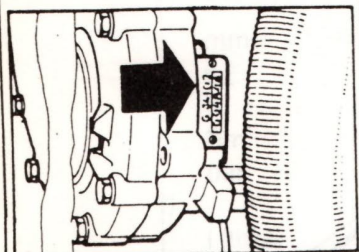
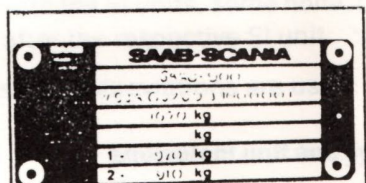


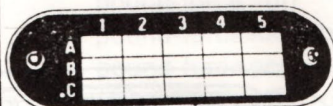
Gearbox No. automatic transmission



Gearbox No. manual transmission



Chassis number plate, as from 1981 models



Modification code plate

BODY COLOUR
COMB CODE 172 H PART CODE

Body colour code

BODY COLOUR
152 G

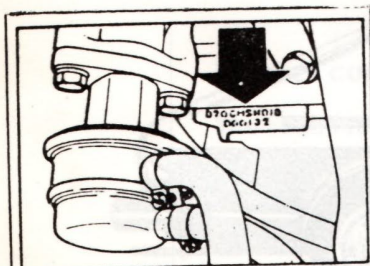
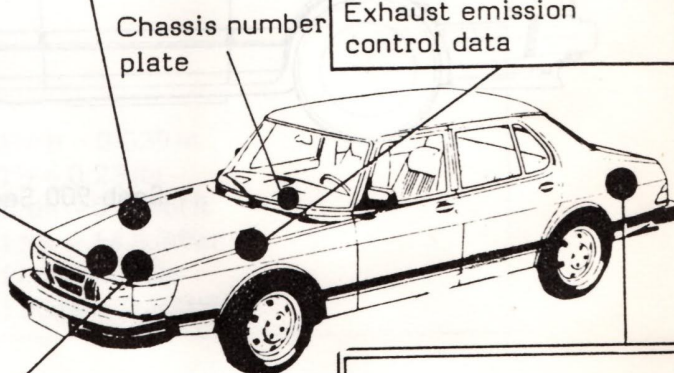
Two tone colour code

TRIM COLOUR
C 14

Trim colour code



Exhaust emission control data

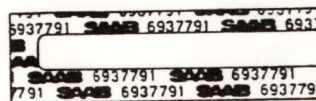


Engine number as from 1981 models

Anti-theft marking as from model 1987 (USA-cars)



Produktion label



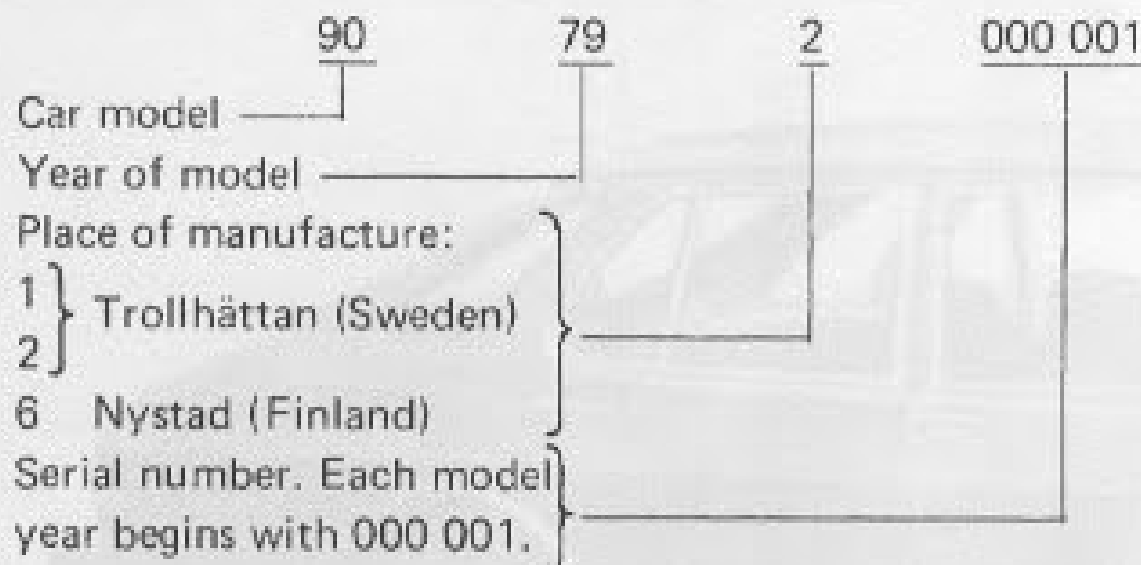
Spare parts label

Y63AG4362B1000026

Chassis number punched in carbody. (Placed on the right side on the rear crossbeam in the luggage compartment) as from 1981 models

CHASSIS NUMBERS

The chassis number consists of eleven digits. The meaning of the digits is shown in the following example:



Cars made in Sweden

Model 1979:

Chassis No. 90791000001–90791034858

Chassis No. 90792000001–90792004463

Model 1980:

Chassis No. 90801000001–

Chassis No. 90802000001–

Cars made in Finland

Model 1979:

Chassis No. 90796000001–90796004675

Model 1980:

Chassis No. 90806000001–

Chassis number (as from 1986 models)

	Y S 3	A	B	3	5	J	X	G	2	000001
Positions 1-3 Manufacturer	Y S 3 = Saab-Scania AB									
Position 4 Model		A = 900								
Position 5 Series			B = i C = i16 D = Turbo							
Position 6 Body type				2 = 2-door Sedan 3 = 3-door Hatchback 4 = 4-door Sedan 6 = 4-door Sedan, extended length 7 = 2-door Convertible						
Position 7 Transmission type					5 = 5-speed manual 6 = 3-speed automatic					
Position 8 Engine type						J = Fuel injection, B201 D = Fuel injection, B202 S = Turbocharged, B201 L = Turbocharged, B202 with intercooler				
Position 9 Check digit							0 - 9 or X			
Position 10 Model year								G = 1986 H = 1987 J = 1988		
Position 11 Assembly plant									2 = SAAB 900, Trollhättan 3 = SAAB 900, Ärlöv 7 = SAAB 900, Nystad (Finland)	
Positions 12-17 Serial number										Consecutive number within the model year

**Engine number
as from model year 1984**

	B	20	1	2	S	0	1	M	E	000001
*Position 1 Engine type	B = Petrol engine									
*Position 2-3 Swept volume	20 = 2.0 l (121 cu.in.)									
*Position 4 Cylinder head	1 = One overhead camshaft 2 = Twin overhead camshafts									
Position 5 Model	2 = Saab 900									
*Position 6 Version	I = Fuel injection (B201) D = Fuel injection (B202) S = Turbocharged (B201) L = Turbocharged with intercooler (B202)									
*Position 7 Code for development variant	0 = Without knock-sensor 1 = With knock-sensor 3 = Fuel injection with catalytic converter									
Position 8 Exhaust emission control specification	0 = No market specification 3 = USA specification									
*Position 9 Transmission type	A = Automatic M = Manual									
Position 10 Model year	E = 1984 F = 1985 G = 1986 H = 1987 J = 1988									
Positions 11-16 Serial number	Consecutive number within the model year									

*These codes are used to distinguish the different engine versions.

Example:

B202 SLM = 16-valve Turbo with APC, induction-air cooler and manual transmission.
IA = Fuel injection engine with automatic transmission.

Pressure regulator checking values

Turbo 1986 and earlier

Depression	Line pressure
0 bar	2.5 bar (36 psi)
-0.2 bar (-2.9 psi)	2.3 bar (33 psi)
-0.4 bar (-5.8 psi)	2.1 bar (30 psi)
-0.6 bar (-8.6 psi)	1.9 bar (28 psi)

Pressure	Line pressure
0 bar	2.5 bar (36 psi)
+0.2 bar (-2.9 psi)	2.7 bar (39 psi)
+0.4 bar (-5.8 psi)	2.9 bar (42 psi)
+0.6 bar (-8.6 psi)	3.1 bar (45 psi)

Turbo 1987 onwards

Depression	Line pressure
0 bar	2.8 bar (40 psi)
-0.2 bar (-2.9 psi)	2.6 bar (37 psi)
-0.4 bar (-5.8 psi)	2.4 bar (35 psi)
-0.6 bar (-8.6 psi)	2.2 bar (32 psi)

Pressure	Line pressure
0 bar	2.8 bar (40 psi)
+0.2 bar (-2.9 psi)	3.0 bar (43 psi)
+0.4 bar (-5.8 psi)	3.2 bar (46 psi)
+0.6 bar (-8.6 psi)	3.4 bar (49 psi)

B202I 1986 onwards

Depression	Line pressure
0 bar	3.0 bar (43 psi)
-0.2 bar (-2.9 psi)	2.8 bar (40 psi)
-0.4 bar (-5.8 psi)	2.6 bar (37 psi)
-0.6 bar (-8.6 psi)	2.4 bar (35 psi)

Specifications

Clutch

Make

4-speed: Borg & Beck;

Type

5-speed: Fichtel & Sachs

Single, dry plate with spring-loaded hub
(5-speed transmission includes predamper)

Operation

Hydraulically operated

Diameter, standard version

8 in (204 mm)

Diameter, Turbo

8.5 in (216 mm)

Drive shafts

Universal joints, inner: grease volume

80 g inside the housing and 60 g in the
rubber gaiter

grease type

Esso Beacon EP2

outer: grease type

Esso Nebular EP2; Molycote UNZ467

Manual transmission

Oil capacity:

4-speed

approx. 2.5 l

5-speed

approx. 3.0 l

Oil specification

Engine oil SAE 10 W 30 or SAE 10 W 40, or
SAE EP 75 API GL 4 or API GL 5

Drain plugs, 4-speed and 5-speed transmissions

The gearbox is fitted with a filler tube and dipstick.

Engine oil drain plug: M 14 x 1.5 mm with
19 mm hexagon or 13 mm hexagon as from
gearbox No. 81400.

Transmission oil drain plug:

1/2 in x 14 NPTF taper thread with 10 mm
square socket head. M 18 x 1.5 mm parallel
thread with 10 mm square socket head as
from 1982 model gearboxes (4-speed) No.
146995 and 5-speed No. 442810.

When the gearbox is filled with the
specified quantity of oil, the level on the
dipstick will be between the MIN and MAX
markings.

When filling an empty 4-speed transmission
(overhauled transmission), note that the
level will drop when the car is driven, since
the primary gear case will take
approximately 3 dl of oil. Note that under
corresponding conditions, a 5-speed
transmission will require 0.4 l for the
primary gear and 2.7 l for the gearbox. Top
up with oil when the level has dropped to
the minimum mark or below. Overfilling of
the transmission will result in stiff gear-
changing when the gearbox is cold.

Year	Model	Tyres rolling	Dynamic primary radius	Pri-drive gear	Final Overall gear ratio					Road speed. km/h at engine speed of 1000 r/min		
						1	2	3	Rev	1	2	3
1982	900	165 SR 15	312	39:38 0.97	9:35 3.89	9.06	5.49	3.79	7.92	12.98	21.42	31.04
1982	900	185/65 SR 15	301	39:38 0.97	9:35 3.89	9.06	5.49	3.79	7.92	12.52	20.67	29.94
1982	900 Turbo	180/65 HR 390	297	41:36 0.88	9:35 3.89	8.16	4.95	3.41	7.14	13.72	22.62	32.83
1983	900 GLs	165 SR 15	312	39:38	9:35 3.89	9.06	5.49	3.79	7.92	12.98	21.24	31.04
1983	900* GLi GLE	185/65 SR 15	301	39:38	9:35 3.89	9.06	5.49	3.79	7.92	12.52	20.67	29.94
1983	900** GLs GLi GLE	185/65 SR 15	301	39:38	9:33 3.67	8.54	5.18	3.57	7.47	13.28	21.92	31.75
1983	900 Turbo Ej USA	180/65 HR 390	297	41:36 0.88	9:33 3.67	7.69	4.67	3.22	6.73	14.55	23.99	34.82
1983	900	185/65 SR 15	301	41:36	9:33	7.69	4.67	3.22	6.73	14.75	24.31	35.29
1984	Turbo Ej USA	185/65R1587S		0.88	3.67							
1983	900	185/65 SR 15	301	40:37	9:33	8.11	4.91	3.39	7.09	13.99	23.15	33.48
1984	Turbo USA	185/65R1587S		0.93	3.67							
1983	900	195/60 HR 15	299	40:37	9:33	8.11	4.91	3.39	7.09	13.90	23.00	33.26
1984	Turbo USA	195/60R1586H		0.93	3.67							
1984	900 GLs GLE GLi	185/65R1587S	301	40:37 0.93	9:33 3.67	8.11	4.91	3.39	7.09	13.99	23.15	33.48
1984	900*** GL	175/70R1586T	305	40:37 0.93	9:33 3.67	8.11	4.91	3.39	7.09	14.18	23.46	33.92
1984	900* Turbo Turbo S	195/60R1586H 195/60R1586V	299	41:36 0.88	9:33 3.67	7.69	4.67	3.22	6.73	14.65	24.15	35.05
1985	GL	175/70 R 15	305	39:38 0.97	9:33 3.67	8.54	5.18	3.57	7.47	13.4	22.1	32.2
	900 i 900 USA 900 S	185/65 R 15	301	39:38 0.97	9:33 3.67	8.54	5.18	3.57	7.47	13.3	21.9	31.8
	Turbo excl. USA	195/60 R 15	299	41:36 0.88	9:33 3.67	7.69	4.67	3.22	6.73	14.7	24.1	35.0
	Turbo Turbo 16 USA	185/65 R 15 195/60 R 15	301 299	40:37 0.93	9:33 3.67	8.11	4.92	3.39	7.09	14.0 13.9	23.2 23.0	33.3 33.5

* Excl. USA, Canada, Switzerland

** Only USA, Canada, Switzerland

*** Only Sweden, Finland

Year	Model	Gearbox designation	Wheels	Dyn. rolling radius	Primary gear	Intermediate gear	Final drive	Overall gear ratio						Road speed, km/h, per 1,000 rpm				
								1	2	3	4	5	Rear	1	2	3	4	5
1979	900	G34402	155 SR 15	305	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,23	8,89	14,74	21,97	30,58	
	900	"	165 SR 15	312	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,23	9,09	15,08	22,47	31,25	
	900	"	175/70 HR 15	305	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,23	8,89	14,74	21,97	30,58	
	900 Turbo	G44602	195/60 HR 15	295	31:26 0,84	17:33 1,94	9:35 3,89	11,87	7,16	4,80	3,26		13,06	9,37	15,54	23,15	34,10	
	900 Turbo	"	180/65 HR 390	297	31:26 0,84	17:33 1,94	9:35 3,89	11,87	7,16	4,80	3,26		13,06	9,43	15,64	23,31	34,33	
1980	900	G34402	155 SR 15	305	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,26	8,89	14,74	21,97	30,58	
	900	"	165 SR 15	312	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,26	9,09	15,08	22,47	31,25	
	900	"	175/70 HR 15	305	31:30 0,97	18:33 1,83	9:35 3,89	12,94	7,80	5,23	3,76		14,26	8,89	14,74	21,97	30,58	
	900	G45702	175/70 HR 15	305	32:25 0,78	15:34 2,27	9:35 3,89	12,91	7,78	5,22	3,76	3,04	14,20	8,90	14,77	22,01	30,61	37,85
	900 Turbo	"	195/60 HR 15	295	32:25 0,78	15:34 2,27	9:35 3,89	12,91	7,78	5,22	3,76	3,04	14,20	8,61	14,29	21,29	29,61	36,60
	900 Turbo	"	180/65 HR 390	297	32:25 0,78	15:34 2,27	9:35 3,89	12,91	7,78	5,22	3,76	3,04	14,20	8,67	14,38	21,43	29,81	36,85
1981	900	G34504	165 SR 15	312	30:27 0,90	17:33 1,94	9:35 3,89	13,59	7,68	5,15	3,50		14,95	8,66	15,31	22,82	33,61	
	900	"	175/70 HR 15	305	30:27 0,90	17:33 1,94	9:35 3,89	13,59	7,68	5,15	3,50		14,95	8,46	14,97	22,31	32,85	
	900	G45704	175/70 HR 15	305	32:25 0,78	15:34 2,27	9:35 3,89	13,77	7,78	5,22	3,76	3,04	15,15	8,36	14,77	22,01	30,61	37,84
	900	"	185/65 SR 15	303	32:25 0,78	15:34 2,27	9:35 3,89	13,77	7,78	5,22	3,76	3,04	15,15	8,29	14,67	21,86	30,41	37,60
	900 Turbo	G44604	195/60 HR 15	295	31:26 0,84	17:33 2,27	9:35 3,89	12,66	7,16	4,80	3,26		13,9	8,78	15,54	23,15	34,10	
	900 Turbo	"	180/65 HR 390	297	31:26 0,84	17:33 2,27	9:35 3,89	12,66	7,16	4,80	3,26		13,9	8,84	15,64	23,31	34,33	
	900 Turbo	G45704	195/60 HR 15	295	32:25 0,78	15:34 2,27	9:35 3,89	13,77	7,78	5,22	3,76	3,04	15,15	8,07	14,29	21,29	29,61	36,60
	900 Turbo	"	180/65 HR 390	297	32:25 0,78	15:34 2,27	9:35 3,89	13,77	7,78	5,22	3,76	3,04	15,15	8,13	14,38	21,43	29,81	36,85

	900 GLi, EMS, GLE	G45706	185/65 SR 15	301	32:25 0,78	15:34 2,27	9:33 3,67	12,99	7,34	4,93	3,54	2,86	14,28	8,74	15,46	23,04	32,04	39,62
1984	All models	G34506	165 SR 15	312	30:27 0,90	17:33 1,94	9:33 3,67	12,81	7,24	4,86	3,30	-	14,09	9,2	16,2	24,2	35,6	-
	GL	G45706	175/70 R 15	305	32:25 0,78	15:34 2,27	9:33 3,67	12,99	7,34	4,93	3,54	2,86	14,28	8,9	15,7	23,3	32,4	40,1
	GLs, GLE GLi	G45706	185/65 R 15	301	32:25 0,78	15:34 2,27	9:33 3,67	12,99	7,34	4,93	3,54	2,86	14,28	8,7	15,5	23,0	32,0	39,6
	i, EMS	G45606	185/65 R 15	301	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,1	14,4	21,5	29,8	36,9
	Turbo	G45606	195/60 HR 15	299	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,1	14,3	21,3	29,6	36,7

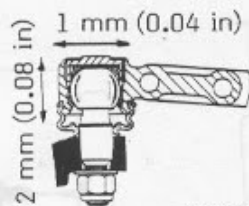
Year	Model	Gearbox designa- tion	Wheels	Dyn. rol- ling radius	Prim- ary gear	Inter- medi- ate gear	Final drive	Overall gear ratio						Road speed, km/h, per 1,000 rpm				
								1	2	3	4	5	Rear	1	2	3	4	5
1985	GL	GM34506	165 SR 15	312	30:27 0,90	17:33 1,94	9:33 3,67	12,81	7,24	4,86	3,30		14,09	9,2	16,2	24,2	35,6	
	GL	GM45606	175/70 R 15 S	305	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,2	14,6	21,7	30,2	37,4
	900	GM45606	185/65 R 15T	301	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,1	14,4	21,5	29,8	36,9
	Turbo	GM45606	185/65 R 15T	301	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,1	14,4	21,5	29,8	36,9
	Turbo	GM45606	195/60 R 15H	299	31:26 0,84	15:34 2,27	9:33 3,67	13,94	7,88	5,29	3,80	3,08	15,34	8,09	14,3	21,31	29,65	36,65
	Turbo 16 (B202)	GM45706	195/60 R 15V	299	32:25 0,78	15:34 2,27	9:33 3,67	12,99	7,34	4,93	3,54	2,86	14,28	8,7	15,4	22,9	31,8	39,3

Year	Model	Gearbox designation	Wheels	Dyn. rolling radius	Primary gear	Intermediate gear	Final drive	Overall gear ratio					Road speed, km/h, per 1,000 rpm				
								1	2	3	4	5	Rear	1	2	3	4
1981	900	G44604 Turbo	195/60 HR 15	295	31:26	17:33	9:35	12.66	7.16	4.80	3.26		13.9	8.78	15.54	23.15	34.10
1981	900	"	180/65 HR 390	297	31:26	17:33	9:35	12.66	7.16	4.80	3.26		13.9	8.84	15.64	23.31	34.33
1981	900	G45704 Turbo	195/60 HR 15	295	32:25	15:34	9:35	13.77	7.78	5.22	3.76	3.04	15.15	8.07	14.29	21.29	29.61
1981	900	"	180/65 HR 390	297	32:25	15:34	9:35	13.77	7.78	5.22	3.76	3.04	15.15	8.13	14.38	21.43	29.81
1982	900	G45606 Turbo	185/65 SR 15	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.14	14.40	21.45	29.84
1982	900	"	175/70 HR 15	305	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.25	14.59	21.74	30.24
1982	900	"	185/60 SR 15	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.14	14.40	21.45	29.84
1982	900	"	180/65 HR 390	297	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.03	14.21	21.17	29.45
1982	900	"	195/60 HR 15	299	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.09	14.30	21.31	29.65
1983	900	G45606 Turbo	185/65 SR 15	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.14	14.40	21.45	29.84
1983	900	"	180/65 HR 390	297	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.03	14.21	21.17	29.45
1983	900	"	195/60 HR 15	299	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.09	14.30	21.31	29.65
1983	900a	G45706	185/65 SR 15	301	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	14.28	8.74	15.46	23.04	32.04
1984	900a	G45706	185/65 R 15	301	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	14.28	8.7	15.5	23.0	32.0
	900a	G45606	185/65 R 15	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.1	14.4	21.5	29.8
	Turbo	G45606	195/60 HR 15	299	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.1	14.3	21.3	29.6
1985	900a	GM45606	185/65 R 15T	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.1	14.4	21.5	29.8
	Turbo	GM45606	185/65 R 15T	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.1	14.4	21.5	29.8
	Turbo	GM45606	195/60 R 15H	299	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.09	14.3	21.31	29.65
	Turbo 16 (B202)	GM45706	195/60 R 15H	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	14.28	8.7	15.4	22.9	31.8
1986	900a	GM45606	185/65 R 15T	301	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.1	14.4	21.5	29.8
	Turbo	GM45606	195/60 R 15H	299	31:26	15:34	9:33	13.94	7.88	5.29	3.80	3.08	15.34	8.09	14.3	21.31	29.65
	Turbo 16 (B202)	GM55712	195/60 R 15V	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	14.28	8.7	15.4	22.9	31.8
1987	S16, T8	GM45610	175/70 R 15T	305	31:26	15:34	9:33	13.94	7.88	5.28	3.80	3.07	7.5	8.2	14.6	21.7	30.2
	900 T16 CAT	GM55602	185/60 R 15H alt VR	299	31:26	15:34	9:33	13.94	7.88	5.28	3.80	3.07	7.4	8.1	14.3	21.3	29.6
	900i CAT	GM45710	195/60 VR 15	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	7.9	8.7	15.4	22.9	31.8
	900 T16	GM55702	195/60 VR 15	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	7.9	8.7	15.4	22.9	31.8
1988	S16, T8	GM45610	175/70 R 15T	305	31:26	15:34	9:33	13.94	7.88	5.28	3.80	3.07	7.5	8.2	14.6	21.7	30.2
	900 T16 CAT	GM55602	185/60 R 15H alt VR	299	31:26	15:34	9:33	13.94	7.88	5.28	3.80	3.07	7.4	8.1	14.3	21.3	29.6
	900i CAT	GM45710	195/60 VR 15	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	7.9	8.7	15.4	22.9	31.8
	900 T16	GM55702	195/60 VR 15	299	32:25	15:34	9:33	12.99	7.34	4.93	3.54	2.86	7.9	8.7	15.4	22.9	31.8

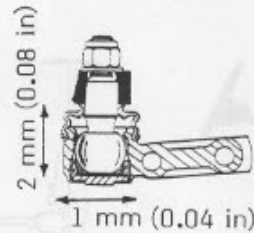
Steering knuckle housing

Ball joints, permissible wear

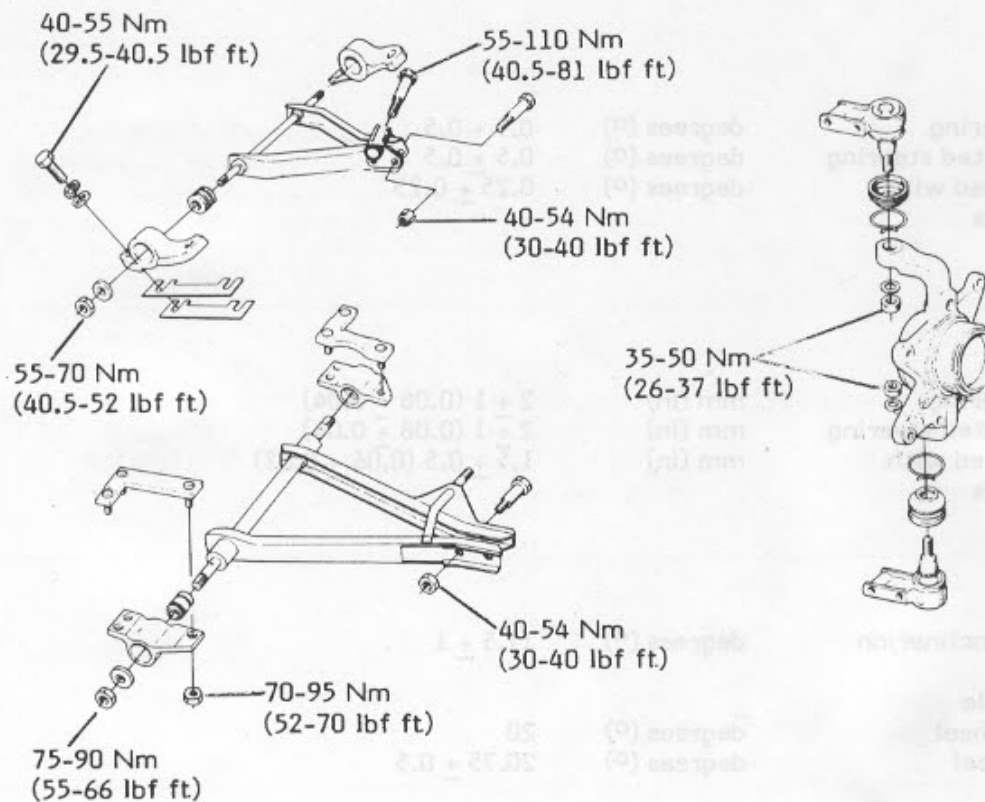
axial	mm (in)	2 (0.08)
radial	mm (in)	1 (0.04)



S 1/037



Tightening torque, control arms and steering knuckle housing



S 6/029

Suspension and wheels

<u>Rear wheel alignment</u>					
Camber		$-1/2^{\circ} \pm 1/4^{\circ}$			
Toe-in, 1981-84	mm (in)	4 ± 2 mm (1-3 mm/side) (0.158 ± 0.08)			
	mm (in)	4 ± 1 mm (1-3 mm/side) (0.158 ± 0.04)			
Suspension					
<u>Front coil springs</u> 1981-1984 models					
Total number of turns		8 1/4			
Number of free turns		6 3/4			
Wire diameter	mm (in)	14.4 (0.57)			
Free length	mm (in)	373 (14.69)			
Colour code		Green			
		Light green			
<u>Front coil springs</u> as from model year 1985					
Total number of turns	8 1/4	8 1/4*	8 1/4	8 1/4*	8 1/4
Number of free turns	6 3/4	6 3/4	6 3/4	6 3/4	6 3/4
Wire diameter, mm	14.2	14.4	14.0	14.4	14.4
Approx. free length, mm	375	375	375	380	390
Colour coding, class I	Black	Green	Blue	Yellow	Pink
class II	White	Light green	Light blue	Red	Brown
<u>Rear coil springs</u> 1981-1984 models					
		<u>left</u>		<u>right</u>	
Total number of turns		9		9	
Number of free turns		7 1/2		7 1/2	
Wire diameter	mm (in)	14.8 (0.58)		15.0 (0.59)	
Free length	mm (in)	308 (12.13)		311 (12.24)	
Colour code		Green		Black	
		Light green		White	
<u>Rear coil springs</u> as from model year 1985					
Total number of turns	9*	9*	9*	9*	
Number of free turns	7 1/2	7 1/2	7 1/2	7 1/2	
Wire diameter, mm	14.8	15.0	15.0	14.8	
Approx. free length, mm	310	310	315	335	
Colour coding, class I	Green	Black	Yellow	Blue	
class II	Light green	White	Red		

An asterisk (*) indicates that the size of spring in question is carried as a standard spare part.

Turbo:

Check the pressure switch

Check the charging pressure

Clean the charge pressure regulator membrane housing and the pipe between exhaust manifold and membrane housing cover.

Check the seal on the charge pressure regulator

Check the wide open throttle enrichment function

Oil and oil filter change

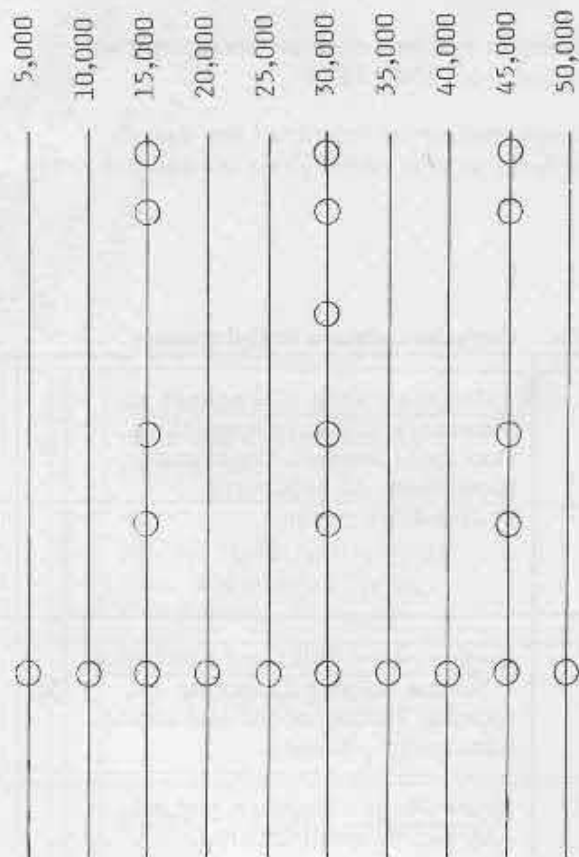
Normal driving conditions:

6 months or 5,000 miles, whichever comes first

Extra oil change

Severe driving conditions:

3 months or 2,500 miles, whichever comes first



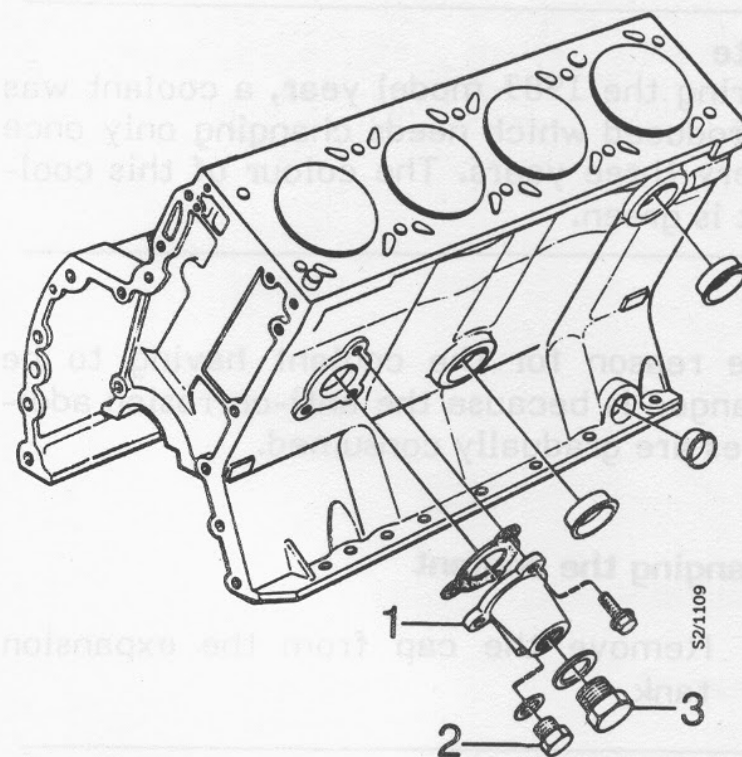
"EXH"-service indicator device

An indicator lamp located on the instrument panel reminds the driver of the point of time for the emission systems required maintenance service (e.g. cleaning of EGR-device, changing the oxygen sensor etc).

The indicator lamp is actuated by a counter unit located under the instrument panel. The counter unit is driven by a wire from the speedometer and engages at 15,000 miles. The counter unit is reset by means of a push button on the unit.

Draining the coolant from the block (B201 engine as from 1985 models)

Drain the coolant through the lower plug (2) in the cap. The upper plug (3) can be removed for fitting of an immersion heater.



Cylinder block B201 engine (as from 1985 models)

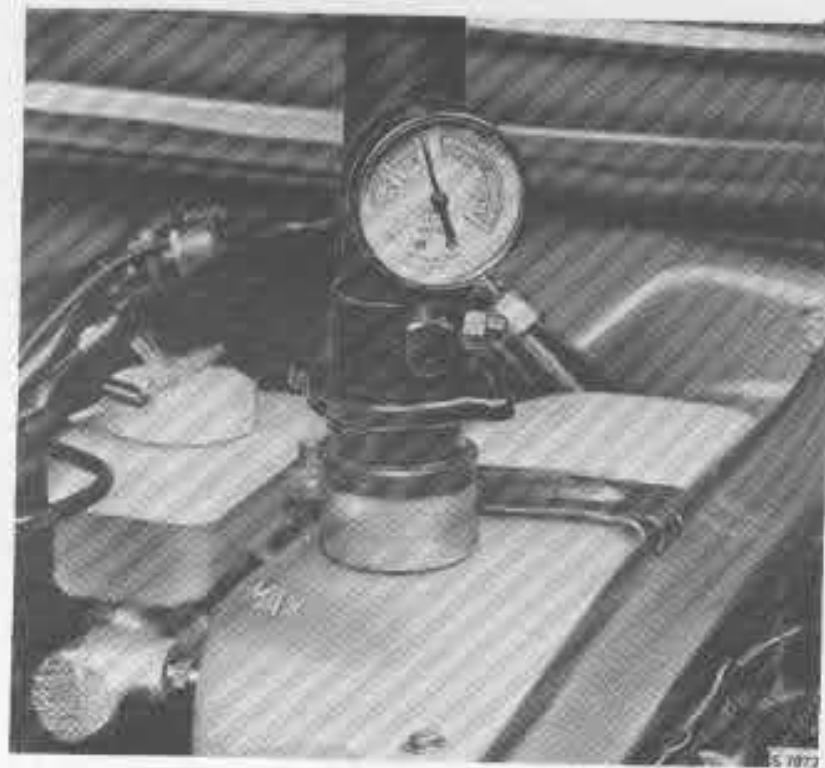
- 1 Cap
- 2 Coolant drain plug
- 3 Immersion heater plug

Auxiliary fan on cars equipped with air conditioning.

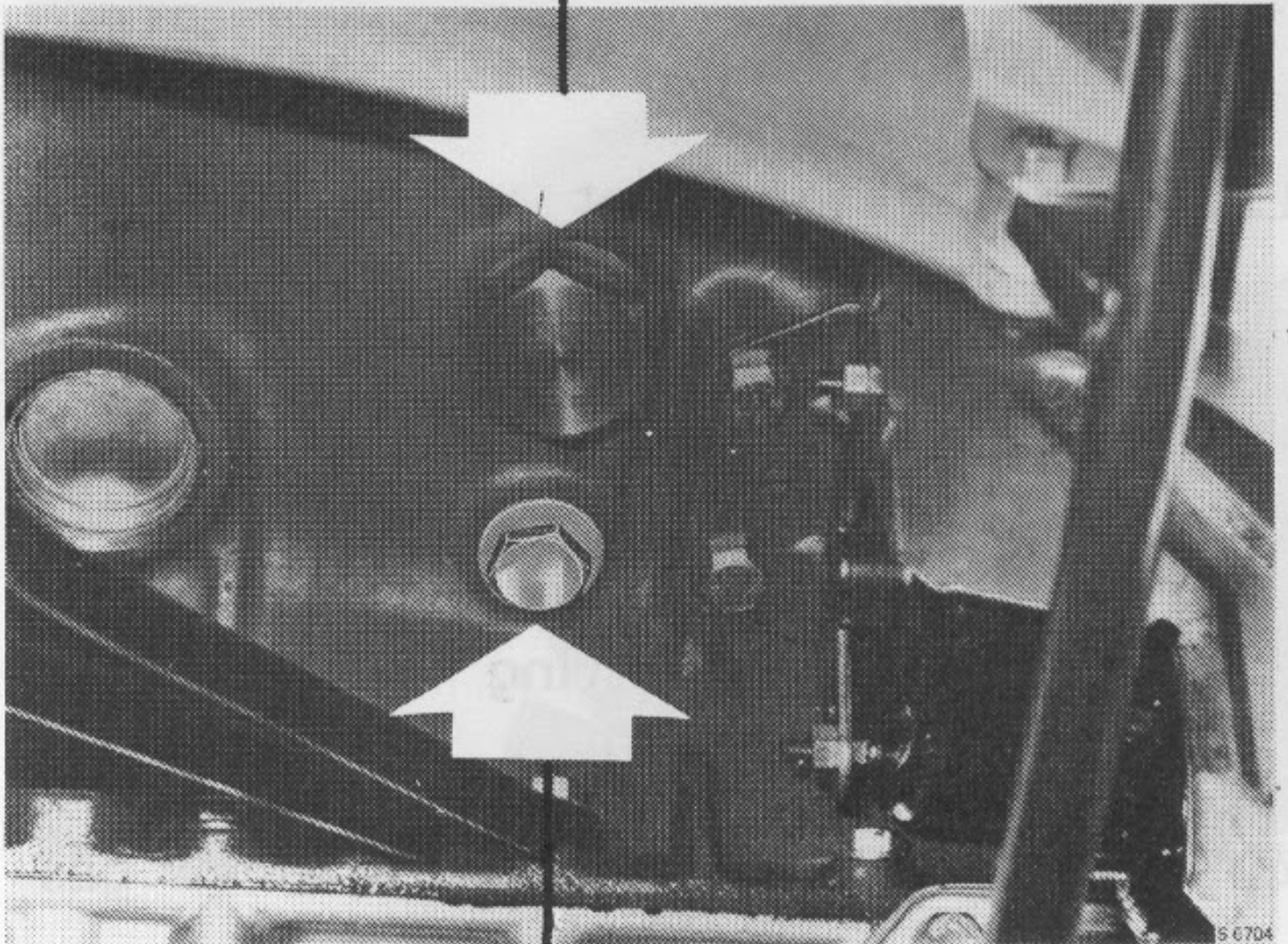
An auxiliary radiator and an auxiliary fan are fitted beside the standard radiator and fan on cars equipped with air conditioning. The auxiliary fan cuts-in as soon as the air conditioning system is switched on.

Pressure testing of the cooling system

Leakages in the cooling system are often difficult to detect owing to the fact that the cooling system only becomes fully pressurized when the car is on the road. An excellent method of testing the system is to use a pressure tester which pressurizes the system and enables the radiator hoses and seals to be checked. The highest permissible test pressure is 1.2 bar (17.5 lb/in²). The pressure at which the radiator cap opens can also be checked using the pressure-testing equipment. The opening pressure should be between 0.9 and 1.2 bar (13.0 and 17.5 lb/in²).



Plug for engine block heater



Drain plug for coolant

of the ignition leads, including the distributor, should be:

1. 10 kOhm between the coil and the distributor

2. 10 kOhm between the distributor and the spark plugs.

vacuum advance mechanism

1. Remove the distributor cap, rotor arm and cover.

2. Disconnect the vacuum hose and remove the screws retaining the advance mechanism.

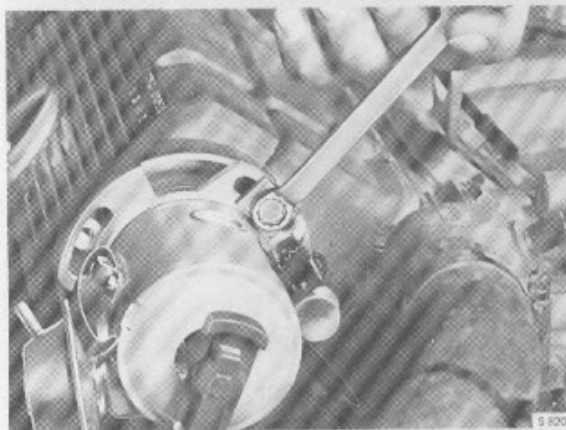
3. Remove the vacuum advance arm.



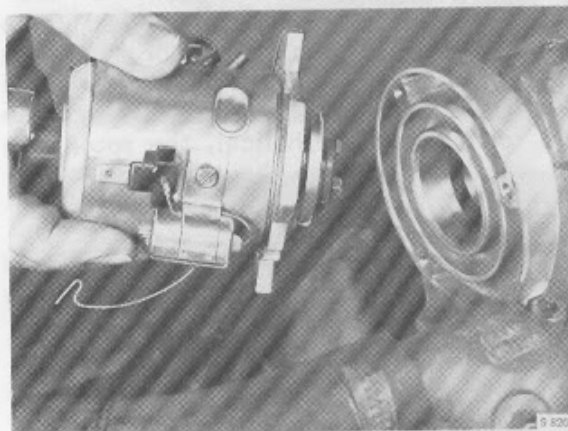
To change the distributor as from the 1981 models

To remove

1. Remove the distributor cap.
2. Disconnect the high tension lead from the distributor.
3. Disconnect the vacuum hose.
4. Remove the three distributor retaining bolts.

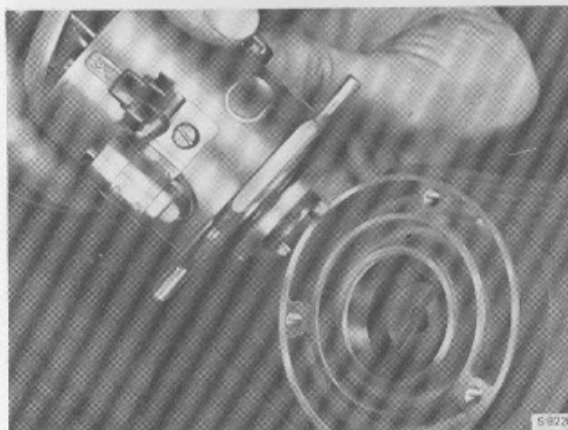


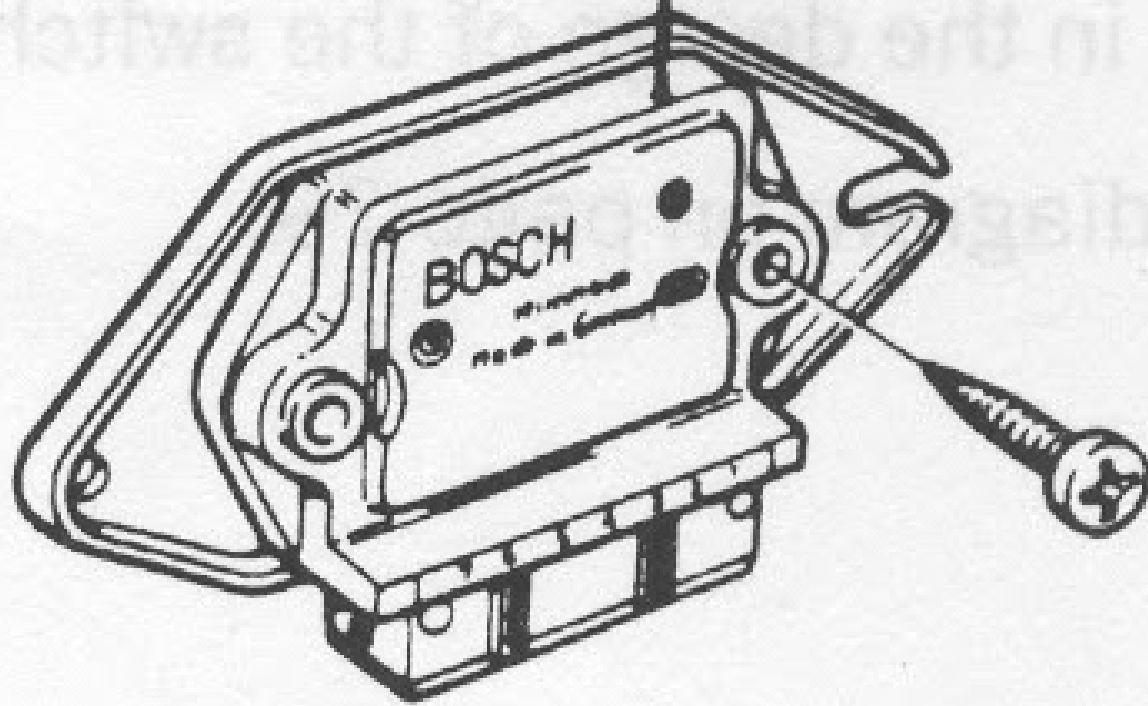
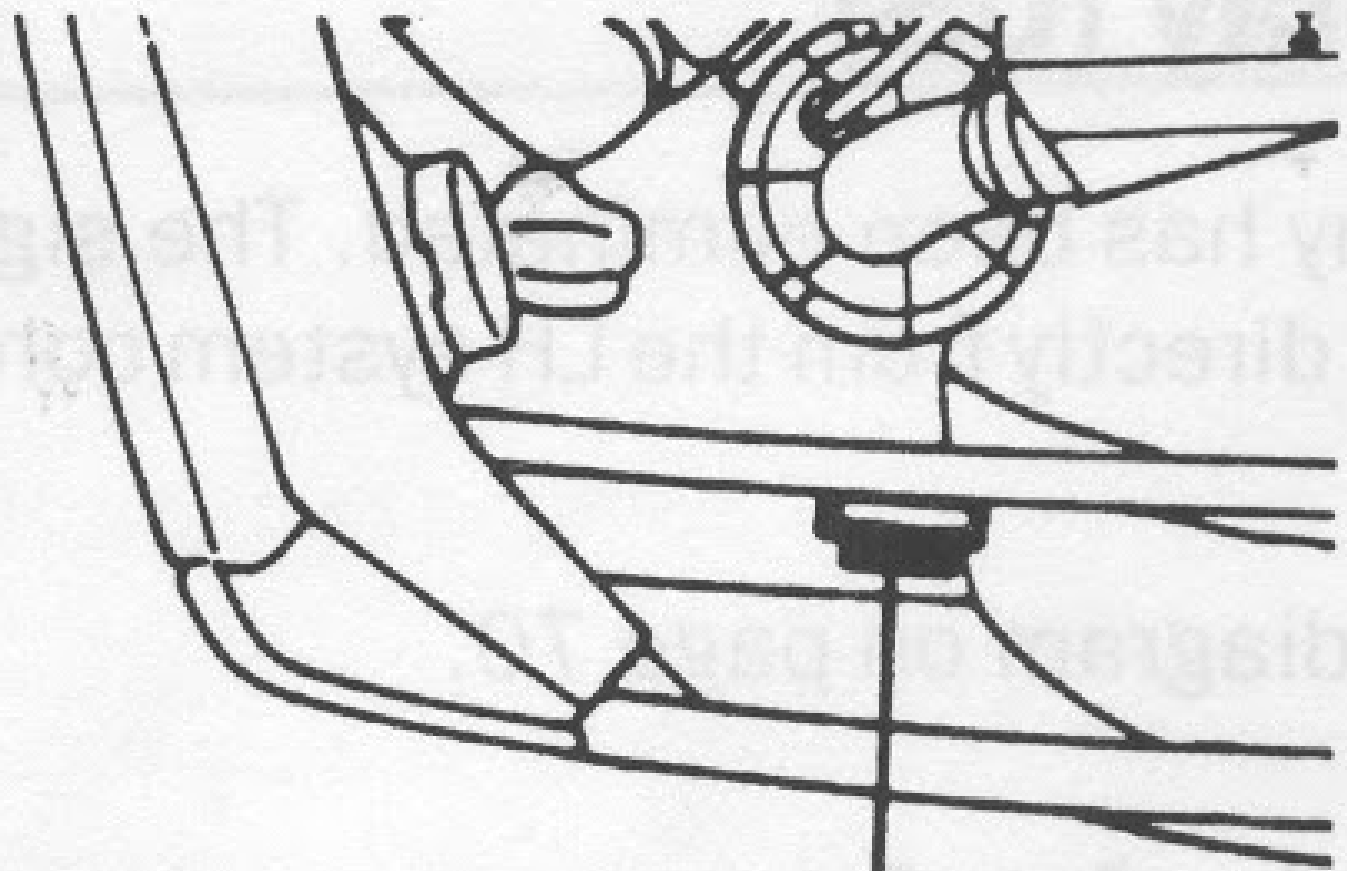
5. Withdraw the distributor from the camshaft cover.



