



CARS

Part 0 (03)
SPECIFICATIONS
P 120
Station Wagon

SERVICE MANUAL



VOLVO
101 059

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GENERAL

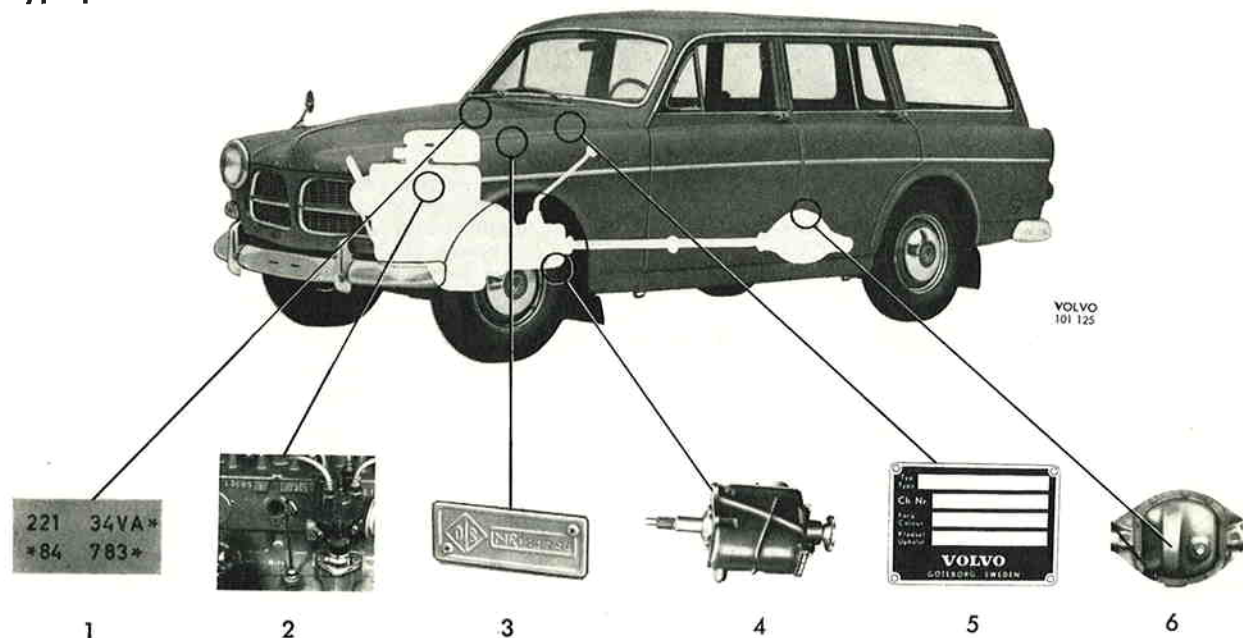
TYPE DESIGNATIONS

These specifications concern the Volvo 120 Station Wagon with the type designations and main data shown below.

| Type designation | Model | With effect from | Chassis number | Engine | Gearbox | Rear axle |
|------------------|-------|------------------|----------------|--------|---------|-----------|
| P 22134 | VA/HA | Feb 1962 | 1— 1399 | B 18 A | M 40 | 4.55:1 |
| P 22244*) | | | | B 18 D | M 40 | 4.55:1 |
| P 22134 | VB/HB | Aug 1962 | 1400— 8274 | B 18 A | M 40 | 4.55:1 |
| P 22244*) | | | | B 18 D | M 40 | 4.55:1 |
| P 22134 | VD/HD | Aug 1963 | 8275—17949 | B 18 A | M 40 | 4.55:1 |
| P 22244*) | | | | B 18 D | M 40 | 4.55:1 |
| P 22134 | VE/HE | Aug 1964 | 17950— | B 18 A | M 40 | 4.55:1 |
| P 22244*) | | | | B 18 D | M 40 | 4.55:1 |

