

This Service Information bulletin supersedes S.I. 24 05 94 dated April 1996 which should be removed and discarded from your S.I. binder.

SUBJECT: Pendulum Shifting, Delayed Gear Engagement or Adapter Case Leak

MODEL: E34 and E36 with a THM-R1 Transmission

- Complaint:**
1. While driving at a constant road speed (55 to 65 mph) in 4th gear under constant or light load a change in engine speed of approx. 500 rpm is noticed:
 - Transmission appears to be hunting for a gear at 55 to 65 mph.
 - Transmission is shifting too much at highway speeds (Pendulum Shifting).
 2. After the vehicle is parked for an extended time (for example overnight):
 - A delay of 2 to 3 seconds is experienced from the time gear selection is made until gear engagement occurs.
 - The delayed engagement only occurs with a cold engine on the initial start of the day when first shifting into drive or reverse.
 3. Transmission leaks fluid from Converter Housing/Adapter Case and/or Adapter Case/Main Case seal.

Correction: If one of the above **customer complaints** is received:

Complaint	Check/Repair
1. While driving at a constant road speed (55 to 65 mph) in 4th gear under constant or light load a change in engine speed of approx. 500 rpm is noticed	Monitor torque converter solenoid: if solenoid remains energized while symptom is occurring and the transmission serial number is less than 5215898 install P/N 24 27 1 423 311 If solenoid voltage is cycling check solenoid and associated wiring.
2. After the vehicle is parked for an extended time (for example overnight) and a delay of 2 to 3 seconds is experienced from the time gear selection is made until gear engagement occurs.	If transmission serial number is less than 4834735 install latest seal kit P/N 24 27 1 423 311
3. Transmission leaks fluid from Housing/Adapter Case and/or Adapter Case/Main Case	Install latest seal kit P/N 24 27 1 423 311 Converter

seal.

Note:

Remanufactured transmissions utilize a higher torque for installing the long bolts, thereby preventing this problem from occurring.

Procedure:

See attachment for repair instructions and a complete parts list for the 24 27 1 423 311 kit.

Note: In order to perform this extended repair a set of special tools

P/N 90 88 6 242 310 will be required and will be direct shipped to all Retailers.

Parts Information:

<u>Description</u>	<u>Part Number</u>
Transmission Seal Kit	24 27 1 423 311
Reverse Clutch Piston Compressor	90 88 6 242 311 *
Clutch Piston Installer Sleeve	90 88 6 242 314 *
Transfer Plate Guides	90 88 6 242 313 *

* All parts will be included with special tool kit P/N 90 88 6 242 310 which will be directed shipped to all retailers.

Warranty Information: Parts and labor will be reimbursable under the terms of the applicable BMW New Car Limited Warranty.

1. If a **customer complaint** of delayed gear engagement is received use the following defect code:

Defect Code: 24 00 20 60 00

<u>Labor Operation</u>	<u>Description</u>	<u>Labor Allowance</u>
24 27 510	Removing converter bell-housing and sealing intermediate housing	23
24 00 025	Removing and installing automatic transmission	Refer to Flat Rate Manual

2. If a **customer complaint** pertaining to a transmission seal leak or pendulum shifting is received use the following defect code:

Defect Code: 24 00 92 14 00

<u>Labor Operation</u>	<u>Description</u>	<u>Labor Allowance</u>
24 27 510	Removing converter bell-housing and sealing intermediate housing	23
24 00 025	Removing and installing automatic transmission	Refer to Flat Rate Manual

Installation Instructions

Parts Listing:

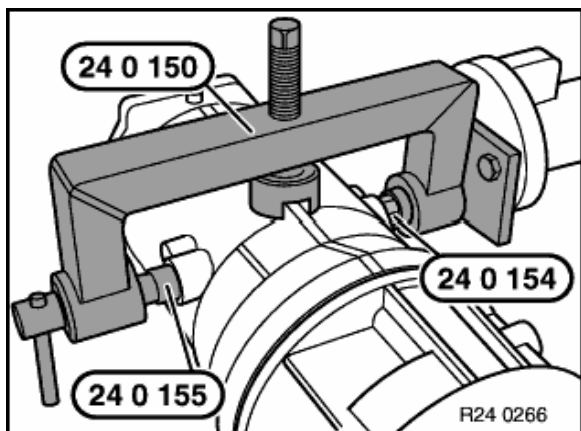
Quantity	Description	Location
12	10mm Hex Screw with loctite	Servo Cover
3	Torx Screw	Torque Converter housing
1	Servo Cover Gasket	Servo Cover
1	Solid Teflon "O" Ring	Turbine Shaft
1	Split Teflon "O" Ring	Turbine Shaft
1	Seal Ring	Turbine Shaft
1	Radial Seal Ring	Torque Converter Housing
2	Square Seal Rings	Adapter Case & Oil Pump
2	O" Rings	Adapter Case
1	Paper Gasket	Adapter Case
1	Paper Gasket	Oil Pump
1	Teflon Ring Sizing Tool	
2	Adapter Case Alignment Screws	
2	Second Clutch Oil Seal	Center Support Hub
1	Reverse Clutch Piston Seat	Reverse Clutch
1	Snap Ring	Reverse Clutch
5	Springs	Reverse Clutch
2	Transfer Plate Gasket	Adapter Case
1	Reverse Clutch Piston Seal Inner	Reverse Clutch Piston
1	Reverse Clutch Piston Seal Outer	Reverse Clutch Piston

Special Tools Required:**Description**

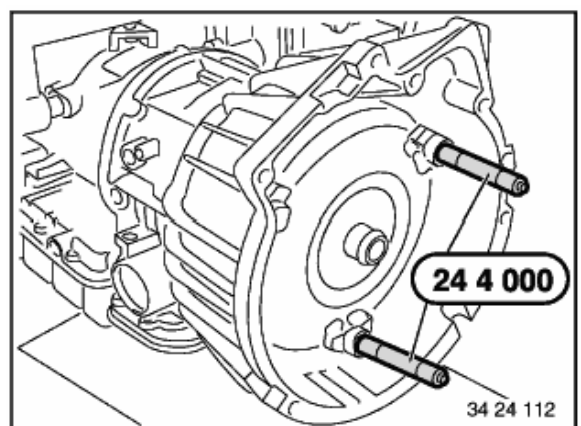
00 1 490	Transmission Support
24 0 150	Transmission Support
24 4 000	Torque Converter Removal Tool
24 2 311	Reverse Clutch Piston Compressor*
24 2 312	Threaded Rod
24 2 313	Transfer Plate Guides*
24 2 314	Clutch Piston Installer Sleeve*
00 5 010	Seal Puller

