

SERVICE MANUAL

CARS AND VANS

P 44403/4.

Part 13

SPECIFICATIONS

Export Service Department

AKTIEBOLAGET

VOLVO

GÖTEBORG . SWEDEN

CONTENTS

Type designations	1
General information	3
Engine	4
Clutch	11
Gearbox	12
Propeller shaft	13
Rear axle	13
Front axle and steering gear	14
Brakes	14
Wheels and tyres	15
Springs and shock absorbers	15
Electrical system	16
Lubrication	22

IMPORTANT

N.B. To avoid beforehand any possible confusion which may arise concerning the points and commas in the decimal figures in this book, we should like to point out that the CONTINENTAL system is used and not the English and American, i.e.

read	0,8 = 8/10	0,08 = 8/100
	1,000 = One	1.000 = One thousand

However, with typical English measurements such as inches, the ENGLISH system is used, i.e.

.004" and not 0,004"

TYPE DESIGNATIONS

These specifications concern Volvo saloon car PV 444. Type designations, models and distinguishing marks are shown in the following silhouettes.

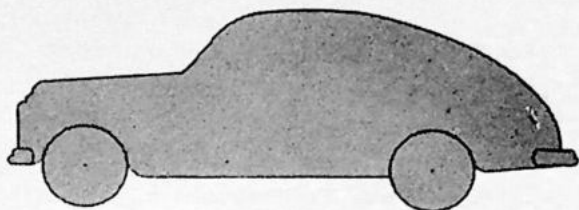


Fig. 1.

P 44403, Chassis Nos. 1—12504

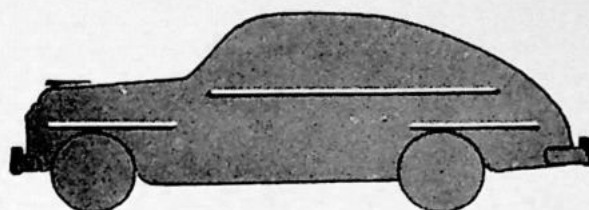


Fig. 2.

P 44404, Chassis Nos. 1—12504
(dove-grey enamel, bonnet emblem
and chromed strips)

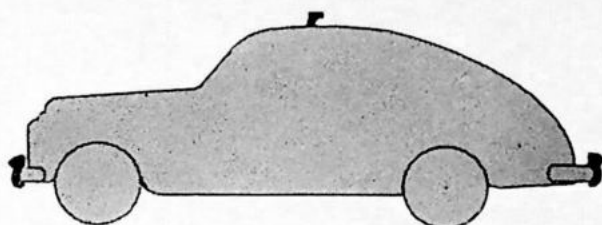


Fig. 3.

P 44403, Chassis Nos. 12505—28004
P 44403, Chassis Nos. 28005—37004
(early prod.)

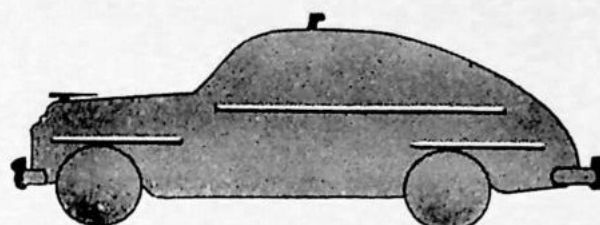


Fig. 4.

P 44404, Chassis Nos. 12505—28004
(dove-grey enamel, bonnet emblem
and chromed strips),
P 44404, Chassis Nos. 28005—37004
(early prod.)
(bonnet emblem and chromed strips)

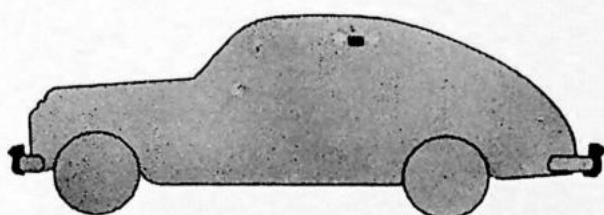


Fig. 5.

P 44403, Chassis Nos. 12505—28004
with direction indicators fitted on sides
P 44403, Chassis Nos. 28005—37004
(late prod.)
P 44403, Chassis Nos. 37005—68955

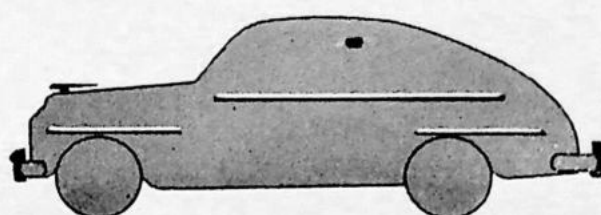


Fig. 6.

P 44404, Chassis Nos. 12505—28004
(dove-grey enamel, bonnet emblem
and chromed strips),
with direction indicators fitted on sides
P 44404 Chassis Nos. 28005—37004
(late prod.)
(bonnet emblem and chromed strips)
P 44404, Chassis Nos. 37005—68955
(bonnet emblem and chromed strips)

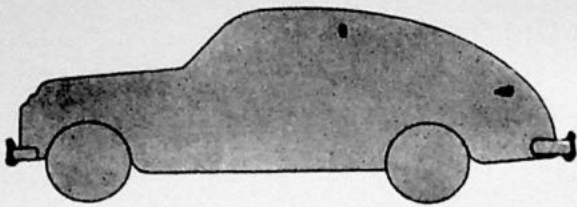


Fig. 7.

P 44103, Chassis Nos. 68956—131917

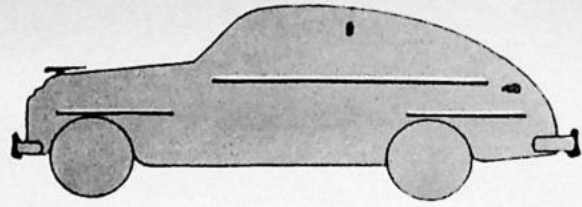


Fig. 8.

