

# POWER LAWN MOWERS

PARTS REORDERING

AND

GENERAL INSTRUCTIONS

FOR DISASSEMBLING, REASSEMBLING, AND REPAIRING

REVERSE GEAR TRANSMISSIONS ON LOCKE TRIPLEX MOWERS

Always give Serial Number of Mowers when ordering Parts

## 1974

*Manufactured by*

**LOCKE MANUFACTURING DIVISION**

STELLAR INDUSTRIES, INC. BRIDGEPORT, CONN. 06601

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**GENERAL INSTRUCTIONS**  
**FOR DISASSEMBLING, REASSEMBLING, AND REPAIRING**  
**REVERSE GEAR TRANSMISSIONS ON LOCKE TRIPLEX MOWERS**

1. The tractor clutch on these machines is a multiple disc type with a planetary reverse gear completely enclosed and running in an oil bath.

**LUBRICATION**

2. The oil level should be checked at regular intervals by removing the oil level pipe plug #1723 at the front side of the transmission case. The oil should be drained after the first 10 hours operation (drain plug is located at the bottom of the transmission), and refilled to overflow at the oil level plug #1723 with Type A transmission oil. Type A transmission oil is the same as the oil used in most cars with automatic transmissions. Additional changes of oil should be made after each 100 hours of operation.
3. The transmission requires only 12 ounces of oil and is equipped with a breather #1372-1 located on the cover plate #1528-1.
4. IMPORTANT - If the transmission is always run with clean oil, it will outlast the rest of the machine.

**FORWARD CLUTCH ADJUSTMENT**

5. If the machine shows evidence of slippage as the clutch discs wear, it will be necessary to take up on the adjustment as follows:
6. The Tractor Clutch Lever #1826 should be in the neutral position 1/8" before hitting the stop of the #1819 bracket shown on plate 14 in the parts book. This adjustment can be made with the #1626 Rod End.
7. It is necessary to lift this lever up over the stop to go into reverse. This pause eliminates the shock on the tractor chain, ball bearings, etc.
8. The motor should be stopped while making adjustments. Make certain that the clutch lever #1530 is in the neutral position with the ball check #1651 in the groove of this lever.
9. Remove the four screws #1646 that hold the steel cover plate #1528-1 to the top of the transmission and use caution in removing the plate not to damage the gasket #1739.
10. Roll the machine forward or backward until the #2238 locking pin is on top. Use a screw driver as shown in Fig. 3 to release locking pin which locks the adjusting ring in one of the 51 spaces cut in the #2233 internal gear.
11. Turn the adjusting ring in the direction of the arrow as shown on Fig. 3 and allow the locking pin to position in the next space.

12. Adjust only one space at a time.

#### REVERSE BRAKE BAND ADJUSTMENT

13. To adjust the wear of the reverse brake band remove pipe plug #1510, loosen jam nut #744 on brake adjusting screw #2296. Place screwdriver in brake adjusting screw and take up about one full turn of the brake screw until the brake drum #1536 still turns freely when the clutch lever #1826 is in the neutral position, and the clutch shifting fork has moved the flange of the #1533-1 clutch cone just up to the hub of the #1536 brake drum. Then the brake band should start to grip the drum when the clutch lever #1826 is pulled back for the reverse to operate.
14. If the mower has a tendency to crawl in either direction when in the neutral position, it is evident that either the clutch or the brake band is set up too tight or the oil is too heavy or dirty.
15. All adjustments on the machine should be made when the transmission is warm.

#### GENERAL OVERHAUL

16. The following instructions cover the replacement of broken brake band assemblies, replacement of friction discs, and major repairs not covered by the adjustment instructions.
17. While the transmission is still on the machine, loosen the Tractor Sprocket Lock Nut #1734 before removing the Tractor Chain, as this prevents the turning of the Sprocket Stud while removing the Lock Nut. This does not have to be done if only replacing the Reverse Brake Band Assembly #2290.
18. The next step is to remove the Transmission unit from the machine.

