

Automatisches Getriebe 722.3

Typ 461, 463

Bestell-Nr. 6510 5762 02

Printed in Germany

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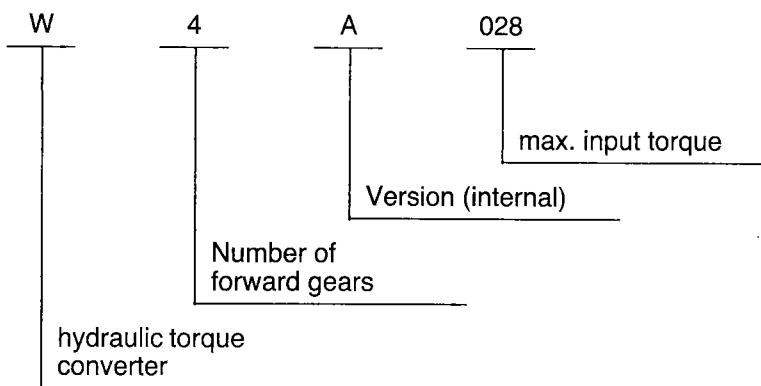
Installation survey

Vehicle Model	Type	Installation	Transmission – Version	Model	Sales designation
461.329 .367	290 GD 4 x 4 ¹⁾	SA (Code G 40)	4-gear torque converter transmission	722.384 ²⁾ .385	W4A 028
463.204 .224 .225	230 GE 4 x 4 G 230 ⁴⁾			722.396	
.207 .227 .228	300 GE 4 x 4 G 300 ⁴⁾			722.397	
.208 .230 .231	G 320			722.372	
.228	500 GE V8 4 x 4 ³⁾			722.382	
.307 .327 .328	300 GD 4 x 4 G 300 Diesel ⁴⁾			722.399	
.300 .320 .321	350 GD Turbo 4 x 4 G 350 Turbodiesel ⁴⁾			722.398	
				Standard	

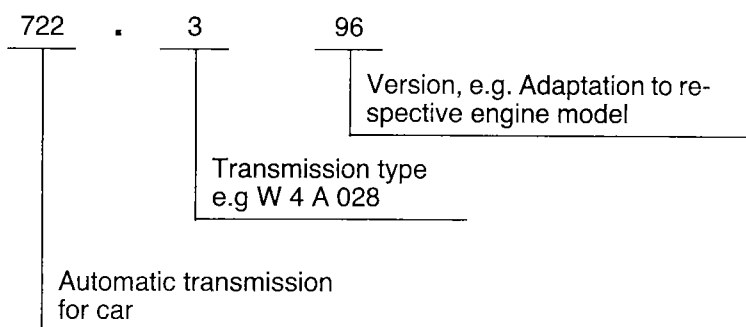
- 1) Only for special operating conditions e.g. below ground or airport operation
- 2) 4th gear blocked
- 3) Special model
- 4) From 9/93

Key to sales designation

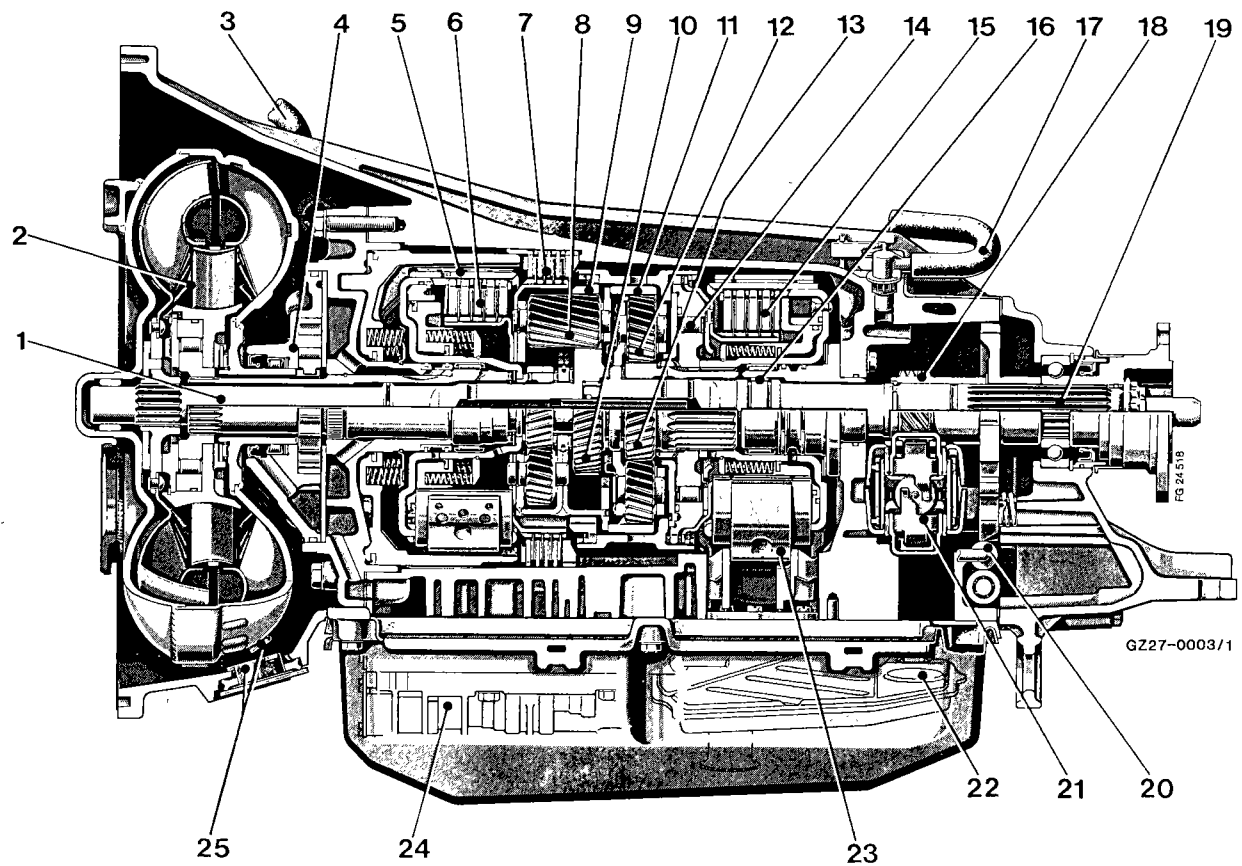
Transmission type



Transmission



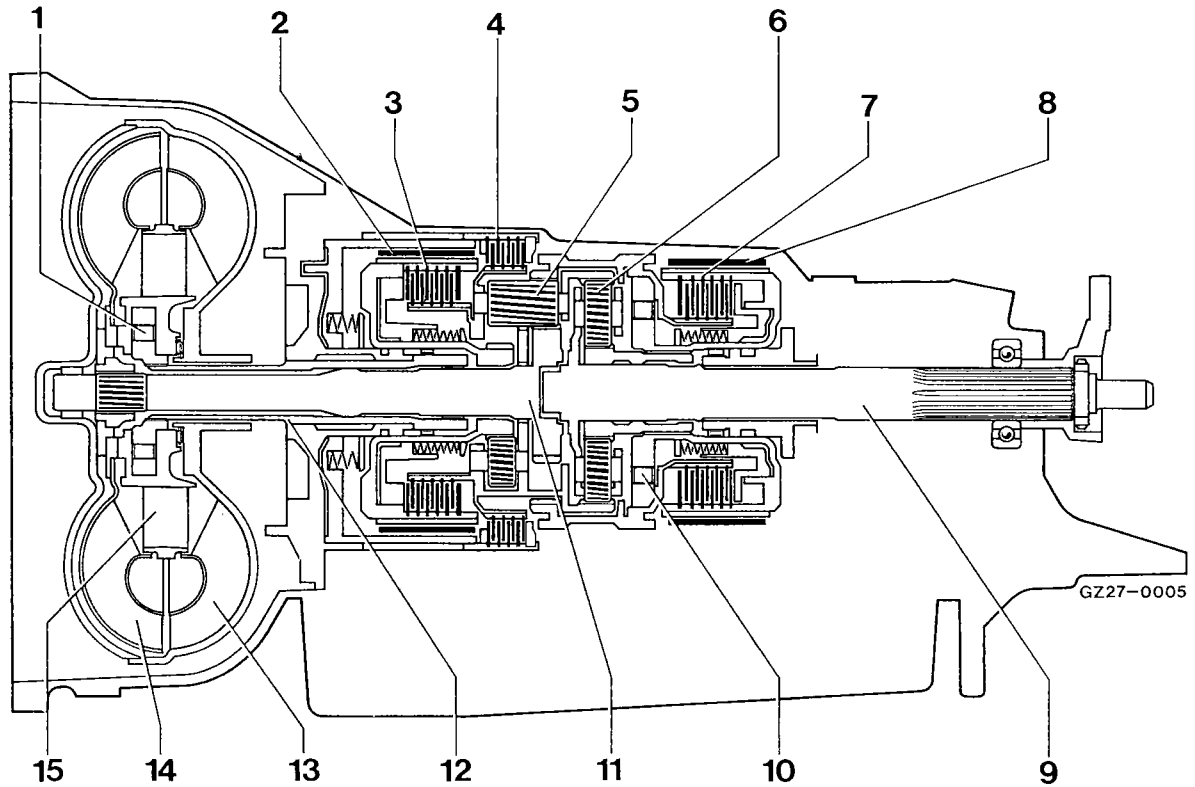
Sectional view



4-gear automatic transmission W4A 028

- | | | | |
|----|--------------------------------|----|--|
| 1 | Input shaft | 14 | Sliding freewheel |
| 2 | Torque converter | 15 | Clutch K2 |
| 3 | Vent, torque converter housing | 16 | Bearing-output shaft |
| 4 | Primary pump | 17 | Vent, transmission housing |
| 5 | Brake band B1 | 18 | Drive gear-governor and auxiliary pump |
| 6 | Clutch K1 | 19 | Output shaft |
| 7 | Lamellae brake B3 | 20 | Parking lock linkage |
| 8 | Ravigneaux – planetary gearset | 21 | Flyweight governor |
| 9 | – Wide planet gear | 22 | Oil filter |
| 10 | – Hollow gear | 23 | Brake band B2 |
| 11 | – Sun gear | 24 | Control plate |
| 12 | Rear planetary gearset | 25 | Oil drain-torque converter |
| 13 | – Hollow gear | | |
| | – Planet gear | | |
| | – Sun gear | | |

Diagram



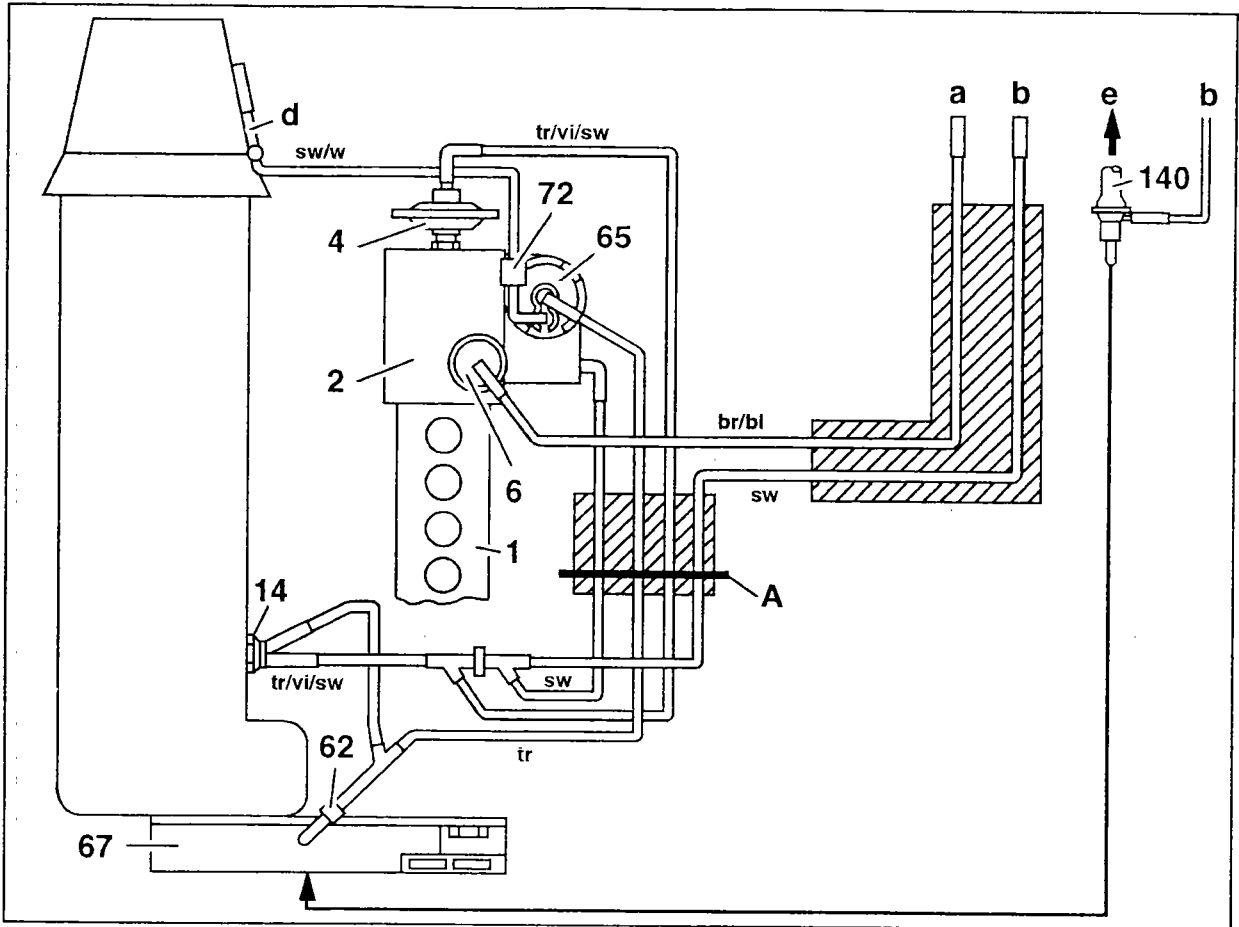
- | | |
|--------------------------------|------------------------|
| 1 Converter freewheel | 9 Output shaft |
| 2 Brake band B1 | 10 Sliding freewheel F |
| 3 Clutch K1 | 11 Input shaft |
| 4 Lamellar brake B3 | 12 Stator shaft |
| 5 Ravigneaux-planetary gearset | 13 Impeller gear |
| 6 Rear planetary gearset | 14 Turbine wheel |
| 7 Clutch K2 | 15 Stator |
| 8 Brake band B2 | |

Gear ratios

Gear	Ratio	Actuated or effective shift elements	Gear ratio $i =$
1.	in front (Ravigneaux) $i = 2,696$ and rear planetary gearset $i = 1,436$	Brake band 2 Freewheel ¹⁾	3,871
2.	in the front (Ravigneaux) $i = 1,565$ and rear planetary gearset $i = 1,436$	Brake band 1 Brake band 2	2,247
3.	in the rear planetary gearset	Clutch 1 Brake band 2	1,436
4.	no gear ratio	Clutch 1 Clutch 2	1
Reverse gear	in the front (Ravigneaux) $i = 1,696$ and rear planetary gearset $i = 3,294$	Lamellar brake 3 Freewheel ¹⁾	5,586

1) In 1st gear, in selector lever position "L" or "2" and in the reverse gear, by connecting the clutch 2 the freewheel is bypassed.

Vacuum line routing

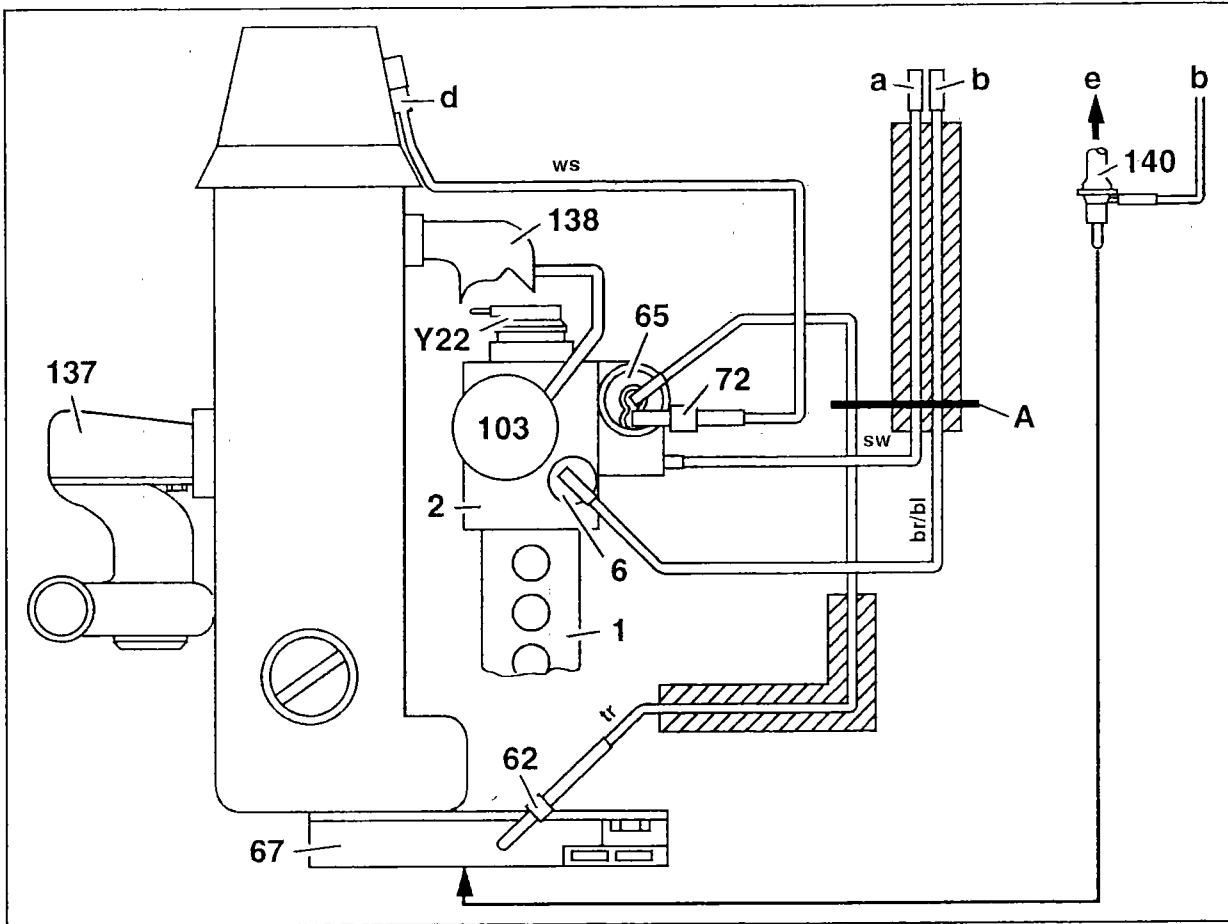


P27-5306-57

Model 461 – 290 GD (engine 602 D29)

- | | | | |
|----|---|-----|---------------------------------------|
| 1 | Injection pump | 140 | Non-return valve of brake unit |
| 2 | Governor | A | Partition wall |
| 4 | Vacuum unit PLA (pneumatic idle speed increase) | a | Key shut-off |
| 6 | Vacuum unit Stop | b | Ventilation to passenger compartment |
| 14 | Thermo valves | d | To vacuum unit Automatic transmission |
| 62 | Filter | e | To brake unit |
| 65 | Vacuum control valve | | |
| 67 | Vacuum pump | | |
| 72 | Damper | | |

Vacuum line routing

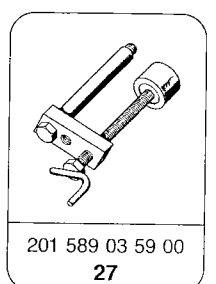
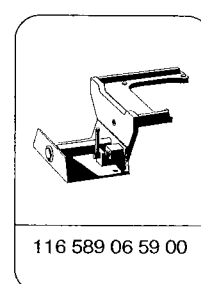
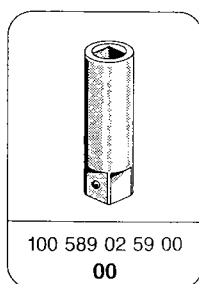
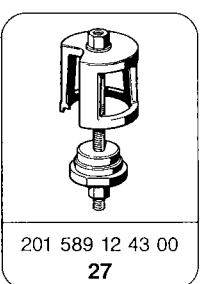
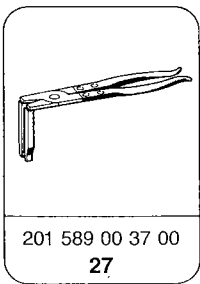
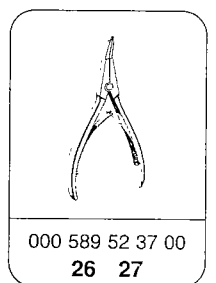
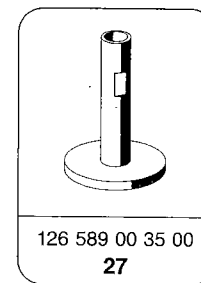
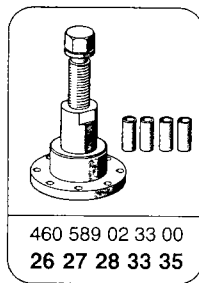
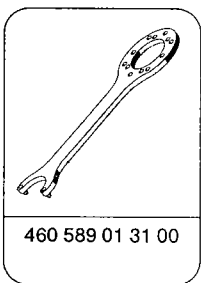
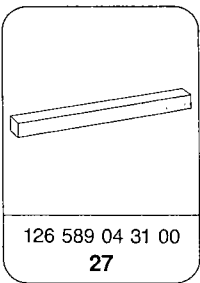
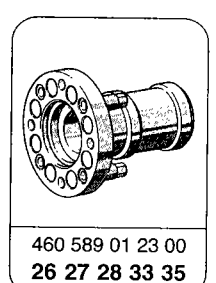
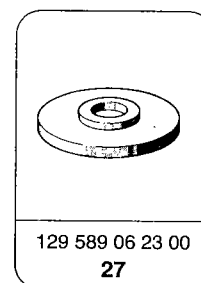
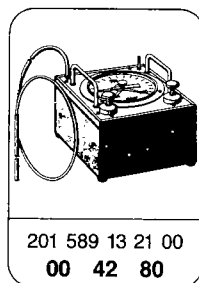
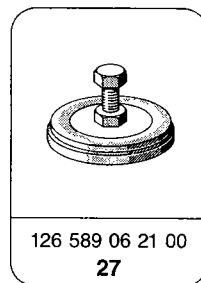
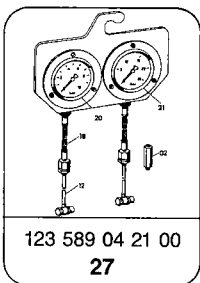
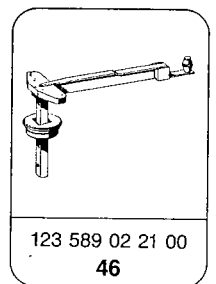
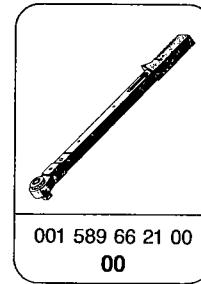
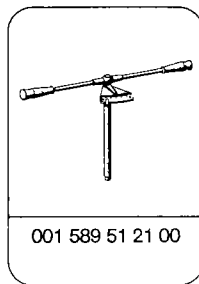
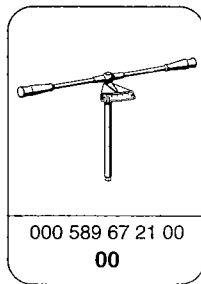
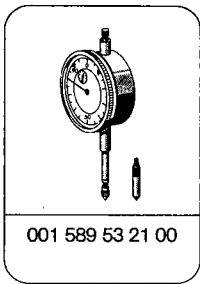
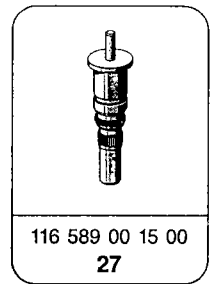
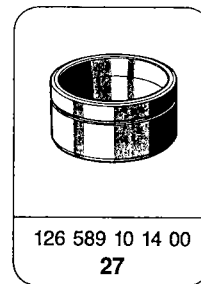
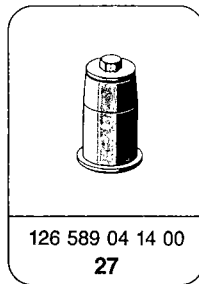
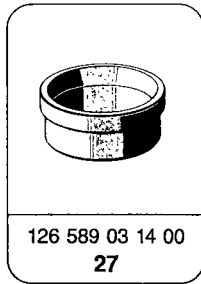
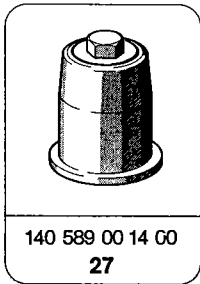
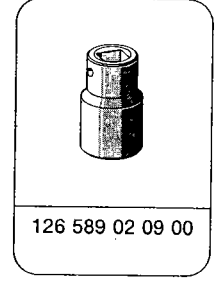
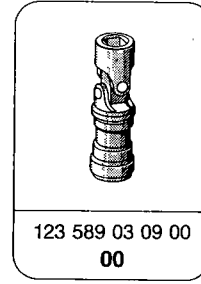
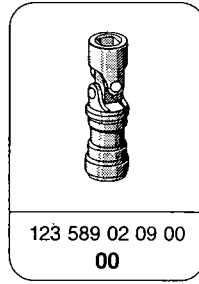
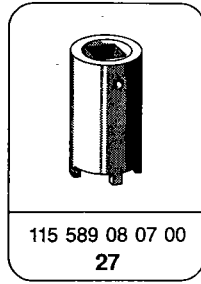
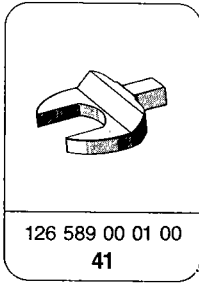


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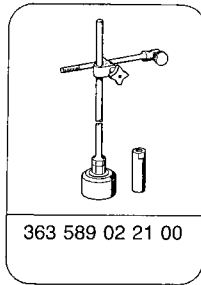
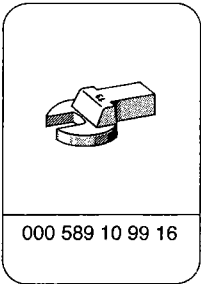
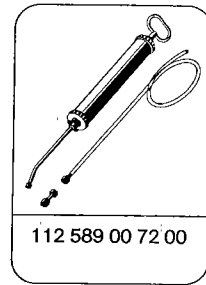
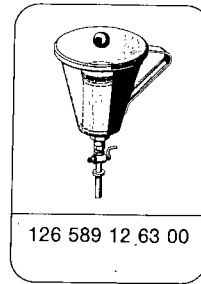
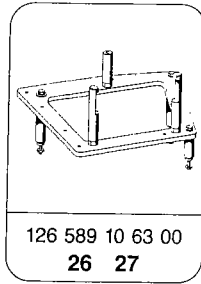
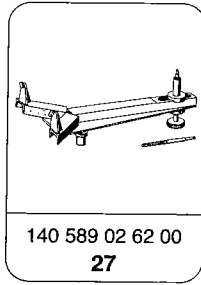
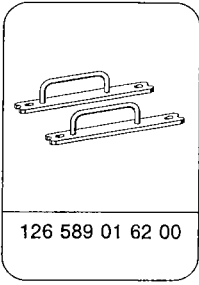
Model 463 – G 350 Turbo diesel (engine 603 D35)

- | | | | |
|-----|---|-----|---|
| 1 | Injection pump | 140 | Non-return valve of brake unit |
| 2 | Governor | Y22 | Electromagnetic actuator of electronic idle speed control |
| 6 | Vacuum unit Stop | A | Partition wall |
| 62 | Filter | a | Ventilation to passenger compartment |
| 65 | Vacuum control valve | b | Key shut-off |
| 67 | Vacuum pump | d | To vacuum unit Automatic transmission |
| 72 | Damper | e | To brake unit |
| 103 | ALDA unit (altitude pressure compensator) | | |
| 137 | Turbocharger | | |
| 138 | Charge air distributor | | |

Special tools 

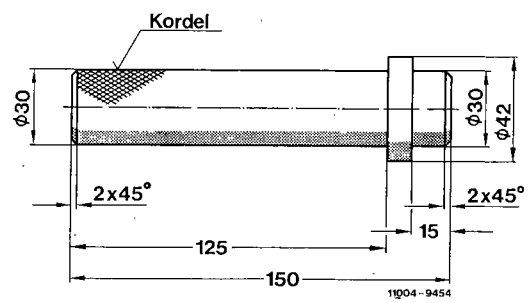
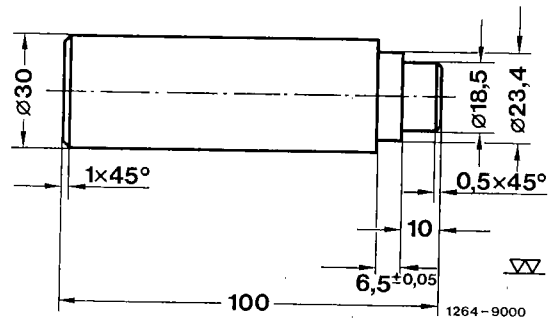


Special tools 



Tool for self-assembly

Note: The drive-in drift is shop made corresponding to the specified dimensions.



Capacity

Service product (refer to MB Service Product Specifications)	SAE grade	Capacity (l)
Automatic transmission fluid	ATF-Dexron II	7,0

Expendable materials

Cons. No.	Designation	Part Number
1	Lubricant: Molybdenum disulphide running-in paste	000 989 51 51
2	Sealing compound: Dirko-Transparent	001 989 29 20

Tightening torques

Designation	Thread	Nm
Screw plug	Converter	16 ± 4
	Transmission	14 ± 1,4
Automatic transmission to engine	M 10 x 40	55 ± 6
	M 10 x 90	45
	M 12	65
Flange to main shaft	–	120 ± 12
Propeller shaft to flange	–	30 (50 to 60) ¹⁾
Torque converter to follower	–	42 ± 4
Supply and return line to transmission	–	34 ± 4
Kick-down solenoid valve to transmission	–	30 ± 3
Valve body to transmission housing	M 6 x 50/M6 x 55	8 ± 0,8
Oil filter to transmission housing	–	4 ± 0,4
Oil pan to transmission housing	–	7 ± 0,7
Mounting of front cover	–	13 ± 1,3
Mounting of primary pump	M 8 x 22	20 ± 2
Screw plug of pressure body B1	–	70 ± 10
Mounting of rear cover	–	13 ± 1,3

1) From transmission no. 3 684 00 (homokinetic propeller shaft)

Adjustment

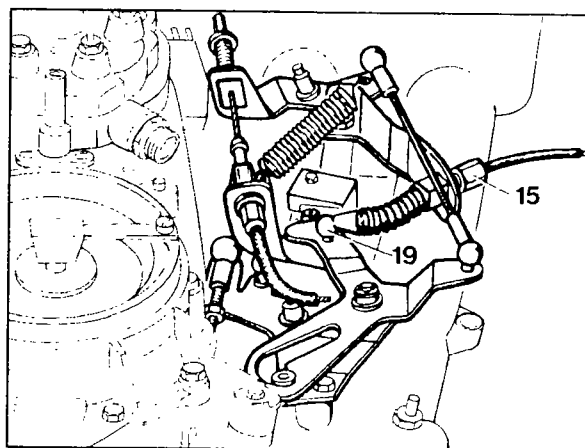
Caution!

Throttle control must be correctly adjusted.

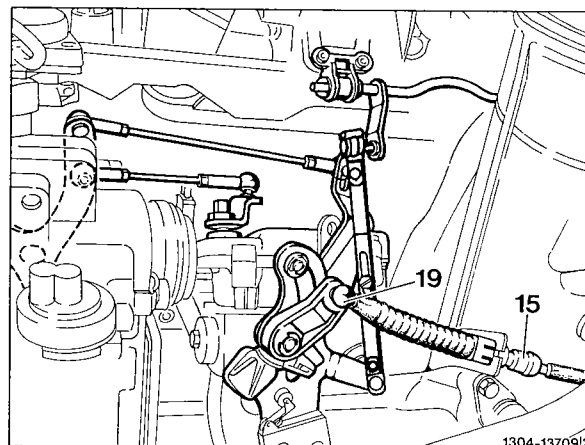
Vehicle with engine 102, 103, 602, 603 and 603 A

1 Disengage ball socket (19), pull control pressure cable forward until a slight resistance becomes noticeable. In this position, hold ball socket over ball head and engage free of tension, adjust using adjusting screw (15), if necessary.

Engine 102, 103



P27-0006-13

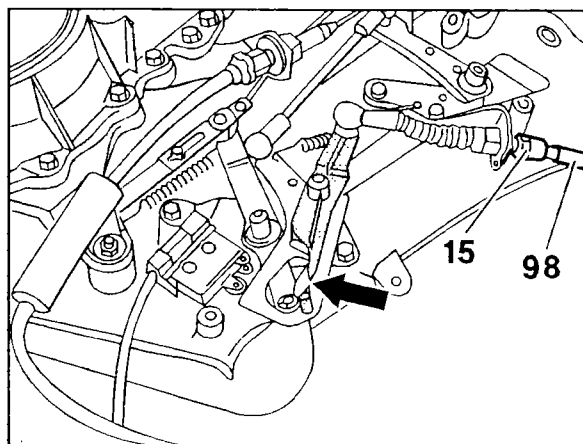


Engine 602
Engine 603
Engine 603 A

1304-13709|2

Vehicle with engine 104

1 Control pressure cable attached. Adjust control pressure cable (98) at the adjusting screw (15) in such a way that the tips of the pointers face each other.



P27-5233-13

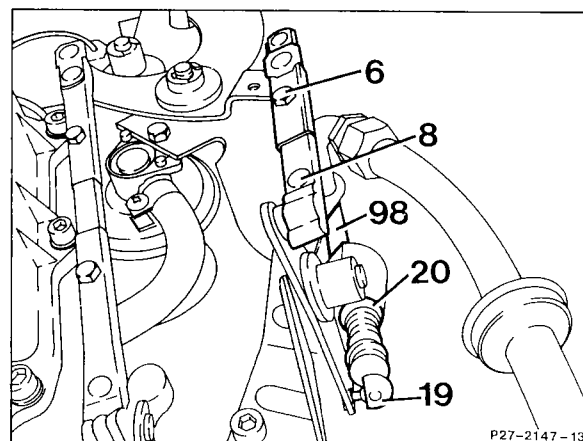
Vehicle with engine 117

1 Detach air filter.

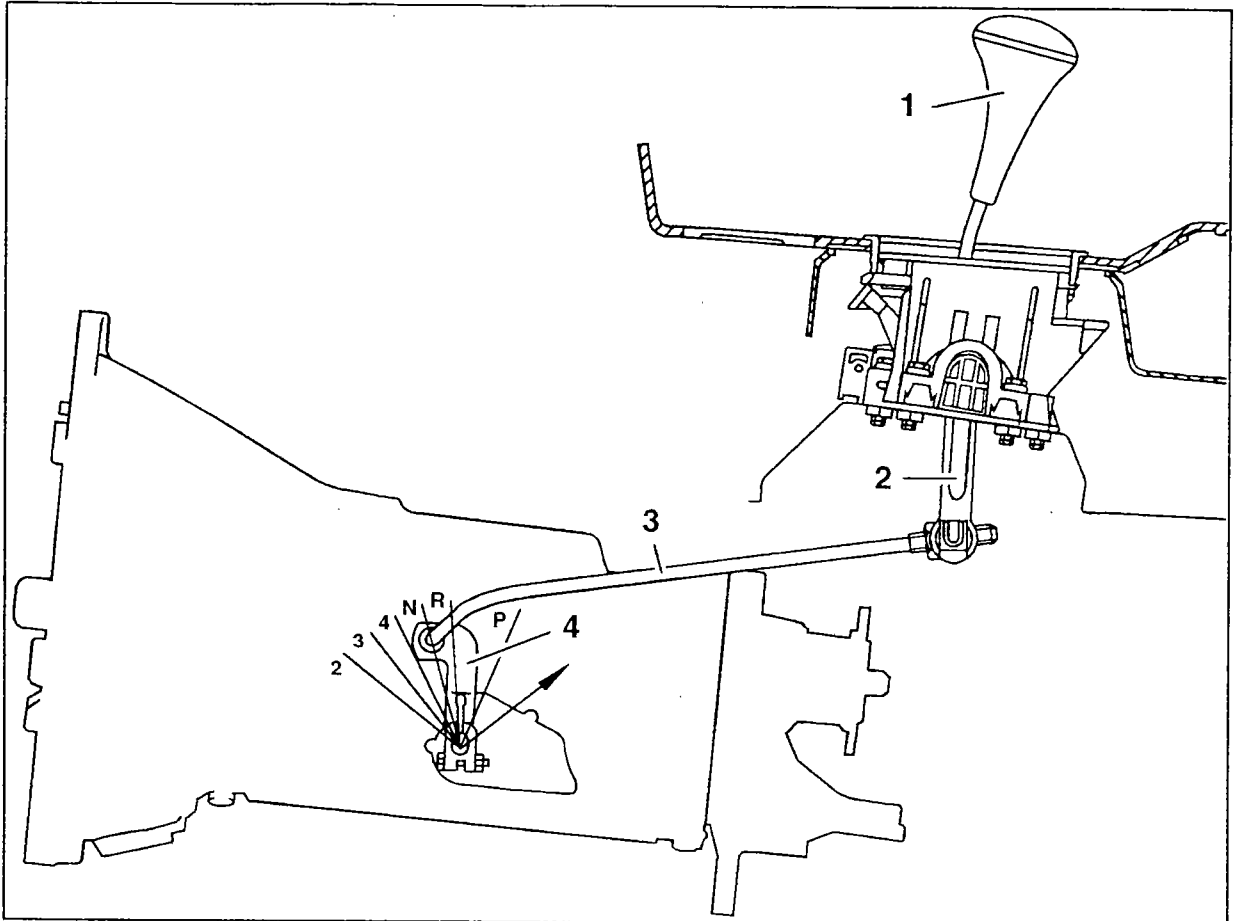
2 Release clamping screw (6) at connecting rod (8).

3 Pull connecting rod (8) apart and push together again until a slight resistance becomes noticeable. Then tighten clamping screw (6).

4 Mount air cleaner.



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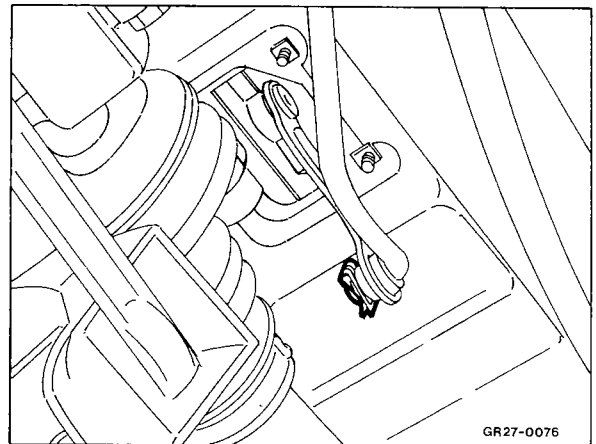


P27-5309-57

Adjustment

Note: For the adjustment work the vehicle must be standing on its wheels.

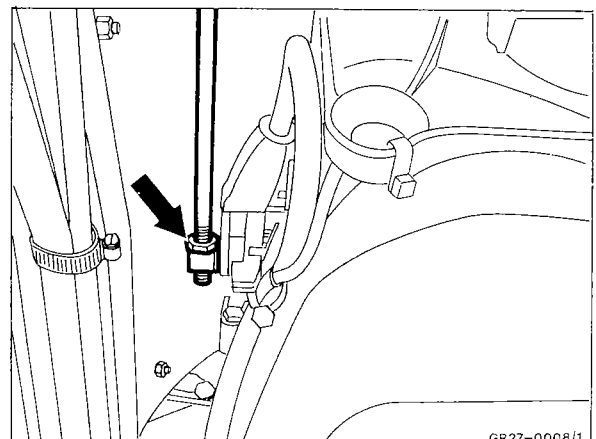
1 Unlock control rod (3) at selector lever (2) and disengage.



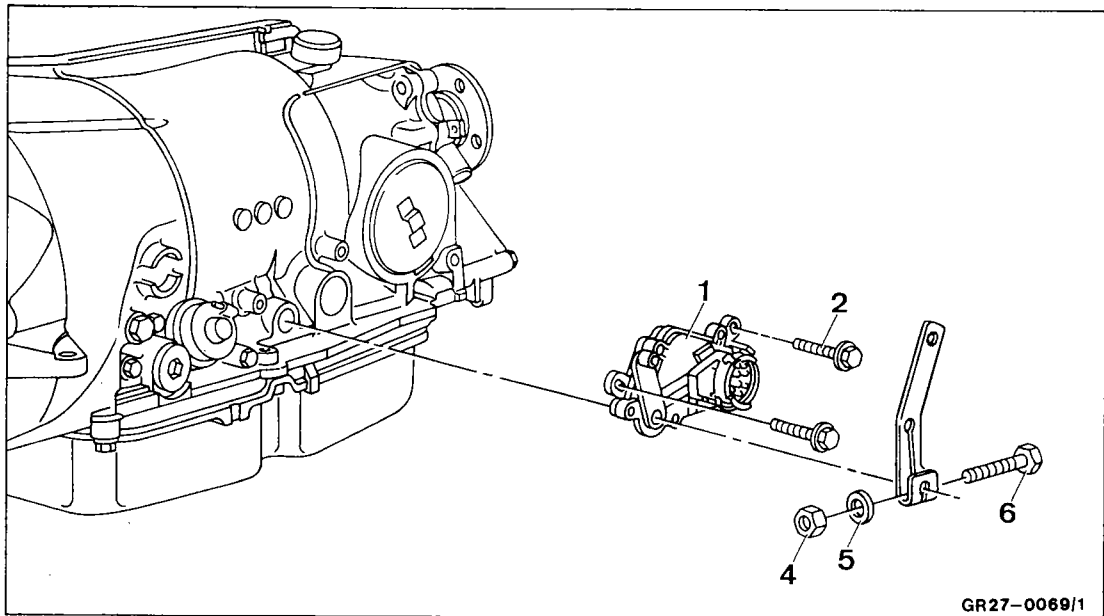
GR27-0076

2 Put range selector lever (4) into position "N".

3 Adjust control rod (3) on range selector lever (4) lengthwise so that there is approx. 1 mm clearance between the selector lever (1) and the "N" detent on the shifting gate plate. Engage control rod (3) and secure. Tighten nut.

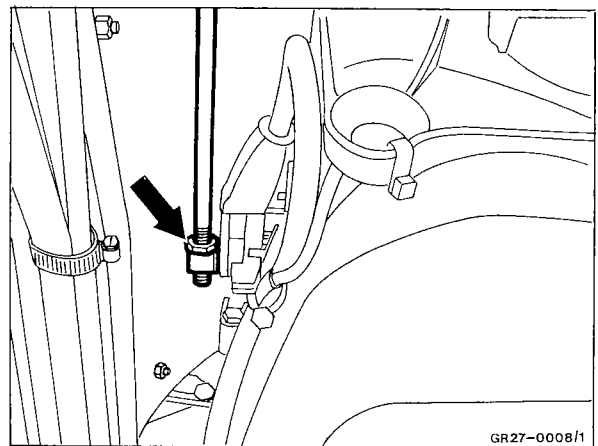


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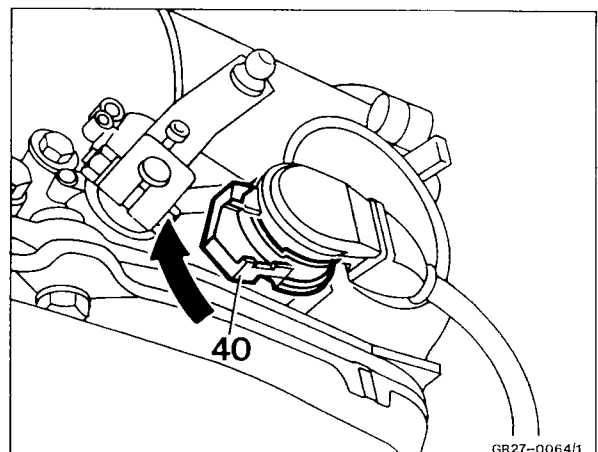


Adjustment

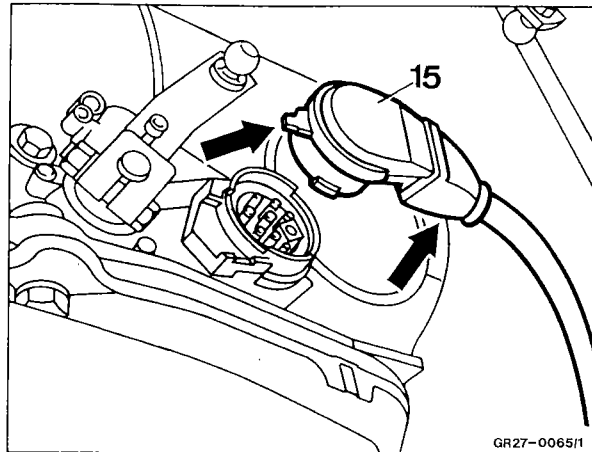
- 1 Remove retainer and disengage control rod.



- 2 Turn lock (40) up in direction of arrow.



3 Carefully press off plug (15) using two screwdrivers at the cable outlet (arrow) and at the strap (arrow).

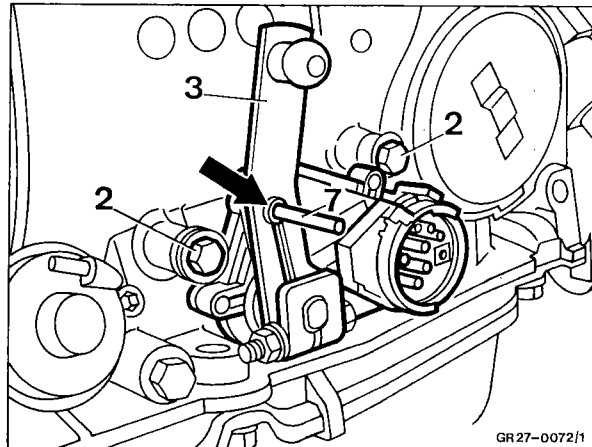


4 Release hexagon bolts (2).

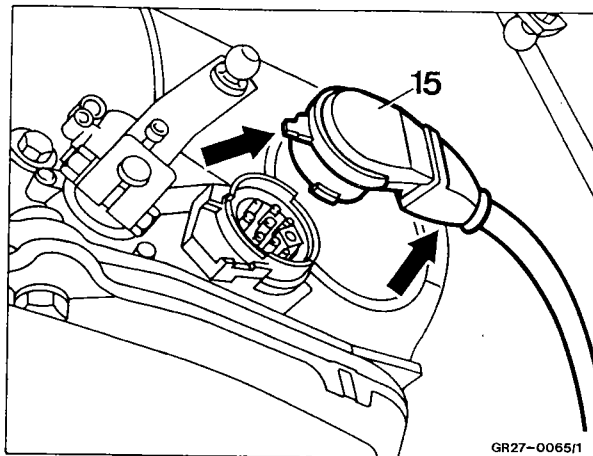
5 Put range selector lever (3) into position "N".

6 Insert drill (7) or cotter pin with 4 mm dia. through the bore in the follower (arrow) into the location bore in the starter lock switch housing (arrow).

7 Tighten hexagon bolts (2).

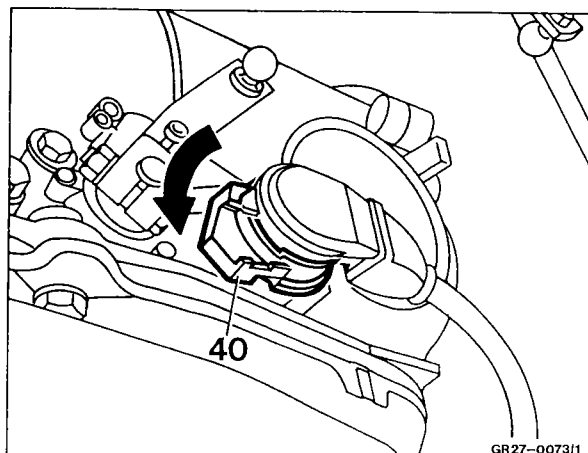


8 Connect plug (15).

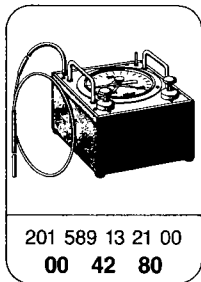


9 Turn lock (40) down in direction of arrow.

10 Engage control rod and install retainer.




Special tools 



Test

Note: Adjust throttle control, if necessary.

- 1 Bring engine to operating temperature.
- 2 Remove vacuum line.
- 3 Connect vacuum tester and check vacuum at idle speed.

 201 589 13 21 00

Specified value:

420 ± 25 mbar, vacuum control valve with red or blue colored closing cap,
385 ± 25 mbar, vacuum control valve with black colored closing cap.

- 4 Switch off engine and bring throttle control linkage to full load stop. Check vacuum.

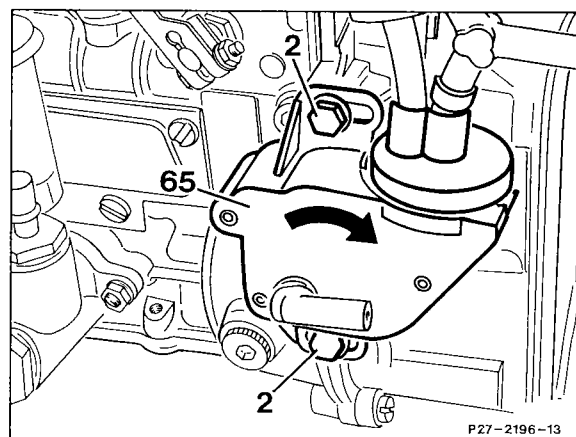
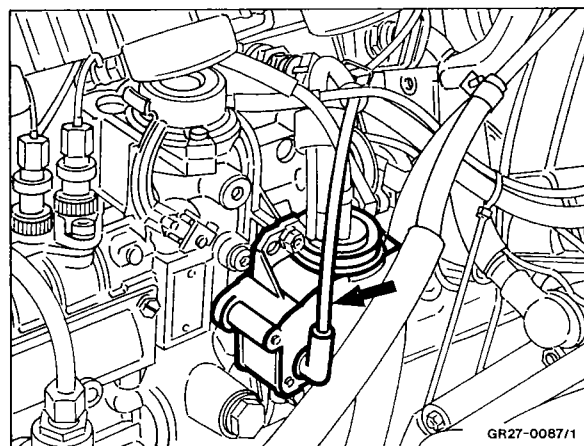
Specified value 0 mbar. If the specified values are not attained:

- a) Check adjustment of vacuum control valve.
- b) Check vacuum lines according to vacuum plan, refer to 1.4/1.
Check vacuum pump, replace vacuum control valve, if necessary.

- 5 Release hexagon bolts (2). Apply full load so that the regulating lever of the injection pump rests against the full load stop.

- 6 Turn vacuum control valve (65) in direction of arrow until a resistance becomes noticeable. In this position, tighten hexagon bolts (2).

- 7 Attach vacuum line.



Note:

Check the standard functions of the automatic transmission using the described test procedures. Evaluation of the operating performance and any possible faults in the transmission requires knowledge and experience in the handling of automatic transmissions. If this is not available, it is expedient to use as comparison a second, satisfactorily operating automatic transmission of the same design. If any irregularities occur during the test, the cause of the determined fault can be found using the "programmed repair".

Always check the oil level in the transmission, the idling speed of the engine and the adjustment of the control pressure cable prior to starting the test.

Test run:

During the test run, in addition to checking the shift points, particularly the transitions when changing gear must be checked.

Upshifting should take place at **partial throttle** in such a way that the shifting is only just perceptible. During **full throttle and kickdown** the changing of the gears can be clearly perceived, however the new gear must engage smoothly and the feeling of the full power of the engine must remain.

For example, a sudden accelerating of the engine during upshifting, indicates a slipping of a servo element (brake band or clutch) and must be looked into more closely.

The automatic **downshifting without throttle application** takes place at very low speeds and can only just be perceived (speed increase of engine). On the other hand, **downshifting under kickdown** takes place with a clearly perceptible shifting surge in addition to the increase in speed of the engine. In certain speed ranges, a downshifting is possible with partial to full throttle.

Downshifting with the selector lever is either downshifting under throttle application (e.g. uphill) or brake shifting without throttle application (e.g. on gradients or during deceleration). Downshifting under throttle application only requires a few fractions of a second for changing gear, whereas brake shifting without throttle application requires 1 to 2 seconds.

During the test make sure that the transmission is not continuously shifting, particularly under load. During the shifting action there is a lot of heat generated at the servo elements. As a guide value the following applies: **Repeat a shifting action under load only once within 15 seconds.**

Note

All speed specifications are approx. values. They apply to the rear axle transmission ratio and tires valid for the respective series. Deviations from the specified values are caused by variations on part of the transmission, as well as in the speedometer display.

Vehicles with wide tires must be refitted with tire sizes as specified in the technical data.

Installation survey

Type	Sales designation	Transmission	Page	
461	290 GD	722.384 .385	3.2/2	
463	230 GE G 230 ¹⁾	722.396	to 7. 92	3.2/3
			from 8. 92	3.2/4
	300 GE G 300 ¹⁾	722.397	to 7. 92	3.2/5
			from 8. 92	3.2/6
	G 320	722.372		3.2/7
	500 GE V8	722.382		3.2/8
	300 GD G 300 Diesel ¹⁾	722.399	to 7. 92	3.2/9
			from 8. 92	3.2/10
350 GD Turbo G 350 Turbodiesel ¹⁾	722.398		3.2/11	

1) From 9/93

290 GD

Installation survey, test and pressure values

Transmission		722.384 ¹⁾	722.385
Transmission	Part no.	461 270 02 01	460 270 20 01
Shift valve housing	Part no.	461 270 00 07	460 270 40 07
Flyweight governor	Part no.	601 270 01 74	
Intermediate plate	Part no.	126 277 28 15	
Seal	Part no.	126 277 14 80	
Vacuum unit	Colour	natural colors	
Modulating pressure	bar	2,5	
Regulator pressure	bar	> 0,5 bar at V > 30 km/h	
Converter	∅ mm	270 (K) ²⁾	

1) 4th gear blocked

2) Identification

Shift points – Model 722.384

Tyres 205 R 16 Rear axle i = 4,857		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	–
Upshift	1-2	10,0	17,0	–	10,0	17,0	–	10,0	17,0	–	–
	2-3	20,0	38,0	–	20,0	38,0	–				
Downshift	3-2	12,0	24,0	–	12,0	24,0	–				
	2-1	8,0	10,0	–	8,0	10,0	–	8,0	10,0	–	20,0

Transmission starts in 1st gear and rolls to a standstill in 1st gear.

No kickdown shifting possible as vehicle without kickdown shut-off relay.

4th gear is blocked

Shift points – Model 722.385

Tyres 205 R 16 Rear axle i = 4,857		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	–
Upshift	1-2	10,0	17,0	–	10,0	17,0	–	10,0	17,0	–	–
	2-3	20,0	38,0	–	20,0	38,0	–				
	3-4	30,0	58,0	–							
Downshift	4-3	19,0	42,0	–							
	3-2	12,0	24,0	–	12,0	24,0	–				
	2-1	8,0	10,0	–	8,0	10,0	–	8,0	10,0	–	23,0

Transmission starts in 1st gear and rolls to a standstill in 1st gear.

No kickdown shifting possible as vehicle without kickdown shut-off relay.

230 GE (up to 7. 92)

Installation survey, test and pressure values

Transmission		722.396
Transmission	Part no.	463 270 08 01
Valve body	Part no.	463 270 08 07
Flyweight governor	Part no.	140 270 00 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	Natural colour
Modulating pressure	bar	2,6
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	∅ mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,860		KD shift points in km/h								
		Selector lever position								
		D			3			2		
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down
Upshift	1-2	10,0	26,5	40,5	10,0	26,5	40,5	10,0	26,5	40,5
	2-3	25,0	67,0	70,0	25,0	67,0	70,0			
	3-4	36,5	105,0	109,5						
Downshift	4-3	22,5	76,0	98,0						
	3-2	16,0	30,0	59,5	16,0	30,0	59,0			
	2-1	0,0	11,0	23,5	0,0	11,0	23,5	0,0	11,0	23,5

Selector lever position B: 1-2 Gear change does not take place

2-1 Gear change takes place at kickdown shift point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown or with selector lever actuation D-B-D.

Transmission moves off in 2nd gear, 1st gear can be engaged with full throttle below approx. 10 km/h.

230 GE (from 8. 92)
G 230

Installation survey, test and pressure values

Transmission		722.396
Transmission	Part no.	463 270 08 01
Valve body	Part no.	463 270 08 07
Flyweight governor	Part no.	140 270 00 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	Natural colour
Modulating pressure	bar	2,6
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	Ø mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,860		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	—
Upshift	1-2	14,0	39,0	46,0	14,0	39,0	46,0	14,0	39,0	46,0	
	2-3	28,0	66,0	79,0	28,0	66,0	79,0				
	3-4	43,0	111,0	118,0							
Downshift	4-3	24,0	87,0	109,0							
	3-2	15,0	37,0	64,0	15,0	37,0	64,0				
	2-1	11,0	17,0	30,0	11,0	17,0	30,0	11,0	24,0	37,0	32,0

Selector lever position B: 1-2 Gear change does not take place

2-1 Gear change takes place at kickdown shift point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown or with selector lever actuation D-B-D.

Transmission moves off in 1st gear and rolls to a standstill in 1st gear.

300 GE (up to 7. 92)

Installation survey, test and pressure values

Transmission		722.397
Transmission	Part no.	463 270 09 01
Shift valve housing	Part no.	463 270 09 07
Flyweight governor	Part no.	129 270 05 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	red
Modulating pressure	bar	3,75
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	Ø mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,375		KD shift points in km/h								
		Selector lever position								
		D			3			2		
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down
Upshift	1-2	11,5*	29,5	47,0	11,5*	29,5	47,0	11,5*	29,5	47,0
	2-3	31,0	79,5	81,0	31,0	79,5	81,0			
	3-4	43,5	126,0	127,0						
Downshift	4-3	26,5	81,0	115,0						
	3-2	19,0	39,0	69,5	19,0	39,0	69,5			
	2-1	0,0	10,0	22,5	0,0	10,0	22,5	0,0	10,0	22,5

Selector lever position B: 1-2 Gear change does not take place

2-1 Gear change takes place at kickdown shift point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown, or with selector lever actuation D-B-D.

Transmission moves off in 2nd gear, 1st gear can be engaged with full throttle below approx. 10 km/h.

300 GE (from 8. 92)
G 300

Installation survey, test and pressure values

Transmission		722.397
Transmission	Part no.	463 270 09 01
Shift valve housing	Part no.	463 270 09 07
Flyweight governor	Part no.	129 270 05 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	red
Modulating pressure	bar	3,75
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	∅ mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,375		KD shift points in km/h												
		Selector lever position												
		D			3			2			B			
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	—			
Upshift	1-2	*	15,0	40,0	48,0	*	15,0	40,0	48,0	*	15,0	40,0	48,0	
	2-3		29,0	74,0	82,0		29,0	74,0	82,0					
	3-4		43,0	117,0	123,0									
Downshift	4-3		28,0	90,0	115,0									
	3-2		17,0	40,0	69,0		17,0	40,0	69,0					
	2-1		10,0	18,0	31,0		10,0	18,0	31,0		10,0	24,0	38,0	32,0

Selector lever position B: 1-2 Gear change does not take place

2-1 Gear change takes place at kickdown shift point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown or with selector lever actuation D-B-D.

Transmission moves off in 1st gear and rolls to a standstill in 1st gear.

G 320

Installation survey, test and pressure values

Transmission		722.372
Transmission	Part no.	720 270 19 01
Shift valve housing	Part no.	720 270 39 07
Flyweight governor	Part no.	129 270 05 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	black
Modulating pressure	bar	4,1
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	Ø mm	270 (K)*

* Identification

Shift points

Tyres 255/65 R 16 Rear axle i = 4,857		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	-
Upshift	1-2	13,0	41,0	53,0	13,0	41,0	53,0	13,0	41,0	53,0	
	2-3	22,0	81,0	88,0	22,0	81,0	88,0				
	3-4	36,0	128,0	133,0							
Downshift	4-3	24,0	96,0	121,0							
	3-2	15,0	37,0	73,0	15,0	37,0	73,0				
	2-1	10,0	19,0	34,0	10,0	19,0	34,0	10,0	19,0	34,0	34,0

Transmission moves off in 1st gear and rolls to a standstill in 1st gear.

500 GE V8

Installation survey, test and pressure values

Transmission		722.382
Transmission	Part no.	463 270 12 01
Shift valve housing	Part no.	126 270 89 71
Flyweight governor	Part no.	129 270 00 74
Intermediate plate	Part no.	126 277 28 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	red
Modulating pressure	bar	3,5
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	∅ mm	290 (K)*

* Identification

Shift points

Tyres 265/70 R 16 Rear axle i = 4,375		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	-
Upshift	1-2	*			*			*			
		15,0	36,0	58,0	15,0	36,0	58,0	15,0	36,0	58,0	
	2-3	24,0	86,0	97,0	24,0	86,0	97,0				
	3-4	32,0	135,0	144,0							
Downshift	4-3	21,0	86,0	130,0							
	3-2	16,0	32,0	80,0	16,0	32,0	80,0				
	2-1	0,0	18,0	32,0	0,0	18,0	32,0	0,0	18,0	32,0	32,0

Selector lever position B: 1-2 Gear change does not take place
2-1 Gear change takes place at kickdown shift point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown or with selector lever actuation D-B-D.

Transmission moves off in 2nd gear and 1st gear can be engaged at full throttle at under approx. 10 km/h.

300 GD (up to 7. 92)

Installation survey, test and pressure values

Transmission		722.399
Transmission	Part no.	463 270 10 01
Shift valve housing	Part no.	463 270 10 07
Flyweight governor	Part no.	140 270 01 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	Black
Modulating pressure	bar	2,1
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	Ø mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,111 4,375')		KD shift points in km/h								
		Selector lever position								
		D			3			2		
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down
Upshift	1-2	11,0*	27,5	37,5	11,0*	27,5	37,5	11,0*	27,5	37,5
	2-3	21,0	63,0	64,5	21,0	63,0	64,5			
	3-4	27,5	98,5	100,5						
Downshift	4-3	19,0	73,0	89,5						
	3-2	14,0	30,0	56,0	14,0	30,0	56,0			
	2-1	0,0	16,0	29,5	0,0	16,0	29,5	0,0	16,0	29,5

Selector lever position B: 1-2 Gear change does not take place
2-1 Gear change takes place at kickdown point

* 1-2 Idle throttle shifting is possible if 1st gear is engaged in standstill with kickdown or with selector lever actuation D-B-D.

Transmission moves off in 2nd gear, 1st gear can be engaged with full throttle below approx. 10 km/h.

1) From 1.91.

300 GD (from 8. 92)
G 300 Diesel

Installation survey, test and pressure values

Transmission		722.398
Transmission	Part no.	463 270 11 01
Shift valve housing	Part no.	463 270 11 07
Flyweight governor	Part no.	601 270 00 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	brown
Modulating pressure	bar	3,1
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	∅ mm	270 (K)*

* Identification

Shift points

Tyres 205 R 16 Rear axle i = 4,111		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	
Upshift	1-2	16,0	35,0	38,0	16,0	35,0	38,0	16,0	35,0	38,0	–
	2-3	30,0	60,0	65,0	30,0	60,0	65,0				
	3-4	43,0	91,0	97,0							
Downshift	4-3	22,0	68,0	86,0							
	3-2	14,0	35,0	54,0	14,0	35,0	54,0				
	2-1	9,0	15,0	27,0	9,0	15,0	27,0	9,0	15,0	27,0	27,0

Selector lever position B: 1-2 Gear change does not take place
2-1 Gear change takes place at kickdown point

Transmission starts in 1st gear and rolls to a standstill in 1st gear.

**350 GD Turbo
G 350 Turbodiesel**
Installation survey, test and pressure values

Transmission		722.398
Transmission	Part no.	463 270 11 01
Shift valve housing	Part no.	463 270 11 07
Flyweight governor	Part no.	601 270 00 74
Intermediate plate	Part no.	126 277 36 15
Seal	Part no.	126 277 14 80
Vacuum unit	Colour	brown
Modulating pressure	bar	3,1
Regulator pressure	bar	> 0,5 bar at V > 30 km/h
Converter	∅ mm	270 (K)*

* Identification

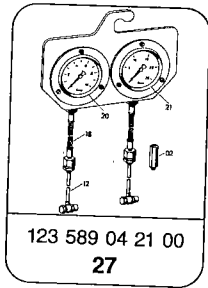
Shift points

Tyres 205 R 16 Rear axle i = 4,111		KD shift points in km/h									
		Selector lever position									
		D			3			2			B
		Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	Idle throttle	Full throttle	Kick-down	–
Upshift	1-2	16,0	31,0	40,0	16,0	31,0	40,0	16,0	31,0	40,0	–
	2-3	28,0	61,0	64,0	28,0	61,0	64,0				
	3-4	40,0	92,0	98,0							
Downshift	4-3	27,0	66,0	86,0							
	3-2	18,0	35,0	56,0	18,0	35,0	56,0				
	2-1	12,0	15,0	27,0	12,0	15,0	27,0	12,0	21,0	32,0	32,0


Selector lever position B: 1-2 Gear change does not take place
2-1 Gear change takes place at kickdown point

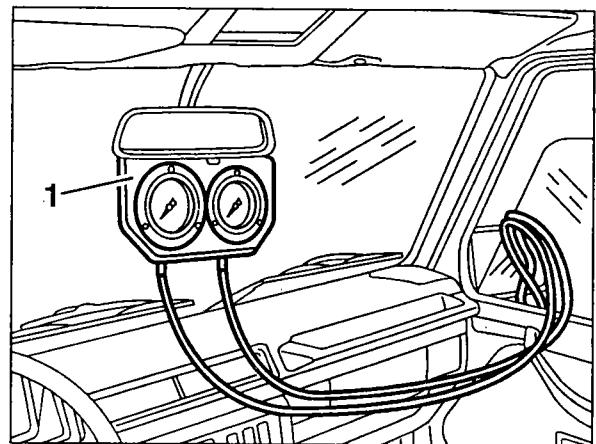
Transmission starts in 1st gear and rolls to a standstill in 1st gear.

Special tools 



Note: For measuring the operating pressure, modulating pressure and governor pressure, pass pressure hoses through the window of the right front door and clamp with window pane. The pressure hoses are not to sag or touch the exhaust pipe.

1 Tester  123 589 04 21 00



P27-5301-13

Caution!

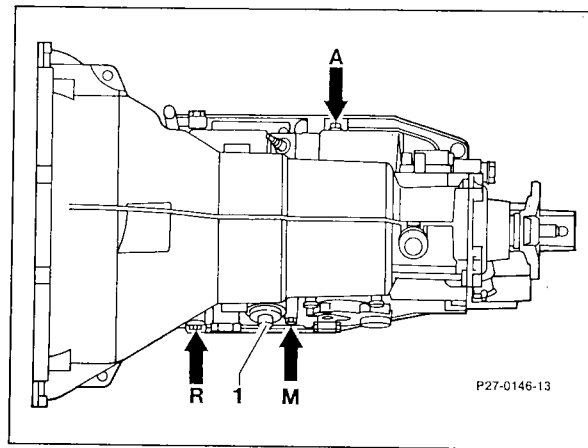
For all adjustment work on the vehicle with running engine the parking brake must be actuated and the selector lever in position "P".

When measuring in the test stand, with driving position engaged, the service brake must be actuated in addition to the parking brake.

After testing, let engine run and check measuring points for leaks.

Measuring and adjusting

- 1 Detach vacuum line (1) at vacuum unit.
- 2 Connect pressure gauge with 25 bar measuring range to test connection for **operating pressure (A)**.
- 3 Connect pressure gauge with 10 bar measuring range to test connection for **modulating pressure (M)**.
- 4 Connect pressure gauge with 10 bar measuring range to test connection for **governor pressure (R)**.



Measuring modulating pressure

Note: Testing the modulating pressure is **only** necessary in the following cases:

- If the upshift is too soft or too hard in all gears, i.e. poor shifting quality when driving along.

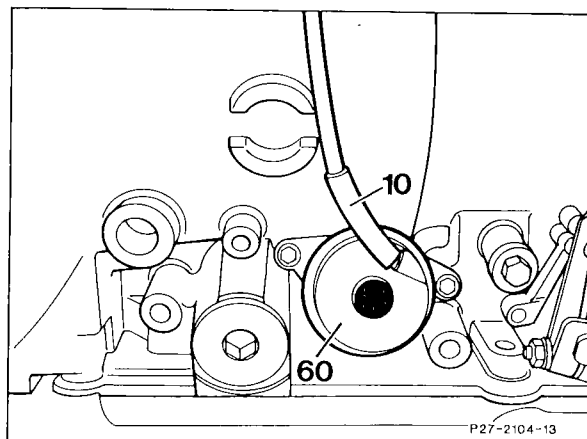
Caution! The vacuum line and the line routing as well as the vacuum control in diesel vehicles must be satisfactory.

- After replacing or removal or installation of the vacuum unit.
- Following a transmission repair job where the vacuum unit has been removed or the disks of the clutches or brake bands are dark (burnt) and have been replaced.

Testing is **not necessary** with:

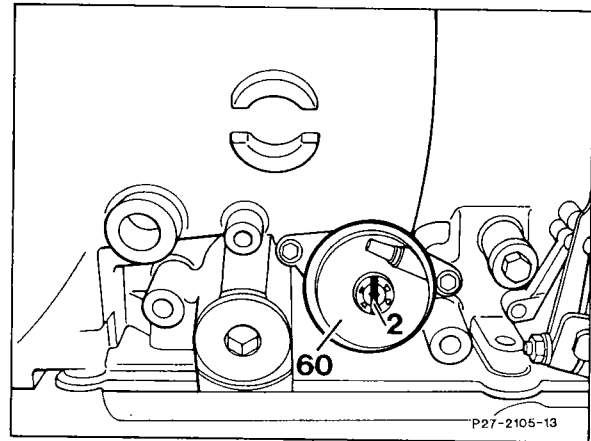
- Hard engaging surge in driving position "D" or "R".
- No upshifting.
- In event of deviations of individual shift procedures.

