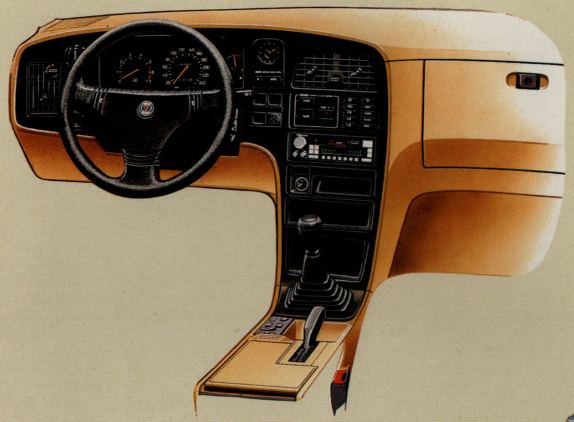
SAAB

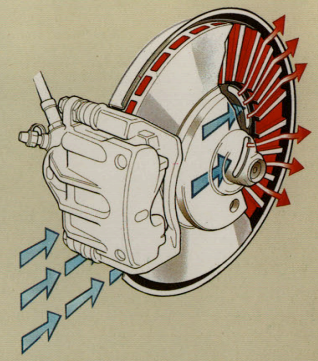
9000

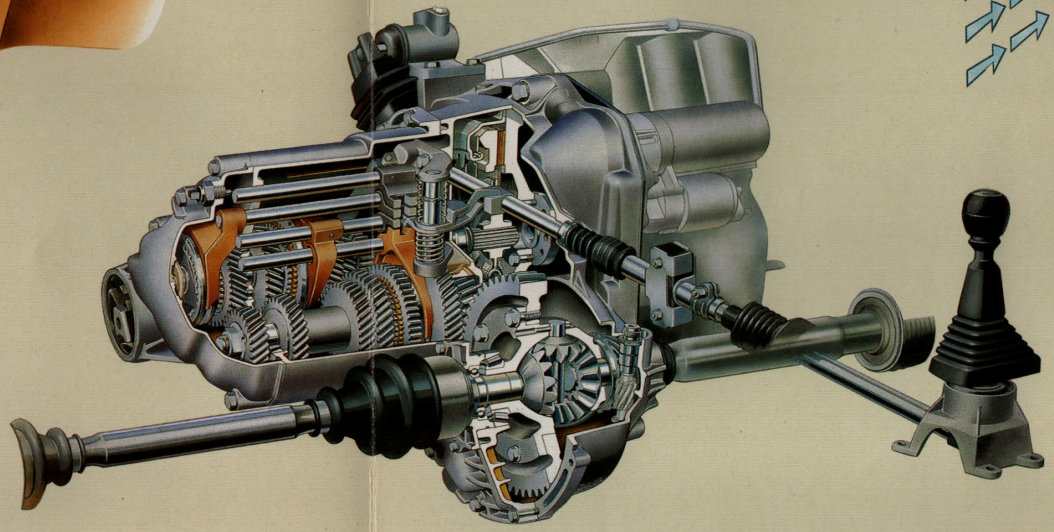
SERVICE MANUAL

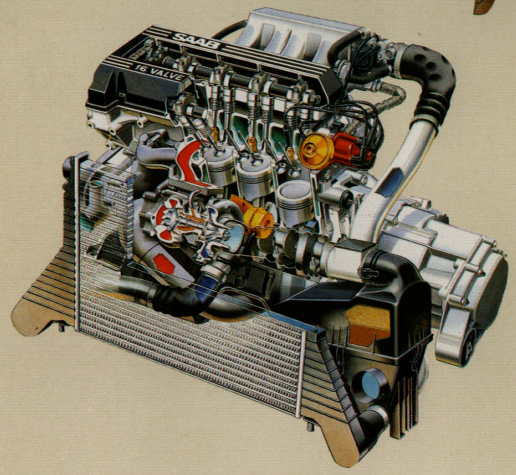
0 Technical data

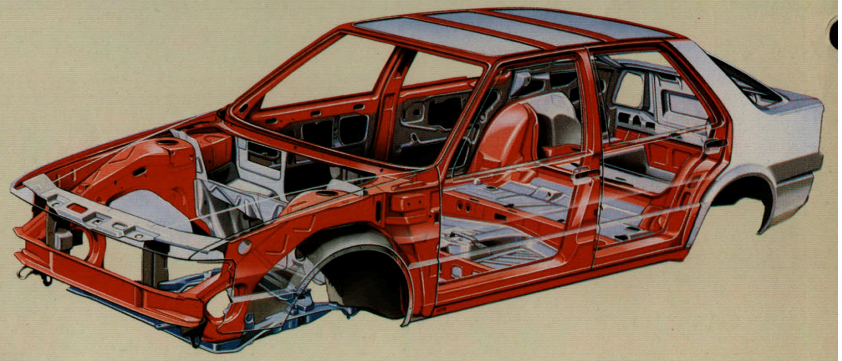
M 1986–1988–








SAAB
16 VALVE



SAAB 9000

SERVICE MANUAL

0 Technical data

M 1986–1988–

Units

The basic and derived units used throughout the Service Manual are in accordance with the SI system.

For users not familiar with the SI units, some non-Continental units are given in brackets after the respective SI unit.

The following symbols and abbreviations are used:

SI unit	Equivalent unit and symbol
mm	inch (in)
kg	pound (lb)
N	pound-force (lbf)
Nm	pound-force foot (lbf ft)
bar	pound-force per square inch (lbf/in^2) (Also abbreviated: psi)
l (litre)	US liquid quart (liq qt) (Also abbreviated: qts) US gallon (USgal)
°C	°F

Conversion factors

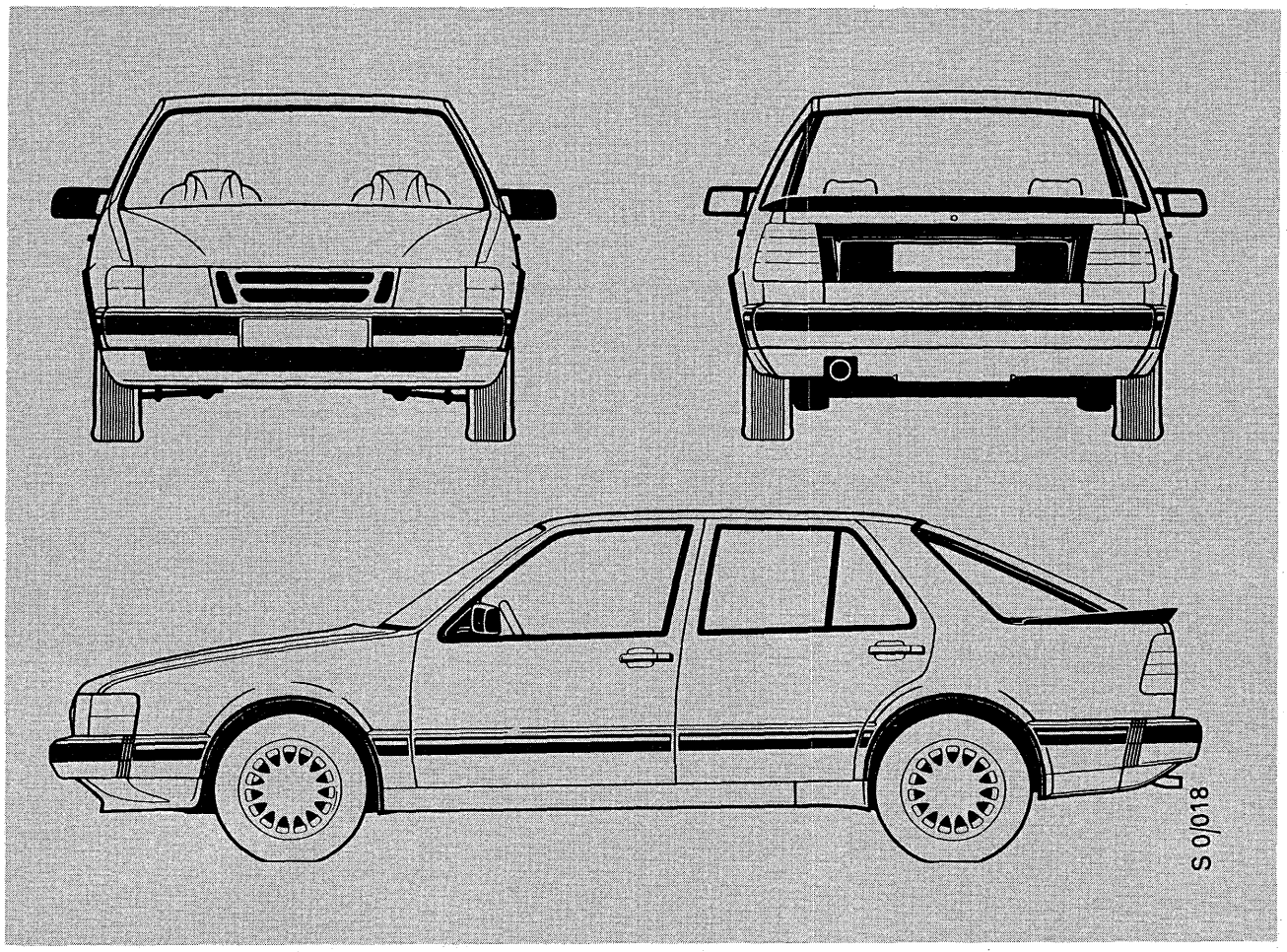
1 in = 25.4 mm	1 mm = 0.039 in
1 lbf = 4.45 N	1 N = 0.23 lbf
1 lbf ft = 1.36 Nm	1 Nm = 0.74 lbf ft
1 psi = 0.07 bar	1 bar = 14.5 lbf/in^2
1 liq qt = 0.95 l	1 l = 1.05 liq qt
1 US liq qt = 0.83 UKqt	1 USgal = 0.83 UKgal

Market codes

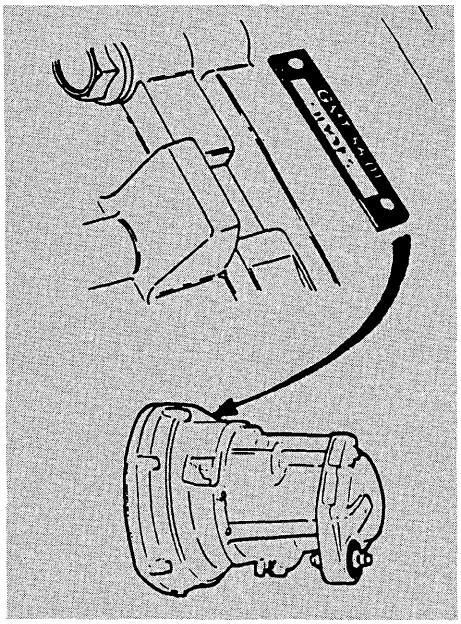
The codes refer to market specifications

AT	Austria	FR	France
AU	Australia	GB	Great Britain
BE	Belgium	GR	Greece
CA	Canada	IS	Iceland
CH	Switzerland	IT	Italy
DE	Germany	JP	Japan
DK	Denmark	ME	Middle East
ES	Spain	NL	Netherlands
EU	Europe	NO	Norway
FE	Far East	SE	Sweden
FI	Finland	US	USA

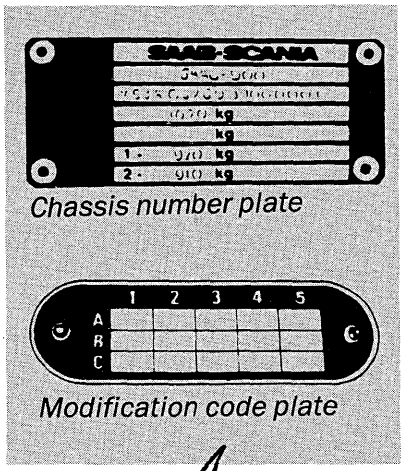
Production: Technical Publications, Saab-Scania, Trollhättan, Sweden



Saab 9000



Transmission number, manual transmission

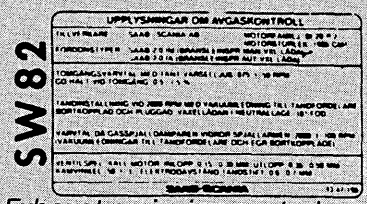


Chassis number plate

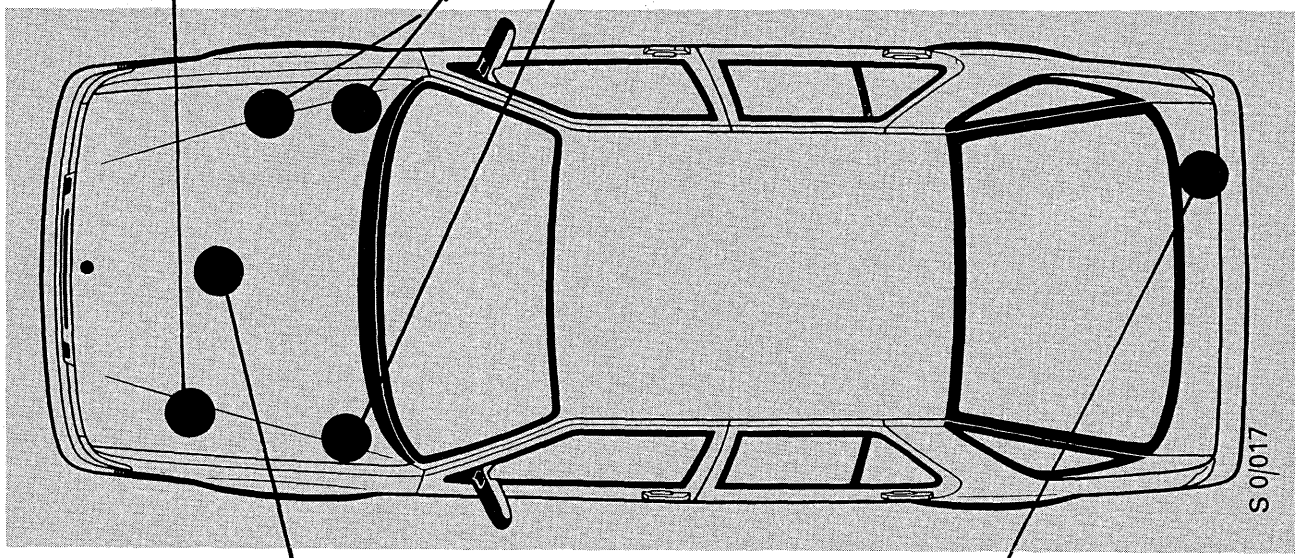
Modification code plate

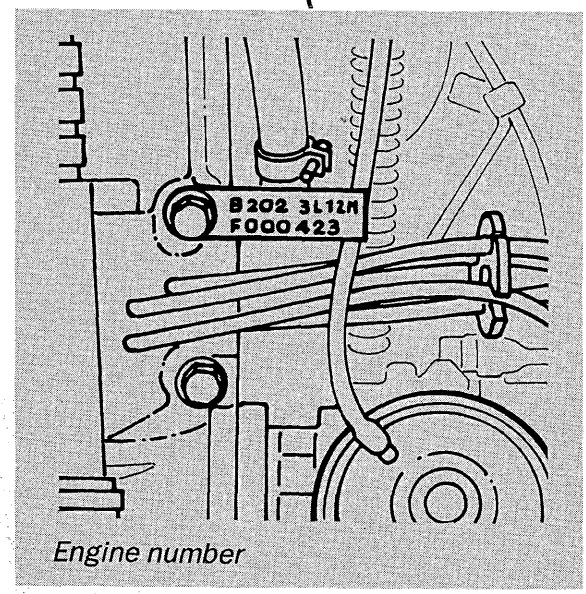
Body colour code

Trim colour code

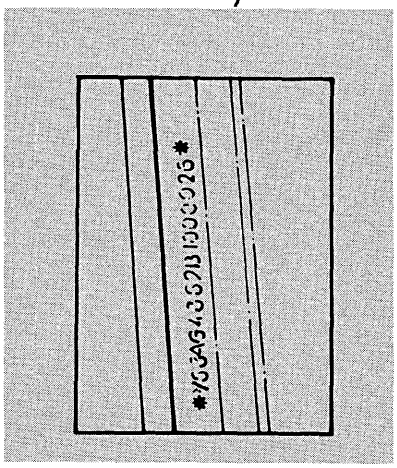


Exhaust emission control data





Engine number



Chassis number (punched in car body left of right rear light behind panel in luggage compartment)