#### DISASSEMBLY OF THE REVERSE GEAR TRANSMISSION

19. Drain oil from the Transmission by removing #1723 Pipe Plug at the bottom of the Transmission (Fig. 1).
20. Engage the forward clutch with the Clutch Lever #1530. This locks the internal unit into one solid unit from the Input Shaft Driver #1728-S to the Tractor Clutch Sprocket #1563.
21. Loosen the Input Shaft Lock Nut #2004-S on the input end of the Sun Gear Shaft #1552-S as shown in Fig. 5. To do this, hold the Transmission in a vise by the #1563 Sprocket on the Output end with 2 wood blocks.

22. After removing this nut, the Input Shaft Driver #1728-S can be pulled off the Input Shaft by using a wheel puller or two screw drivers as pries. Be careful not to damage the case of the Oil Seal #1755 (Fig. 4).
23. Remove the Clutch Lever #1530 which is held with a Locking Bolt #767 and Woodruff Key #776 (Fig. 4).
24. Pick out the Clutch Lever Ball Check #1651 and its Spring #1535. Remove Transmission Cover Plate #1528-1 and its Gasket #1739. Next, remove the Transmission Gear Housing Cover #1527 which is held by 6 Socket Head Cap Screws #1647-1 (Fig. 4).
25. Remove Pipe Plug #1373, loosen Jam Nut #744 unscrew Brake Adjusting Screw #2296, remove block spring and washers and lay aside.
26. Remove the Clutch Fork Lower Fulcrum Stud #1539 which has a hexagon head. This allows the Clutch Fork #1529 to be lifted out with the two Clutch Fork Trunnion Dogs #1531 as shown in Fig. 4.
27. Remove the 3 Transmission Housing Cap Screws #2303 which holds Flange #2289 to Housing #2288 a Gasket #2302 is used as a seal between the housing and flange (Fig. 4).
28. The Flange #2289 with Oil Seal #1755 and Input Bearing #1756 can now be removed and examined. If it is necessary to replace the Brake Band Assembly #2290 remove Adjusting Screw #2296 as shown in (Fig. 4).
29. All of the internal mechanisms are now separated as a sub-assembly. To disassemble this unit a clip 3/8" wide can now be placed on the Planetary Gear Carrier #1555 to limit the movement of the Clutch Cone #1533-1 which will prevent the Clutch Balls from dropping out of their Cage when the Internal Gear #2233 is screwed off of the Adjusting Ring #2234, (Fig. 5).
30. To replace the Friction Clutch Disc #1550-1 and #1550-2, and Steel Discs #1551, with screw driver release locking pin (hold out), turn internal gear, and remove same. Remove friction and steel discs.
31. The Sun Gear Shaft Assembly #1552-S can now be pulled out. Pick out the 3 Planetary Pinions #1553 (Fig. 5).
32. To examine the Clutch Adjusting Ring #2234, Thrust Washers #1534 and #1799-1 and the Ball Cage #1844, remove the 3/8" wide clip from the Carrier #1555 mentioned in paragraph 29 which allows the Clutch Cone #1533-1, Adjusting Ring #2234, Carrier #1555, Ball Cage #1844, Washers #1534 and #1799-1 and Balls #1846 to separate for inspection. If any of these need replacing, cut the Locking Wire #1816 on the Brake Drum Hub #1536 and remove the 2 Locking Plugs #720 (Fig. 5). There are holes in the #1556 Planetary Carrier Bushings for knockouts.
33. Support the Brake Drum #1536 on 2 parallels and press the Planetary Carrier #1555 out of the Brake Drum. The Brake Drum #1536 is keyed to the Carrier with a Feather Key #1575, the right end of which is spread slightly to keep it from falling out.

34. The Clutch Cone #1533-1, the Clutch Adjusting Ring #2234, the Ball Cage #1844, the 12 #1846 Clutch Balls, and the Thrust Washers #1799-1 and #1534 can now be slid off the Carrier.
35. If a transmission is run in a continually slipping condition, it will cause the Clutch Balls #1846 to wear a groove in the Thrust Washers #1799-1 and #1534 which will make it difficult to engage the clutch in the forward position.
36. Examine the Sun Gear Shaft #1552-S for wear, and also the Bronze Bushings #1556 in the Planetary Gear Carrier #1555. These can be replaced.
37. Also examine the Sun Gear Needle Bearing and its Quill #1560 and replace if necessary. This Needle Bearing is assembled with a press fit into the end of the Sun Gear Shaft Assembly #1552-S.