- 1 Detach vacuum line (10) at the vacuum unit (60).
- 2 In selector lever position "D" drive at approx. 50 km/h, at the same time read off pressure value.



Adjusting modulating pressure

- 3 Remove rubber cap on vacuum unit (60).
- 4 Pull lock tab (2) out of retainer slots to such a degree that it can be turned.
- 5 With the lock tab (2) the adjusting screw in the vacuum unit (60) can now be adjusted. One rotation of the adjusting screw causes a change in pressure of approx. 0,4 bar.
- 6 Press lock tab (2) back into the slots after turning the adjusting screw.
- 7 Mount rubber cap back on vacuum unit (60).
- 8 Measure modulating pressure once more.
- 9 Attach vacuum line to vacuum unit (60).



Note: Phased in from 8/92, a modified vacuum unit (60) is installed.

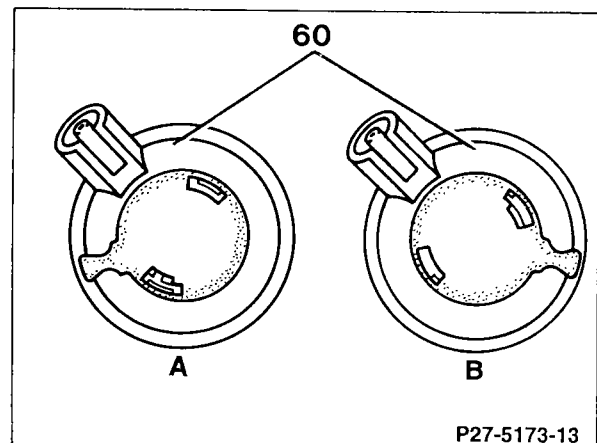
On this vacuum unit the closing cap (60b) for the modulating pressure adjusting screw (60a) is of plastic material (previously rubber). With this closing cap the modulating pressure can be lowered by 0,2 bar pressure.

At the specified modulating pressure the closing cap is attached in position "basic adjustment" (A). By turning the closing cap (60b) from position (A) to "B" it is possible to lower the modulating pressure by 0,2 bar, in the event of customer complaints related to "hard shifting surge". This correction is attained by turning up to the stop.

A pressure gauge testing of the modulating pressure is thus no longer necessary.

With the application of the vacuum unit (60) the thrust pin (59a) has also be modified.

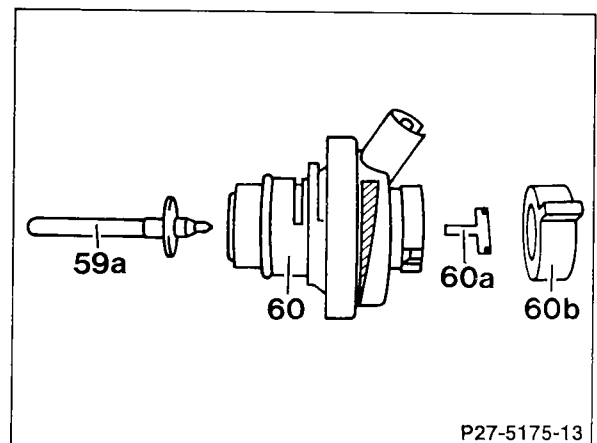
Note: If, in the case of a repair, a further correction of the modulating pressure is required, the modulating pressure can be adjusted as previously, by removing the closing cap (60b). The closing cap is destroyed upon removal and has to be replaced after completing the job. The new closing cap is pressed on in basic position after adjusting the specified modulating pressure.



- A Basic adjustment
- B reduced by 0,2 bar

Measuring governor pressure

The governor pressure in all vehicles, measured at a speed of > 30 km/h, is > 0,5 bar. If the pressure value differs, the flyweight governor has to be replaced.

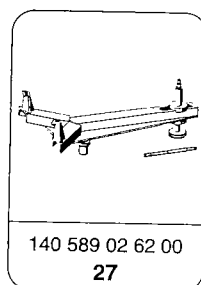
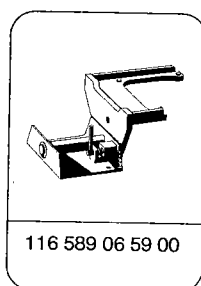
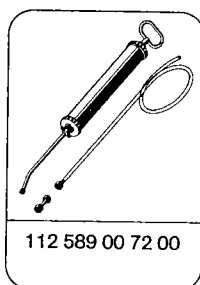
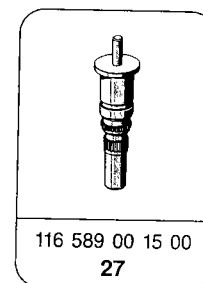
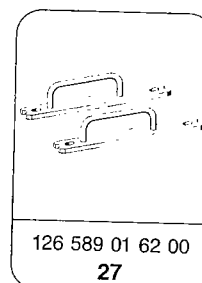
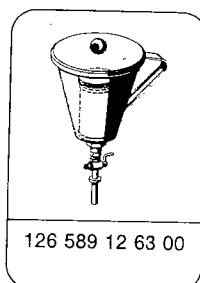
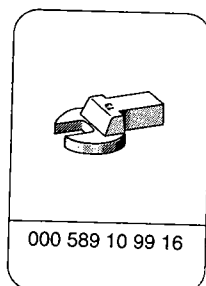
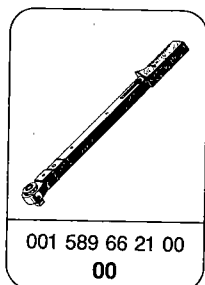


- 59a Thrust pin
- 60 Vacuum unit
- 60a Adjusting screw
- 60b Screw plug

Capacity

Service product (refer to MB Service Product Specifications)	SAE grade	Capacity (l)
Automatic transmission fluid	ATF-Dexron II	7,0

Special tools 



Expendable materials

Cons. No.	Designation	Part Number
1	Lubricant: Molybdenum disulphide running-in paste	000 989 51 51
2	Sealing compound: Dirko-Transparent	001 989 29 20

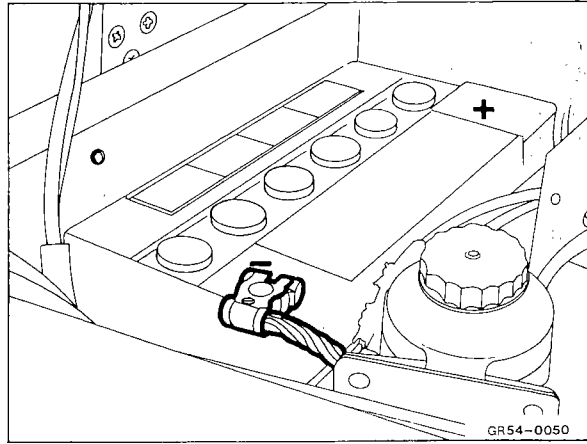
Tightening torques

Designation		Nm
Screw plug	Torque converter	16 ± 4
	Transmission	14 ± 1,4
Automatic transmission on engine	M 10 x 40	55 ± 6
	M 10 x 90	45
	M 12	65
Propeller shaft to flange		35 (50 to 60) ¹⁾
Torque converter to driver		42 ± 4
Supply and return line to transmission		34 ± 4

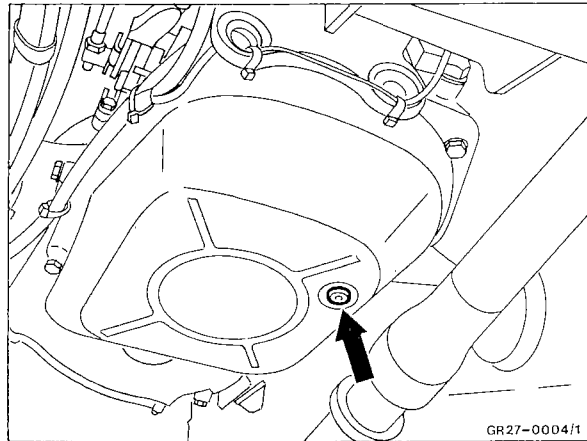
1) From transmission no. 3 684 000 (homokinetic propeller shaft).

Removal

- 1 Disconnect battery at negative terminal.

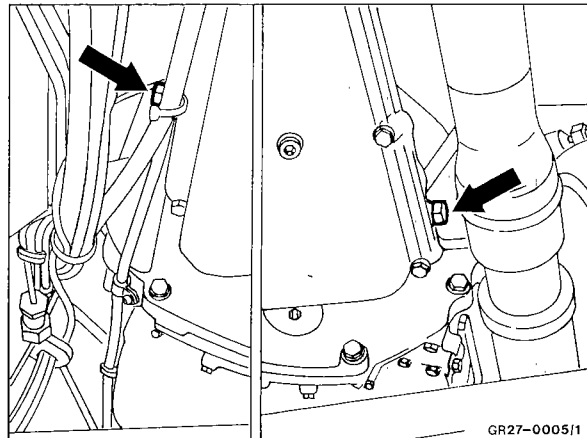


- 2 If necessary drain gear oil.



- 3 Detach supply and return line to oil cooler.

- 4 Detach vent.



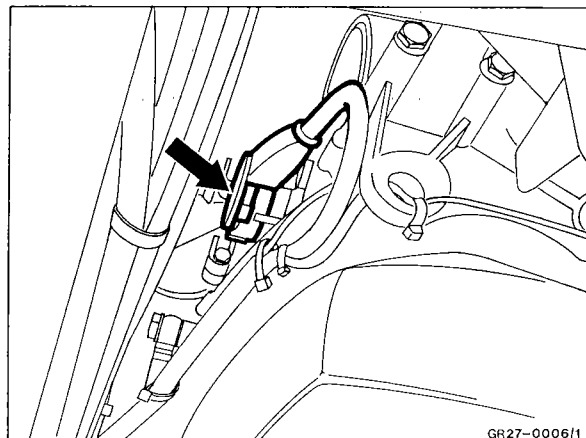
- 5 Remove plug connector for starter lock switch.

Caution!

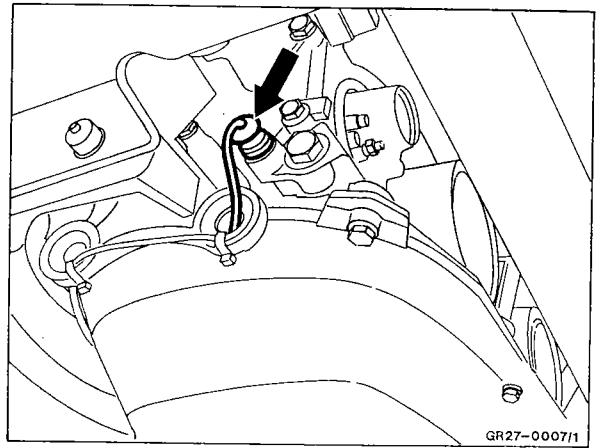
The plug connector for the starter lock switch is secured with a lock (white plastic ring).

Before pressing off the plug connector, the lock must be turned towards the top.

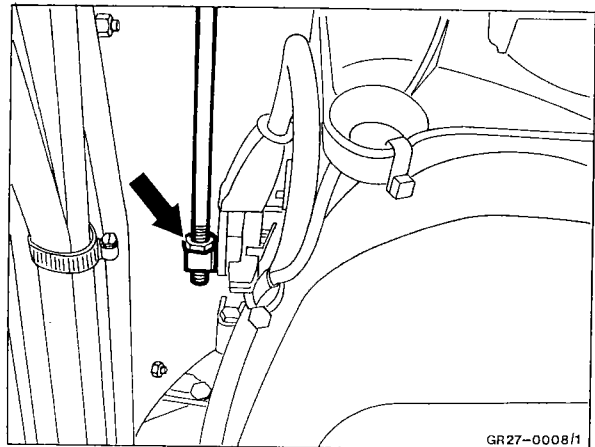
Carefully press off the plug connector with two screw drivers at the cable outgoing and at the strap.



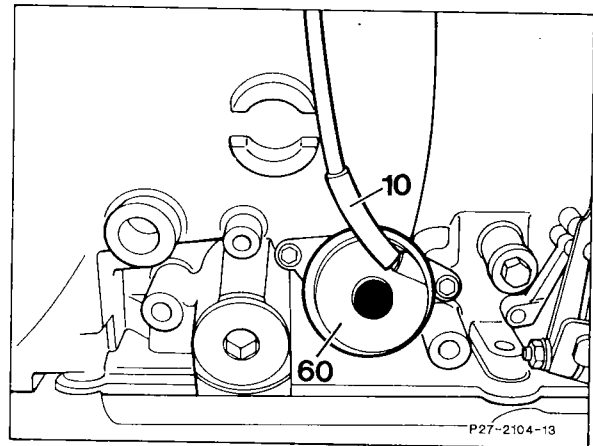
6 Detach cable at the kickdown solenoid valve.



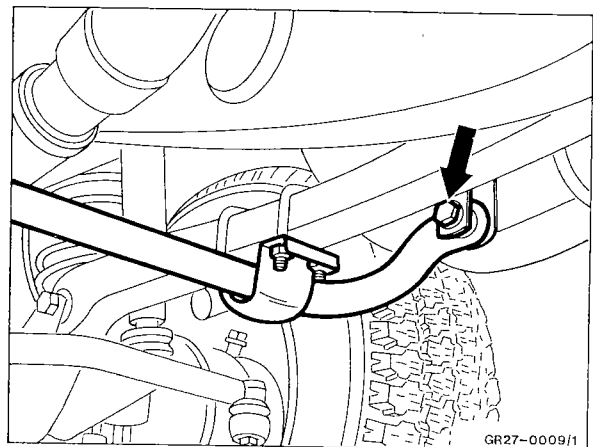
7 Detach control rod at range selector lever.



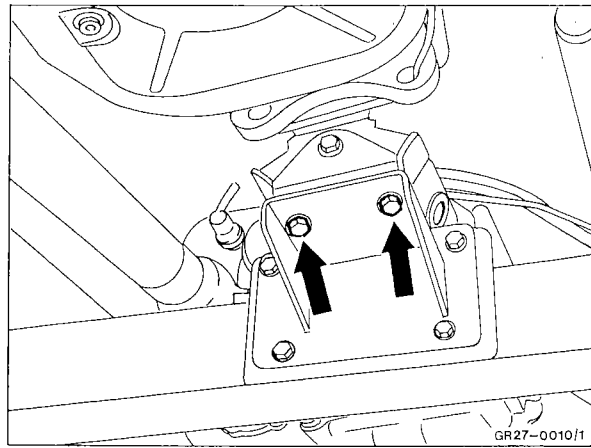
8 Disconnect vacuum line (10).



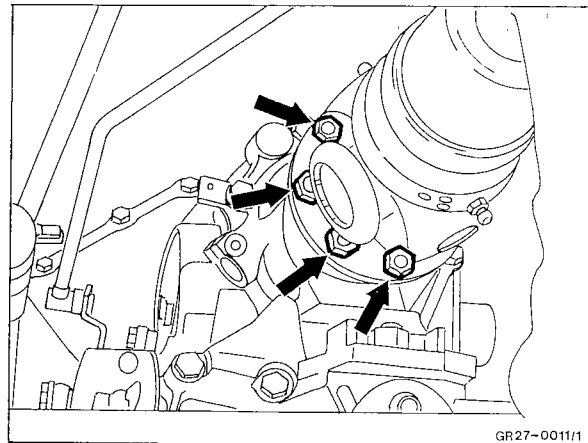
9 Detach stabilizer.



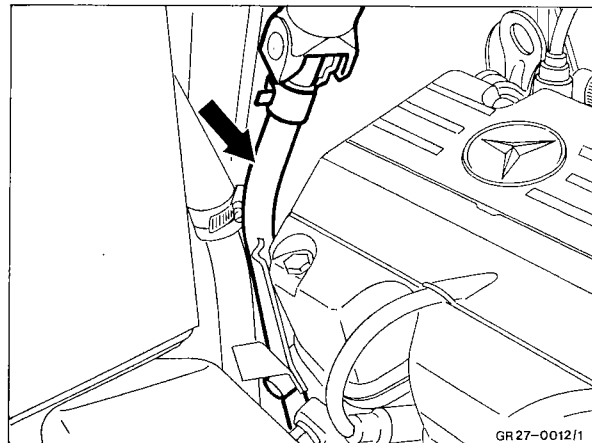
10 Unscrew bolts on transmission mount.



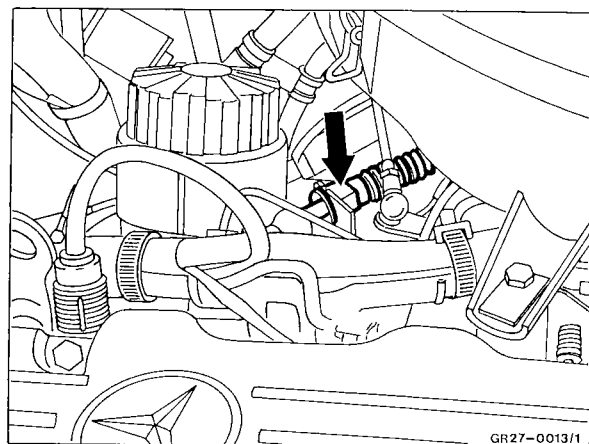
11 Mark installation position of propeller shaft, detach and tie up to the side.



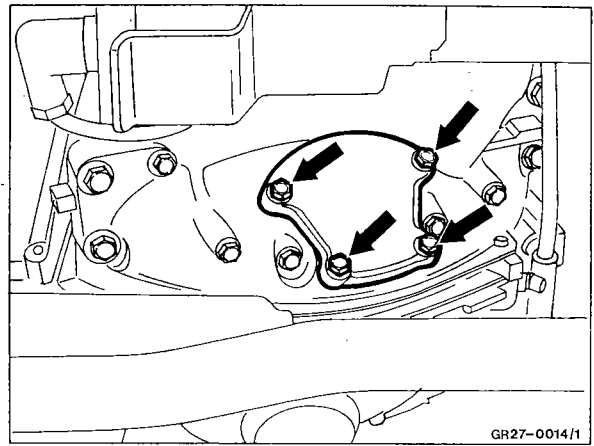
12 Detach oil filler pipe.



13 Detach wire cable.

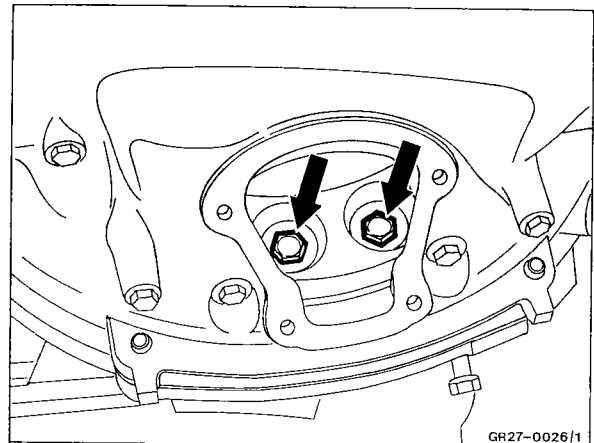


14 Detach end cover from torque converter housing.



15 Detach torque converter from driver.

Note: Respectively turn in such a way that the driver bolts (6) are accessible.

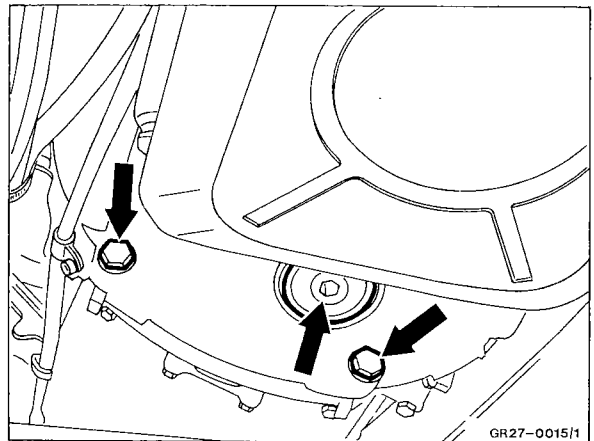


16 Unscrew drain plug at the torque converter and let oil run out.


17 Place support beneath automatic transmission, detach and remove from engine.

 140 589 02 62 00

Note: The retaining pin in the torque converter housing is no longer provided.



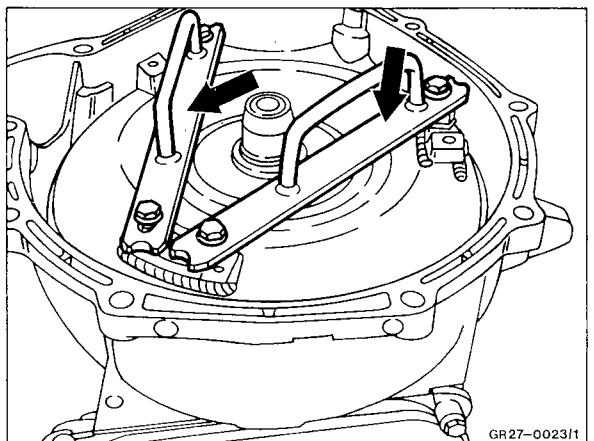
18 Put down transmission in upright position and remove torque converter.

 126 589 01 62 00


Caution!

If the gear oil smells burned or if it contains lining wear, the torque converter, oil cooler pipes and oil cooler must be flushed.

If there are metal chips in the gear oil pan the torque converter must be renewed. Metal chips are not completely removed by flushing and can later lead to transmission damage.




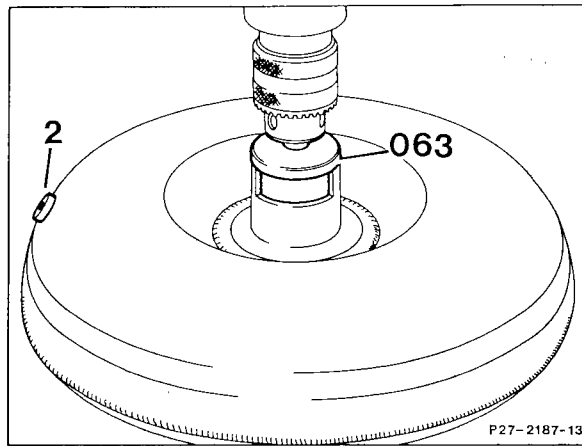
19 Flush torque converter, for this purpose fill with 1 liter of petroleum. Insert flushing drift (063) and drive with a hand drilling machine at reduced speed for approx. 2 minutes. Afterwards drain petroleum via the drain plug.

 116 589 00 15 00

Note: Repeat flushing procedure 2 to 4 times until the petroleum runs out clean.

20 Bolt oil cooler with oil cooler pipes to the syringe and flush out with cleaning fluid. Then thoroughly blow out.

 112 589 00 12 00

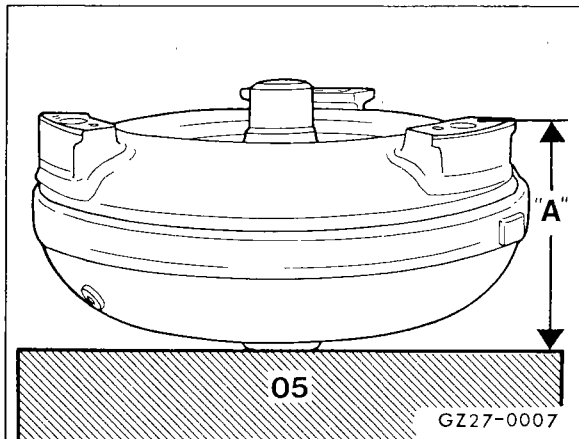


Installation

Note: Check overall height of torque converter in event of engine overspeed damage.

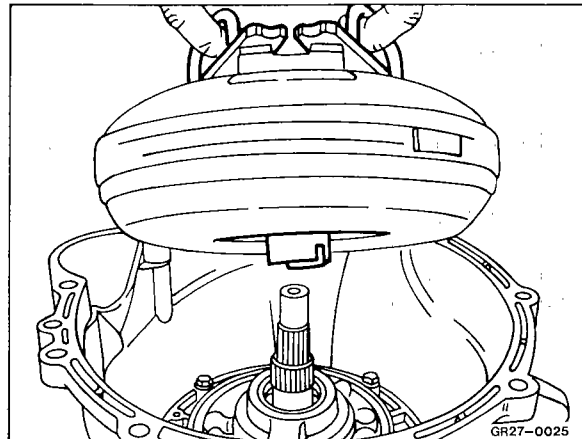
For this purpose place torque converter with primary pump drive flange down on a graduated ruler and measure the distance "A". If the dimension "A" is smaller than 121,5 mm the torque converter can still be used, if the dimension is greater it must be renewed.

If it is necessary to renew the torque converter, the radial seal of the primary pump must also be renewed.



1 Coat drive flange with lubricating grease.

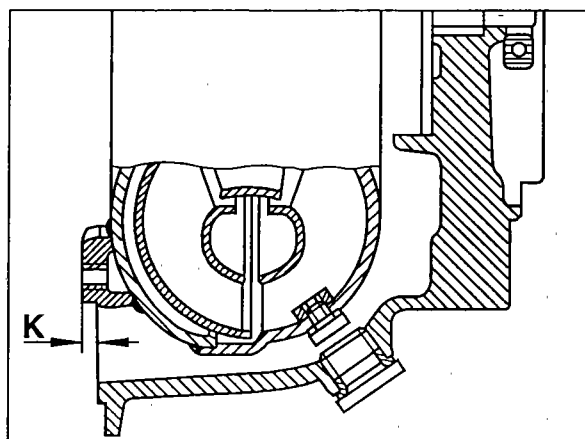
Note: Turn torque converter backwards and forwards when inserting so that the gearing engages.



2 Check projection (K) towards torque converter housing.

Note: With correctly inserted torque converter, the dimension K must be approx. 5 mm.

Exception **500 GE** – here the torque converter must be set back approx. 30 mm towards the torque converter housing.

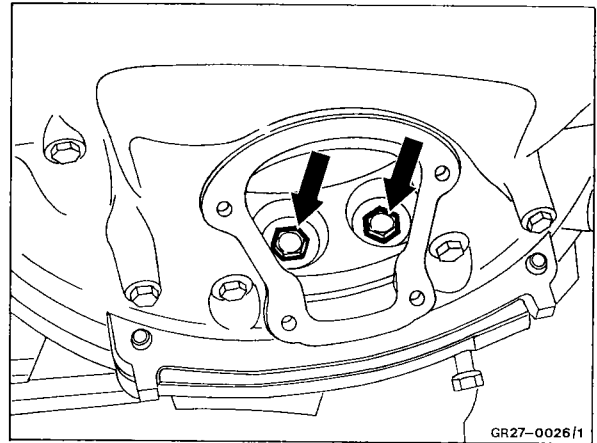


3 Further installation takes place in the same manner, in reverse order to the removal. At the same time pay attention to the following:

- Attach transmission with sealing compound no. 2.
- Tighten torque converter to follower to 42 Nm.
- Attach automatic transmission on engine.


Tightening torques: M 10 x 40 = 55 Nm
 M 10 x 90 = 45 Nm
 M 12 = 65 Nm

- With installed spacer plate on the transmission bearing, this must be installed again.
- Renew sealing rings for supply and return line, tighten lines to 34 Nm.

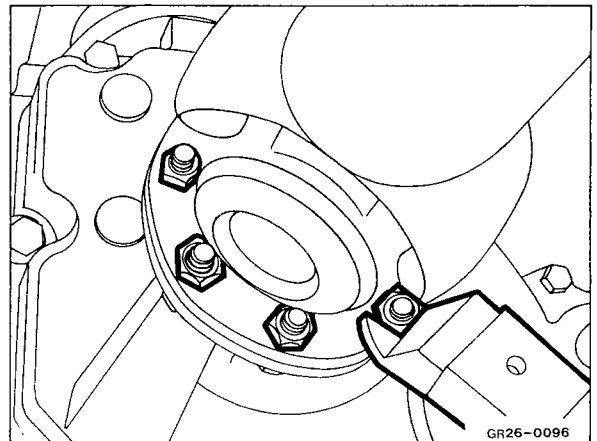


- Tighten drain plug on torque converter to 16 Nm and to oil pan to 14 Nm.


4 Attach propeller shaft corresponding to the marking and tighten bolts to 35 Nm.

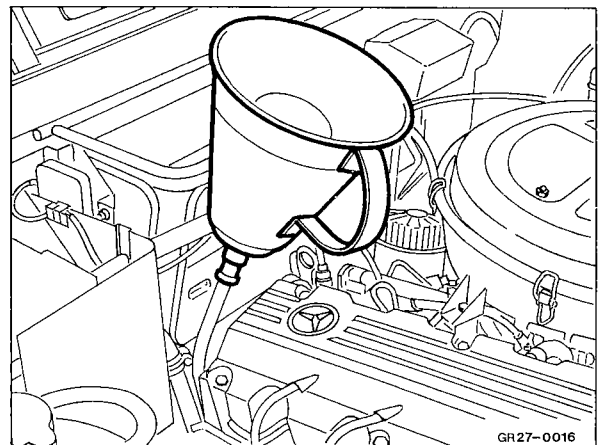
 000 589 10 99 16
 001 589 66 21 00

Note: From transmission no. 3 684 000 (installation of homokinetic propeller shaft) the tightening torque is 50 to 60 Nm.



5 Fill gear oil through filler funnel with filter.

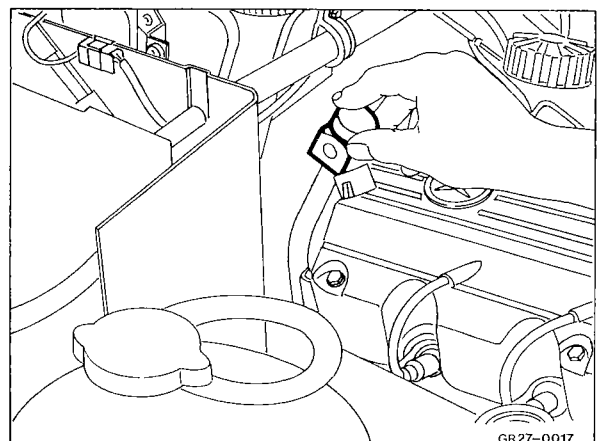
 126 589 12 63 00

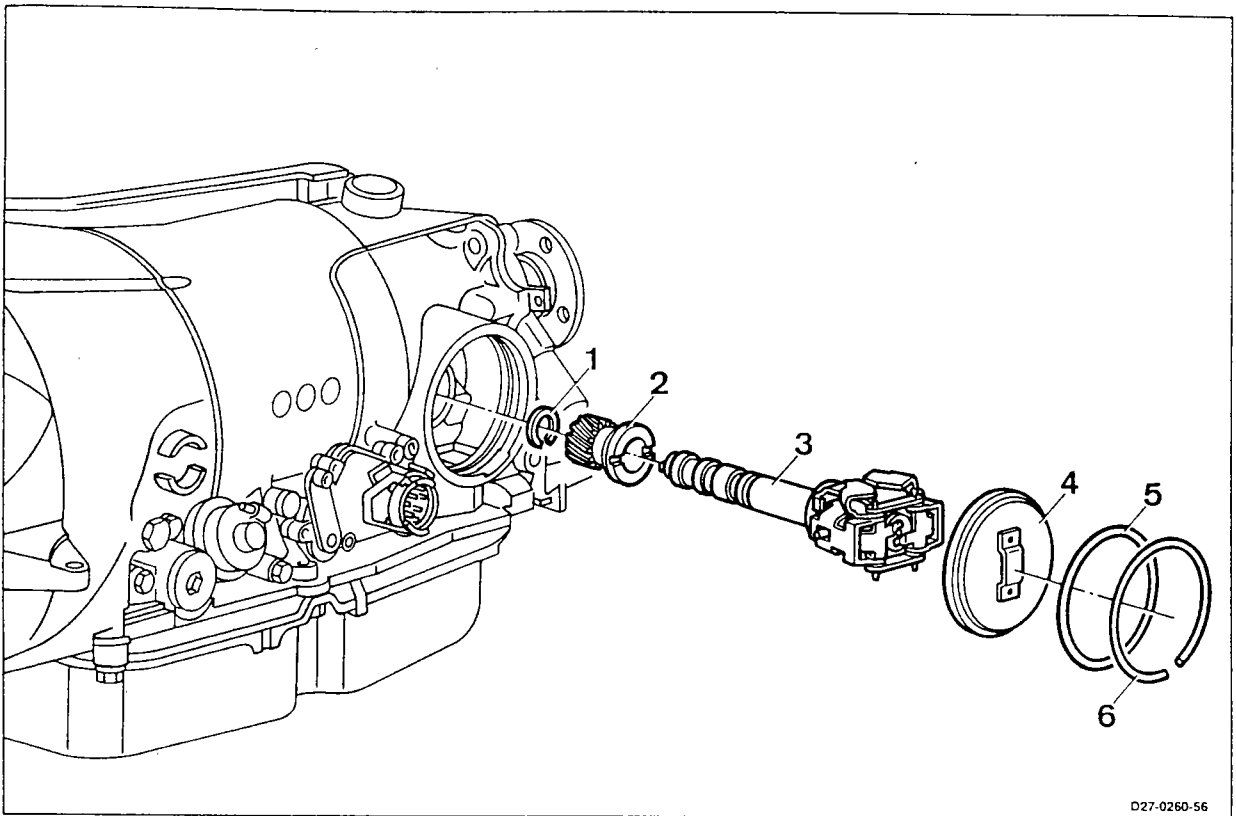


6 Check oil level (maintenance manual, Job item 2710).

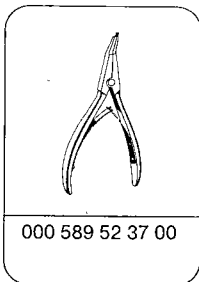
7 Check for leaks.

8 Check and adjust modulating pressure, refer to 3.3/1.



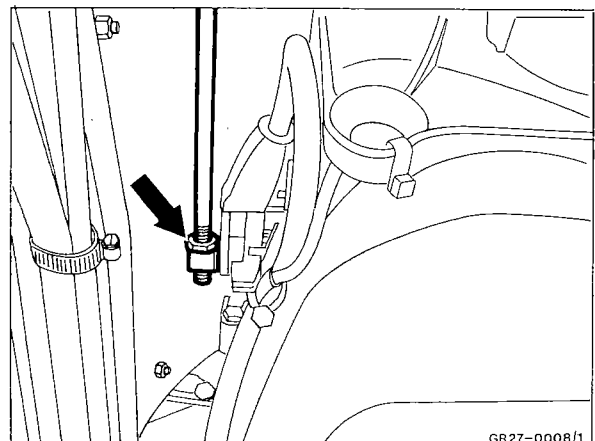


Special tools 

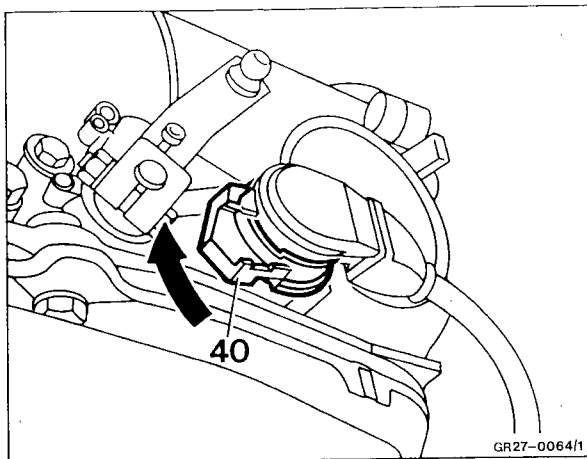


Removal

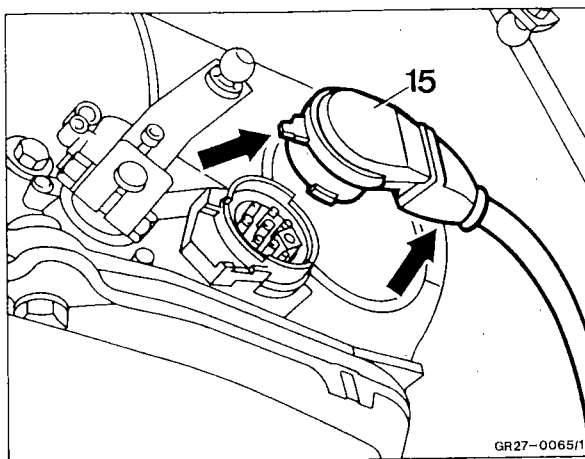
- 1 Detach control rod at range selector lever.



2 Turn lock (40) upward in direction of arrow.

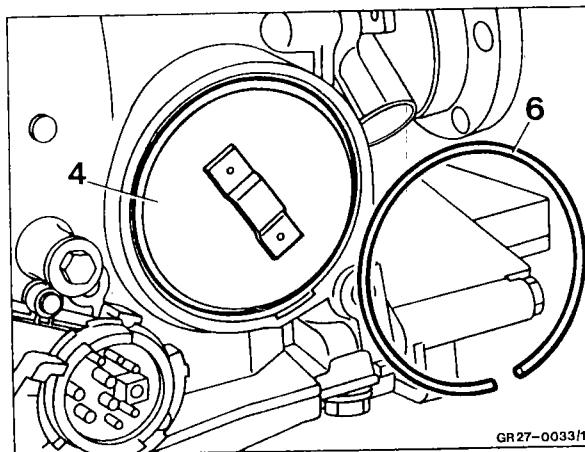


3 Carefully remove plug (15) using two screwdrivers at cable outlet (arrow) and at the strap (arrow).



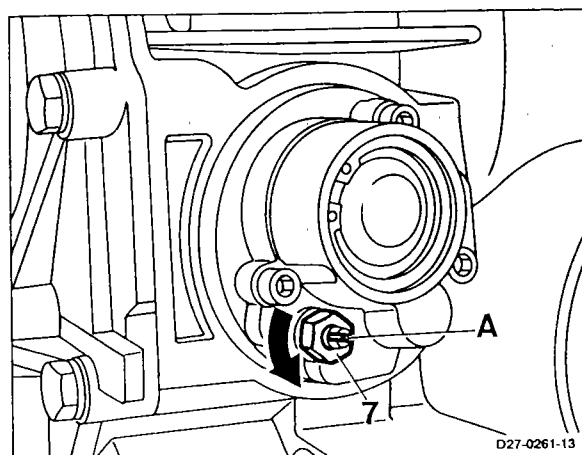
4 Lightly press in cover (4) and remove snap ring (6).

5 Pull out cover.

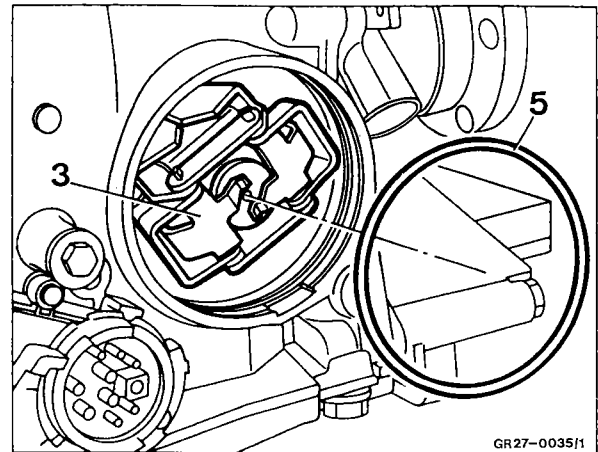


6 Release hexagon nut (7) on side facing the axial support.

7 Turn axial support away to the left at the slot (A).



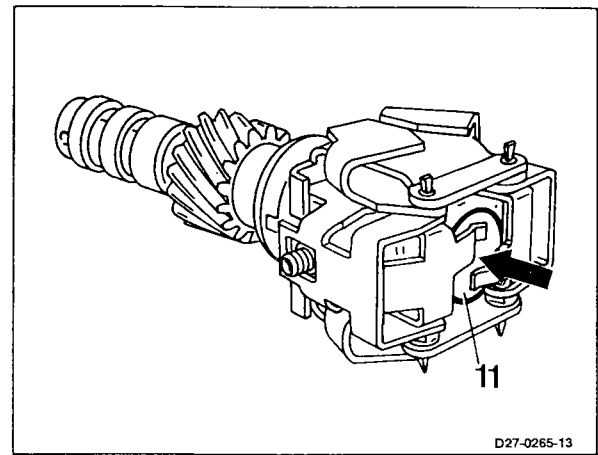
- 8 Remove o-ring (5).
- 9 Pull out flyweight governor (3).



Checking flyweight governor

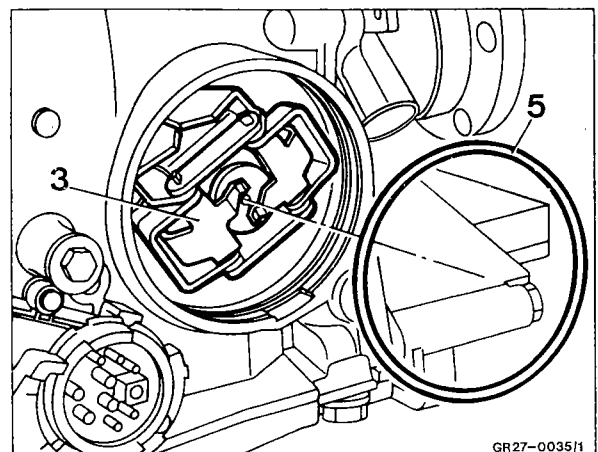
- 1 Move control valve (11) in direction of arrow and in this way check control valve and flyweights for ease of movement.

Note: The control valve must be able to be moved easily.
If the flyweight governor is replaced, the helical gear of the removed flyweight governor is to be used again.



Installation

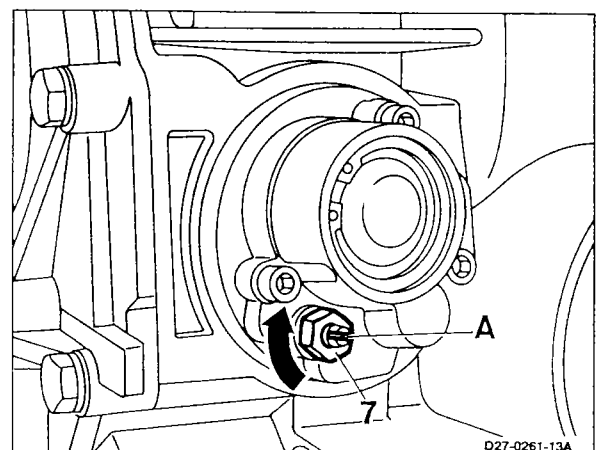
- 1 Install flyweight governor (3).
- 2 Install new O-ring (5).



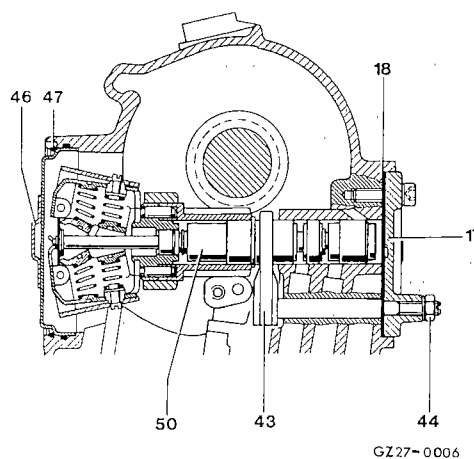
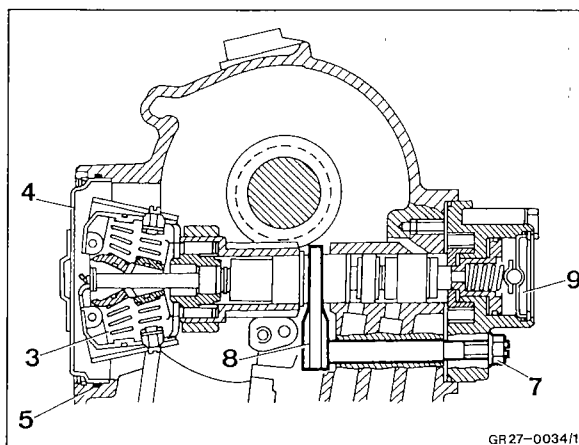
- 3 Turn axial support at slot (A) in clockwise direction (direction of arrow) up to stop.

Note: The axial support is correctly mounted when slot (A) is positioned horizontal.

- 4 Tighten hexagon nut (7) of axial support to 6 Nm.



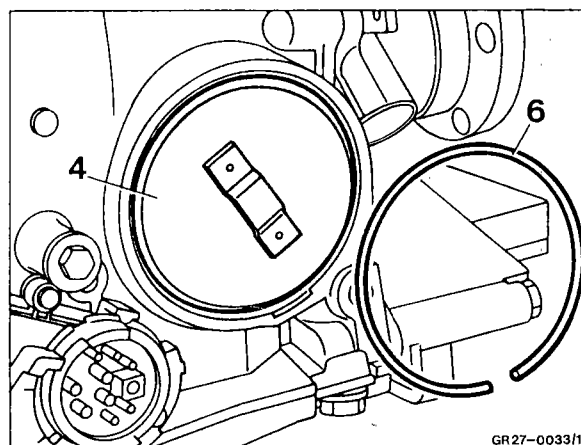
- 3 Flyweight governor
- 4 Cover
- 5 O-ring
- 7 Hexagon nut of axial support
- 8 Axial support
- 9 Secondary pump (installed up to transmission end no. 3 576 711)



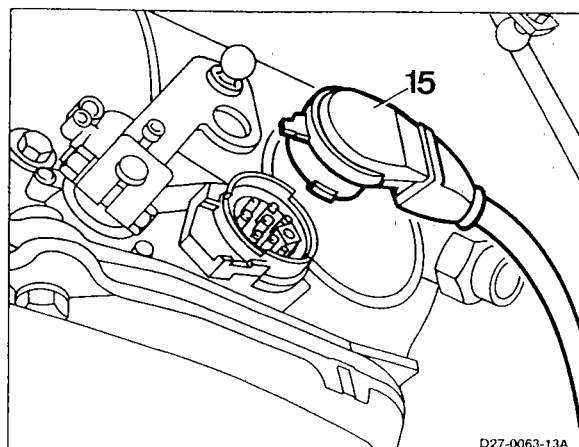
Arrangement without secondary pump

- 5 Install cover (4) and press in.
- 6 Install snap ring(6).

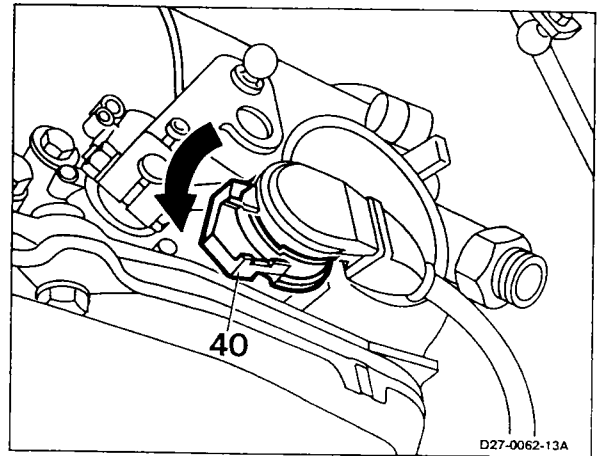
Note: After installing the snap ring, the cover must be pulled back until it rests against the snap ring.



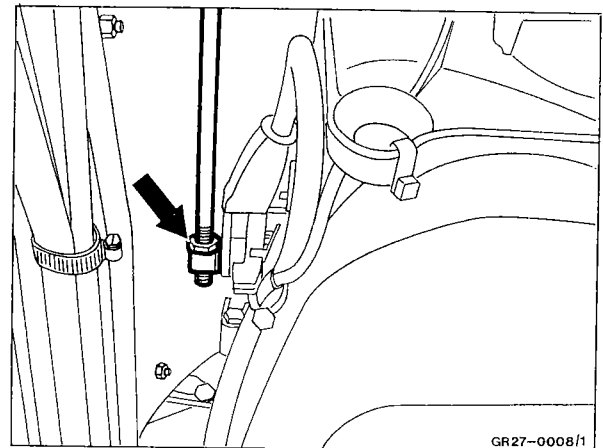
- 7 Connect plug (15).



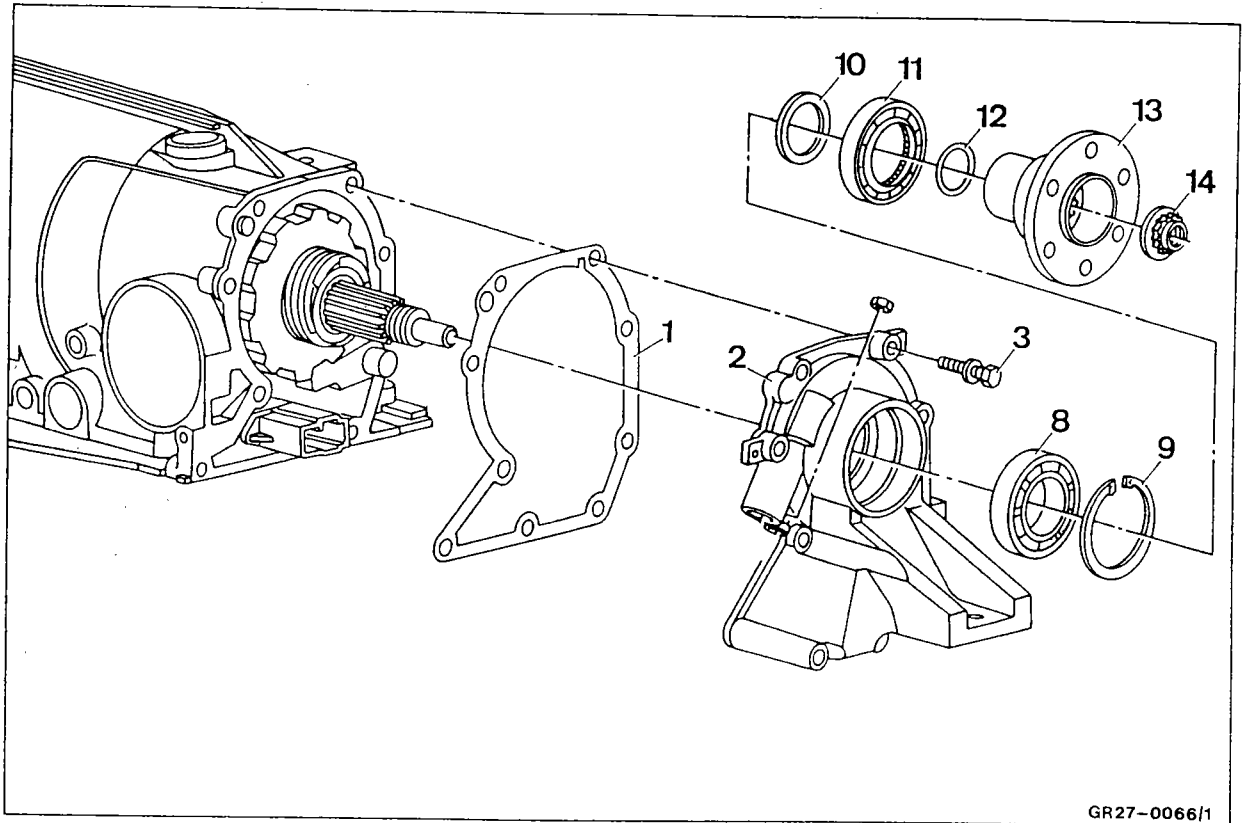
- 8 Turn lock (40) downward in direction of arrow.



- 9 Engage control rod and install retainer.



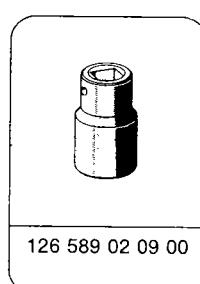
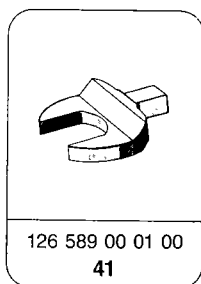
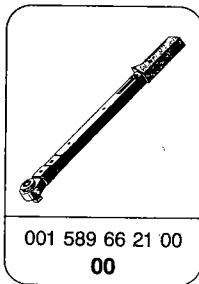
Tightening torques



GR27-0066/1

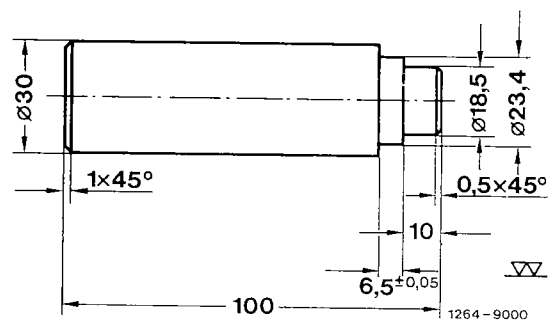
Item no.	Designation	Nm
3	Hexagon bolt	13
14	Twelve-point collar nut	120

Special tools 



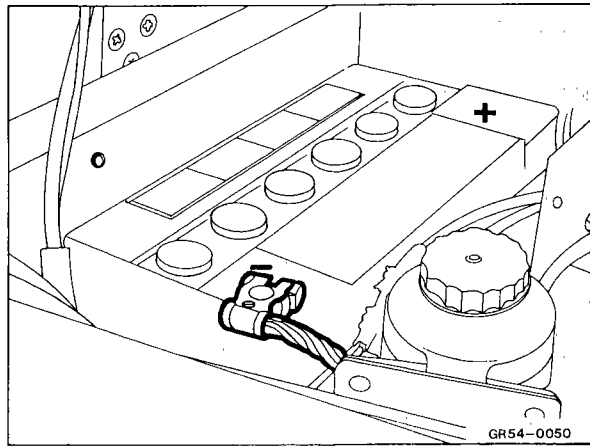
Tool for self-assembly

Note: The drive-in drift is shop made corresponding to the specified dimensions.

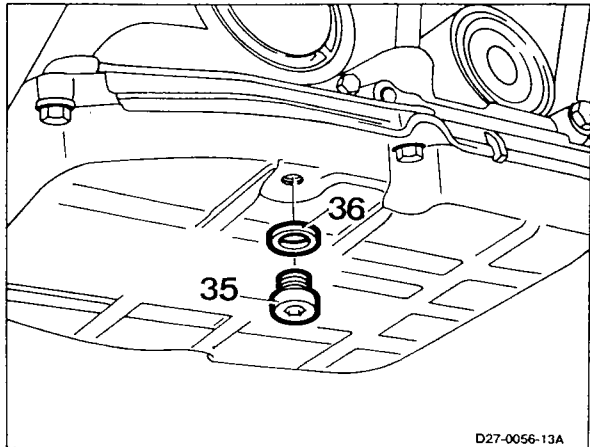


Removal

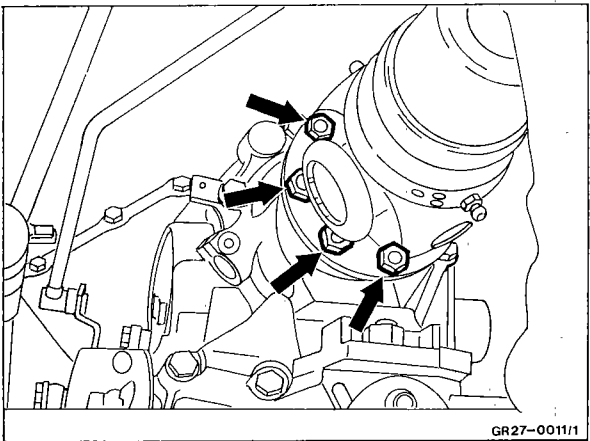
- 1 Disconnect battery at negative terminal.
- 2 Pull out oil dipstick.



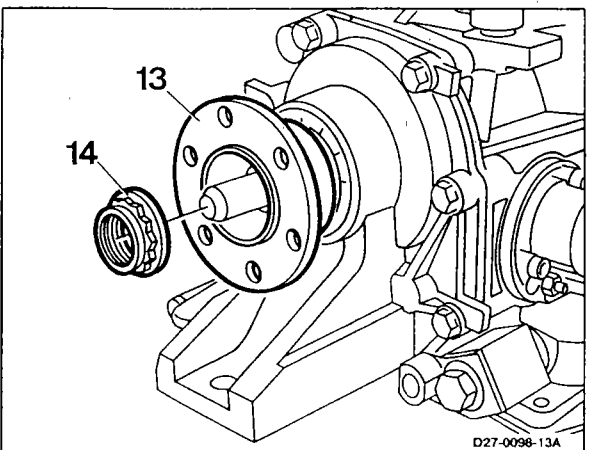
- 3 Unscrew drain plug (35) with sealing ring (36) and drain gear oil.



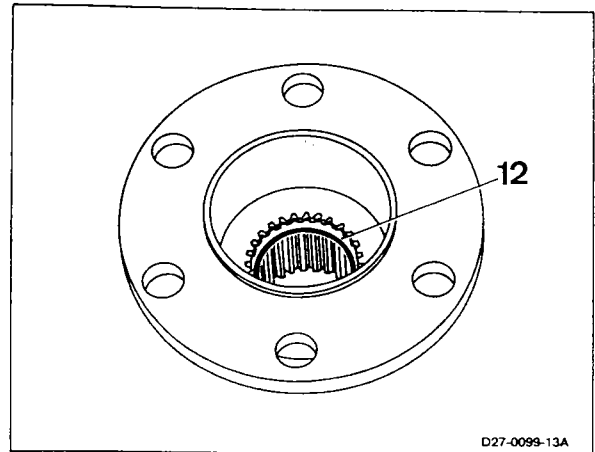
- 4 Mark installation position of propeller shaft, detach and tie up to the side.
- 5 Unscrew bolts on transmission mount.



- 6 Unscrew twelve-point collar nut (14) and remove flange (13).

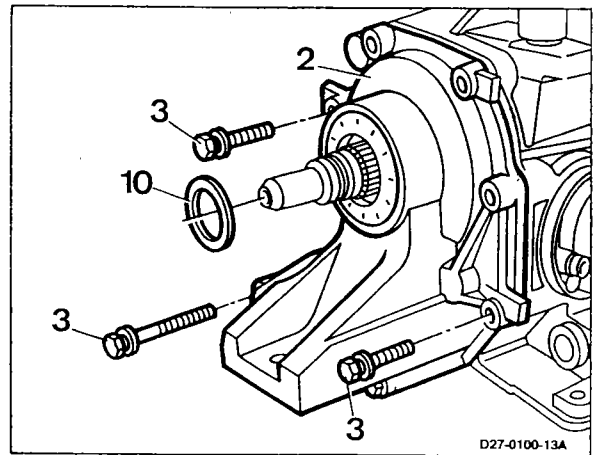


7 Remove O-ring (12) from flange.



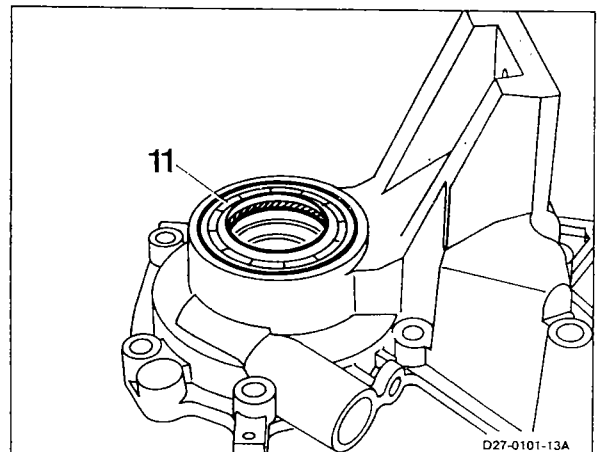
8 Remove washer (10).

9 Unscrew hexagon head bolts (3) and remove rear cover (2).

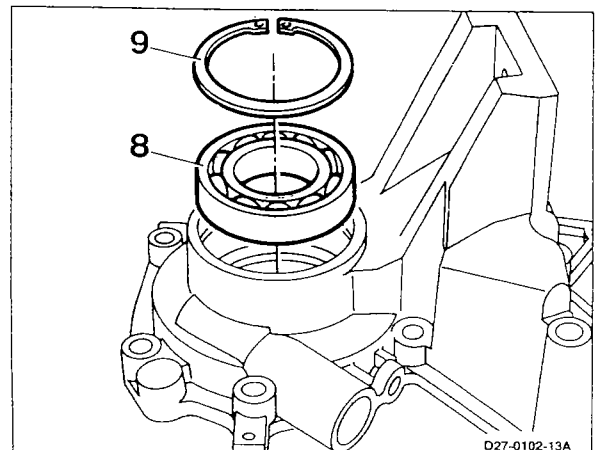


Disassembly

1 Remove radial shaft seal (11).

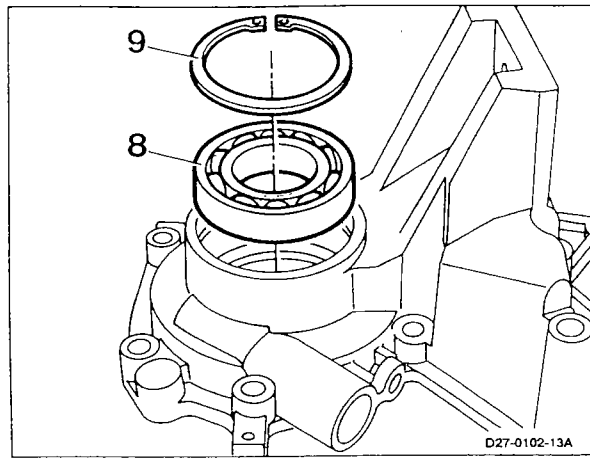


2 Remove locking ring (9) and ball bearing (8).



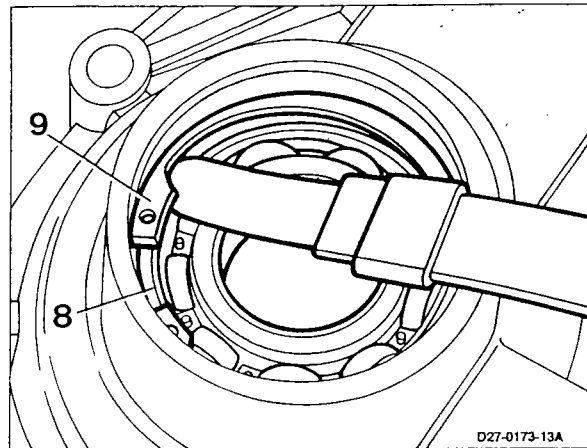
Assembly

- 1 Install ball bearing (8) using a suitable drift.
- 2 Install locking ring (9).

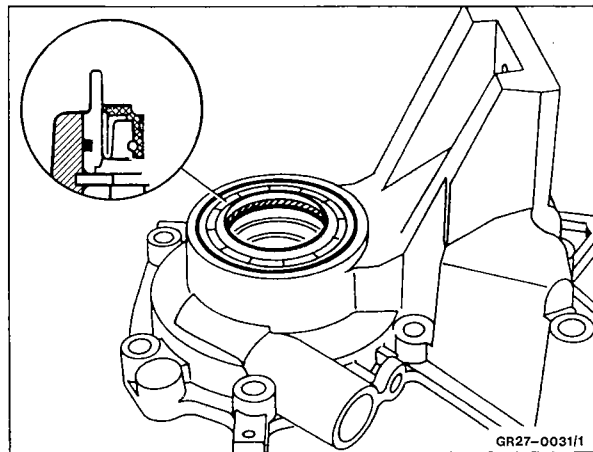


- 3 Measure clearance between locking ring (9) and ball bearing (8) with feeler gauge.

Note: If the locking ring cannot be inserted, use a thinner locking ring. There is to be no clearance between locking ring (9) and cylinder roller bearing (8). Make up for any clearance using a thicker locking ring. Locking rings are available in the following thickness: 2,0; 2,1; 2,2 mm.

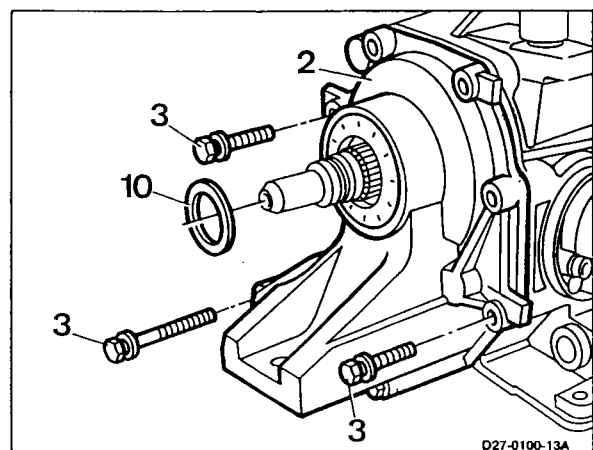


- 4 Drive in new radial shaft seal to be flush using a suitable drift.

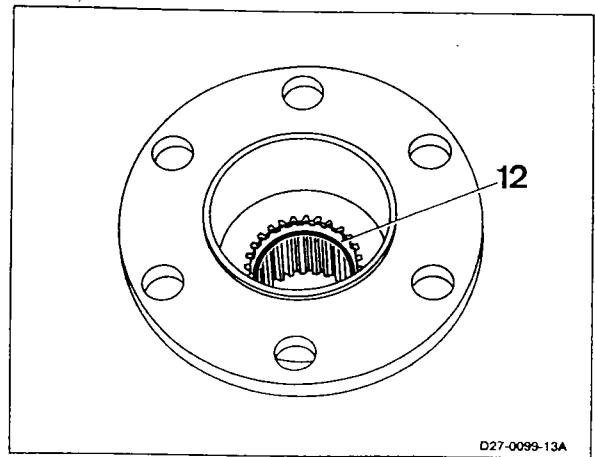


Installation

- 1 Mount rear cover (2) with new gasket, screw in hexagon bolts (3) and tighten to 13 Nm.
- 2 Insert washer (10).



3 Insert new O-ring (12) in flange.

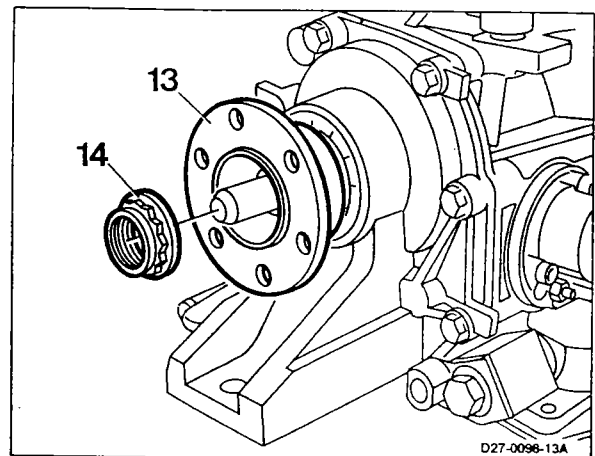


4 Slide on flange (13).

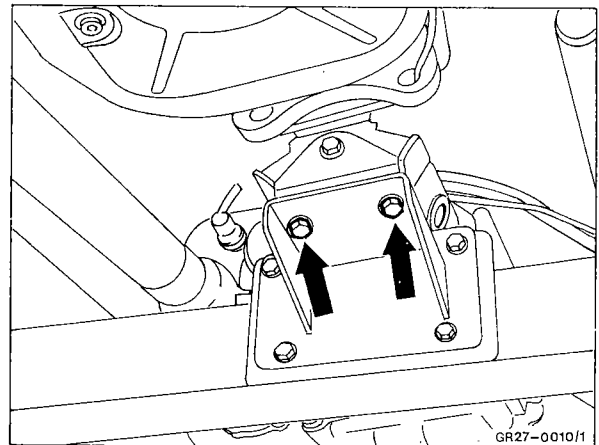
5 Screw on twelve-point collar nut (14) and tighten to 120 Nm.

Check concentricity of flange, refer to 4.10/1.


Note: Caulk nut to base of groove.



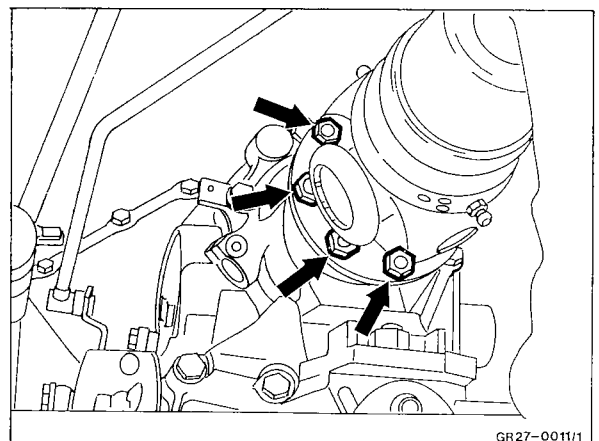
6 Attach transmission bearing.



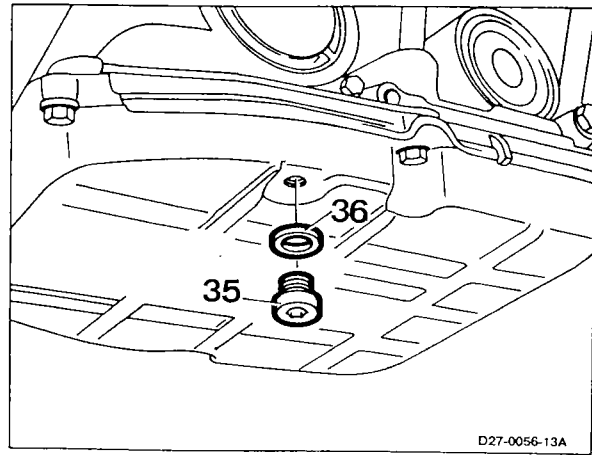
7 Mount universal-joint drive shaft and tighten to 35 Nm.

 000 589 10 99 16
001 589 66 21 00


Note: From transmission no. 3 684 000 (installation of homokinetic propeller shaft) the tightening torque is 50 to 60 Nm.

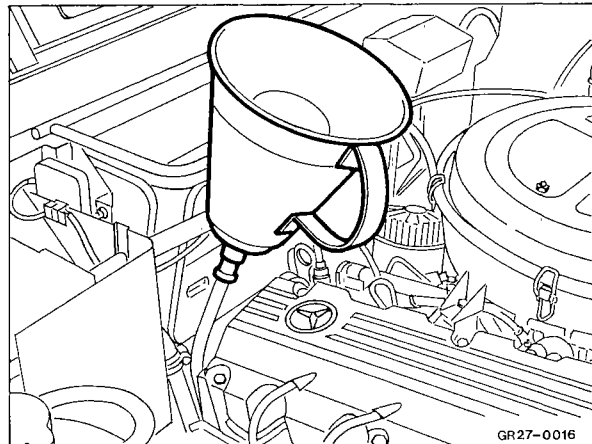


8 Screw in drain plug (35) with new sealing ring (36) and tighten to 14 Nm.



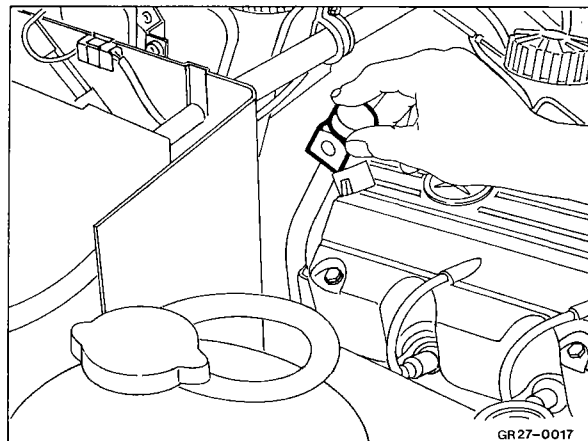
9 Fill up gear oil through the filler funnel with filter.

