

Designation	Type of change and why	Date of introduction	Job No.
Radial bearing one way clutch	To resist wear, the inner race of one way clutch is provided with an additional bearing point	December 1979	660
Spring for ball valve in shift valve housing	An additional spring is installed to reduce starting jerk	February 1980	420
Temperature throttle with changed intermediate plate	To prevent slip in cold transmission, the throttle for K1 is displaced from large intermediate plate into housing	May 1980	435 640
Plastic thrust pin between vacuum control unit and control valve	As heat expansion compensation to prevent temperature-related modulating pressure changes	February 1981	640
Channel change in transmission housing and modified large intermediate plate	Additional oil channel in oil distribution plate for subsequent use of shift valve housing 2nd version and selector lever position "B"	June 1981	640
Additional models	Model 123 with engines 110, 123 and 617.952 are provided with transmissions 722.308, 722.309 and 722.315 with mechanical tachometer drive	September 1981	all
Model year 1982	Modified pressure data and shift points for national versions model year 1982 added	September 1981	330
Shift valve housing 2nd version	For additional improvement of shifting quality. Employment of selector lever position "B" on 8 cylinder vehicles	Engine 116, 117 September 1981 Engine 110, 123, 617.95 January 1982	420
Cup spring K1 and thrust body brake band B1	Together with shift valve housing 2nd version a cup spring is installed into clutch K1 as a damping element and a thrust body with reduced spring pressure (180 N), formerly (300 N)	Engine 116, 117 September 1981 Engine 110, 123, 617.95 January 1982	640 680
Radial bearing one way clutch	One-way clutch with single bearing. One bearing point for one-way clutch inner race omitted	December 1981	660

Designation	Type of change and why	Date of introduction Transmission end No.	Job No.
Lower cover	Screen filter installed so that no dirty particles will reach governor	June 1982 238 871	435
Gear housing	Oil deflector installed in induction port of primary pump for noise reduction	October 1982 280 750	640
Transmission with mechanical speedometer	Rear transmission cover modified, for better assembly of clamping screw for speedometer shaft	November 1982 293 181	440
Front cover	Tapped assembly bores modified as blind end bores to prevent leaks	December 1982 313 750	630
Clutch K1	Circlip with reduced end clearance to prevent hopping of circlips	January 1983 314 705	680
Shift valve housing Valve balls	Steel balls are replaced by polyamide balls to prevent denting of valve seats in intermediate plate	May 1983 366 760	420
Control pressure cable	Cover designed as double spiral to prevent elongation	May 1983	110
Gear housing	Damper spring for LB3 installed to reduce noise and gear housing wear	June 1983 379 225	640
Clutch 1	Asbestos-free inner plates installed against elongated 2-3 gear change	June 1983 379 940	640
Brake band B2	Brake band modified at thrust bearing end to increase life	June 1983 383 608	640
Thrust bearing B2	Annular groove to prevent failure caused by twisted thrust bodies	July 1983 389 470	640
Outer plate carrier K2	The radial ball bearing on vehicles with engine 117 is no longer installed; standardization	July 1983 393 445	640
Large intermediate plate	Intermediate plate made of aluminum to save weight	September 1983 408 117	435
Clutch K2	Asbestos-free inner plates, shift slip 3-4	September 1983 phased in	690
Gear housing	Installation of red temperature throttle to improve gear shift 2-3 (refer to Installation survey 27-001)	October 1983 phased in	640

Designation	Type of change and why	Date of introduction Transmission end No.	Job No.
Inner plate Brake B3	Of asbestos-free lining	October 1983 426 347	640
Large intermediate plate and gasket	Gasket (air pocket) and intermediate plate (6-cyl.) modified. Improved 4-3 part throttle gear change	November 1983 441 537 phased in	435
Gear housing	Lubrication for Bendix drive (speedometer) modified, oil pipe made of plastics	January 1984 461 301 phased in	640
National versions	Modified pressure values and shiftpoints for model years 1983, 84, 85 and 1986 added	starting September 1983	001 330
Retrofitted and CAT versions	Also refer to installation survey Test and pressure values	September 1985	001
Vacuum transducer Engine 617.95	Temperature and boost pressure- dependent vacuum control, improved shifting	October 1984	001 006
Change of ratio	Transmission 722.323 220 kW owing to higher torque	October 1985	002
Clutch K1	On transmissions 722.323 standard version as well as 722.324 and 722.325 the piston guide ring is held by a circlip	October 1985	680
Program selection switch	For selecting between sports style and economic driving	Model 124 from start of production Models 107 and 126 starting October 1985	745 115
Transmission overload protection	Installed in transmission 722.323 to protect the shift elements against thermic overloads	October 1985	640
Oil filter	Transmission 722.323 is provided with a modified oil filter with slide and intake at the rear and front so that no air will be drawn in during vigorous acceleration	October 1985	640
Relay "moving off 1st gear" engine 117	No longer installed. Moving off in 1st or 2nd gear proceeds by way of accelerator pedal	October 1985	007
Brake band piston B1	Removable pressure pin. Release clearance brake band B1 is set by means of shims	April 1986 788 606	640

Designation	Type of change and why	Date of introduction Transmission end No.	Job No.
Brake band piston B1	T-shaped sealing ring mounted owing to housing wear	April 1986 767 605	640
Centrifugal governor Transmission 722.319/320/ 322/346	To open 2-3 gear shift, modified characteristic	April 1986 phased-in	520
Brake band guide B2, reaction valve RV2	Oil drain bores, modified improved downshifts	August 1986 825 583	640
Intermediate plate lower cover, vehicles with 8-cylinder engines	Additional gasket against drop of control pressure at high oil temperatures	February 1987 904 533	435
Brake band piston B2, reaction valve RV2	Modified strokes, to improve 4-3 downshift	February 1987 909 459	640
Brake band B1 and B2	Release clearances of brake bands reduced, improved 4-2 downshift	July 1987 983 383	640
Multiple plate brake LB3, vehicles with gasoline engines Ⓧ Ⓧ starting 1988	Additional spring retainer, fast change from "D" to "R"	October 1987 phased-in	640
Transmission overload protection	Installed in transmission 722.311/324, to protect shift elements against thermic overload	October 1987 973 880	640
Punched-in consecutive number on transmission	Code number revised, e. g. 722.311 03 000 001 formerly 733.311 02 999 999	October 1987	-
Outside plates LB3	Gas-nitrided outside plates, improved shifting to driving position "R"	April 1988 3 085 775	640
Brake band piston B2	Use of one-piece brake band piston B2, formerly two-piece	August 1988 3 122 870	640

Survey transmission – model

Transmission	Installed in model	Coordinates ¹⁾	
722.300	123.033	Ⓧ 1981 ¹⁾ Ⓧ 1981 ¹⁾	K 1
	123.053		
	126.022 126.023		K 1
722.301	126.032	(up to September 1981)	K 1
	126.033		
722.302	126.036	(up to September 1981)	K 1
	126.037		
722.303	123.193	Ⓧ 1981 ¹⁾ Ⓧ 1981 ¹⁾	O 2, A 3, E 2
	126.120		
722.304	107.025	(up to September 1981)	K 1
	107.045		
722.305	107.026	(starting March 1980 up to September 1981) (up to September 1981)	K 1
	107.046		
722.306	107.022	(up to September 1981)	K 1
	107.042		
722.307	126.021		L 1
722.308	123.026	(starting September 1981)	L 1
	123.028		
	123.086		
722.309	123.007	(starting September 1981)	M 1
	123.033		
	123.053		
	123.093		
722.310	126.032	(starting September 1981)	M 1
	126.033		
	126.043		
722.311	126.036	(starting September 1981)	M 1, N 1
	126.037		
	126.044		
722.312	107.045	(starting September 1981)	N 1
722.313	107.046	(starting September 1981) Ⓧ 1981 ¹⁾	N 1, O 1 E 2
	107.048		
	Ⓧ 1981 ¹⁾		
722.315	123.193	(starting September 1981)	O 1
722.317	124.133	Ⓧ 1986 ¹⁾	P 1
	124.193		
722.319	126.024		P 1
	126.025		
722.320	124.030		P 1
	124.090		
722.321	126.125	Ⓧ 1986 ¹⁾	E 2
722.322	107.041		P 1
722.323	126.039		P 1
	126.045		
722.324	126.034		A 2
	126.035		
	126.046		
722.325	107.047		B 2

¹⁾ National versions starting coordinate E 2

Survey transmission – model

Transmission	installed in model	Coordinates ¹⁾
722.345	124.226	C 2
722.346	124.230 124.290	C 2
722.347	124.330 124.333	C 2
722.348	124.393	C 2
722.350	126.039 126.045	starting 9/87 D 2

¹⁾ National versions starting coordinate E 2

Transmission		722.300		722.301	722.302
Version		up to 12/81	starting energy concept 01/82	up to 09/81	up to 08/81
Transmission	Part no.	126 270 07 01 126 270 14 01 ²⁾	126 270 27 01 126 270 55 01 ¹⁾	126 270 01 01 126 270 15 01 ²⁾ 126 270 19 01	126 270 02 01 126 170 13 01 ²⁾
Shift valve housing	Part no.	126 270 43 07 126 270 55 07 ⁶⁾ ws ³⁾ 126 270 93 07 ⁷⁾ ws ³⁾	126 270 71 07ws ³⁾ 126 270 31 15rt ⁴⁾ 126 270 54 15 ⁹⁾ rt ⁴⁾	126 270 43 07 126 270 56 07 ⁶⁾ ws ³⁾ 126 270 94 07 ⁷⁾ ws ³⁾	126 270 38 07 126 270 52 07 ¹⁰⁾ ws ³⁾ 126 270 95 07 ⁷⁾ ws ³⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ⁵⁾			126 270 13 74 K 10 ⁵⁾
Intermediate plate	Part no.	126 277 23 14 126 277 38 14 ⁷⁾	126 277 39 14 126 277 76 14	126 277 23 14 126 277 38 14 ⁷⁾	126 277 23 14 126 277 38 14 ⁷⁾
Gasket	Part no.	126 277 02 80	126 277 02 80 126 277 05 80 ⁸⁾		126 277 02 80
Vacuum control unit	Color	red	red black		red
Modulating pressure	bar	2,8	3,0	3,5	3,8
Working pressure	bar	9,7 ± 1	10,4 ± 1	12,2 ± 1	13,7 ± 1
Governor pressure in bar			1,0	0,9	1,0
			2,6	2,4	2,6
Transducer dia.	mm	270			290

Transmission		722.304	722.305	722.306	
Version ⁶⁾		up to 08/81	up to 08/81	up to 12/81	starting energy concept 01/82
Transmission	Part no.	107 270 07 01 107 270 15 01 ²⁾ LL 107 270 18 01 107 270 08 01 107 270 16 01 ²⁾ RL 107 270 19 01	107 270 13 01 LL 107 270 14 01 RL	107 270 11 01 107 270 17 01 ²⁾	107 270 21 01 107 270 28 01 ¹⁾
Shift valve housing	Part no.	126 270 43 07 126 270 56 07 ⁶⁾ 126 270 94 07 ⁷⁾	126 270 38 07 126 270 52 07 ⁶⁾ 126 270 95 07 ⁷⁾	126 270 43 07 126 270 55 07 ⁶⁾ 126 270 93 07 ⁷⁾	126 270 71 07ws ³⁾ 126 270 31 15rt ⁴⁾ 126 270 54 15rt ⁴⁾ ⁹⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ⁵⁾			
Intermediate plate	Part no.	126 277 23 14 126 277 38 14 ⁷⁾			126 277 39 14 126 277 76 14
Gasket	Part no.	126 277 02 80			126 277 02 80 126 277 05 80 ⁸⁾
Vacuum control unit	Color	green		red	red/black ¹⁾
Modulating pressure	bar	3,5	3,8	2,8	3,0
Working pressure	bar	12,2 ± 1	13,7 ± 1	9,5 ± 1	10,4 ± 1
Governor pressure in bar			0,9		1,0
		0,9	2,5		2,6
Transducer dia.	mm	270	290	270	

- 1) Use of shift valve housing 126 270 31 15 together with temperature throttle red and black vacuum control unit starting transmission end no. 4 22 707.
- 2) Use of modified intermediate plate together with temperature throttle white.
- 3) Temperature throttle white.
- 4) Temperature throttle red.
- 5) Identification, numerals stamped on centrifugal governor.
- 6) Replacement for 126 270 43 07 only in combination with intermediate plate 126 277 23 14 and temperature throttle white.
- 7) Repair version can be installed as replacement for 126 270 43 07/5207/5507/5607 together with intermediate plate 126 277 38 14, filler piece and injector.
- 8) Replacement for 126 277 02 80 in combination with intermediate plate 126 277 76 14.
- 9) Installed in exchange transmission only. Replacement is 126 270 31 15.
- 10) Replacement for shift valve housing 126 270 38 07.

Transmission		722.307		722.308	
Version		starting energy concept 01/82	up to 12/81	up to 12/81	starting 01/82
Transmission	Part no.	126 270 29 01 126 270 56 C ¹⁾	126 270 09 01 126 270 16 01 ²⁾	126 270 17 01	126 270 57 01
Shift valve housing	Part no.	126 270 71 01 ³⁾ 126 270 31 15 ⁴⁾ 126 270 54 15 ^{4) 18)}	126 270 43 07 126 270 55 07 ⁶⁾ 126 270 93 07 ⁷⁾	126 270 55 07 ³⁾ 126 270 64 07 ¹⁰⁾	126 270 84 07 ³⁾ 126 270 49 15 ¹¹⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ⁵⁾			
Intermediate plate	Part no.	126 277 39 14 126 277 76 14	126 277 23 14 126 277 38 14 ²⁾	126 277 23 14 126 277 39 14	126 277 39 14
Gasket	Part no.	126 277 02 80 126 277 05 80 ⁹⁾	126 277 02 80		
Vacuum control unit	Color	red black	red		
Modulating pressure	bar	3,0	2,8	3,6	
Working pressure	bar	10,4 ± 1	9,7 ± 1	12,9 ± 1	
Governor pressure in bar			1,0 2,6		
Transducer dia.	mm	270			

Transmission		722.309		722.310	722.311
Version		up to 12/81	starting 02/82	starting energy concept 09/81	starting energy concept 09/81
Transmission	Part no.	126 270 40 01	126 270 58 01 126 270 75 01 ¹¹⁾	126 270 36 01	126 270 37 01
Shift valve housing	Part no.	126 270 55 07 ³⁾ 126 270 93 07 ⁷⁾	126 270 71 07 ³⁾ 126 270 31 15 ⁴⁾ 126 270 54 15 ^{4) 18)}	126 270 75 07 ³⁾ 126 270 34 15 ¹¹⁾	126 270 76 07 ³⁾ 126 270 35 15 ¹¹⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ⁵⁾			
Intermediate plate	Part no.	126 277 23 14 126 277 38 14 ²⁾	126 277 39 14 126 277 76 14	126 277 40 14	
Gasket	Part no.	126 277 02 80	126 277 02 80 126 277 05 80 ⁹⁾	126 277 02 80 126 277 05 80 ¹²⁾	
Vacuum control unit	Color		red, black	green	red
Modulating pressure	bar	2,8	3,0	4,0	
Working pressure	bar	9,7 ± 1	10,4 ± 1	13,2 ± 1	13,7 ± 1
Governor pressure in bar	30 km/h 90 km/h		1,0 2,6	0,6 2,0	0,5 1,9
Transducer dia.	mm	270			290

- 1) Use of shift valve housing 126 270 31 15 temperature throttle, red-black vacuum control unit starting transmission end no. 422 707.
- 2) Use of modified intermediate plate together with temperature throttle white.
- 3) Temperature throttle white.
- 4) Temperature throttle red.
- 5) Identification numerals, stamped on centrifugal governor.
- 6) Replacement for 126 270 43 07 only in combination with intermediate plate 126 277 23 14 and temperature throttle white.
- 7) Repair version may be used as replacement for 126 270 43 07/55 07 together with intermediate plate 126 277 38 14 and injector.
- 8) Installed in exchange transmission only, replacement for 126 270 31 15.
- 9) Replacement for 126 277 02 80 in combination with intermediate plate 126 277 76 14.
- 10) May be used as replacement for shift valve housing 126 270 55 07 together with intermediate plate 126 277 39 14.
- 11) Replacement for shift valve housing 126 270/75 07/76 07/84 07 in combination with red temperature throttle.
- 12) Replacement for gasket 126 277 02 80.

Transmission		722.311			
Version	RUF	CAT CH CAT 1986	CH CAT starting 10/86	AKR RUF	
Transmission	Part no.	126 270 67 01	126 270 63 01	107 270 44 01	126 270 00 00
Shift valve housing	Part no.	126 270 68 15 107 270 12 07 ¹⁾		107 270 30 07	126 270 14 71
Centrifugal governor	Part no. code no.	126 270 09 74 K 09			
Intermediate plate	Part no.	126 277 89 14 126 277 94 14 ⁷⁾			
Gasket	Part no.	126 277 05 80 126 277 07 80 ⁸⁾			
Vacuum control unit	Color	red			
Modulating pressure	bar	4,0	3,8		
Working pressure	bar	14,4 ± 1,0	13,7 ± 1,0		14,0 ± 1,0
Governor pressure	30 km/h bar 90 km/h bar	0,5 1,9			
Transducer dia.	mm	290			

Transmission		722.311		722.312	722.313
Version	AKR CAT	NV	starting energy concept 09/81	starting energy concept 09/81	
Transmission	Part no.	126 270 01 00	126 270 67 01	126 270 32 01 ¹⁾ 126 270 38 01 ²⁾ LL 126 270 33 01 ¹⁾ RL 126 270 39 01 ²⁾	126 270 34 01 ¹⁾ 126 270 40 01 ²⁾ LL 126 270 35 01 ¹⁾ RL 126 270 41 01 ²⁾
Shift valve housing	Part no.	126 270 14 71	107 270 06 07	126 270 75 07 ^{ws3)} 126 270 34 15 ^{rt4)}	126 270 76 07 ^{ws3)} 126 270 35 15 ^{rt4)}
Centrifugal governor	Part no. code no.	126 270 09 74 K 09 ⁵⁾			
Intermediate plate	Part no.	126 277 94 14	126 277 39 14 ¹⁾ 126 277 40 14 ²⁾ 126 277 76 14 ¹⁾	126 277 39 14 ¹⁾ 126 277 40 14 ²⁾	
Gasket	Part no.	126 277 07 80 ⁸⁾			
Vacuum control unit	Color	white	red	green	red
Modulating pressure	bar	3,8	4,0		
Working pressure	bar			13,2 ± 1	13,7 ± 1
Governor pressure	30 km/h bar 90 km/h bar	0,5 1,9	0,5 2,0	0,9 ¹⁾ 2,4 ¹⁾	0,5 1,9
Transducer dia.	mm	290			

- 1) Without B-position
- 2) With B-position
- 3) Temperature throttle white
- 4) Temperature throttle red
- 5) Identification, numerals stamped on centrifugal governor.
- 6) Installed starting transmission end no. 888 468
- 7) Installed starting transmission end no. 743 450
- 8) Installed starting transmission end no. 741 219

Transmission		722.313		722.315	
Version		RÜF	CAT and CH CAT	up to 12/81	starting 01/82
Transmission	Part no.	126 270 88 01 ¹⁾ 126 270 69 01 ¹⁾	107 270 46 01	123 270 47 01	123 270 59 01 123 270 79 01 ¹⁾
Shift valve housing	Part no.	126 270 88 15 107 270 12 07 ¹⁵⁾ 107 270 06 07 ¹⁴⁾	107 270 06 07	126 270 36 07 ^{ws3)} 126 270 96 07 ^{2)ws3)}	126 270 74 07 ^{ws3)} 126 270 28 15 ^{6)ws3)} 126 270 60 15 ^{7)rs4)}
Centrifugal governor	Part no. code no.	126 270 09 74 K 09 ⁵⁾		126 277 13 74 K 10 ⁵⁾	
Intermediate plate	Part no.	126 277 89 14 126 277 94 14 ¹¹⁾		126 277 23 14 126 277 36 14 ²⁾	126 277 39 14 126 277 76 14
Gasket	Part no.	126 277 05 80 126 277 07 80 ¹²⁾		126 277 02 80	126 277 02 80 126 277 05 80 ⁸⁾
Vacuum control unit	Color	red		green	
Modulating pressure	bar	4,0	3,8	2,9	2,9 3,3 ⁹⁾
Working pressure	bar			12,5 ± 1	12,5 ± 1 14,3 ± 1 ⁹⁾
Governor pressure	30 km/h bar 90 km/h bar	0,5 1,9		1,2 2,8	
Transducer dia.	mm	290		270	

Transmission		722.317	722.320 722.319 ⁶⁾	722.322	722.323
Version		-	RÜF/CAT CH CAT 1986	RÜF/CAT CH CAT starting 1986 S CAT 1987	RÜF
Transmission	Part no.	124 270 00 01	124 270 10 01 126 270 50 01 ⁶⁾	107 270 37 01	126 270 85 01
Shift valve housing	Part no.	107 270 33 07		126 270 83 15 107 270 08 07 ¹⁴⁾	126 270 79 15 126 270 14 07
Centrifugal governor	Part no. code no.	126 270 10 74 K 10 ⁵⁾		126 270 09 74 126 270 22 74 ¹⁰⁾ K 22 ⁵⁾	126 270 09 74 K 09 ⁵⁾
Intermediate plate	Part no.	126 277 96 14		126 277 76 14 126 277 96 14 ¹¹⁾	126 277 89 14 126 277 94 14 ¹¹⁾
Gasket	Part no.	126 277 07 80		126 277 05 80 126 277 07 80 ¹²⁾	126 277 05 80 126 277 07 80 ¹²⁾ 126 277 09 80 ¹³⁾
Vacuum control unit	Color	black			
Modulating pressure	bar	3,2		3,9	4,2
Working pressure	bar	14,8 ± 1,0		12,7 ± 1,0	14,9 ± 1,0
Governor pressure	30 km/h bar 90 km/h bar	0,9 2,5	0,8 1,0 ⁶⁾ 2,3 2,6 ⁶⁾	1,0 2,5	0,6 2,1
Transducer dia.	mm	270			290

- 1) Use of temperature- and boost pressure-dependent vacuum control.
- 2) Repair version may be used as replacement for shift valve housing 126 270 36 07 together with intermediate plate 126 277 38 14, filler piece and injector.
- 3) Temperature throttle white
- 4) Temperature throttle red
- 5) Identification, numbers stamped on centrifugal governor.
- 6) For model 126
- 7) Replacement for shift valve housing 126 270 74 07/28 07 in combination with red temperature throttle.
- 8) Replacement for gasket 126 277 02 80 in combination with intermediate plate 126 277 76 14.
- 9) Values for vehicles with vacuum amplifier.
- 10) Installed starting transmission end no. 788 050
- 11) Installed starting transmission end no. 741 819
- 12) Installed starting transmission end no. 743 450
- 13) Installed starting transmission end no. 910 187
- 14) Shift valve housing with improved kickdown downshift
- 15) Installed starting transmission end no. 801 772.

Transmission		722.323			
Version		CAT and (CH) CAT	(CH) CAT starting 10/86	220 kW	NV
Transmission	Part no.	126 270 86 01	107 270 45 01	126 270 70 01	126 270 85 01
Shift valve housing	Part no.	126 270 79 15 107 270 14 07 ¹⁾	107 270 32 07	126 270 69 15 107 270 13 07 ³⁾	107 270 14 01
Centrifugal governor	Part no. code no.	126 270 09 74 K 09			
Intermediate plate	Part no.	126 277 89 14 126 277 94 14 ¹⁾			126 277 94 14
Gasket	Part no.	126 277 05 80 126 277 07 80 ²⁾ 126 277 09 80 ⁶⁾			126 277 09 80
Vacuum control unit	Color	red		black	
Modulating pressure	bar	3,8		4,0	4,2
Working pressure	bar	13,7 ± 1,0		16,4 ± 1,0	15,2 ± 1,0
Governor pressure	30 km/h bar 90 km/h bar			0,6 2,1	
Transducer dia.	mm	290			

Transmission		722.324			
Version		RUF	CAT (CH) CAT 9/86	AKR RUF	AKR CAT
Transmission	Part no.	126 270 71 01	126 270 79 01	126 270 02 00	126 270 03 00
Shift valve housing	Part no.	126 270 67 15 107 270 11 07 ³⁾ 126 270 08 71 ⁵⁾⁶⁾		126 270 12 71	
Centrifugal governor	Part no. code no.	126 270 09 74 K 09			
Intermediate plate	Part no.	126 277 89 14 126 277 94 14 ¹⁾		126 277 94 14	
Gasket	Part no.	126 277 05 80 126 277 07 80 ²⁾		126 277 07 80	
Vacuum control unit	Color	green		red	white
Modulating pressure	bar	4,0	3,6	4,0	3,7
Working pressure	bar	15,3 ± 1,0	14,5 ± 1,0	14,4 ± 1,0	13,3 ± 1,0
Governor pressure	30 km/h bar 90 km/h bar			0,6 2,0	
Transducer dia.	mm	290			

- 1) Installed starting transmission end no. 743 450.
- 2) Installed starting transmission end no. 741 819.
- 3) Installed starting transmission end no. 888 468.
- 4) Installed starting transmission end no. 910 187.
- 5) CAT only.
- 6) Installed starting transmission end no. 936 600.
- 7) Installed starting transmission end no. 801 772.
- 8) Installed starting transmission end no. 910 187.

Transmission		722.324	722.325		
J-version		NV	RUF	CAT (CH) CAT 1906	CAT starting 9/87 (CH) CAT starting 10/86
Transmission	Part no.	126 270 71 01	107 270 34 01 LL 107 270 35 01 RL	107 270 41 01	107 270 43 01
Shift valve housing	Part no.	107 270 11 07	126 270 67 15 107 270 11 07 ¹⁾ 107 270 39 07 ²⁾	126 270 67 15 107 270 11 07 ¹⁾ 126 270 08 71 ²⁾	107 270 29 07
Centrifugal governor	Part no. code no.		126 270 09 74 K 09 ³⁾		
Intermediate plate	Part no.	126 277 94 14	126 277 89 14 126 277 94 14 ³⁾		126 277 94 14
Gasket	Part no.	126 277 07 80	126 277 05 80 126 277 07 80 ⁴⁾		
Vacuum control unit	Color	green			
Modulating pressure	bar	4,0		3,6	
Working pressure	bar	18,3 = 1,0		13,7 = 1,0	
Governor pressure	30 km/h bar 90 km/h bar	0,6 2,0			
Transducer dia.	mm	230			

Transmission		722.345	722.346	722.347	722.348
Version L		-	-	-	-
Transmission	Part no.	124 270 07 01 124 270 25 01 ⁵⁾ 124 270 54 01 ⁶⁾	124 270 19 01 124 270 24 01 ⁵⁾ 124 270 55 01 ⁶⁾	124 270 08 01 124 270 25 01 ⁵⁾ 124 270 55 01 ⁶⁾	124 270 20 01 124 270 26 01 124 270 57 01
Shift valve housing	Part no.	107 270 28 07	107 270 05 07	107 270 34 07	107 270 33 07
Centrifugal governor	Part no. code no.	126 270 22 74 ⁷⁾ K 22		126 270 10 74 K 10 ⁷⁾	
Intermediate plate	Part no.	126 277 90 14			
Gasket	Part no.	126 277 07 80			
Vacuum control unit	Color	red	black	green	black
Modulating pressure	bar	3,1	2,9	3,0	3,2
Working pressure	bar	12,4 = 1,0	12,7 = 1,0	13,4 = 1,0	14,7 = 1,0
Governor pressure	30 km/h bar 90 km/h bar	0,9 2,4	0,8 2,3	1,0 2,7	0,9 2,5
Transducer dia.	mm	270			

- 1) Installed starting transmission end no. 888 464
- 2) Replacement for previously named shift valve housing
- 3) Installed starting transmission end no. 743 450
- 4) Installed starting transmission end no. 741 819
- 5) Modified gear teeth on ring gear
- 6) Transmission without ring gear (parts sector)
- 7) Code number stamped on centrifugal governor

Transmission		722.350	
Version L		AKR RUF	AKR CAT
Transmission	Part no.	126 270 97 01	126 270 98 01
Shift valve housing	Part no.	126 270 09 71	
Centrifugal governor	Part no. code no.	126 270 09 74 K 09 ¹⁾	
Intermediate plate	Part no.	126 277 94 14	
Gasket	Part no.	126 277 09 80	
Vacuum control unit	Color	black	red
Modulating pressure	bar	4,4	4,0
Working pressure	bar	15,9 ± 1,0	14,4 ± 1,0
Governor pressure	30 km/h bar 90 km/h bar	0,6 2,1	
Transducer dia.	mm	290	

¹⁾ Code number stamped on centrifugal governor

National versions up to 1988⁸⁾

Transmission		722.300			
Version		(AUS) S 1981	(J) 1981	(J) 1982-1985	(AUS) (CH) S 1982-1985
Transmission	Part no.	126 270 18 01	126 270 34 01	126 270 44 01	126 270 45 01
Shift valve housing	Part no.	126 270 60 07 ws ³⁾ 126 270 98 07 ⁴⁾ (ws ³⁾	126 270 68 07 ws ³⁾ 126 270 97 07 ⁴⁾ (ws ³⁾	126 270 90 07 ws ³⁾ 126 270 47 15 ²⁾ (ws ³⁾	126 270 89 07 ws ³⁾ 126 270 48 15 ²⁾ (ws ³⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 03 ⁵⁾			
Intermediate plate	Part no.	126 277 23 14 126 277 38 14		126 277 39 14	
Gasket	Part no.	126 277 02 80			
Vacuum control unit	Color	green	white		green
Modulating pressure	bar	2,4			
Working pressure	bar	8,5 = 1		9,2 = 1	
Governor pressure	30 km/h bar 90 km/h bar	1,0 2,5		1,0 2,6	
Transducer dia.	mm	270			

Transmission		722.301		722.303	
Version		(AUS) S 1981	(USA) 1981	(USA) 1981	(USA) (J) 1982-1984
Transmission	Part no.	126 270 26 01	126 270 12 01	126 270 08 01	126 270 28 01
Shift valve housing	Part no.	126 270 72 07 ws ³⁾ 126 270 00 15 ⁶⁾ (ws ³⁾	126 270 46 07 ws ³⁾ 126 270 99 07 ⁶⁾ (ws ³⁾	126 270 36 07 ws ³⁾ 126 270 96 07 ⁶⁾ (ws ³⁾	126 270 74 07 ws ³⁾ 126 270 28 15 ⁶⁾ (ws ³⁾
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ⁵⁾	126 270 13 74 K 10 ⁵⁾		
Intermediate plate	Part no.	126 277 23 14 126 277 38 14 ⁷⁾	126 277 23 14 126 277 38 14		126 277 39 14
Gasket	Part no.	126 277 02 80			
Vacuum control unit	Color	green	red	green	
Modulating pressure	bar	3,0	3,5	2,9	
Working pressure	bar	10,7 = 1	12,5 = 1		
Governor pressure	30 km/h bar 90 km/h bar	0,9 2,4		1,2 2,8	
Transducer dia.	mm	270			

- 1) Use of modified intermediate plate together with temperature throttle white.
- 2) Replacement for shift valve housing 126 270 89 07/90 07 in combination with red temperature throttle.
- 3) Temperature throttle white.
- 4) Temperature throttle red.
- 5) Identification, numerals stamped on centrifugal governor.
- 6) Repair version may be used as replacement for 126 270 46 07/60 07/68 07/72 07 together with intermediate plate 126 277 38 14, filling piece and injector.
- 7) Replacement for shift valve housing 126 270 74 07.
- 8) For vehicles not listed on national version values of standard version apply.

National versions up to 1988

Transmission		722.303	722.304		722.309
Version		(USA) 1985	(USA) 1981	(AUS) (S) 1981	(AUS) (S) 1981
Transmission	Part no.	126 270 03 01	107 270 12 01	102 270 20 01	122 270 49 01
Shift valve housing	Part no.	126 270 02 15 (rt ²)	126 270 46 07 (ws ³), 126 270 59 07 ⁴ (ws ³)	126 270 72 07 (ws ³), 126 270 00 15 ⁵ (ws ³)	126 270 60 07 (ws ³), 126 270 98 07 ¹ (ws ³)
Centrifugal governor	Part no. code no.	126 270 13 74 K 10 ²)	126 270 11 74 K 09 ²)		
Intermediate plate	Part no.	126 277 76 14	126 277 23 14 126 277 38 14	126 277 23 14 126 277 38 14 ⁶)	126 277 23 14 126 277 38 14
Gasket	Part no.	126 277 05 60	126 277 02 80		
Vacuum control unit	Color	green	red	green	
Working pressure	bar	3,3	3,5	3,0	2,4
Modulating pressure	bar	14,4 ± 1	12,5 ± 1	10,7 ± 1	8,5 ± 1
Governor pressure	30 km/h bar 90 km/h bar	1,2 2,3		0,9 2,4	1,0 2,5
Transducer dia.	mm	270			

Transmission		722.309		722.310	
Version		(AUS) (CH) (S) 1982-1985	(J) 1982-1985	(USA) (J) 1982	(AUS) (S) 1982-1985 (CH) 1983
Transmission	Part no.	122 270 61 01	123 270 62 01	120 270 42 01	126 270 43 01
Shift valve housing	Part no.	126 270 89 07 (ws ³), 126 270 48 15 ⁶ (rt ²)	126 270 90 07 (ws ³), 126 270 47 15 ⁶ (rt ²)	126 270 85 07 (ws ³)	126 270 10 15 (ws ³), 126 270 36 15 ⁶ (rt ²)
Centrifugal governor	Part no. code no.	126 270 11 74 K 09 ²)			
Intermediate plate	Part no.	126 277 39 14			
Gasket	Part no.	126 277 02 80			
Vacuum control unit	Color	green	white	red	brown
Modulating pressure	bar	2,4		3,7	3,9
Working pressure	bar	9,2 ± 1		14,1 ± 1	12,2
Governor pressure	30 km/h bar 90 km/h bar	1,0 2,6		0,6 2,0	0,9 2,4
Transducer dia.	mm	270			

- 1) Use of modified intermediate plate and temperature throttle white.
- 2) Temperature throttle red.
- 3) Temperature throttle white.
- 4) Identification, numerals stamped on centrifugal governor.
- 5) Repair version may be used as replacement for shift valve housing 126 270 46 07/72 07 together with intermediate plate 126 277 38 14, filling piece and injector.
- 6) Replacement for shift valve housing 126 270 10 15/89 07/90 07 together with red temperature throttle.

National versions up to 1988

Transmission		722.310		722.311	
Version		(USA) (J) 1983-1985	(CH) (S) 1984-1985	(USA) (J) 1984-1985	
Transmission	Part no.	126 270 46 01	126 270 47 01	126 270 53 01	126 270 49 01
Shift valve housing	Part no.	126 270 14 15 wt ¹⁾ , 126 270 37 15 ^{3) (rt²⁾}	126 270 36 15 (rt ²⁾	126 270 35 15 (rt ²⁾	126 270 22 15 wt ¹⁾ , 126 270 38 15 ^{3) (rt²⁾}
Centrifugal governor	Part no. code no.	126 270 11 74 K 02 ⁴⁾			
Intermediate plate	Part no.	126 277 40 14			
Gasket	Part no.	126 277 02 80 126 277 05 80 ⁵⁾			
Vacuum control unit	Color	red	brown	green	white
Modulating pressure	bar	3,7	3,9	3,6	3,3
Working pressure	bar	14,1 ± 1	12,2	13,8	14,1 ± 1
Governor pressure	30 km/h bar 90 km/h bar		0,6 2,0	0,5 1,9	0,6 2,0
Transducer dia.	mm	290	270	290	

Transmission		722.313		722.317 722.321 ²⁾	
Version		(AUS) (J) (USA) 1985	(AUS) (J) (USA) 1987	(J) (USA) 1986	
Transmission	Part no.	126 270 77 01 LL 126 270 78 01 RL	107 270 56 01 RL 107 270 53 01 LL	124 270 00 01 126 270 51 01 ²⁾	
Shift valve housing	Part no.	126 270 79 15 107 270 14 07 ³⁾	126 270 26 71	126 270 73 15 107 270 33 07 ³⁾	
Centrifugal governor	Part no. code no.	126 270 09 74		126 270 10 74	
Intermediate plate	Part no.	126 277 89 14 126 277 94 14 ⁵⁾	126 277 08 15	126 277 76 14 126 277 96 14 ⁴⁾	
Gasket	Part no.	126 277 05 80 126 277 07 80 ⁵⁾ 126 277 09 80 ¹⁾	126 277 09 80	126 277 05 80 126 277 07 80 ⁵⁾	
Vacuum control unit	Color	red		black	
Modulating pressure	bar	4,0		3,2	
Working pressure	bar	14,4 ± 1,0		12,7 ± 1,0	
Governor pressure	30 km/h bar 90 km/h bar	0,6 2,0		0,8 2,3	1,0 ²⁾ 2,5 ²⁾
Transducer dia.	mm	290		270	

- 1) Temperature throttle white.
- 2) Temperature throttle red.
- 3) Replacement for shift valve housing 126 270 14 15/22 15 in combination with red temperature throttle.
- 4) Identification, numerals stamped on centrifugal governor.
- 5) Replacement for gasket 126 277 02 80.

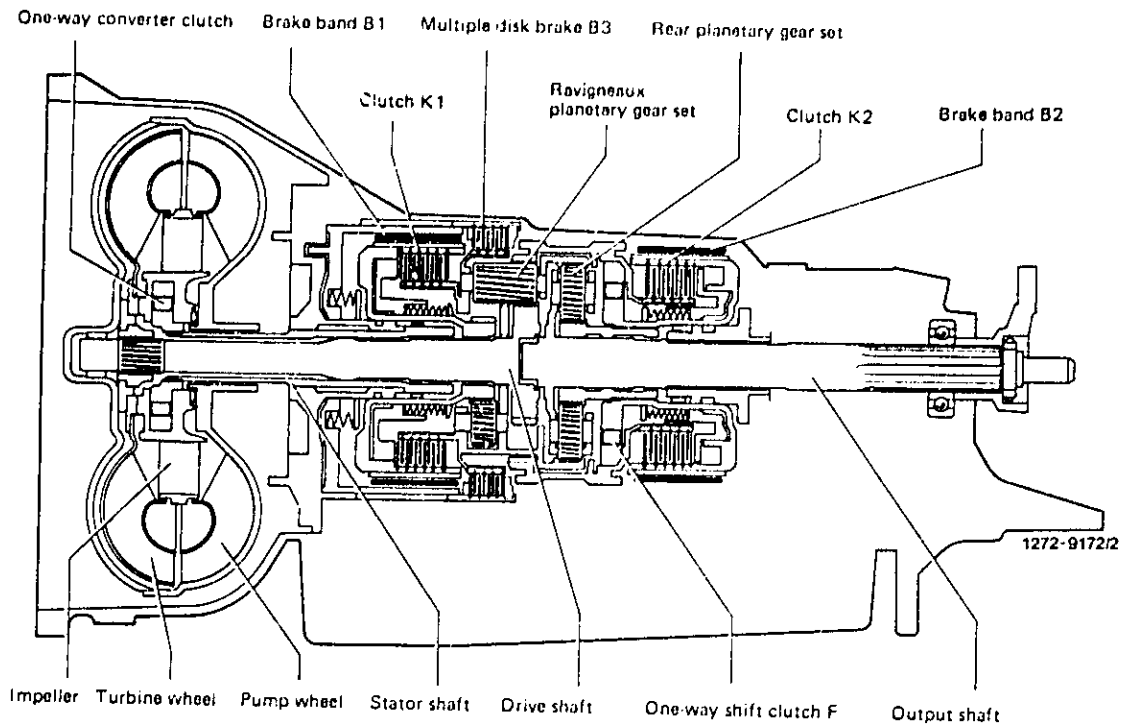
National versions up to 1988¹⁾

Transmission		722.323	722.324	
Version		(AUS) (J) (USA) 1988	(AUS) (J) (USA) 1988	(J) (USA) 1988
Transmission	Part no.	126 270 04 00	126 270 74 01 126 270 84 01 ²⁾	126 270 05 00
Shift valve housing	Part no.	126 270 20 71	126 270 67 15 107 270 11 07 ²⁾³⁾ 126 270 08 71 ⁴⁾	126 270 21 71
Centrifugal governor	Part no. code no.	126 270 09 74		126 270 22 74
Intermediate plate	Part no.	126 277 08 15	126 277 89 14 126 277 94 14 ⁵⁾	126 277 08 15
Gasket	Part no.	126 277 09 80	126 277 05 80 126 277 07 80 ⁶⁾	126 277 07 80
Vacuum control unit	Color	red	green	
Modulating pressure	bar	4,0	3,6 3,8 ³⁾	3,6
Working pressure	bar	14,4 ± 1,0	13,7 ± 1,0	
Governor	30 km/h bar pressure 90 km/h bar		0,6 2,0	
Transducer dia.	mm:		290	

- 1) For vehicles not listed on national version, data of basic version apply.
- 2) (AUS) only.
- 3) Installed starting transmission end no. 801 147.
- 4) Installed starting transmission end no. 936 600 (J) (USA) only.
- 5) Installed starting transmission end no. 743 450.
- 6) Installed starting transmission end no. 741 819.

27-002 Transmission diagram – ratios

Transmission diagram



Ratios

Gear	Ratio	Actuated or effective shift elements	Ratio $i =$	
1st	in front (Ravigneaux) and rear planetary gear set	Brake band 2 One-way clutch ¹⁾	3.68	$3.87^2)$
2nd	in front (Ravigneaux) and rear planetary gear set	Brake band 1 Brake band 2	2.41	$2.24^2)$
3rd	in rear planetary gear set	Clutch 1 Brake band 2	1.44	
4th	no ratio	Clutch 1 Clutch 2	1	
Reverse	in front (Ravigneaux) and rear planetary gear set	Multiple-disk brake 3 One-way clutch ¹⁾	5.14	$5.58^2)$

¹⁾ In 1st gear in selector lever position "L" or "2" and in reverse the one-way clutch will be bridged by engaging clutch 2.
²⁾ Transmission 722.323, 220 kW, 722.350.

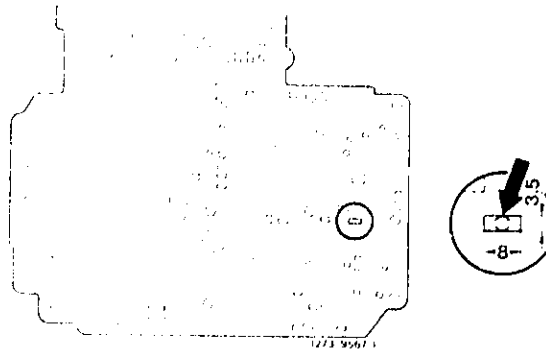
27-003 Survey large intermediate plate

The following arrangement is intended to serve as an identification aid. The intermediate plates have different hole patterns (arrows). The crosses are marking the points where no holes should be located.

Intermediate plate for transmission with shift valve housing 1st version (prior to energy concept) and repair version.

Valid gasket 126 277 02 80

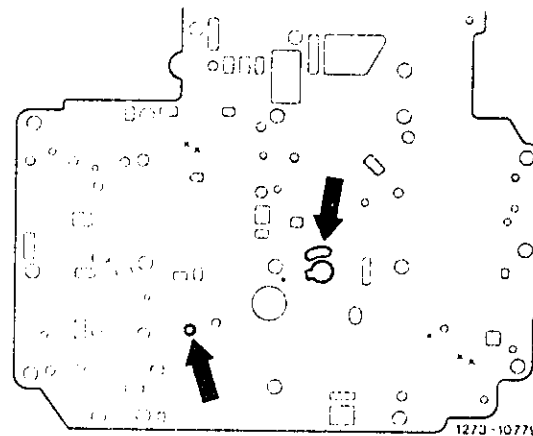
Installed up to transmission end No. 18937 without temperature throttle¹⁾



¹⁾ 126 277 07 14

Valid gasket 126 277 02 80

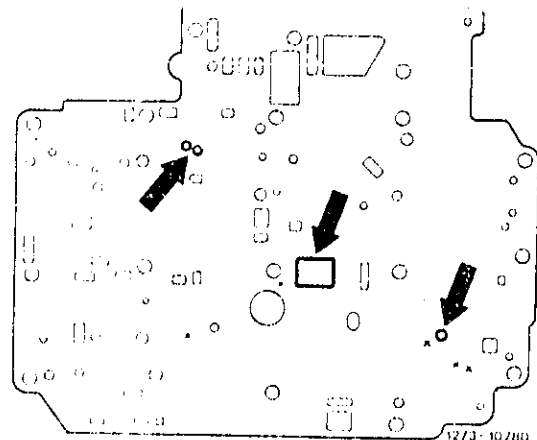
Installed starting transmission end No. 18938 with temperature throttle, white²⁾



²⁾ 126 277 23 14

Valid gasket 126 277 02 80

Installed in combination with shift valve housing repair version³⁾



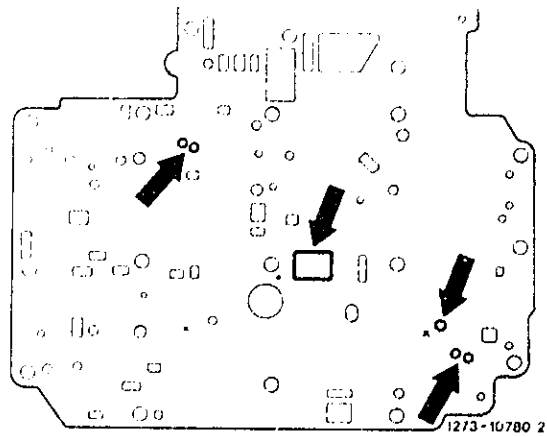
³⁾ 126 277 38 14

Intermediate plate for transmission with shift valve housing 2nd version (starting energy concept 9.1981 or 1.1982).

Valid gasket 126 277 02 80

Installed in transmission without position "B"¹⁾

- ¹⁾ 126 277 32 14 (steel)
- ¹⁾ 126 277 39 14 (aluminum)

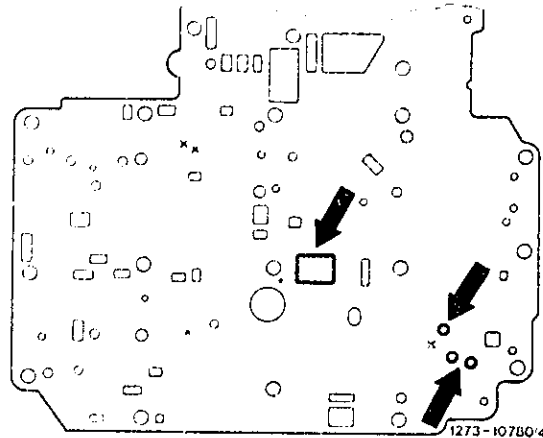


Valid gasket 126 277 05 80 (air pocket)

Installed in transmission without position "B"²⁾

Note: If gasket 126 277 05 80 is not available, gasket 126 277 02 80 may be used.

- ²⁾ 126 277 76 14

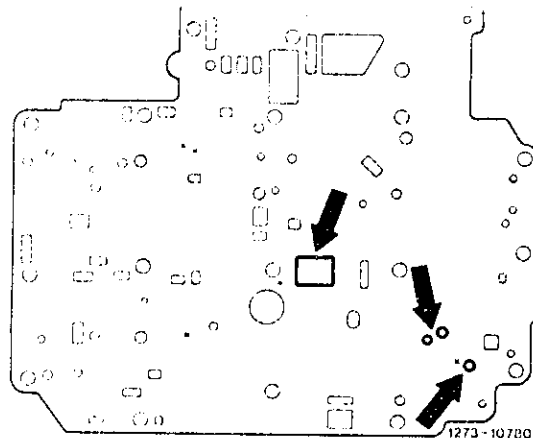


Valid gasket 126 277 05 80

Installed in transmission with position "B"³⁾

Note: If gasket 126 277 05 80 is not available, gasket 126 277 02 80 may be used.

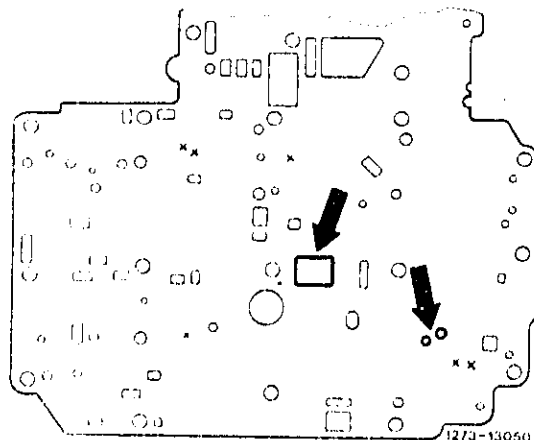
- ³⁾ 126 277 33 14 (steel)
- ³⁾ 126 277 40 14 (aluminum)



Valid gasket 126 277 05 80

Installed in transmission with position "B"⁴⁾

- ⁴⁾ 126 277 89 14

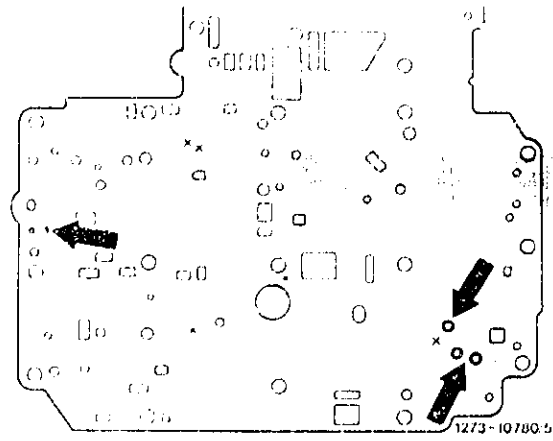


Valid gasket 126 277 07 80

Installed starting transmission end No. 741 819 and replacement for 126 277 05 80

Installed in transmission without position "B"¹⁾ starting transmission end No. 754 609 and replacement for 126 277 76 14

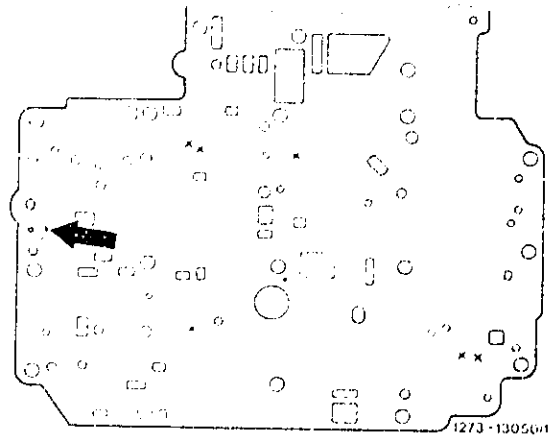
¹⁾ 126 277 96 14



Valid gasket 126 277 07 80

Installed in transmission with position "B"²⁾ starting transmission end No. 743 450 and replacement for 126 277 89 14

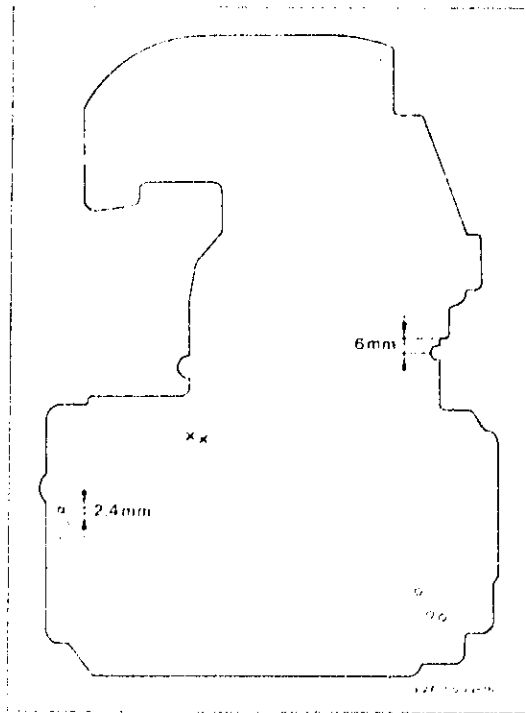
²⁾ 126 277 94 14



Valid gasket 126 277 07 80 or 126 277 10 80

Installed in transmission with spring retainer (LB3)

Vehicles with 6-cylinder engine (AUS) (J) (USA) 1988



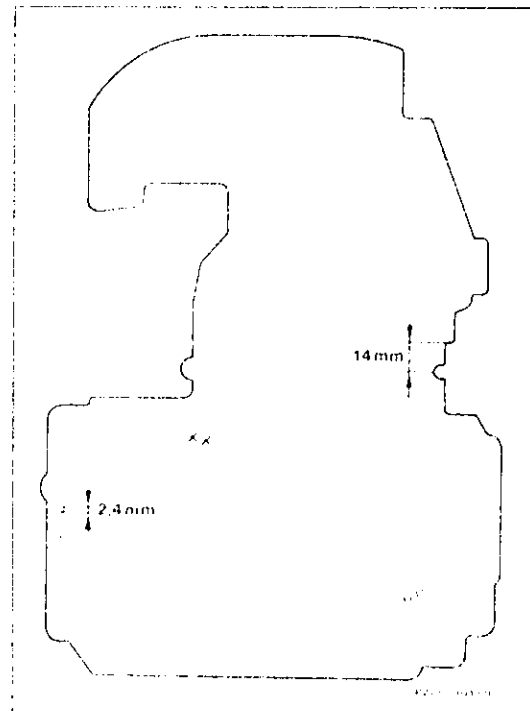
126 277 12 15

Valid gasket 126 277 09 80 or
126 277 11 80 with engine 117

Valid gasket 127 277 07 80 or
126 277 10 80 with engine 116

Installed in transmission with spring retainer (LB3)

Vehicles with 8-cylinder engine (AUS) (J) (USA) 1988



126 277 08 15

27-006 Function vacuum control

The vacuum control is installed in vehicles with engine G17.95.

Identification of vacuum lines

The basic color of the vacuum lines for the automatic transmission is black. The lines are identified for the different functions by means of color stripes.

Abbreviated designations in vacuum flow charts:

br = brown
gn = green
rt = red
sw = black
ws = white

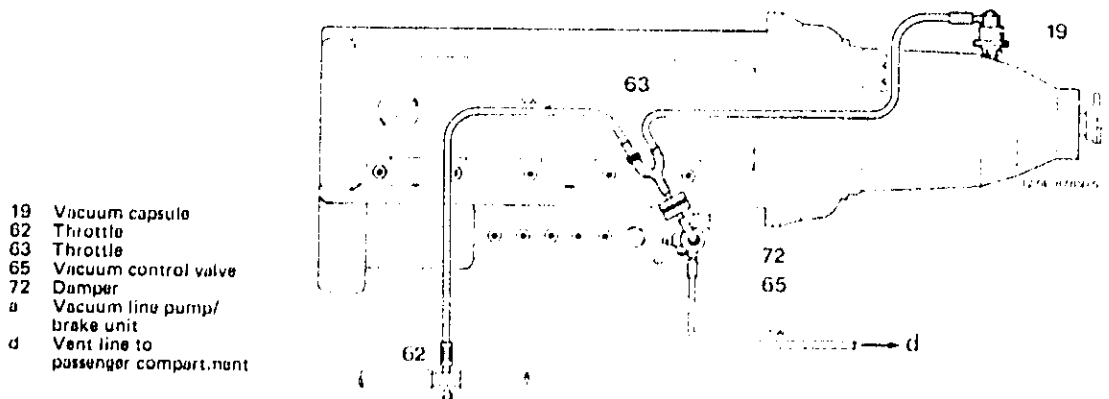
Vacuum flow charts

Models 123.133, 123.153, 123.193, 126.120

The vacuum is picked up at vacuum line (a) pump/brake unit. It is fed to the vacuum control valve (65) through the black/green vacuum line and throttle (63). The vacuum control valve controls the vacuum in idle throttle position to approx. 0.35 bar.

Upon further acceleration the vacuum is still further reduced by the vacuum control valve (65) and is completely exhausted at full load.

On this version moving off in 1st gear is not initiated by the vacuum but by the control pressure cable.



Temperature and boost pressure-dependent vacuum control with vacuum flow chart,
vehicles with engine 617.95 starting October 1984 and engine 603.96 from start of series

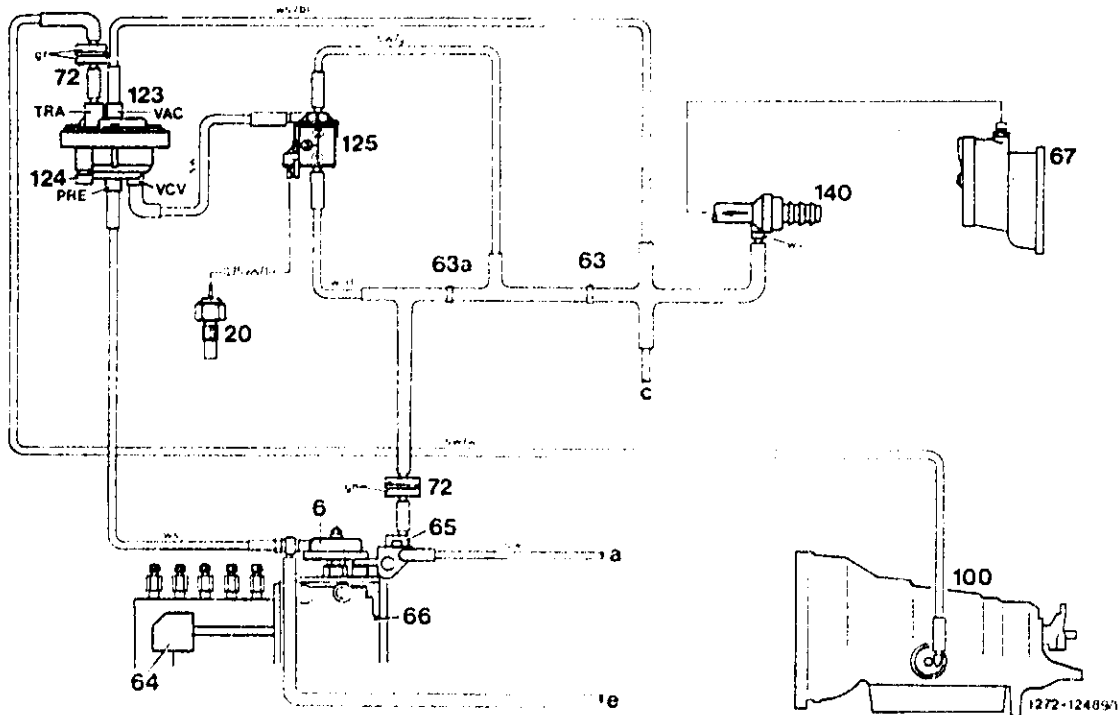
Engine 617.95 starting 10.84

At centric connection (1/AC) of vacuum transducer full vacuum is engaged with the engine running.

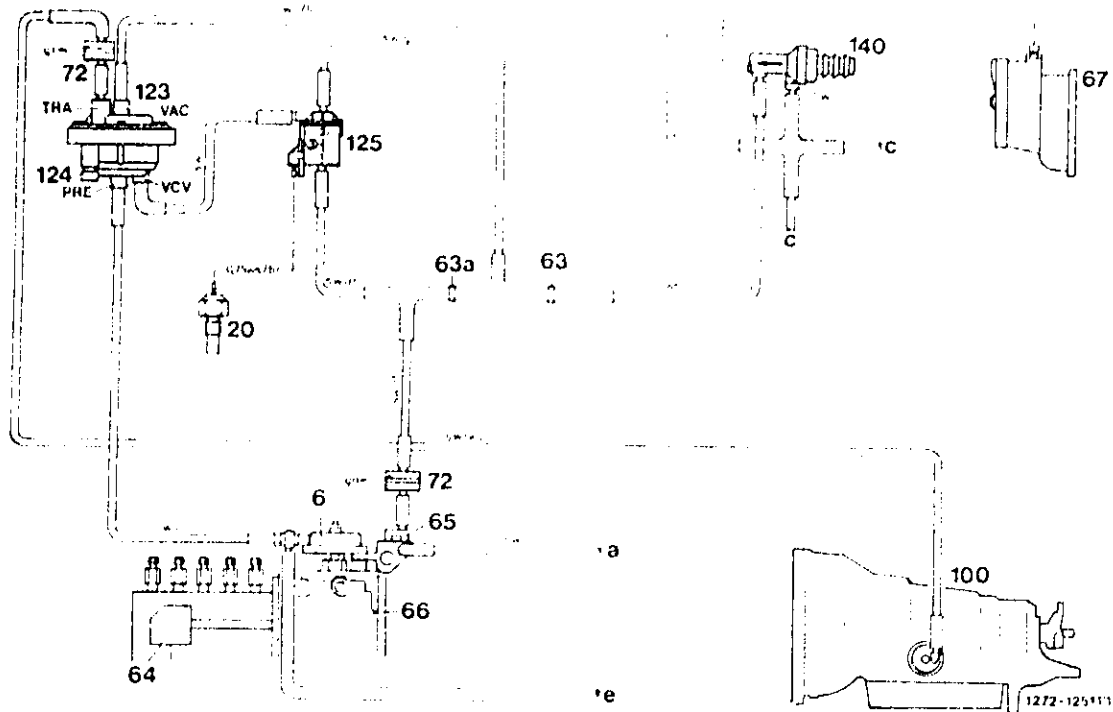
At a coolant temperature of 50 °C the switchover valve (125) is connected to ground by means of temperature switch (20). The connection vacuum control valve to connection (VCV) at vacuum transducer is closed. The vacuum generated by the vacuum pump provides a higher vacuum between throttles 63 and 63a than the vacuum controlled at vacuum control valve. This vacuum, which is picked up between the throttles, flows via switchover valve (2-3) to vacuum transducer (connection VCV). As a result, a higher vacuum will be introduced, which results in a lower modulating pressure via connection (TRA) and vacuum capsule on transmission. The temperature switch (20) opens as of approx. 50 °C, the ground connection to the switchover valve (125) is interrupted. The controlled vacuum of the vacuum control valve flows through switchover valve (1-3) to vacuum transducer (connection VCV).