### ASSEMBLY OF THE REPAIRED TRANSMISSION

38. If the unit has been completely disassembled, as outlined in the preceding instructions, the following order of sequence should be followed in reassembling the unit.
39. Assemble the Clutch Adjusting Ring #2234 and Bushing #1543-1, with the Thrust Washer #1799-1, the Ball Cage #1844, Retainer Ring #1843-S, Snap Ring #1845-S and slide the Clutch Cone #1533-1 into the Bushing. Then slide this sub-assembly onto the Planetary Gear Carrier #1555 with its Thrust Washer #1534 in place.
40. Next, assemble the Brake Drum #1536 onto the Carrier #1555 with the Feather Key #1575. The slightly flattened end will keep this key from backing out through the Brake Drum. Be careful that this key does not stick up above the diameter of the Carrier #1555, since this will limit the motion of the Clutch Cone #1533-1, which should move freely up to the hub of the Brake Drum #1536. Insert the 2 Locking Plugs #720 in the hub of the Brake Drum #1536 and wire in place with the #1816 soft iron Locking Wire.

### LOADING THE BALL CAGE

41. With the Clutch Cone #1533-1 pushed up against the Clutch Adjusting Ring Bronze Bushing #1543-1, insert the 12 Clutch Balls #1846 in the openings in the Ball Cage #1844. This should be done while holding the whole assembly in a vertical position which keeps the balls from dropping out. Then slide the whole assembly along the Planetary Gear Carrier #1555 until the Clutch Balls hit the Thrust Washer #1534 on the rear of the Carrier as shown in Fig. 5.

42. While in this position, put a clip  $3/8$ " wide on the Carrier to limit the motion of the Clutch Cone #1533-1. Keep this clip on until all the Clutch Discs have been assembled with the Internal Gear #2233 or the Clutch Balls will drop out and it will be necessary to disassemble the entire unit to reload the Ball Cage.

### **ASSEMBLY OF GEARS, CLUTCH DISCS, INTERNAL GEAR AND INTERNAL GEAR FLANGE**

43. Then insert the Sun Gear Shaft #1552-S, and then the 3 Planetary Pinions #1553. Now place the Steel Clutch Disc #1551 (internal teeth), the 3 Clutch Friction Discs #1550-1 (external teeth), in this order: 1 - #1551, 1 - #1550-1, 1 - #1551, 1 - #1550-1, 1 - #1551, then place the double thickness Friction Disc #1550-2.

With a rule line up the teeth of the friction discs and the pinion gears (all three gears), position #2233 Internal Gear over discs and gears, then screw on #2234 Adjusting Ring into internal gear until 2 threads remain exposed.

44. The clutch Adjusting Ring #2234 should now be adjusted so that the Clutch Cone #1533-1 engages with considerable pressure. The final adjustment should be made after the sub-assembly has been assembled in the Transmission Housing.
45. Now the  $3/8$ " wide clip that limits the motion of the Clutch Cone can be removed and the clutch should be left in the engaged position (Fig. 5).

### **FINAL OUTPUT END ASSEMBLY**

46. Assemble the Ball Bearing #1561 into the Housing Flange #2289 and fasten in place with the Output Ball Bearing Retainer Plate #1564 with four  $1/4$ -20 Flat Head Screws #1650 (Fig. 4).
47. Insert two parallels between the Brake Band #1536 and the Clutch Adjusting Ring #2234. Support the Adjusting Ring on these parallels with the mechanism in a vertical position and rest the parallels on a pair of blocks of sufficient height to prevent the Sun Gear Shaft #1552-S touching the bench or support of the blocks.
48. With the Clutch Cone #1533-1 in the engaged position and the driving mechanism resting on the parallels on the blocks in a vertical position, place the Output Flange #2289 with its Ball Bearing #1561 clamped in place by the Retainer Plate #1564, over the driving mechanism; place a wood block  $1\ 1/2$ " thick with a clearance hole for the Tractor Sprocket Stud #1562-1 over this stud and across the Flange #2289 and drive the flange and Ball Bearing onto the #1562-1 Stud and Internal Gear #2233.
49. Place the Ball Bearing Clamping Washer #1565 onto the Stud #1562-1. Insert the 2 Woodruff Keys #776 and drive the Tractor Sprocket #1563 onto the Stud. Assemble the Tractor Sprocket Lock Nut #1734 and be sure the Clamping Washer #1565 turns freely in the Retainer Plate #1564.