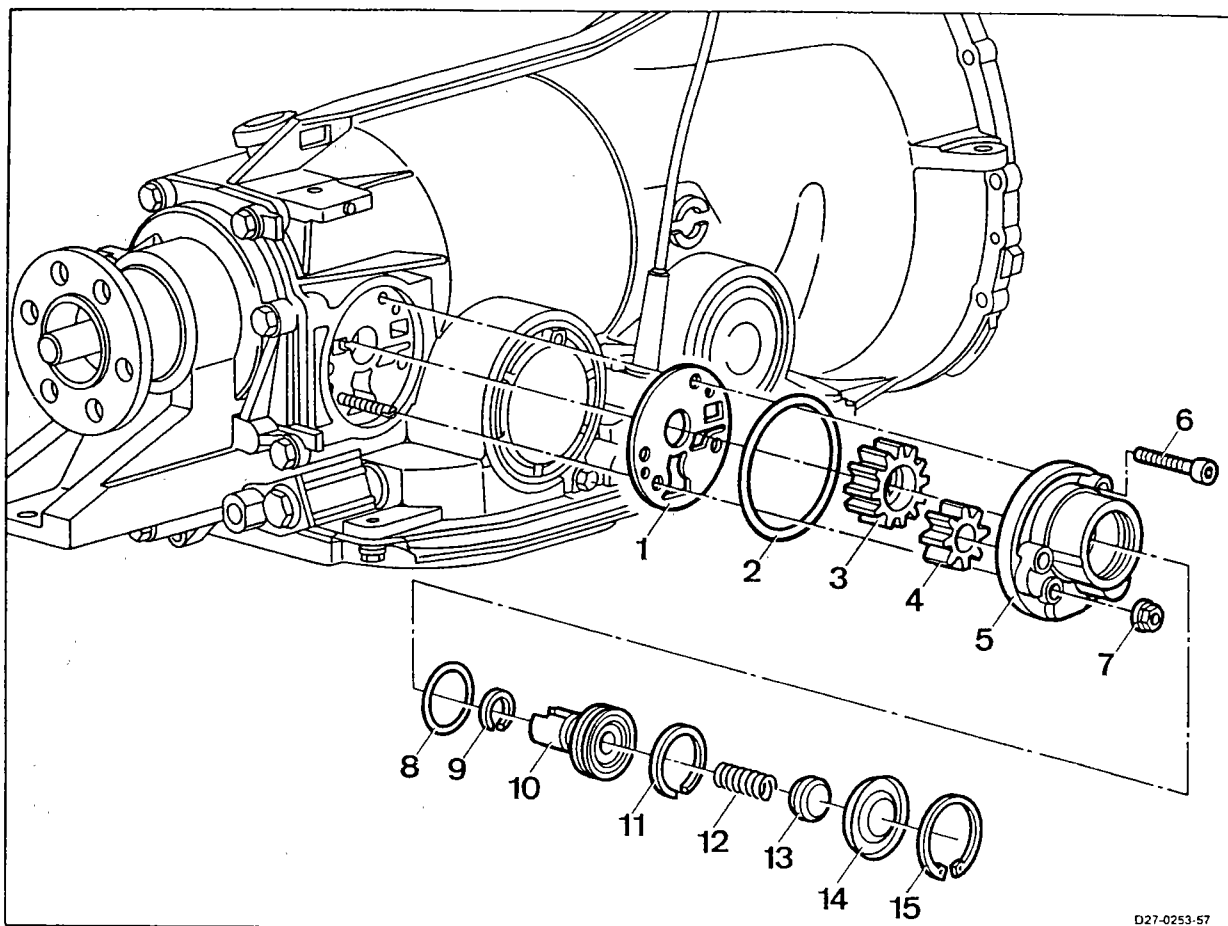
 126 589 12 63 00



10 Check oil level (maintenance manual, Job item 2710).

11 Check for leaks.



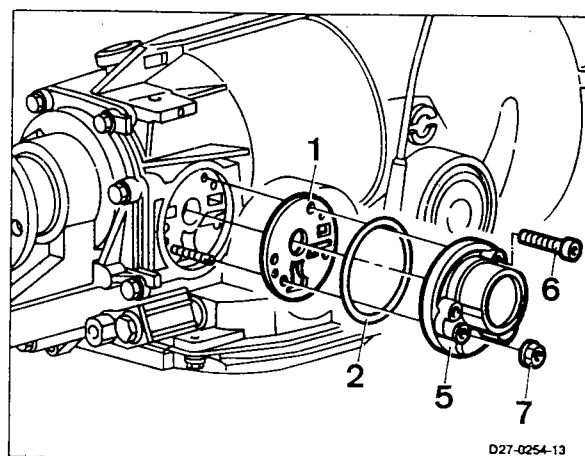


D27-0253-57

Removal

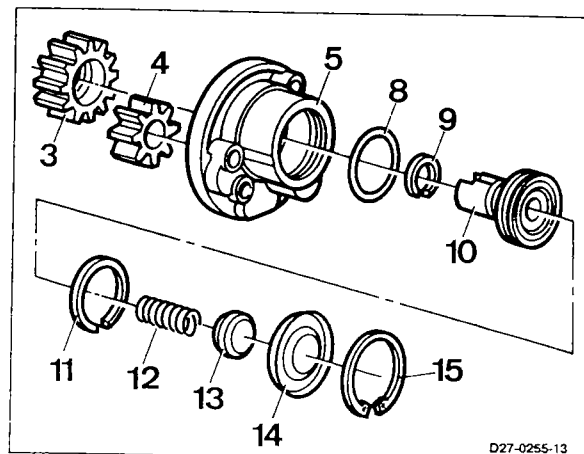
Note: The secondary pump is installed up to transmission end no. 3 576 711.

- 1 Unscrew hexagon nut (7) for axial support.
- 2 Unscrew hexagon socket bolts (6) and remove secondary pump housing (5).
- 3 Remove O-ring (2) and intermediate plate (1).



D27-0254-13

- 4 Remove pump gears (3/4) from secondary pump housing.
- 5 Remove locking ring (15) and remove cover (14).
- 6 Pull out spring retainer (13), spring (12) and cut-off piston (10) with O-ring (8).
- 7 Remove Teflon rings (9/11) from cut-off piston.

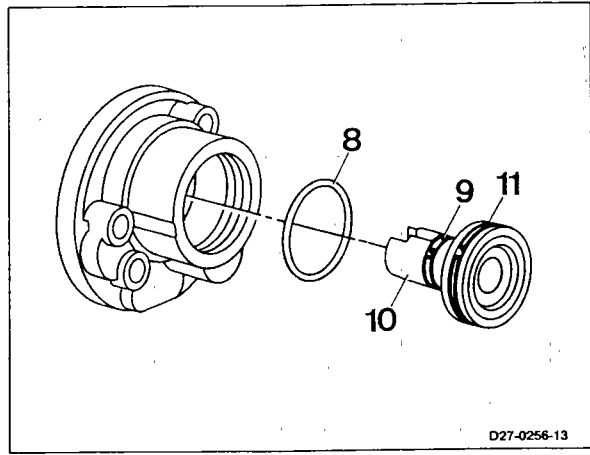


D27-0255-13

Installation

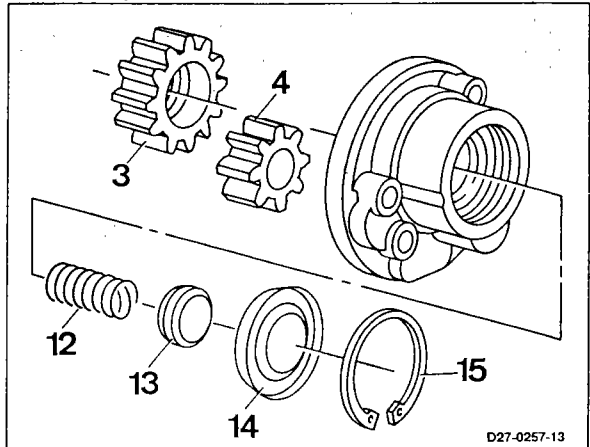
- 1 Install new O-ring (8) in secondary pump housing.
- 2 Install Teflon rings (9/11) in cut-off piston (10) and lubricate with automatic gear oil.
- 3 Slide cut-off piston into secondary pump housing.

Note: When sliding in the cut-off piston, the Teflon rings (9/11) must be pressed together.



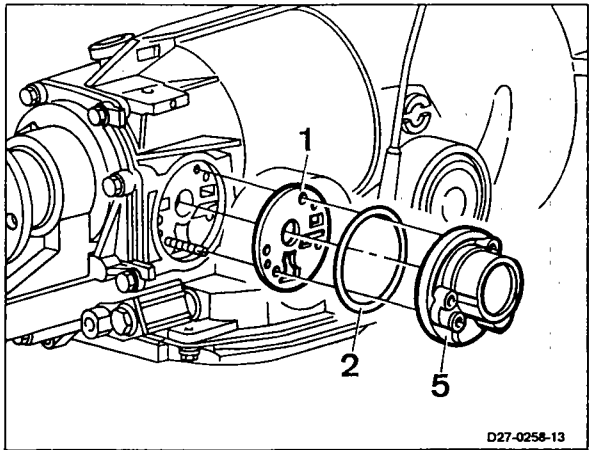
D27-0256-13

- 4 Insert spring (12), spring retainer (13) and cover (14) and install locking ring (15).
- 5 Install pump gears (3/4).



D27-0257-13

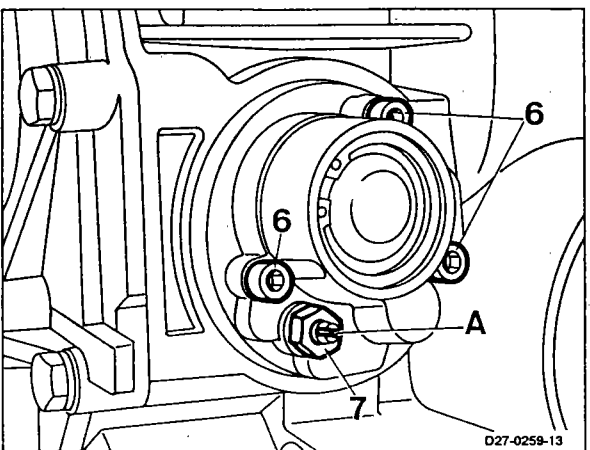
- 6 Install intermediate plate (1) and new O-ring (2).
- 7 Mount secondary pump housing (5).



D27-0258-13

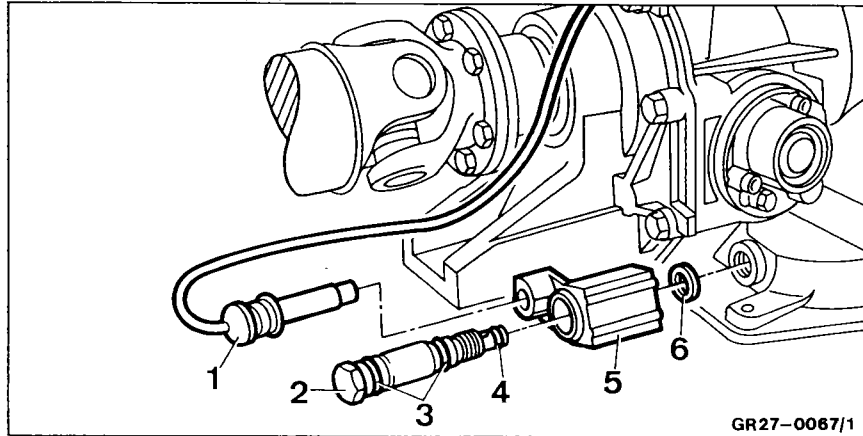
- 8 Tighten hexagon socket bolts of secondary pump (6) to (7) Nm.

Note: The slot (A) in the axial support must be horizontal.



D27-0259-13

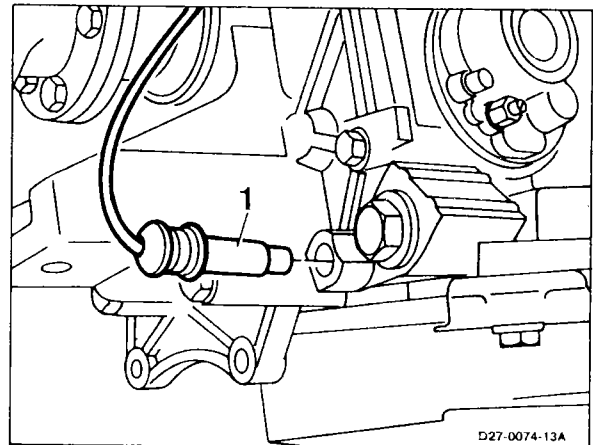
Tightening torques



Item no.	Designation	Nm
2	Kick-down solenoid valve	30

Removal and installation

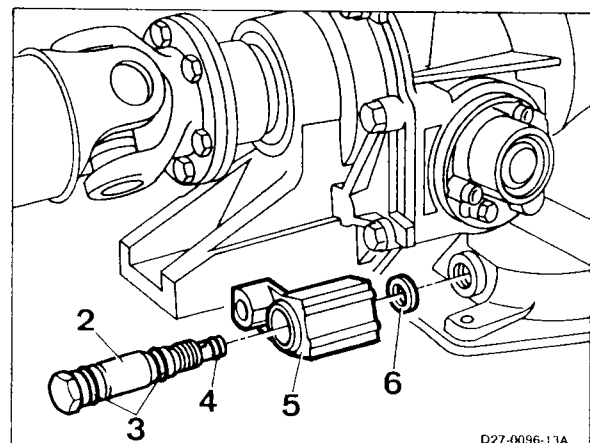
1 Remove plug (1).

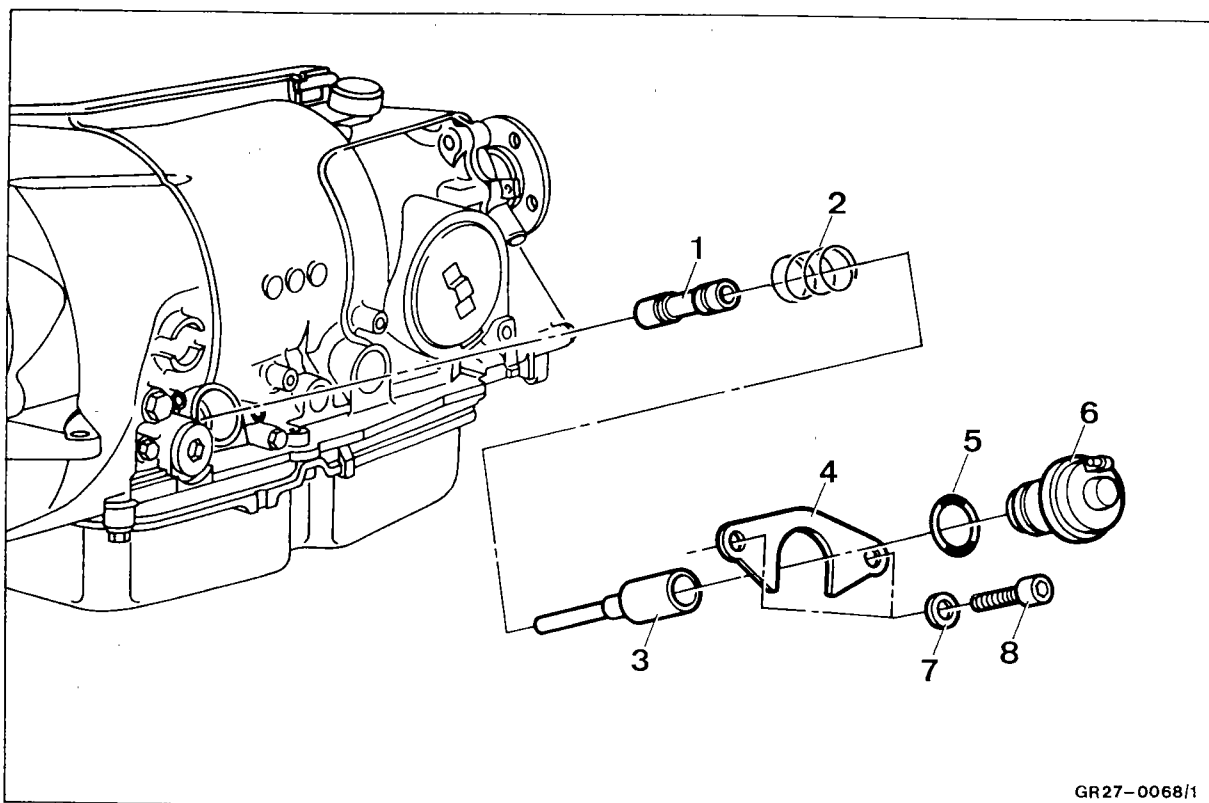


2 Unscrew kick-down solenoid valve (2) with solenoid (5), O-ring (3/4) and sealing ring (6).

Install in reverse sequence.

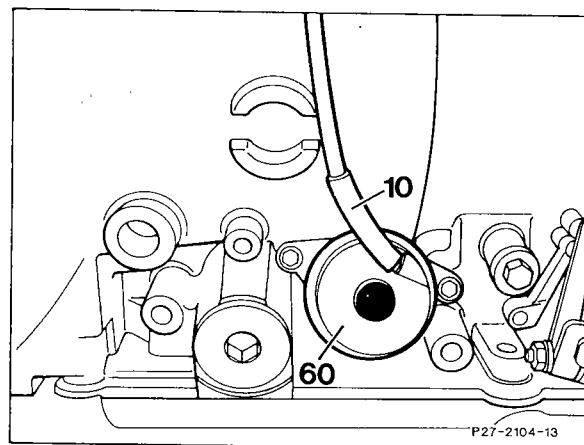
Note: Replace O-rings (3/4) and sealing ring (6). Tighten kick-down solenoid valve to 30 Nm.



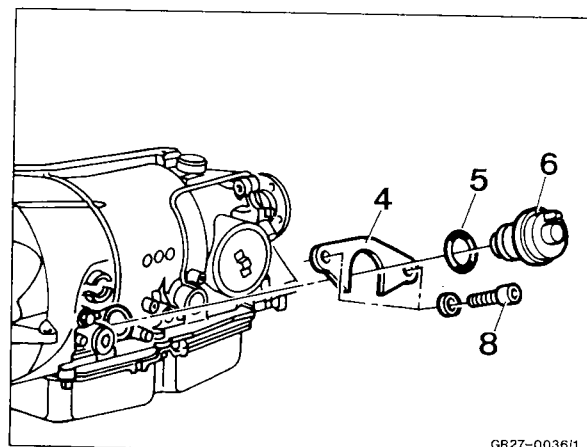


Removal

- 1 Remove vacuum hose (10).



- 2 Unscrew hexagon socket bolts (8) and remove retaining plate (4).
- 3 Pull out vacuum unit (6) with sealing ring (5).

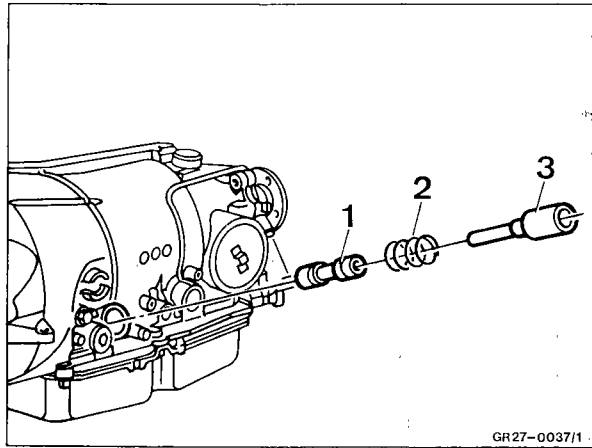


4 Pull out thrust pin (3), spring (2) and modulating pressure valve (1).

Installation

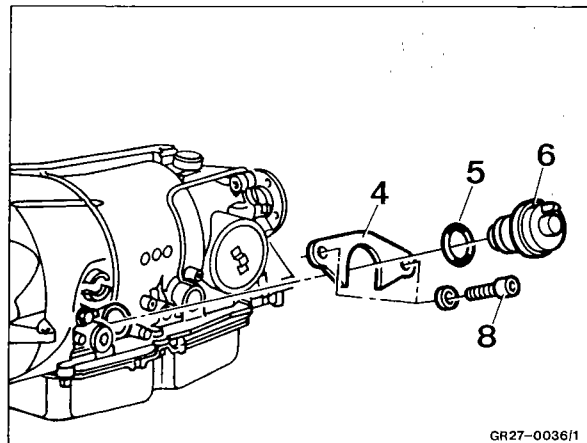
1 Insert thrust pin (3), spring (2) and modulating pressure valve (1).

Note: the thrust pin must be cleaned and checked for ease of movement.



2 Insert vacuum unit (6) with new sealing ring (5).

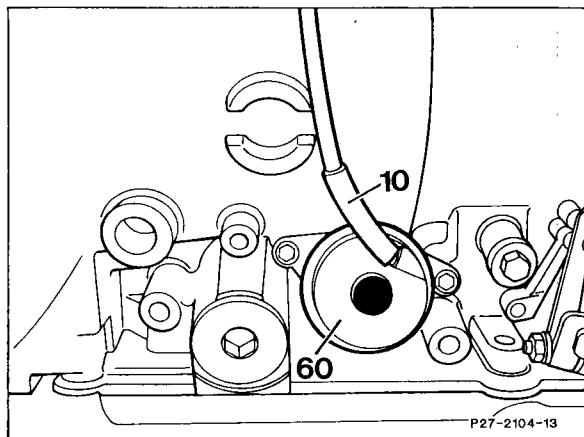
3 Insert retaining plate (4) and tighten with hexagon socket bolts (8).

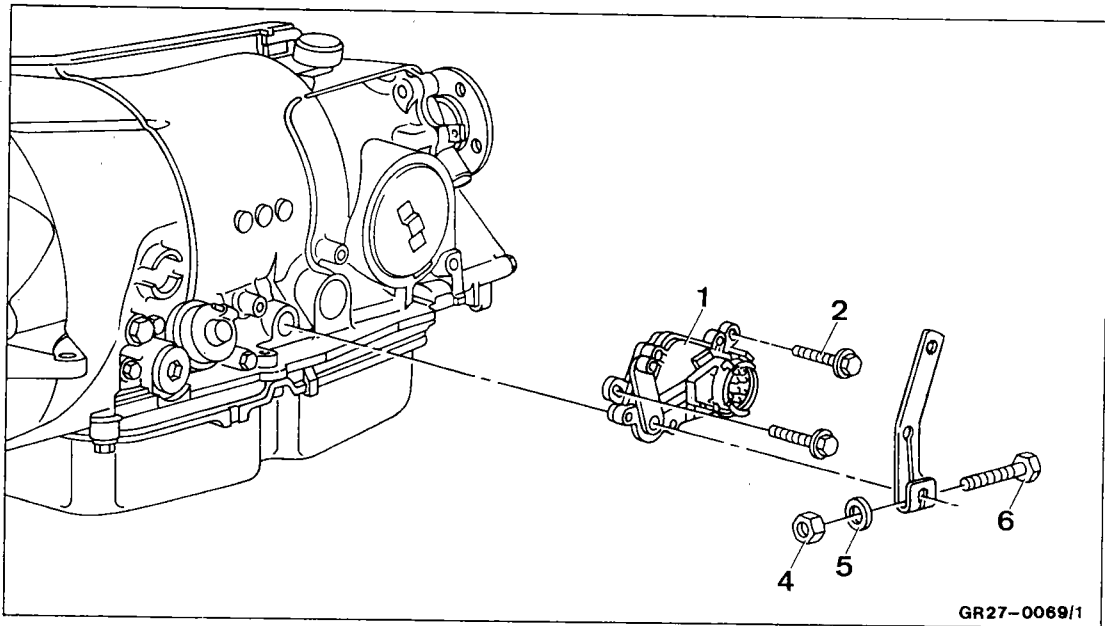


4 Mount vacuum hose (10).

Note: Check vacuum hose for leaks or porous places and replace if necessary.

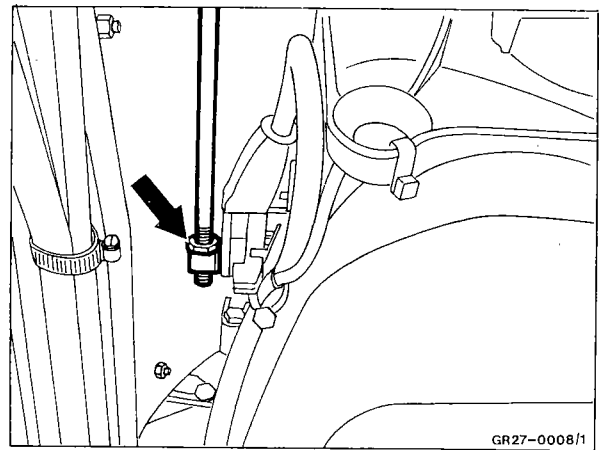
5 Check modulating pressure and adjust if necessary, refer to 3.3/1.



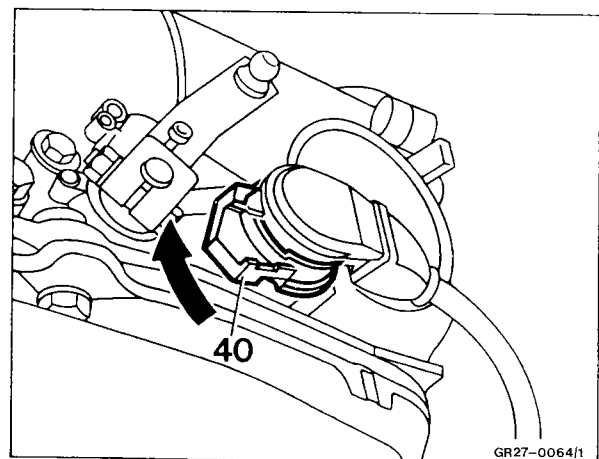


Removal

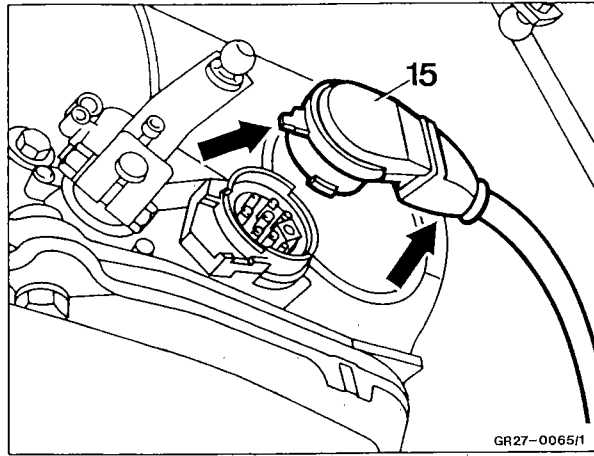
- 1 Remove retainer and disengage control rod.



- 2 Turn lock (40) up in direction of arrow.

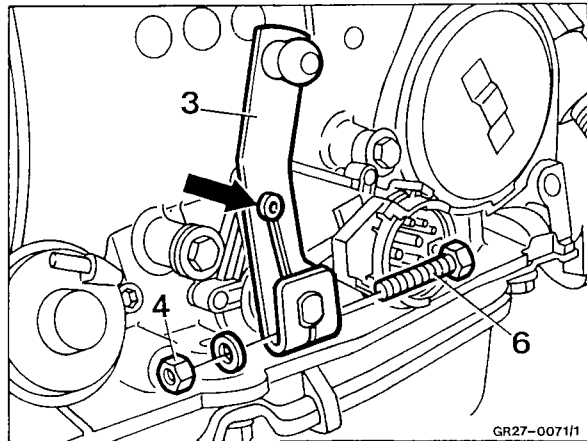


3 Carefully press off plug (15) using two screwdrivers at the cable outlet (arrow) and at the strap (arrow).



4 Unscrew hexagon bolt (6) with washer and nut (4).

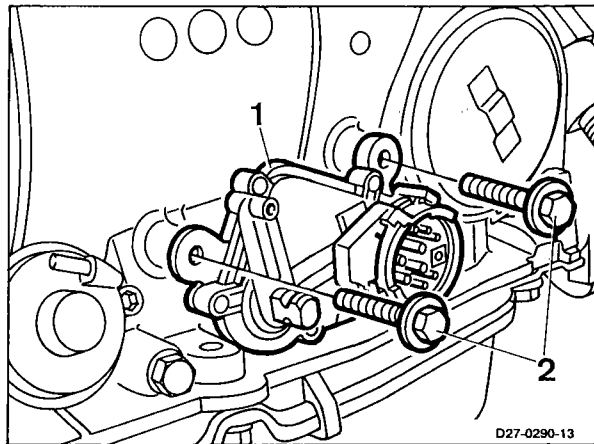
5 Remove range selector lever (3).



6 Unscrew hexagon bolts (2) and remove starter lock switch (1).

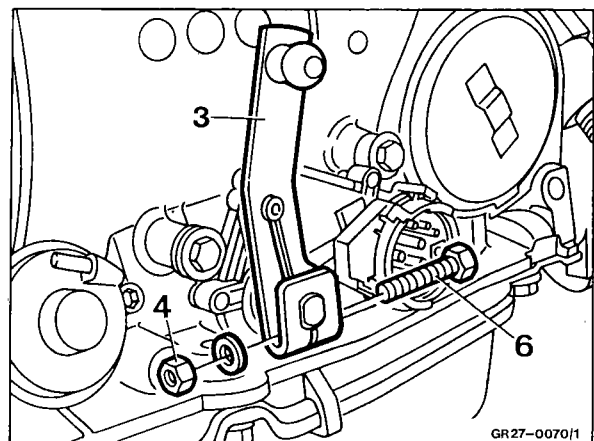
Installation

1 Insert starter lock switch (1) and screw in hexagon bolts (2).



2 Mount range selector lever (3) in such a way that the follower (arrow) engages in the range selector lever.

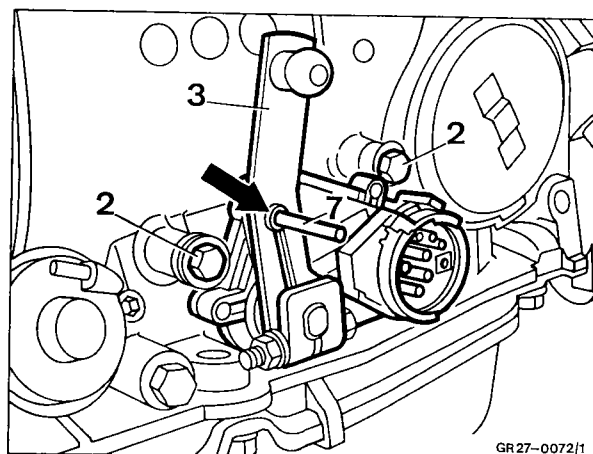
3 Fasten range selector lever with hexagon bolt (6), washer and nut (4).



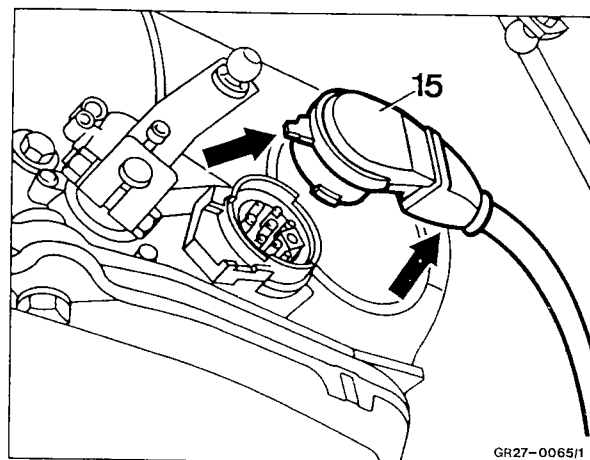
4 Put range selector lever (3) into position "N".

5 Insert drill (7) or cotter pin with 4 mm dia. through the bore in the follower (arrow) into the location bore in the starter lock switch housing (arrow).

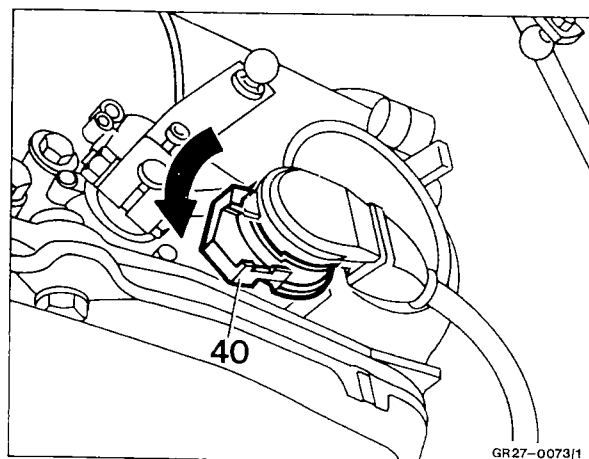
6 Tighten hexagon bolts (2).



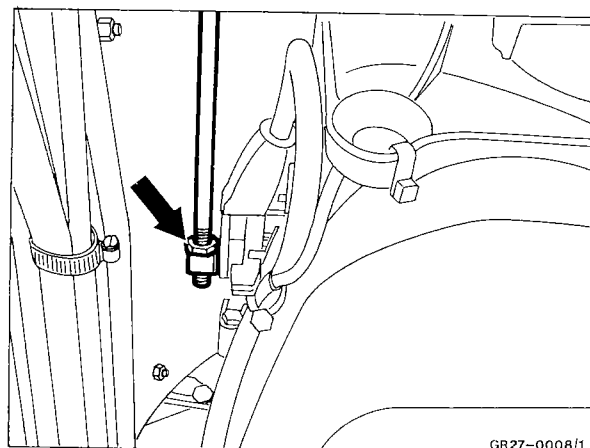
7 Connect plug (15).



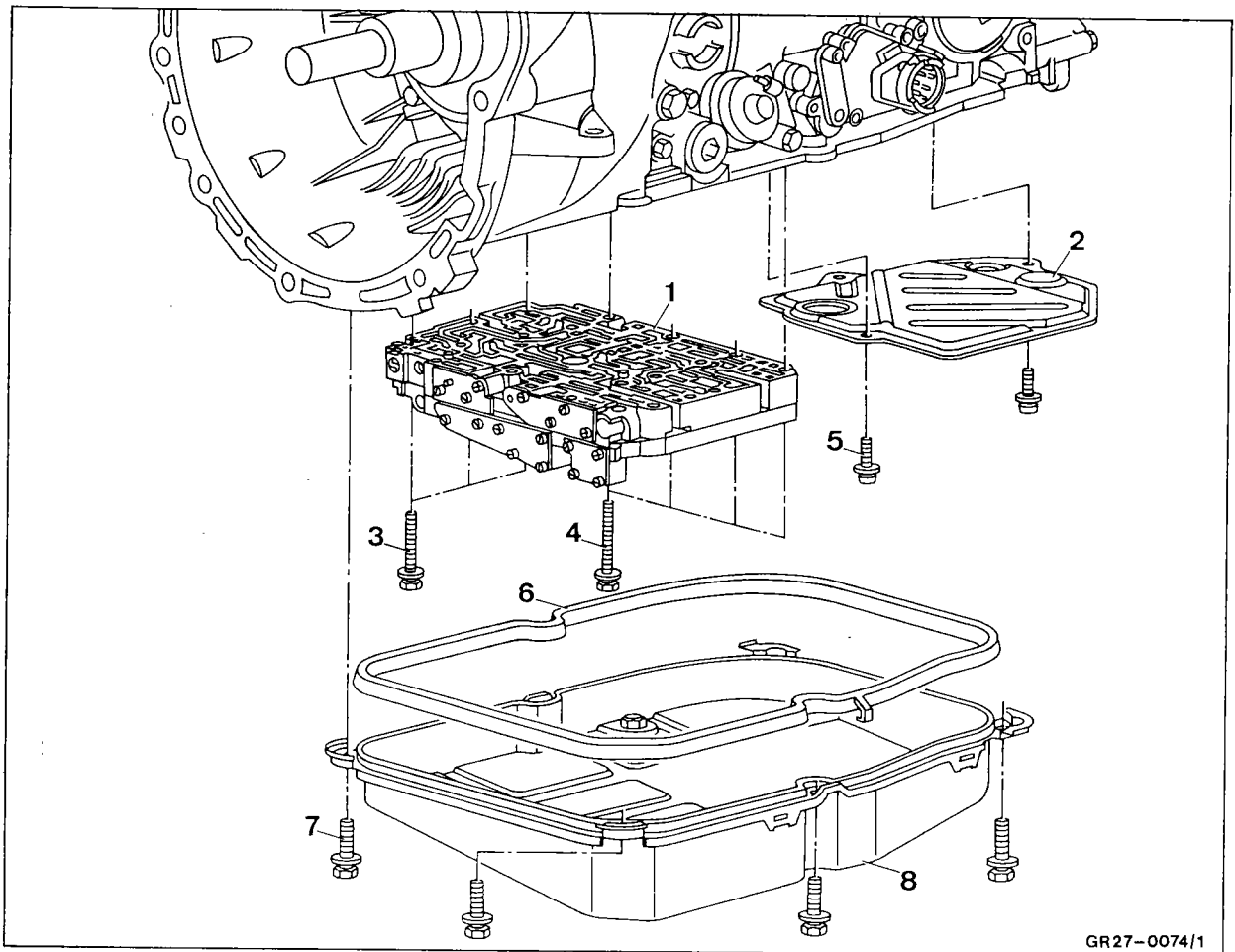
8 Turn lock (40) down in direction of arrow.



9 Engage control rod and install retainer.



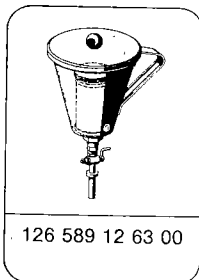
Tightening torques



GR27-0074/1

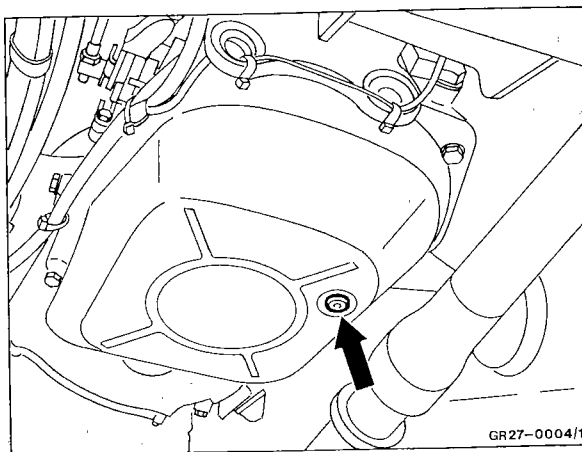
Item no.	Designation	Thread	Nm
3	Hexagon bolt	M 6 x 50	8
4	Hexagon bolt	M 6 x 55	8
5	Phillips screw	-	4
7	Hexagon bolt	-	7

Special tools 



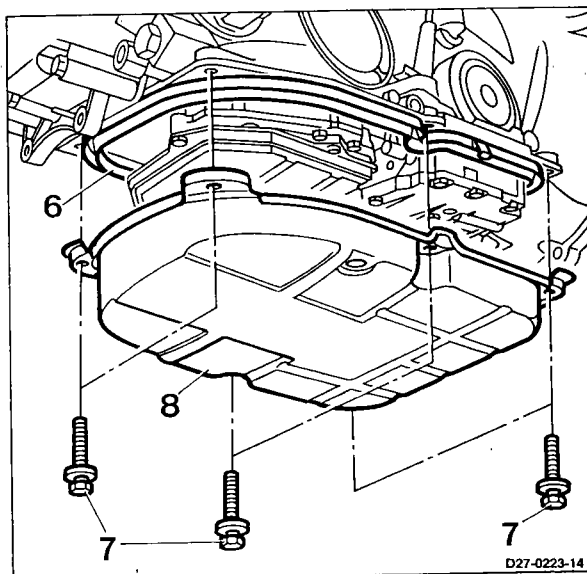
Removal

1 Put shift lever in position "P" and unscrew drain screw with sealing ring and drain gear oil.

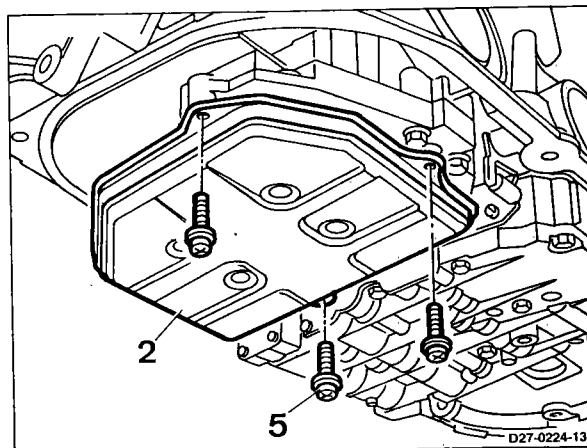


2 Remove cable binder.

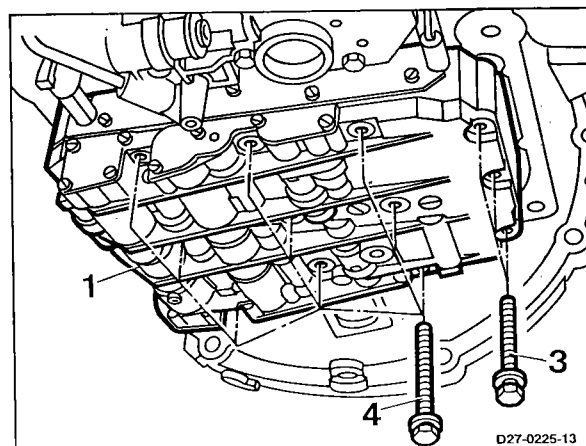
3 Unscrew hexagon bolts (7) and remove oil pan (8) with seal (6).



4 Unscrew Phillips screws (5) and remove oil filter (2).



5 Unscrew hexagon bolts (3/4) and remove shift valve housing (1).



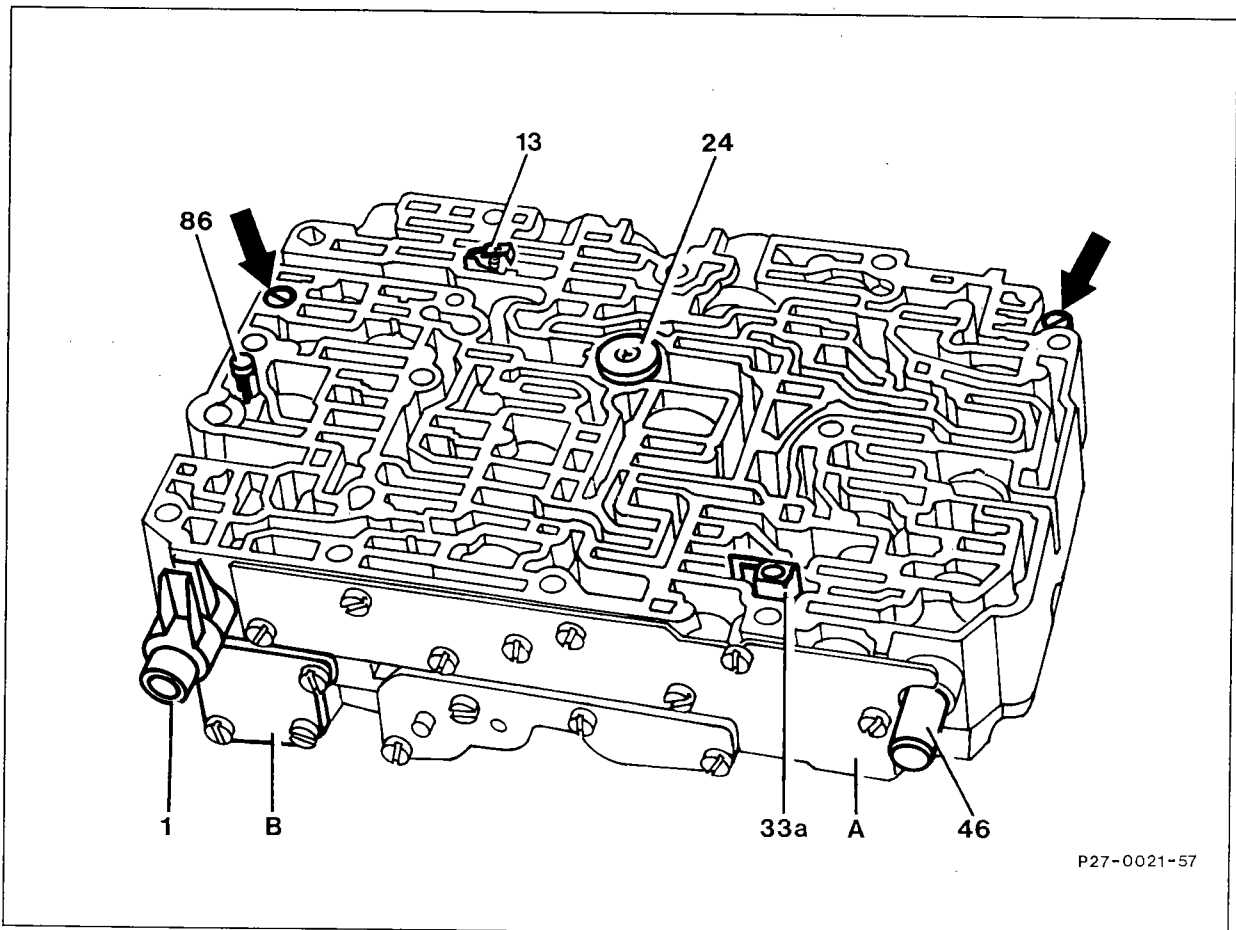
Disassembly and assembly

Note: During all work on the shift valve housing, always ensure utmost cleanliness. The work should, if possible, be carried out on a plastic surface. Do not use cloths with fluff; leather cloths are particularly good to use. After disassembly, all parts must be washed and blown out with compressed air.

In the shift valve housing there are 19 or 18 valve balls. During the disassembly make sure that the balls do not roll away. During the assembly they must be inserted in the correct positions.

1 Unscrew bolts (arrows). Remove valves (13, 24, 86) as well as chip strainer (33a).

2 Hold shift valve housing (A) and sensor housing (B) together and turn over.



A Shift valve housing
B Sensor housing
1 Selector valve
13 Plate non-return valve

24 Non-return valve of primary pump
33a Chip strainer of shift valve B2
46 Piston of regulator valve – control pressure
86 Drain valve LB 3

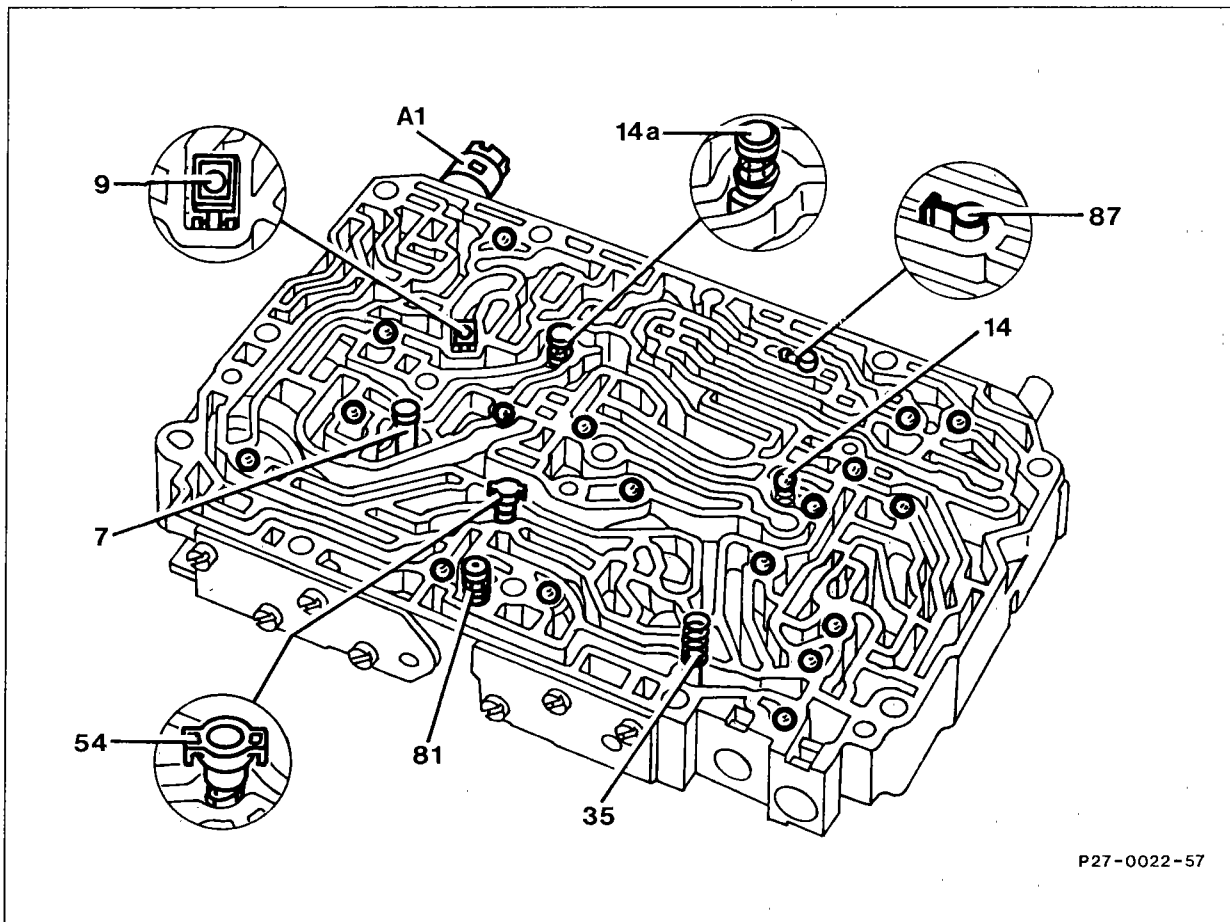
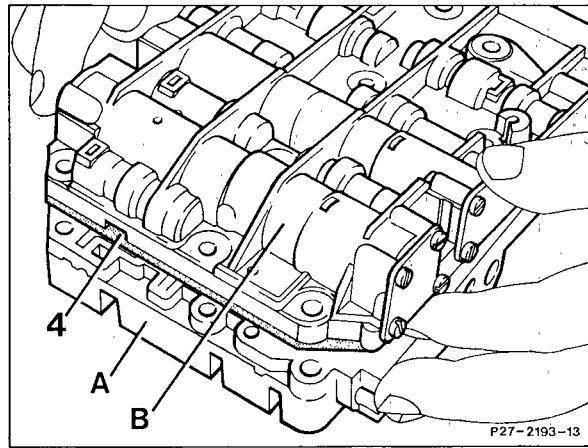
Note: Only loosely tighten bolts so that both housing parts can be adjusted towards each other, as far as permitted by the bolts.

Insert valves (13, 24, 86) and chip strainer (33a) in shift valve housing.

3 Carefully lift sensor housing (B) with the intermediate plate (4).

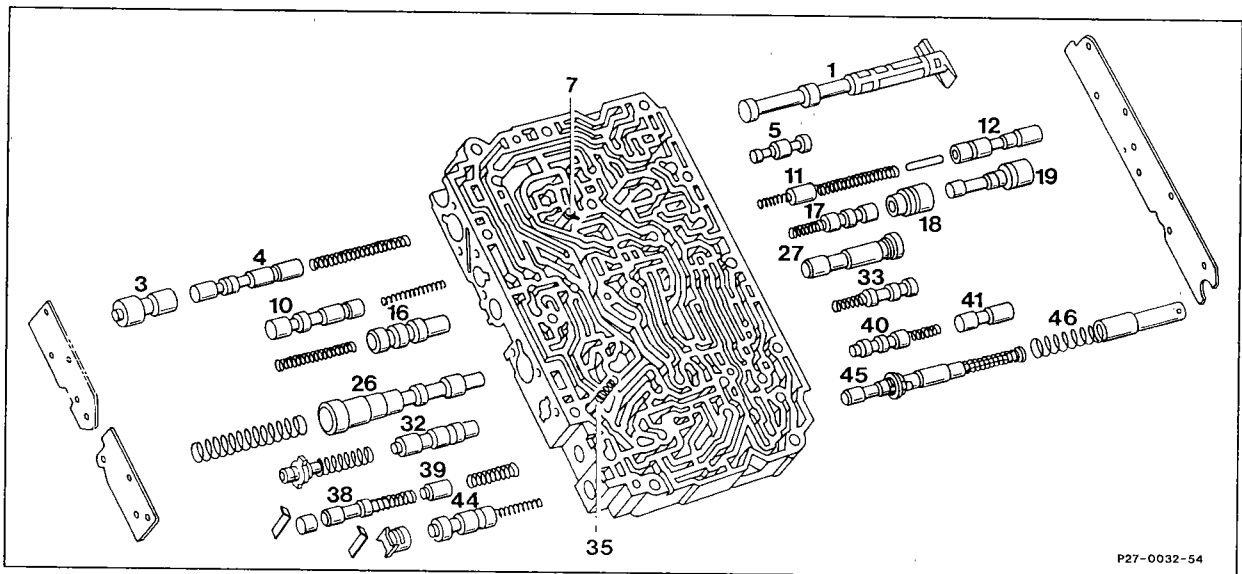
4 Remove all 18 or 19 valve balls (14). The valve ball marked with 14 is on a conical spring.

5 Remove valves, filter and shift pin.



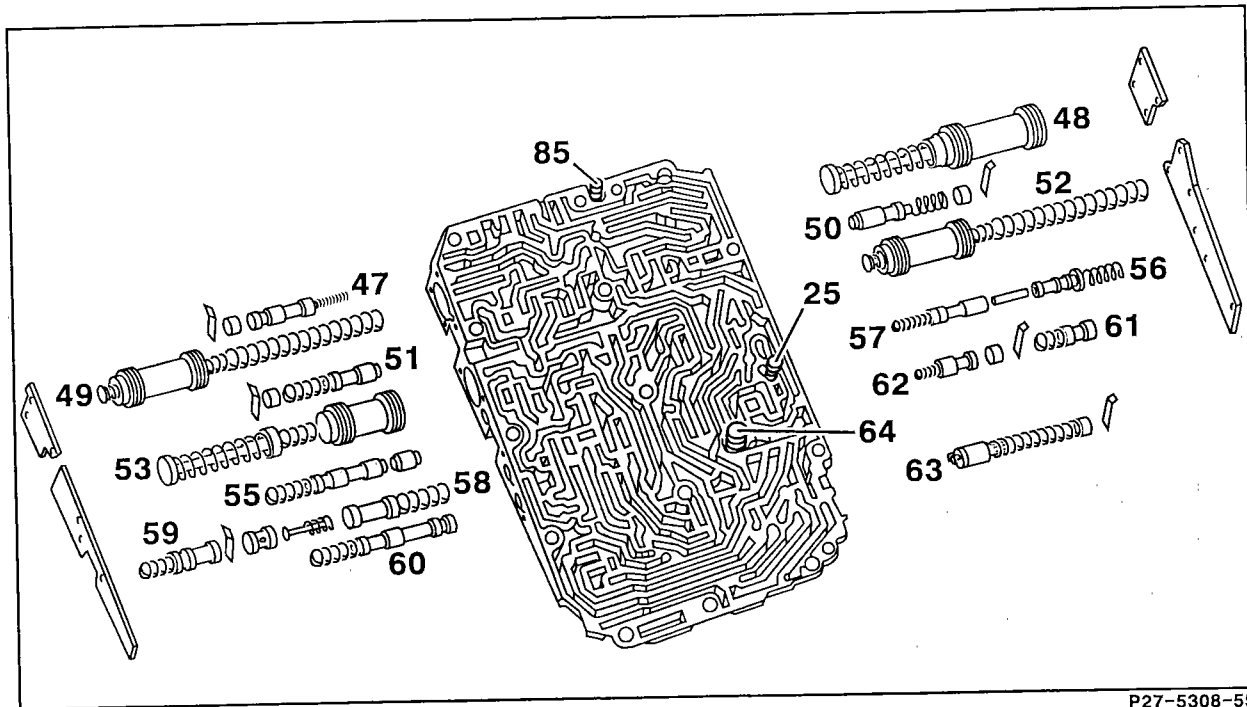
- | | | | |
|-----|-------------------------------|----|---------------------------------|
| A1 | Selector valve | 35 | Shift pin, lubricating pressure |
| 7 | Blocking valve K1 | 54 | Non-return valve |
| 9 | Non-return valve without bore | 81 | Strainer |
| 14 | Valve balls (x18) | 87 | Throttle valve K2 |
| 14a | Pressure valve | | |

6 If required, unscrew side cover from shift valve housing, check piston and slide valve for ease of movement and chips.



- | | | | |
|----|--------------------------------------|----|--|
| 1 | Selector valve | 26 | Control valve – operating pressure |
| 3 | Piston of command slide valve 2-3 | 27 | Plug of shift valve – kickdown |
| 4 | Command slide valve 2-3 | 32 | Control valve – full throttle |
| 5 | Control valve – converter adaptation | 33 | Shift valve B2 |
| 7 | Blocking valve K1 | 35 | Lubricating pressure shift pin |
| 10 | Shift valve B1 | 38 | Control valve B1 |
| 11 | Piston of command slide valve 3-4 | 39 | Piston of control valve B1 |
| 12 | Command slide valve 3-4 | 40 | Shift valve – kickdown |
| 16 | Control valve – basic pressure | 41 | Shift valve – governor pressure |
| 17 | Command slide valve 1-2 | 44 | Booster slide valve – governor pressure |
| 18 | Sleeve of command slide valve 1-2 | 45 | Regulator valve – control pressure |
| 19 | Piston of command slide valve 1-2 | 46 | Piston of regulator valve – control pressure |

7 If required, unscrew side cover from sensor housing, check piston and slide valve for accuracy and chips.

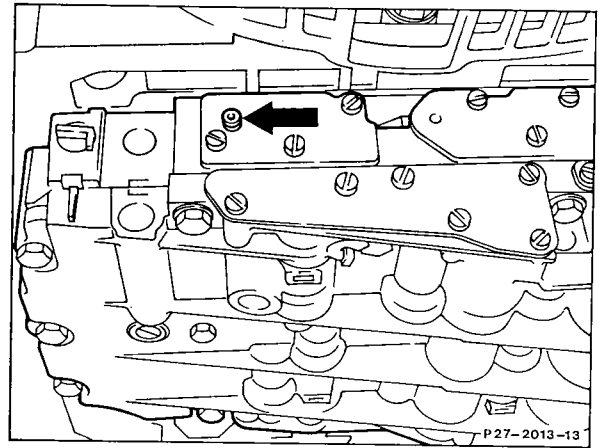


P27-5308-55

- | | | | |
|----|--|----|---------------------------------------|
| 25 | Valve – gauge pressure (modulating pressure) | 57 | Control valve – sensor B1 |
| 47 | Control valve – shift pressure | 58 | Control valve – sensor – switching on |
| 48 | Sensor K1 | 59 | Shift valve K2 |
| 49 | Sensor K2 | 60 | Release valve B2 |
| 50 | Control valve – sensor K1 | 61 | Blocking valve of brake circuit |
| 51 | Control valve – sensor K2 | 62 | Blocking valve RV1 |
| 52 | Sensor B1 | 63 | Sensor – kickdown |
| 53 | Sensor – switching on | 64 | Lubricating pressure valve |
| 55 | Blocking valve RV2 | 85 | Pressure reduction valve K1 |
| 56 | Shift valve – overrun | | |

Note: Depending on the transmission or vehicle model, the springs are installed upstream or downstream of the slide valve. Therefore, when disassembling from the shift valve housing or mounting housing, pay attention to the order in which the slide valve and springs are installed.

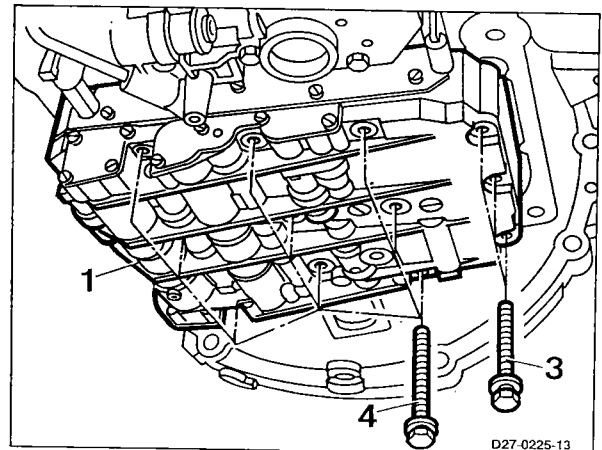
8 The arrow shows the position of the hexagon socket bolt for the full throttle control pressure. Clockwise direction of rotation causes earlier full load or kick-down upshifting. The opposite direction of rotation causes a later upshifting.



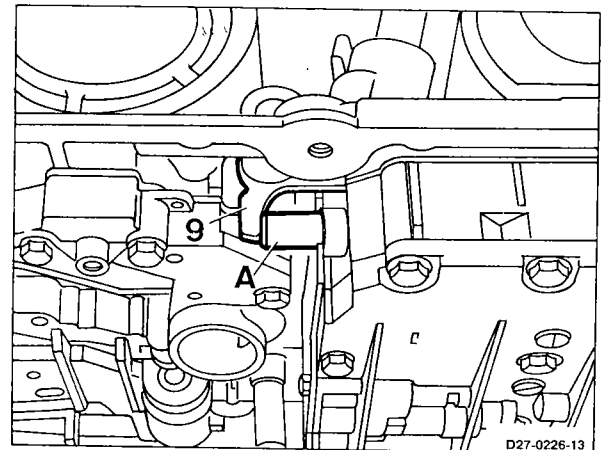
Installation

Note: Clean all parts and sealing surfaces carefully. During assembly always ensure the utmost cleanliness. Only use a non-fluff cloth for cleaning.

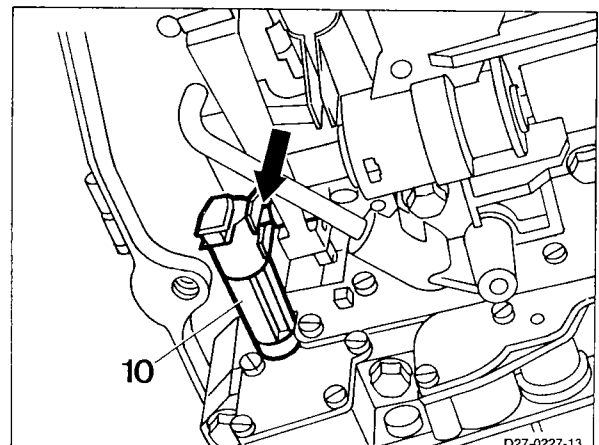
1 Mount shift valve housing (1) and tighten hexagon bolts (3/4) to 8 Nm.



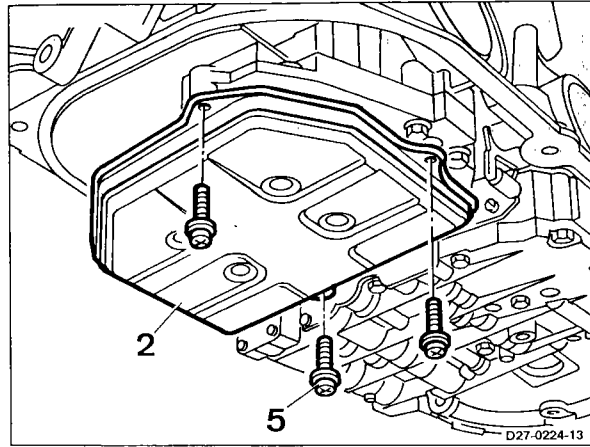
Note: The piston for the control pressure control valve (A) must rest against the reversing lever (9).



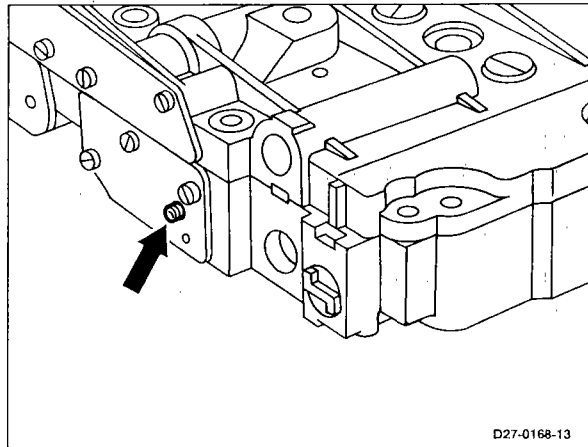
Note: The range selector lever (10) must engage in the follower (arrow) of the detent plate.



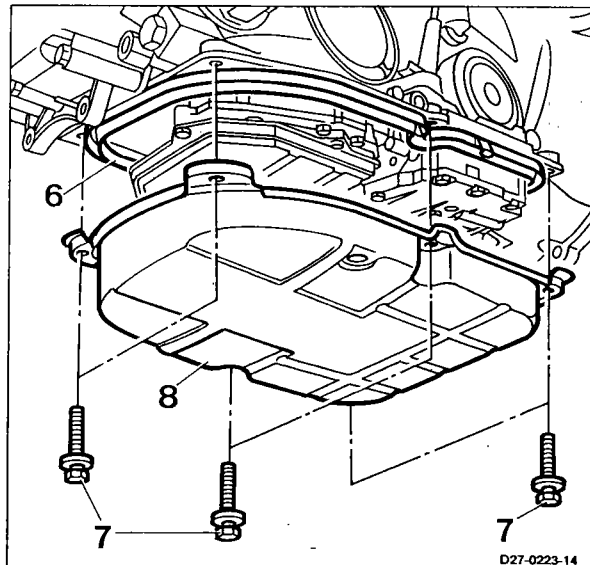
- 2 Mount oil filter (2) and tighten Phillips screws (5) to 4 Nm.



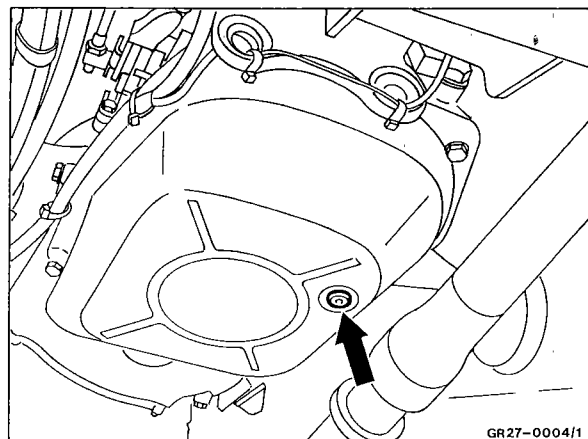
Note: The adjusting screw (arrow) is for the fine adjustment of the control pressure in the full load range. **The fine adjustment can only be carried out in the production on the test stand.**



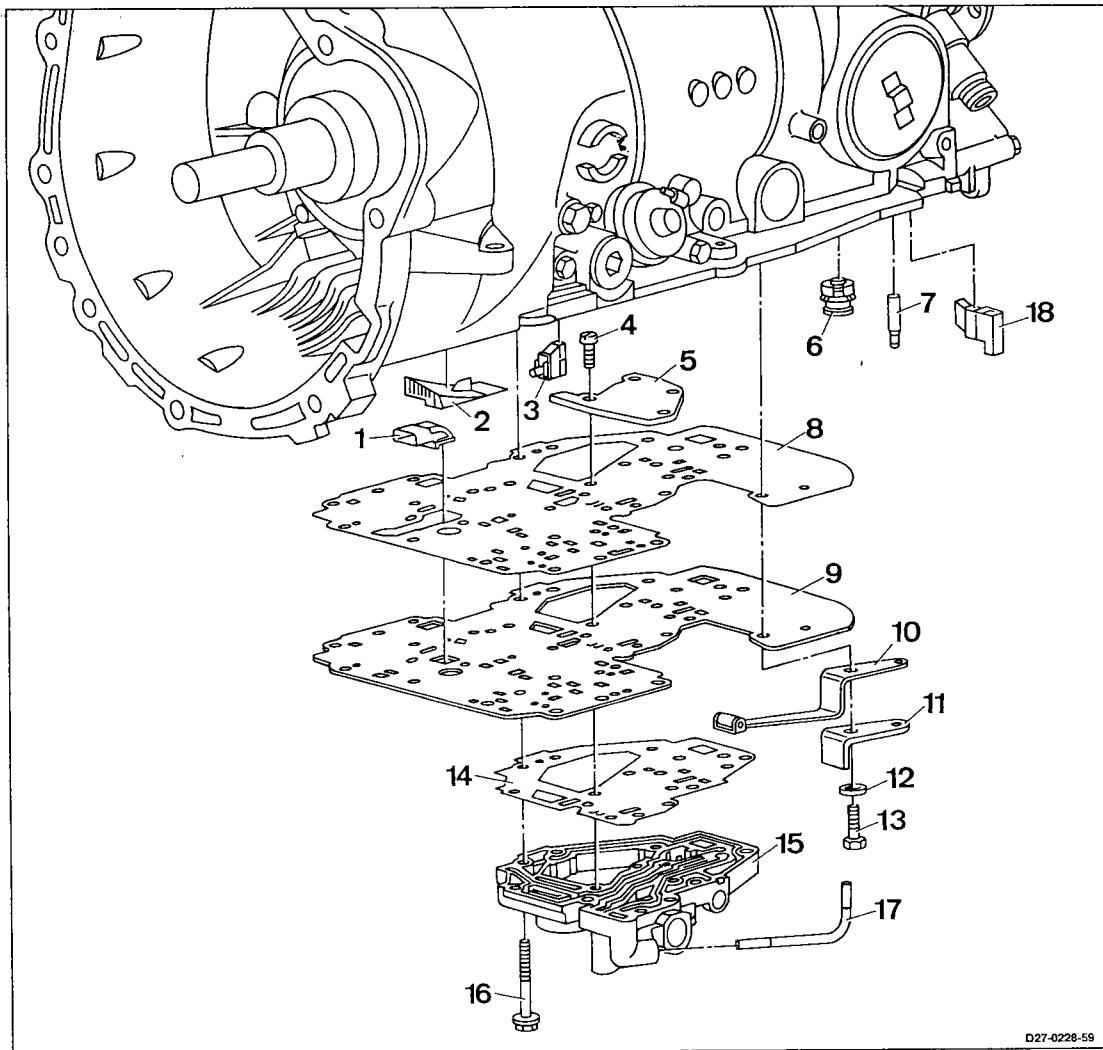
- 3 Mount oil pan (8) with new seal (6) and tighten hexagon bolts (7) to 7 Nm.
4 Attach new cable binders.



