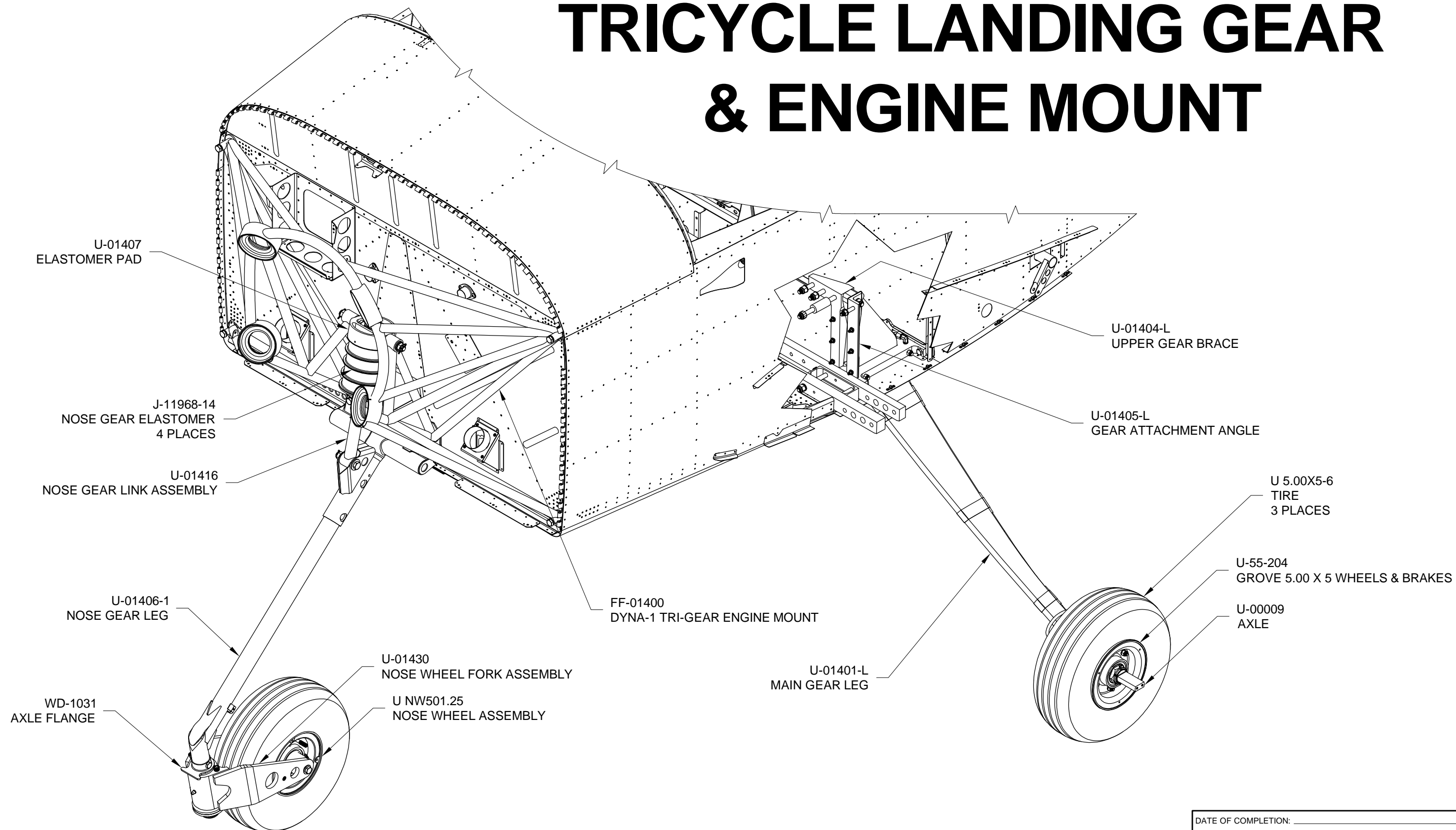


SECTION 40A: TRICYCLE LANDING GEAR & ENGINE MOUNT



DATE OF COMPLETION: _____

PARTICIPANTS: _____



Step 1: Ream the six engine mount attachment holes as called out in Figure 1. Be sure the reamer remains perpendicular to the Firewall Assembly while reaming.

Step 2: Bolt the FF-01400 Engine Mount to the Firewall Assembly using the hardware called out in Figure 1.

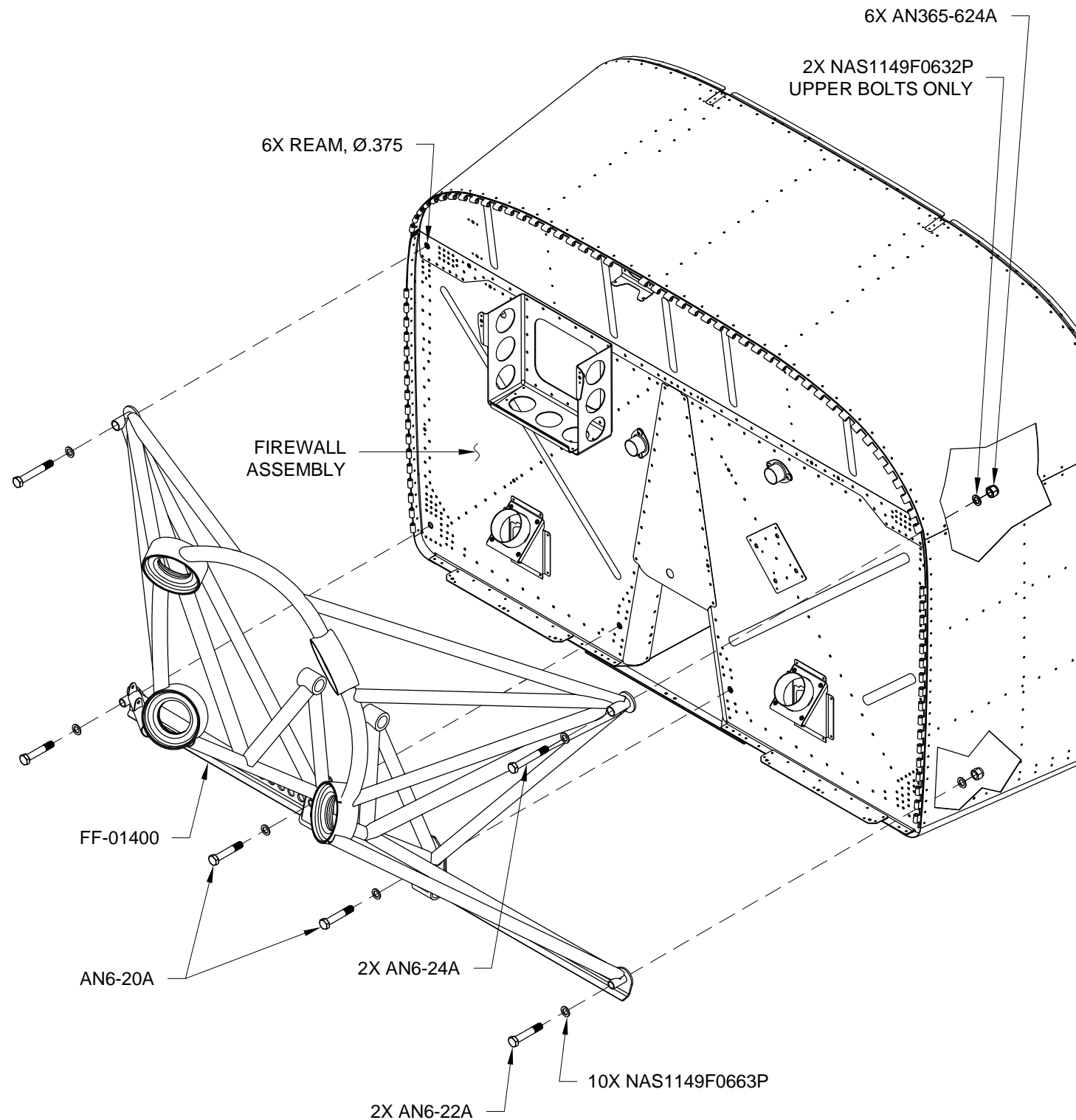


FIGURE 1: ATTACHING THE ENGINE MOUNT

Step 3: Separate and trim the U-01405 Gear Attachment Angle using the dimensions provided in Figure 2.

Prime the gear attachment angles and the U-01404-L & -R Upper Gear Braces. For upper gear braces see page 40A-03 Figure 3.

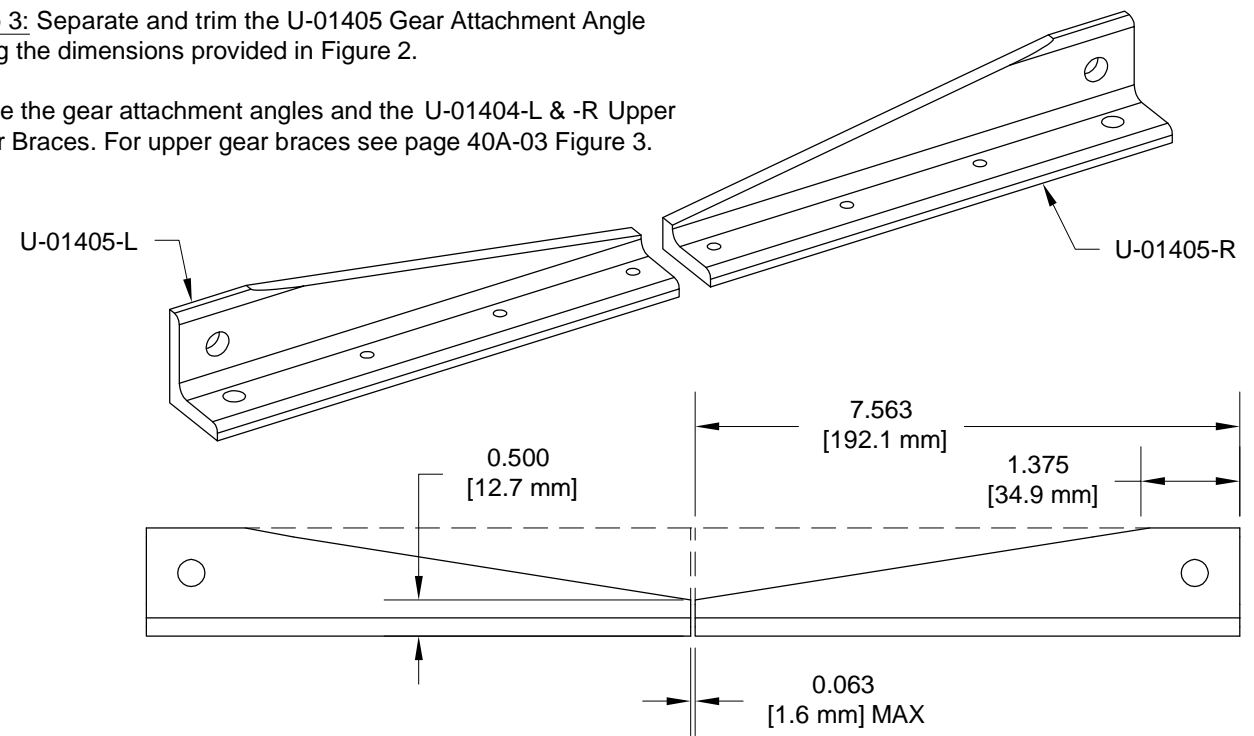


FIGURE 2: SEPARATING THE GEAR ATTACHMENT ANGLE

WARNING: When working with an installed tire always deflate the tire before loosening the wheel bolts.

