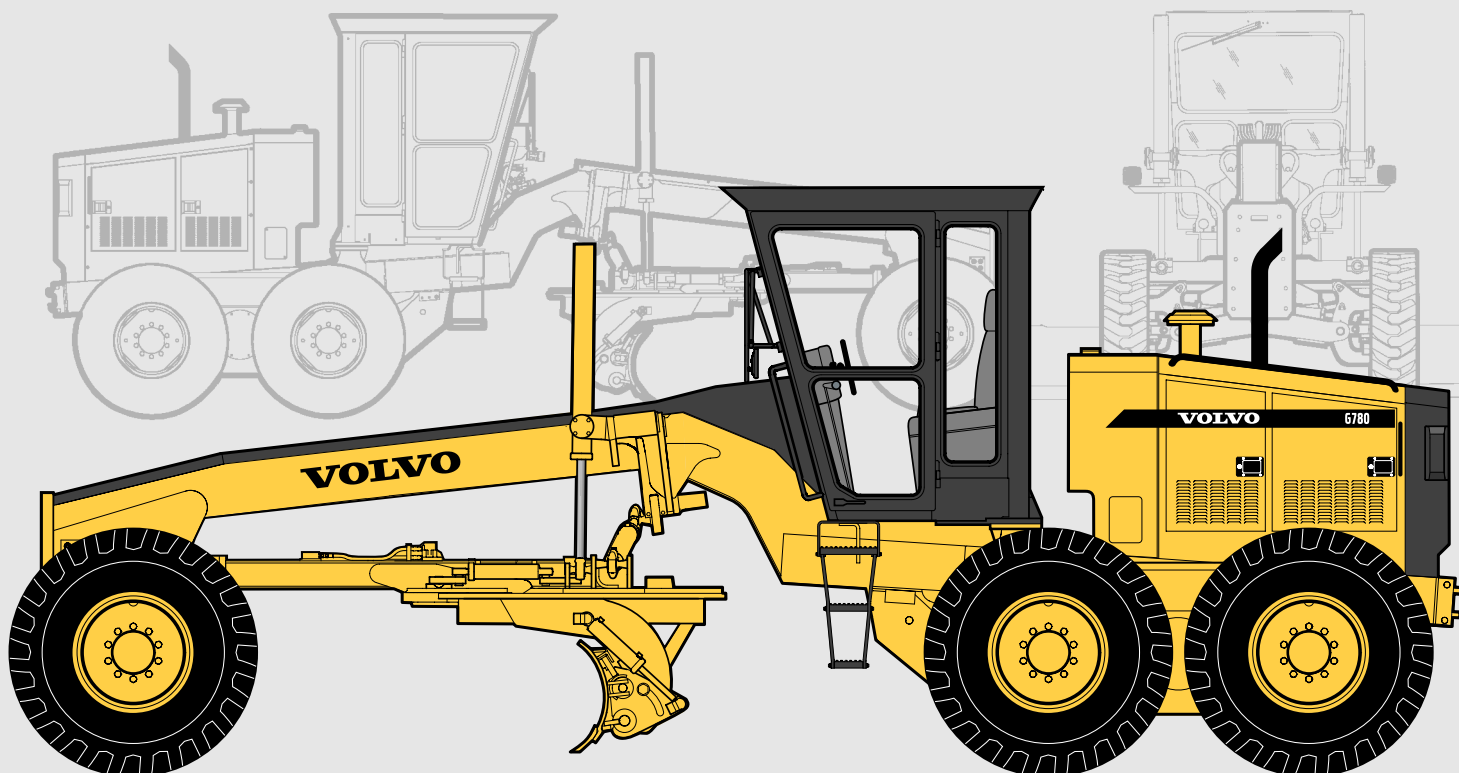


VOLVO MOTOR GRADER

G780 / G780 VHP

TANDEM DRIVE



KEY FEATURES:

- 8400 fully sequential direct drive powershift transmission with 13.5" (343 mm) clutch
- Choice of fully enclosed, quiet, comfortable ROPS cab in full height or low profile configuration, or ROPS canopy
- Moveable Blade Control System
- Load sensing, closed center hydraulic system
- Fully adjustable, low effort controls
- Full front and rear frame sections for all attachment applications
- Single lever transmission control with "Smart Shifter" feature
- Hydraulically Boosted Dual Braking System with reserve power assist
- Heavy duty lock/unlock differential
- Three level electronic operator warning system
- 14' (4 267 mm) moldboard
- Full range of front and rear mounted attachments