Boost pressure influence

Independent of coolant temperature the vacuum transducer (connection PRE) will be provided with boost pressure when the turbocharger starts operating. This will result in a reduction of the controlled vacuum (connection TRA) and therefore an increase of the modulating pressure via vacuum capsule on transmission.



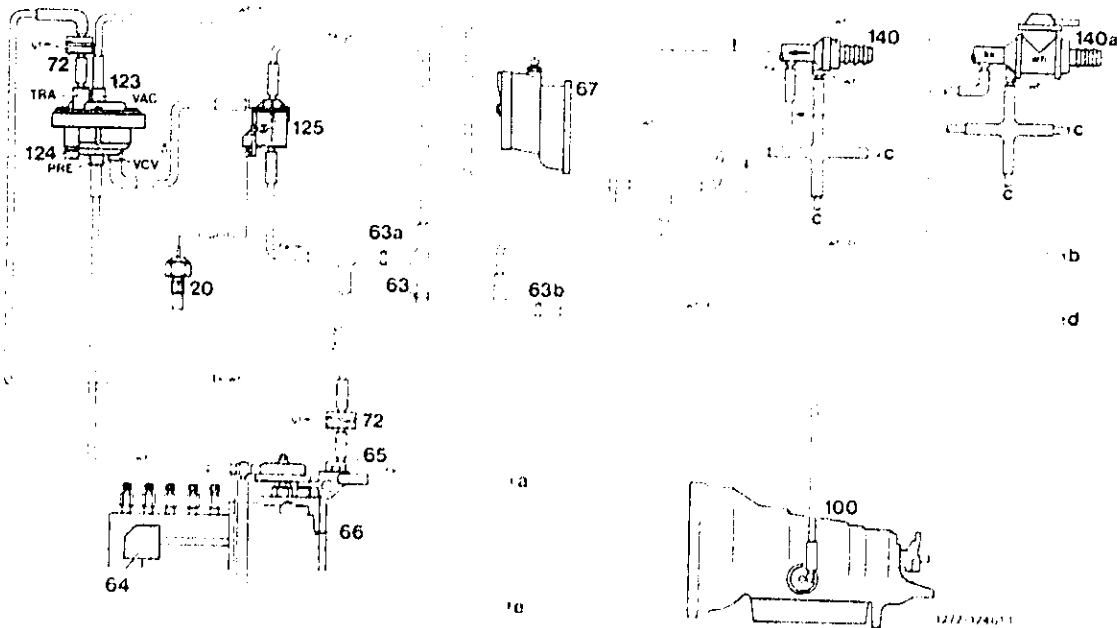
Vacuum flow chart model 123 standard version and (J)



Vacuum flow chart model 123 and 126 (USA)

- | | | | |
|-----|------------------------------------|------|--------------------------------------|
| 20 | Temperature switch 50 °C | 140 | Check valve, model 123 |
| 63 | Throttle 0.6 mm, natural color | 140a | Check valve, model 126 |
| 63a | Throttle 0.6 mm, natural color | a | Vent line from passenger compartment |
| 63b | Throttle 0.5 mm | b | Switchover valve vacuum transducer |
| 64 | Control rod travel sensor | c | Residual consumer |
| 65 | Vacuum control valve | d | Vacuum transducer |
| 66 | Injection pump | e | Switchover valve overload protection |
| 67 | Vacuum pump | | |
| 72 | Vacuum damper | | |
| 100 | Automatic transmission | | |
| 123 | Vacuum transducer | | |
| 124 | Adjusting screw | | |
| 125 | Switchover valve vacuum transducer | | |

- | | |
|-----|------------------------|
| PRE | = Boost pressure |
| TRA | = Transmission |
| VAC | = Vacuum |
| VCV | = Vacuum control valve |



Vacuum flow chart model 126 (J)

Engine 603.96

The vacuum control for modulating pressure differs compared with engine 617.95 in its pneumatic activation.

Function

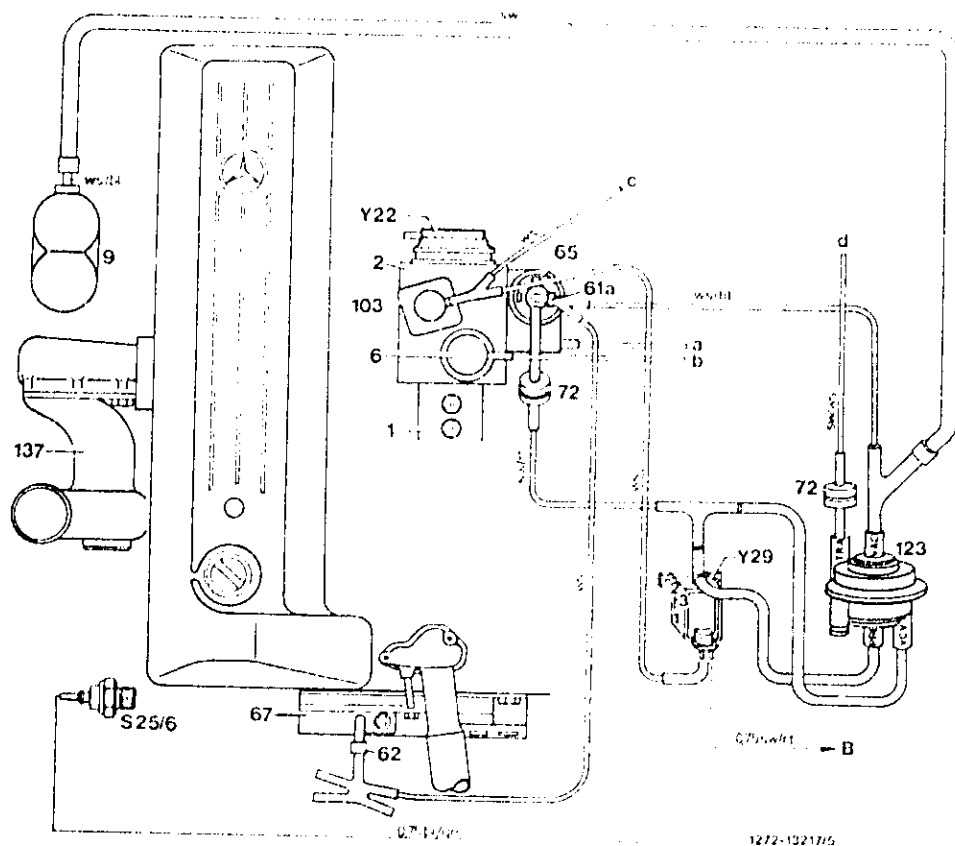
With the engine running, the centric connection (VAC) of vacuum transducer is connected to full vacuum, connection (VCV) is connected to controlled vacuum.

Coolant temperature < 50 °C

The switchover valve (Y 29) is connected to ground via temperature switch (S25/6) for connection 2-3. The vacuum controlled by the vacuum control valve rests against connections (PRE and VCV) and acts directly against the vacuum at connection (VAC). This will result in the vacuum at connection (TRA) required for transmission control.

Coolant temperature > 50 °C

The ground connection on switchover valve (Y 29) is interrupted, the valve switches 1-3. The connection (PRE) is now connected with the boost pressure line of the exhaust gas turbocharger. When the boost pressure is starting, it will act against the vacuum controlled by the vacuum control valve. This will result in a reduction of the vacuum at connection (TRA) and the modulating pressure will therefore be increased via vacuum capsule on automatic transmission.



Vacuum flow chart model 124 and 126 with engine 603.96

- | | | | |
|-------|---|-----|--|
| 1 | Injection pump | Y22 | Actuating magnet |
| 2 | Governor | Y29 | Switchover valve vacuum transducer |
| 6 | Vacuum capsule stop | B | To relay auxiliary fan K9 terminal 4 |
| 9 | Vacuum accumulator | a | Ventilation toward passenger compartment |
| 61a | Throttle | b | Key shutoff |
| 62 | Filter | c | To switchover valve engine overload protection |
| 65 | Vacuum control valve | d | To vacuum capsule automatic transmission |
| 67 | Vacuum pump | | |
| 72 | Dampor | | |
| 103 | ALDA capsule | | |
| 123 | Vacuum transducer | PRE | Boost pressure |
| 137 | Turbocharger | TRA | Transmission |
| S25/6 | Temperature switch 50 °C
(in thermostat housing) | VAC | Vacuum |
| | | VCV | Vacuum control valve |

27-007 Function kickdown cutout, "B" gear change and moving off 1st gear

Models 107 and 126 with 8-cylinder engines are provided with a kickdown cutout since September 1981, model 124 since start of series, as well as models 123 and 126 with engine 617.95 (USA) starting model year 1985. As a result, the kickdown shiftpoints could be raised.

Kickdown cutout

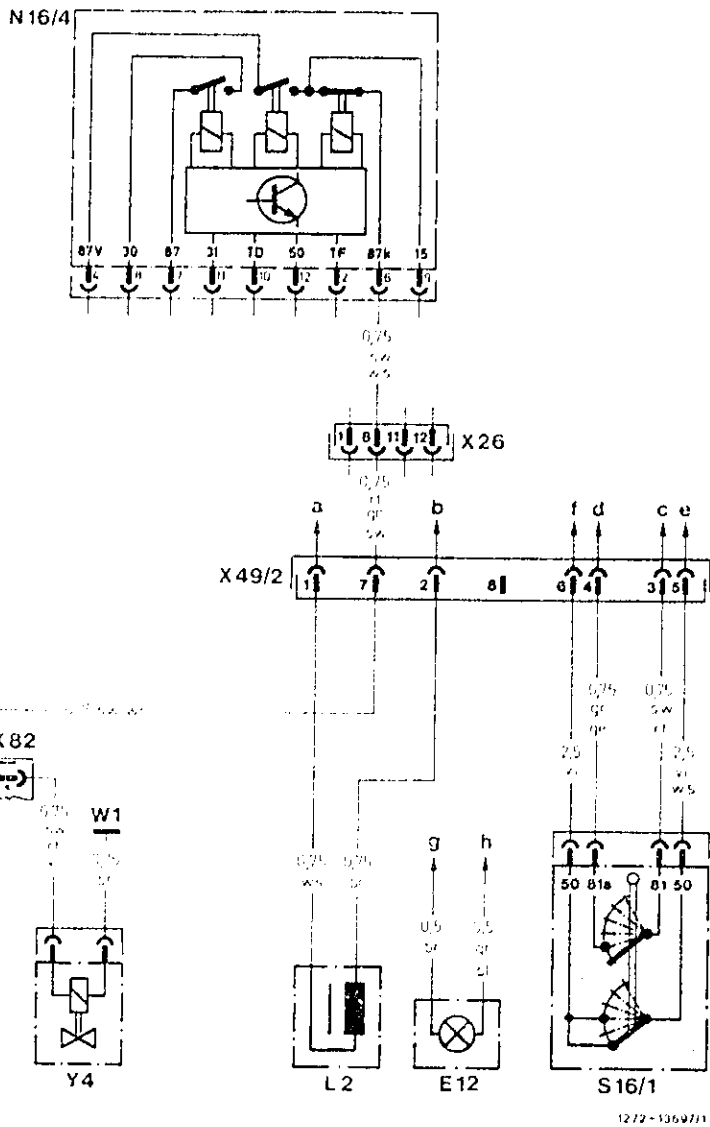
To utilize the engine up to max. speed during kickdown gearshift, the kickdown upshift is hydraulically placed above max. speed of engine. But just before attaining max. speed, the kickdown flow is electronically interrupted (fuel pump relay or control unit compressor cutout). This will guarantee that the transmission will shift to the next higher gear shortly before max. engine speed.

"B" gearshift

During a "B" gearshift switch (S60) is actuated and current will flow to switchover valve, automatic transmission (Y3). A decel brake shift 2-1 below 40 km/h is not possible and 1st gear can now be used for braking. The 1st gear remains at a speed of 50-60 km/h (installed since September 1981).

Moving off, 1st gear vehicle with engine 117, installed from May 1980 to August 1985

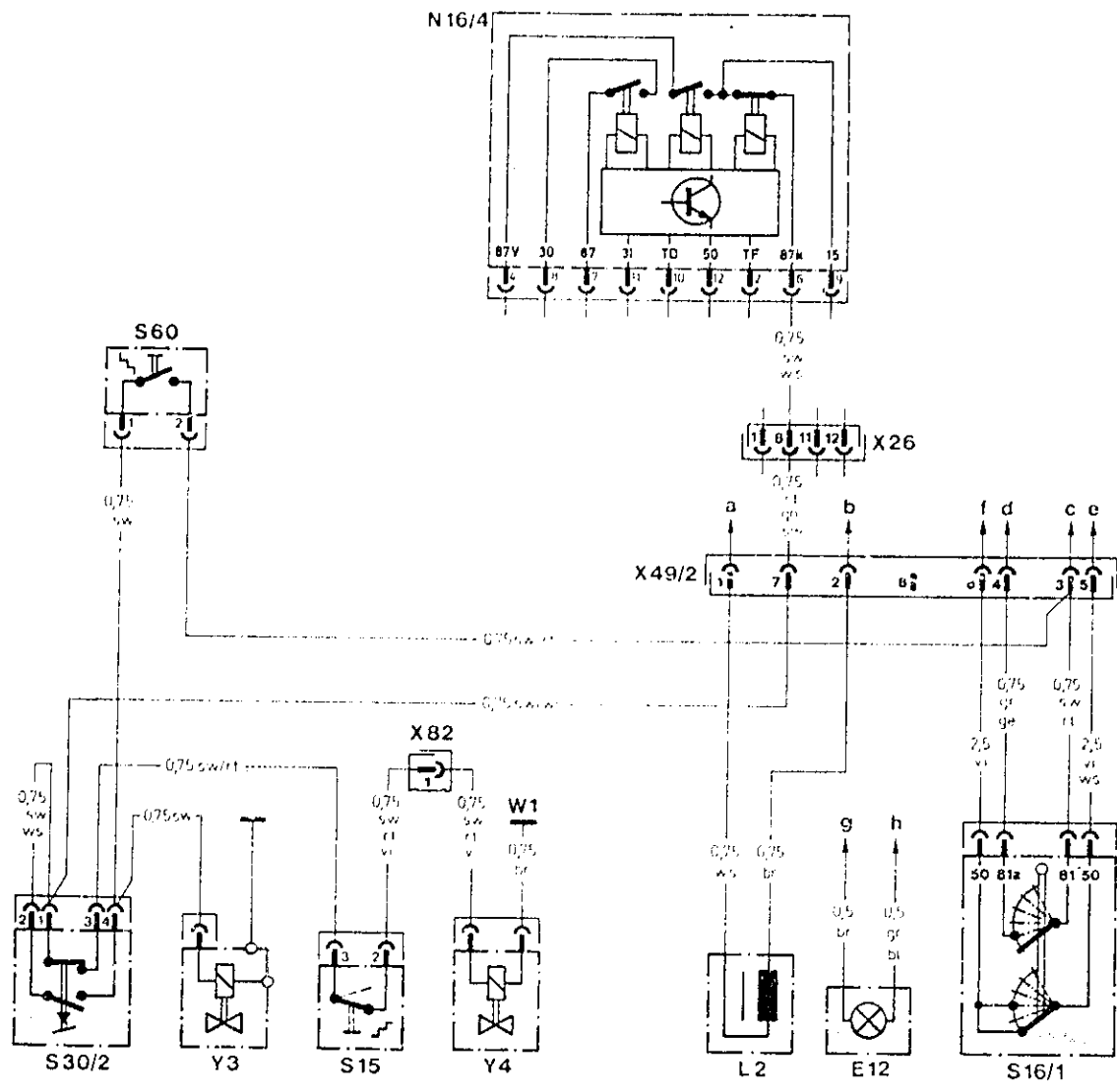
In driving position "3" and "2" current will flow via starter interlock and backup lamp switch (S16/1) and relay, moving off 1st gear (N23) to switchover valve, automatic transmission (Y3) and 1st gear will be engaged. As from a speed of approx. 12 km/h (signal comes from speedometer cruise control connection) the current to magnetic valve is interrupted by the control unit moving off 1st gear and the transmission will shift into 2nd gear (refer to wiring diagrams).



Wiring diagram kickdown shutoff and 2nd drive program
Vehicles with 6-cylinder engines models 107

- E12 Illumination, shift pattern
- N16/4 Relay, fuel pump with cold start valve control and kickdown shutoff
- L 2 Inductive transmitter, road speed
- S16/1 Starter interlock and backup lamp switch
- S15 Switch, 2nd drive program
- S30/2 Kickdown switch 2nd drive program
- W 1 Main ground (behind instrument cluster)
- X 6 Cable connector terminal 58d
- X26 Plug connection, engine harness

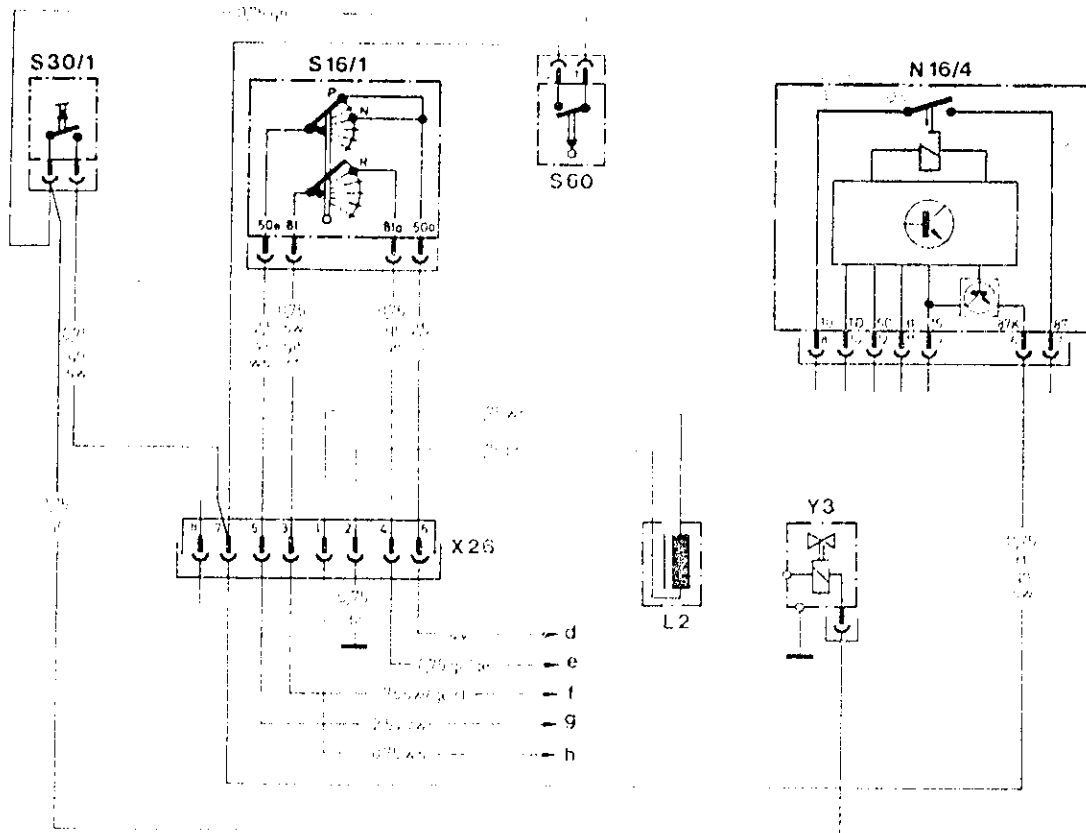
- X49/2 Plug connection, starter interlock and backup lamp switch
- X82 Plug connection, switchover valve/switch 2nd drive program
- Y 3 Switchover valve, automatic transmission
- Y 4 Switchover valve, 2nd drive program
- a Speedometer
- b W1 main ground behind instrument cluster
- c Fuse terminal 15
- d Backup lamp
- e Ignition starter switch
- f Starter
- g Ground, radio
- h Rotary lamp switch (K)



1272-13698/1

Wiring diagram kickdown shutoff "B" circuit and 2nd drive program, vehicles with 8-cylinder engines model 107

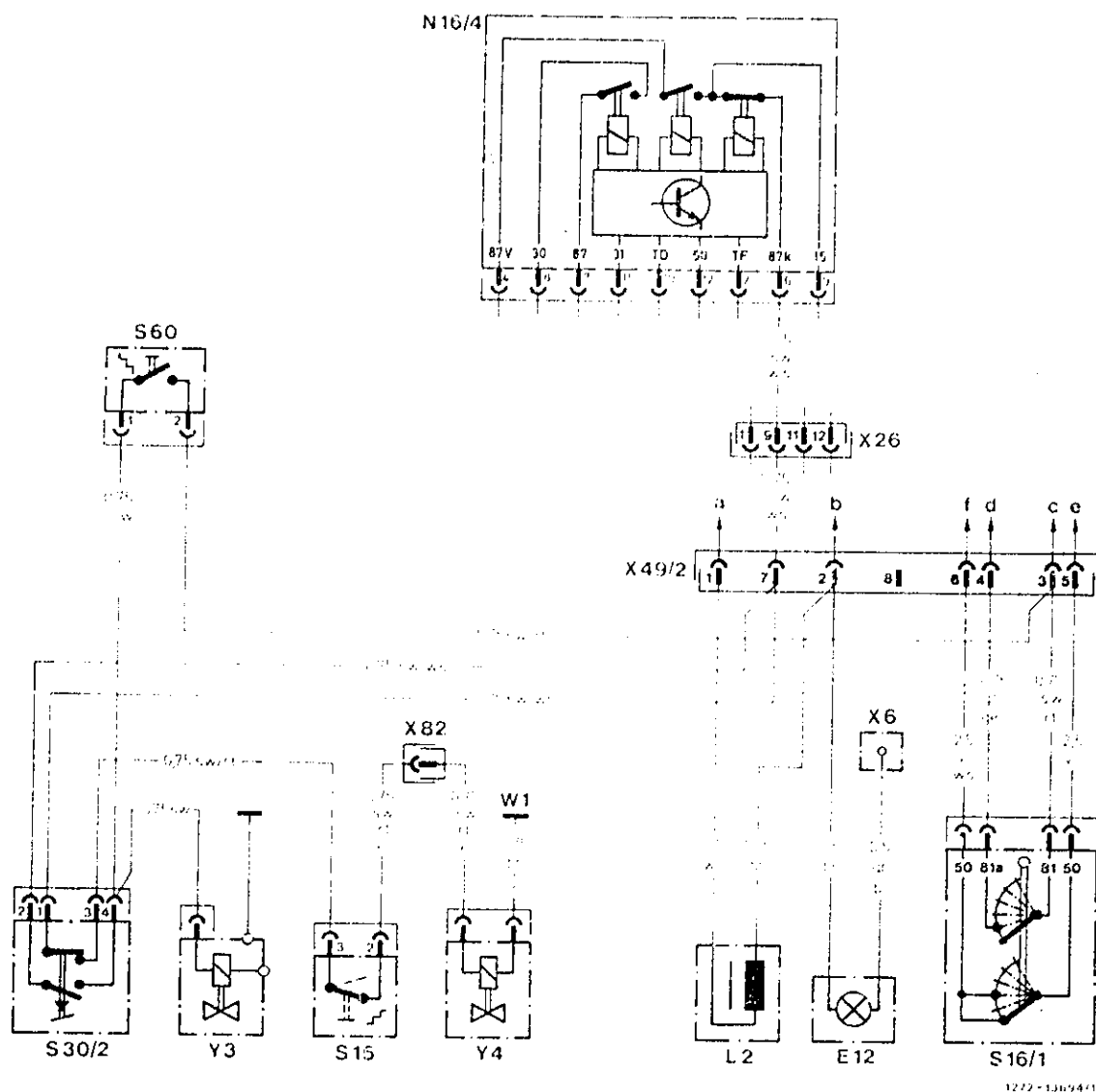
- | | | | |
|-------|---|-------|--|
| E12 | Illumination, shift pattern | S60 | Switch, B circuit |
| N16/4 | Relay, fuel pump with cold start valve control and kickdown shutoff | X82 | Plug connection, switchover valve/switch 2nd drive program |
| S15 | Switch, 2nd drive program | L 2 | Inductive transmitter, road speed |
| S30/2 | Kickdown switch 2nd drive program | S16/1 | Starter interlock and backup lamp switch |
| W 1 | Main ground (behind instrument cluster) | a | Speedometer |
| W 3 | Ground, wheelhouse front left (ignition coil) | b | W1 main ground behind instrument cluster |
| W 5 | Ground, engine | c | Fuse terminal 15 |
| X26 | Plug connection 12-pole, engine harness | d | Backup lamp |
| Y 3 | Switchover valve, automatic transmission | e | Ignition starter switch |
| Y 4 | Switchover valve, 2nd drive program | f | Starter |
| X 6 | Cable connector terminal 58d | g | Ground, radio |
| X49/2 | Plug connection, starter interlock and backup lamp switch | h | Rotary lamp switch (K) |



1273-13/06

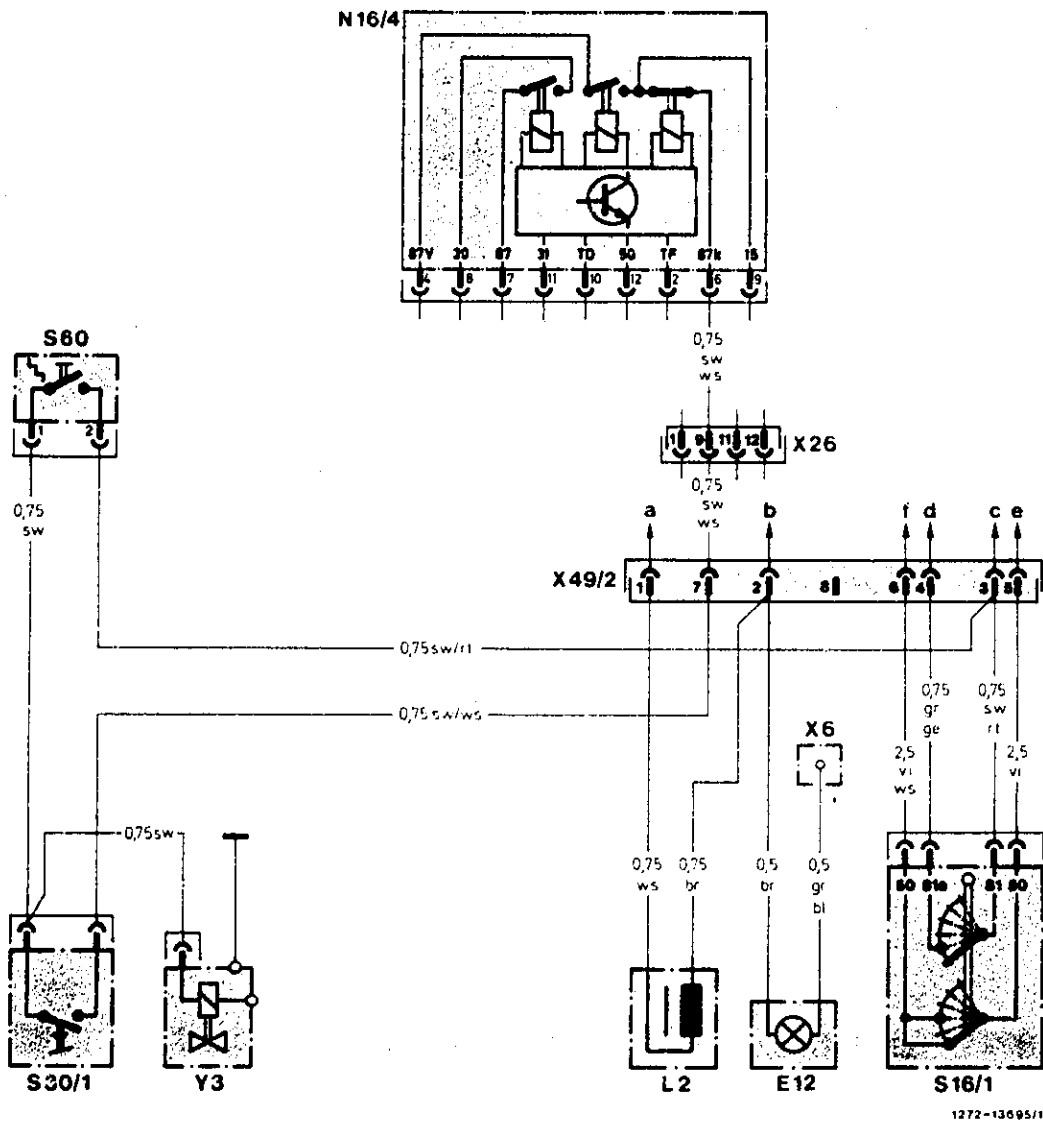
Wiring diagram, selector lever position "B" and kickdown shutoff, vehicles with engine 116

- | | | | |
|-------|---|---|------------------------|
| S16/1 | Starter interlock and backup lamp switch | d | Starter terminal 50 |
| X26 | Plug connection, 8-pole | e | Backup lamp |
| S30/1 | Kickdown switch | f | Fuse, terminal 15 |
| Y 3 | Switchover valve, automatic transmission | g | Ignition switch |
| L 2 | Sensor, electronic speedometer | h | Electronic speedometer |
| N16/4 | Relay, fuel pump with cold start valve control, kickdown shutoff and engine speed limit | | |
| S60 | Switch, B circuit | | |



Wiring diagram kickdown shutoff "B" circuit and 2nd drive program, vehicles with 8-cylinder engines model 126

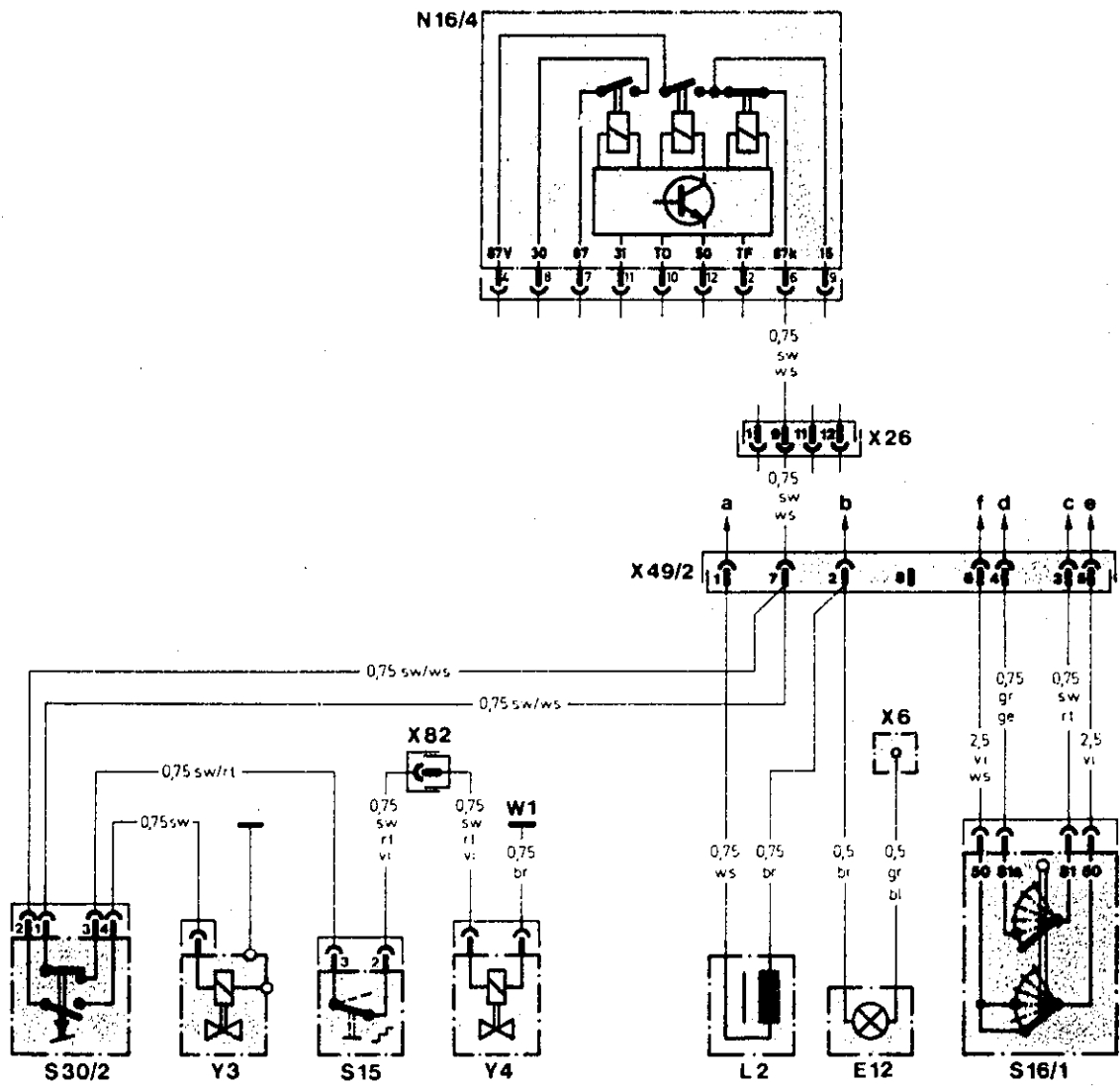
- | | | | |
|-------|---|-------|--|
| E12 | Illumination, shift pattern | X49/2 | Plug connection, starter interlock and backup lamp switch |
| N16/4 | Relay, fuel pump with cold start valve control and kickdown shutoff | S60 | Switch, B circuit |
| S15 | Switch, 2nd drive program | X82 | Plug connection, switchover valve/switch 2nd drive program |
| S30/2 | Kickdown switch 2nd drive program | L2 | Inductive transmitter, road speed |
| W1 | Main ground behind instrument cluster | S16/1 | Starter interlock and backup lamp switch |
| W3 | Ground, wheelhouse front left (ignition coil) | a | Speedometer |
| W5 | Ground, engine | b | W1 main ground behind instrument cluster |
| X26 | Plug connection 12-pole, engine harness | c | Fuse terminal 15 |
| Y3 | Switchover valve, automatic transmission | d | Backup lamp |
| Y4 | Switchover valve, 2nd drive program | e | Ignition starter switch |
| X6 | Cable connector terminal 58d | f | Starter |



Wiring diagram kickdown shutoff and "B" circuit,
vehicles with 8-cylinder engines models 126 (USA) (AUS) (J)

- E12 Illumination, shift pattern
- N16/4 Relay, fuel pump with cold start valve control and kickdown shutoff
- L 2 Inductive transmitter, road speed
- S16/1 Starter interlock and backup lamp switch
- S30/1 Kickdown switch
- S60 Switch, B circuit
- X 6 Cable connector terminal 58d
- X26 Plug connection 12-pole, engine harness
- X49/2 Plug connection, starter interlock and backup lamp switch
- Y 3 Switchover valve, automatic transmission

- a Speedometer
- b W1 main ground behind instrument cluster
- c Fuse terminal 15
- d Backup lamp (lamp monitoring unit)
- e Ignition starter switch
- f Starter



1272-13899/1

Wiring diagram kickdown shutoff and 2nd drive program, vehicles with 6-cylinder engines model 126

- E12 Illumination, shift pattern
- N16/4 Relay, fuel pump with cold start valve control and kickdown shutoff
- L 2 Inductive transmitter, road speed
- S16/1 Starter interlock and backup lamp switch
- S15 Switch, 2nd drive program
- S30/2 Kickdown switch 2nd drive program
- W 1 Main ground (behind instrument cluster)
- X 6 Cable connector terminal 58d
- X26 Plug connection, engine harness
- X49/2 Plug connection, starter interlock and backup lamp switch
- X82 Plug connection, switchover valve/switch 2nd drive program
- Y 3 Switchover valve, automatic transmission
- Y 4 Switchover valve, 2nd drive program

- a Speedometer
- b W1 main ground behind instrument cluster
- c Fuse terminal 15
- d Backup lamp
- e Ignition starter switch
- f Starter

27-010 Shifted gear when starting off

Model	Engine	Program selector ¹⁾	Selector lever positions ²⁾	Shifted gear at accelerator pedal position			
				light throttle	part throttle	full throttle	kick-throttle down
107 123 126	110 123 617.95	no	"D" and "3" "2"	2 1	1 1	1 1	1 1
107 123 126	110 ³⁾ as of 10.83	no	"D" and "3" "2"	2 1	2 1	1 1	1 1
107 124 126	103	yes	"D" and "3" "2"	2 1	2 1	1 ⁴⁾ 1	1 1
107 126	116 117 up to 04.80	no	"D" and "3" "2" "B" ²⁾	2 1 1	1 1 1	1 1 1	1 1 1
107 126	117 up to 08.85	no	"D" "3" and "2" "B"	2 1 1	2 1 1	2 1 1	1 1 1
107 126	116 117 as of 09.85	yes	"D", "3" and "2" "B"	2 1	2 1	1 ⁴⁾ 1	1 1
124 126	603.96	no	"D", "3" and "2"	1	1	1	1

¹⁾ Program selector is not installed in national version (AUS) (J) (USA)

²⁾ Driving position "B" for vehicles with engine 116/117 standard version starting September 81, for (CH) (J) (S) (USA) and starting model year 1983, (AUS) starting model year 1986.

³⁾ Starting off 2nd gear standard version only.

⁴⁾ In switch position "E" starting at full throttle in 2nd gear.

27-110 Adjustment of cable control for control pressure

Adjusting

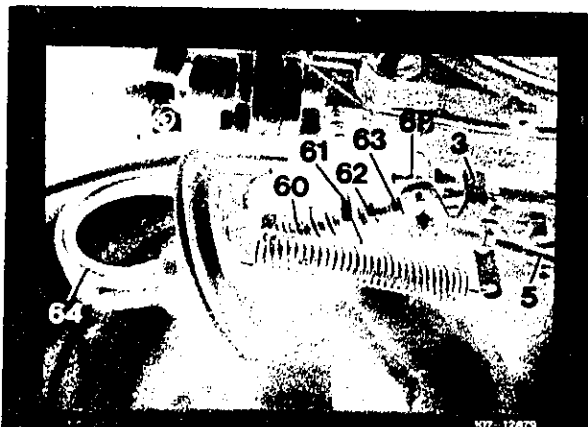
Caution!

Engine regulation must be correctly adjusted.

Vehicles with carburetor engine

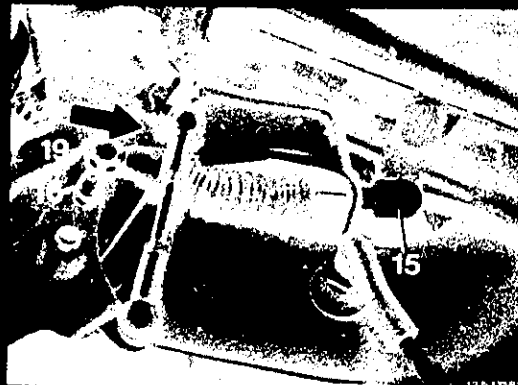
1 Remove air cleaner.

2 Run engine. Pinch vacuum hose (64), so that the throttle valve lever (3) rests against idle speed adjusting screw (68) on stopped engine.



3 Push off ball socket (19).

4 Push ball socket (19) back (in direction of arrow), pull forward again until a slight resistance is felt and hold above ball head (16). Ball socket (19) should be in accurate alignment with ball head (16), readjust by means of adjusting screw (15) if required.



5 Press-on ball socket (19).

6 Mount air cleaner.

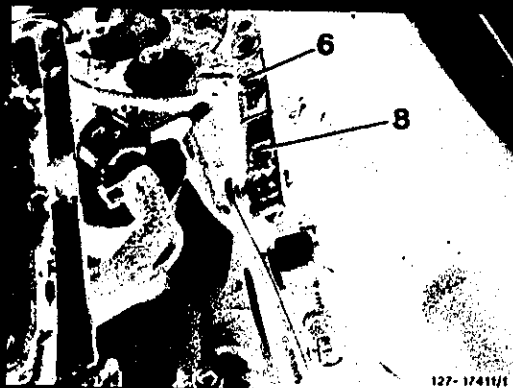
Vehicles with gasoline injection engine

1 Remove air cleaner.

2 Loosen clamping screw (6) on connecting rod (8).

3 Extend connecting rod (8), retract again until slight resistance is felt. Then tighten clamping screw (6).

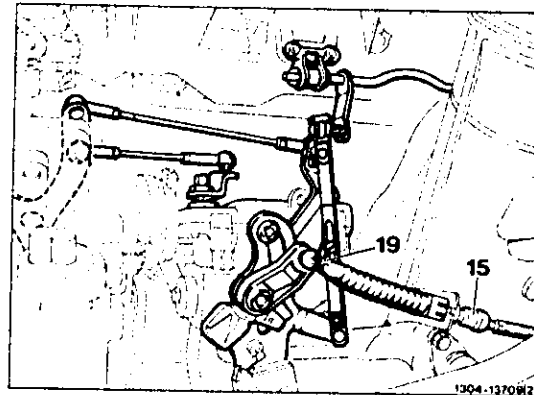
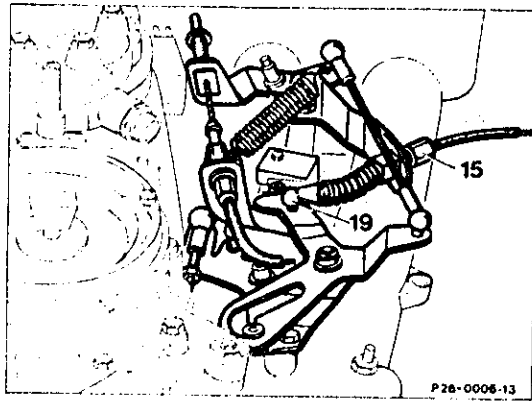
4 Mount air cleaner.



Vehicles with engines 103.98 and 603.96

1 Disconnect ball socket (19), pull control pressure cable forward until slight resistance is felt. In this position, hold ball socket above ball head and engage free of tension, adjust by means of adjusting screw (15), if required.

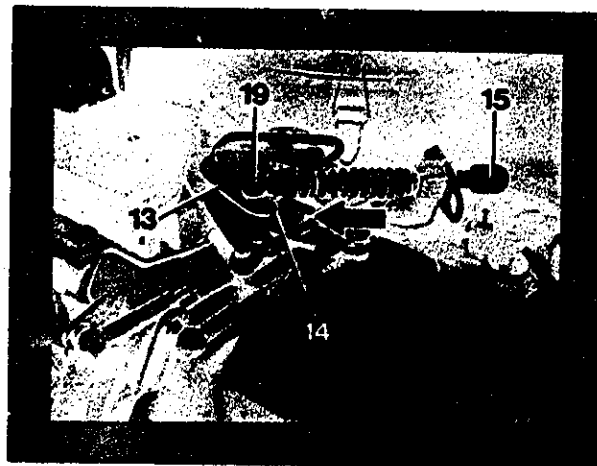
Engine 103.98



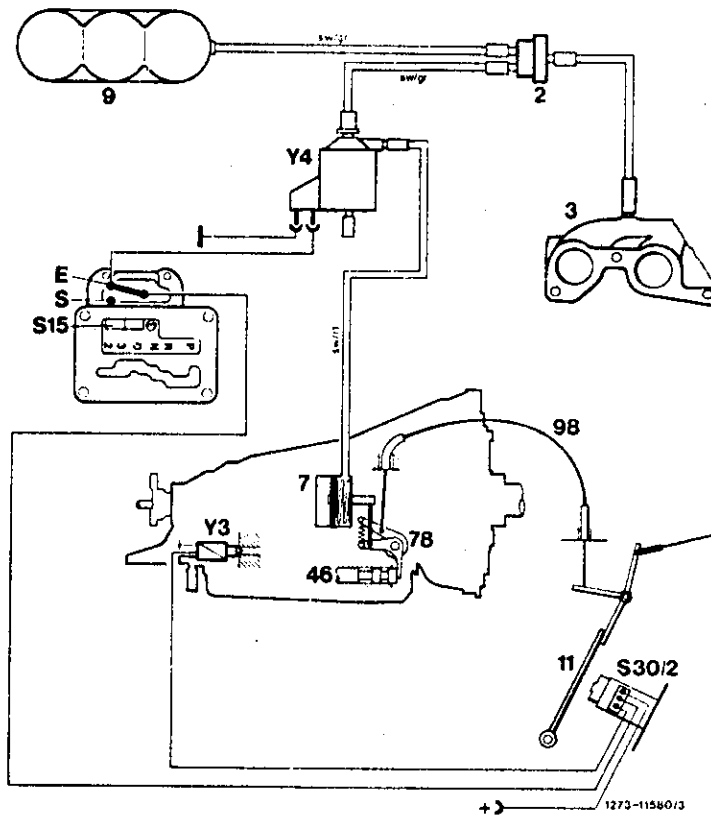
Engine 603.96

Vehicles with engine 617.95

- 1 Push off ball socket (19).
- 2 Push ball socket (19) first to the rear (opposite to direction of arrow), then pull carefully forward (direction of arrow) until a slight resistance is felt.
- 3 In this position, hold ball socket (19) above ball head (drag lever (13) should rest against stop (14)).
- 4 Adjust control pressure cable control at adjusting screw (15) in such a manner that the ball socket (19) can be pushed free of tension on ball head.

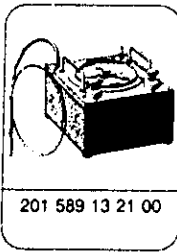


27-115 Removing, installing and adjusting control pressure with vacuum element, vehicles with program selector switch



- | | | |
|-------|--|---|
| 98 | Control pressure cable | loosen detent on transmission and disengage connecting rod. During installation, remove oil pan to permit engagement of connecting rod. |
| 2 | Check valve | Adjust control pressure cable according to item 7-9. installed in engine compartment left, at component compartment wall. |
| 3 | Intake pipe | |
| 7 | Vacuum element | integrated in control pressure cable. |
| 9 | Vacuum reservoir | behind plastic cover,
at left front wheelhouse (models 124, 126)
at right front wheelhouse (model 107) |
| 11 | Accelerator pedal | |
| 46 | Control pressure valve | |
| 78 | Guide lever | |
| 98 | Control pressure cable | |
| S15 | Switch 2nd drive program | Shift pattern included |
| S30/2 | Kickdown switch | |
| Y 3 | Switchover valve, automatic transmission | |
| Y 4 | Electric switchover valve | Engine compartment left, at component compartment wall (models 124 and 126), wheelhouse left center (model 107) |

Special tools



Removal and installation of control pressure cable

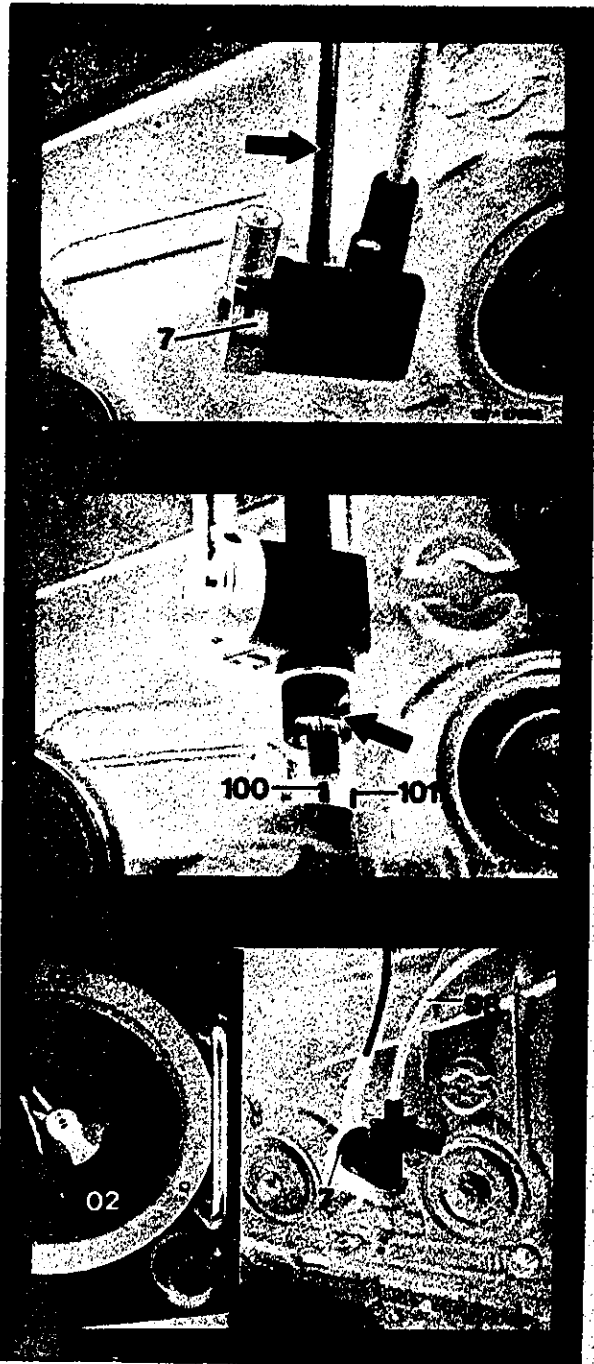
- 1 Release lock with a screwdriver (arrow).
- 2 Disengage control pressure cable at connecting rod.

Installation note

- 3 Remove gear oil pan.
- 4 Connect connecting rod (100) to control pressure cable.
- 5 Introduce limiting rod (101) into bore (arrow) and insert control pressure cable.
- 6 Rotate control pressure cable until lock engages.

Adjustment

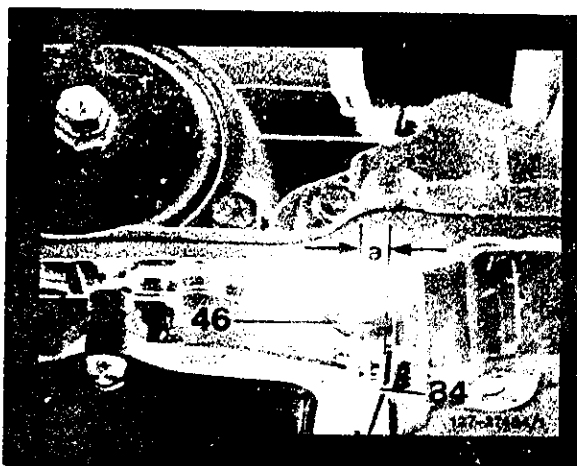
- 7 Connect tester (02) 201 589 13 21 00 to vacuum element and activate vacuum.
- 8 Pull control pressure cable up to full load stop.



9 Measure dimension "a" between face of control pressure valve (46) and connecting plate (84).

Dimension "a" = 7 mm 6-cylinder engines
6 mm 8-cylinder engines

10 Dimension "a" can be set with hex. head socket screw (arrow) (Fig. item 7).



11 Testing program selector switch

Test step Test scope	Test connection: Test unit	Actuation Prerequisite	Nominal value	Possible cause/remedy
Test vacuum on vacuum element of control pressure cable	Connect vacuum tester with Y-distributor to vacuum element control pressure cable	Engine at idle program selector switch position "E"	approx. 400 mbar	Switchover valve Y4 Switch selector program S15 Vacuum line
		Position "S"	0 bar	

27-120 Adjustment of control rod

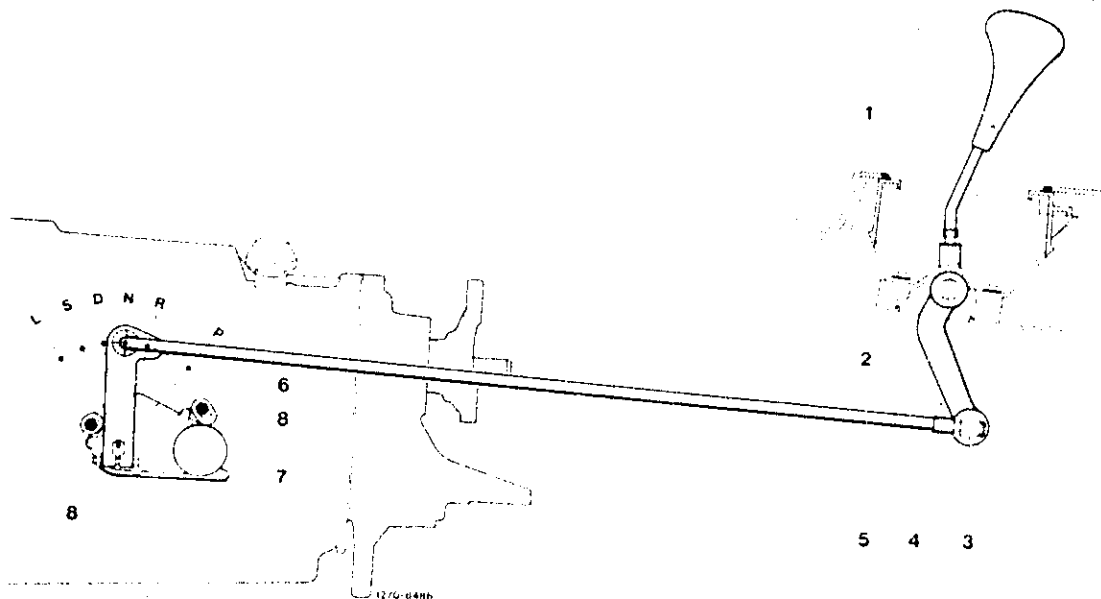
Note

For the adjusting jobs described below the vehicle should rest on its wheels.

Adjustment

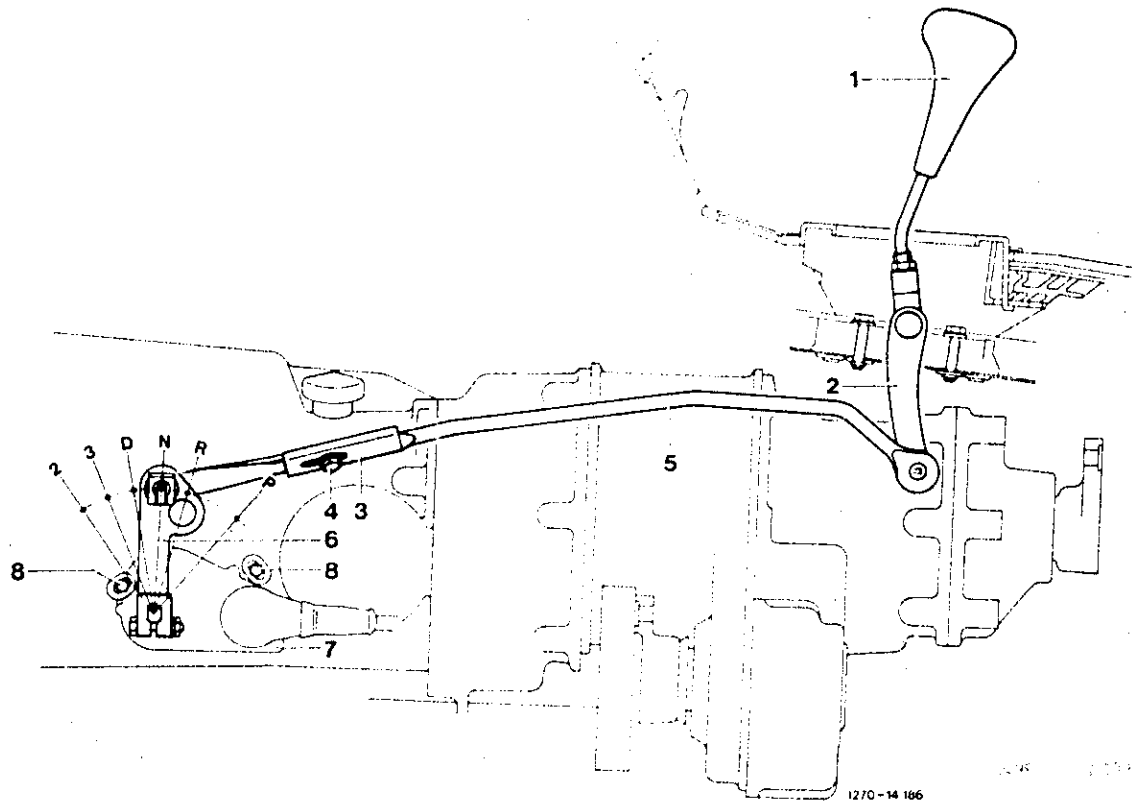
On vehicles without 4MATIC

- 1 Disconnect control rod (5) from selector lever (2).
- 2 Set range selector lever (6) into position "N".
- 3 Loosen counter nut (4). Adjust control rod lengthwise in such a manner that approx. 1 mm clearance is available between selector lever (1) and "N" stop on gear change plate.
- 4 Attach control rod and secure. Tighten counter nut (4).



On vehicles with 4MATIC

- 5 Loosen clamping screw (4).
- 6 Set range selector lever (6) to position "N".
- 7 Set selector lever (1) in such a manner that there is 1 mm clearance on "N" stop of shift gate plate, then tighten clamping screw (4).

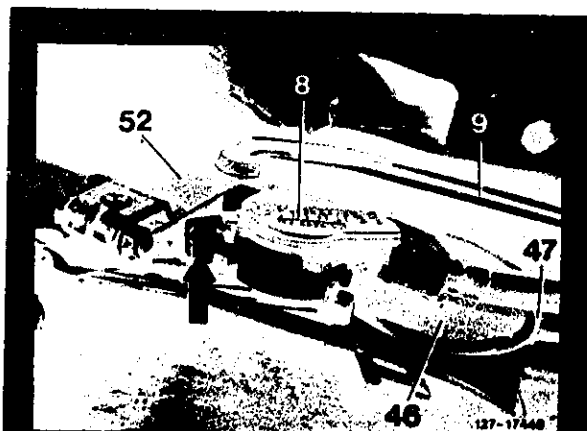


27-130 Removal, installation and adjustment of starter lockout switch

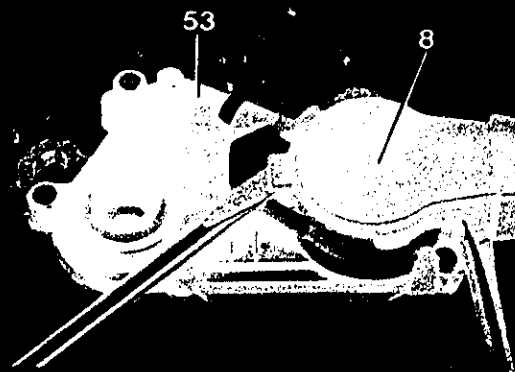
Removal

1 Loosen detent for plug of starter lockout switch (8), while turning white plastic ring (arrow) upwards in direction of arrow.

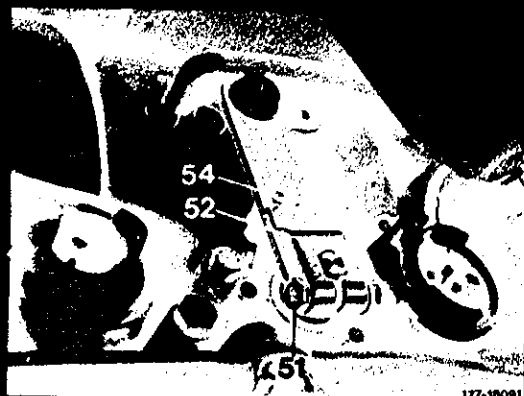
2 Disconnect shift rod (9).



3 Carefully push off plug at cable outlet end and at tongue by means of two screw drivers.



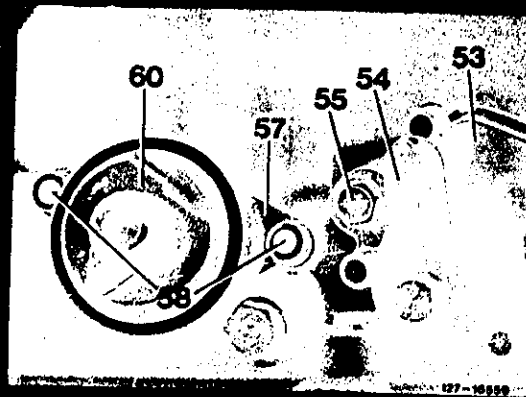
4 Unscrew hex. bolt (51) and pull off range selector lever (52).