Step 4: Split the U NW501.25 Nose Wheel Assembly by removing the bolts holding the two Wheel Halves together. See Fig. 3.

NOTE: To avoid pinching, inflate the inner tube enough to hold the rounded shape before assembling wheel halves.

Step 5: Remove the nut and washers from the valve stem of the U 5:00X5-6IT Inner Tube, not shown in Figure 3. Dust the tube and the inside of the U 5:00X5-6 Tire with talcum powder, then mount the tube and tire on the Wheel Halves. The mark indicated in Figure 3 on one of the wheel halves should be aligned with the notch for the valve stem in the opposite wheel half. The red dot on the tire, if present, is installed adjacent to the valve stem. Bolt the wheel halves together. Carefully observe the manufacturer's bolt torque specifications shown on the document in the wheel package. Check that the tube is not pinched between the wheel halves.

Step 6: SLOWLY inflate the tire to 25 psi. Deflate fully and re-inflate the tube SLOWLY a couple more times to work out any wrinkles in the tube. It is a good idea to do this with the valve core removed; in the event a finger gets pinched the tire can be quickly deflated. Inspect for a good seat around the wheel rim.

Step 7: Reinstall the valve stem core as required and SLOWLY inflate the tube/tire. Final inflation pressure is 35 psi.

Step 8: Check the valve stem for air leaks and check the tire for proper seating around the wheel rim.

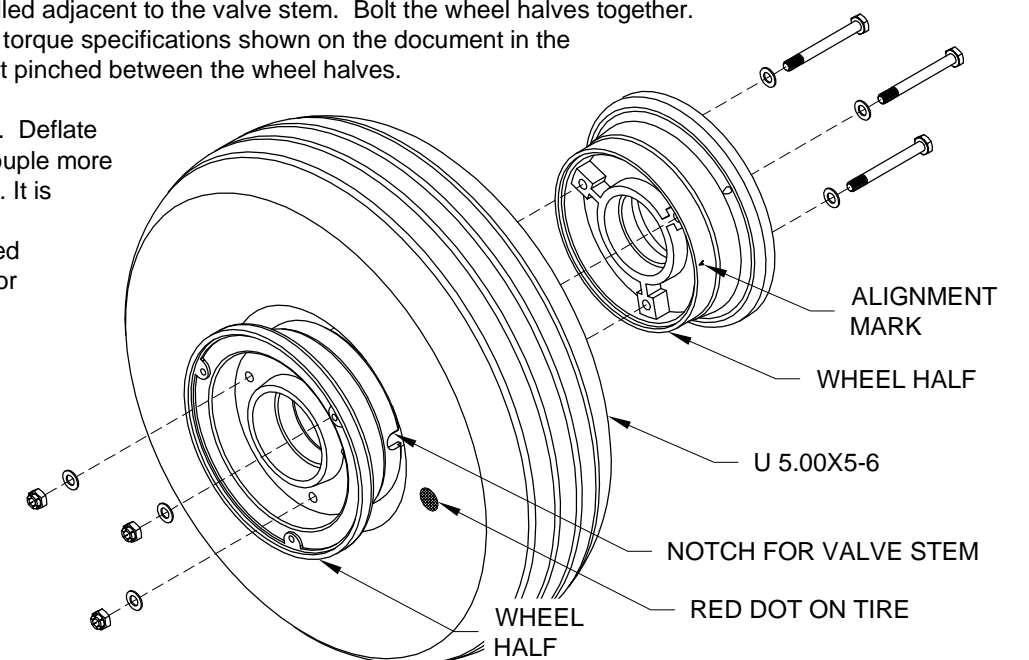
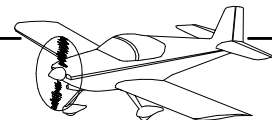


FIGURE 3: NOSE WHEEL & TIRE ASSEMBLY



NOTE: Read the manufacturer's instructions for the Wheel and Brake Assemblies. Follow the instructions in Steps 1-8 for both Main Wheel and Tire Assemblies. However, if Van's Aircraft instructions conflict with those of the manufacturer then defer to the manufacturer.

Step 1: Pull the bearings from the U-55-204 GROVE 5.00 X 5 Wheels & Brakes wheel assembly by removing the snap-rings retaining them. Pay close attention to how the bearings, washers, and grease seal felts are installed so they may be reinstalled the same way. See Figure 2.

WARNING: When working with an installed tire always deflate the tire before loosening the wheel bolts.

Step 2: Split the Main Wheel Assembly by removing the bolts holding the Brake Disc and the Inner and Outer Wheel Halves together as shown in Figure 1.

Step 3: Dust the U 5:00X5-6IT Inner Tube, not shown in Figure 1, and the inside of the U-5:00X5-6 Tire with talcum powder. Lubricate the valve stem with a small amount of grease prior to pushing it through the grommet.

Mount the tube and tire on the Inner and Outer Wheel halves while aligning the red dot on the tire, if present, next to the valve stem of the tube. See Figure 2. The tube should have enough air to hold its shape but still be limp.

Bolt the wheel halves and the brake disc together carefully observing the manufacturer's bolt torque specifications shown on the document in the wheel and brake package. Check that the tube is not pinched between the wheel halves.

Step 4: SLOWLY inflate the tire to 25 psi. Deflate fully and re-inflate SLOWLY a couple more times to work out any wrinkles in the tube. It is a good idea to do this with the valve core removed; in the event a finger gets pinched the tire can be quickly deflated.

Step 5: Reinstall the valve stem core as required and SLOWLY inflate the tube/tire to a final pressure of 40 psi.

Step 6: Check the valve stem for air leaks and check the tire for proper seating around the wheel rim.

Step 7: Clean, dry and fully grease the bearings from the Main Wheel & Tire Assembly using AeroShell Grease 5 or equivalent.

Step 8: Reinstall the bearings, washers, and grease seal felts in the same order they were removed. See Figure 2.

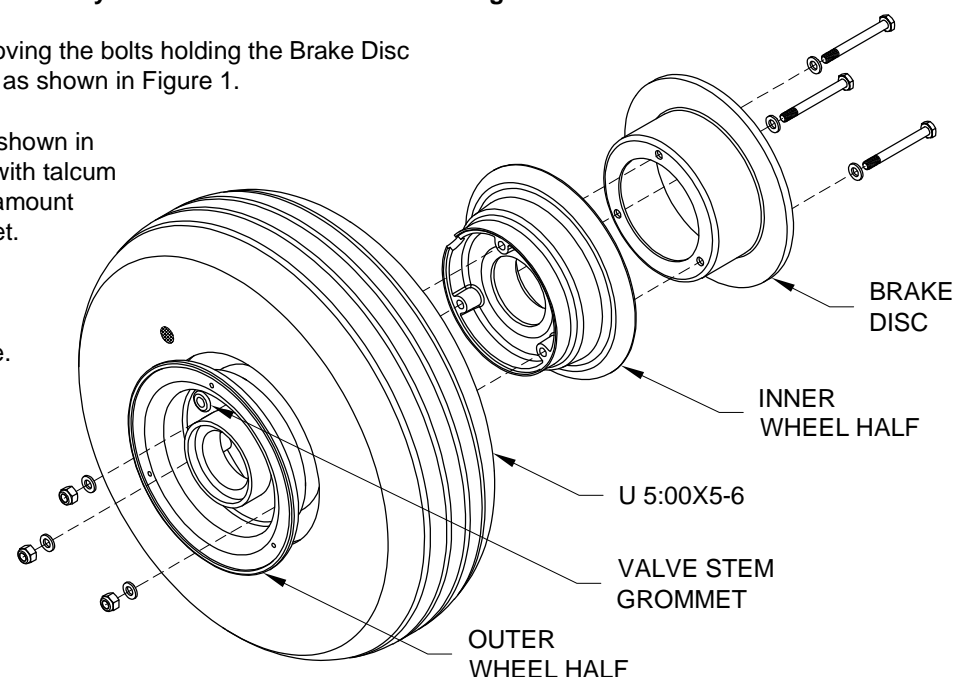


FIGURE 1: MAIN WHEEL & TIRE ASSEMBLY

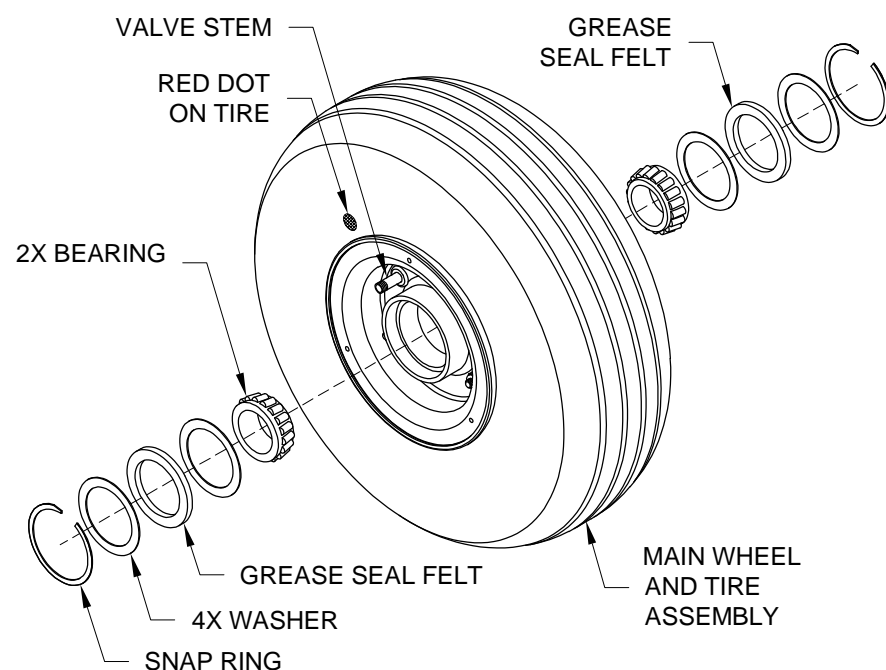


FIGURE 2: INSTALLING BEARINGS IN THE MAIN WHEEL & TIRE ASSEMBLY

NOTE: Hardware call-outs apply to both ends of the assembly. If necessary loosen the AN5 bolt per Figure 3 call-out to ease bushing insertion.

Step 9: Bolt the U-01404-L Upper Gear Brace and the aluminum bushing called out in Figure 3 to the Center Section Assembly using the hardware shown.

Repeat for the right side.

Tighten AN5 bolts if/as required.

