



# SERVICE BULLETIN

No. 671

Piper Aircraft Corporation

Lock Haven, Pennsylvania, U.S.A.

Modification FAA/DOA EA-1 Approved

October 20, 1980 M

Subject: Flap Control System Inspection and Reinforcement

Models Affected:

PA-23/PA-23-160 Apache  
PA-23-235 Apache  
PA-23-250 Aztec  
PA-23-250 (6 Place) Aztec

Serial Numbers Affected:

23-1 through 23-2046  
23-505 through 23-622  
27-1 through 27-504  
27-2000 through 27-8054059

NOTE: Provisions of this Service Bulletin apply only to those aircraft which have accumulated one thousand (1000) hours or more total operating time.

Compliance Time:

1. Aircraft with more than 1000 hours in service, but not exceeding 2000 hours, within the next one hundred (100) hours of operation or at the next scheduled inspection, whichever occurs first.
2. Aircraft with more than 2000 hours in service, within the next fifty (50) hours of operation or at the next scheduled inspection, whichever occurs first, unless previously accomplished.

Purpose:

Field reports indicate that after one thousand (1000) hours in service, some Models Affected, above, depending upon the type of use, may develop cracks in components of the flap control system. Left unattended, such cracks could eventually lead to separation of components attended by possible operational interference or a split flap condition.

This Service Release provides instructions for the inspection and reinforcement of the flap control system.

Instructions:

Refer to attached Sketch/Instruction data for inspection and reinforcement procedures.

Material Required:

Material requirements depend upon inspection results. Refer to attached Sketch/Instruction data.

(over)

Availability of Parts:

Your Piper Field Service Facility.

Effectivity Date:

This Service Release is effective upon receipt.

Summary:

Please contact your Piper Field Service Facility to arrange for compliance with the provisions of this service release in accordance with Compliance Time, above.

INSTRUCTIONS

1. Gain access to the flap torque tube and Flap Control System by removing the aft seats, seat tracks, carpeting, right side fuselage interior trim panel and the aft cabin floorboard.
  2. Remove the left and right rear wing root fairings and the left and right flap torque tube access panels. Refer to sketch "A".
  3. Disconnect the push-pull control rods from the flaps by removing the attachment hardware at the inboard flap rib.
    - a. Visually inspect the rod end bearings on each end of the push-pull control rods for corrosion and general condition. Replace all worn or corroded rod ends with new rod ends (P/N 452 383). Lubricate all rod end bearings with oil as specified in the Lubrication Chart in the appropriate Service Manual.
  4. Refer to sketch "A". Remove the flap bellcrank assembly from the right side of the flap torque tube by disconnecting the hydraulic flap actuator cylinder and the push-pull control rod and removing the bellcrank attachment hardware from the torque tube. Refer to sketch "B" and proceed as follows.
    - a. Remove the five (5) rivets which attach the bellcrank arm to the bellcrank tube and channel assembly and remove the arm from the channel.
    - b. Remove all paint and corrosion from the inside and outside of the bellcrank tube and channel assembly to facilitate inspection.
    - c. Inspect the bellcrank tube and channel assembly, in the weld area, for cracks using the magnetic particle or dye penetrant inspection method as described in the F. A. A. Aircraft Inspection and Repair Manual A. C 43. 13-1A, Chapter 7, Section 3. Also clean and check general condition of bellcrank arm.
    - d. If a crack or excessive corrosion is found, replace with new flap bellcrank assembly (P/N 16423-06) as described in the Drilling Procedure for Replacement of Flap Bellcrank Assembly and Flap Horn Assembly on page 3.
    - e. If no crack or excessive corrosion is found, reassemble bellcrank as follows:
      1. Apply sealing compound RTV-102 or PRC 1221-B2 (Piper P/N 914 046 - 6 oz. or P/N 914 047 - 2.5 oz. ) or equivalent to the inside of the channel portion of the bellcrank tube and channel assembly.
      2. Insert the bellcrank arm into the bellcrank tube and channel assembly. Remove excess sealant. NOTE: Assemble arm in proper direction. Refer to sketch "A".
      3. Fasten the bellcrank arm to the channel using five (5) rivets (P/N 420 252/MS20470AD6-12).
      4. Prime and repaint the bellcrank assembly.
- NOTE: When Bellcrank, Piper Part No. 16423-00 is reassembled in accordance with Instruction 4, step e, a visual inspection of the bellcrank must be repeated at intervals not to exceed 100 hours time in service after initial inspection of Instruction 4.
- Upon installation of Bellcrank, Piper Part No. 16423-06, the repetitive inspection of Instruction 4 is no longer required.
- f. Lubricate the bushings in the bellcrank assembly with oil as specified in the Lubrication Chart in the appropriate Service Manual.
  - g. Reinstall the bellcrank assembly to the torque tube using existing hardware and new cotter pins (P/N 424 051/MS24665-132).