5 Unscrew both screws and remove starter lockout switch (53).

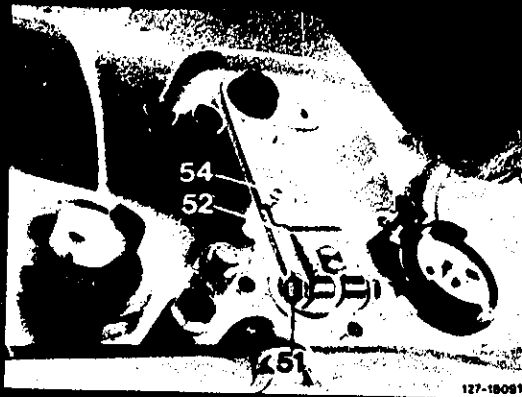
Installation

6 Position starter lockout switch (53), screw-in both fastening screws (55) but do not yet tighten.



7 Mount range selector lever (52) in such a manner that driver (54) engages. Set range selector lever to position "N".

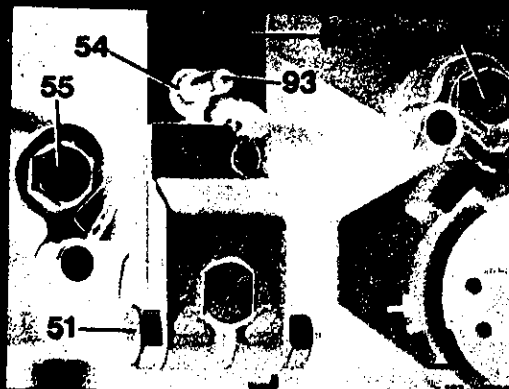
8 Insert hex. screw (51) and tighten.



Adjusting

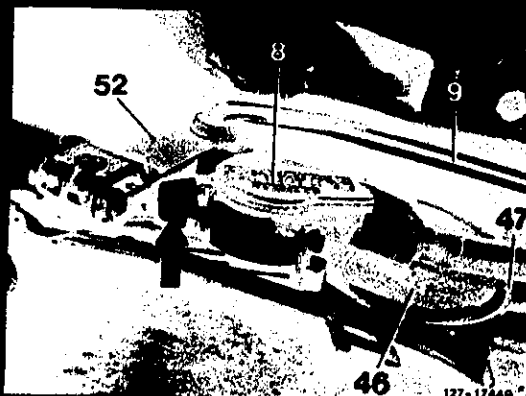
9 Insert a 4-mm cotter pin or twist drill through driver (54) into locating bore in switch housing.

10 Tighten fastening screws (55), pull out locating pin (93).



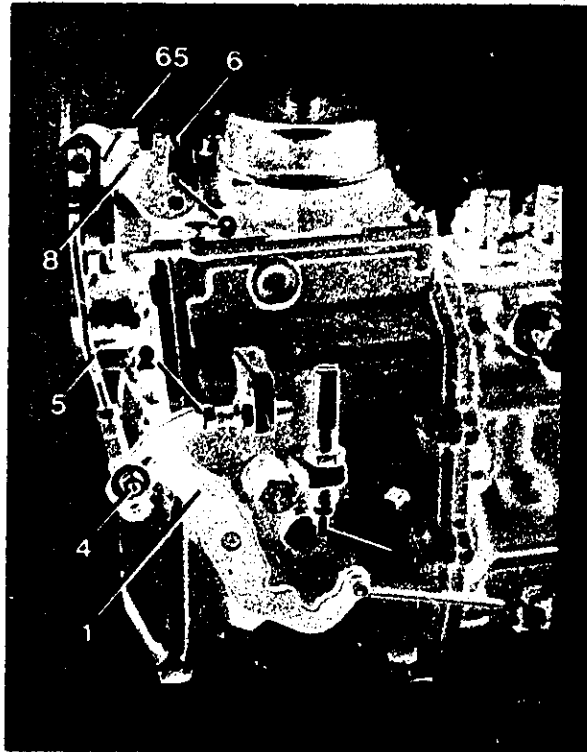
11 Engage control rod (9) and secure with clip.

12 Push-on plug (8) and turn white plastic ring in downward direction (opposite to direction of arrow).



A. Adjustment of vacuum control valve (MW pump)

- 1 Push regulating lever (1) to full throttle stop (2).
- 2 Loosen ball head (4) and displace in slot in such a manner that actuating lever (8) is also resting against full load stop (6).
- 3 Tighten ball head (4), then check once again whether both levers are reaching full load stops at the same time.

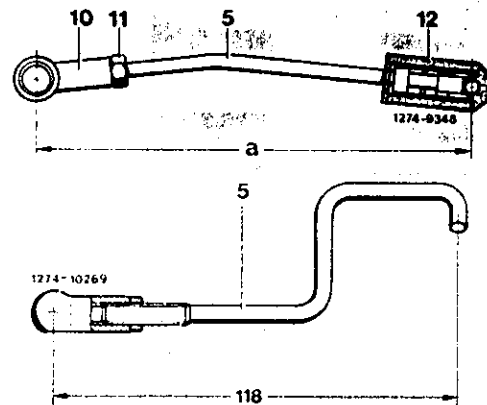


4 The basic dimension (a) of connecting rod (5) is 122 mm.

Installed up to September 1980.

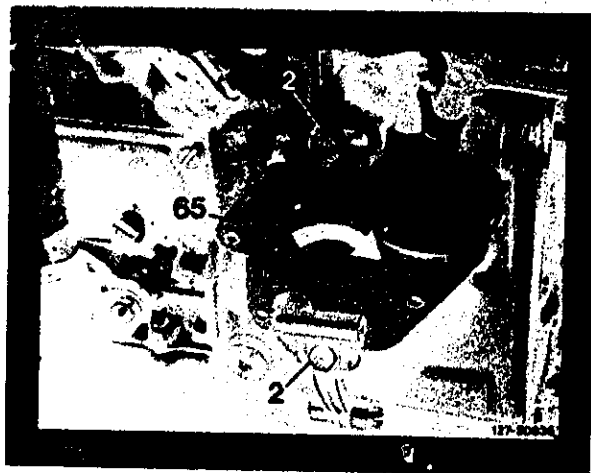
5 The basic dimension of the connecting rod (5) is 118 mm.

Installed starting October 1980.

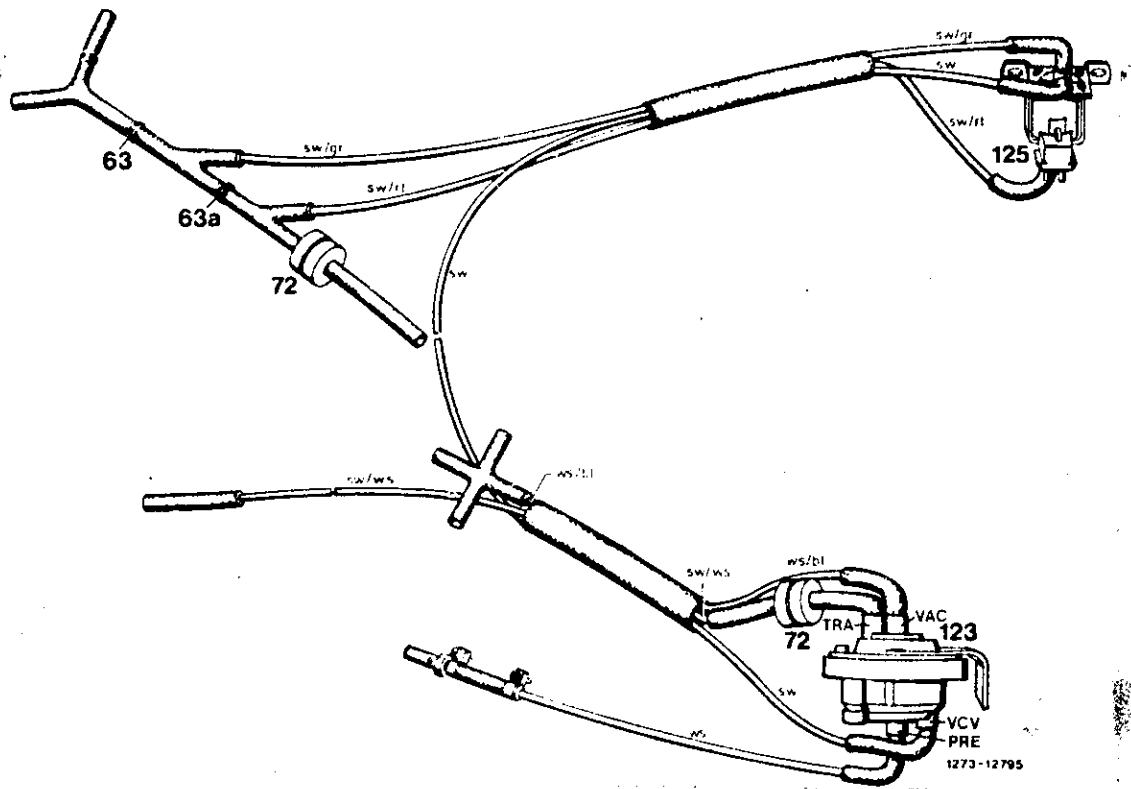


B. Adjustment of vacuum control valve (M/RSF pump)

- 1 Loosen fastening screws (2).
- 2 Apply full throttle, so that the regulating lever of the injection pump rests against full load stop.
- 3 Rotate vacuum control valve (65) in direction of arrow until resistance is felt. In this position, tighten fastening screws (2).



A. Vehicles with engine 617.95



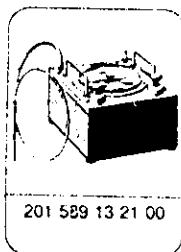
Vacuum function diagram, shown on model 123

Complaints: Transmission shifts hard.
Transmission slips during gear change.

Test conditions: Engine at idle and operating temperature. Test vacuum lines according to function diagram. Check orifices (63 and 63a) for blockage. Modulating pressure correctly adjusted.

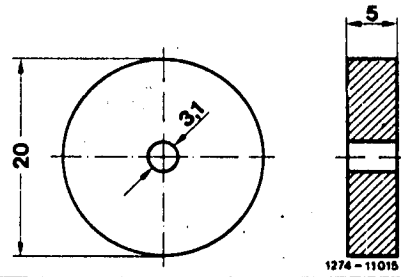
Test items: Vacuum control valve, vacuum transducer, electric switchover valve and temperature switch 50 °C.

Special tool



Self-made tool

Adjusting roller



Testing

Testing vacuum control valve.

Disconnect connecting rod (5) at ball head. Disconnect vacuum line from vacuum damper and connect tester with Y-distributor at vacuum damper. Place adjusting roller (arrow) on vacuum control valve. Actuate valve until lever rests against the adjusting roller (arrow).

Readout: 140 ± 20 mbar

Okay

Not okay

Replace vacuum control valve.

Testing temperature switch 50 °C.

At coolant temperatures above 50 °C the ground connection for the switchover valve must be disconnected by the temperature switch.

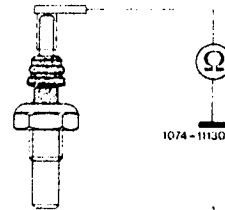
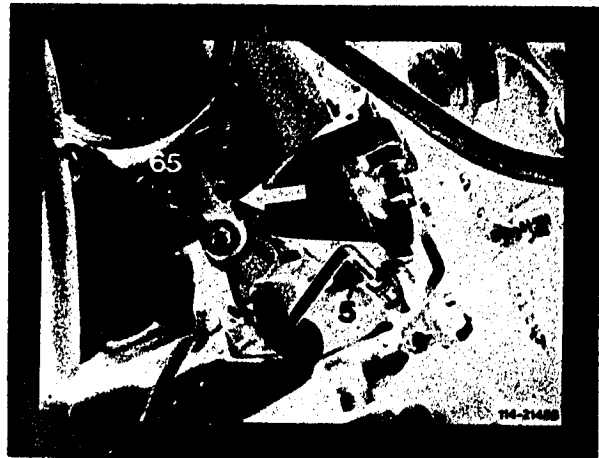
Connect ohmmeter to temperature switch.

Readout: $\infty \Omega$

Okay

Not okay

Replace temperature switch.



Testing switchover valve

Unplug temperature switch (20) and ground plug.

Switchover valve should noticeably switch.

Okay	Not okay
------	----------

Check if voltage is present at plug.

Okay	Not okay
------	----------

Replace switchover valve.

Check electric activation.

Testing vacuum transducer with boost pressure above 50 °C.

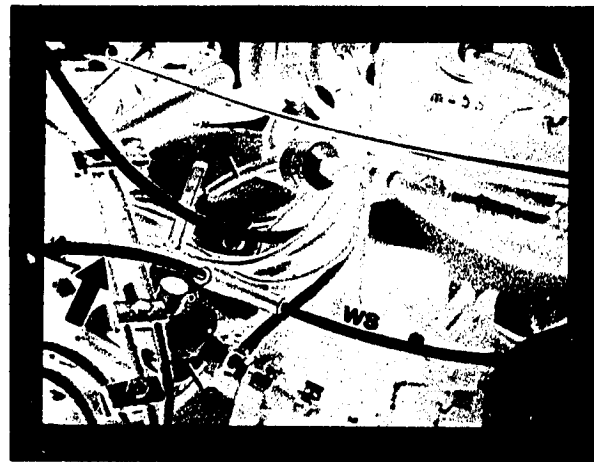
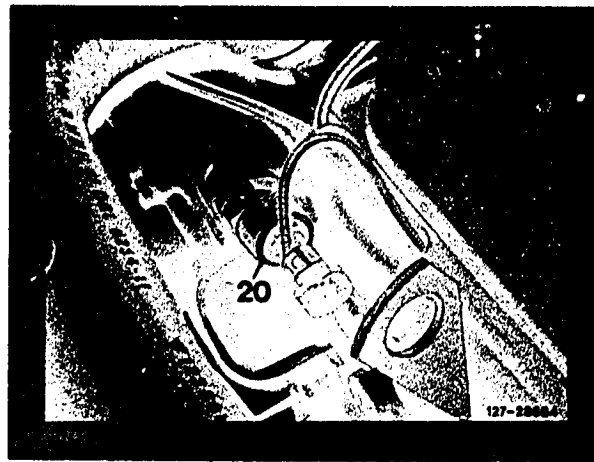
Pull off vacuum line (3) from vacuum control valve. Pull off boost pressure line (white) from anaeroid compensator (6), connect tester pressure line (arrow) and simulate 740 bar boost pressure (replace vacuum transducer in the event of leaks). Connect tester vacuum line with Y-distributor to TRA connection.

Adjusting value: 40 ± 20 mbar

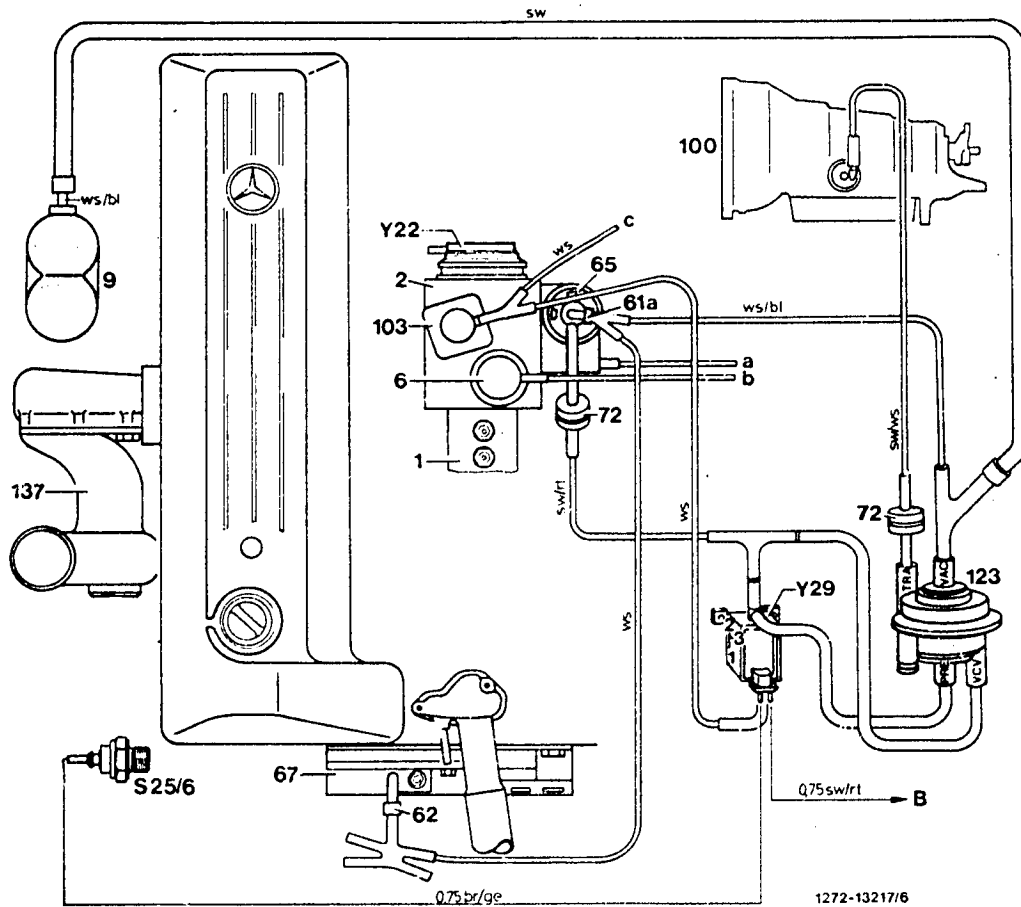
Okay	Not okay
------	----------

Replace vacuum transducer.

End of test



B. Vehicles with engine 603.96



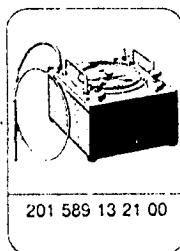
Vacuum function diagram, shown on models 124 and 126

Complaints: Transmission shifts hard.
Transmission slips during gear change.

Test conditions: Engine at idle and operating temperature. Test vacuum lines according to function diagram.
Modulating pressure correctly adjusted.

Test items: Vacuum control valve, vacuum transducer, electric switchover valve and temperature switch.

Special tool



201 589 13 21 00

Testing

Testing vacuum control valve

Pull off vacuum line black/red (3), connect vacuum tester (02) and test vacuum at idle.

Nominal value: 385 ± 25 mbar

With engine stopped and regulating linkage against full throttle stop.

Nominal value: 0 mbar

Test values

okay

not okay

Test vacuum pump (43-660).
Adjust vacuum control valve and
replace, if necessary (27-140).

Testing temperature switch 50 °C.

At coolant temperatures above 50 °C the ground connection for the switchover valve must be disconnected by the temperature switch.

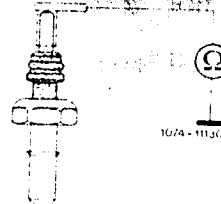
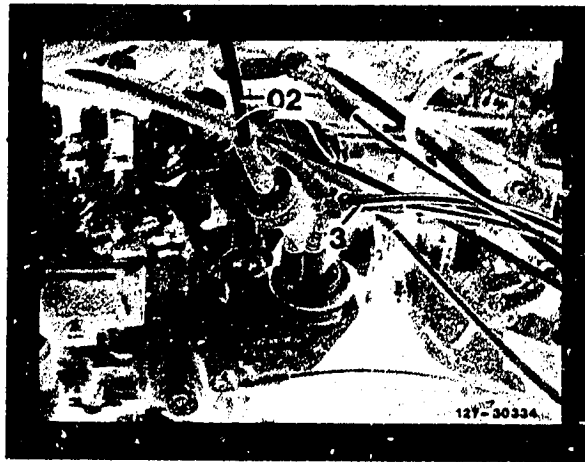
Connect ohmmeter to temperature switch.

Readout: $\infty \Omega$

Okay

Not okay

Replace temperature switch.



Testing switchover valve

Unplug temperature switch S25/6 and ground plug.

Switchover valve should noticeably switch.

Okay	Not okay
------	----------

Check if voltage is present at plug.

Okay	Not okay
------	----------

Replace switchover valve.

Check electric activation.

Testing vacuum transducer (123) with boost pressure and temperature above 50 °C

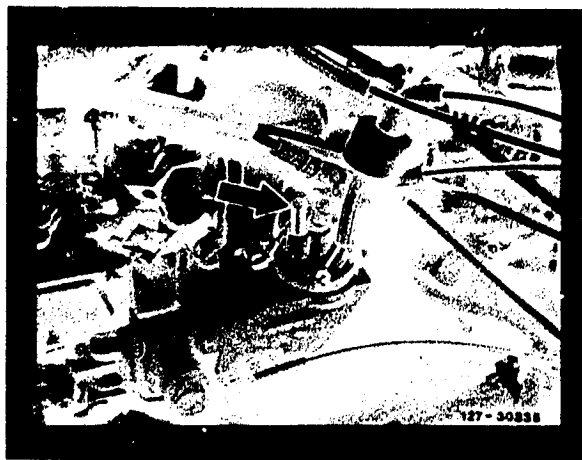
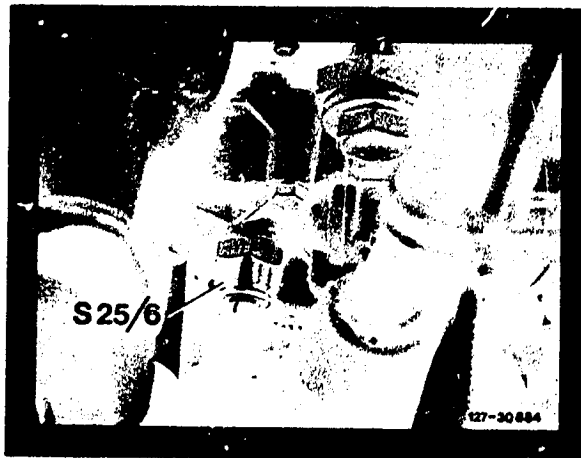
Pull off vacuum line with damper from vacuum control valve. Close connection at vacuum control valve (arrow), pull off boost pressure line (white) from anaeroid compensator (6), connect tester pressure line (arrow) and simulate 740 bar boost pressure (replace vacuum transducer in the event of leaks). Connect tester vacuum line with Y-distributor to TRA connection on vacuum transducer.

Test value: 40 ± 20 mbar

Okay	Not okay
------	----------

Replace vacuum transducer.

End of test



Notes

The test methods described below are used to check the normal functions of the automatic transmission. Judging the operation and troubles, if any, of a transmission, obviously requires experience in handling automatic transmissions. Without such experience it will be of advantage to use another automatic transmission which is still in good order and of the same design for making comparisons. If the test shows irregular functions, reference to "Programmed repairs" will assist in finding the causes of such faults.

Prior to starting, be sure to check the oil level, the idling speed of the engine and adjustment of control pressure cable control.

During test make sure that the gears are not continuously changed, particularly under load. While changing gears, considerable heat is generated at the servo members. **Reference value: Repeat a load change only once within 15 seconds.**

Test drive

During test drive, in addition to shiftpoints, special attention should be paid to changeover during gear change.

Shifting up at part throttle should be noticed only when listening carefully. At **full throttle and kickdown** the gear changes are clearly heard but the new gear speed should obtain a smooth hold and the impression of an energetically pulling engine should remain. Sudden revving up of the engine, for example, when shifting up indicates the slipping of a servo member (brake band or clutch) and should be checked.

Automatic downshifts without applying the throttle occur at very low speeds and will be heard only when listening very carefully (speed increase of engine). On the other hand, **downshifts under kickdown** are coupled with a clearly felt shifting impulse in addition to an increase in engine speed. At certain speed ranges a downshift under part to full throttle is possible.

Downshifts with the selector lever are either downshifts while applying the throttle (for example uphill) or decelerating shifts without applying the throttle (for example downhill or when decelerating). Downshifts while applying the throttle require only a few fractions of a second for changing gears, while decelerating shifts without applying the throttle require from 1 to 2 seconds.

27-330 Shiftpoints in selector lever position "D"

Note

All speed data are approximate. They apply to respectively valid rear axle ratio and tires of series vehicles. Deviations from named data are influenced by dispersions at transmission end as well as by speedometer readout.

Vehicles with selector program: switch position E = economy, S = standard

Standard version

Model	Accelerator position	Shift sequence at km/h (approx. values)						
		1	2	3	4	3	2	1
107.022 126.021 ¹⁾ 107.042 ¹⁾ 126.022 ¹⁾ 126.023 ¹⁾	Full throttle	42	67	140	75	22	9	
	Kickdown	45	82	140	125	62	19	
107.025 126.032 ¹⁾ 107.045 ¹⁾ 126.033 ¹⁾	Full throttle	44	72	148	80	23	9	
	Kickdown	47	87	148	132	65	20	
107.026 126.036 ¹⁾ 107.046 ¹⁾ 126.037 ¹⁾	Full throttle	-	76	142	75	20	-	
	Kickdown	44	87	142	130	55	19	
107.041 126.024/025	Full throttle	E	-	50	98	39	25	-
		S	36	82	144	91	41	21
	Kickdown	E	57	88	146	134	68	36
		S	57	88	146	134	68	36
107.042 ²⁾ 123.033 123.003 123.053 123.007 123.083 123.026 123.093 123.028 126.02 ²⁾	Full throttle	38	73	140	82	36	14	
	Kickdown	45	80	140	126	62	19	
107.045 ³⁾ 126.033 ²⁾ 126.032 ²⁾ 126.043	Full throttle	50	106	184	130	55	23	
	Kickdown	58	112	188	170	95	38	
107.046 ³⁾ 126.037 ³⁾ 126.036 ³⁾ 126.044	Full throttle	-	117	203	143	60	-	
	Kickdown	64	124	207	188	105	42	

¹⁾ With shift valve housing 1st version up to August 1981.

²⁾ With shift valve housing 2nd version, vehicles with engine 116, 117 starting September 1981 and vehicles with engine 110, 123 starting December 1981 phased in.

³⁾ With shift valve housing 2nd version, vehicles with engine 116, 117 starting September 1981.

Model	Accelerator position	Shift sequence at km/h (approx. values)						
		1-2	2-3	3-4	4-3	3-2	2-1	
107.046 126.036 126.037 126.044 starting 10/85	Full throttle	E	—	65	137	64	31	—
		S	49	123	205	143	50 ⁴ /64	20
	Kickdown	E S	82	128	209	188	108	48/55
107.047 126.034 126.035 126.046 starting 10/85	Full throttle	E	—	60	124	58	28	—
		S	45	112	186	130	45 ⁴ /55	20
	Kickdown	E S	75	116	189	170	98	44 ⁴ /50
123.193	Full throttle		36	70	117	69	32	12
	Kickdown		41	70	117	102	53	18
124.030 124.050 124.230	Full throttle	E	—	55	108	43	28	—
		S	40	93	159	100	45	23
	Kickdown	E S	63	97	161	148	75	40
124.090 124.226 124.290	Full throttle	E	—	52	101	40	26	—
		S	37	87	148	94	42	22
	Kickdown	E S	59	91	150	139	70	38
124.193 124.133 124.333 124.393	Full throttle		43	78	136	99	44	25
	Kickdown		52	84	140	125	70	38
124.330	Full throttle		33	73	124	75	39	18
	Kickdown		48	83	129	109	64	28
126.039 126.045 RÜF/CAT Ⓞ CAT 1986	Full throttle	E	—	57	107	53	27	—
		S	43	107	180	118	43 ⁵ /53	19
	Kickdown	E S	72	110	182	166	94	48
126.039 126.045 220 kW AKR RÜF/CAT	Full throttle	E	—	62	120	55	26	—
		S	36	116	182	120	45 ⁴ /53	18
	Kickdown	E S	55	118	184	168	102	35

1) With shift valve housing 1st version up to August 1981.

2) With shift valve housing 2nd version, vehicles with engine 116, 117 starting September 1981 and vehicles with engine 110, 123 starting December 1981 phased in.

3) With shift valve housing 2nd version, vehicles with engine 116, 117 starting September 1981.

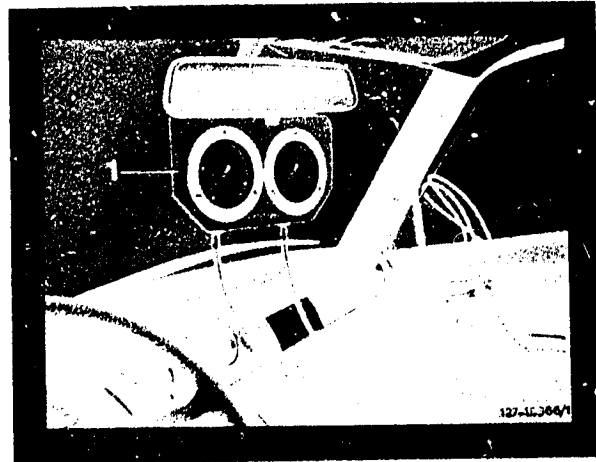
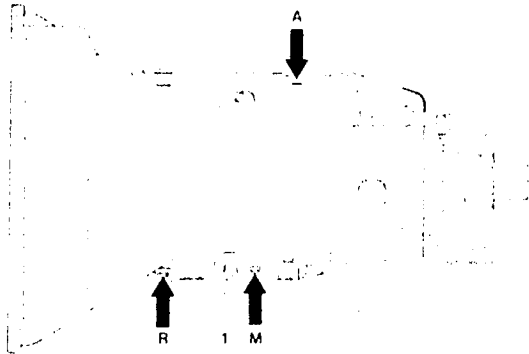
4) AKR RÜF/CAT and Ⓞ CAT

5) Ⓞ CAT 1986

National versions¹⁾

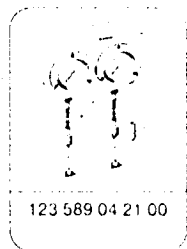
Model	Accelerator position Shift sequence at km/h (approx. values)						
	1	2	3	4	3	2	1
107.045 126.033 Ⓐ Ⓢ 1981	Full throttle	44	72	148	80	23	9
	Kickdown	47	87	148	132	65	20
107.045 126.033 126.043 Ⓐ Ⓢ 1982/83. Ⓒ 1983	Full throttle	38	80	139	98	41	17
	Kickdown	44	85	142	128	72	29
107.025 107.045 126.043 Ⓜ Ⓐ 1981	Full throttle	59	94	160	100	51	28
	Kickdown	62	94	160	141	74	45
107.045 126.033 126.043 Ⓜ Ⓐ 1982	Full throttle	57	88	160	114	51	28
	Kickdown	63	101	172	152	82	47
107.045 126.03 126.043 Ⓜ Ⓐ 1983-1985	Full throttle	55	94	163	101	58	34
	Kickdown	71	105	170	106	65	44
107.048 126.035 126.039 126.045 Ⓐ Ⓜ Ⓐ 1986	Full throttle	45	112	186	130	55	20
	Kickdown	75	116	189	170	98	50
123.007 126.022 123.033 123.053 123.093 Ⓐ Ⓢ 1981/82	Full throttle	42	67	140	75	22	9
	Kickdown	45	82	140	125	62	19
123.007 126.022 123.033 123.053 123.093 Ⓐ Ⓒ Ⓢ 1983/84	Full throttle	41	79	137	88	35	14
	Kickdown	44	83	137	122	63	18
123.133 123.193 123.153 126.120 Ⓜ Ⓐ 1981-1984	Full throttle	36	70	117	69	32	12
	Kickdown	41	70	117	102	53	18
123.133 123.193 123.153 126.120 Ⓐ 1985	Full throttle	40	73	121	79	41	24
	Kickdown	47	75	125	113	66	35
126.037 126.044 Ⓜ Ⓐ 1984/85	Full throttle	-	99	165	106	51	-
	Kickdown	61	104	170	150	88	48
126.035 126.039 Ⓜ Ⓐ starting 1986	Full throttle	48	112	186	130	66	20
	Kickdown	75	116	189	170	98	58
126.125 Ⓜ Ⓐ 1986	Full throttle	40	73	128	93	41	24
	Kickdown	49	78	132	117	66	36

¹⁾ For vehicles not shown with national version the values of standard version are valid.



- 1 Tester 123 589 04 21 00 For measuring working pressure, modulating pressure and governor pressure. Enter pressure hoses through window of righthand driver's door and clamp down with window pane. Pressure hoses should not sag or rest against exhaust pipe.
- A Test connection for working pressure. Connect pressure gauge with measuring range up to 25 bar
- M Test connection for modulating pressure Connect pressure gauge with measuring range up to 10 bar
- R Test connection for governor pressure Use pressure gauge similar to modulating pressure

Special tool



Attention!

Operate parking brake during all adjusting jobs on vehicle when the engine is running, with selector lever in position "P".

When measuring with engine stopped and driving position engaged, operate service brake in addition to parking brake.

Upon testing, run engine and check measuring points for leaks.

Measuring modulating pressure

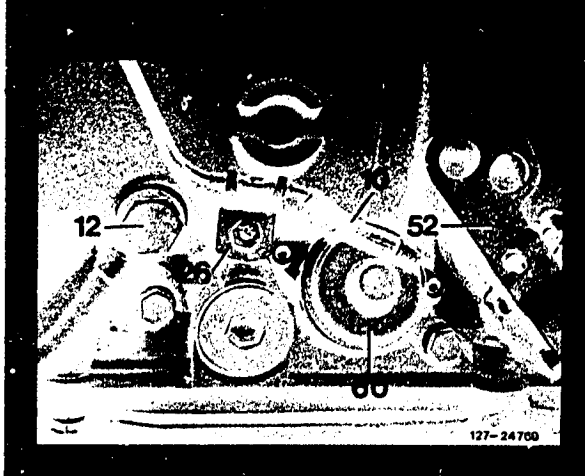
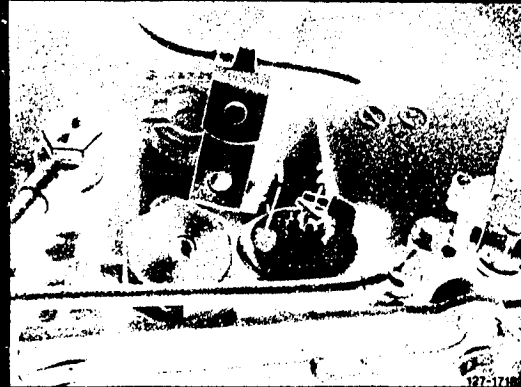
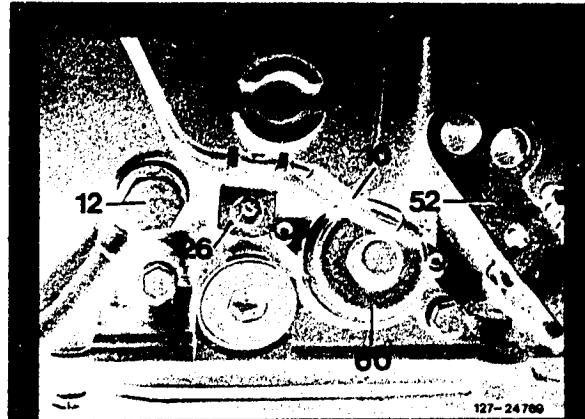
- 1 Unscrew holder (26).
- 2 Pull off vacuum line (10) on vacuum control unit (60).
- 3 In selector lever position "D", drive at approx. 50 km/h and read pressure value.

Attention!

On vehicles with engine 110, apply full throttle while measuring.

Adjusting modulation pressure

- 4 Remove rubber cap on vacuum control unit.
- 5 Pull locking plate (2) out of locking slots to permit rotation.
- 6 The adjusting screw in vacuum control unit can now be adjusted by means of locking plate. One turn of adjusting screw results in a pressure change of approx. 0.4 bar gauge pressure.
- 7 After turning adjusting screw, push locking plate back into locking slots.
- 8 Put rubber cap back on vacuum control unit (60).
- 9 Measure modulating pressure once again.
- 10 Plug-on vacuum line (10) and screw to holder (26).



Measuring working pressure

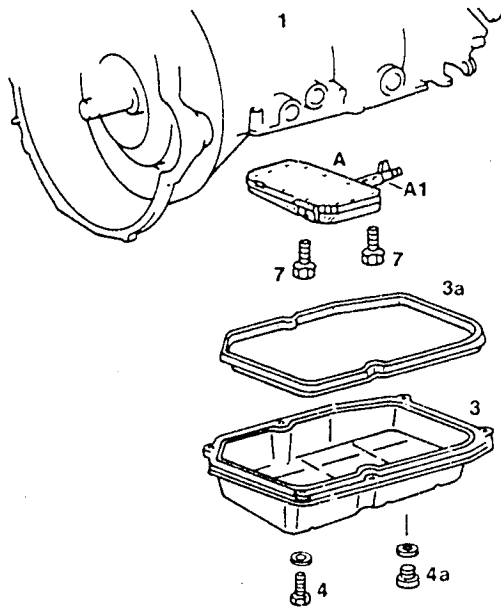
- 11 Pull vacuum line from vacuum control unit.
- 12 Start engine and let run at approx. 1000 rpm reading the pressure value with engaged driving position "D".

Note: The working pressure cannot be adjusted. Measuring simply provides information concerning operation of working pressure regulating valve in shift valve housing. When measuring the working pressure, make sure that the modulating pressure has been accurately set.

Measuring governor pressure

Drive vehicle on drum dynamometer or on the road at the speed named in tables and read indicated pressures. If no governor pressure is indicated, remove centrifugal governor and clean.

If all the pressure data differ from the values named on tables, replace centrifugal governor.

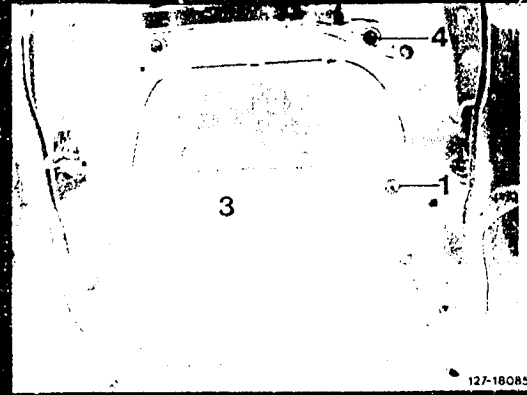


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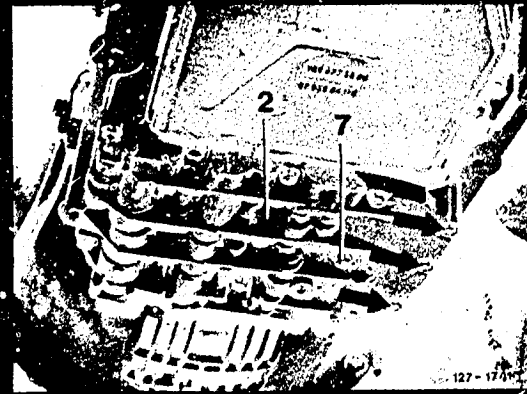
- | | |
|---|---|
| Drain plug (4a) | drain oil, following repairs, fill in and correct (Maintenance Manual job item 2710), 14 Nm. |
| Fastening bolts (4) | screw off and in, 8 Nm, remove oil pan (3), check gasket (3a). |
| Shift valve housing (A) | remove and install; for this purpose, screw fastening bolts (7) off and in, 8 Nm; pay attention to different lengths of bolts. Range selector valve (A1) should enter driver. |
| Shift valve housing and accumulator housing | disassemble and assemble (item 5-11). |

Removal and installation

- 1 Unscrew drain plug (1) and let oil run off.
- 2 Unscrew fastening bolts (4) and remove oil pan (3).



- 3 Set shift lever to position "P".
- 4 Unscrew fastening bolts (7) and remove shift valve housing (2).

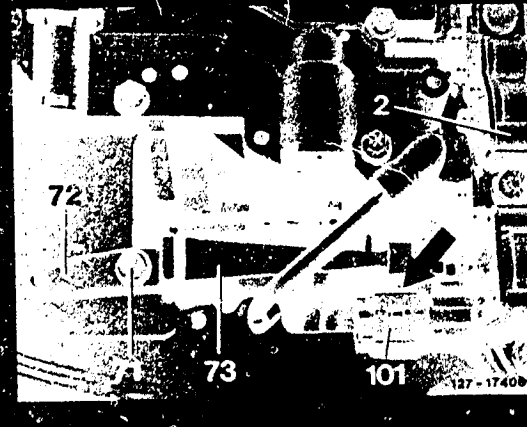


Installation note

The three bolts identified with arrows are 50 mm long, the remaining bolts 55 mm.

Tightening torque 8 Nm.

Make sure that the range selector valve (101) enters driver (arrow).



Disassembly and assembly

General notes

Observe particular cleanliness for all jobs on shift valve housing. The work should be done as much as possible on a plastic surface. Do not use fuzzy cloth; leather would be best. Upon disassembly, wash all parts and blow out with compressed air.

5 Unscrew both screws (3).

6 Hold shift valve housing (1) and accumulator housing (2) against each other and turn around.

Installation note

Tighten screws (3) only to the extent that both housing parts can still be displaced in relation to each other, as far as the screws permit.

Insert plastic valve (9) into shift valve housing (1).

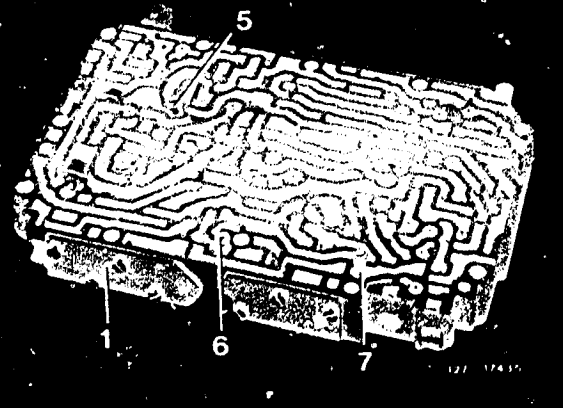
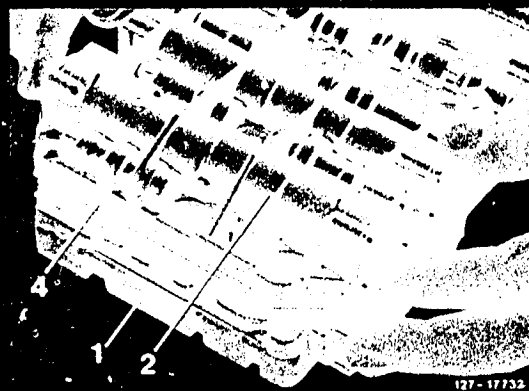
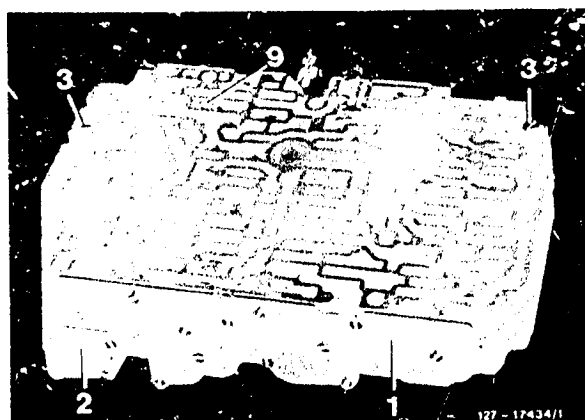
7 Lift off accumulator housing (2) with intermediate plate (4).

8 Remove all plastic valves and shift pin (7)

9 Remove all valve balls.

Caution!

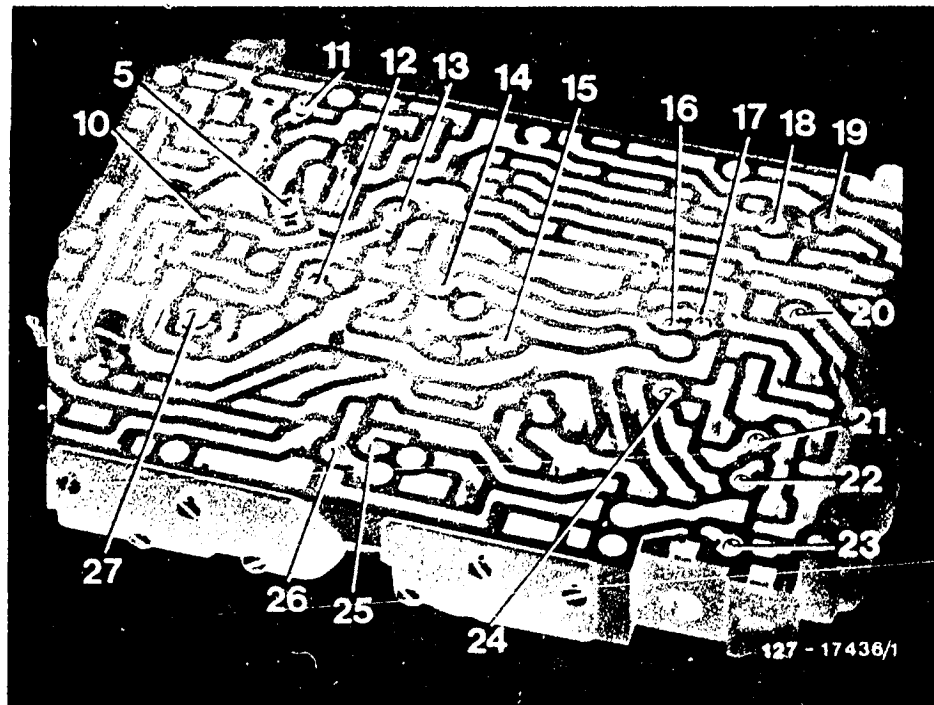
Plastic valves (5 and 9, refer to Fig. item 5) are similar in shape and dimension; they differ only by a bore in valve item 9. If the valves are removed, they must be put back into their original position.



Installation note

Depending on version the shift valve housing holds 17, 18 or 19 balls. During disassembly, make sure that the balls are not rolling away. During assembly, insert balls at correct points.

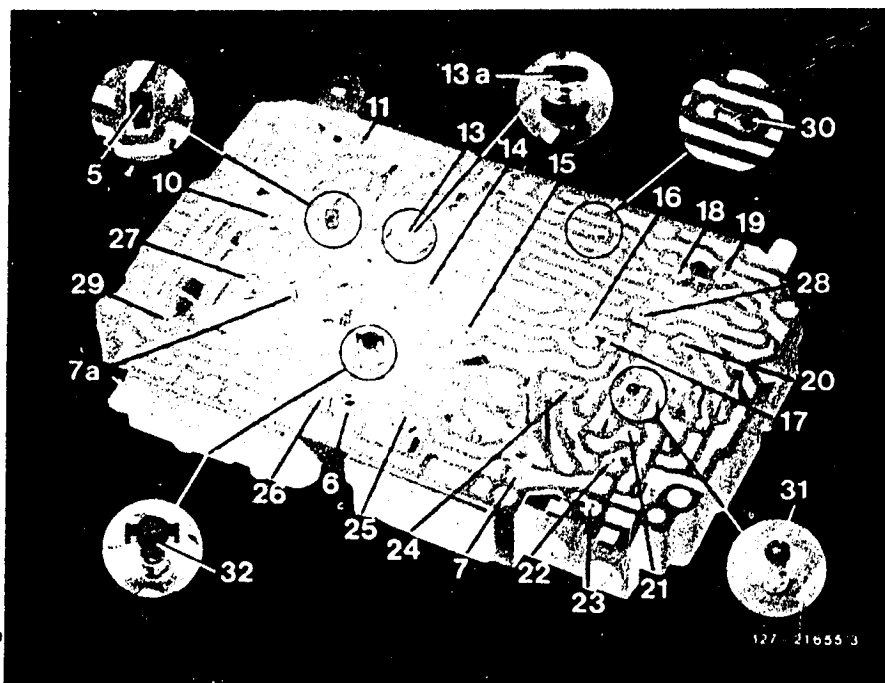
In addition, owing to the large number of shift valve housing versions, pay attention to number and color of the different valves.



1st version

2nd version

- 5 Flap valve
- 6 Strainer throttle
- 7 Shift pin
- 7a Locking pin K1
- 10-29 Valve balls
- 13a Pressure relief valve
- 30 Check valve
- 31 Throttle check valve
- 32 Check valve

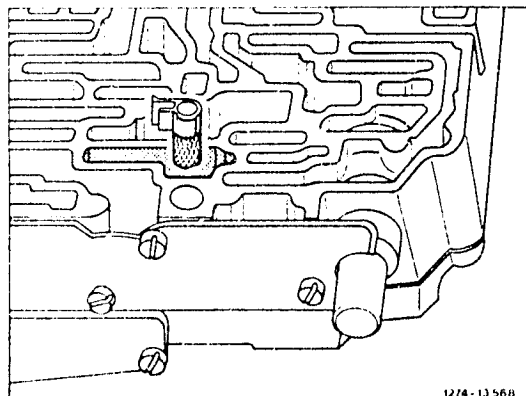


Note: Valve ball (28) is not installed on transmissions 722.315 and 722.303.

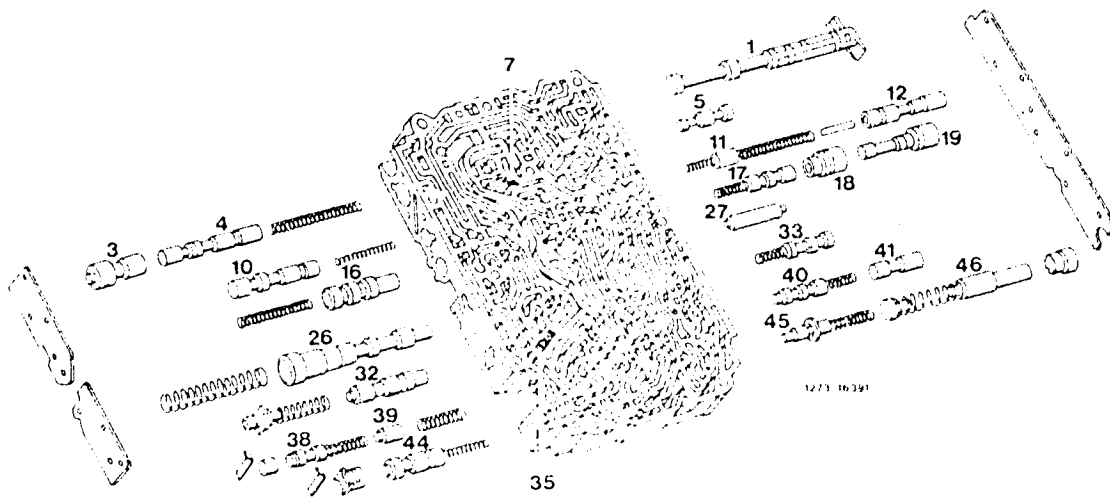
A conical spring is located under valve ball (16).

On some shift valve housing versions a pressure relief valve (13a) is installed instead of valve ball (13).

10 Insert chip strainer into feed channel to B2 shift valve. Installed as of transmission end no. 729 001. Can also be installed in transmissions with lower transmission end no., part no. 126 270 02 98.

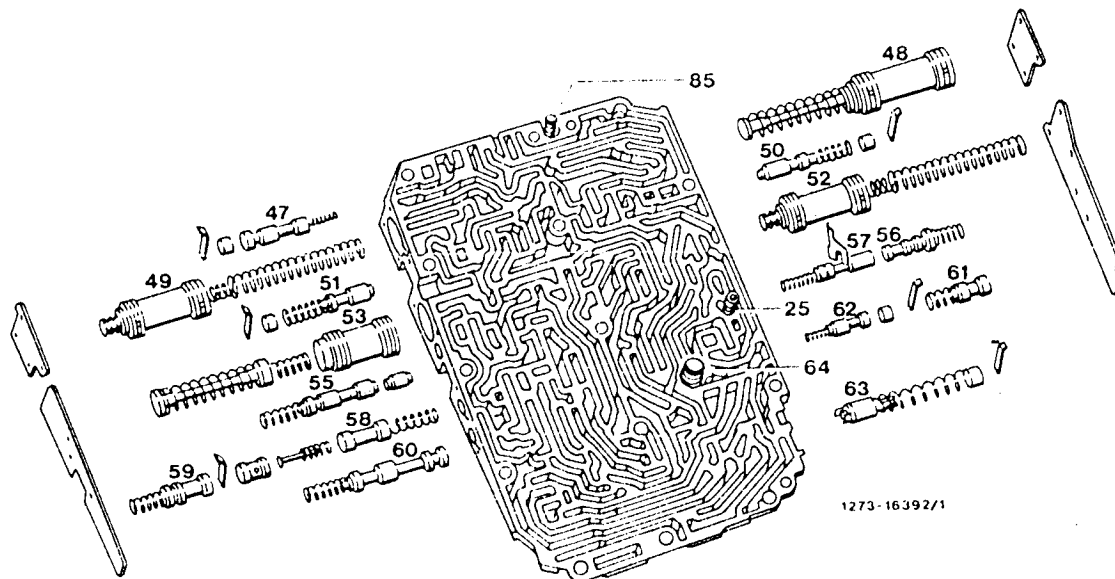


11 Unscrew lateral cover from shift valve housing and check pistons and valves for easy operation and chips.



- | | | | |
|----|--|----|--|
| 1 | Selector valve | 26 | Regulating valve working pressure |
| 3 | Piston command valve 2-3 | 27 | Plug shift valve Ku |
| 4 | Command valve 2-3 | 32 | Regulating valve with throttle |
| 5 | Regulating valve transducer adaptation | 33 | Shift valve B2 |
| 7 | Locking valve K1 | 35 | Shift pin lubricating pressure |
| 10 | Shift valve B1 | 38 | Regulating valve B1 |
| 11 | Piston command valve 3-4 | 39 | Piston regulating valve B1 |
| 12 | Command valve 3-4 | 40 | Shift valve kickdown |
| 16 | Regulator basic pressure | 41 | Shift valve governor pressure |
| 17 | Command valve 1-2 | 44 | Amplifier valve governor pressure |
| 18 | Sleeve command valve 1-2 | 45 | Regulating valve control pressure |
| 19 | Piston command valve 1-2 | 46 | Piston-regulating valve-control pressure |

12 Unscrew lateral cover from accumulator housing and check pistons and valves for easy operation and chips.



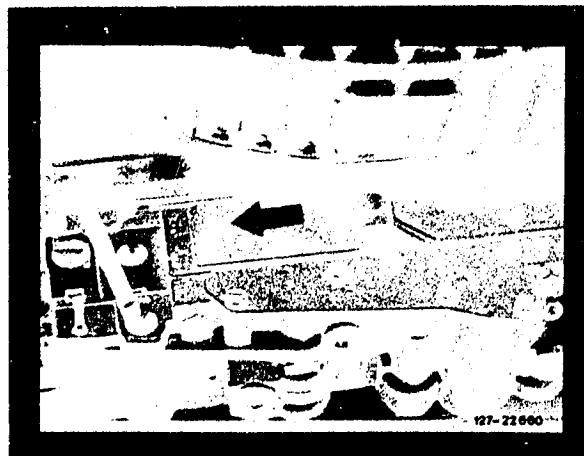
- | | | | |
|----|---|----|---|
| 25 | Valve excess pressure (modulating pressure) | 57 | Regulating valve accumulator B1 |
| 47 | Regulating valve shift pressure | 58 | Regulating valve accumulator cutting-in |
| 48 | Accumulator K1 | 59 | Shift valve K2 |
| 49 | Accumulator K2 | 60 | Release valve B2 |
| 50 | Regulating valve accumulator K1 | 61 | Locking valve brake shift |
| 51 | Regulating valve accumulator K2 | 62 | Locking valve RV1 |
| 52 | Accumulator B1 | 63 | Accumulator kickdown |
| 53 | Accumulator cutting-in | 64 | Lube pressure valve |
| 55 | Locking valve RV2 | 85 | Pressure limiting valve |
| 56 | Shift valve decel shift | | |

Installation note

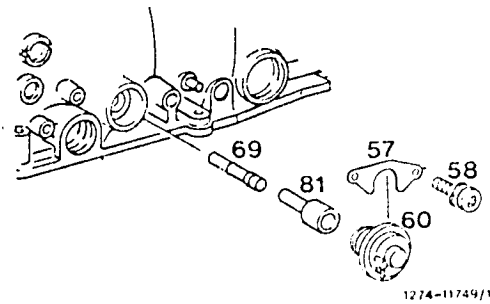
The springs are installed in front of or behind valve depending on transmission type or vehicle model.

For this reason, when disassembling shift valve housing or accumulator housing, make sure of the sequence in which the valves and springs are installed.

The arrow shows the location of the hex. socket screw for full throttle control pressure. Clockwise direction of rotation causes earlier full load or kick-down upshifts. Counterclockwise direction of rotation causes upshifts to occur later.



27-425 Removal and installation of vacuum control unit



- | | | |
|----|--|--|
| 57 | Holding plate | |
| 58 | Hex. head screws | M6x15, tightening torque 8 Nm |
| 60 | Vacuum control unit | Check for damage and contamination |
| 69 | Modulating pressure regulating valve | Check for easy operation |
| 81 | Thrust pin for heat expansion compensation | Check for damage, pay attention to Note item 1 |

Scope

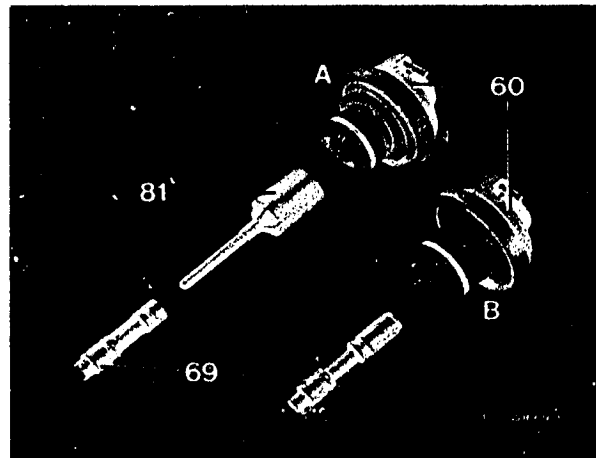
- 1 Remove, install vacuum control unit.

Note

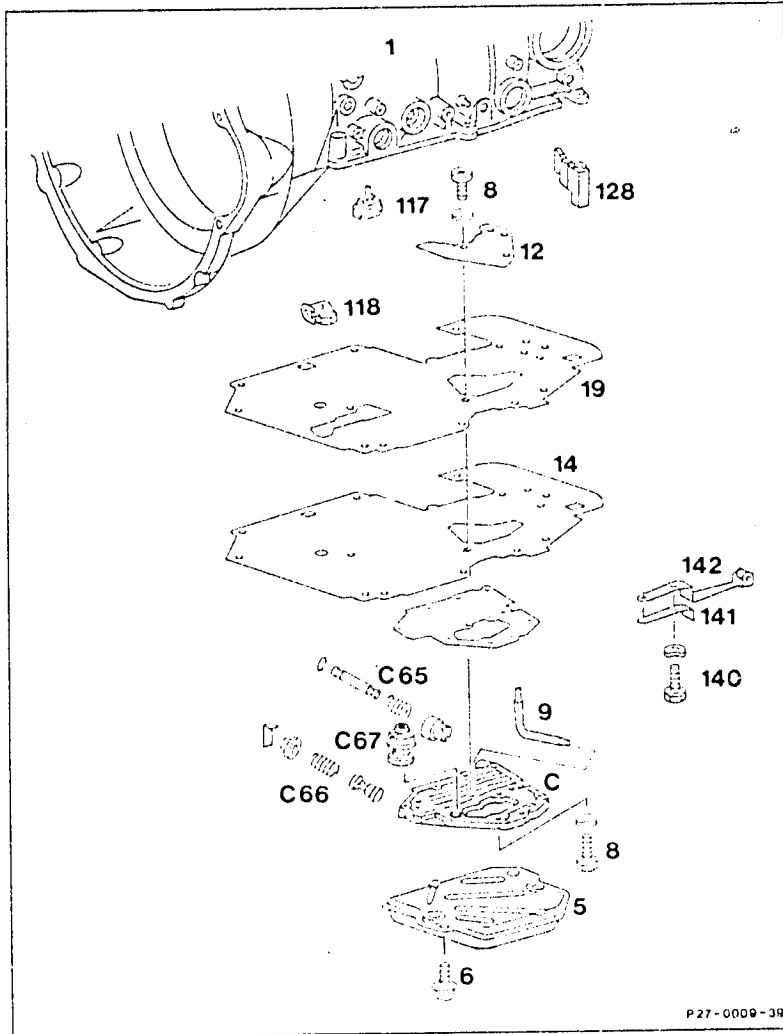
The vacuum control unit version B has been installed up to February 1981. The vacuum control unit with thrust pin for heat expansion compensation version A is installed since February 1981.

In the event of repairs, install version A.

Test modulating pressure and adjust, job No. 27-350.