* Tools parts of Special Tool kit P/N 90 88 6 242 310

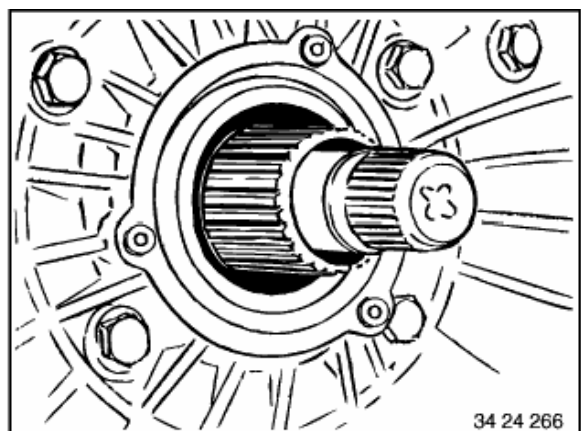
Procedure:



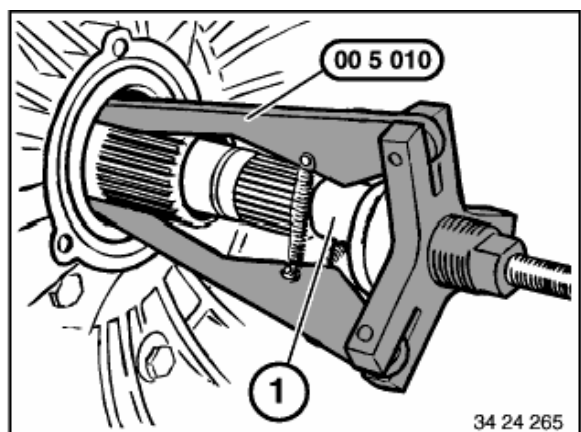
1. Drain transmission fluid into a clean pan before disassembling transmission.
2. Attach transmission support tool 24 0 150 to transmission, then attach 24 0 150 to 00 1 490 and insert it into the support stand



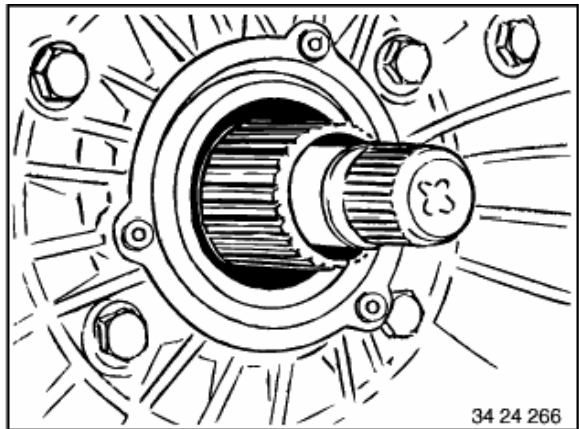
3. Remove torque converter using special tool 24 4 000.



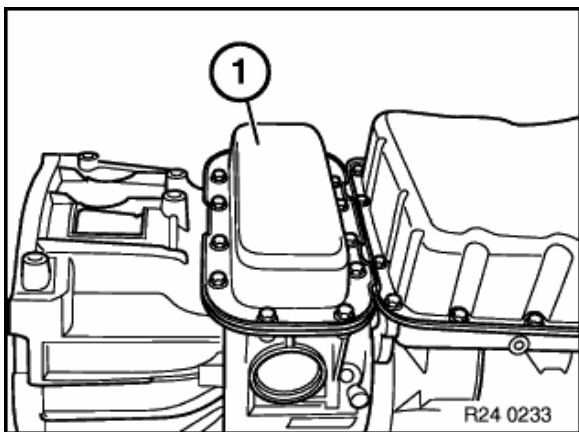
4. Remove the 3 screws that hold the radial seal ring.



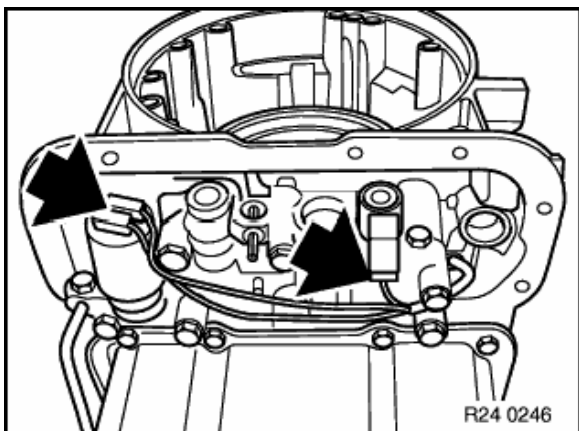
5. Remove the radial seal ring from the bell housing using tool 00 5 010 and **proper spacer (1)**



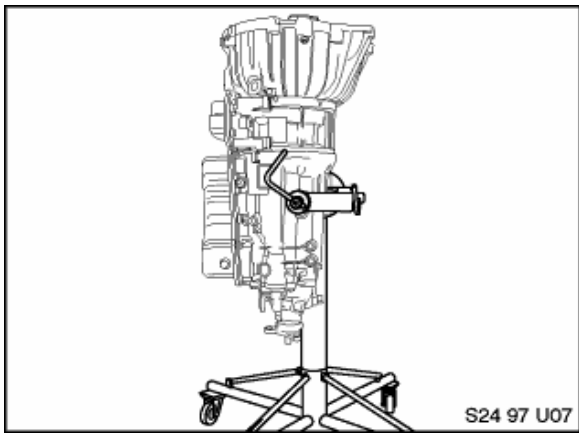
6. Apply petroleum jelly or transmission fluid to the new radial seal ring and install. Tighten the three screws to 3 Nm (2.2 lb.ft.).



