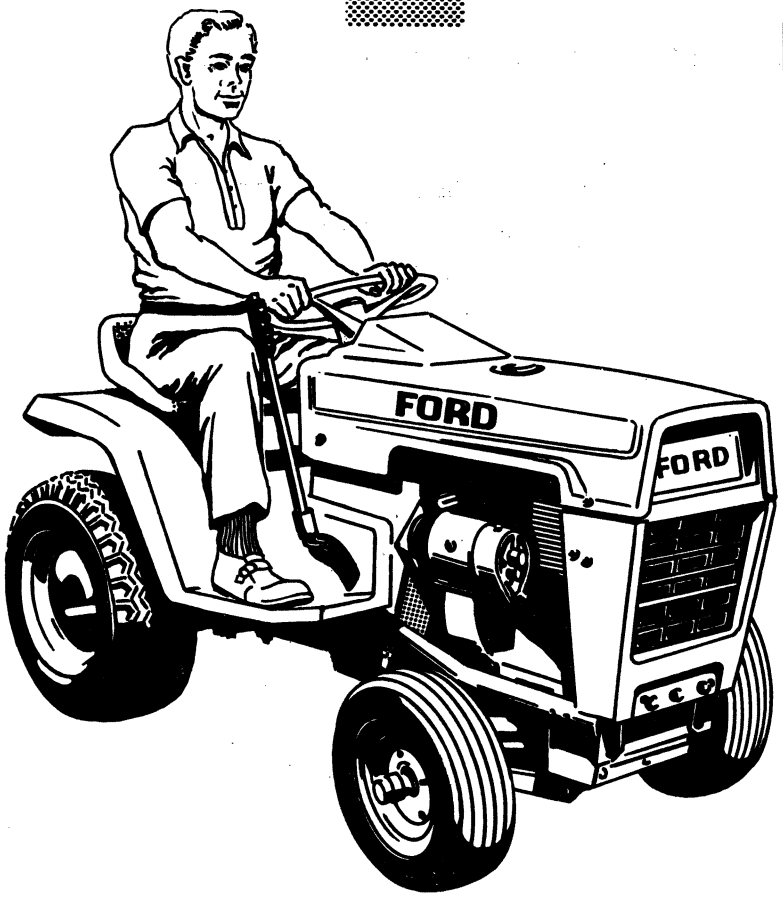
FORD

LAWN AND GARDEN TRACTORS

SERVICE INFORMATION



FORD TRACTOR OPERATIONS

FORD MOTOR COMPANY

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Reprinted

FOREWORD

THIS MANUAL CONTAINS SERVICE INFORMATION FOR THE FORD 100, 120, 125, AND 145 LAWN AND GARDEN TRACTORS. INFORMATION IS PROVIDED ON DESCRIPTION AND OPERATION, PRESSURE CHECKS AND ADJUSTMENTS, AND COMPONENT OVERHAUL.

REFER TO THE KOHLER ENGINE REPAIR MANUAL FOR INFORMATION CONCERNING THE ENGINE; ITS COMPONENTS, SPECIFICATIONS, AND REPAIR.

KEEP THIS MANUAL ALONG WITH YOUR OTHER SERVICE LITERATURE, AVAILABLE FOR READY REFERENCE.

SERVICE DEPARTMENT
FORD TRACTOR OPERATIONS
FORD MOTOR COMPANY

Contents

HYDRAULIC LIFT

The hydraulic implement lift in the 145 Ford Lawn and Garden Tractor consists of three components; the hydraulic pump, hydraulic valve, and hydraulic cylinder. The hydraulic pump is used as a charge pump for the hydrostatic transmission as well as a source of hydraulic power for the hydraulic system. The hydraulic valve is an open center, single spool, double-acting valve which has an integral flow restrictor type relief valve, Figure 1. This valve is adjustable. The hydraulic linkage actuating cylinder is a double-acting sealed unit, Figure 1, having a 1-1/2" bore and 3-1/2" stroke and is equipped with two single lip phonelic type seals on the piston for positive sealing. The transmission hydraulic pump is the source of hydraulic power for the hydraulic system. All three components of the hydraulic system are serviced as assemblies only.

PRESSURE CHECK

When checks are made for the valve pressure settings, the hydraulic system must be at operating temperature.