P 44104, Chassis Nos. 68956—about 98000
(grey or red enamel, bonnet emblem and chromed strips)

P 44104, Chassis Nos. about 98000—131917
(grey, midnight-blue, riviera-blue or red enamel, bonnet emblem and chromed strips)

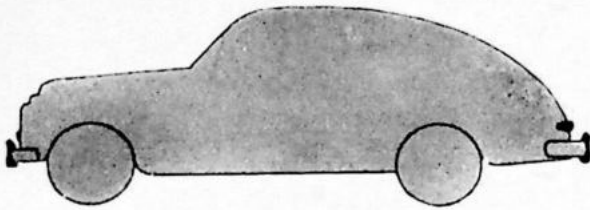


Fig. 9.

P 44103, Chassis Nos. 131918—onwards

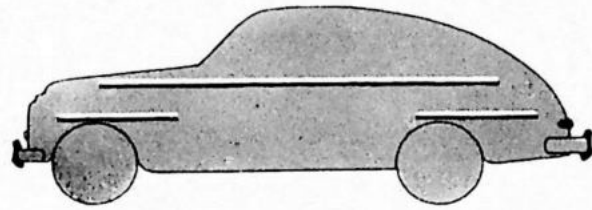


Fig. 10.

P 44104, Chassis Nos. 131918—onwards
(California white, grey, midnight blue, Riviera blue or red enamel; chromed strips)

- | | |
|--------------------------|--|
| Chassis number location: | Plate under bonnet at right-hand side of engine (3). |
| Body number location: | Plate under bonnet at left-hand side of engine (5). |
| Engine number location: | Plate on right-hand side of engine above starter motor (1). |
| Engine part number: | On the same plate as the engine no. (1) |
| Gearbox number: | Stamped on plate attached to the left-hand side of the gearbox (2). |
| Rear axle number: | Stamped on plate attached to rear axle housing (4).
(Early production). |
| Rear axle ratios: | Stamped on the same plate as the rear axle no. (4)
(Early production). |

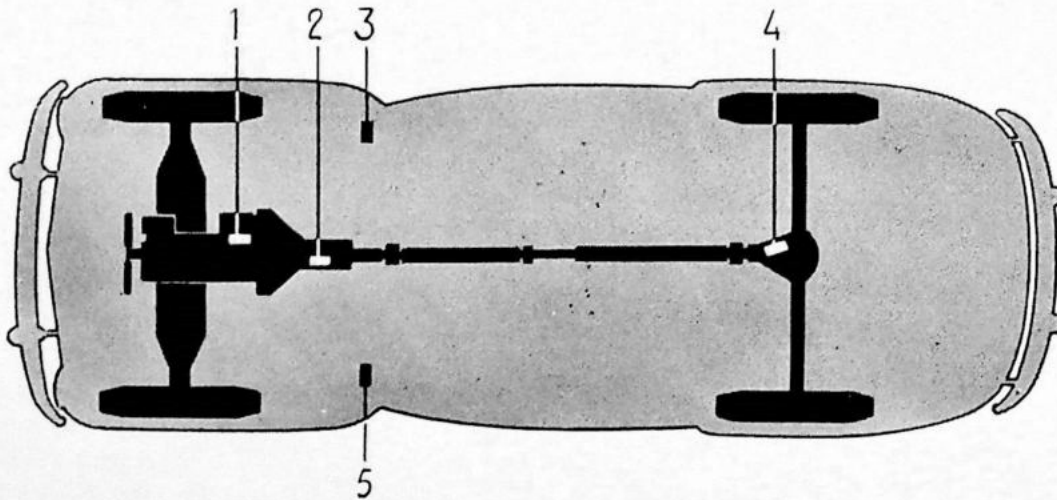


Fig. 11. Locations of type designation and part nos.

GENERAL INFORMATION

Weights:	Curb weight (with driver)	Unladen weight	Max. wheel pressure
P 44403, Chassis Nos. 1—12504	995 kg (2193 lb.)	880 kg (1940 lb.)	365 kg (804 lb.)
P 44404, Chassis Nos. 1—12504	1040 kg (2292 lb.)	925 kg (2039 lb.)	380 kg (838 lb.)
P 44403, Chassis Nos. 12505—20004	1040 kg (2292 lb.)	925 kg (2039 lb.)	380 kg (838 lb.)
P 44404, Chassis Nos. 12505—20004	1040 kg (2292 lb.)	925 kg (2039 lb.)	380 kg (838 lb.)
P 44403, Chassis Nos. 20005—28004	1020 kg (2248 lb.)	905 kg (1995 lb.)	375 kg (827 lb.)
P 44404, Chassis Nos. 20005—28004	1030 kg (2270 lb.)	915 kg (2017 lb.)	380 kg (838 lb.)
P 44403, Chassis Nos. 28005—37004	1040 kg (2292 lb.)	925 kg (2039 lb.)	375 kg (827 lb.)
P 44404, Chassis Nos. 28005—37004	1050 kg (2314 lb.)	935 kg (2060 lb.)	375 kg (827 lb.)
P 44403, Chassis Nos. 37005—68955	1025 kg (2259 lb.)	910 kg (2006 lb.)	375 kg (827 lb.)
P 44404, Chassis Nos. 37005—68955	1035 kg (2281 lb.)	920 kg (2027 lb.)	375 kg (827 lb.)
P 44403, Chassis Nos. 68956—about 98000	1050 kg (2314 lb.)	935 kg (2060 lb.)	375 kg (827 lb.)
P 44404, Chassis Nos. about 98000—131917	1050 kg (2314 lb.)	935 kg (2060 lb.)	375 kg (827 lb.)
P 44403, Chassis Nos. 131918—onwards	1040 kg (2292 lb.)	925 kg (2039 lb.)	375 kg (827 lb.)
P 44404, Chassis Nos. 131918—onwards	1040 kg (2292 lb.)	925 kg (2039 lb.)	375 kg (827 lb.)
Wheelbase		2600 mm (102½")	

