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MERCEDES 722.3 AND 722.4

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INTRODUCTION

MERCEDES 722.3 722.4

Mercedes introduced the 722 models in 1980. The 722.3 is found in most models and the 722.4 was first found in the 190 vehicles. This manual covers the difference between these units in the valve body and governor. The basic components, the pump, gear sets, drums, clutches, bands are the same. This manual covers both the original manufacturers information along with some of the changes and updates. We thank Mercedes Benz for the information and illustrations that have made this booklet possible.

The information and part numbers contained in this booklet have been carefully compiled from industry sources known for their reliability, but ATSG does not guarantee its accuracy.

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MERCEDES 722.3 722.4

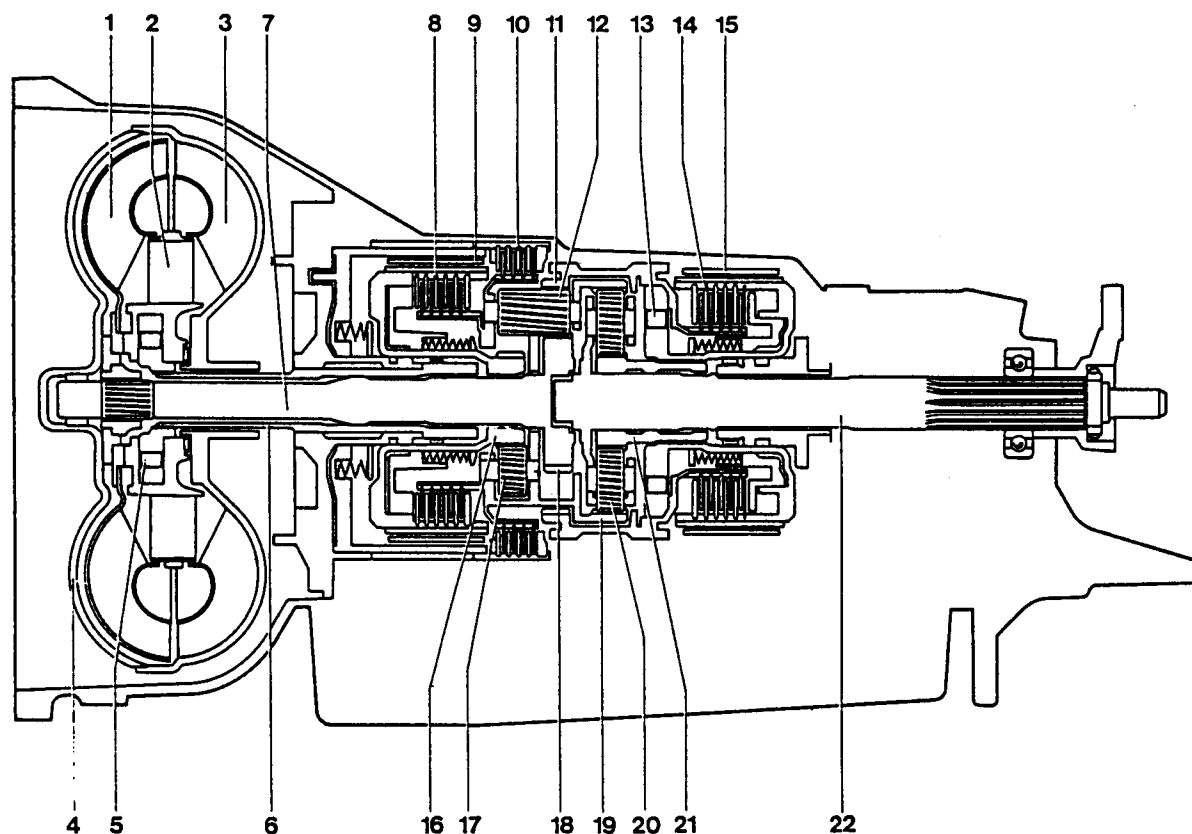


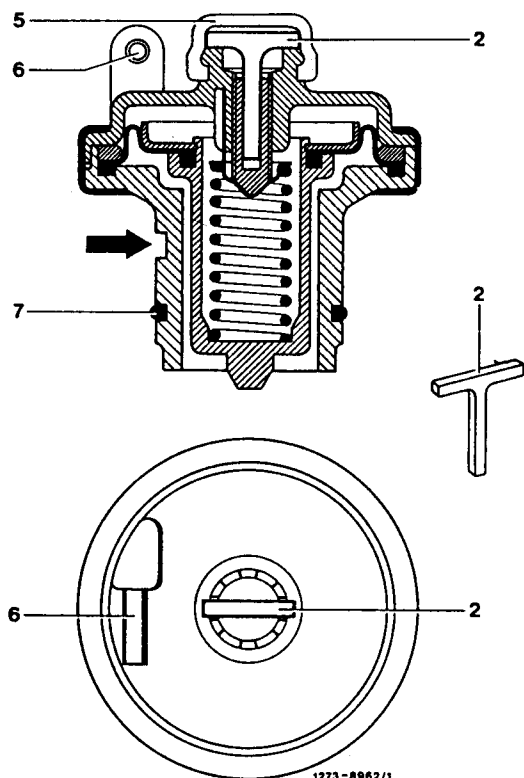
Fig. 368

- | | |
|--|---|
| 1 Turbine wheel | 12 Wide planet pinion (Ravigneaux planetary unit) |
| 2 Impeller | 13 One-way clutch F |
| 3 Pump wheel | 14 Clutch K 2 |
| 4 Converter cover | 15 Brake band B 2 |
| 5 Converter one-way clutch | 16 Small sun gear (Ravigneaux planetary unit) |
| 6 Stator shaft | 17 Narrow planet pinion (Ravigneaux planetary unit) |
| 7 Input shaft | 18 Large sun gear (Ravigneaux planetary unit) |
| 8 Clutch K 1 | 19 Ring gear behind planetary unit |
| 9 Brake band B 1 | 20 Planet pinion rear planetary unit |
| 10 Disc brake B 3 | 21 Sun gear rear planetary unit |
| 11 Ring gear (Ravigneaux planetary unit) | 22 Output shaft |

Speed	B 1	B 2	B 3	K 1	K 2	F	Reduction
1		X			(X)	X	3.68
2	X	X					2.41
3		X		X			1.44
4				X	X		1
R			X		(X)	X	5.14

(X) K 2 bridges the one-way clutch during deceleration (coasting).

TEST CONNECTIONS



- 2-Adjusting Key
- 5-Rubber Cap
- 6-Vacuum Connection
- 7-O-ring

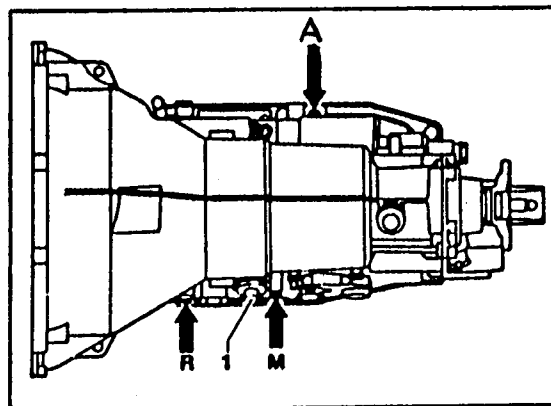
A pressure pin for transmitting the movement of the vacuum diaphragm is no longer installed. The vacuum control unit acts directly on the modulating pressure regulating valve.

CAUTION

The vacuum control unit is installed in two versions having two different diaphragm diameters. For identification, the plastic cover of the vacuum control unit is color coded.

The table on the following page shows the combination of the vacuum control unit and transmission.

For testing the pressure values which are important for operation and diagnosis, the transmission has three test connections. The test connection can be used to test the modulating pressure.



- A-Working pressure
- M-Modulating pressure
- R-Governor pressure
- 1-Vacuum control unit

The modulating pressure must be measured at 50 km/h (30 mph) and the vacuum line pulled off in the "D" selector position.

Measuring the working pressure is required and significant in specific cases only ie., if there is no positive power connection. Measuring serves essentially as an operational check-up for the primary pump.

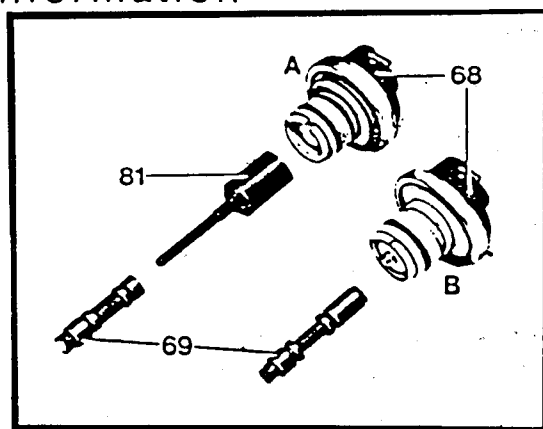
As before, the governor pressure should be tested while driving at the specified speed.



Technical Service Information

Vacuum control unit version "B" has been installed up to February 1981. Starting February 1981 the vacuum control unit with the thrust pin for heat expansion compensation version "A" is installed.

Update to the late version on overhaul



TRANSMISSION

722.300, 722.302, 722.305
722.306, 722.307, 722.308
722.309, 722.311, 722.313
722.301, 722.304,
722.310, 722.312

VACUUM CONTROL UNIT COLOR CODE

red 722.400

722.301, 722.304, 722.310
722.312, 722.315
722.300, 722.301, 722.304
722.312, 722.303

green

722.310
722.300

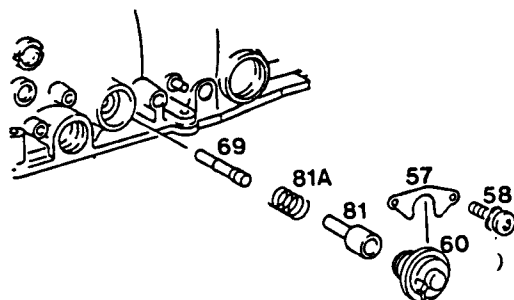
white 722.402

722.310
722.312

blue

722.310
722.312

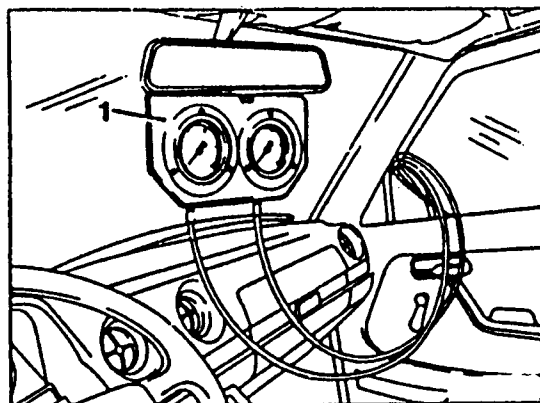
brown



57-Holding plate (two sizes)
58-Hex screws
60-Vacuum control unit
69-Modulating pressure control valve
81-Thermal thrust pin

NOTE

To measure the operating pressure, modulating pressure and governor pressure, position the pressure hoses through right front door window and roll up the window to hold in place. The pressure hoses should not sag or touch the exhaust pipe



Measuring modulator pressure

1 Disconnect vacuum line (10) on vacuum control unit (60).

2 Operate vehicle approx. 50 km/h with the selector lever in position "D" and read off pressure value.

Ajustment of modulator pressure

3 Remove rubber cap on vacuum control unit.

4 Pull retaining plate (2) out of retaining slots until it can be turned.

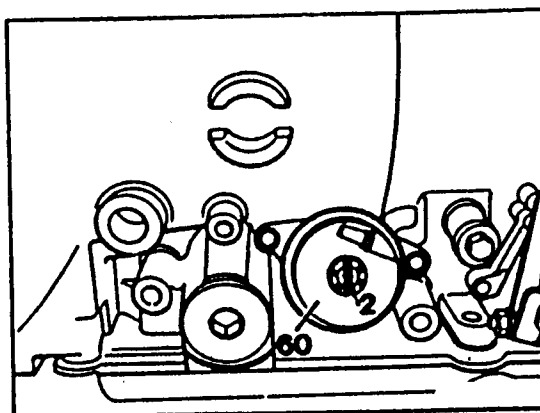
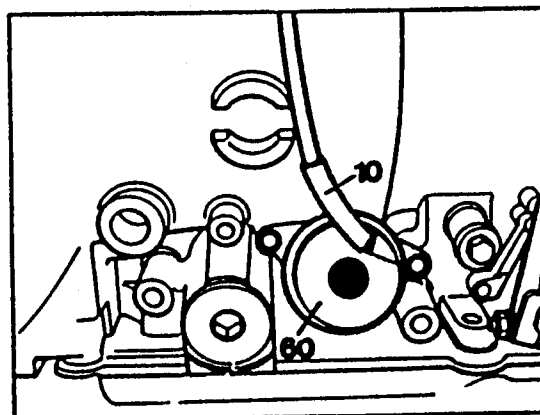
5 The adjustment screw in the vacuum control unit can then be adjusted with the retaining plate. One rotation of the adjustment screw changes the pressure approx. 0.4 bars.

6 After adjusting the adjustment screw, press the retaining plate back into the retaining slots.

7 Reinstall rubber cap on vacuum control unit (60)

8 Measure modulating pressure again

9 Reattach vacuum line (10)



MEASURING OPERATING PRESSURE

10 Disconnect vacuum line on vacuum control unit

11 Start engine and allow to run at approx 1000 rpm and read off pressure value with selector lever in "D".

Note operating pressure cannot be adjusted,

MEASURING GOVERNOR PRESSURE

Operate vehicle on road test at speeds specified in tables and read off pressure values. If no governor pressure is indicated on gauge, remove governor and clean.

If all the pressure values deviate from the values specified in the tables, replace the governor.

NOTE FOR VEHICLES WITH CATALYTIC CONVERTER.

On vehicles with shift point increase feature unscrew the pressure oil line on the test connection for the governor pressure.

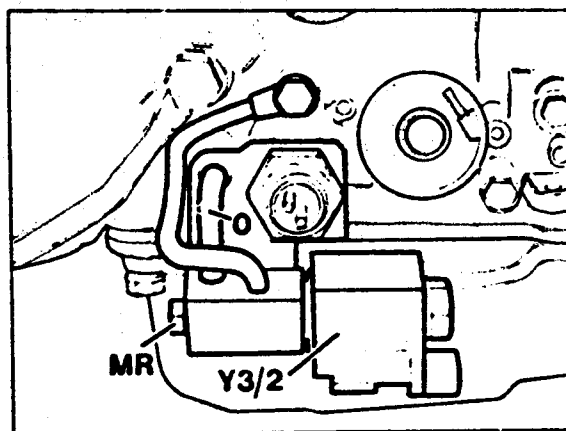
INSTALLATION NOTE

First tighten pressure oil line (MR), then oil line (O) and holder for switch-over valve (Y3/2).

O Return line oil sump

MR Test connection, Governor Press.

Y3/2 Switch-over valve shift pt. increase

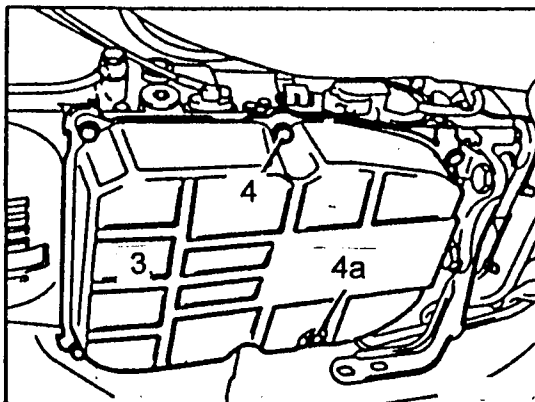


REMOVAL,INSTALLATION

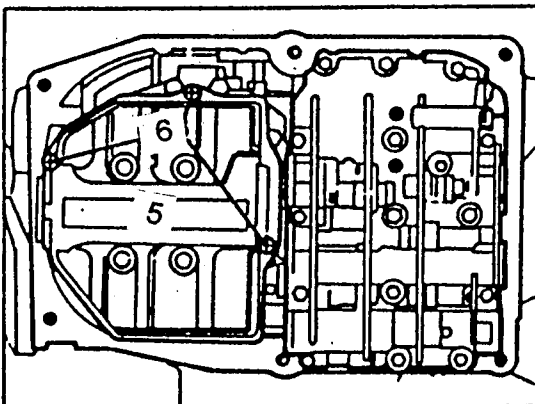
1 Screw out drain plug (4a) and drain fluid.

2 Screw out mounting screws (4) and remove oil pan (3)

INSTALLATION NOTE;
Tightening Torque drain plug 14 Nm
Pan bolts 8Nm.



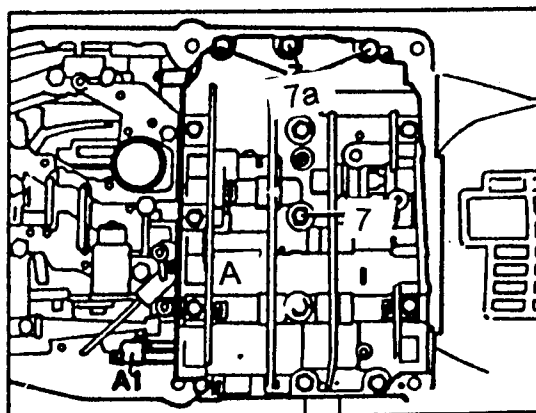
3 Screw out phillips screws (6) and remove oil filter.



4 Move selector lever to "D" position.

5 Screw out mounting screws (7) and (7a) and remove shift valve housing (A).

INSTALLATION NOTE
Tightening Torque 8 Nm

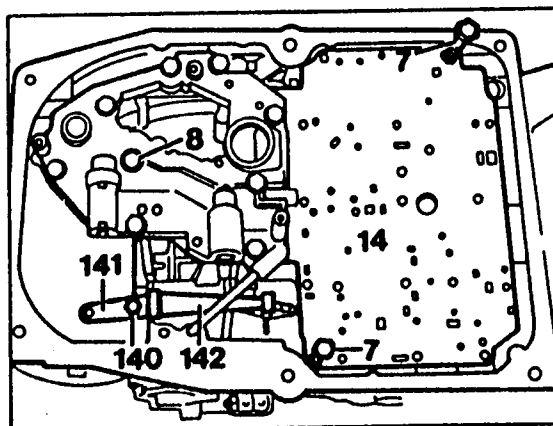
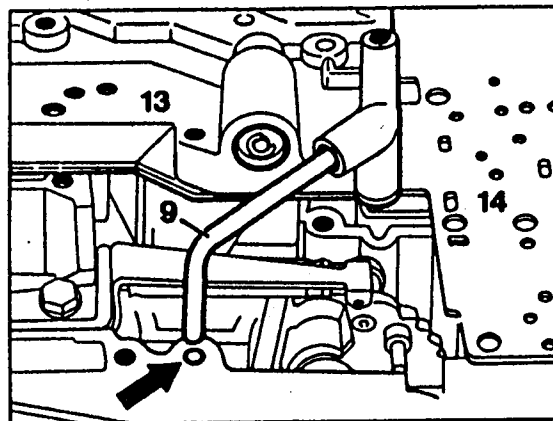


Valve Body

INSTALLATION NOTE:

Install oil pipe (9) into bore (arrow).

Insert bolts with washers (8) but do not tighten. Screw in two screws (7) to locate the intermediate plate (14). Tighten bolts with washers (8) to 8 Nm. Attach leaf spring (142) with bracket (141) and tighten screw (140) to 8 Nm. Ensure that the locating pin for the bracket is correctly inserted.

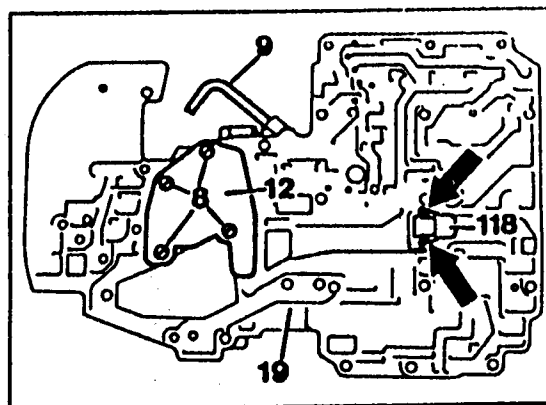


6-Push both tabs (arrows) of injector together (118) and remove injector.

7-Pull out oil pipe (9).

8-Unscrew retaining bolts (8) and remove cover plate (12) with intermediate plate.

9-Detach gasket (19) from intermediate plate.



Installation note:

Affix gasket (19) to intermediate plate. Tightening torque 8 Nm.

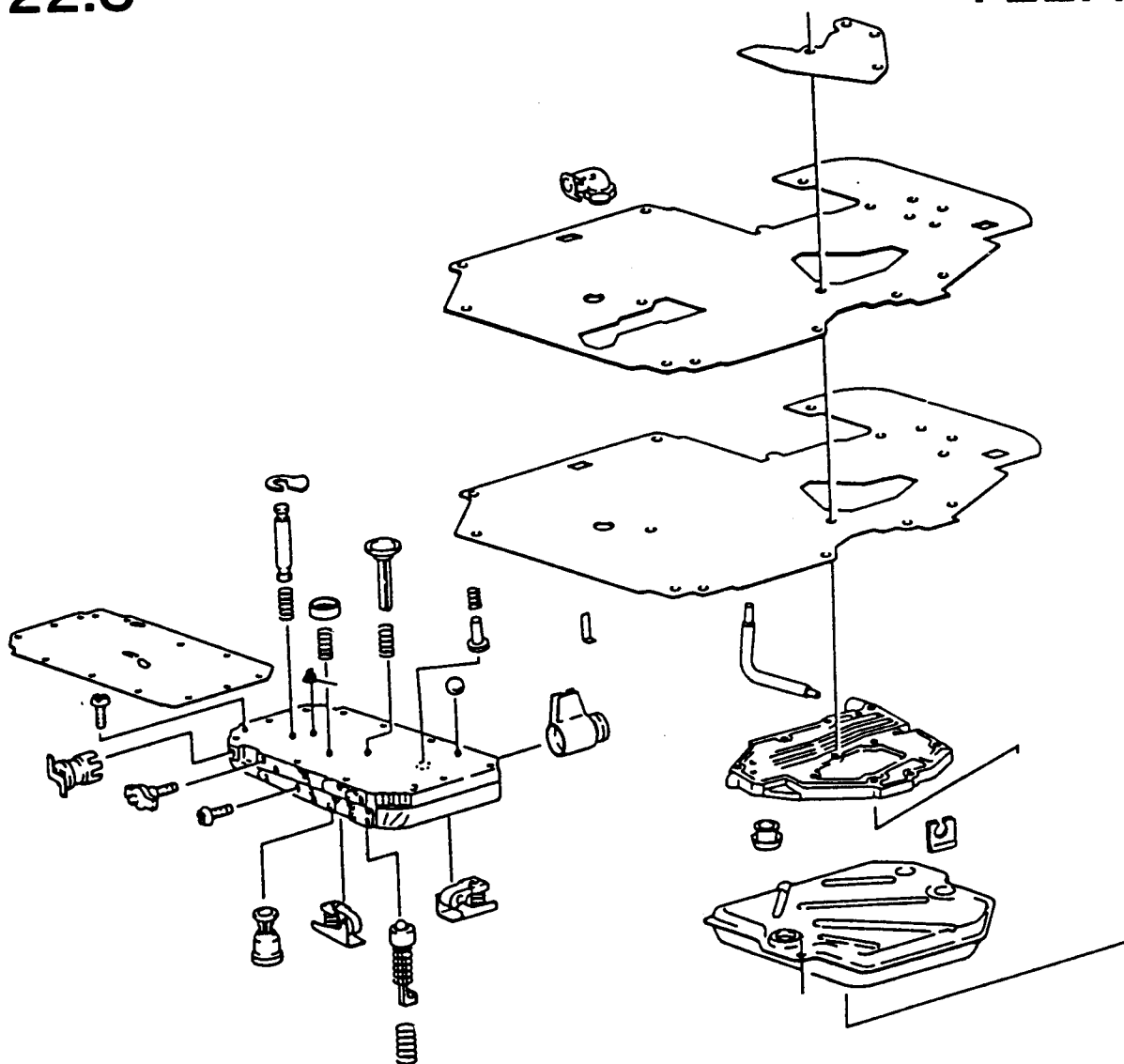
10-Dismantle and assemble lower cover, check parts.



Valve Body

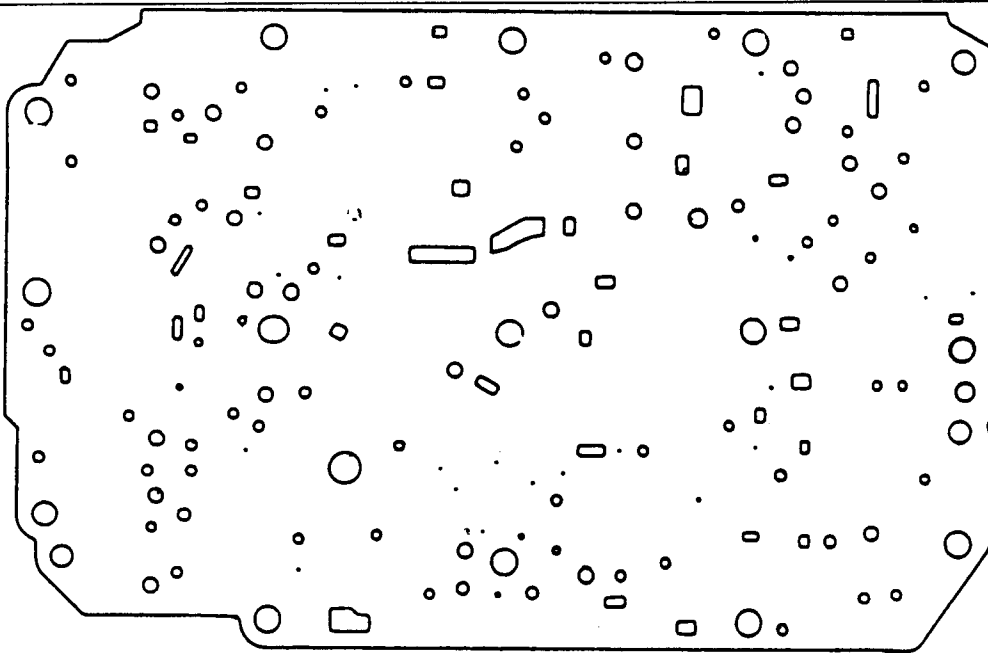
722.3

722.4

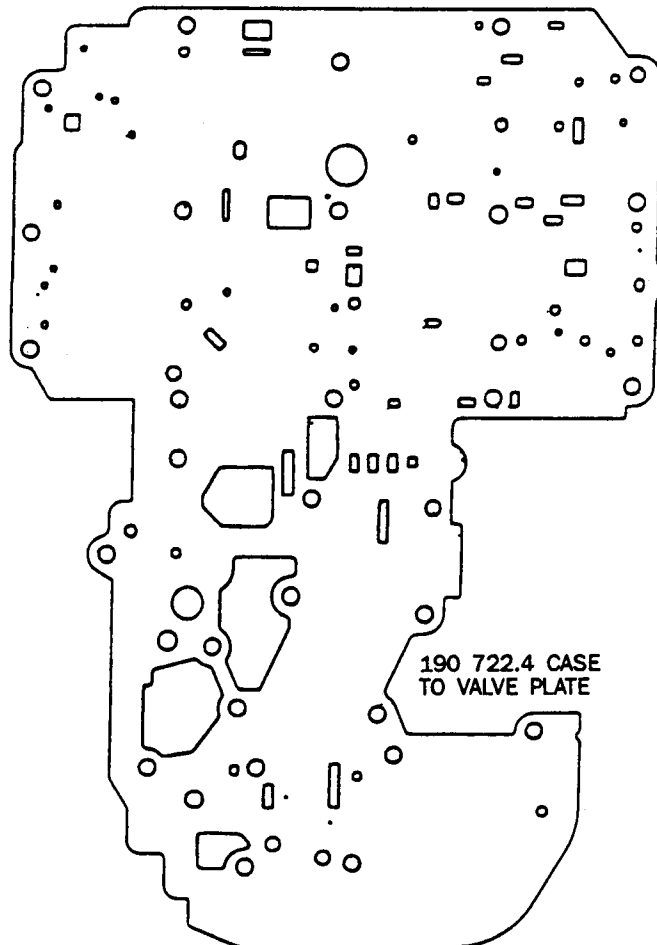
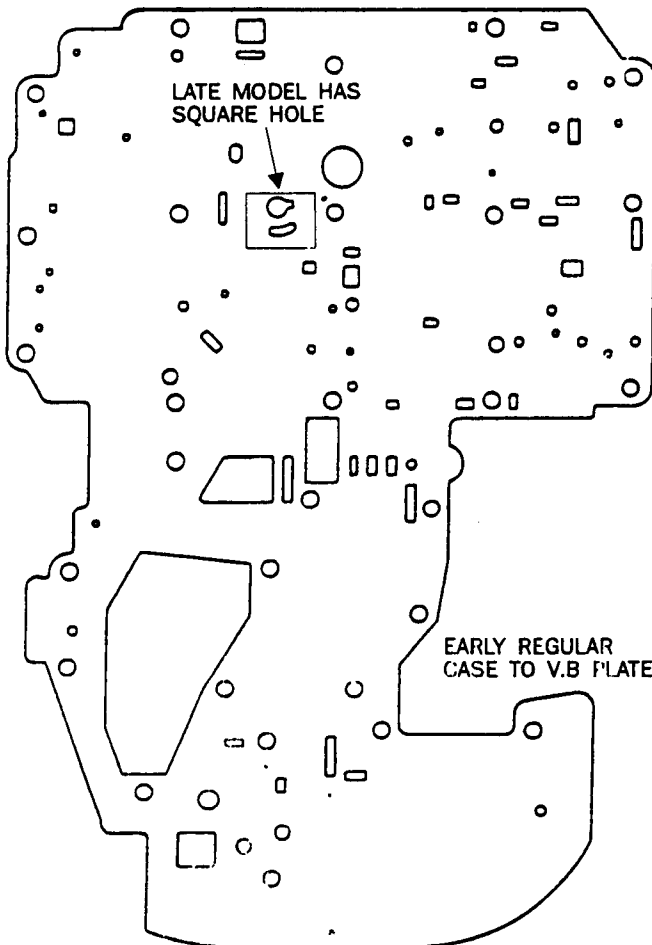




Technical Service Information



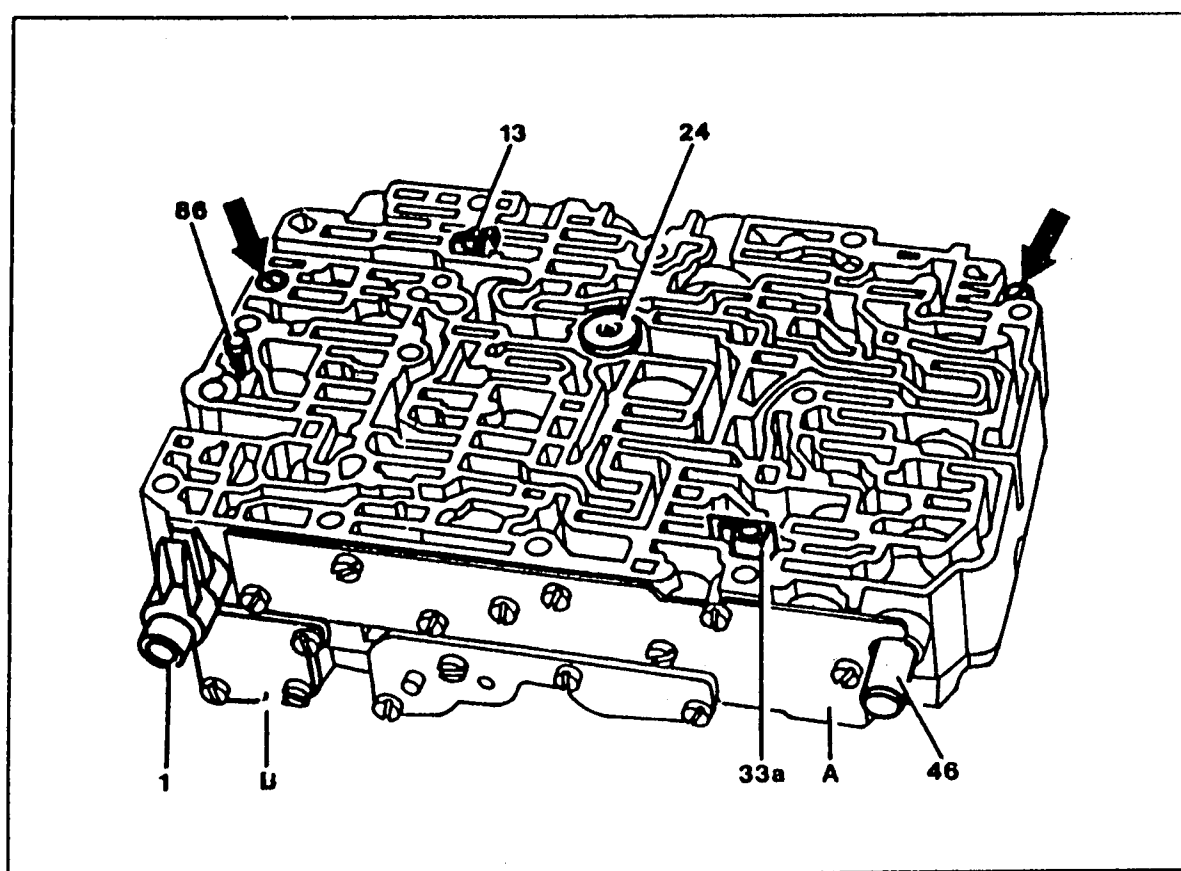
REGULAR 722 .1, 2, 3 UPPER TO
LOWER V.B. SPACER PLATE



VALVE BODY TEARDOWN AND ASSEMBLY

Observe cleanliness when working with the valve body. Do not use fuzzy rags because this can cause hanging of valve and cross leaks. remove screws indicated by arrows, remove valves (13,24,86) and retainer (33a).

INSTALLATION NOTE;
Tighten screws lightly so that housings are able to move so as to install all the screws. Insert valves (13,24,86) and retainer (33a) in housing.

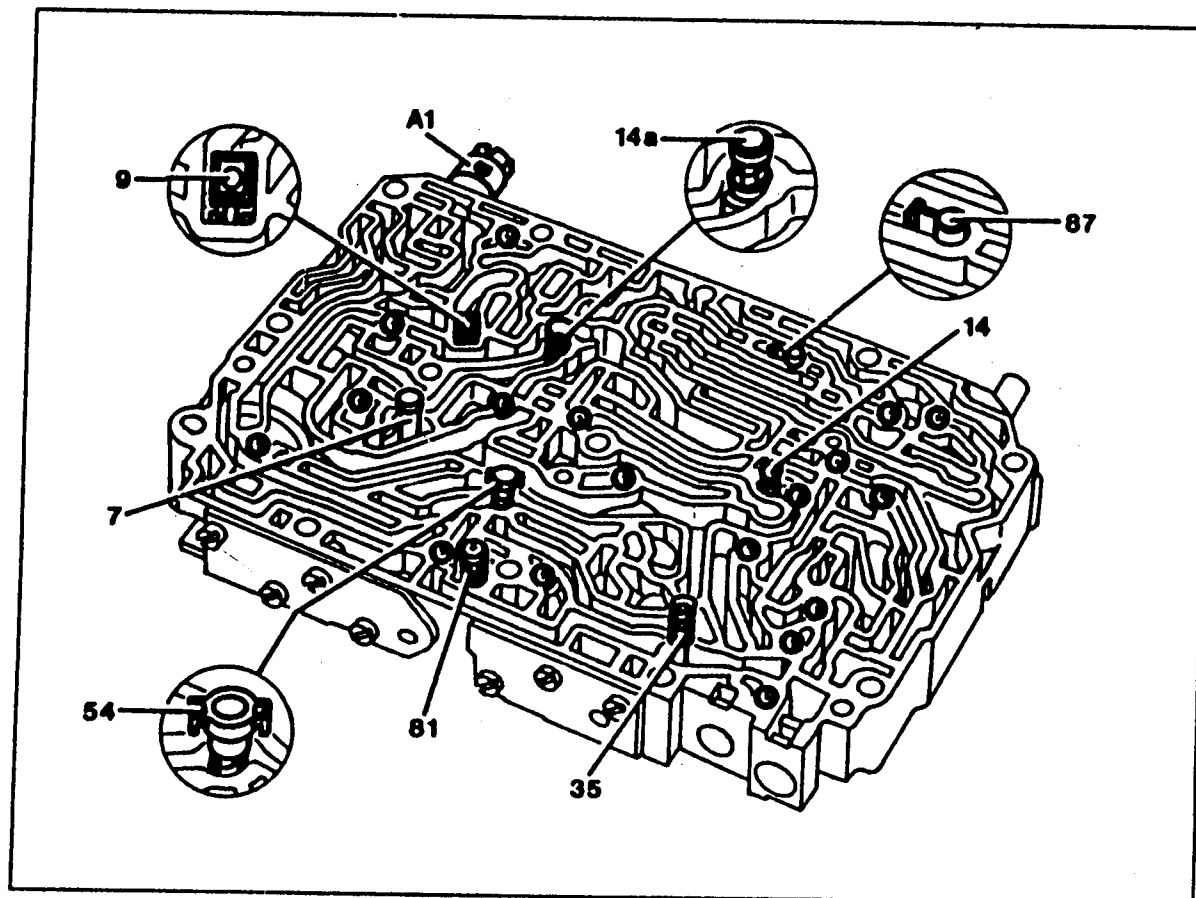
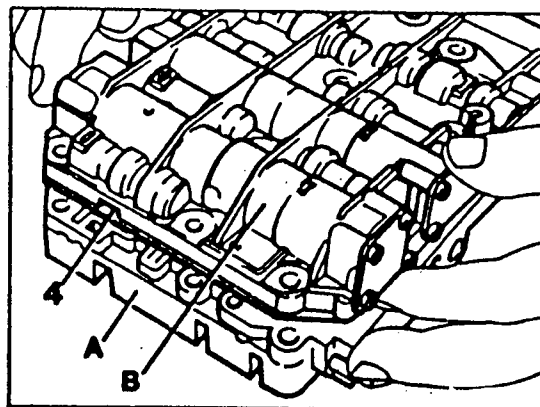


- | | | | |
|----|-----------------------------|-----|---------------------------|
| 13 | Plate check valve with bore | 33a | clamped retainer B2 valve |
| 24 | Check valve-primary pump | 86 | Drain Valve LB3 |

Carefully lift damper housing (B) together with separator plate (4).

Remove all 19 check balls (14). The valve ball marked with 14 is positioned on a conical spring.

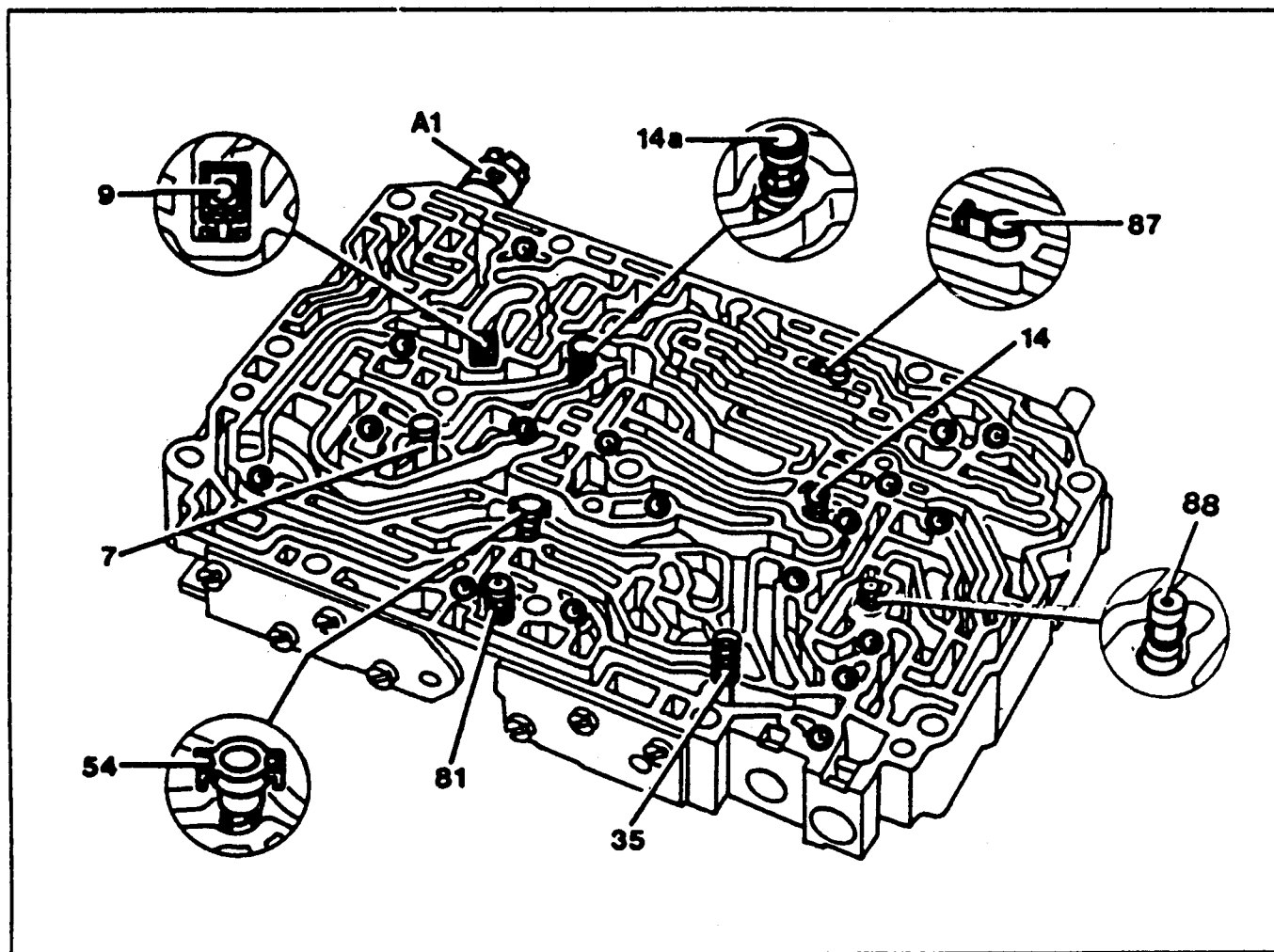
Remove valves, filter and shift pin.



A1 Manual Valve
 7 Shift valve K1
 9 Check valve (white)
 14 check balls (19)
 14a Pressure valve

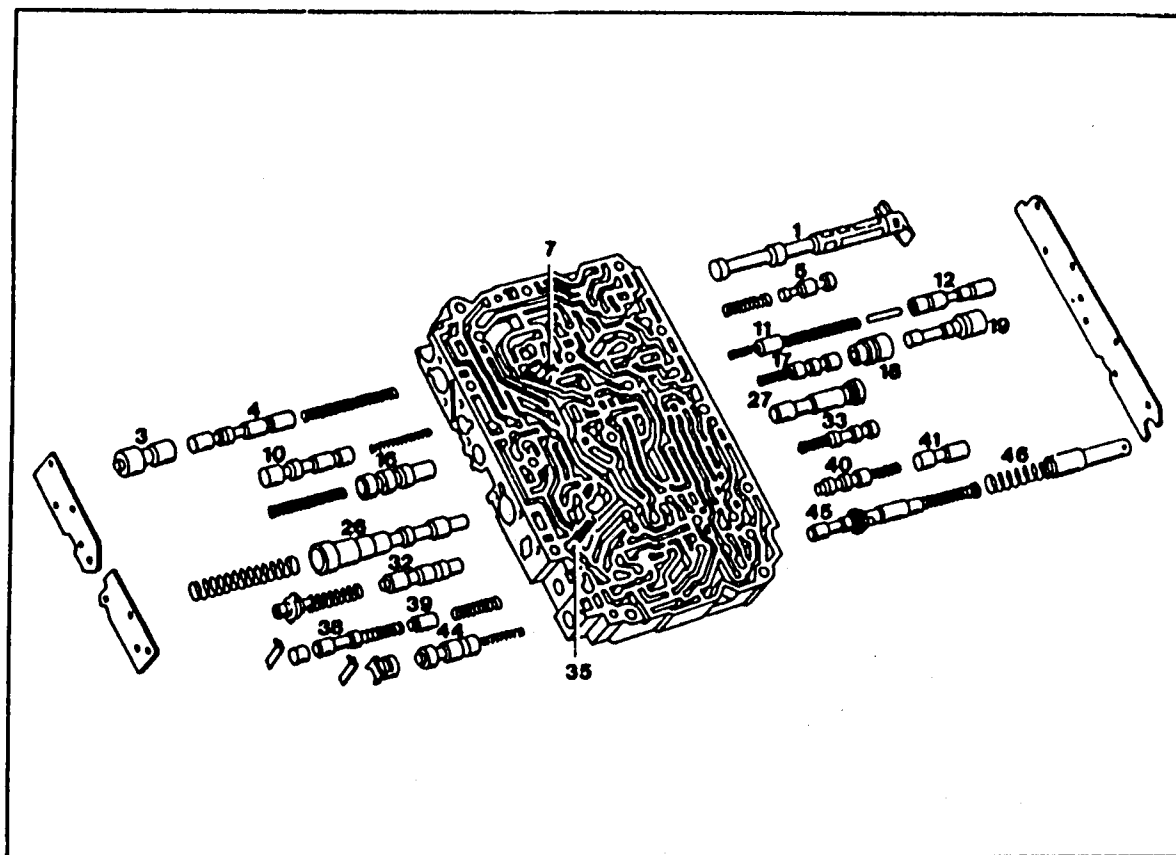
35 Shift pin lube pressure
 54 Check valve
 81 Sieve filter
 87 Throttle Valve

Mercedes Model 722.4



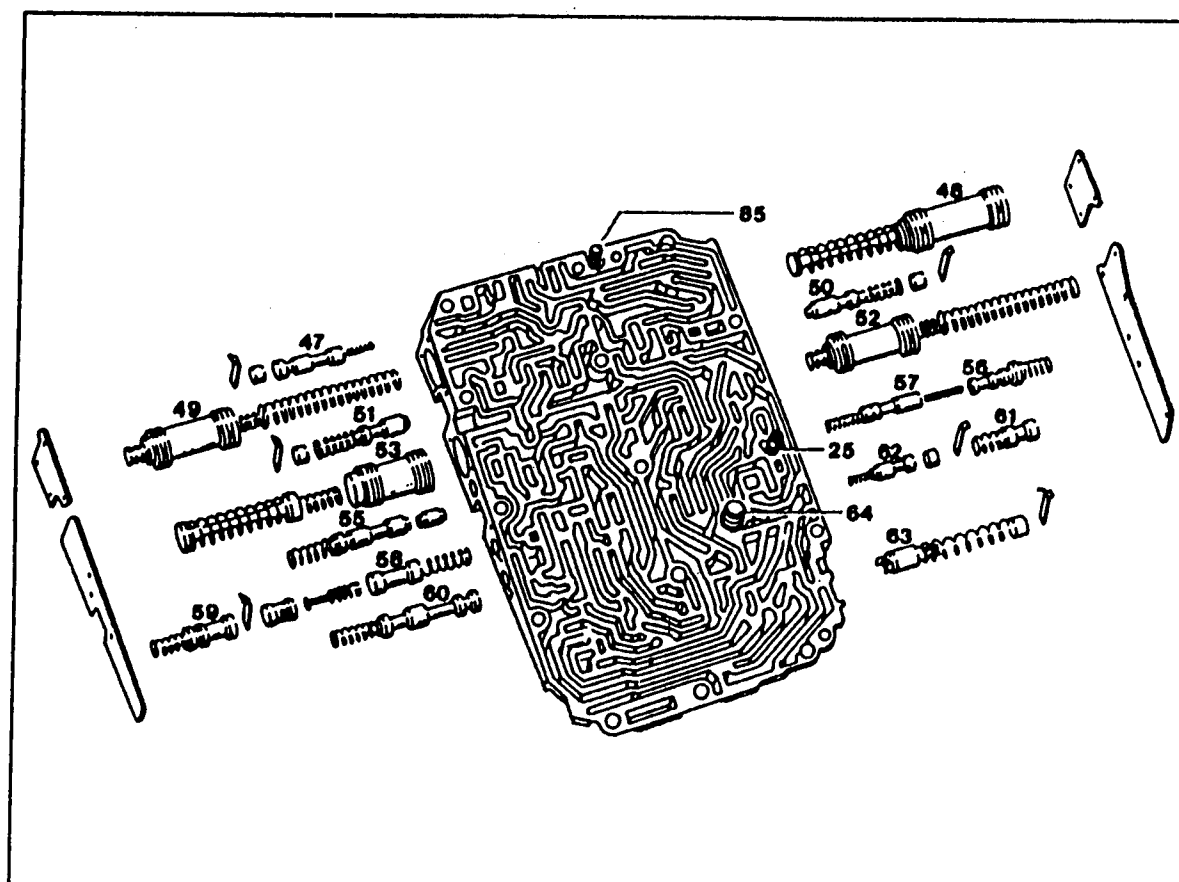
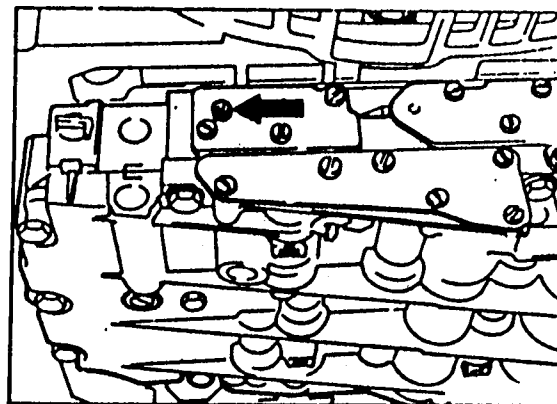
- A1 Selector Valve
- 81 Strainer
- 7 Locking valve K1
- 9 Check valve without bore
- 14 Valve balls (18 or 19)

- 14a Pressure valve (check ball)
- 54 Check valve
- 87 Restrictor valve K2
- 35 Lubricating pressure shaft spring
- 88 Check valve with restrictor



- | | |
|----------------------------------|--|
| 1 Manual Valve | 26 Regulator valve oper. press. |
| 3 Piston control valve 2-3 | 27 Plug, Shift valve Ku |
| 4 Control valve 2-3 | 32 Regulator valve, Full TV |
| 5 Regulator valve Torque Conv. | 33 Shift valve B2 |
| 7 Lock-out valve K1 | 35 Shift pin lube press. |
| 10 Shift valve B1 | 38 Regulator valve B1 |
| 11 Piston control valve 3-4 | 40 Shift valve, kick down |
| 12 Control Valve 3-4 | 41 Shift valve Gov. Press. |
| 16 Regulation valve basic press. | 44 Amplification Valve Gov. |
| 17 Control Valve 1-2 | 45 Regulator valve, cont.l pressure |
| 18 Sleeve control valve 1-2 | 46 Piston, regulator valve control pressure. |
| 19 Piston control valve 1-2 | |

The arrow indicates the position of the allen screw for full throttle control pressure. Turning clockwise results in earlier full load or kick-down upshifts. Turning counter-clockwise results in later upshifts.



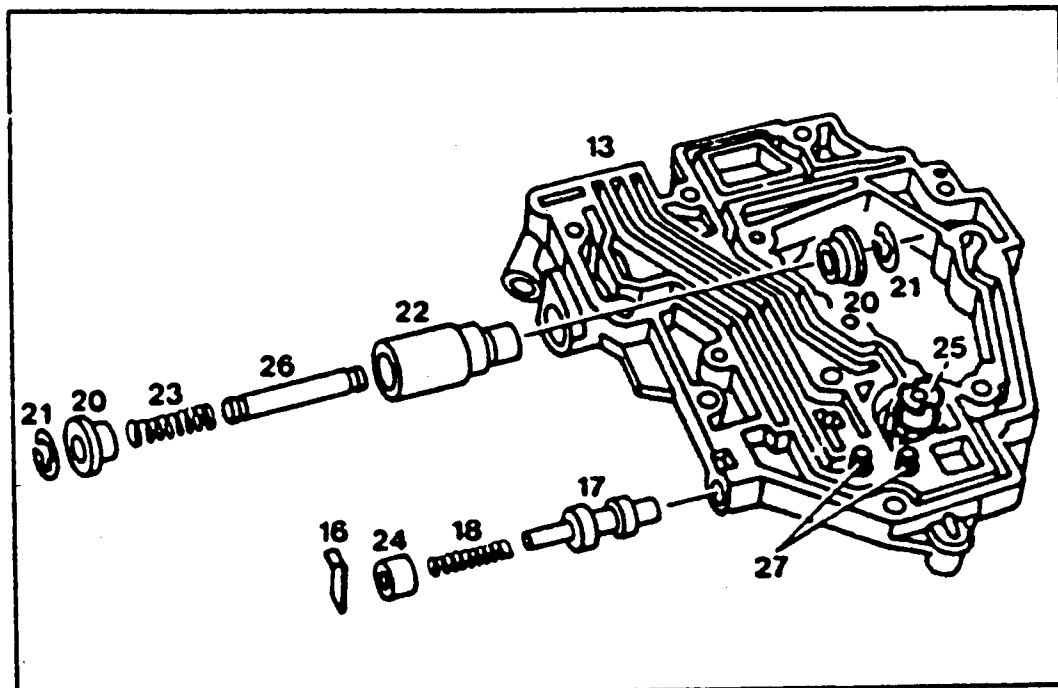
- 25 Relief valve (modulator press)
- 47 Regulator valve shift pattern
- 48 Damper K1
- 49 Damper K2
- 50 Regulator valve damper K1
- 51 Regulator valve damper K2
- 52 Damper B1
- 53 Damper switch on
- 55 Lock-out valve RB2
- 56 Shift valve deceleration

- 57 Regulator valve damper B1
- 58 Regulator valve damper, switch on
- 59 Shift valve K2
- 60 Release valve B2
- 61 Lock-out valve deceleration
- 62 Lock-out valve RV1
- 63 Damper, kick-down
- 64 Lubrication pressure valve
- 85 Pressure limitation valve.

