

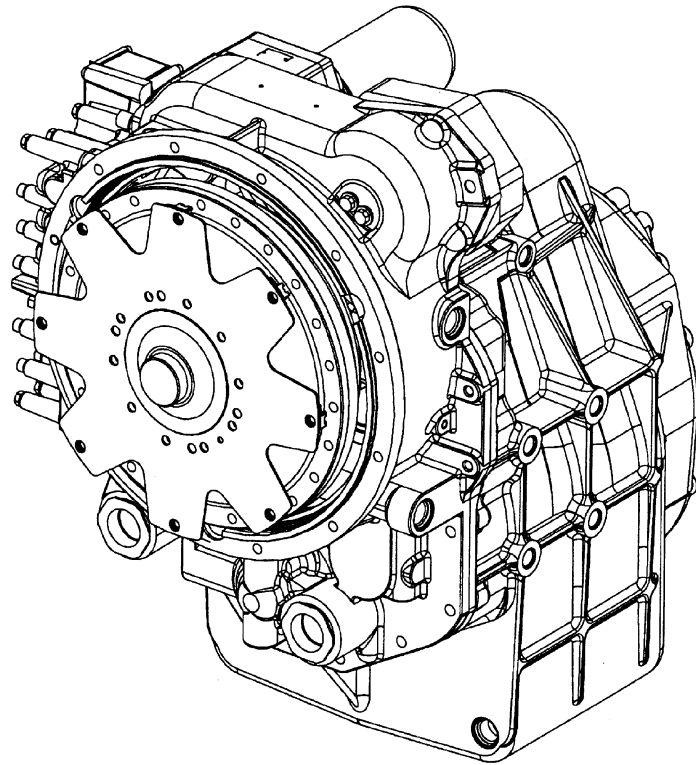
SERVICE REPAIR

MANUAL

Hyster H007 (H170HD, H190HD, H210HD, H230HD, H250HD, H280HD) Forklift Service Repair Manual

HYSTER

TRANSMISSION REPAIR



HYSTER

SAFETY PRECAUTIONS

MAINTENANCE AND REPAIR

- The Service Manuals are updated on a regular basis, but may not reflect recent design changes to the product. Updated technical service information may be available from your local authorized Hyster® dealer. Service Manuals provide general guidelines for maintenance and service and are intended for use by trained and experienced technicians. Failure to properly maintain equipment or to follow instructions contained in the Service Manual could result in damage to the products, personal injury, property damage or death.
- When lifting parts or assemblies, make sure all slings, chains, or cables are correctly fastened, and that the load being lifted is balanced. Make sure the crane, cables, and chains have the capacity to support the weight of the load.
- Do not lift heavy parts by hand, use a lifting mechanism.
- Wear safety glasses.
- DISCONNECT THE BATTERY CONNECTOR before doing any maintenance or repair on electric lift trucks. Disconnect the battery ground cable on internal combustion lift trucks.
- Always use correct blocks to prevent the unit from rolling or falling. See HOW TO PUT THE LIFT TRUCK ON BLOCKS in the Operating Manual or the Periodic Maintenance section.
- Keep the unit clean and the working area clean and orderly.
- Use the correct tools for the job.
- Keep the tools clean and in good condition.
- Always use HYSTER APPROVED parts when making repairs. Replacement parts must meet or exceed the specifications of the original equipment manufacturer.
- Make sure all nuts, bolts, snap rings, and other fastening devices are removed before using force to remove parts.
- Always fasten a DO NOT OPERATE tag to the controls of the unit when making repairs, or if the unit needs repairs.
- Be sure to follow the WARNING and CAUTION notes in the instructions.
- Gasoline, Liquid Petroleum Gas (LPG), Compressed Natural Gas (CNG), and Diesel fuel are flammable. Be sure to follow the necessary safety precautions when handling these fuels and when working on these fuel systems.
- Batteries generate flammable gas when they are being charged. Keep fire and sparks away from the area. Make sure the area is well ventilated.

NOTE: The following symbols and words indicate safety information in this manual:



WARNING

Indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Indicates a hazardous situation which, if not avoided, could result in minor or moderate injury and property damage.

On the lift truck, the **WARNING** symbol and word are on orange background. The **CAUTION** symbol and word are on yellow background.

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**Thanks very much for your reading,
Want to get more information,
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manual**

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please download the PDF document first, and then
click on it.**

**Have any questions please write to me:
admin@servicemanualperfect.com**

Series Code / Model Designation Reference Table

This table consist of the following Series Codes used in this manual.

Series Code	European Model	Americas Model
F007		H170-H280HD
G007		H170-H280HD
H007	H8-12XM	H170-H280HD
F019		H300-360HD, H360HD-12EC
G019	H13-14XM, H16XM-6, H10-12XM-12EC	H300-360HD, H360HD-EC

General

This manual provides information on repair of the TE10 transmission as fitted on series lift trucks.

Procedures for tests and adjustments are in .

Transmission Repair

REMOVE

1. Tilt the mast fully forward to release hydraulic pressure in the system.
2. Turn the key to OFF position to shutdown the engine.
3. Apply the parking brake.
4. Disconnect the cables at the battery. Disconnect the ground cable first and then the positive cable.
5. Tilt the operator compartment up to gain access to the transmission. See the section Operator's Cab 0100SRM1390.