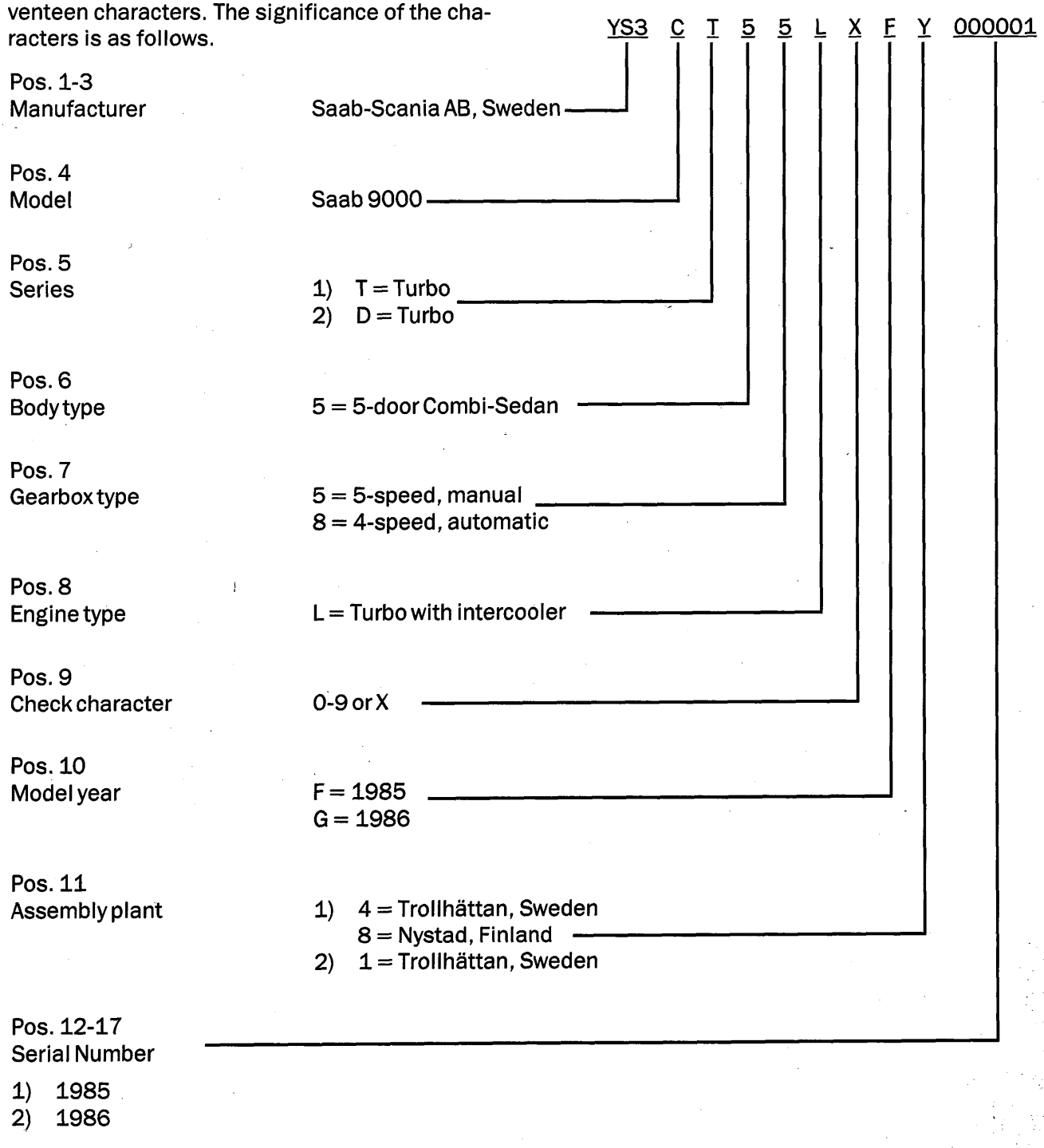
General

Chassis and engine numbers

The location of the chassis and engine numbers are shown on the facing page. For positive identification of a car or engine, these numbers, together with the odometer reading, should be quoted in all correspondence, e.g. when claims are being submitted. When a replacement engine is fitted, the number of the old engine must always be stamped in the place provided for that purpose. This is essential to obviate subsequent problems should the car be taken out of the country.

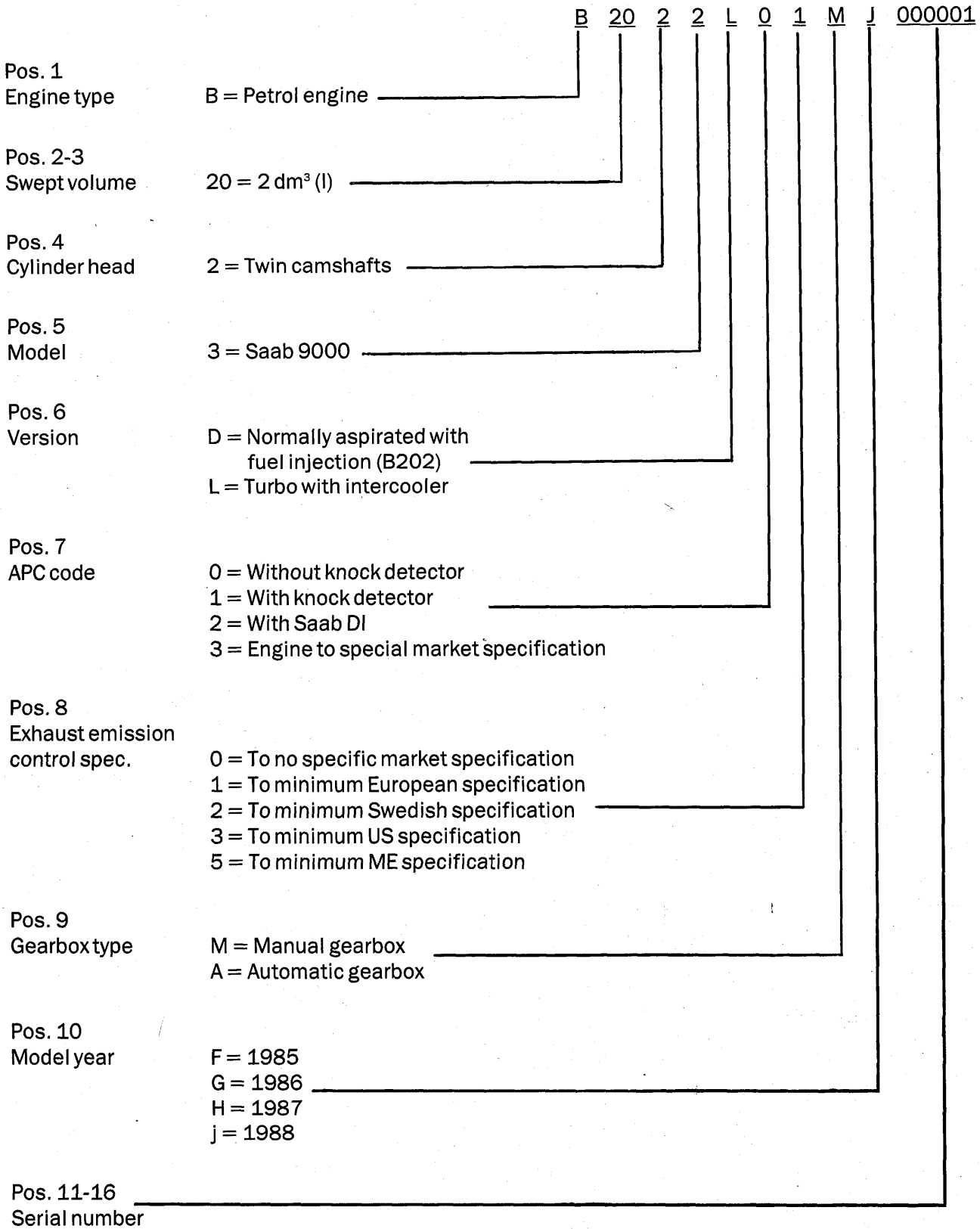
Vehicle Identification Number, VIN (chassis number)

The vehicle identification number contains seventeen characters. The significance of the characters is as follows.

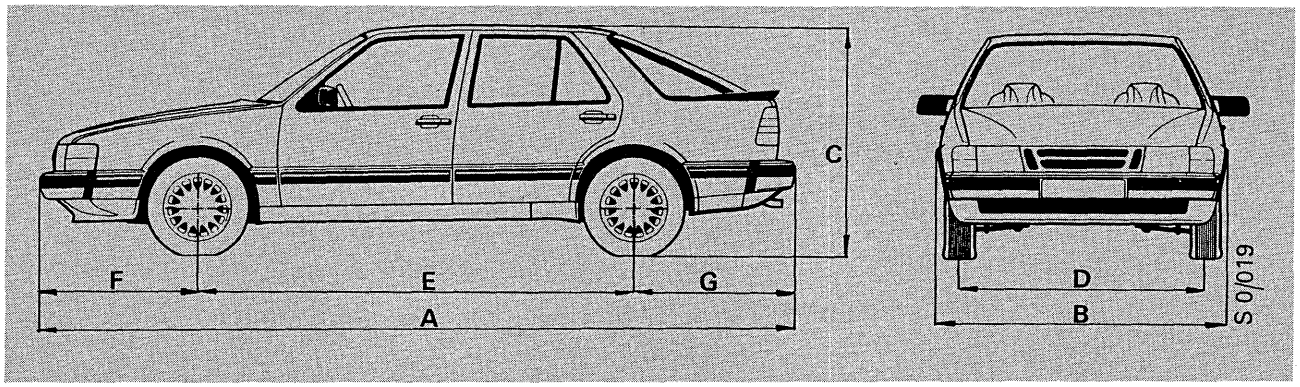


1) 1985
2) 1986

Engine Number

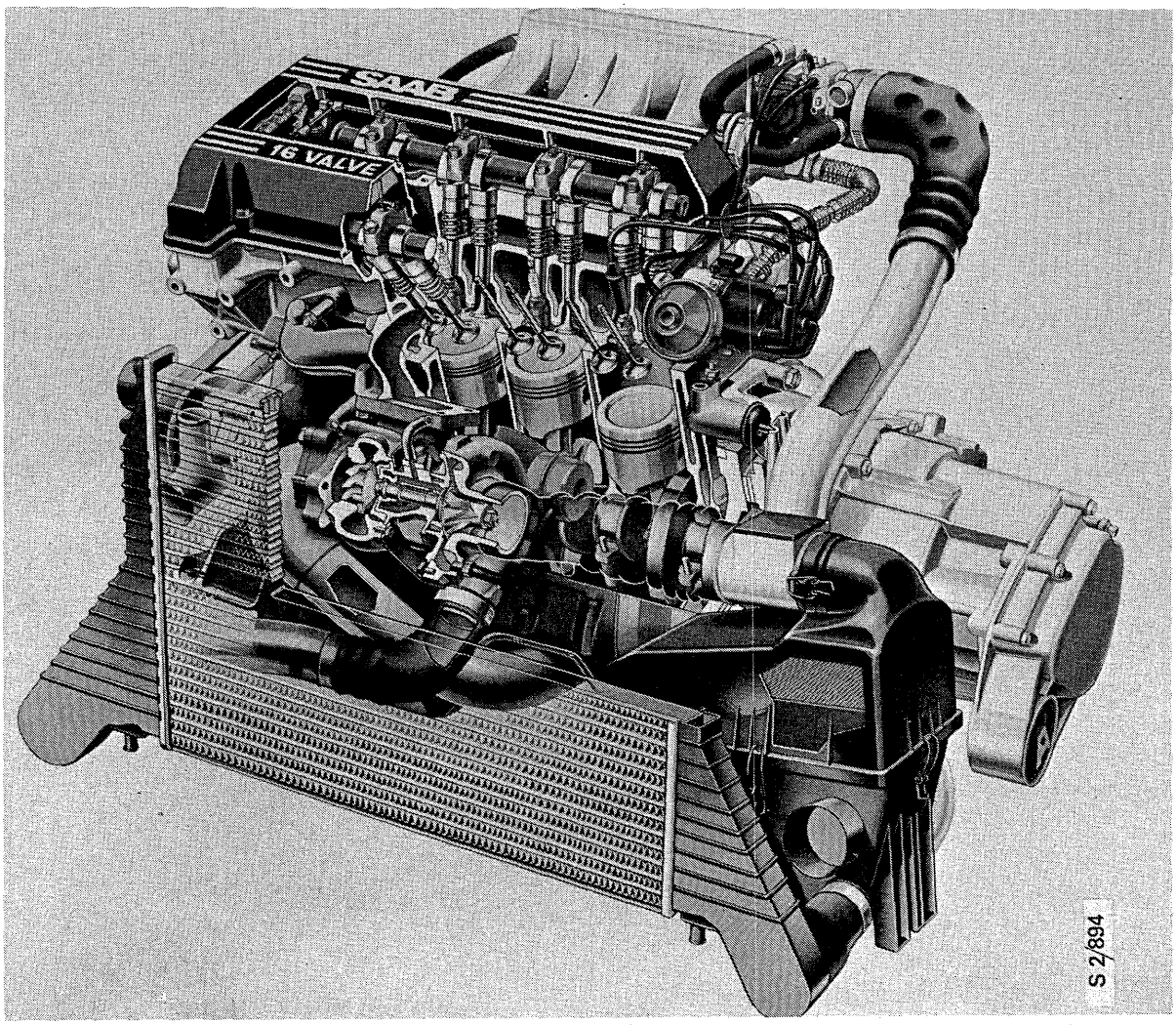


General data



A	Overall length	mm (in)	4620 (182)
B	Overall width	mm (in)	1764 (69)
C	Maximum height	mm (in)	1430 (56)
	Ground clearance	mm (in)	150 (5,9)
D	Front track	mm (in)	1522 (60)
	Rear track	mm (in)	1492 (58,5)
E	Wheelbase	mm (in)	2672 (104)
F	Front overhang	mm (in)	965 (38)
G	Rear overhang	mm (in)	983 (38,5)
	Turning-circle radius	m (in)	5.45 (215)
	Service weight	kg (lbs)	1295-1400 (2830-3050)
	Gross weight	kg (lbs)	1780 - 1810 (3900-4000)
	Max. axle load, front	kg (lbs)	940 (2050)
	Max. axle load, rear	kg (lbs)	860 (1900)
	Max. roof-rack load	kg (lbs)	100 (220)
	Max. trailer weight	kg (lbs)	1600 (3500)

