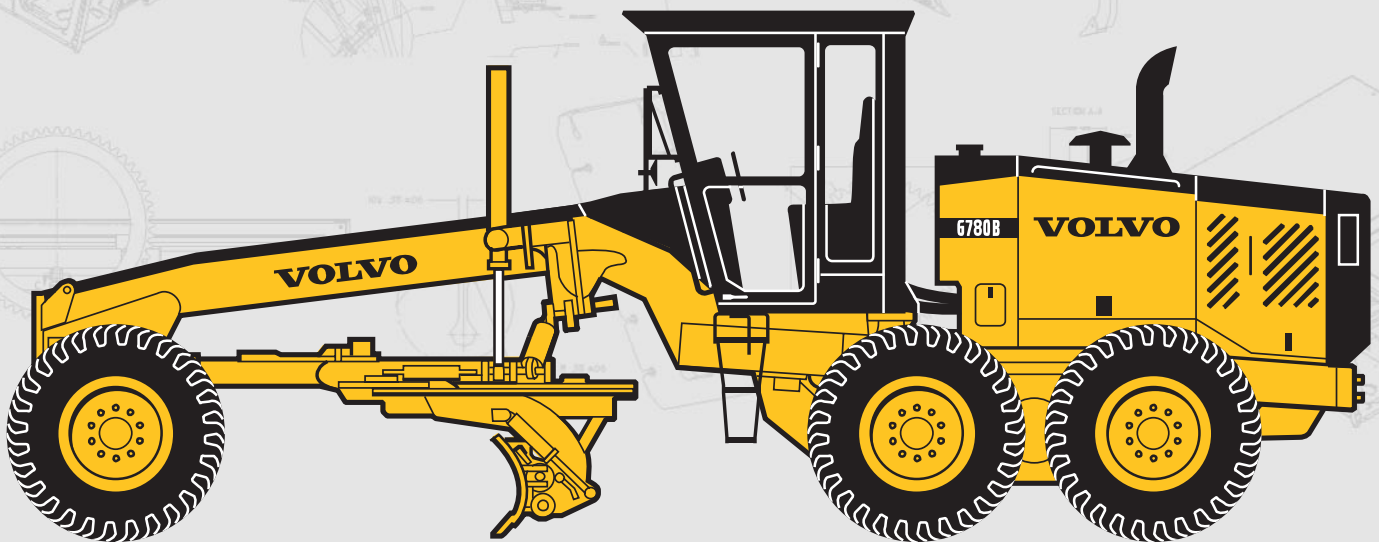


# VOLVO MOTOR GRADER G780B

## TANDEM DRIVE



- **Configuration:** Articulated frame
- **Engine model:** Volvo D10BGAE2
- **Maximum net engine output @2100 RPM (per SAE J1349):** 163 - 181 kW (219 - 243 hp)
- **Base weight:** 19 618 kg (43,250 lb)
- **Blade down force:** 10 416 kg (22,963 lb)
- **Blade pull:** 12 360 kg (27,248 lb)
- 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

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

### Base

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

### Typically equipped operating weight:

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

G780B . . . . . 22 041 kg (**48,594 lb**)  
Maximum combined capacity . . . . . 25 401 kg (**56,000 lb**)  
Maximum weight - front . . . . . 8 391 kg (**18,500 lb**)  
Maximum weight - rear. . . . . 17 237 kg (**38,000 lb**)

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

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

Blade down force

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

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. . . . . 121 x 140 mm (**4.76" x 5.51"**)  
Displacement. . . . . 9.6 l (**586 cu in**)

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

Rated gross brake horsepower @ 2100 RPM

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

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

Rated net brake horsepower @ 2100 RPM

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

Torque @ 1000 RPM . . . . . 1 135 N.m (**837 lb.ft**)

Torque rise . . . . . 46.7%

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

Torque @ 1100 RPM . . . . . 1 145 N.m (**846 lb.ft**)