To refit

1. Check the position of the drive slot in the camshaft (note that the slot is offset) and turn the distributor shaft so that its coupling claws are lined up with the slot.



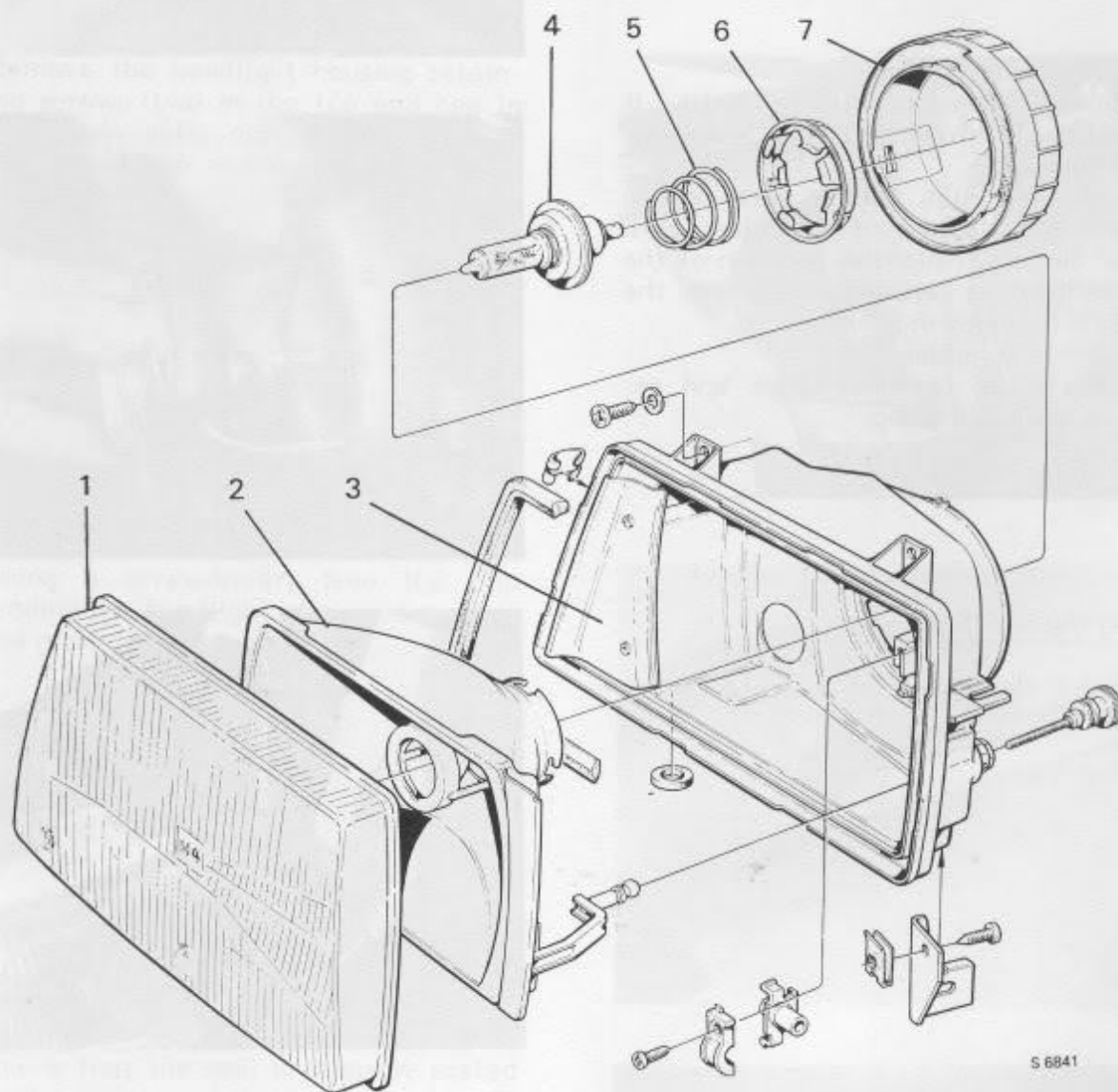


Headlights, Canada type

General

The headlights, which are built into the front of the car, can be taken apart, making it possible for the glass or reflector to be renewed separately.

The headlight bulbs have two filaments for high and low beam respectively; the beam elevation is controlled by the combined headlight dimmer/flasher and direction indicator control lever on the steering column. A light on the instrument panel glows blue when the headlights are on high beam.



S 6841

Headlight, disassembled view

1. Glass
2. Reflector
3. Headlight housing
4. Bulb
5. Spring
6. Lampholder
7. Sealing cap

Fuses 1984 model

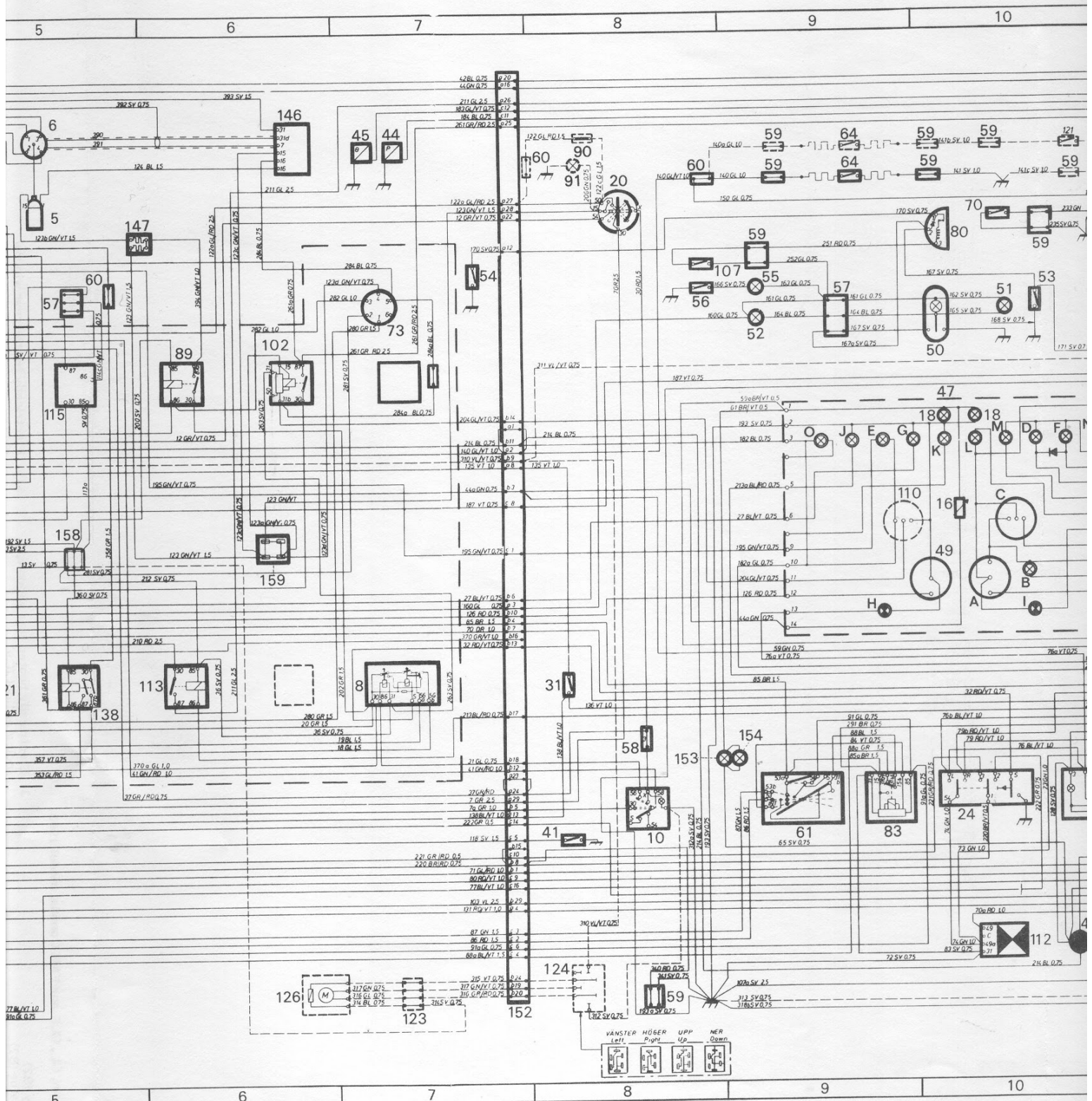
Fuse No.	Rating	Function
1	—	Spare
2	—	Spare
3	—	Spare
4	—	Spare
5	15 A	Brake fluid warning, windshield wipers, headlamp wipers, seat belt reminder lamp
6	30 A	Air conditioner (AC)
7	15 A	Direction indicators
8	10 A	Headlamp wipers, rear-view mirrors, Cruise Control
9	30 A	Ventilation fan
10	10 A	APC system
11	30 A	Window regulators, sunroof
12	15 A	Electric heating pads for the front seats, delayed interior lights
13	20 A	Reversing lights, cigarette lighter lighting, tachometer, charge warning lamp
14	15 A	Right-hand headlamp, full beam
15	15 A	Left-hand headlamp, full beam and full beam warning lamp
16	15 A	Right-hand headlamp, dipped beam
17	15 A	Left-hand headlamp, dipped beam
18	10 A	Right-hand parking light, right-hand rear light, number plate illumination, glove compartment and ashtray illumination, instrument lighting
19	10 A	Left-hand parking light, left-hand rear light
20	15 A	Driving lights
21	15 A	Rear fog lights
22	10 A	Fuel system, ignition system, temperature gauge, choke warning lamp
23	—	Spare
24	10 A	Central locking
25	30 A	Radiator fan
26	25 A	Horn
27	15 A	Hazard warning lights
28	15 A	Interior lighting, clock, radio, electrically operated aerial
29	20 A	Heater element for the rear window
30	20 A	Fuel pump for the fuel injection engine (8-valve engine)
31	15 A	Brake lights

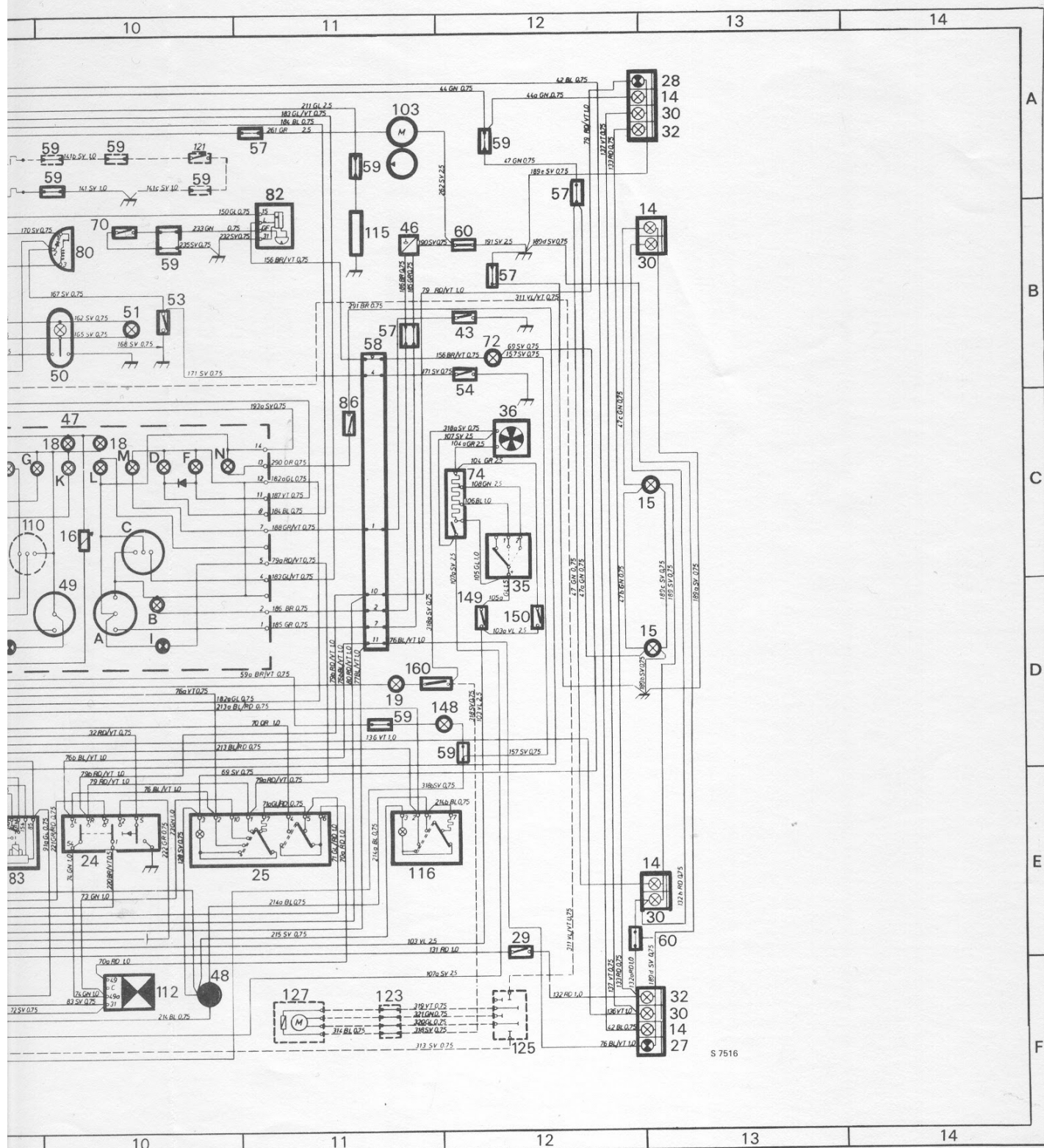
Fuses 1985 model

Fuse No.	Rating	Function
1	—	Spare
2	—	Spare
3	—	Spare
4	—	Spare
5	15 A	Brake fluid warning, windshield wipers, headlamp wipers, seat belt reminder lamp
6	30 A	Air conditioner (AC)
7	15 A	Direction indicators
8	10 A	Headlamp wipers, rear-view mirrors, Cruise Control, charge warning lamp
9	30 A	Ventilation fan
10	10 A	APC system
11	30 A	Window regulators, sunroof
12	15 A	Electric heating pads for the front seats, delayed interior lights
13	20 A	Reversing lights, cigarette lighter lighting
14	15 A	Right-hand headlamp, full beam
15	15 A	Left-hand headlamp, full beam and full beam warning lamp
16	15 A	Right-hand headlamp, dipped beam
17	15 A	Left-hand headlamp, dipped beam
18	10 A	Right-hand parking light, right-hand rear light, number plate illumination, glove compartment and ashtray illumination, instrument lighting
19	10 A	Left-hand parking light, left-hand rear light
20	15 A	Driving lights
21	15 A	Rear fog lights
22	10 A	Fuel system, ignition system, tachometer, temperature gauge; handbrake and choke warning lamps
23	—	Spare
24	10 A	Central locking
25	30 A	Radiator fan
26	25 A	Horn
27	15 A	Hazard warning lights
28	15 A	Interior lighting, clock, radio, electrically operated aerial
29	20 A	Heater element for the rear window
30	20 A	Fuel pump for the fuel injection engine (8-valve engine)
31	15 A	Brake lights

Wiring diagram, GL, GLE and EMS USA, model 1980

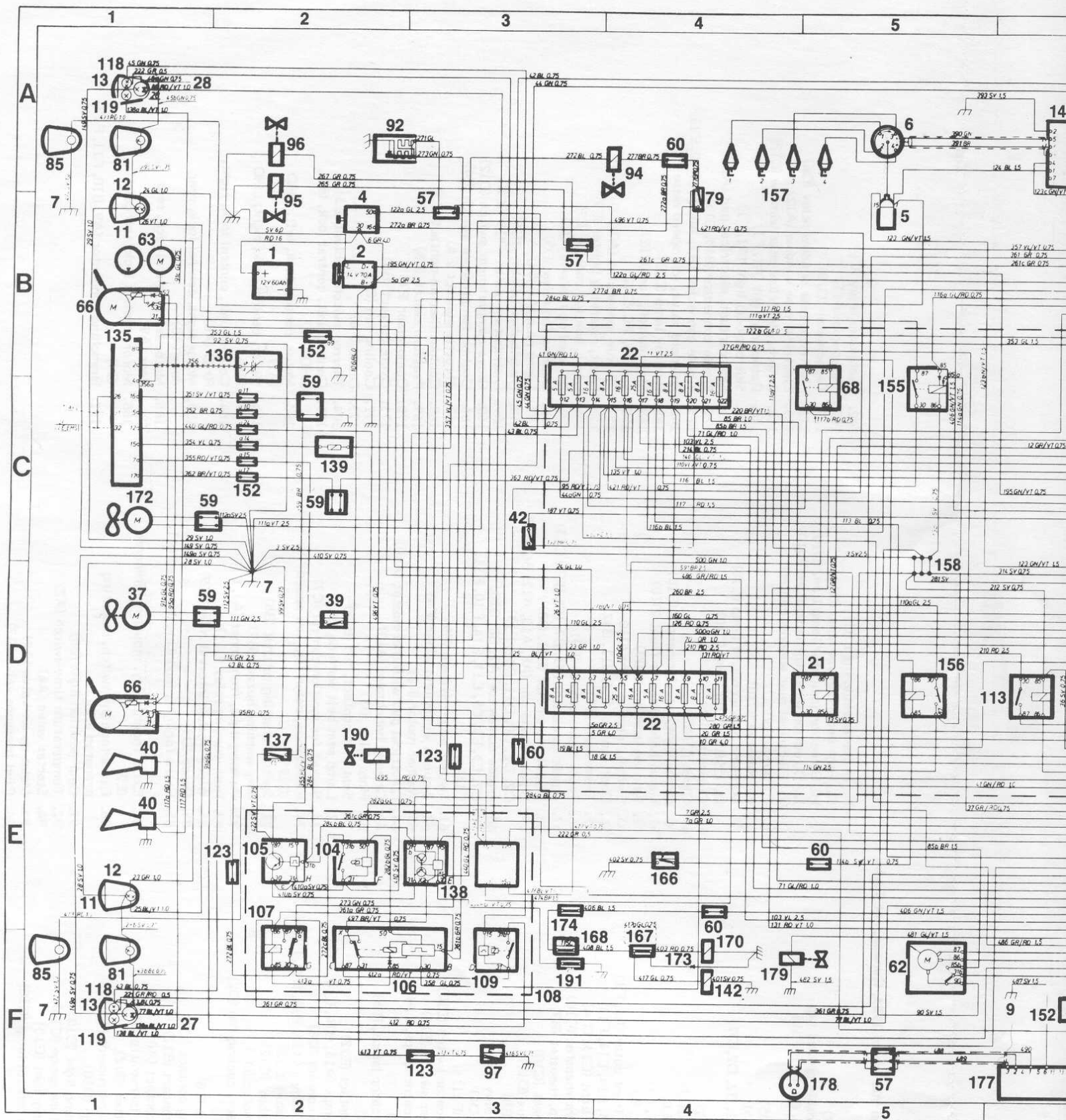
1. Battery (B2)
2. Alternator (B2)
4. Starter motor (B2)
5. Ignition coil (B5)
6. Ignition distributor (A5)
8. Lighting relay (D7)
10. Light switch (E8)
11. High beam (B1, E1)
12. Low beam (B1, E1)
13. Parking light (A1, F1)
14. Tail light (A13, B13, E13, F13)
15. Number plate light (C13, D13)
16. Instrument light rheostat (C10)
18. Instrument panel light (C10)
19. Light, glove box (D11)
20. Ignition lock (B8)
21. Ignition relay (D5)
22. Fuse box (C4, D4)
24. Direction indicator switch, (E10)
25. Warning flasher switch (E11)
27. Direction indicator lights, L.H. (F1, F13)
28. Direction indicator lights, R.H. (A1, A13)
29. Brake light contact (E12)
30. Brake lights (A13, B13, E13, F13)
31. Back-up lights contact (D8)
32. Back-up lights (A13, F13)
35. Fan switch (C12)
36. Fan motor (C12)
37. Cooling fan motor (D1)
38. Cooling fan relay (C5)
39. Cooling fan thermostat contact (D2)
40. Signal horn (B1, E1)
41. Signal contact (E8)
42. Brake warning contact (C3)
43. Handbrake contact (B12)
44. Oil warning contact (A7)
45. Temperature transmitter (A7)
46. Fuel level transmitter (B11)
47. Combination instrument (C10):
 - A. Fuel gauge (D10)
 - B. Fuel warning light (D10)
 - C. Temperature gauge (C10)
 - D. Oil warning light (C10)
 - E. Ignition light (C9)
 - F. Brake warning light (C10)
 - G. High beam indicator light (C10)
- H. Direction indicator repeater, L.H. (D9)
- I. Direction indicator repeater, R.H. (D10)
- J. Electrically heated rear window, indicator light (C9)
- K. Extra (C10)
- L. Extra (C10)
- M. Handbrake control light (C10)
- N. EGR control lamp (C10)
- O. Choke indicator light (C9)
48. Cigarette lighter (F10)
49. Clock (D10)
50. Dome light, interior centre (B10)
51. Dome light, interior front (B10)
52. Ignition lock light (B9)
53. Switch, interior light (B10)
54. Door contact, interior lighting (B7, B12)
55. Trunk light (B9)
56. Trunk light contact (B8)
57. 3-pole connector (A11, A12, B3, B5, B9, B11, B12)
58. 12-pole connector (B11, D8)
59. 2-pole connector (A9, A10, A11, A12, D2, D11, D12, F8)
60. 1-pole connector (A4, A5, A8, B4, B5, B7, B12, E13)
61. Switch, wiper system (E9)
62. 2-speed windshield wiper motor (F4)
63. Washer motor (F3)
64. Electrical pad with thermostat (A9)
70. Seat belt contact, "F" (B10)
72. Lamp, seat belt warning (B12)
73. Socket for ignition control (B7)
74. Resistance, fan low speed (C12)
79. Vacuum switch (A4)
80. Buzzer key and seat belt warning (B10)
82. Logic relay (B11)
83. Wiper washer interval relay (E9)
86. EGR contact (C11)
89. Start inhibitor relay (C6)
90. Start lock contact (A8)
91. Gear position light (A8)
92. Temperature time switch (A2)
94. Starter valve (A4)
95. Make-up air valve (A2)
96. Pilot pressure valve (A2)
102. Fuel pump relay (C6)
103. Fuel pump (A11)
107. Key contact (B8)
110. Tachometer (C9)
112. Electronic flasher unit (F10)
113. Relay, electrically heated rear window (D6)
115. Electrically heated rear window (B11)
116. Switch, electrically heated rear window (E11)
118. Cornering light (A1, F1)
119. Side back-up light (A1, F1)
121. Seat contact, electrical pad (A10)
123. 4-pole connector (F7, F11)
124. Switch, electrical rear view mirror L.H. (F8)
125. Switch, electrical rear view mirror R.H. (F12)
126. Electrical rear view mirror L.H. (F6)
127. Electrical rear view mirror R.H. (F11)
135. Trigger unit Lambda (C1)
136. Sond (B2)
137. Valve switch (C2)
138. Relay (Lambda) (D5)
139. Timing valve (E2)
146. Electronic unit, ignition system (A6)
147. Resistance (B5)
148. Light, ashtray (D12)
149. Main switch, fan (D12)
150. Switch, air conditioning (D12)
152. 29-pole connector (A-F7)
153. Light, cigarette lighter (E8)
154. Light, heating control (E9)
157. Spark plug (A4)
158. Distribution plinth - (C5)
159. Distribution plinth + (C6)
160. Contact, glove compartment light (D11)

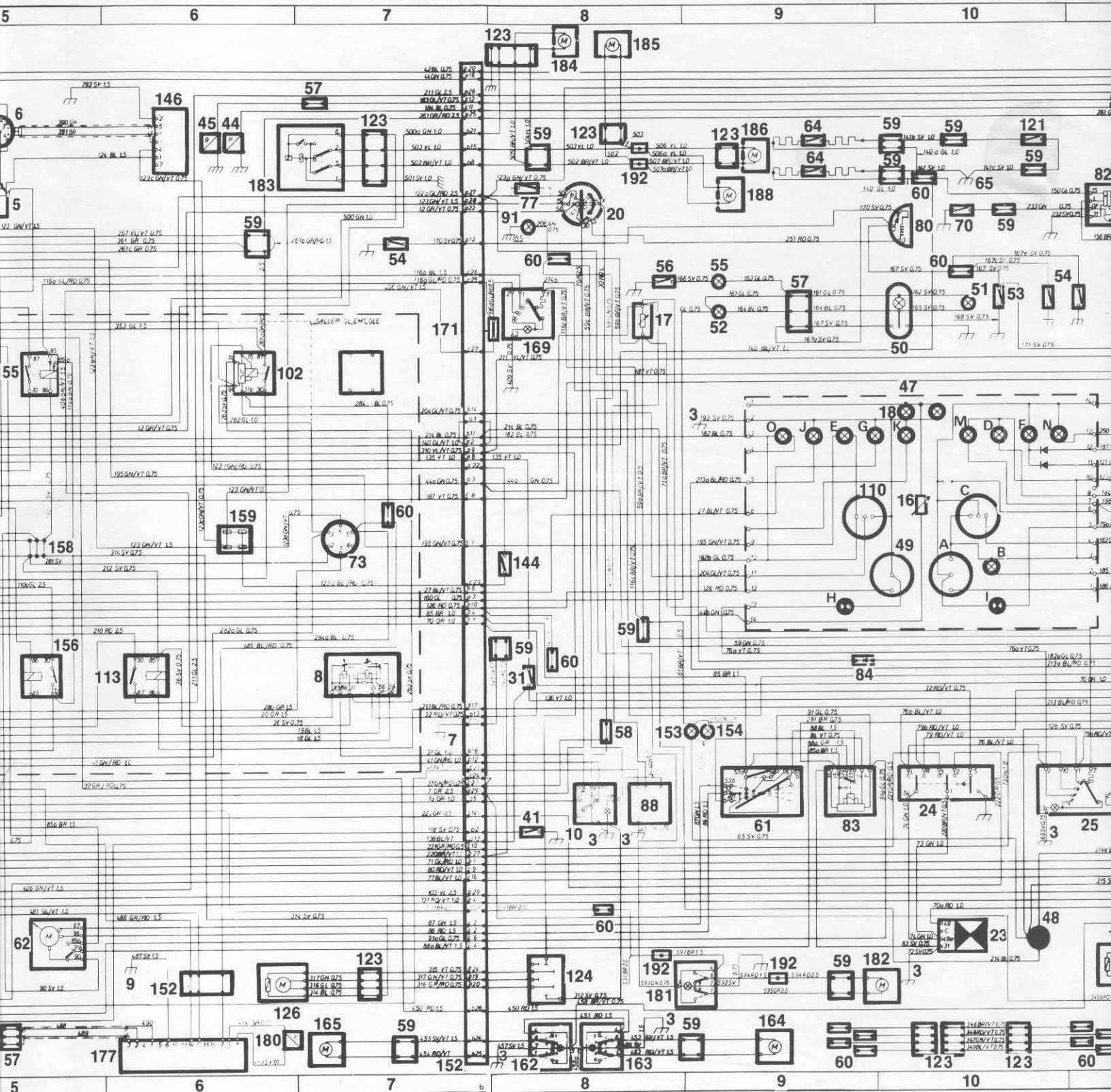


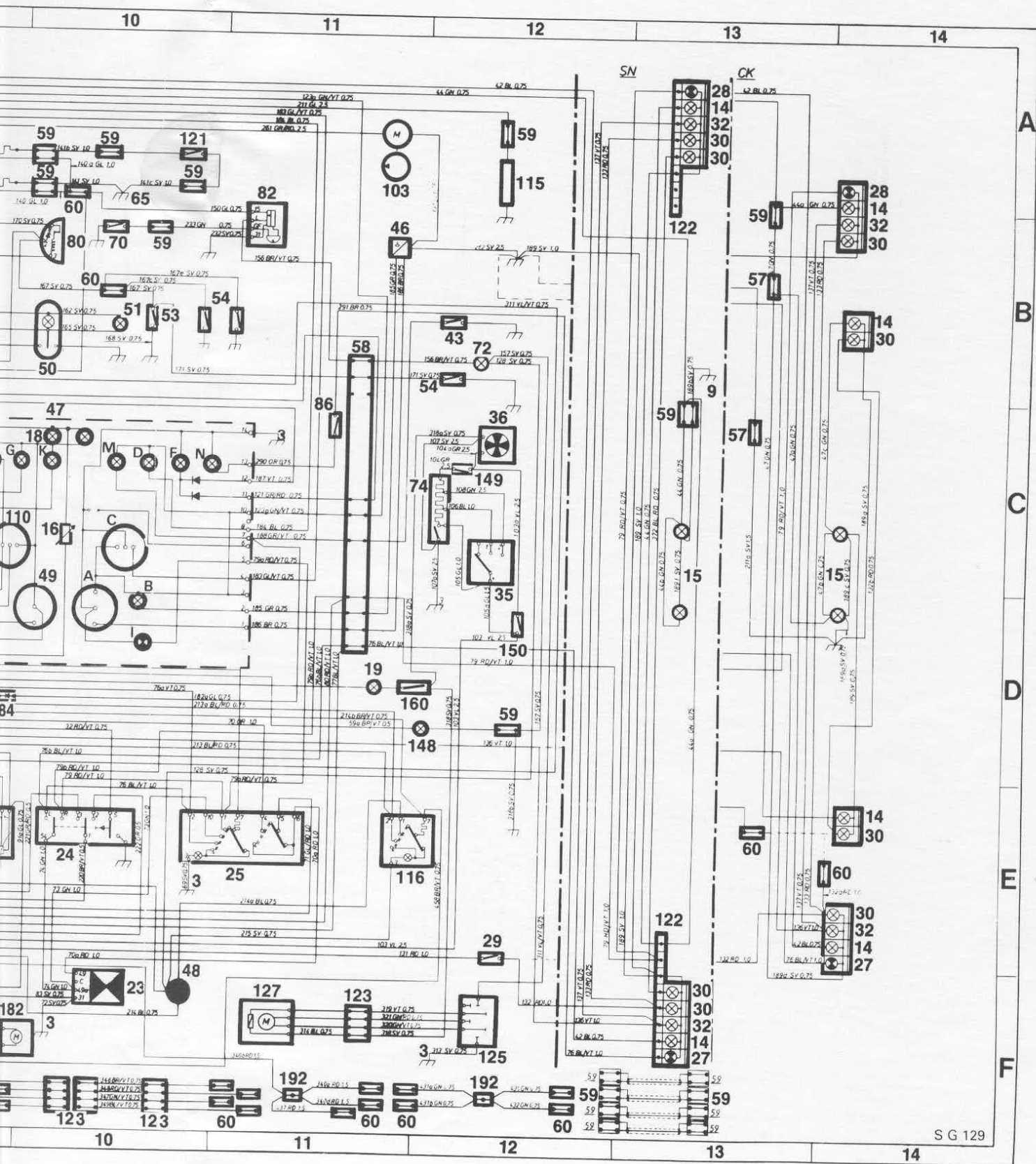


Wiring diagram, Saab 900 model 1983, USA, Canada Turbo

1. Battery (B2)
2. Alternator (B2)
3. Instrument console ground tab (C8, C11, D12, E8, E11, F8, F10, F12)
4. Starter (B2)
5. Ignition coil (B5)
6. Distributor (A5)
7. Ground tap (B1, C7, D2, F1)
8. Light relay (D7)
9. Ground, trunk (B13)
10. Light switch (E8)
11. High beam (B1, E1)
12. Low beam (B1, E1)
13. Parking light, front (A1, F1)
14. Tail light (A13, A14, B14, E14, F13)
15. Licence plate light (C13, C14)
16. Instrument light rheostat (C10)
17. Electric switch, rheostat (B8)
18. Light, instrument (C10)
19. Light, glove box (D11)
20. Ignition lock (B8)
21. Ignition lock relay (D5)
22. Fuse box (C4, D4)
23. Flasher relay (E10)
24. Direction indicator switch (E10)
25. Warning flasher switch (E11)
27. Direction indicator lamps, L.H. (E14, F1, F13)
28. Direction indicator lamps, R.H. (A1, A13, A14)
29. Brake light contact (E12)
30. Brake light lamps (A13, B14, E14, F13)
31. Back-up light contact (D8)
32. Back-up light lamps (A13, A14, E14, F13)
35. Fan switch, cabin (C12)
36. Fan motor, cabin (C12)
37. Cooling fan motor (D1)
39. Thermo contact, cooling fan (D2)
40. Signal horn (E1)
41. Signal contact (E8)
42. Brake warning contact (C3)
43. Hand brake contact (B12)
44. Oil warning contact (A6)
45. Temperature transmitter (A6)
46. Fuel transmitter (B11)
47. Combination instrument (C10):
 - A. Fuel gauge (D10)
 - B. Fuel warning light (D10)
 - C. Temperature gauge (C10)
 - D. Oil warning light (C10)
 - E. Charging control lamp (C9)
 - F. Brake warning light (C10)
 - G. High beam control lamp (C10)
- H. Direction indicator lamp L.H. (D9)
- I. Direction indicator lamp R.H. (D10)
- J. Electrical rear window control lamp (C9)
- K. Reserve (C10)
- M. Hand brake control lamp (C10)
- N. EGR control lamp (C10)
48. Cigarette lighter (F10)
49. Clock (D10)
50. Dome light, interior centre (B10)
51. Dome light, interior front (B10)
52. Ignition lock light (B9)
53. Switch, interior light (B10)
54. Door contact (B7, B10, B12)
55. Trunk light (B9)
56. Trunk light contact (B8)
57. 3-pole connector (B3, B9, B13, C13)
58. 12-pole connector (B11, D8)
59. 2-pole connector (A10, A12, A13, C2, D2, D8, D12, F7, F9, F13)
60. 1-pole connector (A4, B8, B10, C7, D8, E4, E5, E13, F9, F11)
61. Switch, wiper system (E9)
62. 2-speed windshield wiper (I 5)
63. Washer motor (B1)
64. Electrical pad with thermostat (A9)
65. Ground, handbrake (B10)
66. Headlight wiper motor (B1)
68. Horn relay (B5)
70. Seat belt contact, "F" (B10)
72. Lamp seat belt warning (B12)
73. Socket for ignition control (C7)
74. Resistance, cabin fan, low speed (C12)
77. Switch, starting ratchet (A8)
79. Vacuum switch (A4)
80. Key warning buzzer (B10)
82. Belt warning relay (B11)
83. Wiper washer interval relay (E9)
84. Diode (D10)
85. Extra foglight, mounting prepared (A1, E1)
86. EGR contact (C11)
87. Extra foglight relay, mounting prepared (E3)
88. Extra foglight - switch, mounting prepared (E8)
91. Gear position light (B8)
92. Temperature time switch (A2)
94. Starter valve (A4)
95. Make-up air valve (A2)
96. Pilot pressure valve (A2)
97. Thermo-contact (F3)
102. Fuel pump relay (C6)
103. Fuel pump (A11)
104. Hot starter relay (E2)
105. Engine speed relay (E2)
106. Time relay (F3)
107. Relay (F2)
108. Relay central (E2-E3)
109. Acceleration enrichment relay (F3)
110. Tachometer (C9)
113. Electrical rear window relay (D6)
115. Electrical rear window (A12)
116. Switch, electrical rear window (E11)
118. Cornering light (A1, F1)
119. Side back-up light (A1, F1)
121. Seat contact, electrical pad (A10)
122. 8-pole connector (B13, E13)
123. 4-pole connector (A7, A8, A9, E2, E3, F2, F7, F10, F11)
124. Switch, electrical rear view mirror L.H. (F8)
125. Switch, electrical rear view mirror R.H. (F12)
126. Electrical rear view mirror L.H. (F6)
127. Electrical rear view mirror R.H. (F11)
135. Trigger unit Lambda (C1)
136. Solenoid (B2)
137. Throttle contact (E2)
139. Timing valve (C2)
142. Solenoid valve, idle speed raise (F4)
144. Pressure switch (D8)
146. Electronic unit, ignition system (A6)
148. Ashtray lamp (D11)
149. Main switch, fan (C12)
150. Switch, AC (D12)
152. 29-pole connector (A7-F7, C2)
153. Light, cigarette lighter (E8)
154. Light, heating control (E9)
155. AC cooling fan relay (C5)
156. Cooling fan relay (D5)
157. Spark plug (A4-A5)
158. Distribution plinth - (C5)
159. Distribution plinth - "15" (C6)
160. Glove compartment (D11)
162. Electrical window regulator switch L.H. (F8)
163. Electrical window regulator switch R.H. (F8)
164. R.H. electrical window regulator motor (F9)
165. L.H. electrical window regulator motor (F7)
166. Cooling fan pressure switch (E4)
167. Throttle contact (F4)
168. Coolant thermo-contact (F3)
169. Pressure switch (B8)
170. Compressor (F4)
171. Cycle contact (B8)
172. Cooling fan (C1)
173. Diode (F4)
174. Thermo switch, coolant (E4)
177. Control unit APC (F6)
178. Sensor (F5)
179. Magnet valve (F4)
180. Pressure transmitter (F6)
181. Switch, sunroof (F9)
182. Motor, sunroof (F10)
183. Control unit, central lock, left, LHD (A7)
183. Motor, central lock, left, RHD (A7)
184. Motor, central lock, right, LHD (A8)
184. Control unit, central lock, right, RHD (A8)
185. Motor right, central lock, rear door (A8)
186. Motor left, central lock, rear door (A9)
188. Motor, central lock, tail gate (A9)
192. Branching connector (A8, F11, F12)



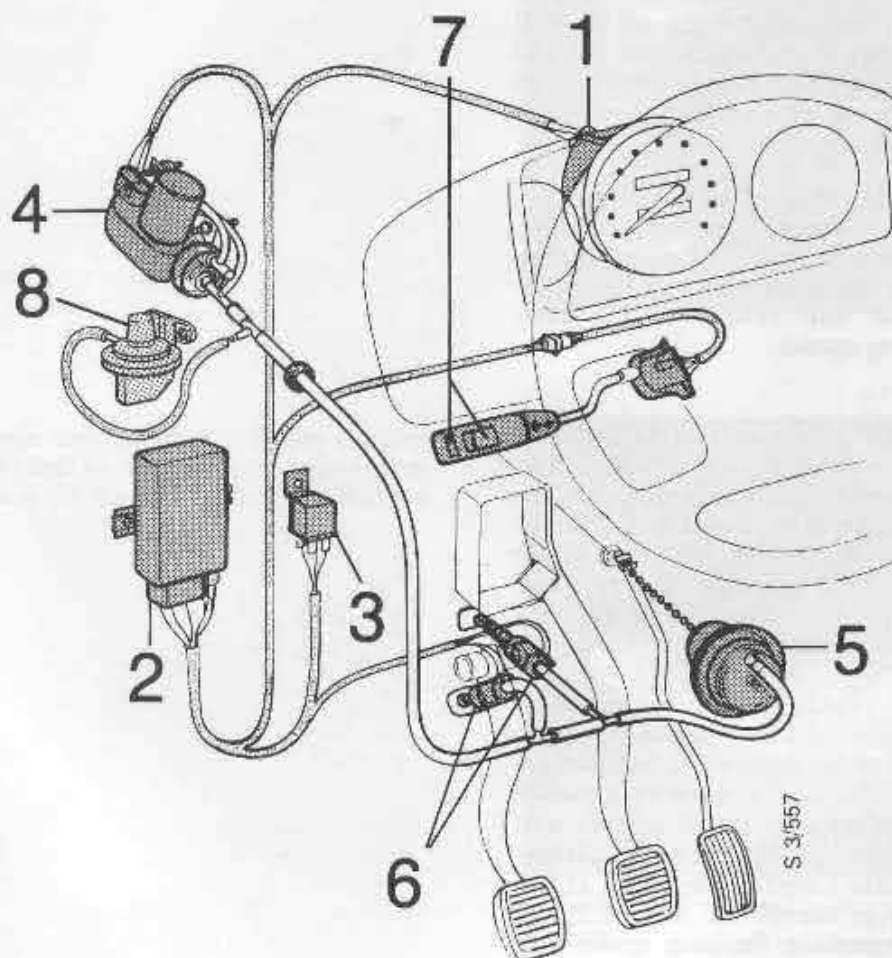




Cruise Control system

General

Some variants of 1984 model Turbo cars are equipped with a Cruise Control system. This system enables the driver to select a cruising speed which will then be maintained without the use of the accelerator pedal. The Cruise Control is switched on by means of a switch on the direction indicator control lever. The system disengages automatically when either the clutch or brake pedal is depressed or if the switch is moved to the OFF position. The cruising speed selected may be anywhere between 37 - 180 km/h (23 mph - 112 mph).



1. Speed transmitter
2. Electronic control unit
3. Relay
4. Vacuum pump
5. Vacuum regulator
6. Pedal switches
7. Control switch
8. Vacuum switch, Turbo 16

S 3/557

Operating principle

The main components of the Cruise Control system are the speed transmitter, the electronic control unit relay, the vacuum pump, the vacuum regulator, the brake and clutch pedal switches and the switch on the steering column, which incorporates the positions, SET, RESUME, OFF and ON.

When the SET button is depressed, the speed transmitter sends a signal to the electronic control unit, informing it of the speed of the car. The vacuum pump then starts running and the vacuum raised moves the diaphragm in the vacuum regulator which, in turn, acts on the throttle wire. The throttle butterfly then adopts the correct position for the preselected speed.

Any change in the speed of the car will be sensed by the speed transmitter, which will then send a signal to the electronic control unit which, in turn, will signal the vacuum motor to reduce or increase the vacuum to maintain the preselected speed.

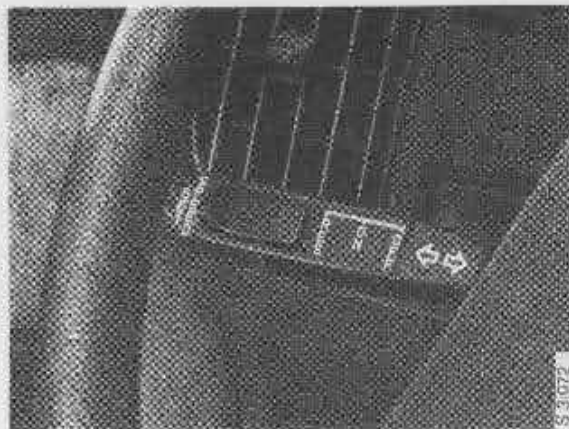
Temporary acceleration, e.g. for safe overtaking, can be achieved normally by depressing the accelerator. As soon as the pressure on the accelerator has been released, the car will return to the preselected cruising speed.

When the brake pedal or clutch pedal is depressed, the pedal or switch will break the circuit causing the vacuum to be released, whereupon the throttle butterfly will return immediately to the position for idling speed. For double safety, the vacuum pump will simultaneously be switched off electrically.

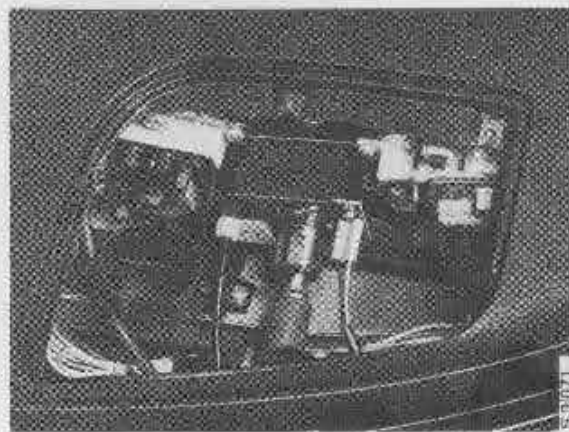
The electronic control unit incorporates a memory function which enables the preselected speed to be resumed after temporary deceleration. If the clutch or brake pedal is depressed, the pedal switch will break the circuit, automatically disengaging the Cruise Control. However, if the control switch is moved to the RESUME position, the constant cruising speed will be resumed.

The system will be automatically disengaged and the memory function erased if the speed of the car falls below 37 km/h (23 mph), if the switch is moved to the OFF position or if the ignition is switched off.

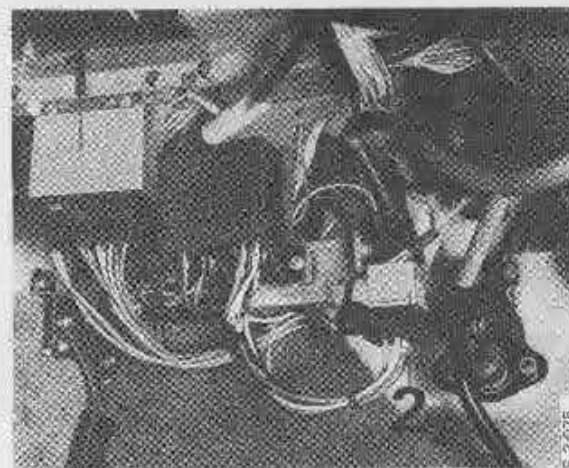
The control switch is incorporated in the direction indicator lever.



The speed transmitter is fitted behind the speedometer and is accessible after the speaker grille has been removed.

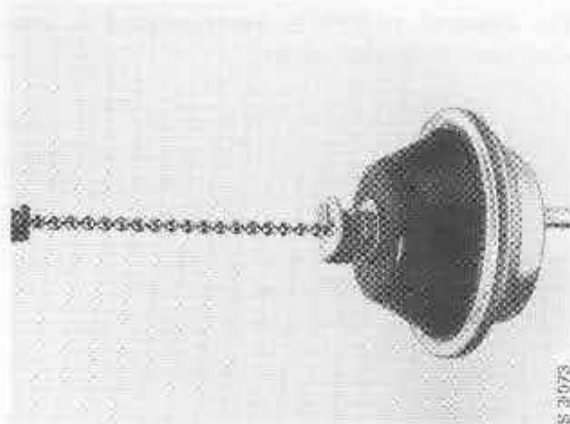


The electronic control unit and the system relay are fitted to the relay panel on the left-hand side of the car under the instrument panel.

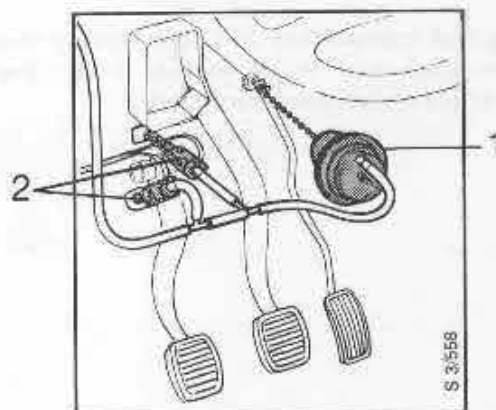


1. Electronic control unit
2. Relay

The vacuum regulator is mounted on a bracket on the heater box. Take care not to damage the rubber gaiter on the regulator during removal or refitting. The ball chain linking the vacuum regulator to the throttle cable should be as tight as possible, without moving the throttle cable.