27-430 Removal and installation, disassembly and assembly of lower cover with intermediate plate



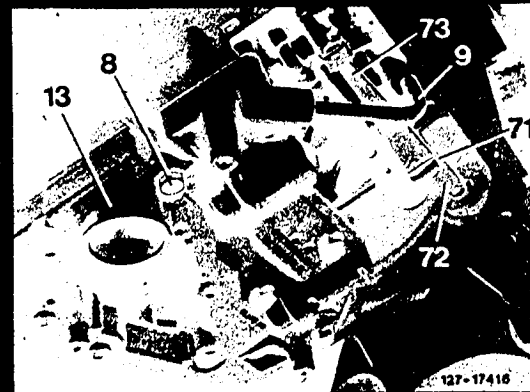
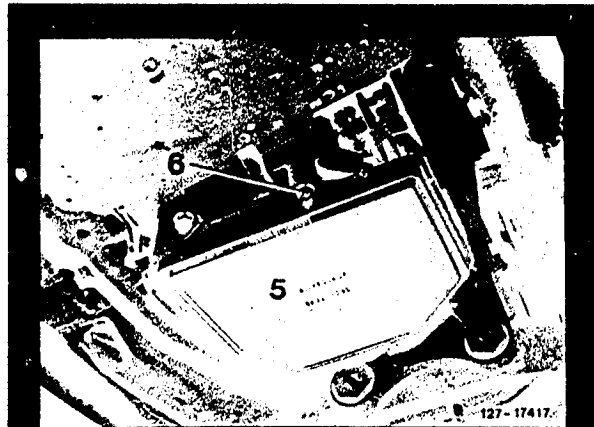
- Oil from transmission (1) drain, remove and install oil pan, check oil level following repairs (Maintenance Manual job item 2710).
- Shift valve housing remove and install (27-400).
- Oil filter (5) remove and install, screwing Phillips head screw (6) off and on, 4 Nm (item 2).
- Leaf spring (142), holder (141) and screw (140) remove and install, 8 Nm (item 3).
- Combination screws (8) screw off and on, remove complete intermediate plate (14). 8 Nm (item 4).
- Injector (118) remove and install by rotation (item 5).
- Cover plate (12) and oil pipe (9) remove, screwing fastening screws on and off for this purpose, 8 Nm, then remove intermediate plate (14) and gasket (19) (item 6-8).
- Lower cover (13) disassemble and assemble, check parts (item 9).

General notes

Observe particular cleanliness for all jobs on shift valve housing. The work should be done as much as possible on a plastic surface. Do not use fuzzy cloth; leather would be best. Upon disassembly, wash all parts and blow out with compressed air.

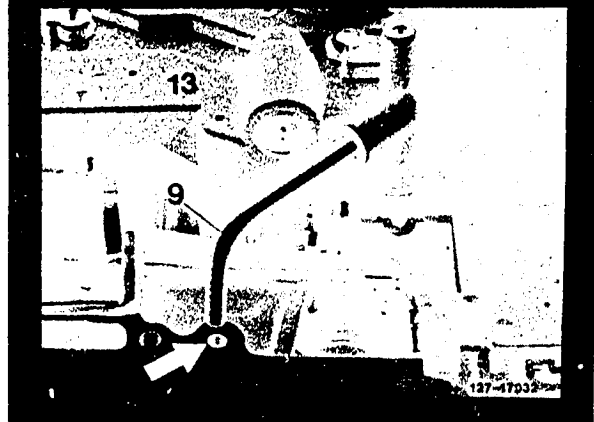
Removal and installation

- 1 Remove shift valve housing (27-400).
- 2 Unscrew Phillips screws (6) and remove oil filter (5).
- 3 Unscrew screw (71), remove holder (72) with leaf spring (73).
- 4 Unscrew combination screws (8), remove lower cover (13) with oil pipe (9) and intermediate plate.



Installation note

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

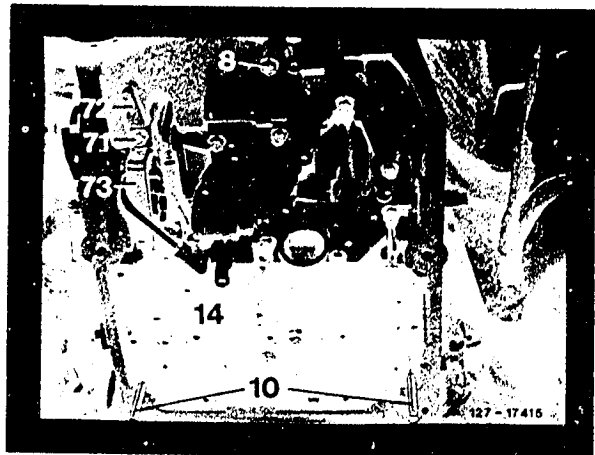


Insert combination screws (8) but do not tighten.

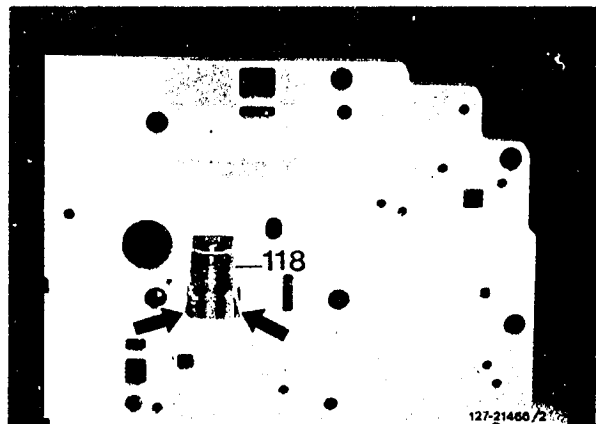
Screw in two screws (10) for locating intermediate plate (14).

Tighten combination screws (8) to 8 Nm.

Mount leaf spring (73) with holder (72). Tighten screw (71) to 8 Nm. Make sure that the locating pin for holder (72) is correctly installed.



5 Injector (118) compress both links (arrow) and remove injector.



6 Pull out oil pipe (9).

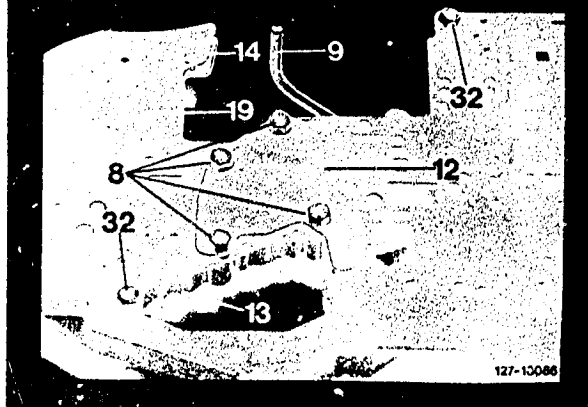
7 Unscrew fastening screws (8), remove cover plate (12) with intermediate plate (14).

8 Release gasket (19) from intermediate plate.

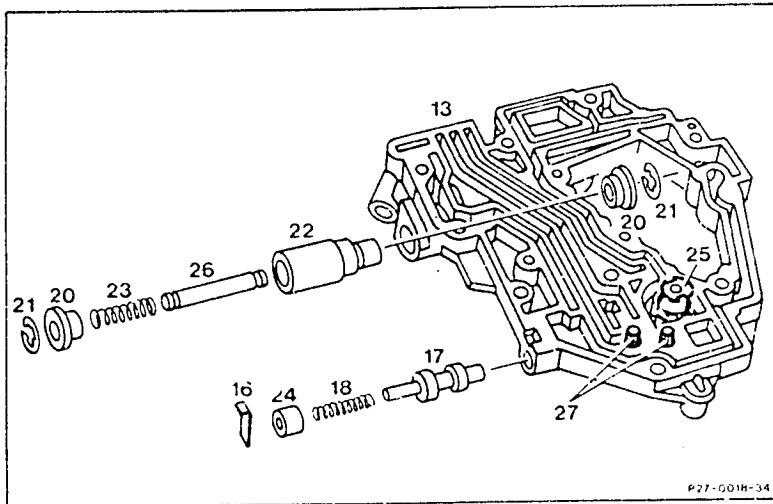
Installation note

Pay attention to survey, large intermediate plate (27-003).

Locate gasket (19) in relation to intermediate plate (14). Tightening torque 8 Nm.



9 Disassemble and assemble lower cover, check parts.



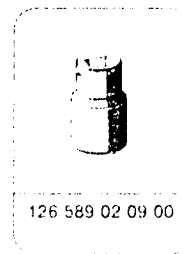
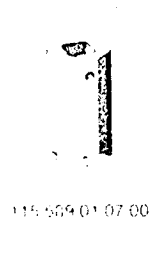
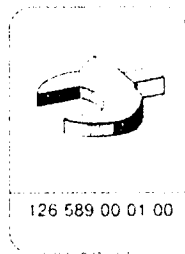
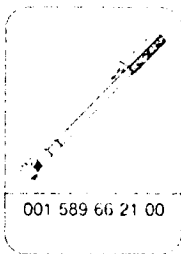
- 13 Lower cover
- 16 Holding plate
- 17 Shift valve secondary pump
- 18 Spring
- 20 Bushing
- 21 Lock
- 22 Locking valve
- 23 Spring
- 24 Plug
- 25 Valve
- 26 Bolt
- 27 Screen filter

27-440 Removal and installation of rear cover

Tightening torques	Nm
Universal shaft clamping nut	30
Slot nut or double hex. collar nut for three-legged flange or ring gear	120
Combination screws rear cover	13 28 ¹⁾
Drain plug oil pan	14

¹⁾ Combination screws with material 10.9

Special tools

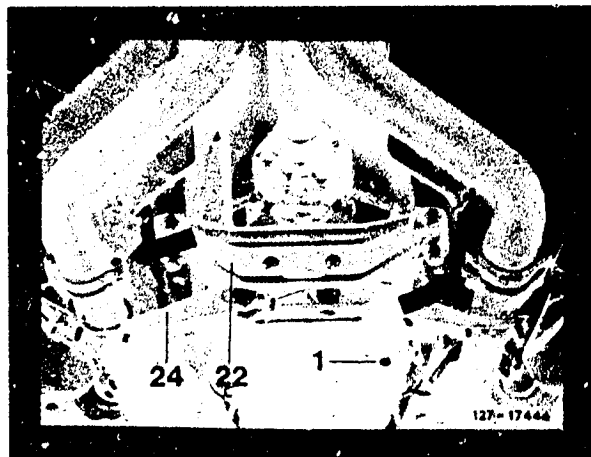


Note

On vehicles with 4MATIC an adapter housing and ring gear are mounted instead of rear transmission cover and three-legged flange. Upon removal of transfer case (28-200), proceed according to item 10.

Removal

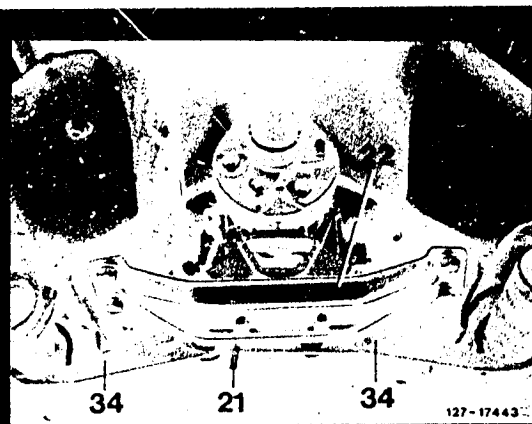
- 1 Jack up vehicle at the rear.
- 2 Unscrew drain plug (1) and drain oil.
- 3 Screw-in drain plug (1) and tighten to 14 Nm.
- 4 Loosen exhaust system at plug connection (arrows) and remove together with shielding plate.



5 Remove cross beam (22) together with rear engine mount.

6 Loosen holding strap (21).

7 Unscrew exhaust support (34).

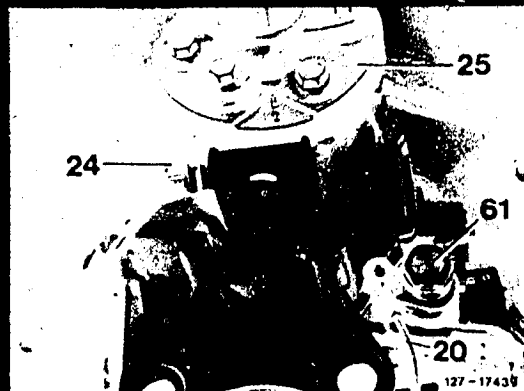


8 Unscrew cable (20) from kickdown solenoid valve (61). Remove screw on impulse transmitter (24) and pull out impulse transmitter.

Note: Disconnect shaft on vehicles with mechanical tachometer.

9 Unscrew companion plate (25) on universal flange, loosen universal shaft clamping nut and contract universal shaft as much as possible.

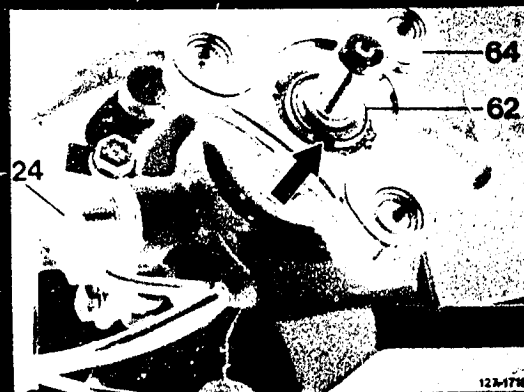
Torque wrench 001 589 66 21 00
Open end wrench 126 589 00 01 00



10 Engage parking lock.

11 Unscrew slot nut or double hex. collar nut (62) and pull off three-legged flange (64) or ring gear (with 4MATIC).

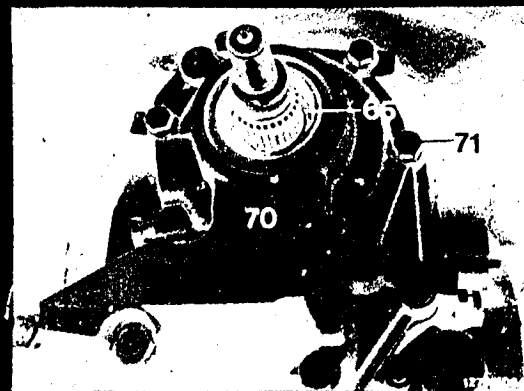
Pin spanner 115 589 01 07 00
Socket wrench insert 126 589 02 09 00



12 Remove washer (65).

13 Unscrew combination screws (71) and pull off rear cover (70) or adapter housing.

Attention!
When removing rear transmission cover make sure that the kickdown solenoid valve is not damaged. If necessary, loosen kickdown solenoid valve and turn slightly.



Installation

14 Mount rear cover (70) or adapter housing with new gasket.

15 Screw in combination screws (71) and tighten to 13 or 28 Nm.

Note: Make screws free of grease and coat with non-hardening sealing compound.

16 Insert washer (65).

17 Plug on three-legged flange (64) or ring gear. Screw on slot nut or double hex. collar nut (62) and tighten to 120 Nm.

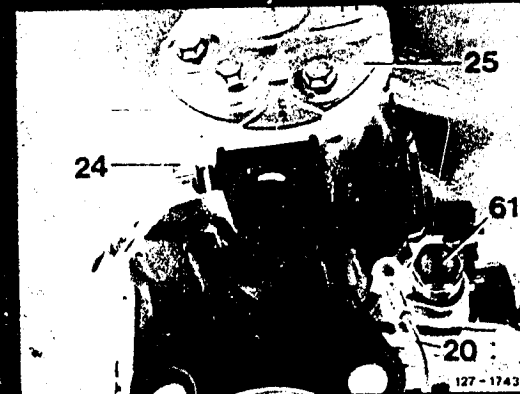
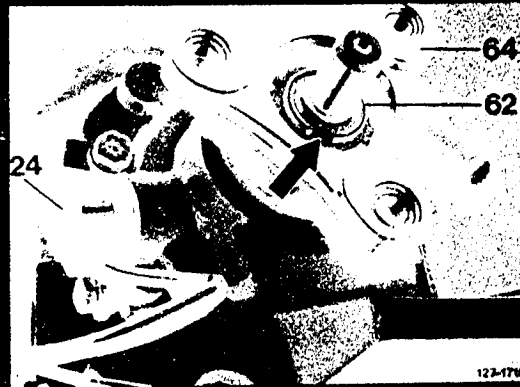
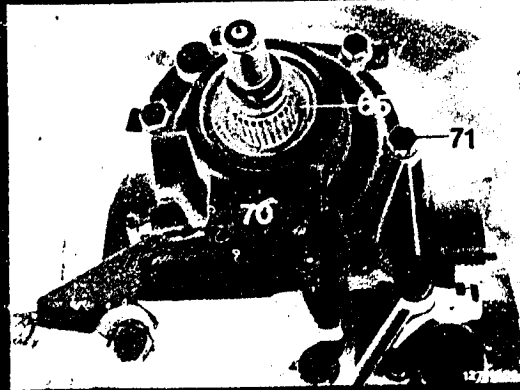
18 Secure slot nut or double hex. collar nut (62) by knocking collar into recess on drive shaft (arrow) by means of a suitable punch.

19 Insert impulse transmitter (24), screw-in screw and tighten to 4 Nm or connect tachometer shaft, respectively.

20 Screw companion plate (25) to universal flange.

21 Screw cable (20) to kickdown solenoid valve (61).

22 Tighten propeller shaft clamping nut (7) to 30 Nm. Install shielding plate.



23 Install cross beam (22) together with rear engine mount.

24 Screw-on exhaust support (34).

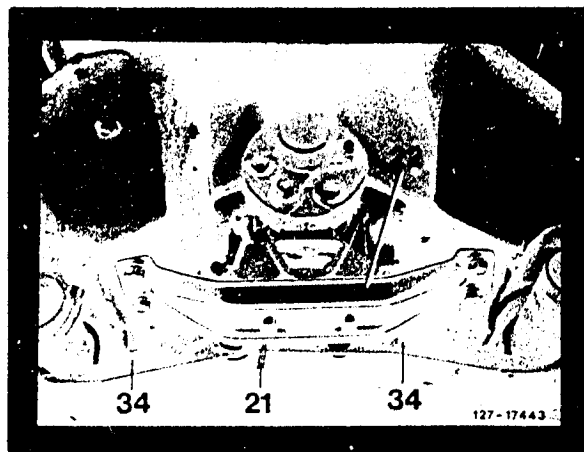
25 Attach cable for kickdown solenoid valve by means of holding strap (21).

26 Install exhaust system.

27 Lower vehicle.

28 Add transmission fluid.

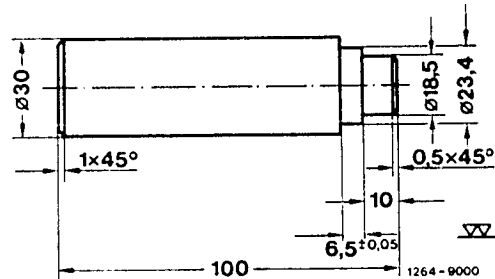
29 Check oil level and correct (refer to Service Manual job no. 2710).



27-450 Disassembly and reassembly of rear cover

Self-made tool

Note: Punch is self-made according to specified dimensions.

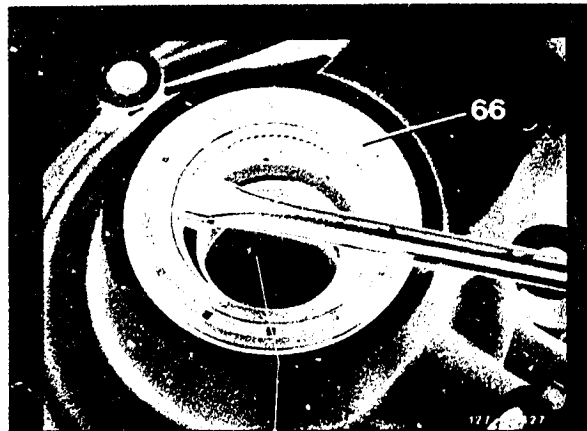


Dimensions

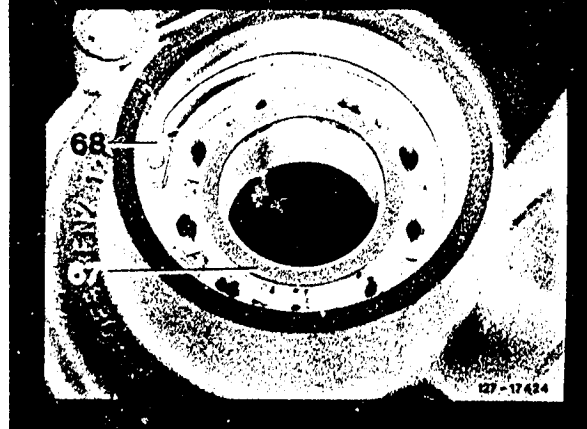
Designation	Item	Thickness in mm
Locking ring	68	2.0-2.1-2.2

Disassembly

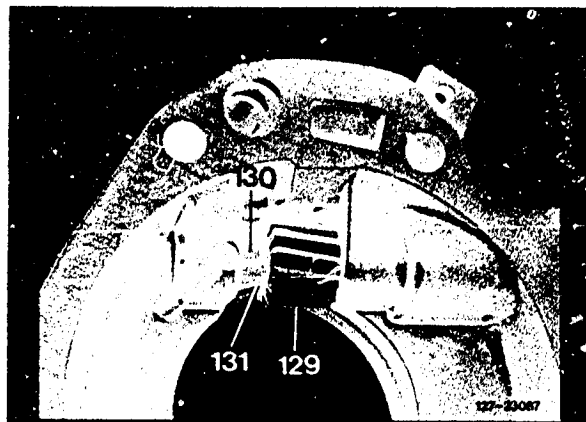
1 Remove radial sealing ring (66) with a screw driver.



2 Remove locking ring (68) and knock-out radial ball bearing (67).

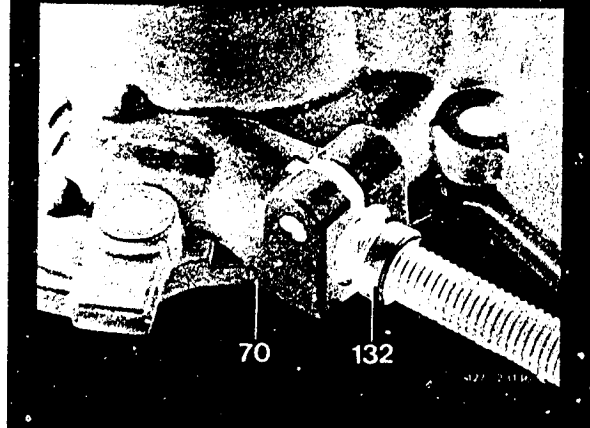


3 Remove drive pinion (129) for mechanical tachometer. Remove lock (131), remove shaft (130) and pinion (129).



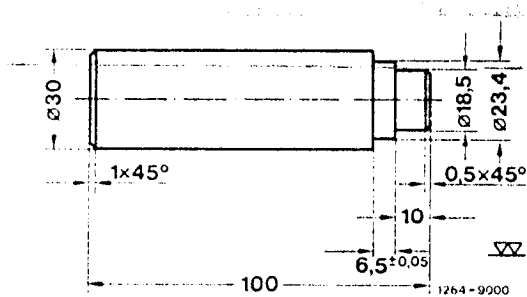
4 Pull radial sealing ring (132) out of rear transmission cover (70).

Note: To facilitate removal, screw a hex. bolt M 12 into radial sealing ring and clamp into vise. Pull out radial sealing ring while applying light blows with a plastic hammer against transmission cover.

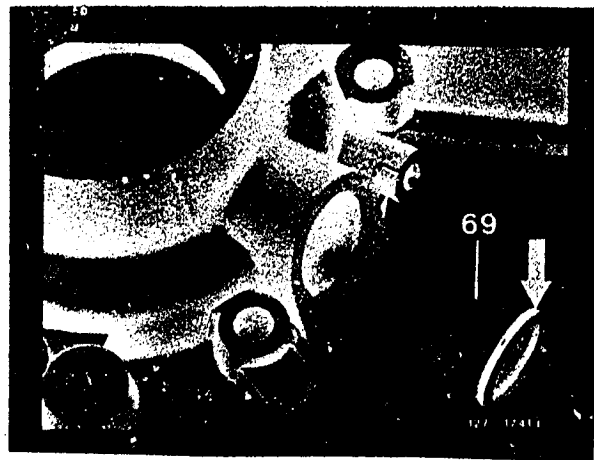


Assembly

Note: The punch is self-made according to specified dimensions.

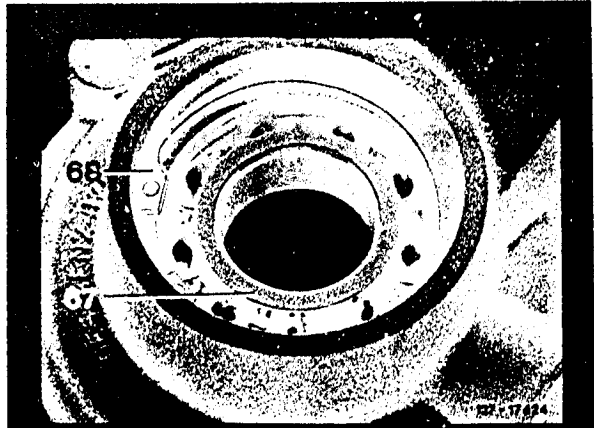


Note: If a new plastic bushing (69) with O-ring (arrow) must be installed on vehicles with electronic tachometer, insert plastic bushing by means of self-made punch.



5 Press-in radial ball bearing (67) with a suitable mandrel.

6 Insert locking ring (68) and check for play.



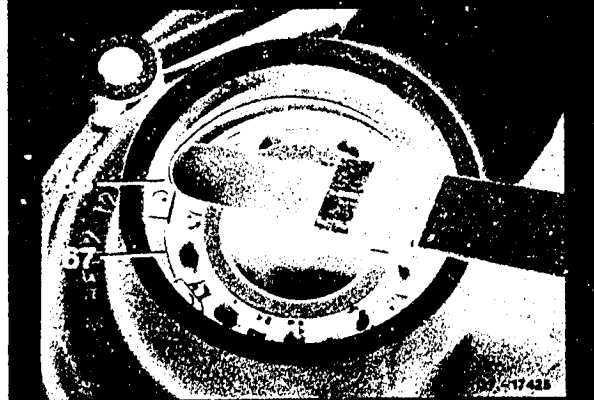
Note: There should be no play between locking ring (68) and radial ball bearing (67). For this reason, three locking rings of varying thickness are available (refer to dimensions).

When inserting locking rings, make sure that ring is correctly seated in groove.

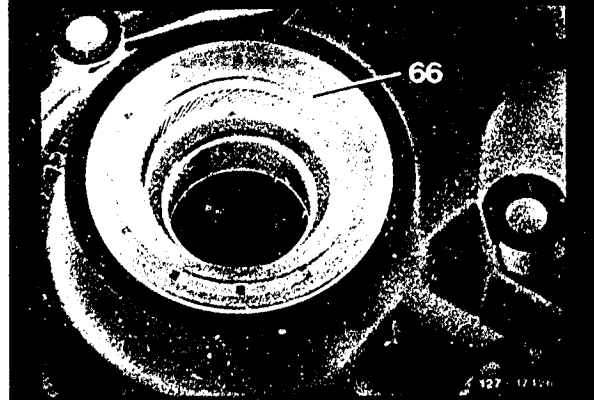
If the locking ring cannot be inserted, use a thinner ring.

In the event of play between locking ring and radial ball bearing, insert a thicker ring.

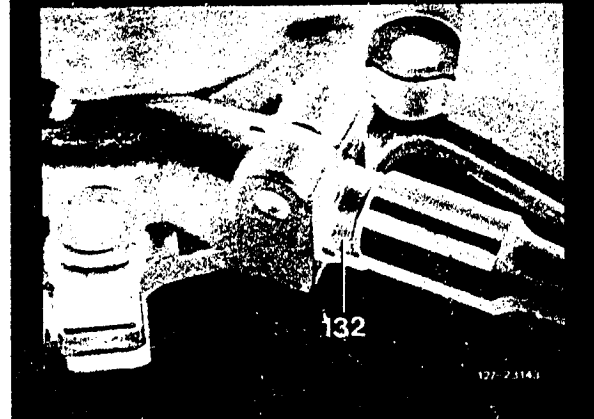
Check with slip gauge (0.10 mm) for play.

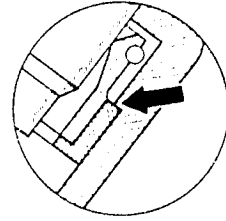


7 Press-in radial sealing ring (66).

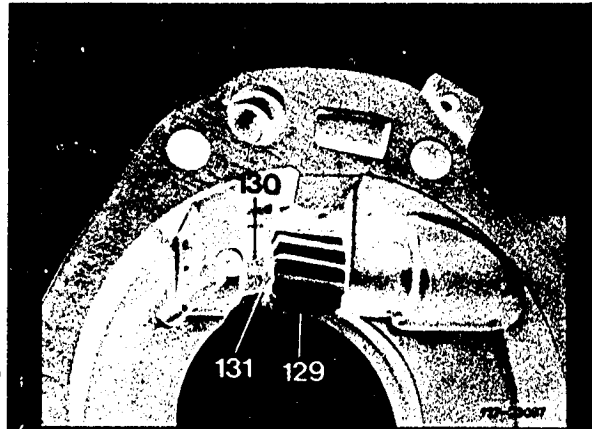


8 Carefully press-in radial sealing ring (132) up to stop (arrow).

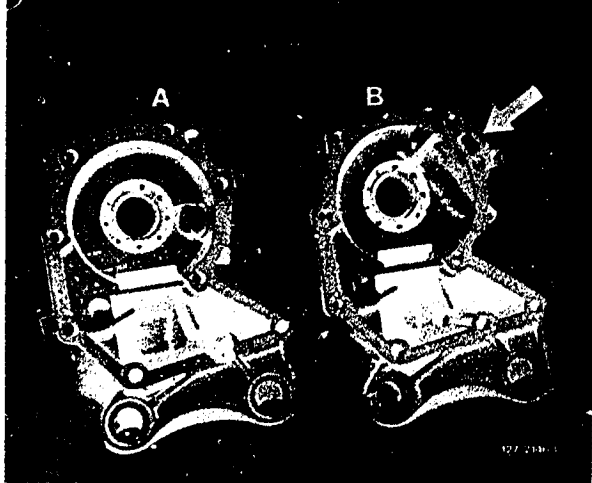




9 Insert pinion (129) and shaft (130) into rear transmission cover together with locking ring (131).



Note: Flange contours (arrow) are different starting with installation of mechanical tachometer drive September 1981.



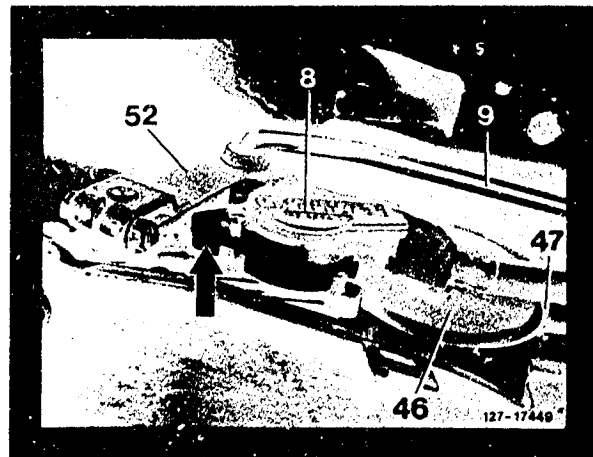
A. 1st version
B. 2nd version

27-520 Removal and installation of centrifugal governor

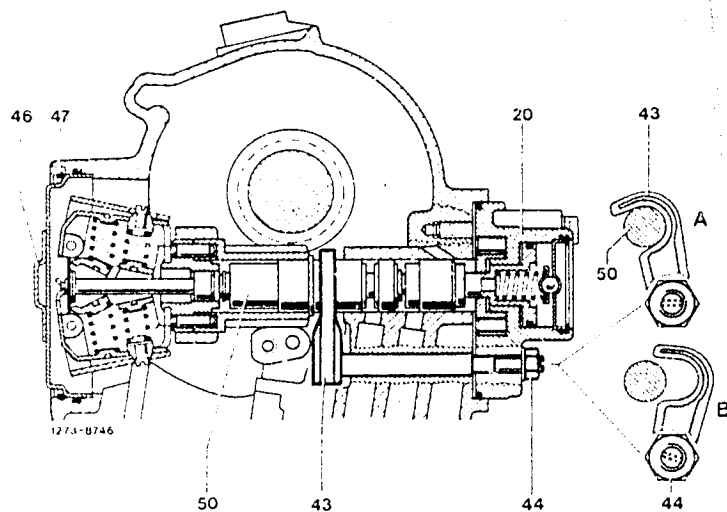
Tightening torque	Nm
Nut for centrifugal governor axial holder	8

Removal

- 1 Remove rear engine mount.
- 2 Unlock plug (8), while turning white plastic ring upwards in direction of arrow.
- 3 Pull off plug (8).
- 4 Push-in cover (46), remove circlip (47) together with cover.

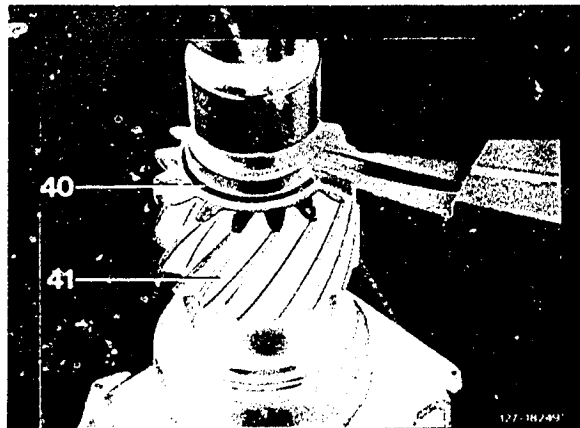


- 5 Loosen nut (44) for axial holder.
- 6 Swivel axial holder (43) with screw driver at slot (arrow) counterclockwise (according to position "B" in sectional view).
- 7 Pull out centrifugal governor (50).



- | | |
|-------------------------|-------------------------|
| 20 Secondary pump | 46 Cover |
| 43 Axial holder | 47 Circlip |
| 44 Nut for axial holder | 50 Centrifugal governor |

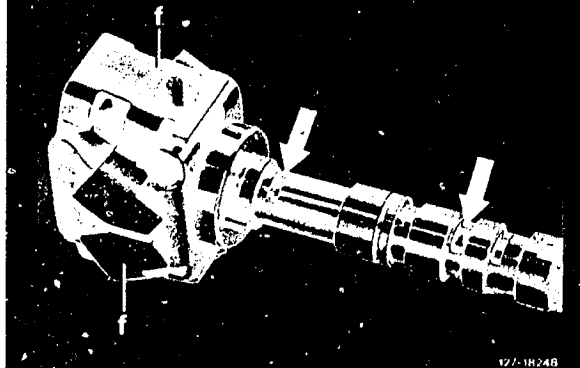
8 Remove lock (40) and pull off helical gear (41).



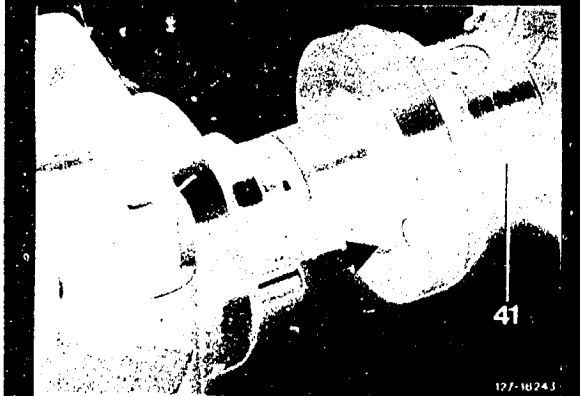
9 Move fly weights (f), while checking control valve in openings (arrows) for easy operation.

Note: Control valve should move easily, if required wash centrifugal governor and blow out. If control valve is still hard to move, exchange centrifugal governor.

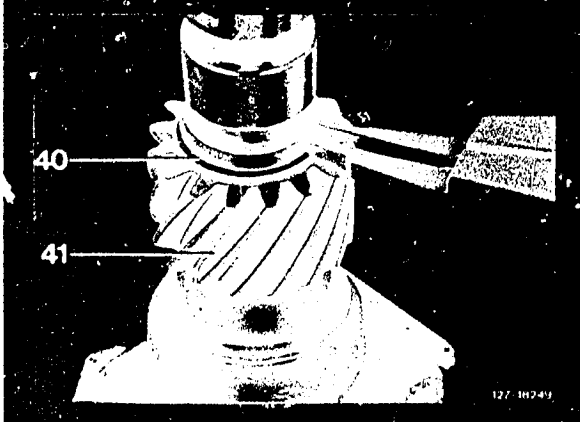
In such a case, take helical gear (41) from removed centrifugal governor for re-use.



10 Mount helical gear (41) in such a manner that the drive pin (arrow) enters bore in helical gear.



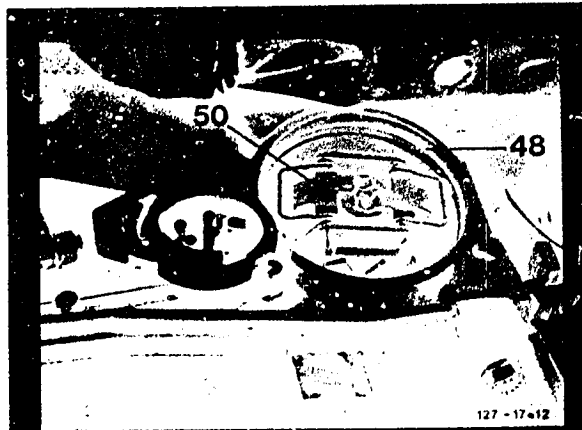
11 Insert lock (40).



Installation

12 Insert O-ring (48).

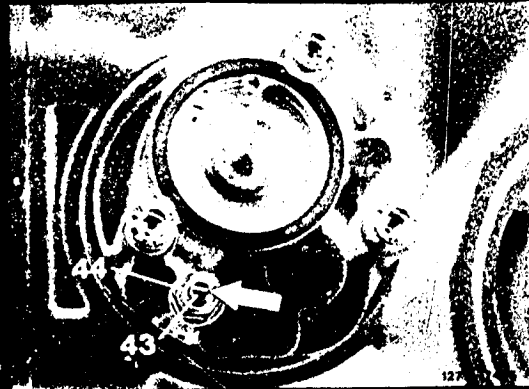
13 Introduce centrifugal governor (50).



14 Move centrifugal governor axially slightly back and forth while turning axial holder (43) clockwise for correct engagement (position "A" in sectional view).

15 Tighten nut for axial holder (44) to 8 Nm.

Note: The axial holder is correctly mounted with slot (arrow) in horizontal position.



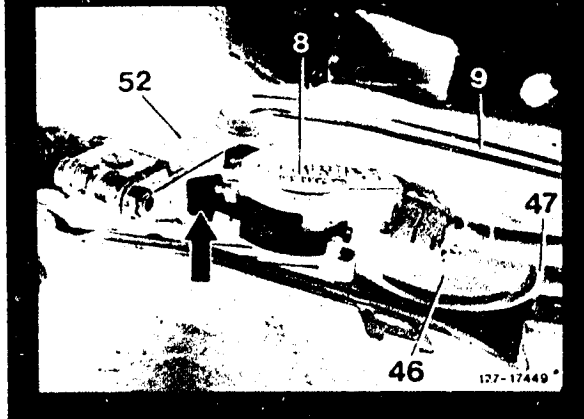
16 Push-in cover (46) and insert circlip (47).

17 Push cover (46) again in outward direction to rest against circlip (47).

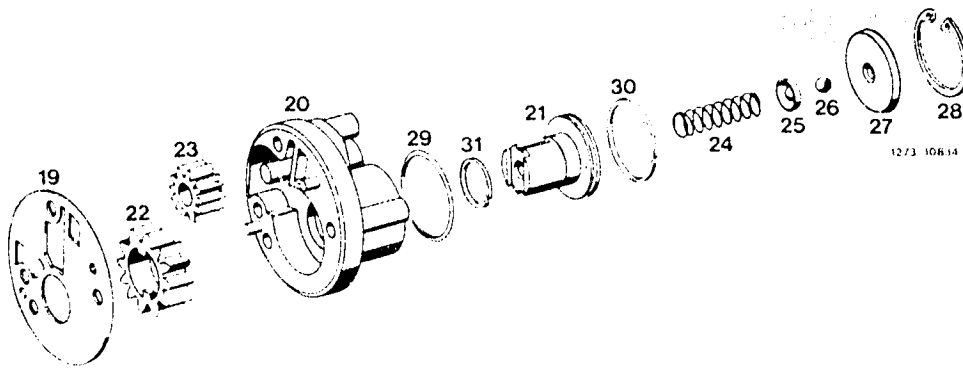
18 Mount plug (8), turn white plastic ring in downward direction (opposite to direction of arrow).

19 Install rear engine mount.

20 Check oil level and correct (Service Manual job no. 2710).



27-530 . Removal and installation, disassembly and assembly of secondary pump



- | | |
|---|---|
| 19 Intermediate plate | Check for damage |
| 20 Pump housing | Check for damage and wear |
| 21 Shutoff piston | Check for damage and wear |
| 22 Pump wheel – driving | Check for damage and wear ¹⁾ |
| 23 Pump wheel – driven | Check for damage and wear ¹⁾ |
| ¹⁾ Pay attention to installation note item 1 in section "Disassembly and assembly" | |
| 24 Compression spring | |
| 25 Spring plate | |
| 26 Ball | |
| 27 Cover | Check for damage |
| 28 Circlip | |
| 29 O-ring | Replace |
| 30 Teflon ring | Check for damage and wear |
| 31 Teflon ring | Check for damage and wear |

Tightening torques

Nm

Hex. socket screws

8

Nut for axial holder

8

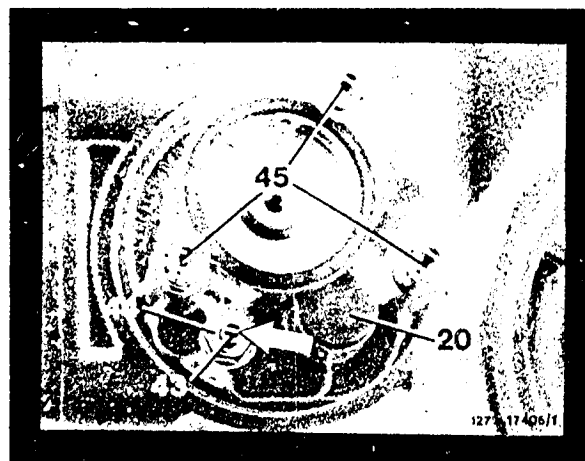
Removal and installation

- 1 Unscrew nut for axial holder (44).
- 2 Unscrew hex. socket screws (45) and remove secondary pump (20).

Installation note

Tighten hex. socket screws (45) and nut for axial holder (44) to 8 Nm.

The slot (arrow) in axial holder (43) must be horizontal.



Install intermediate plate (21) and O-ring (22).

Disassembly and assembly

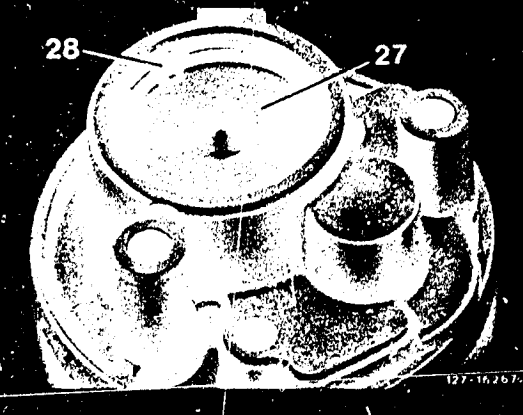
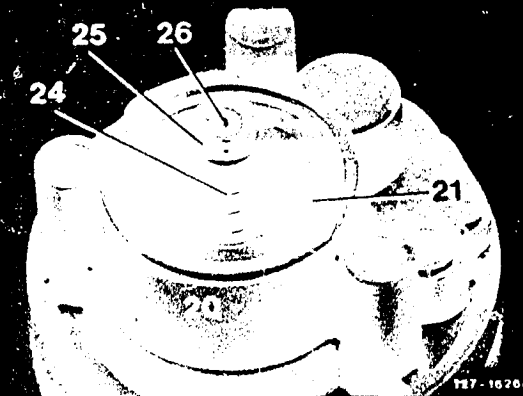
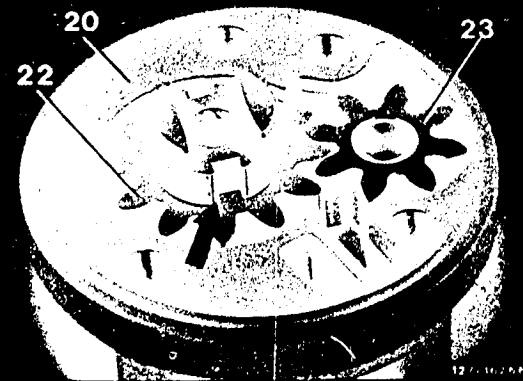
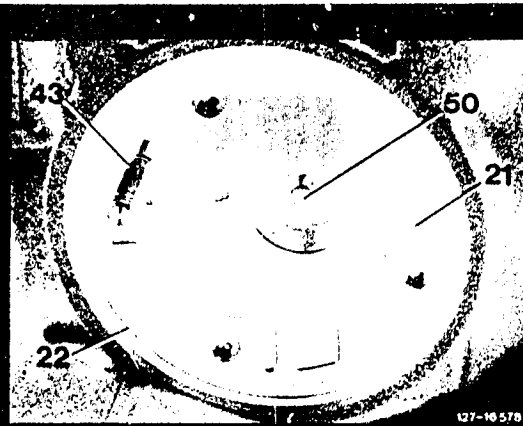
1 Take pump wheels (22) and (23) from pump housing (20).

Installation note

Lubricate pump wheels (22) and (23) and insert into pump housing (20). Rotate driving pump wheel (22) in such a manner that the drivers are entering into grooves (arrow).

2 Remove locking ring (28) and cover (27).

3 Remove shutoff piston (21) together with compression spring (24), spring plate (25) and ball (26) from pump housing (20).

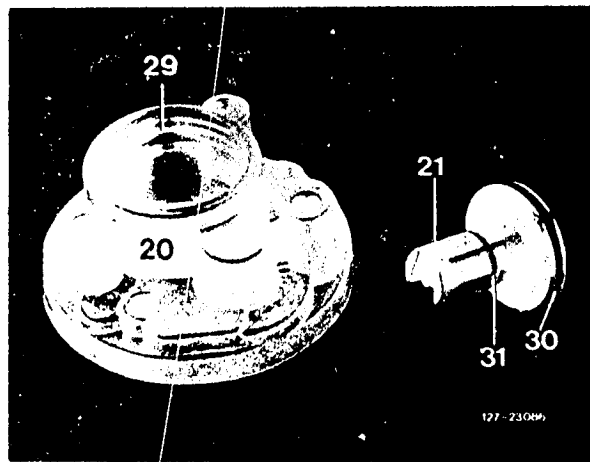


Installation note

Check O-ring (29) and teflon rings shutoff piston (30) and (31) for damage and replace, if necessary.

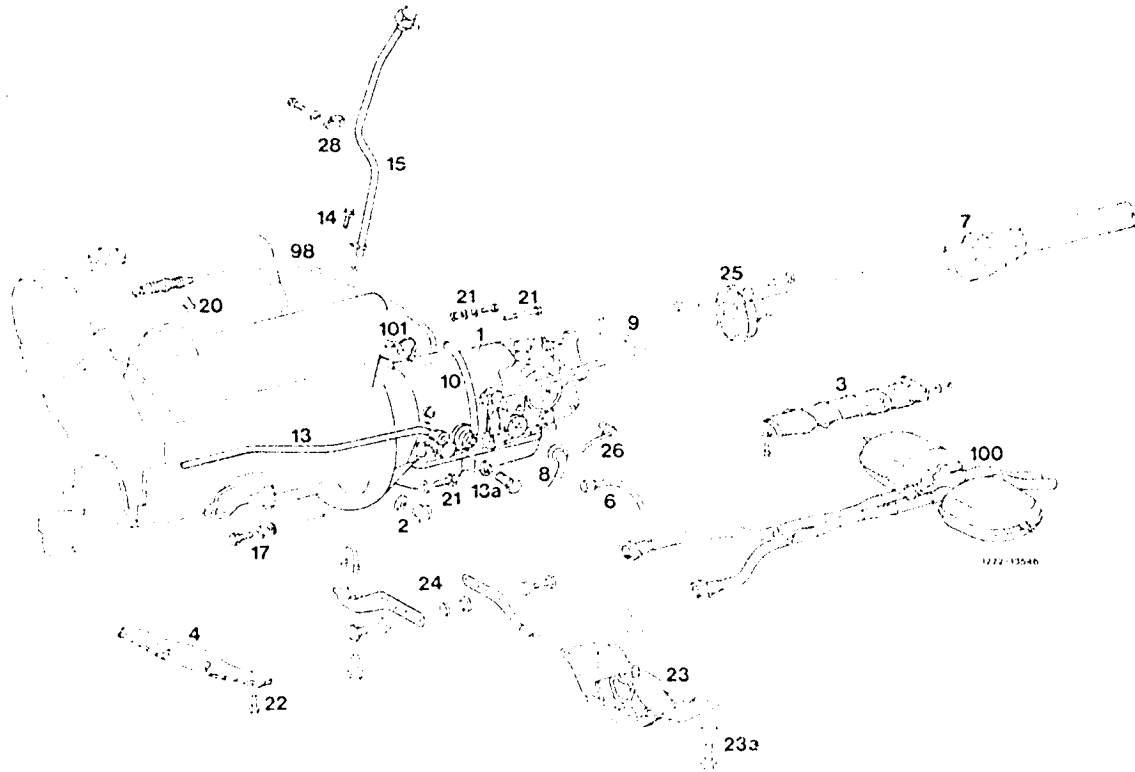
Place O-ring (29) into pump housing.

Insert teflon rings (30) and (31) into shutoff piston (21).



Handwritten note: 127-23099 - O-ring, shutoff piston

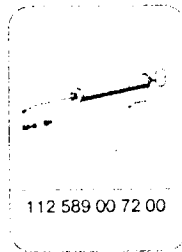
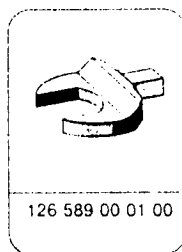
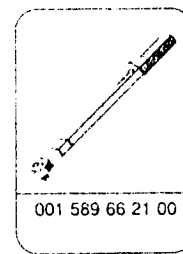
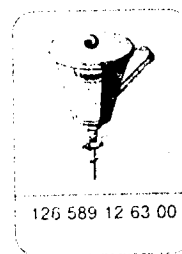
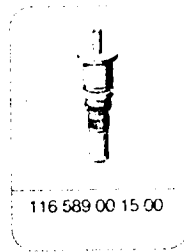
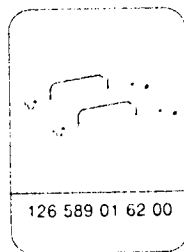
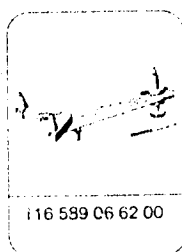
A. Vehicles without 4MATIC



- | | | |
|-----|--|--|
| 1 | Transmission | mount 116 589 02 62 00 |
| 2 | Oil drain plug front, torque converter | replace sealing ring, 14 Nm. Pay attention to "Attention!" under item 35. |
| 3 | Shielding plate | |
| 4 | Cross member-center piece | |
| 6 | Cable for kickdown solenoid valve | |
| 7 | Clamping nut of propeller shaft | 30-40 Nm, torque wrench C01 589 66 21 00, open end wrench 126 589 03 01 00 |
| 8 | Plug starter lockout switch | |
| 9 | Shiftrod and clips | Disengage, engage |
| 10 | Vacuum line | |
| 13 | Oil lines to oil cooler | Pay attention to "Attention!" under item 35 |
| 13a | Hollow screw and sealing rings | Replace sealing rings |
| 14 | Fastening screw | |
| 15 | Oil filling pipe | |
| 17 | Screws for fastening converter | 42 Nm |

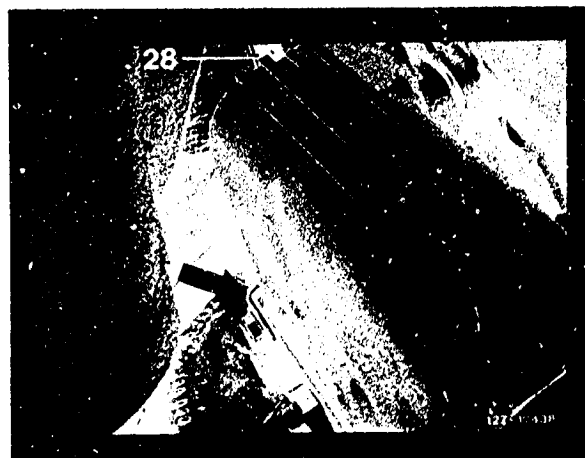
- | | | |
|-----|--|--|
| 20 | Fuse, control pressure cable | |
| 21 | Fastening screws | M 10x40 = 55 Nm, M 10x90 = 45 Nm, M 12 = 65 Nm |
| 22 | Self-locking hex. head screws | replace, 45 Nm |
| 23 | Cross member with rear engine mount | |
| 23a | Fastening screws | |
| 24 | Exhaust support | |
| 25 | Unscrew companion plate on flexible flange | |
| 26 | Impulse sensor, speedometer | |
| 28 | Holder, oil filling pipe | |
| 98 | Control pressure cable | adjust |
| 100 | Exhaust system | on 8-cylinder engines remove and install as from plug connection |
| 101 | Cover position sensor EZL | clip on after installing transmission |

Special tools



Removal and installation

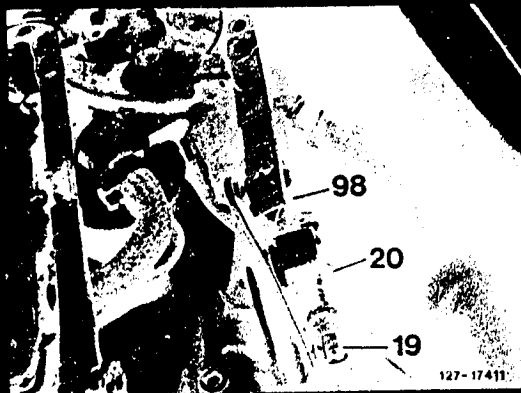
- 1 Disconnect minus cable on battery.
- 2 Unscrew holder (arrow) for oil filler pipe (28) on cylinder head.
- 3 Disengage engine longitudinal regulating shaft.



- 4 Force off ball socket (19).
- 5 Disconnect control wire for control pressure (98).

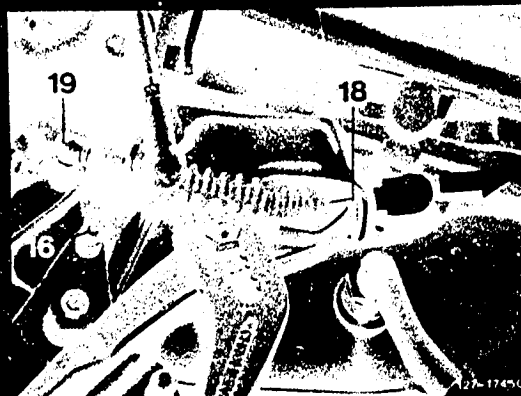
Vehicles with injection engines

Pull out lock (20) and loosen control wire.



Vehicles with carburetor engines

Compress both plates on plastic clip (18) with pliers and pull out control wire in direction of arrow.



Installation note

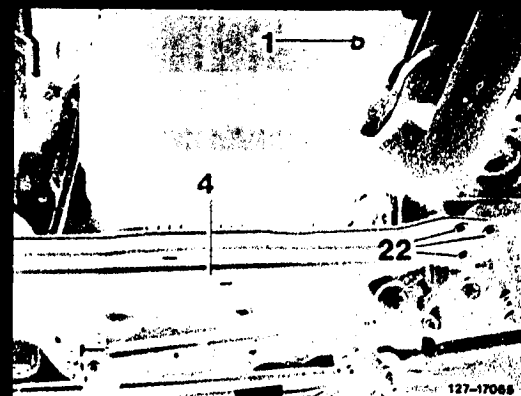
Adjust cable for control pressure (27-110).

- 6 Jack up vehicle.
- 7 Unscrew cross yoke center piece (4).

Installation note

Replace self-locking hex. head screws and tighten to 45 Nm.

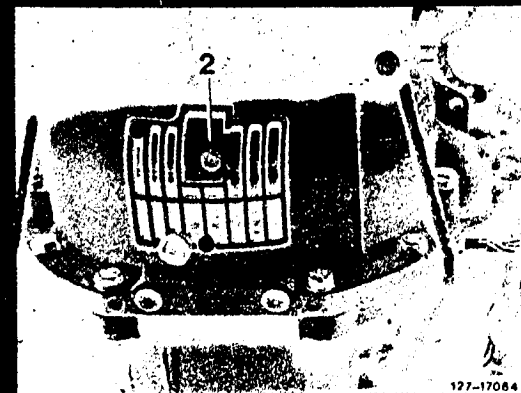
- 8 Unscrew drain plug (1) on oil pan and drain oil.



- 9 Unscrew drain plug on torque converter (2) and drain oil.

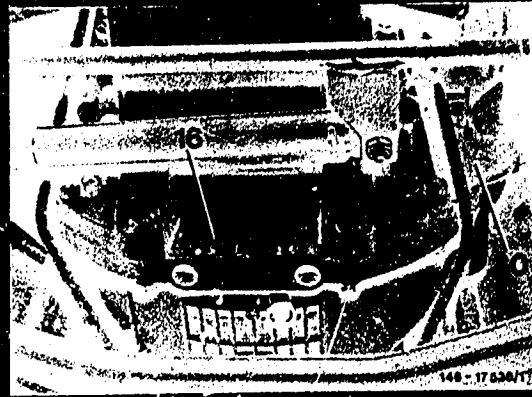
Installation note

Screw in drain plug on oil pan and on torque converter and tighten to 14 Nm.



10 Unscrew cover plate (16 and 30).

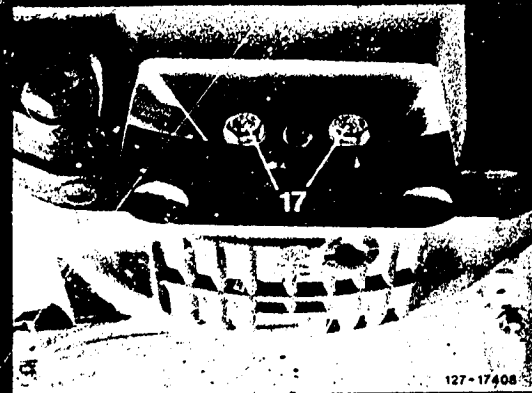
Note: On vehicles with engine 110, unscrew supporting tray of oil pan intermediate flange.



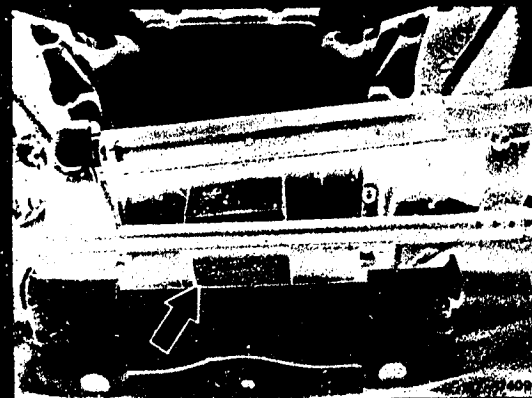
11 Unscrew screws (17) for driving plate torque converter (total of six).

Installation note

Tightening torque 42 Nm.

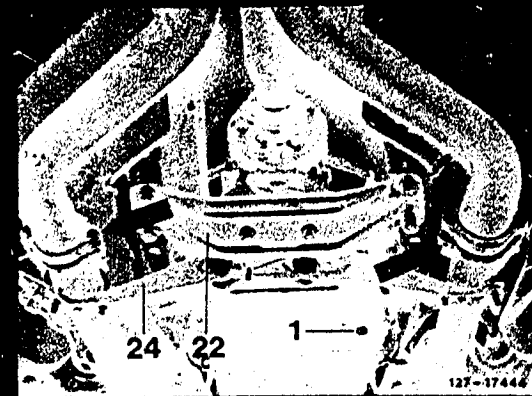


12 Place a fitting wooden block (arrow) in-between engine oil pan and cross yoke.



13 Loosen exhaust system on plug connection (arrows) and remove.

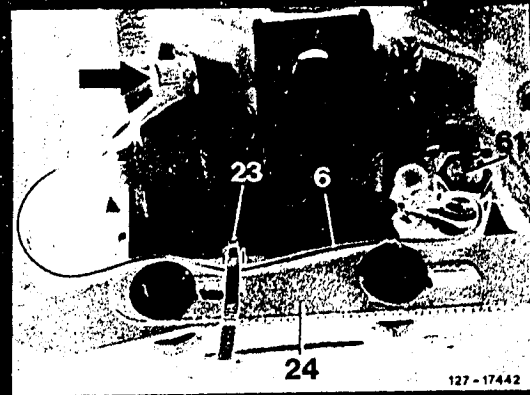
14 Remove cross beam (22) together with rear engine mount.



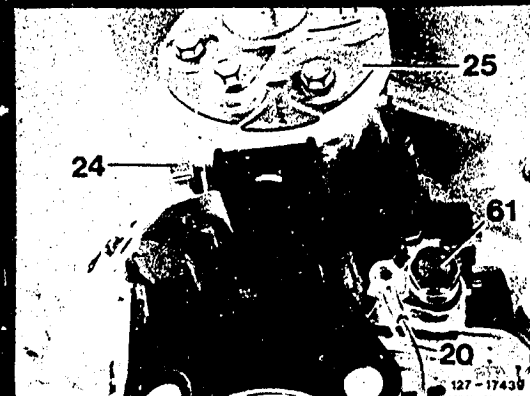
15 Loosen cable strap (23) and unscrew cable (6) on kickdown solenoid valve (61). Unscrew fastening screw for impulse transmitter (arrow) and pull out impulse transmitter.