CAUTION

The drive shaft for this truck is a two piece model, consisting of a male splined drive shaft, a female splined slip yoke and a universal joint on both ends where it connects to the drive axle and transmission.

Drive shafts are balanced and configured at the time of manufacture. It is recommended that an alignment mark is made on the drive shaft indicating the position of the universal joint and drive shaft prior to removal.

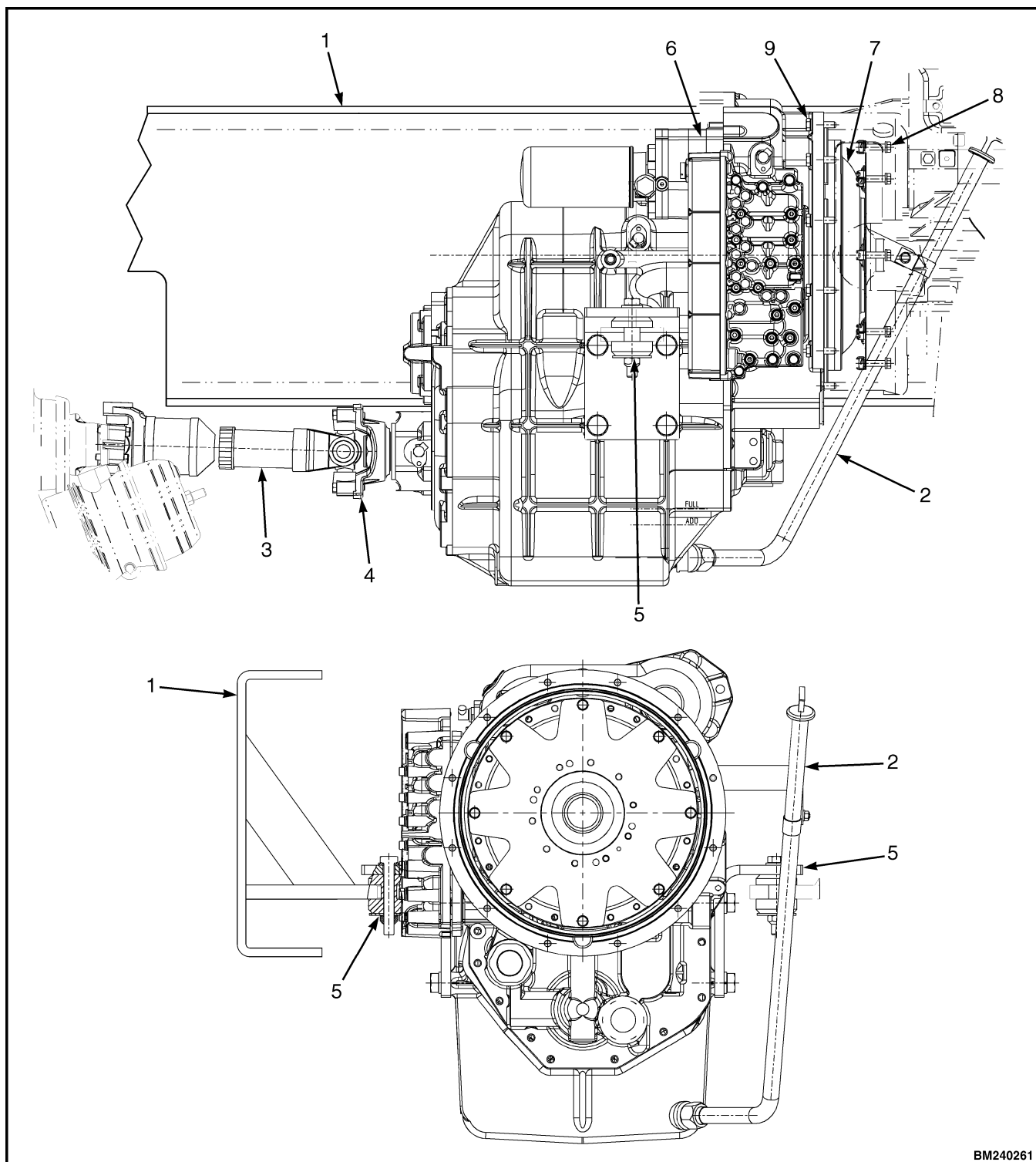
During removal, it may be possible for the drive shaft to split apart into two pieces. Reassemble the drive shaft using the alignment mark made prior to removal.

Failure to assemble and install the drive shaft properly may lead to:

- Vibration of the drive shaft and/or truck
- Premature failure of the universal joints on the drive shaft
- Excessive vibration levels in the transmission
- Excessive vibration levels in the drive axle

NOTE: Use a marker of some type to indicate position and orientation of drive shaft prior to removal.

6. Disconnect the drive shaft at the yokes. Remove the drive shaft between the transmission and the differential. See Figure 1.



