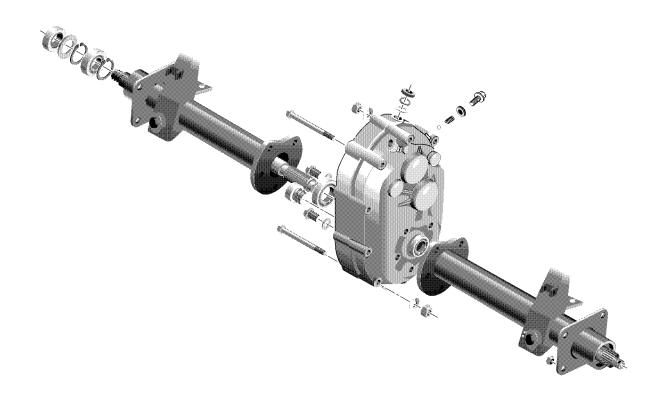


## SHOP REBUILD AND SERVICE PARTS MANUAL



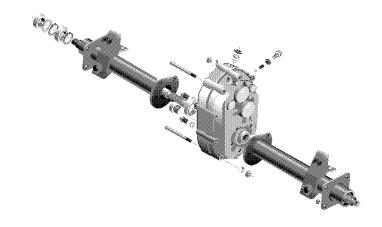
### **FOUR CYCLE TRANSAXLE**

STARTING MODEL YEAR: 1992

**REVISED: 06/15/00** 

# SHOP REBUILD AND SERVICE PARTS MANUAL

### **4-CYCLE TRANSAXLE**



E-Z-GO Division of Textron reserves the right to make design changes without obligation to make these changes on units previously sold and the information contained in this manual is subject to change without notice.

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E-Z-GO DIVISION OF TEXTRON, INC., P.O.BOX 388, AUGUSTA, GEORGIA USA 30903-0388



### **NOTES**



### INTRODUCTION

Read all of each section before attempting any procedure. Pay particular attention to all Notes, Cautions and Warnings

#### **HOW TO USE THIS MANUAL**

This manual is designed to suit the needs of mechanics at all levels of experience with the E-Z-GO 4-cycle transaxle. The outline format will allow the mechanic to choose the level of instructional detail needed to completely disassemble, diagnose, repair/overhaul and reassemble the transaxle.

The manual is divided into four major operational sections, which are each divided into smaller operational sections. At the beginning of each major section is a list of tools that will be required to perform the operations desired in that section. Do not use non-specified tools (vise grips<sup>®</sup>, hammers, adjustable wrenches etc.). The use of these tools could cause permanent damage to the transaxle components.

The objective of this manual is to provide instructions for the disassembly and reassembly of the transaxle after it has been removed intact from the vehicle. Although we strongly recommend that the entire transaxle be removed from the vehicle before attempting to disassemble or repair any part of it, there are several operations covered that may be completed, on only one side of the transaxle at a time, without removing the entire transaxle:

- 1. Remove and inspect/replace one axle shaft and/or axle shaft bearing.
- 2. Remove and inspect one axle tube.
- 3. Inspect/replace one axle oil seal in the transaxle casing.
- 4. Remove and inspect/replace the input shaft, shifter shaft, and governor shaft oil seals.

We strongly recommend that no matter what your experience level, you use this manual as a guide when disassembling, repairing/overhauling and reassembling the transaxle. Before working on the transaxle, read and understand the text and in particular each NOTE, CAU-TION and WARNING.

Some illustrations may show components that differ from your transaxle. This is the result of ongoing improvements to the transaxle design.

### NOTES, CAUTIONS AND WARNINGS

Throughout this manual, the following NOTES, CAU-TIONS and WARNINGS are used. For the protection of all personnel and the vehicle, be aware of and observe the following:



NOTE A NOTE indicates a condition that should be observed.

surrounding facilities.

A CAUTION indicates a condition that may result in damage to the vehicle or



A WARNING indicates a hazardous condition which could result in

serious injury or death.

### IMPORTANT SAFETY WARNINGS

In any product, components will eventually fail to perform properly as the result of normal use, age, wear or abuse.

It is virtually impossible to anticipate all possible component failures or the manner in which each component may fail.

Be aware that a vehicle requiring repair indicates that the vehicle is no longer functioning as designed and therefore should be considered potentially hazardous. Use extreme care when working on any vehicle. When diagnosing, removing or replacing any components that are not operating correctly, take the time to consider the safety of yourself and others around you if the component should move unexpectedly.

Some components are heavy, spring loaded, highly corrosive, explosive or may produce high amperage or reach high temperatures. Gasoline, carbon monoxide, battery acid and hydrogen gas could result in serious bodily injury to the technician/mechanic and bystanders if not treated with utmost caution. Be careful not to place hands, face, feet or body in a location that could expose them to injury should an unforeseen situation occur.

Always use the appropriate tools listed in the tool list and wear approved safety equipment.



Before working on vehicle, remove all jewelry (watch, rings, necklaces,

etc.).

Be sure that no loose clothing or hair can contact moving parts.



### INTRODUCTION

Read all of each section before attempting any procedure. Pay particular attention to all Notes, Cautions and Warnings



Wear eye protection when working on or around vehicle. In particular, use care when working around batteries, or when using solvents or compressed air.

Use care not to contact hot objects.

Before attempting to operate or adjust the powertrain, the rear of the vehicle must be raised and supported on jack stands.

Wear OSHA approved clothing and eye protection when working on anything that could expose the body or eyes to potential injury. In particular, use care when working with or around batteries, compressed air or solvents.

Always turn the key switch to 'OFF' and remove the key before disconnecting a live circuit.

When connecting battery cables, pay particular attention to the polarity of the battery terminals. Never confuse the positive and negative cables.

Battery posts, terminals and related accessories contain lead and lead compounds. Wash hands after handling.

Set the parking brake before performing any work on the vehicle.

Keep all smoking materials, open flame or sparks away from gasoline or batteries.

If repairs are to be made that will require welding or cutting, the battery and fuel tank must be removed and the fuel system drained.

Never operate the starter with the spark plugs removed unless the ignition system has been disabled and the engine/exhaust is cold. Fuel expelled from the cylinders could be ignited by the ignition system or the hot exhaust system.

Never work on an engine that is hot.

Never work around or operate a vehicle in an environment that does not ventilate exhaust gases from the area.

Exhaust gas (carbon monoxide) is deadly.

Carbon monoxide is an odorless gas that is formed as a natural part of the incomplete combustion of hydrocarbon fuels. Carbon monoxide is a dangerous gas that can cause unconsciousness and is potentially lethal.

The following are symptoms of carbon monoxide inhalation:

- Dizziness
- Vomiting
- · Intense headache
- Muscular twitching
- Weakness and sleepiness
- Throbbing in temples

If experiencing any of these symptoms, get fresh air immediately.

Never test the ignition system without either connecting the spark plug lead to a tester or spare grounded spark plug.

If the spark function is to be observed at the spark plug, be sure to install a spare spark plug into the open cylinder before operating the starter.

Never test the function of a fuel pump in the vicinity of a hot engine or other source of flame or combustion.

Never confuse the hoses to and from the fuel pump. Verify that the carburetor and pulse lines are correctly installed before starting the engine (see FUEL SYSTEM Section in your Repair and Service Manual).

Aerosol containers of battery terminal protectant must be used with extreme care. Insulate the metal container to prevent the metal can from contacting battery terminals which could result in an explosion.



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Inspection and Replacement of Parts	В
Transaxle Reassembly	C
Illustrated Parts breakdown	D

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#### TRANSAXLE DISASSEMBLY

Tool List	Qty. Required
Extension, 4", 3/8" drive	1
Small diameter pick-up magnet	1
Rubber mallet, medium	1
Snap ring pliers, medium	1
Snap ring pliers, small	1
Standard pliers	1
Seal puller	1
Ratchet, 3/8" drive	1
Ratchet, 1/2" drive	1
Flat blade screwdriver, small	1
Phillips screwdriver, #2	1
Socket, 12mm, 3/8" drive	1
Socket, 14mm, 3/8" drive	1
Socket, 17mm, 3/8" drive	1
Socket, 1/2", 3/8" drive	1
Socket, 1 1/8", 1/2" drive	1
Combination wrench, 12mm	1
Combination wrench, 1/2"	1
Lug wrench, 3/4"	1

It is assumed that the wheels have been removed, the oil drained from the transaxle, and that the transaxle has been removed from the vehicle. If these things have not been done, do so before continuing with this section. Refer to the Repair and Service Manual of the specific vehicle for information and safety considerations when removing the transaxle.

Press fit shaft bearings should be cleaned and inspected; and replaced only if they appear to be damaged or excessively worn. Replace bearings that are pitted, nicked, burred, discolored, or that rotate roughly or noisily.



Keep work area clean and well organized while performing the opera-

tions described in this manual. This will help prevent accidents and reduce the possibility of mistakes that could damage or impair the performance of the transaxle.

Because some mating parts with wear surfaces were machined together when the transaxle was manufactured, or have established wear patterns during operation, the reassembly of parts in their original positions and orientations, with their original mating parts, is critical to the performance and life expectancy of the transaxle. Mark and sort all parts as they are disassembled so that they will be reassembled and installed in their original positions.

#### Wheel Brake Removal

Brake removal will vary between models and mechanical or hydraulic brakes. Typical mechanical brakes are shown. Please refer to the Repair and Service Manual for your specific brake removal procedure.

