



SERVICE INFORMATION

INDUSTRIAL TRUCK DIVISION

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VOLUME I 65-47

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DATE 23 JUNE 1965

SECTION TRANSMISSION

SUBJECT: TRANSMISSION DISASSEMBLY AND REASSEMBLY.

PROBLEM: No ESTABLISHED PROCEDURE.

SOLUTION:

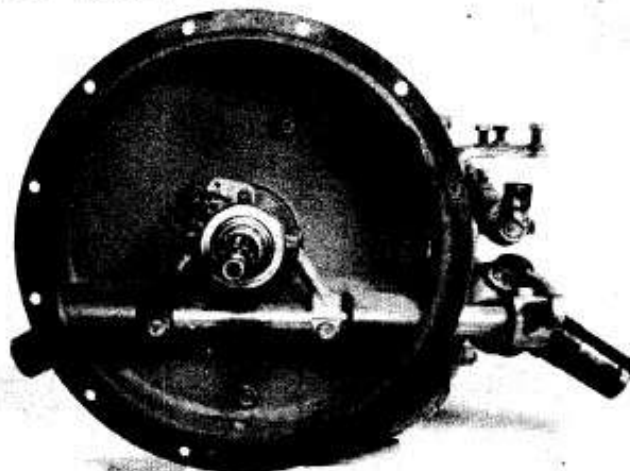
THE FOLLOWING ILLUSTRATED STEP BY STEP PROCEDURE WILL BE USEFUL AS A GUIDE FOR THE DISASSEMBLY AND REASSEMBLY OF THE CORTEZ TRANSMISSION.

PREPARATION

1. DRAIN TRANSMISSION GREASE BEFORE REMOVAL FROM THE CORTEZ.
2. REMOVE TRANSMISSION FROM CORTEZ AND STEAM CLEAN OR WASH EXTERIOR SURFACES FREE OF ROAD DIRT.
3. PREPARE A CLEAN WORK BENCH OR FLOOR SPACE TO PERFORM OVERHAUL PROCEDURES TO PREVENT CONTAMINATION AND LOSS OF PARTS.

TRANSMISSION DISASSEMBLY

1. REMOVE CLUTCH RELEASE BEARING, CARRIER AND SPRING.
2. LOOSEN CLUTCH RELEASE SHAFT YOKE FINGER RETAINING NUTS.
3. DRIVE CLUTCH RELEASE SHAFT OUT IN DIRECTION OF CLUTCH RELEASE SHAFT ARM.



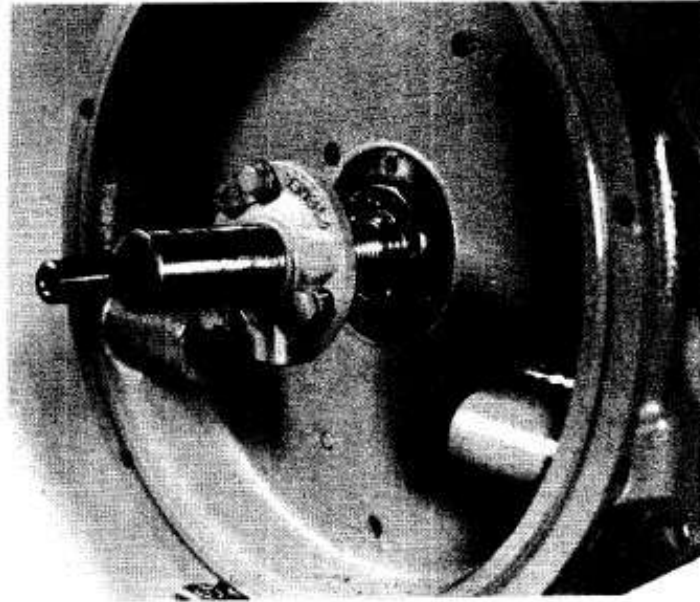


FIG. 2

4. REMOVE MAIN DRIVE SHAFT BEARING CAP. (SEE FIG. 2)
5. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE.
6. REMOVE DIFFERENTIAL DRIVE SHAFT BEARING CARRIER AND UNIVERSAL JOINT FROM EACH SIDE. MARK CAPS AND CASE FOR REASSEMBLY AND KEEP SHIMS SEPARATED. (SEE FIG. 3)

