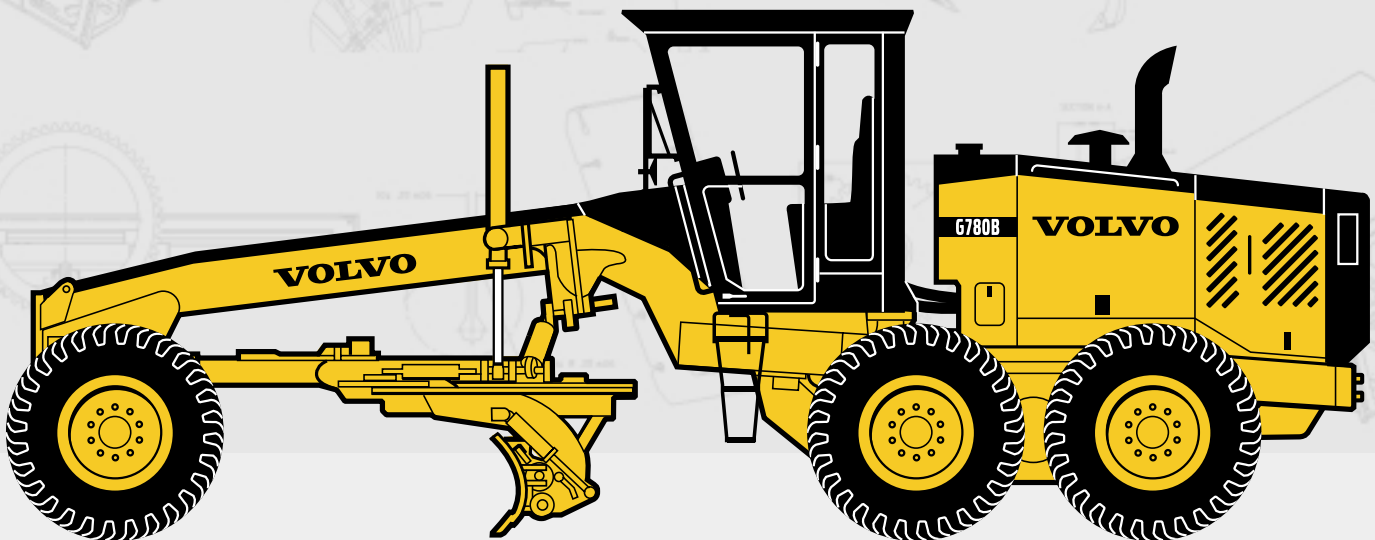


VOLVO MOTOR GRADER G780B

TANDEM DRIVE



- **Configuration:** Articulated frame
- **Engine model:** Volvo D10BGAE2
- **Maximum net engine output @2100 RPM (per SAE J1349):** 219 - 243 hp (163 - 181 kW)
- **Base weight:** 43,250 lb (19 618 kg)
- **Blade down force:** 22,963 lb (10 416 kg)
- **Blade pull:** 27,248 lb (12 360 kg)
- 8400 fully sequential direct drive powershift transmission
- Choice of fully enclosed, ROPS cab in full height or low profile configuration, or ROPS canopy
- Moveable Blade Control System
- Load sensing, Closed Center Hydraulic System
- Fully adjustable control pedestal with low effort hydraulic controls
- Full front and rear frame sections designed for attachment mounting
- Engine cooling module with efficient, variable speed, hydraulically driven cooling fan
- Single lever "Smart Shifter" transmission control with gear memory feature
- Hydraulically Boosted Dual Crossover Braking System with reserve power assist
- Heavy duty lock/unlock differential
- Contronic Monitoring System for all machine functions
- Full range of front and rear mounted attachments
- Equipped with the fuel efficient, long life Volvo engine that complies to the EPA Tier II, EU Stage II emission standards

VOLVO



Operating weight (Standard equipment)

Weights shown include full cab with ROPS, all operating fluids and operator.

Base

Total 43,250 lb (19 618 kg)
On front wheels 12,975 lb (5 825 kg)
On rear wheels 30,275 lb (13 733 kg)

Typically equipped operating weight:

includes 20.5 x 25, 12 PR, L-2 tires on 17" (432 mm) rims and 16' x 31" x 1" (4 877 x 787 x 25 mm) moldboard, front push block and rear mounted ripper.
G780B 48,594 lb (22 041 kg)

Maximum combined capacity . 56,000 lb (25 401 kg)
Maximum weight - front . . . 18,500 lb (8 391 kg)
Maximum weight - rear . . . 38,000 lb (17 237 kg)

Weight adjustments for various options are listed at the rear of the brochure.