Engine



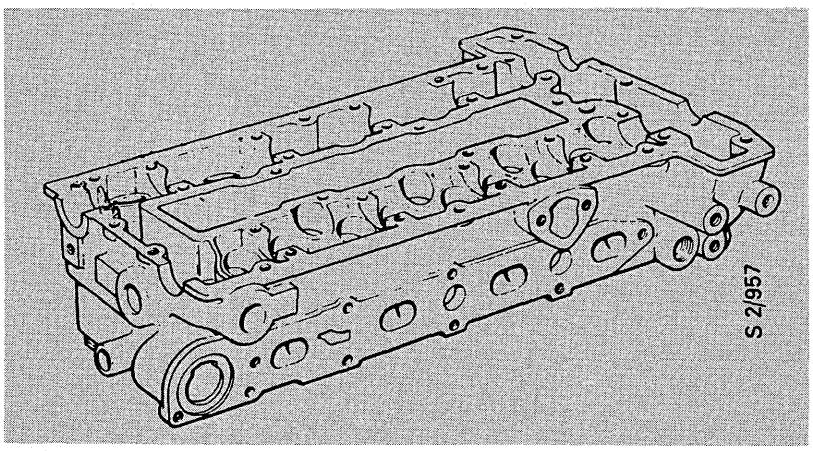
General

Type		4-cylinder, 16-valve, 4-stroke twin overhead camshaft engine with turbocharger, intercooler and APC. Transverse mounted.
Cylinder bore	mm (in)	90 (3.54)
Stroke	mm (in)	78 (3.07)
Swept volume	cm^3 (in^3)	1985 (121)
Firing order		1-3-4-2
Weight	kg (lb)	approx. 150 (330)

Rating, compression ratio, fuel octane number

Engine	Model year	Fuel octane number	Unleaded fuel	Compression ratio	Rating DIN kW (hp) at rpm	Torque DIN Nm (lbf ft) at rpm
B202S	1986-	Min 91 Rek 98	X	10.1	96 (130)/5500	173 (128)/3000
B202S kat	1986-	Min 91 (87) Rek 95 (91)	X	10.1	92 (125)/5500	170 (126)/3000
B2002 Turbo	1985-	Min 91 Rek 98	X	9.0	129(175)/5300	270(188)/3000
B202 Turbo kat	1986-	Min 91(87) Rek 95(91)	X	9.0	118 (160)/5500	255 (188)/3000

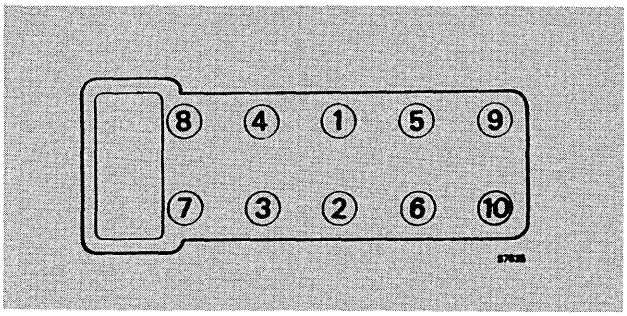
The fuel octane numbers are minimum values and may differ from those given in the Owners Manual since this was written to meet the then actual fuel quality.



Cylinder head

Height of new cylinder head	mm (in)	140.5 ± 0.1 (5.532 ± 0.004)
Min. after regrinding	mm (in)	140.1 ± 0.1 (5.516 ± 0.004)

Tightening sequence



Tightening torques, -1987

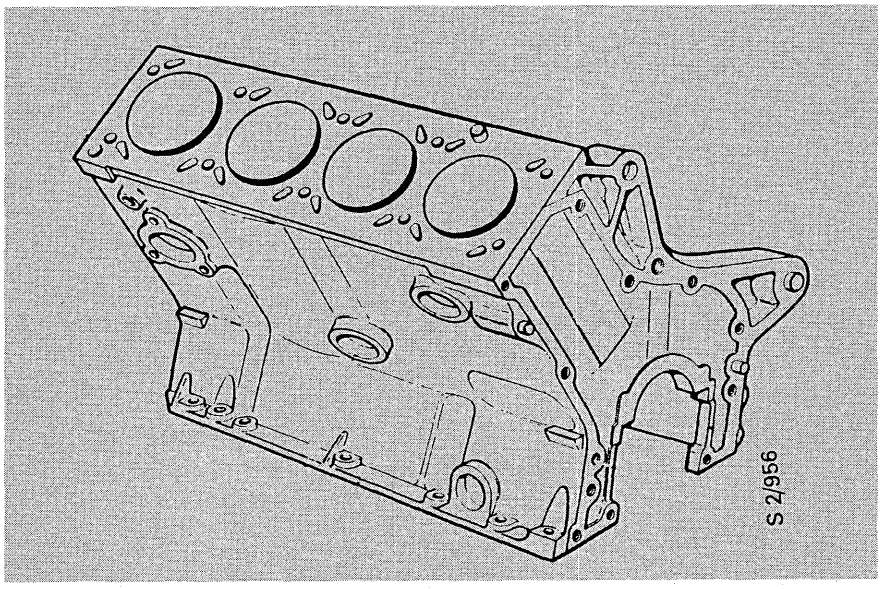
The specified torques apply to lubricated bolts and washers and to cylinder heads fitted with a new gasket (75 16 529)

Stage I	Nm (lbf ft)	60 (44)
Stage II	Nm (lbf ft)	80 (59)
Stage III		Run the engine to normal temperature and then allow it to cool for 30 minutes.
Stage IV	Nm (lbf ft)	Slacken and then retighten each bolt to 80 (59)
Stage V		Tighten by turning through a further 90°

Tightening torques, 1988-

The specified torques apply to lubricated bolts and washers and to cylinder heads fitted with a new gasket (75 61 301)

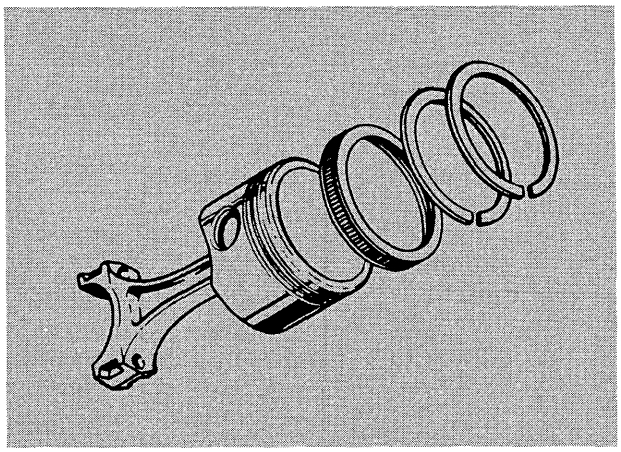
Stage I	Nm (lbf ft)	60 (44)
Stage II	Nm (lbf ft)	80 (59)
Stage III		Tighten by turning through a further 90°



Cylinder block

Cylinder bore

Standard (A)	mm (in)	90.000-90.010 (3.5433-3.5437)
Standard (B)	mm (in)	90.010-90.020 (3.5437-3.5441)
First oversize	mm (in)	90.500 (3.5630)
Second oversize	mm (in)	91.000 (3.5827)

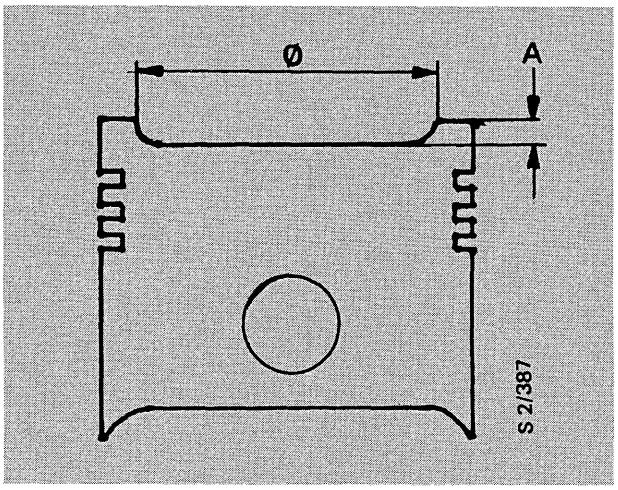


Pistons

Make		MAHLE
Piston speed at 5000 r/min	m/sek	13
Pistons of different makes must not be fitted in the same engine		

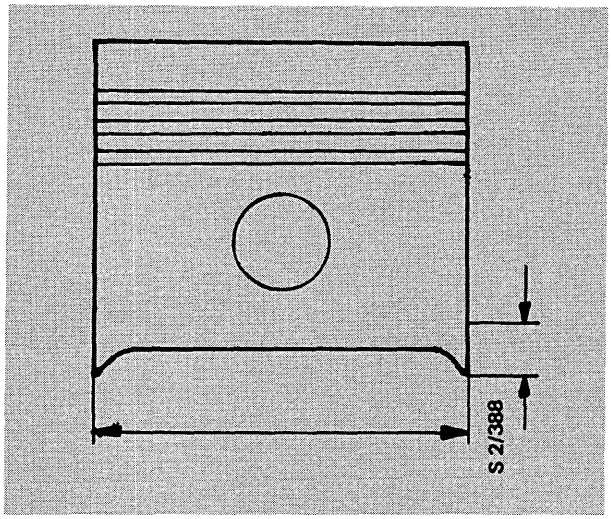
Piston type

Engine	Year model		Ø	A
Turbo 16	1986-	mm (in)	64 (2.52)	3,85 (0.152)



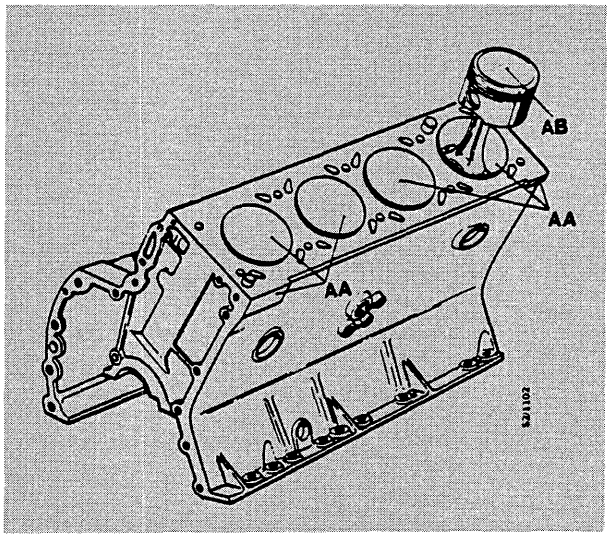
Piston diameter, classification

Measured at right angles to the gudgeon pin hole and 16 mm (0.63 in) above the bottom edge of the skirt.



Classification of pistons and cylinder bores

The piston class is stamped on the piston crown. The piston classes for service are:
AB
B
C
The cylinder class is stamped on the cylinder plane and is specified for each cylinder. The cylinder class may occur in any cylinder block.

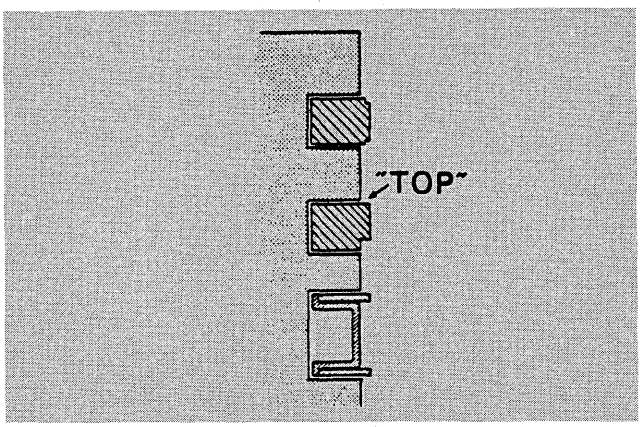


		Turbo "MAHLE"
Standard A (not carried as a spare part)	mm (in)	89.960-89.970 (3.5417-3.5421)
Standard AB	mm (in)	89.970-89.978 (3.5421-3.5424)
Standard B	mm (in)	89.978-89.986 (3.5424-3.5427)
Standard C	mm (in)	89.986-90.002 (3.5427-3.5434)
First oversize (0.5)	mm (in)	90.460-90.475 (3.5614-3.5620)
Second oversize (1.0)	mm (in)	90.960-90.975 (3.5811-3.5817)

Piston clearance	mm (in)	0.022-0.050 (0.0008-0.0020)

Resulting piston clearance

Classification	Piston/cyl comb.	Clearance limits, 1/1000 mm
	Piston make	Turbo
	A/A	Mahle
	AB/A	30-50
	AB/A	22-40
	B/A	32-50
	B/B	14-32
	C/B	24-42
		8-34



Piston rings

		Top compression ring	Second compression ring	Scraper ring
Width (thickness)	mm (in)	(1.73-1.75) (0.068-0.069)	1.98-1.99 (0.078-0.078)	2.63-2.73* (0.104-0.108)
Side clearance in groove	mm (in)	0.050-0.082 (0.002-0.003)	0.040-0.072 (0.002-0.003)	
Working gap in new cylinder	mm (in)	0.35-0.55 (0.014-0.022)	0.30-0.45 (0.012-0.018)	0.38-1.40** (0.015-0.055)

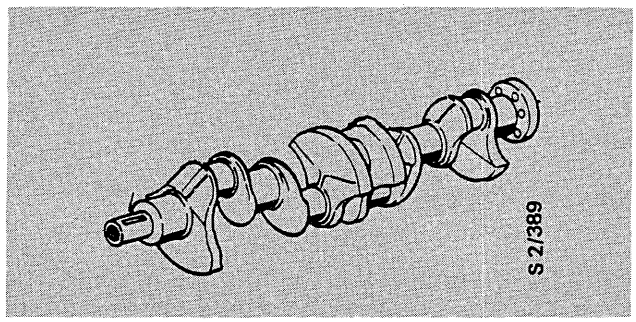
* Segment width (thickness): 0.58 - 0.64 mm (0.023 - 0.025 in)
** Applies to segment

Gudgeon pins

Diameter	mm (in)	23.996-24.000 (0.9447-0.9449)
Fit	mm (in)	0.005-0.014 (0.0002-0.0006) (sliding fit under gentle thumb pressure)

Connecting rods

Diameter of big-end	mm (in)	56.000-56.019 (2.2047-2.2055)
Diameter of small-end bush (fitted)	mm (in)	24.005-24.010 (0.9451-0.9453)
Maximum permissible weight variation per set	g (oz)	9 (0.32)



Crankshaft

Maximum variation in straightness	mm (in)	0.10 (0.004)
End float	mm (in)	0.08-0.28 (0.003-0.011)
Max. ovality of journals	mm (in)	0.05 (0.002)
Max. taper of journals	mm (in)	0.05 (0.002)
Radius of main journal fillet	mm (in)	2.2-2.5 (0.09-0.10)
Max clearance of main journal fillet	mm (in)	0.020-0.062 (0.0008-0.0024)

Colour markings of main bearing and big-end bearing shells	Thin	Thick
Standard	Red	Blue
First undersize	Yellow	Green
Second undersize	White	Brown