	Chassis Nos.				
	1— 12504	12505— 20004	20005— 37004	37005— 68955	68956— onwards
Track:					
Front	1280 mm (50½")	1280 mm (50½")	1295 mm (51")	1295 mm (51")	1295 mm (51")
Rear	1300 mm (51¼")	1300 mm (51¼")	1315 mm (51¾")	1315 mm (51¾")	1315 mm (51¾")
Overall length	4365 mm (172")	4450 mm (175")	4500 mm (177")	4500 mm (177")	4500 mm (177")
Overall width	1580 mm (62")	1580 mm (62")	1580 mm (62")	1580 mm (62")	1580 mm (62")
Overall height, unladen, with side-mounted direction indicators	1560 mm (61½")	1560 mm (61½")	1560 mm (61½")	1560 mm (61½")	1560 mm (61½")
Overall height, unladen, with roof-mounted direction indicators	—	1650 mm (65")	1650 mm (65")	—	—
Ground clearance, laden	220 mm (8½")	200 mm (8")	200 mm (8")	200 mm (8")	200 mm (8")
Turning circle diam. (measured on centre of tread)	10 m (394")	10 m (394")	10.2 m (401½")	10.2 m (401½")	10.8 m (425")

ENGINE

General

Type, up to chassis no. 131917	B 4 B			
.. from chassis no. 131918 onwards	B 16 A			
Type designation	B 4 B	B 4 B	B 4 B	B 16 A
Engine part no. (various productions)	495300	495301	495302	495383
Output, b.h.p. at r.p.m.	40/3800	44/4000	51/4500	60/4500
Max. torque, kgm (lb.ft.) at r.p.m.	9.5 (69) /2200	9.5 (69) /2200	10.0 (72 ^{1/2}) /2500	11.3 (81 ^{1/2}) /2500
Compression pressure (warm engine) when turning over with starter motor, 200 r.p.m.	kg/cm ² p.s.i.	8.1—8.4 115—120	8.1—8.4 115—120	9.2—9.6 130—136
Compression ratio	6.5: 1	6.5: 1	7.3: 1	7.4: 1
Common data:	B 4 B		B 16 A	
Number of cylinders	4		4	
Bore	75 mm (2.953")		79.37 mm (3.125")	
Stroke	80 mm (3.150")		80 mm (3.150")	
Displacement	1.4 litres		1.6 litres	
Weight	about 145 kg (319 ^{1/2} lb.)		about 150 kg (330 lb)	

Cylinder block

Material	
The cylinder bores are machined direct into the block	
Bore, standard	
.. .010" oversize	
.. .020" oversize	
.. .030" oversize	
.. .040" oversize	
.. .050" oversize	

Concerning the letter stamped on the cylinder bore see Part 1, "Fitting of pistons".

B 4 B

B 16 A

Special-alloy cast-iron

75 mm (2.953")	79.37 mm (3.125")
75.25 mm (2.963")	79.62 mm (3.134")
75.51 mm (2.973")	79.88 mm (3.145")
75.76 mm (2.983")	80.13 mm (3.155")
76.02 mm (2.993")	80.39 mm (3.165")
76.27 mm (3.003")	80.64 mm (3.175")

Pistons

Material	
Weight	
Permissible weight difference for pistons in the same engine	
Total height	
Height from gudgeon pin centre to piston top	
Piston clearance	

Light-alloy
355±3 grammes
(12.67±.107 oz.)

Light-alloy
407±3 grammes
(14.35±.107 oz.)

6 grammes (.214 oz.)
86 mm (3.386")
46 mm (1.81")
0.04—0.06 mm
(.016"—.024")

6 grammes (.214 oz.)
86 mm (3.386")
46 mm (1.81")
0.03—0.05 mm
(.012"—.02")

Diameter, standard, measured at right angles to gudgeon pin at bottom end of piston	
.010" oversize	
.020" oversize	
.030" oversize	
.040" oversize	
.050" oversize	

74.95 mm
(2.9508")
75.20 mm
(2.9606")
75.46 mm
(2.9709")
75.71 mm
(2.9807")
75.97 mm
(2.9909")
76.22 mm
(3.0008")

79.33 mm
(3.123")
79.58 mm
(3.133")
79.84 mm
(3.144")
80.09 mm
(3.153")
80.35 mm
(3.164")
80.60 mm
(3.173")

Concerning the letter stamped on the cylinder bore see Part 1, "Fitting of pistons".

Piston rings

	B 4 B	B 16 A
Piston ring gap measured at ring opening		0.25—0.50 mm (.010"—.020")
Piston ring oversizes .....		.010" .020" .030" .040" .050"

Compression rings

Chromed upper ring		
Number of rings per piston	2	2
Height	2.5 mm (.098")	1.97 mm (.078")
Piston ring clearance in groove	0.051—0.088 mm (.0020—0.0035")	0.068—0.079 mm (.0027—0.0031")

B 4 B Ring No. 1 from piston top: chamfered inner edge,
turned up

Ring No. 2 from piston top: chamfered outer edge,
turned up

B 16 A Both rings have chamfered inner edges. These are
turned upwards.

Oil rings

Number on each piston	1	1
Height	4.5 mm (.177")	4.73 mm (.186")
Piston ring clearance in groove	0.025—0.064 mm (.0010—0.0025")	0.045—0.073 (.0018—0.0029")

Gudgeon pins

Fully-floating. Circlips at both ends in piston.

