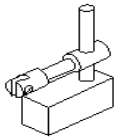


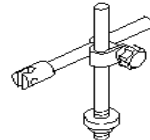
Automatic Transmission Assembly - Dismantle and Assemble (Transmission Assembly Removed) (17 214 8)

Special Tools



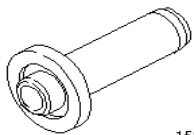
15008

15-008 Dial indicator fixture



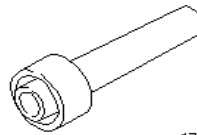
15022A

15-022A Dial indicator fixture



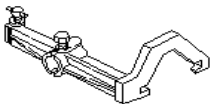
15058

15-058 Pinion seal installer



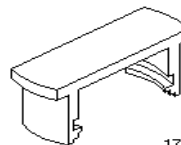
17002

17-002 Installer, transmission extension housing seal



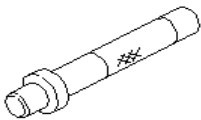
17006B

17-006B Mounting bracket



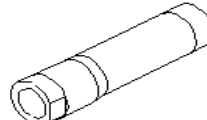
17007A

17-007A Compressor, clutch spring



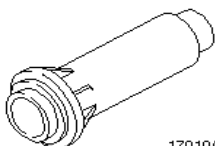
17008

17-008 Installer, shift lever seal



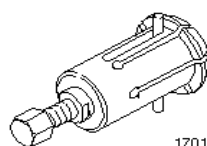
1700901A

17-009-01A Aligner, transmission fluid pump



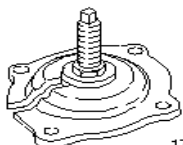
17010A

17-010A Installer, transmission fluid pump seal



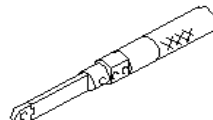
17011A

17-011A Remover, transmission fluid pump seal



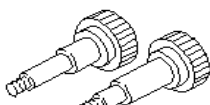
17012

17-012 Gauge, rear servo piston rod



17029

17-029 Torque wrench, brake band



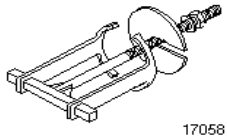
17030

17-030 Aligner screws, control unit

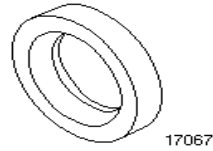


17055

17-055 Gauge bar, shim selection



17058



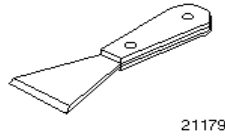
17067

17-058 Spring compressor, clutch

17-067 Guide sleeve, one-way clutch



17068



21179

17-068 Setting gauge, transmission range sensor

21-179 Separator, sump

Proprietary Tools

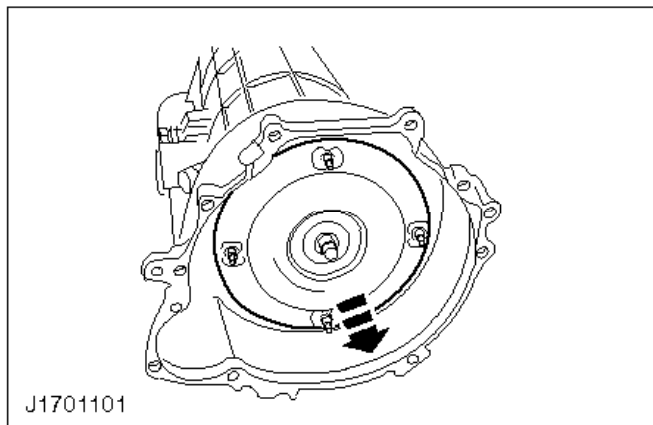
Dial indicator
Depth gauge
Feeler gauges

Workshop Equipment

Assembly stand	
----------------	--

Materials

Set of gaskets	
Vaseline	
Paraffin	



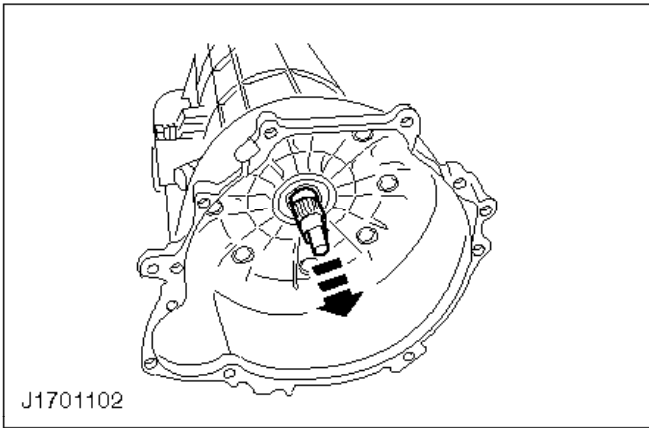
J1701101

Dismantle

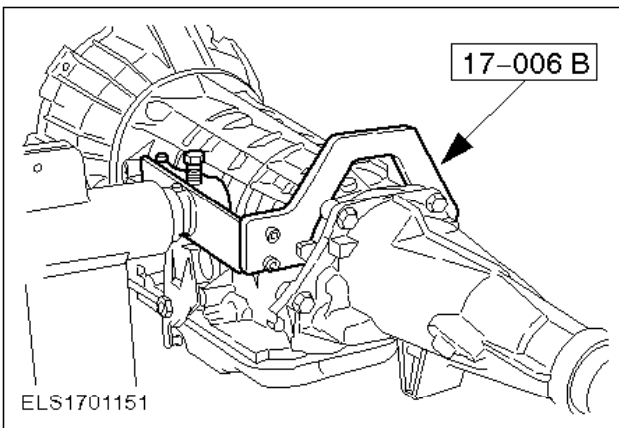
Note:

The torque converter is filled with automatic transmission fluid.

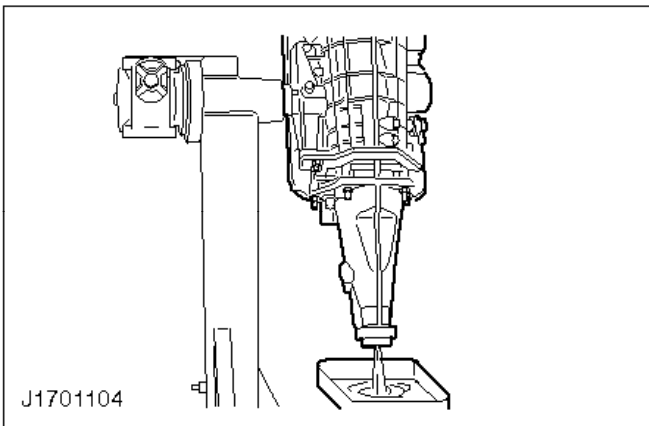
1. Take out the torque converter.
 - Shake the torque converter and pour the transmission fluid through a very fine filter.
 - Check the transmission fluid (see General Notes).



2. Withdraw the input shaft.



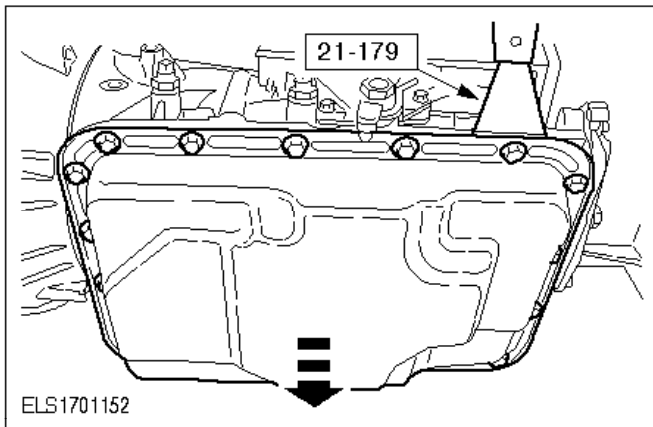
3. Secure the transmission to the assembly stand.



Note:

Do not turn the transmission further than 45°.

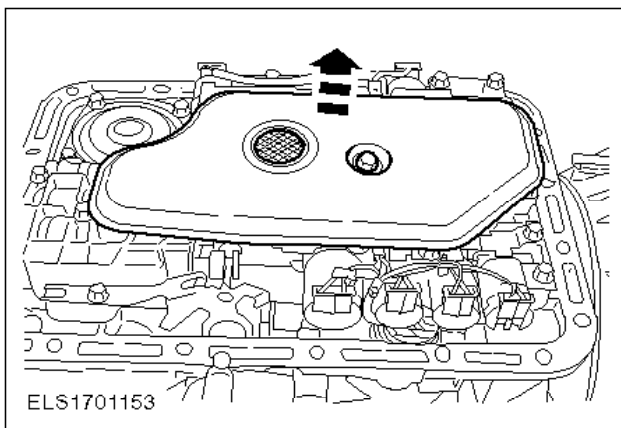
4. Drain the transmission fluid.
- Turn the transmission back to the horizontal position.
 - Check the transmission fluid (see General Notes).



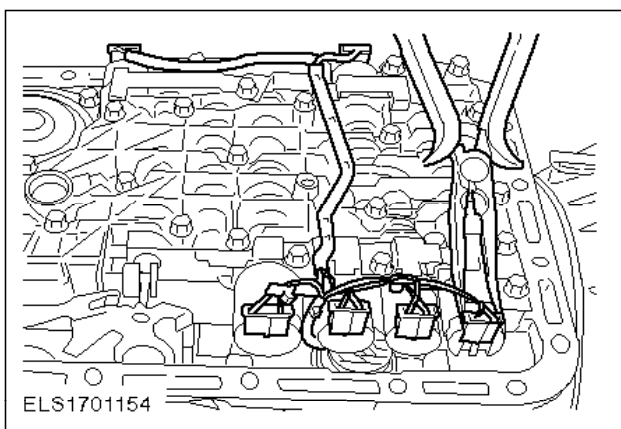
Note:

Check for deposits in the sump (see General Notes).

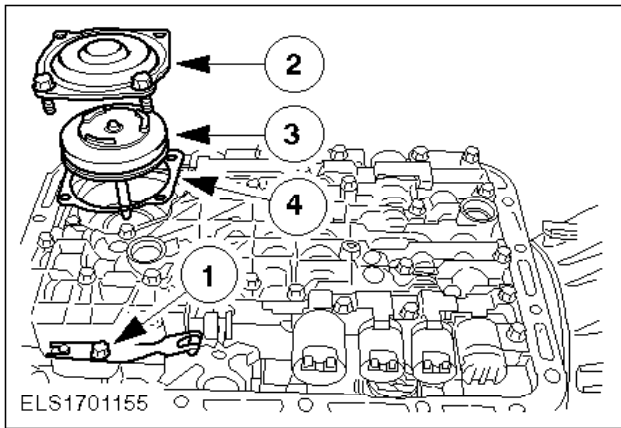
5. Detach the sump downwards.
 - Remove the bolts.
 - Separate the sump from the automatic transmission using the special tool.
 - Remove the sump gasket and the torque limiters (x 36).
 - Turn the transmission through 180°.



6. Remove the transmission fluid filter.
Remove the seals.

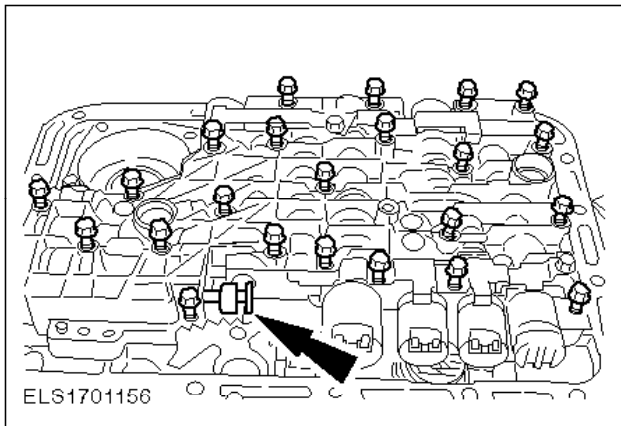


7. Disconnect the wiring.



8. Remove the detent spring and the rear servo piston.

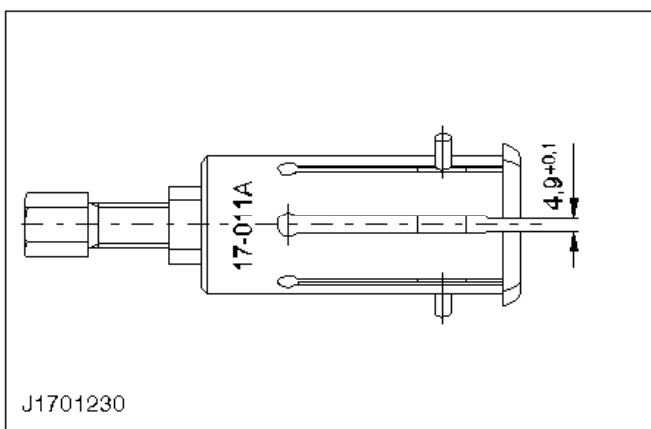
- 1 Detent spring
- 2 Servo cover
- 3 Servo piston
- 4 Gasket



Note:
Hold the manual selector plunger.

9. Detach the valve body assembly with the gasket.

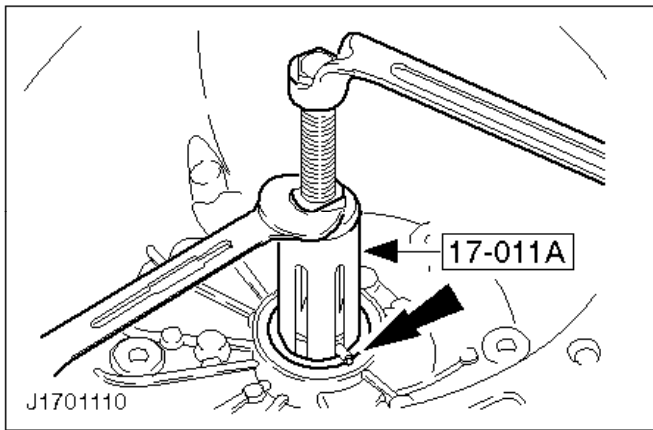
Unscrew the 24 bolts.



Remove the transmission fluid pump housing seal

10. If necessary, rework the special tool.
- File out the open-ended slots to 4,9 mm.

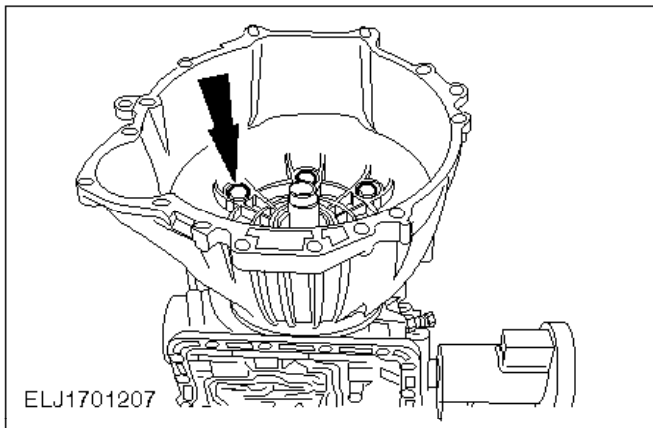
- Change the special tool no. to 17-011A.



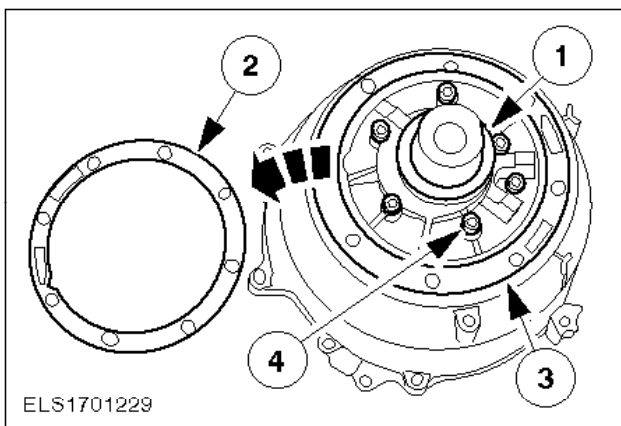
Note:

Turn the transmission into the vertical position.

- ⌚ 11. Remove the radial seal.

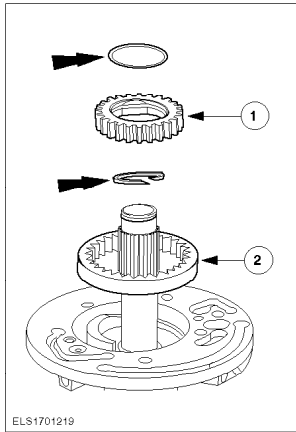


- ⌚ 12. Detach the torque converter housing together with the transmission fluid pump.



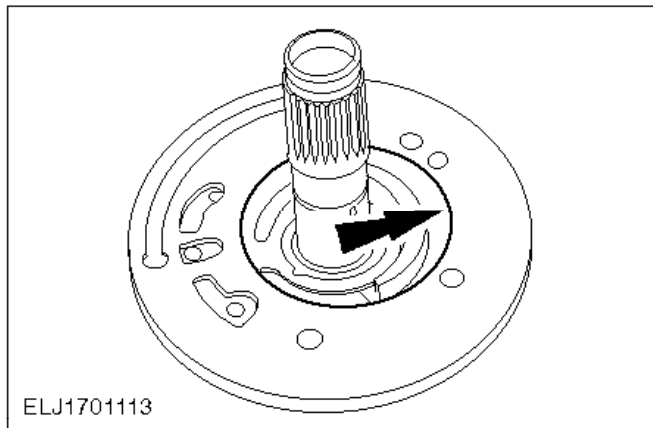
- ⌚ 13. Detach the transmission fluid pump and intermediate plate from the torque converter housing.

- 1 Remove the thrust washer (-7D014-).
- 2 Remove the gasket of the intermediate plate.
- 3 Remove the square section ring.
- 4 Remove the transmission fluid pump with the intermediate plate.



14. Dismantle the transmission fluid pump.

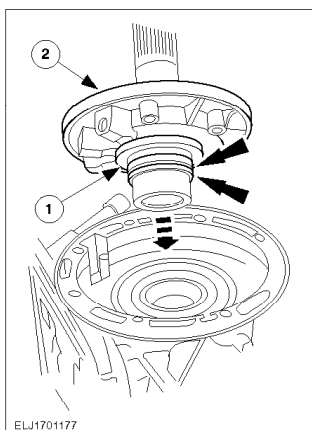
- 1 Remove the inner gear.
Remove the O-ring.
- 2 Remove the outer gear.
Remove the seal for the transmission fluid pump shaft.



Note:

The transmission fluid pump can only be renewed as a complete unit.

15. Check the transmission fluid pump housing for wear and scoring.



Check the end float of the O/D gear train

Note:

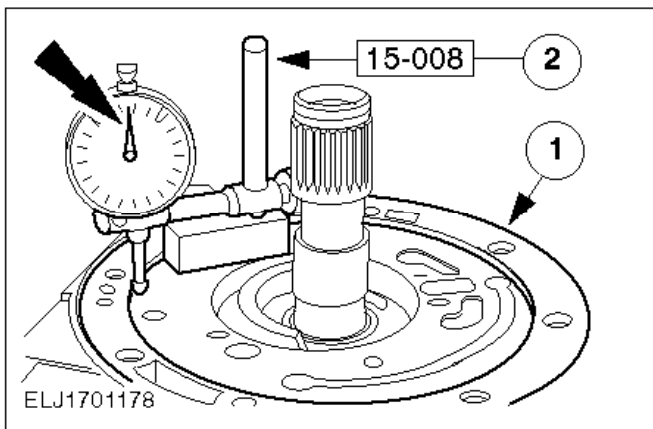
If the end float is too large, this indicates that the thrust washers, needle bearings or bearing running faces are more worn than they should be.

Note:

Make sure that the thrust washer sticks to the transmission fluid pump. Do not damage the seals.

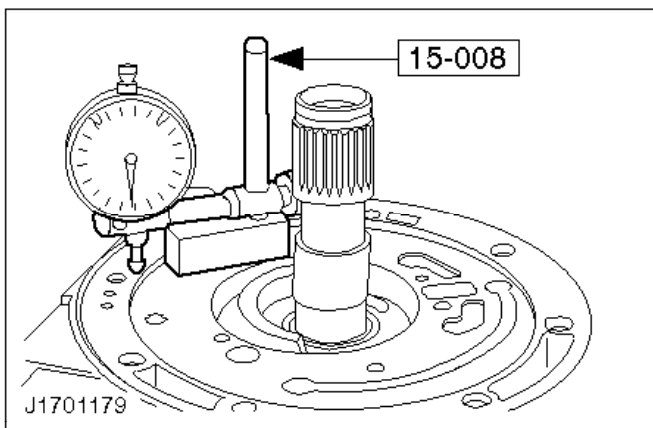
16. Install the transmission fluid pump.

- 1 Locate the thrust washer (-7D014-) in position with Vaseline.
- 2 Insert the transmission fluid pump in the O/D gear train.



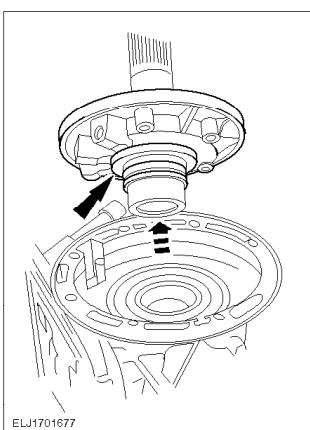
17. Measure the end float of the O/D gear train.

- 1 Fit the gasket.
- 2 Zero the dial indicator gauge on the transmission fluid pump housing.



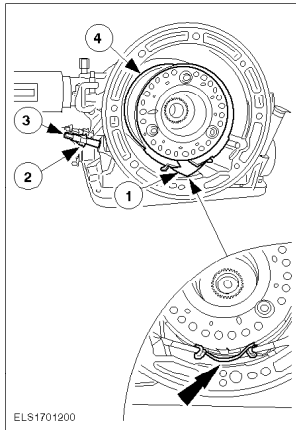
18. Measure the end float of the O/D gear train (continued).

- Position the plunger on the gasket of the transmission housing and take the reading.
- Carry out a second measurement at 180° to the first and take the average of the two measurements.
- Required value: $0,38 \pm 0,2$ mm.



19. Remove the transmission fluid pump.

Remove the thrust washer (-7D014-).



Note:

Mark the O/D brake band to prevent it being mistaken for the centre brake band.

20. Remove the O/D brake band.

- 1 Make a wire clip and fit it.
- 2 Slacken the lock nut.

