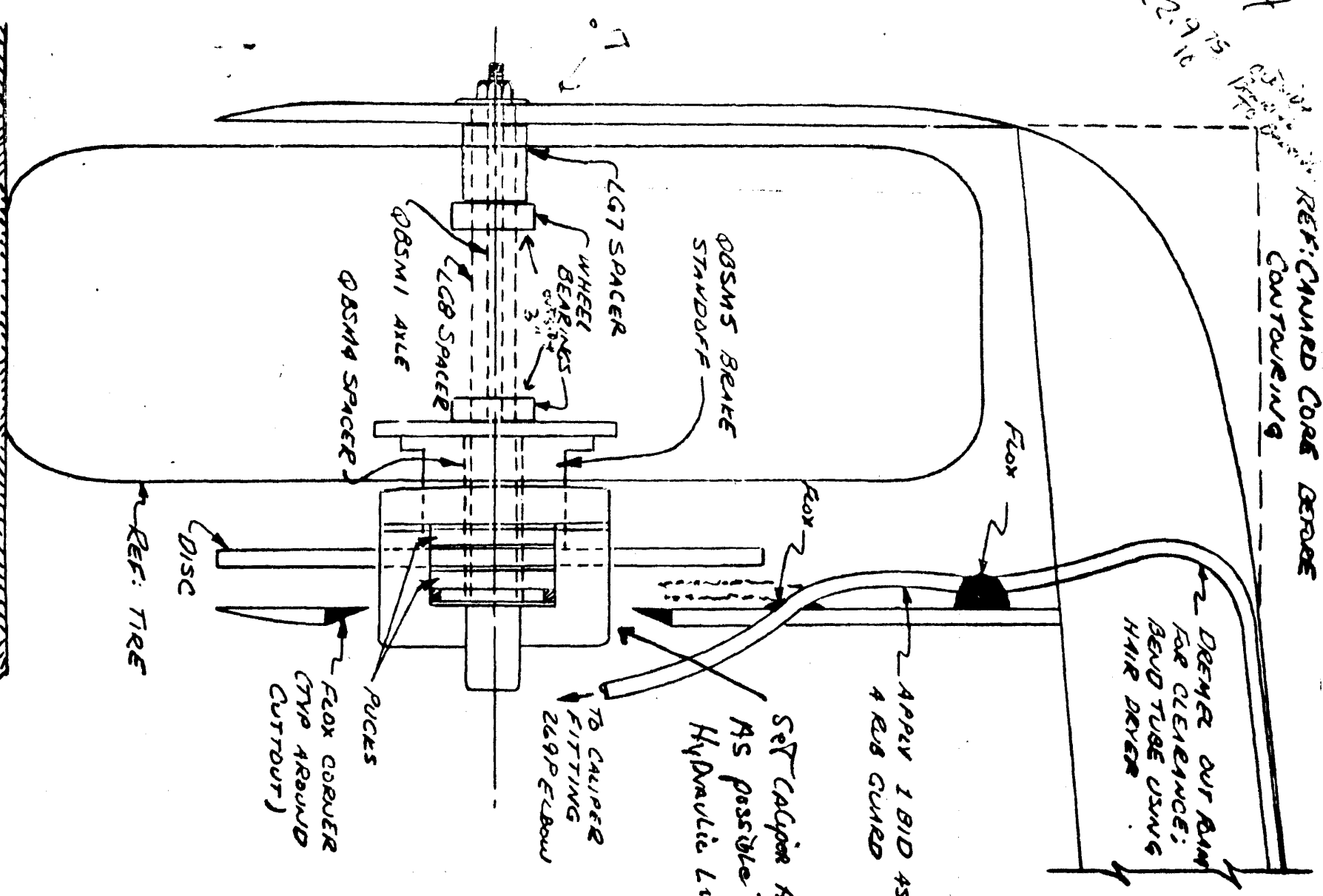


Hand to
6.4
11/27/81
3

REF: CAVARD COAS GEODE
COURTAINING



NUMBER
Q2PC18
Q2PC19

DATE
11 November, 1981
27 November, 1981

DESCRIPTION
Page 14-2: The AN3-24A Bolt retaining the QTWM1 axle on which the tail wheel rotates is longer than necessary. Current kits contain an AN3-20A Bolt as a replacement.
Page 11-3 thru Page 11-6: The original internal expanding drum brakes have been replaced by Hydraulic Disc Brakes controlled by a single pull handle within the left cockpit side console. The Q2BSM1 Brake Pedals and associated cable and hardware are omitted and replaced by the enclosed plans. The rudder pedals are mounted as shown on Page 11-3.

INSTALLING THE WHEELS/TIRES/BRAKES

The Q2 uses 5" diameter wheels, hydraulic disc brakes, and 400 x 5 tires standard. The wheel pant is large enough to accommodate a 500 x 5 aircraft tire. Begin by assembling the wheel halves and the QBSM5 standoff using the 3 AN5-33A bolts and nuts provided. Assemble a disc to the QBSM5 standoff using the 6 AN3H-4A bolts provided, and safety wire the assembly.

Next, mount the tires to the wheels and inflate to between 25-40 psi. Check the pressure after the assembly has set for several days and verify that there are no leaks.

The left and right wheel pant assemblies are mirror images of one another. The instructions and sketches that follow cover only the left wheel pant, but you will probably wish to save time and do both the left and right together.

To provide clearance for the hydraulic disc brake assembly, which is located on the inboard side of the wheel pant, the tire is offset slightly toward the outboard side of the wheel pant.

The LG7 spacer is made from 7/8" O.D. x 0.120" wall 6061T6 Aluminum tubing. The sizing will be described shortly. Find QBSM1 axle bolt (2) and the QBSM4 spacer (2). The LG8 spacer is made from 5/8" O.D. x 0.065" wall 6061T6 Aluminum tubing, so find that material also.