Fit:

In connecting rod	Close running fit
In piston	Slide fit
Diameter, standard	19 mm (.748")
0.05 mm oversize	19.05 mm (.750")
0.10 mm "	19.10 mm (.752")
0.20 mm "	19.20 mm (.756")

Cylinder head

Height, measured from cylinder head contact surface to
cylinder head nut level

Part No. 495300: 100 mm (3.937")	99 mm (3.898")
Part No. 495301: 100 mm (3.937)	
Part No. 495302: 98 mm (3.858")	

Crankshaft

(Replaceable bearing shells for main and big-end
bearings)

Crankshaft axial clearance	0.01—0.10 mm (.0004—.004")
Main bearings, radial clearance	0.014—0.064 mm (.0005—.0025")

Main bearings

Main bearing journals

Diameter, standard	53.950—53.960 mm (2.1240—2.1244")
undersize .010"	53.696—53.706 mm (2.1140—2.1144")

	B 4 B	B 16 A
Diameter, undersize .020"		53.442—53.452 mm (2.1040—2.1044")
" .030"		53.188—53.198 mm (2.0940—2.0944")
" .040"		52.934—52.944 mm (2.0840—2.0844")
Main bearing journal width (distance between webs):		
Standard		38.935—38.975 mm (1.5329—1.5344")
Oversize 0.1 mm (undersize shell .010")		39.035—39.075 mm (1.5369—1.5384")
0.2 mm (" .020")		39.135—39.175 mm (1.5407—1.5423")
0.3 mm (" .030")		39.235—39.275 mm (1.5447—1.5463")
0.4 mm (" .040")		39.335—39.375 mm (1.5486—1.5502")
Main bearing shells		
Thickness, standard		1.911—1.918 mm (.0752—.0755")
undersize .010"		2.038—2.045 mm (.0802—.0805")
" .020"		2.165—2.172 mm (.0852—.0855")
" .030"		2.292—2.299 mm (.0902—.0905")
" .040"		2.419—2.426 mm (.0952—.0955")
Big-end bearings		
Big-end bearing journals		
Big-end bearings, radial clearance	0.013—0.019 mm (.0005—.0019")	0.051—0.091 mm (.0021—.0036")
Bearing seat width		32.900—33.000 mm (1.2953—1.2992")
Diameter, standard		47.589—47.600 mm (1.8736—1.8740")
undersize .010"		47.335—47.347 mm (1.8636—1.8640")
" .020"		47.081—47.092 mm (1.8536—1.8540")
" .030"		46.827—46.838 mm (1.8436—1.8440")
" .040"		46.573—46.584 mm (1.8336—1.8340")
Big-end bearing shells		
Thickness, standard	1.581—1.587 mm (.0622—.0625")	1.560—1.568 mm (.0611—.0614")
undersize .010"	1.708—1.714 mm (.0672—.0675")	1.687—1.695 mm (.0645—.0657")
" .020"	1.835—1.841 mm (.0722—.0725")	1.814—1.822 mm (.0715—.0719")
" .030"	1.962—1.968 mm (.0772—.0775")	1.941—1.949 mm (.0756—.0759")
" .040"	2.089—2.095 mm (.0822—.0825")	2.068—2.076 mm (.0817—.0820")

Connecting rods

Marked 1—4 from the camshaft. Classified A—D to show the weight classification. Only connecting rods with the same weight classification may be fitted in any one engine.

	B 4 B	B 16 A
Axial play at crankshaft	0.15—0.35 mm (.0059—.0138")	
Length, centre-centre	150±0.1 mm (5.905±.0039")	
Weight, classification A	528—558 grammes (18.62—19.6802 oz.)	578—608 grammes (20.35—21.48 oz.)
" B	558—588 grammes (19.68—20.7402 oz.)	608—638 grammes (21.48—22.54 oz.)
" C	588—618 grammes (20.74—21.8002 oz.)	638—668 grammes (22.54—23.60 oz.)
" D	618—648 grammes (21.80—22.8502 oz.)	668—698 grammes (23.60—24.65 oz.)

Flywheel

Permissible axial throw	0.20 mm (.79")
Ring gear (chamfer facing front)	116 teeth

Flywheel housing

Permissible axial throw, max.	0.08 mm (.0031")
radial throw, max.	0.15 mm (.0059")

Camshaft

Drive	Gear, fibre gear on camshaft	
Number of bearings	3	
Front bearing journal, diameter	46.975—47.000 mm (1.8491—1.8501")	
Centre bearing journal, diameter	42.975—43.000 mm (1.6919—1.6929")	
Rear bearing journal, diameter	36.975—37.000 mm (1.4557—1.4567")	
Radial clearance	0.025—0.075 mm (.0010—.0030")	
Clearance for camshaft setting examination (cold engine):		
engine part No. 495300	0.31 mm (.0122")	1.1 mm (.0429")
495301	0.60 mm (.0236")	
495302	1.1 mm (.0433")	
Inlet valve should open at engine part No. 495300	5° B.T.D.C.	10° A.T.D.C.
495301	5° B.T.D.C.	
495302	10° A.T.D.C.	

Camshaft bearings

Front bearing, diameter	47.025—47.050 mm (1.8514—1.8524")
Centre bearing, diameter	43.025—43.050 mm (1.6939—1.6949")
Rear bearing, diameter	37.025—37.050 mm (1.4577—1.4587")

Engine with part No. 495302:	B 4 B	B 16 A
Spring coloured blue. Lower spring seat washer not used.		
Length, unloaded	45 mm (1.772")	
with 25.5 ± 2 kg ($56 \pm 4\frac{1}{2}$ lb.) loading	39 mm (1.535")	
with 66 ± 3.5 kg ($145\frac{1}{2} \pm 7\frac{3}{4}$ lb.) loading	30.5 mm (1.201")	
Length, unloaded		45 mm (1.772")
with 25.5 ± 2 kg ($56 \pm 4\frac{1}{2}$ lb.) loading		39 mm (1.535")
with 66 ± 3.5 kg ($145\frac{1}{2} \pm 7\frac{3}{4}$ lb.) loading		30.5 mm (1.201")
Lubricating system		
Oil capacity in crankcase	3.25 litre (6 Imp. pints)	2.75 litre (4 $\frac{3}{4}$ Imp. pints)
Oil capacity incl. oil filter	3.75 litre (6 $\frac{1}{2}$ Imp. pints)	3.5 litre (6 $\frac{1}{4}$ Imp. pints)
Oil pressure, hot engine, 2000 rpm (about 50 kph (30 mph) in 3rd gear)	1.5—2.5 kg/cm ² (21 $\frac{1}{2}$ —35 $\frac{1}{2}$ p.s.i.)	2.5—3.5 kg/cm ² (35.6—49.8 p.s.i.)
Lubricant, type		Engine oil
quality		Service MM, MS
viscosity, summer		SAE 20
winter		SAE 10 W
Lubricating oil pump, type		Gear
number of teeth		10
axial clearance		0.02—0.10 mm (.0008—.004")
radial clearance		0.00—0.10 mm (0—.004")
tooth flank clearance		0.15—0.35 mm (.0059—.0138")
Relief valve spring:		
Length, unloaded	36 ± 0.5 mm (1.417 \pm .0197")	40 ± 0.5 mm (1.575 \pm .0197")
loaded with kg/lb	32 mm/ 2 ± 0.2 kg (1.26"/4 $\frac{1}{2} \pm .44$ lb.)	34 mm/ $2.5-0.2$ kg (1.34"/5.51 \pm .44 lb.)

