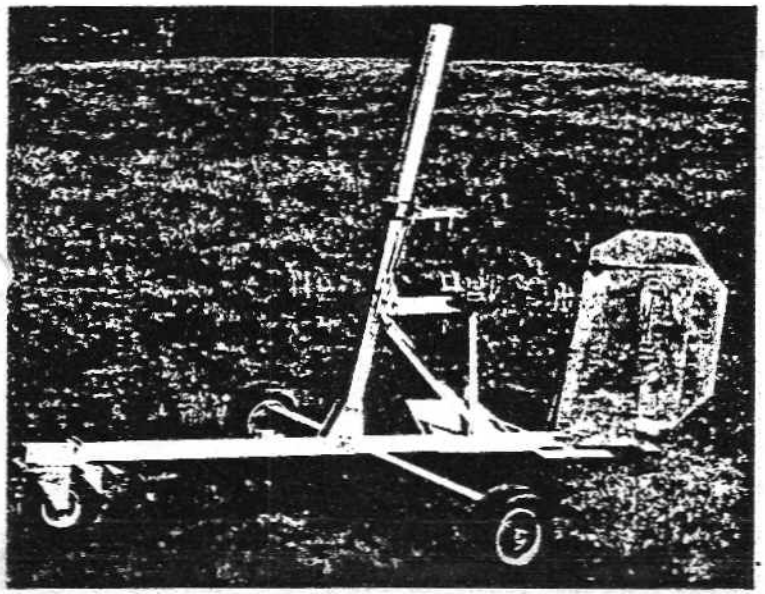
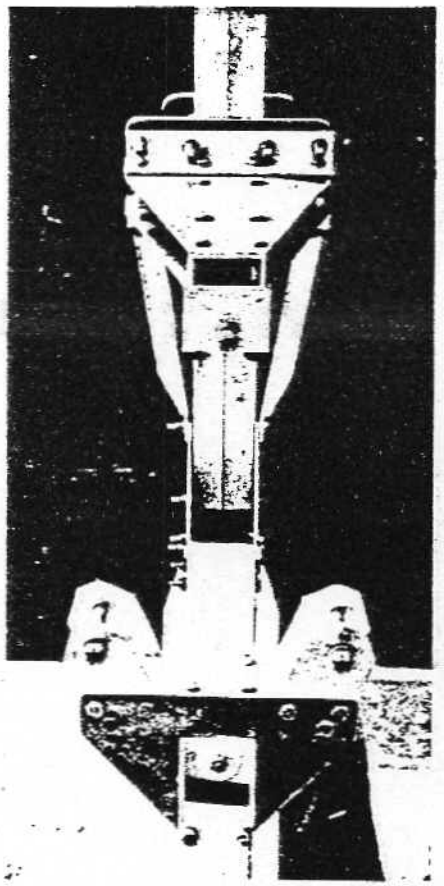
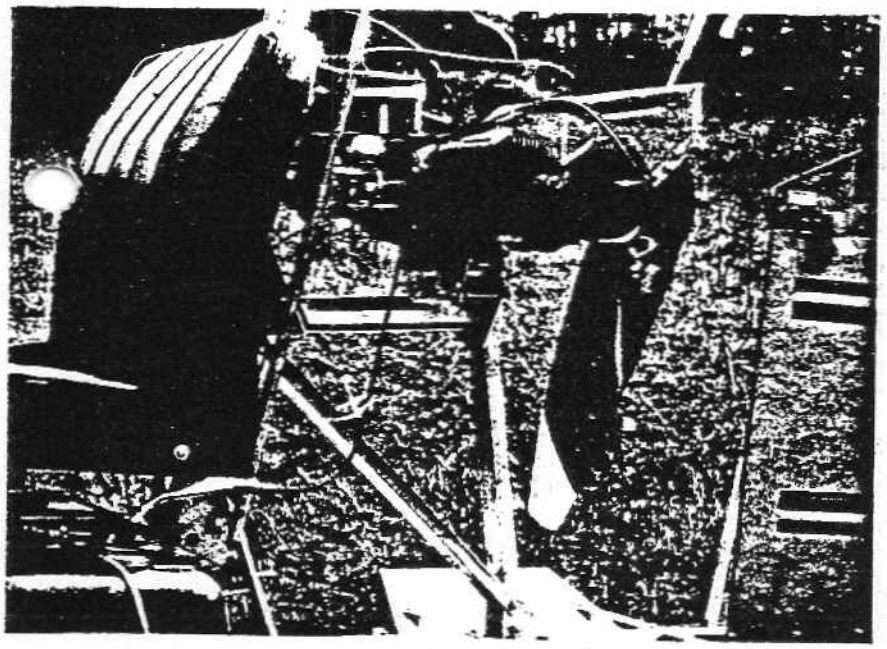
BENSEN

8-81B ENGINE MOUNT







Construction and Assembly Manual

The 8-81B Engine Mount construction can be completed with common hand tools and a 1/4" Drill Motor. A STAND MOUNTED DRILL MOTOR IS BETTER, if available, to obtain perpendicular holes. As suggested in the opening page, refer to the "B-80 Construction and Tooling Manual" for proper drilling procedures.

