Overdrive

Repairs and Maintenance

Section	Group
4	43

Overdrive
1976—

VOLVO

TP 30058/3
6000.05.84

Printed in U.S.A.

Contents

Specifications

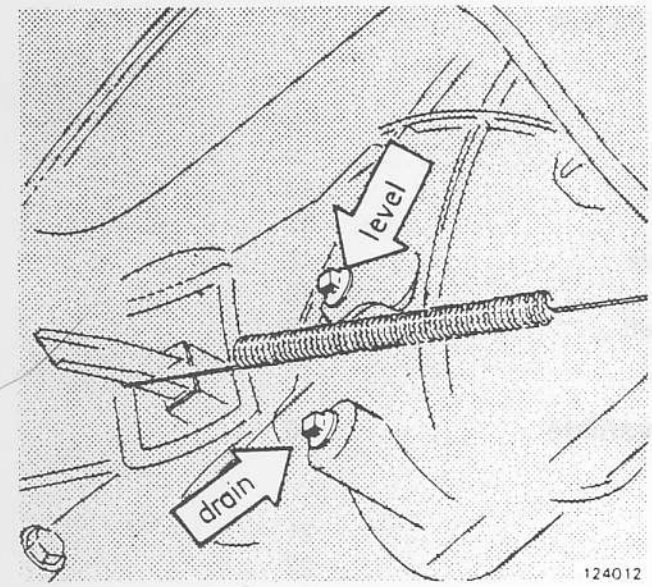
Reduction ratio 0.8:1

Solenoid current draw, approx. ..... 2 Amps at 12 Volts

Lubricant

M41 – Type ..... Gear oil
Quality ..... API GL-1
Viscosity ..... SAE 80W/90 alt. SAE 80/90
Capacity (transm. included) ..... 1.6 liters 1.7 US qts

M46 – Type ..... ATF Type F or G
Capacity (transm. included) ..... 2.3 liters 2.4 US qts



124 012

The oil level should be up to the filler plug hole. Transmission and overdrive are lubricated by the same oil. When oil is drained from transmission, also remove cover on overdrive and clean strainer.

Tightening torques

See specific operations

Applications

Volvo P/N	Laycock No.	Introduced	Drive flange	Main application
254740-4	115648	Fall 1974	1310	6-cyl engines
1208014-9	115655	Fall 1974	1140	4-cyl engines
1208015-6	115656	Fall 1974	1310	4-cyl engines. Replaced by 1208014-9 + drive flange 1310.
1208101-4	115657	Fall 1976	1140	4-cyl engines
1208109-7	115659	Jan. 1978	1310	6-cyl engines
1208110-5	115660	Fall 1977	1140	4-cyl engines
1208191-5	115895	Fall 1978	1140	Diesel engines

Specifications

Oil pressures:

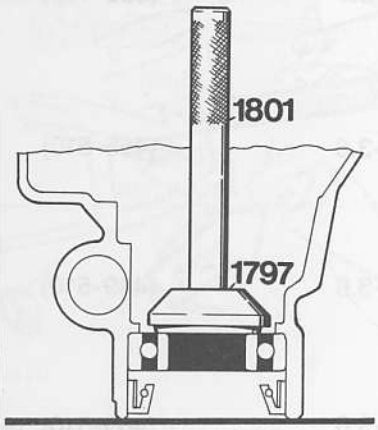
Direct drive engaged (all engine applications) ..... 0.15 MPa (21 psi)

Overdrive engaged:

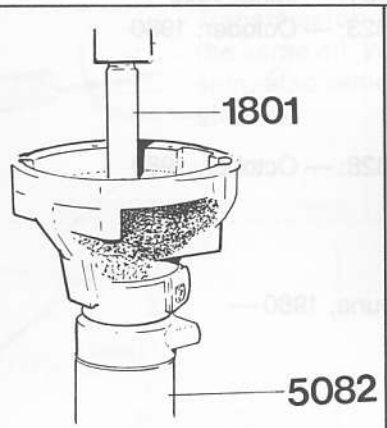
Engine application	Production date notes	MPa	(psi)
4-cyl (except Turbo)	B21: — June, 1980 B23: — October, 1980	2.7-3.1	(380-440)
6-cyl	B28: — October, 1980	3.2-3.6	(455-510)
B21 (except Turbo)	June, 1980 —	3.3-3.6	(469-510)
B23	October, 1980 —	3.3-3.6	(469-510)
B28	October, 1980 —	3.3-3.6	(469-510)
Diesel	March, 1981 —	2.8-3.1	(398-440)
Turbo	June, 1981 —	3.7-4.0	(526-568)

Special tools

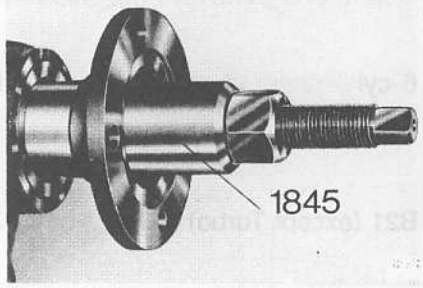
1797 **Drift**
removing rear bearing
1801 **Standard handle**
1845 **Press tool**
installing drive flange
2261 **Puller**
pulling drive flange
2412 **Drift**
installing bearing and seal
2715 **Drift**
installing clutch bearing
2806 **Drift**
installing clutch bearing
2834 **Pressure gauge**
checking oil pressure
5172 **Crow-foot wrench**
replacing solenoid valve
5183 **Extractor**
for relief valve
5210 **Ring**
assembling/disassembling
one-way clutch
2835 **Centering tool**
for centering splines in planetary
gear cage and one-way clutch
2836 **Wrench**
for plugs
2851 **Drift**
removing clutch sliding member
5069 **Extractor**
for oil seal
5082 **Sleeve**
5103 **Drift**
removing clutch bearing
5149 **Wrench**
torquing drive flange nut



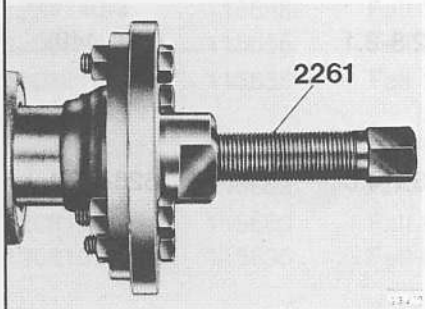
1797 **Drift**
removing rear bearing
115 919



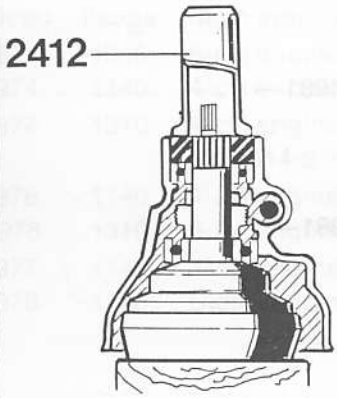
1801 **Standard handle**
123 571



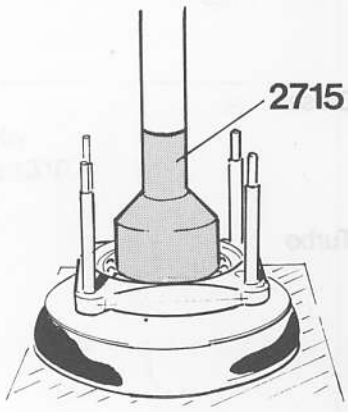
1845 **Press tool**
installing drive flange
22 723



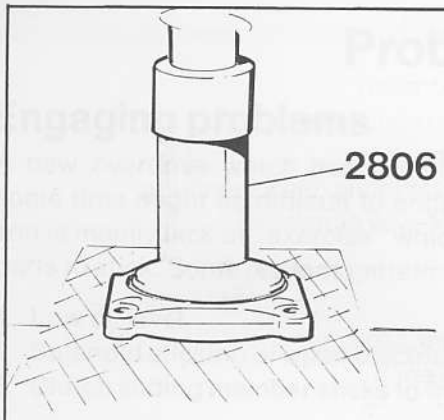
2261 **Puller**
pulling drive flange
22 720



2412 **Drift**
installing bearing
and seal
123 575

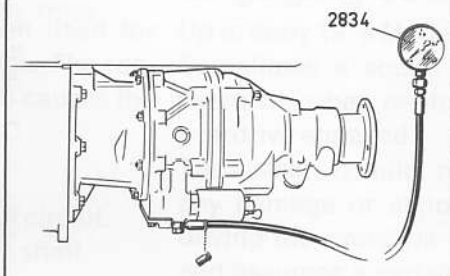


2715 **Drift**
installing clutch bearing
123 582



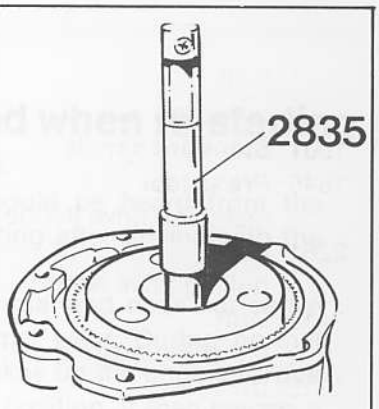
2806 **Drift**
installing clutch bearing

123 581



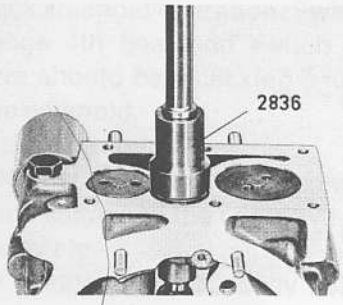
2834 **Pressure gauge**
checking oil pressure

103 233



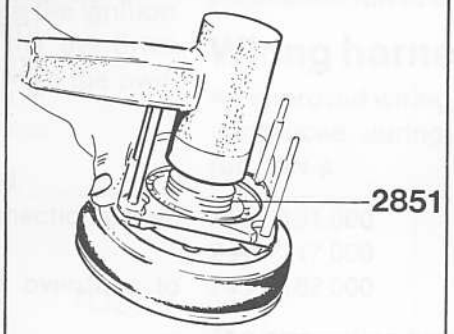
2835 **Centering tool**
for centering splines