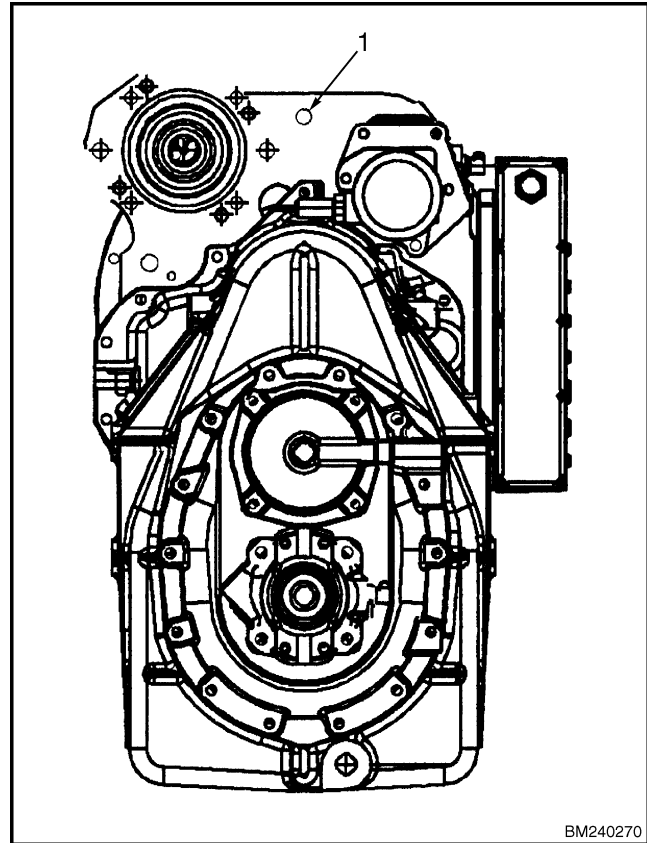
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1. FRAME (REFERENCE)
2. DIPSTICK ASSEMBLY
3. DRIVE SHAFT
4. OUTPUT YOKE
5. TRANSMISSION MOUNT

6. TRANSMISSION
7. TORQUE CONVERTER
8. CAPSCREWS (8 EACH)
9. CAPSCREWS (12 EACH)

Figure 1. Transmission Arrangement

7. Disconnect the wiring harnesses on the transmission and wires for the temperature sending unit on the transmission. Put identification tags on the wires so they can be correctly connected again.
8. Place a suitable container under the transmission sump and remove the transmission sump drain plug and drain the transmission oil [approximately 25.4 liter (6.7 gal)].
9. Disconnect the oil lines to the oil cooler at the transmission. Drain the oil into a drain pan. Put plugs and caps on open lines/fittings.
10. Disconnect the oil hoses at the hydraulic pump. Disconnect the hose from the hydraulic pump to the steering system. Put plugs and caps on open lines/fittings.
11. The hydraulic pump is connected to the transmission cover with four capscrews. Attach a lifting device to hold the hydraulic pump, remove the capscrews, and remove the hydraulic pump. The drive shaft of the hydraulic pump is engaged in the splines of the drive gear. The drive shaft of the hydraulic pump will slide out of the drive gear when the hydraulic pump is removed.
12. Disconnect and remove the dipstick assembly from the transmission.
13. Install blocks and a jack under the flywheel end of the engine as a support. If the support is under the engine oil sump, make sure that the support is across the width of the oil sump so the weight of the engine does not damage the oil sump.
14. A 3/4-inch machined hole with UNC threads is in the top of the transmission housing. Install an eyebolt in the 3/4-inch UNC hole. Connect a lifting device to the transmission. Make sure the lifting device has a lifting capacity of at least 1200 kg (2650 lb). To stabilize the transmission, wrap a lifting strap around the output yoke to keep the transmission from tipping while being removed. See Figure 2.

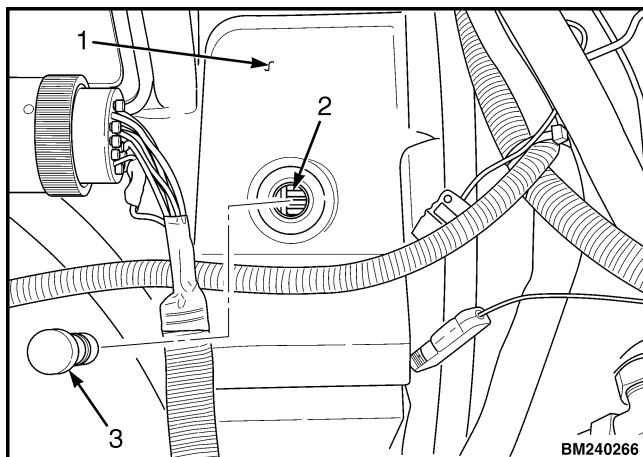


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1. 3/4-INCH UNC HOLE

Figure 2. Rear View of Transmission

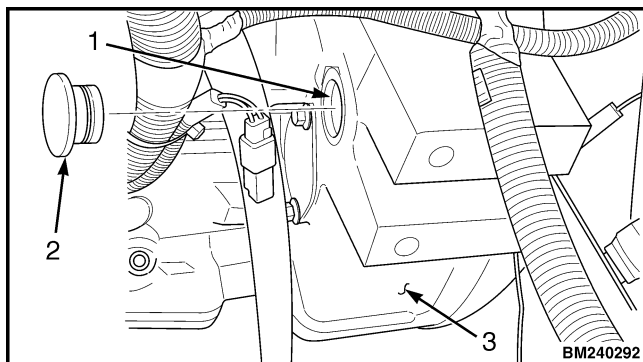
15. Remove the two $\frac{3}{4} \times 3\frac{1}{2}$ -inch bolts that fasten the transmission mounts to the frame.
16. Remove the access plug to gain access to the flywheel. See Figure 3.