ALL HOLES to be drilled in your Engine Mount will be 1/4" or less in diameter, and not over 1/4" deep. All holes to be drilled will have their diameters listed on the drawing, or will be noted as follows:

1/4" diameter --- "A" 3/16" diameter --- "B"

HARDWARE SELECTION AND PLACEMENT

All hardware is identified on the Packing list by a PART NUMBER, with sizes. All hardware placement is identified on the drawings by this PART NUMBER. A flat washer is installed under ALL attaching nuts, unless instructed otherwise in the steps. All Castellated Nuts are safetied with a Cotter Pin.

RECOMMENDED TORQUE VALUES

	Bolts in Shear	Bolts in Tension
3/16 Dia. Bolts	12-15 inch lbs.	25 inch lbs.
1/4 Dia. Bolts	30-40 inch lbs.	60 inch lbs.
3/8 Dia. Bolts	115-145 inch lbs.	240 inch lbs.

USE THESE VALUES CONSISTENTLY UNLESS INSTRUCTED OTHERWISE IN THE PROCEDURE!

8-81B ADVANTAGES

Your 8-81B Engine Mount is tailored to obtain the most desirable aeroelastic, dynamic, and static features of the Mac "AX" engine. It is so designed that the centerline of the engine is at 3 degrees negative to the Keel tube, which gives greater propeller and rotor tip clearance; a definite aid under extreme landing loads. Another welcome addition is the incorporation of a shouldered liner which provides internal bumper stops, thereby eliminating the need for external bumper pads, and also prevents damage to isolation mounts when exposed to erratic starts and rough engine idle at lower rpm's.

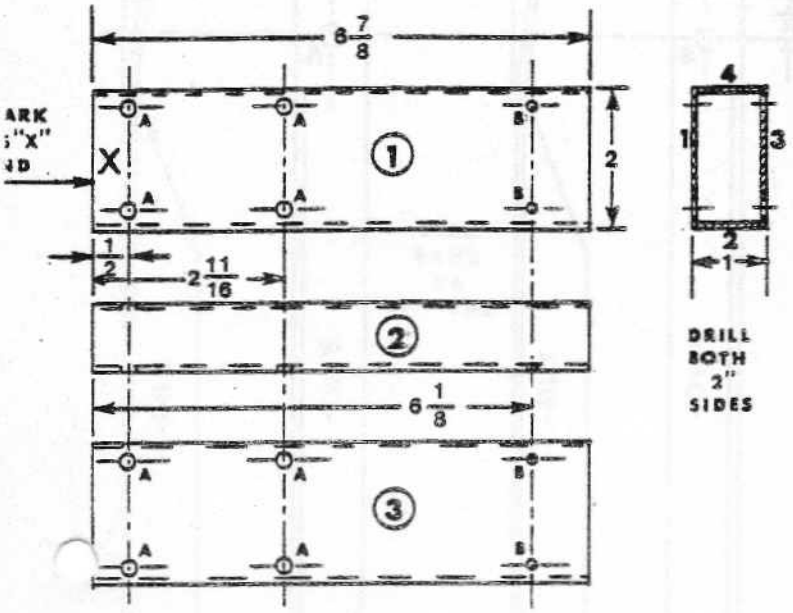
Read carefully the following text before starting any modification or fabrication of parts. Locate and identify all package parts. After assembly completion, be sure to erase all pencil lay-out lines and re-check all steps to make sure your Engine Mount is installed correctly.

4-30A	1	1/4-28 x 2-9/16 Grip Bolt ..	-011,-017 Installation
4-31A	6	1/4-28 x 2-11/16 Grip Bolt..	-015,-013,-014 Installation
4-34A	1	1/4-28 x 3-1/16 Grip Bolt ..	-013,-016 Installation
4-35A	2	1/4-28 x 3-3/16 Grip Bolt ..	-013,-016,-020 Installation
6-31	2	3/8-24 x 2-9/16 Grip Bolt ..	-015 to Engine Mount Lugs
4750	1	1/4 x 3/4 Flat Washer	Under Nut of 4-6A & -019
310-6	2	3/8-24 Castellated Nut	Attaching Nuts, Pins, Washers
380-3-3	2	3/32 x 3/4 Cotter Pin	" " " "
960-616	4	3/8 x 5/8 Flat Washer	" " " "
364-428	22	1/4-28 Lock Nut	" " " "
960-416	22	1/4 x 1/2 Flat Washer	" " " "

81B-H3 ENGINE ISOLATION MOUNTING HARDWARE

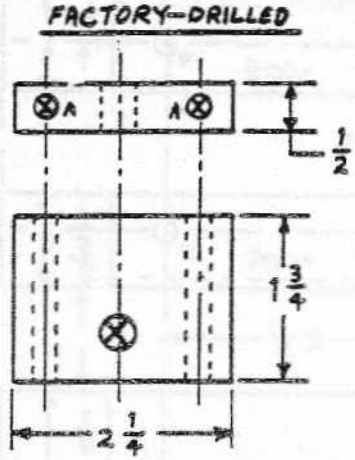
8-81B-012	6	Conical Isolation Insert Mounts
-012A	3	Aluminum Shouldered Isolation Liners
-022	10	5/32 x 3/8 x 1-1/4 Flat Spacer Washers