Installation instructions

Be sure to install gasket on plate properly

The tightening torque is 8 NM



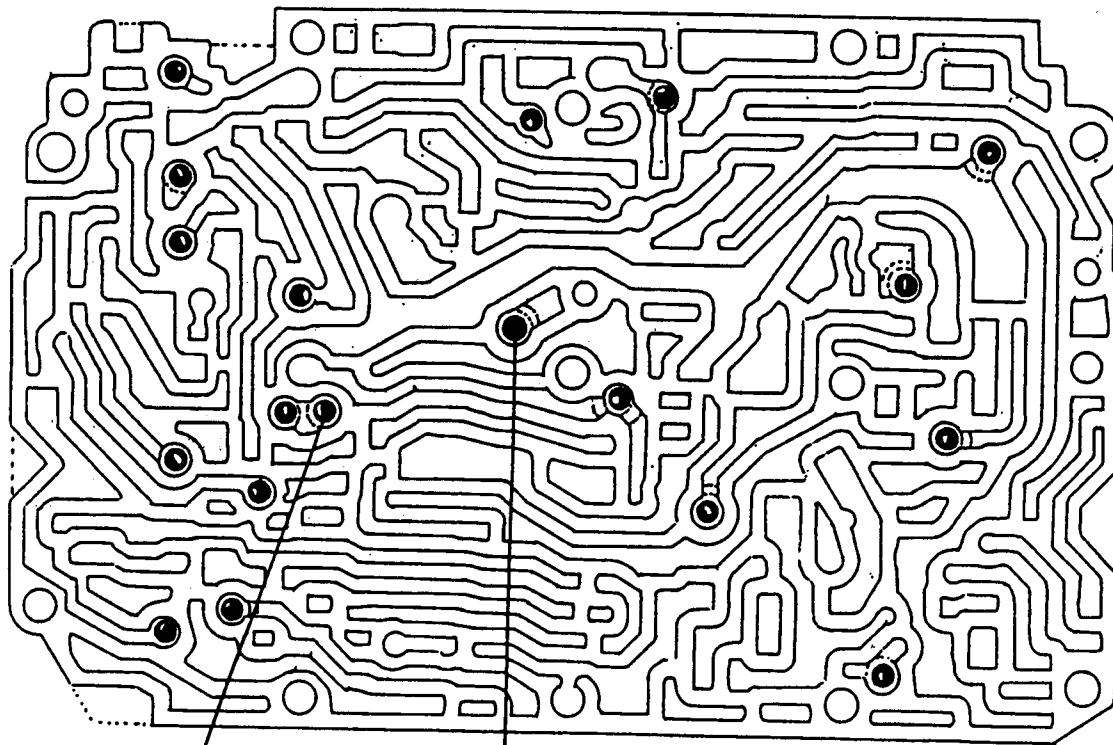
- 13-Bottom cover
- 16-Retaining plate
- 17-Secondary pump check valve
- 18-Spring
- 20-Bushing
- 21-Locking element
- 22-Locking valve
- 23-Spring
- 24-Plug
- 25-Valve
- 26-Pin
- 27-Strainer



Technical Service Information

UPPER VALVE BODY (BOTTOM VIEW)

(18) .215 STEEL CHECK BALL LOCATIONS



ONE .220 RUBBER BALL HERE

PLACE SPRING UNDER THIS BALL



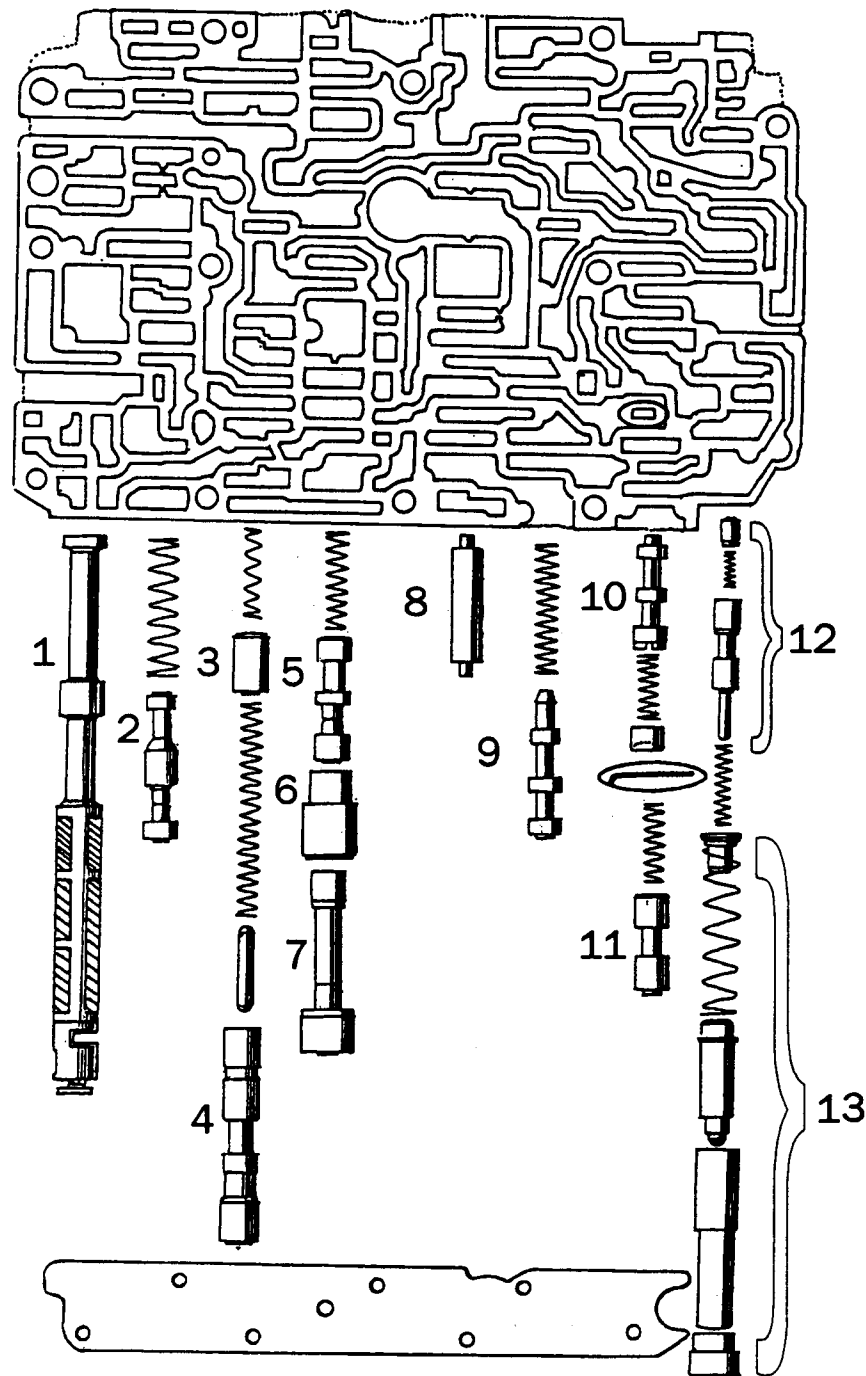
ACTUAL SIZE

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Technical Service Information UPPER VALVE BODY (TOP VIEW)



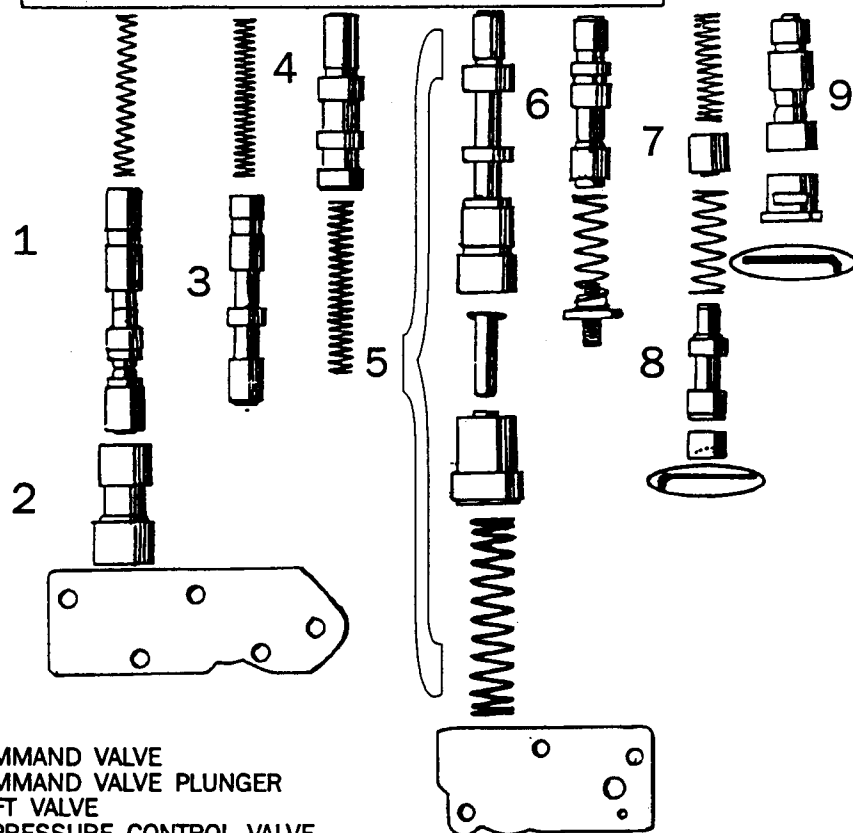
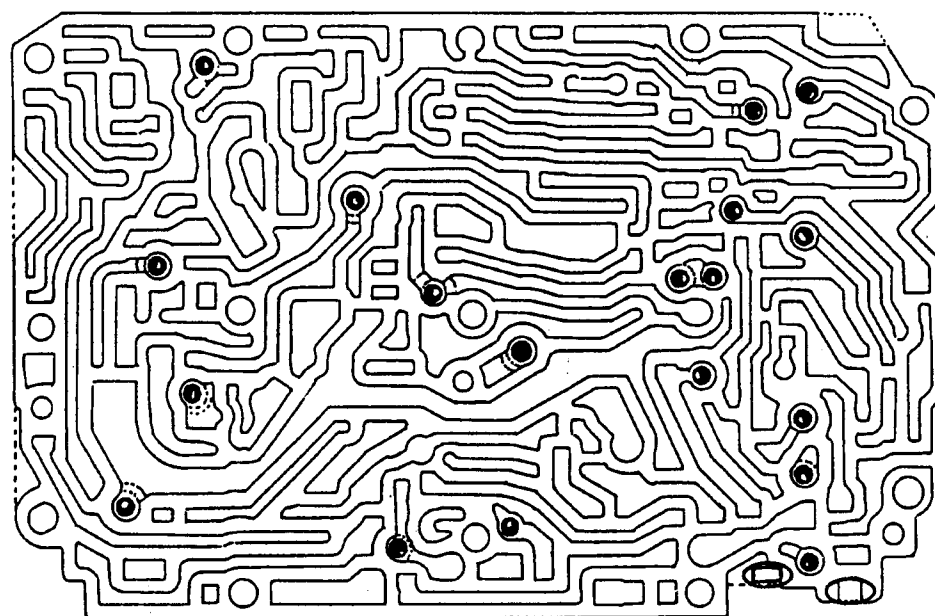
1. MANUAL VALVE
2. CONVERTER ADAPTION CONTROL VALVE
3. 3-4 PLUNGER COMMAND VALVE
4. 3-4 COMMAND VALVE
5. 1-2 COMMAND VALVE
6. 1-2 COMMAND VALVE SLEEVE
7. 1-2 PLUNGER COMMAND VALVE

8. SHIFT VALVE BRIDGING CLUTCH PLUG
9. B2 SHIFT VALVE
10. KICKDOWN SHIFT VALVE
11. GOVERNOR PRESSURE SHIFT VALVE
12. PRESSURE CONTROL VALVE
13. PRESSURE CONTROL VALVE PLUNGER

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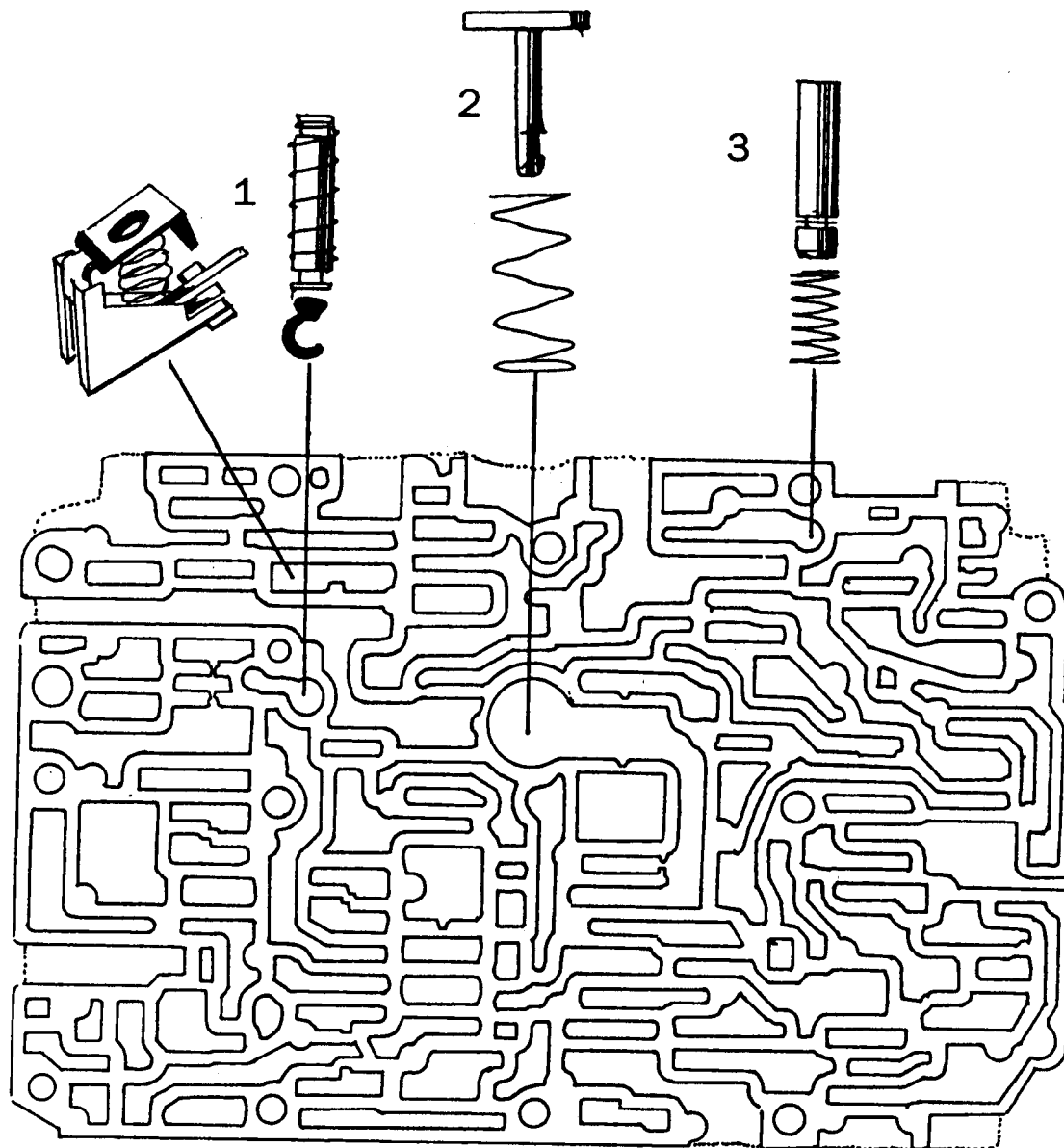
UPPER VALVE BODY (BOTTOM VIEW)



1. 2-3 COMMAND VALVE
2. 2-3 COMMAND VALVE PLUNGER
3. B1 SHIFT VALVE
4. BASIC PRESSURE CONTROL VALVE
5. WORKING PRESSURE CONTROL VALVE
6. FULL THROTTLE CONTROL VALVE
7. B1 PLUNGER CONTROL VALVE
8. B1 CONTROL VALVE
9. GOV. PRESSURE BOOST VALVE

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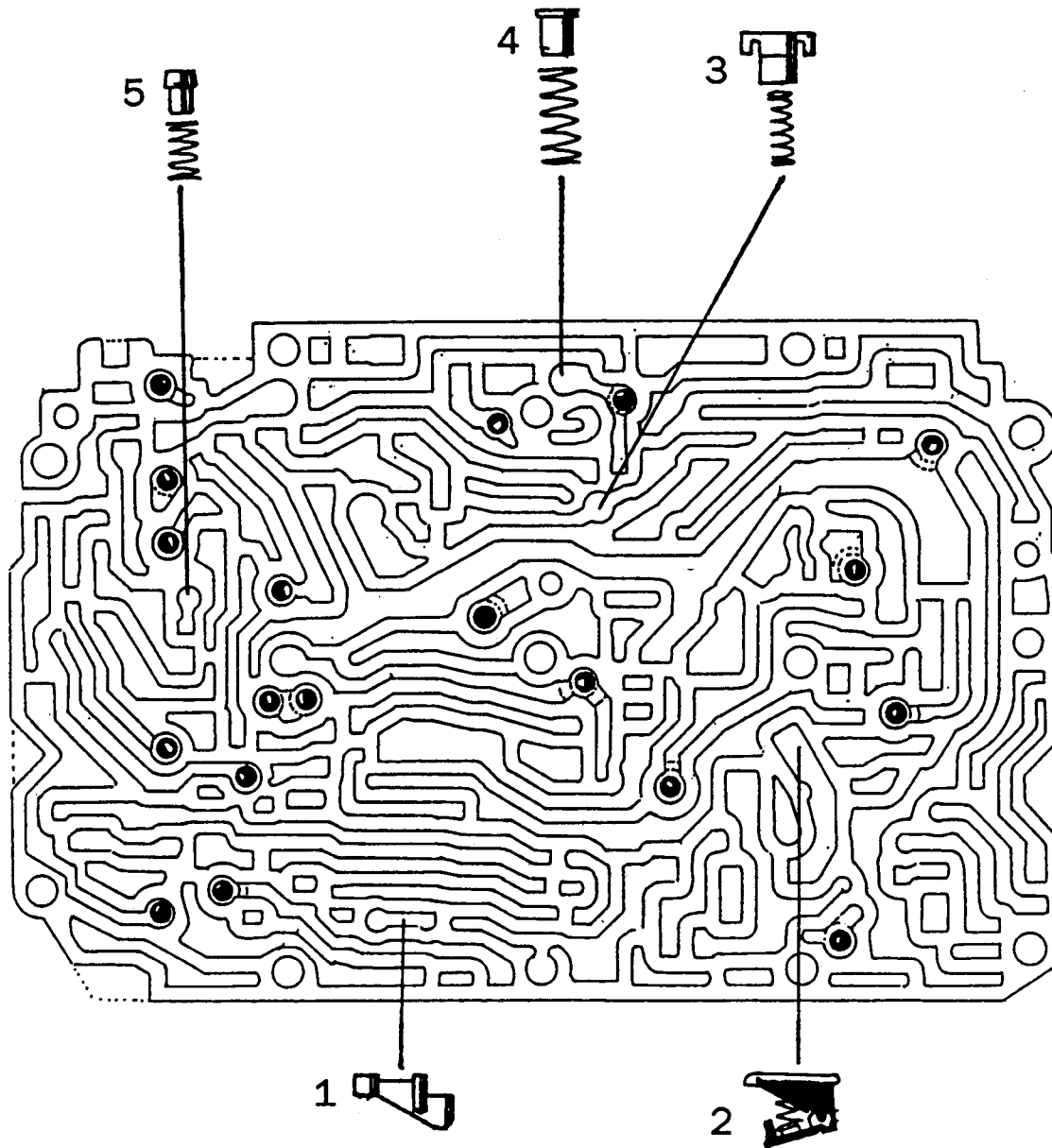
UPPER VALVE BODY (TOP VIEW)



1. K1 SHUT OFF VALVE
2. PRIMARY PUMP CHECK VALVE
3. LUBRICATING PRESSURE SHIFT PIN

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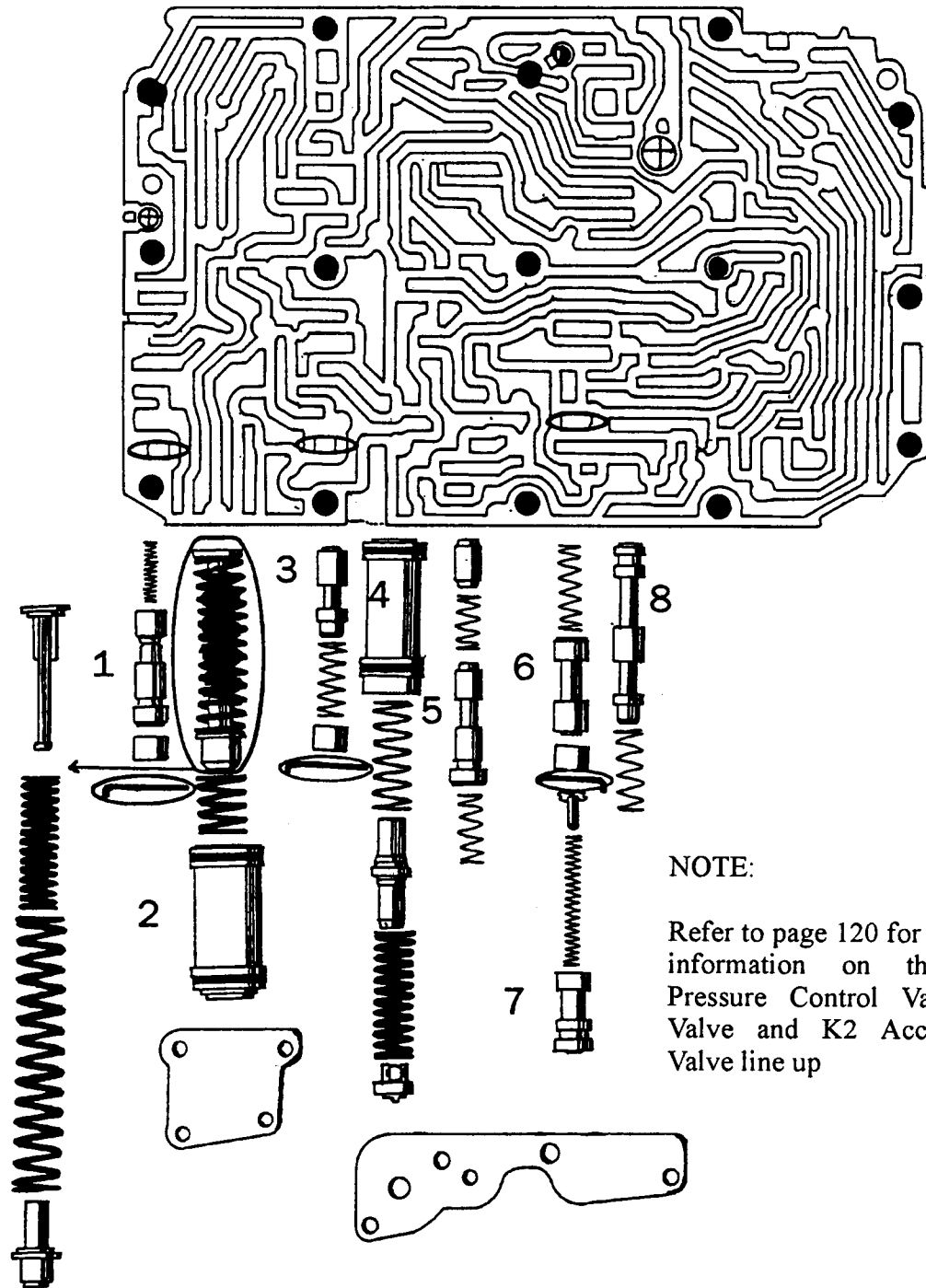
UPPER VALVE BODY (BOTTOM VIEW)



1. THROTTLE CHECK VALVE
2. PLATE TYPE CHECK VALVE
3. CHECK VALVE WITH STRAINER
4. THROTTLE CHECK VALVE WITH STRAINER - ORIFICE .032
5. THROTTLE CHECK VALVE - ORIFICE .032



Technical Service Information LOWER VALVE BODY (BACK VIEW)



NOTE:

Refer to page 120 for the latest information on the Shift Pressure Control Valve, K2 Valve and K2 Accumulator Valve line up

1. SHIFT CONTROL PRESSURE VALVE
2. K2 ACCUMULATOR
3. K2 ACCUMULATOR CONTROL VALVE
4. ACCUMULATOR SWITCHING ON

5. RV2 SHUT OFF VALVE
6. ACCUMULATOR SWITCHING ON CONTROL VALVE
7. K2 SHIFT VALVE
8. B2 DETENT VALVE

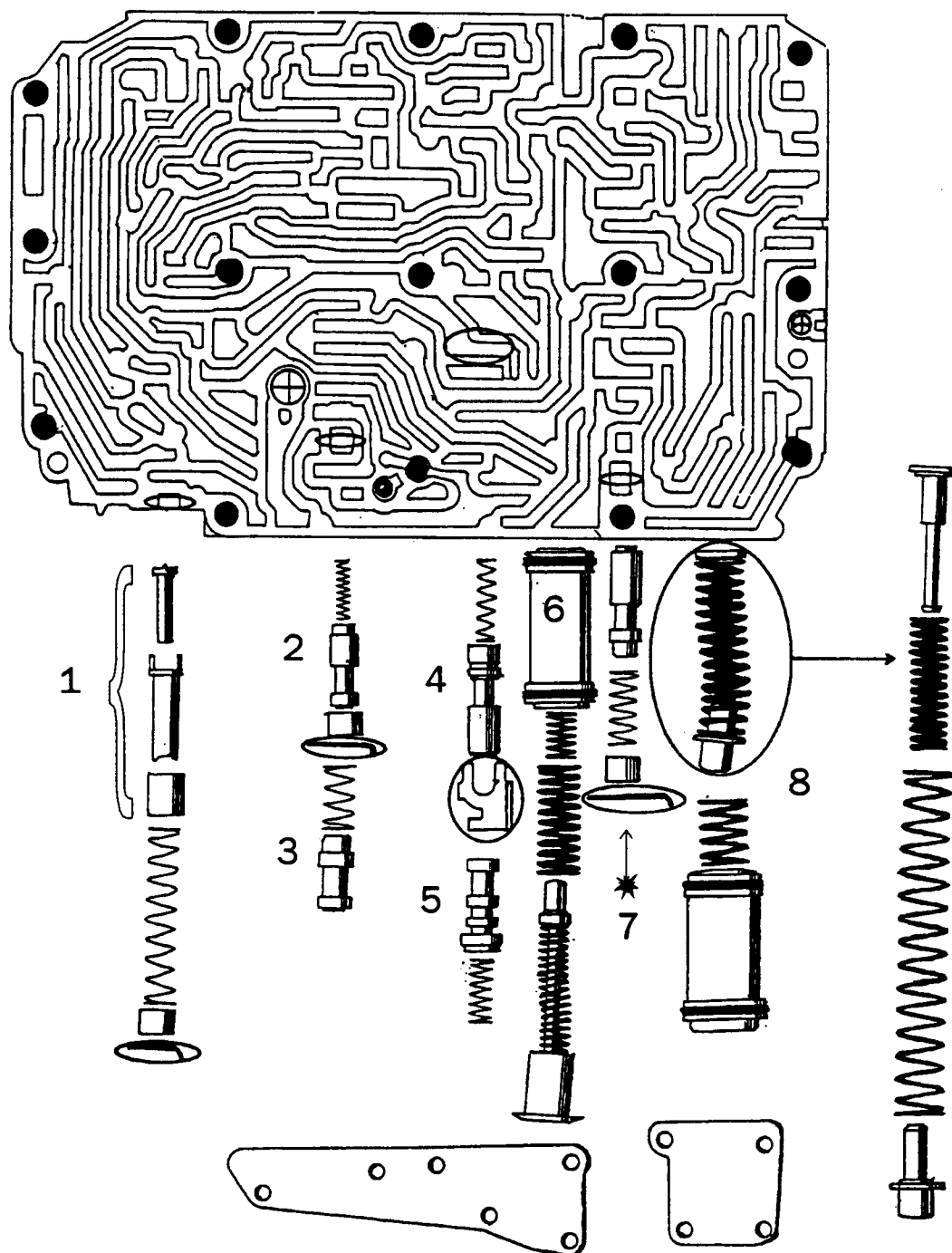
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Technical Service Information

LOWER VALVE BODY (FRONT VIEW)



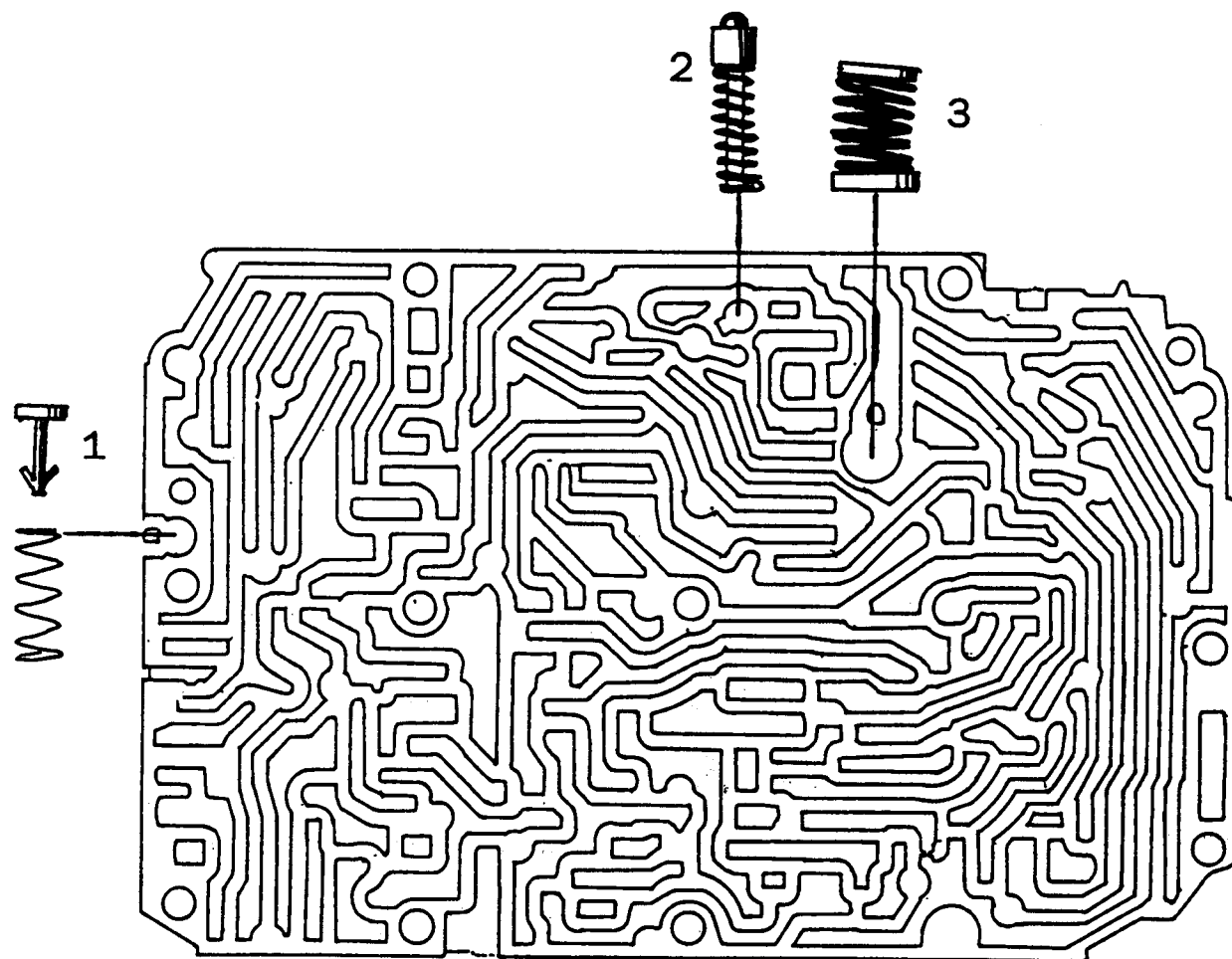
1. ACCUMULATOR KICK DOWN
2. RV1 SHUT OFF VALVE
3. BRAKE CIRCUIT SHUT OFF VALVE
4. B1 ACCUMULATOR CONTROL VALVE

5. DECELERATION CONTROL VALVE
6. B1 ACCUMULATOR
7. K1 ACCUMULATOR CONTROL VALVE
8. K1 ACCUMULATOR

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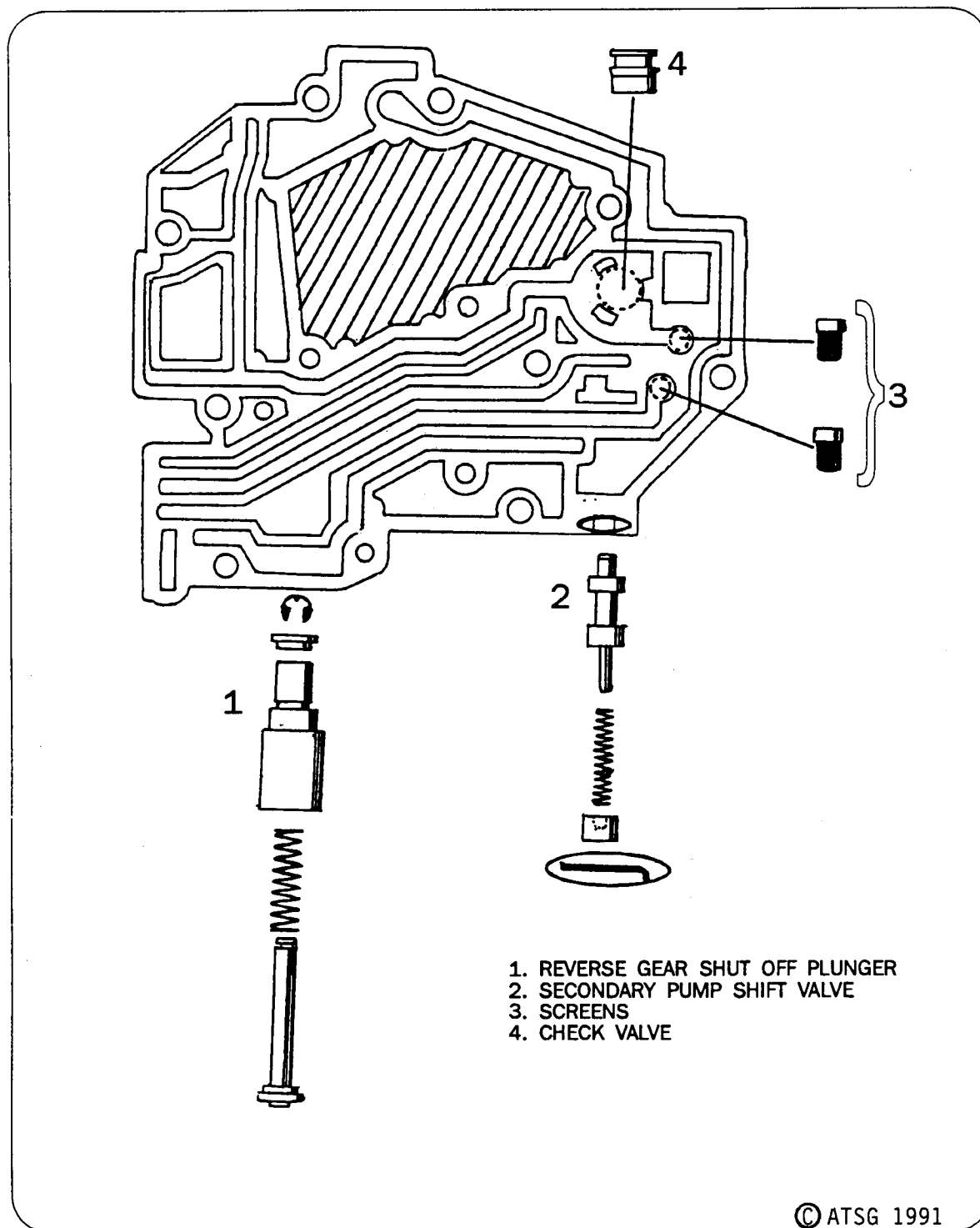
LOWER VALVE BODY



1. PRESSURE LIMITING VALVE
2. MODULATING PRESSURE RELIEF VALVE
3. LUBRICATING PRESSURE VALVE

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LOWER COVER

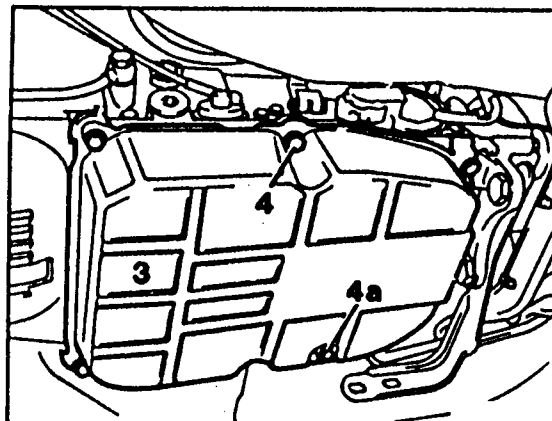


GOVERNOR, REAR PUMP REMOVAL AND INSTALLATION

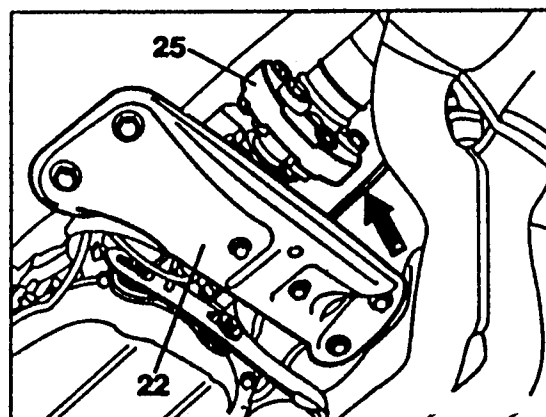
1-Screw out drain plug (4a) and drain oil.

INSTALLATION NOTE:

Tighten drain plug to 14 Nm. Check oil level and correct if necessary.

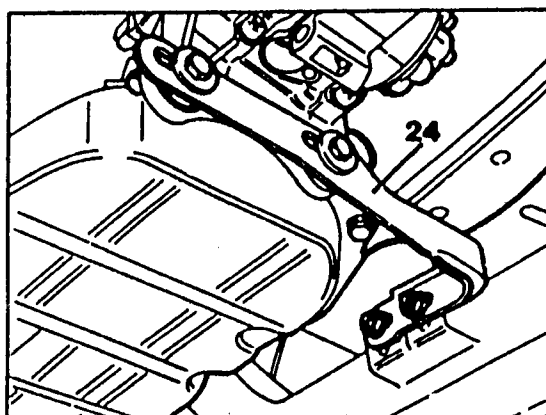


2-Remove cross member (22) together with rear engine mount.



3-Remove companion plate (25).

4-Unplug lamda sensor cable (arrow) on tunnel and disconnect mounting clips.



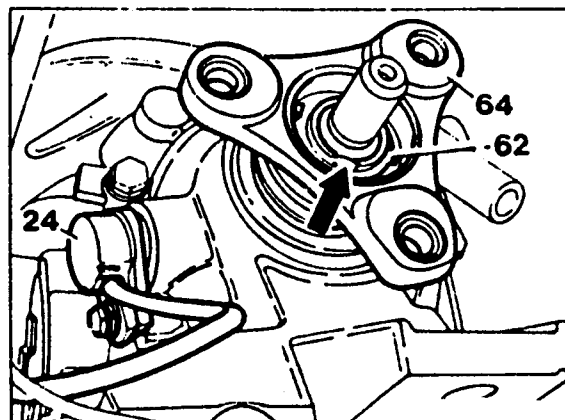
5-Completely remove exhaust support (24).

6-Engage parking lock.

7-Unscrew twelve-sided collar nut (62) and pull off joint flange (64).

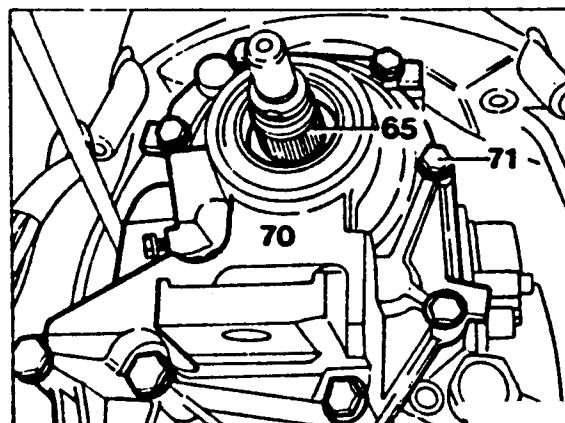
INSTALLATION NOTE:

Tightening torque is 120 Nm, then knock the collar into the recess on the input shaft (arrow) with a suitable drift.



8-Take off disc (65).

9-Unscrew bolts (71), and take off rear cover (70).



CAUTION;

When removing the rear transmission cover, be sure that the kickdown solenoid valve is not damaged. It may be necessary to loosen the kickdown solenoid valve and turn slightly.

INSTALLATION NOTE:

When installing gasket DONOT coat with a sealant. Screw in bolts (71) and tighten to 13 Nm.

NOTE:

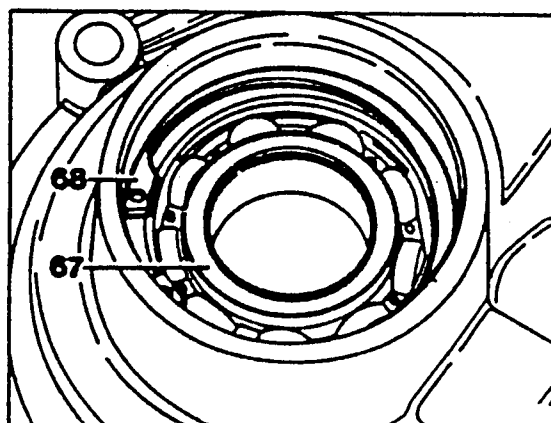
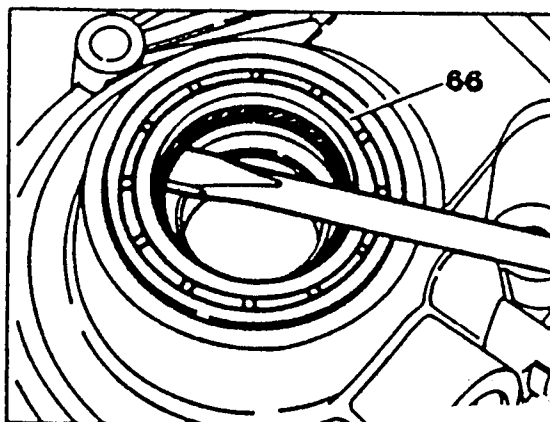
Clean bolts free of grease and coat with non-hardening sealant.

10-Pry out radial seal (66) with a screw driver.

INSTALLATION NOTE:

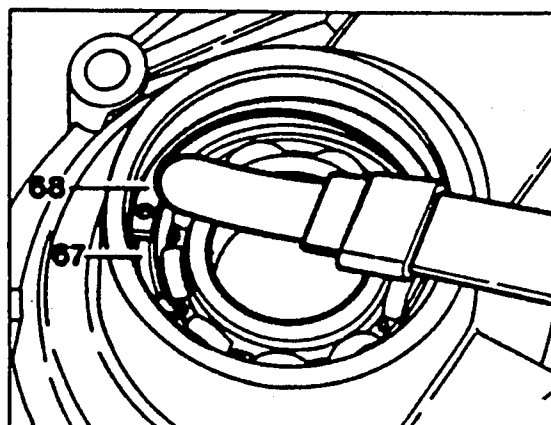
Install with suitable driver.

11-Remove retaining ring (68) and knock out ball bearing.

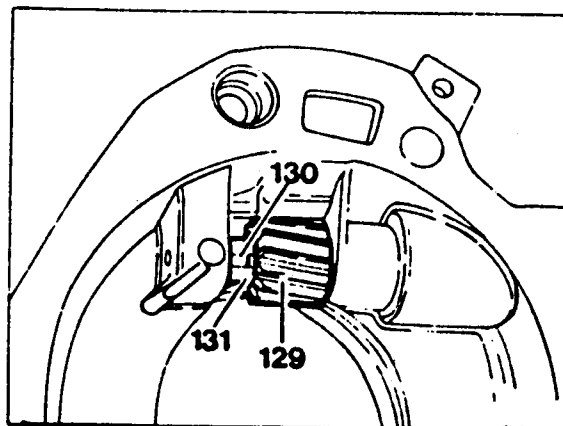


INSTALLATION NOTE:

Play should not be present between the retaining ring (68) and the ball bearing (67). For this reason retaining rings are available in three different thickness (2.0-2.1-2.2mm). When inserting the retaining ring be sure that it is positioned properly in the groove. If the retaining ring cannot be inserted, use a thinner retaining ring. If play is present between the retaining ring and the ball bearing use a thicker retaining ring. Check whether play is present with a feeler gauge (0.10mm).



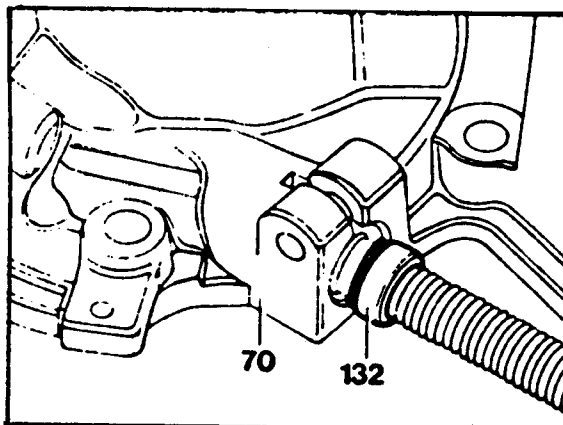
12-Remove drive gear (129) for mechanical speedometer. Take off locking element (131). take out shaft (130) and drive (120).



13-Remove radial seal (132) from the rear transmission cover (70).

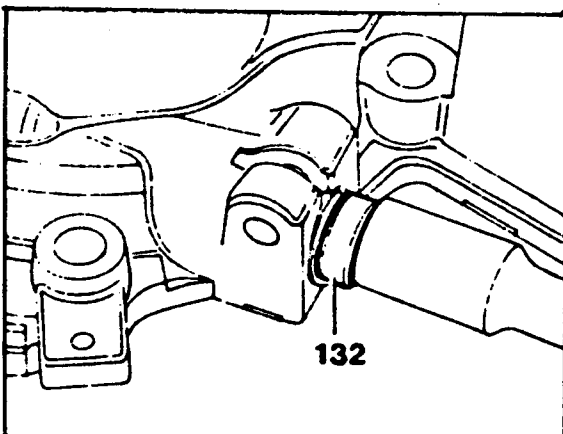
NOTE:

To help in the removal, a hexagon bolt (M12) is screwed into the radial seal and clamped in the vice. The radial seal is withdrawn by striking the transmission cover with light blows from a plastic mallet.

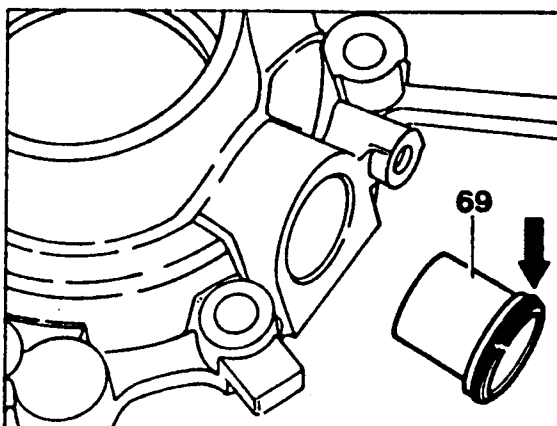


INSTALLATION NOTE:

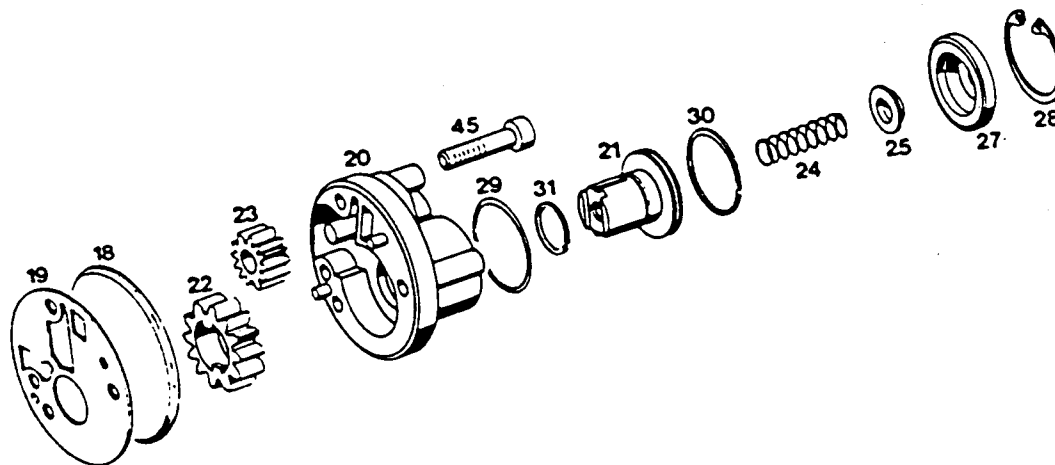
Carefully press in radial seal (132) as far as the stop with a drift or driver.



14-If a new plastic bushing (69) with O-ring (arrow) has to be installed on vehicles with electronic speedometer, insert the plastic bushing with the shop-made drift.



REAR PUMP ASSEMBLY



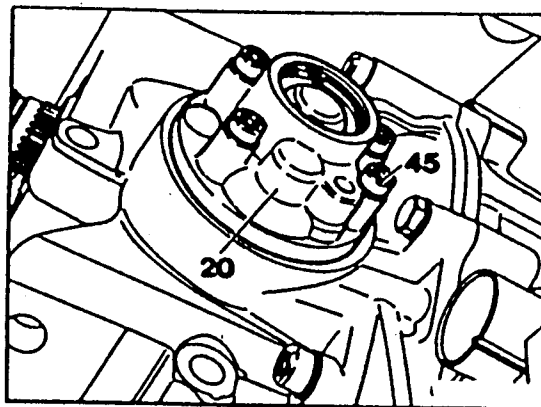
18-O-ring
 19-Intermediate plate
 20-Pump housing
 21-Shut off piston
 22-Pump drive gear
 23-Pump driven gear
 24-Compression spring
 25-Spring retainer
 27-Closing cover
 28-Locking ring
 29-O-ring
 30-Teflon ring
 31-Teflon ring
 45-Hex Socket screw

Replace
 Check for damage and wear
 Check for damage and wear
 Check for damage and wear
 Check for damage and wear
 Check for damage and wear

Check for wear
 Check for damage and wear

Replace
 Replace
 Replace
 Tighten to 8 Nm

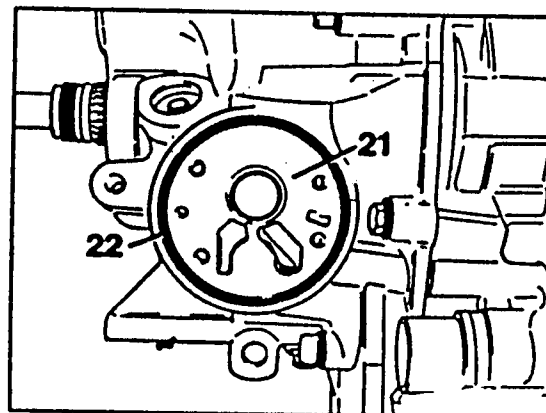
15-Screw out allen screw (45) and remove secondary pump (20)



INSTALLATION NOTE

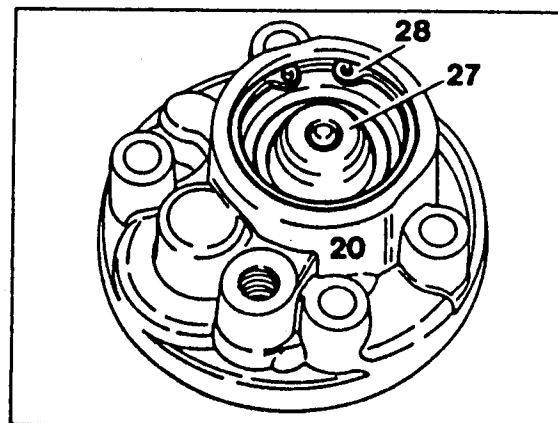
Tighten torque for M6x30 bolt is 8 Nm

16-Remove O-ring (22) and intermediate plate (21) for secondary pump.



