3/400 EATON 7 HYDROSTATIC TRANSMISSION - WH TRANSAXLE

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3/400 EATON 7 HYDROSTATIC TRANSMISSION - WH TRANSAXLE

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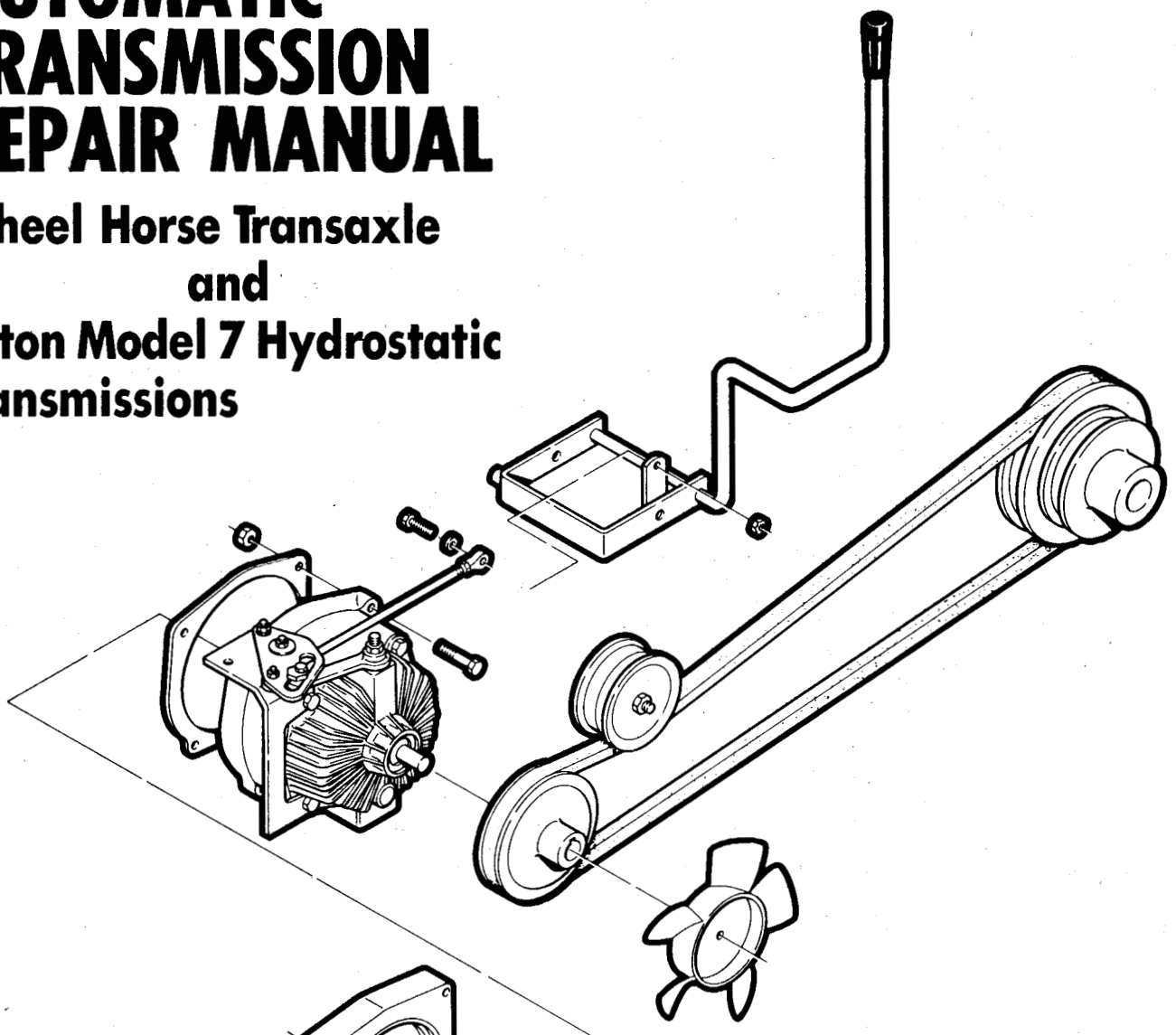
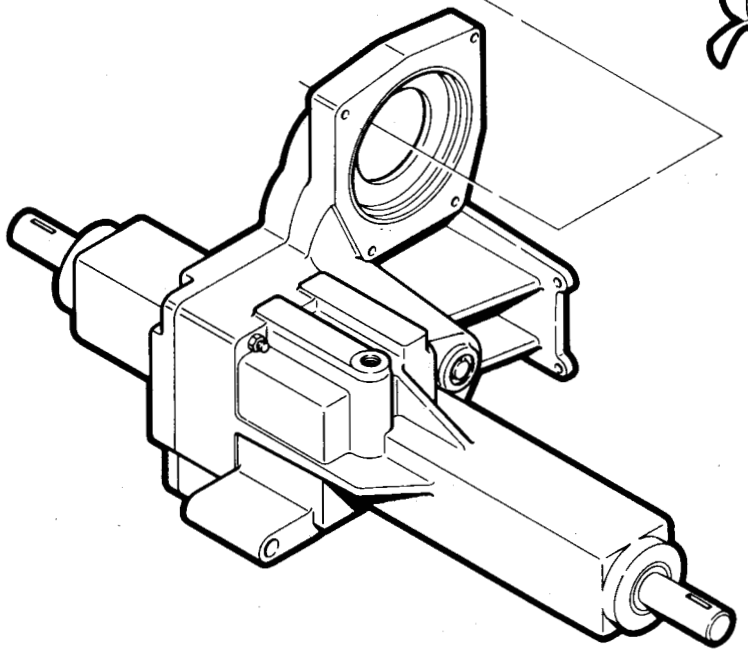
AUTOMATIC TRANSMISSION REPAIR MANUAL

Wheel Horse Transaxle and Eaton Model 7 Hydrostatic Transmissions





Wheel Horse

Printed in U.S.A. 0987

PART NO. 810395R2

FOREWORD

This service and repair manual has been compiled to provide authorized Wheel Horse service personnel with the proper procedures and techniques for servicing the Wheel Horse transaxle with Eaton Model 7 hydrostatic transmission.

The following Table of Contents lists all areas covered. It is advisable to read all of the introductory sections first to gain a proper understanding of the Wheel Horse automatic transmission system.

The automatic transmission and transaxle are sophisticated assemblies. Maintain strict cleanliness control during all stages of service and repair. Even a small amount of dirt or other contamination can severely damage the system.

This manual covers the transmission system beginning with 1985 model year. It may be used to the extent applicable for later model tractors equipped with the Eaton hydrostatic transmission and Wheel Horse transaxle.

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SPECIFICATIONS

TRANSMISSION: Eaton Model 7; Radial, Ball-piston Pump and Motor

Displacement
Pump, Variable 0-.465 cu. in./rev.
Motor, Fixed, .767 cu. in./rev.

Speed (as used)
Input 3325 RPM
Output 0-1975 RPM

Torque Output (Max.)
Continuous 150 in. lbs.
Intermittent 228 in. lbs.

Operating Temperature
Maximum Continuous 180°F

Cooling
8" Diameter Fan.

TRANSAXLE: Wheel Horse; Single-speed, with Uni-Drive 4-pinion Differential (1⅛" dia. axles) and Double Reduction Gears.

Gears & Shafts
Heat-Treated Steel

Bearings
Ball — 2
Needle — 6

Case Halves & Hubs
Cast Iron

Seals
3, Double-Lip, Spring-Loaded

Ratios & Speeds
Drive Belt Pulley Ratio 1:1
Overall Reduction Ratio 20.68:1
Axle Shaft Speed
@ 1975 RPM Eaton Output 96 RPM

Tractor Speeds (approx.)
Forward 0-5.6 MPH
Reverse 0-3.4 MPH

MAINTENANCE:

Transmission Oil Check —
Before Each Use

Transaxle Oil Check —
After every 25 hours Operation

Oil Changes —
Transmission — Not Required
Transaxle — 100 hours/One Year

Oil Specifications —
Transmission — ¾ qt. SAE 20 Premium Motor Oil
Transaxle — 3 qt. SAE 10W-30 or 10W-40 Premium Motor Oil

Adjustments —
Foot/Parking Brake
Motion Control Friction
Motion Control Neutral
} As Required

Torque Value (Thread Sizes)
¼-20 — 8 ft. lbs.
5/16-18 — 17-22 ft. lbs.
⅜-16 — 30-35 ft. lbs.
½-13 — 75-80 ft. lbs.
Wheel Hub Set Screw — 28-32 ft. lbs.

GENERAL INFORMATION

TRANSMISSION DESCRIPTION & IDENTIFICATION MARKINGS

NOTE

This manual uses the terms "transmission, hydrostatic transmission, and hydrostatic unit" to refer to the Eaton Model 7 Hydrostatic Transmission. The term "transaxle" is used to refer to the assembly of intermediate gears, differential and case halves that make up the Wheel Horse Differential and Gear Reduction Unit. "Transmission System" and "Automatic Transmission System" are used to refer to the entire drive train as an assembly, including engine, transmission, transaxle, and all related parts.

Eaton Model 7 Hydrostatic transmission, as used by Wheel Horse, is equipped with forward and reverse check valves, and vibration dampening pistons. Transmission has a keyed input shaft and a splined output shaft, both of which are supported by ball bearings.

The transmission is stamped with model number, manufacturing date code, and direction of rotation. Rebuilt units are also marked with a "1".

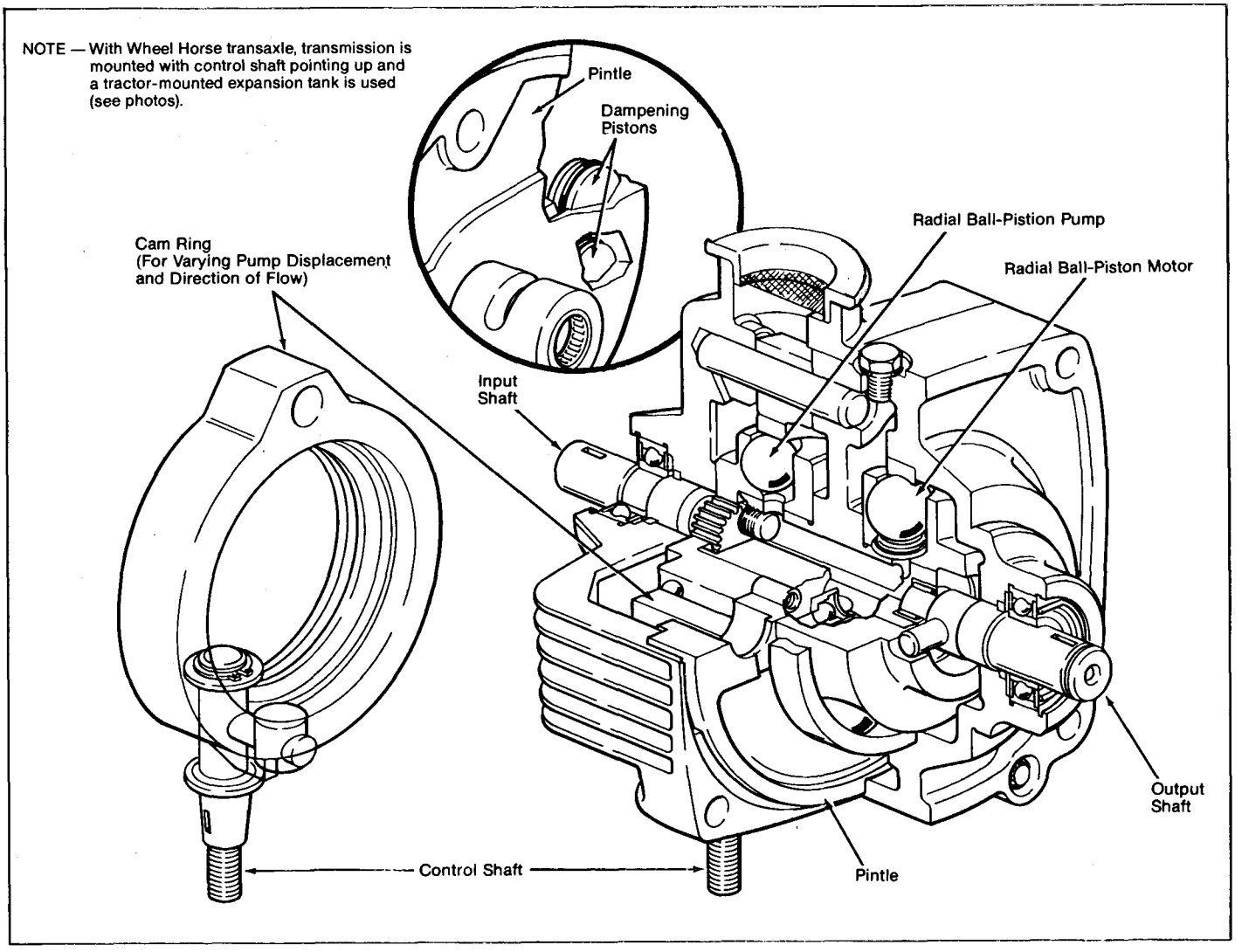


FIG. 1. Internal Transmission Features (Typical)

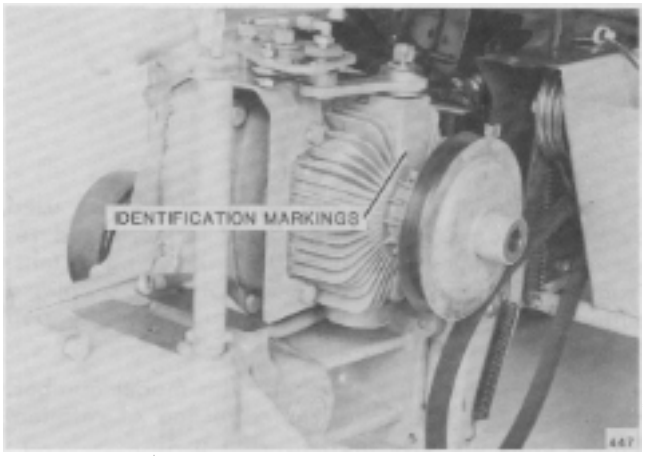


FIG. 2. Identification Markings Location

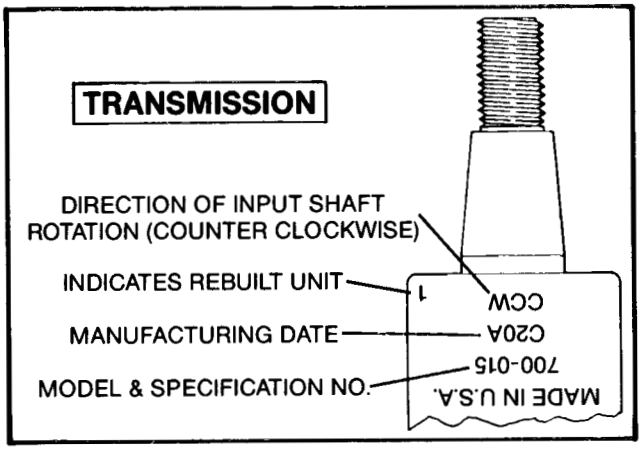


FIG. 3. Identification Markings

INTERNAL TRANSMISSION SERVICE

Repair procedures contained in this manual do not cover internal service of Eaton hydrostatic transmission. Troubleshooting instructions in this manual are intended to help you determine whether a problem is caused by an improperly operating hydrostatic unit or some other part of the drive system.

Contact Wheel Horse for current information about repair of the Eaton transmission.

PRINCIPLES OF OPERATION

TRANSMISSION SYSTEM

Major parts for Wheel Horse automatic transmission system are Identified in Figure 4 thru 7.

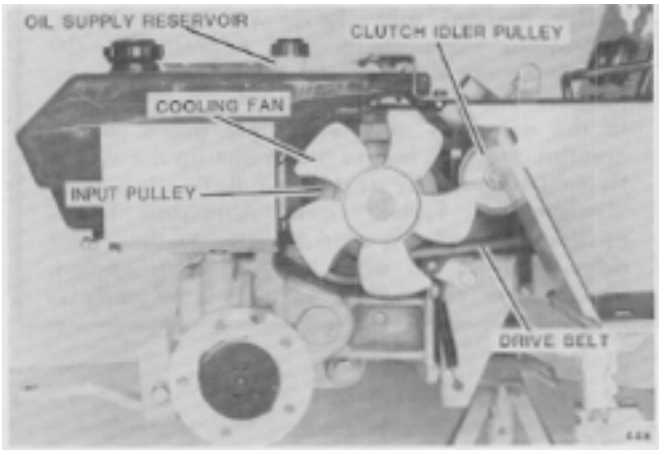


FIG. 4. Right Side

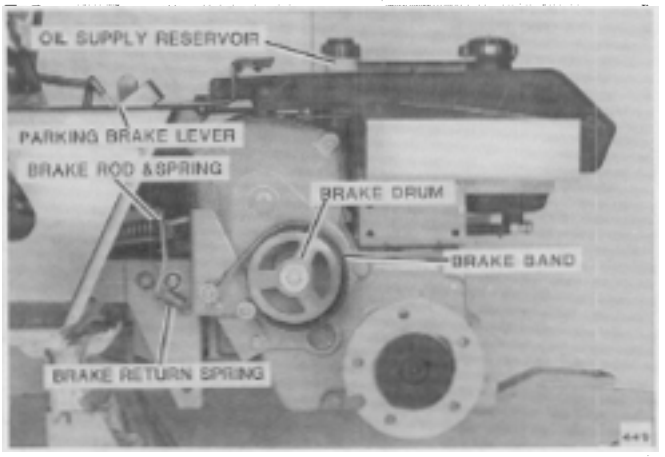


FIG. 5. Left Side

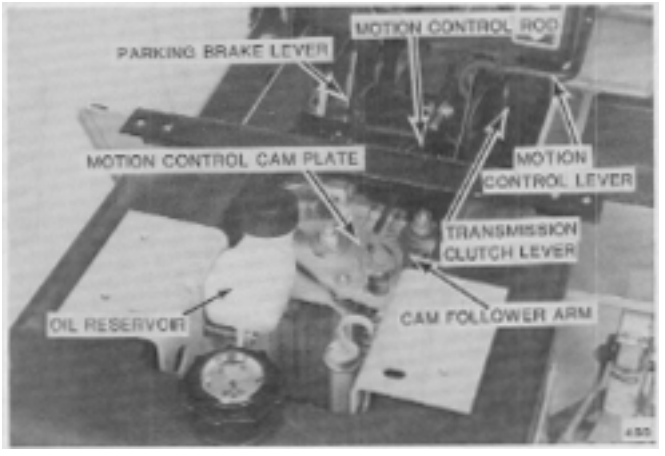


FIG. 6. Controls

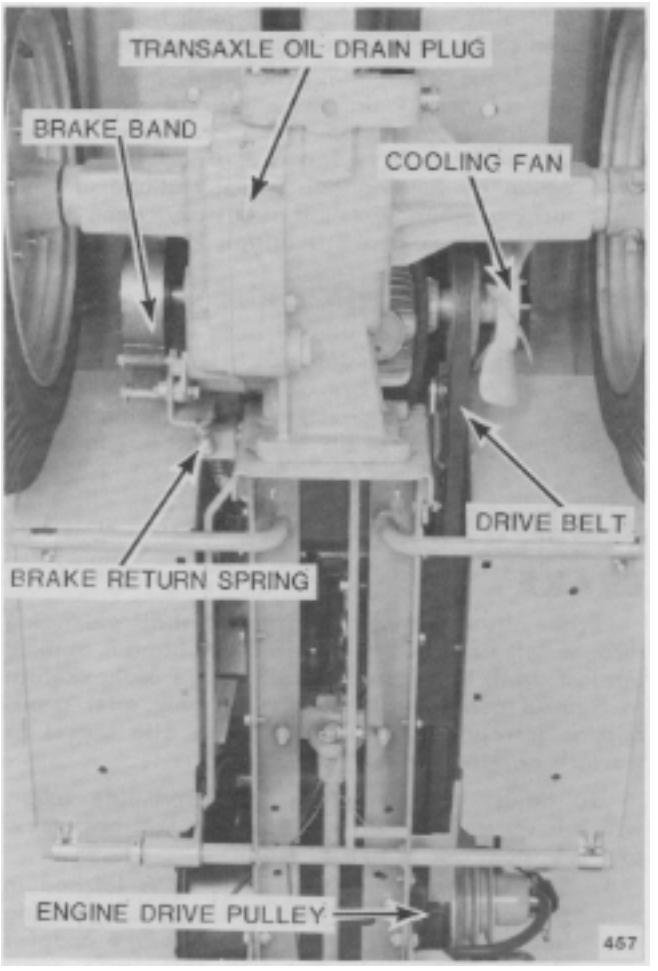


FIG. 7. Transmission System

SYSTEM OPERATION

Tractor drive belt turns transmission input shaft, which is connected to pump section. Pump section of transmission controls volume and direction of oil flow to motor section, depending on position of motion control linkage. As motion control lever is moved away from neutral position, flow of oil is increased to motor making it go faster. Motor output shaft drives tractor axles through two reduction gears and a differential assembly. Torque is generated in direct response to load; higher pump pressure (torque) is generated as resistance to movement increases.