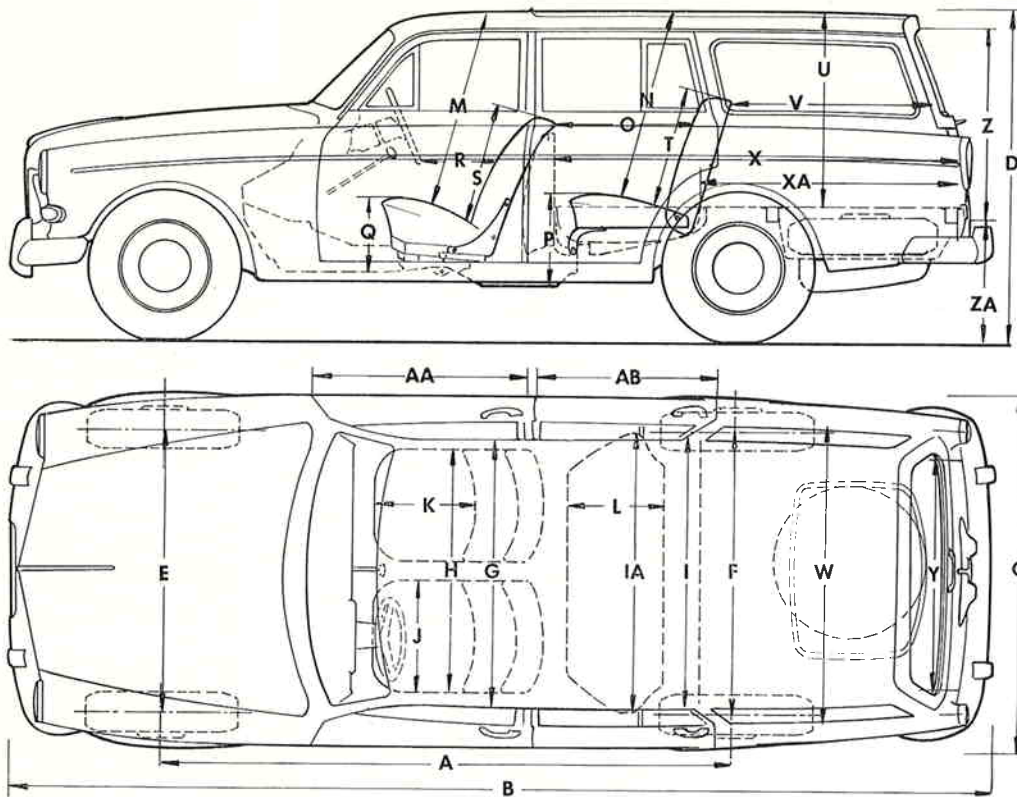
*) United States market only.

Type plates



1. The chassis number is stamped on the bulkhead.
2. Engine type designation, serial and part numbers.
3. Body number.
4. Gearbox type designation, serial and part numbers.
5. Vehicle type designation, chassis number, colour and upholstery codes.
6. Rear axle. Number of teeth and ratio on plate attached to lower part of inspection cover.

GENERAL DATA



VOLVO
26890

Dimensions:

| | * mm | * in. | ** mm | ** in. | | * mm | * in. | ** mm | ** in. |
|---|------|--------|-------|--------|---|------|-------|-------|--------|
| A Wheelbase | 2600 | 102.36 | | | P Height of rear seat cushion above floor | 370 | 14.57 | 400 | 15.75 |
| B Overall length | 4490 | 176.77 | | | Q Height of rear seat cushion above floor | 330 | 12.99 | 340 | 13.39 |
| C Overall width | 1620 | 63.78 | | | R Space between steering wheel and squab | 350 | 13.78 | 390 | 15.35 |
| D Overall height | 1530 | 60.24 | | | S Height of front squab | 540 | 21.26 | | |
| E Track, front | 1315 | 51.78 | | | T Height of rear squab | 550 | 21.65 | 580 | 22.83 |
| F Track, rear | 1315 | 51.78 | | | U Height, floor-roof of luggage space | 865 | 34.06 | | |
| G Front seat width at shoulder height | 1280 | 50.39 | 1340 | 52.75 | V Distance between rear squab and rear door | 970 | 38.19 | 900 | 35.43 |
| H Width over front seat, hip height | 1340 | 52.75 | 1290 | 50.79 | W Width, luggage space | 1260 | 49.61 | | |
| I Rear seat width at shoulder height | 1250 | 49.21 | 1330 | 52.36 | X Length, luggage space (rear seat folded down) | 1830 | 72.05 | | |
| IA Rear seat width, hip height | 1330 | 52.36 | 1240 | 48.81 | XA Length, luggage space (rear seat in raised position) | 1185 | 46.65 | | |
| J Width of front seat | 530 | 20.87 | | | Y Width of rear door | 1055 | 41.54 | | |
| K Length (depth), front seat | 470 | 18.50 | 500 | 19.69 | Z Height of rear door | 780 | 30.71 | | |
| L Length (depth), rear seat | 460 | 11.11 | 480 | 18.90 | ZA Loading height | 620 | 24.41 | | |
| M Roof height, front seat, 15 cm (6") in front of squab | 980 | 38.58 | 950 | 37.40 | AA Door width, front | 935 | 36.81 | | |
| N Roof height, rear seat, 15 cm (6") in front of squab | 910 | 35.83 | 950 | 37.40 | AB Door width, rear | 840 | 33.07 | | |
| O Distance between front seat squab and rear seat cushion | 600 | 23.62 | 700 | 27.56 | | | | | |