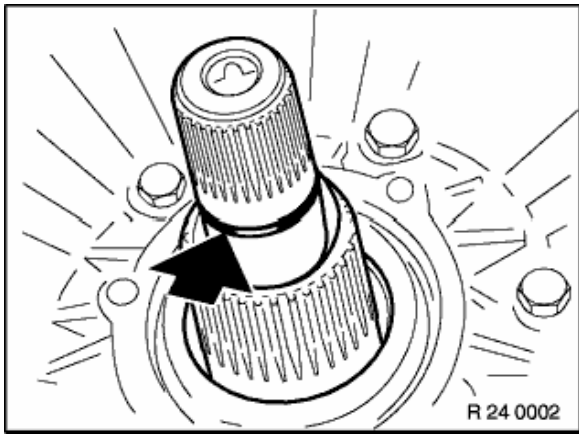
7. Rotate transmission 180° so that the oil pan is facing up. Remove the front oil pan and gasket after removing 12 screws.



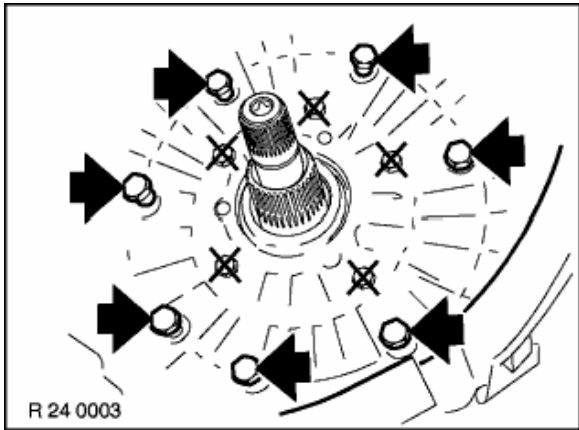
8. Disconnect connectors from solenoids.



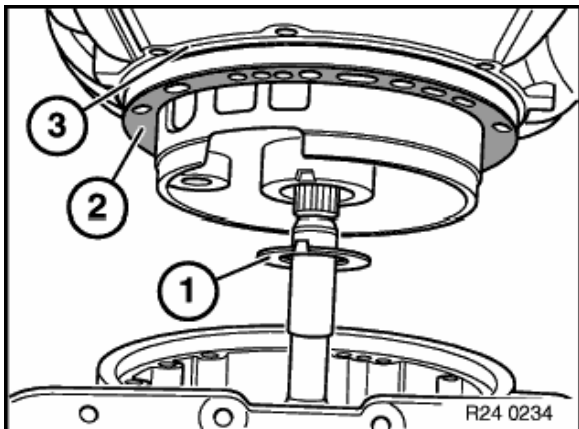
9. Rotate transmission 90° so that converter housing is facing up.



10. Remove 'O' ring seal from turbine shaft end.

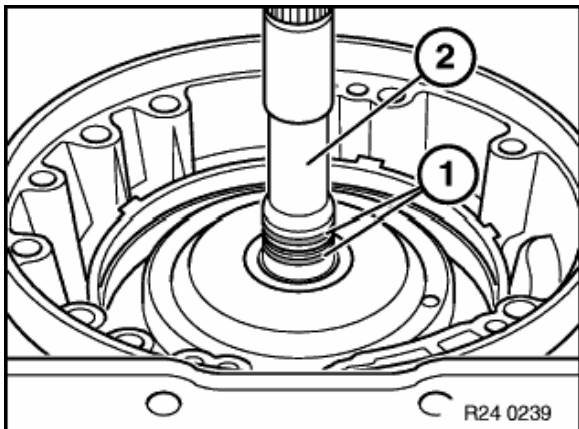


11. Remove the 7 bolts holding the converter housing to the adapter case.

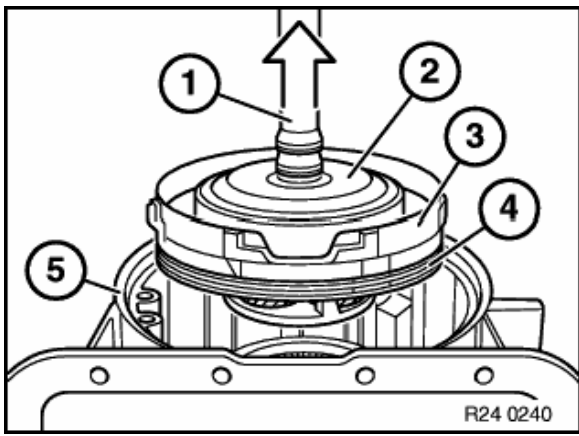


12. Remove the following:

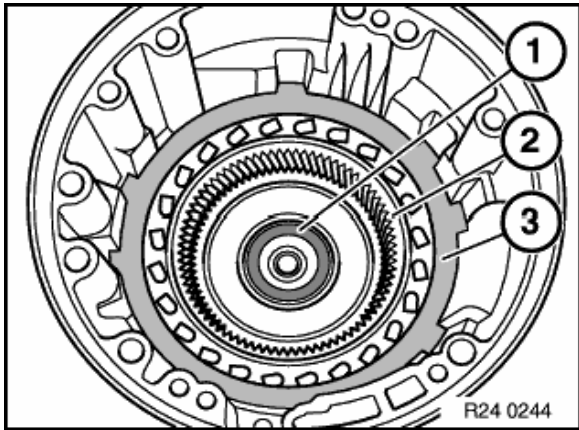
- Torque converter housing and oil pump assembly from the adapter case. - Square section seal ring (3) from the oil pump.
- Paper gasket (2) from the adapter case.
- Colored selective washer (1).



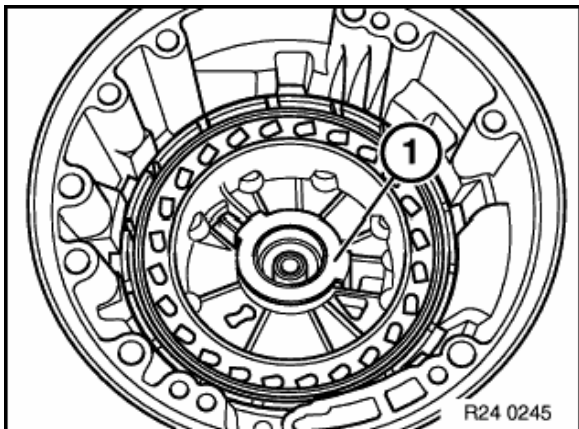
13. Remove the two teflon seal rings (1) on the turbine shaft (2).