Open up the 1/4" diameter axle pilot holes in the wheel pant to 5/8" spotface to avoid tearing the hole. The LG8 spacer length is the width between the outside faces of the wheel pant measured at the axle hole; measure carefully. Next, carefully measure the width of the wheel pant between the inside faces at the axle hole. The QBSM4 spacer has been sized to provide a minimum of 1/4" clearance between the outboard tire side and the inside wheel pant face on the outboard of the pant. If the clearance is less than 1/4", reduce the length of the QBSM4 spacer to set a minimum clearance of 1/4". Now, the LG7 spacer can be made. Size it so that there is about 0.020" freerplay from side to side after it is installed in position.

LG6 is a tool made from 5/8" O.D. x 0.065" wall 6061T6 Aluminum tubing. It has slightly rounded ends, and its length should be approximately 1/8" less than the width between the inside faces of the wheel pant

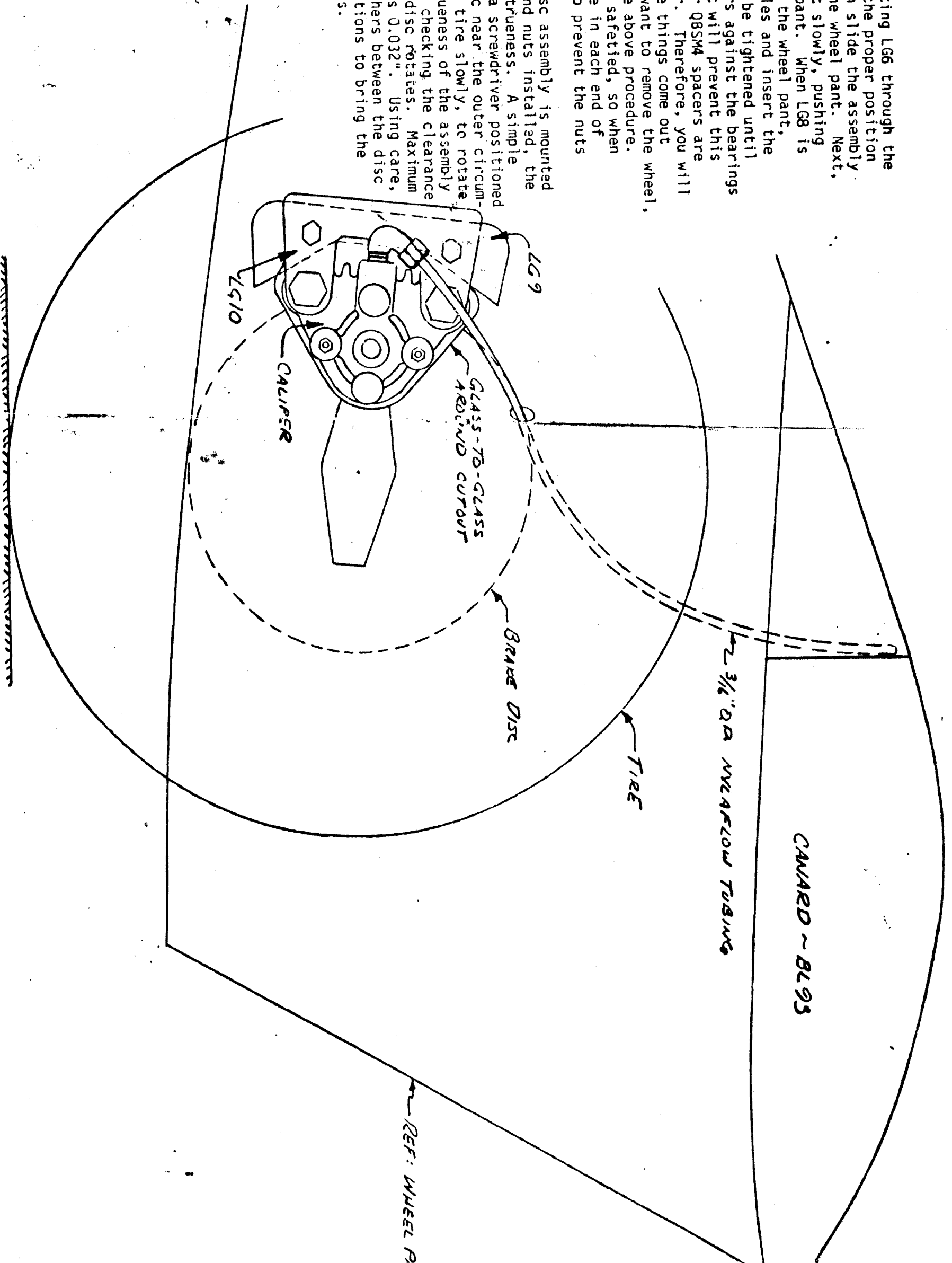
CONTINUED ON NEXT PAGE

measured at the axle hole. By inserting LG6 through the pieces (except LG8) to keep them in the proper position (sort of like a shisk-a-bob), you can slide the assembly up into the proper position inside the wheel part. Next, slide and push LG8 from left to right slowly, pushing LG6 out the other side of the wheel part. When LG8 is resting between the inboard faces of the wheel part, center the AN970-3 washers on the holes and insert the QBSM1 axle bolt. The axle bolt must be tightened until it clamps up the LG7 and QBSM4 spacers against the bearings of the wheel. If LG8 is too long, it will prevent this clamping up effect; if the LG7 and/or QBSM4 spacers are too short, they won't clamp up either. Therefore, you will have to do some trial fitting to make things come out right. In the future, whenever you want to remove the wheel, use the LG6 piece, just reversing the above procedure.

The AN310-4 castle nuts must be safetied, so when everything fits properly, drill a hole in each end of QBSM1 and run a cotter pin through to prevent the nuts from backing off.