Note that adding weight and attachments to the base grader may necessitate a tire upgrade since the maximum weight capacity of the tire may be exceeded.



Productivity (Standard equipment)

Blade pull at base weight (no wheel slip, 0.9 traction co-efficient) 27,248 lb (12 360 kg)

Blade down force

• cutting capability
(ISO 7134) 22,963 lb (10 416 kg)

Blade down force is the maximum downward force which may be applied at the cutting edge.



Engine data

G780B

Make/Model Volvo D10BGAE2
Type 4 Cycle, Turbocharged, Aftercooled
No. of cylinders In Line 6
Bore & stroke 4.76" x 5.51" (121 x 140 mm)
Displacement 586 cu in (9,6 l)

Maximum net engine output @ 2100 RPM
(per SAE J1349) 219-243 hp (163-181 kW)

Rated gross brake horsepower @ 2100 RPM

• Gears forward 1, 2 and
Reverse 1 225 hp (168 kW)

• Gears forward 3-8 and
Reverse 2-4 249 hp (186 kW)

Rated net brake horsepower @ 2100 RPM

• Gears forward 1, 2 and
Reverse 1 219 hp (163 kW)

Torque @ 1000 RPM 837 lb.ft (1 135 N.m)
Torque rise 46.7%

• Gears forward 3-8 and
Reverse 2-4 243 hp (181 kW)

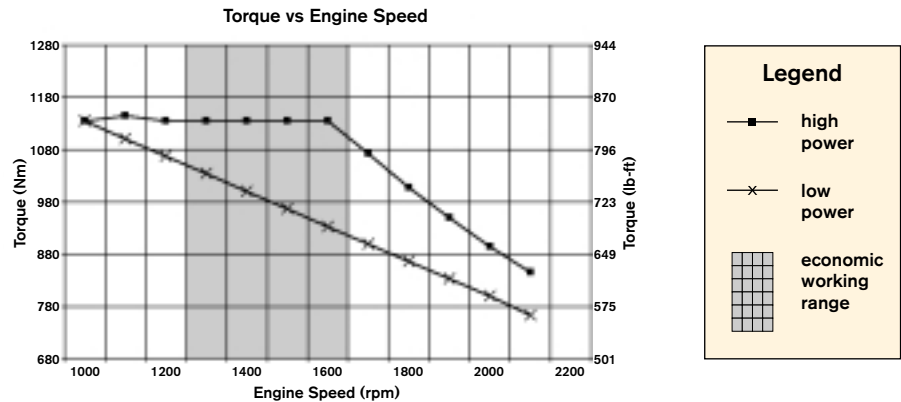
Torque @ 1100 RPM 846 lb.ft (1 145 N.m)
Torque rise 33.8%

Performance: Rated net brake horsepower SAE standard J1349/ISO 3046-2 conditions with water pump, lubricating oil pump, fuel system, air cleaner, muffler, alternator and cooling fan.

Engine complies to EPA Tier II, EU Stage II exhaust emission standard.

Engine cooling system designed with singular cooler installations, and utilizes a highly efficient, variable speed, hydraulically driven cooling fan.

Engine performance curve



Engine data (continued)

Engine equipped with a two stage, dual element, dry type air cleaner with exhaust aspirator and service indicator. 24 volt starting and electrical system with 80 amp (1920 watt) brushless alternator with internal voltage regulator. Two heavy duty 12 volt maintenance free batteries with 950 cold cranking amps (CCA) and 160 minutes reserve capacity per battery. 1300 CCA batteries available. System includes battery disconnect.



Transmission

Make/Model Volvo 8400

Fully sequential, direct drive, powershift transmission. Engine cannot be started if transmission is in gear. Single lever "Smart Shifter" electronic transmission controller provides self-diagnostics. The flywheel mounted, multi-disc master clutch is oil cooled and lubricated for long life.

Ground speeds at 2100 RPM with standard tires:

Forward		Reverse	
Gears.....mphkm/h	Gears.....mphkm/h
1.....	2.3.....3,7	1.....	2.3.....3,7
2.....	3.2.....5,1	2.....	4.5.....7,1
3.....	4.5.....7,2	3.....	8.8.....14,1
4.....	6.2.....10,0	4.....	17.0.....27,3
5.....	8.8.....14,1	8.....	23.8.....38,3
6.....	12.3.....19,7		
7.....	17.0.....27,3		
8.....	23.8.....38,3		

Transmission guard is standard equipment and is hinged for easy access.