MODEL	G780	G780 VHP
Configuration	Articulated Frame	Articulated Frame
Engine	Cummins M11	Cummins M11
Output (SAE J1349)	210 hp (157 kW)	210-235 hp (157-175 kW)
Base weight	42,740 lb (19 388 kg)	42,740 lb (19 388 kg)
Blade down pressure	23,485 lb (10 653 kg)	23,485 lb (10 653 kg)
Blade pull	26,507 lb (12 024 kg)	26,507 lb (12 024 kg)

VOLVO



BASE OPERATING WEIGHT (Standard Equipment)

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

G780 / G780 VHP

Total 42,740 lb (19 388 kg)
On front wheels 13,288 lb (6 028 kg)
On rear wheels 29,452 lb (13 360 kg)

Weight adjustments for various options are listed.

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 mm x 787 mm x 25 mm) moldboard, front push block and rear mounted ripper.

G780 / G780 VHP 47,360 lb (21 484 kg)



PRODUCTIVITY (Standard Equipment)

Maximum blade pull (no wheel slip, 0.9 traction co-efficient) 26,507 lb (12 024 kg)

Blade down pressure

- cutting capability

(ISO 7134) 23,485 lb (10 653 kg)

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



ENGINE DATA

G780

Make/Model Cummins M11
Type 4 Cycle, Turbocharged, Aftercooled
No. of cylinders In Line 6
Bore & stroke 4.92" x 5.79" (125 mm x 147 mm)
Displacement 660 cu in (10.8 L)
Rated gross brake horsepower
@ 2100 RPM 225 hp (168 kW)
Rated net brake horsepower
@ 2100 RPM 210 hp (157 kW)
Torque @ 1300 RPM 760 lb.ft (1031 N.m)
Torque rise (Net) 43%

G780 VHP

Make/Model Cummins M11
Type 4 Cycle, Turbocharged, Aftercooled
No. of cylinders In Line 6
Bore & stroke 4.92" x 5.79" (125 mm x 147 mm)
Displacement 660 cu in (10.8 L)
Rated gross brake horsepower @ 2100 RPM
- Gears forward 1, 2 and
Reverse 1 225 hp (168 kW)
- Gears forward 3-8 and
Reverse 2-4 250 hp (187 kW)
Rated net brake horsepower @ 2100 RPM
- Gears forward 1, 2 and
Reverse 1 210 hp (157 kW)
Torque @ 1300 RPM 760 lb.ft (1031 N.m)
Torque rise (Net) 43%
- Gears forward 3-8 and
Reverse 2-4 235 hp (175 kW)
Torque @ 1300 RPM 845 lb.ft (1146 N.m)
Torque rise (Net) 45%

Engine equipped with a two stage, dual element, dry type air cleaner with evacuator and dash-mounted service indicator. 24 volt starting and electrical system with 75 amp (1800 watt) brushless alternator with internal voltage regulator. Two heavy duty 12 volt maintenance free batteries with 900 cold cranking amps (CCA) and 160 minutes reserve capacity per battery. System includes battery disconnect.

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.



TRANSMISSION

Make/Model Volvo 8400
Fully sequential, direct drive, powershift transmission. Engine cannot be started if transmission is in gear. Single lever transmission controller provides electronic self-diagnostics. The flywheel mounted, multi-disc master clutch is oil cooled 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	7,1	3	8.8	14,1
4	6.2	10,0	4	17.0	27,3
5	8.8	14,1			
6	12.3	19,7			
7	17.0	27,3			
8	23.8	38,1			

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



DIFFERENTIAL / FINAL DRIVE

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



TANDEMS

Oscillating tandem case has 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, oil 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 even braking on both sides of the grader. Includes reserve power assist and operator warning system (visual and audible).

Parking Brake Hand operated
Independent, disc-type hand 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.

Braking systems 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)
Bolt-on rims are interchangeable between the front wheels and the tandem wheels.



FRONT AXLE

Type Fully 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)
Twin 4" (102 mm) diameter wheel lean cylinder with lock valve.



STEERING

Hydraulic 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: Fully welded box section. Dual sloped front frame provides excellent forward visibility.

Minimum dimensions of box

box section 10.5" x 14.0" (267 mm 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 rear frame permits modular powertrain mounting for ease of service and simplifies attachment mounting.

Minimum dimensions of

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

Plate thickness ... 3.0" x 0.75" (76 mm x 19 mm)



CIRCLE

Hardened teeth, cut on the outside of the circle for maximum leverage and minimum wear. Circle is fabricated from high tensile steel and running surfaces are precision machined.