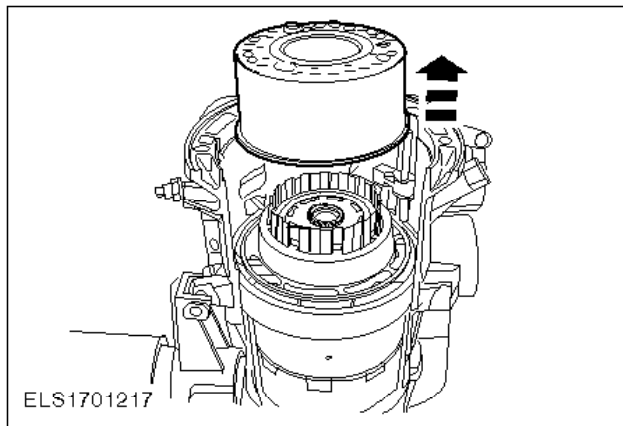
Note:

Hold the thrust element with pointed pliers.

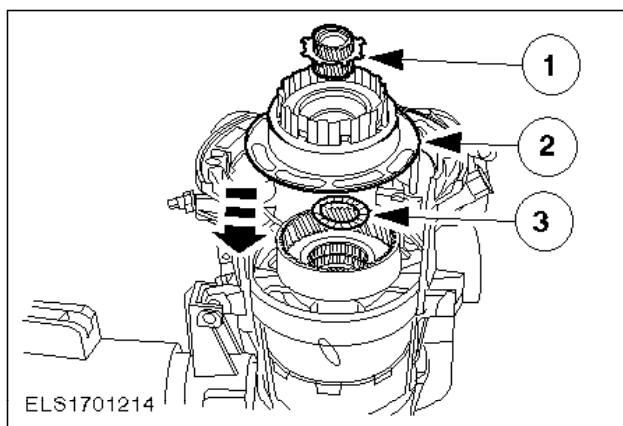
- 3 Unscrew the adjusting bolt for the O/D brake band.

Remove the thrust elements.

- 4 Remove the O/D brake band.



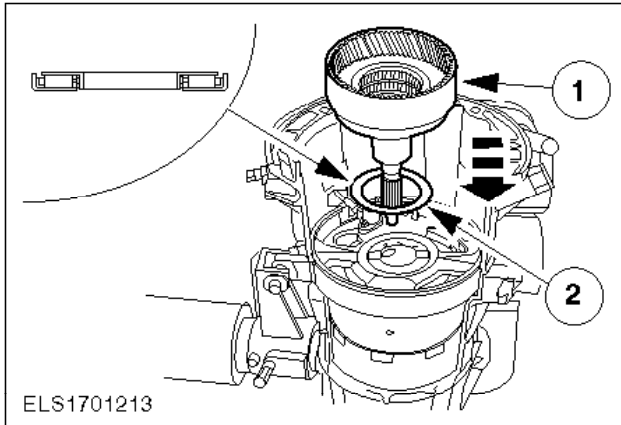
21. Remove the O/D clutch.



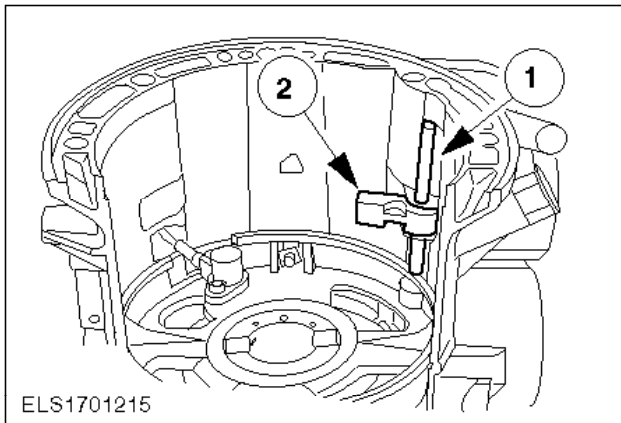
Note:

The inner needle bearing in the planet carrier cannot be removed.

- 22. Remove the planetary gear train from the centre shaft.
 - 1 Sun wheel and drive plate.
 - 2 O/D planet carrier.
 - 3 Needle bearing (-7L495-).



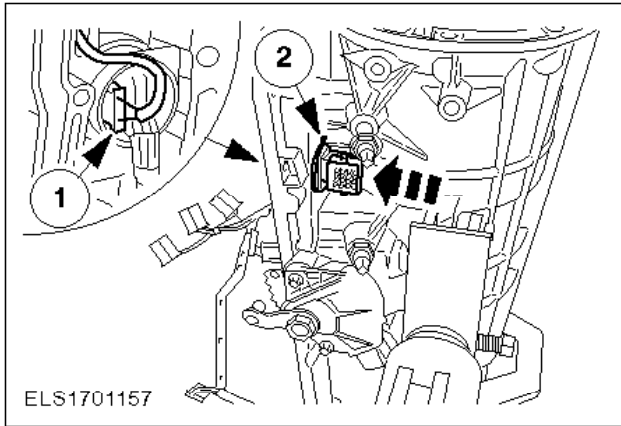
- 23. Remove the centre shaft.
 - 1 Annulus with centre shaft.
 - 2 Needle bearing (-7D014-).



Note:

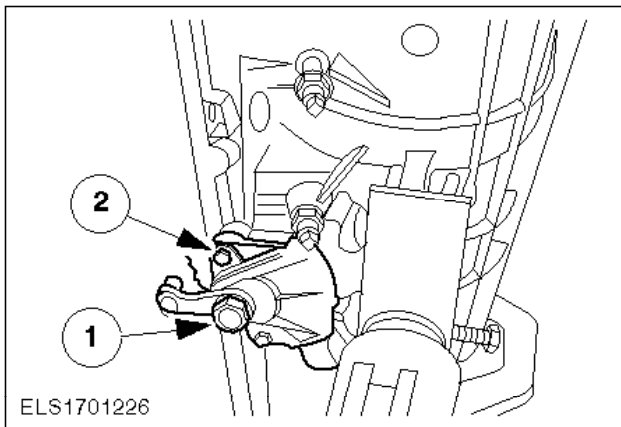
Mark the intermediate lever to prevent it being mistaken for the intermediate lever of the centre brake band.

- 24. Remove the intermediate lever.
 - 1 Withdraw the spindle of the intermediate lever.
 - 2 Remove the intermediate lever.Remove the plate retainer.



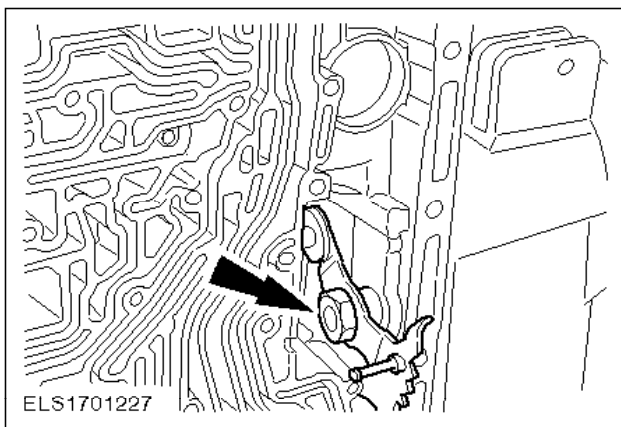
25. Remove the transmission connector.

- 1 Disconnect the plug from the transmission speed sensor (TS sensor).
- 2 Pull out the retaining clip, press in the retaining tang on the back of the connector and push out the connector.

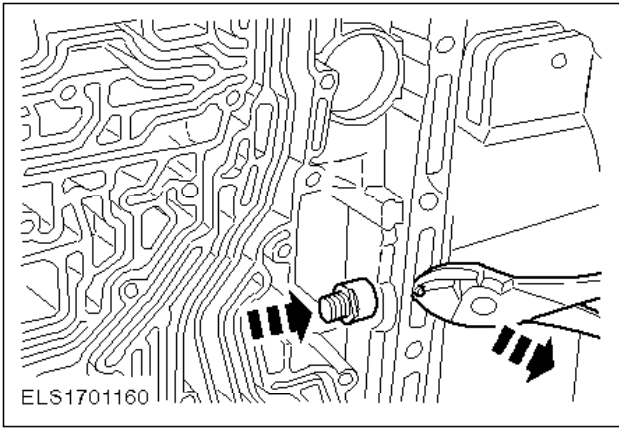


26. Detach the transmission range sensor (TR sensor).

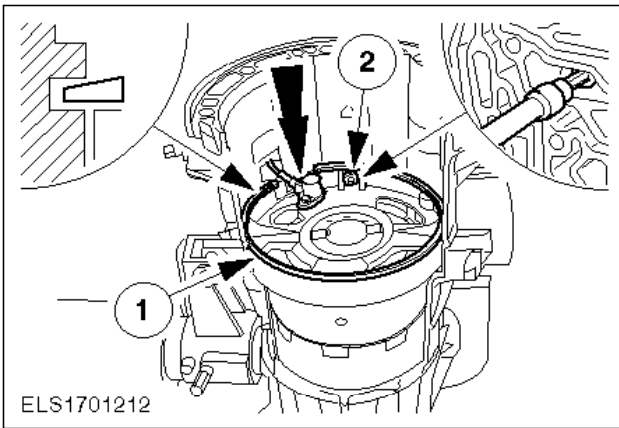
- 1 Remove the selector lever.
- 2 Remove the bolts.



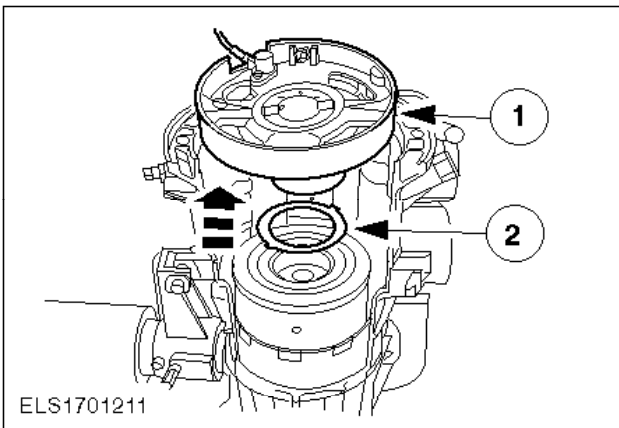
27. Remove the detent plate with the actuating linkage.



- 28. Remove the selector lever shaft.



- 29. Remove the centre carrier with the TS sensor.
 - 1 Remove the circlip.
 - 2 Slacken the centre carrier.



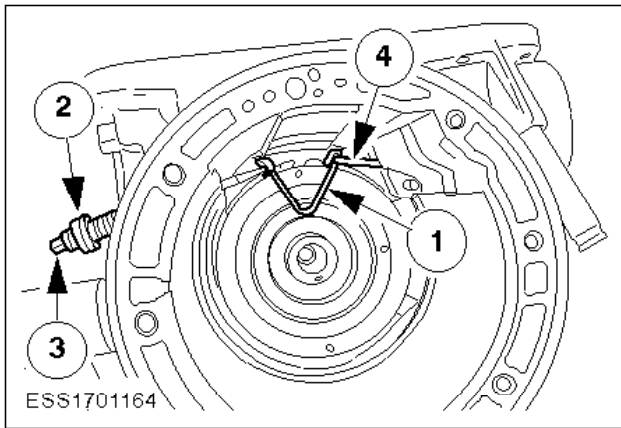
- 30. Remove the centre carrier with the TS sensor (continued).



CAUTION:

Do not damage the TS sensor wiring.

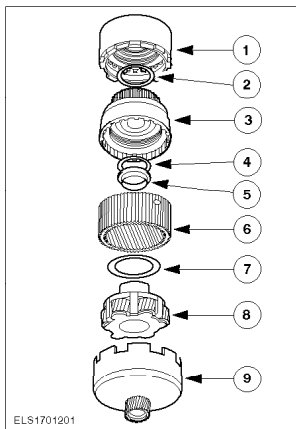
- 1 Remove the centre carrier.
 - 2 Needle bearing (-7D014-).
- Remove the Viton seals from the centre carrier.



Note:

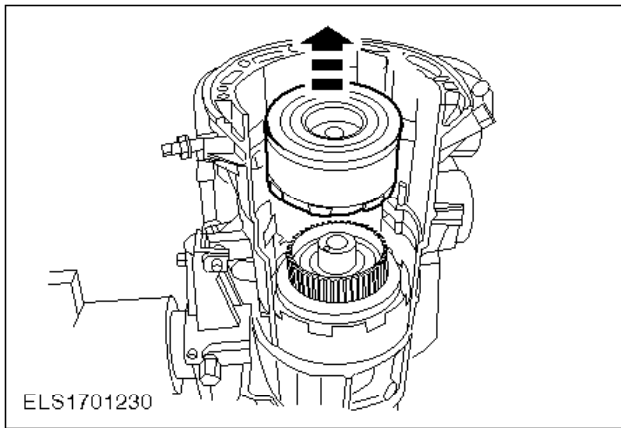
Mark the brake band to prevent it being mistaken for the O/D brake band.

- 31. Remove the centre brake band.
 - 1 Make a wire clip and fit it.
 - 2 Slacken the lock nut.
 - 3 Remove the adjusting bolt.
 - 4 Remove the thrust elements with pointed pliers.
 Remove the brake band.

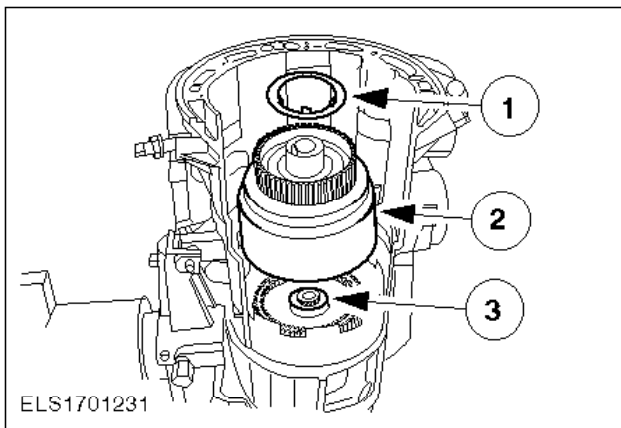


Remove the centre gear train.

- 32. Exploded view of centre gear train.
 - 1 Reverse and direct drive clutch
 - 2 Thrust washer (-7D428-)
 - 3 Forward clutch
 - 4 Needle bearing (-7D234-)
 - 5 Bronze bush (-7D045-)
 - 6 Annulus with hub
 - 7 Needle bearing (-7F374-)
 - 8 Front planet carrier
 - 9 Input bell housing

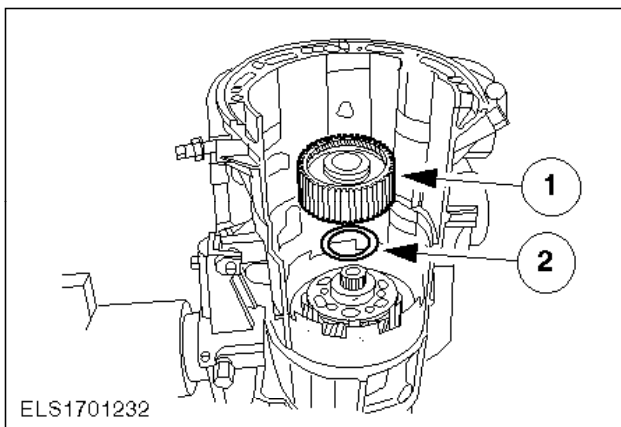


33. Remove the reverse and direct drive clutch.



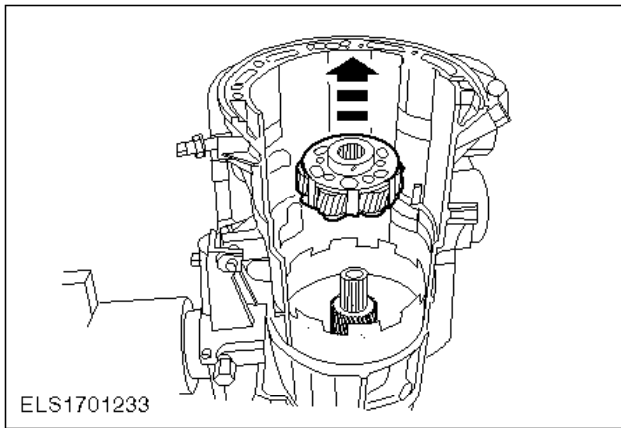
34. Remove the forward clutch.

- 1 Thrust washer (-7D428-)
- 2 Forward clutch
- 3 Needle bearing (-7D234-)



35. Remove the annulus.

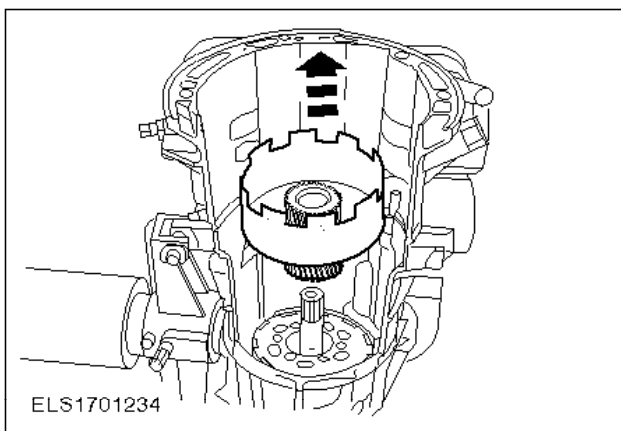
- 1 Annulus with hub
 - 2 Needle bearing (-7F374-)
- Remove the bronze bush (-7D045-).



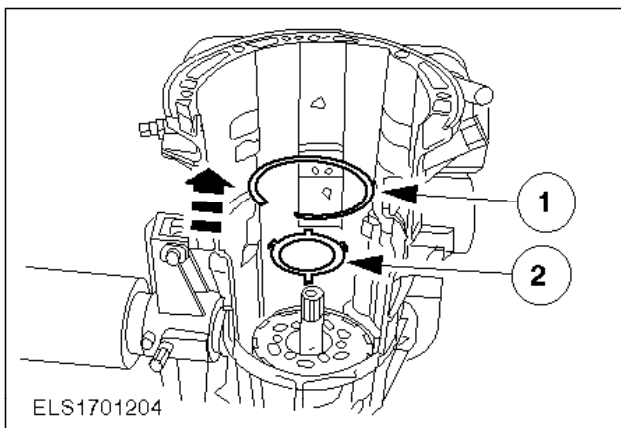
- 36. Remove the front planet carrier.

Note:

The needle bearing in the planet carrier cannot be removed.

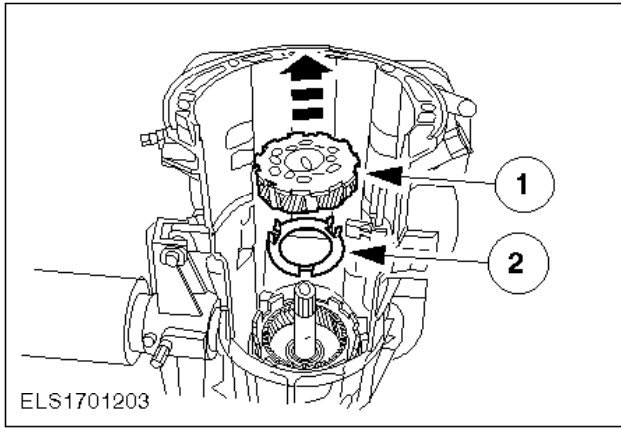


- 37. Remove the input bell housing.



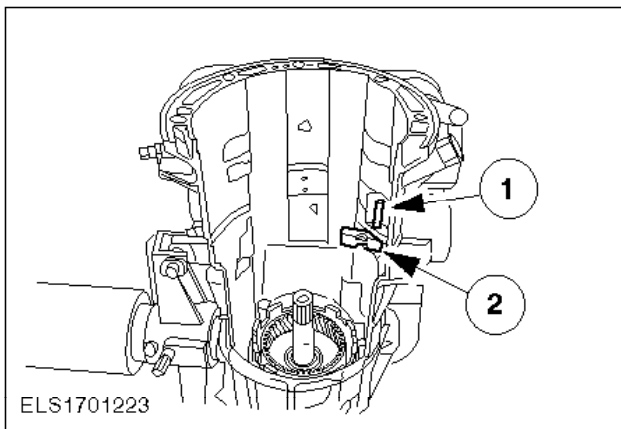
- 38. Remove the rear planetary gear train.

- 1 Remove the circlip of the planetary gear train.
- 2 Remove the thrust washer (-7D423).



39. Remove the rear planetary gear train (continued).

- 1 Planetary gear train
- 2 Thrust washer (-7D423)

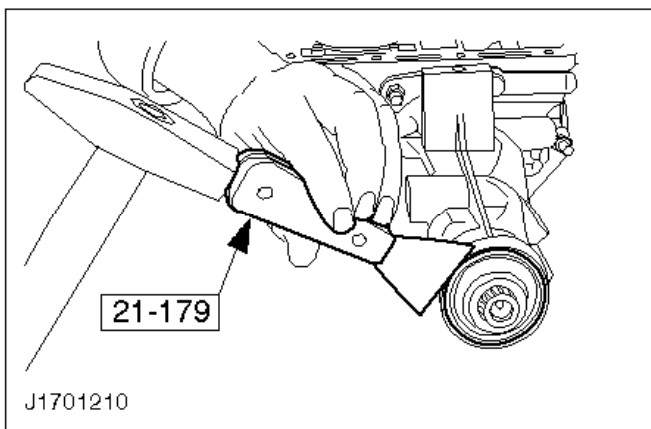


Note:

Mark the intermediate lever to prevent it being mistaken for the intermediate lever of the O/D brake band.

40. Remove the intermediate lever of the centre brake band.

- 1 Withdraw the spindle of the intermediate lever.
- 2 Remove the intermediate lever.