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5. Hydraulic flap actuator cylinder assembly inspection.
  - a. Visually inspect the flap actuator cylinder assembly for leaks and general condition. Refer to the appropriate Parts Catalog if new cylinder assembly or component parts are required.
  - b. Visually inspect the flap actuator cylinder rod end bearing for corrosion and general condition. Replace all worn or corroded rod ends with new rod ends (P/N 452 383). Lubricate rod end bearing with oil as specified in the Lubrication Chart in the appropriate Service Manual.
6. Refer to sketch "B". Inspect the weld on the flap horn assembly for cracks using 10X magnification.
  - a. If cracks are found, replace with new flap horn assembly (P/N 16424-00) as described in the Drilling Procedure for Replacement of Flap Bellcrank Assembly and Flap Horn Assembly on page 3.
7. Refer to sketch "C". Remove paint and inspect the torque tube bearing block attachment brackets, which are welded to the fuselage frame tube, for cracks using 10 X magnification.
  - a. If cracks are found, repair or replace with new bearing block attachment bracket(s) (P/N 28624-03 on left side - P/N 28624-02 on right side). NOTE: New right side bracket assembly (P/N 28624-02) will include the reinforcement gusset being added per step 9. If new right side bracket (P/N 28624-02) is being installed, disregard step 9 in its entirety.
8. Visually inspect the torque tube bearing blocks, bearings and block attachment hardware for wear and general condition. Lubricate the bearings with oil as specified in the Lubrication Chart in the appropriate Service Manual. Refer to the appropriate Parts Catalog if any of these parts are required.
9. Refer to sketch "C". Add a reinforcement gusset to the flap torque tube bearing block attachment bracket on the right side as follows:

NOTE: Reinforcement gusset is not required on the left side.