1. Shut off the engine and relieve the hydraulic pressure in the system by actuating the control valve levers.

2. Install a 1/4" tee fitting and a 0 – 1000 psi pressure gauge in the piston end of the hydraulic cylinder.

3. Start the tractor engine and set the engine speed at a high idle. Actuate the hydraulic control lever and read the pressure on the gauge. The pressure should read 600 psi.

4. If a pressure reading obtained is greater than 600 psi, turn the relief valve adjusting screw, Figure 2, out to decrease the relief valve setting. If the pressure reading obtained is less than 600 psi, turn the relief valve adjusting screw in to increase the relief valve setting.

5. If unable to obtain the 600 psi reading, replace the charge pump and recheck the system. If excessive leak-down occurs, replace the cylinder and/or control valve.

NOTE: *When the 3-point linkage is installed the optional 2-inch bore cylinder must be used.*

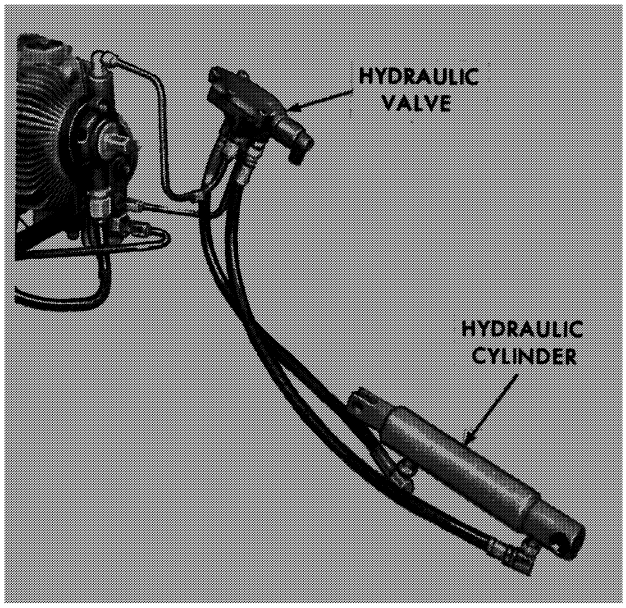

Figure 1
Hydraulic System Components

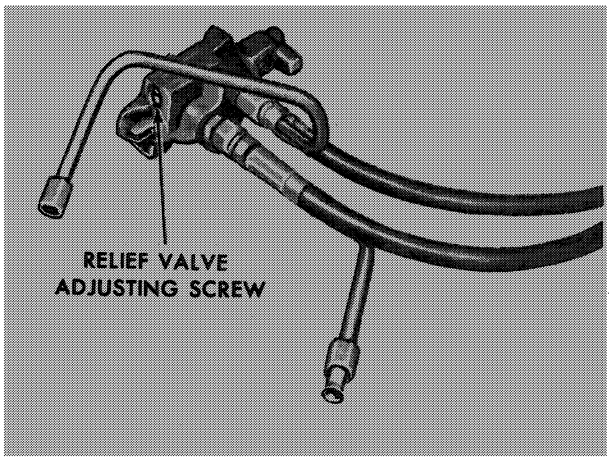

Figure 2
Hydraulic System Relief Valve

MARSHALLMATIC HYDROSTATIC FLOW DIAGRAM

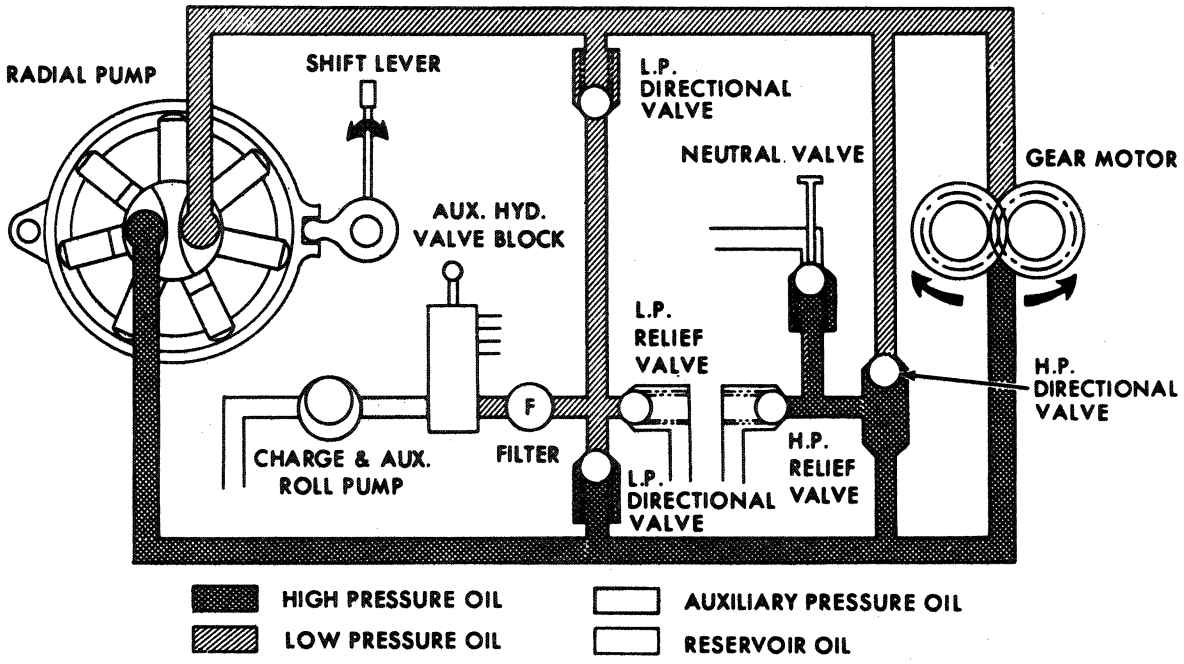

Figure 3
Hydrostatic Transmission Flow Diagram

HYDROSTATIC TRANSMISSION

The hydrostatic transmission is serviced only as an assembly; however, in the event of hydraulic or transaxle component failures which could cause oil contamination, it may be necessary to disassemble the hydrostatic unit for complete cleaning.

The hydrostatic transmission used in 125 and 145 Ford Lawn and Garden Tractors is composed of three major parts; a reversible variable displacement radial piston pump, a fixed displacement radial piston motor, and a system of valves between the pump and motor. The tractor ground speed is regulated by changing