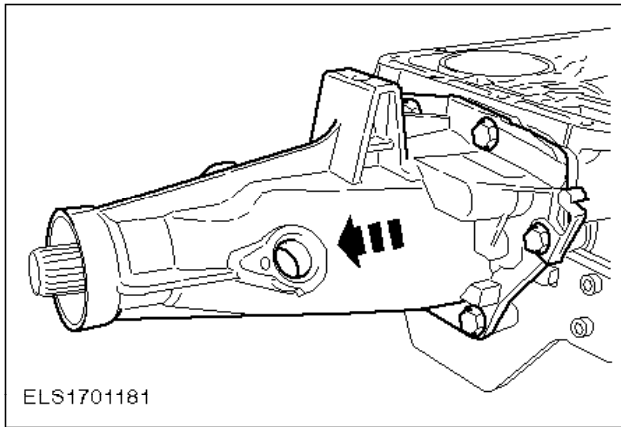


Remove the seal of the transmission extension housing

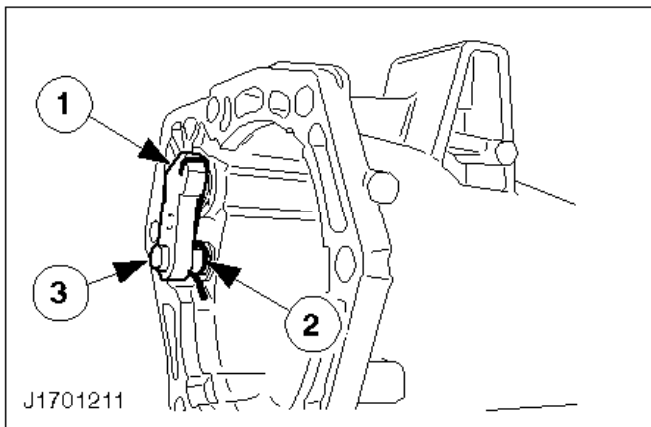
Note:

The driveshaft bearing bush in the transmission extension housing is not available individually.

41. Remove the seal of the transmission extension housing.

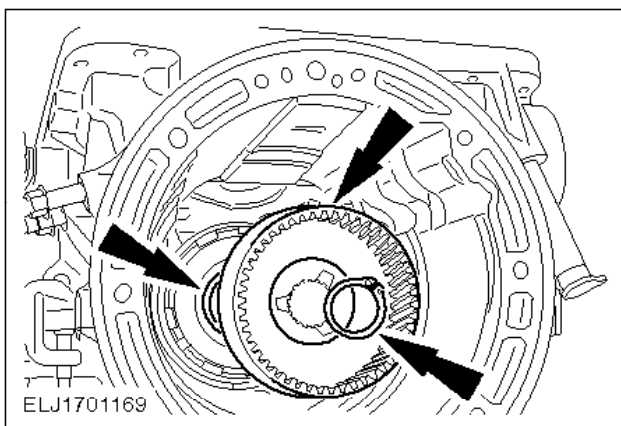


42. Detach the transmission extension housing (six bolts).
Remove the gasket.



43. Detach the parking pawl with the return spring and the pivot pin.

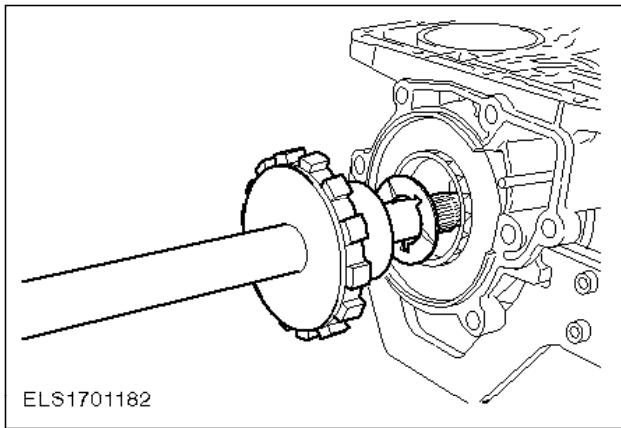
- 1 Parking pawl
- 2 Return spring
- 3 Pivot pin



Note:
Bring the transmission to the horizontal position.

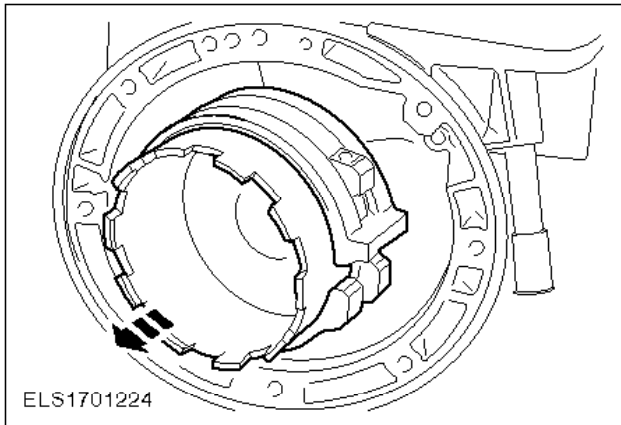
44. Remove the annulus.
- Remove the circlip.
 - Remove the annulus.

- Remove the thrust washer (-7D423-).



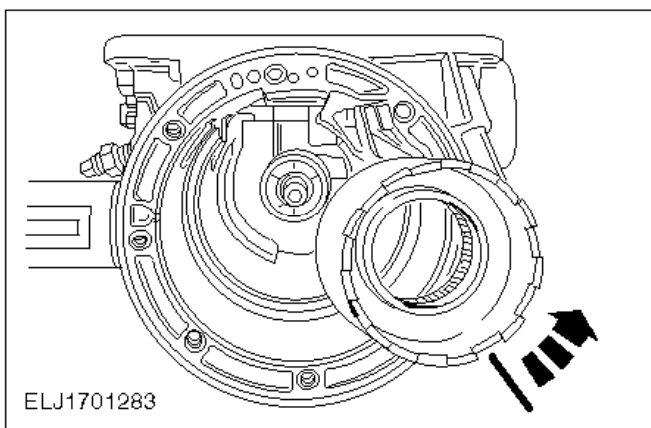
45. Remove the output shaft.

- Withdraw the output shaft and the thrust washer (-7B368-).
- Check the running faces of the seals in the housing for wear.



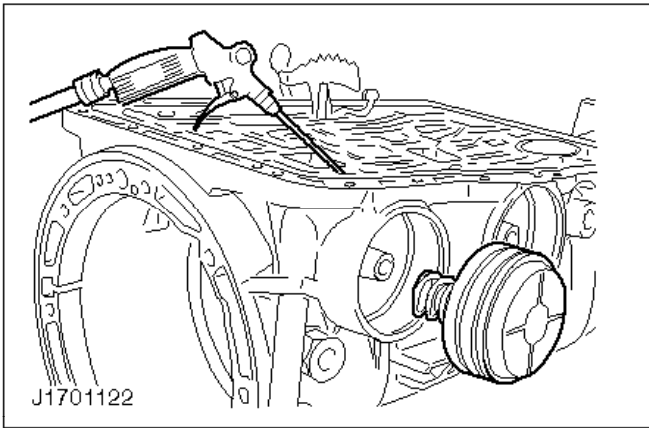
46. Remove the rear planet carrier.

Remove the brake drum and brake band.



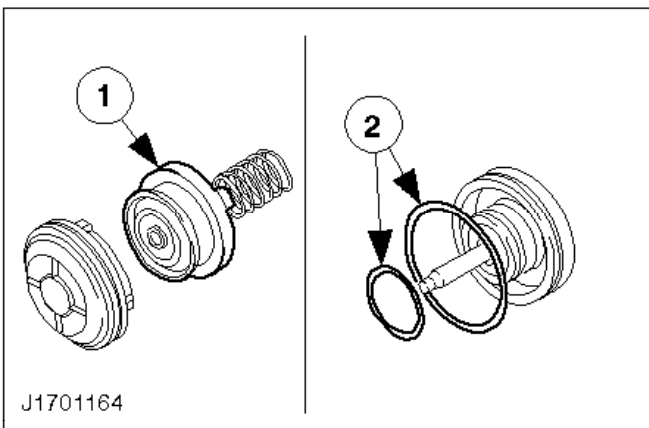
47. Check the one-way clutch.

- Fit the brake drum on the one-way clutch inner ring in the transmission housing.
- Turn the brake drum:
- Clockwise = coast, anti-clockwise = lock.



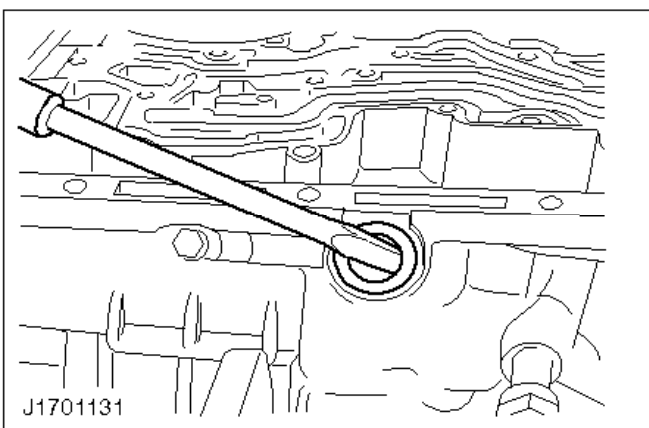
48. Remove the front and centre servo piston.

- Press the cover of the servo piston in slightly and remove the circlip.
- Remove the servo piston and compression spring, if necessary, using compressed air.
- Remove the cover of the servo piston.

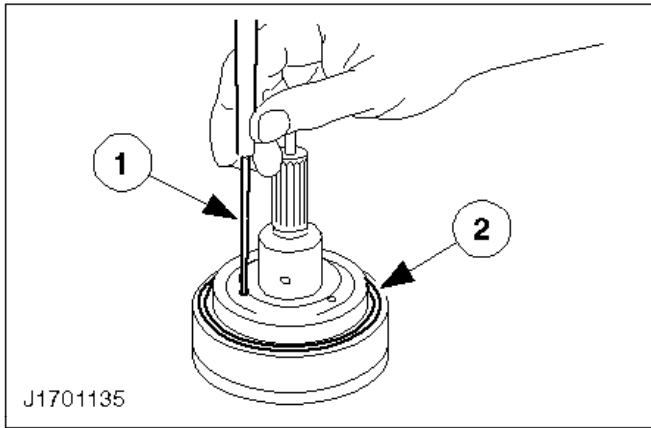


49. Check the servo pistons.

- Check each servo piston for wear or excessive play between the piston and the bore.
- 1 Check the sealing lips of the servo piston and renew the servo piston if necessary.
- 2 Remove the seals of the rear servo piston.
- Check the seals for damage or hardening.



50. Prise out the selector lever seal.



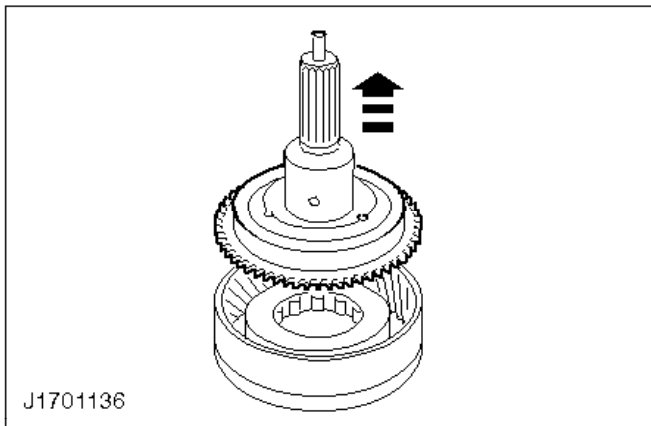
Remove the one-way clutch from the O/D gear train

51. Remove the one-way clutch from the O/D gear train, if necessary.

Note:

Do not reuse the one-way clutch once it has been removed.

- 1 Remove the circlip.
- 2 Drive the one-way clutch out of the centre shaft using a drift.

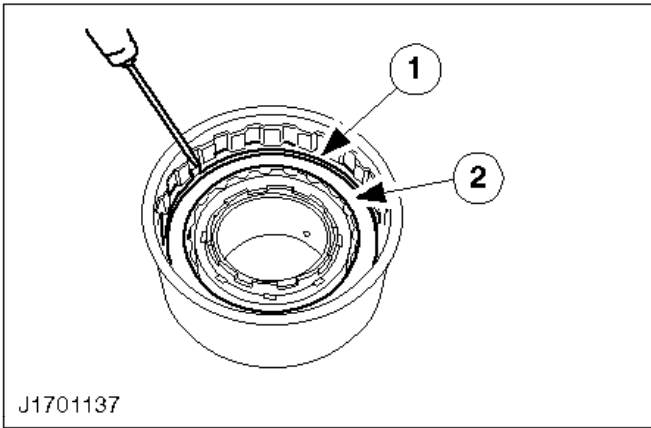


52. Withdraw the centre shaft from the annulus.

Dismantle the O/D clutch

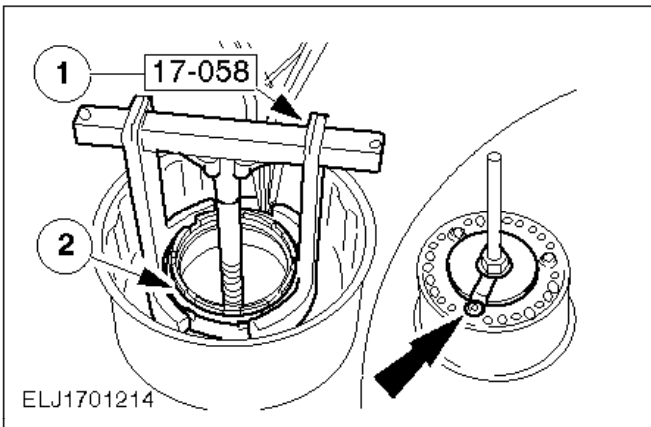
53. Notes on dismantling the clutches.

- Check the steel and friction plates of the clutch for wear, damage and signs of excessive heat (discolouration) and renew them if necessary.
- Do not allow the clutch plates to come into contact with cleaning agents.
- Check the hydraulic piston for damage and renew it if necessary.
- If the clutch body is damaged or worn, renew the entire clutch unit.



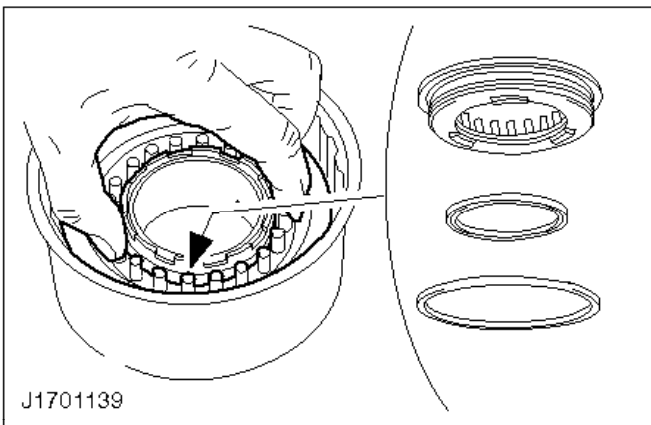
Note:
Step

- 54. Remove the plate pack.
 - 1 Remove the support plate circlip.
 - 2 Remove the support plate with the plate pack (two friction plates and two steel plates).



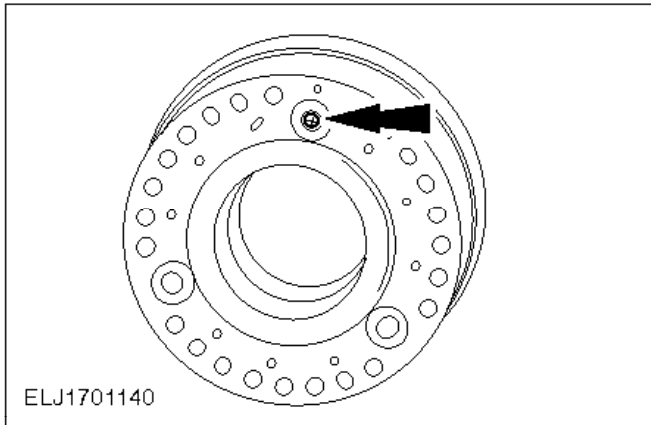
Note:
Align the recess on the special tool with the ball valve.

- 55. Remove the compression springs.
 - 1 Press down the spring retainer.
 - 2 Remove the circlip.
 - Release the spring retainer and remove it.
 - Remove the 20 compression springs.



- 56. Remove the hydraulic piston.

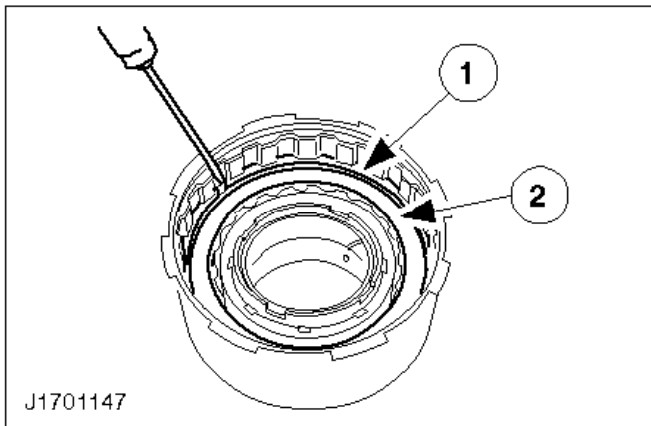
- Remove the hydraulic piston by banging it on a rubber surface.
- Remove the inner and outer seal.



Note:

A rattling noise should be audible when the clutch body is shaken.

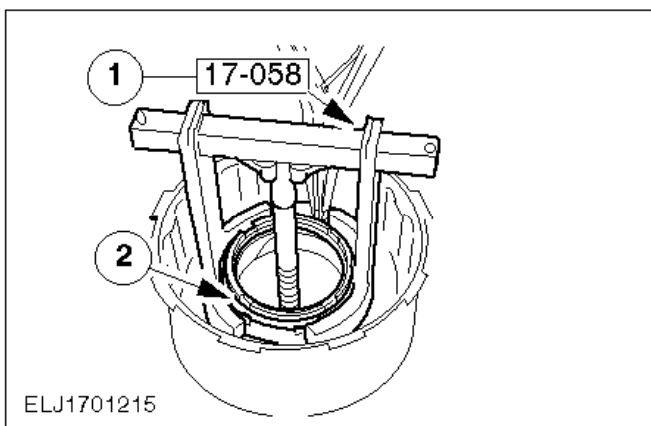
- ⦿ 57. Check that the ball valve can move freely.



Dismantle the reverse and direct drive clutch

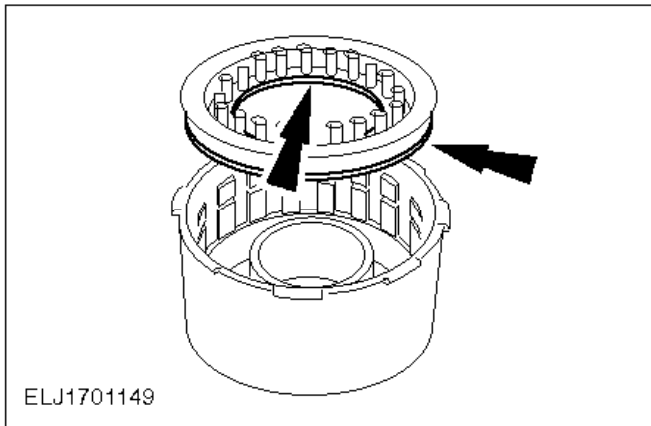
- ⦿ 58. Remove the plate pack.

- 1 Remove the support plate circlip.
- 2 Remove the support plate with the plate pack.
 - 2,9 V6 24V Cosworth engine: six friction and six steel plates
 - 2,9 V6 12V engine: five friction and five steel plates
 - 2,0 DOHC 16V engine: four friction and four steel plates



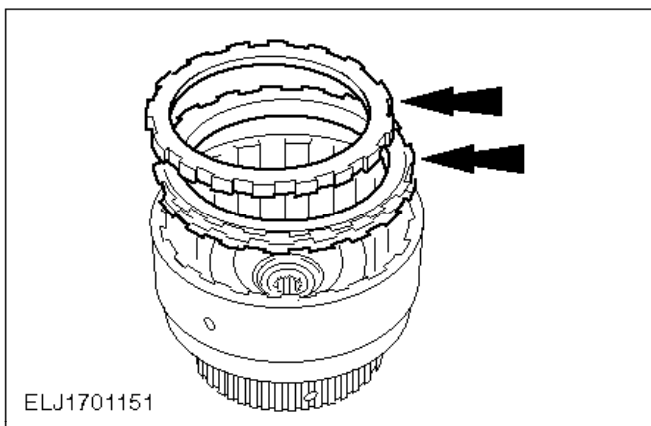
⬅ 59. Remove the compression springs.

- 1 Press down the spring retainer.
- 2 Remove the circlip.
 - Release the spring retainer and remove it.
 - Remove the 20 compression springs.



⬅ 60. Remove the hydraulic piston.

- Remove the hydraulic piston by banging it on a rubber surface.
- Remove the inner and outer seal.



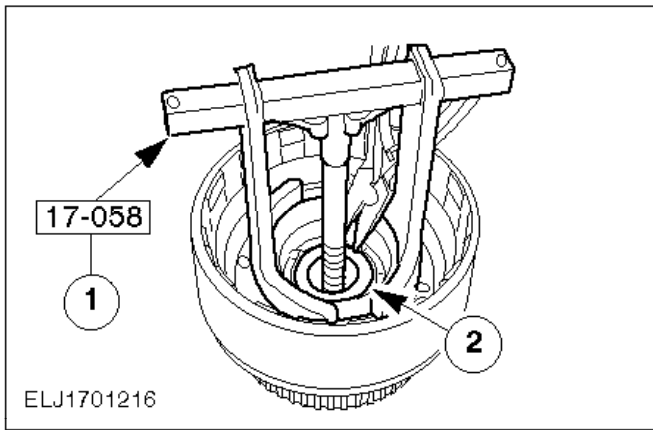
Dismantle the forward clutch

⬅ 61. Remove the plate pack.