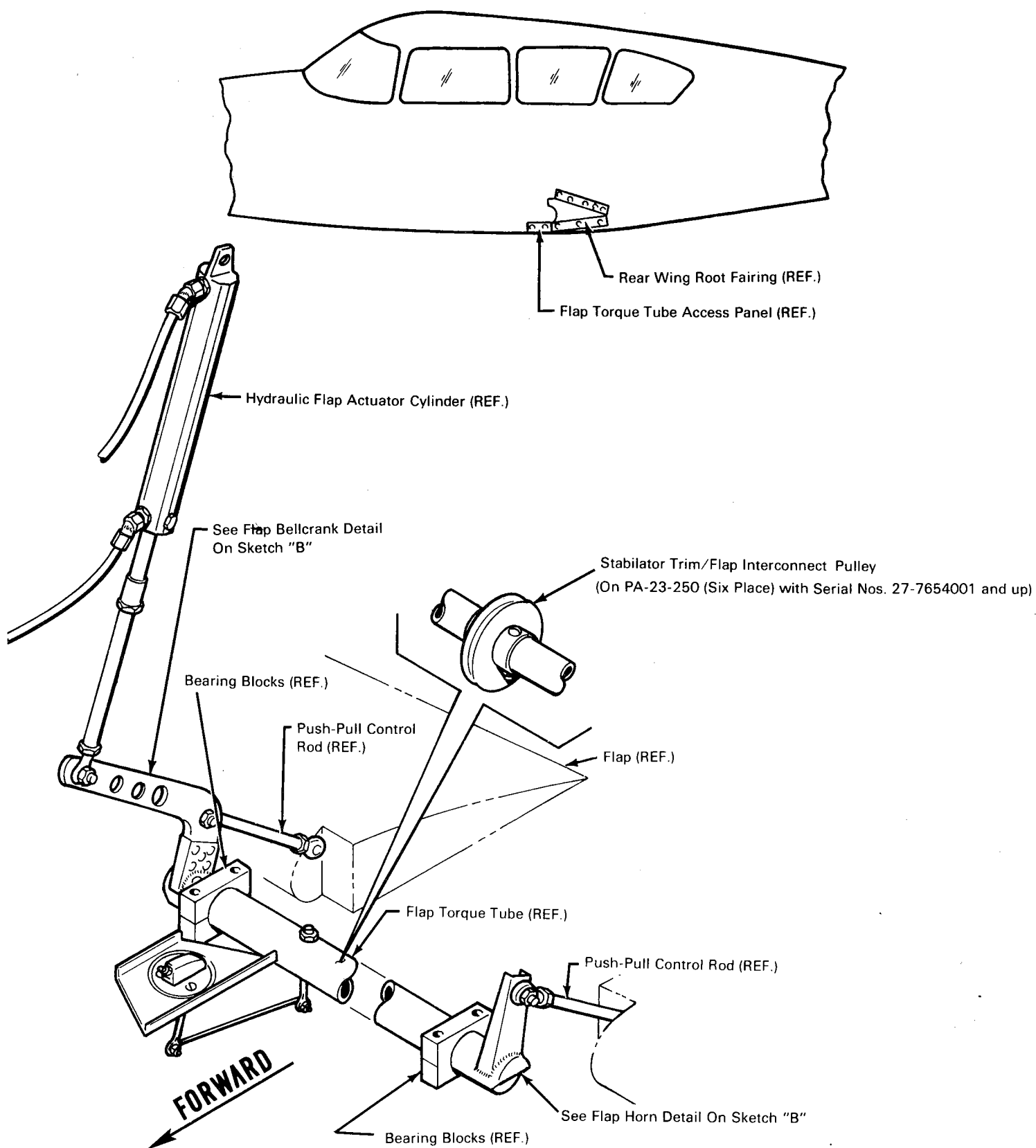
  - a. Cut the safety wire and remove the bolts which attach the torque tube bearing blocks to the bearing block attachment brackets on the left and right sides.
  - b. Lower the torque tube assembly to facilitate installation of a reinforcement gusset on the right side bracket.
  - c. Fabricate a reinforcement gusset, as shown on sketch "C", using .050 4130 steel condition N.
  - d. Position the reinforcement gusset between the two nuts on the bearing block attachment bracket as shown on sketch "C".
  - e. Weld the reinforcement gusset to the fuselage frame tube and the bearing block attachment bracket using the gas welding method. NOTE: Take all precautions against the hazard of fire. Use a flameproof material to cover the flap torque tube, fuselage skins, structures, etc.
  - f. Paint the fuselage frame tube, bearing block attachment bracket and the reinforcement gusset.
  - g. Reinstall the flap torque tube assembly, bearings and bearing blocks to the bearing block attachment brackets using existing hardware. Safety the bearing block attachment bolts with safety wire.
10. Reconnect the push-pull control rods to the flaps using existing hardware.
11. Check and adjust the flaps for proper operation and travel as described in the appropriate Service Manual. NOTE: On PA-23-250 Six Place aircraft with serial numbers 27-7654001 and up, insure that the stabilator trim/flap interconnect cable is properly engaged in all pulleys of the Stabilator Trim/Flap Interconnect System.
12. Reinstall the wing root fairings, access panels, floorboards, interior trim panel, carpeting, seat tracks, seats and any other parts which were removed.
13. Make proper Logbook entry of compliance with the inspection requirements and reinforcement gusset installation of this Service Bulletin.

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DRILLING PROCEDURE FOR REPLACEMENT OF FLAP  
BELLCRANK ASSEMBLY AND FLAP HORN ASSEMBLY

NOTE: Refer to sketch "D".

