

**SECTION**

**O**

**SERVICING THE**

**STEERING SYSTEM**

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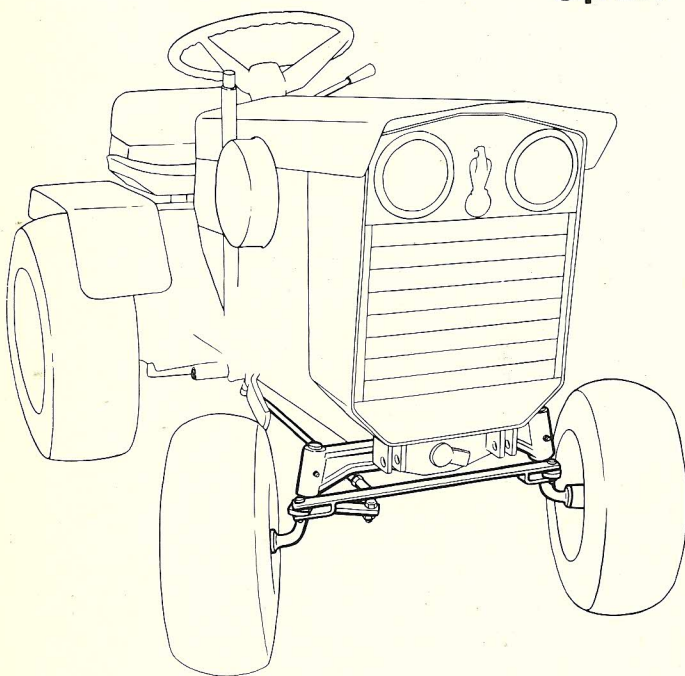
### INTRODUCTION

Two separate types of steering systems are used on the compact tractors. Both types are easily distinguished by visual examination of the vehicle before performing any service operations.

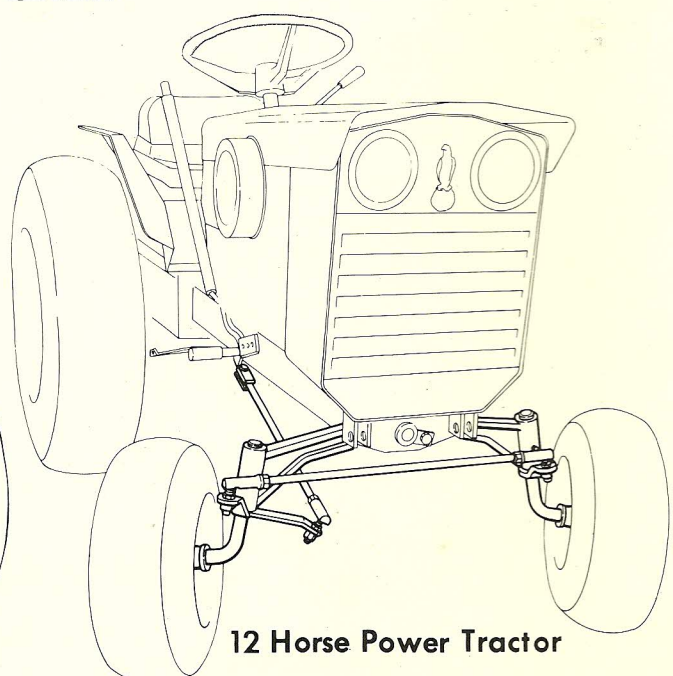
apply to your tractor, examine the steering column. Service procedures for the fully enclosed column are on Page O-4 of this section. The open shaft service procedures are on Page O-6 of this section