the oil delivery of the variable displacement pump. Moving the speed control lever forward will control the forward ground speed range of 0 – 6.5 mph at full engine rpm. When the speed control lever is moved in the reverse direction, a reverse range of 0 – 4.4 mph is achieved. The system operates as a closed loop type and any internal loss of oil from the loop is replaced by oil from the charge pump. See Figure 3. The oil is contained in an internal reservoir in the hydrostatic transmission and transaxle. The oil is forced by the charge pump into the loop circuit through a full flow filter and then through one of the low pressure directional valves. Depending on direction of the tractor travel, excess oil passes through the low pressure relief valve and back into the reservoir.

LINKAGE ADJUSTMENT

To adjust the hydrostatic transmission linkage, turn adjusting nuts, Figure 4, on the speed control rod where it is attached to the speed control arm. Moving the adjusting nuts towards the front of the tractor will increase forward speed while turning the nuts in the opposite direction will increase reverse speed.

The transmission linkage should be adjusted so that the tractor does not creep in neutral. Turn the adjusting nuts to increase or decrease spring tension against the speed control arm until the tractor remains stationary in the neutral position.

The system is protected by a high pressure relief valve located in the circuit after the high pressure directional valve. The high pressure relief valve will protect the circuit whether it is operating in the forward or reverse direction.

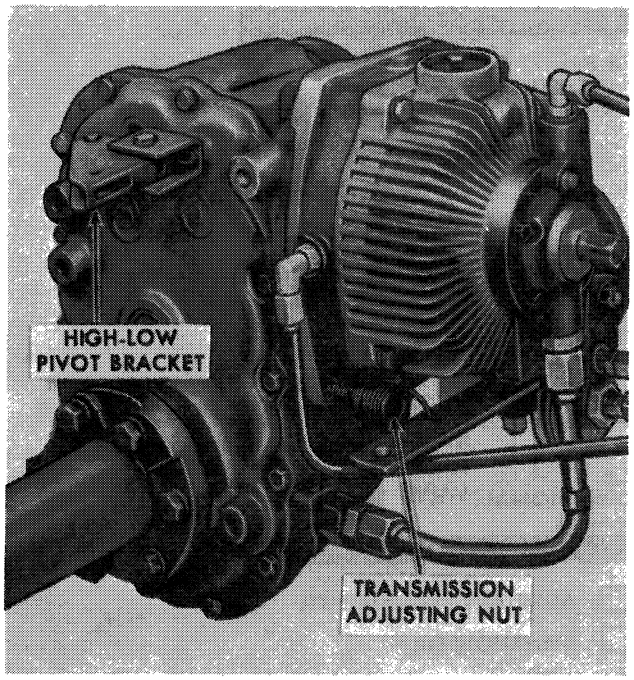

Figure 4
Transmission Linkage

REMOVAL

The following steps should be taken to remove the hydrostatic transmission and transaxle assembly from the tractor.