1. Scribe one straight line on a piece of 1.50" O.D. tube (tube should be 10" long minimum).
2. Place the existing bellcrank assembly and the new bellcrank assembly (P/N 16423-06) or the existing horn assembly and the new horn assembly (P/N 16424-00) on the 1.50" O.D. tube as shown on sketch "D".
3. Insert a 1/4" rod thru the bushings in the bellcrank arms or the horn assemblies to maintain proper alignment.
4. Align the scribed line on the 1.50" O.D. tube with the center line of one of the bolt holes in the existing assembly as shown on sketch "D". Lay a straight edge across the new assembly so that the edge of the straight edge aligns with the scribed line on the 1.50" O.D. tube. Scribe a center line onto the new assembly. Measure the distance from the end of the existing assembly to the center line of the bolt hole in the existing assembly. Measure this distance on the new assembly and scribe a center line.
5. Rotate the 1.50" O.D. tube (approximately 90 degrees) and repeat step 4 to locate the other bolt hole onto the new assembly.
6. Remove the assemblies from the 1.50" O.D. tube.
7. Center punch the two marked center line locations on the new assembly and drill .234 holes in one wall only.
8. Place the new assembly onto the flap torque tube and align the two holes in the new assembly with the existing holes in the flap torque tube.
9. Enlarge one of the holes in the new assembly to .249/.251. Continue drilling .249/.251 thru the existing hole in the flap torque tube and thru the other wall of the new assembly.
10. Remove all drill burrs from the .249/.251 holes in the new assembly and install existing bolt, washers and nut thru the new assembly and the flap torque tube. Safety with new cotter pin (P/N 424 051/MS24665-132).
11. Enlarge the other hole in the new assembly to .249/.251. Continue drilling .249/.251 thru the existing hole in the flap torque tube and thru the other wall of the new assembly.
12. Repeat step 10 for this bolt hole.



FLAP CONTROL SYSTEM DETAIL

SKETCH A

REF. S.B. 671

Bushing (REF.)

Flap Bellcrank Assembly  
(P/N 16423-06)

Bushing (REF.)

Rivet - P/N 420 252  
(MS20470AD6-12)  
5 Req.

Apply Sealant To The Inside  
Of The Channel Portion Of  
The Bellcrank Tube And Channel Assembly

Bellcrank Arm (REF.)

Bellcrank Tube and Channel Assembly (REF.)

INSPECT WELD AREAS FOR CRACKS  
(Magnetic Particle or Dye Penetrant)

### FLAP BELLCRANK DETAIL

Fuselage Frame Tube (REF.)

**FORWARD** **INBOARD**

Flap Horn Assembly  
(P/N 16424-00)

Flap Torque Tube (REF.)

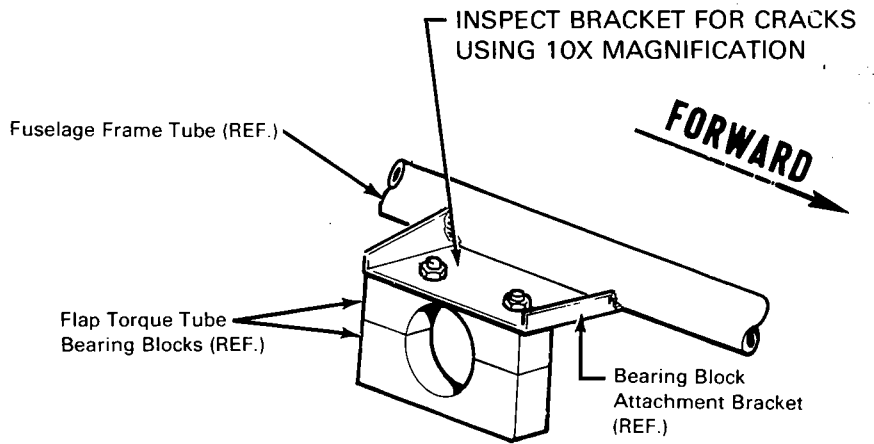
INSPECT WELD AREA FOR  
CRACKS USING 10X  
MAGNIFICATION

Bearing Blocks (REF.)