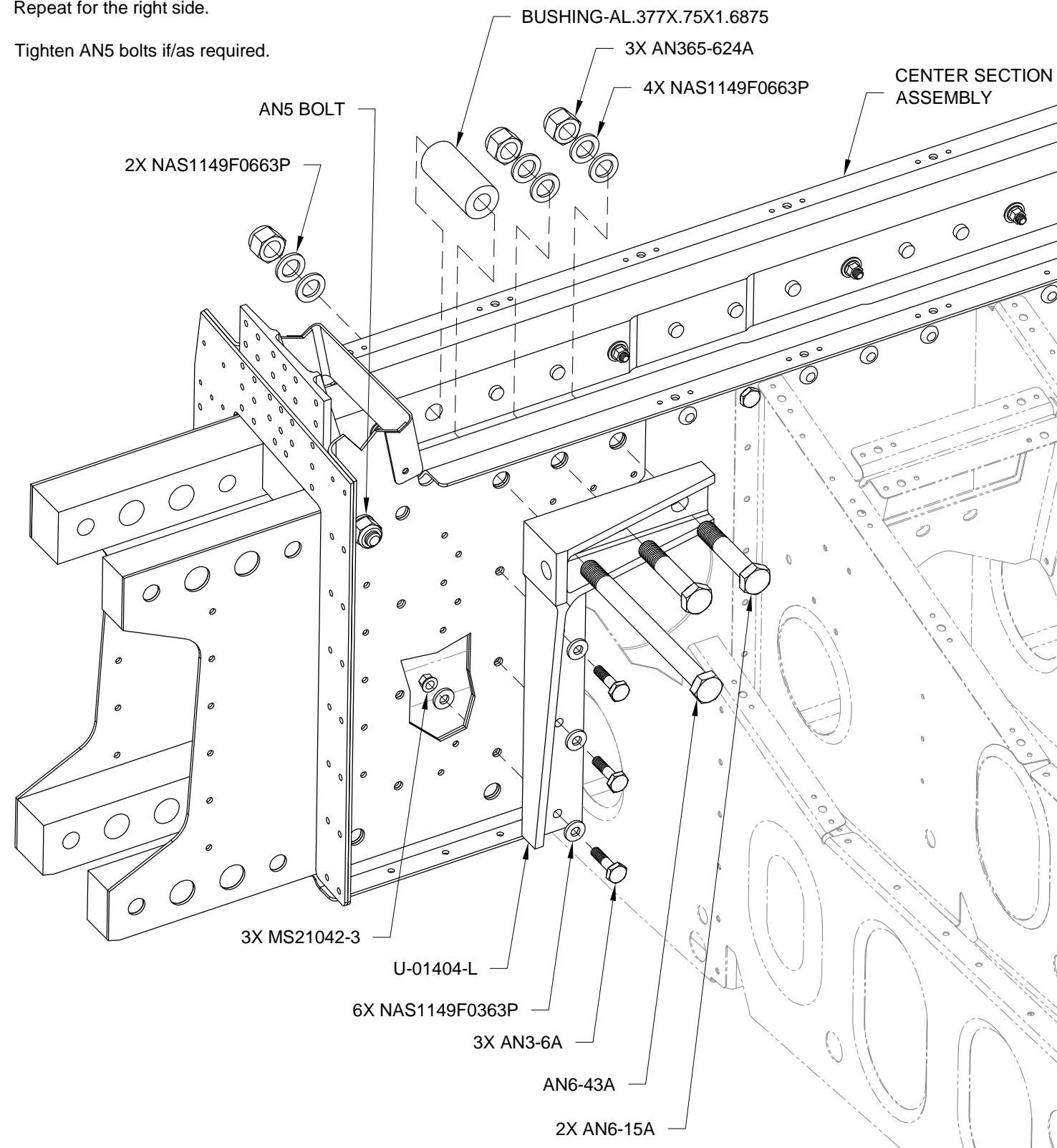
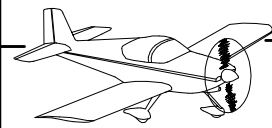


FIGURE 3: INSTALLING THE UPPER GEAR BRACE



Step 1: Locate the F-14129AB and F-14129CD Gear Shims shown in Figures 1 and 2 and separate them into individual parts by removing the hatched areas. The grayed-out parts are shown for reference only as they may have already been used in Section 10 where they were supplied.

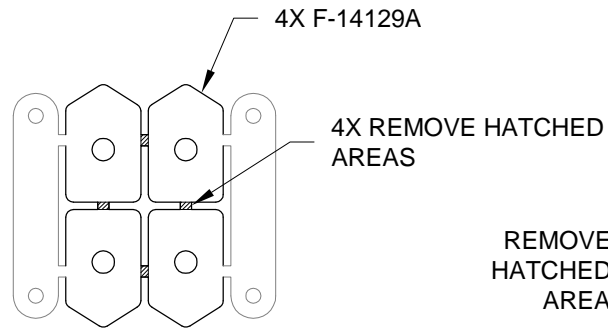


FIGURE 1: .016 GEAR SHIMS

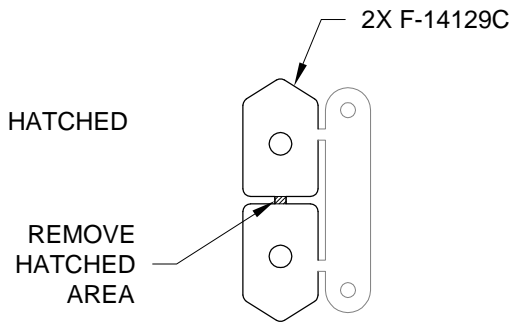


FIGURE 2: .025 GEAR SHIMS

Step 2: Slide the U-01401-L Main Gear Leg through the bottom of the fuselage, aligning the hole in the top of the gear leg with the hole in the U-01404-L Upper Gear Brace as shown in Figure 4. Slide the bolt shown in Figure 3 through the upper gear brace and far enough into the gear leg to hold it up in place.

Step 3: Bolt the U-01405-L Gear Attachment Angle to the F-01404 Aft Center Section Bulkhead Assembly using the hardware called out in Figure 4.

Step 4: Install the F-14129A and/or F-14129C Shims shown in Figure 3 as needed, then push the bolt at the top of the U-01401-L Main Landing Gear through the U-01405-L Gear Attachment Angle and install the called out washer and nut.

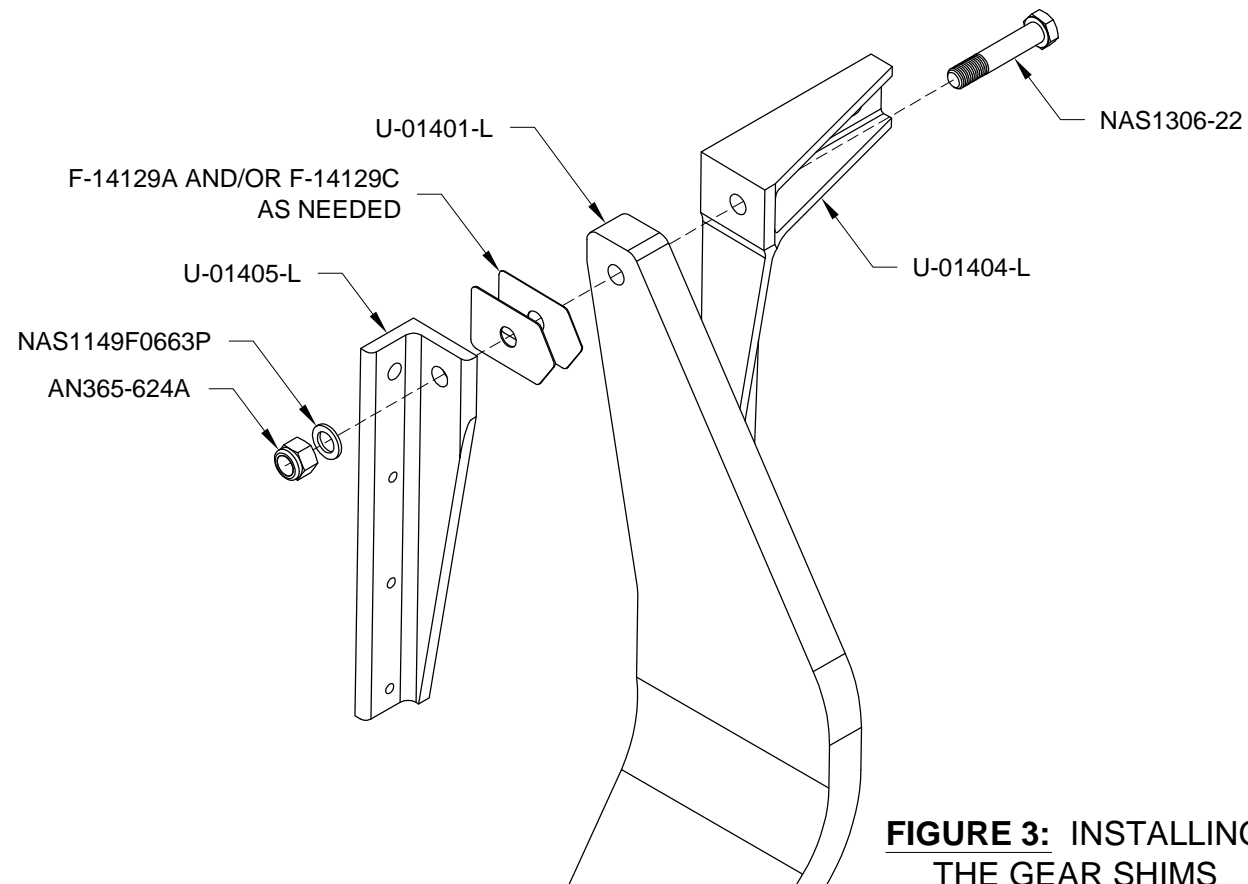


FIGURE 3: INSTALLING THE GEAR SHIMS

NOTE: Hardware call-outs apply to both ends of the assembly.

Step 5: Bolt the U-01403 Gear Attachment Bar to the U-01402 Lower Gear Brace using the hardware called out in Figure 4. Since the bolts are longer than the gap between the gear attachment bar and the F-01416-L Seat Rib (not shown in Figure 4), clearance holes in the rib are provided so that the bolts can be installed.

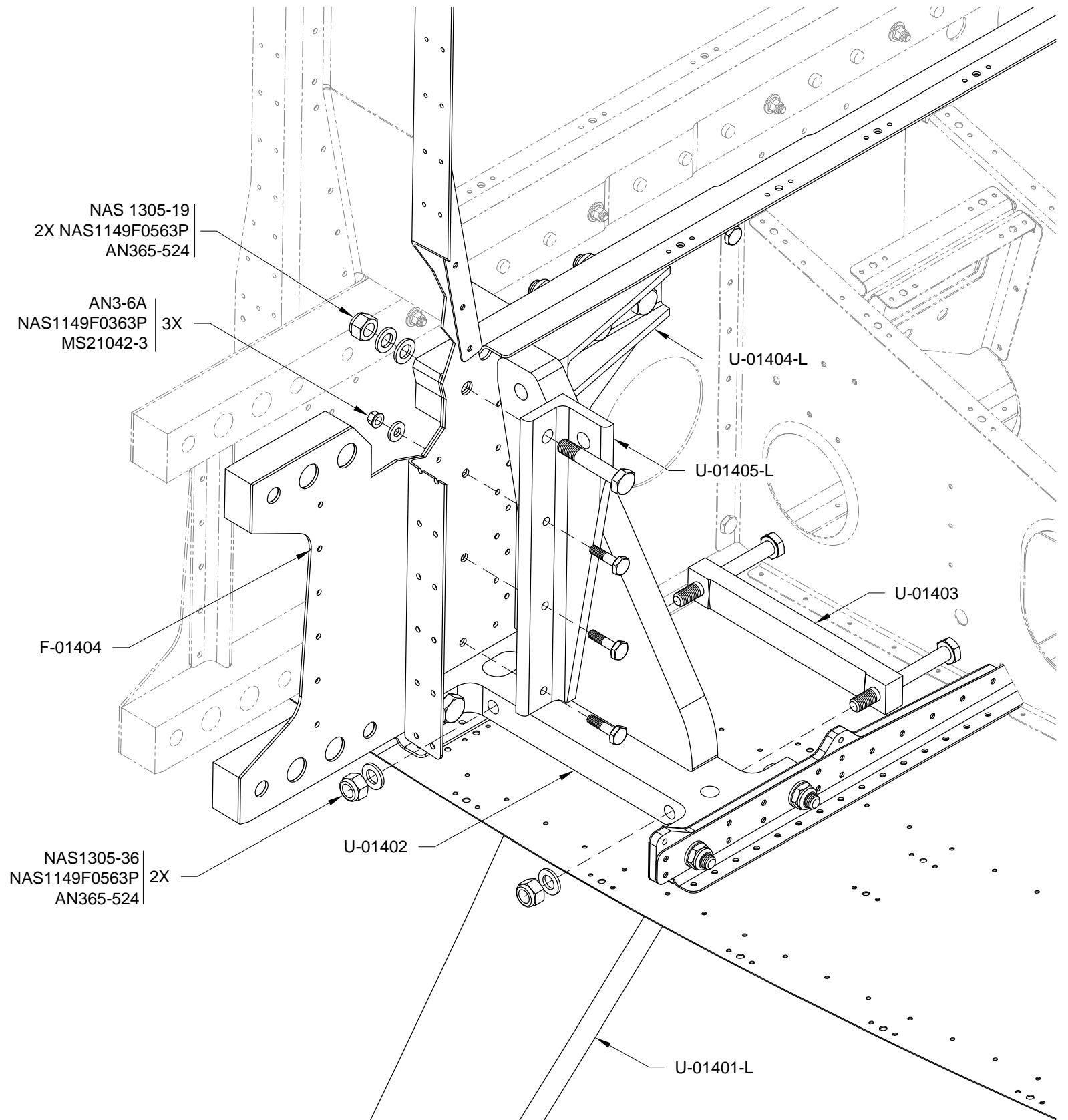
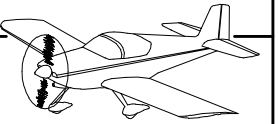