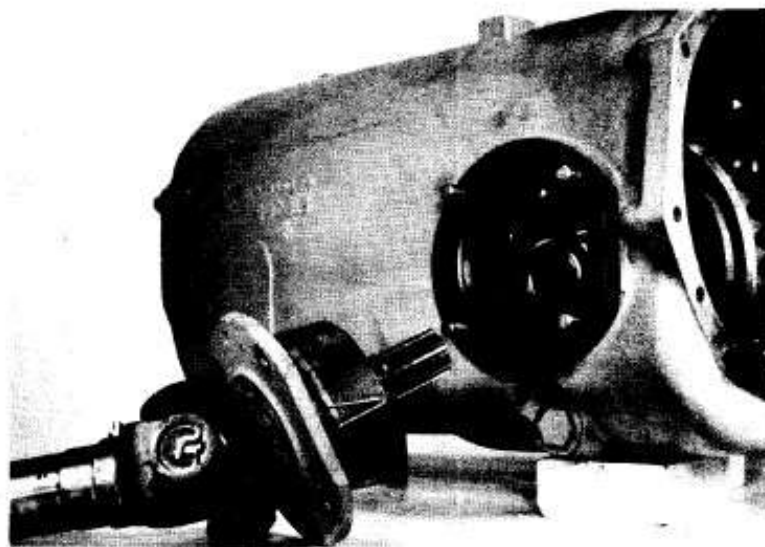


FIG. 3



FIG. 4

8. REMOVE CONTROL COVER ASSEMBLY.

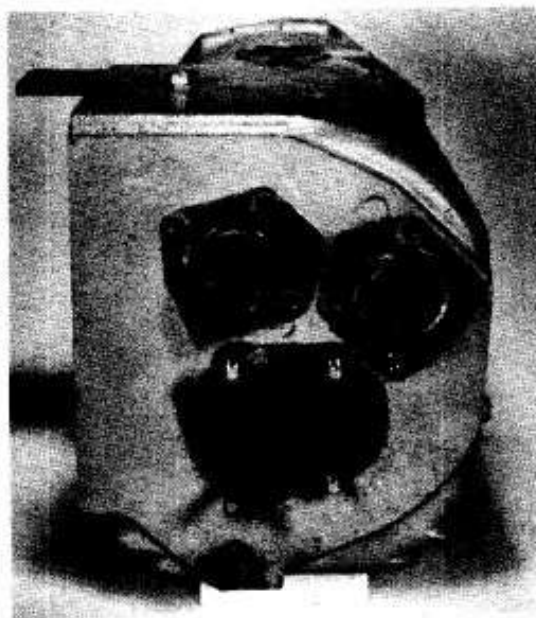


FIG. 6

7. REMOVE DIFFERENTIAL ASSEMBLY, NOTING WHICH SIDE RING GEAR IS PLACED AGAINST PINION GEAR.

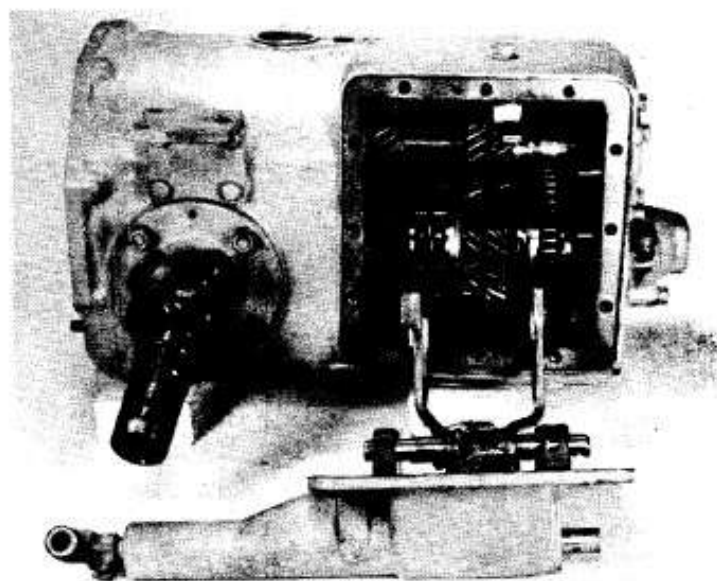


FIG. 5

9. REMOVE REAR BEARING CAPS AND SHIMS.

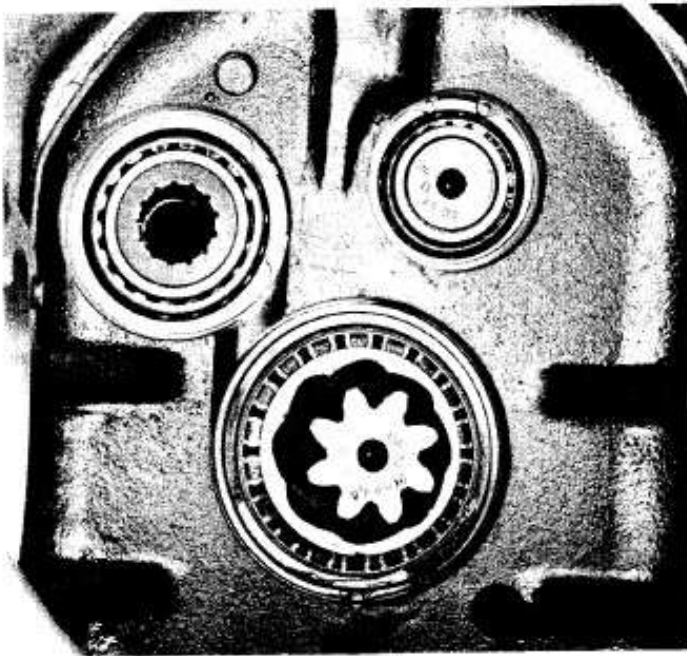


FIG. 7

11. REMOVE PINION SHAFT NUT,
SPEEDOMETER DRIVE GEAR,
REAR BEARING AND SHIMS.

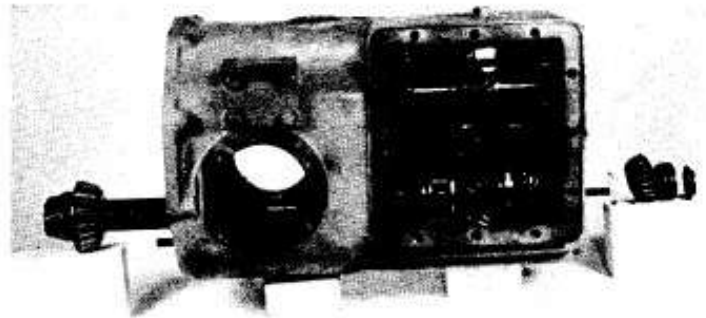


FIG. 8

12. PUSH PINION SHAFT
FORWARD OUT OF CASE
AND ROLL GEAR GROUP
OUT SIDE OPENING.



FIG. 9
PINION SHAFT

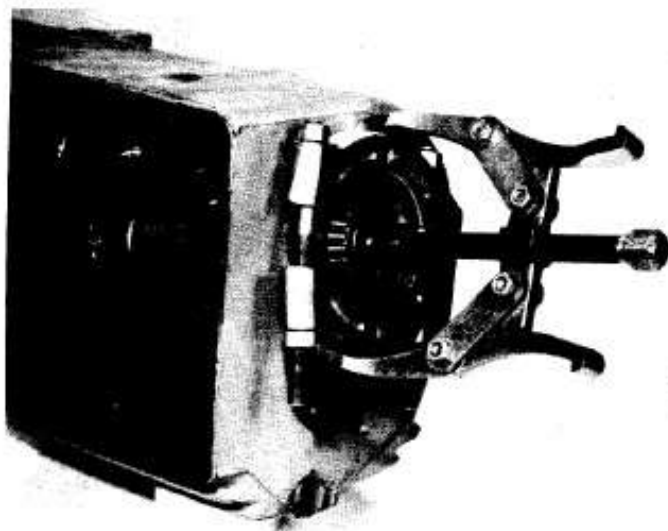