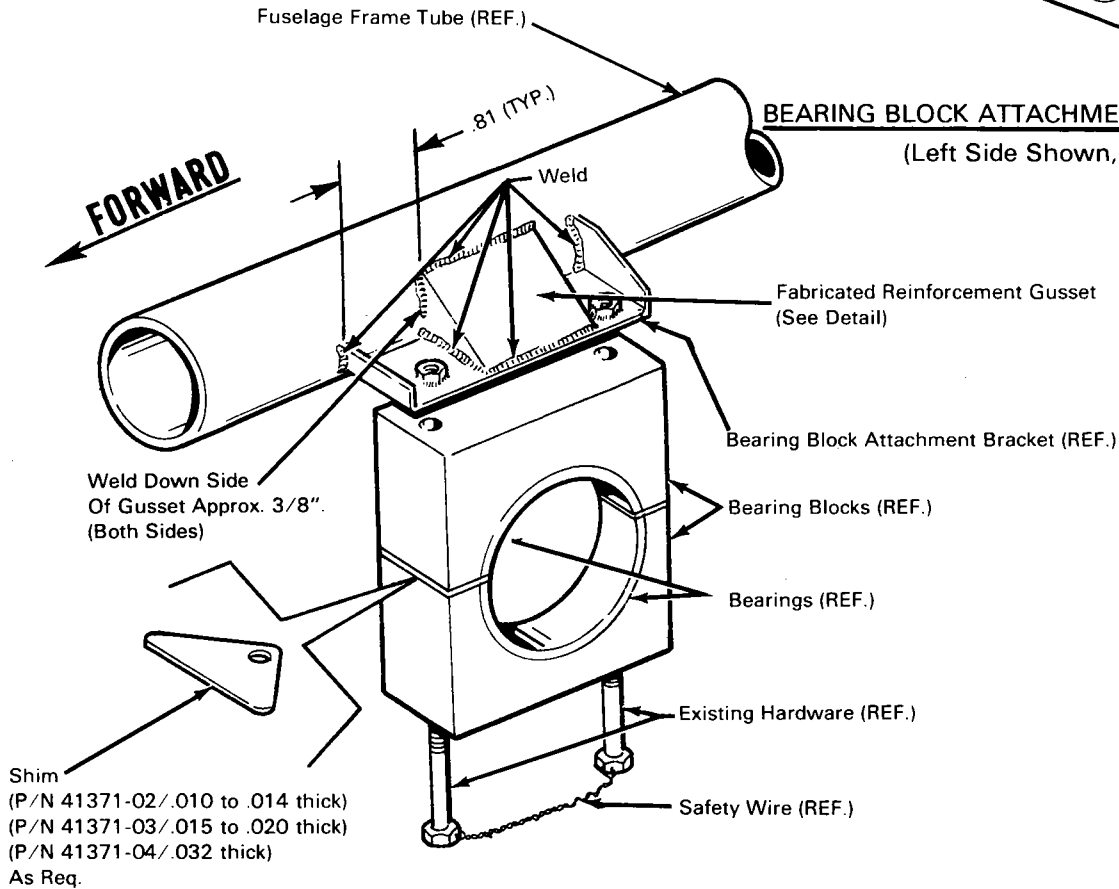
Safety Wire (REF.)

### FLAP HORN DETAIL

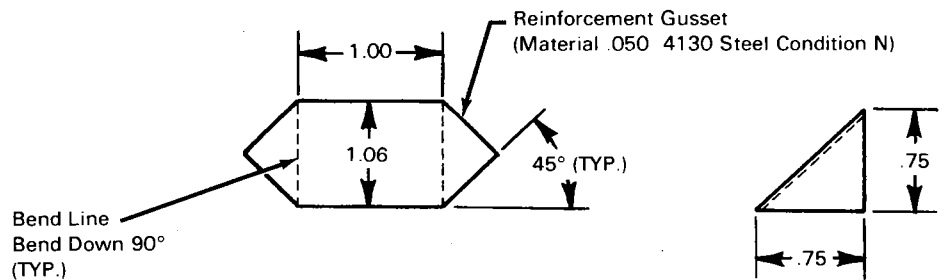
(View Looking In From Left Side)



