STEERING SYSTEM

Live-offset steering gives short work cycle times. Power-efficient system provides good fuel economy, good directional stability and smooth ride.

Steering system: Load-sensing hydrostatic articulated steering

System supply: The steering system is supplied by a separate steering pump.

Pump: Variable flow axial piston pump.

Cylinders: Two double-acting cylinders.

- Steering cylinder: 2 Bar
- Stroke: 70 mm
- Piston rod diameter: 40 mm
- Relief pressure: 21 MPa
- Max. flow: 40 l/min
- Valve: Double-acting, 3-spool valve.

LIFT SYSTEM

Option: hydraulic cylinders with high/low efficient vane pumps allows precision control at low rpm with quick movements thanks to the high capacity pumps.

Pumps: Variable pump fitted with a pressure-take-off on the transmission.

Valve: Double-acting, 3-spool valve. The control valve is actuated by a 3-spool pilot valve.

Lift function: The valve has four functions: raise, hold, lower and float. Inductive/magnetic automatic boom control can be switched on or off and is adjustable to any position between maximum reach and full lift height.

Tilt function: The valve has three functions: rollover, hold and dump. Inductive/magnetic/automatic bucket control that can be switched on and off.

- Cylinders: Double-acting.
- Filter: FailSafe Filter through 20 µm (absolute) filter cartridge.

ENGINE

- Engine: Air-cooled, 4-stroke, dual-spur-steel, on-mounted exhaust and intake pipes.
- Water temperature: 85°C (no load), 95°C (full load).
- Oil temperature: 70°C (no load), 85°C (full load).
- Oil pressure: 5 MPa (no load), 10 MPa (full load).
- Battery: 12 V, 200 Ah.

Electrical system

- Generator: Alternator, brushless, 50 A.
- Engine intake manifold preheater: Electric.
- Auxiliary: Engine coolant temperature.
- Control: Automatic lubrication system.

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- Control: Automatic lubrication system.

CAB

- Model: Care Cab II
- Tür: Side panels, manual hand
- Window guards: , side and rear window
- Sun visor: Sun visor
- Engine: WFI wheel armrest
- Automatic lubrication system
- Automatic suspension system
- Center console on dashboard
- Neutral start interlock
- Rearview mirrors: (2)
- Dashboard: Painted in Sweden 2001.08 – 3,0 WLO

LIFTF SYSTEM

- Valve: Double-acting, 3-spool valve.
- Filter: FailSafe Filter through 20 µm (absolute) filter cartridge.

LIFT SYSTEM

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ENGINE

The engine delivers high torque and good response at low rpm even under full load. The machine can work at low engine speeds, which contributes to good fuel economy, lower noise, less wear and longer life.

- Engine: 4-cylinder in-line, direct-injected, turbocharged, intercooled 4-stroke diesel engine with wet replaceable liner.
- Fuel consumption: 255 l / 1000 h (Euro 5).
- Maximum power: 110 kW (150 hp) at 2000 rpm.
- Transmission: three-stage.
- Starter-motor output: 800 Nm (60 A).
- Alternator rating: 1685 W / 60 A.
- Torque converter: 322 kW / 1000 rpm.
- Flywheel output at 800 rpm: 365 kW / 1100 rpm.

ELECTRICAL SYSTEM

- Voltage: 24 V.
- Battery: 300 Ah.
- Starter: 5,4 kW (13 hp).

GRAPPLE (Flank on)

- Length: 11,920 mm.
- Width: 5,050 mm.
- Height: 2,800 mm.
- Weight: 28,000 kg.

BUCKET SELECTION CHART

- Ground load: 4 800 kg (incl. logging counterweight).
- Operating weight: 9 600 kg.

OPERATIONAL DATA, VOLVO L90D

- Number of discs/wheel: 1.
- Operating load: 4 800 kg (incl. logging counterweight).
- Operating weight: 9 600 kg.
### SERVICE REFILL CAPACITIES

<table>
<thead>
<tr>
<th>Material density (t/m³)</th>
<th>Rock</th>
<th>Aggregate</th>
<th>Sand/Gravel</th>
<th>Earth/Clay</th>
</tr>
</thead>
<tbody>
<tr>
<td>2,2</td>
<td>~1,8</td>
<td>~1,9</td>
<td>~1,6</td>
<td>~1,7</td>
</tr>
<tr>
<td>2,4</td>
<td>~1,8</td>
<td>~2,4</td>
<td>~2,2</td>
<td>~2,6</td>
</tr>
<tr>
<td>2,6</td>
<td>~2,4</td>
<td>~2,6</td>
<td>~2,4</td>
<td>~2,6</td>
</tr>
</tbody>
</table>

### ELECTRICAL SYSTEM

### ENGINE

- **Engine:** Borg Warner 12NSC 6-cylinder turbocharged and intercooled with 4-stroke cycle.
- **Air cleaning:** Three-stage.
- **Displacement:** 8.0 L.
- **Vmax:** 1,100 rpm.
- **Rated engine output:** 210 kW / 285 HP.
- **Rated engine torque:** 1,050 Nm.

