



REPUBLIC AVIATION CORPORATION
FARMINGDALE, LONG ISLAND, NEW YORK
SERVICE DEPARTMENT

June 16, 1947

OPTIONAL CHANGE

SERVICE BULLETIN NO. 17

INSTALLATION STEERABLE TAIL WHEEL

(Includes **Supplement 1** and **Supplement 2**)

Reason for Change: To provide greater ease of taxiing under crosswind conditions.

Airplanes affected: Republic Serial Nos. 5 through 875. Serial Nos. 876 and up have already had this change accomplished in production.

Description of Change:

This change involves the following steps:

- A. Tail Wheel Disassembly.
- B. Yoke Rework.
- C. Collar Rework.
- D. Fork Rework.
- E. Tail Wheel Assembly.
- F. Tail wheel Installation.
- G. Bulkhead Pulley Bracket Installation.
- H. Standpipe Installation.
- I. Rigging.

NOTE: On Seabee Serial Nos. 5 through 125, which have the old type steel welded yoke and/or the old type shock absorber with the welded or machined type aft collar (new type collar is a forging with Part No. 17F42041-1 stamped on the face of the left ear), it will be necessary to replace these either with Yoke Assembly – Steerable Tail wheel Part No. 1543 and/or Shock Absorber – Steerable Tail Wheel Part No. 1544. These parts will be required in addition to the conversion kit.

A. DISASSEMBLY TAIL WHEEL

1. Place cradle under tail wheel bulkhead so that tail wheel is raised off the ground.
2. Remove tail wheel fork and yoke assemblies by removing the bolt holding the yoke to the aft shock absorber collar and the bolt holding the yoke to the piston of the shock absorber. Cut the tail wheel lock cable at any convenient point.
3. Disassemble the yoke and fork assembly. Discard the spindle and hardware. Remove the lock pin and spring from the yoke assembly.
4. It is recommended that the complete tail wheel lock cable and handle in the cockpit be removed.

B. YOKE REWORK

1. Rework the yoke assembly in accordance with Figure 1. It will be noted that this rework consists of removing the top portion of the yoke, which was previously used to support the lock pin aft pulley. It is suggested that this material be removed with a hacksaw and then file smooth to existing flat counterbore. Be sure to cover needle bearings to prevent chips, etc. from getting on them.
2. Place Cam Assembly 17F42180-1 on top of yoke so that center of holes in cam and yoke line up within +.005 inches. Using pilot holes in cam as guides drill five holes #26 (.147) 3/4 inch deep into yoke enlarging pilot holes in cam at same time. Tap holes in yoke and cam #10-24-5/8 inch deep (NC-2). Countersink holes on top of cam .372 inch diameter by 82°. Attach cam to yoke using five AN505C10-8 screws. Stake these screws in place. The top surface of the cam plate must be smooth after staking the screws. Refer to Figure 1.

C. COLLAR REWORK

1. Rework aft shock absorber collar in accordance with Figure 2. This work can be accomplished with collar in place. This rework consists of removing the inboard ear on the collar. This ear may be removed with a hacksaw and filing smooth. Also note that a #22 (.157) 5/8 inch deep hole must be drilled and tapped #10-32-1/2 inch deep (NF-3) into side of collar.
2. Place Wedge 17F42276-1 on outboard side of ear on collar as shown in Figure 2 so that centers of pilot hole in wedge and hole in ear line up. Using full size #12 (.189) hole in wedge as guide drill #12 (.189) through ear on collar. Countersink

hole on inboard side of ear 82° by 1/32 inch deep as shown. Attach wedge to ear with 17F42277-1 pin, staking pin on inboard side and filing smooth if necessary. Using pilot hole in wedge as guide drill and ream ¼” (.250) through wedge and ear normal (perpendicular) to outboard surface of wedge.

D. FORK REWORK

1. Rework fork in accordance with Figure 3. Note that this rework consists of cutting two notches in top of fork. These notches are to be cut so that pin assembled in Spindle 17F42178-1 just fits into them. It is recommended that these notches be made by drilling ¼ inch holes at dimension shown, opening hole with hacksaw and filing to proper width.
2. Assemble fork on spindle using two NAS143-24 washers, AN7502-24 nut and AN380-5-10 cotter pin as shown on Figure 4. This nut must be torqued as tightly as possible (3000 in. lbs. Minimum). Do not back off to obtain cotter pin hole alignment.

E. TAIL WHEEL ASSEMBLY

1. Referring to Figure 5 assemble yoke and quadrant assemblies on Fork and Spindle assemblies as follows:
 - a. Place 17F42152-1 washer over spindle.
 - b. Place yoke assembly over spindle.
 - c. Place Quadrant Assembly 17F42093-1 with Bushing Assembly 17F42175-1 over spindle.
 - d. Place Washer 17F42198-1 over spindle.
 - e. Place two Spring Washers 17F42045-2 over spindle.
 - f. Fasten assembly together with two AN960-C1016 washers, one AN310-10 nut and AN380-C4-4 cotter pin tightening nut sufficiently to resist a 20# to 25# side load applied at the bottom of the fork.
 - g. Apply AN-G-15 or equivalent waterproof grease at lubricating fittings on yoke.
 - h. Assembly old wheel, tire, etc. on this assembly.

F. TAIL WHEEL INSTALLATION

1. Reassemble Yoke and Fork Assembly onto the aft collar and piston of the shock absorber as follows referring to Figure 10.
 - a. Pass Bolt 17F42268-1 through ears on collar and yoke from right side.
 - b. ON left side place Bearing 17F42269-1 over Bolt and Bracket Assembly 17F42272-1 over bearing.
 - c. Fasten bolt with AN320-6 nut and AN381-12 cotter pin.
 - d. Fasten yoke to piston of shock absorber with original hardware.

NOTE: Be sure bolts through both ends of shock absorber piston run horizontal to ground.

G. BULKHEAD PULLEY BRACKET INSTALLATION

1. Make up drilling template to use for installing pulley bracket at Station 230.5 as shown in Figure 6. This template may be used to drill holes through bulkhead due to lack of visibility. Use a piece of 21-3/4 x 2-9/16 x 1/8 Aluminum for this. If a large number of ships are to be reworked with the same template, it is recommended that steel be used. While making template check it against the bracket, pulley and cable assembly for alignment for holes.
2. Open hand holes in tail boom to obtain access to bulkhead Station 230.5. This is the bulkhead directly above the aft end of the tail wheel lock. This bracket is on aft side of bulkhead.
3. Disconnect rudder and water rudder control cables at rudder cross tubes in cabin. Then remove bolts holding cables to link at point shown on Figure 8. Pass aft cables through bulkhead Station 230.5. This will necessitate removal of the fairlead at this point.
4. Place drilling template in place on aft side of bulkhead Station 230.5 referring to Figure 7 holding it in place with four bolts at existing fairlead holes and drill ten #10 (.194) holes through diameter holes through bulkhead using elongated holes in template as guides. Use a rotary or rat-tail file to open these holes up to full elongated size. Remove template.
5. Place Pulley Bracket complete with pulleys and cables in place against aft side of bulkhead Station 230.5 and after threading cables through holes attach channel of

- bracket assembly to bulkhead with ten AN3-4A bolts, AN365-1032 nuts and AN960-10 washers.
6. Clamp a left and right Link 17M42280-1 on either side of original links as shown on Figure 8 and drill #12 (.189) holes through original links using holes in new link as guides. Fasten new links to old links with AN393-21 pin, AN960-10 washer and AN380-2-2 cotter pin.
 7. Thread rudder and water rudder control cables through proper holes in bulkhead Station 230.5 and replace fairleads previously removed using original hardware. It may be necessary to trim outside edges of these fairleads so that they will fit in place. Reconnect these cables at correct turnbuckles and check for 25# \pm 5# cable tension.
 8. Reinstall reworked links as shown in Figure 8 using AN24-14 bolt, AN320-4 nut and AN960-416 washer and AN380-2-2 cotter pin for each link. Reconnect cables at crosstube in cabin.
 9. Attach each forward end of new steerable tail wheel control cables to links using an AN155-16L barrel, AN165-16L eye terminal, AN23-10 bolt, AN320-3 nut and AN380-2-2 cotter pin. Refer to Figure 8.