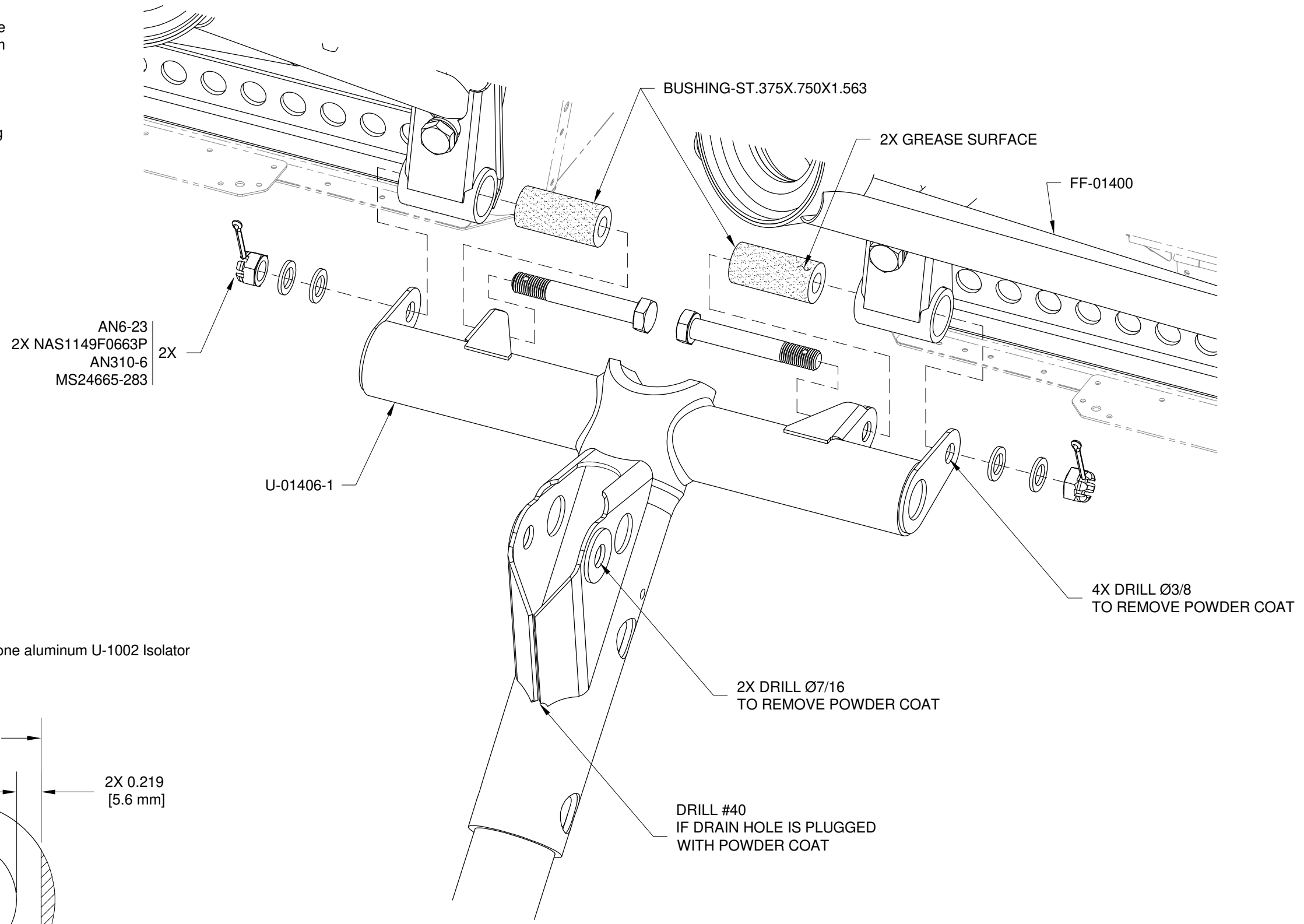
FIGURE 4: INSTALLING THE MAIN GEAR LEG



Step 1: Remove powder coat where indicated per the call-outs in Figure 1.

Step 2: Apply a light coat of wheel bearing grease to the outer surface of the steel bushings called out, then slide them into the FF-01400 Engine Mount as shown in Figure 1.

Step 3: Bolt the U-01406-1 Nose Gear Leg to the FF-01400 Engine Mount using the hardware called out in Figure 1.



Step 4: Remove the shaded area from one aluminum U-1002 Isolator Washer as shown in Figure 2.

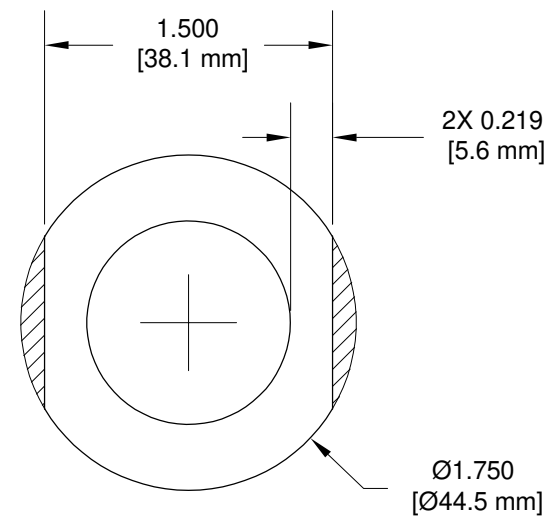
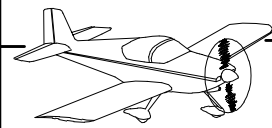


FIGURE 2: TRIM WASHER

FIGURE 1: ATTACHING THE NOSE GEAR LEG



Step 1: If necessary, remove excess powder coat from the ends of the called out FF-01400 Engine Mount bushings to allow the installed U-01407 Elastomer Pad to swivel freely.

Step 2: Coat the outer surface of both flanged BUSH-F-ST.438X.750X1.328 with wheel bearing grease then insert them into the welded bushings of the FF-01400 Dyna-1 Tri-Gear Engine Mount as shown in Figure 1.

Step 3: Position the U-01407 Elastomer Pad as shown in Figure 1 and insert the called out bolts through the holes in the pad and into the flanged bushings.

Install the called out hardware associated with the elastomer pad bolts as shown in Figure 1.

NOTE: Do not apply grease or other lubricant to the Nose Gear Link Assembly or Elastomers.

Step 4: Slide the four J-11968-14 Nose Gear Elastomers onto the shaft of the U-01416 Nose Gear Link Assembly.

Insert the top end of the Nose Gear Link Assembly into the U-01407 Elastomer Pad as shown in Figure 1.

Step 5: Coat the outer surface of the plain BUSHING-ST.438X.750X1.25 with wheel bearing grease then insert the bushing into the lower end of the U-01416 Nose Gear Link Assembly as shown in Figure 1.

Step 6: Bolt the U-01416 Nose Gear Link Assembly to the U-01406-1 Nose Gear Leg using the hardware called out in Figure 1.

NOTE: Ease installation of the hardware atop the Nose Gear Link Assembly by first compressing the elastomers which may be accomplished by lifting the Nose Gear Leg (or by lowering the fuse onto the nose gear leg.)

Slide the U-1002 Isolator Washer, SPRING-00003 compression spring, and U-01420-1 Link Assembly Cap onto the top end of the Nose Gear Link Assembly and secure with the hardware shown in Figure 1. Fully torque the nut.

NOTE: Periodically inspect the elastomer pad and the elastomers with weight off the nose wheel.

Over time, a gap between the elastomer pad and the first elastomer will develop. When this gap develops, install a second isolator washer on top of the first (trimming is not required.)

Two washers have been provided. Up to three washers may be installed before replacement of the elastomers is required.

Refer to Figure 2 for a depiction of the installed assembly.

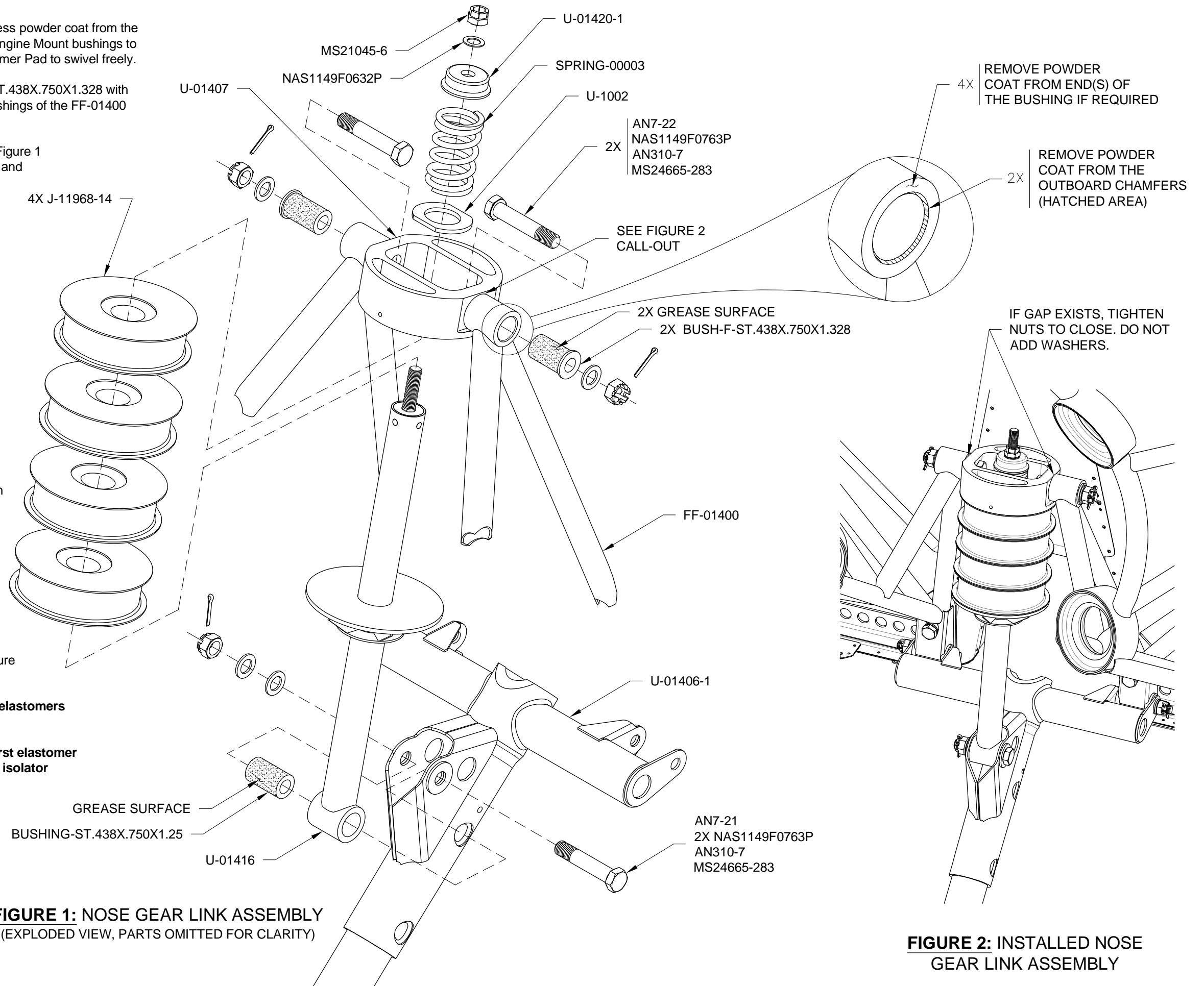
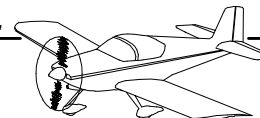