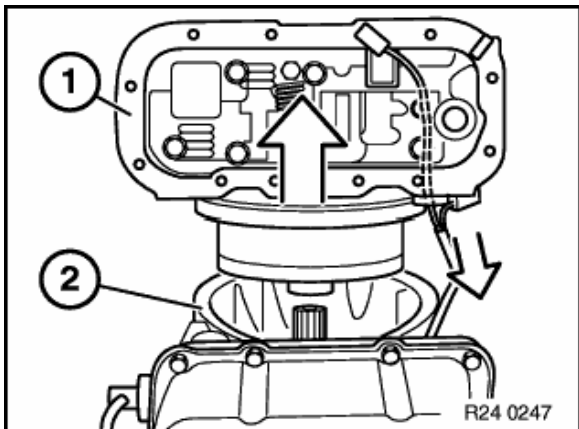
14. Remove the overrun sub assembly along with the 4th clutch plates.



15. Remove the following: Last 4th clutch plate (3). Thrust bearing (1), note the position of the bearing (black side up). Overdrive ring gear (2).



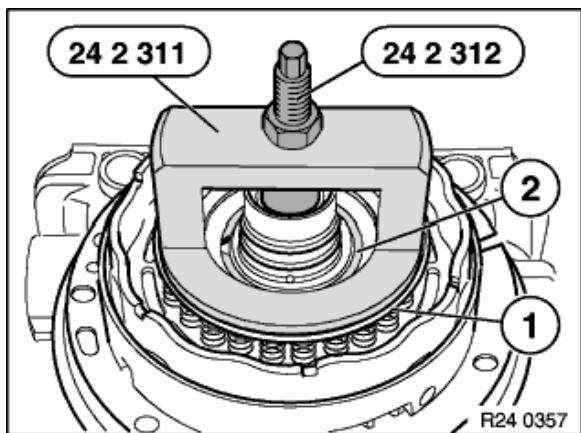
16. Remove the thrust washer(1).



17. Slowly remove the adapter case (1) to ensure that the 3rd clutch shaft is not displaced. **NOTE:** The wiring harness attached to the valve body main case must be fed through the hole in the adapter case as it is being removed.

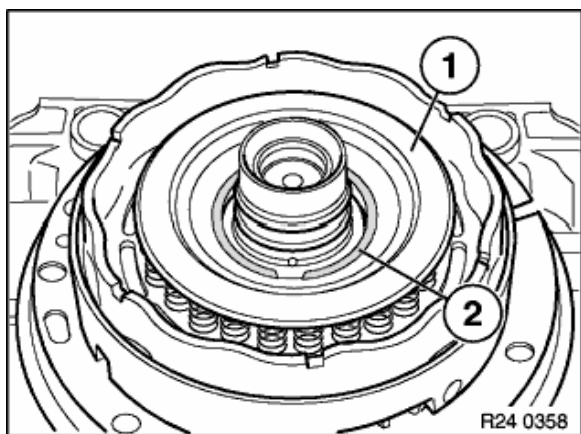
Remove the following:

- Selective washer
- Two 'O' rings

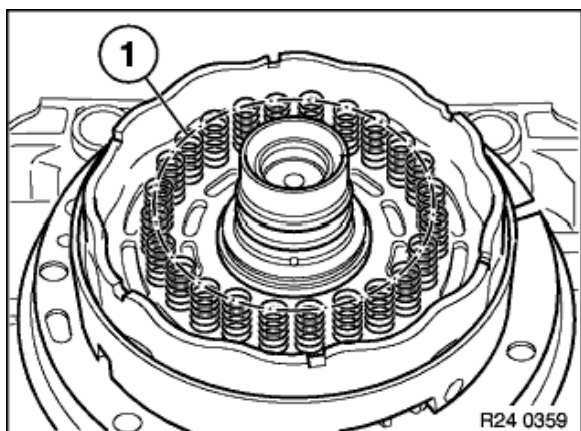


18. Turn adapter case upside down. Compress seat (1) using tool 24 2 311 and 24 2 312 or a press. Remove snap ring (2) from groove using snap ring pliers. Release the tool and remove.

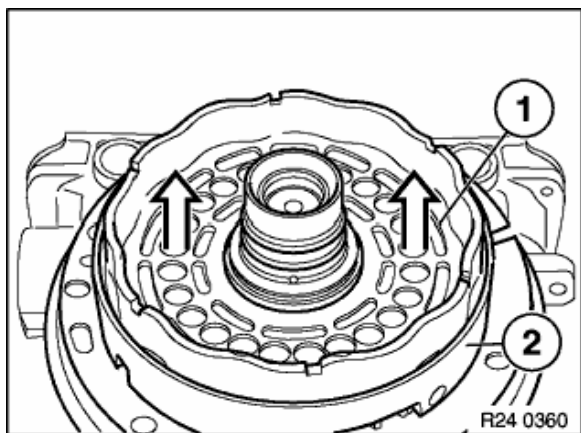
NOTE: If a press is used to compress the seat, **CAUTION must be used to insure that the seat is not compressed too far**, as damage to the seat may result.



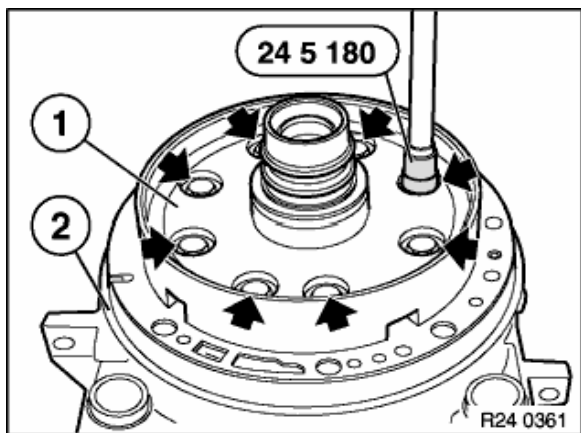
19. Remove and discard the snap ring (2). Remove seat (1).



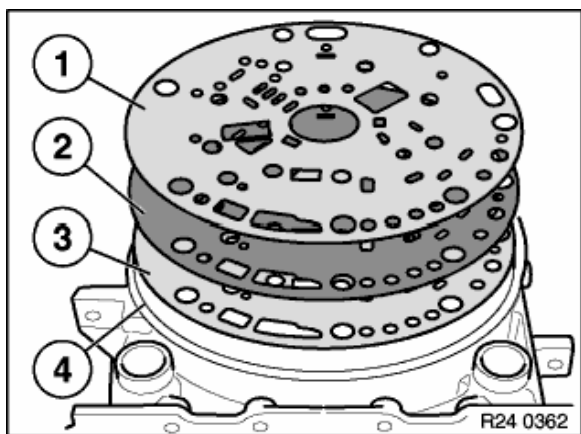
20. Remove 24 relief springs (1).