123 580



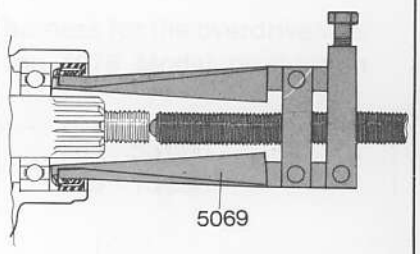
2836 **Wrench**
for plugs

103 114



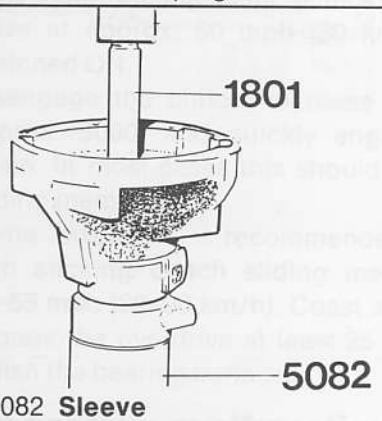
2851 **Drift**
removing clutch

123 559



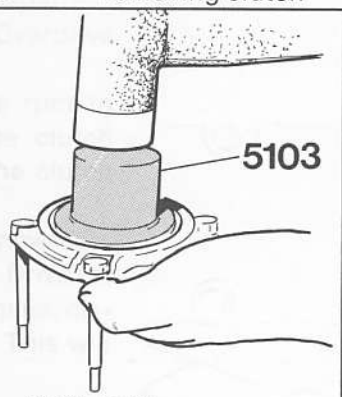
5069 **Extractor**
for oil seal

109 245



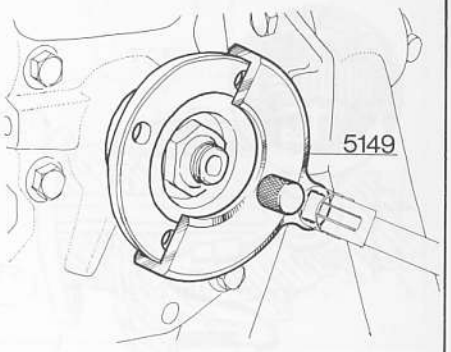
5082 **Sleeve**
installing bearing

123 571



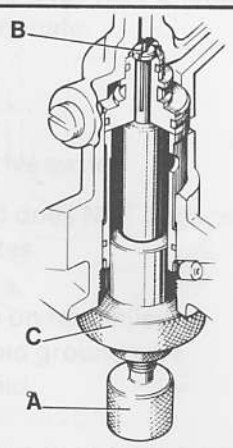
5103 **Drift**
removing clutch bearing

123 560

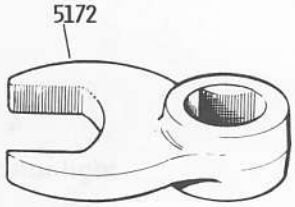


5149 **Wrench**
torquing drive flange nut

116 890

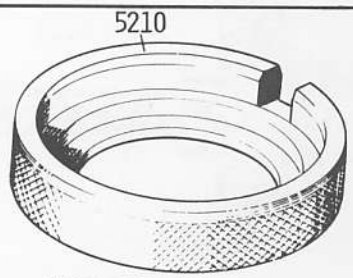


5183 **Extractor**
128 731 for relief valve



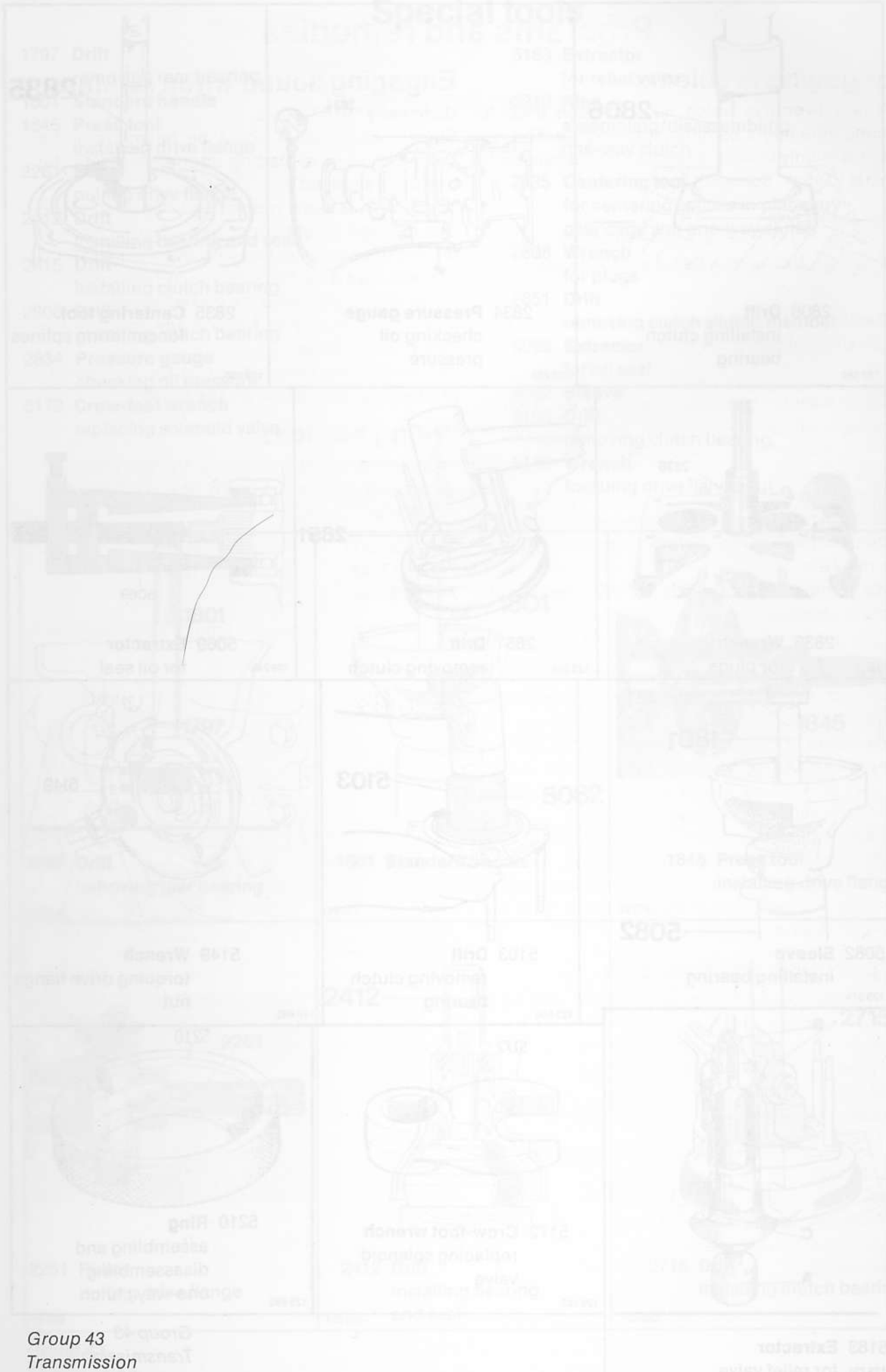
5172 **Crow-foot wrench**
replacing solenoid valve

129 582



5210 **Ring**
assembling and disassembling one-way clutch

129 583



Problems and remedies

Engaging problems

A new overdrive which has not been used for some time might be difficult to engage. The reason is mainly lack of "exercise" which causes the parts to stick. Some reasons:

1. Low oil level
2. Solenoid sticking or open electrical circuit.
3. Clutch sliding member sticks to the shaft.

1.
Check that the oil level is up to the plug level. Low oil level can cause many problems.

2.
Check solenoid operation. Switch on the ignition, engage 4th gear and switch on the overdrive. There should be a clicking sound from the overdrive solenoid.
No clicking sound:
Do NOT start to replace the solenoid.
Check voltage to the overdrive connections, then to relay etc.
Use jumper wires directly to the overdrive to check operation.

3.
If the clutch sliding member sticks to the shaft:
Drive at approx. 50 mph (80 km/h). Overdrive switched ON.
Disengage the clutch, increase engine rpm to approx. 5000, and quickly engage the clutch again. In most cases this should free the clutch sliding member.
Some "exercise" is recommended for new cars with sticking clutch sliding member. Drive at 50–55 mph (80–90 km/h). Coast and engage/disengage the overdrive at least 25 times. This will polish the bearing surfaces.

Operation malfunction

Overdrive does NOT engage, indicator light does NOT illuminate.
Check:
– Fuses
– Wiring
– Overdrive switch

Solenoid does NOT engage (click), indicator light illuminates.
Check:
– Switch on transmission
– Solenoid ground wire
– Solenoid

Engaging sound when re-starting.

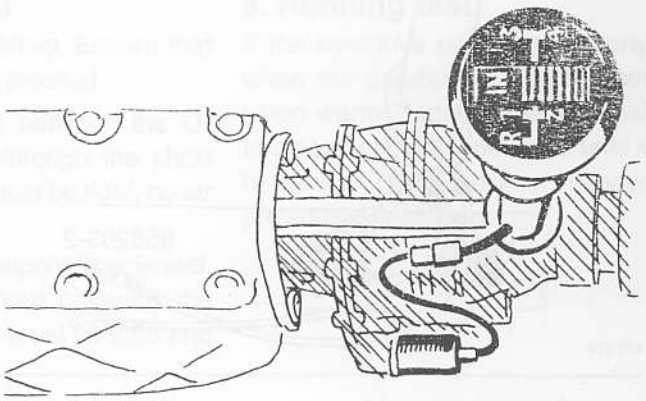
Up to early 1978 Models.
Sometimes a sound could be heard from the overdrive when re-starting after driving with the overdrive engaged.
The reason is quite normal and does not cause any damage or abnormal wear. During normal driving the overdrive takes up the engine torque and assumes a certain position. It then causes a noise when it returns to the locked position.
It is not necessary to replace any parts or the overdrive assembly.
The design was changed during the 1978 Model production run to eliminate the sound.

Wiring harness

An improved wiring harness for the overdrive was introduced during the 1978 Model production run. VIN-s:

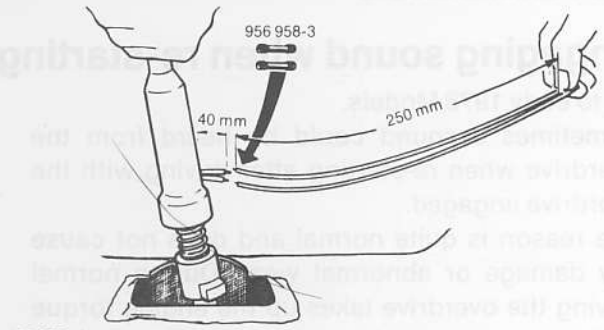
242	131 000	264	53 000
244	317 000	265	13 000
245	182 000		

The new wiring harness is longer, softer and better insulated.



129 371

Modification of old type wiring harness

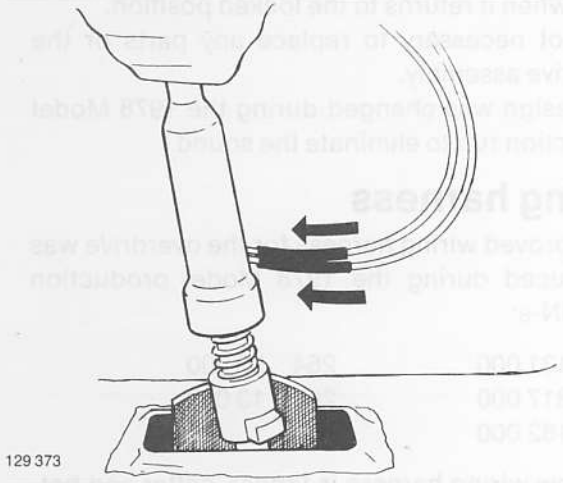


129 372

1.
Remove the rubber bellow for the gear lever.

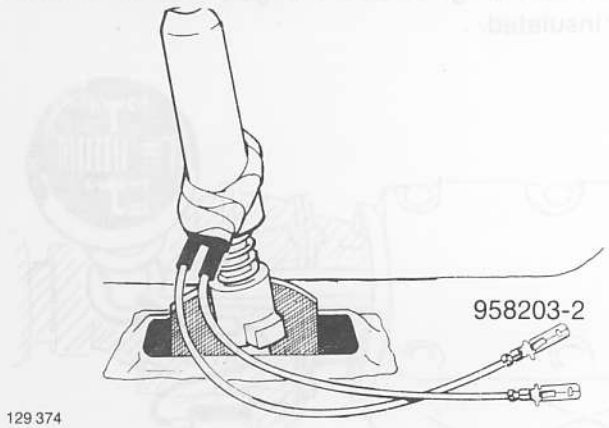
2.
Cut the wires approx. 40 mm (1.5 inch) from the gear lever.

3.
Splice two 14 gauge wires, approx. 250 mm (10″) long.



129 373

4.
Push on two 50 mm (2″) pieces of insulation tubing.



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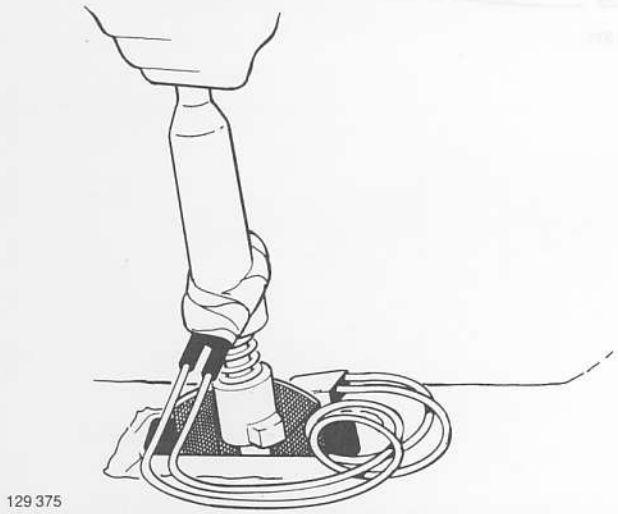
5.
Use tape to tie the wires to the gear lever, as shown.

6.
Attach two spade connectors to the wire ends.

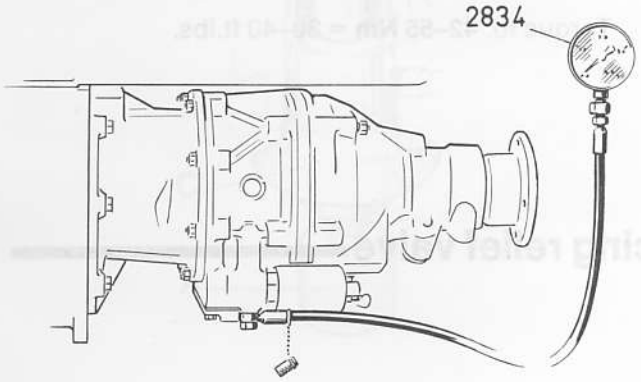


129 375

7.
Loop the wires to permit maximum flexibility. Attach to the connector. It must be in the front left corner.

8.
Reinstall the rubber bellow.

Checking oil pressure



103 233

The oil pressure can be checked when driving on test rollers or highway. Tests on jack or stands should be avoided for safety reasons.

1.
Remove the plug under the control valve. Connect pressure gauge 2834.

2.
Drive in 4th gear, overdrive NOT engaged, speed 45 mph = 70 km/h. Pressure should be 0.15 MPa = 21 psi.

3.
Same conditions, but overdrive ON. Pressures should be as indicated in "Specifications" section.

4.
Disengage overdrive. Check time for pressure to drop to 0.15 MPa = 21 psi. Time should not exceed 3 seconds.

Testing solenoid

1. Electrically

Check for current at the yellow wire on the solenoid. Ignition must be on and 4th gear plus overdrive engaged.

2. Mechanical

Remove the solenoid. Ensure that oil-ways are not blocked.

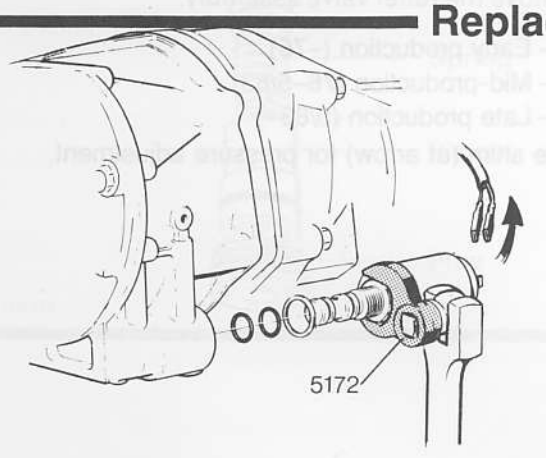
Cover the holes between the O-rings and blow through the short end. The valve must be tight, no air may pass.

Connect a 12V supply to solenoid. Blow again without covering the holes. The valve must be tight and no air may pass.

3. Running test

If the overdrive operates properly when the gearbox is cold but not when warm, connect the solenoid to a power supply and leave until it heats up. Then check in manner previously described.

Replacing solenoid

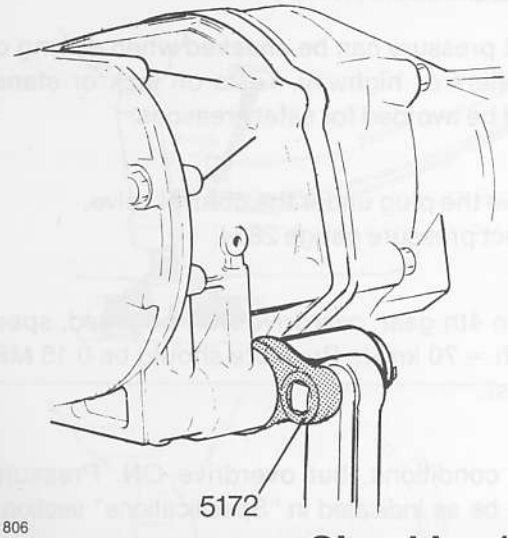


114805

114 805

Solenoid valve and control valve are integral and replaced as an assembly. Use 25 mm = 1" crow-foot wrench (Volvo tool 5172) for removing and installing.

1.
Disconnect wires at connectors. Attach crow-foot wrench. Use extension and wrench as appropriate. Remove solenoid.

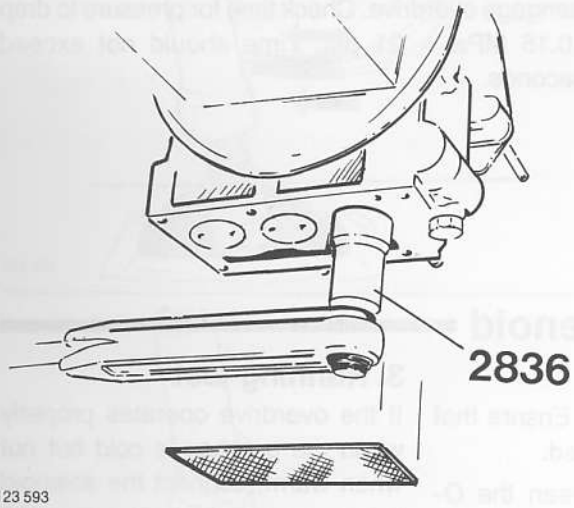


114 806

2.
Apply ATF oil to the new O-rings. Install solenoid. Use crow-foot wrench and torque wrench.

Torque to: **42–55 Nm** = 30–40 ft.lbs.