FIG. 10

13. USING BEARING PULLER, REMOVE INTERMEDIATE SHAFT REAR BEARING.

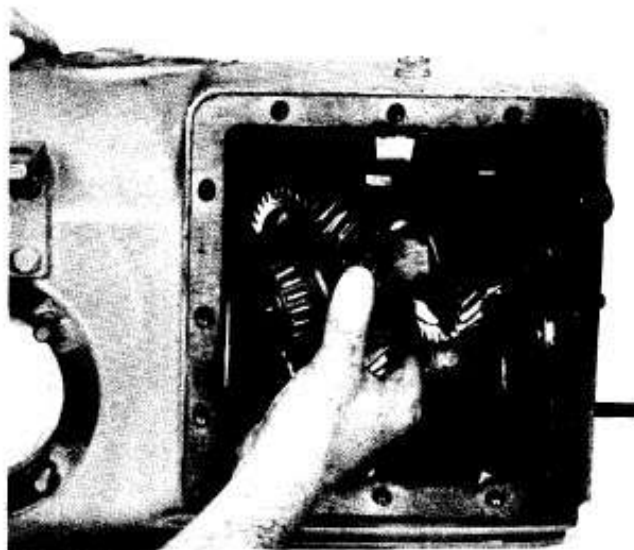


FIG. 11

14. REMOVE INTERMEDIATE SHAFT ASSEMBLY.

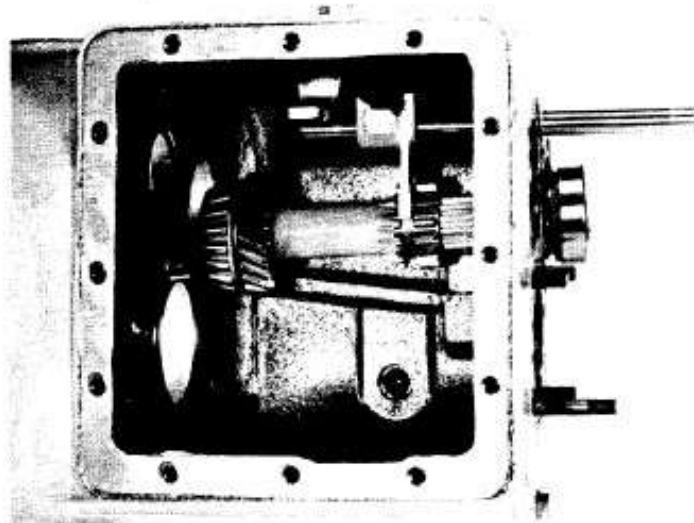


FIG. 12

15. USING A SOFT (BRASS) PUNCH, DRIVE REVERSE SHIFT FORK PAIL TO THE REAR UNTIL FREE OF THE SHIFT FORK. REMOVE BOTH SHIFT FORK AND RAIL.
16. DRIVE MAIN SHAFT TOWARD REAR TO REMOVE MAIN SHAFT REAR BEARING CUP.

17. REMOVE MAIN SHAFT.
18. REMOVE REVERSE SHIFT FORK ROCKER ARM.

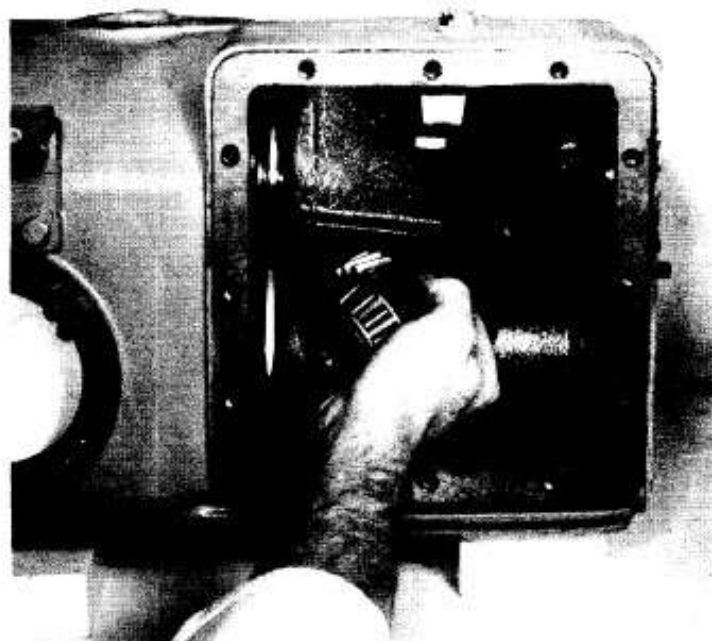


FIG. 13

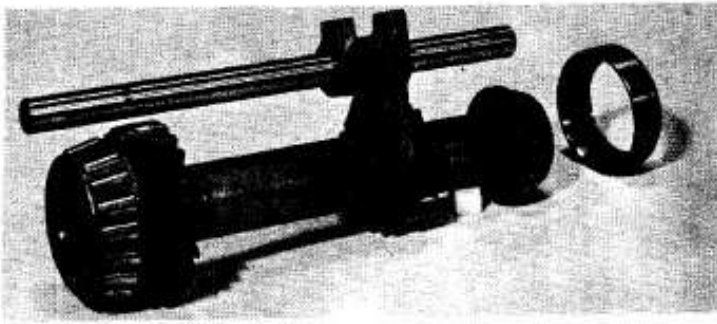


FIG. 14

TRANSMISSION DRIVE SHAFT AND REVERSE GEAR ASSEMBLY REMOVED.