The circle is held positively in place at ten points by five adjustable clamp plates and five adjustable guide shoes, providing optimum circle support and load distribution. The primary set of clamps and guide shoes is located at the front of the circle where greatest loading occurs. 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



ARTICULATION

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



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 cushion 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 mm x 165 mm)
 Plate thickness 1.5" & 0.75" (38 mm & 19 mm)



MOLDBOARD

Standard moldboard with replaceable end bits 14" x 31" x 1" (4 267 mm x 787 mm x 25 mm)
 Blade material SAE 1050 high carbon steel
 Edge: through hardened 8" x 1" boron steel (203 mm x 25 mm)
 Bolt diameter spacing 6" (152 mm)
 - drill 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" (3137 mm)	123" (3124 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 and gauges are housed in the fully adjustable steering pedestal and right hand console. Located in the pedestal head are the engine oil pressure, coolant temperature and fuel level gauges, transmission gear indicator and a three level electronic monitoring display. Pedestal located switches include: differential lock/unlock, independent moldboard floats (optional) and combination turn signal, hazard lights, and high beam headlight switch. Heater and wiper/washer controls, 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 panel. An accelerator/decelerator foot pedal and slider type hand throttle are standard equipment. Outside mounted rear view mirrors (L&R) are standard. Interior operator noise level ranges from 78 to 81 dB(A) per ISO 6394 (enclosed cab).

CAB OPTIONS

- High capacity heater/air conditioner c/w adjustable vents, temperature control and 3 speed fan
- Fully adjustable, suspension seat
- Lower opening vent windows
- Rear windshield wipers and washers
- Lower front window wipers and washers
- Modular, 24 volt radio and cassette player with remote control
- Operator Convenience Package (lunch box, steel vacuum bottle and holder, ashtray)
- 24 volt to 12 volt converter for electrical accessories or two way radio installations

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 2" (51 mm) wide and meets SAE J386 JUNE 93; ISO 6683-1981(E). A cushioned vinyl covered bucket seat with fore & aft and height adjustment is standard.



CAPACITIES

	U.S.Gal.	Imp.Gal.	Litres
Fuel tank.....	100.0	83.3	378.5
Transmission	10.0	8.4	38.0
Final drive	9.0	7.5	34.0
Tandems (each)	27.7	23.1	105.0
Hydraulic oil tank	23.8	19.8	90.0
Coolant antifreeze protection to -58° F (-50° C) approx ...	13.2	11.0	50.0
Engine oil	9.0	7.5	34.0



LOAD SENSING HYDRAULICS

Closed center hydraulic system senses load requirements and maintains system pressure 250 psi (17,25 Bar) above the load pressure.

When hydraulic pressure is not required, system pressure is only 90 psi (6,2 Bar).

System features industry standard control arrangement c/w 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 and articulation. All hoses and fittings are equipped with o-ring seals.

Pump design features include cast iron end covers and center housing, and one piece gear and shaft assembly to ensure reliability and long service life.

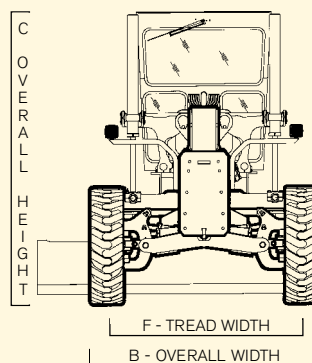
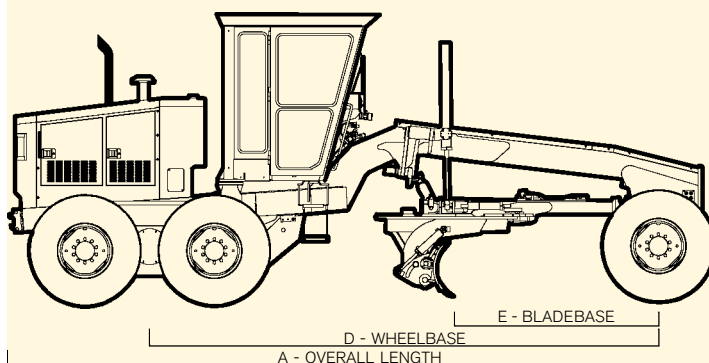
Maximum pressure 2,500 psi (172 Bar)
 Output at 2100 RPM 0-48.3 gpm (0-183 lpm)
 Filtration 7 micron spin-on type



ATTACHMENTS

"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)
 Snow Wing
 - rear mounted 3,100 lb (1 406 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) 1,600 lb (725 kg)
 - 9' (2 743 mm) 1,650 lb (748 kg)
 Push Block 1,125 lb (510 kg)
 Ripper/Scarifier, rear 2,625 lb (1 190 kg)
 Windrow Eliminator 1,300 lb (590 kg)