1. Drain the oil from the transaxle bottom drain plug.

2. Remove the high/low shift lever, hydraulic lever, and brake lock knobs and remove the cover by removing the four Phillips head screws.

3. Disconnect the drive shaft coupler from the transmission flange.

4. On the Model 145, disconnect the hydraulic valve line from the top of the transmission hydraulic pump and disconnect the oil return line from the valve to transmission filter as shown in Figure 5.

5. Remove the brake linkage, brake band, and brake anchor bracket from the transaxle by removing the two brake anchor brackets.

6. Remove the rod and spring from the hydroactuating arm, remove the transaxle high/low actuating linkage and pivot brackets from the transaxle shown in Figure 4.

7. Remove the frame-to-transaxle retaining bolts from both sides and remove the hydrostatic transmission and transaxle assembly from the tractor.

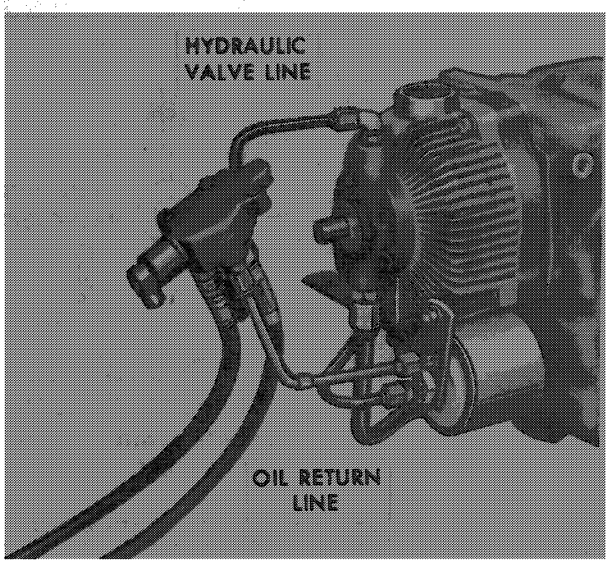

Figure 5
Hydraulic Valve Oil Lines

8. For removal of the hydrostatic transmission from the transaxle, disconnect the filter line from the hydrostatic and remove the filter and bracket assembly by removing the nut holding the filter on the stud shown in Figure 6.

   Disconnect the oil inlet line from the hydrostatic transmission and the three remaining bolts and remove the hydrostatic unit as shown in Figure 6.

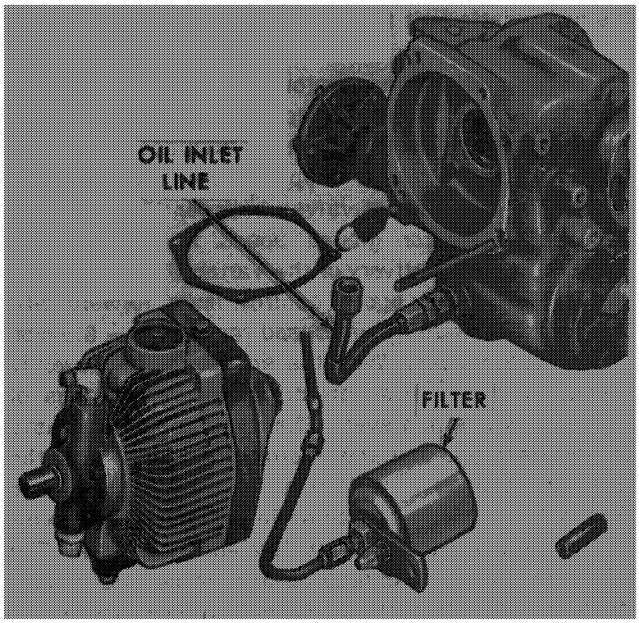

Figure 6
Hydrostatic Transmission and Transaxle Separation

DISASSEMBLY, CLEANING, AND REASSEMBLY OF HYDROSTATIC GEAR ASSEMBLY

The only part of the hydrostatic gear assembly that is serviced is the hydraulic booster pump shown in Figure 7.