For optimum performance engine should be operated at full throttle, and never less than 3/4 throttle. Under high load conditions tractor should be slowed using motion control lever, which will increase output torque. This is due to lower friction and pumping losses at slower transmission output speeds, and can be compared to effect of shifting a manual transmission to a lower gear.

TRANSMISSION OPERATION

Flow diagram shows hydraulic circuits inside hydrostatic unit and illustrates high and low pressure areas during operation (Fig. 8).

Tractor operator controls transmission by moving control shaft connected to a cam ring within pump. With control shaft in neutral, or its centered position, no oil flow is generated by pump and therefore motor portion is at rest.

When control shaft is moved from neutral in a "forward" direction, cam ring in pump is moved off center and pump ball-pistons create a flow of oil. Position of control shaft/cam ring is infinitely variable and any flow rate is possible up to maximum cam ring movement/maximum pump displacement.

Oil flow created by pump moves to a fixed displacement motor through internal passageways. Because motor is a fixed displacement unit, motor requires a specific volume of oil for it to make one complete revolution.

When control shaft is moved from neutral to "reverse" direction, cam ring is swung off center to opposite side of pump and oil flow from pump is "reversed". This flow is directed to other side of motor causing its output shaft to rotate in opposite direction. Pump input shaft always rotates in one direction, dictated by engine, while motor output shaft rotates in either direction depending on direction of oil flow from pump.

Pump discharge oil flow is high pressure (dictated by load) fluid. Oil flow returned from motor to pump is low pressure fluid.

Due to internal leakage, oil being returned to inlet side of pump from exhaust side of motor is less than required by pump. To replace this needed oil, check valves located on low pressure side of pump will open allowing oil to enter loop to make up leakage losses.

Model 7 has two dampening pistons, which rest against cam ring and are controlled by system pressure. In operation they reduce control shaft vibration and transmission noise.

TROUBLESHOOTING

PROBLEM DIAGNOSIS

To save time and expense, a systematic approach should be used when troubleshooting any transmission problem, starting with a thorough understanding of how system operates. Trouble symptoms should be carefully noted and compared to Troubleshooting Guide.

Whenever a problem occurs **ALWAYS CHECK THESE ITEMS FIRST:**

1. Transmission and transaxle oil level and condition.
2. Motion control linkage.
3. Gaskets and seals.
4. Transmission drive belt, pulleys & transmission clutch.
5. Owner modification to transmission system.

GENERAL SYSTEM CHECKS

OIL SYSTEM

1. Check oil level when cold; overfilling transmission reservoir reduces available expansion area and may result in overflow at operating temperature. A low oil level will cause erratic operation and may cause permanent damage to hydrostatic unit. Replace leaking seals and gaskets.

2. Check color of oil; if natural color has changed to black, overheating is indicated. If oil is a milky white color, water contamination is indicated. Change transmission oil before further operation or tests.

COOLING SYSTEM

Cooling system consists of a cooling fan and cast fins in aluminum transmission cover. Fan, cover fins, and area surrounding transmission should be kept clean for maximum cooling efficiency. Replace a broken or cracked cooling fan.

Use care to prevent water from entering the transaxle when using high pressure or steam cleaning equipment. Cover the oil filler tube and avoid directing the spray at seals.

ENGINE AND INPUT DRIVE

1. Check engine for correct no-load RPM.
2. Run engine under load and check for proper performance.
3. Check drive belt, transmission clutch, pulleys, keys and keyways.

MOTION CONTROL LINKAGE

1. Check condition of all linkage and securing hardware. Replace worn parts to minimize free movement.
2. Check for damage or binding parts that prevent full forward and reverse travel.
3. Check motion control friction and neutral adjustments.
4. Check condition of control arm, key and transmission control shaft.

TRANSAXLE

1. Disengage transmission clutch and move motion control lever fully forward; push tractor slowly and check for unusual noises or seizing.
2. Check for differential action and smooth operation of gear train. Raise rear of tractor, disengage transmission clutch and move motion control lever fully forward. Check differential action by holding one wheel stationary while turning other wheel. If necessary, open transaxle to check gears, bearings, keys & keyways.

HYDROSTATIC TRANSMISSION

You should not be able to push tractor in either direction when transmission clutch is engaged. If all other parts of system are good and tractor can be pushed in one or both directions, transmission has excessive internal wear or an internal part has failed.

ADJUSTMENTS

BRAKE

Brake drum is mounted on gear shaft extending through left transaxle case half. Brake band is applied against drum by rods connected to the Brake/Return to Neutral pedal. Brake is applied only after transmission is returned to neutral. Brake also serves as tractor's parking brake.

To adjust brake, remove left hand side cover, which is secured by two screws at the top, one screw at the bottom and a bolt at front.

1. Set parking brake so that lever is latched in first notch in control cam. This is done by pulling back on parking brake lever as brake pedal is slowly depressed. You will feel lever move back slightly as it drops into first notch of control arm.
2. Tighten nut on brake linkage bolt until coils of heavy spring are fully compressed, then back off nut 1/2 turn.
3. Release parking brake and check that brake band is not dragging on brake drum.

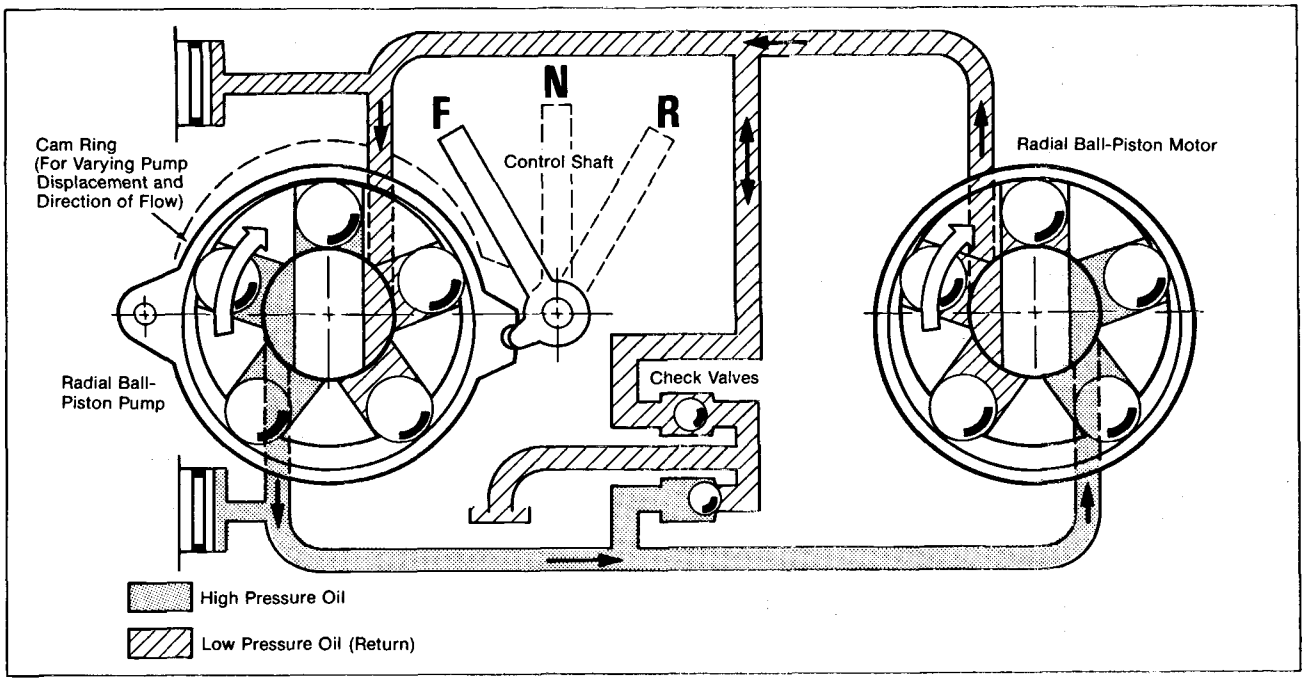


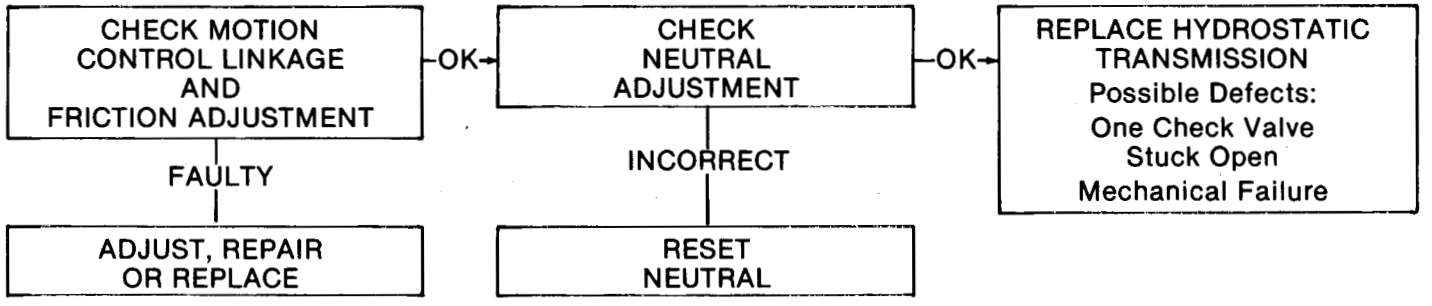
FIG. 8. Hydrostatic Transmission Flow Diagram

TROUBLE SHOOTING GUIDE

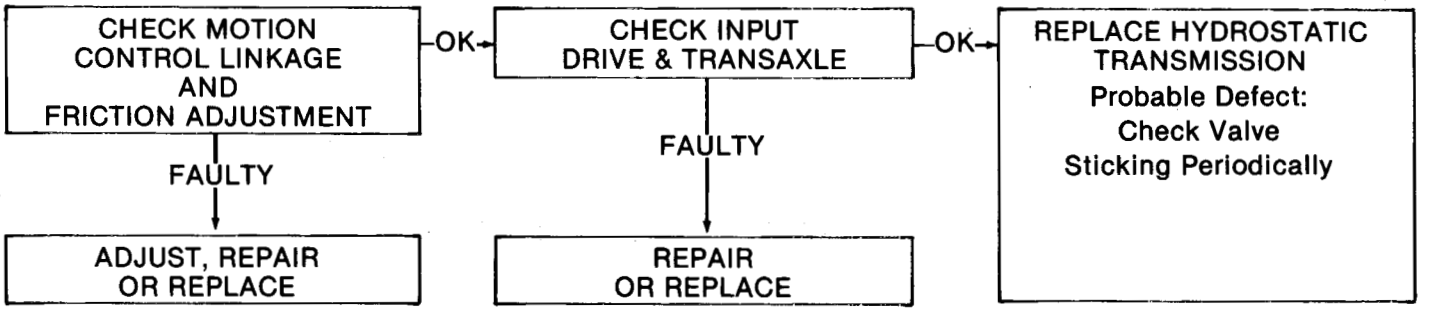
TRACTOR DOES NOT RETURN TO NEUTRAL.

TRACTOR OPERATES NORMALLY IN ONE DIRECTION, BUT IS VERY SLOW IN OPPOSITE DIRECTION.

TRACTOR OPERATES IN ONLY ONE DIRECTION.



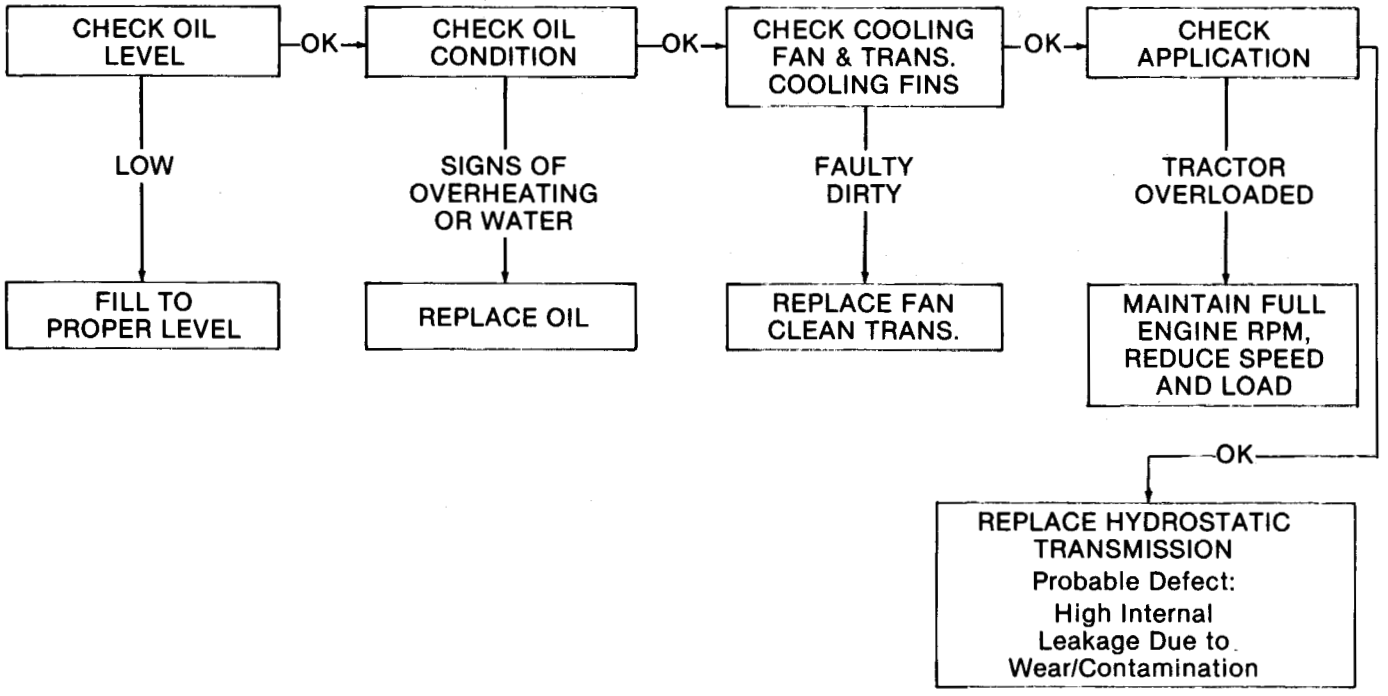
TRACTOR OPERATES ERRATICALLY



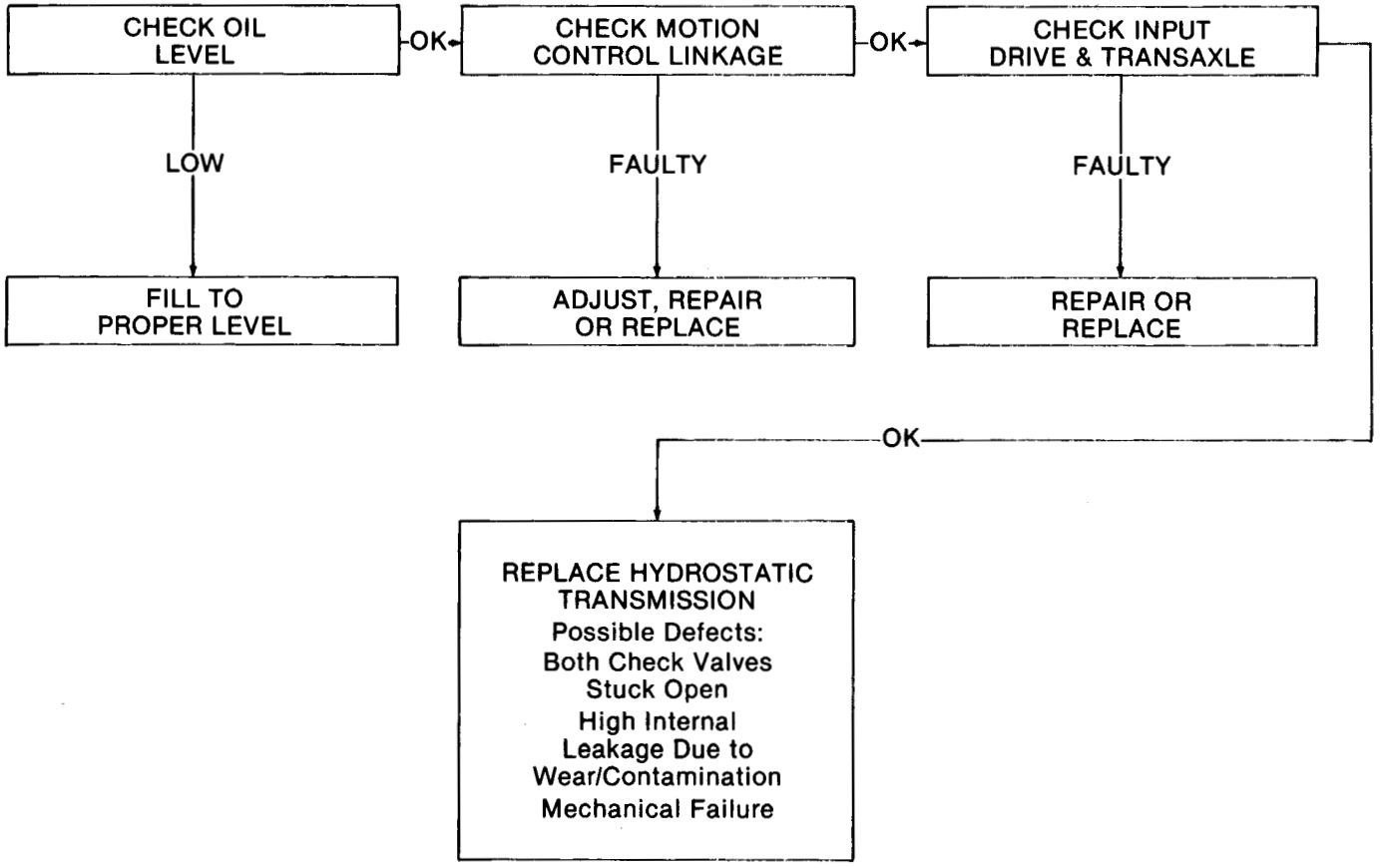
TROUBLE SHOOTING GUIDE

TRACTOR OPERATES IN BOTH DIRECTIONS, BUT LOSES POWER AS OIL BECOMES HOT.

