

310-0500/0650/0750/0800
Integrated Hydrostatic Transaxle
Service and Repair Manual

BLN-50432
Revision Dec. 2008

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Introduction

The purpose of this manual is to provide information useful in servicing the Hydro-Gear® Integrated Hydrostatic Transaxle (IHT). This manual includes component description, troubleshooting, maintenance and repair procedures.

A transaxle normally will not require servicing during the life of the vehicle in which it is installed. Should servicing be required, the unit must be removed from its installed location and thoroughly cleaned before beginning most procedures.

General Description

The Integrated Hydrostatic Transaxle is a self contained unit designed for the transfer and control of power. It provides an infinitely variable speed range between zero and maximum in both forward and reverse modes of operation.

The IHT uses a variable pump with a maximum displacement of 10cc per revolution, and a motor with a fixed displacement of 21cc per revolution. The variable displacement pump features a cradle swashplate with a direct-proportional displacement control. Reversing the direction of tilt of the swashplate reverses the flow of oil from the pump to the motor and thus reverses the direction of the motor output rotation. The fixed displacement motor uses a fixed swashplate. The pump and motor are of the axial piston design, and both utilize spherical nosed pistons which are held against a thrust race by internal compression springs.

The IHT has a self-contained fluid supply and an integral filter. The fluid is forced through the filter by a positive “head” on the fluid in the housing/reservoir with an assist by the negative pressure created in the pump pistons as they operate.

Charge check valves in the center section are used to control the makeup flow of fluid to the low pressure side of the loop.

The IHT is filled and tested at the factory and should not require fluid or filter changes unless the fluid becomes contaminated.

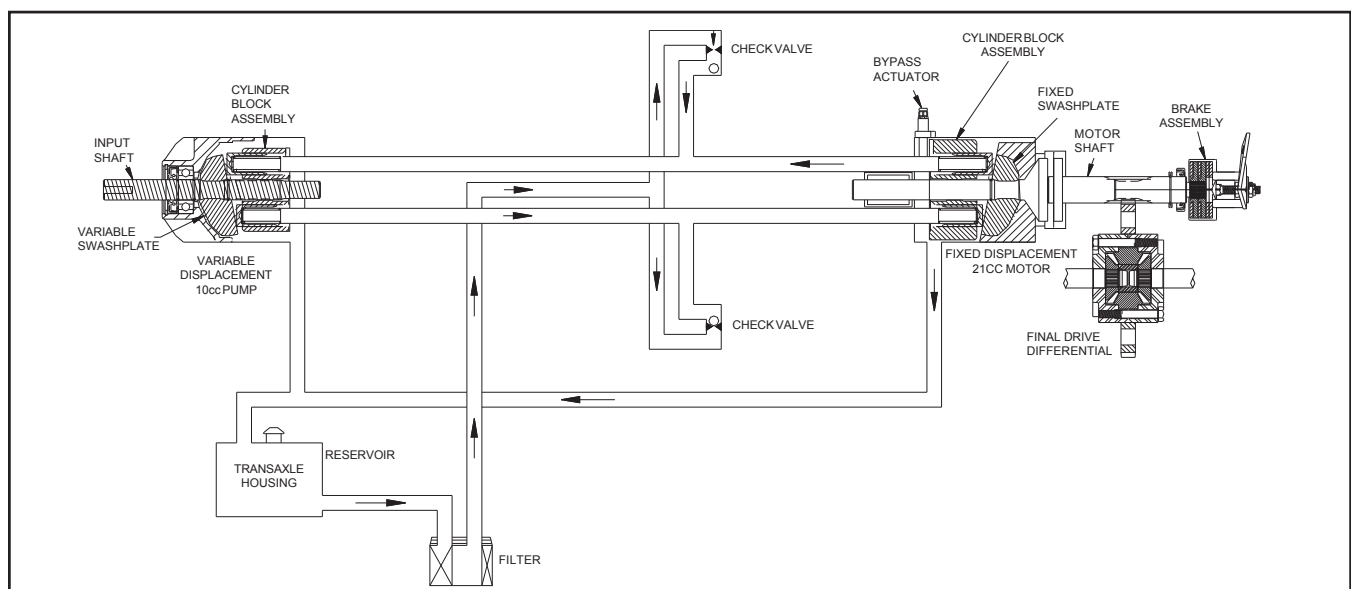
A cam style, block lifting bypass is utilized in the IHT to permit moving the vehicle for short distances at a maximum of 2 mph (3.2 km/hr) without starting the engine.

WARNING !!!

Actuating the bypass will result in the loss of hydrostatic braking capacity. The machine must be stationary and on a level surface and in neutral when actuating the bypass.

The IHT includes an integral differential which utilizes heavy duty heat treated bevel gears.

A “cam” style arm is utilized to actuate an in line floating multidisc parking brake. The brake discs are enclosed in a cavity that is sealed from the oil supply.



IHT Flow Illustration

Fluids/Greases

The fluids used in Hydro-Gear® products have been carefully selected, and only equivalent or better products should be used.

Typically, an engine oil with a minimum rating of 9 cSt (55 SUS) at 230°F (110°C) and an API classification of SL/CD is recommended. A 20W-50 engine oil has been selected for use by the factory.

The grease used in the manufacture of Hydro-Gear products is Exxon Polyrex EP2 grease and should be substituted with equivalent products only if it is not readily available in your area.

NOTE: This grease is not compatible with all grease types.

Safety Precautions

Certain procedures may require the vehicle to be disabled (wheels raised off the ground, engine disconnected, etc.) in order to prevent possible injury to the technician and bystanders.

Some cleaning solvents are flammable. To avoid possible fire, do not use cleaning solvents in an area where a source of ignition may be present.

The loss of hydrostatic driveline power may result in the loss of hydrostatic braking capacity. Proper brake maintenance becomes very important should this condition develop.

Maintenance

Check the transaxle cooling fan for broken or distorted blades, and check to see that the fan is securely fastened. Replace the fan if damaged.

NOTE: Not all vehicles are equipped with a cooling fan, refer to your vehicle manual.

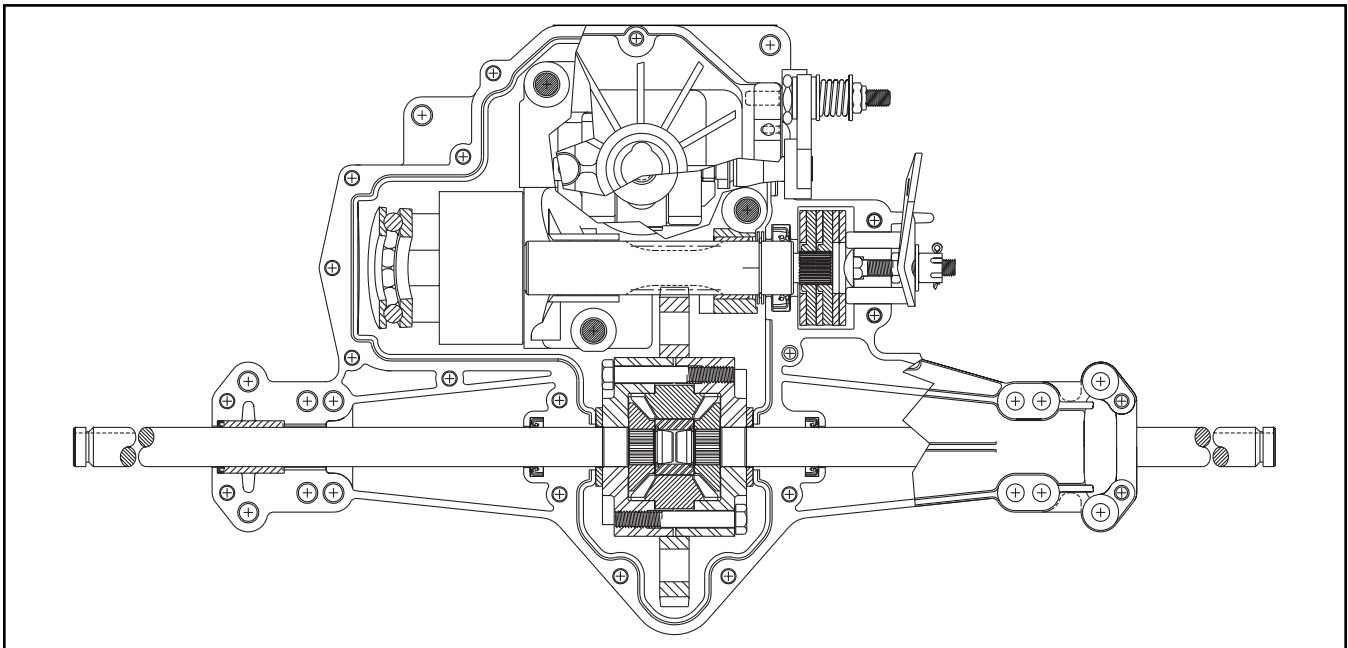
Keep the transaxle clean. Grass clippings and dirt will effect the cooling efficiency of the fins on the housing. Avoid high pressure washing, compressed air is the preferred method of removing loose debris.

Inspect the brake for proper operation. If the brake fails to stop the vehicle or hold on a 30% slope, adjustments are necessary. You should also make sure it fully disengages when the pedal is released.

Check to make sure the bypass actuator and linkage is operational. The bypass must be fully released during operation of the vehicle.

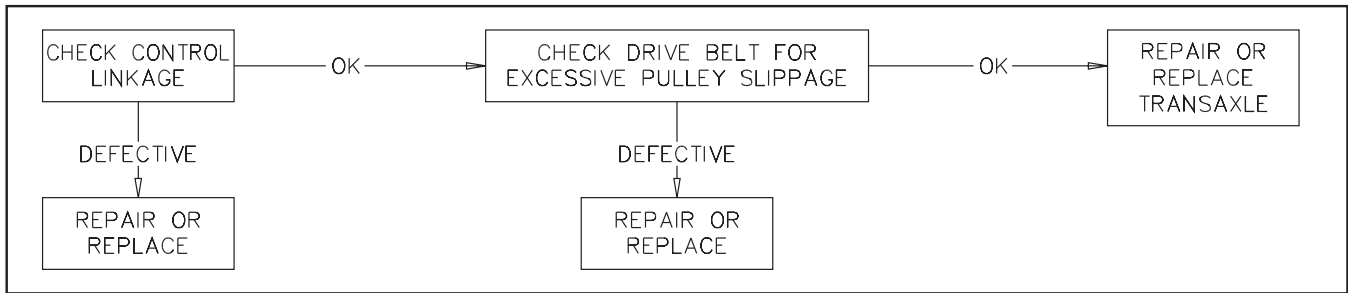
Inspect the transaxle for leaks at lip seals or damage to the housing.

Check the oil level and add oil as necessary to bring it up to the proper level.