H. STANDPIPE INSTALLATION

1. Install Standpipe 17F14040-3 and Plate 17F14040-5 as follows referring to Figure 9:
 - a. Place Plate 17F14040-5 against flange of Standpipe 17F14040-3 and check alignment of plate nuts on flange of standpipe with pilot holes in plate. Open up pilot holes in plate with a #10 (.194) drill being sure to compensate for any misalignment.
 - b. Draw a line on the hull 2 inches aft of the aft surface of the tail wheel shock absorber bearing.
 - c. Place plate so that inboard edge of hole in it is 9/16 inches to the right of the vertical centerline of the airplane. The long centerline of the elongated hole in the plate should be on the line drawn under (b) above. Scribe hole to be cut in hull using hole in plate as guide. Cut hole in hull.
 - d. Using holes in plate as guide, drill fifteen (15) #10 (.194) holes through hull.

- e. Install Channel 17F42281-1 in place as shown picking up two existing bolts through bulkhead Station 230.5.
- f. Install two Bumpers 17F42267-1 as follows referring to Figure 11:
 - (1) Position of bumpers on right side of tail boom is to be determined by tail wheel fork in retracted and full swivel position. Mark location of interference with fork on tail boom.
 - (2) Place bumpers at points of interference and using holes in bumpers as guides drill four #19 (.166) holes for each bumper.

NOTE: If bumper overlaps skin splice, locate bumpers so that no holes are drilled in skin splice. If necessary use only two attaching holes.

- (3) Install each bumper with four AN526-832-12 screws, AN365-832 nuts and AN960-8 washers.
- g. Install standpipe and plate using fifteen AN520-1032-10 screws and AN960-10 washers first applying ample amount of UL-10161 (or equivalent) sealing compound between the plate and hull.
- h. Attach top of standpipe to channel so that edges of standpipe match edges of aft leg of channels using an AN23-8A bolt, AN365-1032 nut and AN960-10 washer. Use a #10 (.194) drill through top of standpipe for this bolt.
- i. Pass aft ends of steerable tail wheel control cables and pulleys as follows referring to Figure 10:

I. RIGGING

- 1. Assemble steerable tail wheel control cables and pulleys as follows referring to Figure 10:
 - a. Pass right hand control cable around an AN210-3A pulley.
 - b. Assemble pulley to Bracket 17F42274-1 with an AN24-22 bolt.
 - c. Fasten pulley and bracket assembly to ear on aft shock absorber collar with Wedge 17F42275-1 and an AN320-4 nut and AN380C2-2 pin.
 - d. Pass left hand control cable around Pulley 17F42154-1 and assemble this on collar with Bracket 17F42271-1, AN3H6 bolt and AN936-B10.

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- e. Pass left hand control cable around an AN210-3A pulley and fasten this pulley to bracket installed under paragraph F, 1b. with an AN24-14 bolt, AN320-4 nut and AN380C2-2 cotter pin.
 - f. Attach right and left hand cables to right and left hand ears on quadrant with AN24-11 bolt, AN320-4 nut and AN380C2-2 cotter pin. Set cables for 8 lbs. Tension. Lockwire all turnbuckles.
2. Check hydraulic operation of tail wheel.
 3. Check operation and travel of rudder and water rudder.
 4. Remove hull cradle.
 5. Place Decal 17F88024-2 on instrument panel.

Parts Required:

Parts may be obtained through your local distributor or dealer.

Service Bulletin Kit No. 17 consists of the following:

<u>Quantity</u>	<u>Part Number</u>	<u>Part Name</u>
* 1	17F12010-5	Channel
* 1	17F12010-6	Bracket
* 1	17F12010-7	Bracket
* 1	17F12010-8	Bracket
* 1	17F12010-9	Bracket
1	17F14040-3	Standpipe Weld Assy.
1	17F14040-5	Plate
2	17F42045-2	Washer
**1	17F42093-1	Quadrant Assy.
1	17F42152-1	Washer
1	17F42154-1	Pulley
**1	17F42175-1	Bushing
***1	17F42178-1	Spindle
1	17F42180-1	Cam Assembly
1	17F42198-1	Washer
***1	17F42222-1	Pin
2	17F42267-1	Bumpers
1	17F42268-1	Bolt
1	17F42269-1	Bearing
1	17F42271-1	Bracket

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<u>Quantity</u>	<u>Part Number</u>	<u>Part Name</u>
1	17F42272-1	Bracket Assy.
1	17F42274-1	Bracket
1	17F42275-1	Wedge
1	17F42276-1	Wedge
1	17F42277-1	Pin
* 1	17F42279-1	Cable Assy.
* 1	17F42279-2	Cable Assy.
2L/2R	17F42280-1	Link
1	17F42281-1	Channel
1	17F88024-2	Decalcomania
1	AN3H6	Bolt
10	AN3-4A	Bolt
1	AN23-8A	Bolt
2	AN23-10	Bolt
2	AN24-11	Bolt
3	AN24-14	Bolt
* 2	AN24-15	Bolt
1	AN24-22	Bolt
2	AN155-16L	Barrell
2	AN165-16L	Eye Terminal
* 2	AN210-3A	Pulley
2	AN210-3A	Pulley
1	AN310-10	Nut
2	AN320-3	Nut
* 2	AN320-4	Nut
6	AN320-4	Nut
1	AN320-6	Nut
8	AN365-832	Nut
11	AN365-1032	Nut
* 6	AN380-2-2	Cotter Pin
6	AN380-2-2	Cotter Pin
1	AN380-5-10	Cotter Pin
4	AN380C2-2	Cotter Pin
1	AN380C4-4	Cotter Pin
1	AN381-3-12	Cotter Pin
* 4	AN392-21	Pin
2	AN393-21	Pin
5	AN505C10-8	Screw
15	AN520-1032-10	Screw
8	AN526-832-12	Screw
1	AN936-B10	Washer

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8	AN960-8	Washer
28	AN960-10	Washer
* 2	AN960-416	Washer
2	AN960-416	Washer
<u>Quantity</u>	<u>Part Number</u>	<u>Part Name</u>
2	AN960-416	Washer
1	AN7502-24	Nut
2	NAS143-24	Washer

* These parts make up the bracket, pulley and cable assembly.