- 5 Tighten drain screw with new sealing ring.
6 Fill gear oil through filler funnel with filter.
S 126 589 12 63 00
7 Check oil level (maintenance manual, Job item 2710).



Tightening torques

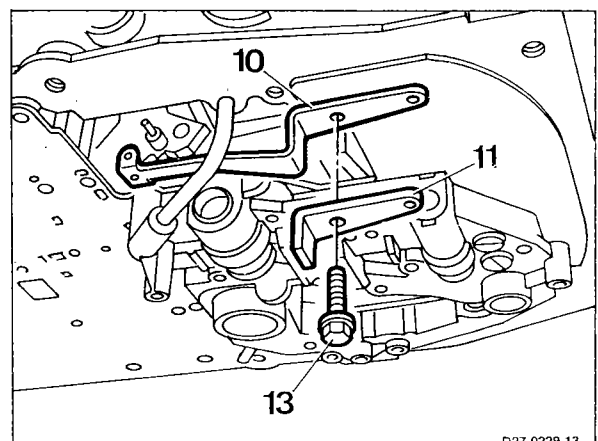


Item no.	Designation	Nm
4	Slotted-head screw	8
13	Hexagon bolt	8
16	Hexagon bolts	8

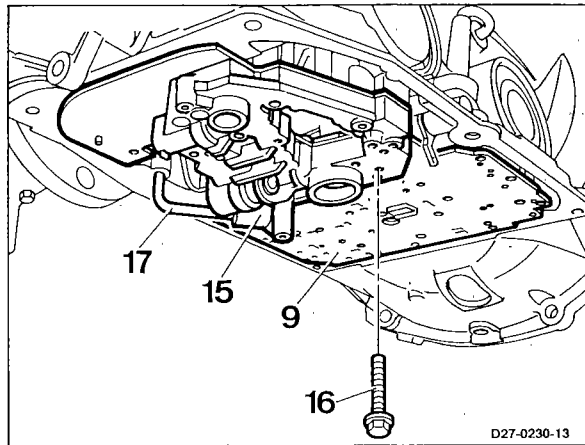
Removal

Note: Remove shift valve housing, refer to 4.8/1.

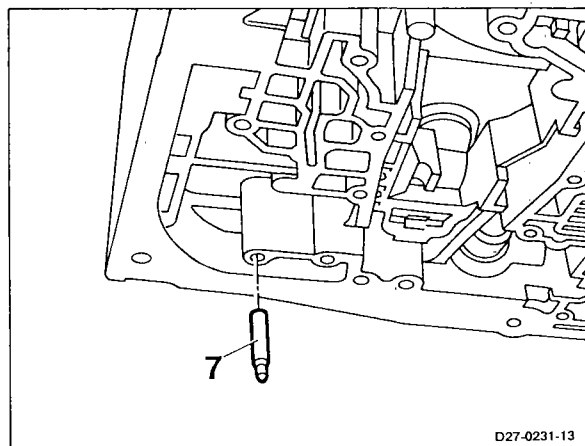
1 Unscrew hexagon bolt (13) and remove bracket (11) with leaf spring (10).



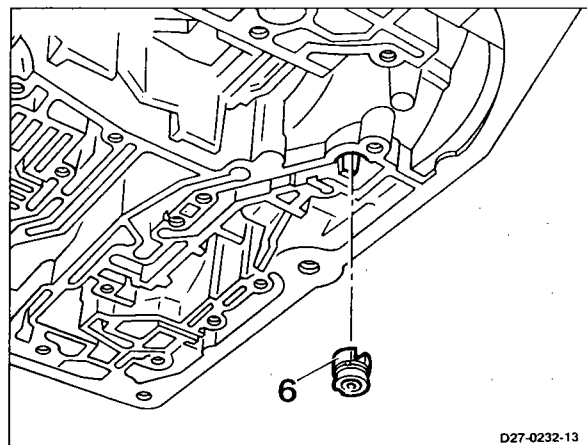
- 2 Unscrew hexagon bolts (16).
- 3 Lift off lower cover (15) with intermediate plate (9) lift and pull out oil pipe (17).



- 4 Remove locating pin (7).
- Caution:** Locating pin may drop out.

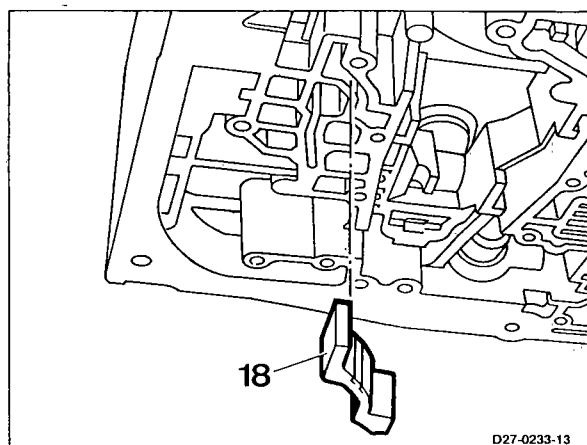


- 5 Remove one-way valve (6).

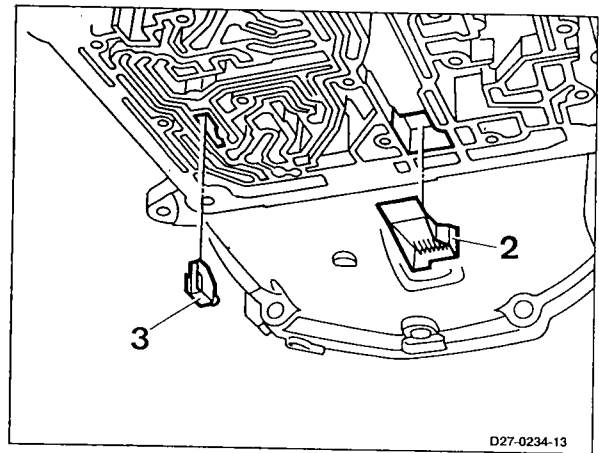


- 6 Remove filler piece (18).

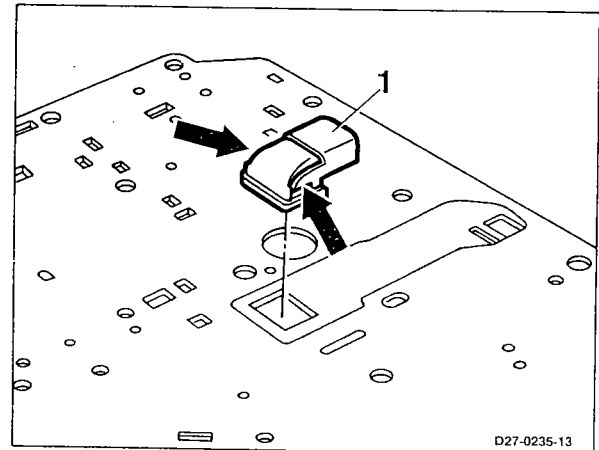
Note: The filler piece is installed up to transmission end no. 34 22 000.



7 Pull out oil deflector piece (2) and temperature reactor (3).

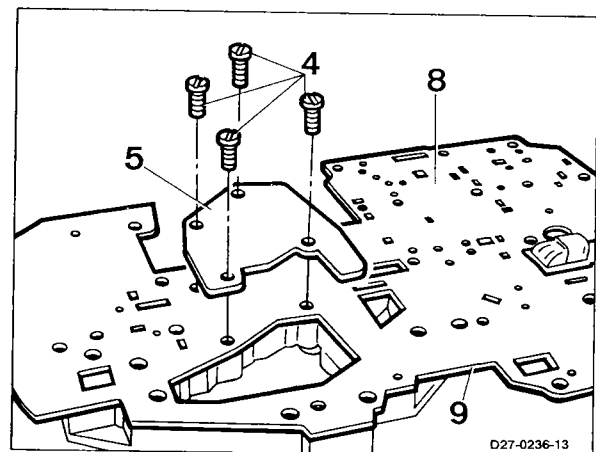


8 Press out injector (1) via the underside of the intermediate plate by pressing the straps (arrows) together.

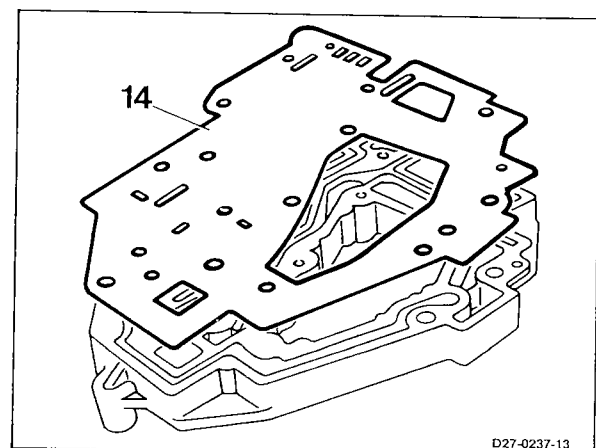


9 Unscrew slotted-head screws (4) and remove cover plate (5).

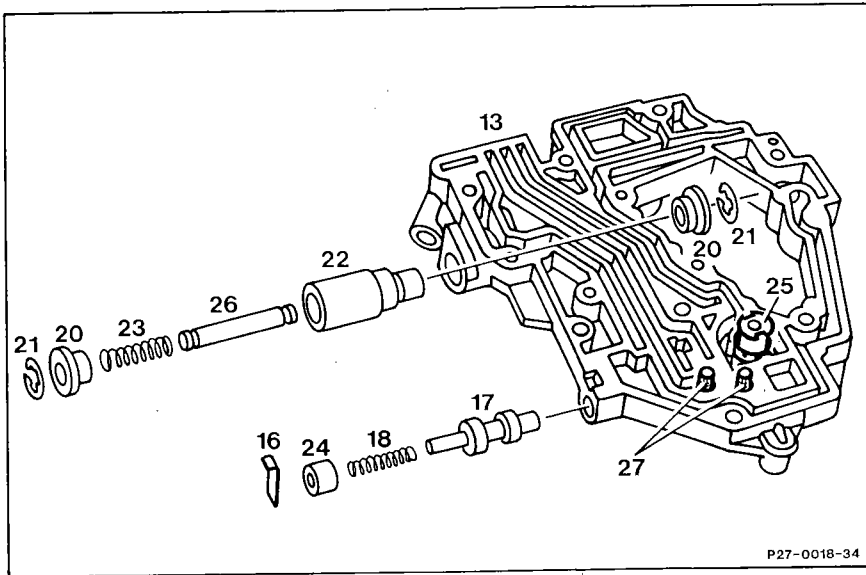
10 Remove seal (8) and intermediate plate (9).



11 Remove seal (14) of lower cover.



Disassembly and assembly of lower cover

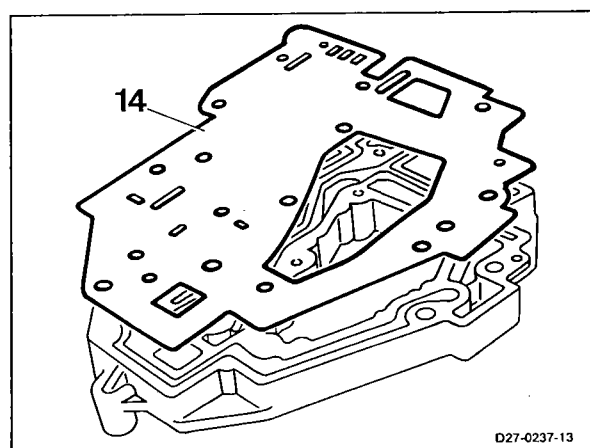


- | | | | |
|----|-------------------------------|----|----------------|
| 13 | Lower cover | 22 | Blocking valve |
| 16 | Retaining plate | 23 | Spring |
| 17 | Shift valve of secondary pump | 24 | Stopper |
| 18 | Spring | 25 | Valve |
| 20 | Bushing | 26 | Pin |
| 21 | Retainer | 27 | Strainer |

Installation

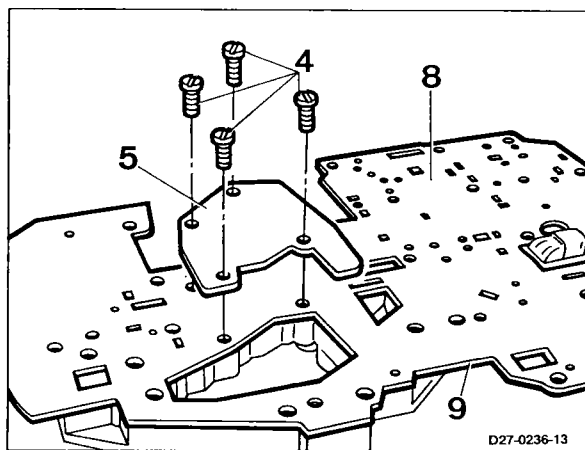
Note: Prior to installation the slide valves must be lubricated with ATF oil. Check for ease of movement when inserting.

- 1 Place new seal (14) on lower cover.

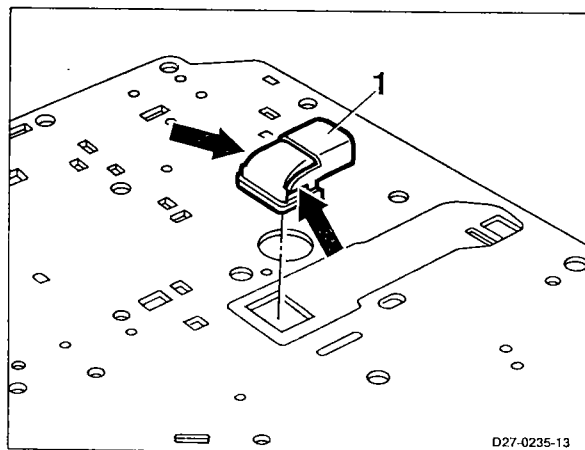


2 Mount seal (8) and intermediate plate (9) on lower cover.

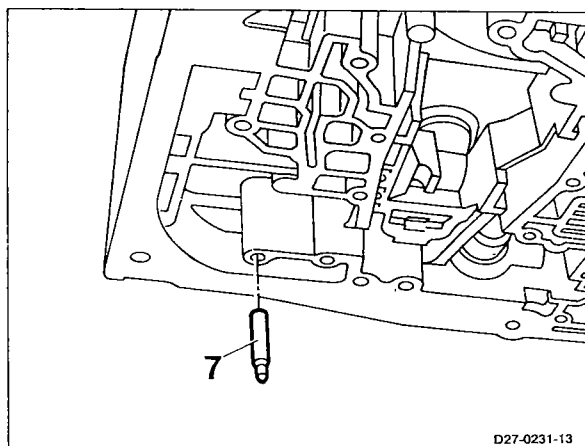
3 Mount cover plate (5) and tighten slotted-head bolts (4).



4 Install injector (1) via the underside of the intermediate plate by pressing the straps together (arrows).

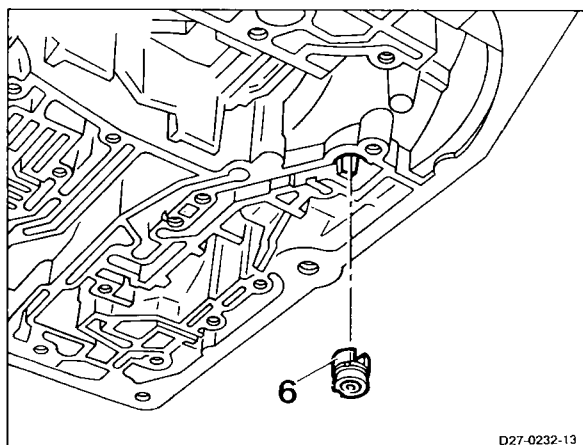


5 Insert locating pin (7).

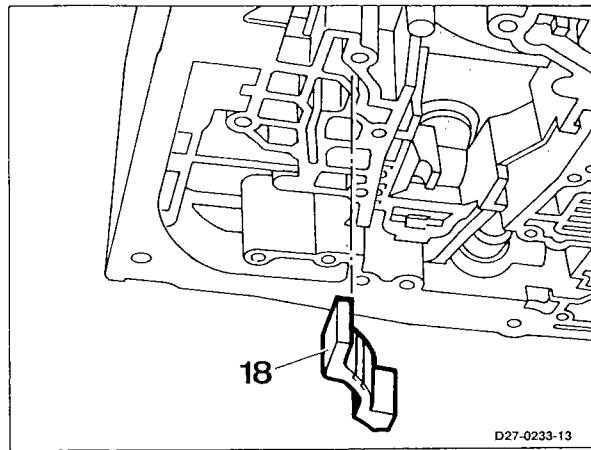


6 Insert one-way valve (6).

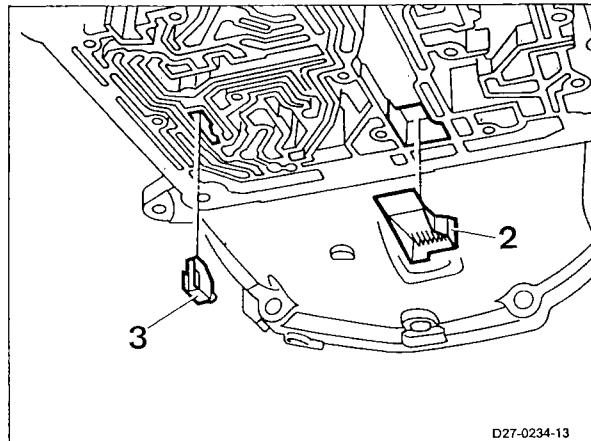
Note: The filler piece is installed up to transmission end no. 34 22 000.



7 Insert filler piece (18).

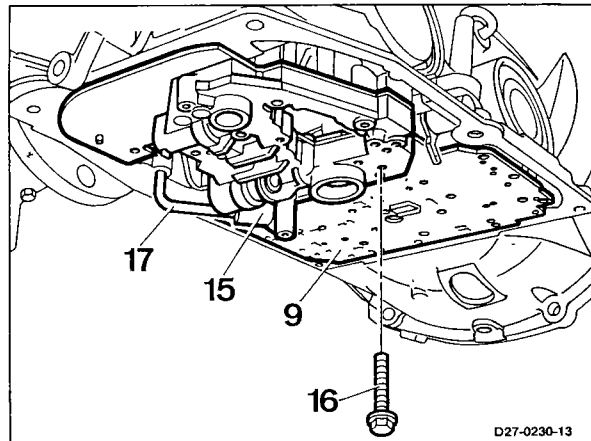


8 Insert oil deflector piece (2) and temperature reactor (3).

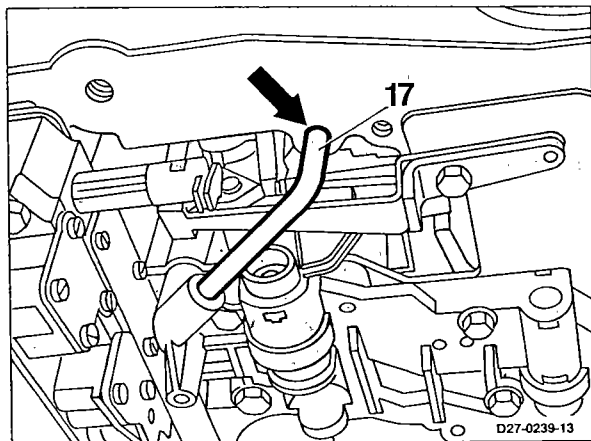


9 Mount lower cover (15) with intermediate plate (9) and oil pipe (17).

10 Tighten hexagon bolts (16) to 8 Nm.

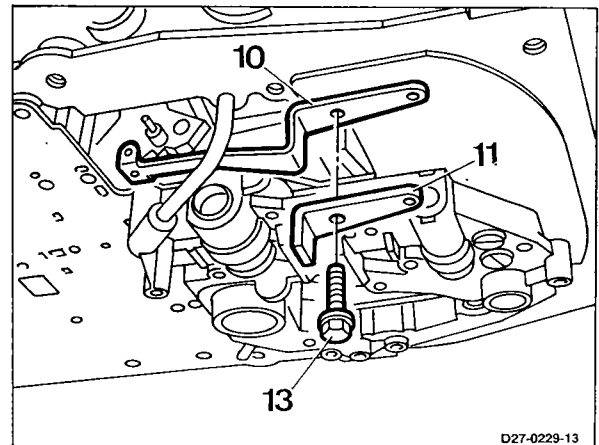


Note: Before tightening the lower cover, make sure that the oil pipe (17) is inserted in the bore (arrow), free of tension.

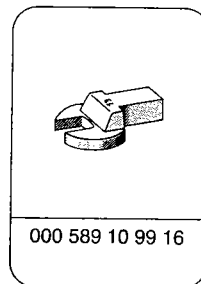
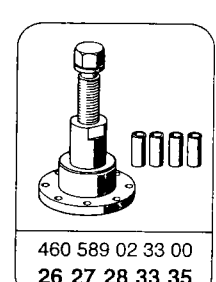
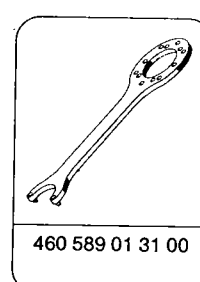
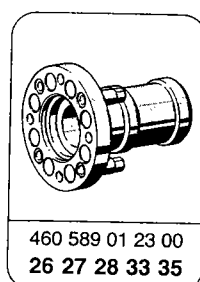
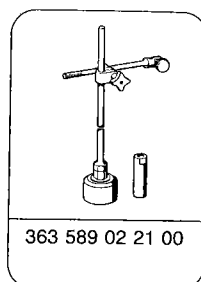
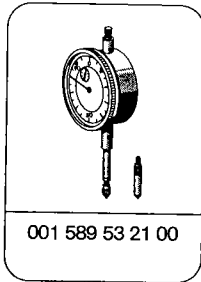


11 Mount bracket (11) with leaf spring (10) and tighten hexagon bolt (13) to 8 Nm.

12 Install shift valve housing, refer to 4.8/1.



Special tools 



Test values

Overall concentricity deviation at the flange	mm	< 0,07 ¹⁾
1) In event of complaints due to noise, aim for 0,04 mm.		


Tightening torques

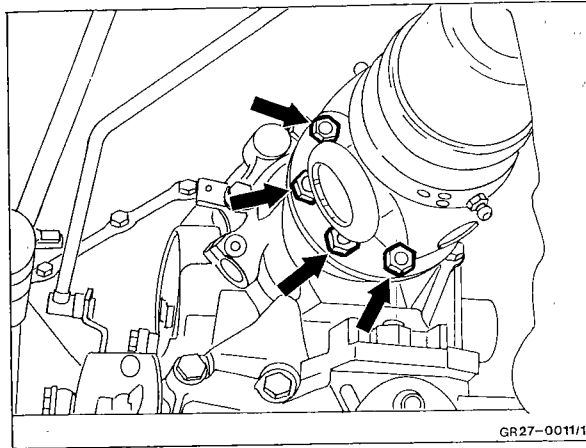
Designation	Nm
Flange to main shaft	120 ± 12
Flange to propeller shaft	35

Testing – up to transmission no. 36 84 000


Note: Carry out this test in the event of complaints caused by wobbling at the flanges.

1 Detach propeller shaft and attach orifice flange.

 460 589 01 23 00




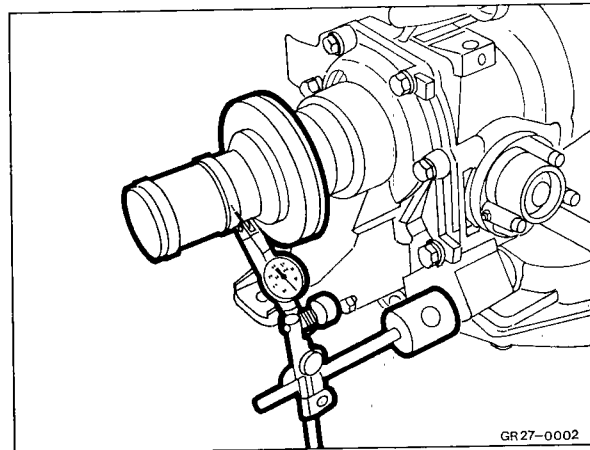
2 Attach dial gauge and bracket to the transmission housing.

 001 589 53 21 00
363 589 02 21 00

3 Check the overall concentricity deviation < 0,07 mm at the front measuring surface.

4 If the **dimension is not** attained, detach the flange with the retaining wrench and puller.

 460 589 01 31 00
460 589 02 33 00



Note: Once the dimension of 0,07 mm is exceeded, detach the flange. Turn the flange and install again.

180° after first measuring procedure

90° after second measuring procedure


180° after third measuring procedure

This procedure is called „matching“ and is to be repeated max. 3 times. If the specified value is not attained using this method, replace the flange.

In unfavourable tolerance position of the gearing, heat the flange to 170°C and bring with nut to contact surface. After cooling down tighten to 120 ± 12 Nm.

5 After test secure nut on flange.

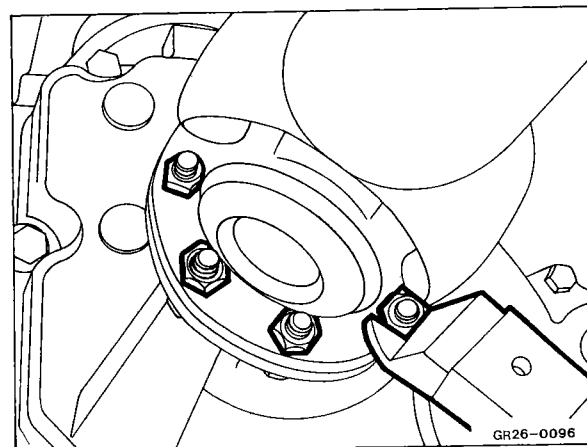
6 Mount universal-joint drive shaft and tighten to 35 Nm.

 000 589 10 99 16
001 589 66 21 00

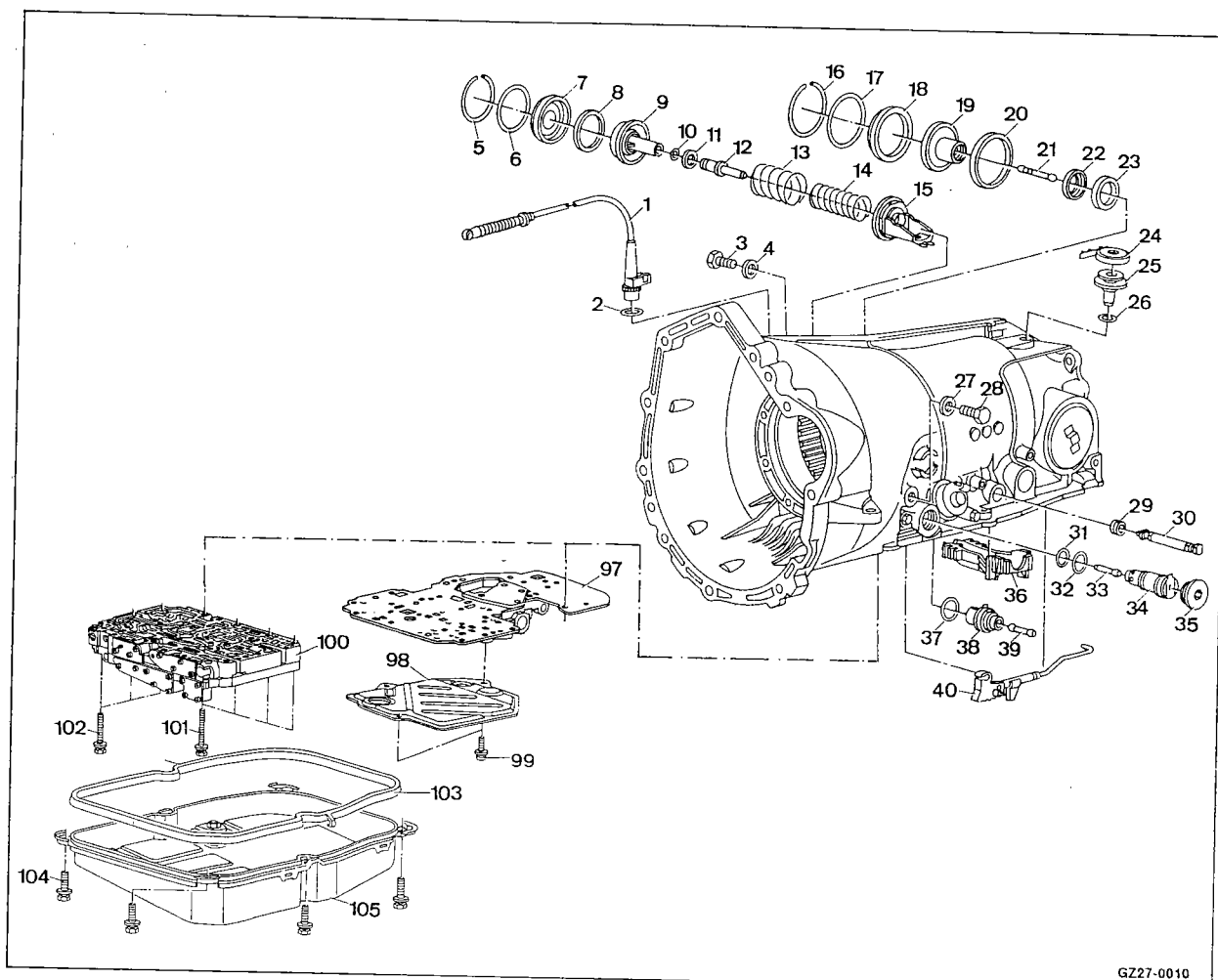
7 Apply new color markings to flanges.

yellow point at the bottom.

green point at the top.



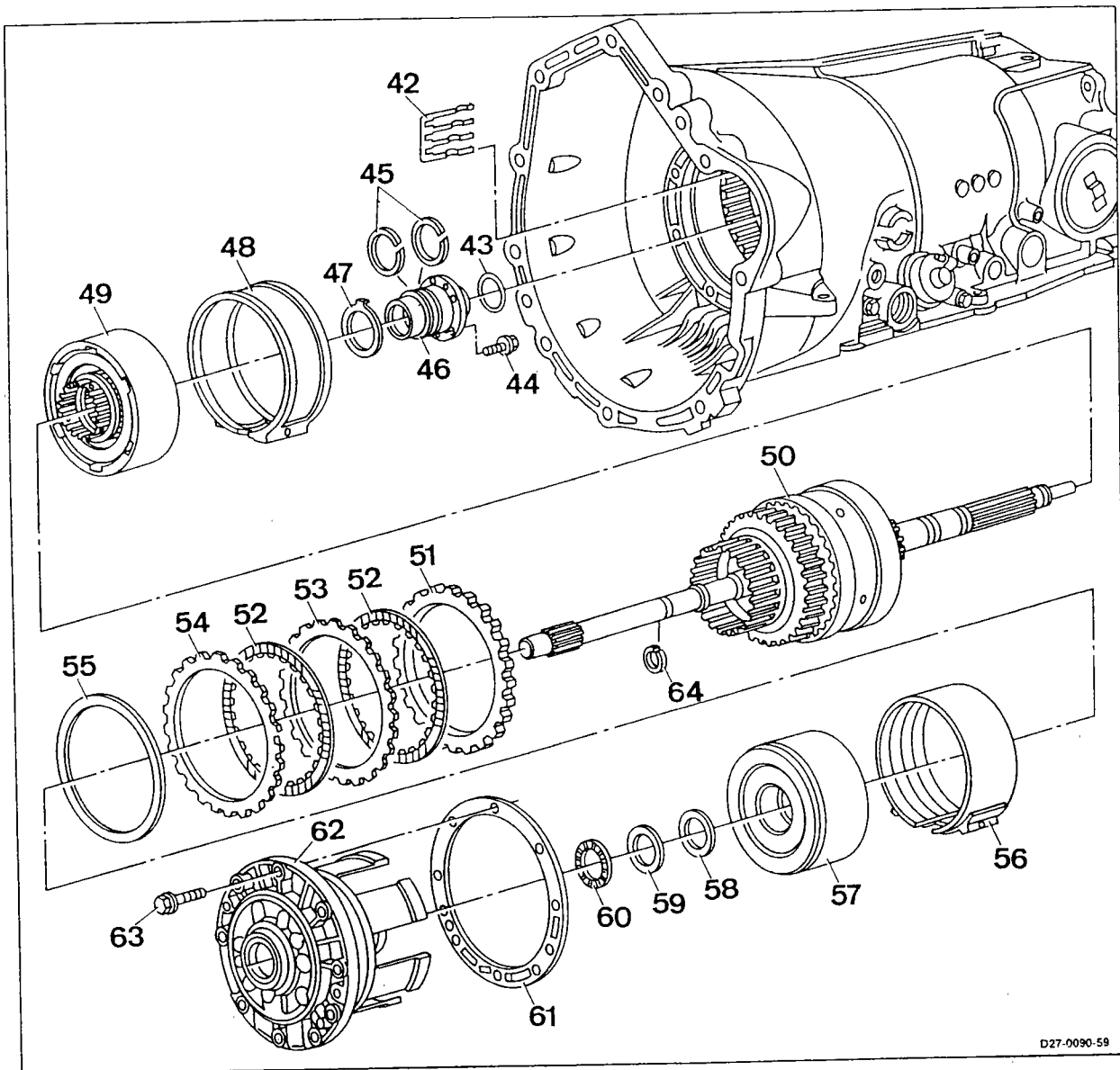
Technical data



GZ27-0010

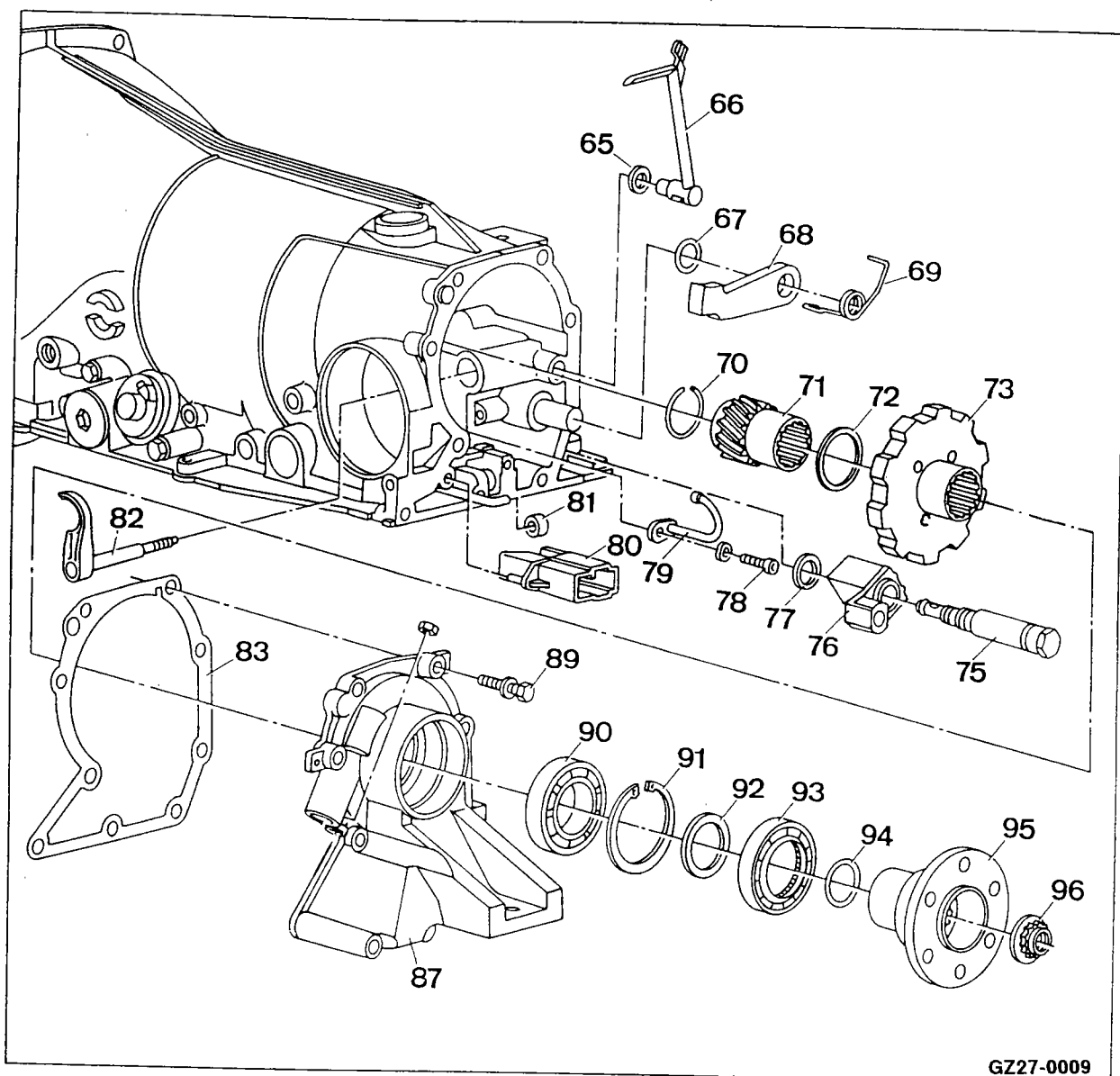
- | | | | |
|----|----------------------------|-----|---|
| 1 | Control pressure cable | 26 | Replace O-ring |
| 2 | Replace O-ring | 27 | Replace gasket |
| 3 | Screw plug – 13 Nm | 28 | Screw plug – 13 Nm |
| 4 | Replace gasket | 29 | Replace radial shaft seal |
| 5 | Snap ring | 30 | Range selector shaft |
| 6 | O-ring | 31 | Replace O-ring |
| 7 | Brake band piston cover B1 | 32 | Replace O-ring |
| 8 | Replace lip sealing ring | 33 | Thrust pin |
| 9 | Brake band piston B1 | 34 | Pressure body B1 |
| 10 | Replace sealing ring | 35 | Screw plug – 70 Nm |
| 11 | Shim ring | 36 | Brake band holder B2 |
| 12 | Thrust pin | 37 | Replace O-ring |
| 13 | Pressure spring | 38 | Pressure body B2 |
| 14 | Pressure spring | 39 | Thrust pin |
| 15 | Brake band holder B1 | 40 | Detent plate with linkage |
| 16 | Snap ring | 97 | Lower cover with intermediate plate |
| 17 | Replace O-ring | 98 | Oil filter |
| 18 | Brake band piston cover B2 | 99 | Phillips screw – 4 Nm |
| 19 | Brake band piston B2 | 100 | Shift valve housing with sensor housing |
| 20 | Check Teflon ring | 101 | Hexagon bolt M6x55 – 8 Nm |
| 21 | Thrust pin | 102 | Hexagon bolt M6x50 – 8 Nm |
| 22 | Plastic guide ring | 103 | Seal |
| 23 | Replace lip sealing ring | 104 | Hexagon bolt – 8 Nm |
| 24 | Ventilation cover | 105 | Oil pan |
| 25 | Ventilation part | | |

Technical data



- | | | | |
|----|-------------------------|----|---------------------------------|
| 42 | Damping spring | 54 | Check steel disk |
| 43 | Replace O-ring | 55 | Cup springs |
| 44 | Hexagon bolt | 56 | Brake band B1 |
| 45 | Check Teflon rings | 57 | Clutch K1 |
| 46 | Supporting flange | 58 | Shim ring |
| 47 | Support disk | 59 | Thrust washer |
| 48 | Brake band B2 | 60 | Check axial bearing |
| 49 | Clutch K2 | 61 | Replace seal |
| 50 | Gearset | 62 | Front housing cover |
| 51 | Check steel disk | 63 | Hexagon bolts – 13 Nm |
| 52 | Check lining disks (x4) | 64 | Check lubricating pressure ring |
| 53 | Check steel disks (x3) | | |

Technical data

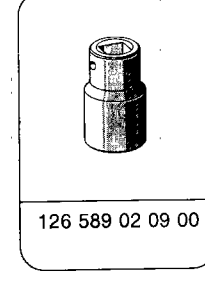
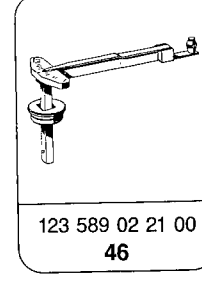
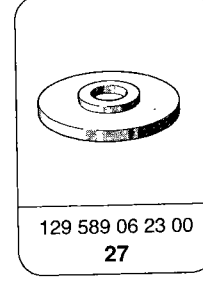
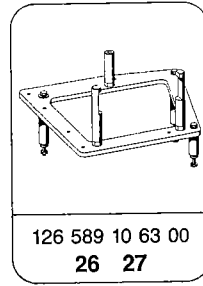
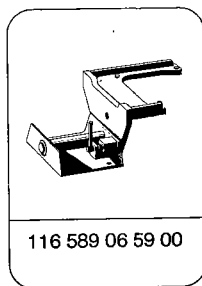
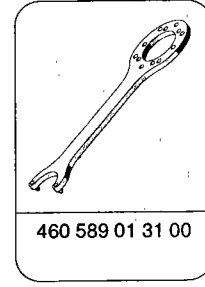
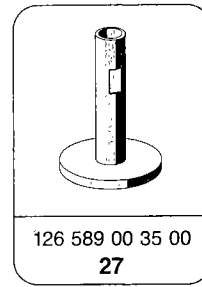
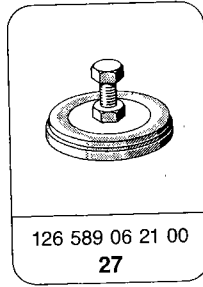
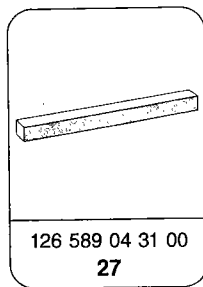
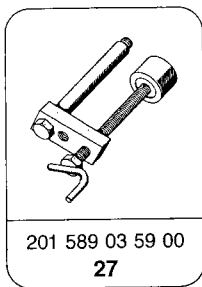


- | | | | |
|----|---|----|----------------------------------|
| 65 | Replace O-ring | 79 | Oil splash pipe |
| 66 | Oil pipe | 80 | Plastic guide |
| 67 | Thrust washer | 81 | Roller |
| 68 | Park lock ratchet | 82 | Axial support |
| 69 | Expanding spring | 83 | Replace seal |
| 70 | Snap ring | 87 | Rear cover |
| 71 | Helical gear | 89 | Hexagon bolt – 13 Nm |
| 72 | Shim ring | 90 | Check cylindrical roller bearing |
| 73 | Parking lock gear | 91 | Locking ring |
| 75 | Check solenoid valve with sealing rings | 92 | Washer |
| 76 | Solenoid | 93 | Replace radial shaft seal |
| 77 | Replace gasket | 94 | Replace O-ring |
| 78 | Hexagon socket bolt | 95 | Flange |
| | | 96 | Twelve-point collar nut – 120 Nm |

Setting values

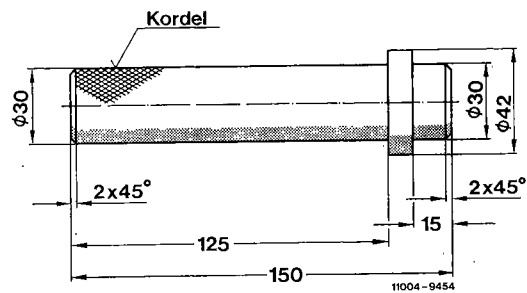
Axial clearance "B" of clutch K1	Rear housing cover assembled	0,3 to 0,5
	Rear housing cover not assembled	0,8 to 1,2
Disk clearance of brake B3		1,5 to 2,0
Free travel at brake band B1		1,8 to 2,4
Disk clearance at brake band B2		5,5 to 6,0
Clearance "C" between linkage stop and blocking piston on resilient linkage		0,4 to 1,0
Axial clearance "C" of output shaft (clutch K2)		0,4 to 0,5

Special tools 



Tool for self-assembly

Note: The drive-in drift is shop made corresponding to the specified dimensions.




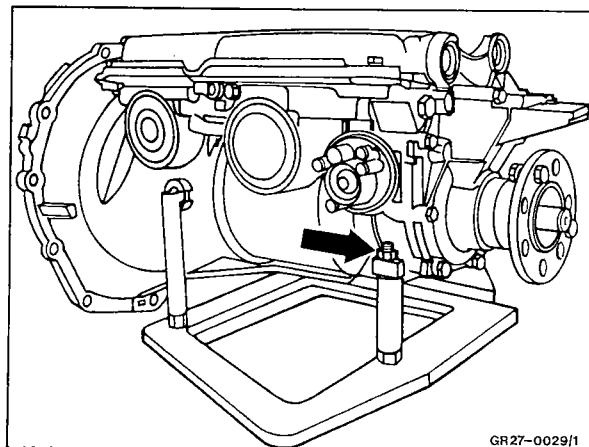
Disassembly

1 For removal of automatic transmission refer to 4.1/1.

Note: Drain off residual oil.

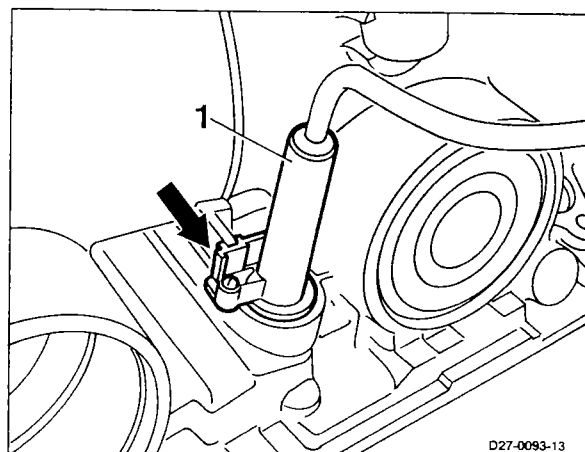
2 Bolt support plate to the assembly base. Insert automatic transmission in support plate and fasten with hexagon nut (arrow).

 116 589 06 59 00
126 589 10 63 00

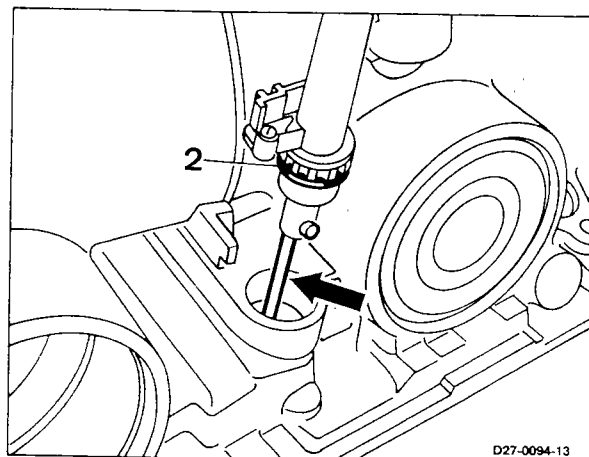


3 Press together holder (arrow) on control pressure cable (1) and disengage.

4 Pull out control pressure cable.

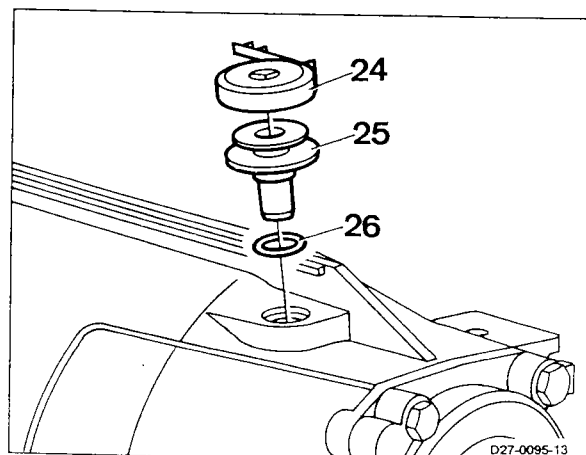


5 Disengage pull rod (arrow) and remove O-ring (2).

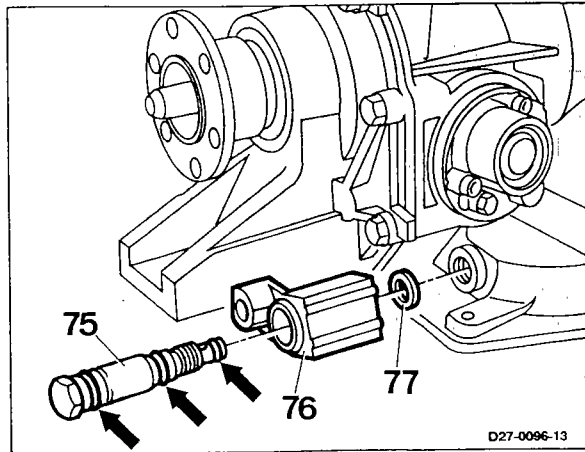


6 Remove ventilation cover (24) and ventilation part (25).

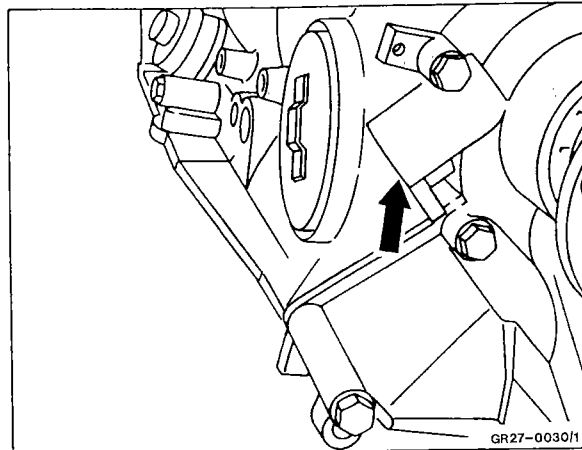
7 Remove o-ring (26).



8 Unscrew kick-down solenoid valve (75) with sealing rings (arrows) and remove solenoid (76) with gasket (77).



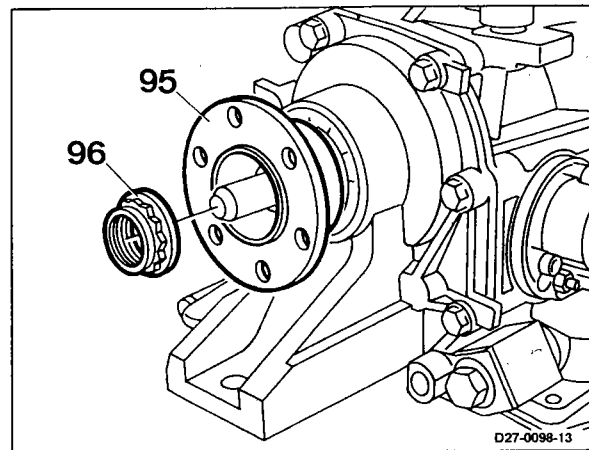
9 Check dummy plug, replace if necessary.



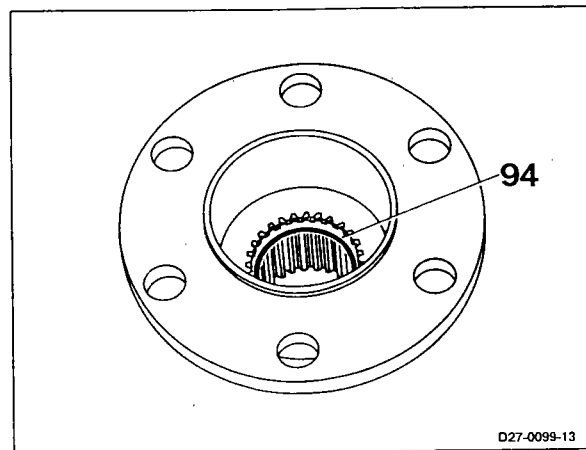
10 Unscrew twelve-point collar nut (96) and remove flange (95).

S 460 589 01 31 00

Note: From transmission no. 3 684 000 a flange for the homokinetic propeller shaft is attached.

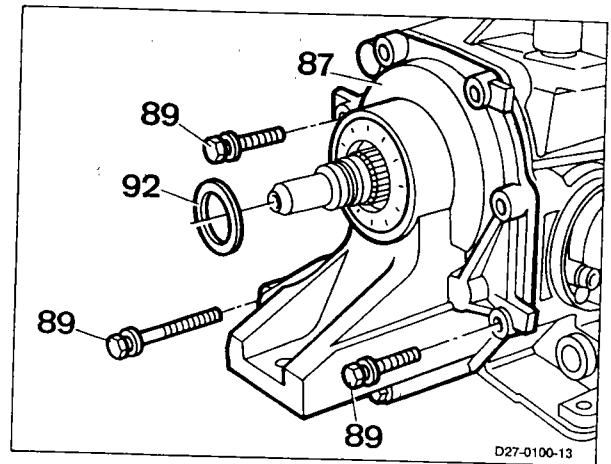


11 Remove O-ring (94) from flange.

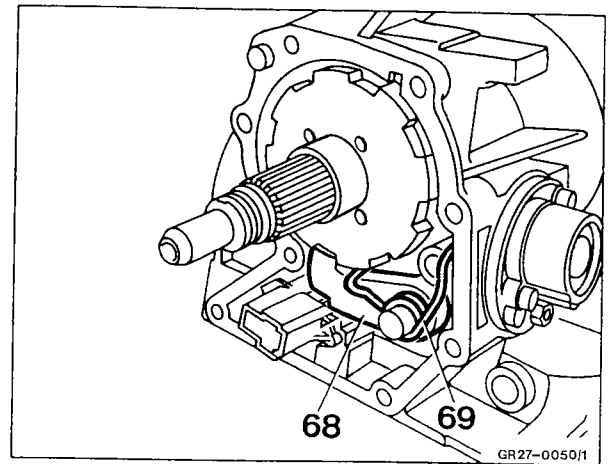


12 Remove washer (92).

13 Unscrew hexagon bolts (89) and remove rear cover (87). For disassembly and assembly of rear cover refer to 4.3/1.

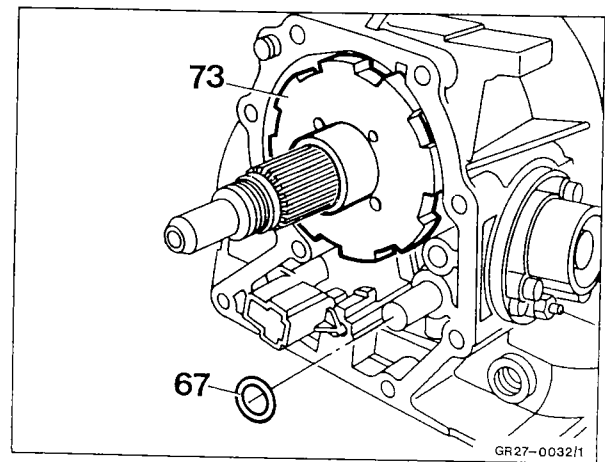


14 Remove expanding spring (69) and parking lock ratchet (68).

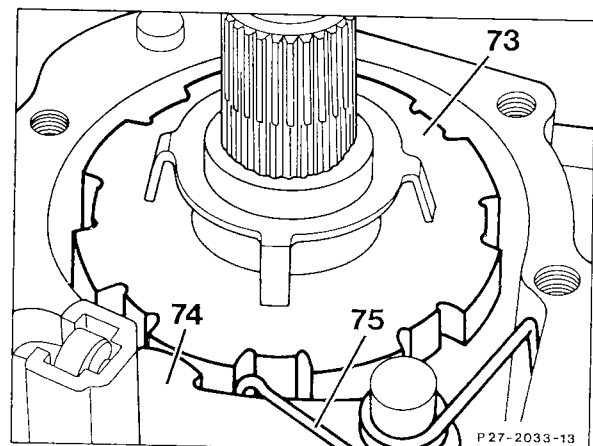


15 Remove thrust washer (67) of parking lock ratchet.

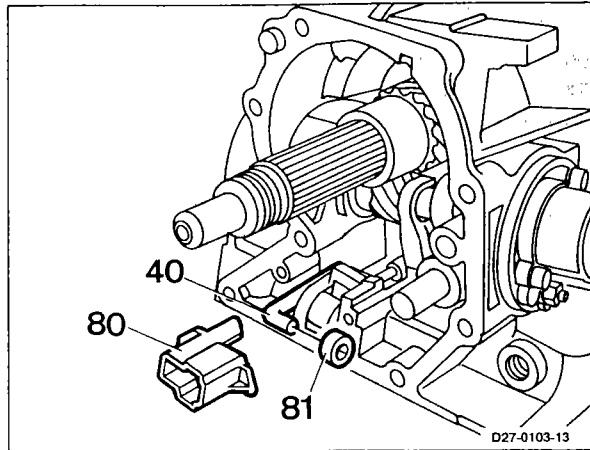
16 Remove parking lock gear (73).



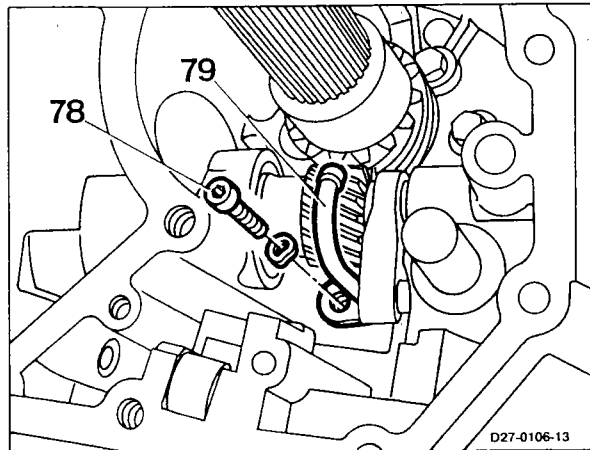
17 In vehicles with electronic speedometer, from transmission end no. 37 47 000 remove parking lock gear (73) with rotor, parking lock ratchet (74) and expanding spring (75).



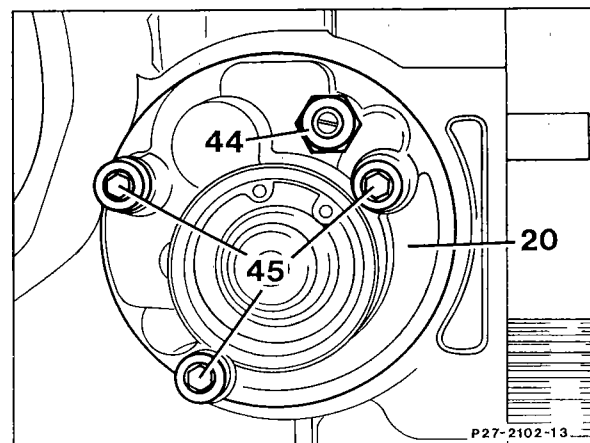
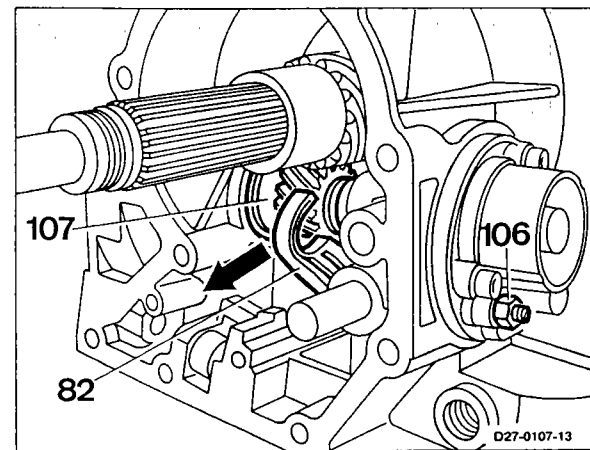
18 Remove plastic guide (80) and remove roller (81) from linkage of detent plate (40).



19 Unscrew hexagon socket bolt (78) and remove with oil pipe (79).

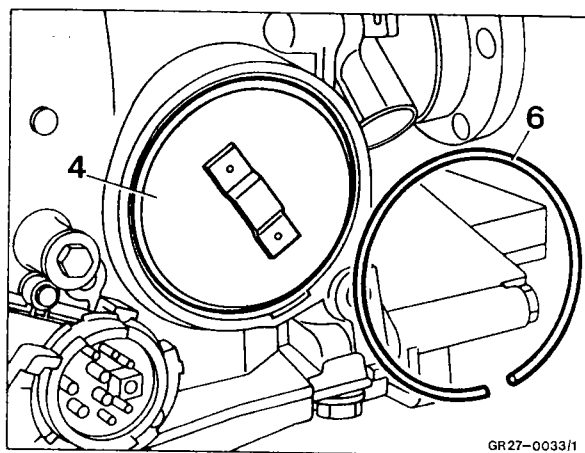


20 Release lock nut (106 or 44) and move axial support (82) away from the flyweight governor (107) using a screwdriver. (direction of arrow)

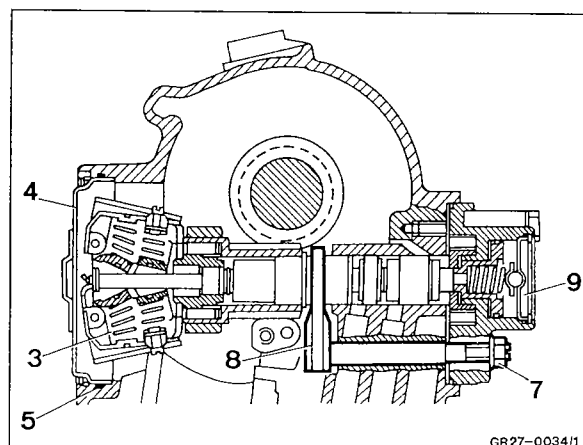


21 Lightly press in cover (4) and remove snap ring (6).

22 Pull out cover.

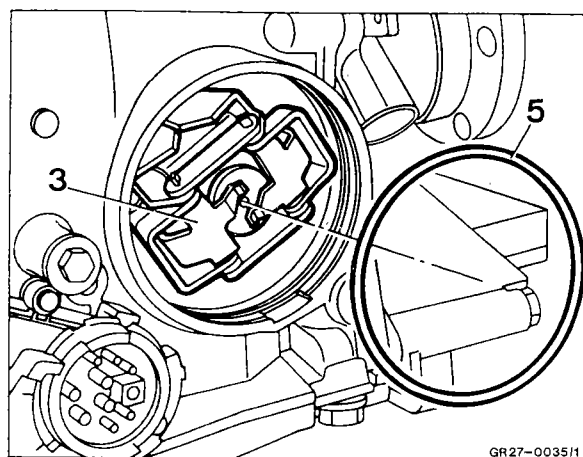


- 3 Flyweight governor
- 4 Cover
- 5 O-ring
- 7 Hexagon nut of axial support
- 8 Axial support
- 9 Secondary pump (installed up to transmission end no. 35 76 711)



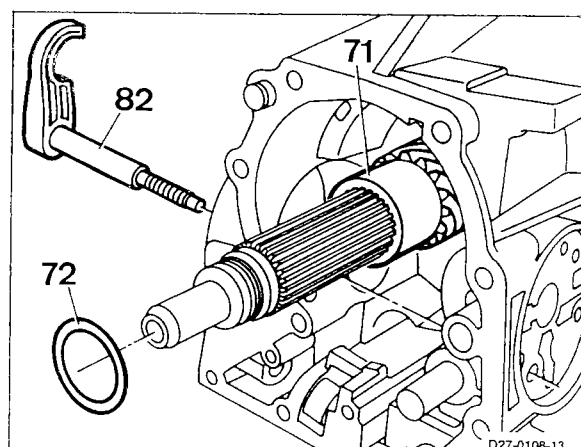
23 Remove o-ring (5).

24 Pull out flyweight governor (3) and check, refer to 4.2/1.




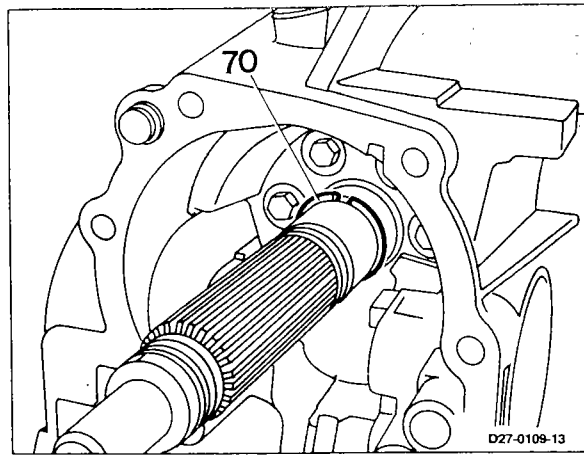
25 Remove shim ring (72).

26 Remove helical gear (71) and remove axial support (82).



27 Remove locking ring (71) with pair of pliers.

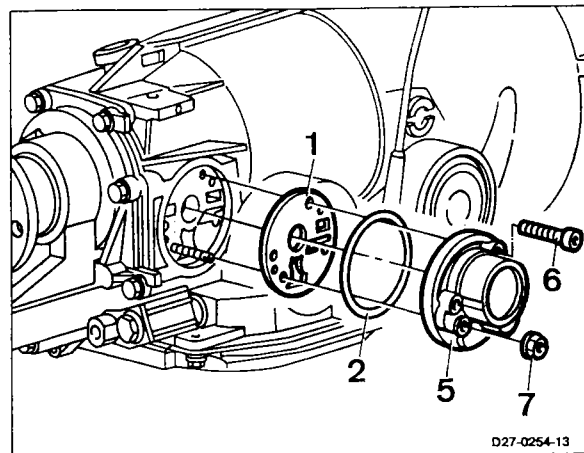
 000 589 52 37 00



28 Unscrew hexagon socket bolts (6) and remove secondary pump housing (5).

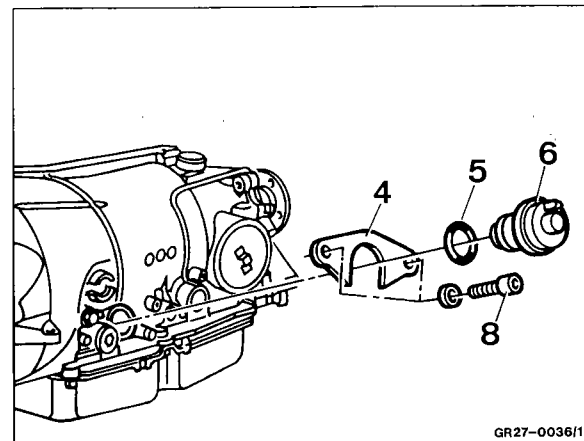
29 Remove O-ring (2) and intermediate plate (1).

30 For disassembly of secondary pump refer to 4.4/1.

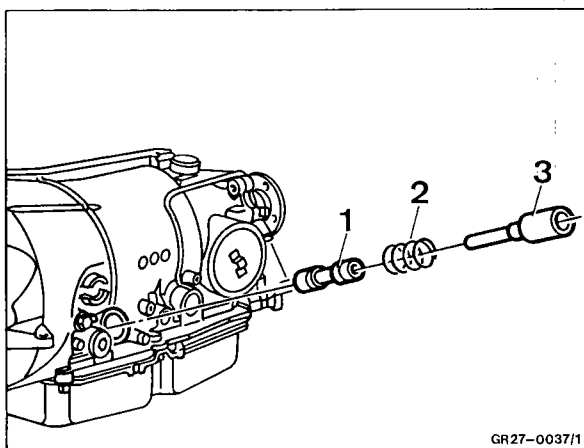


31 Unscrew hexagon socket bolts (8) on modulating aneroid box and remove retaining plate (4).

32 Pull out vacuum unit (6) with sealing ring (5).

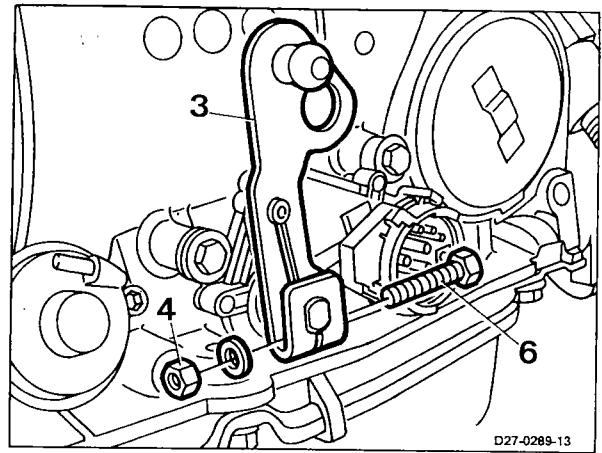


33 Pull out thrust pin (3), spring (2) and modulating pressure valve (1).

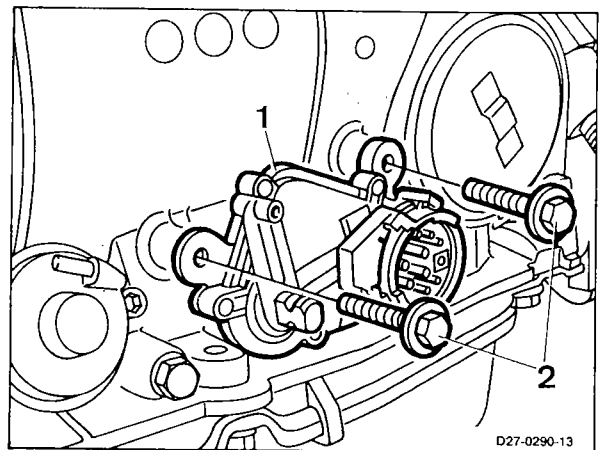


34 Unscrew hexagon bolt (6) with washer and nut (4).

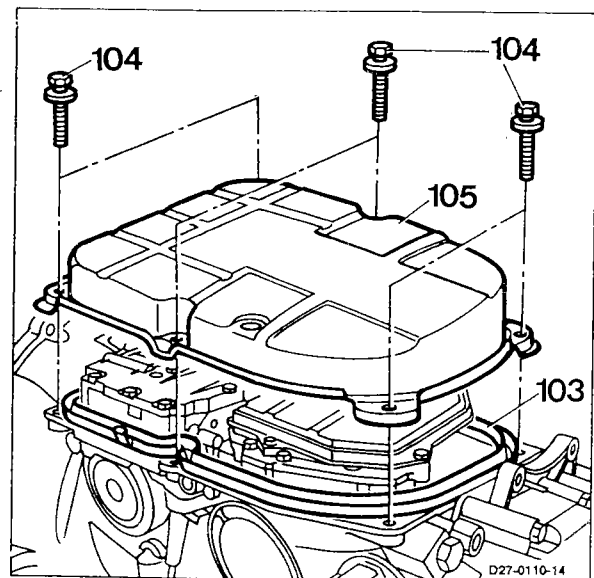
35 Remove range selector lever (3) on starter lock switch.