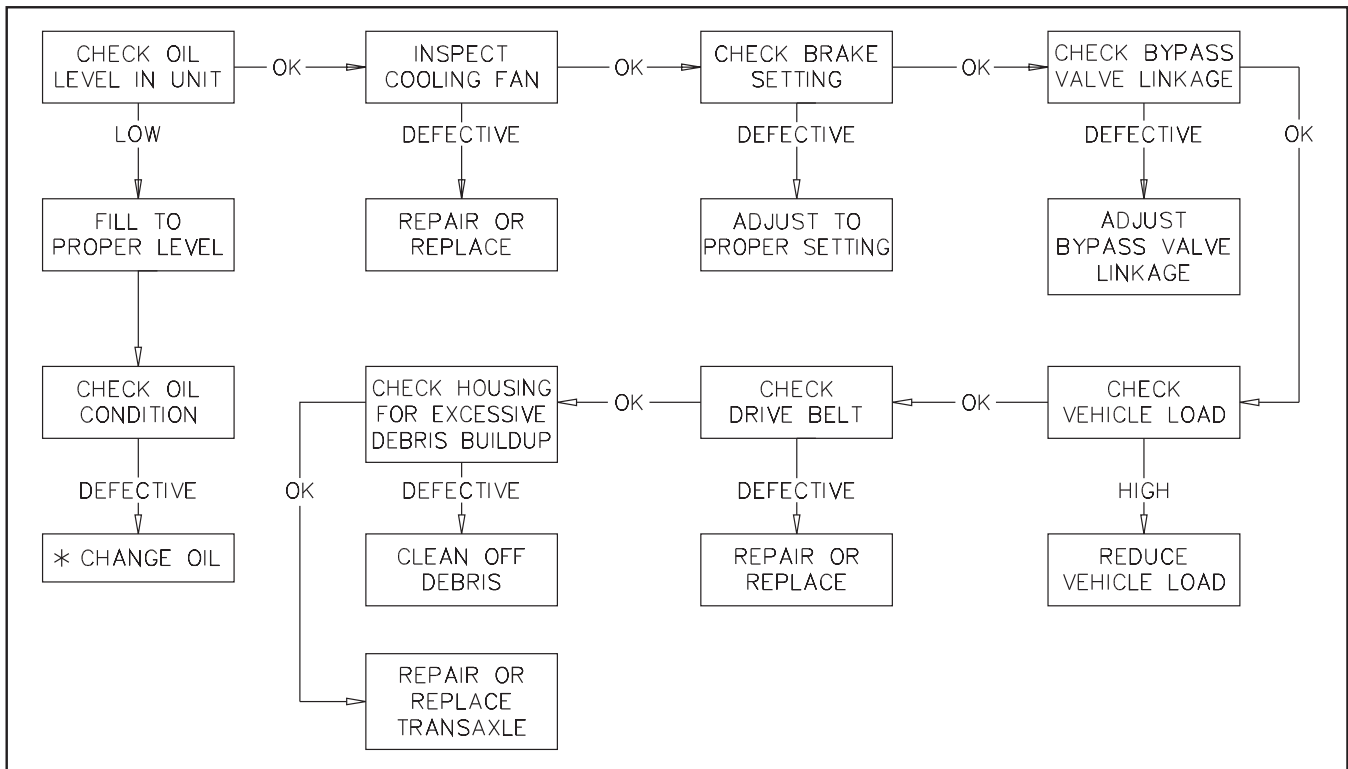


310-0500 Integrated Hydrostatic Transaxle

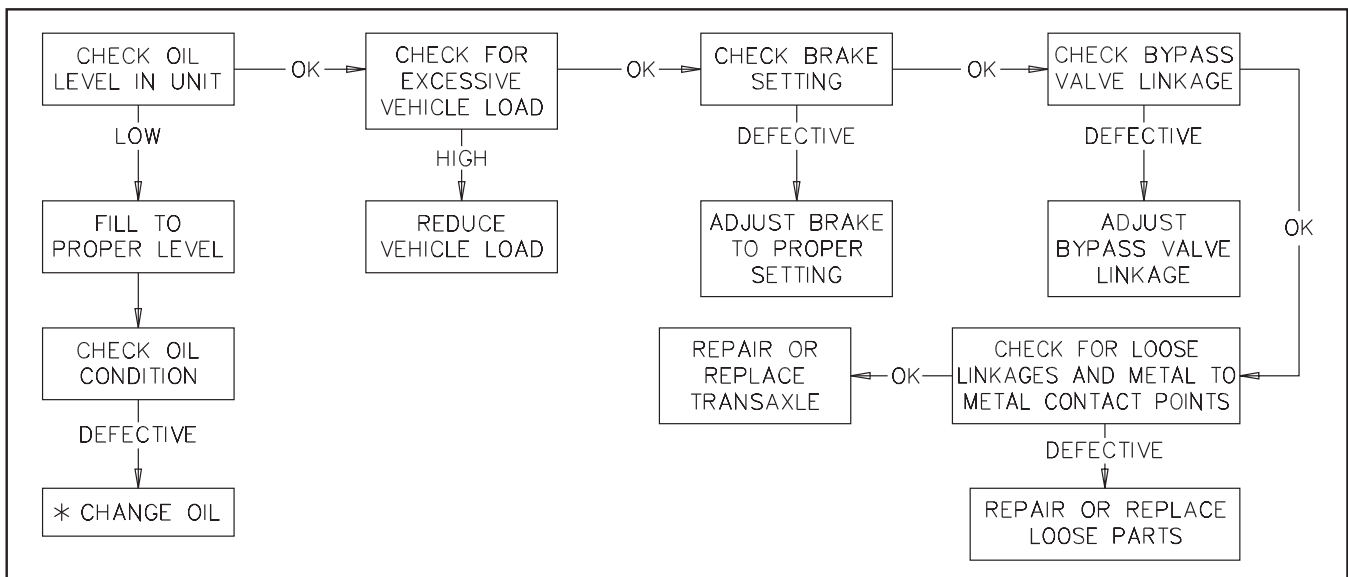
OPERATES IN ONE DIRECTION ONLY



OPERATING HOT / LOSING POWER



NOISY UNDER LOAD



* WILL REQUIRE TRANSAXLE REMOVAL

WARNING!!!
THE VEHICLE SHOULD BE ON LEVEL GROUND AND
THE ENGINE DISABLED BEFORE PERFORMING ANY ADJUSTMENTS

SYMPTOM - OPERATES IN ONE DIRECTION ONLY

POSSIBLE CAUSE

- Inspect control linkage
- Inspect drive belt & pulleys

CORRECTIVE ACTION

- Repair or replace
- Repair or replace

SYMPTOM - NOISY

POSSIBLE CAUSE

- Check oil level & condition
- Check for excessive loading
- Check brake setting
- Check for loose parts
- Check bypass valve linkage operation

CORRECTIVE ACTION

- Fill to proper level or change oil
- Reduce vehicle loading
- Adjust brake to proper setting
- Repair or replace loose parts
- Repair or replace linkage

SYMPTOM - LOW POWER

POSSIBLE CAUSE

- Check engine RPM
- Check drive belt & pulleys
- Check oil level & condition
- Check for excessive loading
- Check brake setting
- Check for loose parts
- Check bypass valve linkage operation

CORRECTIVE ACTION

- Adjust to correct setting
- Repair or replace
- Fill to proper level or change oil
- Reduce vehicle loading
- Adjust brake to proper setting
- Repair or replace loose parts
- Repair or replace linkage

SYMPTOM - OPERATING HOT

POSSIBLE CAUSE

- Check for debris buildup
- Check oil level & condition
- Check for excessive loading
- Check brake setting

CORRECTIVE ACTION

- Clean off debris
- Fill to proper level or change oil
- Reduce vehicle loading
- Adjust brake to proper setting

Minor Repairs

General Information

Minor Repairs may be performed, following the procedures in this section, without voiding the unit warranty.

Cleanliness is a primary means of assuring satisfactory life of either new or repaired units. Cleaning parts by using solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign materials and chemicals.

Protect all exposed sealing surfaces and open cavities from damage and foreign material. The outer surfaces of the transaxle should be cleaned before beginning any repairs.

Shaft Seals

Lip type seals are used on the pump input shaft, the displacement control shaft and the bypass actuator shaft of the transaxle. These seals can be replaced without major disassembly of the unit. Replacement of these seals generally requires removal of the transaxle from the machine frame.

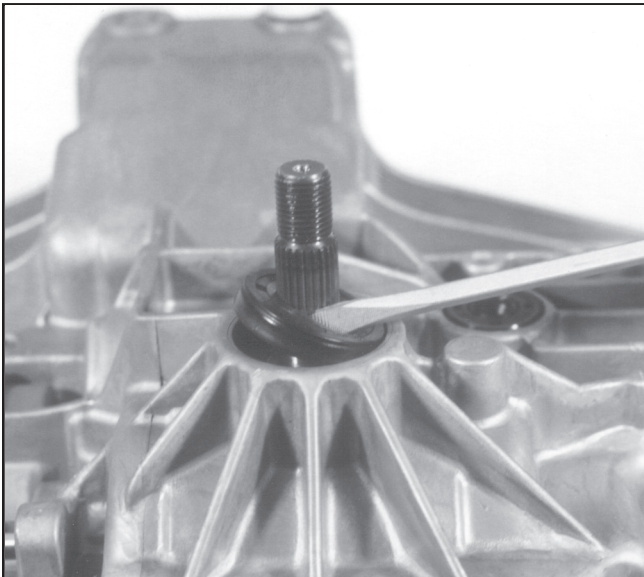
To remove the input shaft seal carefully pull the seal out of the housing bore with a "hook" type tool or a slide hammer type puller. Care must be taken to avoid damage to the housing bore or to the shaft sealing surface.

Lubricate the new seal prior to installation with a petroleum jelly.

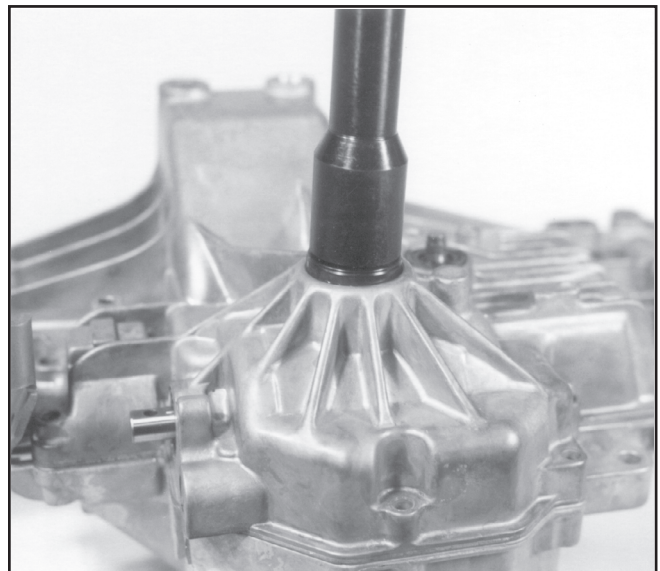
Wrap the shaft spline (keyway) with a thin plastic or cellophane tape to prevent damage to the new seal lip during installation.

Slide the seal over the shaft and press it into the housing bore. Be careful not to damage the seal. The seal should seat against the retaining ring.

The displacement control shaft seal and the bypass actuator shaft seal may be replaced following similar procedures.



Input Shaft Seal Removal

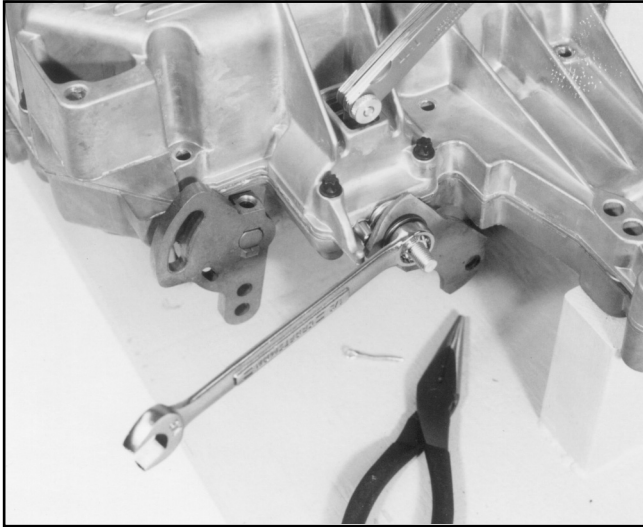


Input Shaft Seal Installation

Parking Brake

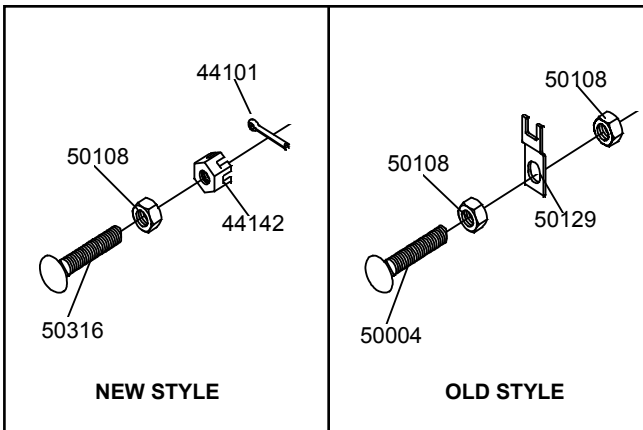
The brake was set at a specific running clearance, approximately 0.030" (.762 mm) between the discs to the Original Equipment Manufacturers specifications. Refer to the vehicle service manual for the correct clearance.

