

SERVICING THE STEERING ASSEMBLY

TRAINING TIME: 1¼ Hr.

TOOLS AND MATERIALS:

1. Standard Set of Mechanic's Hand Tools
2. Special Tools and Equipment
 - a. One set of basic tools available for the Ford Tractor Service Tool Board No. FT 47
 - b. Spring Scale
 - c. One quart can

JOB PROCEDURE:

I. DISASSEMBLING THE STEERING UNIT (WITH UNIT REMOVED FROM THE TRACTOR)

- Step 1—Drain the oil by removing the oil plug (A-Figure 1).
- Step 2—Pull both steering arms off of the sector shafts as shown in Figure 2 and remove the felt washers.
- Step 3—Unscrew the cap screws (C-Figure 1) that hold the sector shaft housings and washers to the gear case.
- Step 4—Remove both washers, sector gears and housings from the sides of the gear case.

NOTE: Due to the eccentric fit of the sector gear housing in the side of the gear case it will facilitate removal to turn the right sector gear housing counter clockwise to free it. Free the left sector gear housing by turning it *clockwise*.

- a. Remove the right sector gear housing.
- b. Remove the left sector gear housing.

- Step 5—Remove the cover and tube assembly cap screws (B-Figure 1) and lift the assembly off of the gear case.

CAUTION: Do not turn the wormshaft if the ball nut is near either end of the worm because the ball retainers will be damaged.

II. REPLACING THE LOWER BEARING CUP

- Step 1—Remove the welsh plug from the bottom of the steering housing.
- Step 2—Drive the bearing cup (A-Figure 3) out of the housing, using a punch.
- Step 3—Replace the bearing cup by driving it in from inside the housing.
- Step 4—Replace the welsh plug.