 Attach a wheel and tire to the brake hub on the driver (clutch) side axle tube and stand the transaxle on end, with the wheel as a base (Ref Fig. A-1 on page A-1).

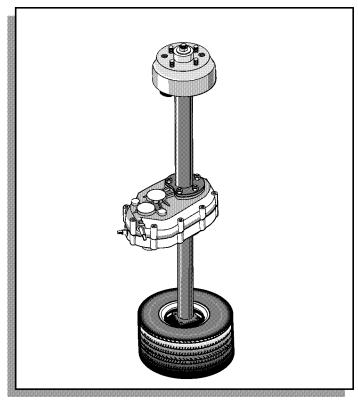


Fig. A-1 Axle Stand

- Remove the cotter pin (1), axle nut (item 2, 1 1/8" socket), washer (3), and cup washer (4) (if present) from the right side axle shaft (Ref Fig. A-2 on page A-2).
- 3. Pull the brake drum (5) from the axle (10), and remove the washer (7) (Ref Fig. A-2 on page A-2).

When the vehicle was manufactured, an antiseize compound was applied to the axle shaft splines to prevent the brake drum from bonding to the shaft. If the brake drum has since been removed and reinstalled without an anti-seize compound, removal of the drum may require the use of a slide hammer.

A. Using a 1/2" socket, remove the four bolts (8) and nuts (9), and detach the brake assembly (6) from the top (passenger) side axle tube (11) (Ref Fig. A-2 on page A-2).



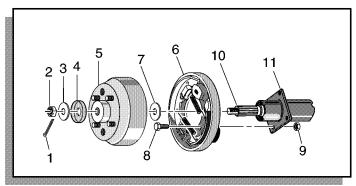


Fig. A-2 Wheel Brake Removal

#### **Axle Shaft and Axle Tube Removal**

1. Remove the top (passenger) side axle shaft (1) (Ref Fig. A-3 on page A-2).

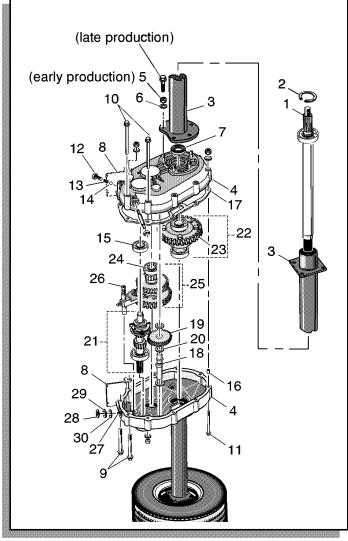


Fig. A-3 Transaxle Breakdown

- A. Using snap ring pliers, remove the bearing retaining ring (2) from the end of the axle tube (3).
- B. Carefully pull the axle shaft and bearing out of the tube.
- 2. Remove the top (passenger) side axle tube from transaxle casing (4) (Ref Fig. A-3 on page A-2).
  - A. Using a 17mm socket, remove five nuts (5) and washers (6) attaching the tube to the casing (some models may use bolts) and carefully lift the tube from the casing studs.
- 3. Using a seal puller, remove the axle shaft seal (7) from the casing (Ref Fig. A-3 on page A-2)(Ref Fig. A-4 on page A-2).

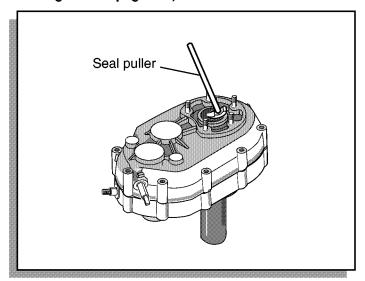


Fig. A-4 Axle Shaft and Tube Removal

CAUTION

Do not scratch, score, or damage the seal bore in any way. This could cause

the seal to fail.

### **Removing Shifter Cable Mounting**

- 1. Remove the shifter cable mounting bracket (8) (Ref Fig. A-3 on page A-2).
  - A. Using a 12mm socket, remove the two (2) bracket mounting/transaxle casing bolts (9) and pull the bracket from the casing.
  - B. Attach the mounting bolts to the bracket in their original positions so that they can be easily installed in their original positions when reassembling the transaxle.
- 2. Using a 12mm socket, remove the two accelerator bracket mounting/transaxle casing bolts (10) (Ref Fig. A-3 on page A-2).



These are the longest bolts in the casing. They are each of different lengths and both are longer than all the others. They are also installed opposite in direction to all the other casing bolts. Mark these bolts so that they will be reinstalled in their proper positions.

- 3. Using a 12mm socket, remove the six remaining casing bolts (11) (Ref Fig. A-3 on page A-2).
- 4. Remove the shifter detent (Ref Fig. A-3 on page A-2).
  - A. Using a 14mm socket, remove the shifter detent bolt (12).
  - B. Using a small magnet, remove the spring (13) and ball (14) from the shifter detent bolt hole.

### **Separating Differential Case**

- 1. Remove the top (passenger side) half of the transaxle casing (4) (Ref Fig. A-3 on page A-2).
  - A. Using a wooden or rubber mallet, gently tap around the casing joint to loosen the seal.
  - B. Grip the axle tube studs on the top half of the casing and pull up while gently tapping upward on the governor shaft boss until the top half of the casing separates. Carefully remove the case half and gasket (Ref Fig. A-5 on page A-3).
  - C. If the input shaft bearing (15) (Ref Fig. A-3 on page A-2) stays on the shaft when the top half of the case is lifted, remove it from the shaft and mark it for location.
- 2. Remove two transaxle case alignment dowels (16) and gasket (17) (Ref Fig. A-3 on page A-2).

### **Differential Case Disassembly**

- 1. Remove the counter shaft (18), reverse idler gear (19), and three spacers (20) (Ref Fig. A-3 on page A-2).
- 2. Remove the input shaft assembly (21) (Ref Fig. A-3 on page A-2).
  - A. Lift the differential carrier assembly (22) until the final drive gear (23) touches the intermediate gear shaft bearing (24) and hold it in this position (Ref Fig. A-6 on page A-3).
  - B. While holding the final drive gear against the bearing, gently tap straight up on the end of the input shaft until the input shaft assembly is free from its seating in the casing (Ref Fig. A-6 on page A-3).
- 3. Remove the differential carrier assembly, the intermediate gear shaft assembly (25), and the shifter fork (26) (Ref Fig. A-3 on page A-2).

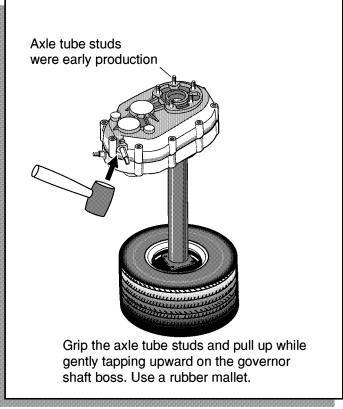


Fig. A-5 Separating Differential Case

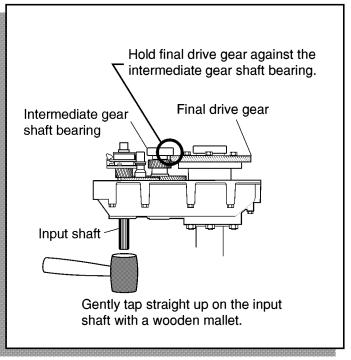


Fig. A-6 Differential Case Disassembly



- A. Hold the shifter shaft fork, intermediate gear shaft assembly, and differential carrier assembly together and lift them as one unit from the casing.
- 4. Remove the selector shaft (27) (Ref Fig. A-3 on page A-2).

Do not scratch, score, or damage the seal bore in any way. This could cause the seal to fail.

- A. Using a small, sharp screwdriver or other suitable tool, carefully remove the oil seal (28) from the selector shaft bore.
- B. Use a small pair of snap ring pliers to remove the snap ring (29) and spacer (30).
- C. Remove the selector shaft.
- 5. Remove the governor fork (1) from the top half of the casing (2) (Ref Fig. A-7 on page A-4).

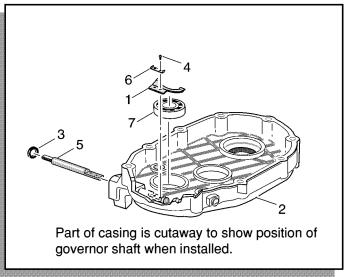


Fig. A-7 Governor fork Removal

Do not scratch, score, or damage the seal bore in any way. This could cause the seal to fail.

- A. Using a small sharp screwdriver or other suitable tool, carefully remove the governor shaft seal (3).
- B. Using a #2 Phillips screwdriver, remove two screws (4) with washers attaching the governor fork to the governor fork shaft (5).
- C. Remove the shaft retainer (6) and governor fork.
- D. Pull the governor fork shaft from the casing.

- 6. If the input shaft bearing (7) is still in the casing bore, remove and mark it for location (Ref Fig. A-7 on page A-4).
- Using a 17mm socket, remove five nuts (1) with washers and detach the driver side casing half from the driver side axle tube (Ref Fig. A-8 on page A-4).