1. CONVERTER HOUSING
2. ACCESS HOLE TO FLYWHEEL
3. ACCESS PLUG

Figure 3. Access Plug to Flywheel

17. Remove the access plug to gain access to the flywheel. See Figure 4.



1. ACCESS HOLE TO CAPSCREWS (8 EACH)
2. ACCESS PLUG
3. CONVERTER HOUSING

Figure 4. Access Plug for Drive Plate Capscrews



CAUTION

Do not drop the capscrews into the converter housing. They will be difficult to retrieve.

NOTE: You must turn the flywheel to gain access to each screw. See Figure 3.

18. Remove the eight capscrews retaining the drive plate to the flywheel. See Figure 4.
19. Raise the lifting device to hold the weight of the transmission only. Remove the twelve capscrews that fasten the torque converter housing to the flywheel housing.



CAUTION

Keep the transmission level when the transmission is separated from the engine so the drive plate is not damaged.

20. Make sure that all connections have been removed and carefully lift the transmission assembly from the frame and engine.

DISASSEMBLE

Figure 5 shows the front view of the TE10 3-speed transmission.



Figure 5. TE10 3-Speed Transmission

Transmission Case, Disassemble

STEP 1.

Remove the control valve assembly. See Control Valve Removal and Installation.



NOTE: Place a suitable container below the oil filter to catch remaining oil in filter.

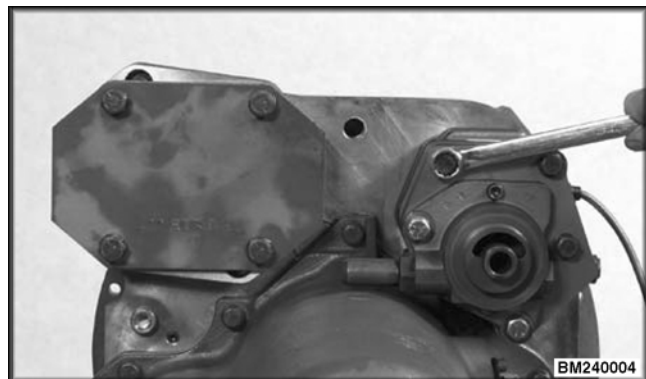
STEP 2.

Remove the oil filter.



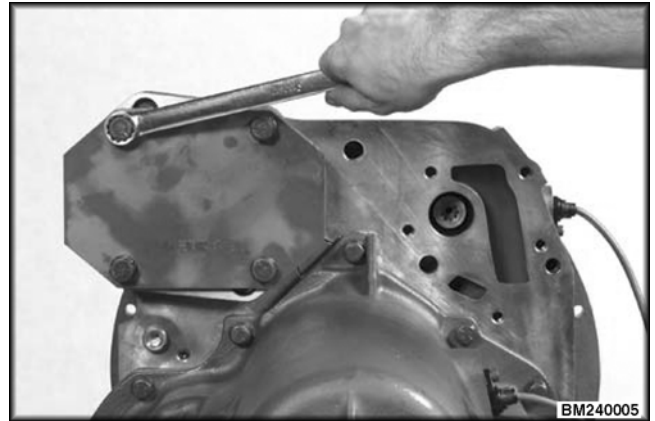
STEP 3.

Remove the capscrews and washers retaining the pressure regulating valve and the charging pump. Remove the pressure regulating valve and the charging pump as an assembly.

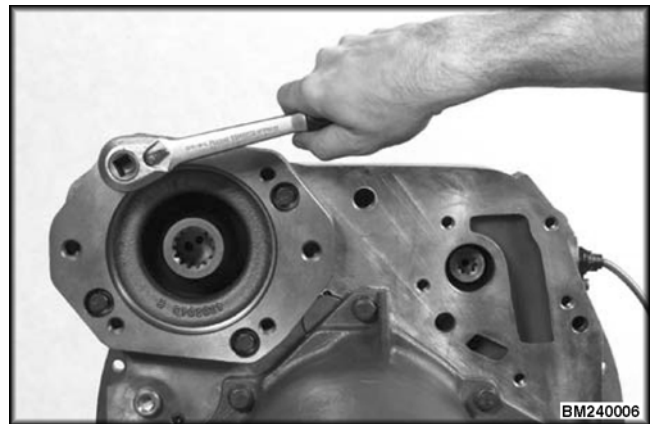


STEP 4.

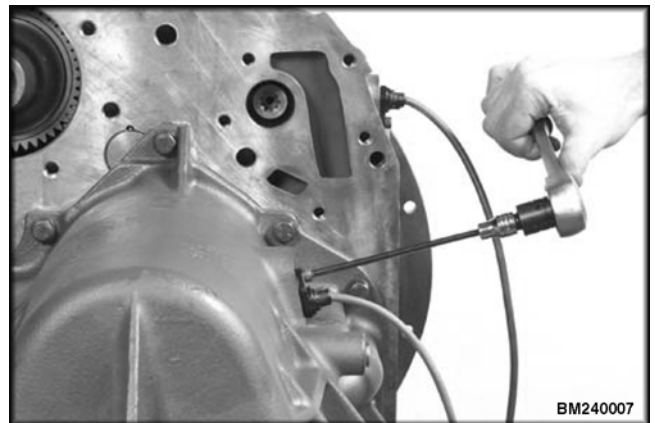
If used, remove the capscrews and washers retaining the shipping cover. Remove the shipping cover.