**BEARING BLOCK ATTACHMENT BRACKET INSPECTION DETAIL**  
(Left Side Shown, Right Side Opposite)

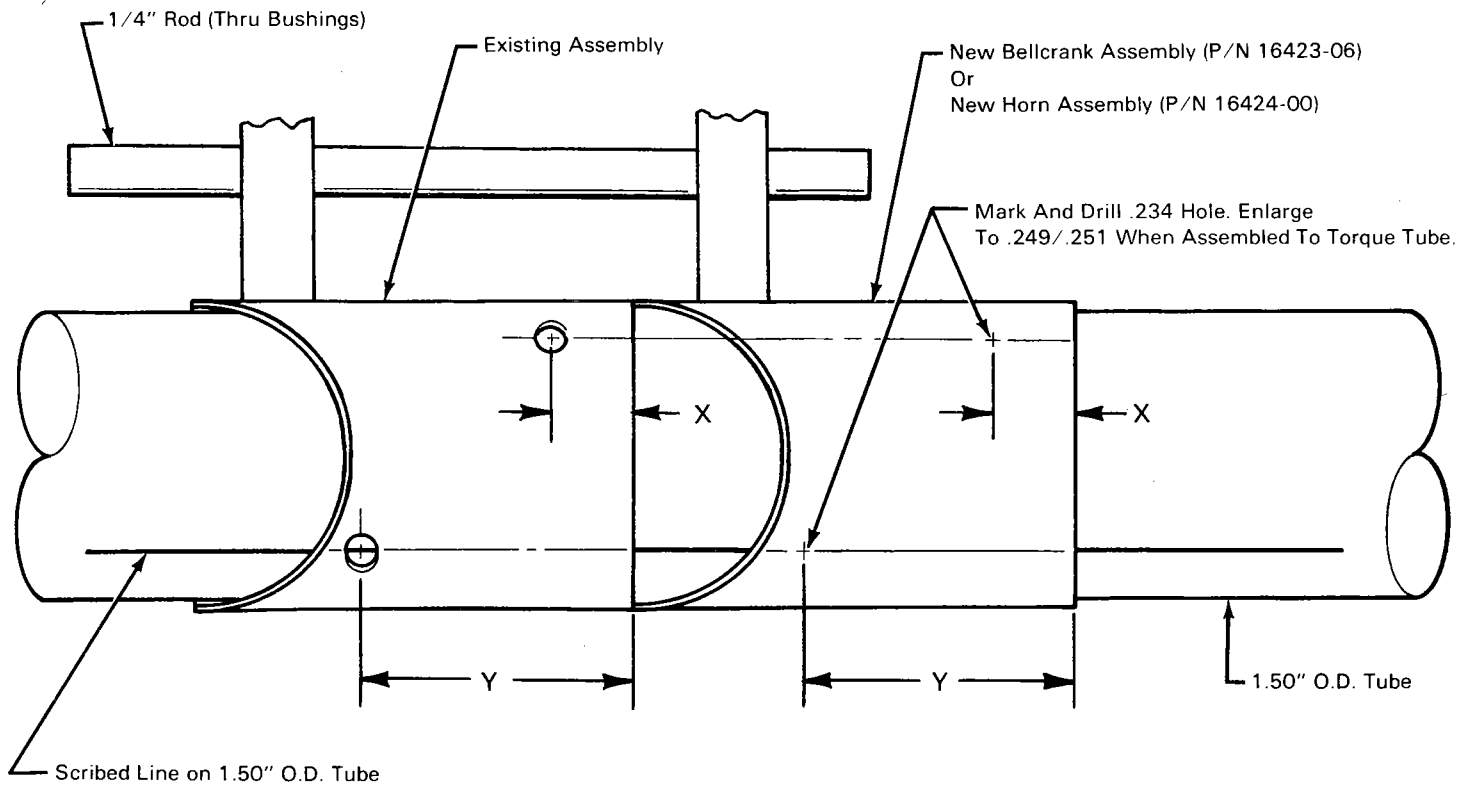


**REINFORCEMENT GUSSET INSTALLATION DETAIL**  
(Right Side Only)



**REINFORCEMENT GUSSET DETAIL (P/N 28624-04 REF.)**





VIEW LOOKING AT BOTTOM OF ASSEMBLIES

NOTE:

"X" And "Y" Represent The Distance From The End Of The Part To The Centerline Of The Hole In The Existing Assembly.