TRANSMISSION OVERHEATS



TRACTOR WILL NOT OPERATE IN EITHER DIRECTION



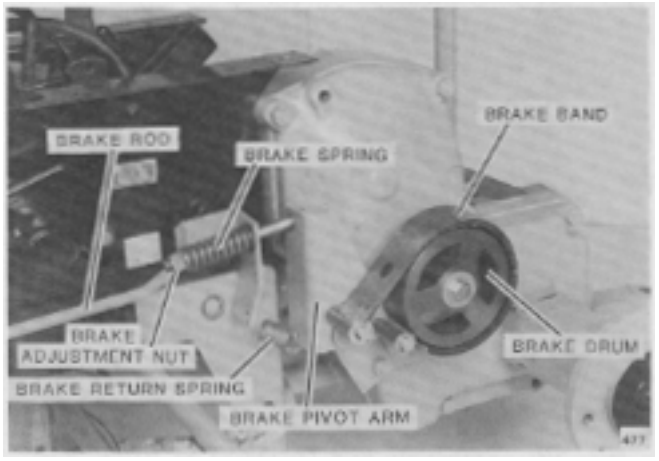


FIG. 9. Brake Adjustment

MOTION CONTROL FRICTION

Motion control lever should move when approximately 6 lbs. pressure is applied. A hole is provided in tractor's rear fender for access to motion control friction adjustment. Tighten or loosen adjustment nut as required.

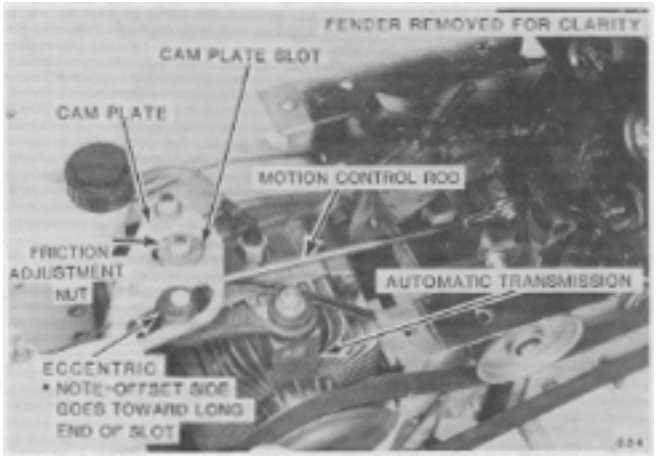


FIG. 10. Motion Control Friction and Neutral Adjustments

NEUTRAL

To test neutral adjustment, the tractor should be brought to a stop from both directions using Brake/Return to Neutral pedal. Once tractor is stopped, release pedal. If tractor "creeps" in either direction, neutral adjustment is necessary.

1. Support rear of tractor so both wheels are off ground.
2. Start engine and run at full throttle. Move motion control lever forward and wait for drive train to reach normal operation temperature.
3. Depress brake pedal fully and release.
4. Slightly loosen lock bolt and turn eccentric with a wrench until wheels stop turning (Fig. 10). Turn eccentric in opposite direction until wheels start to turn, then set eccentric mid-way between these two positions.

If working with fender removed, do so from left side of tractor when setting neutral. This will help prevent accidental contact with cooling fan.

5. Tighten lock bolt and retest for neutral, from both directions, with engine running at full throttle.
6. If tractor can not be neutralized in both directions with eccentric, control rod length should be reset and neutral readjusted as follows:
   a. Remove control cover plate.
   b. Set parking brake.
   c. Disconnect front end of control rod from motion control lever arm.
   d. Adjust position of cam plate so that front edge of friction washer is even with front end of slot in cam plate.
   e. Adjust rod end on control rod so that bolt enters hole in motion control lever arm exactly at a right angle (square) to it.
   f. If a satisfactory neutral still cannot be obtained, check linkage for wear or damage.

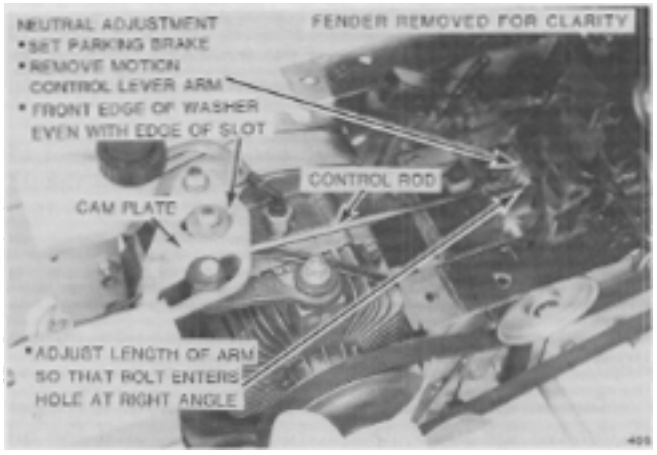


FIG. 11. Control Rod Length Adjustment

TESTING

SYSTEM PERFORMANCE

A test for observing transmission system performance under load can be helpful when checking a "low power", or "tractor loses power" condition.

1. Operate tractor to bring engine and drive train to normal operating temperature.
2. Anchor rear of tractor to an immovable object (tree, beam, etc.) with a chain secured to transaxle case. Rear wheels must be on a high friction surface, such as unfinished concrete or asphalt. Front wheels may be placed against a curb or wall as an alternative, but provision must be made to keep front of tractor on ground.
3. Set engine at half throttle and move motion control lever fully forward. Tractor should have enough power to spin rear wheels, with an operator in seat.
4. If wheels do not spin, carefully note engine drive belt, and transmission/transaxle performance to isolate problem.
5. If test results are marginal, tractor should be used under actual operating conditions to isolate problem.

REPAIR OPERATIONS

GENERAL INFORMATION

The hydrostatic transmission and transaxle may all be serviced without removing the complete transmission system from the tractor. Detailed repair operations are given for in-vehicle service. A procedure for removing the transmission/transaxle from the tractor as an assembly is also given at the end of this section.

LUBRICANT REPLACEMENT

Oil fill and drain locations are shown in figures 12 and 13. Oil types and quantities are given in "Specifications" at front of this manual. BE SURE TO CLEAN AREA AROUND DRAIN AND FILL OPENINGS TO PREVENT DIRT FROM ENTERING TRANSMISSION OR TRANSAXLE.

Replace TRANSAXLE oil at 100 hour/1 year intervals. To ease oil fill, remove one of the bolts securing the seat support to the top of the transaxle, or provide an air vent in the dipstick/filler tube while adding oil.

Under normal conditions, periodic replacement of the TRANSMISSION oil is not required. The oil should be replaced only if it becomes contaminated by water, or there are signs of overheating.

NOTE — If transmission oil level keeps dropping and there are no external signs of a leak, it is likely a leak has developed around the transmission output shaft, letting the oil drain into the transaxle.

Due to difficult access to the drain plug, it is best to remove the transmission from the tractor if the oil requires replacement.

1. Remove transmission as described under "Transmission Removal" in this section.
2. Remove reservoir hose from 90° fitting. Drain and clean reservoir and inlet fitting.
3. Remove adapter bushing and hose fitting from top of transmission.
4. Remove drain plug at bottom of transmission and allow it to drain completely. Turn transmission shafts by hand to completely drain oil. Flush transmission if needed, by adding 20 weight oil and turning shafts by hand; allow oil to drain. Continue until oil is clean.
5. Install drain plug.
6. Slowly fill transmission with 20 weight oil. Turn input and output shafts to help trapped air escape.
7. Install adapter bushing and hose fitting into top of transmission. Reconnect reservoir hose to fitting.
8. Install reservoir and fill to prescribed level with oil (Fig. 13). Reinstall transmission as described under "Transmission Installation" in this section.
9. Noisy operation indicates air is still trapped in transmission. Recheck oil level after oil cools.
10. Replace the transmission if it does not operate properly after changing the oil. Overheating or contamination has caused permanent damage.

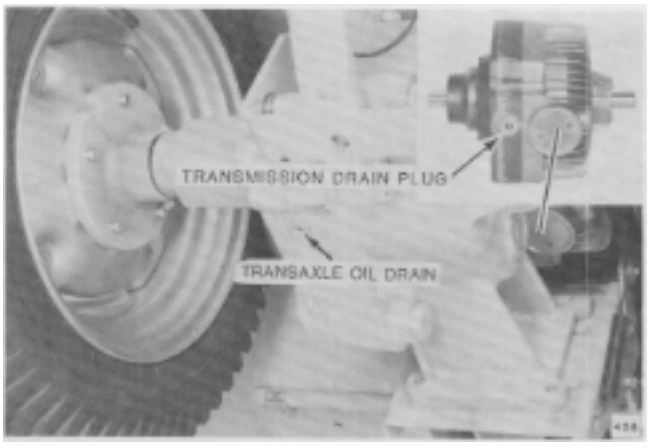


FIG. 12. Transaxle and Transmission Drain Plug

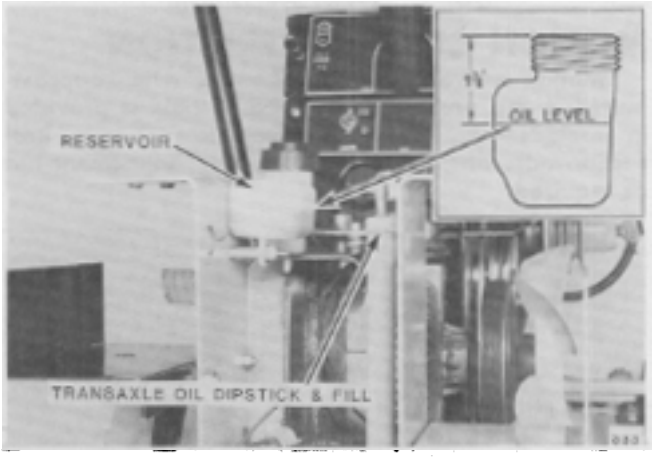


FIG. 13. Transmission Oil Fill

TRANSMISSION

REMOVAL

1. Remove tractor main fuse.
2. Remove seat, rear fender, and control cover plate.
3. Support rear of tractor with jack stands placed under rear footrest cross rods.
4. Remove rear wheels.
5. Close fuel shut-off valve. Remove and plug fuel hose.
6. Remove two bolts, bracket and lift tube from top of transaxle.
7. Apply tape over vent hole in reservoir cap. Remove nut holding reservoir to seat support. Lay reservoir on top of cam plate.

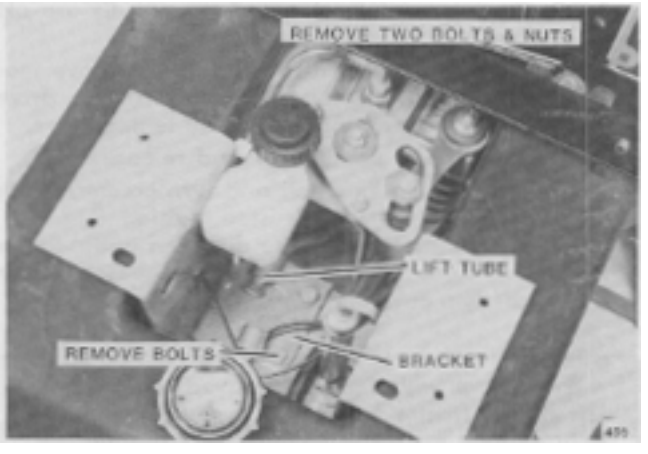


FIG. 14. Free Seat Support from Transaxle

8. Remove two bolts and nuts securing front seat support bracket to hoodstand.
9. Remove fuel tank and fender support as an assembly.

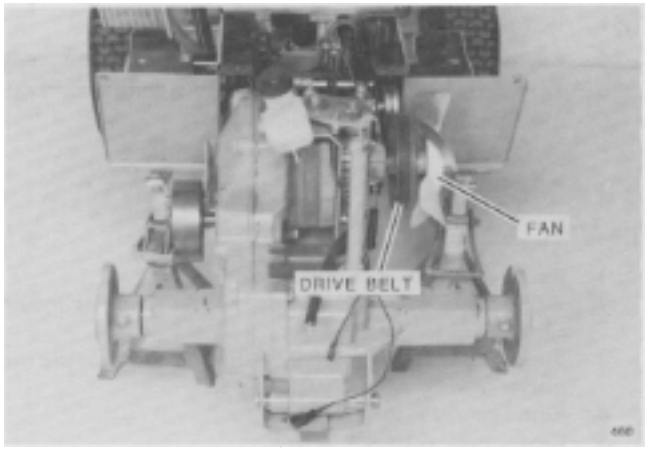


FIG. 15. Fuel Tank/Seat Support Removed

10. Remove cooling fan (Fig. 15). Note direction of installation.
11. Disengage transmission clutch and remove drive belt from input pulley.
12. Disconnect front end of the motion control rod from motion control lever arm (Fig. 16).

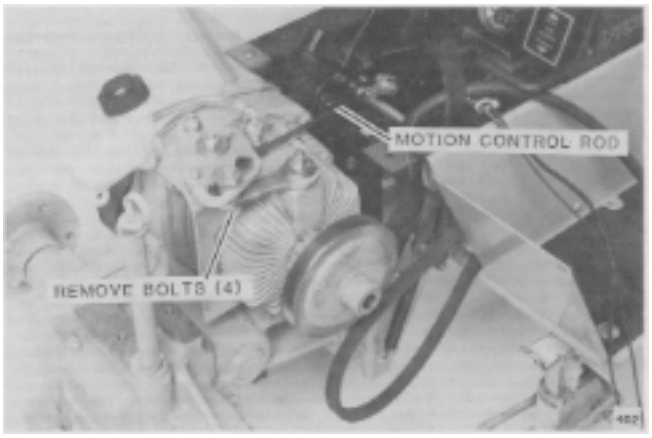


FIG. 16. Fan, Drive Belt, Control Rod Removal

13. Pull wiring and fuel hose forward, out of hoodstand, and secure out of way.
14. Remove four bolts securing transmission to cast iron adapter plate (Fig. 16). Remove transmission and discard gasket (Fig. 17).

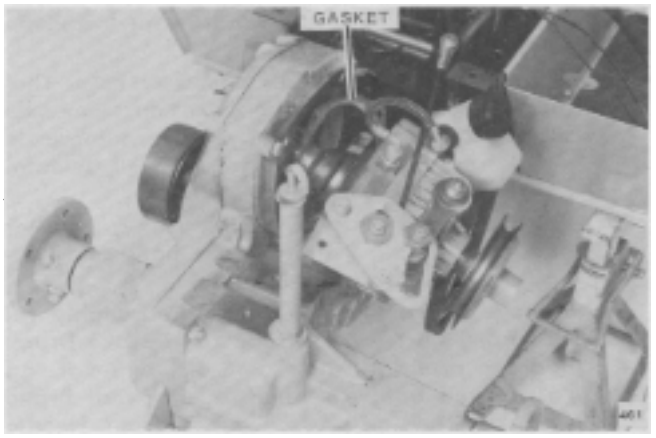


FIG. 17. Transmission Removal

PULLEY, GEAR & CAM PLATE REMOVAL

1. Remove reservoir hose at transmission. Plug fitting and hose to prevent contamination.
2. Slide input pulley off input shaft. Remove key from shaft.
3. Remove lock bolt and eccentric from control arm and remove cam plate assembly (Fig. 18).

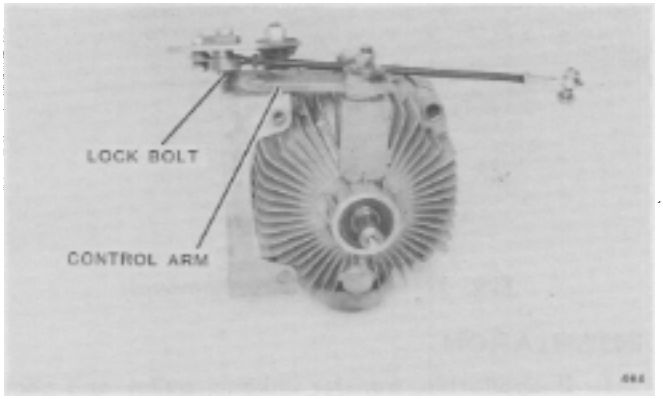


FIG. 18. Cam Plate and Bracket Removal

4. Remove the control arm with a puller only. The transmission control shaft is tapered, as well as having a keyway, for retaining the control arm. Striking the end of the control shaft to remove the control arm, can cause permanent internal damage to the transmission (Fig. 21).
5. Remove bolt, washer and output gear from transmission (Fig. 19).

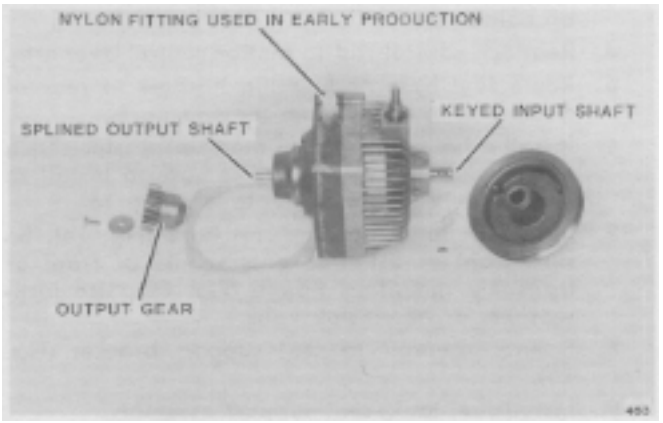


FIG. 19. Gear and Pulley Removal

6. Disassemble cam plate assembly as shown in Fig. 20.

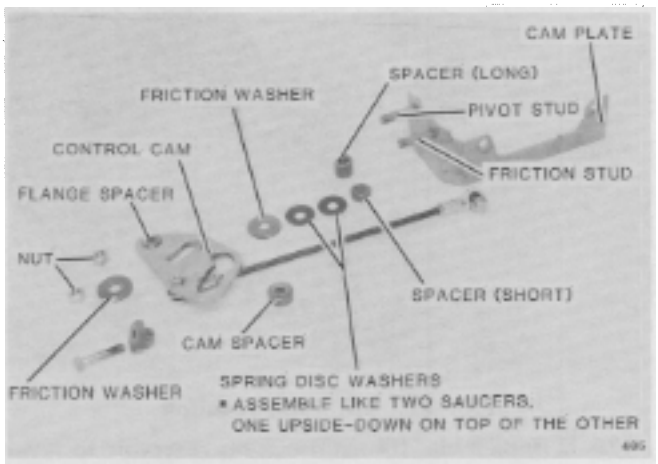


FIG. 20. Cam Plate Disassembled

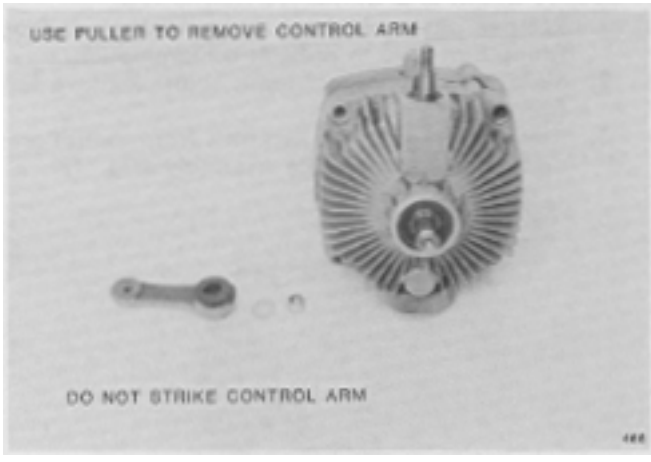


FIG. 21. Control Arm Removal

INSTALLATION

1. If applicable, transfer linkage, pulley and gear to new transmission (Fig. 18-21). Use an anti-rust compound on the input pulley shaft (Texaco Rust Preventative, Code 1976, Compound "L" Light, or equivalent).
2. Place a new gasket on the transmission, using grease to hold it in place (Fig. 17). If applicable, remove plugs from reservoir hose and fitting and install hose on fitting.
3. Install the transmission on the transaxle and secure in place (Fig. 16). Use Loctite #242 (Blue) on bolts.
4. Reattach control rod to motion control lever arm.
5. Route fuel hose and wiring harness to rear of tractor; keep away from moving parts.
6. Install drive belt, engage the transmission clutch and install cooling fan; make sure to install so air flow will be from right to left (Fig. 15).
7. Install lift tube, bracket and bolts (Fig. 14). Be sure front of lift tube enters hole at front of transaxle mounting flange (Fig. 22). Use lockwashers or new Eslok bolts.
8. Secure reservoir to seat support bracket (Fig. 13).
9. Install fuel tank/seat support assembly.
10. Connect fuel hose and shut-off valve.