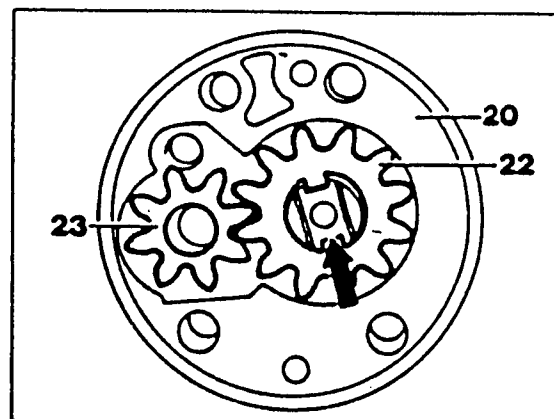
17-Remove pump gears from housing.

18-Remove retaining ring (28) and cover (27).

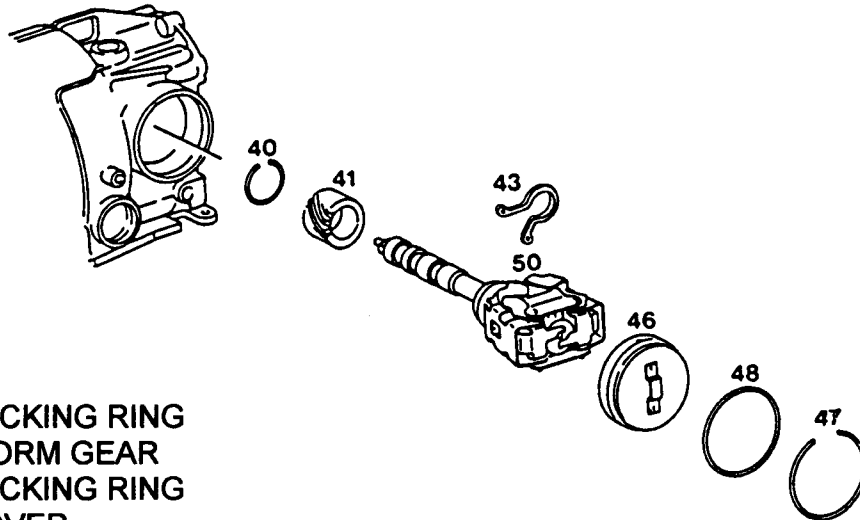


INSTALLATION NOTE:

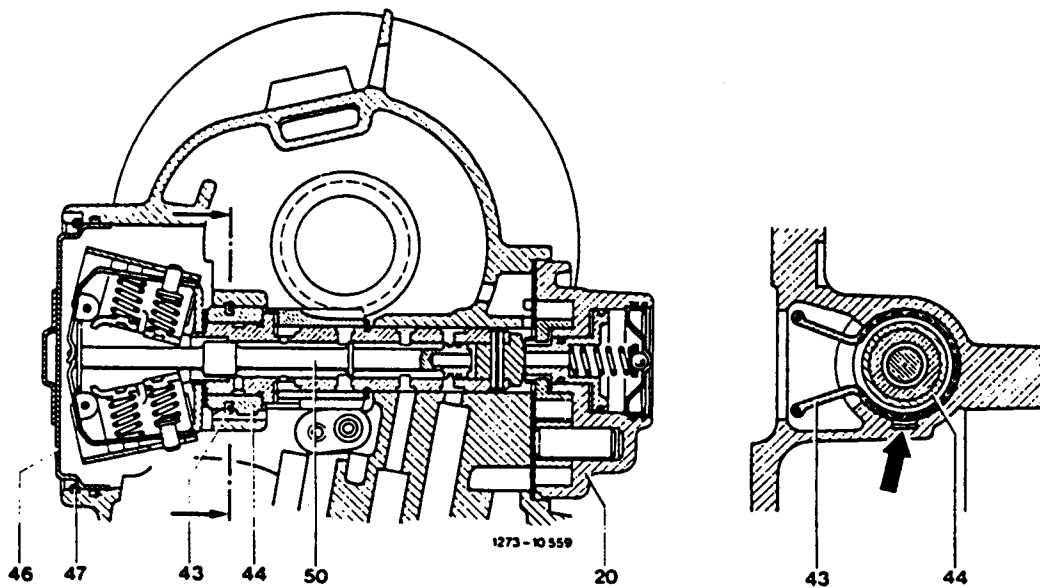
Oil pump gears(22 and 23) and insert into pump housing. Insert driven pump gear (22) so that drive lug (arrow) points upwards.



GOVERNOR ASSEMBLY

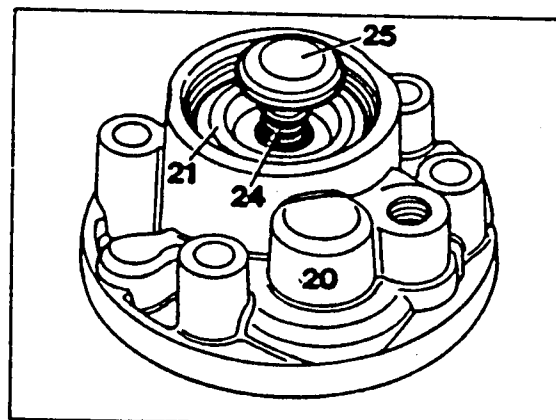


- 40-LOCKING RING
- 41-WORM GEAR
- 43-LOCKING RING
- 46-COVER
- 47-CIRCLIP
- 48-O-RING

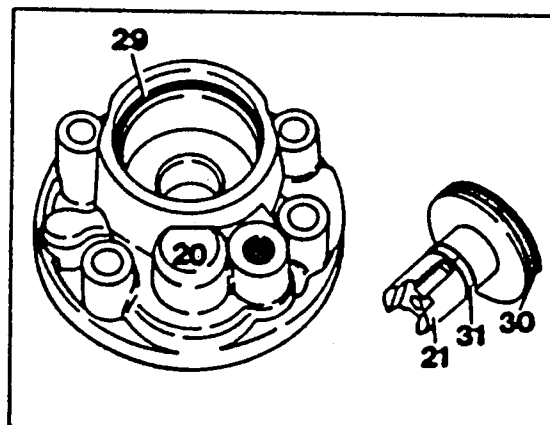


- 20-SECONDARY PUMP
- 43-LOCKING RING
- 44-BEARING RING
- 46-COVER
- 47-CIRCLIP

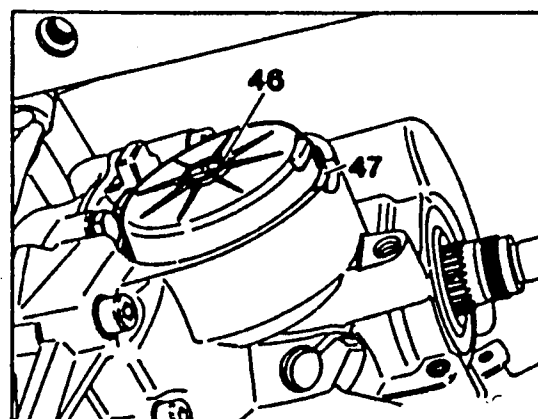
19-Remove switch-off piston (21) together with pressure spring (24) and spring plate (25) from transmission.



20-Remove O-ring (29). Check all parts for damage and wear. The gap in the two Teflon rings (30 and 31) should bell the way together, no gap, if necessary insert Teflon ring into grooves with a small quantity of grease.



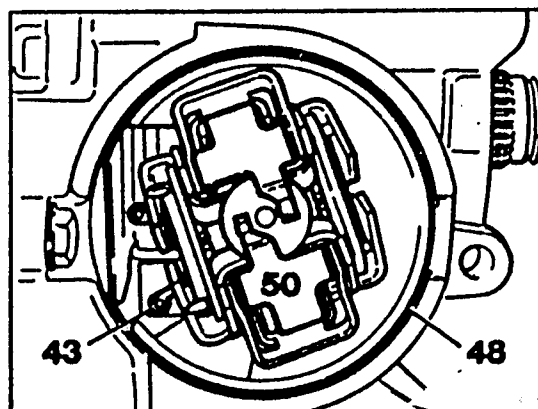
21-Press cover (46) of governor in to move retaining ring (47) and remove cover.



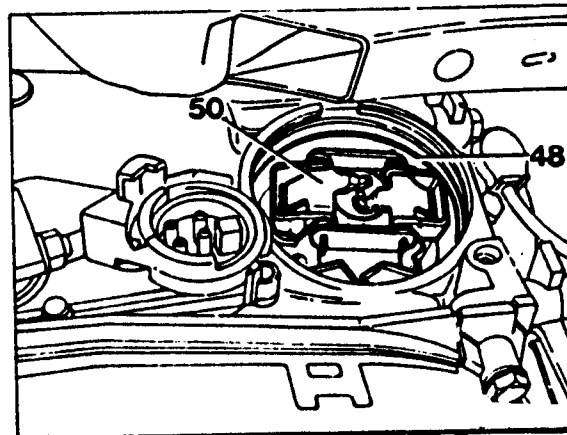
INSTALLATION NOTE :

After installation pull cover out so that it contacts the retaining ring around entire circumference.

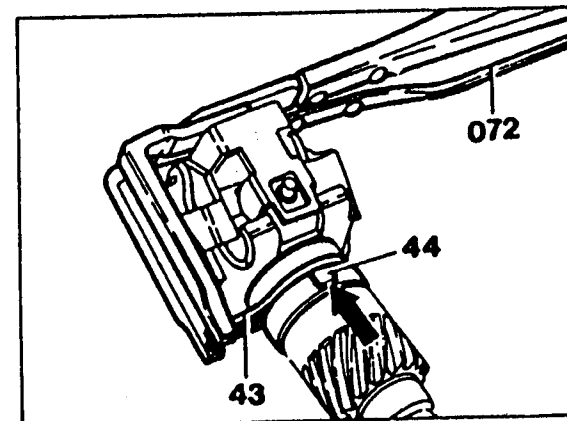
22-Turn output shaft so that governor (50) is in position shown in illustration.



23-Insert snap ring pliers in position illustrated press retaining ring together and pull governor out of case as far as possible.



24-Remove pliers (072), press against right side of transmission and remove governor.

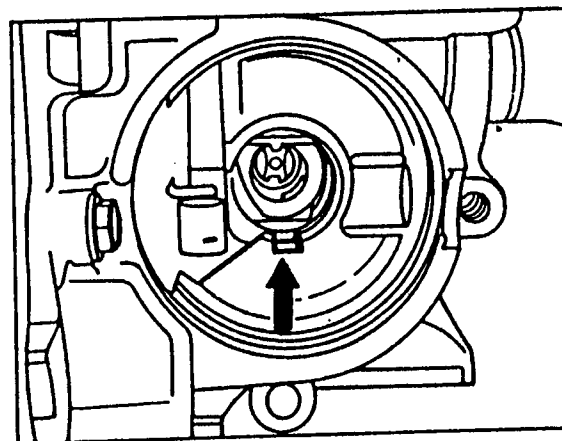


INSTALLATION NOTE:

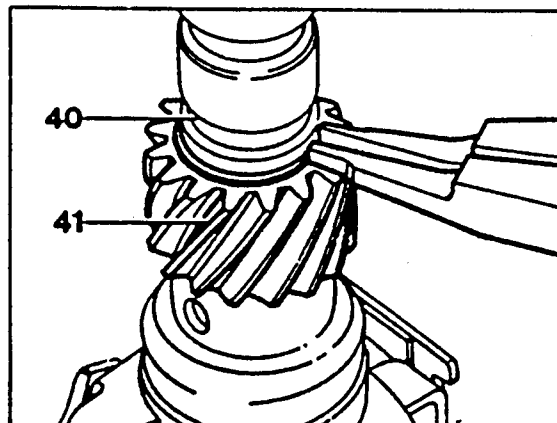
Turn transmission to right and insert governor with pliers pressed together. The nose (arrow) must be inserted into the groove in the housing (arrow).

CAUTION

Be sure that the retaining ring is seated in the annular groove. When the governor is installed properly the retaining ring can be moved back and forth easily in the annular groove.

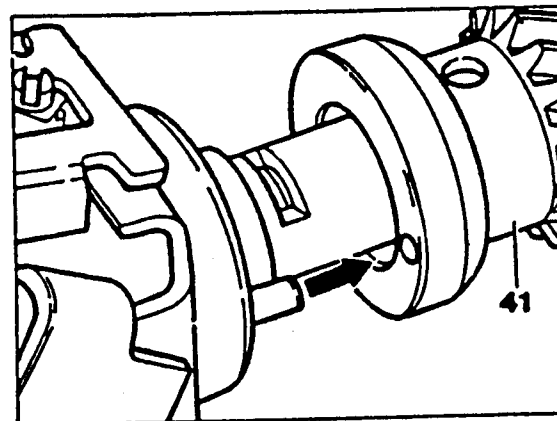


25- Remove retaining ring (40), and pull off pinion (41)



INSTALLATION NOTE :

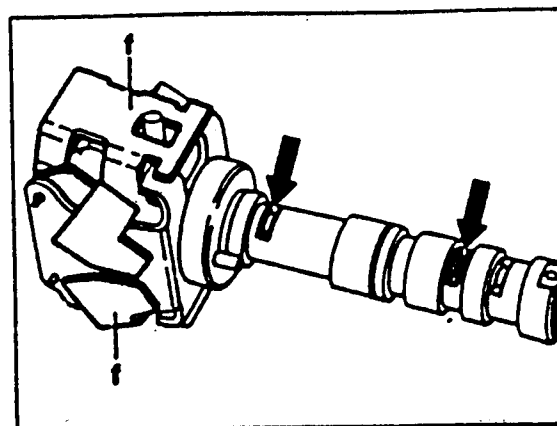
Position pinion (41) so that the drive pin (arrow) engages in the hole in the pinion.



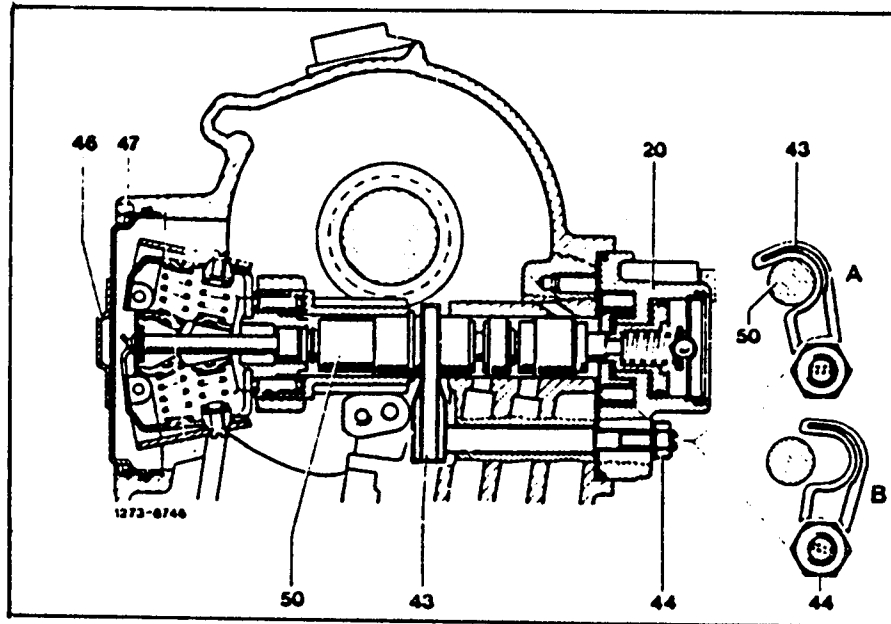
26-Move centrifical weights (f) and check control valve for easy motion in openings (arrows).

NOTE:

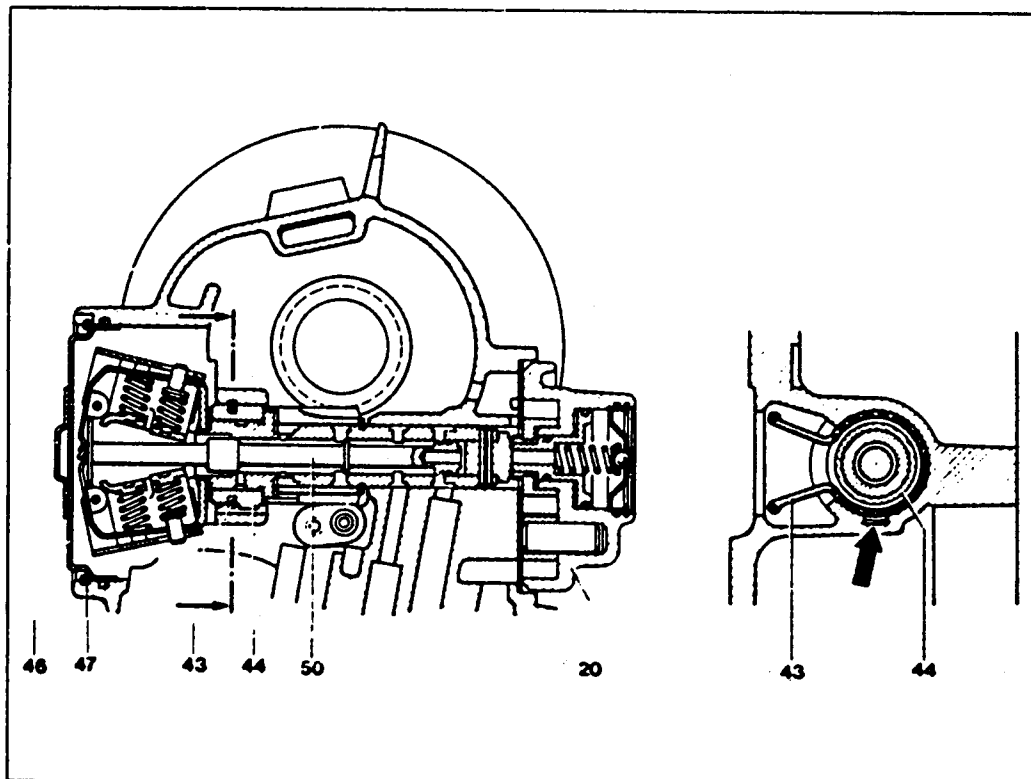
The control valve must be easy to move, wash out and blow out governor as required. If it is not possible to free up the control valve in this manner, then replace the governor.



GOVERNOR ASSEMBLY 722.3



GOVERNOR ASSEMBLY 722.4



20-SECONDARY PUMP
43-LOCK RING
44-BEARING RING

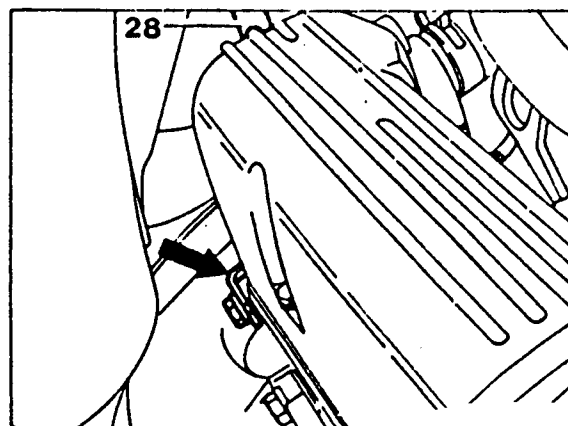
46-COVER
47-LOCK RING
50-GOVERNOR

REMOVAL AND INSTALLATION;

1-Disconnect the ground to the battery

2-Unscrew bracket (arrow) for oil filler tube (28) at cylinder head.

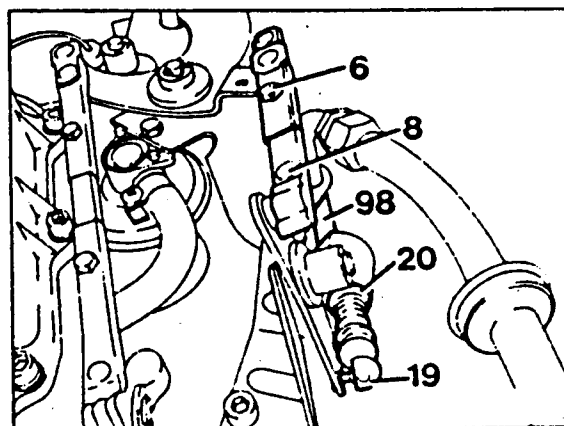
3-Detach engine throttle linkage shaft,



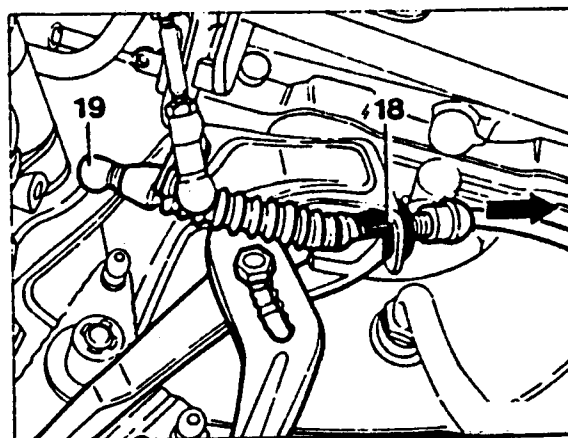
4-Press off ball socket.

5-Unhook control pressure cable (98)

In vehicles with engines 116 and 117, pull out circlip (20) and release cable.

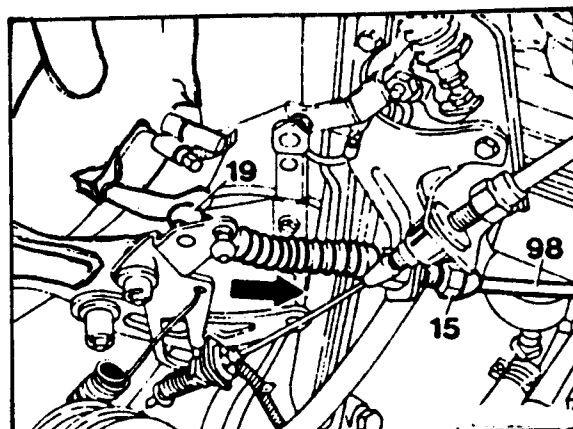


vehicles with engines 103 and 104. Push both tabs on plastic clip (18) together using pliers and pull out cable in direction of arrow.



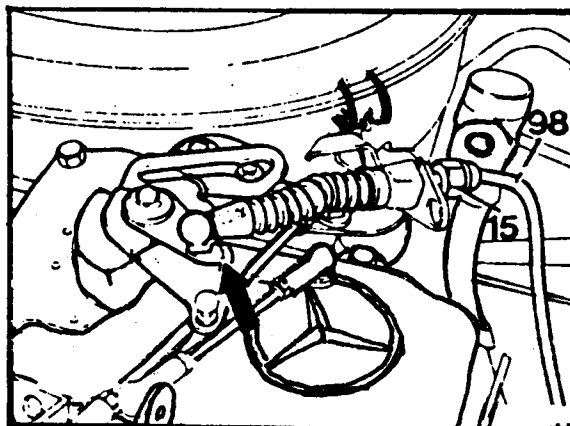
5a-Models with carburetor engine

Press off ball socket (19). Compress retaining clip (arrow) and detach cable for control pressure (98).



5b-Models 123 and 128 with diesel engine

Press off ball socket (19), compress plastic clip with pliers and remove control pressure cable (98).

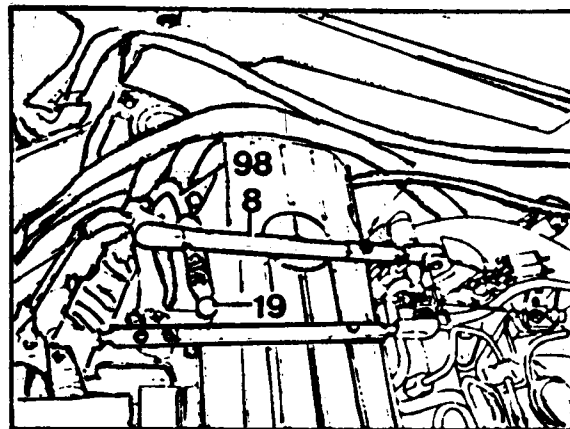


5c-Models 201 and 124 with diesel engine

Press off ball socket (19), remove retaining clip and detach control pressure cable (98).

Installation note:

Adjust cable as necessary for control pressure.

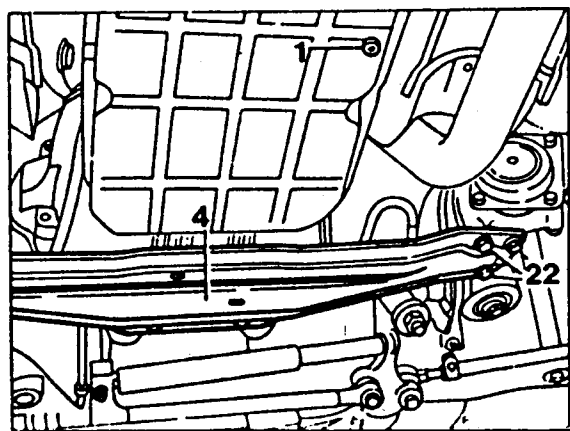


6-Jack up vehicle.

7-Unscrew transverse yoke center assembly (4).

INSTALLATION NOTE:

Renew self-locking hexagon bolts and tighten to 45 Nm.

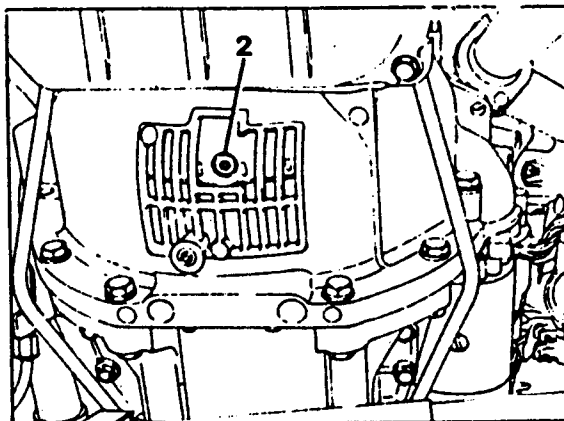


8-Unscrew drain plug (1) in oil pan and drain oil.

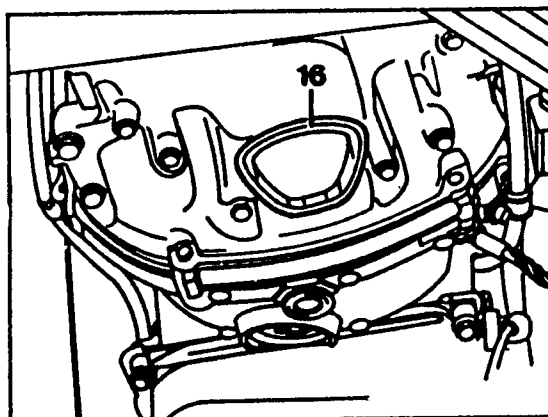
9-Unscrew drain plug in torque converter (2) and drain fluid.

INSTALLATION NOTE:

Screw in drain plugs for oil pan and torque converter and tighten to 14 Nm.

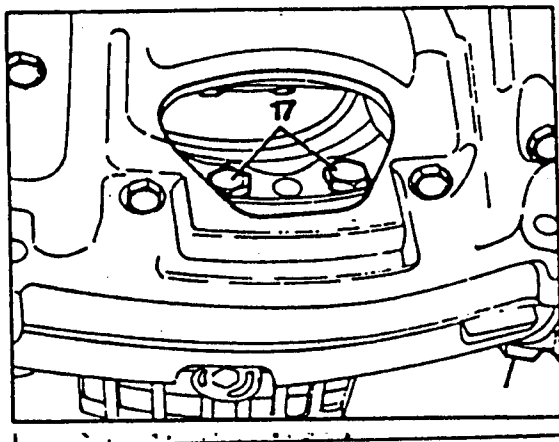


10-Remove plastic cover (16)

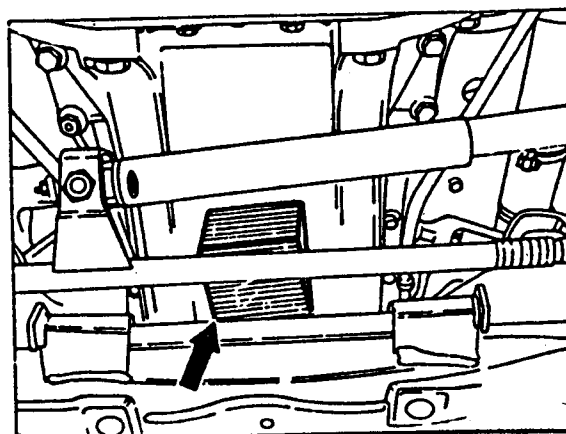


11-Unscrew bolts (17) for driver plate of torque converter (total of 6 bolts).

INSTALLATION NOTE:
Tightening torque 42 Nm.

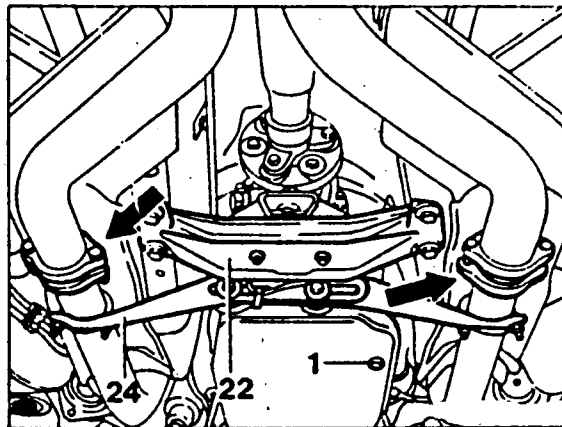


12-Insert a suitable block of wood (arrow) between the engine oil pan and the transverse yoke.



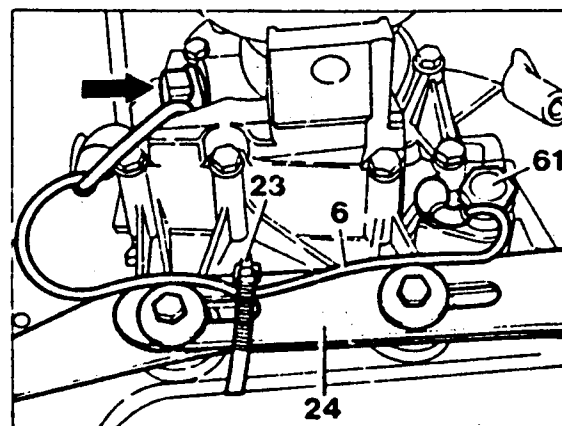
13-Detach exhaust system at plug connections (arrows) and remove (engines 116,117). In engine 119, remove complete. In engines 103 and 104, detach exhaust system at rear suspension, lower carefully and suspend with a length of welding wire.

14-Remove traverse (22) with rear engine mount.



15-Release cable strap (23) and unscrew cable (6) on kickdown solenoid valve (61). Unscrew retaining bolts for pulse generator (arrow) and pull out pulse generator.

16-Unscrew exhaust support (24).



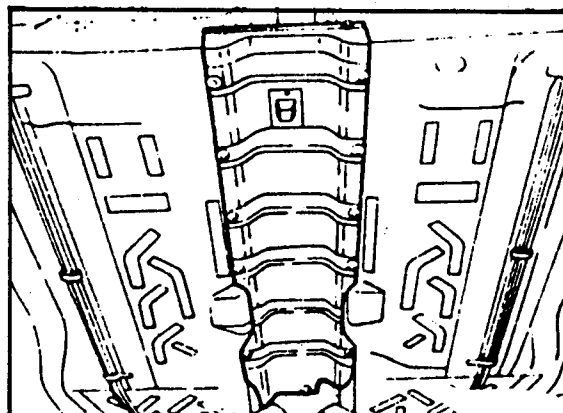
NOTE;

In vehicles with mechanical speedometer, disconnect shaft. In vehicles with catalytic converter heating, disconnect cable for shift point control.

NOTE;

In vehicles with 8 cylinder engines, disconnect plug for shift point control cable.

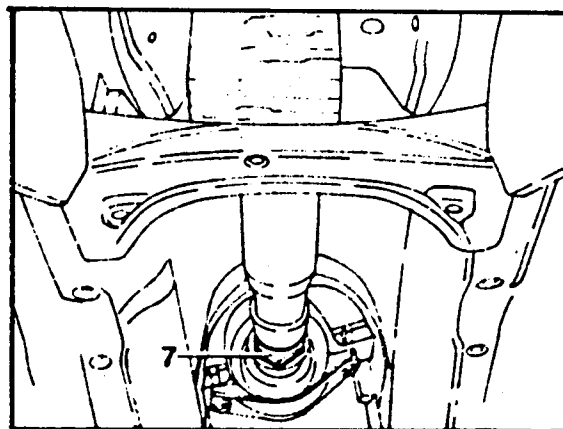
17-Unscrew exhaust sheiding plate.



18-Slacken propeller shaft clamping nut (7).

Torque wrench 001 589 66 21 00
Open end wrench 46 mm 126 589 00 01 00

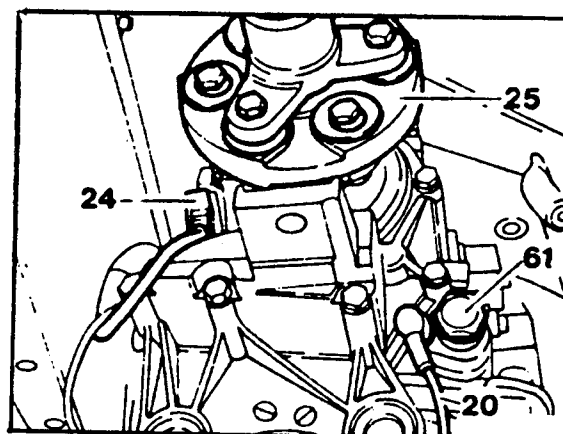
INSTALLATION NOTE;
Tightening Torque 30-40 Nm.



19-Unscrew propeller disc (25) at propeller flange.

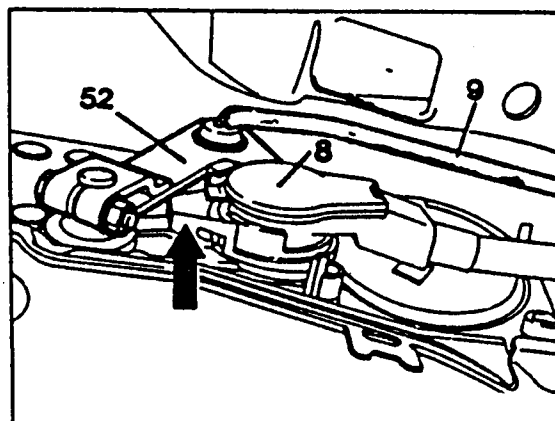
20-Before pushing propeller disc back from propeller flange, slacken close-fit sleeves in propeller flange. To do this, use a drift pin of 10 mm dia and approx. 150 mm long.

21-Push propeller shaft rear ward as far as the intermediate bearing and clamping element allow.



22-Remove plug for starting switch (8).

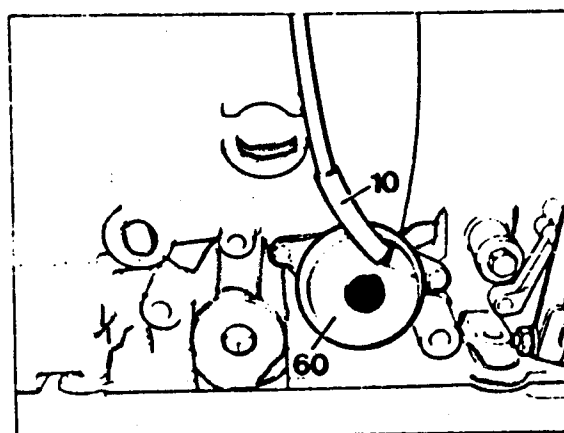
The plug for the starting lock switch is secured by a locking device (white plastic ring). The locking device must be turned upwards (in direction of arrow) before disconnecting the plug. Carefully press off plug using two screw drivers at the cable output and the tab.



23-Unhook shift rod (9) from range selector lever (52).

24-Disconnect vacuum line (10).

25-Unscrew oil cooler feed line.

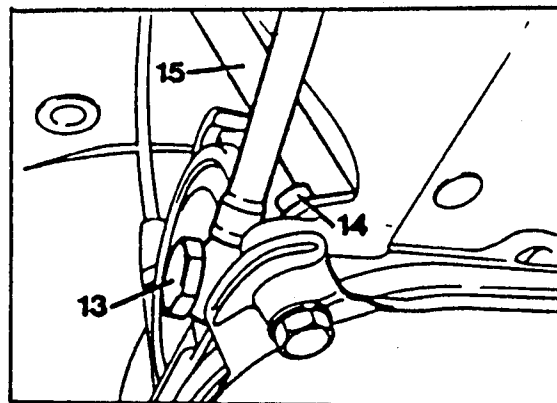


26-Disconnect oil cooler feed line and oil cooler return line (13).

INSTALLATION NOTE:

Replace gaskets for feed and return lines.

27-Screw our mounting screw (14) for oil filler neck (15) and push oil filler tube up.



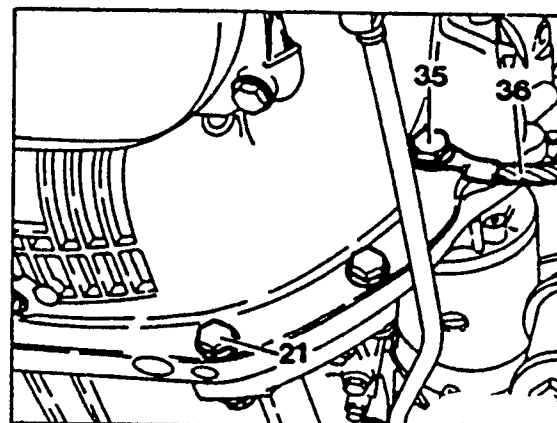
28-Screw out all mounting screws (21) except for the two screws on the side (35).

INSTALLATION NOTE:

Tightening torque is 55 Nm.

29-Slightly jack up transmission.

30-unscrew remaining bolts.

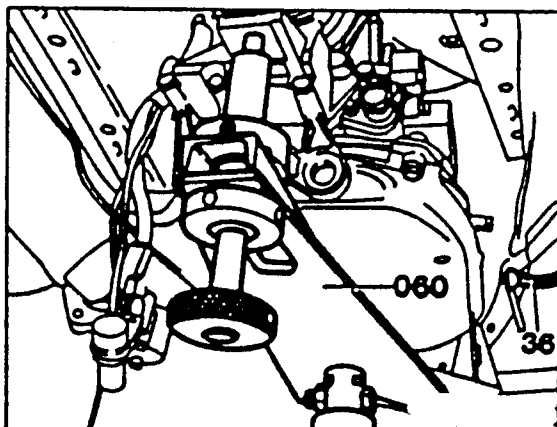


31-Slide transmission to rear as far as drive shift permits and lower jack carefully.

INSTALLATION NOTE:

Lift transmission to engine height and slide forward until torque converter housing is against engine. Reconnect ground strap (36)

32-Lift transmission off of Jack.



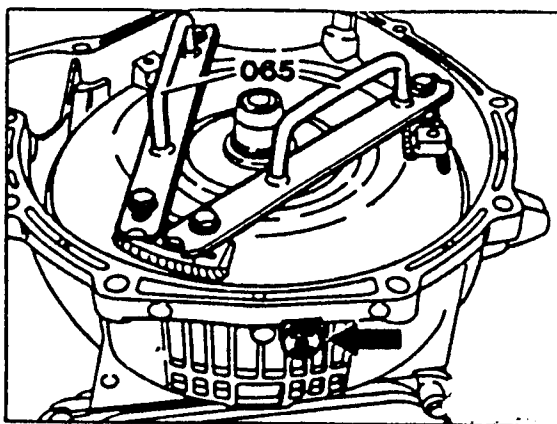
INSTALLATION NOTE:

Turn torque converter so that one of the three threaded plates points straight down. Slightly grease centering pin on converter.

33-Set Transmission in vertical position.

34-Turn plastic retaining pin (arrow) for converter 1/4 turn counter-clockwise with 8mm allen wrench and remove.

35-Screw bracket onto converter as illustrated.



36-Pull out torque converter.

INSTALLATION NOTE:

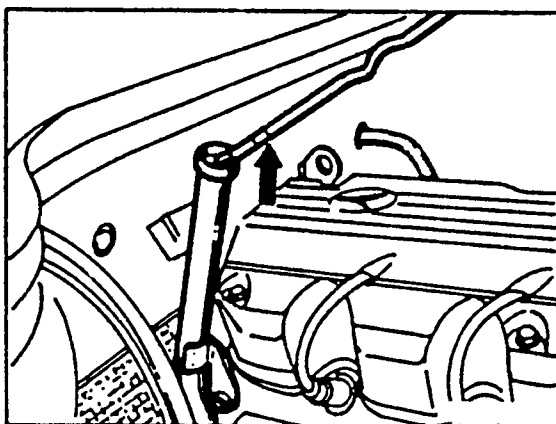
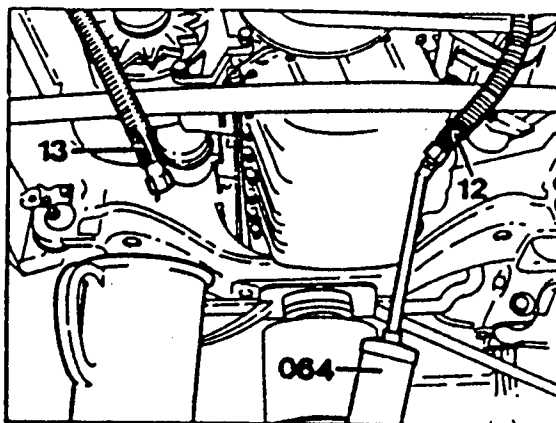
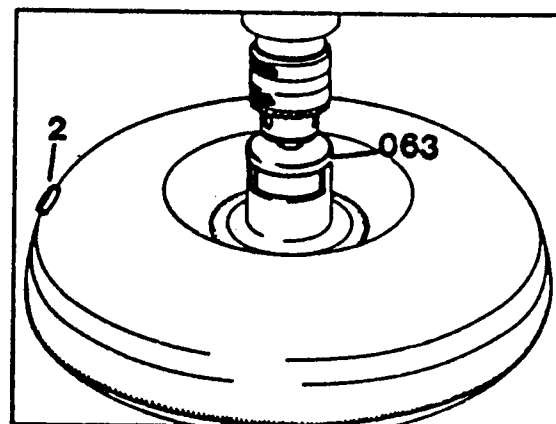
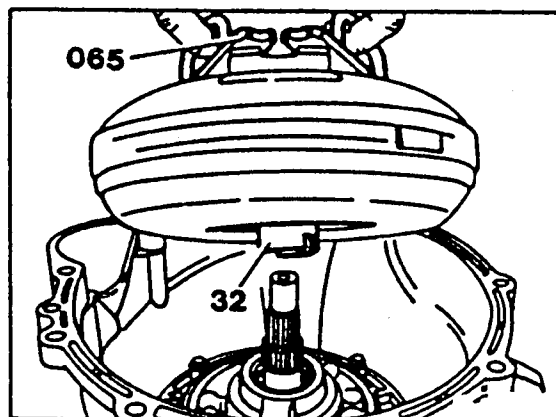
Grease drive flange (32) and crankshaft bearing journal with molycode. Turn torque converter back and forth when installing to allow teeth to mesh. Insert plastic retaining pin (arrow) and turn 1/4 turn clockwise.

If the transmission oil pan contains metal chips, replace the torque converter. Metal chips cannot be completely removed by flushing the torque converter.

37-Flush torque converter by adding 1 liter of kerosene. Insert flushing mandrel (063) (Mercedes tool number 116 589 00 15 00) and operate at a low speed for approximately 2 minutes. Then drain kerosene by removing drain plug. Repeat this procedure 3-4 times until kerosene flowing out is clean.

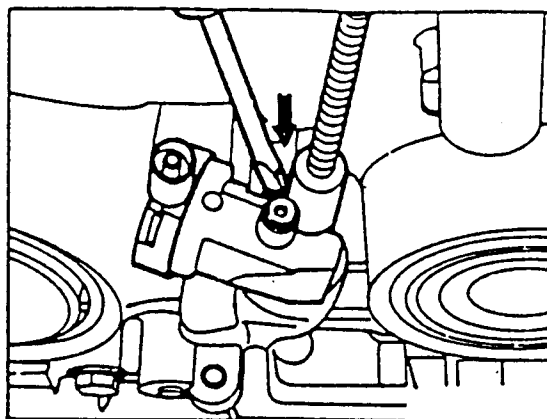
38-Screw oil cooler to syringe (064) (Mercedes tool number 112 589 00 72 00) and flush with kerosene. Then blow out oil cooler lines and oil lines.

39-Add transmission fluid through filler neck. When the transmission is at operating temperature (80° C.) the oil level should be at the maximum mark (arrow).

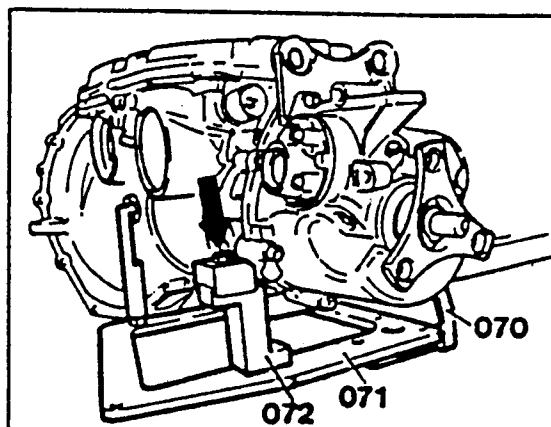


TEARDOWN;

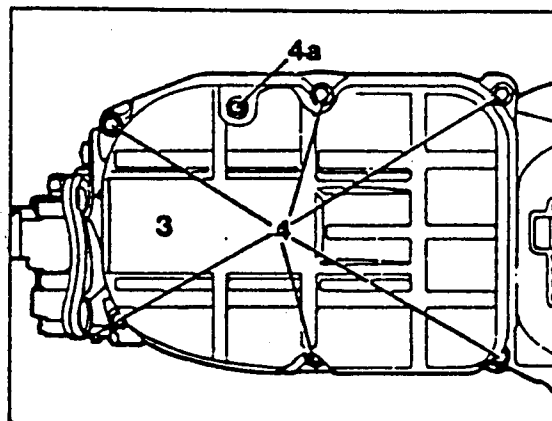
1-Remove control pressure cable. Release lock with screw driver (arrow) and unhook control pressure cable.



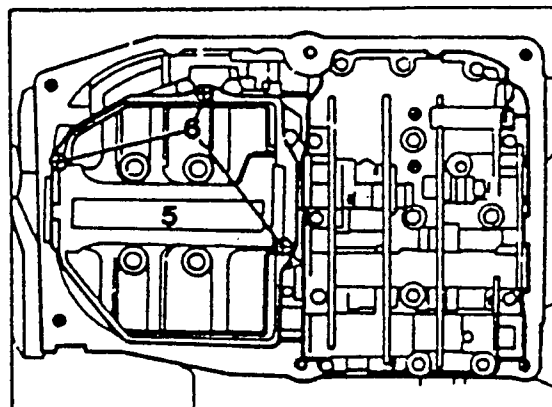
2-Place transmission in holding fixture. Position transmission as shown in illustration.



3-Remove bolts (4) and remove transmission oil pan (3).



4-Remove phillips screws (6) and remove oil filter (5).



5-Remove hex head bolts (7) and (7a) and remove valve body assembly (A).

Disassemble valve body, refer to valve body section.

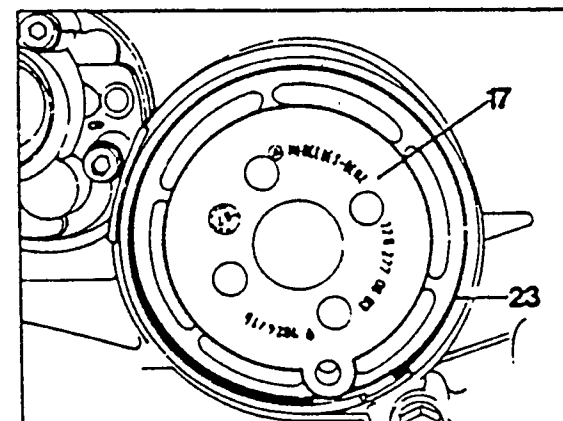
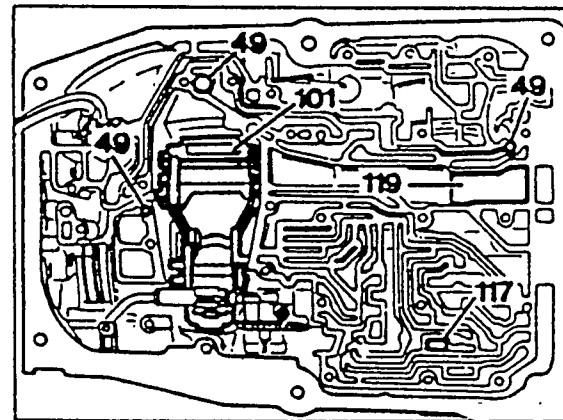
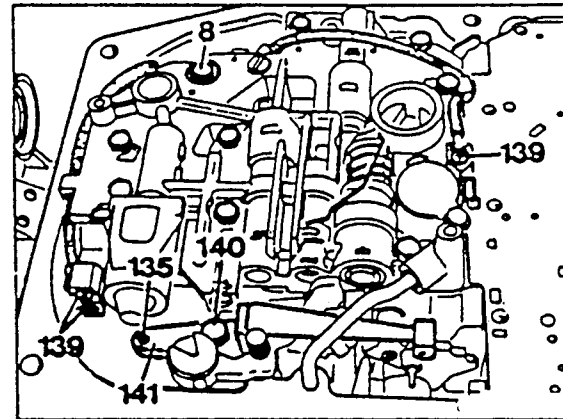
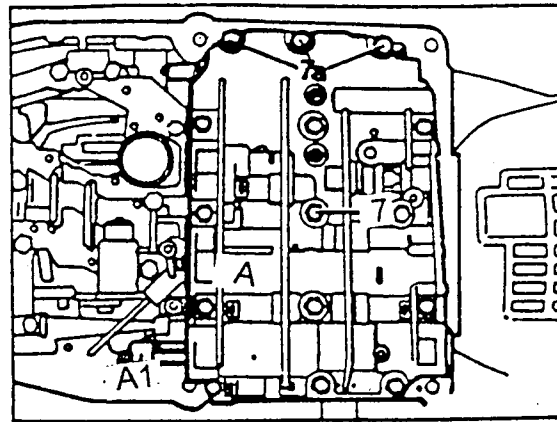
6-Remove hex head bolt (140), remove holder (141) with catch spring (142) and locating pin (135).

7-Remove clamping screws (139) and hex bolts (8).

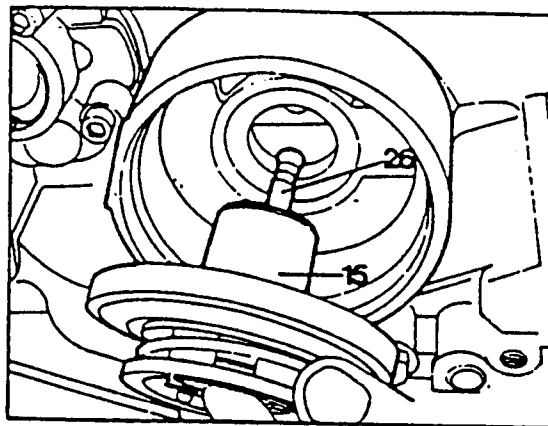
8-Remove bottom cover (13) together with intermediate plate (14) and oil tube (9).