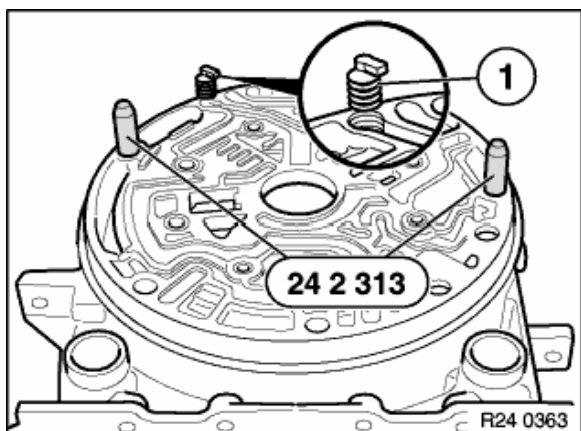
21. Remove clutch piston (1) from adapter case (2). Remove and discard inner and outer reverse piston seals.



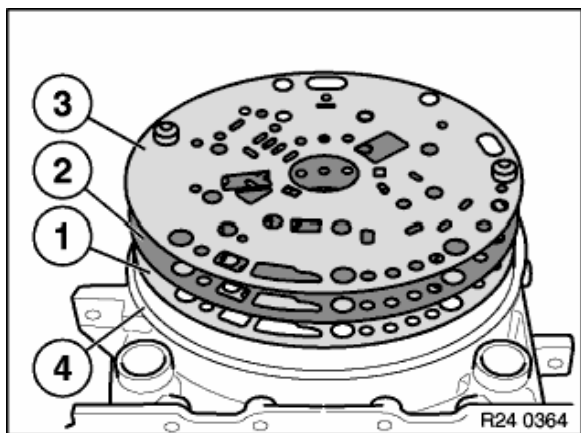
22. Unscrew 8 screws (1) from center support (2). Remove center support from adapter case.



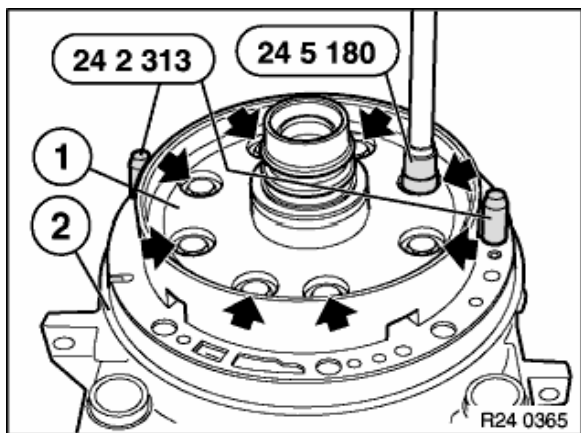
23. Remove gasket (1), Transfer plate (2) and gasket (3). Discard the two gaskets.



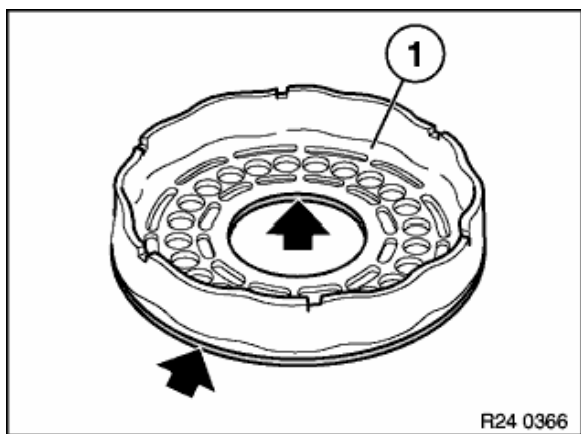
24. Insert (Transfer Plate Guides) special tools 24 2 313 on the adapter case as shown.
CAUTION: Inspect oil restrictor (1) in adapter case.



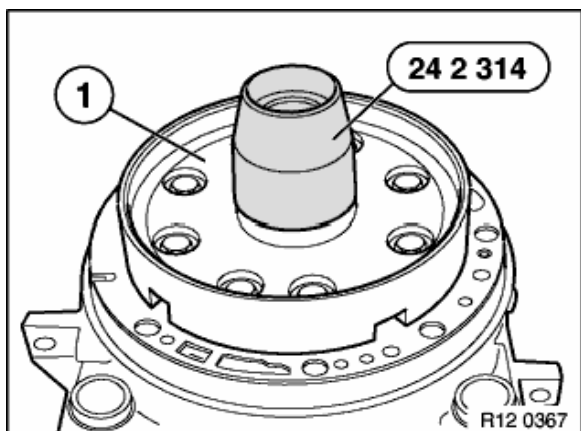
25. Install gasket (1), transfer plate (2), and gasket (3) to adapter case (4).
CAUTION: Pay close attention to position of gaskets and transfer plate.



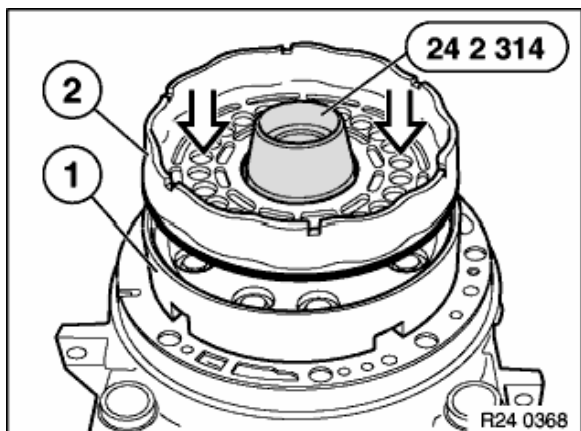
26. Install center support hub (1) with 8 screws. Tighten progressively to 25 Nm.
Remove special tools 24 2 313.