To determine which service operations

### Open Shaft



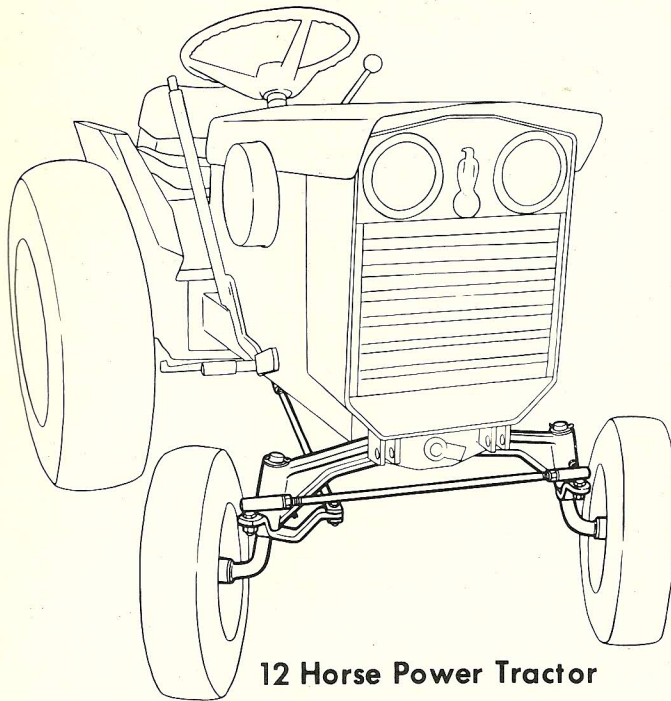
**10 Horse Power Tractor**



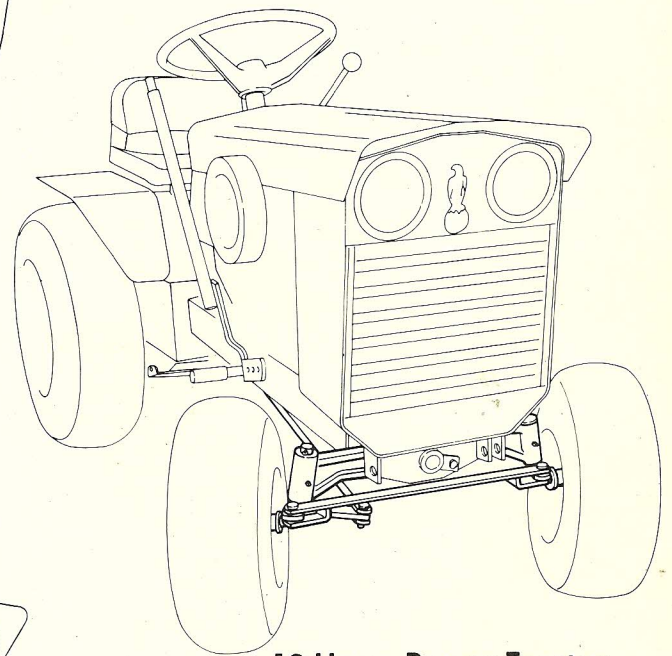
**12 Horse Power Tractor**



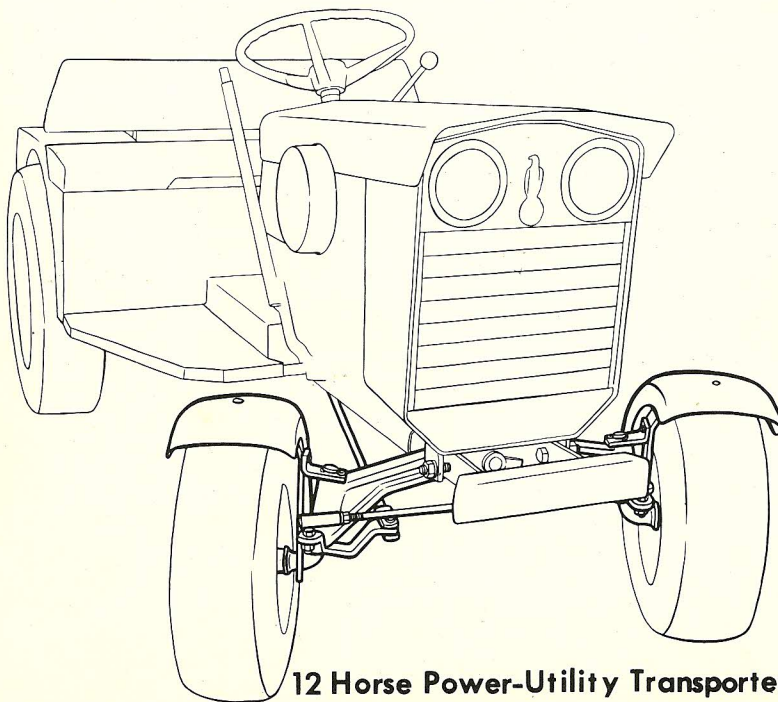
## Enclosed Shaft



**12 Horse Power Tractor**



**10 Horse Power Tractor**



**12 Horse Power-Utility Transporter**

Figure O-1

# **STEERING SYSTEM ENCLOSED GEAR SHAFT**

## **Removal and Disassembly**

**(Refer to Figure O-1)**

1. Remove the steering wheel medallion (1), rubber retaining ring (2), nut (3), steering wheel (4), seals (27), bearing spacer (26) and retainer (25).
2. Loosen the clamping nut (28) on the shifter bracket (29) and open the clamp enough to allow the column housing to pass thru.
3. Disconnect the drag link rod from the lever assembly (15).
4. Remove U-bolt nuts (24), U-bolt (22) and bolts (19). Manuever the steering assembly out thru the bottom of the tractor.
5. Remove lock nut and adjusting nut (21), washer (20) and pull the entire lever assembly (13 thru 17).
6. Remove cotter pin (11) and adjustment plug (12).
7. Remove worm gear (8), bearing cups (6 and 10) and bearing assemblies (7 and 9).

## **Inspection**

1. Thoroughly clean all parts before inspection. Replace all damaged or badly worn parts.
2. Inspect bearing assemblies (7 and 9) for worn or pitted balls or damaged bearing cups (6 and 10) and replace if necessary.
