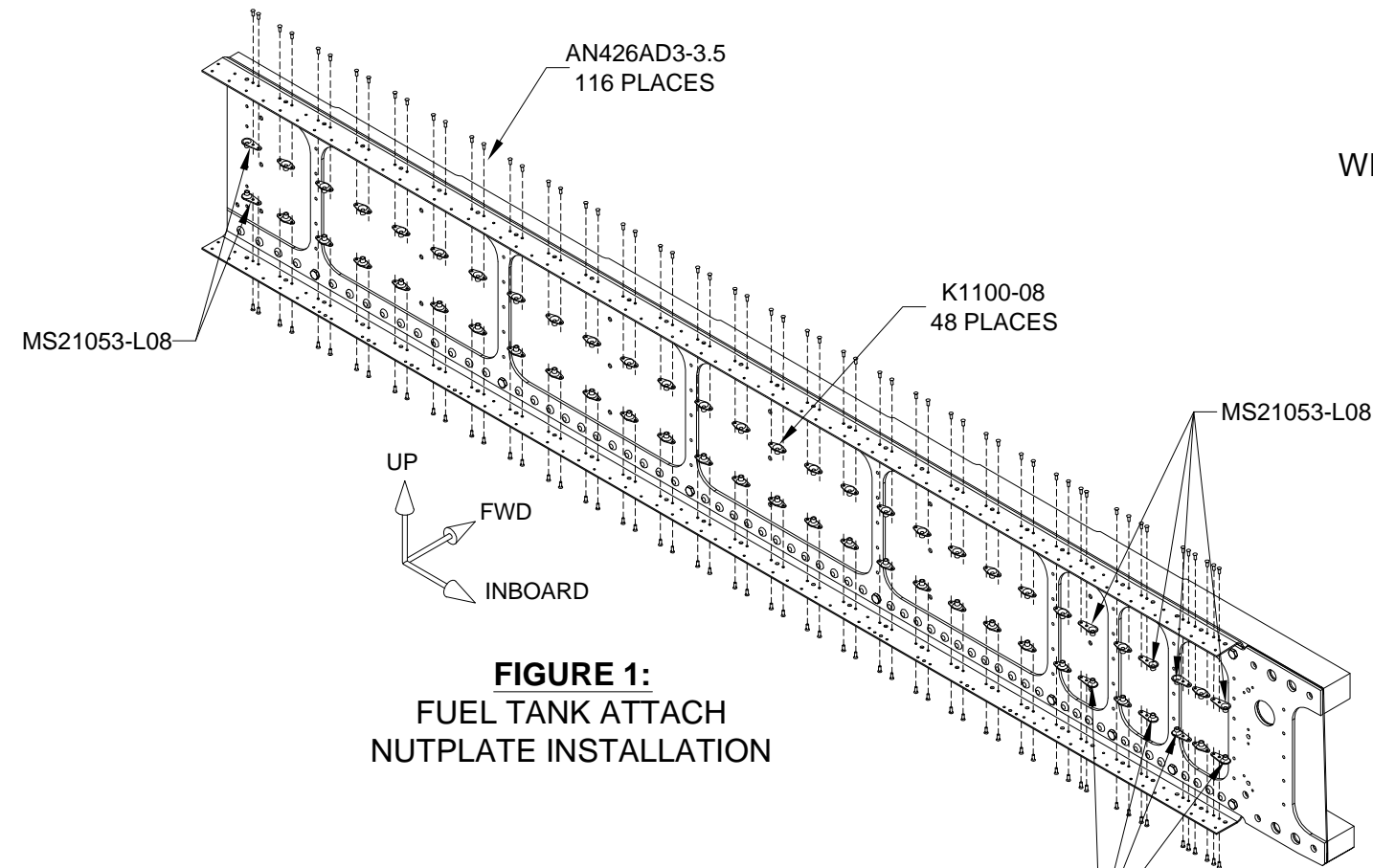


FIGURE 1:
FUEL TANK ATTACH
NUTPLATE INSTALLATION

NOTE: Use a temporary screw in the nutplates to ensure proper alignment.

Step 4: Rivet the fuel tank skin attach nutplates to the W-00006-L Main Spar Assembly as shown in Figure 1.