The front seats can be fully adjusted lengthwise 150 5.91 225 8.86

Turning circle:

Outermost edge of vehicle 11200 mm (37 ft. 4 in.)
Kerb to kerb 10600 mm (35 ft.)

| Type designation | Kerb weight | | Dry weight | | Axle pressure (with kerb weight) | | | |
|------------------|-------------|------|------------|------|----------------------------------|------|------|------|
| | kg | lb. | kg | lb. | Front | | Rear | |
| VA/HA | 1260 | 2777 | 1140 | 2513 | 592 | 1305 | 668 | 1472 |
| VB/HB | 1260 | 2777 | 1140 | 2513 | 592 | 1305 | 668 | 1472 |
| VD/HD | 1270 | 2799 | 1146 | 2526 | 597 | 1316 | 673 | 1483 |
| VE/HE | 1270 | 2799 | 1146 | 2526 | 597 | 1316 | 673 | 1483 |

* Up to chassis number 17949.
** W.e.f. chassis number 17950.

LUBRICATION

ENGINE

| | |
|--|--|
| Oil capacity, with oil filter | 3.75 litres (3 1/2 Imp. qts. = 4 US qts.) |
| without oil filter | 3.25 litres (3 1/4 Imp. qts. = 3 1/2 US qts.) |
| Oil pressure at 2000 r.p.m. (with warm engine and new oil) | 3.5—6.0 kg/cm ² (50—85 lb./sq.in.) |
| Lubricant | Engine oil for Service MS |
| viscosity, all the year round | Multigrade oil SAE 10W—30 |
| viscosity, below 0° C (32° F) | SAE 10W |
| between 0 and 30° C (32 and 90° F) | SAE 20 |
| above 30° C (90° F) | SAE 30 |
| Oil for carburettor damping cylinders | SAE 20 engine oil (multigrade oil may not be used) |

GEARBOX

| | |
|-------------------------------------|---|
| Lubricant, type | Gear oil |
| viscosity, below 0° C (32° F) | SAE 80 |
| above 0° C (32° F) | SAE 90 |
| Oil capacity | 0.75 litres (1 1/4 Imp. pints = 1 1/2 US pints) |

DIFFERENTIAL

| | |
|-------------------------------------|--|
| Lubricant, type | Hypoid oil |
| viscosity, below 0° C (32° F) | SAE 80 |
| above 0° C (32° F) | SAE 90 |
| Oil capacity | 1.3 litres (2 3/8 Imp. pints = 2 3/4 US pints) |

STEERING BOX

| | |
|-------------------------------------|---|
| Lubricant, type | Hypoid oil |
| viscosity, below 0° C (32° F) | SAE 80 |
| above 0° C (32° F) | SAE 90 |
| Oil capacity | 0.25 litres (3/8 Imp. pint = 1/2 US pint) |

ENGINE

GENERAL

| | B 18 A | B 18 D |
|---|--------------------------|----------------------|
| Type designation | (496801 and 496814)* | (496802-815-816-817) |
| Output, h.p. at r.p.m. (SAE) | 75/4500 | 90/5000 |
| (DIN) | 68/4500 | 80/5000 |
| Max torque, kgm (lb.ft.) at r.p.m. (SAE) | 14.0 (103)/2800 | 14.5(105)/3500 |
| (DIN) | 13.5(98)/2600 | 14.0(103)/3000 |
| Compression pressure (warm engine) when turned over with starter motor, 250—300 r.p.m. kg/cm ² | 11—13 | |
| lb./sq.in. | 156.4—185.0 | |
| Compression ratio | 8.5:1 | |
| Number of cylinders | 4 | |
| Bore | 84.14 mm (3.313") | |
| Stroke | 80 mm (3.150") | |
| Displacement | 1.78 litres | |
| Weight, including electrical equipment and carburetters.. | approx. 155 kg (342 lb.) | |

* Refers to the engine model number, and is stamped on the right-hand side of the engine.