Once the wheel/tire/standoff/disc assembly is mounted in the wheel part with all spacers and nuts installed, the disc must be checked for rotational trueness. A simple way of accomplishing this is to use a screwdriver positioned horizontally to rest against the disc near the outer circumference of the disc. Then, spin the tire slowly, to rotate the disc, and check the rotational trueness of the assembly by holding the screwdriver fixed and checking the clearance between disc and screwdriver as the disc rotates. Maximum allowable wobble in that direction is 0.032". Using care, 0.02" is easily obtainable. Use washers between the disc and standoff in the appropriate locations to bring the trueness within the prescribed limits.

CONTINUED ON NEXT PAGE



REF: WHEEL P

The inboard face of the wheel pant must have a cutout for clearancing of the brake caliper. Use the 'Hole Cutout for Caliper' template to make the cutout. A flux corner is positioned around the circumference of the cutout by removing the foam and replacing the foam with flux tapered to an edge. Laminates 2 810 around the circumference over the flux, lapping 1" minimum onto the existing fiberglass. Make LG10 using the full size pattern provided. It is important that the distance between the two 5/16" diameter holes is 2.25". Also, the two holes will need to be clearanced with sandpaper for the spacer added later on. LG10 basically holds the caliper; it does not set the alignment of the caliper; the pucks do that. The caliper must be able to ride in and out on LG10 to allow for both wear of the pucks and any misalignment of the disc. Also, make LG9 from the full size pattern provided.

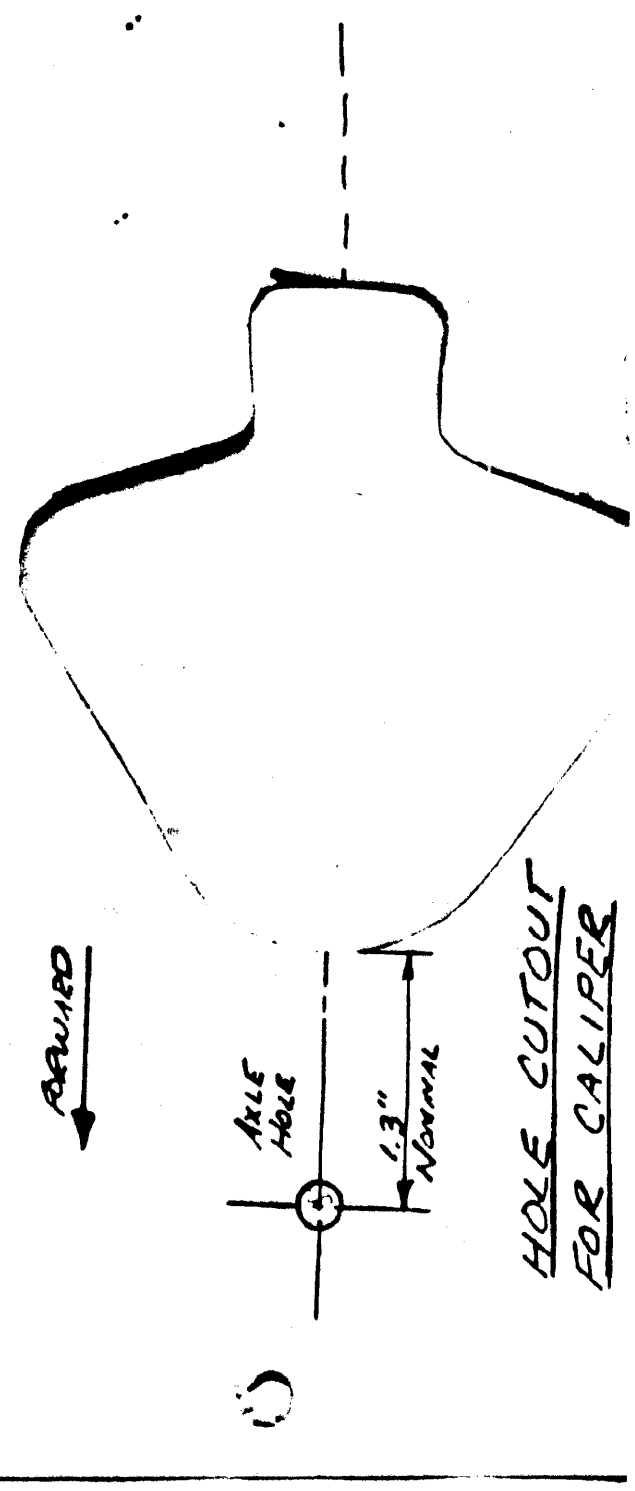
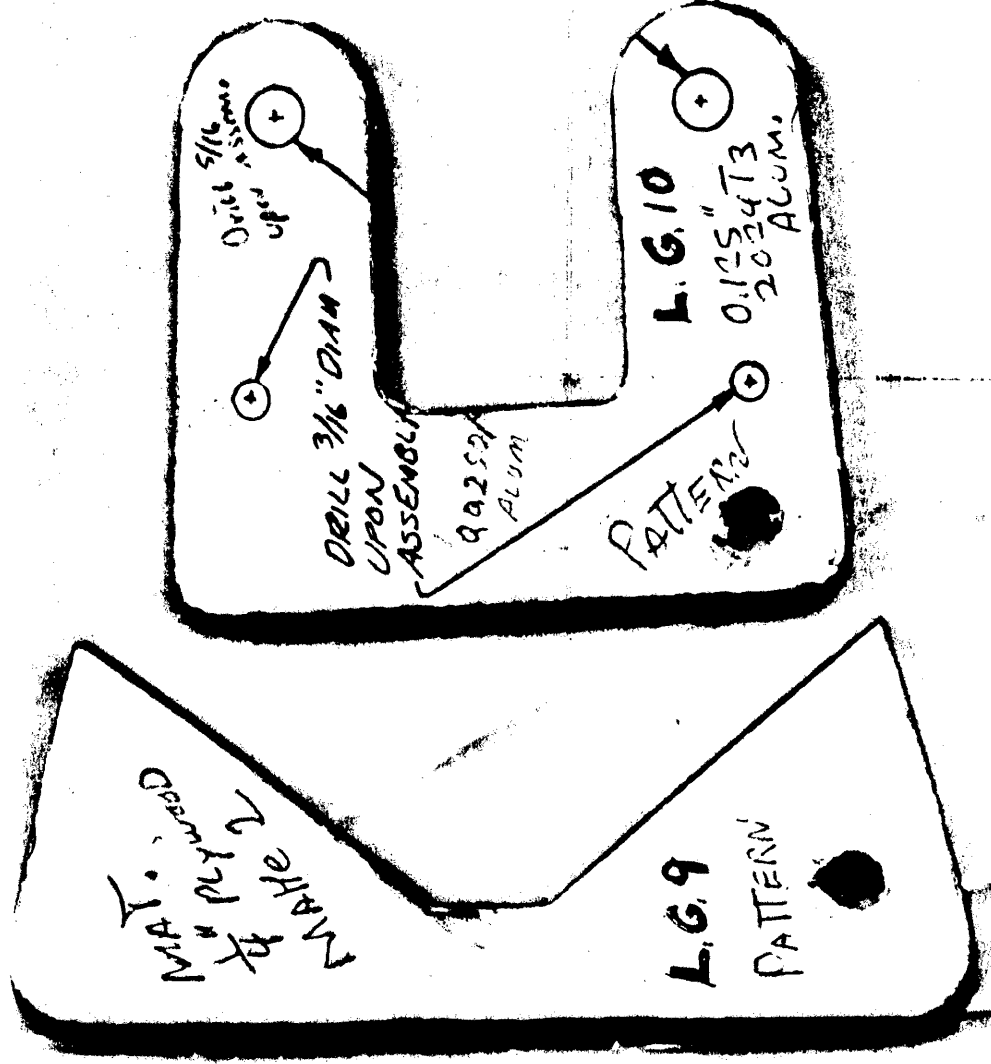
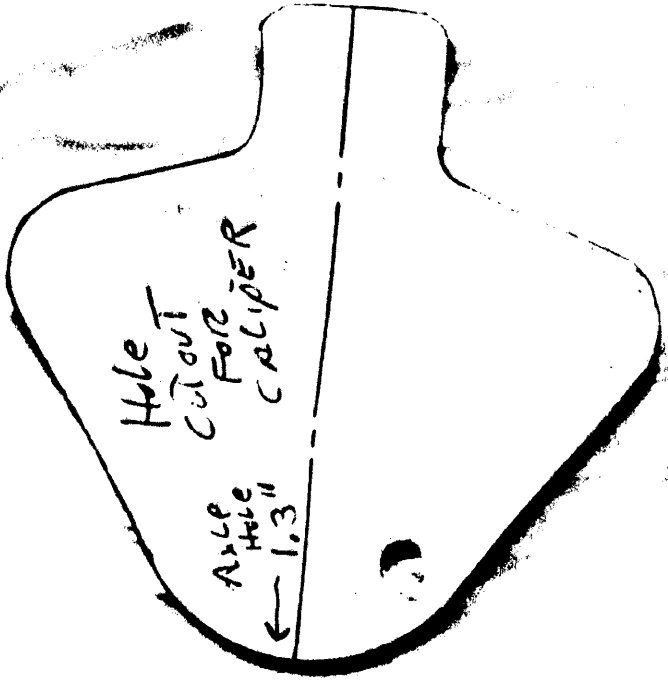
The caliper comes in three pieces in order to facilitate positioning around the disc. The thin center piece is a spacer because the Q2 system uses a thick disc. The slim casting (anvil) is positioned outboard. In order to position the LG9 plywood insert in the inboard wheel pant face, the builder must locate its position. Study the side view drawing. Assemble LG10 to the caliper and position the caliper as shown in relationship to the disc. This will allow you to mark the position of LG9. Remove the inboard glass and foam from the inboard wheel pant side and insert the LG9 using flux. Laminates 2 810 over the LG9 insert lapping at least 1" onto the existing lamination on the inboard wheel pant side.