3. Inspect the worm gear (8) and housing (23) for cracks or damaged threads.
4. Replace seals (27), bearing spacer (26) and gasket (17) each time the steering gear is disassembled.

## **Assembly and Installation**

1. If necessary, install new balls in bearing retainers (7 and 9).
2. Install bearing assemblies (7 and 9) with bearing cups (6 and 10) and position the worm gear (8) in the column housing (23).
3. Secure the worm gear (8) in the column housing (23) with adjustment plug (12). Tighten the plug until it is tight against the bearings and secure it with cotter pin (11).
4. Install gasket (17), retainer (16), lever assembly (15) to housing (23) and secure with washer (20), adjusting nut and lock nut (21). Refer to Page O-8 for proper adjustment.
5. Install adjusting screw (14) and lock nut (13). Refer to Page O-8 for proper adjustment.
6. If necessary, replace grease fitting (18).
7. Fill with approximately 1/4 pound of No.1 Lithium base grease.
8. Secure the steering assembly to the tractor frame with U bolt (22), nuts and washers (24) and bolts (19). Tighten the clamping nut (28) on the shifter bracket (29).
9. Connect the drag link rod to the lever assembly.
10. Install retainer (25), bearing (26), seals (27), steering wheel (4), nut (3), rubber retainer ring (2) and medallion (1).