Checking/replacing relief valve



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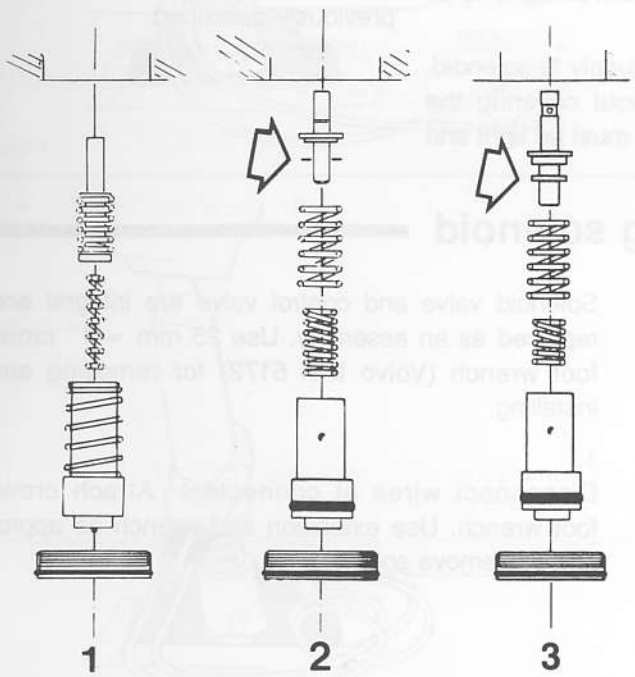
1.
Have an oil collecting pan ready. Remove oil pan and strainer.

2.
Use tool **2836** to remove the plug under the relief valve.

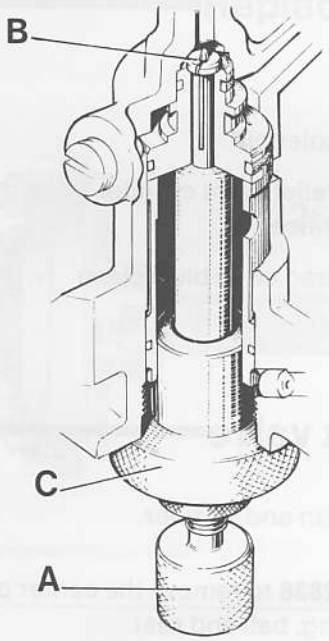


123 594

3.
Remove the relief valve assembly.

1 – Early production (–75)
2 – Mid-production (76–5/83)
3 – Late production (5/83–)

Note shim (at arrow) for pressure adjustment.



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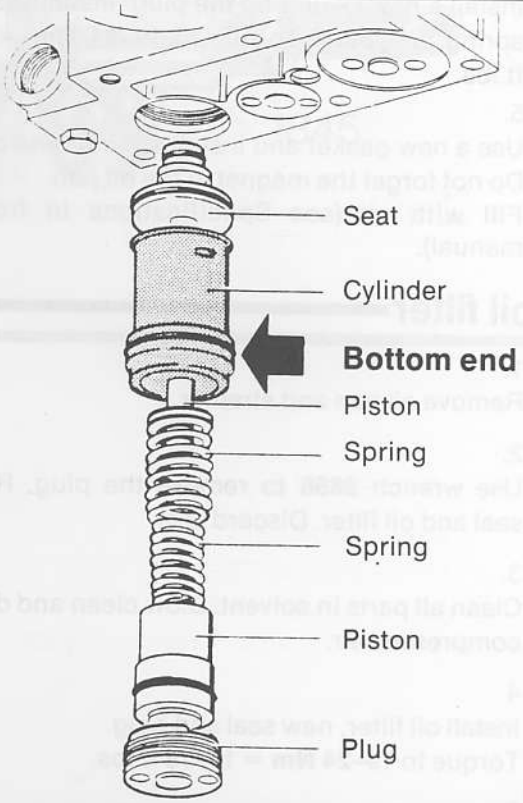
4.
Use tool 5183 to pull cylinder and seat.

- Screw out the center screw A until the slotted part B can be inserted in the seat.
- Screw in the center screw until tight.
- Screw in nut C until seat and cylinder come loose.

5.
Clean all parts in solvent. Blow clean and dry with compressed air.
Carefully check for wear and damage.
Make sure the pistons run easily in the cylinders.
Replace defective parts.

6.
Use compressed air to blow clean the control orifice prior to installation.

7.
Install new O-rings on seat, cylinder and plug. Lubricate with oil.



129 377

8.
Position the seat in the housing. Use the cylinder to press it into correct position.

NOTE:
The cylinder O-ring end should be DOWN.

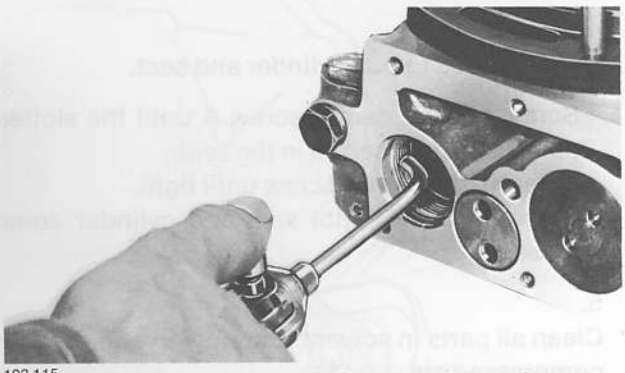
9.
Fit the small piston and springs in the large piston.
Insert the assembly in the cylinder.
Make sure the small piston fits correctly in the seat.

10.
Install the plug. Torque to **19–24 `Nm** = 14–18 ft.lbs.

11.
Make sure the magnet is cleaned. Use a new gasket and install strainer and oil pan. Fill oil to plug level.

NOTE:
Make sure the relief valve cylinder is correctly assembled (see arrow).

Cleaning control orifice



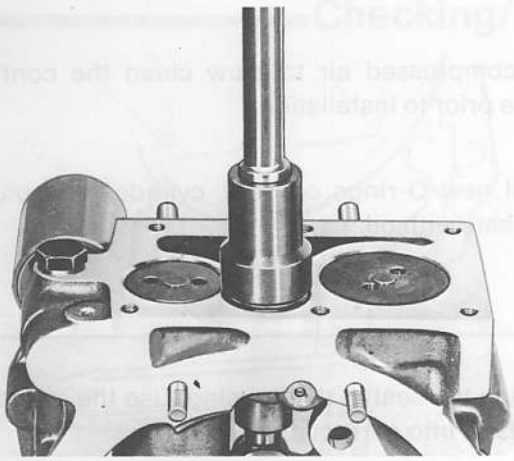
103 115

Remove the solenoid.

Remove the relief valve cylinder to gain access to the control orifice.

Use compressed air to blow clean.

Checking/replacing check valve



103 114

103 114

1.
Remove oil pan and strainer.

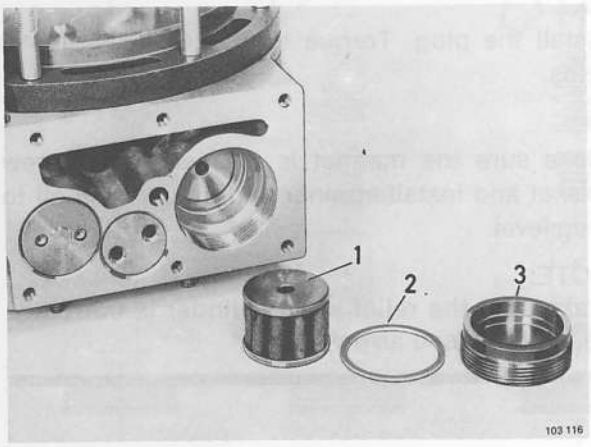
2.
Use wrench **2836** to remove the center plug.
Remove spring, ball and seat.

3.
Clean all parts in solvent. Blow dry with compressed air.
Check all parts for wear and damage. Replace as necessary.

4.
Install a new O-ring on the plug. Install seat, ball, spring and plug. Torque to **19–24 Nm** = 14–18 ft.lbs.

5.
Use a new gasket and install strainer and oil pan. Do not forget the magnet in the oil pan.
Fill with oil (see Specifications in front of manual).

Cleaning oil filter



103 116

103 116

1.
Remove oil pan and strainer.

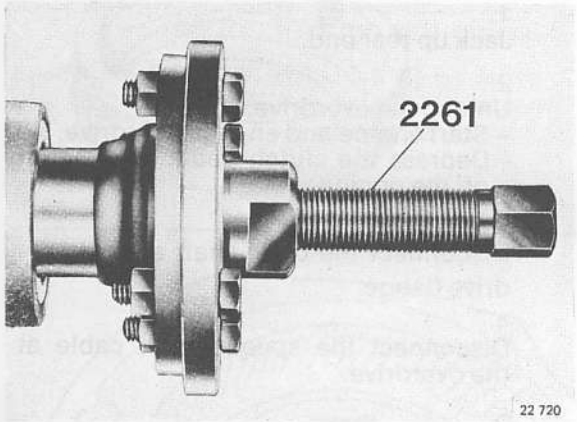
2.
Use wrench **2856** to remove the plug. Remove seal and oil filter. Discard seal.

3.
Clean all parts in solvent. Blow clean and dry with compressed air.

4.
Install oil filter, new seal and plug.
Torque to **19–24 Nm** = 14–18 ft.lbs.

5.
Use a new gasket and install strainer and oil pan. Do not forget the magnet.
Fill with oil (see Specifications in front of manual).

Replacing oil seal at output shaft

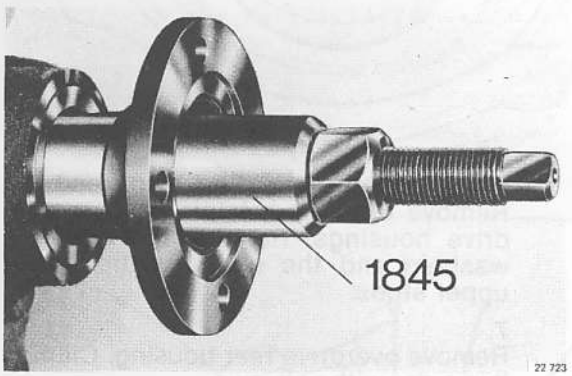


22 720

1.
Disconnect the drive shaft at the overdrive flange.

2.
Remove the nut. Use puller **2261** to pull the drive flange.

3.
Use extractor **5069** to remove the oil seal.



22 723

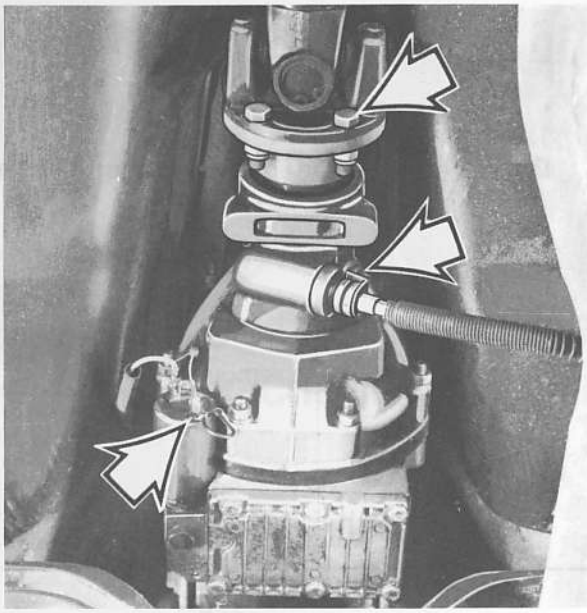
4.
Use drift **2412** to install the new seal.

5.
Use press tool **1845** to install the drive flange.

6.
Install drive flange nut. Torque to:
165–180 Nm = 120–130 ft.lbs.

7.
Reconnect the drive shaft.

Replacing one-way clutch



129 379

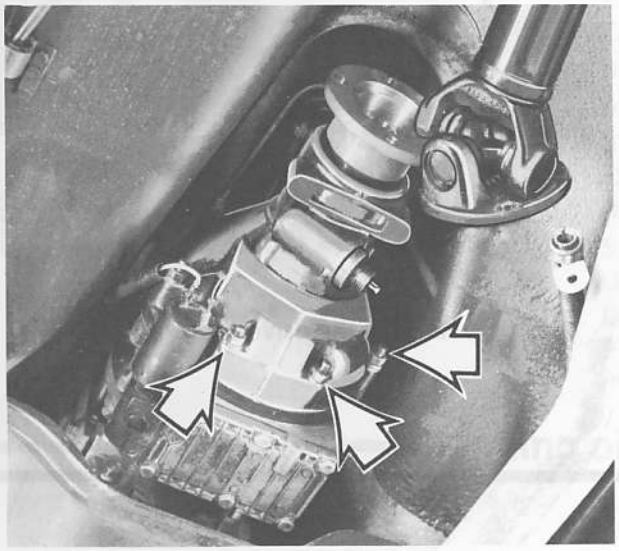
1.
Jack up rear end.

2.
Unload the overdrive:
– Start engine and engage overdrive.
– Depress the clutch pedal and switch off the engine.

3.
Disconnect the drive shaft at the overdrive flange.

4.
Disconnect the speedometer cable at the overdrive.

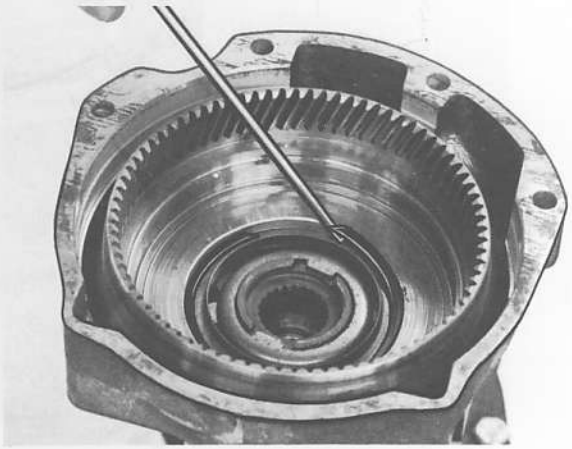
5.
Disconnect the solenoid ground wire.