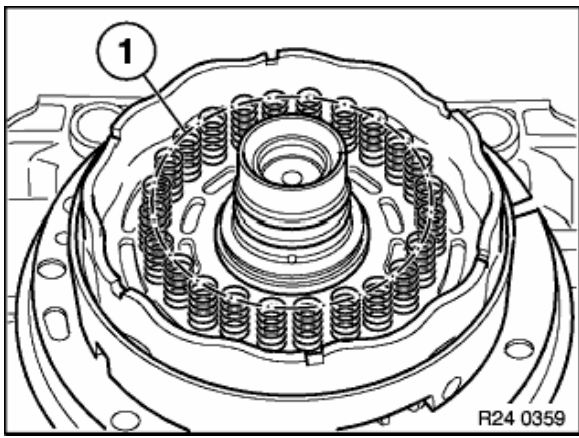
27. Install new inner and outer seals on clutch piston (1).



28. Place (Clutch Piston Installer Sleeve) special tool 24 2 314 over center support (1) hub as shown.

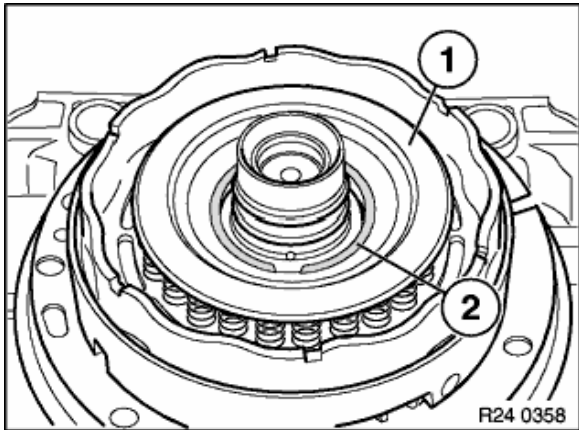


29. Install the reverse clutch piston (2) over center support (1). Remove tool 24 2 314.

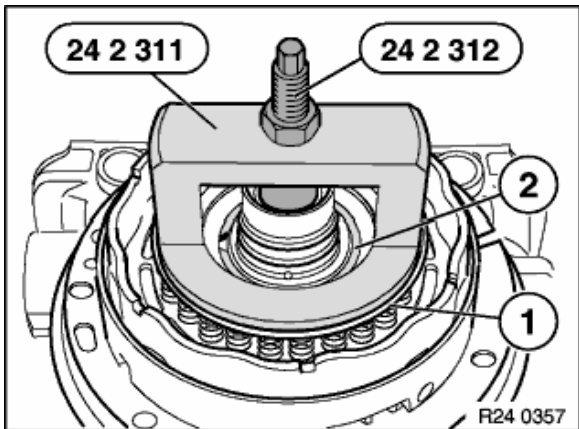


30. Install the 24 relief springs (1) on reverse clutch using petroleum jelly.

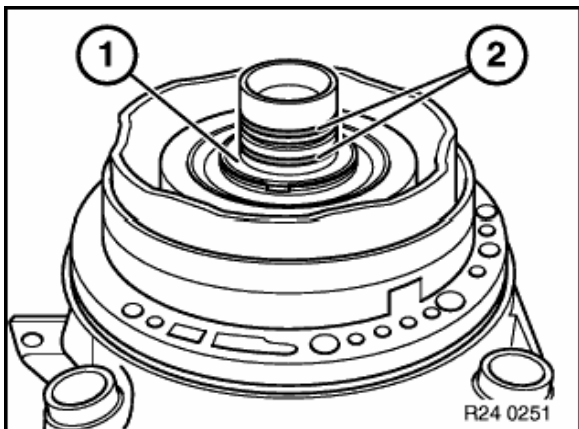
CAUTION: Ensure that all relief springs are correctly in place.



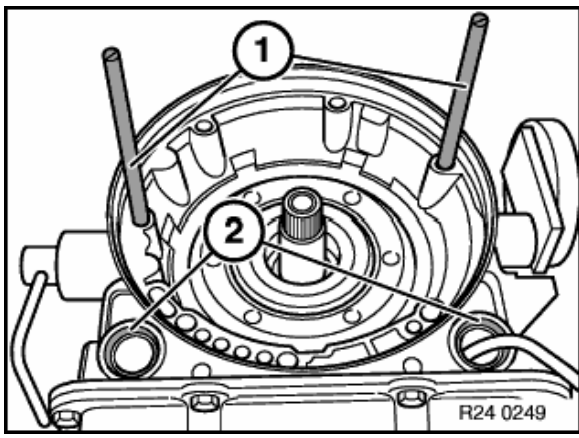
31. Install seat (1) on relief springs. Place the new snap ring (2) on the seat.



32. Install tool 24 2 311 onto the center support. Using tool 24 2 312, compress the relief springs, the seat, and the snap ring. **DO NOT OVER COMPRESS-RISK OF BENDING THE SPRING SEAT.** Install the snap ring in the groove using a snap ring pliers. **ENSURE THE SNAP RING IS CORRECTLY IN PLACE.** Release the pressure and remove the special tools.

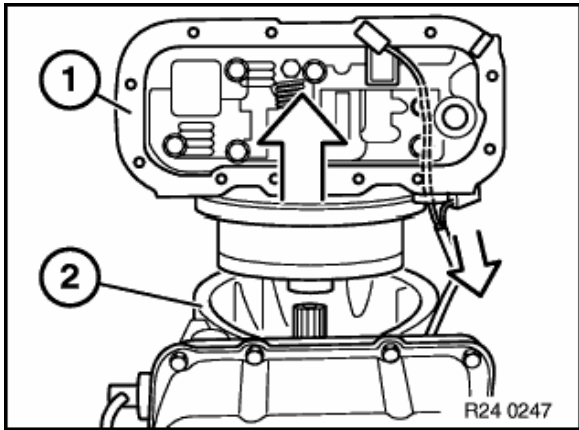


33. Install 2 new seal rings and thrust washer using petroleum jelly.

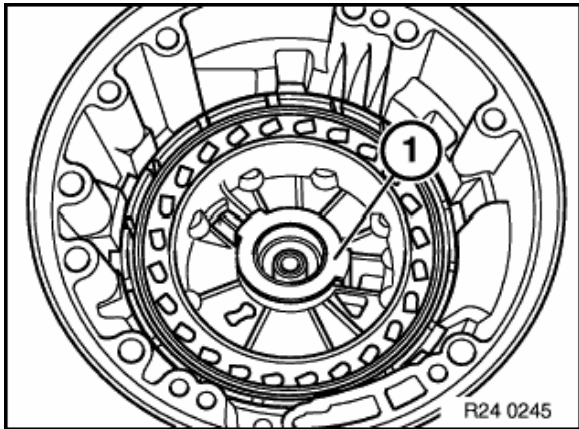


34. Rotate the transmission 90°, back to its vertical position with the main case and its mating surface facing up. Install:

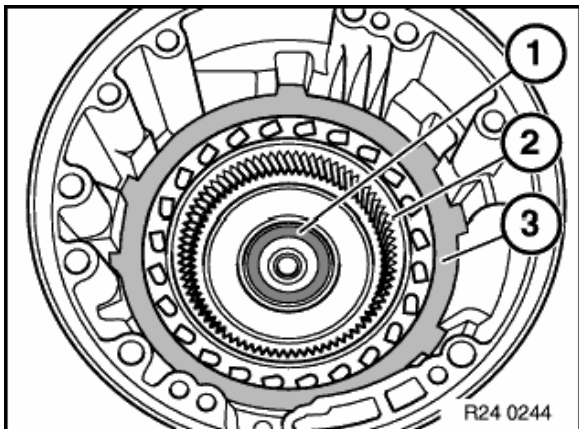
- Apply transmission fluid or petroleum jelly to two "O" rings and install as indicated (2).
- Install the two adapter case alignment screws (1) as shown.



35. Carefully place the adapter case back onto the main case. NOTE: The wiring harness for the solenoids must be reinserted through the hole in the adapter case as it is being lowered on to the main case. Make certain that the wire is not pinched during reassembly.

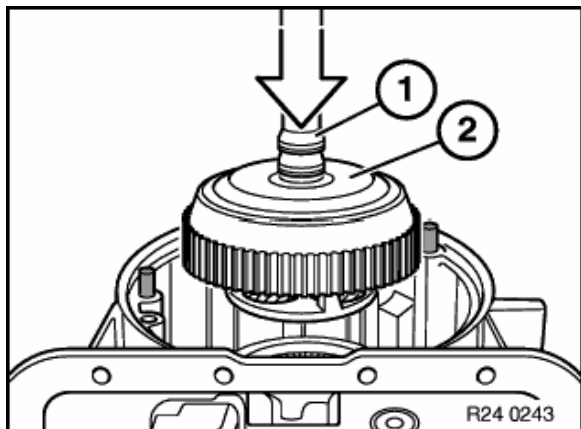


36. Apply petroleum jelly or transmission fluid to the thrust washer (1) and reinstall.

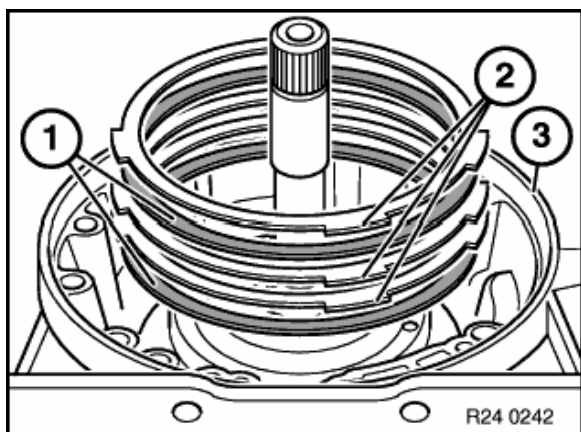


37. Install:

- Overdrive ring gear (2)
- Thrust bearing (1) black side up.

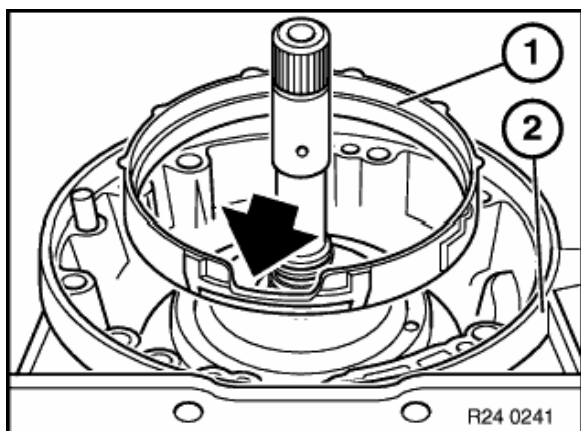


38. Install the overrun sub assembly.

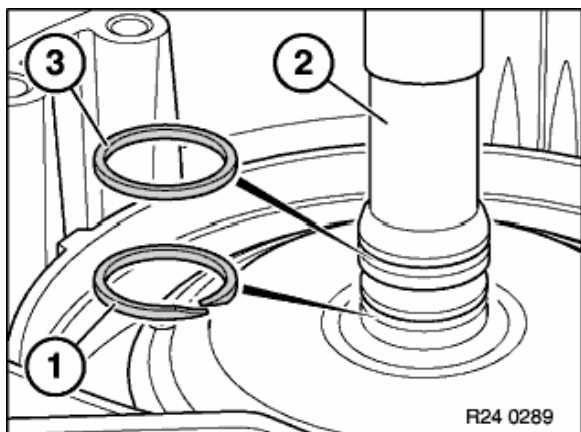


39. Install the 4 clutch plates.

NOTE: The assembly position of the plates steel-lined-steel-steel-lined-steel.

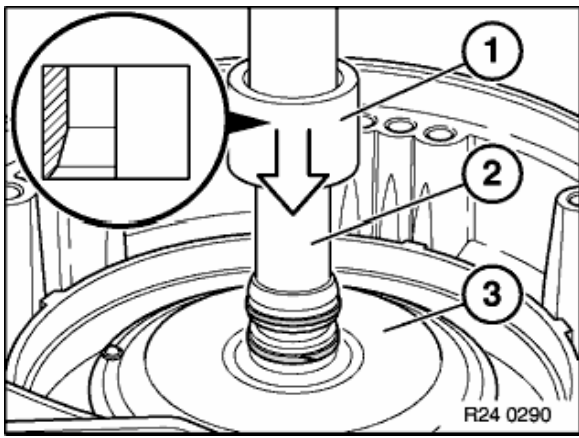


40. Install the retainer.

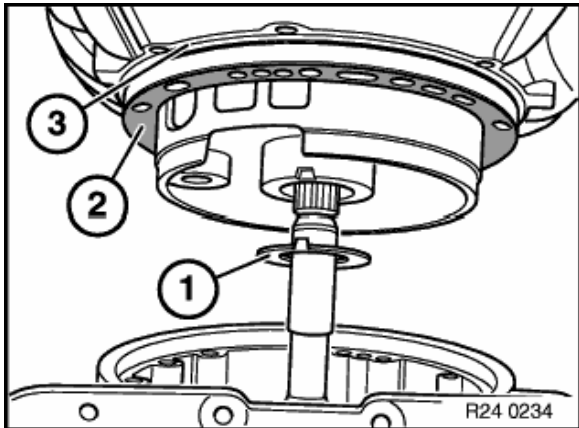


41. Apply petroleum jelly or automatic transmission fluid to the turbine shaft seal (1&3).

- Install the split Teflon ring into the lower groove.
- Slide the solid Teflon ring down the turbine shaft and install into the upper groove.