Place a feeler gage between the two outer discs, if the clearance is not correct make the necessary change with the brake retainer nut.



Brake Adjustment (Bottom View)

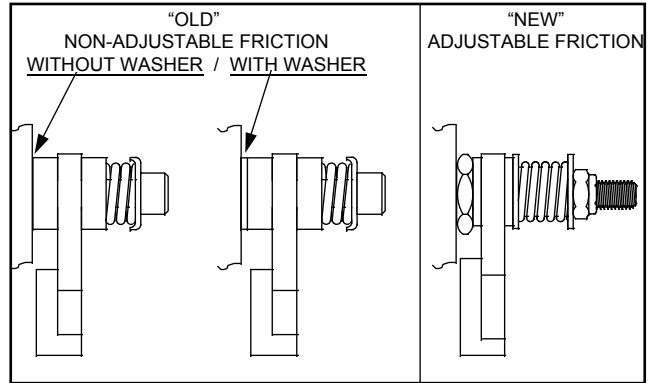
NOTE: Two versions of the brake retainer nuts have been used. Early production employed a "Nylock" type nut, while current production is using a castellated nut with a cotter pin for retainment.



Brake Retainer Nut Variations

Control Arm & Friction Pack

NOTE: The control arm and friction pack vary between models and is not used on some. The OEM have established individual specifications for the proper adjustments. Refer to vehicle service manual for the proper procedures.



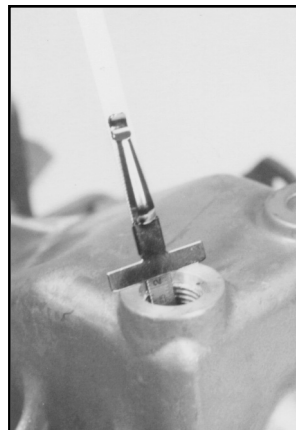
Friction Pack Variations

Oil Level

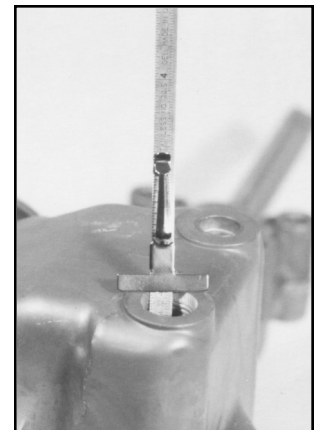
To check the oil level you must first remove the breather fitting from the housing.

NOTE: Make sure the surrounding area has been thoroughly cleaned prior to removal of the fitting to prevent the introduction of contamination into the oil.

The oil level should be between 1.25" and 2.0" (31.75 - 50.8 mm) from the top of the housing for the 310-0500, and between 1.00" and 1.75" (25.4 - 44.45 mm) from the top of the housing for the 310-0750.



310-0500



Oil Levels

310-0750

General Information

Major Repairs described in the following sections are for the complete disassembly and reassembly (Major Repair) of the IHT and will void all product warranty, unless license to perform said Major Repair was previously obtained from an Authorized Representative of Hydro-Gear®.

Cleanliness is a primary means of assuring satisfactory life on new or repaired units. Cleaning parts by using a solvent wash and air drying is usually adequate. As with any precision equipment, all parts must be kept free of foreign materials and chemicals.

Protect all exposed sealing surfaces and open cavities from damage and foreign material. The outer surfaces should be cleaned before beginning any repairs.

It is recommended that all seals be replaced. Lightly lubricate all seals with a clean petroleum jelly prior to assembly.

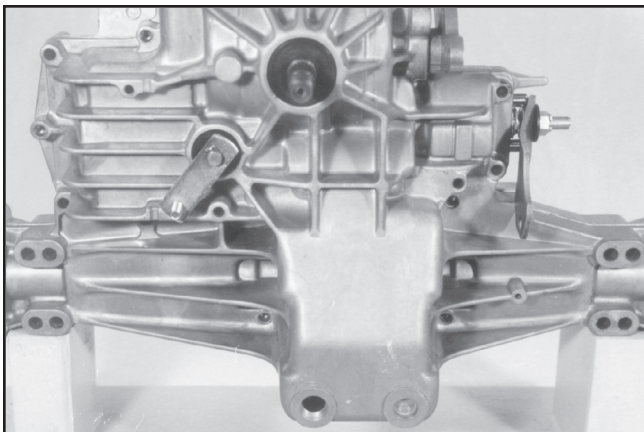
It is recommended that parts requiring replacement be replaced as a complete assembly (kit) as shown in the service parts drawings on pages 20 -23.

Prior to performing Major Repairs on the IHT, remove the transaxle from its installed location and remove any external components such as the brake arm, brake actuating pins, control arm (and friction pack if included), cooling fan and input pulley or frame mounting hardware.

NOTE: Thoroughly clean all exposed surfaces prior to any further disassembly.

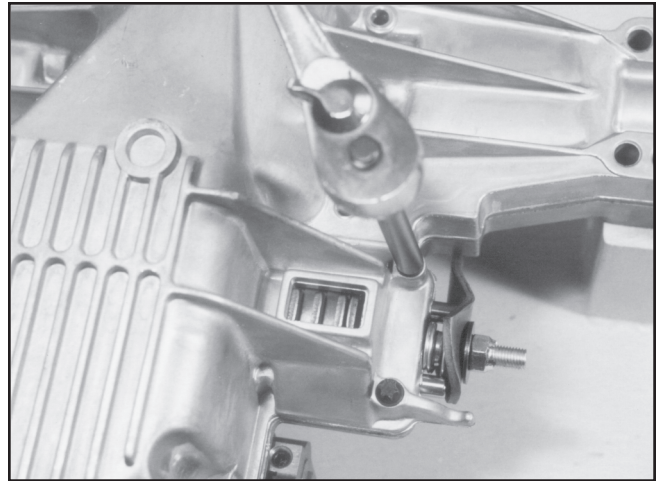
Disassembly Procedures

Drain the oil by removing the breather assembly and positioning the IHT so that the breather port is down to allow the oil to drain thoroughly.



Drain Oil From Breather Port

Position and secure the IHT with the upper housing down to allow access to the twenty housing assembly cap screws.

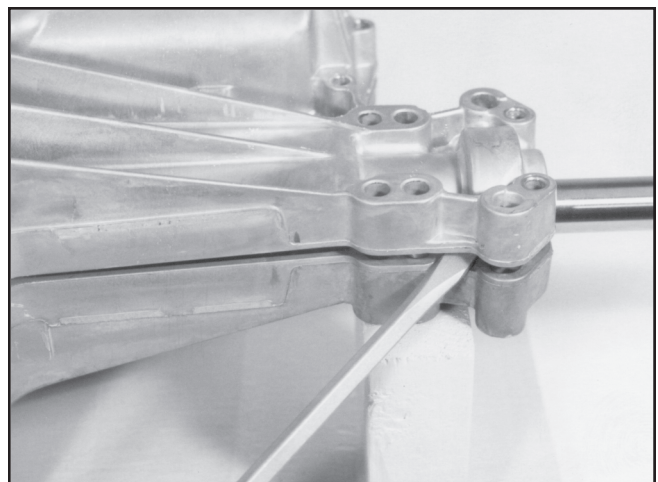


Remove Housing Assembly Bolts

Using the appropriate tool, remove the twenty assembly screws. **NOTE:** Prior to October 27, 1993 a 3/16" drive internal hex head cap screw was used, at that time a change was made to an "E-8" external drive "Torx" cap screw.

Loosen the nut on the brake arm mounting bolt.

Separate the two housing halves by applying pressure (as shown) with two large straight blade screw drivers. Use caution to prevent damage to the mating sealing surfaces as you separate the two halves. **NOTE:** The sealant will make the two halves difficult to separate.



Separate Housing Halves

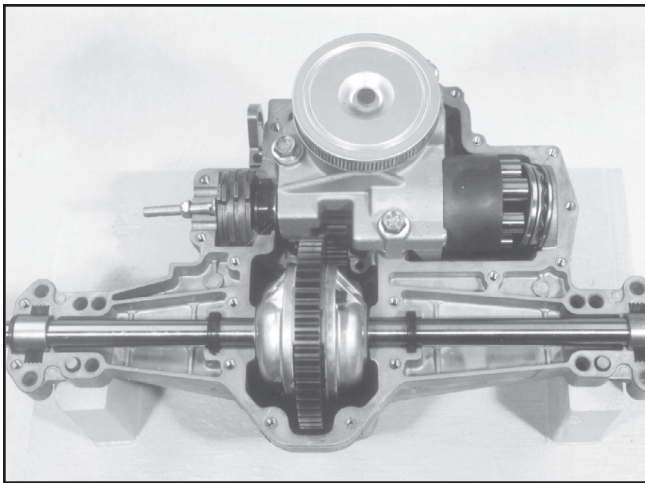
Disassembly Procedures

All components should remain in the upper housing (positioned down).

CAUTION: The axle/differential assembly may stick as the lower housing is being lifted off of the upper housing.

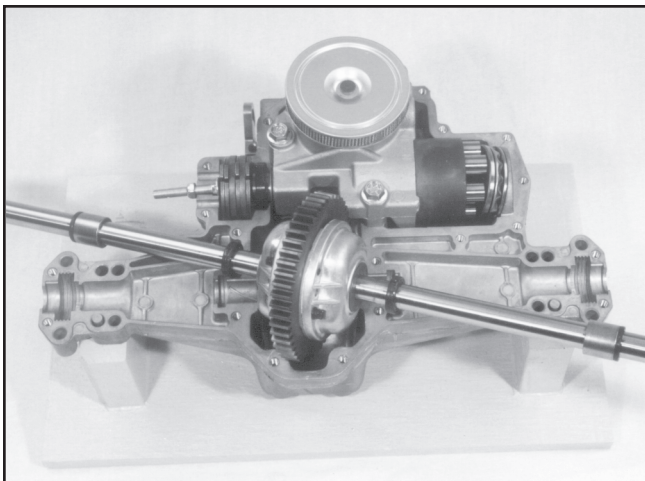
Inspect the lower housing for damage. Inspect the axle journal bearing pockets for excessive wear. Inspect the brake rotor/stator pocket for excessive wear.

NOTE: Prior to reassembly the lower housing must be thoroughly cleaned and old sealant must be removed.



310-0750 components in Upper Housing

Lift the axle/differential assembly out of the upper housing.
NOTE: It will be necessary to remove any burrs or rust from the axle ends prior to the removal of the two bronze bearings or damage to the bearings will occur. Remove the two bronze journal bearings, four lip seals and two flat washers from the axle ends.



Remove Axle / Differential Assembly

NOTE: The lip seals must not be re-used during reassembly.