Step 5: Machine countersink the fuel tank attach screw holes. See Figure 3 for details of the countersunk hole. Use a #30 pilot countersink cutter in a microstop countersink cage to countersink the screw holes in the spar. The #30 pilot will center in the nutplate well enough to keep the countersink round and concentric.

Step 6: Rivet the wing access plate attach nutplates to the W-00006-L Main Spar Assembly as shown in Figure 2.

Use a #40 pilot countersink cutter in a microstop countersink cage to countersink the screw holes in the spar. The #40 pilot will center in the nutplate well enough to keep the countersink round and concentric.

Step 7: Machine countersink remaining the skin and rib attach rivet holes in the flanges of the W-0006-L Main Spar Assembly. Countersink just deep enough to fit the dimples in the wing skins.

Step 8: Spot prime the areas where the anodize finish was removed during countersinking in steps 2, 5, and 7. See Section 5.1 for more information on priming aluminum.

Step 9: Install the snap bushings as shown in Figure 2.

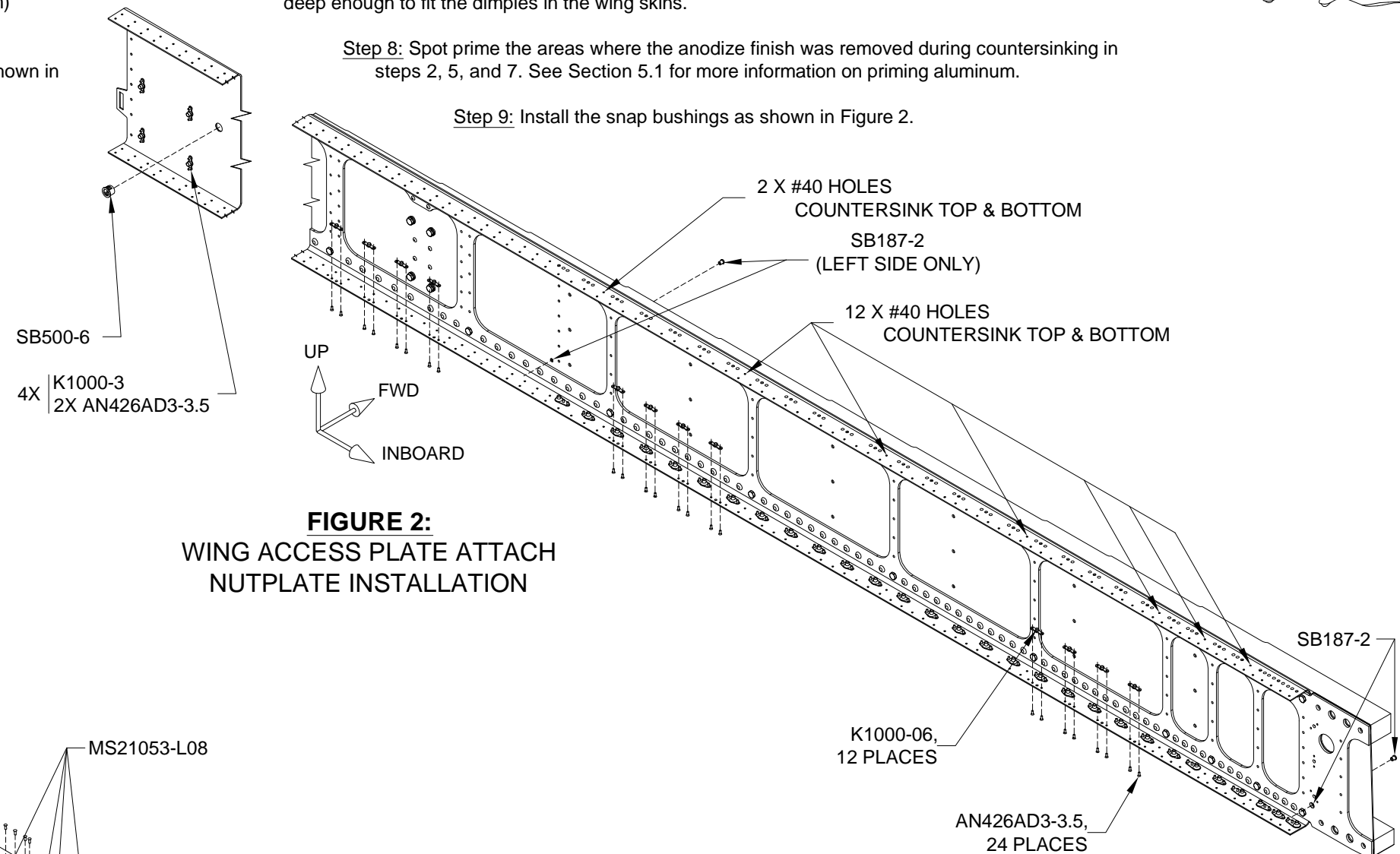


FIGURE 2:
WING ACCESS PLATE ATTACH
NUTPLATE INSTALLATION

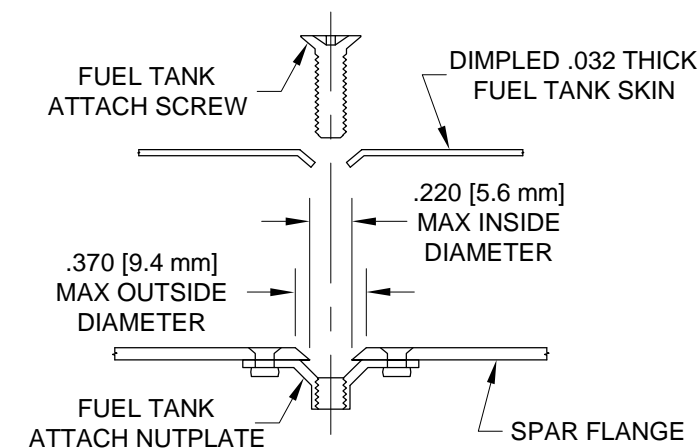