## FINAL ASSEMBLY — INPUT END

50. Assemble the Input Needle Bearing #1756 by pressing it into place in the Input End of the Housing #2288, then press the Oil Seal #1755 into place. Use a plug with parallel surfaces of a greater diameter than the oil seal and be sure that it is entered straight.
51. Place the Brake Band Assembly #2290 in the #2288 Housing insert #2296 adjusting screw in housing then place the following parts on adjusting screw; #2294 Gear Rack, #2297 Washer, #2295 Spring, 2 piece #2297 Washers, #744 Nut. Hold nut and turn adjusting screw until screw is about 1/2" below surface.
52. Place 2 parallels 2" high to clear the hub on the #2289 Flange Assembly. Place #2302 Gasket over flange section of #2289 Assembly. Position #2288 Housing Assembly on #2289 Flange and lock together with 3 piece #2303 Cap Screws.
53. Start the Input Shaft Driver #1728-S on the Input end of the Input Shaft #1552-S and drive onto the shaft until the hub of the Driver is against the slight shoulder on the Input Shaft #1552-S (Fig. 5).
54. Tighten Lock Nut #2004-S against the Driver #1728-S (Fig. 5).

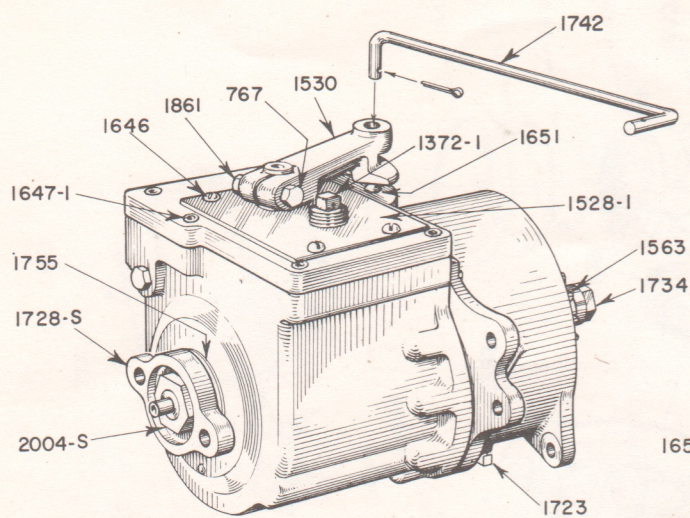
## ASSEMBLY OF CLUTCH FORK

55. Assemble the 2 Clutch Fork Trunnion Dogs #1531 in the Clutch Fork #1529 and slide this into the Transmission onto the Clutch Cone #1533-1, then screw in the lower Clutch Fork Fulcrum Stud #1539 (Fig. 4).
56. Assemble the Gear Housing, Cover #1527 to the Housing #2288 with some gasket cement to prevent leakage (Fig. 4).
57. Assemble the Clutch Fork Lever #1530 and Woodruff Key #776. Insert Ball Check Spring #1535 and Ball #1651 in the Housing Cover as shown in Fig. 1. The lever #1530 should be pushed down within 1/8" of the Cover and locked with the Bolt #767 and Lock Nut #1861 (Fig. 4).