9-Remove one-way valves (49), brake band guide B2 (101), oil deflector (119) and temperature throttle (117).

10-Press in brake band piston cover B2 (17), remove retaining ring (23) and remove brake band piston cover.

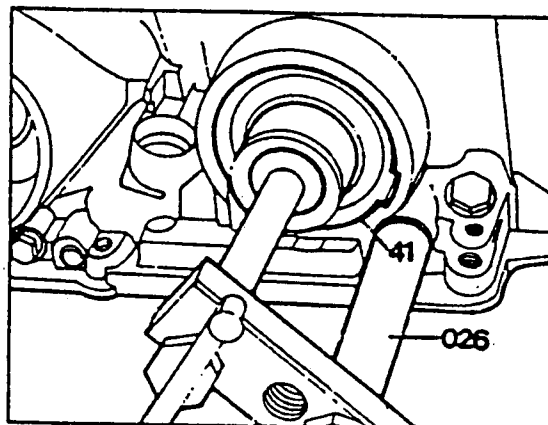


11-Pull out brake band piston B2 (15) with thrust pin (26) clipped in.



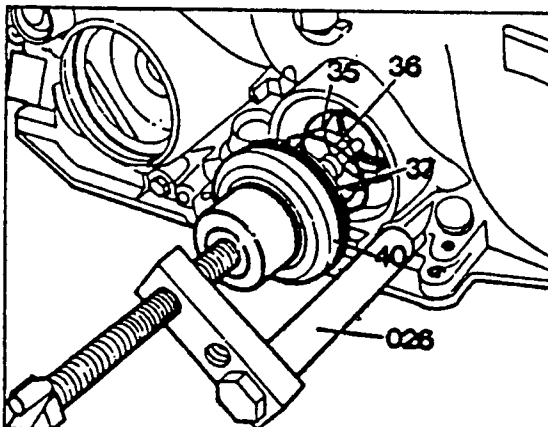
12-Attach assembly device (026) (Mercedes tool 201 589 03 69 00) and screw into transmission housing.

13-Clamp assembly device and remove retaining ring (41).

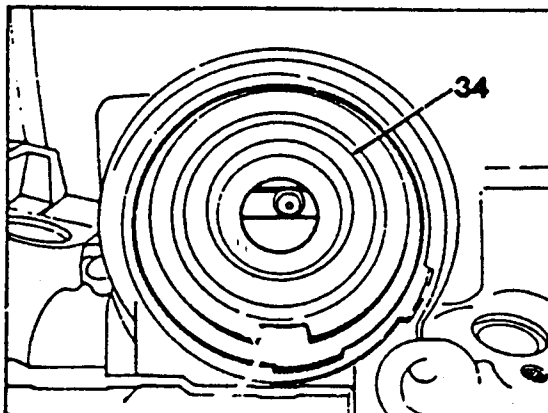


14-Release assembly device (026), remove brake piston B1 (37) together with thrust pin, as well as cover (40) and return springs (35,36).

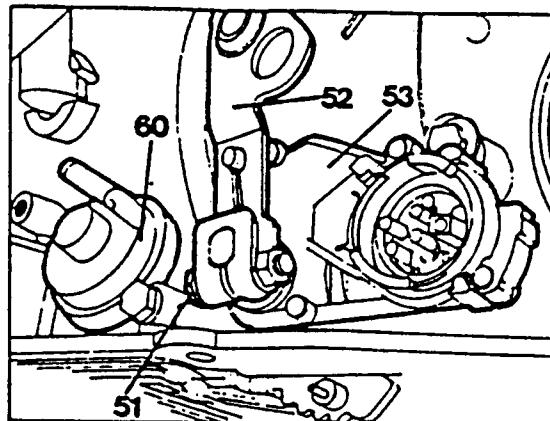
15-Remove release assembly device.



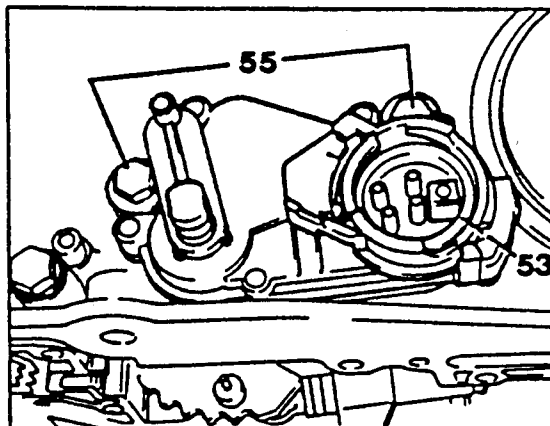
16-Pull out brake band guide B1 (34).



17-Remove hex bolt (51) and pull of range selector (52) (Manual lever position sensor).

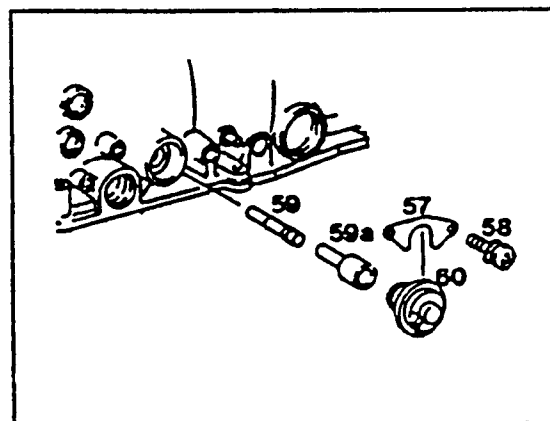


18-Remove hex head bolt (55) and remove starter lock-out switch (53).



19- Remove vacuum control unit (60) after removing allen screw.

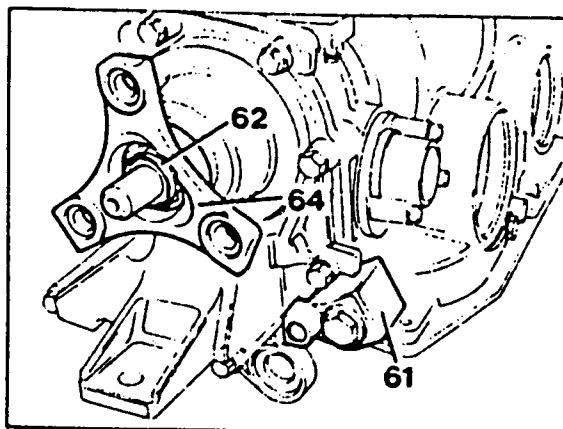
20-Remove heat expansion pin (59a) and modulator pressure control valve (59)



21-Unscrew kickdown solenoid valve (61).

22-Select parking lock. Unscrew double- hexagon collard nut (62) and pull off flange or internal gear.

Socket wrench 126 589 02 09 00

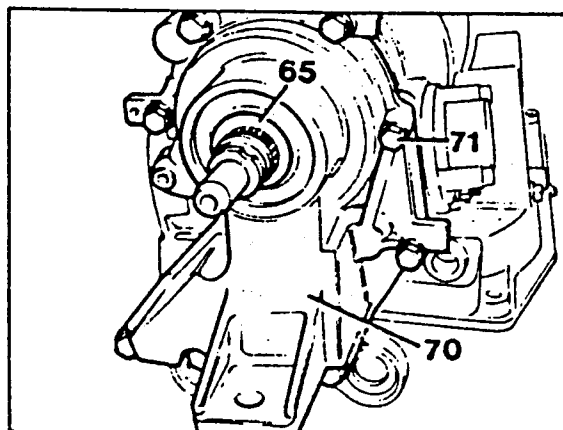


23-Remove washer (65).

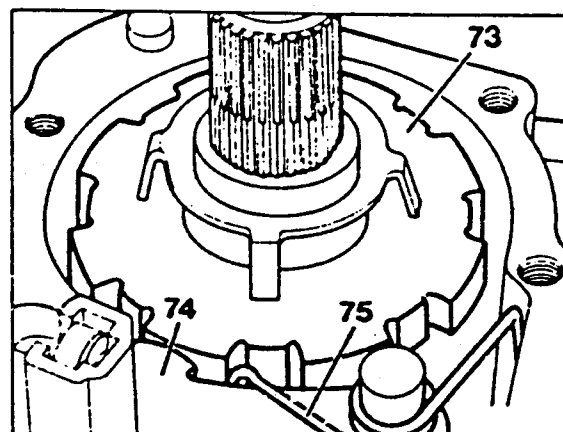
24-Unscrew bolts with washers (71).

25-Loosen rear cover (70) by tapping gently with a plastic mallet and remove.

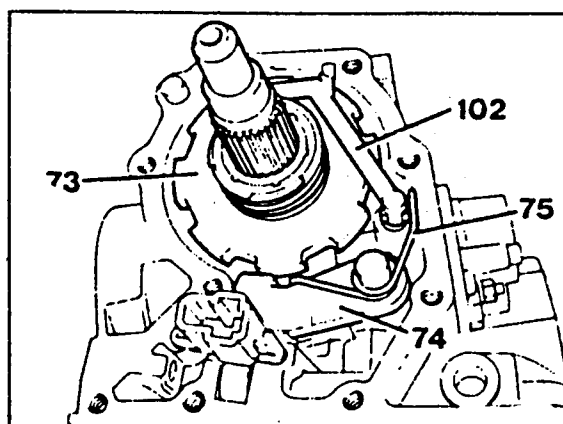
26-Dismantle rear cover.



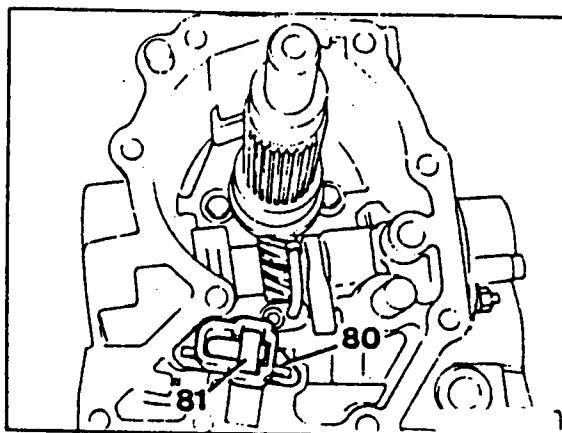
27-In vehicles with electronic speedometer, remove parking lock gear (73) with rotoe, parking lock pawl (74) and expansion spring (75).



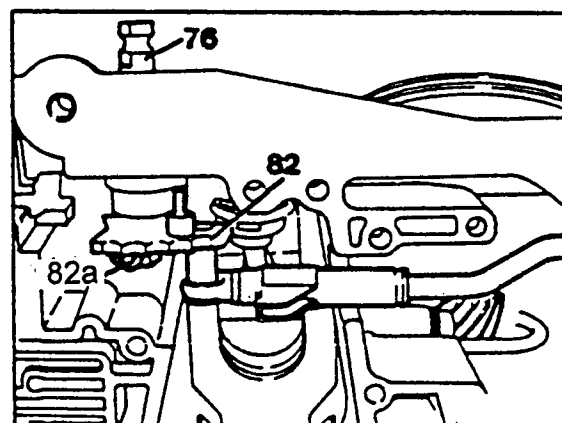
28-In vehicles with mechanical speedometer, remove oil pipe (102), parking lock gear (73) with helical gear, parking pawl (74) and expansion spring (75).



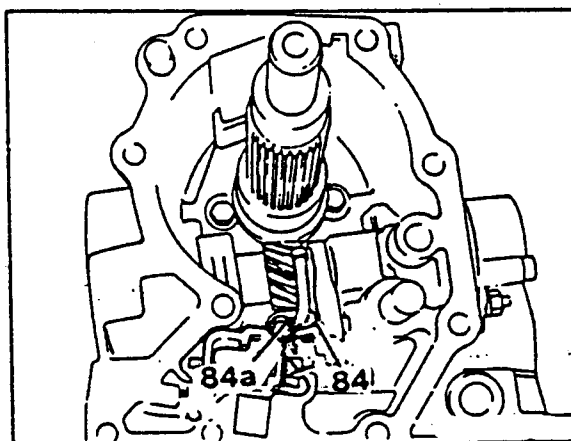
29-Pull off plastic guide (80) upwards and then remove roller (81).



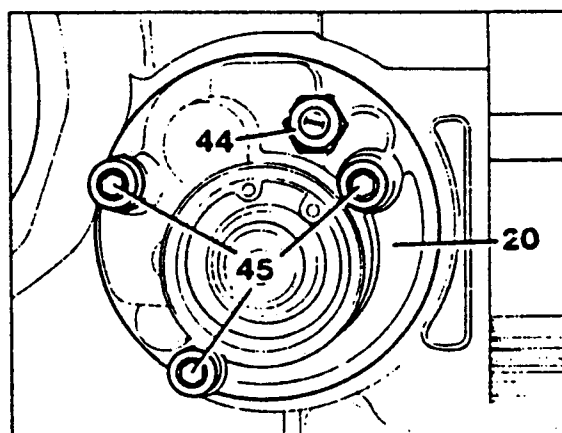
30-Unscrew hexagon socket bolt (82a), pull out shaft (76) and remove notched plate (82) with spring linkage.



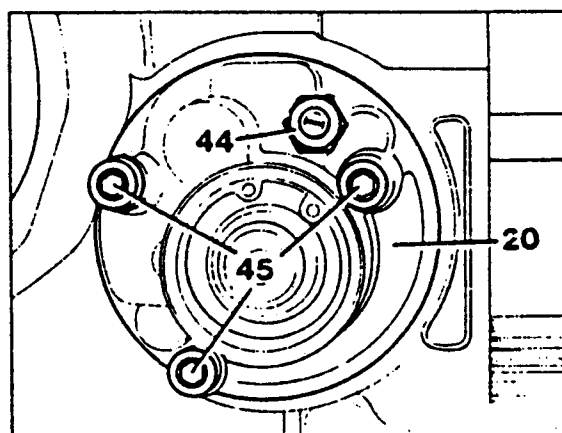
31-Unscrew hexagon socket bolt (84a) and remove with oil pipe (84).



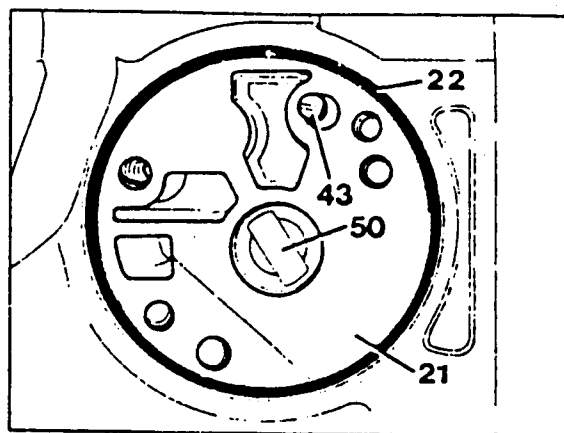
32-Unscrew nut (44) from axial retainer for the governor assembly.



33-Unscrew hexagon socket bolts (45) and remove secondary (rear) pump (20).

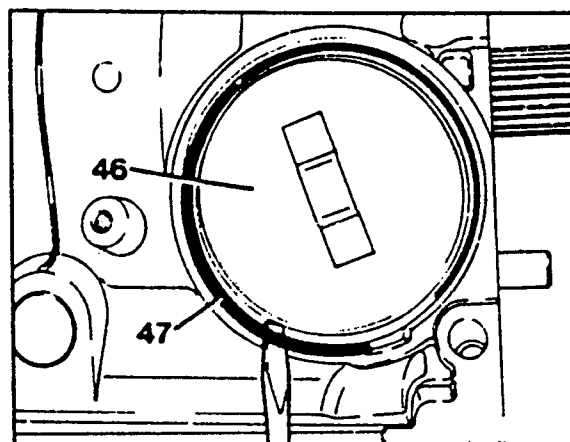


34-Remove O-ring (22) and intermediate plate (21) of secondary (rear) pump.



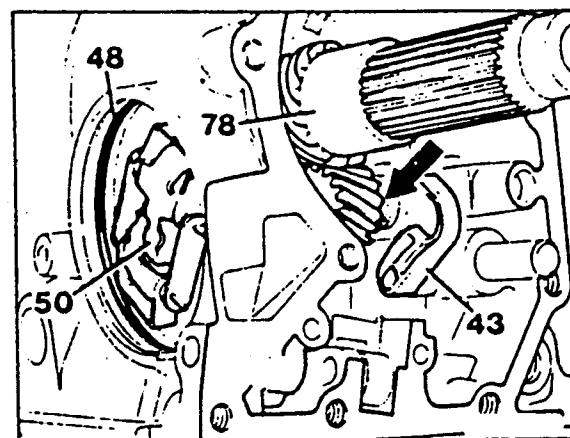
35-Press cover (46) for governor and remove circlip (47).

36-Pull out cover (46).



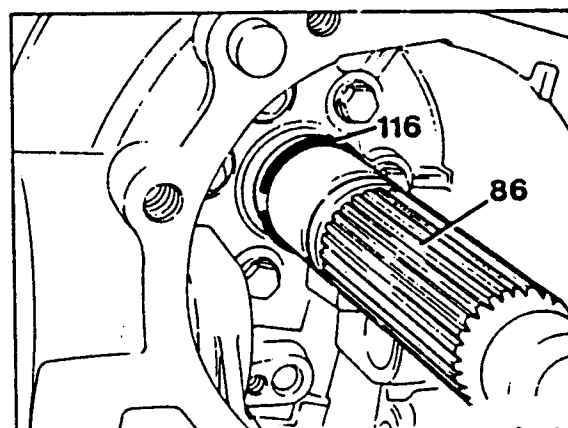
37-Swivel axial retainer (43) back and then pull out governor (50). Take out axial retainer.

38-Pull off spacer washer and helical gear (78).



39-Remove snap ring (116) from drive shaft (86).

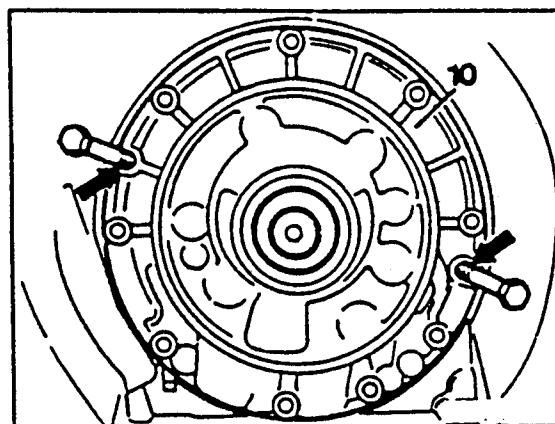
Pliers 000 589 52 37 00



40-Remove combination screws out of front cover.

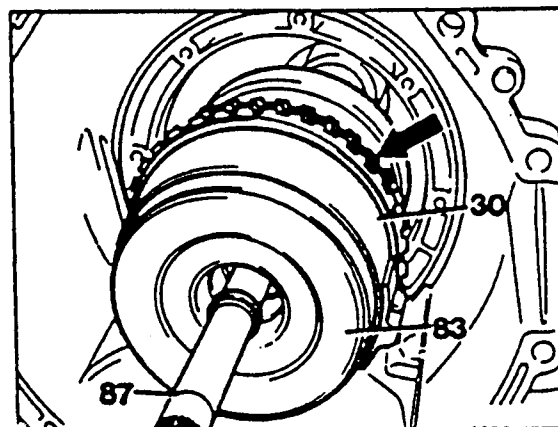
41-Screw two bolts into threaded holes (arrows) and use to pull out front pump assembly.

refer to teardown section on pump assembly.

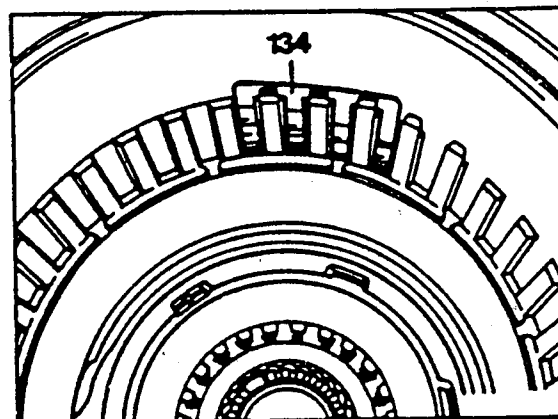


42-Grip planetary gear set on input shaft (87) and carefully pull out toward front.

43-Pull clutch K1 (83) off of planetary gear set together with brake band B1 (30).

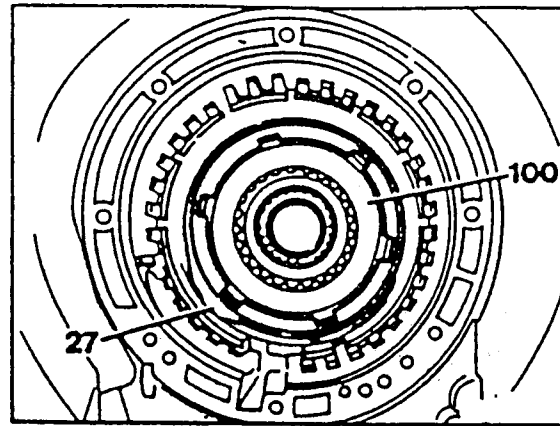


44-Remove plates for B3 assembly (arrow).

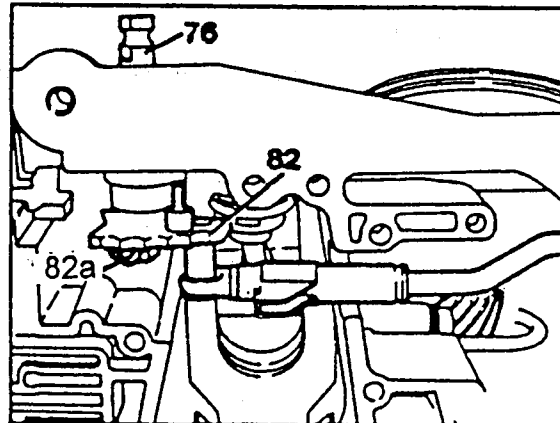


45-Remove damping spring (134).

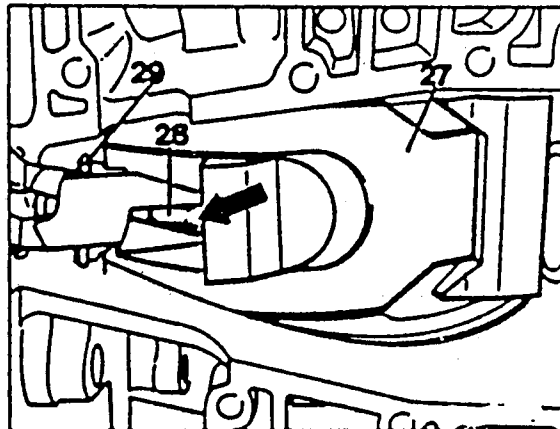
46-Remove clutch K2 (100).



47-Remove allen screw (82a), pull out shaft (76) and remove catch plate (82) with rooster comb linkage.



48-Remove thrust pin (28).

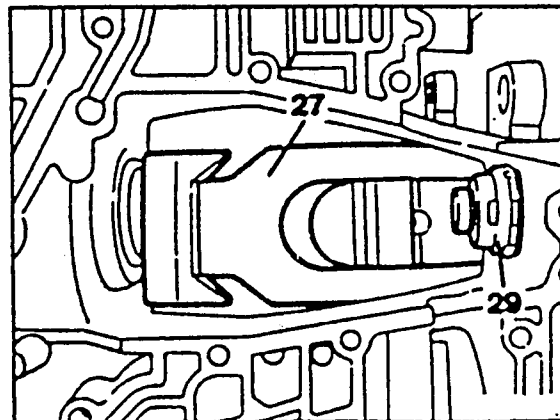


49-Position brake band B2 (27) at angle, press together and remove.

NOTE:

Lateral cracks in brake band lining have no effect on function.

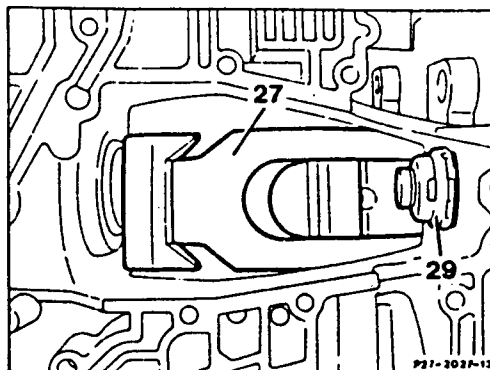
50-Pull out thrust element B2 (29).



51-Move brake band B2 (27) to a diagonal position, compress and remove.

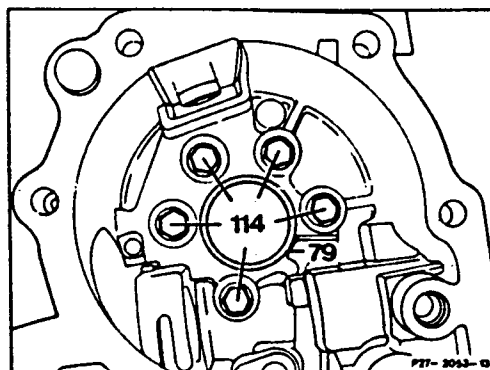
NOTE:

Lateral cracks in the lining of the brake band B2 are NOT important.



52-Pull out thrust element B2 (29).

53-Unscrew hexagon bolts (114). Screw two bolts approx. 80 mm long into two opposite holes. loosen support flange (79) from housing by tapping both bolts with a hammer.



54-Remove any sealing rings, test connection plugs etc. remaining in the housing.

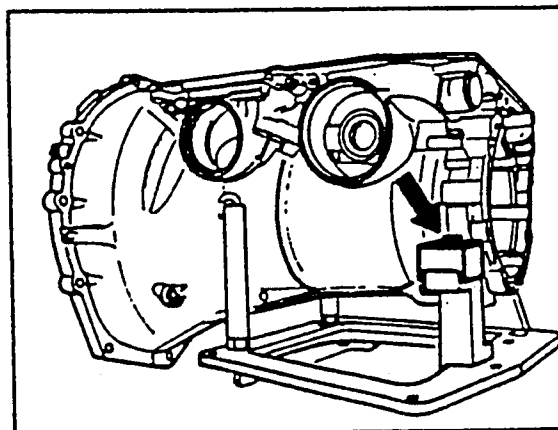
55-Remove housing from assembly fixture.

ASSEMBLY:

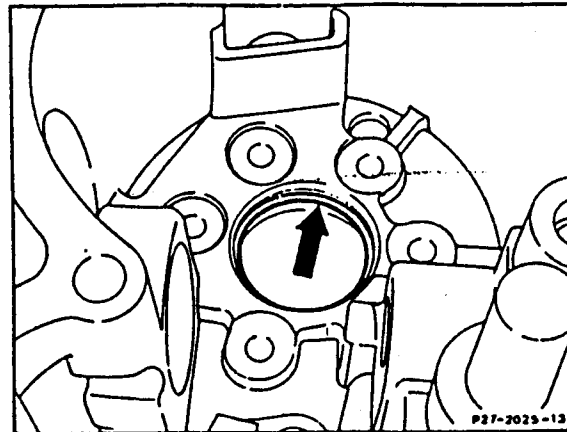
NOTE:

Clean case, soak friction materials clutches bands etc in transmission fluid for at least 1 hour before reassembly.

56-Re-install transmission case in holding fixture.

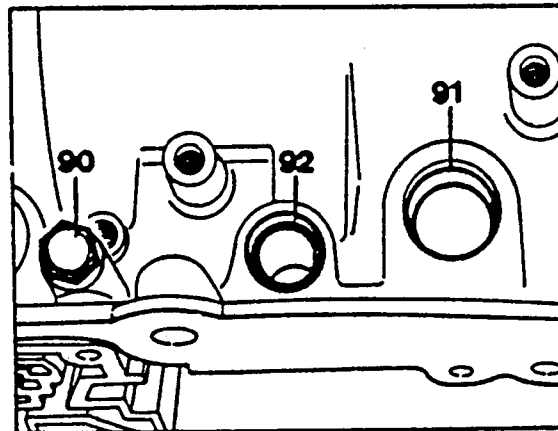


57-Place O-ring (arrow) in groove.



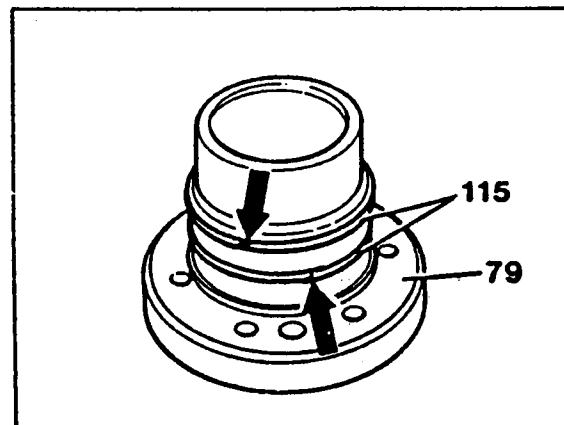
58-Insert radial seal (92).

59-Install plug (90) with new aluminum gasket and tighten to 10 Nm.



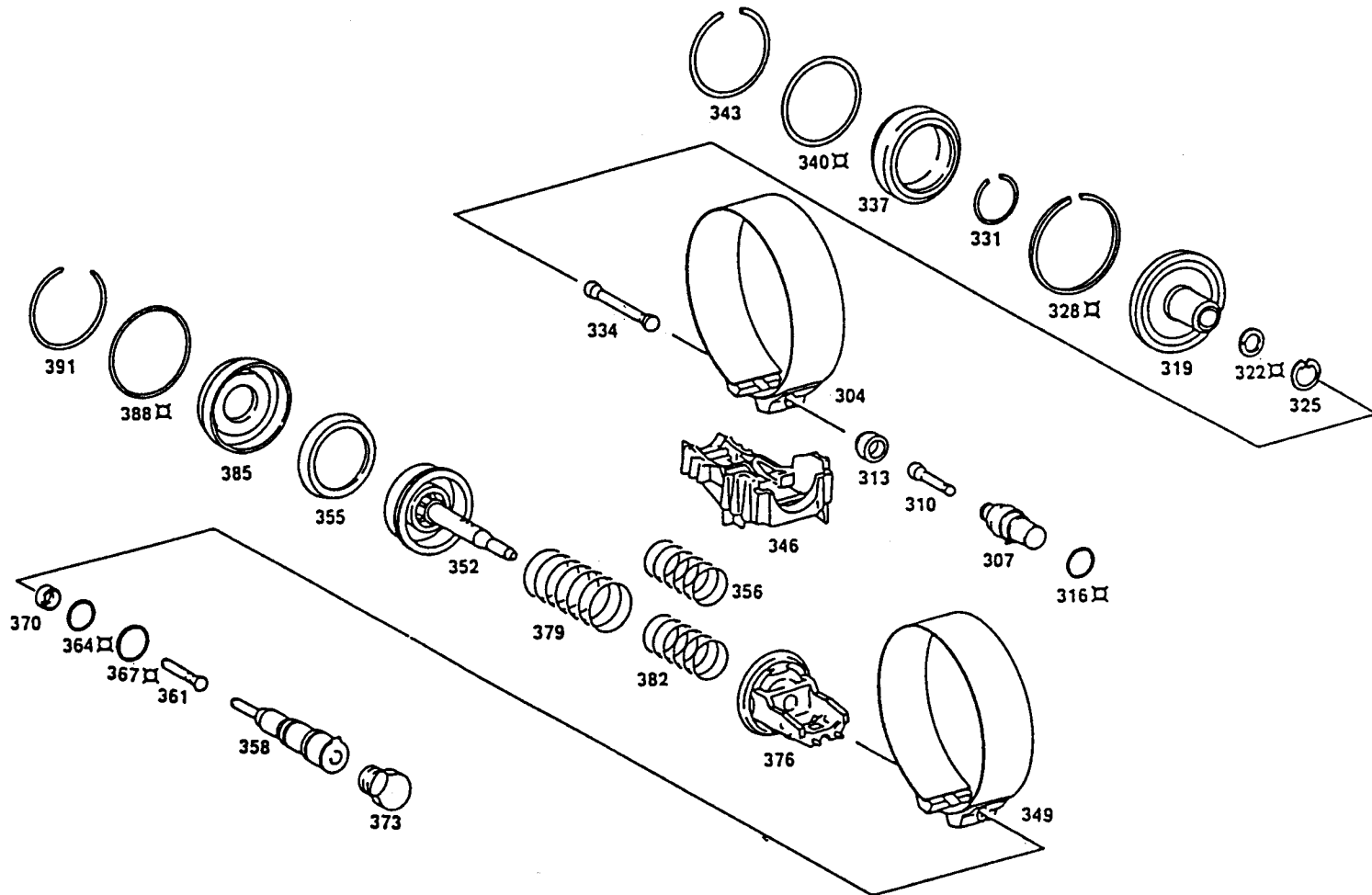
60-Coat grooves in support flange (79) with grease. Insert teflon rings (115) and push into the groove so that the diagonal cut (arrow) remains closed.

61-Insert support flange (79) following pattern of holes for retaining bores: use two bolts, approx. 80 mm long, for centering.

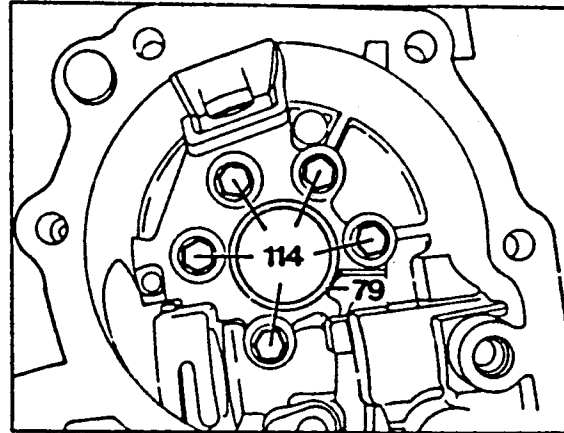




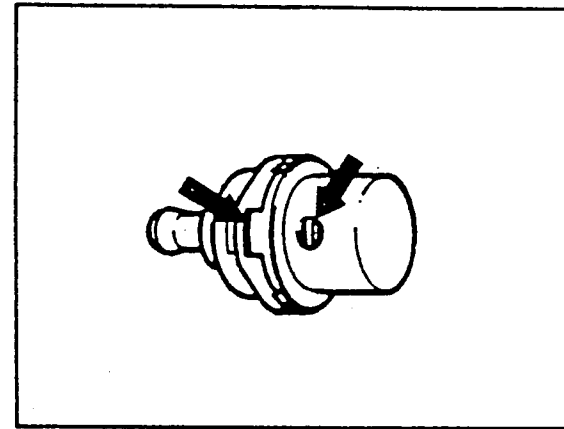
Servo and Band Assembly



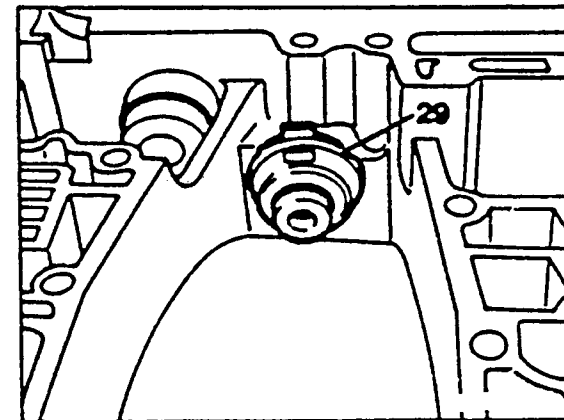
62-Screw in bolts with washers (114) and tighten to 11 Nm.



63-Assure that thrust element B2 is not twisted. When the thrust element is removed the hole should point in the same direction as the tab (arrows).



When the thrust element is installed one spring coil of the thrust element should be visible through the hole in the oil tube on the lower cover.



64-Insert thrust element B2 (29) with tab (arrow) pointing up.

NOTE:

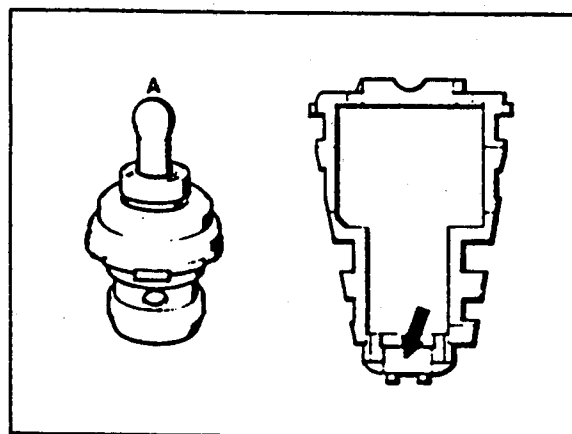
Thrust bearing B2 brake band guide brake band piston B2 are installed in different versions.

Below is a list of the versions.

VERSION "A"

Thrust bearing B2 together with brake band guide without oil discharge hole (arrow).

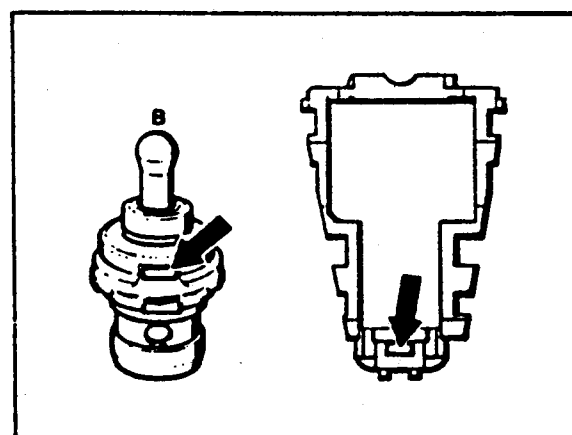
Installed up to transmission serial No 377 682.



VERSION "B"

Thrust bearing B2 with oil discharge hole down the way (arrow) only in combination with brake band guide with additional oil discharge hole (arrow).

Installed effective Transmission serial No. 377 683.



VERSION "C"

Thrust bearing B2 with enlarged stroke, identified by elimination of annular groove (arrow) in combination with brake band piston B2 with reduced contact stroke. Consequently, size "a" is 2.6-2.8 mm; was 3.4-3.6 mm.

Installed effective Transmission serial No. 451 986

NOTE;

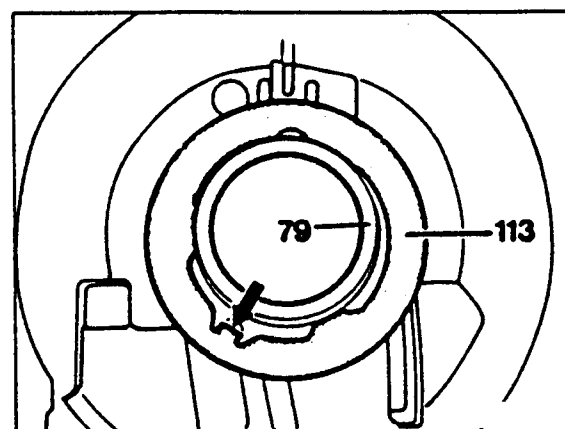
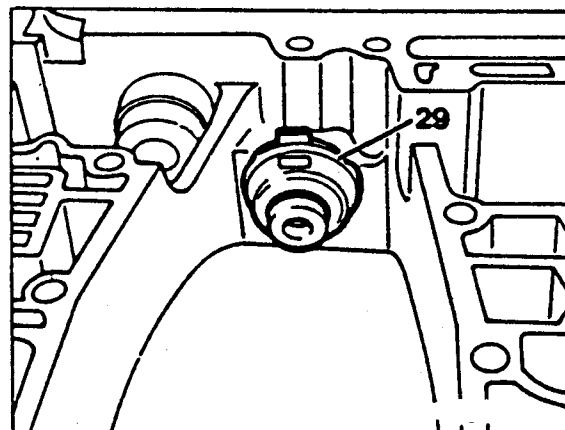
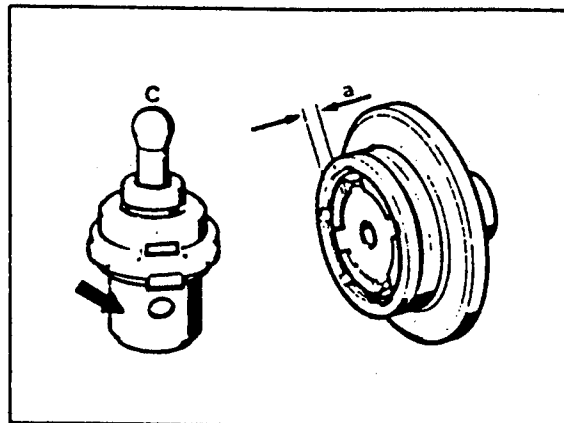
Install thrust bearing B2 with enlarged stroke only together with the modified brake band piston B2.

The previous thrust bearing can be combined with the old and new brake band pistons.

65-Insert pressure body B2 (29) with the tab facing up.

66-Insert thrust washer (113) so that the tab for the anti-twist lock (arrow) is located in the housing.

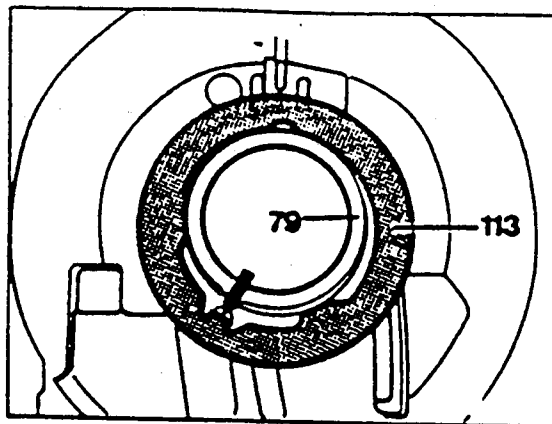
67-Re-check the seating of the teflon rings on the supporting flange (79)



68-Insert thrust washer (113) so that tab to prevent rotation (arrow) is set in housing.

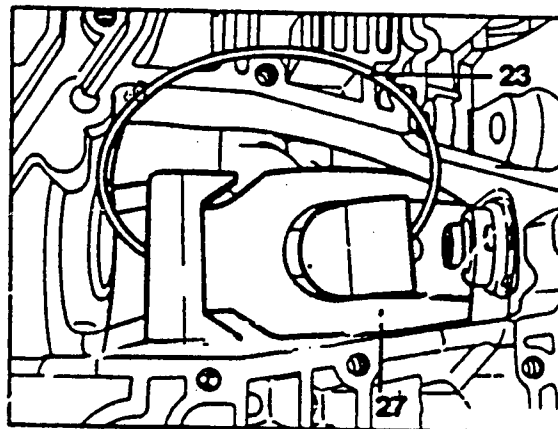
NOTE:

Check seat of teflon rings on support flange (79) again.

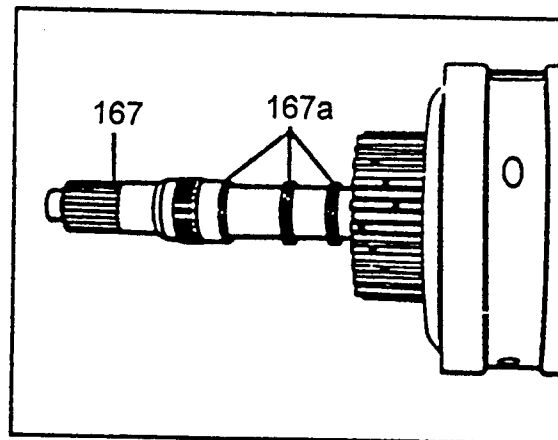


69-Press brake band B2 (27) together on support tabs as far as possible and insert into housing.

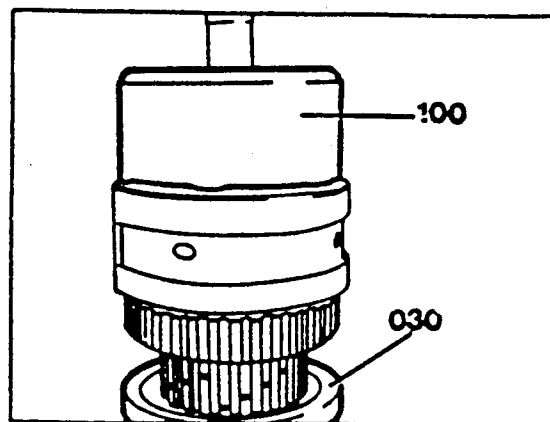
To facilitate assembly the brake band can be held together with a clamp (23) or a clip.



70-Grease grooves in intermediate shaft (167). Insert teflon rings (167a) and press into groove until gap is closed.

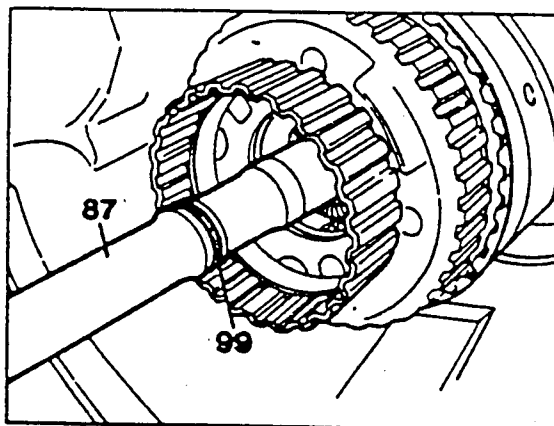


71-Install clutch K2 (100) on planetary gear set.

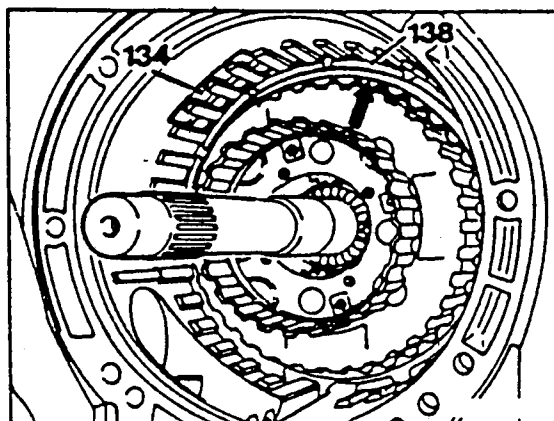


72-Insert planetary gear set into transmission housing while turning input shaft (87).

73-Place transmission in vertical position with input shaft (87) pointing upward.



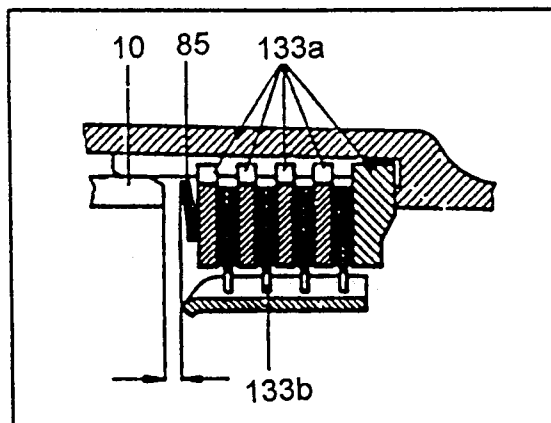
74-Check installed position of planetary gear set. The planetary gear set is installed properly when the upper edge of the front connection support (arrow) is lower than the support surface (138) of the outer disc LE3.



75-Reassemble front cover with the front pump. Install damping spring (134).

76-Position plates for clutch pack brake B3 in sequence as shown in figure and insert individually.

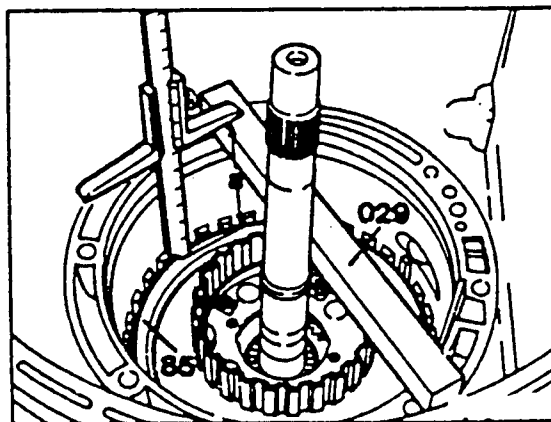
- 133b inner plate
- 133a outer plate
- 85 Plate spring
- 10 Piston LB3



77-Measure release clearance "L" of multiple plate brake B3 and adjust.

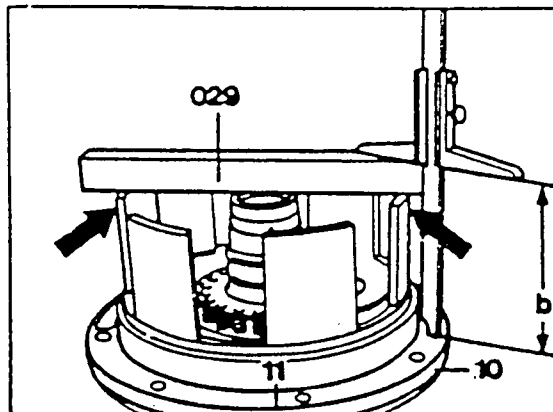
Measure dimension "a"

Position parallel support (029) on machined surface and measure the distance to outer edge of plate spring (85) with depth gauge.

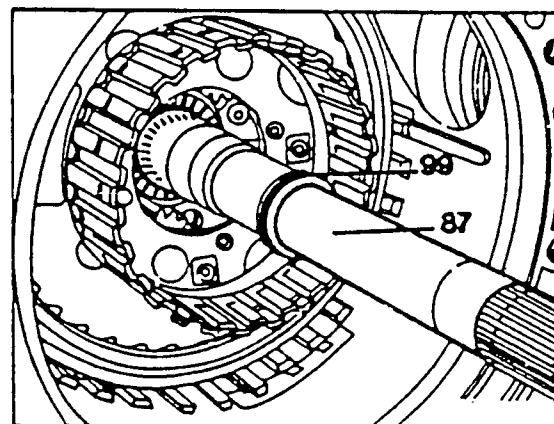


78-Measure dimension "b"

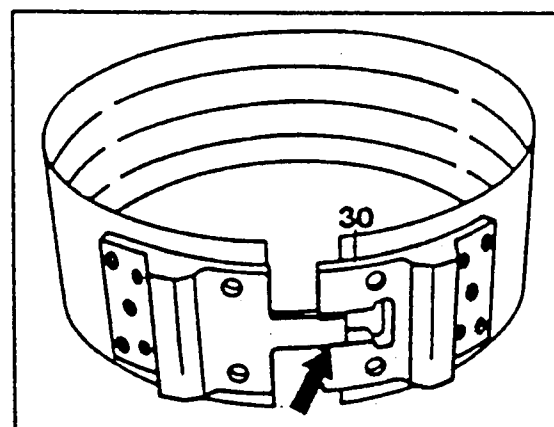
Position parallel support (029) on piston for multiple disc brake (arrows and measure depth of gasket (11). The difference between these two values is equal to the release clearance "L". Set release clearance "L" to nominal value of 1.5-2.0mm. Compensate by using outer plates available in different thickness.



79-Grease groove in drive shaft (87). Insert lubricating pressure ring (99) and press into groove until gap is closed.

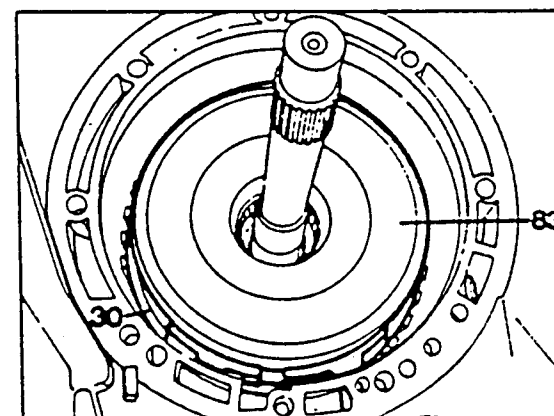


80-Hook assembly lock (arrow) on brake band B1 (30).

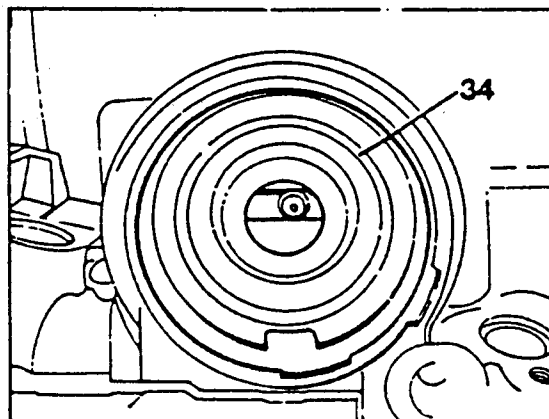


81-Insert clutch K1 (83) while turning so that teeth mesh.