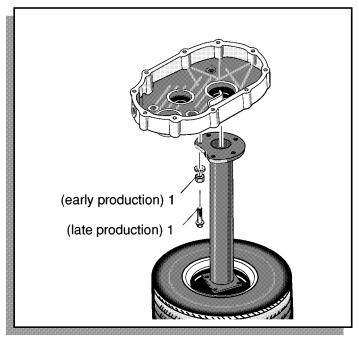


Fig. A-8 Differential Case Removal

8. Using a seal puller, carefully remove the remaining oil seals (1, 2) from the casing (Ref Fig. A-9 on page A-4).

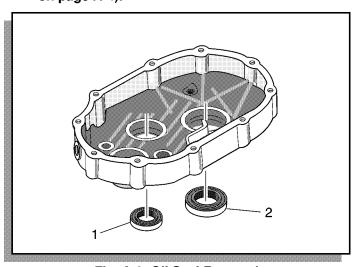


Fig. A-9 Oil Seal Removal



- 9. Remove the wheel from the driver side hub.
- 10. Remove the cotter pin (1), axle nut (2) using a 1 1/8" socket, washer (3), and cup washer (if present) (4) from the driver side axle shaft (Ref Fig. A-10 on page A-5).

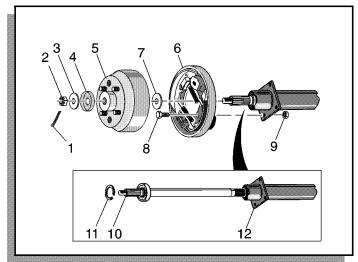


Fig. A-10 Axle Shaft Removal

- 11. Pull the brake drum (5) from the brake assembly (6), and remove the washer (7) (Ref Fig. A-10 on page A-5).
- 12. Using a 1/2" socket, remove the four (4) bolts (item 8) and nuts (9), and remove the brake assembly from the driver side axle tube (Ref Fig. A-10 on page A-5).
- 13. Remove the driver side axle shaft (10) (Ref Fig. A-10 on page A-5).
  - A. Using snap ring pliers, remove the bearing retaining ring (11) from the end of the axle tube (12) (Ref Fig. A-10 on page A-5).
  - B. Carefully pull the axle shaft out of the tube.

Notes:	



#### INSPECTION AND REPLACEMENT OF PARTS

Tool List	Qty. Require
Vernier calipers	1
Depth gauge	1
Feeler gauge set	1
Telescoping gauge set	1
Micrometer, 1"	1
Micrometer, 2"	1
Micrometer, 3"	1
Bearing puller	1
Medium non-ferrous punch	1
Small non-ferrous punch	1
Medium flat blade screwdriver	1
Phillips screwdriver, #2	1
Surface plate	1

We strongly recommend that all parts found to be damaged or out of specified limits be replaced. We recommend that parts found to be acceptable but near limits be replaced if the vehicle will see high usage.

Telescoping gauges and hole gauges are "transfer-type" measuring instruments. they are not calibrated and are used to record a distance which is then transferred to a micrometer for measurement. Position the gauge in the hole or bore and "set" the telescoping arms or ball to its true diameter. Make sure that the handle of the gauge is in line with the centerline of the hole or bore. Remove the gauge and measure its setting with a micrometer (Ref Fig. B-1 on page B-1).

All parts must be thoroughly cleaned, and free of all dirt, oil, grease, or residue of any kind before beginning this section. It is especially important that your work area be clean and well organized while performing the operations described in this section.

### Oil Seal and Bearing Inspection

1. Inspect all oil seals for damage of any kind.

It is recommended that any oil seals that are removed, and all seals if a transaxle is more than one year old when disassembled, be replaced with new ones.

Inspect all bearings for damage and excessive wear. Replace bearings that are pitted, nicked, burred, discolored, or that rotate roughly or noisily.

Remove press fit bearing only if they are damaged, excessively worn, or if it is necessary in order to remove other parts. It is recommended that removed press fit bearings be replaced with new ones.

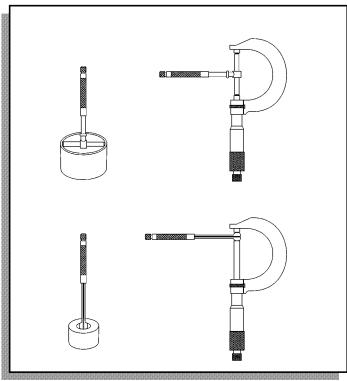


Fig. B-1 Telescoping and Hole Gauge

### **Axle Shaft and Tube Inspection**

- 1. Check shafts for straightness.
- 2. Check journal diameter (A, B, C) (Ref Fig. B-2 on page B-2).
  - A. Inspect splines for obvious fretting, twisting, or damage of any kind (Ref Fig. B-2 on page B-2).
  - B. Inspect threads and seal areas for damage.
  - C.Inspect axle tubes for damage of any kind. Check for straightness.

### **Differential Case Inspection**

1. Inspect casing halves (1, 2) for damage of any kind (Ref Fig. B-3 on page B-2).

If flatness of a gasket surface is found to be out of tolerance by more than .004, the part must be replaced.

- A. Place each case half on a surface plate, gasket surface down, and check for flatness using a .004 feeler gauge. If the gauge can be inserted anywhere under the case half, the transaxle casing must be replaced.
- B. Inspect bearing and shaft bores for damage of any kind.



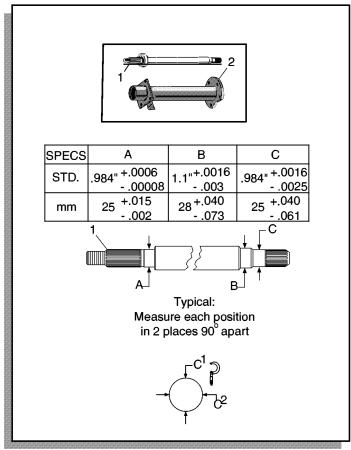


Fig. B-2 Axle Shaft and Tube Inspection

### **Governor Shaft and Fork Inspection**

 Inspect the governor shaft (1), governor fork (2), and shaft retainer (3) for damage of any kind. Check governor fork tangs for wear (Ref Fig. B-4 on page B-2).

### **Shifter Shaft and Fork Inspection**

1. Inspect the shifter shaft/fork (1) for wear or damage of any kind (Ref Fig. B-5 on page B-3).

### **Counter shaft and Reverse Idler Gear Inspection**

- 1. Inspect the counter shaft (1), reverse idler gear (2), and spacers (3) (Ref Fig. B-6 on page B-3).
  - A. Inspect the shaft, gear, and spacers for scoring, chipping, broken teeth, etc.
  - B. Measure the outside diameter of the shaft at the position shown, in two places  $90^{\circ}$  apart.
  - C. Measure the inside diameter of the gear bushing at two places 90° apart as shown.

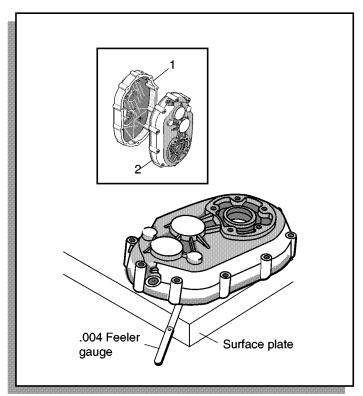


Fig. B-3 Differential Case Inspection

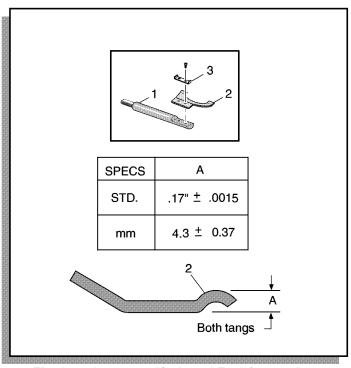


Fig. B-4 Governor Shaft and Fork Inspection

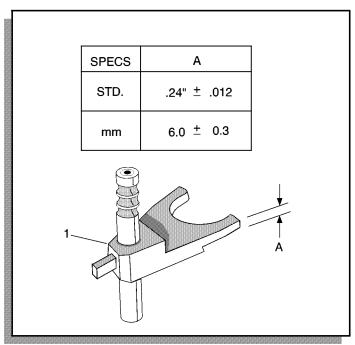


Fig. B-5 Shifter Shaft and Fork Inspection

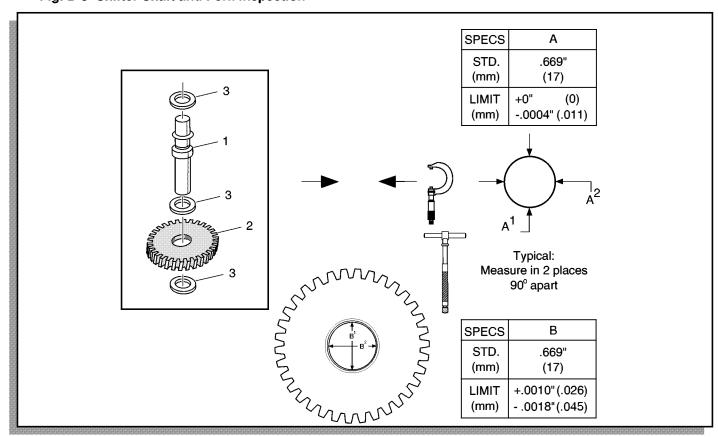


Fig. B-6 Counter Shaft and Reverse Idler Gear Inspection



### **Input Shaft Inspection**

- 1. Inspect the input shaft assembly (1) (Ref Fig. B-7 on page B-4).
- NOTE It is recommend that the complete assembly be replaced if any part is found to be damaged.
  - A. Inspect the governor sleeve (2) for excessive wear or damage of any kind.
- B. Inspect input shaft (3) for chipped splines or gears, excessive wear, or damage of any kind.
- 2. If necessary, disassemble the input shaft assembly.

