

140H

Motor Grader



ES Version

Cat[®] 3306 turbocharged diesel engine with
Engine Power Management

Gears 4 - 8	138 kW	185 hp
Gears 1 - 3	123 kW	165 hp

Blade width	3658 mm	12 ft
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Operating weights (approximate)

On Front wheels	4223 kg	9310 lb
On Rear wheels	10 501 kg	23,150 lb
Total machine	14 724 kg	32,460 lb

Engine

Four-stroke cycle, six cylinder Caterpillar 3306 turbocharged diesel engine with Engine Power Management (EPM).

Power ratings for gears 4 - 8 forward and 3 - 6 reverse

Ratings at 1900 rpm*	kW	hp
Gross power	148	199

The following ratings apply at 1900 rpm when tested under the specified standard conditions for the specified standard:

Net power	kW	hp
Caterpillar	138	185
ISO 9249	138	185
SAE J1349	137	183
EEC 80/1269	138	185

Peak torque (net) @ 1200 rpm	902 Nm	665 lb-ft
Torque rise		30%

Dimensions

Bore	121 mm	4.75 in
Stroke	152 mm	6.00 in
Displacement	10.45 liters	638 cu in

Power ratings for gears 1 - 3 forward and 1 - 2 reverse

Ratings at 1900 rpm*	kW	hp
Gross power	133	179

The following ratings apply at 1900 rpm when tested under the specified standard conditions for the specified standard:

Net power	kW	hp
Caterpillar	123	165
ISO 9249	123	165
SAE J1349	122	163
EEC 80/1269	123	165

Peak torque (net) @ 1200 rpm	804 Nm	593 lb-ft
Torque rise		30%

*Power rating conditions

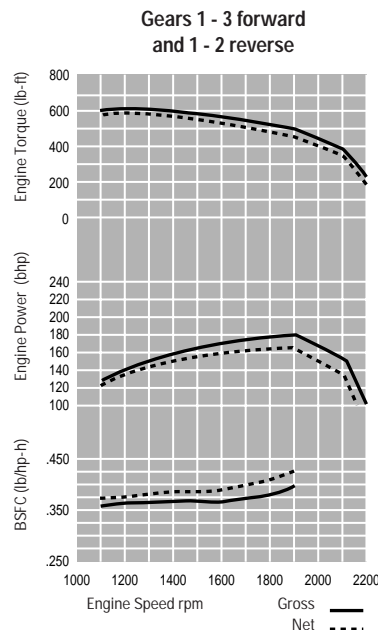
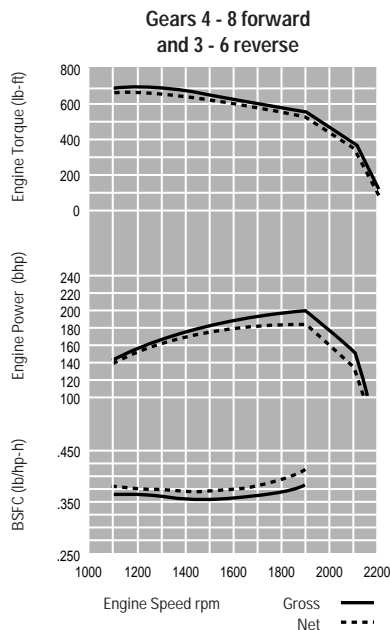
- net power advertised is the power available at the flywheel when engine is equipped with fan, air cleaner, muffler and alternator
- no derating required up to 2573 m (8442 ft) altitude

Engine Power Management (EPM)

- delivers a full-rated net power of 138 kW (185 hp) in gears 4 - 8 forward
- in lower gears, where the machine is traction-limited, engine horsepower is automatically reduced to 123 kW (165 hp)
- works to lower fuel consumption as well as reduce tire slippage and wear in the lower gears

Features

- direct injection fuel system with individual adjustment-free injection pumps and nozzles
- 3-ring aluminum alloy pistons
- heat-resistant sil-chrome steel intake and stellite-faced exhaust valves
- forged steel connecting rods
- one-piece cylinder head designed with cast intake manifold
- cast cylinder block with replaceable wet liners
- induction-hardened, forged crankshaft
- direct electric 24-V starting and charging system
- two 12-V, 100 amp-hour, 950 CCA, maintenance-free batteries
- 50-amp alternator
- tube-type, water-cooled oil cooler
- vertical-flow, steel-fin, tube-type radiator
- dry-type, radial-seal air cleaner with primary and secondary elements
- resiliently mounted to rear frame



Hydraulic System

Proportional priority pressure compensated system.