### ELECTRICAL SYSTEM

### BRAKE SYSTEM

A simple, reliable system with full parts ensures high availability and safety. Self-adjusting internal oil circulation-cooled disc brakes give long service life.

- **Service brakes:** Volvo, dual-circuit, system with nitrogen-charged accumulators for dead engine braking. Fully hydraulically operated enclosed internal oil circulation-cooled, outboard-mounted disc brakes. Transmission declutching braking can be preselected by a switch on the instrument panel.
- **Parking brake:** Mechanically operated disc brake on front axle.
- **Secondary brake:** Either of the service brake circuits or the parking brake fulfills ISO/SACE safety requirements.

### OPERATIONAL DATA, VOLVO L90D

**GENERAL PURPOSE**

<table>
<thead>
<tr>
<th>Tire 20.5 R25 L2</th>
<th>Tire 23.5 R25 L2</th>
<th>Tire 23.5 R25 L3</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 850</td>
<td>2 800</td>
<td>3 050</td>
</tr>
<tr>
<td>2 650</td>
<td>1 720</td>
<td>1 720</td>
</tr>
<tr>
<td>2 650</td>
<td>1 810</td>
<td>1 810</td>
</tr>
</tbody>
</table>

**LIGHT MECHANICAL**

<table>
<thead>
<tr>
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<th>Tire 23.5 R25 L2</th>
<th>Tire 23.5 R25 L3</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>2 650</td>
<td>1 720</td>
<td>1 720</td>
</tr>
<tr>
<td>2 650</td>
<td>1 810</td>
<td>1 810</td>
</tr>
</tbody>
</table>

**GRAPPLE (Fixed on)**

<table>
<thead>
<tr>
<th>Material</th>
<th>Bucket 31 m³</th>
<th>Material</th>
<th>ISO-SACE bucket volume, m³</th>
<th>Actual volume, m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,0</td>
<td>15 500</td>
<td>3,2</td>
<td>12 190</td>
<td>9 820</td>
</tr>
<tr>
<td>1,2</td>
<td>15 140</td>
<td>3,4</td>
<td>11 850</td>
<td>9 580</td>
</tr>
<tr>
<td>1,4</td>
<td>14 660</td>
<td>3,6</td>
<td>11 020</td>
<td>8 120</td>
</tr>
<tr>
<td>1,6</td>
<td>14 160</td>
<td>3,8</td>
<td>10 870</td>
<td>7 710</td>
</tr>
<tr>
<td>1,8</td>
<td>13 610</td>
<td>4,0</td>
<td>10 120</td>
<td>6 810</td>
</tr>
<tr>
<td>2,0</td>
<td>13 060</td>
<td>4,2</td>
<td>9 550</td>
<td>6 050</td>
</tr>
</tbody>
</table>

**BUCKET SELECTION CHART**

The choice of bucket is determined by the density of the material and the bucket fill factor. The VOLVO L90D comes with a very open bucket design, has very good rollback in all working conditions, and is very user friendly. The system is pre-wired for installation of optional equipment.

### OPERATIONAL DATA & DIMENSIONS

Cabin

Care Cab

- Cab floor area
- Cab height
- Operator's seat
- Control panel
- Instrumentation
- Operator's information
- Energy efficiency

Hydraulic system

- Engine
- Transmission
- Powertrain
- Drive train
- Brakes
- Auxiliary power
- Efficiency

Standard equipment

- Equipment
- Attachments
- Control system
- Hydraulics
- Transmission
- Brakes
- Accessories
- Interior

Option equipment

- Engine output
- Transmission
- Power train
- Drive train
- Brakes
- Attachments
- Control system
- Hydraulics
- Transmission
- Brakes
- Accessories
- Interior
**SERVICE REFILL CAPACITIES**

**ENGINE**

The engine delivers high torque and quick response at low rpm.

**TRANSMISSION**

Transmission: Volvo Power Drive transmission with counter-driven main clutch and single-range control. Fast and smooth forward/reverse shift.

**SHAFTING SYSTEM**

Shifting system: Volvo Automatic Power Shift (APS II) with mode selection.

**BRAKE SYSTEM**

Brake system: Mechanically operated disc brake on front axle and parking brake.

**HYDRAULIC SYSTEM**

Hydraulic tank 53 l, Fuel tank 210 l.

**OPERATIONAL DATA, VOLVO L90D**

**OPERATIONAL DATA & DIMENSIONS**

**BUCKET SELECTION CHART**

The capacity of buckets is determined by the density of the material and the loaded bucket factors. The TP-linkage uses a very open bucket design, has very good roll back in all positions plus fills the bucket very well. This means that the actual volume carried is often larger than the rated capacity of the bucket. Bucket fill factors of different materials and sizes, a clearance circle of 370 mm with a 1% fill factor, are given in the TP-linkage bucket selection chart.