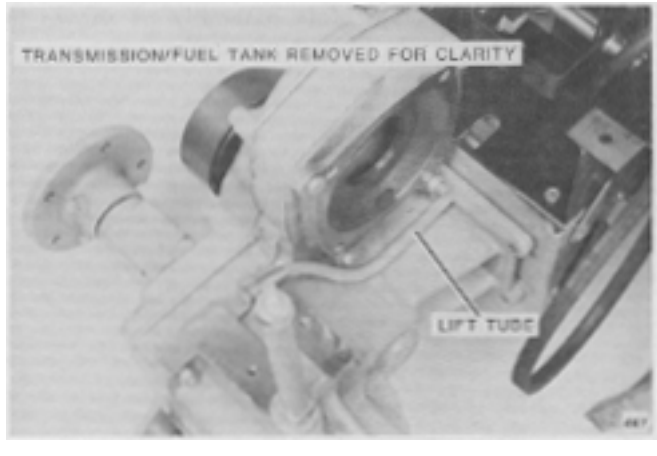


FIG. 22. Lift Tube Location

11. If applicable, fill transmission reservoir to level as shown in Figure 13. Remove tape covering vent hole in cap.
12. Install main fuse.
13. Set transmission neutral as outlined under "Adjustments" section of this manual. Check for leaks, and recheck oil level.
14. Install rear wheels and lower tractor.
15. Reconnect rear fender wiring and install seat.
16. Test system performance as outlined under "Testing" Section of this manual.

TRANSAXLE

IN-VEHICLE SERVICE

1. Remove Tractor Main Fuse.
2. Remove seat, rear fender, and control cover plate.
3. Support rear of tractor with jackstands placed under rear footrest cross rods.
4. Remove rear wheels.
5. Close fuel shut-off valve.
6. Remove two bolts, bracket and lift tube from top of transaxle (Fig. 14).
7. Apply tape over vent hole in reservoir cap. Remove nut holding reservoir to seat support. Lay reservoir on top of cam plate.
8. Remove two bolts and nuts securing front seat support bracket to hoodstand.
9. Remove fuel tank, seat and fender support as an assembly (Fig. 15).
10. If transmission is to be removed, follow instructions for transmission removal. To leave transmission installed while servicing transaxle, leave transmission bolts installed as indicated in Fig. 23. This will hold transmission and adapter plate in place during transaxle service.

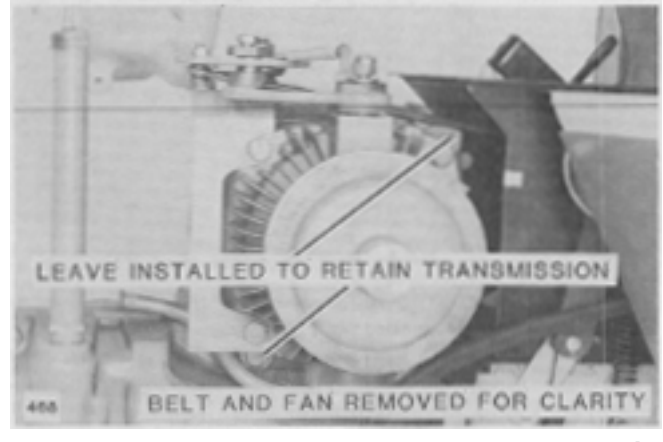


FIG. 23. Transaxle Service, Transmission Installed

11. Remove both wheel hubs and axle keys. Thoroughly remove burrs and corrosion from axle shafts. Failure to do so may cause damage to needle bearing in case halves, as well as damage new axle seals when installed.
12. Remove brake bracket pivot bushing, washer and nut (Fig. 24). Remove brake band and linkage assembly from brake drum.
13. Remove brake drum (Fig. 25). Thoroughly remove any burrs or corrosion from Brake Drum. If brake drum will not come off, removal can be delayed until case half is removed. Brake shaft can then be pressed out of drum. Needle bearing can be damaged as shaft is pressed through it; replacement is recommended.

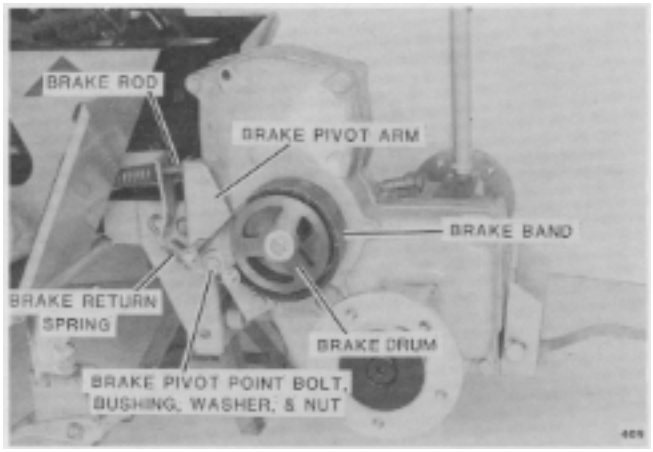


FIG. 24. Wheel Hubs, Brake Pivot Hardware

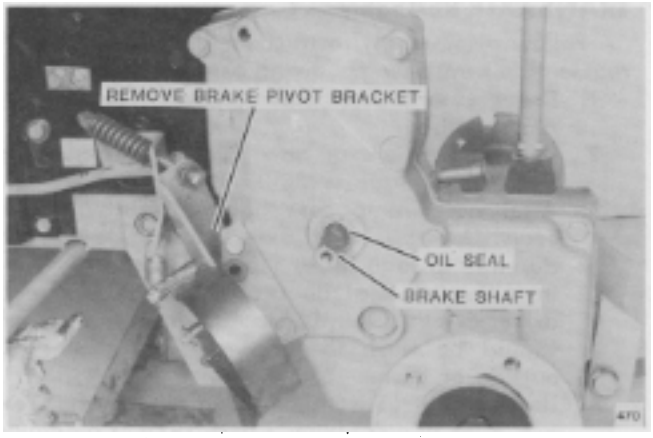


FIG. 25. Brake Drum Removal

14. Remove eight bolts securing case halves together (Fig. 26)
15. Carefully remove left case half. A soft-faced mallet may be used to break seal. Discard gasket or gaskets.

Some transaxles are assembled with two gaskets. Use two new gaskets when reassembling these units.

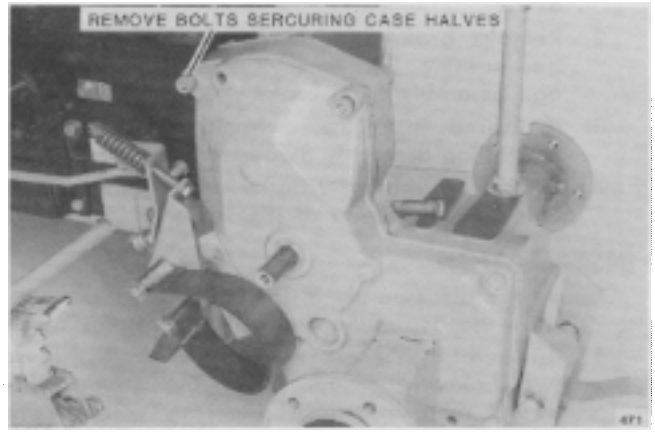


FIG. 26. Case Half Removal

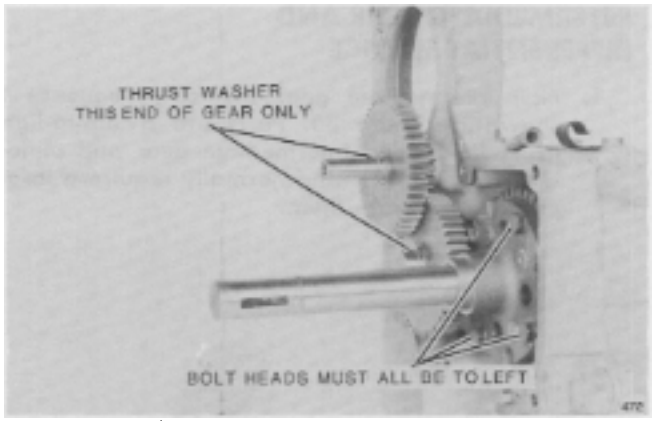


FIG. 27. Case Half Removed

16. Remove two intermediate gears and differential assembly from right case half (Fig. 27).

CASE HALF SERVICE

1. Remove and discard brake shaft seal and both axle seals. DO NOT install new seals until transaxle is reassembled.
2. Carefully inspect bearings in both case halves (Fig. 28 and 29). If replacement is required, two axle shaft needle bearings can be driven out from either inside or outside of case. All other bearings should be driven out from outside of case half. To remove uppermost bearing in RH case, use a 3/16-1/4" punch inserted through small opening behind bearing (Fig. 28).
3. Axle needle bearings should be pressed in from outside. All other bearings are pressed in from inside case. All bearings are pressed flush with machined surface around bearing bore.

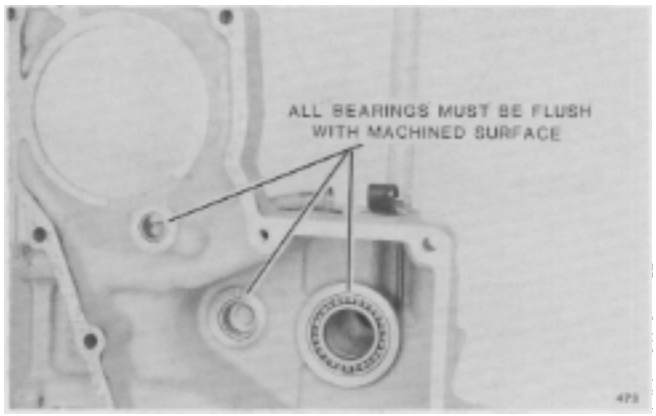


FIG. 28. Right Case Half

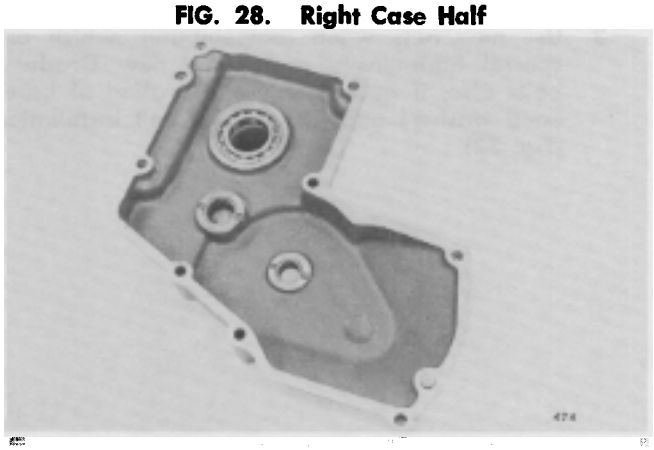


FIG. 29. Left Case Half

INTERMEDIATE GEAR AND DIFFERENTIAL SERVICE

1. First intermediate gear assembly sequence is shown in Figure 30. Parts are a slip-to-light press fit. Second intermediate gear and pinion are very tight fits and normally require a large press to separate them.

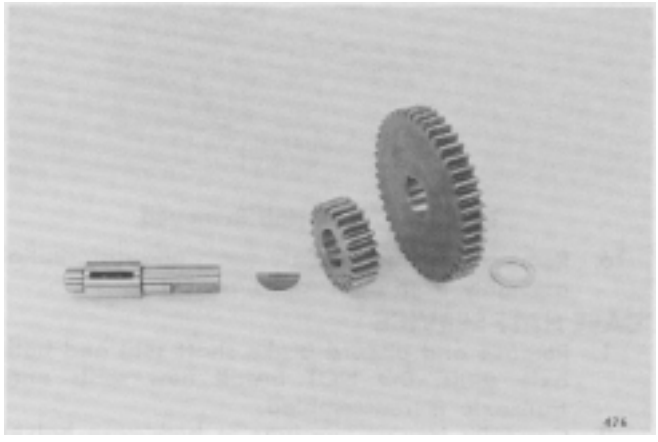


FIG. 30. Intermediate Gear Assembly

2. Differential assembly should be disassembled for inspection during a general overhaul. Check for loose hardware, cracks, enlarged holes, and gear wear or damage (Fig. 31). Note that ad-adjacent differential pinions are installed in opposite directions (teeth up, teeth down, teeth up, etc.).

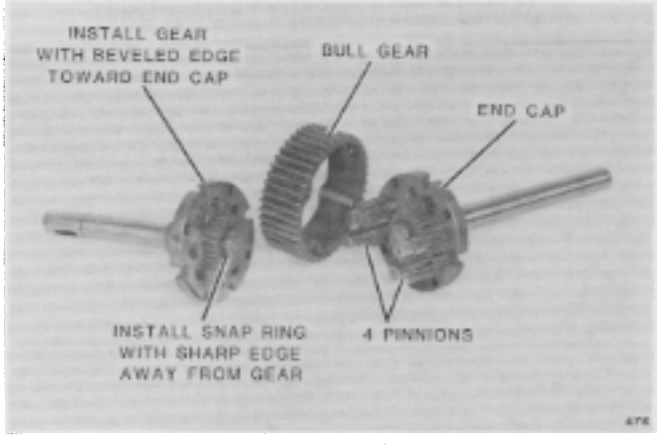


FIG. 31. Differential Disassembly

3. Use new nuts when reassembling, which are special high-tensile parts. Use new Grade 8 bolts also, if necessary. Note location of hardened washers and direction of bolt installation (Fig. 32).

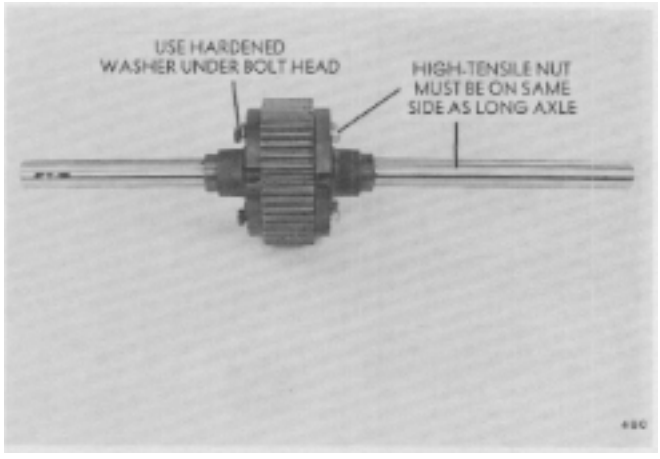


FIG. 32. Differential Assembly

TRANSAXLE REASSEMBLY

Follow disassembly instructions in reverse order to reassemble transaxle. Following assembly notes apply:

1. Use grease to hold case gasket in place when reassembling.
2. Use lockwashers or new Eslok nuts and bolts. Case bolt torque is 30-35 ft. lbs.
3. After assembling case halves, install new oil seals. Use tape over axle keyways to prevent damage to seal; use a seal bullet (sleeve) when installing oil seal on brake shaft. Use a seal driver or other suitable tool to drive seals. Seals should be flush to slightly below flush with outside of case.
4. Use an anti-rust compound on axle shafts (Texaco Rust Preventative, Code 1976, Compound "L" Light, or equivalent). Apply a very light coating of this compound on brake drum shaft also.
5. Wheel hub set screw torque is 28-32 ft. lbs.
6. Brake adjustment should be checked after reassembly.

TRANSMISSION SYSTEM

REMOVAL

In some cases, removal of the transmission/transaxle as an assembly may simplify repairs.

1. Perform Steps 1-13 under "Transmission Removal".
2. Remove brake bracket pivot bushing, washer and nut (Fig. 24). Remove brake band and linkage assembly from brake drum.
3. If desired, install rear wheels and tires to permit rolling assembly away from tractor.
4. Support weight of transaxle and remove four bolts securing front of transaxle to frame.

INSTALLATION

Follow the disassembly instructions in reverse order to reinstall the assembly. The following notes apply:

1. It is helpful to insert two $\frac{3}{8}$-16 x 2 bolts through two holes in frame plate, then temporarily thread them into transaxle. They will serve as pilots for hole alignment and permit easy installation of first two normal-length bolts. Use new lockwashers on bolts. Torque to 30-35 Ft. Lbs.
2. Adjust brake and make neutral adjustment after reinstallation.

INTERNAL TRANSMISSION SERVICE

The following repair procedures for the Model 7 Eaton Transmission is for OUT-OF-WARRANTY transmissions ONLY. Transmissions within warranty period must be serviced with new or rebuilt complete units. Repair parts are available using regular Wheel Horse procedures. Repair part numbers are listed in this manual and on Blue Color Microfiche Card for the Model 7 Transmission Repair Manual.

SUGGESTED ITEM AIDS

(1) 2" x 6" x 10" Wood Block with ¾" Hole

(1) 2" x 2" x 2½" Wood Block

(2) Large ½" Wide Rubber Bands

(1) Hardened 3/16" Dia. x 10" Long Rod

(1) Tube of Vaseline

Disassembly/Reassembly

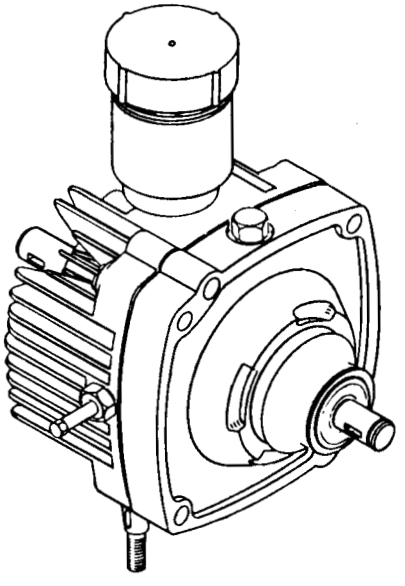


FIG. 33.

Clean transmission exterior thoroughly before repairs are begun. Use a cleaning solution that will not affect paint, gaskets, rubber seals, and plastic.

IMPORTANT

When compressed air is used in cleaning, do not expose lip seals or bearing surfaces to high pressure.

Drain fluid from transmission.

NOTE: A 2" x 6" x 10" wooden block with a ¾ inch hole in the center is recommended for a suitable bench fixture.

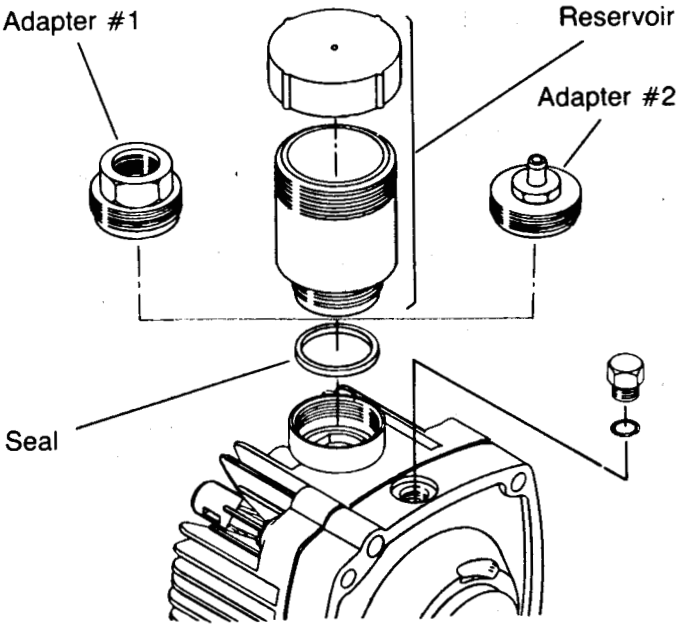


FIG. 34.

Reservoir/Adapter—Disassembly

Eaton light duty transmissions are equipped with one of two adapters or a reservoir as shown in Fig. 34.

1. Remove adapter or reservoir by rotating **clockwise.**

IMPORTANT

The adapters and reservoir have left hand threads. To remove turn CLOCKWISE.

To remove adapter #1 use a six point 1½" wrench or socket.

To remove adapter #2 use a six point 1" hex wrench or socket.