**STEP 5.**

Remove the capscrews retaining the auxiliary pump adaptor and remove the auxiliary pump adaptor.

**STEP 6.**

Remove the four speed sensors.



STEP 7.

Remove the drive plate nuts and lockwashers. Remove drive plates and locking rings.



STEP 8.

Use a small screwdriver and pry the impeller cover bearing cap from the impeller cover.



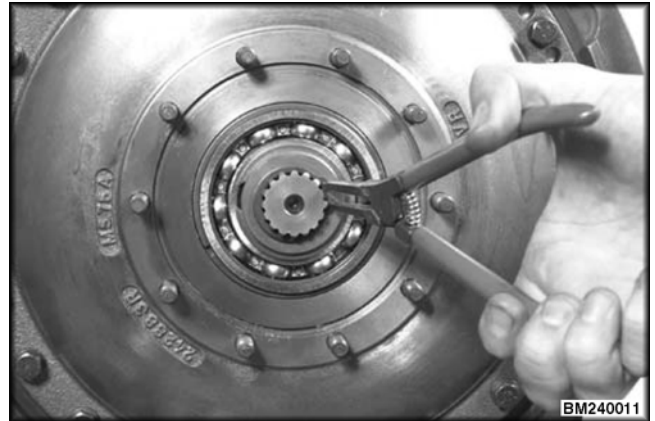
STEP 9.

Remove the impeller cover bearing cap O-ring.



STEP 10.

Remove the retaining ring from the turbine shaft that retains the turbine hub.



NOTE: Use a suitable container to catch the oil remaining in the converter.

STEP 11.

Remove the bolts and washers retaining the impeller cover to the impeller.

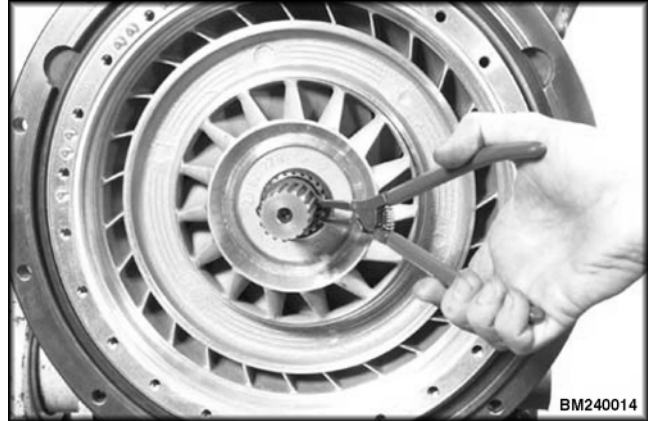
**STEP 12.**

Remove the impeller cover and turbine as an assembly.



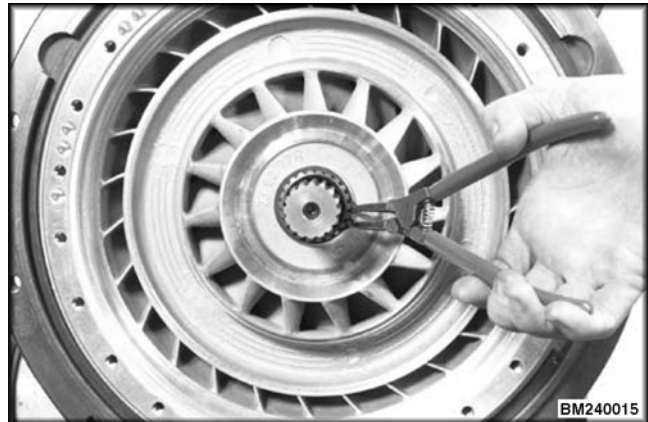
STEP 13.

Remove the turbine locating ring from the turbine shaft.



STEP 14.

Remove the stator retaining ring.



STEP 15.

Remove the stator.

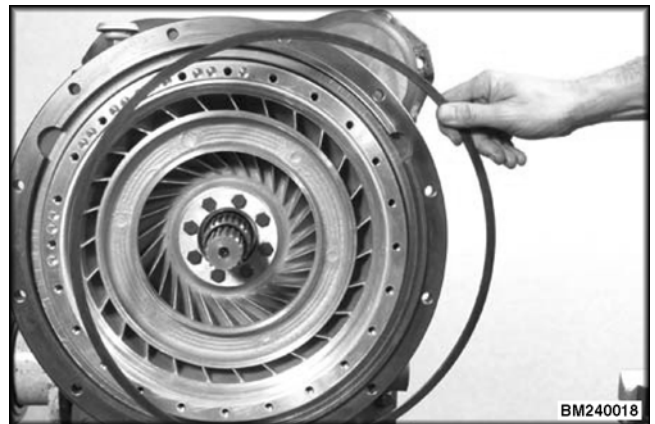


STEP 16.