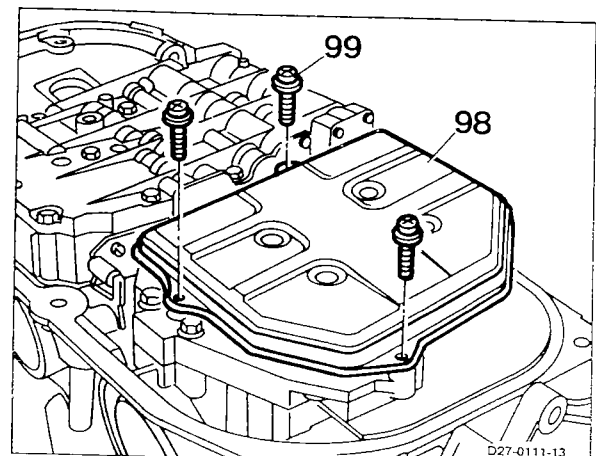
36 Unscrew hexagon bolts (2) and remove starter lock switch (1).



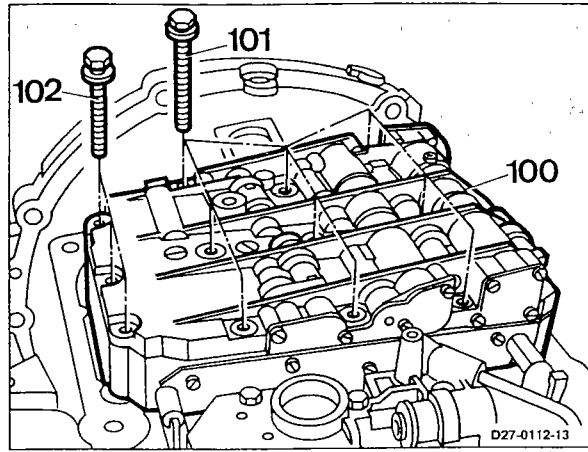
37 Unscrew bolts (104) and remove oil pan (105) with seal (103).



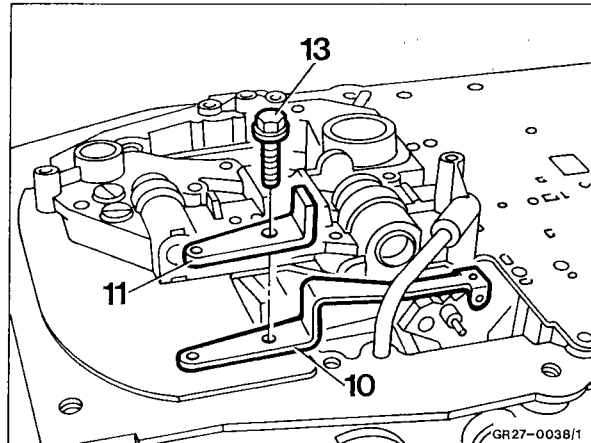
38 Unscrew Phillips screws (99) and remove oil filter (98).



39 Unscrew bolts (101/102) and remove shift valve housing (100).

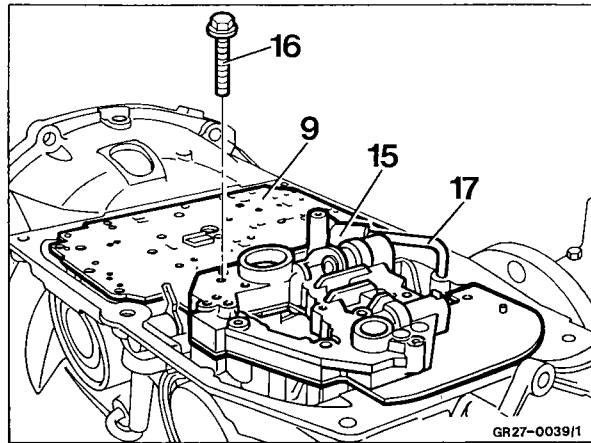


40 Unscrew hexagon bolt (13) and remove support (11) with leaf spring (10).



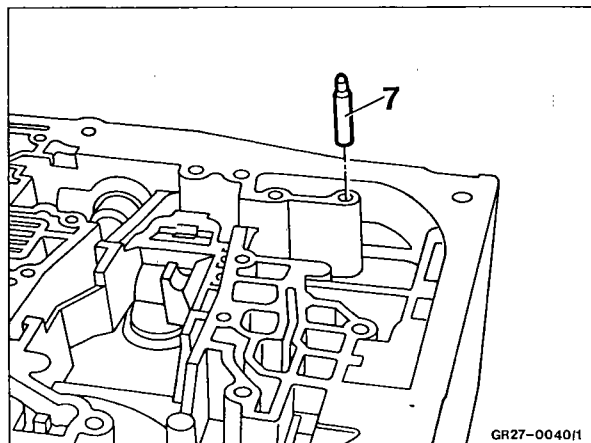
41 Unscrew bolts (16).

42 Lift lower cover (15) with intermediate plate (9) and pull out oil pipe (17).



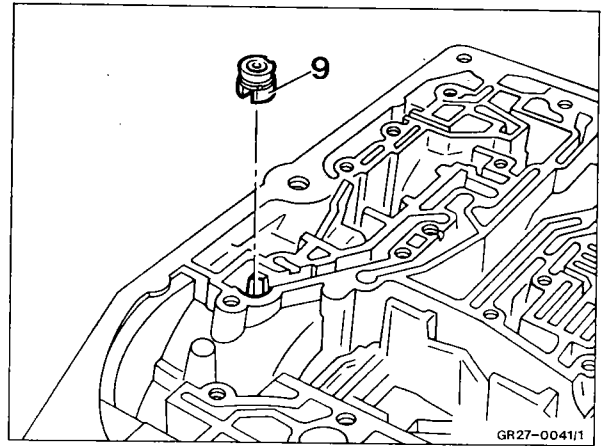
43 Remove locating pin (7).

Caution: Locating pin may drop out.



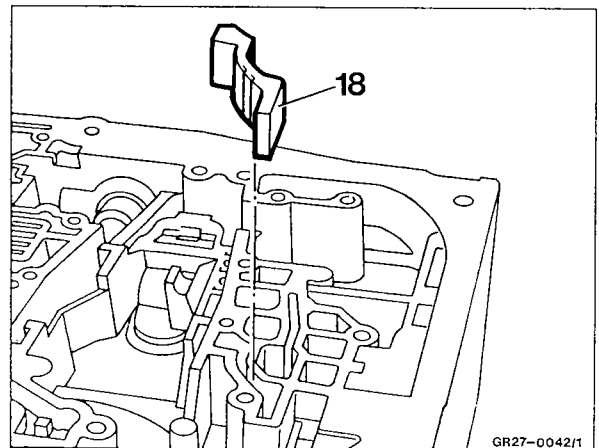
44 Remove one-way valve (9).

Note: installed up to 8/91 in combination with the secondary pump.

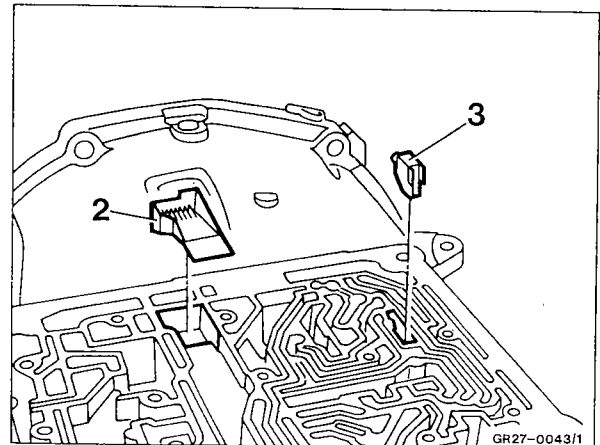


45 Remove filler piece (18).

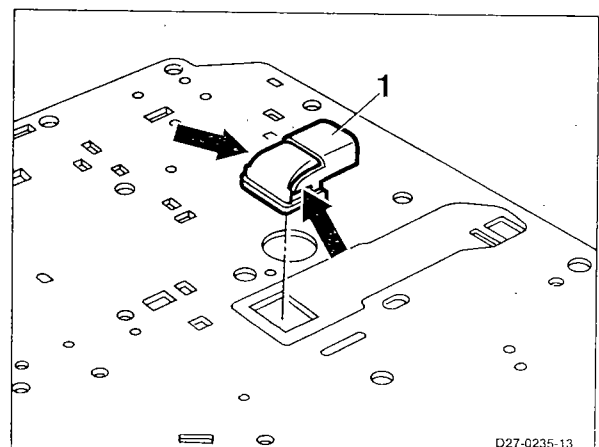
Note: The filler piece is installed up to transmission end no. 34 22 000.



46 Pull out oil deflector piece (2) and temperature reactor (3).

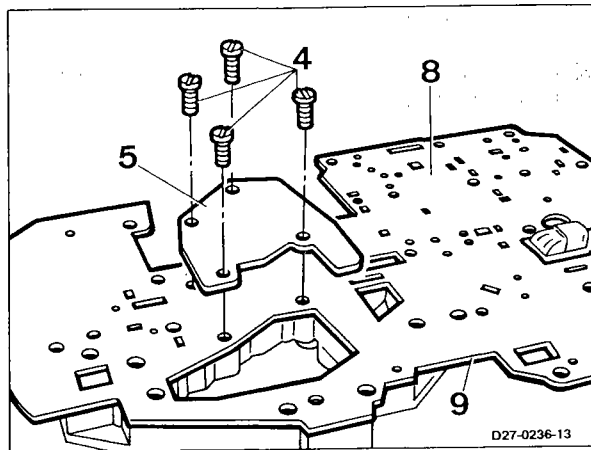


47 Press out injector (1) via the underside of the intermediate plate by pressing the straps together (arrows).

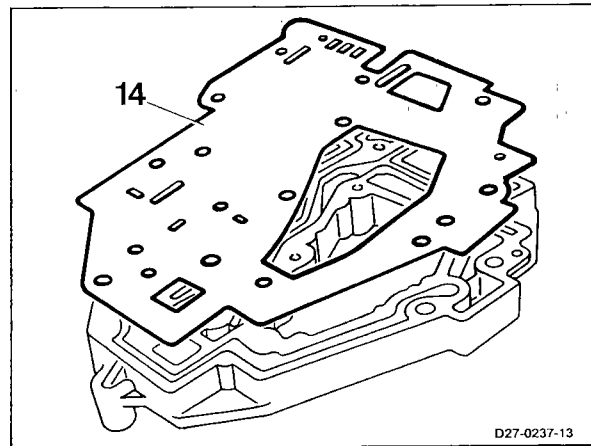


48 Unscrew slotted-head screws (4) and remove cover plate (5).

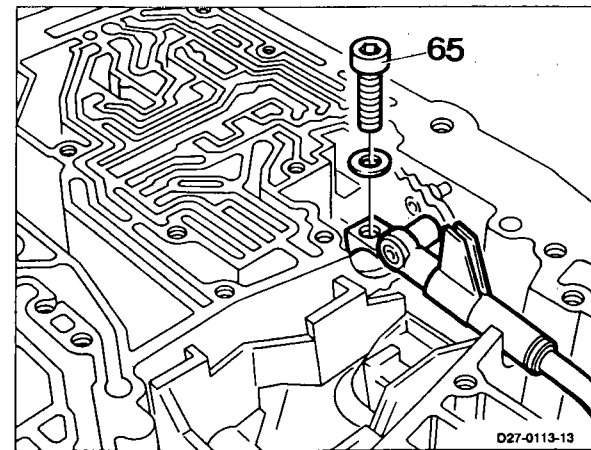
49 Remove seal (8) and intermediate plate (9).



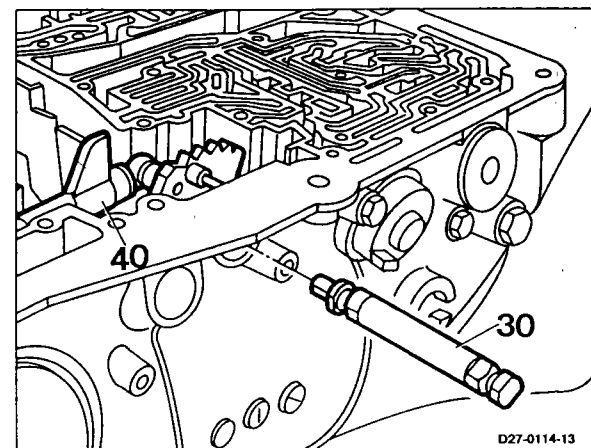
50 Remove seal (14) from lower cover.



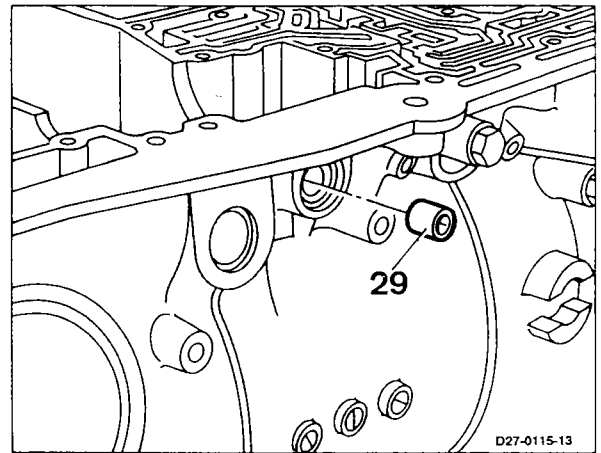
51 Unscrew bolt (65).



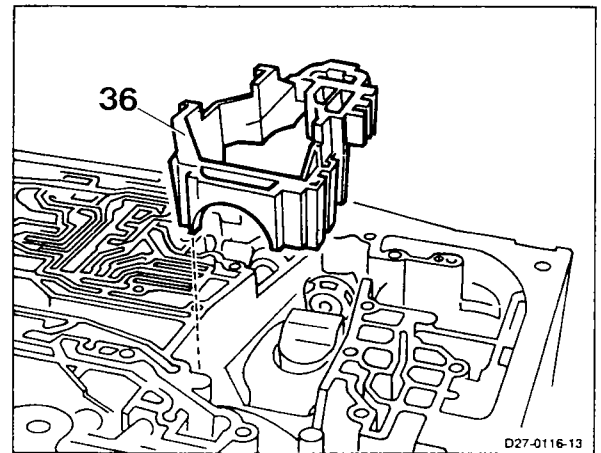
52 Pull out range selector shaft (30) and remove detent plate with linkage (40).



53 Remove radial shaft seal (29).

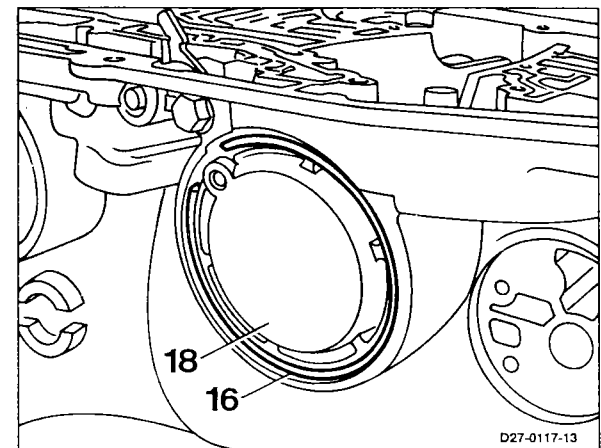


54 Pull out brake band holder B2 (36).



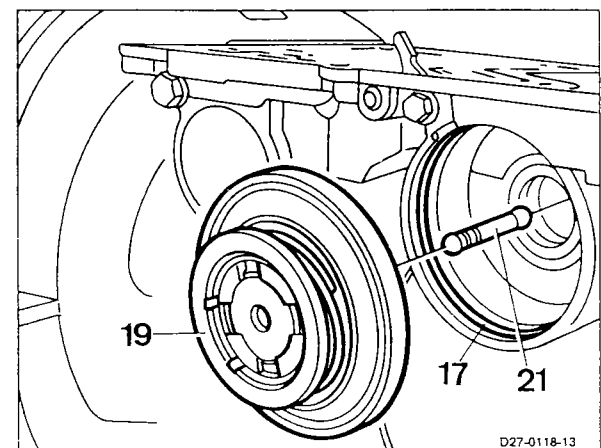
55 Press in brake band piston cover B2 (18) and remove locking ring (16).

56 Remove brake band piston cover B2.

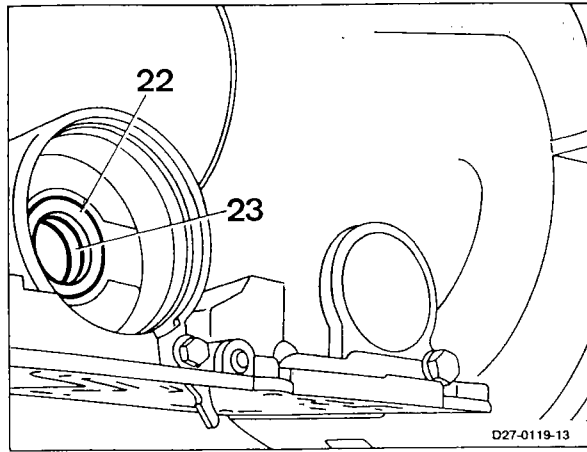


57 Remove brake band piston B2 (19) with thrust pin (21).

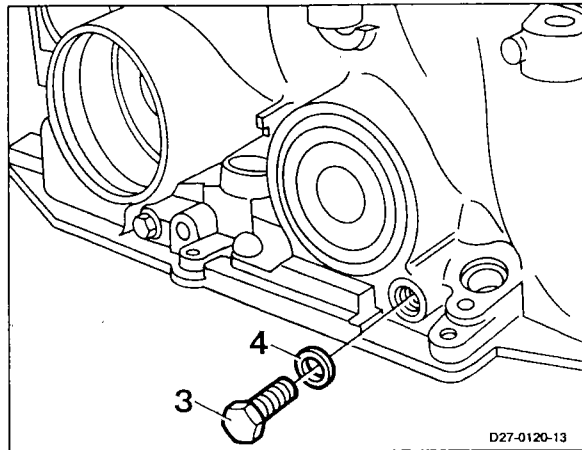
58 Remove o-ring (17).



59 Remove plastic guide ring (22) with lip sealing ring (23).




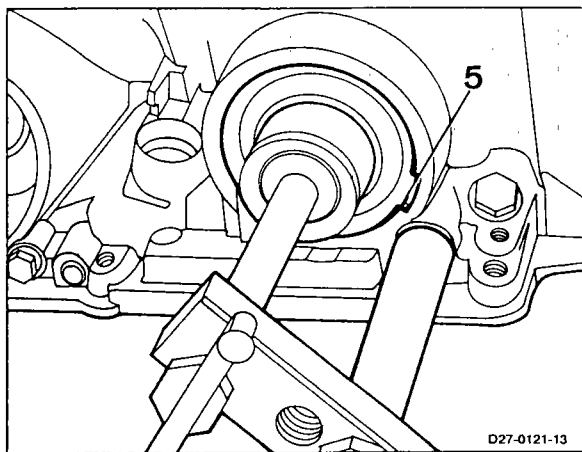
60 Unscrew hexagon bolt (3) with sealing ring (4).



61 Mount assembling fixture on brake band piston cover B1 and bolt to transmission housing.

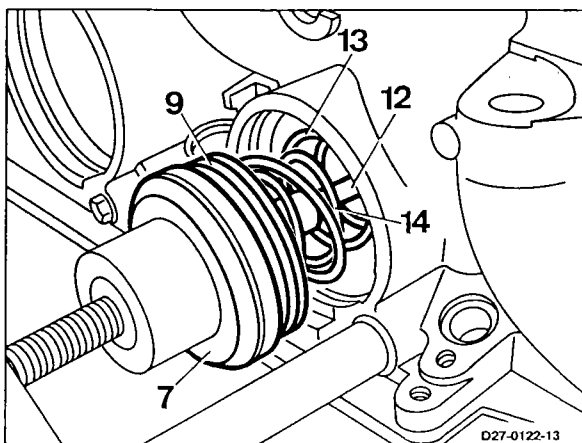
62 Clamp assembling fixture and remove locking ring (5).

 201 589 03 59 00



63 Unclamp assembling fixture and remove.

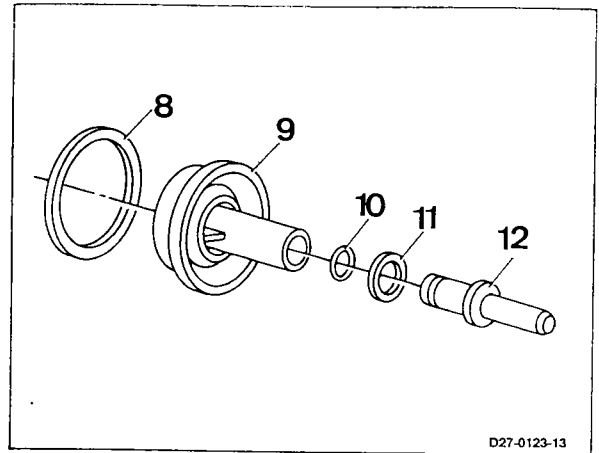
64 Remove brake band piston cover (7) and brake band piston B1 (9) with thrust pin (12), pressure springs (13) and (14).



65 Remove lip sealing ring (8) of brake band piston (9).

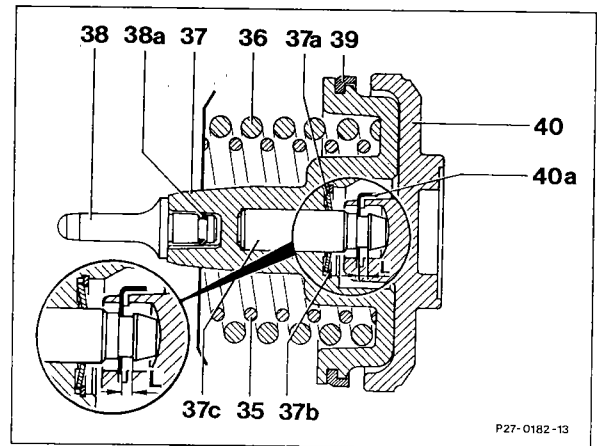
66 Remove thrust pin (12).

67 Remove shim ring (11) and sealing ring (10).

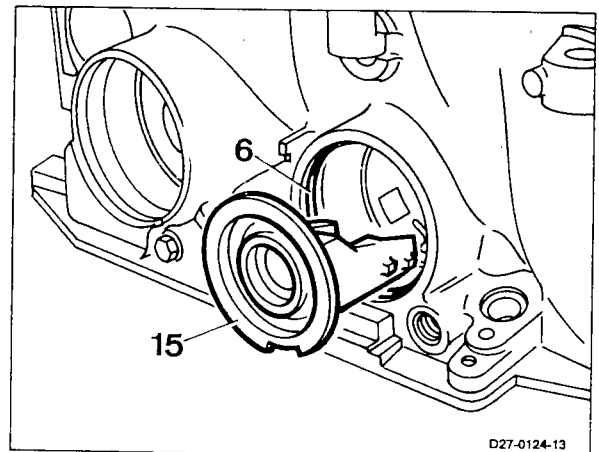


Note: from July 1990 to September 1990 (transmission no. from 03 420 691 to 03 450 408) the brake band piston B1 was installed with an automatic adjustment of the loose play. The loose play therefore does not have to be measured or adjusted in these transmissions. Standard as from 8.92.

35/36	Return springs	38a	O-ring
37	Brake band piston B1	39	Teflon ring
37a	Cup spring	40	Brake band piston cover B1
37b	Corrugated snap ring	40a	Retainer
37c	Pin		
38	Thrust pin		



68 Pull out brake band guide B1 (15) and remove O-ring (6).

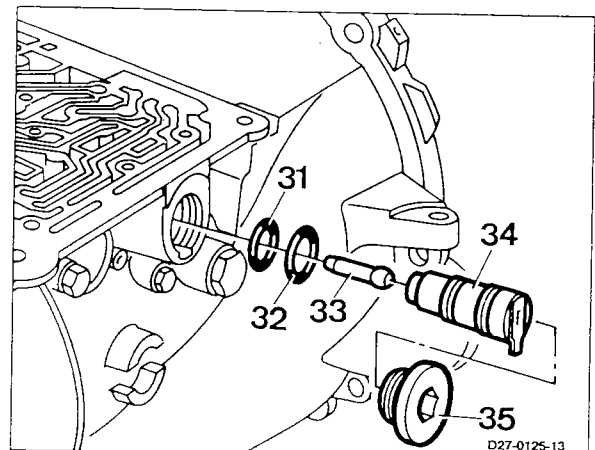


69 Unscrew screw plug (35).

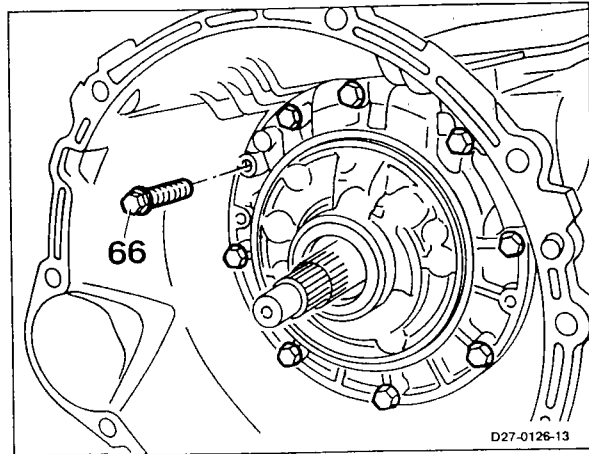
Note: In 500 GE V8 switch for transmission overload protection.

70 Pull out pressure body B1 (34) with thrust pin (33).

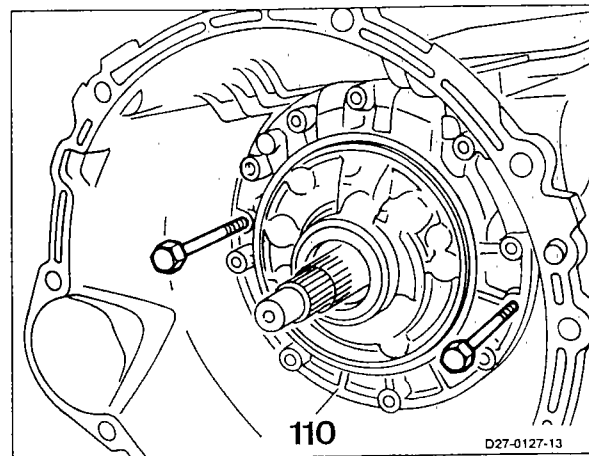
71 Remove O-rings (31/32).



72 Unscrew bolts (66).

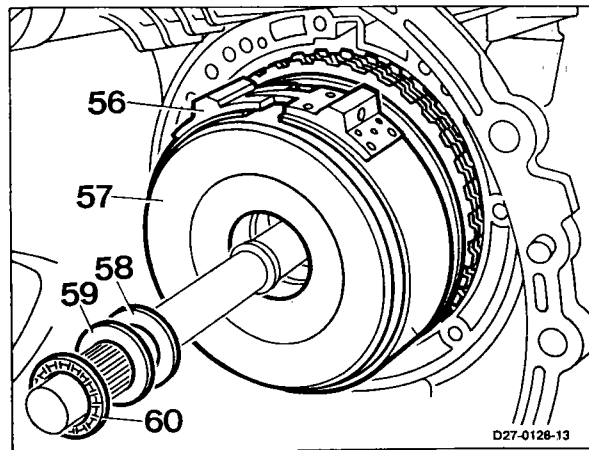


73 Screw bolts into the threaded bores and in this way pull out front transmission cover (110) with sealing ring and disassemble, refer to 5.2/1.



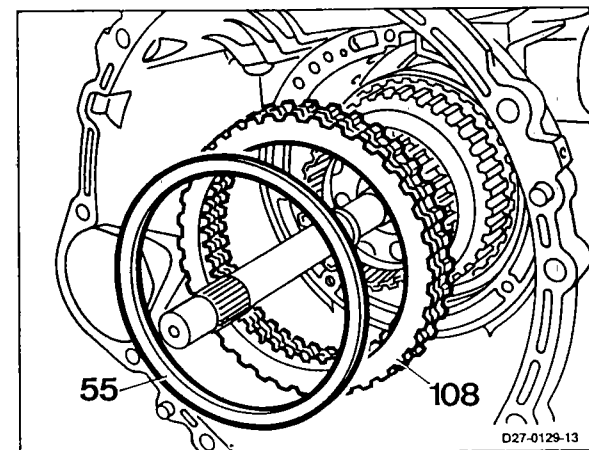
74 Remove axial bearing (60), thrust washer (59), shim ring (58), clutch K1 (57) with brake band B1 (56) from gearset.

75 Disassemble clutch K1, refer to 5.3/1.

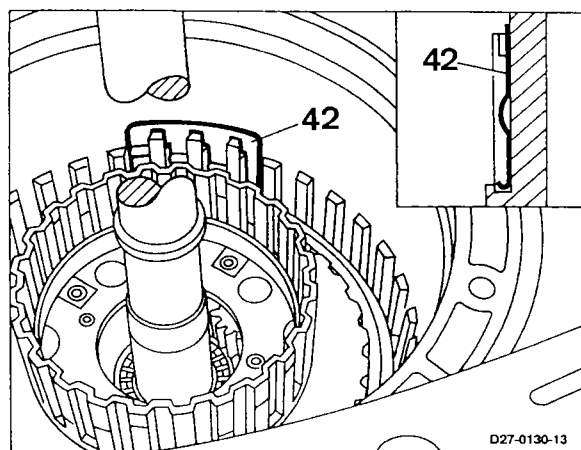


76 Remove cup springs (55) with disk set B3 (108).

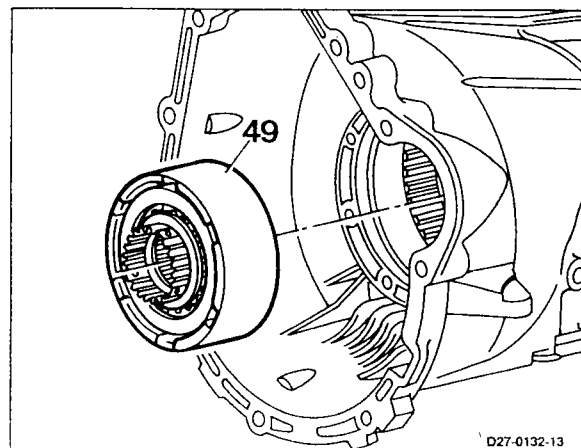
77 Remove and disassemble gearset, refer to 5.7/1.



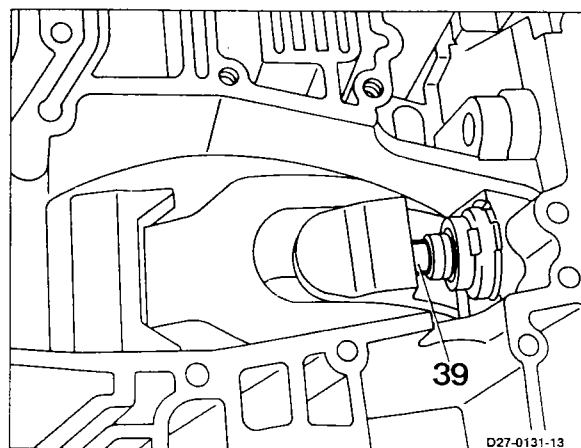
78 Remove damping spring (42).



79 Remove and disassemble clutch K2 (49), refer to 5.4/1.

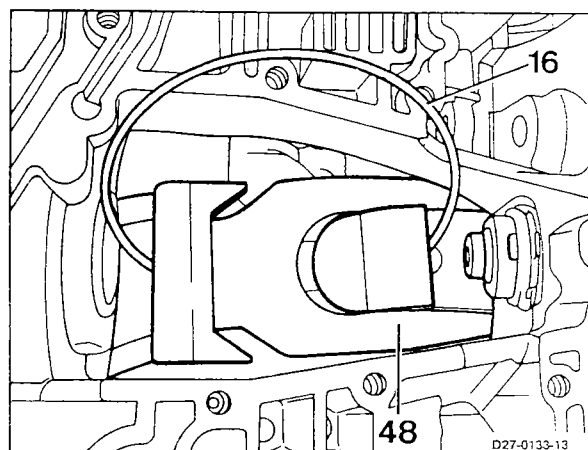


80 Remove thrust pin (39).

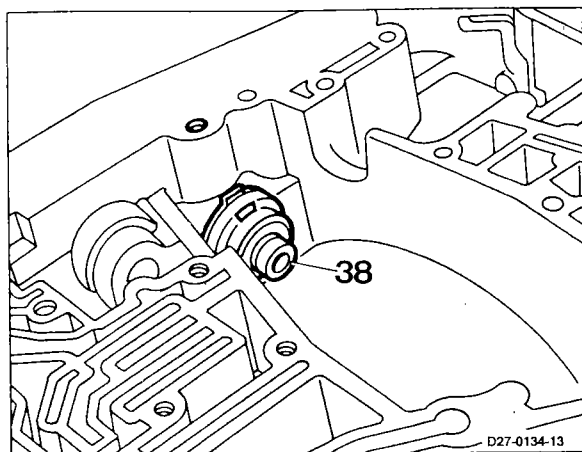


81 Clamp together brake band B2 (48), position horizontally and remove.

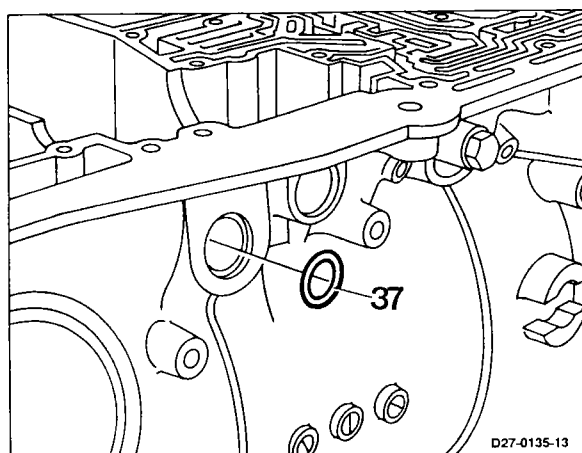
Note: In order to clamp the brake band together the snap ring (16) of brake band piston **B2** can be used. Transverse cracks in the brake band lining are of no significance.



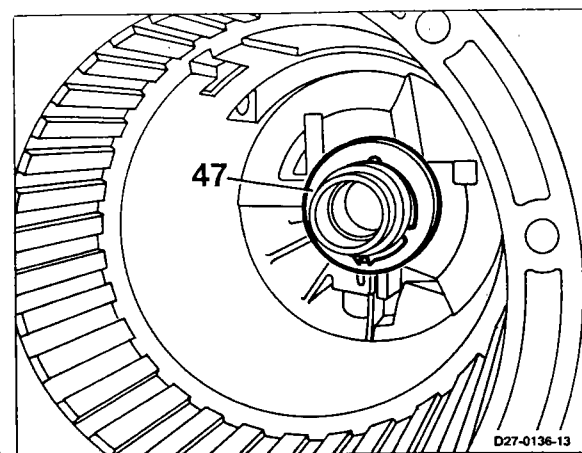
82 Pull out pressure body (38).



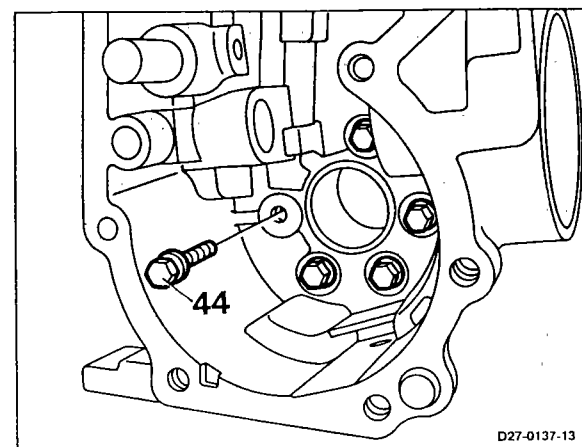
83 Remove o-ring (37).



84 Remove support disk (47).

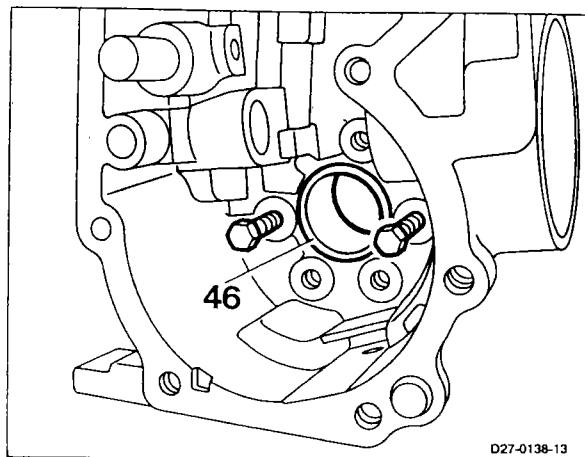


85 Unscrew hexagon bolts (44).

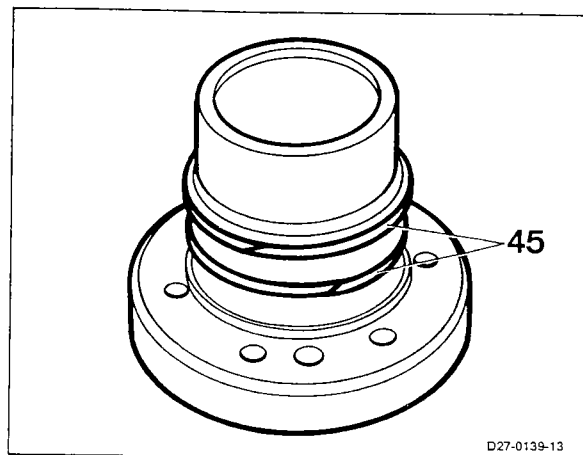


86 Screw in bolts of approx. 80 mm in length on the opposite side.

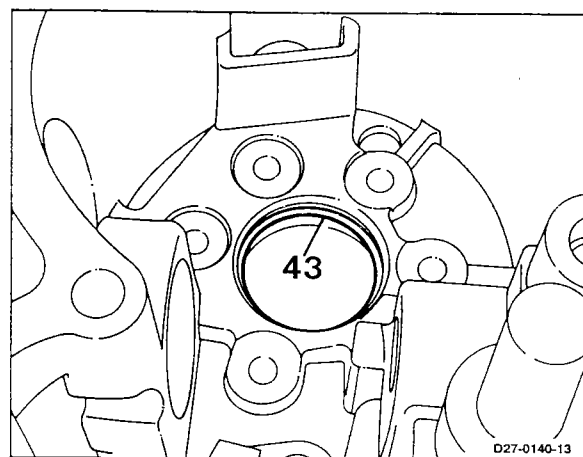
87 Uniformly drive out supporting flange (46) inwards by applying hammer blows to the bolts.



88 Remove Teflon rings (45).



89 Remove o-ring (43).

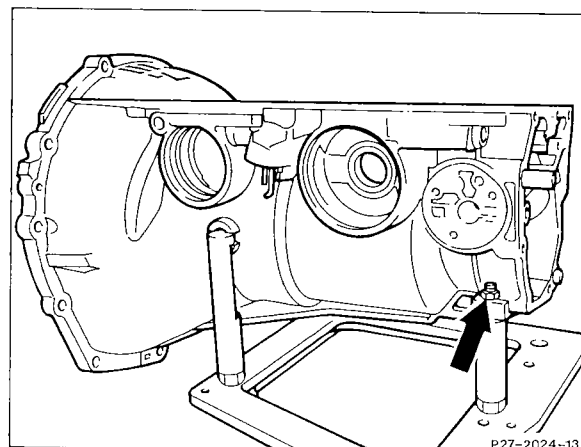


90 Detach housing from assembling fixture.



116 589 06 59 00
126 589 10 63 00


91 Clean all parts, check, exchange as required.

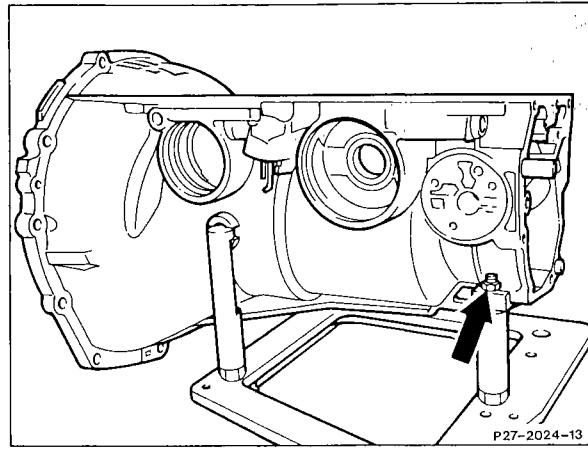


Assembly

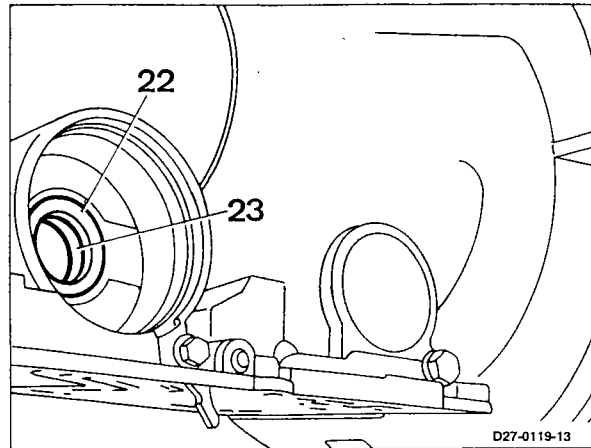
Note: New lining disks and brake bands must be placed in ATF oil prior to installation for approx. 1 hour.

1 Insert housing in the assembling fixture and fasten with the bolt (arrow).

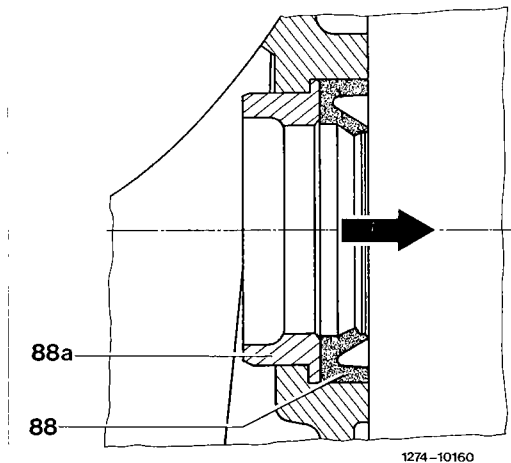
 116 589 06 59 00
126 589 10 63 00



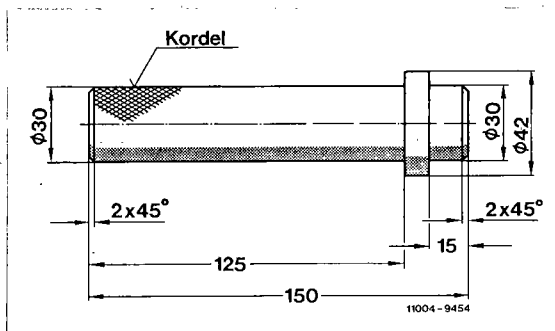
2 Insert plastic guide ring (22) for piston B2, then insert lip sealing ring (23) with the shop-made drive-in drift.



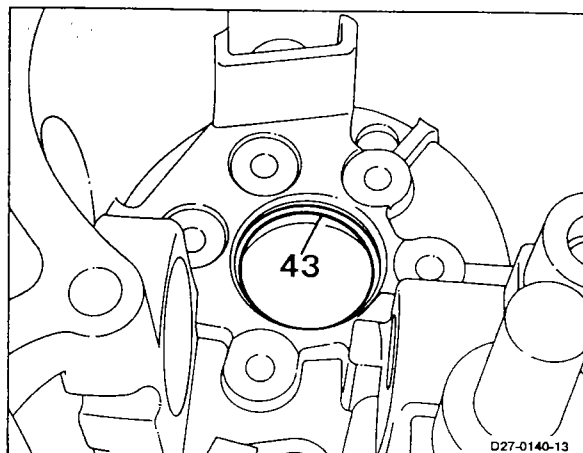
- The sealing lip (arrow) must point in the direction of the brake band piston cover.



Note: The drive-in drift is shop-made corresponding to the specified dimensions.

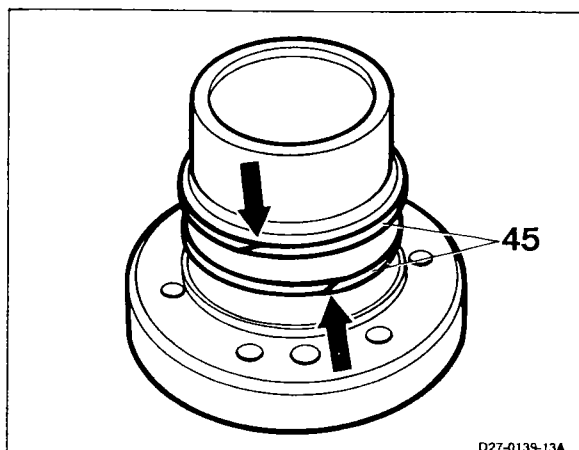


- 3 Install new O-ring (43).

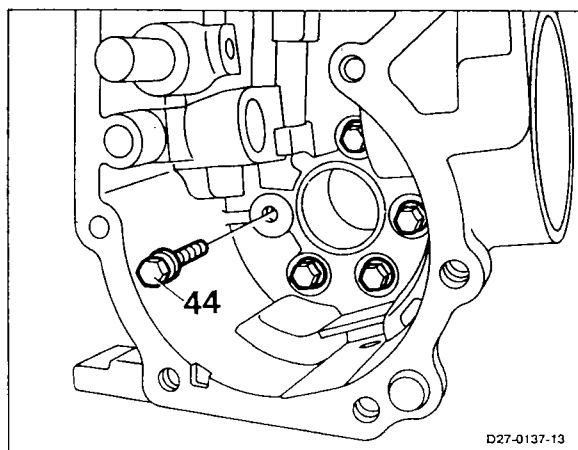


- 4 Coat grooves in supporting flange (46) with grease and insert Teflon rings (45).

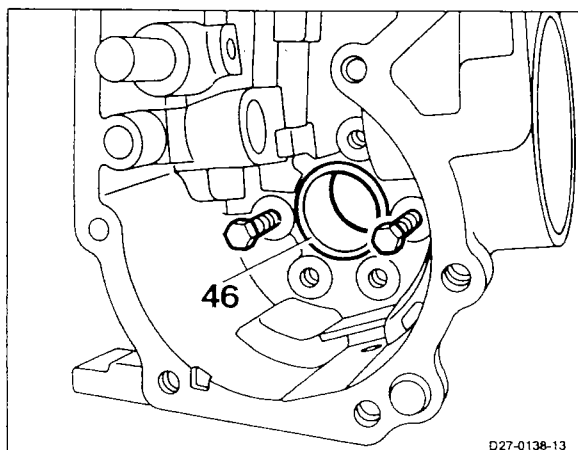
- 5 Press Teflon rings into the groove in such a way that the pack (arrow) remains together.



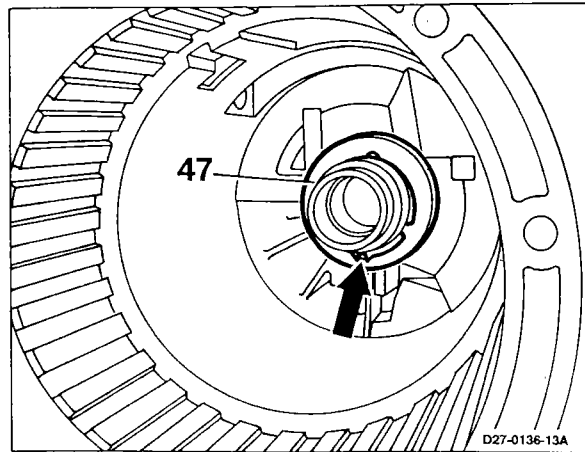
- 6 Center supporting flange (46) with two hexagon bolts, approx. 80 mm in length, to the hole pattern of the fastening bores and drive in.



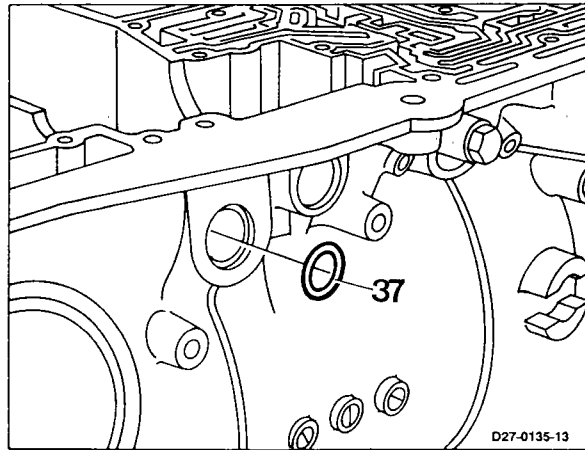
- 7 Screw in bolts (44) and tighten to 11 Nm.



8 Insert support disk (47) in such a way that the strap for the anti-torsion device is in the corresponding bore (arrow).

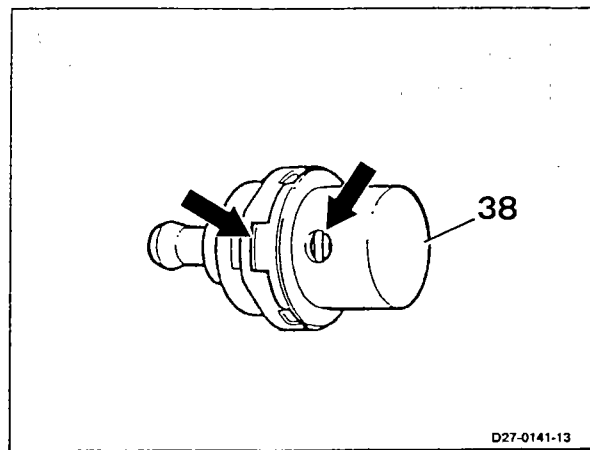


9 Install new O-ring (37).

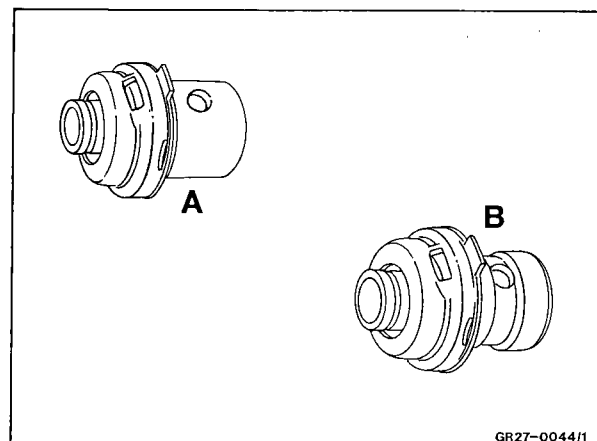


10 Check pressure body (38) for torsion.

Note: With removed pressure body, 1st version, the bore and the strap (arrows) must be in one direction.



Pay attention to correct pressure body.

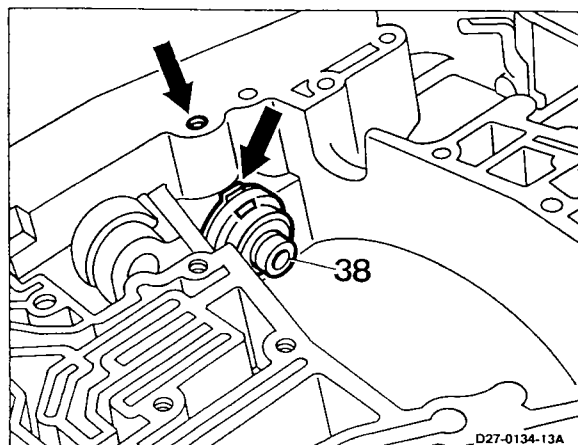


- 1 1st version
- 2 2nd version with Rybestos lining (B2)

11 Insert pressure body (38) with the strap (arrow) at the top.

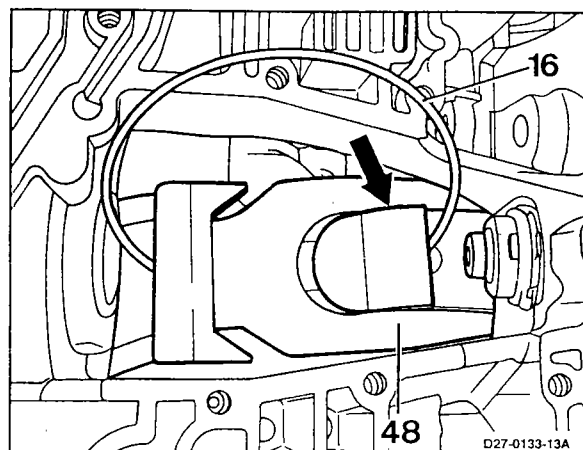
Note: The pressure body, 1st version, must be installed in such a way that the bore in the pressure body coincides with the bore in the housing.

Pressure bodies of the 2nd version have a groove all round.



12 Press brake band B2 (48) together at the support straps and insert in the housing.


Note: As an assembly aid, the brake band can be held together using the retainer (16). The narrow side (arrow) of the brake band points to the pressure body.



13 Assemble and measure gearset, refer to 5.5/1.

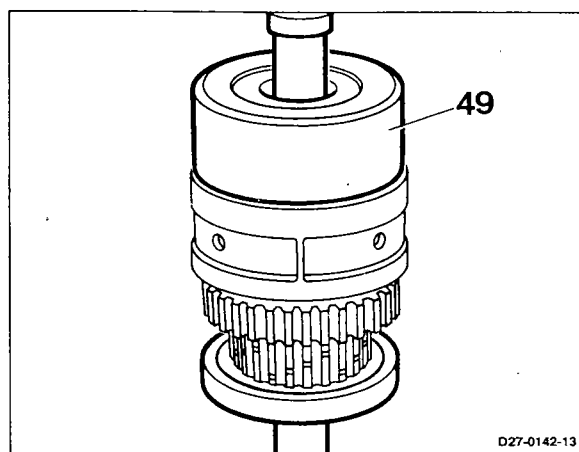
14 Assemble clutch K2, refer to 5.4/1.

15 Clamp assembling fixture in vise.

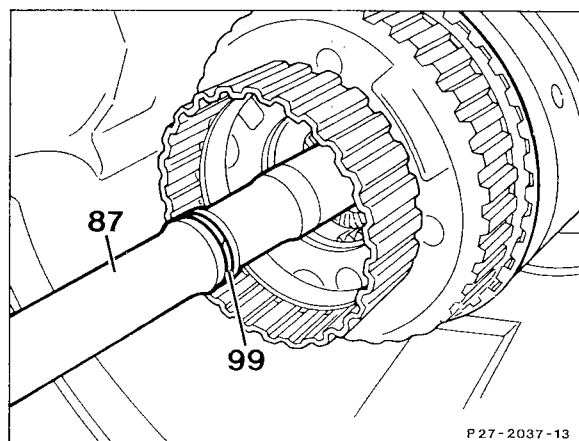
 126 589 00 35 00

16 Mount gearset on assembling fixture.

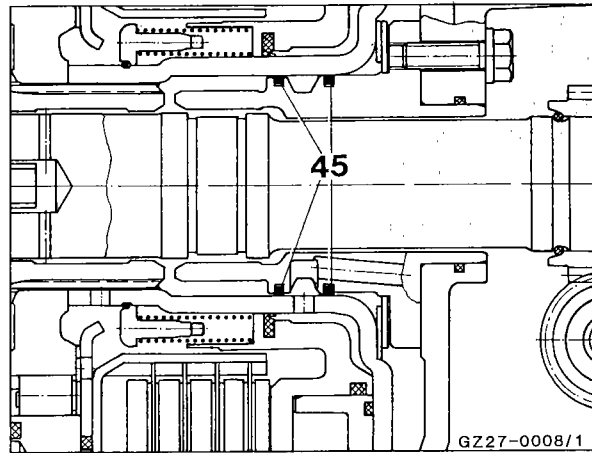
17 Slide clutch K2 (49) on gearset.



18 Insert gearset in transmission housing, at the same time turn the input shaft (87).



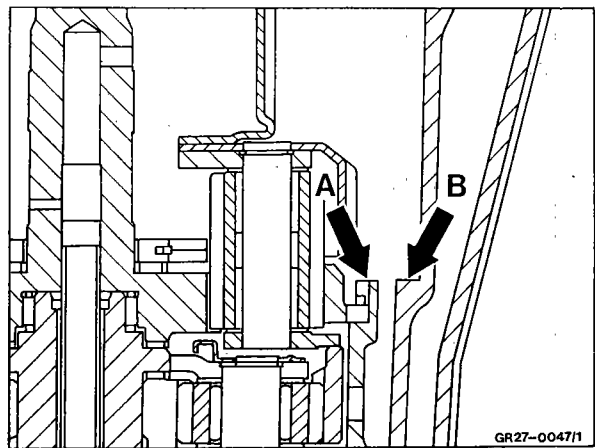
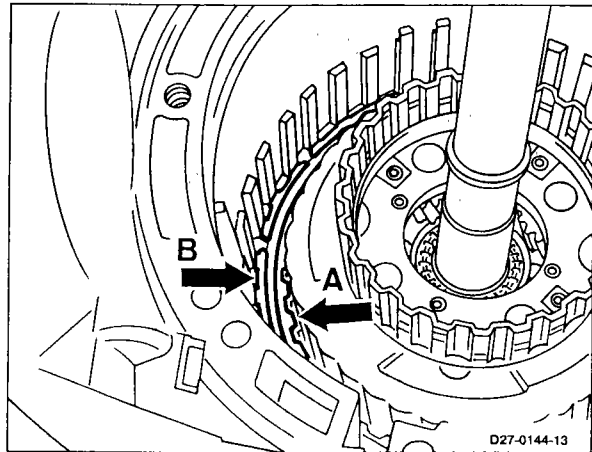
Note: Make sure that the Teflon rings (45) are not damaged.



19 Stand transmission with input shaft pointing vertically upward.

20 Check installation position of gearset.

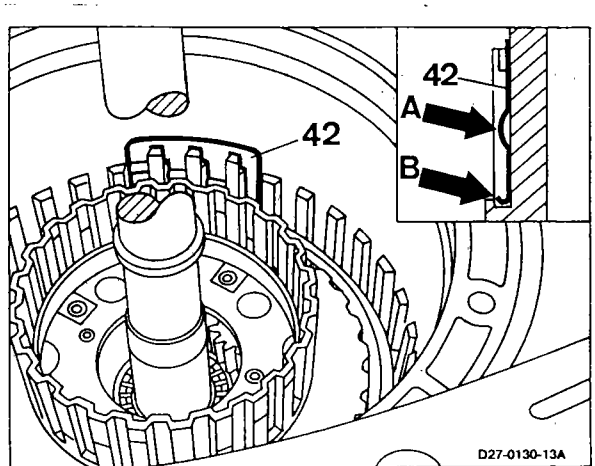
Note: The connecting member (arrow A) is not to be higher than the contact surface (arrow B) in the transmission housing.



Arrow A = Connecting member
Arrow B = Contact surface in transmission housing

21 Insert damping spring (42).

Note: The convexity (arrow A) of the damping spring must point to the inside. The damping spring must engage in the pockets (arrow B) in the transmission housing.

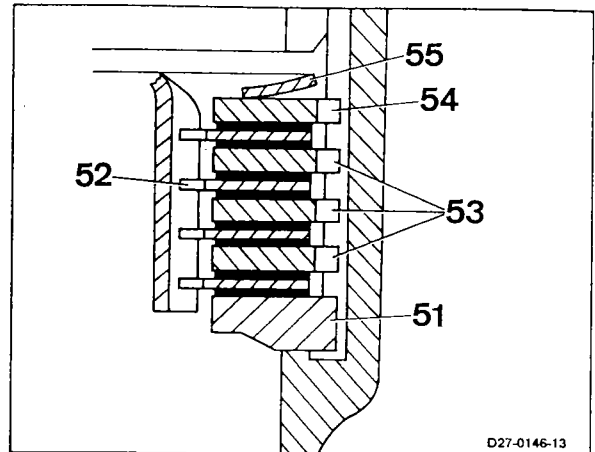


22 Put together disks for the brake B3 in the following order and insert individually.

Note: For measuring, a steel disk can be placed on the cup springs in order to obtain a flat measuring surface. For this purpose changeover item 54 and 55.

After measurement, return to the correct order. Observe installation position of cup spring (55).

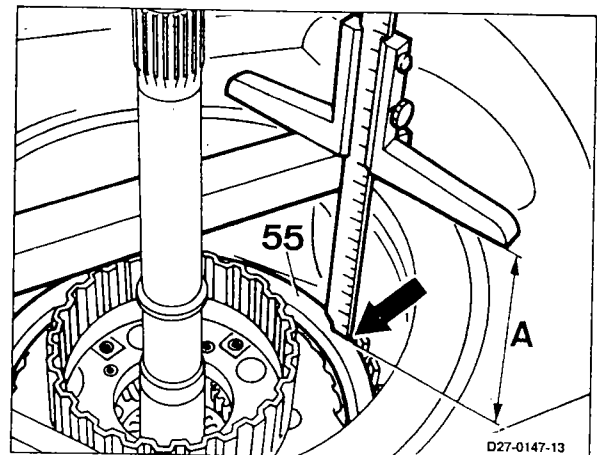
- 51 Steel disk, thickness 7,7 mm
- 52 Lining disks (x4)
- 53 Steel disks (x3), thickness 2,8 mm
- 54 Steel disk, thickness 3,4 mm
- 55 Cup spring



Measure disk clearance of brake B3 and compensate

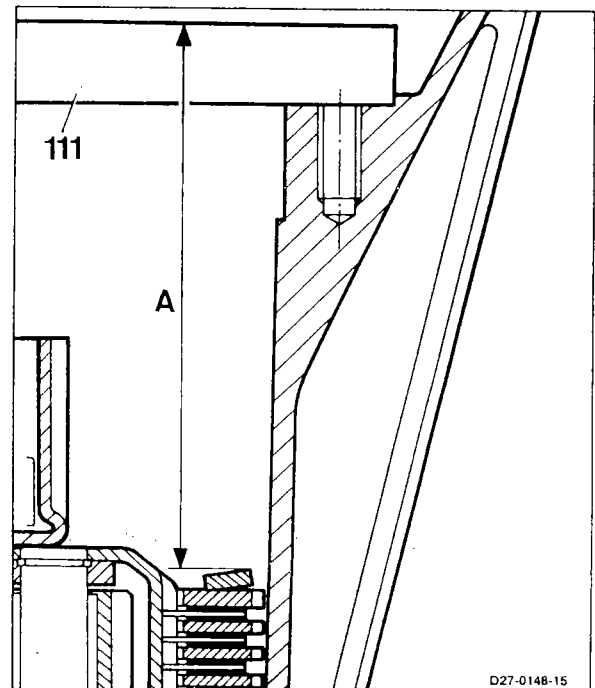
23 Determine dimension "A".

- Place parallel support on the worked surface of the housing.
- Using a depth gauge measure dimension "A" from the parallel support to the edge (arrow) of the upper cup spring.



Note: Reinstall cup spring and steel disk in the correct order after measurement.

111 Parallel support  126 589 04 31 00

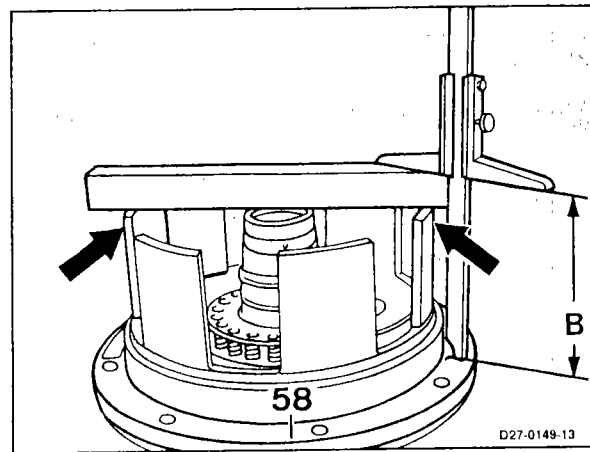


24 Determine dimension "B".

- Place parallel support on the piston of the multi-disk brake (arrows).
- Using a depth gauge measure dimension "B" from the parallel support to the seal (8).

Note: The difference between dimension "A" and "B" is the disk clearance.

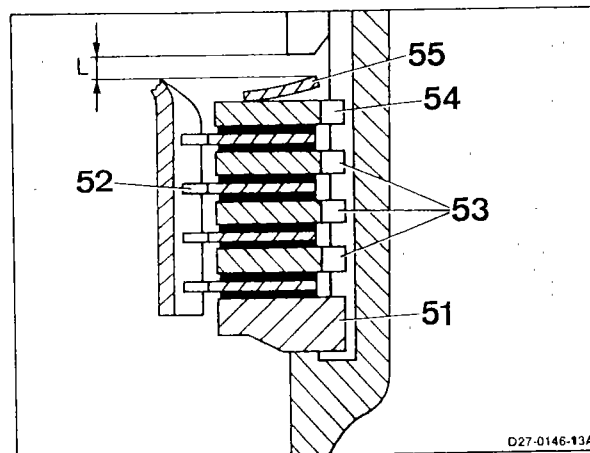
The disk clearance must be 1,5 – 2,0 mm.



25 The disk clearance is attained by changing the steel disks (53/54) which are available in different thicknesses. Steel disk (53) 2,3 mm or 2,8 mm. Steel disk (54) 2,8; 3,3; 3,8 mm.

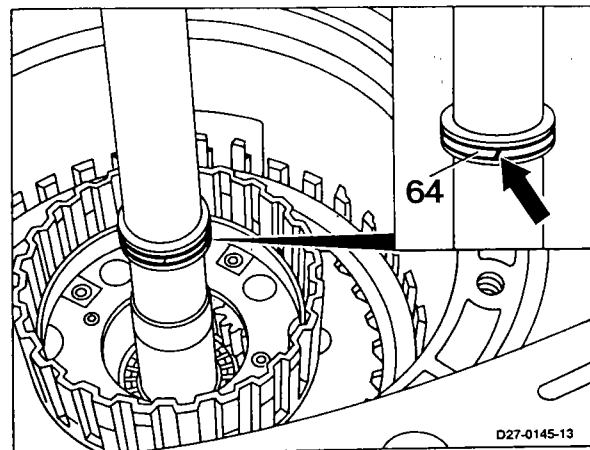
- 51 Steel disk, thickness 7,7 mm
- 52 Lining disks (x4)
- 53 Steel disks (x3)
- 54 Steel disk
- 55 Cup spring
- L Disk clearance

Note: Repeat measurement after changing steel disks.

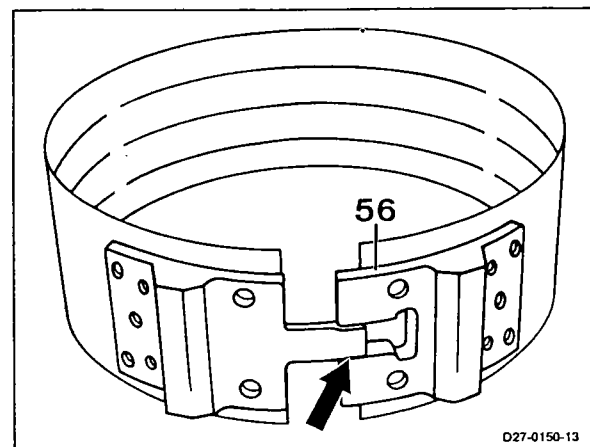


26 Coat groove in input shaft with grease.

27 Press lubricating pressure ring (64) into the groove in such a way that the pack (arrow) remains together.



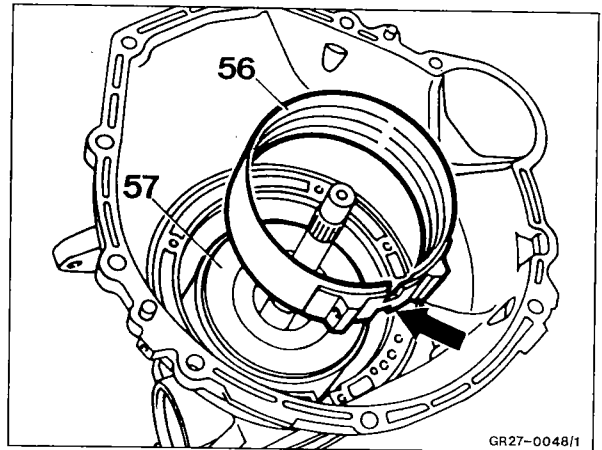
28 Engage assembly lock (arrow) on brake band B1 (56).



29 Insert clutch K1 (57) and turn at the same time until the gearing engages.

30 Insert brake band B1 (56).

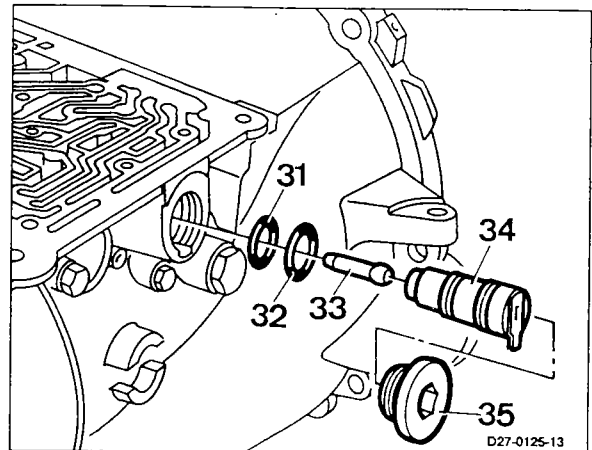
Note: The assembly lock (arrow) on brake band B1 must point to the pressure body B1.



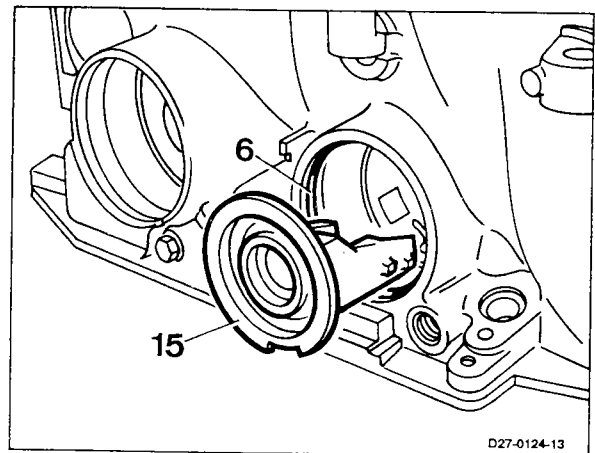
31 Install new O-ring (31/32).

32 Insert pressure body B1 (34) with thrust pin (33).

33 Screw in screw plug (35) or overload protection switch (in 500 GE V8 and G 320) and tighten to 70 Nm.




34 Insert O-ring (6) and brake band guide B1 (15), make sure that the fixing stud engages in the bores in the housing and press in until they noticeably engage.