To remove reservoir use a small filter or web wrench.

2. Remove seal ring from cover and discard.

NOTE: It is recommended that all seals be replaced with new ones whenever transmission is disassembled and reassembled.

Body/Cover—Disassembly

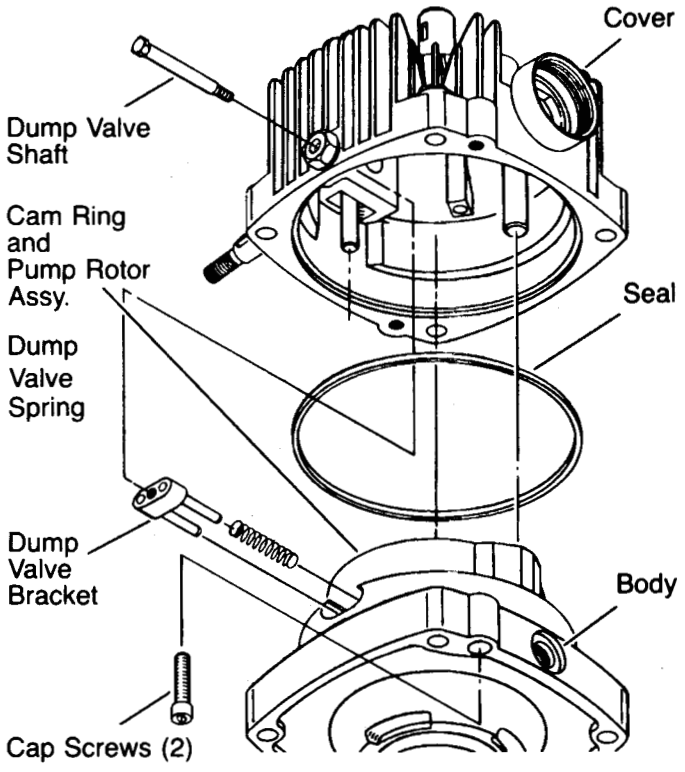


FIG. 35.

IMPORTANT

Before disassembling transmission, scribe a line across the cover and body to ensure correct reassembly. Incorrect assembly will change output shaft rotation.

3. Use ¼ inch Allen wrench to remove (2) 5/16 cap screws. Wher applicable, remove dump valve shaft.

4. Lift cover to separate from body.

IMPORTANT

Do not allow cam ring, pintle, or pump rotor assembly to lift with cover. The pump ball piston assembly must remain intact as ball pistons are matched to pump rotor bores.

If cover does not separate easily from body because of fluid seal, tap body and/or cover with plastic hammer to break seal.

5. Remove dump valve bracket, and spring, when used.

6. Remove seal ring and discard.

Cover—Disassembly

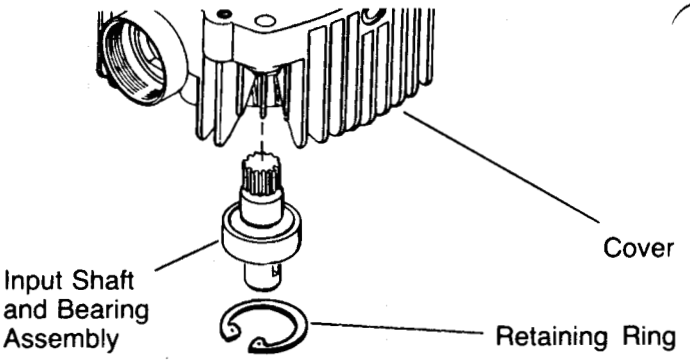


FIG. 36.

7. Remove input shaft retaining ring. Press or drive input shaft and bearing assembly from cover.

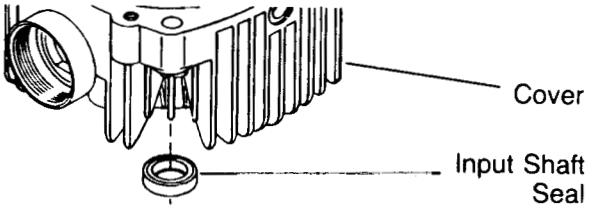


FIG. 37.

8. Press or drive input shaft seal from cover.

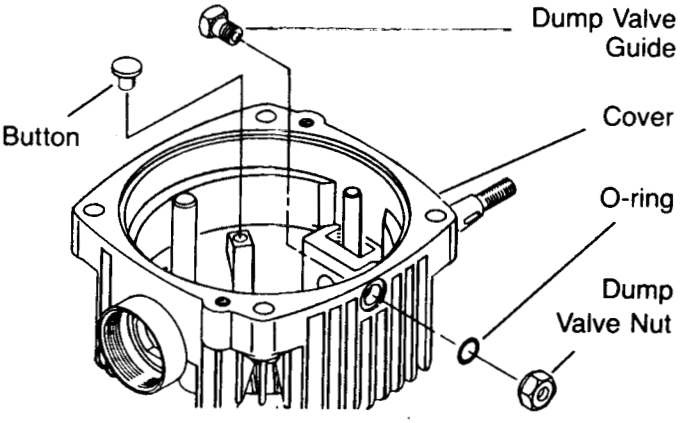


FIG. 38.

9. Remove button from cover.

Where applicable, remove dump valve guide, nut, and o-ring. Discard o-ring.

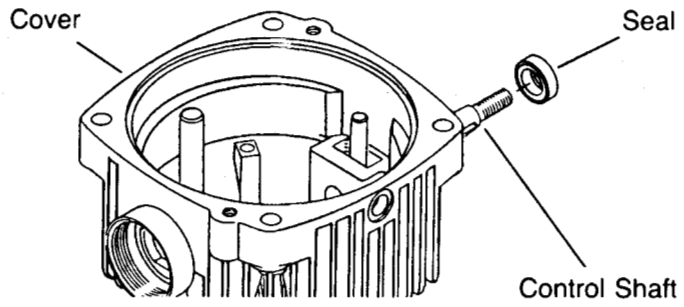


FIG. 39.

10. Use a sharp, narrow tool to pierce top metal part of oil seal and remove seal from cover.

IMPORTANT

Do not scratch control shaft or distort seal counter bore when removing seal.

Cam Ring—Disassembly/Inspection

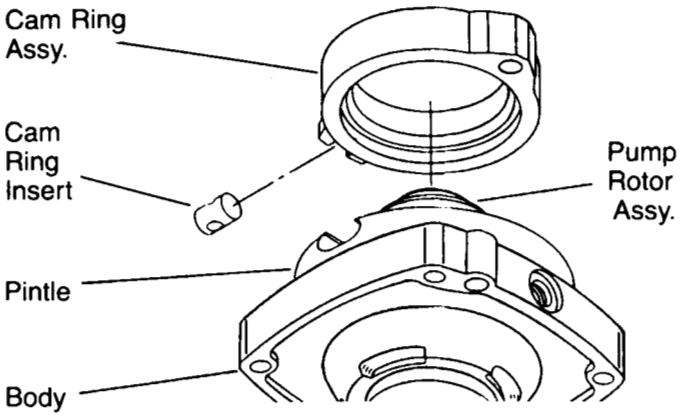


FIG. 40.

11. Remove cam ring assembly from pintle. Remove cam ring insert.

IMPORTANT

Use special care when removing cam ring from pump rotor assembly. The ball pistons must remain in place as they are matched to rotor bores. Use a wide rubber band to hold ball pistons in place.

12. Inspect area where ball pistons contact cam ring pump race. This area must be smooth and completely free of irregularities. If it is not, replace cam ring assembly.

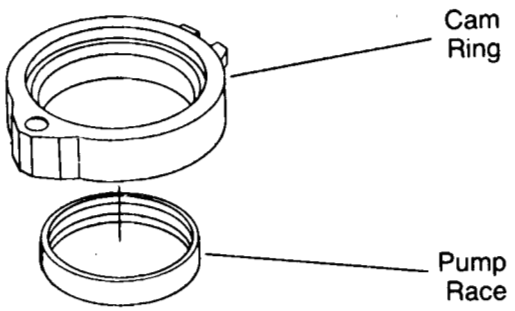


FIG. 41.

NOTE: Cam ring and pump race are available as an assembly.

NOTE: If irregularities are noted in cam ring or pump race, it is reasonable to assume that one or more ball pistons and rotor bores will also be damaged.

Pump Rotor—Removal

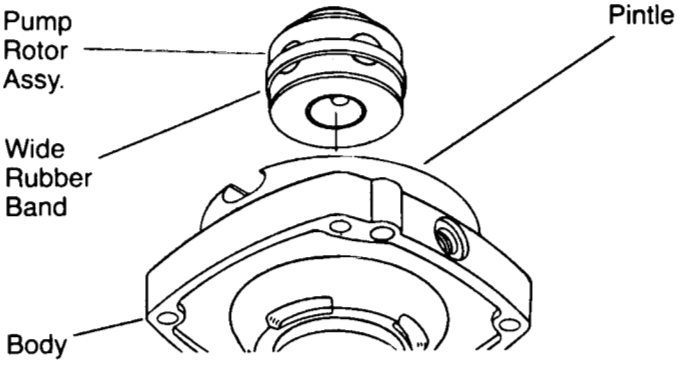


FIG. 42.

13. Hold pintle assembly in position against body and remove pump rotor assembly intact.

Pintle Assembly—Removal

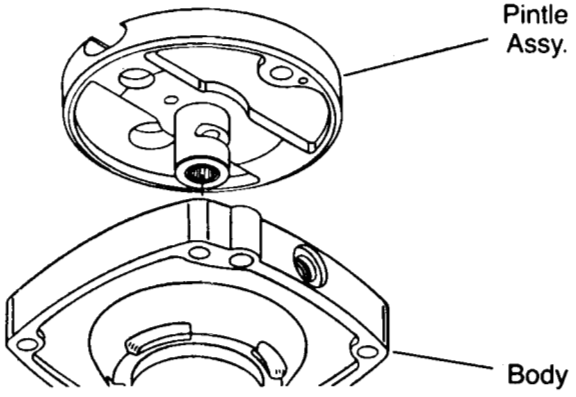


FIG. 43.

14. Hold motor rotor assembly in bottom position and tap lightly on body. Lift pintle assembly out of body.

Pintle Assembly—Disassembly/Inspection

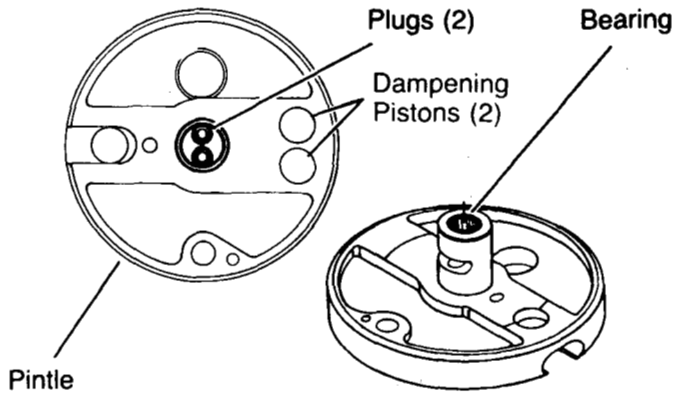


FIG. 44.

15. We do not recommend complete disassembly of pintle assembly for cleaning. Normal flushing should be all that is required. However, if complete disassembly is required, use the following procedures:

NOTE: Do not remove two large plugs located on pintle journal.

16. Inspect dampening pistons and pintle journals, particularly in the porting area, for any irregularities such as scoring or grooves cut between ports.

    If any irregularities are noted: Replace pintle assembly.

Check Valve—Removal

NOTE: Removal of check valve is not necessary if check valve balls move freely and seat properly.

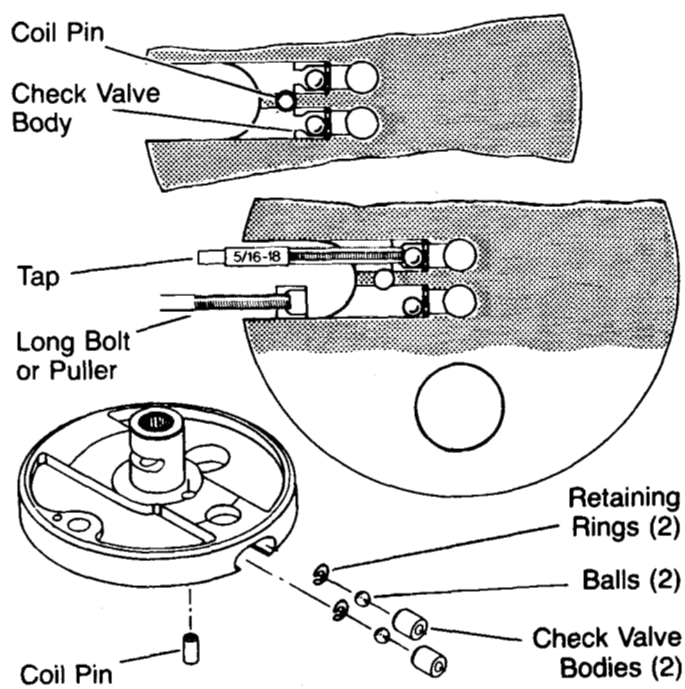


FIG. 45.

17. Press or drive out coil pin that retains two check valve bodies. Use a four blade 5/16-18 tap to tap holes in check valve bodies. Insert a long bolt or a threaded puller, pull the check valve bodies from pintle housing and discard them.
18. Remove check balls and retaining ring.
19. Inspect check valve balls and retaining rings. Replace any defective parts.

Check Valve—Installation

20. Install retaining rings and check valve balls in bores of pintle. Press **new** check valve bodies in bores. Press far enough for coil pin clearance.

> **IMPORTANT**
>
> **To prevent dislodging of retaining rings DO NOT DRIVE check valve bodies into bores.**

21. Press coil pin into pintle until flush with or slightly below surface.

Motor Rotor—Removal

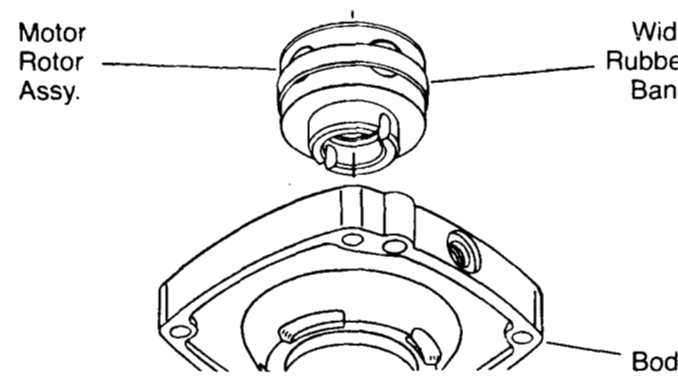


FIG. 46.

22. Remove motor assembly intact from the body.

> **IMPORTANT**
>
> **Use special care when removing motor rotor from body. The ball pistons MUST remain in place as they are matched to motor bores. Use a wide rubber band to hold ball pistons in place.**

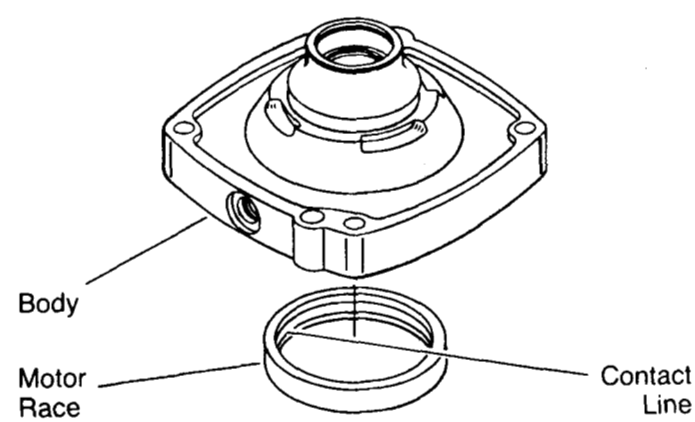


FIG. 47.

23. Inspect contact line of motor ball pistons on motor race located in body. This contact area must be smooth and completely free of any irregularities. If any irregularities are noted, replace motor race.

NOTE: If irregularities are noted in motor race, it is reasonable to assume that one or more ball pistons and rotor bores will also be damaged.

Rotor Assemblies—Disassembly Inspection

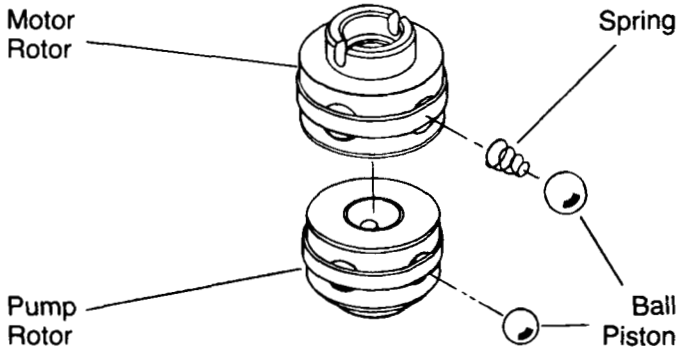


FIG. 48.

24. Inspect rotor assemblies. Remove piston balls from rotor, one at a time, by working clockwise from letter stamped on the face of rotor and placing in a prepared container.

NOTE: Each ball must be replaced in same bore from which it was removed. Use a suitable container for piston ball storage such as an egg carton or ice cube tray.

25. Inspect for broken or collapsed springs in motor rotor assembly.

NOTE: When broken or collapsed springs are found with no other irregularities, the springs may be replaced individually without replacing complete motor rotor assembly.

26. Inspect piston balls. They must be smooth and completely free of any irregularities.

27. Inspect rotor bores, rotor bushing and pintle journals for irregularities or excessive clearance. Ball piston to rotor bore clearance is select fit electronically to .0002 to .0006 of an inch. When irregularities or excessive clearance are noted, replace complete rotor assembly.

Install ball pistons in their matching bores. Hold them in place with a rubber band.

Body—Disassembly

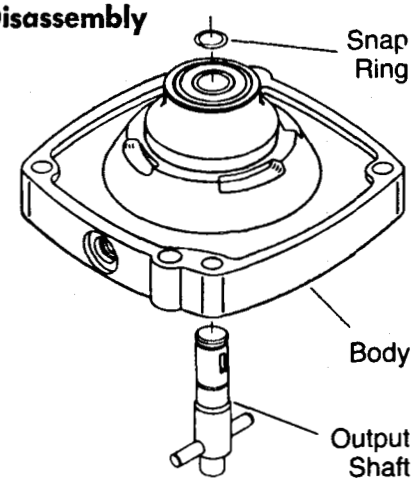


FIG. 49.

28. Remove snap ring that retains output shaft and tap or press shaft from body.

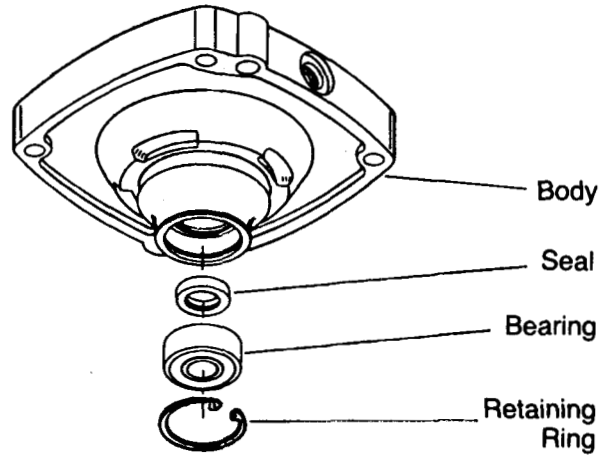


FIG. 50.

29. Remove large retaining ring that retains output bearing to body. Drive or press the output bearing and seal from motor body.

Cover—Reassembly

30. Inspect cover assembly, especially around control shaft area. Replace cover assembly if it is broken, cracked or if side clearance between control shaft and cover exceeds .006".

31. In most cases, it will not be necessary to remove the control shaft from cover. If the dowel is loose or broken in control shaft, remove shaft using following procedures.