2. Lay out and drill the following parts.

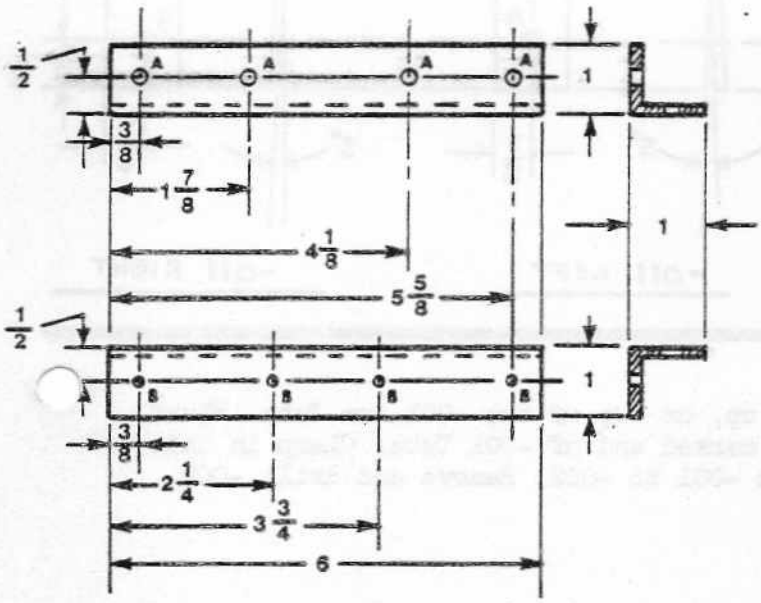


-001 ARM TUBE (LAYOUT AND DRILL BOTH SIDES)

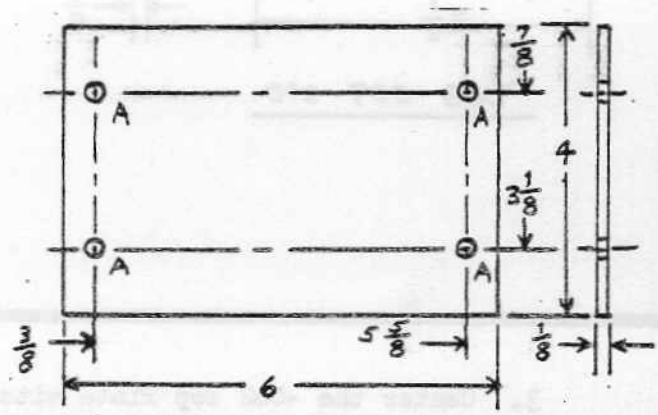
FACTORY-DRILLED



-004 & -005

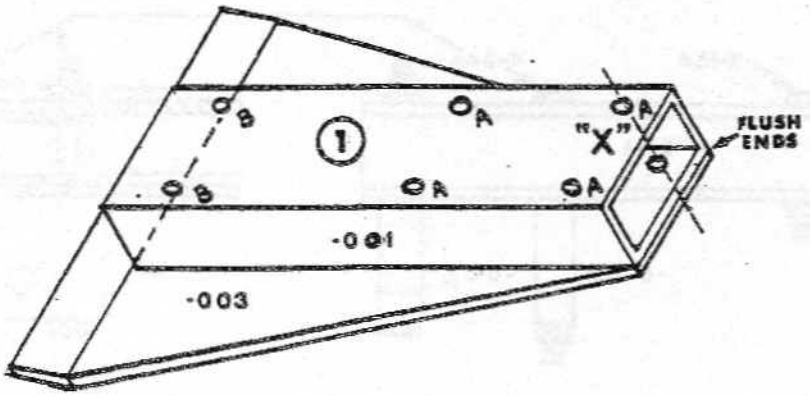


-006 FORK FLANGE (2)