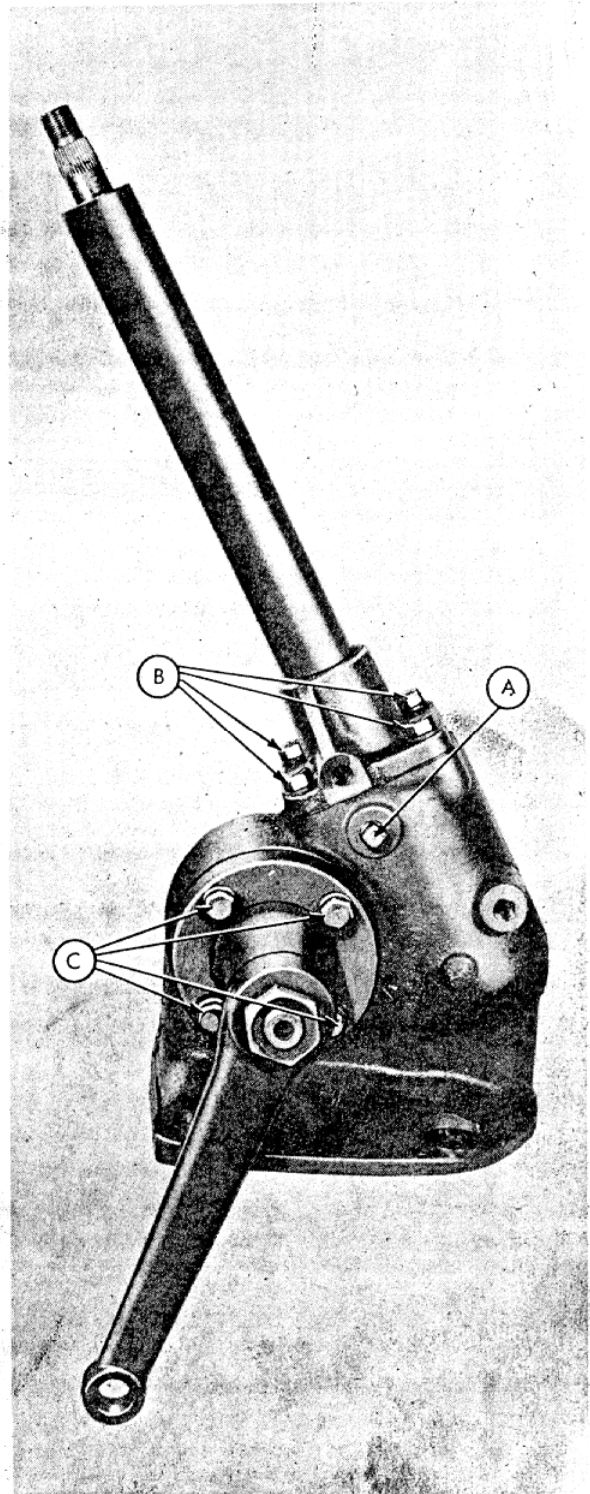


Fig. 1

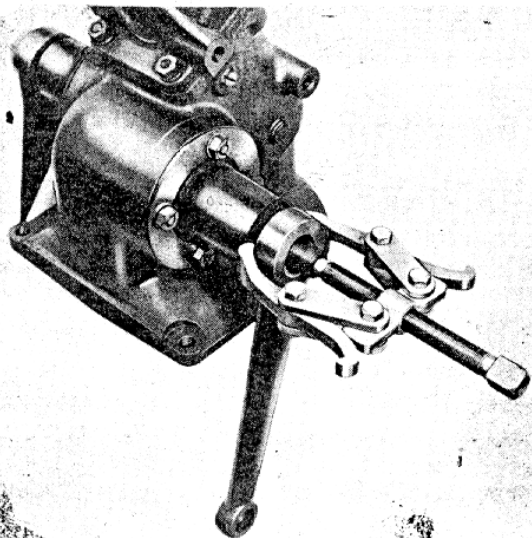


Fig. 2

III. REPLACING THE SECTOR SHAFT HOUSING BUSHING

NOTE: When new tractors are used for training, some part of the job plan will be omitted but the procedure will be discussed by the instructor.

- Step 1—Drive the bushings from the housings.
- Step 2—Press the inner bushings into the housing $\frac{1}{8}$ inch below the face of the hub.
- Step 3—Install the outer bushings flush or slightly below the bottom of the oil seal counterbores.
- Step 4—Ream the bushings to 1.125-1.126.

IV. REASSEMBLING AND ADJUSTING THE STEERING UNIT

- Step 1—Install the steering shaft lower bearing (B-Figure 3).
- Step 2—Install the shaft and ball nut assembly with the nut (C-Figure 4) positioned at approximately the center of the worm.
- Step 3—Install the top bearing (C-Figure 3).
- Step 4—Position the shims (B-Figure 4) and install the steering tube and cover assembly.
- Step 5—Install the lockwashers and cap screws (B-Figure 1) and tighten securely.
- Step 6—Install the steering housing on the tractor.
- Step 7—Adjust the wormshaft (A-Figure 4) end play (bearing adjustment).

NOTE: To properly perform the above, it is necessary to have the sector shafts and housings removed.

- a. Adjust the bearings to a slight pre-load by removing shims (B-Figure 4) from the top face of the gear housing.
- b. With a spring scale as shown in Figure 5, check the amount of pull required to rotate the steering wheel through center or straight forward position. (Should be $1\frac{1}{2}$ lbs.)

Step 8—Center the ball nut on the shaft as shown in Figure 3.

Step 9—Install the left sector shaft assembly (three large and five small teeth).

NOTE: The notch on the sector shaft housing flange should be down.

a. The center tooth of the three large sector teeth is meshed with the center space of the teeth on the ball nut (D-Figure 3).

Step 10—Adjust the sector mesh (left).

- a. Install the felt dust seal.
- b. Install the left sector arm.
- c. With the steering wheel installed hold the steering shaft rigid and turn the sector shaft housing and metal gasket counter clockwise as far as possible by hand.