Perma Lube U joints on the input/output drive shafts.



Differential / Final drive

Make/Model Volvo Twin Bull Gear
Double reduction final drive with an operator controlled lock/unlock differential. Rear axles are induction hardened, supported on double row spherical roller bearings.



Tandems

Robotically welded, tandem case with internal gusseting for maximum torsional strength. Field proven split ring/flanged sleeve tandem mounting and 1" (25 mm) thick inner wall resists flexing from side loading during severe applications.

Depth 24.50" (622 mm)
Width 8.25" (210 mm)
Thickness • inner wall 1.00" (25 mm)
• outer wall 0.75" (19 mm)
Center distance 65.50" (1 657 mm)
Drive chain pitch 2.00" (51 mm)
Oscillation ±15°



Brakes

Service Brakes: Foot operated

Fade resistant, hydraulically actuated, wet multiple disc service brakes located at the 4 tandem drive wheels are self-adjusting, fully sealed and maintenance free. System features cross over dual braking circuits for uniform braking on both sides of the grader. Includes reserve power assist and operator warning system (visual and audible).

Parking Brake

Spring applied hydraulic release independent, disc-type parking brake on transmission output shaft and effective on all 4 tandem drive wheels. Includes visual and audible operator warning system for parking brake on, transmission in gear condition. Transmission will not engage with park brake on.

Braking systems comply to SAE Recommended Practice J1473 OCT. 90, and J1152 APR. 80; ISO 3450-1993-01-28. Volvo uses asbestos free brake components.



 **Wheels & tires
(Standard equipment)**

Tire size 16.00 x 24, G-2
 Ply rating (PR) 12
 Rim size 10" (**254 mm**) Three piece rim
 Bolt-on rims are interchangeable between front and rear.

 **Front axle**

Type: Robotically welded steel truss, gusseted for torsional strength, oscillates on a single 3" (**76 mm**) diameter center pivot pin.
 Wheel lean 18° R & L
 Oscillation 16° up and down
 Ground clearance 27.5" (**698 mm**)
 Two 4" (**102 mm**) diameter wheel lean cylinder with lock valve are standard equipment.

 **Steering**

Hydrostatic power steering of front wheels incorporating two steering cylinders. Includes reserve power assist and operator warning system (visual and audible), meets SAE J1511 OCT. 90.
 Minimum turning radius using front axle steering, articulation, wheel lean and unlocked differential 25'5" (**7 747 mm**)
 Steering arc 72°
 Frame articulation angle 22°
 Articulation lock standard.



Frame

Full front and rear frame sections.

Front: Robotically welded box section. Dual sloped front frame provides excellent forward visibility.

Minimum dimensions of box

box section 10.5" x 14.0" (**267 x 356 mm**)

Plate thickness • top and bottom . . . 1.5" (**38 mm**)

• sides 1.25" (**32 mm**)

Vertical section modulus

at arch 185 cu in (**3 032 cm³**)

minimum 157.9 cu in (**2 588 cm³**)

maximum 324.3 cu in (**5 314 cm³**)

Linear weight - minimum-maximum

178.0 - 285.8 lb/ft (**264.9 - 425.3 kg/m**)

Rear: Full perimeter frame permits modular powertrain mounting for ease of service and is ideal for attachment mounting. Optional first user lifetime warranty on frame and articulation joint.

Minimum dimensions of

rear frame 4.0" x 11.0" (**102 x 279 mm**)

Plate thickness 3.0" + 1.0" (**76 + 25 mm**)



Articulation

Twin 5" (**127 mm**) hydraulic cylinders articulate frame 22° right and left. Anti drift lock valve ensures stable operation.



Circle

Hardened teeth, cut on the outside of the circle for maximum leverage and minimum wear.

Circle to drawbar support is provided at 15 points. Five upper circle wear plates, five adjustable clamp plates and five adjustable guide shoes combine to ensure optimum circle support and load distribution. DURAMIDE™ wear plates and bearings at the clamp and guide shoes prevent metal-to-metal contact and provide maximum service life.

DURAMIDE™ is a synthetic bearing material that provides long service life and reduces circle system maintenance requirements.

Diameter 66.62" (**1 692 mm**)

Thickness 2.0" (**51 mm**)

Adjustable guide shoes 5

Adjustable clamp plates 5

Upper circle wear plates 5



Circle drive

The Volvo dual cylinder Circle Drive System uses direct acting hydraulic power for exceptional turning and holding capability under full load. The Circle Drive System uses hardened drive pinions and is fully protected against impact damage by an overload relief valve as standard equipment.