FIGURE 1: NOSE GEAR LINK ASSEMBLY
(EXPLODED VIEW, PARTS OMITTED FOR CLARITY)

FIGURE 2: INSTALLED NOSE GEAR LINK ASSEMBLY



Step 1: Thread the grease fitting into the hole in the front of the U-01430 Nose Wheel Fork Assembly and the two screws into the holes in the top of the nose fork as shown in Figure 1.

CAUTION: Carefully observe the WD-1031 Axle Flange orientation shown in Figure 1. The straight edge of the flange must be positioned forward as depicted. Positioning this edge aft will adversely affect the aircraft's turning radius.

Step 2: Slide the WD-1031 Axle Flange onto the spindle of the U-01406-1 Nose Gear Leg. Final-Drill .313 the .281[7.1mm] hole in the Axle Flange using the axle as a drill guide. See the Figure 1 call-out. Secure it in place using the hardware called out in Figure 1.

Sand the spindle surface indicated using 320 grit sandpaper. See Figure 1.

Clean the sanded surface. Grease the bore of the fork and the spindle surface. For this purpose we recommend (Blue) Marine/Boat Trailer Grease.

NOTE: Belleville washers are slightly cupped and in order to function properly the outside perimeter of both washers must be in contact with each other when installed. See Figure 2. Install the washers dry.

Step 3: Slide the U-01430 Nose Fork and the two K2750-O-219 Belleville Washers onto the spindle, then thread on the S21025-24 Nut.

Step 4: Thread safety wire through the wheel axle holes per the call-out, then attach a spring scale to the end of the safety wire.

Tighten the MS21025-24 Nut until reaching the point at which a force of 26 lbs is required to rotate the U-01430 Nose Fork around the spindle.

Secure the nut with the cotter pin called out in Figure 1. If 26 lbs cannot be obtained using the original cotter pin hole drill a new #30 hole approximately 90° from the original.

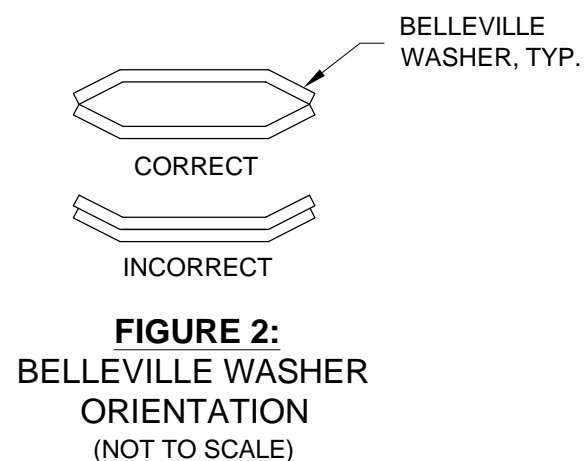
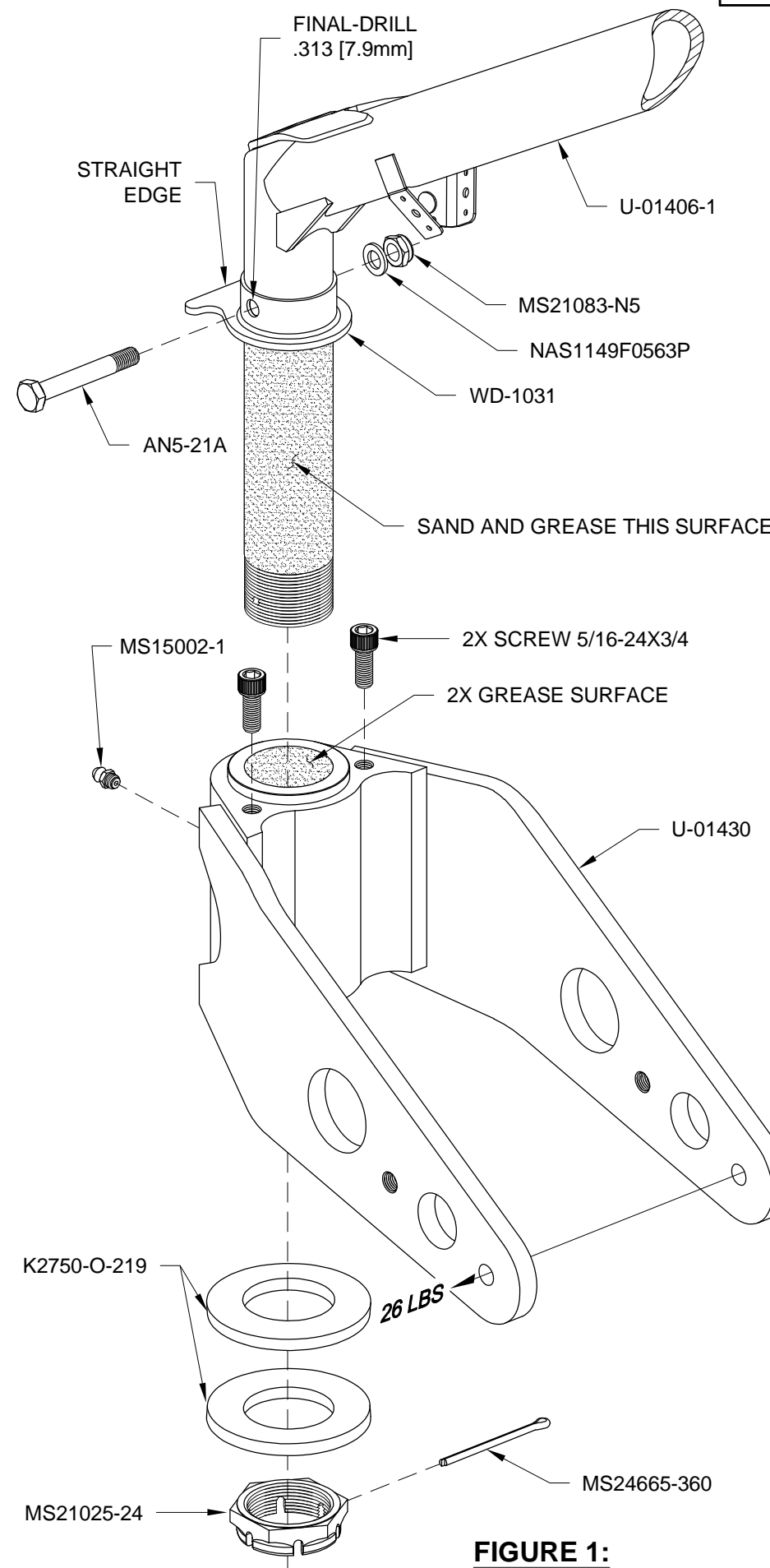
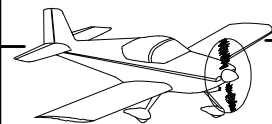


FIGURE 1:
INSTALLING THE NOSE FORK



NOTE: Coat only the outer perimeter of the seal with grease where it contacts the Nose Wheel Assembly. Do not apply grease to the outer seal surface face.

Step 1: Clean, dry and fully grease the bearings that came with the Nose Wheel Assembly with AeroShell Grease 5 or equivalent. The bearings have an integral rubber grease seal. See Figure 2.

Coat the outer perimeter of the seal with grease where it contacts the Nose Wheel Assembly. Insert the bearings into the Nose Wheel Assembly. See Figure 3 detail.

Step 2: Slide the U-00024 Axle through the bearings, then slide the two U-00711 Axle Spacer over the end of the axle and thread on the axle nut. See Figure 3.

NOTE: Integral grease seals produce some drag and make the wheel feel stiff when rotated. The tendency to reduce the axle nut torque until the wheel spins freely allows the grease seal and the bearing cone to improperly rotate with the wheel. The higher rolling drag is completely normal for this bearing. It is important that the axle nut torque be sufficient to keep the seal from rotating with the wheel, but no more than necessary so as not to cause excessive drag. Properly installed, the bearing will produce between 18 and 26 inch pounds of torque (drag).

Step 3: Tighten the axle nut until all play is gone and the wheel rotates freely. Rotate the wheel back and forth while tightening the nut to help seat the bearings. The rubber seal on the bearing must remain stationary while the wheel rotates around it. If the seal spins with the wheel, tighten the nut until the seal stops spinning. When the bearing are fully seated and the bearings seals no longer rotate with the wheel, tighten the nut to align the next available slot/hole combination in the nut and axle.

Step 4: Install the U-00712 Axle Nut Pin by inserting the bent end of the pin into the hole in the axle and then pulling the remainder of the pin over the circular, nonhexed portion of the nut. See Figure 1.

Step 5: Bolt the Nose Wheel and Tire Assembly, and the axle to the Nose Fork Assembly using the hardware called-out in Figure 3.