19. MARK DIFFERENTIAL ASSEMBLY HALVES FOR LOCATION UPON REASSEMBLY.
20. REMOVE LOCK WIRES AND DIFFERENTIAL CASE BOLTS.

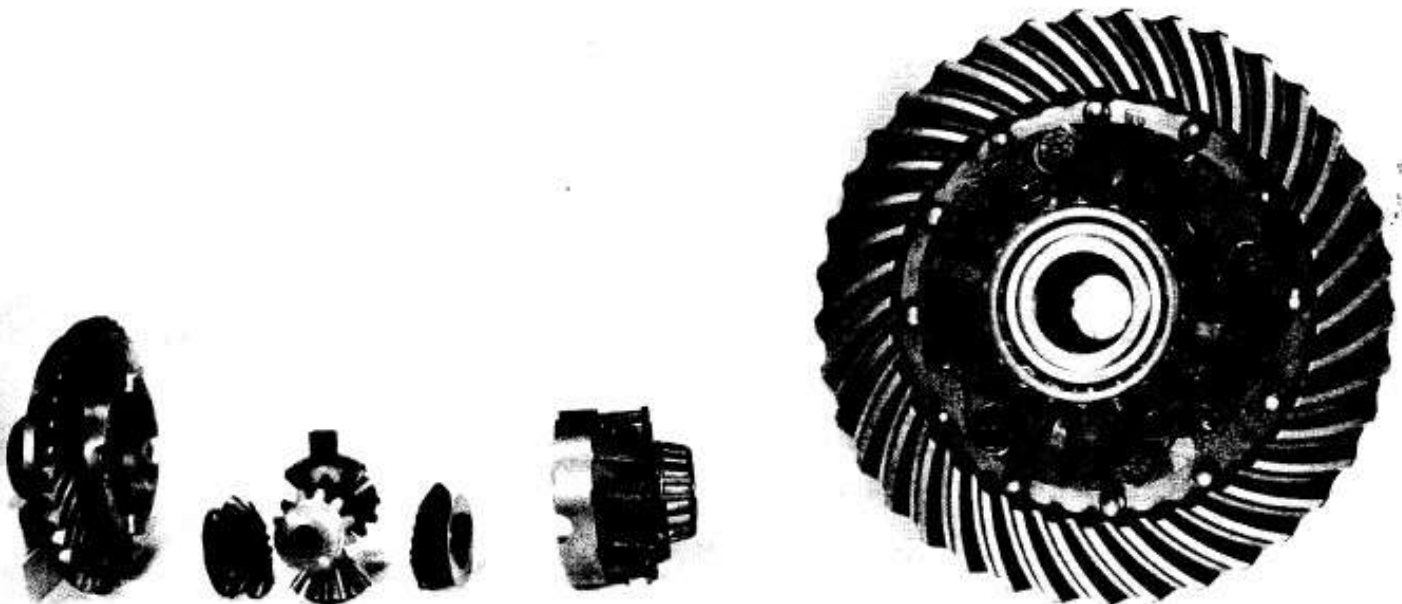


FIG. 15

DIFFERENTIAL ASSEMBLY DIASSEMBLED.

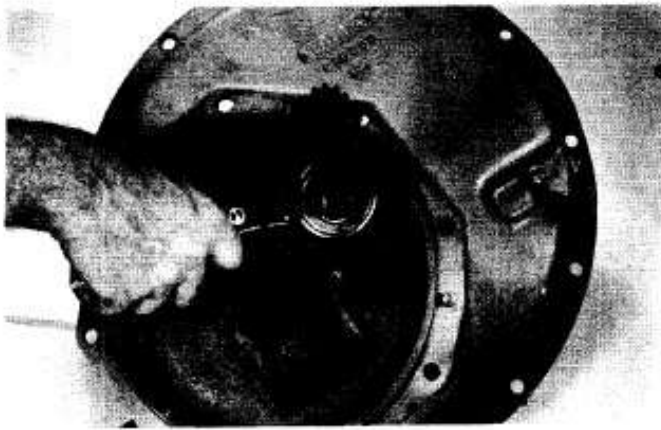


FIG. 16

22. REFERENCE FIG. 17, REMOVE REVERSE LUG LOCATING SCREW LOCK WIRE AND SCREW. PUSH REVERSE RAIL CLEAR OF "OVER SHIFT" SPACERS AND LUG.

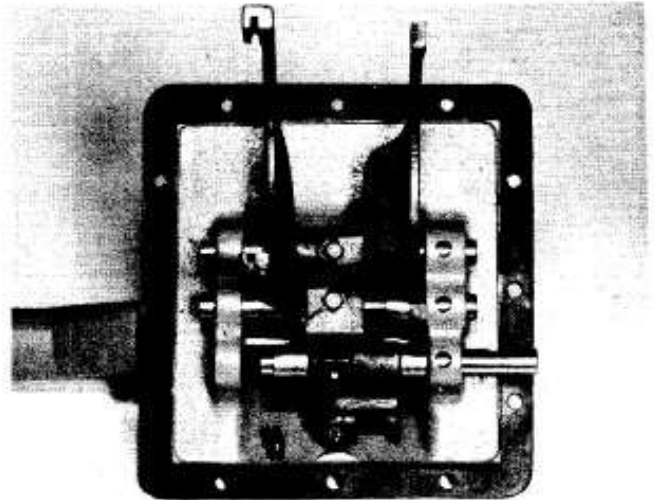
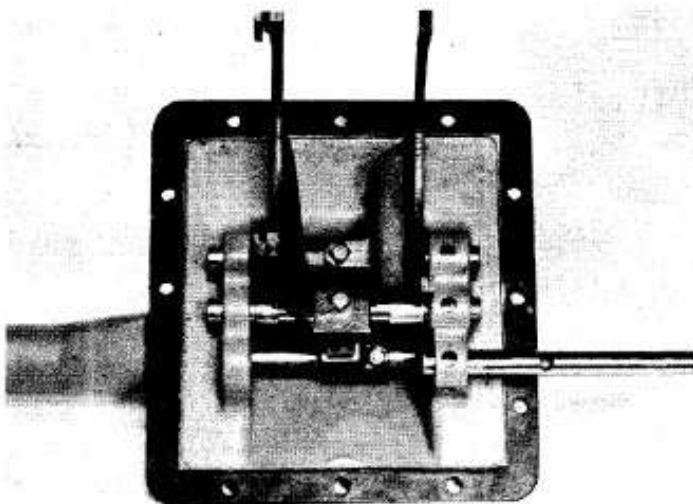


FIG. 17

23. AFTER REMOVAL OF "OVER SHIFT" SPACERS AND LUG, REMOVE RAIL FROM COVER TAKING CARE NOT TO LOSE DETENT SPRING AND BALL.



24. REMOVE 3RD AND 4TH AND 1ST AND 2ND SHIFT RAILS, USING SAME PROCEDURE AS IN PROCEDURE (23). NOTE: TWO MESH LOCK BALLS ARE LOCATED IN THE ORIFICE BETWEEN 1ST AND 2ND AND 3RD AND 4TH SHIFT RAILS, ALSO TWO BETWEEN 3RD AND 4TH AND REVERSE SHIFT RAILS.

THESE BALLS WORK IN CONJUNCTION WITH AN INTERLOCK PIN LOCATED IN THE 3RD AND 4TH SHIFT RAIL.