FIGURE 3:
FUEL TANK ATTACH
COUNTERSINK DETAIL

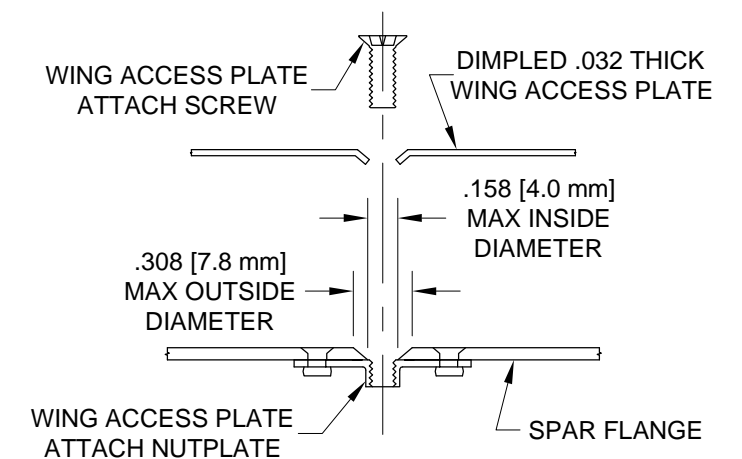


FIGURE 4:
WING ACCESS PLATE ATTACH
COUNTERSINK DETAIL



▽ FUEL TANK SKIN ATTACH

▣ ACCESS PLATE ATTACH

◇ ACCESS PLATE NUTPLATE ATTACH

✧ FUEL TANK SKIN NUTPLATE ATTACH

NO SYMBOL = SKIN or SKIN AND RIB or RIB ATTACH

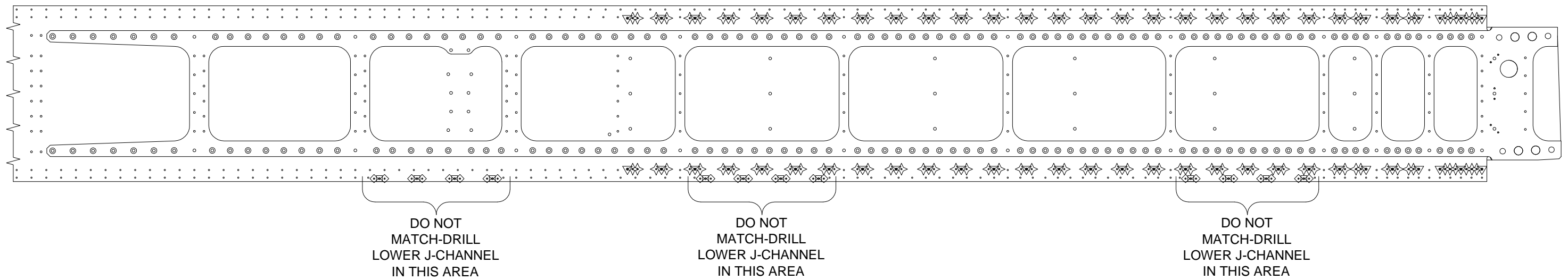
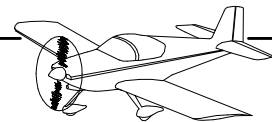


FIGURE 1:
MAIN SPAR FLANGE HOLE
IDENTIFICATION DIAGRAM



Step 1: Final-Drill #30 the five .125 (3.2 mm) diameter spar doubler to spar web rivet holes in the web of the W-00006-L Main Spar Assembly. See Figure 1.

Step 2: Install the five AN470AD4 rivets as shown in Figure 1.

Step 3: Rivet the fuel tank attach nutplates to the W-00006-L Main Spar Assembly as shown in Figure 1.

Step 4: Final-Drill #12 the two smaller holes in each W-823-1 Aileron Bellcrank Bracket and the four smaller holes in the W-823-AP Aileron Bellcrank Bracket.

Final-Drill 1/4 (6.4 mm) the single large hole in each aileron bellcrank bracket.

Attach the two aileron bellcrank brackets to the W-00006-L Main Spar Assembly as shown in Figure 2.

Attach the two aileron bellcrank brackets to the W-00006-R Main Spar Assembly as shown in Figure 3.