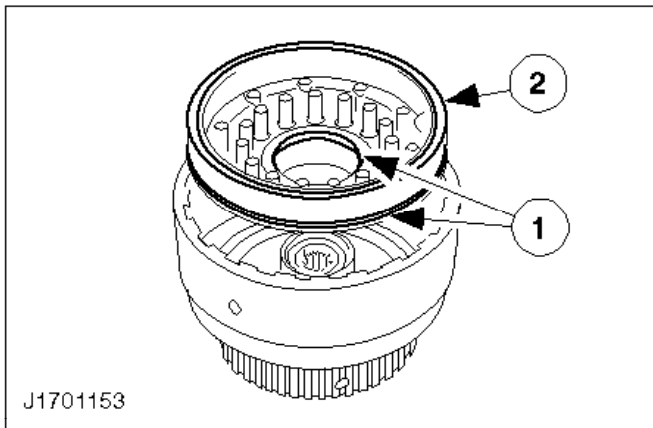
Note:

Step

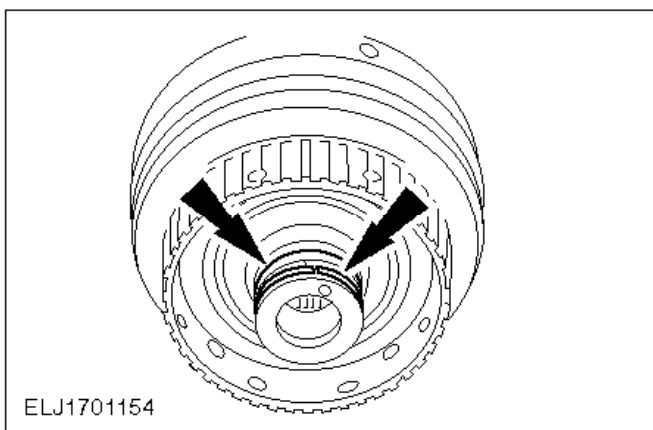
- Remove the support plate circlip.
 - Remove the support plate with the plate pack.
 - 2,9 V6 24V Cosworth engine: six friction and six steel plates
- All other engines: five friction and five steel plates



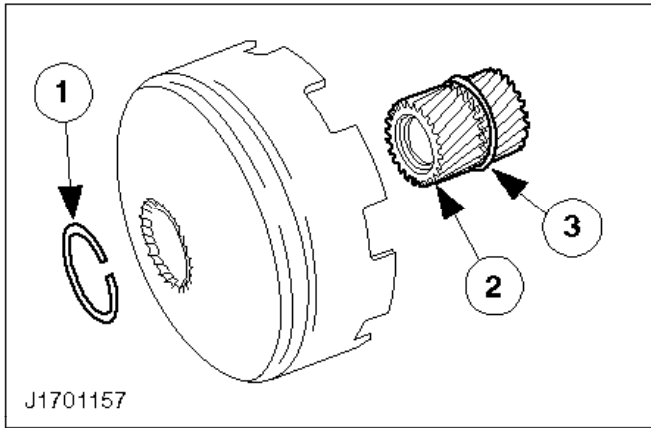
62. Remove the compression springs.
- 1 Press down the spring retainer.
 - 2 Remove the circlip.
 - Release the spring retainer and remove it.
 - Remove the 15 compression springs.



63. Remove the hydraulic piston.
- Remove the hydraulic piston by banging it on a rubber surface.
- 1 Remove the inner and outer seal.
 - 2 Remove the rubber damping spring.

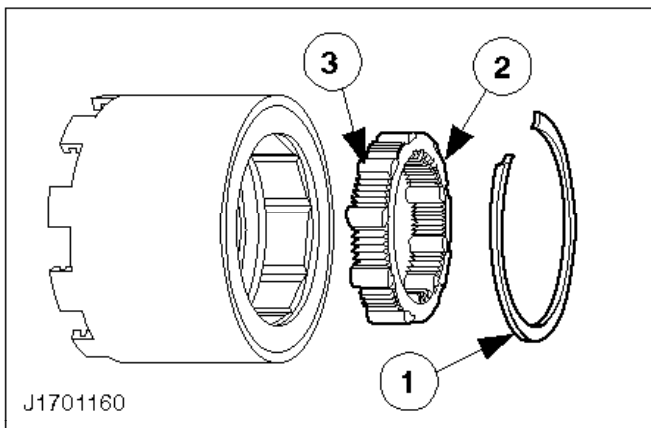


64. Detach the piston rings from the clutch collar.



65. Remove the sun wheel.

- 1 Remove the outer circlip.
- 2 Remove the sun wheel.
- 3 Detach the inner circlip from the sun gear.



Remove the one-way clutch from the rear gear train

66. Dismantle the one-way clutch.

- 1 Remove the circlip.
- 2 Remove the roller bearing cage from the rear brake drum.
- 3 Remove the 10 roller bearings from the bearing cage.

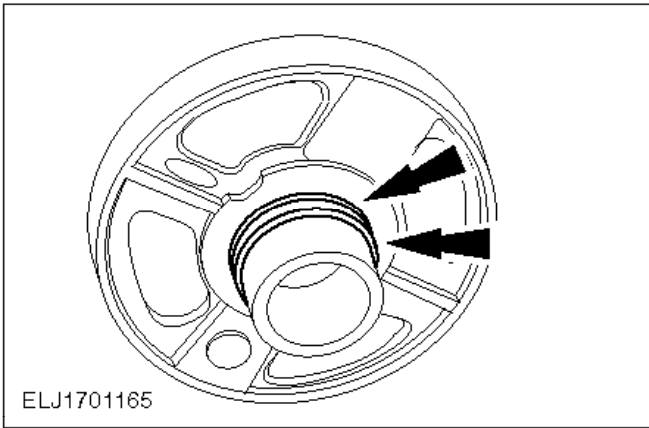
Assemble

67. General note.

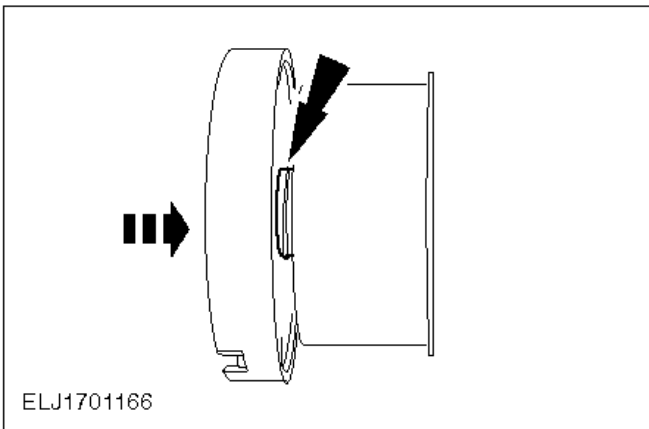
Note:

First read General Notes.

- Renew all self-locking bolts and nuts.
- Lubricate all sliding parts with transmission fluid.
- Renew all oil seals and gaskets and lubricate them with transmission fluid prior to installation.



68. Install the Viton seals on the centre carrier.
- Coat the hub of the centre carrier and the Viton seals with Vaseline.
 - Slide the Viton seals on carefully - do not overstretch them.

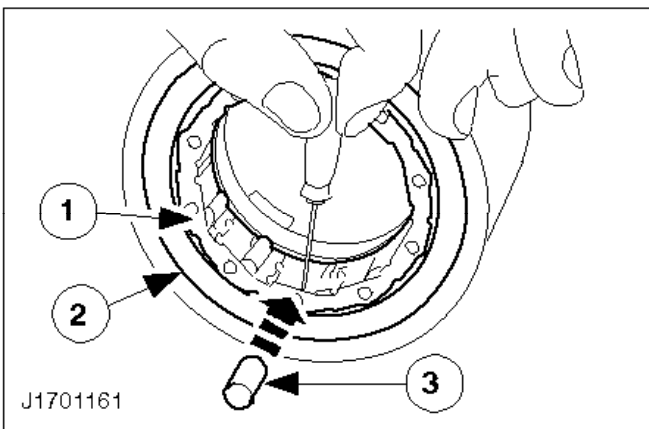


CAUTION:

Do not damage the seals when guiding in the centre carrier.

69. Guide the centre carrier into the O/D clutch.

Guide the centre carrier into the O/D clutch to enable the Viton seals to go back into shape.



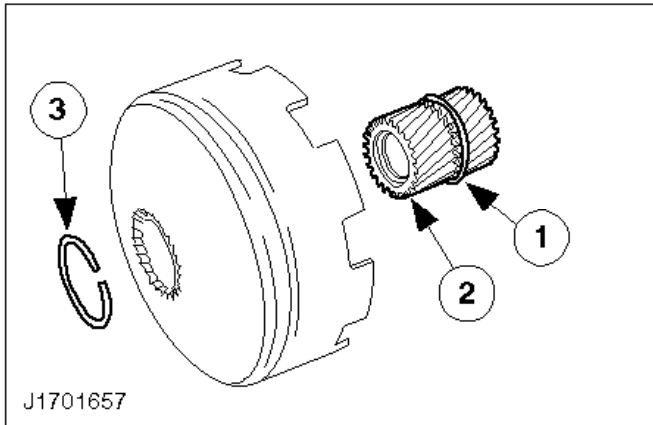
Install the one-way clutch of the rear gear train

70. Assemble the one-way clutch.
- 1 Fit the roller bearing cage in the rear brake drum.
 - 2 Install the circlip.

Note:

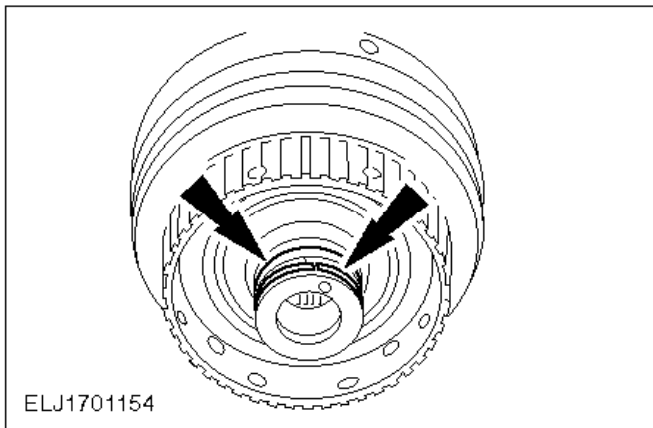
The springs must bear on the roller bearings.

3 Insert the 10 roller bearings in the bearing cage.



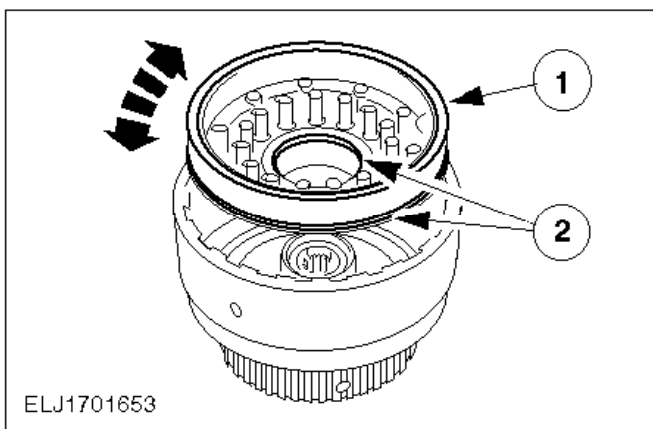
71. Install the sun wheel.

- 1 Fit the inner circlip.
- 2 Fit the sun wheel in the input bell housing.
- 3 Fit the outer circlip.



Assemble the forward clutch

72. Slide the piston rings on carefully.

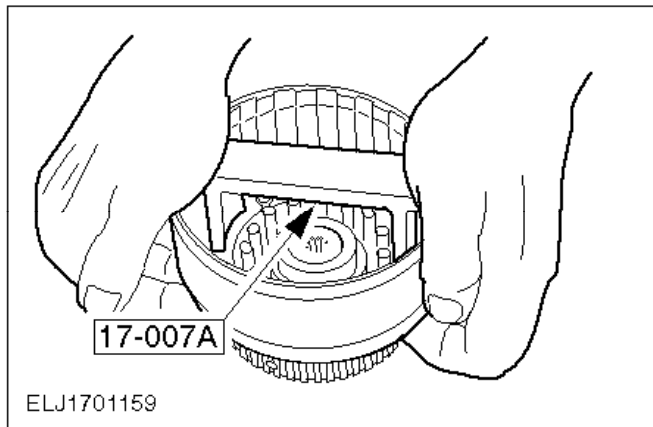


CAUTION:

Turn the hydraulic piston back and forth slightly when installing it.

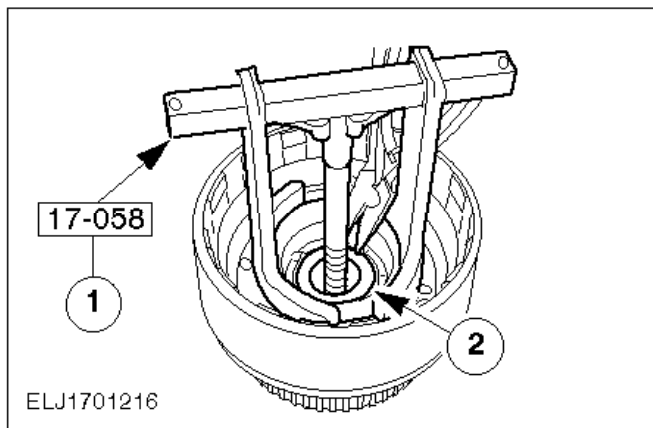
73. Install the hydraulic piston.

- Fit the inner and outer seal.
- Fit the rubber damping spring.



74. Install the hydraulic piston (continued).

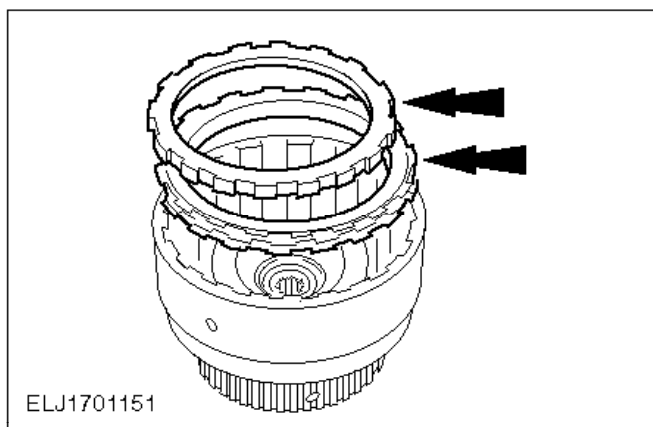
Press the hydraulic piston in as far as it will go.



75. Install the compression springs.

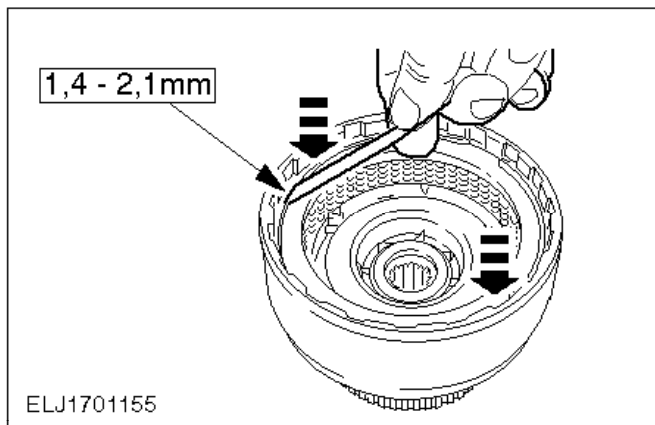
Install the 15 compression springs and the spring retainer.

- 1 Press down the spring retainer.
- 2 Install the circlip.



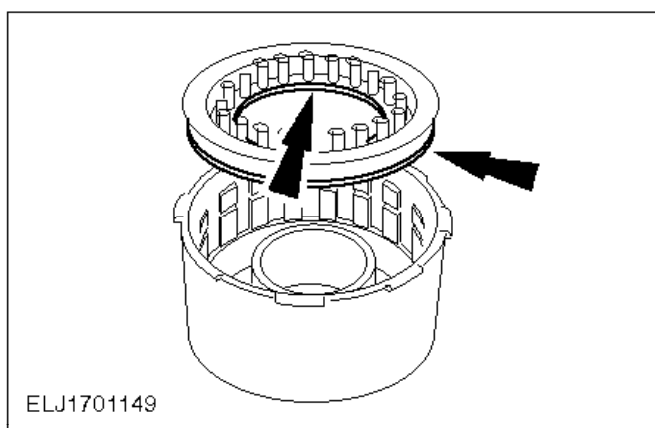
76. Install the plate pack.

- Fit the support plate with the plate pack.
 - Install the support plate circlip.
 - 2,9 V6 24V Cosworth engine: six friction and six clutch plates
- All other engines: five friction and five clutch plates



77. Measure the clearance between the circlip and the support plate.

- Press the plate pack down firmly (approx. 110 N) to squeeze out the transmission fluid.
- Measure the clearance between the circlip and the support plate.
- If necessary renew the circlip (see Parts Microfiche).



Assemble the reverse and direct drive clutch

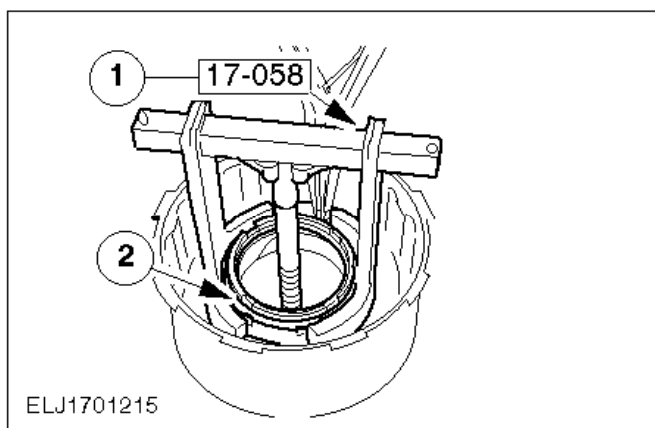


CAUTION:

Turn the hydraulic piston back and forth slightly when installing it.

78. Install the hydraulic piston.

Fit the inner and outer seal.

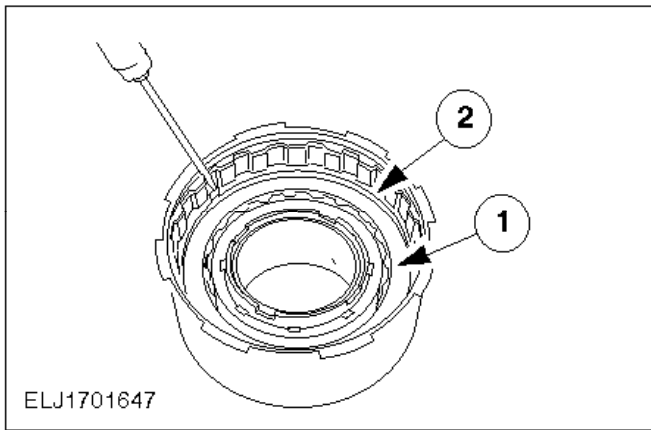


79. Install the compression springs.

Fit the 20 compression springs and the spring retainer.

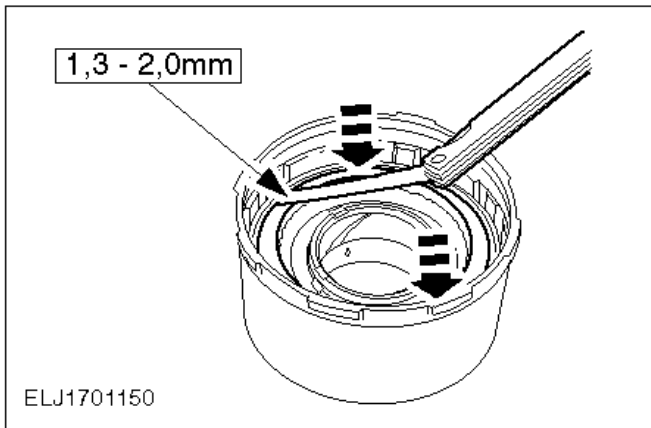
1 Press down the spring retainer.

2 Install the circlip.



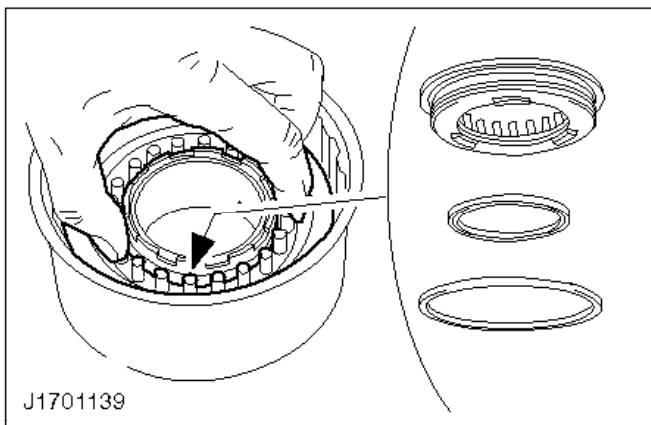
80. Install the plate pack.

- 1 Fit the support plate with the plate pack.
- 2 Fit the support plate circlip.



81. Measure the clearance between the circlip and the support plate.

- Press the plate pack down firmly (approx. 110 N) to squeeze out the transmission fluid.
- Measure the clearance between the circlip and the support plate.
- If necessary renew the circlip (see Parts Microfiche).



Assemble the O/D clutch

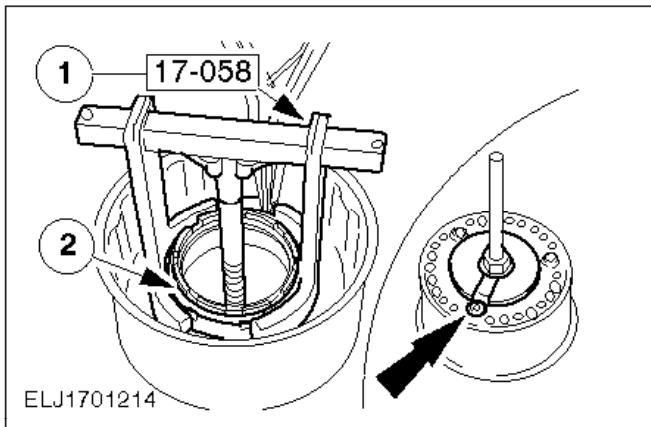


CAUTION:

Turn the hydraulic piston back and forth slightly when installing it.

82. Install the hydraulic piston.

Slide on the inner and outer seal.

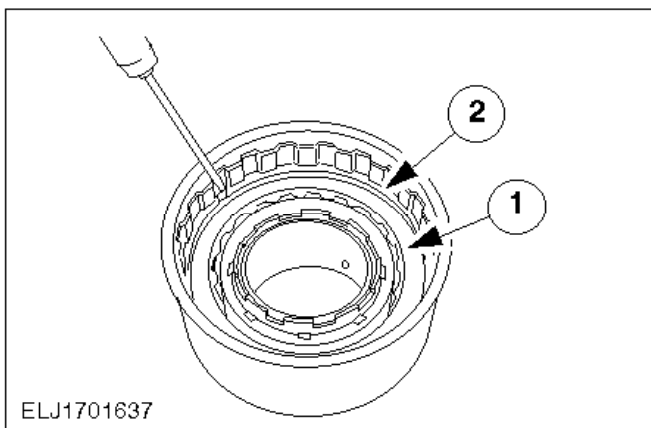


Note:

Align the recess in the special tool with the ball valve.