Study the following drawings very carefully: 'LG10 Mounting' and 'Caliper Mounting'. Obviously, the assembled caliper must straddle the disc. LG10 must be mounted to the LG9 plywood insert using the aft holes in LG10. The forward holes on LG10 are used to mount the caliper assembly to LG10.

The LG11 and LG12 spacers are made from 5/16" O.D. x 1/4" I.D. 4130 Steel Tubing. LG11 should be 0.25" in length. LG12 should be 1.75" in length. Note carefully the assembly sequence shown in the 'Caliper Mounting' drawing. The spacers ride against the AN960-416 washers.

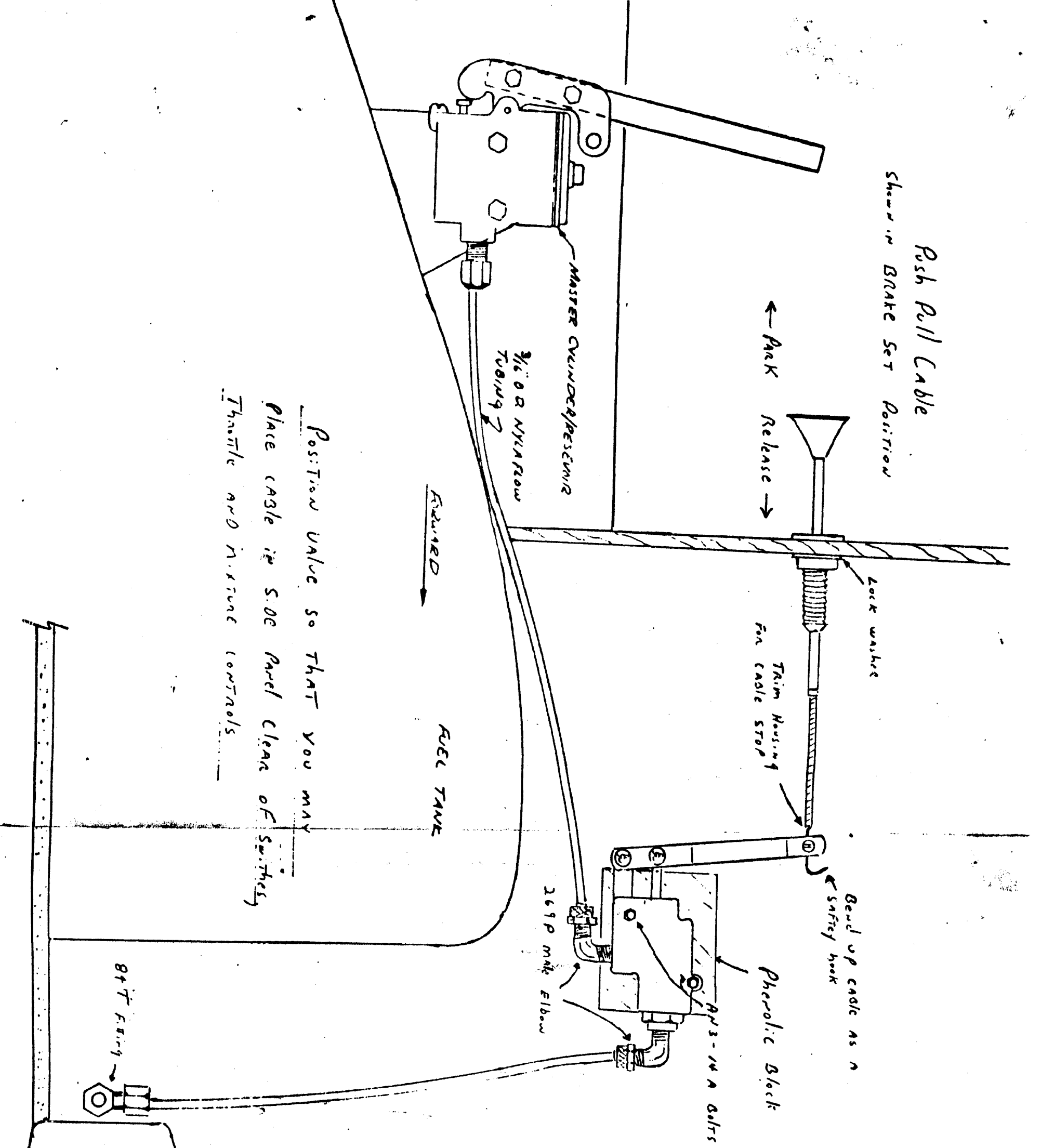
By varying the number of AN970-3 washers top and bottom (see 'LG10 Mounting' drawing), the caliper assembly can be aligned with the disc, and allowances can be made for curvature in the inboard wheel pant face.

To assemble the caliper assembly, the three caliper pieces must be slipped up into position on either side of the disc, with the pucks in position. The outboard puck is held in position using a screw provided. The inboard puck can be held in position for assembly with a dab of contact cement. Disassembly is, of course, effected by reversing the above procedure.