CYLINDER BLOCK

| | |
|------------------------------|--|
| Material | |
| Bore, nominal standard | |
| 0.020" oversize | |
| 0.030" oversize | |
| 0.040" oversize | |
| 0.050" oversize | |

B 18 A

B 18 D

| |
|------------------------|
| Special-alloy castiron |
| 84.14 mm (3.313") |
| 84.65 mm (3.333") |
| 84.90 mm (3.343") |
| 85.16 mm (3.353") |
| 85.41 mm (3.363") |

PISTONS

| | |
|---|--|
| Material | |
| Permissible weight deviation between pistons in same engine | |
| Height, overall, early prod. | |
| late prod. | |
| Height from gudgeon pin centre to piston crown | |
| Piston clearance | |

| |
|-------------------------------|
| Light-alloy |
| 10 grammes (0.35 oz.) |
| 83.5 mm (3.287") |
| 71.0 mm (2.795") |
| 46 mm (1.811") |
| 0.02-0.04 mm (0.0008-0.0016") |

Piston rings

| | |
|---|--|
| Piston ring gap, measured in ring opening | |
| Piston ring oversizes | |

| |
|-----------------------------|
| 0.25-0.50 mm (0.010-0.020") |
| 0.020" |
| 0.030" |
| 0.040" |
| 0.050" |

COMPRESSION RINGS

| | |
|---------------------------------------|--|
| Marked "TOP". Upper ring chromed. | |
| Number on each piston | |
| Height | |
| Piston ring clearance in groove | |

| |
|---------------------------------|
| 2 |
| 1.98 mm (0.078") |
| 0.054-0.081 mm (0.0021-0.0032") |

SCRAPER RINGS

| | |
|---------------------------------------|--|
| Number on each piston | |
| Height | |
| Piston ring clearance in groove | |

| |
|---------------------------------|
| 1 |
| 4.74 mm (0.1866") |
| 0.044-0.072 mm (0.0017-0.0028") |

GUDGEON PINS

| | |
|---|--|
| Floating fit. Circlips at both ends in piston | |
| Fit: | |
| In connecting rod | |
| In piston | |
| Diameter, standard | |
| 0.05 mm (0.002") oversize | |
| 0.10 mm (0.004") oversize | |
| 0.20 mm (0.008") oversize | |

| |
|-------------------|
| Close running fit |
| Push fit |
| 22.00 mm (0.866") |
| 22.05 mm (0.868") |
| 22.10 mm (0.870") |
| 22.20 mm (0.874") |

CYLINDER HEAD

| | |
|--|--|
| Height, measured from cylinder head face to bolt head level | |
| Distance from the upper surface of the cylinder head to the upper end of the overflow pipe (pipe located under thermostat) | |

| |
|---------------|
| 88 mm (3.46") |
| 35 mm (1.38") |

CRANKSHAFT

| | |
|--|--|
| Crankshaft, end play | |
| Main bearings, radial clearance | |
| Big-end bearings, radial clearance | |

| |
|---------------------------------|
| 0.017-0.108 mm (0.0007-0.0043") |
| 0.026-0.077 mm (0.0010-0.0030") |
| 0.039-0.081 mm (0.0015-0.0032") |

Main bearings

B 18 A

B 18 D

MAIN BEARING JOURNALS

| | |
|---|-----------------------------------|
| Diameter, standard | 63.441—63.454 mm (2.4977—2.4982") |
| 0.010" undersize | 63.187—63.200 mm (2.4877—2.4882") |
| 0.020" undersize | 62.933—62.946 mm (2.4777—2.4782") |
| 0.030" undersize | 62.679—62.692 mm (2.4677—2.4682") |
| 0.040" undersize | 62.425—62.438 mm (2.4577—2.4582") |
| 0.050" undersize | 62.171—62.184 mm (2.4477—2.4482") |
| Width on crankshaft for pilot bearing shell | |
| Standard | 38.930—38.970 mm (1.5327—1.5343") |
| Oversize 1 (0.010" undersize shell) | 39.031—39.072 mm (1.5367—1.5383") |
| 2 (0.020" undersize shell) | 39.133—39.173 mm (1.5407—1.5423") |
| 3 (0.030" undersize shell) | 39.235—39.275 mm (1.5447—1.5463") |
| 4 (0.040" undersize shell) | 39.336—39.376 mm (1.5487—1.5503") |
| 5 (0.050" undersize shell) | 39.438—39.478 mm (1.5527—1.5543") |

MAIN BEARING SHELLS

| | |
|---------------------------|---------------------------------|
| Thickness, standard | 1.985—1.991 mm (0.0781—0.0784") |
| 0.010" undersize | 2.112—2.118 mm (0.0831—0.0834") |
| 0.020" undersize | 2.239—2.245 mm (0.0881—0.0884") |
| 0.030" undersize | 2.366—2.372 mm (0.0931—0.0934") |
| 0.040" undersize | 2.493—2.499 mm (0.0981—0.0984") |
| 0.050" undersize | 2.620—2.626 mm (0.1031—0.1034") |