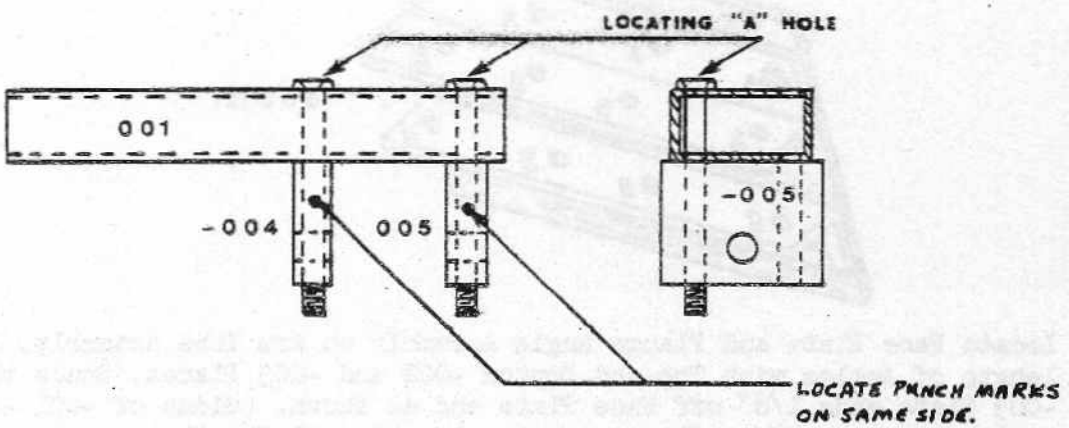
-007 REAR FACE PLATE

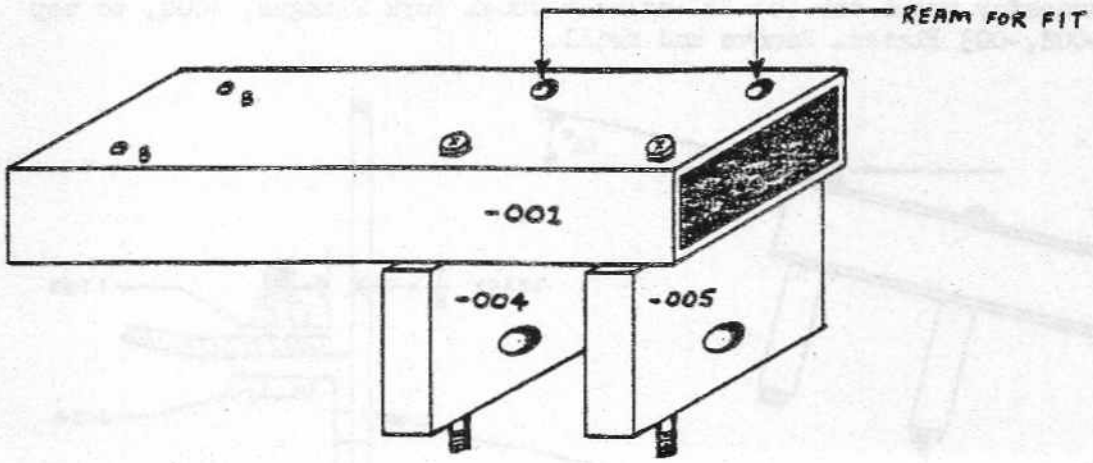
4. Center the -003 Lower Plate with bend up, on the bottom of -001 Arm Tube. Flush the -003 Plate tapered end with "X" marked end of -001 Tube. Clamp in this position and transfer all holes from -001 to -003. Remove and drill -003.



5. Locate -004, -005 Front and Rear Ears on bottom, side 3, "X" end of -001 Arm tube. Rotate ears to assure the punch marks are on the same side. Locate ears with a 1/4 bolt through the (4) locating holes in -001 tube.

Center the pre-drilled holes in ear and tube. Check fit of second retention bolt. If slightly mis-aligned, run a 1/4 drill or ream through assembly.