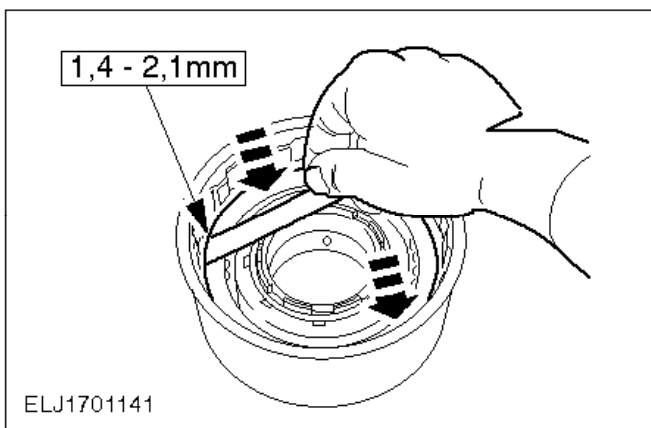
83. Fit the 20 compression springs and the spring retainer.

- 1 Press down the spring retainer.
- 2 Install the circlip.



84. Install the plate pack.

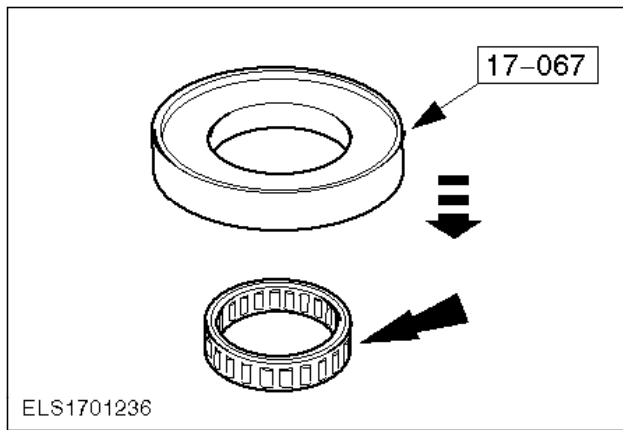
- 1 Fit the support plate with the plate pack.
- 2 Fit the support plate circlip.



85. Measure the clearance between the circlip and the support plate.

- Press the plate pack down firmly (approx. 110 N) to squeeze out the transmission fluid.
- Measure the clearance between the circlip and the support plate.

- If necessary renew the circlip (see Parts Microfiche).

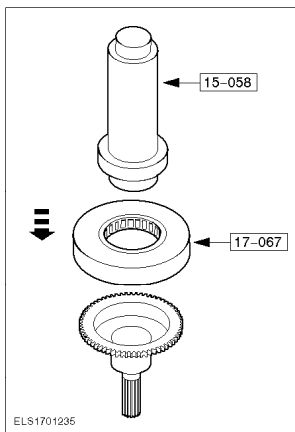


Install the one-way clutch of the O/D gear train

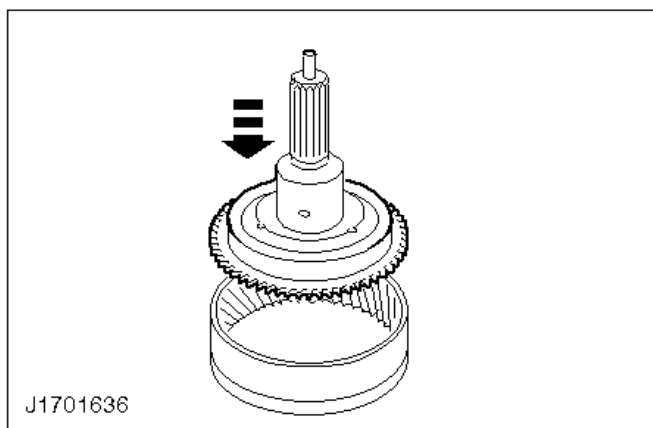
Note:

Place the one-way clutch of the O/D gear train with the open side upwards and press the tool on evenly.

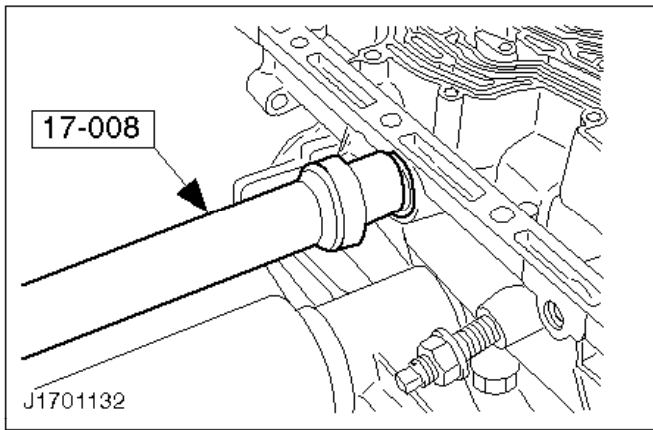
- ⦿ 86. Fit the one-way clutch of the O/D gear train (with the plastic cage) in the special tool.



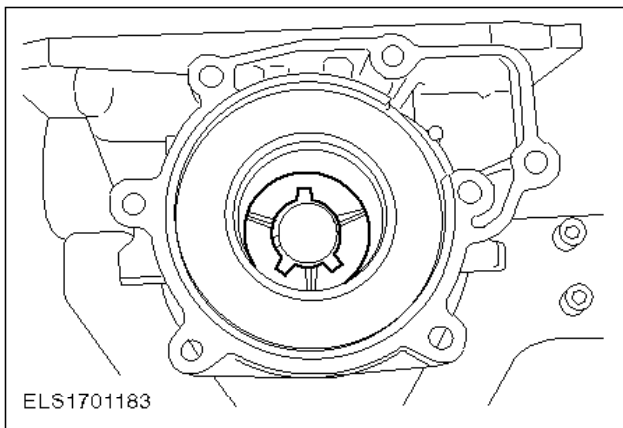
- ⦿ 87. Fit the one-way clutch in the centre shaft.



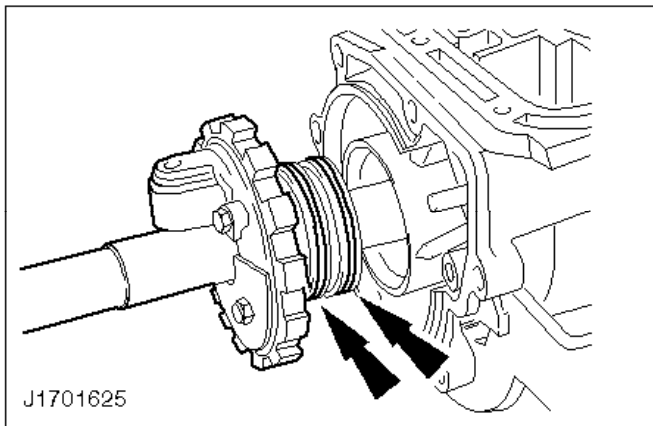
- ⦿ 88. Insert the centre shaft in the annulus.
Fit the circlip.



- 89. Install the selector lever seal.



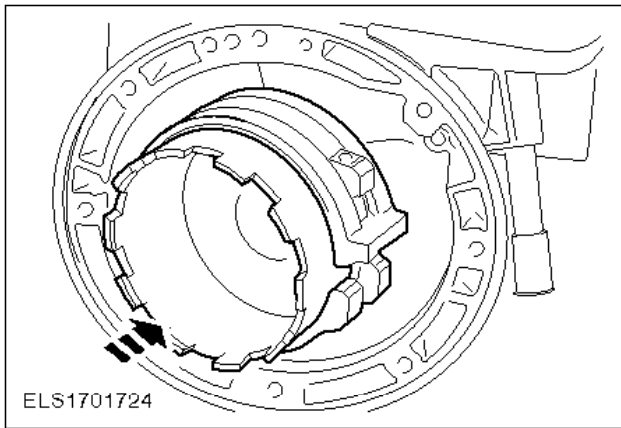
- 90. Locate the thrust washer (-7B368-) in position with Vaseline.



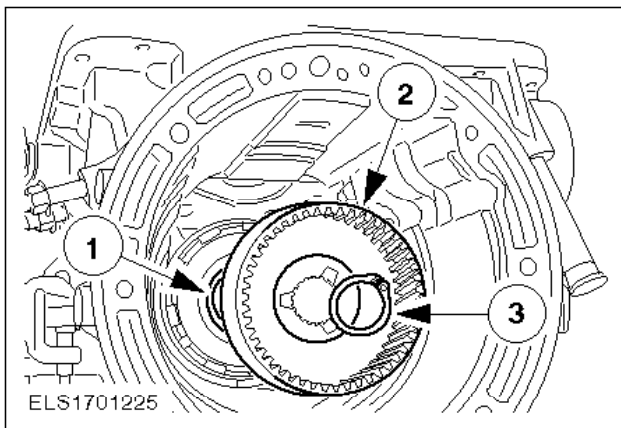
Note:

Do not damage the seals. Turn the output shaft slightly when installing it.

- 91. Install the output shaft.

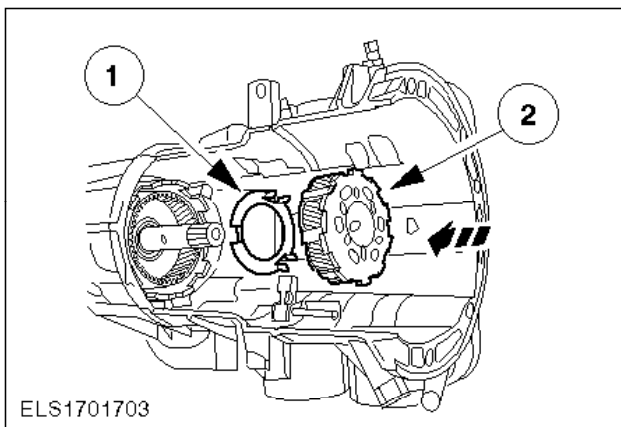


92. Install the rear brake drum with the one-way clutch.



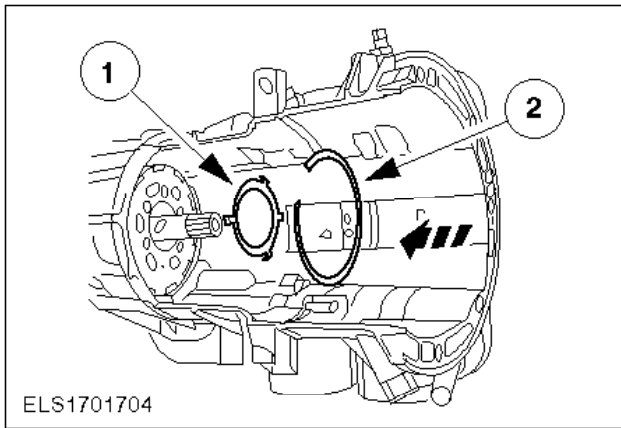
93. Install the annulus.

- 1 Position the thrust washer (-7D422-) using Vaseline.
- 2 Fit the annulus.
- 3 Fit the circlip.



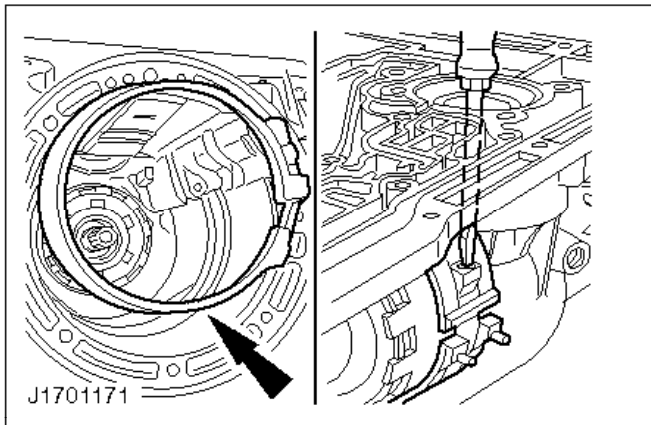
94. Install the rear planet carrier.

- 1 Position the thrust washer (-7D423-) using Vaseline.
- 2 Fit the planet carrier.

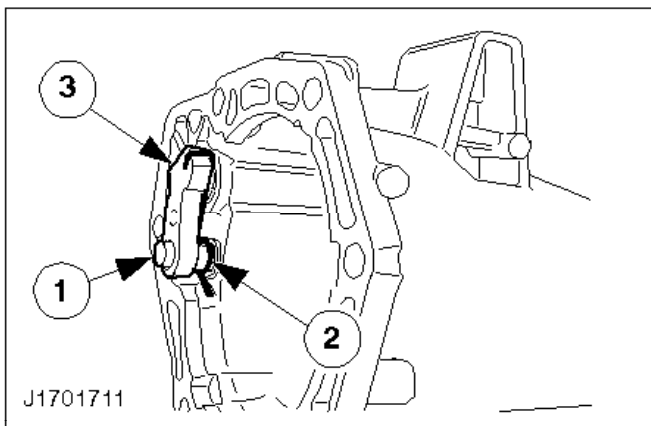


95. Install the rear planet carrier (continued).

- 1 Position the thrust washer (-7D422-) using Vaseline. Pull the brake drum forwards to give access to the retaining groove.
- 2 Install the circlip of the planet carrier.

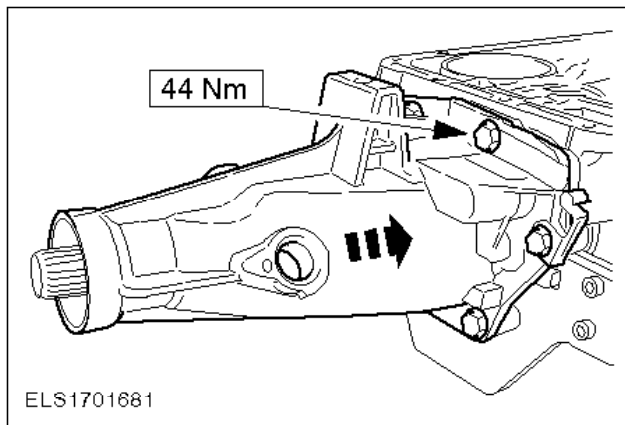


96. Fit the rear brake band.
97. Check that the brake band is sitting correctly.



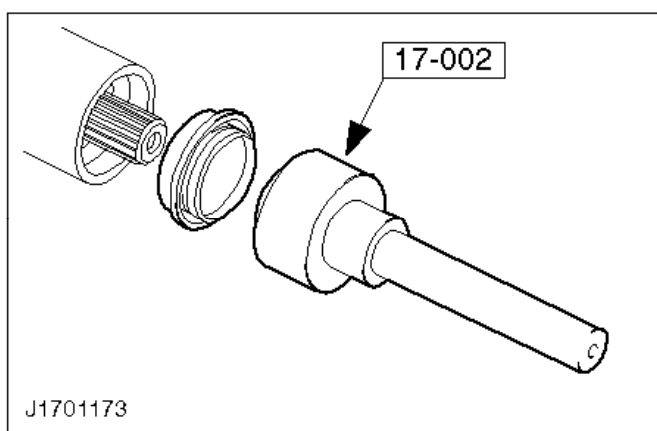
98. Install the parking pawl with the return spring and the pivot pin.

- 1 Pivot pin
- 2 Return spring
- 3 Parking pawl



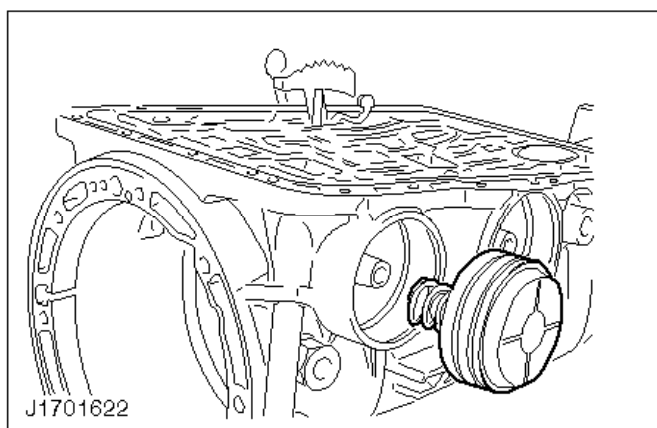
Note:
Renew the gasket.

- 99. Attach the transmission extension housing.



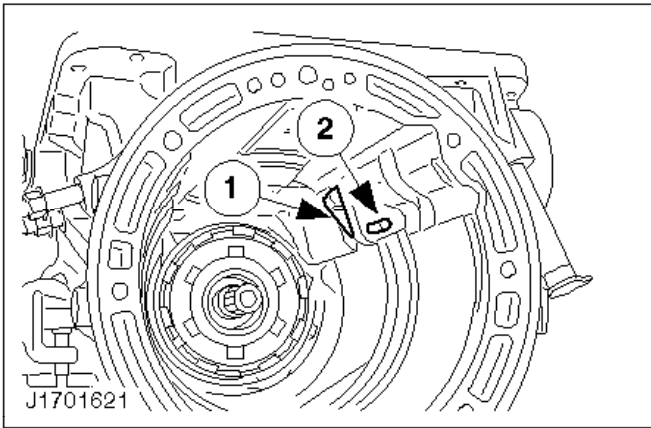
Install the transmission extension housing seal

- 100. Install the transmission extension housing seal.



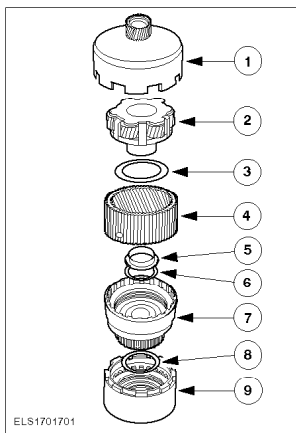
- 101. Install the front and centre servo piston.

- Immerse the servo piston in transmission fluid and fit it in the cover.
- Fit the servo piston with the compression spring.
- Fit the circlip.



← 102. Install the intermediate lever of the centre brake band.

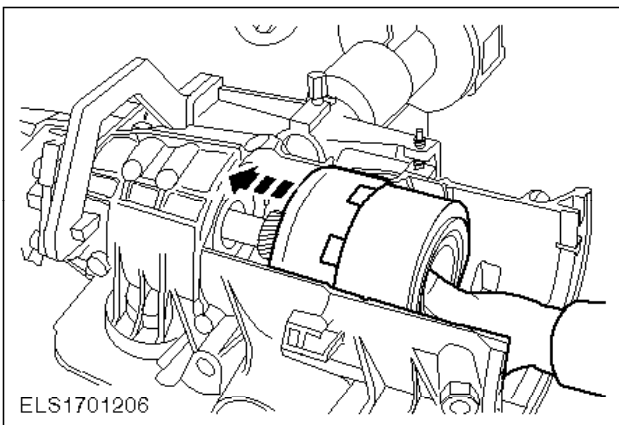
- 1 Fit the intermediate lever.
- 2 Fit the spindle of the intermediate lever.



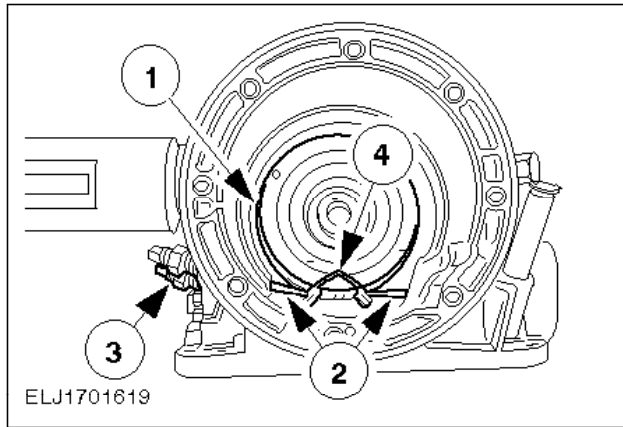
Install the centre gear train

← 103. Assemble the centre gear train.

- 1 Input bell housing
- 2 Centre planetary gear train
- 3 Needle bearing (-7F374-)
- 4 Annulus with hub
- 5 Bronze bush (-7D045-)
- 6 Needle bearing (-7D234-)
- 7 Forward clutch
- 8 Thrust washer (-7D428-)
- 9 Reverse and direct drive clutch



- ⬅ 104. Install the centre gear train.



Note:

Turn the automatic transmission into the vertical position.

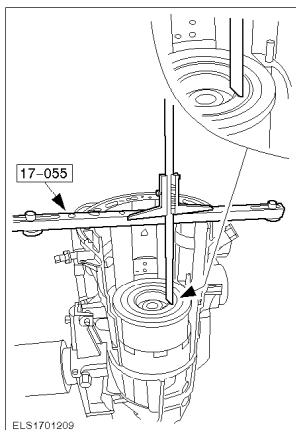
- ⬅ 105. Install the centre brake band.

- 1 Fit the brake band.

Note:

Start with the thrust element next to the servo piston.

- 2 Fit the thrust elements.
3 Screw in the adjusting bolt.
4 Remove the wire clip.

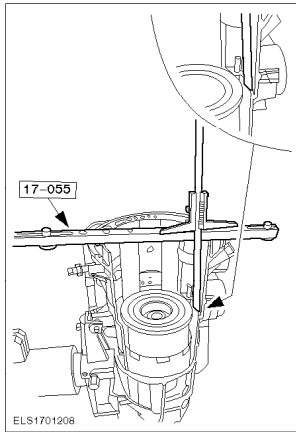


Measure the end float of the rear gear train

- ⬅ 106. Determine the size of needle bearing required.

- Measurement 1: Measure the distance between the gauge bar and the running face of the needle bearing.
- Carry out a second measurement at 180° to the first and take the average of the two readings.

Measurement 1 = A



← 107. Determine the size of needle bearing required (continued).

- Measurement 2: Measure the distance between the gauge bar and the centre carrier bearing shoulder.
- Carry out a second measurement at 180° to the first and take the average of the two measurements.