** Quadrant and Bushing are delivered assembled.

*** Spindle and Pin are delivered assembled.

Tools Required: Mechanics standard handtools plus the following:

- Right Angle or "Gooseneck" Drill
- #26 (.147) Drill
- #22 (.157) Drill
- #19 (.166) Drill
- #12 (.189) Drill
- #10 (.194) Drill
- 1/4 (.250) Drill
- #10-24 NC-2 Tap
- #10-32 NF-3 Tap
- 82° .372 inch Diameter Countersink

Time Required: Approximately 16 man-hours are required for modifying existing parts and 32 man-hours for installation of kit.

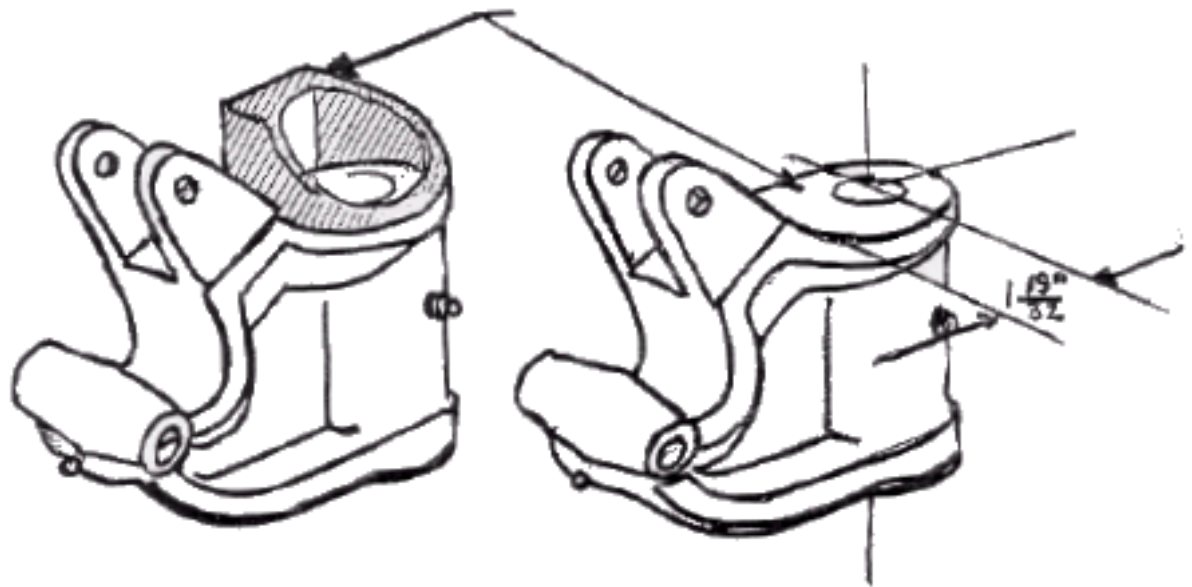
Weight and Balance:

	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
Non-Steerable T.W.			
Total Weight	38.5	225.06	8658
Steerable T.W.			
Total Weight	41.9	235.73	9877
Additional Ballast Necessary	7.0	4.5	32

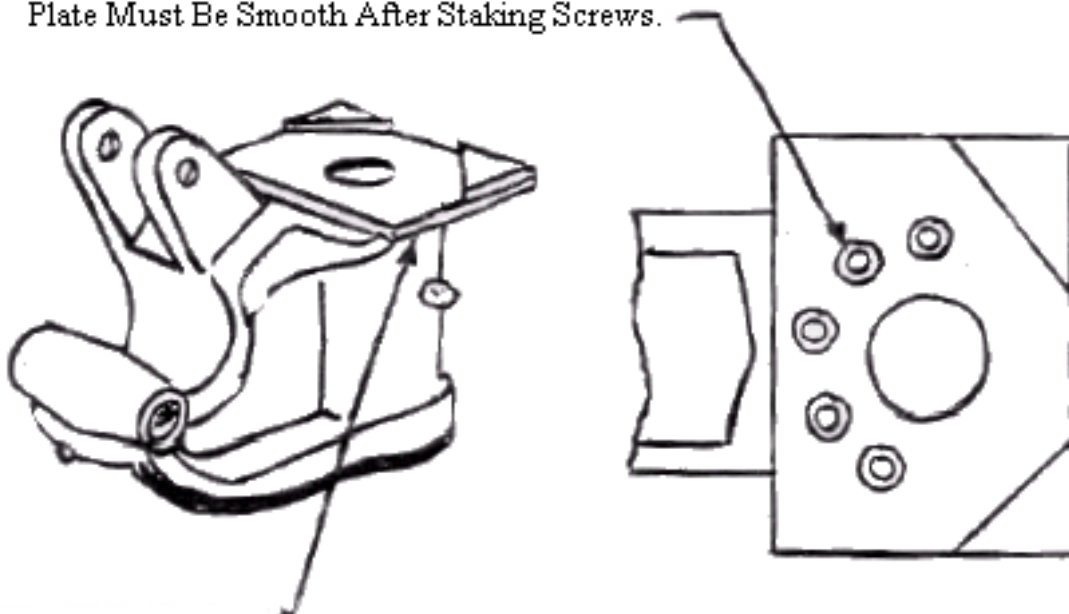
Make suitable entry in log book.

W. H. Ehmann
Service Manager

NOTE:
REMOVE SHADED AREA TO EXISTING FLAT SURFACE AS SHOWN



Drill #26 (.147) -3/4" Deep in Yoke and Cam - Tap #10-24-5/8" Deep (NC-2)
Countersink .372" Dia x 82°. 5 Holes Equal Spaces as Shown.
AN 505-C10-8 Screws (5) Stake in Place - Surface of Cam.
Plate Must Be Smooth After Staking Screws.



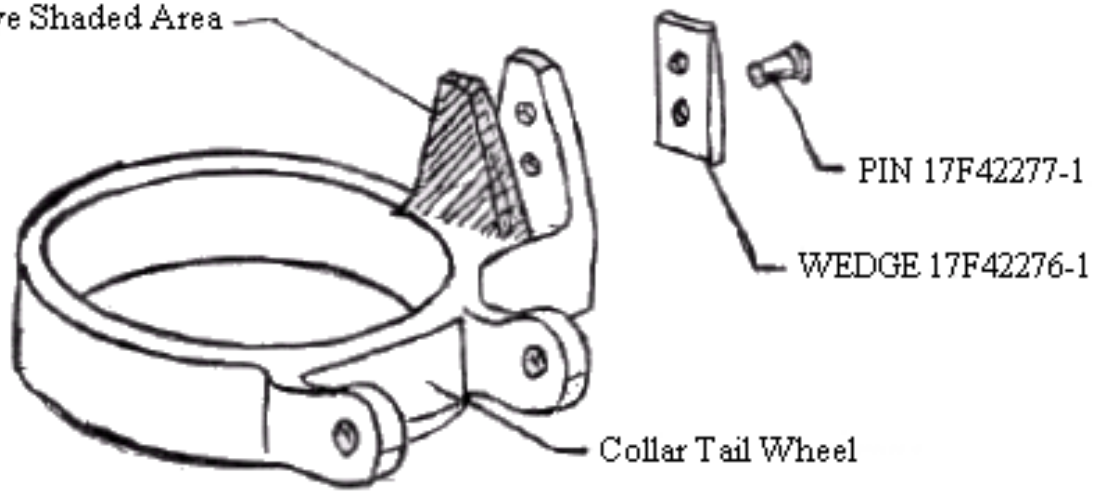
CAM ASSEMBLY ON YOKE

CAM ASSEMBLY ATTACHMENT

Figure 1
Yoke Rework

NOTE:

Remove Shaded Area



Drill #12 (.189)

Countersink 82° x 1/32" Deep

Drill #22 (.157)

5/8" Deep

Tap 10-32 NF-3 1/2" Deep

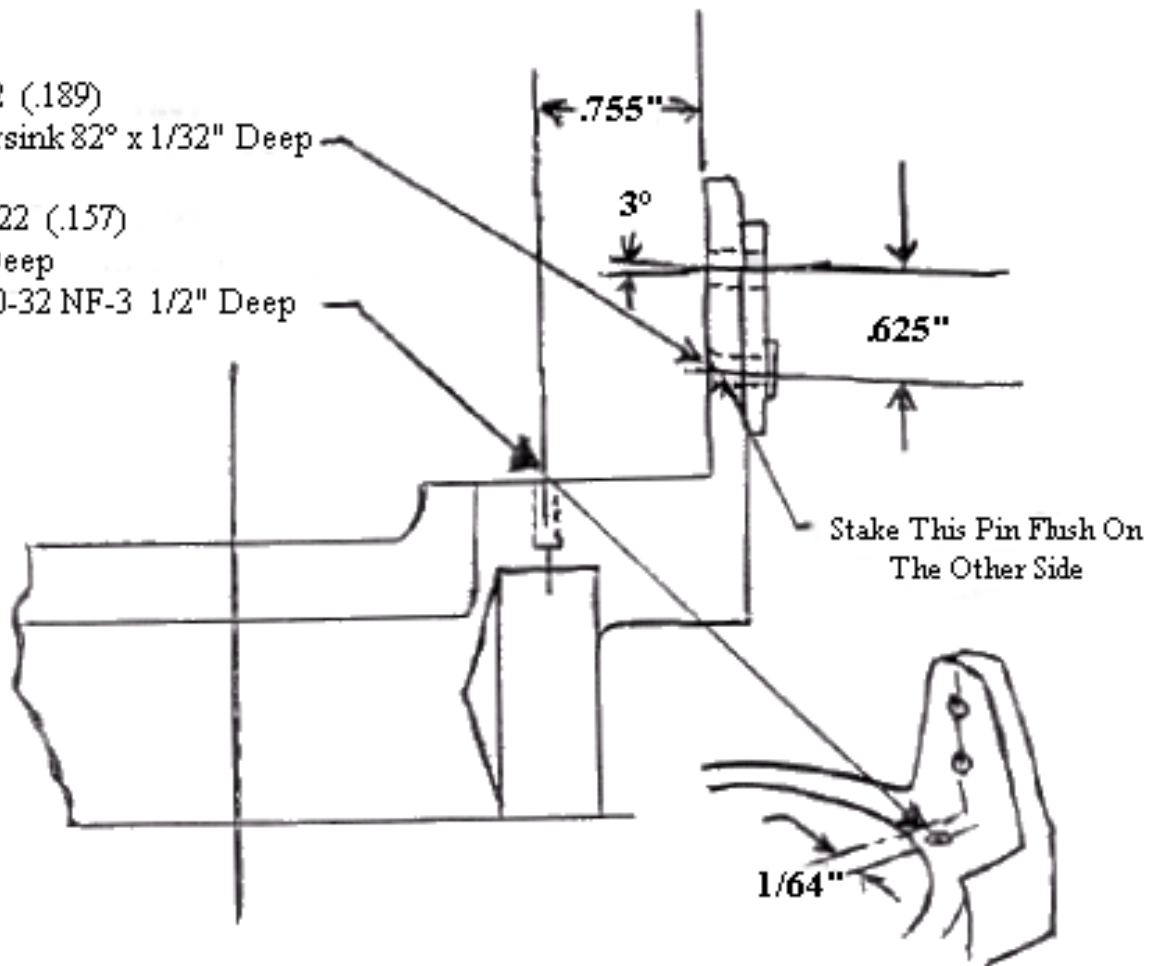


Figure 2
Collar Rework

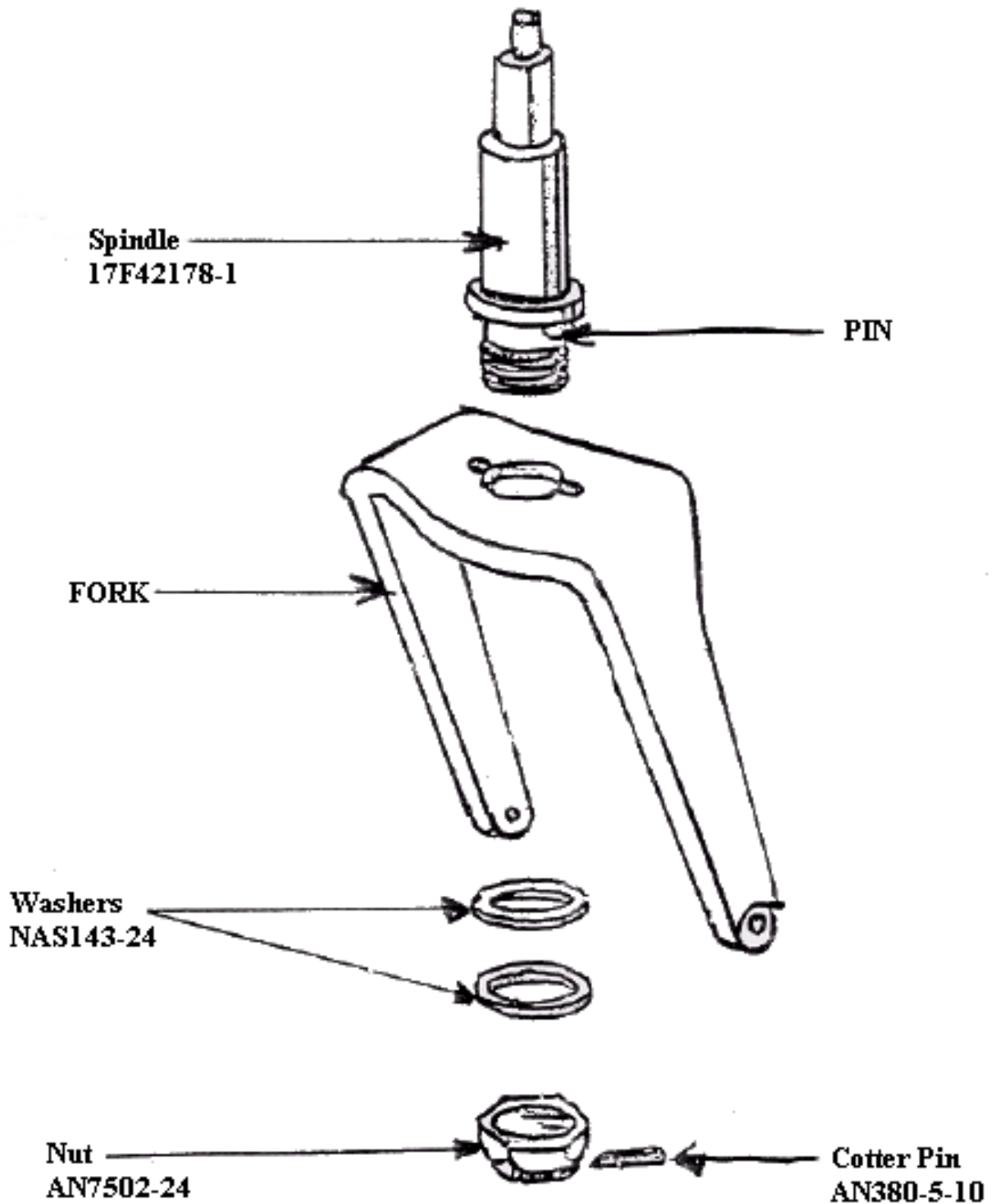


Figure 4