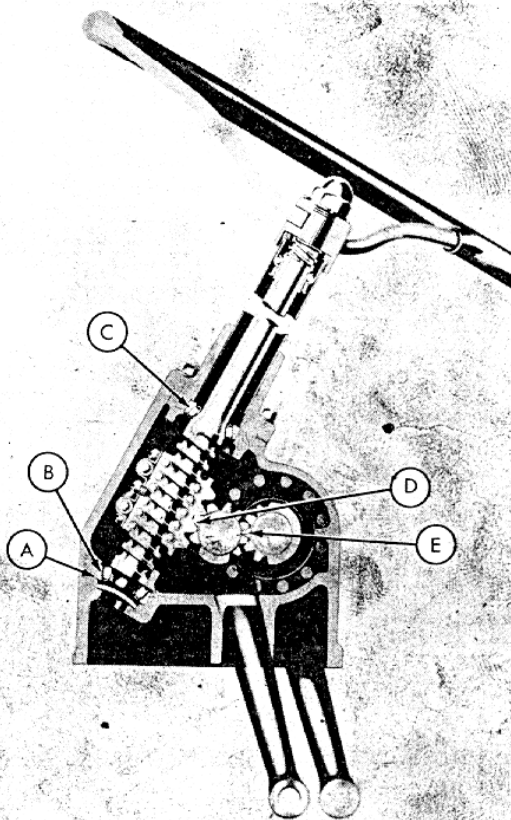


Fig. 3

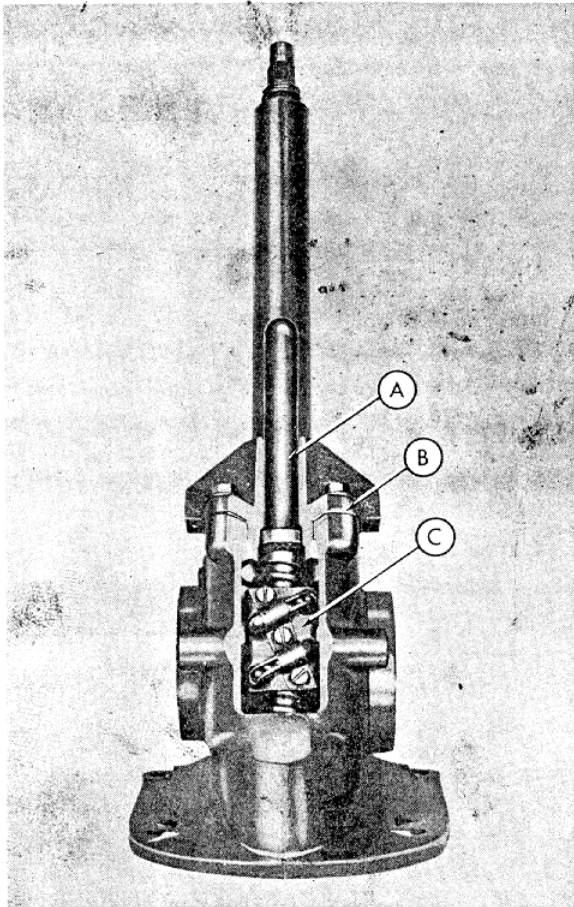


Fig. 4

- d. Check to see that there is no backlash.
- e. Install the side washer and cap screws.

Step 11—Install the right sector shaft assembly.

NOTE: The notch on the sector shaft housing flange should be down.

- a. Mesh the center tooth of the sector with the third tooth space on the left sector gear (counting from the solid section of the gear located on the bottom (E-Figure 3).

- b. Rotate the right sector shaft housing in a clockwise direction and follow the procedure established in Step 10 for checking backlash.

Step 12—Check the steering adjustment (drag links disconnected).

- a. With a spring scale hooked to the rim of the steering wheel rotate the steering wheel through mid or straight forward position. A pull of not less than 2½ lbs. or more than 6 lbs. is correct.

Step 13—Properly position the steering arms and secure with nuts and lockwashers.

Step 14—Fill the gear housing with oil. ~~GREASE~~

Step 15—Install the instrument panel.

NOTE: It may be necessary to remove the clip and bracket on the lower end of the throttle rod to install the instrument panel.

Step 16—Install the steering wheel.

Step 17—Connect the oil pressure line from the gauge on the instrument panel to the block.

Step 18—Attach the drag links to the steering arms.

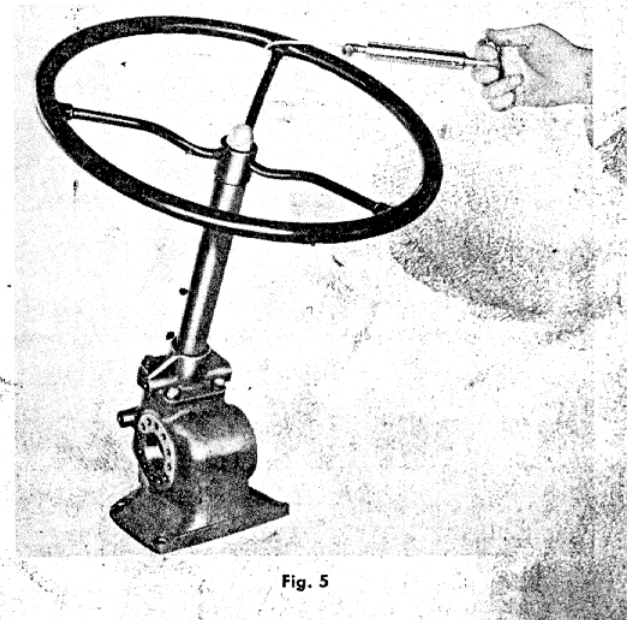


Fig. 5



*Best internet source
of information and help
for old Ford tractors.*

www.ntractorclub.com