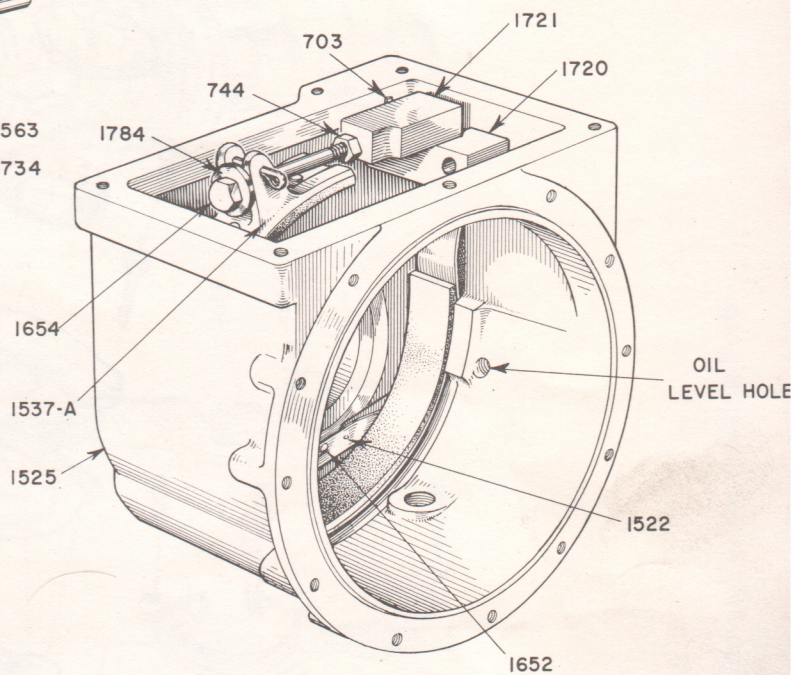
## GENERAL INSTRUCTIONS

58. Now make the final adjustments of the Clutches as outlined on Pages 3 and 4.
59. After adjustments, assemble the Cover Plate #1528-1 with its Gasket #1739. Fill the Transmission with approximately 12 ounces Type A oil (Type A transmission oil is the same as the oil used in most cars with automatic transmissions) until it starts to overflow at the Oil Level hole on the side of the Housing #2288 (Fig. 2).
60. A heavy oil will not penetrate and lubricate all parts of the Transmission and will ultimately cause failure. A heavy oil will also cause the discs to stick together, and the Forward Clutch will not release.

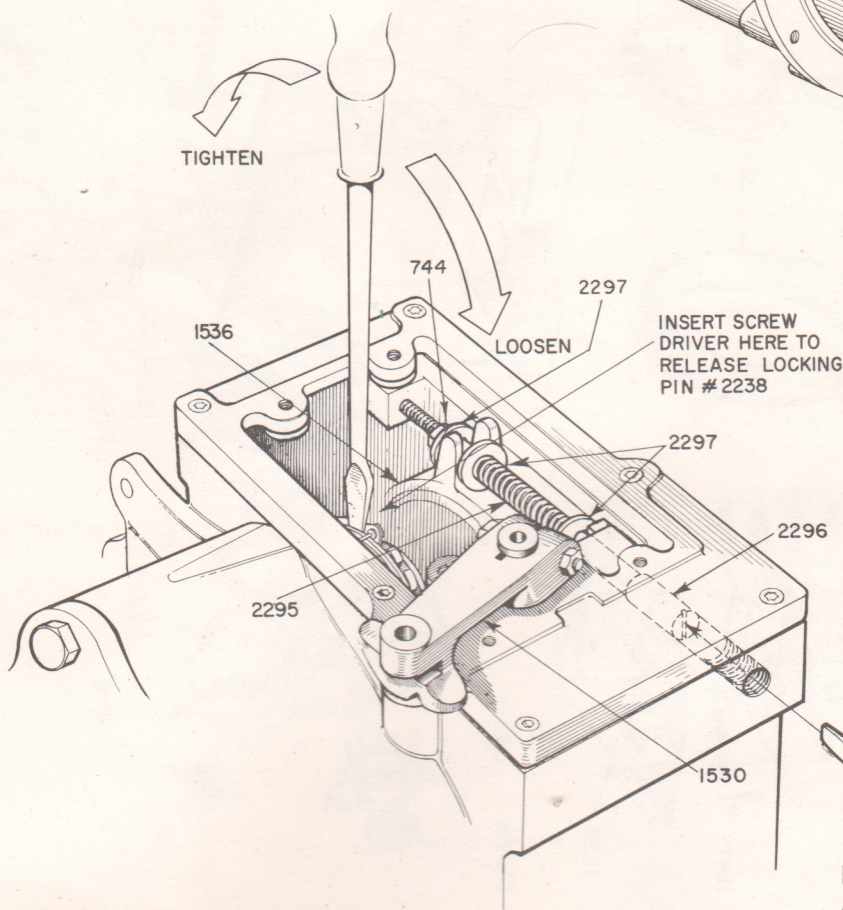




**Fig. 1**



**Fig. 2**



**Fig. 3**

NOTE: Fig. 1 and 2 illustrate obsolete old style transmission.