S 3073



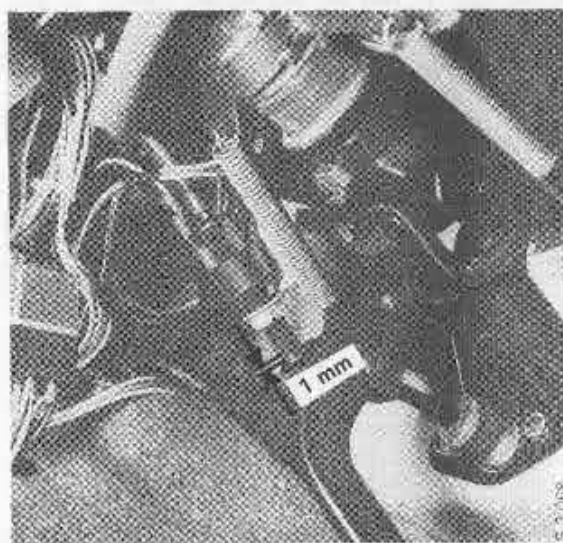
S 3558

1. Vacuum regulator
2. Pedal switches

The pedal switches are fitted on the same panel as the brake light switch. The pedal switches should be adjusted to leave a clearance of 1 mm between the screw thread and the ball tip (see illustration). Any adjustments should be made with the pedals in the rest position.

Note

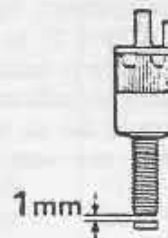
The pedal switches must not be adjusted to a position in which they will interfere with the pedal movement.



S 3088

Inspection and fault tracing in the event of malfunctioning of the Cruise Control system

Check that fuse No. 8 has not blown. Check that cables and vacuum hoses are correctly connected. Check that the pedal contacts have been correctly adjusted.



Checking the performance of the pedal contacts

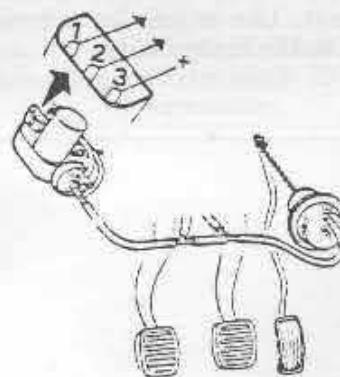
The vacuum function can be checked by connecting a hose and blowing through it. The contacts should be closed when the pedals are in the released position and should be open when the pedals are depressed.

The electrical performance can be checked by means of a buzzer. The circuit should be closed when the contacts are closed and should be open when the contacts are open.

Checking of vacuum pump and regulator, and leakage check

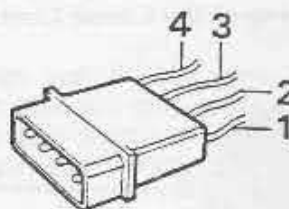
Remove the connector from the vacuum pump. Connect 12 V to terminal 3 in the connector. Connect two leads from ground to terminals 1 and 2 in the connector.

The vacuum pump should now start and the vacuum regulator should pull the accelerator wire to the bottom. Remove the lead from terminal 2. The pump should now stop and the vacuum regulator should remain in the bottom position. If the regulator does not remain in the bottom position, this indicates leakage in the system or a fault on the vacuum pump. Disconnect the lead from terminal 1. The vacuum regulator should then return to its rest position. If it does not, this indicates that the pump is defective.



Switch

Disconnect the connector of the switch from the electrical system. Connect 12 V to the brown wire (item 2) in the connector. Connect a test lamp between ground and the three leads. The indications provided by the lamp should be as shown in the table below. If they are not, replace the switch.



1. Red
2. Brown
3. Green
4. Yellow

Con- nector	Switch position			
	OFF	ON	ON SET SPEED	RESUME
1. Red	Lamp off	Lamp on	Lamp on	Lamp on
3. Green	Lamp on	Lamp on	Lamp off	Lamp on
4. Yellow	Lamp off	Lamp off	Lamp on	Lamp on

Checking the wiring

Remove the connector from the electronic control unit. Use a test lamp to check as specified in the table below.

- | | | |
|--------------|--|-----------|
| 1. Brown | | 5. Blue |
| 2. Red/white | | 6. Yellow |
| 3. Black | | 7. Orange |
| 4. Green | | 8. Black |
| | | 9. Red |

Switch position	Check	Correct reading	Probable fault
Ignition switched off. Switch in ON position.	Connect the test lamp between ground and items 1-9 in the connector.	The lamp should not light up in any position.	Poor contact in the fuse panel or the black 29-pole connector.
Ignition switched on. Switch in ON position.	Connect the test lamp between ground and items 1-9 in the connector.	The lamp should light up at items 1, 4 and 9.	Fuse 8. Wires. Vacuum pump. Switch.
Ignition switched on. Switch in ON position.	Connect the test lamp between item 1 and item 8.	The lamp should light up.	Ground connection to the electronic control unit.
Ignition switched on. Switch in ON position.	A. Connect the test lamp between item 1 and item 3. B. Depress the brake pedal or clutch pedal.	A. The lamp should light up. B. The lamp should not light up.	Pedal contacts. Incorrect adjustment of the pedal contacts. Ground lead.
Ignition switched on. Switch in ON position.	Connect the test lamp between ground and item 2. Set the switch to SET SPEED.	A click should be heard in the relay. The lamp should light up when the button is depressed.	Relay Switch Wires
Ignition switched on. Switch in ON position.	Connect the test lamp between ground and item 6. Set the switch to RESUME position.	The lamp should light up.	Switch Wires
Ignition switched on. Switch in ON position.	A. Connect item 7 to ground. B. Connect another ground lead to item 4.	A. A click should be heard from the vacuum pump. B. The vacuum pump starts.	Vacuum pump Wires Items 17, 18 and 19 in the black 29-pole connector.

Checking the clutch for wear

Wear on the clutch disc can be checked through an inspection hole in the clutch cover. The inspection hole is fitted with a rectangular cover plate.

1. Disengage the clutch and then release the pedal. The release bearing will then be in contact with the fingers of the pressure plate.
2. Through the inspection hole, check that the sliding lock ring on the piston in the slave cylinder is in contact with the cylinder walls.
3. Check the distance between the sliding lock ring and the lock ring behind the release bearing.

Checking the clutch for wear; slave cylinder of later design

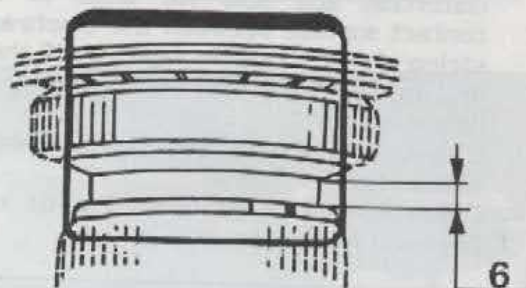
To check the wear of the clutch disc, remove the cover plate in the clutch housing cover and look through the inspection hole.

If the distance between the plastic sleeve front edge and the front edge of the turned surface is less than 2 mm, the clutch disc should be replaced.

Checking the clutch for wear; slave cylinder of later design

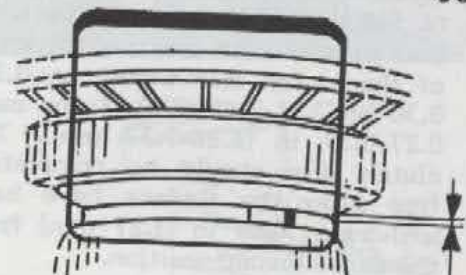
To check the wear of the clutch disc, remove the cover plate in the clutch housing cover and look through the inspection hole.

If the distance between the plastic sleeve front edge and the front edge of the turned surface is less than 2 mm, the clutch disc should be replaced.



New clutch disc

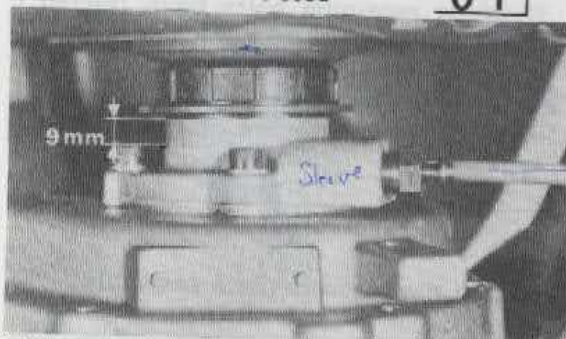
S 6595



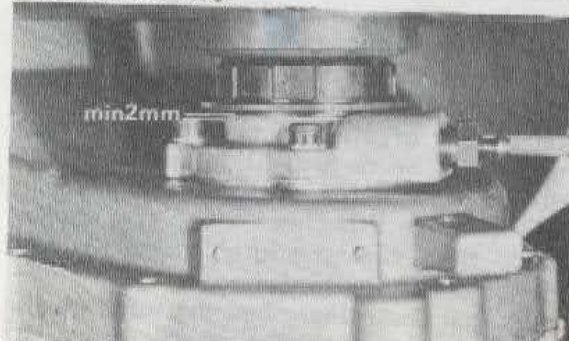
Worn disc

S 6596

0-1



New clutch disc



Worn disc

Removal

1. Undo the clip securing the pipe from the clutch cylinder to the body and disconnect the pipe from the cylinder.
2. Remove the safety padding located under the instrument panel.
3. Remove the pin holding the push-rod to the clutch pedal.
4. Remove the nuts on the inside of the bulkhead and remove the clutch cylinder from the engine compartment side. Disconnect the hose from the fluid reservoir and hang it up to prevent fluid from escaping.

Dismantling

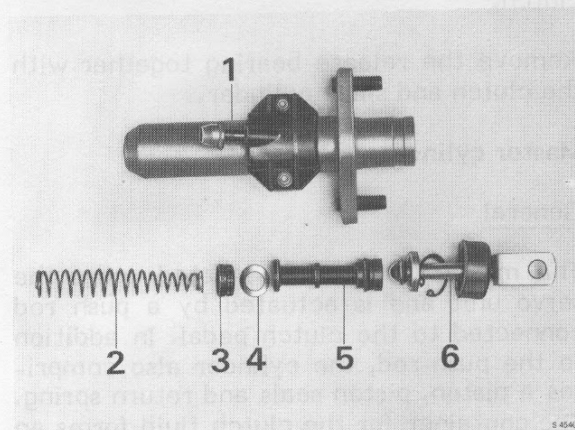
Pull back the rubber cover and remove the circlip with a pair of pliers. Remove the push-rod with the washer. The piston and its seal are now visible. Remove the piston, washer, seal and spring. Take the seal carefully off the piston. Examine the cylinder walls; if they are smooth and unscratched, new seals can be fitted, but if the surface of the cylinder bore is rough, a complete new cylinder should be fitted. If the old seals on the piston are enlarged or swollen, they have probably been contaminated with mineral oil, and even small quantities can cause them to swell with time. If this is suspected, change all the seals and flush the system with clean hydraulic brake fluid.

Assembling

Fit the return spring and spooling seat. Lubricate the piston and seals thoroughly with Girling Rubber Grease 3 and fit the seal, washer and piston with seals.

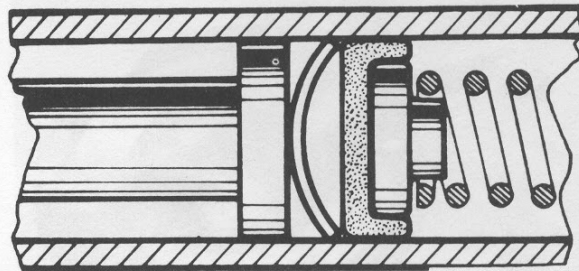
The washer must be fitted with the convex side facing the piston (see illustration).

Fit the push-rod into the cylinder, followed by the washer and circlip, which are located in the cylinder housing groove. Replace the rubber cover or fit a new one if the old one is damaged.



Clutch master cylinder

1. Housing
2. Spring with seat
3. Seal
4. Washer
5. Piston and rear seal
6. Push-rod with stop washers, circlip and rubber cover

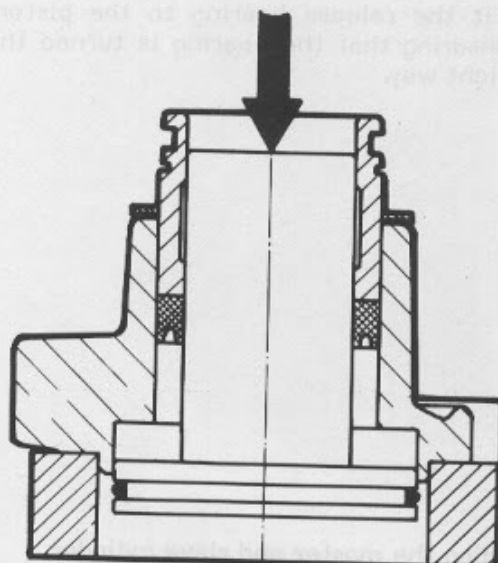


S 4539

Correct position of the washer

Dismantling

1. Remove the release bearing from the slave cylinder.
2. Press out the slave cylinder sleeve and remove the O-ring from the flange of the sleeve.
3. Remove the piston and lip seal.



5 5237

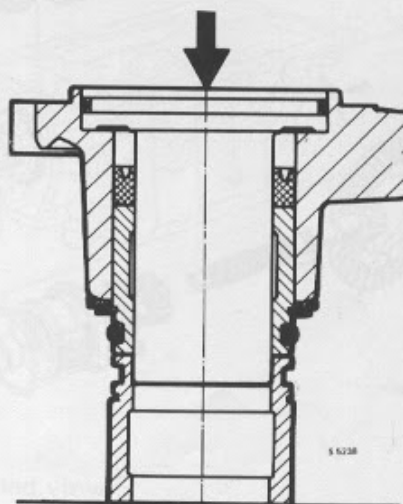
Assembly

Make sure that the slave cylinder has been thoroughly cleaned. Wash the parts in brake fluid or a special cleaning fluid for hydraulic brake components, e.g. a mixture of cleaning spirit and acetone.

The lip seal should never be allowed to come into contact with mineral oil. Apply a thin coating of Castrol Rubber Grease to the lip seal (not in the groove) and to the piston (but not the O-ring).

1. Fit the O-ring to the flange of the sleeve.
2. Slide the lip seal onto the sleeve. Dip the flange of the sleeve in brake fluid and insert the sleeve into the cylinder. Insert the lip seal part of the way into the cylinder.
3. Guide the sleeve and the cylinder upwards by pushing in the piston. The circlip and the O-ring should be fitted to the piston (dust seal with circlip on later design).

4. Place the slave cylinder on a suitable support (e.g. a spare slave cylinder piston) and press the sleeve into the cylinder.



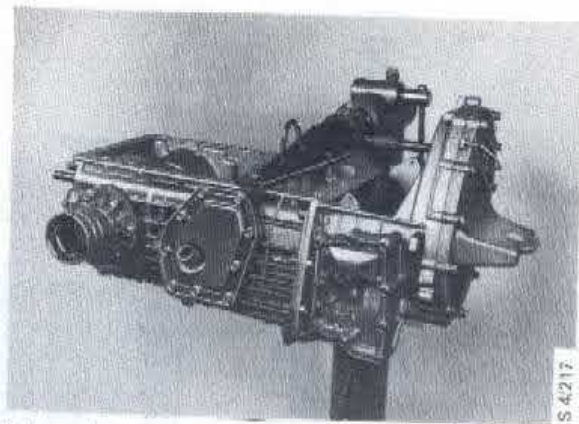
5 5238

Manual transmission, 5-speed

The transmission is designed for front-wheel drive in such a way that all shafts and gears, the differential and inner universal joints form an integral unit.

All forward gears are synchromesh and reverse is engaged by a sliding gear. The shafts are journaled in the transmission housing in ball and taper roller bearings. The pinion shaft gearwheels are journaled on bushes. All gearwheels except reverse are permanently in mesh engaged and have helical teeth. The layshaft gears are mounted on needle bearings and the constant mesh gear is run on individual balls. The front of the transmission assembly consists of a primary drive which transmits the engine power via the clutch to the gearbox itself. The latter is located underneath the engine, and part of the transmission case serves as an engine oil sump.

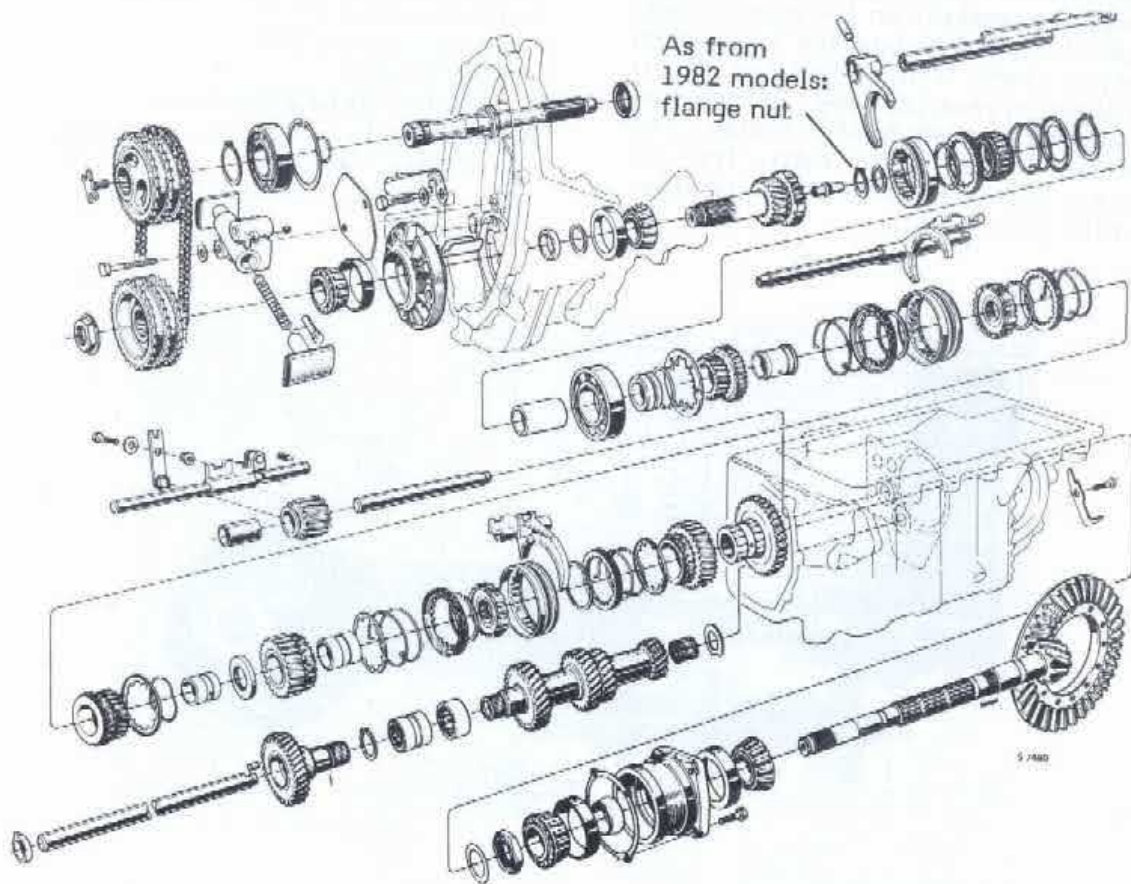
The operation of the transmission is illustrated in the diagram. Shaft power is transmitted through the clutch and primary gear to the input shaft in the gearbox. When the car is being driven in 1st gear, power is transmitted by the layshaft to the



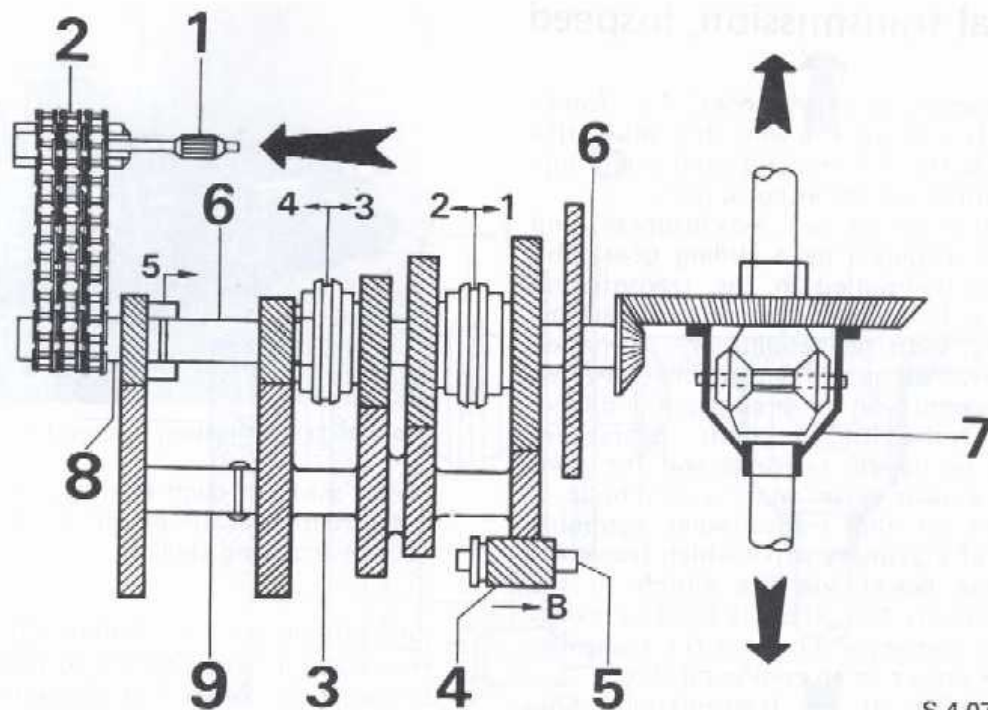
Manual transmission, 5-speed

pinion shaft through the No. 1 gear, which is journaled on the pinion shaft and locked to it by a sliding sleeve.

For driving in 2nd, 3rd or 4th, power is transmitted to the pinion in the same way but with No. 2, No 3 or No. 4 locked to the pinion shaft by a sleeve. For driving in top gear, the input shaft in the gearbox is locked to the pinion shaft direct by a sleeve, i.e. in this case power is not transmitted through the layshaft.



5-speed transmission, exploded view

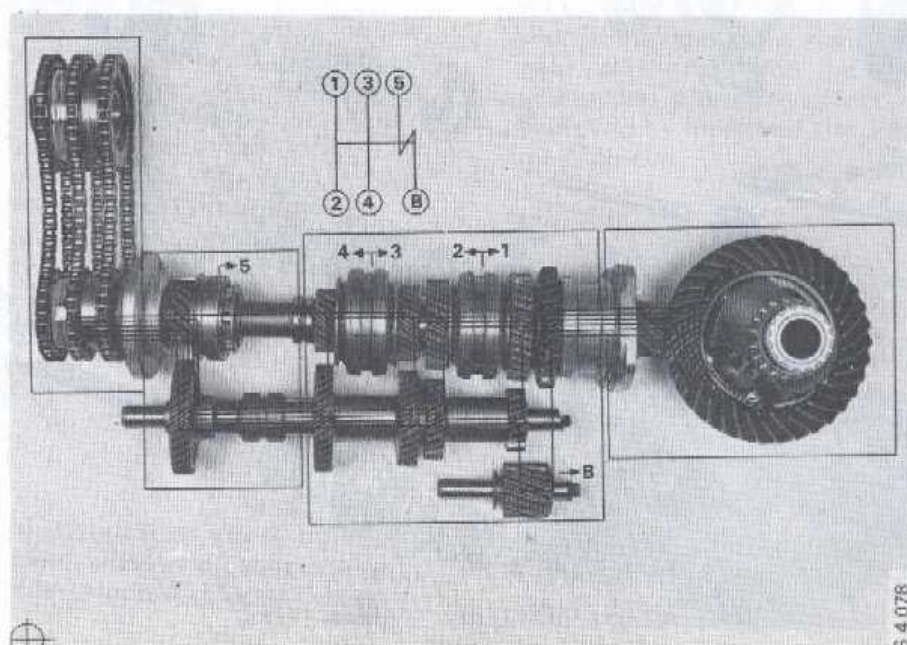


S 4 077

Reverse drive is provided by an idler shaft for reverse gear. A gear journaled on this shaft is in constant mesh with 1st gear on the layshaft. The gear pinion can be engaged with a gearwheel on the pinion shaft. This gear is located behind the 1st gear on the pinion shaft. Thus, when the car is being driven in reverse, power is transmitted from the layshaft to the reverse gear, and thence to the pinion shaft. This arrangement reverses the direction of rotation of the pinion shaft.

5-speed transmission, schematic diagram

1. Clutch shaft
2. Primary drive
3. Layshaft gear cluster
4. Reverse gear
5. Reverse gear shaft
6. Pinion shaft
7. Differential housing
8. Input shaft
9. Constant mesh gear



S 4 078

5-speed transmission, lubricating system

General

The gearbox components are lubricated by the oil in the gearbox sump. The oil flows through distribution oilways to the same level in the primary gear case, the gearbox case and the final drive case. A ball valve is fitted in the primary gear case to prevent changes in the level of the lubricant when the car is travelling downhill, thereby ensuring that the final drive unit will be properly lubricated.

Lubrication

The crown wheel and the layshaft gears are partially submerged in oil. When the transmission is running, the oil is delivered to the primary gear chain case via an oil catcher. The oil collected here forms a sump which lubricates the chains, sprockets and input shaft bearing. Excess oil is returned to the primary gear case and the gearbox case via two oil catchers which lubricate the pinion shaft gear. The oil flows through drilled oilways in the input and pinion shafts and via connecting pipes to 4 lubrication points on the pinion shaft for the gear bearings.

Ventilation

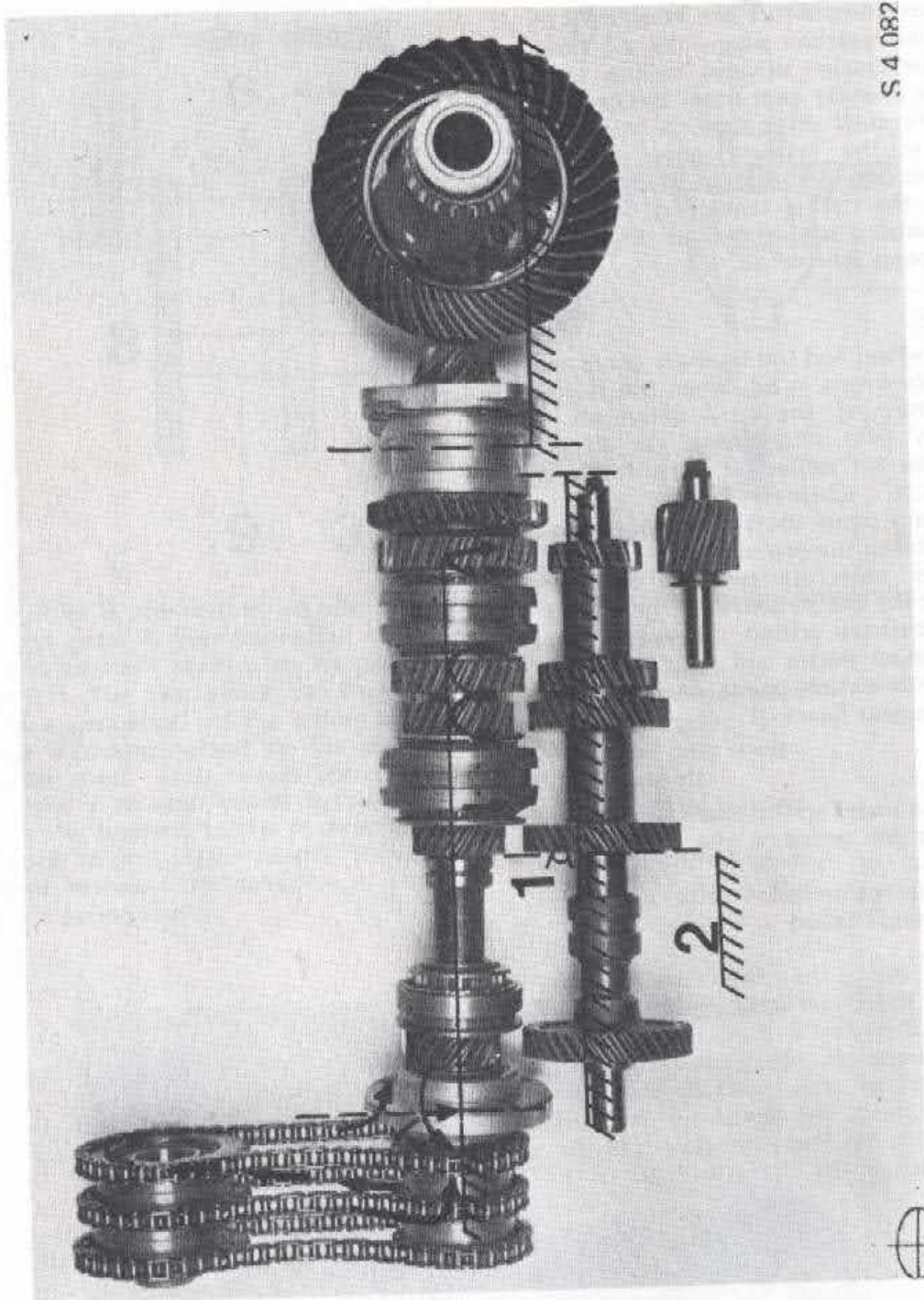
A vent in the panel on the chain case cover compensates for pressure changes in the transmission.

Refilling the transmission with oil after repair or reconditioning

Add 0.5 pint oil to the chain case through the panel in the chain case cover and the remaining 4.8 pints oil should be used to fill the transmission. Approx. 4.6 pints oil will flow through the aperture into the primary gear case. The lower periphery of the aperture is on the same level as the maximum mark on the dipstick.

Oil

Engine oil is used for lubrication and should only be changed after repair or reconditioning of the transmission. The oil level should be topped-up using the oil recommended in the specification. The oil level should be checked using the dipstick on the right-hand side of the transmission.



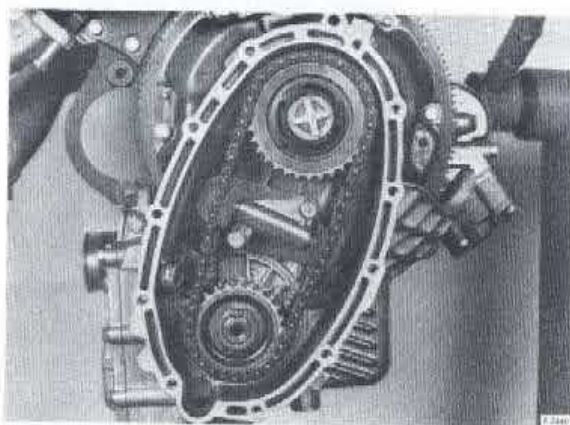
S 4 082

Lubricating system

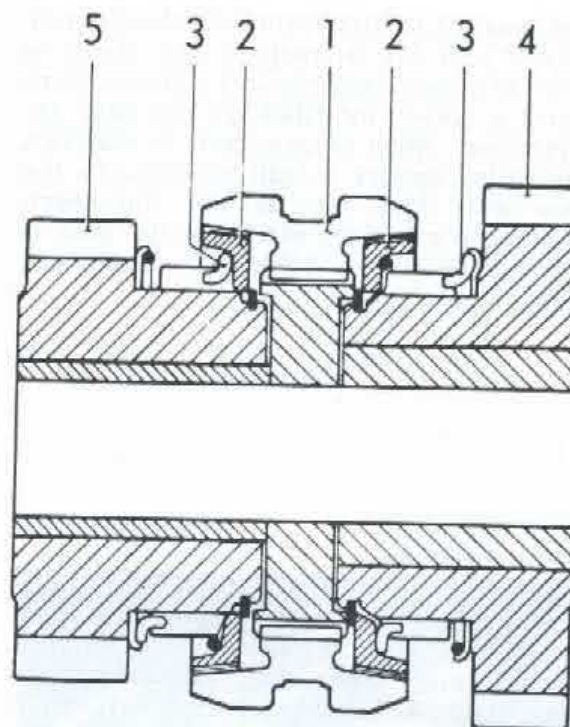
1. Ball valve
Oil level

Primary gear

The primary gear consists of a chain transmission comprising three simple chains. Located between the chains is a chain tensioner comprising two spring-loaded tensioner pads with hydraulic damping. Oil flows continuously from the primary gear case to the oil trap of the chain tensioner housing. Non-return valves providing an hydraulic damping function are located in the passages between the oil trap and the chain tensioner cylinders.



Primary gear



Synchromesh unit

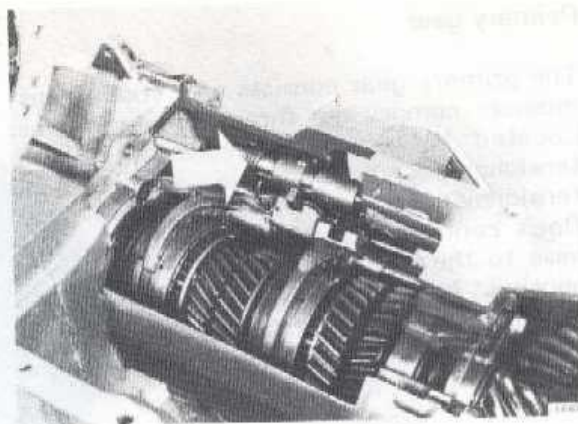
1. Synchromesh sleeve
2. Synchromesh ring
3. Spring
4. 1st speed gearwheel
5. 2nd speed gearwheel

Synchromesh mechanism

The synchromesh mechanism works as follows (see illustration). When the synchromesh sleeve is about to engage with the coupling teeth of second gear, the internal taper of the sleeve first makes contact with the spring-loaded synchromesh ring which is engaged with the gear wheel. In its outermost position, the synchromesh ring can turn approximately half the pitch of one tooth in relation to the gear. If the second gear is running at a different speed to the pinion shaft at the time when second gear is about to be engaged, and the sleeve is starting to move towards second gear position, the sleeve will be blocked by the teeth on the synchromesh ring which

turned in relation to the teeth of the pinion. Friction between the taper in the sleeve and the synchromesh ring will cause the sleeve and gear to run at the same speed, whereupon the torque acting on the synchromesh ring will be reduced. It will now be possible for the teeth on the synchromesh ring and the synchromesh sleeve to slide into engagement with the teeth on the pinion.

The gearbox is fitted with a braking device which provides smoother gear-changing when reverse is selected. The device comprises a spring mounted on the gear selector rod. When reverse gear is selected, the spring applies a light pressure to the gear shift fork for 1st and 2nd gears, whereupon a braking effect on the gear is achieved by means of the 1st gear synchromesh sleeve.



Braking device for reverse gear

Differential, etc.

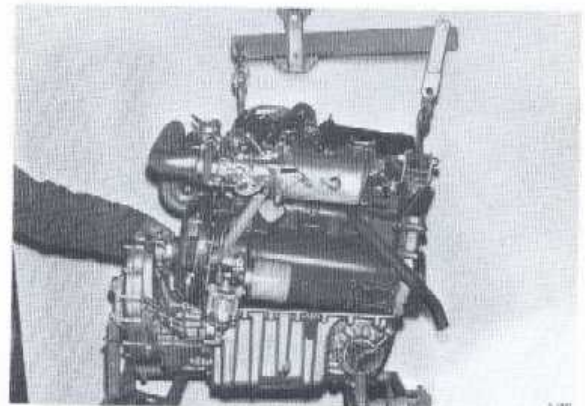
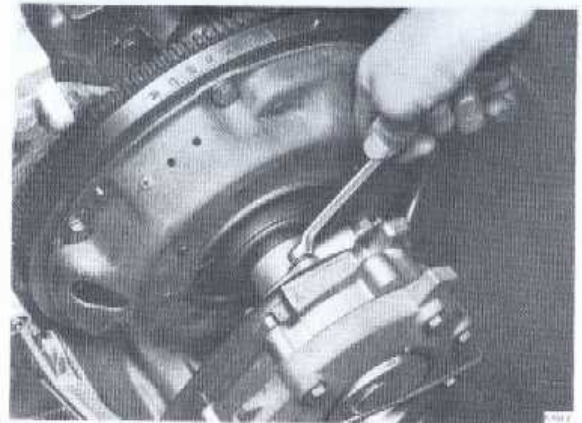
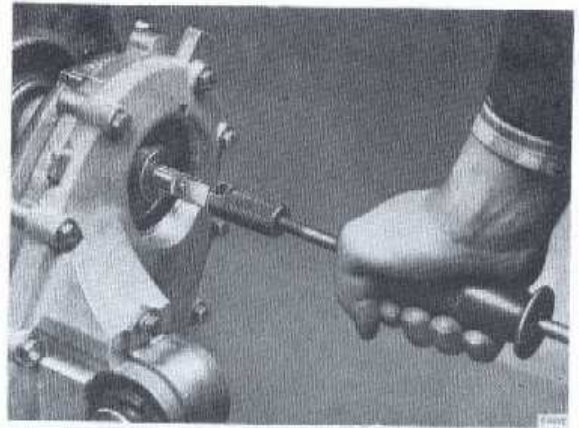
The differential assembly consists of two differential gears and two front axle gears, one for each front axle. All these gears have straight, bevel teeth. The axle gears are splined to the ends of the inner drivers. The crown wheel, which is driven from the transmission by the pinion shaft, is bolted to the differential case.

The speedometer drive gear is secured to the differential case by a lock ring. Its rotation is transmitted by a worm gear to the speedometer cable attachment.

Separating the engine from the transmission

1. Clean the outside of the power unit.
2. Drain the engine oil.
3. Remove the cover over the flywheel ring gear.
4. Withdraw the clutch shaft using tapping-out hammer 83 90 270 and joint 87 90 529.
5. Remove the three slave cylinder fixing bolts.
6. Remove all bolts in the mating flanges of the engine and transmission.
7. Carefully lift the engine away from the transmission (see illustration), removing the guide sleeve for the release bearing at the same time.

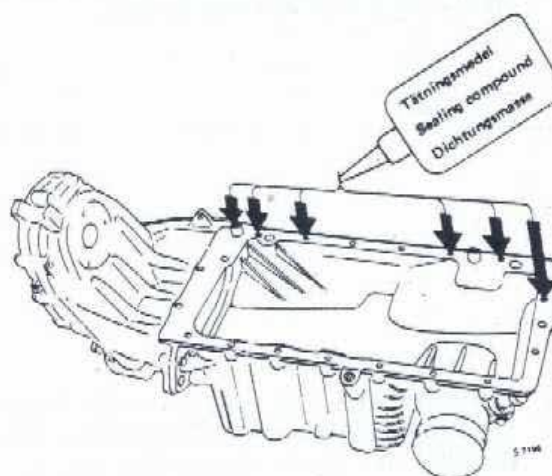
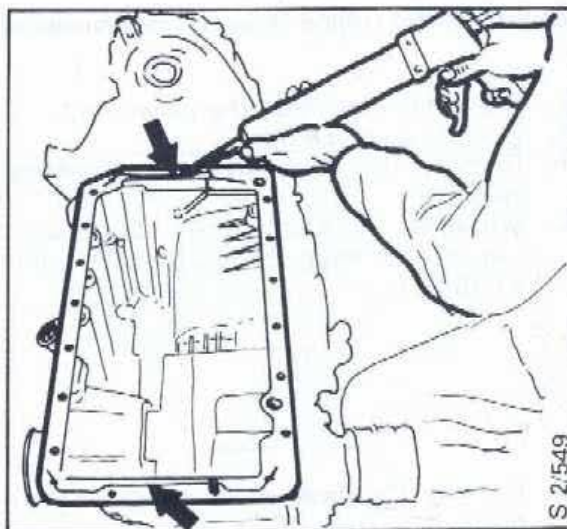
If the engine and transmission fail to separate, never attempt to force them apart without first checking that all bolts have been removed.



The following measures are important when fitting together the engine and transmission.

- Make sure that the mating surfaces between the engine and transmission are scrupulously clean.
- Check that the two guide sleeves are fitted in the transmission.
- Fit a new gasket on the transmission flange. Apply Dirko or Bostik Silicon sealing compound to both the end flanges indicated in the upper picture.
- Apply thread sealing compound to the six bolts indicated in the lower illustration.

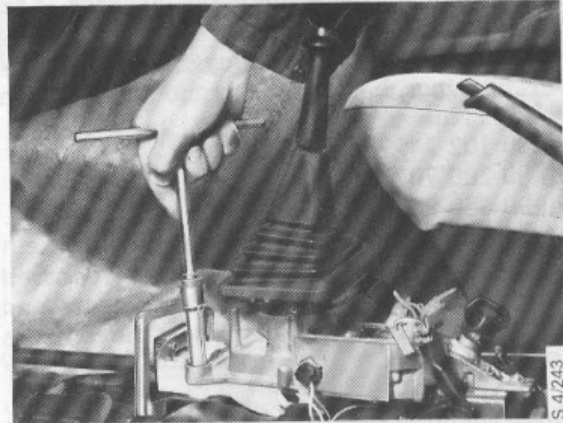
Assemble in the reverse order.



Ignition and starter switch

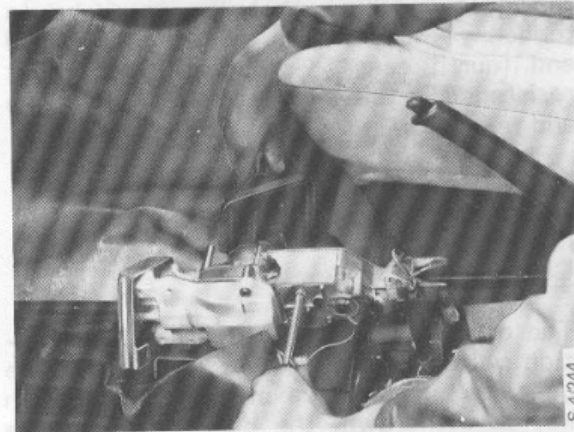
To remove the gear lever housing complete with the ignition and starter switch

1. Disconnect the battery leads.
2. Remove the front passenger seat.
3. Remove the centre console (see page 432-9).
Fold back the carpet and remove the heater duct.
4. Disconnect the electrical leads to the ignition switch and reversing-light switch.
5. Unhook the spring from the control unit (five-speed models only). Undo the retaining bolts for the gear lever housing using special key 87 90 370.



S 4/243

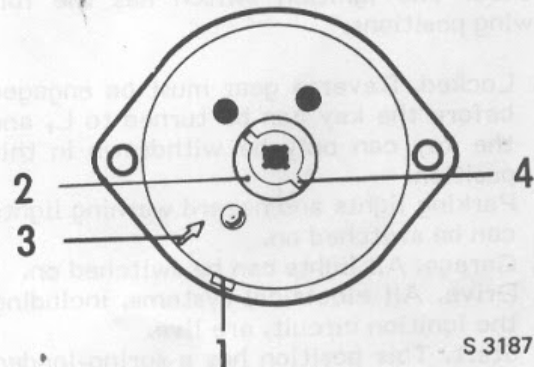
6. Lift up the gear lever housing and swivel it so that the retaining screws will become accessible from underneath and then remove the cover.
(To remove the entire housing, remove the two screws securing the plastic bottom section, after which the entire housing can be removed.)
7. Undo the two securing screws for the starter switch and remove the switch.



S 4/244

Assembly

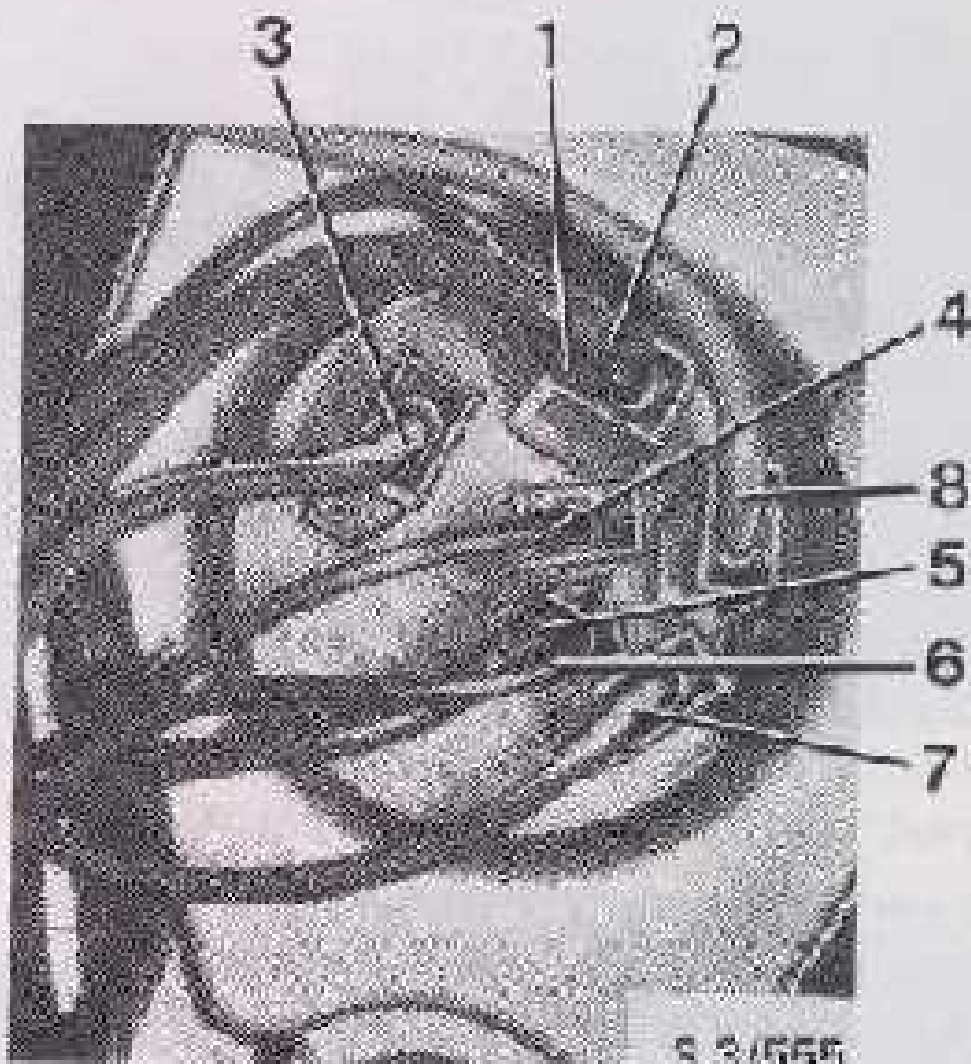
1. Insert a screwdriver in the slot (4) and turn the contact to bring the mark (2) opposite the arrow (3).
2. Check that the ignition key is in position L (locked).
3. Fit the switch with the locating stud (1) in the matching groove in the gear lever housing.