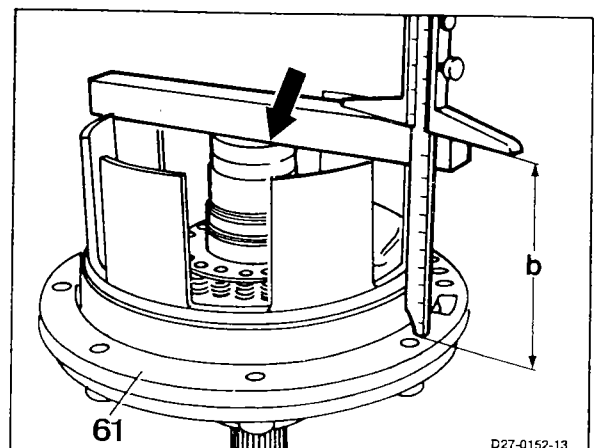


Measure axial clearance "B" for gearset and compensate

35 Determine dimension "b".

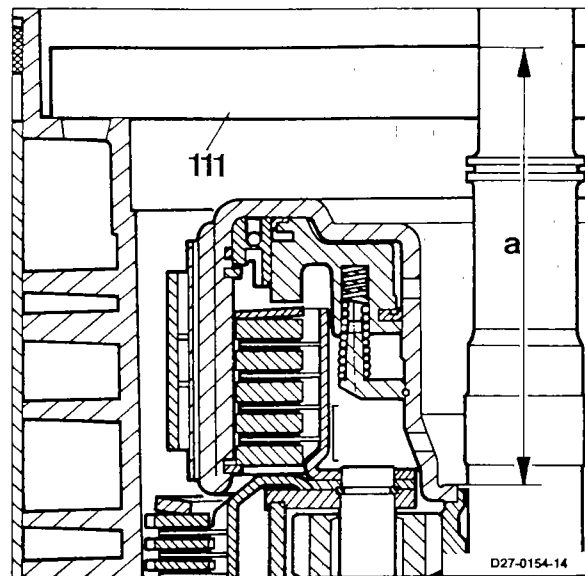
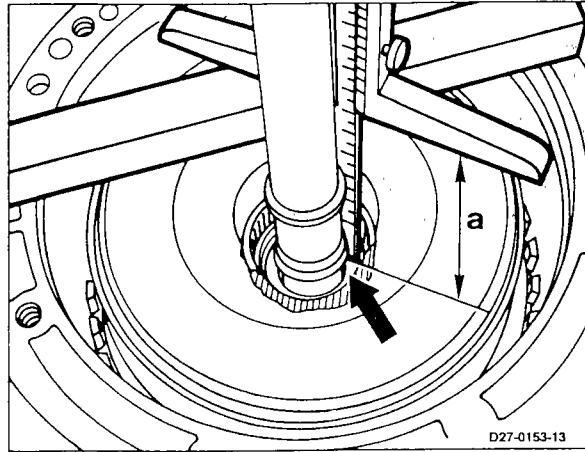
- Place parallel support on the flange (arrow).
- Using a depth gauge measure dimension "b" from the parallel support to the seal (61).

 126 589 04 31 00



36 Determine dimension "a".

- Place parallel support on the worked surface of the housing.
- Using a depth gauge measure dimension "a" from the parallel support to the contact surface (arrow) in clutch K1.



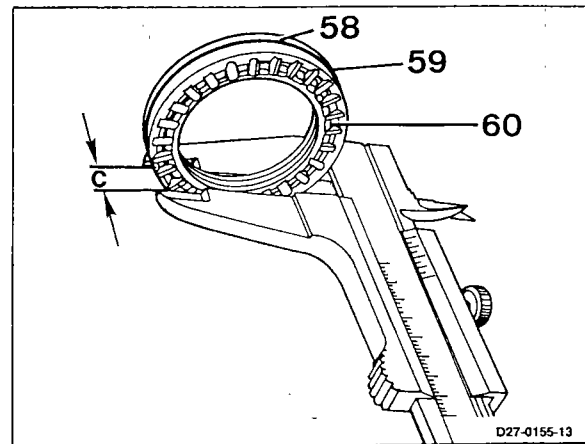
111 Parallel support  126 589 04 31 00

37 Determine dimension "c".

- Hold shim rings (58), thrust washer (59) and axial bearing (60) together and measure dimension "c" with a caliper gauge.

38 Calculate axial clearance "B".
"B" = a (b + c)

Note: Values in parenthesis must be calculated first (b + c).



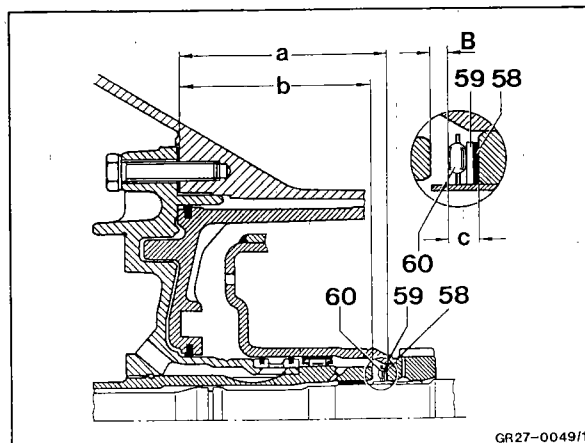
39 Specified axial clearance:

0,8 to 1,2 mm rear housing cover not installed. 0,4 to 0,6 mm rear housing cover installed.

The axial clearance can be adjusted by inserting appropriate shim rings (58). Shim rings are available in the following thickness: 0,1; 0,2; 0,5 mm.

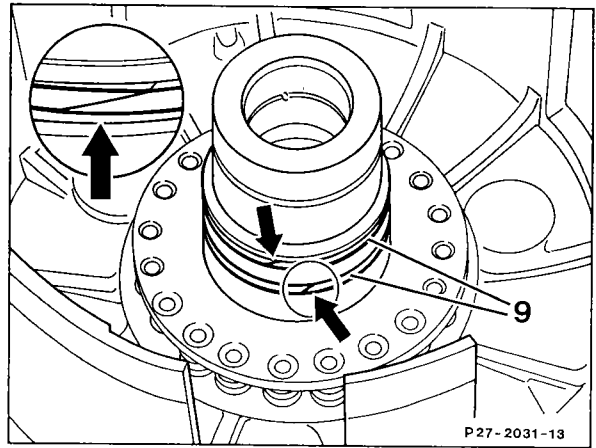
Insert determined shim rings (58) with thrust washer (59) and axial bearing (60) in the clutch K1.

Note: Observe the sequence, refer to Fig. (item 58/59).



40 Insert Teflon rings (9) with grease.

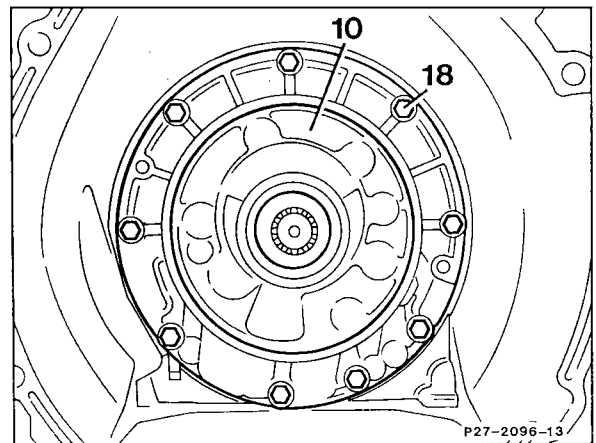
Note: The pack (arrow) of Teflon rings must remain intact for the installation of the primary pump. If necessary, remove the rings again and form to a smaller diameter so that the tension is increased.



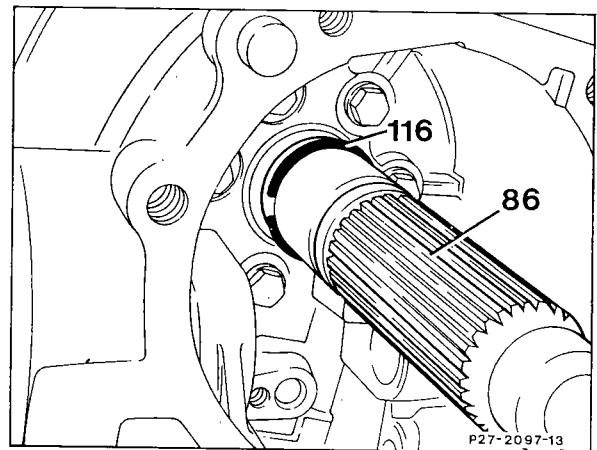
41 Assemble front cover with primary pump, refer to 5.2/1.

42 Mount front transmission cover (10) with seal and tighten to 13 Nm (18).

Note: The seal can be used several times, it is not to be coated with sealing compound. The washer and screw assemblies (66) are however to be coated lightly with non-hardened sealing compound.

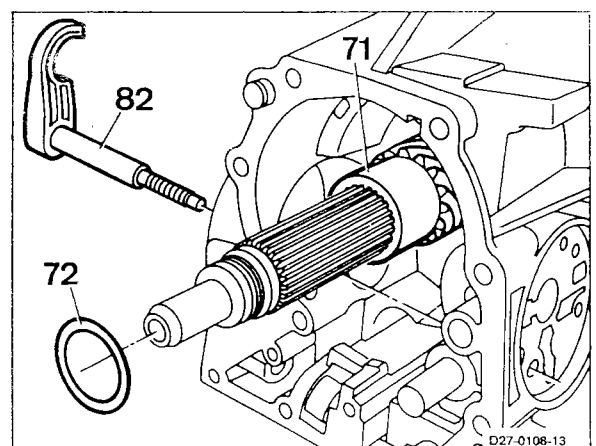


43 Turn assembling fixture so that output shaft (86) points upward. Slide locking ring (116) up to its groove on the output shaft.



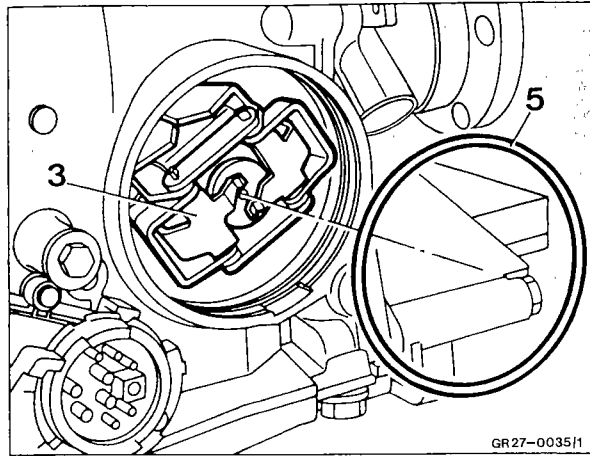
44 Install axial support (82).

45 Slide on helical gear (71) and shim ring (72).

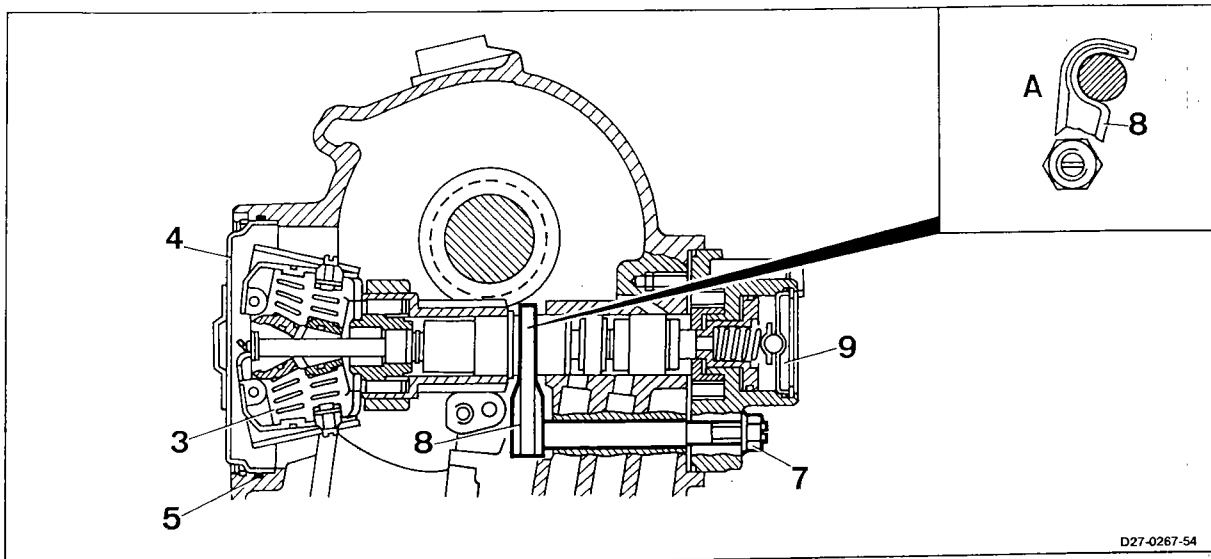
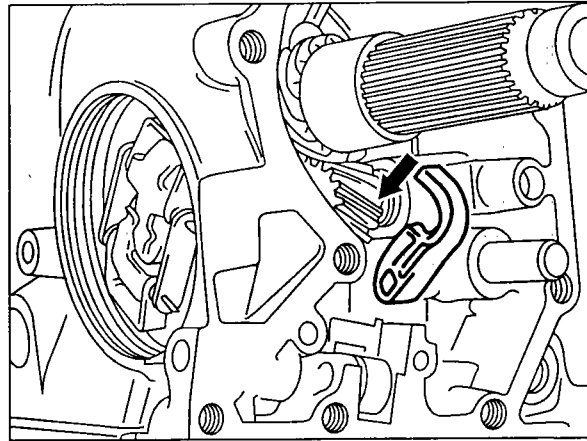


46 Install flyweight governor (3).

47 Install new O-ring (5).



48 Swivel axial support to flyweight governor so that it engages in the groove in the governor shaft (arrow).



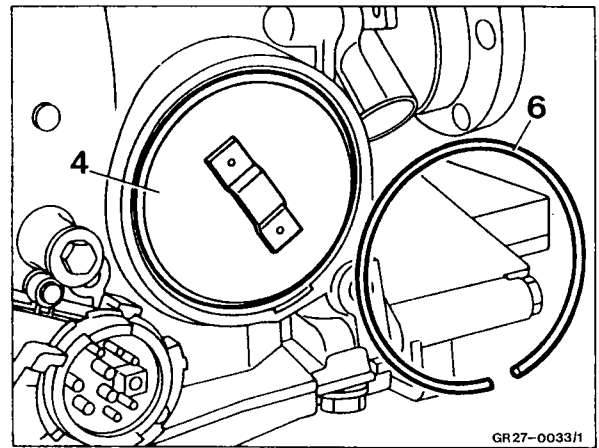
- 3 Flyweight governor
- 4 Cover
- 5 O-ring

- 7 Hexagon nut of axial support
- 8 Axial support
- 9 Secondary pump

49 Install cover (4) and press in.

50 Install snap ring (6).

Note: After installing the snap ring, the cover must be pulled back until it rests against the snap ring.

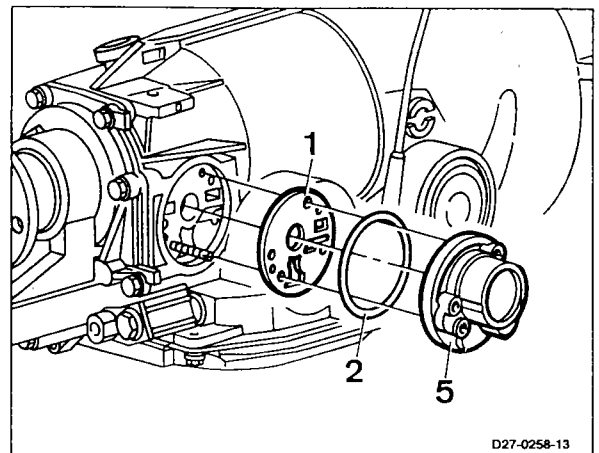


GR27-0033/1

51 Install intermediate plate (1) and new O-ring (2).

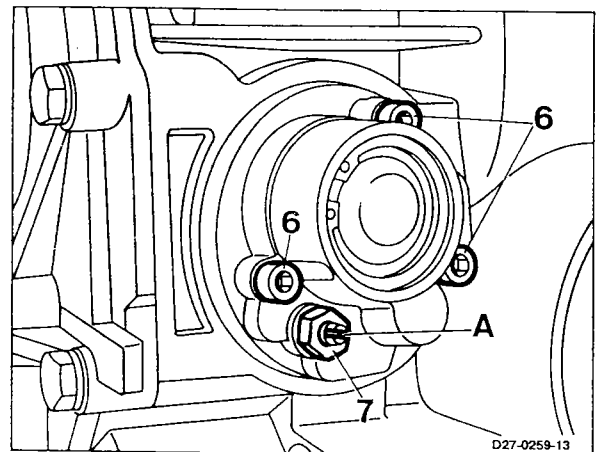
52 Mount secondary pump housing (5).

Note: For assembly of secondary pump refer to 4.4/1.
Secondary pump is installed up to 8/91.



D27-0258-13

53 Tighten hexagon socket bolts of secondary pump (6) to 8 Nm.



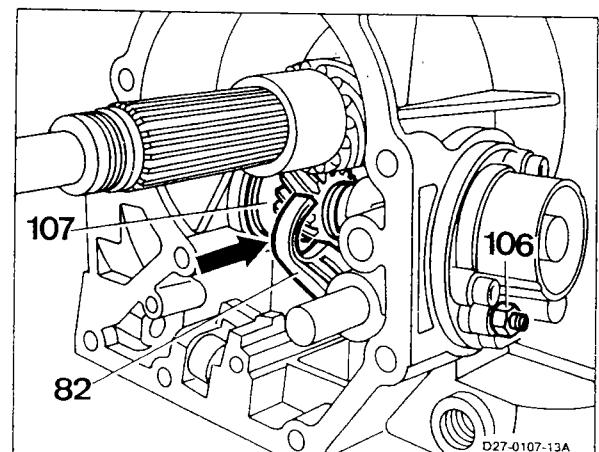
D27-0259-13

54 Turn axial support (82) to flyweight governor (107) (direction of arrow).

Note: The axial support must rest in the groove in the flyweight governor.

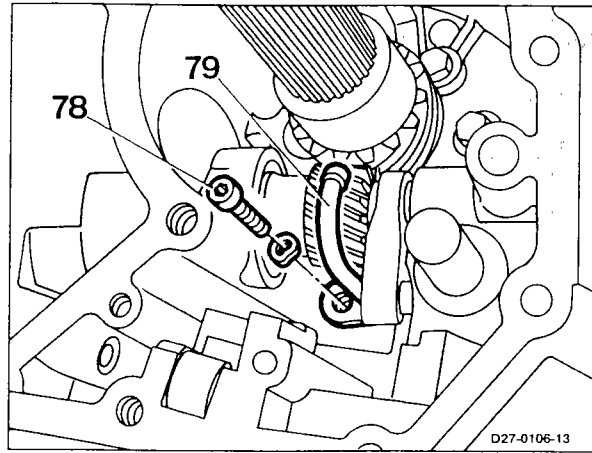
55 Tighten hexagon nut (106) to 6 Nm.

Note: The slot (A) in the axial support must be horizontal (refer to Fig. at Pos. 53).

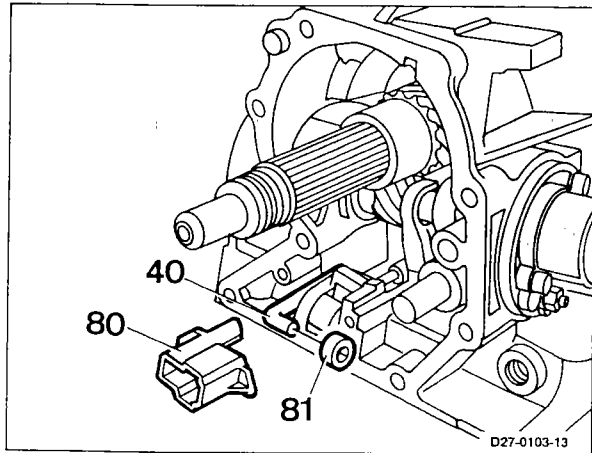


D27-0107-13A

56 Fasten oil splash pipe (79) with hexagon socket bolt (78) and tighten to 8 Nm.

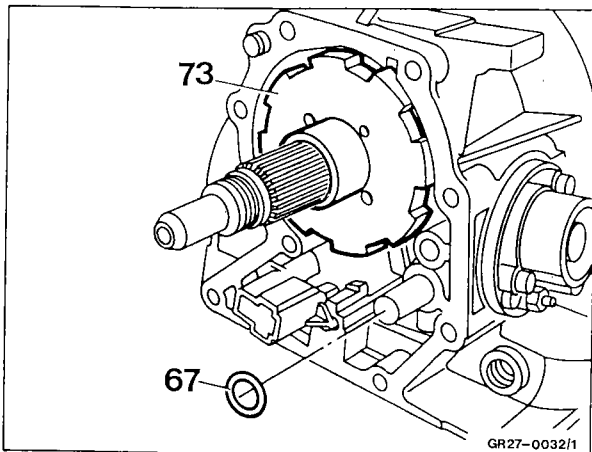


57 Slide roller (81) on linkage (40) of detent plate and insert plastic guide (80) in housing.

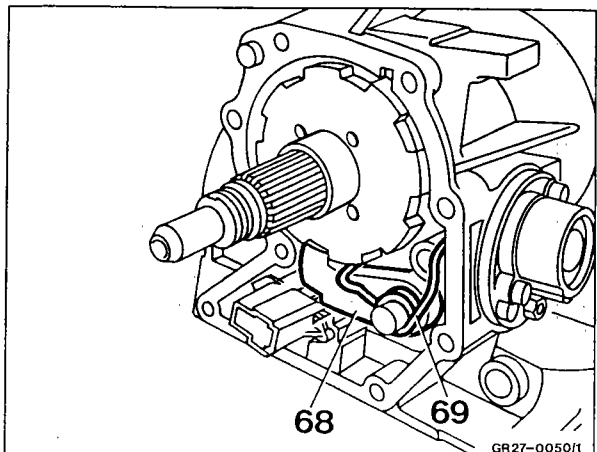


58 Insert thrust washer (67) of parking lock ratchet.

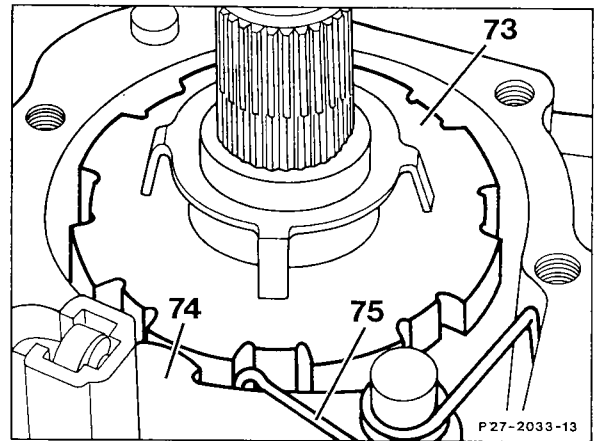
59 Slide on parking lock gear (73).



60 Mount parking lock ratchet (68) with expanding spring (69) and insert.




61 In vehicles with electronic speedometer, from transmission end no. 37 47 000 remove parking lock gear (73) with rotor, parking lock ratchet (74) and expanding spring (75).



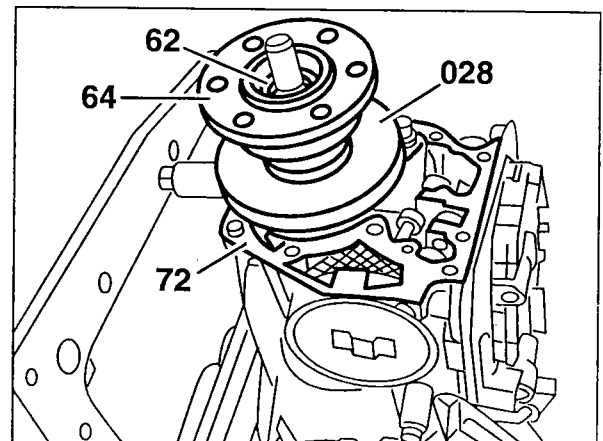
Measure axial clearance (C) of output shaft (clutch K2) and compensate

62 Mount graduated disk (028) and flange (64).

 129 589 06 23 00

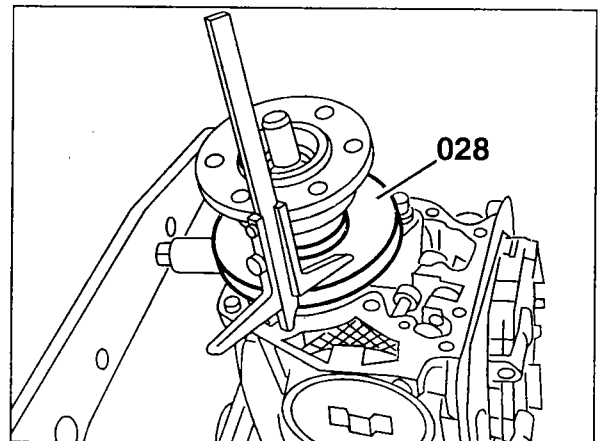
63 For holding in place, engage parking lock ratchet (68) and tighten collar nut (62) to 100 Nm.

64 Mount seal (72) on sealing surface of transmission mount.



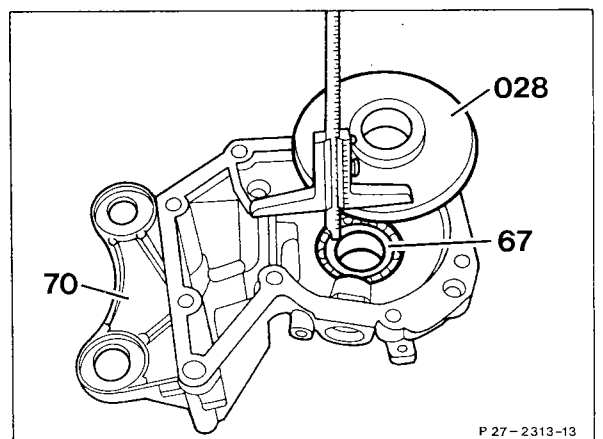
65 Using the depth gauge, measure from the graduated disk (028) to the seal.

Measured distance = dimension "b"



66 Place graduated disk (028) on sealing surface of rear cover. Using the depth gauge, measure from the graduated disk (028) to the inner race of ball bearing (67).

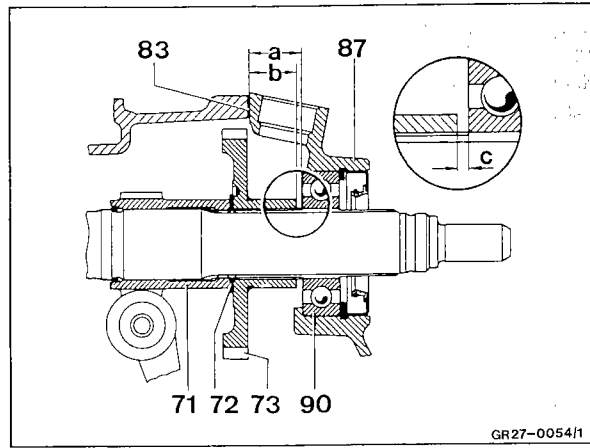
The measured distance = dimension "a".



67 Dimension "a" minus dimension "b" = axial clearance "C". The axial clearance "C" must be 0,4 to 0,5 mm.

Shim rings are available in the following thickness: 0,1; 0,2; 0,5 mm.

- 71 Helical gear
- 72 Shim ring
- 73 Parking lock gear
- 83 Sealing ring
- 87 Rear cover
- 90 Ball bearing

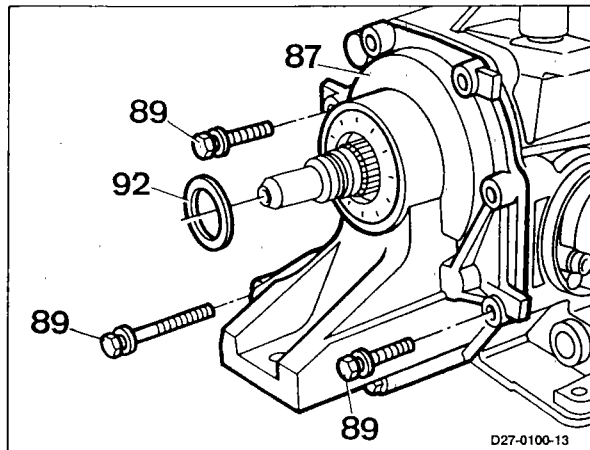


68 Unscrew twelve-point collar nut, remove graduated disk and parking lock gear.

69 Insert determined shim ring (72) between the helical gear and the parking lock gear.

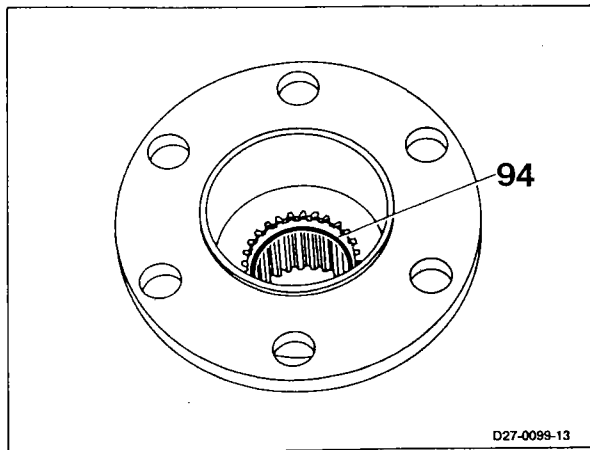
70 Mount rear cover (87) with new seal and tighten hexagon bolts (89) to 13 Nm.

71 Insert washer (92).



72 Insert new O-ring (94) in flange.

Note: From production breakpoint in the 350 GD Turbo or from transmission end no. 36 84 000 in all models 463, there is a modified flange installed for the homokinetic propeller shaft.

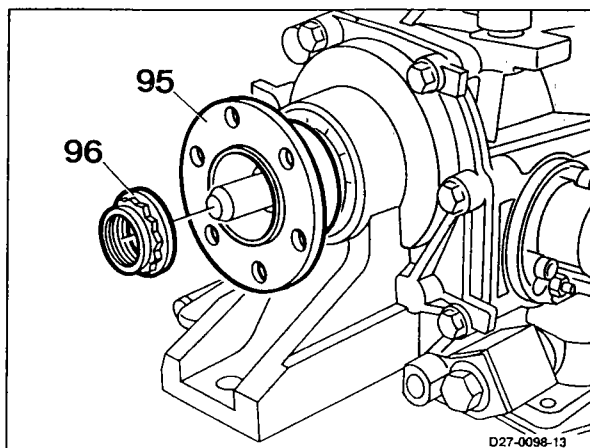


73 Slide on flange (95).

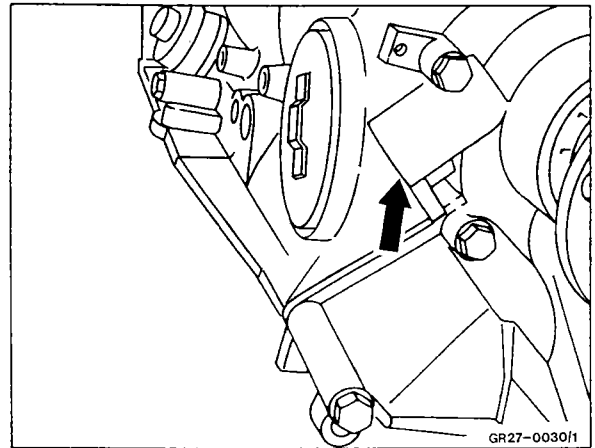
74 Tighten twelve-point collar nut (96) to 120 Nm.

 126 589 02 09 00

Note: Secure nut by calking up to base of groove.

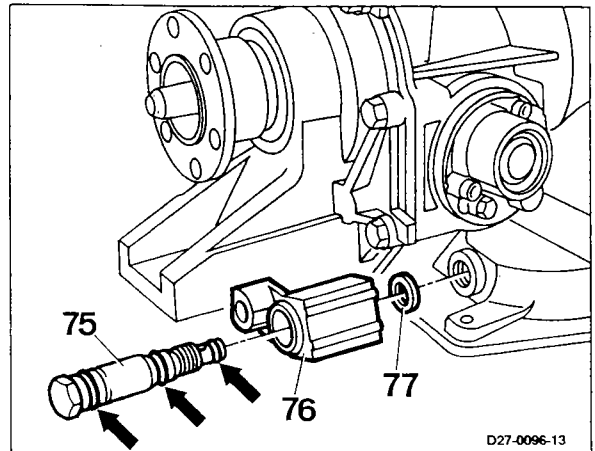


75 Replace dummy plug.



76 Install kick-down solenoid valve (75) with solenoid (76) and new gasket (77) and tighten to 30 Nm.

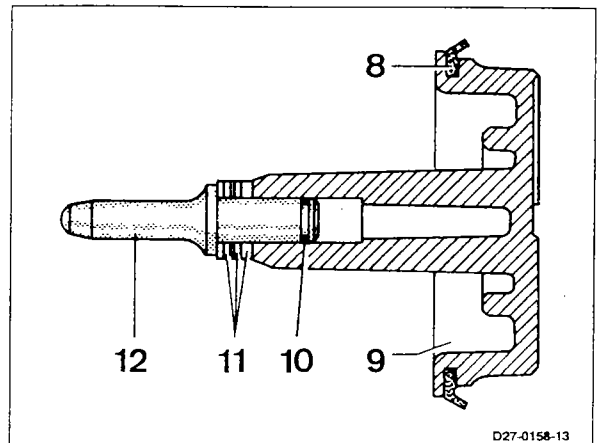
Note: Replace sealing rings (arrows).



77 Preassemble brake band piston B1 (9). For this purpose insert shim rings (11) and new sealing ring (10).

78 Insert thrust pin (12).

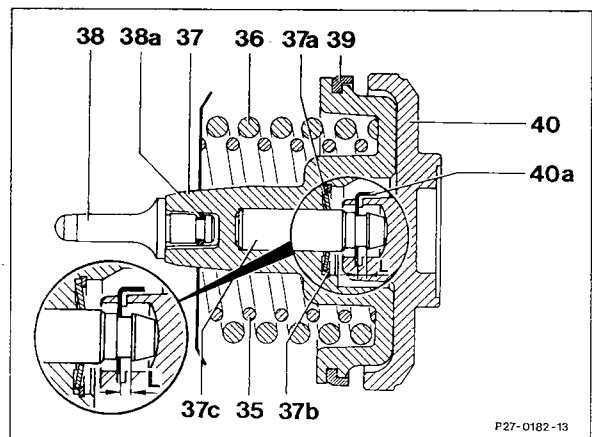
79 Insert new lip sealing ring (8) on brake band piston B1. Observe installation position.



1st version

Note: from July 1990 to September 1990 (transmission no. from 03 420 691 to 03 450 408) the brake band piston B1 was installed with an automatic adjustment of the loose play. The loose play therefore does not have to be measured or adjusted in these transmissions. Standard as from 8.92.

- | | | | |
|-------|----------------------|-----|----------------------------|
| 35/36 | Return springs | 38a | O-ring |
| 37 | Brake band piston B1 | 39 | Teflon ring |
| 37a | Cup spring | 40 | Brake band piston cover B1 |
| 37b | Corrugated snap ring | 40a | Retainer |
| 37c | Pin | | |
| 38 | Thrust pin | | |

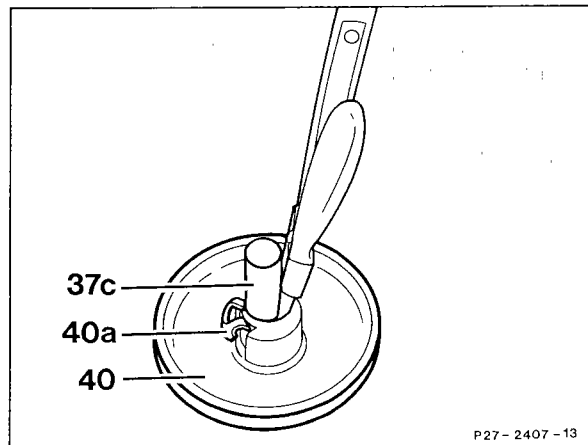


2nd version

Note: If the brake band B1 is replaced, the brake band piston B1 must be moved into its initial position.

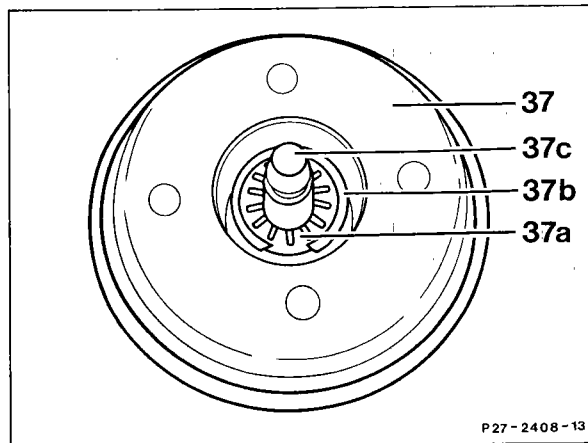
Disassembly of brake band piston

- 1 Remove brake band piston from brake band piston cover.
- 2 Press apart retainer (40a), remove pin (37c). Leave retainer in brake band piston cover.
- 3 Remove snap ring (37b) in brake band piston, remove cup spring.

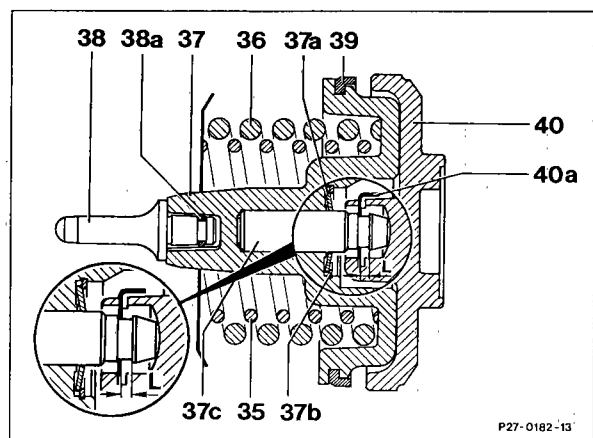


Assembly of brake band piston

- 1 Insert pin (37c) in brake band piston B1.
- 2 Slide cup spring over the pin until it rests against the brake band piston. Insert snap ring. Pay attention to correct seat.
- 3 Press the assembled brake band piston into the brake band piston cover until it audibly engages. After this **do not** pull apart manually.
- 4 Install the complete brake band piston, the adjustment takes place automatically.




Note: During the installation of the brake band piston B1, turn the return springs (35/36) so that they fit correctly in the brake band guide. Only press brake band piston cover with the assembling fixture into the transmission housing to such a degree so that the snap ring can be assembled.



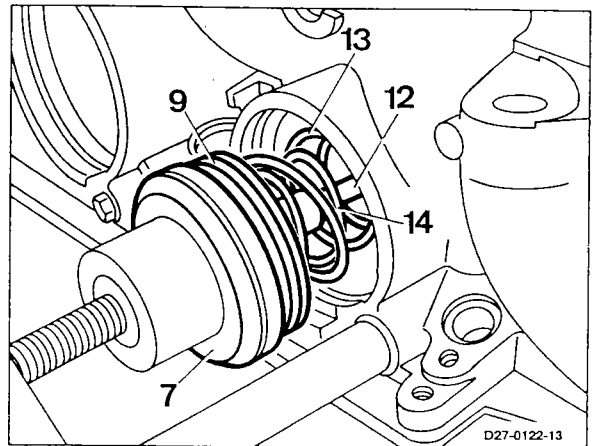
Measure free travel at brake band B1 and adjust

80 Mount assembling fixture and bolt to transmission housing.

 126 589 06 21 00
201 589 03 59 00

81 Insert tester (7), brake band piston B1 (9) with thrust pin (12) and pressure spring (13).

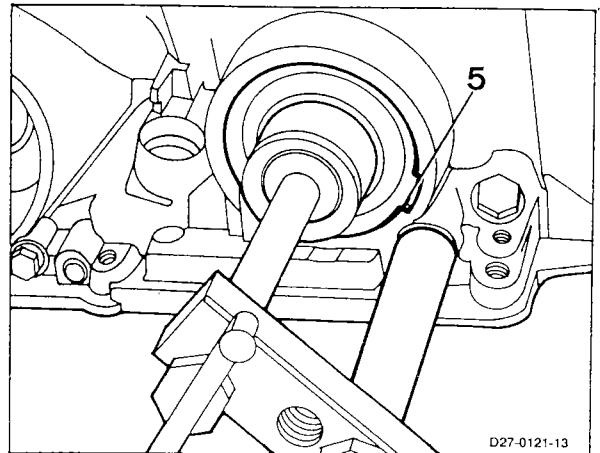
Note: Adjustment is only required with the "1st version" of the pistons! For adjustment of the free travel only install the pressure spring (13) with large diameter.




82 Screw in spindle of assembling fixture and at the same time make sure that the thrust pin of the brake band piston B1 is installed in brake band B1.

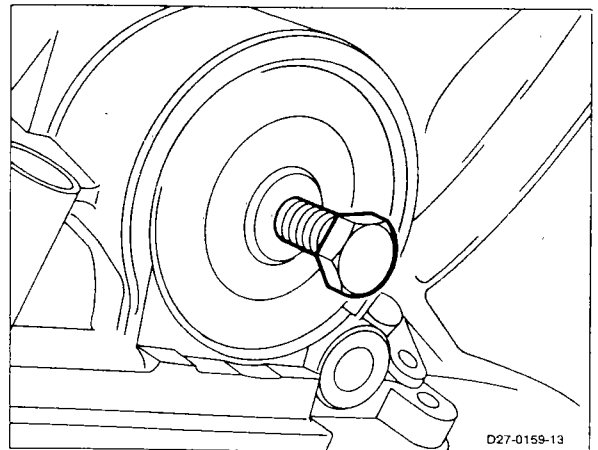
83 Insert locking ring (5).

84 Unclamp assembling fixture and remove.



85 Screw hexagon bolt into tester by hand until a resistance becomes noticeable.

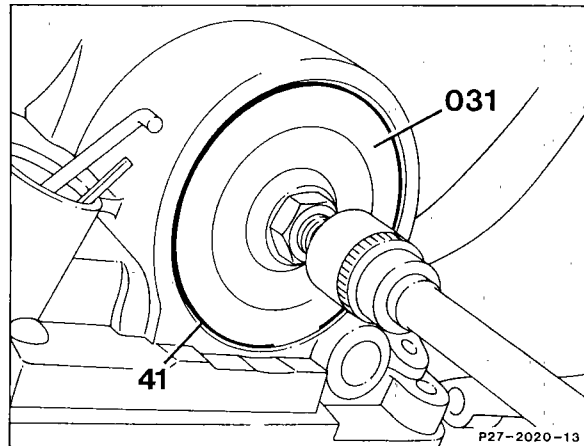
 126 589 06 21 00



86 Using a torquemeter, screw in the hexagon bolt and at the same time count the rotations until the torquemeter indicates 1 Nm (brake band applied).
The torque of 1 Nm must be attained after 1,8 to 2,4 rotations.

Note: At a pitch of 1 mm on the tester, the free travel is 1,8 to 2,4 mm.

S 001 589 49 21 00
123 589 02 21 00
126 589 06 21 00



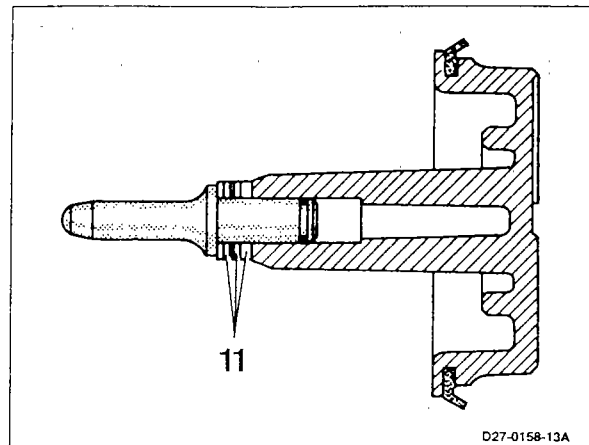
87 The free travel at brake band B1 can be adjusted by inserting or removing shim rings (11). Shim rings are available with the following thickness: 0,2; 0,3; 0,5; 1,0; 1,5 mm.

If the free travel is too great, install a brake band piston with longer thrust pin or if the free travel it is too small install a brake band piston with shorter thrust pin.

88 The measurement must be repeated after adjustment of the free travel on brake band B1.

Note: The 2nd version is with automatic adjustment.

1st version

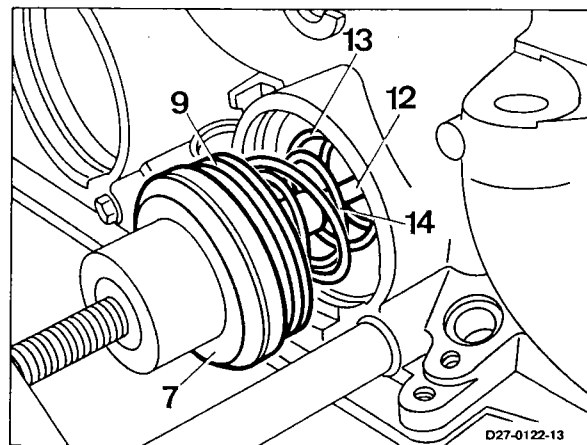


89 Insert spring (13) and spring (14).

90 Insert brake band piston cover (7), brake band piston B1 (9) with thrust pin (12) and determine shim rings.

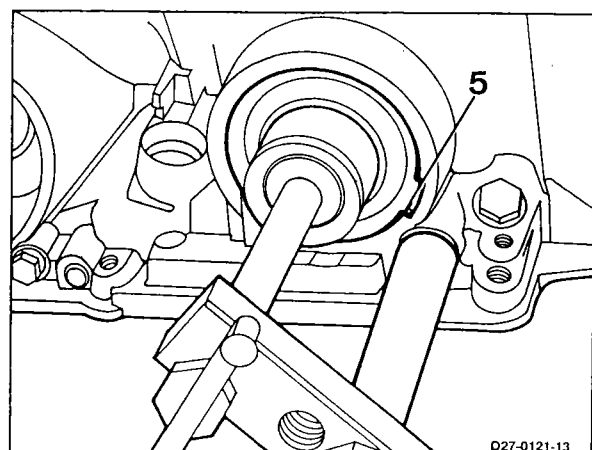
91 Mount assembling fixture and bolt to transmission housing.

92 Screw in spindle of assembling fixture and at the same time make sure that the thrust pin of the brake band piston B1 is installed in brake band B1.

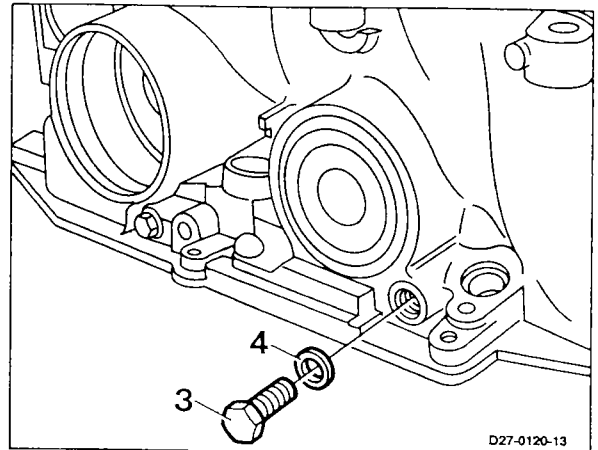


93 Insert locking ring (5).

94 Unclamp assembling fixture and remove.

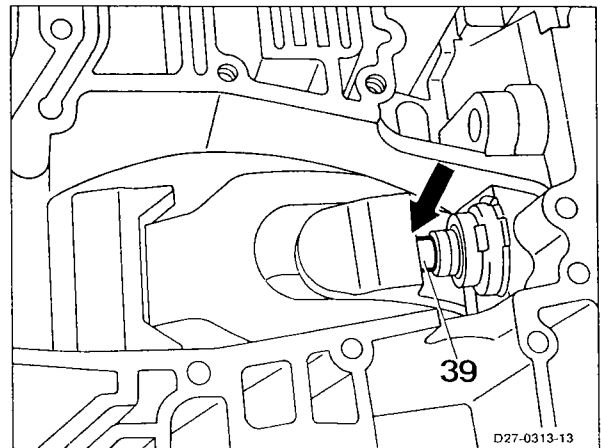


95 Screw in hexagon bolt (3) with sealing ring (4).



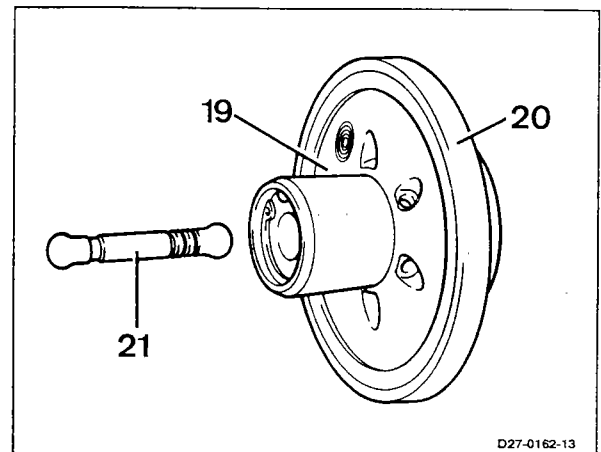
96 Install thrust pin (39) with large diameter to brake band **B2** (arrow).

Note: Thrust pin must engage.



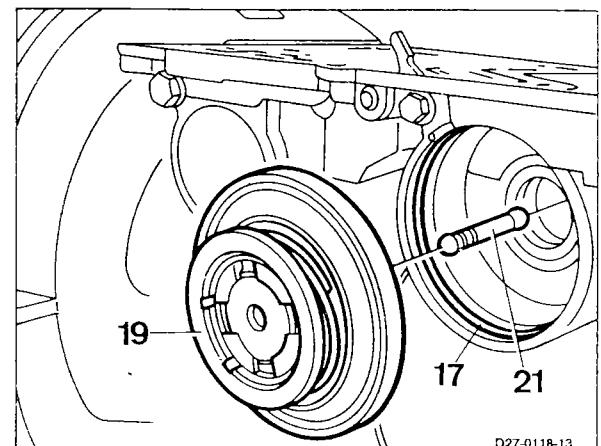
97 Insert Teflon ring (20) with grease in groove of brake band piston **B2** (19).

98 Insert thrust pin (21).

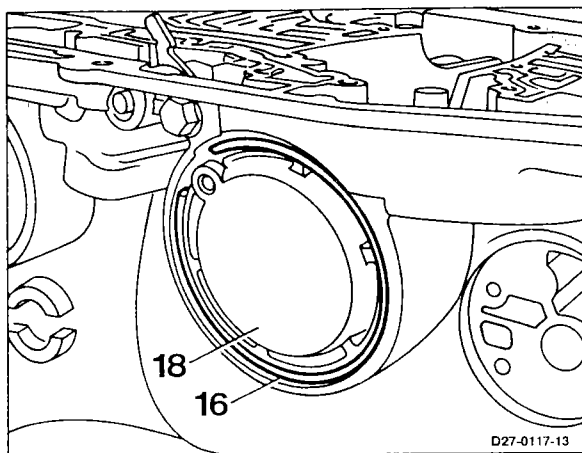


99 Install new O-ring (17).

100 Insert brake band piston **B2** (19) with thrust pin (21) and at the same time make sure that the thrust pin of brake band piston **B2** is installed in brake band **B2**.



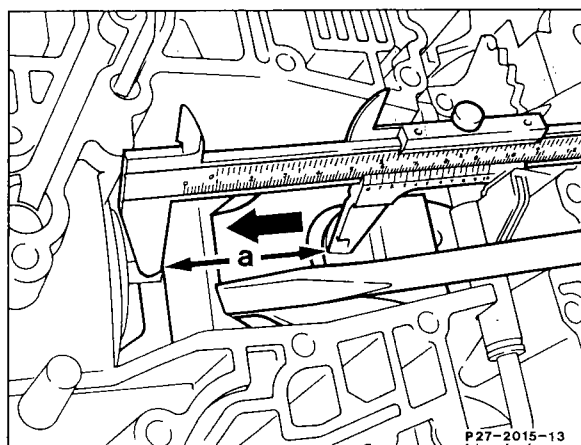
101 Press in brake band piston cover **B2** (18) and install locking ring (16).



D27-0117-13

Measure free travel at brake band B2 and adjust

102 Press brake band **B2** at the support strap to brake band piston **B2** (direction of arrow) until the brake band piston **B2** is at the brake band piston cover **B2** and measure dimension "a".

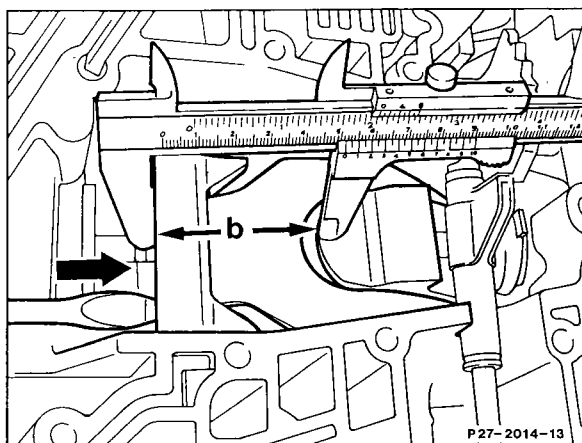


P27-2015-13

103 Press brake band **B2** at the support strap to pressure body (direction of arrow) and measure dimension "b".

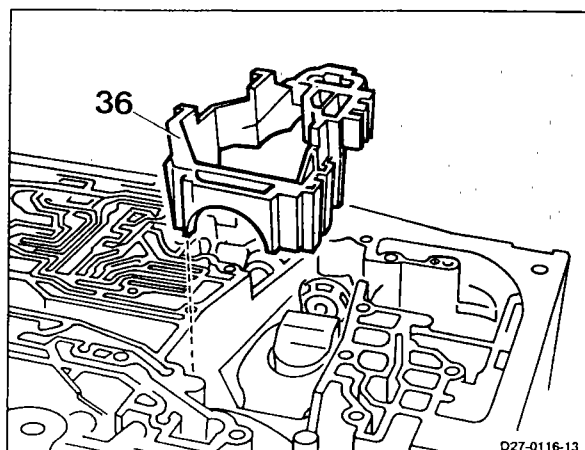
Note: The difference between dimension "a" and dimension "b" is the free travel.

The free travel must be 5,5 to 6,0 mm and is adjusted by replacing the thrust pins (21) which are available in different lengths. Thrust pins are available in the following lengths: 47,2; 48,0; 48,8; 49,6 mm.



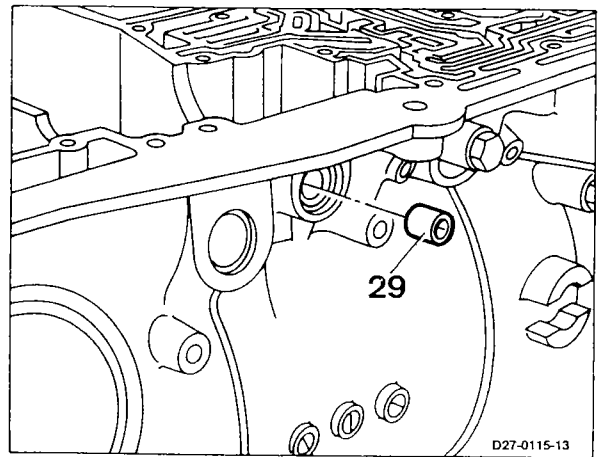
P27-2014-13

104 Insert brake band holder **B2** (36).

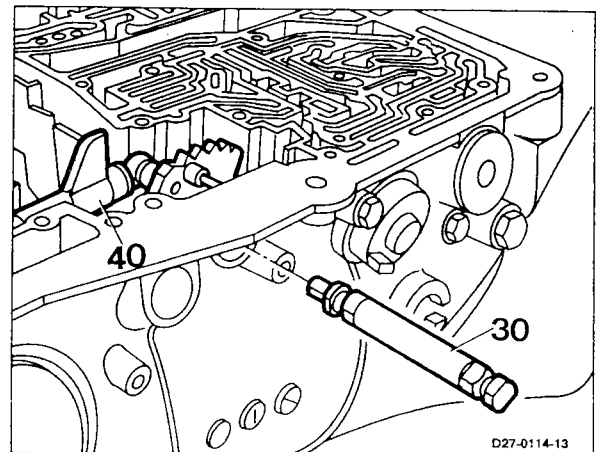


D27-0116-13

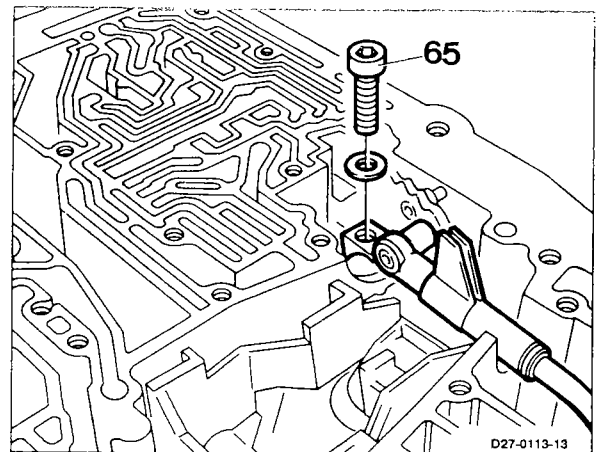
105 Install new radial shaft seal (29).



106 Insert detent plate with linkage (40) and slide in range selector shaft (30).

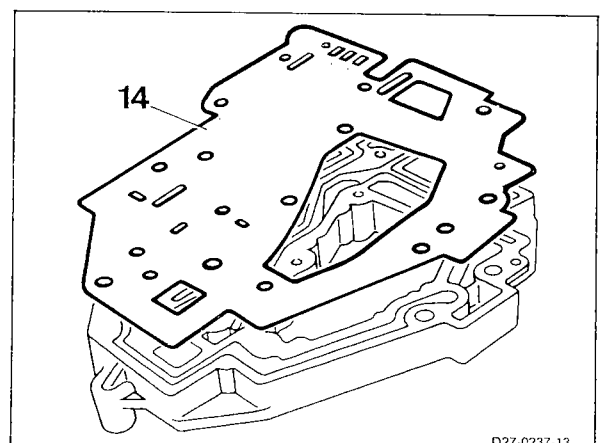


107 Fasten detent plate with hexagon socket bolt (65) and tighten to 8 Nm.



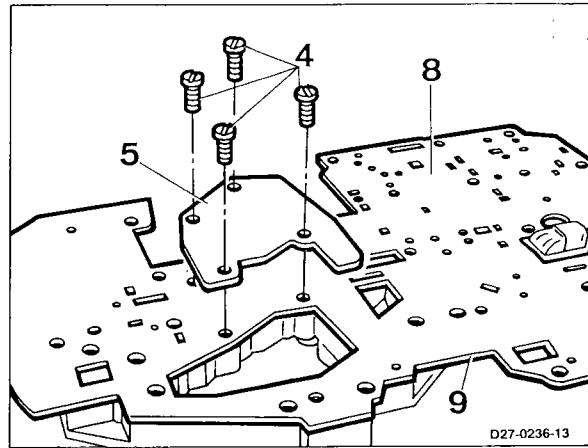
108 Place new seal (14) on lower cover.

Note: The slide valves must be oiled with ATF oil prior to the installation. Check ease of movement when inserting.

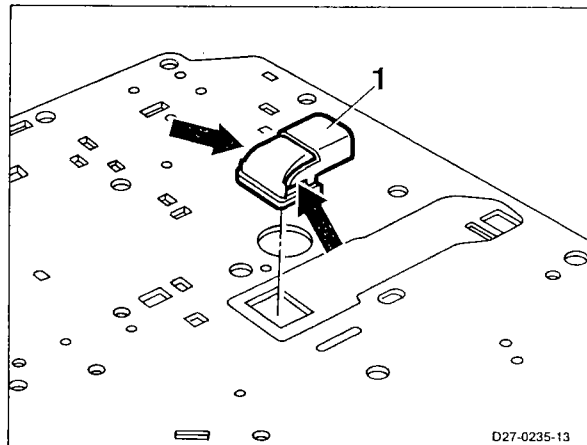


109 Mount seal (8) and intermediate plate (9) on lower cover.

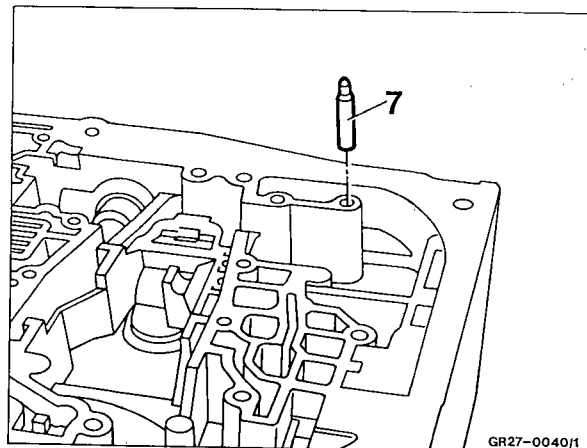
110 Mount cover plate (5) and tighten slotted-head bolts(4).



111 Insert injector (1) via the underside of the intermediate plate by pressing the straps (arrows) together.

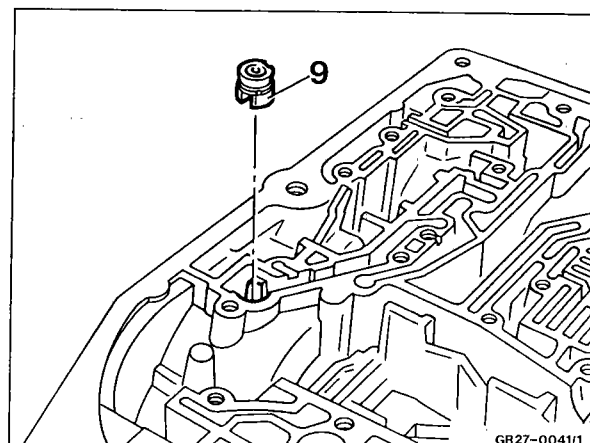


112 Insert locating pin (7).



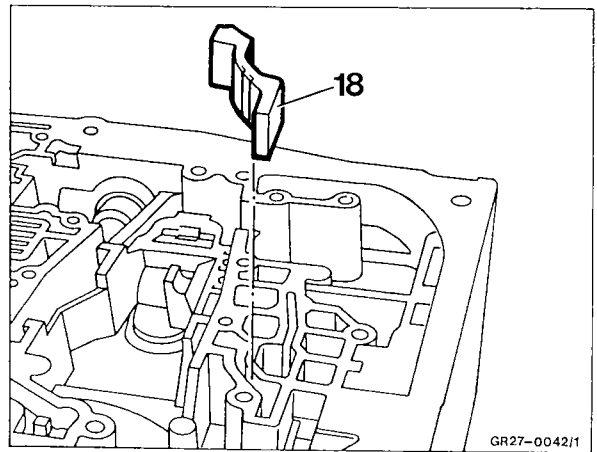
113 Insert one-way valve (6).

Note: installed up to 8/91 in combination with the secondary pump.

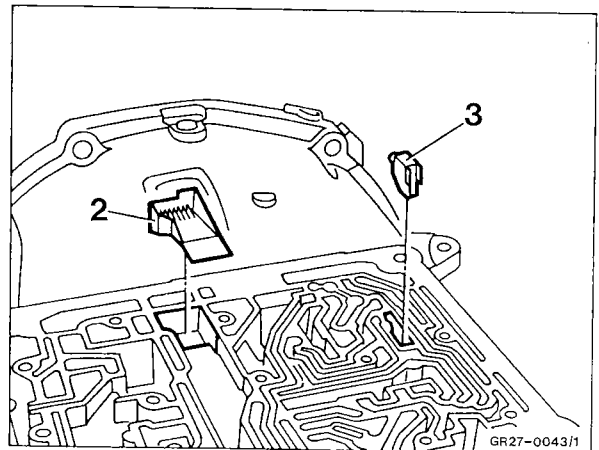


114 Insert filler piece (18).

Note: The filler piece is installed up to transmission end no. 34 22 000.

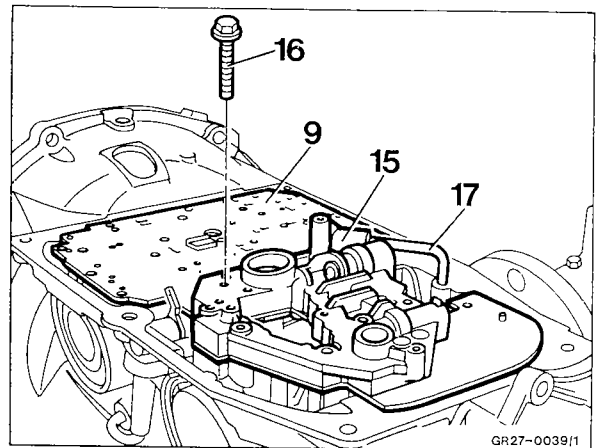


115 Insert oil deflector piece (2) and temperature reactor (3).

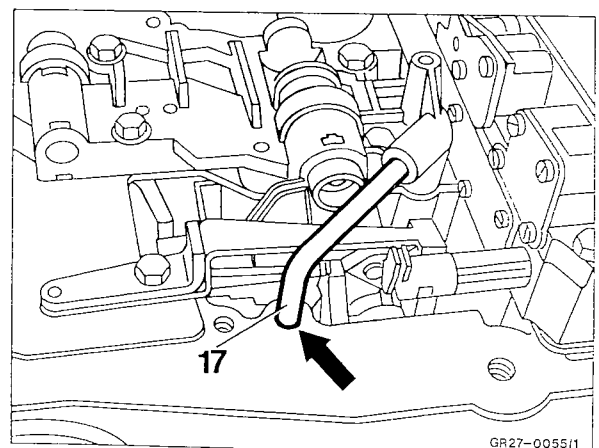


116 Mount lower cover (15) with intermediate plate (9) and oil pipe (17).

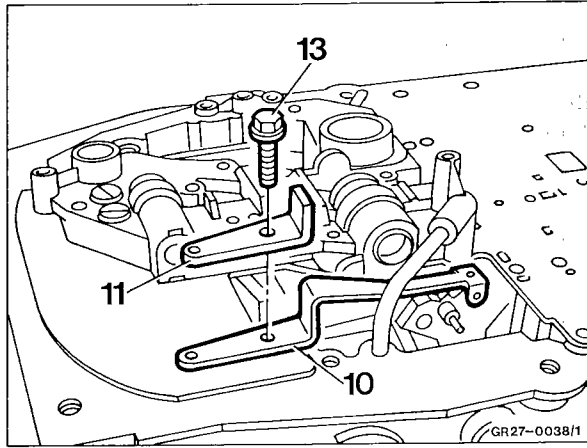
117 Tighten hexagon bolts (16) to 8 Nm.



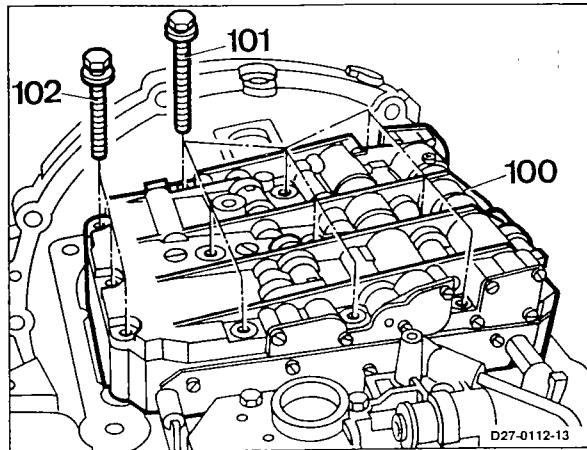
Note: Prior to tightening the lower cover, make sure that the oil pipe (17) is inserted in the bore (arrow) free of tension.



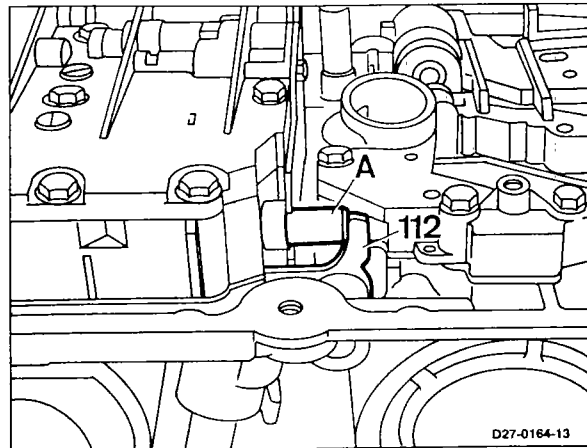
118 Mount support (11) with leaf spring (10) and tighten hexagon bolt (13).



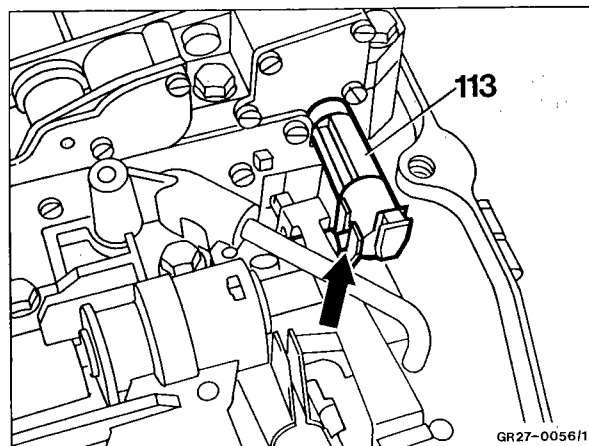
119 Mount shift valve housing (100) and tighten hexagon bolts (100/102) to 8 Nm.



Note: Piston for control pressure control valve (A) must rest against reversing lever (112).



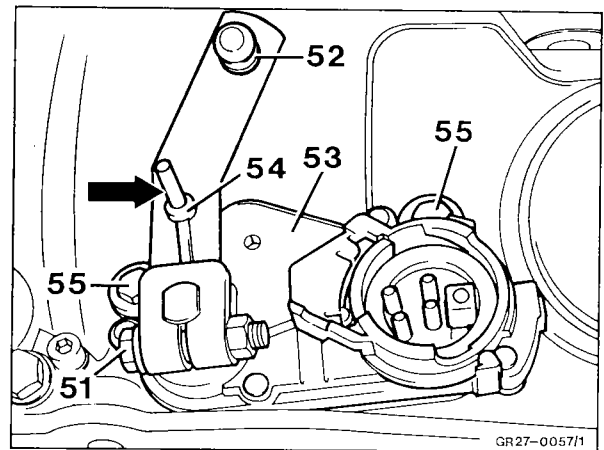
Note: The range selector lever (113) must engage in the follower (arrow) of the detent plate.