Big-end bearings

BIG-END BEARING JOURNALS

| | |
|-------------------------------|-----------------------------------|
| Width of bearing recess | 31.950—32.050 mm (1.2579—1.2618") |
| Diameter, standard | 54.089—54.102 mm (2.1295—2.1300") |
| 0.010" undersize | 53.835—53.848 mm (2.1195—2.1200") |
| 0.020" undersize | 53.581—53.594 mm (2.1095—2.1100") |
| 0.030" undersize | 53.327—53.340 mm (2.0995—2.1000") |
| 0.040" undersize | 53.073—53.086 mm (2.0895—2.0900") |
| 0.050" undersize | 52.819—52.832 mm (2.0795—2.0800") |

BIG-END BEARING SHELLS

| | |
|---------------------------|---------------------------------|
| Thickness, standard | 1.833—1.841 mm (0.0722—0.0725") |
| 0.010" undersize | 1.960—1.968 mm (0.0772—0.0775") |
| 0.020" undersize | 2.087—2.095 mm (0.0822—0.0825") |
| 0.030" undersize | 2.214—2.222 mm (0.0872—0.0875") |
| 0.040" undersize | 2.341—2.349 mm (0.0922—0.0925") |
| 0.050" undersize | 2.468—2.476 mm (0.0972—0.0975") |

CONNECTING RODS

| | |
|--|-------------------------------|
| End play on crankshaft | 0.15—0.35 mm (0.006—0.014") |
| Length, centre to centre | 145 ± 0.1 mm (5.710 ± 0.004") |
| Max. permissible weight deviation between connecting rods in same engine | 6 grammes (0.21 oz.) |

FLYWHEEL

| | |
|---|--|
| Permissible axial throw, max. | 0.05 mm (0.002") at a diam. of 150 mm (6") |
| Ring gear (chamfer facing forwards) | 142 teeth |

FLYWHEEL HOUSING

| | |
|--|--|
| Max. axial throw for rear face | 0.05 mm (0.002") at a diam. of 100 mm (4") |
| Max. radial throw for rear guide | 0.15 mm (0.006") |

CAMSHAFT

| | |
|---|--|
| Marking | |
| Number of bearings | |
| Front bearing journal, diameter | |
| Centre bearing journal, diameter | |
| Rear bearing journal, diameter | |
| Radial clearance | |
| End play | |
| Valve clearance for control of camshaft setting (cold engine) | |
| Inlet valve should then open at | |

B 18 A

B 18 D

| | |
|-----------------------------------|--|
| A | |
| 3 | |
| 46.975—47.000 mm (1.8494—1.8504") | |
| 42.975—43.000 mm (1.6919—1.6929") | |
| 36.975—37.000 mm (1.4557—1.4567") | |
| 0.020—0.075 mm (0.0008—0.0030") | |
| 0.020—0.060 mm (0.0008—0.0024") | |
| 1.1 mm (0.04") | |
| 10° after T.D.C. | |

Camshaft bearings

| | |
|--------------------------------|--|
| Front bearing, diameter | |
| Centre bearing, diameter | |
| Rear bearing, diameter | |

| |
|-----------------------------------|
| 47.020—47.050 mm (1.8512—1.8524") |
| 43.025—43.050 mm (1.6939—1.6949") |
| 37.020—37.045 mm (1.4575—1.4585") |

TIMING GEARS

| | |
|--|--|
| Crankshaft gear, number of teeth | |
| Camshaft gear (fibre), number of teeth | |
| Backlash | |
| End play, camshaft | |

| |
|-------------------------------|
| 21 |
| 42 |
| 0.04—0.08 mm (0.0016—0.0032") |
| 0.02—0.06 mm (0.0008—0.0023") |

VALVES

Inlet

| | |
|-----------------------------------|--|
| Disc diameter | |
| Stem diameter | |
| Valve seat angle | |
| Seat angle in cylinder head | |
| Seat width in cylinder head | |

| |
|---------------------------------|
| 40 mm (1.58") |
| 8.685—8.700 mm (0.3419—0.3425") |
| 44.5° |
| 45° |
| 1.4 mm (0.06") |

Exhaust

| | |
|-----------------------------------|--|
| Disc diameter | |
| Stem diameter | |
| Valve seat angle | |
| Seat angle in cylinder head | |
| Seat width in cylinder head | |

| |
|---------------------------------|
| 35 mm (1.38") |
| 8.645—8.660 mm (0.3404—0.3409") |
| 44.5° |
| 45° |
| 1.4 mm (0.06") |