Measurement 2 = B

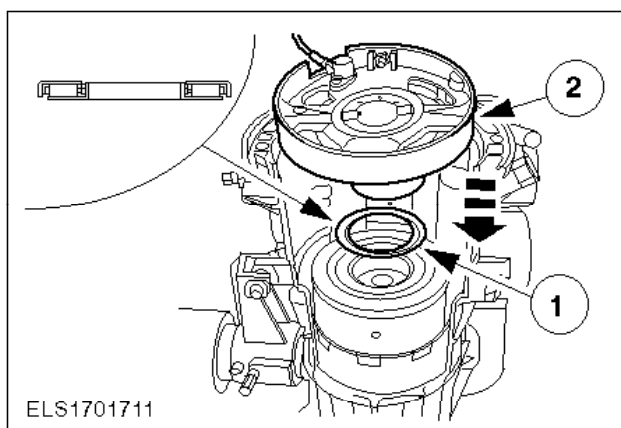
- Centre carrier step height = 1,30 mm
- Permitted end float: $0,30 \pm 0,20$ mm
- Required size of needle bearing = x
- Example:

$$A - B + 1,30 \text{ mm (for centre carrier clearance)} - 0,30 \text{ mm (for end float)} = x$$

Note:

Try to achieve an average end float.

- The needle bearing (-7D014-) is available in four sizes which can be identified by the number of thickness marks.
- No mark = 2,80 mm
- One mark = 2,95 mm
- Two marks = 3,15 mm
- Three marks = 3,35 mm



← 108. Fit the centre carrier in the transmission housing.

Note:

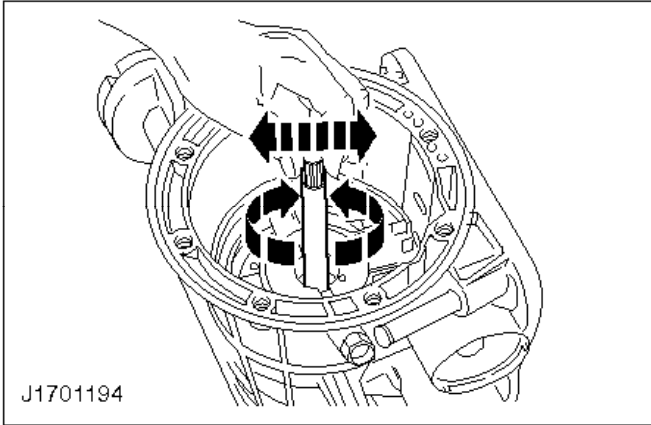
Do not exert any pressure on the centre carrier.

- 1 Locate the needle bearing (-7D014-) of the correct size in position on the centre carrier using Vaseline.

Note:

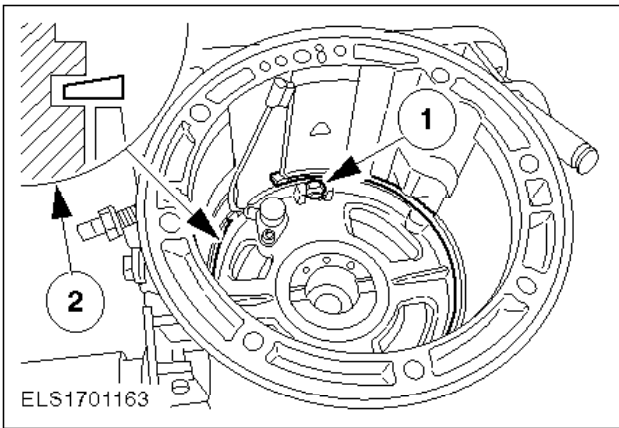
Align the recess in the centre carrier with the hole in the retaining nut.

- 2 Fit the centre carrier.



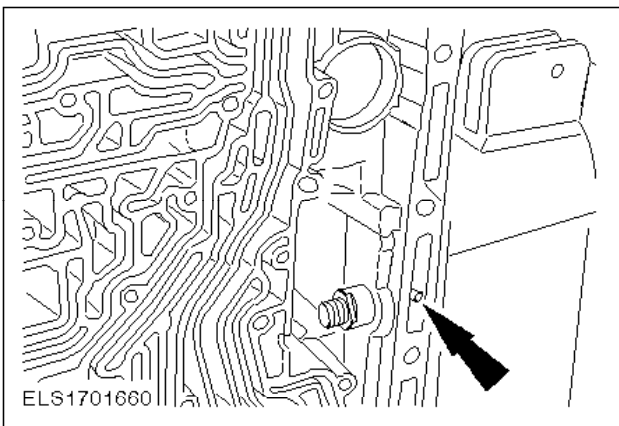
109. Align the centre carrier.

- Insert the input shaft in the forward and direct drive clutch as an auxiliary tool.
- Move the input shaft from side to side so that the centre carrier slides into the clutch as far as the stop.
- Withdraw the input shaft.



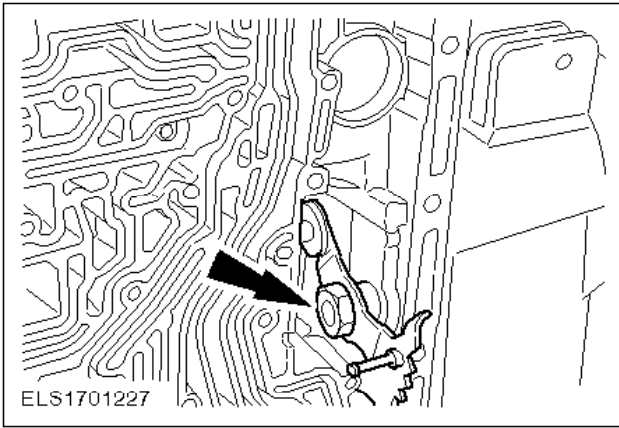
110. Secure the centre carrier.

- 1 Renew the self-locking nut.
Tighten the centre carrier bolt to 11 Nm.
- 2 Fit the circlip.
Guide the TS sensor wiring through the labyrinth.

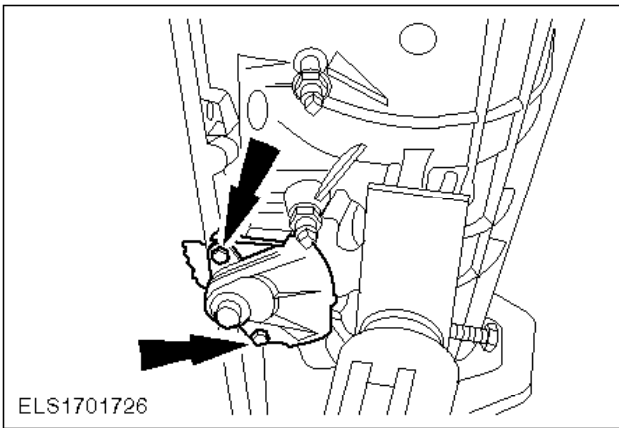


111. Install the selector lever shaft.

Secure the selector lever shaft with a new retaining pin.

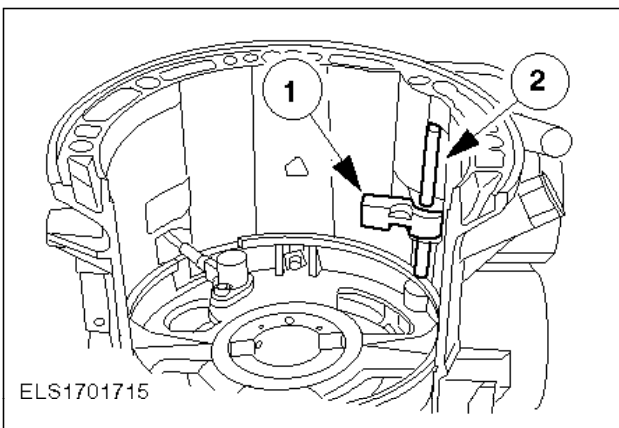


- 112. Install the detent plate with the actuating linkage.



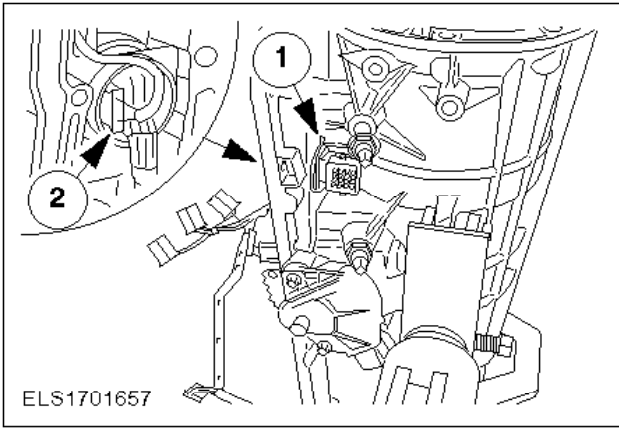
Note:
The adjustment will be carried out in step 151.

- 113. Attach the TR sensor.



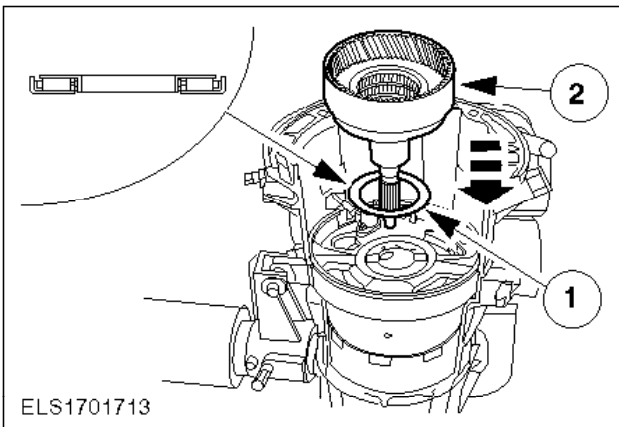
- 114. Install the intermediate lever.

- 1 Fit the intermediate lever with the retainer.
- 2 Fit the spindle of the intermediate lever.



⤵ 115. Install the transmission connector.

- 1 Push in the connector.
- 2 Connect the TS sensor plug.
Fit the retaining clip.

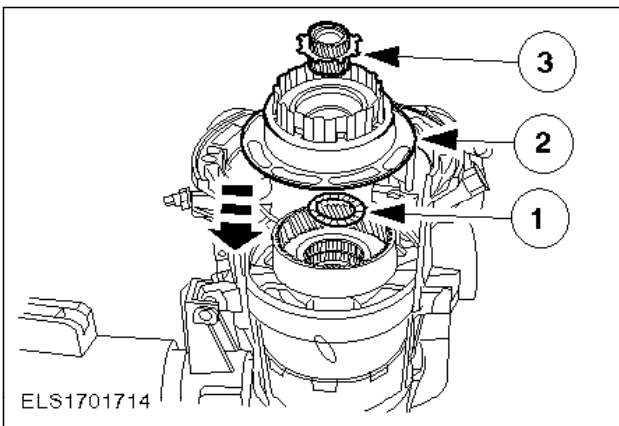


⤵ 116. Install the centre shaft.

Note:

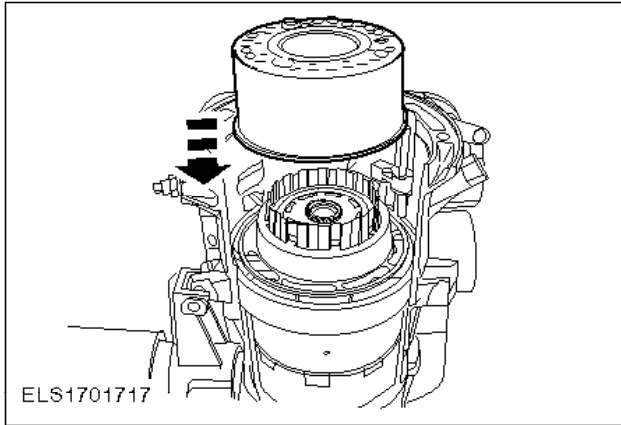
Make sure the needle bearing is positioned correctly.

- 1 Locate the needle bearing (-7D014-) in position using Vaseline.
- 2 Annulus with centre shaft.

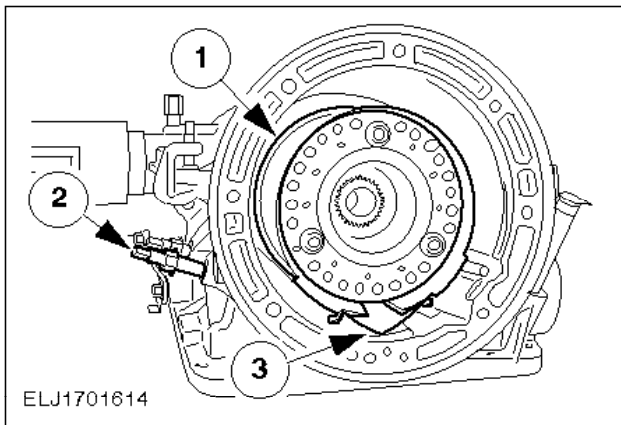


⤵ 117. Install the O/D planetary gear train.

- 1 Locate the needle bearing (-7L495-) in position using Vaseline.
- 2 O/D planetary gear train
- 3 Sun wheel and drive plate.



- ⦿ 118. Install the O/D clutch.



- ⦿ 119. Install the O/D brake band.

- 1 Fit the O/D brake band.

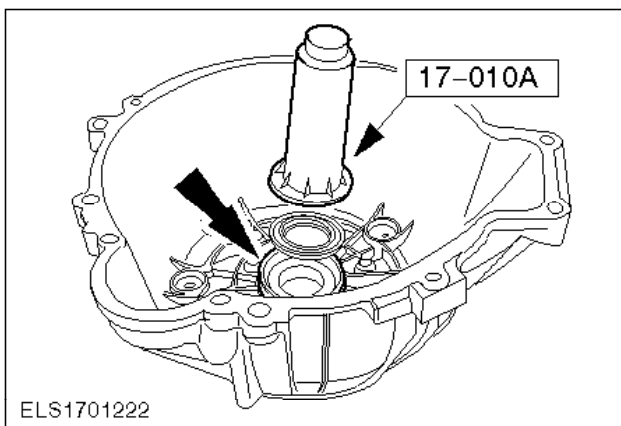
Note:

Start with the thrust element next to the servo piston.

Fit the thrust elements.

- 2 Screw in the adjusting bolt.

- 3 Remove the wire clip.



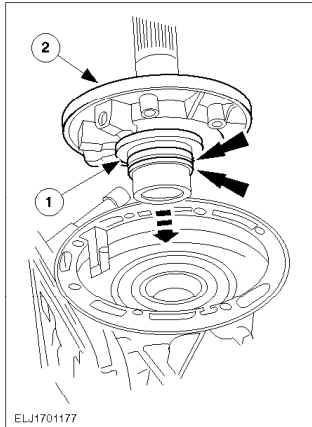
Install the transmission fluid pump housing seal

Note:

Grind out any existing caulk marks in the torque converter housing.

- ⦿ 120. Fit the transmission fluid seal.

- Caulk in five new places.
- These should be offset from the old caulk marks by approx. 3 mm.



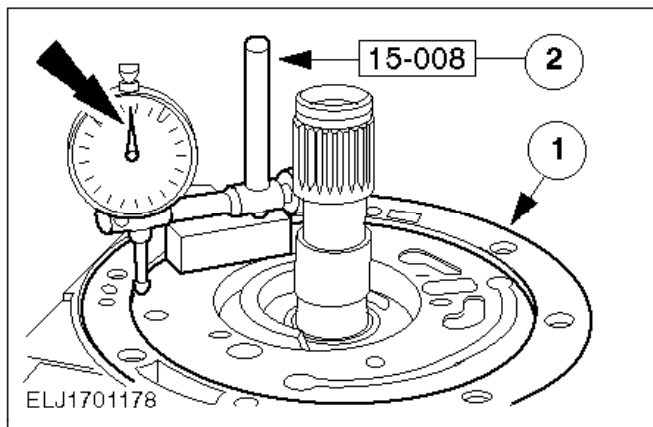
Measure the end float of the O/D gear train.

Note:

Make sure that the thrust washer sticks to the transmission fluid pump. Do not damage the seals.

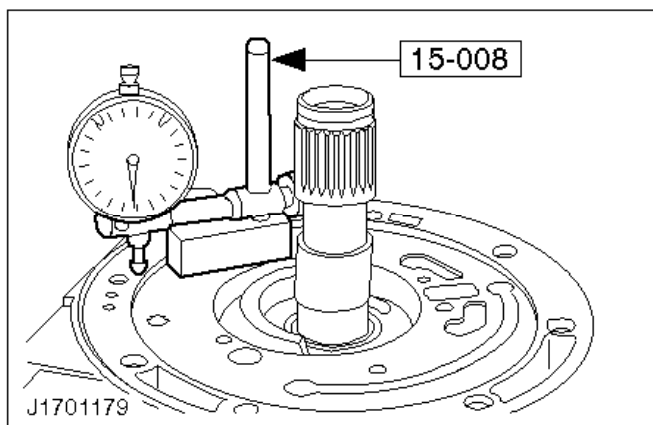
121. Fit the oil pump.

- 1 Locate the thrust washer (-7D014-) in position using Vaseline.
- 2 Fit the transmission fluid pump.



122. Measure the end float of the O/D gear train.

- 1 Fit the gasket.
- 2 Set up the dial indicator gauge on the transmission fluid pump housing. Place the plunger of the dial indicator gauge on the transmission fluid pump and zero the gauge.

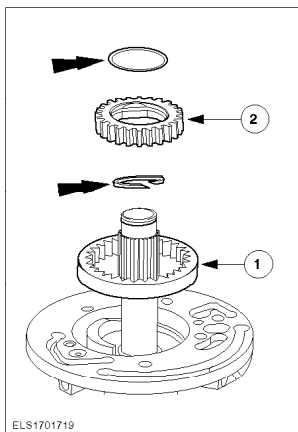


123. Measure the end float of the O/D gear train (continued).

- Place the plunger on the gasket of the transmission housing and take the reading.
- Take a second measurement at 180° to the first and take the average of the two measurements.
- Required value: $0,38 \pm 0,2$ mm.
- If necessary, fit a different thrust washer (-7D014-).
- Thrust washers are available in various thicknesses (see Parts Microfiche).

124. Remove the transmission fluid pump.

Remove the thrust washer (-7D014-).



125. Reassemble the transmission fluid pump.

Note:

The dot should face downwards.

1 Insert the outer gear.

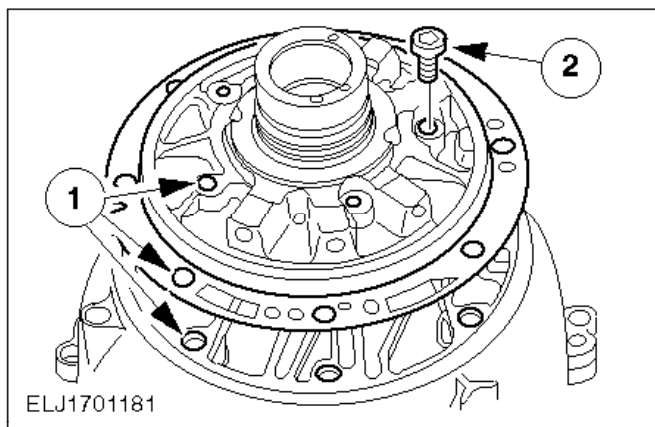
Fit the O-ring in the inner gear.

Note:

The counterbore should face upwards.

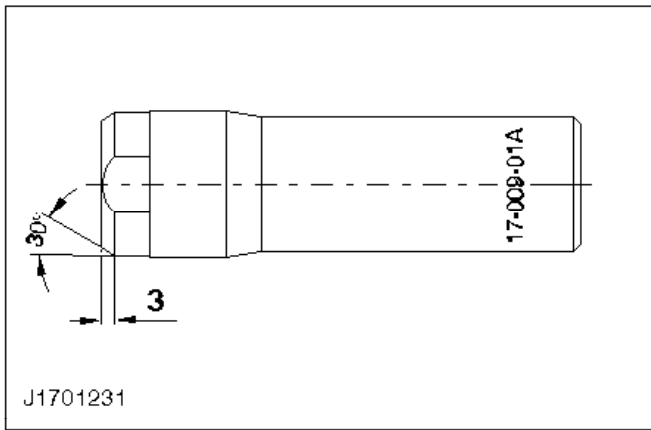
2 Insert the inner gear.

Slide the seal onto the transmission fluid pump shaft.



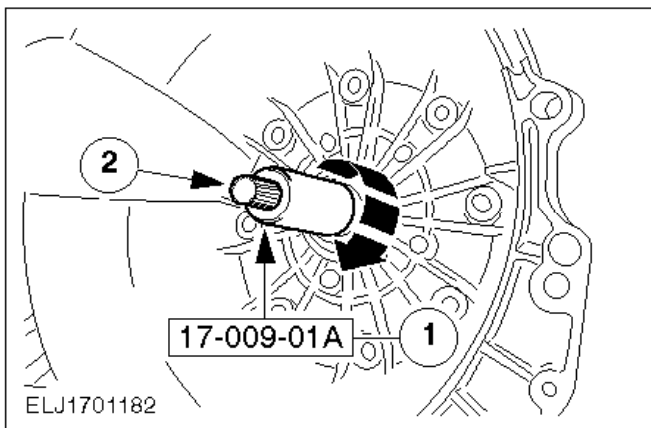
126. Place the transmission fluid pump with the intermediate plate on the torque converter housing.

- 1 Line up the holes in the transmission fluid pump and the intermediate plate with the torque converter housing.
- 2 Screw in the transmission fluid pump bolts.



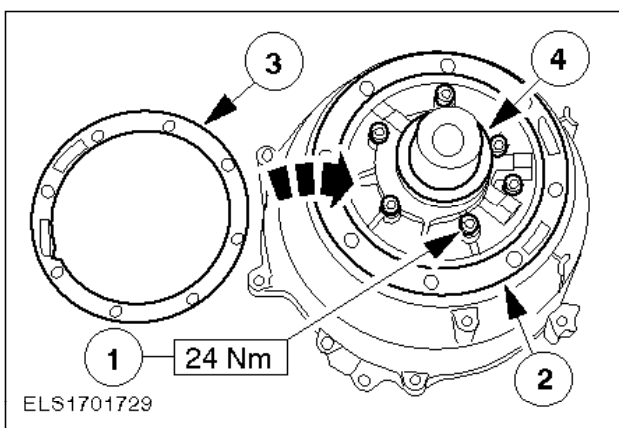
127. If necessary, rework the special tool.

- Grind a 30° chamfer.
- Change the special tool number to 17-009-01A.



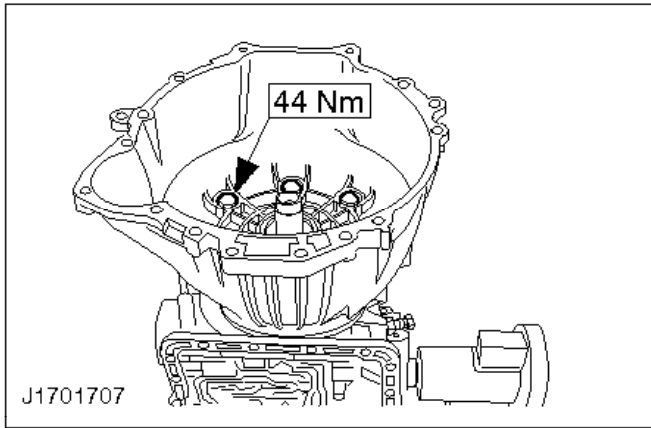
128. Align the transmission fluid pump.