Fuel system

Fuel pump, type	AC diaphragm pump
Fuel pressure	Min. 0.14 kg/cm ² (2 p.s.i.) Max. 0.25 kg/cm ² (3.5 p.s.i.)
Pumping capacity when idling (min. 300 r.p.m.)	0.5 litre/min. ($\frac{7}{8}$ Imp. pint/min.)
Fuel tank, capacity	35 litres (7 $\frac{3}{4}$ Imp. galls.)
Fuel gauge, type	Electric

Carburettor, B4B Engine

Carter

Model designation, early production	W-O 618 S	
late production	W-O 618 SA	
	Designation	Data
Venturi, diameter		23 mm (.91")
Metering rod jet	120—151 S	dim. 0.070"
Needle, fuel	75—590	dim. 0.0590"—0.0532" (two-stage)
Needle for light Bently	75—697	
Needle for lean mixture	75—676	
Main jet, WO 618 S	12—255	dim. 0.096"
WO 618 SA	12—323	dim. 0.096"
Acceleration jet	48—141	dim. 0.024"

	Designation	Data
Idling jet	11—186 S	dim. 0.029"
Needle valve	25—93 S	
Setting tool for fuel needle	T 109—26	length 2.718"
Wire gauge (for richer fuel mixture)	T 109—41	diam. 0.015"
Float level (measurement between cover and upper side of float. Turn the cover upside down with the gasket removed)	9.5 mm (.474")	
Acceleration pump stroke	$\frac{9}{64}$ " (3.5 mm)	
Idling speed (warm engine)	400—600 r.p.m.	

Zenith

Model designation, early production	Zenith 30 VIG-9/C 1412	
late production	Zenith 30 VIG-9/C 1412 B	
	Designation	Data
Venturi	25	
Main jet, standard, early production	102	1.02 mm (.040")
late production	107	1.07 mm (.042")
lean mixture, early production	95	0.95 mm (.037")
late production	100	1.00 mm (.030")
Compensating jet, standard	70	0.70 mm (.028")
rich mixture (Bentyl)	75	0.75 mm (.030")
Idling jet	50	0.50 mm (.020")
Acceleration jet	50	0.50 mm (.020")
Air jet for partial acceleration, early production	2.0	
late production	2.8	
Bentyl	2.4	
Air jet for full acceleration	1.8	
Float valve	1.5	
Float valve gasket, thickness	2 mm (.075")	
Idling speed	400—600 r.p.m.	

Carburettor, BI6A Engine

Model designation	Zenith 34 VN	
	Designation	Data
Venturi	27	
Main jet, standard	97	0.97 mm (.0382")
Bentyl	102	1.02 mm (.0469")
Compensating jet	97	0.97 mm (.0382")
Idling jet	50	0.50 mm (.0197")
Air jet for idling	50	0.50 mm (.0197")
Acceleration jet	40	0.40 mm (.0157")
Float valve	1.75	
Float valve gasket, thickness		1.0 mm (.039")
Fuel level, when running		18 mm (.709") below top of float chamber
Idling speed		400—600 r.p.m.

Cooling system

Type	Pressure
Capacity	about 8 litres ($1\frac{3}{4}$ Imp. galls.)
Radiator cap valve opens at	0.23—0.30 kg/cm ² pressure ($3\frac{1}{4}$ — $4\frac{1}{4}$ p.s.i.)
Thermostat:	
Rated	165
Type	Balanced = is not influenced by water pump pressure

Speedometer cable revolutions per kilometer (mile):	
AC-speedometer	616 (990)
VDO-speedometer	630 (1135)

PROPELLER SHAFT

Propeller shaft, up to chassis number 2505	Tubular, one-piece, two universal joints
from chassis number 2506 onwards ...	Tubular, two-piece, three universal joints, support bearing
Manufacture and type	Hardy-Spicer with needle bearings
Number of rollers in each bearing	22
Lubricant, universal joints	Special chassis lubricant

REAR AXLE

Manufacturing number and gear ratios are stamped on a plate attached to the rear axle housing.

Rear axle, type	Semi-floating
Track, Chassis Nos. 1—20004	1300 mm (51")
Chassis Nos. 20005 onwards	1315 mm (51 ³ / ₄ ")
Axial clearance for drive shafts, ENV	0.02—0.12 mm (.0008"—.0047")
Spicer	0.07—0.20 mm (.0028"—.0079")

Rear axle gear

Chassis Nos. 1—12504, early production

Type	Crown wheel and pinion
Gear ratio, alternative	4.57: 1 (7: 32)
	4.63: 1 (8: 37)
Tooth flank clearance (pinion—crown wheel)	0.10—0.20 mm (.004"—.008")
Axial throw, crown wheel	max. 0.08 mm (.0032")
Tension, pinion bearing	2—4 kgem (1.74—3.48 lb. in)
Lubricant	Hypoid oil
viscosity	SAE 80
Oil capacity	1.3 litres (2 ¹ / ₄ Imp. pints)