Inspect the bronze bearings for excessive wear.

Inspect the axle ends for damage or excessive wear.

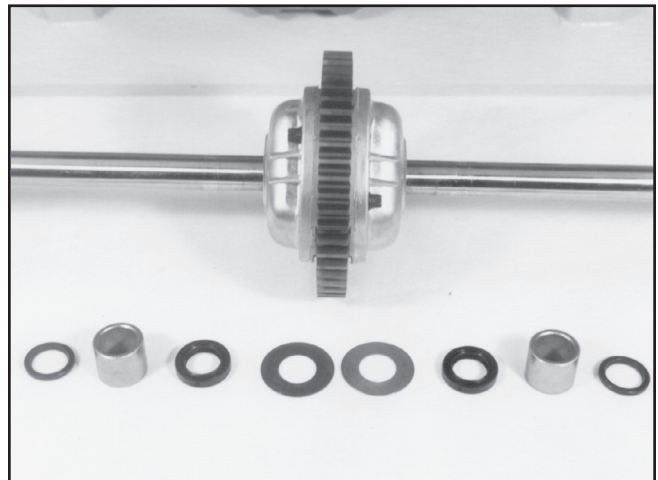
Inspect the differential bevel gears by rotating the axle ends.

Inspect the final drive gear teeth for excessive wear or damage.

Check the differential assembly screws for proper torque. For the 310-0500 they should be torqued to 15-26 ft.lbs. (20-35 Nm) while the 310-0750 should be torqued to 11-15 ft.lbs. (15-20 Nm).

Inspect the journal bearings inside the differential housing for excessive wear by feeling the shafts for an unreasonable amount of play.

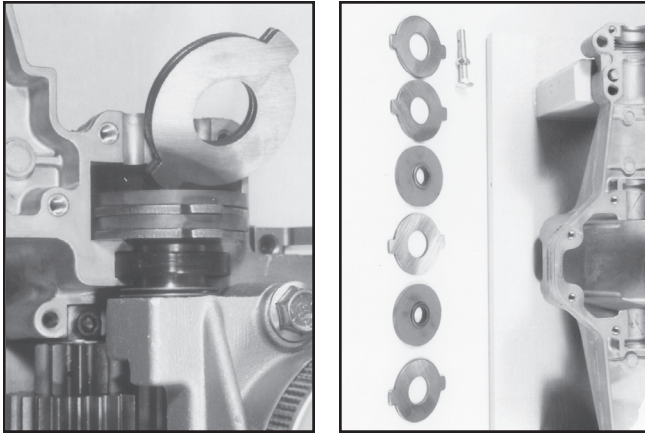
If excessive wear or damage has been found, the complete assembly must be replaced.



310-0750 Axle / Differential Components

Disassembly Procedures

Remove the brake rotors and stators by sliding one at a time off of the end of the splined motor shaft.



Removal and Inspection of Brake Rotors

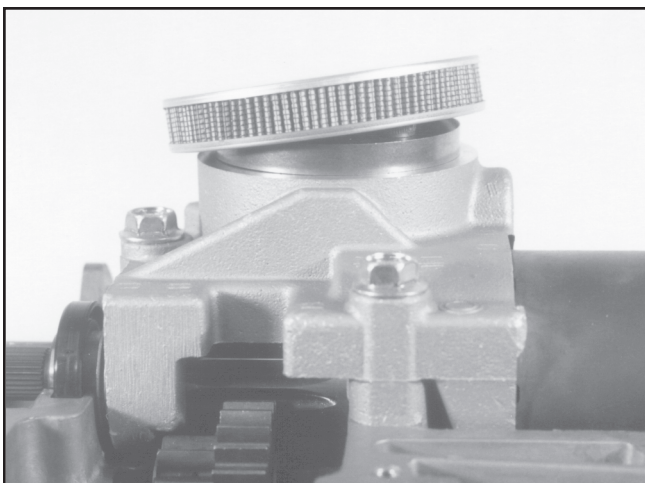
Inspect each side of both rotors for excessive wear or damage.

Inspect the rotors internal splines for excessive wear or damage.

Inspect the stators for excessive wear and damage.

Replace rotors and stators as a complete kit if excessive wear or damage is found, and inspect all other mating parts.

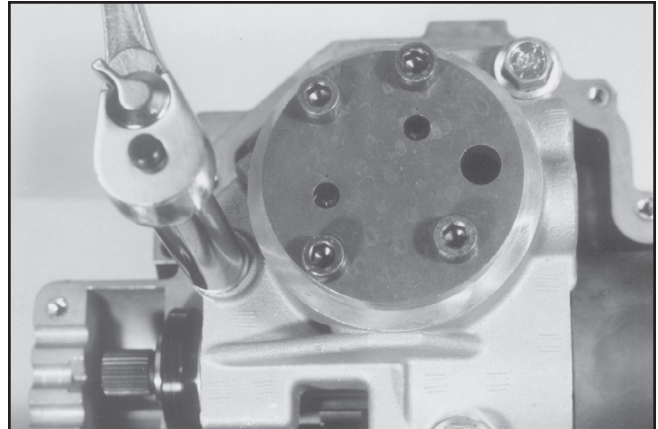
Remove the oil filter. After inspecting the filter for unusual particles that it may have trapped, dispose of it properly and replace it with a new oil filter during reassembly.



Remove Oil Filter

Using a 9/16" socket (or box end) wrench, remove the three assembly bolts retaining the center section in the upper housing.

CAUTION: The pump and motor piston springs may push the center section assembly out of position while you remove these bolts.



Remove Center Section Assembly

Remove the center section assembly from the housing. The pump block assembly should remain in the upper housing on the input shaft, but may stick to the center section. Check the check valve plate bolt torque, but do not remove. Two styles of check plates have been used, one has three bolts while the other has four. The one with four bolts should be torqued from 170 to 240 in.lbs. (19.2-27 Nm) while the one with three bolts should be torqued from 135 to 185 in. lbs. (15.25-21 Nm).

CAUTION: The aligning pins, motor shaft, bypass plate, pump block and motor block assemblies are NOT retained to the center section or the upper housing and may become separated from the assembly during removal.



Center Section / Motor Shaft

Disassembly Procedures

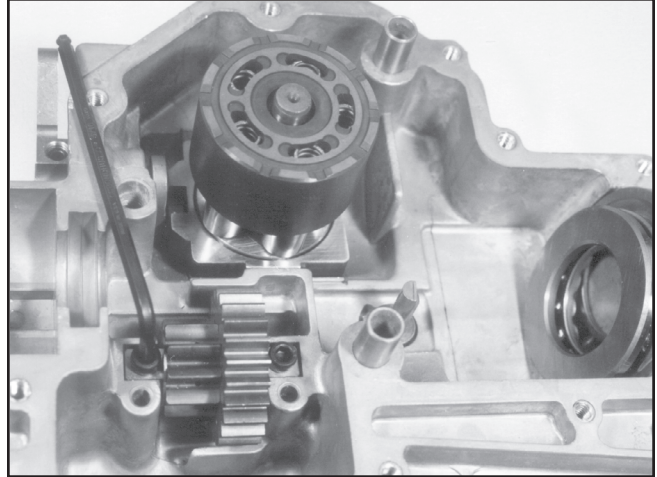
Remove the motor block assembly from the motor shaft and inspect for unusual wear or damage. The pistons should fit with very little side clearance in the block bores, but must slide freely.

Remove the motor shaft, washers and bypass plate from the center section and inspect for unusual wear or damage.

Inspect the center section running surfaces for unusual wear or damage.

Remove the pump block assembly, block thrust washer and spring from the input shaft and inspect for unusual wear or damage. The pistons should fit with very little side clearance in the block bores, but must slide freely.

For 310-0750 Models Only: Remove the two internal hex head cap screws retaining the jack shaft to the housing with a 5mm hex wrench and remove the jack shaft / pinion gear assembly from the housing.



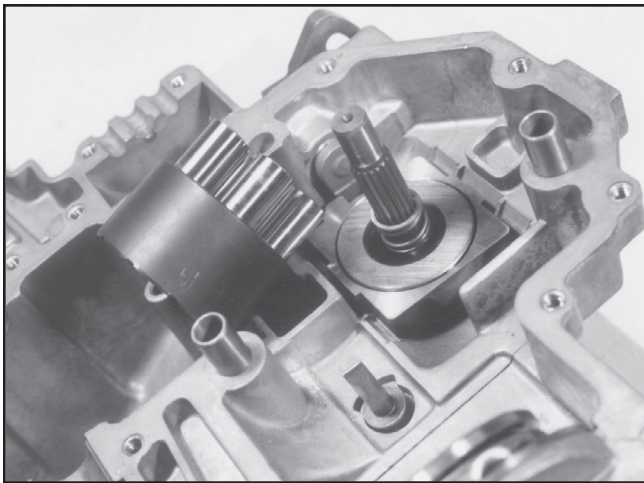
Remove Jack Shaft / Pinion Gear Assembly

Inspect the jack shaft running surface for excessive wear or damage.

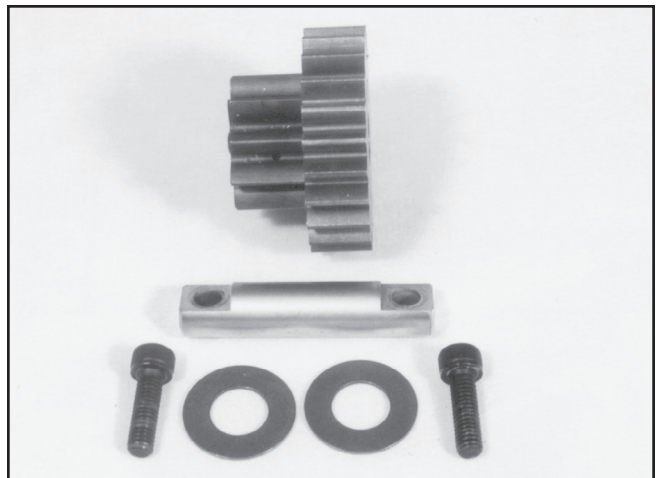
Inspect the pinion gear bore for excessive wear or damage.

Inspect the pinion gear teeth for excessive wear or damage.

If excessive wear or damage was found, the complete assembly should be replaced.



Remove Pump Block Assembly



Jack Shaft / Pinion Gear Components

Disassembly Procedures

Remove the motor thrust bearing assembly, swashplate kit and cradle bearings from the housing and inspect for unusual wear or damage.

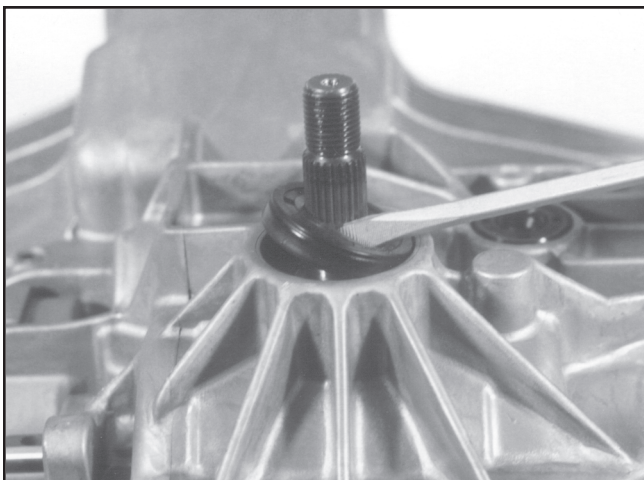


Swashplate Kit and Thrust Bearing Assembly

Remove the slot guide block from the displacement control shaft.

Remove the bypass actuator from the housing.