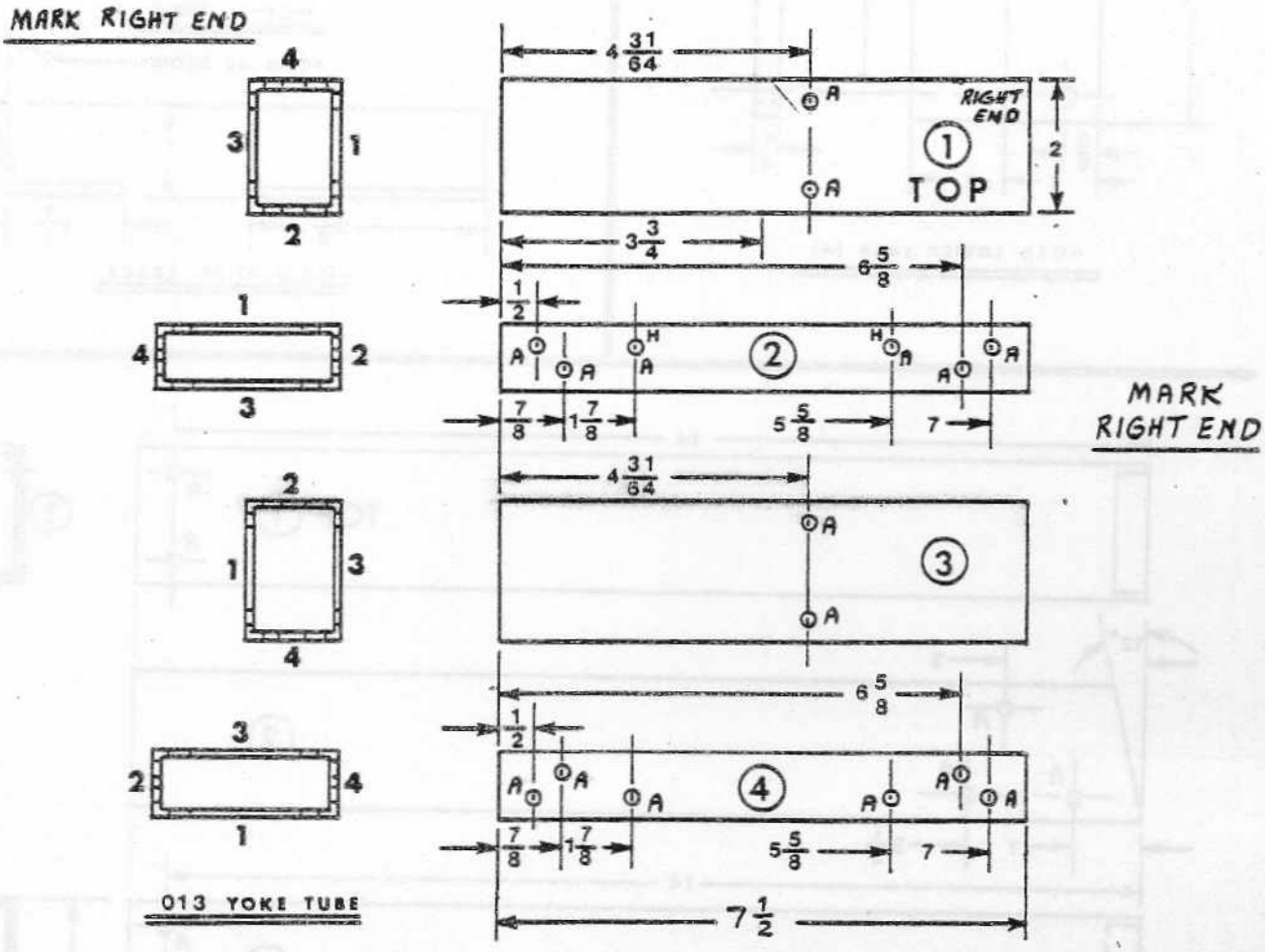


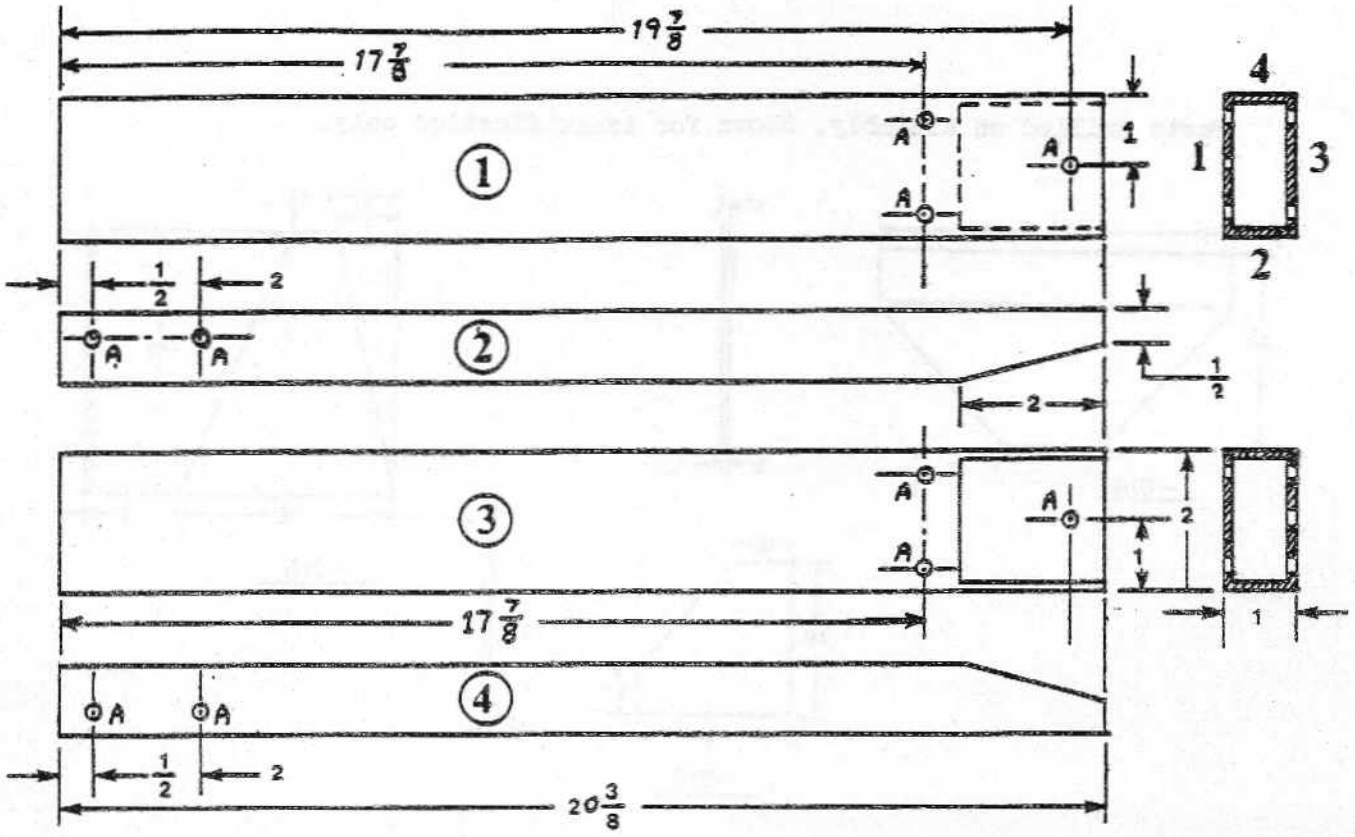
9. Bolt Flange and Arm assembly together. Place the 3/16 bolts with nuts on the inside of the -002 and -003 cavity. Place a 1183 washer under all (8) 3/16 nuts.