Chassis Nos. 1—12504, late production and

Chassis Nos. 12505 onwards

Type	Crown wheel and pinion (hypoid)
Gear ratio	4.56: 1 (9: 41)
Tooth flank clearance (pinion—crown wheel)	0.10—0.20 mm (.004"—.008")
Axial throw, crown wheel	max. 0.08 mm (.0032")
Tension, pinion bearing, ENV	2—4 kgem (1.74—3.48 lb.in)
Spicer	9—14 kgem (7.82—12.2 lb.in)
Lubricant	Hypoid oil
viscosity	SAE 80
Oil capacity, ENV, Chassis Nos. 1—131917	0.9 litre (1 ¹ / ₂ Imp. pints)
Chassis Nos. 131918 onwards	1.3 litre (2 ¹ / ₄ Imp. pints)
Spicer	1.3 litre (2 ¹ / ₄ Imp. pints)

Tightening torques

	Kgm	Lb/ft
Companion flange (18×1.5 mm thread)	max. 20	max. 150
(³ / ₄ "—16 thread)	28—30	200—220
Cap (11×1.5 mm thread)	5.5—6	40—45
(¹ / ₂ "—13 thread)	8.5—10	60—70
Crown wheel (10×1 mm thread)	5.5—6	40—45
(10×1.25 mm thread)	5.0—5.5	36—40
(³ / ₈ "—24 thread)	5.5—7	40—50
(⁷ / ₁₆ "—20 thread)	7—8.5	50—60

FRONT AXLE AND STEERING GEAR

Steering gear

Steering wheel diameter, Chassis Nos. 1—12504	417 mm (16 ¹ / ₂ ")
Chassis Nos. 12505 onwards ..	425 mm (16 ³ / ₄ ")
Steering wheel turns, lock to lock	3 ¹ / ₄
Steering gear, early production	Ross, cam and lever
late production	Gemmer, cam and roller
Gear ratio, centre position, early production	12:1
late production	13.9:1
outer positions, early production	14:1
late production	13.9:1
Oil capacity, early production	3.0 dl (¹ / ₂ Imp. pints)
late production	1.3 dl (¹ / ₄ Imp. pints)
Lubricant	Caltex Special Oil 250, Castrol SB Special Gear oil, Esso Gear Oil 250 Special, Kendall No. 400, Vacuum Mobilube Special Steering Gear Oil or Nynäs Steering Gear Oil 250

Wheel alignment (unladen)

Caster	— ³ / ₄ ° to + ¹ / ₄ °
Camber	— ¹ / ₄ ° to + ¹ / ₂ °
Toe-in	0—3 mm (0"—.118")
Toe-out:	
When the outer wheel is turned 20°, the inner wheel should be turned	22°±1°
King pin inclination inwards	5° (at 0° camber)
length, Chassis Nos. 1—20004	124.5 mm (4.9")
length, Chassis Nos. 20005 onwards	133.5 mm (5.25")
diameter	19.0 mm (.75")

BRAKES

Brake drum, diameter, front	228.6 mm (9.0")
rear	228.6 mm (9.0")
radial throw, max.	0.15 mm (.006")
Effective brake lining area, early prod. (rivetted linings)	850 cm ² (132 sq. in.)
late prod. (bonded linings)	930 cm ² (144 sq. in.)

Brake linings:	
Type	Pressed
Size, front shoes	2" × 3/16" × 258 mm (10.15")
rear shoes	2" × 3/16" × 198 mm (7.8")
Brake lining rivets:	
Size	9/64" × 5/16" (3.5 × 8 mm)
Number of rivets on front brake shoes	10
Number of rivets on rear brake shoes	8
Clearance between shoes and drums	0.10 mm (.004")
Pedal free-play	7—12 mm (.28"—.47")

Hydraulic system

Type	Lockheed
Master cylinder, diameter	1"
Wheel unit cylinders, diameter, front	1"
rear	7/8"
Clearance between plunger and cylinder, min.	0.03 mm (.0012")
max.	0.15 mm (.006")

WHEELS AND TYRES

Wheels

Type	Disc
Size, Chassis Nos. 1—20004	3.50"D—16"
Chassis Nos. 20005 onwards	4.00"J—15"
Out-of-roundness, max.	2.5 mm (.09")
Warping, max.	2.5 mm (.09")
Wheel, r.p.km. (mile): 5.00"—16"	about 500 (300)
5.90"—15"	about 505 (308)
Torque required for tightening wheel nuts	10—14 kgm (70—100 lb. ft.)

Tyres

Type:	Chassis Nos. 1 - 20004	Chassis Nos. 20005 onw
Standard model, to chassis No. 101041	Tyres with tubes	Tyres with tubes
from chassis No. 101042 onwards ..	—	Tubeless tyres
Special model, to chassis No. 87492	Tyres with tubes	Tyres with tubes
from chassis No. 87493 onwards ..	—	Tubeless tyres
Size	5.00"—16"	5.90"—15"
Ply	4	4
Rolling radius	319 mm (12.56")	315 mm (12.40")
Tube	5.00"—16"	5.90"—15"
Tyre pressure (cold tyres):		
Two persons, front tyres	1.5 kg/cm ² (21.3 p.s.i.)	1.3 kg/cm ² (18.5 p.s.i.)
rear tyres	1.6 kg/cm ² (22.8 p.s.i.)	1.5 kg/cm ² (21.3 p.s.i.)
Full load, front tyres	1.7 kg/cm ² (24.2 p.s.i.)	1.5 kg/cm ² (21.3 p.s.i.)
rear tyres	2.0 kg/cm ² (28.4 p.s.i.)	1.7 kg/cm ² (24.2 p.s.i.)