Reposition the housing and remove the input shaft lip seal from the housing bore. A hook type tool may be used to pry the seal out. Care must be taken to avoid damage to the housing bore, shaft sealing surface or bearing. Once removed, the seal is not be reusable.

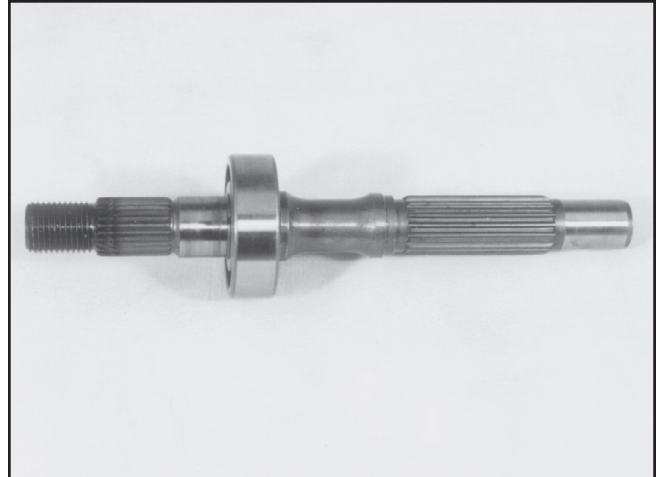


Remove Input Shaft Lip Seal

Remove the input shaft bearing retaining ring.

Remove the pump input shaft assembly from the housing.

Inspect the shaft and bearing for unusual wear or damage.



Pump Input Shaft Assembly

Reposition housing and remove the displacement control shaft and lip seal.

Inspect the housing for damage.

Reconditioning and Replacement of Parts

All parts should be thoroughly cleaned in a suitable solvent. All sealant material **MUST** be removed from the housing halves prior to reassembly

Inspect all parts for damage, nicks or unusual wear patterns. Replace all parts having unusual, excessive wear or discoloration.

Inspect the sealing surfaces, bearing surfaces, and shaft splines. Polish the sealing areas on the shafts if necessary. Replace any worn or damaged parts.

The running surfaces of the cylinder blocks **MUST** be flat and free from scratches. If scratches or wear are found on the running surface of the cylinder block or center section, replace the parts.

Clean and lightly oil parts prior to assembly of the IHT.

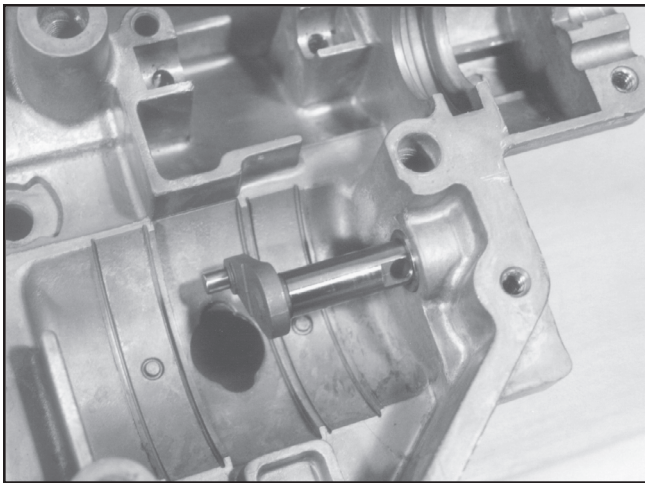
Assembly Procedures

Be sure to torque all threaded parts to the recommended torque levels.

Replace all o-rings and shaft seals.

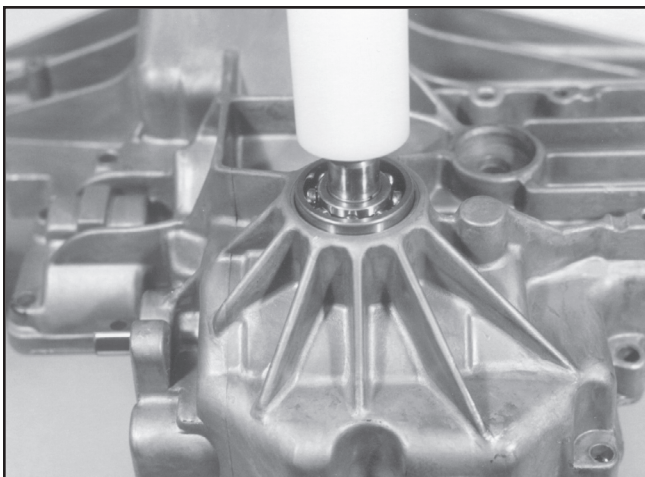
CAUTION: Most parts have critical high tolerance surfaces. Care must be exercised to prevent damage to these surfaces during assembly. Protect exposed surfaces, openings and ports from damage or foreign material.

Install the displacement control shaft.



Install Displacement Control Shaft

Install the pump input shaft assembly and retaining ring into the housing.



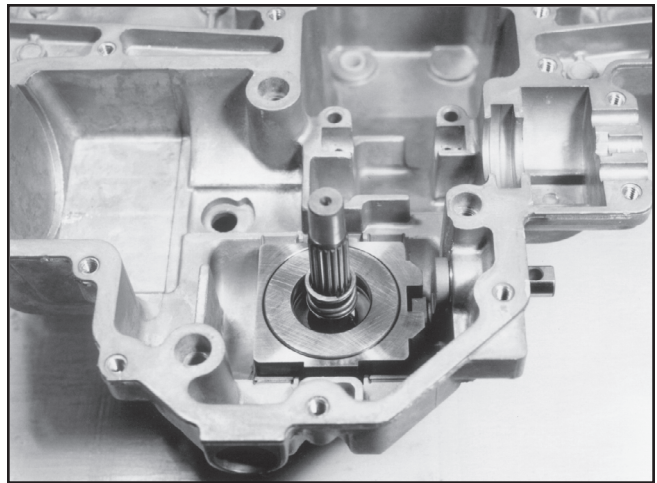
Install Pump Shaft Assembly

Install the pump shaft lip seal.

Reposition the upper housing and install the cradle bearings.

Install the slot guide block onto the displacement control shaft.

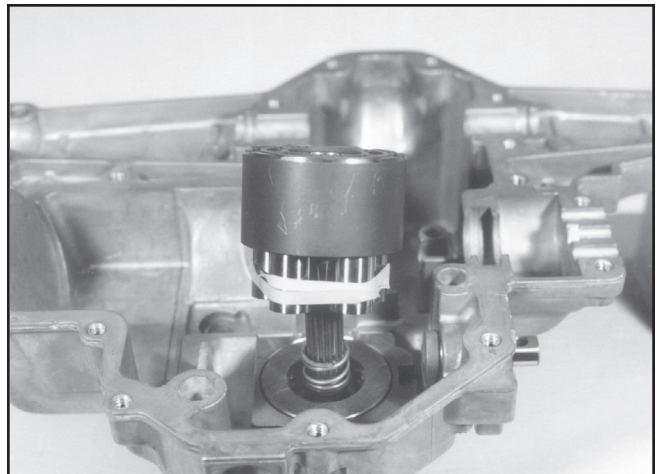
Install the swashplate assembly into the housing. The slot on the swashplate must engage the slot guide block on the displacement control shaft. Use a tool such as a screwdriver to hold the guide block in position while installing the swashplate.



Swashplate Installation

Install the thrust washer and pump block spring onto the pump shaft.

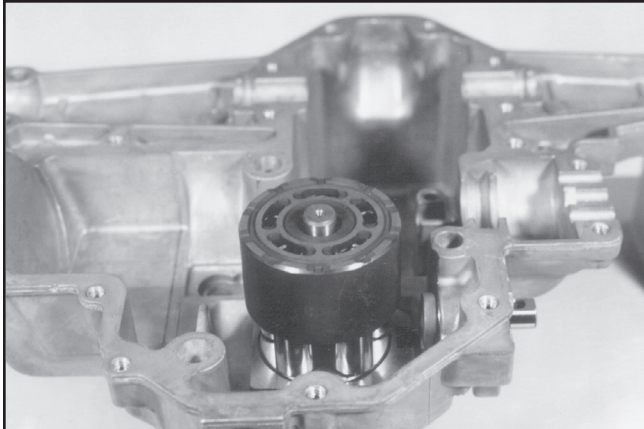
NOTE: To simplify the installation of the pump block, wrap a rubber band snugly around the pistons. This is intended to hold the pistons in their bores as the block kit is handled during installation.



Cylinder Block Kit with Rubber Band

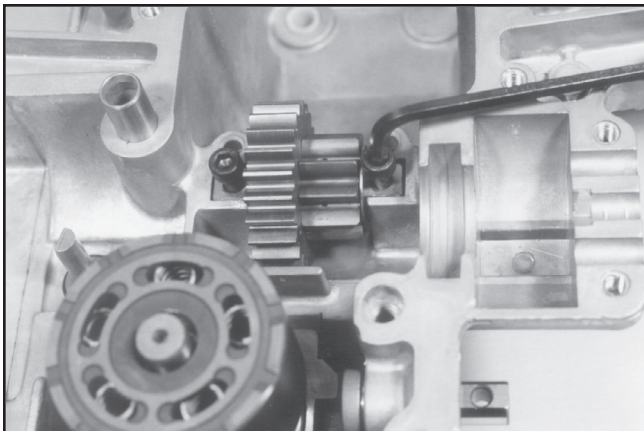
Assembly Procedures

With the swashplate in the neutral (0 angle) position, lubricate the running surfaces and install the block kit onto the pump input shaft. Make sure the splines engage properly.



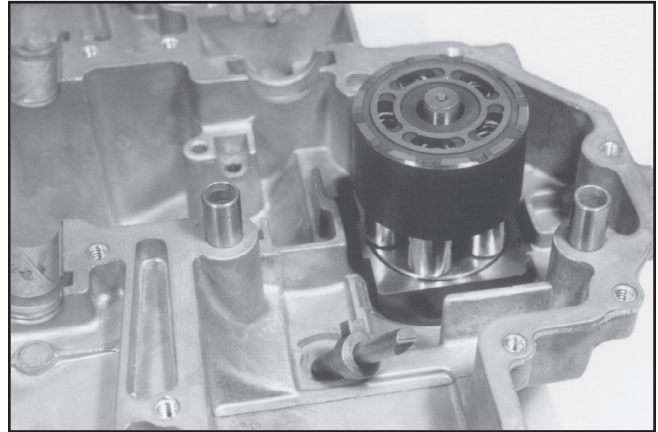
Install Pump Block Kit

For 310-0750 Models Only: Install the pinion gear and washers onto the jackshaft. Install the jackshaft assembly into the housing and torque the bolts from 120 in.lbs. to 170 in.lbs. (13.5-19.2 Nm).



310-0750 Jackshaft Assembly Installation

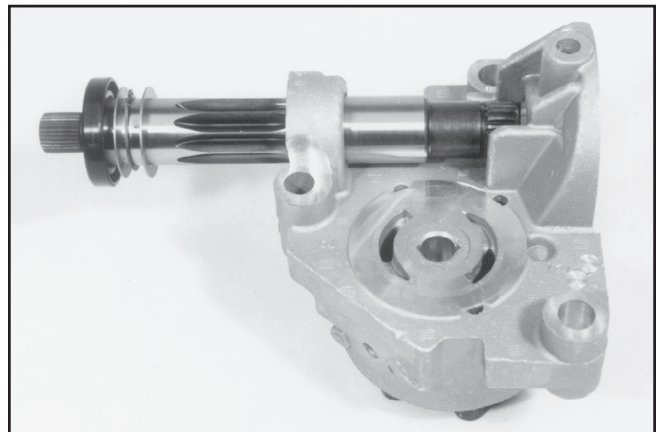
Install the aligning pins and the bypass actuator into the housing.