82-Insert brake band B1 (30) so that pin of assembly lock (arrow, figure item 62) points toward thrust element B1.

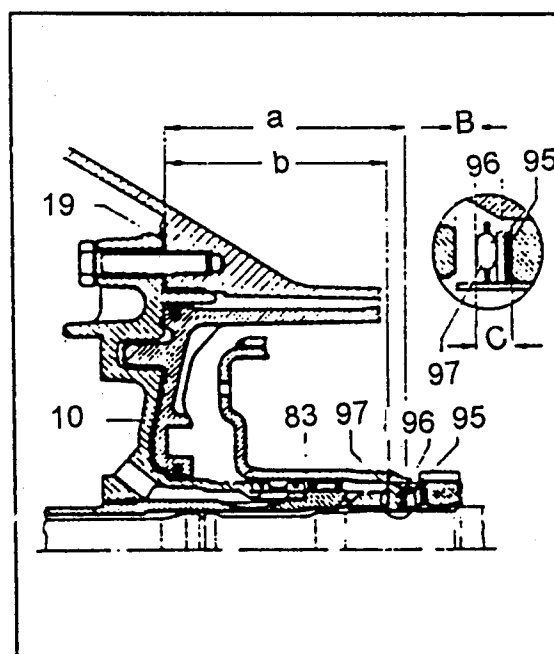


83-Insert brake band guide (34). Assure that the locating pin engages in the hole in the housing: press in until it can be felt engaging.



84-Measure end-play "B" for K1 Clutch and adjust.

Rear housing not installed 0.8-1.2mm
Rear housing installed 0.4-0.6mm.

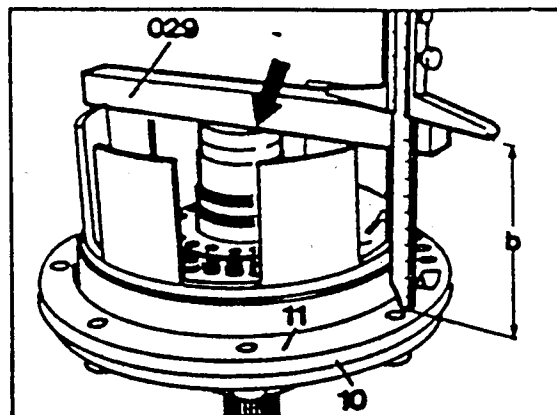


- 95 Shims
- 96 Thrust washer
- 97 Thrust bearing

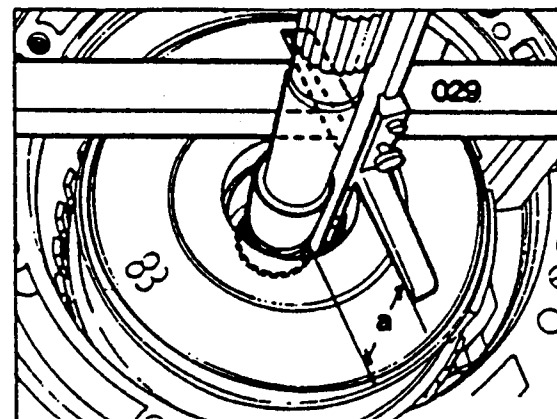
Place gasket (19) on front cover (10).

Position parallel support (029) (Mercedes tool 126 589 04 31 00) on flange (arrow)

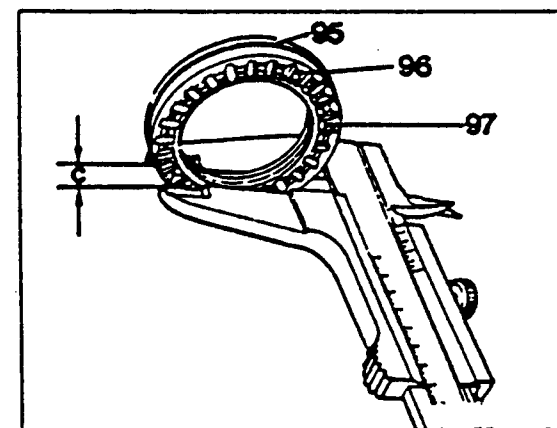
Measure distance from parallel support to gasket (11) with depth gauge (dimension "b").



Position parallel support (029) on machined surface of transmission housing. Measure distance between parallel support to contact surface in clutch K1 (83) with depth gauge (dimension "a").

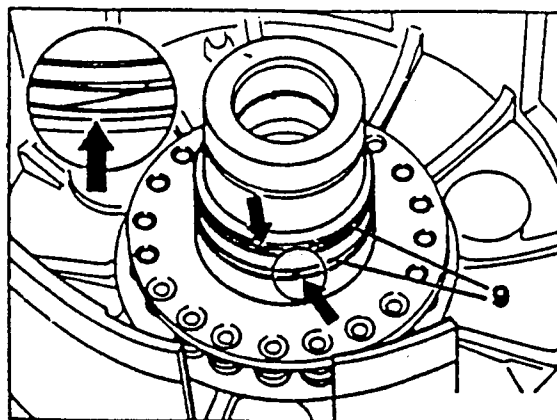


Hold shim (95), thrust washer (96) and thrust bearing (97) together and measure dimension "c" with vernier calipers. The end play "B" for clutch K1 is equal to dimension "a" minus dimensions "b" and "c" ($B=a-b-c$). The end play can be adjusted by inserting appropriate shims (95) (thickness 0.1;0.2;0.5mm)



85-Insert measured shims, thrust washer and thrust bearing into K1 one after the other.

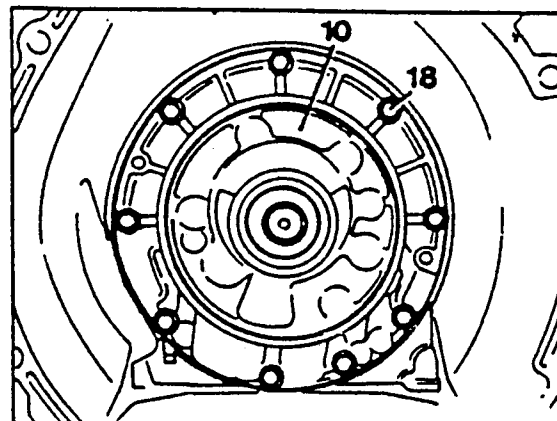
86-Install Teflon rings (9) with grease. Assure that the ring gap (arrow) remains closed. If required remove rings and reform to smaller diameter.



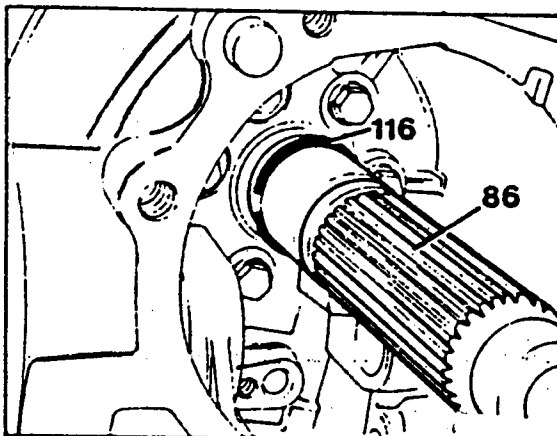
87-Insert front cover (10) with gasket, tighten bolts (18) M8x40 to 13 Nm.

NOTE:

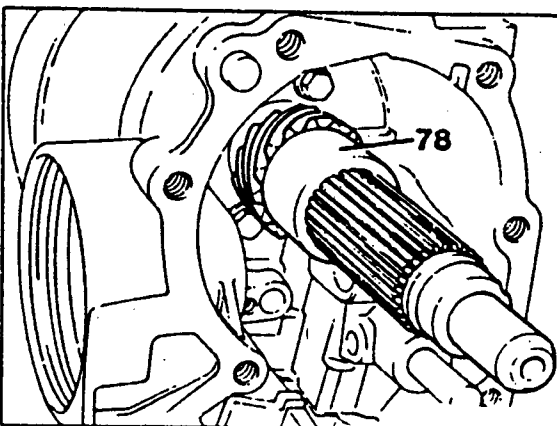
The gasket can be used a number of times, however it must NOT be coated with sealant. The bolts should be coated lightly with a non-hardening sealant.



88-Rotate assembly device until output shaft (86) points upwards. Push snap ring (116) along output shaft as far as its groove.



89-Attach helical gear (78).



90-Insert axial retainer (43) into transmission housing.

91-Insert O-ring (48).

92-Insert governor (50).

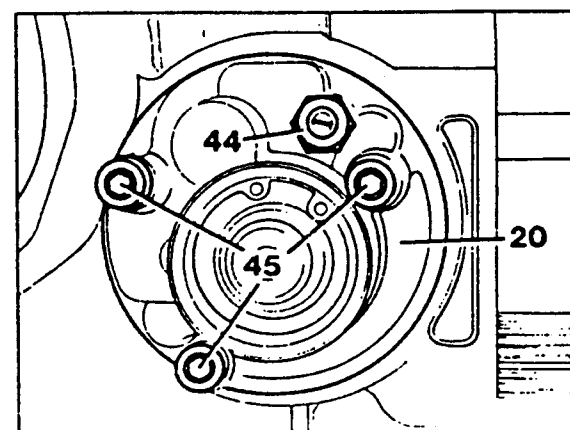
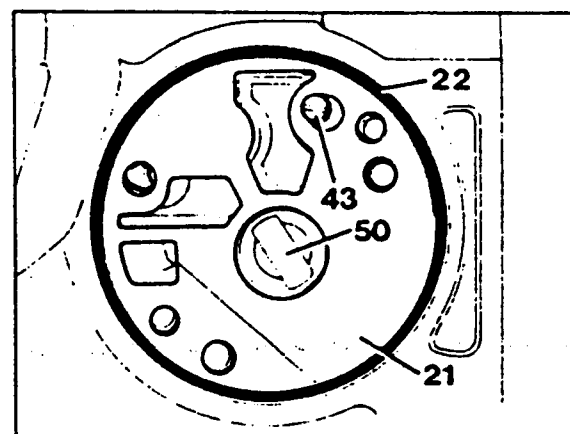
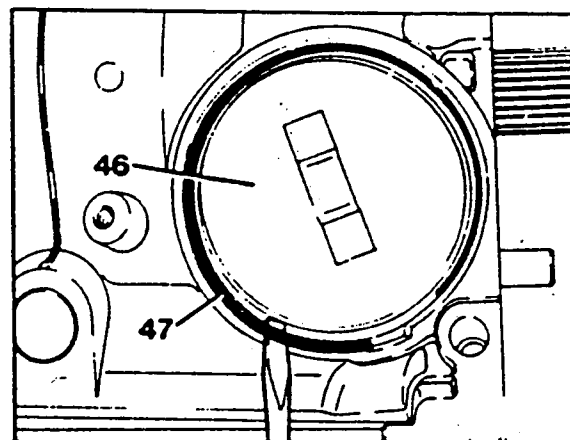
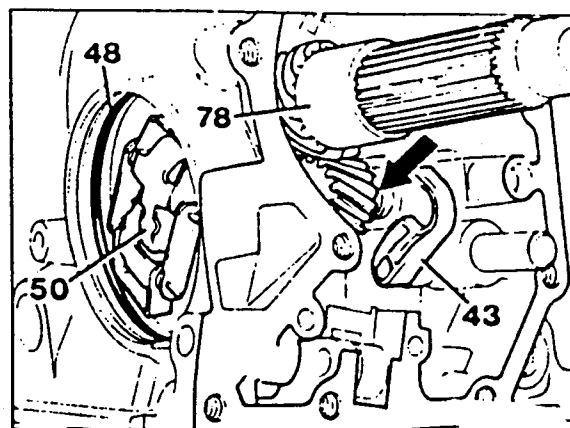
93-Swivel axial retainer (43) towards governor (50) so that it engages in the groove in the governor shaft (arrow).

94-Insert cover (46) and attach circlip (47) with the aid of a screw driver. Then pull cover outwards until it lies against the circlip around its entire circumference.

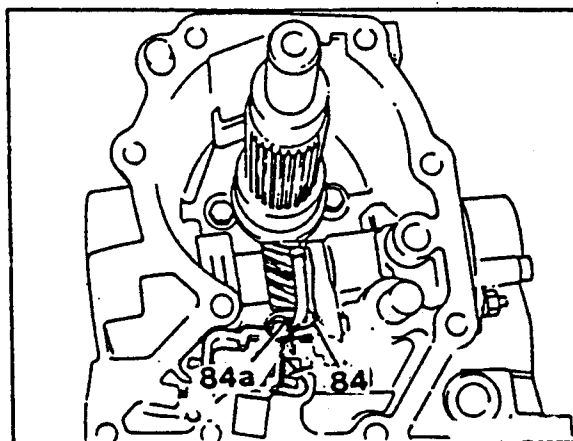
95-Insert intermediate plate (21) and O-ring (22).

96-Attach rear pump (20) and tighten hexagon socket bolts (45) to 8 Nm.

97-Check seating of axial bracket again, screw on nut (44) and tighten to 6 Nm.

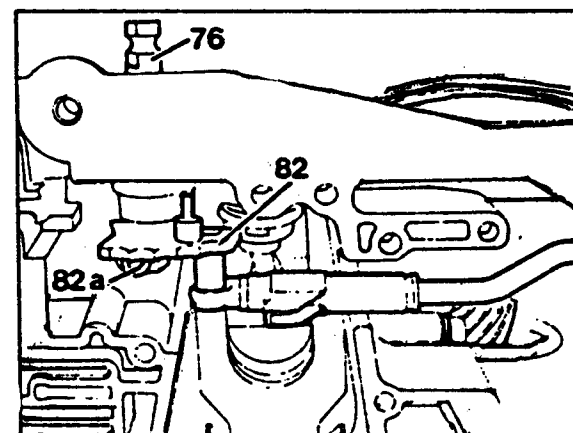


98-Insert oil pipe (84) and tighten hexagon socket bolt (84a) to 8 Nm.



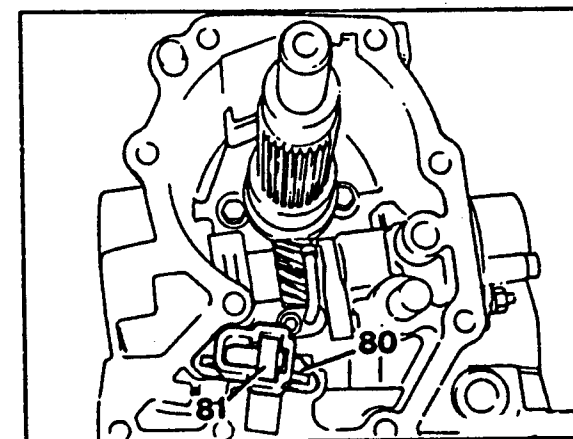
99-Insert notched plate (82) with spring linkage and push in shaft (76).

100-Screw in hexagon socket bolt (82a) and tighten to 8 Nm.

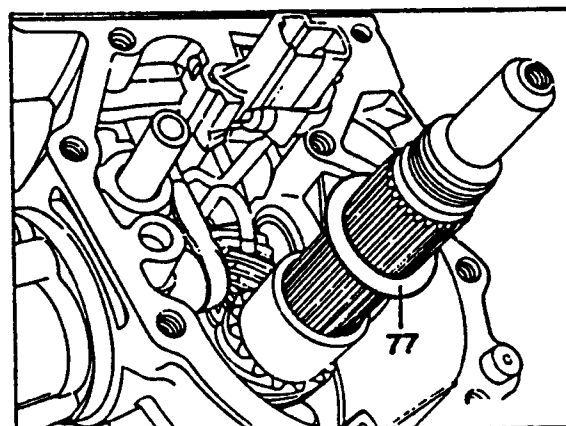


101-Push roller (81) onto spring linkage (82).

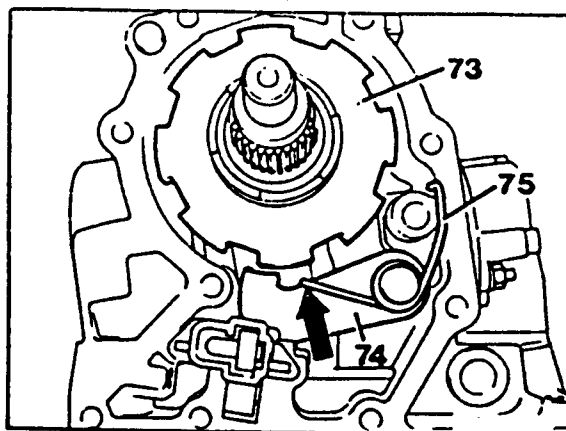
102-Attach plastic guide (80) and push into locating bores.



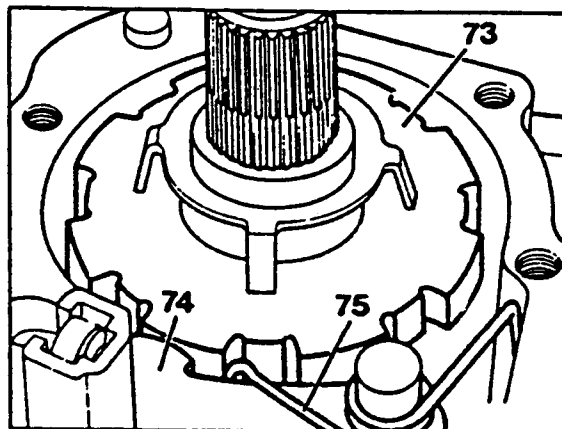
103-Place shims (77) onto helical gear.



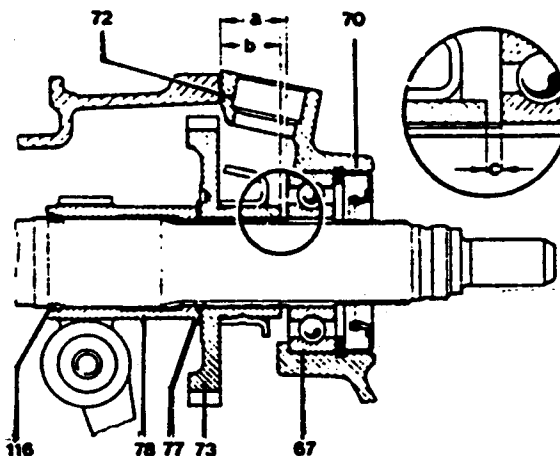
104-Push on parking pawl (74), insert expansion spring (75) and hook onto parking lock pawl (74).



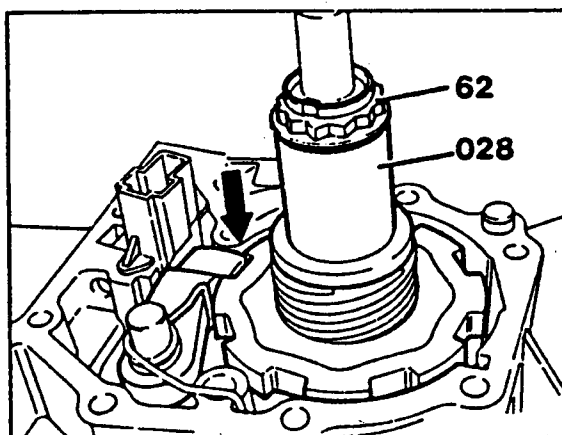
105-Attach parking lock gear (73) with rotor or helical gear.



106-Measure axial play (C) of output shaft (clutch K2) and correct.



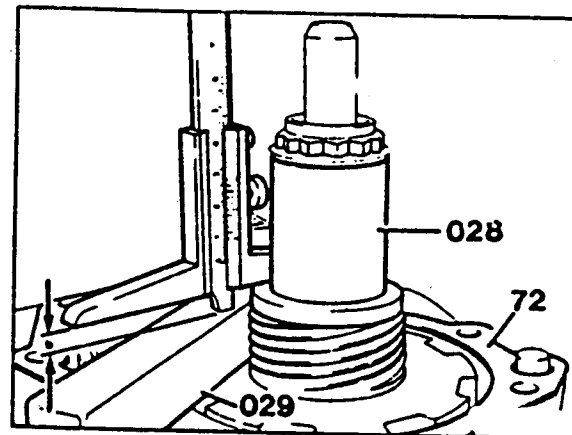
Attach measuring sleeve (028) 126 589 06 14 00 and tighten collar nut (62) to 100 Nm. Engage the parking lock pawl (arrow) to counter nut. Attach seal (72)



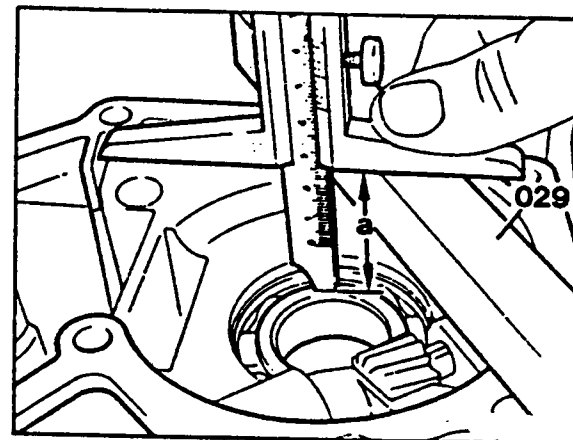
Position parallel-edged block (029) 126 589 04 31 00. Measure from measuring sleeve (028) to block using a depth gauge. Add 15 mm to the measured distance to obtain distance "b".

NOTE:

The 15 mm is the height of the parallel-edged block (20 mm) minus the edge of the measuring sleeve (5 mm). Assemble rear cover (70).



Parallel-edged block (029) on the sealing surface of the rear cover,

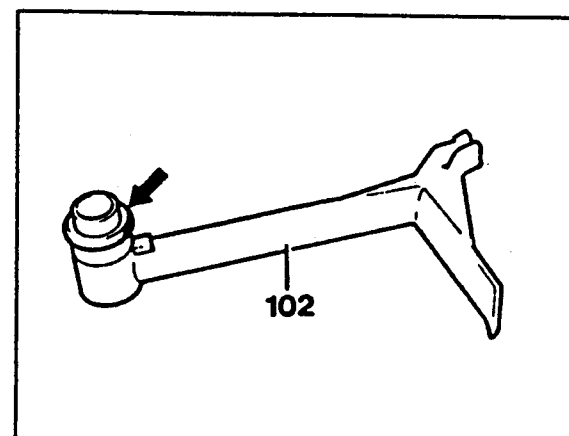


Measure from parallel-edged block (029) to the inside ring of the ball bearing using a depth gauge. Subtract 20 mm from the measured distance to obtain distance "a".

Distance "a" minus distance "b" equals the axial play "C".

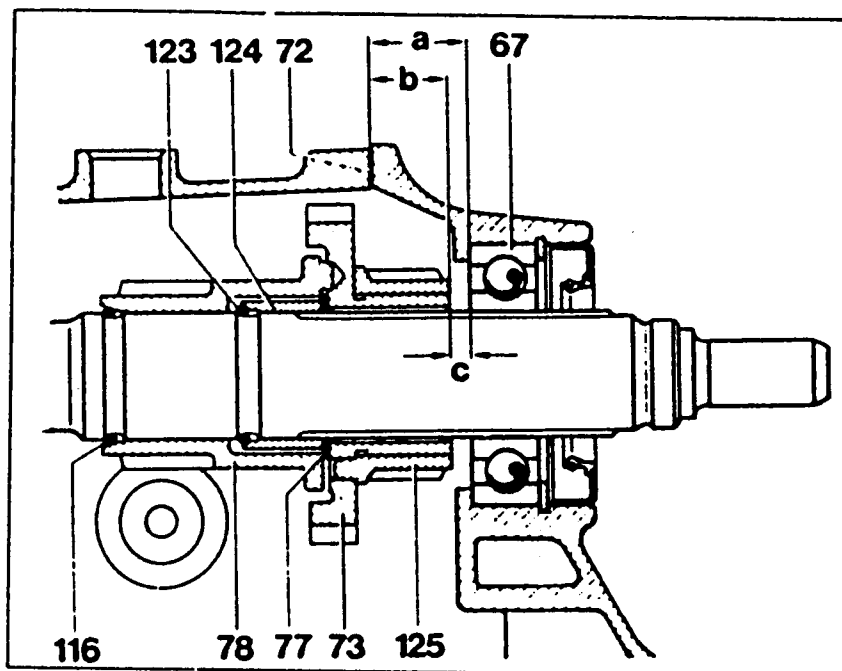
Correct the axial play "C" to $0.4 + 01$ mm by adding or removing shims (77) below the parking lock gear (73) see paragraph 103.

107-Push seal (arrow) onto oil pipe (102) for (mechanical) speedometer lubrication and insert pipe.



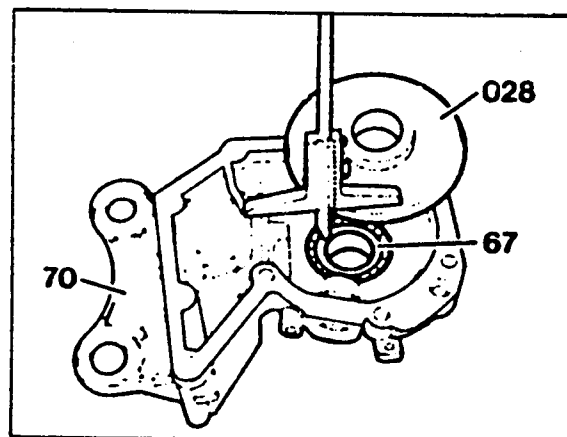
722.4 Models

107a-Measure end play (C) of output shaft (clutch K2) and compensate.



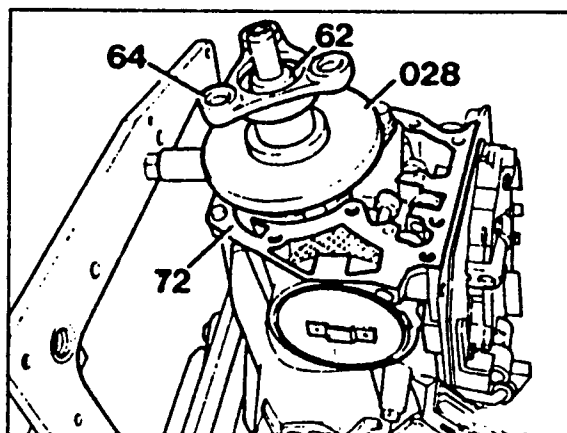
Determining size "a"

Place measuring disc (028) 129 589 06 23 00 onto the sealing face of the rear cover. Measure with the depth gauge from the measuring disc (028) to the ball bearing inner race (67).



Determining size "b"

Fit on measuring disc (028) and joint flange (64), tighten collar nut (62) to 100 Nm. Engage parking lock ratchet to prevent parts moving. Fit on gasket (72).

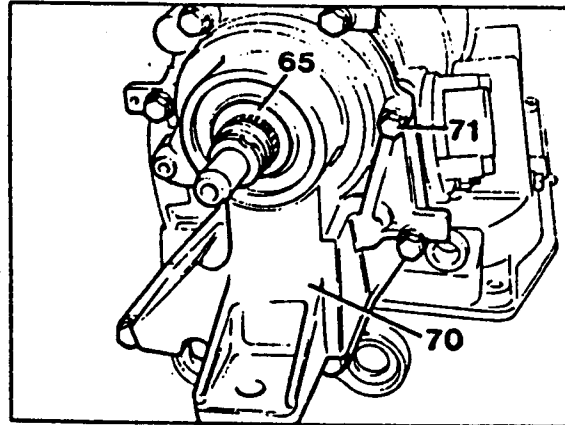


722.4 Models

107b-Attach rear cover (70), coat retaining bolts (71) with non-hardening sealing compound and tighten to 13 Nm (8.8) or 28 Nm (10.9).

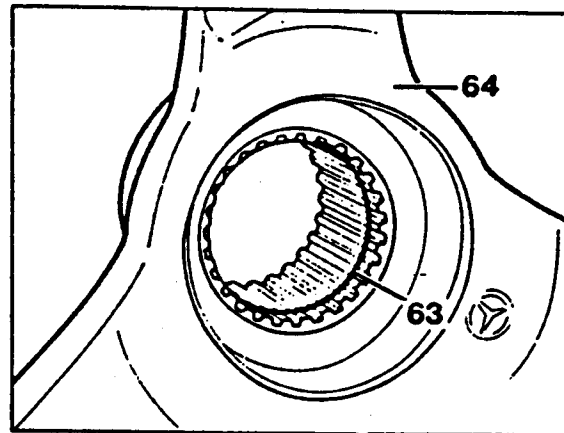
NOTE:

The sealing insert may be used several times but must never be coated with sealing compound.

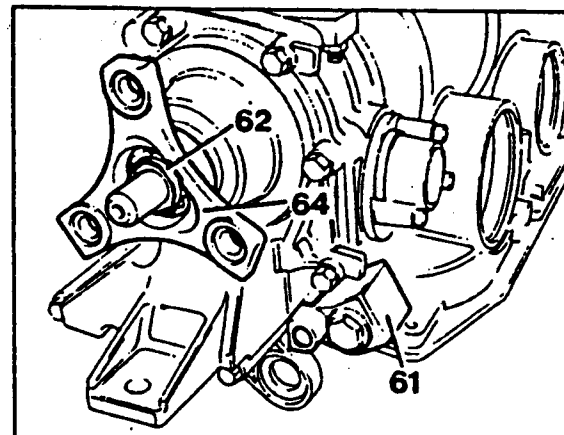


108-Insert washer (65)

109-Insert O-ring (63) into rear flange (64).



110-Attach rear flange (64), tighten double hexagon collar nuts (62) to 120 NM and lock in place with a suitable drift pin.



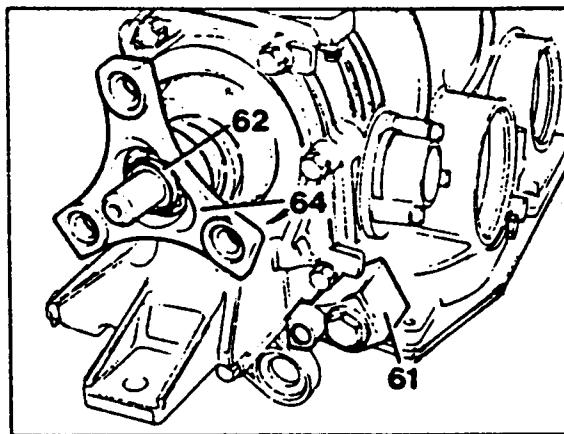
111-Screw in kickdown solenoid valve (61) and tighten to 20 Nm.

722.4

111a-Unscrew (Install) kickdown solenoid valve (61)

111b-Engage (disengage) parking lock. Unscrew (screw) twelve-side collar nut (62) and pull off (install) joint flange (64)

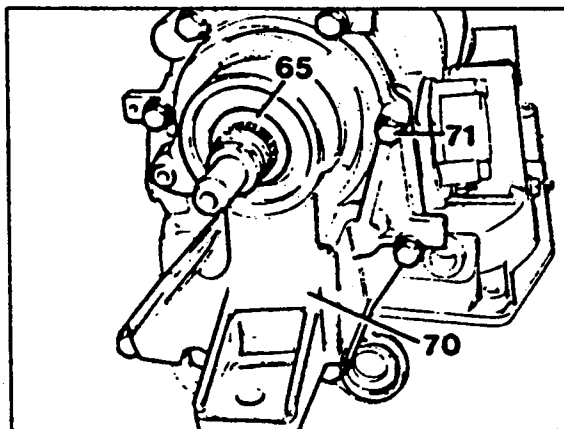
Wrench socket 126 589 02 09 00



111c-Take off (install) washer (65)

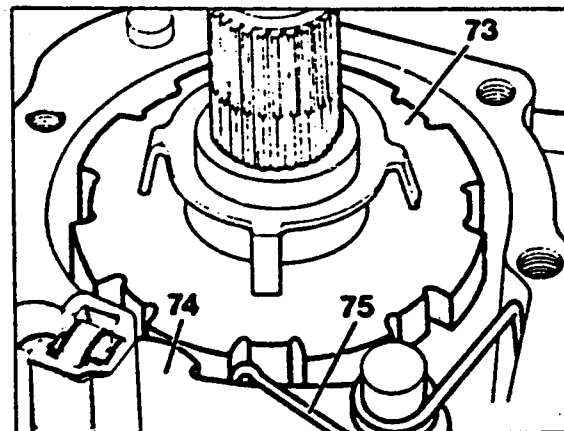
111d-Unscrew (screw) bolts (71).

111e-Detach (attach) rear cover (70) by slight blows with a plastic-headed hammer and remove (install)

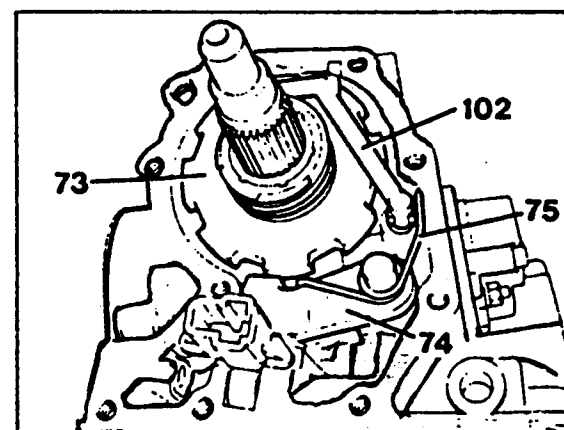


111f-Disassemble (assemble) rear cover.

111g-On vehicles with an electronic speedometer, take off (re-install) parking lock gear (73) with rotor, parking lock ratchet (74) and spreader spring.

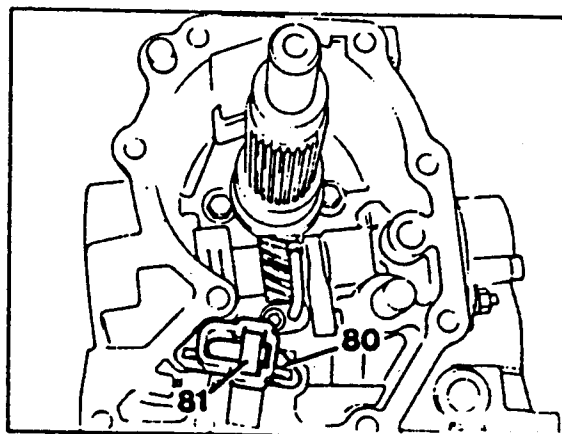


111h-On vehicles with a mechanical speedometer, take off (reinstall) oil pipe (102), parking lock gear (73) with helical gear, parking lock ratchet (74) and spreader spring (75).

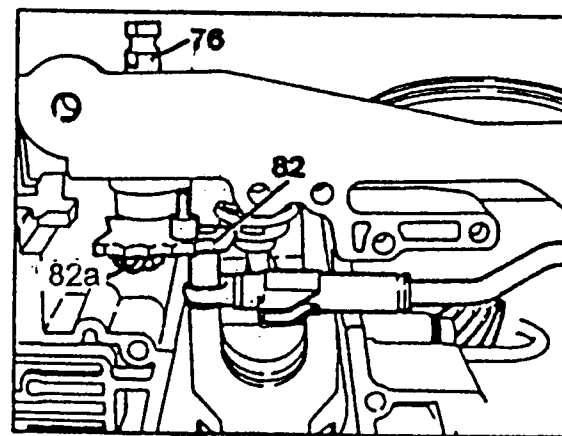


722.4 Models

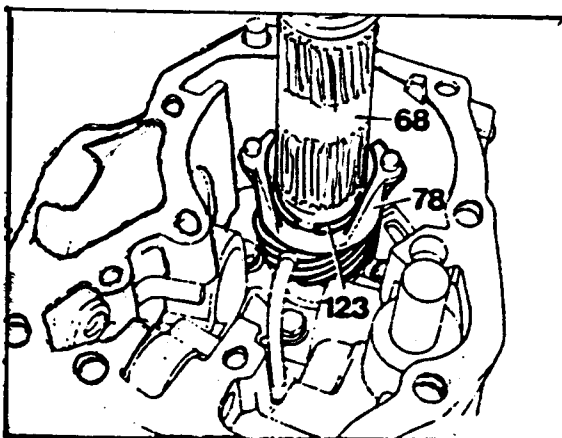
111i-Pull off (install) plastic guide (80) up the way, then take off roller (81).



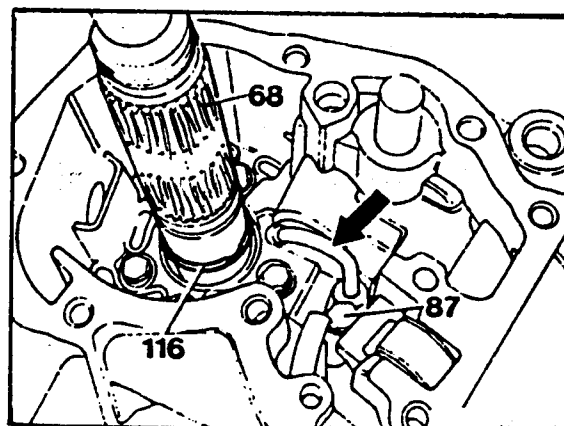
111j-Unscrew (screw) hexagon socket bolts (82a), remove shaft (76) and take out detent plate (82) together with resilient linkage.



111k-Take (install) snap ring (123) off the input shaft (68) and take out helical gear.



111l-Take (install) locking ring (116) off the input shaft (68). Unscrew (screw) bolt (87) and take out (install) oil pipe (arrow).

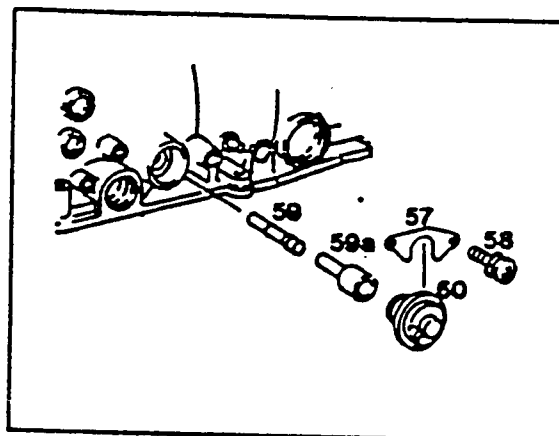


Note:

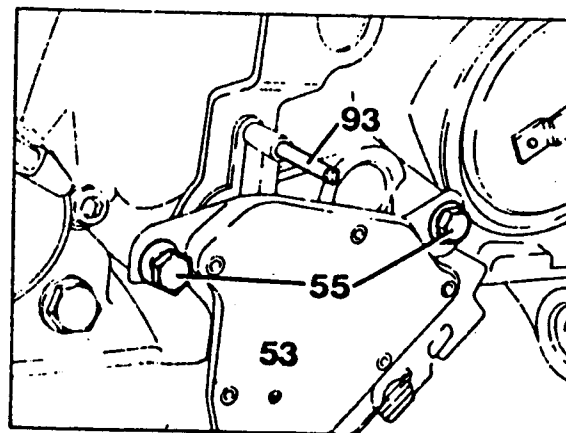
Oil pipe (arrow) is no longer fitted effective July 1986.

112-Insert modulator pressure control valve (59) and thrust pin (59a).

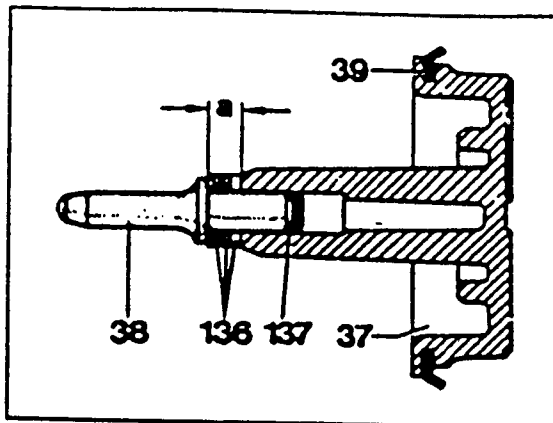
113-Attach vacuum control unit (60) with retaining plate (57), tighten allen screws (58) M6x15 to 8 Nm.



113a-Insert a 4 mm split pin or drill bit as a locating pin (93) through the locating hole into the driver of the starter lock-out switch (53). Tighten bolts (55) to 8 Nm and withdraw locating pin.

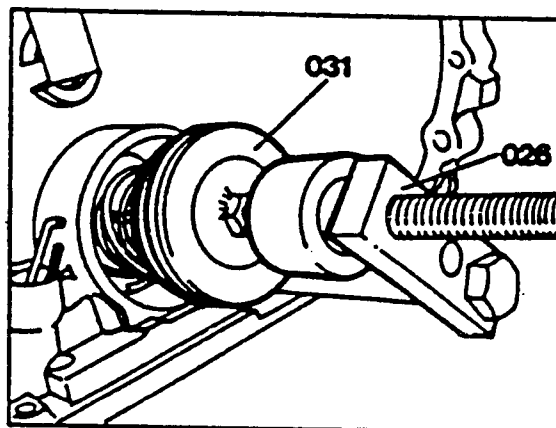


114-Install lip seal (39) on brake Band piston B1 (37) so that sealing lip points outward.



115-Attach servo assembly device onto transmission housing. (Mercedes tool number 125 589 06 21 00.)

116-Insert brake band piston B1 (37) with new pressure spring and measuring device (031). (Mercedes tool number 125 589 06 21 00).

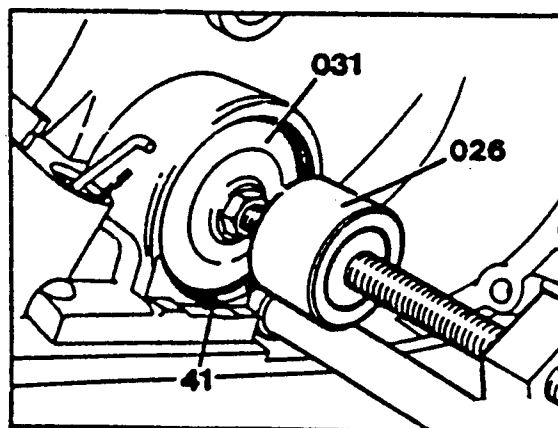


117-Screw assembly device spindle (026) in assuring that the thrust pin on brake band piston B1 (37) slides into brake band and lip seal (39) is not damaged.

NOTE;

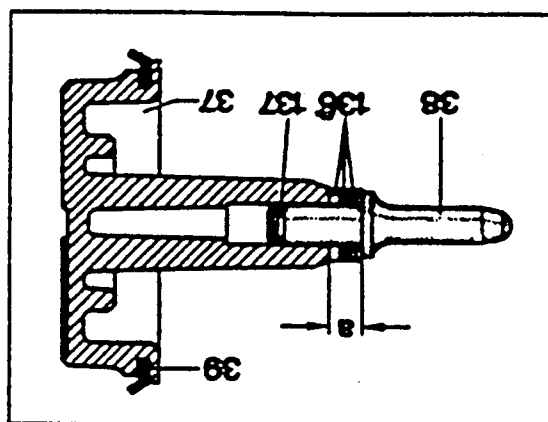
To adjust release clearance it is sufficient to install one pressure spring.

118-Install retaining ring (41), release assembly device (026) and remove.



NOTE:

To remove and install the retaining ring (41) without screwing out the plug (33) or transmission overload protection switch (33b), machine a bevel (arrow) on first version measuring devices.

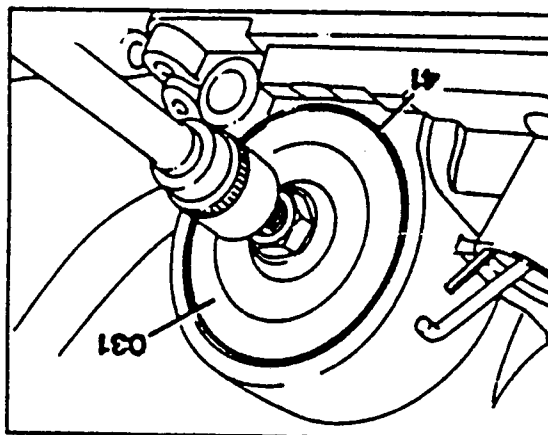


119-Measure and adjust release clearance "L" on brake band B1.

NOTE:

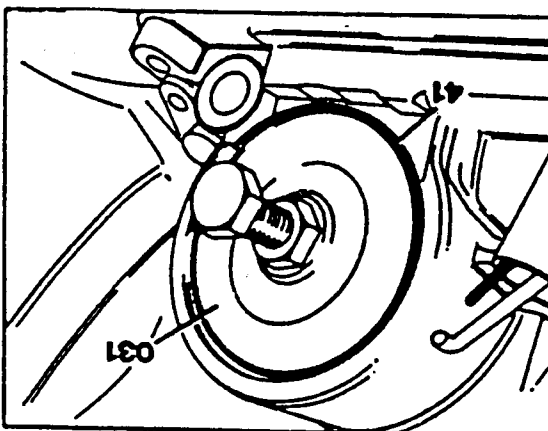
The thread on the measuring device (031) has a 1mm pitch so that one turn is equal to a distance of 1mm.

Screw in bolt on measuring device (031) by hand until resistance is felt.

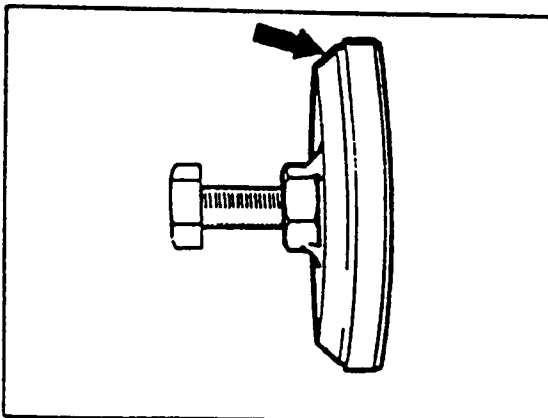


Continue to screw in bolt with torque wrench while counting rotations and tighten bolt to 1 Nm.

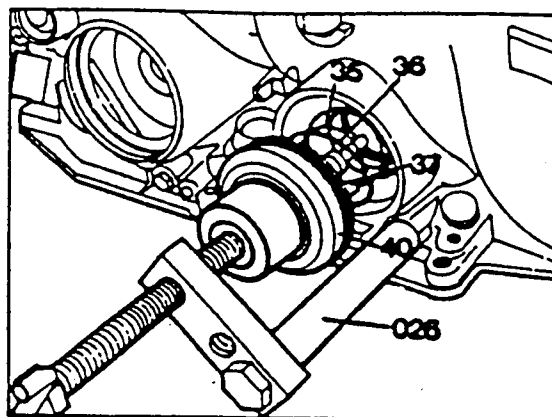
The idle path for the brake band should be 1.8-2.5mm, which means that a torque of 1 Nm should be reached after 1.8-2.5 rotations.



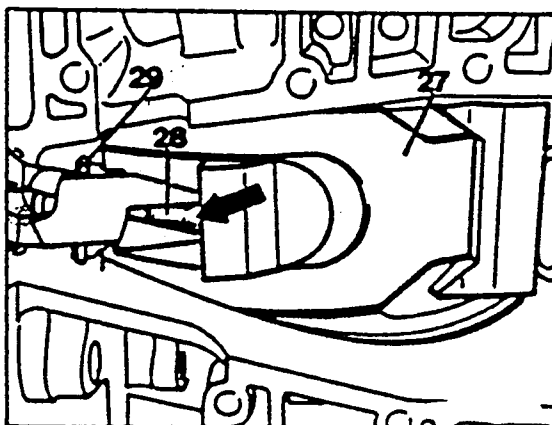
The release clearance can be adjusted by inserting or removing shims (136) behind the thrust pin (38).



120-Reattach assembly device (026) and screw on. Install brake band piston cover (40) and second pressure spring in place of measuring device (031) and then remove assembly device (026).



121-Insert thrust pin counter bearing B2 (28) with larger diameter toward brake band B2 (27).

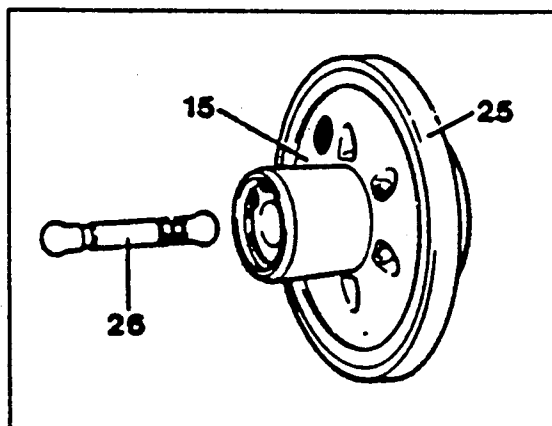


122-Insert Teflon ring (25) into groove with grease.

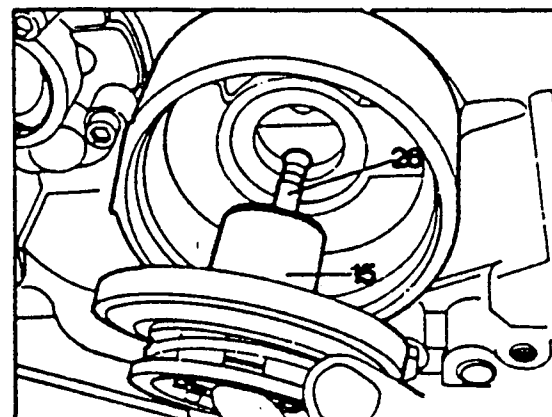
123-Insert thrust pin (26).

NOTE:

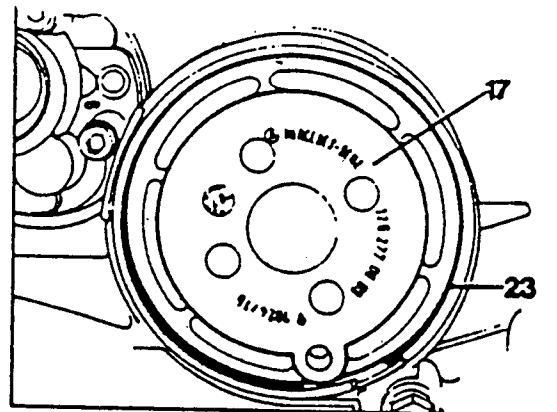
Thrust pins (26) are available with lengths of 47.2; 48.8 and 49.6 mm for compensation of the idle travel at brake band B2.



124-Insert brake band piston B2 (15), while assuring that thrust pin (26) engages in brake band.

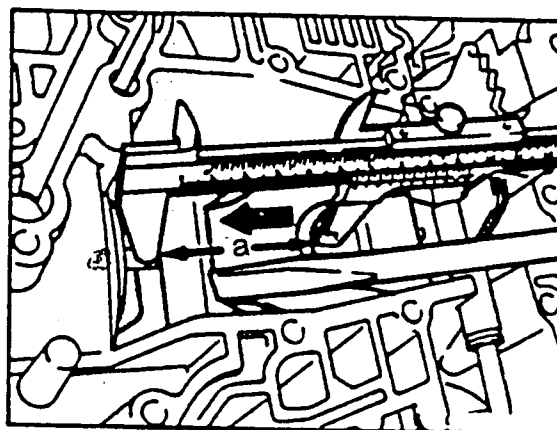


125-Press in brake band piston cover B2 (17) and install retaining ring (23).



126-Measure release clearance "L" on brake band B2 and adjust.

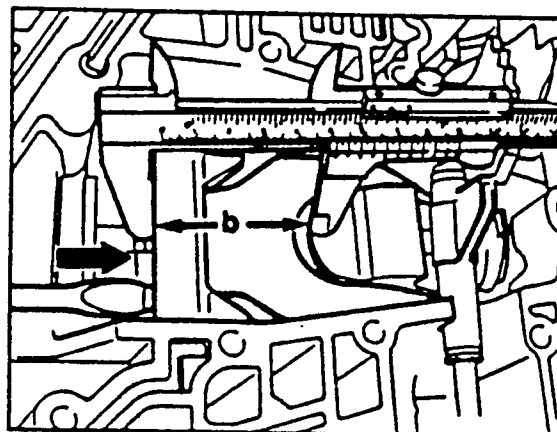
Press brake band B2 (27) toward brake band piston (direction of arrow) on support tab so that brake band piston is against brake band piston cover. Measure dimension "a" on brake band with vernier calipers.



Also press brake band B2 (27) toward thrust element (in direction of arrow) on support tab (27).

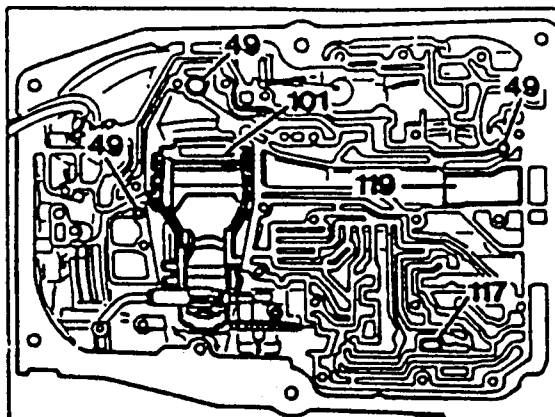
Measure dimension "b".