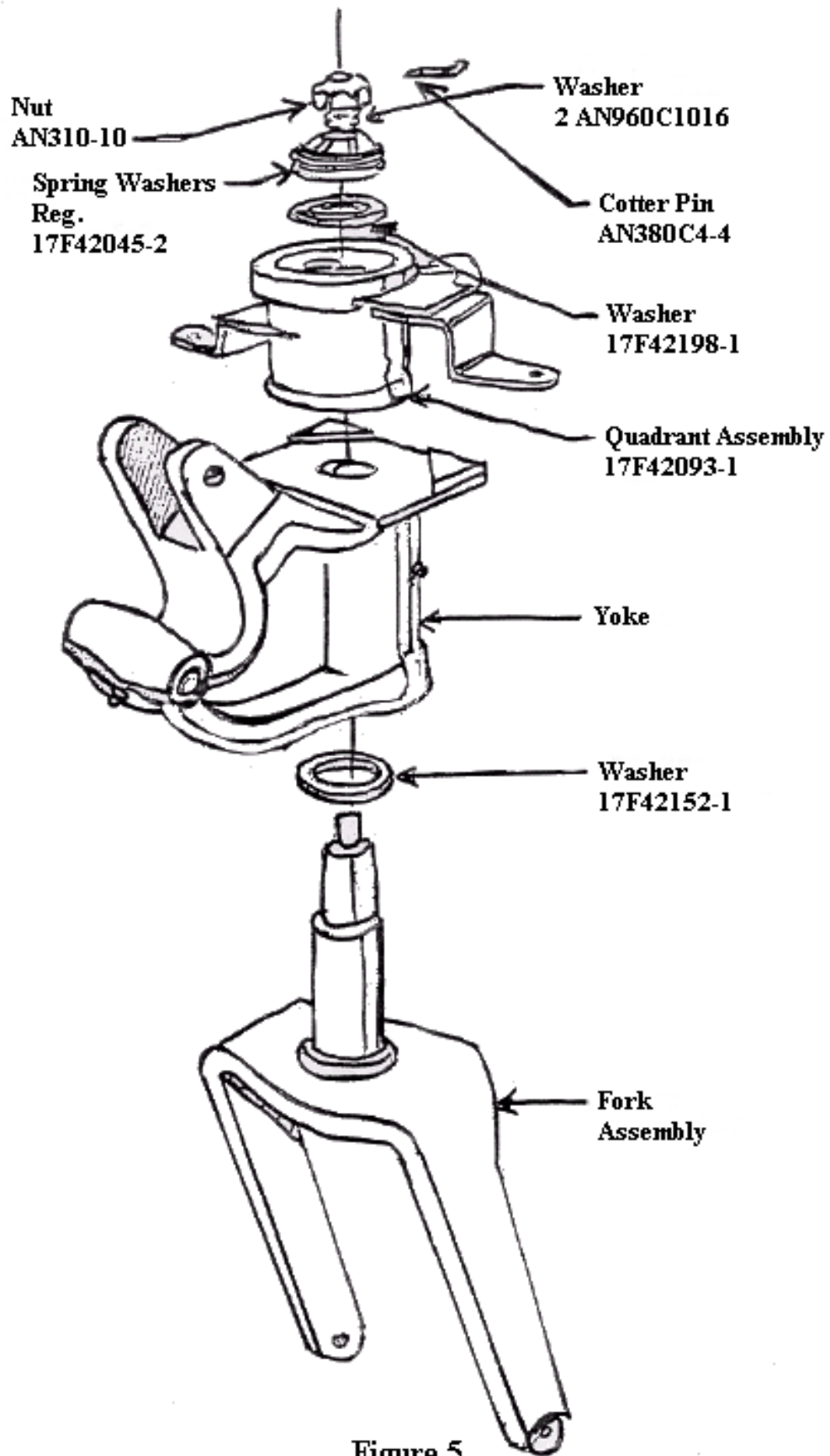


Figure 5

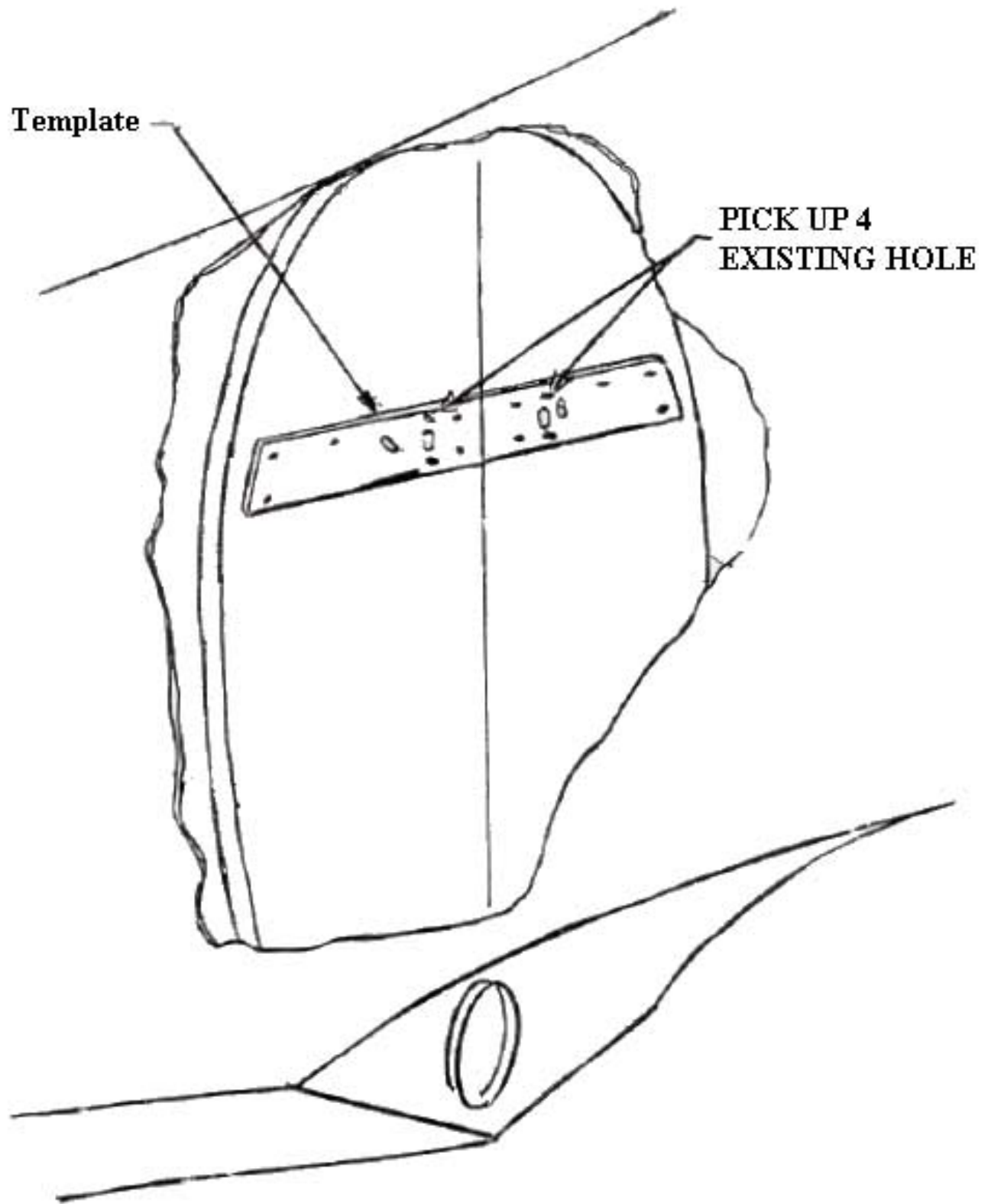


Figure 7