NOTE

Only the governor sleeve and the governor plate can be removed.

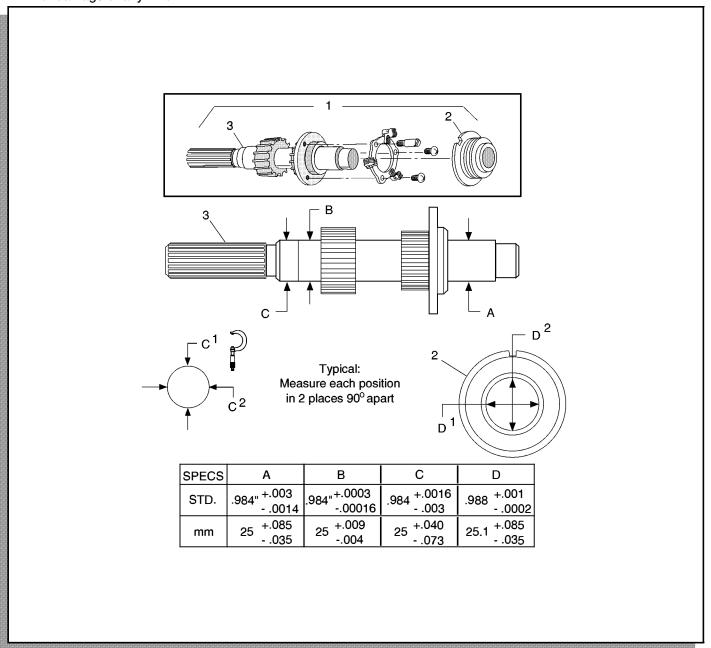


Fig. B-7 Input Shaft Inspection

### **Intermediate Gear Inspection**

- 1. Inspect the intermediate gear and shaft assembly (1) (Ref Fig. B-8 on page B-5).
  - A. Check for a close fit between the gears (2, 3) and the shaft (4). Gears should spin evenly on the shaft without "play" or wobbling.
  - B. Inspect gear teeth and shaft splines for damage of any kind.
  - C.Check pin clutch motion. Pin clutch (5) should slide freely on the shaft.
  - D. Inspect pin clutch teeth and pin clutch engagement holes in the gears for damage of any kind.

- 2. If necessary, disassemble the intermediate gear and shaft assembly (Ref Fig. B-8 on page B-5).
  - A. Using a three jaw bearing puller, remove the bearing (6).
  - B. Remove the spacer (7), collar (8), output gear (9), collar (10), reverse gear (2), spacer (11), and pin clutch (5) from the shaft.
  - C. Using a three jaw bearing puller, remove the bearing (12).
  - D. Remove the spacer (13), drive gear (ITEM 3), and spacer (14) from the shaft.

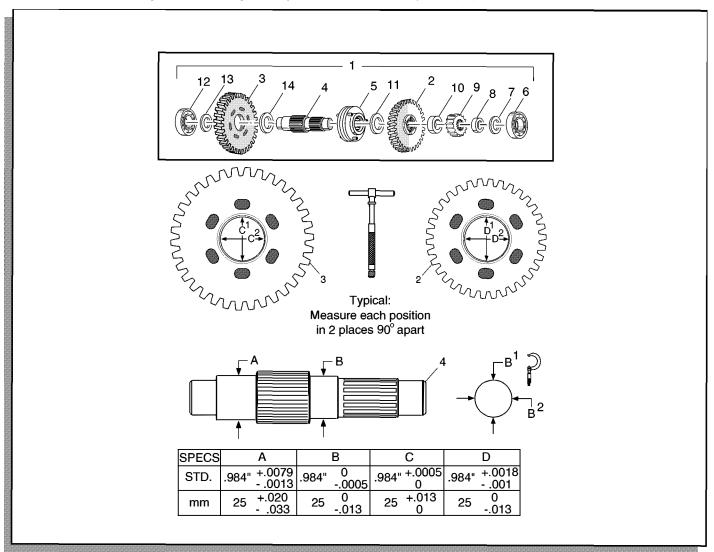


Fig. B-8 Intermediate Gear and Shaft Inspection

### **Differential Carrier Inspection**

- 1. Inspect the differential carrier assembly (Ref Fig. B-9 on page B-6).
  - A. Make sure that the ring gear (1) is properly positioned and fastened securely to the carrier housing (2).
  - B. Inspect the ring gear for damage of any kind.
  - C. Inspect the pinion gears (3, 4) and side gears (5, 6) inside the housing for damage of any kind.
  - D. Check the pinion gear shaft (7) and pinion gears for proper close fit. Gears should spin evenly on the shaft without "play" or wobbling.
- 2. If necessary, disassemble the differential carrier assembly (Ref Fig. B-9 on page B-6).

Because of wear patterns created during operation, it is recommended that the pinion shaft, pinion gears, and side gears **not** be replaced individually. Replace all of these as a set.

- A. Using a three jaw bearing puller, remove the bearing (8).
- B. Using a 17mm socket, remove four (4) bolts (9) attaching the ring gear (1) to the carrier housing (2). Carefully remove the ring gear and the first side gear (6).
- C. Remove the pinion gear shaft (7).
  - 1) Using a suitable punch, GENTLY tap out the pinion shaft locking pin (10).
  - 2) Using a suitable punch, GENTLY tap out the pinion shaft and remove the two pinion gears (3, 4) and the second side gear (5).
- D. If the carrier housing bearing (11) is to be removed, use a bearing puller to remove it.

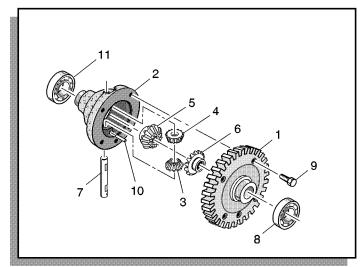


Fig. B-9 Differential Carrier Inspection



#### TRANSAXLE REASSEMBLY

Tool List	Qty. Required
Extension, 4", 3/8" drive,	1
Small ball peen hammer	1
Seal installer	1
Rubber mallet, medium	1
Snap ring pliers, medium	1
Snap ring pliers, small	1
Standard pliers	1
Mechanical press	1
Non-ferrous punch, medium	1
Non-ferrous punch, small	1
Ratchet, 3/8" drive	1
Ratchet, 1/2" drive	1
Flat Blade screwdriver, medium	1
Phillips screwdriver, #2	1
Socket, 12mm, 3/8" drive	1
Socket, 14mm, 3/8" drive	1
Socket, 17mm, 3/8" drive	1
Socket, 1/2", 3/8" drive	1
Socket, 1 1/8", 1/2" drive	1
Combination wrench, 12mm	1
Combination wrench, 1/2"	1
Lug wrench, 3/4"	1
Torque wrench, 3/8" drive	1

Prior to transaxle reassembly, all parts must be thoroughly cleaned; free of dirt, oil, grease, or residue of any kind; free of nicks, burrs, or damage of any kind to wear surfaces; and inspected for excessive wear. Parts that are damaged or are not within dimensional specifications should be replaced.

Because some mating parts with wear surfaces were machined together when the transaxle was manufactured, or have established wear patterns during operation, the reassembly of transaxle parts in their original positions and orientations with their original mating parts is critical to the performance and life expectancy of the transaxle.

When tightening a number of screws or bolts in a given pattern, tighten them in two stages. Tighten them to 1/2 of specified torque in one pass through the pattern, and then to specified torque on the second pass.

Fasteners that are plated, or are lubricated when installed, are considered "wet" and require approximately 80% of the specified torque for "dry" fasteners. All transaxle fasteners are considered "wet" (Ref Fig. C-26 on page C-11).

Because assemblies of moving parts establish wear patterns together, it is recommended that all parts of an assembly be replaced if one part is found to be damaged. Noise levels during operation may be increased if only individual parts are replaced.

Apply Loctite carefully. Make sure that none is accidentally applied to surfaces other than those for which it is intended.

### Reassemble the Input Shaft Assembly

- Position the governor plate (2) on the input shaft (3) and install the lock pin (4) and two screws (5). Use 262 Loctite on lock pin and screw threads, and tighten to specified torque (Ref Fig. C-1 on page C-1).
- 2. Install the governor sleeve (6) on the input shaft, with the lock pin in the notch as shown.

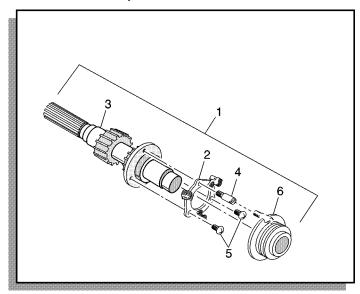


Fig. C-1 Input Shaft Assembly

### Reassemble the Intermediate Shaft Assembly

- 1. Install the spacer (2), drive gear (3), and spacer (4) on the intermediate gear shaft (5) as shown (Ref Fig. C-2 on page C-2).
- 2. Using a mechanical press, install a new bearing (6) on the shaft.
- 3. Install the pin clutch (7), spacer (2), reverse gear (8), collar (9), output gear (10), collar (11), and spacer (12) on the shaft as shown.
- 4. Using a mechanical press, install a new bearing (13) on the shaft.