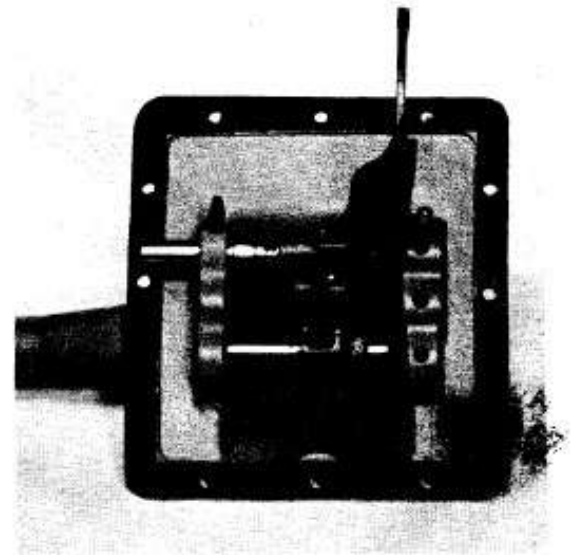


FIG. 19

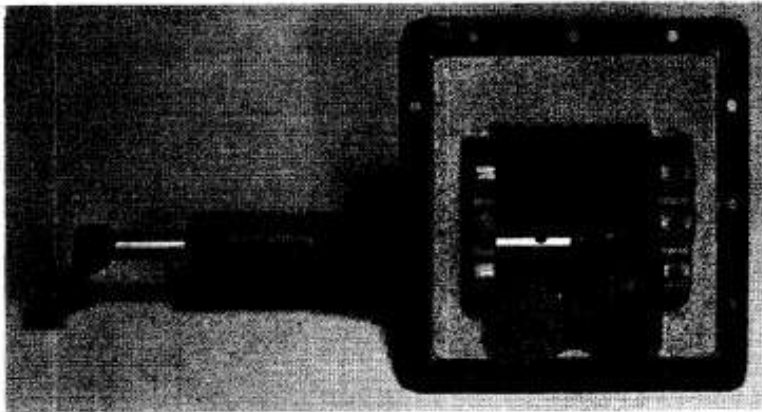


FIG. 20

25. REMOVE SHIFT SHAFT BY REMOVING LOCK SCREW FROM SHIFT SHAFT INSIDE FINGER.

26. ADJUSTMENT OF REVERSE LATCH PLUNGER SHOULD BE FLUSH WITH LUG. ADJUSTMENT IS MADE BY INCREASING OR DECREASING SPRING TENSION BY USE OF ADJUSTING NUT.

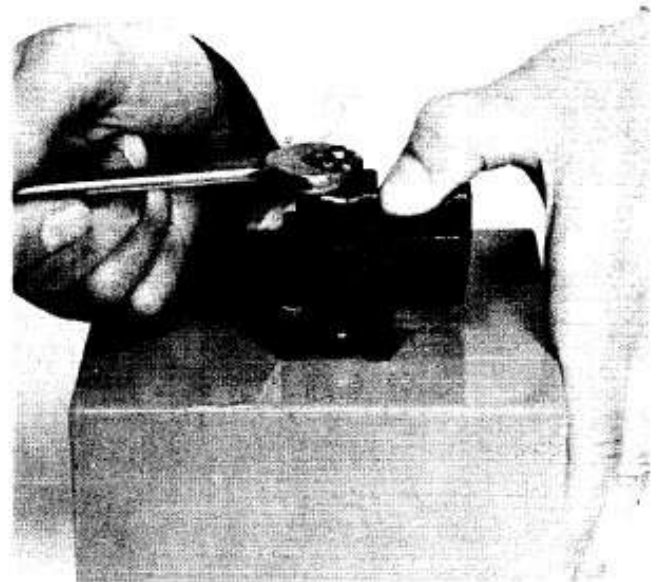


FIG. 21

TRANSMISSION ASSEMBLY

TRANSMISSION COMPONENTS SHOULD BE THOROUGHLY CLEANED AND LUBRICATED PRIOR TO ASSEMBLY. TORQUE SPECIFICATIONS AND BEARING PRE-LOAD SHOULD BE CLOSELY ADHERED TO.

1. INSTALL REVERSE SHIFT FORK ROCKER ARM WITH BOLT LOCK WASHER AND NUT. TORQUE TO 60 FOOT LBS.
2. INSTALL MAIN TRANSMISSION DRIVE SHAFT ASSEMBLY (REF. FIG. 12)
3. INSTALL REVERSE SHIFT FORK AND RAIL (REF. FIG. 12)
4. INSTALL MAIN DRIVE SHAFT FRONT BEARING RETAINER SNAP RING. (REF. FIG. 7)
5. INSTALL MAIN DRIVE SHAFT REAR BEARING CUP, SHIMS AND CAP. (REFER FIG. 6)
6. REFER TO FIG. 22, USING MAIN DRIVE SHAFT AS AN ADAPTOR, CHECK BEARING PRE-LOAD (2-6 INCH LBS) ADJUST BY MEANS OF SHIMS UNDER REAR BEARING CAP.

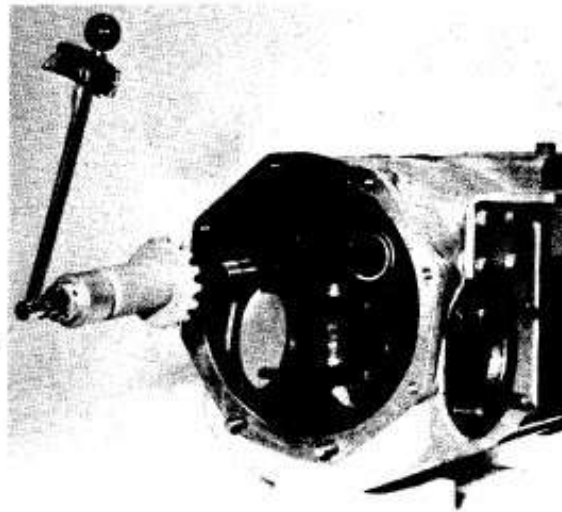


FIG. 22



FIG. 23

INTERMEDIATE SHAFT GEAR ASSEMBLY.

7. INSTALL INTERMEDIATE SHAFT GEAR ASSEMBLY (FIG. 23)
8. INSTALL INTERMEDIATE SHAFT GEAR ASSEMBLY FRONT BEARING RETAINING SNAP RING.
9. INSTALL INTERMEDIATE SHAFT REAR BEARING CUP, SHIMS AND CAP. ADJUST BY MEANS OF REAR SHIMS TO A PRE-LOAD OF 2-6 INCH LBS. CHECK BY USING SAME METHOD AS ITEM 6.

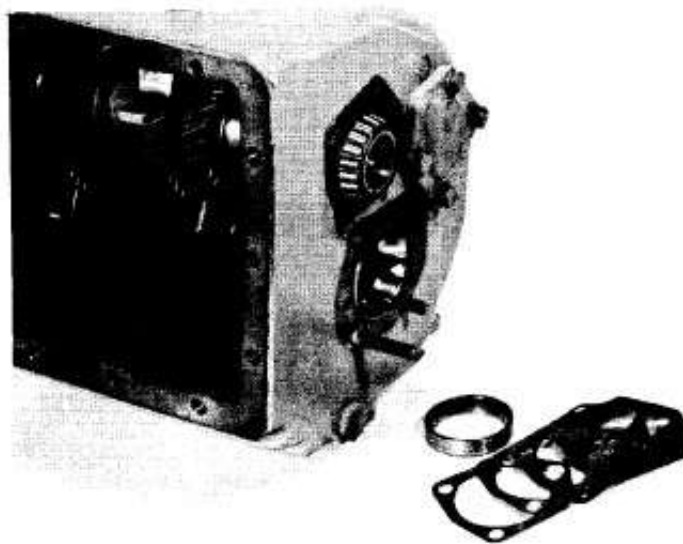


FIG. 24

INTERMEDIATE REAR BEARING SHIMS.