1. The pump housing is removed by removing the five cap screws which secure the pump housing to the hydrostatic housing, the Woodruff key from the shaft and the shaft seal shield from the shaft. Then, using a soft tip hammer, tap the housing and dowels away from the hydrostatic.

2. It should be noted before removing the pump rotor the direction it is installed so that the straight sides of the rotor are driving the rollers. To remove the rotor, it will be necessary to remove the outer snap ring from the shaft, then the rotor, key, and pump backing plate may be removed.

3. If additional tear-down of the hydro gear is to be done, then the inner snap ring should also be removed from the input shaft.

4. To separate the variable speed hydraulic pump housing from the hydraulic motor housing, remove the two retaining bolts, set the assembly on the motor end and lift the variable pump section including the oil distributor assembly from the motor end.

5. The ball pistons are a select fit to each bore; they should be retained in their respective positions as shown in Figure 7.

6. The distributor assembly should then be removed from the variable pump housing and the pump components may be removed using caution not to mix ball pistons in the wrong bores.

7. After thoroughly cleaning and checking all parts, they should be lubricated and reassembled using the same procedure in the reverse of the disassembly procedure.

TWO-SPEED TRANSAXLE

The two-speed transaxle unit, Figure 8, is powered by the hydrostatic unit and both share a common lubricating system.