B. CONSTRUCTION, LOWER KNEE AND MOUNT ASSEMBLY

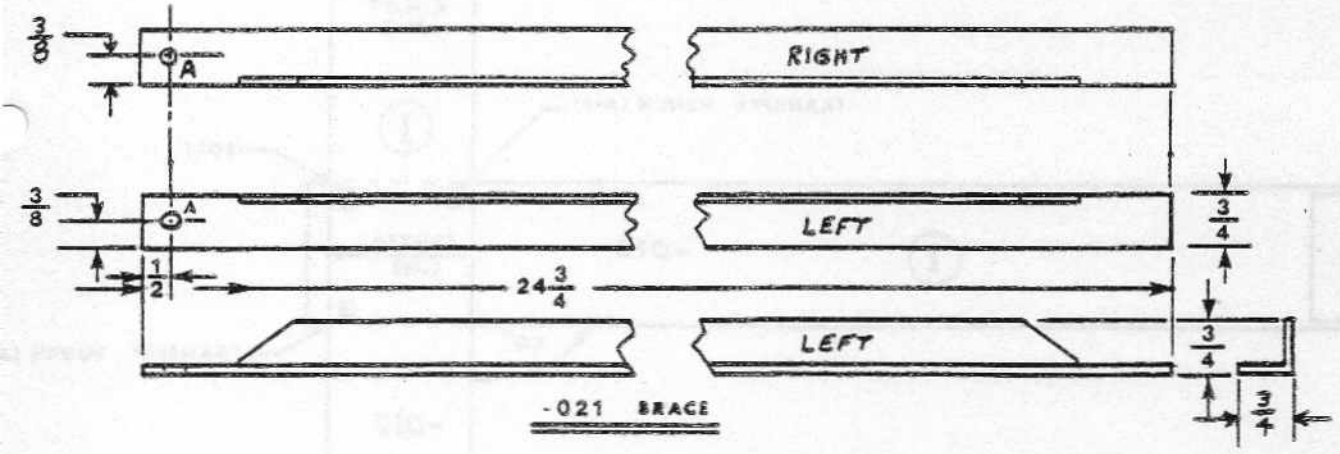
1. Lay out and drill, one "A" hole, 66-1/2" from the front end of the Keel tube on the top edge of sides "2" and "4" if you have not already done so. See drawing No. 41-1 included with the 8-41 Airframe Materials.