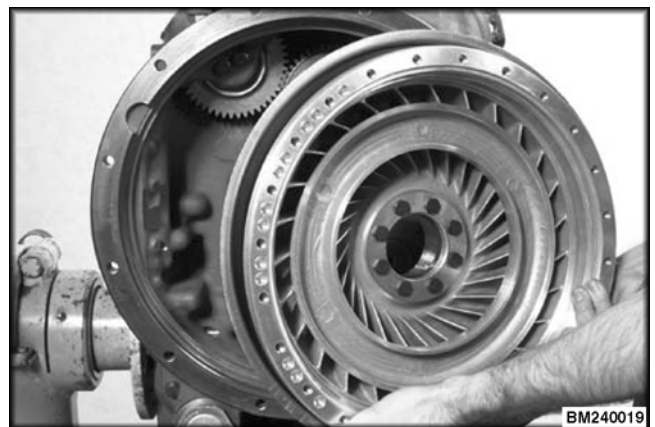
Remove the stator spacer.

**STEP 17.**

Remove the oil baffle retaining ring.

**STEP 18.**

Remove the impeller, impeller hub, and oil baffle as an assembly.



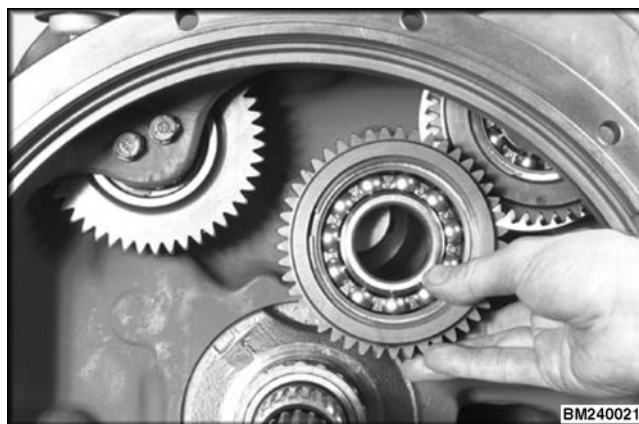
STEP 19.

Remove the pump drive idler gear retaining ring.



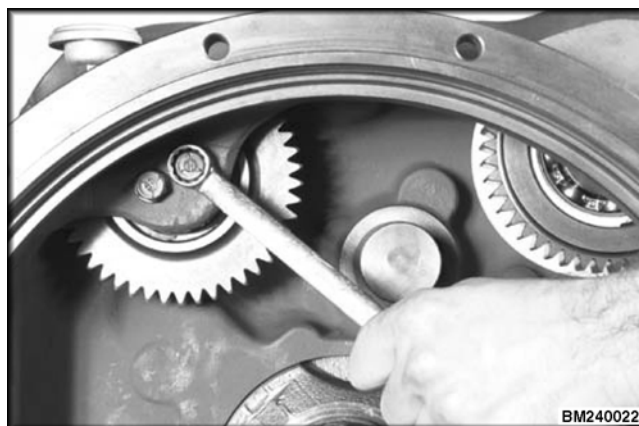
STEP 20.

Remove the idler gear and bearing as an assembly.



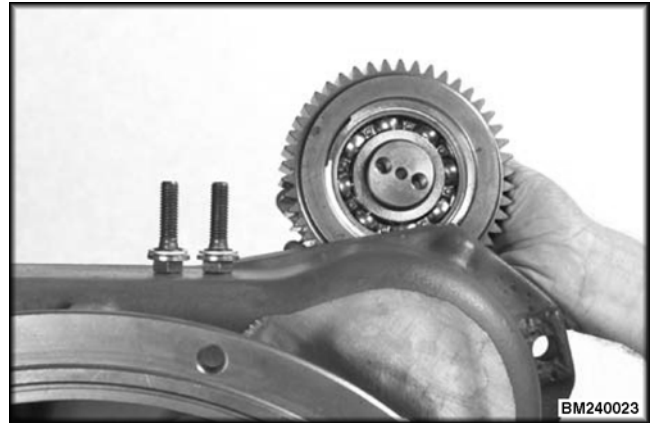
STEP 21.

Remove the pump drive gear bearing support bolts and remove the gear and bearing as an assembly.

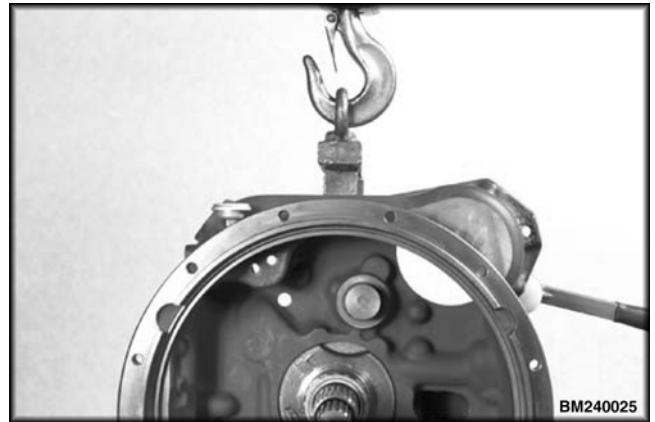


STEP 22.