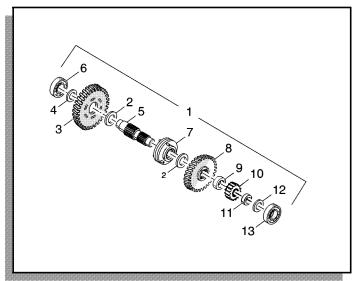


Fig. C-2 Intermediate Shaft Assembly Reassemble the Differential Carrier Assembly.

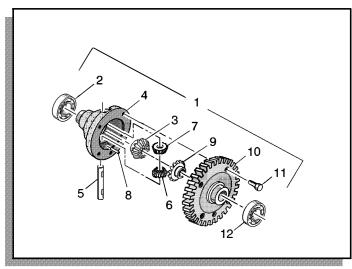


Fig. C-3 Differential Carrier Assembly

- 1. If the carrier housing bearing (2) was removed, use a mechanical press to install a new bearing (Ref Fig. C-3 on page C-2).
- 2. Position the side gear (3) in the carrier housing (4) as shown.
- 3. Start the pinion shaft (5) into the pinion shaft bore in the carrier housing with the locking pin hole oriented as shown. Do not allow it to protrude beyond the interior opening of the bore (Ref Fig. C-4 on page C-2).

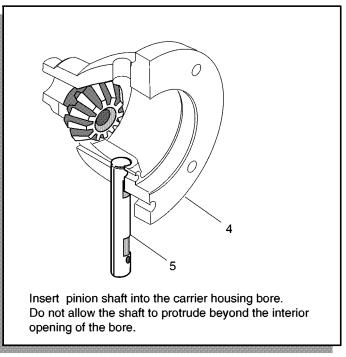


Fig. C-4 Locking Pin Orientation

 Position the lower pinion gear (6) over the pinion shaft bore and continue pushing the pinion shaft through the gear as shown (Ref Fig. C-5 on page C-2).

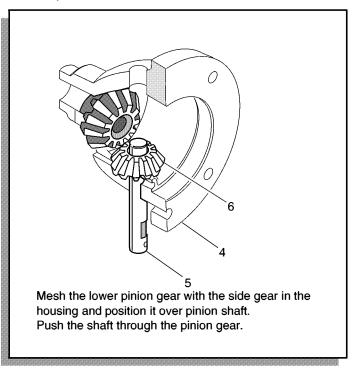


Fig. C-5 Lower Pinion Gear Position



 Position the upper pinion gear (7) over the lower one and push the pinion shaft through it and into the shaft bore in the carrier housing (Ref Fig. C-6 on page C-3).

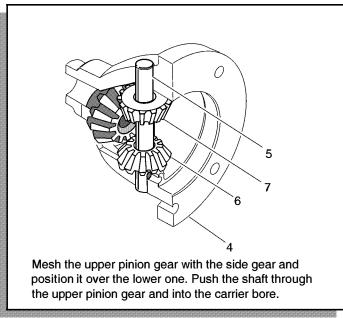


Fig. C-6 Upper Pinion Gear Position

6. Tap the pinion shaft into position and then, with a suitable punch, gently tap a new pinion shaft locking pin (8) into place as shown (Ref Fig. C-7 on page C-3).

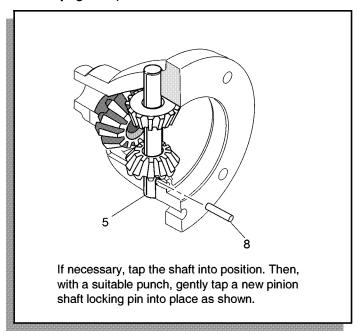


Fig. C-7 Pinion Shaft Locking Pin

- 7. Position the side gear (9) in the carrier, in mesh with the pinion gears, as shown (Ref Fig. C-3 on page C-2).
- 8. Using a mechanical press, install a new bearing (12) on the ring gear.
- Position the ring gear (10) on the side gear (9) and carrier housing as shown and install four bolts (11) using a 17mm socket that attach the gear to the housing. Tighten the bolts to specified torque.

#### Oil Seal Installation

If using press to install seals, adequately support the aluminum casing as close to the seal bore as possible. Failure to do so could result in a fractured casing.

 Install any oil seals (1, 2, 3) that were removed. Lubricate seals with assembly lube (molybdenum disulfide) before installing them (Ref Fig. C-8 on page C-3).

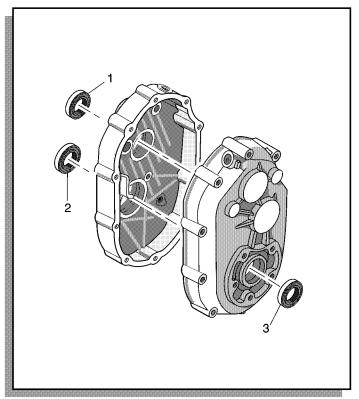


Fig. C-8 Oil Seal Installation

It is recommended that any oil seals that were removed, and all seals if a transaxle is more than one year old when disassembled, be replaced with new seals.



#### **Driver Side Axle Tube Installation**

1. Install the left (clutch) side axle tube (1) on the left side transaxle casing half (2) (Ref Fig. C-9 on page C-4).

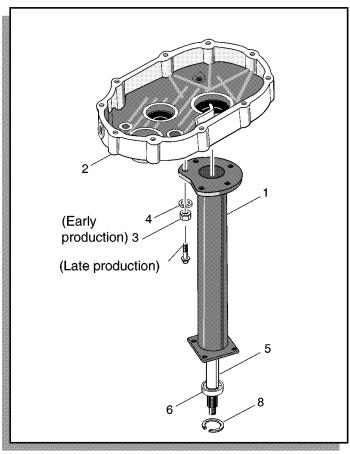


Fig. C-9 Axle Tube/Casing installation

The left (clutch) side axle tube is longer than the right side tube.

A. Position the axle tube mounting plate on the casing studs and install five nuts (3), using a 17mm socket with new lock washers (4). Tighten the nuts to specified torque.

### Install Driver (Clutch) Side Axle Shaft.

If the bearing was removed from the axle shaft, use a mechanical press to install a new bearing. The left (clutch) side axle shaft is longer than the right side shaft.

 Carefully insert axle shaft through the tube and casing oil seal until the shaft bearing (6) seats against the inner retaining ring (7) (Ref Fig. C-9 on page C-4)(Ref Fig. C-10 on page C-4).

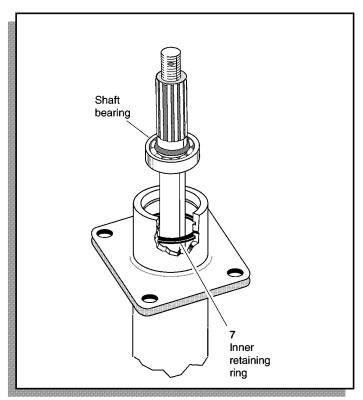


Fig. C-10 Axle shaft Insertion

2. Using snap ring pliers, install the axle shaft outer retaining ring (8) in the axle tube.

#### **Install the Driver Side Brake Assembly**

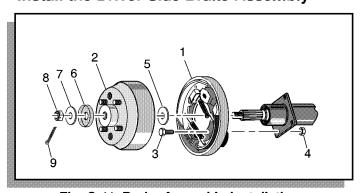


Fig. C-11 Brake Assembly Installation

- Position the brake assembly on the axle tube mounting plate and install four new bolts (3) using a 1/2" socket, and four new lock nuts (4) using a 1/2" socket that attach the backing plate to the axle tube. Tighten the bolts to specified torque.
- 2. Install the washer (5) as shown.
- 3. Install the brake drum (2) onto the axle and brake assembly.



A. Lubricate (with Neverseize) the axle splines.

B. (For NSI/older style brakes) Insert a straight blade screwdriver between the adjusting lever and the adjusting mechanism, and rotate the star wheel counter-clockwise until the shoes have retracted enough to allow the brake drum to be installed.

(For Bendix/newer style brakes) Carefully lift the adjuster arm just enough to permit the star wheel to be rotated. Use great care not to force the adjuster arm which will cause permanent damage to the adjuster. The only recourse after damaging the adjuster arm is the replacement of both wheel brake assemblies. If no brake parts are to be replaced, turn adjuster screw 'in' 10 - 15 'clicks.

- C. Slide the brake drum into position.
- 4. Install cup washer (6) (if used) and washer (7).
- 5. Install the axle nut (8) using a 1 1/8" socket and cotter pin (9).
  - A. Install and tighten the axle nut to at least 70 ft. lbs. If the slot in the axle nut is not aligned with the hole in the axle, continue tightening until they are aligned.
  - B. Install a new cotter pin through the nut slot and axle hole, and bend the ends back to secure it.

#### Attach a Wheel and Tire

1. Attach a wheel and tire to the brake drum and stand on end with the wheel as a base (Ref Fig. C-12 on page C-5).

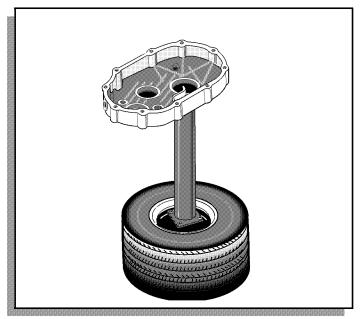


Fig. C-12 Position Axle on Base

#### Install the Selector Shaft

1. Lubricate the shaft (1) with assembly lube (Molybdenum disulfide) and insert it into the casing bore as shown (Ref Fig. C-13 on page C-5).