2. Locate -013 Yoke Tube and number all sides as shown below. Lay out and drill.





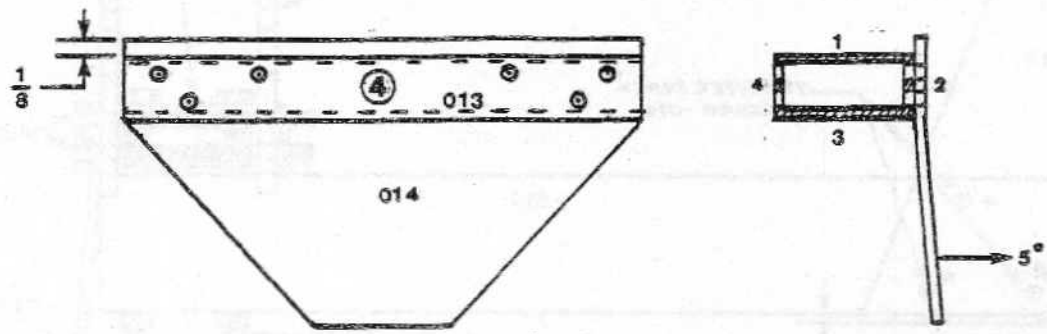
-019 VERTICAL KNEE



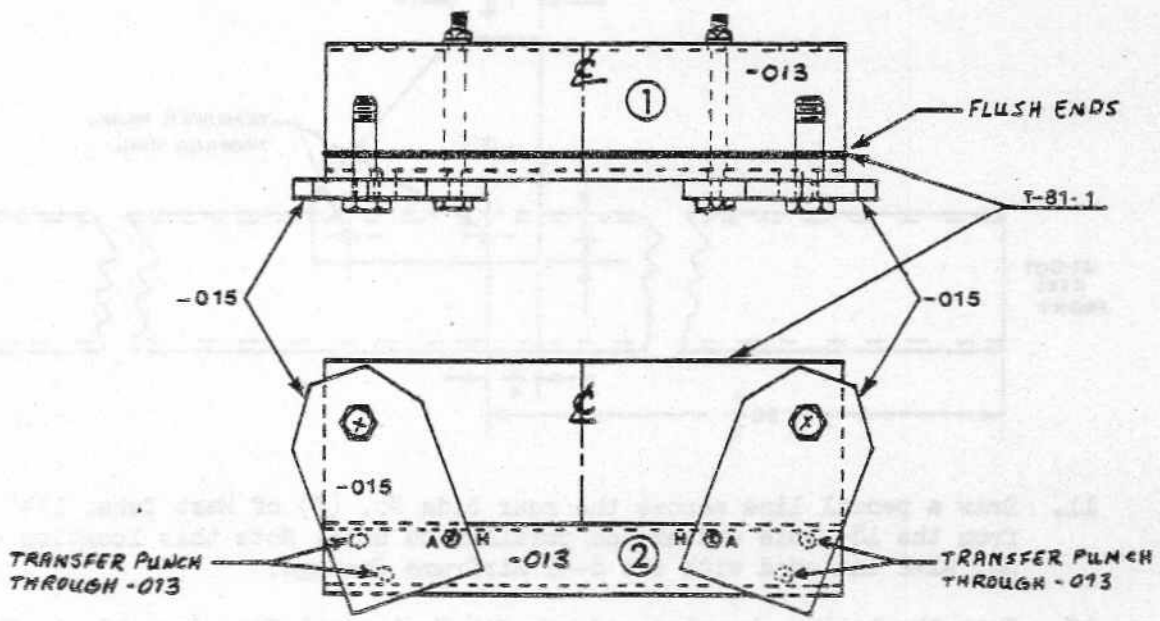
-021 BRACE

5. Locate -014 Yoke Plate on Side (2) of -013 Yoke Tube with top of -014 overhanging -013 Tube by 1/8". Side (4) of -013 should be facing out, with Side (1) on top. The 5 degree bend of -014 is located away from the tube side.

6. Clamp and transfer punch the (6) "A" holes through Yoke tube to Plate. Remove and drill.

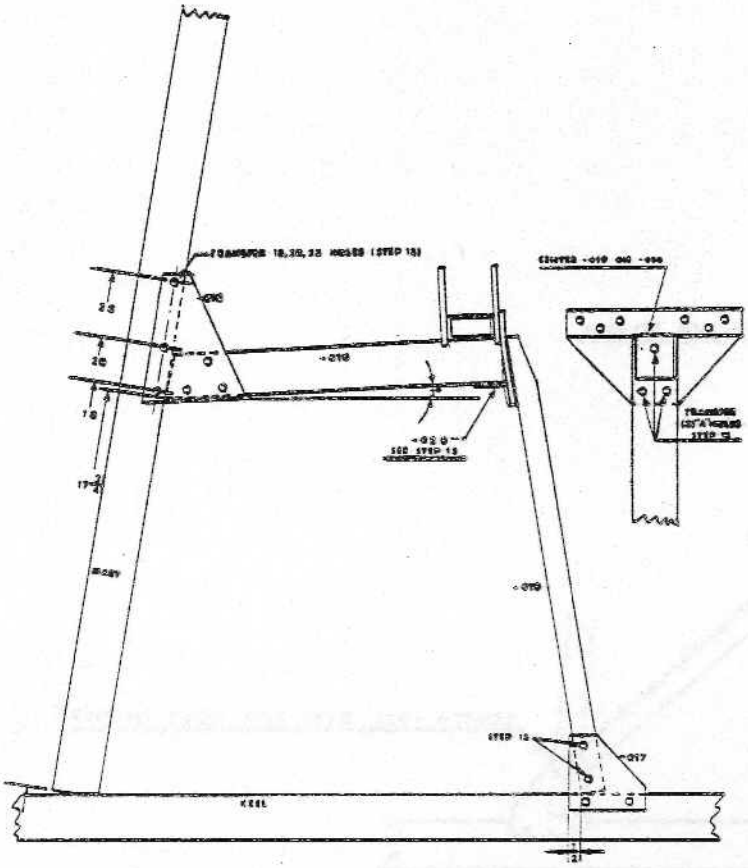


7. Locate a -015 Mount Ear on each end of Side No. (2) of the -013 Yoke Tube, by bolting through the in-board "H" holes of tube and "A" hole in ears. Set the T-81-1 Tool Gauge on top Side #1 of Yoke Tube and locate with (2) 3/8" bolts through ears and strip Gauge. Flush ends of T-81-1 with ends of -013 Yoke Tube, clamp and transfer (2) "A" hole locations to each ear, through Yoke Tube. Remove and drill. (Note: locating tool gauge will center ears and establish the correct angle.)