S 3187

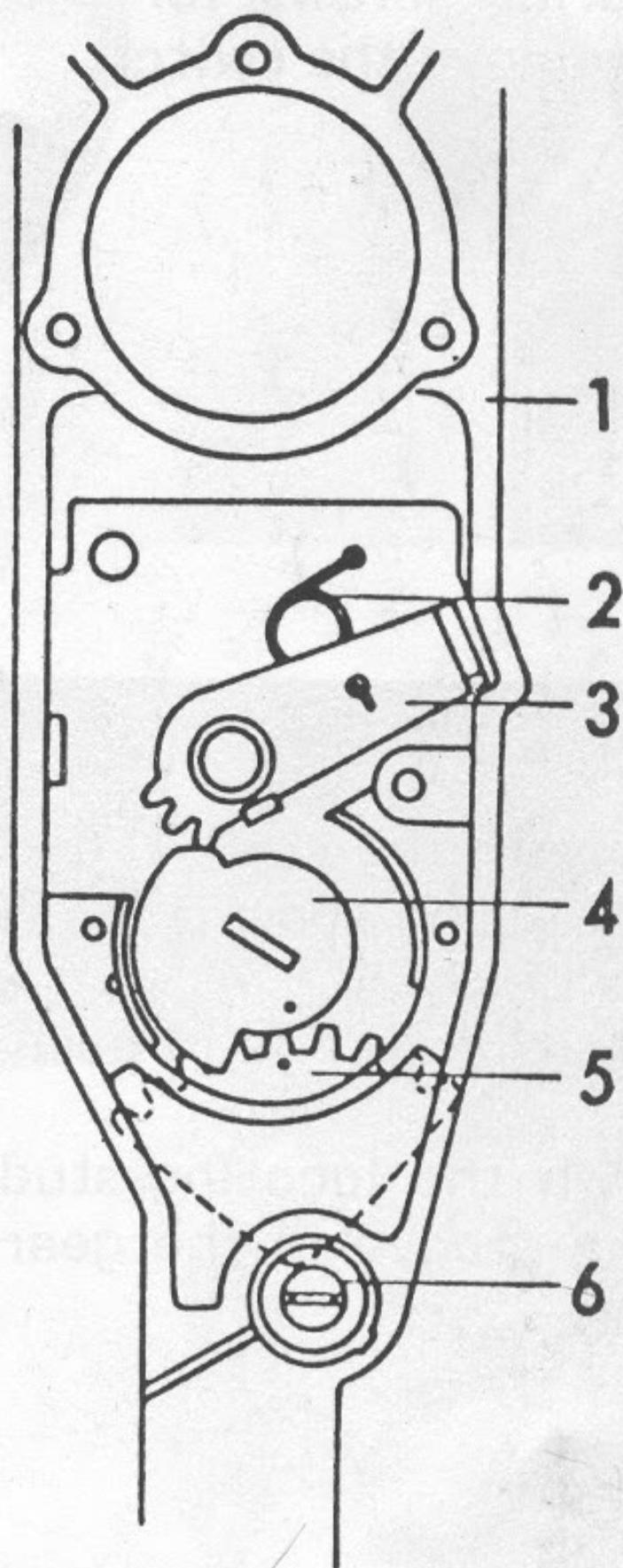
Ignition and starter switch

1. Locating stud
2. Setting mark
3. Arrow
4. Logwheel locating slot



Starter switch

- | | |
|----------------------|---------------------|
| 1. Grey to 30 | 5. Red to X |
| 2. Grey/red to 30 | 6. Red to X |
| 3. Green/white to 15 | 7. White/gray to 54 |
| 4. Green to S | 8. Yellow to 50 |



Gear lever lock

- 1. Housing
- 2. Spring
- 3. Locking tongue
- 4. Cogwheel
- 5. Toothed segment
- 6. Lock cylinder

4. Turn the ignition key back and forth to make sure that the gear lever lock does not stick or jam.
5. Fit the cover plate.
6. Fit the gear lever housing. (5-speed models only: Hook the spring onto the control unit.)
7. Connect the leads to the ignition switch and reversing light switch.
8. Fit the heater duct and fold down the carpet.
9. Fit the centre console.
10. Refit the seat.
11. Reconnect the battery leads.

Lock cylinder

Removing

1. Remove the gear lever housing (see the section on removing the gear lever housing).
2. Turn the key to a position mid-way between the locking and garage positions.
3. With the key in this position, the lock cylinder dowel can be pushed in to free the cylinder using a wire lockpick or similar inserted through a hole under the gear lever housing (see illustration).
4. Pull out the lock cylinder.

Assembling

1. Turn the key in the lock cylinder to a position between the locking and garage positions.
2. Push in the lock cylinder dowel. Check that the toothed segment driver pins are correctly positioned to fit in the lock cylinder. Push in the lock cylinder and check that it is engaged in the toothed segment.
3. Fit the gear lever housing (see Gear lever housing Assembling).

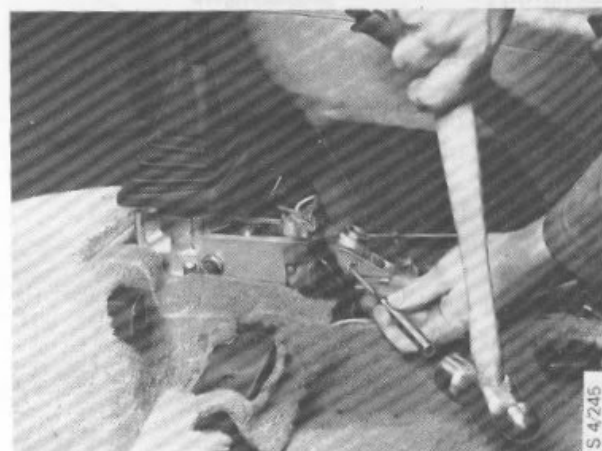
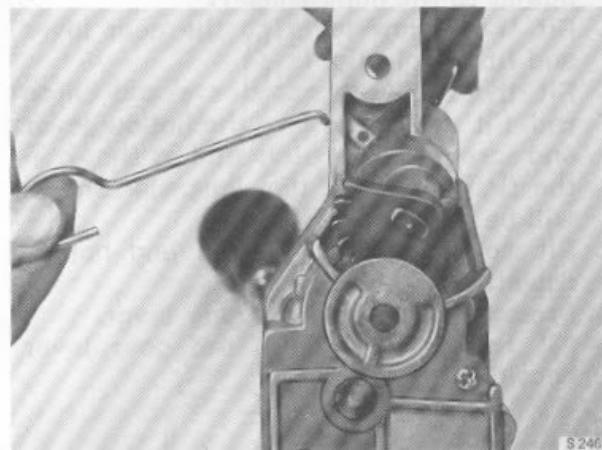
Removing the cylinder when the key is missing

To remove the lock cylinder from the gear lever housing when the key is missing (thereby demolishing the lock cylinder), proceed as follows:

1. Remove the left front seat and the gear lever cover.
2. Remove the centre console.
3. Drill out the plug covering the hole for the lock cylinder dowel in the gear lever housing.
4. Drive in the dowel using a drift (approx. 0.08 in. or 2 mm) and remove the lock cylinder.



S 6615



Gear lever

up to and incl. chassis no.

90 80 102 3498

90 80 200 7076

90 80 600 2627

Removal

1. Undo the three screws under the rubber boot and remove the gear lever from the gear lever housing.
2. Pull out the bellows dowel from the sleeve, screw out the catch stud and remove the spring.
3. Remove the sleeve, the bearing and the cover.
4. Tap the knob carefully with a plastic mallet, so that it will loosen from the gear lever and remove the sleeve, the catch rod and the rubber boot.
5. Remove the circlip which holds the hollow lever and the gear lever together and pull out the hollow lever with its rubber bush.

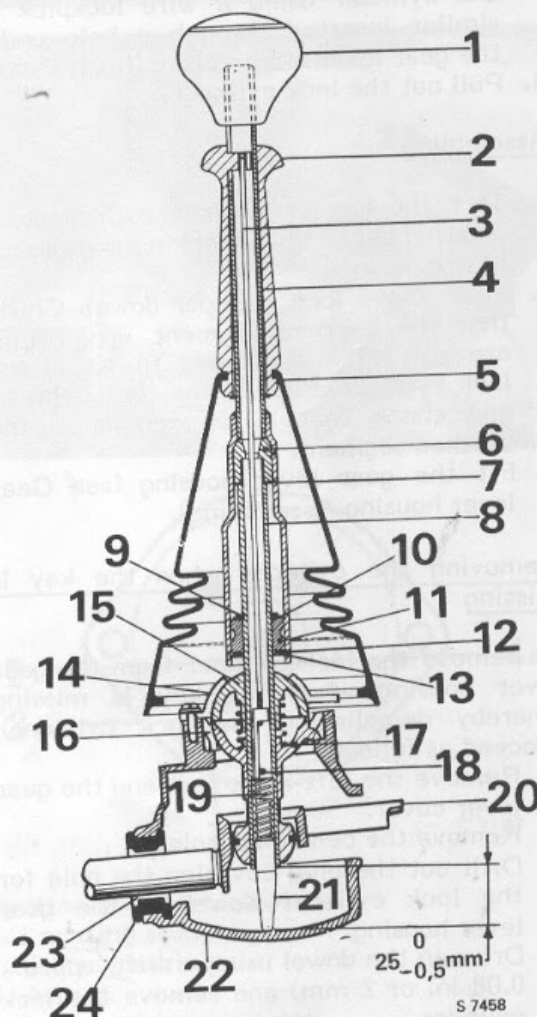
Replace damaged or worn parts.

Assembly

1. Fit the slot ring, washers and rubber bushes to the hollow lever.
2. Fit the hollow lever to the gear lever and fit the circlip.
3. Fit the rubber boot, sleeve and catch rod. Fit the spring into the hollow lever and screw in the catch stud as shown in the figure, so that the dimension shown will be obtained.
4. Fit cover, bearing, sleeve and hollow dowel.
5. Press the knob onto the gear lever.
6. Fit the gear lever to the gear lever housing.

Section through gear lever housing

- | | |
|-----------------|------------------------|
| 1. Knob | 13. Circlip |
| 2. Sleeve | 14. Cover |
| 3. Catch rod | 15. Bearing |
| 4. Gear lever | 16. Gear lever bearing |
| 5. Rubber boot | 17. Carrier |
| 6. Rubber bush | 18. Hollow dowel |
| 7. Washer | 19. Spring |
| 8. Hollow lever | 20. Gear shift rod |
| 9. Slot ring | 21. Catch stud |
| 10. Washer | 22. Bottom part |
| 11. Rubber bush | 23. Bearing |
| 12. Washer | 24. Rubber bush |



Gear lever, 5-speed models

As from chassis No.

90 80 102 3499

90 80 200 7077

90 80 600 2628

Removal

1. Remove the gear lever from the gear lever housing.
2. Remove the hollow dowel and remove the sleeve, spring and bearing components.
3. Unscrew the catch stud from the catch rod.
4. Remove the rubber boot from the sleeve.
5. Prise away the knob from the hollow lever.
6. Remove the sleeve and the catch rod.

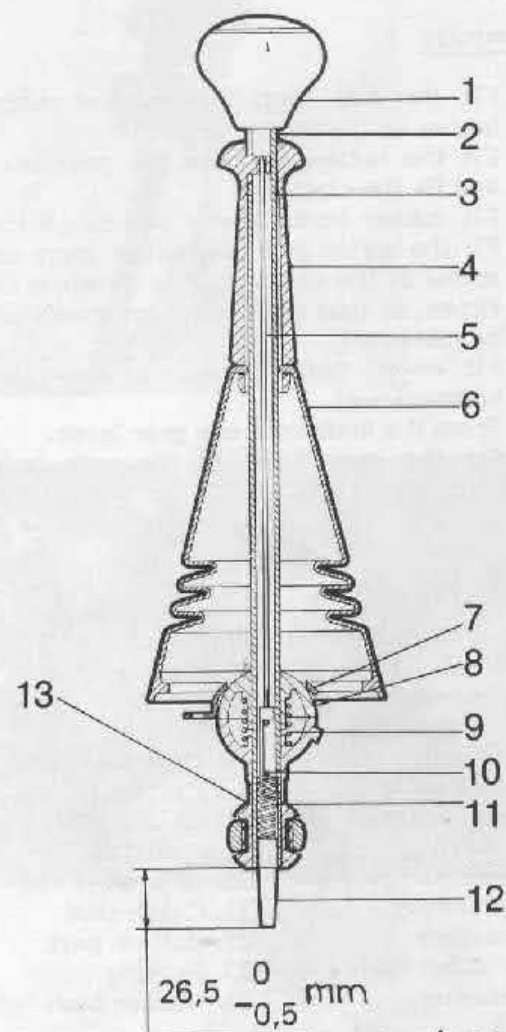
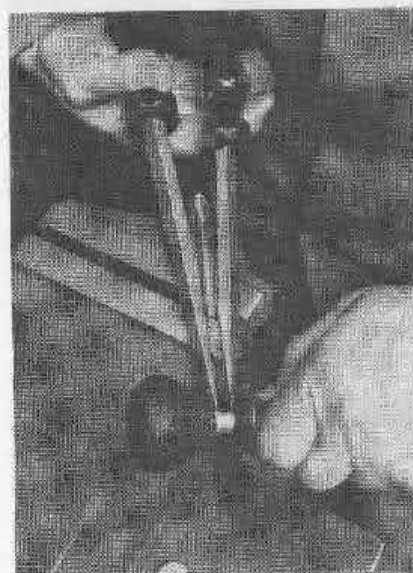
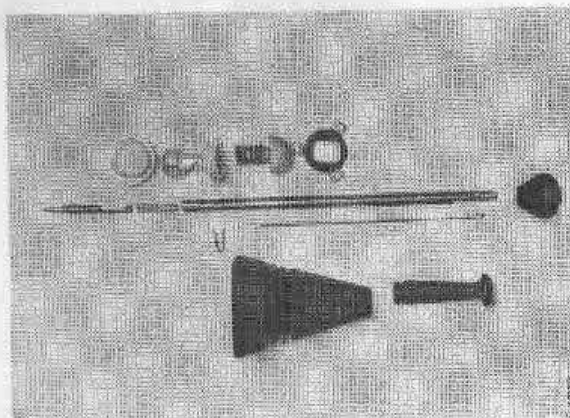
Assembly in the reverse order.

Note

Before the hollow dowel is fitted, the projecting length of the catch stud must be adjusted to 26.5 ± 0.5 mm.

Gear lever housing

1. Knob
2. Gear lever
3. Stop ring
4. Sleeve
5. Catch rod
6. Rubber boot
7. Cover
8. Bearing
9. Spring
10. Hollow dowel
11. Spring
12. Catch stud
13. Carrier



S 4/158

Centre console as from 1983 models

To remove

1. Move the seats to the rear limit of their fore-and-aft adjustment and apply the handbrake.
2. Engage reverse gear and remove the ignition key.
3. Remove the handle for the choke control (cars with carburettor engines). Then push the control in.

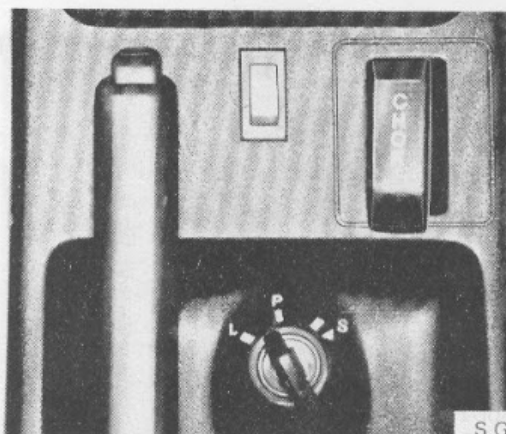
4. Remove the two screws for the cover (top part of the console) and raise the cover so that the cables can be disconnected from the switch for the interior lighting. Then release the cover from the gear lever.

5. Remove the ashtray located at the rear of the console. Remove the five screws. Raise the console and remove the lamp for the ignition lighting. The console can then be released from the gear lever.

Assemble in the reverse order.

Note

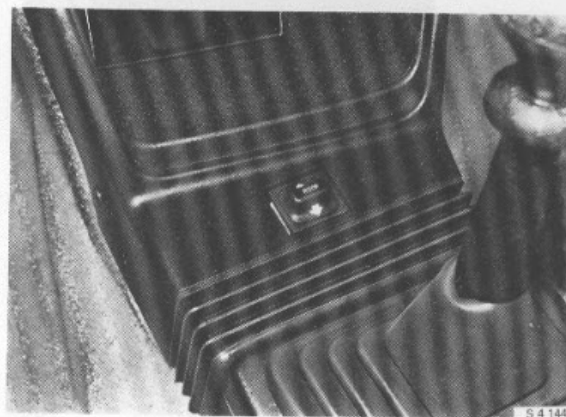
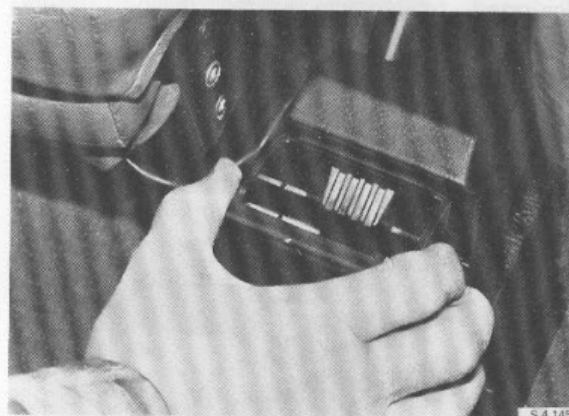
On Turbo and GLE cars, the bellows between the centre console and the radio console can be removed and refitted separately.



Remove the screw and withdraw the handle.



Remove the rubber boot of the gear lever from the top part of the console.



Gear lever

Removal

1. Remove the gear lever from the gear lever housing.
2. Remove the hollow dowel and remove the sleeve, spring and bearing components.
3. Unscrew the catch stud from the catch rod.
4. Remove the rubber boot from the sleeve.
5. Prise away the knob from the hollow lever.
6. Remove the sleeve and the catch rod.

Assembling

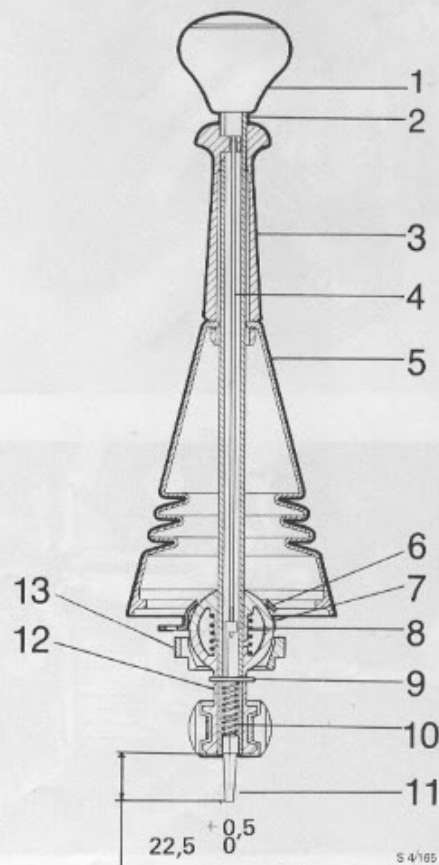
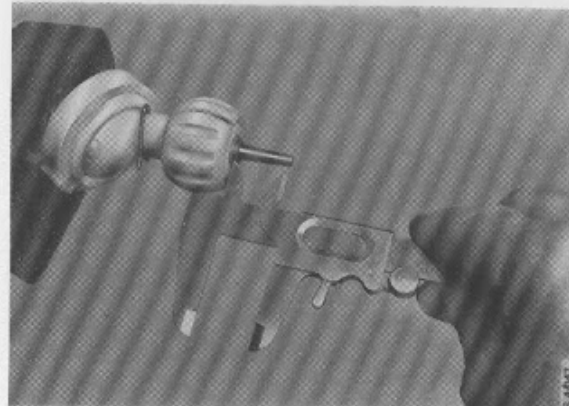
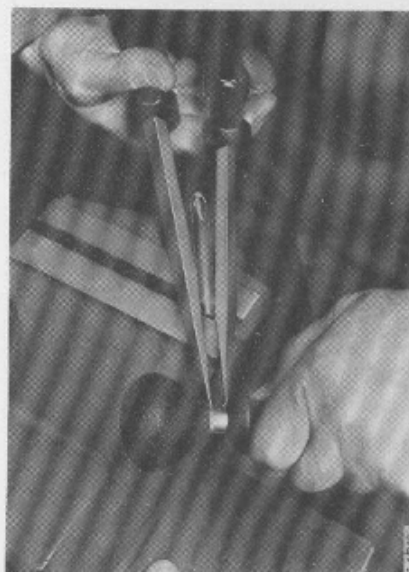
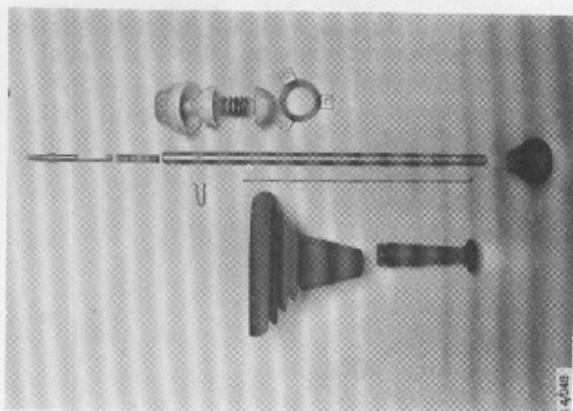
Assembly in the reverse order.

Note

Before the hollow dowel is fitted, the projecting length of the catch stud must be adjusted to $22.5 + 0.5$ mm
- 0.0 mm

Gear lever

1. Knob
2. Gear lever
3. Sleeve
4. Catch rod
5. Rubber boot
6. Cover
7. Bearing
8. Spring
9. Hollow dowel
10. Spring
11. Catch stud
12. Carrier
13. Bearing



Fault diagnosis schedule related to the test report on the automatic transmission

* If the warranty is still in force, the automatic transmission should be replaced by a replacement unit.

Test No.

- | | | |
|---------------------|----|--|
| 0.1 | A. | Check the oil level in the automatic transmission |
| Does not drive | B. | Oil filter clogged by impurities |
| Line pressure too | C. | Suction pipe O-ring leaking |
| low or no pressure | D. | * |
| | E. | Torque converter drive lugs broken |
| 0.2 | A. | Check the selector control, also in the automatic transmission |
| Does not drive | B. | Check the primary drive and final drive |
| Mechanical defects. | C. | Check that the pipes are firmly secured |
| Line pressure OK. | D. | * |
| | E. | Does not drive in "D". Check the front clutch. Check the one-way clutch. |
| | F. | Does not drive in "R". Check the rear clutch, rear band and rear servo |
| 1.1 | A. | Check the governor for binding |
| Pulls away in 2nd | B. | Check the 1-2 shift valve for binding |
| | C. | * |
| | D. | Dismantle the transmission, check the governor mounting - seal rings |
| | E. | Replace the governor assembly (internal leakage) |
| | F. | Replace the valve body assembly (internal leakage) |
| 1.2 | A. | Check the governor for binding |
| Pulls away in 3rd | B. | Check the 1-2 and 2-3 shift valves for binding |
| | C. | * |
| | D. | Dismantle the transmission, check the governor mounting - seal rings |
| | E. | Replace the governor assembly (internal leakage) |
| | F. | Replace the valve body assembly (internal leakage) |
| 1.3 | A. | Check that the kick-down valve cable is correctly adjusted |
| Low upshift speed | B. | Check whether the idling speed pressure is too low |
| | C. | Check the governor for binding |
| | D. | * |
| | E. | Replace the governor (correct type) |
| 1.4 | A. | Check that the kick-down valve cable is correctly adjusted |
| High upshift speed | B. | Check whether the idling speed pressure is too high |
| | C. | Check the governor for binding |
| | D. | Check the pipes between the governor and the valve body |
| | E. | * |
| | F. | Replace the governor (correct type) |
| | G. | Dismantle the transmission, check the governor mounting - seal rings |

Test No.

- 1.5
Does not shift up
- A. Check that the kick-down valve cable is correctly adjusted
 - B. Check the kick-down valve cable (seized in the kick-down position)
 - C. Check the pipes between the governor and valve body
 - D. Check the shift valves for binding
 - E. Check the governor for binding
 - F. *
 - G. Check that the governor faces in the correct way (BW35)
- 2.1
Juddering or noise on manual shifting (1st)
- A. Check that the gear selector cable is correctly adjusted
 - B. Check the oil level
 - C. Check that the rear band is correctly adjusted
 - D. Check the pipes to the rear servo
 - E. *
 - F. Check the O-rings of the N-D accumulator
 - G. Check the O-rings of the rear servo
 - H. Check the front clutch
- 2.2
Upshift from manual (1st)
- A. Check that the gear selector cable is correctly adjusted
- 2.3
No overrun braking in manual (1st)
- A. Check that the rear band is correctly adjusted
 - B. Check the pipes to the rear servo
 - C. *
 - D. Check the O-rings of the rear servo piston
 - E. Dismantle the transmission and check the rear band
- 3.1
Slips on a gradient
- A. Check that the kick-down valve cable is correctly adjusted
 - B. Check the oil level
 - C. Check that the rear band is correctly adjusted
 - D. Check whether the idling speed pressure is too low
 - E. Check the pipes to the rear servo and rear clutch
 - F. *
 - G. Check the O-rings of the rear servo piston
 - H. Dismantle the transmission, check the rear servo and rear clutch
 - I. Check the rear band
 - J. Check the rear clutch seals (three)
- 4.1
Pulls away in 2nd
- A. Check the governor for binding
 - B. Check the 1-2 shift valves for binding
 - C. *
 - D. Dismantle the transmission, check the governor mounting - seal rings
 - E. Replace the governor assembly (internal leakage)
 - F. Replace the valve body assembly (internal leakage)
- 4.2
Pulls away in 3rd
- A. Check the governor for binding
 - B. Check the 1-2 and 2-3 shift valves for binding
 - C. *
 - D. Dismantle the transmission, check the governor mounting - seal rings
 - E. Replace the governor assembly (internal leakage)
 - F. Replace the valve body assembly (internal leakage)

Test No.

- 4.3
Low upshift speed
on kick-down
- A. Check that the kick-down valve cable is withdrawn by 45 mm on kick-down
 - B. Check the governor for binding
 - C. *
- 4.4
High upshift speed
on kick-down
- A. Check the governor for binding
 - B. Check the pipes between the governor and the valve body
 - C. Check the shift valves for binding
 - D. *
 - E. Check the seal rings of the governor mounting
- 4.5
Does not shift
down
- A. Check the governor for binding
 - B. Check the pipes between the governor and the valve body
 - C. Check the shift valves for binding
 - D. *
 - E. Dismantle the transmission, check the seal rings of the governor mounting
- 4.6
Slips on shifting
- A. Check that the front band is correctly adjusted
 - B. Check the pressure drop before shifting (after cut-back - ACB) (adjustment of the kick-down valve cable)
 - C. *
 - D. Check the O-rings of the front servo piston
 - E. Check the front clutch, front band and rear clutch
 - F. Check the seals on the sun gear shaft
- 5.1
Low 3-1/3-2
shift speed
on kick-down
- A. Check that the kick-down valve cable is withdrawn by 45 mm on kick-down
 - B. Check the governor for binding
 - C. Check that the kick-down valve cable is correctly adjusted
 - D. *
- 5.2
High 3-1/3-2
shift speed
on kick-down
- A. Check the governor for binding
 - B. *
- 5.3
No 3-1 shift
on kick-down
- A. Check that the kick-down valve cable is withdrawn by 45 mm on kick-down
 - B. Check the governor for binding
 - C. Check the 1-2 and 2-3 shift valves for binding
 - D. *
- 5.4
No 3-2 shift
on kick-down
- A. Check that the kick-down valve cable is withdrawn by 45 mm on kick-down
 - B. Check the governor for binding
 - C. Check that the front band is correctly adjusted
 - D. Check the 1-2 and 2-3 shift valves for binding
 - E. *

Test No.

- | | |
|--|--|
| 5.5
Slips on shifting | <ul style="list-style-type: none"> A. Check that the front band is correctly adjusted B. Check that the kick-down valve cable is correctly adjusted C. Check the mounting of the pipes (leakage) D. * E. Check the O-rings of the front servo piston F. Check the front clutch, front band and rear clutch G. Check the seals on the sun gear shaft |
| 6.1
No overrun braking on manual shifting (2nd) | <ul style="list-style-type: none"> A. Check that the gear selector cable is correctly adjusted B. Check that the front band is correctly adjusted C. * |
| 6.2
No overrun braking on manual shifting (1st) | <ul style="list-style-type: none"> A. Check that the gear selector cable is correctly adjusted B. Check that the rear band is correctly adjusted C. Check the rear servo pipes D. * E. Check the O-rings of the rear servo piston F. Check the rear band |
| 6.3
Manual downshift (1st) at 80 km/h | <ul style="list-style-type: none"> A. Check that the throttle cable has not seized in the kick-down position B. Check the line pressure C. Check the kick-down valve D. * E. Replace the valve body |
| 7.1
Pulls forward slightly | <ul style="list-style-type: none"> A. Check that the gear selector cable is correctly adjusted B. Check the O-rings of the N-D accumulator C. Check the position of the manual valve in the valve body in "N" D. * E. Dismantle the transmission and check the front clutch springs |
| 8.1
The parking pawl does not hold | <ul style="list-style-type: none"> A. Check that the gear selector cable is correctly adjusted B. Check that the gear selector rod is correctly adjusted (remove the cover) C. Check the parking pawl and ring gear D. * |
| 9.1
Does not normally shift | <ul style="list-style-type: none"> A. Check that the kick-down valve cable is correctly adjusted B. Check the oil level C. Check that the gear selector cable is correctly adjusted D. Check that the front band is correctly adjusted E. Check that the rear band is correctly adjusted F. * G. Dismantle the transmission, and check all bands and clutches |

Removal and Installation

Test No.

10.1 Noise

- A. Check the oil in the final drive
- B. Check the ATF oil level
- C. Check that the gear selector cable is correctly adjusted (the parking pawl engages in the ring gear)
- D. *
- E. Check the drive disc (for cracks, loose bolts)
- F. Check the oil cooler outlet
- G. Dismantle the transmission and check the needle bearings and pinion bearings (the pinion bearing noise is transmitted through the selector lever)
- H. Check the planet gear (tooth damage - thrust washers)
- I. Check that torque converter (drain the remaining ATF and look for loose parts)
- J. Check the oil pump (centring, drive, noise)
- K. Chain (primary drive) and sprockets

N.B. Note that noise may originate from other parts of the power unit and auxiliaries.

11.1 Leakage

- A. Covers: change the gaskets, refit and tighten with the appropriate torque
- B. Replace the pump seal with the transmission in the car
- C. *
- D. Gasket between the torque converter housing and gearcase. Remove the transmission.
- E. Sealing cover between the torque converter housing and gearbox (O-rings or porosity)
- F. Pinion bearing seals (drain hole on the BW 37)

Manual 5-speed transmissions

For work on the transmission, it will not usually be necessary to separate the engine and transmission. However, the flywheel and starter motor must always be dismantled first.

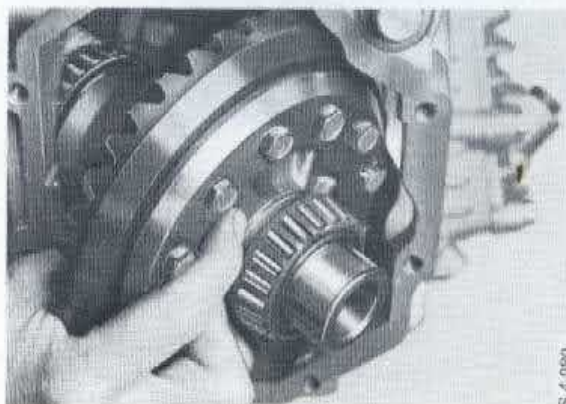
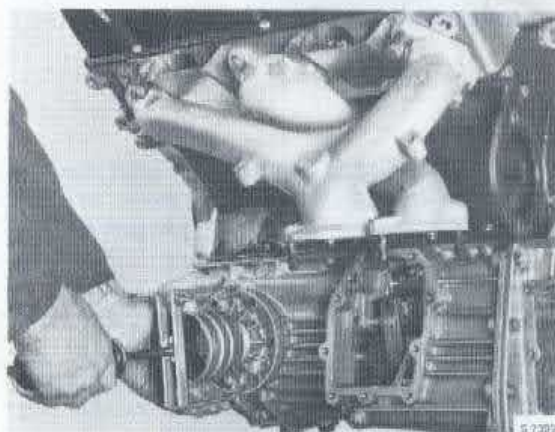
Dismantling

(Proceed in the following order as far as necessary in order to remove whichever component needs attention:)

1. Clean the transmission case and drain the oil:
 - a. with the transmission horizontal and
 - b. with the transmission vertical. Let the oil drain out of the primary drive case.
2. Remove the following covers:
 - Front cover on the primary drive case.
 - Side cover on the primary drive case (there will still be some oil in the primary gear case).
 - Side cover on transmission case.
 - Final drive cover.
3. Measure the backlash between the pinion and crown wheel, see section 473.
4. Remove the differential bearing seat retaining bolts and remove the seats and inner driver using tool 83 90 270 and puller 87 90 776.
Save the spring and plunger at the shaft end of the driver, and the shims, which can be re-used on the condition that the differential gear backlash has not been altered by the exchange of some components.
5. Remove the differential assembly. For dismantling of the differential assembly see section 473.
6. Measure the clearance between the pinion and the centre of the crown wheel. See section 473.

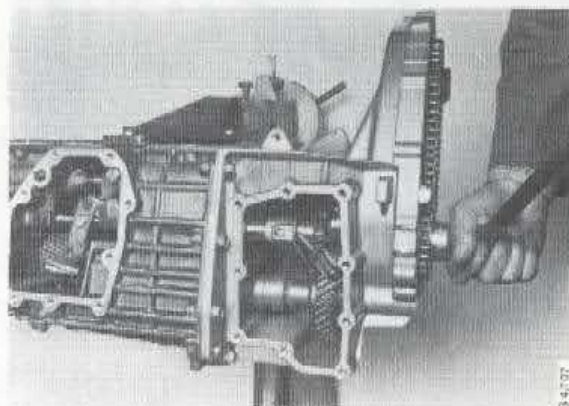
Important

Before dismantling the transmission, always measure the positions of the pinion gear and crown wheel. This is to check whether there is any error in their locations. If the pinion and crown wheel assembly is relatively new, i.e. if it has done less than 6,000 miles (10,000 km), it can be adjusted, but if the mileage is any greater the gears will have worn themselves into a given position. In the latter case, they should be reassembled in the same measured positions which they occupied before being dismantled.



7. Remove the dowel in the gear-shift fork for 5th gear.

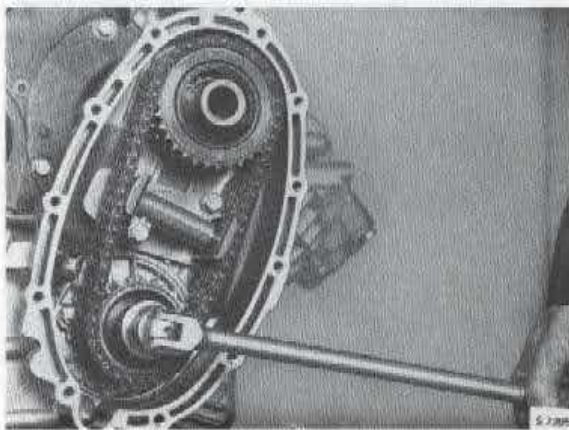
8. Move the gearwheel for reverse into reverse-gear position and select 5th gear.



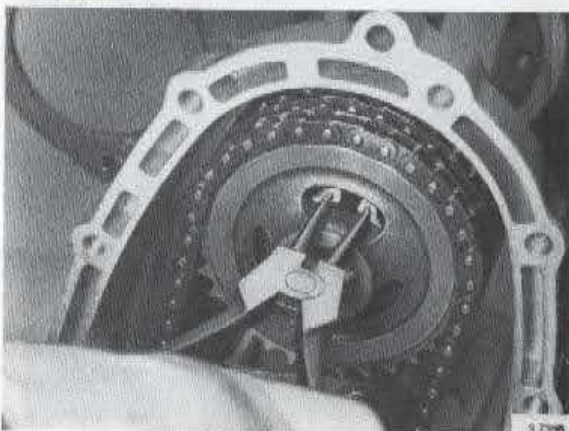
9 a. Free the shaft (lower sprocket) tab washer from the input shaft.

b. Remove the nut.

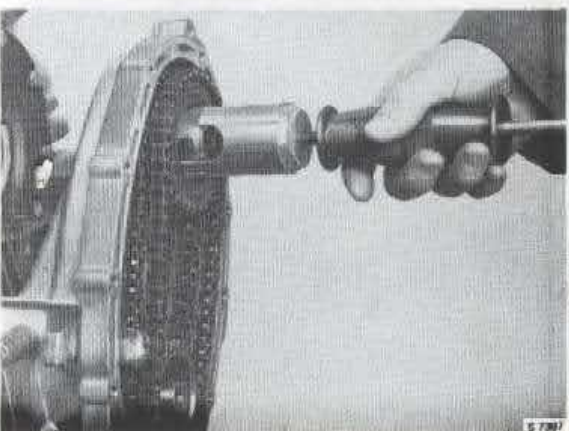
10. Remove the chain tensioner.



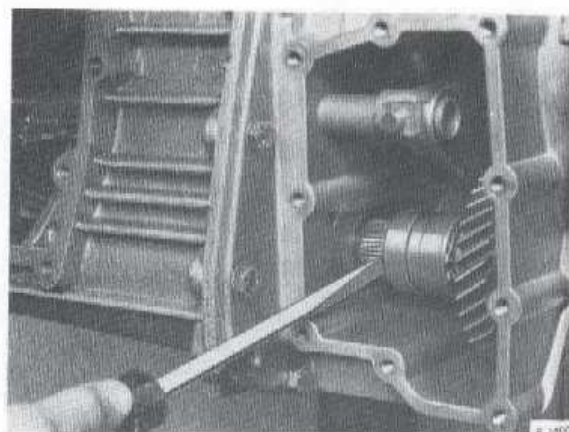
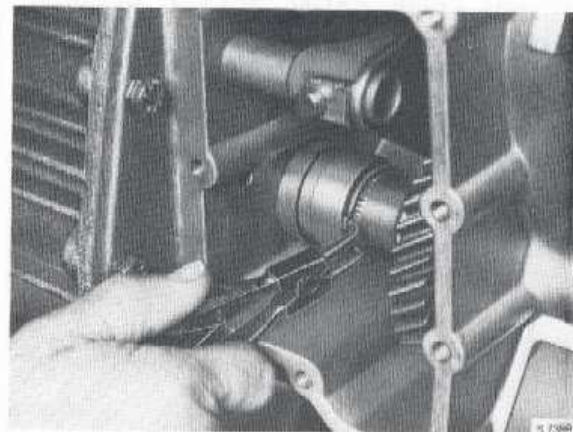
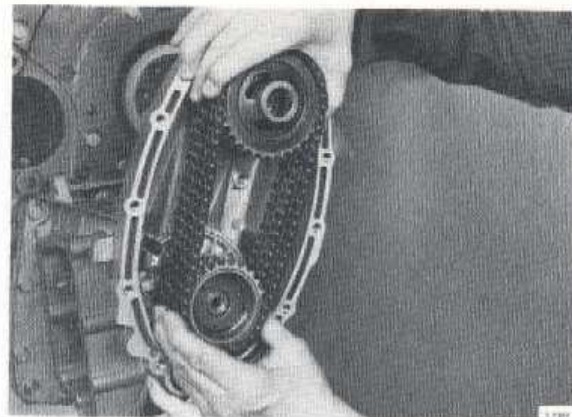
11. Remove the circlip from in front of the upper sprocket bearing.



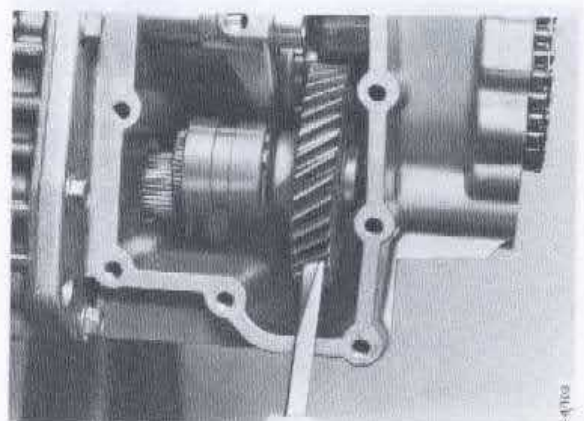
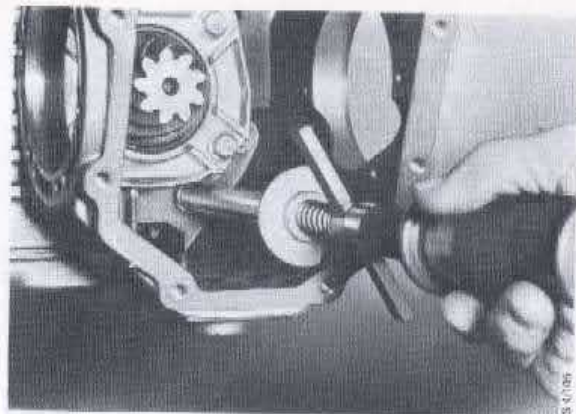
12. Remove the sprockets and the chains simultaneously. Slide hammer 83 90 270 and puller 83 90 891 may be needed to remove the sprockets.



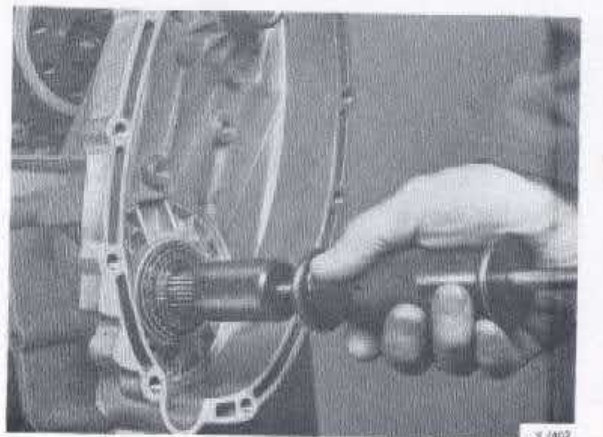
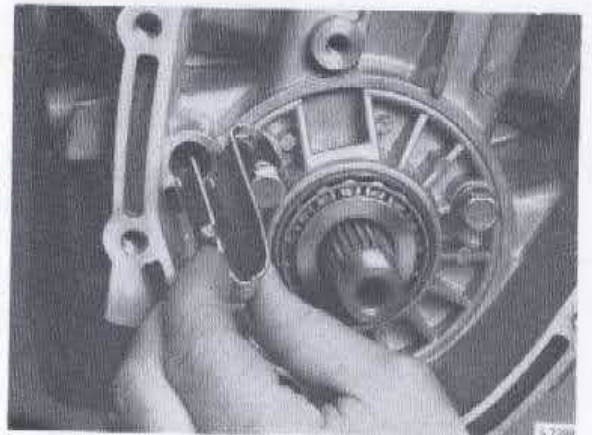
13. Separate the constant mesh gear from the layshaft gear cluster by removing the circlip from the groove and sliding the synchromesh sleeve towards the gear.



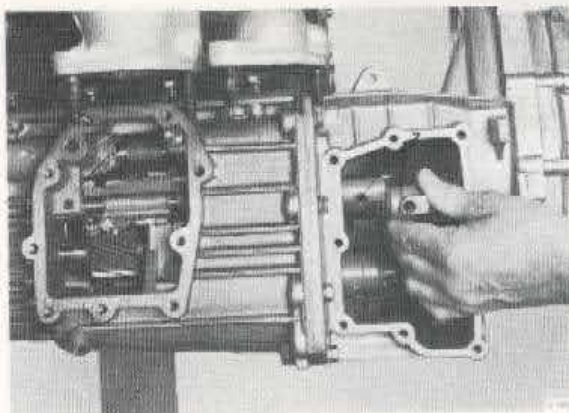
14. Remove the locking plate for the layshaft and reverse gear shaft. Using tools 83 90 049 and 83 90 270, withdraw the layshaft gear cluster and then remove the constant mesh gear, together with the syncromesh sleeve and thrust washer, through the side of the transmission case.



15. Remove the bolts and the oil catcher from the input shaft bearing case. Then remove the bearing case using slide hammer 83 90 270 and adapter 87 90 917.

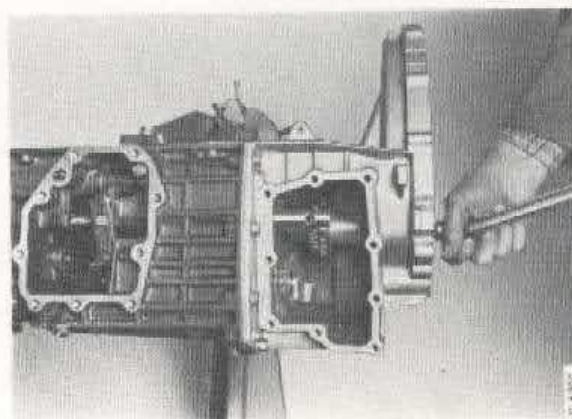
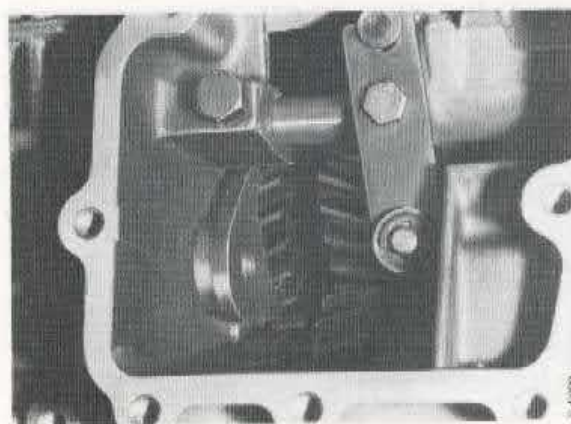
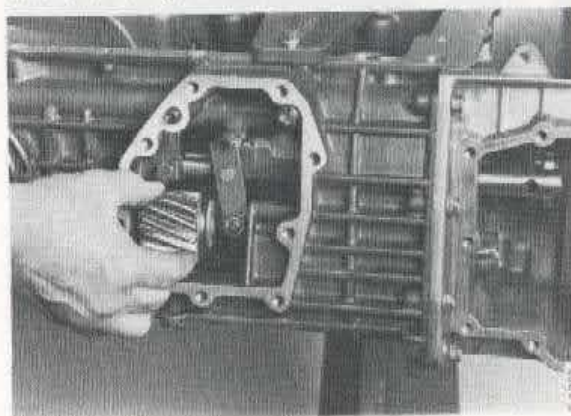


16. Slide the gear selector for fifth gear to the full extent of its travel and then remove the selector fork and the synchromesh sleeve.



1. Gear selector to stop
2. Hole for locking stud

17. Remove the gearwheel and shaft for reverse gear. Fit locking tool 87 90 503 to the reverse gearwheel. Release the circlip and unscrew the nut securing the synchro hub for fifth gear. Retain the hub and spacer.

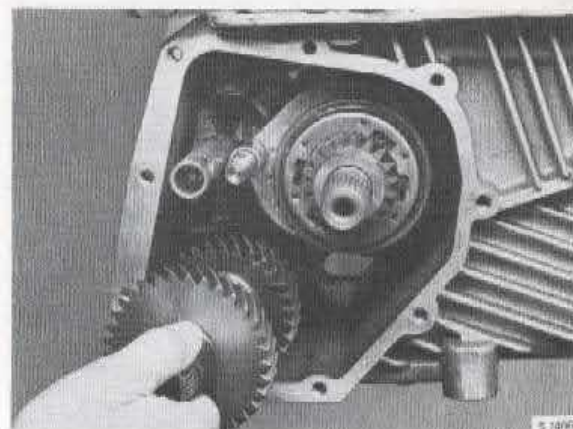
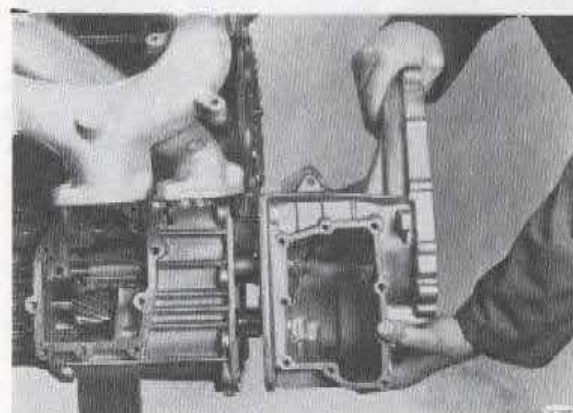
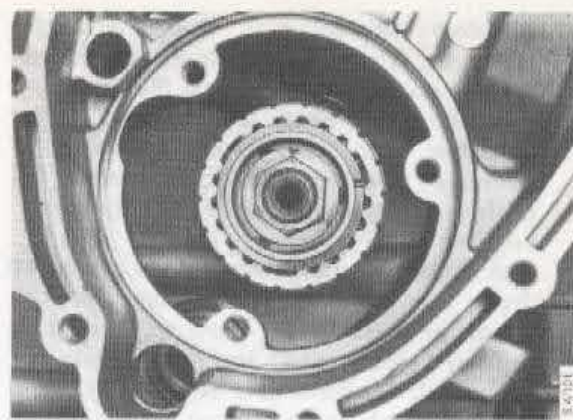




18. Remove all primary gear case retaining bolts and drift in the dowels so that the primary gear case can be separated from the gearbox housing. (The 5th speed selector will remain in the housing and can be removed later. File away any burrs there may be round the hole in the shaft, so that the aperture in the gear housing will not be damaged on reassembly).
19. Remove the layshaft and the layshaft gear cluster. Retain the needle bearings and thrust washer for re-use.