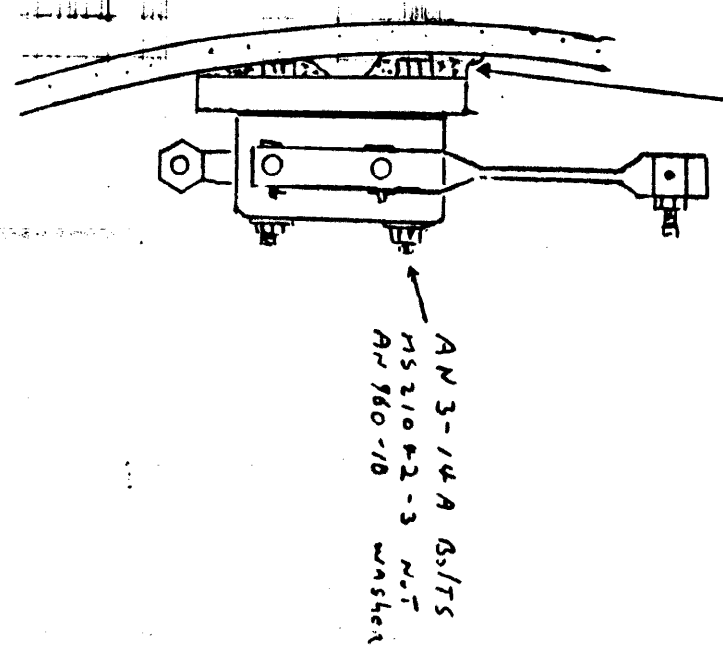


HOLE CUTOUT FOR CALIPER

Push Pull Cable
 Show in BRAKE SET Position

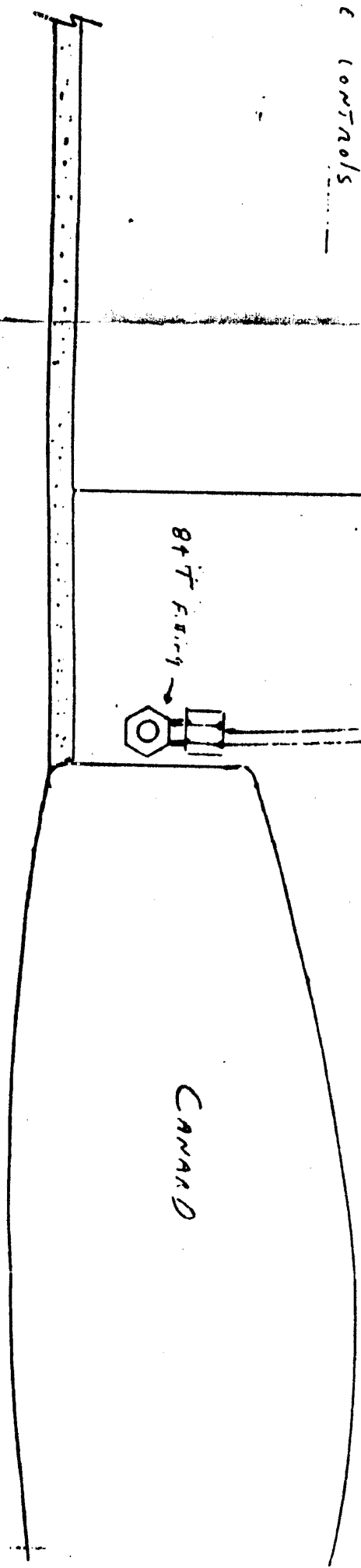


Position valve so THAT YOU MAY
 Place cable in S.O.C Panel Clean of switches,
 Throttle and mixture controls

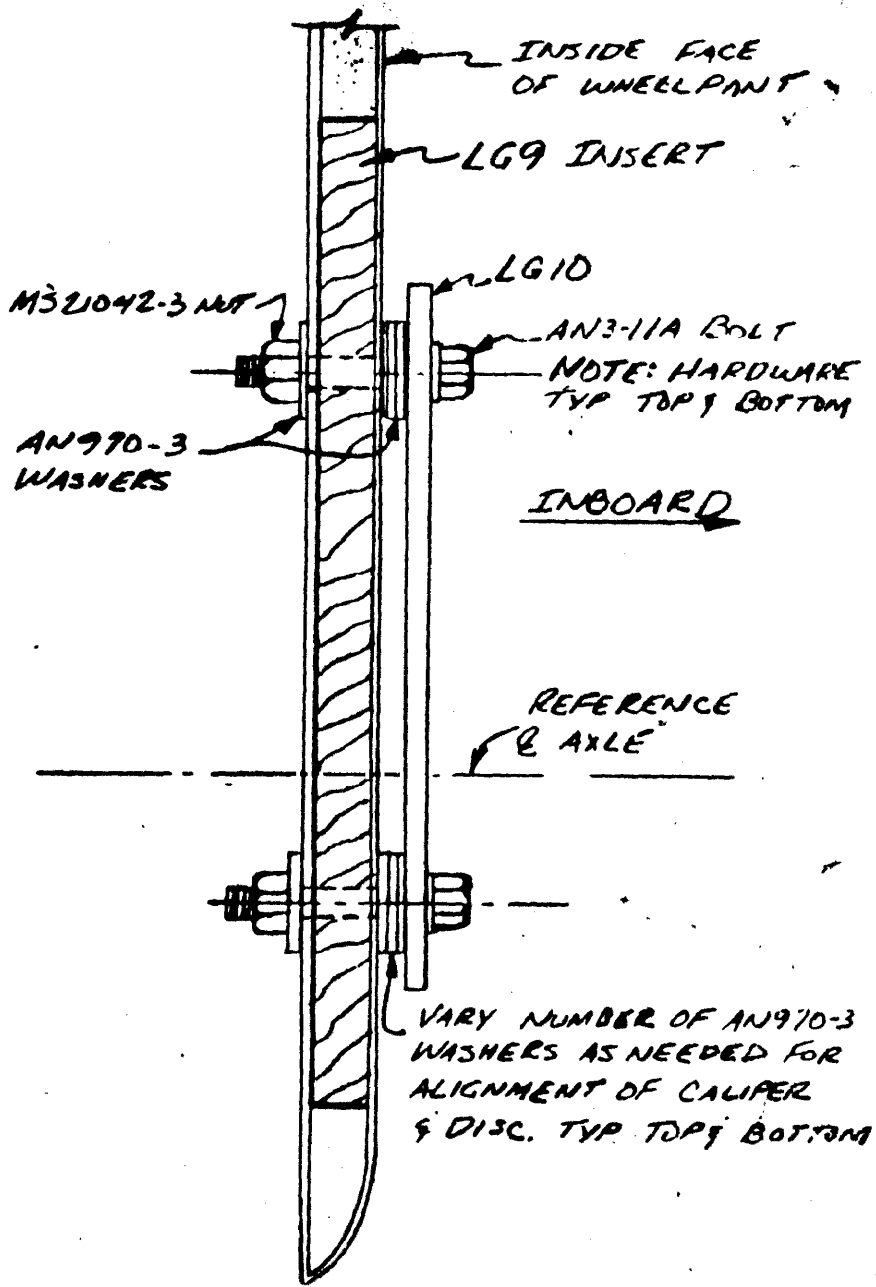


Pheroelic Floxed in place also
 with air head and floxed

Remember to check Packing
 BRAKE AS PART OF YOUR Pre-
 Landing Check List
 (Packing BRAKE MUST BE Dis-engaged)