120 Mount range selector lever (52) in such a way that the follower (54) is fixed in the range selector lever.

121 Insert hexagon bolt (51) and tighten to 8 Nm.

122 Move range selector lever (52) into position "N", introduce a 4-mm cotter pin (arrow) through the range selector lever into the location bore of the switch housing and tighten fastening bolts (55) to 8 Nm. Remove cotter pin again.

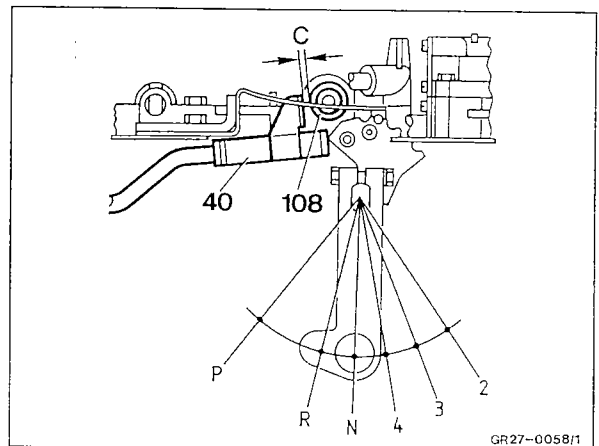


Check clearance "C" between blocking piston (108) and stop on linkage of detent plate (40) and adjust

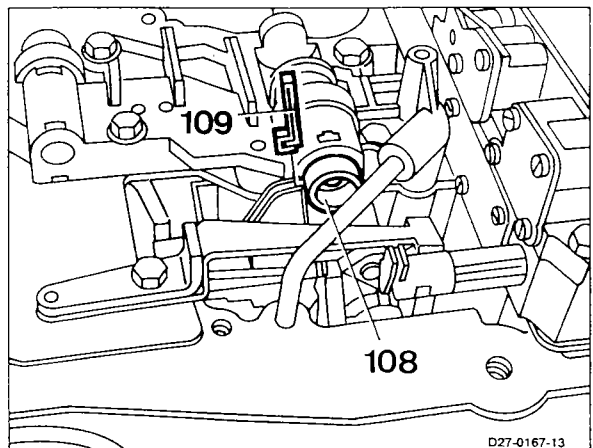
123 Move shift lever into position "N".

124 Check clearance "C" between blocking piston (108) and stop on detent plate with linkage (40) using a feeler gauge.

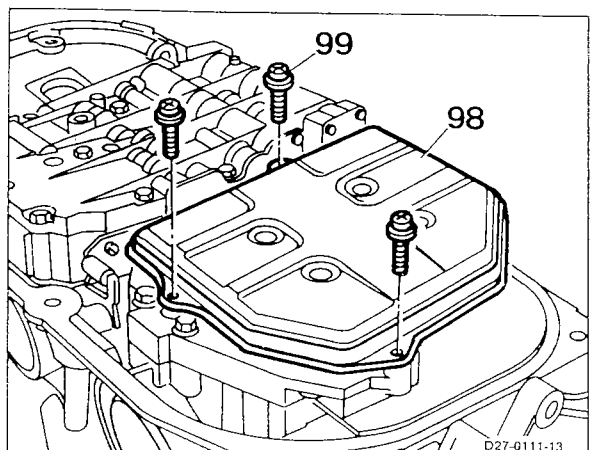
The clearance "C" in position "N" must be adjusted to 0,4 to 1,0 mm.



Note: The clearance "C" is adjusted by changing the plastic clip (109).

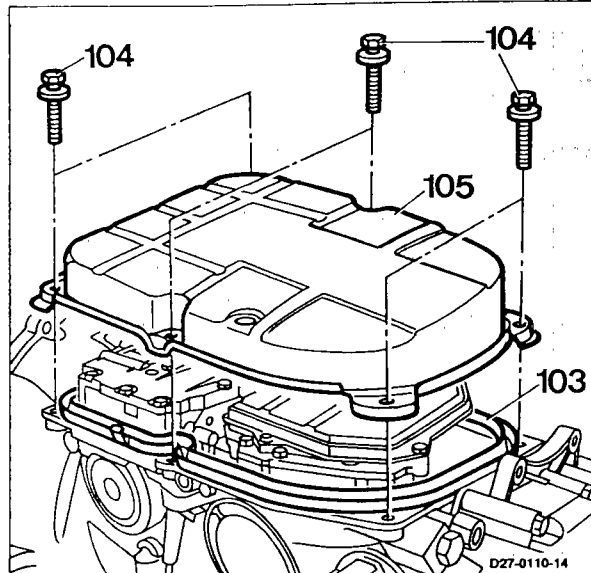


125 Mount oil filter (98) and tighten Phillips screws (99).

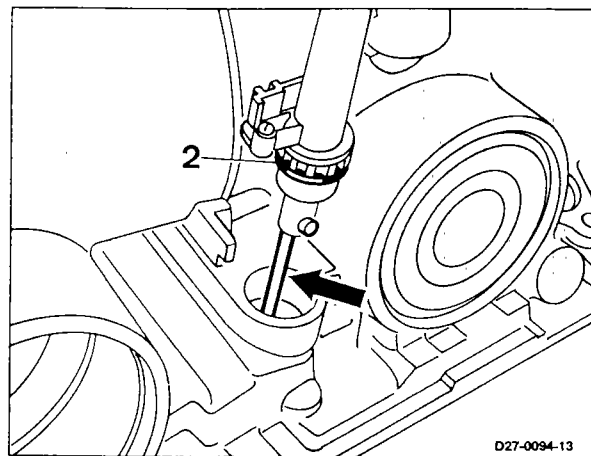


126 Mount oil pan (105) with new seal (103) and tighten hexagon bolts (104) to specified tightening torque.

127 Put transmission bearing bracket in installation position.

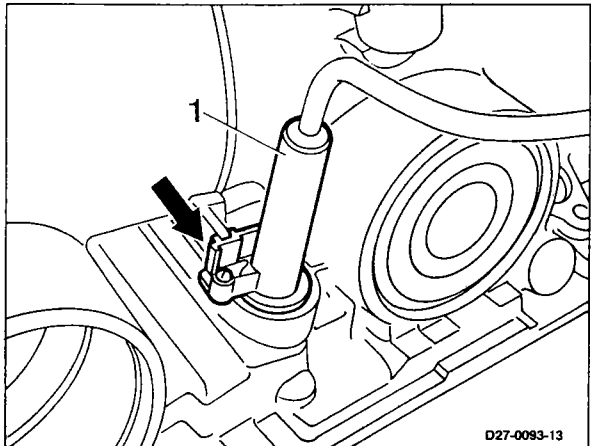


128 Insert new O-ring (2) and engage pull linkage (arrow).



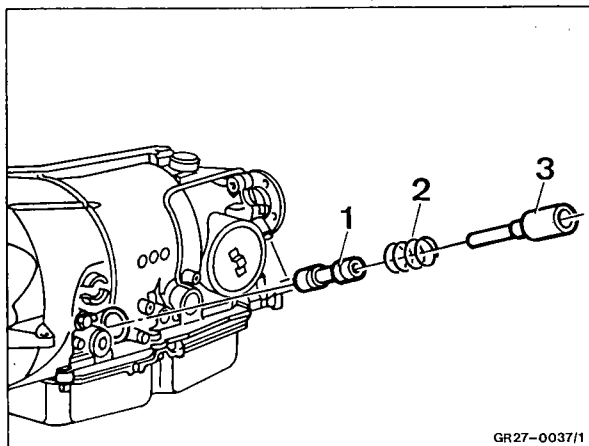
129 Install control pressure cable (1).

Note: The plastic clip (arrow) must engage.



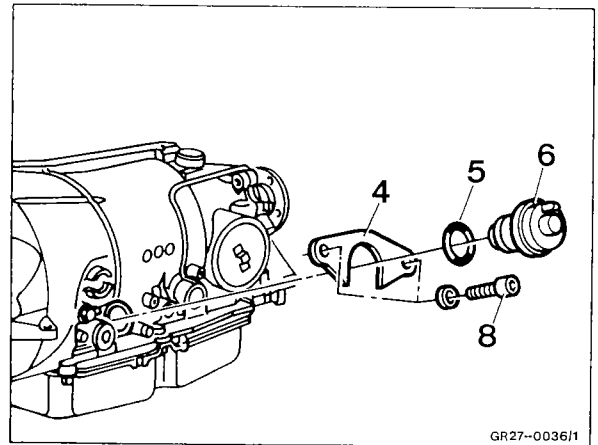
130 Insert thrust pin (3), spring (2) and modulating pressure valve (1).

Note: The thrust pin must be cleaned and checked for ease of movement.

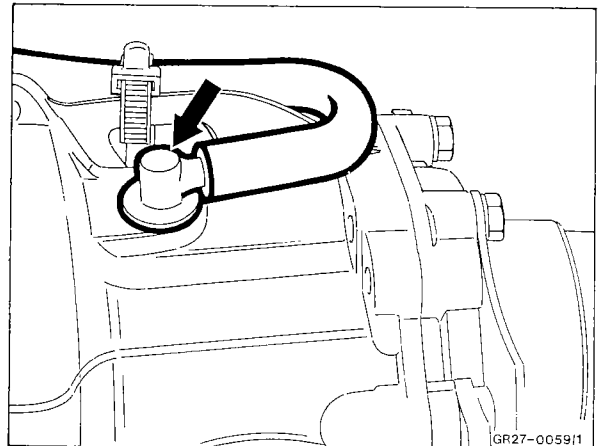


131 Insert vacuum unit (6) with new sealing ring (5).

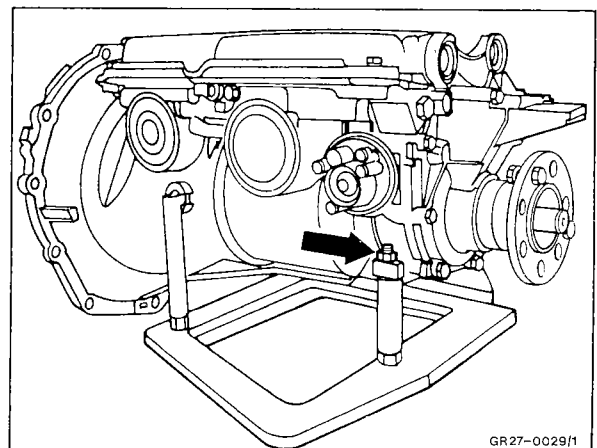
132 Insert retaining plate (4) and tighten with hexagon socket bolts (8).



133 Mount ventilation line.

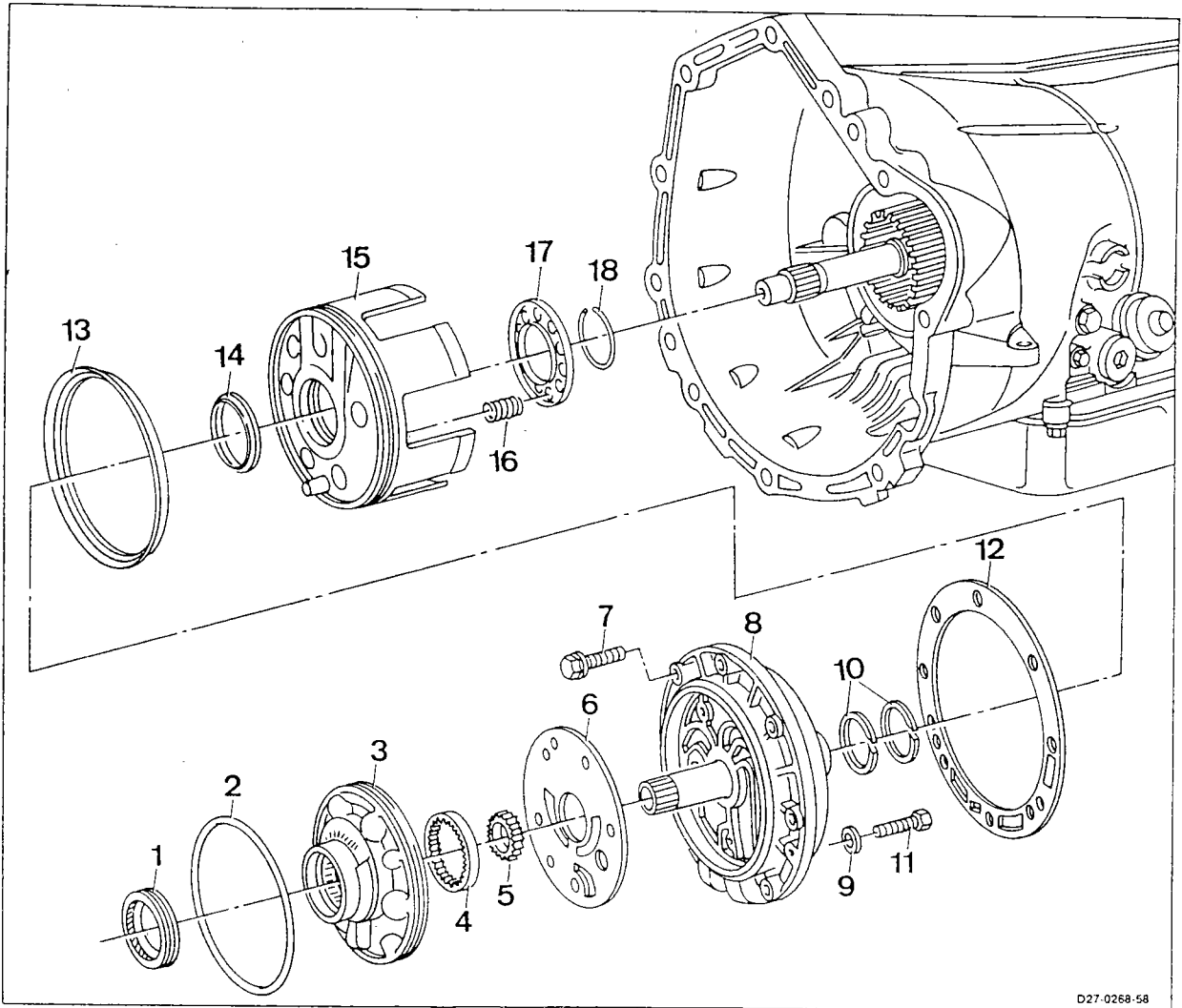


134 Remove bolt (arrow) and lift transmission out of assembly block.



135 For installation of automatic transmission refer to 4.1/1.

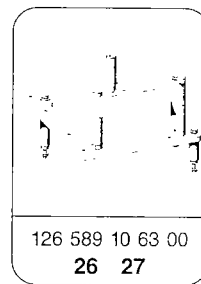
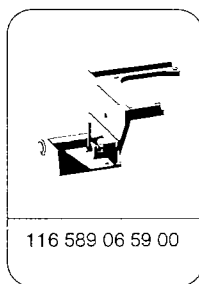
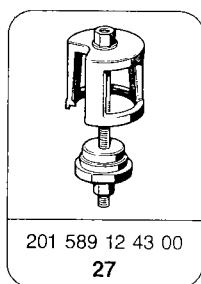
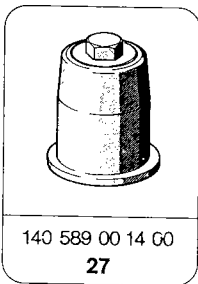
Tightening torques



D27-0268-58

Item no.	Designation	Thread	Nm
7	Fastening of front cover	-	13
11	Fastening of primary pump	M 8 x 22	20

Special tools 



Technical data

	Number	Wire diameter mm	Length is slack mm
Pressure spring for B3 piston	20	1,1	approx. 29

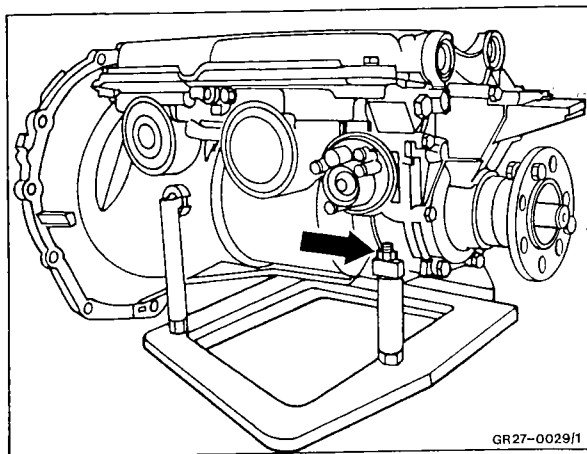
Removal

1 For removal of automatic transmission refer to 4.1/1.

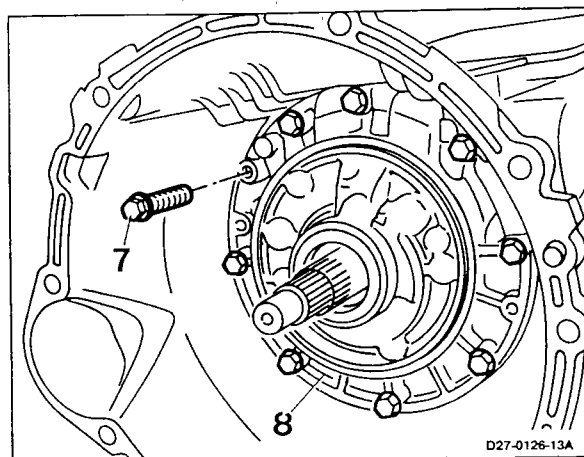
Note: Drain off residual oil.

2 Bolt support plate to the assembly base. Insert automatic transmission in support plate and fasten with hexagon nut (arrow).

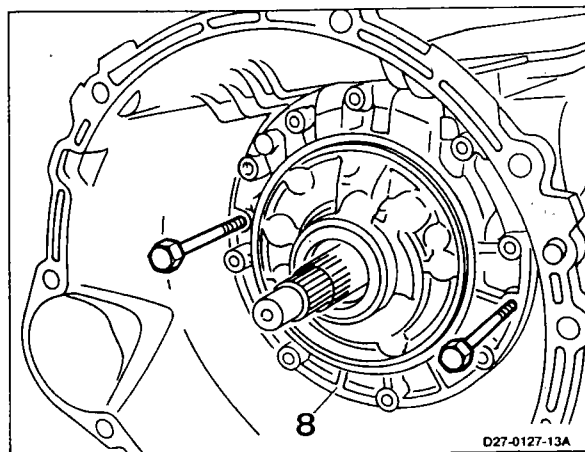
S 116 589 06 59 00
126 589 10 63 00



3 Unscrew bolts (7).

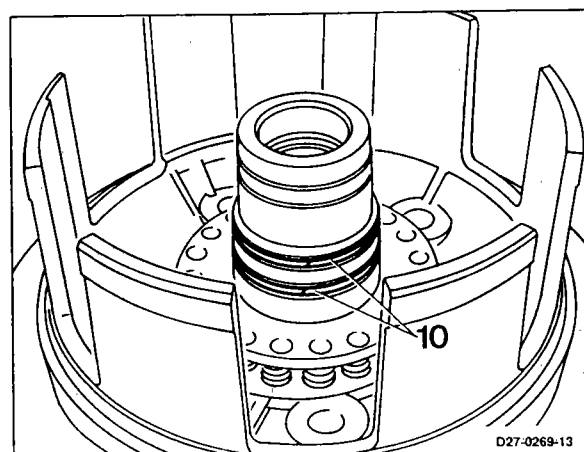


4 Screw bolts into threaded bores and in this way pull out the front transmission cover (8) with seal.




Disassembly

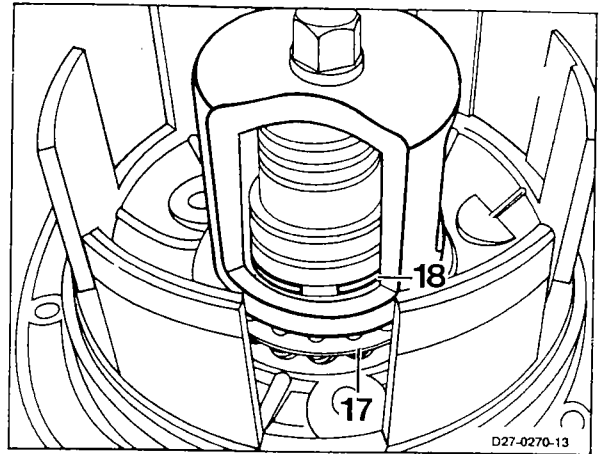
1 Remove Teflon rings (10).



2 Place spring tensioner on the spring retainer (17) and clamp with counterpiece until the snap ring (18) is exposed.

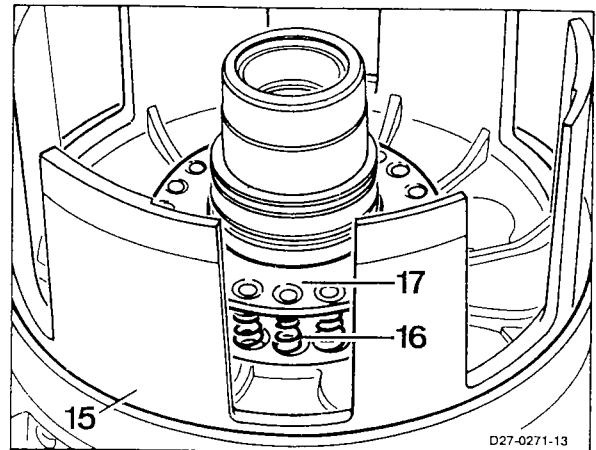
3 Remove snap ring from above, unclamp assembling fixture and remove.

 201 589 12 43 01
201 589 12 43 02



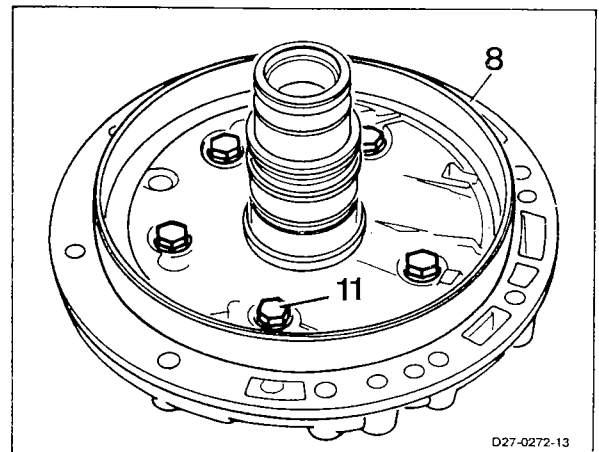
4 Remove spring retainer (17) and pressure springs (16).

5 Pull out piston LB 3 (15).

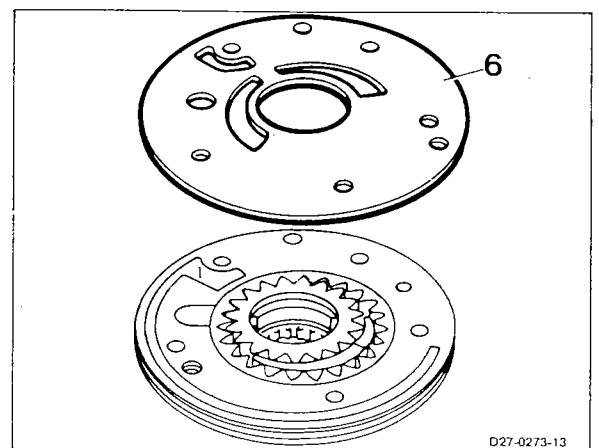


6 Unscrew bolts (11).

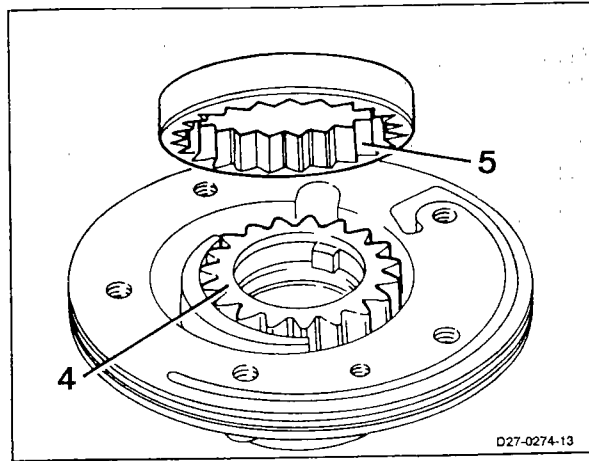
7 Remove primary pump from front transmission cover (8).



8 Remove intermediate plate (6).



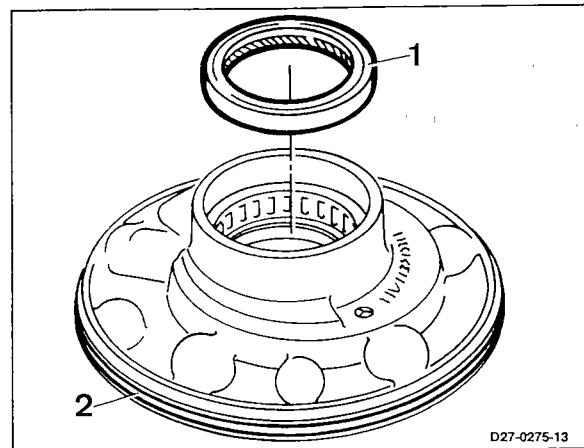
9 Remove primary pump gears (4/5) from the primary pump housing.



10 Remove radial shaft seal (1).

11 Remove O-ring (2).

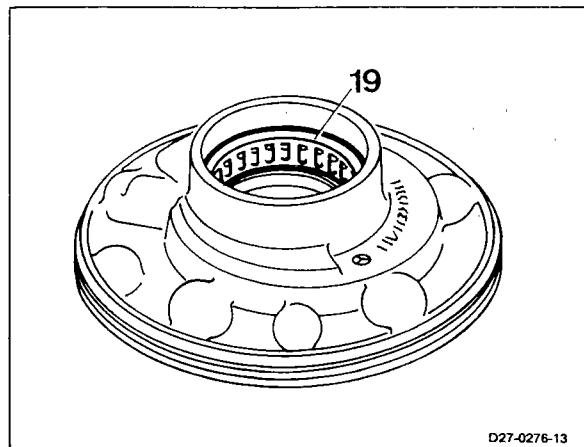
12 Clean all parts, check, exchange as required.



Assembly

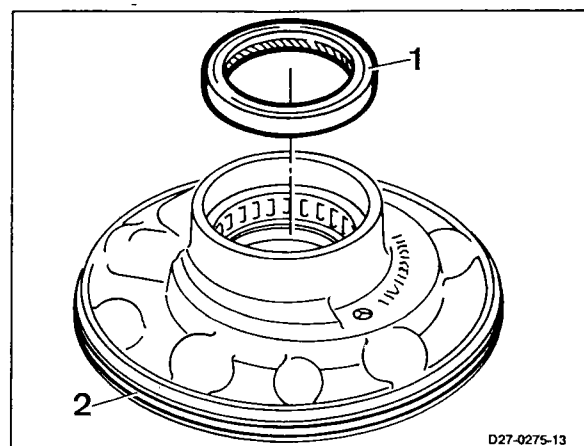
1 Check radial roller bearing (19).

Note: If there are signs of wear or damage on the radial roller bearing, the primary pump must be replaced.



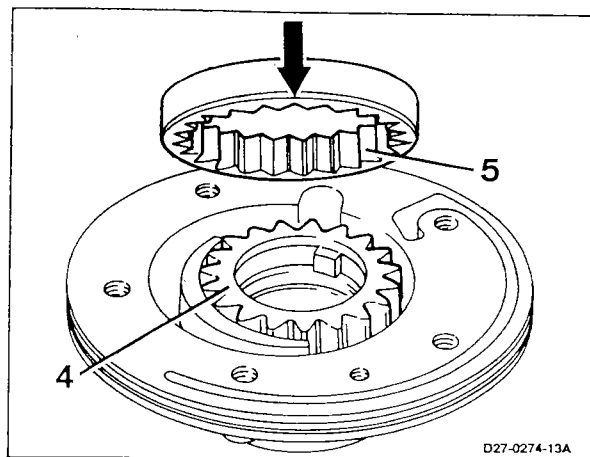
2 Install new O-ring (2).

3 Drive in radial shaft seal (1) to be flush using a suitable drift.

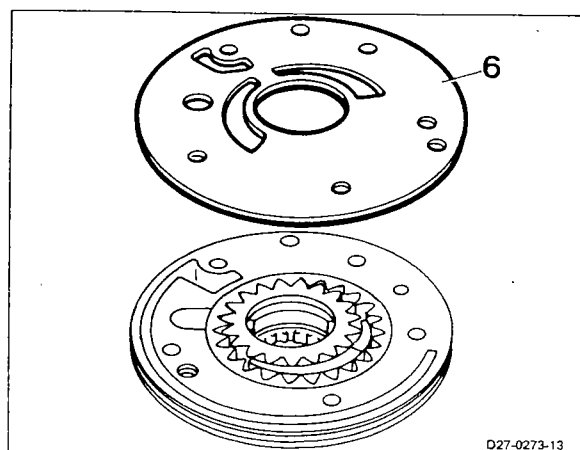


4 Oil primary pump gears (4/5) and insert in primary pump housing.

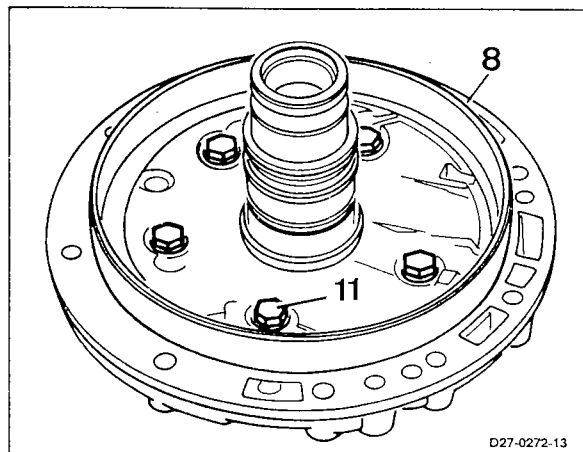
Note: Insert pump gear in such a way that the chamfer (arrow) points down to the primary pump housing.



5 Mount intermediate plate (6).

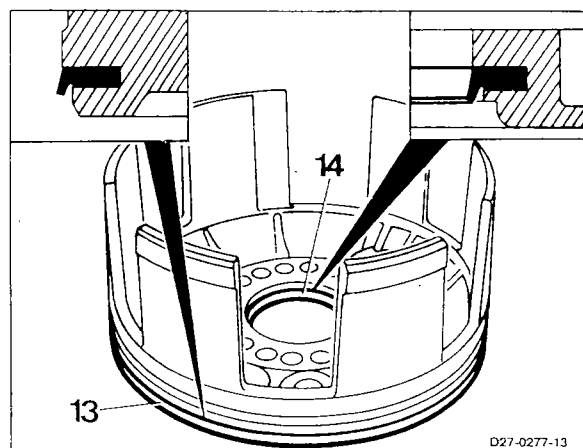


6 Insert primary pump in front transmission cover (8) and tighten hexagon bolts (11) to 20 Nm.




7 Check lip sealing rings (13/14) and replace if necessary.

Note: The lip sealing rings must be installed in such a way that the sealing lip is pointing down.



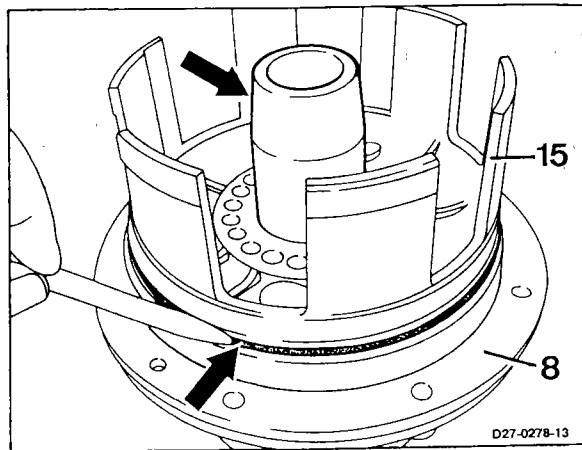
8 Oil the sliding surfaces of the installation sleeve and mount on the front transmission cover (8) (arrow).

 140 589 00 14 00

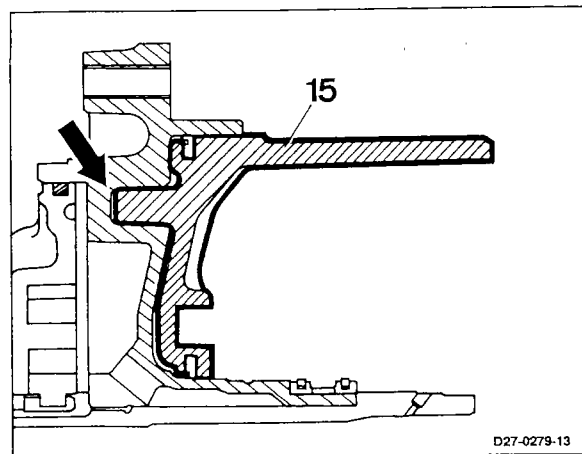
9 Oil lip sealing rings

10 Press down piston LB3 (15) carefully without canting, at the same time run over the outer lip sealing ring (arrow) with a pin.

11 Remove installation sleeve.



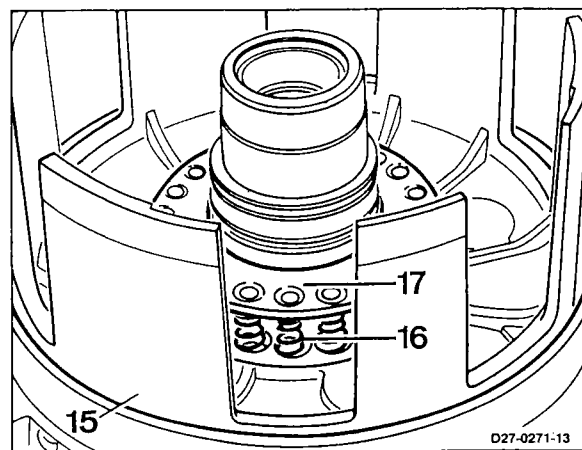
Note: Insert piston LB3 (15) in such a way that the journal (arrow) on piston LB3 coincides with the bore on the front transmission cover.




12 Insert pressure springs (16).

13 Insert Teflon rings (17) with grease.


Note: All springs must be centered by the pins in the spring retainer.

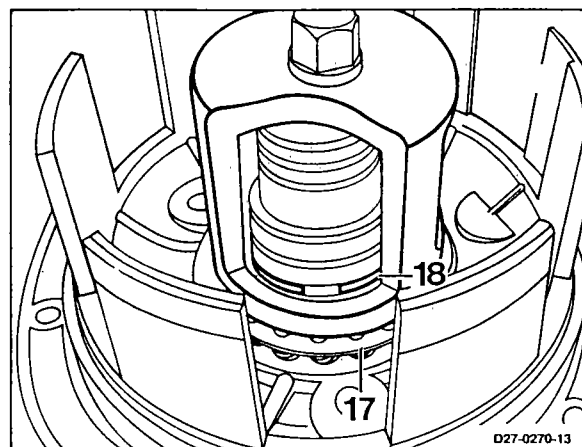


14 Place spring tensioner on spring retainer (17) and clamp with counterpiece until the groove for the snap ring (18) is exposed.

 201 589 12 43 01

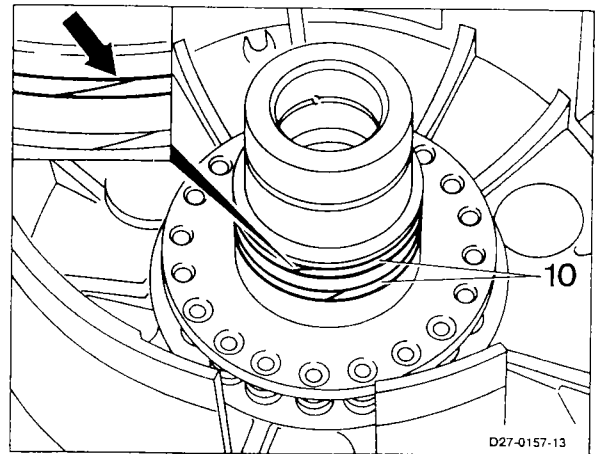
15 Insert snap ring in groove, unclamp assembling fixture and remove.

 201 589 12 43 02



16 Insert Teflon rings (10) with grease.

Note: The pack (arrow) of Teflon rings must remain intact for the installation of the primary pump. If necessary, remove the rings again and form to a smaller diameter so that the tension is increased.



Installation

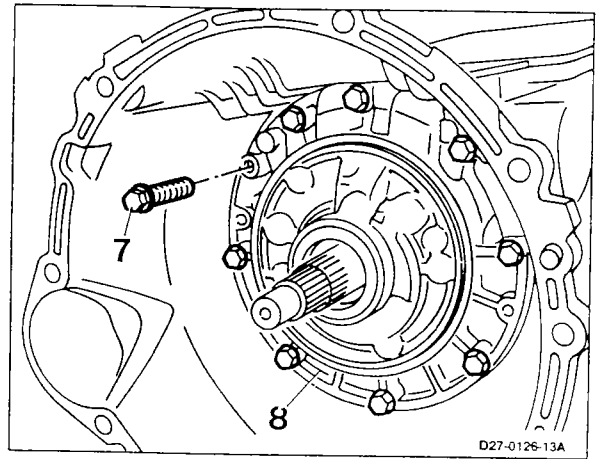
1 Clean sealing surface of front transmission cover (7).

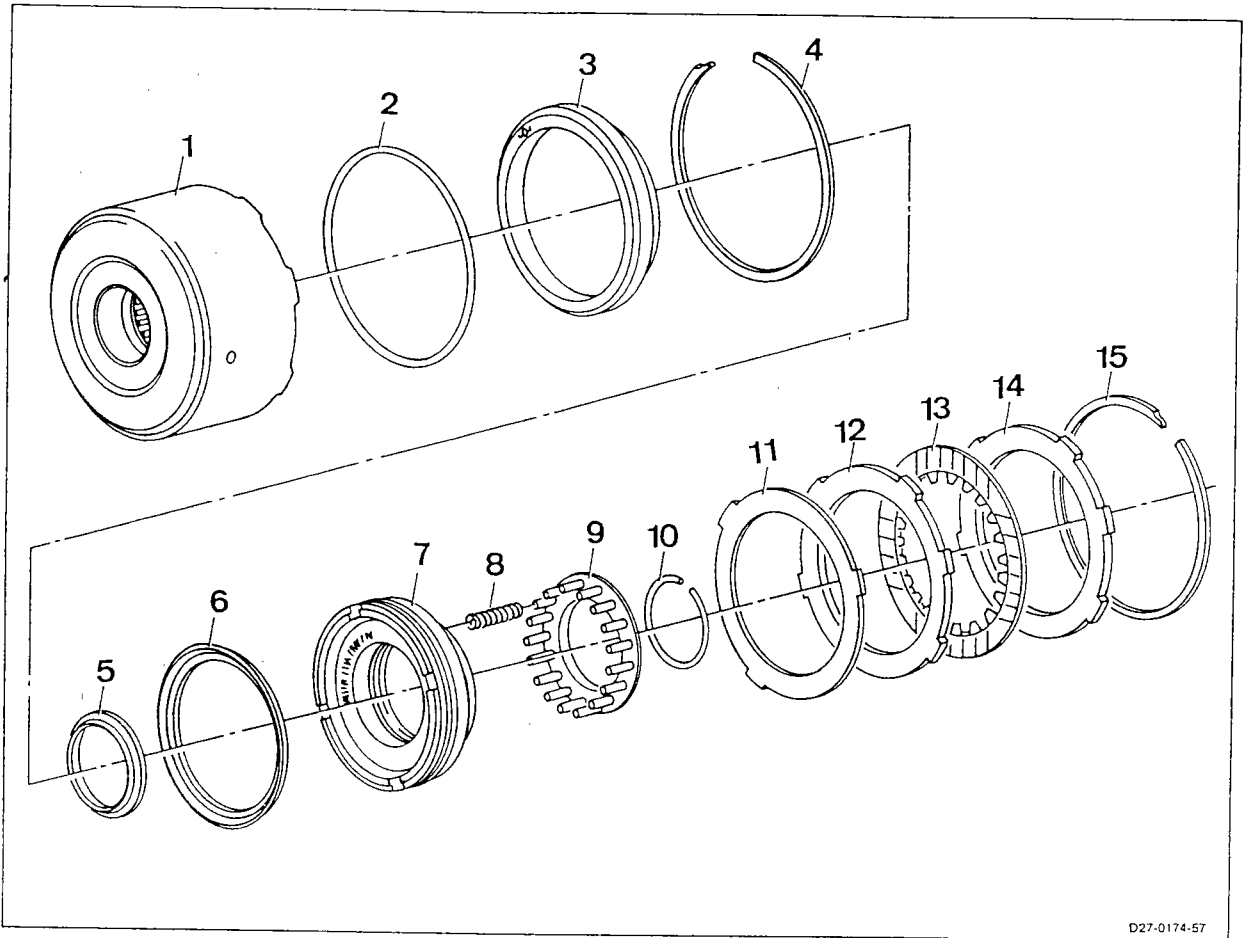
2 Mount front transmission cover (8) with new seal.

Note: The seal of the front transmission cover is not to be coated with sealing compound.

3 Tighten hexagon bolts (7) to 20 Nm.

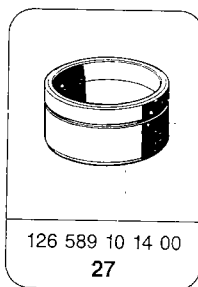
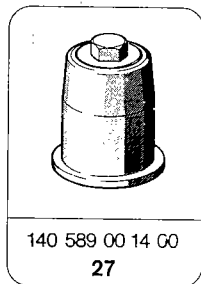
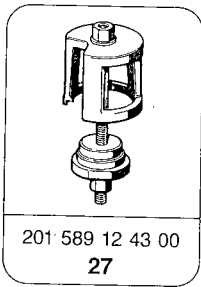
4 For installation of automatic transmission refer to 4.1/1.





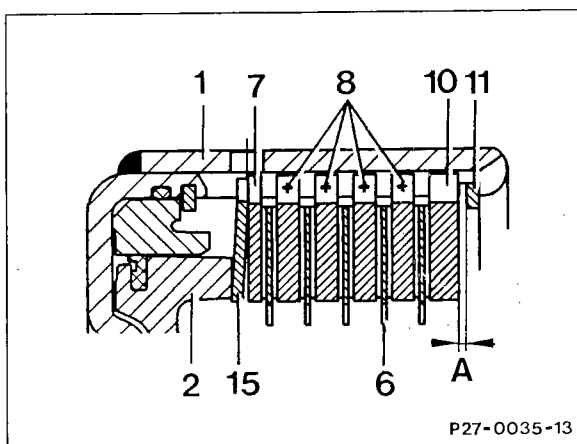
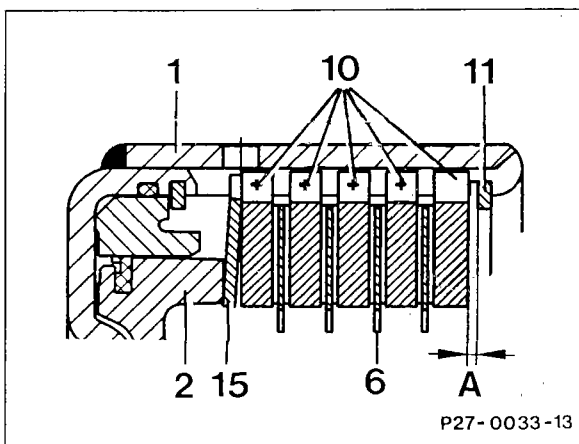
D27-0174-57

Special tools 



Sequence of clutch disks

Transmission 722.384
 .385
 .396
 .397
 .398
 .399



Transmission 722.372
 .382

Clutch disk versions

Designation	Item no.	Thickness in mm
Inner disk	6	2,1
	7	2,0
	8 optional for clearance compensation	3,5 or 4,0
	10 optional for clearance compensation	4,5 or 5,0
Piston	2	—
Snap ring	11	2,0
		2,5
		3,0
Cup spring	15	—

Return springs for clutch piston (the number of springs is determined by balancing out, thus up to 2 springs less may be installed)

Transmission	Number	Wire diameter in mm	Length is slack mm approx.
722.3	27	0,9	38,5

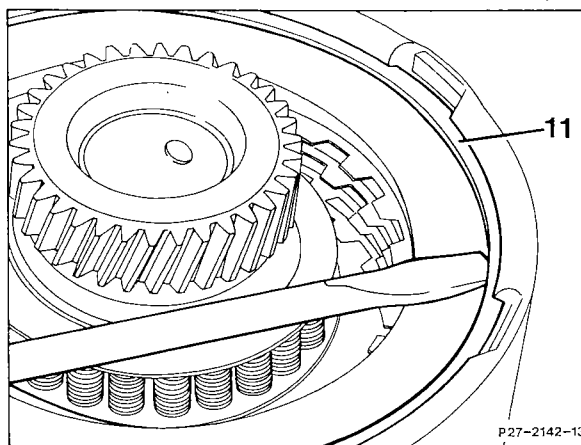
Adjustment data

Clearance "A" of disk clutch in mm (refer to diagram) Disks pressed together to 10 N	0,7 to 1,3
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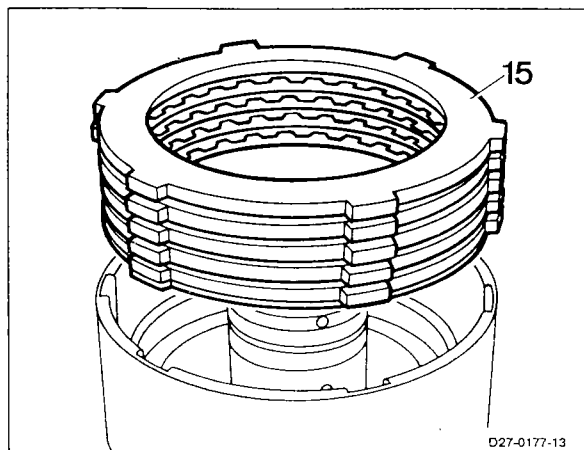
Disassembly

1 For disassembly of automatic transmission refer to 5.1/1.

2 Remove snap ring (11).




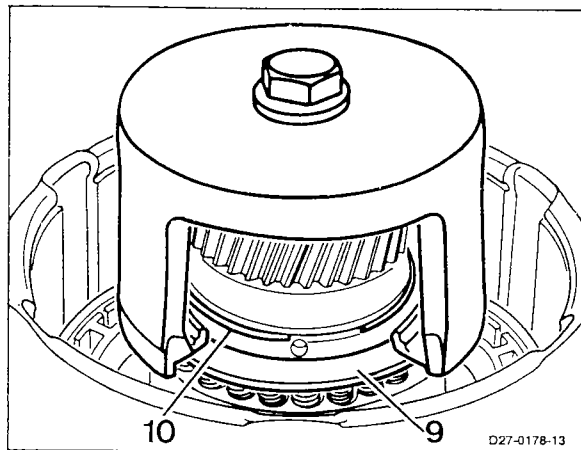
3 Remove complete disk set (15) from outer disk carrier.



4 Mount assembling fixture, press down spring retainer (9) and remove snap ring (10).

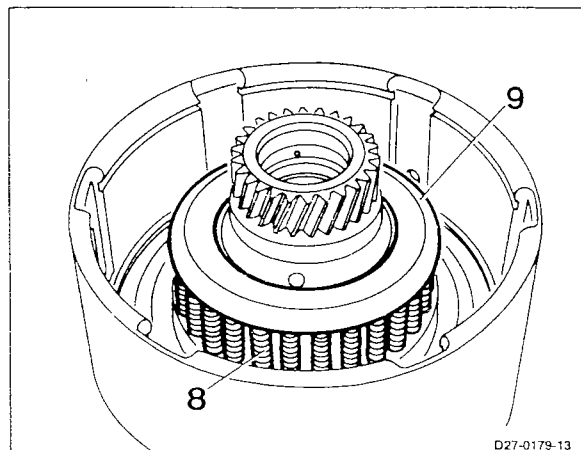
5 Unclamp assembling fixture and remove.

 126 589 00 43 00

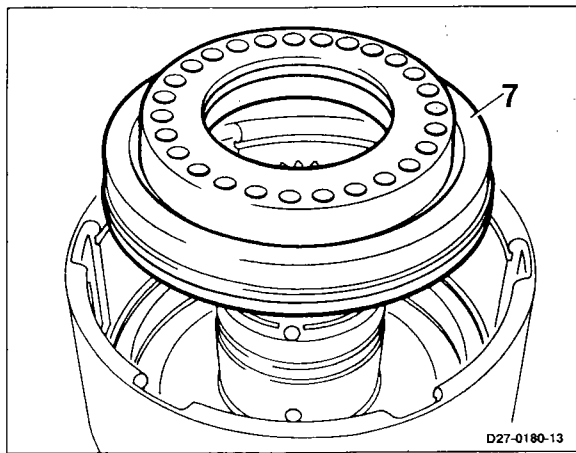


6 Remove spring retainer (9) and pressure springs (8).

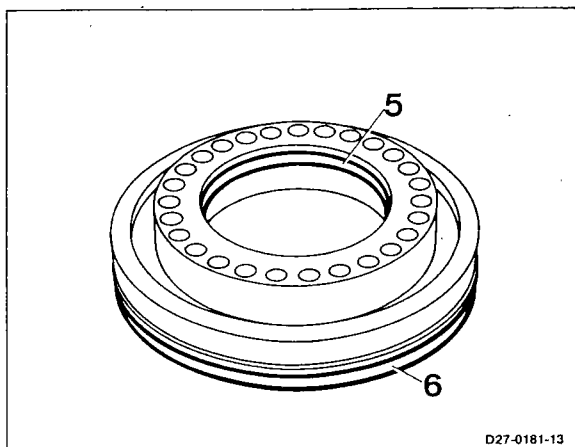
Note: Write down the number of pressure springs. Do not confuse springs of K1 and K2.



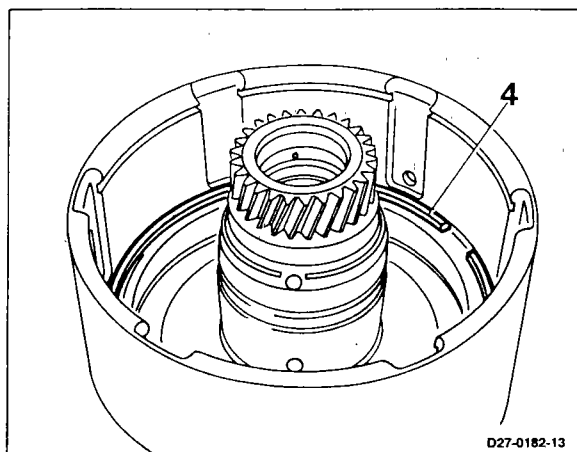
7 Pull out piston (7) from outer disk carrier.



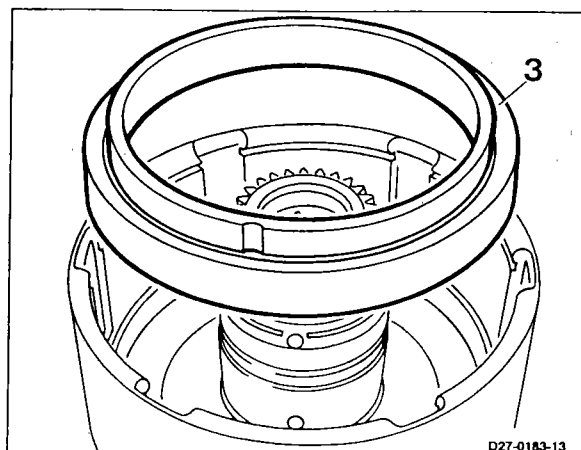
8 Remove lip sealing rings (5/6) of piston.



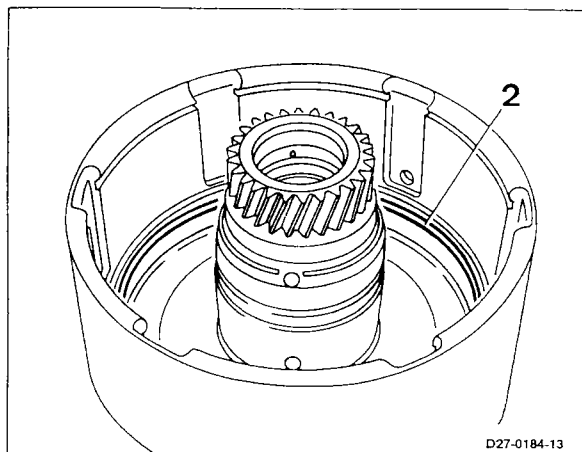
9 Remove snap ring (4).



10 Remove piston guide ring (3).



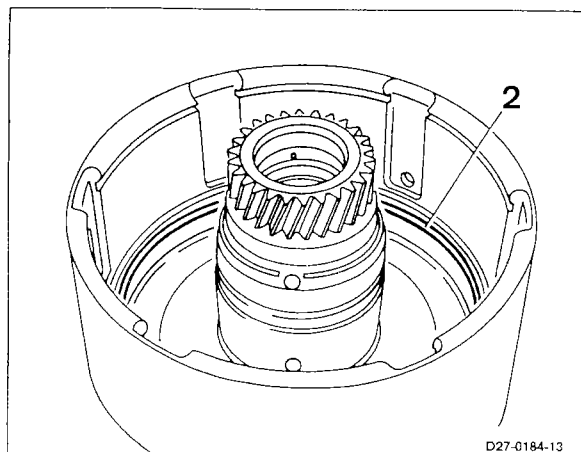
11 Remove O-ring (2).



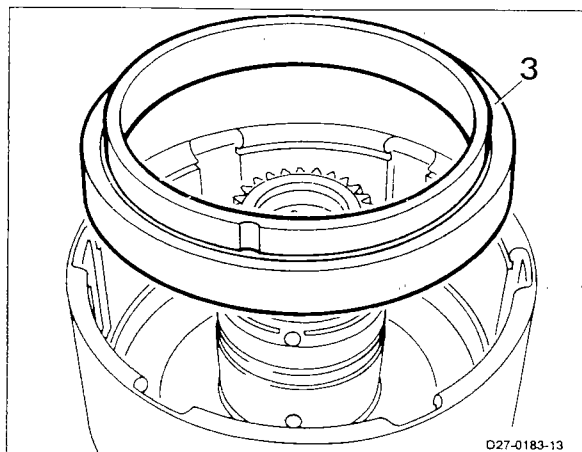
Assembly

Note: New lining disks must be placed in ATF oil for 1/2 hour.

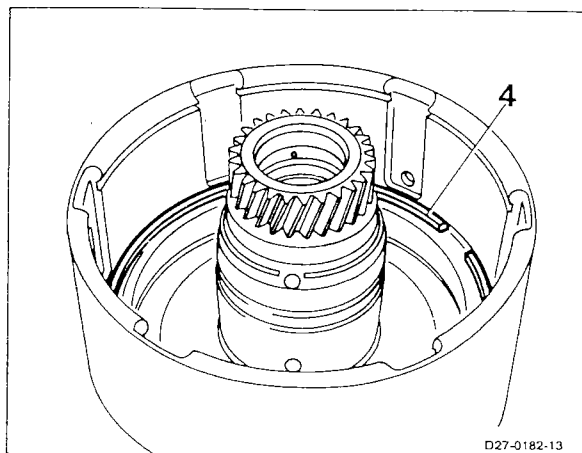
1 Install new O-ring (2).



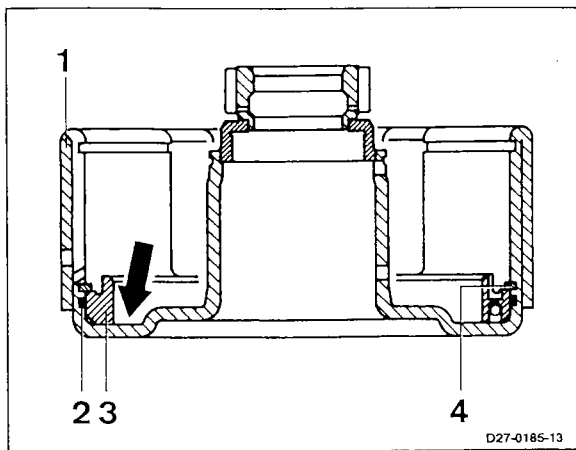
2 Insert piston guide ring (3).



3 Install snap ring (4).

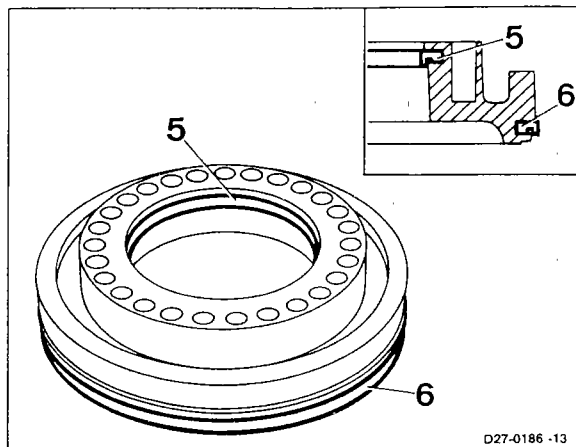


Note: In order to check the O-ring (2) between the outer disk carrier (1) and the piston guide ring (3) for leaks, fill a little petroleum or cleaning fluid in the piston guide ring. Then observe whether the fluid reaches the inner side (arrow) of the outer disk carrier. If there are leaks, check the piston guide ring and the outer disk carrier and replace, if necessary.




4 Oil lip sealing rings (5/6) with ATF oil and insert in annular groove of the piston with the sealing lips pointing down.

Note: Make sure that the lip sealing rings are not inserted twisted.

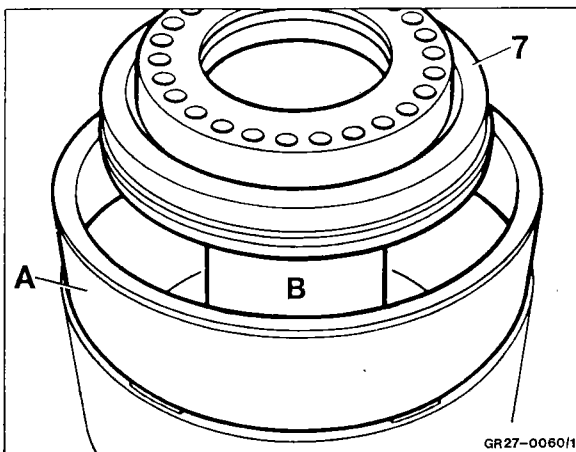


5 Insert installation sleeves in the outer disk carrier.

-  126 589 10 14 00 (A)
- 140 589 00 14 00 (B)

6 Slide piston (7) under slight rotating motion up to axial contact in the outer disk carrier.

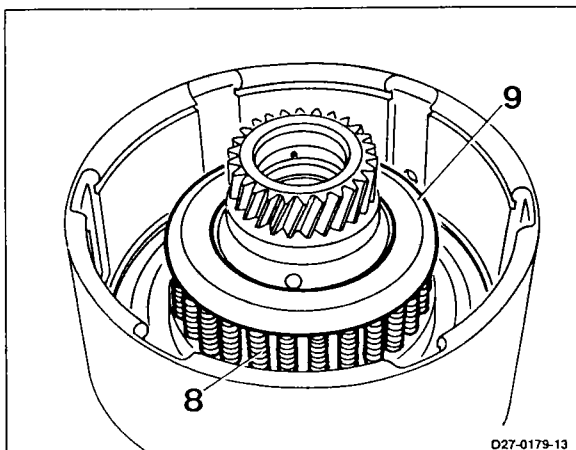
Note: Make sure not to cant the piston when inserting, so as not to damage the lip sealing rings.



7 Insert pressure springs (8) in the piston uniformly distributed over the circumference.


Note: Install the same number of pressure springs as were present in the disassembly of the clutch K1.

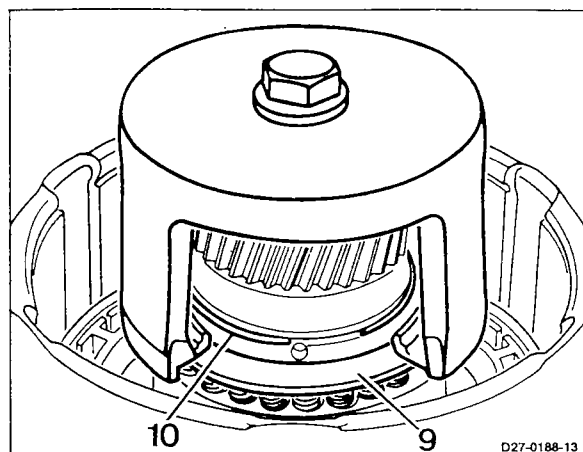
8 Insert spring retainer (9).



9 Mount assembling fixture, press down spring retainer (9) and install snap ring (10).

10 Unclamp assembling fixture and remove.

 201 589 12 43 00

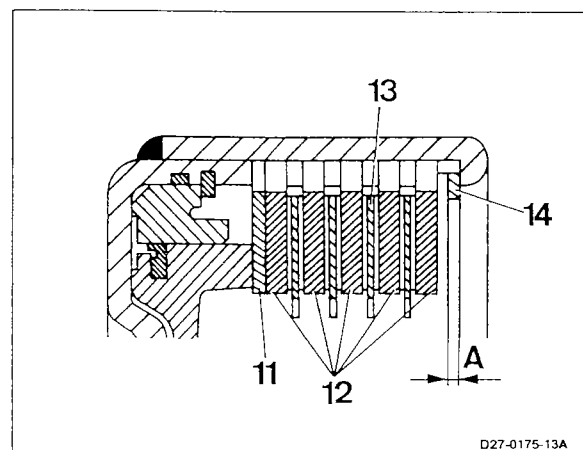


11 Compile disk set as follows:

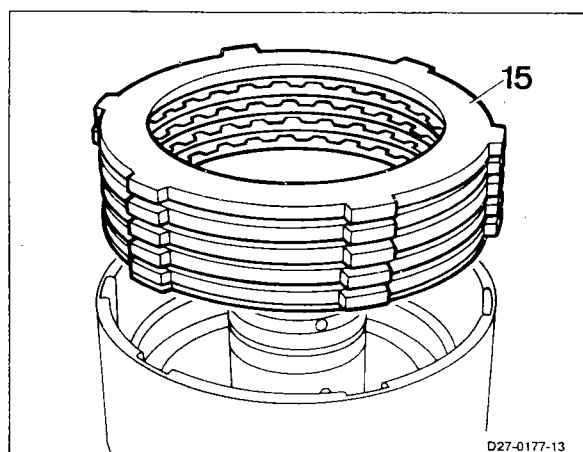
Sequence of clutch disks:

- Thin steel disk (11)
- Alternately steel disk (12) (x5) and lining disk (13) (x4)

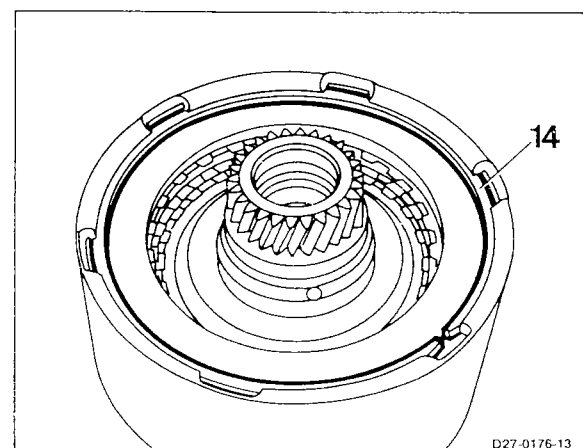
Note: refer to table 5.3/1.



12 Insert disk set (15) in the outer disk carrier.

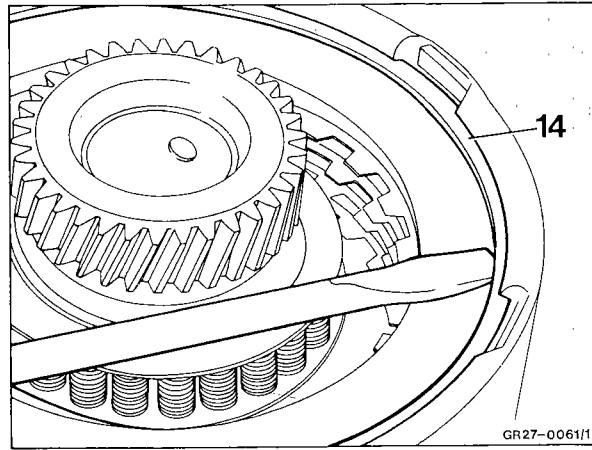


13 Install snap ring (14).



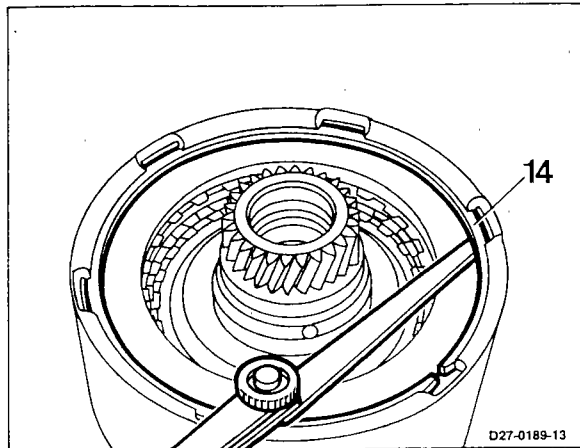
Measuring

Note: After inserting, press up snap ring (14) over the entire circumference using a screwdriver, in order to avoid measurement errors.



GR27-0061/1

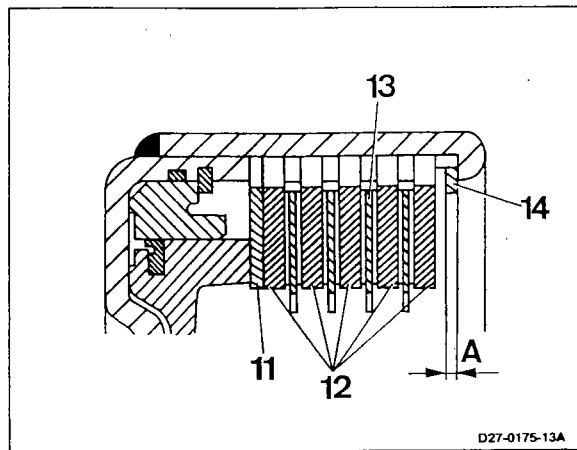
14 Measure clearance "A" using a feeler gauge. The disk clearance must be 0,7 up to 1,3 mm.



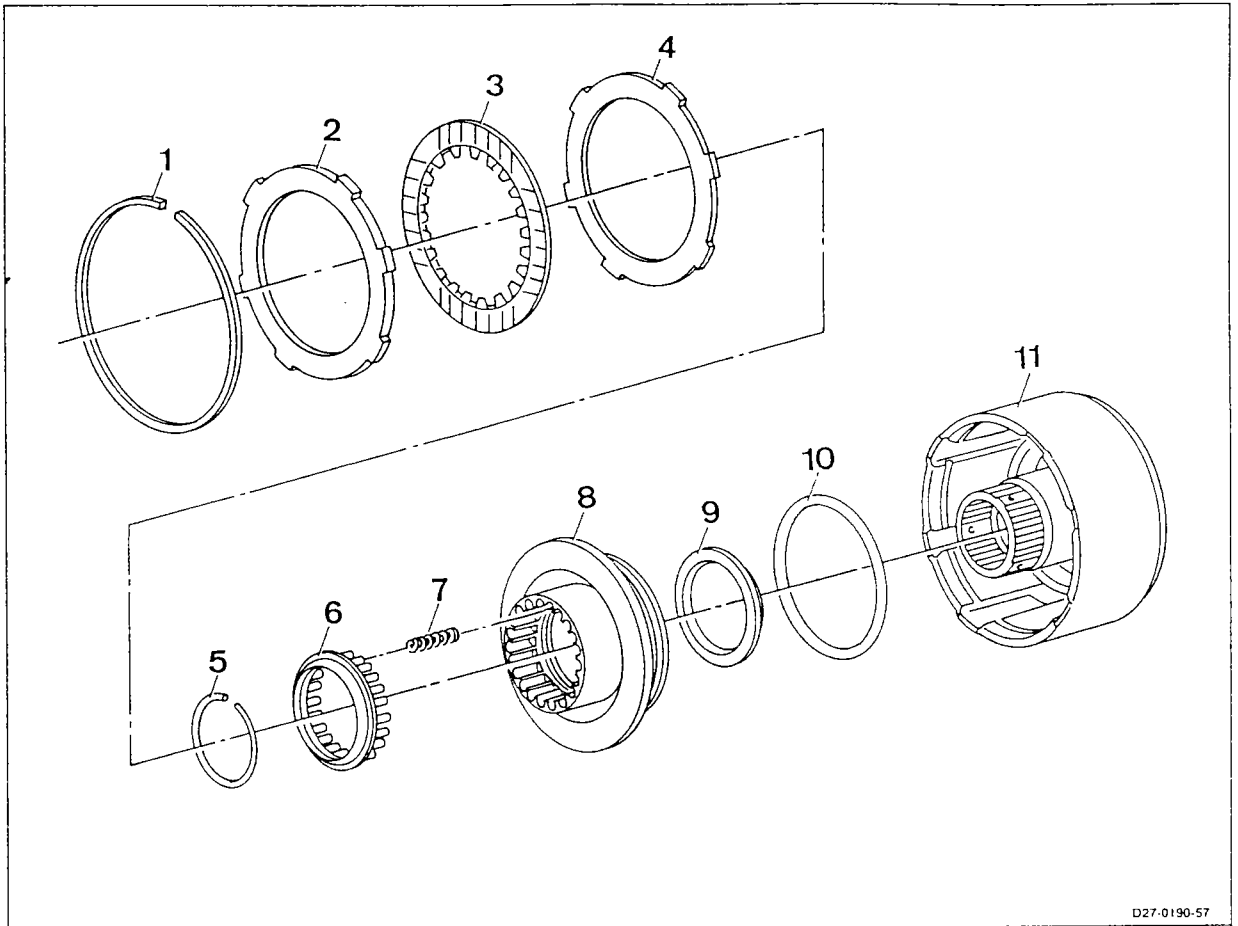
D27-0189-13

Note: The disk clearance is adjusted by changing the snap ring (14). Snap rings are available in the following thickness: 2,0; 2,5; 3,0 mm. The groove for the snap ring is 3,2 mm in width.