129 380

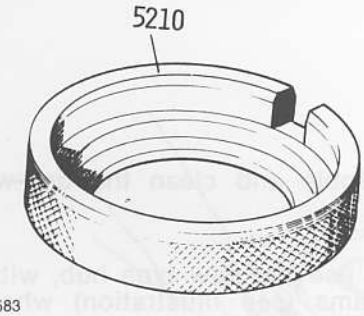
6.
Have an oil collecting pan ready. Remove the nuts retaining the overdrive housings. Remove the spring washers and the seals at the two upper studs.

7.
Remove overdrive rear housing. Clamp it in a vise with soft jaws.



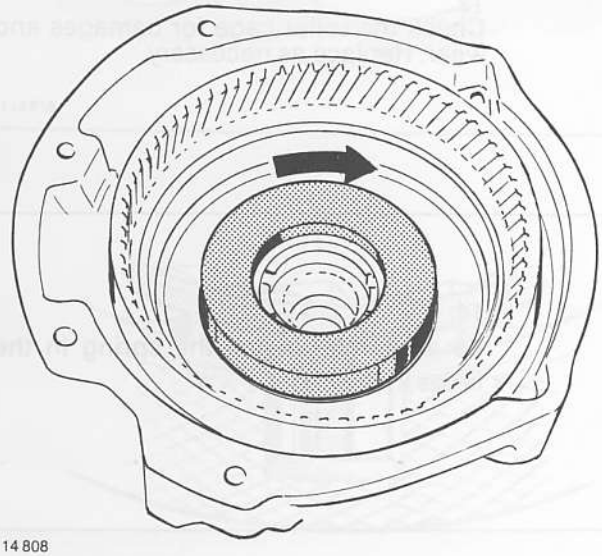
129 381

8.
Remove snap ring and oil slinger.



129 583

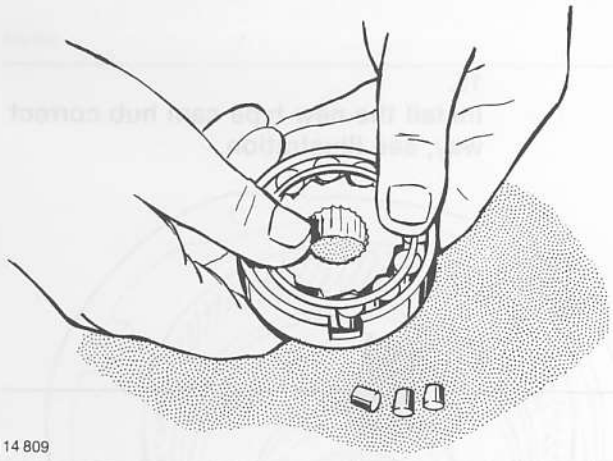
Use ring **5210** to facilitate disassembly and assembly of one-way clutch.



114 808

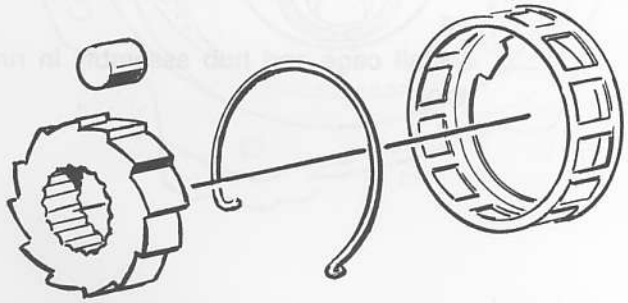
9.
Install ring **5210.** Lift one-way clutch into the ring. Turning clockwise.

Alternate method, if no ring tool is available:
Carefully remove one-way clutch. The rollers are loose.



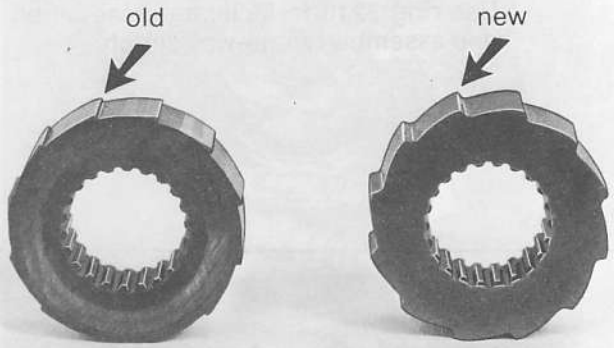
114 809

10.
Rotate the one-way clutch in the ring tool so that the rollers come out, one by one.



114 810

Freewheel components.



129 383

10.
Disassemble and clean the one-way clutch.

11.
Always use the new type hub, with high cams (see illustration) when reassembling.

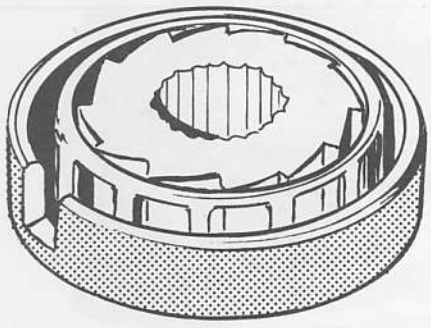
12.
Check the roller cage for damages and wear. Replace as necessary.

114 811

14.
To assemble, install the spring in the holes in the cage.

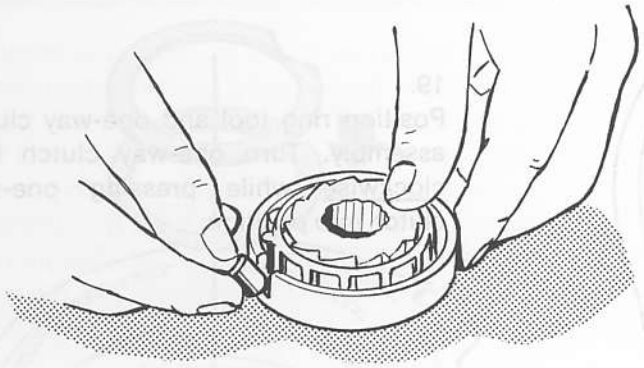
114 811

15.
Install the new type cam hub correct way, see illustration.



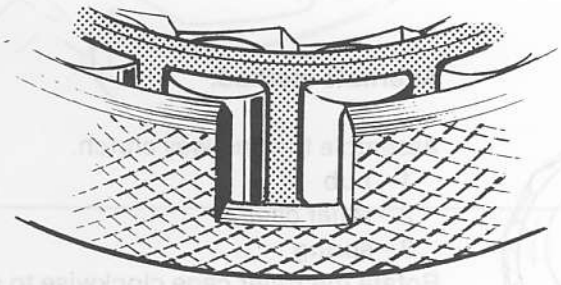
114 812

16.
Install cage and hub assembly in ring tool.



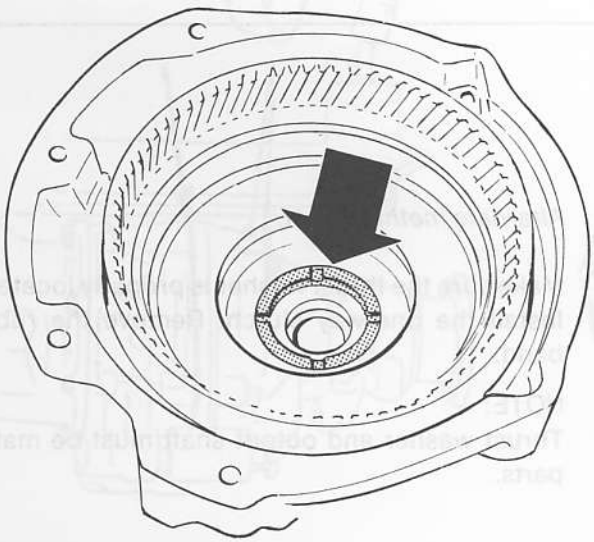
114 816

17.
Turn the cage assembly while installing the rollers.



114 813

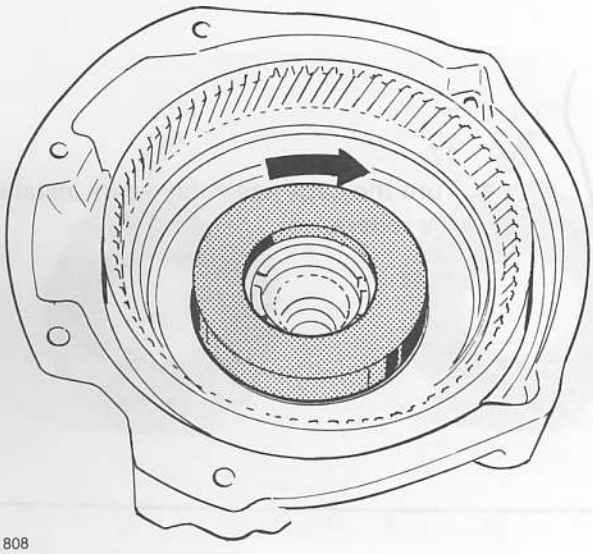
NOTE:
Position opening of the ring tool toward space between rollers as shown.



114 814

18.
Make sure the thrust washer is properly located. If necessary, use grease to hold it in place.

NOTE:
Thrust washer and output shaft must be mating parts.

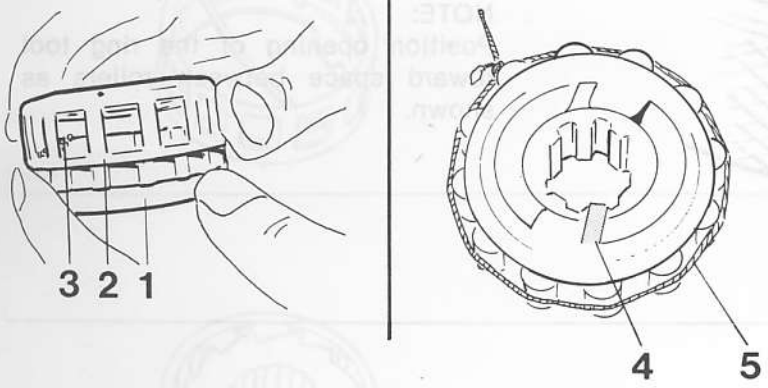


114 808

19.
Position ring tool and one-way clutch assembly. Turn one-way clutch hub clockwise while pressing one-way clutch into position.

Earlier type

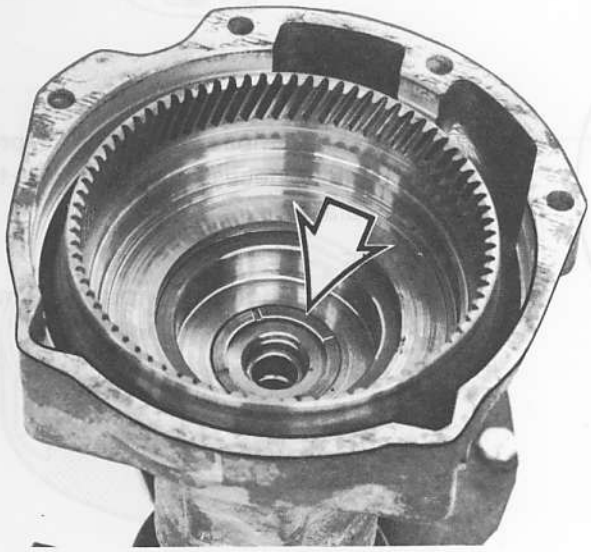
New type



123 577

Alternate method:

Assemble the one-way clutch.
1 – hub
2 – roller cage
3 – spring
Rotate the roller cage clockwise to end. Use the key (4) to lock it in position. Install the rollers. Hold them in position with a rubber band (5).

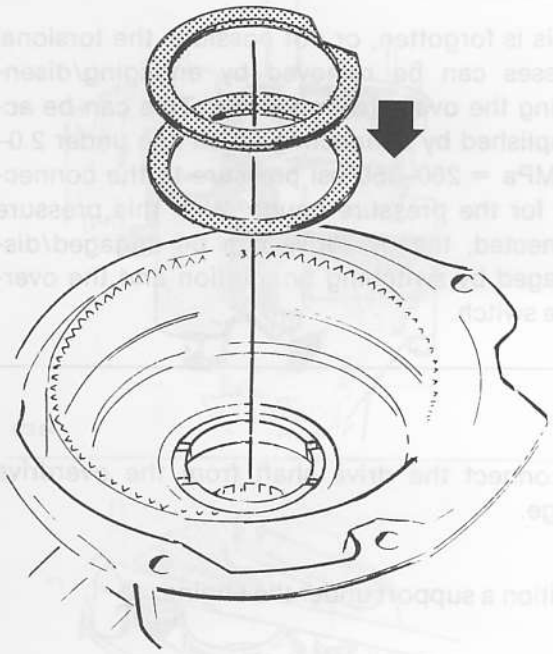


129 393

Alternate method, cont.

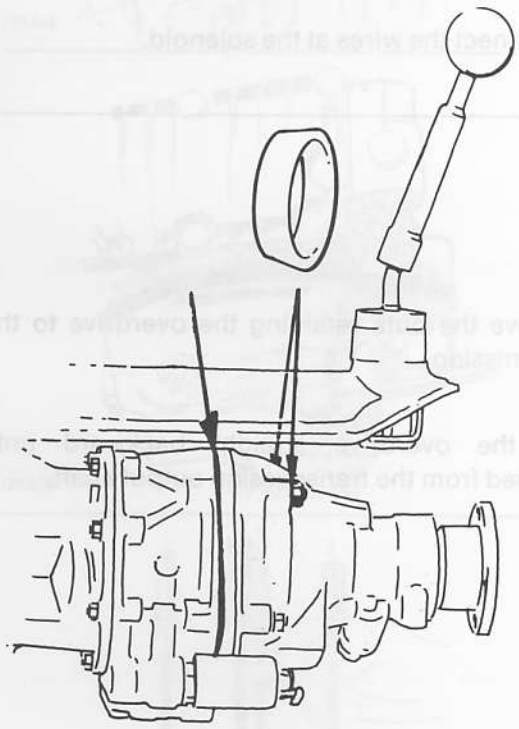
Make sure the thrust washer is properly located. Install the one-way clutch. Remove the rubber band.

NOTE:
Thrust washer and output shaft must be mating parts.