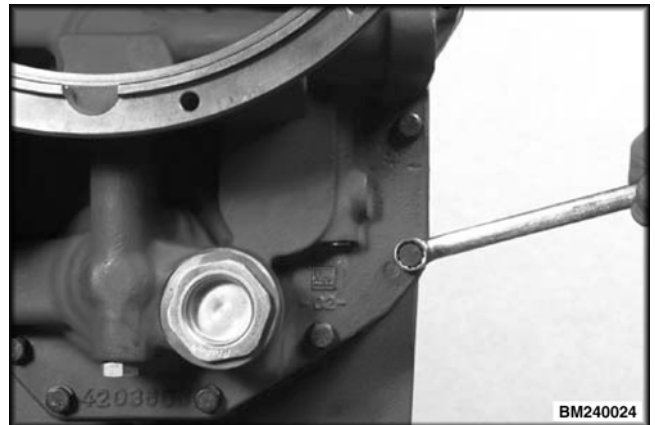
Remove the auxiliary pump drive gear bearing support bolts. Remove the gear and bearing as an assembly from behind.

**STEP 23.**

Support the converter housing with an overhead lifting device.

**STEP 24.**

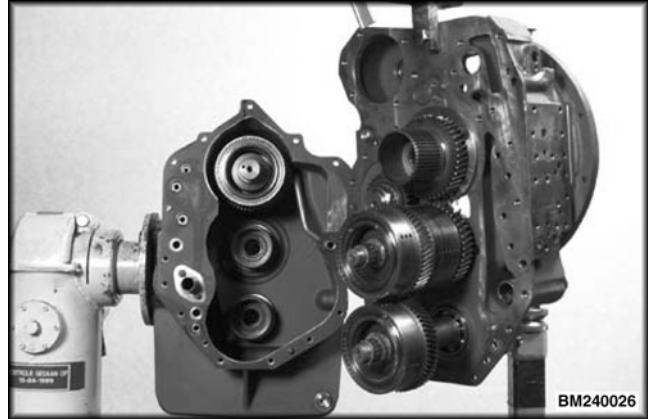
Remove the converter housing to transmission case bolts.



STEP 25.

Separate the converter housing from the transmission case.

NOTE: Rev/2nd and 3rd clutches will remain in the converter housing.



STEP 26.

Remove the 2nd speed clutch disc hub snap ring retainer, outer ring, and ring retainer.



STEP 27.

Remove 2nd clutch disc hub.

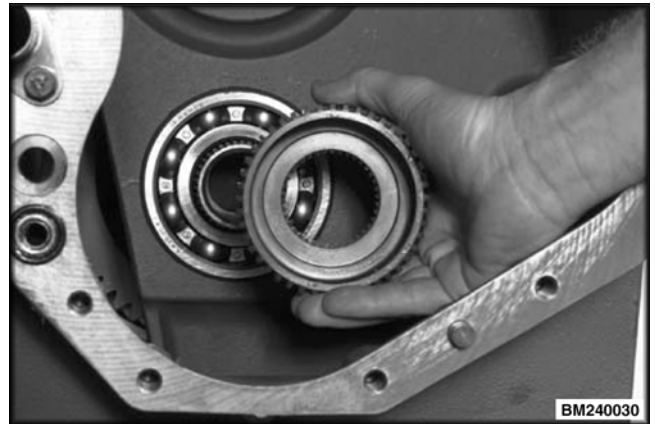


STEP 28.

Remove 3rd speed disc hub snap ring retainer, outer ring, and ring retainer.

**STEP 29.**

Remove 3rd clutch disc hub.

**STEP 30.**

Remove the nut, washer, and O-ring retaining the output yoke.



STEP 31.

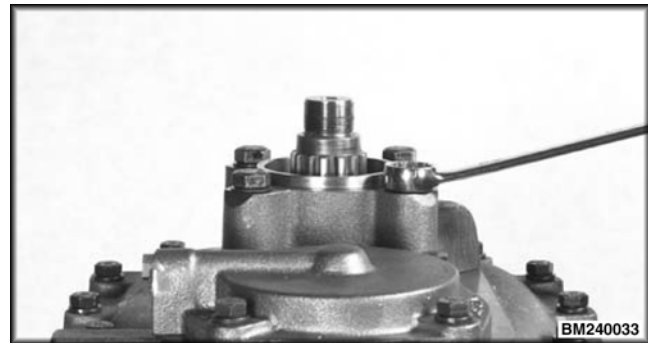
Remove output yoke.



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STEP 32.

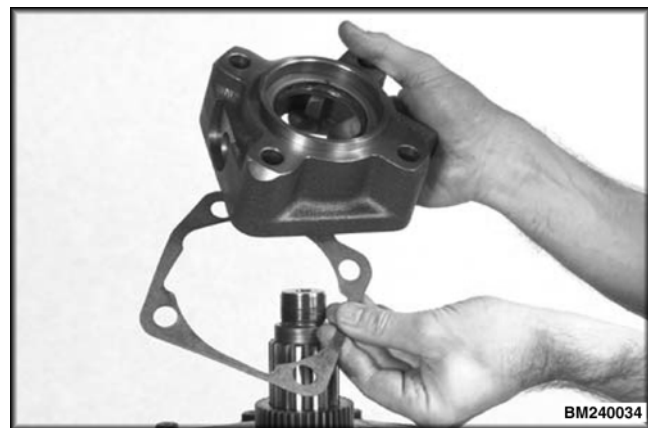
Remove the bolts and lockwashers retaining the output shaft bearing cap.