Install Aligning Pins and Bypass Actuator

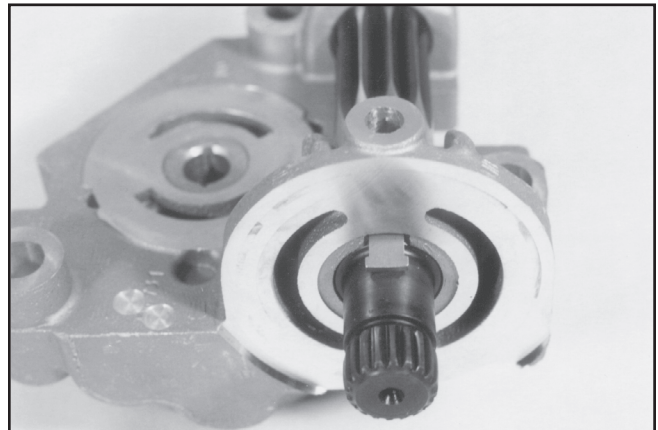
Install the washers and a new lip seal onto the motor shaft.

Install the motor shaft into the center section.



Install Motor Shaft

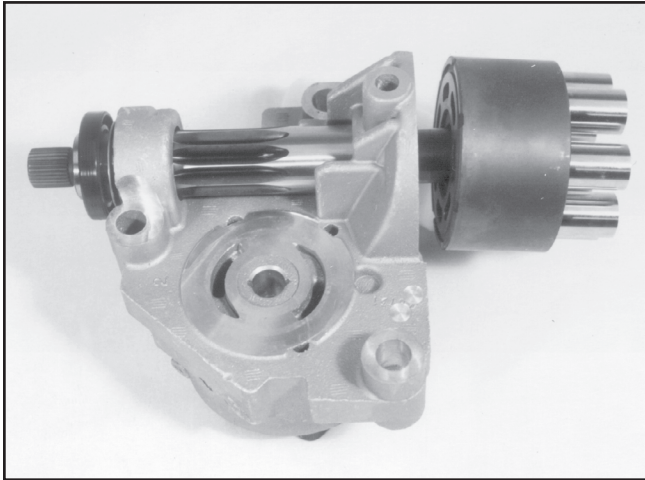
Install the bypass plate (small end first) into the center section.



Install Bypass Plate

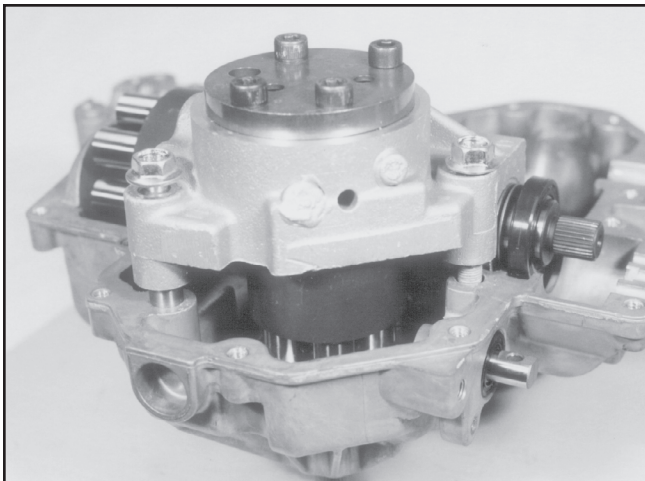
Assembly Procedures

Lubricate the running faces and install the motor block kit onto the motor shaft.



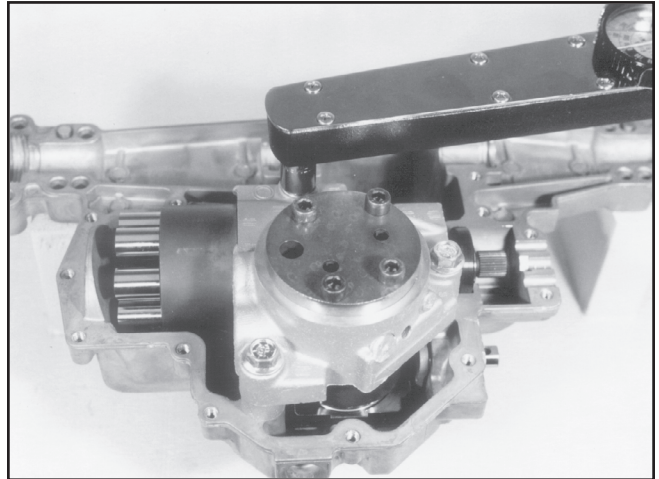
Install Motor Block Kit

Position the washers and seal and install the center section assembly onto the aligning pins and pump input shaft.



Position Center Section Assembly

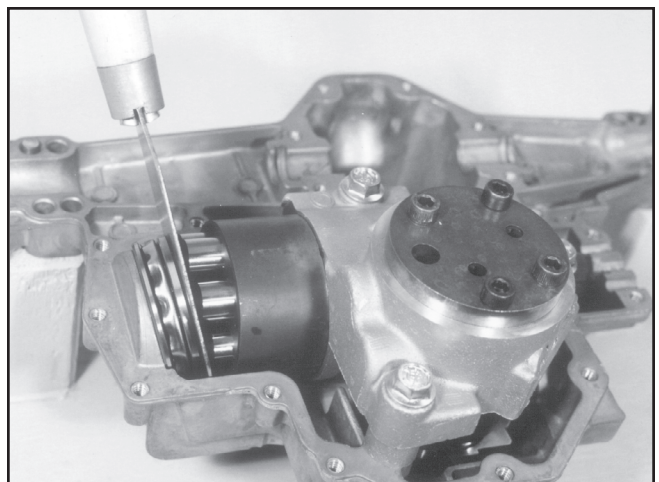
Insert the three assembly bolts into the center section and press center section down onto the aligning pins and pump input shaft until seated on mounting bosses. While holding the center section in position, torque the bolts evenly from 525 in.lbs. to 700 in.lbs. (59-79 Nm).



Install Center Section Assembly

Install the motor thrust bearing (with the thicker race towards the pistons) by compressing the piston springs and sliding the bearing assembly in to place.

NOTE: The tool being shown is an example of what you will need to compress the pistons and allow the bearing to be installed.



Install Motor Thrust Bearing

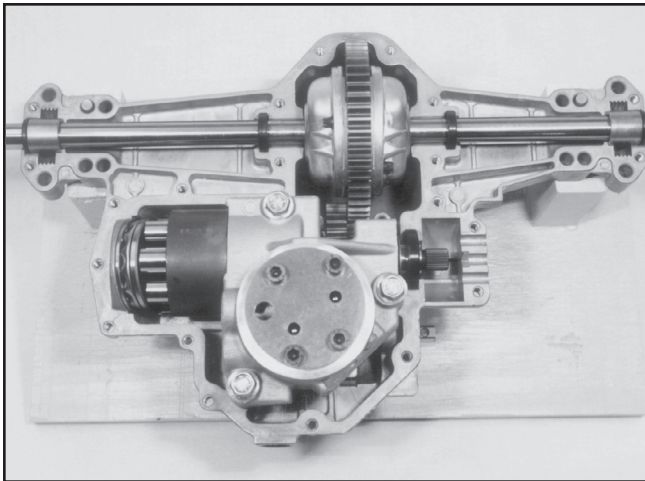
Assembly Procedures

Fill the axle pockets of the upper housing with Exxon Polyrex EP2 grease (inside of bearing location). **NOTE:** This grease is not compatible with all grease types.

Do not overfill, and wipe off any excess grease or sealant will not cure properly.

Install the washers and seals onto the differential / axle assembly and align them for installation.

Install the differential / axle assembly into the housing.

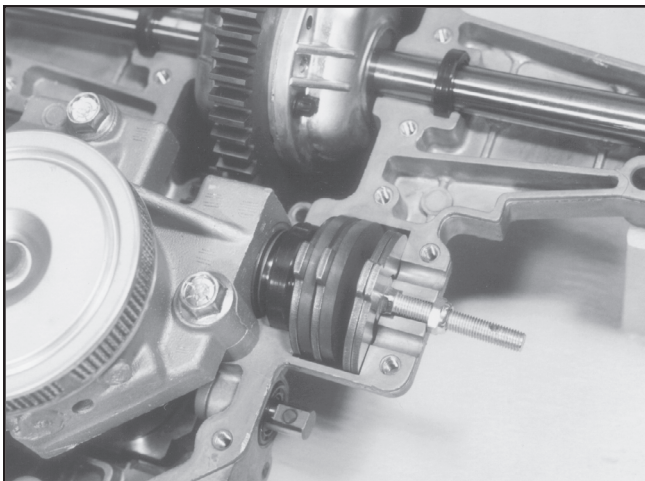


Install Differential / Axle Assembly

Install a new filter onto the center section / check valve plate.

Install the rotors and stators. Install a stator, then a rotor (hub to inside), then a stator, then a rotor (hub to inside), then two stators.

Install the brake bolt (with nut) into the upper housing.

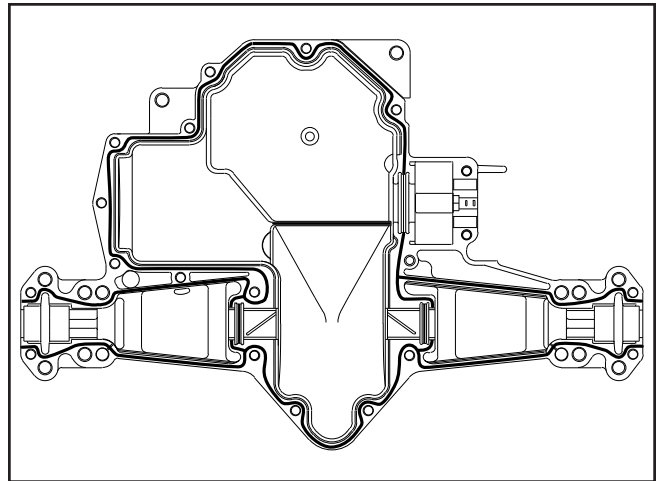


Install Brake Components

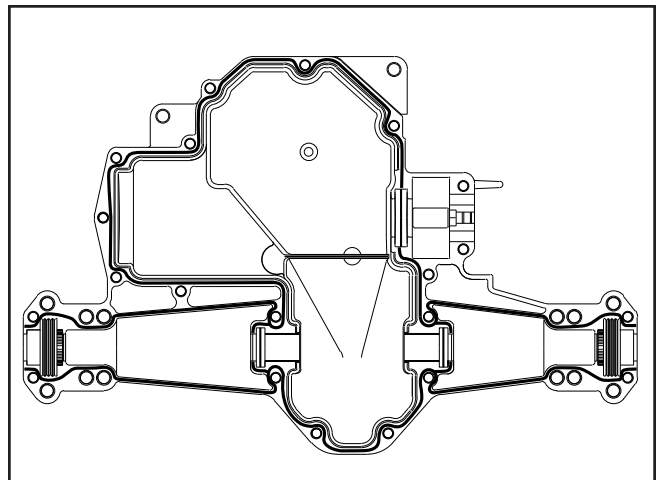
Fixture the lower housing and apply a thin bead of sealant as shown in the following two examples.

NOTE: The drawings below may not appear the same as the factory sealant application, but are the recommended patterns. Apply sparingly.

NOTE: Sealant must be of good quality, oil and heat resistant.