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 equipped with a two stage, dual element, dry type air cleaner with exhaust aspirator and service indicator. 24 volt starting and electrical system with 1920 watt (**80 amp**) 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 . . . km/h . . . . . mph	Gears . . . km/h . . . . . mph
1 . . . . . 3,7 . . . . . 2.3	1 . . . . . 3,7 . . . . . 2.3
2 . . . . . 5,1 . . . . . 3.2	
3 . . . . . 7,2 . . . . . 4.5	2 . . . . . 7,1 . . . . . 4.5
4 . . . . . 10,0 . . . . . 6.2	
5 . . . . . 14,1 . . . . . 8.8	3 . . . . . 14,1 . . . . . 8.8
6 . . . . . 19,7 . . . . . 12.3	
7 . . . . . 27,3 . . . . . 17.0	4 . . . . . 27,3 . . . . . 17.0
8 . . . . . 38,3 . . . . . 23.8	

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.



## TANDEM

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

Depth . . . . . 622 mm (**24.50"**)

Width. . . . . 210 mm (**8.25"**)

Thickness • inner wall . . . . . 25 mm (**1.00"**)

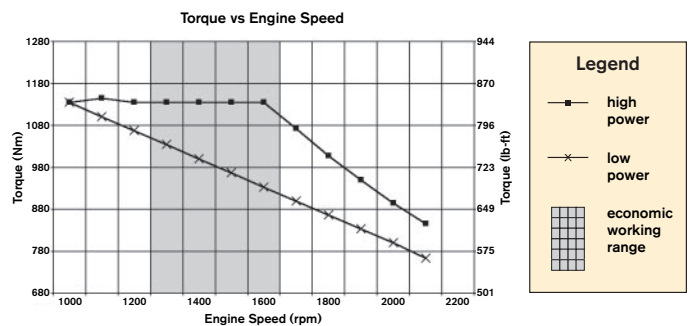
• outer wall . . . . . 19 mm (**0.75"**)

Center distance . . . . . 1 657 mm (**65.50"**)

Drive chain pitch. . . . . 51 mm (**2.00"**)

Oscillation. . . . . ±15°

## ENGINE PERFORMANCE CURVE





## BRAKES

Service Brakes: Foot operated

Fade resistant, hydraulically actuated, wet multiple disc service brakes located at the four 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 four 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 AND TIRES

Tire size ..... 16.00 x 24, G-2  
 Ply rating (PR) ..... 12  
 Rim size ..... 254 mm (10") 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 76 mm (3") diameter center pivot pin.

Wheel lean ..... 18° R & L  
 Oscillation ..... 16° up and down  
 Ground clearance ..... 698 mm (27.5")

Two 102 mm (4") 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

..... 7 747 mm (25'5")  
 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 ..... 267 x 356 mm (10.5" x 14.0")  
 Plate thickness • top and bottom ..... 38 mm (1.5")  
 • sides ..... 32 mm (1.25")

Vertical section modulus

at arch ..... 3 032 cm<sup>3</sup> (185 cu in)  
 minimum ..... 2 588 cm<sup>3</sup> (157.9 cu in)  
 maximum ..... 5 314 cm<sup>3</sup> (324.3 cu in)  
 Linear weight - minimum-maximum ..... 264.9 - 425.3 kg/m  
 (178.0 - 285.8 lb/ft)

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 ..... 102 x 279 mm (4.0" x 11.0")  
 Plate thickness ..... 76 + 25 mm (3.0" + 1.0")



## ARTICULATION

Twin 127 mm (5") 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	1 692 mm (66.62")
Thickness	51 mm (2.0")
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	165 x 165 mm (6.5" x 6.5")
Plate thickness	38 & 19 mm (1.5" & 0.75")



## MOLDBOARD

Standard moldboard with replaceable end bits. . . . . 4 267 x 787 x 25 mm (14' x 31" x 1")

Blade material. . . . . SAE 1050 high carbon steel  
Edge: through hardened. . . . . 203 x 25 mm boron steel (8" x 1")

Bolt diameter spacing. . . . . 152 mm (6")  
• bolt size . . . . . 19 mm (3/4")

Slide rails supported with adjustable Za12 (Zinc aluminum) bearings for maximum wear resistance.