- 1 Insert the special tool in the transmission fluid pump.
 - 2 Insert the input shaft in the transmission fluid pump.
- Turn the special tool and check that it moves freely.



129. Tighten the transmission fluid pump bolts and locate the gaskets and the washer in position.

- 1 Tighten the bolts.
Remove the input shaft and special tool.
- 2 Fit the square section ring.
- 3 Fit the gasket for the intermediate plate.
- 4 Position the thrust washer (-7D014-) using Vaseline.

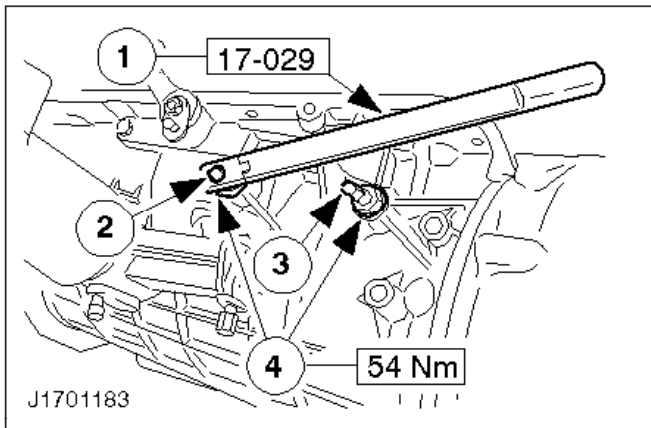


- 130. Attach the torque converter housing and the transmission fluid pump.

Note:

Do not damage the O-rings. Make sure the thrust washer (-7D014-) is correctly positioned.

Fit the new O-rings and tighten the bolts.



Adjust the brake bands

- 131. Adjust the front and centre brake band.

Slacken the lock nuts.

- 1 Tighten the adjusting bolt.
- 2 Turn the adjusting bolt for the front brake band back two turns.
- 3 Turn the adjusting bolt for the centre brake band back 2½ turns.
- 4 Tighten the lock nuts.

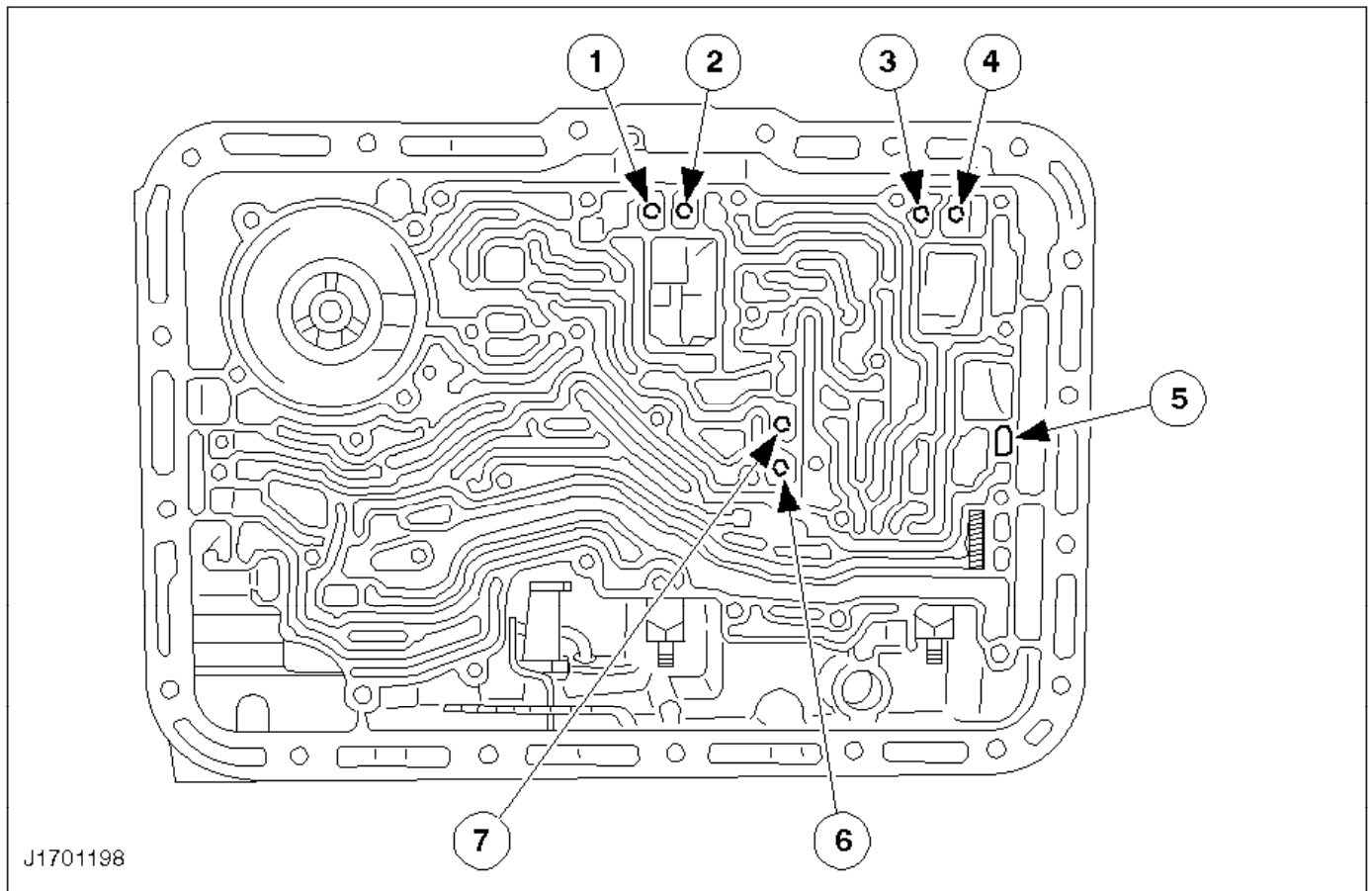
Check the servo pistons and clutches

Note:

Transmission fluid will escape from the transmission fluid passages.

- 132. Check the operation of the clutches and servo pistons.

- Apply compressed air (approx. 5 bar) to the transmission fluid passages marked.
- If the relevant component is functioning and is correctly positioned:
 - A: the transmission fluid passage is opened and a clicking noise can be heard.
 - B: the transmission fluid passage is closed and the air pressure remains constant.

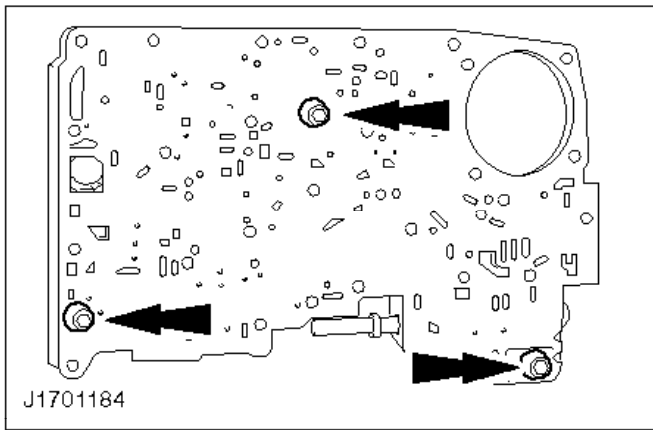


Item	Description
1	Push back centre servo piston (B)
2	Actuate centre servo piston (A)
3	Push back O/D servo piston (B)
4	Actuate O/D servo piston (A)
5	Actuate O/D clutch (B)
6	Engage reverse and direct drive clutch (A)
7	Engage forward clutch (A)

Dismantle the valve body assembly

133. Dismantle the valve body assembly.

- Cover the workbench with a clean sheet of paper or cardboard before starting.
- Remove the shift valves and check they can move freely.
- Carefully clean the transmission fluid passages and ancillary parts with paraffin, blow them out with compressed air and check for burring, scoring and deposits.
- If the valve body assembly or any individual components are damaged or if abraded metal particles are found, renew the valve body assembly complete.
- Lubricate the shift valves with automatic transmission fluid prior to installation.



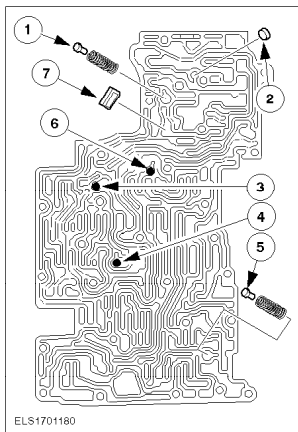
134. Detach the intermediate plate from the valve body assembly.

- Place the valve body assembly with the intermediate plate facing upwards. Press down the intermediate plate and remove the bolts.

Note:

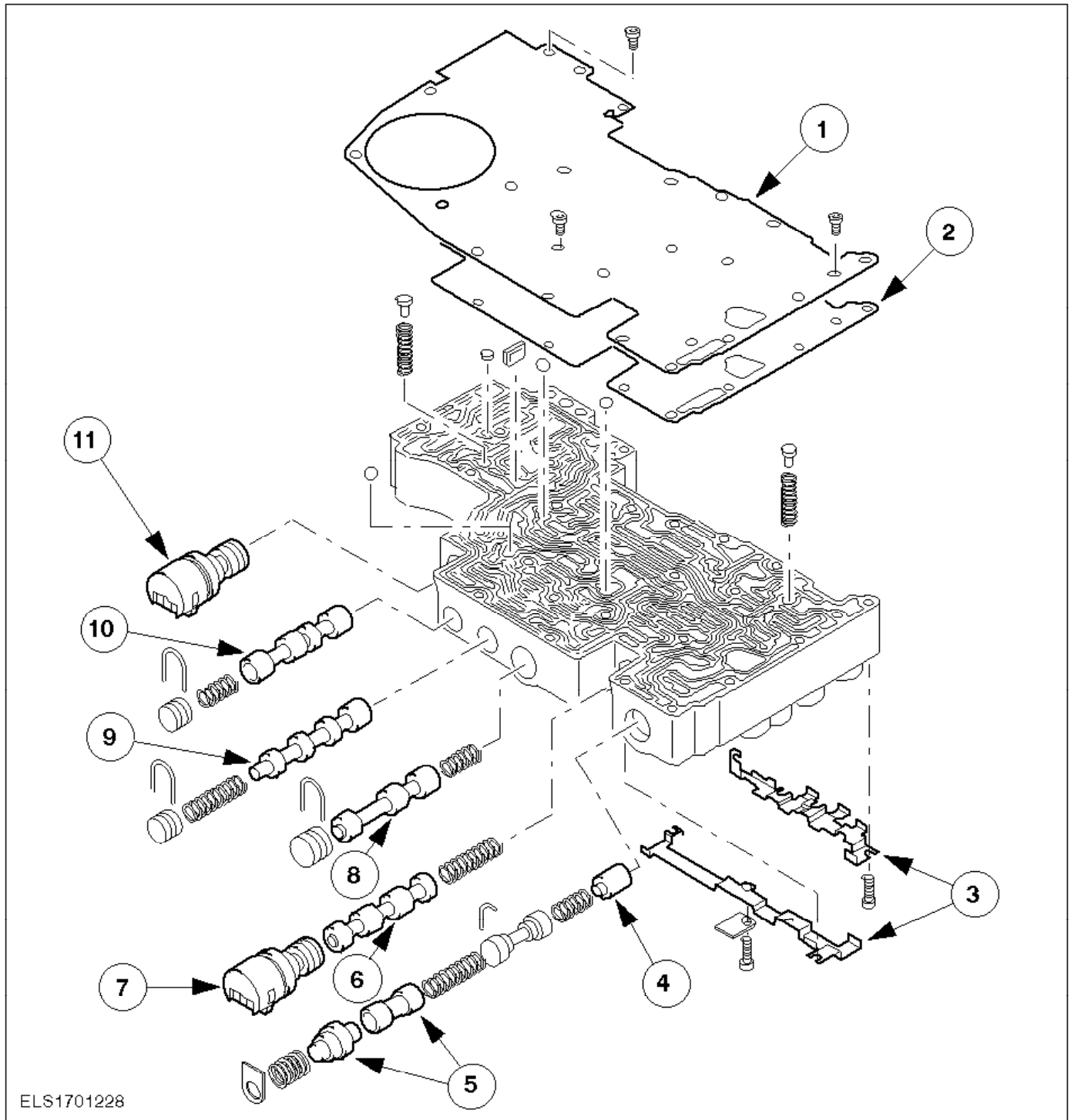
Do not lift or turn the valve body assembly as the valve balls, retaining plates and pins could fall out of their recesses.

- Carefully lift off the intermediate plate and the gasket.



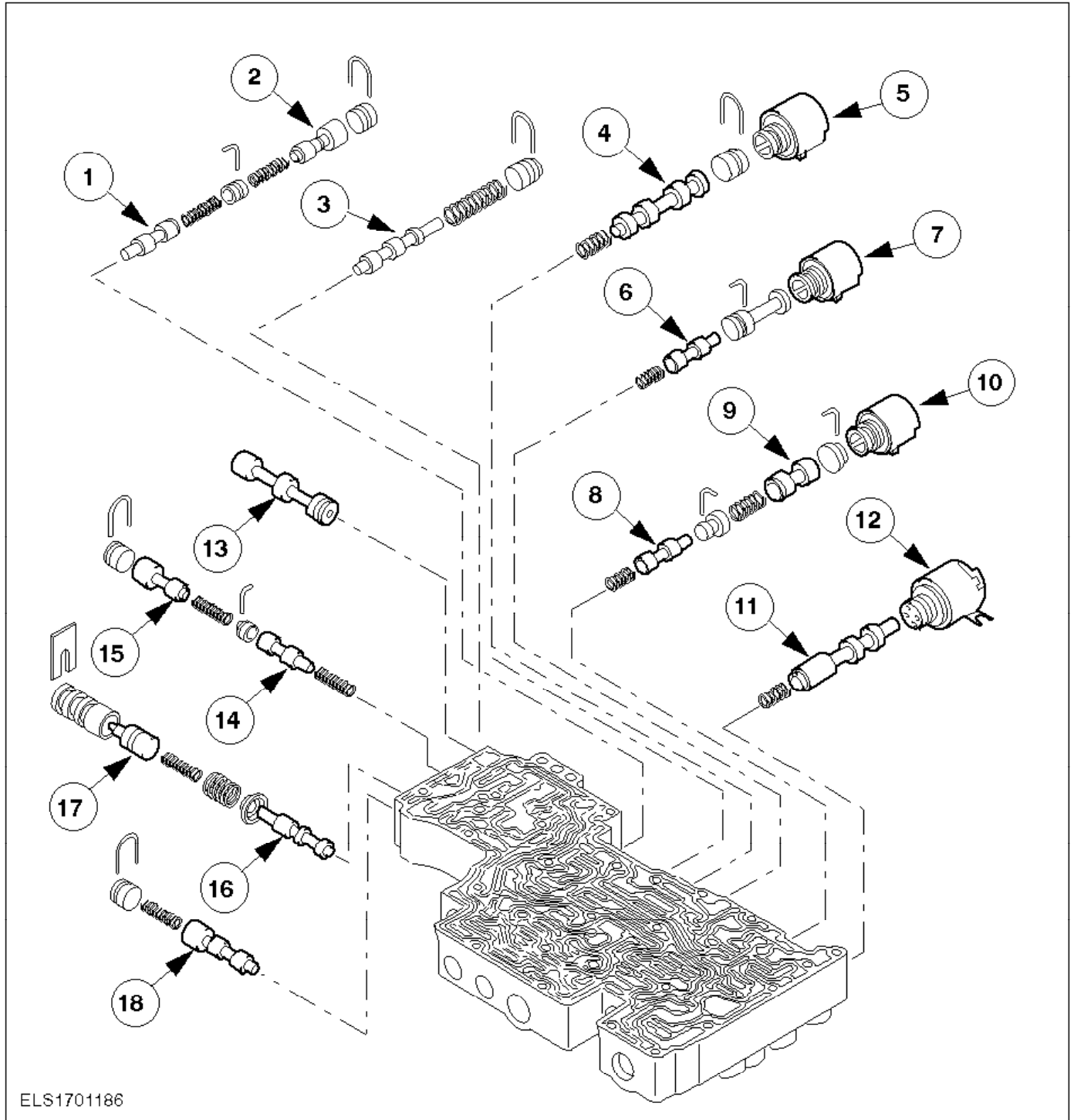
135. Dismantle the valve body assembly (continued).

- 1 Pressure limiting valve EPCB
- 2 Throttle plate
- 3 Shift valve
- 4 Shift valve
- 5 Pressure limiting valve CC
- 6 Shift valve
- 7 Filter



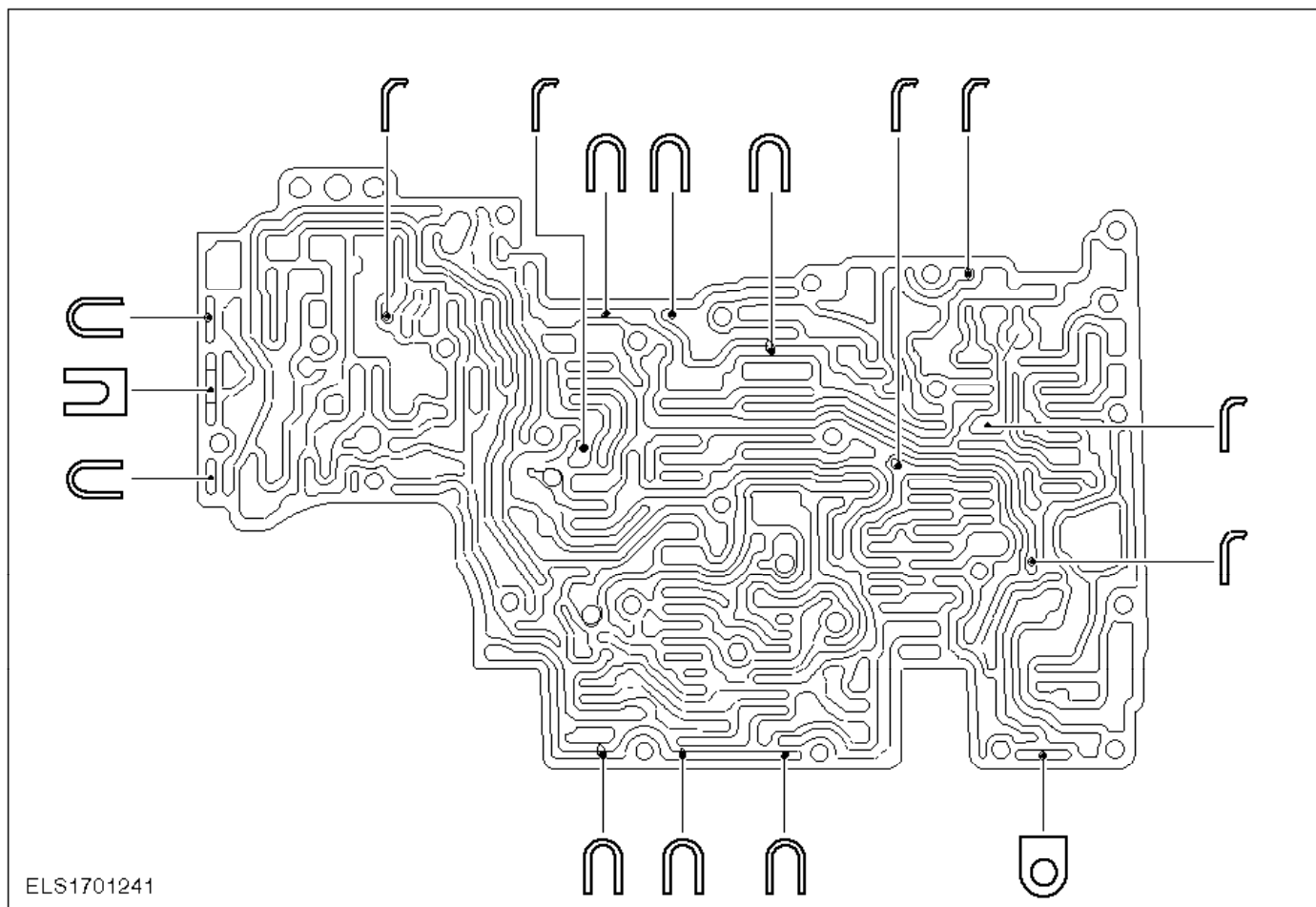
Item	Description
1	Intermediate plate
2	Gasket
3	Bracket
4	Torque converter pressure limiting valve.
5	Radiator thermostat and bypass valve
6	3 - 4 shift valve
7	SS3 solenoid

8	3 - 2 downshift control valve (TD)
9	Man. 1 modulating valve
10	3 - 2 downshift control valve
11	SS1 solenoid



Item	Description
1	Control valve (reverse)
2	Clutch pressure regulating valve (reverse)
3	2 - 3 shift valve

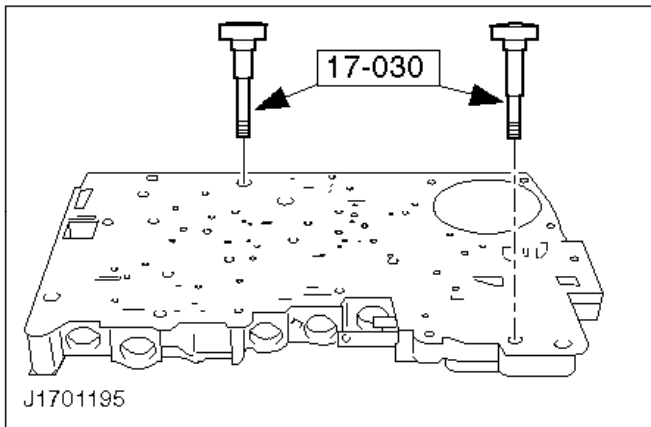
4	1 - 2 shift valve
5	EPC/VFS solenoid
6	Regulating solenoid
7	SS2 solenoid
8	O/D clutch control valve
9	Regulating solenoid
10	CCS/SS4 solenoid
11	Torque converter lock-up clutch solenoid
12	CCC/PWM solenoid
13	Manual shift valve
14	EPC pressure boost valve
15	Clutch pressure regulating valve (forward)
16	Main line pressure regulating valve
17	Main line pressure boost valve
18	Control valve (forward)



ELS1701241

Note:

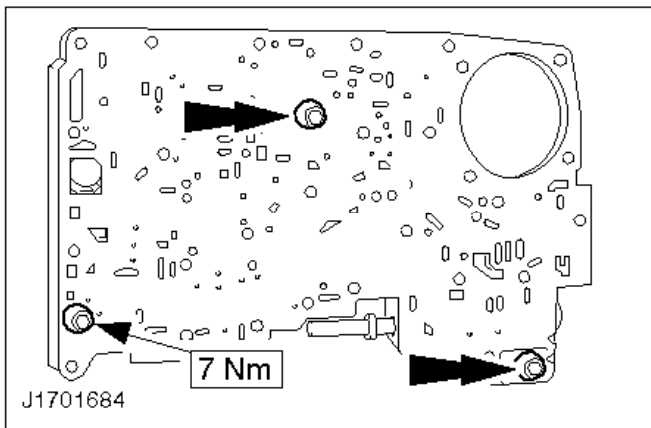
Installation position of the retaining pins.