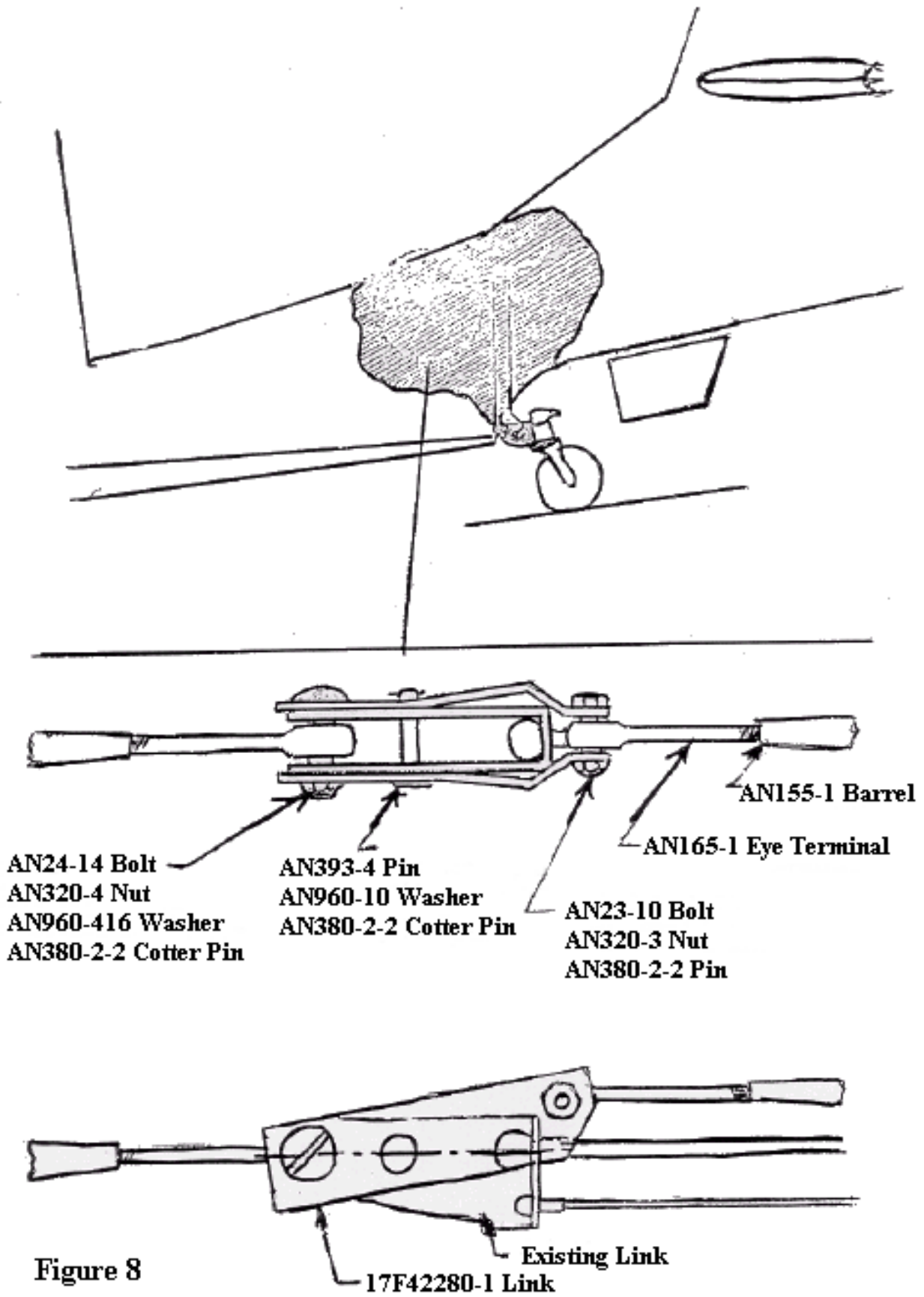


Figure 8

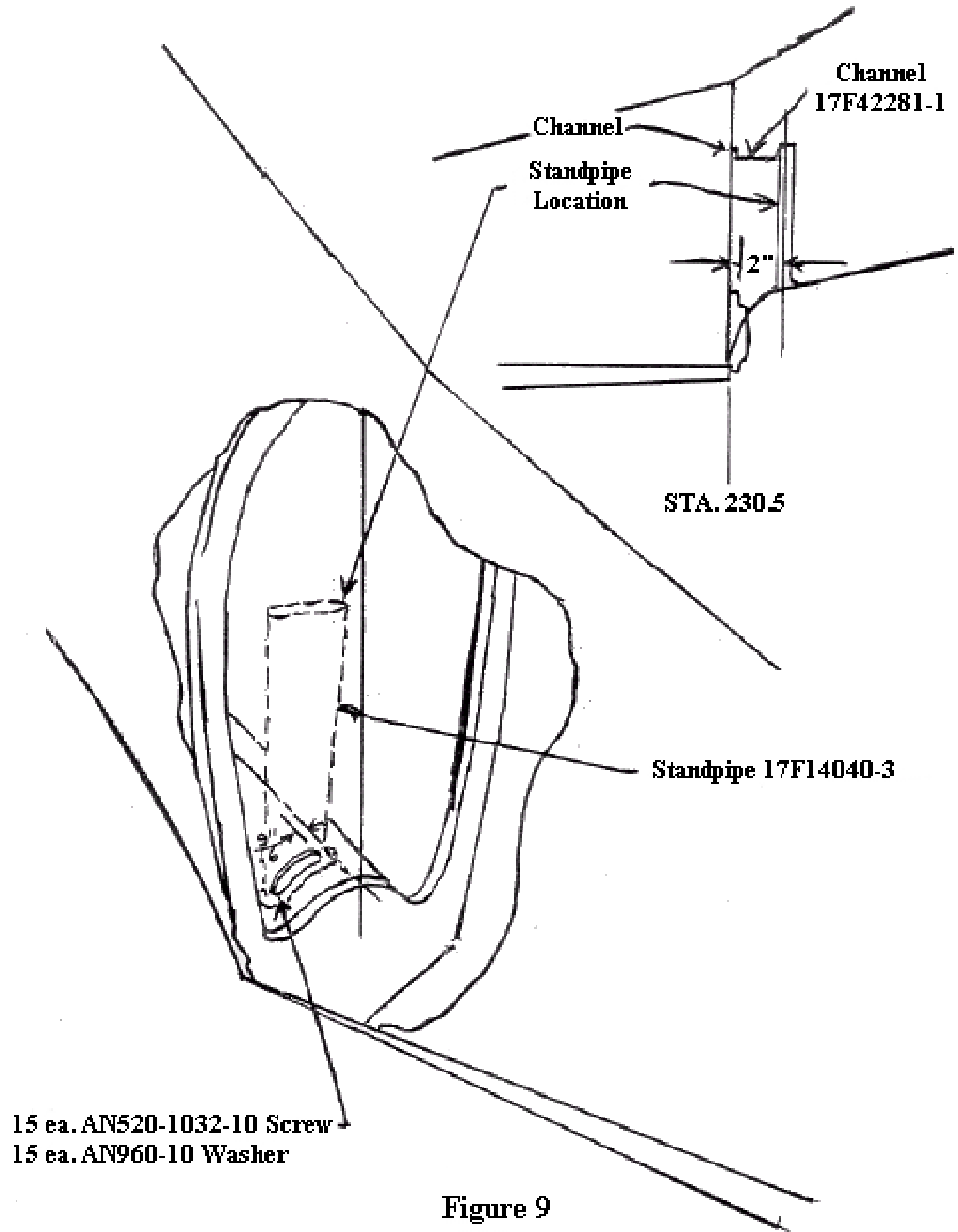
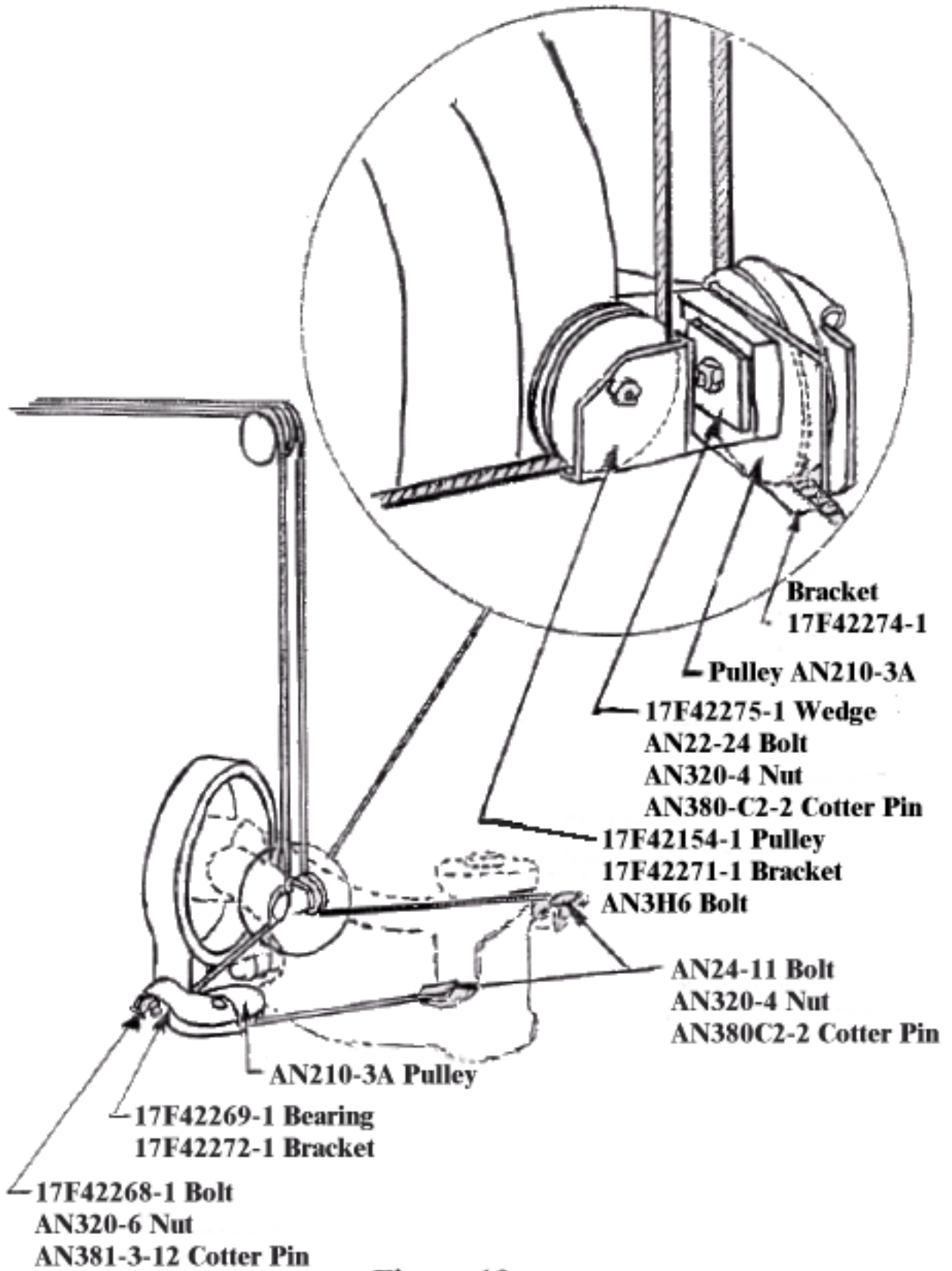