## BLADE RANGE

(Dimensions shown with standard moldboard)

	LEFT	RIGHT
Reach outside tires - articulated frame	3 137 mm (123.5")	3 124 mm (123")
Reach outside tires - straight frame	2 311 mm (91")	2 299 mm (90.5")
Blade slide	673 mm (26.5")	673 mm (26.5")
Circle side shift	762 mm (30")	749 mm (29.5")
Maximum bank sloping angle	90°	90°
Blade ground clearance	432 mm (17.0")	
Blade cutting depth	838 mm (33.0")	
Blade tilt range	46° forward	13° back

Superior blade mobility permits steep ditch cutting angles and back sloping outside overall machine width.



## CAB AND 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 76 mm (3") 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 rearview 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	1 880 mm (74.0")
Width @ controls	1 422 mm (56.0")
Depth @ controls	1 410 mm (55.5")

An optional Low-Profile Cab is available with an inside height of 1 575 mm (62"). 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 76 mm (3") 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 24 Bar (**350 psi**) 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 . . . . . 186 Bar (**2,700 psi**)  
 Output 2200 RPM . . . . . 0-284 lpm (**0-75 U.S. gpm**)  
 Filtration . . . . . 10 micron spin-on type

## CAPACITIES

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

## ATTACHMENTS

(Optional unless otherwise stated as standard equipment)

### Snow

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

### Earth

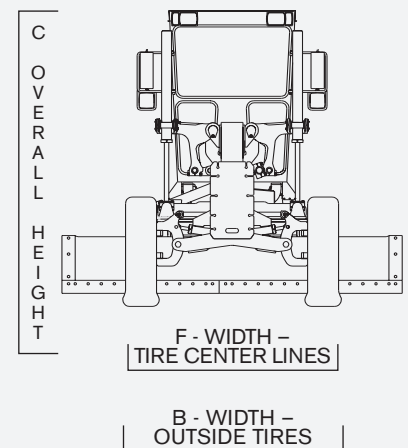
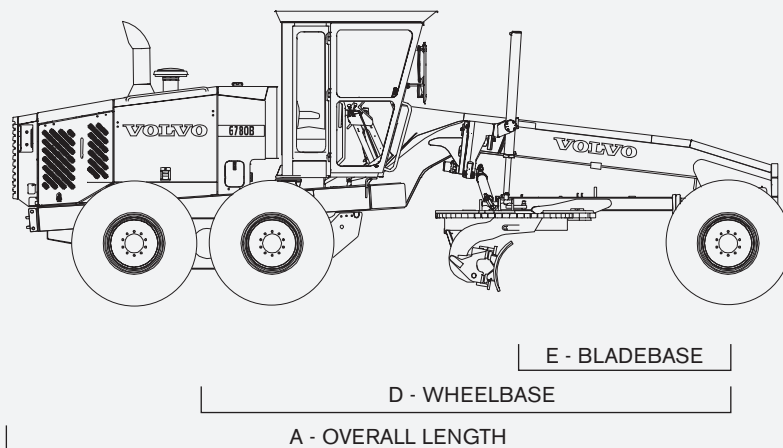
- Dozer Blade
  - 2 438 mm (**8'**) . . . . . 1 188 kg (**2,620 lb**)
  - 2 743 mm (**9'**) . . . . . 1 302 kg (**2,870 lb**)
  - 3 048 (**10'**) . . . . . 1 415 kg (**3,120 lb**)
- Push Block . . . . . 510 kg (**1,125 lb**)
- Ripper/Scarifier, rear . . . . . 1 306 kg (**2,880 lb**)

### Dimensions with standard equipment

All dimensions are approximate

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

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



## STANDARD EQUIPMENT

Operator controlled, lock/unlock differential final drive

4 wheel, crossover, dual braking system with reserve power assist

Park brake with operator warning alarm and indicator

Fully sequential, direct drive, powershift 8400 transmission, with transmission guard

343 mm (13.5") diameter, 5 plate, oil-cooled and lubricated master clutch

Moveable Blade Control System for optimum blade mobility

Full front and rear frame sections designed to withstand shock loading of attachments