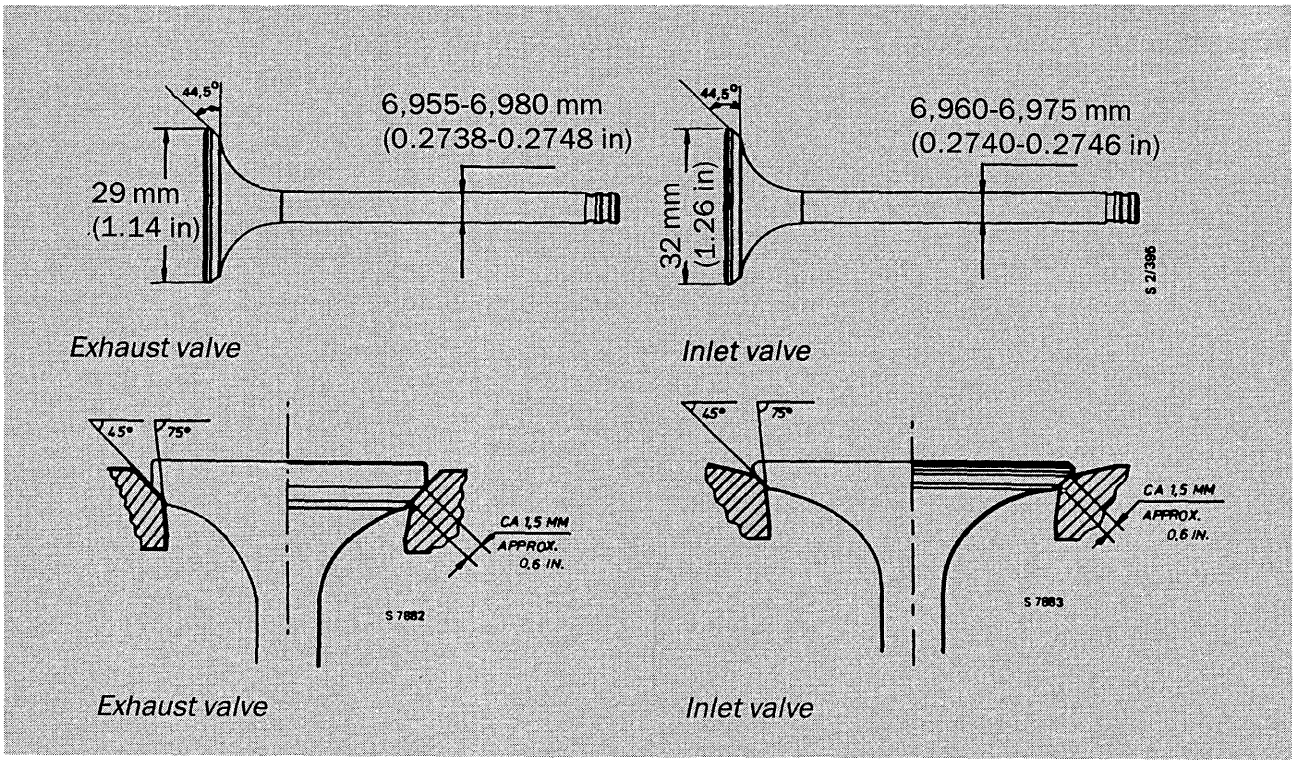
Crank pin diameter

Standard	mm (in)	51.981-52.000 (2.0465-2.0472)
First undersize	mm (in)	51.731-51.750 (2.0366-2.0374)
Second undersize	mm (in)	51.481-51.500 (2.0268-2.0276)
Third undersize	mm (in)	51.237-51.250 (2.0172-2.0177)
Fourth undersize	mm (in)	50.987-51.000 (2.0074-2.0079)
Bearing clearance	mm (in)	0.026-0.062 (0.0010-0.0024)

Main journal diameter

Standard	mm (in)	57.981-58.000 (2.2827-2.2835)
First undersize	mm (in)	57.731-57.750 (2.2729-2.2736)
Second undersize	mm (in)	57.481-57.500 (2.2630-2.2638)
Third undersize	mm (in)	57.237-57.250 (2.2534-2.2539)
Fourth undersize	mm (in)	56.987-57.000 (2.2436-2.2441)

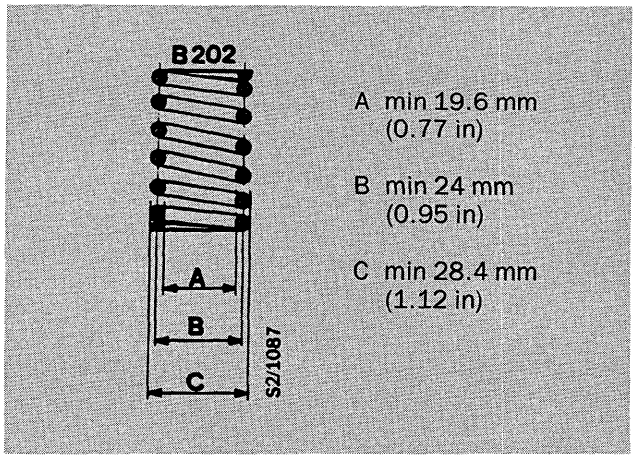
Valve mechanism



Note
The exhaust valves are stellited and should therefore not be machined. The use of grinding paste is the only method of grinding recommended.

Valve guides

Length	mm (in)	49.0 (1.93)
Outside diameter	mm (in)	12.039-12.050 (0.4740-0.4744)
Bore for valve guides in cylinder head	mm (in)	12.000-12.018 (0.4724-0.4731)
Max. clearance between valve stem and valve guide	mm (in)	0.5 (0.02) measured on valve head raised 3 mm (0.12) above seat



Valve springs

Length when fitted	mm (in)	37.0 (1.46)
Free length	mm (in)	45.0 ± 1,5 (1.772 ± .050)
Length when under load of 595-645 N (131-141 lbf)	mm (in)	28.4 (1.12)

Cam followers

Diameter	mm (in)	32.959-32.975 (1.2976-1.2982)
Height	mm (in)	26.0 (1.024)
Bore for cam followers in cylinder head (camshaft bearing assembly)	mm (in)	33.000-33.016 (1.2992-1.2998)

Camshafts

Number of bearings		5
Bearing diameter	mm (in)	28.922-28.935 (1.1387-1.1392)
End float	mm (in)	0.08-0.35 (0.003-0.014)

Cam lift at 0	Year model		Inlet valves	Exhaust valves
B202 Turbo cat	1986	mm (in)	8.65/6.65 (0.3406/0.2618)	8.65 (0.3406)
B202 Turbo, S	1986–	mm (in)	8,65	8,65
B202 Turbo cat	1987–		(0.3406)	(0.3406)

Valve timing

(at design clearance of 0.35 mm (0.014 in) for inlet valves and 0.55 mm (0.022 in) for exhaust valves)

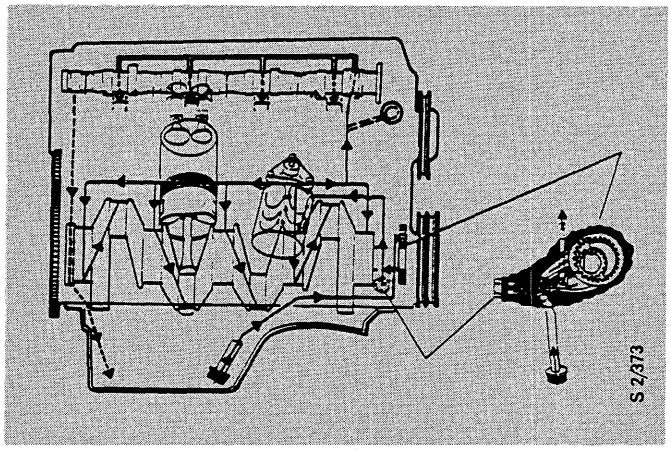
		Inlet valves		Exhaust valves	
Valves	Year model	Open	Close	Open	Close
9000 Turbo	1986- degrees (°)	16 BTDC	56 ABDC	61 BBDC	13 ATDC
9000S	1987- degrees (°)	16 BTDC	44 ABDC	61 BBDC	13 ATDC

Tightening torques

	Torque (Nm)	Torque (lbf ft)	Dimension
Main bearings	110	81	M12
Big-end bearings	55	41	M10
Camshaft bearing caps	15	11	M8
Camshaft cover	15	11	M8
Crankshaft pulley	190	140	M16
Flywheel	60	44	M10
Oil pump	8	5.9	M6
Chain tensioner	65	48	M10
Camshaft sprocket	65	48	M10
Inlet manifold	18	13.5	M8
Thermostat housing	18	13.5	M8
Throttle housing	18	13.5	M8
Exhaust manifold	25	19	M8
Timing cover	20	15	M8
Distributor	20	15	M8
Knock detector	20±5	15 ± 3.7	

All other bolts should be tightened as follows:

Dimension	Tightening torque	
	Nm	lbf ft
M5	5	3.7
M6	10	7.4
M8	20	15
M10	40	30



Lubricating system

Oil capacity including oil filter	liter (qts)	4,2 (4.5)
Volume of oil required to raise oil level from MIN mark on dipstick to MAX mark	liter (qts)	1,0 (1.1)
Grade of oil		9000 Turbo: Saab Turbo engine oil, or oil to API SF/CD or SF/CC service 9000S: According to API Service SF/CC
Viscosity		10W30 or 10W40. If these viscosities are unobtainable, 15W40 or 15W50 oil may be used. At constant temperatures of -20°C (-4°F) use 5W30

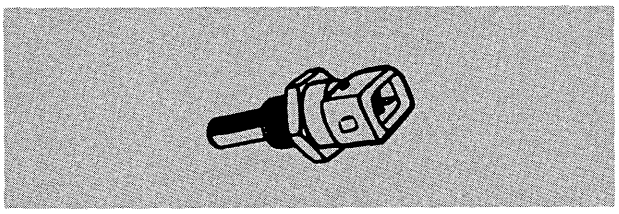
Oil pressure

Oil pump pressure-reducing valve opens at:	bar (psi)	3.6 - 5.2 (52.2 - 75.4)
Oil warning light comes on when pressure falls to:	bar (psi)	0.3 - 0.5 (4.4 - 7.2)
Pressure at 2 000 r/min and engine temperature of 80°C and 10W30 oil in use	bar (psi)	minimum 2,7 (38.9)
Axial clearance between rotor and casing	mm (in)	0.03 - 0.08 (0.0012 - 0.0031)
Thermostat motor-oil cooler, opening temperature	°C (°F)	90 (194)

Fuel system

Fuel pressure

System pressure	bar (psi)	2.5 (36) above pressure in inlet manifold
Residual pressure (engine switched off)	bar (psi)	Approx. 2.3 (33)



Temperature transducer

Resistance at 0°C (32°F)	Ohm	5 800
20°C (68°F)	Ohm	2 600
80°C (176°F)	Ohm	320

Auxiliary air valve, 1985

Resistance	Ohm	40 - 60

AIC valve, as from 1986

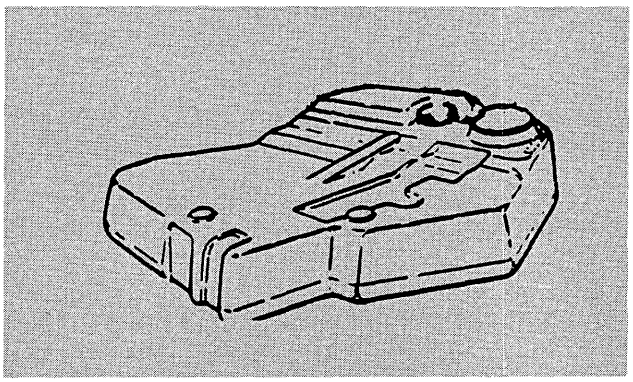
Resistance between pins 3 - 4 and 4 - 5	Ohm	20 ± 2

Full-load enrichment system

Throttle switch (butterfly angle when switch closes)	degrees (°)	Approx. 72
CO value at simulated fullload conditions	%	4 - 6

Fuel pump

Capacity at back pressure of 2.5 bar (36 psi)	At least 900 cm³/30 s (0.9 litre/30 s)



Fuel tank

Capacity	litre (qts)	Approx. 68 (72)
Amount left in tank when fuel warning light comes on	litre (qts)	Approx. 7 (7.4)

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

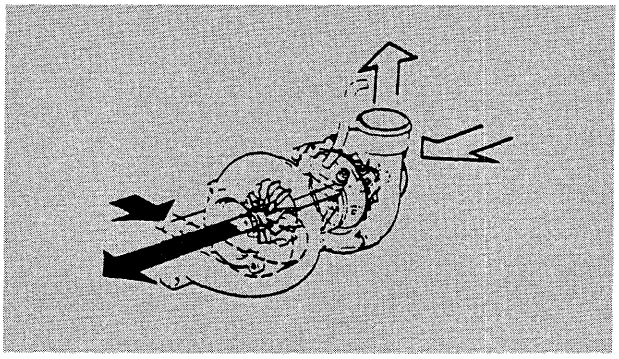
Depression	*Line pressure*
0 bar	2.8 bar (40 psi)
-0.2 bar (-2.9 psi)	2.6 bar (37 psi)
-0.4 bar (-5.8 psi)	2.4 bar (35 psi)
-0.6 bar (-8.6 psi)	2.2 bar (32 psi)

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

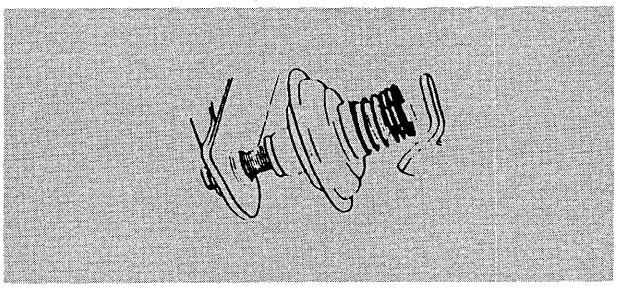
Depression	*Line pressure*
0 bar	3.0 bar (43 psi)
-0.2 bar (-2.9 psi)	2.8 bar (40 psi)
-0.4 bar (-5.8 psi)	2.6 bar (37 psi)
-0.6 bar (-8.6 psi)	2.4 bar (35 psi)

Induction and exhaust systems



Turbo compressor

Maximum charging pressure, EU	bar (psi)	0,85 ± 0.05 (12,3 ± 0,7)
USA	bar (psi)	0,75 ± 0,05 (10,8 ± 0,7)
Basic charging pressure, EU	bar (psi)	0.40 ± 0.03 (5,8 ± 0,4
USA	bar (psi)	0,35 ± 0,03 (5,0 ± 0,4)
Tripping pressure for pressure switch, EU	bar (psi)	1.10 ± 0.05 (16,0 ± 0,4)
USA	bar (psi)	0,95 ± 0,03 (13.8 ± 0,4)
Turbo shaft bearings:		
End float	mm (in)	0.025 - 0.10 (0,0010-0,0039)
Radial clearance	mm (in)	0.075 - 0.18 (0,0030-0,0071)

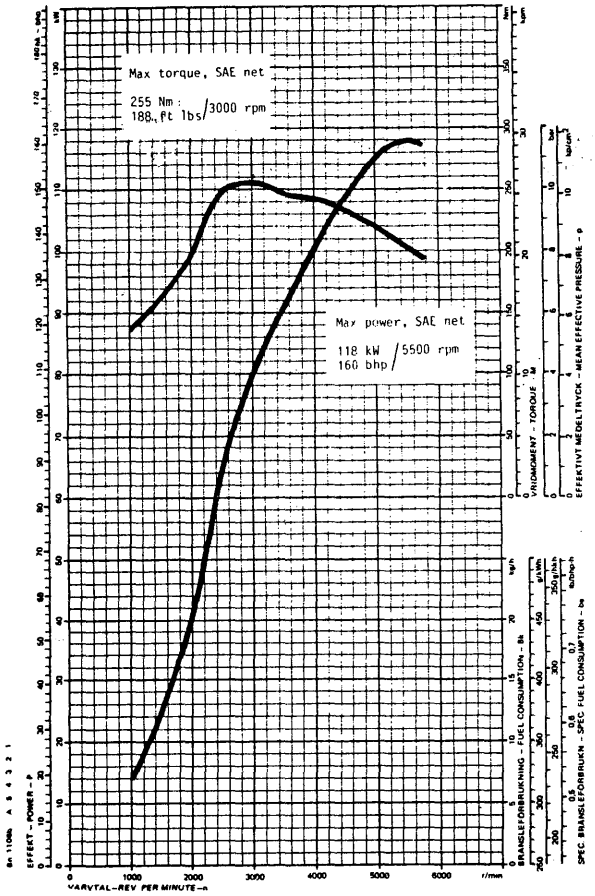


Mechanical throttle damper (dashpot)