310-0500 Sealant Application

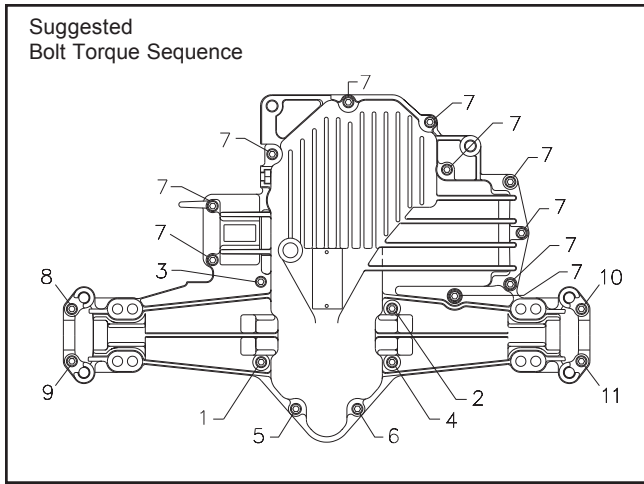


310-0750 Sealant Application

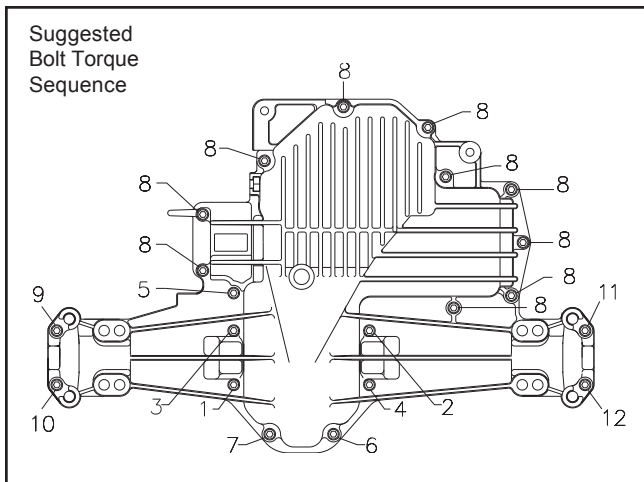
Assembly Procedures

Position the lower housing onto the upper housing and secure with assembly bolts. Torque the bolts from 135 in.lbs. to 185 in.lbs. (15.25-21 Nm) following the patterns illustrated below.

NOTE: The group of bolts around the front of the housings have the same sequence number because they are installed simultaneously at our factory, the order in which you torque them should not be important.



310-0500 Bolt Torque Sequence

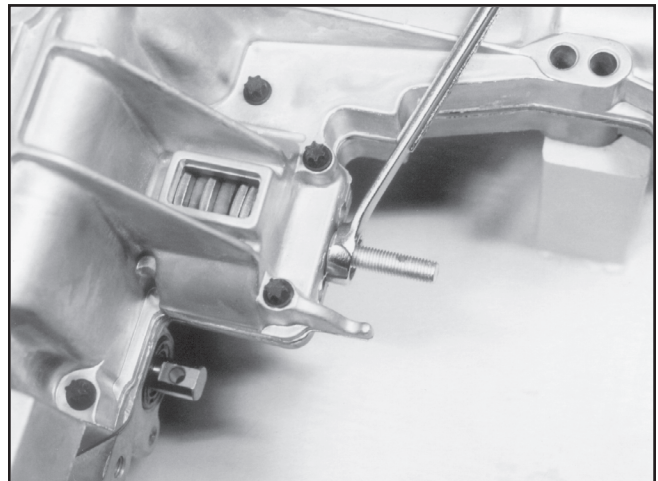


310-0750 Bolt Torque Sequence

After torquing all bolts, wipe off any excess sealant from the seam of the housings.

Reposition the transaxle assembly and check the bypass actuator and axle shafts for freedom of movement. The axle shafts should not lock up but may be tight, while the bypass actuator must rotate freely.

Torque the nut on the brake bolt from 120 to 185 in. lbs. (15.5-21 Nm).



Tighten Brake Bolt Nut

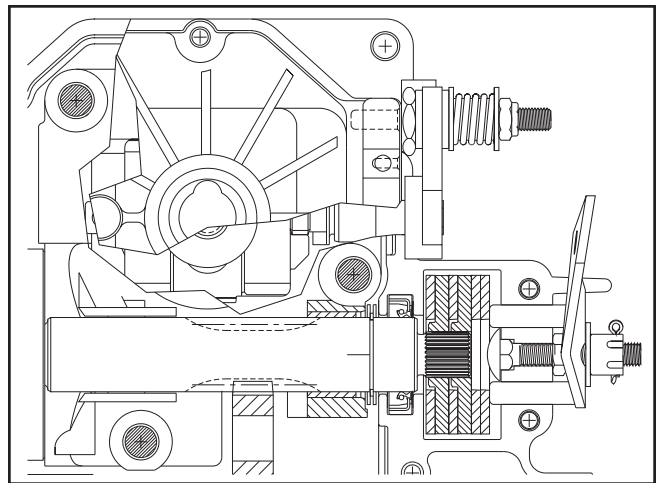
Install a new lip seal on the displacement control shaft & bypass actuator as described in the Minor Repairs Section.

Install the brake pins and brake arm.

Install the washer and adjustment nut.

Adjust the brake clearance as described in the Minor Repairs Section.

Refer to the Minor Repairs Section before installing the control arm and friction pack.

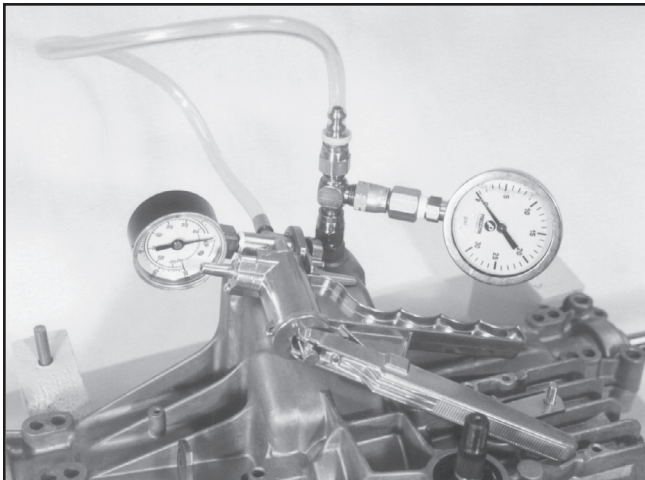


Brake and Control Arm Components

Install the bypass actuator arm and retaining ring. Use care to avoid over extending the retaining ring.

Assembly Procedures

Prior to adding oil to the IHT it is recommended that you test for leaks. This may be performed with a small hand pump or by using compressed air and a regulator. Do not allow more than 10 PSI (.69 bar) to be applied or seal damage may occur. To locate a leak, apply a soap mixture around the housing seam and at all lip seals. Do not submerge unit or the brake will be damaged.



Test for Leaks

Oil Fill & Start-Up Procedures

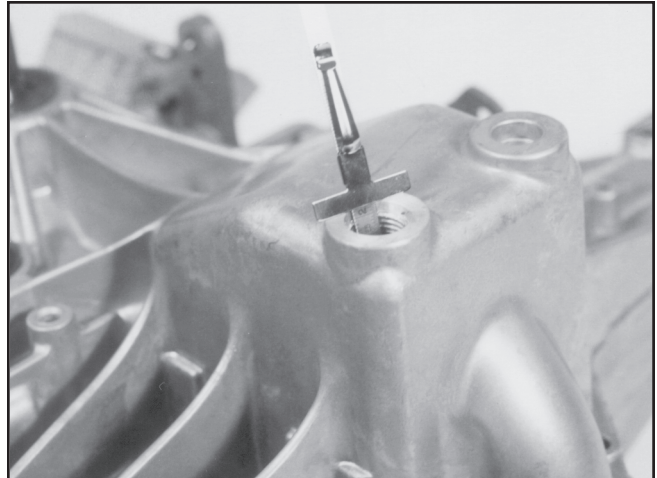
Fill the IHT with a 20W-50 engine oil. The correct volume for fill should be 2 1/2 quarts (80 ounces) (2.37L) for both the 310-0500 and the 310-0750.

It is recommended that the unit be purged prior to installing into the vehicle frame. The following is the suggested purging procedures for repaired transaxles.

- 1 Spin the input shaft in a clockwise direction at 1000 - 1500 RPM. This may be performed in a drill press (or equivalent).
- 2 Engage (actuate) the bypass.
- 3 Stroke the control lever forward for five seconds and then reverse for five seconds. Do this three times in each direction.
- 4 Return the control lever to neutral.
- 5 Disengage the bypass.
- 6 Stroke the control lever forward for five seconds and then reverse for five seconds. Do this three times in each direction.

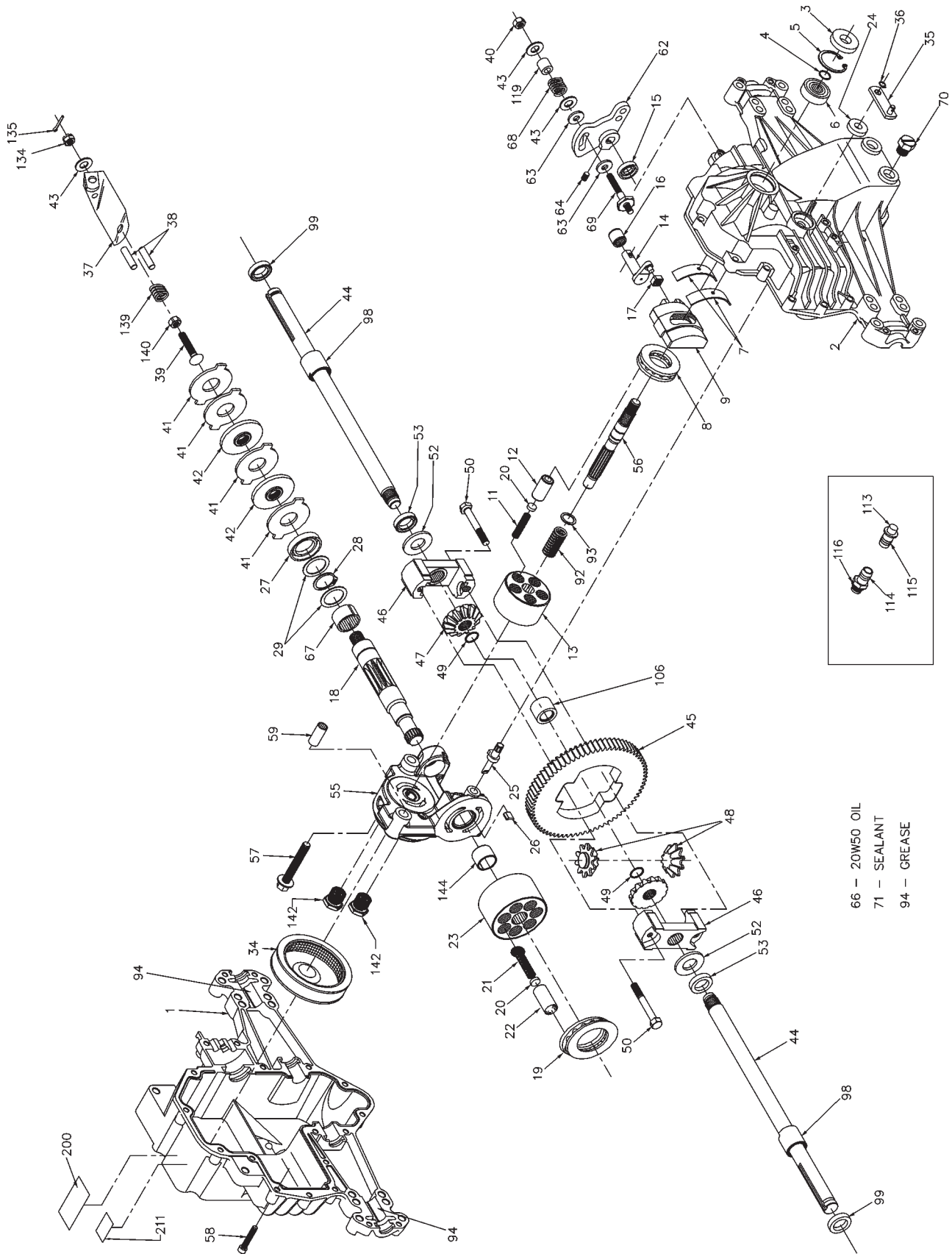
NOTE: It may be necessary to repeat these steps in the vehicle to fully purge the IHT.