SPRINGS AND SHOCK ABSORBERS

Springs

Front	Coil springs
Length loaded with 435 ± 12 kg (959 ± 26 1/2 lb.)	177 mm (6.96")
Material thickness	13.6 ± 0.1 mm (.54" ± .004")

PV 444

Rear	Coil springs
Chassis Nos. 1—onwards	
Length loaded with 215±8 kg (474±17½ lb.)	242 mm (9.5")
Material thickness	11.8±0.1 mm (.46"±.004")
PV 444 TL	
Length loaded with 300±10 kg (661±22 lb.)	255 mm (10")
Material thickness	13±0.1 mm (.5"±.004")

Shock absorbers

Manufacture and type	Delco telescopic
Can be dismantled up to chassis no. 10000, all-welded design on late production	

ELECTRICAL SYSTEM

Battery

Type	Boliden 3F06, NOACK 312, SAAJ GH 13—6, Tudor 3 Df6 or similar
Earthed	Negative
Voltage	6 volts
Battery capacity, standard	85 amp.h.
Electrolyte specific weight, fully charged battery	1.275—1.285
Electrolyte specific weight, when charging is necessary	1.230

Ignition system

Firing order	1—3—4—2
Ignition setting, B 4 B, basic setting,	
engine part Nos. 495300, 495301	5° B.T.D.C.
engine part No. 495302, 83 oct. ROT ..	5° A.T.D.C.
93 oct. ROT	2° B.T.D.C.
B 16 A, basic setting,	
83 oct. ROT	2° A.T.D.C.
93 oct. ROT	4° B.T.D.C.
B 16 A, stroboscope setting (1500 r.p.m., vacuum control disconnected),	
83 oct. ROT	15° B.T.D.C.
93 oct. ROT	21° B.T.D.C.
Ignition coil, production I	Auto-Lite IG-4090
II	Auto-Lite CR-6001
III	Bosch ZS/KZ 1/6
Sparking plugs, early production	10 mm thread Bosch U 175 T 3 AC 104 Auto-Lite P-6 Champion Y 6 or similar
Sparking plugs, late production	14 mm thread Bosch W175T4 AC 44 Com Auto-Lite A7 Champion J7 or similar
Sparking plug gap	0.7—0.8 mm (.028—.032")

Distributor

Type, B 4 B production	I	Auto-Lite IGS-4210
	II	Auto-Lite IAT-4006
	III	Bosch VJU 4BR9
B 16 A		Bosch VJU 4BR20

Test values for Auto-Lite distributor:

Direction of rotation:	Clockwise				
Centrifugal governor					
Distributor, degrees	0	4	7.5	13	17.5
Distributor speed, r.p.m.	250	355	450	1160	1750
Vacuum governor:					
Distributor, degrees	0	1	3	6	7.5
Vacuum cm Hg	10	14	22	35	40
Breaker points, gap	0.45—0.55 mm (.018"—.022")				
contact pressure	0.48—0.57 kg (1—1.25 lb)				
closing angle	47°				
Condenser, capacity	0.20—0.25 μ F (microfarad)				

Test values for Bosch distributor VJU4 BR9:

Direction of rotation:	Clockwise					
Ignition setting:						
Centrifugal governor						
Distributor degrees	0	5	10	15	17.5	
Distributor speed, r.p.m.	140—300	280—450	560—920	1180—1580	1500—1900	
Vacuum governor:						
Distributor degrees	0	7.5 \pm 1				
Vacuum cm Hg	9—14	44				
Breaker points, gap	0.4—0.5 mm (.016"—.020")					
contact pressure	0.4—0.5 kg (1—1.25 lb)					
closing angle	54 \pm 2°					

Test values for Bosch distributor VJU4 BR20:

Direction of rotation	Clockwise				
Ignition setting:					
Centrifugal governor					
Distributor degrees	0	5	10	14 \pm 1	
Distributor speed, r.p.m.	210—380	370—500	825—1200	1575—1925	
Vacuum governor					
Distributor degrees	0	8 \pm 1			
Vacuum cm Hg	7—14	50			
Breaker points, gap	0.4—0.5 mm (.0157"—0.197")				
contact pressure	0.4—0.5 kg (.88—1.1 lb)				
closing angle	50 \pm 3°				

Dynamo

Type, B 4 B engine up to engine No. 12096	Auto-Lite GDZ-4821 A
engine Nos. 12097—43099 and	
engine Nos. 74630—75219	Auto-Lite GDZ-6001 C
engine Nos. 43100—73048	Bosch LJ/GJM160/6 1500R10
engine Nos. 73049—74629 and	
engine Nos. 75220—131917	Bosch LJ/GJM160/6 1800R10
B 16 A engine	Bosch LJ/GG200/6 2300R6..7

Auto-Lite GDZ-4821 A

Auto-Lite GDZ-6001 C

Voltage	6 volts
Earthed	Negative

Charging, cold dynamo:		
6.4 volts 0 amps	.....	1850—1900 r.p.m.
8 volts 40 amps	.....	2575—2675 r.p.m.
Charging, warm dynamo:		
6.4 volts 0 amps	.....	1875—1950 r.p.m.
8 volts 40 amps	.....	2750—2850 r.p.m.

Charging control:

Type, B 4 B engine, up to engine No. 12096	.....	Auto-Lite VRP-4007 C2
engine Nos. 12097—43099 and		
engine Nos. 74630—75219	.....	Auto-Lite VRP-6003A
engine Nos. 43100—73048	.....	Bosch RS/UA 160/6/30
engine Nos. 73019—74629 and		
engine Nos. 75220—131917	.....	Bosch RS/UA 160/6/16
B 16 A engine	.....	Bosch RS/UA 200/6/23

Auto-Lite VRP-4007 C2

Auto-Lite VRP-6003A

Series resistance (2)	7 and 38 ohms.
-----------------------	-------	----------------

Test values

Reverse current relay:		
Adjusted for cutting-in at	.....	6.5 volts
Adjusted for cutting-out at	.....	4.1—4.8 volts (open circuit)
		4—6 amps. (closed circuit)

Voltage control:		
Control voltage adjusted to	.....	7.35 volts

Current control:		
Control current adjusted to	.....	35 amps.
Test values are rated at an air temperature of	.....	20±1° C (68±2° F)

Bosch RS/UA 160/6/30

Bosch RS/UA 160/6/16

Equalizing resistance AR	.....	5.5—6.0 ohms
Control resistance W1	.....	4.0—5.0 ohms

Test values

Reverse current relay:		
Adjusted for cutting-in at	.....	5.8—6.3 volts
Adjusted for cutting-out at	.....	4—9 amps. (closed circuit)

Voltage control:		
Control voltage adjusted to	.....	7.1—7.4 volts

Current control:		
Control current adjusted to	.....	40±1 amp.
Test values are rated at an air temperature of about	....	20° C (68° F)