The release clearance "L" is equal to the difference between the values "a" and "b".

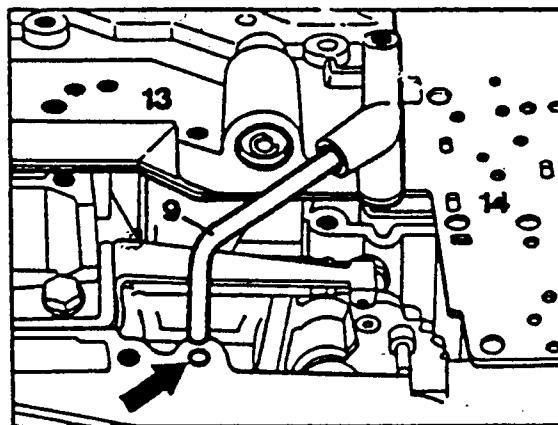


Adjust release clearance "L" to 5.5-6mm by replacing thrust pin (26) on brake band piston B2.

127-Install brake band guide pin B2 (101), one-way valves (49), temperature throttle (117) and oil deflector (119) into transmission housing.



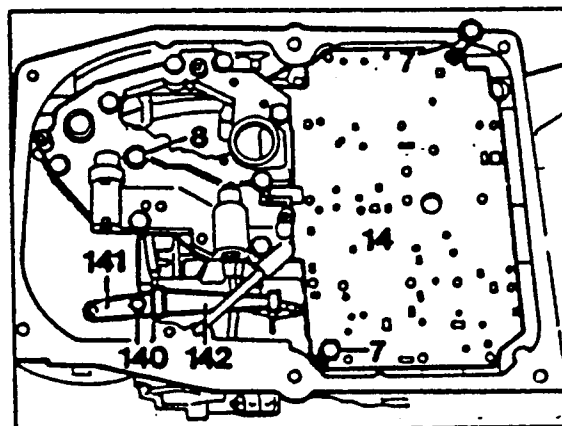
128-Attach lower cover with intermediate plate while assuring that oil tube (9) slides into hole (arrow).



129-Center intermediate plate (14) with two bolts (7).

130-Insert combination screws (8) M6x30 and tighten to 8 Nm.

131-Attach leaf spring (142) with holder (141) tighten screw (140) M6x18 to 8 Nm.

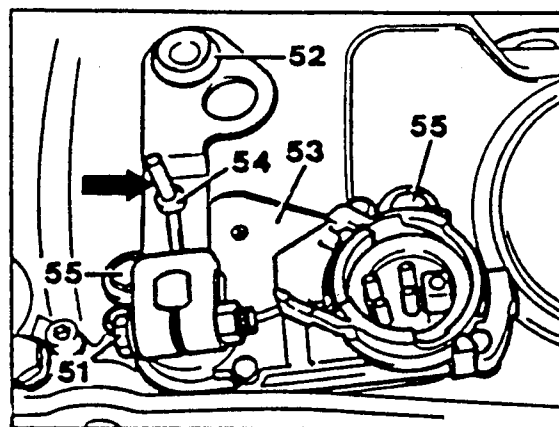


NOTE:

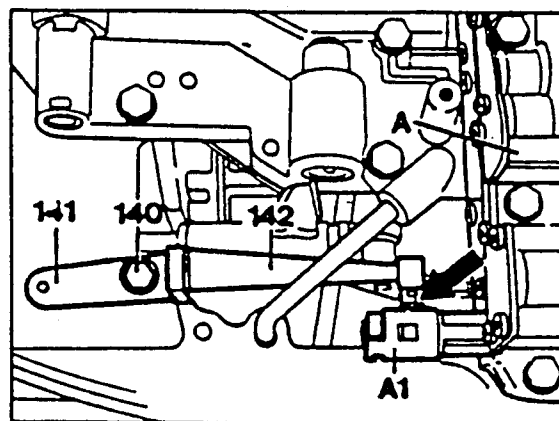
Assure that the locating pin for the holder (141) is correctly inserted.

132-Install range selector lever (52) so that driver (54) is engaged in range selector lever.

133-Insert hex head bolt (51) and tighten to 8 Nm.



134-Move range selector lever (52) to position "N", insert a 4mm pin (arrow) through the range selector lever into the locating hole on the switch housing and tighten mounting screws (55) to 8 Nm. Remove pin.

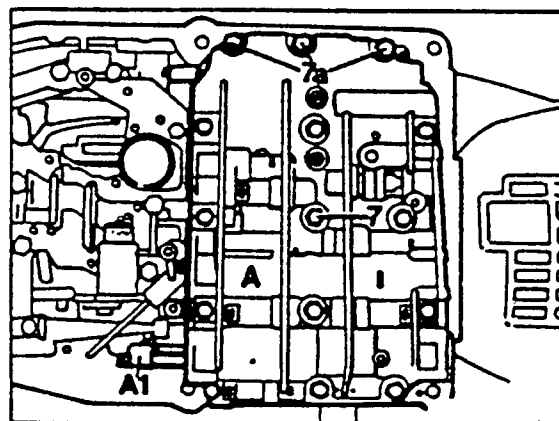


135-Attach shift valve housing (A) while assuring that the range selector valve (A1) engages in the driver on the catch plate (arrow).

136-Insert combination screws (7) and tighten to 8 Nm.

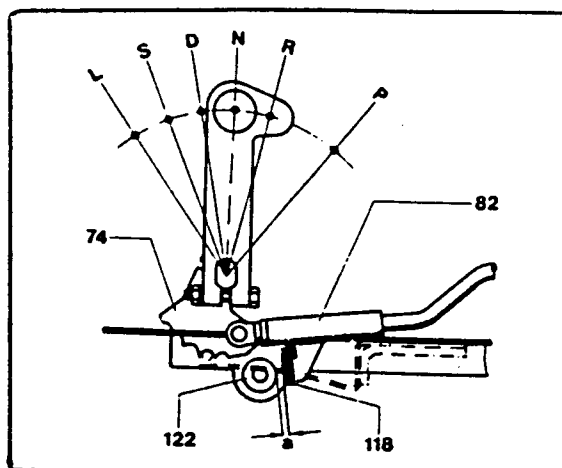
CAUTION;

Observe length of screws. The three screws marked with a number (7a) are only 50 mm long, the other 12 screws are 55 mm long.



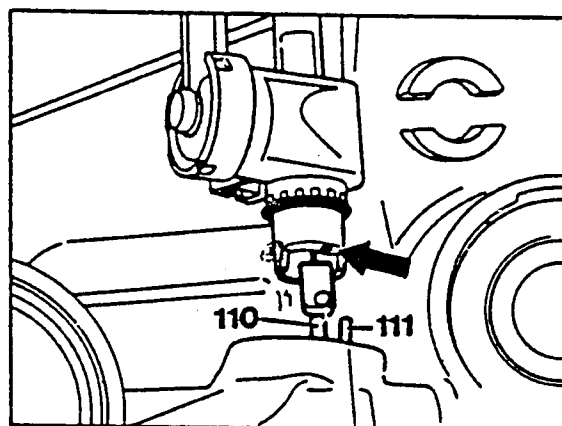
137-Check play "a" between shut off plunger (122) and stop on spring linkage (82), and adjust if necessary.

The play "a" is adjusted to 0.4 - 1.0mm in position "N" by means of the plastic clip (118). The plastic clip is available in two thicknesses.



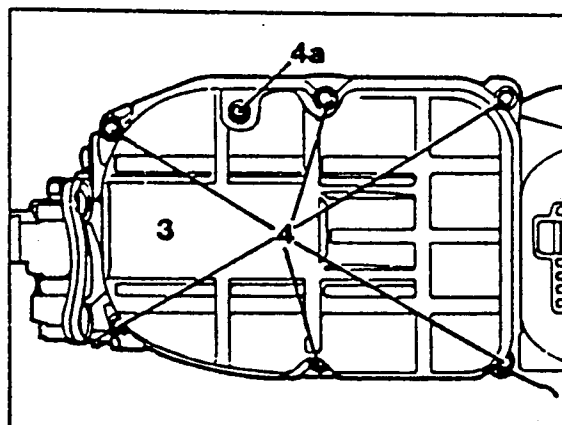
138-Check O-ring on control pressure cable, replace if required. Then hook control pressure cable onto connecting rod (110). Insert limitation rod (111) into hole (arrow) and attach control pressure cable.

139-Turn control pressure cable until lock catches.



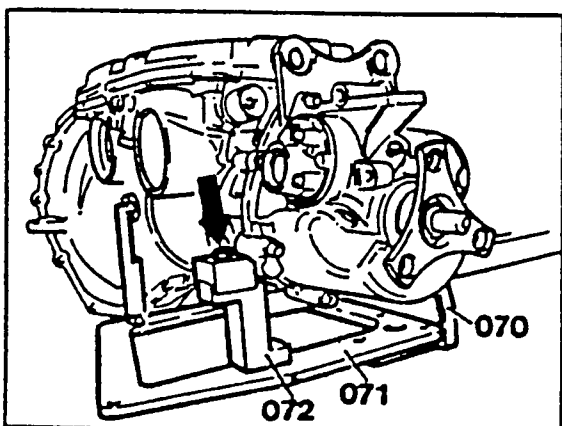
140-Attach oil filter, tighten phillips screws to 4 Nm.

141-Attach oil pan (3), tighten mounting bolts (4) to 8 Nm.

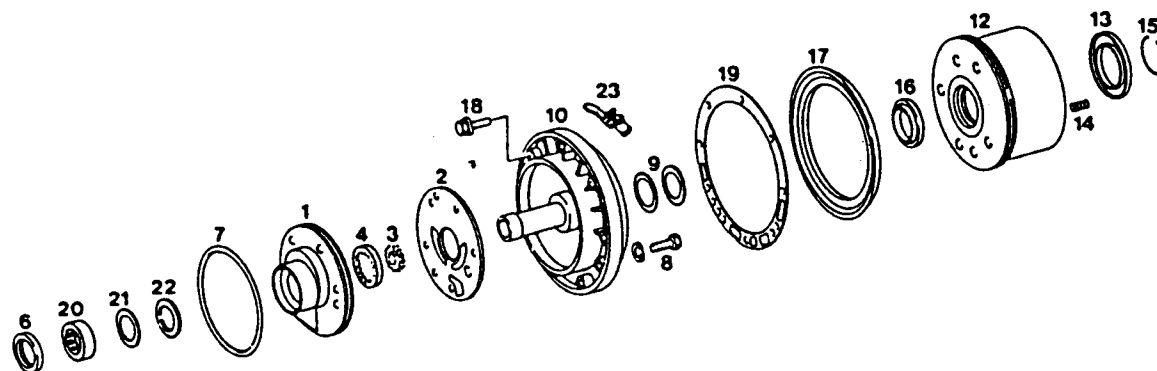


142-Remove bolt (arrow) and lift transmission from bench holding fixture.

After installing transmission check for leaks also check modulator pressure and adjust if necessary.



FRONT PUMP ASSEMBLY



- 1-Pump housing
- 2-Intermediate plate
- 3-Pump wheel, driving
- 4-Pump wheel, driven
- 6-Radial sealing ring
- 7-O-ring
- 8-Hex, screw
- 9-Teflon rings
- 10-Cover
- 12-Piston
- 13-Spring washer
- 14-Back pressure springs
- 15-Locking ring
- 16-Lip sealing ring
- 17-Lip sealing ring
- 18-Hex, screw
- 19-Gasket
- 20-Radial roller bearing
- 21-Thrust washer
- 22-Sealing washer
- 23-check valve

- Check for damage and wear
- Check for damage
- Check for damage and wear, lube for assembly
- Check for damage and wear, lube for assembly
- Check for damage and wear
- Check for damage and wear
- Renew
- M8x32, tightening torque 20 Nm
- Check for damage and wear
- Check for damage
- Check for damage and wear
- Check dimensions
- Check for damage and wear
- Check for damage and wear
- M8x40, tightening torque 13 Nm
- Check for damage replace if necessary
- Check for damage and wear
- Check for damage
- Check for damage
- Check for damage

TRANSMISSION TEARDOWN AND ASSEMBLY

1-Remove pump bolts.

2-Screw two bolts into threaded holes (arrows) and use these to pull out front pump (10)

INSTALLATION NOTE:

Clean surfaces replace pump gasket do not use any sealant on the gasket. The bolts should have a non-hardening sealant torque bolts to 13 Nm.

3-Remove the two teflon rings (9).

INSTALLATION NOTE:

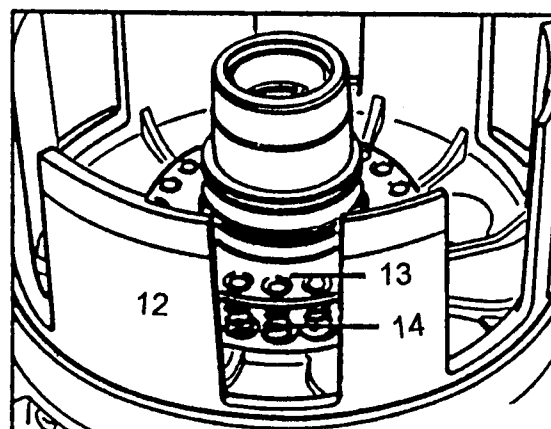
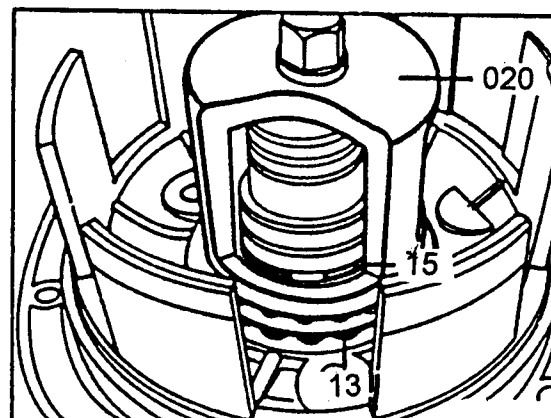
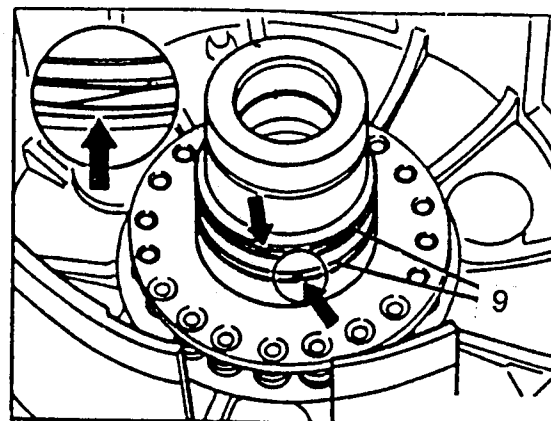
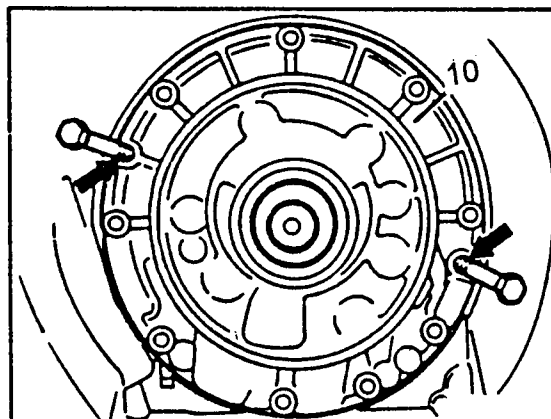
Insert teflon rings (9) with grease. Assure that the ring gaps (arrows) remain together. If necessary remove rings again and reform to smaller diameter.

4-Position installation fixture (020) on spring plate (13) and clamp until snap ring (15) is exposed. Remove snap ring (15). Release installation fixture and remove.

5-Remove spring plate (13) and return springs (14) for piston B3.

INSTALLATION NOTE:

Number of return springs = 20.



6-Pull out B3 Piston (12).

INSTALLATION NOTE:

Replace lip seals (16,17). the lip seals must be installed so that the lips point toward the rear (direction of arrow).

Apply oil to to sliding surfaces for lip seals. Insert piston (12) so that the pin (on the piston) and the hole (ib the pump cover) coincide. Carefully press piston in housing without crimping seal. Remove installation sleeve (024).

7-Loosen mounting bolts (8) and screw out.

8-Remove primary pump from front cover.

INSTALLATION NOTE:

Insert mounting screws (8) M8x32 and tighten to 20 NM.

9-Remove both pump gears (3,4) from pump housing.

INSTALLATION NOTE;

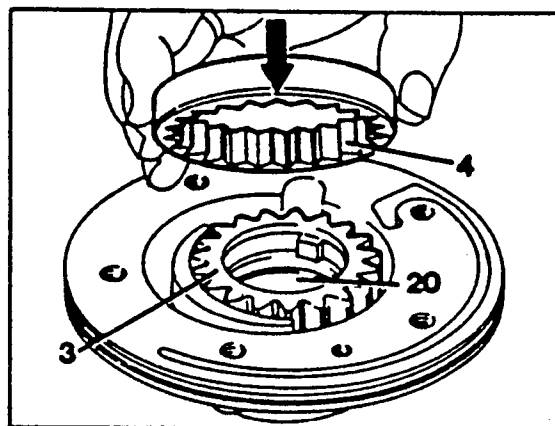
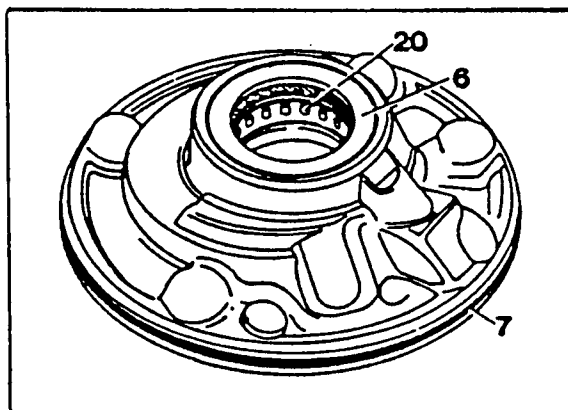
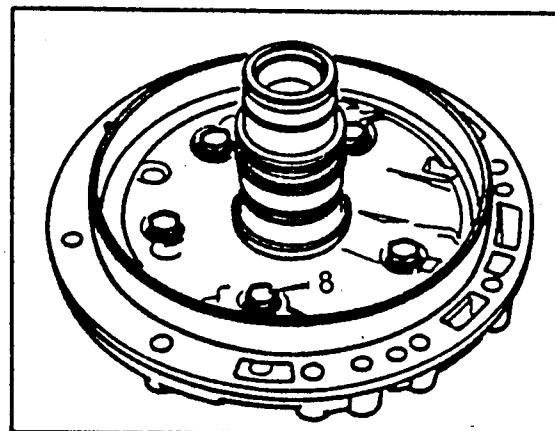
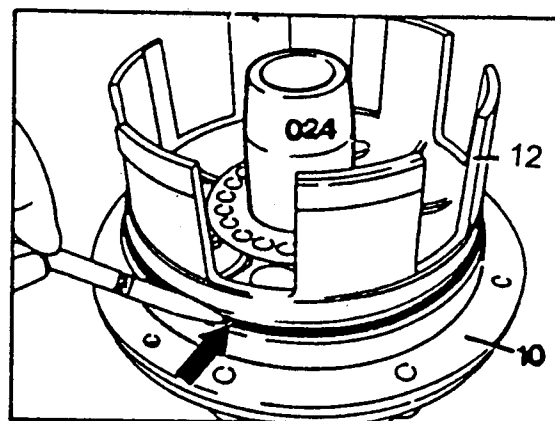
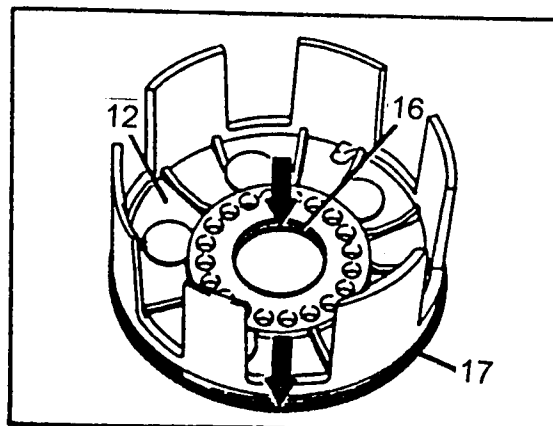
Oil both pump gears (3,4) and position in pump housing, Insert pump gear (4) so that the bevel (arrow) points toward the radial roller bearing (20)

CAUTION:

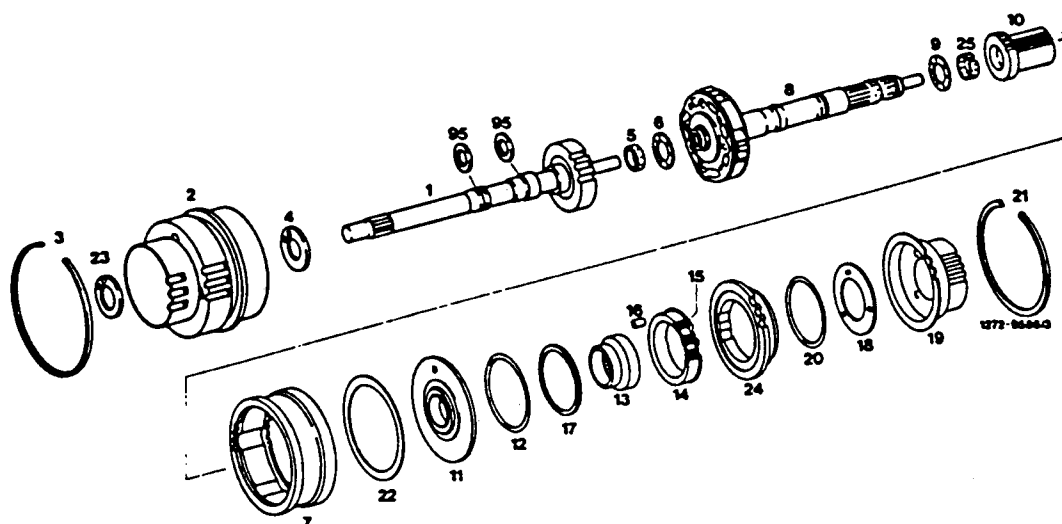
If radial roller bearing (20) is damaged replace front pump.

10-Replace radial seal (front pump)(6).

11-Replace O-ring (7). Insert O-ring into groove on pump assembly.



PLANETARY ASSEMBLY



1 Input shaft	Check for damage and wear
2 Front gear assembly	Check for damage and wear
3 Circlip	
4 Axial bearing	Check for damage and wear
5 Radial bearing	Check for damage and wear
6 Axial bearing	Check for damage and wear
7 Connection carrier	
8 Output shaft	Check for damage and wear
9 Axial bearing	Check for damage and wear
10 Sun gear behind gear assembly	Check for damage and wear
11 Supporting disk	Check for damage and wear
12 O-ring	Renew
13 One-way roller clutch-inner race	Check for damage and wear
14 Roller cage	Check for damage
15 Compression springs	
16 Cyl. rollers	Check for damage and wear
17 Compensating ring	
18 Thrust washer	Check for damage and wear
19 Inner plate carrier K2 with one-way roller clutch-outer race	Check for damage and wear
20 O-ring	Renew
21 Circlip	
22 Compensating washer	Measure or exchange, if required
23 Axial bearing	Check for damage and wear
24 One-way roller clutch-outer race	Check for damage and wear
25 Radial bearing	Check for damage and wear
26 Lubrication thrust rings	Renew

Note: Lubricate bearing points and slide surfaces during assembly.

COMPONENT ASSEMBLY

NOTE:

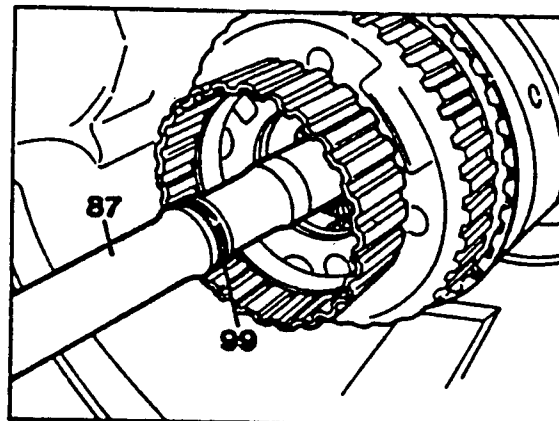
Apply oil to bearing points and friction surfaces during assembly.

DISASSEMBLY and ASSEMBLY:

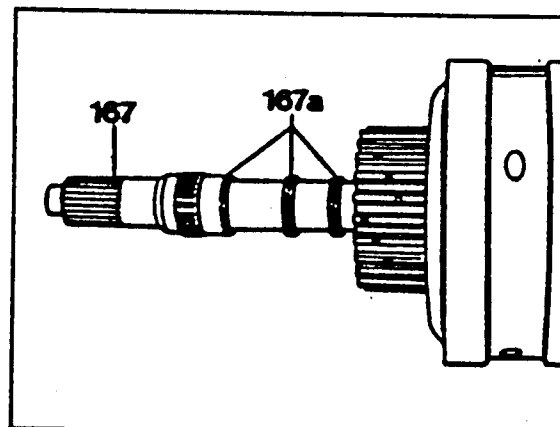
1-Remove lubrication thrust ring (99) from input shaft (87).

NOTE:

Insert lubrication thrust ring into groove with grease so that gap is closed.



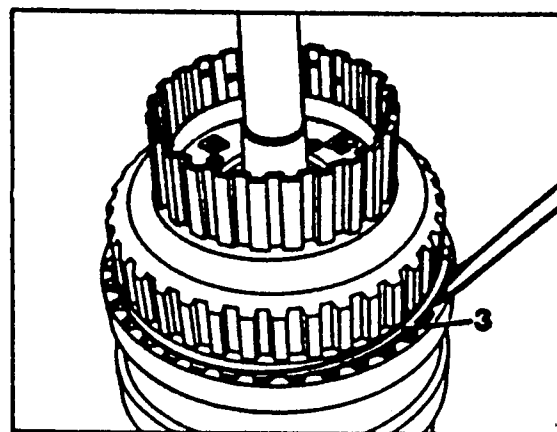
2-Remove teflon rings (167a) from intermediate shaft (167).



Installation note:

Insert teflon rings into grooves with grease so that gap is closed.

3-Clamp assembly (Mercedes tool 126 589 00 35 00) in vise the two flats with the plate pointing upward. Insert gear assembly into assembly jig with intermediate shaft forward.



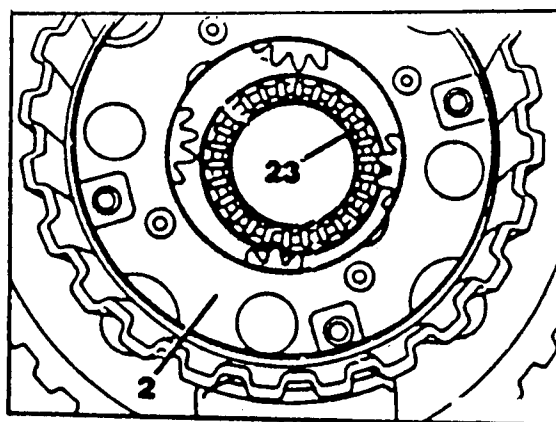
4-Remove retaining pin (3).

Installation note:

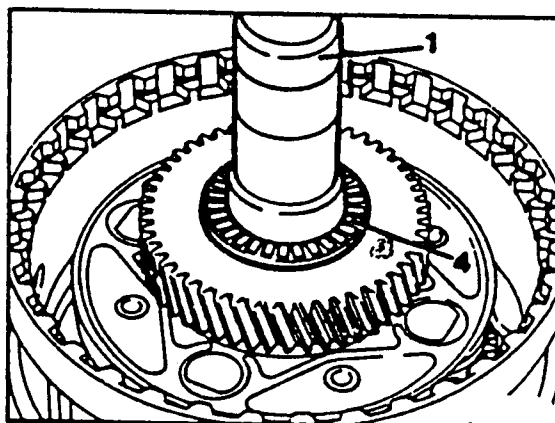
After inserting retaining ring, press into groove with screwdriver after attaching front gear assembly.

5-Lift front planetary gear assembly (2) up.

6-Remove thrust bearing (23) from planetary gear assembly and check.



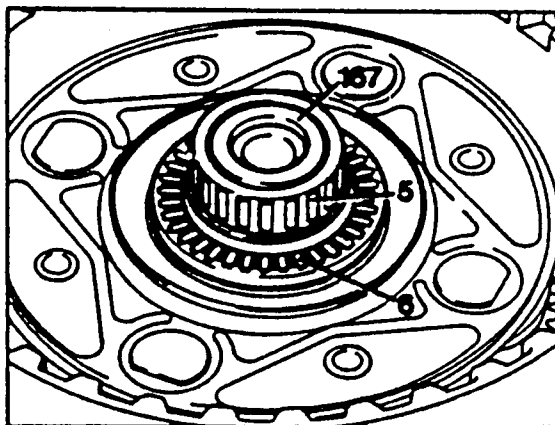
7-Remove thrust bearing (4) and input shaft (1).



8-Remove radial bearing (5) and thrust bearing (6).

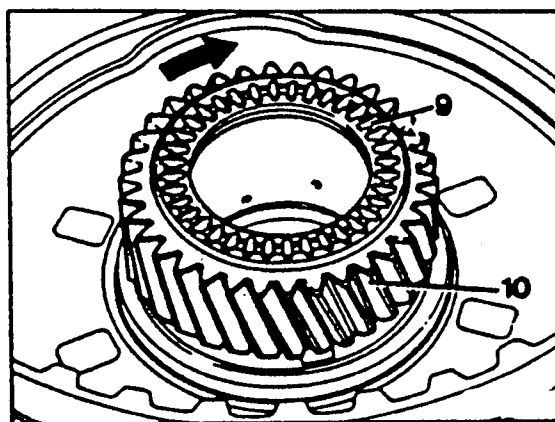
9-Remove intermediate shaft (167).

10-Remove thrust bearing (9) and pull out sun gear (10)



Installation note:

Insert sun gear (10) into one way clutch and turn; the one way clutch should not rotate in the direction of the arrow. The position thrust bearing (9) on sun gear.

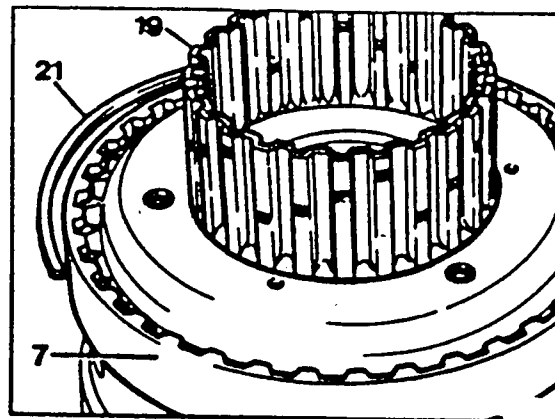


11-Turn connecting carrier and remove retaining ring (21).

Installation note:

Press retaining ring into groove with screw driver.

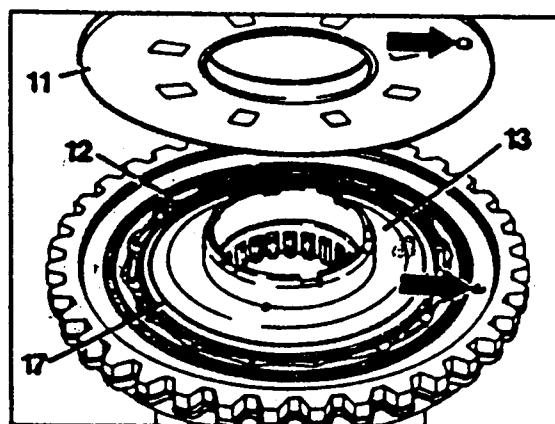
12-Lift inner plate carrier K2 (19) out of connecting carrier (7) together with one-way clutch.



13-Lift supporting disk (11).

Installation note:

Position supporting disk (11) so that the pins engage in the hole in the outer race of the one-way clutch (arrows).

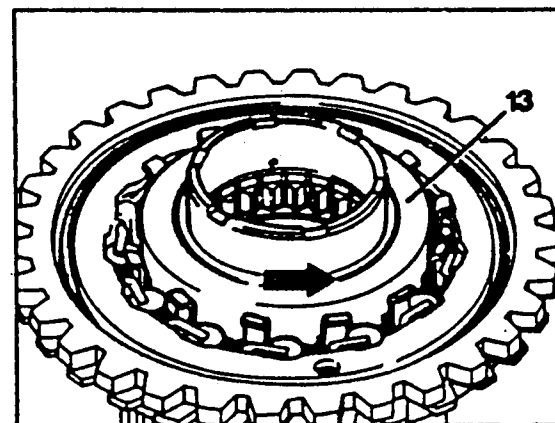


14-Remove shim (17) and O-ring (12).

Note:

Do not disassemble INA brand one-way clutch. If this one way clutch is defective replace.

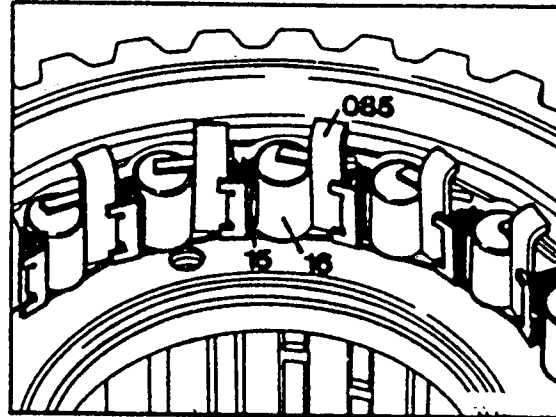
15-Turn inner race of one way clutch (13) in direction of arrow and pull out while turning.



Installation note:

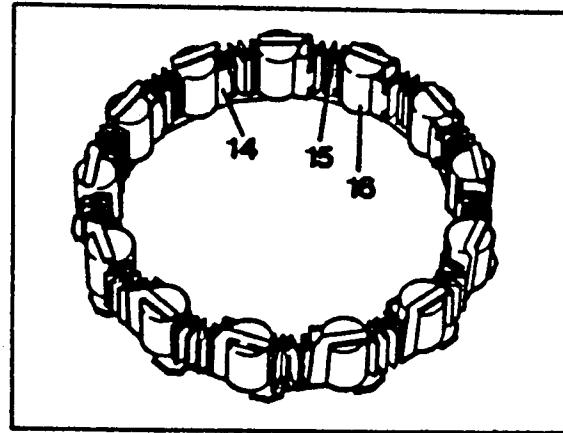
16-Press cylindrical rollers (16) against the pressure springs (15) and insert retaining plates (085) with offset pointing towards outside. The retaining plates are available as auxiliary tools. Under part no. 125 277 00 73 (16 each).

Insert inner race of one way roller clutch (13) while turning counter -clockwise; then remove retaining plates (085).

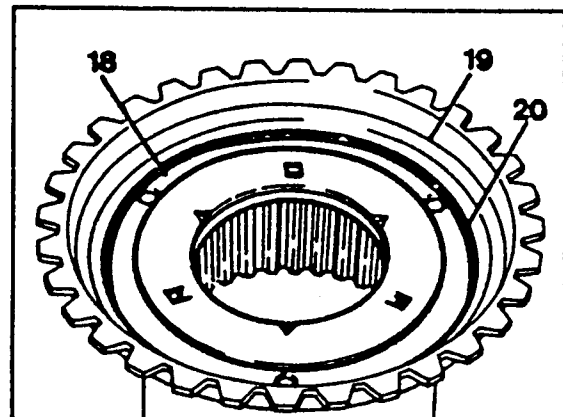


17-Remove cylindrical rollers (16) and roller cage (14) together with pressure springs (15). Check parts for damage.

18-Remove outer ring of one-way clutch (24)



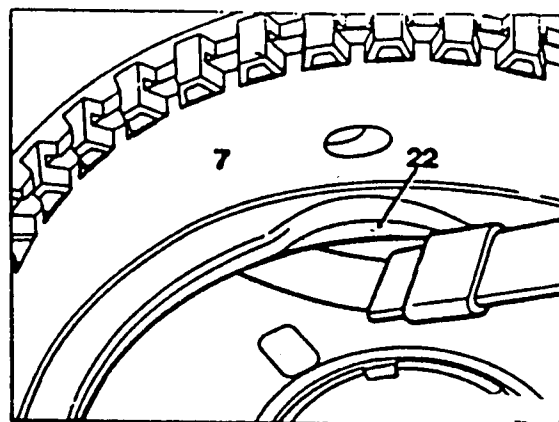
19-Check thrust washer (18) and O-ring (20) for damage and wear.



20-Check end play of the one way clutch and compensate. Check play between one-way clutch and connecting carrier (7) with feeler gauge.

Note:

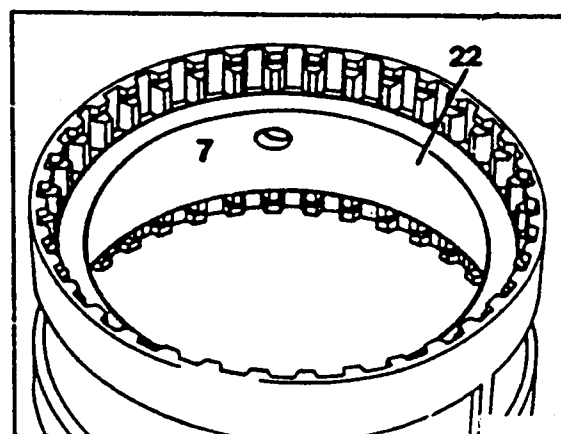
When measuring, the O-rings (12,20) should not be installed.



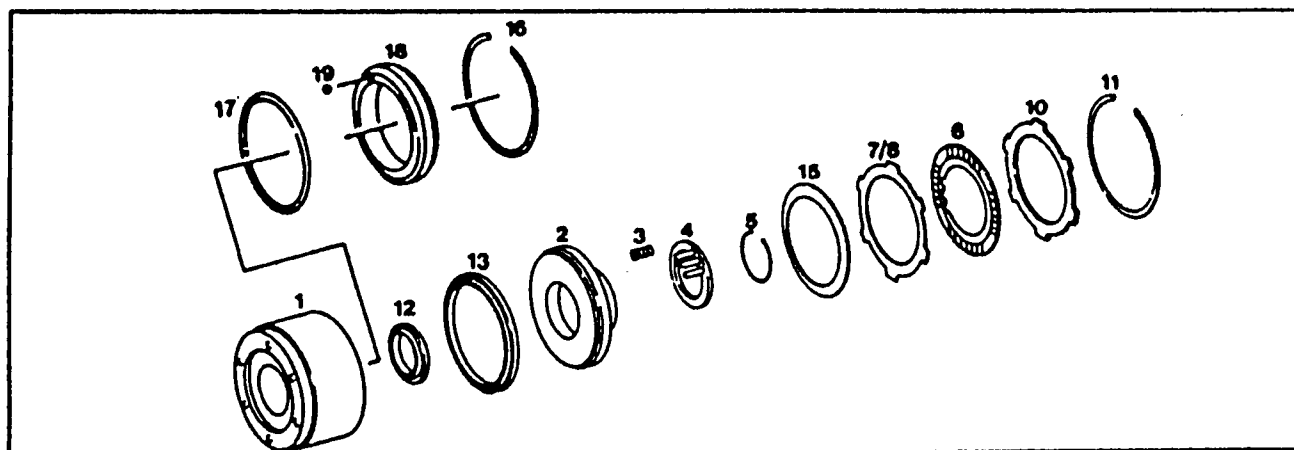
21-Compensate play to 0.05-0.2 mm with shim (22), then insert O-rings (12) and (20).

22-Position shims (22) in connecting carrier (7).

23-Hold one-way clutch together and insert retaining ring in connecting carrier.



DISASSEMBLY, ASSEMBLY AND MEASUREMENT OF K1 CLUTCH



Retaining ring (11).....
 Plate assembly (6,7,8 and 10 plate
 spring (15).....

remove with screw driver .Install

Remove completely from hub (1). Install.
 Position in sequence according to
 transmission type. Position plate spring
 with crown toward piston .Check and
 adjust release clearance.

retaining ring (5).....

remove, install. For this purpose
 compress spring plate until retaining ring
 is exposed.

Spring plate (4) and pressure
 springs (3).....

remove and check number of springs.

piston (2).....

Pull out, To install piston use installation
 tool.

O-ring (17).....

Test for leakage.

Piston guide ring (18)....

Remove after removing retaining ring.

DISASSEMBLY AND ASSEMBLY OF DRUMS.

1-Remove retaining ring (11).

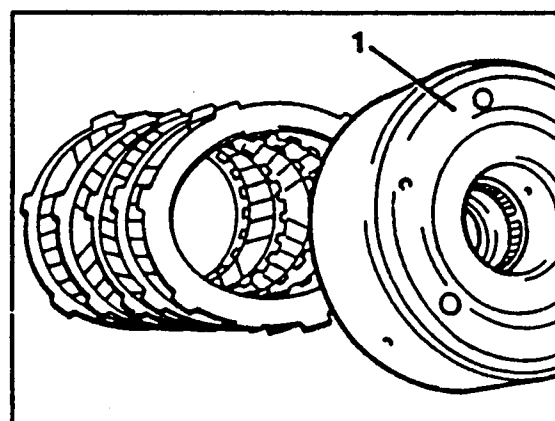
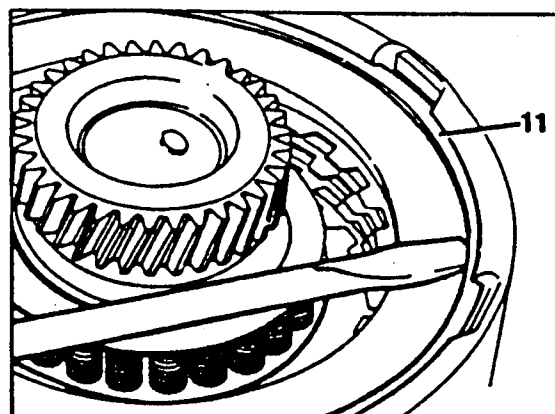
Installation note:

After inserting press up with a screwdriver around entire circumference.

2-Tip outer plate carrier (1) and remove plate assembly. Check inner plates for burned spots and wear (nimal thickness is 2 mm).

Installation note:

Observe clutch plate sequence. Assemble plate assembly according to transmission type designation and soak in transmission fluid for approximately 1 hour. Position plate and spring toward piston.

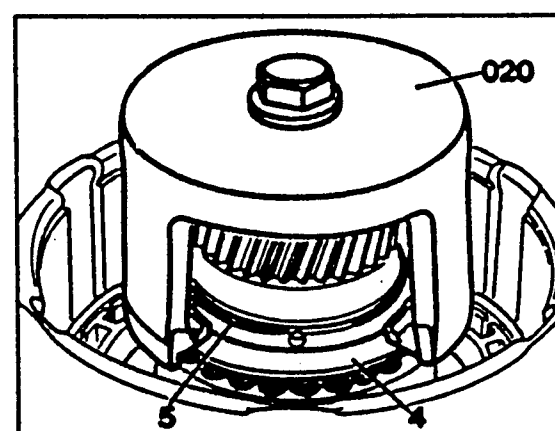


3-Set installation device (020) on spring plate (4) and compress unit retaining ring (5) is exposed. Remove retaining ring (5).

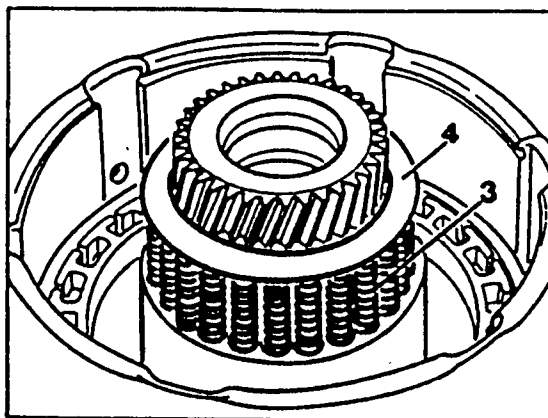
4-Release assembly device and remove. (Mercedes tool number 126 589 00 43 00)

Installation note:

After inserting retaining ring assure that it is seated properly.



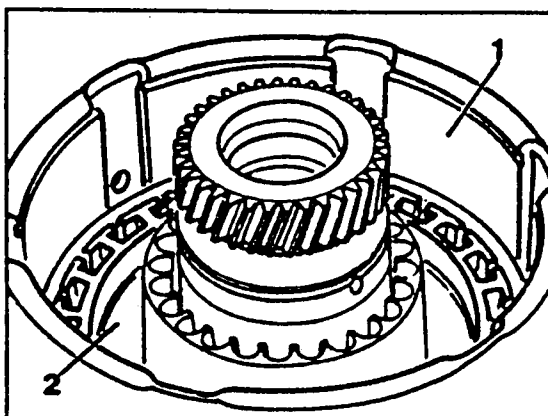
5-Remove spring plate (4) and pressure springs (3).



Installation note:

Observe number of pressure springs and assure that each spring is centered on a guide pin on the spring plate.

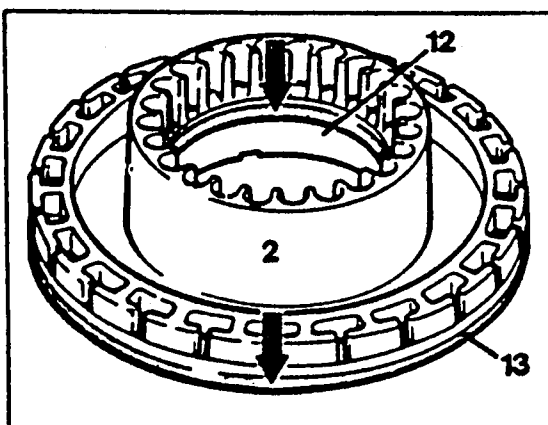
6-Pull piston (2) out of outer plate carrier (1).



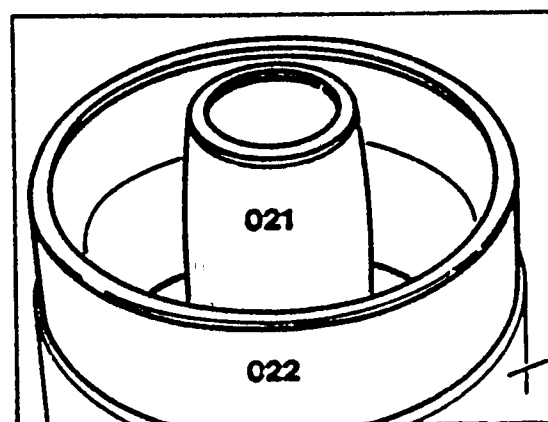
Installation note:

Replace lip seals (12 and 13).

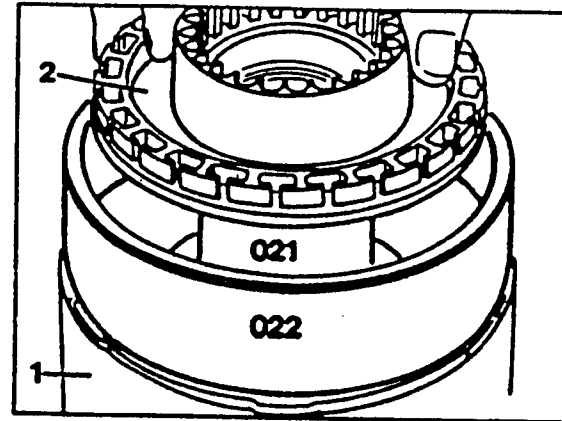
Insert lip seals (12 and 13) into piston (2) so that sealing lip points down (direction of arrows).



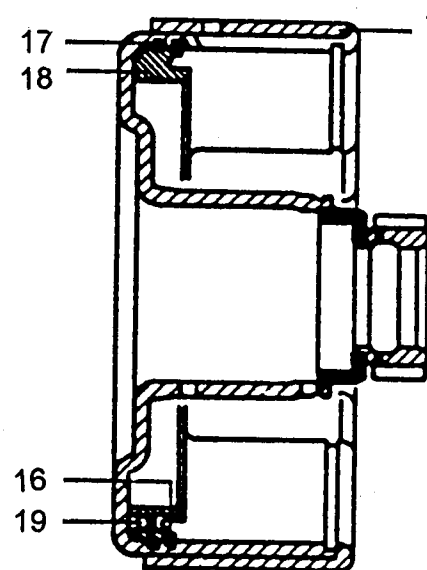
Position insertion sleeve (021) (Mercedes tool 126 589 02 14 00) and (022) (126 589 10 14 00) into outer plate carrier (1),



7-Coat insertion sleeve and lip seals with transmission fluid and carefully insert piston (2) and press into outer plate carrier (1) without cocking.



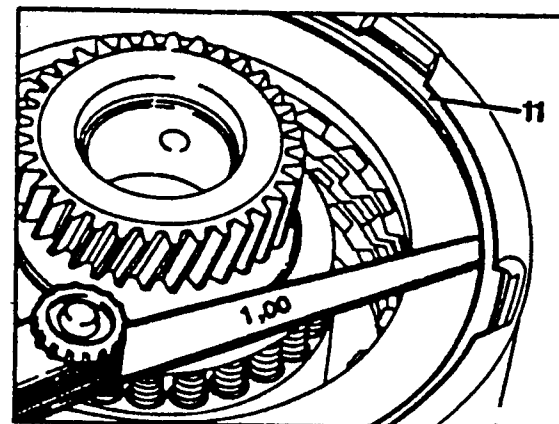
8-Check O-ring (17) between outer plate carrier (1) and piston guide ring (18) for leakage by filling the piston guide ring with a small quantity of kerosene. If the O-ring leaks press out retaining ring (16) remove the piston and replace the lip seal.



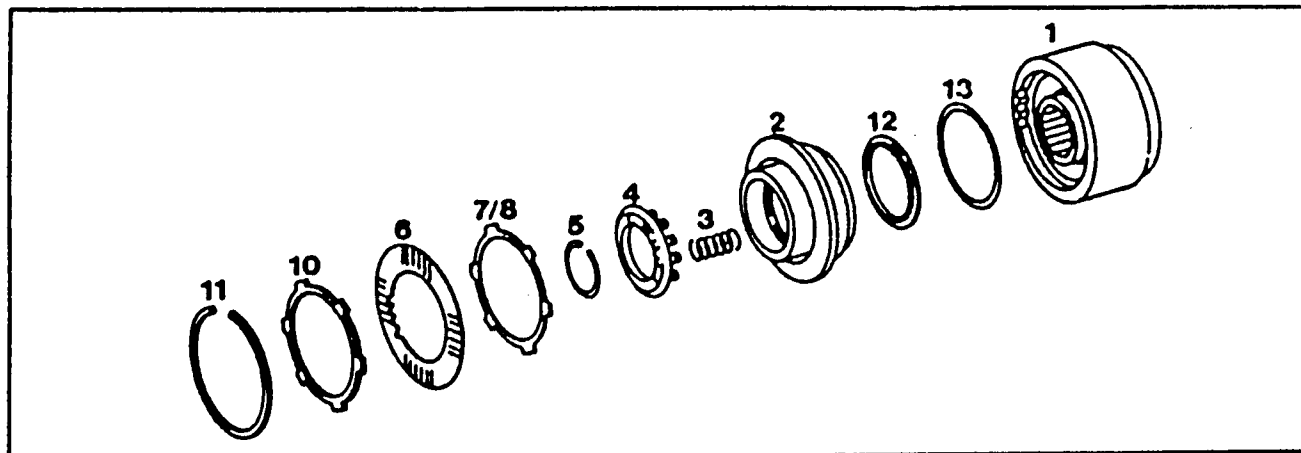
Measurement:

9-Measure play "A" with feeler gauge.

Adjust play "A" with retaining ring (11) available in 3 thicknesses(2.0; 2.5; 3.0 mm). For this purpose machine the groove for the retaining ring to a width of 3.2 mm. If it is not possible to achieve the specified play "A" with the retaining ring (11) alone,additional compensation is possible with the center outer plate. Adjust the release clearance to 0.7-1.3mm.



DISASSEMBLY, ASSEMBLY AND MEASUREMENT OF K2 CLUTCH



Retaining ring (11).....

remove with screw driver, install

Plate assembly (6,9 and 10).....

remove completely from outer plate carrier(1). Install. Position in sequence according to transmission type. After installation check and adjust clearance.

Retaining ring (5).....

remove, install. For this purpose compress spring plate (4) until retaining ring is exposed.

Spring plate (4) and pressure springs (3).....

remove, spring retainer (4)

Piston (2).....