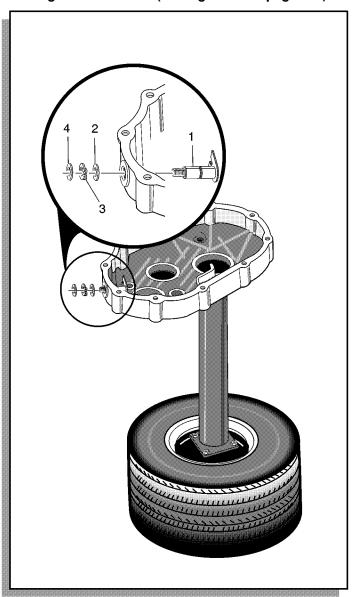


Fig. C-13 Selector Shaft Installation

- While holding the shaft in position, install the washer (2) and then retaining ring (3) with a pair of snap ring pliers. Make sure the retaining ring is seated in the groove.
- 3. Install a new seal (4).



### Shifter Fork and Intermediate Gear Assembly Installation

 Lubricate the shifter shaft and fork with assembly lube and position the fork on the pin clutch in the intermediate gear assembly, with the two detent grooves up as shown (Ref Fig. C-14 on page C-6).

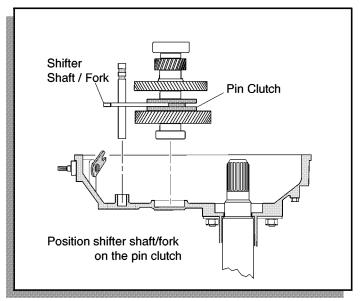


Fig. C-14 Shifter Fork and Pin Clutch Assembly

- 2. Hold the shifter shaft and the intermediate gear assembly together as shown and place them in the casing.
  - A. Orient the selector shaft fork upwards and engage the shifter fork actuator tang in the selector fork while lowering the shifter shaft and intermediate gear assembly into the casing (Ref Fig. C-15 on page C-6).
  - B. Guide the shifter shaft into its bore, while allowing the intermediate gear shaft bearing (7) to rest on the lip of (not seated in) its bore (Ref Fig. C-16 on page C-6).
- 3. Place the input shaft assembly in the casing (Ref Fig. C-17 on page C-7).
  - A. Lubricate the input shaft splines and carefully insert the shaft through its oil seal in the casing.
  - B. Mesh the input shaft gears with the intermediate shaft gears and hold them in position together. Do not allow them to seat in the casing.
- 4. Place the differential carrier assembly in the casing (Ref Fig. C-18 on page C-7).

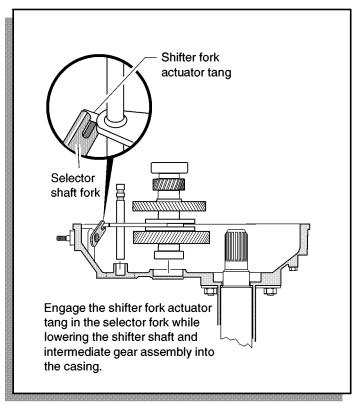


Fig. C-15 Engaging Shifter Fork Actuator

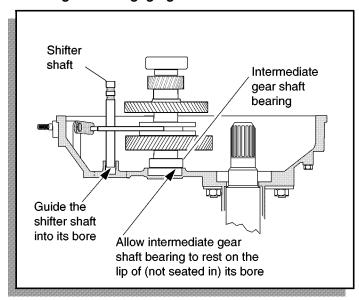


Fig. C-16 Locating Shifter Shaft Into Bore

A. While holding the input shaft gears and intermediate shaft gears in mesh and preventing them from seating, mesh the final drive gear on the differential carrier with the output gear on the intermediate gear shaft.



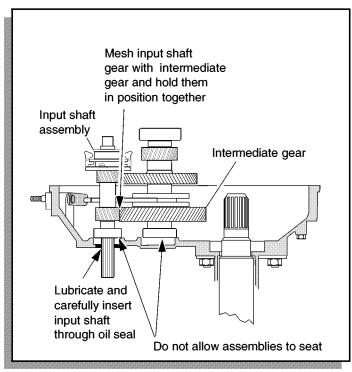


Fig. C-17 Input Shaft Assembly

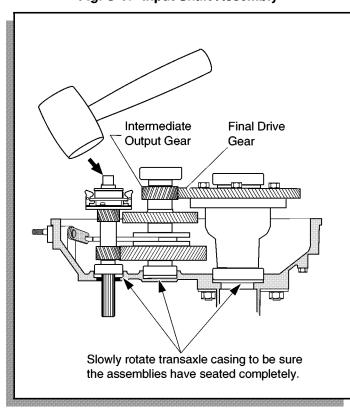


Fig. C-18 Differential Carrier Installation

- B. Hold the intermediate gear assembly and differential carrier assembly together and allow them to seat together (they will not seat completely).
- 5. Seat all of the assemblies in the casing (Ref Fig. C-18 on page C-7).
  - A. Hold the intermediate gear shaft assembly straight, and make sure that all gears in all assemblies are meshed with their mates.
  - B. Hold the intermediate gear shaft assembly straight, and use a rubber mallet to lightly tap the input shaft assembly and shifter fork shaft until all assemblies fall into place.
  - C. It is possible that the differential carrier assembly will not have completely seated. If the final drive gear on the differential carrier assembly appears to be too high to mesh properly with the intermediate output gear, slowly rotate the transaxle casing until the differential carrier assembly aligns with the axle shaft splines and drops into place.

### Install the Spacer, Reverse Idler Gear, Spacer, Counter Shaft, and Spacer

- 1. Position the spacer, on the shaft boss with the machined surface facing up (Ref Fig. C-19 on page C-8).
- 2. Position the reverse idler gear on the shaft boss and spacer with the oil grooves facing up.
- 3. Position the spacer on the reverse idler gear with the machined side toward the gear.
- 4. Lubricate the counter shaft with assembly lube and insert it through the gear and two spacers and into the shaft bore as shown.
- 5. Place the spacer on the counter shaft with the machined side up.

#### **Input Shaft Bearing**

 Install the input shaft bearing in the top half (1) of the casing (Ref Fig. C-20 on page C-8).

Use a new bearing if there are any doubts about the condition of the original.

### **Installing the Governor Fork Assembly**

When lubricating the governor fork shaft, do not get lubricant in the threaded screw holes.

1. Lubricate the governor fork shaft (2) with assembly lube and insert it through the casing bore as



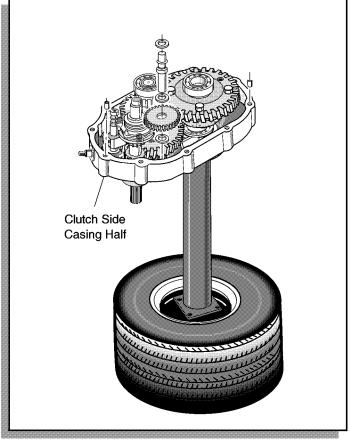


Fig. C-19 Input Shaft Bearing and Governor Fork Assembly

shown. Make sure the shaft rotates freely (Ref Fig. C-20 on page C-8).

- Position the governor fork (3) and shaft retainer (4) on the fork shaft and install, but do not tighten, two screws (5) as shown. Use 262 Loctite (Ref Fig. C-20 on page C-8).
- Press the shaft against the stop in the housing, and then adjust the governor fork so that the diameter of its arc is concentric with the diameter of the input shaft bearing.
- 4. Hold in this position and tighten the screws. Make sure the shaft rotates freely.
- 5. Install a new oil seal (6).

#### **Transaxle Case Dowels**

1. Install two transaxle case alignment dowels (1) (Ref Fig. C-21 on page C-9).

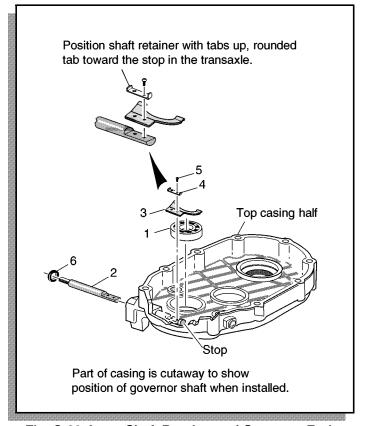


Fig. C-20 Input Shaft Bearing and Governor Fork
Assembly

#### **Transaxle Casing Gasket**

1. Install a new transaxle casing gasket (2) on the left (clutch) side transaxle casing half, using the alignment dowels for positioning (Ref Fig. C-21 on page C-9).

### Install the Top (Passenger) Half of the Transaxle Casing

- 1. Make sure the casing half, and especially the gasket surface, is clean (Ref Fig. C-21 on page C-9).
- 2. Rotate the governor fork shaft against the input shaft bearing and hold in this position to prevent the bearing from falling out while installing the case half.
- 3. While holding the governor shaft fork against the input shaft bearing, place the right (top) casing half onto the alignment dowels and ease it down onto the left casing half.