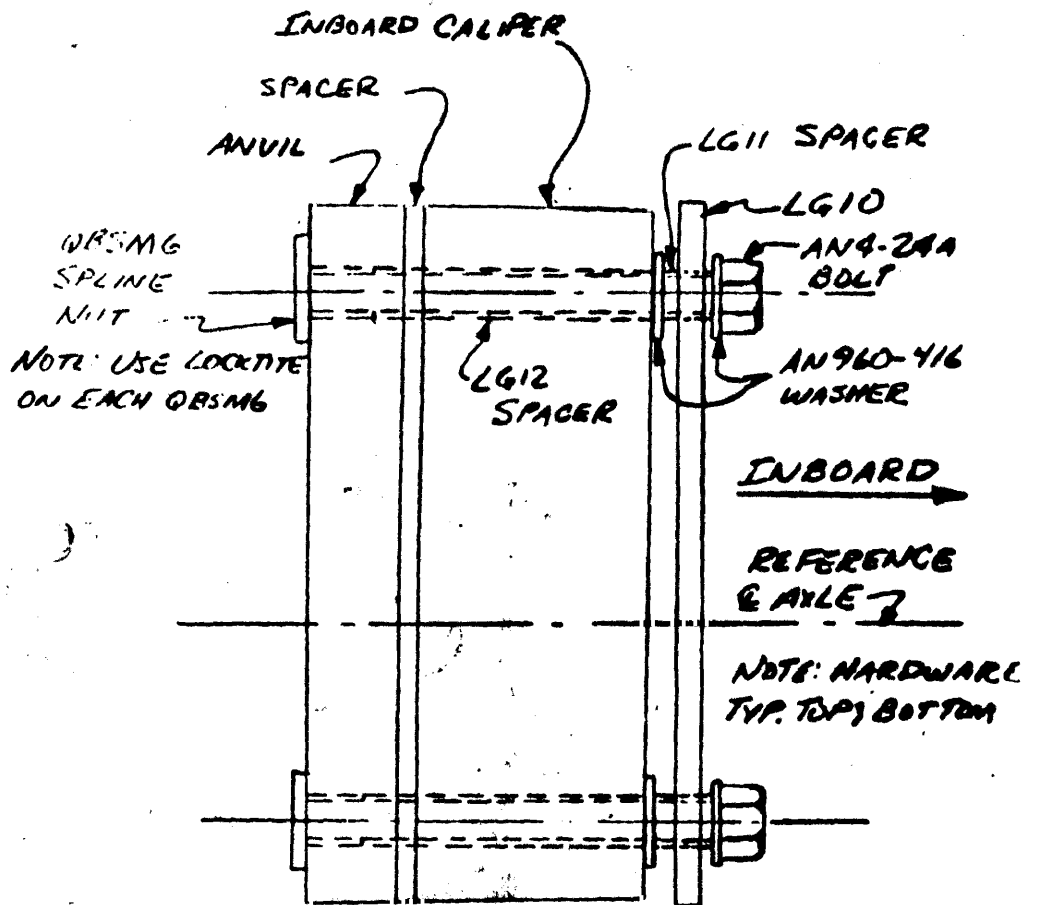


CANARD



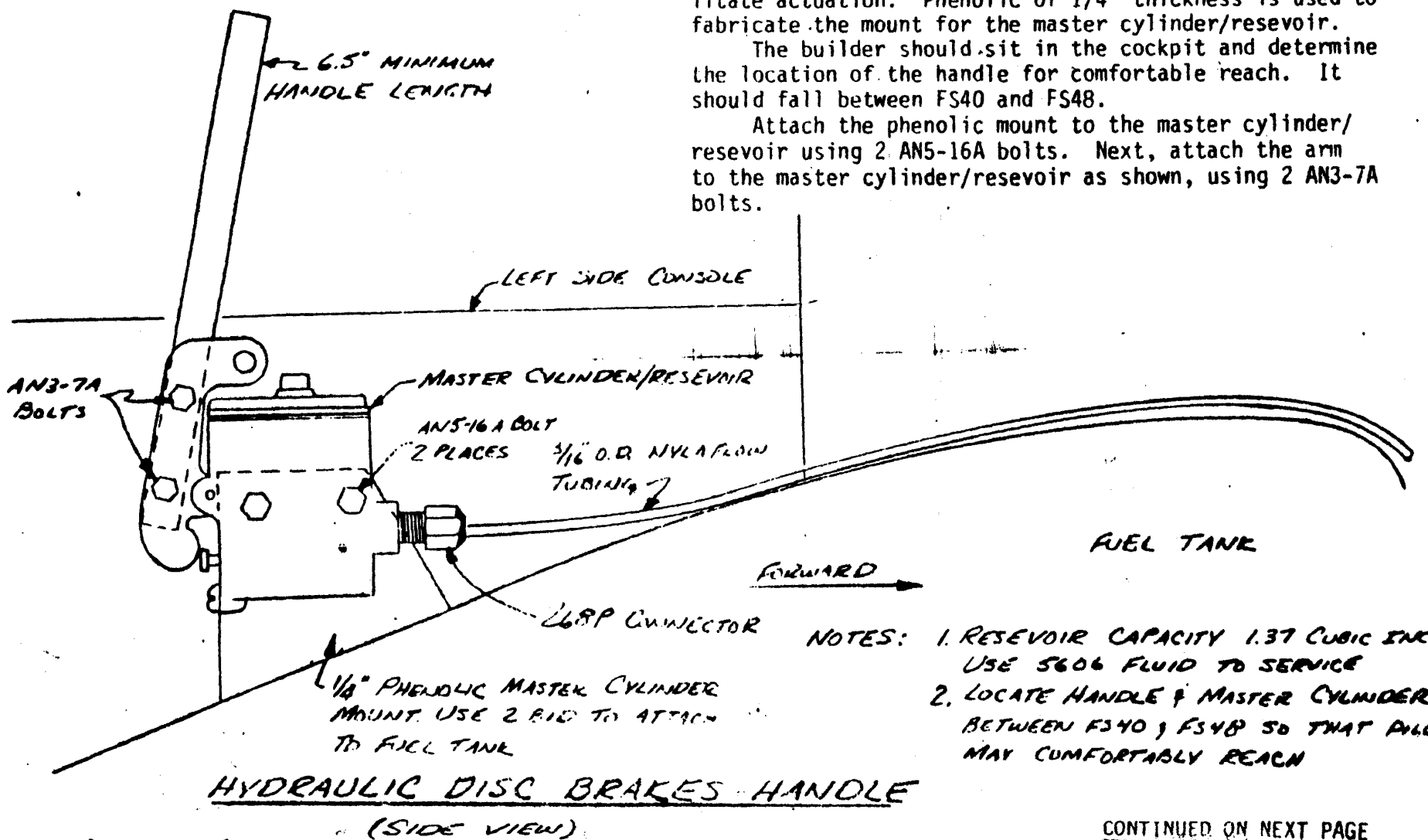
LG10 MOUNTING

(LOOKING FORWARD)
(USE AFT HOLES IN LG10)