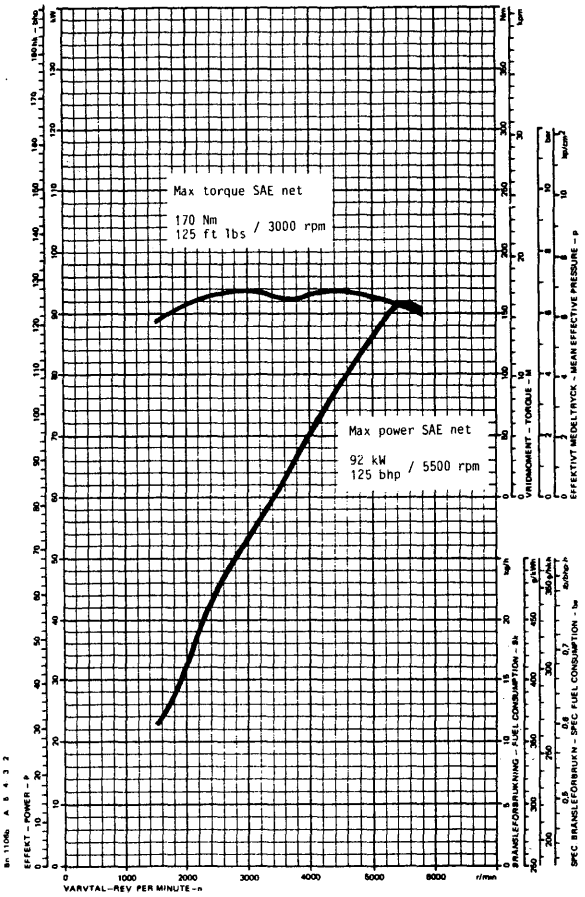
Time for the throttle damper to return from the position when it is touching the throttle lever to the idling speed position. (Carry out this adjustment when the engine is not running)	s	4 ± 1

Engine performance graph

9000 Turbo



9000S



Cooling system

Coolant

Type		Saab Original Coolant
Capacity	litre (US gal)	8,65 (2.29)

Thermostat

Opening temperature	°C (°F)	89 ± 2 (192 ± 4)*
*) Alternative spec. for certain markets:		82 ± 2 (180 ± 4°F)

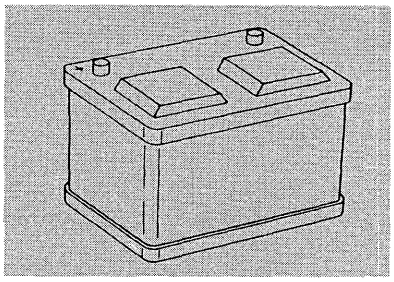
Expansion tank

Pressure valve opens at	bar (lb/in²)	0.9 - 1.2 (13.0 - 17.4)

Thermostatic switch

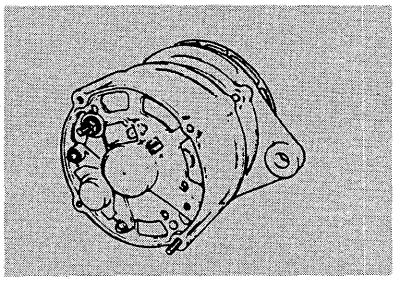
Makes circuit at	°C (°F)	90 - 95 (194 - 203)
Breaks circuit at	°C (°F)	85 - 90 (185 -194)

Electrical system



Battery

Voltage	V	12
Capacity	Ah	62
Polarity		Negative (-) earth
Specific gravity of electrolyte:		
Recharging required		1.21
Battery fully charged		1.28



Alternator

Bosch N1-14V 80 A 19

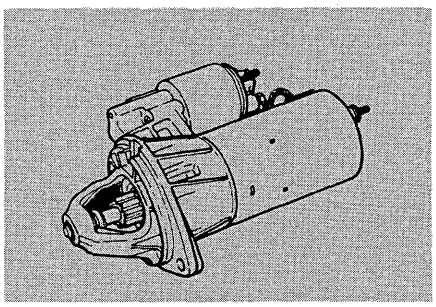
Rated voltage	V	14
Rated speed	r/min	1900
Stator connection		Star connection ⅄
Slip ring diameter, new	mm (in)	27.8 (1.09)
minimum	mm (in)	26.8 (1.06)
Maximum permissible slipring runout	mm (in)	0.03 (0.001)
Maximum permissible rotor runout	mm (in)	0.05 (0.002)
Minimum brush length	mm (in)	5 (0.2) (protruding from brush holder)
Reduction ratio between crankshaft pulley and alternator		1:2.4

Test values

Resistance, rotor winding	Ohm	2.8 ± 10 %
between phases on stator	Ohm	0.10 ± 10 %
Output:		
At 1 500 r/min	A	36
At 1 900 r/min	A	54
At 6 000 r/min	A	80

Belt tension

New belt	N (lbf)	800 ± 45 (184 ± 10)
Minimum	N (lbf)	355 (82)
After adjusting	N (lbf)	535 ± 45 (123 ± 10)



Starter motor

Type		Bosch DW 12V 0 001 108 012 (M1986) Bosch DW 12V 0 001 108 038 (M1986–)
Rating	kW (hp)	1.4 (1.9)
Number of teeth on pinion		9
Number of teeth on ring gear		142
Reduction ratio engine/starter motor		1:15.8

Test values, mechanical

Backlash in gear train	mm (in)	0.35 - 0.60 (0.014-0.024)
Clearance between pinion and ring gear	mm (in)	2.5 - 3.0 (0.1-0.12)
Rotor end float	mm (in)	0.05 - 0.40 (0.002-0.016)
Torque of freely rotating pinion	Nm (lbf ft)	0.12 - 0.18 (0.09-0.13)

Test values, electrical

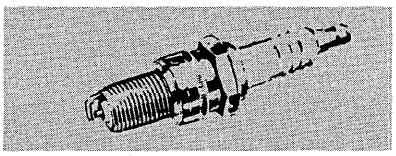
Idling, 12 V and 70 A	r/min	3 000
Speed under load, 9 V and 315 A	r/min	1 700
Starter motor locked, 4 V and 650 - 750 A	r/min	0
Minimum voltage for solenoid energising	V	7

Tightening torques

Solenoid securing bolts	Nm (lbf ft)	4.5 - 5.5 (3.3-4.1)
Commutator end bracket securing bolts (long)	Nm (lbf ft)	2.7 - 3.5 (2.0-2.6)

Ignition system

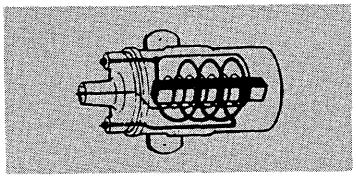
Type	Breakerless incorporating a Hall transducer
Firing order	1-3-4-2



Spark plugs

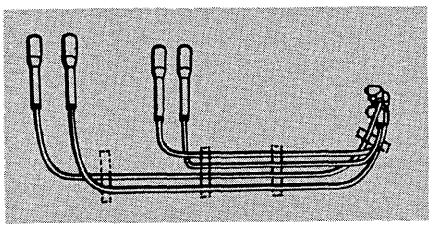
Engine		Type	Remarks
Turbo 16		Champion C7GY NGK BCP 7EV NGK BCP 7ES Champion C7YC Bosch F6DC	
Injection 16		NGK BCP 6ES Champion C9YC Bosch F7DC	
Replacement interval, US	km (miles)	50 000 (30 000)	
Electrode gap	mm (in)	0.6 (0.02)	
Tightening torque (non-lubricated plug)	Nm (lbf ft)	25-29 (18.5-21.5)	

Electrode gap	mm (in)	0.6 (0.02)
Tightening torque (non-lubricated plug)	Nm (lbf ft)	25 - 29 (18.5-21.5)



Ignition coil

Resistance of primary winding measured between terminals 1 and 15	Ohm	0.52 - 0.76
Resistance of secondary winding measured between terminal 1 and the HT output terminal	kOhm	7.2 - 8.2

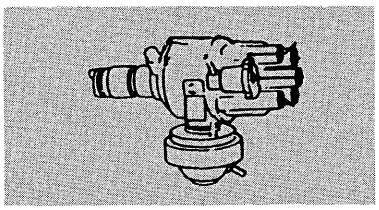


HT leads

Resistance of lead (including connectors) between coil and distributor	kOhm	0.5 - 1.5
Resistance of lead (including connectors) between distributor and plug	kOhm	2 - 4

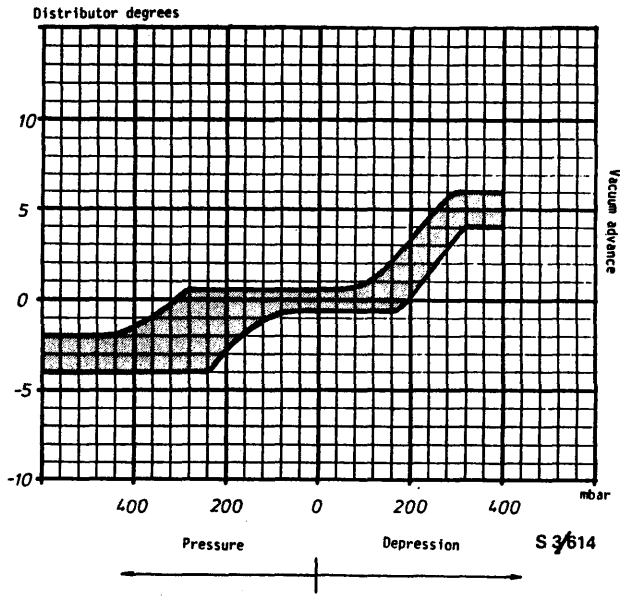
Ignition setting with vacuum control unit disconnected

Engine	Timing at r/min	Remarks
Turbo 16	16° BTDC/850	
Injection 16	14° BTDC/850	



Distributor

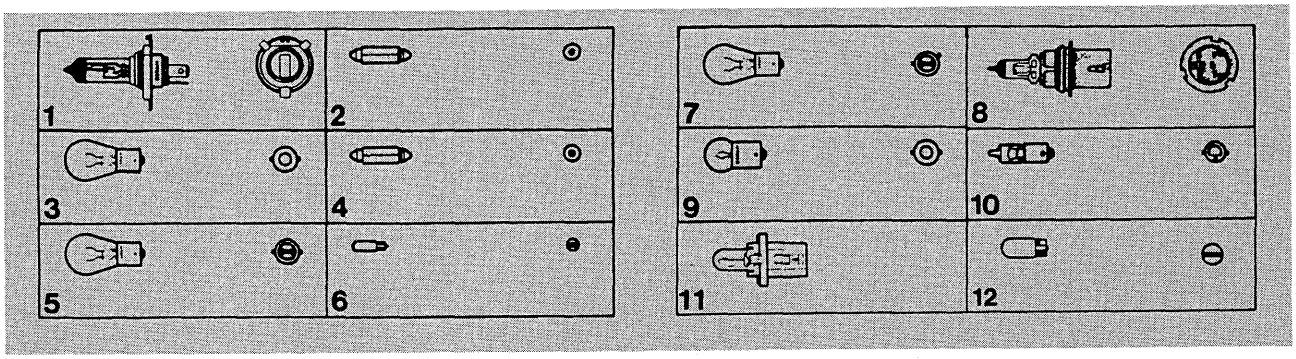
Type	Turbo	Bosch 0 237 507 007
	injection	Bosch 0 237 506 009
Direction of rotation		Anticlockwise
Rotor arm resistance	kOhm	1



Ignition timing graph Bosch 0 237 507 007

Amplifier

Type	Turbo	Bosch 0 227 100 139
	injection	Bosch 0 227 100 124



Lighting

			Socket	Item
Headlamps (US)	W	70/50	Sylvania 9004 DOT 12V	8
Rear direction indicators, stop lights, reversing lights, high-level brake light	W	21	BA 15s	3
Front direction indicators/side marker lights, corner lights/parking lights	W	21/5	BAY 15d	5
Rear lights	W	21/4	BAZ 15d	7
Rear lights	W	5	BA 15s	9
Number plate illumination, interior lighting rear-view mirror, glove compartment lamp, centre console lamp, courtesy lamps, seat-belt warning lamp	W	5	SV 8.5-8	2
Roof lamp and luggage compartment lamp	W	10	SV 8.5-8	4
Illumination of switches and front ashtray	W	1.2	W2x4.6d	6
Warning/indicating lamps for oil pressure, brakes, direction indicators, rear-window heater, high beam, handbrake, washer fluid level, pictogram, shift up indicator, anti-lock brakes (M1988), check engine	W	1.12	bulb with bulb holder	–
Fuel warning lamp	W	1.2	bulb with bulb holder	11
Charging warning lamp	W	2.0	bulb with bulb holder	11
Illumination of heating and ventilation controls and cigarette lighter	W	2	W2 x 4.6d	6
Instrument lighting	W	3	bulb with bulb holder	–
Spotlight in front roof console, reading lamps on C pillars	W	5	halogen	10
Side direction indicators	W	5	W2.1 x 9.5	12
Engine compartment illumination (M1987–)	W	15	SW8.5	4

Fuses

Red	A	10
Blue	A	15
Yellow	A	20
Transparent	A	25
Green	A	30

Other electrical equipment

Windscreen wiper motor

Speed (double strokes per minute) and current consumption at 13,5V			
Wet glass, half-speed	r/min	44 ± 4	≤3 A
Wet glass, full speed	r/min	64 ± 6	≤4 A
Current consumption, motor locked (e.g. wiper blades frozen to glass)	A	approx.20	

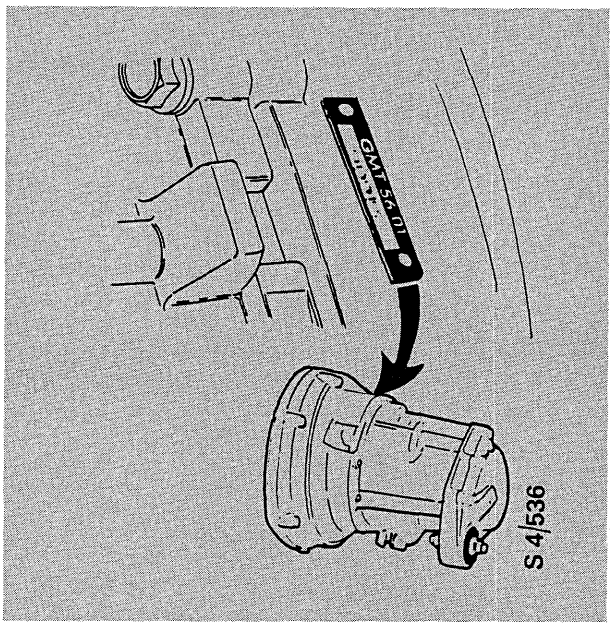
Heated front seats

Rating of heating elements	W	approx. 86

Rear window heater

Rating at 12 V	W	215 ± 25

Transmission



Gearbox number

Type number for manual transmissions, 1986-87 models

The type number is located next to the transmission serial number and signifies the following:

GM T 5 3 01

Manual gearbox

Gearbox for transversely mounted unit

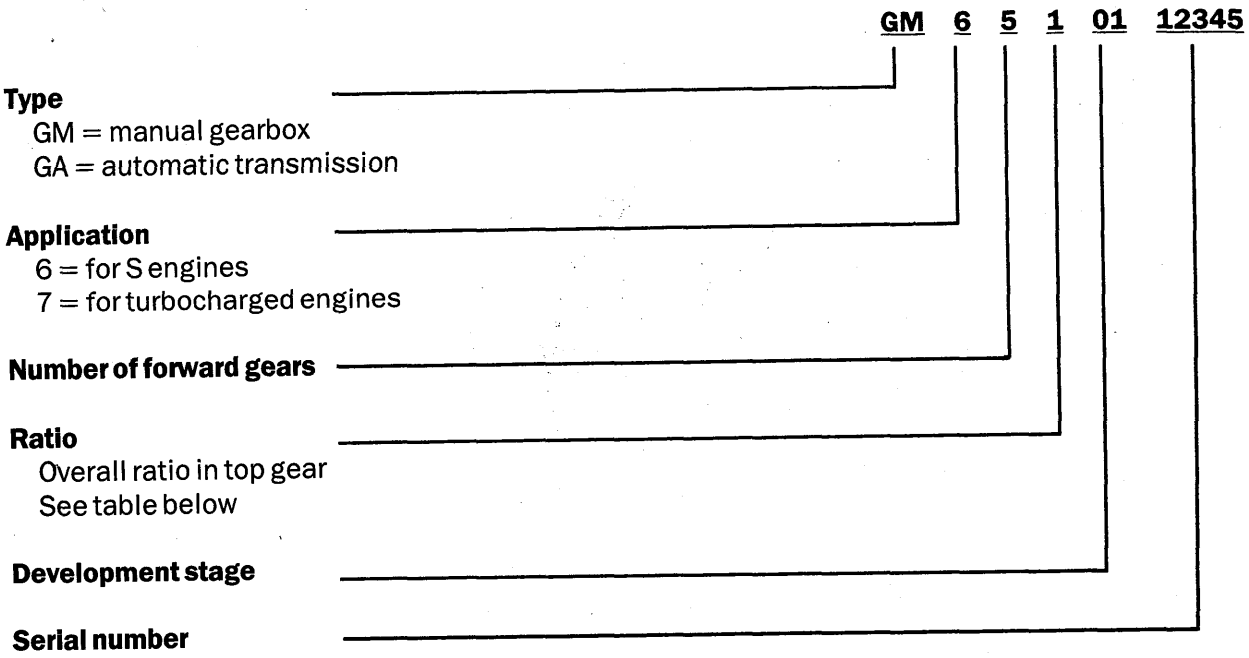
Number of forward gears

Fifth-speed gear ratio

Variant (stage of development)

Serial No.: 300 000 series

Type number for manual transmission, as from 1988 models



Overall ratios in top gear

Code	0	1	2	3	4	5	6	7	8	9
Ratio	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3

Tightening torques

Output shaft bearing bracket	Nm (lbf ft)	26± 2 (19.2 ± 1.5)
Bolts of internal gear selector mechanism	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Reverse gear selector	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Selector shaft actuator	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Selector shaft - universal joint	Nm (lbf ft)	30 - 33 (22 - 24)
Gearcase/clutch housing joint bolts	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Input shaft bearing bracket	Nm (lbf ft)	26 ± 2 (19.2 ± 1.5)
Slave cylinder bolts	Nm (lbf ft)	9 ± 1 (6.7 ± 0.7)
Crown wheel bolts	Nm (lbf ft)	90 ± 10 (67 ± 7.1)
Bearing seat, left-hand driver	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Oil filler plug	Nm (lbf ft)	50 ± 10 (37.0 ± 7.4
End cover securing bolts	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Reversing-light switch	Nm (lbf ft)	22 ± 2 (16.3 ± 1.5)
Pressure plate	Nm (lbf ft)	20 ± 6 (14.8 ±4.4

Table of lubricants

Gearbox		Engine oil SAE 10 W-30, SF/CD or SF/CC
Clutch release bearing		Factory-sealed for life. Not to be washed.
Input shaft splines		On fitting, molybdenum paste or Esso Nebula EP2 (Saab Special Chassis grease)
Gear-lever housing		Esso Nebula EP2 (Saab Special Chassis grease)
Master cylinder plungers and seals		Wakefield Girling No. 3 Rubber Grease
Slave cylinder plunger and seals		Castrol UBCF 11
Universal joint	g	80 Esso Beacon EP2 Mobil 525/Mobil EXF 57C
Driver cup including rubber-bonded joint	g	60 Esso Beacon EP2 Mobil 525/Mobil EXF 57C
Intermediate drive shaft	g	100 Esso Beacon EP2 Mobil 525/Mobil EXF 57C
		Caution Take care to keep the grease off all painted surfaces as the grease is liable to discolour the paint.
Outboard drive shafts	g	80 Esso Nebula EP2 (Saab Special Chassis grease)
Clutch pedal pivot		Esso Nebula EP2 (Saab Special Chassis grease)
Sealant between gearbox and clutch housing		Loctite 510 (45) 30 20 468

Clutch

Make		Fichtel & Sachs
Type		Single dry-plate clutch of diaphragm-spring type
Operation		Hydraulic
Diameter	mm (in)	(228) 9

Manual gearbox

Oil capacity	l (qts)	2.5 (2.65)
Grade of oil		Engine oil SAE 10W30 or 10W40 SF/CC
Weight including oil	kg (lb)	47 (104)

Gear ratio

Year	Model	Gearbox No.	Tyres	Dynamic rolling radius	Final dr. ratio	Gear ratios 1	2	3	4	5	Reverse
1985	9000T	GMT 5301	195/60 VR15	299	19:80 4.21	13.93	7.42	4.91	3.61	2.88	13.53
1986	9000T	GMT 5301	205/55 VR15	295	20:77 3.85	13.93	7.42	4.41	3.61	2.88	13.53
1986	9000S	GMT 5101	195/60 HR15	299	19:80 4.21	13.93	7.42	4.91	3.83	3.07	13.53

Year	Model	Gearbox No.	Tyres	Road speed, km/h (mph) at 1 000 r/min 1	2	3	4	5	Reverse
1985	9000T	GMT 5301	195/60 VR15	8.1 (5.0)	15.1 (9.4)	22.9 (14.2)	31.2 (19.4)	39.2 (24.4)	8.4 (5.2)
1986	9000T	GMT 5301	205/55 VR15	8.0 (5.0)	15.0 (9.3)	22.7 (14.1)	30.8 (19.1)	38.6 (24.0)	8.3 (5.2)
1986	9000S	GMT 5101	195/60 HR15	8.0 (5.0)	15.1 (9.4)	22.7 (14.2)	29.4 (18.3)	36.9 (22.9)	8.4 (5.2)

Year	Model	Gearbox type	Fin. dr. ratio	Overall reduction ration 1	2	3	4	5	Reverse
1987	9000S	GMT 5202	20:89 4.45	14.72	7.84	5.25	3.80	3.04	14.30
1987	9000S	GMT 5203	20:89 4.45	14.72	7.84	5.25	3.80	2.99	14.30
1987	9000T	GMT 5401	19:80 4.21	13.93	7.42	4.97	3.60	2.83	13.53

Year	Model	Gearbox type	Tyre alt.	Road speed, km/h (mph) at 1000 r/min 1	2	3	4	5	Reverse
1987	9000S	GMT 5202	1)	7.7 (4.8)	14.5 (9.0)	21.6 (13.4)	29.9 (18.6)	37.3 (23.2)	7.9 (4.9)
			2)	7.7 (4.8)	14.4 (8.9)	21.5 (13.4)	29.7 (18.4)	37.1 (23.0)	7.9 (4.9)
1987	9000S	GMT 5203	1)	7.7 (4.8)	14.5 (9.0)	21.6 (13.4)	29.9 (18.6)	38.0 (23.6)	7.9 (4.9)
			2)	7.7 (4.8)	14.4 (8.9)	21.5 (13.4)	29.7 (18.4)	37.7 (23.4)	7.9 (4.9)
1987	9000T	GMT 5401	1)	8.1 (5.0)	15.2 (9.4)	22.7 (14.1)	31.3 (19.4)	39.8 (24.7)	8.3 (5.2)
			2)	8.0 (5.0)	15.0 (9.3)	22.4 (13.9)	30.9 (19.2)	39.3 (24.4)	8.2 (5.1)

Year	Model	Type designation	Final drive	Overall ratios 1	2	3	4	5	Reverse
1988	9000S	GM 65101	89:20 4.45	14.72	7.84	5.25	3.98	3.13	14.30

Year	Model	Gearbox type	Tyre alt.	Road speed, km/h (mph) at 1000 r/min 1	2	3	4	5	Reverse
1988	9000S	GM 65101	1)	7.7 (4.7)	14.5 (9.0)	21.6 (13.4)	28.5 (17.7)	36.2 (22.5)	7.9 (4.9)
			2)	7.7 (4.7)	14.4 (8.9)	21.5 (13.4)	28.3 (17.6)	35.9 (22.3)	7.9 (4.9)

1) 185/65 R15 H Michelin MXV/Pirelli P6/Goodyear Eagle NCT 65
Dynamic rolling radius: 301 mm
2) 195/60 R15 H Michelin MXV/Pirelli P6/Goodyear Eagle NTC 65
Dynamic rolling radius: 299 mm

Automatic transmission

Transmission capacity		Turbo	9000i/S
Input torque	Nm	100 to 270	100-170
Max. torque multiplication in the torque converter		1:1 to 1:2,5	1:1-1:2.57
Torque converter diameter	mm	260	260
Ratios: 1 st		2.58	2.58
2nd		1.41	1.41
3rd		1.0	1.0
4th		0.74	0.74
reverse		2.88	2.88

Weights, oil capacity and oil specification		Turbo	9000i/S
Gearbox (without torque converter, without oil)	kg	approx. 55.0	approx. 55.0
Torque converter	kg	approx. 10.5	approx. 10.5
Oil capacity (incl. torque converter and oil cooler	l	approx. 8.2	approx. 8.2
Oil specification		Automatic transmission fluid ATF DEXRON II	

Shift points

Min. throttle application and keep it constant.

		Turbo	9000i/S
Upshift to 2nd at	km/h (mph)	26-38 (16-24)	18-28 (11-17)
Upshift to 3rd at	km/h (mph)	44-56 (27-34)	38-48 (24-30)
Upshift to 4th at	km/h (mph)	65-77 (40-48)	58-70 (36-44)

Depress the accelerator pedal to the kick-down position and keep it pressed down

		Turbo	9000i/S
Upshift to 2nd at 5400 ± 300 RPM	km/h (mph)	57-67 (35-42)	52-62 (32-38)
Upshift to 3rd at 5400 ± 300 RPM	km/h (mph)	109-121 (68-75)	102-112 (63-70)
Upshift to 4th at 5400 ± 300 RPM	km/h (mph)	157-169 (98-105)	139-149 (86-93)

Depress the accelerator pedal to the kick-down position at different road speeds

		Turbo	9000i/S
Max downshift 3-4 at	km/h (mph)	139-151 (86-94)	125-135 (78-84)
Max downshift 3-2 at	km/h (mph)	90-102 (56-63)	82-92 (51-57)
Max downshift 3-1 at	km/h (mph)	55-65 (34-40)	45-55 (28-34)

Dyn wheel radius 299 with 195/60 VR 15 wheels
Speed/1000 rpm

		Turbo	9000i/S	
1	11,4 km/h	7,1 mph	10.6 km/h	6.6 mph
2	21,0 km/h	13,0 mph	19.1 km/h	11.9 mph
3	29,5 km/h	18,5 mph	26.8 km/h	16.7 mph
4	39,7 km/h	24,0 mph	36.1 km/h	22.4 mph
R	10,2 km/h	6,9 mph	9.3 km/h	5.8 mph

Dyn wheel radius 295 with 205/55 VR 15 wheels
Speed/1000 rpm

		Turbo
1	11,3 km/h	7,0 mph
2	20,7 km/h	12,9 mph
3	29,1 km/h	18,0 mph
4	39,2 km/h	24,0 mph
R	10,1 km/h	6,9 mph

Dyn wheel radius 295 with 205/55 VR 15 wheels
Speed/1000 rpm

		9000i/S
1	10,7 km/h	6,6 mph
2	19,2 km/h	11,9 mph
3	27,0 km/h	16,8 mph
4	36,4 km/h	22,6 mph
R	9,4 km/h	5,8 mph

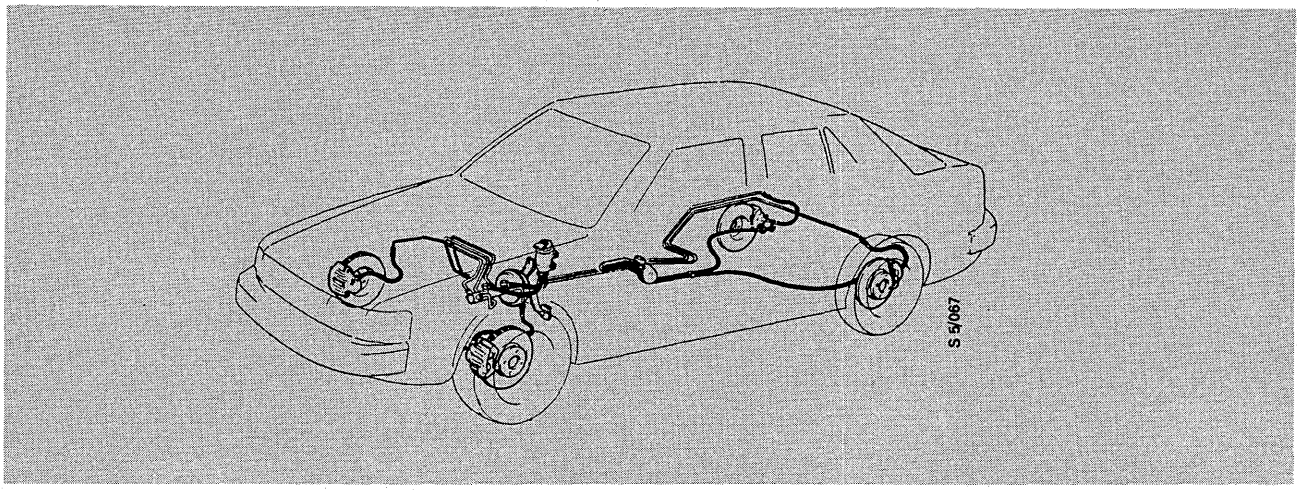
Recorded settings Turbo

Speeds and pressures with the transmission in warm condition		Position R	Position N	Position D	Position 1
Idling speed	rpm	900	875	900	900
Line pressure at idling speed	bar	11.3 ± 1.0	7.5 ± 0.4	7.5 ± 0.4	7.5 ± 0.4
Line pressure om idling with the kick-down cable withdrawn fully	bar	18.0 ± 3.0	13.0 ± 0.7	13.0 ± 0.7	13.0 ± 0.7
Stall speed in pos. D and 1, no longer than 10 sec (Basic Boost pressure)	rpm			2600-3100	2600-3100

Recorded settings 9000i/S

Speeds and pressures with the transmission in warm condition		Position R	Position N	Position D	Position 1
Idling speed	rpm	950	875	950	950
Line pressure at idling speed	bar	11.3 ± 1.0	7.5 ± 0.4	7.5 ± 0.4	7.5 ± 0.4
Line pressure om idling with the kick-down cable withdrawn fully	bar	17 +2.0/-1.0	12.3 ± 0.7	12.3 ± 0.7	12.3 ± 0.7
Stall speed in pos. D and 1, no longer than 10 sec (Basic Boost pressure)	rpm			2300-2700	2300-2700