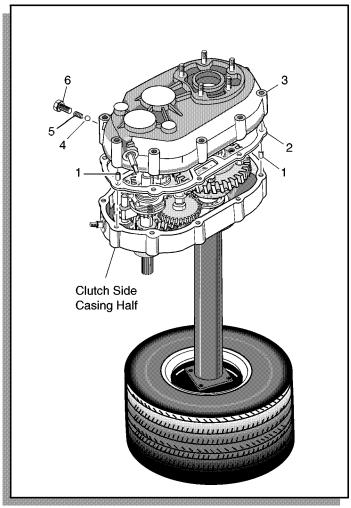


Fig. C-21 Transaxle Case Assembly and Shifter Detent
Install the Shifter Detent

- 1. Install the ball (4) and then the spring (5) as shown (Ref Fig. C-21 on page C-9).
- 2. Install the bolt (6) using a 14mm socket and tighten to specified torque.

### **Install the Transaxle Casing Bolts**

The two casing bolts that also attach the accelerator bracket to the casing are longer than the other six, and are installed in the opposite direction.

Install the two accelerator bracket/transaxle casing bolts (1, 2) with lock washers (3), and two nuts (4) each, in the positions and direction shown. Do not tighten them (Ref Fig. C-22 on page C-9).

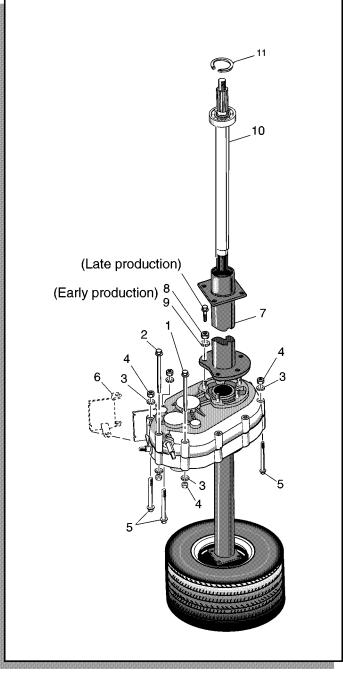


Fig. C-22 Casing Bolts and Axle Tube Installation

- 2. Install four casing bolts (5), with lock washers (3) and nuts (4) in the positions and direction shown. Do not tighten them.
- 3. Position the shifter cable mounting bracket (6) and install two casing bolts (5), with lock washers (3) and nuts (4) as shown.



 Using a 12mm socket and 12mm wrench, tighten the transaxle casing bolts to specified torque in two stages, in the order shown (Ref Fig. C-23 on page C-10).

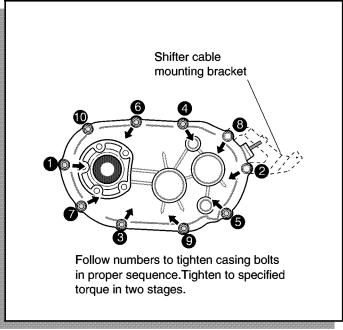


Fig. C-23 Torque Sequence

### Install the Right Side Axle Tube on the Transaxle Casing

1. Position the axle tube (7) on the mounting studs in the casing and install five nuts (8) with lock washers(9). Tighten nuts to specified torque (Ref Fig. C-22 on page C-9).

### Install the Right Side Axle Shaft

If the axle shaft bearing has not been installed on the axle shaft, use a mechanical press to install a new one before installing the shaft into the transaxle.

- Lubricate the axle shaft (10) and carefully insert it through the axle tube and into the transaxle casing, short spline end first (Ref Fig. C-22 on page C-9).
- 2. Gently rotate the shaft until it meshes with the transaxle gearing and drops into place, seating the axle shaft bearing against the inner axle tube retaining ring (Ref Fig. C-24 on page C-10).
- 3. Use snap ring pliers to install the outer axle tube retaining ring (11)(Ref Fig. C-22 on page C-9).

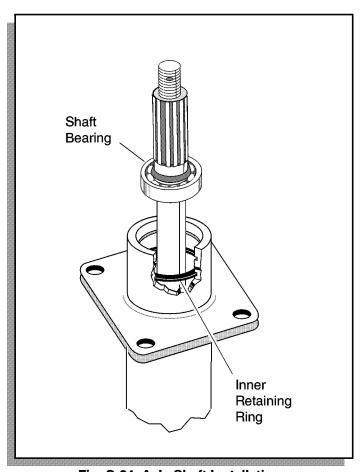


Fig. C-24 Axle Shaft Installation

### Attach the Brake Assembly to the Axle Tube

1. Position the brake assembly (1) on the axle tube as shown (Ref Fig. C-25 on page C-10).

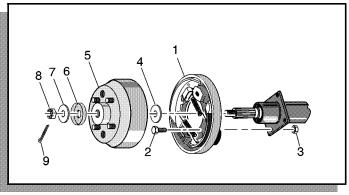


Fig. C-25 Brake Assembly Installation

2. Install four new bolts (2) and lock nuts (3) using a 1/2" socket and tighten to specified torque.

### **Apply Anti-Seize Compound**

1. Apply an anti-seize compound (Neverseize) to the axle shaft splines and install the washer (4) and brake drum (5) onto the axle shaft and brake assembly in the same manner described for the left side (Ref Fig. C-25 on page C-10).

Failure to apply an anti-seize compound (Neverseize) to the axle shaft splines may make future removal of the brake drum difficult, possibly causing damage to the drum.

#### **Axle Nut Installation**

1. Install the cup washer (6) (if used), spacer (7), axle nut (8), and cotter pin (9) on the axle shaft as shown (Ref Fig. C-25 on page C-10). Tighten axle unit to specified torque.

DECORIDATION		TIGHTENING TORQUE		
DESCRIPTION		kg / cm	N/m	ft / lb
RING GEAR / CARRIER HOUSING BOLT	S	550~630	53.9~61.7	39.8~45.6
GOVERNOR FORK SCREW		14~18	1.4~1.8	1.0~1.3
GOVERNOR PLATE SCREW		14~18	1.4~1.8	1.0~1.3
TRANSAXLE CASING NUTS / BOLTS		210~260	20.6~25.5	15.2~18.8
SHIFTER DETENT BOLT	SHIFTER DETENT BOLT		15.7~20.6	11.6~15.2
OIL DRAIN PLUG		210~260	20.6~25.5	15.2~18.8
AXLE TUBE MOUNTING NUTS		350~430	34.3~42.2	25.3~31.3
AXLE NUT		970~2300	95~225	70~166
	6mm	60~80	5.9~7.8	4.3~5.8
OTHERS	8mm	140~180	13.7~17.6	10.1~13.0
OTHERS				

Fig. C-26 Torque Specifications (Wet)



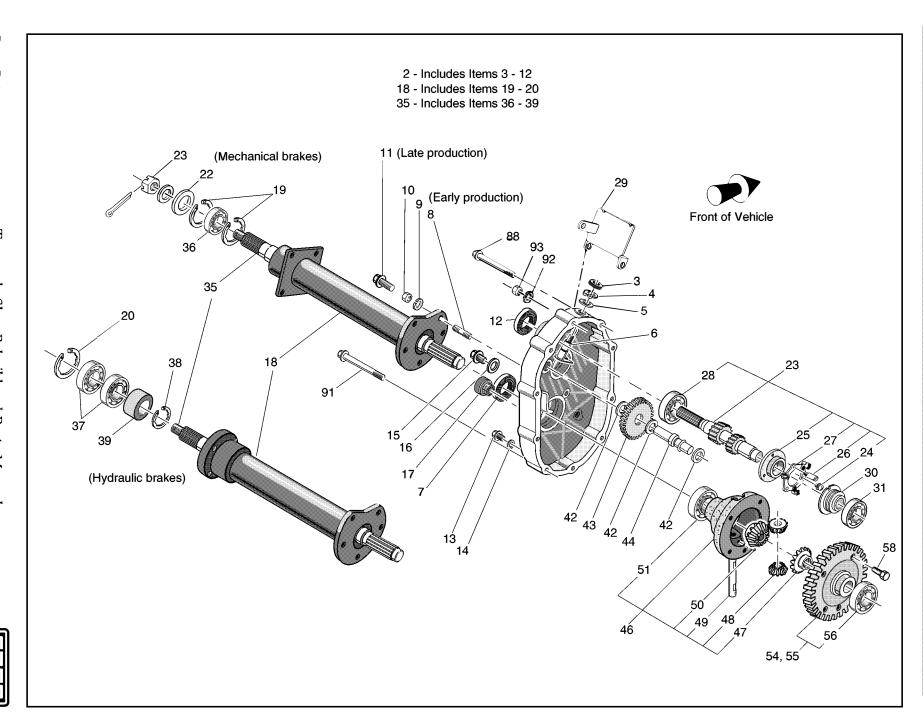
Notes:	



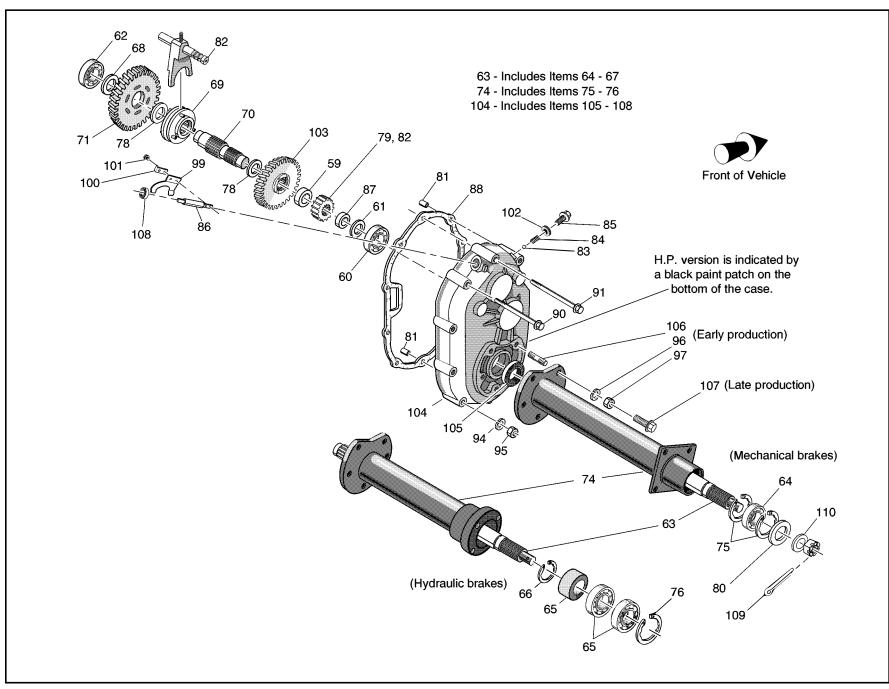
# 4-CYCLE TRANSAXLE ILLUSTRATED PARTS BREAKDOWN



TRANSAXLE







When ordering parts, please specify the model and serial number of the product.

