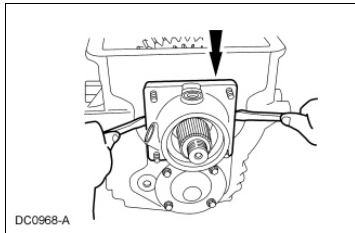


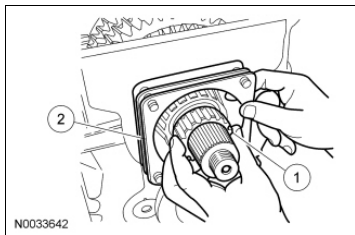
13. Remove the mainshaft rear bearing cover.

- Inspect the mainshaft rear bearing cup for wear and damage. Install a new one as needed.
- Remove and discard the mainshaft rear bearing cover oil seal.



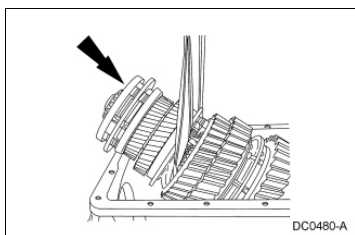
14. Remove the speedometer rotor and the mainshaft rear bearing cover shims.

1. Remove the speedometer rotor.
2. Remove the mainshaft rear bearing cover shims.

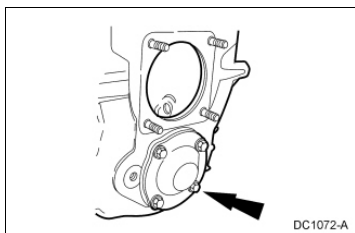


15. **NOTE:** Wrap the sling around the 3rd/4th speed synchronizer.

Using a suitable chain hoist and a sling, lift the mainshaft assembly from the transmission case.



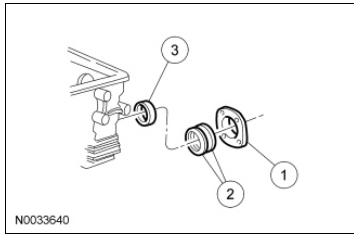
16. Remove the 4 countershaft rear bearing cover bolts.



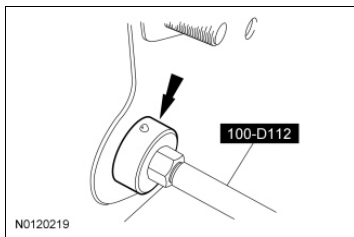
17. Remove the countershaft rear bearing cover, the countershaft rear bearing cover shims and the countershaft rear bearing cup.

1. Remove the countershaft rear bearing cover.

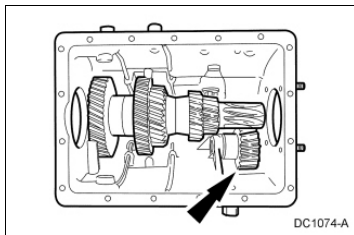
2. Remove the countershaft rear bearing cover shim(s).
3. Remove the countershaft rear bearing cup.



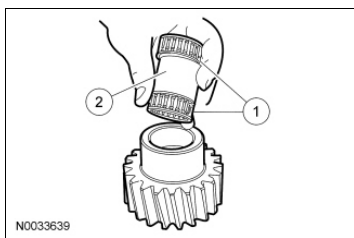
18. Using the Slide Hammer Master Set (5 lb), remove the reverse idler shaft.
 - Remove the locating ball once it is exposed.



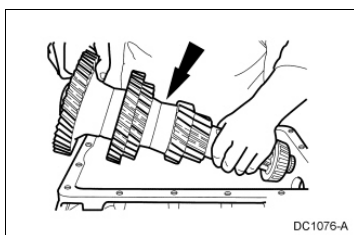
19. Remove the reverse idler gear and the reverse idler thrust washers.



20. Remove the reverse idler gear bearings and the reverse idler gear bearing spacer.
 1. Remove the reverse idler gear bearings.
 2. Remove the reverse idler gear bearing spacer.

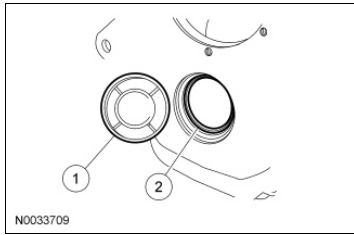


21. Remove the countershaft assembly.
 - Move the countershaft toward the rear and lift it from the transmission case.

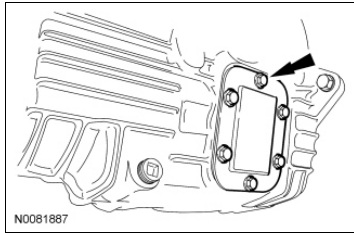


22. If a new countershaft front bearing cup is to be installed, remove the countershaft front bore plug.
 1. Drive the bore plug through the front of the transmission case.