114 815

20.
Install oil slinger and snap ring.



21.
Clean the mating surfaces of the housings. Install new gasket.

22.
Make sure the gasket in front of the brake has not been damaged when removing the clutch.

23.
Install overdrive rear housing.

24.
Install the seals on the two upper studs.
Install spring washers and nuts.
Torque to: **7–16 Nm** = 5–12 ft.lbs.

25.
Reconnect the solenoid ground wire.

26.
Reconnect the speedometer cable at the overdrive. **4–6 Nm** = 3–4 ft.lbs.

27.
Reconnect the drive shaft at the overdrive flange.

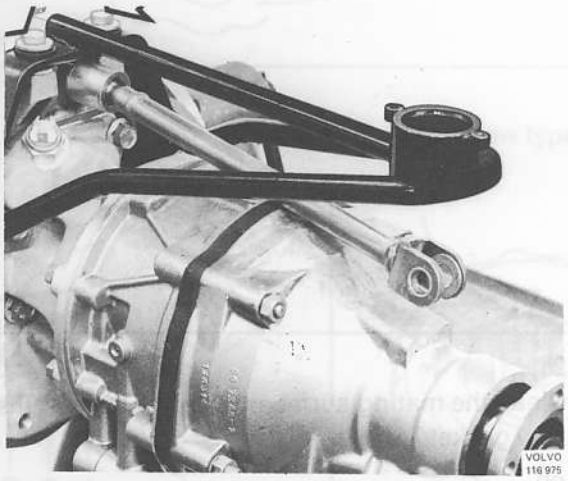
28.
Fill with correct oil (see Specifications in front of manual). Start the engine and engage the overdrive when driving.
Recheck oil level after driving.

Removing overdrive from vehicle

It is important to avoid torsional stresses in the shaft between the planetary gear carrier and the one-way clutch.

Prior to removing the overdrive, it is advisable to drive the vehicle with the overdrive engaged and then disengage with the clutch depressed.

If this is forgotten, or not possible, the torsional stresses can be removed by engaging/disengaging the overdrive in vehicle. This can be accomplished by connecting an oil line under 2.0–2.5 MPa = 280–350 psi pressure to the connection for the pressure gauge. With this pressure connected, the overdrive can be engaged/disengaged by switching on ignition and the overdrive switch.



116 975

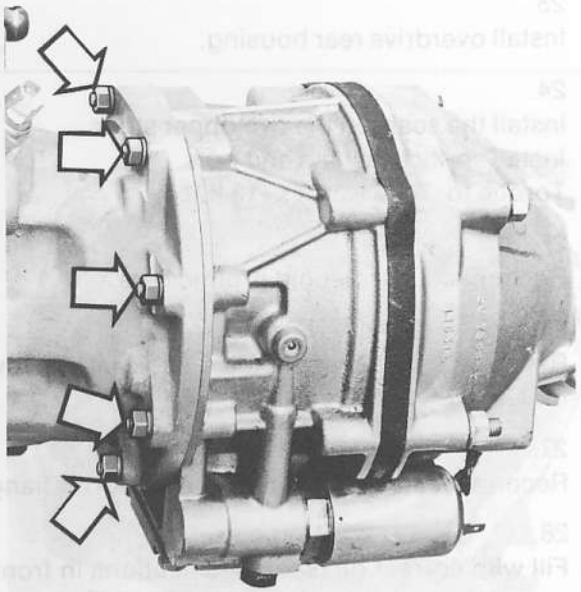
1.
Disconnect the drive shaft from the overdrive flange.

2.
Position a support under the engine.

3.
Remove the cross member under the transmission.

4.
Lower the engine rear end.

5.
Disconnect the wires at the solenoid.

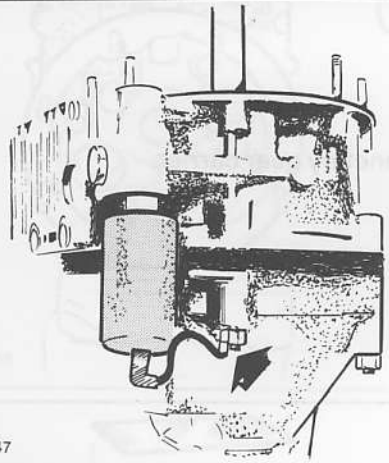


116 978

6.
Remove the nuts retaining the overdrive to the transmission.

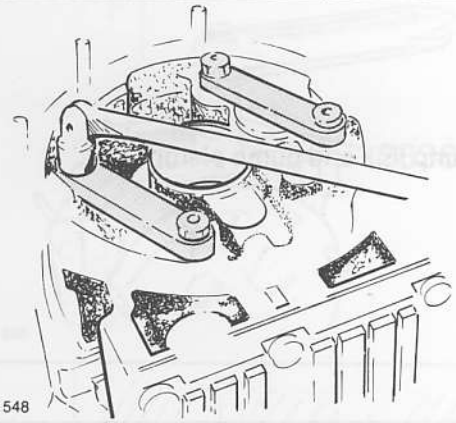
7.
Pull the overdrive straight backward until released from the transmission output shaft.

Disassembling overdrive



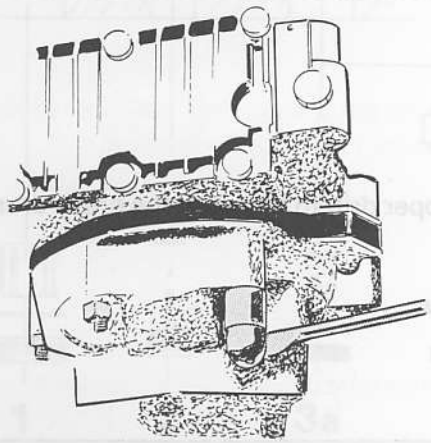
123 547

Clamp the overdrive in a vise with soft jaws.
Remove the solenoid ground wire.



123 548

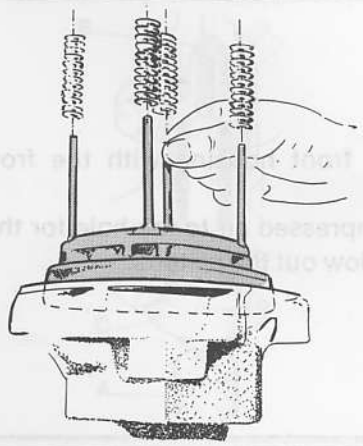
Remove the bridges.



123 588

Remove the nuts holding front and rear housings together.

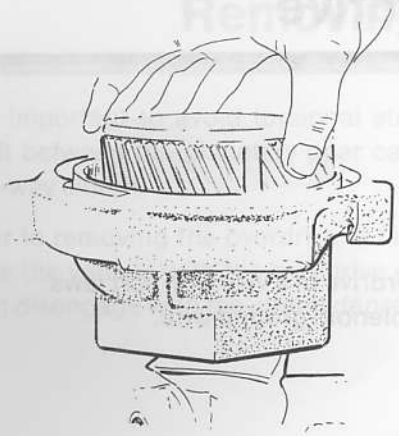
NOTE:
Loosen crosswise to avoid tension.



123 550

Remove front housing and brake drum.

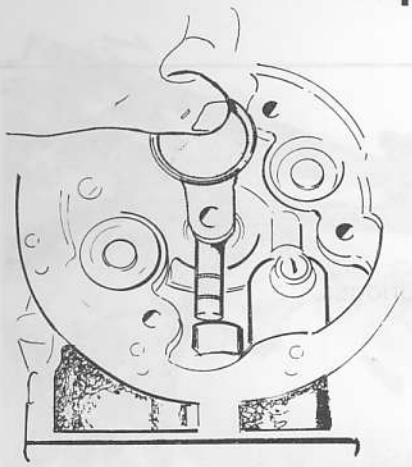
Remove the springs. Lift out the clutch with thrust bearing and sun gear.



123 551

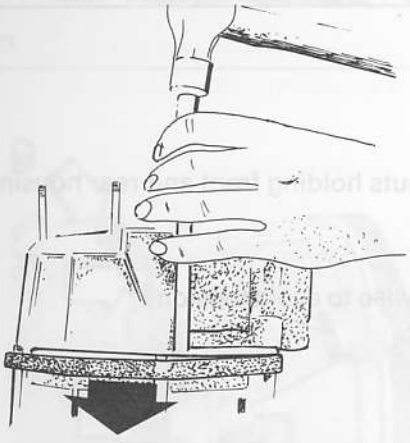
Remove the planetary gear carrier.

Front housing



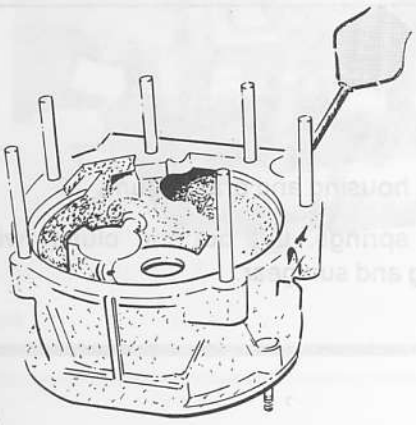
123 552

Remove pump link and pump piston.



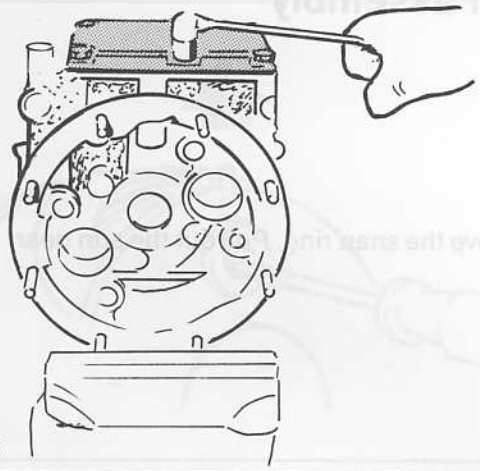
123 553

Use a copper drift to tap loose the brake drum.



123 554

Position the front housing with the front end DOWN.
Connect compressed air to the hole for the solenoid valve. Blow out the pistons.

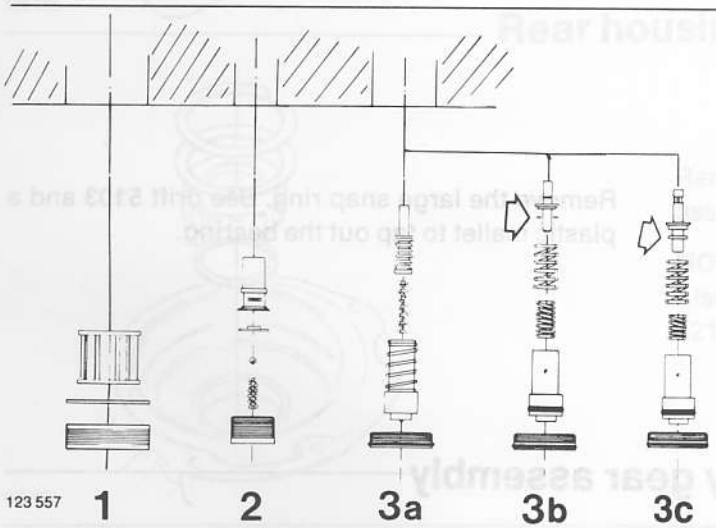


123 555

Clamp the front housing in a vise with soft jaws.
Remove the oil pan.

123 556

Remove the strainer.
Use wrench **2836** to remove the three plugs.

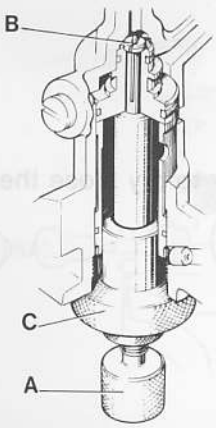


123 557

Remove in order:

1. Oil filter.
2. Check valve with spring, ball and seat.
   Remove pump cylinder.
3. Remove relief valve.
   a. Early production (–75).
   b. Mid-production (76–5/83)
   c. Late production (5/83–)

Note shim (at arrow) for pressure adjustment.

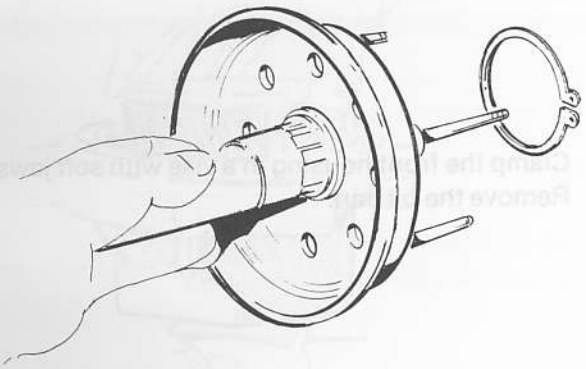


128 731

Use extractor **5183** to pull cylinder and seat.

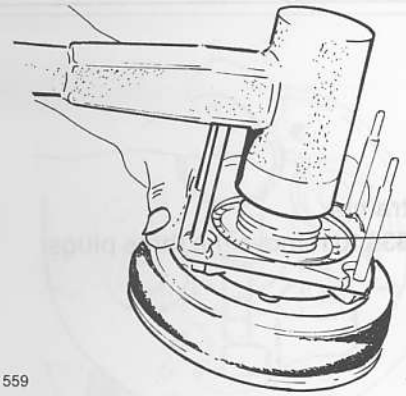
– Screw out the center screw A until the slotted part B can be inserted in the seat.
– Screw in the center screw until tight.
– Screw in nut C until seat and cylinder come loose.

Clutch sliding member assembly



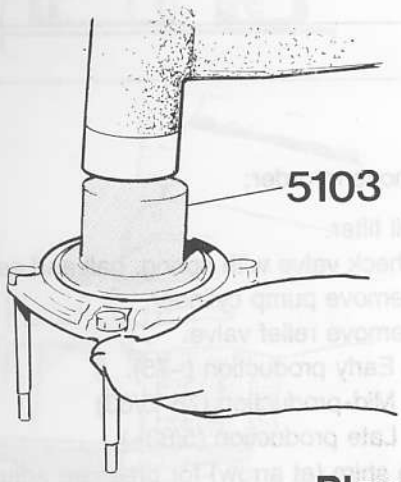
123 558

Remove the snap ring. Pull out the sun gear.



123 559

Remove the snap ring. Use drift **2851** and a plastic mallet to tap out the clutch disc.



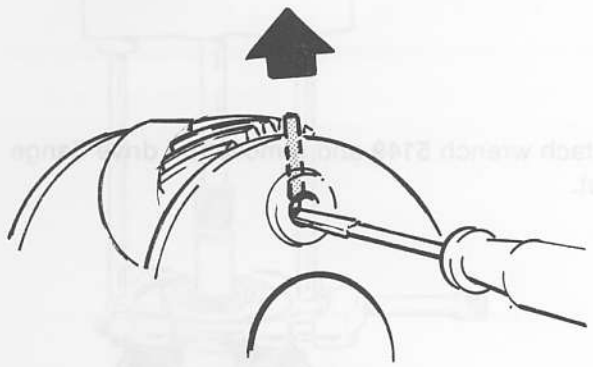
123 560

Remove the large snap ring. Use drift **5103** and a plastic mallet to tap out the bearing.