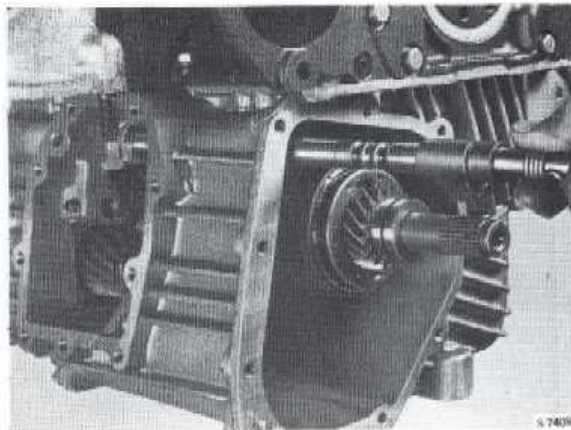
20. Before fitting the primary gear to the pinion shaft, check the surfaces against the mating surfaces for the primary gear housing and for the pinion shaft nut. The primary gear nut is 1/2" x 1/2" x 1/2" and the pinion shaft nut is 1/2" x 1/2" x 1/2". If it is found that the surfaces are not smooth, they should be smoothed with a fine file. The primary gear nut should be smoothed with a fine file. The pinion shaft nut should be smoothed with a fine file. The primary gear nut should be smoothed with a fine file. The pinion shaft nut should be smoothed with a fine file.

21. When fitting the primary gear to the pinion shaft, check the surfaces against the mating surfaces for the primary gear housing and for the pinion shaft nut. The primary gear nut is 1/2" x 1/2" x 1/2" and the pinion shaft nut is 1/2" x 1/2" x 1/2". If it is found that the surfaces are not smooth, they should be smoothed with a fine file. The primary gear nut should be smoothed with a fine file. The pinion shaft nut should be smoothed with a fine file.

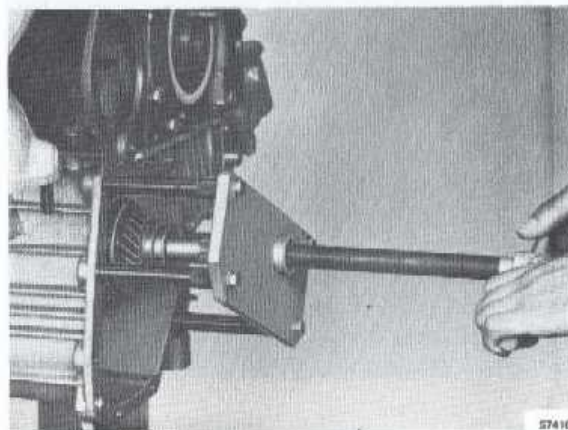


20. Remove the selector shafts and the selectors (first, second, third and fourth speeds on the inner shaft). Remove the selectors for first and second gears together with their synchromesh units. Remove the selector for reverse together with the shaft for fifth gear and reverse gear.

21. The selector shafts should be removed from the front. The aperture for the taper pin should be filed so that it is free of burrs so that the aperture is not damaged. Remove the selector, double lockout and spring later. Retain the selector ball and guide pin



22. Remove the four bolts retaining the pinion shaft bearing housing. Install tool 87 90 909 and press out the pinion shaft. Keep the gearwheels, sleeves, washers and shims.



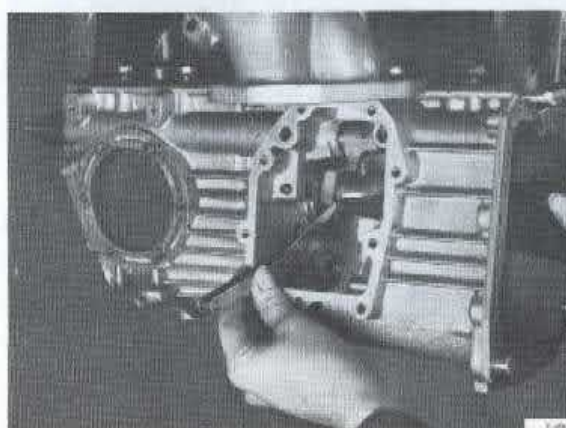
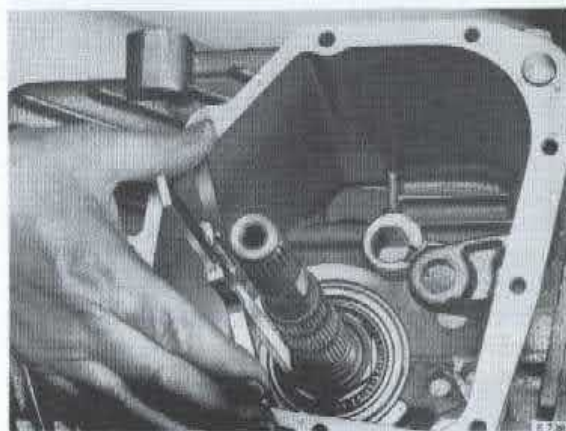
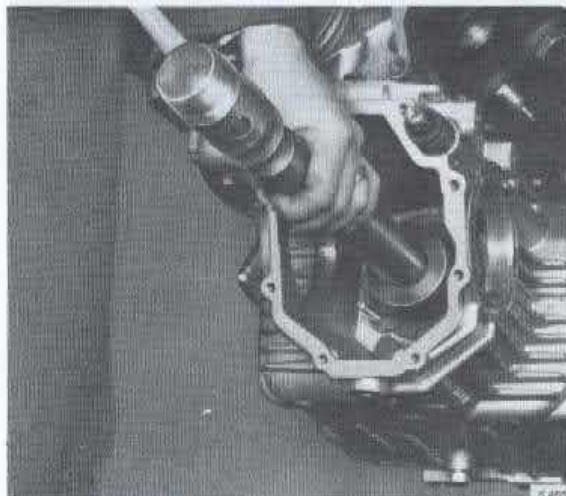
Assembly

Having removed the component that needs attention, clean all fragments of old gaskets and all traces of old sealing compound off the covers and flanges. Inspect the transmission case and all dismantled parts and wash them in kerosene or similar. Lubricate all components as detailed in the specifications section on lubricants. Reassemble the transmission, following the procedure described below:

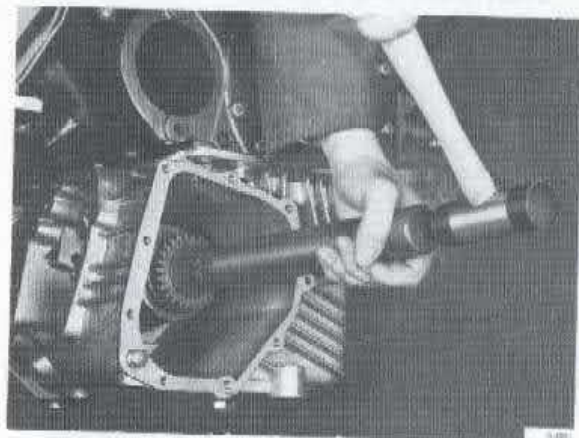
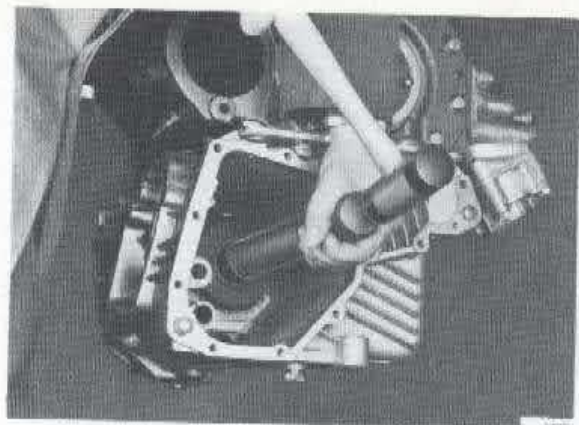
1. Adjust the differential bearings to the correct compression. See section 473.
2. Screw the two locating studs (tool 87 90 438) into the transmission case. Then shim and locate the pinion shaft assembly. Tap the assembly gently into position, using a plastic mallet, drift 83 90 114, and sleeve 83 90 148. Refit the retaining bolts for the bearing housing, tightening them to a torque of 20-25 Nm (2 - 2.5 kgfm; 15-18.5 lb ft). Finally, apply Loctite to the bolts.

- 3.a. Before fitting the reverse gear on the pinion shaft, check the distance between the mating surface for the primary gear housing and the pinion shaft nut. The distance must be 7.677 in-7.681 in (195.0-195.1 mm). If it is not, shims must be placed between the nut and the reverse gear. Shims are available in thicknesses of 0.0118 in (0.30 mm), 0.0157 in (0.40 mm) and 0.0197 in (0.050 mm). If the position of the pinion shaft is unchanged, the shims used earlier can be replaced.

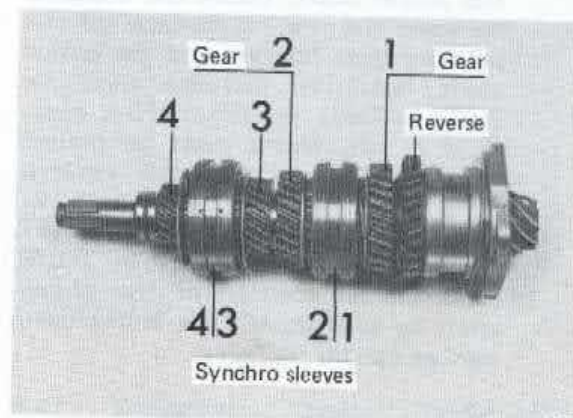
- b. When using measuring tool 87 90 552, the procedure of shimming is the following:
Fit the measuring tool in the gear-box housing as illustrated, and measure the distance between tool and nut with the aid of a feeler gauge. Fit shims with a thickness equivalent to that of the feeler gauge.



4. Fit the reverse gear using sleeve 83 90 148.
5. Fit the 1st-speed gear on the bearing sleeve of the reverse gear.
6. Fit 1st-2nd speed synchromesh hub. Fit 1st-2nd speed gear shift fork into 1st-2nd speed synchromesh sleeve and fit these on the synchromesh hub. Fit 1st-2nd speed gear shift fork into 1st-2nd speed synchromesh sleeve and fit these on the synchromesh hub.
7. Fit the 2nd speed gear sleeve with tool 83 90 148 and fit the 2nd speed gear on the sleeve.

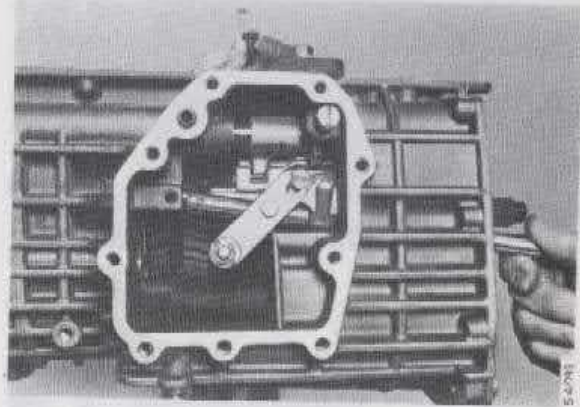


8. Fit the spacer, the sleeve for 3rd gear with tool 83 90 148 and fit the 3rd speed gear on the sleeve.
9. Fit 3rd-4th gear synchromesh hub. Fit 3rd-4th speed gear shift fork into 3rd-4th gear synchromesh sleeve and fit these on the synchromesh hub. Fit the bush for the 4th speed gear and fit the gear onto the bush. Fit the ball bearing bush.
10. If the selector shaft has been removed, refit it together with the double lock-out guide pin



11. Ease the synchromesh sleeves onto the pinion shaft in the neutral position and fit the gear shift shaft for 1st-2nd speed and 3rd-4th speed gear-shift forks.

12. Refit the reverse selector shaft with selector. Seal the shaft stop bolt with Loctite 242 and tighten.

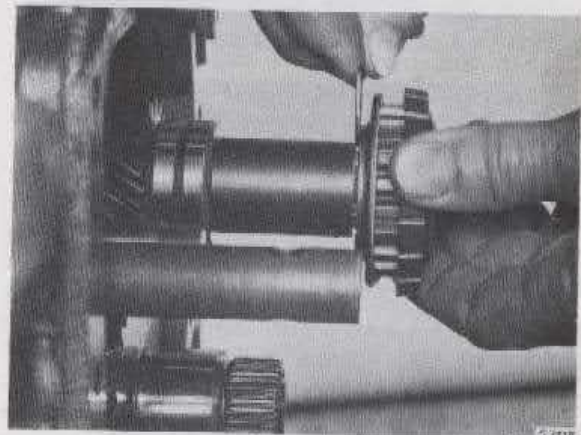


13. Fit the 5th speed selector on the reverse selector shaft.

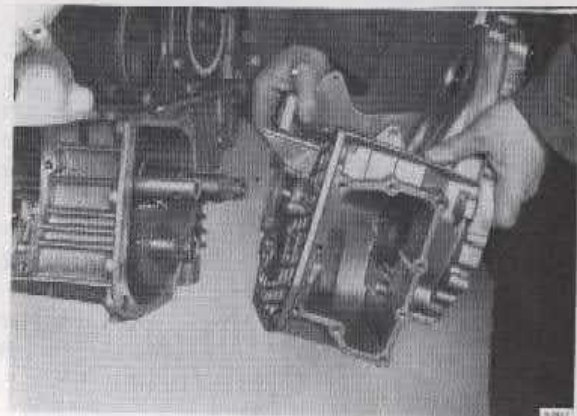
14. Fit the needle bearing to the layshaft gear cluster and place the latter inside the gearbox housing.

15. Fit the layshaft and raise the layshaft gear cluster to line it up with the shaft. Insert the shaft far enough to hold the gears in position. Fit the thrust washer later.

16. Fit the spacer the 5th speed synchro hub and the circlip on the pinion shaft. Fit the requisite shims between the hub and sleeve so that there is no play between the parts on the pinion shaft. The shim thicknesses available are 0.30 mm and 0.40 mm. The circlip, the hub and the spacer should then be removed.



17. Apply Loctite 510 sealing compound to the flange of the primary drive casing and bolt the casing to the gearbox housing. Knock in the locating studs before fitting the bolts. Fit the spacer to the pinion shaft. Fit the 5th speed synchro hub.

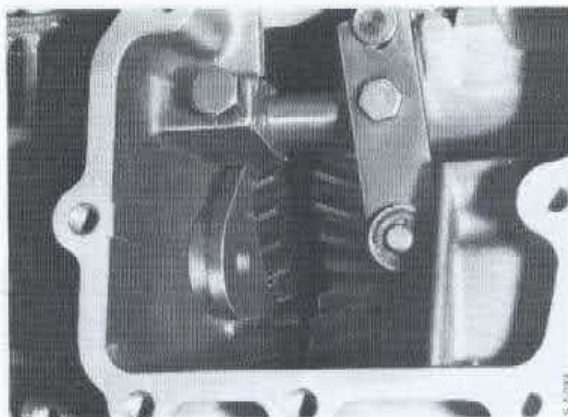


18. Fit the shims which were previously tested to the hub so that there is no axial play once the circlip has been fitted.

Fit locking tool 87 90 503 to the reverse gearwheel. Tighten the nut to a torque of 50 ± 10 Nm (5 ± 1 kgfm; 37 ± 7 lbft).

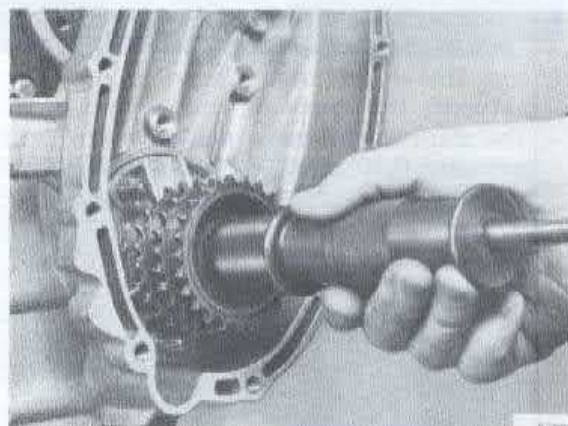
Upset the flange of the nut in the groove in the hub, using a drift with a rounded nose.

19. Fit the synchro sleeve for 5th gear and the gear shift fork.



20. Fit the input shaft together with the bearing housing, oil catcher and connecting pipes. Use three guide pins 87 90 438 for alignment and the sprocket as a spacer between the adapter 87 90 917 and bearing housing.

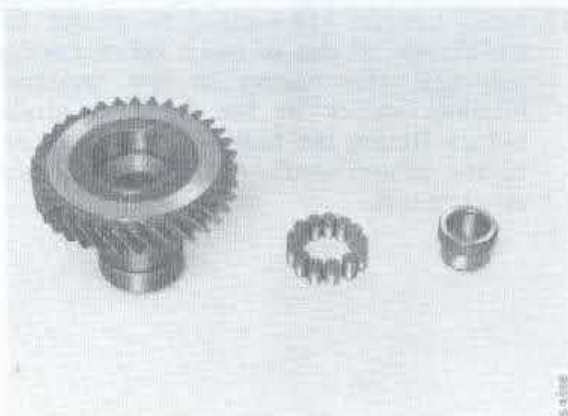
Insert the bearing housing far enough for the shaft to meet the synchro sleeve. The bearing housing should then be driven into place using slide hammer 83 90 270. Check the compression of the bearing before installation. (See input shaft and bearing housing, section 471).



21. Up to and including gearbox No. 437802, 1982 models: Fit the thrust washer for the constant mesh gear on the input layshaft. Grease the washer and fit it with the tab located in the special recess.

As from gearbox No. 437803, 1982 models: A new bearing without a thrust washer supersedes the earlier one.

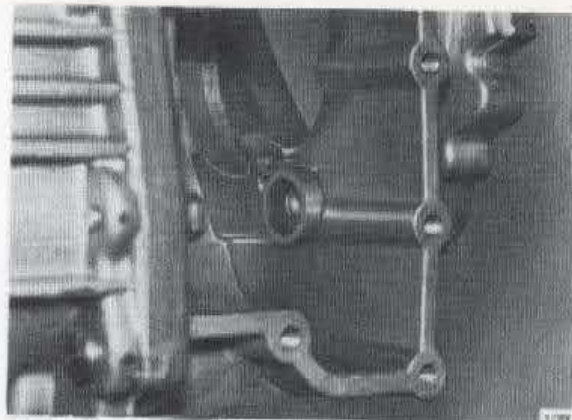
22. Fit the roller bearings and inner bearing track in the constant mesh gear.



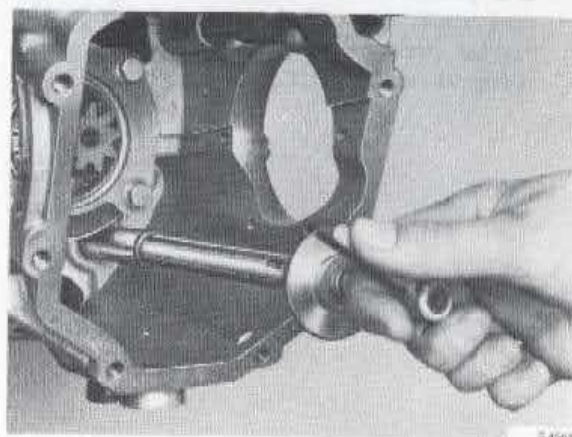
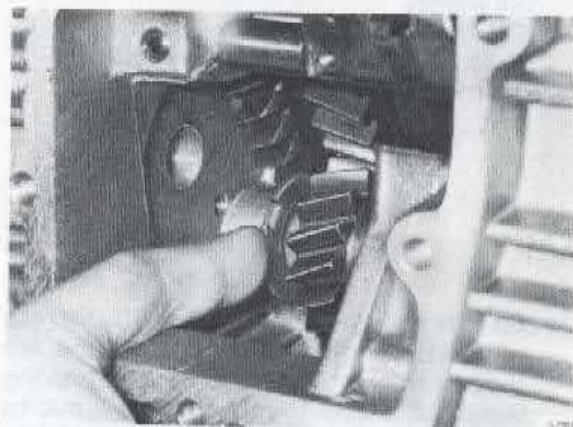
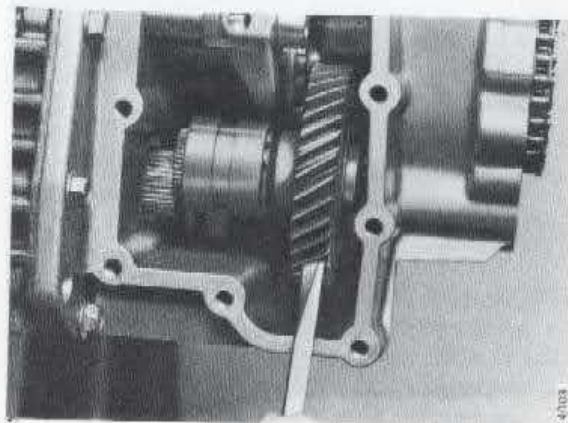
23. Fit the constant mesh gear complete with sleeve, circlip and bearing rollers. Slide the layshaft gear cluster back to enable the gear to be fitted.

24. Slide the synchro sleeve onto the layshaft and fit the circlip in the groove.

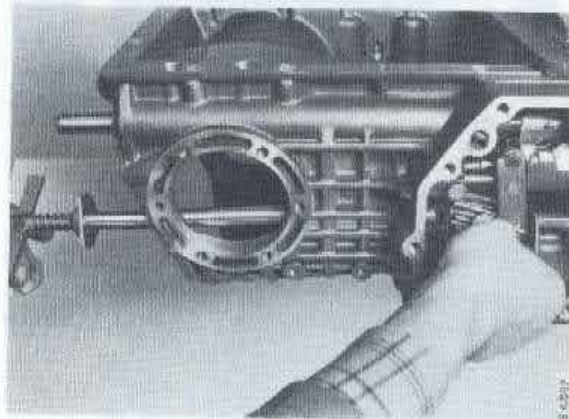
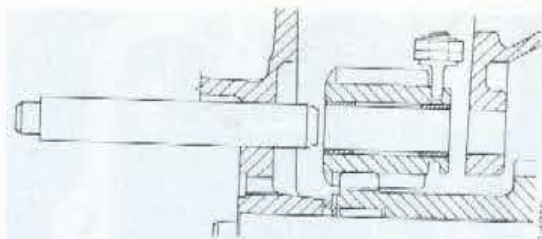
25. To fit the layshaft thrust washer, withdraw the layshaft and slide the washer into position. Then use tool 83 90 049 to insert the shaft so that it locks in position.



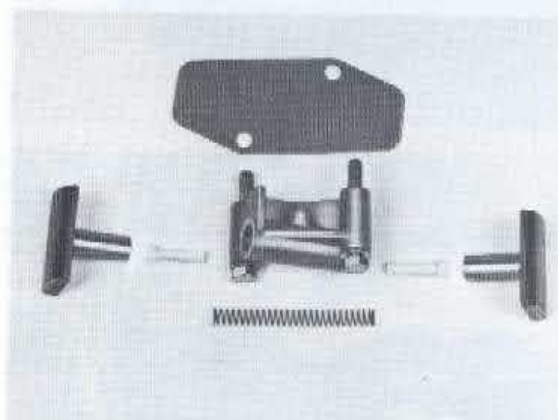
Thrust washer, up to and including gearbox No. 437800



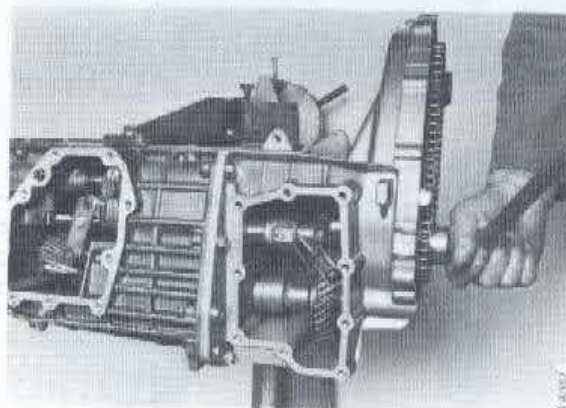
26. Fit the reverse gearwheel and shaft. Make sure that the reverse lever engages the groove in the reverse gear. Adjust the shaft using tool 83 90 049 until it locks in position.



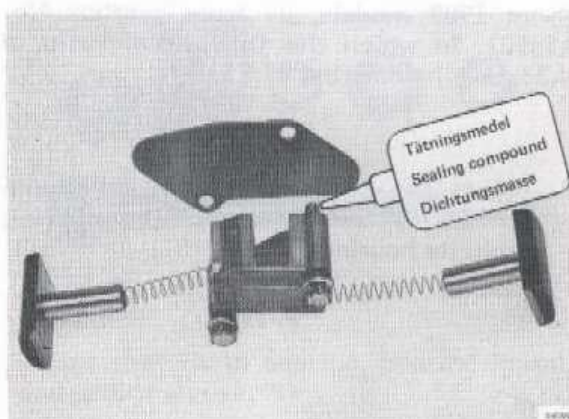
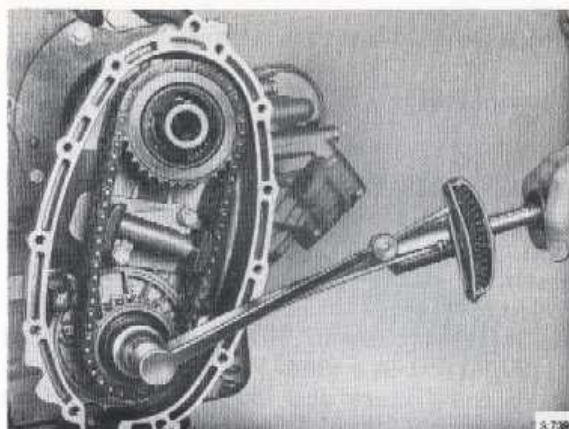
27. Fit the locking plate over the shaft ends and seal the bolt with Loctite 242.
28. Fit the primary gear sprockets and chains. Ensure that the hole for the tab washer on the lower sprocket is facing outwards.
29. Fit the chain tensioner. Apply locking fluid to the bolts prior to installation.



30. Fit the nut onto the input shaft. Before torque tightening select reverse and 5th speed gears at the same time so locking the input shaft. Then tighten the nut to the prescribed torque of 100 ± 10 Nm and upset one of the nut tabs into the recess provided in the gearwheel, using a round-nosed drift.



31. Fit the dowel in the gear selector fork selector for 5th gear.



32. Fit the differential unit. See section 473.
33. Check the shaft seals in the bearing retaining housings and replace if necessary. Adjust the crownwheel backlash if necessary. See section 473. Then fit the two drive shafts and inner universal joints. Ensure that the seals are not damaged. Fit the selector ball and spring and fit the gearbox top cover assembly and gasket.
34. Fit the final drive unit, cover and gasket, the primary gear housing and the chain cover with gaskets.
35. Refill with oil: 0.3 l in the primary drive and 2.7 l in the gearbox.

Pinion shaft, 5-speed transmission

Dismantling

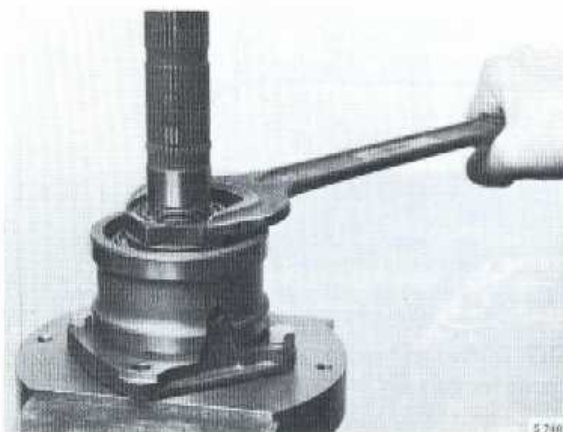
To dismantle the pinion shaft, follow the instructions for dismantling the transmission up to the point where the pinion shaft assembly is removed. Then continue as follows:

1. Secure fixture 87 90 636 and holder ring 87 90 651 in a vice. Put the pinion shaft in the fixture and loosen the nut using spanner 87 90 453.

From 1982 models, as from gearbox No. 436501, in which the final drive ratio is 9.33, use holder ring 87 91 097.

2. Mount the bearing assembly on sleeve 83 90 098, and press out the bearing from its housing.

3. Press off the rear roller bearing with the aid of tools 87 90 636 and 87 90 651. From 1982 models, as from gearbox No. 436501, in which the final drive ratio is 9.33, use holder ring 87 91 097.



4. Press the outer rings of the taper roller bearings out of the bearing housing using tools 83 90 098, 83 90 106 and 83 90 148 (see illustration).

Fitting the pinion shaft

Having removed the part that needs attention, inspect all the dismantled parts and wash them in kerosene or similar. Then reassemble and fit, proceeding as follows:

Note

Lubricate the bearings before assembly.

1. Press the outer races of the taper roller bearings into the bearing housing, using tools 83 90 189 and 87 90 461.



Pinion shaft with bearing, bearing housing and spacer sleeve.



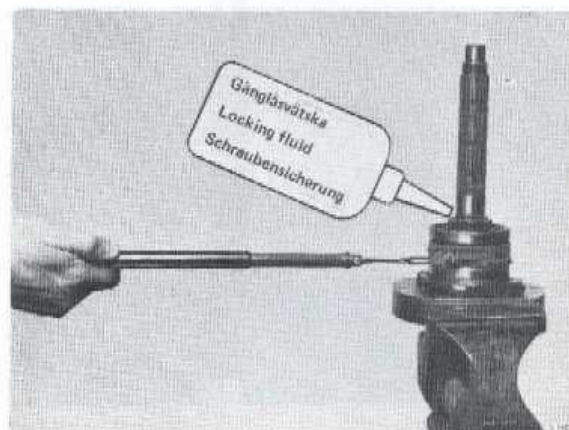
2. Press on the roller bearing adjacent to the pinion until it butts against its stop, using tool 87 90 636 and fitting ring 87 90 925.
3. Fit the spacer sleeve on the shaft.
4. Fit the bearing housing.
5. Fit the front roller bearing.



6. Set up the shaft in a press (see illustration). Press the bearing housing slowly on, using fixture 87 90 636 and fitting ring 87 90 925. Rotate it at the same time until resistance is felt.



7. Smear Loctite 270 on the threads and put on the nut. Fit fixture 87 90 636 with holder ring 87 91 097 in a vice. Place the bearing housing on the fixture. Using spanner 87 90 453, tighten the nut until the correct rolling torque is obtained. To determine the rolling torque, wind a line around the bearing housing and attach the other end to a spring balance. Lightly oil the bearings and tighten to the following rolling torque: New bearings 47-71 N (10-15 lb, 4.7-7.0 kg) on the spring balance which corresponds to a torque of 2.5 ± 0.5 Nm (1 ± 0.5 lbft, 25 ± 5 kgfcm). After the correct value has been obtained, upset the flange of the nut using a drift.



8. Fit two locating pins, tool 87 90 438, in the gearbox housing. Then fit on the shims and fit the pinion shaft with bearing housing. Knock the bearing housing carefully into place using a plastic mallet or hammer together with drift 83 90 114 and sleeve 83 90 148. Apply Loctite to the four bolts and then tighten them to a torque of 20-25 Nm (2.2-2.5 kgfm, 15-18.5 lb ft).

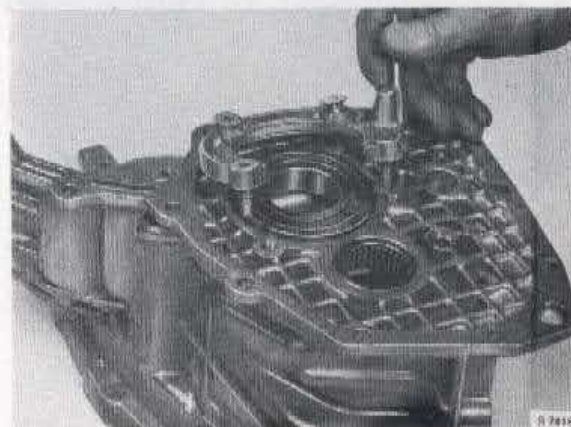


Primary gear case

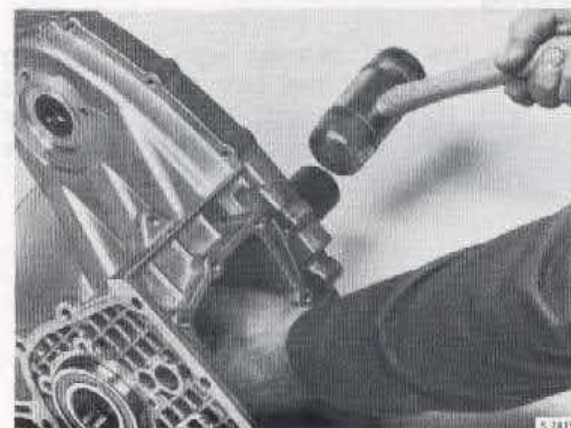
The primary gear case should be removed when dismantling the gearbox. Separate the primary gear case complete with the following components from the gearbox: A. Ball bearing, B. Needle bearing, C. Clutch shaft seal, D. Level control ball valve. Dismantle the parts as follows:

Dismantling

1. Remove the four countersunk socket-head cap screws and remove the ball bearing retainer.



2. Drift out the ball bearing. Use drift 83 90 106 and sleeve 83 90 148.



3. Remove the needle bearing sleeve in the primary gear case by means of drift 83 91 997 and 83 90 577.

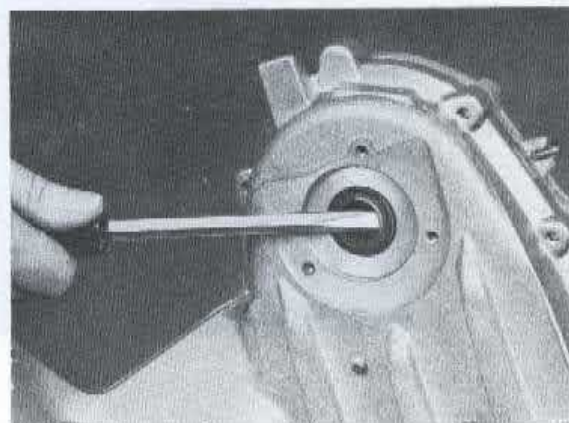
Do not remove the level control ball valve. Just check that the ball moves freely and sits securely on its seat.

The ball valve acts at low speeds downhill to prevent the oil from running out of the gearbox and into the primary gear case, so ensuring proper lubrication of the differential and final drive units.

4. Remove the clutch shaft seal by means of a screwdriver.



9 3429



Fitting

1. Fit the ball bearing with the bearing retainer. Seal the two through-screws with thread sealant. Tighten down the screws alternately until the bearing is in position.

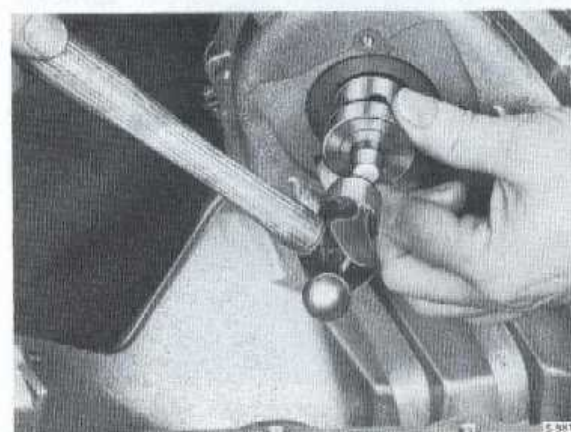


9 3430

2. Fit the needle bearing race with the numbered end pointing out towards the primary gear case. Use drift 83 91 997 and sleeve 78 41 067.



3. Fit a new clutch shaft seal, using drift 83 91 997. Grease the lips of the seal after it has been fitted. See Lubricant Specification.



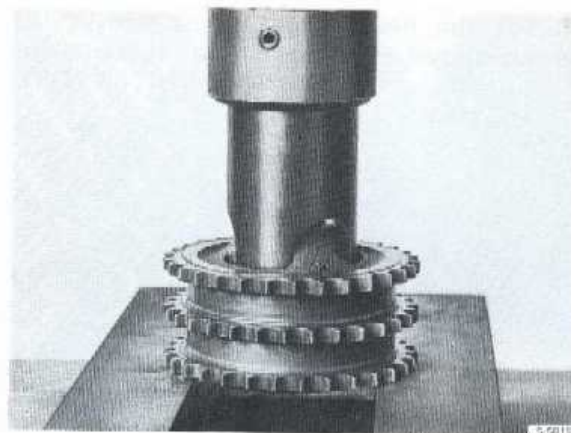
Primary drive

Dismantling

1. To dismantle the primary drive separately, remove the front cover from the primary drive case. Otherwise follow the instructions under "Removal and installation, manual transmission, 5-speed".
2. Remove the circlip from the upper sprocket.

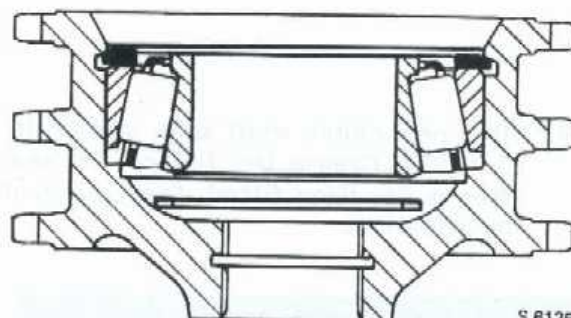


3. Use hollow drift 87 90 891 to press out the bearing from the sprocket.



Assembly

1. Fit the circlip to the upper sprocket and press the bearing into the sprocket, see illustration. Tool, hollow drift 87 90 859. Fit the circlip for the bearing's outer race with the chamfer facing outwards.
2. Fit the chains, sprockets and chain tensioner as described in the section on transmission assembly.
3. Top up with oil.

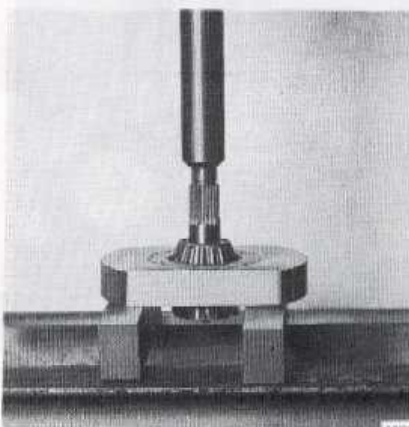
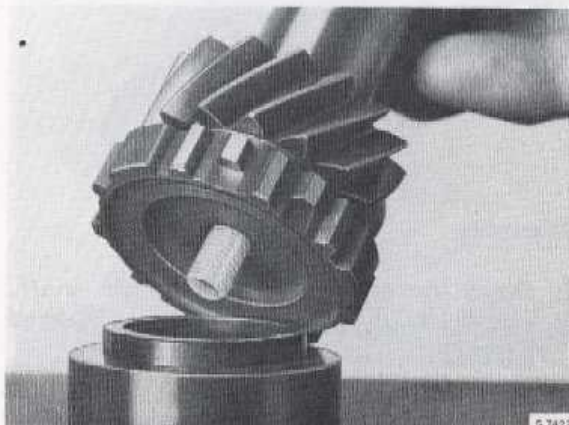


S 6125

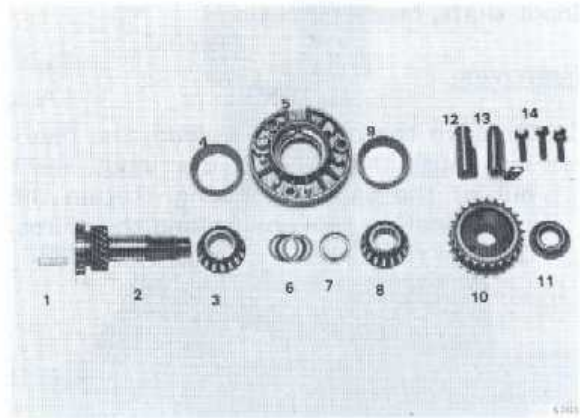
Input shaft, bearing housing

Removing

1. Remove the oil catcher from the bearing housing and press the input shaft out of the bearing housing. Retain the front bearing, the spacer and the shims. Use the ring-shaped support 83 90 098.
2. Take care that the connection pipe is not damaged when pressing out the shaft.
3. Press the rear bearing off the input shaft. Use support 87 90 636 and ring 87 90 933.



4. Remove the bearing races from the housing with a drift. Rest the housing on the ring-shaped support.



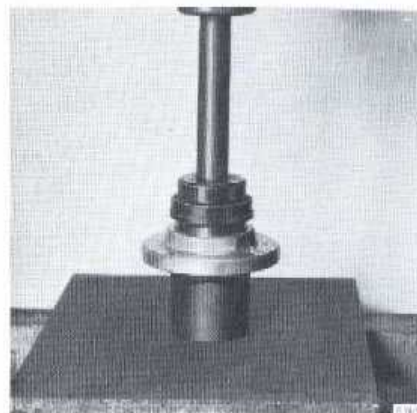
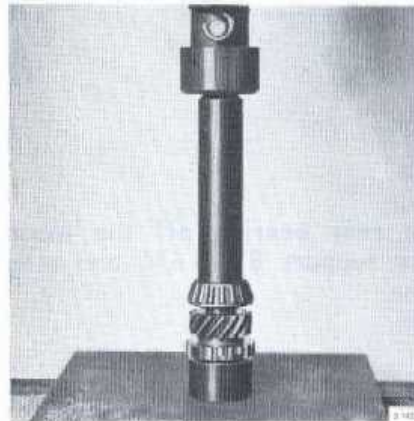
Input shaft and bearing housing

- | | |
|---------------------------------|-----------------------|
| 1. Connecting pipe, lubrication | 8. Ball bearing |
| 2. Input shaft | 9. Race |
| 3. Ball bearing | 10. Sprocket |
| 4. Race | 11. Nut |
| 5. Bearing housing | 12. Rear oil catcher |
| 6. Shims | 13. Front oil catcher |
| 7. Spacer | 14. Bolts |

Assembly

1. Press the rear bearing onto the shaft. Use drift 78 41 075 and the ring-shaped support.

2. Press the bearing races into the bearing housing. Use tool 83 90 312, 83 90 189 and the ring-shaped support.



3. Fit the input shaft, shims, spacer and bearing in the bearing housing. Select shims and spacer of known size to deliberately give axial play. Place the shims between the rear bearing and the spacer.



4. Lubricate the bearings and press them together until they meet the distance stop with a 3 tonne force applied. While the bearings are being pressed together rotate the bearing housing, against both the upper and lower bearings, 40 times in both directions so that the balls become properly positioned. Use drift 78 41 075 and the ring-shaped support to avoid damaging the connecting pipe. Maintain the 3-tonne force.



5. Fit the gauge in the bearing housing bolt hole. First put the bearing housing under load on the upper bearing and then on the lower bearing, reading off the axial play.



Shims of sizes 0.10, 0.15, 0.25 and 0.50 mm are available for eliminating the axial play.

When correctly shimmed, there should be no resistance to movement nor any play in the bearings. If the play cannot be eliminated by the available shims sizes, change the spacer. Spacers are available in thicknesses of 8.08, 8.09, 8.10 and 8.11 mm.

6. Press the front bearing off the input shaft and fit the estimated number of shims. Place the shims between the rear bearing and the spacer. Refit the front bearing on the input shaft in the bearing housing and press together with 3-tonne force. Rotate the bearing as described in point 4. Ensure that there is no resistance to movement or play in the bearing.
7. Fit the oil catcher in the bearing housing.

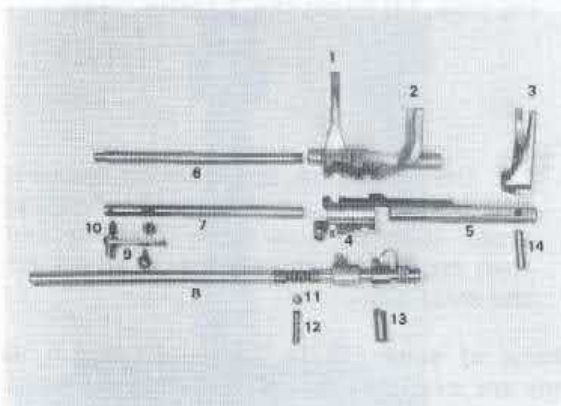


E-7432

Gear selector mechanism

Refer to the section on dismantling and refitting.

The gear selector mechanism consists of a system of selector shafts, selectors, selector forks with plungers, selector balls, ball springs and taper setscrew.

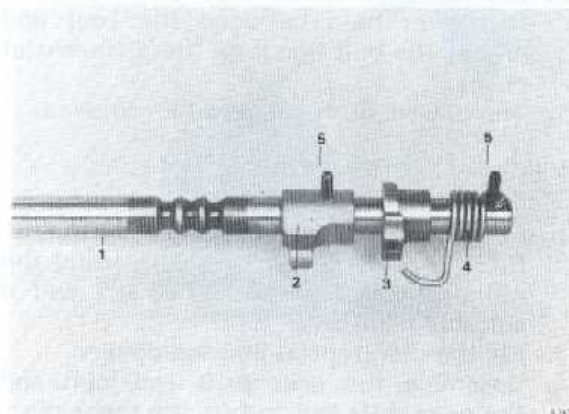


1. Selector fork, 1st and 2nd speeds
2. Selector fork, 3rd and 4th speeds
3. Selector fork, 5th gear
4. Actuator, reverse gear
5. Actuator, 5th gear
6. Shaft, 1st and 2nd speed, 3rd and 4th speed selector forks
7. Shaft, reverse actuator and 5th speed selector
8. Selector shaft
9. Reverse operating lever
10. Taper setscrew, shaft item 7
11. Ball, selector
12. Spring, ball
13. Plunger
14. Cylindric pin

Selector shafts

Dismantling

Knock out the dowl with a 4 mm drift. Remove the spring, double lockout and actuator.



1. Shaft
2. Actuator
3. Double lockout
4. Spring
5. Tubular dowel

Assembly

Assembly is in the reverse order. For positioning of parts see illustration. Fit new dowels.

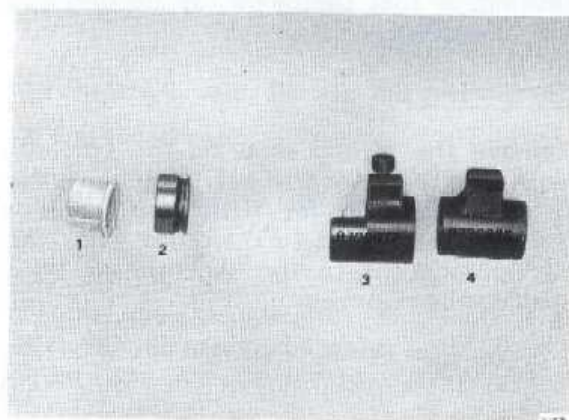
The reverse lever need not be detached from the gear shift shaft when the shaft is removed. The bolt is liable to shear because of the locking of the threads.

Replacing the seal and plastic bearing on the gear selector rod

(Can be done with the gearbox in situ)

Removal

1. Knock off the front taper pin from the gear shift joint and separate the joint from the rod.
2. Drain the transmission oil and remove the differential housing cover.



1. Plastic bush
2. Sealing ring
3. Dismantling tool
4. Assembly tool

3. Put the dismantling tool 87 90 677 over the collar on the sealing ring and bolt in the bolt of the tool against the shaft.
4. Pry off the sealing ring using of a boltdriver held between the tool and one of the bolt heads on the differential cover.
5. The plastic bush can now be removed.