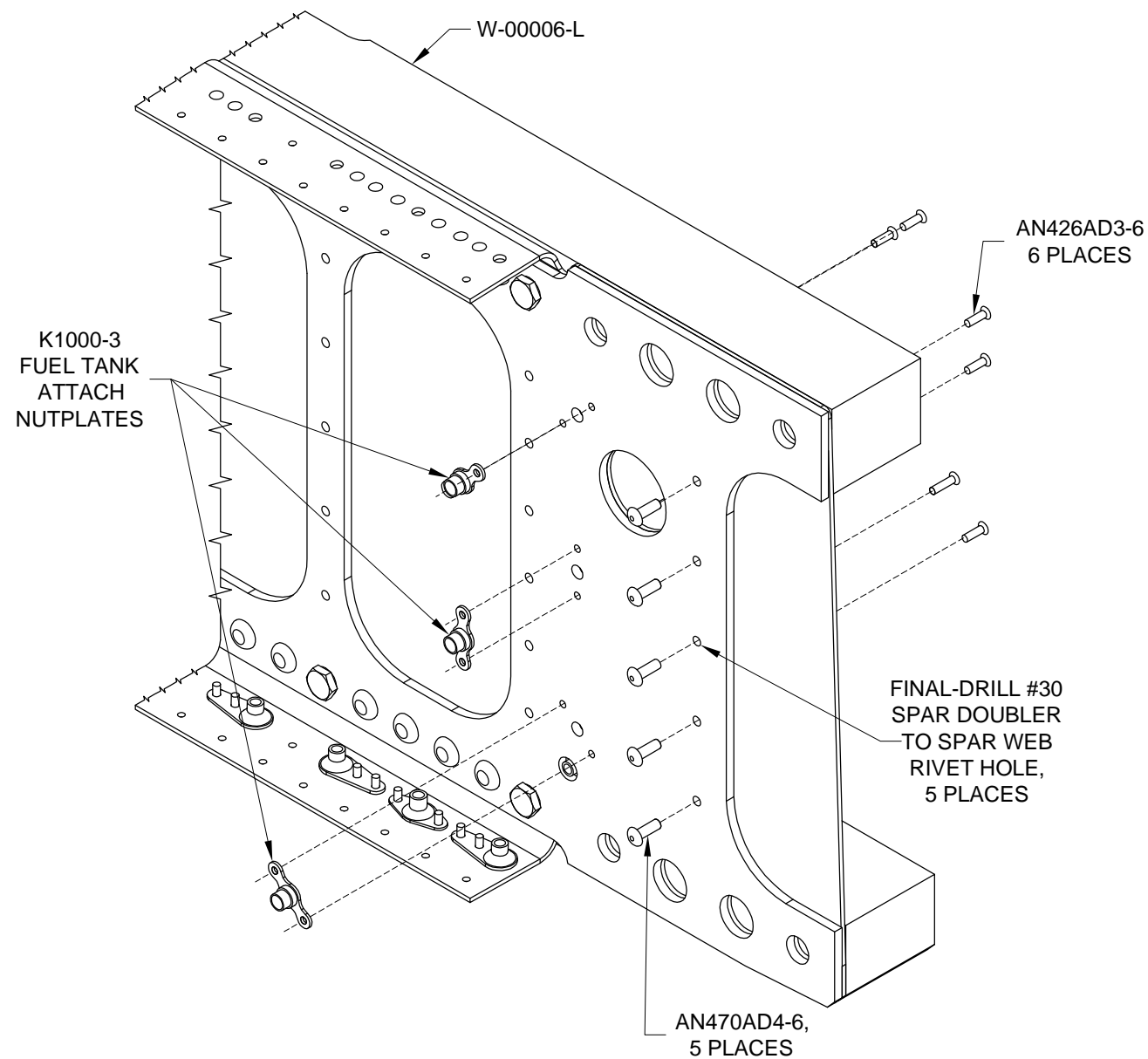


FIGURE 1:
FUEL TANK NUTPLATE AND SPAR DOUBLER RIVET INSTALLATION