Fig. 3 illustrates forward and reverse adjustments of new style transmission.

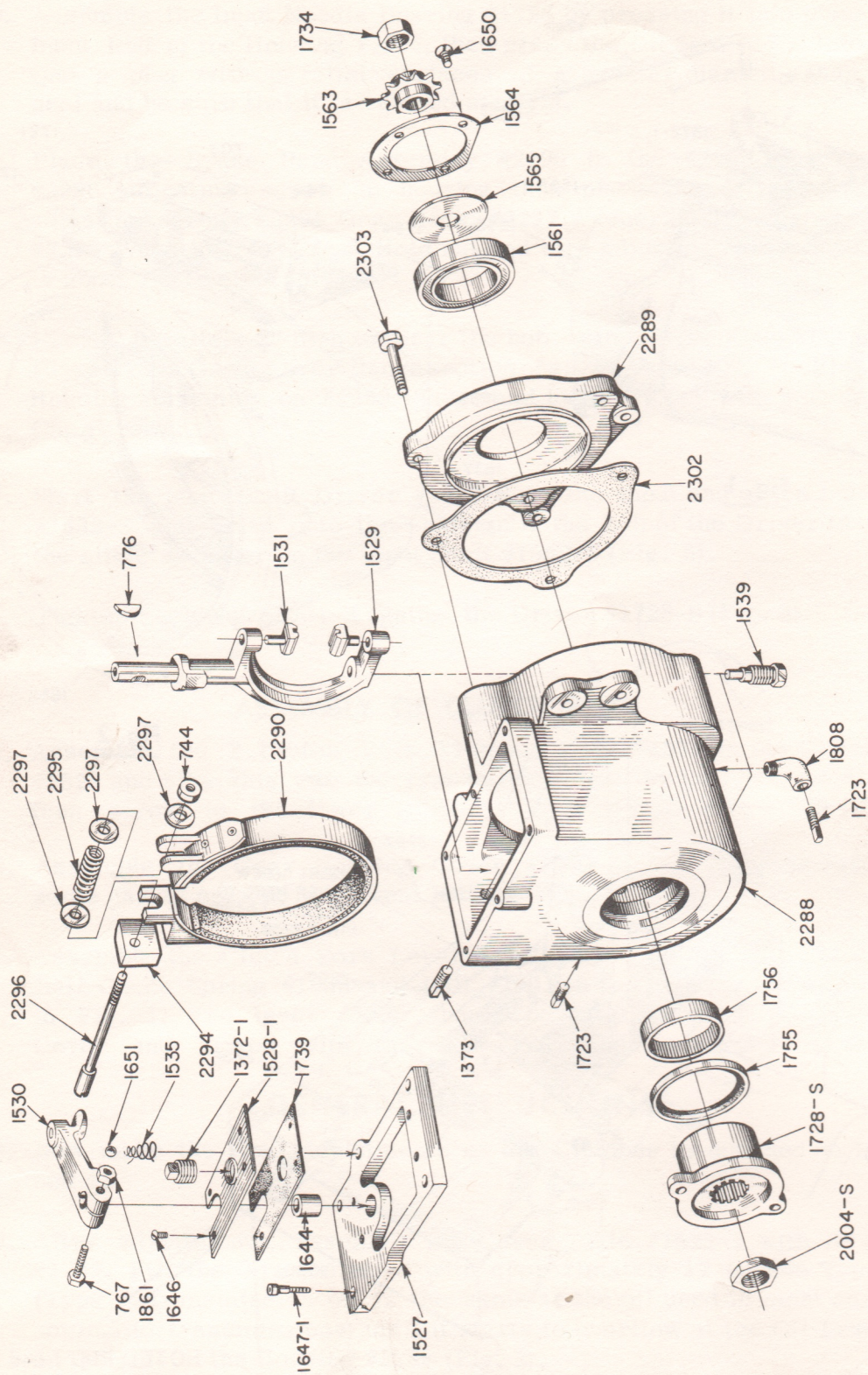


FIGURE 4

Always give Serial Number of Mowers when ordering Parts

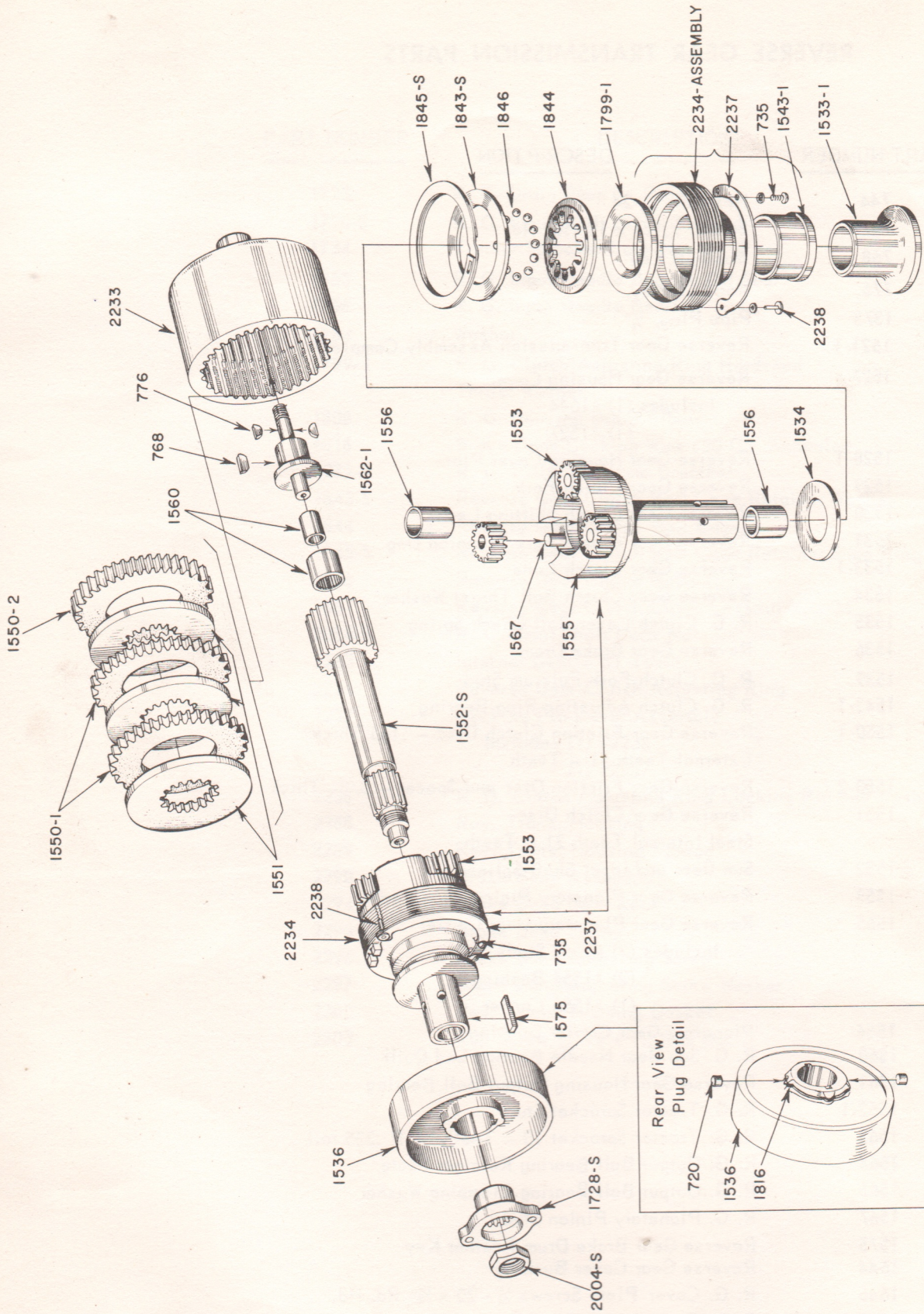


FIGURE 5  
 Always give Serial Number of Mowers when ordering Parts

## REVERSE GEAR TRANSMISSION PARTS

<u>PART NUMBER</u>	<u>DESCRIPTION</u>
744	Hex Nut, $\frac{5}{16}$ -24
767	Screw, $\frac{5}{16}$ -24 x $1\frac{1}{2}$ Hex Hd.
768	Woodruff Key
776	Woodruff Key
1373	Pipe Plug, $\frac{1}{4}$ "
1521-1	Reverse Gear Transmission Assembly Complete
1527	Reverse Gear Housing Cover Includes (1) #1644 (1) #1527
1528-1	Reverse Gear Housing Cover Plate
1529	Reverse Gear Clutch Fork
1530	Reverse Gear Clutch Shifting Lever
1531	Reverse Gear Clutch Fork Trunnion Dog
1533-1	Reverse Gear Clutch Cone
1534	Reverse Gear Clutch Ball Thrust Washer
1535	R. G. Clutch Lever Ball Check Spring
1536	Reverse Gear Brake Drum
1539	R. G. Clutch Fork Fulcrum Stud
1543-1	R. G. Clutch Adjusting Ring Bearing
1550-1	Reverse Gear Friction Clutch Disc - .146 Thick External Teeth 51 - Teeth