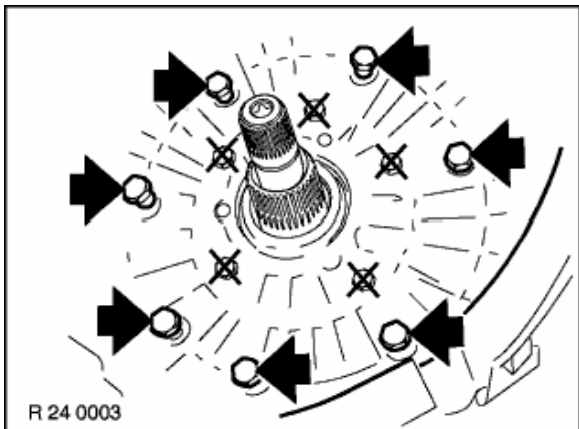


42. Slide the special tool (1) included in the repair kit down the turbine shaft and over the upper seal ring just installed. Continue to slide the special tool down the shaft until it rests against the overrun subassembly. **Leave the special tool in place for at least 5 minutes, until the upper seal ring is properly seated in the upper groove of the turbine shaft.**

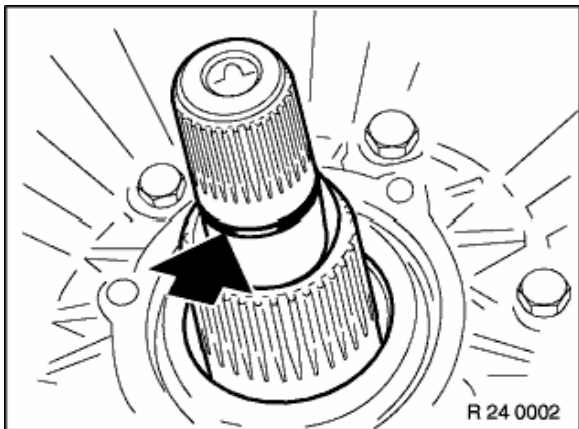


43. Install the converter housing, oil pump assembly and colored selective washer.

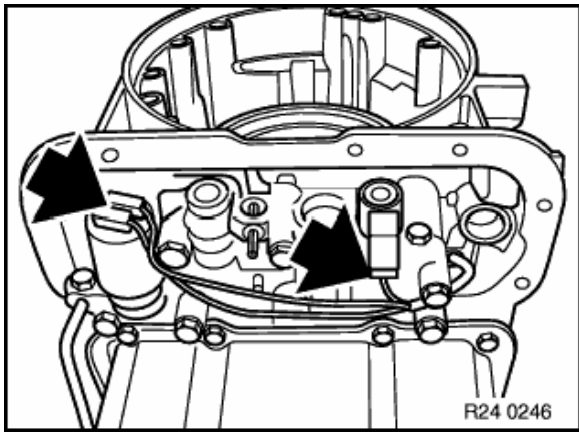
Unscrew and remove the two guides.



44. Insert the 7 bolts (2) and tighten them to 42 Nm (30.9) in an alternating pattern.

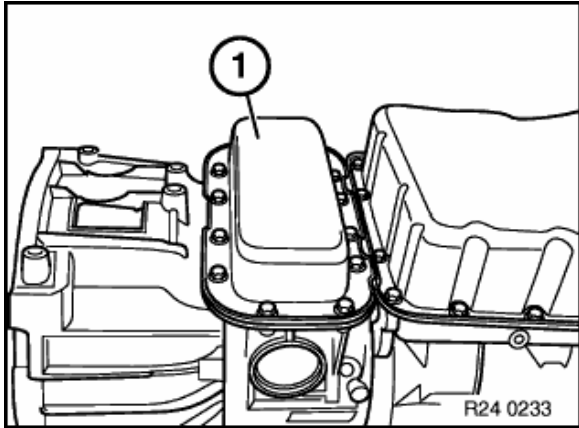


45. Install a new turbine shaft 'O' ring (1).

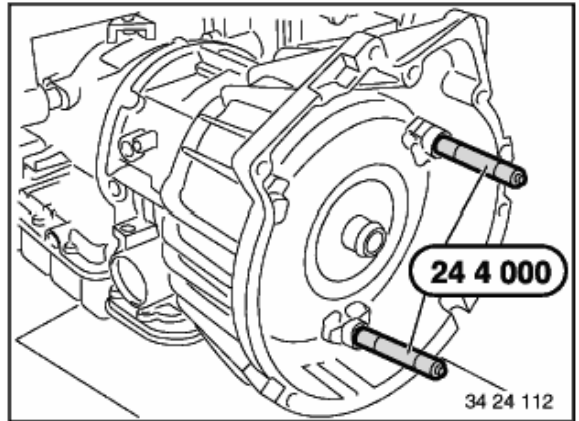


46. Rotate the transmission 90° so that the oil pan is on top.

- Connect the wiring harness to the solenoids.



47. Install the gasket, oil pan, and tighten the 12 screws to 12 Nm (8.8 lb.ft.)



Rotate the transmission 180° so that the oil pan is at the bottom and install the torque converter.

Install the transmission. Use a hand pump or siphon pump to inject transmission fluid into the transmission.

- Add transmission fluid until oil starts to run out of the fill hole and install the plug.
- Start the engine and allow transmission oil temperature to reach operating temperature (30°C - 50°C).
- Slowly move gear selector lever through all gears.
- With the engine running recheck the transmission fluid level by removing plug. Fluid should be at the bottom edge of the hole. Add additional fluid until it starts to run out of the fill hole and re-install the plug.