Hydraulic drive cylinders 2

Points of leverage 2

Rotation 360°



Drawbar

Fully welded box section. Narrow "T" design permits optimum visibility to the work area. Drawbar ball stud provides an adjustment to compensate for different tire sizes. Blade lift cylinder anchors are straddle mounted on drawbar to provide maximum strength and support. Circle/drawbar is protected against severe impact damage by means of nitrogen charged accumulators plumbed into blade lift cylinders.

Dimensions of

box section 6.5" x 6.5" (**165 x 165 mm**)

Plate thickness 1.5" & 0.75" (**38 & 19 mm**)



Moldboard

Standard moldboard with

replaceable end bits 14' x 31" x 1"

(**4 267 x 787 x 25 mm**)

Blade material SAE 1050 high carbon steel

Edge: through hardened 8" x 1" boron steel

(**203 x 25 mm**)

Bolt diameter spacing 6" (**152 mm**)

• bolt size 3/4" (**19 mm**)

Slide rails supported with adjustable Za12

(Zinc aluminum) bearings for maximum wear

resistance.



Blade range: Moveable Blade Control System

(Dimensions shown with standard moldboard)

LEFT

RIGHT

Reach outside tires - articulated

frame123.5" (**3 137 mm**).....123" (**3 124 mm**)

Reach outside tires - straight

frame91" (**2 311 mm**)90.5" (**2 299 mm**)

Blade slide ..26.5" (**673 mm**).....26.5" (**673 mm**)

Circle side

shift.....30" (**762 mm**)29.5" (**749 mm**)

Maximum bank

sloping angle.....90°90°

Blade ground clearance.....17.0" (**432 mm**)

Blade cutting depth33.0" (**838 mm**)

Blade tilt range46° forward 13° back

Superior blade mobility permits steep ditch

cutting angles and back sloping outside overall

machine width.



Cab & controls



All controls are located in a 90° arc forward and to the right of the operator. Enclosed cab has a fully adjustable, cloth covered suspension seat as standard and comes with a 3" (**76 mm**) seat belt. Located forward of the operator are the engine oil pressure, coolant temperature and fuel level gauges, transmission gear indicator and a multi-function Contronic monitoring display. Located in the fully adjustable steering pedestal are the following switches: differential lock/unlock, hazard lights, combination turn signal, horn and high beam headlight. Heater and wiper/washer controls (if equipped), lighting and accessory switches are grouped in the operator's right hand console. This console also contains the ignition key and access to the circuit breaker and fuse panel. An accelerator/decelerator foot pedal and slider type hand throttle are standard equipment. Outside mounted rear view mirrors (L&R) and a convex interior mirror are standard. Interior operator noise levels average 75 dB(A) per ISO 6394 (enclosed cab).

Cab Options

- High capacity heater/air conditioner c/w adjustable vents, temperature control and variable speed fan

- Lower opening front windows

- Rear windshield wipers and washers

- Lower front window wipers and washers

- Modular, 24 volt radio and cassette player

- Operator Convenience Package included with air conditioner option (lunch box, steel vacuum bottle, cup holder and ashtray)

- 24 volt to 12 volt converter for electrical accessories or two way radio installations 25 or 60 amp available

- Bubble type slope meter

- Transmission and hydraulic filter restriction warning

- Low hydraulic oil and hydraulic oil temperature indicator

- Speedometer/odometer

Full height cab with ROPS

Inside dimensions

Height 74.0" (**1 880 mm**)

Width @ controls 56.0" (**1 422 mm**)

Depth @ controls 55.5" (**1 410 mm**)

An optional Low Profile Cab is available with an inside height of 62" (**1 575 mm**). All Volvo Grader cabs and canopies are designed to meet or exceed SAE J1040 APR. 88, ISO 3471/1-1986(E), and 86/295/EEC ROPS requirements. The seatbelt is 3" (**76 mm**) wide and meets SAE J386 JUNE 93; ISO 6683-1981(E).



Load sensing hydraulics

Closed Center Hydraulic System senses load requirements and maintains system pressure 350 psi (**24 Bar**) above the load pressure.

System features industry standard control arrangement complete with low effort, feathering type, short throw levers located on a fully adjustable steering pedestal.

System incorporates lock valves to prevent cylinder drift under load in the following circuits: blade lift, moldboard tilt, circle shift, wheel lean, circle turn and articulation.