CALIPER MOUNTING

(LOOKING FORWARD)
(USE FWD HOLES ON LG10)



BRAKE HANDLE/MASTER CYLINDER MOUNTING

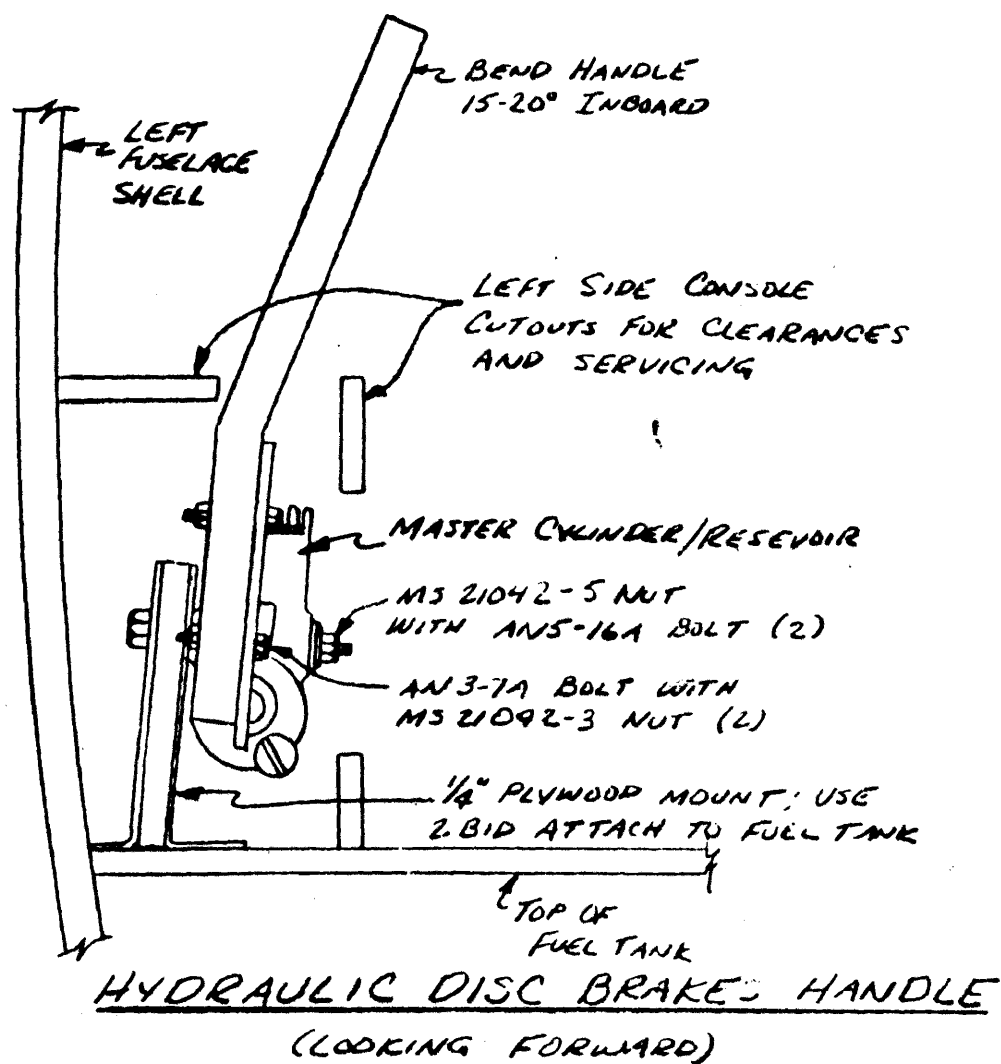
The two hydraulic disc brakes are actuated by a single pull handle located in the left side console. This handle actuates a master cylinder/resevoir mounted within the console on top of the fuel tank.

Begin by making the handle from 9/16" O.D. x 0.035" wall 4130 steel tubing; the 15-20 degree bend is to facilitate actuation. Phenolic of 1/4" thickness is used to fabricate the mount for the master cylinder/resevoir.

The builder should sit in the cockpit and determine the location of the handle for comfortable reach. It should fall between FS40 and FS48.

Attach the phenolic mount to the master cylinder/resevoir using 2 AN5-16A bolts. Next, attach the arm to the master cylinder/resevoir as shown, using 2 AN3-7A bolts.

It will be necessary to cut away some of the left side console in order to install and actuate the assembly. Mount the phenolic mount to the fuel tank using 2 BID lapping onto the fuel tank a minimum of 1 inch, positioning it as shown. Check again that the handle can be comfortably reached while the pilot is seated in the aircraft.



ROUTING THE HYDRAULIC TUBING

Nylaflo tubing (3/16" O.D. x 0.028" wall) is used to route the hydraulic fluid pressure to the brake pucks. A 268P connector attaches to the master cylinder/reservoir as shown. The Nylaflo tubing then runs forward past the fuel tank to a #84 lb 03 Tee fitting. The Nylaflo tubing then runs outboard through the canard to each wheel pant. The builder may choose whether to use the routing shown and described on Page 10-6, or whether to route the tubing outboard just forward of the elevator in the elevator slot. In the later case, use 5-Min dabs to hold the tubing in place. Once reaching the wheel pant vicinity, dremel out the foam for clearance, and heat the tubing with a hair-dryer to bend it downward as shown in the 'LEFT WHEEL PANT ASSEMBLY LOOKING FORWARD' drawing. A 269P elbow is used to connect the Nylaflo tubing to each inboard caliper. The optional Dual Brake and Parking Brake installations are covered separately.

END OF Q2PC19