# ENCLOSED GEAR SHAFT

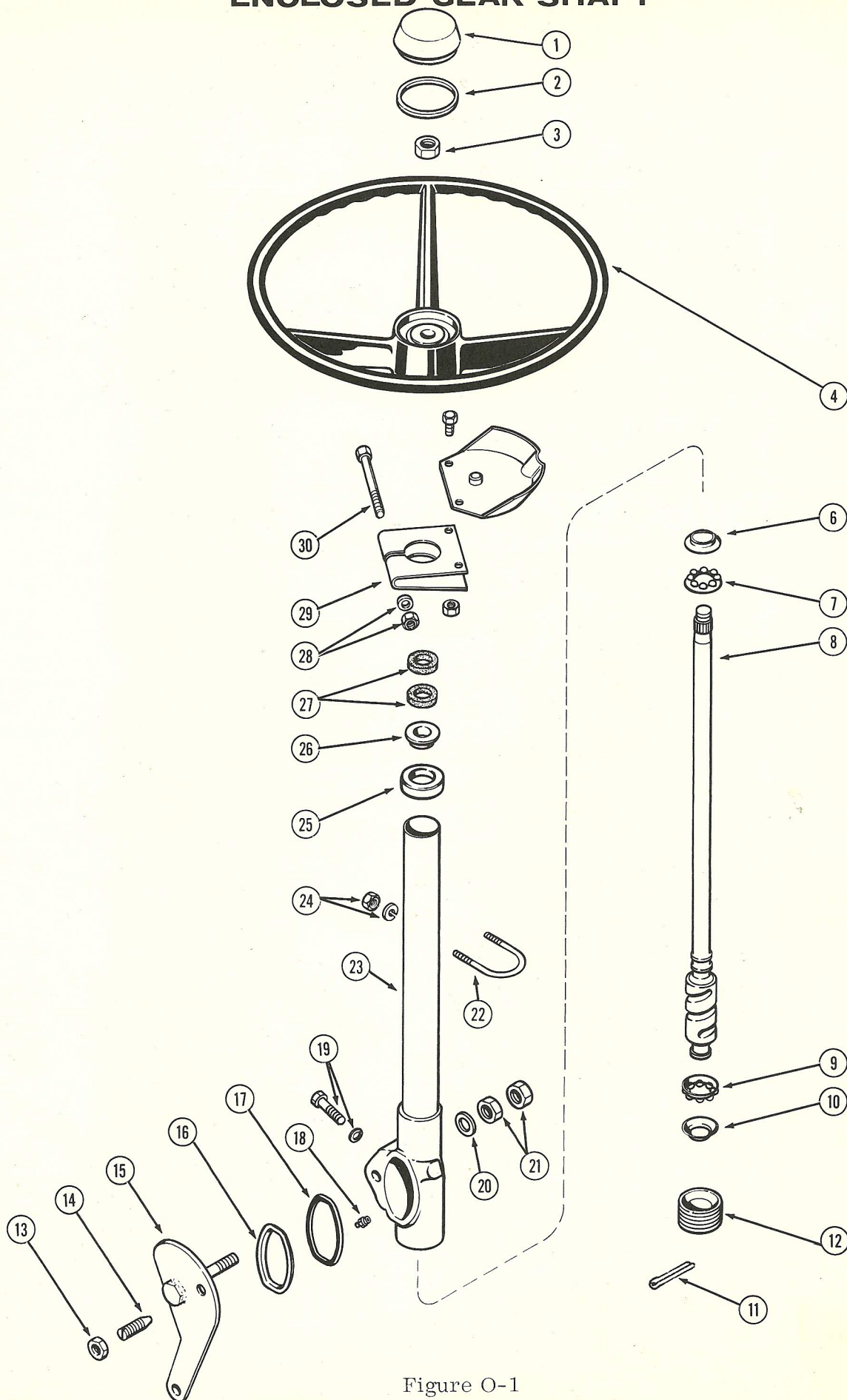


Figure O-1

**STEERING SYSTEM  
OPEN GEAR SHAFT  
Removal and Disassembly  
(Refer to Figure O-2)**

1. Remove the steering wheel medallion (1) and retainer ring (2).
2. Remove nut (3), lift off steering wheel (4) and tap out spacer (5).
3. Disconnect the drag linkage from the steering sector (13).
4. Block up the tractor, remove retaining ring (10), washer (11) and lower the steering sector (13).
5. Remove bushing (12).
6. Remove retaining ring (6), washer (7) and steering gear (9) thru the bottom of the tractor and tap out bushing (8).

**Inspection**

1. Thoroughly clean all parts before inspection.
2. Inspect bushings for cracks or excessive wear. Replace if necessary.
3. Inspect steering gear and sector for broken or chipped teeth and replace if necessary.

**Assembly and Installation**

1. Install bushing (8) in mounting bracket and position the steering gear (9).
2. Install new washer (7) and retaining ring (6) over the top of the steering gear and slide down the steering gear.
3. Push the steering gear into position and install bushing (5), steering wheel (4), nut (3), retaining ring (2) and medallion (1).
4. Install bushing (12) in the steering sector mounting bracket, position the steering sector (13) and install new washer (11) and snap ring (10).
5. Position the steering sector (13) arm at a right angle to the drag linkage with the front wheels in the straight ahead position and connect the drag linkage.