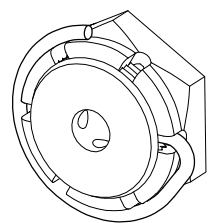
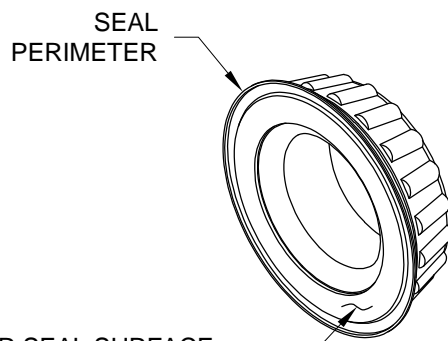


FIGURE 1: INSTALLED AXLE NUT PIN



KEEP OUTER SEAL SURFACE
FACE GREASE FREE

FIGURE 2: WHEEL BEARING

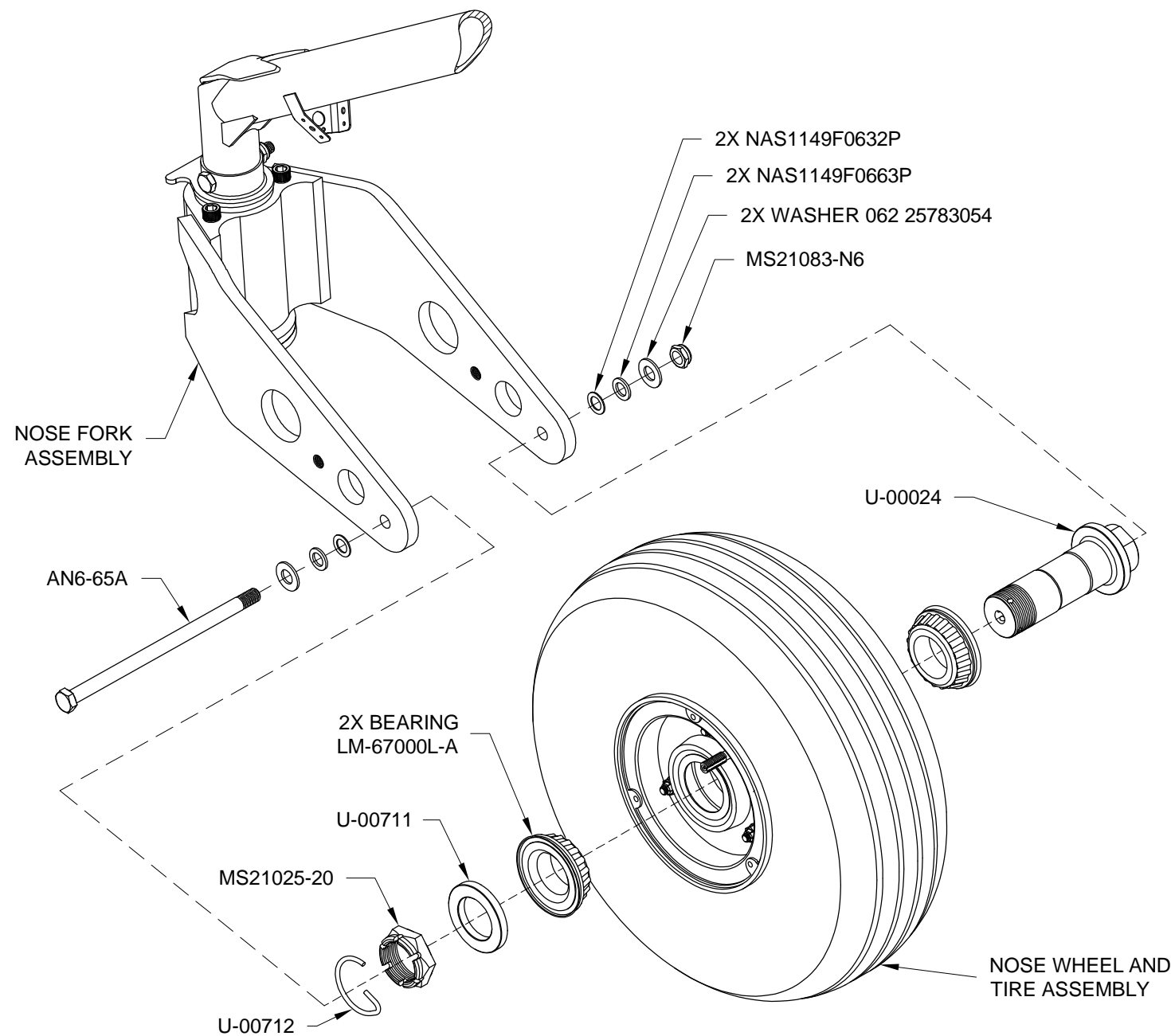
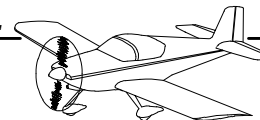


FIGURE 3: INSTALLING THE NOSE WHEEL & TIRE ASSEMBLY



NOTE: Hardware call-outs apply to both Main Gear Legs.

Step 1: Bolt together the U-00003 Bracket Mount, the U-01401-L Main Gear Leg, the U-00009 Axle, and the Brake Torque Plate using the hardware called out in Figure 1. Repeat for the right side.

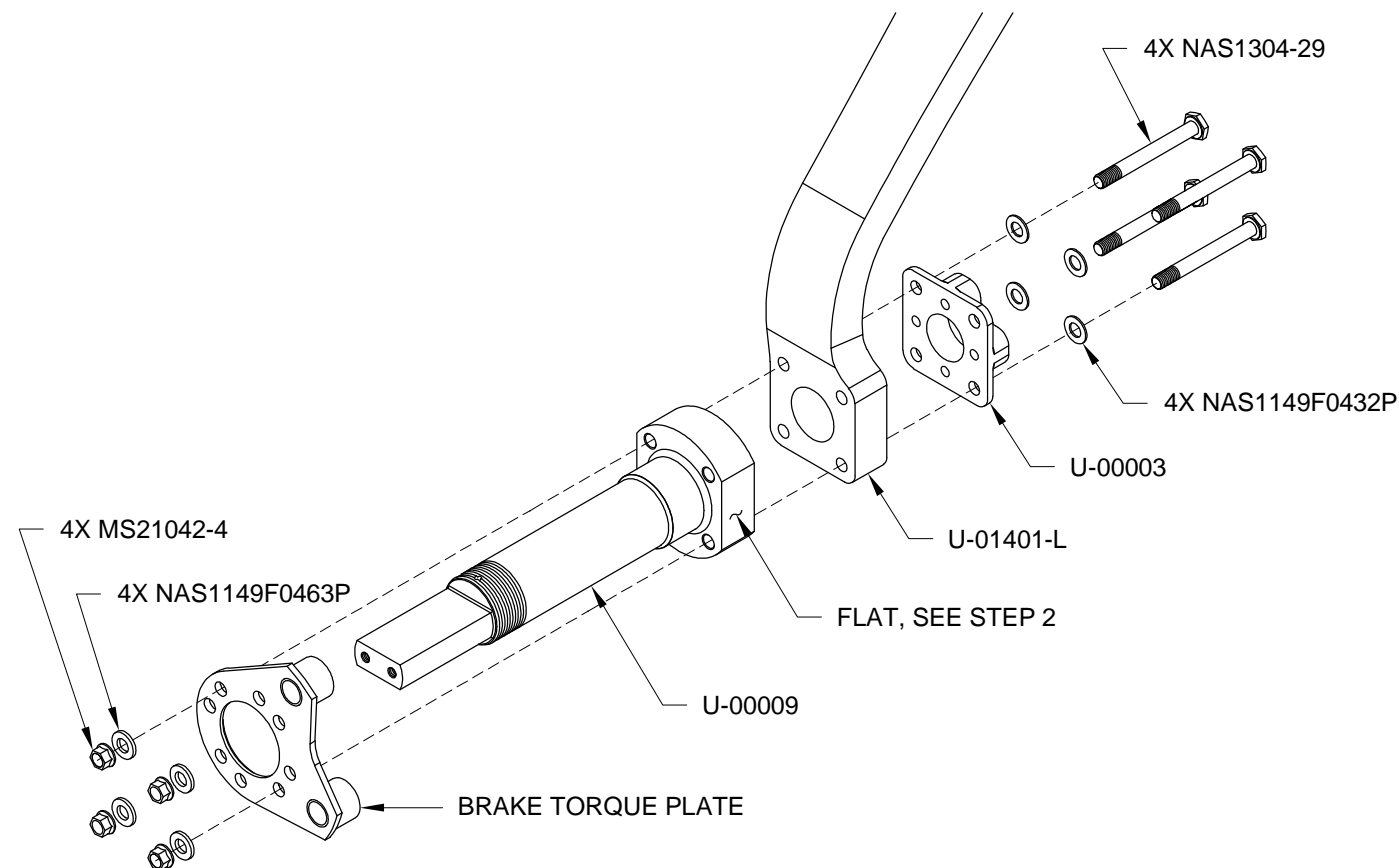


FIGURE 1: ATTACHING THE MAIN GEAR LEG AXLE

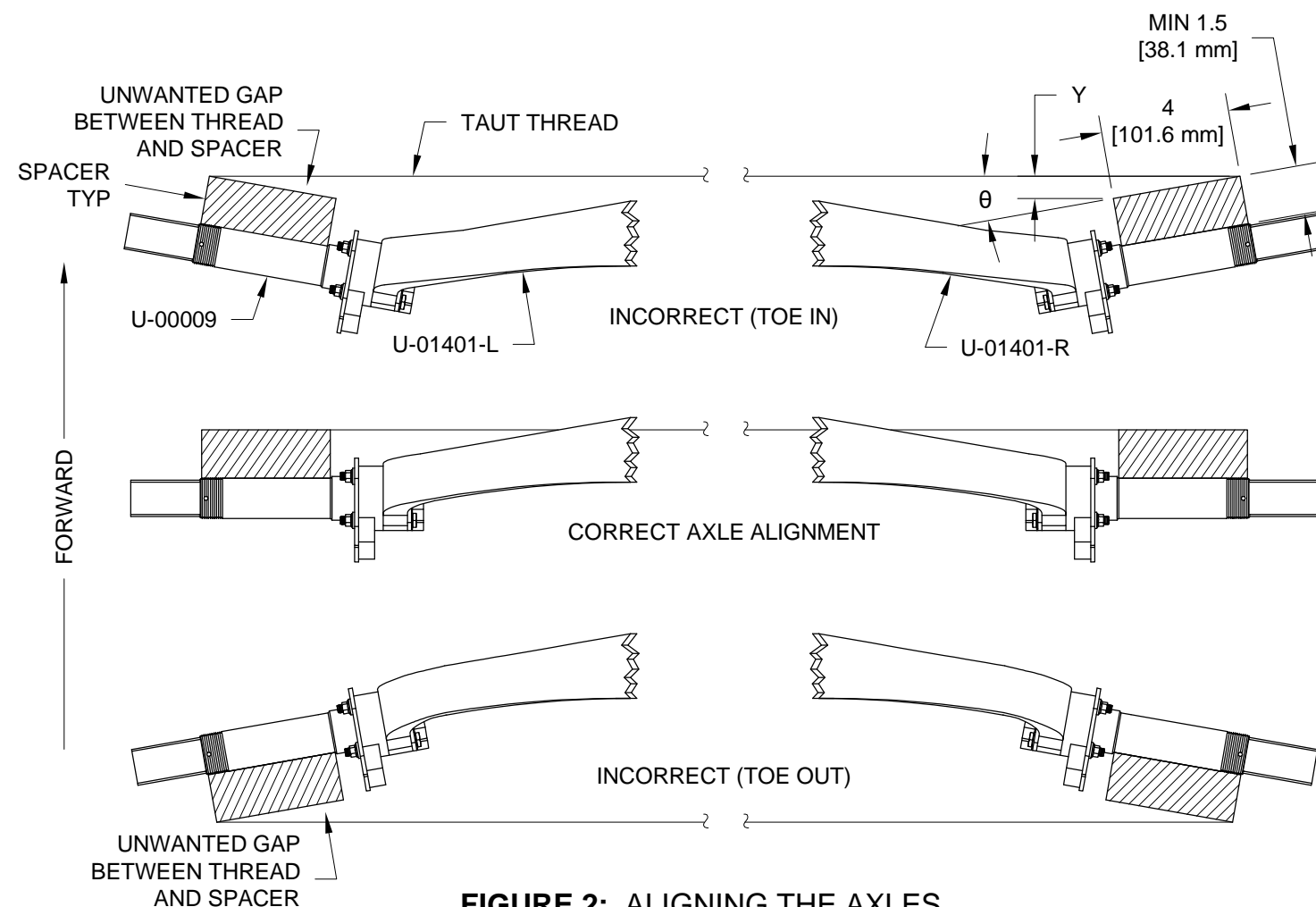


FIGURE 2: ALIGNING THE AXLES (TOP VIEW)

Step 2: Check for correct alignment between the two U-00009 Axles as shown in Figure 2. The maximum allowable angle is 0.25° toe-in or toe-out. The spacers shown in the figure must be located on the front or back of the axles (parallel with the flats on the axle mounting flange, see Figure 1), and be the minimum thickness shown so that the taut thread will clear the back of the brake torque plates.