2. Drive the countershaft front bearing cup toward the rear of the transmission case.
 - ◆ Inspect the plug snap ring and install a new snap ring as needed.



23. Remove the 6 bolts from the 2 Power Take-Off (PTO) covers and remove the covers.



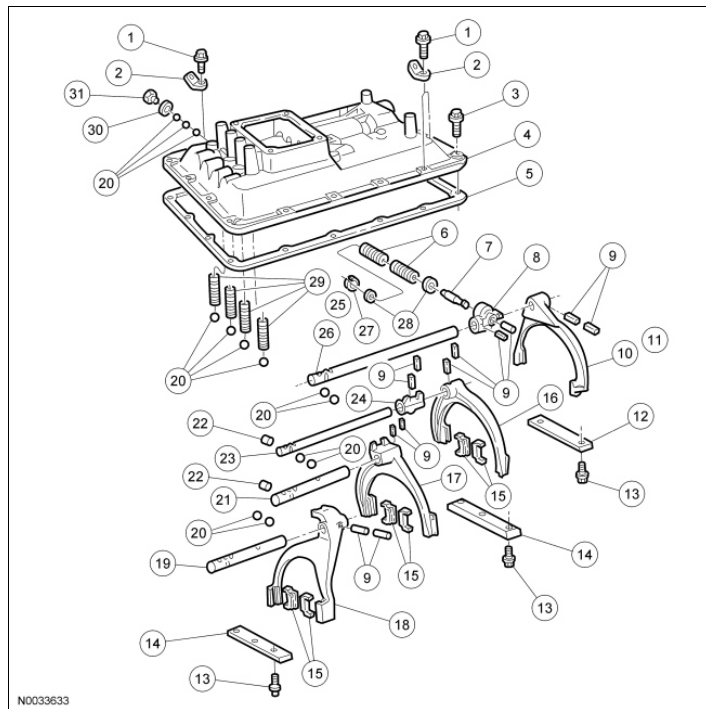
24. Remove the oil filler plug.
25. Clean all parts removed with solvent and dry with compressed air.

Shift Control Housing

Material

Item	Specification
Premium Long-Life Grease XG-1-C or XG-1-K (US); CXG-1-C (Canada)	ESA-M1C75-B
Threadlock and Sealer TA-25	WSK-M2G351-A5

Shift Control Housing -- Disassembled View



Item	Part Number	Description
1	43514-S8	Lifting eye capscrews
2	--	Lifting eyes (part of 7003)
3	20368-S2	Shift bar housing capscrew
4	7222	Shift bar housing
5	7223	Gasket
6	--	Springs (part of 7279)
7	7247	Plunger
8	7279	Shift block
9	7Z025	Lock pins

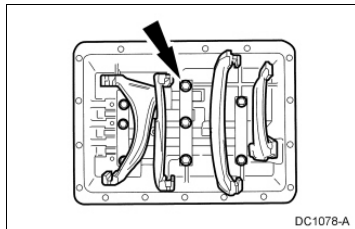
10	7243	Reverse yoke
11	7L183	Reverse yoke
12	7E274	Shift rail retainer (2-hole)
13	379488-S	Capscrews
14	7E274	Shift rail retainers (3-hole)
15	7B403	Bushings
16	7231	1st/2nd yoke
17	7289	3rd/4th yoke
18	7230	5th/6th yoke
19	7334	5th/6th shift rail
20	353086-S	Detent balls
21	7241	3rd/4th shift rail
22	7235	Pins
23	7240	1st/2nd shift rail
24	7232	Block
25	7242	Reverse shift rail
26	7240	Reverse shift rail
27	--	Snap ring (part of 7279)
28	--	Washer (part of 7279)
29	7N120	Detent springs
30	--	Gasket (part of 7003)
31	--	Plug (part of 7003)

Disassembly

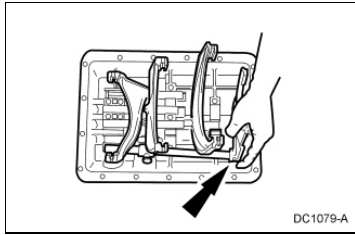
NOTE: Do not disassemble the shift bar housing to determine if the parts are worn. Note the condition of the shift rails and yokes by a visual inspection. If the yokes are excessively worn, or if they bind when shifted into the various positions, disassemble the shift bar housing to repair.