# OPEN GEAR SHAFT

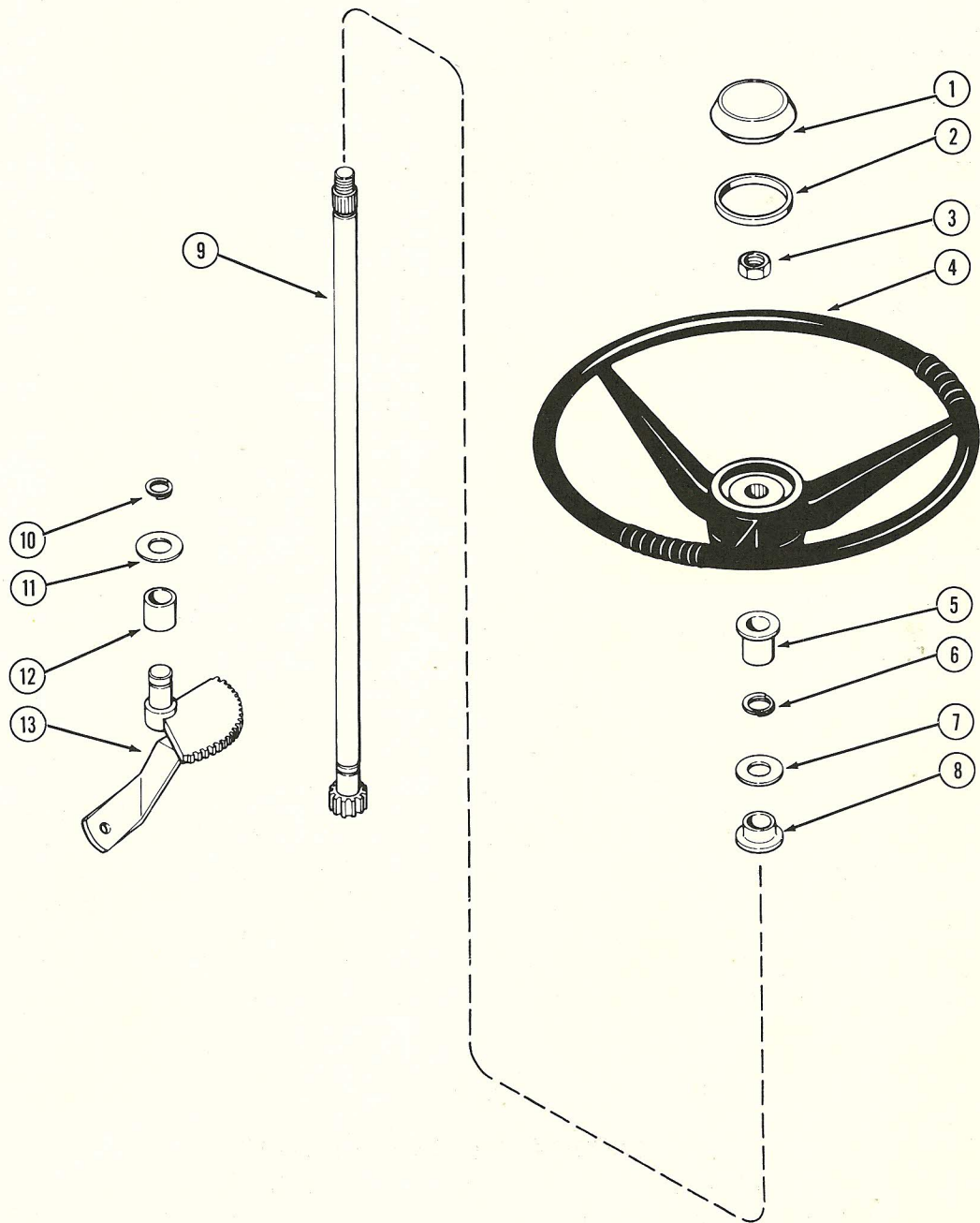


Figure O-2



## STEERING GEAR ADJUSTMENT

### ENCLOSED GEAR SHAFT

#### Worm Shaft End Play Adjustment

Raise and block up the front end of the tractor so the front wheels are off the ground.

The end play (up and down) of the worm shaft is adjusted by loosening or tightening the adjusting plug located at the bottom end of the steering gear assembly. When the worm shaft is correctly adjusted, there should be no noticeable end play at the steering wheel.

#### Worm Gear Adjustment

Raise and block up front end of tractor so front wheels are off the ground.