If the specified disk clearance is not achieved by changing the snap ring, additionally compensate with the steel disks (12). Steel disks are available in the following thickness: 4,5; 5,0 mm.

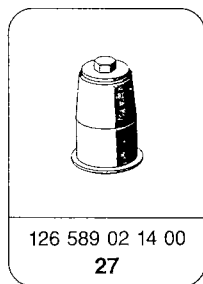
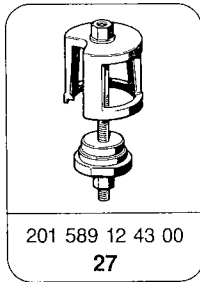


D27-0175-13A



D27-0190-57

Special tools 

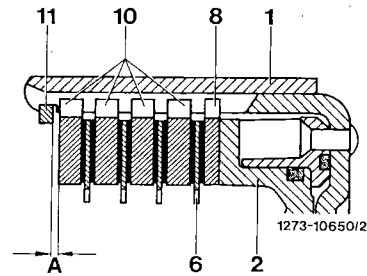


Return springs for clutch piston (the number the springs is determined by balancing out, therefore up to 2 springs less may be installed)

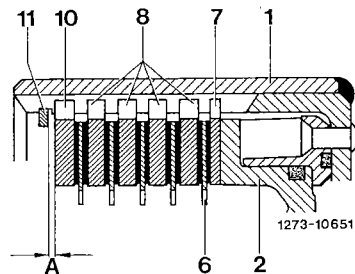
Transmission	Number	Wire dia. in mm	Length is slackened mm approx.
722.3	24	0,8	39

Sequence of clutch disks

Transmission 722.384
 .385
 .396
 .397
 .398
 .399



Transmission 722.372
 .382



Clutch disk versions

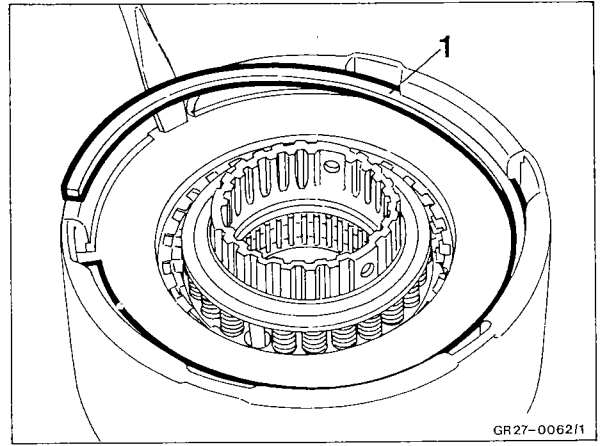
Designation	Item no.	Thickness in mm
Inner disk	6	2,1
	7	2,0
	8 optional, for clearance compensation	3,5 or 4,0
	10 optional, for clearance compensation	4,5 or 5,0
Piston	2	—
Snap ring	11	2,0
		2,5
		3,0

Adjustment data

Clearance "A" of the disk clutch in mm (refer to diagram) Disks pressed together with 10 N	0,7 to 1,3
---	------------

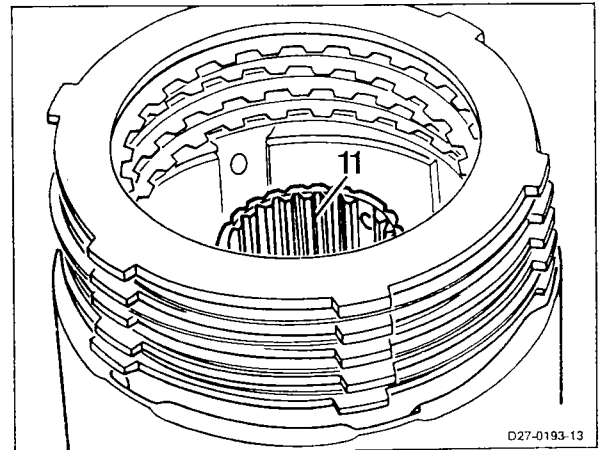
Disassembly

- 1 For disassembly of automatic transmission refer to 3.1/1.
- 2 Remove snap ring (1).




GR27-0062/1

- 3 Remove complete disk set from the outer disk carrier (11).

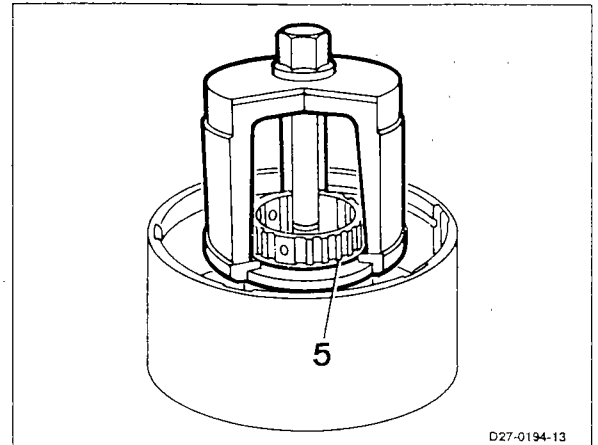


D27-0193-13

- 4 Mount assembling fixture, press down spring retainer and remove snap ring (5).

 201 589 12 43 00

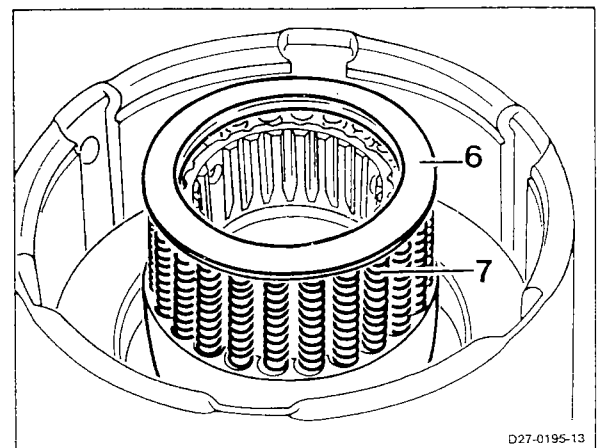
- 5 Unclamp assembling fixture and remove.



D27-0194-13

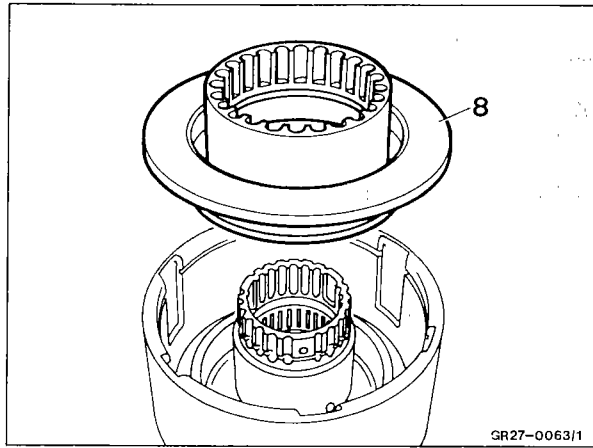
- 6 Remove spring retainer (6) and pressure springs (7).

Note: Write down the number of pressure springs.



D27-0195-13

7 Pull out piston (8) from outer disk carrier.



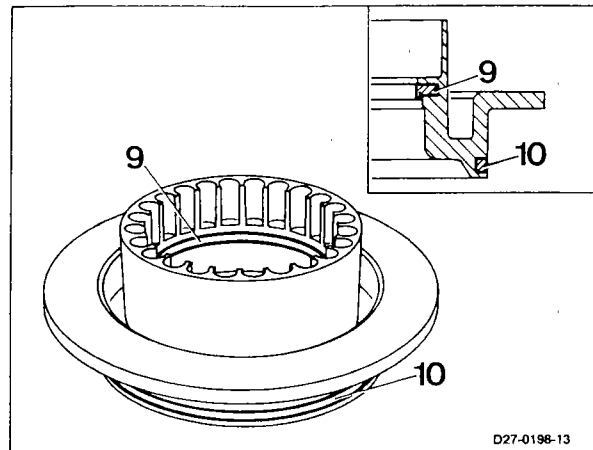
8 Remove lip sealing rings (9/10) of piston.

Assembly

Note: New lining disks must be placed in ATF oil for approx. 1/2 hour.

1 Oil lip sealing rings (9/10) with ATF oil and insert in the annular groove of the piston with the sealing lips pointing down.

Note: Make sure that the lip sealing rings are not inserted twisted.

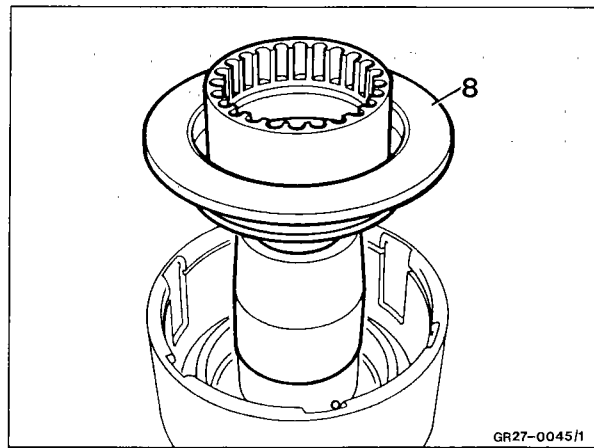


2 Insert installation sleeve in the outer disk carrier.

S 126 589 02 14 00

3 Slide piston (8), under lightly rotating action, up to axial contact in the outer disk carrier.

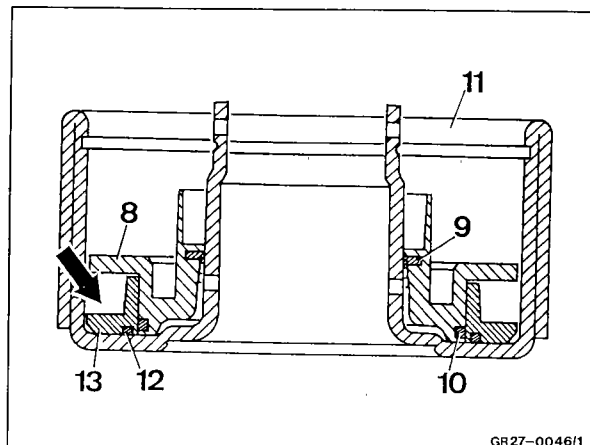
Note: When inserting do not cant the piston so as not to damage the lip sealing rings.



Note: For checking the O-ring (12) between the outer disk carrier (11) and the piston guide ring (13) for leaks, fill a little petroleum or cleaning fluid in the piston guide ring.

Then look to see whether the fluid reaches the inner side (arrow) of the outer disk carrier.

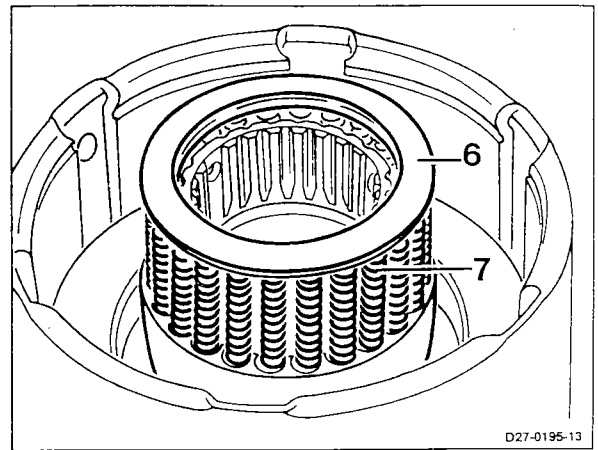
If there are leaks, the outer disk carrier must be replaced.



4 Insert pressure springs (7) in the piston uniformly distributed over the circumference.

Note: Install the same number of pressure springs as were present before the disassembly.

5 Insert spring retainer (6).

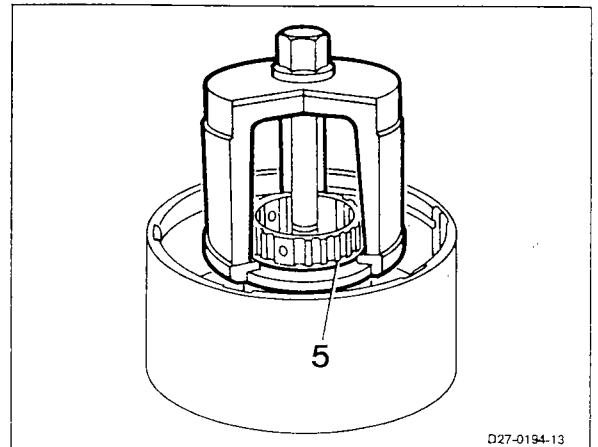


D27-0195-13

6 Mount assembling fixture, press down spring retainer and remove snap ring (5).

S 201 589 12 43 00

7 Unclamp assembling fixture and remove.



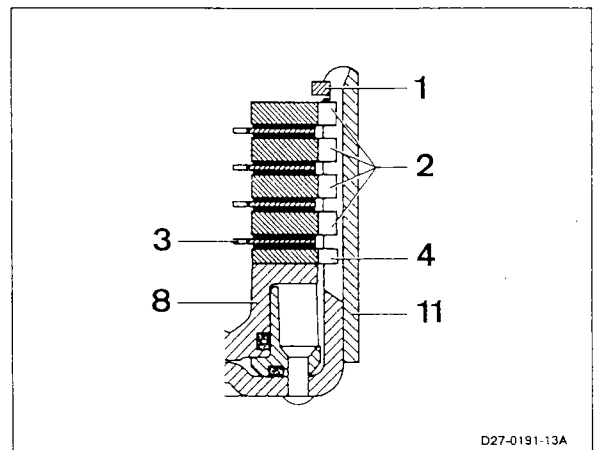
D27-0194-13

8 Compile disk set as follows:

Sequence of clutch disks:

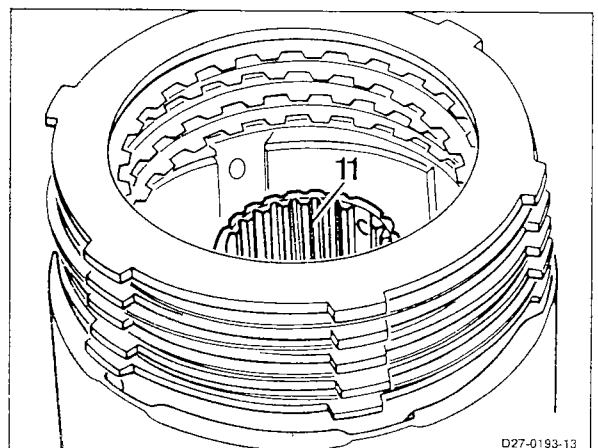
- Thin steel disk (4)
- Alternately steel disk (2) (x5) and lining disk (3) (x4)

Note: refer to table 5.4/1.



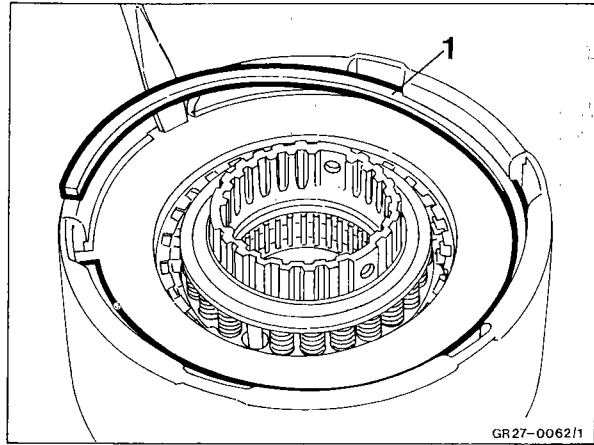
D27-0191-13A

9 Insert complete disk set in the outer disk carrier (11).



D27-0193-13

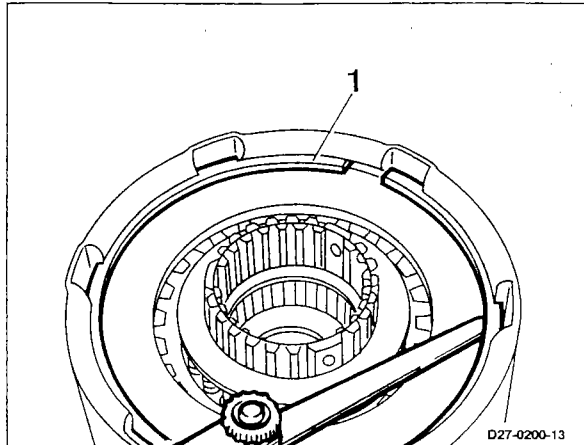
10 Install snap ring (1).



Measuring

Note: After inserting, press up snap ring (1) over the entire circumference using a screwdriver, so as to avoid error in measurement.

14 Measure the disk clearance with a feeler gauge. The disk clearance must be 0,7 to 1,3 mm.



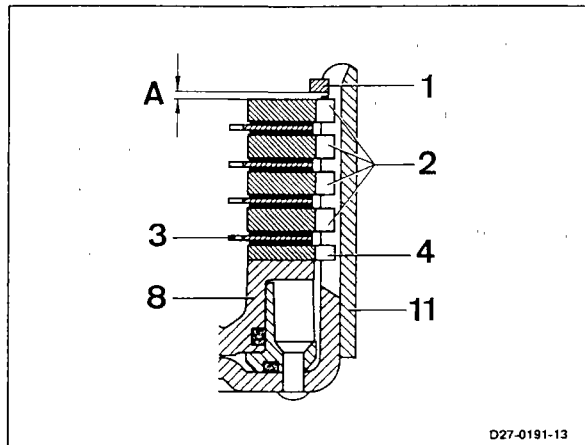
Note: The disk clearance is adjusted by changing the snap ring (1).

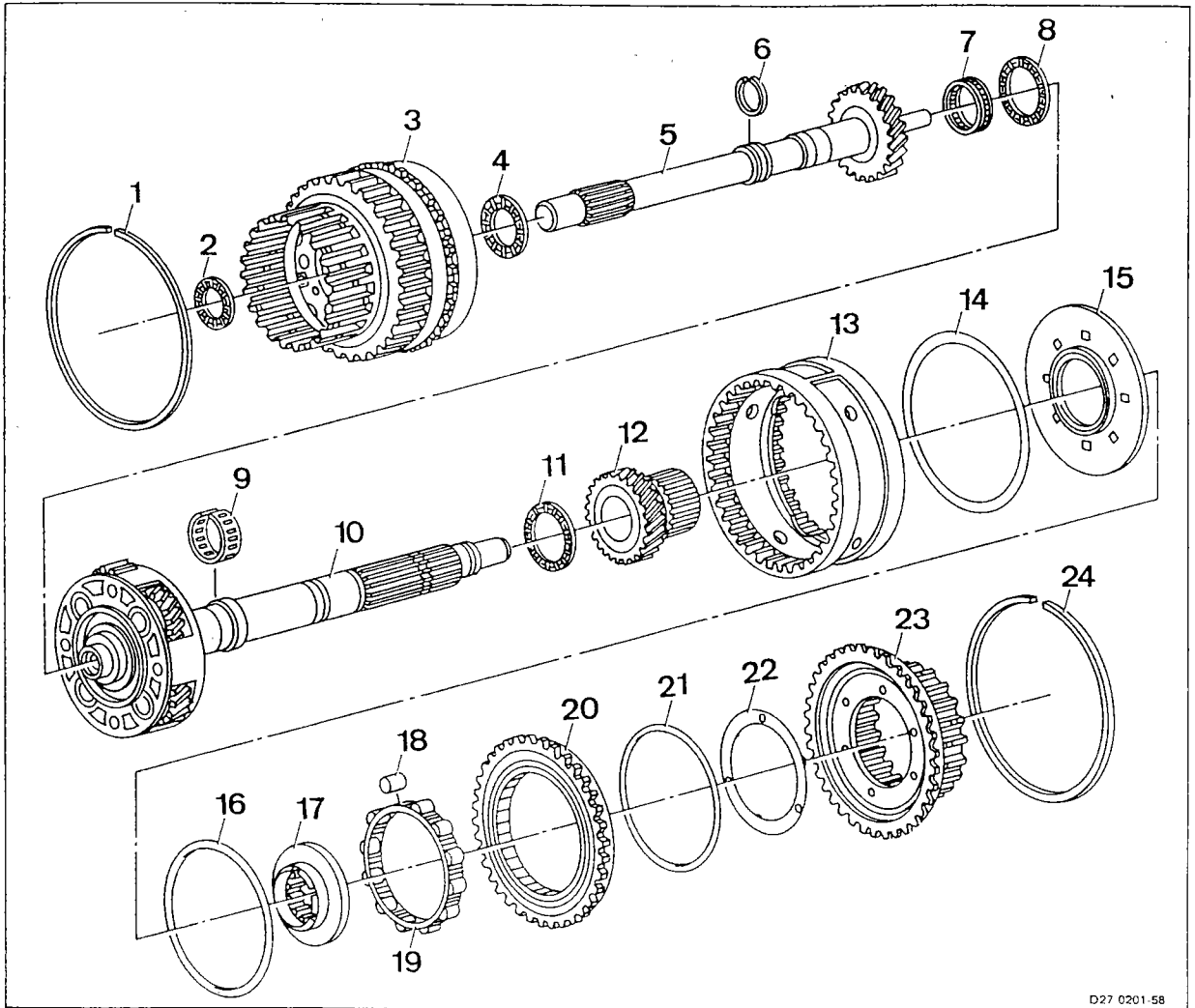
Snap rings are available in the following thickness: 2,0; 2,5; 3,0 mm.

The groove for the snap ring is 3,2 mm in width.

If the specified disk clearance is not reached by changing the snap ring, additionally compensate with the steel disks (2).

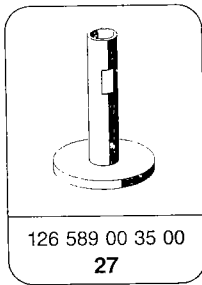
Steel disks are available in the following thickness: 4,5; 5,0 mm.





D27 0201-58

Special tools 




Auxiliary tool (spare part)

Tab washer (x16)

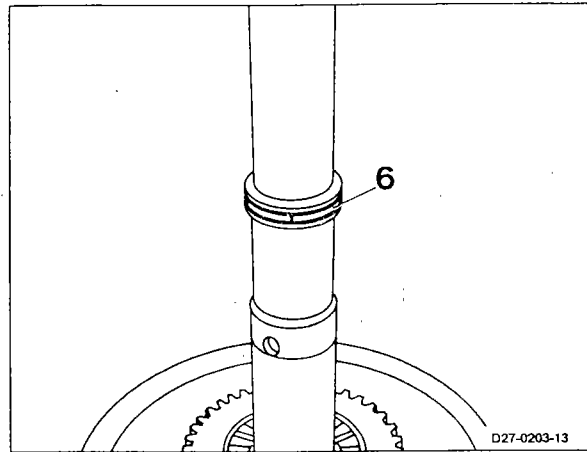
126 227 00 73

Disassembly

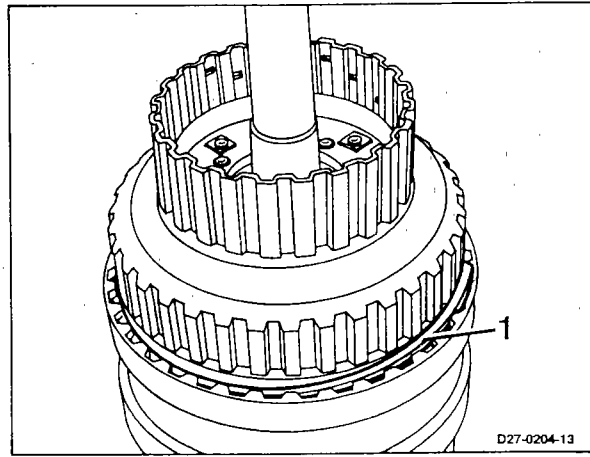
1 Clamp assembling fixture in the vise at the two surfaces with the plate upwards. Place gearset in the assembly base with input shaft first.

 126 589 00 35 00

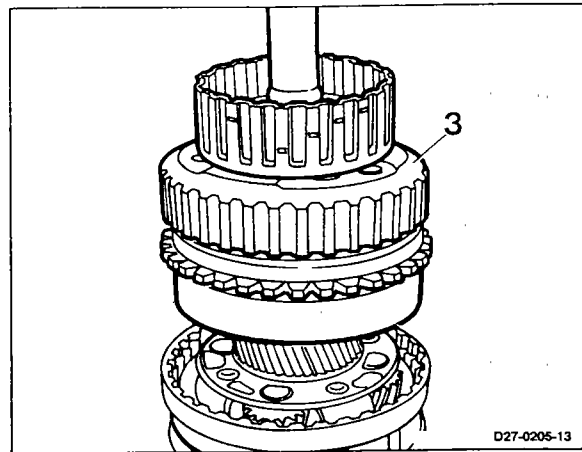
2 Remove lubricating pressure ring (6) from the input shaft.



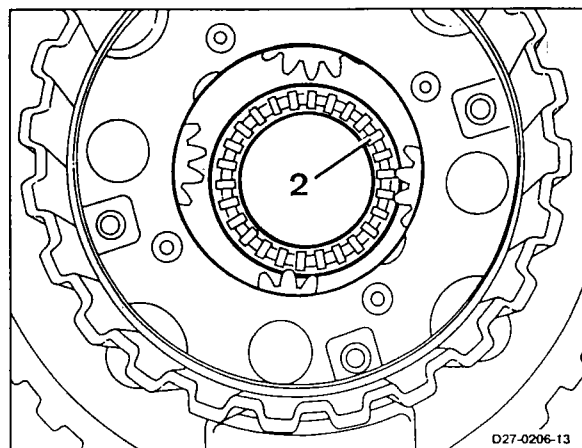
3 Remove snap ring (1) with screwdriver.



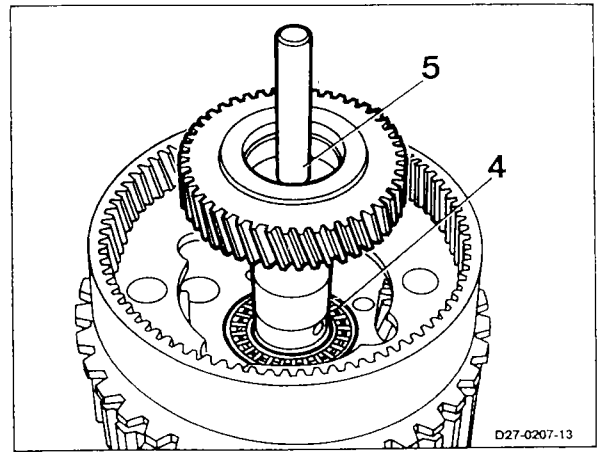
4 Lift front planetary gearset (3) with input shaft.



5 Remove axial bearing (2) from the planetary gearset.

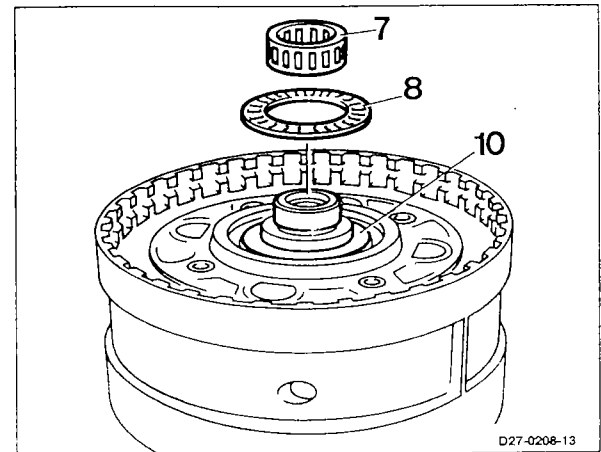


6 Remove axial bearing (4) and input shaft (8).

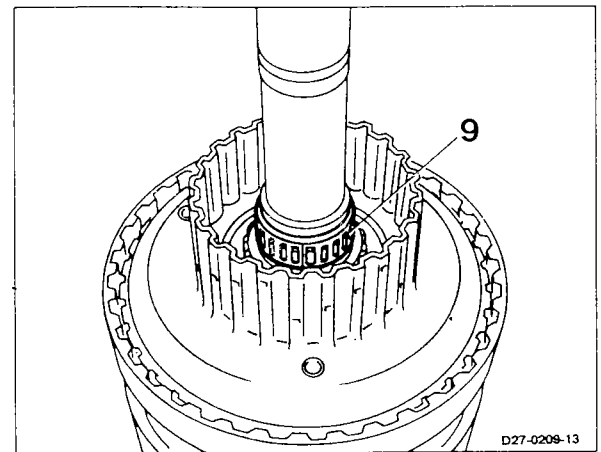


7 Remove radial bearing (7) and axial bearing (8).

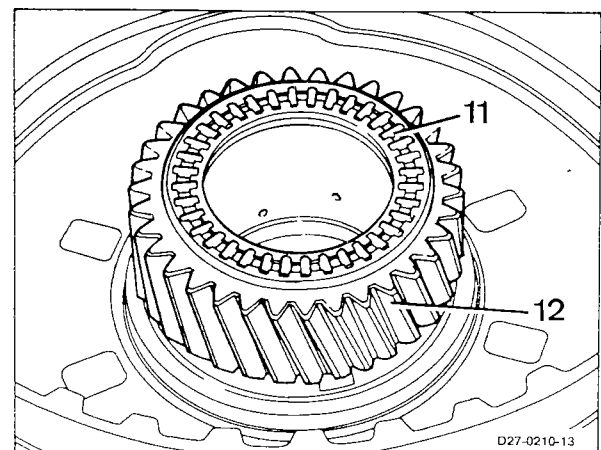
8 Remove input shaft (10) with planetary gearset.



9 Remove radial bearing (9) from output shaft.

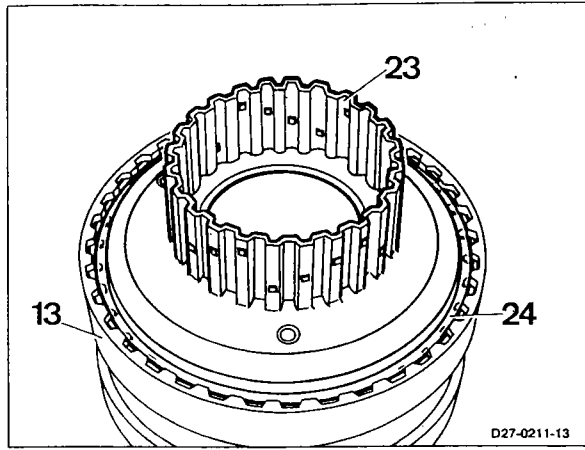


10 Remove axial bearing (11) and pull out sun gear (12) from connecting member.



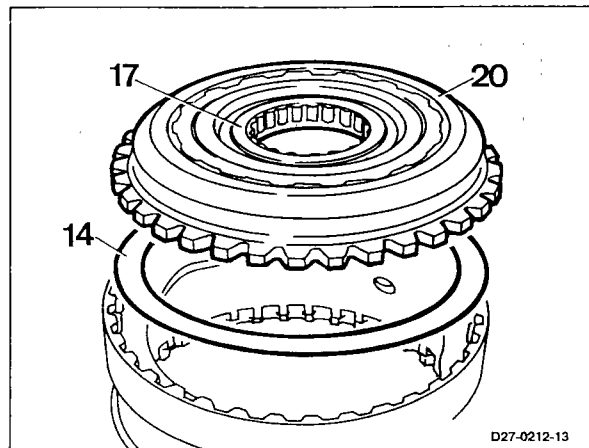
11 Remove snap ring (24).

12 Remove inner disk carrier K2 (23) from connecting member (13).



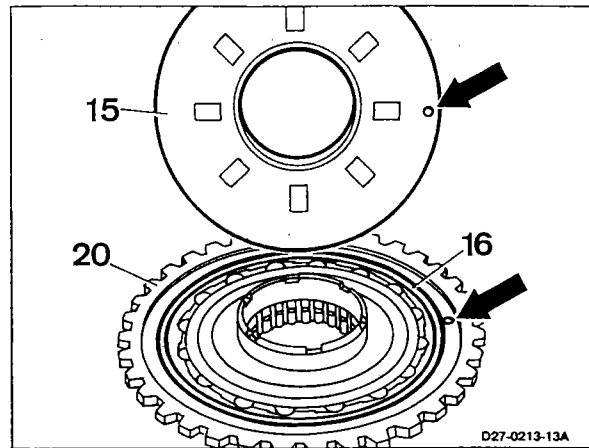
13 Remove free wheel outer ring (20) with free wheel inner ring (17).

14 Remove shim ring (14).

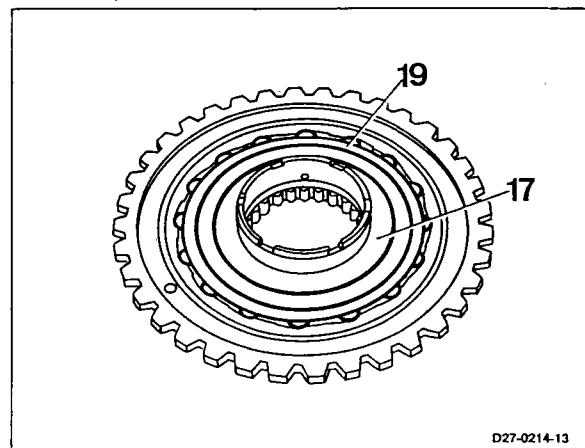


15 Lift support disk (15).

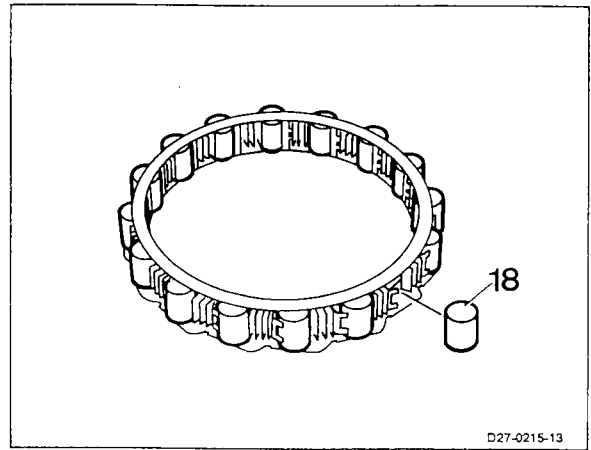
16 Remove O-ring (16) from free wheel outer ring (20).



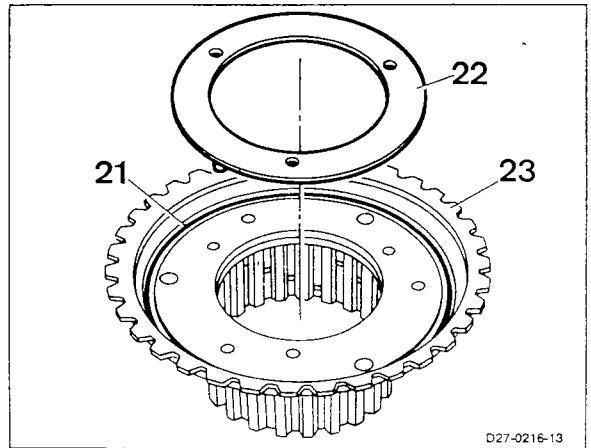
17 Remove free wheel inner ring (17) and notch cage (19) from free wheel outer ring.



18 Remove cylindrical rollers (18) from notch cage and check.



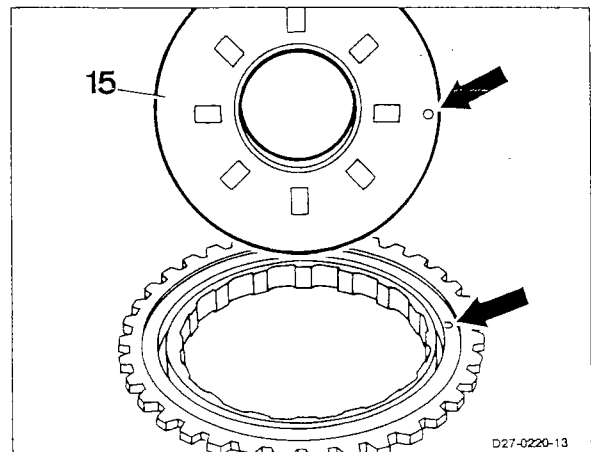
19 Remove thrust washer (22) and O-ring (21) from inner disk carrier K2 (23).



Measuring

Note: The O-rings (16, 21) are not to be installed for measurement of the axial clearance.

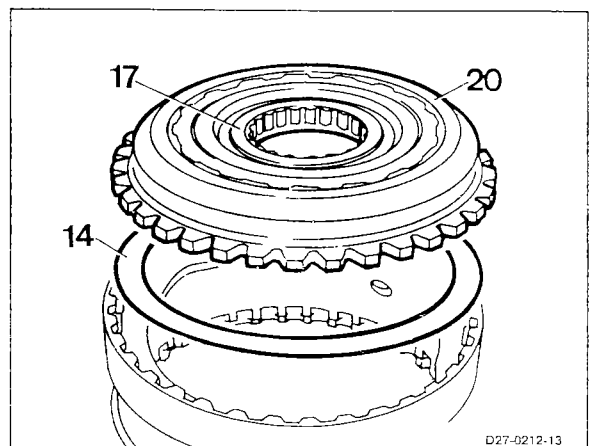
1 Mount support disk (15) in such a way that the journal (arrow) engages in the bore (arrow) in the free wheel outer ring (20).



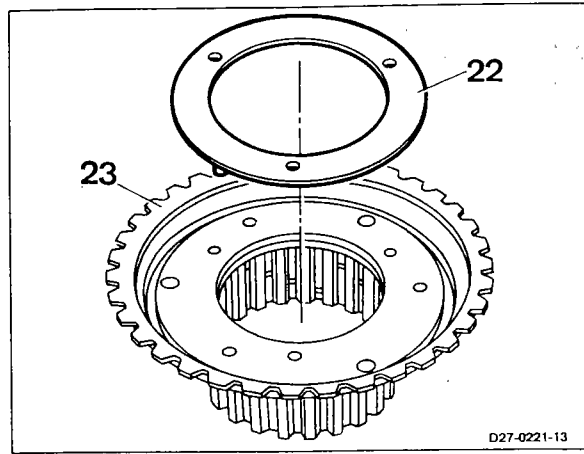
2 Install shim ring (14).

3 Insert free wheel outer ring (20) with free wheel inner ring (17) in the connecting member.

Note: The notch cage does not have to be installed for the measurement of the axial clearance.

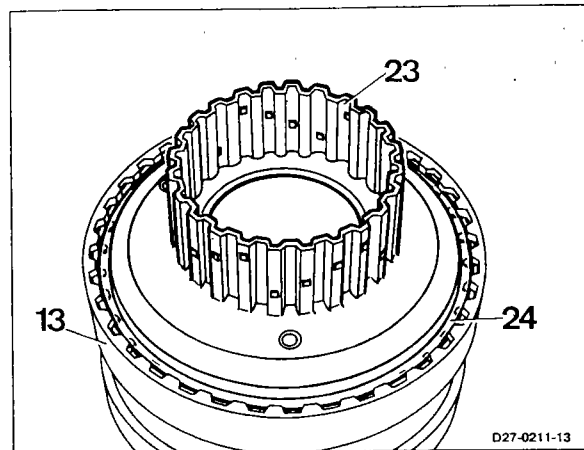


4 Insert thrust washer (22) in the inner disk carrier K2 (23).



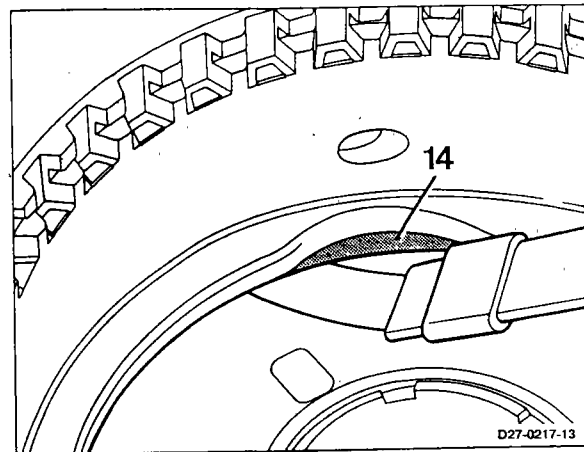
5 Insert inner disk carrier K2 (23) in the connecting member (13).

6 Install snap ring (24).



7 Check axial clearance between shim ring (14) and connecting member using a feeler gauge.

Note: The axial clearance must be 0,05 to 0,2 mm. The adjustment of the axial clearance is carried out using shim rings. Shim rings are available in the following thickness: 0,1; 0,2; 0,3 mm.

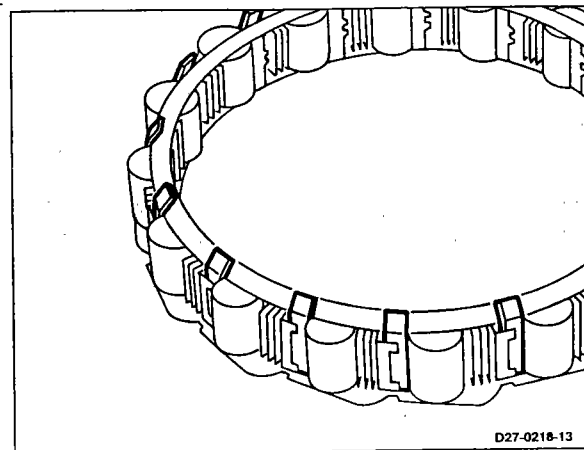


Assembly

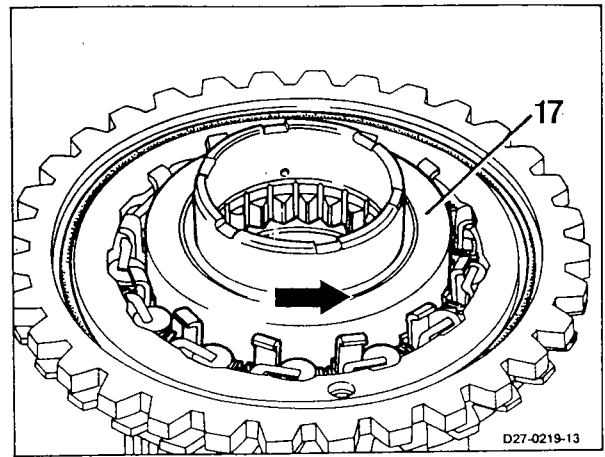
Clean all parts, check, exchange as required.

1 Press cylindrical rollers against the spring pressure and insert tab washers with the bending facing inwards.

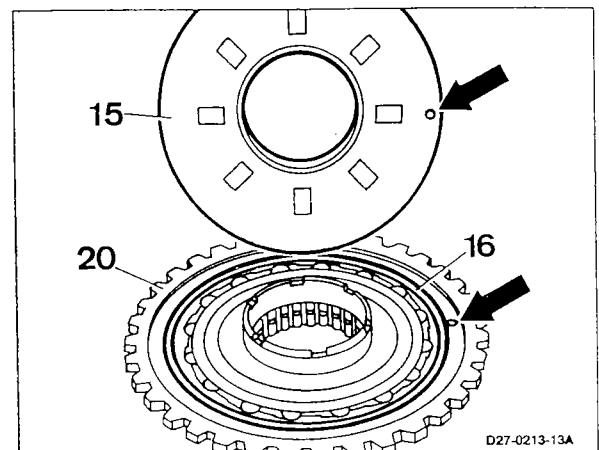
Note: The tab washers are available as auxiliary tool under the part number 126 277 00 73 (x16).



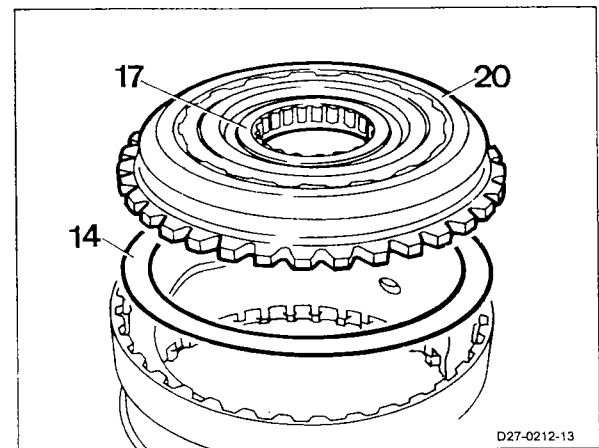
- 2 Insert notch cage with the tab washers in the free wheel outer ring.
- 3 Insert free wheel inner ring (17). At the same time turn the free wheel inner ring counterclockwise (direction of arrow).
- 4 Remove tab washers.



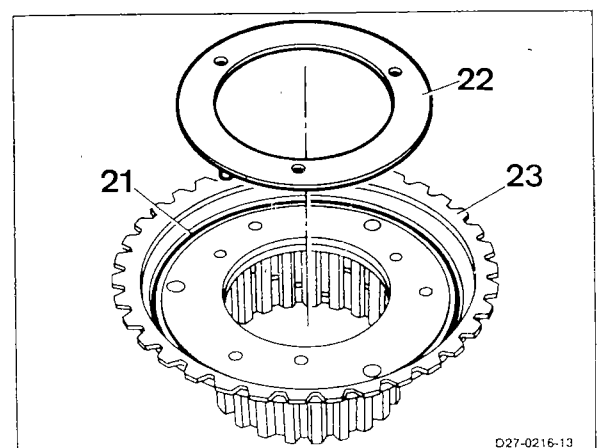
- 5 Insert new O-ring (16) and mount support disk (15) in such a way that the journal (arrow) engages in the bore (arrow) in the free wheel outer ring.



- 6 Insert determined shim ring (14).
- 7 Insert free wheel outer ring (20) with free wheel inner ring (17).

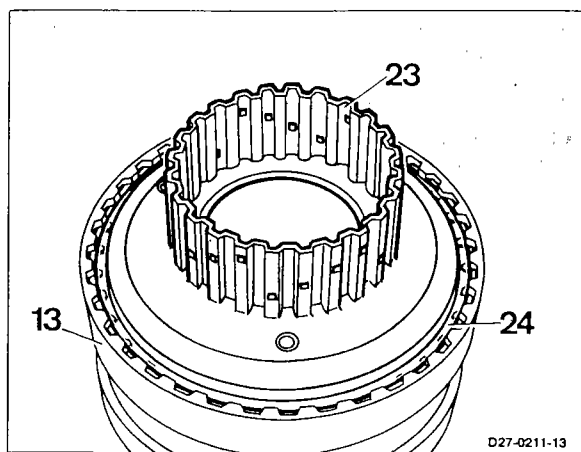


- 8 Insert thrust washer (22) and new O-ring (21) in the inner disk carrier K2 (23).



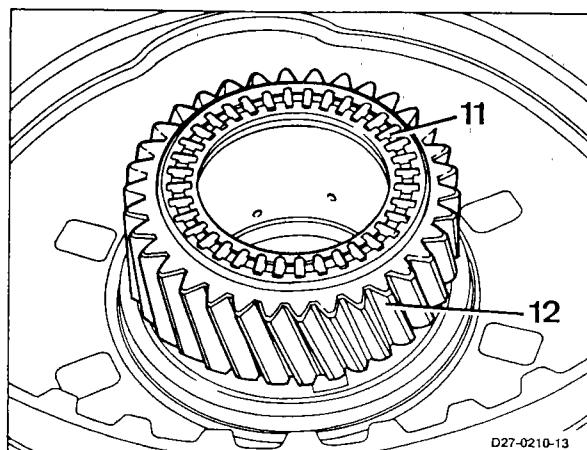
9 Insert inner disk carrier K2 (23) in the connecting member (13).

10 Install snap ring (24).

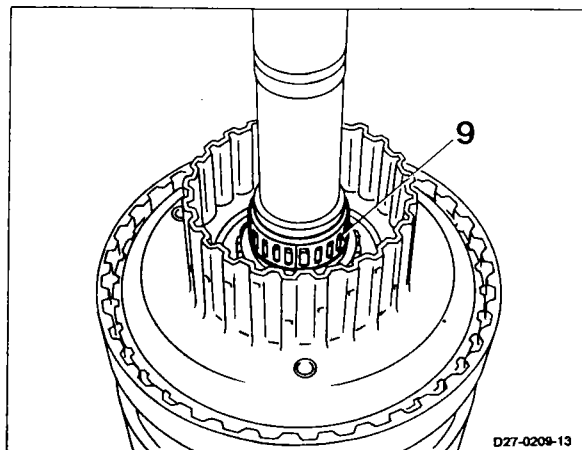


11 Slide sun gear (12) into connecting member and mount axial bearing (11).

Note: Check axial bearing for wear and replace if necessary.



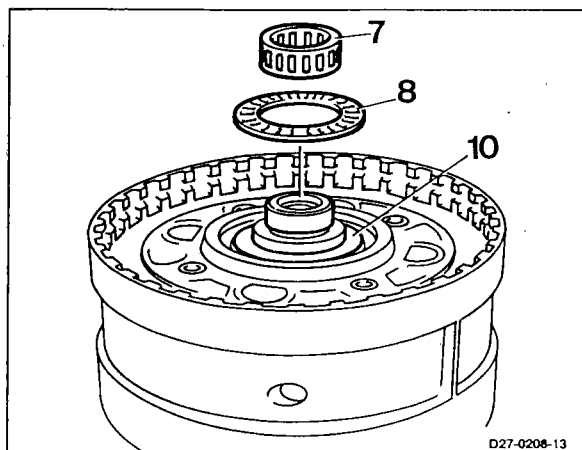
12 Install radial bearing (9) on the input shaft.



13 Install output shaft (10) with planetary gearset in the connecting member.

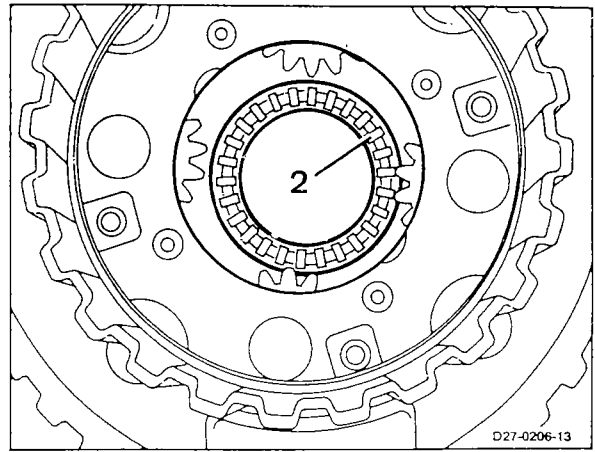
14 Install radial bearing (7) and axial bearing (8).

Note: Check radial bearing and axial bearing for wear and replace if necessary.



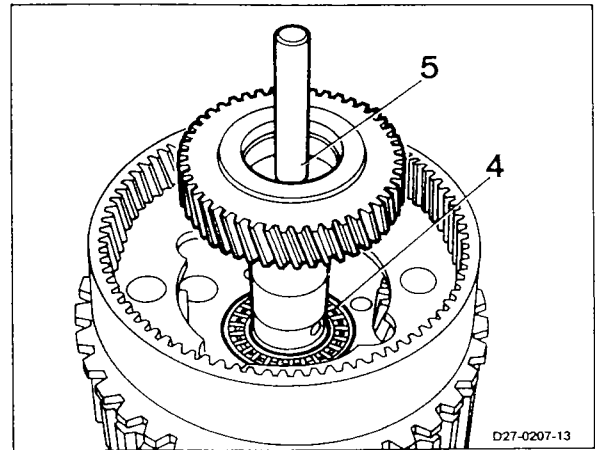
15 Install axial bearing (2) in the planetary gearset.

Note: Check axial bearing for wear and replace if necessary.

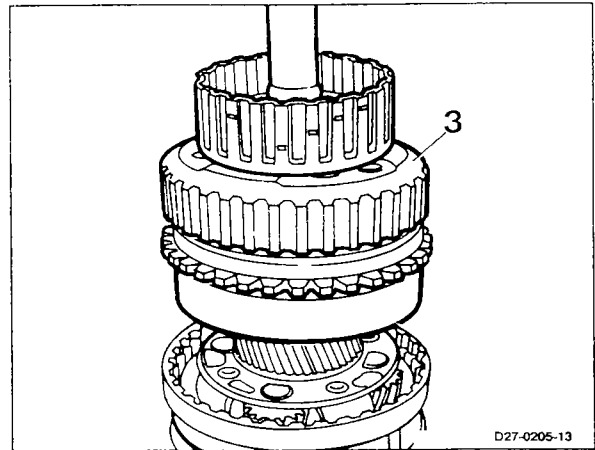


16 Install axial bearing (4) and input shaft (5).

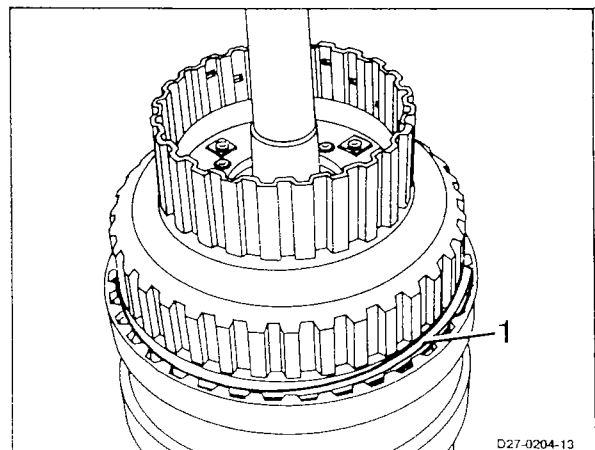
Note: Check axial bearing for wear and replace if necessary.



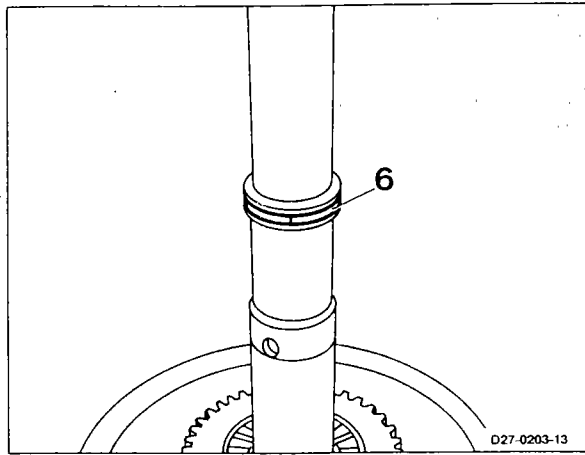
17 Install front planetary gearset (3) with input shaft.



18 Install snap ring (1).



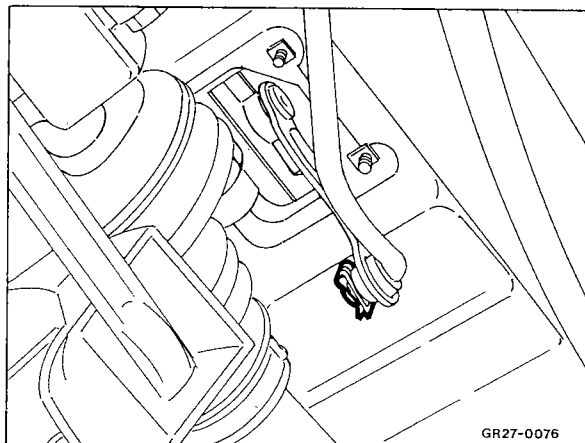
19 Install lubricating pressure ring (6) in the input shaft.



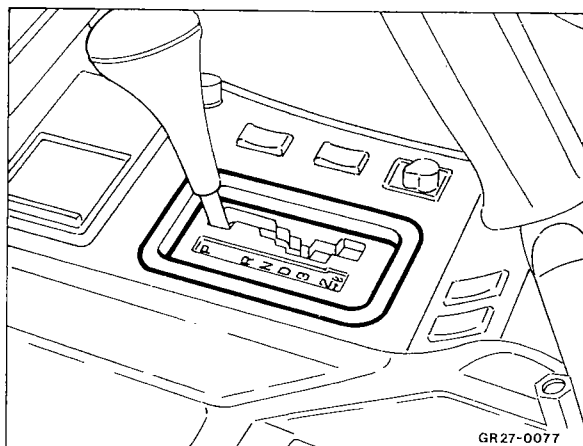
Removal

1 Unclip retainer on control rod.

2 Disengage control rod.

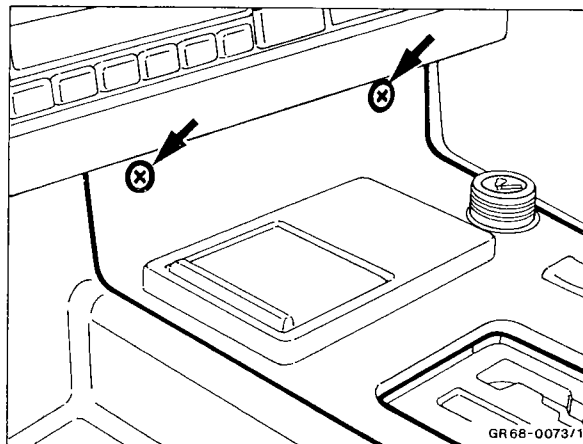


3 Remove cover on shift lever.



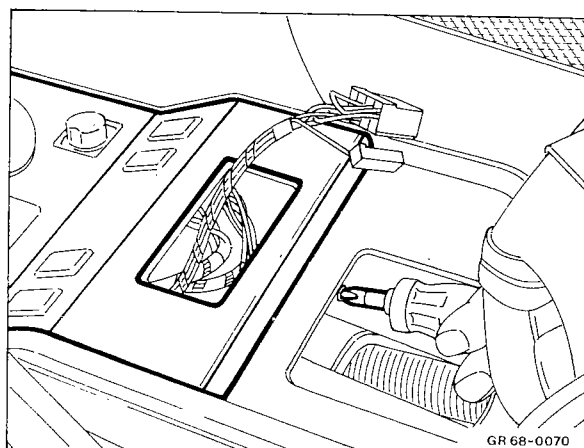
4 Release cover at the front.

Note: Remove ashtray.

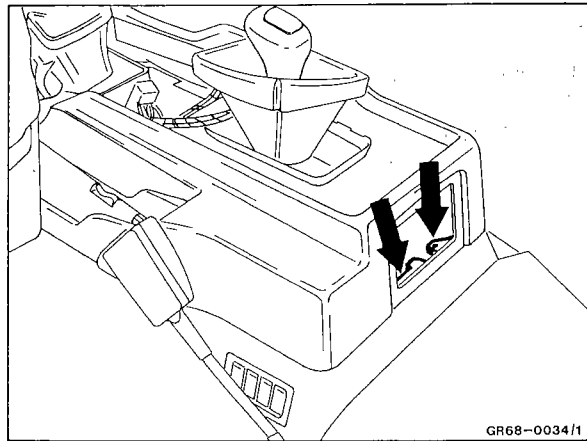


5 Release cover at the rear and remove.

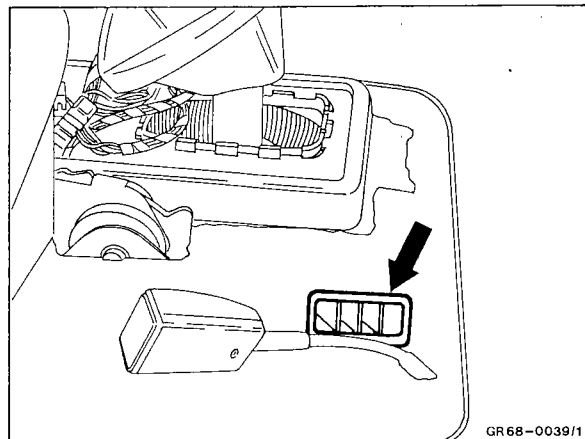
Note: Mark all plugs to the corresponding switches and remove.



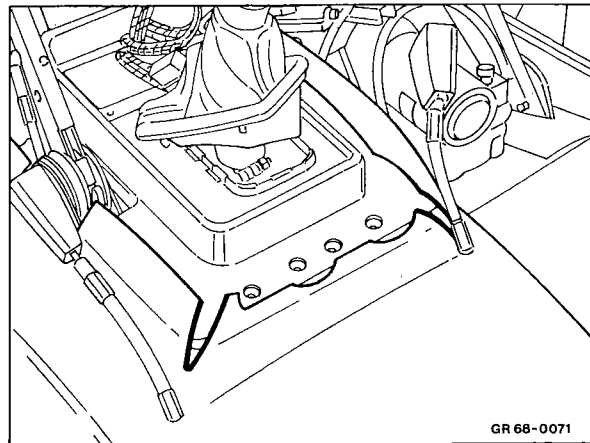
- 6 Remove cover from hand brake lever.
- 7 Unscrew 4 bolts on housing.
- 8 Remove ashtray and unscrew two bolts, then remove housing.



- 9 Disengage tensioning rubber piece for belt whip and detach left and right nozzles.



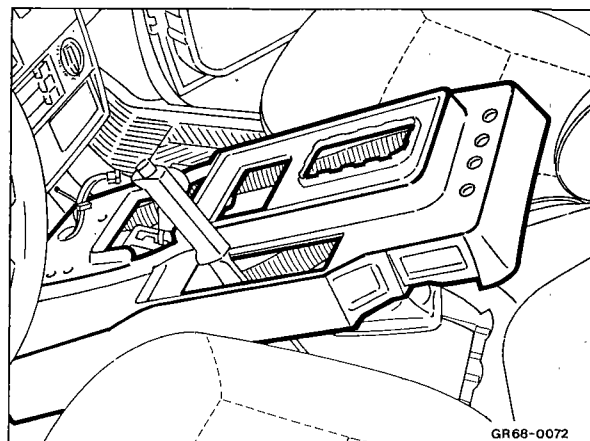
- 10 Make a cut of approx. 4 cm in the left and right of the carpeting, at the rear edges of the tray.



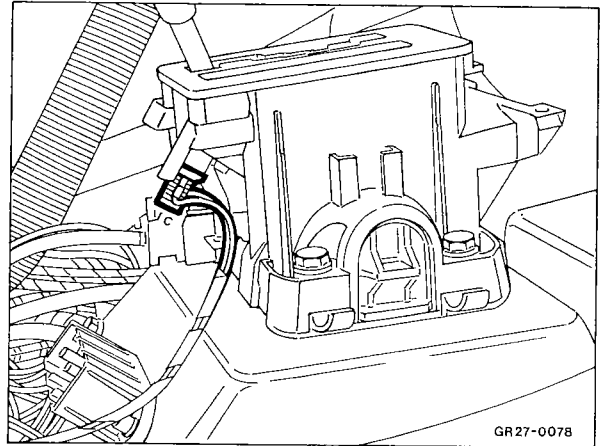
- 11 Remove all bolts of the tray and remove.

Note: Slightly lift oddments tray, disconnect heater pipes and remove tray.

- 12 Remove insulating mat.



13 Remove light unit for continuous row of luminaires of the shift gate illumination.



14 Remove cable connector.

15 Release bracket of floor shift and remove.

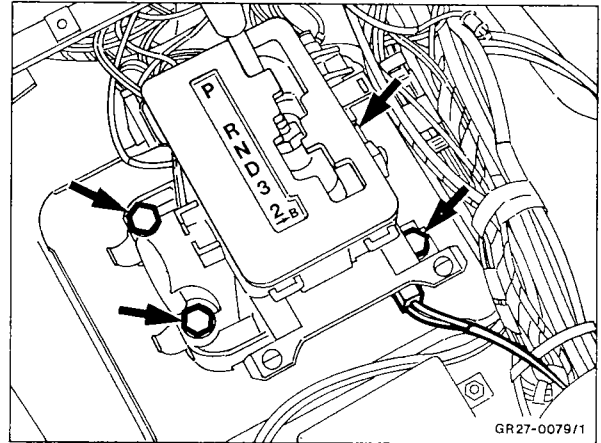
16 For disassembly of floor shift refer to 6.2/1.

17 Remove gasket and reinforcement.

18 Clean all parts, check, exchange as required.

19 The installation is carried out in the same manner in reverse order, at the same time observe the following:

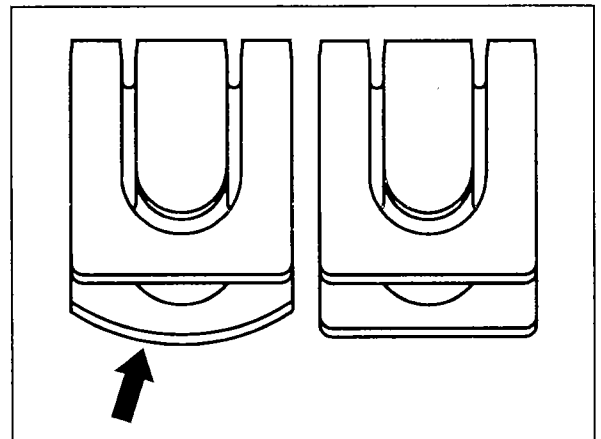
- Clip retainer on control rod.



Caution!

Only use clip retainers with radius (arrow). If clip retainers are used without radius, they may be forced out and the shift rods fall from the intermediate shift levers.

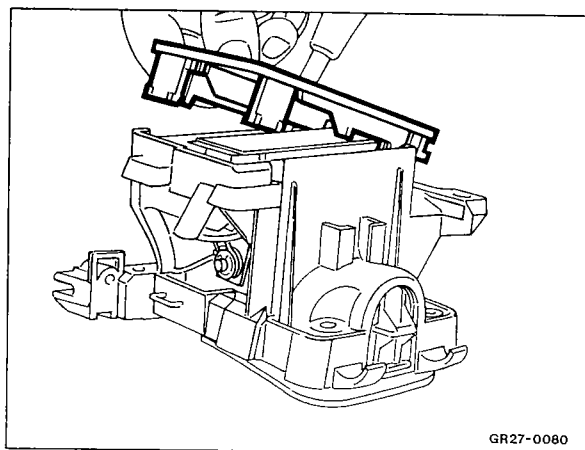
- Adjust control rod, if necessary, refer to 2.2/1.
- Check shifting action for function.



P26-5068-13

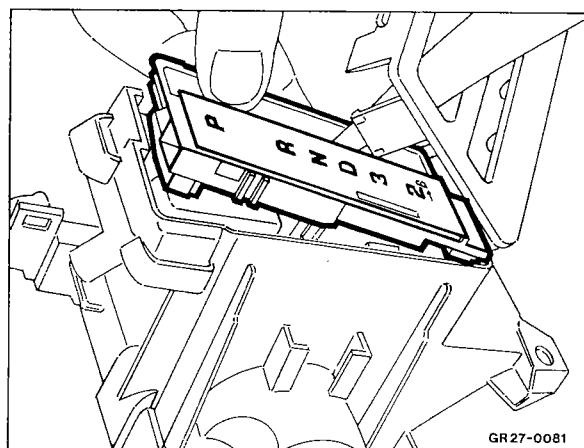
Disassembly

1 Remove cover.



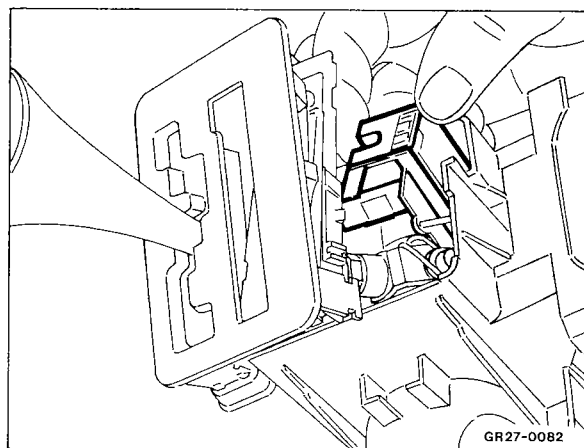
GR27-0080

2 Detach program strip.



GR27-0081

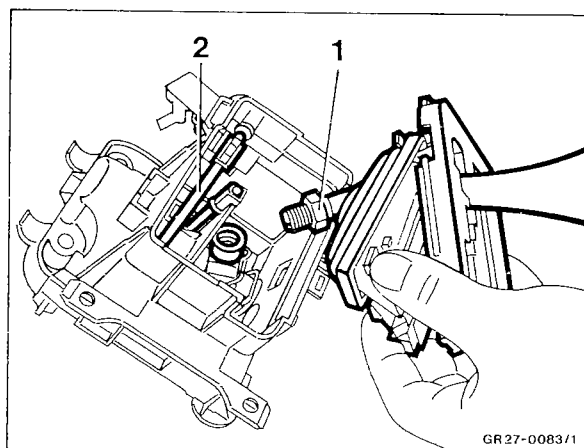
3 Remove shifter lock.



GR27-0082

4 Release lock nut (1) and remove control rod with program strip and cover.

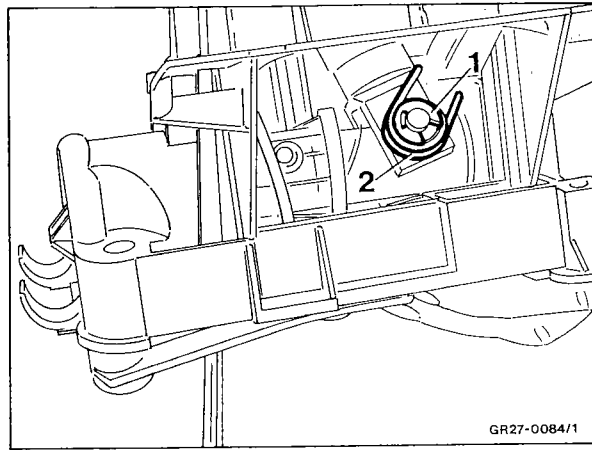
5 Remove fibre optic band (2) of shift gate illumination.



GR27-0083/1

6 Unlock fork head (1) and remove.

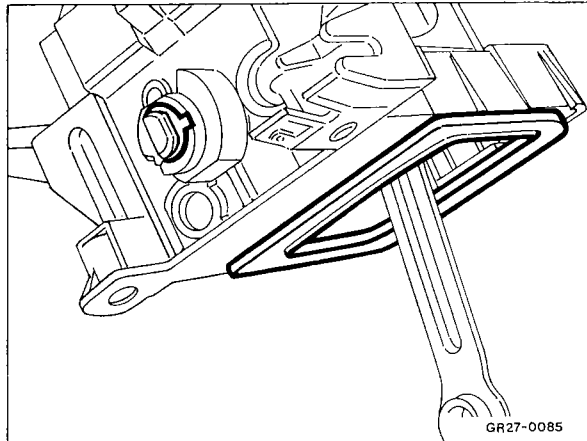
Note: The double helical coiled spring (2) is under load.



7 Unlock shaft and remove.

8 Remove gasket.

9 Clean all parts, check, exchange as required.



10 The installation is carried out in the same manner in reverse order, at the same time observe the following:

- Lubricate bearing points with long-term grease.
- Align selector lever in such a way that the bend points to the front. Tighten lock nut.