Note: Disconnect tachometer shaft on vehicles with mechanical tachometer.

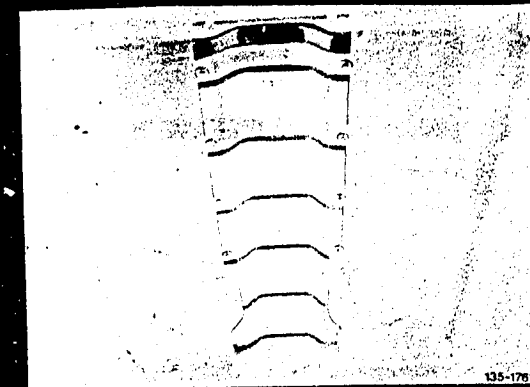
16 Unscrew exhaust support (24).



17 Unscrew companion shaft (25) on universal flange.



18 Unscrew exhaust shielding plate.

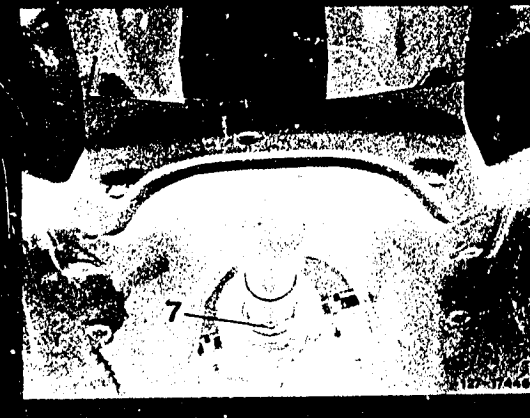


19 Loosen propeller shaft clamping nut (7) and contract propeller shaft as much as possible.

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

Installation note

Tightening torque 30–40 Nm.



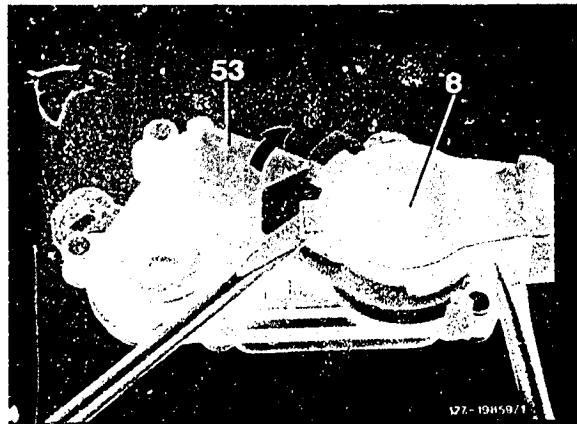
20 Remove plug for starter lockout switch (8).

Attention!

The plug for the starter lockout switch (8) is secured by a lock (white plastic ring).

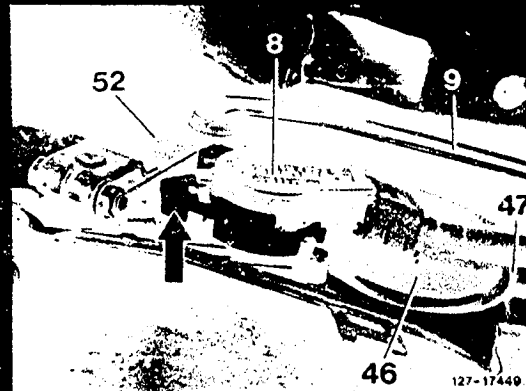
Prior to pushing off plug, turn lock in upward direction (direction of arrow).

Carefully push off plug at cable outlet and tongue by means of two screw drivers.



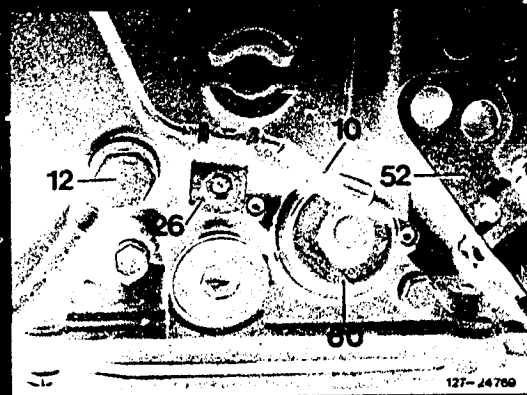
21 Pull off plug (8).

22 Disconnect control rod (9) on range selector lever (52).



23 Unscrew holder (26) and pull off vacuum line (10).

24 Unscrew oil cooler feed line (12).

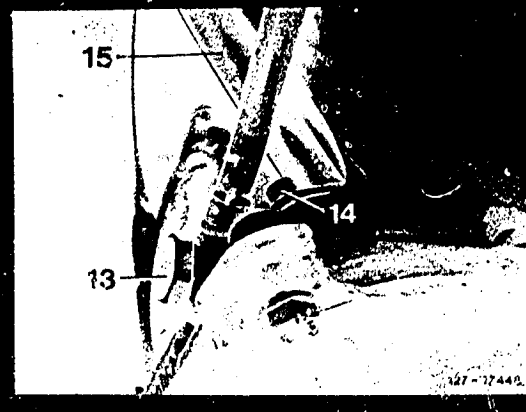


25 Unscrew oil cooler return line (13).

Installation note

Replace sealing rings for forward and return flow line.

26 Unscrew fastening screw (14) for oil filler pipe (15) and push oil filler pipe in upward direction.



27 Unscrew all fastening screws except for the two lateral screws (21).

Tightening torques: M 10x40 = 55 Nm
M 10x90 = 45 Nm
M 12 = 65 Nm

28 Slightly lift transmission with mount 116 589 06 62 00 for pit lift (060).

29 Unscrew lateral screws (21).

30 Push transmission to the rear as far as propeller shaft permits and lower carefully.

Installation note

Lift transmission and slide at engine height forward until converter housing rests firmly against engine. Also connect ground strap (36).

31 Lift transmission from removing and installing fixture.

Installation note

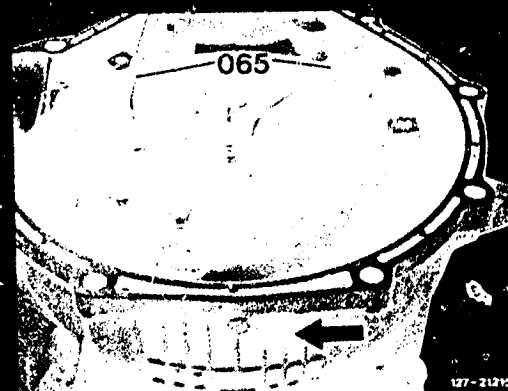
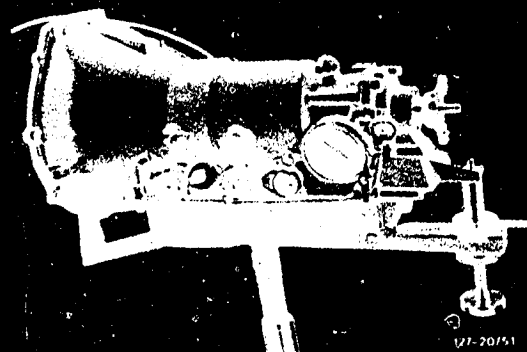
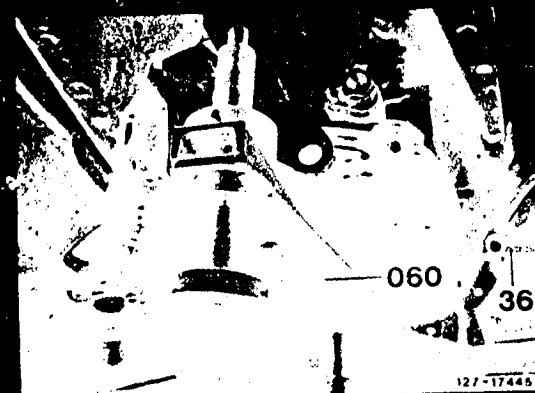
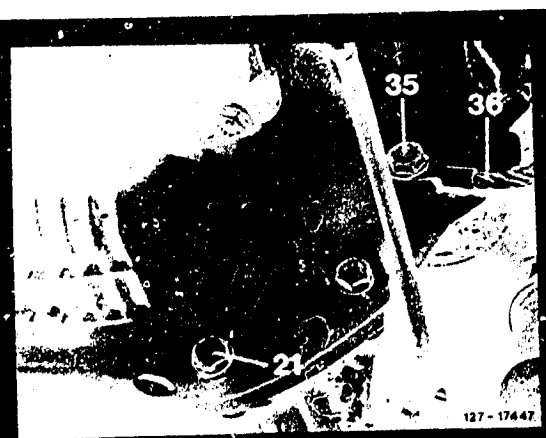
Turn torque converter in such a manner that one of the three threaded plates is accurately in downward position.

Slightly grease centering pin on torque converter.

32 Place transmission into vertical position.

33 Turn plastic holding pin (arrow) for torque converter by 1/4 turn in counterclockwise direction by means of 8 mm hex. socket wrench and remove.

34 Screw handle 126 589 01 62 00 (065) on torque converter.



35 Pull out torque converter.

Attention!

If the transmission fluid has a **burned smell** or is mixed up with **abrasive material**, **flush torque converter**, **oil cooler lines** and **oil cooler**.

If the transmission oil pan contains **metal chips**, **replace torque converter**. Metal chips are not completely removed by flushing and may lead to **transmission damage later on**.

Installation note

Grease drive flange (32) with Moilykote.

Move torque converter back and forth during installation for easy meshing of teeth.

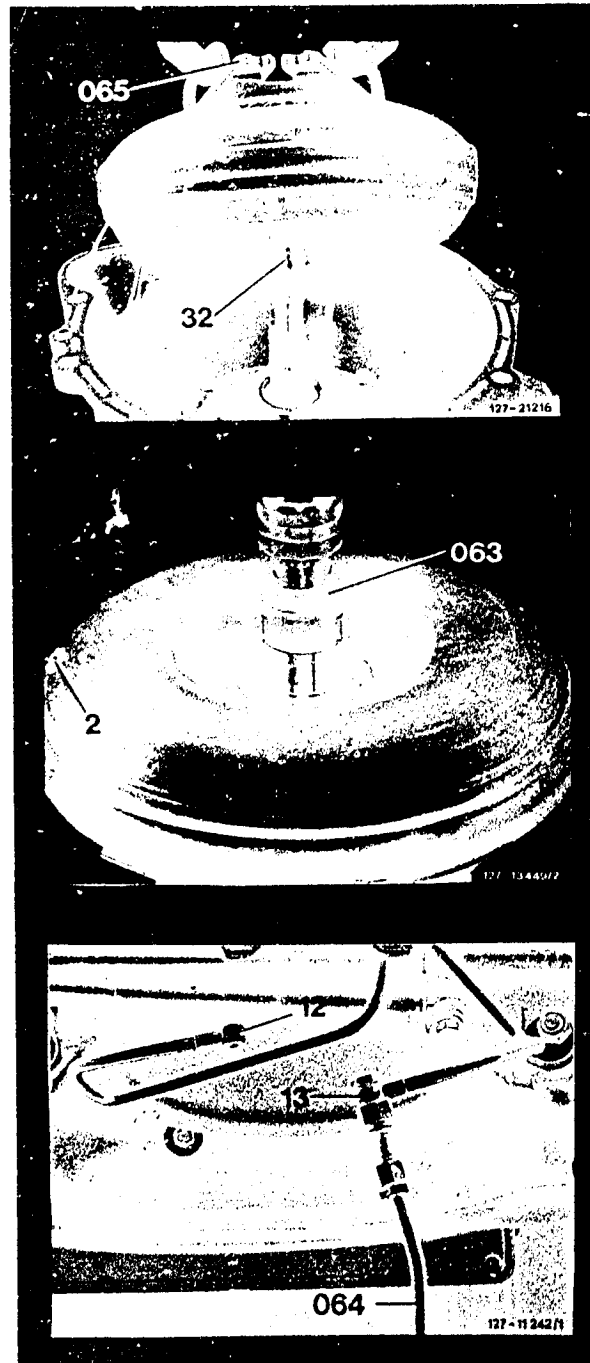
Insert plastic holding pin (arrow) and turn clockwise for 1/4 turn.

36 Flush torque converter by adding 1 liter of kerosene. Insert flushing mandrel 116 589 00 15 00 (063) and drive by means of a portable drill at low speed for approx. 2 minutes. Then drain kerosene via drain plug (2).

Repeat flushing procedure 2-4 times until kerosene flows out clean.

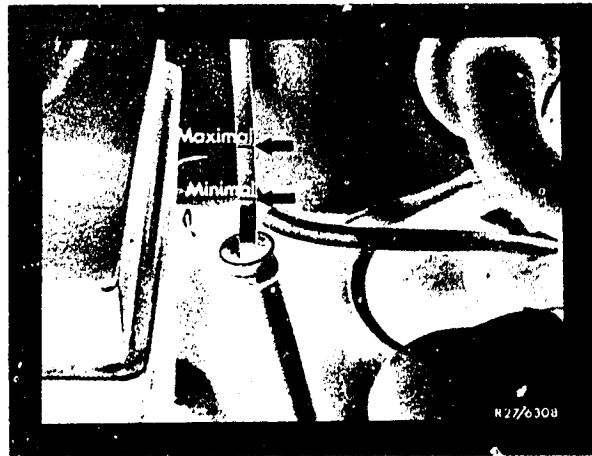
37 Screw oil cooler with oil cooler lines (12) and (13) to syringe (064) and flush with cleaning compound. Then blow out well.

Hand pump for removing oil 112 589 00 12 00.

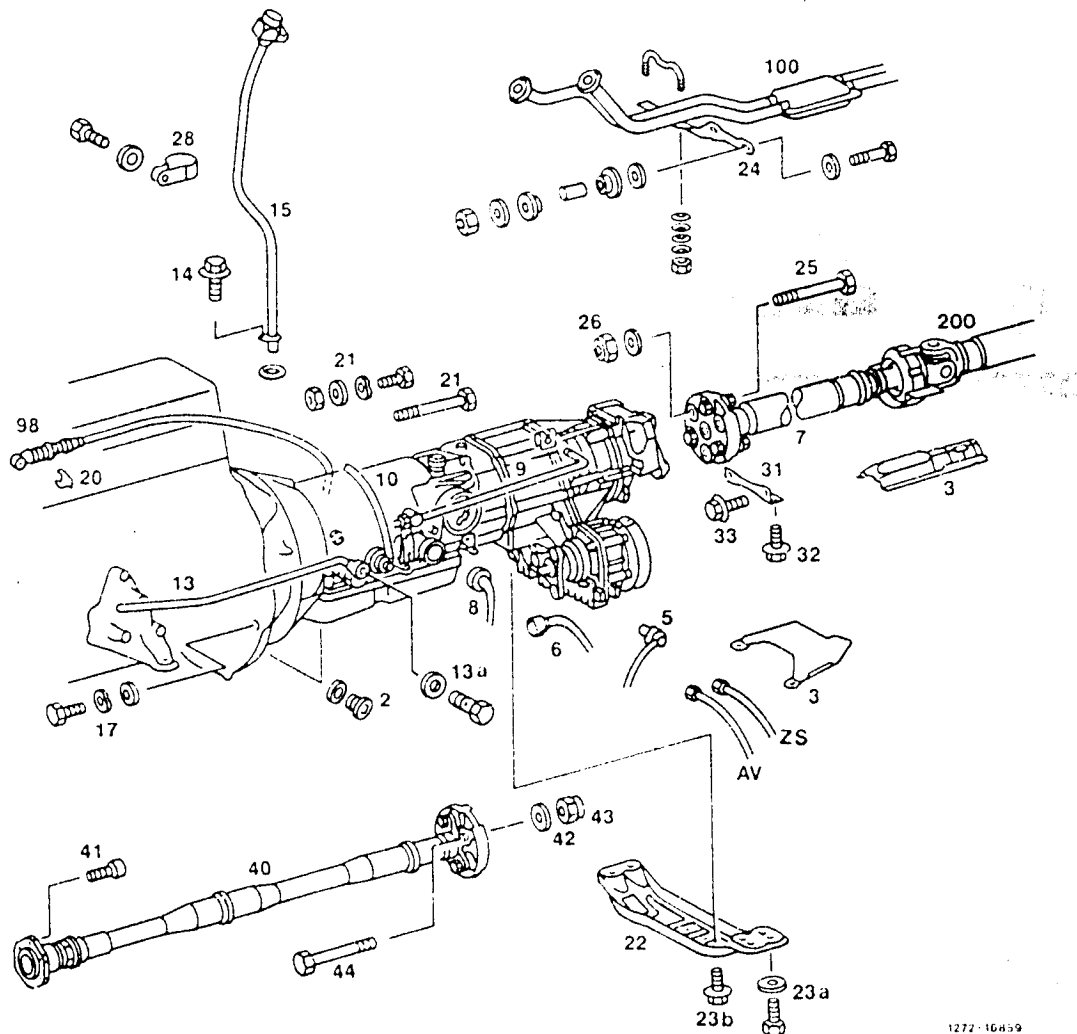


38 Fill in transmission fluid through filling-in funnel with filter 126 589 12 63 00 and perform oil level checkup (Maintenance Manual job item 2710).

With transmission at operating temperature, and at correct oil level, the readout should be at max. mark.



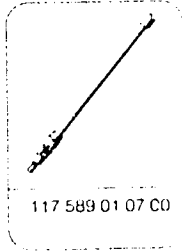
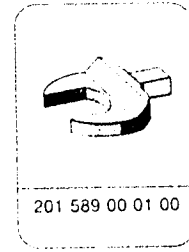
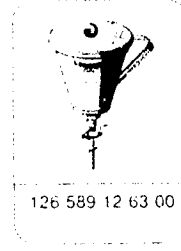
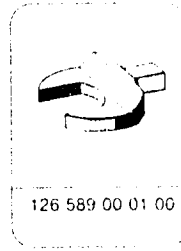
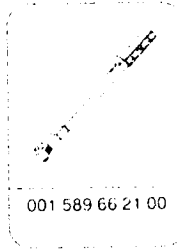
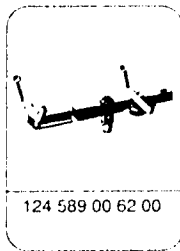
B. Vehicles with 4MATIC



1277-16459

Battery grounding line	disconnect and connect.
Damping mat of unit compartment wall	protect against damage by means of a suitable sheet metal cover.
Hydraulic system	make pressureless by throwing service valve. Vent according to repair instructions (28–140).
Holder (28)	screw off and on at cylinder head.
Pulling wire control pressure (98)	force off ball socket (19), pull out lock, if required, pulling wire disengage and engage, and adjust (27–110).
Exhaust system (100)	completely remove and install (49–100), remove exhaust side support (24).
Shielding plates (3)	remove and install (item 8).
Oil from transfer case	drain, filling capacity 0.7 liters (item 9).
Oil from transmission and torque converter	let oil run out, drain plugs (1 and 2) 14 Nm, fill in correct oil quantity (refer to filling quantities), correct with engine at operating temperature. Filling-in funnel 126 589 12 63 00
Pressure oil line of AV and ZS coupling	remove and install, close openings with blind plugs, check lines for leaks.
Transmission (1) with transfer case	support; mount 124 589 00 62 00 (item 13)
Cross bridge (31)	remove and install (item 14)
Propeller shaft (7)	loosen and fasten clamping nut (200), 30–40 Nm; torque wrench 001 589 66 21 00 open end wrench 126 589 00 01 00. Unscrew hex. head bolts (25). Loosen fitted sleeves in three-legged flange, renew hex. nuts (26).
Engine carrier rear (22)	screw off and on at frame floor and engine mount, hex. head bolts and washers (23c) 40 Nm, hex. head bolts (23b) 20 Nm.
Propeller shaft front (40)	loosen and fasten clamping nut 30–40 Nm. Torque wrench 001 589 66 21 00, open end wrench 201 589 00 01 00.
Hex. head bolts (44)	remove and install, loosen fitted sleeves in three-legged flange, renew hex. nuts (43).
Hex. socket screws (41)	remove and install, renew, 25 Nm. Flange wrench 117 589 01 07 00, remove three-legged flange.
Hex. bolts driven plate-torque converter (17)	screw off and on (6 each) 42 Nm, unscrew pertinent cover plate or supporting shell.
Cable kickdown solenoid valve (6) and impulse transmitter or speedometer shaft (5)	screw off and on.
Plug for starter locking switch (8)	force off and on, turning respective lock in upward direction.
Shift rod (9)	on range selector lever, disengage and engage.
Vacuum line (10)	pull off, plug on (item 27).
Oil cooler forward and return line (12, 13)	remove and mount, renew sealing rings.
Oil filler pipe (15)	slip out and in, loosen hex. head screw (14) for this purpose.
Transmission (1)	lift with mount 124 589 00 62 00, screw all hex. head bolts (21) off and on; M 10 = 55 Nm, M 12 = 65 Nm. Slip transmission with torque converter horizontally out and in.

Special tools



Note

Below is a description for removing and installing the transmission of model 124.230. For models 124.226/290/330/393 the assembly is essentially the same, and procedure can be in accordance with these instructions.

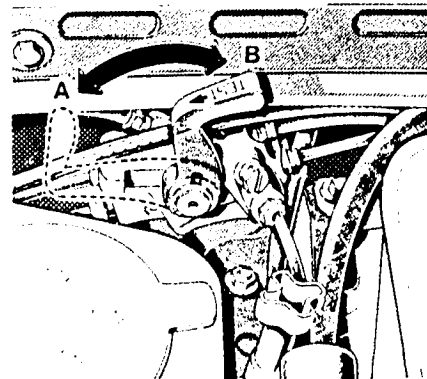
Vent upon installation of hydraulic system (refer to 28-140).

Removal and installation

- 1 Disconnect grounding cable on battery.
- 2 To prevent damage to damping mat of unit compartment wall when lowering transmission, protect damping mat with a suitable sheet metal cover.
- 3 Make hydraulic system pressureless by throwing lever on service valve (test position).

Installation note

Lever on service valve in operating position.



A Test position
B Operating position

1284-346/0

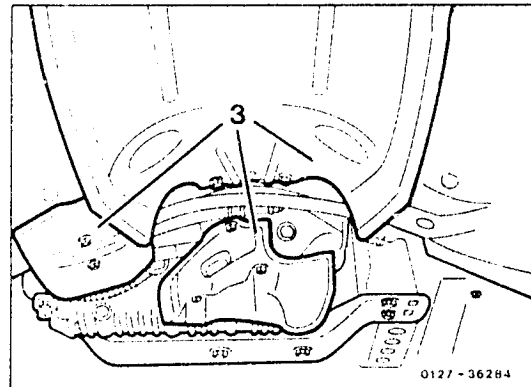
- 4 Unscrew holder for oil filler pipe on cylinder head.
- 5 Force off ball socket (19).
- 6 Compress both links on plastic clips (18) with pliers and pull out wire rope in direction of arrow.

Installation note

Adjust wire rope for control pressure (27-110).



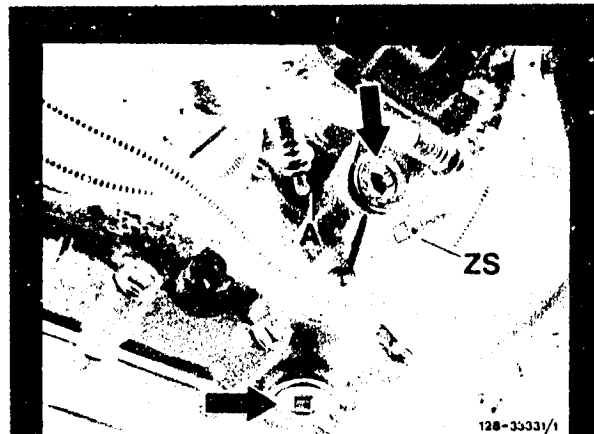
- 7 Completely remove exhaust system (100) with lateral support (24) (49-100).
- 8 Remove shielding plates (3).



- 9 Drain oil from transfer case (arrow, below).

Installation note

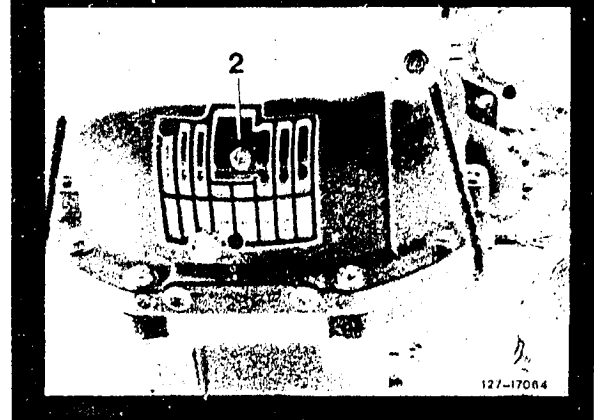
Filling capacity 0.7 l.



- 10 Unscrew drain plug on oil pan and let oil run out.
- 11 Unscrew drain plug on torque converter (2) and let oil run out.

Installation note

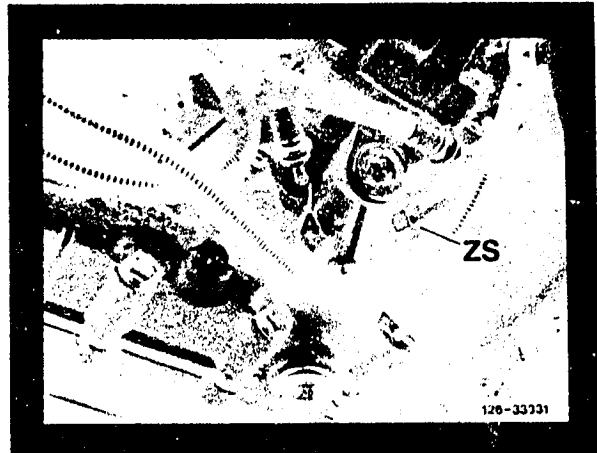
Screw in drain plug on oil pan and on torque converter and tighten to 14 Nm.



12 Unscrew pressure oil line for AV and ZS coupling on transfer case.

Installation note

Check pressure oil lines for leaks.

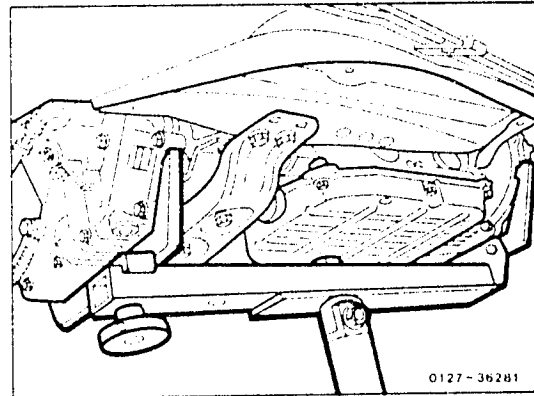


13 Unscrew two screws on transmission.

Lift transmission and transfer case with pit lift mount.
Mount 124 589 00 62 00

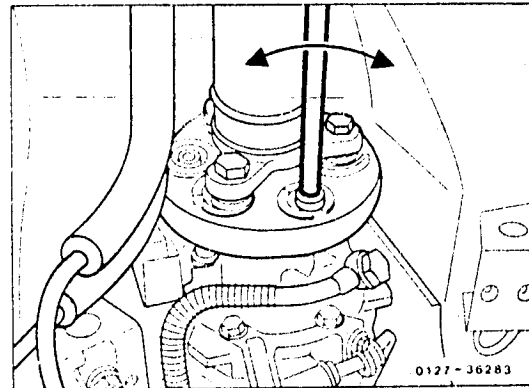
Caution!

Joint should be rotatable in driving direction.



14 Unscrew cross bridge (31) on center tunnel.

15 Unscrew propeller shaft on gearbox flange. Companion plate remains on propeller shaft. Loosen vulcanized centering sleeve in gearbox flange with a mandrel of 10 mm dia.



16 Loosen clamping nut (SW41) of propeller shaft. Slide propeller shaft back as far as possible.

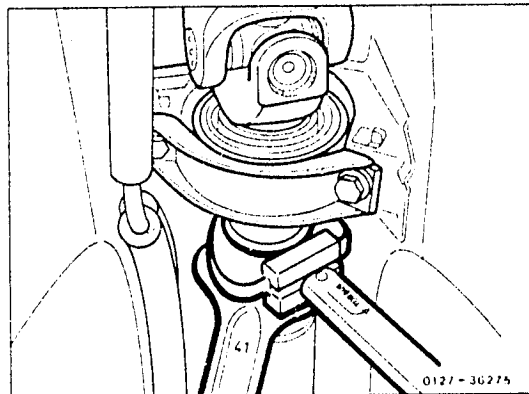
Installation note

Tighten clamping nut of propeller shaft to a tightening torque of 30–40 Nm.

Special tools

Torque wrench 001 589 66 21 00

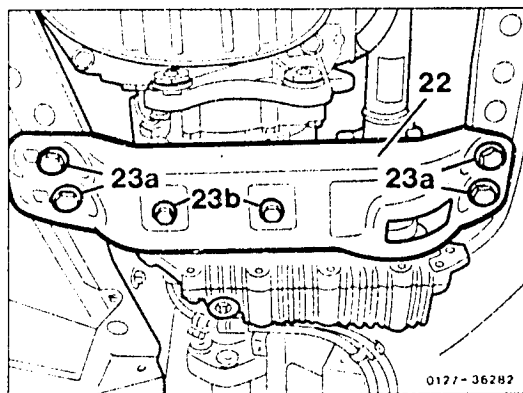
Open end wrench 126 589 00 01 00



17 Unscrew engine carrier (22) at the rear on frame floor.

Installation note

Hex. head bolts on rubber mount (23b) 20 Nm
Hex. head bolts on frame floor (23a) 40 Nm

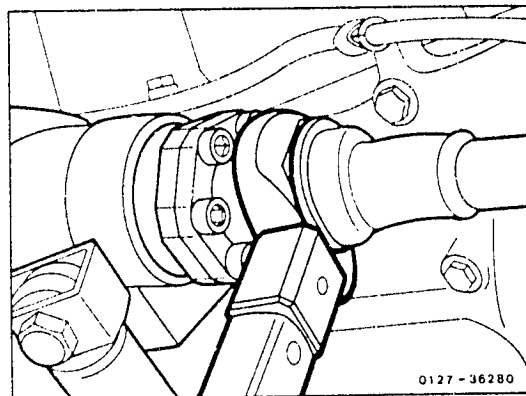


18 Loosen clamping nut of propeller shaft, front axle.

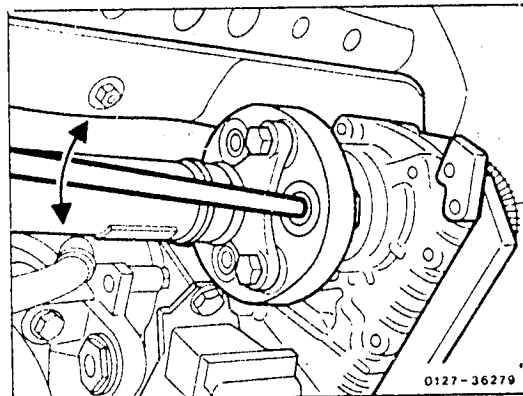
Installation note

Tighten clamping nut to a tightening torque of 30–40 Nm.

Open end wrench 201 589 00 01 00
Torque wrench 001 589 66 21 00



19 Unscrew propeller shaft front axle on transfer case in such a manner that the companion plate remains on propeller shaft. Prior to pushing back companion plate from three-legged flange, loosen fitted sleeves in three-legged flange. For this purpose, use a cylindrical mandrel of 10 mm dia. and approx. 150 mm in length.

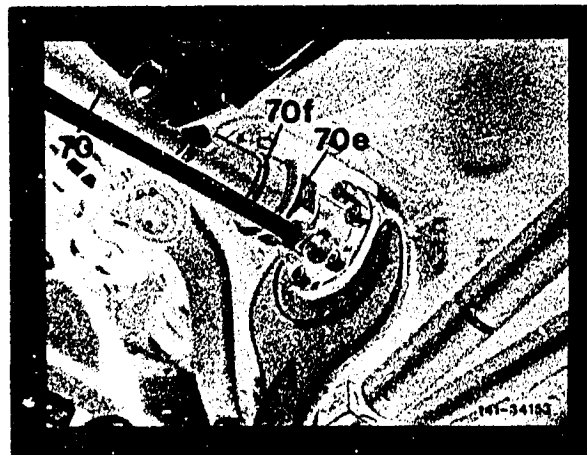


20 Unscrew propeller shaft toward front axle from front axle housing. For this purpose, apply counterhold at connecting flange by means of a 65 mm open end wrench and unscrew 6 screws M 8x20 (micro-encapsulated).

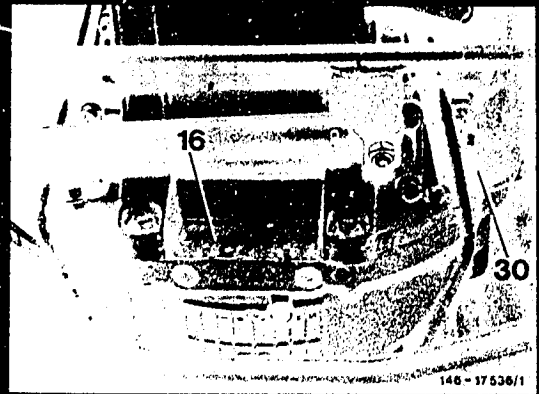
Make sure that the connecting flange is not pushed out of gears.

Installation note

Renew self-locking hex. socket screws. Tightening torque 20–25 Nm.
Flange wrench 117 589 01 07 00.



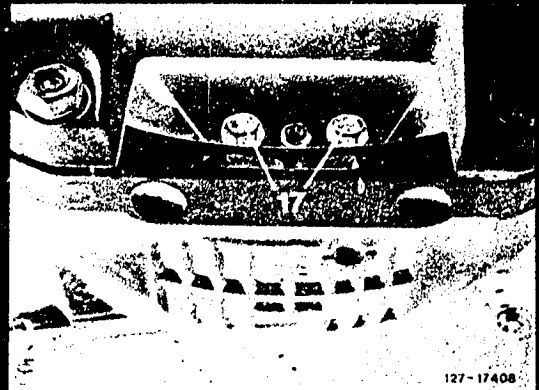
21 Unscrew cover plate (16).



22 Unscrew screws (17) drive plate — torque converter (a total of 6 each).

Installation note

Tightening torque 42 Nm.



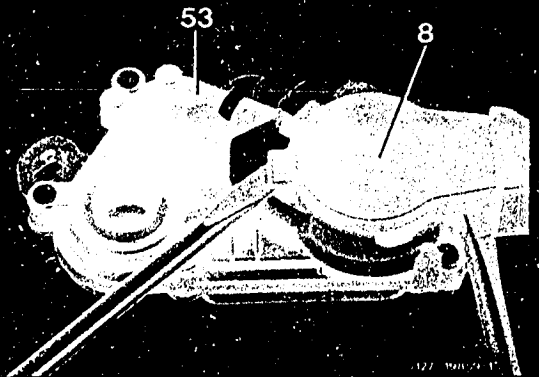
23 Remove plug for starter lockout switch (8).

Caution!

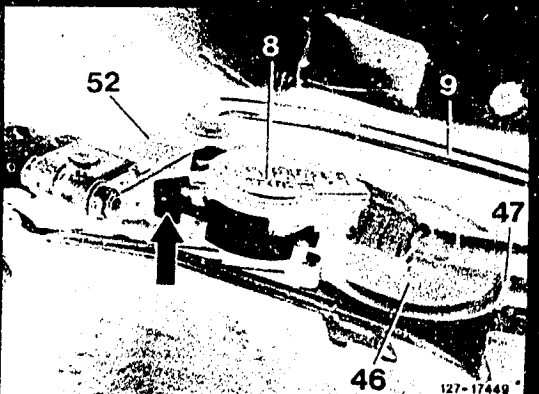
Plug for starter lockout switch is secured by a lock (white plastic ring); turn this ring in upward direction and carefully force off by means of two screw drivers at cable outlet and at link.

24 Unscrew cable (6) from kickdown-solenoid valve.

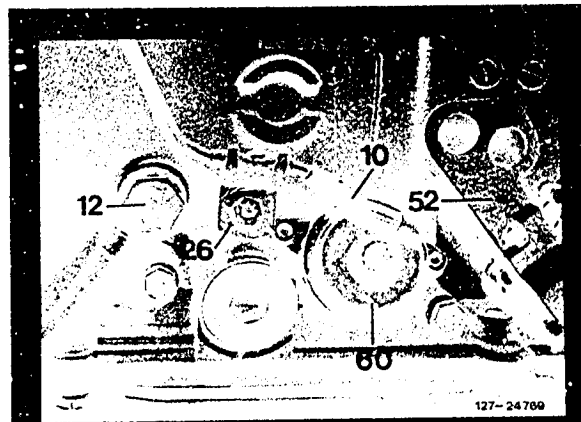
25 Remove impulse transmitter or mechanical speedometer drive.



26 Disengage shift rod (9) in range selector lever (52).



27 Unscrew holder (26) and pull off vacuum line (10).

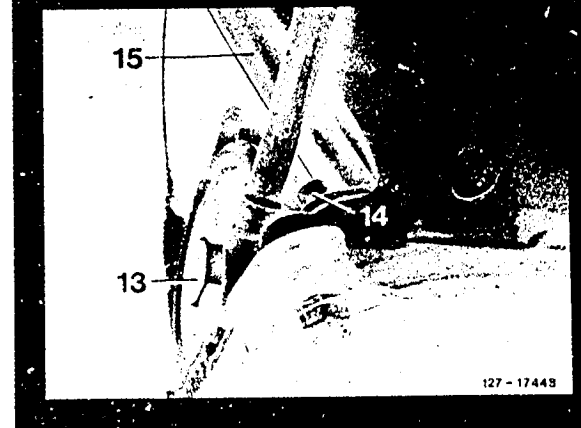


28 Disconnect oil cooler feed line (12) and oil cooler return line (13).

Installation note

Renew sealing rings for forward and return line.

29 Unscrew fastening screw (14) for oil filler pipe (15) and slide oil filler pipe in upward direction.

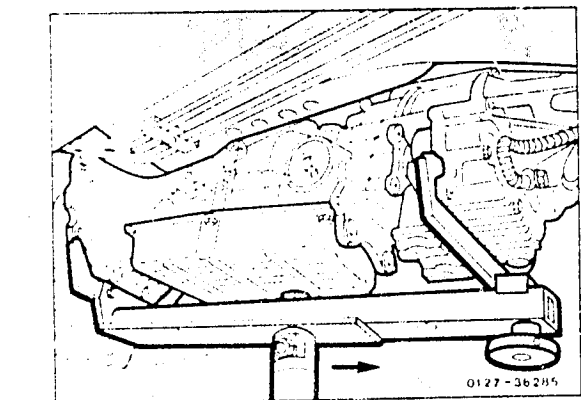


30 Unscrew all screws for fastening transmission to intermediate flange.

Installation note

Tightening torque 1110 55 Nm
1112 65 Nm

31 Pull transmission with transfer case horizontally to the rear (arrow). Then carefully lower transmission.

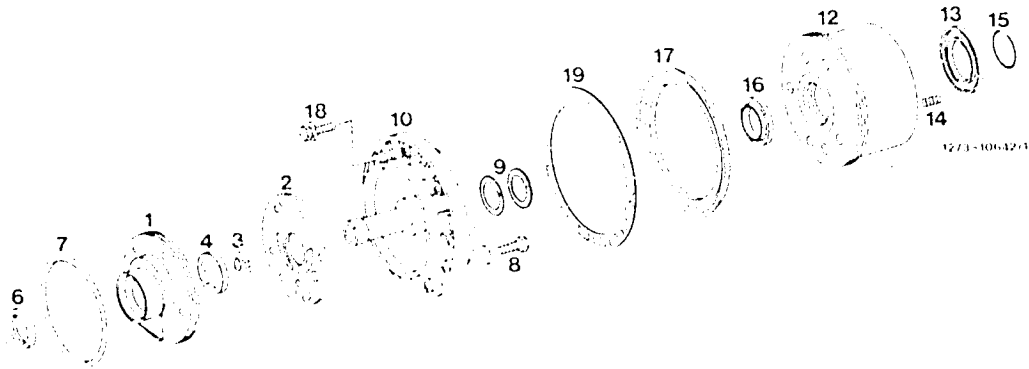


Installation note

Lift transmission and slide at engine level in forward direction until converter housing rests well against engine.

32 Check torque converter and clean, if required, install (refer to "A" item 32-37).

33 Fill up with transmission fluid through filling funnel with filter 126 589 12 63 00 and check oil level (Maintenance Manual job item 2710). With transmission at operating temperature and correct fluid level, the readout should be at max. mark.

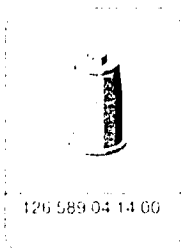


1 Primary pump housing	Check for damage and wear
2 Intermediate plate	Check for damage
3 Pump gear driving	Check for damage and wear, lubricate during assembly
4 Pump gear driven	Check for damage and wear, lubricate during assembly
6 Radial sealing ring	Check for damage and wear
7 O-ring	Replace
8 Hex. screw	M 8 x 32, tightening torque 20 Nm
9 Teflon rings	Check for damage and wear (use multi-purpose grease, refer to Specifications for service products sheet 267)
10 Cover	Check for damage
12 Piston	Check for damage and wear, insertion sleeve 126 589 04 14 00
13 Spring retainer	
14 Return springs	Pay attention to dimension and number
15 Locking ring	
16 Lip sealing ring	Check for damage and wear ¹⁾
17 Lip sealing ring	Check for damage and wear ¹⁾
	¹⁾ Pay attention to item 16
18 Hex. screw	M 8 x 40, tightening torque 13 Nm
19 Gasket	Check for damage, replace if necessary

Return springs for B 3 piston

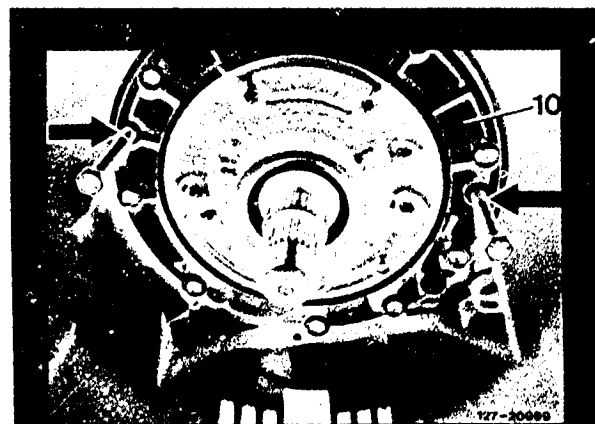
Transmission	Number	Wire dia. in mm	Length, slack mm approx.
722.3	20	0.6	24

Special tools

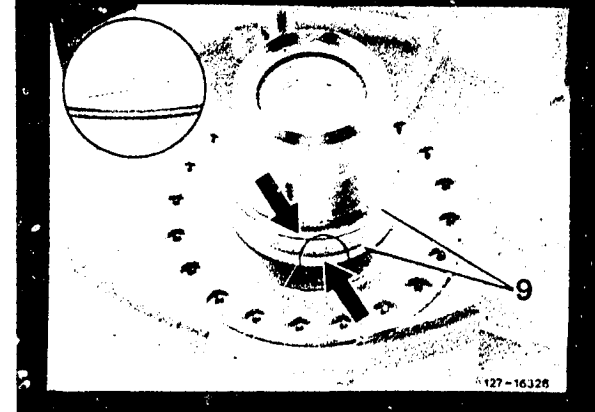


Removal

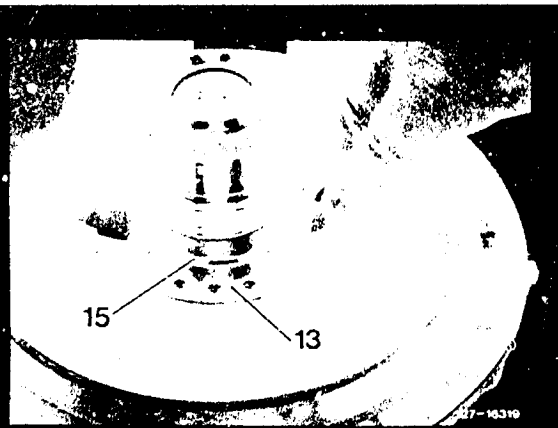
- 1 Unscrew fastening screws.
- 2 Screw two screws into tapped holes (arrows) and pull out front cover (10).



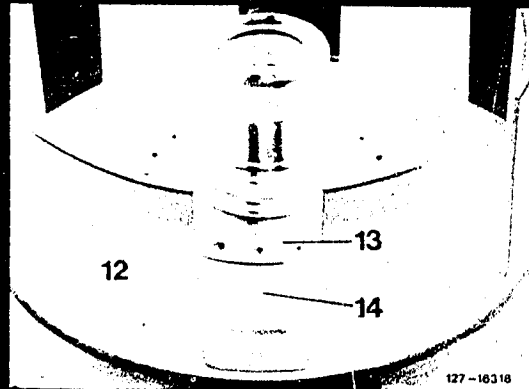
- 3 Remove the two teflon rings (9).



4 Push spring retainer (13) down and remove locking ring (15).

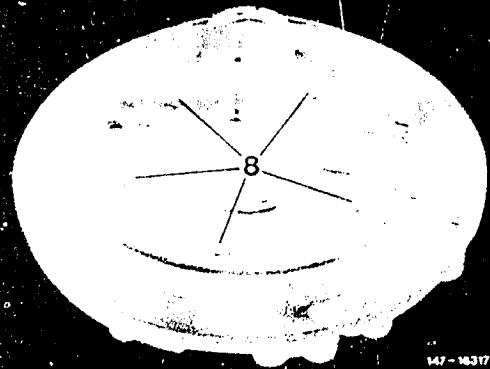


5 Remove spring retainer (13) and back pressure springs (14) for piston B 3.



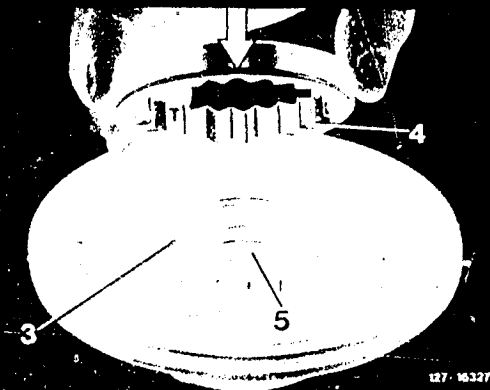
6 Pull out piston (12).

7 Loosen fastening bolts (8) and unscrew.



8 Take primary pump from front cover.

9 Take both pump gears (3 and 4) from pump housing.



Installation

Attention !

Check bearing bushing (5). If bearing bushing shows score marks or damage, renew primary pump.

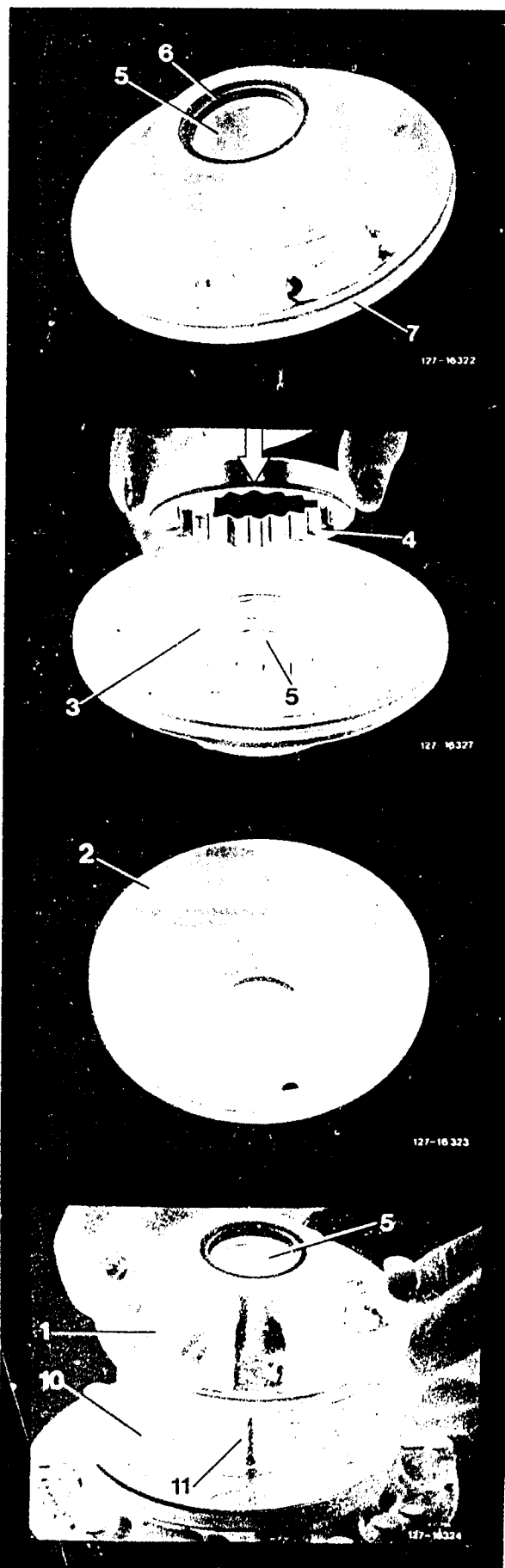
10 Check radial sealing ring (6) and renew, if required.

11 Renew O-ring (7). Insert O-ring into groove in such a manner that it is not twisted.

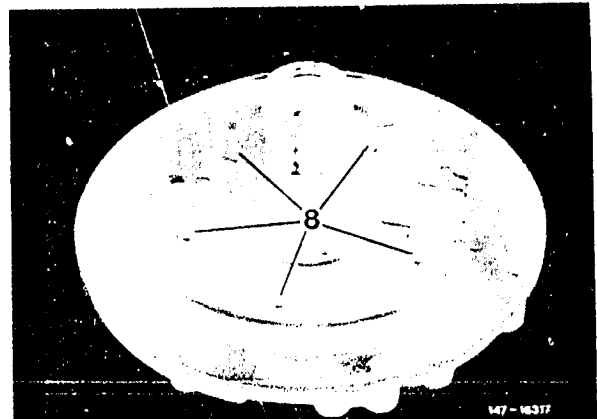
12 Lubricate both pump gears (3 and 4) and place into pump housing. Insert pump gear (4) in such a manner that chamfer (arrow) faces bearing bushing (5).

13 Place intermediate plate (2) on primary pump.

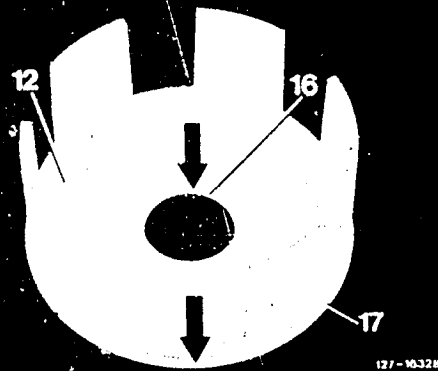
14 Place primary pump (1) into front cover (10), making sure that bearing bushing (5) is not damaged by stator shaft (11).



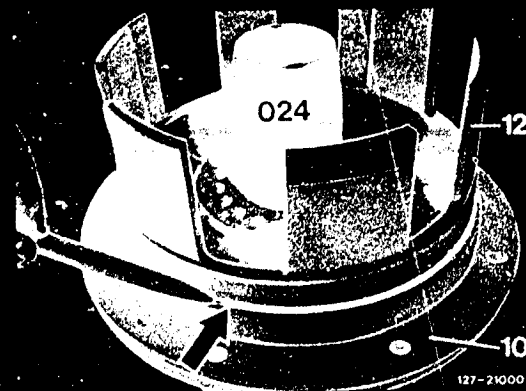
15 Insert fastening screws (8) and tighten to 20 Nm.



16 Check lip sealing rings (16 and 17) and renew, if required. Lip sealing rings should be installed in such a manner that the sealing lip is facing downwards (direction of arrow).



17 Place insertion sleeve (024) on front cover (10). Lubricate slide surfaces for lip sealing rings.

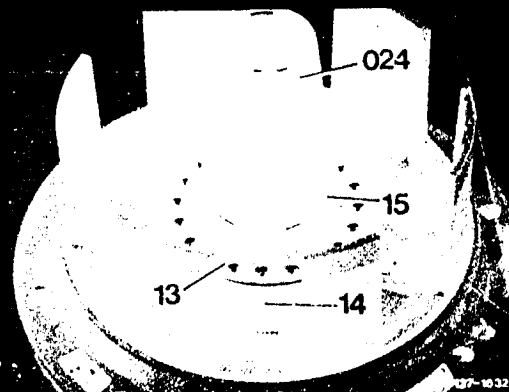


18 Lubricate lip sealing rings on piston. Insert piston (12) in such a manner that pin (on piston) and bore (in front cover) are in alignment.



19 Carefully push down piston without canting, push down with a pin at outer lip sealing ring (arrow), if required.

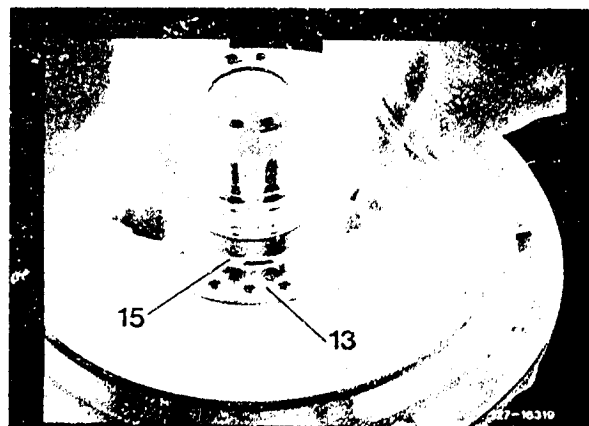
20 Mount back pressure springs (14) and spring retainer (13).

21 Slip locking ring (15) over installation sleeve (024). Hold locking ring at bottom and pull off installation sleeve.

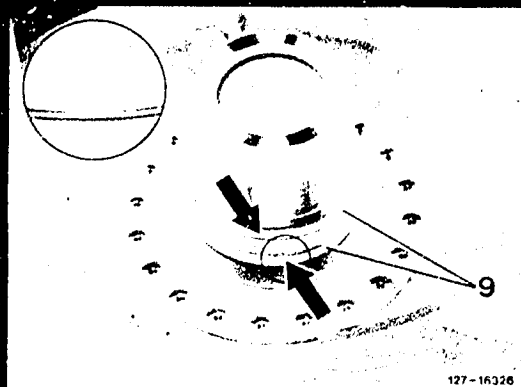


22 Push spring retainer (13) down with locking ring (15), until locking ring engages in its groove.

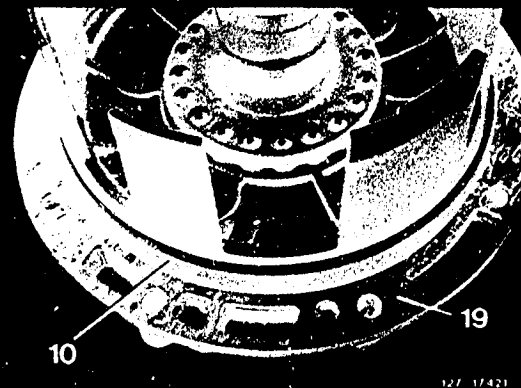
Note: If the multiple plate brake B3 (  1988) is provided with a spring retainer (item 80, 26-640), the assembly device 201 589 12 43 00 is required to push down spring retainer.



23 Insert teflon rings (9) with grease. Make sure that the ring interfaces (arrow) remain in touch. If required, remove rings again and shape to a smaller diameter.



24 Place gasket (19) fitting with hole pattern on front cover (10).

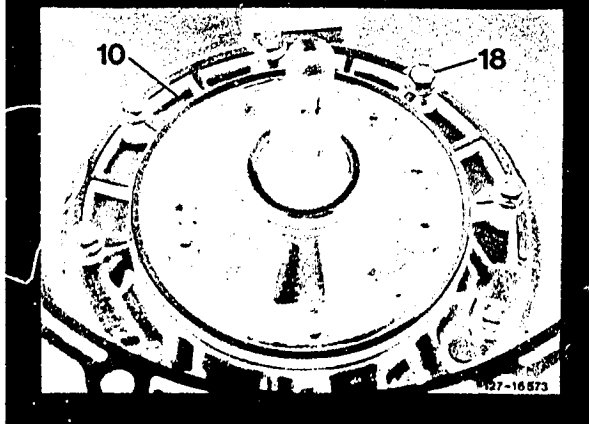


25 Mount front cover (10). Tighten fastening screws (18) to 13 Nm.

Note

Make screws free of grease and coat with non-hardening sealing compound.

Up to transmission end No. 313 790, close assembly thread bores with 2 short screws.



27-640 Disassembly and assembly of transmission

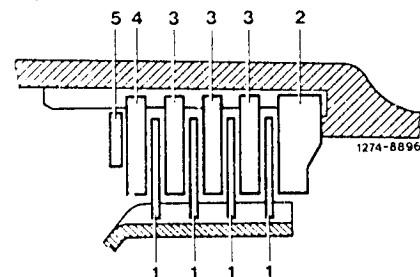
Adjusting data		mm
End play "B" clutch K1, front planetary gear set	rear housing not installed	0.8-1.2
	rear housing installed	0.3-0.5
End play "C" clutch K2, rear planetary gear set		0.3-0.5
Release clearance "L" of multiple plate clutch B3		1.5-2.0
Release clearance "L" brake band B1		1.8-2.4
Release clearance "L" brake band B2		5.5-6
Clearance between linkage stop and locking piston		0.4-1.0

Dimensions

Compensating washers supporting flange K 2	0.1-0.2-0.5
Compensating washers axial bearing K 1	0.1-0.2-0.5
Compensating washers helical gear/parking lock gear	0.1-0.2-0.5
Thrust pin brake band piston B 1	68-74 (0.5 mm steps)
Thrust pin brake band piston B 2	47.2-48-48.8-49.6
Shim-thrust pin brake band piston B 1	0.5, 1.0 and 1.5

Plate sequence LB 3

Piston end



Note

On vehicles with gasoline engine (J) (USA) starting 1988 a spring retainer is mounted instead of compensating washer 5 (refer to Repair Instruction 722.3 starting 09/88).

Disc versions

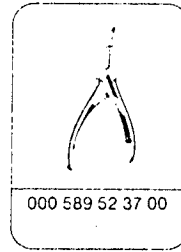
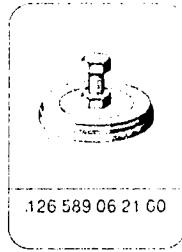
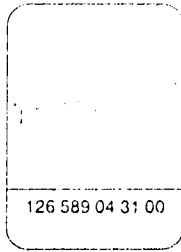
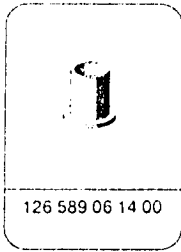
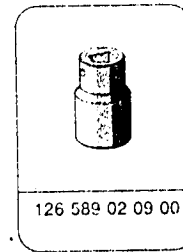
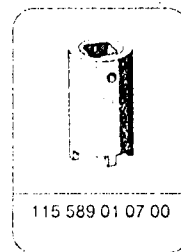
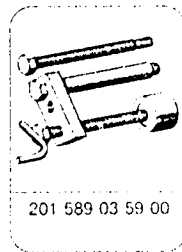
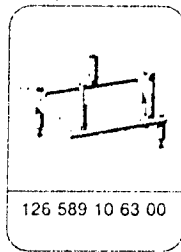
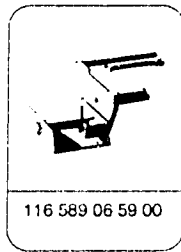
Designation	Item no.	Thickness in mm
Inside plates	1	2.1
	2	7.7
Outside plates	3 optional for compensating play	2.3 or 2.8
	4	2.8
Compensating washers	5 optional for compensating play	2.5-3.0-3.5

Tightening torques

		Nm
Combination screws supporting flange K 2	M 6 x 20	11
Hex. socket screw detent plate	M 6 x 20	8
Hex. screw leaf spring	M 6 x 16	8
Hex. screw starter lockout switch	M 6 x 16	8
Hex. screw range selector lever	M 6 x 30	8
Hex. socket screws secondary pump	M 6 x 45	8
Nut axial holder-centrifugal governor	M 6	6
Hex. socket screw oil pipe	M 6 x 15	8
Combination screws rear housing	M 8 x 35	13
	M 8 x 80	28 ¹⁾
Combination screws front cover	M 8 x 40	13
Closing plug thrust bearing B 1	M 27 x 1.5	70
Slot nut or double hex. collar nut for universal flange		120
Kickdown solenoid valve		20
Hex. socket screws vacuum control unit	M 6 x 15	8
Combination screws lower cover	M 6 x 30	8
	M 6 x 20	
Combination screws shift valve housing	M 6 x 50	8
	M 6 x 55	
Phillips screws oil filter	M 5 x 12	4
Combination screws oil pan	M 8 x 30	7
Closing plug test connection		13

¹⁾ Combination screws with material 10.9

Special tools



Lubricants

for teflon rings	Multi-purpose grease (refer to specifications for service products page 267)
for slide surfaces and bearing points	ATF (refer to Specifications for Service Products page 236.4)

Self-made tools

Assembly sleeve	refer to Fig. item 55 note
Punch	refer to Fig. item 61 note

Note

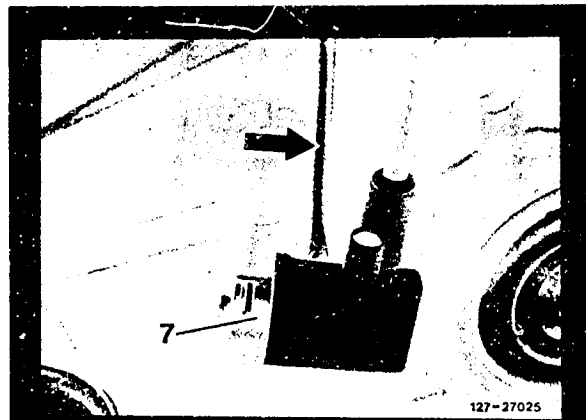
During assembly jobs, the sealing surface of the oil distributing plate cast into transmission housing should be handled with special care. Absolute cleanliness is additionally required. Perfect function of transmission depends on the absence of any dirt whatsoever on transmission members and in oil circuit. For this reason, wash all parts carefully upon disassembly, flush oil ducts and blow out with compressed air.