Bosch RS/UA 2000/6/23

Equalizing resistance AR	.....	5.5—6.0 ohms
Control resistance W1	.....	4.0—5.0 ohms
W2	.....	6.0—7.0 ohms

Test values

Reverse current relay:		
Cut-in voltage	.....	5.8—6.3 volts
Reverse current	.....	4—9 amps

Voltage control:		
Control voltage, unloaded dynamo, first control stage	.....	7.0—7.5 volts

Electrical:

Unloaded starter motor:	
Test period	max. 15 secs.
5.5 volts and 65—75 amps.	3500—4500 r.p.m.
Loaded starter motor:	
4.5 volts and 260—280 amps.	750—850 r.p.m.
Locked starter motor:	
3.5 volts and 450—480 amps	min. 1.33 kgm (9.4 lb.ft) (r.p.m. = 0)
Solenoid:	
Cut-in voltage	2.5—3.3 volts
Cut-out voltage	0.8—1.6 volts
Measurement "a" (see fig. 13)	32.2 + 0.1 mm (1.27 + .004")

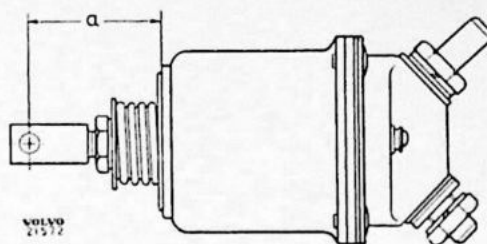


Fig. 13. Control solenoid setting.
(iron core withdrawn).

Bulbs

Figures in the columns indicate:
number
output
socket

	Chassis Nos. 1—12504	Chassis Nos. 12505—20004	Chassis Nos. 20005—23004	Chassis Nos. 23005—37004	Chassis Nos. 37005—68955	Chassis Nos. 68956—about 93000	Chassis Nos. about 93000—131917	Chassis Nos. 131918—onwards	
Headlights	2 15/40 W BA 20 d								
Parking lights	2 2.4 W BA 9 s						2 1.5 W BA 9 s	2+ 20/5 W BA 15 d spec.	
Long time parking lights	—						2 1.5 W BA 9 s	—	
Number plate lighting	1 5 W BA 15 s								
Stop and tail lights	2 20/3 W BA 15 d				2 20/5 W BA 15 d spec.			2+ 20/5 W BA 15 d spec.	
Instrument lamps	3 1.5 W BA 9 s		2 2.4 W BA 9 s						
Direction indicator lamps	2 3 W S 5		Roof mounted 3 15 W BA 15 s	Side mounted 2 15 W BA 15 s	2 15 W BA 15 s		2 15 W S 8		++
Control lamps for direction indicators	1 2.4 W BA 9 s						2 2.4 W BA 9 s		
Control lamp for headlights	1 2.4 W BA 9 s				1 1.5 W BA 9 s				
Interior lighting	1 15 W BA 15 s		1 1.5 W BA 9 s		1 15 W BA 15 s		1 10 W S 8		

+ Also direction indicator lamps.
++ See parking lights and stop and tail lights respectively.

Fuses

Fusebox under the bonnet on the left-hand side of the cowl.

	Number	Amps.
Chassis Nos. 1—20004 (P 44403)	3	8
	1	25
Chassis Nos. 12505—20004 (P 44404)	2	8
	2	25
Chassis Nos. 20005—28004 (P 44403)	5	8
	1	25
Chassis Nos. 28005—68955 (P 44403)	4	8
	2	25
Chassis Nos. 68956 onwards (P 44403)	1	8
	2	25
Chassis Nos. 68956 onwards (P 44404)	3	8
	3	25

Headlight setting

Adjust at a distance of 16 ft 5" (5 m) from wall.

Vertical setting (Dimension "C" in Service Manual

Part 10 Fig. 68).

3" (7.5 cm) below the headlight horizontal centre line.

Horizontal setting (Dimension "B" in Service Manual

Part 10 Fig. 68).

3" (7.5 cm) out from the headlight vertical centre line.

LUBRICATION

Engine

	B 4 B	B 16 A
Lubricating oil, type	Engine oil	Engine oil
grade	Service MM, MS	Service MM, MS
viscosity, summer	SAE 20	SAE 20
winter	SAE 10 W	SAE 10 W
Oil capacity without oil filter	3.25 litres	2.75 litres
	(5 ³ / ₄ Imp. pints)	(4 ⁷ / ₈ Imp. pints)
Oil capacity with oil filter	3.75 litres	3.5 litres
	(6 ¹ / ₂ Imp. pints)	(6 ¹ / ₈ Imp. pints)

Gearbox

Lubricating oil, type	Gearbox oil
viscosity	SAE 80
capacity	0.5 litres (1 Imp. pint)

Rear axle gear

Lubricating oil, type	Hypoid oil
viscosity	SAE 80
Oil capacity, chassis Nos. 1—12504 (early production) ..	1.3 litres (2 ³ / ₈ Imp. pints)
Oil capacity, chassis Nos. 1—12504 (late prod.) and Nos	
12505—131917, ENV	0.9 litres (1 ⁵ / ₈ Imp. pints)
Spicer	1.3 litres (2 ³ / ₈ Imp. pints)
chassis Nos. 131918—onwards	1.3 litres (2 ³ / ₈ Imp. pints)

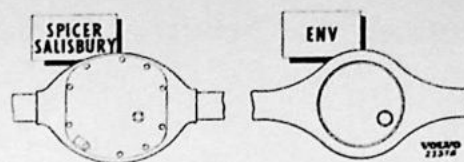


Fig. 14. Identification of rear axle.

Steering gear

Lubricating oil, type	Caltex Special Oil 250 Castrol SB Special Gear Oil Esso Gear Oil 250 Special Kendall 400 Mobilube Special Steering Gear Oil or Nynäs Steering Gear Oil 250
Oil capacity, early prod. (Ross)	0.3 litres (1/2 Imp. pints)
late prod. (Gemmer)	0.13 litres (1/4 Imp. pints)