Planetary gear assembly

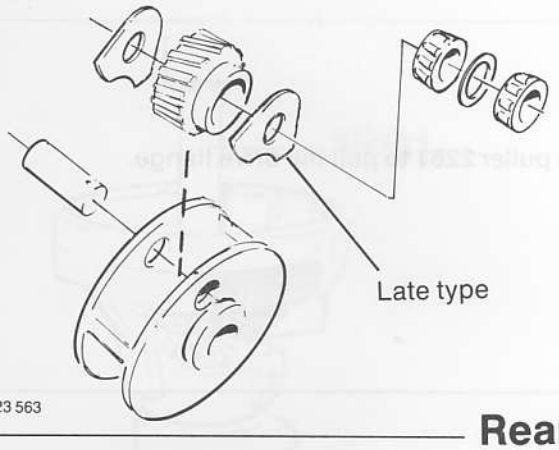
123 561

Use a screwdriver to pry loose the oil slinger.



123 562

Use a screwdriver to pry loose the lock pins.
NOTE:
The pins may have to be drilled out.

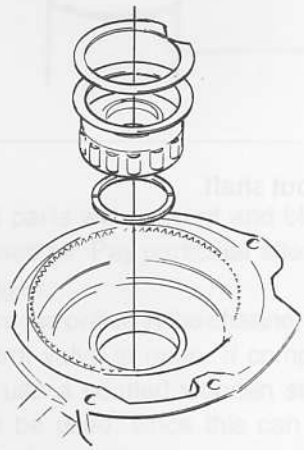


123 563

Remove the gear shafts. Remove planetary gears and thrust washers.

Remove needle bearings and spacers from the planetary gears.

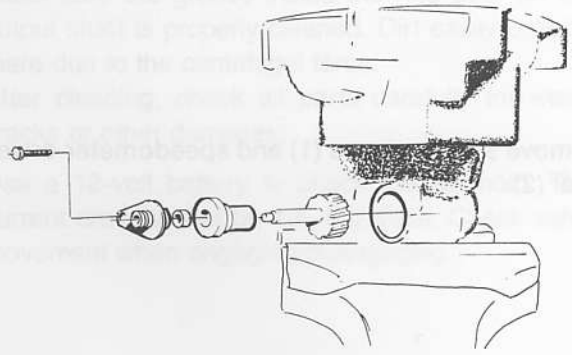
Rear housing



123 564

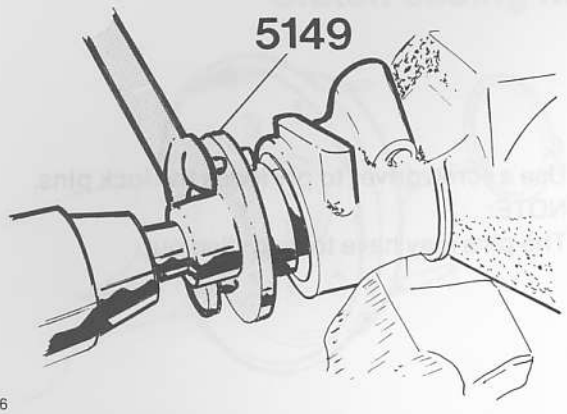
Remove snap ring, oil slinger, one-way clutch assembly and thrust washer.

NOTE:
Also see page 15 for procedures using ring tool 5210 when removing one-way clutch assembly.



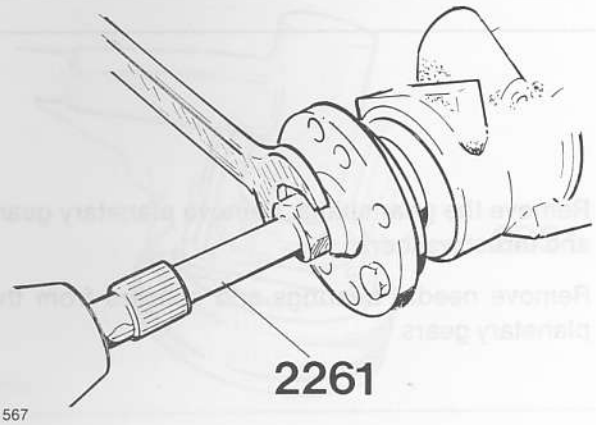
123 565

Remove the speedometer gear assembly.



123 566

Attach wrench **5149** and remove the drive flange nut.

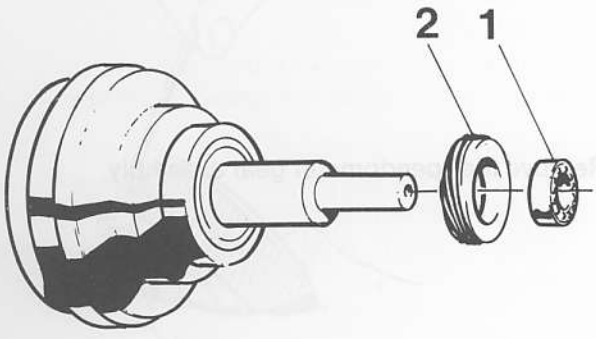


123 567

Use puller **2261** to pull the drive flange.

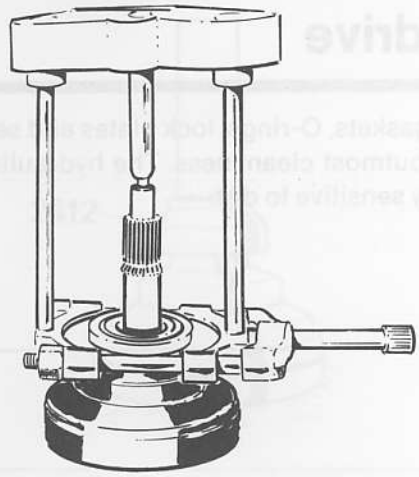
123 568

Press out the output shaft.



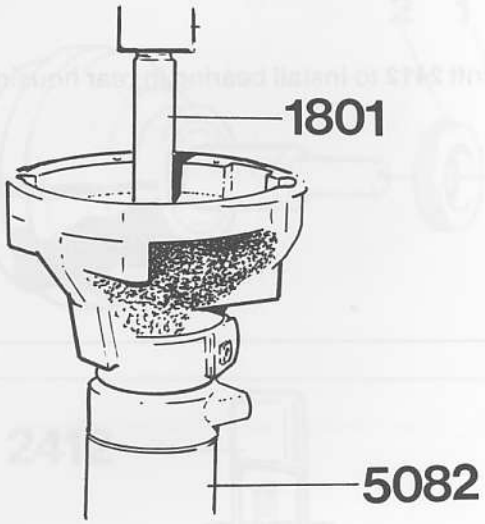
123 569

Remove spacer sleeve (1) and speedometer drive gear (2).



123 570

Pull off the bearing on the output shaft.



123 571

Use drift **1797** and standard handle **1801** when pressing out the bearing in the rear housing.

Use sleeve **5082** to support the housing.

Cleaning and checking

Clean all parts with solvent and blow them dry with compressed air. Pay particular attention to filters and oil passages.
Make sure the orifice in the channel between the relief and control valve is open. If compressed air is not enough, use a pointed wooden stick. Hard objects must not be used, since this can alter the bore of the channel.

Make sure the groove inside the ring gear on the output shaft is properly cleaned. Dirt easily collects there due to the centrifugal force.
After cleaning, check all parts carefully for wear, cracks or other damages.

Use a 12-volt battery to check the solenoid. The current draw should be 1.5–2.0 Volts. Check valve movement when engaging/disengaging.

Make sure filter and strainer are not damaged.
Check the hydraulic system pistons for wear and abrasion.
Check the valves for wear. Make sure the springs are not damaged.
Check all gears and ball bearings for wear.

If a planetary gear has to be replaced, the other two must also be replaced at the same time. Otherwise the planetary gear assembly may cause noise.
For the same reason, both needle bearings for a planetary gear should be replaced at the same time.

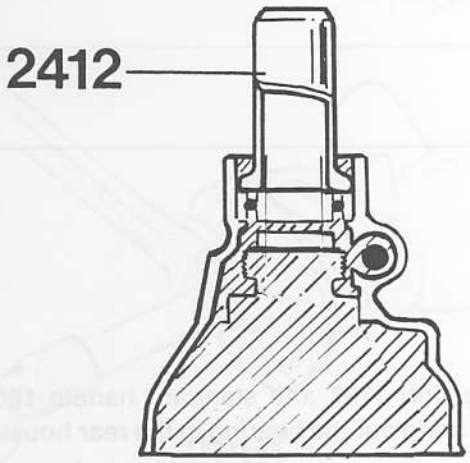
Check the brake drum for scoring, cracks and wear.

Check the clutch disc linings for wear and heat deformations.

Assembling overdrive

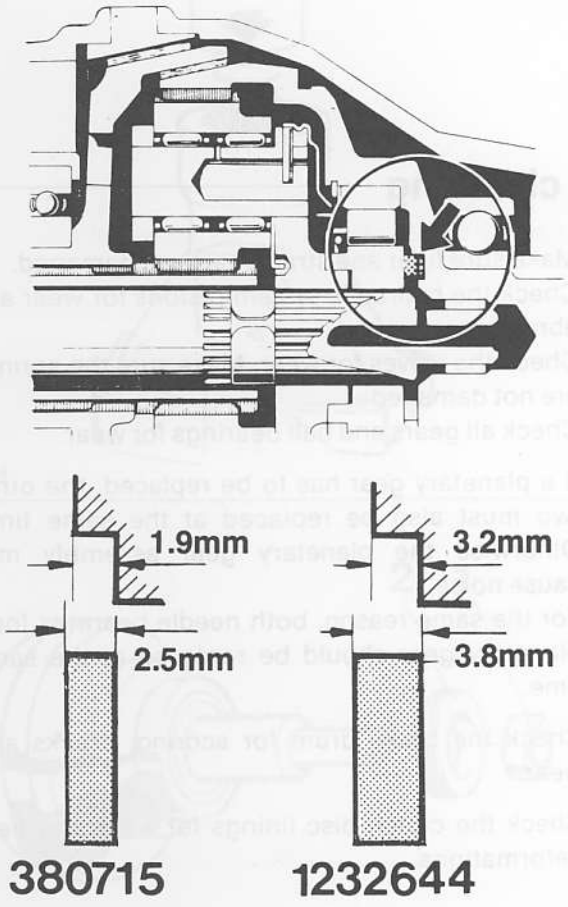
Use new gaskets, O-rings, lock plates and seals. Exercise outmost cleanliness. The hydraulic system is very sensitive to dirt.

Rear housing



123 572

Use drift **2412** to install bearing in rear housing.



129 376

New output shaft

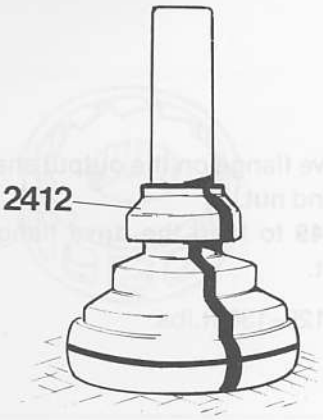
During the 1979 Model production run, a new output shaft and thrust washer were introduced.

To hold the thrust washer between the one-way clutch and output shaft better in position:

- thrust washer thickness was increased from 2.5 mm to 3.8 mm.
- the shaft groove depth was increased from 1.9 mm to 3.2 mm.

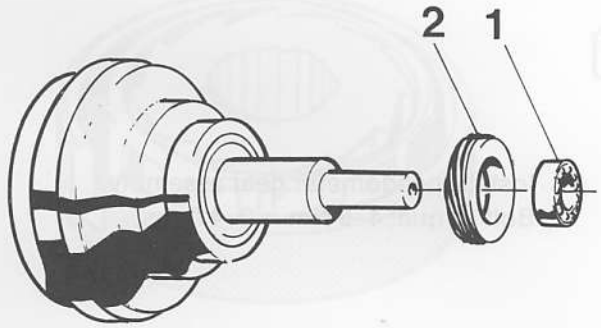
The new thrust washer 1232644-3 is used with the new output shaft 1232646-8.

The old thrust washer 380715-3 is used with the previous type output shafts 380679-1 and 1232105-5.



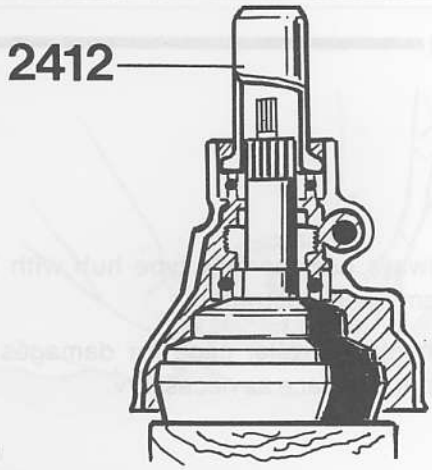
123 573

Use drift **2412** to press the bearing on the output shaft.



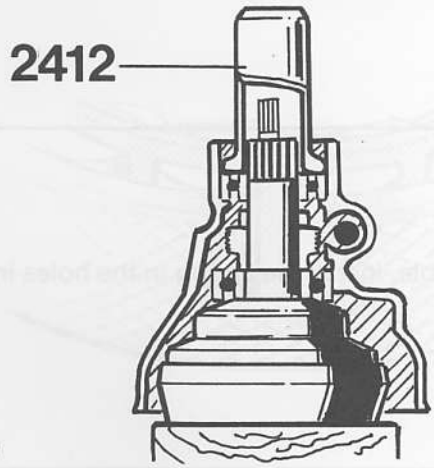
123 569

Install speedometer drive gear (2) and spacer (1) on the output shaft.



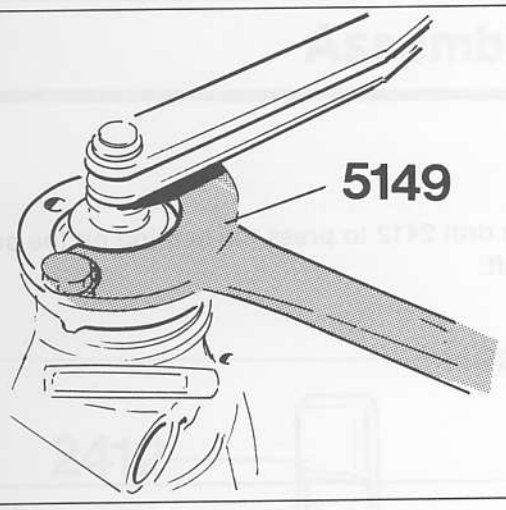
123 574

Use a piece of wood to support the output shaft. Use drift **2412** to press on the rear housing.