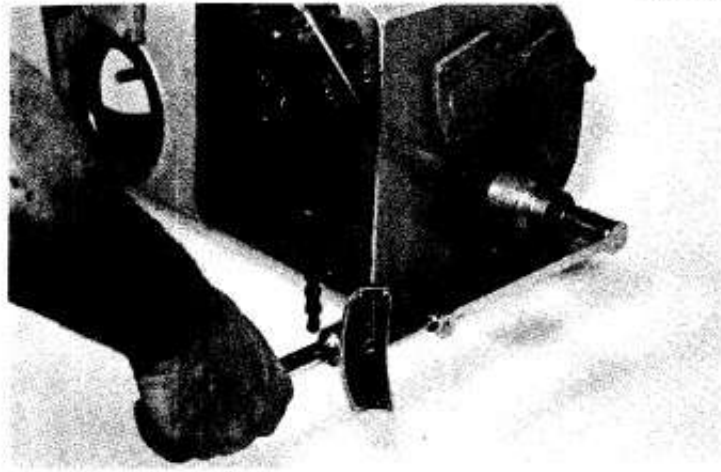


FIG. 25

10. INSTALL PINION SHAFT AND BEARINGS, LESS GEARS AND TORQUE TO 150-200 FOOT LBS.
11. CHECK BEARING PRE-LOAD. SHOULD BE 10-15 INCH LBS. ADJUSTED BY VARIABLE PINION SHAFT SHIMS.

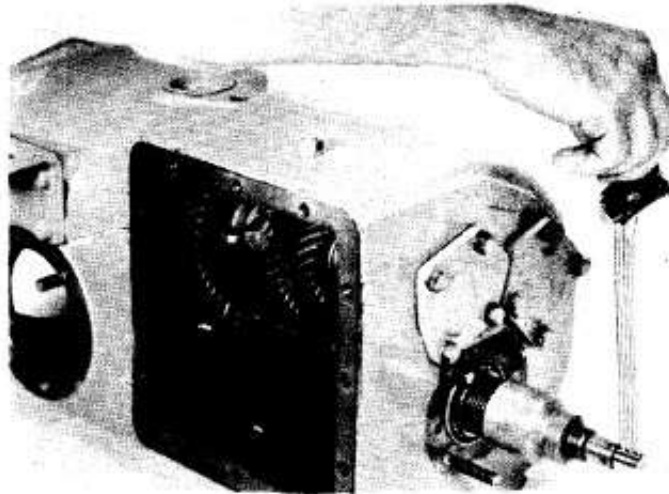


FIG. 26

12. REMOVE PINION SHAFT AND PROCEED TO ADJUST DIFFERENTIAL CARRIER BEARINGS. NOTE: DIFFERENTIAL CARRIER BEARINGS MUST BE ADJUSTED BEFORE FINAL INSTALLATION OF THE PINION SHAFT.

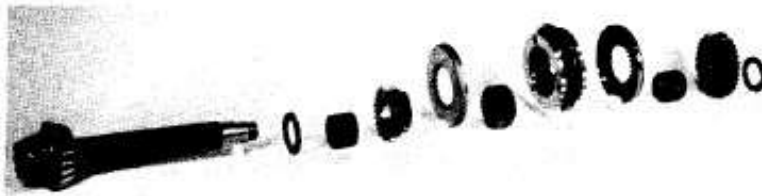


FIG. 27

PINION SHAFT GEAR GROUP.

13. REASSEMBLE DIFFERENTIAL ASSEMBLY AND PLACE IN CASE. (NOTE: BE CERTAIN RING GEAR IS INSTALLED ON PROPER SIDE OF PINION GEAR OR VEHICLE WILL RUN REVERSE IN HIGH GEAR). REFER TO FIG. 4.
14. INSTALL WHEEL DRIVE SHAFT BEARING CARRIERS WITH MATCHING MARKS SUGGESTED IN (ITEM 6 OF DISASSEMBLY) MAKING SURE ALL SHIMS ARE INSTALLED. TORQUE BEARING CARRIER STUDS TO 30-35 FT. LBS.
15. ADJUST BEARING PRE-LOAD BY MEANS OF SHIMS TO 15-25 INCH LBS.
16. REFERENCE FIG. 28, ROLL THE PINION SHAFT GEAR GROUP INTO POSITION INSIDE THE GEAR CASE. SLIDE PINION SHAFT THROUGH THE GEAR GROUP FROM THE FRONT. MAKE SURE ALL THRUST WASHERS AND SMALL PARTS ARE INSTALLED.