Figure 9



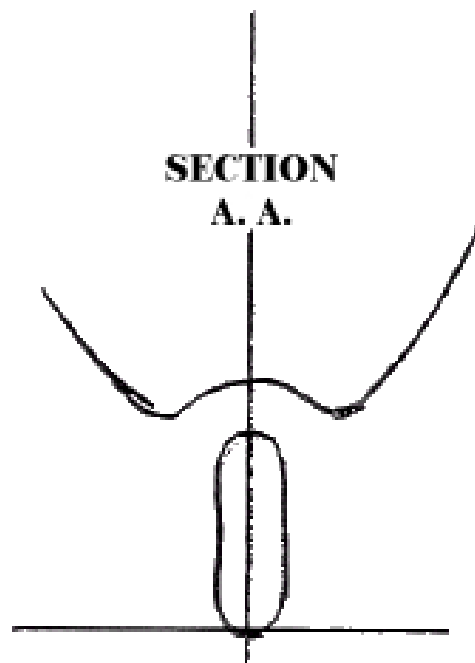
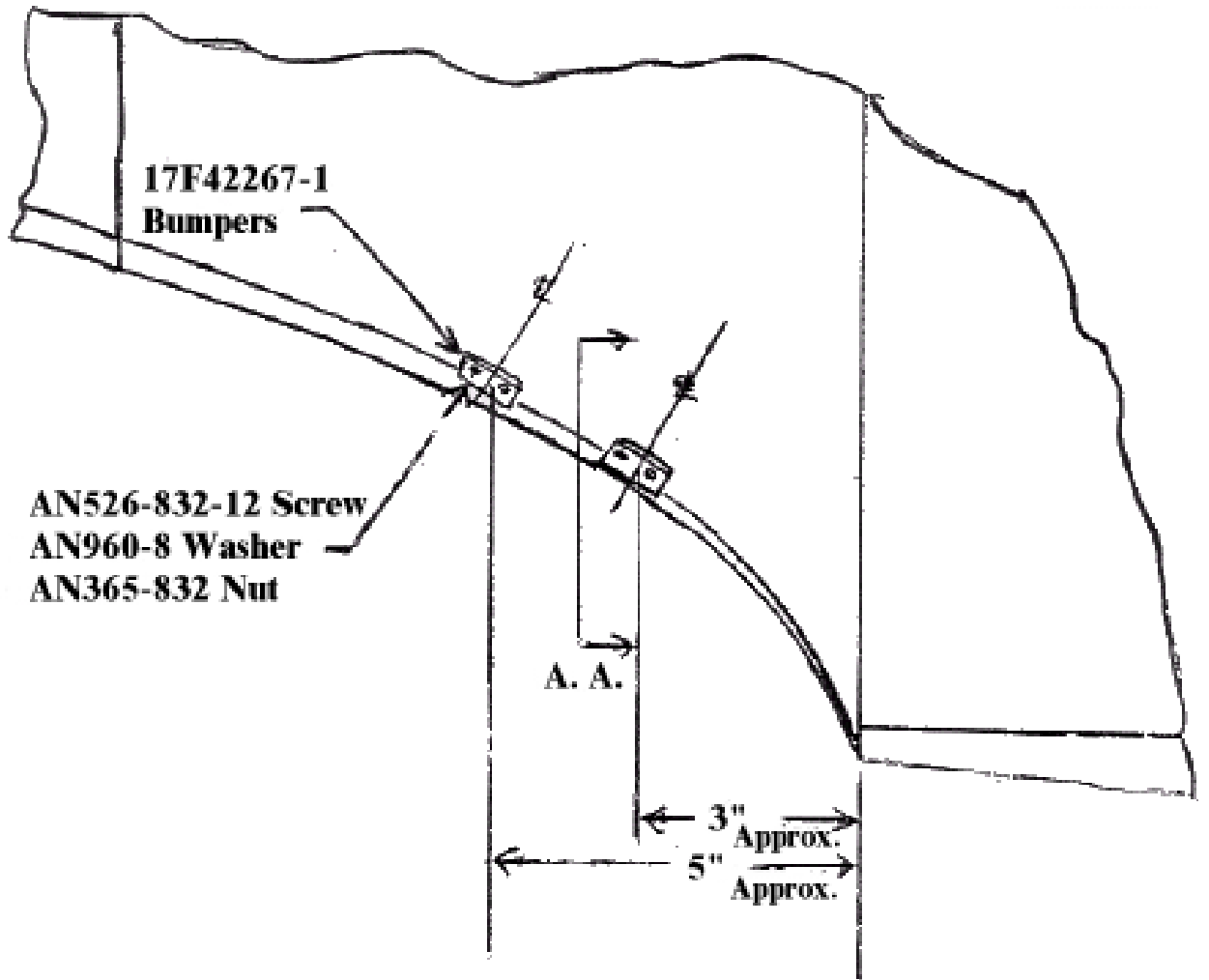


Figure 11

Supplement No. 1, Service Bulletin no. 17

July 1, 1947

Installation Steerable Tail Wheel

To prevent steerable tail wheel control cable terminals from swiveling one hundred and eighty degrees on the quadrant when the tail wheel is retracted, rivets are placed along side the terminals. If the cable terminals swivel there is danger of breaking the cables. Some of the early quadrants shipped in kits did not have these rivets installed. Please inspect these quadrants and if the rivets are not evident, install a rivet, screw or bolt so that there is $\frac{3}{32}$ -inch clearance between the inboard edge of the terminal and edge of the head of the rivet, screw or bolt.

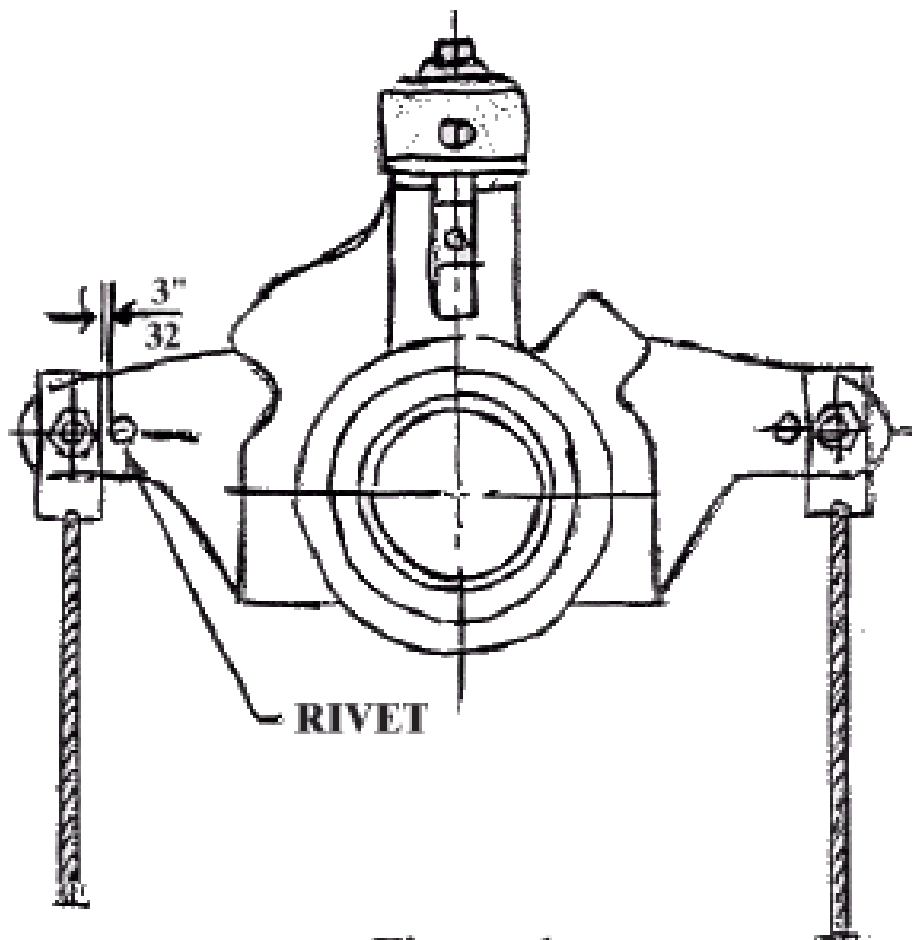


Figure 1

SUPPLEMENT NO. 2
Service Bulletin No. 17
October 16, 1947

INSTALLATION STEERABLE TAIL WHEEL

It was recently brought to our attention that in instances where the Steerable Tail Wheel cable tension was not, at all times, rigorously maintained at specified limits the danger of resultant slack in these cables causing fouling was existent. In order to offset any possibility of this fouling, the following modification should be incorporated in the installation at the earliest possible date and not later than the next 25-hour inspection.

1. Make an overlay of the sketch of the horn (Figure 1) as shown on the reverse side of this supplement
2. Use the overlay as a pattern to fabricate 2 pieces of this detail from .091 gauge aluminum plate.
3. Remove the quadrant arms from the tail wheel quadrant assembly after disconnecting the cable clips from the quadrant arms.
4. Drill out the stop-rivet from the arms.
5. Fit the horns to the arms as shown in Figure 1. Clamp into place. Drill out corresponding holes for attachment in the horn, using the arms as a template.
 - (a) Drill "F" (.257) for clip attachment.
 - (b) Drill #30 (.187) for rivet hole.
6. Rivet the horns to arms using an AN441-4-5 rivet.
7. Remove clamps and reassemble arms to the quadrant.
8. Spread the cable clips to fit over the horn and arm and attach with AN24-11 bolts.
9. Make suitable notation of compliance in the Aircraft Log.