Brakes



Front brakes

Make			Girling
Type			Sliding caliper and ventilated discs
Brake discs Thickness, new disc	1985–*	mm (in)	22.0 +0/-0.2 (0.87 +0/-.01)
	–1986**	mm (in)	22.5 +0/-0.2 (0.89 +0/-.01)
	1987	mm (in)	23.5 +0/-0.2 (0.93 +0/-.01)
	1988	mm (in)	25.0 +0/-0.2 (0.98 +0/-.01)
Minimum thickness after grinding	1985–	mm (in)	20.0 +0/-0.2 (0.93 +0/-.01)
	–1986	mm (in)	20.5 +0/-0.2 (0.81 +0/-.01)
	1987	mm (in)	21.5 +0/-0.2 (0.85 +0/-.01)
	1988	mm (in)	23.0 +0/-0.2 (0.91 +0/-.01)
Brake pads	Thickness of new lining	mm (in)	11 (0.43)
	Minimum thickness of new lining	mm (in)	1 (0.04)
	Area of friction material, each pad	cm^2 (in^2)	35 (5.4) (M 1988 onwards: 48 (7.43))***
	Thickness of new lining	mm (in)	16.7 (0.66) (M 1988 onwards: 19.5 (0.77))***

*) 30 cooling channels
**) 60 cooling channels
***) Turbo

Rear brakes

Make			ATE
Type			Sliding caliper
Brake disc,	Outside diameter	mm (in)	258 (10.2)
	Thickness, new disc	mm (in)	9.0 (0.35)
	Minimum thickness after grinding	mm (in)	7.5 (0.30)
	Maximum grinding depth each side	mm (in)	0.7 (0.03)
	Maximum runout, disc fitted	mm (in)	0.08 (0.003)
	Maximum variation in disc thickness	mm (in)	0.015 (0.0006)
Brake pads,	Thickness of new lining	mm (in)	11.0 (0.43)
	Minimum thickness	mm (in)	1 (0.04)
	Area of friction material, each pad	cm^2 (in^2)	18 (2.8)
Total area of friction material, front and rear brakes		cm^2 (in^2)	212 (32.9) (Turbo 1988–: 254 (39.4))

Brake fluid

Grade		DOT 4
Fluid capacity	l (qts)	Approx 0.50 (0.53)

Master cylinder

Type		Tandem cylinder
Make		Girling
Diameter	mm (in)	22.2 (0.87)

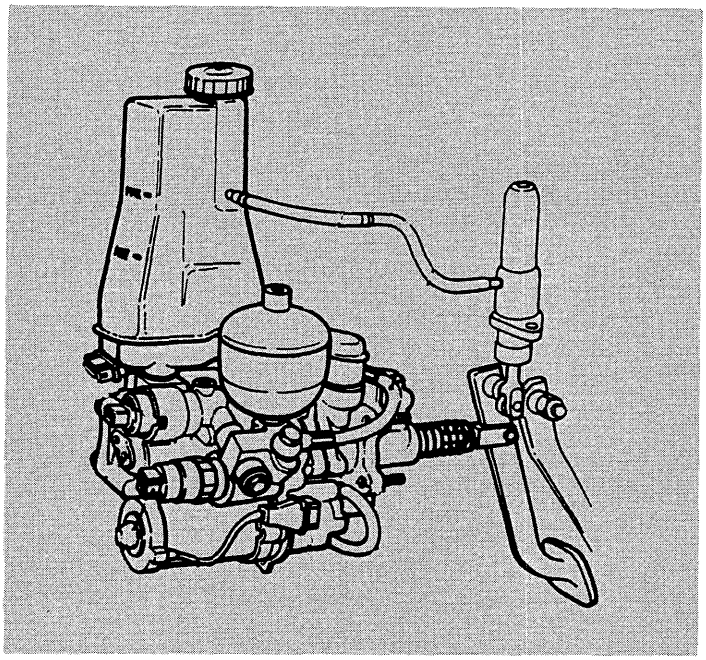
Servo unit

Make		Girling
Diameter	mm (in)	203 (8)
Power assistance		4.0:1 at a pedal effort of 245 N (55 lbf)

Tightening torques:

Caliper assembly securing bolts,	Front	Nm (lbf ft)	70-110 (52-82)
	Rear	Nm (lbf ft)	70-90 (52-66)

ABS-brakes



Hydraulic unit

Make		ATE
Brake fluid specification		DOT 4
Working voltage	V	10-14
Working temperature range	°C (°F)	-30 – +80 (-22 – +176)
Pressure: brake circuits accumulator	bar (psi) bar (psi)	0-180 (0-2610) 140-180 (2030-2610)

Brake fluid reservoir

Capacity	litre (liq qt)	0.8 (0.84)
Number of chambers No. 1 chamber 2 3		3 Static circuit Dynamic circuit (pump) Dynamic circuit (return from servo)
Flow through filter	litre/min	0.5

Filler cap, brake fluid reservoir

Fluid level indicator resistance	ohm	10 (float at lowest point)
ABS-warning switch	ohm	1 (float at highest point)

Hydraulic pump

Type		Ball-valve
Pressure: inlet side delivery side	bar (psi) bar (psi)	0.1-1.0 (1.45-14.5) 140-180 (2030-2610)
Relief valve opening pressure	bar (psi)	210 (3045)
Power demand	W	180 at 160 bar (2320 psi)

Hydraulic accumulator

Pressure of gas-filled chamber at 20°C (68°F)	bar (psi)	80 (1160)
Capacity	litre (liq qt)	0.25 (0.26)
Working pressure range	bar (psi)	135-190 (1956-2755)
Maximum pressure loss	bar (psi) per 10 min	10 (145)

Pressure switch and warning-light switch

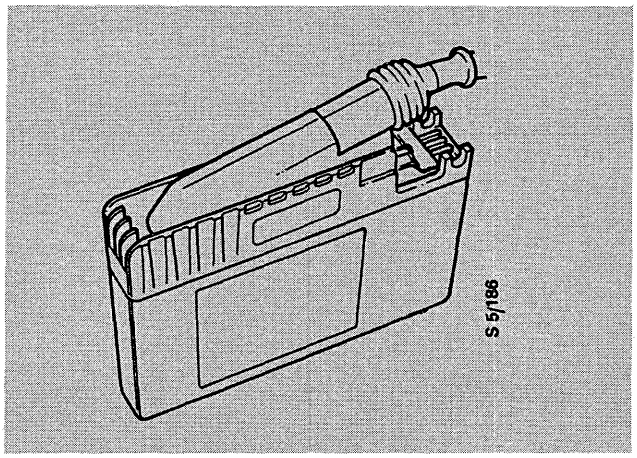
Pressure switch:		
breaks circuit at	bar (psi)	180 ± 4 (2610 ± 58)
makes circuit at	bar (psi)	140 ± 4 (2030 ± 58)
Warning-light switch:		
breaks circuit at	bar (psi)	134 ± 2 (1943 ± 29)
makes circuit at	bar (psi)	105 ± 2 (1523 ± 29)

Master valve

Maximum working pressure	bar (psi)	180 (2610)
Power rating at 12 V	W	35
Coil resistance	ohm	2-5

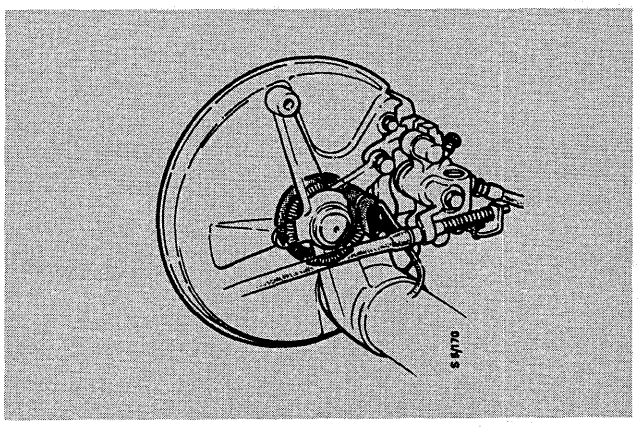
Solenoid valves

Maximum working pressure	bar (psi)	180+40 (2610+580)
Capacity at 20°C (68°F) and 100 bar (1450 psi)	cm^3/s (in^3/s)	36 (2.2)
Power rating at 12 V	W	25
Resistance	ohm	5-7



ECU

Working voltage	V	7-18
Power rating	W	40
Working temperature range	°C (°F)	-40 - +80 (-40 - +176)



Wheel sensors

Resistance	ohm	800-1400
Working voltage	V a.c.	0.15-0.70

Tightening torques

Pressure switch	Nm (lbf ft)	20-26 (15-19)
Hydraulic accumulator	Nm (lbf ft)	34-46 (25-34)
Pump delivery hose	Nm (lbf ft)	16-24 (12-18)
Brake fluid reservoir	Nm (lbf ft)	4-6 (3-4)
Pump unit	Nm (lbf ft)	7-9 (5-7)

Front assembly, steering device

Wheel alignment

Front wheel alignment (unladen car)

Swivel pin (king pin) inclination	degrees	11.3 ± 0.5
Castor	degrees	1.65 ± 0.50
Camber	degrees	-0.65 ± 0.50
Toe-in, measured at rim (410 mm or 16.1 in)	mm (in)	1.5 ± 0.5 (0.059 ± 0.020)
Toe-in, measured at a universal 28.64 in circle	mm (in)	2.6 ± 1.7 (0.102 ±0.067)
Steering angle, outer wheel	degrees	20
Steering angle, inner wheel	degrees	21 ± 0.5

Wheelbase

	mm (in)	2672 (105.197)

Steering

Number of steering wheel turns, lock-to-lock	3.2
Adjustment of plunger	Screw the plunger fully home and then back off through 70° - 90°. Check that the rack does not bind in any position.

Permissible wear limits

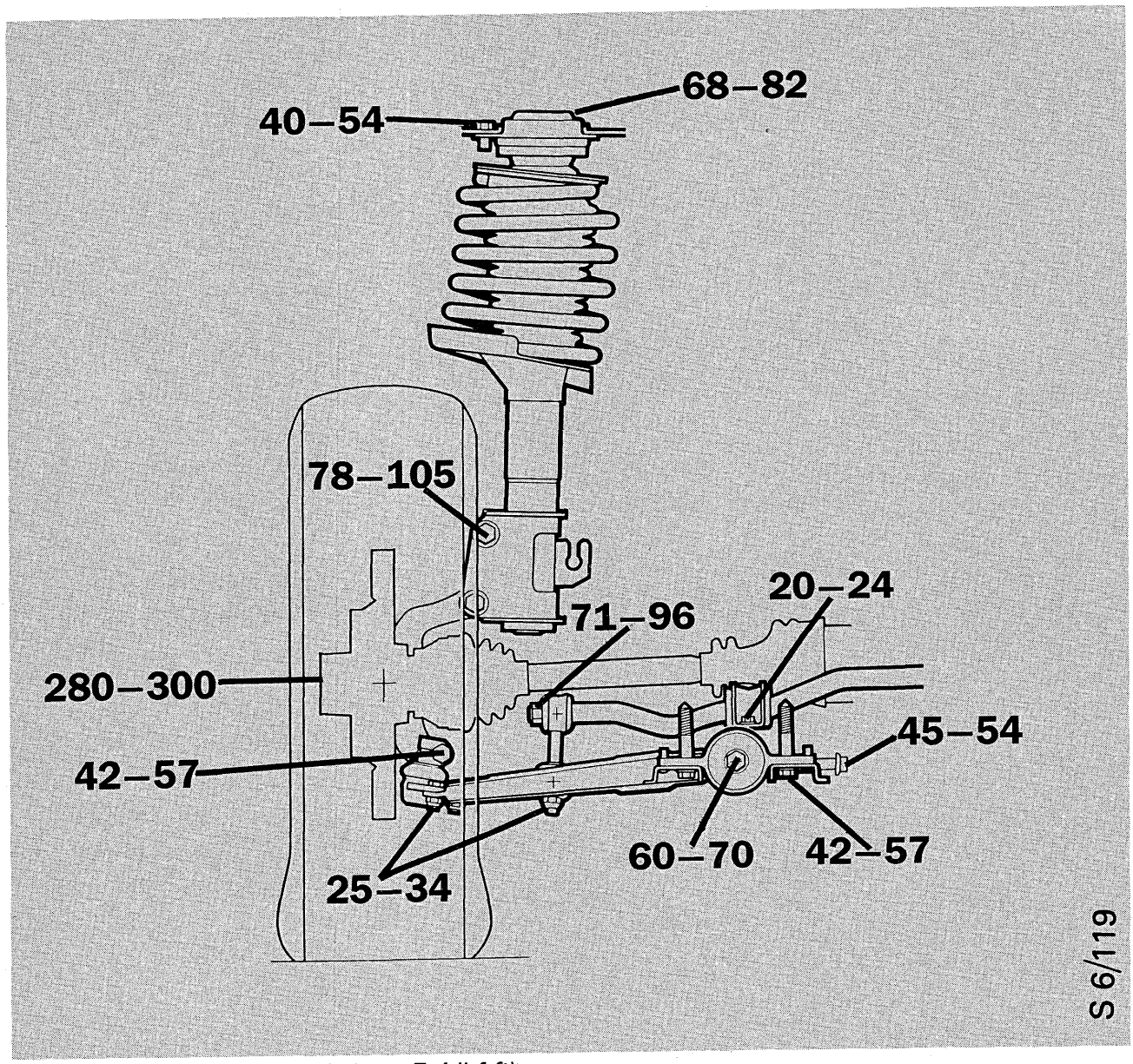
Track-rod end,	Axial play	mm (in)	2 (0.08)
	Radial play	mm (in)	1 (0.04)
Inner ball joint, rack-and-pinion gear,	Axial play	mm (in)	1 (0.04)
Ball joints (track-rod ends)			Non-adjustable. If excessive play is present, the ball joint must be replaced complete.