To protect rubber seals, do not use benzine for washing. Use spirit of alcohol for cleaning rubber parts.

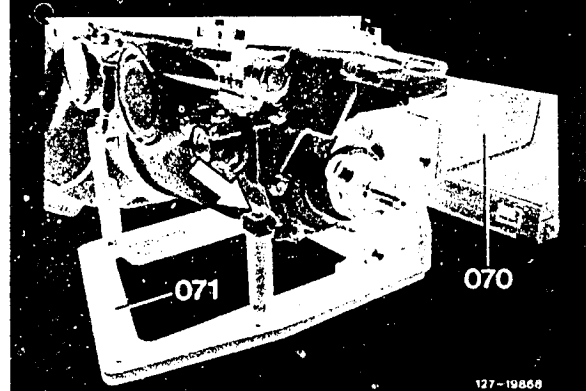
Also make sure that the parts are not coming into contact with wool rags, since any adhering fuzz may lead to trouble.

Disassembly

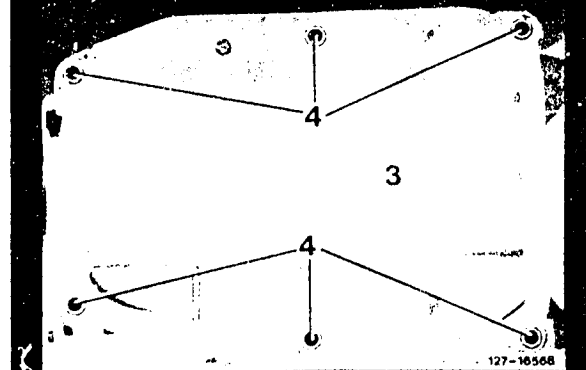
1 Remove control pressure cable, transmission with selection program: Loosen detent with a screwdriver (arrow) and disengage control pressure cable.



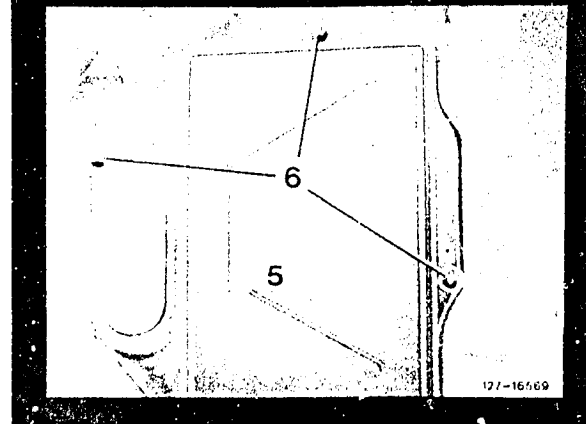
2 Screw mounting plate (071) 126 589 10 63 00 to assembly stand (070) 116 589 06 59 00. Insert transmission into mounting plate and fasten with screw (arrow).



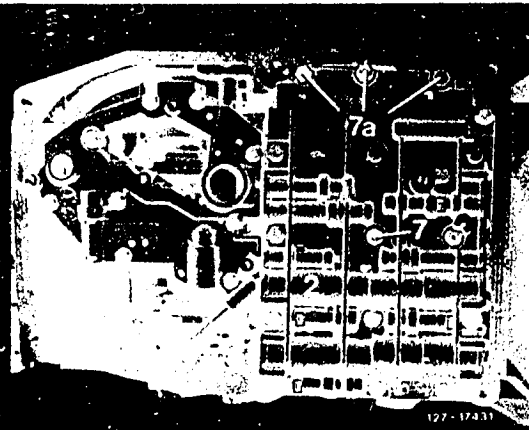
3 Unscrew combination screws (4) and remove oil pan (3).



4 Unscrew Phillips screws (6) and remove oil filter (5).

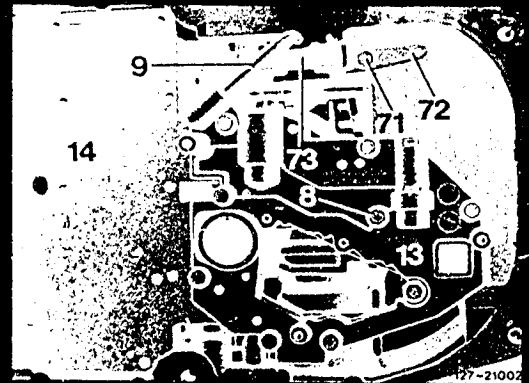


5 Unscrew combination screws (7) and remove shift valve housing (2).



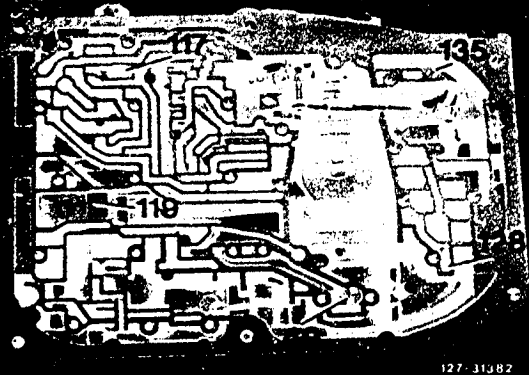
6 Unscrew hex. screw (71). Remove holder (72) with leaf spring (73).

7 Unscrew combination screws (8), lift off lower cover (13) together with intermediate plate (14) and oil pipe (9). Disassemble lower cover (27-435).



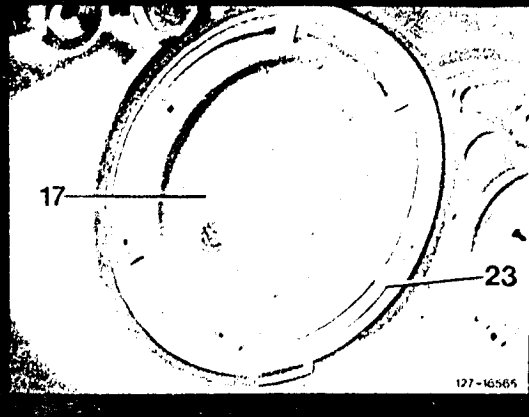
8 Remove one-way valve (49), brake band guide B2, filler piece (128), locating pin (135) and oil deflector (119).

Note: The filler piece (128) is installed in transmission with shift valve housing 2nd version and repair version. For **USA** and **J** starting 1981. Oil deflector (119) is installed starting transmission end No. 280 750.

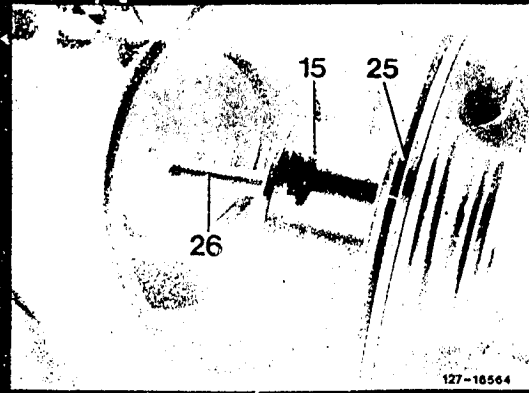


9 Push-in brake band piston cover B 2 (17) and remove locking ring (23).

10 Remove brake band piston cover.



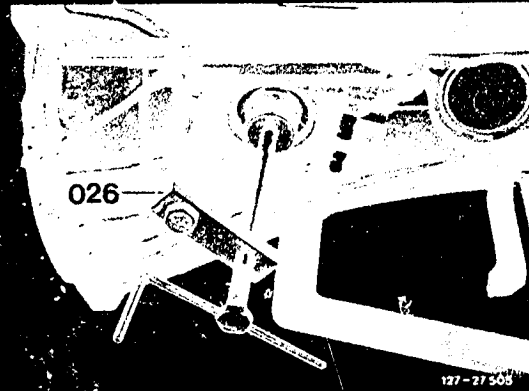
11 Pull out brake band piston B 2 (15).



12 Mount assembly device (026) 201 589 03 59 00 and screw to transmission housing.

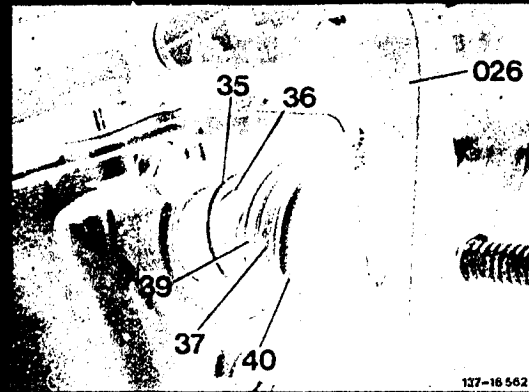
13 Tension assembly fixture.

14 Remove locking ring.

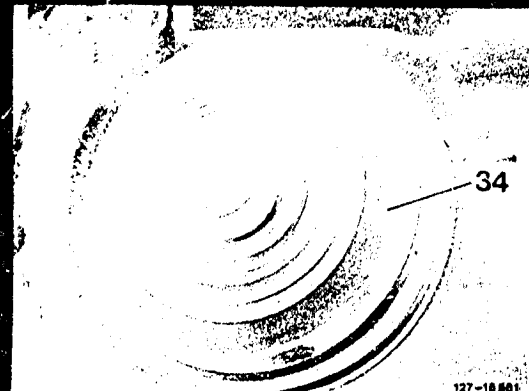


15 Unclamp assembly device (026), remove brake band piston B 1 (37) with cover (40) and back pressure springs (35, 36).

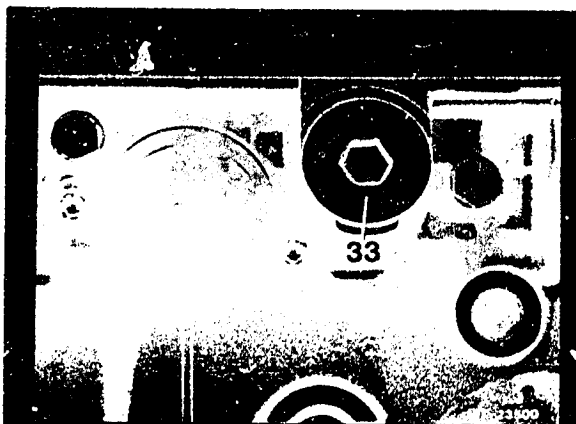
16 Unscrew assembly device (026).



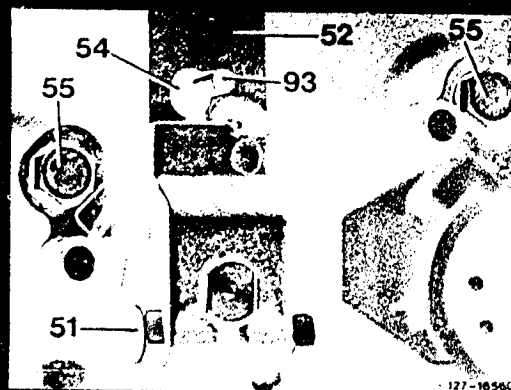
17 Pull out brake band guide B 1 (34).



18 Unscrew closing plug (33) for thrust body B 1 or pressure switch transmission overload protection.



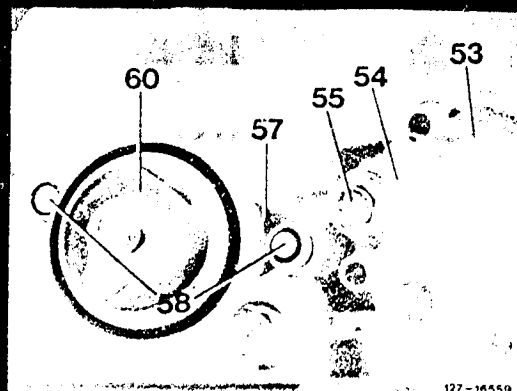
19 Unscrew hex. bolt (51) and pull-off range selector lever (52).



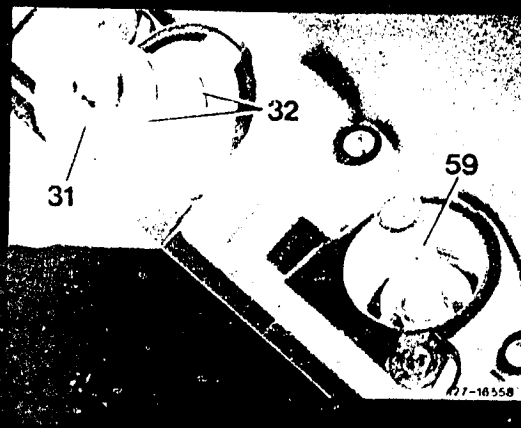
20 Unscrew fastening bolts (55) and remove starter lockout switch (53).

21 Unscrew hex. socket screws (58) and remove together with holding plate (57).

22 Pull out vacuum control unit (60).



23 Remove thrust body B 1 (31) and modulating pressure control valve (59).

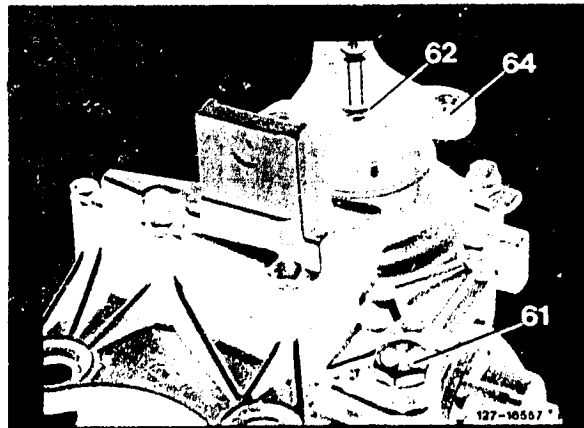


24 Unscrew kickdown solenoid valve (61).

25 Unscrew slot nut or double hex. collar nut (62) and pull off universal flange (64).

Pin spanner 115 589 01 07 00

Socket wrench insert 126 589 02 09 00

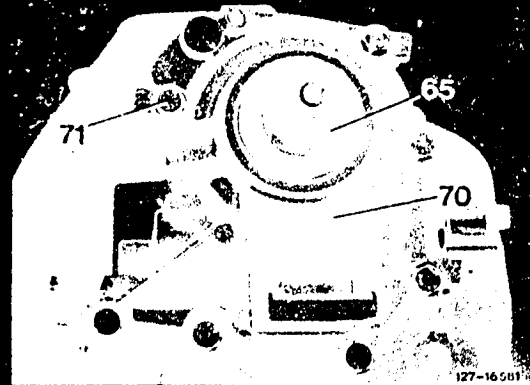


26 Remove washer (65).

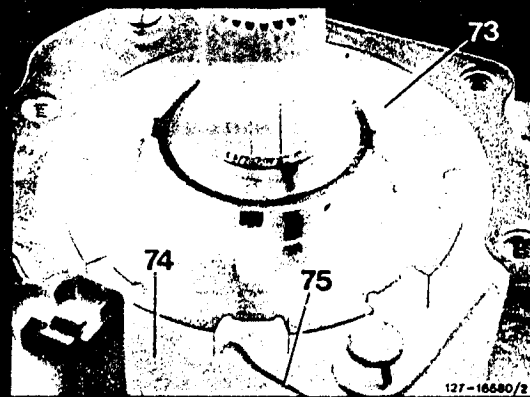
27 Unscrew combination screws (71).

28 Loosen rear cover (70) by means of light blows with a plastic hammer and remove.

Disassemble rear cover (27-450).

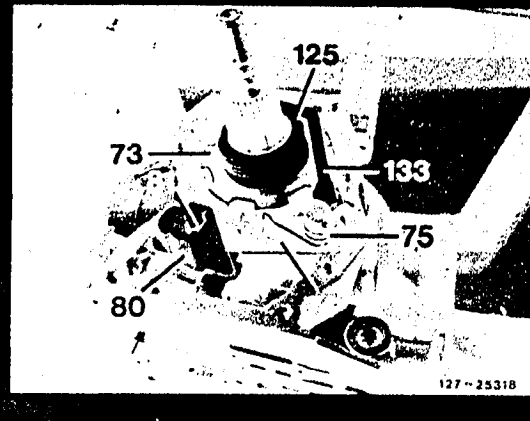


29 Remove parking lock wheel (73) with parking lock pawl (74) and expanding spring (75).

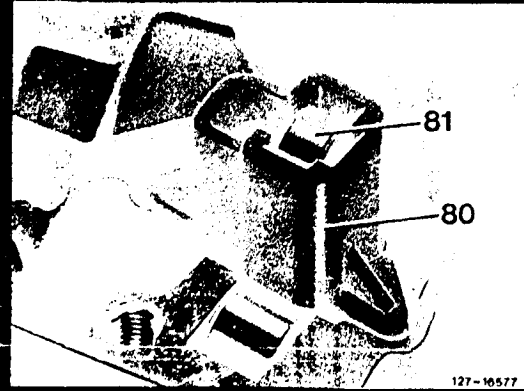


Vehicles with mechanical speedometer drive

30 Remove oil pipe for speedometer lubrication (133), helical gear for speedometer drive (125), locking wheel (73) with locking pawl (74) for parking position and spreading spring (75).

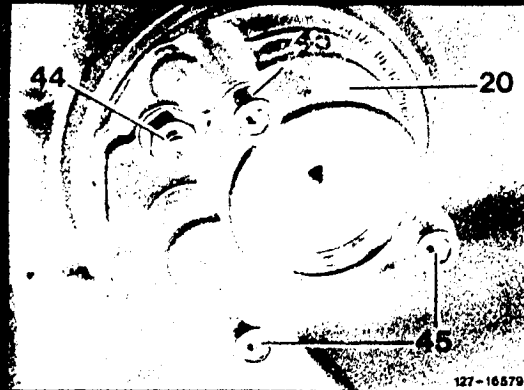


31 Pull off plastic guide (80) in upward direction, then remove roller (81).

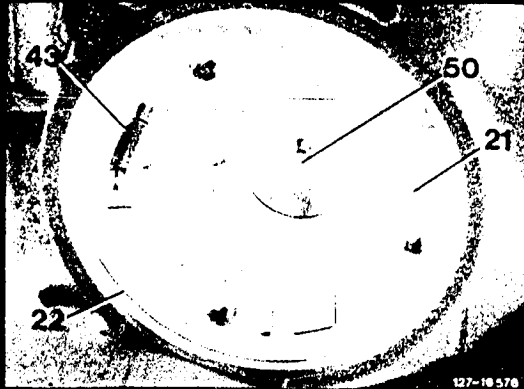


32 Unscrew nut (44) from axial holder for centrifugal governor.

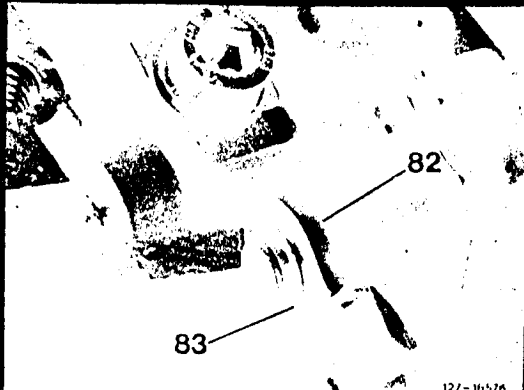
33 Unscrew hex. socket screws (45) and remove secondary pump (20).



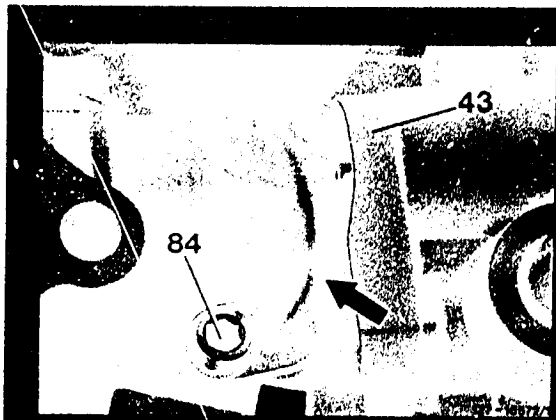
34 Remove O-ring (22) and intermediate plate (21) of secondary pump.



35 Force off lock (83) and remove resilient linkage (82).

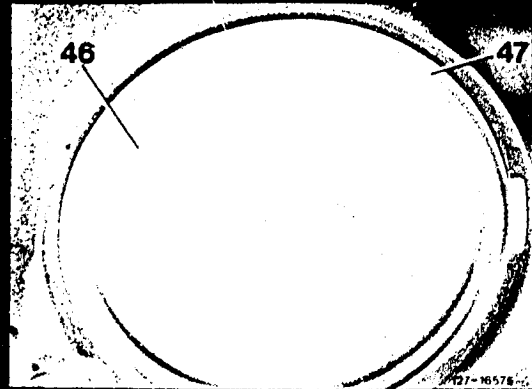


36 Unscrew hex. socket screw (84) and remove together with oil pipe (arrow).



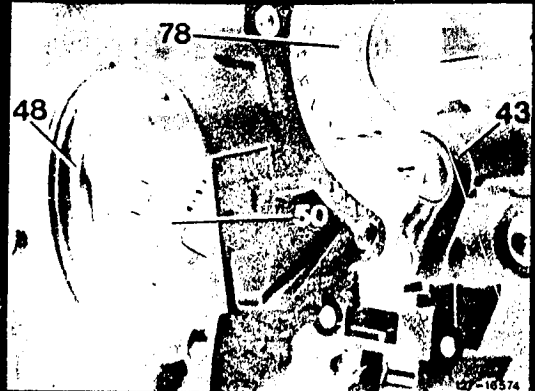
37 Push-in cover (46) and remove locking ring (47).

38 Pull out cover (46).

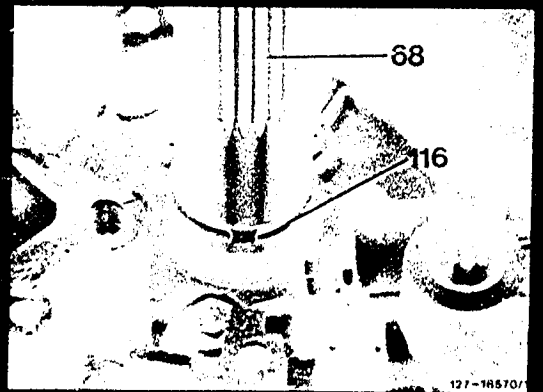


39 Swivel back axial holder (43), then pull out centrifugal governor (50). Remove axial holder.

40 Pull off helical gear (78).

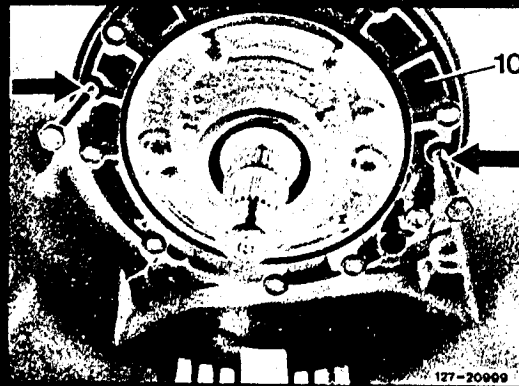


41 Remove circlip (116) from output shaft.
Pliers 000 589 52 37 00



42 Unscrew combination screws.

43 Screw two screws into tapped holes (arrows) and use to pull out front cover (10).



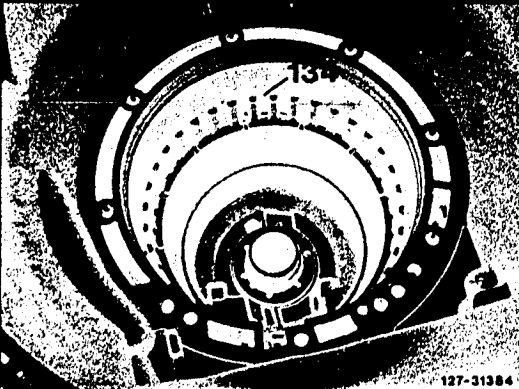
44 Hold gear set on input shaft (69) and pull out carefully in forward direction.

45 Pull clutch K 1 (83) together with brake band B 1 (30) from gear set.

46 Remove plates of B 3 (arrow).



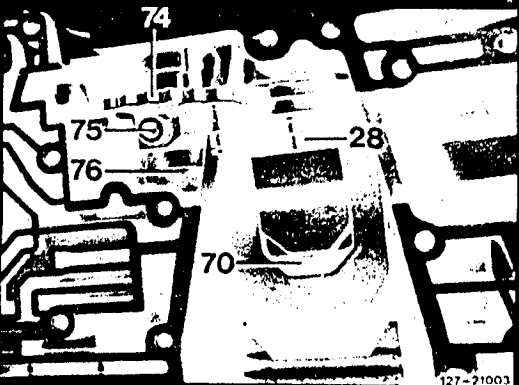
47 Remove damping spring (134), installed starting transmission end No. 379 225.



48 Remove thrust pin (28).

49 Pull out clutch K 2 (70).

50 Unscrew hex. socket screw (75), pull out shaft (76) and remove detent plate (74).

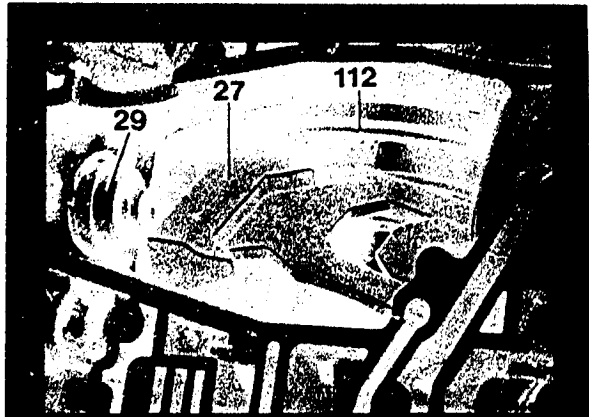


51 Set brake band B 2 (27) at an angle and remove.

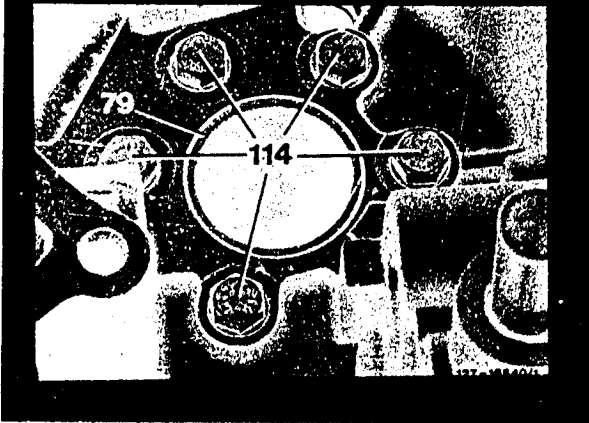
Note: Transverse cracks in brake band lining B 2 are insignificant.

52 Remove thrust washer (112).

53 Pull out thrust body B 2 (29).

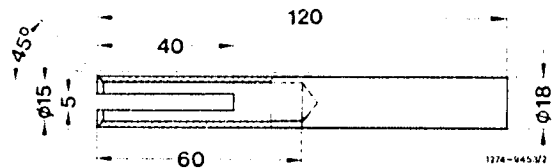


54 Unscrew hex. screws (114). On opposite side, screw in two screws approx. 80 mm long. Loosen supporting flange (79) from housing by means of hammer blows against the two screws.

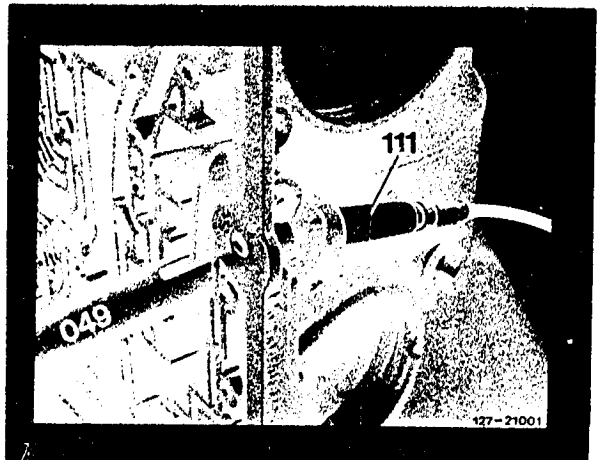


55 Remove sealing rings, metal plugs etc. which are still in housing.

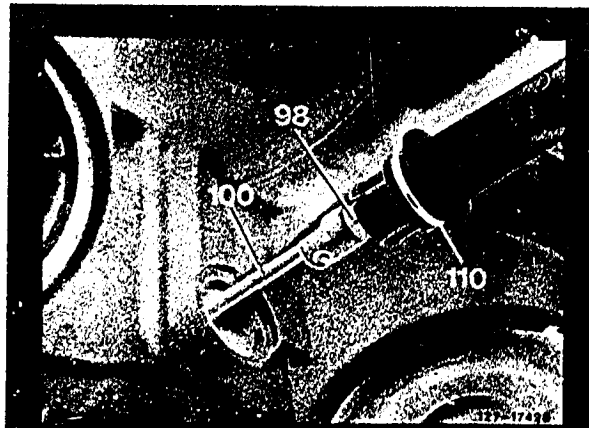
Note: The assembly sleeve is self-made according to specified dimensions.



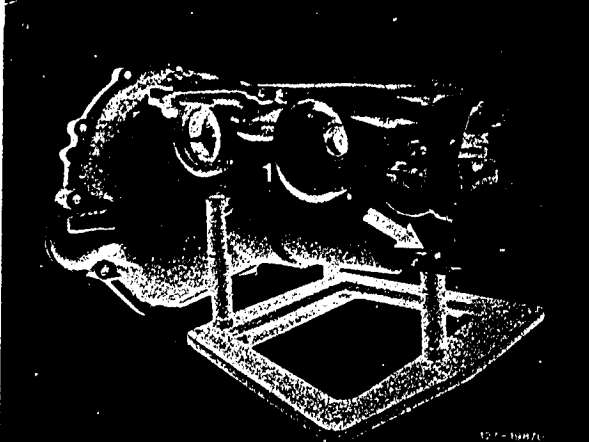
56 Push assembly sleeve (049) from below against plastic sleeve (111) and thereby pull sleeve out of housing.



57 Disconnect control pressure cable control (98).



58 Remove screw (arrow) and housing (1).

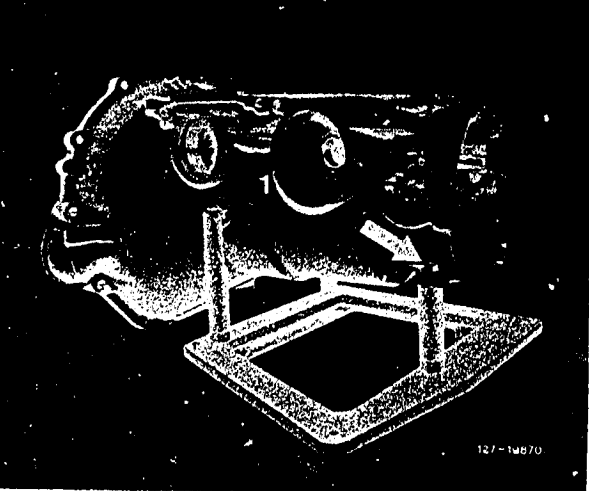


Assembly

Note: During assembly, provide bearing points and slide surfaces with specified ATF.

Place new brake bands and lined discs of multiple plate brake for approx. 1 hour into ATF prior to installation.

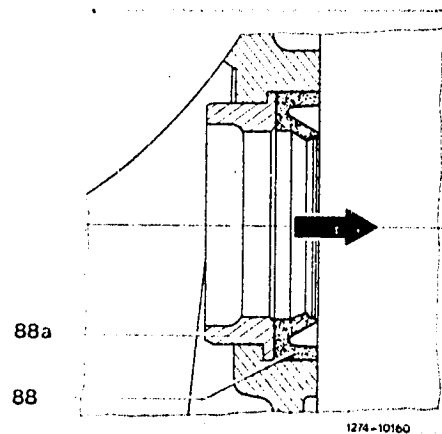
59 Place housing (1) into assembly fixture and fasten with screw (arrow).



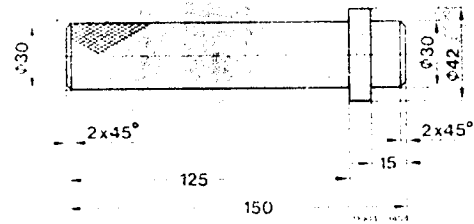
60 Screw-in closing plug with a new aluminum sealing ring and tighten to 10 Nm.

61 Insert guide ring (88a), then insert lip sealing ring (88) by means of self-made punch, sealing lip (arrow) should point in direction of brake band piston cover.

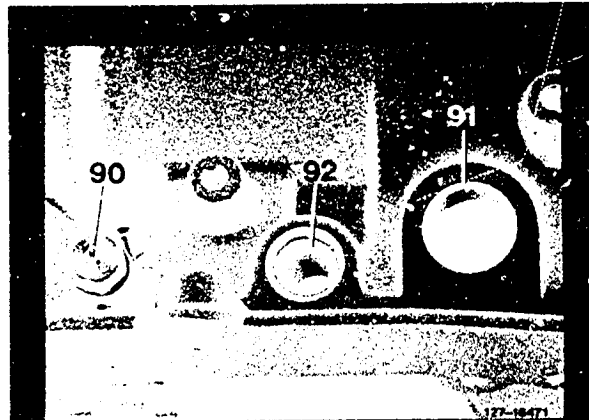
Note: As of transmission end no. 3 122 870 a one-piece brake band piston B2 will be installed (refer to item 145), previously two-piece. The one-piece brake band piston may be installed only together with a plastic piston guide ring (88a).



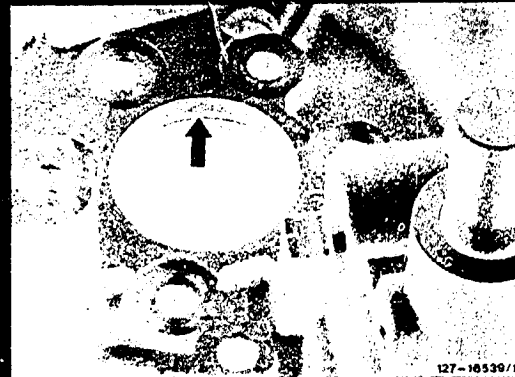
Note: The punch is self-made according to specified dimensions.



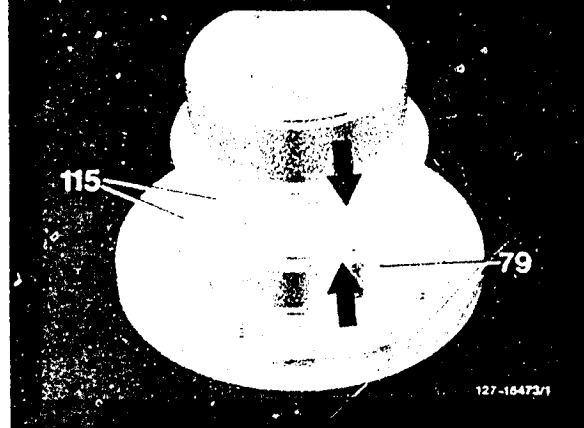
- 62 Place O-ring (91) into groove.
- 63 Insert radial sealing ring (92).
- 64 Screw-in closing plug (90) with new aluminum sealing ring and tighten to 10 Nm.



- 65 Place O-ring (arrow) into groove.

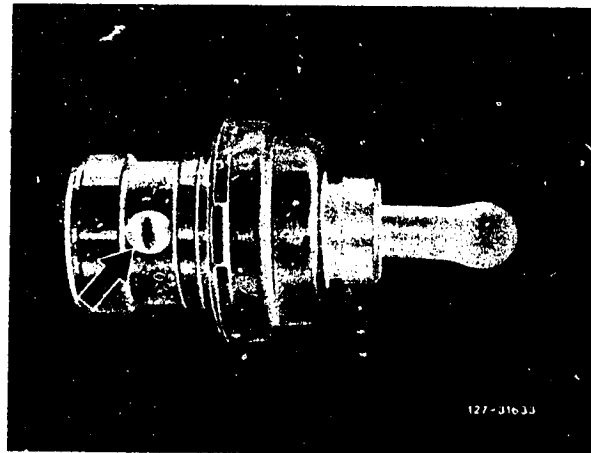


- 66 Provide grooves in supporting flange K 2 (79) with grease. Insert Teflon rings (115) and push into grooves to the extent that the gap (arrows) remains together.



67 Check thrust body B2 for twist: Bore (arrow) and link should be aligned in one direction.

Note: As of transmission end no. 389 470, thrust body B2 with ring groove to avoid failures caused by twisted thrust bodies.



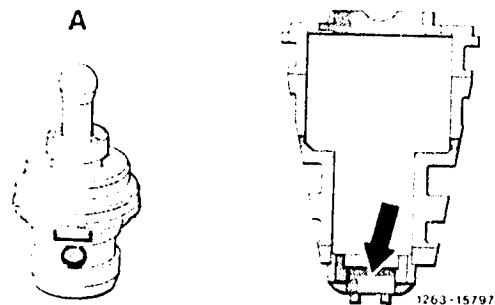
Note: Thrust bearings B2 brake band guide and brake band piston B2 are installed in different versions.

Below is a list of such versions.

Version "A"

Thrust bearing B2 together with brake band guide without oil drain bore (arrow).

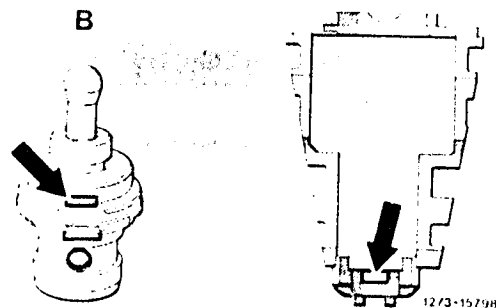
Installed up to transmission end no. 825 582.



Version "B"

Thrust bearing B2 with oil drain bore turned in downward bearing B2 with oil drain bore turned in downward direction (arrow) only in combination with brake band guide with additional oil drain bore (arrow).

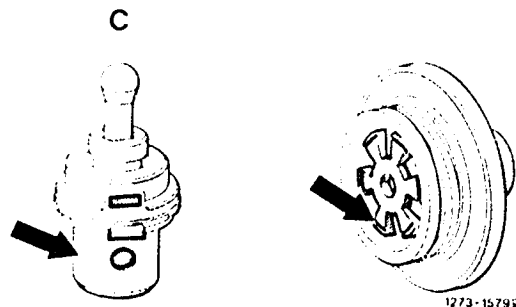
Installed starting transmission end no. 825 583.



Version "C"

Thrust bearing B2 with enlarged stroke, identification for elimination of ring groove (arrow) in combination with brake band piston B2 with ring groove (arrow) on spring retainer.

Installed starting transmission end no. 909 459.

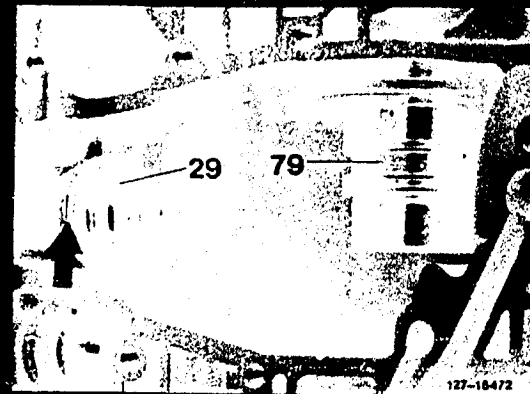


Note: Install thrust bearing B2 with enlarged stroke only together with modified brake band piston B2.

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

68 Insert thrust body B2 (29) with strip (arrow) in upward direction.

69 Insert supporting flange (79) in accordance with hole pattern of fastening bore.

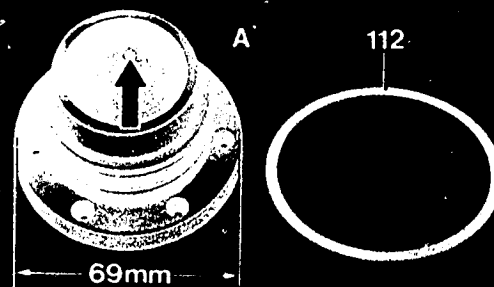


Note: Depending on version of outer plate carrier K2, supporting flanges of different design will be installed.

1st version "A"

Supporting flange K2 with lube bore (arrow) and spacing washer 0.5 mm (112) for outer plate carrier K2 with ball bearing.

Installed from start of series.

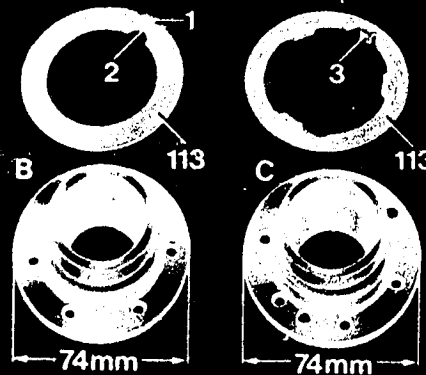


2nd version "B"

Supporting flange K2 and thrust washer (113) with locating lug (1) and groove (2).

Installed

starting transmission end No. 51760 for M110
starting transmission end No. 80200 for OM617 ATL
starting transmission end No. 106276 for M116.



3rd version "C"

Supporting flange K2 without lube bore with thrust washer (113) and locating lug (3) inside.

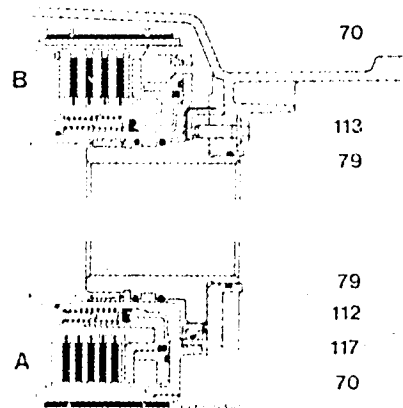
Installed starting transmission end No. 101853.

Version "C" will be installed in vehicles with engine 117 starting transmission end No. 393445.

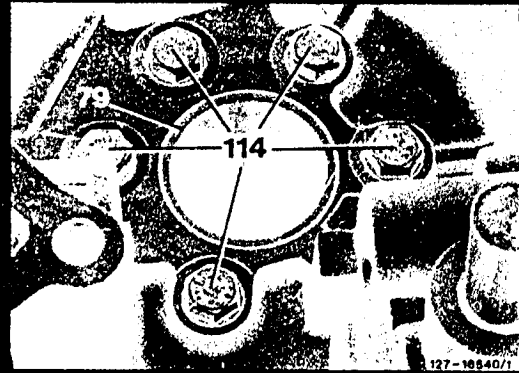
Note: Starting transmission end No. 53854 supporting flange K 2 3rd version (C) with thrust washer (113) 2nd version (B) is installed.

Clutch K 2 is guided axially either by way of a radial ball bearing (version "A") or a thrust washer (version "B").

For version "A", a steel washer (112) is placed on supporting flange (79), for version "B", a brass-coated thrust washer (113).



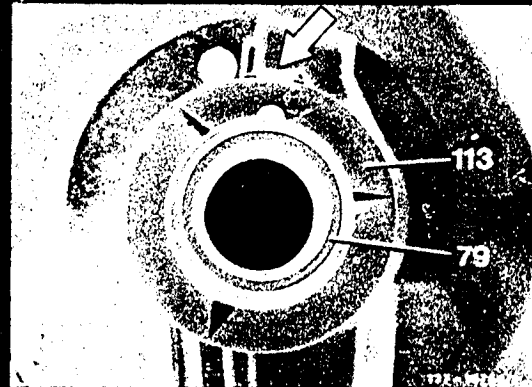
70 Screw in combination screws (114) and tighten to 11 Nm.



71 Insert steel or thrust washer. Insert thrust washer (113) in such a manner that the plate for torsion lock (arrow) is fixed in housing.

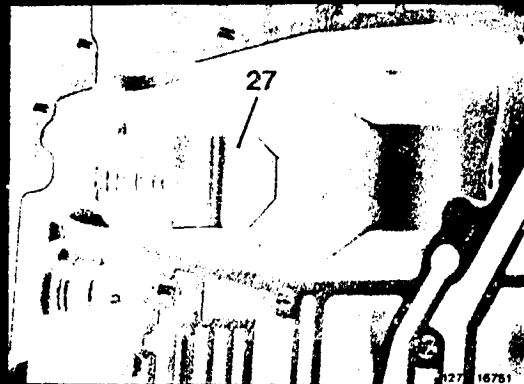
Note: Starting transmission end No. 101853 thrust washer (113) is located in supporting flange K2.

72 Check seat of teflon rings on supporting flange (79) once again.

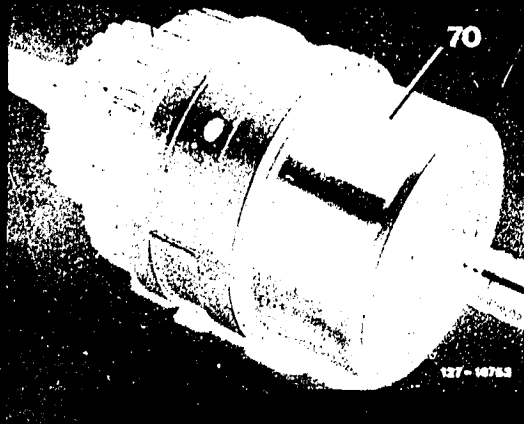


73 Compress brake assembly B 2 (27) on supporting lugs as much as possible and insert in housing.

Note: A modified brake band B2 is installed starting transmission end No. 383608. The bore for the thrust pin (at thrust bearing end) is reduced by 1 mm. If the brake band is replaced on transmissions with lower end No., a new thrust pin part No. 126 277 51 75 must be used.

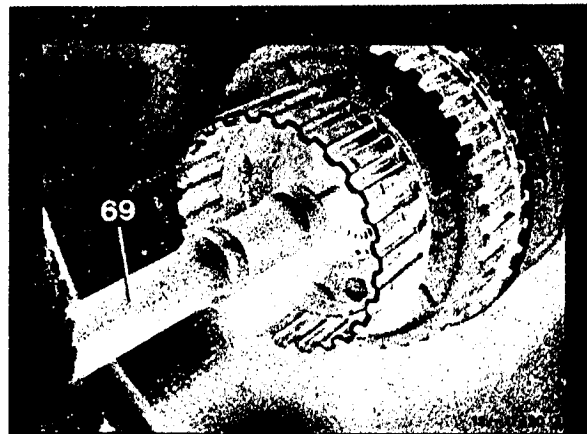


74 Place clutch K2 (70) on gear set.



75 Insert gear set into transmission housing while rotating input shaft (69).

76 Place transmission in vertical position with input shaft (69) in upward direction.

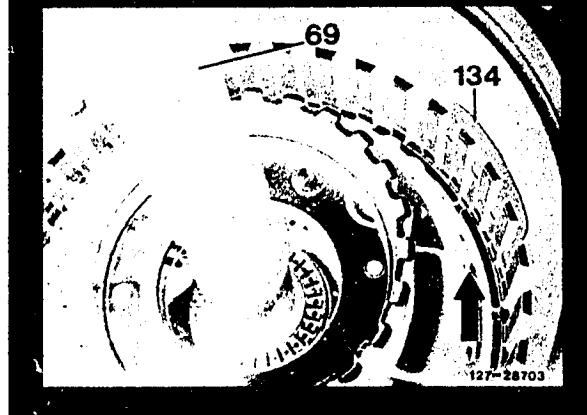


77 Check installation position of gear set. Gear set is correctly inserted, when the upper edge of the connecting carrier (arrow) is lower than the supporting surface of the outside plate LB 3.

78 Mount front cover on primary pump (27-630).

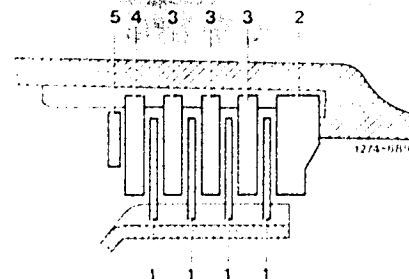
79 Insert damping spring (134), install starting transmission end No. 379225.

Note: For transmission of the previous version a damping spring can be installed in repair version part No. 126 993 03 15.



80 Assemble plates for multiple plate brake B 3 in sequence shown in illustration and insert individually.

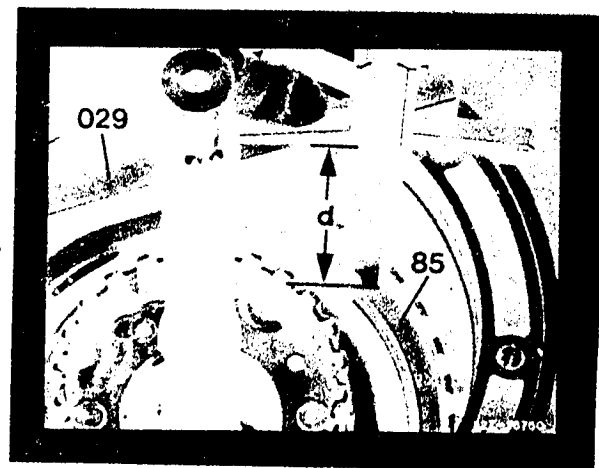
Note: On vehicles with gasoline engine (J) (USA) starting 1988 a spring retainer is mounted instead of compensating washer (5) (refer to Repair Instructions 722.3 starting 09/88).



81 Measure B3 release clearance "L" = 1.5-2.0 mm and compensate.

Find dimension "d"

Place parallel bar (029) on machined surface and measure by means of depth gauge in direction of compensating washer (85).

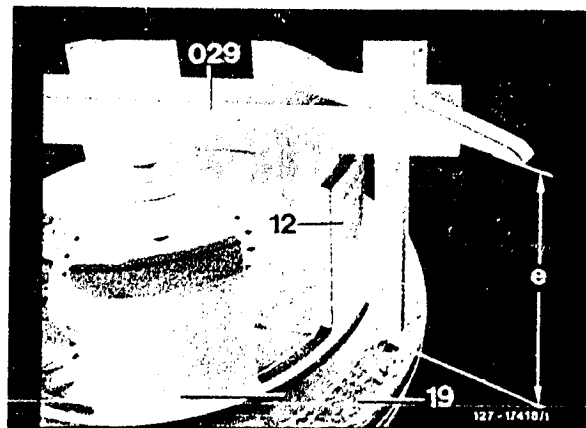


Find dimension "e".

Place parallel bar (029) on piston of multiple-disk brake (12), measure by means of depth gauge in relation to gasket (19).

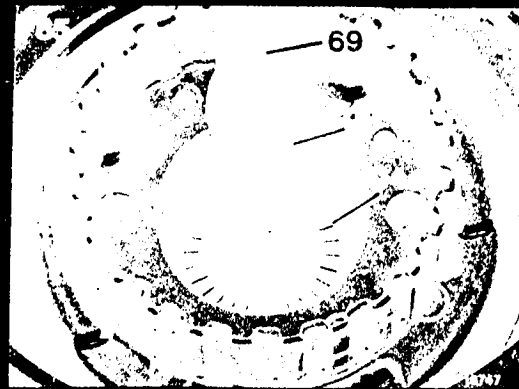
The difference between the two dimensions provides the release clearance "L".

Set release clearance "L" to its nominal value of 1.5–2.0 mm. Compensation is made by means of outside plates and compensating washers (85) of varying thickness.

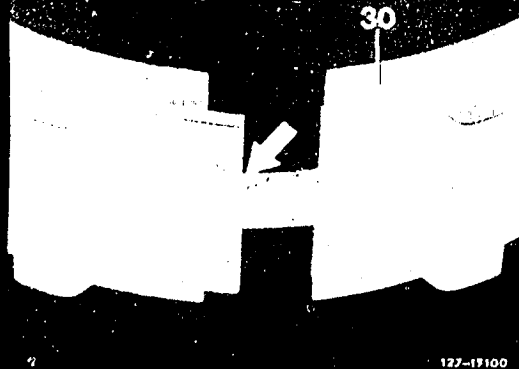


82 Place axial bearing (94) into planetary carrier.

83 Provide groove in input shaft (69) with grease and insert grease pressure ring (95).



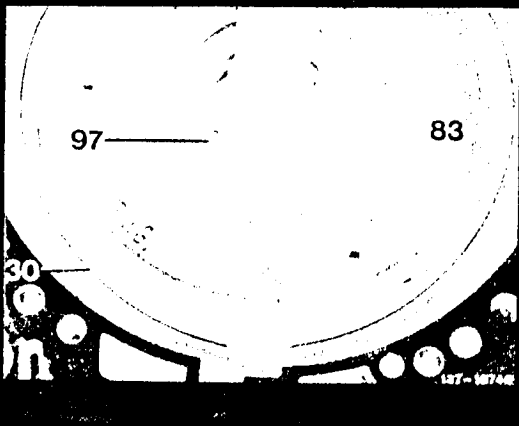
84 Connect assembly lock (arrow) to brake band B 1 (30).



85 Rotate clutch K1 (83) to facilitate meshing of teeth.

86 Insert brake band B1 (30) in such a manner that pin of assembly lock (arrow) in Fig. item 84 is facing thrust body B1.

87 Install axial bearing (97).

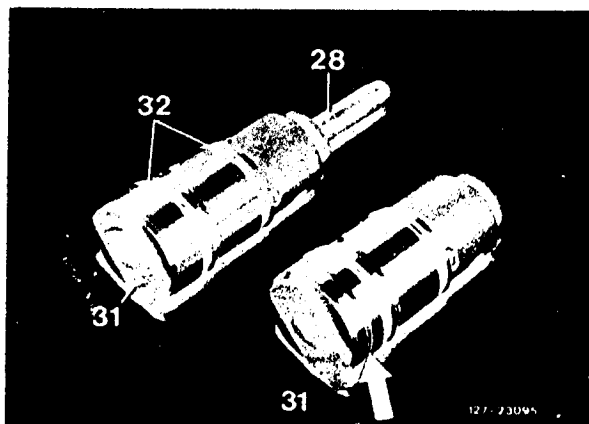


88 Plug thrust pin (28) into thrust body B 1.

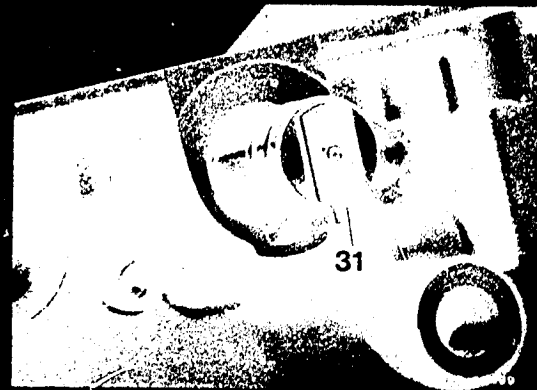
89 Renew O-rings (32).

Note: Thrust body with groove (arrow) is installed in transmissions with shift valve housing 2nd version.

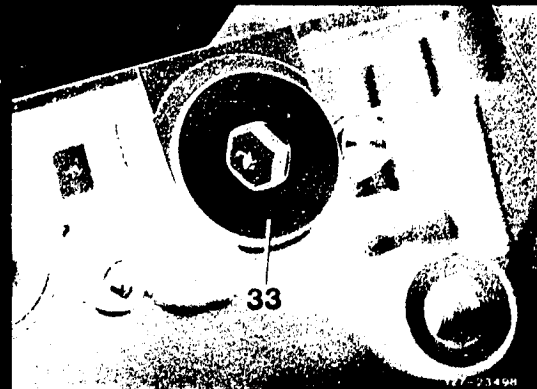
Except for transmission 722.308 where the thrust body with groove is installed already on shift valve housing 1st version.



90 Insert thrust body B 1 (31).



91 Screw in closing plug (33) and tighten to 70 Nm.



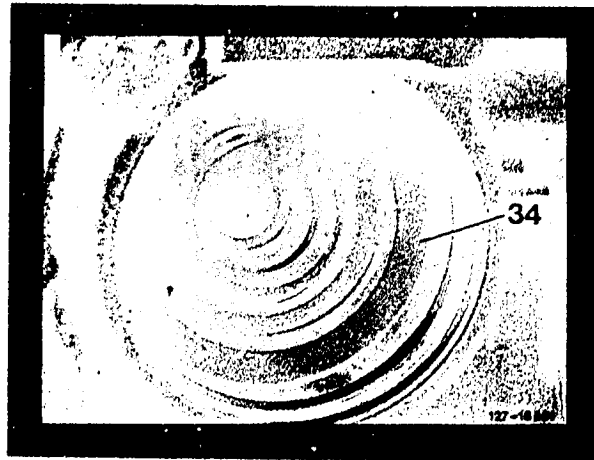
92 On transmissions with transmission overload protection screw in switch (S 65) and tighten to 70 Nm.



93 Insert brake band guide (34) making sure that the locating lugs enter into bores in housing and push down until they are noticeably engaging.

Attention!

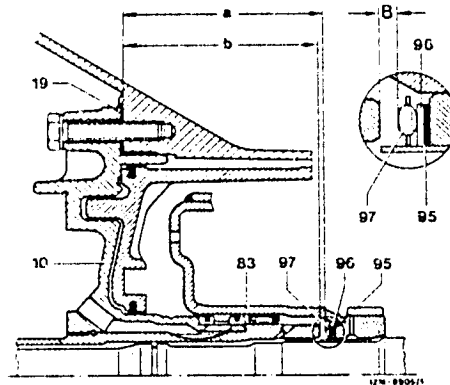
Starting transmission end No. 655 877 a brake band guide with a larger through-bore for brake band piston is installed with removable thrust pin.



94 Measure end clearance "B" for clutch K1 and compensate.

Rear housing not installed 0.8–1.2 mm.

Rear housing installed 0.3–0.5 mm.

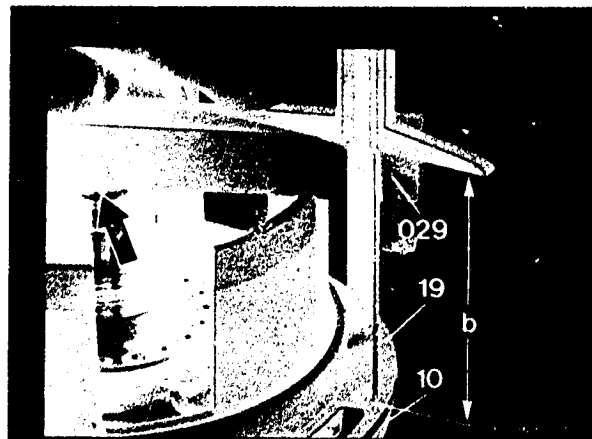


- 95 Compensating washers
- 96 Thrust washer
- 97 Axial bearing

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

Place parallel bar (029) 126 589 04 31 00 on flange (arrow).

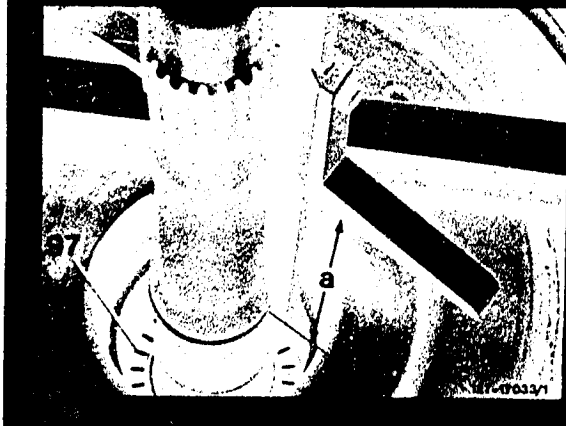
Measure with depth gauge in relation to gasket (dimension "b").



Place parallel bar (029) on machined surface. Measure by means of depth gauge from parallel bar in relation to a roller of axial bearing (97) (dimension "a").

The difference between the two measurements is play "B".

Adjust play by inserting pertinent shims (95) under thrust washer (96) of axial bearing (97) (refer to drawing item 94).