Hydraulic system features include axial piston pump, pressure and flow compensated, variable displacement with high output for smooth multi-functioning.

The pump drive shaft is equipped with Perma Lube U joints.

Maximum pressure 2,700 psi (**186 Bar**)
Output 2200 RPM. 0-75 U.S. gpm (**0-284 lpm**)
Filtration 10 micron spin-on type



Capacities

	U.S.Gal.	Litres
Fuel tank	120.0	454.0
Transmission.	10.0	38.0
Final drive.	9.0	34.0
Tandems (each)	27.7	105.0
Hydraulic oil tank	35.4	134.0
Coolant antifreeze protection to -58° F (-50° C) approx	8.2	31.0
Engine oil	10.4	39.5



Attachments

(Optional unless otherwise stated as standard equipment)

Snow

- Hydraulic Wing
- high bench 4,800 lb (**2 177 kg**)
- low bench 4,000 lb (**1 814 kg**)
- One Way Snow Plow 2,350 lb (**1 065 kg**)
- "V" Snow Plow
- 9' (**2 743 mm**) 2,500 lb (**1 134 kg**)
- 10' (**3 042 mm**) 2,650 lb (**1 202 kg**)

Earth

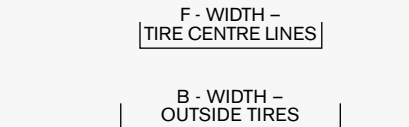
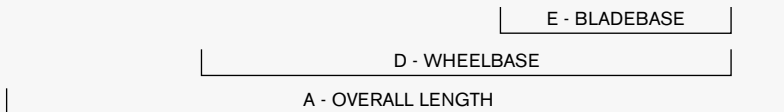
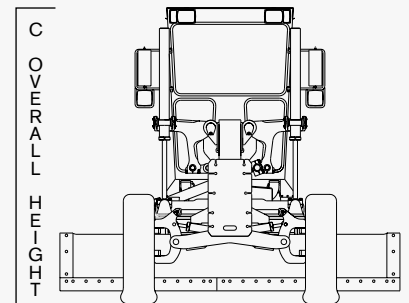
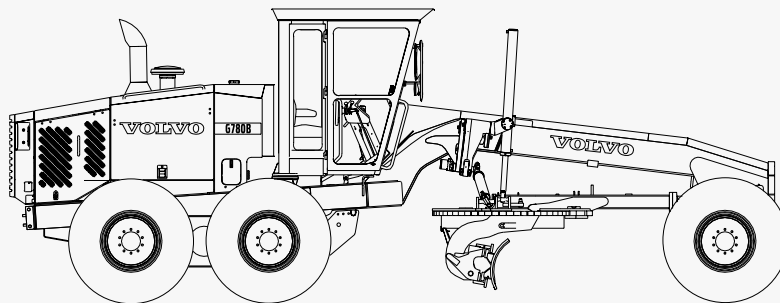
- Dozer Blade
- 8' (**2 438 mm**) 2,620 lb (**1 188 kg**)
- 9' (**2 743 mm**) 2,870 lb (**1 302 kg**)
- 10' (**3 048 mm**) 3,120 lb (**1 415 kg**)
- Push Block 1,125 lb (**510 kg**)
- Ripper/Scarifier, rear. 2,880 lb (**1 306 kg**)

Dimensions with standard equipment

All dimensions are approximate

- A Overall length 30'7" (**9 322 mm**)
- D Wheelbase 20'6" (**6 248 mm**)
- E Bladebase
- ISO 7134. 8'11" (**2 718 mm**)

- B Overall width 9'2" (**2 794 mm**)
- C Overall height. 11'6" (**3 505 mm**)
- with Low Profile Cab 10'6" (**3 200 mm**)
- F Width - Tire centre lines 7'7" (**2 311 mm**)