Fitting

1. Fit the plastic bush.
2. Fit the new sealing ring with using the aid of assembly tool 87 90 685 and a suitable hammer.
3. Fit the differential housing cover.
4. Assemble the gear shift rod joint and the gear shift rod and fit the taper pin
5. Fill the transmission with oil.

Note

Before refitting remove any burrs or marks on the gear selector rod.

Synchromesh

Synchromesh rings

When changing the synchromesh rings, follow the instructions for the dismantling of the gearbox. The differential unit must be removed and the layshaft gear cluster dismantled so that the primary gear housing can be removed. When changing the synchromesh ring for top gear, no further dismantling is necessary.

When changing the synchromesh ring for 1st and 2nd speed gear, the pinion shaft must be taken out of the transmission housing, so that the gears can be removed from the shaft.

Dismantling

Remove the circlip securing the synchromesh ring to the gearwheel. To remove the synchromesh ring for fifth gear, remove the circlip adjacent to the guide ring. The circlip adjacent to the synchromesh ring need not be removed.



Fitting

First fit the guide rings for the retaining springs, and the circlips for the guide rings on 3rd and 4th gears. There are no circlips on the guide rings for first and second gears. Fit the retaining spring with the longer end adjacent to the guide ring and with the ends spanning 11 teeth.

There are no circlips on the guide rings for first and second gears. Fit the retaining spring with the longer end adjacent to the guide ring and with the ends spanning 11 teeth.

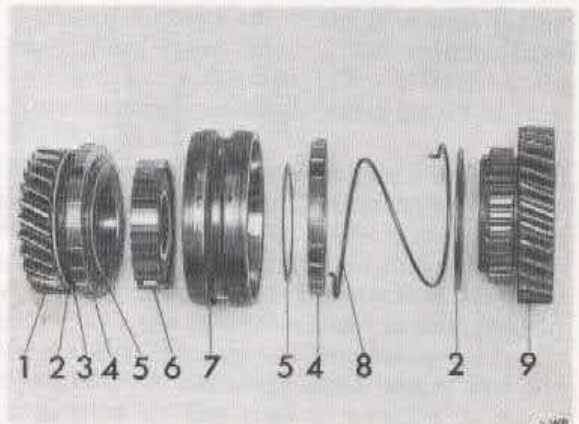
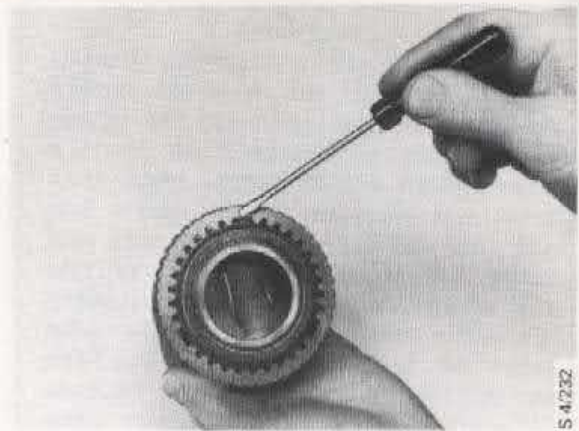
The guide rings on the third and fourth gears are factory-fitted and peened in position by a special tool after the circlip has been fitted. The guide rings supplied as spare parts should not be peened.

Guide 87 02 730, which is available as a spare part, should be used in conjunction with a pear-shaped circlip, 87 02 722.

Alternatively, a complete synchromesh unit comprising the gear and factory-fitted synchromesh is available as a spare part, No. 87 11 632.

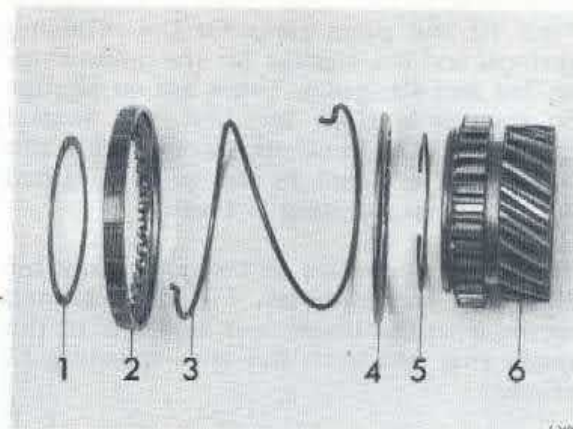
Fit the 5th speed synchro ring. The retaining spring should be positioned so that there are 5 teeth between the ends of the spring. Then fit the guide ring and the circlip.

The synchro ring for 2nd and 3rd gears has a molybdenum-coated cone; the same type may also be used for 1st and 4th gears.



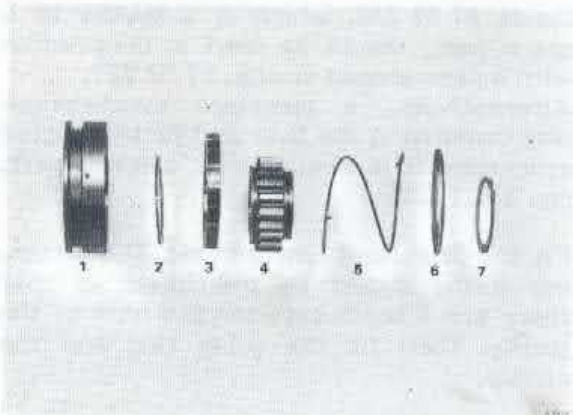
Synchromesh unit, 1st and 2nd speed gear

1. 2nd speed gear
2. Guide ring
3. Retaining spring, 2nd speed gear
4. Synchromesh ring
5. Circlip
6. Synchromesh hub
7. Synchromesh sleeve
8. Retaining spring, 1st gear
9. 1st gear



Synchromesh, 3rd gear

1. Lock ring
2. Synchromesh ring
3. Retaining spring, 3rd gear
4. Guide ring
5. Guide-ring circlip
6. 3rd gear



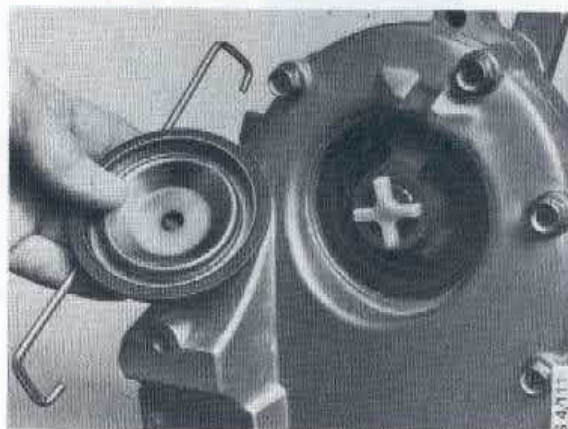
1. Synchromesh sleeve
2. Circlip
3. Synchro cup
4. Synchro hub
5. Retaining spring
6. Guide ring
7. Circlip

Ventilation

Ventilation of the transmission is by means of a hole through the top cover in the primary gear housing. The hole emerges at the centre of a plastic propeller which is screwed to the clutch shaft.

As the clutch shaft rotates, the oil is flung away from the hole by the propeller.

When the shaft is stationary, the oil level in the primary gear is well below the hole.



Differential and pinion/crown wheel gear

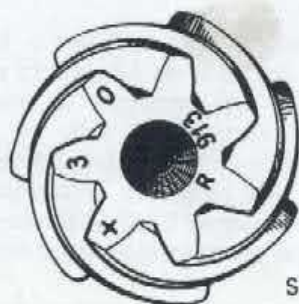
General

The crown wheel and pinion are a matched pair, so if one is exchanged the other must be exchanged too. The parts are tested together for noise and the optimum setting for minimum noise output is measured. The key measurements for pinion and crown wheel are the distance from the end face of the pinion to the centre of the crown wheel, and the backlash between the teeth. These measurements and the mating number are stamped on both parts at the time of noise testing. When the pinion and crown wheel are installed, these measurements must be accurately adjusted with shims and a special measuring instrument. The pinion gear shims are placed next to the bearing housing of the pinion shaft bearings, and the crown wheel (differential) shims are distributed between the two differential bearing seats.

Adjusting the position of the pinion gear

General

Data for adjustment of the distance from the pinion gear to the centre of the crown wheel are stamped into the end face of the pinion (an example is illustrated below).



End face of pinion

- + 3 - measurement for pinion setting
- R913 = mating number, also stamped on crown wheel
- 0 - pinion not offset - shaft centreline intersects crown wheel centreline (all pinions are marked 0 and this datum has no relevance to the adjustment)

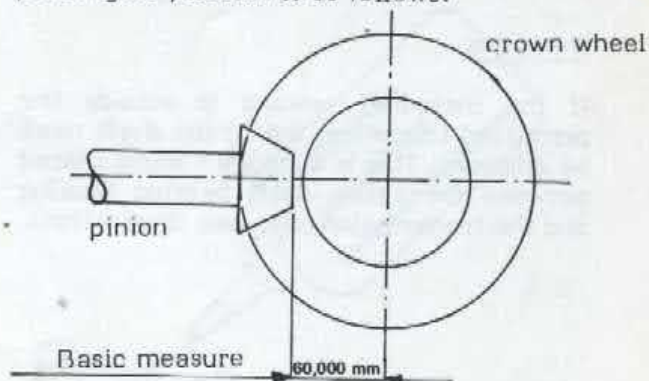
Important

Before dismantling the transmission, always measure the positions of the pinion and crown wheel. This provides a check on whether the setting may have been wrong. If the pinion shaft and crown wheel assembly has done less than 6,000 miles (10,000 km), the setting can be adjusted, but after greater mileage, when the gears will have worn themselves into a certain position, the parts should be reassembled with the same settings as were measured prior to dismantling.

Before measuring

The following preparations must be made prior to measuring the pinion gear setting: The following applies to manual transmissions: The pinion shaft bearings must be compressed until the torque required to rotate the pinion shaft in the housing is 2.5 ± 0.5 Nm (25 ± 5 kgfcm), corresponding to a dynamometer reading of 47-71 N (10.4-15.4 lb, 4.7-7.0 kgf). These figures apply to new, lightly oiled bearings. The corresponding figures for older bearings (which have done more than 1,200 miles (2,000 km)) are 1.3 ± 0.5 Nm (13 ± 5 kgfcm), the dynamometer readings being 19-43 N (4.2-9.5 lb, 1.9-4.3 kgf).

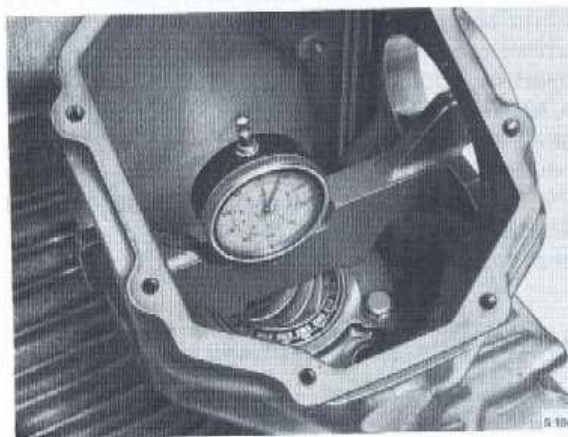
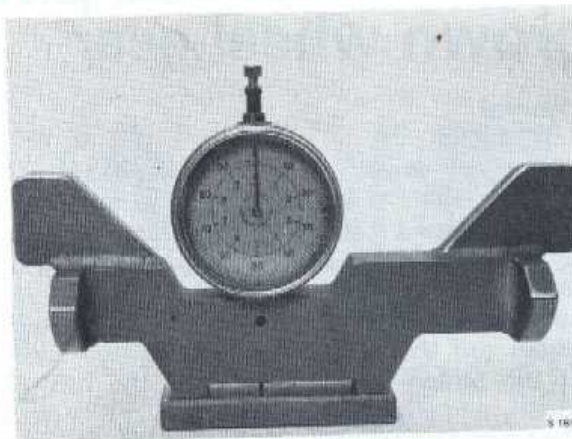
The differential unit must be removed to permit installation of the measuring instrument (tool 83 90 155), which consists of a measuring jig with attached dial indicator. A ground gauge block is provided for calibration of the dial; the block is laid against the calibration stops of the instrument, and the distance between these stops and the centreline of the tool is exactly 2.362 in (60.000 mm), equal to the distance from the end face of the pinion shaft to the centre of the crown wheel (see illustration). The procedure for measuring the pinion gear position is as follows.



S 4 075

Measuring

1. Check that the pointers of the instrument are zeroed when the measuring point touches the gauge block (see illustration).
2. Place the instrument in the differential housing with the point applied to the flat end of the pinion gear and take a reading (see illustration).
3. When the pinion gear is correctly positioned, the dial should show the same reading (in hundredths of a millimeter (+ or -) as that stamped on the pinion (with a permitted tolerance of ± 0.05 mm).

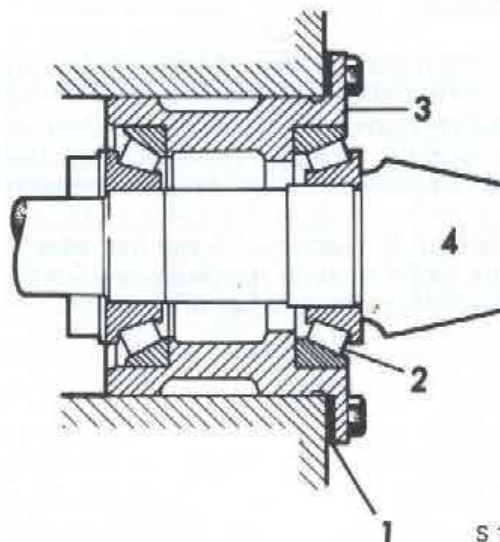


Shimming

If the measured reading is outside the permitted tolerance, the pinion shaft must be adjusted. This is done with shims placed between the pinion shaft bearing housing and the transmission case (see illustration).

Shim table

Location	Shims	
	Thickness mm	Spare part No.
Pinion shaft between bearing housing and trans- mission case	0.10	83 41 752
	0.15	83 41 760
	0.30	83 41 778
	0.50	83 44 723



S 1845

Adjusting the pinion gear

1. Shim
2. Roller bearing
3. Bearing housing
4. Pinion

Procedure for shimming is as follows:

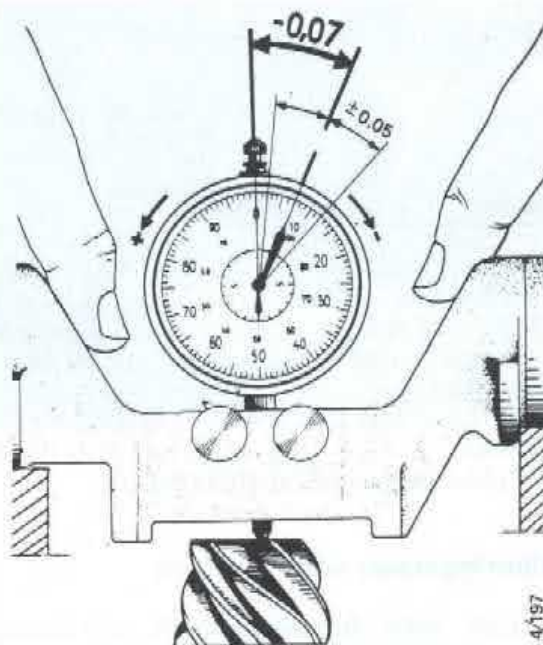
1. Undo the four bolts from the pinion shaft bearing housing and tap the pinion shaft gently out of the transmission case.
2. Change the shimming according to the following rules:
 - a) If the dial reading is higher than the correct value, increase the shim combination.
 - b) If the dial reading is lower than the correct value, reduce the shim combination.

Note! + reads counter-clockwise and - reads clockwise on the dial.

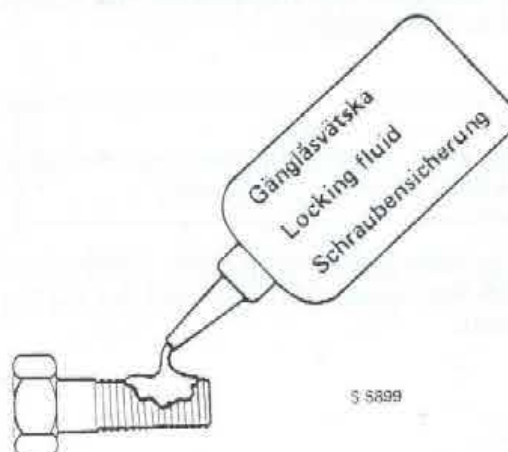
Reduce or increase the shim combination by the difference between the measured and correct values.

If the pinion is stamped -7, the pointers should indicate -0.07 mm. A deviation of ± 0.05 mm from this reading is permitted.

3. Having selected the correct combination of shims, place them in the transmission case with aid of the locating pins. Mount the pinion shaft to the transmission case using sleeve 83 90 148 and arbor 83 90 114. Remove the locating pins, apply Loctite to the bolts and then tighten them to the prescribed torque.



S 4197

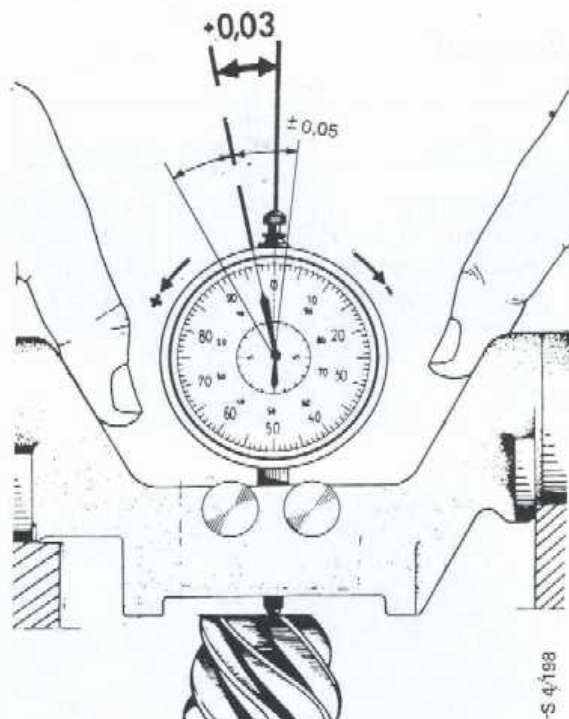


S 5899

Rechecking

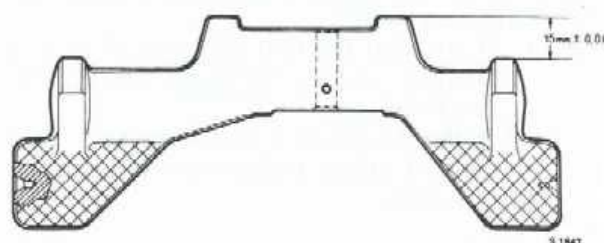
After shimming, replace the measuring jig in the differential housing and check that the dial now gives the correct reading to within ± 0.05 mm. If it does not, the shimming procedure must be gone through again.

If the pinion is stamped +3, the dial should indicate $+0.03$ mm. A deviation of ± 0.05 mm from this reading is permitted.



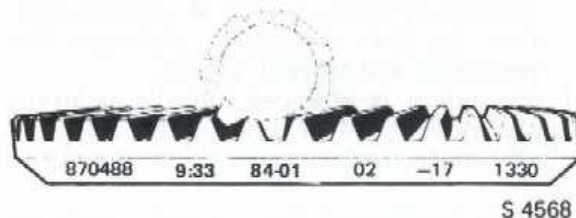
Checking the measuring jig

The measuring jig is a precision-made tool. It should be handled with care to avoid knocks and deformation. If there is reason to suspect that the jig may have been damaged in such a way that it gives wrong readings, it can be checked. The dimension indicated in the illustration on the right should be measured for this purpose.



Adjusting crown wheel backlash

Certain data for adjustment of crown wheel backlash are stamped on the crown wheel as illustrated.



Note

With new details the backlash should be adjusted to 0.1 ± 0.05 mm.

Details with less mileage than 6,000 miles (10,000 km) should be adjusted to 0.17 ± 0.05 mm.

Crown wheel markings

- 870488 = Item number (not part number)
- 9:33 = Ratio
- 84-01 = Date of manufacture and identification code
- 02 = Material code
- 17 = Backlash of 0.17 mm. Unless otherwise stated, this has a tolerance of 0.05 mm.
- 1330 = Mating number, which is also stamped on the pinion

The backlash should be checked at four points round the circumference of the crown wheel and must not deviate by more than ± 0.05 mm from the stated measurement. Crown wheel backlash is adjusted with shims. Up to four shims in suitable combinations may be used.

Measuring and shimming

Adjustment of differential bearings

Adjustment must be carried out before the pinion shaft is mounted. (If only the final drive has been dismantled for the replacement of the differential bearings, the crown wheel must also be dismantled before the bearings can be adjusted.)

1. Place the differential assembly complete with crown wheel in the transmission case.
2. Mount the left bearing seat (with the speedometer drive) without shims and tighten the bolts to the prescribed torque.

**Tightening torque,
left-hand bearing seat**

20-25 Nm (2.0-2.5 kgfm, 14-18 lbft,)

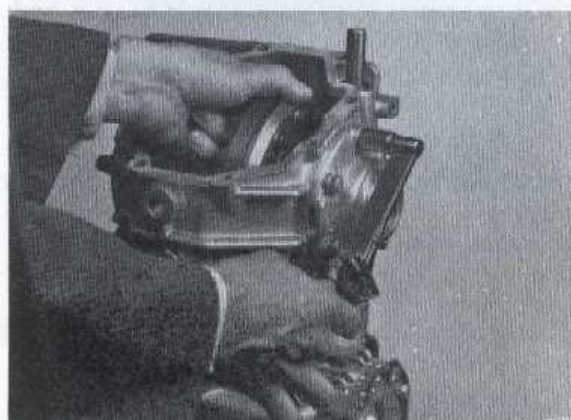
3. Oil the differential bearings and mount the right bearing seat. If the inner drive is mounted in the bearing seat, remove the spring and plunger before mounting the seat. Tighten the bolts, in two or three stages, to the prescribed torque. Rotate the differential while tightening the bolts.

**Tightening torque,
right-hand bearing seat**

2.2 Nm (22 kgfcm; 19 lbjn)

Table of shims

Location	Shims	
	Thickness mm	Spare part No.
Between differential bearing seat and transmission case	0.10	83 41 604
	0.15	83 41 612
	0.30	83 41 620
	0.50	83 44 638



4. Measure the gap between the transmission case and bearing seat with a feeler gauge at two points opposite each other and take an average of the two measurements. Then select shims corresponding to this result plus an increment of 0.20 mm to obtain the correct bearing compression.

The method described above applies to both new and old bearings.

The torque obtained in this way can be measured by means of a torque wrench and driver 87 90 818.

Ensure that you adjust to the correct values. The following values apply for the rolling torque.

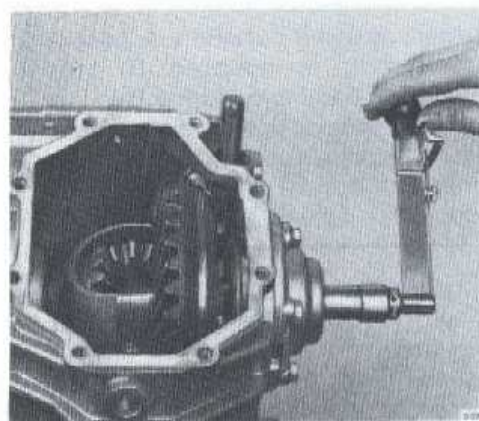
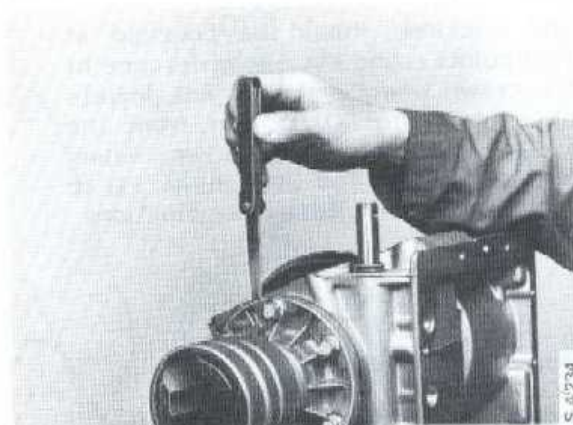
New, lightly oiled bearings:
1.8-2.8 Nm (16-24 lbin, 18-28 kgfcm)

Bearings having run more than 1 200 miles (2 000 km) 0.8-1.3 Nm (7-11 lbin, 8-13 kgfcm)

Shims of four different thicknesses can be suitably combined. The available thicknesses are shown in the table below.

Note

The resulting set of shims should then be distributed between the right and left sides to give the correct backlash.



Location	Shims	Spare part No.
	Thickness mm	
Between differential bearing seat and transmission case	0.10	83 41 604
	0.15	83 41 612
	0.30	83 41 620
	0.50	83 44 638

Adjusting crown wheel gear backlash

1. Place the differential assembly complete with crown wheel in the transmission case.
2. Mount the left bearing seat (with the speedometer drive) without shims and the right bearing seat with the selected set of shims, tightening the bolts to the prescribed torque.

Tightening torque,
LH and RH bearing seat:
20-25 Nm (2.0-2.5 kgfm; 18 lbft.)

3. Mount the dial indicator, see illustration, and measure the backlash.
4. Calculate the difference between the measure backlash and the desired backlash, and then move shims of suitable thickness over to the left bearing seat. Check the measurement once again.

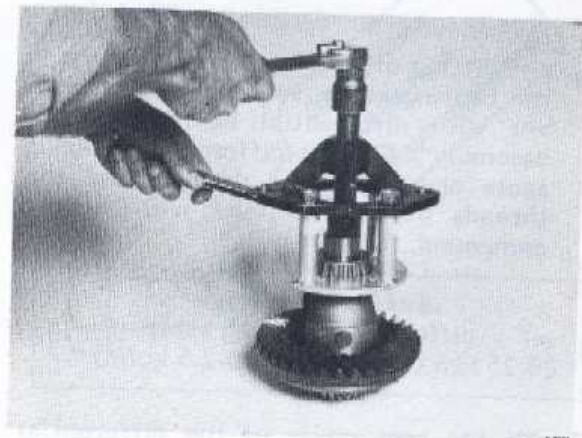
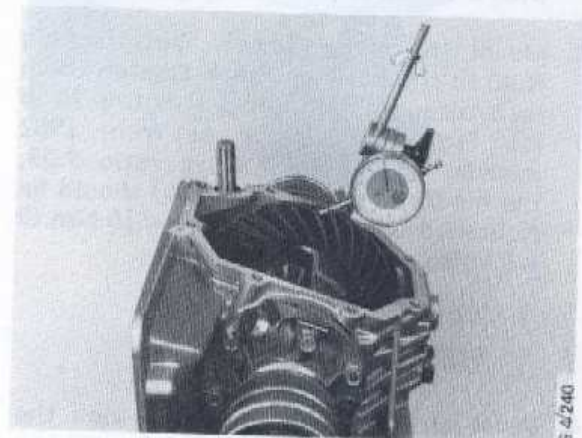
The preselected set of shims must be used for adjusting the backlash. The total thickness of the set must not be altered.

Differential

Removing (Earlier versions)

To replace parts inside the differential, remove one of the circlips on the differential drive shaft. The shaft, drive and wear washers can be removed without the crown wheel having to be dismantled.

1. Remove the differential housing cover.
2. Remove the two differential bearing seats together with inner drivers. Save any shims and remove the differential.
3. If necessary, press the outer bearing rings out of the bearing seats (see Dismantling of the inner driver with differential bearing cap). Remove the speedometer drive and press both journal bearings off the differential housing using tools 89 96 084, 87 90 768 and 89 95 177.
4. Remove the crown wheel bolts and take off the crown wheel.
5. Push out the differential gear shaft. The hole marked by a white dot is slightly smaller - the shaft should therefore be pressed out from this side.
6. Remove the gears and the wear washers from the differential casing.



Important

If the crown wheel is exchanged, the pinion gear must be exchanged with it, as these two parts constitute a matching pair.

1. Exchange any worn or damaged parts.
2. Locate the gears and wear washers in the differential casing and slide in the differential drive shaft. The shaft should be inserted from the side marked with a white dot.
3. Mount the crown wheel, apply locking fluid to the bolts and then tighten them to a torque of 50 Nm (5.0 kgfm; 36 lb ft). Tightening torque as from 1982 models, with a final drive ratio 9.33, the modified bolts (10 x 1.25) should be tightened to a torque of 90 ± 10 Nm (9 ± 1 kgfm, 63 ± 7 lb ft).

4. Press on the journal bearings and the speedometer drive, if these have been removed, using tool 87 90 487.
5. Locate the differential assembly in the transmission case. If any part affecting the overall width of the differential assembly - e.g. the bearings - has been exchanged, the crown wheel backlash must be adjusted. This is done by alteration of the combination of shims. See section "Adjusting crown wheel backlash".

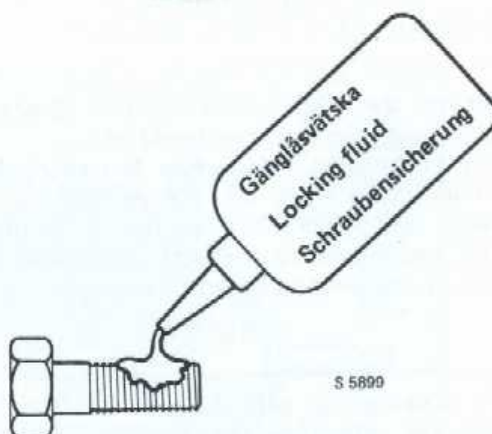
6. For fitting of the outer bearing rings in the bearing seats, see under "Inner driver with differential bearing seats - assembly". Fit the differential bearing seats and the inner driver. Coat the threads of the 12 bolts with sealing compound.

Tightening torque,
differential bearing seat:
20-25 Nm (15-19 lbft, 2.0-2.5 kgfm)

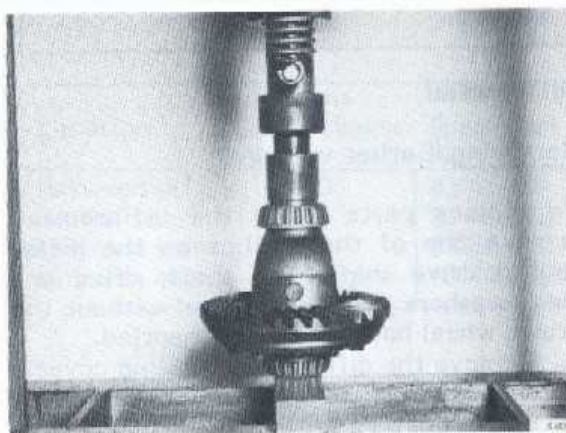
7. Fit the rear cover of the differential housing.



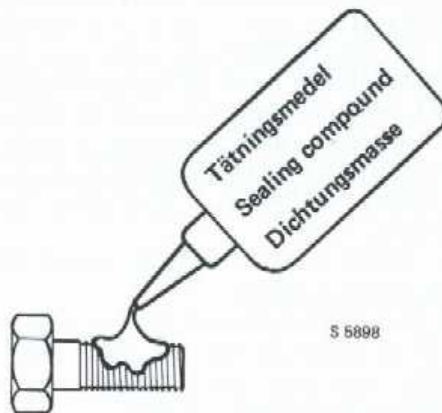
S 5891



S 5899



S 5892



S 5898

Differential (New version)

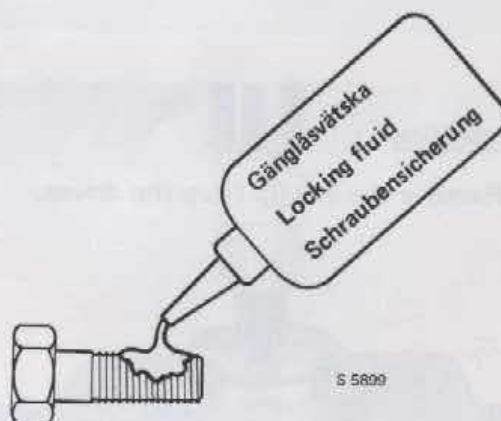
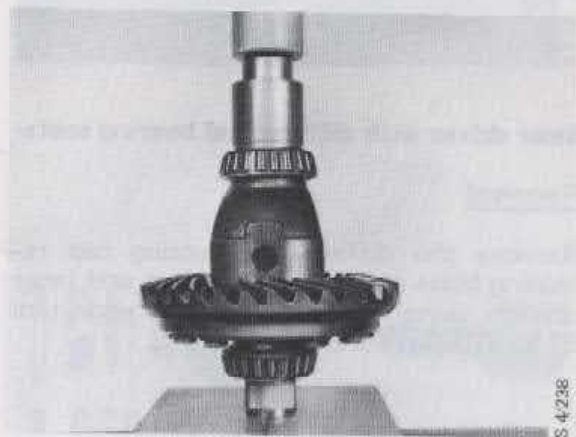
To dismantle the differential

1. Remove the final drive cover.
2. Remove the two differential bearing seats together with the inner drivers. Save the shims and remove the differential.
3. Remove the speedometer drive and press off the journal bearing using tools 89 96 084, 87 90 768 and 89 95 177. To change the outer bearing races, refer to the section on dismantling of the inner driver.
4. Remove the locking pin from the differential shaft and carefully tap out the shaft. Save the gears and the wear washers.
5. Undo the crown wheel bolts and remove the crown wheel.

To assemble

1. Exchange any worn or damaged parts.
2. Refit the journal bearings and the speedometer drive, using tool 87 90 487.
3. Mount the differential and differential bearing seats inside the transmission case. Check the bearing preload and adjust the shims as necessary (refer to "Inner driver with differential bearing seats").
4. Remove the differential and bearing seats from the transmission case.
5. Fit the crown wheel, tighten the bolts to the specified torque and apply locking fluid to them.

Tightening torque:
 $90 \pm 10 \text{ Nm}$ ($9 \pm 1 \text{ kgf m}$)

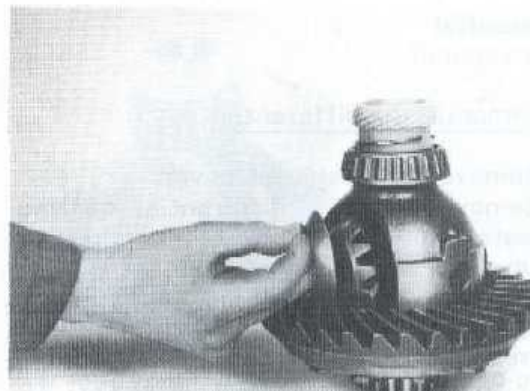


6. Fit the gears and wear washers and insert the differential shaft. Fit the locking pin.
7. Mount the differential and differential bearing seats in the transmission case.
8. Check the crown wheel backlash and adjust as necessary (see the section on the inner driver with differential bearing seats.)

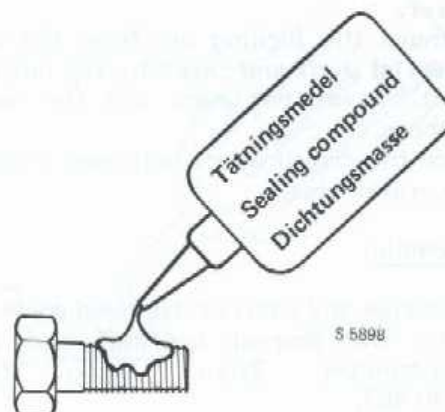
9. When finally fitting the differential bearing seats, apply sealing compound to the 12 bolts.

Tightening torque:
20 - 25 Nm (2 - 2.5 kfg m)

10. Refit the final drive cover.



S 4237

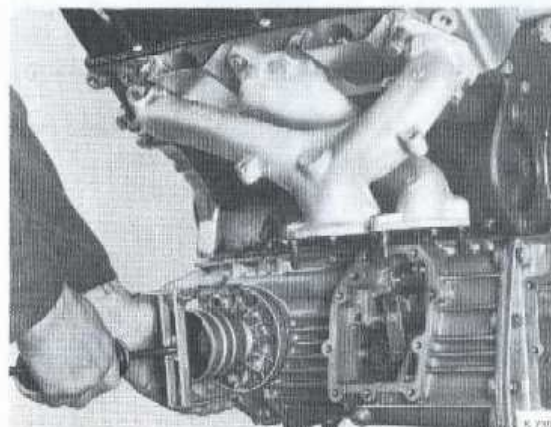


S 5898

Inner driver with differential bearing seats

Removal

Remove the differential bearing cap retaining bolts and remove the cap and inner driver using tool 87 90 776 and tool 83 90 270. Save the shims.



S 7393

Dismantling

1. Remove the circlip from the driver.



S 4236

2. Press out the driver from the differential bearing seat.
3. Using a screwdriver, remove the seal ring taking care not to damage the bearing seat.
4. Remove the speedometer drive from the left bearing seat.
5. Press out the ball bearing using tool 78 41 067.

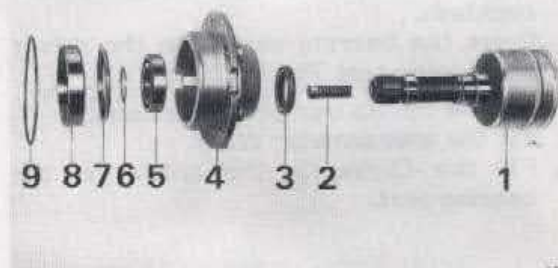


6. Remove the bearing tracks for the differential bearings by means of a suitable drift. A washer is located inside the bearing track for the right-hand differential bearing seat (seat without speedometer drive) and the purpose of this is to improve the bearing lubrication.
7. Remove the O-ring from the groove in the bearing seat.



Inner driver and bearings

1. Inner driver
2. Spring with plunger
3. Sealing ring
4. Seat
5. Ball bearing
6. Circlip
7. Oil level washer
8. Bearing track
9. O-ring

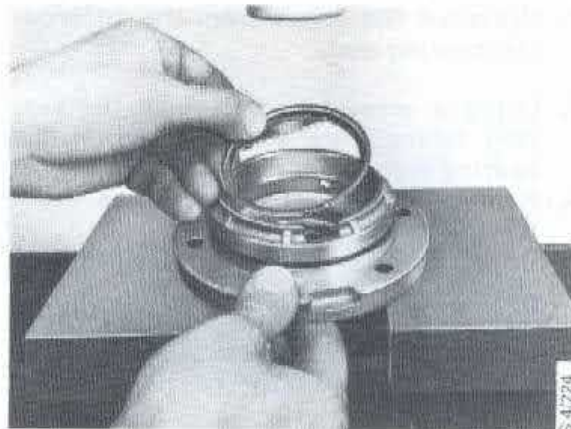


Assembly

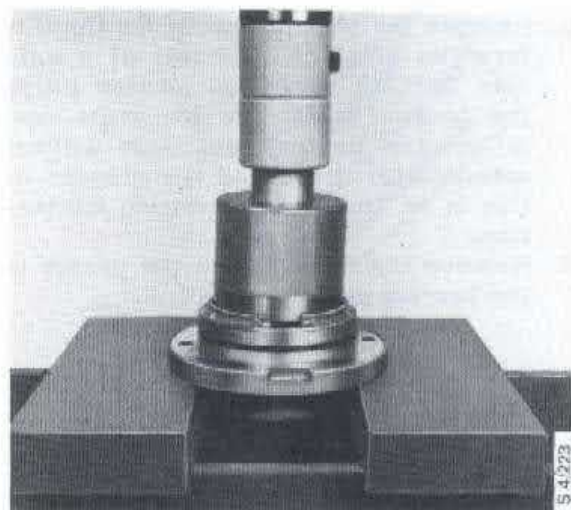
1. Press the ball bearing into the bearing seat using tool 78 41 141.



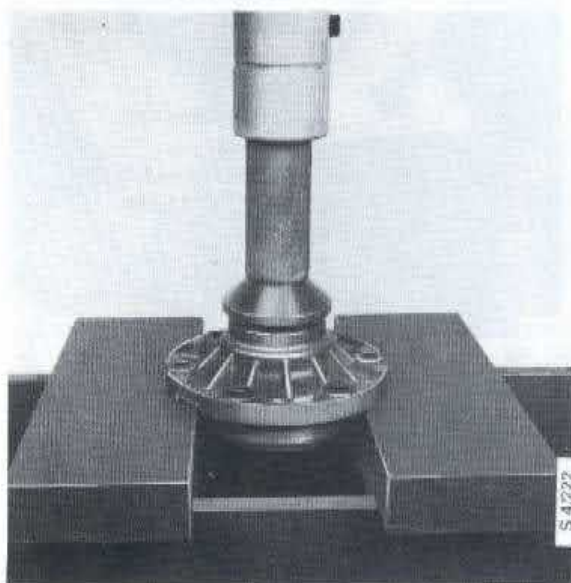
2. Guide the washer into its groove in the right-hand bearing seat and press in the bearing track using tool 83 90 114.



3. Using drift 87 90 800, press in the seals in such a way that they will project approximately 0.08 in (2 mm) above the plane of the bearing seat.



4. Adjust the bearing compression and the backlash.
5. Press the bearing seat onto the driver shaft using tool 78 41 067.
6. Fit the circlip using circlip pliers.
7. Fit the speedometer drive.
8. Fit the O-ring in the groove in the bearing seat.



Installation

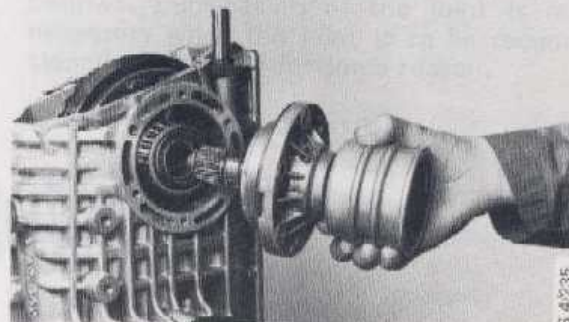
See adjustment of the differential bearing compression and adjustment of backlash.

1. Check that the O-ring is mounted on the bearing seat and place the spring and plunger in the hole in the end of the driver shaft.
2. Fit a suitable combination of shims to the two bearing seats and mount the seats, together with inner driver, to the transmission.
3. When securing the bearing seat, check that there is backlash. Tighten the retaining bolts to the prescribed torque. Use sealing compound on the threads of the 12 bolts.

Tightening torque, differential bearing seat:

20-25 Nm (15-18.5 lb ft, 2.0-2.5 kgfm)

4. Check the backlash by measuring in four places.



S 4235

Note
Only the new carrier must be fitted on the new drive shaft.

The new carrier pin, on the contrary, is fitted in the carrier shaft.

On GL versions the introduction of the new pin is introduced on chassis 140.

AC 1002947, AC 2007442, AC 2007443, AC 2007444

For other versions:

AC 1002946, AC 2007441, AC 2007440, AC 2007439

S 4/52

Master cylinder

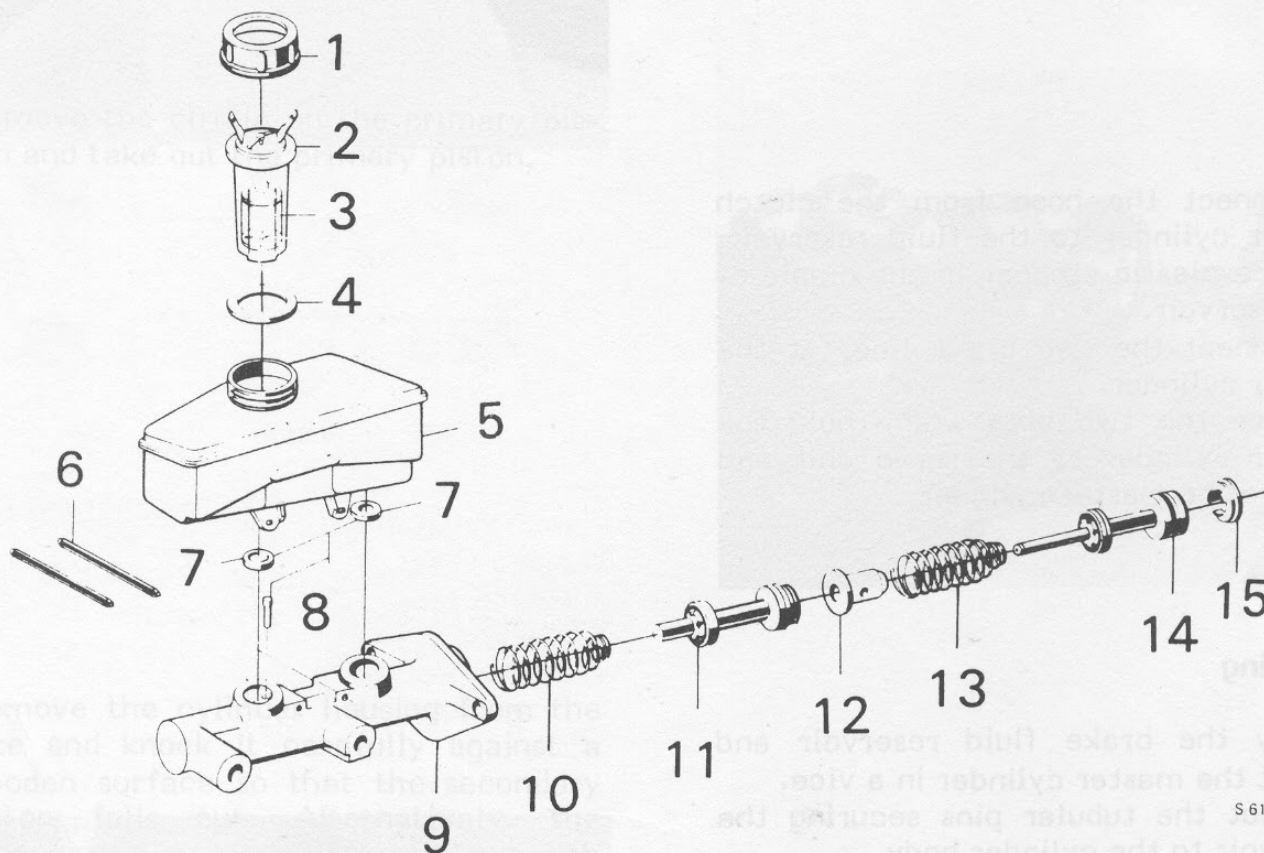
Workshop technique	521-1
Removal	521-2
Dismantling	521-2

Assembly	521-4
Fitting	521-5

Workshop technique

Scrupulous cleanliness is essential when the brake system or any part of it is dismantled. Clean any dismantled parts in brake fluid or in a special cleaning solution for hydraulic brake components. Wipe the

parts with a clean, lint-free cloth. All rubber parts and seals, etc., are available in repair kits and should be replaced. Before a unit is installed, all components should be dipped in clean brake fluid of the recommended specification.