Valve clearance

| | |
|---|--|
| Clearance, both warm and cold engine, exhaust | |
| Clearance, both warm and cold engine, inlet | |

| |
|-----------------------------|
| 0.40—0.45 mm (0.016—0.018") |
| 0.40—0.45 mm (0.016—0.018") |

VALVE GUIDES

| | |
|--|--|
| Length | |
| Inner diameter | |
| Height above upper face of head | |
| Clearance, valve stem—guide, inlet valve | |
| exhaust valve | |

| |
|---------------------------------|
| 63 mm (2.48") |
| 8.725—8.740 mm (0.3435—0.3441") |
| 21 mm (0.83") |
| 0.025—0.055 mm (0.0010—0.0022") |
| 0.065—0.095 mm (0.0026—0.0037") |

VALVE SPRINGS

| | |
|---|--|
| Early prod.: | |
| Length, without loading, approx. | |
| with a loading of 25.5±2.0 kg (56±4 1/2 lb.) .. | |
| with a loading of 66.0±3.5 kg (145±8 lb.) | |

| |
|-----------------|
| 45 mm (1.77") |
| 39 mm (1.54") |
| 30.5 mm (1.20") |

Late prod.:
Length, without loading, approx.
with a loading of 29.5 ± 2.3 kg (65 ± 5 lb.)
with a loading of 82.5 ± 4.3 kg ($182 \pm 9 \frac{1}{2}$ lb.)

| | |
|---------------|---------------|
| B 18 A | B 18 D |
| 46 mm (1.81") | |
| 40 mm (1.57") | |
| 30 mm (1.18") | |

LUBRICATING SYSTEM

Oil capacity, with oil filter
without oil filter

3.75 litres (3 1/2 Imp. qts. = 4 US qts.)
3.25 litres (3 1/4 Imp. qts. =
3 1/2 US qts.)

Oil pressure at 2000 r.p.m. (with warm engine and new oil)

3.5–6.0 kg/cm² (50–85 lb./sq.in.)

Lubricant
viscosity, all the year round
viscosity, below 0° C (32° F)
between 0 and 30° C (32 and 90° F)
above 30° C (90° F)

Engine oil for Service MS
Multigrade oil SAE 10W–30
SAE 10W
SAE 20
SAE 30

Lubricating oil filter

Type
Make

Full-flow
Wix or Mann

Lubricating oil pump

Lubricating oil pump, type
number of teeth on each gear
end play
radial clearance
backlash

Gear
10
0.02–0.10 mm (0.0008–0.0040")
0.08–0.14 mm (0.0032–0.0055")
0.15–0.35 mm (0.0060–0.0140")

Relief valve springs (in oil pump)

Length, unloaded, early prod.
late prod.
loaded with 4.0 ± 0.2 kg ($9 \pm 1/2$ lb.), early prod.
 9.5 ± 0.3 kg ($21 \pm 3/4$ lb.)
 8.0 ± 0.8 kg ($17 \frac{1}{2} \pm 1 \frac{3}{4}$ lb.), late
prod.

approx. 31 mm (1.22")
approx. 32.5 mm (1.28")
27.5 mm (1.08")
22.5 mm (0.88")

22.5 mm (0.88")

FUEL SYSTEM

Fuel pump

Fuel pump, type I, diaphragm pump
Fuel pump, type II, diaphragm pump
Fuel pump, type III, diaphragm pump
Fuel pressure, measured at same level as pump.....

AC-UG
Pierburg APG
AC-YD
min. 0.11 kg/cm² (1.5 lb./sq.in.)
max. 0.25 kg/cm² (3.5 lb./sq.in.)

Carburettors

Type
Make and designation

| | |
|--------------|------------|
| Down-draught | Horizontal |
| Zenith 36 VN | SU-HS 6 |

DATA (ZENITH 36 VN)

| | |
|--|-----|
| Venturi | 30 |
| Main jet..... | 117 |
| Compensating jet | 115 |
| Idling jet | 70 |
| Air jet for idling | 70 |
| Air jet for partial acceleration | 140 |
| Acceleration jet, early prod. | 40 |
| late prod. | 50 |

Acceleration pump stroke
 Float valve
 Gasket for float valve, thickness
 Idling speed (warm engine)

DATA (SU-HS 6)

Number
 Size (air intake diameter)
 Fuel needle, designation
 Idling speed
 Oil for damping cylinders

IGNITION SYSTEM

Voltage
 Order of firing
 97 octane ROT
 97-100 octane ROT
 at 1500 engine r.p.m. (vacuum regulator disconnected)
 Sparking plugs
 Sparking plug gap
 tightening torque