1550-2	Reverse Gear Friction Disc and Spacer - $\frac{3}{8}$ " Thick
1551	Reverse Gear Clutch Disc Steel Internal Teeth 21 - Teeth
1552-S	Sun Gear and Input Shaft Splined
1553	Reverse Gear Planetary Pinion 15 - Teeth
1555	Reverse Gear Planetary Gear Carrier Includes (3) #1567 Studs (2) #1556 Bushings (1) #1555 Carrier
1556	Planetary Gear Carrier Bushing
1560	R. G. Sun Gear Needle Bearing and Quill
1561	Reverse Gear Housing Output Ball Bearing
1562-1	R. G. Tractor Sprocket Stud
1563	R. G. Tractor Sprocket 10 - Teeth $\frac{1}{2}$ " P .335 roll
1564	R. G. Output Ball Bearing Retainer Plate
1565	R. G. Output Ball Bearing Clamping Washer
1567	R. G. Planetary Pinion Stud
1575	Reverse Gear Brake Drum Feather Key
1644	Reverse Gear Cover Bushing
1646	R. G. Cover Plate Screws $\frac{1}{4}$ - 20 x $\frac{1}{2}$ " Rd. Hd.
1647-1	R. G. Cover Screws $\frac{1}{4}$ - 20 x $\frac{5}{8}$ " Recessed Head
1650	R. G. Output Bearing Retainer Plate Screws $\frac{1}{4}$ - 20 x $\frac{1}{2}$ " Flat Head
1651	Clutch Lever Locking Ball $\frac{7}{16}$ " Diameter



<u>PART NUMBER</u>	<u>DESCRIPTION</u>
1723	R. G. Drain Plug $\frac{1}{8}$ " Pipe