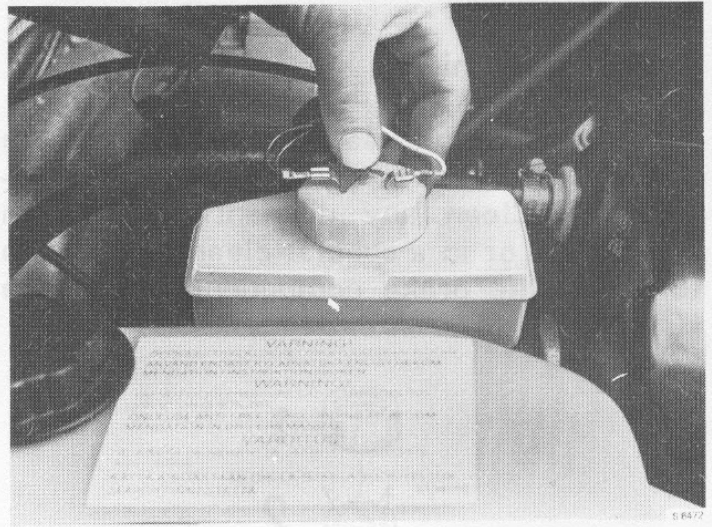
S 6152

Master cylinder, exploded view

- | | |
|--------------------------|------------------------------|
| 1. Cap | 9. Cylinder housing |
| 2. Fluid level switch | 10. Spring, secondary piston |
| 3. Float | 11. Secondary piston |
| 4. Sealing ring | 12. Sleeve |
| 5. Brake fluid reservoir | 13. Spring, primary piston |
| 6. Pin | 14. Primary piston |
| 7. Sealing ring | 15. Lock ring |
| 8. Stop pin | |

Removal

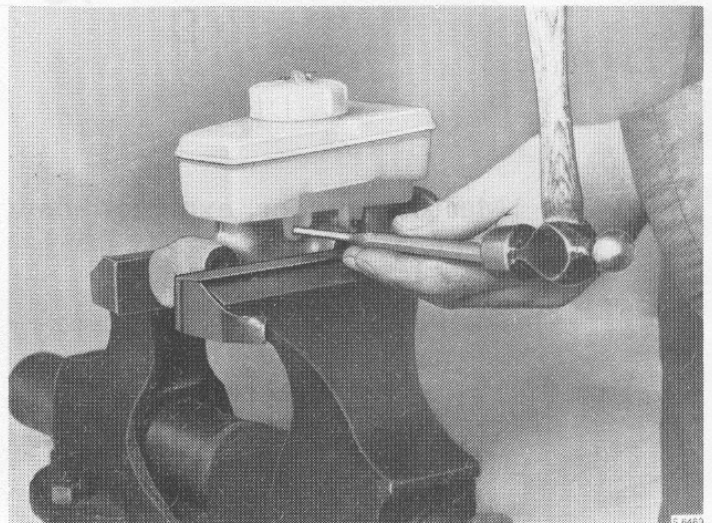
1. Cover the front fender and place rags under the master cylinder to obviate damage to the paintwork in case the brake fluid should be spilt.
2. Disconnect the electric cable to the filler cap.



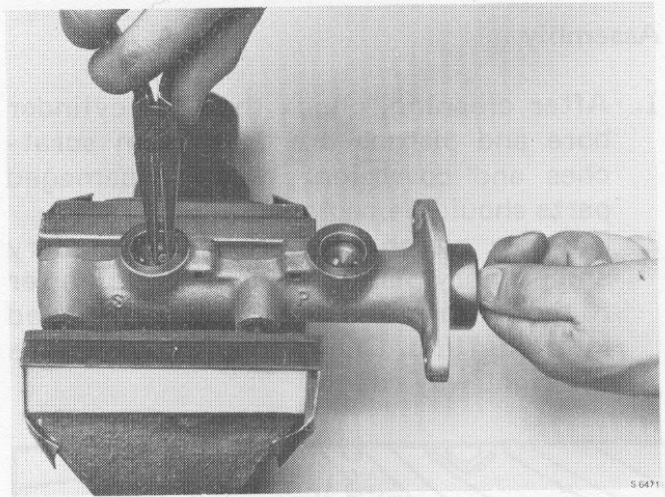
3. Disconnect the hose from the clutch master cylinder to the fluid reservoir. Insert a plastic stopper in the nipple of the reservoir.
4. Disconnect the two brake lines at the master cylinder.
5. Remove the two nuts which hold the master cylinder to the servo unit and remove the master cylinder.

Dismantling

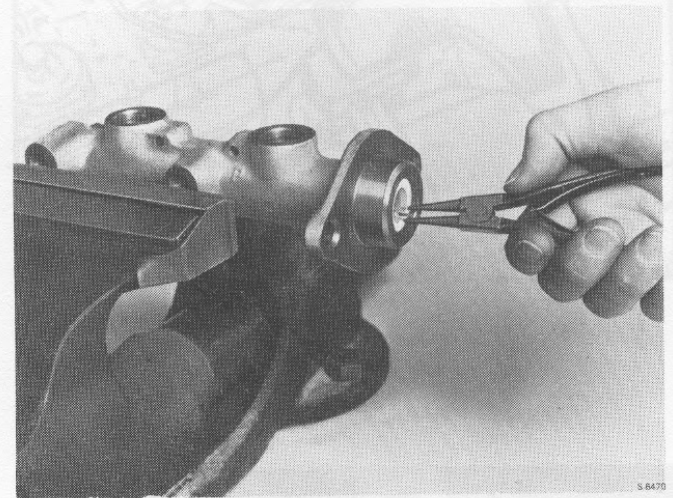
1. Empty the brake fluid reservoir and mount the master cylinder in a vice.
2. Tap out the tubular pins securing the reservoir to the cylinder body.



3. Remove the reservoir and by means of a small screwdriver remove the rubber seals from the hole for the fluid reservoir.
4. Push the primary piston into the master cylinder and withdraw the stop pin on the secondary piston.



5. Remove the circlip on the primary piston and take out the primary piston.



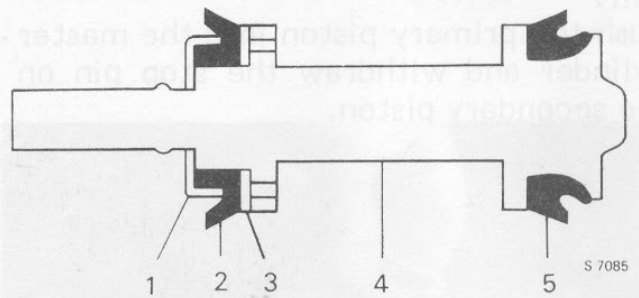
6. Remove the cylinder housing from the vice and knock it carefully against a wooden surface so that the secondary piston falls out. Alternatively, the secondary piston can be forced out with compressed air.
7. Remove the springs and seal rings from the two pistons. Keep the pistons and their rings apart so that they can be fitted back into the cylinders from which they have been removed.

Caution

Never attempt to extract the seals with sharp-edged tools which may scratch the pistons. If necessary, use a small screwdriver with smoothly rounded edges.

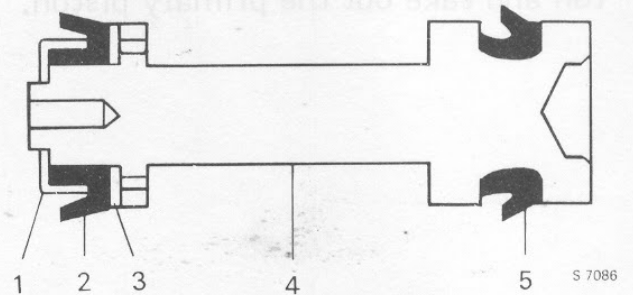
Assembly

1. After cleaning, check that the cylinder bore and pistons are free from scratches and corrosion. Worn or damaged parts should be replaced.
2. Fit new piston seals to the secondary and primary pistons. This is made easier if the pistons and seals are first dipped in brake fluid. Check that the seals are the right way round.



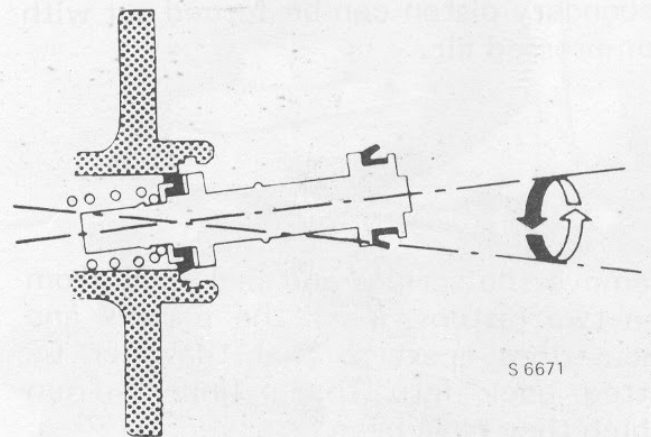
Secondary piston with seals

1. Spring seat
2. Piston seal
3. Washer
4. Piston
5. Piston seal



Primary piston with seals

1. Spring seat
2. Piston seal
3. Washer
4. Primary piston
5. Piston seal



S 6671

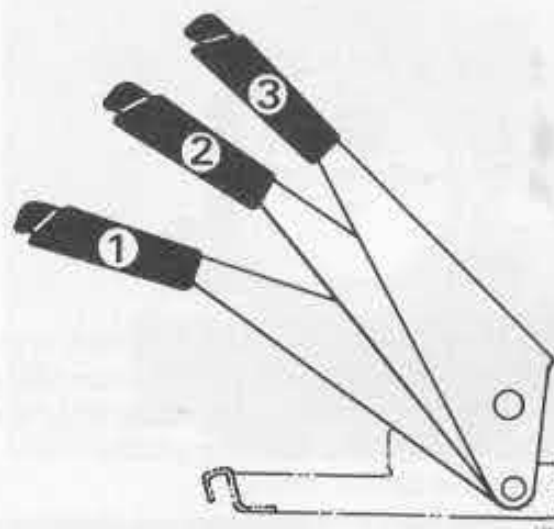
Disassembly

3. Mount the master cylinder in a vice, thoroughly lubricate the cylinder bore and carefully insert the complete secondary piston with the spring. Great care must be taken to avoid damage to the piston seals. Push in the secondary piston by means of a clean screwdriver and insert the stop pin.
4. Insert the complete primary piston in the same way and fit the circlip.

4. Fit the brake pads.
5. Top up the brake fluid, bleed the system and check all connections for leakage.
6. With the engine switched off, return the brakes to their operating position by repeated pumping of the brake pedal. Continue pumping until the footbrake just starts to operate.
7. Pull up the handbrake lever five notches. Continue to pump the pedal until the handbrake operates after the lever has been pulled up a further two-to-four notches.

Caution

The car must not be used before both the footbrake and handbrake are operating properly.



Handbrake lever

1. Neutral position (brake off)
2. Adjustment position (5 notches)
3. Full braking effort (7-9 notches)

Rear-wheel brake assembly

Removal

1. Remove the brake pads (see section 517).
2. Disconnect the brake pipe at the connection to the brake housing. Plug the end of the pipe to prevent fluid leaking from the brake system.
3. Remove the two bolts securing the brake housing to the end assembly of the rear axle.

Handbrake system

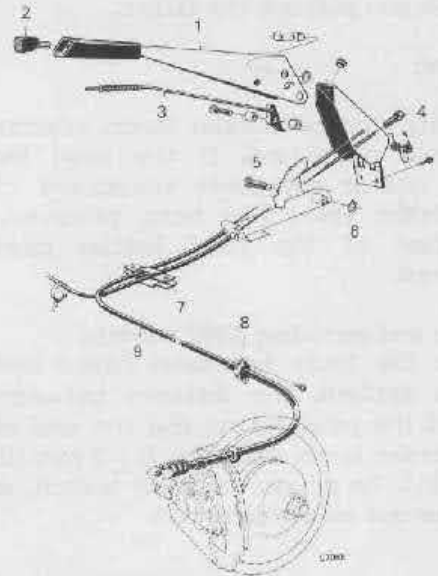
Handbrake cable 551-1

Handbrake lever 551-2

Handbrake cable

Removal

1. Remove the driver's seat. Remove the scuff plates and fold the carpet to provide access to the heater ducts.
2. Remove the gear lever cover. Take care not to damage the ignition switch light.
3. Remove the air ducts and remove the air ducts, cover plate and then the air ducts.
4. Disconnect the cable from the adjustment nut on the handbrake lever.
5. Remove the clip holding the two cables to the floor.
6. Remove the rubber bush in the side of the wheel housing and disconnect the cable from the handbrake lever at the brake cylinder housing.
7. Pull out the cable. The simplest method is to with draw either end of the cable from underneath in the engine compartment.

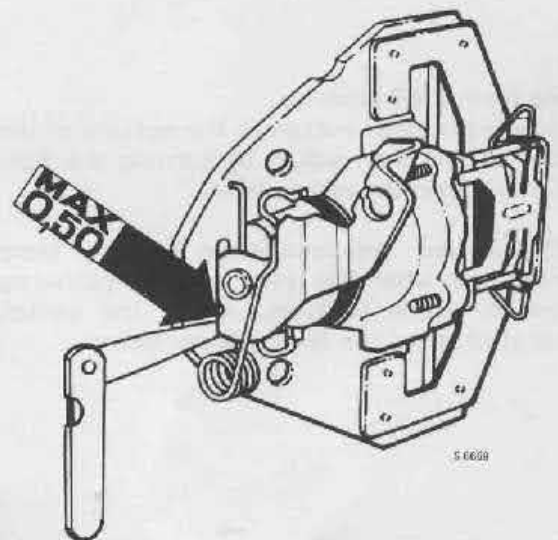


Handbrake operation

1. Handbrake lever
2. Push button
3. Pawl rod
4. Adjusting nut
5. Pivot pin
6. Circlip
7. Cable clip
8. Wheel housing grommet
9. Handbrake cable

Fitting

1. Fitting is carried out in the reverse order. The cables should cross each other on the floor of the passenger compartment.
2. After the new cable has been fitted, apply the handbrake lever a few times to stretch the cable. Use the adjusting nut on the handbrake lever inside the car to adjust the cable such that it will give a maximum clearance between the handbrake lever (at the brake housing) and the yoke of 0.5 mm (0.19 in), as shown in the illustration. The clearance should be the same on both sides.



Handbrake lever

Removal

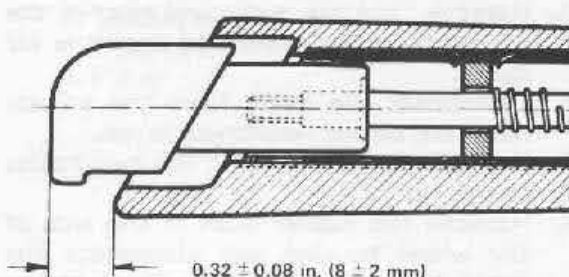
1. Disconnect the two cables from the adjusting nuts.
2. Remove the locking pin from the pivot pin and pull out the latter.

Fitting

To refit the handbrake lever, reverse the removal procedure. If the pawl button, pawl rod or any other component of the handbrake lever has been removed, the position of the pawl button must be checked.

Up to and including 1982 models:

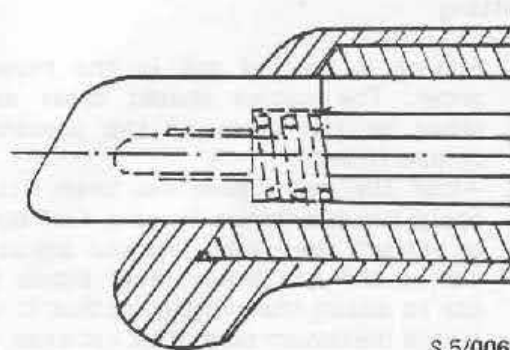
After the lever has been fitted and the brake applied, the distance between the top of the pawl button and the end of the handbrake lever should be 8 ± 2 mm ($0,32 \pm 0,08$ in). To adjust the pawl button, screw it in or out on the pawl rod.



As from 1983 models:

Screw the pawl button to the bottom of the thread and then adjust by turning the button a maximum of one turn.

Check that the handbrake warning lamp comes on when the lever has been pulled up two or three notches. Adjust the switch located under the lever, as necessary.



S 5/006

Changing front coil springs and rubber stops

Under no circumstances must the front and rear springs be interchanged. For differences between the springs see section 027. The springs are delivered with a rustproof coating. If this coating has been rubbed off, it should be touched up before the spring is installed.

Removal

1. Remove the upper shock absorber nuts before you jack up the car.

Caution

The maximum stroke (i.e. the downward stroke of the control arm) is limited by a built-in stop in the shock absorber.

Therefore, remove the shock absorber either:

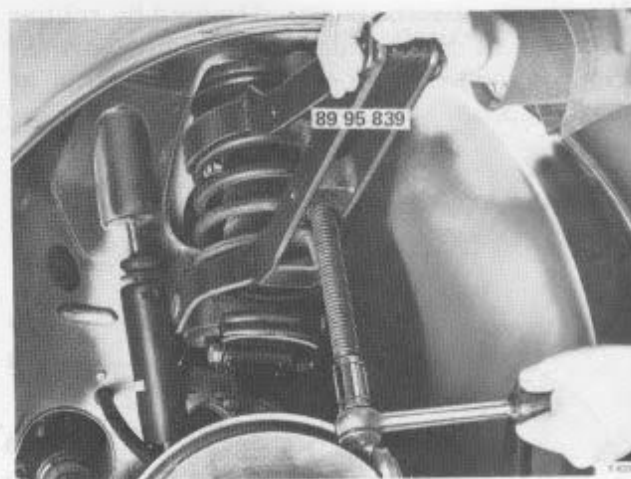
- before the car is jacked up, or
- by using a jack to lift the outer end of the lower control arm slightly.

2. Raise and block up the front of the car and take off the wheel.
3. Apply spring compression tool 89 95 839, engaging the upper shanks direct in the spring at the second free turn from the top and the lower shanks round the spring cups. These are located on the last turn of the spring with the colour-coded cup right beside the end of the coil.

4. Compress the spring to give 30-40 mm (roughly 1 1/2 in) clearance at the top. If necessary, use a screwdriver to prize the upper spring attachment or cup away from the body.

Note

Do not overload the spring compression tool. Avoid letting the shanks butt together when a nut tightener is used.

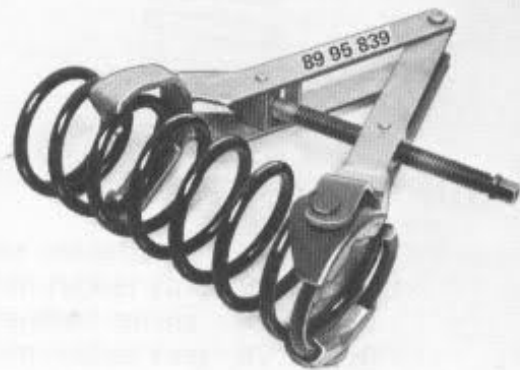


5. Remove the spring and steel cone.
6. Check and, if necessary, change rubber ring or steel cone with rubber buffer.
7. Check and, if necessary, renew the bottom spring seat bearing (the pivot plate bearing).

Installation

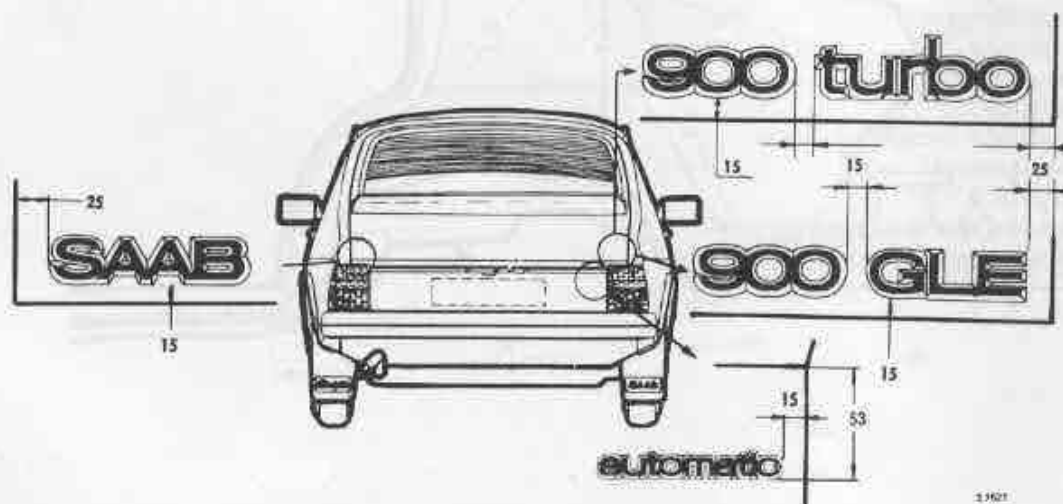
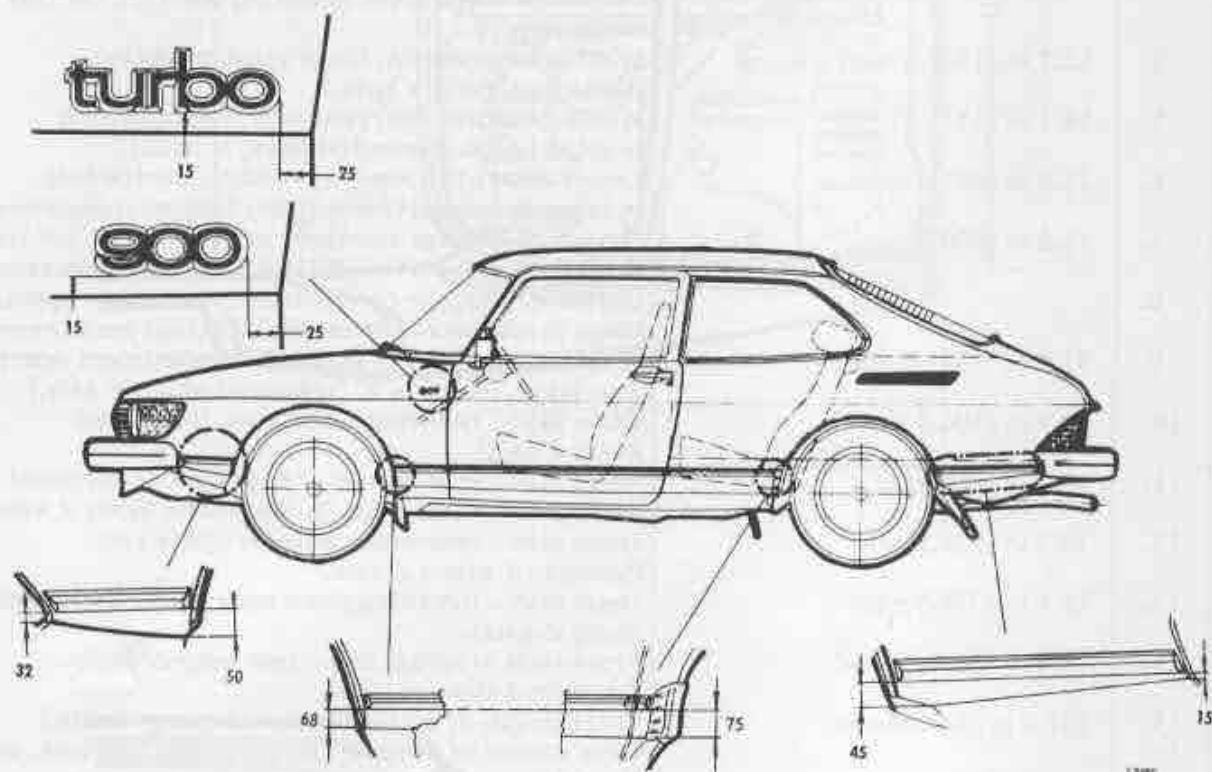
1. If the spring has been taken out of the compression tool or when fitting a new spring, locate the colour-coded cup right beside the end of the coil, and hook the upper shanks of the tool over the second turn from the top.
2. Compress the spring. Place the steel cone and rubber ring in the top of the coil.
3. Locate the spring on its bottom seat. Slacken off gradually on the compression, guiding the steel cone into its seat in the wheel housing. Remove the compression tool. If the bottom seat has been removed, it is advisable when re-assembling to mount the seat loosely and wait until after the spring is in place before securing the seat, which will automatically take up the correct position due to pressure from the spring.
4. Place a jack under the outer end of the lower control arm and raise the end slightly as the shock absorber is guided into position. Secure the shock absorber. Remove the jack.

5. Fit the wheel.
Remove the blocks and lower the front wheels to the ground.



Mouldings and emblems, up to and including 1980 models

Before fitting emblems or mouldings on the car, ensure that the bodywork is free from grease and dust. Clean the surface using a commercially pure petrol or equivalent cleaning agent. In conjunction with this work, the temperature inside the premises should not be below 65°F (18°C). Remove the protective backing and press each item into position by hand.



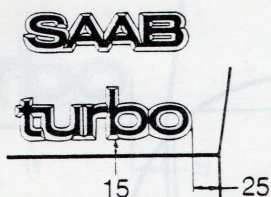
Up to and including 1980 models; all measurements in mm

Mouldings and emblems, as from 1981 models

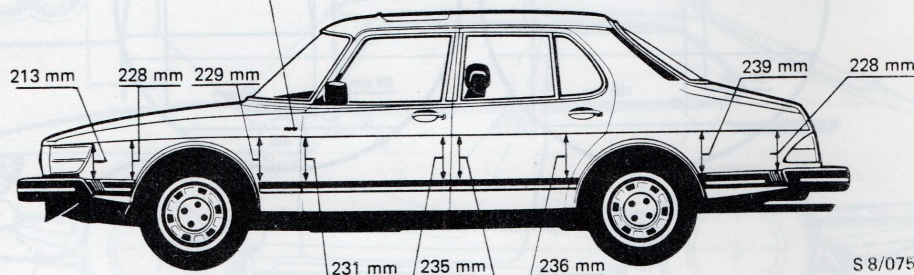
The mouldings on 1981 model cars are wider than before. There is a silver stripe along the lower edge of the otherwise black moulding. When replacing individual mouldings, fit the new moulding so that the silver stripe lines up with adjacent mouldings. When fitting all new mouldings, line up the silver stripe with that of the bumper.

During the 1983 model year, the mouldings between the wheel housings were raised by approx. 10 mm. When replacing the moulding on one side of older cars, therefore, check the height of the moulding on the other side. The measurements given apply to later models.

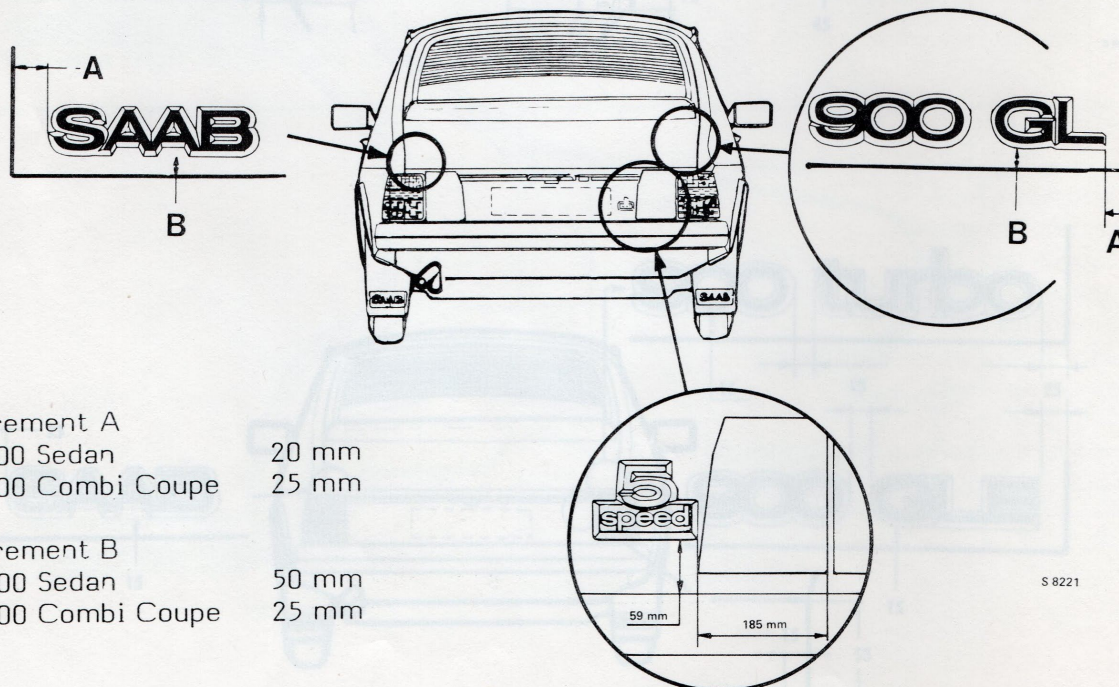
As from 1984 models, the front and rear side mouldings have been replaced by mouldings that are an extension of the bumpers. These are secured to the wings or side panels by screws with plastic nuts.



Location of emblems on bonnet (hood)



The nominal measurements (tolerance of 2 mm) apply to all variants. Make sure that the mouldings line up with each other and with those on the bumpers.

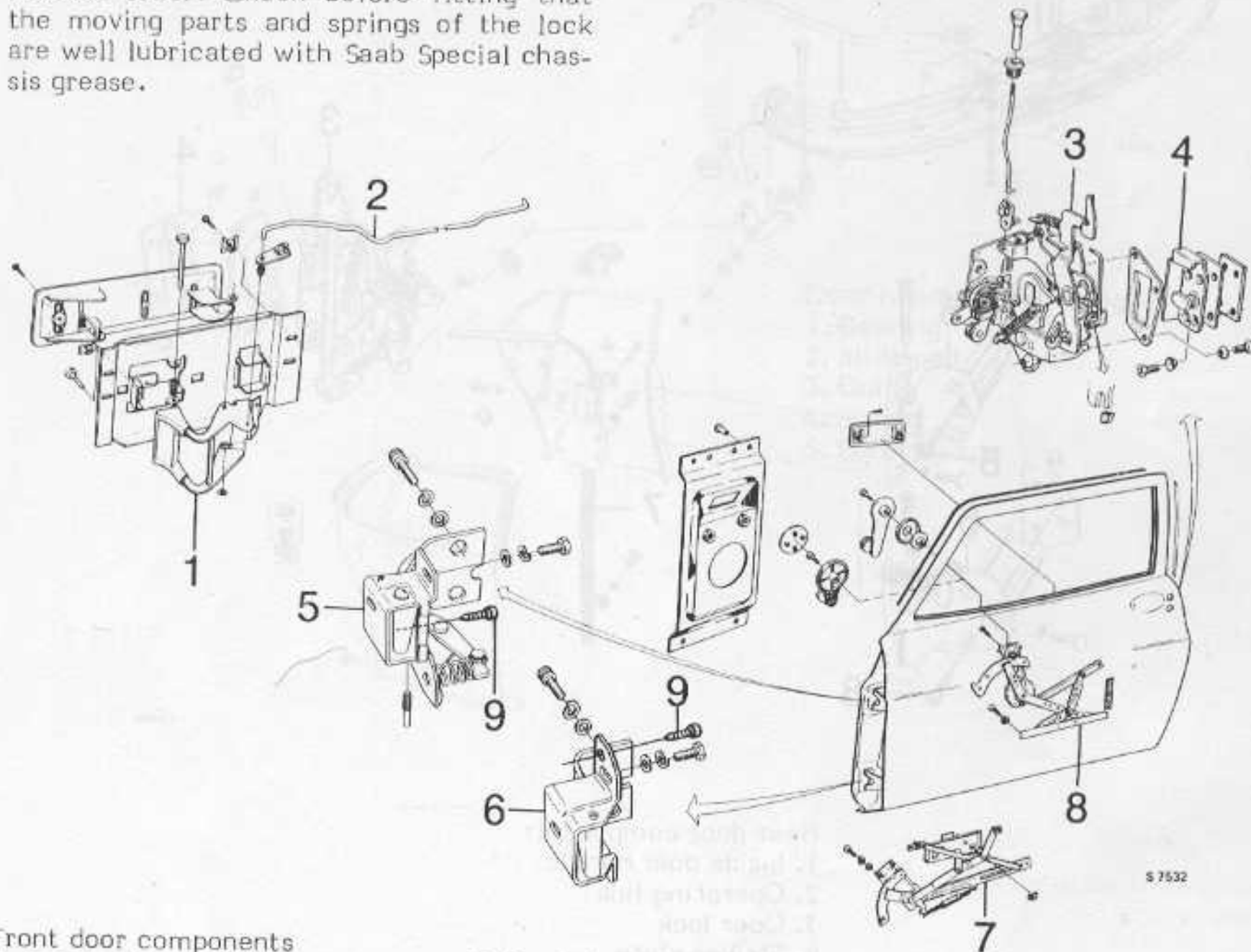


Measurement A	
Saab 900 Sedan	20 mm
Saab 900 Combi Coupe	25 mm

Measurement B	
Saab 900 Sedan	50 mm
Saab 900 Combi Coupe	25 mm

Location of emblems on luggage compartment door.

reverse order. Check before fitting that the moving parts and springs of the lock are well lubricated with Saab Special chassis grease.



Front door components

1. Inside door handle
2. Operating link
3. Door lock
4. Striker plate

5. Top hinge with door stop
6. Bottom hinge
7. Window regulator, earlier design
8. Window regulator, later design
9. Locating stud

To refit

Check the condition of the plastic bush and replace if necessary. Refit the bush on the hinge pivot. Refit the hinge and the washer. Replace the clips.

Apply a small amount of grease to the surface of the hinge which comes into contact with the spring. Refit the spring using tool 82 91 577. Normally the spring is hooked in the middle hole. The opening force of the hinge can be increased or decreased by fitting the spring to the outer or inner hole. Refit the parcel shelf, pillar trim and seat belt mounting plate.

Luggage compartment door lock

To remove, cars with conventional locks

1. Release the lock cylinder by removing the clip. Use a screwdriver to remove the link from the driver ball. Extract the cylinder.
2. Remove the screws holding the lock mechanism and handle. Remove the lock mechanism. Remove the handle by passing it between the inner and outer panels.

Refit in the reverse order.

Cars with central locking

To remove

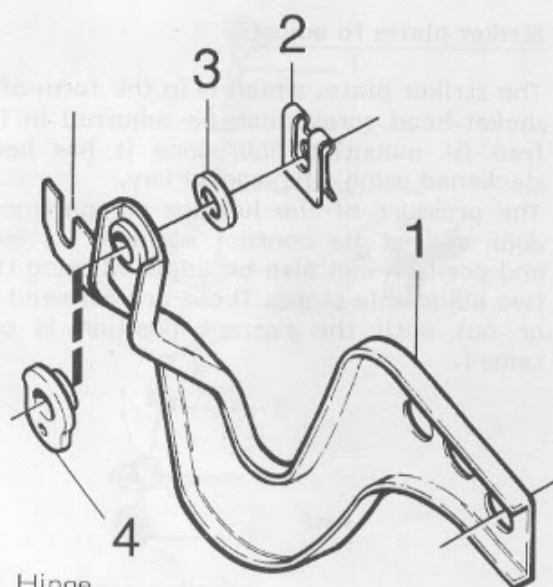
1. Disconnect the electric cables from the motor.
2. Remove the motor retaining bolts.
3. Remove the lock as described above.
4. Extract the lock between the inner and outer panels.
5. Disconnect the tie rod from the motor from the lock operating link.

To refit

Attach the tie rod from the motor to the lock, with the clip.

Connect the electric cables to the motor. Insert the lock and motor, checking that the link is correctly connected to the tie rod.

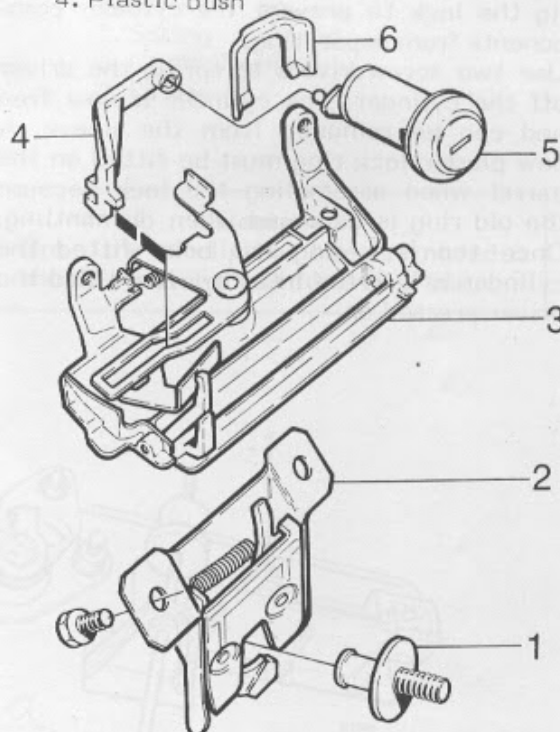
Tighten the lock and motor retaining bolts. Refit the lock cylinder.



Hinge

1. Hinge
2. Circlip
3. Washer
4. Plastic bush

S 8217



S 8 010

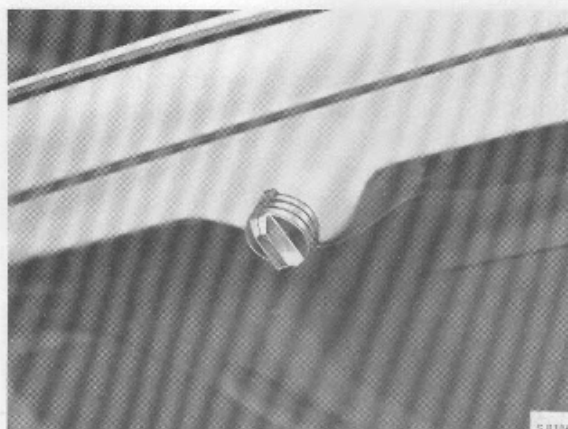
Lock, Trunk Lid, Saab 900 Sedan

1. Striker plate
2. Lock assembly
3. Operating link
4. Tie rod
5. Lock cylinder
6. Circlip

Striker plate: to adjust

The striker plate, which is in the form of a socket-head screw, can be adjusted in its free fit mounting hole once it has been slackened using a hexagonal key.

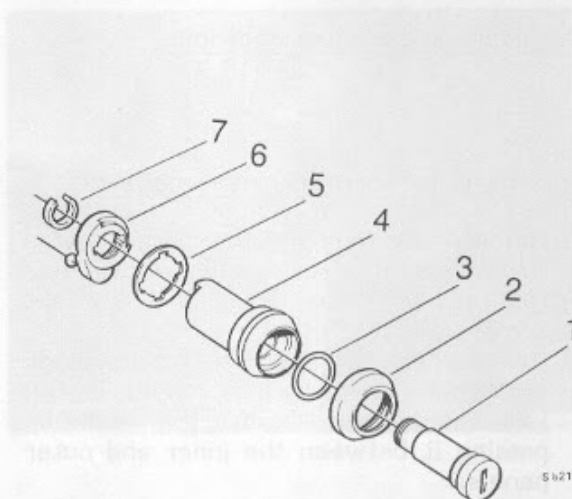
The pressure of the luggage compartment door against its contact surface, its seal and position can also be adjusted using the two adjustable stops. These are screwed in or out until the correct position is obtained.



Lock cylinder, to replace

The key should be inserted before dismantling the lock to prevent the cylinder components from separating.

Use two screwdrivers to spring the driver off the cylinder. The cylinder is now free and can be removed from the sleeve. A new plastic lock ring must be fitted on the barrel when assembling the lock because the old ring is damaged when dismantling. Once the lock ring has been fitted the cylinder is inserted into the sleeve and the driver pressed on.



Lock cylinder assembly, luggage compartment door, Saab 900 Sedan

1. Lock cylinder assembly
2. Bezel
3. Seal
4. Sleeve
5. Spacer
6. Driver
7. Circlip

**Door lock cylinder,
luggage compartment door,
Saab 900 Combi Coupé**

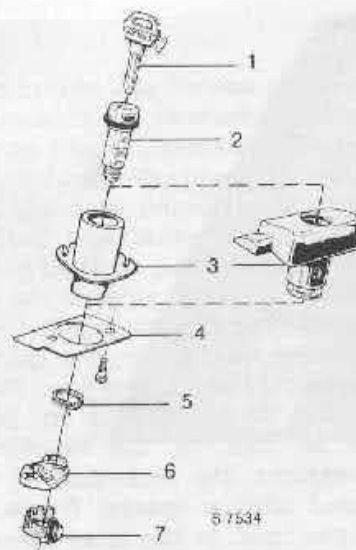
Removal and installation

1. Remove the trim from the inside of the door.
 2. Unhook the link rod from the control arm of the lock cylinder.
 3. Remove the two lock cylinder retaining screws from the inside of the luggage compartment door and remove the complete cylinder.
- Install in the reverse order.

Dismantling and assembly

1. Insert the key in the lock cylinder.
2. Pry off the driver and remove the circlip.
3. Remove the control arm and spring.
4. Withdraw the lock cylinder from the sleeve. Ensure that the key remains in the lock cylinder for as long as the latter is withdrawn from the sleeve. There will otherwise be a danger of the cylinder coming apart.

Assemble in the reverse order.



Lock cylinder

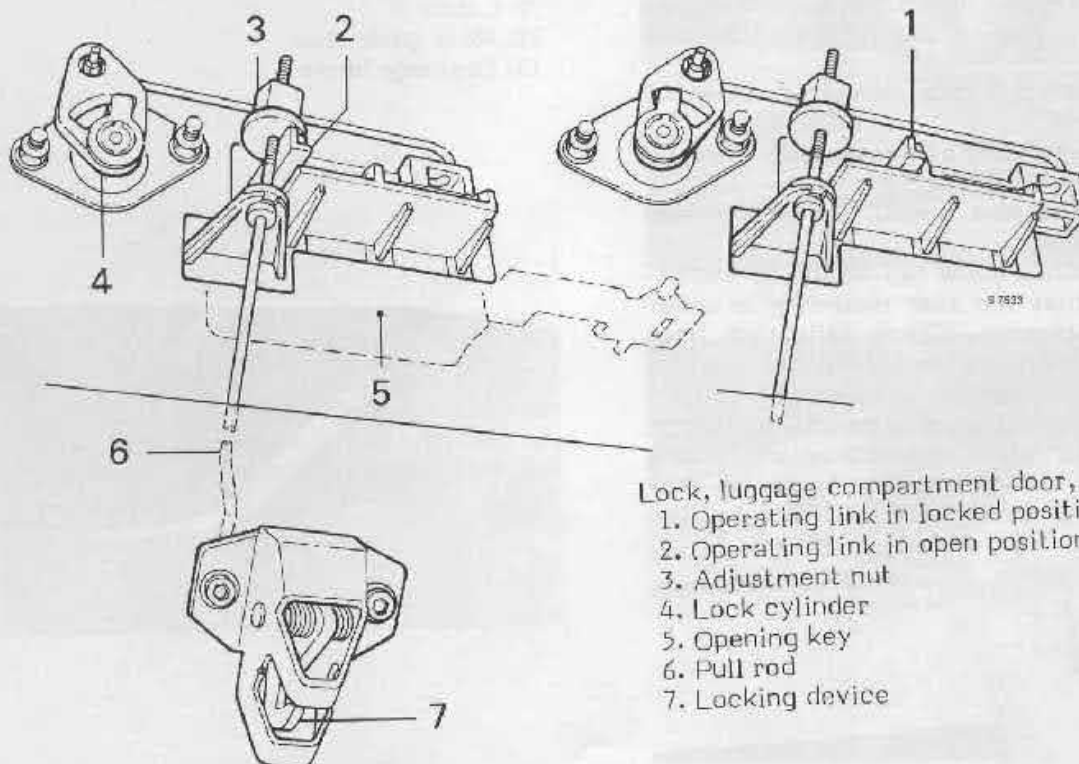
1. Key
2. Lock cylinder
3. Lock cylinder bracket
4. Gasket
5. Spring
6. Control arm
7. Driver

Caution

Do not withdraw the key from the new lock cylinder until the cylinder has been inserted in the lock sleeve.

Caution

Once the circlip has been removed it should be exchanged for a new one.



Lock, luggage compartment door, Saab 900

1. Operating link in locked position
2. Operating link in open position
3. Adjustment nut
4. Lock cylinder
5. Opening key
6. Pull rod
7. Locking device

Electrically adjustable mirror, to replace glass

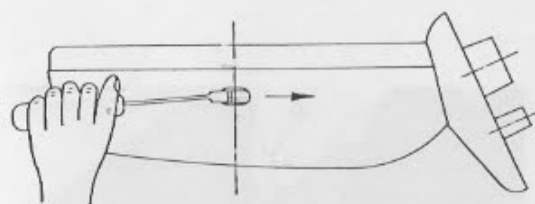
To remove

There is an oval hole in the underside of the mirror holder.

1. Set the mirror so that it is lying absolutely flat. A grooved plastic ring is situated in the middle of the hole.
2. Insert a screwdriver in the oval hole and rotate the plastic ring two cogs to the right, so that the third groove is opposite the oval hole. The plastic ring should be rotated to the right for both the left-hand and right-hand mirrors.
3. Tilt the mirror glass so that a screwdriver can be inserted between the glass and the holder. Carefully prize the glass loose.
4. Remove the plastic ring from the rear of the mirror.

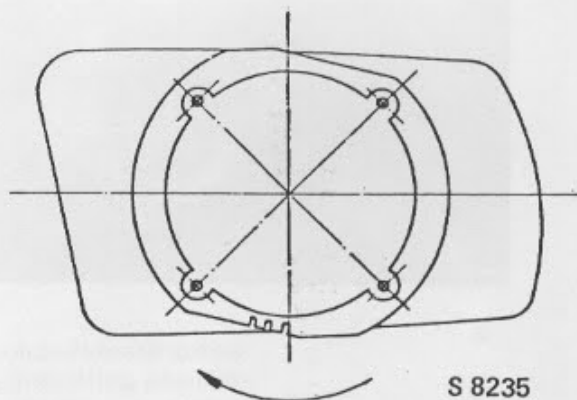
To refit

1. Position the plastic ring on the rear of the mirror with the grooves downwards. Rotate slightly counter-clockwise until the plastic protrusions on the mirror are opposite the slots in the plastic ring.
2. Position the mirror on the drive unit in the holder. The plastic protrusion should engage in the holes in the drive unit ring.
3. Press the mirror into position. Insert a screwdriver into the oval hole in the holder and rotate the plastic ring two cogs to the left so that it locks in position.



S 8233

View of mirror from below

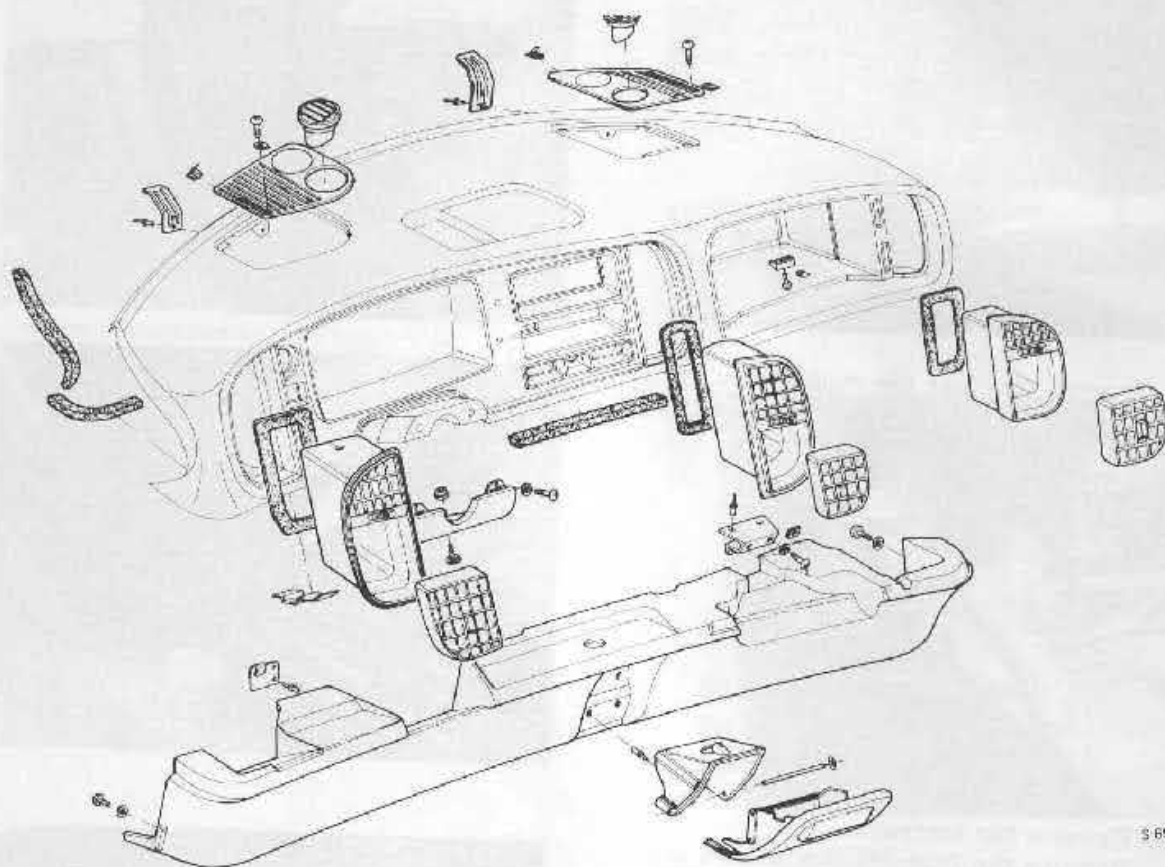


S 8235

Interior equipment

Instrument panel

The instrument panel and heating and ventilation system are built around a sturdy panel member. The instrument panel includes an upper section with glove compartment, switch panel and knee-level safety padding.