Distributor

Make
 Breaker points, gap
 pressure
 Dwell angle
 Direction of rotation

COOLING SYSTEM

Type
 Radiator cap valve opens at
 Capacity
 Fan belt, designation
 tension: The pulley should start slipping when
 the force applied is

Anti-freeze

Amount of glycol required for frost-protection down to
 -10° C (+15° F)
 -20° C (-5° F)
 -30° C (-22° F)
 -40° C (-40° F)
 The maximum depression of freezing point down to
 -56° C (-70° F) is obtained by adding 5.1 litres (1 1/8
 Imp. galls = 1 1/4 US galls) of ethylene glycol.

Thermostat

Type
 Marked
 Starts to open at
 Fully open at

B 18 A

Short
 1.75
 1 mm (0.04")
 500-700 r.p.m.

B 18 D

2
 44.5 mm (1 3/4")
 ZH
 500-700 r.p.m.
 SAE 20, engine oil
 (not multigrade)

12 V
 1-3-4-2
 21-23° before
 T.D.C.

22-24° before
 T.D.C.

Bosch W 175 T1 or equivalent
 0.7-0.8 mm (0.028-0.032")
 3.8-4.5 kgm (28-32 lb.ft.)

Bosch
 0.4-0.5 mm (0.016-0.018")
 0.4-0.6 kg (0.88-1.32 lb.)
 61° ± 4°
 Anti-clockwise

Pressure
 0.25-0.30 kg/cm² (3-4 lb./sq.in.)
 pressure
 approx. 8.5 litres (2 Imp. galls. =
 2 1/4 US galls.)
 HC 38 X 35"
 8.0-11.0 kg (17.6-24.3 lb.) at a lever
 of 150 mm (6")

2 litres (3 1/2 Imp. pints = 4 US pints)
 3 litres (5 1/4 Imp. pints = 6 US pints)
 4 litres (7 Imp. pints = 9 US pints)
 4.5 litres (1 Imp. gall. = 1 1/4 US gall.)

Fulton Sylphon 1-1700-D 3
 170
 75-78° C (167-172° F)
 89° C (192° F)

WEAR TOLERANCES

B 18 A

B 18 D

Cylinder

To be rebored when wear reaches (if engine shows abnormal oil consumption) 0.25 mm (0.010")

Crankshaft

Permissible out-of-round on main bearing journals, max. 0.05 mm (0.002")
 Permissible out-of-round on big-end bearing journals, max. 0.07 mm (0.003")
 Crankshaft end play, max. 0.15 mm (0.006")

Valves

Permissible clearance between valve stems and valve guides, max. 0.15 mm (0.0060")
 Valve stems, permissible wear, max. 0.02 mm (0.0008")

Camshaft

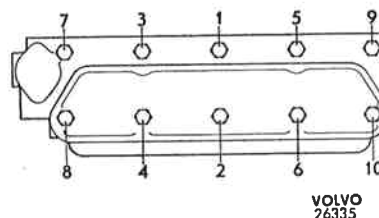
Permissible out-of-round (with new bearings), max. 0.07 mm (0.0030")
 Bearings, permissible wear 0.02 mm (0.0008")

Timing gears

Permissible backlash, max. 0.12 mm (0.005")

Tightening torques

| | Kgm | Lb.ft. |
|------------------------------|---------|--------|
| Cylinder head | 8.5-9.5 | 61-69 |
| Main bearings | 12-13 | 87-94 |
| Big-end bearings | 5.2-5.8 | 38-42 |
| Flywheel | 4.5-5.5 | 33-40 |
| Sparking plugs | 3.8-4.5 | 27-33 |
| Camshaft nut | 13-15 | 94-108 |
| Crankshaft pulley bolt | 7-8 | 51-58 |
| Dynamo bolt (3/8"-16") | 3.5-4.0 | 25-29 |
| Oil filter nipple | 4.5-5.5 | 33-40 |
| Oil sump bolts | 0.8-1.1 | 6-8 |



Tightening sequence, cylinder head bolts

ELECTRICAL SYSTEM

BATTERY

| | |
|----------------------------------|-------------------------------|
| Type | Boliden 107GM60 or equivalent |
| Earthed | Negative terminal |
| Voltage | 12 V |
| Battery capacity, standard | 60 Ah |

Electrolyte specific gravity:

- Fully charged battery
- When recharging is necessary
- Recommended charging current

B 18 A

- 1.275-1.285
- 1.230
- 4.5 A

B 18 D

IGNITION SYSTEM

- Order of firing
- Ignition setting:
 - 97 octane ROT
 - 97-100 octane ROT
 - at 1500 engine r.p.m. (vacuum regulator disconnected)
- Ignition coil
- Sparking plug, type
- thread
- gap
- tightening torque.....