95 Check teflon rings on front cover and on input shaft for correct seat.

96 Install front cover (10) with gasket, tighten fastening screws (18) to 13 Nm.

Note

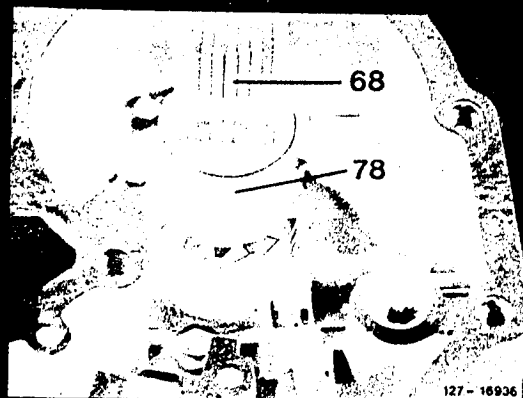
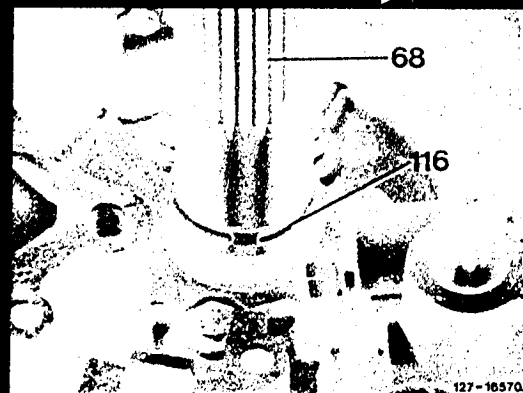
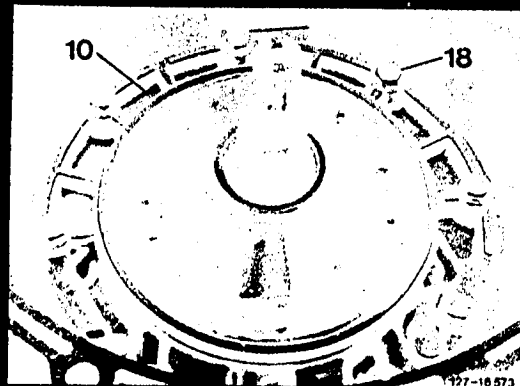
Up to transmission end No. 313.790, close assembly thread bores with 2 short screws.

97 Turn assembly fixture in such a manner that output shaft (68) points in upward direction.

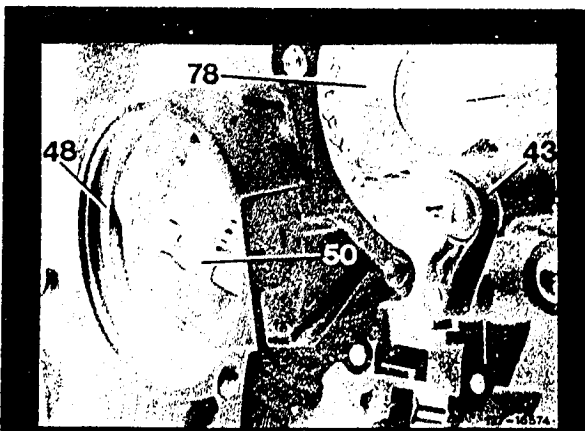
98 Slip circlip (116) up to its groove on output shaft (68).

99 Mount helical gear (78).

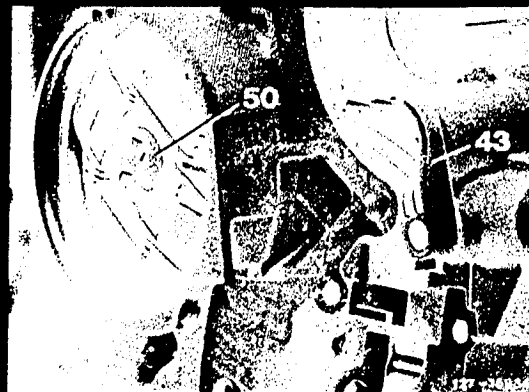
100 Install axial holder (43).



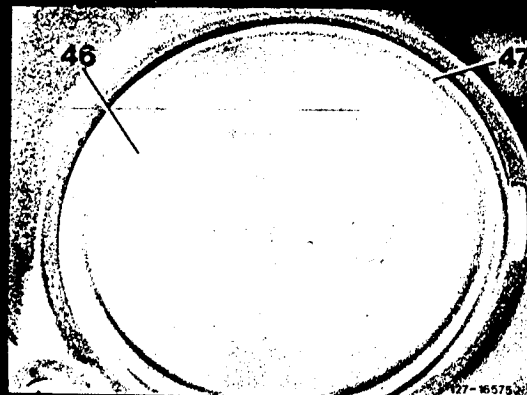
- 101 Insert O-ring (48).
- 102 Install centrifugal governor (50).



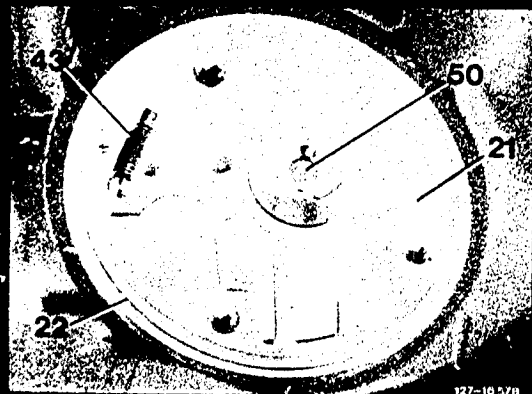
- 103 Swivel axial holder (43) in direction of centrifugal governor (50) in such a manner that it will enter groove of governor shaft.



- 104 Mount cover (46).
- 105 Insert locking ring (47), then pull cover in outward direction to rest against locking ring with its entire circumference.

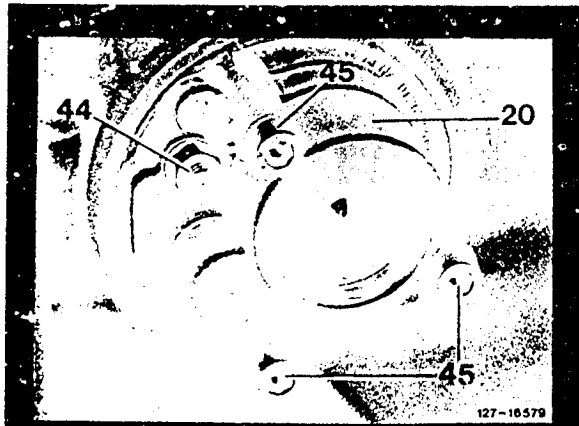


- 106 Insert intermediate plate (21).
- 107 Insert O-ring (22).

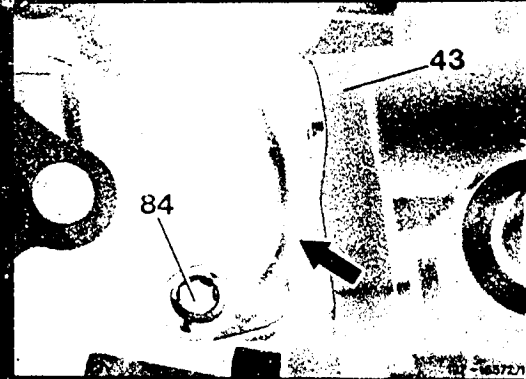


108 Mount secondary pump (20), tighten hex. socket screws (45) to 8 Nm.

109 Check seat of axial holder once again, screw-on nut (44) and tighten to 6 Nm.

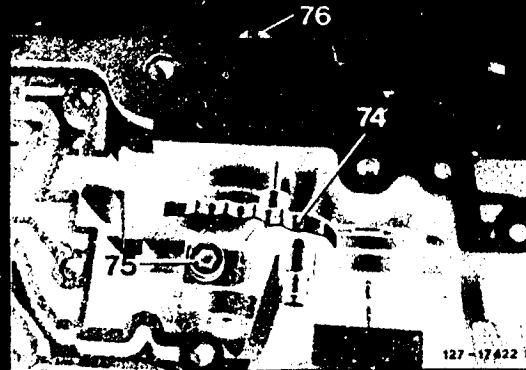


110 Insert oil pipe (arrow) tighten hex. socket screw (84) to 8 Nm.



111 Install detent plate (74) with shaft (76).

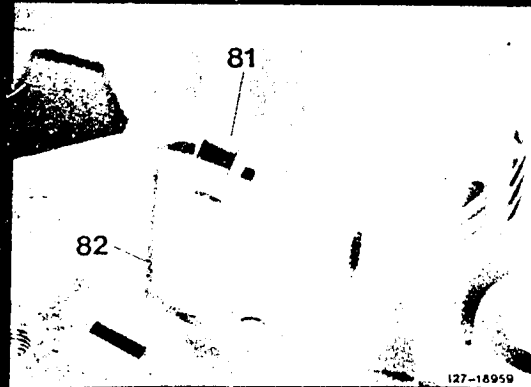
112 Screw-in hex. socket screw (75) and tighten to 8 Nm.



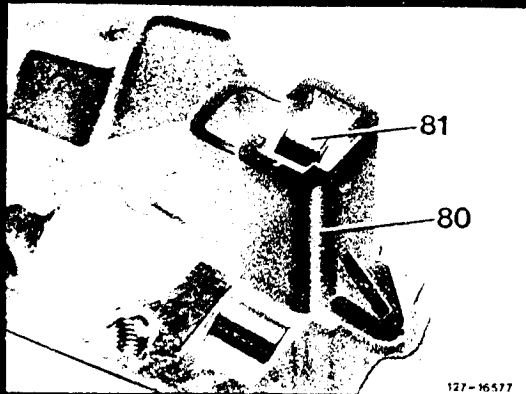
113 Place resilient linkage (82) on detent plate and insert lock (arrow).



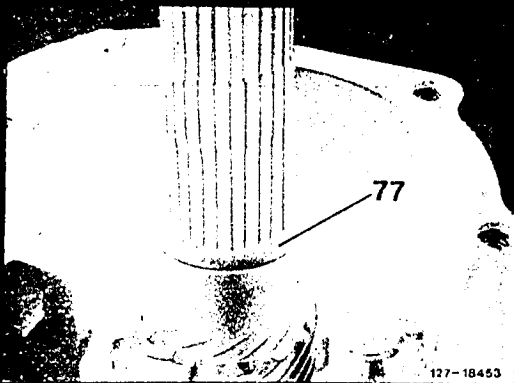
114 Mount roller (81) on resilient linkage (82).



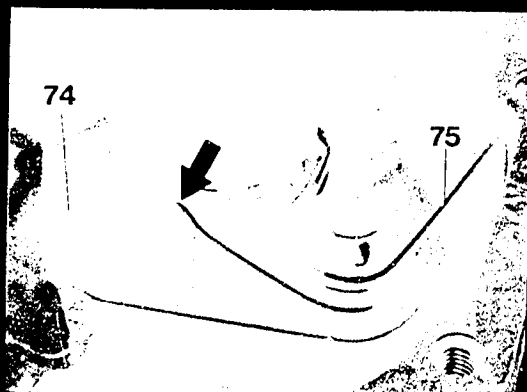
115 Mount plastic guide (80) and push into locating bores.



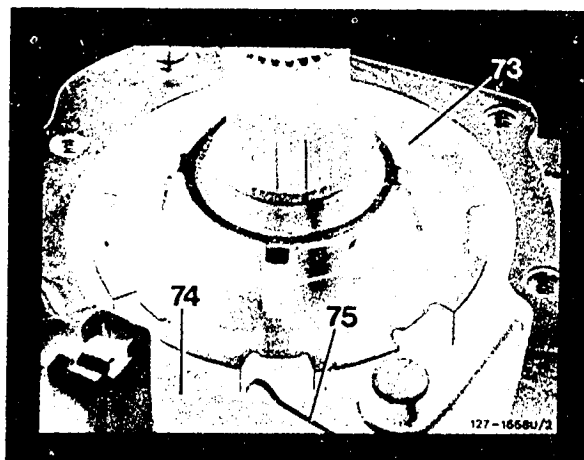
116 Place existing compensating washers (77) on helical gear.



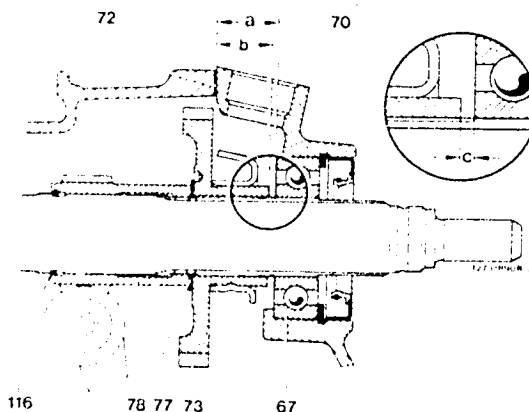
117 Mount parking lock pawl (74), insert expanding spring (75) and attach to parking lock pawl (arrow).



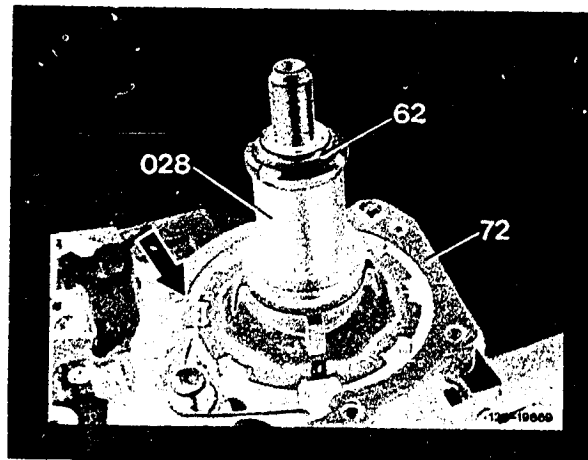
118 Mount parking lock wheel (73).



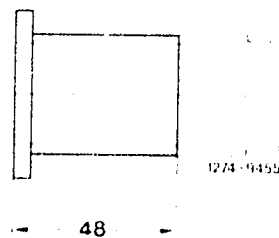
119 Measure end play (C = 0.3–0.5 mm) of output shaft (clutch K2) and compensate.



Plug on measuring sleeve (028) 126 589 06 14 00, tighten slot nut (62) to 100 Nm. Engage parking lock pawl to serve as a counterhold (arrow). Mount gasket (72).



Machine measuring sleeve of 1st version to 48 mm length (refer to drawing).



Mount parallel bar (029) 126 589 04 31 00. Measure with depth gauge from measuring sleeve (028) to bar. Add 15 mm to the measured dimension to provide dimension "b".

Note: The 15 mm are the result from height of parallel gauge block (20 mm) minus edge of measuring sleeve (5 mm).

Assemble rear cover (70) (27-440).

Measure with depth gauge from sealing surface of rear cover (70) in relation to inner race of radial ball bearing (67) (dimension "a").

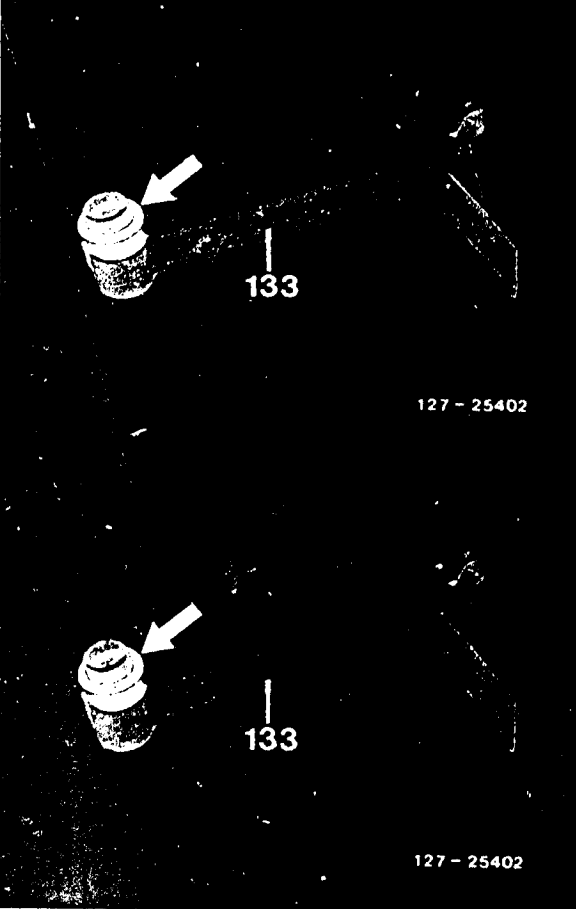
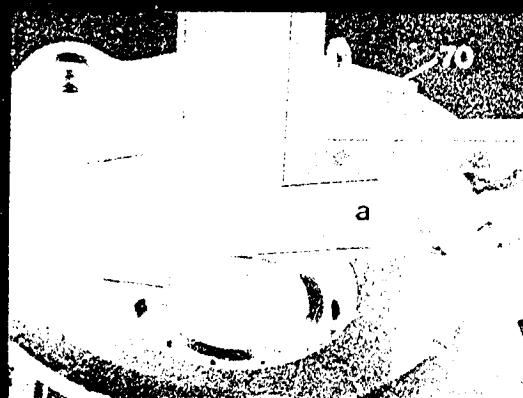
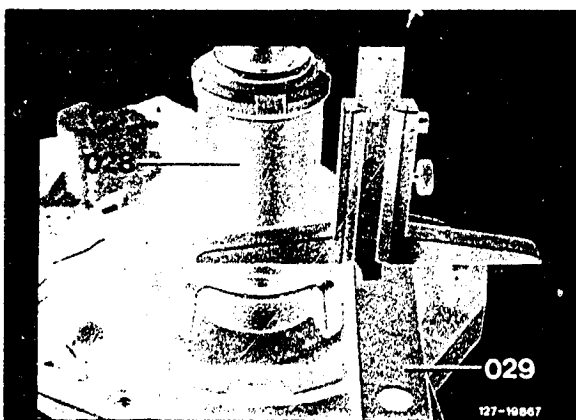
Deduct dimension "a" from dimension "b" to obtain end play "C".

Compensate end play "C" to 0.3-0.5 mm by adding or removing compensating washer (77) under parking lock gear (73), refer to Fig. item 119.

120 Place O-ring (arrow) on oil pipe-speedometer lubrication (133), but only on transmission with mechanical speedometer drive.

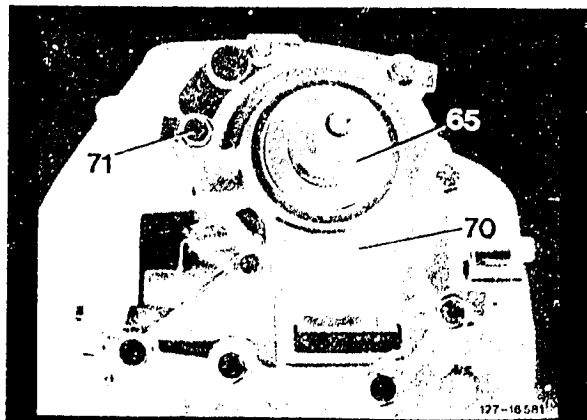
121 Insert oil pipe-speedometer lubrication (133).

122 Mount helical gear for speedometer drive (125) making sure that the two pins mesh with the bores in parking lock wheel.

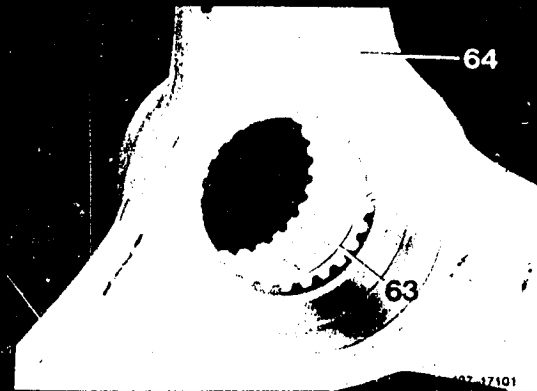


123 Mount rear cover (70), tighten fastening screws (71) to 13 Nm.

124 Insert washer (65).



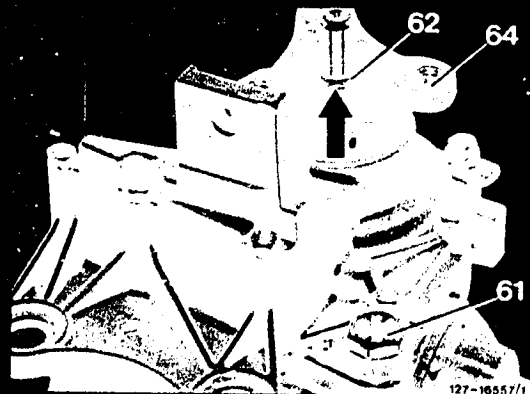
125 Place O-ring (63) into universal flange (64).



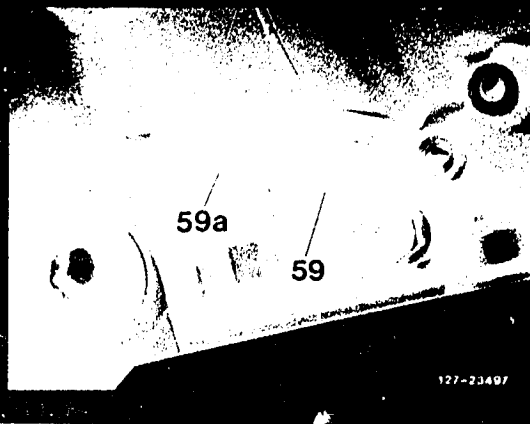
126 Mount three-legged flange (64), tighten slot nut or double hex. collar nut (62) to 120 Nm, engaging parking lock for this purpose.

127 Knock collar of slot nut or double hex. collar nut (62) into recess of output shaft (arrow) with a suitable punch.

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

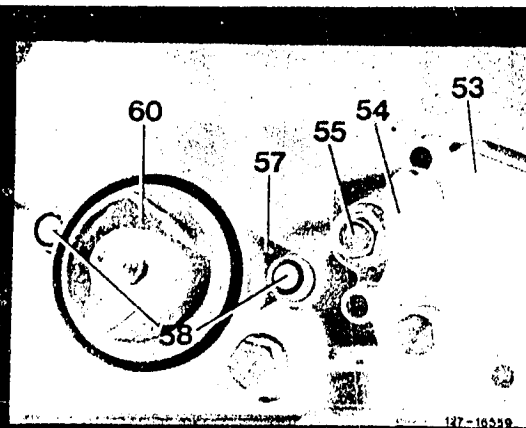


129 Insert modulating pressure control valve (59) and thrust pin (59a).



130 Mount vacuum control unit (60) with holding plate (57), tighten hex. socket screws (58) to 8 Nm.

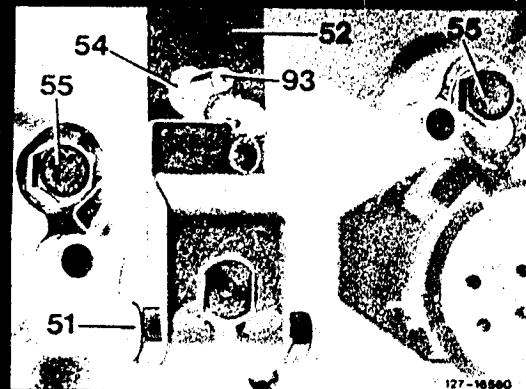
131 Mount starter lockout switch (53), screw-in fastening screws (55) but do not yet tighten.



132 Mount range selector lever (52) in such a manner that the driver (54) is located in range selector lever.

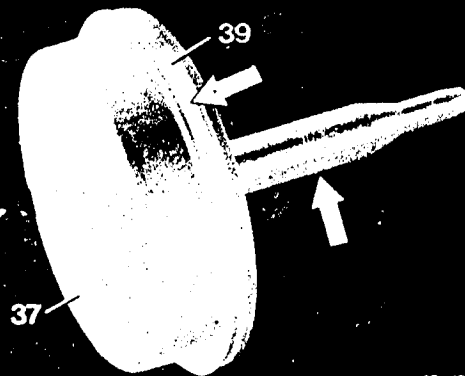
133 Insert hex. screw (51) and tighten to 8 Nm.

134 Move range selector lever (52) into position "N". Introduce a 4-mm cotter pin through range selector lever into locating bore of switch housing and tighten fastening screws (55) to 8 Nm. Remove cotter pin.

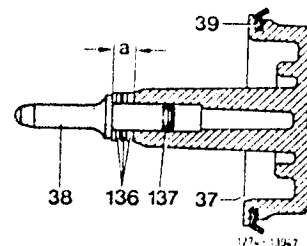


135 Insert lip sealing ring (39) on brake band piston B 1 (37) in such a manner that the sealing lip is pointing in direction of arrow.

Note: To compensate release clearance on brake band B1 on transmissions up to end no. 788 605, brake band pistons with five thrust pin lengths are available. They are identified with grooves (arrow). The brake band piston with the shortest thrust pin has no identifying groove. The brake band piston with the longest thrust pin has four identifying grooves.



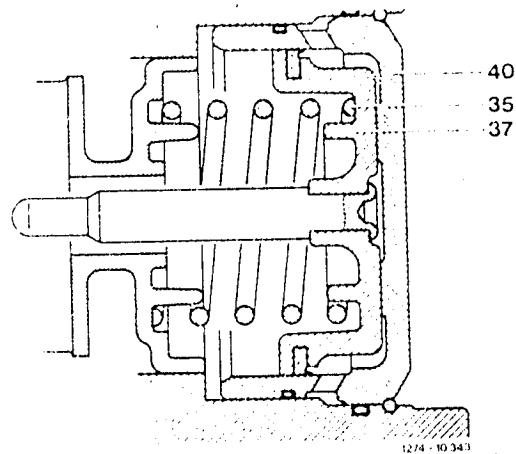
Note: A brake band piston with removable thrust pin will be installed starting transmission end No. 788 606. The release clearance is set with shims available 0.5, 1.0 and 1.5 mm thick.



- 37 Brake band piston B1
- 38 Thrust pin
- 39 Lip seal
- 136 Shims
- 137 O-ring
- a max. 6.5 mm

Note: Transmissions 722.308/347 have a brake band piston B1 with reduced diameter (62 mm). The brake band piston cover (40) is designed as an insert and receives the B1 piston (37).

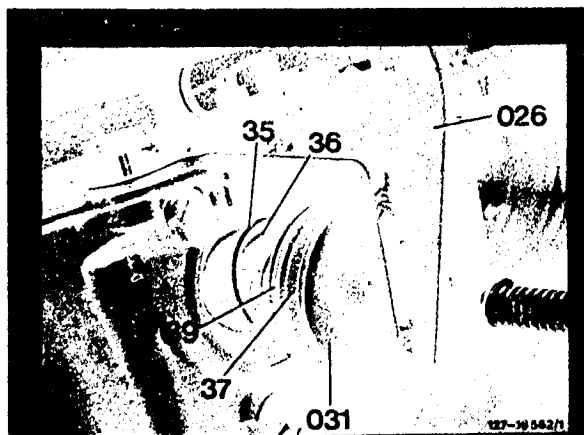
Nothing is changed for measuring release clearance "L" on brake band piston B1.



136 Mount assembly device (026) 201 589 03 59 00 and screw to transmission housing.

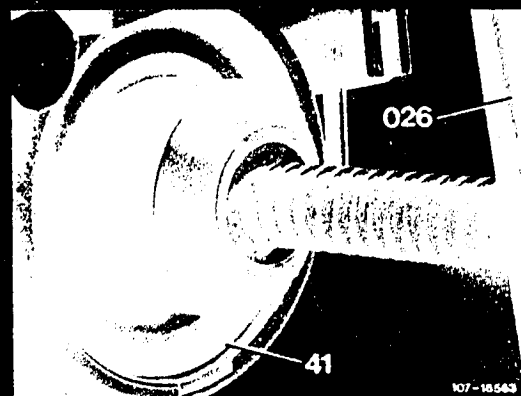
137 Insert brake band piston B1 (37) with a compression spring and measuring device (031) 126 589 06 21 00 only.

138 Screw-in spindle of assembly device (026), making sure that the thrust pin of the brake band piston B1 (37) enters the brake band and that the lip sealing ring (39) is not damaged.



139 Insert locking ring (41). Release assembly device (026) and remove.

Note: For easier installation of locking ring, slightly unscrew closing plug thrust body B1 (33, item 91).

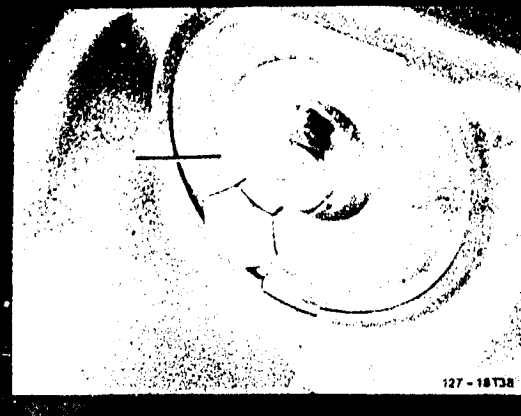


140 Measure release clearance "L" = 1.8–2.4 mm on brake band B1 and adjust.

Note: The threads on measuring device (031) have a 1 mm pitch, so that one revolution means 1 mm travel.

Turn screw on measuring device (031) manually until resistance is felt.

Note: On brake band piston with removable thrust pin, use a screw without measuring tip.



Turn screw further down with torque wrench, while counting revolutions and tighten screw to 1 Nm.

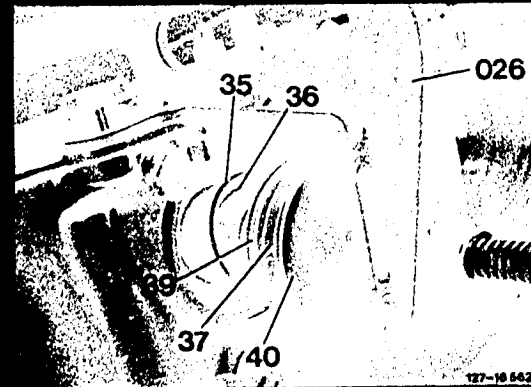
The idle travel on brake band should amount to 2 x 1.8–2.4 mm, i. e., after 2 x 1.8–2.4 revolutions a torque of 1 Nm must be attained.

If the idle travel is too high or too low, install brake band piston (1st version inrust pin 68–74 mm) or shims (2nd version 0.5; 1.0; 1.5 mm).



Mount assembly device (026) again and screw down.

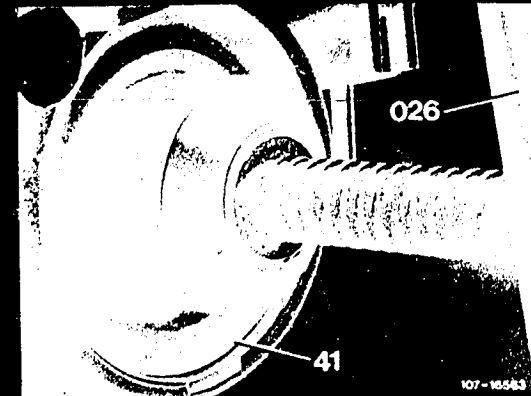
Install brake band piston cover (40) instead of measuring device (031).



141 Screw-in spindle of assembly device (026), insert locking ring (41).

Note: For easier installation of locking ring, slightly unscrew closing plug-thrust body B1 (33, item 91).

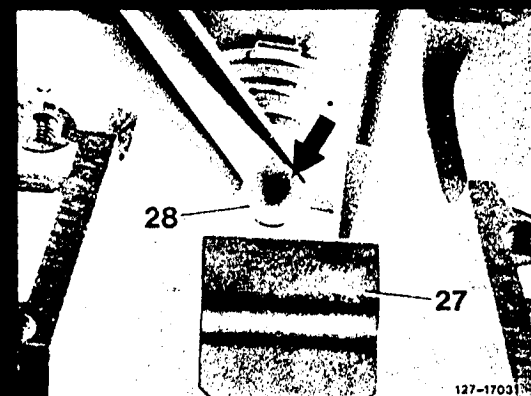
142 Release assembly device (026) and remove.



143 Insert thrust pin (28) with the large diameter (arrow) toward brake band B 2 (27).

Note: Thrust pin (at thrust bearing end) has been modified starting transmission end No. 383608:

larger dia. 1st version 10.6 mm
2nd version 9.6 mm
Length 1st version 27.0 mm
2nd version 26.0 mm

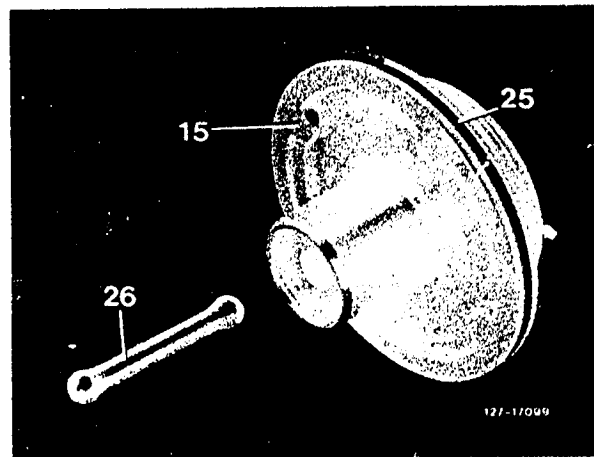


144 Place teflon ring (25) with grease into groove of brake band piston (15).

145 Insert thrust pin (26).

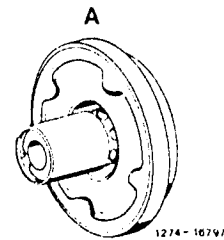
Note

Thrust pins (26) are available in 4 lengths for idle travel compensation on brake band B2.

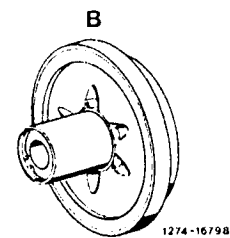


As of transmission end no. 3 122 870, the two-piece brake band piston is replaced by a one-piece brake band piston. However, the one-piece brake band piston should be installed only together with a plastic piston guide ring (item 61).

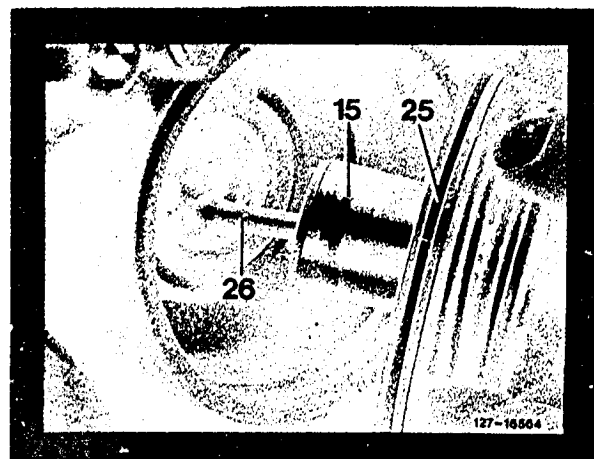
1st version
two-piece brake band piston



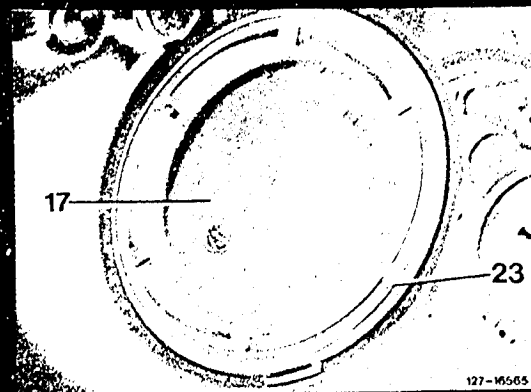
2nd version
one-piece brake band piston



146 Introduce brake band piston B2 (15) while making sure that the thrust pin (26) enters brake band.



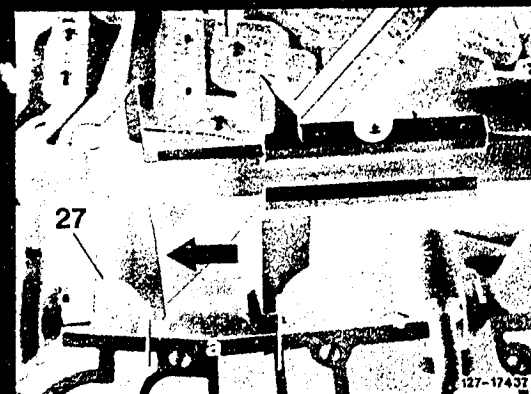
147 Push-in brake band piston cover B2 (17) and insert locking ring (23).



148 Measure release clearance "L" = 5.5–6 mm on brake band B2 and adjust.

Push brake band B 2 (27) at supporting lug in direction of brake band piston (direction of arrow), so that brake piston rests against brake band piston cover.

Measure dimension "a" with slide gauge.

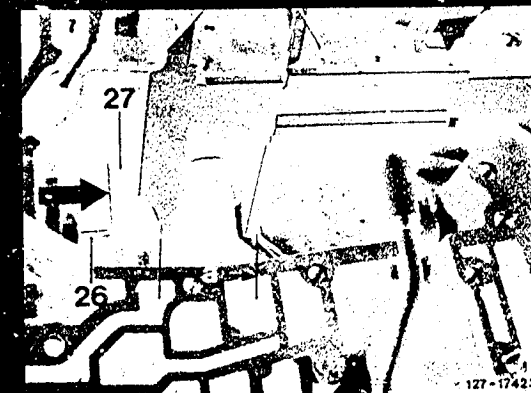


Also push brake band B 2 (27) at supporting lug (27) in direction of thrust body (direction of arrow).

Measure dimension "a" once again.

The difference from both measurements provides release clearance "L".

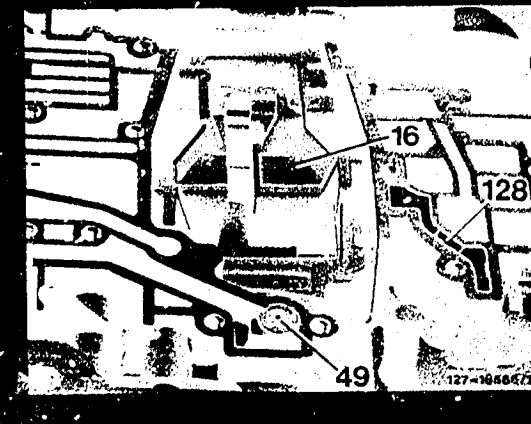
Adjust release clearance "L" to 5.5–6 mm by exchanging thrust pin (26) on brake band piston B2.



149 Insert brake band guide B2 (16).

150 Insert one-way valve (49) and filler piece (128).

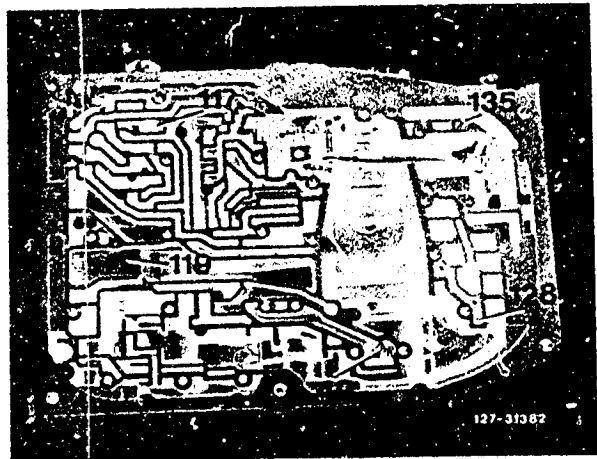
Note: The filler piece (128) is installed in transmissions with shift valve housing 2nd version and repair version. For (USA) and (J) starting 1981.



151 Insert locating pin (135) and oil deflector (119).

Note: The oil deflector is installed starting transmission end No. 250 750 and cannot be installed in transmission with a lower end No.

152 Insert temperature throttle (117) and push into oil duct until it is flush with housing.

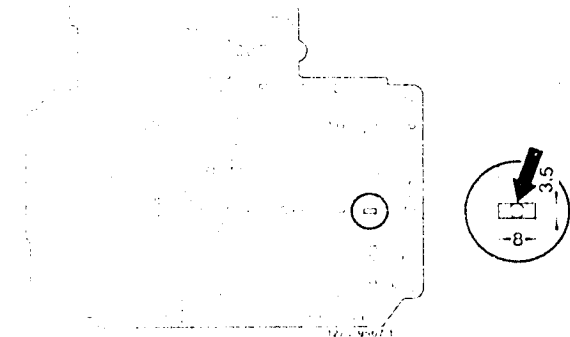


Attention!

The temperature throttle (117) is installed as standard starting May 1980.

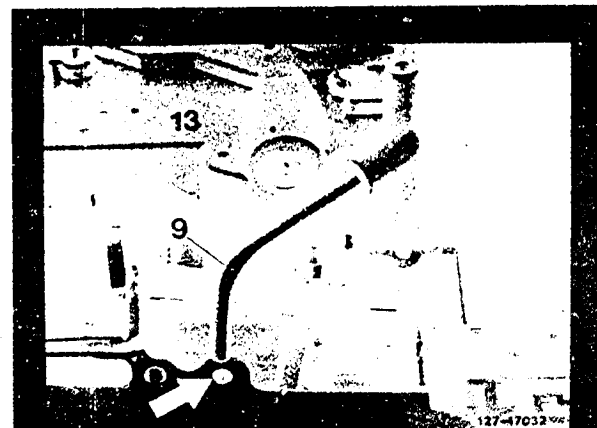
On transmissions made at an earlier date the temperature throttle must be subsequently installed. In connection therewith, the throttle bore on large intermediate plate must be filed square.

A white or red temperature throttle will be installed depending on shift valve housing version (refer to Installation survey 27-001).



153 Assemble lower cover (13) (27-435).

154 Mount lower cover (13) making sure that the oil pipe (9) enters into bore (arrow).

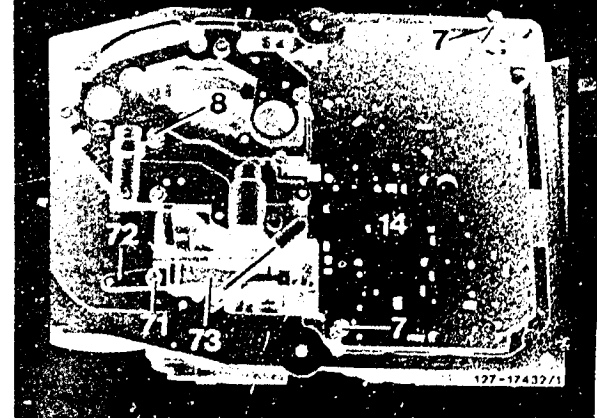


155 Center intermediate plate (14) with two screws (7).

156 Insert combination screws (8) and tighten to 8 Nm.

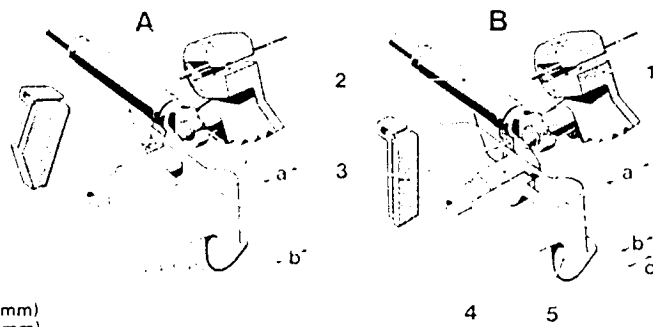
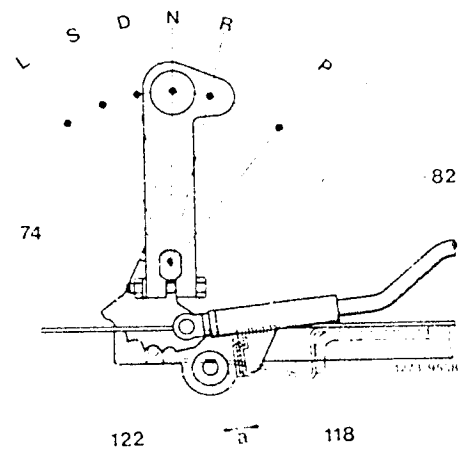
157 Mount leaf spring (73) with holder (72), tighten screw (71) to 8 Nm.

Note: Make sure that the locating pin for holder (72) is correctly inserted.



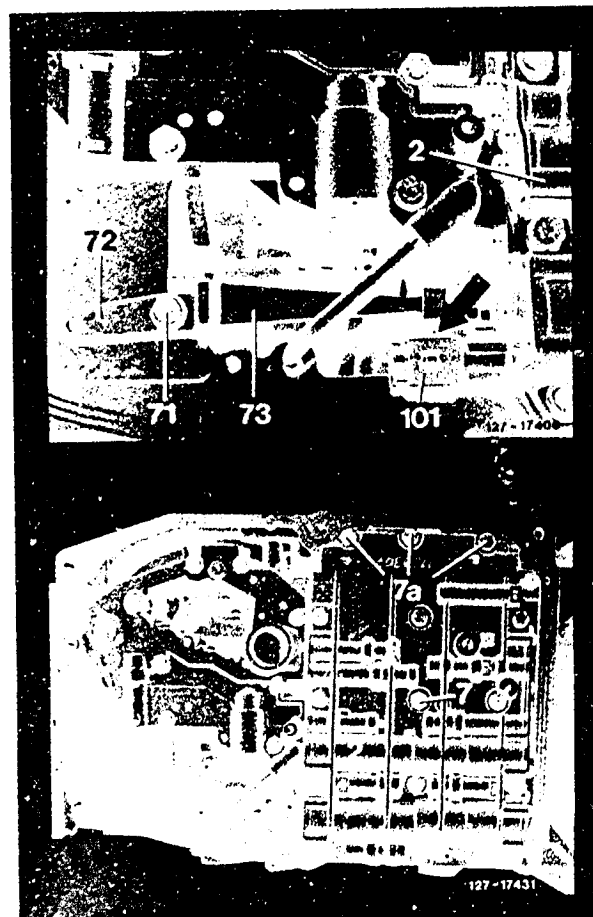
158 Check clearance "a" between locking piston (122) and stop on resilient linkage (82) and adjust, if required.

Clearance "a" is set to 0.4–1.0 mm in position "N" by means of plastic clips (118). Plastic clips are available in three degrees of thickness.



A 1st version (a = 9.5 mm)
B 2nd version (a = 13.5 mm)

159 Mount shift valve housing (2), making sure that the range selector valve (101) enters driver on detent plate (arrow).



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

Caution!

Pay attention to screw length. The three screws identified with item 7 a are only 50 mm long, the remaining 12 screws are 55 mm long.

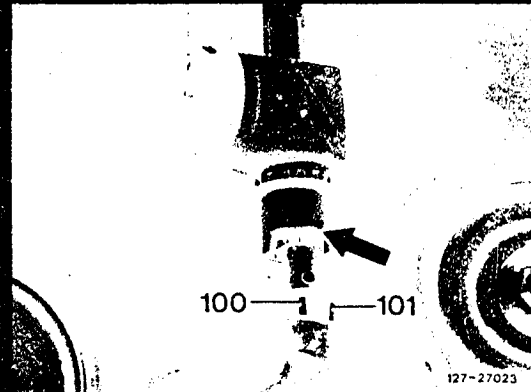
15
161 Engage pulling wire for control pressure (98) in connecting rod (100). Check O-ring (110) and renew, if required.



162 Push plastic sleeve of pulling wire (98) into housing until it is noticeably engaging.



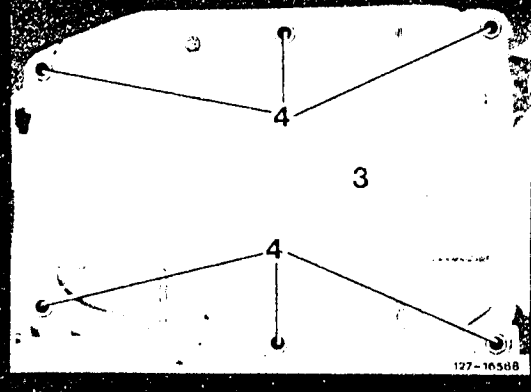
15
163 Engage control pressure cable with vacuum element on connecting rod (100). Introduce limiting rod (101) into bore (arrow) and insert control pressure cable.



164 Rotate control pressure cable until lock engages.

165 Mount oil filter, tighten Phillips screws to 4 Nm.

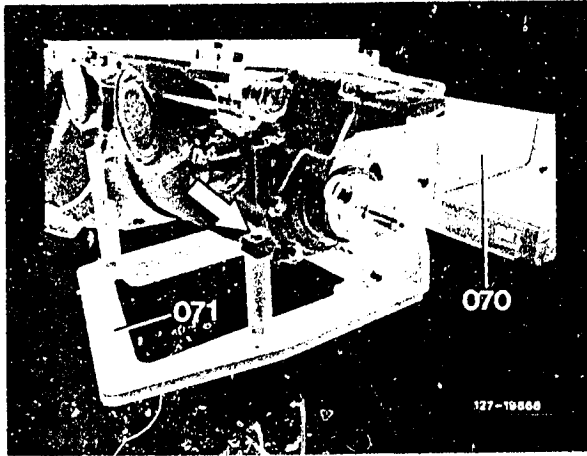
166 Mount oil pan (3), tighten fastening screws (4) to 8 Nm.

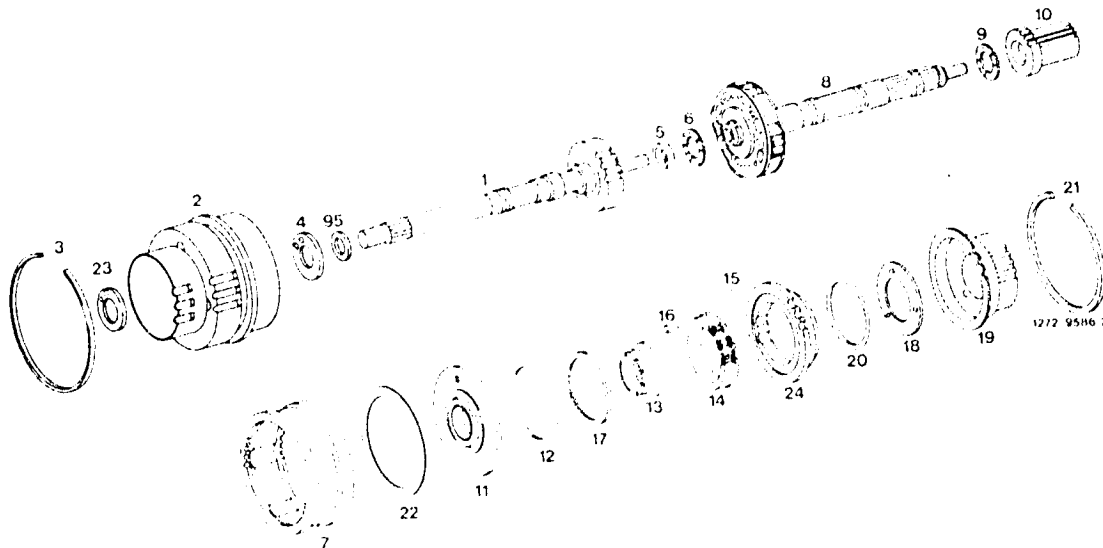


167 Remove screw (arrow) and lift transmission out of assembly block.

Attention!

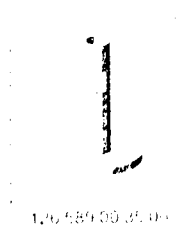
Following installation of transmission, check for leaks and check modulating pressure. Adjust, if required.





1	Input shaft	Check for damage and wear
2	Front gear set	Check for damage and wear
3	Circlip	
4	Radial bearing	Check for damage and wear
5	Radial bearing	Check for damage and wear
6	Radial bearing	Check for damage and wear
7	Connecting carrier	End play one-way clutch-connecting carrier 0.05–0.2 mm, refer to item 21
8	Output shaft	Check for damage and wear
9	Radial bearing	Check for damage and wear
10	Sun gear, rear gear set	Check for damage and wear
11	Supporting disk	Check for damage and wear
12	O-ring	Replace, insert only after the end play of one-way clutch has been measured
13	One-way clutch inner race	Completely replace one-way clutch, if the running surface of the cylindrical rollers on one-way clutch inner race are showing rough score marks or notches
14	Roller cage	Check for damage
15	Compression springs	
16	Cylindrical rollers	Check for damage and wear, pay attention to item 17, auxiliary tool spare part 126 277 00 73, 16 each
17	Compensating ring	
18	Thrust washer	Check for damage and wear
19	Inner plate carrier K2	Check for damage and wear
20	O-ring	Replace, insert only after the end play of one-way clutch has been measured. Installed only in one-way clutch with single bearing, at one-way clutch outer race and inner plate carrier which consists of two parts
21	Circlip	
22	Compensating washer	Different thickness 0.1 – 0.2 – 0.5 mm
23	Radial bearing	Check for damage and wear
24	One-way clutch outer race	Check for damage and wear
95	Lube pressure ring on input shaft	Replace

Special tool

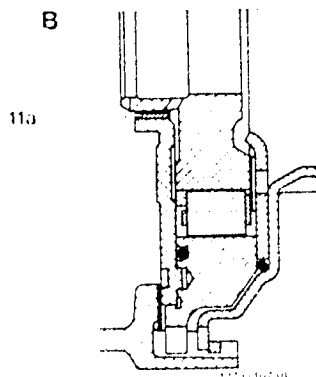
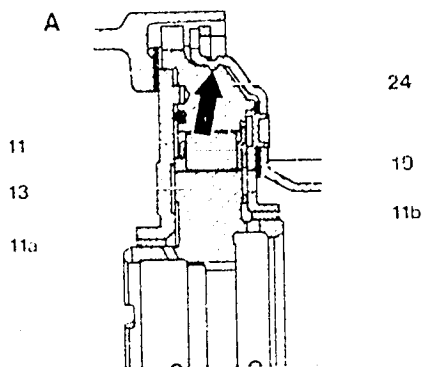


Disassembly and assembly

Note

One-way clutch 1st version "A" has two friction bearings (11a and 11b) for one-way clutch inner race (13). On this version the one-way clutch outer race (24) is peened to inner plate carrier K2 (19) (arrow).

Starting transmission end No. 169754 the one-way clutch 2nd version "B" is installed with one friction bearing (11a) only. The one-way clutch outer race is not permanently connected to inner plate carrier. Assembly procedure for both versions is the same.



Installation note

Lubricate bearing points and slide surfaces during assembly.

1 Clamp assembly fixture 126 589 00 35 00 at the two surfaces into vise with disk facing in upward direction. Place gear set into assembly fixture.

2 Remove circlip (3).

Installation note

Upon insertion, push circlip into groove by means of a screwdriver, after the front gear set has been mounted.

3 Lift off front planetary gear set (2).

4 Remove axial bearing (4) and input shaft (1).

Installation note

Upon insertion of input shaft (1), mount axial bearing (4).

5 Remove radial bearing (5) and axial bearing (6).

6 Remove output shaft (8).

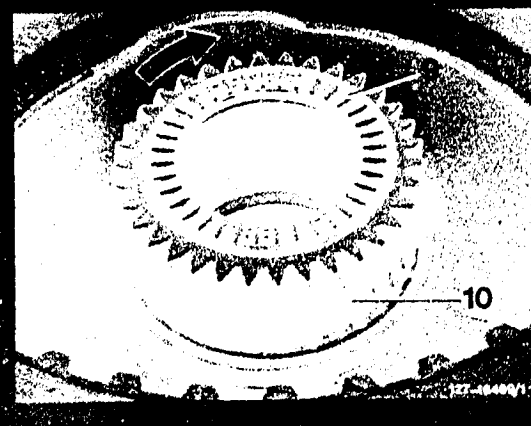
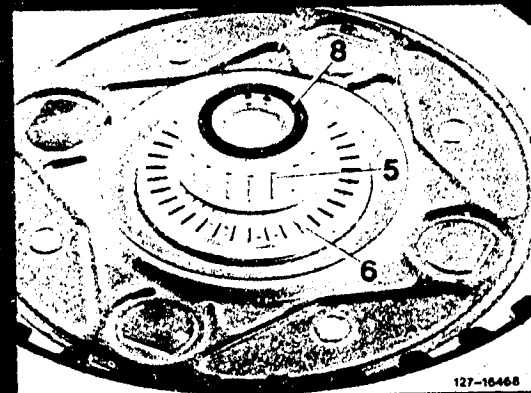
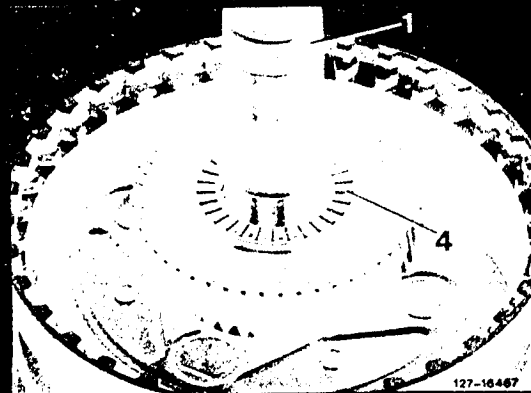
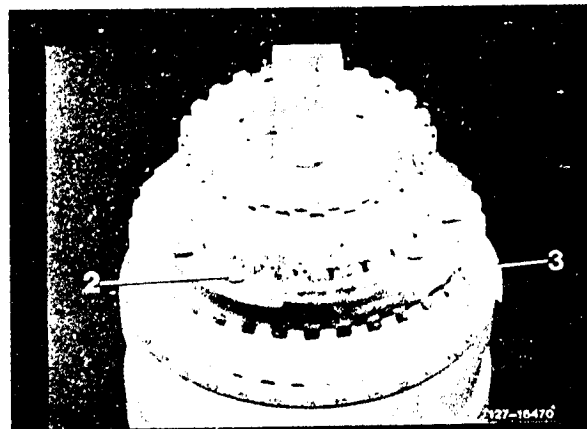
Installation note

Upon insertion of output shaft (8), insert radial bearing (5) and axial bearing (6).

7 Remove axial bearing (9) and pull out sun gear (10).

Installation note

Insert sun gear (10) into one-way clutch and rotate, one-way clutch should lock in direction of arrow, then place axial bearing (9) on sun gear.

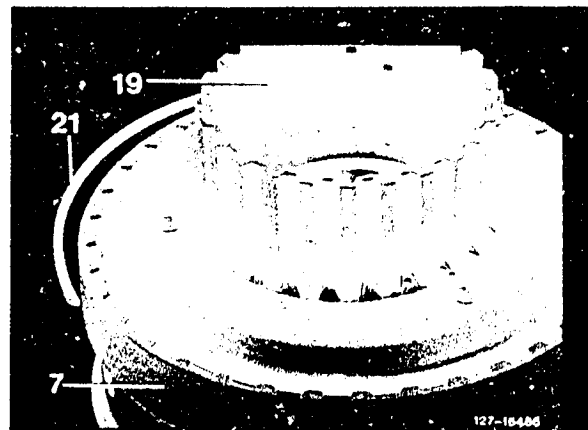


8 Remove circlip (21).

Installation note

Push circlip into groove by means of screwdriver.

9 Lift inside plate carrier K2 (19) with one-way roller clutch out of connecting carrier (7).



10 Lift off supporting disk (11).

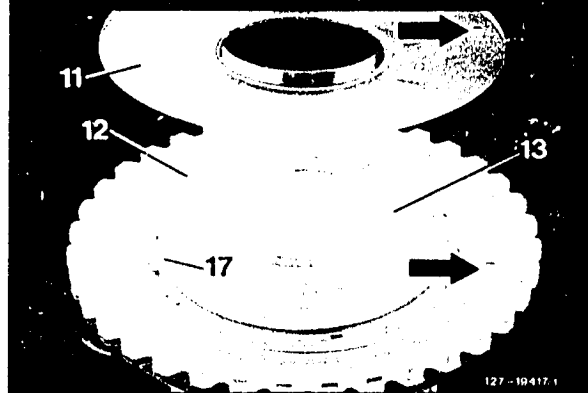
Installation note

Mount supporting disk (11) in such a manner that the lug enters bore in one-way clutch outer race (arrows).

11 Remove compensating ring (17) and O-ring (12).

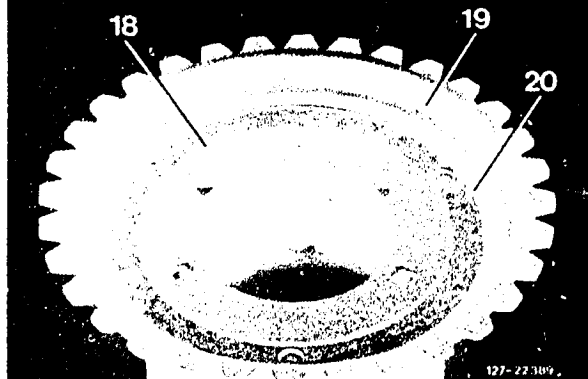
12 Rotate inner race (13) of one-way clutch in anti-clockwise direction and pull out.