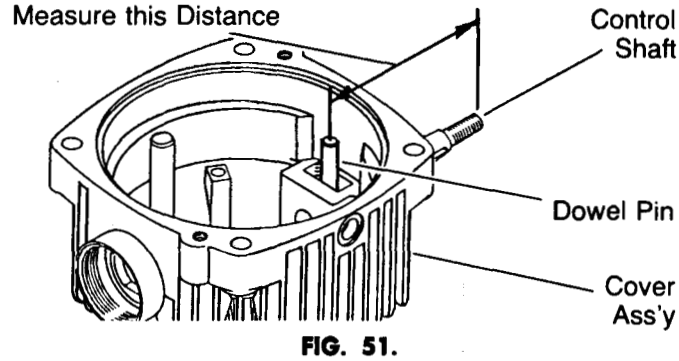


FIG. 51.

32. Measure distance between center of dowel pin and end of shaft as shown in Fig. 51.

33. Turn cover over. Use this dimension to locate dowel pin in cover face. Drill 11/32" diameter hole at center point of dowel pin. Drill hole exactly in line with center of shaft.

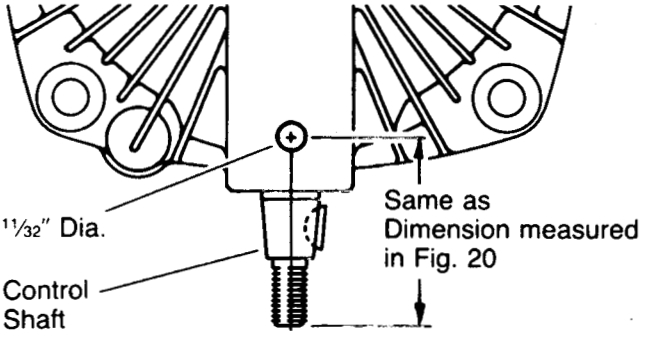


FIG. 52.

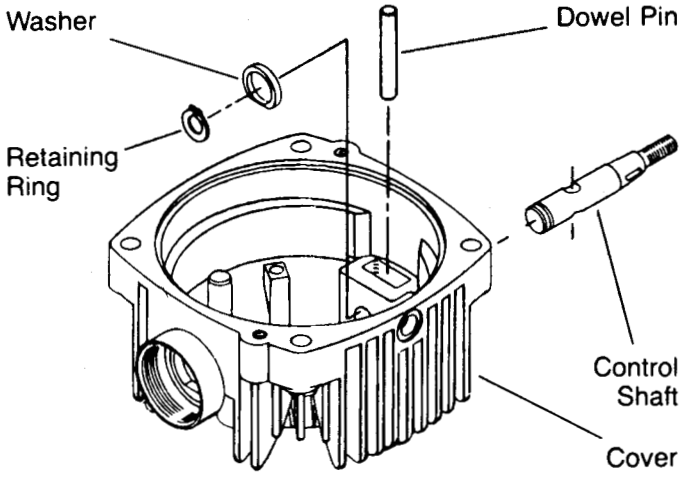


FIG. 53.

34. Press loose or broken dowel pin out. Remove retaining ring and washer from end of control shaft. Remove control shaft outward from cover.

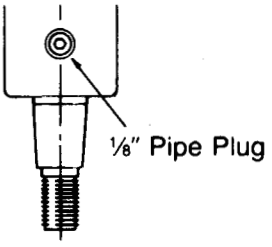


FIG. 54.

35. Tap hole drilled with 1/8" pipe tap. Install 1/8" flush type pipe plug.

36. Lubricate a new control shaft and install in cover. Replace washer and retaining ring on end of control shaft. Press new dowel pin through shaft leaving 1 1/8 inch of dowel extending from shaft.

IMPORTANT

When pressing new dowel pin into control shaft, Woodruff key in control shaft must be to the left looking at threaded end of shaft.

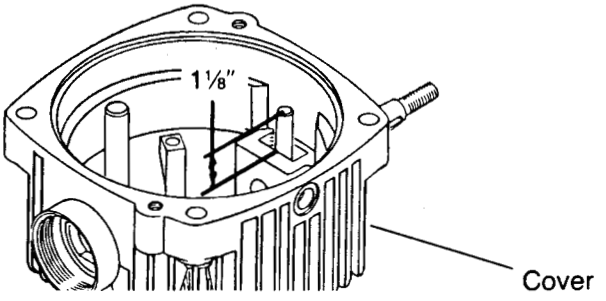


FIG. 55.

37. Lubricate I.D. of new oil seal with clean lubricant. Then press or tap seal in bore until completely seated.

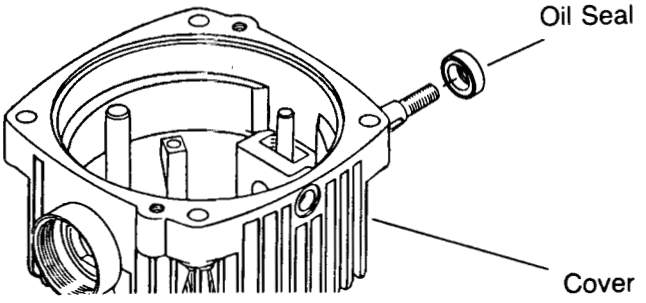


FIG. 56.

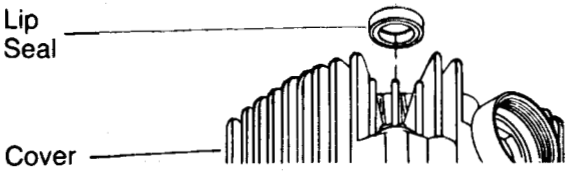


FIG. 57.

38. Lubricate inner surface of lip seal with a clean lubricant. Press or tap seal into bottom position in cover counter bore.

IMPORTANT

Be careful not to damage inner portion of oil seal. Excessive pressing or driving of oil seal will damage rubber portion of seal.

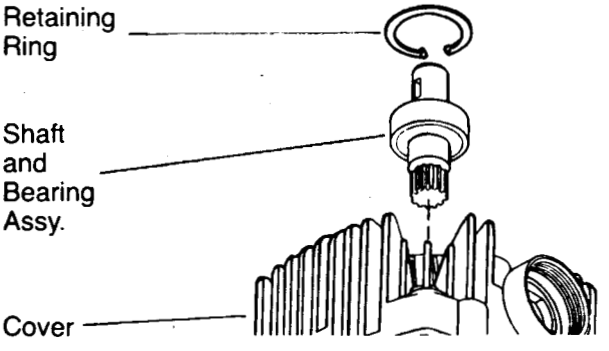


FIG. 58.

39. Install input shaft assembly into bottom position in counter bore in cover. Install retaining ring in groove located in front cover.

Cam Ring—Installation

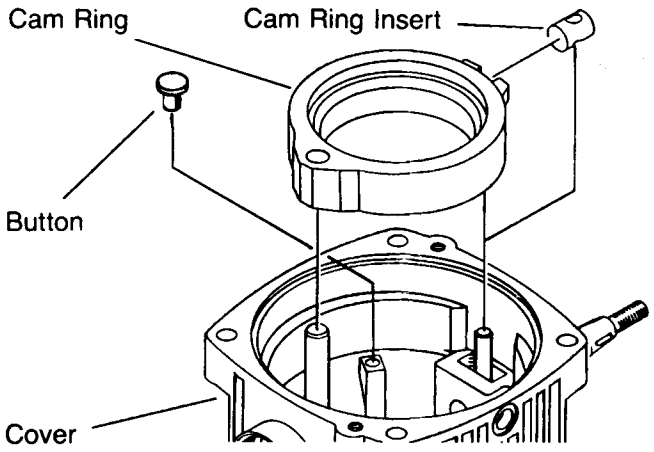


FIG. 59.

40. Install button in hole located in cover.
41. Install cam ring insert with hole away from cam ring as shown in Fig. 59.
42. Align cam ring with control shaft pin and cam ring pivot pin.

    Install cam ring with flush side of bearing race facing cover. Press in firmly until cam ring has bottomed in cover assembly.

IMPORTANT

Cam ring must move freely from stop to stop. If binding occurs at either stop rotate cam ring insert 180°. Check cam ring movement again.

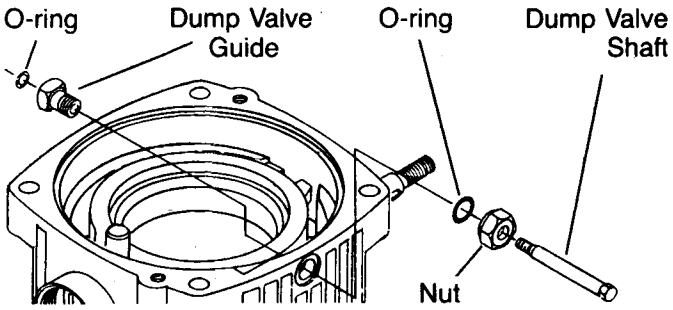


FIG. 60.

43. Where applicable, lubricate O-Ring and install in groove located in dump valve guide. Install guide through cover and install O-Ring and nut. Lubricate dump valve, valve shaft and install in guide assembly.

NOTE: Check dump valve shaft for freedom of movement.

Pump Rotor—Installation

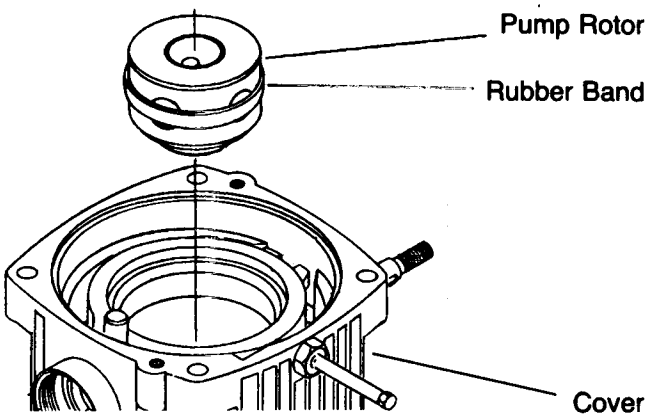


FIG. 61.

44. Align internal spline in pump rotor assembly with external spline on input shaft and install pump rotor in cover.

    Remove the rubber band retaining the ball pistons (if used).

Pintle—Installation

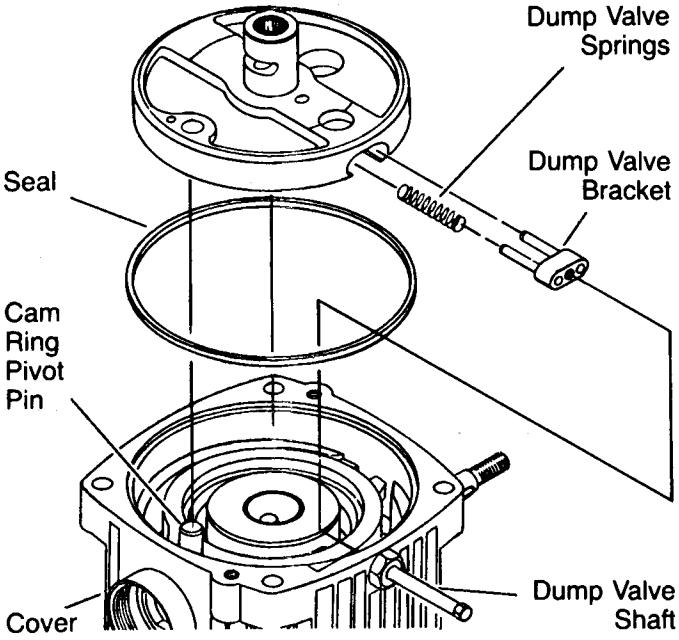


FIG. 62.

45. Install two springs and dump valve bracket into pintle assembly.

    Use a small screwdriver to compress and hold dump valve bracket into pintle to clear previously installed dump valve guide located in cover.

46. Align pintle assembly with cam ring pivot pin and guide pintle assembly into pump rotor. Push to bottom position in cover.

NOTE: Do not force pintle through pump rotor assembly as it is a slip fit. The pump rotor assembly must turn freely on the pintle by hand. If not recheck pintle installation.

47. Push dump valve shaft in and thread into dump valve bracket. **Torque to 2-3 Foot Pounds.**

48. Lightly grease new cover sealing ring and install in groove in cover.

Body—Reassembly

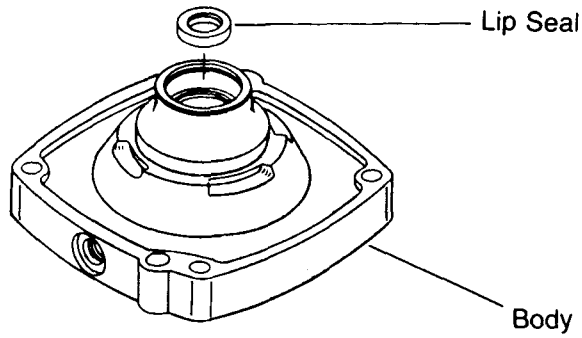


FIG. 63.

49. Lubricate inner surface of new lip seal and install with rubber lip of seal toward counter bore in body.

IMPORTANT

Do not over press or drive seal, this may damage rubber sealing portion of seal or distort counter bore.

50. Install output shaft into body, protecting shaft seal lip from keyway and snap ring grooves.

Support output shaft from underneath body so that cross pin in output shaft is tight against body.

Use a solid block (steel or hardwood) 2 inches in diameter by at least 1½ inches long to support output shaft.

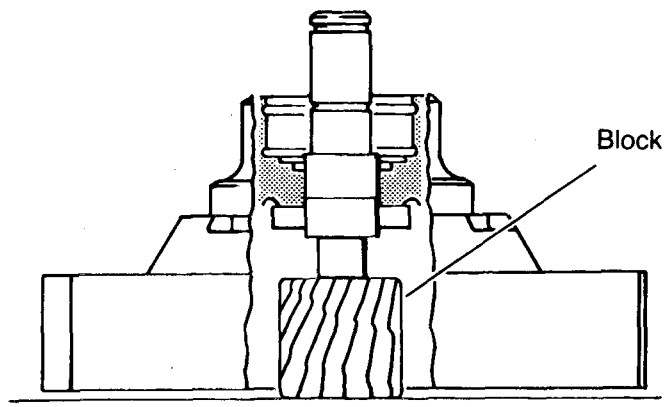


FIG. 64.

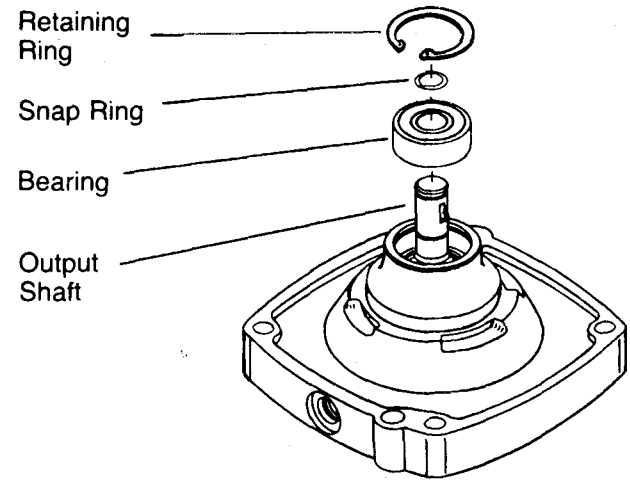


FIG. 65.

51. Install output shaft bearing by positioning bearing over output shaft and pressing on outer race of ball bearing to bottom position in body.

52. Install small snap ring on output shaft against inner bearing race.

53. Install large retaining ring used to retain ball bearing in body.

NOTE: The output shaft must rotate freely by hand. If it doesn't, recheck bearing installation.

Motor Rotor—Installation

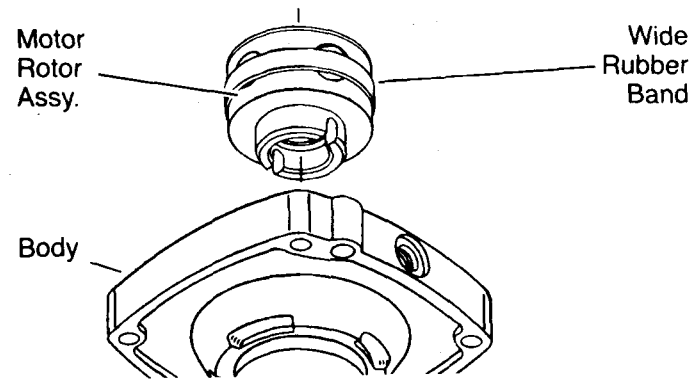


FIG. 66.

54. Align slot in motor rotor assembly with cross pin on output shaft and install motor rotor in body.

55. Remove rubber band retaining ball pistons in their respective bores (if used).

Cover/Body—Reassembly

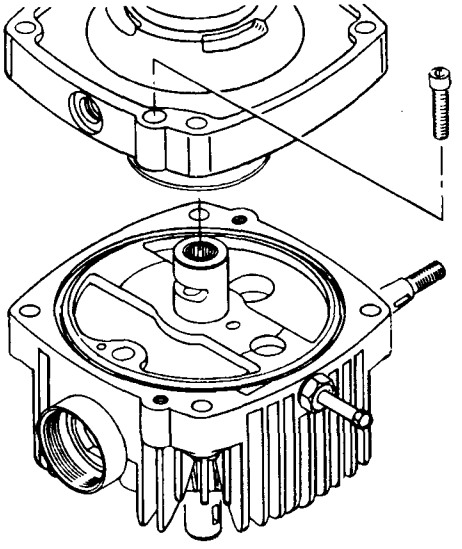


FIG. 67.

IMPORTANT

Be sure to realign previous scribed line for correct output rotation. If body assembly is installed 180° as previously assembled output rotation will be reversed.

56. Hold motor rotor assembly in position and install body on pintle.

NOTE: Do not force motor rotor assembly on pintle as it is a slip fit and must turn freely by hand.

57. Install (2) 5/16 x 1 1/4 socket heat cap screws and torque to 15 foot pounds.

Reservoir/Adapter—Reassembly

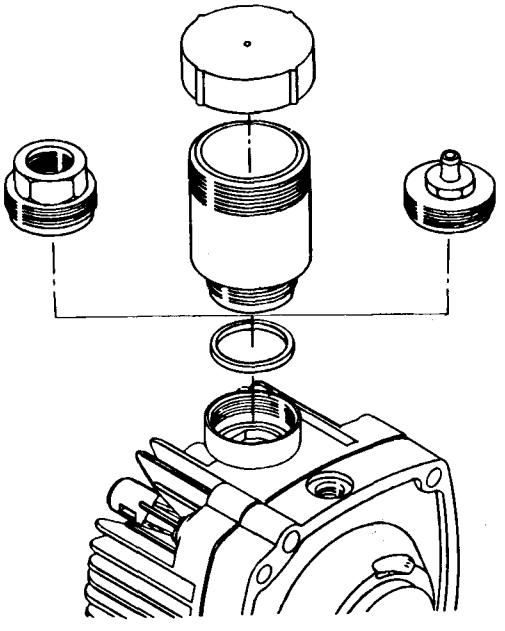


FIG. 68.

58. Lightly grease sealing ring and install into recess in cover.

59. Install adapter or reservoir in cover by rotating **counterclockwise.**

Torque to Approximately 8-12 ft. lbs.

IMPORTANT

The adapters and reservoir are threaded left hand. To install, turn counterclockwise.

Start-up Procedure

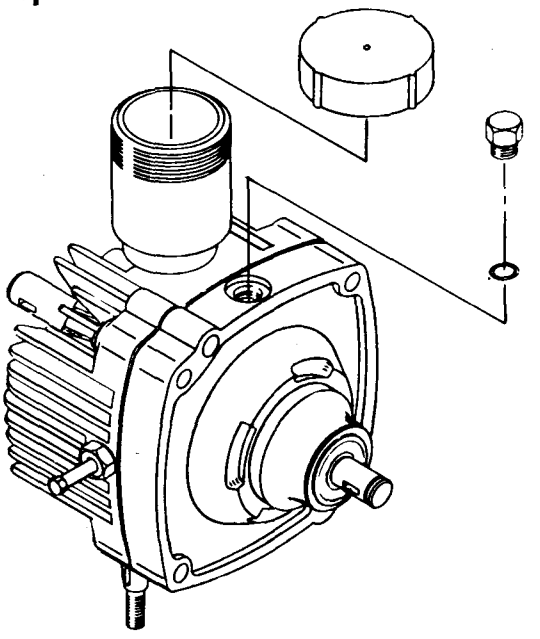


FIG. 69.