123 574

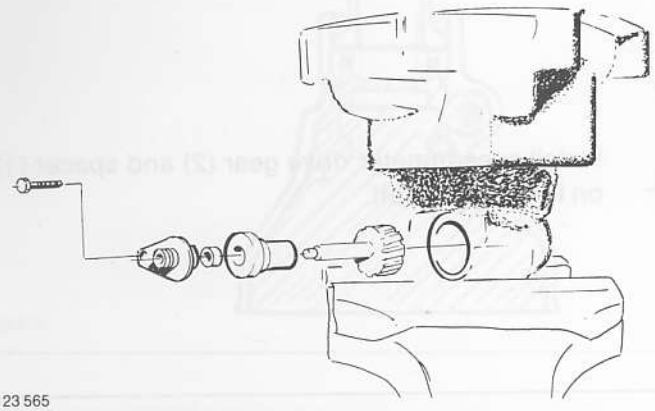
Use drift **2412** to press in oil seal in rear housing.



123 576

Position the drive flange on the output shaft.
Install washer and nut.
Use wrench **5149** to hold the drive flange while torquing the nut.

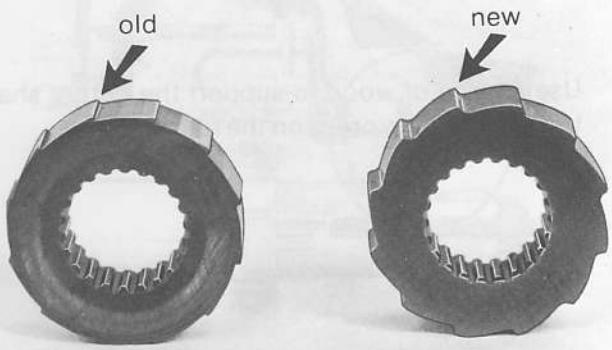
165–180 Nm = 120–130 ft.lbs.



123 565

Install speedometer gear assembly.
Bolt torque: **4–6 Nm** = 3–4 ft.lbs.

One-way-clutch



129 383

Always use the new type hub with high cams, see illustration.

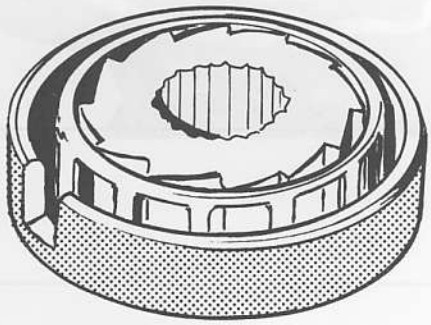
Check the roller cage for damages and wear. Replace as necessary.

114 811

To assemble, install the spring in the holes in the cage.

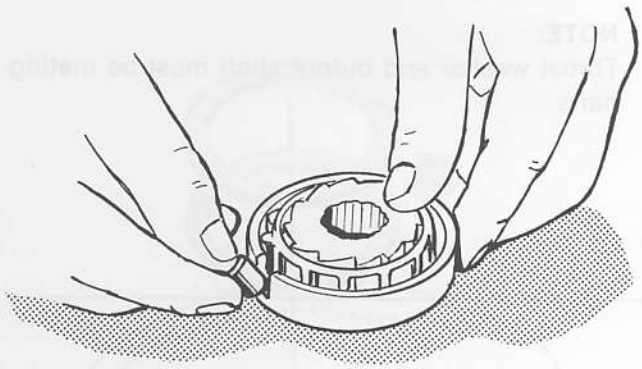
114 811

Install the cam hub correct way, see illustration.



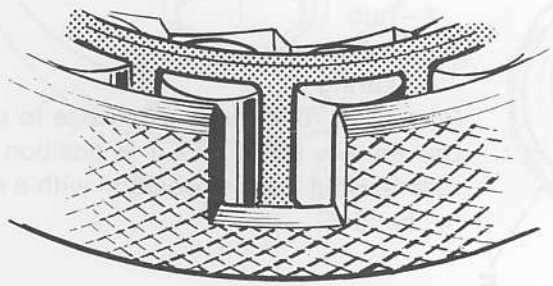
114 812

Install cage and hub assembly in ring tool.



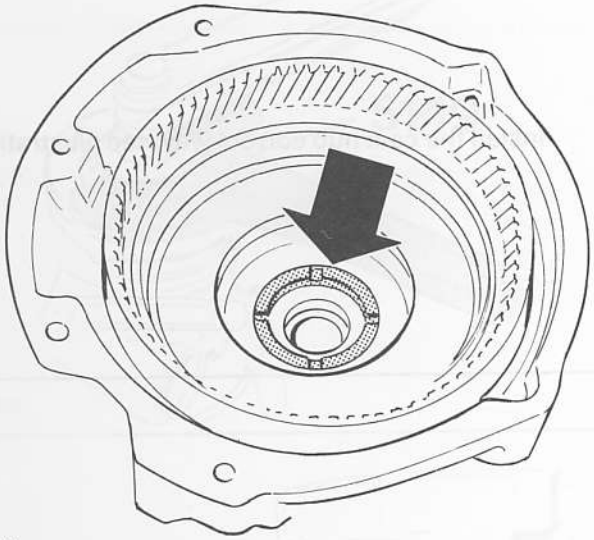
114 816

Turn the cage assembly while installing the rollers.



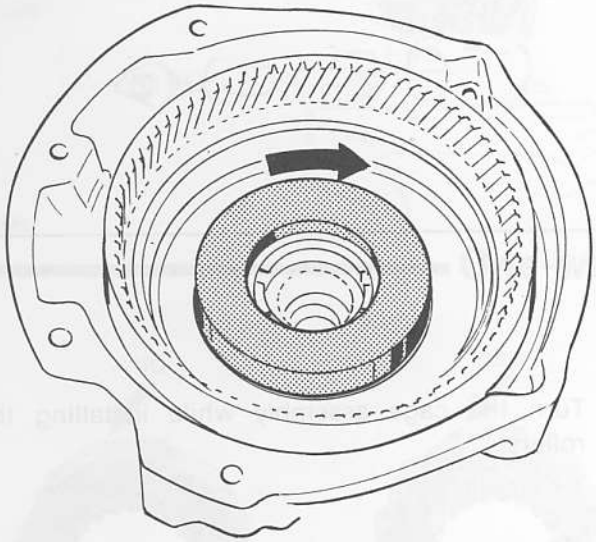
114 813

NOTE:
Position opening in ring tool toward space between rollers as shown.



114 814

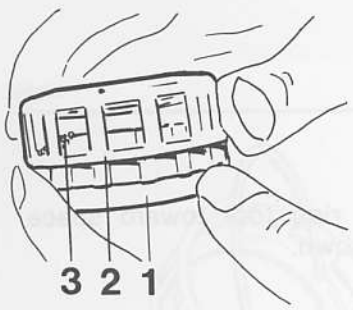
Make sure the thrust washer is properly located. If necessary, use grease to hold it in place.



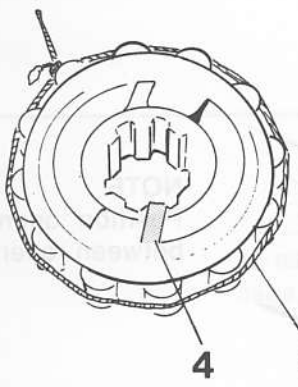
Position ring tool and one-way clutch assembly. Turn one-way clutch hub clockwise while pressing one-way clutch into position.

NOTE:
Thrust washer and output shaft must be mating parts.

Earlier type



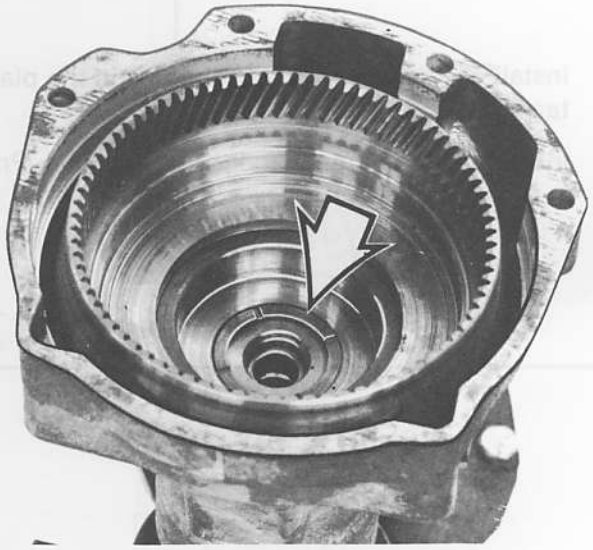
New type



Alternate method:

Assemble the one-way clutch.
1 – hub
2 – roller cage
3 – spring
Rotate the roller cage clockwise to end. Use the key (4) to lock it in position the rollers. Hold them in position with a rubber band (5).

123 577

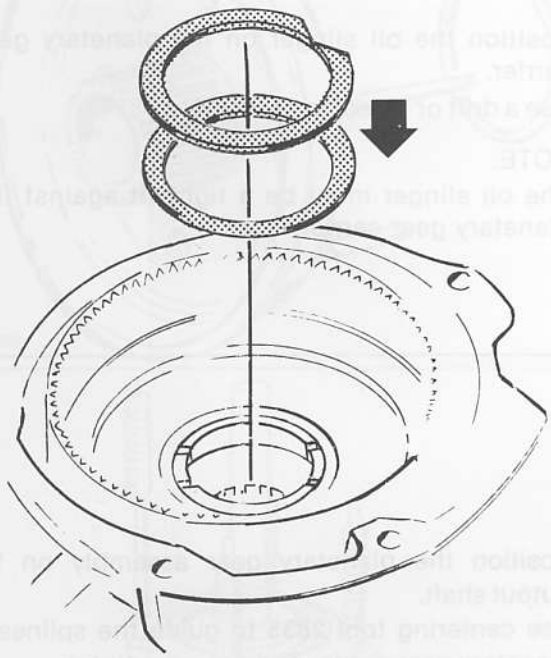


129 393

Alternate method, cont.

Make sure the thrust washer is properly located. Install the one-way clutch. Remove the rubber band.

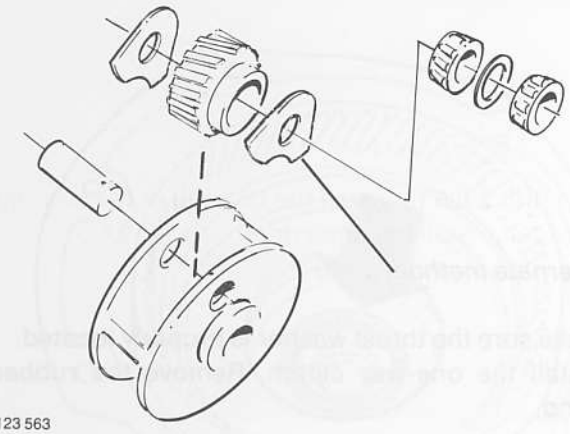
NOTE:
Thrust washer and output shaft must be mating parts.



114 815

Install oil slinger and snap ring.

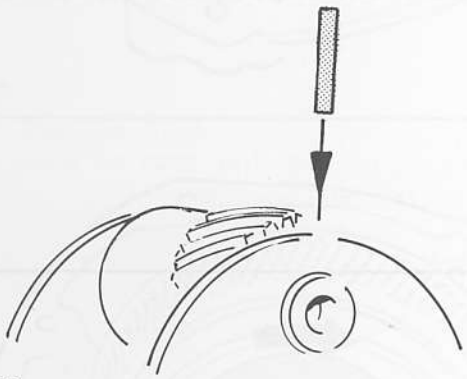
Planetary gear assembly



123 563

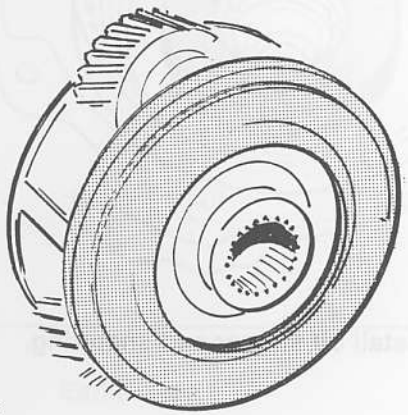
Install needle bearings and spacers in the planetary gears.

Install planetary gears and thrust washers. Press in the shafts.



123 578

Install the locking pins.



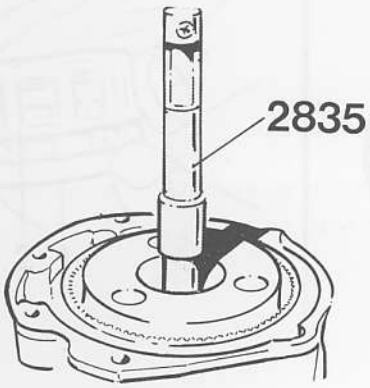
123 579

Position the oil slinger on the planetary gear carrier.

Use a drift or chisel to secure it.

NOTE:

The oil slinger must be a tight fit against the planetary gear carrier.

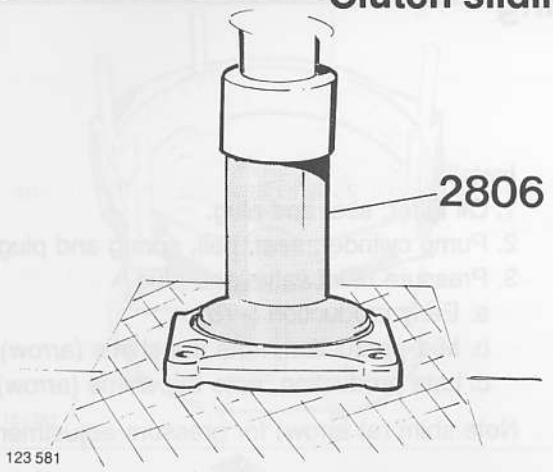


123 580

Position the planetary gear assembly on the output shaft.

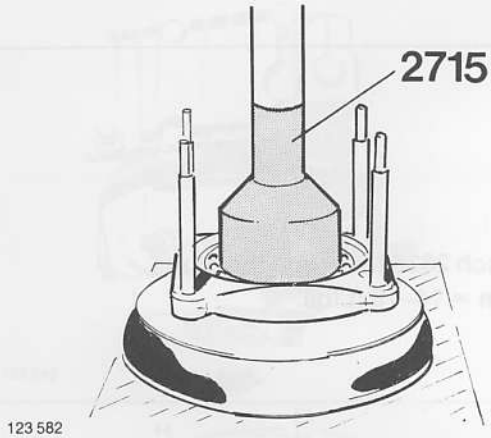
Use centering tool **2835** to guide the splines in planetary gear carrier and one-way clutch.