Assemble the valve body assembly

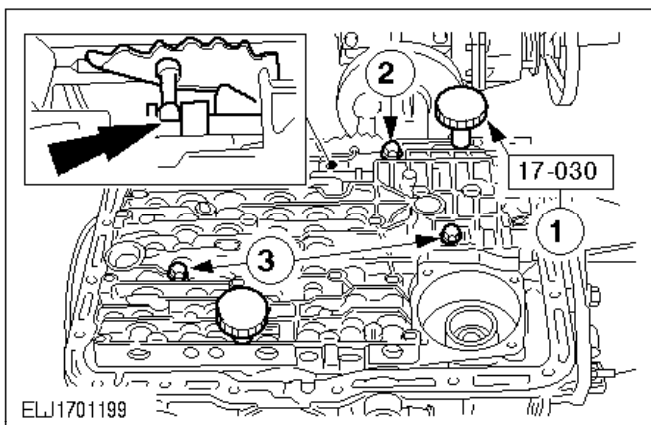
136. Align the intermediate plate with the valve body assembly.

- Place the new gasket on the intermediate plate.
- Insert the special tool in the holes shown.



137. Attach the intermediate plate.

- Tighten the bolts.
- Remove the special tool.



Note:

The gear selector boss of the detent plate should be between the stop and the manual shift valve.

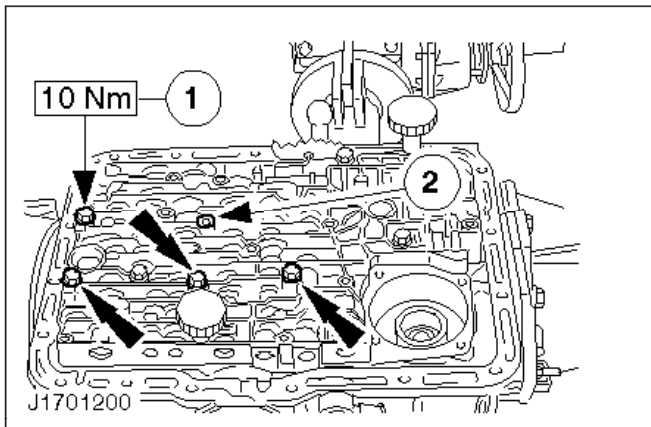
138. Fit the valve body assembly.

- 1 Screw in the guide pins.

Note:

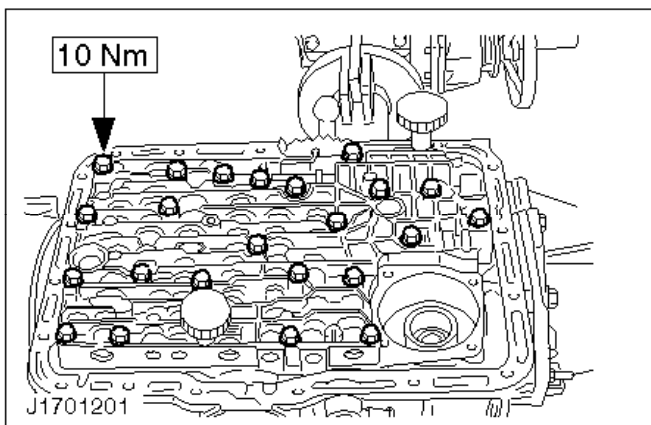
The bolts are of different lengths.

- 2 Screw in the single M6x30 bolt.
- 3 Screw in the two M6x35 bolts.



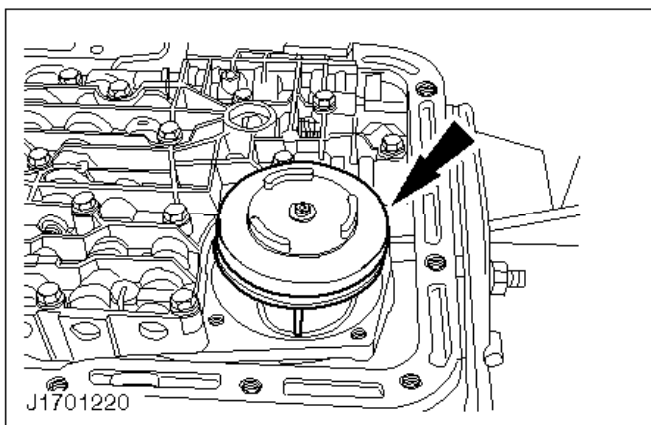
139. Fit the valve body assembly (continued).

- 1 Screw in the four M6x45 bolts.
- 2 Do not fit one of the transmission fluid filter bolts (M6x45).



140. Secure the valve body assembly.

- Screw in the 15 M6x40 bolts.
- Remove the guide pins and screw in the M6x40 bolts.
- Tighten the bolts working from the inside outwards.

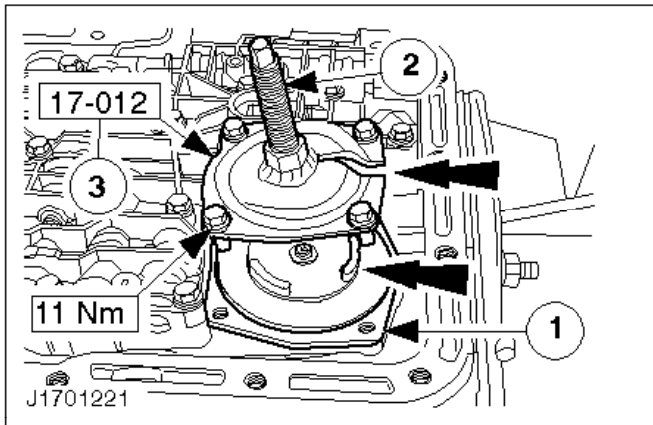


Check the length of the rear servo piston rod

Note:

If the transmission housing, servo piston or rear brake band has been renewed, the length of the rear servo piston rod must be checked.

- ④ 141. Install the rear servo piston using any piston rod.

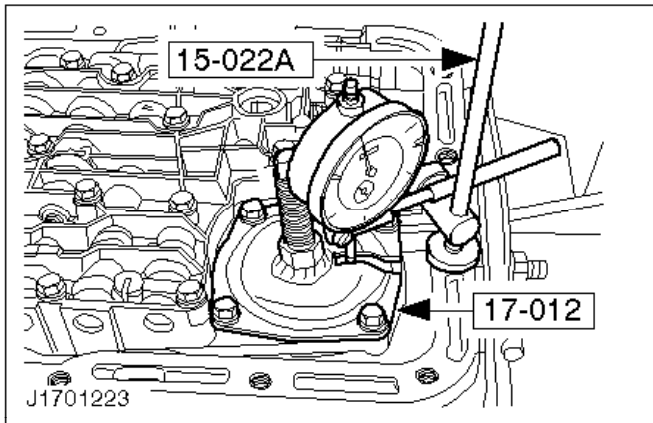


Note:

Place the measuring gap over one of the three locating pegs.

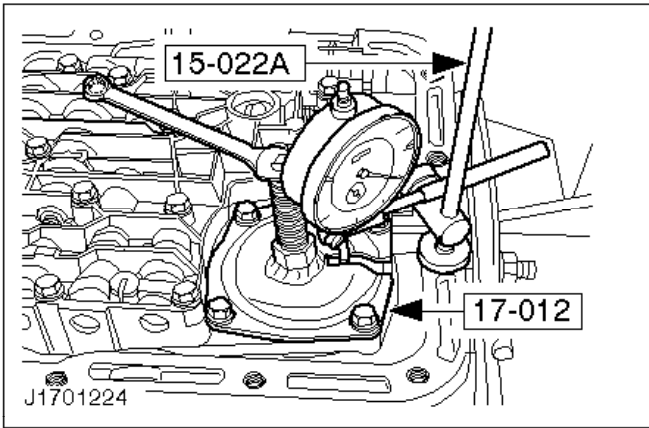
- ④ 142. Fit the special tool.

- 1 Fit the gasket.
- 2 Remove the adjusting bolt.
- 3 Fit the special tool.



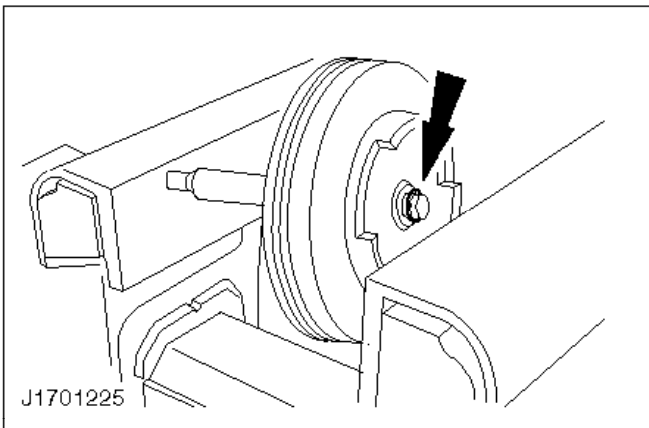
- ④ 143. Measure the piston stroke.

- Set up a dial indicator gauge.
- Place the plunger of the dial indicator gauge on the locating peg in the servo piston.
- Zero the dial indicator gauge.



144. Measure the piston stroke (continued).

- Tighten the adjusting bolt and observe the gauge at the same time.
- Permitted piston stroke: 3,0 - 4,5 mm
- If the measurement is too small, fit a shorter piston rod.
- If the measurement is too large, fit a longer piston rod.

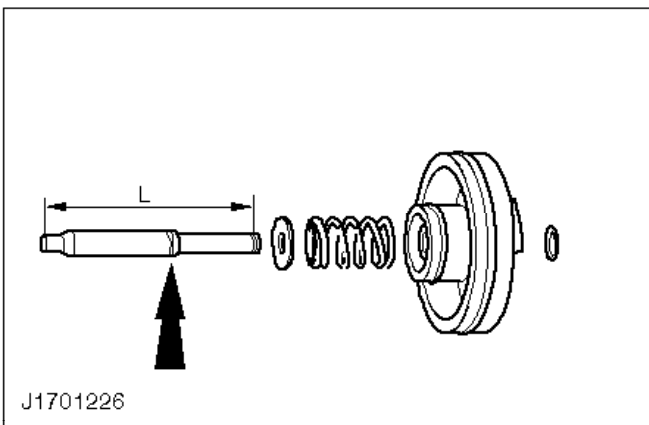


145. Remove the rear servo piston.

- Remove the special tool.

146. Remove the piston rod.

- Remove the circlip.
- Withdraw the piston rod.

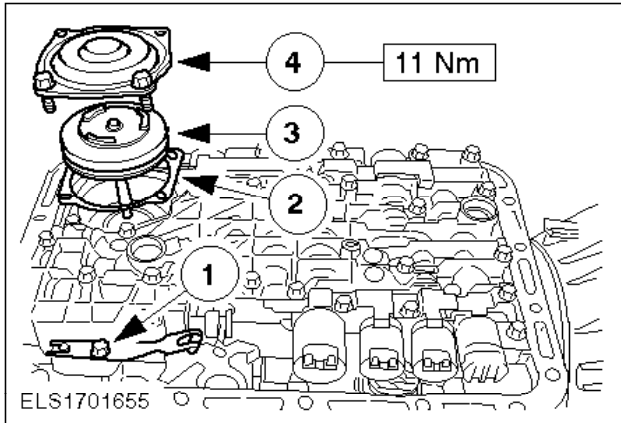


147. Select the piston rod.

- Piston rods are available in three different lengths, which are indicated by grooves:
- No groove: $L = 86,35$ mm

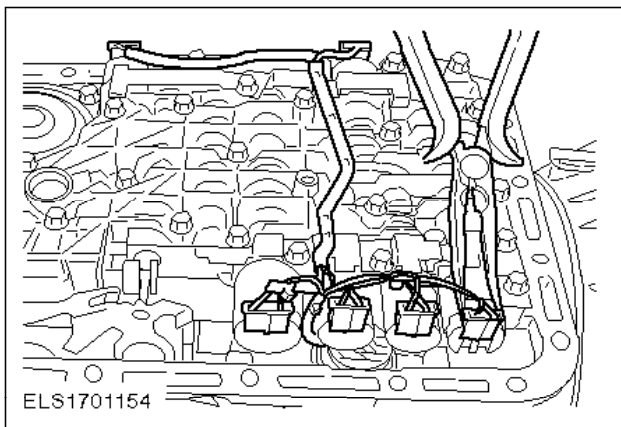
- 1 groove: L = 88,05 mm
- 2 grooves: L = 84,65 mm

148. Fit the piston rod.

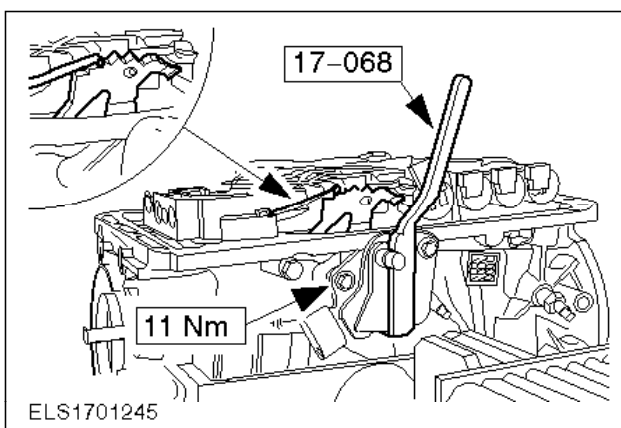


149. Install the detent spring and the rear servo piston.

- 1 Install the detent spring.
- 2 Fit the seal.
- 3 Fit the servo piston.
- 4 Attach the servo cover with the gasket.



150. Connect the wiring.



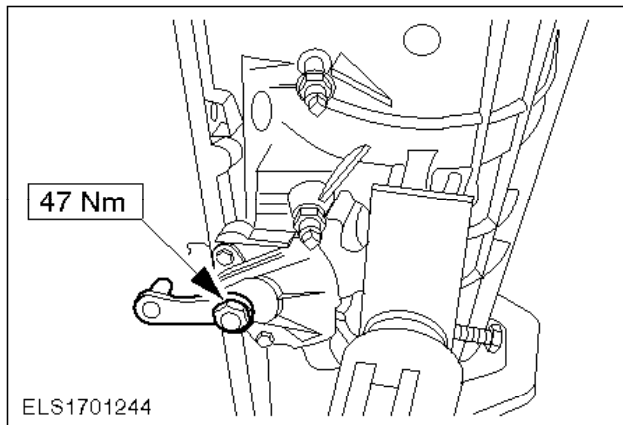
Adjust the transmission range sensor

151. Adjust the TR sensor.

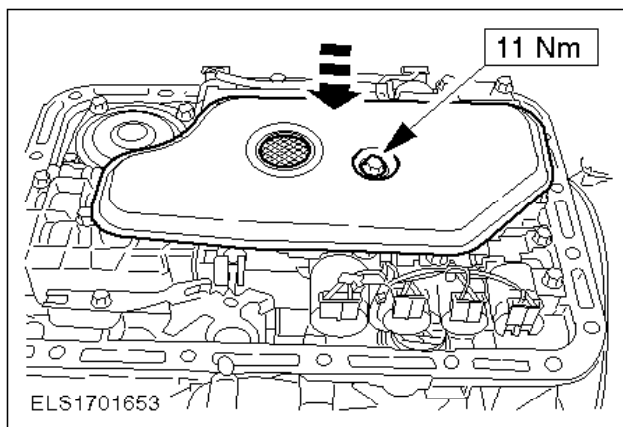
Note:

Make sure the detent spring is in the correct position.

- Fit the setting gauge. The teeth of the setting gauge must engage in the grooves of the TR sensor.
- If necessary, slacken the bolts of the TR sensor and turn the sensor until the setting gauge engages. Tighten the bolts of the TR sensor.

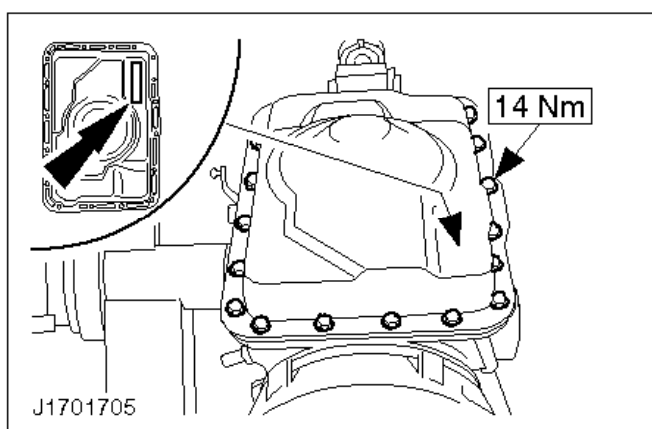


- ④ 152. Install the selector lever.



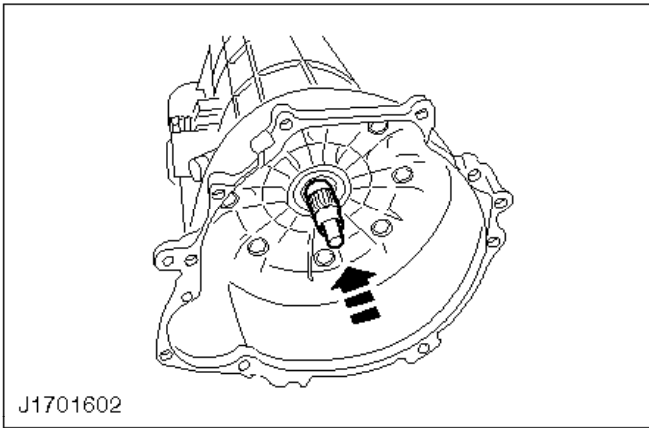
Note:
Fit the new seals.

- ④ 153. Install the transmission fluid filter.



Note:
Make sure the magnet is in the correct position. Renew the gasket.

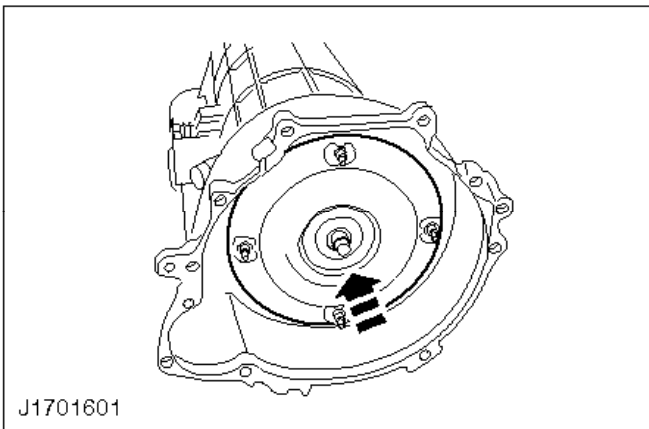
- ④ 154. Fit the sump.
- 155. Detach the transmission from the assembly stand.



Note:

Different shaft diameters are available. It should be easy to slide the input shaft in by hand.

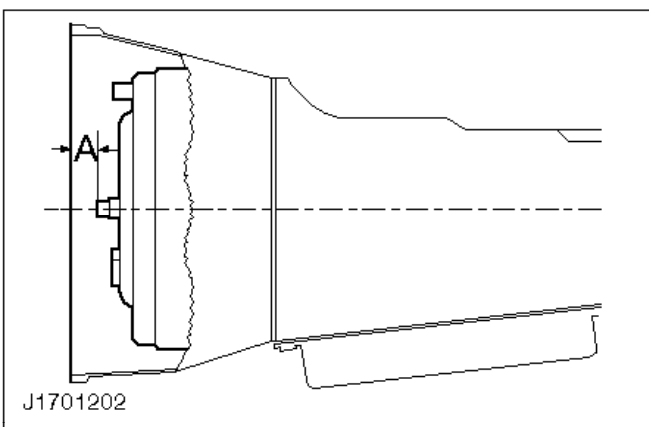
- 156. Fit the input shaft.



Note:

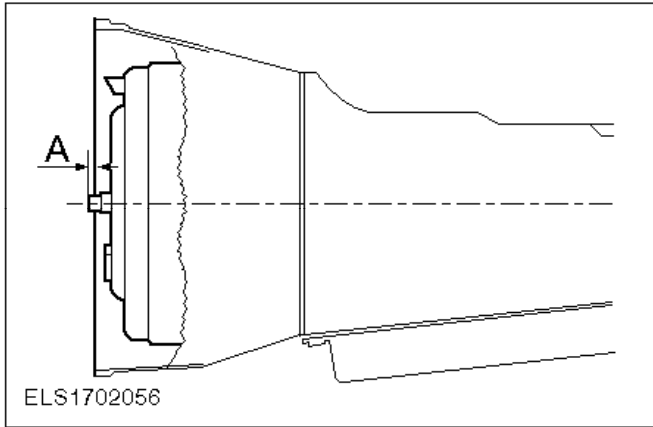
The torque converter hub must fully engage in the transmission fluid pump driving gear.

- 157. Fit the torque converter.



- 158. Test the torque converter installation depth:

- Measure installation depth "A" between the converter housing flange and the centring spigot of the torque converter.
- Installation depth "A":
 - 2.0l DOHC-16V engine = 9 mm ± 1 mm
 - 2.3l DOHC-16V engine = 9 mm ± 1 mm
 - 2.9l V6-16V engine = 11 mm ± 1 mm
 - 2.9l V6-24V engine = 11 mm ± 1 mm



2.5l TCI diesel engine only

- 159. Test the torque converter installation depth:

The installation depth "A" between the flange of the torque converter housing and the torque converter centring pin is approx. 4 mm.
