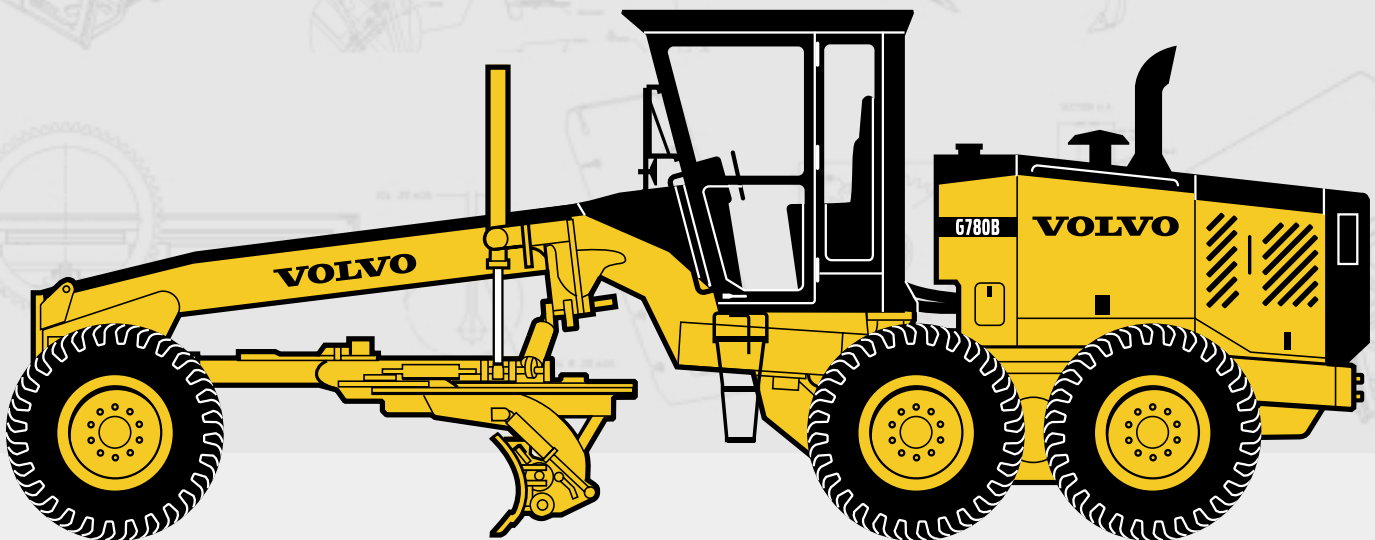


# VOLVO MOTOR GRADER G780B

## 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 weight . 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.



### 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

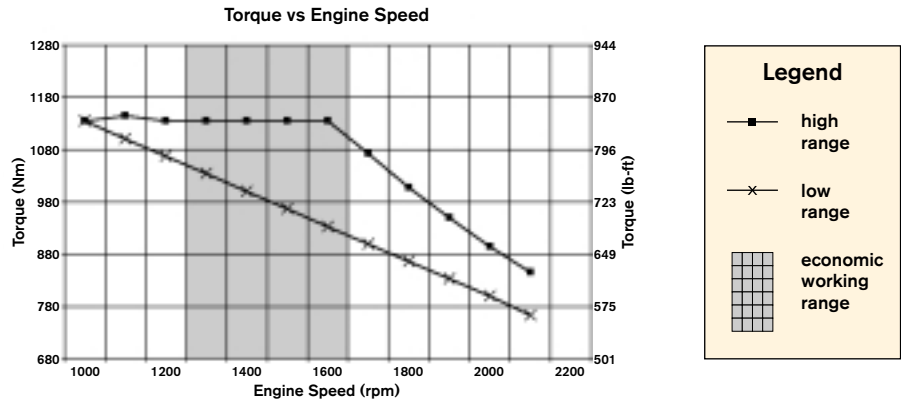
Make/Model ..... Volvo D10BGAE2  
Type ..... 4 Cycle, Turbocharged, Aftercooled  
No. of cylinders ..... In Line 6  
Bore & stroke ..... 4.76" x 5.51" (**121 x 140 mm**)  
Displacement ..... 586 cu in (**9,6 l**)  
Maximum net engine output @ 2100 RPM (per SAE J1349) ..... 219-243 hp (**163-181 kW**)  
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.....mph	.....km/h	Gears.....mph	.....km/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	5.....	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 front wheel steering incorporating two steering cylinders. Includes reserve power assist and operator warning system (visual and audible), meets SAE J53 OCT. 84.  
 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 cm<sup>3</sup>)**

minimum . . . . . 157.9 cu in **(2 588 cm<sup>3</sup>)**

maximum . . . . . 324.3 cu in **(5 314 cm<sup>3</sup>)**

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.

The circle is supported at ten points by five adjustable clamp plates and five adjustable guide shoes, providing optimum circle support and load distribution. DURAMIDE™ faced clamp and guide shoes prevent metal-to-metal contact and provides maximum service life.