Clutch sliding member assembly



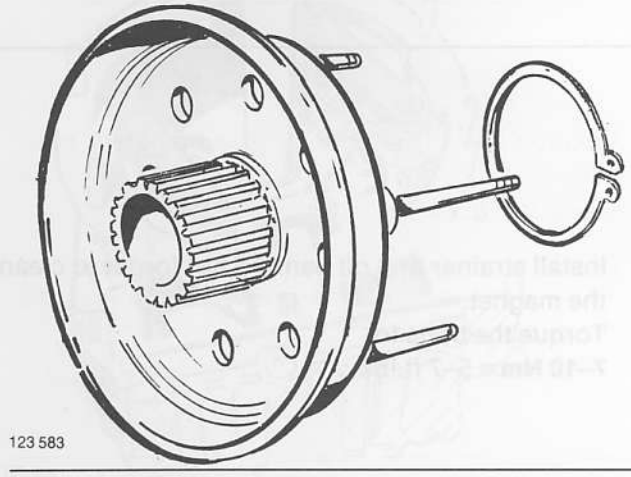
123 581

Use drift **2806** to install the bearing in the bearing retainer. Install the snap ring.



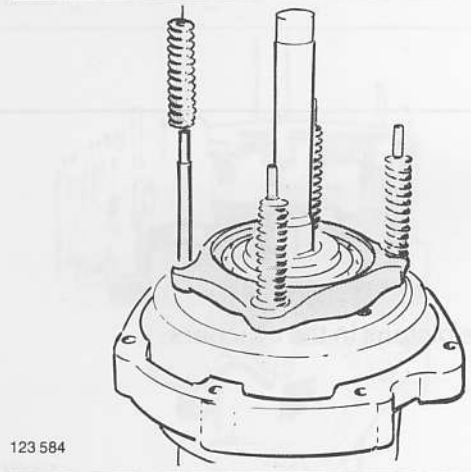
123 582

Install the bolts. Use drift **2715** to press on bearing and retainer assembly.



123 583

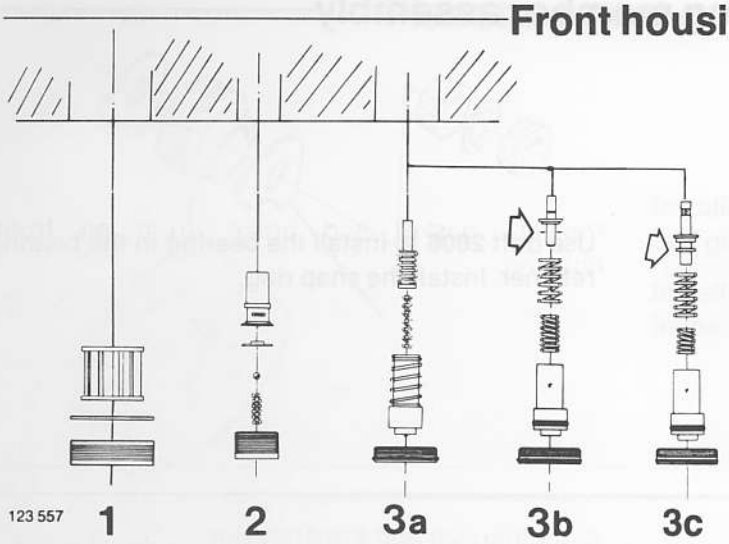
Position the sun gear in the clutch disc. Install the snap ring.



123 584

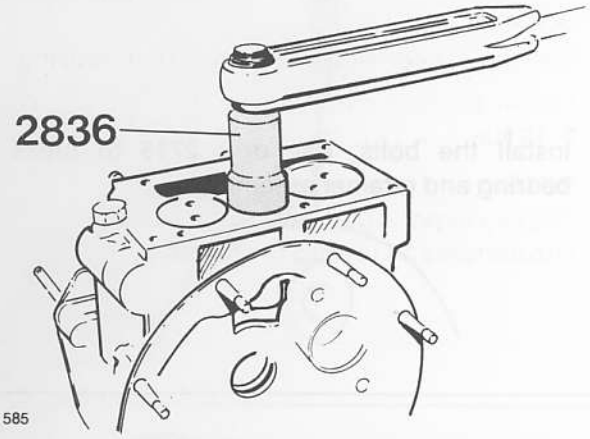
Position the clutch assembly on the output shaft. Install the springs.

Front housing

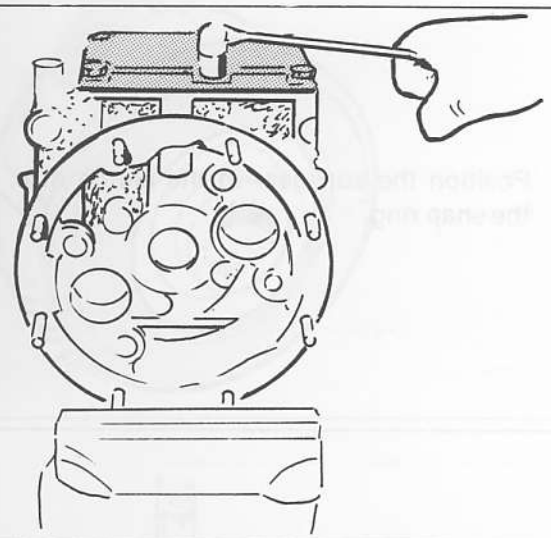


Install:
1. Oil Filter, seal and plug.
2. Pump cylinder, seat, ball, spring and plug.
3. Pressure relief valve and plug.
   a. Early production (–75)
   b. Mid-production, note the shims (arrow).
   c. Late production, note the shims (arrow).

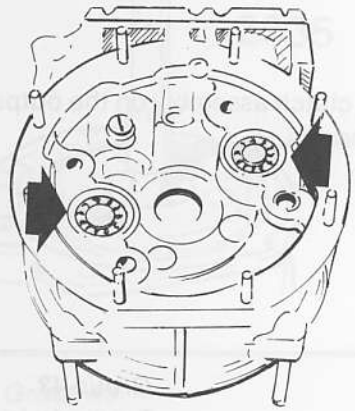
Note shim (at arrow) for pressure adjustment.



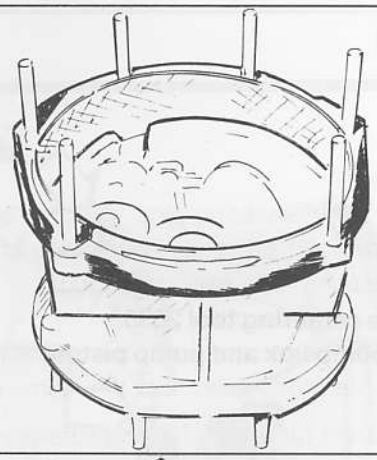
Use wrench **2836** to torque the plugs.
19–24 Nm = 14–18 ft.lbs.



Install strainer and oil pan. Do not forget to clean the magnet.
Torque the bolts to:
7–10 Nm = 5–7 ft.lbs.

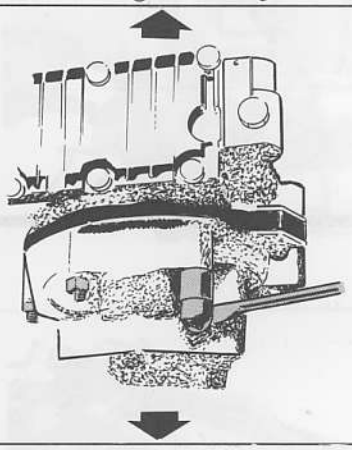


Position the pistons in the cylinders.



123 587

Position gasket and brake drum on front housing.



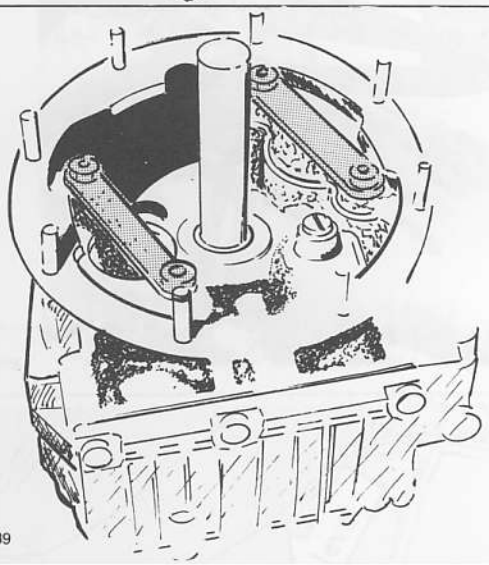
123 549

Assemble rear and front housing.

NOTE:
Gasket between brake drum and rear housing.

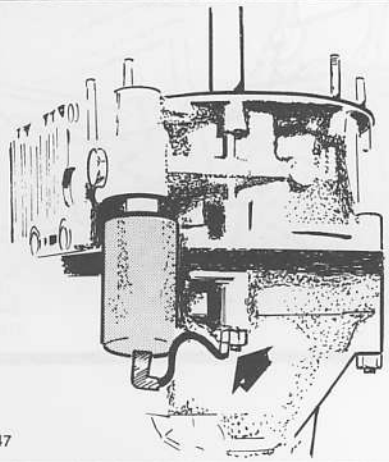
Torque the nuts crosswise to:
7–16 Nm = 5–12 ft.lbs.

NOTE:
The two upper studs have nylon seals.
The narrow end toward the housing.



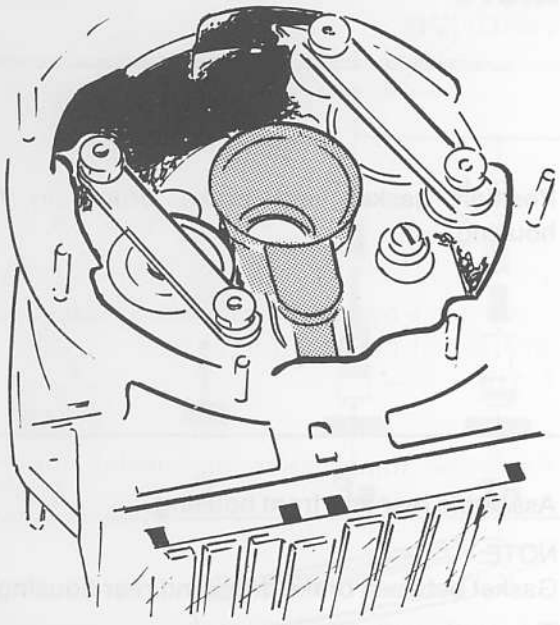
123 589

Install the bridges and tighten the nuts.
7–16 Nm = 5–12 ft.lbs.



123 547

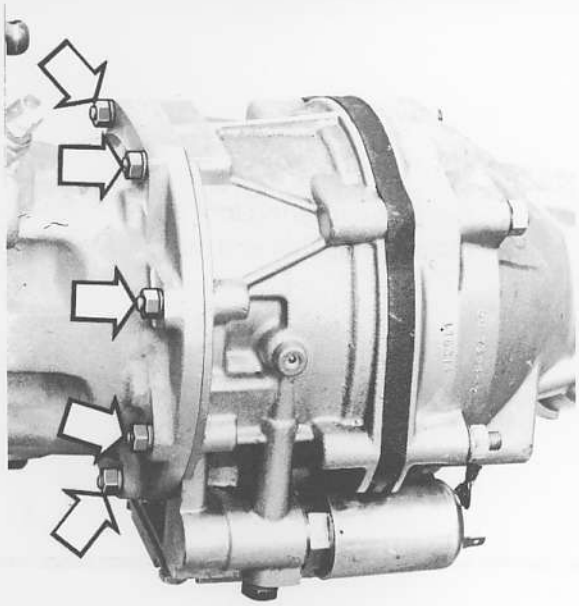
Install solenoid and ground wire.
Torque the solenoid to:
42–55 Nm = 30–40 ft.lbs.



123 590

Remove centering tool 2835.
Install pump link and pump piston.

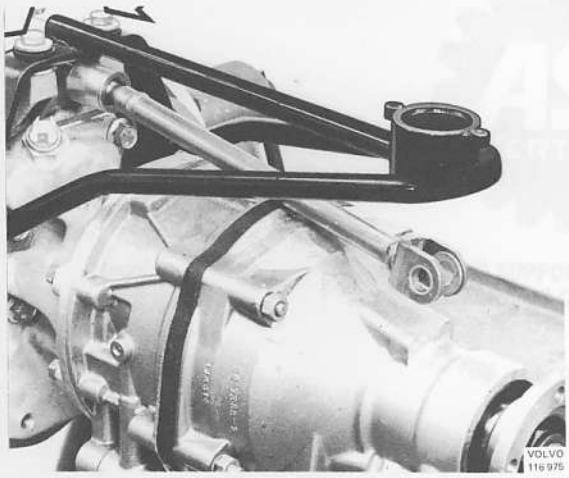
Installing overdrive



116 978

1.
Position the overdrive on the transmission output shaft. Install the nuts. Torque to:
7–11Nm = 5–8 ft.lbs.

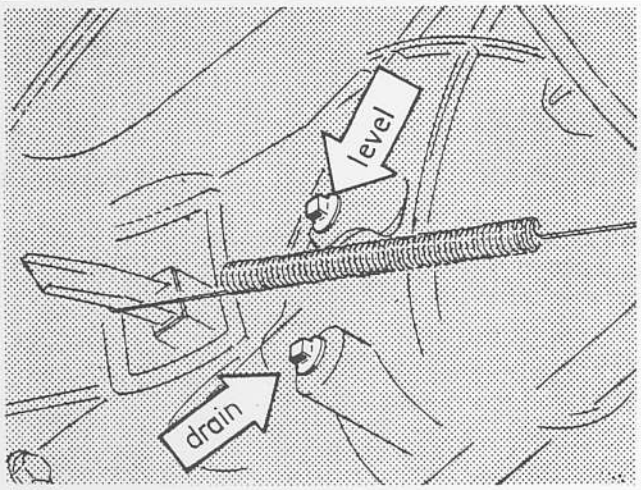
2.
Raise the transmission and install the cross member.



116 975

3.
Reconnect the wires at the solenoid.

4.
Reconnect the drive shaft.



124 012

5.
Fill with oil to plug hole level.
M41: SAE 80W/90
M46: Automatic Transmission Fluid

6.
Recheck oil level after driving approx. 10 miles = 15 km.

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