60. Remove the 3/8 hex head plug to vent transmission. See Page 1 for fluid recommendations.

Attached Reservoir

Fill transmission with proper fluid through reservoir until fluid overflows from opening in body.

Rotate both input and output shafts to purge any trapped air from transmission. Refill reservoir until fluid reappears and install hex head plug, **Torque to 2-5 Foot Pounds.**

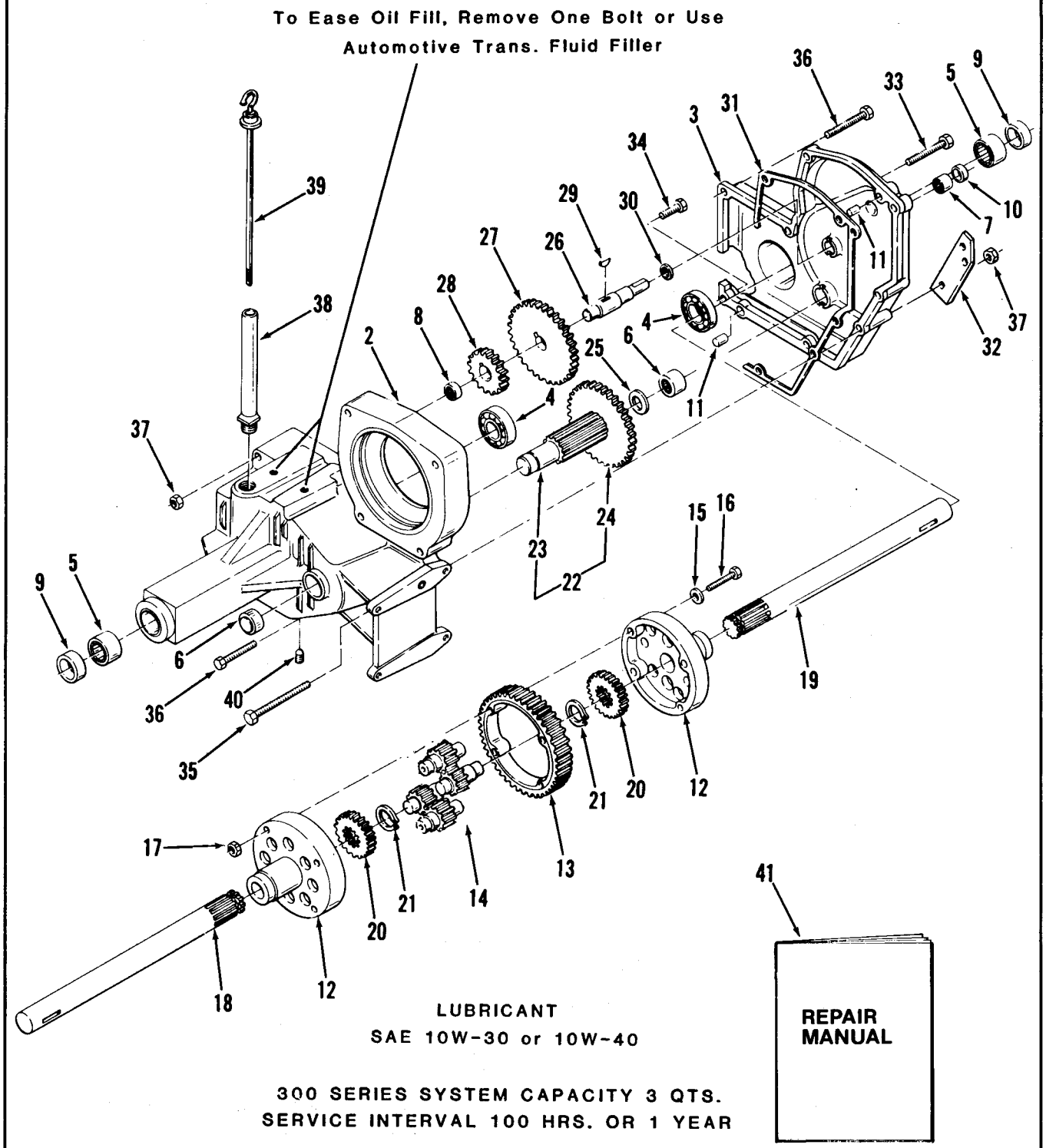
Fill reservoir to oil level cold mark.

Separate Reservoir

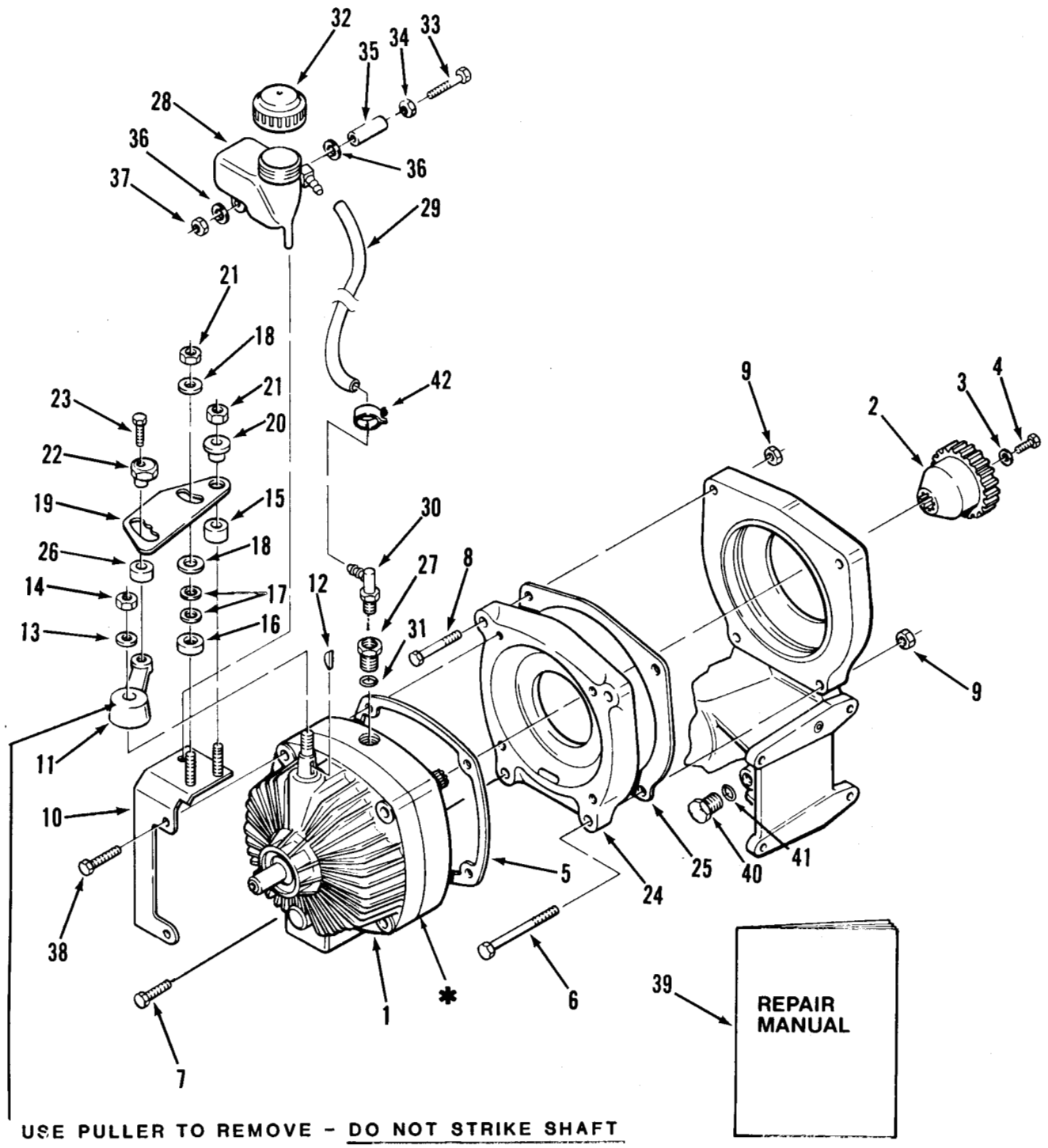
Fill transmission with proper fluid through customer supplied separate reservoir until fluid overflows from opening in body.

Rotate both input and output shafts to purge any trapped air from transmission. Refill reservoir until fluid reappears and install hex head plug. **Torque to 2-5 Foot Pounds.**

Fill reservoir to proper fluid level shown.


To Ease Oil Fill, Remove One Bolt or Use
Automotive Trans. Fluid Filler
LUBRICANT
SAE 10W-30 or 10W-40
300 SERIES SYSTEM CAPACITY 3 QTS.
SERVICE INTERVAL 100 HRS. OR 1 YEAR
REPAIR MANUAL
0418

ITEM	DESCRIPTION	
	TRANSAXLE	
	Transaxle Complete	1
2	Case-Transaxle RH	1
3	Case-Transaxle LH	1
4	Ball Bearing 1 1/2 I.D.	2
5	Needle Bearing 1 1/8 I.D.	2
6	Needle Bearing 1 I.D.	2
7	Needle Bearing 3/4 I.D.	1
8	Needle Bearing 5/8 I.D.	1
9	Seal Axle	2
10	Seal	1
11	Dowel Pin	2
12	Differential End Cap	2
13	Differential Ring Gear 43 Tooth	1
14	Differential Pinion Gear 11 Tooth	4
15	Special Washer-Case Hardened	4
16	Bolt 3/8-16 x 3 1/2 Grade 8	4
17	Nut 3/8-16 High-Tensile	4
18	Rear Axle RH-Long (13 1/8 in./33 cm)	1
19	Rear Axle LH-Short (10 1/8 in./26 cm)	1
20	Differential Axle Gear 24 Tooth	2
21	Special Snapring	2
22	Gear Assembly	1
23	Gear-Pinion 11 Tooth	1
24	Gear-Reduction 46 Tooth	1
25	Thrust Washer	1
26	Shaft	1
27	Gear 46 Tooth	1
28	Gear 20 Tooth	1
29	Woodruff Key 3/16 x 1 1/8	1
30	Thrust Washer	1
31	Gasket-Case	1
32	Bracket-Brake	1
33	Bolt 3/8-16 x 2 1/2 Eslok	1
34	Bolt 3/8-16 x 1 1/4 Eslok	1
35	Bolt 3/8-16 x 5	1
36	Bolt 3/8-16 x 3	2
37	Nut 3/8-16 Eslok	3
38	Filler Tube	1
39	Dipstick	1
40	Allen Hd. Pipe Plug 1/4	1
41	Repair Manual	1



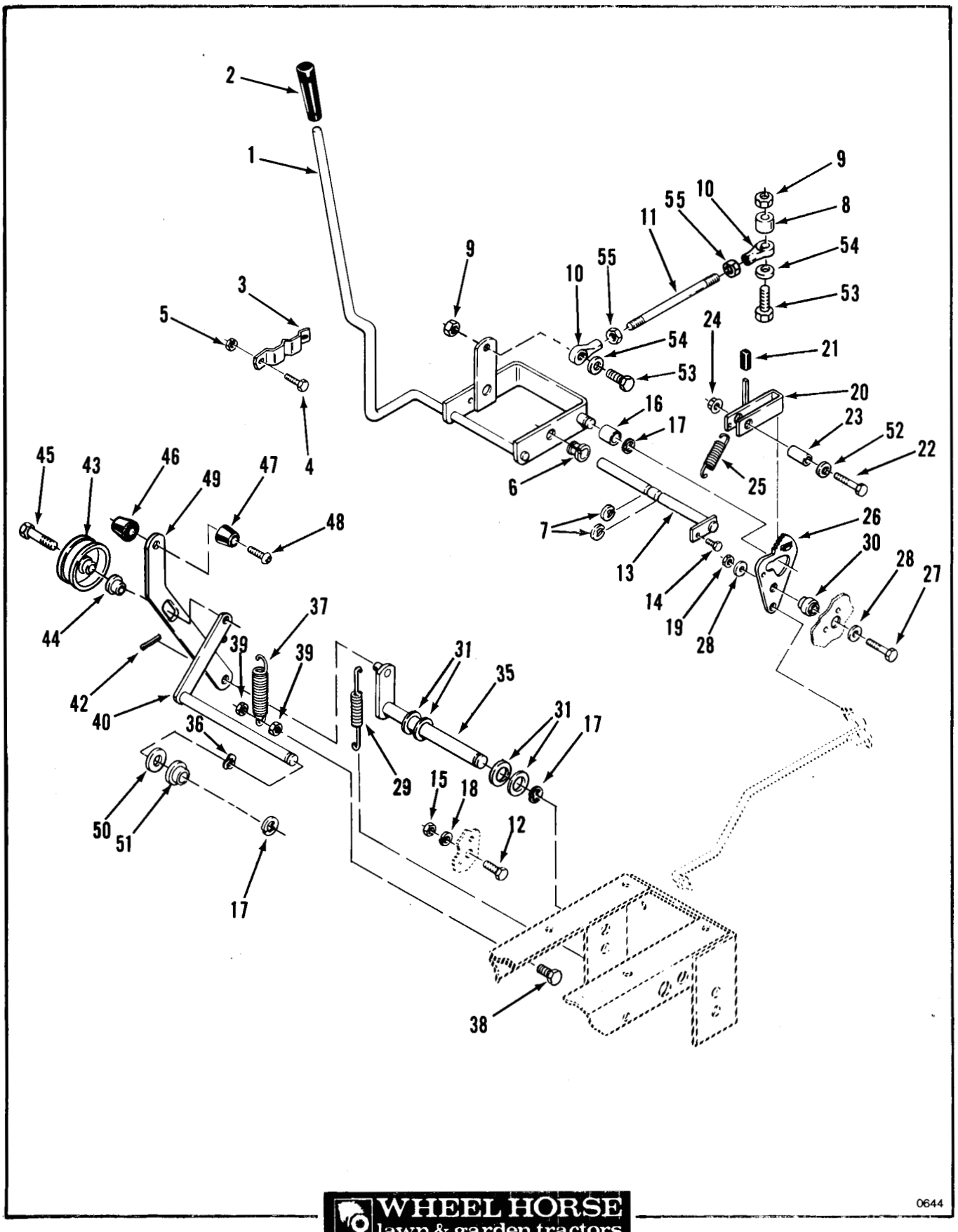
USE PULLER TO REMOVE - DO NOT STRIKE SHAFT

* INTERNAL SERVICE NOT AUTHORIZED AT TIME OF PUBLICATION

0427

ITEM	DESCRIPTION	
	AUTOMATIC TRANSMISSION	
1	Pump & Motor	1
2	Gear 20 Tooth	1
3	Special Washer 9/32	1
4	Hex Bolt 1/4-20 x 5/8 Eslok	1
5	Gasket	1
6	Bolt 3/8-16 x 5	1
7	Eslok Bolt 3/8-16 x 1 1/4	1
8	Socket Head Bolt 3/8-16 x 3 1/2	2
9	Eslok Nut 3/8-16	3
10	Control Plate	1
11	Cam Follower Arm	1
12	Woodruff Key	1
13	Washer 3/8 SAE	1
14	Eslok Nut 3/8-16	1
15	Spacer (Long)	1
16	Spacer (Short)	1
17	Washer-Spring Disc	2
18	Washer-Friction	2
19	Cam-Speed Control	1
20	Spacer	1
21	Locknut 3/8-16 Hi-Tensile	2
22	Eccentric Cam	1
23	Eslok Bolt 5/16 x 1 1/2	1
24	Hydro Adapter	1
25	Adapter Gasket	1
26	Cam Spacer	1
27	Plug Fitting w/O-ring	1
28	Tank Assembly	1
29	Hose	1
30	Elbow Fitting	1
31	O-ring	1
32	Vented Cap	1
33	Bolt 1/4-20 x 1 3/4	1
34	Speed Nut 1/4	1
35	Spacer	1
36	Washer 1/4 SAE	2
37	Nut 1/4 Eslok	1
38	Hex Bolt 3/8-16 x 2 3/4	4
39	Repair Manual	1
40	Transaxle Case Plug w/O-ring	1
41	O-ring	1
42	Corbin Clamp	1

CLUTCH, BRAKE AND MOTION CONTROL LINKAGE



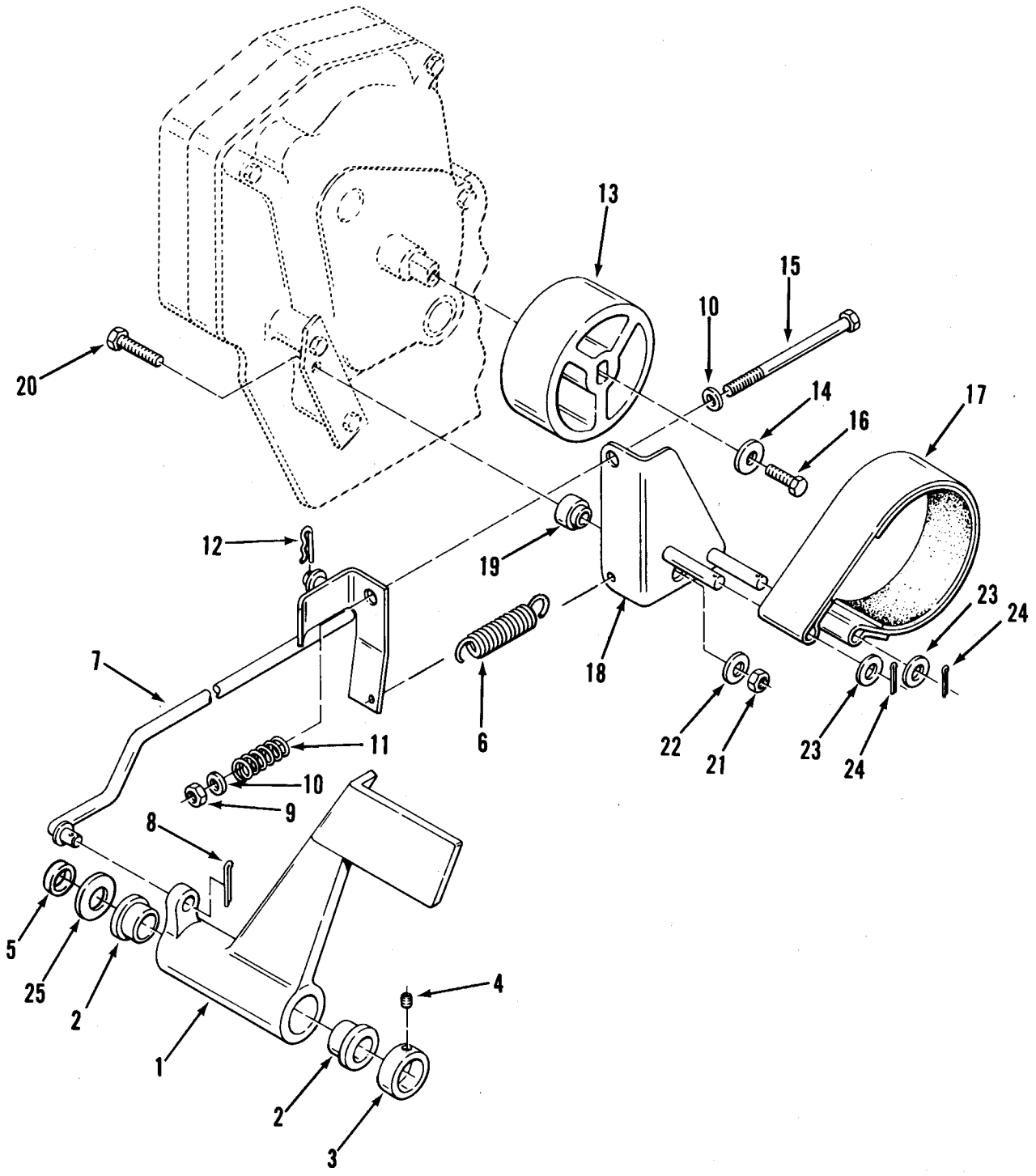
Clutch, Brake and Speed Control Linkage

CLUTCH, BRAKE AND MOTION CONTROL LINKAGE

ITEM	DESCRIPTION	

CLUTCH, BRAKE & SPEED CONTROL LINKAGE

1	Motion Control Lever	1
2	Knob-Motion Control Linkage	1
3	Detent-Motion Control Lever	1
4	Bolt 5/16-18 x 1/2	2
5	Eslok Nut 5/16-18	2
6	Bushing	2
7	E-Ring	2
10	Rod End	2
11	Rod Control 9.9" long	1
12	Bolt 1/4-20 x 3/4	1
13	Pivot Rod-Motion Control Lever	1
14	S.T. Bolt 5/16-18 x 5/8	1
15	Nut 1/4-20	1
16	Cam Bearing	1
17	E-Ring 1/2	4
18	Lockwasher 1/4 External Tooth	1
19	Eslok Nut 3/8-16	1
20	Parking Brake Lever	1
21	Grip-Parking Brake Lever	1
22	Bolt 3/8-16 x 1 3/4	1
23	Spacer	1
24	Special Flanged Nut	1
25	Spring	1
26	Cam Plate	1
27	Bolt 3/8-16 x 1 1/4	1
28	Washer 3/8 SAE	2
29	Spring Anti-Rattle	1
30	Spacer	1
31	Washer 1/2 SAE	1
35	Shaft	1
36	Wave Washer	2
37	Spring	1
38	Bolt 1/4-20 x 1	1
39	Eslok Nut 1/4 x 20	4
40	Pivot Rod	1
41	Wave Washer	1
42	Cotter Pin 1/16 x 3/4	1
43	Idler Pulley	1
44	Spacer	1
45	Special Bolt 3/8-16 x 1 1/2	1
46	Knob	1
47	Knob	1
48	Screw #10-24 x 1 1/4	1
49	Handle	1
50	Washer 1/2 SAE	1
51	Bushing	1
52	Washer 3/8 SAE	1
53	Bolt 1/4-20 x 1 1/2	2
54	Washer 1/4 SAE	2
55	Jam Nut 1/4-28	2