STANDARD FEATURES

<p>Operator controlled, lock/unlock differential final drive</p> <p>4 wheel, crossover, dual braking system with reserve power assist</p> <p>Park brake with operator warning alarm and indicator</p> <p>Fully sequential, direct drive, powershift 8400 transmission, with transmission guard</p> <p>13.5" (343 mm) diameter, 5 plate, oil cooled and lubricated master clutch</p> <p>Moveable Blade Control System for optimum blade mobility</p> <p>Full front and rear frame sections designed to withstand shock loading of attachments</p> <p>Cab halogen headlights with dimmer includes directional and hazard lights</p> <p>Circle drive counter-balance valve protects against impact damage</p> <p>Hardened circle teeth cut on outside of circle for maximum leverage and minimum wear</p>	<p>Hardened circle drive pinions for maximum pinion life</p> <p>Isolation mounted cab, transmission and engine for reduced noise and vibration</p> <p>Adjustable steering pedestal with tilt head for maximum operator comfort</p> <p>Gauges include: coolant temperature, engine oil pressure, fuel level, hourmeter, air cleaner service indicator, articulation angle indicator, multi-function Contronic Monitoring System with visual and audible warnings</p> <p>Load sensing, Closed Center Hydraulic System with short throw, low effort control levers. Hydraulically operated blade lift, circle turn, moldboard slide and tilt, circle shift and wheel lean functions and articulation</p> <p>Feathering type controls for precise blade adjustments</p> <p>Deluxe, cloth covered, fully adjustable suspension seat when grader is equipped with an enclosed cab</p> <p>120 U.S. gallon (454 l) fuel tank capacity</p>	<p>Nitrogen charged blade lift accumulators (2)</p> <p>Dual leaning wheel cylinders</p> <p>DURAMIDE™ wear strips on circle clamp plates and guide shoes prevent metal-to-metal contact for maximum service life</p> <p>Hinged cooling module doors for easy trash clean out</p> <p>Lights; backup, tail, stop and directional</p> <p>Backup alarm with automatic volume level</p> <p>Painted high gloss Volvo yellow and gray</p> <p>Lockable tool box</p> <p>Engine side panels complete with locks</p> <p>Left and right outside rear view mirrors</p> <p>Interior rear view mirror</p> <p>Exhaust aspirated air cleaner</p> <p>Front cab wiper and washer standard when grader is equipped with an enclosed cab</p> <p>VHP - variable horsepower</p>
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OPTIONAL EQUIPMENT

	lb	kg		lb	kg		lb	kg
Accumulators - sideshift	50	23	• Front mounted plow lights - 2			Tires		
Air conditioner - 35,000 BTU			• high mount	120	54	• 20.5 x 25, 12 PR, TL, L-2 or L-3,		
• HFC-134a (non-CFC refrigerant)	122	55	• low mount	100	45	17" (432 mm) rims	984	446
Brush guards	40	18	• Headlights with dimmer switch	0	0	• Consult your Volvo dealer for full		
Cab			• Moldboards lights - 2	2	1	range of tire and wheel options		
• Canopy shell with ROPS - deduct . . (625) (284)			• Rear flood lights - 2	2	1	Tool kit	-	-
• FOPS protection for ROPS cabs	220	100	• Snow wing lights - 2	2	1	Transmission sump heater	-	-
• Low Profile Cab			Fenders			Low ambient fluids	-	-
with ROPS - deduct (270) (122)			• Front	80	36	Vandalism protection	8	4
Cab heater - 50,000 BTU with cab			• Rear	400	182	Wheel weights front or rear - each	250	113
pressurizer and replaceable filter	60	27	Moldboards			Window - opening - lower front	-	-
Defroster fans	3	1	• 16' x 31" x 1"			Window - opening sliders - left/right	-	-
Engine block heater	3	1	(4 877 x 787 x 25 mm)	400	181	Wiper and washer - rear	-	-
Engine precleaner - Turbo II	6	3	Moldboard extensions			Wiper and washer - lower front	-	-
First user lifetime frame warranty	0	0	R or L - 2' (610 mm)	236	107	Rear tailgate guard	200	90
Float control, right and left detent style			Moldboard edges - carbide 3/4" x 5"			Intermittent wipers, front and rear	-	-
independent	15	7	(19 x 127 mm)	-	-			
Front attachment float control, detent style,			100 amp alternator	0	0			
independent of other float valves	15	7	Paint - custom colors	-	-			
Hydraulic tank heater	3	1	Polar protection	0	0			
24 volt radio/cassette player	6	3	Reflectors - side	-	-			
Lights			Remote valve for attachments					
• Beacon (amber or blue)	10	4	• 3 or 5 bank	85	39			
• Clearance lights front & rear	2	1	Tie down brackets	100	45			

Your safety and the safety of those around you depends on using care and judgement when operating and servicing your grader. Do not operate the grader until you read and understand the warnings and instructions in the operator's manual. Volvo Motor Graders Limited is an ISO 9001 and 14001 registered company. www.volvo.com

Under our policy of continuous product development and improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.

Consult your Volvo dealer for recommended option and attachment selection.

VOLVO

Construction Equipment