Table 1 is provided as an aid in determining the toe-in or toe-out angle. Refer to the upper right corner of Figure 2. Dimensions have been added to the spacer with variables 'Y' and 'θ.' Obtain the value for 'Y' by measuring the shortest distance from the thread to the corner of the spacer. Refer to Table 1, column 'Y' and locate the value closest to that just measured. Now read the corresponding angle 'θ.' For example, a builder measures Y = .063 [1.6 mm] and from Table 1 reads that .063 is closest to θ = 1°. The builder then installs the 0.75° shim.

Step 3: If necessary, add U-00013A (0.75°) and/or U-00013B (0.5°) Axle Shims (not provided) between the U-00009 Axles and the U-01401 Main Gear Legs. The axle shims are available through the Van's Aircraft Accessories Catalog.

NOTE: If it is suspected that axle alignment is asymmetric, a second string line parallel to the aircraft centerline may be used to align one axle. Return to the previous method and align the second axle to the first. A small amount of toe in, as long as it is less than 0.5 degrees, is preferable to any amount of toe out.

In Table 1, values of θ are valid only for the block length shown in Figure 2.

TABLE 1: TOE-IN / TOE-OUT ANGLE	
Y	θ (see Note)
0.035 [0.9 mm]	0.5°
0.070 [1.8 mm]	1.0°
0.105 [2.7 mm]	1.5°



NOTE: Hardware call-outs on this page apply to both Main Wheel and Tire Assemblies.

Step 1: Slide two U-405 Axle Spacers and one of the Main Wheel and Tire Assemblies onto the U-00009 Axle of the U-01401-L Main Gear Leg as shown in Figure 1.

Thread on the nut and carefully.

Tighten the nut until there is no side play in the wheel but it still rotates smoothly.

Install the cotter pin.

Repeat for the right side.

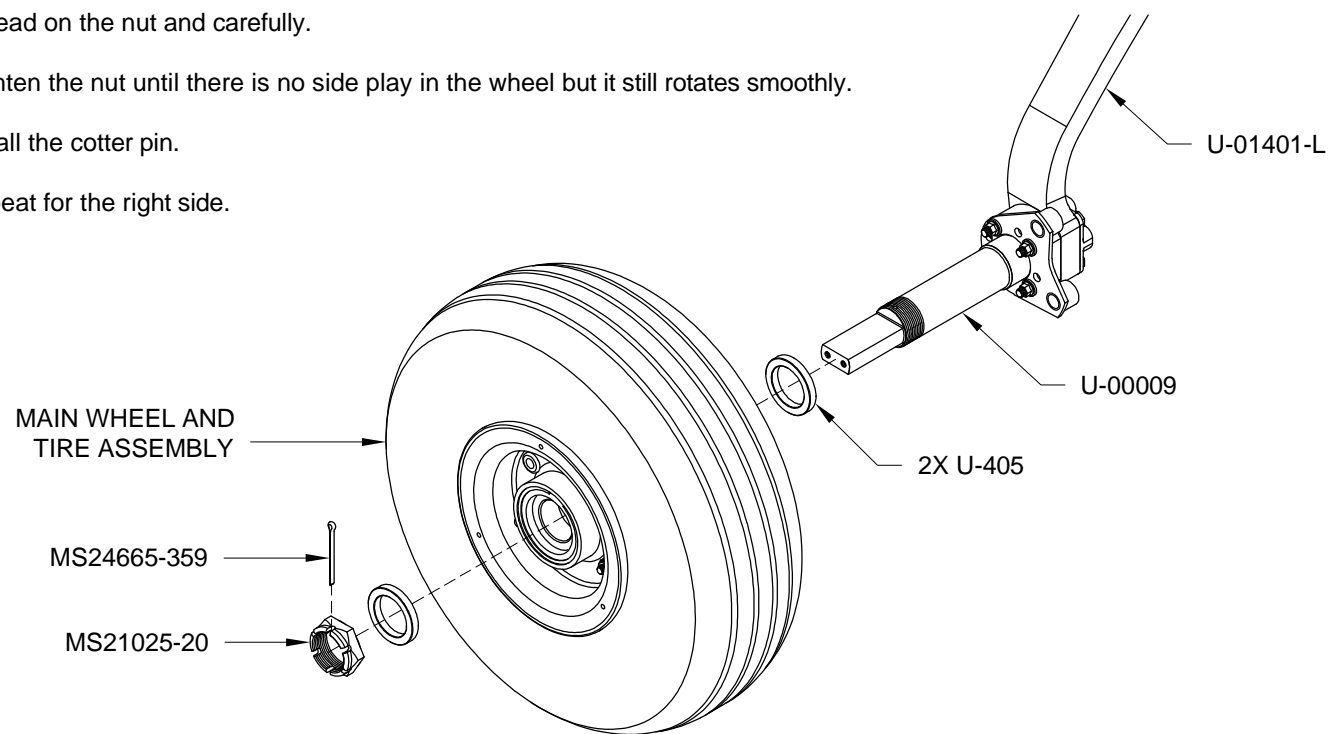


FIGURE 1: INSTALLING THE MAIN WHEEL & TIRE ASSEMBLIES

NOTE: The bleeder valve will have to be moved to the bottom of one of the Brake Caliper Assemblies.

Step 2: Set up the Left and Right Brake Caliper Assemblies as shown in Figure 2. Apply high temp thread sealant such as Permatex #59214 or equivalent to the male thread of the called out Tube/Pipe Elbow fittings per the sealant manufacturer's instructions before threading them into the top of the Brake Caliper Assemblies.

Step 3: Slide the studs of the Brake Caliper Assembly into the Brake Torque Plate.

Place the Back Plate behind the Brake Disc.

Bolt the Back Plate and Brake Caliper Assembly together carefully observing the manufacturer's bolt torque specifications shown on the document in the wheel/ brake package.

Safety wire the bolts.

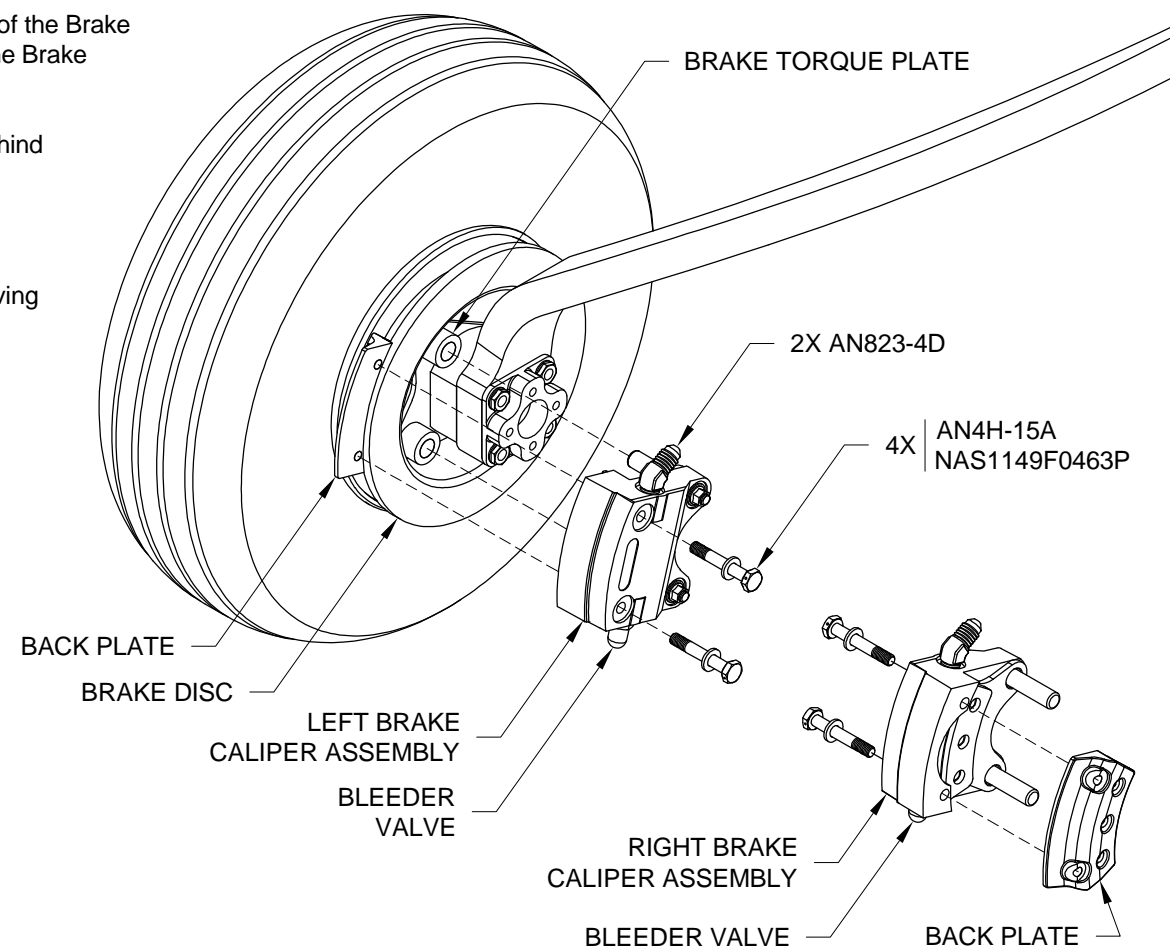
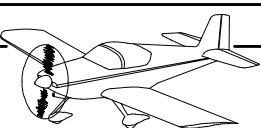


FIGURE 2: INSTALLING THE BRAKE CALIPER ASSEMBLIES



NOTE: See Section 5.14 for detailed instructions on tube flaring and installation. Hardware call-outs apply to both sides.

Step 1: Apply a small amount of pipe thread sealant, then thread the AN fitting shown in Figure 1 into the bottom of the U-01402 Lower Gear Brace (not shown in the figure).

Step 2: Cut two 36.5 in. [927 mm] lengths of .032X.250 3003-0 Tube for the U-01414-L & -R External Brake Lines.

Step 3: Cut six 2.0 in. [51 mm] lengths of PT-062X3/8 Clear Plastic Tube to make the U-01415 Brake Line Sleeves.

Step 4: Slide three U-01415 Brake Line Sleeves (they can be slit lengthwise if sliding them proves difficult), the two AN nuts, and the two AN sleeves called out in Figures 1 and 3 onto both U-01414-L & -R External Brake Lines, then polish and flare the ends.