1. **NOTE:** Place the 5th/6th shift yoke into the fifth position.

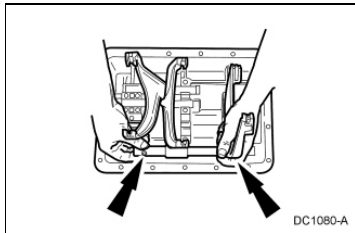
Remove the shift rail retainer bolts and the shift rail retainer.



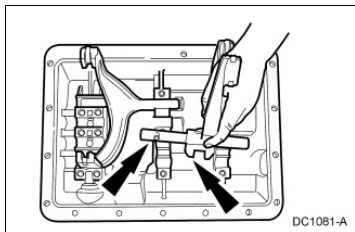
2. Remove the reverse shift yoke and rail assembly.



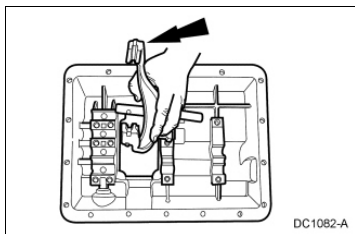
3. Remove the 1st/2nd shift yoke and rail assembly and the interlock cross pin.
 - Make sure the interlock cross pin does not fall out of the rail.



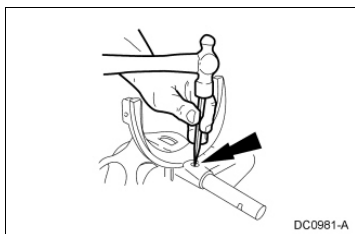
4. Remove the 3rd/4th shift yoke and rail assembly.



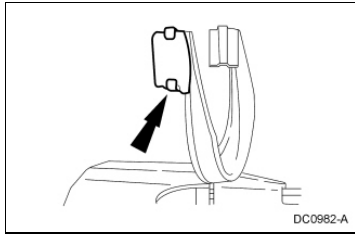
5. Remove the 5th/6th shift yoke and rail assembly.



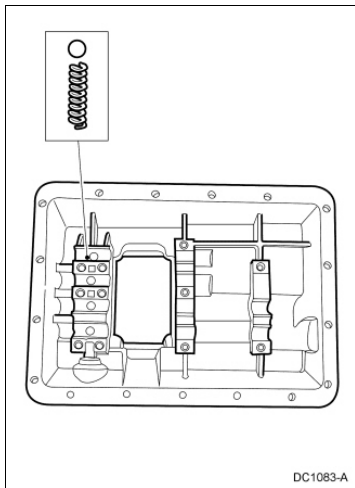
6. If a new shift rail or shift yoke is to be installed, separate the shift rail from the shift yoke by driving the roll pin through the shift fork and rail.



7. Inspect the shift fork bushing for wear and damage. Install a new bushing as necessary.



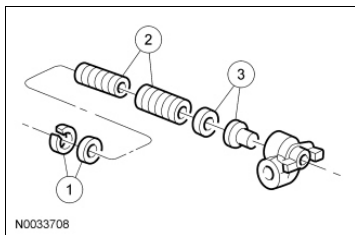
8. Remove the 6 interlock balls and springs, the 4 detent balls and springs, and the 3 reverse lamp switch balls.



9. Disassemble the reverse plunger.

1. Depress the reverse plunger and remove the snap ring and spring retainer.
2. Remove the reverse plunger springs.
3. Remove the washer and the reverse plunger.

◆ Inspect the reverse plunger components for worn and damaged parts. Install new components as needed.



Assembly

1. **NOTE:** Keep the shift mechanism in the NEUTRAL position while assembling.

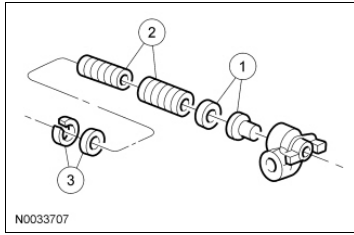
NOTE: The shift rail support holes are not tapped on new shift bar housings. The support bolts used are self-tapping and can be reused if a new shift bar housing is installed.

Before assembling the shift bar housing:

- Lubricate the shift yoke inserts and pads with oil.
- Lubricate the shift rail grooves with grease.

2. Assemble the reverse plunger.
 1. Install the reverse plunger and washer.
 2. Install the reverse plunger springs.

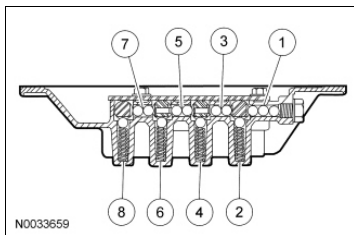
3. Install the spring retainer and snap ring.