Check the oil level after fully purging the unit of air. It should be between 1.25" and 2.0" (31.75 - 50.8 mm) from the top of the housing for the 310-0500, and between 1.00" and 1.75" (25.4 - 44.45 mm) from the top of the housing for the 310-0750.



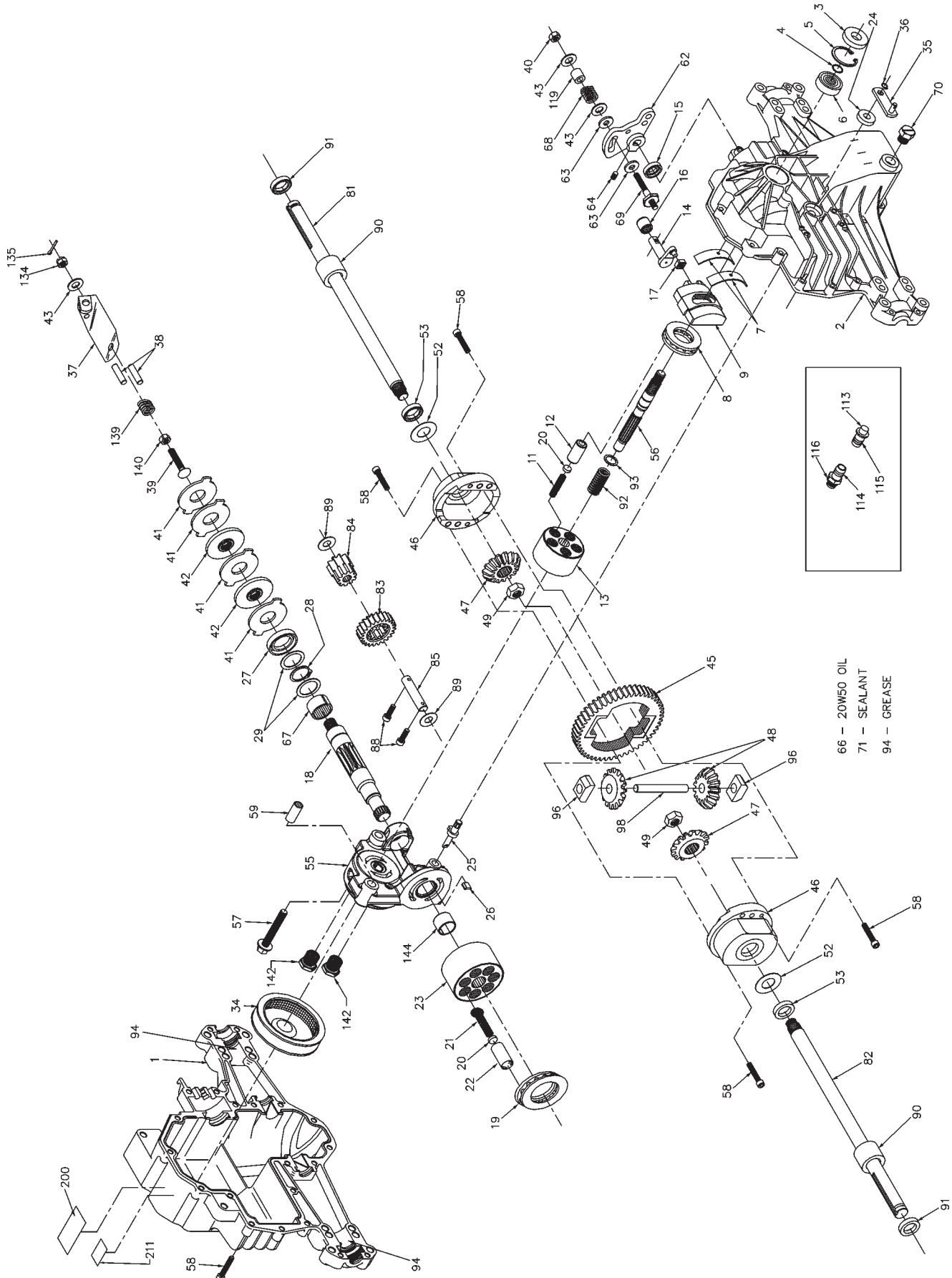
310-0500 Oil Level

After installing the IHT, make sure all linkages and actuators are functioning properly. Refer to the Troubleshooting Section.



310-0500 Parts Drawing & Parts List 310-0500/0800 IHT

| NO. | DESCRIPTION | NO. | DESCRIPTION | NO. | DESCRIPTION |
|-----|-----------------------------|-----|-----------------------------------|-----|----------------------|
| 1 | LOWER HOUSING | 29 | WASHER | 63 | DAMPENER PUCK |
| 2 | UPPER HOUSING | 34 | OIL FILTER ELEMENT | 64 | SET SCREW |
| 3 | SEAL-LIP | 35 | BYPASS ARM | 67 | DU BEARING |
| 4 | WIRE RETAINING RING | 36 | RETAINING RING | 68 | SPRING |
| 5 | RETAINING RING | 37 | BRAKE ARM | 69 | STUD - 5/16-24 |
| 6 | SHAFT BALL BEARING | 38 | ACTUATING PIN | 70 | PLASTIC PLUG |
| 7 | CRADLE BEARING | 39 | BOLT 5/16-24 x 1-3/4 | 72 | CUP WASHER |
| 8 | THRUST BEARING 30 x 52 x 13 | 40 | HEX LOCK NUT 5/16-24 | 92 | BLOCK SPRING |
| 9 | VARIABLE SWASHPLATE | 41 | BRAKE STRATOR | 93 | BLOCK THRUST WASHER |
| 11 | PISTON SPRING | 42 | BRAKE ROTOR | 94 | SET SCREW |
| 13 | CYLINDER BLOCK | 43 | WASHER - 1/16 x 7/8 x .060 | 98 | SLEEVE BEARING |
| 14 | TRUNNION ARM | 44 | SHAFT-AXLE | 99 | LIP SEAL |
| 15 | LIP SEAL | 45 | GEAR-DIFF. 72T | 106 | SPACER - DIFF. |
| 16 | TRUNNION JOURNAL BEARING | 46 | HOUSING-DIFF | 113 | POPPET VALVE CAP |
| 17 | SLOT GUIDE | 47 | GEAR-BEVEL 14T | 114 | PLASTIC HOSE FITTING |
| 18 | MOTOR SHAFT | 48 | GEAR-PLANET 10T | 115 | PLASTIC VENT |
| 19 | THRUST BEARING 42 x 68 x 16 | 49 | RING-RETAINING | 116 | O-RING |
| 20 | PISTON SPRING WASHER | 50 | BOLT-DIFF LOCKING 1/16-24 x 2-1/4 | 119 | SPACER |
| 21 | PISTON SPRING | 52 | WASHER - 3/4 x 1.5 x .13 | 134 | SLOTTED NUT |
| 22 | PISTON | 53 | SEAL - .75 x 1.25 x .250 | 135 | COTTER PIN |
| 23 | CYLINDER BLOCK | 54 | O RING - .103 x 2.987 ID | 139 | COMPRESSION SPRING |
| 24 | LIP SEAL | 56 | INPUT SHAFT | 140 | HEX NUT |
| 25 | BYPASS ACTUATOR | 57 | BOLT - 3/8-24 x 2.5 | 142 | CHECK PLUG ASSEMBLY |
| 26 | BYPASS PLATE | 58 | BOLT - 1/4-20 x 1.38 | 144 | BUSHING |
| 27 | LIP SEAL | 59 | PIN - .5 OD x .43 ID x .750 | 200 | LABEL |
| 28 | RETAINING RING | 62 | CONTROL ARM | 211 | LABEL |



310-0750 Parts Drawing & Parts List 310-0500/0800 IHT

| NO. | DESCRIPTION | NO. | DESCRIPTION | NO. | DESCRIPTION |
|-----|-----------------------------|-----|----------------------------|-----|----------------------|
| 1 | LOWER HOUSING | 34 | OIL FILTER ELEMENT | 69 | STUD |
| 2 | UPPER HOUSING | 35 | BYPASS ARM | 70 | PLASTIC PLUG |
| 3 | LIP SEAL | 36 | RETAINING RING | 81 | AXLE SHAFT, RH |
| 4 | WIRE RETAINING RING | 37 | BRAKE ARM | 82 | AXLE SHAFT, LH |
| 5 | RETAINING RING | 38 | ACTUATING PIN | 83 | GEAR 23T |
| 6 | SHAFT BALL BEARING | 39 | BOLT 5/16-24 x 1 3/4 | 84 | PINION 10T |
| 7 | CRADLE BEARING | 40 | HEX LOCK NUT 5/16-24 | 85 | JACK SHAFT |
| 8 | THRUST BEARING 30 x 52 x 13 | 41 | BRAKE STATOR | 88 | CAPSCREW |
| 9 | VARIABLE SWASHPLATE | 42 | BRAKE ROTOR | 89 | WASHER |
| 11 | PISTON SPRING | 43 | WASHER - 7/16 x 7/8 x .060 | 90 | SLEEVE BEARING |
| 12 | PISTON | 44 | DIFFERENTIAL ASSEMBLY | 91 | WIPER SEAL |
| 13 | CYLINDER BLOCK | 45 | DIFFERENTIAL GEAR 50T | 92 | BLOCK SPRING |
| 14 | TRUNNION ARM | 46 | DIFFERENTIAL COVER | 93 | BLOCK THRUST WASHER |
| 15 | LIP SEAL | 47 | BEVEL GEAR 15T | 96 | BLOCK BEARING |
| 16 | TRUNNION JOURNAL BEARING | 48 | PLANET GEAR 15T | 98 | SHAFT |
| 17 | SLOT GUIDE | 49 | JAM NUT | 113 | BREATHER |
| 18 | MOTOR SHAFT | 52 | WASHER 3/4 x 1.5 x .13 | 114 | PLASTIC HOSE FITTING |
| 19 | THRUST BEARING 42x68x16 | 53 | SEAL-.75 x 1.25 x .250 | 115 | PLASTIC VENT |
| 20 | PISTON SPRING WASHER | 55 | CENTER SECTION | 116 | O-RING |
| 21 | PISTON SPRING | 56 | INPUT SHAFT | 119 | SPACER |
| 22 | PISTON | 57 | BOLT 3/8-24 x 2.5 | 134 | SLOTTED NUT |
| 23 | CYLINDER BLOCK | 58 | BOLT 1/4-20 x 1.38 | 135 | COTTER PIN |
| 24 | LIP SEAL | 59 | PIN | 139 | COMPRESSION SPRING |
| 25 | BYPASS ACTUATOR | 62 | CONTROL ARM | 140 | HEX NUT |
| 26 | BYPASS PLATE | 63 | DAMPENER PUCK | 142 | CHECK PLUG ASSEMBLY |
| 27 | LIP SEAL | 64 | SET SCREW | 144 | BUSHING |
| 28 | RETAINING RING | 67 | DU BEARING | 200 | LABEL |
| 29 | WASHER | 68 | SPRING | 211 | LABEL |



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