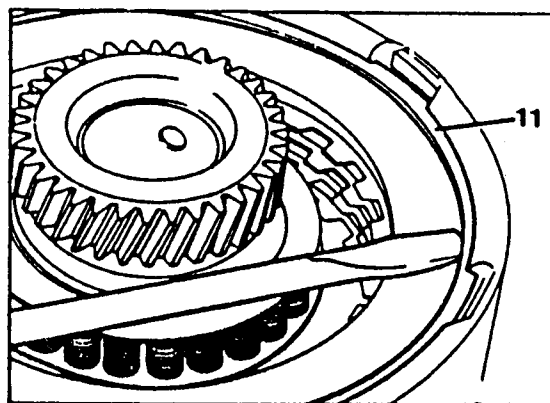
pull out, To install piston use installation sleeve. Install new seals with lip facing down check for leakage with kerosene.

O'ring in outer plate carrier (1)....

1-Remove retaining ring (11)

Installation note:

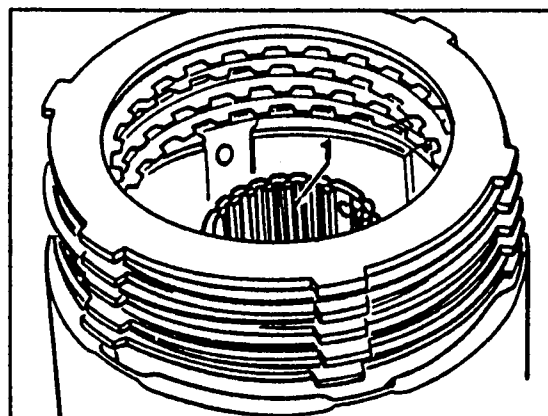
After inserting press up with a screw driver around entire circumference.



2-Tilt outer plate carrier (1) and remove plate assembly. Check inner plates for burned spots and wear (nominal thickness 2mm).

Installation note:

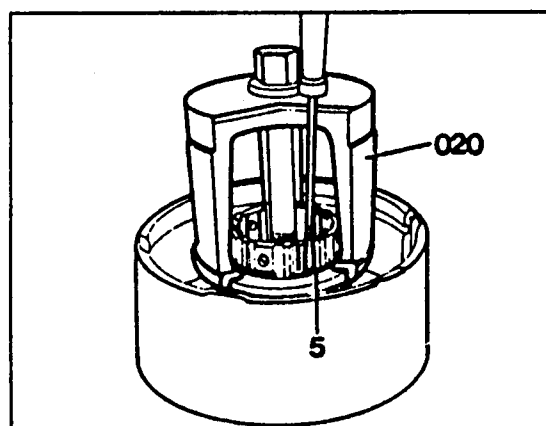
Observe clutch plate sequence. Assemble plate assembly according to transmission type designation and soak in transmission fluid for approximately 1 hour.



3-Set Installation tool (020) (Mercedes tool 126 589 00 43 00) on spring plate and compress until retaining ring (5) is exposed. Remove retaining ring.

Installation note:

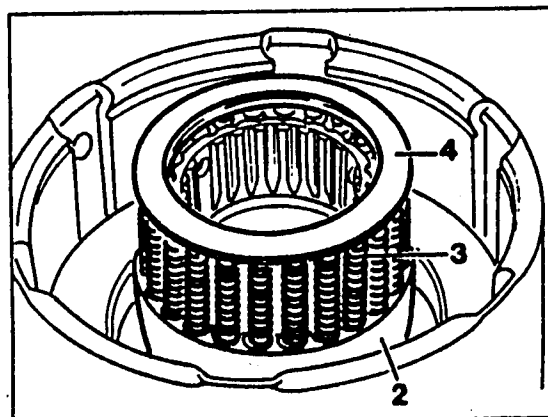
After inserting retaining ring assure that it is seated properly.



4-Remove spring plate (4) and pressure spring (3)

Installation note:

Observe the number of pressure springs and assure that each spring is centered on a guide pin on the spring plate.

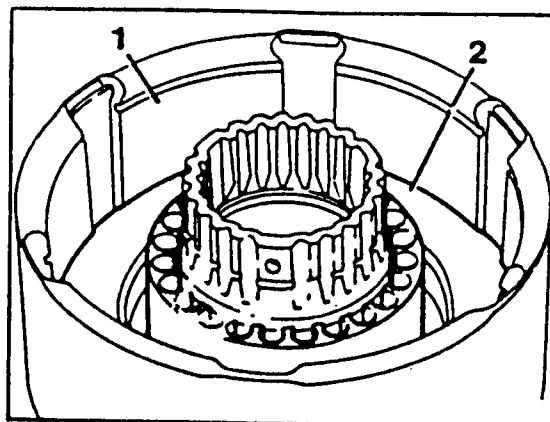


5-Pull piston (2) out of outer plate carrier (1).

Note:

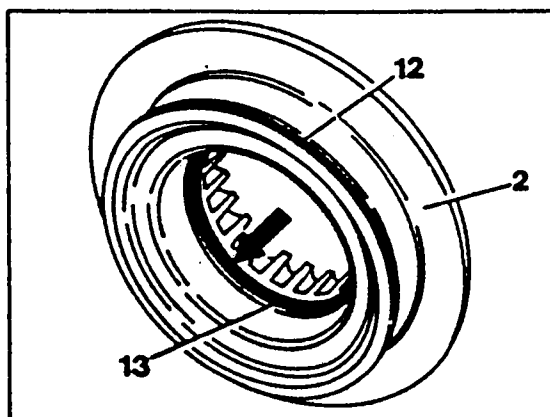
Check O-ring between outer plate carrier and piston guide ring for leakage by filling the piston guide ring with a small quantity of kerosene. Then check whether fluid runs out.

If it leaks replace drum.

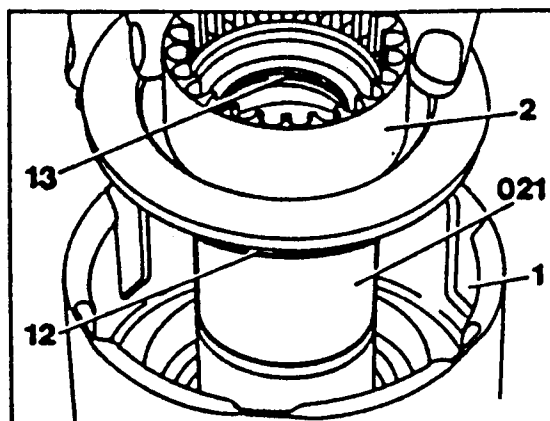


Installation note:

Replace sealing rings (12,13) assure that the rings are not twisted and point in a downward direction (in direction of arrow).



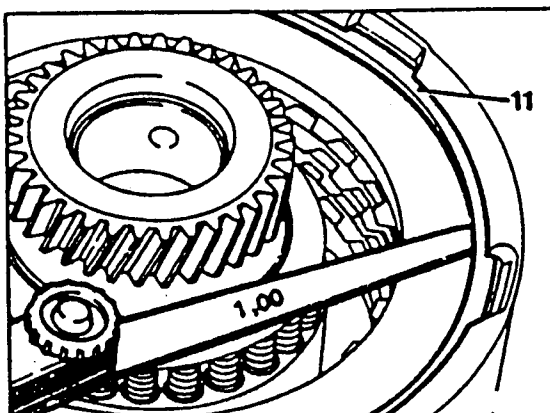
Position installing sleeve (021) (mercedes tool No 126 589 02 14 00) on outer plate carrier (1). Coat sleeve and sealing rings (12,13) with transmission fluid., then carefully install piston into drum. Press piston down while rotating try not to cock piston.



6-Measure play "A" with feeler guage. Adjust the clearance to 0.7-1.3mm.

Note:

Adjust play "A" with retaining ring available in 3 thicknesses (2.0; 2.5; 3.0 mm). For this purpose machine a groove for the retaining ring to a width of 3.2mm. If not possible to achieve the specified play "A" with the retaining ring (11) alone, additional compensation is possible with the center outer plate.

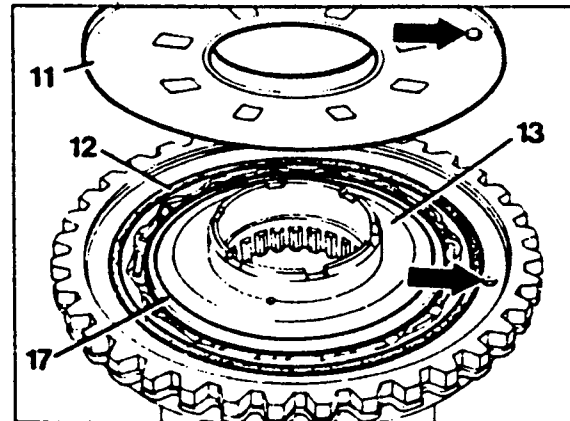


7-Lift off supporting disc (11).

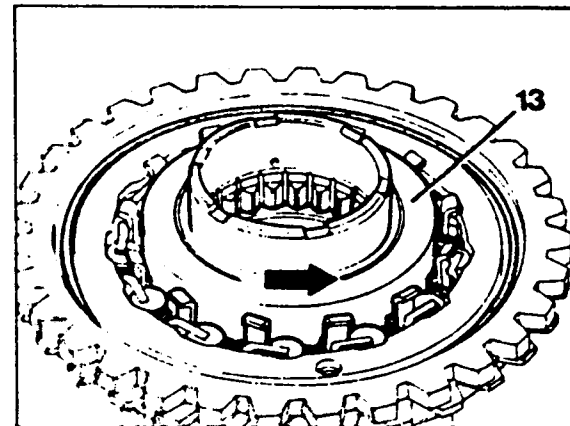
Installation instructions.

Fit on supporting disc (11) so that the stud engages in the hole in the freewheel outer ring (arrows)

8-Take off shim ring (17) and O-ring (12)



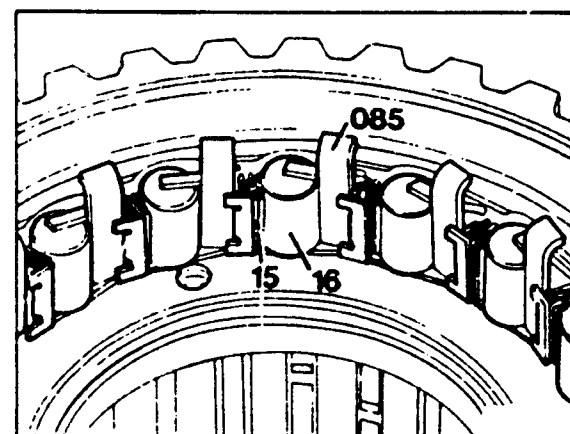
9-Turn freewheel inner ring (13) in direction of arrow and in this way remove.



Installation instruction

10-Press rollers (16) against the compression springs (15) and insert locking plates (085) with the offset end facing out.

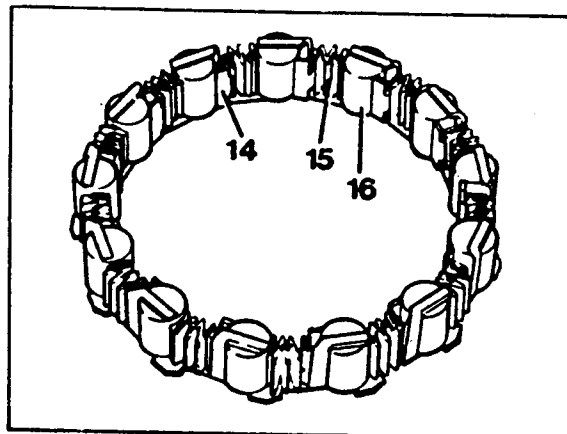
The locking plates should be positioned by installing tool Part no. 126 277 00 73 (16 rollers).



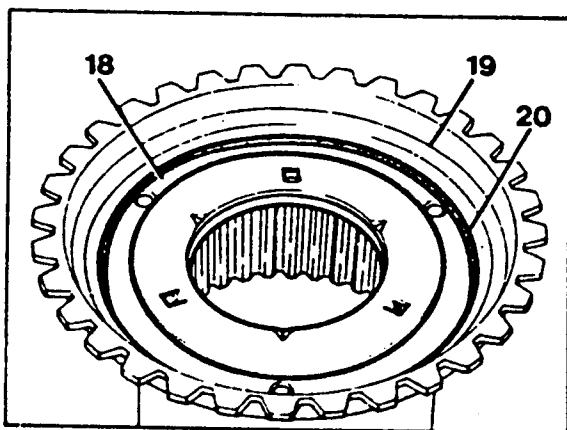
Insert freewheel inner ring (13): when performing this step, turn counter-clockwise, then take out locking plates (085).

11-Take out cylinder rollers (16) and roller cage (14) together with compression springs (15). Inspect parts for signs of wear.

12-Take out freewheel outer ring (24).



13-Examine thrust washer (18) and replace O-ring (20)

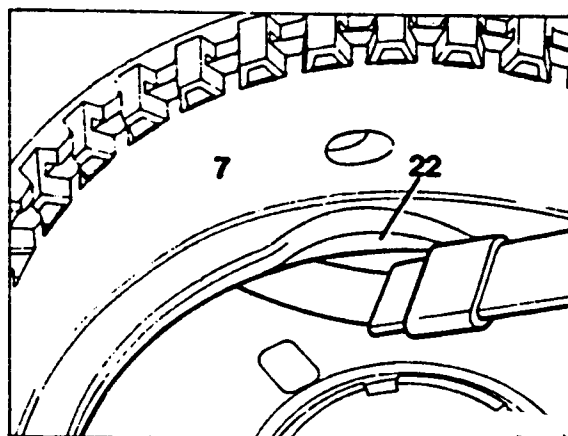


Measuring

14-Check end play of freewheel and adjust. Check the play between freewheel and carrier (7) with a feeler gauge.

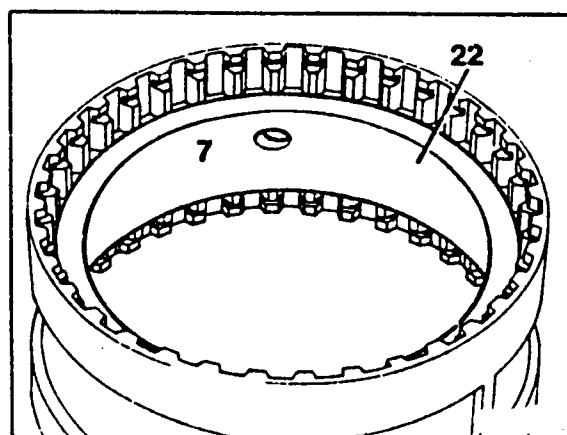
Note:

For gauging end play, the O-rings (12,20) must not be installed.



15-Adjust play to 0.05-0.2 mm with shims (22), then insert O-rings (12) and (20)(figures 7 and 11).

16-Place shims (22) into the carrier (7).



17-Hold freewheel together and insert locking ring.



TROUBLE SHOOTING

NOTE:if the transmission fluid is black or has a burnt smell or if there is an abnormal number of metal chips in oil pan, either recondition transmission or exchange.

Complaint:

Transmission slips in all selector lever positions.

Cause/Remedy:

1. Check modulating pressure and adjust, if required. If not adjustable, check modulating pressure control guide for easy operation.
 2. Check vacuum line from intake manifold to vacuum capsule for passage and renew, if clogged.
 3. Check working pressure, whether it is too low or not available.
 - a) Disassemble and clean shift valve housing, make working pressure control slide operable and exchange shift valve housing, if required.
 - b) Remove and check primary pump, renew if required.
-

Complaint:

2nd speed slips or transmission shifts from 1st to 3rd.

Cause/Remedy:

1. Check control slide B1 for easy operation and exchange shift valve housing, if required.
2. Remove and install brake band piston B1, check lip sealing ring and renew, if required.
3. Renew brake band B1 and thrust body for B1.

Complaint:

Transmission slips when starting at 1st or 2nd speed or forward start impossible but reverse speed in order.

Cause/Remedy:

1. Make shift valve B2 operable, exchange shift valve housing, if required.
 2. Renew brake band piston B2.
 3. Readjust brake band B2 by installation of a longer thrust pin. If the brake band is heavily worn or broken, renew brake band.
-

Complaint:

Transmission slips during 2-3 shift, or slips at first and then grips hard.

Cause /Remedy:

1. Check modulating pressure and adjust, if required.
 2. Check whether temperature is installed.
 3. Exchange shift valve housing.
 4. Renew inner plate of clutch K1, recondition clutch according to condition.
-

Complaint:

Transmission slips during 3-4 shift.

Cause/Remedy:

1. Check modulating pressure and adjust, if required.
 2. Exchange shift valve housing.
 3. Renew inner plates of clutch K2, recondition clutch according to condition.
-



Technical Service Information

Complaint:

Transmission has no positive contact following installation or fails after a short period of operation.

Cause/Remedy:

Torque converter not installed according to instructions. Drivers not accurately entering drive gear of primary pump.

Follow-up damage: Drivers on torque converter and primary pump are distorted.

Renew primary pump or torque converter, if required.

Complaint:

Temporarily no power transmission in all selector lever positions immediately after starting engine (especially after a longer inoperative period).

Cause/Remedy:

Torque converter drains partially via leaking or defective lubrication pressure ring on input shaft or via leaking lubricating pressure valve in shift valve housing.

1. Check lubrication pressure ring on input shaft, renew.

2. Check and clean lubrication pressure valve in shift valve housing.

Complaint:

No positive contact in reverse gear.

Cause/Remedy:

1. Check lining plates and lip sealing rings on piston of LB3 and renew, if required.

2. Renew one-way roller clutch in gear assembly.



Technical Service Information

Complaint:

Heavy cut-in jerk when engaging selector lever position "D" and "R".

Cause/Remedy:

1. Adjust idle speed and emission value as specified.
2. Check modulating pressure, correct modulating pressure, if required.
3. Check whether cone spring under valve ball (16) in shift valve housing is installed.
4. Check vacuum line and connecting points for leaks.
5. Check pressure pickup piston in shift valve housing for easy operation and correct installation and exchange shift valve housing, if required.

Note: If during repeated short-time back and forth from "N" to "D" a hard cut-in jerk results, there is no reason for complaint. The pressure pickup requires a running period of approx. 2 seconds. If this time is maintained, the cut-in jerk is also in order.

Complaint:

Heavy shift jerks when changing gears.

Cause/Remedy:

1. Check modulating pressure, adjust modulating pressure, if required.
2. Check vacuum line and connecting points for leaks.

Note: Additional up-to-date remedies are shown in respective, valid Service Informations.

Complaint:

Heavy shifting jerk during downshift 4-3

Cause/Remedy:

1. Renew lip sealing ring release side B2
2. Renew brake band piston B2.
3. Thrust body B2 twisted, renew thrust body.

Complaint:

Shift jerks in partial load range.

Cause/Remedy:

1. Check adjustment of control pressure cable control.

Note: In the cause of a test drive always set control pressure cable control slightly shorter until optimal shift quality is obtained. Do not set control pressure cable control too short, since otherwise there will be no more brake shifts.

2. Check modulating pressure and adjust, if required.
 3. Check vacuum line and connecting points for leaks.
-



Technical Service Information

Complaint:

No kickdown downshifts.

Cause/Remedy:

1. Check fuse for current supply to magnetic valve.
2. Remove magnetic valve. Connect to current supply in a removed condition and check for function. Renew, if required.
3. Check cable control for control pressure whether disengaged, torn or wrongly adjusted.
4. Check kickdown regulating slide in shift valve housing for easy operation and exchange shift valve housing, if required.

Complaint:

No brake shifts (4-3 and 3-2).

Cause/Remedy:

1. Adjust cable control for control pressure.
2. Check vacuum lines and connections for leaks.
3. Make B1 shift piston operable and exchange shift valve housing, if required.

Complaint:

Automatic, unwanted downshifts outside partial throttle downshift range without actuating kickdown switch.

Cause/Remedy:

1. Remove kickdown magnetic valve. Check O-ring on magnetic valve for damage.
 2. Check whether kickdown switch sticks in pushed position and renew, if required.
 3. Check whether magnetic valve stick in opened position and renew magnetic valve, if required.
-

Complaint:

No upshifts

Cause/Remedy

1. Check regulating pressure (if no regulating pressure is indicated, continue with item 2. If regulator is in order, perform item 3.
2. Clean centrifugal governor and make operable.
3. Disassemble, clean shift valve housing and exchange, if required.

Complaint:

Upshifts in upper speed range of gears only.

Cause/Remedy:

1. Check cable control for control pressure and adjust.
2. Check regulator pressure, if regulator pressure is too low, exchange centrifugal governor.
3. Make control pressure regulating valve operable.

Complaint:

Upshifts in lower speed range of gears only.

Cause/Remedy:

1. Check cable control for control pressure whether disengaged or torn and make accurate adjustments.
 2. Check full throttle stop. (Accelerate by means of accelerator lever and check whether throttle valve rest against full throttle stop, readjust, if required).
 3. Check regulator pressure, if regulator pressure is too high, exchange centrifugal governor.
-



Technical Service Information

Complaint:

Engine cannot be started in selector lever position "P" and "N".

Cause/Remedy:

1. Adjust shift rod and starter lockout switch.
2. Renew starter lockout switch.

Complaint:

Creeping oil loss (without recognizable outer leaks) in connection with smoke developing in exhaust.

Cause/Remedy:

Diaphragm in vacuum control unit defective. Transmission oil is drawn from engine via vacuum line.

1. Renew vacuum control.

Complaint:

Oil loss between torque converter and primary pump (oil emerging at vent grills).

Cause/Remedy:

1. Screw in oil drain plug on torque converter with new sealing ring as well as Hylomar on threads and tighten. In the event of additional leaks, continue with item 2.
 2. Renew radial sealing ring and O-ring of primary pump, while checking groove for O-ring on primary pump for porous spots. Renew primary pump, if required.
-



Technical Service Information

Complaint:

Howling noise which increases with increasing engine speed.

Cause/Remedy:

1. Check primary pump and renew, if required.

Complaint:

Rattling noise at 1500/min engine speed in all selector lever positions except "R".

Cause/Remedy:

Plates of reverse speed brake are oscillating in transmission housing.

1. Renew inner plates of reverse speed brake B3, set release clearance to minimum value.

Complaint:

Slightly grinding noise in selector lever position "P" and "N".

Cause/Remedy:

This noise is a normal rolling noise of front gear assembly which cannot be eliminated.

Complaint:

Chattering noise when driving in reverse.

Cause/Remedy:

Release clearance of plate brake B3 too high. Outer plate carrier of K1 wipes against piston LB3.

1. Set release clearance to specified value of 1.5-2mm.
-



Technical Service Information

Complaint:

Poor acceleration when starting.

Cause/Remedy:

1. Check stall speed.
2. If stalling speed drops by approx. 400-700/min below specified value, one-way roller clutch in torque converter will slip. Exchange torque converter.

Complaint:

Parking lot not engaging.

Cause/Remedy:

1. Check rear engine mount and renew , if required.
2. Check adjustment of selector rod and correct, if required).

Complaint:

Selector lever positions "R" and "P" cannot be engaged.

Cause/Remedy:

- a) With engine running.
 - b) With engine stopped.
1. a) Clean centrifugal governor and make operable .
 2. b) Make detent piston in lower cover operable.

Complaint:

Oil in trnnsmission is emulsified (mixed with water).

Cause/Remedy:

1. Vent on transmission not mounted.
2. Oil cooler in lower tank of engine radiator leaking.

Complaint:

1st and reverse too loud.

Cause/Remedy:

1. Renew front gear assembly according to condition.

Note: Due to prevailing ratios 1st and reverse are louder than the other speeds. Use a comparable vehicle for evaluation.

Complaint:

3rd speed too loud.

Cause/Remedy:

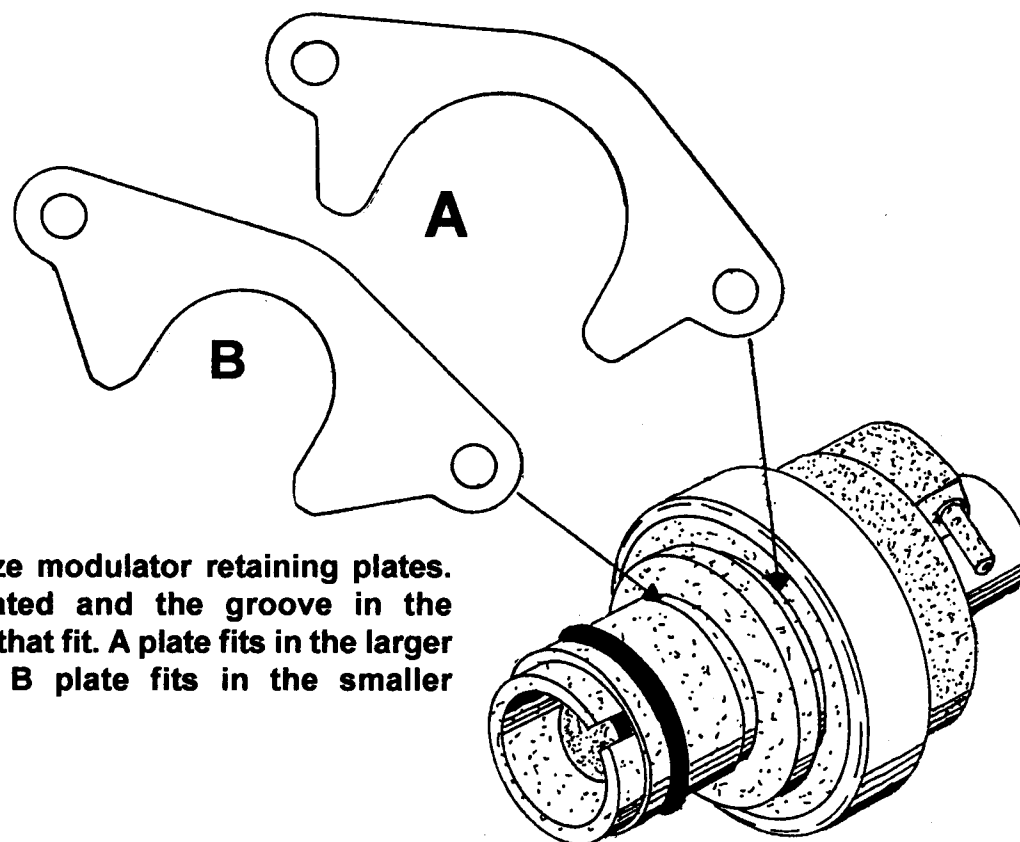
1. Renew rear planetary gear assembly.

Complaint:

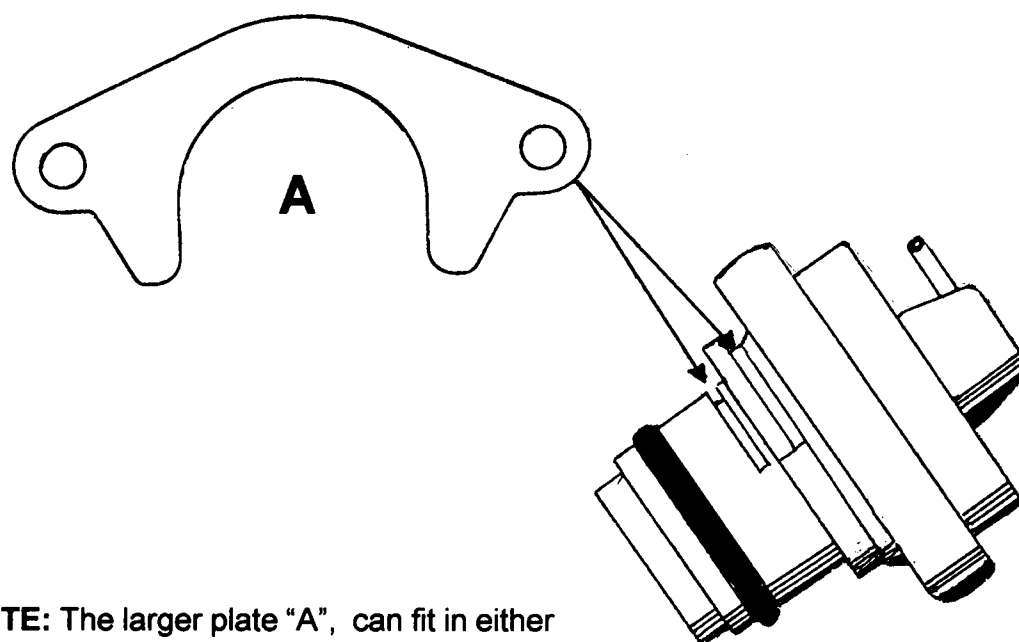
Howling noise only when changing gears under full load.

Cause/Remedy:

1. Renew oil filter.

MODULATOR BRACKETS 722.3 and 722.4

There are two size modulator retaining plates. They are illustrated and the groove in the modulator where that fit. A plate fits in the larger groove and the B plate fits in the smaller groove.

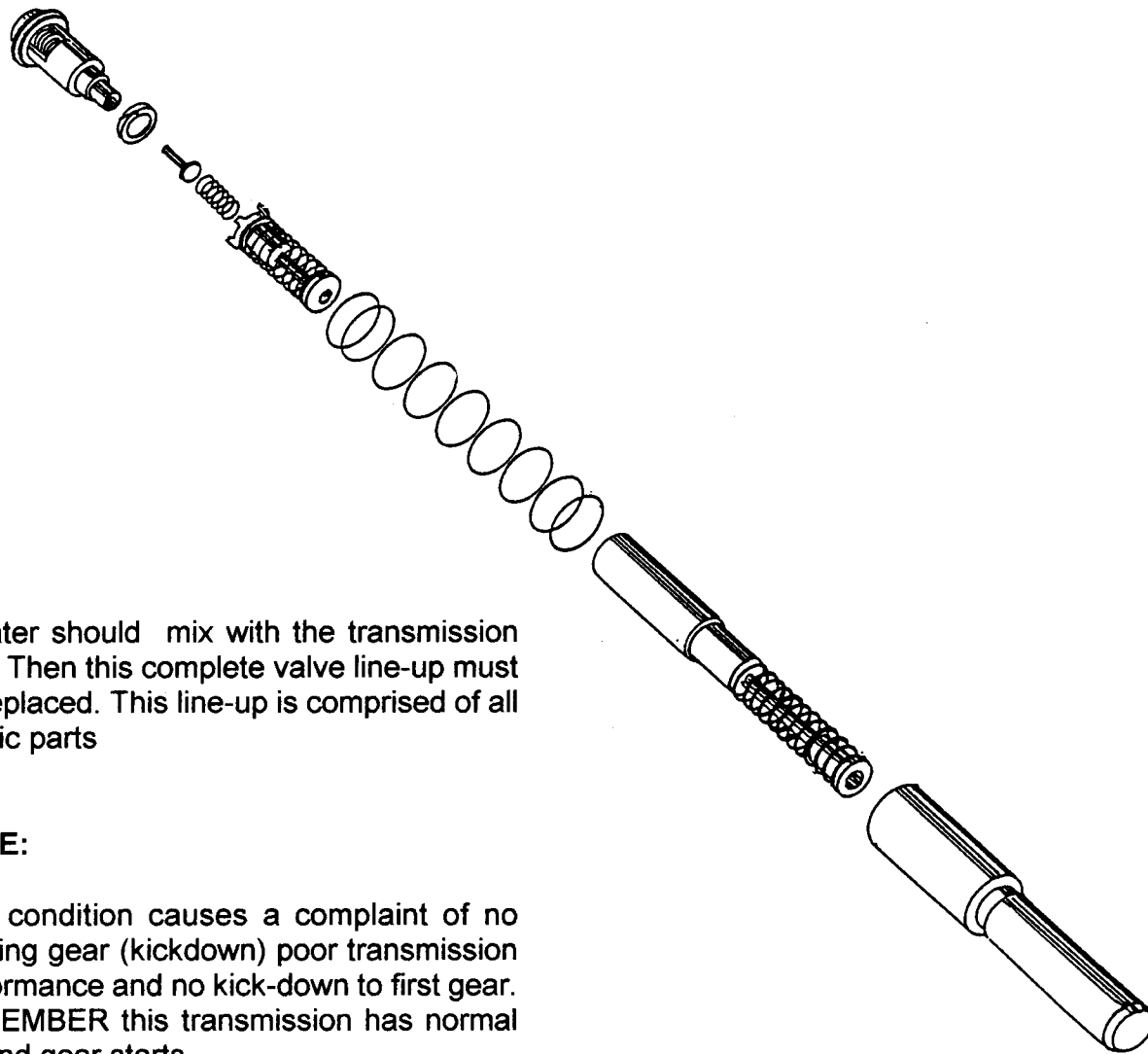


NOTE: The larger plate "A", can fit in either groove. Be careful this mis-positioning of the retaining plate will effect shift quality and can cause leakage.



MERCEDES 722.3 1986-UP TV PLUNGER ASSEMBLY

The TV valve line-up is different in the Mercedes models 420 SEL, 560 SEL and SL models. This change was made the the 1986 model year. Figure 1 illustrates the valve line-up.



If water should mix with the transmission fluid, Then this complete valve line-up must be replaced. This line-up is comprised of all plastic parts

NOTE:

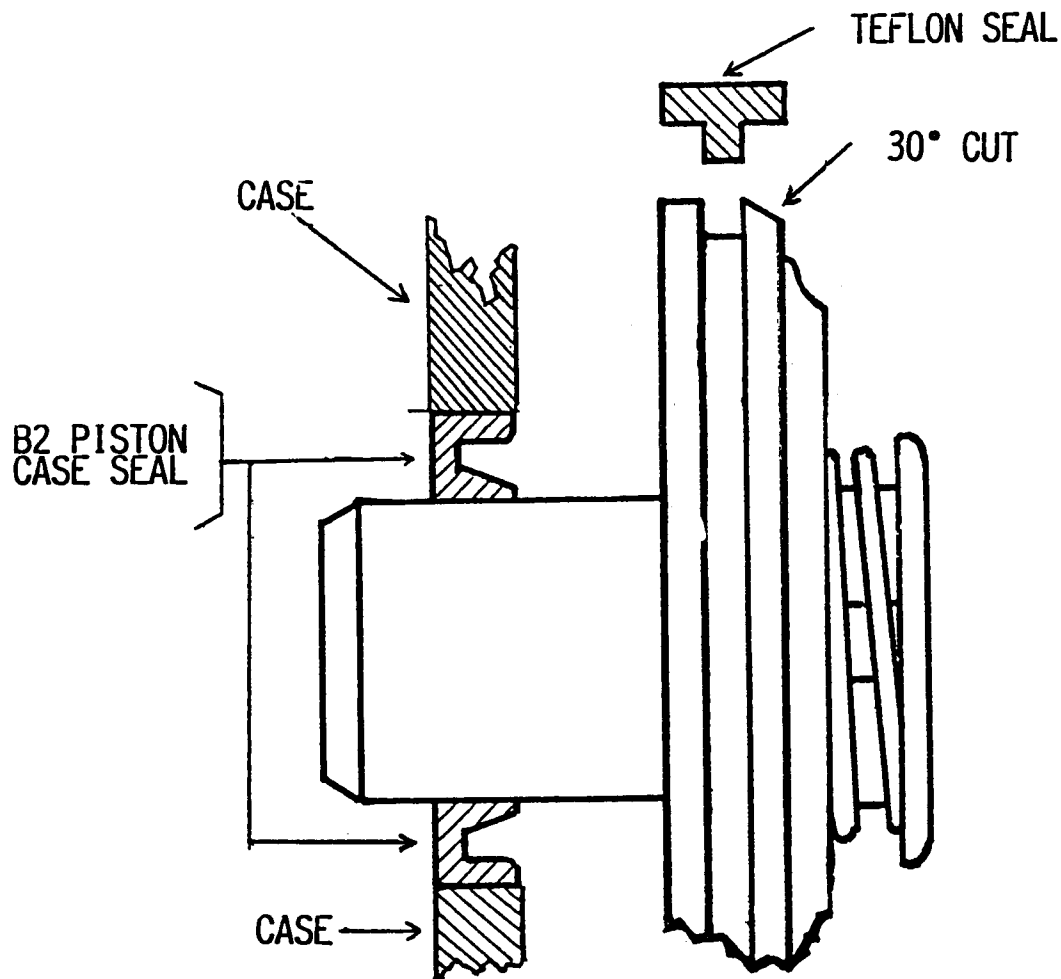
This condition causes a complaint of no passing gear (kickdown) poor transmission performance and no kick-down to first gear. REMEMBER this transmission has normal second gear starts.

Mercedes 722.3 and 722.4 1980 to 1991 Delay engagement , in all Forward positions.

COMPLAINT;Delayed engagement in all forward ranges

CAUSE:The B2 piston seal has been replaced with the late type. Part # 107 270 04 32 that is the "T" type teflon seal. The "T" type seal is not flexible and does not seal well against the servo bore wall.

CORRECTION:Make a 30 degree chamfer around the out diameter of the top (outside land) on the piston. The servo cover side, as shown in Figure 1.





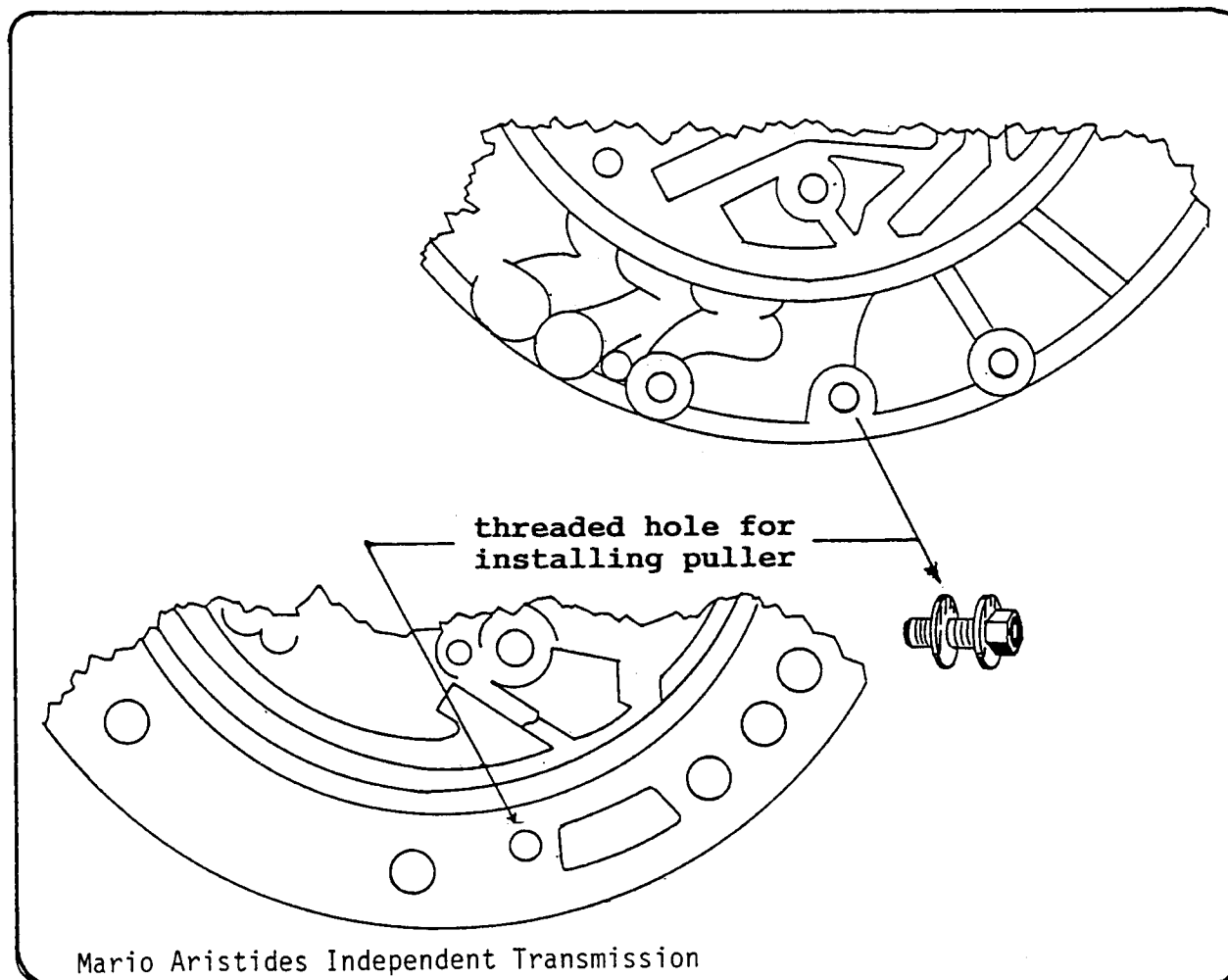
Technical Service Information

Mercedes 722.3 Early Version 1980-84 (6 bolt pan)

COMPLAINT: Transmission leaks from the front after a seal replacement or transmission overhaul.

CAUSE: The threaded hole in the pump body for the use of a pump puller was originally drilled through the pump support up thru 1984. When installing the pump puller the threads in the pump support are pushed above the surface of the support causing a cross leak with the B3 or reverse clutch apply hole. The fluid leaks past the gasket and comes out the hole that the puller was installed in. The later models DO NOT have the hole drilled completely through the pump support.

CORRECTION: Take a hand grind stone and resurface the support and the case at both the bolt hole in the pump cover and B3 clutch hole. Use a sealer on both sides of the gasket and take a pan bolt from an AXOD and a GM pump sealing washer and install in the hole in the pump body that the puller is used in.





Technical Service Information

MERCEDES 722.4 HARSH REVERSE AFTER REBUILD CHECK VALVE IN PUMP OK

COMPLAINT: Some 190 series transmissions may experience a harsh reverse engagement into reverse after an overhaul. All forward ranges are ok and modulating pressure is within specifications.

CAUSE: The reverse feed passage is unrestricted, allowing too much oil volume to the reverse clutches.

CORRECTION: Install the Mercedes tapered oil restrictor Part no. 123 277 0319. into the transmission case as shown in Figure 1. Note that the restrictor goes in tapered end first and fits snug in the case.

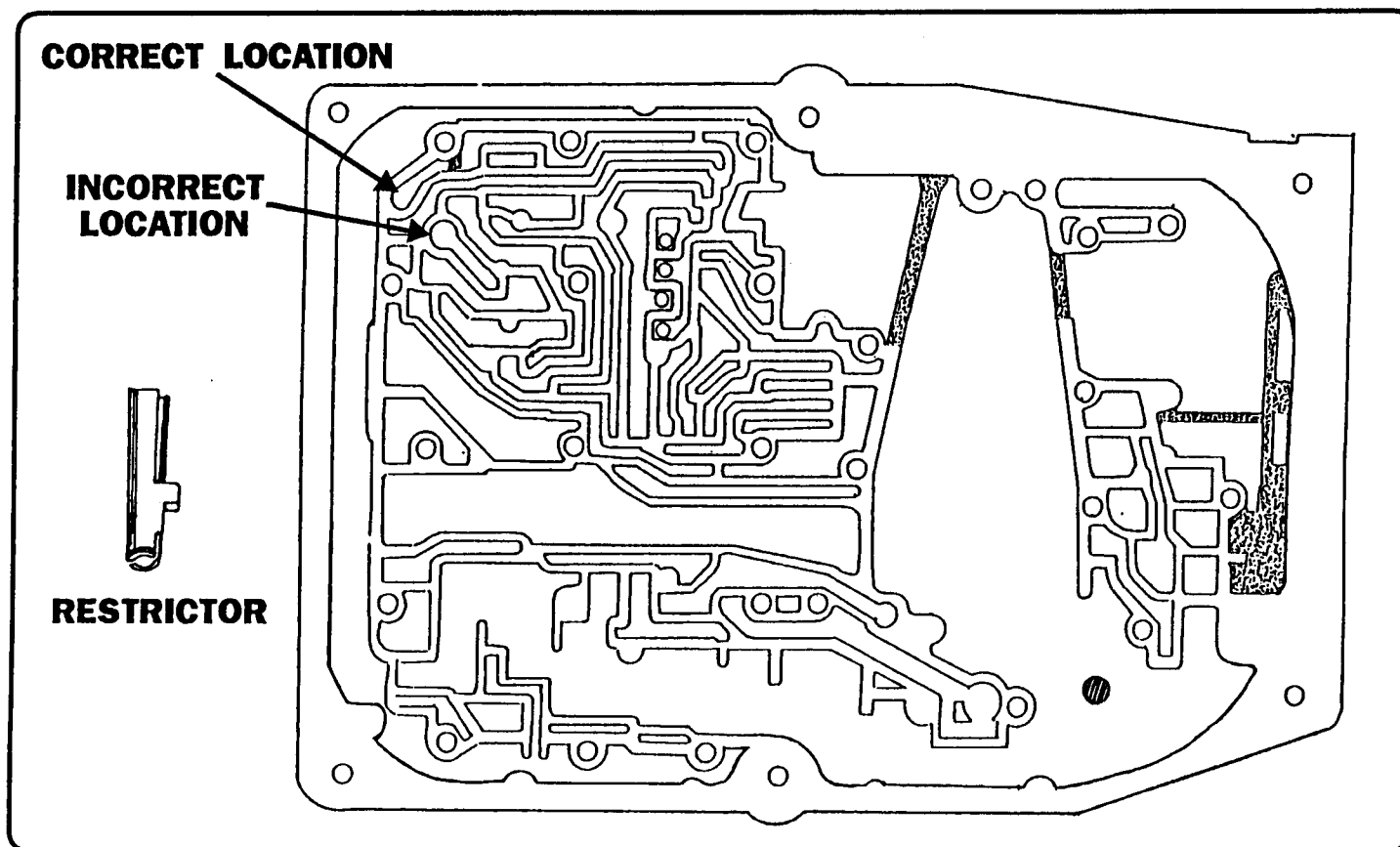


Figure 1



Technical Service Information

MERCEDES ALL MODELS HARSH ENGAGEMENT IN REVERSE AND DRIVE

COMPLAINT: Harsh shifts into "D" and "R" and chattering of driveshaft when taking shift lever out of "D" or "R".

CAUSE:

- a. Coolant in transmission fluid.
- b. Friction coefficient of friction disc LB3 and/or brake band B2 too high.

CORRECTION:

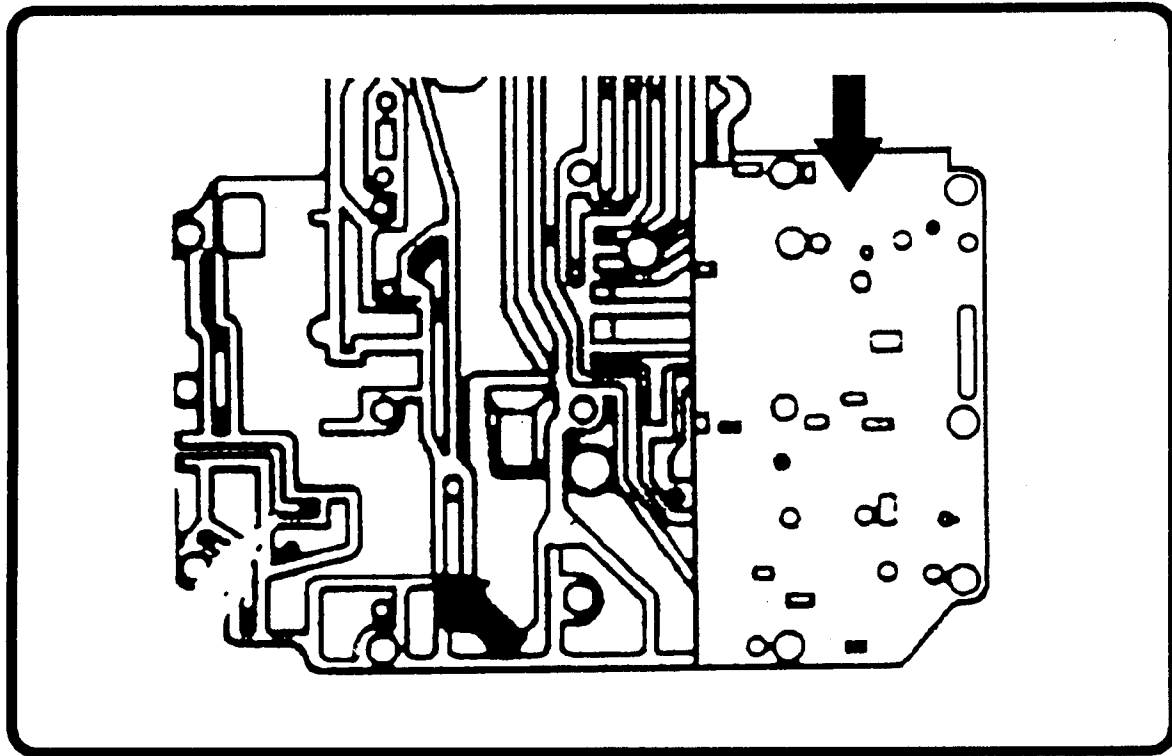
- a. (see note). If coolant is detected in the transmission fluid, replace radiator and all friction linings in the transmission.
- b. For vehicles with a 722.4 transmission already equipped with a brass radiator, or if no coolant can be detected in the transmission, install nitrated outer steel plates LB3 to resolve the complaint.

NOTE TO POINT: A leak in the transmission fluid cooler allows coolant to enter the transmission. This will change the friction coefficient of the friction linings in the transmission.

Therefore, the cooler was changed from aluminum to brass in the period between 2/86 and 6/86. These radiators are marked with a yellow paint dot next to the Behr name plate on top of the radiator. In addition, these radiators can be recognized by the brass colored threaded connections for the transmission fluid hoses. These brass coolers are in order. The following test to determine if coolant entered the transmission have to be performed only on vehicles with aluminum coolers.

Coolant in the transmissions can be recognized by following signs:

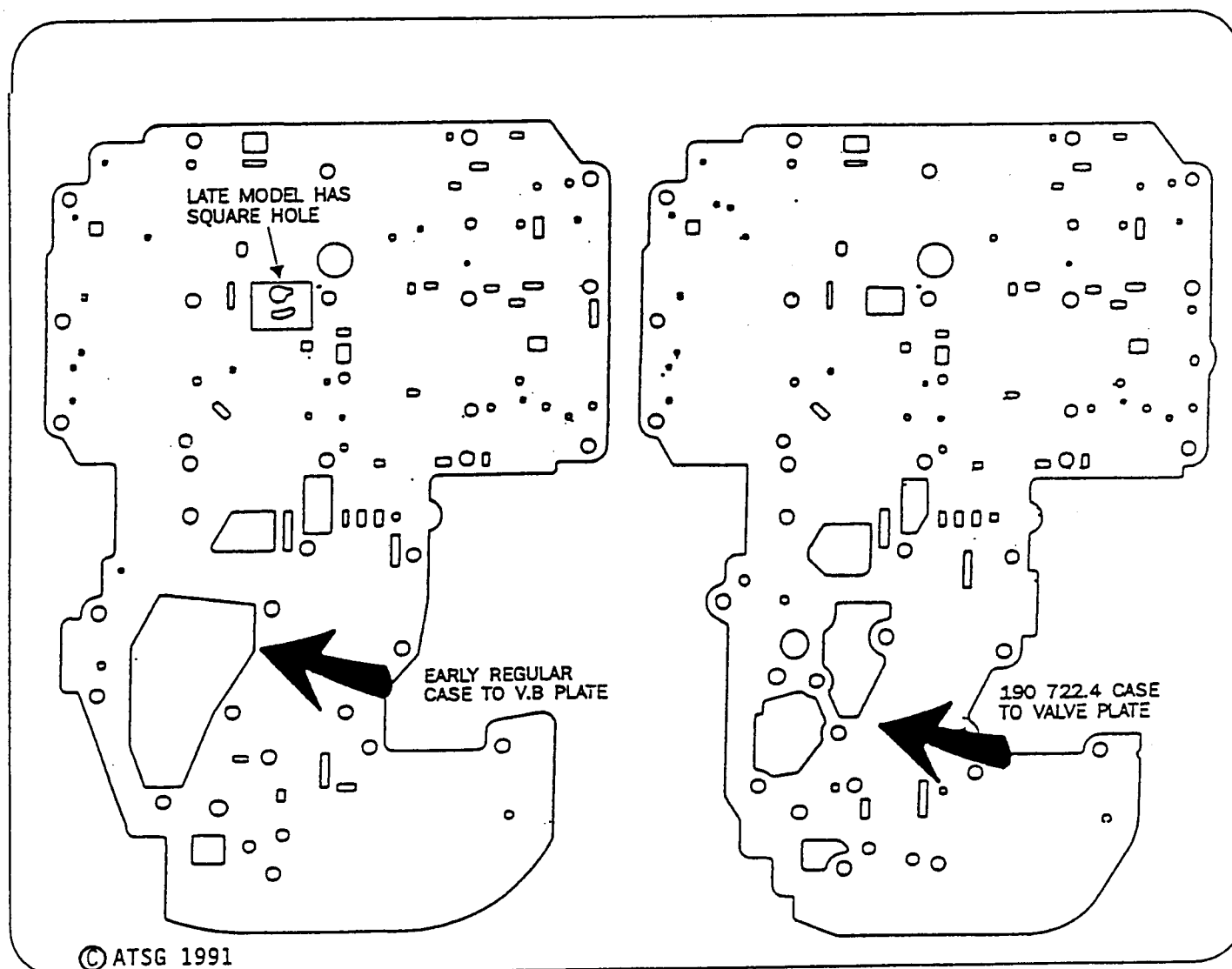
- a. Transmission fluid has milky discoloration.
- b. Transmission fluid foams heavily when drained.
- c. The gasket on the large intermediate plate shows severe swelling or a green slimy coating (upper right arrow in Figure 1).
- d. The intermediate plate shows signs of corrosion under the gasket (lower left arrow in Figure 1).