End play in the drop arm lever shaft can easily be removed by means of the adjusting nut on the lower left of the steering gear box and the slotted adjusting screw located on the right hand side of the steering gear box on the drop arm lever shaft assembly. Always make the adjustments midway between full right and full left turns. Loosen the lock nut (A) and tighten the adjusting nut (B) until a very slight drag is felt midway in the turn. Tighten the lock nut (A) and torque to 50 ft. lbs. being sure that the adjusting nut (B) does not turn. Turn the wheel to be sure there is no binding. Loosen the lock nut (C) and turn in the adjusting screw (D) until a slightly heavier drag is felt midway in the turn. Torque the lock nut (C) 40 to 50 ft. lbs. being sure that the adjusting screw (D) does not turn.

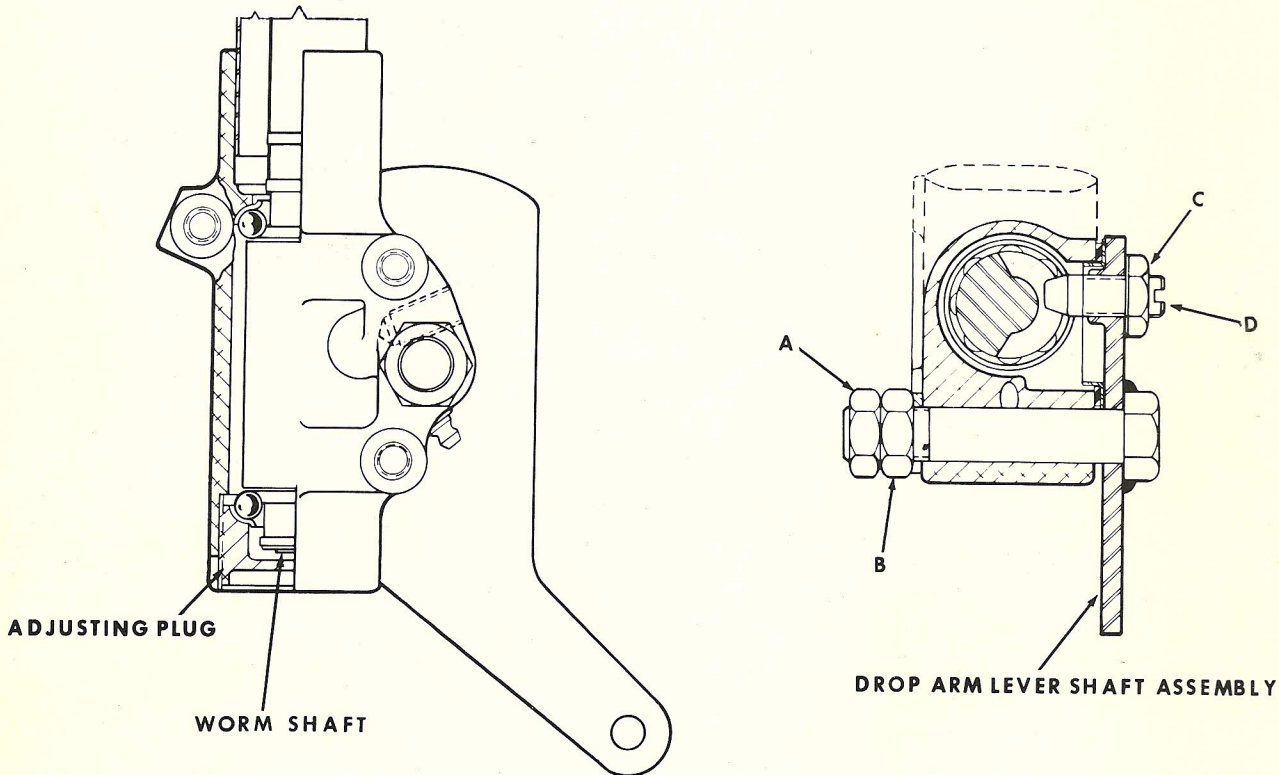


Figure O-3

### OPEN GEAR SHAFT

Steering adjustment should only be necessary if the drag linkage has been replaced. Position the front wheels in the straight ahead position and turn the steering wheel as far clockwise as possible; then turn counter-clockwise as far as possible, counting the number of turns. Now turn the wheel clockwise one-half the amount of turns. The steering sector arm should now be at a right angle to the drag linkage. Lengthen or shorten the drag linkage as necessary to insert it in the sector arm. When the correct length is achieved, tighten the drag linkage adjusting nut.

**NOTE** The J. I. Case Company reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.