Track-rod ends

Maximum distance between end of thread and locknut	mm (in)	25 (0.98)
Maximum difference in above dimensions between left and right track rods	mm (in)	2 (0.08)

Tightening torques

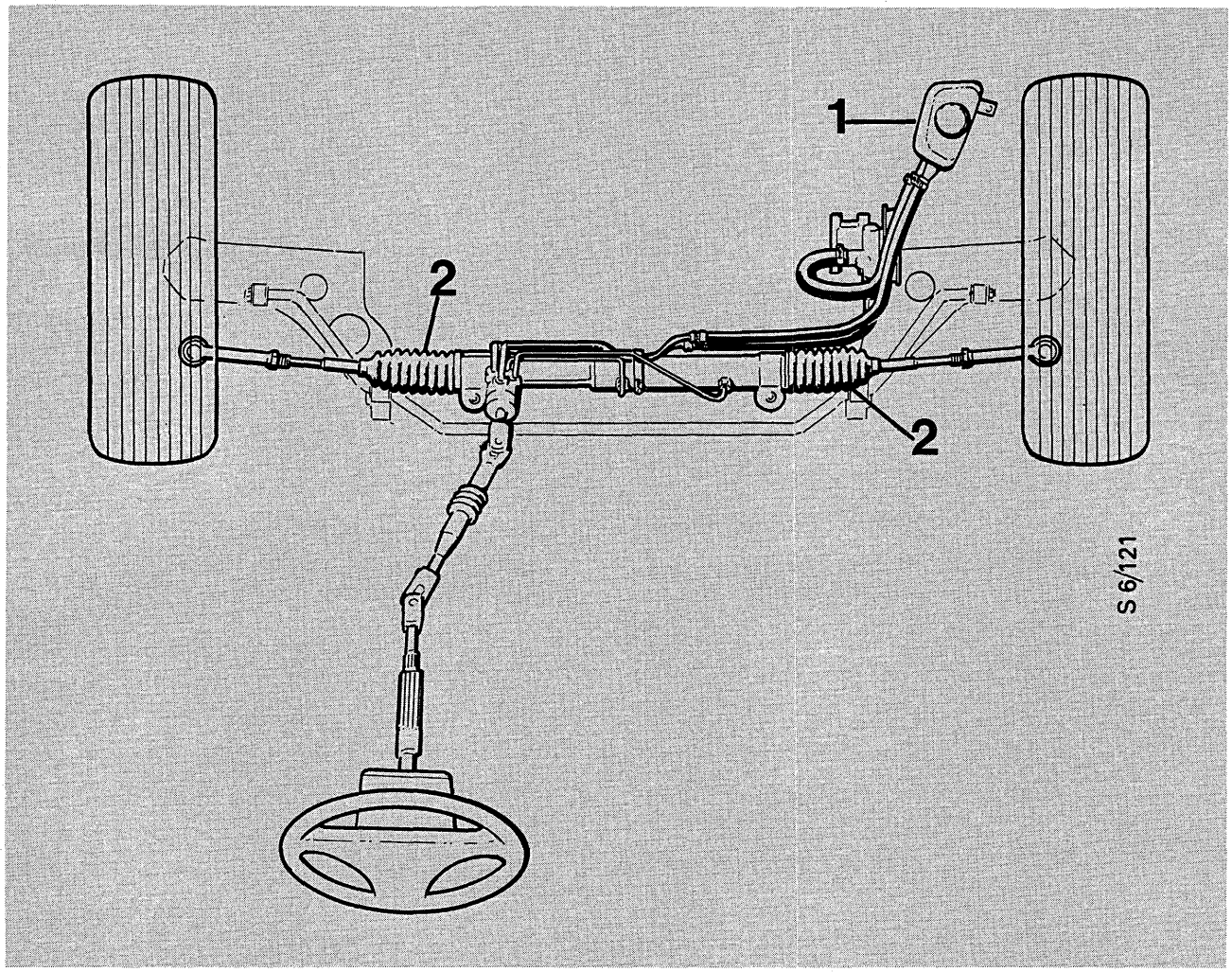
Locknut on track-rod end	Nm (ft.lbs)	60 - 80 (46 - 56)
Track-arm bolt, track-rod-end	Nm (ft.lbs)	50 - 60 (36 - 46)
Rack-and-pinion gear securing bolts	Nm (ft.lbs)	60 - 80 (46 - 56)
Pinch bolt, steering column universal joint	Nm (ft.lbs)	35 - 42 (26.5 - 32)
Steering wheel nut	Nm (ft.lbs)	27 (21)
Connectors, hydraulic lines	Nm (ft.lbs)	20 - 34 (14 - 26)
Inner ball joint	Nm (ft.lbs)	80 - 100 (56 - 72)



Tightening torques in Nm (10 Nm = 7.4 lbf.ft)

Lubricant

Lubricant type		Lithium grease - Shell EP B2, Code 71303, Shell Retinax A, or the equivalent
Lubricant quantity	g (oz)	60 (2.1) (approx. 7 cl)
Servo fluid		Texaco 4634 power steering fluid
Servo fluid quantity	cl (qts)	75 (0.78)



Item	Lubrication point	Lubricant
1	Servo fluid reservoir	GM (Saginaw) power steering fluid (Texaco 4634 power steering fluid), part no. (45) 30 09 800
2	Rack-and-pinion gear	Lithium/lead grease, Shell EP B2 (Shell Retinax A) or the equivalent.

Suspension, wheels

Coil springs

Front coil springs

Total number of coils		6 1/2	6 1/2	6 1/2
Number of active coils		5 1/2	5 1/2	5 1/2
Rod diameter	mm (in)	12.86 (0.506)	12.97 (0.510)	13.09 ((0.515)
Free length	mm (in)	455 (17.913)	455 (17.913)	455 (17.913)
Colour coding, No. 1		Brown	Orange	Black
Colour coding, No. 2		Violet	Pink	White

Rear coil springs

Total number of coils		9 1/2	9 1/2
Number of active coils		8	8
Rod diameter	mm (in)	13.4 (0.528)	13.6 (0.535)
Free length	mm (in)	321 (12.638)	321 (12.638)
Colour coding, No.1		Brown	Black
Colour coding, No. 2		Blue	White

Wheels

Maximum radial runout	mm (in)	0,5 (0.02)
Maximum lateral runout	mm (in)	0,5 (0.02)

Rear wheel alignment

Toe-in	mm (in)	2,5 ± 1,5 (0,1 ± 0,06)
Camber	°	−1/2 ± 1/4

Tightening torques

Wheel bolts	Nm (lbf ft)	105–125 (76–90)
Hubs, front wheels	Nm (lbf ft)	280–300 (205–222)
rear wheels	Nm (lbf ft)	280–300 (205–222)

Table of recommended tyre pressures (cold tyres)

Tyre	No. of occupants	Speed, mph (km/h)	Tyre pressures Front Bar	(psi)	Rear Bar	(psi)
185/65 R15 87T	1–3	0–118 (0–190)	2.2	(32)	2.2	(32)
	4–5		2.6	(38)	2. 6	(38)
185/65 R15 87H	1–3	0–118 (0–190)	2.2	(32)	2.2	(32)
	4–5		2.6	(38)	2. 6	(38)
195/60 R15 86H	1–3	0–130 (0–210)	2.2	(32)	2.2	(32)
	4–5		2.6	(38)	2.6	(38)
195/60 VR15	1–3	0–130 (0–210)	2.2	(32)	2.2	(32)
	1–3	>130 (>210)	2.6	(38)	2.6	(38)
	4–5		2.6	(38)	2.6	(38)
195/60 R15 87H	1–3	0–130 (0–210)	2.2	(32)	2.2	(32)
	4–5		2.6	(38)	2.6	(38)
205/55 VR15	1–3	0–130 (0–210)	2.1	(30)	2.1	(30)
	1–3	> 130 (> 210)	2.5	(36)	2.5	(36)
	4–5		2.5	(36)	2.5	(36)
Winter tyres						
175/70 R15	1–3		2.3	(33)	2.4	(35)
	4–5		2.4	(35)	2.4	(35)
185/65 R15	1–3		2.2	(32)	2.2	(32)
	4–5		2.3	(33)	2.3	(33)
Spare-wheel tyre						
T115/70 D15/R15 or T105/80 R16/D16 or T115/70 R16/D16					4.2	(60)
Options						
205/50 VR16	1–3	0–130 (0–210)	2.1	(30)	2.1	(30)
	1–3	> 130 (> 210)	2.5	(36)	2.5	(36)
	4–5		2.5	(36)	2.5	(36)
205/55 VR16	1–3	0–130 (0–210)	2.0	(29)	2.0	(29)
	1–3	> 130 (> 210)	2.4	(35)	2.4	(35)
	4–5		2.4	(35)	2.4	(35)

Table of wheels and tires

How to use the tables:

Use the first table to find the number-letter code for the car variant and market specification concerned. Look up the digit part of the code in the table of tires and the letter part of the code in the table of wheels.

Tire-wheel code

Car model

Market specification	US	CA
9000Turbo	4C	4C
9000S	1C	1C
Spare wheel	5E	5E

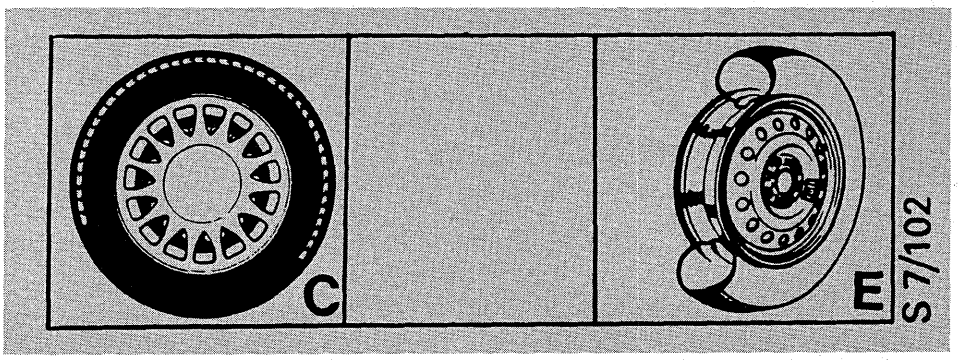


Table of tires

Code digit	Tire designation
1	195/60 R15 86H (M1986-87) 185/65 R15 87T (M1988)
4	205/55 VR15
5	T115/70 D15/R15 (M1986-87) T105/80 R16/D16 or T115/70 R16/D16 (M1988)

Table of wheels

Code letter	Wheel designation	Type	Remarks
C	6J x 15 H2 ET33	Light-alloy	Spoked
E	4J x 15 H1	Steel	Red

Body

Finishing coats

Colour code	Colour	Enamel type	Remarks
117	Platinum blue	Base	
119	Charcoal grey	Solid	Sill colour
120	Cockenville Red	Base	
127	Cherry Red	Solid	
129	Rose Quartz	Base	
156	Mother of pearl	Base	Effect primer + Pearl metallic
158	Odoardo grey	Base	
159	Malachite green	Base	
170	Black	Solid	
172	Silver	Base	

New bodywork paint for the 1987 models

The undercoat paint for two-coat metallic will hereafter be of medium-solid (MS) type. The designation of the paints will not be changed, but the undercoat paint will have a new colour-code number.

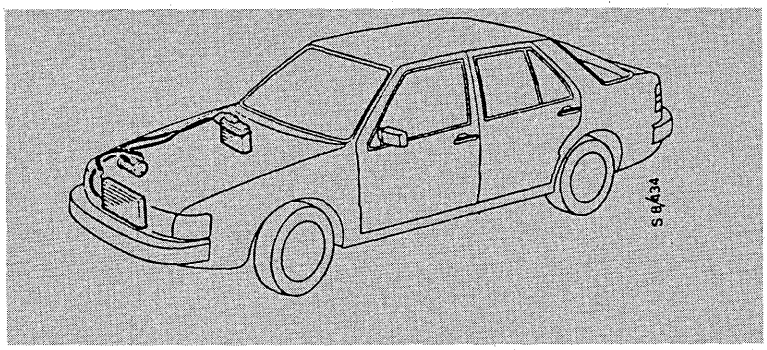
As a result of this modification, paint with a higher dry-solids content must be used. This will produce a slight change in colour, and will require that the correct type of paint be applied.

Note
Always quote the colour code of the car when ordering paint.

Colour code	Colour	Type	Old designation
198	Embassy blue	Solid	
*199	Test paint	Solid or Undercoat	
200	Silver	Undercoat	172
201	Bronze	Undercoat	
202	Rose Quartz	Undercoat	129
203	Platinum blue	Undercoat	117
204	Odoardo grey	Undercoat	158
205	Light Malachite	Undercoat	159
206	Cochineal red	Undercoat	120
212	Sandstone	Base color	
213	Rhodonite	Solid	
214	Cherry Red 2	Solid	

*Indicates that the paint for the car is not available in stock, and must be specially ordered.

Air conditioning (AC)



Compressor

Model		Sanden SD 510	Sanden SD 709
No. of cylinders		5	7
Swept volume	cm^3	161	154.9
Refrigerant		R 12	R12
Oil capacity	dl	1.35 (new compressor)	1.35
Clutch		Electromagnetic	Electromagnetic
Speed range	r/min	500 - 6000	500 – 6000
Weight including clutch	kg	7.7	6.95

Expansion valve

Type		Externally equalized thermal expansion valve
Capacity	tonnes	2 (24000 BTU/h)
Superheating	°C (°F)	44 ± 0.8 (111.2 ± 33.4)

Three-stage pressure switch

		First stage: Allows compressor to run	Second stage: Switches in electric radiator fan	Third stage: Safety function. Switches off compressor
Opening presure, kgf	m/cm^2	approx. 2	10–12	24–29
Operating pressure, kgf	m/cm^2	approx. 2.15	14–16	19–23

Anti-frost thermostat

Make		Ranco
Breaks circuit at	°C	+1.5 ± 1.1
Makes circuit at	°C	5.0 (breaking temperature +maximum difference = 3.6)

Pressure switch (fitted to receiver)

Breaks circuit at	kgf/cm^2	2.8
Makes the circuit at	kgf/cm^3	3.2

Safety valve (fitted on condenser tail pipe)

Type		Mechanical
Opens at	bar	31 ± 2
Closes at	bar	28

Refrigerant

Type		R12
Refrigerant capacity in system	gram	1 100

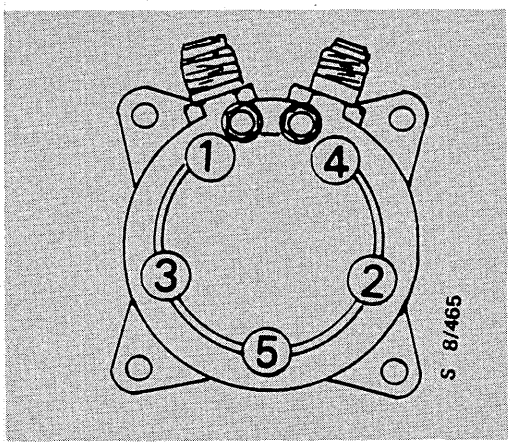
Compressor oil

Type	Refrigeration oil
Viscosity	520 SUS, 38°C (100°F)
Alternative makes	Suniso 5GS Texaco Capella E (WF 100) BP Energol LPT 100

Tightening torques for connections

Compressor pressure side	Nm (kgf m)	30 - 35 (3.0 - 3.5)
suction side	Nm (kgf m)	35 - 40 (3.5 - 4.0)
Condenser inlet	Nm (kgf m)	21 - 28 (2.1 - 2.8)
outlet	Nm (kgf m)	14 - 20 (1.4 - 2.0)
Receiver inlet	Nm (kgf m)	14 - 20 (1.4 - 2.0)
-expansion valve	Nm (kgf m)	14 - 20 (1.4 - 2.0)
Pressure switch on receiver	Nm (kgf m)	14 - 20 (1.4 - 2.0)
Expansion valve - evaporator	Nm (kgf m)	14 - 20 (1.4 - 2.0)
Capillary tube connection to suction line	Nm (kgf m)	7 - 10 (0.7 - 1.0)
Evaporator outlet	Nm (kgf m)	29 - 38 (2.9 - 3.8)
Safety valve on condenser outlet	Nm (kgf m)	14 - 20 (1.4 - 2.0)

Sanden SD 510



Cylinder head tightening sequence
30 - 34 Nm (3.0 - 3.4 kgf m)

Compressor tightening torques

Clutch centre-nut	Nm (kgf m)	34 - 42 (3.4 - 4.2)
Cylinder head screws	Nm (kgf m)	30 - 34 (3.0 - 3.4)
Oil filler plug	Nm (kgf m)	8 - 12 (0.8 - 1.2)
Service valves	Nm (kgf m)	12 - 17 (1.2 - 1.7)

Test conditions

Bonnet	Closed
Front doors	Closed
Engine speed	33 r/s (2000 r/min)

Belt tension, AC-compressor

Reading from IPU belt-tension meter:

New belt: 120 ± 10 lb (535 ± 45 N).

Belt tension control: If the belt tension is below 60 lb (265 N) we recommend a belt tension of 80 ± 5 lb (355 ± 22 N).

Refitting a used belt: Tension the belt to 80 ± 5 lb (355 ± 22 N).

Saab-Scania AB

Saab Car Division

Nyköping, Sweden

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