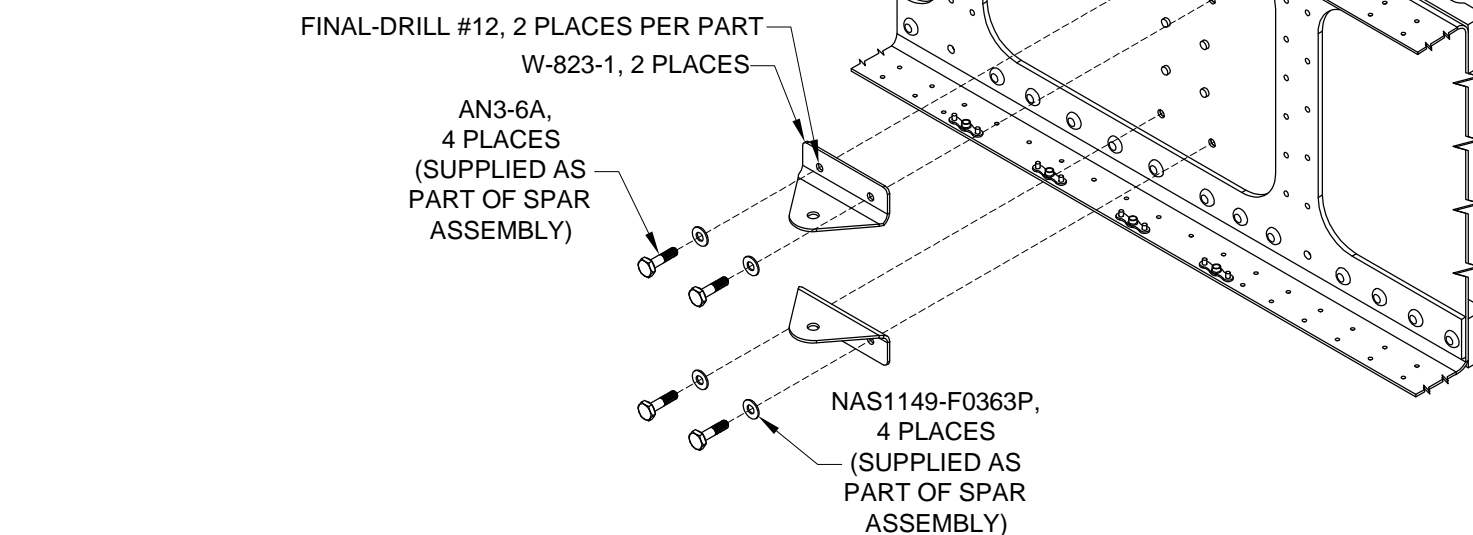


FIGURE 2:
AILERON BELLCRANK BRACKET INSTALLATION - LEFT SIDE

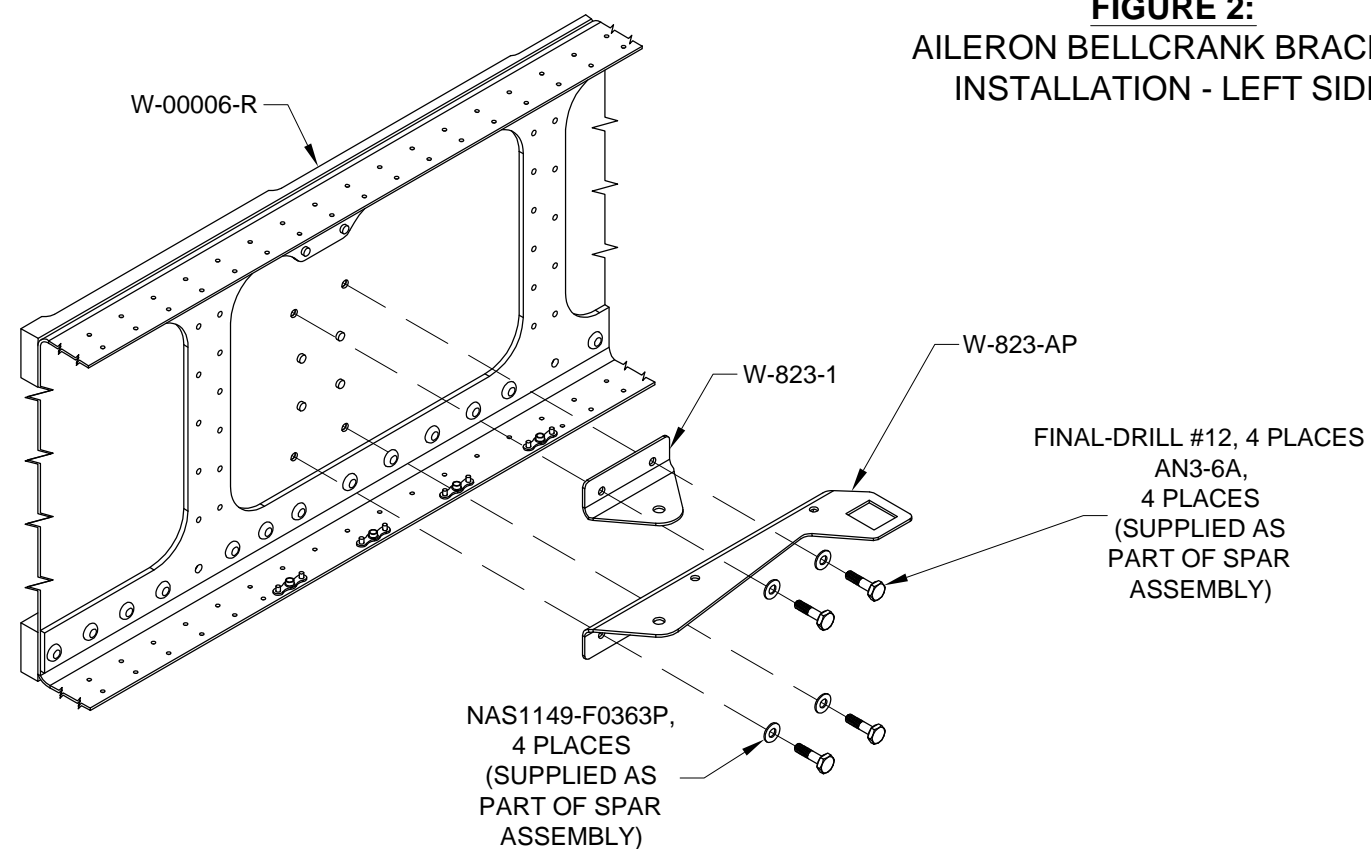


FIGURE 3:
AILERON BELLCRANK BRACKET INSTALLATION - RIGHT SIDE



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