13 Remove cylindrical rollers.

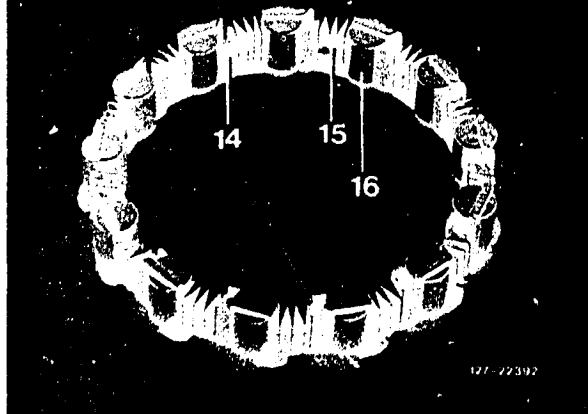


Installation note

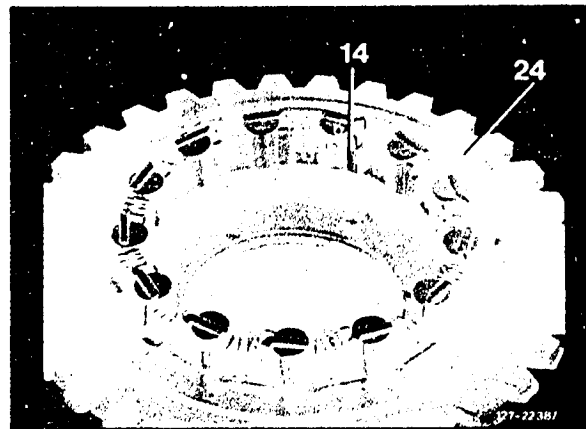
14 Place thrust washer (18) into inner plate carrier (19).



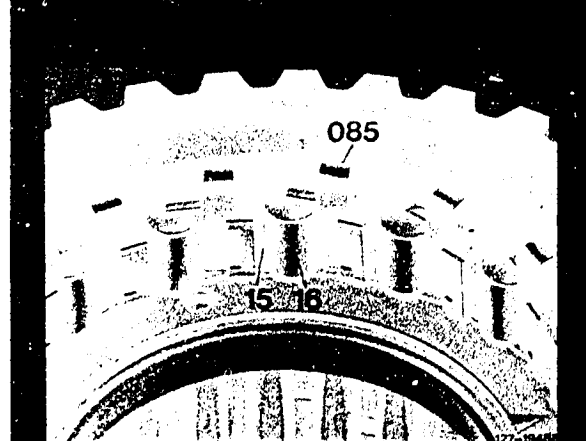
15 Insert cylindrical rollers (16) into roller cage (14).



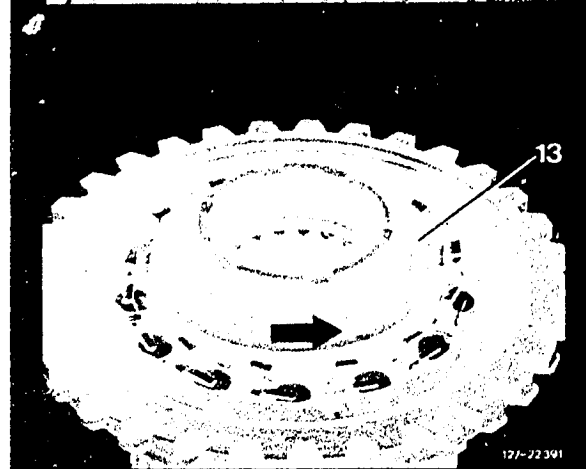
16 Place one-way clutch outer race (24) on inner plate carrier and insert roller cage (14).



17 Press cylindrical rollers (16) against compression springs (15) and insert locking plates (085) with offset in outward direction.

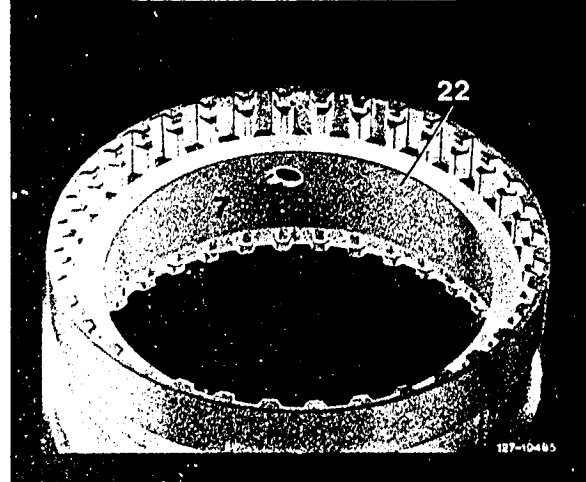


18 Insert one-way clutch inner ring (13) while rotating in direction of arrow, then remove locking plates (085) (refer to Fig. item 17).



19 Place compensating washers (22) into connecting carrier (7).

20 Hold one way clutch together and place into connecting carrier.



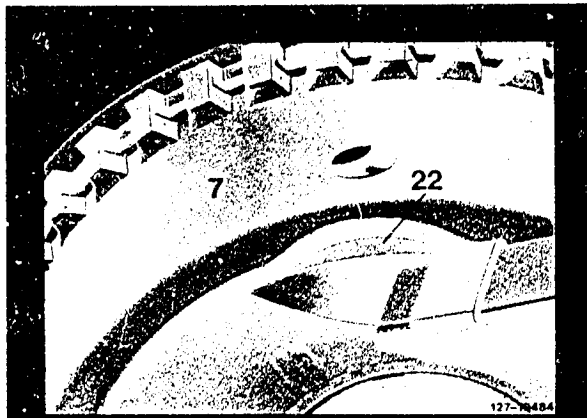
Measuring

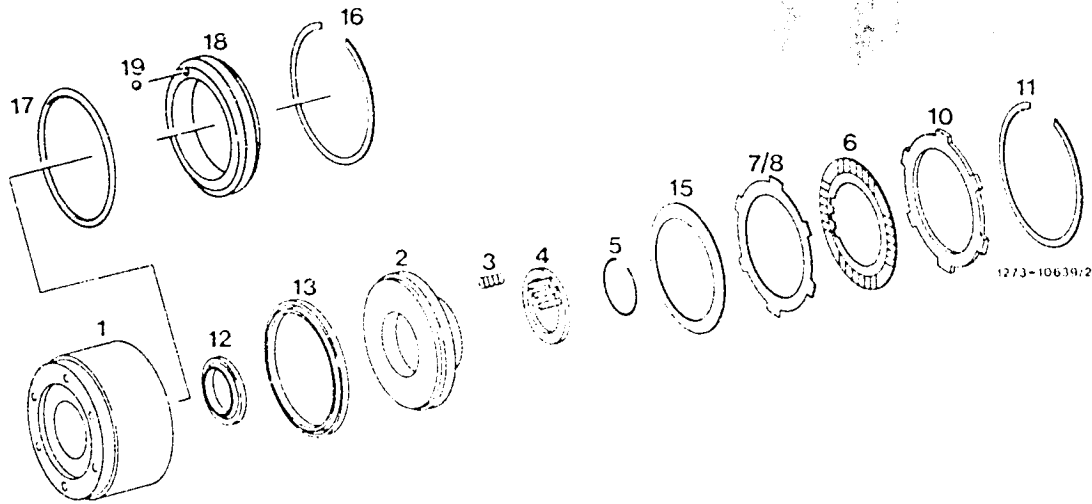
21 Check end play of one-way clutch and compensate.

Check clearance between one-way clutch and connecting carrier by means of a slip gauge.

Compensate clearance to 0.05–0.2 mm by means of compensating washers (22), then insert O-rings (12) and (20) (Fig. item 11 and 14).

22 Lift gear set out of assembly stand and push axial bearing (23) onto drive shaft.





- | | |
|-----------------------|---|
| 1 Outer plate carrier | Check for damage and wear |
| 2 Piston | Check for damage and wear; insertion sleeve
126 589 03 14 00, 126 589 02 14 00, 126 589 10 14 00 |
| 3 Return spring | Pay attention to dimensions and numbers |
| 4 Spring retainer | |
| 5 Circlip | Assembly device 126 589 00 43 00 |
| 6 Inner plate | Check for burnt spots and wear, nominal thickness
2 mm. Place new inside plates prior to installation for
about 1 hour into ATF oil.
Pay attention to number, refer to clutch plate sequence |
| 9 Outer plate | Check for burnt spots and distortions, pay attention to
number, refer to clutch plate sequence |
| 10 Outer plate | Check for burnt spots and distortions |
| 11 Circlip | |
| 12 Lip sealing ring | Check for damage and wear ¹⁾ |
| 13 Lip sealing ring | Check for damage and wear ¹⁾
¹⁾ Pay attention to item 7 |
| 15 Disk spring | Pay attention to installation position, refer to item 2 |
| 16 Circlip | |
| 17 Sealing ring | Check for damage |
| 18 Piston guide ring | Refer to item 8 |
| 19 Valve ball | Pay attention to Note under item 8
Dimension: 3 mm dia. |

Return springs for clutch piston

Transmission	Number	Wire dia. in mm	Length slack mm approx.
722.300-722.323	24	0.9	39.4
722.324, 722.325	19	0.9	41.5
722.323, 220 kW	24	0.9	30.5

Note

The number of springs is determined by weighing, for this reason up to two springs less may be installed.

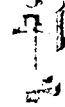
Special tools



126.589.03.14.00



126.589.02.14.00



126.154.01.14.00



126.589.19.14.00

Clutch plate sequence

Transmission model	722.308 722.347	722.300 722.301 722.303 722.304 722.306 722.307 722.309 722.310 722.312 722.315	722.317 722.319 722.320 722.321 722.322 722.345 722.346 722.348	722.302 722.305 722.311 722.313	722.323 722.324 722.325 722.350
Diagram	<p>1 10 11</p> <p>1273 10523 Z</p> <p>2 15 6 A</p>	<p>1 10 11</p> <p>1273 10522 J</p> <p>2 15 6 A</p>	<p>1 7 8 10 11</p> <p>1273 10644 I</p> <p>2 15 6 A</p>		

Clutch plate versions

Designation	Item no.	Thickness in mm
Inside plate	6	2.1
	7	2.0
Outside plate	8	optionally for compensating play 3.0 or 3.5
	9	optionally for compensating play 3.5 or 4.0
	10	optionally for compensating play 4.5 or 5.0

Piston	2	
Circlip	11	2.0
		2.5
		3.5
Disk spring	15	-
Circlip	16	2.0

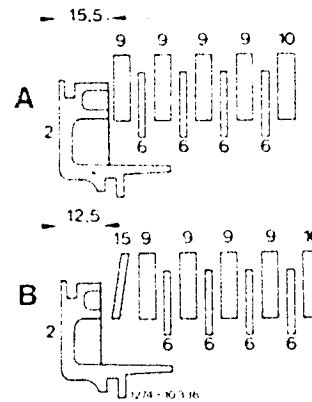
Adjusting data

Play "L" of plate clutch in mm (refer to diagram)	0.7-1.2
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Note

To improve the 2-3 shift, a disk spring (15) will be installed into clutch K1 starting September 1981. During reconditioning jobs this disk spring must be installed on principle in combination with a modified piston (2) of 12.5 mm height. If applicable, the existing piston may be turned down by 3 mm.

A Clutch K1 without disk spring
B Clutch K1 with disk spring



Disassembly and assembly

- 1 Remove circlip (11).

Installation note

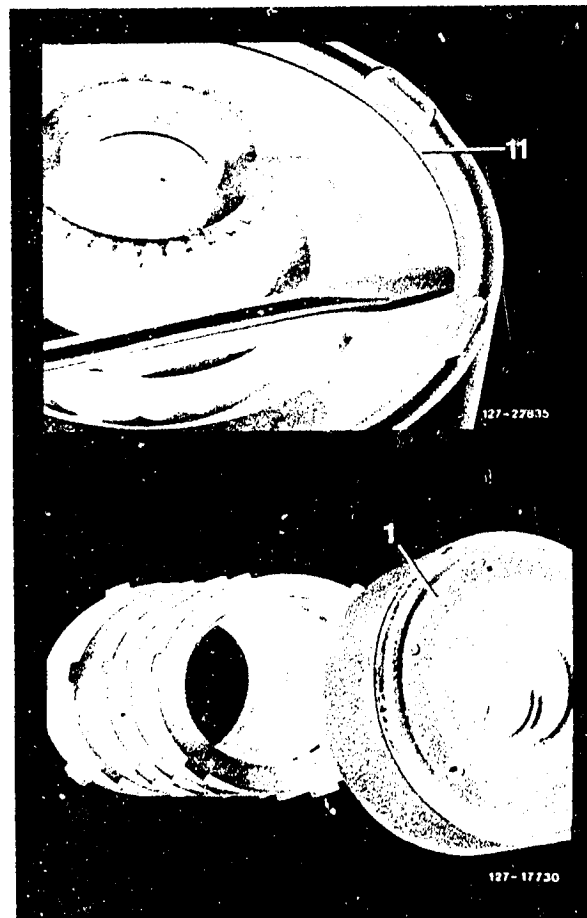
Upon insertion, push circlip at its entire circumference in upward direction by means of a screwdriver.

- 2 Tilt outside plate carrier (1) and remove plate package.

Installation note

Pay attention to clutch plate sequence. Assemble clutch package according to transmission model designation.

Place convex disk spring on piston.



3 Place assembly fixture (020) on spring retainer (4) and tension until circlip (5) is exposed. Remove circlip (5).

4 Release assembly fixture 126 589 00 43 00 and remove.

Installation note

Upon insertion, check circlip for correct seat.

5 Remove spring retainer (4) and compression springs (3).

Installation note

Pay attention to number of return springs and make sure that each spring is centered by a guide pin of spring plate.

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

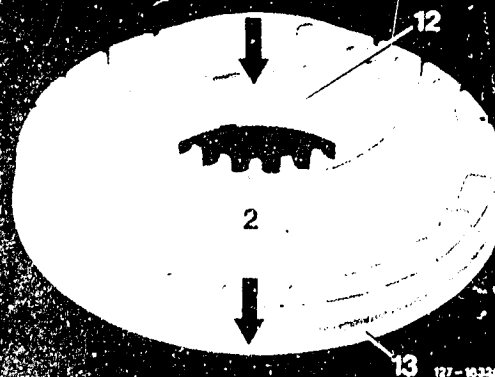
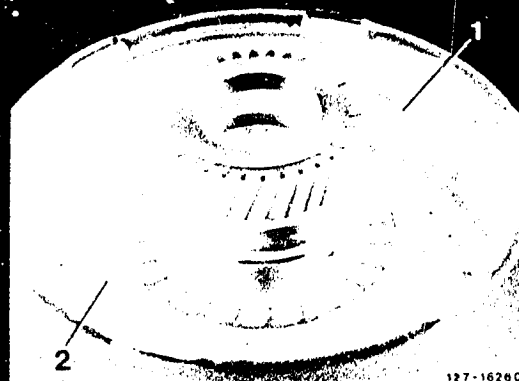
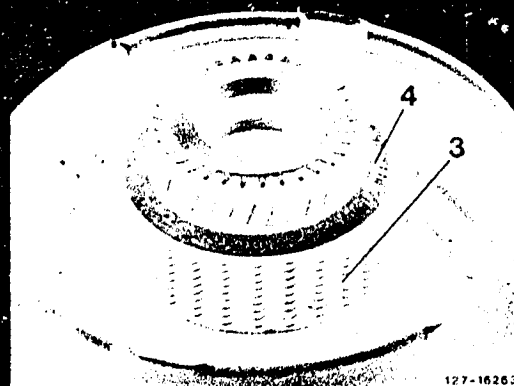
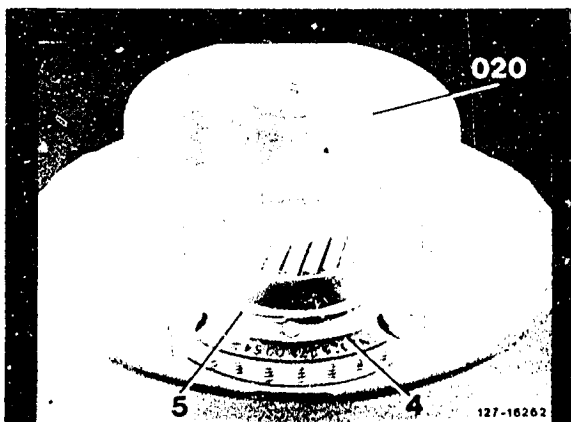
Note: Check O-ring between outside plate carrier and piston guide ring for leaks, fill a small quantity of kerosene or benzine into piston guide ring. Then check whether the fluid is flowing off.

In the event of leaks, replace outside plate carrier except transmission 722.323 220 kW and 722.324/325.

Installation note

Check lip sealing rings (12 and 13) for wear and damage and replace, if required.

7 Insert lip sealing rings (12 and 13) into piston (2) in such a manner that the sealing lips are pointing downwards (direction of arrow).



Attention!

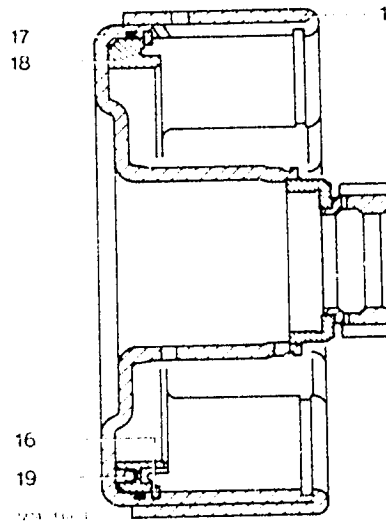
On transmission 722.323 220 kW, 722.324 and 722.325 the piston guide ring is held by means of a circlip (refer to drawing).

8 Remove circlip (16) and pull out piston guide ring (18). Remove sealing ring (17). For installation proceed vice versa.

Installation note

Insert valve bail (19) with grease into piston guide ring (18).

Lubricate piston guide ring and sealing ring with ATF oil prior to installation.



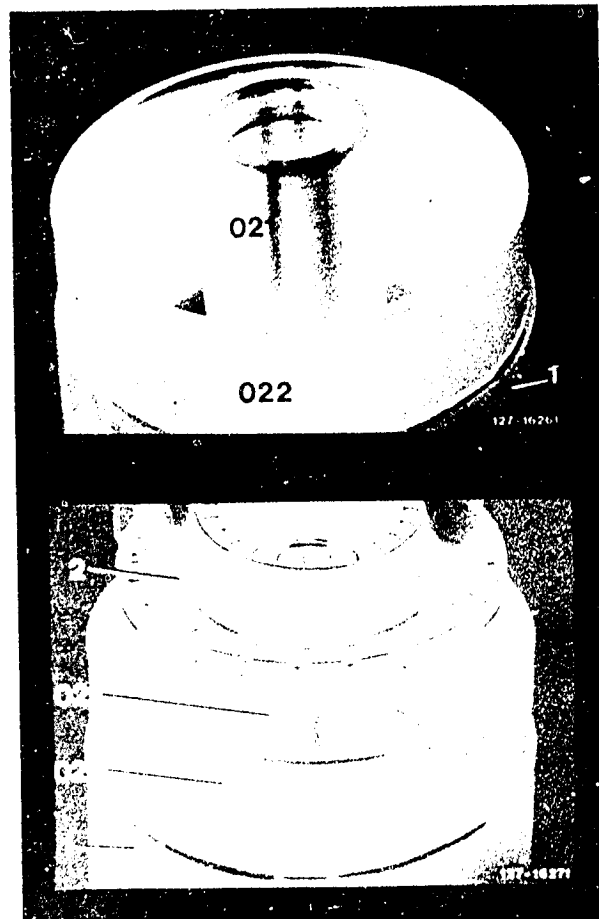
9 Place installation sleeves (021) and (022) into outside plate carrier (1).

Lubricate installation sleeves, as well as lip sealing rings (12 and 13) with ATF.

Note: On insertion sleeves of 1st production run, remove beaded edge for approx. 5 mm on lathe so that the insertion sleeve rests on piston guide ring. Installation sleeves 126 589 03 14 00, 126 589 10 14 00 and 126 589 02 14 00.

10 Carefully install piston (2) and push into outside plate carrier (1) without canting.

11 Remove installation sleeves (021) and (022).

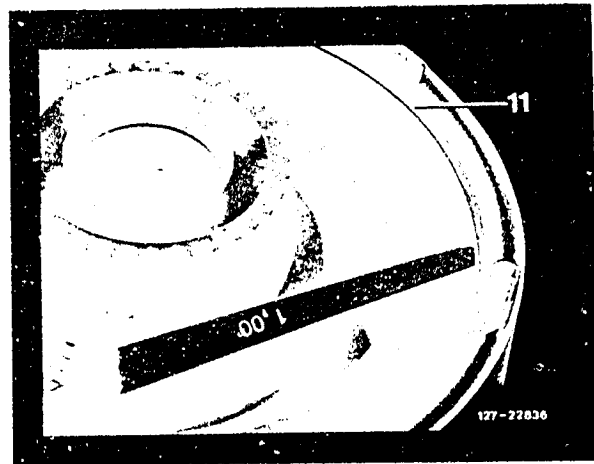


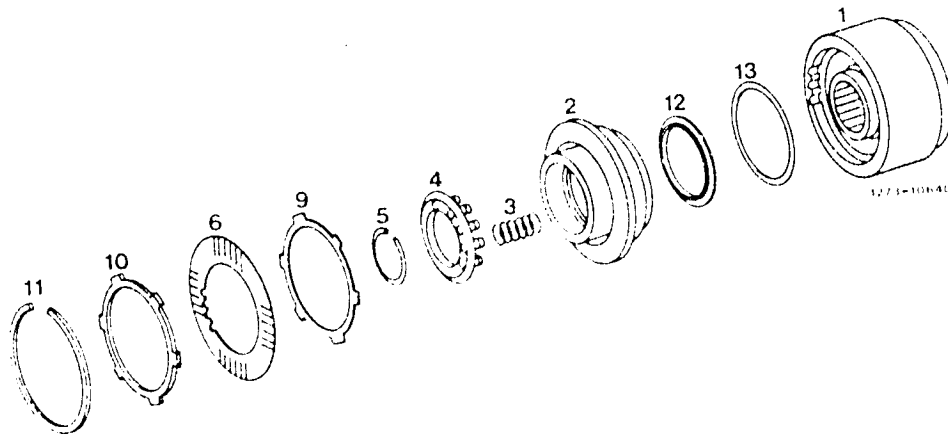
Measuring

12 Find clearance "A" by means of a feeler gauge.

Note: Starting with transmission end No. 243 517 clearance "A" is set by means of circlip (11) which is available in three sizes (2.0 – 2.5 – 3.0 mm thick). The groove for the circlip is therefore machined 3.2 mm wide. Additional compensation by means of center outer plates – similar to transmissions with lower transmission end No. – is required only whenever the specified clearance "A" is not attained by means of circlip (11).

Set release clearance to 0.7–1.2 mm.





- | | | |
|----|-----------------------|--|
| 1 | Outside plate carrier | Check for damage and wear |
| 2 | Piston | Check for damage and wear, installation sleeve
126 589 02 14 00 |
| 3 | Return spring | Pay attention to dimensions and number |
| 4 | Spring retainer | |
| 5 | Circlip | Assembly fixture 126 589 00 43 00 |
| 6 | Inside plate | Pay attention to burnt spots and wear, nominal thickness 2 mm. Prior to installation, place new inside plates for approx. 1 hour into ATF oil. |
| 9 | Outside plate | Pay attention to burnt spots and distortions. Pay attention to number, refer to clutch plate sequence. |
| 10 | Outside plate | Pay attention to number, refer to clutch plate sequence |
| 11 | Circlip | Check for burnt spots and distortions |
| 12 | Lip sealing ring | Check for damage and wear ¹⁾ |
| 13 | Lip sealing ring | Check for damage and wear ¹⁾ |
- ¹⁾ Pay attention to item 6 and 7.

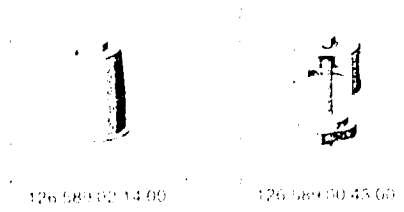
Return springs for clutch piston

Transmission	Number	Wire dia. mm	Length, slack mm approx.
722.300-722.310 722.312, 722.315 722.317-722.322 722.324, 722.325	24	0.5	39
722.311, 722.313 722.323	21		

Note

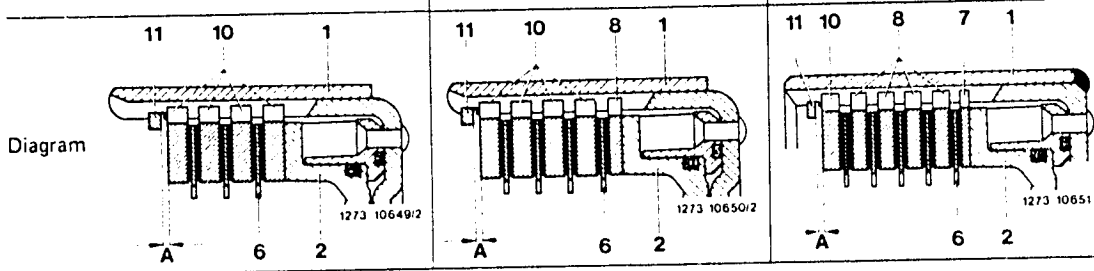
The number of springs is determined by weighing, for this reason up to two springs less may be installed.

Special tools



Clutch plate sequence

Transmission model	722.308 722.347	722.300 722.301 722.303 722.304 722.306 722.307 722.309 722.310 722.312 722.317 722.319	722.320 722.321 722.322 722.324 722.325 722.345 722.346 722.348	722.302 722.305 722.311 722.313 722.323 722.350
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Clutch plate versions

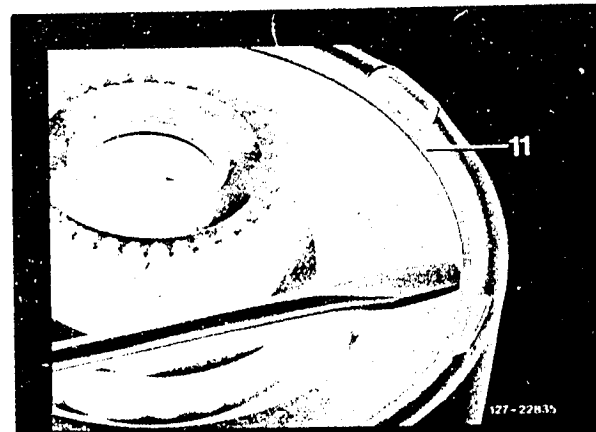
Designation	Item no.	Thickness in mm
Inside plate	6	2.1
	7	2.0
	8	optionally for compensating play 3.0 or 3.5
	9	optionally for compensating play 3.5 or 4.0
Outside plate	10	optionally for compensating play 4.5 or 5.0
	2	
Piston	2	2.0
Circlip	11	2.5
		3.5
Adjusting data		
Clearance "A" of plate clutch in mm		0.7-1.2

Disassembly and assembly

- 1 Remove circlip (11).

Installation note

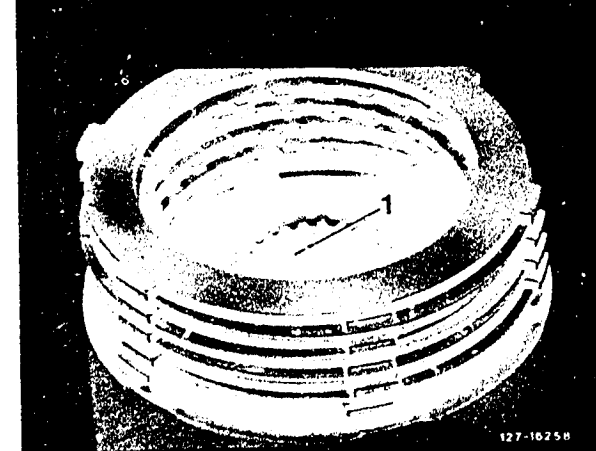
Upon insertion, push circlip along entire circumference in upward direction by means of a screwdriver.



- 2 Tilt outside plate carrier (1) and remove plate package.

Installation note

Pay attention to clutch plate sequence. Assemble clutch package according to transmission model designation.

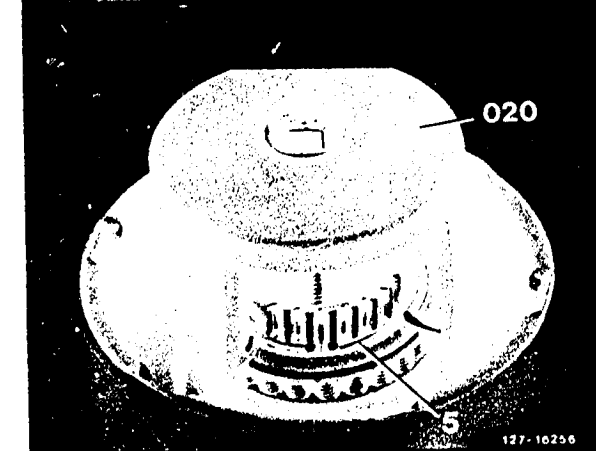


- 3 Place assembly device (020) on spring retainer and tension until circlip (5) is exposed.

Remove circlip (5). Release assembly fixture 126 589 02 14 00 and remove.

Installation note

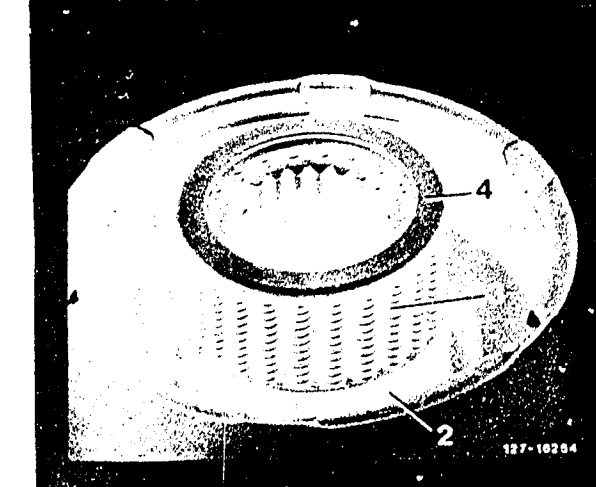
Upon insertion, check circlip for correct seat.



- 4 Remove spring retainer (4) and compression springs (3).

Installation note

Pay attention to number of return springs and make sure that each spring is centered by a guide lug of spring retainer.



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

Note: Check O-ring between outside plate carrier and piston guide ring for leaks. For this purpose, fill some kerosene or benzine into piston guide ring. Then watch whether fluid flows off.

In the event of leaks, replace outside plate carrier.

Installation note

Check sealing rings (12 and 13) for wear or damage and replace, if required.

6 Insert sealing ring (12), making sure that the sealing ring is not twisted.

7 Insert lip sealing ring (13) into piston (2) in such a manner that the sealing lip is pointing downwards (in direction of arrow).

8 Place installation sleeve (021) on outside plate carrier (1). Lubricate installation sleeve as well as sealing rings (12 and 13) with ATF.

9 Carefully place piston (2) into outside plate carrier, while slightly rotating and pushing down piston without canting.

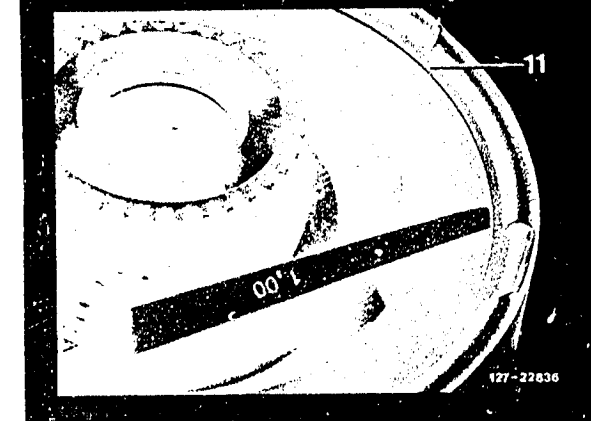
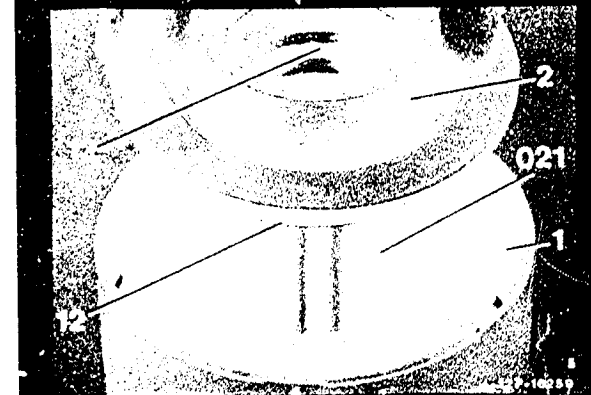
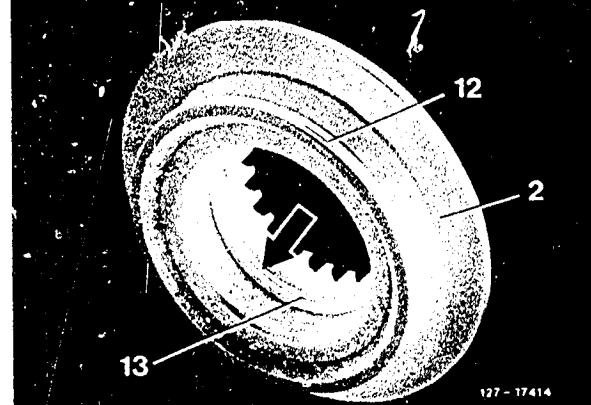
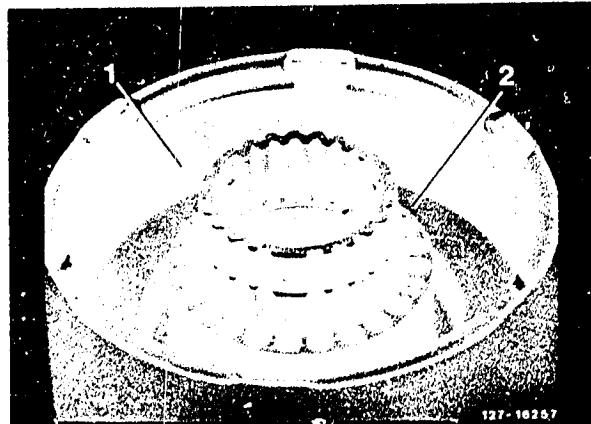
10 Remove installation sleeve 126 589 02 14 00 (021).

Measuring

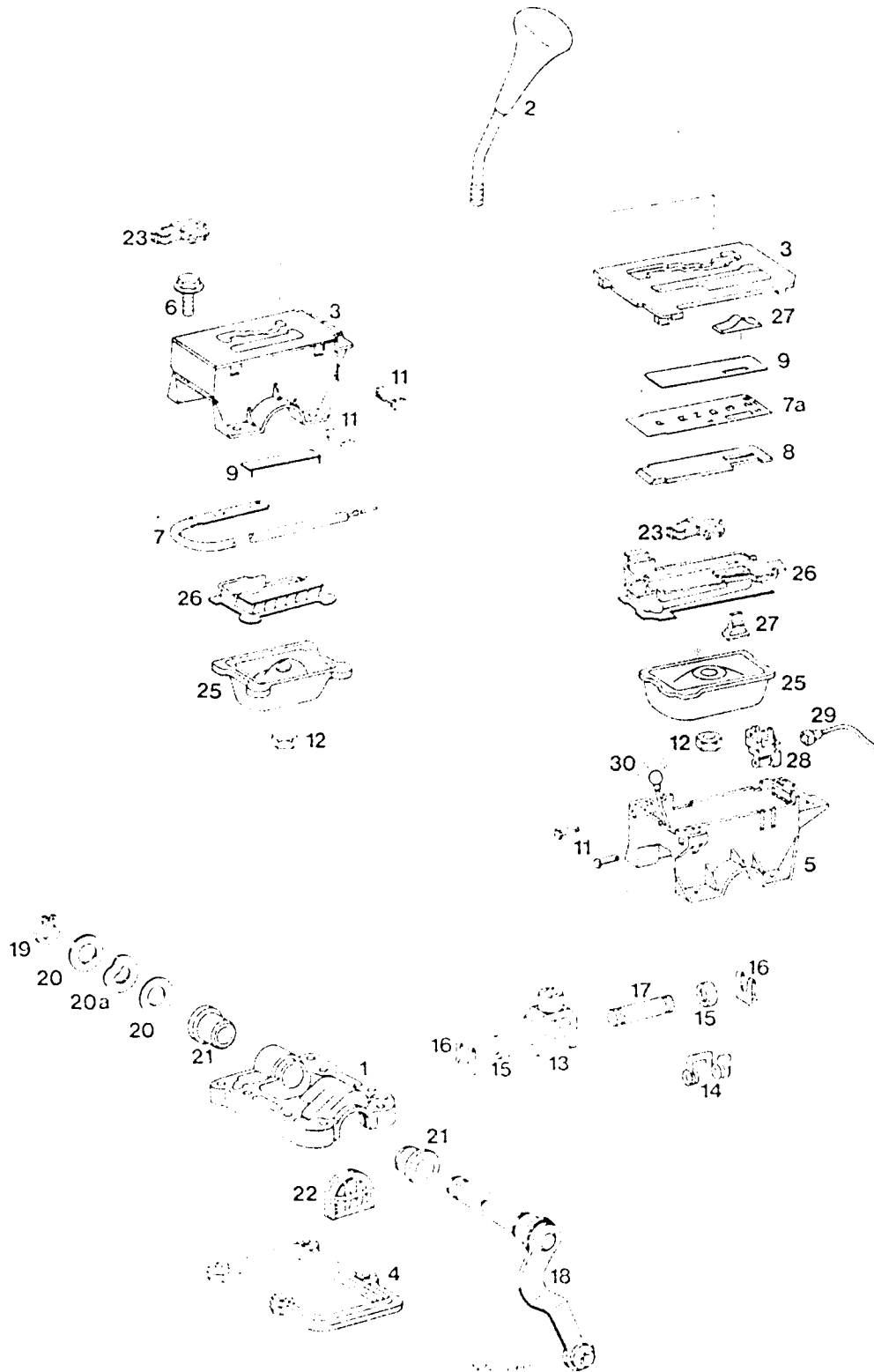
11 Determine clearance "A" by means of a slip gauge.

Set release clearance to 0.7–1.2 mm.

Note: Starting transmission end No. 243 517 clearance "A" is set by means of the circlip available in three sizes (2.0/2.5/3.0 mm thick). The groove for the circlip is machined to 3.2 mm. If the specified clearance "A" is not obtained with circlip (11), compensate additionally with center outside plates (such as transmission with lower end No.).



27-745 Removal, disassembly, assembly and installation of center floor shift



- 1 Bearing bracket Check for damage and bearing points for wear, grease during assembly
- 2 Selector lever Check for damage
- 3 Guide block (shift pattern) Check for damage
- 4 Rubber gasket Check for damage
- 5 Housing
- 6 Hex. head screws
- 7 Light guide Attention! Do not bend light guide, for removal pay attention to item 3

- 7a Light wire
- 8 Cover strip
- 9 Cover
- 11 Holder Remove during disassembly, check for damage, replace if necessary

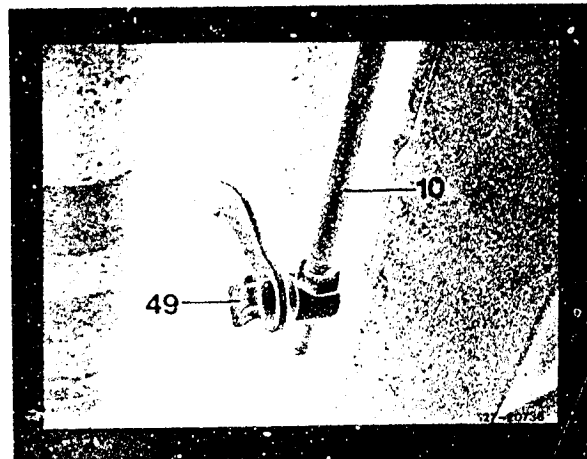
- 12 Counternut
- 13 Fork head Check for wear
- 14 Double leg spring
- 15 Plastic bushings Check for wear
- 16 Fuse
- 17 Bearing bolt Check for wear¹⁾
- 18 Shaft Check for wear¹⁾
- ¹⁾ Longterm lubricant Longterm 2 or Olistamol, refer to Specifications for service products sheet 266.2

- 19 Circlip
- 20 Washer
- 20a Corrugated washer
- 21 Bearing bushings Check for wear
- 22 Gasket
- 23 Switch – selector lever position “B” During removal, slide slightly forward and remove laterally

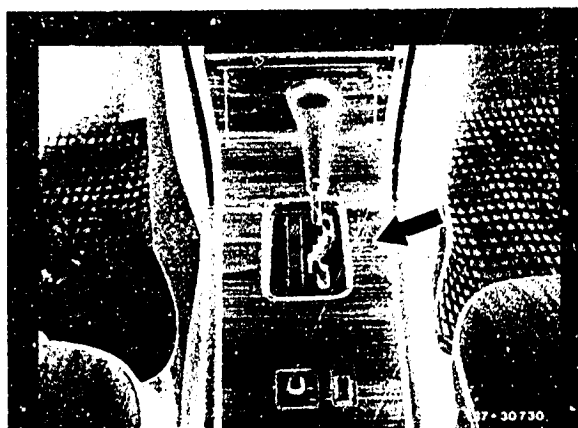
- 25 Sleeve Check for damage and cracks
- 26 Holder
- 27 Valve
- 28 Valve holder Check for function
- 29 Plug
- 30 Glow bulb

Removal and installation

- 1 Remove clip lock (49) and disengage shift rod (10).



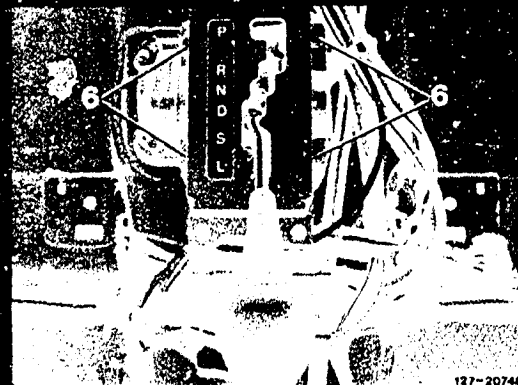
2 Remove cover (arrow) on model 107 and 124 (68-230), remove center console on model 126 (68-200).



3 Pull light guide (7) for illuminating guide block (shift pattern) from distributor (8) or pull glow bulb out of housing and pull plug from switch on vehicles with selector lever position "B", as well as with "S" and "E" programs.



4 Unscrew fastening screws (6), remove center floor shift.

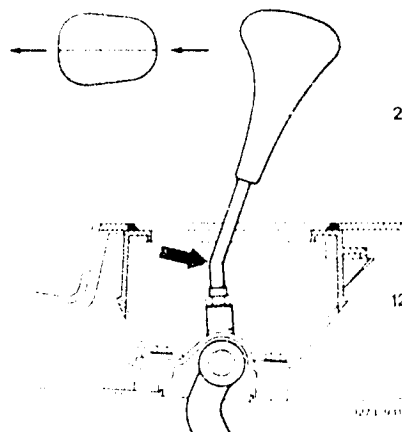


Installation note

During installation, place gasket on center floor shift and insert fastening screws through gasket.

5 For installation proceed vice versa.

6 Align selector lever (2) so that the bend (arrow) points forward and the contour separating line on plastic foam (top view in drawing) runs accurately in longitudinal direction of vehicle.



	Coordinates
Slip or no positive connection	
Transmission slips in all selector lever positions or no positive connection when engaging a driving position	G 17
Transmission slips in 2nd gear or shifts from 1st to 3rd gear	G 17
Transmission slips in 1st and 2nd gear when moving off, or moving off in forward direction is impossible, but reverse gear in order	H 17
Transmission slips during 2-3 shift, or slips first and then takes a hard grip	H 17
Transmission slips during 3-4 shift	J 17
Upon installation, transmission not positively engaging or failing after a short period of operation	K 17
For a short moment no power transmission in all selector lever positions, immediately after the engine fires (particularly after an extended period of inoperation)	K 17
No positive engagement in reverse gear	L 17
Starting jerk	
Rough jerk when engaging selector lever positions "D" and "R"	L 17
Rough jerks when changing gears	M 17
Rough downshift jerk when shifting down from 4-3	N 17
Chatter during upshift	N 17
Upshifts - downshifts	
No shifting up	O 17
No upshifts in selector lever position "3", but in selector lever position "D" in order (engine 117 with energy concept)	O 17
Shifting up only in lower speed range of gears	O 17
Shifting up only in upper speed range of gears	P 17
No kickdown downshifts	A 18
No brake shifts (4-3 and 3-2)	A 18
Automatic, unwanted downshifts outside part throttle shifting-down range without actuation of kickdown switch	B 18
Torque converter	
Poor acceleration when moving off	B 18
Selector lever functions	
Parking lock not engaging	B 18
Selector lever positions "R" and "P" cannot be engaged	B 18
Engine cannot be started in selector lever positions "P" and "N"	C 18
Oil loss	
Creeping oil loss (without recognizable external leaks) in combination with smoke development in exhaust	D 18
Oil loss between torque converter and primary pump (oil comes out at vent grille)	D 18
Oil in transmission emulsified (mixed with water)	E 18
Noises	
1st and reverse too loud	E 18
3rd speed too loud	E 18
Howling noise when changing gear under full load	F 18
Howling noise which increases when engine speed rises	F 18
Rattling noises at engine speed 1500/min in all selector lever positions except "R"	G 18
Light grinding noise in selector lever positions "P" and "N"	G 18
Rattling noises when driving in reverse	G 18
Primary pump bushing getting loose after a short operating period	H 18

Programmed repairs automatic transmission 722.3 → 08/88

Job No. of flat rate or standard text and flat rate data.

Note

If the transmission fluid is black or has a burnt smell, or if there is an abnormally large number of metal chips in oil pan, the transmission must be either reconditioned or exchanged.

Complaint:

Transmission slips in all selector lever positions, or no positive connection when engaging a driving position

Cause/Remedy.

1. Check modulating pressure and adjust, if required. If not adjustable, check modulating pressure control valve for easy operation (*27-015, *27-430).
2. Check regulating valve-switching-on (58) for easy operation. If the regulating valve-switching-on (58) is binding, the working pressure is too high.
3. Check vacuum line from intake pipe to vacuum control unit for unobstructed passage and renew, if clogged (*27-690). On vehicles with diesel engine, check vacuum control valve.
4. Check working pressure, if too low or not available (*27-020):
 - a) Loosen oil cooler line on transmission oil cooler, start engine for a short moment and check for presence of pressure oil; if there is no oil, proceed according to section c).
 - b) Disassemble and clean shift valve housing, make working pressure control valve operational and replace shift valve housing, if necessary (*27-130).
 - c) Remove primary pump, check and replace, if necessary (*27-142 and 146).

If the working pressure is in order, but there is still no positive connection, damage on one-way clutch or gear set is responsible.

Complaint:

Transmission slips in 2nd gear or shifts from 1st to 3rd gear

Cause/Remedy:

1. Check control valve B1 for easy operation and exchange shift valve housing, if necessary (*27-130).
 2. Remove and install brake band piston B1, check lip sealing ring and renew, if necessary (*27-350).
 3. Renew brake band B1 and thrust body for B1 (*27-372).
 4. Or command valve (17) 1-2 will be binding, if no shifting to 4th speed follows.
-

Complaint:

Transmission slips in 1st and 2nd gear when moving off, or moving off in forward direction is impossible, but reverse gear in order

Cause/Remedy:

1. Make shift valve B2 operable and exchange shift valve housing, if necessary (*27-121).
 2. Replace brake band piston B2.
 3. Adjust brake band B2 by installing a longer thrust pin. If wear is excessive or brake band is broken, replace brake band (*27-355).
- If moving off in driving position "2" is possible, but not in driving position "3" and "D", the one-way clutch may slip.
-

Complaint:

Transmission slips during 2-3 shift, or slips first and then takes a hard grip

Cause/Remedy:

1. Drive with vacuum line pulled off. If the transmission is nevertheless slipping, overlapping is not in order. There is no temperature throttle, or sealing rings are damaged.
If the transmission is no longer slipping, the periphery is responsible.
 2. Check modulating pressure and adjust, if necessary (*27-020).
 3. Check whether temperature throttle is installed (refer to job No. 430/1, item 117 in Fig.).
 4. Exchange shift valve housing (*27-121).
 5. Check teflon ring of front cover, if in order proceed according to item 5.
 6. Renew inside plates of clutch K1, recondition clutch according to condition (*27-370).
-

Complaint:

Transmission slips during 3-4 shift

Cause/Remedy:

1. Check modulating pressure and adjust, if necessary (*27-020).
 2. Exchange shift valve housing (*27-121).
 3. Check teflon rings supporting flange K2, if in order proceed according to item 4.
 4. Renew inside plates of clutch K2, recondition clutch according to condition (*27-370).
-

Complaint:

Upon installation, transmission not positively engaging or failing after a short period of operation

Cause/Remedy:

Torque converter not correctly installed. Drivers not accurately engaging in drive gear of primary pump.

Follow-up damage: drivers on torque converter and primary pump will be destroyed.

Replace primary pump or torque converter.

Complaint:

For a short period no power transmission in all selector lever positions, immediately after the engine fires (particularly after an extended period of inoperation)

Cause/Remedy:

Torque converter partially draining via leaking or defective lube pressure ring on input shaft, or via leaking lube pressure valve in shift valve housing.

1. Check lube pressure ring on input shaft, replace (*27-140).
 2. Check lube pressure valve (refer to job No. 420/6 item 18, pos. 33) in shift valve housing and clean.
-

Complaint:

No positive engagement in reverse gear

Cause/Remedy:

1. Check lining plates and lip sealing rings on piston of B3 and replace, if necessary.
-

Complaint:

Rough jerk when engaging selector lever positions „D“ and „R“

Cause/Remedy:

1. Adjust idle speed and emission value as specified (*07-012).
 2. Check pressure receiving piston in shift valve housing for easy operation and correct installation. Exchange shift valve housing, if necessary.
-

Note

If a rough engaging jerk results when shifting for a short period back and forth between "N" and "D", there is no reason for a complaint. The pressure receiver requires approximately 2 seconds to operate. If this period is maintained, the respective engaging jerk is in order.

Complaint:

Rough jerks when changing gears

Cause/Remedy:

1. Check control pressure adjustment.
2. Check vacuum line and connecting points for leaks. On vehicles with diesel engine, check vacuum control valve.
3. Check modulating pressure and adjust, if necessary (*27-020).
4. Coolant may flow via transmission oil cooler into transmission. Not recognized in the beginning, but with increasing amounts the transmission oil will change to a whitish, cloudy color.

Replace all friction linings and exchange transmission, if necessary.

Attention!

Radiator must be replaced.

Complaint:

Rough jerk when shifting down from 4-3.

Cause/Remedy:

1. Replace lip sealing ring at releasing end B 2.
 2. Replace brake band piston B 2.
 3. Thrust body B2 twisted, renew thrust body.
 4. Airbag gasket not installed (at lower downshift limit).
-

Complaint:

Chatter during upshift

Cause/Remedy:

If not in order, install repair shift valve housing (27-420).

Complaint:

No shifting up

Cause/Remedy:

1. Check governor pressure (if no governor pressure is indicated, continue with item 3. If governor pressure is in order, perform item 2 (*27-030).
 2. Check kickdown solenoid valve for tendency to stick or for constant presence of voltage caused by defective fuel pump relay, or whether the kickdown switch will stick.
 3. Clean centrifugal governor and make operable (*27-285).
 4. Disassemble and clean shift valve housing. Exchange, if necessary (*27-128).
-

Complaint:

No shifting up in selector lever position "3", but in order in selector lever position "D" (engine 117 with energy concept)

Cause/Remedy:

1. Contacting of plug for cruise control/Tempomat connection on electronic speedometer not in order.
 2. Replace control unit for moving off 1st gear.
 3. Harness between plug – temperature connection and control unit – moving off 1st gear interrupted.
-

Complaint:

Shifting up in lower speed range of gears only

Cause/Remedy:

1. Check control wire for control pressure whether disconnected or torn and adjust accurately as required (*27-730).
 2. Check full throttle stop. (Accelerate fully by means of accelerator pedal and check whether throttle valve rests against full throttle stop. Adjust, if necessary.)
 3. Check governor pressure. If governor pressure is too high, exchange centrifugal governor (*27-030).
 4. Exchange shift valve housing.
-

Complaint:

Shifting up in upper speed range of gears only

Cause/Remedy:

1. Check control wire for control pressure and adjust (*27-730).
 2. Check kickdown solenoid valve for tendency to stick or for constant presence of voltage caused by defective fuel pump relay, or whether the kickdown switch will stick.
 3. Check governor pressure, if governor pressure is too low, exchange centrifugal governor (*27-030, *27-280).
 4. Make control pressure-control valve operable (*27-128).
-

Complaint:

No kickdown downshifts

Cause/Remedy:

1. Check throttle control and control pressure cable for correct adjustment (*27-730).
 2. Check fuse for power supply to solenoid valve.
 3. Remove solenoid valve. In removed condition, connect to power supply and check for function and replace, if necessary (*27-765).
 4. Check pulling wire for control pressure, whether it is disconnected, torn or wrongly set (*27-730).
 5. Check kickdown control valve in shift valve housing for easy operation and exchange shift valve housing, if necessary (*27-128).
-

Complaint:

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

Cause/Remedy:

1. Adjust pulling wire for control pressure (*27-730).
 2. Make piston for brake shifts operational and exchange shift valve housing, if necessary (*27-128).
-

Complaint:

Automatic, unwanted downshifts outside part throttle shifting-down range without actuation of kickdown switch

Cause/Remedy:

1. Remove kickdown solenoid valve. Check O-ring on solenoid valve for damage (*27-765).
 2. Check whether kickdown switch is stuck when pushed down and replace, if necessary (*27-760).
 3. Check whether solenoid valve is stuck in opened position and replace solenoid valve, if necessary.
-

Complaint:

Poor acceleration when moving off.

Cause/Remedy:

1. Check stalling speed (*27-285).
 2. If the stalling speed is approx. 400-700/min below specified value, the one-way roller clutch of torque converter will slip. Exchange torque converter (*27-730).
-

Complaint:

Parking lock not engaging.

Cause/Remedy:

1. Check rear engine mount and replace, if required.
 2. Check adjustment of selector rod and correct, if required (*27-010).
-

Complaint:

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

Cause/Remedy:

- a) With engine running.
 - b) With engine stopped.
1. a) Clean centrifugal governor and make operable (*27-285).
 2. b) Make locking piston in lower cover operable (*27-270).
-

Complaint:

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

Cause/Remedy:

1. Adjust selector rod and starter lockout switch.
 2. Renew starter lockout switch (*27-780).
-

Complaint:

Creeping oil loss (without recognizable external leaks) combined with smoke development in exhaust.

Cause/Remedy:

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

1. Replace vacuum control unit (*27-420).
-

Complaint:

Oil loss between torque converter and primary pump (oil flowing out at venting grille).

Cause/Remedy:

1. Provide oil drain plug on torque converter with new sealing ring and put Hylomar on threads, screw-in and tighten. If leaking continues, proceed with item 2.
 2. Replace radial sealing ring and O-ring of primary pump, while checking groove for O-ring on primary pump for porous spots. Replace primary pump, if required.
-

Complaint:

Oil in transmission emulsified (mixed with water)

Cause/Remedy:

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

Complaint:

1st and reverse too loud

Cause/Remedy:

1. Renew front gear set according to condition (*27-080).

Note: 1st and reverse are louder than the other speeds owing to reduction conditions. A similar vehicle should be used for comparison.

Complaint:

3rd gear too loud

Cause/Remedy:

1. Replace rear planetary gear set (*27-080).
-

Complaint:

Howling noise when changing gears under full load

Cause/Remedy:

1. Replace oil filter.
-

Complaint:

Howling noise, which increases when engine speed rises

Cause/Remedy:

1. Check primary pump and replace, if required (*27-140).
-

Complaint:

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

Cause/Remedy:

Plates of reverse brake are vibrating in transmission housing.

1. Renew inside plates of reverse brake B 3, mount damper spring (refer to job No. 640/18 item 79), set release clearance to minimum value.
-

Complaint:

Light grinding noise in selector lever positions "P" and "N"

Cause/Remedy:

This noise is a normal rolling noise of front gear set which cannot be eliminated. If in doubt, if the noise seems too loud, compare with another, similar vehicle.

Complaint:

Rattling noises when driving in reverse

Cause/Remedy:

Release clearance of plate brake B3 too high. Outside plate carrier of K1 wipes against piston L B3.

1. Adjust release clearance to specified value 1.5–2 mm or replace inside plates.
-

Complaint:

Primary pump bushing getting loose after a short operating period

Cause/Remedy:

Dowel pins for centering transmission-engine not in place.

H18

 **08/88**

J18

J18

Revisions automatic transmission 722.3 → 08/88

This film replaces microfilm no. 07 102 2155 04.
 The film refers to transmission 722.3 up to production date 08/88.
 A new microfilm will be available for transmissions starting production date 09/88.
 The previous film, now invalid, should be destroyed.

Below is a survey of modifications and supplements in keywords.
 The respective job numbers are indicated.

Transmissions 722.345/346/347/348 and 722.350 up to 08/88 added.

	Job No.	Coordinates
Installation survey, test and pressure values	001	G 1
Shift points in selector lever position "D"	330	E 6
Disassembly, assembly and measuring of clutch K1	680	A 16
Disassembly, assembly and measuring of clutch K2	690	K 16
Model years 1987 and 1988 added		
Installation survey, test and pressure values	001	G 1
Shift points	330	E 6
Survey extended		
Survey of large intermediate plate	003	N 2
Testing of program selector switch added		
Removal, installation and adjustment of control pressure cable with vacuum element, vehicles with program selector switch	115	N 4
Vehicles with 4MATIC added		
Adjustment of control rods	120	B 5
Removal and installation of transmission with torque converter	600	H 9
Tables newly arranged, transmissions 722.345/346/347/348 and 722.350 up to 09/88 and model year 1988 added.		
Shift points in selector lever position "D"	330	E 6
Legend and exploded drawings supplemented, job descriptions more compact or consolidated.		
Removal and installation, disassembly and assembly of shift valve housing	400	O 6
Removal and installation, disassembly and assembly of lower cover with intermediate plate	430	L 7

Note for 4MATIC vehicles added

Removal and installation of rear cover 440 B 8

Note for multiple plate brake B3 with spring retainer added

Removal and installation of primary pump 630 B 11

List concerning thrust bodies, brake band piston B2 and brake band guide B2 added

Disassembly and assembly of transmission 640 L 11

Programmed repairs

Remedies supplemented or modified

Respective complaints:

Transmission slips in all selector lever positions or
no positive connection upon engagement of a driving position G 17

2nd speed slips or transmission shifts from 1st to 3rd speed G 17

Transmission slips during 2-3 shift or slips first
and then takes a hard grip H 17

Transmission slips during 3-4 shift J 17

No positive connection of reverse speed L 17

Rough jerk when engaging selector lever positions "D" and "R" L 17

Rough jerks when changing gears M 17

Rough jerk when shifting down from 4-3 N 17

Chatter during upshift N 17

Upshifts only in lower speed range of gears O 17

No brake shifts (4-3 and 3-2) A 18

Poor acceleration when moving off B 18

	Job No.	Coordinates
Technical revisions		A 1
Installation survey		
Installation survey, test and pressure values	27-001	G 1
Transmission diagram ratios	002	L 2
Survey large intermediate plate	003	N 2
Functions		
Function vacuum control	006	D 3
Function kickdown shutoff "B" gear change and moving off 1st gear	007	L 3
Shifting gear when starting off	010	H 4
Adjusting jobs		
Adjustment of cable control for control pressure	110	K 4
Removing, installing and adjusting control pressure cable with vacuum element, vehicles with program selector switch	115	N 4
Adjustment of control rod	120	B 5
Removal, installation and adjustment of start: lockout switch	130	E 5
Adjustment of vacuum control valve	140	H 5
A. MW pump		H 5
B. M/RSF pump		J 5
Testing vacuum control	142	K 5
A. Vehicles with engine 617.95		K 5
B. Vehicles with engine 603.96		O 5
Transmission checkup		
Checkup during test drive	320	D 6
Shiftpoints in selector lever position "D"	330	E 6
Measuring and adjusting pressure values	350	K 6
Repair jobs (transmission in vehicle)		
Removal and installation, disassembly and assembly of shift valve housing	400	O 6
Removal and installation of vacuum control unit	425	K 7
Removal and installation, disassembly and assembly of lower cover with intermediate plate	430	L 7
Removal and installation of rear cover	440	B 8
Disassembly and assembly of rear cover	450	H 8
Removal and installation of centrifugal governor	520	O 8
Removal and installation, disassembly and assembly of secondary pump	530	D 9
Removal and installation of transmission with torque converter	600	H 9
A. Vehicles without 4MATIC		H 9
B. Vehicles with 4MATIC		E 10

Repair jobs (transmission removed)

Removal and installation of primary pump	630	B 11
Disassembly and assembly of transmission	640	L 11
Disassembly, assembly and measuring of gear set	660	G 15
Disassembly, assembly and measuring of clutch K1	680	A 16
Disassembly, assembly and measuring of clutch K2	690	K 16

Gear shift

Removal, disassembly, assembly and installation of center floor shift	745	A 17
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Programmed repairs		E 17
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Revisions		H 18
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