1728-S	R. G. Input Shaft Driver Splined
1734	Tractor Sprocket Lock Nut $\frac{5}{8}$ - 18
1755	R. G. Input Needle Bearing Oil Seal
1756	R. G. Input Needle Bearing
1784	Washer
1799-1	R. G. Clutch Adjusting Ring Hardened Thrust Washer
1808	R. G. Housing Drain Elbow
1816	Brake Drum Locking Wire #20 Ga. Annealed
1372-1	R. G. Filler Plug and Breather
1843-S	Reverse Gear Clutch Ball Cage Retainer Washer
1844	Reverse Gear Clutch Ball Cage
1845-S	Reverse Gear Clutch Ball Cage Retainer Snap Ring
1846	Reverse Gear Clutch Balls ( $\frac{5}{16}$ " )
1861	Reverse Gear Clutch Lever Locknut $\frac{5}{16}$ - 24
2004-S	R. G. Input Shaft Lock Nut
2233	Internal Gear - 51 Teeth
2234	Reverse Gear Clutch Adjusting Ring
2237	Locking Pin Lever Assembly Includes (1) #2238 (1) #2237
2238	R. G. Clutch Adjusting Ring Locking Pin and Washer
2288	Rev. Trans. Housing
2289	Rev. Trans. Housing Flange
2290	Brake Band Assembly
2294	Brake Band Gear Rack
2295	Brake Band Spring
2296	Brake Band Adjusting Screw
2297	Brake Band Adjusting Screw Washer
2302	Rev. Trans. Housing Gasket
2303	Cap Screw, $\frac{7}{16}$ -14 x $1\frac{1}{4}$ Hex Hd.