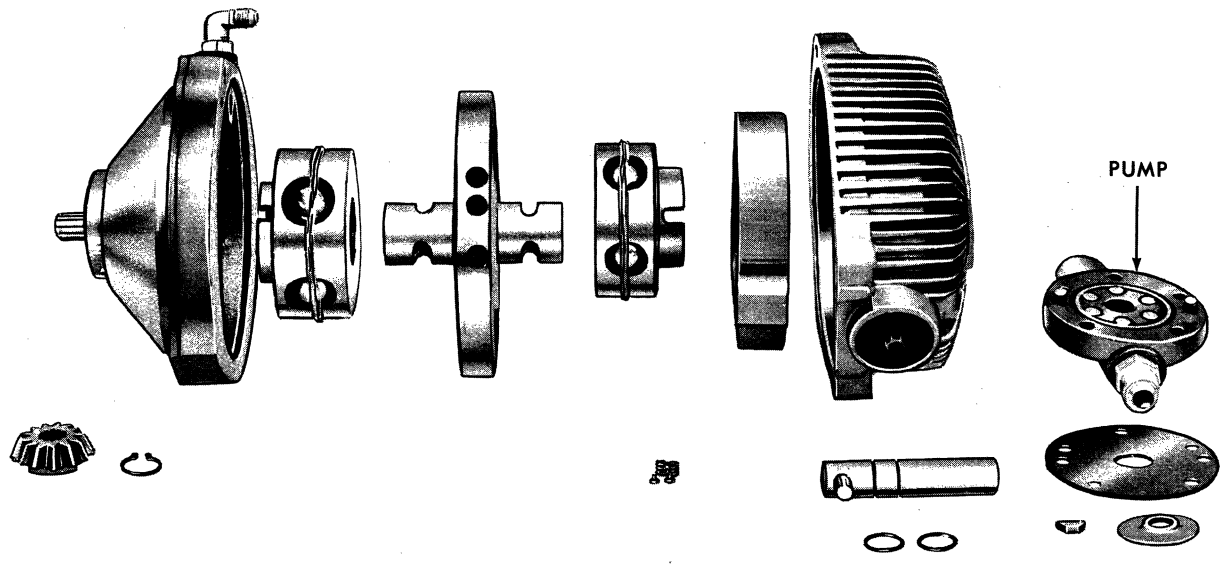

Figure 7
Hydrostatic Transmission and Pump

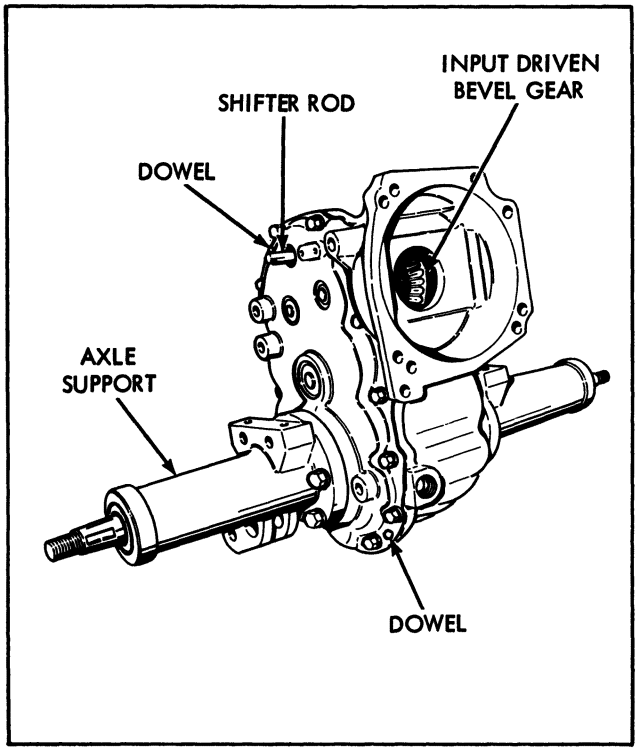

Figure 8
Two-Speed Transaxle

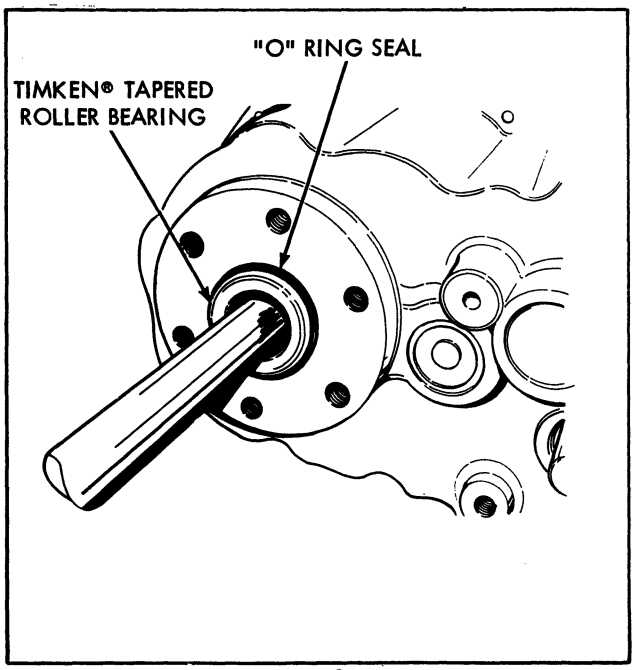

Figure 9
Axle Support Seal

Disassembly

1. Remove the axle supports and square O-ring seal, Figure 9.

2. Position the unit with the cover side up. Remove the dowels and hex bolts and separate the cover from the case assembly.

3. Lift out the differential assembly and remove the output gear and shaft, Figure 10.

4. On the outside of the case, Figure 11, remove the set screw, spring, and ball.
5. Remove both the input and shifter gear and shaft assemblies, along with the shifter rod and fork. See Figures 12, 13, and 14.

Inspection

1. Inspect axle support ball bearings and bearing races for wear.

2. Check case and cover for leaks or cracks.

3. Check gear teeth for wear, pitting, or breakage. Inspect gears for concentricity and out-of-round.

NOTE: *Splines should allow a smooth fit. Rotate meshing parts for a better fit if binding seems excessive.*

4. Check shifter mechanism for tension and ball for wear. Check shifter rod grooves for wear. Be sure the snap ring sharp edge goes away from the shifter fork. Inspect the shifter for straightness and wear.

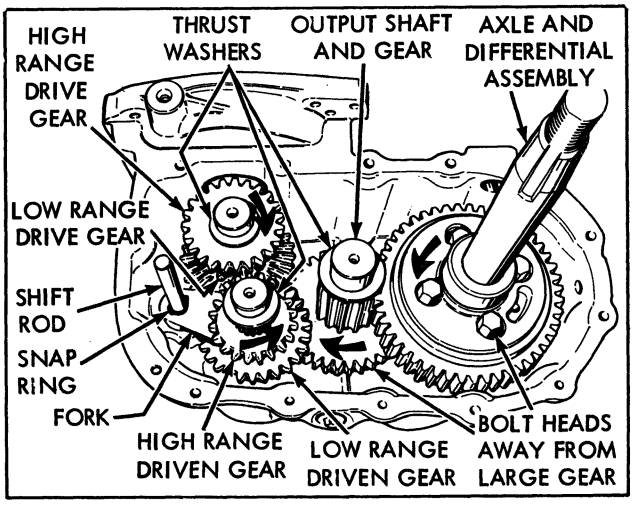

Figure 10
Output Gear and Shaft