DURAMIDE™ is a synthetic bearing material that maximizes 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



## 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

frame . . . . . 123.5" **(3 137 mm)** . . . . . 123" **(3 124 mm)**

Reach outside tires - straight

frame . . . . . 91" **(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 depth . . . . . 33.0" **(838 mm)**

Blade tilt range . . . . . 46° 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 convertor 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)**

"A" Frame. . . . . 700 lb (**318 kg**)

#### 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**)

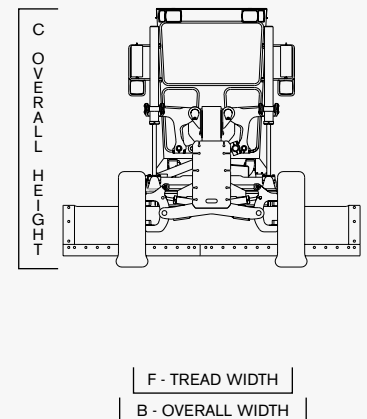
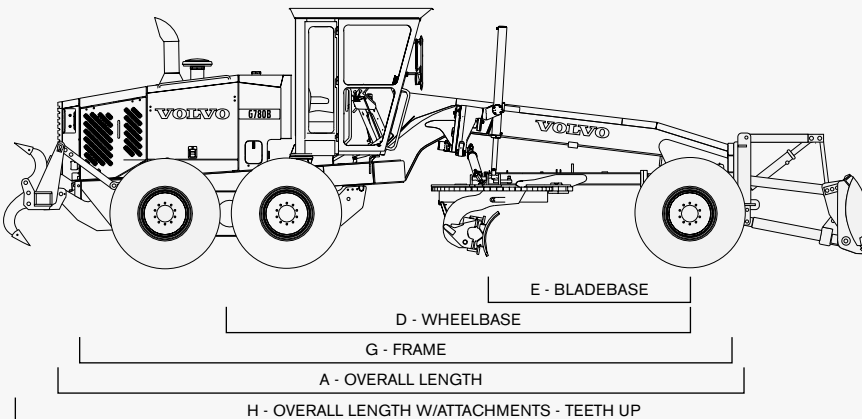
Ripper/Scarifier, rear. . . . . 2,880 lb (**1 306 kg**)

Windrow Eliminator . . . . . 1,300 lb (**590 kg**)

### Dimensions

- A Overall length . . . . . 30'7" (**9 322 mm**)
- D Wheelbase . . . . . 20'6" (**6 248 mm**)
- E Bladebase
- ISO 7134 . . . . . 8'11" (**2 718 mm**)
- G Frame
- Noseplate to Tailgate . . . . . 29'2" (**8 890 mm**)
- H Overall length
- w/attachments - teeth up. . . . . 37'7" (**11 455 mm**)
- w/attachments - teeth down . 37'11" (**11 557 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 Tread width . . . . . 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" (<b>343 mm</b>) diameter, 5 plate, full oil 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, 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 (<b>454 l</b>) 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 door for easy trash clean out</p> <p>Backup lights</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
Air conditioner - 35,000 BTU			• Front mounted plow lights - 2			Remote valve for attachments		
• HFC-134a (non-CFC refrigerant) . . . . .	122	55	• high mount . . . . .	120	54	• 3 or 5 bank . . . . .	85	39
Brush guards . . . . .	40	18	• low mount . . . . .	100	45	Sideshift accumulator . . . . .	50	23
Cab			• Headlights with dimmer switch . . . . .	0	0	Tie down brackets . . . . .	100	45
• Canopy shell with ROPS - deduct . . (625)	(284)		• Moldboards lights - 2 . . . . .	2	1	Tires		
• FOPS protection for ROPS cabs . . . . .	220	100	• Rear flood lights - 2 . . . . .	2	1	• 20.5 x 25, 12 PR, TL, L-2 or L-3,		
• Low Profile Cab			• Snow wing lights - 2 . . . . .	2	1	17" ( <b>432 mm</b> ) rims . . . . .	984	446
with ROPS - deduct . . . . . (270)	(122)		Fenders			Tool kit . . . . .	-	-
Cab heater - 50,000 BTU with cab			• Front . . . . .	80	36	Transmission sump heater . . . . .	-	-
pressurizer and replaceable filter . . . . .	60	27	• Rear . . . . .	400	182	Low ambient fluids . . . . .	-	-
Defroster fans . . . . .	3	1	Moldboards			Vandalism protection . . . . .	8	4
Engine block heater . . . . .	3	1	• 16' x 31" x 1"			Wheel weights front or rear - each . . . . .	250	113
Engine precleaner - Turbo II . . . . .	6	3	( <b>4 877 x 787 x 25 mm</b> ) . . . . .	400	181	Window - opening - lower front . . . . .	-	-
First user lifetime frame warranty . . . . .	0	0	Moldboard extensions			Window - opening sliders - left/right . . . . .	-	-
Float control, right and left detent style			R or L - 2' ( <b>610 mm</b> ) . . . . .	236	107	Wiper and washer - rear . . . . .	-	-
independent . . . . .	15	7	Moldboard edges - carbide 3/4" x 5"			Wiper and washer - lower front . . . . .	-	-
Front attachment float control, detent style,			( <b>19 x 127 mm</b> ) . . . . .	-	-	Rear tailgate guard . . . . .	200	90
independent of other float valves . . . . .	15	7	100 amp alternator . . . . .	0	0	Intermittent wipers, front and rear . . . . .	-	-
Hydraulic tank heater . . . . .	3	1	Paint - custom colors . . . . .	-	-			
24 volt radio/cassette player . . . . .	6	3	Polar protection . . . . .	0	0			
Lights			Reflectors - side . . . . .	-	-			
• Beacon (amber or blue) . . . . .	10	4						
• Clearance lights front & rear . . . . .	2	1						

*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](http://www.volvo.com)*

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*Consult your Volvo dealer for recommended option and attachment selection.*

# VOLVO

## Construction Equipment