1-3-4-2

21-23° before
T.D.C.

22-24° before
T.D.C.

- Bosch ZS/KZ 1/12 A (14/3)
- Bosch W 175 T 1 or equivalent
- 14 mm (0.06")
- 0.7-0.8 mm (0.028-0.032")
- 3.8-4.5 kgm (27.5-32.5 lb.ft.)

DISTRIBUTOR

- Make
- Designation

- Bosch
- VJU 4 BL 33 (JFUR 4) Early prod. VJU 4 BL 33 (JFUR 4)
- Late prod. JFR 4

Test values (VJU 4 BL 33)

- Direction of rotation
- Ignition setting values, centrifugal regulator:
 - Crankshaft degrees 0
 - Crankshaft r.p.m. 750-1050
- Vacuum regulator:
 - Crankshaft degrees
 - Vacuum cm (in.) Hg
- Breaker points, gap
- pressure
- dwell angle

Anti-clockwise

10 22 22 ± 3
1300-1850 2300-2900 2800-3300

6 15 ± 4
6-10 (2.36-3.94") 18 (7.09")
0.4-0.5 mm (0.016-0.020")
0.4-0.5 kg (0.88-1.10 lb.)
57-63°

Test values (JFR 4)

- Direction of rotation
- Ignition setting values, centrifugal regulator:
 - Crankshaft degrees 0
 - Crankshaft r.p.m. 510-1050
- Breaker points, gap
- pressure
- dwell angle.....

Anti-clockwise

10 20 26 ± 3
1450-1920 2350-3700 4600-4900
0.4-0.5 mm (0.016-0.020")
0.50-0.63 kg (1.1-1.4 lb.)
59-65°

DYNAMO

- Make
- Designation
- Voltage
- Rated effect
- Max. continuous effect
- Earthed
- Direction of rotation
- Ratio, engine-dynamo
- Brushes, designation.....
- number
- pressure

- Bosch
- LJ/GG 240 12/ LJ/GG 240 12/
- 2400 AR 7 2400 AR 6
- 12 V
- 240 W
- 30 A
- Negative terminal
- Clockwise
- 1.8:1
- WSK 43 L 1
- 2
- 450-600 grammes (1.0-1.3 lb.)

Test values

Field winding resistance
 Charging, cold dynamo, 240 W
 warm dynamo, 240 W
 Speed for rated voltage, unloaded

B 18 A

B 18 D

4.8 + 0.5 ohms
 2300 r.p.m.
 2500 r.p.m.
 1700 r.p.m.

Charging relay

Make
 Equalizing resistance aR
 Control resistance wR

Bosch RS/VA 240/12/2
 15.5–16.5 ohms
 8–9 ohms

Test values

Reverse current relay:

Adjusted for, cutting-in at
 reverse current at.....

12.4–13.1 V
 2.0–7.5 A

Voltage control:

Control voltage, dynamo unloaded (idling).....
 loaded

14.1–14.8 V
 13.0–14.0 V

Loading current:

Cold dynamo and voltage control
 Warm dynamo and voltage control

45 A
 30 A

STARTER MOTOR (early prod.)

Make
 Voltage
 Earthed
 Direction of rotation
 Output
 Number of teeth on pinion
 Brushes, designation.....
 number

Bosch EGD 1/12 AR 37
 12 V
 Negative terminal
 Clockwise
 about 0.9 h.p. at -10° C (+15° F)
 about 1.2 h.p. at +20° C (70° F)
 9
 DSK 35/5
 4

Test values

Mechanical:

Rotor end play
 Brush spring tension
 Distance from pinion to ring gear
 Frictional torque of rotor brake
 Pinion idling torque
 Backlash
 Pinion modulus

0.1–0.3 mm (0.004–0.012")
 0.8–0.9 kg (1.76–1.98 lb.)
 2.5–3.0 mm (0.10–0.12")
 3–5 kgcm (2.6–3.4 lb.in.)
 1.3–1.8 kgcm (1.13–1.56 lb.in.)
 0.35–0.60 mm (0.014–0.024")
 2.11

Electrical:

Unloaded starter motor:
 11.5 V and 40–60 A.....
 Loaded starter motor:
 10 V and 200 A.....
 Locked starter motor:
 r.p.m. = 0

5500–7500 r.p.m.
 1100–1300 r.p.m.

8 V

400–450 A