\* Indicates a component that is not available as an individual part.

G\*\* Indicates consult Customer Service Department for additional information.

ITEM	PART NO.	1 2 3 4 5 DESCRIPTION	QTY.
1	******	REAR AXLE ASSEMBLY (SEE SERVICE PARTS MANUAL FOR SPECIFIC PART NUMBER FOR YOUR MAKE AND MODEL VEHICLE)	1
2	26760-G01	CASE ASSEMBLY, DRIVER SIDE (INCLUDES ITEMS 3-12)	1
3	26762-G01	OIL SEAL	1
4	26763-G01	SNAP RING	1
5	26764-G01	SPACER	1
6	26765-G01	SELECTOR SHAFT	1
7	72259-G01	OIL SEAL	1
8	26767-G01	STUD (EARLY PRODUCTION)	5
9	26828-G01	LOCK WASHER, 10MM (EARLY PRODUCTION)	5
10	26829-G01	NUT, M10 X 1.5MM (EARLY PRODUCTION)	5
11	72260-G01	BOLT, M10 X 1.5 X 23MM (LATER PRODUCTION)	5
12	26761-G01	OIL SEAL	1
13	26768-G01	OIL CHECK PLUG	1
14	26769-G01	GASKET, 8MM	1
15	26770-G01	OIL DRAIN PLUG	1
16	26771-G01	GASKET, 14MM	1
17	26772-G01	OIL PLUG FILLER	1
18	*****	DRIVER SIDE AXLE TUBE (SEE SERVICE PARTS MANUAL FOR SPECIFIC PART NUMBER FOR YOUR MAKE AND MODEL VEHICLE) (INCLUDES ITEMS 19-20)	1
19	26814-G01	SNAP RING, 52MM (MECHANICAL BRAKE)	2
20	33687-G01	SNAP RING, 62MM (HYDRAULIC BRAKE)	1
21			
22			
23	26779-G01	INPUT SHAFT (INCLUDES ITEMS 24 - 28)	1
24	26778-G01	SCREW AND WASHER	2
25	26780-G01	GOVERNOR BASE	1
26	26781-G01	LOCK PIN	1
27	26782-G01	GOVERNOR PLATE UNIT	1
28	26783-G01	BALL BEARING	1

### **4-CYCLE TRANSAXLE**

When ordering parts, please specify the model and serial number of the product. \* Indicates a component that is not available as an individual part. G\*\* Indicates consult Customer Service Department for additional information.

ITEM	PART NO.	1 2 3 4 5 DESCRIPTION	QTY.
29	26815-G01	SHIFTER CABLE BRACKET	1
30	26784-G01	GOVERNOR SLEEVE	1
31	26785-G01	BALL BEARING	1
32			
33			
34			
35	*******	DRIVER SIDE AXLE SHAFT ASSEMBLY (SEE SERVICE PARTS MANUAL FOR SPECIFIC PART NUMBER FOR YOUR MAKE AND MODEL VEHICLE) (INCLUDES ITEMS 36-39)	1
36	26811-G01	BALL BEARING (MECHANICAL BRAKE)	1
37	33686-G01	BALL BEARING (6206DD) (HYDRAULIC BRAKE)	2
38	72267-G01	SNAP RING, 30 MM (HYDRAULIC BRAKE)	1
39	72268-G01	COLLAR (303828) (HYDRAULIC BRAKE)	1
40			
41			
42	26797-G01	SPACER	3
43	26798-G01	GEAR, 34 TOOTH	1
44	26799-G01	COUNTER SHAFT	1
45			
46	26800-G01	DIFFERENTIAL CASE (INCLUDES ITEMS 47 - 51)	1
47	26801-G01	SIDE DIFFERENTIAL GEAR	2
48	26802-G01	DIFFERENTIAL PINION	2
49	26803-G01	DIFFERENTIAL SHAFT	1
50	26804-G01	SPRING PIN	1
51	26806-G01	BALL BEARING (6007)	1
52			
53			
54	26852-G01	GEAR, 59 TOOTH (H.P. VERSION) (INCLUDES ITEM 56)	1
55	26807-G01	GEAR, 62 TOOTH (INCLUDES ITEM 56)	1
56	26806-G01	BALL BEARING (6007)	1
57			



When ordering parts, please specify the model and serial number of the product. 
\* Indicates a component that is not available as an individual part. 
G\*\* Indicates consult Customer Service Department for additional information.

ITEM	PART NO.	1 2 3 4 5 DESCRIPTION	QTY.
58	26808-G01	BOLT, M10 X 1.25 X 26MM LG	4
59	26792-G01	COLLAR, 24 X 12	1
60	25796-G01	BALL BEARING (6304)	1
61	26795-G01	SPACER	1
62	26785-G01	BALL BEARING	1
63	26810-G01	PASSENGER SIDE AXLE SHAFT ASSEMBLY (SEE SERVICE PARTS MANUAL FOR SPECIFIC PART NUMBER FOR YOUR MAKE AND MODEL VEHICLE) (INCLUDES ITEMS 64/66 OR 65/67)	1
64	26811-G01	BALL BEARING (MECHANICAL BRAKE)	1
65	33686-G01	BALL BEARING (6206DD) (HYDRAULIC BRAKE)	2
66	72267-G01	SNAP RING, 30 MM (HYDRAULIC BRAKE)	1
67	72268-G01	COLLAR (303828) (HYDRAULIC BRAKE)	1
68	26786-G01	SPACER 20 X 22	1
69	27123-G01	CLUTCH PIN	1
70	26790-G01	CENTER SHAFT	1
71	27122-G01	GEAR, 55 TOOTH	1
72			
73			
74	*****	PASSENGER SIDE AXLE TUBE ASSEMBLY (SEE SERVICE PARTS MANUAL FOR SPECIFIC PART NUMBER FOR YOUR MAKE AND MODEL VEHICLE) (INCLUDES ITEMS 75 OR 76)	1
75	26814-G01	SNAP RING, 52MM	2
76	33687-G01	SNAP RING, 62MM (HYDRAULIC BRAKE)	2
77			
78	26788-G01	SPACER	2
79	26793-G01	GEAR, 16 TOOTH	1
80	26832-G01	SHIFTER SHAFT	1
81	26817-G01	DOWEL PIPE	2
82	26851-G01	GEAR, 19 TOOTH (HP VERSION)	1
83	26818-G01	STEEL BALL	1
84	26819-G01	SPRING	1

### **4-CYCLE TRANSAXLE**

When ordering parts, please specify the model and serial number of the product. 
\* Indicates a component that is not available as an individual part. 
G\*\* Indicates consult Customer Service Department for additional information.

ITEM	PART NO.	1 2 3 4 5 DESCRIPTION	QTY.
85	26820-G01	BOLT, M10 X 1.25 X 12MM	1
86	26775-G01	GOVERNOR SHAFT	1
87	72261-G01	COLLAR, 20 X 8	1
88	26822-G01	CASE GASKET	1
89	26823-G01	BOLT, M8 X 1.25 X 100MM	8
90	26824-G01	BOLT, M8 X 1.25 X 110MM	1
91	72264-G01	BOLT, M8 X 1.25 X 115MM	1
92	26826-G01	LOCK WASHER, 8MM	12
93	26827-G01	NUT, M8 X 1.25MM	12
94			
95			
96	26828-G01	LOCK WASHER, 10MM (EARLY PRODUCTION)	5
97	26829-G01	NUT, M10 X 1.5MM (EARLY PRODUCTION)	5
98			
99	26776-G01	GOVERNOR FORK	1
100	26777-G01	GOVERNOR STOPPER	1
101	26778-G01	SCREW AND WASHER	2
102	26831-G01	GASKET	1
103	27124-G01	GEAR, 47 TOOTH	1
104	26773-G01	PASSENGER SIDE CASE ASSEMBLY (INCLUDES ITEMS 105 - 108)	1
105	72259-G01	OIL SEAL	1
106	26767-G01	STUD, M10 X 1.5 X 40MM (EARLY PRODUCTION)	5
107	72260-G01	BOLT, M10 X 1.5 X 23MM (LATER PRODUCTION)	5
108	26774-G01	OIL SEAL, 10 X 20 X 4	1



### **4-CYCLE TRANSAXLE**

### **Gasoline Vehicle**

Notes:	
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