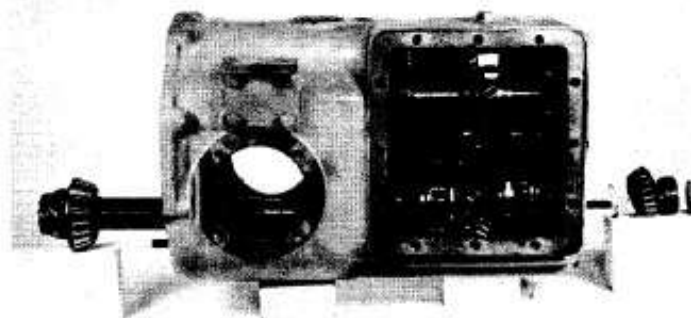


FIG. 28

17. INSTALL PRE-LOAD SHIM, BEARING CUP, CONE, SPEEDOMETER DRIVE GEAR, PINION SHAFT NUT. TORQUE NUT TO 150-200 FT. LBS.

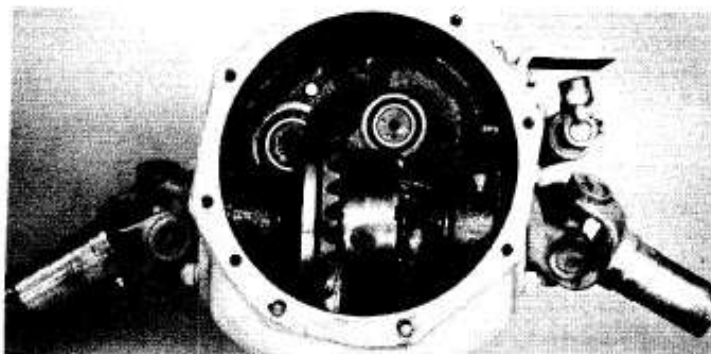


FIG. 29

18. ADJUST PINION AND RING GEAR BACK LASH BY TRANSFERRING WHEEL DRIVE SHAFT CARRIER BEARING SHIMS. (.006 - .010) BACK LASH IS RECOMMENDED. NOTE: SHIMS REMOVED FROM ONE SIDE MUST BE USED ON THE OPPOSITE SIDE.
19. PINION GEAR DEPTH IS SET BY VARIABLE PINION SHAFT FRONT BEARING SNAP RINGS.
20. REF. FIG. 16, INSTALL MAIN DRIVE SHAFT FRONT RETAINING RING ON SHAFT, INSTALL FRONT BEARING ON MAIN DRIVE SHAFT, INSTALL REAR RETAINING RING, PLACE DRIVE SHAFT INTO POSITION IN CLUTCH HOUSING.
21. REF. FIG. 2, INSTALL MAIN DRIVE SHAFT BEARING CAP, CLUTCH RELEASE SPRING CLIP, AND GASKET. TORQUE CAP SCREWS TO 20-25 FT. LBS.
22. PLACE CLUTCH HOUSING TO TRANSMISSION CASE, HAVING "O" RING IN POSITION, INSTALL CLUTCH HOUSING WHILE ALIGNING MAIN DRIVE SHAFT TO MAIN SHAFT. TORQUE BOLTS AND NUTS TO 30-35 FT. LBS.
23. INSTALL CLUTCH RELEASE SHAFT, YOKE AND THROW-OUT BEARING ASSEMBLY.
24. TRANSMISSION CONTROL COVER ASSEMBLY SHOULD BE RE-ASSEMBLED IN REVERSE ORDER OF ITEMS (22 THROUGH 26) IN DISASSEMBLY SECTION.

DISCUSSION:

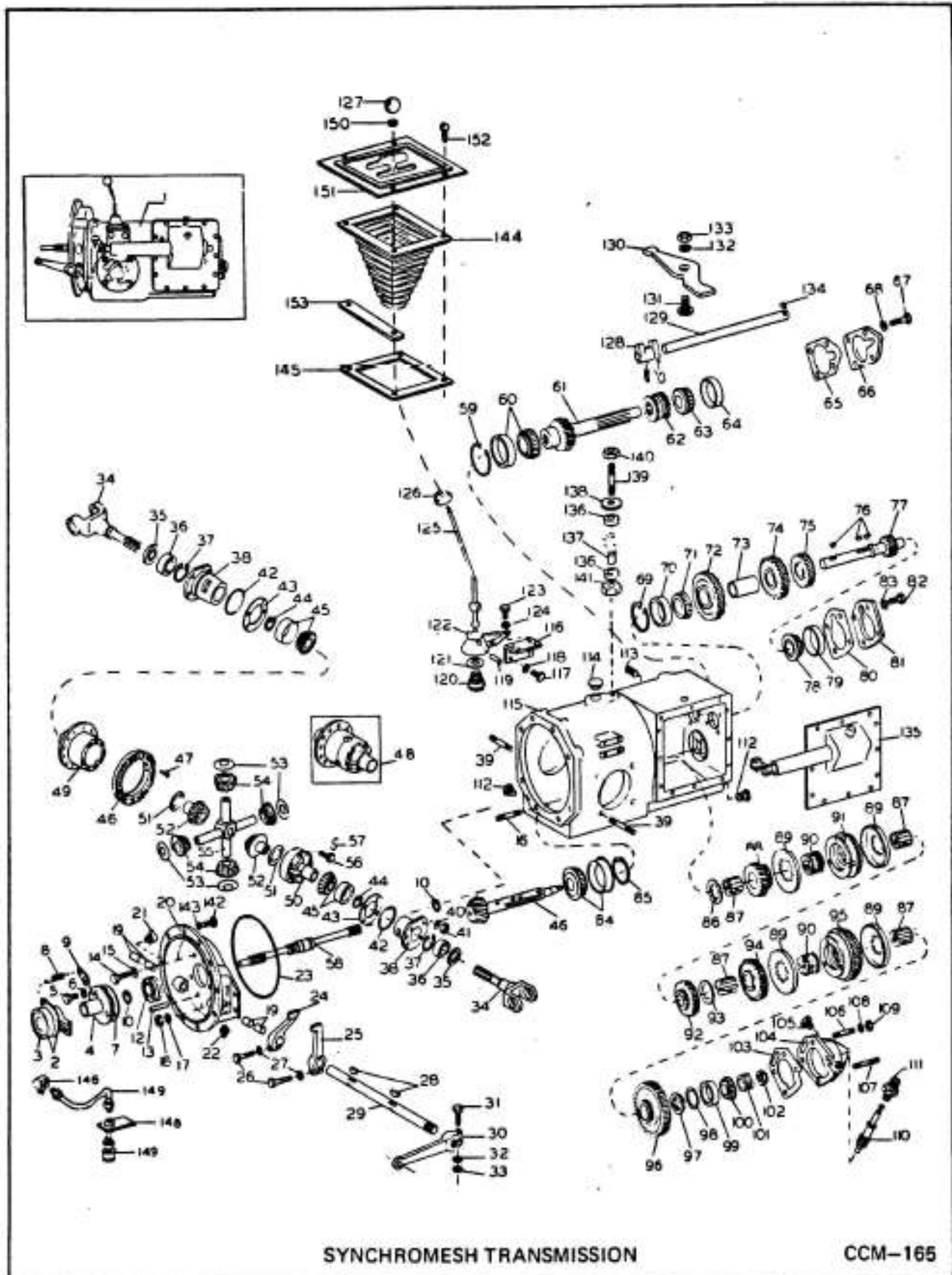
THE DESCRIBED PROCEDURE TO DISASSEMBLE AND REASSEMBLE THIS TRANSMISSION WILL USUALLY REQUIRE APPROXIMATELY 10 HOURS.