DIMENSIONS



A Overall length 28'6" (8 687 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)
 D Wheelbase 20'6" (6 248 mm)
 E Bladebase
 - ISO 7134 8'11" (2 718 mm)
 F Tread width 7'7" (2 311 mm)

STANDARD FEATURES

Accumulators - blade lift (2)
 Operator controlled, lock/unlock differential final drive
 4 wheel, crossover, dual braking system with reserve power assist
 Hand operated park brake with operator warning alarm and indicator
 Fully sequential, direct drive, powershift 8400 transmission, with transmission guard
 13.5" (343 mm) diameter, 4 plate, full oil master clutch
 Moveable Blade Control System for optimum blade mobility
 Full front and rear frame sections designed to absorb shock loading of rear attachments
 Cab halogen headlights with dimmer includes directional and hazard lights
 Circle drive cushion valve protects against impact damage
 Hardened circle teeth cut on outside of circle for maximum turning power
 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, hourmeter, dash mounted air cleaner service indicator, articulation angle indicator, three level electronic monitoring system - M4 - 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
 Feathering type controls for precise blade adjustments
 100 gallon fuel capacity
 Nitrogen charged blade lift accumulators
 DURAMIDE™ wear strips on circle guide and clamp plates prevent metal-to-metal contact for maximum service life
 Hinged radiator guard for easy trash clean out.
 Backup lights
 Backup alarm with automatic volume level
 Painted High Gloss Volvo Yellow and Gray
 Lockable tool box
 Engine side panels c/w locks
 Left and right outside rear view mirrors

OPTIONAL EQUIPMENT

	lb	Kg
Air conditioner - 29,000 BTU - HFC-134a (non-CFC refrigerant)		
Brush guards	40	18
Cab		
- Canopy shell with ROPS - deduct ... (200)	(91)	
- FOPS protection for ROPS cabs	220	100
- Low Profile Cab with ROPS - deduct	(200)	(91)
Cab heater - 49,000 BTU - with cab pressurizer and replaceable filter	30	14
Defroster fans	3	1
Engine block heater	3	1
Engine precleaner - Turbo II	6	3
Exhaust aspirated precleaner	6	3
Ether cold start	10	4
Exhaust rain cap	-	-
Fan - blower type (suction type is standard)	0	0
First user lifetime frame warranty	0	0
Floater control - Right and Left independent, electric	15	7
Hydraulic manifold cover	10	4
Hydraulic tank heater	3	1
24 volt radio/cassette player	6	3
Lights		
- Beacon (amber or blue)	10	4
- Clearance lights front & rear	2	1
- Front mounted plow lights - 2 - high mount	120	54
- low mount	100	45
- Headlights with dimmer switch	0	0
- Moldboards lights - 2	2	1
- Rear flood lights - 2	2	1
- Snow wing lights - 2	2	1
Machine Monitor Plus system - M044..	0	0

(Audible and visual warnings for transmission and hydraulic filter restriction, low engine oil pressure, high coolant temperature, high transmission temperature, and low transmission clutch pressure)

OPTIONAL EQUIPMENT (continued)

	lb	Kg
Moldboards		
- 16' x 31" x 1" (4 877 mm x 787 mm x 25 mm)	300	136
Moldboard extensions		
R & L - 2' (610 mm)	200	91
Moldboard edges - Carbide 3/4" x 5" (19 mm x 127 mm)	-	-
100 amp alternator	0	0
Operator convenience package		
- lunch box, steel vacuum bottle and holder, ashtray	10	5
Paint - custom colors	-	-
Polar protection	0	0
Radiator shutters - hinged	10	4
Reflectors - rear	-	-
Remote lube manifold for articulation cylinders	0	0
Remote valve for attachments		
- 3 or 5 bank	25	11
Rim locks included with 3 piece rims ...	0	0
Sideshift accumulator	45	20
Suspension seat	55	25
Tie down brackets	100	45
Tires		
- 20.5 x 25, 12 PR, TL, L-2 or L-3, 17" (432 mm) rims	822	373
Tool kit	-	-
Transmission sump heater	-	-
Tropical protection	-	-
Vandalism protection	8	4
Wheel weights front or rear - each	250	113
Window - opening - lower front	-	-
Window - opening sliders - left/right ...	-	-
Wiper and washer - front	-	-
Wiper and washer - rear	-	-
Wiper and washer - lower front	-	-

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VOLVO

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