(Figure 1)

MERCEDES 722.3 / 722.4 SEPARATOR PLATE IDENTIFICATION

We have illustrated the separator plate ID in Figure 1 for both the regular 722.3 valve body and the 722.4 which is the 190E plate. You will note that the "regular" six bolt pan plate has a large opening where as the 190E opening is split. The arrows point to the locations on the plate. The regular plate (722.3) has a late and early version. The early will NOT fit the late valve body but the late will fit the early. Note the difference. The late has a square hole instead of the two orifices in the early. This is the position of the valve body screen.



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MERCEDES 722.3 / 722.4 MODIFIED BRAKE BAND PISTON B1 WITH PRESSURE PIN

As of April 1986 production the above mentioned transmissions are equipped with a modified brake band piston B1 with removeable pressure pin (previously caulked). The pressure pin (38) is held in place in the piston by an O-ring 1.0 mm and 1.5mm thicknesses (Figure 5).

EFFECTIVE SERIAL NUMBERS

Transmission	Trans End No.
722.3	788606
722.4	34638

NOTE:

When installing the modified brake band piston B1 into transmission 722.3 up to end number 65877 and into transmission 722.4 up to end number 180000, the brake band guide must also be replaced.

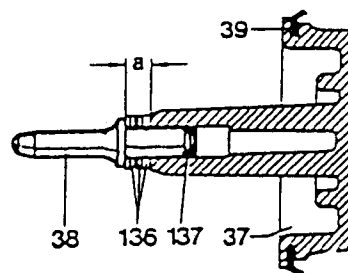


FIGURE 5

- 37 Brake band piston B1
- 38 Pressure Pin
- 39 Lip Seal
- 136 Shims
- 137 O-ring

NOTE:

Dimension "a" does not exceed 6.5 mm.

PART NAME	PART NUMBER	APPLICATION
Brake band piston B1 56 mm Dia.	123 270 49 32*	722.403
Brake band piston B1 64 mm Dia.	123 270 48 32*	722.400/408-410 413/414
Brake band Piston B1 71 mm Dia.	124 270 48 05*	722.303/310-313 315/317/320/321 323

*INCLUDES Brake piston, Lip seal, pressure pin, O-ring and shims.

MERCEDES 722.4

HARSH REVERSE ENGAGEMENT

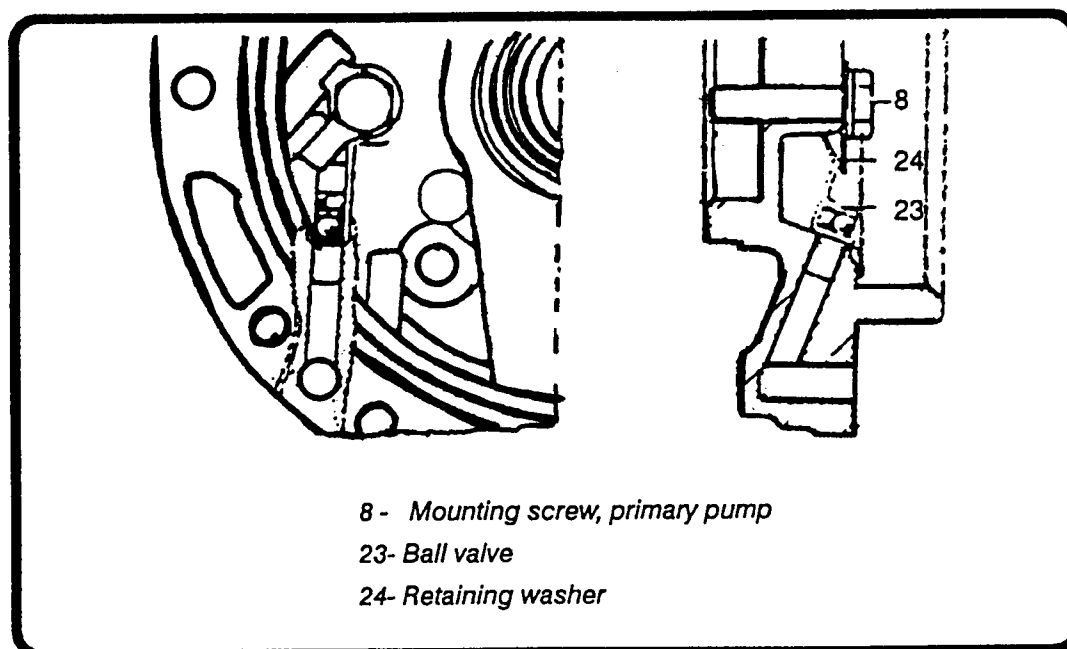
COMPLAINT: Harsh engagement in reverse only.

CAUSE: Ball valve in the front transmission cover is defective.

CORRECTION: Replace ball valve, part #201 270 03 89, and install retaining washer (24), part number 000 463 008403 (Figure 1).

Production Phase-in of retaining washer: As of trans end # 316 257.

NOTE: Take ball from package only shortly before installation, otherwise the plastic becomes brittle when it dries out and can break during installation.



(Figure 1)

MERCEDES 722.4

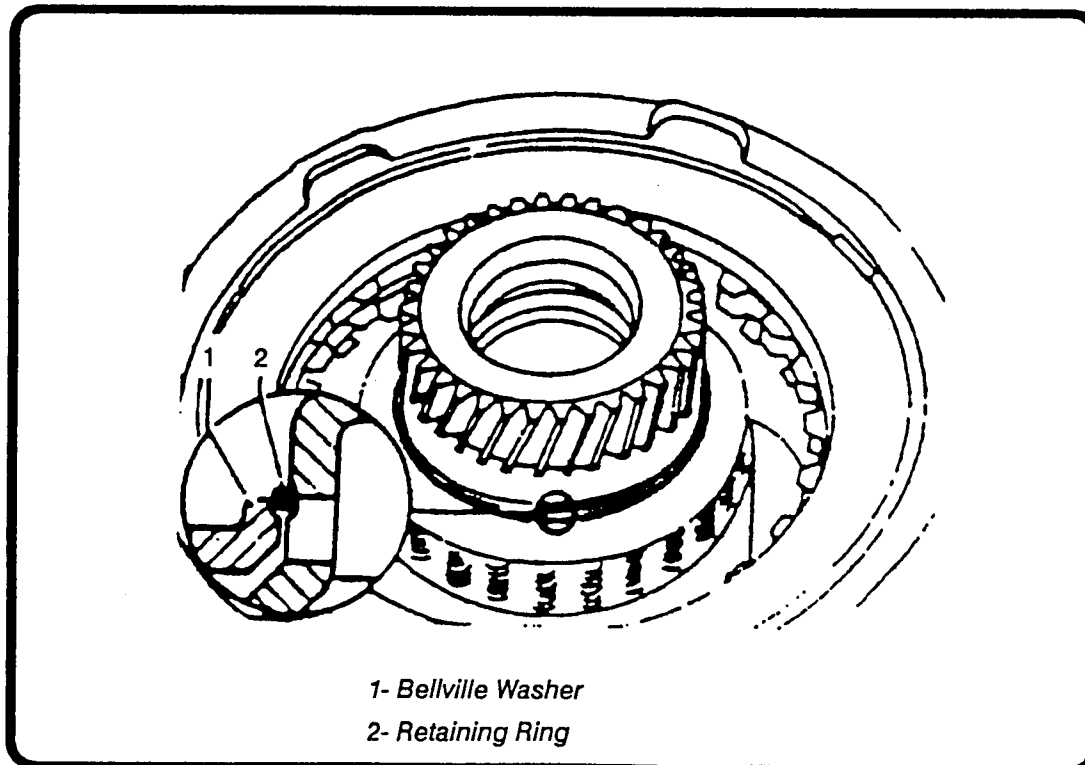
BURNT FLUID

COMPLAINT: *Transmission fluid is very dark or black, but does not smell burned. From 7/86 to 2/87 Production.*

CAUSE: *The bellville washer of the K-1 clutch rubs against the planetary-gear carrier of the front planetary.*

CORRECTION: *Replace steel disks K-1, bellville washer, and retaining ring (Figure 1).*

NOTE: *If the transmission is disassembled for repairs, check to be sure the retaining ring sits properly in it's groove, or if the bellville washer already is pushed over the retaining ring. In this case, replace steel disks K-1, retaining ring, and bellville washer.*



1- Bellville Washer

2- Retaining Ring

(Figure 1)



Technical Service Information

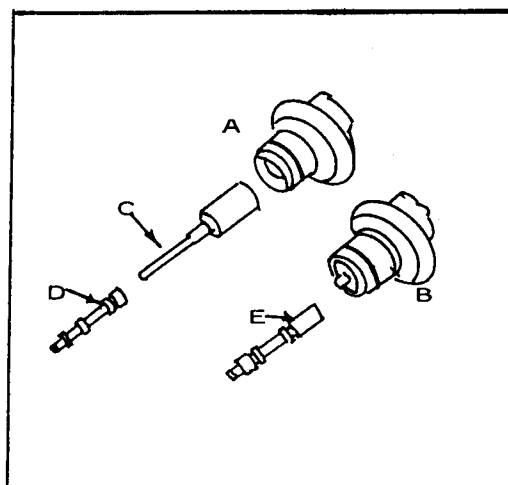
MERCEDES 722.3 MODELS 107 123 126 COMPENSATING PIN FOR THE MODULATOR VALVE

IN EARLY 1981 PRODUCTION A PLASTIC COMPENSATING PIN WAS INSTALLED IN THE VACUUM MODULATOR AND THE CONTROL PRESSURE SLIDE VALVE (MODULATOR VALVE). THE COMPENSATING PIN ALLOWS FOR THE EXPANSION OF THE MODULATOR VALVE IN ORDER TO PREVENT VARIATION OF THE MODULATING PRESSURE DUE TO THE VARYING TEMPERATURE OF THE TRANSMISSION. THIS IS DESIGNED TO IMPROVE THE SHIFT CHARACTERISTICS OF THE TRANSMISSION DURING START-UP AND BEFORE THE TRANSMISSION GETS TO OPERATING TEMPERATURE.

PRODUCTION CUT-OFF

MODEL	TRANSMISSION	CHASSIS end No.
107.025	722.304	002301
107.045	722.304	004898
126.033	722.301	011989
126.120	722.303	007359
123.193	722.303	002951

Installation of the compensating pin (C) must include the modified vacuum modulator (A) and the control pressure slide valve (D). The earlier vacuum modulator has a different bore size (B) and the slide valve is of a different dimension (E).



PARTS INFORMATION:

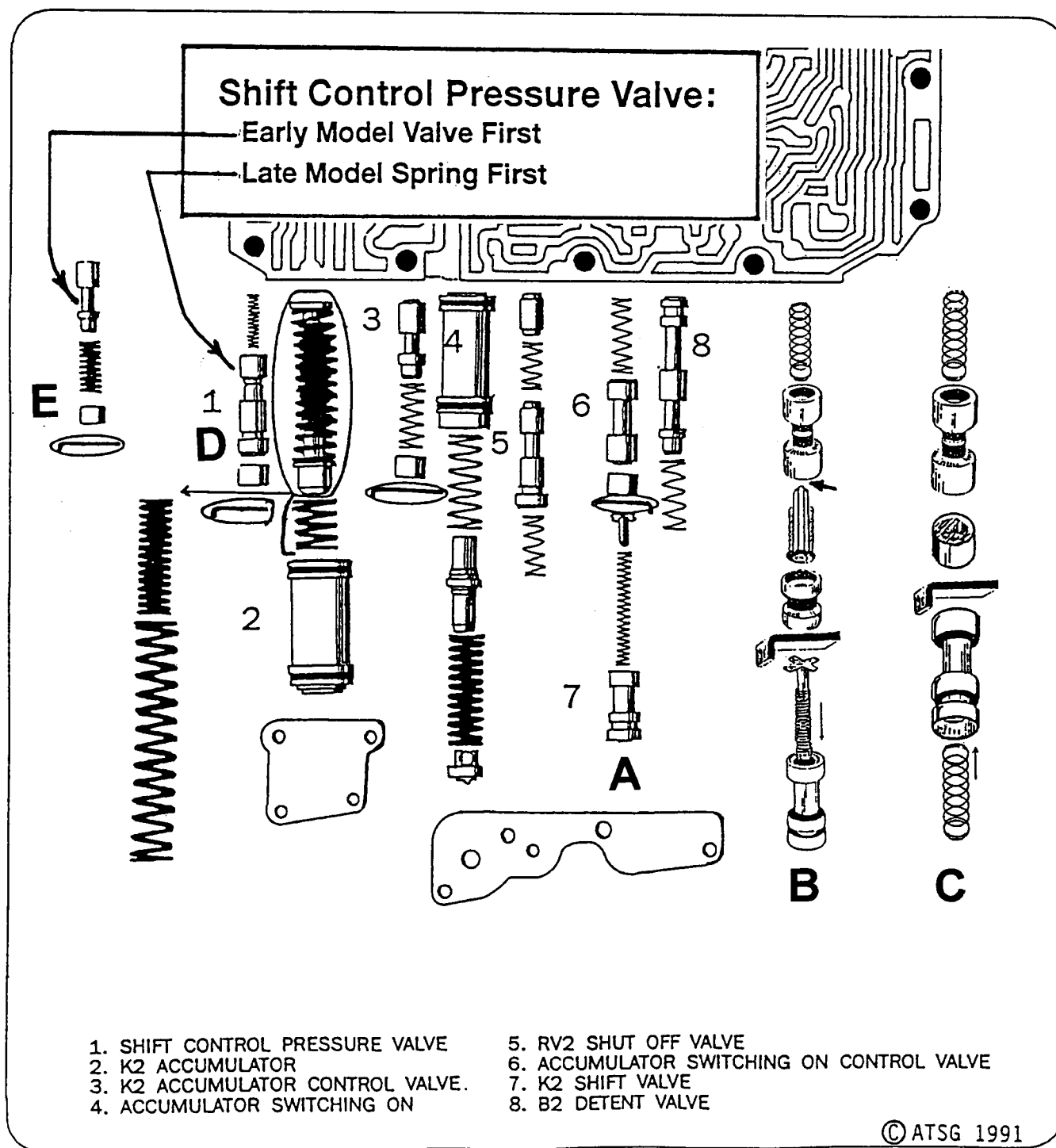
Transmission	Modulating Valve	Slide Valve	Compensating Pin
722.301	126 270 11 79 / RED	126 277 21 32	126 277 20 75
722.304	126 270 11 79 / RED	126 277 21 32	126 277 20 75
722.303	126 270 12 79 / GREEN	126 277 21 32	126 277 20 75

MERCEDES 722.3 / 722.4

LOWER VALVE BODY UPDATE

There are three versions of the K2 shift valve line-up in the lower valve body. we have illustrated these in the illustration below. Line-up "A" is the second and most common version. The "C" line-up is the first version. The "B" line-up was first found in the 722.4 and became the third version in the late model 722.3.

The "D" and "E" shift control pressure valves can be found to be installed valve first then spring (early) or spring then valve (late). Be sure to check valve type and line-up.



Technical Service Information

MERCEDES 722.3 /4 MODIFIED B1 PISTON WITH PRESSURE PIN

As of April 1986 production, the above-mentioned transmissions are equipped with a modified brake band piston B1 with removeable pressure pin (previously caulked). The pressure pin (38) is held in place in the piston by an O-ring 1.0 mm and 1.5 mm thicknesses (Figure 5).

EFFECTIVE SERIAL NUMBER

Transmission	As of Transm. End No.
722.3	788606
722.4	34638

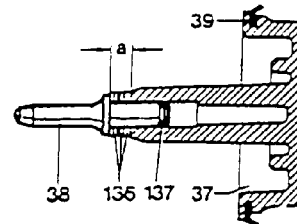


FIGURE 5

- 37 Brake band piston B1
- 38 Pressure pin
- 39 Lip Seal
- 136 Shims
- 137 O-ring

NOTE:

When installing the modified brake band piston B1, into transmission 722.3 up to end number 655877 and into transmission 722.4 up to end number 180000, the brake band guide must also be replaced.

NOTE:

Dimension "a" not to exceed 6.5 mm

PARTS INFORMATION

PART NAME	PART NUMBER	APPLICATION
Brake band piston B1 56 mm dia.	123 270 49 32*	722.403
Brake band piston B1 64 mm dia.	123 270 48 32*	722.400/408-410/ 413/414
Brake band piston B1 71 mm dia.	124 270 48 05*	722.303/310-313/ 315/317/320/321/ 323
SHIM, 0.5 mm	000988 008015	
SHIM, 1.0 mm	000988 008006	
SHIM, 1.5 mm	000988 008024	

*INCLUDES:

- 1 Brake band piston B1
- 1 Lip seal
- 1 Pressure pin
- 1 O-ring
- 6 Shims



Technical Service Information

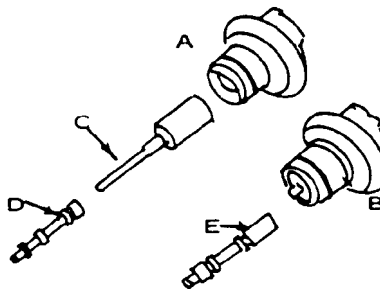
MERCEDES 722.3 /.4 MODELS 107, 123 AND 126 COMPENSATING PIN FOR THE MODULATOR VALVE

In early 1981 production a plastic compensating pin was installed in the vacuum modulator and the control pressure slide valve (modulator valve). The compensating pin allows for the expansion of the modulator valve in order to prevent variation of the modulating pressure due to the varying temperature of the transmission. This is designed to improve the shift characteristics of the transmission during start-up and before the transmission gets to operating temperature.

PRODUCTION CUT-OFF

MODEL	TRANSMISSION	As of CHASSIS END NO.
107.025	722.304	002301
107.045	722.304	004898
126.033	722.301	011989
126.120	722.303	007359
123.193	722.303	002951

Installation of the compensating pin (C) must include the modified vacuum modulator (A) and the control pressure slide valve (D). The earlier vacuum modulator has a different bore size (B) and the slide valve is of a different dimension (E).



PARTS INFORMATION

Transmission	Modulating Valve Part No./Color Code	Slide Valve Part No.	Compensating Pin
722.301	126 270 11 79/ RED 126 270 12 79/ GREEN	126 277 21 32	126 277 20 75
722.304			
722.303			

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MERCEDES 722.3 /.4 MODELS 107, 123 AND 126 COMPENSATING PIN FOR THE MODULATOR VALVE

We have illustrated the separator plate ID in Figure 1 for both the regular 722.3 valve body and the 722.4 which is the 190E plate. You will note that the "regular" six bolt pan plate has a large opening where as the 190E opening is split. The arrows point to the locations on the plate. The regular plate (722.1 722.2 722.3) has a late and early version. The early will NOT fit the late valve body but the late will fit the early. Note the difference. The late one has a square hole instead of the two orifices in the early. This is the position of the valve body screen.

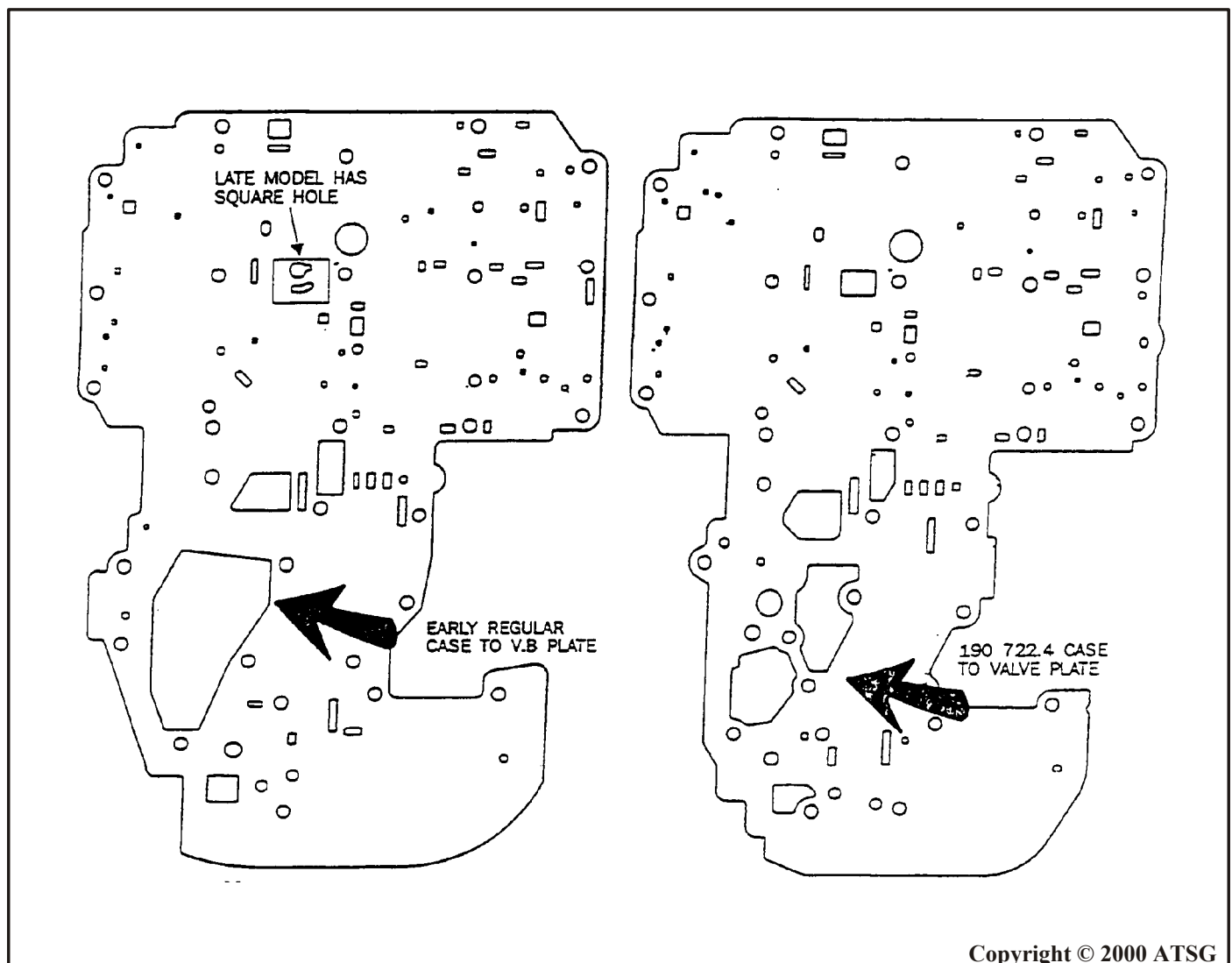


Figure 1



Technical Service Information

MERCEDES 722.3 /.4 HARSH ENGAGEMENT INTO REVERSE AND DRIVE

COMPLAINT: Harsh shifts into "D" and "R" and chattering of drive shaft when taking shift lever out of "D" or "R".

CAUSE:

- a. Coolant in transmission fluid.
- b. Friction coefficient of friction disc LB3 and/or brake band B2 too high.

CORRECTION:

- a. (See note) If coolant is detected in the transmission fluid, replace radiator and all friction linings in the automatic transmission.
- b. For vehicles with transmission 722.4 already equipped with a brass radiator, or if no coolant can be detected in the transmission, install nitrated outer steel plates LB3 to resolve the complaint.

NOTE TO POINT A A leak in the transmission fluid cooler allows coolant to enter the automatic transmission. This will change the friction coefficient of the friction linings in the transmission.

Therefore, the cooler was changed from aluminum to brass in the period between 2/86 and 6/86. These radiators are marked with a yellow paint dot next to the Behr name plate on top of the radiator. In addition, these radiators can be recognized by the brass-colored threaded connections for the transmission fluid hoses. These brass coolers are in order. The following tests to determine if coolant entered the transmission have to be performed only on vehicles with aluminum coolers.

Coolant in the transmission can be recognized by the following signs:

- a. Transmission fluid has milky discoloration,
- b. Transmission fluid foams heavily when drained,
- c. The gasket on the large intermediate plate shows severe swelling or a green slimy coating (upper right arrow in Figure 1).
- d. The intermediate plate shows signs of corrosion under the gasket (lower left arrow in Figure 1).

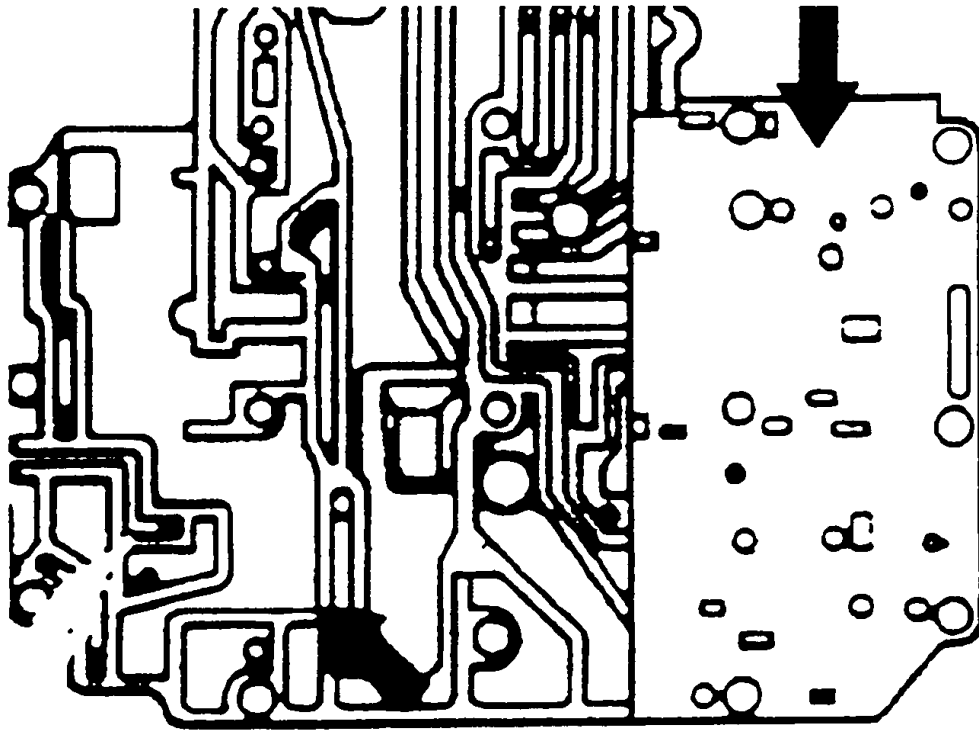
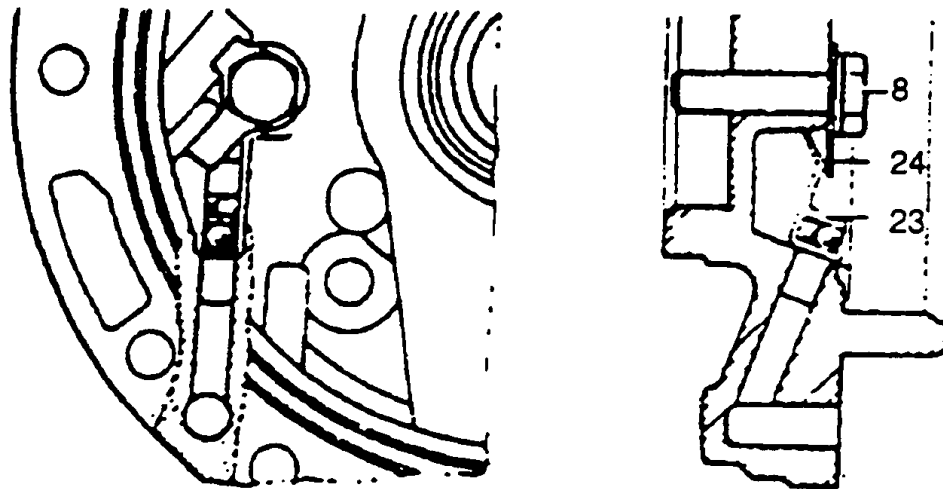


Figure 1

Technical Service Information

MERCEDES 722.3 /.4 HARSH ENGAGEMENT INTO REVERSE ONLY

- COMPLAINT:** Harsh engagement in reverse only.
- CAUSE:** Ball valve in the front transmission cover is defective.
- CORRECTION:** Replace ball valve, part #201270 03 89, and install retaining washer (24), part number 000 463 008403 (Figure 1).
- Production Phase-in of retaining washer: As of trans end #316 257.
- NOTE** Take ball from package only shortly before installation, otherwise the plastic becomes brittle when it dries out and can break during installation.



8 - Mounting screw, primary pump
23- Ball valve
24- Retaining washer



Technical Service Information

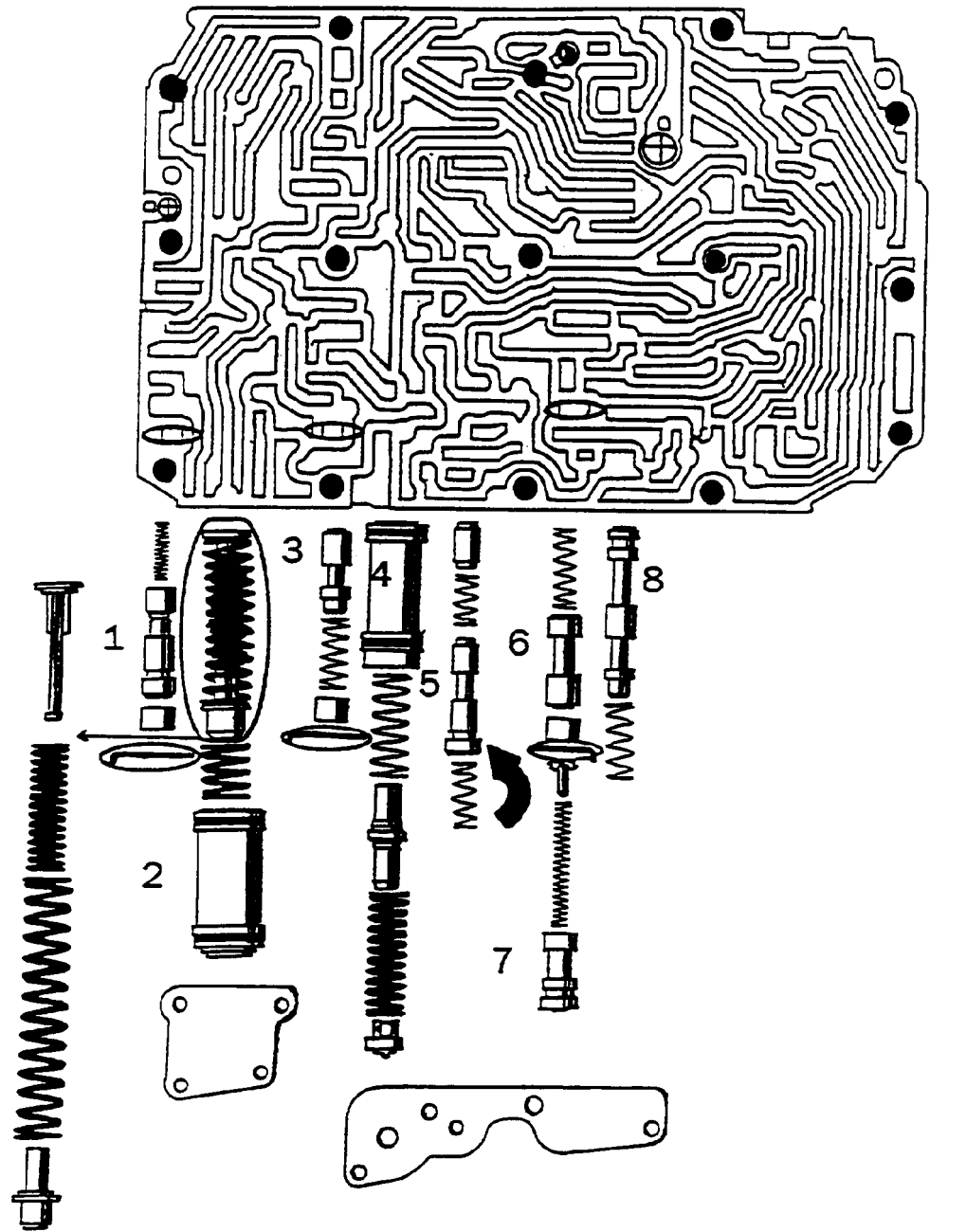
MERCEDES 722.3 /.4 ERRATIC DOWNSHIFTS

COMPLAINT: Erratic 4-3 3-2 downshift, other times it does not. Sometimes it does occur and at all.

CAUSE: Throttle linkage and/or control pressure detent/Bowden cable is not adjusted properly, or the reaction valve in the valve body is binding. Or the shut off valve is binding. Figure 1 and Figure 2 show the location of these valves.

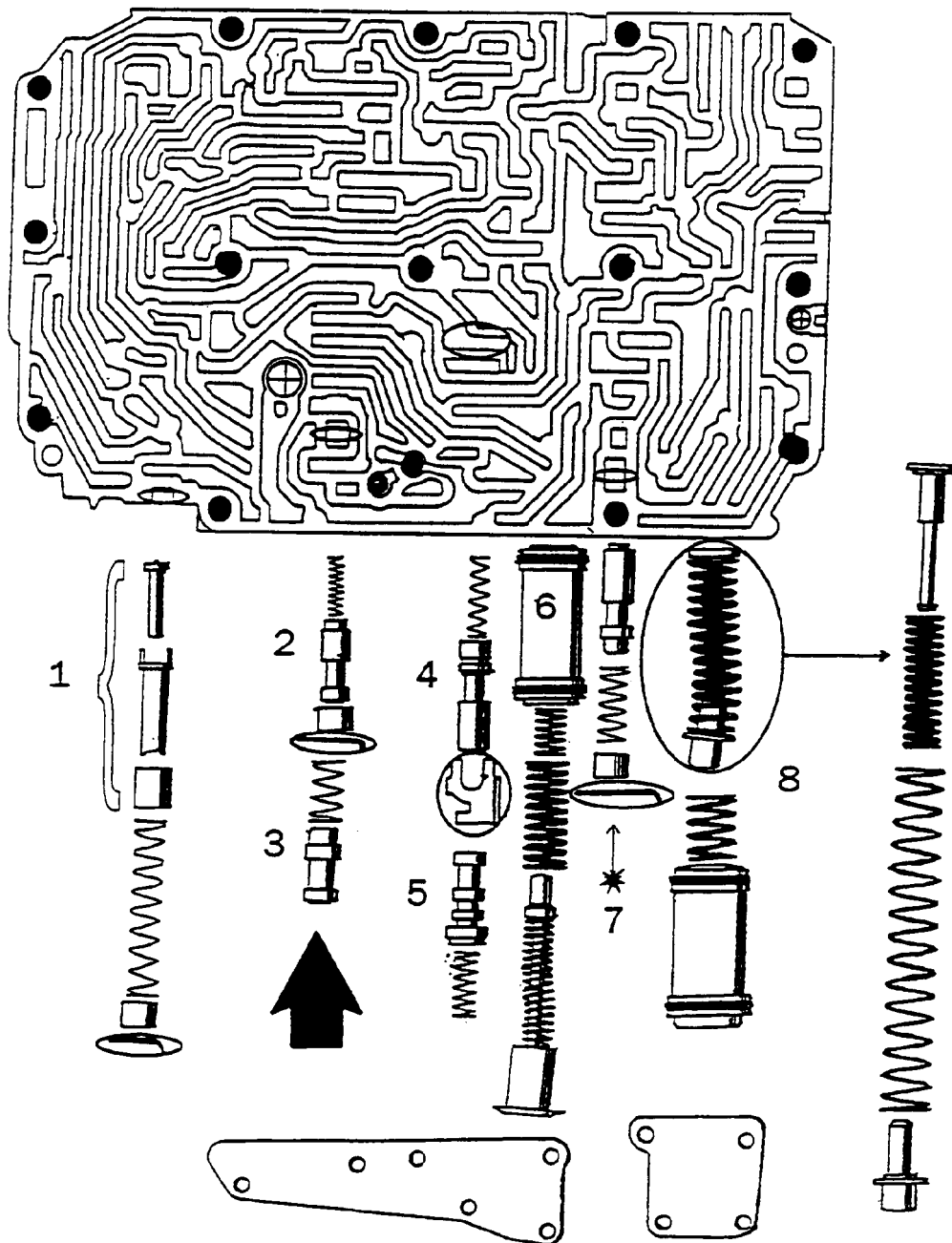
CORRECTION: Drive the vehicle with the detent cable disconnected (control pressure Bowden cable). If manual downshift will take place then the problem is not the transmission nor the valve body, but that the detent/Bowden cable is out of adjustment. Make necessary adjustment to the cable. If the downshift still will not occur, then the problem is either the RV5 shut off valve shown in Figure 1 is binding or the brake shut off valve in Figure 2 is binding.

CAUTION: It is important that the valve body bolts be properly torqued. On this model unit the bolts holding the valve body together should be torqued to 65 in. lbs. and the bolts that secure the valve body to the case should also be torqued to the 65 in. lbs. setting.



- | | |
|----------------------------------|---|
| 1. SHIFT CONTROL PRESSURE VALVE | 5. RV2 SHUT OFF VALVE |
| 2. K2 ACCUMULATOR | 6. ACCUMULATOR SWITCHING ON CONTROL VALVE |
| 3. K2 ACCUMULATOR CONTROL VALVE. | 7. K2 SHIFT VALVE |
| 4. ACCUMULATOR SWITCHING ON | 8. B2 DETENT VALVE |

Figure 1



1. ACCUMULATOR KICK DOWN
2. RV1 SHUT OFF VALVE
3. BRAKE CIRCUIT SHUT OFF VALVE
4. B1 ACCUMULATOR CONTROL VALVE

5. DECELERATION CONTROL VALVE
6. B1 ACCUMULATOR
7. K1 ACCUMULATOR CONTROL VALVE
8. K1 ACCUMULATOR

Figure 2

Technical Service Information

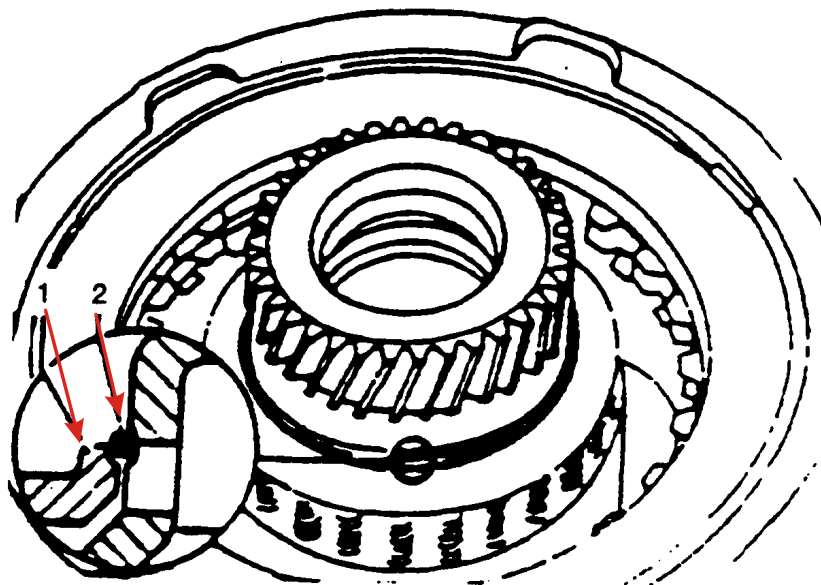
MERCEDES 722.3 /.4 BURNT FLUID (BELLVILLE PLATE INTERFACE)

COMPLAINT: Transmission fluid is very dark or black, but does not smell burned. From 7/86 to 2/87 Production.

CAUSE: The bellville washer of the K-1 clutch rubs against the planetary-gear carrier of the front planetar

CORRECTION: Replace steel disks K-1, bellville washer, and retaining ring (Figure 1).

NOTE: If the transmission is disassembled for repairs, check to be sure the retaining ring sits property in it's groove, or if the bellville washer already is pushed over the retaining ring. In this case, replace steel disks K-1, retaining ring, and bellville washer.



1 - BELLVILLE WASHER
2 - RETAINING RING

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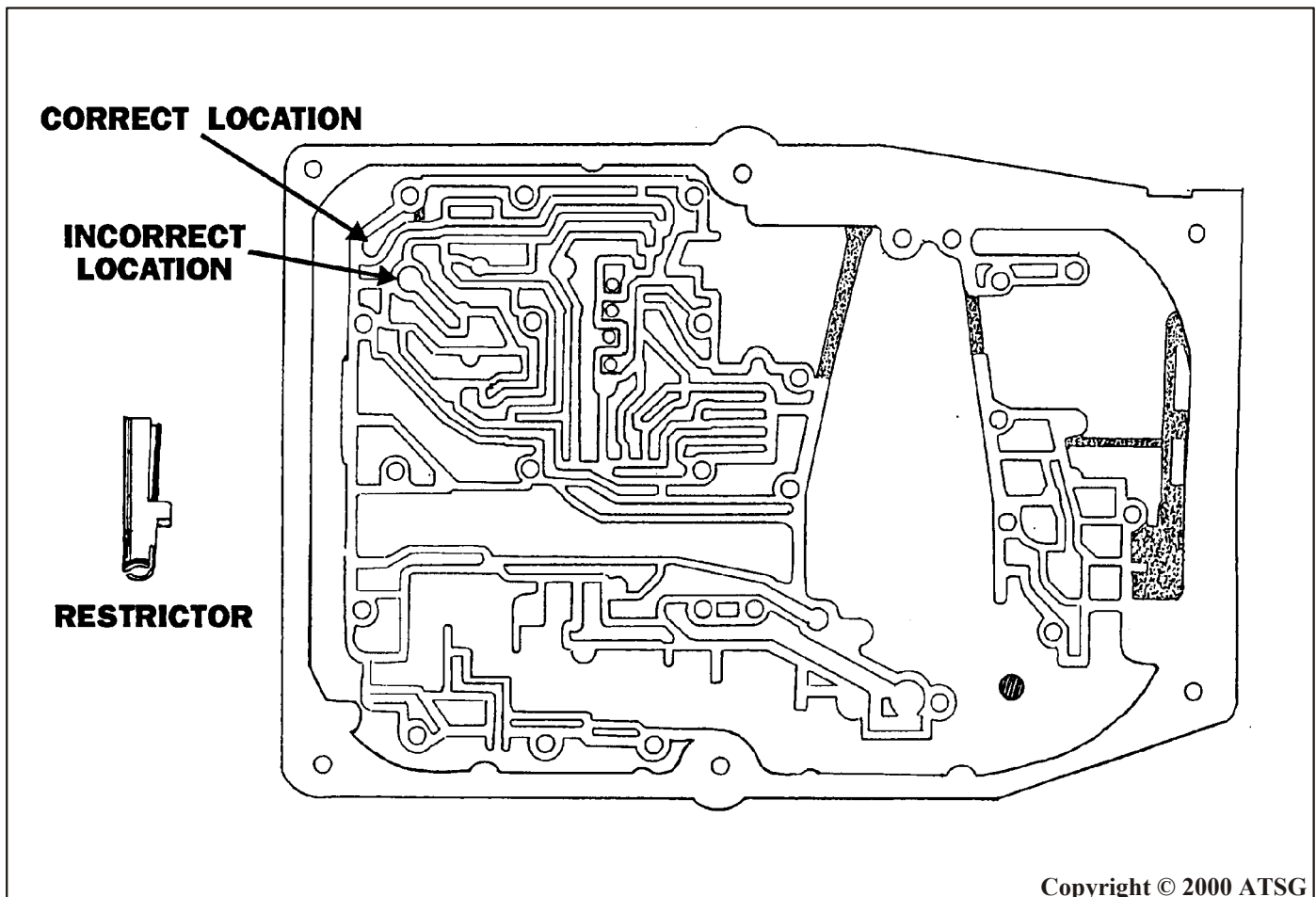
Technical Service Information

MERCEDES 722.3 /.4 HARSH REVERSE AFTER REBUILD CHECK VALVE IN PUMP IS OK

COMPLAINT: Some 190 series transmissions may experience a harsh reverse engagement into reverse after an overhaul. All of the forward ranges are ok and modulating pressure is within specifications.

CAUSE: The reverse feed passage is unrestricted, allowing too much oil volume to the reverse clutches.

CORRECTION: Install the Mercedes tapered oil restrictor (Part # 123 277 0319) into the transmission case as shown in figure 1. Note that the restrictor goes in tapered end first and fits snug in the case.



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Technical Service Information

ZF4HP22

ERRATIC OR NO UPSHIFTS

COMPLAINT: Harsh shifts into "D" and "R" and chattering of driveshaft when taking shift lever out of "D" or "R".

CAUSE:

- a. Coolant in transmission fluid.
- b. Friction coefficient of friction disc LB3 and/or brake band B2 too high.
- a. (See note) If coolant is detected in the transmission fluid, replace radiator and all friction linings in the automatic transmission.
- b. For vehicles with transmission 722.4 already equipped with a brass radiator, or if no coolant can be detected in the transmission, install nitrated outer steel plates LB3 to resolve the complaint.

CORRECTION: A leak in the transmission fluid cooler allows coolant to enter the automatic transmission. This will change the friction coefficient of the friction linings in the transmission. Therefore, the cooler was changed from aluminum to brass in the period between 2/86 and 6/86. These radiators are marked with a yellow paint dot next to the Behr name plate on top of the radiator. In addition, these radiators can be recognized by the brass-colored threaded connections for the transmission fluid hoses. These brass coolers are in order. The following tests to determine if coolant entered the transmission have to be performed only on vehicles with aluminum coolers.

Coolant in the transmission can be recognized by the following signs:

- a. Transmission fluid has milky discoloration,
- b. Transmission fluid foams heavily when drained,
- c. The gasket on the large intermediate plate shows severe swelling or a green slimy coating (upper right arrow in Figure 1).
- d. The intermediate plate shows signs of corrosion under the gasket (lower left arrow in Figure 1).

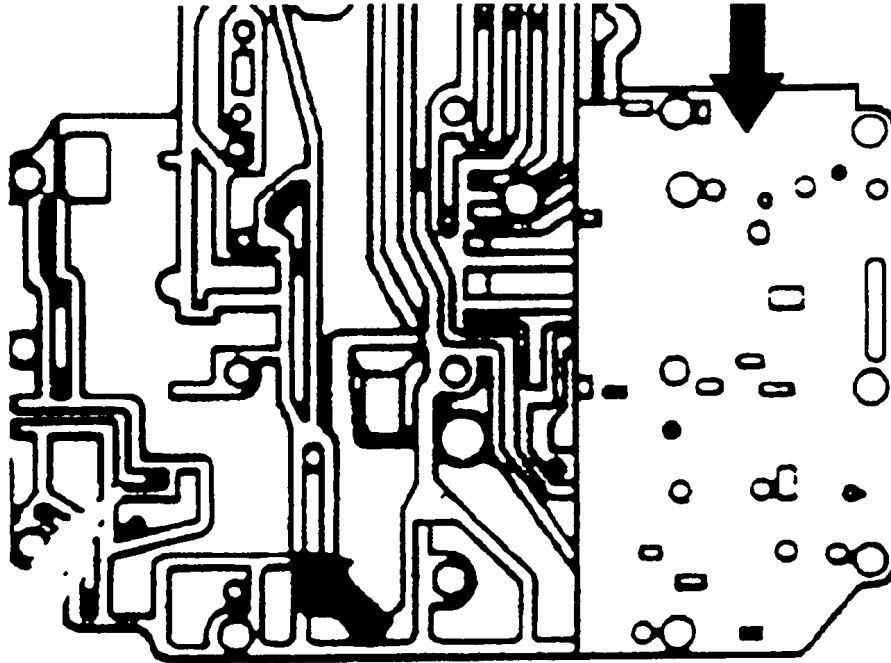


Figure 2

Technical Service Information

MERCEDES 722.3 - 722.4 SLIPPING AND/OR NO REVERSE

COMPLAINT: Before and/or after rebuild, any Mercedes equipped with the 722.3 - 722.4 transmission may exhibit a chattering in reverse, slipping in reverse, or no reverse.

CAUSE: The cause may be, a stuck or sticking *Accumulator Switching On Control Valve*, a collapsed or broken *Accumulator Switching On Control Valve Spring*, a missing, cut, or leaking seal ring on the accumulator piston, or a cracked *Accumulator Switching On Piston* (See Figure 1).

CORRECTION: Remove and disassemble the valve body. Inspect and replace as necessary, the parts and concerns listed above, as shown in Figure 1.

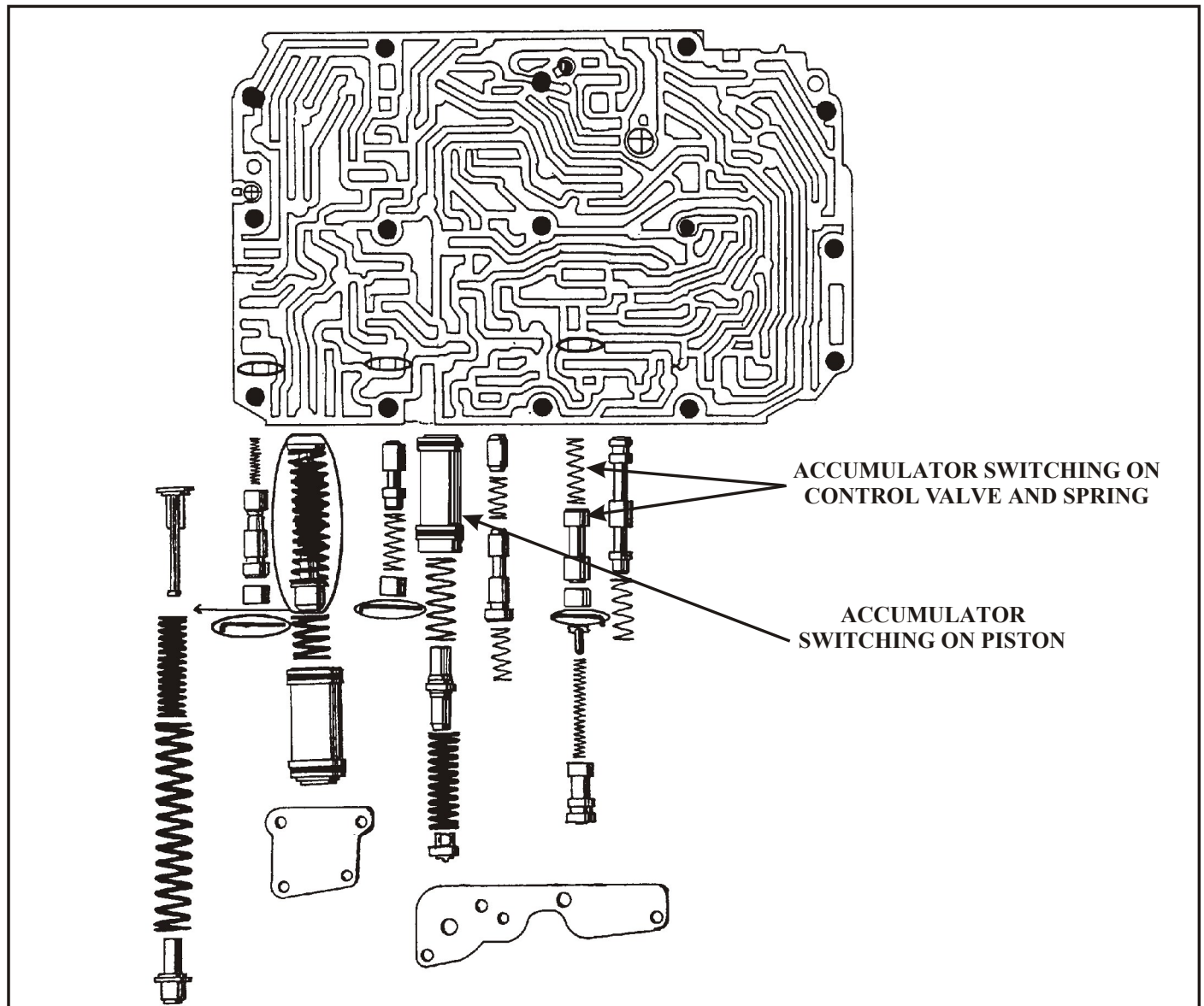


Figure 1