RH/cc

1. Transmission Assembly	1	47. Ring Gear Rivet or Bolt	12
2. Clutch Release Bearing & Carrier	1	48. Differential Assembly	1
3. Clutch Release Bearing	1	49. Refer to Item 48	1
4. Main Drive Shaft Bearing Cap	1	50. Refer to Item 48	1
5. Bearing Cap Bolt	3	51. Side Gear Thrust Washer	2
6. Bearing Cap Lockwasher	3	52. Differential Side Gear	2
7. Bearing Cap Gasket	1	53. Pinion Gear Thrust Washer	4
8. Clutch Release Bearing Carrier Spring	1	54. Pinion Gear	4
9. Bearing Carrier Spring Clip	1	55. Differential Spider	1
10. Main Drive Shaft Snap Ring	2	56. Differential Case Bolt	8
12. Main Drive Shaft Front Bearing	1	57. Differential Case Bolt Lockwire	8
13. Clutch Housing Dowel Pin	1	58. Main Drive Shaft	1
14. Clutch Housing Upper Mounting Bolt	6	59. Transmission Drive Shaft Front Bearing	
15. Clutch Housing Upper Mounting L.W.	6	Snap Ring	1
16. Clutch Housing Lower Mounting Stud	2	60. Transmission Drive Shaft Front Bearing	1
17. Clutch Housing Lower Mounting L.W.	2	61. Transmission Drive Shaft	1
18. Clutch Housing Lower Mounting Nut	2	62. Transmission Drive Shaft Reverse Gear	1
19. Clutch Housing Bushing	4	63. Trans Drive Shaft Rear Bearing Cone	1
20. Clutch Housing (Incl. Item 19)	1	64. Trans Drive Shaft Rear Bearing Cup	1
21. Clutch Pedal Shaft Lube Fitting R.H.	1	65. Rear Bearing Cap Shim Kit	1
22. Clutch Pedal Shaft Lube Fitting L.H.	1	66. Rear Bearing Cap	1
23. Clutch Housing "O" Ring	1	67. Rear Bearing Cap Bolt	4
24. Clutch Release Yoke R.H.	1	68. Rear Bearing Cap Lockwasher	4
25. Clutch Release Yoke L.H.	1	69. Inter. Shaft Front Bearing Snap Ring	1
26. Release Yoke Bolt	2	70. Inter. Shaft Front Bearing Cup	1
27. Release Yoke Lockwasher	2	71. Inter. Shaft Front Bearing Cone	1
28. Release Yoke Key	2	72. Inter. Shaft Drive Gear	1
29. Clutch Release Shaft	1	73. Inter. Shaft Gear Spacer	1
30. Clutch Release Shaft Arm	1	74. Inter. Shaft 3rd Gear	1
31. Clutch Release Shaft Arm Bolt	1	75. Inter. Shaft 2nd Gear	1
32. Clutch Release Shaft Arm L.W.	1	76. Inter. Shaft Gear Key	3
33. Clutch Release Shaft Arm Nut	1	77. Intermediate Shaft	1
34. Wheel Drive Shaft and Yoke	2	78. Inter. Shaft Rear Bearing Cone	1
35. Wheel Drive Shaft Oil Seal	2	79. Inter. Shaft Rear Bearing Cup	1
36. Wheel Drive Shaft Bearing	2	80. Rear Bearing Cap Shim Kit	1
37. Wheel Drive Shaft Bearing Snap Ring	2	81. Rear Bearing Cap	1
38. Wheel Drive Shaft Bearing Carrier	2	82. Rear Bearing Cap Bolt	4
39. Bearing Carrier Stud	8	83. Rear Bearing Cap Lockwasher	4
40. Bearing Carrier Stud Lockwasher	8	84. Pinion Shaft Front Bearing	1
41. Bearing Carrier Stud Nut	8	85. Pinion Shaft Front Bearing Snap Ring Kit	1
42. Bearing Carrier "O" Ring	2	86. 4th Gear Spacer Washer	1
43. Bearing Carrier Shim Kit	1	87. Pinion Shaft Gear Bushing	4
44. Bearing Carrier Snap Ring	2	88. Pinion Shaft 4th Gear	1
45. Differential Bearing	2	89. Synchronizer Cup	4
46. Ring Gear and Pinion Set	1	90. Synchronizer Hub Sleeve	2

91. 3rd & 4th Synchronizer Assembly	1	134. Reverse Shift Rail Key	1
92. Pinion Shaft 3rd Gear	1	135. Control Cover Assembly	1
93. 2nd & 3rd Gear Washer	1	136. Rubber Cushion	2
94. Pinion Shaft 2nd Gear	1	137. Cushion Spacer	1
95. 1st & 2nd Synchronizer Assembly	1	138. Washer	1
96. Pinion Shaft 1st Gear	1	139. Transmission Mount Stud	1
97. 1st Gear Spacer Washer	1	140. Stud Nut	1
98. Pinion Shaft Shim Kit	1	141. Spacer	1
99. Pinion Shaft Rear Bearing Cup	1	142. Clutch Housing to Engine Bolt	12
100. Pinion Shaft Rear Bearing Cone	1	143. Clutch Housing to Engine L.W.	12
Pinion Shaft Rear Bearing Retainer Ring		144. Gear Shift Lever Boot	1
(Not Shown)	1	145. Gear Shift Lever Boot Retainer	1
101. Speedometer Drive Gear	1	146. Grease Line Elbow	1
102. Pinion Shaft Nut	1	147. Grease Line	1
103. Bearing Cap Gasket	1	148. Grease Line Adaptor	1
104. Pinion Shaft Rear Bearing Cap	1	149. Clutch Release Bearing Grease Cup	1
105. Pinion Shaft Magnetic Plug	1	150. Shift Lever Knob Jan Nut	1
106. Bearing Cap Stud	3	151. Gear Shift Escutcheon	1
107. Bearing Cap Stud - Lower Left	1	152. Gear Shift Escutcheon Mounting Screw	4
108. Bearing Cap Stud Lockwasher	4	153. Tapping Plate	2
109. Bearing Cap Stud Nut	4		
110. Speedometer Drive Gear	1		
111. Speedometer Tube Nut	1		
112. Magnetic Drain Plug	2		
113. Cast Filler Plug	1		
114. Cast Inspection Plug	1		
115. Transmission Case	1		
116. Bracket, Shift Lever Support	1		
117. Support Bracket Bolt	4		
118. Support Bracket Lockwasher	4		
119. Shift Lever Pivot Pin	1		
120. Shift Lever Support Spring	1		
121. Shift Lever Support Washer	1		
122. Bracket, Shift Lever Mounting	1		
123. Shift Lever Mounting Capscrew	3		
124. Shift Lever Mounting Lockwasher	3		
125. Shift Lever	1		
126. Shift Lever Dust Cover	1		
127. Shift Lever Knob	1		
128. Reverse Shift Fork	1		
129. Reverse Shift Fork Rail	1		
130. Reverse Shift Fork Rocker Arm	1		
131. Reverse Rocker Arm Pivot	1		
132. Reverse Rocker Arm Pivot Lockwasher	1		
133. Reverse Rocker Arm Pivot Nut	1		

CORTEZ DIVISION



SYNCHROMESH TRANSMISSION

CCM-165