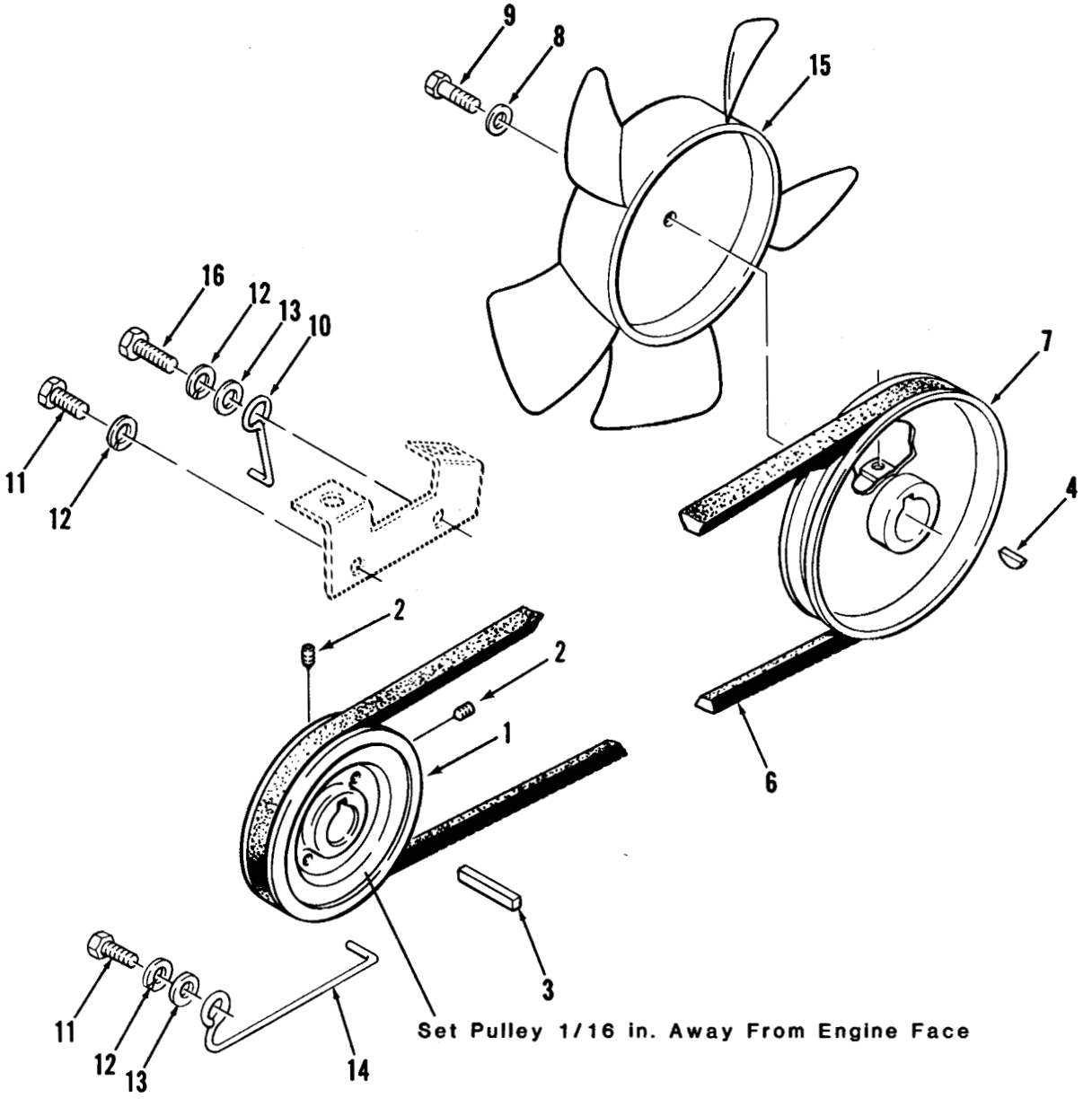


WHEEL HORSE lawn & garden tractors

Clutch, Brake and Speed Control Linkage

CLUTCH, BRAKE & SPEED CONTROL LINKAGE

ITEM	DESCRIPTION	
1	Brake/Return To Neutral Pedal	1
2	Bushing	2
3	Collar	1
4	Set Screw 1/4-20 x 1/4 Cup Pt.	1
5	Spacer	1
6	Spring-Brake Return	1
7	Brake Rod-Front	1
8	Cotter Pin 1/8 x 1	1
9	E.S. Nut 3/8-16	1
10	Washer 3/8 SAE	2
11	Spring	1
12	Hairpin Cotter	1
13	Brake Drum	1
14	Special Washer	1
15	Bolt 3/8-16 x 4 1/2	1
16	Eslok Bolt 3/8-16 x 1	1
17	Brake Band	1
18	Brake Pivot Arm	1
19	Bushing	1
20	Bolt 3/8-16 x 1 1/2	1
21	Eslok Nut 3/8-16	1
22	Washer 3/8 U.S.	1
23	Washer 3/8 SAE	2
24	Cotter Pin 3/32 x 3/4	2
25	Shim Washer	1



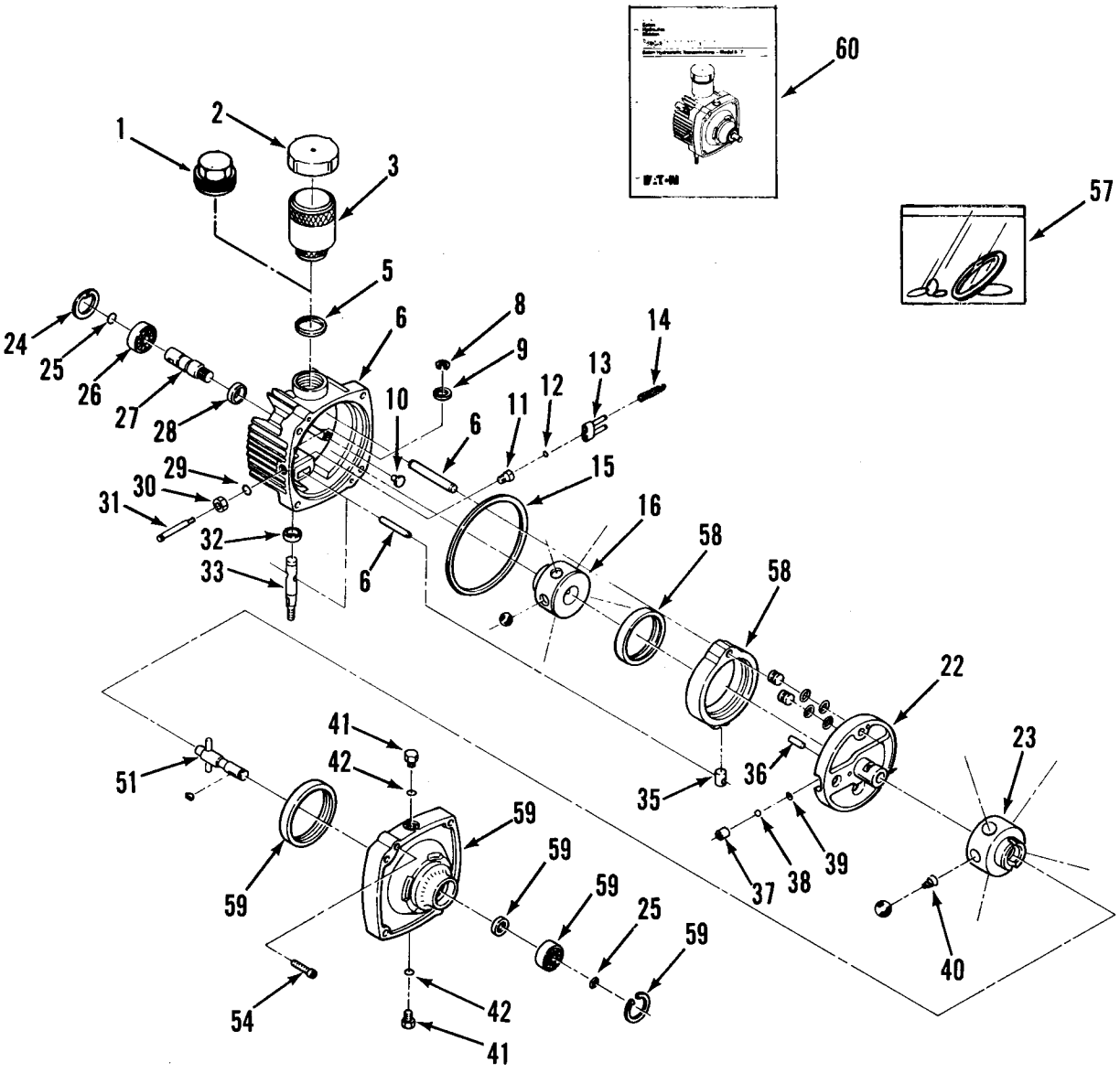
WHEEL HORSE lawn & garden tractors

1452

Drive Belt and Pulleys

DRIVE BELT, PULLEYS AND PTO CLUTCH

ITEM	DESCRIPTION	
	DRIVE BELT AND PULLEYS	
1	Engine Drive Pulley	1
2	Set Screw 5/16-18 x 5/16	2
3	Key 1/4 x 1/4 x 3/4	1
4	Woodruff Key 3/16 x 3/4	1
6	Drive Belt	1
7	Transmission Drive Pulley	1
8	Washer	2
9	Eslok Bolt 1/4-20 x 2 1/4	1
10	Belt Guide - Top	1
11	Bolt 7/16-14x1 1/4	2
12	Lockwasher 7/16	3
13	Washer 7/16	2
14	Belt Guide - Bottom	1
15	Fan	1
16	Bolt 7/16-14x1 1/4	1



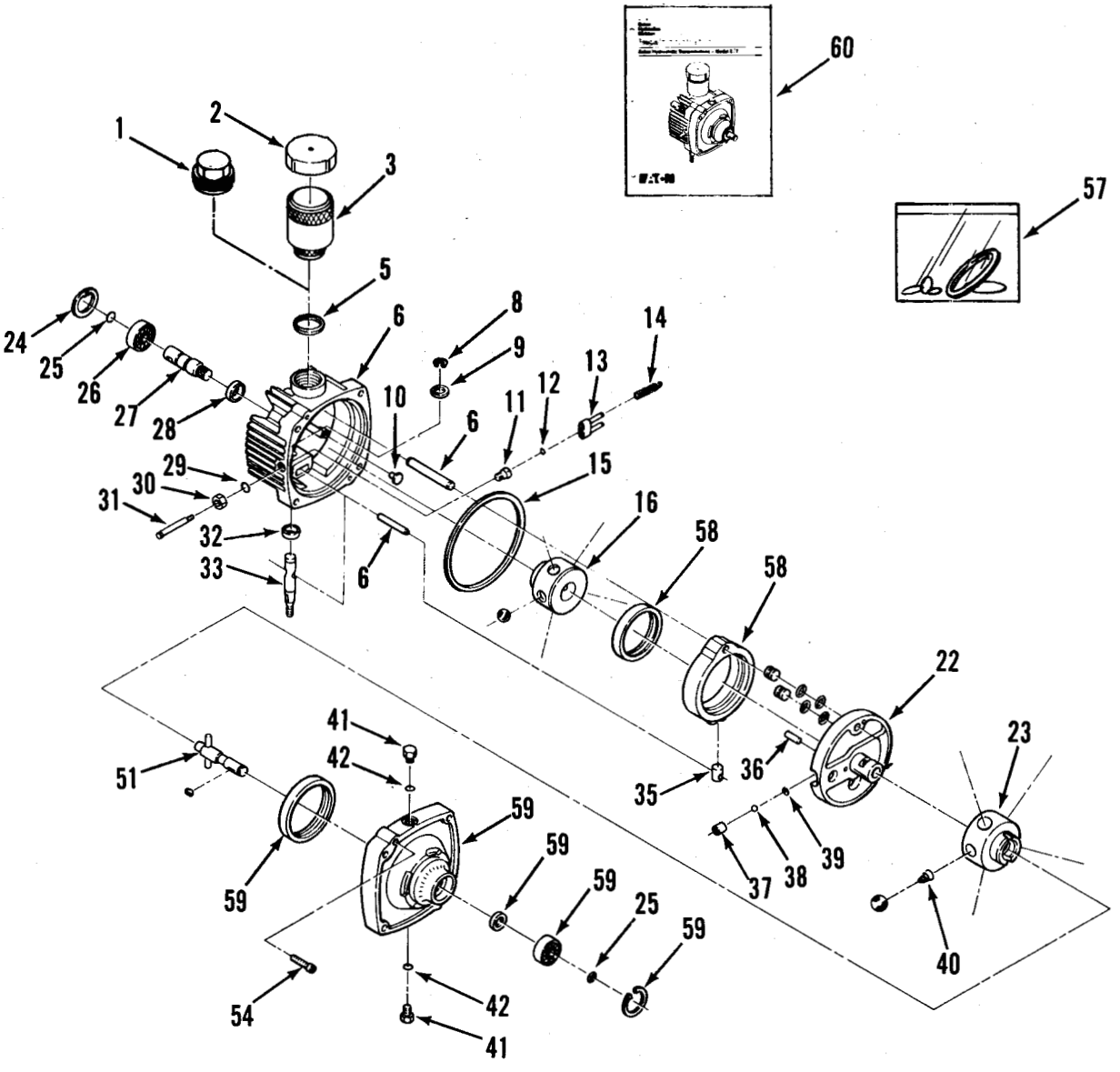
REPAIR OF EATON HYDROSTATIC TRANSMISSIONS IS INTENDED FOR OUT-OF-WARRANTY TRANSMISSIONS ONLY

Wheel Horse

0431

ITEM	PART NUMBER	DESCRIPTION	Qty.
		HYDROSTATIC TRANSMISSION	
1	112621	Reservoir Adapter	1
2	112589	Reservoir Cover	1
3	112590	Reservoir Body	1
5	112591	Square Cut Seal Ring (included in item 57)	1
6	112592	Cover Service Kit (includes Pivot Pin Dowel, Control Shaft Dowel, & items 8, 9, 28, 32 & 33) used on models w/o dump valve	X
	112625	Cover Service Kit (includes Pivot Pin Dowel, Control Shaft Dowel, & items 8, 9, 28, 32 & 33) used on models w/ dump valve	X
8	112593	External Retaining Ring (included in item 6)	1
9	112594	Control Shaft Washer (included in item 6)	1
10	112595	Button	1
*11	112626	"O" Ring Fitting Guide (includes item 12)	1
*12	112627	Dump Valve Bracket "O" Ring (included in item 11 & 57)	1
*13	112628	Bracket And Pins	1
*14	112629	Dump Valve Spring	1
15	112596	Square Cut Seal Ring (included in item 57)	1
16	112597	Pump Rotor & Balls	1
22	112630	Pintle - Used in CCW (counterclockwise rotation) trans. (includes Piston, Backup Ring, "O" Ring, & items 36, 37, 38 & 39)	1
	112634	Pintle - Used in CW (clockwise rotation) trans. (includes Piston, Backup Ring, "O" Ring, & items 36, 37, 38 & 39)	1
23	112599	Motor Rotor & Balls (also includes items 40)	1
24	112600	Retaining Ring	1
25	112601	Snap Ring	1
26	112602	Ball Bearing - Input	1
27	112603	Input Shaft	1
28	112604	Oil Seal (included in item 6 & 57)	1
*29	112631	Dump Valve "O" Ring (included in item 57)	1
*30	112632	Nut - Gasket Subassembly (included in item 57)	1
*31	112633	Dump Valve	1
32	112605	Oil Seal (included in item 6 & 57)	1
33	112606	Control Shaft Kit (included in item 6)	1
35	112607	Cam Ring Insert	1
36	112608	Coil Pin (included in item 22)	1
37	112609	Check Valve Body (included in item 22)	2
38	112610	Grade 200 Ball 5/16 O.D. (included in item 22)	2
39	112611	Retaining Ring (included in item 22)	2
40	112612	Piston Spring (included in item 23)	5
41	112613	"O" Ring Plug Subassembly (includes item 42)	1
42	112614	Tube Fitting "O" Ring (included in item 41 & 57)	1

*indicates NOT on all models



REPAIR OF EATON HYDROSTATIC TRANSMISSIONS IS INTENDED FOR OUT-OF-WARRANTY TRANSMISSIONS ONLY

Wheel Horse

0431

ITEM	PART NUMBER	DESCRIPTION	Qty.
		HYDROSTATIC TRANSMISSION (CONT'D)	
51	112615	Keyed Output Shaft (included in item 59).....	1
	112623	Splined Output Shaft (included in item 59).....	1
54	112616	Socket Hd. Capscrew.....	2
57	112618	Overhaul Sealing Kit (includes Dampening Piston "O" Rings, Dampening Piston Backup Rings, Output Shaft Oil Seal, Plug "O" Ring & items 5, 11 w/12, 15, 28, 29, 30, 32 & 42).....	X
58	112619	Cam Ring Subassembly (includes Pump Race & Cam Ring).....	1
59	112620	Body Subassembly (includes Body, Oil Seal, Output Ball Bearing, Snap Ring, Retaining Ring, Motor Race & item 51 - Keyed Output Shaft).....	1
	112624	Body Subassembly (includes Body, Oil Seal, Output Ball Bearing, Snap Ring, Retaining Ring, Motor Race & item 51 - Splined Output Shaft)....	1
60	740315	Model 7 Hydrostatic Transmission Repair Manual..	X

Product information and specifications are shown herein as of the time of printing. Wheel Horse Products, Inc. reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligation.

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