Step 5: Secure the top of the U-01414-L External Brake Line to the AN fitting on the bottom of the fuselage as shown in Figure 1, then bend the brake line so that it runs down the aft side of the U-01401-L Main Gear Leg and remains within the profile of the main gear leg as shown in Figure 2.

NOTE: The brake line should be adjusted so that it naturally aligns with the caliper and does not induce a side load which may cause the brake pad to drag on the disc.

Step 6: Bend the U-01414-L External Brake Line around the bottom end of the U-1001-L Main Gear Leg (be sure the AN819-4D Sleeve is at the bottom end of the brake line before bending), then secure it to the AN fitting on the Left Brake Caliper Assembly as shown in Figure 3.

Step 7: Secure the U-01414-L External Brake Line in the three places to the U-01401-L Main Gear Leg with U-01415 Brake Line Sleeves and "Friction Tape" (found at most hardware stores) as shown in Figure 3.

Step 8: Repeat Steps 5-7 for the right side.

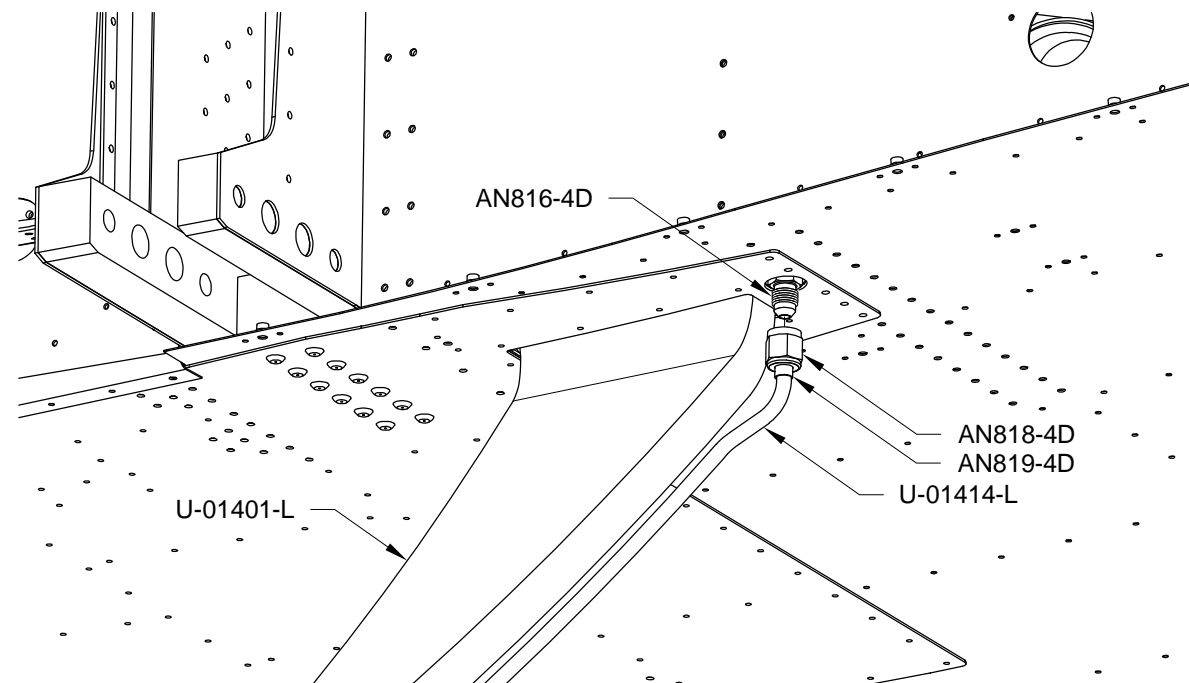


FIGURE 1: ATTACHING THE TOP OF THE BRAKE LINE
(CLEAR PLASTIC TUBE NOT SHOWN)

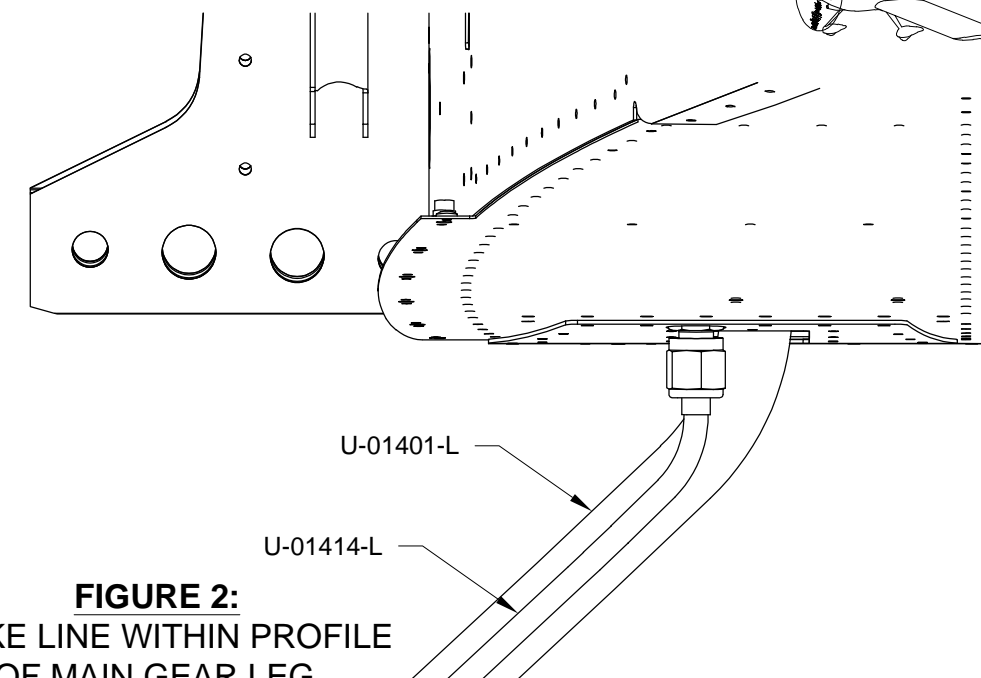


FIGURE 2:
BRAKE LINE WITHIN PROFILE
OF MAIN GEAR LEG
(CLEAR PLASTIC TUBE NOT SHOWN)

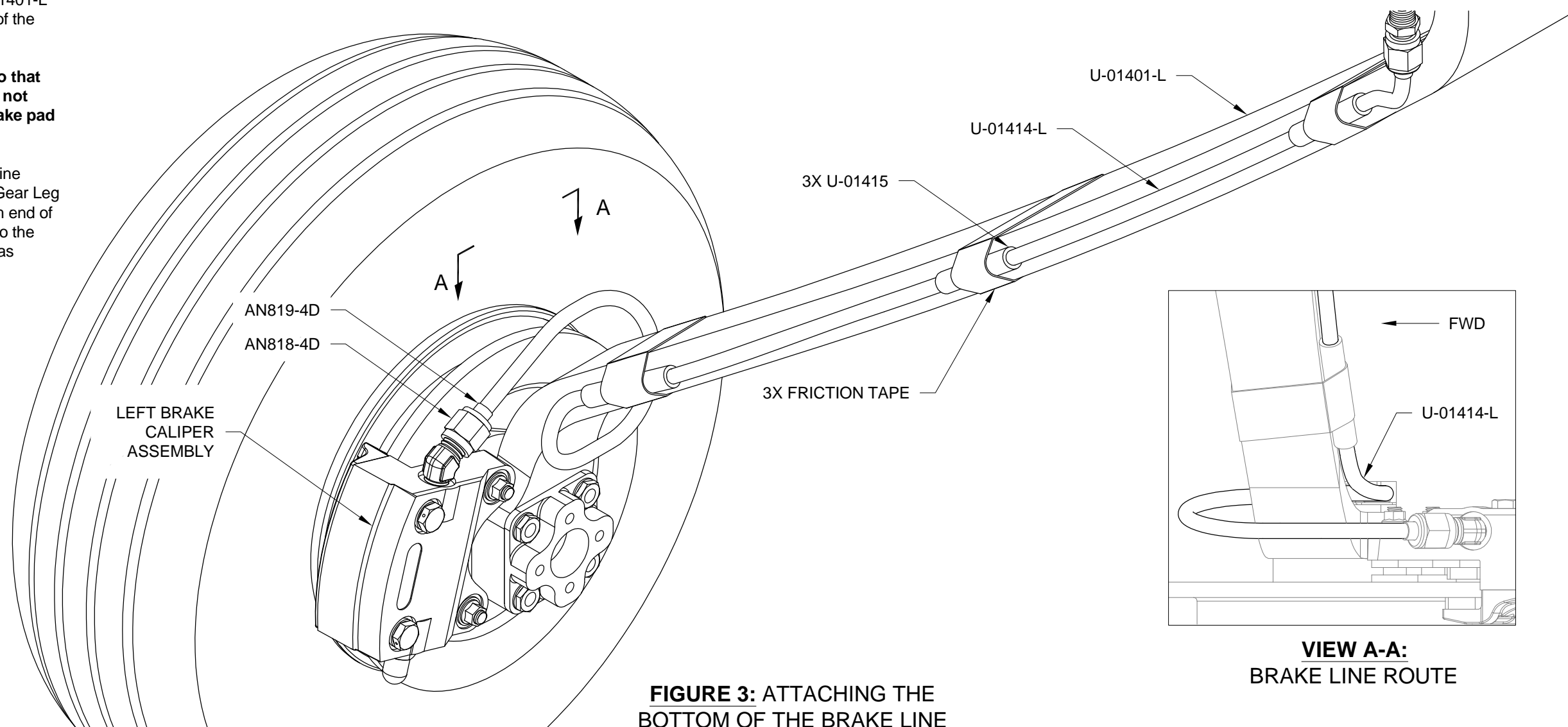
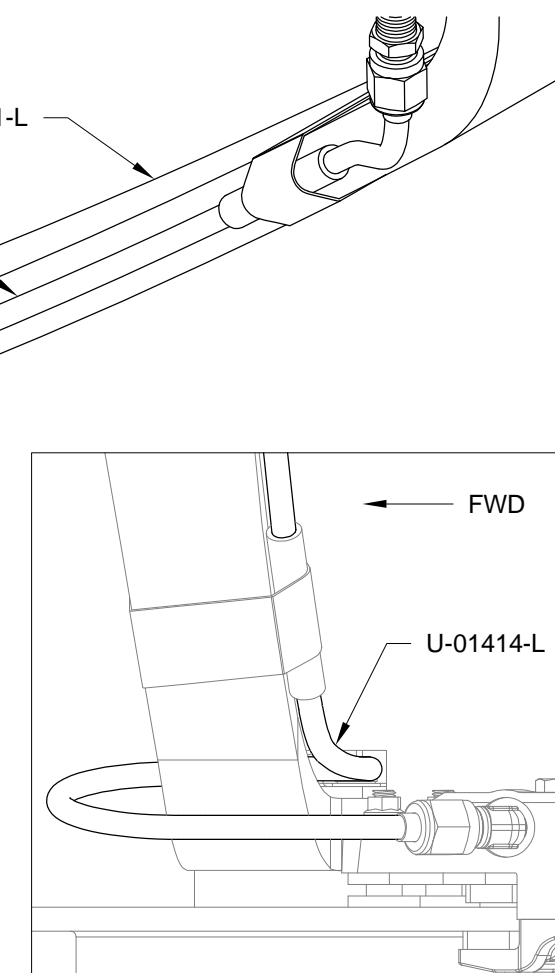


FIGURE 3: ATTACHING THE
BOTTOM OF THE BRAKE LINE



VIEW A-A:
BRAKE LINE ROUTE



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