8. Repeat Step No. 7 procedure for the (2) -015 Ears located on Side No. 4 of Yoke Tube.

9. Temporarily bolt Yoke Tube on Horizontal Knee, and the -015 Ears and -014 Yoke Plate on -013 Yoke Tube.

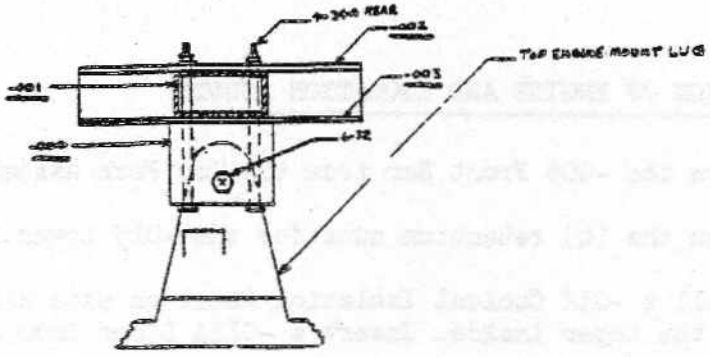


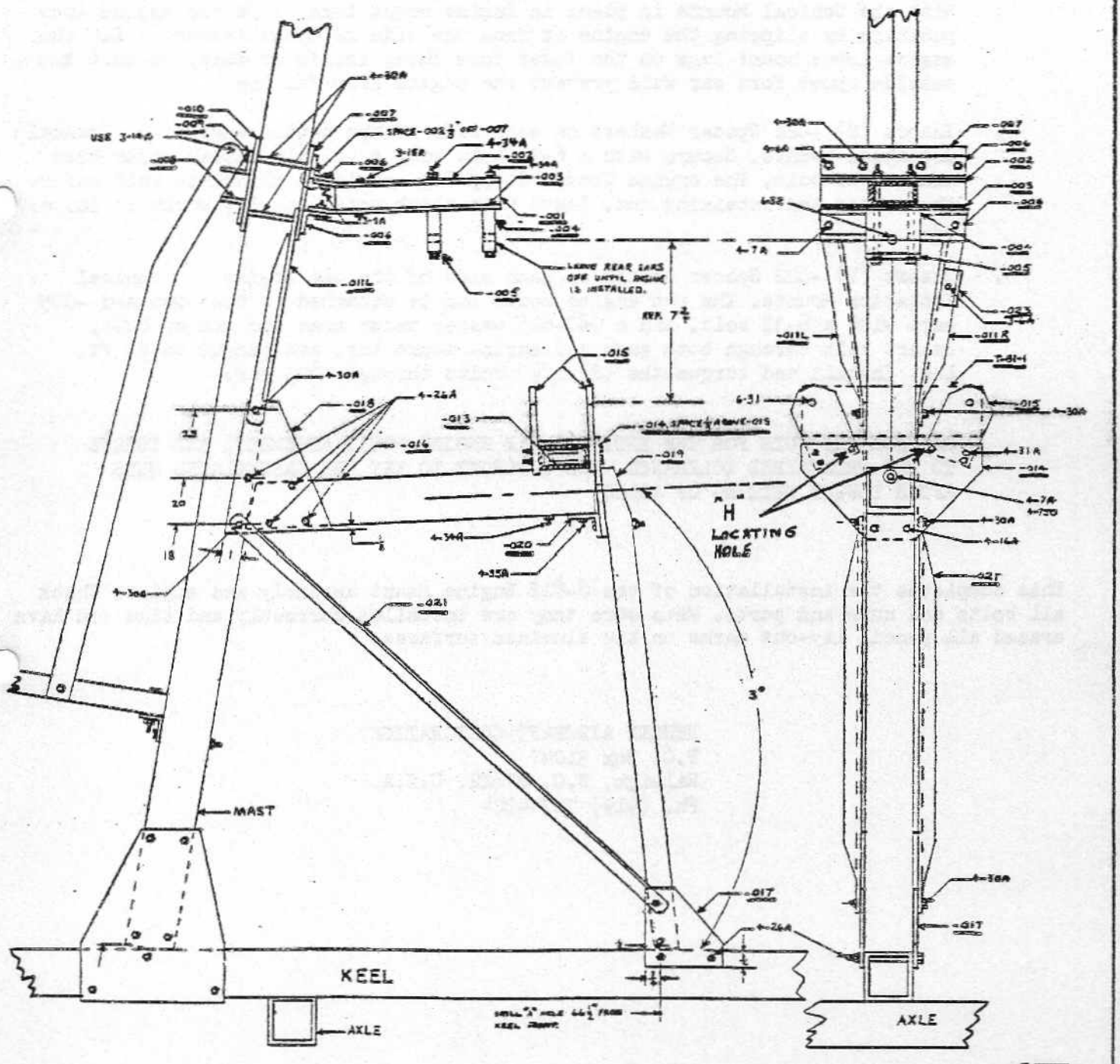
13. Transfer (3) "A" Mast holes to -018 Mast Gusset, (2) "A" Vertical Knee holes to -017 Keel Gusset, and (3) "A" Vertical Knee to -014 Yoke Plate holes -- as shown in preceeding drawing. Remove Knee assembly and drill all holes.

14. Temporarily re-assemble knee structure on airframe with pushed-through bolts. Locate the opposite -018 gusset on -016 Knee, and clamp gusset assembly to Mast. Remove (1) bolt at a time from previously drilled gusset and transfer punch through Mast (3) "A" hole locations. Remove gusset and drill all holes.

15. Center the -020 Knee Brace Angle under Horizontal Knee and against -014 Yoke Plate as shown on Step No. 12 drawing. Transfer (4) "A" holes, remove and drill.

16. Attach the drilled end of -021 Mast to Keel Brace Angles to the bottom bolt of Mast Gusset. Center Brace on top hole of -017 Keel Gusset, and transfer-punch, remove and drill (1) "A" hole in each angle.


TOP ENGINE MOUNT LUG


MAST
KEEL
AXLE
AXLE
"H" LOCATING HOLE
3°
LEAVE REAR BARS OFF UNTIL ENGINE IS INSTALLED.

8-81 B