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STEP 33.

Remove the bearing cap, seal, and gasket.



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STEP 34.

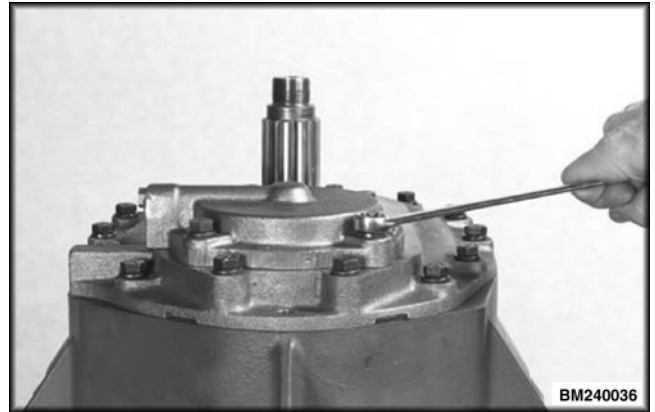
Remove the speedometer gear.



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STEP 35.

Remove the bolts and lockwashers retaining the 1st clutch shaft bearing cap.

**STEP 36.**

Remove the low clutch shaft bearing cap and gasket.

**STEP 37.**

Remove the low clutch shaft rear bearing locating ring.

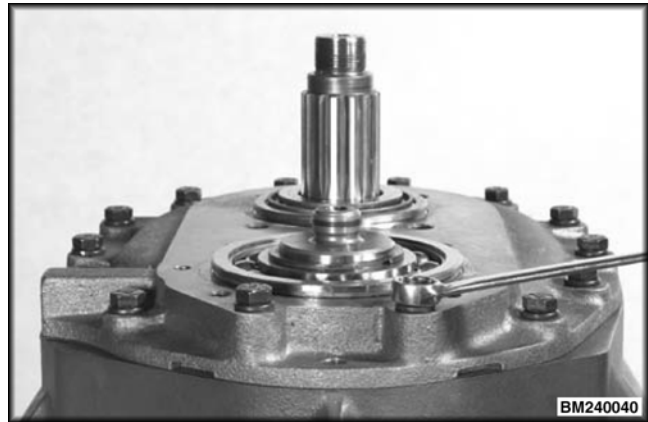


STEP 38.

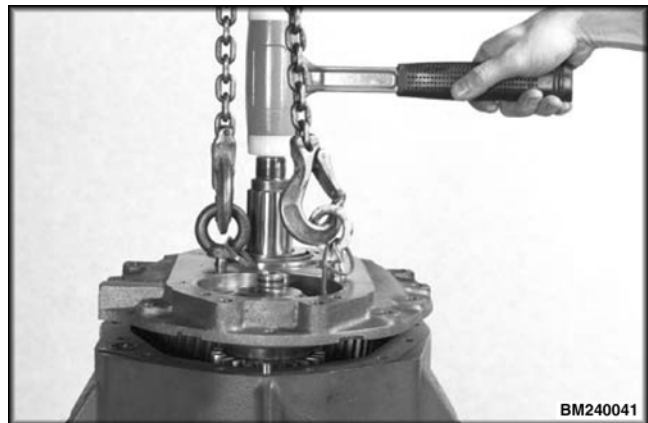
Remove the output shaft rear locating ring.

**STEP 39.**

Remove the capscrews and lockwashers retaining the rear cover.

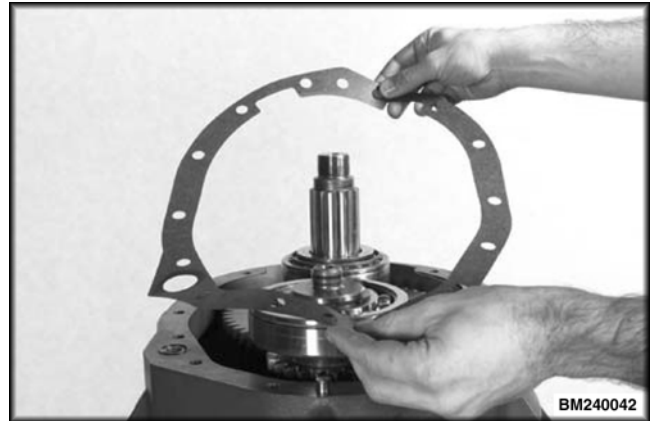
**STEP 40.**

Support the rear cover with an overhead lifting device. Using the provided pry slots, pry the cover from the transmission housing, tapping the shafts with a soft hammer to assist in removal.



STEP 41.

With the rear cover removed, remove the rear cover to transmission case gasket.

**STEP 42.**

Remove the output shaft rear locking ball.

**STEP 43.**

Remove the low clutch shaft rear bearing retainer ring.



NOTE: Newer low clutch shaft rear bearings do not have spacers.