Cab halogen headlights with dimmer includes directional and hazard lights

Circle drive counter-balance valve protects against impact damage

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

Hardened circle drive pinions for maximum pinion life

Isolation mounted cab, transmission and engine for reduced noise and vibration

Adjustable steering pedestal with tilt head for maximum operator comfort

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

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

Feathering type controls for precise blade adjustments

Deluxe, cloth covered, fully adjustable suspension seat when grader is equipped with an enclosed cab

454 l (120 U.S. gallon) fuel tank capacity

Nitrogen charged blade lift accumulators (2)

Dual leaning wheel cylinders

DURAMIDE™ wear strips on circle clamp plates and guide shoes prevent metal-to-metal contact for maximum service life

Hinged cooling module doors for easy trash clean out

Lights; backup, tail, stop and directional

Backup alarm with automatic volume level

Painted high gloss Volvo yellow and gray

Lockable toolbox

Engine side panels complete with locks

Left and right outside rearview mirrors

Interior rearview mirror

Exhaust aspirated air cleaner

Front cab wiper and washer standard when grader is equipped with an enclosed cab

VHP - variable horsepower

## OPTIONAL EQUIPMENT *(Standard in certain markets)*

	kg	lb
Accumulators - sideshift . . . . .	23	50
Air-conditioner - 35,000 BTU		
• HFC-134a (non-CFC refrigerant) . . . . .	55	122
Brush guards . . . . .	18	40
Cab		
• Canopy shell with ROPS – deduct . (284)	(625)	
• FOPS protection for ROPS cabs . . . . .	100	220
• Low-Profile Cab with ROPS - deduct . . . . . (122)	(270)	
Cab heater - 50,000 BTU with cab pressurizer and replaceable filter . . . . .	27	60
Defroster fans . . . . .	1	3
Engine block heater . . . . .	1	3
Engine precleaner - Turbo II . . . . .	3	6
First user lifetime frame warranty . . . . .	0	0
Float control, right and left detent style independent . . . . .	7	15
Front attachment float control, detent style, independent of other float valves . . . . .	7	15
Hydraulic tank heater . . . . .	1	3
24 volt radio/cassette player . . . . .	3	6
Lights		
• Beacon (amber or blue) . . . . .	4	10
• Clearance lights front & rear . . . . .	1	2

	kg	lb
• Front mounted plow lights - 2		
• high-mount . . . . .	54	120
• low-mount . . . . .	45	100
• Headlights with dimmer switch . . . . .	0	0
• Moldboards lights - 2 . . . . .	1	2
• Rear flood lights - 2 . . . . .	1	2
• Snow wing lights - 2 . . . . .	1	2
Fenders		
• Front . . . . .	36	80
• Rear . . . . .	182	400
Moldboards		
• 4 877 x 787 x 25 mm (16' x 31" x 1") . . . . .	181	400
Moldboard extensions		
• R or L - 610 mm (2") . . . . .	107	236
Moldboard edges - carbide 19 x 127 mm (3/4" x 5") . . . . .	-	-
100 amp alternator . . . . .	0	0
Paint - custom colors . . . . .	-	-
Polar protection . . . . .	0	0
Reflectors - side . . . . .	-	-
Remote valve for attachments		
• 3 or 5 bank . . . . .	39	85
Tie down brackets . . . . .	45	100

	kg	lb
Tires		
• 20.5 x 25, 12 PR, TL, L-2, or L-3 432 mm (17") rims . . . . .	446	984
• Consult your Volvo dealer for full range of tire and wheel options		
Tool kit . . . . .	-	-
Transmission sump heater . . . . .	-	-
Low ambient fluids . . . . .	-	-
Vandalism protection . . . . .	4	8
Wheel weights front or rear - each . . . . .	113	250
Window - opening - lower front . . . . .	-	-
Window - opening sliders - left/right . . . . .	-	-
Wiper and washer - rear . . . . .	-	-
Wiper and washer - lower front . . . . .	-	-
Rear tailgate guard . . . . .	90	200
Intermittent wipers, front and rear . . . . .	-	-

*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)*

*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  
North America, Inc.**

One Volvo Drive, Asheville, NC 28803-3447  
[www.volvoce.com](http://www.volvoce.com)

Ref. No. 22 6 434 1012 English  
Printed in USA 05/05 - 5,0 GMC  
Volvo, Asheville