**ELECTRICAL SYSTEM**

Contactor-controlled system with increased functionality. Electrical system with circuit boards, well protected and pre-wired for installation of optional equipment.

**OPERATIONAL DATA & VOLUME**

**DRIVETRAIN**

Drivetrain and working hydraulic systems are matched to each other. Desirable function. Quick acceleration andadies smoothly. Volvo system-compatible design facilitates servicing.

**TORQUE CONVERTER**


**BATTERY**

Battery output: 450 A, Reserve capacity: 30 h.

**HARMONIC BALANCER**

Volumetric efficiency: 91%.
CAB
Care Case I/Inch wide door opening and comfortable, contoured handles of cab lined with non-slip elements. Noise and vibration suppressing suppression. Good all-round visibility through large glass areas. Curved front windshield of green tinted glass. Ergonomically positioned controls and instruments painted a comfortable operating position.

Instrumentation: All important information is centrally located in the operator’s field of view. Displays for Comfort Drive Monitoring system, in center console on dashboard.

Heater and defroster: Heater coil with fresh air and fan with four speeds. Defroster vents for all window areas.

Operator’s seat: Operator’s seat with adjustable suspension and retractable seatbelt. The seat is mounted on a bracket on the rear cab seat. The forces from the retractable seatbelt are absorbed by the seat rail.

Standard: The cab is tested and approved according to ISO 3650 (ISO 3650:1994, ISO 3649, ISO 2321). The cab meets with requirements according to ISO 6210 (1995 for roof of high lift vehicles) and SAE J858 ("Operator Reclining Seat").

LIFTM SYSTEM
TP Liftarm combines high breakout torque throughout the working range with nearly zero parallel lift arm action. The feature together with high lift height and long reach, make the lift system equally as good in bucket loading as in work with fork attachments and material handling tasks.

Liftarm:

- Lift: 300 mm
- Breakout forces: 135 kN
- Lift: 710 mm
- Breakout forces: 200 kN
- Lift: 400 mm
- Breakout forces: 50 kN
- Lift: 600 mm
- Breakout forces: 90 kN

Power: 24 V/135 A
- Lift: 450 mm
- Breakout forces: 140 kN
- Lift: 710 mm
- Breakout forces: 200 kN
- Lift: 400 mm
- Breakout forces: 50 kN
- Lift: 600 mm
- Breakout forces: 90 kN

STANDARD EQUIPMENT

Engine
- Diesel engine (4-stroke, direct injection, turbocharged, water cooled, electronically controlled) with exhaust aftertreatment system:
- Pollution control
- Water and oil
dump. Inductive/magnetic automatic bucket positioner that can be switched on and off.

Cylinders: Two double-acting cylinders.

- Steering cylinder: 2
- Break 100 kg
- Plate: 40 mm
- Stroke: 410 mm
- Relief pressure: 31 MPa
- Maximum pressure: 23 MPa
- Articulation: +6/6

STEERING SYSTEM
- Quick centre hydraulic with highly efficient van pumps allows precision control at all times together with quick movements thanks to the high capacity pumps.
- Van pump: Fitted a power take off on the transfer case. The pilot system is supplied from a combined piston pump.
- Valve: Double-acting, 3-speed valve. The control valve is activated by a 3-speed pilot valves.
- Lift function: The valve has four functions: raise, hold, lower and float. Inductive/magnetic actuated by 3-spool pilot valve.
- Electrical system:
- Air conditioning (optional equipment):
- Variable-flow axial piston pump.
- Cylinder:
- Filter: Fineflow filtration through 20 mm (absolute) filter cartridge.
- Valve pump: Displacement pressure: 21.5 MPa
- Flow: 203 litre/min
- Max. engine speed: 1800 (102 rpm)
- Pilot system: 35 litre/min
- Cycle times: "F:" 5.2 s
- "D:" 1.4 s
- Load 100 kg: 2.2 s
- Total cycle time: 9.7 s
- with intake via ISO 8890 and SAE J858

OPTIONAL EQUIPMENT

- Standard in certain markets.

- Engine output SAE 1395:
- gross 118 kW (153 hp)
- net 103 kW (135 hp)
- ISO 8489, SAE 1394:
- net 113 kW (153 hp)
- 2-stroke engine, direct injection, turbocharged, water cooled:
- High output engine: 140 kW (190 hp)
- Performance: feeds latest emission regulations for off-road vehicles
- Tires
- Power Shift with mode selector
- Neutral start interlock
- Automatic Power Shift (APS II)
- Drive system
- Engine
- Single lever hydraulic control
- Control valve
- Cab
- Inductive/magnetic automatic bucket positioner that can be switched on and off.
- Volvo transmission with APS II:
- 2-stroke engine, direct injection, turbocharged, water cooled:
- High output engine: 140 kW (190 hp)
- Performance: feeds latest emission regulations for off-road vehicles
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