Instrument panel

Removing the entire panel assembly

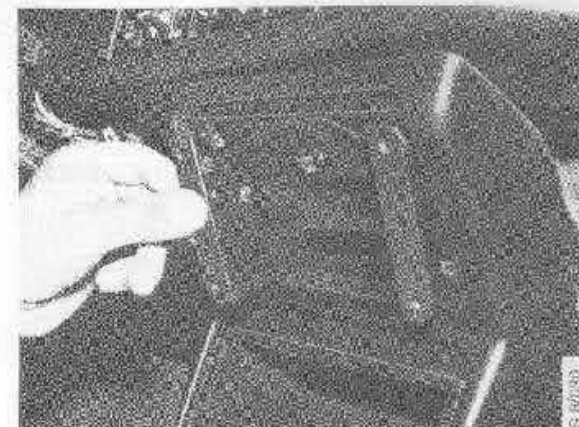
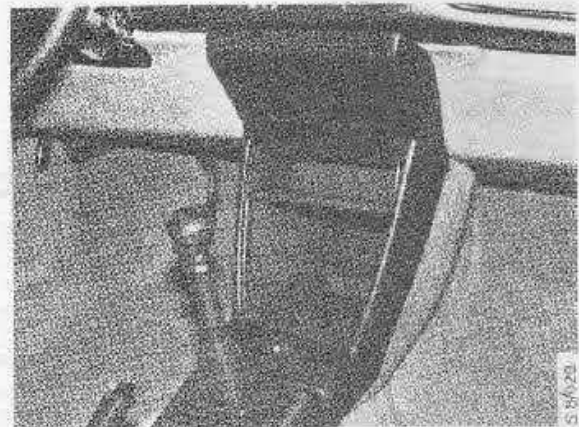
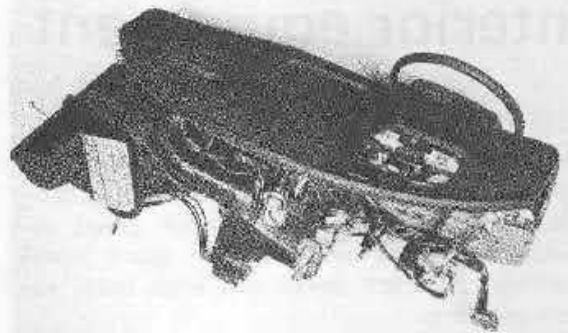
Drain off sufficient coolant to enable the hoses to the heater connections in the engine compartment to be disconnected without spillage. To prevent coolant leaking onto the carpeting, plug the hose ends before removing the panel.

1. Disconnect the positive (+) lead from the battery.
2. Remove the left-hand seat.

Saab Turbo and GLE cars, as from 1983 models, are fitted with a centre radio and storage console which must be removed at this stage.

- a. Squeeze together the rubber boot on the gear lever to free it from retaining lugs, and slide the boot up.

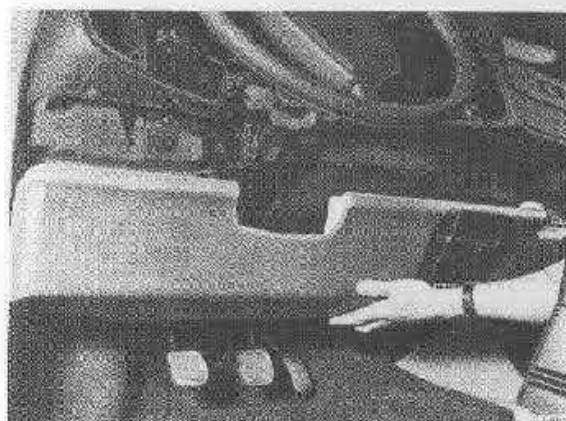
- b. Remove the ashtray.
Remove the four Phillips screws securing the ashtray holder to the console.
Remove the bolt securing the holder to the instrument panel member.
Disconnect the cables and remove the bulb.
Remove the holder.
- c. Remove the six Phillips screws securing the console to the frame and car body.
Remove the console and frame.



3. Remove the cover below the switches on the steering column.
4. Remove the lower section of the panel.



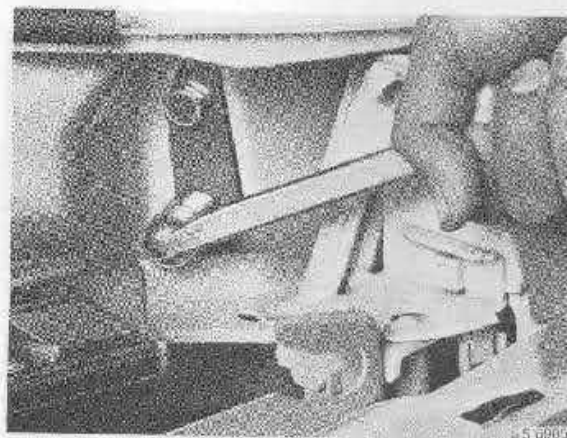
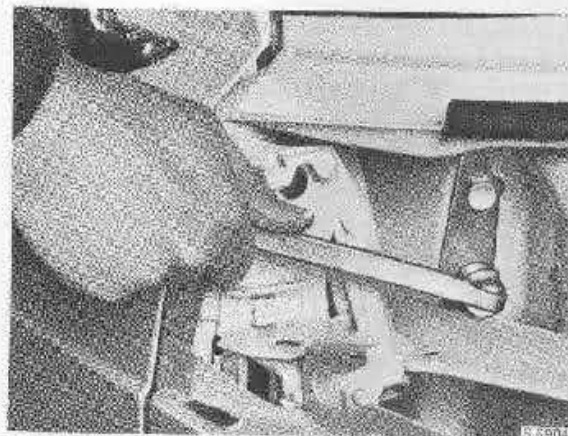
5. Remove the locking screw for the upper joint of the intermediate shaft in the steering assembly.
6. Unhook the brake and clutch pedal return springs.
7. Unplug the connectors for the instrument panel.



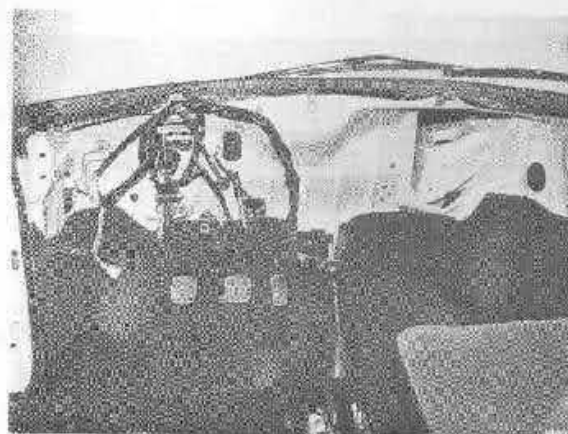
8. Remove the speaker/defroster grilles and undo the screws in the upper section of the panel.



9. Disconnect the speedometer cable from the speedometer.
10. Disconnect the lead from the right-hand door switch and pull the lead into the passenger compartment.
11. Remove the panel member retaining bolts.

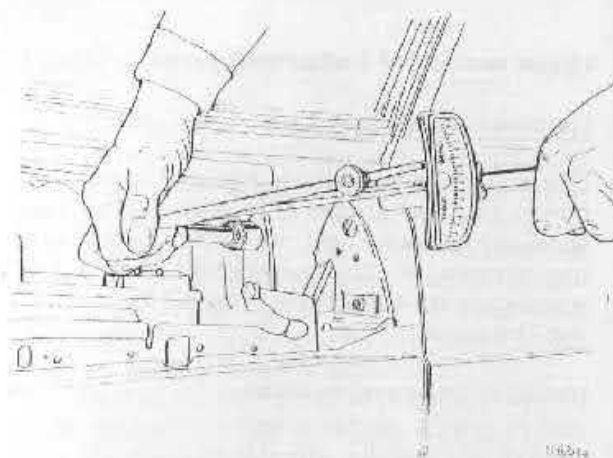


12. Disconnect the vacuum hose connections to the heater housing, located beneath the heater system air filter in the engine compartment. Lift the entire panel unit out of the car.



Refit in the reverse order.

Tightening torque
Panel member retaining bolts
40-54 Nm (4.0-5.4 kpm)



Switch panel

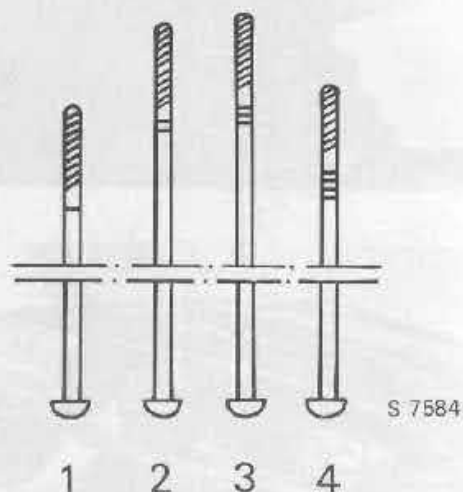
Removal and installation

Disconnect the positive battery lead. Remove the steering wheel. Remove the four panel screws. Tilt the panel back and disconnect the electrical connections, and the hose connections at the vacuum distributor. Lift out the panel.

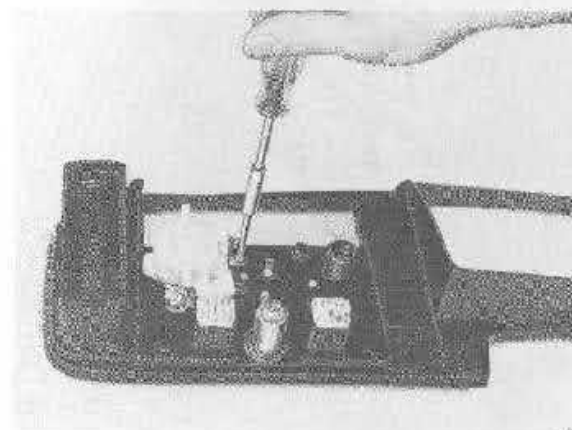
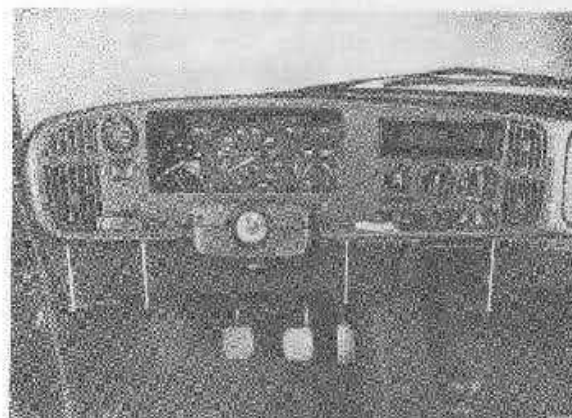
Install in the reverse order.

Note

The lengths of the four switch panel retaining screws are different. For easy identification, the screws have grooves in them, as shown below.



Switch panel screws
Length of screws
1. 176 mm (6.93 in)
2. 205 mm (8.07 in)
3. 210 mm (8.27 in)
4. 189 mm (7.44 in)



Removing the vacuum distributor

Upper section of instrument panel

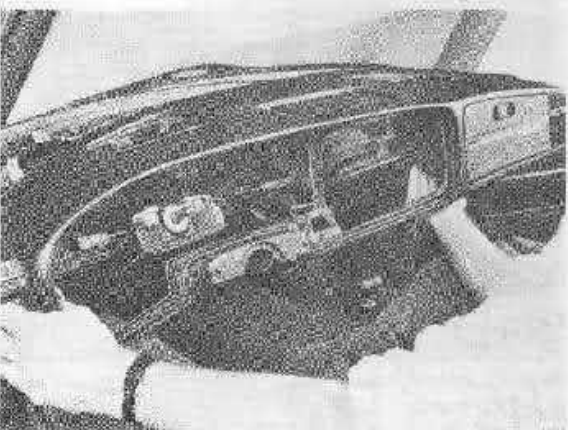
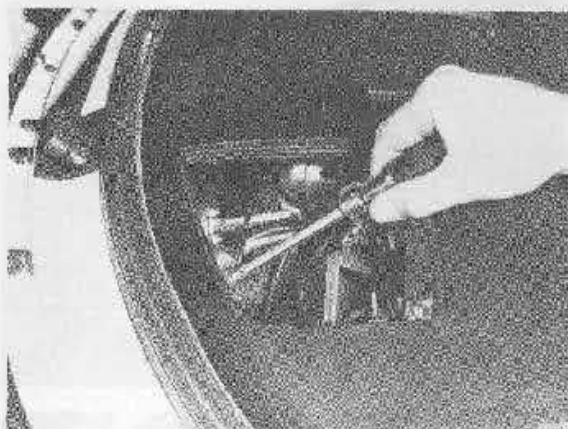
Removal and installation

Disconnect the positive battery lead. Remove the switch panel. Remove the two speaker/defroster grilles. Undo the retaining screws at the windshield. Undo the screws under the glove compartment. Lift out the panel.

Install in the reverse order.



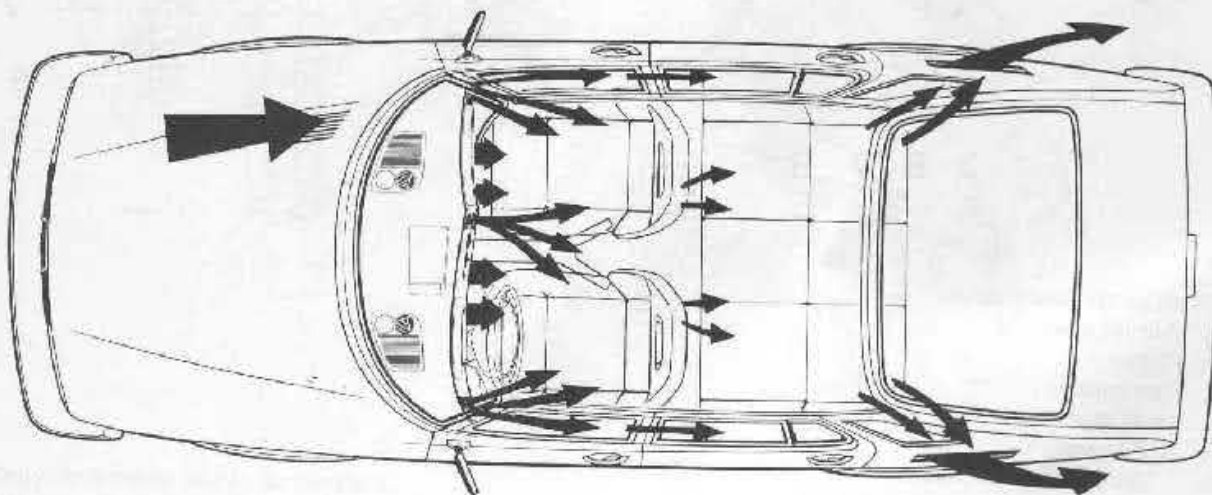
Installing the vacuum distributor



Heating and ventilation system, air conditioning

General

Air is drawn in through the air intake on the right of the hood by the heater fan or ram effect caused by the motion of the car. The air passes through a powerful filter which separates out particles of dust and dirt. It then passes through the fan casing and heat exchanger, after which it is directed through various ducts to different outlets in the instrument panel and floor area. Air from the passenger compartment is evacuated through special evacuation boxes in the luggage compartment.



Air flow, heating and ventilation system

Functional description

The heating system operates as follows.

1. Vacuum-controlled valve operation directs air through the system.
2. Thermostatically controlled, manually operated water valve, regulating flow of water through heater unit.
3. Switch for regulation of fan speed.

The fan switch has three positions to select three fan speeds. The switch has no "off" position and current will always be fed to the fan unless the air distribution control is set to "0", when the circuit to the fan will be broken, regardless of the position of the fan switch.

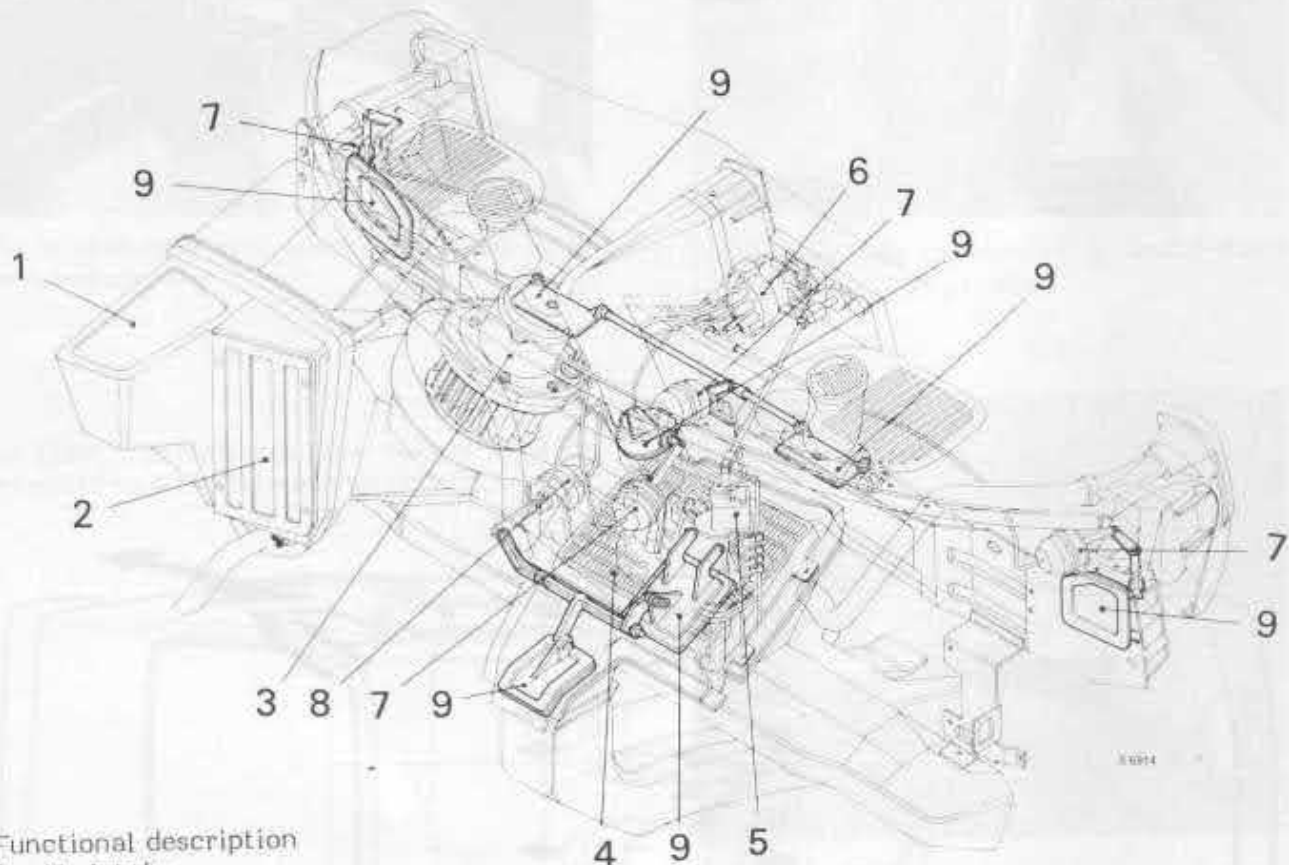
These functions are controlled by micro-switches, actuated by the vacuum distributor.

Positions  and  on the distribution control (vacuum distributor) are intended for the air conditioning unit, which can be incorporated in the ordinary heating and ventilation system. In cars not equipped with air conditioning, these positions are used when the admission of fresh air only is required.

As from 1984 model cars with air conditioning, a manually controlled air recirculation facility is provided. The air recirculation system will operate automatically when the air supply control is in position "0", or 

Note

The air recirculation system should not be used in cold weather as this may cause ice or mist to form on the windshield and windows.



Functional description

1. Air intake
2. Filter
3. Fan motor
4. Heat exchanger
5. Water valve
6. Vacuum distributor (Air distribution control)
7. Vacuum servo, single-stage
8. Vacuum servo, two-stage
9. Vacuum-controlled air shutters

Apart from air to the central panel outlet, all air passes through the heat exchanger. The panel outlets can be closed and opened individually, and, consequently, if the central panel outlet is shut, all air entering the car can be heated. In cars with air conditioning, the temperature control is used to regulate the temperature of the incoming cooled air. The outer defroster nozzles for the side windows cannot be closed.

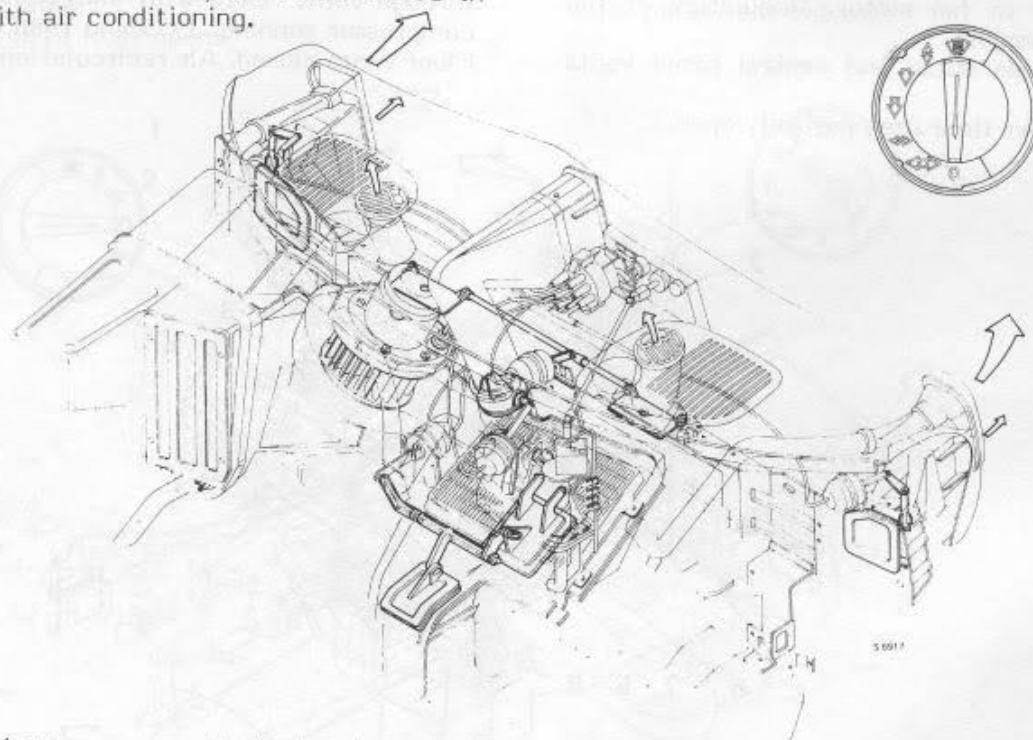
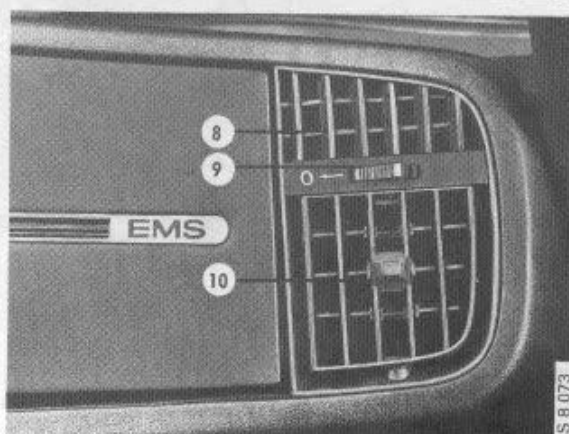
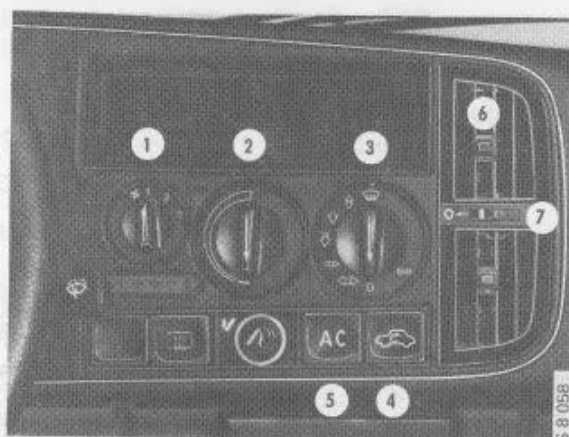
1. Fan switch
2. Temperature control
3. Air supply control (vacuum distributor)
4. Air recirculation switch
5. ON/OFF switch, air conditioning
6. Central panel vents
7. Shutter control
8. Side window defroster
9. Shutter control, outer panel vent
10. Outer panel vent.

The flow of air through the system: functions operative at different settings of the air distribution control

Position 0

No current to fan motor. All air valves closed, although leakage of air will occur through defroster and outer panel vents.

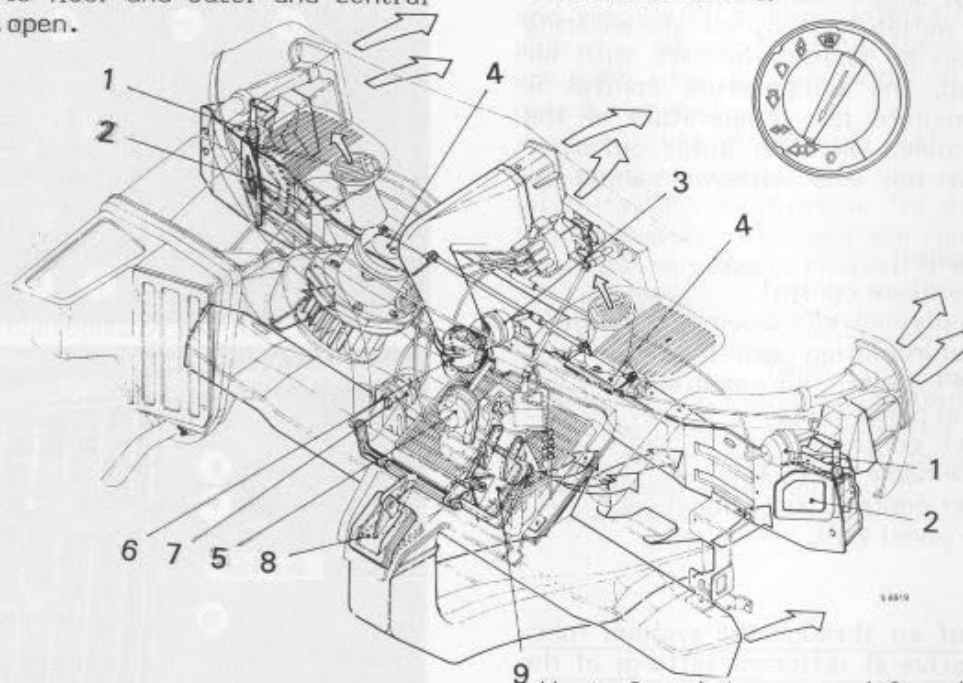
As from 1984 models, all vents closed in cars with air conditioning.



Only defroster servo activated.
All air valves closed.

Position  Fresh air (AC max)
 Current to fan motor, high speed.
 No regulation of fan speed possible.
 Air valves to floor and outer and central panel vents open.

Defroster vent closed but leakage of air through vent. Cars with air conditioning: compressor running. 1979 and 1980 models: Floor vents closed.

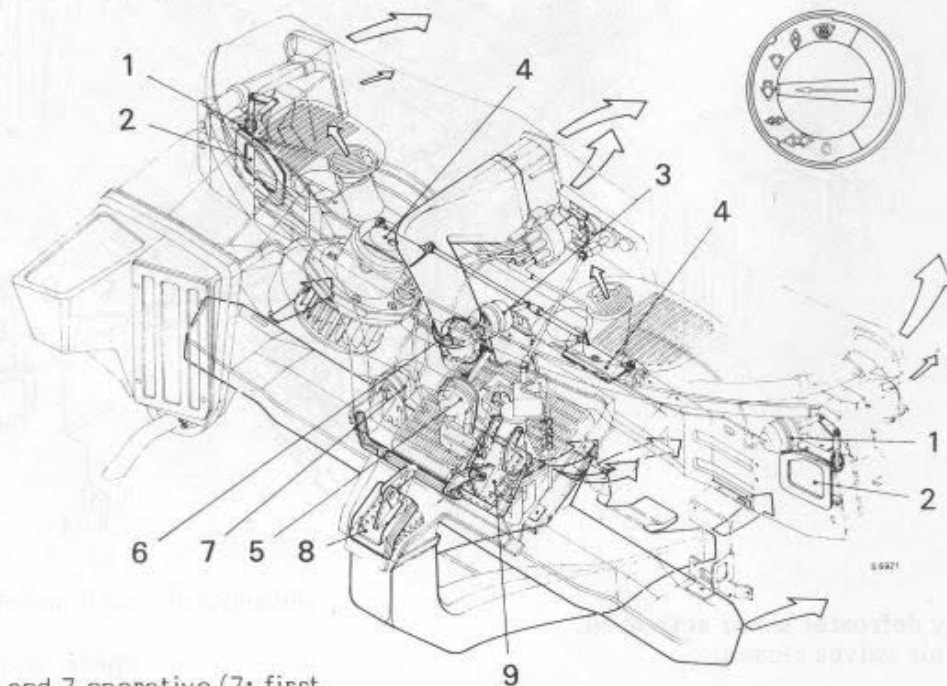


Vacuum servos 1, 5 and 7 operative (7: first stage). Cars with air conditioning: vacuum servo 7 not operating.

Vents 2 and 6 open and 8 and 9 partially open.
 Cars with air conditioning: vents 8 and 9 closed.

Position  Fresh air (AC fresh)
 Current to fan motor. Regulation of fan speed possible.
 Valves for outer and central panel vents open.
 Valves for floor area partially open.

Defroster vent closed but leakage of air through vent. Cars with air conditioning: compressor running. 1979 and 1980 models: Floor vents closed. Air recirculation.



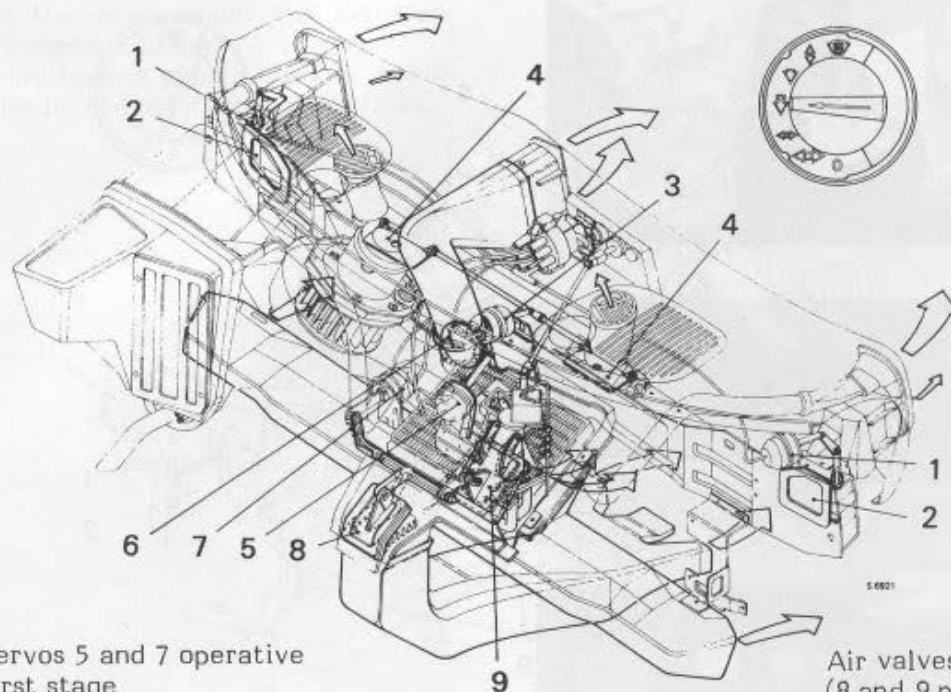
Vacuum servos 1, 5 and 7 operative (7: first stage). Cars with air conditioning: vacuum servo 7 not operating.

Vents 2, 6, 8 and 9 open (8 and 9 partially open). Cars with air conditioning: vents 8 and 9 closed.

Position  Ventilation

Current to fan motor. Regulation of fan speed possible.
Air valves to floor and central panel vents open.

Defroster and outer panel vents closed but leakage past valves.



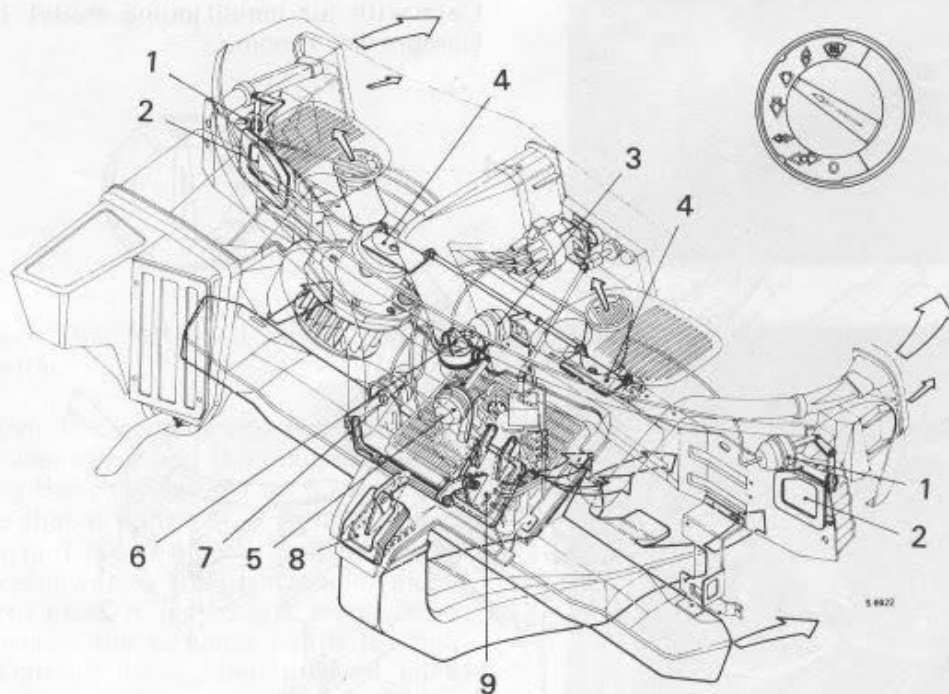
Vacuum servos 5 and 7 operative
7 in the first stage

Air valves 6, 8 and 9 open
(8 and 9 partially open)

Position  Floor

Current to fan motor. Regulation of fan speed possible.
Air valves to floor open.

Defroster, outer and central panel vents closed, leakage of air past defroster and outer panel vent valves.

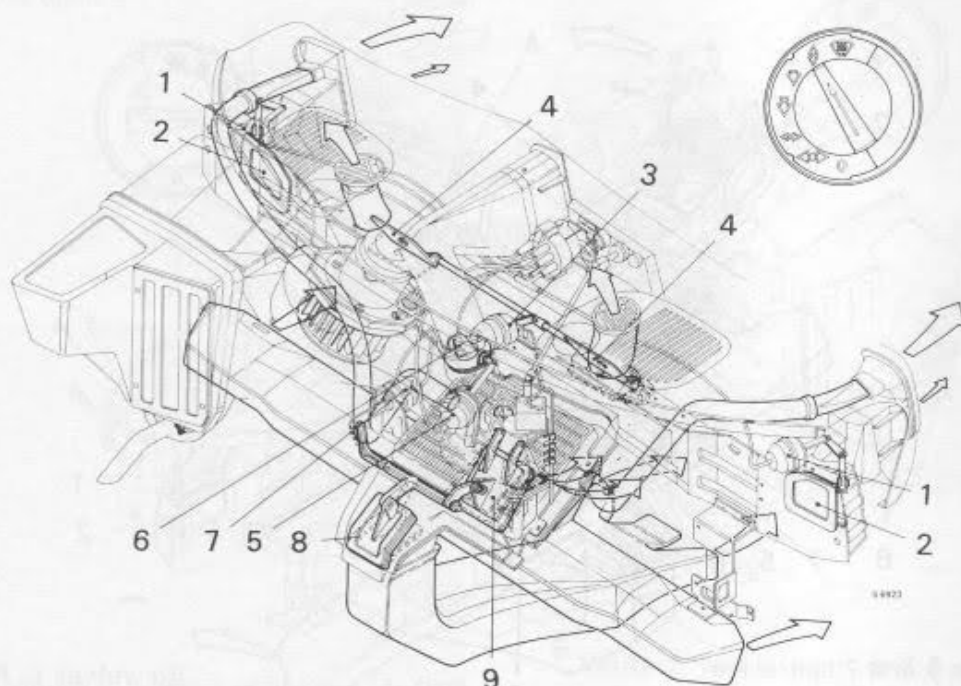


Vacuum servo 7 operative
(second stage)

Air valves 8 and 9 wide open

Position  Comfort
Current to fan motor. Regulation of fan speed possible.

Defroster valves open. Floor, outer and central panel vents closed, but air leakage past outer panel vent valves

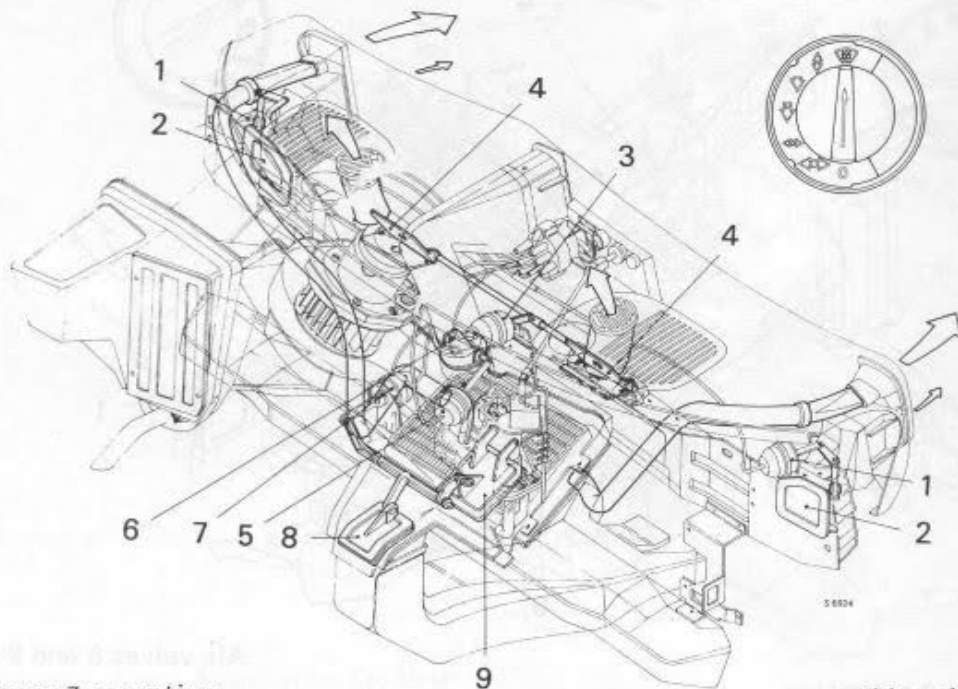


Vacuum servos 3 and 7 operative
(7 second stage)

Air valves 4, 8 and 9 open
(8 and 9 wide open)

Position  Defroster
Current to fan motor. Regulation of fan speed possible.

Defroster valves open. Floor, outer and central panel vents closed, but leakage past outer panel vent valves.
Cars with air conditioning model 1979-80:
Compressor running.



Vacuum servo 3 operative

Air valves 4 open

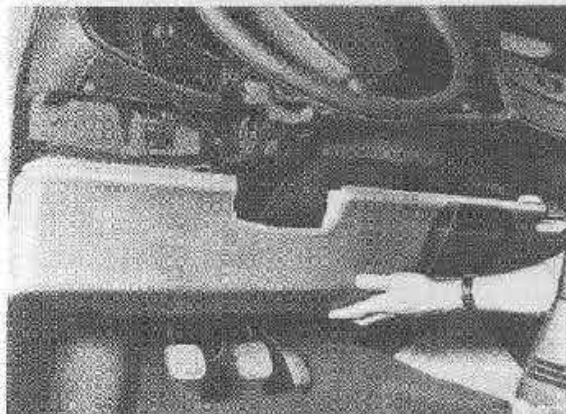
Changing the heat exchanger and water valve

To change the heat exchanger and water valve, remove them as an integral unit.

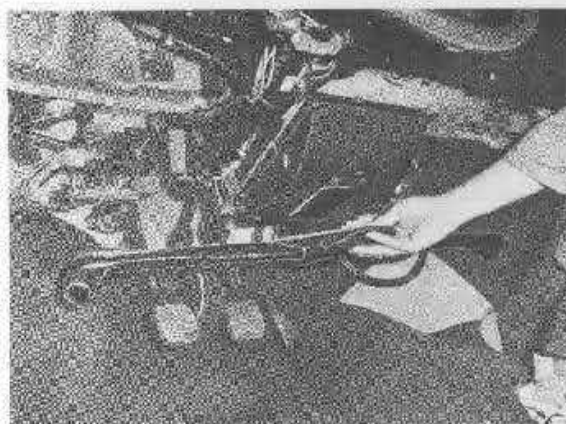
1. Remove the cover under the switches on the steering column
2. Some cars have a centre console which must also be removed (see page 853-2).



3. Remove the lower section of the instrument panel.

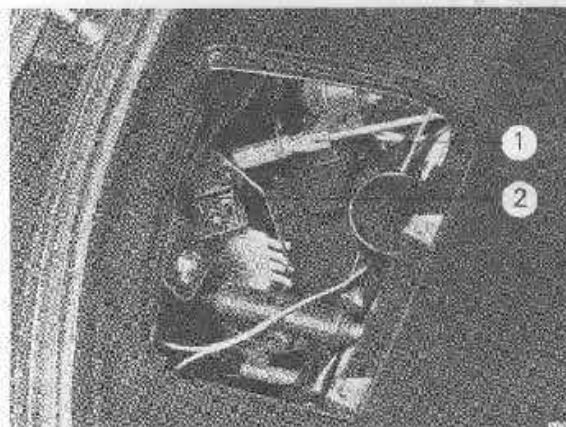


4. Remove the air diffuser (5 screws).



5. Remove the left-hand defroster/speaker grille

6. Remove the control rod from between the water valve and the control knob by sliding the rod forward as far as it will go, so that it comes free from the knob. Next, pull the rod back to free it from the water valve. The plastic joint at the control knob is accessible from underneath once the switches below the heater controls have been pressed backwards.



1. Control rod, water valve
2. Water valve

7. Remove the lower section of the heater housing.



8. Drain off sufficient coolant to enable the hoses to the water valve in the engine compartment to be disconnected without spillage. To prevent coolant leaking onto the carpeting, plug the hose ends before removing the heat exchanger/water valve.

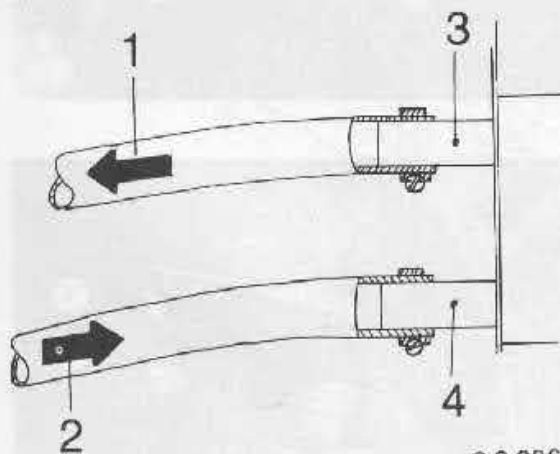
9. Separate the heat exchanger with water valve from the heater housing and guide it backwards and downwards. To make sure there is room for the water valve to pass between the heater housing and the steering column, unhook the brake pedal return spring and depress the pedal slightly.



10. Remove the capillary tube from the heat exchanger (where applicable) and the screws/bolts in the water valve flange.

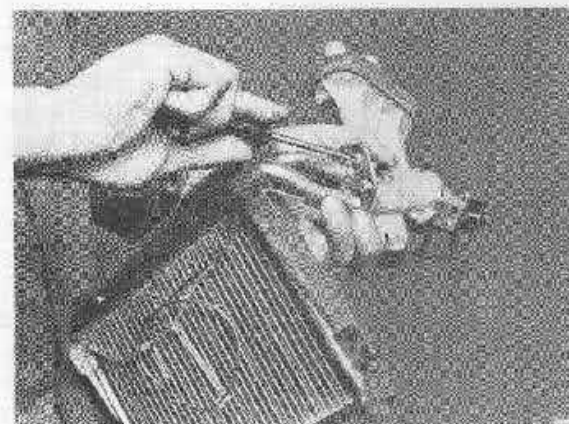
11. Always renew the gasket for the water valve flange. Handle the capillary tube with care, never allowing it to become kinked or creased.

Refit in the reverse order.

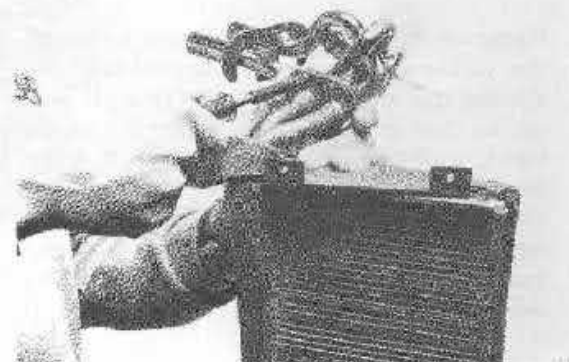


Correct water hose connection

1. To water pump
2. From inlet manifold
3. Upper connection on water valve
4. Lower connection on water valve



Earlier design

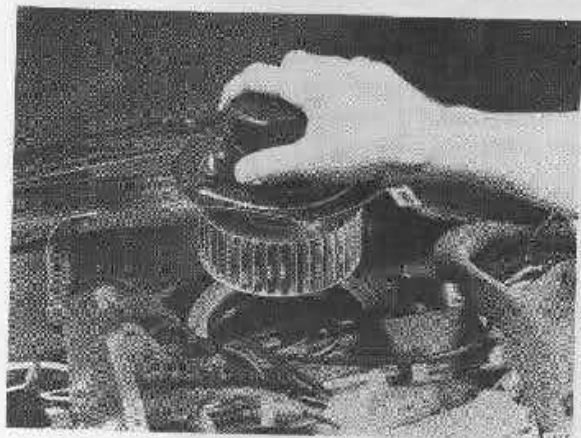


Later design

Removing the fan motor

1. Disconnect the positive battery lead.
2. Remove the switch panel.
3. Remove the upper section of the instrument panel.
4. Disconnect the leads to the fan motor.
5. Remove the attachment screws for the right-hand defroster valve housing.
6. Remove the fan motor retaining screws.
7. Lift out the fan motor.

Refit in the reverse order.



Changing the air filter in the heating system

Undo the four retaining screws and withdraw the filter. Fit a new filter. Change the filter every 18 000 miles (30 000 km).

Caution

Avoid touching the filter element. The filter element contains glass fibres which can cause skin irritation. WEAR PROTECTIVE GLOVES WHEN HANDLING THE FILTER.

1983 models onwards: The cover is incorporated in the filter casing and secured by four plastic clips. To remove the cover, turn the clips a 1/4 turn clockwise or anti-clockwise. To refit, reverse the removal procedure.