3. **NOTE:** Interlock balls, detent balls and springs can be used interchangeably.

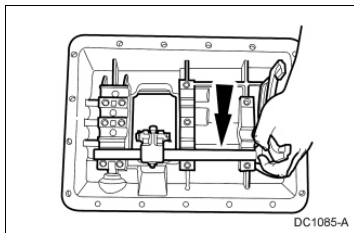
Install the interlock balls, detent balls and springs in the following order:

1. Position the 3 balls in the reverse lamp switch bore.
2. Install the reverse detent spring and ball.
3. Position the 2 interlock balls in the adjacent cross bores.
4. Install the 1st/2nd detent spring and ball.
5. Position the 2 interlock balls in the adjacent cross bore.
6. Install the 3rd/4th detent spring and ball.
7. Position the 2 interlock balls in the adjacent cross bore.
8. Install the 5th/6th detent spring and ball.



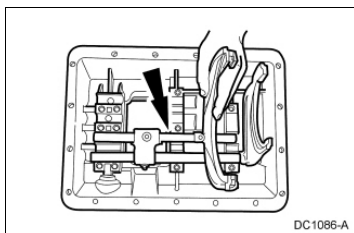
4. Install the reverse shift yoke and rail and the 1st/reverse shift rail lockpin.

- Position the 1st/reverse shift rail in the rail groove over the detent ball and spring.



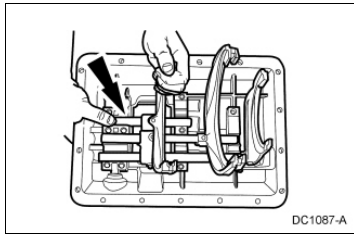
5. Install the 1st/2nd shift yoke and rail assembly and the interlock cross pin.

- Position the 1st/2nd shift yoke and rail assembly in the rail groove over the detent ball and spring.



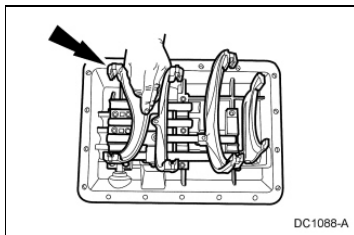
6. Install the 3rd/4th shift yoke and rail assembly.

- Position the 3rd/4th shift yoke and rail assembly in the rail groove over the detent ball and spring.



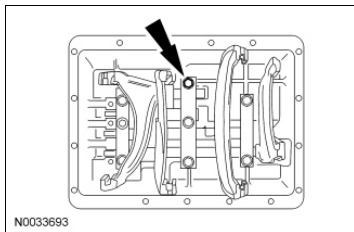
7. Install the 5th/6th shift yoke and rail assembly.

- Position the 5th/6th shift yoke and rail assembly in the rail groove over the detent ball and spring.



8. Install the shift rail retainers and the shift rail bolts.

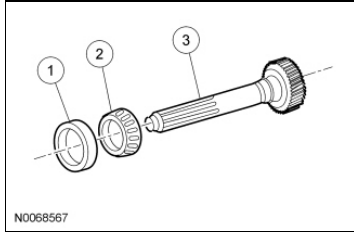
- Apply threadlock and sealer to the bolt threads.
- Tighten to 30 Nm (22 lb-ft).



9. Check the interlocking system.

- Shift the 4th/5th shift fork and rail out of the neutral position.
 - ◆ The 1st/reverse fork should not shift.
 - ◆ If it does, the interlock cross pin or interlock balls were not assembled correctly.

Input Shaft and Bearing

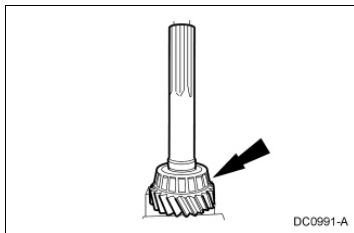


Item	Part Number	Description
1	1202	Main drive gear bearing cup
2	7025	Main drive gear bearing
3	7017	Input shaft

Disassembly

1. **NOTE:** If the input shaft is to be disassembled, the front main drive gear bearing must be discarded.

Split the main drive gear bearing cage and remove the main drive gear bearing.



Assembly

1. Inspect the input shaft and bearings for wear and damage. For additional information, refer to [Section 308-00](#).
2. Using a suitable sleeve-type driver, install a new main drive gear bearing.