Output at 2100 rpm and 24 150 kPa (3500 psi)	206 liters/min	54.4 gpm
Standby pressure	3100 kPa	450 psi
Maximum system pressure	24 150 kPa	3500 psi

Pump features

- load-sensing, pressure-compensating, variable-displacement piston pump
- low standby pressure
- pump supplies only flow and pressure required to move implements plus 2100 kPa (300 psi) margin pressure

Control features

- eight, closed-center control valves standard:
 - right blade lift
 - left blade lift
 - blade sideshift
 - blade tip
 - circle drive
 - centershift
 - front wheel lean
 - articulation
- low effort, short throw controls
- controls spaced to allow use of several controls at once

- blade float position built into each blade lift control valve
- lock valves built into all control valves
- line relief valves for the blade lift, blade tip and blade sideshift circuits are incorporated into the control valves
- dead-engine implement lowering capability
- if flow requirements exceed pump output, control valves proportion flow to each implement circuit

Other features

- steering circuit given priority over implement circuits
- heavy duty XT hose
- hose couplings with O-ring face seals
- full-flow filter

Service Refill Capacities

	liters	U.S. gallons
Fuel tank	341	90
Cooling system	40	10.4
Crankcase	27	7
Transmission		
differential and final drives	47	12.2
Tandem housing (each)	65	16.9
Hydraulic system	80	20.8
Hydraulic tank	38	9.9
Circle drive housing	7	1.8
Front wheel spindle bearing housing	0.5	0.13

Steering

Two-cylinder, hydraulic steering with hand metering unit.

Dimensions

Minimum turning radius (outside front tires)*	7.4 m	24' 3"
Steering range	50° Left/Right	
Articulation angle	20° Left/Right	

*Using front wheel steering, frame articulation, and with differential unlocked.

Features

- large steer stops and steering relief valve help prevent damage when object is hit during full turn
- consistent steering response to the left and right
- standard secondary steering system provides secondary steering capability in event of a complete loss of hydraulic pressure

Transmission

Direct drive, power shift transmission with eight speeds forward.

Maximum travel speeds (at rated rpm with conventional base 14.00-24 tires)

		km/h	mph
Forward	1	3.5	2.2
	2	4.8	3.0
	3	7.0	4.3
	4	9.6	6.0
	5	15.1	9.4
	6	20.5	12.8
	7	28.3	17.6
	8	41.1	25.5
Reverse	1	2.8	1.7
	2	5.2	3.2
	3	7.6	4.7
	4	11.9	7.4
	5	22.3	13.9
	6	32.4	20.2

Features

- electronic shift control
- electronically controlled overspeed protection
- single lever controls direction, speed and parking brake
- low efforts on shift lever and inching pedal
- internal parking brake serviceable without removing transmission
- diagnostic connector
- resiliently mounted to frame

Frame

Flanged, box-section design.

Dimensions

Front frame	mm	in
Top and bottom plates		
Width	305	12
Thickness	25	1
Side plates		
Width	242	9.5
Thickness	12	0.5

Linear weights

Front frame	kg/m	lb/ft
Minimum	165	112
Maximum	213	144

Section modulus

Front frame	cm ³	in ³
Minimum	2083	127
Maximum	4785	291

Features

- single piece top and bottom plates run from bolster to articulation joint
- rear frame has two box-sectioned channels integral with fully welded differential case

Front Axle

Live spindle design.

Dimensions

Front axle	mm	in
Ground clearance	625 mm	24.6"
Front wheel lean		18°
Oscillation angle		32°

Features

- allows use of large outboard bearings for high load-carrying capability of the wheel assembly
- wheel spindle rotates inside sealed compartment
- bearings bathed in oil

Tandems

Dimensions

	mm	in
Height	506	19.9
Width	201	7.9
Sidewall thickness		
Inner	16	0.63
Outer	18	0.71
Drive chain pitch	51	2
Wheel axle spacing	1522	60
Tandem oscillation	15° Forward	25° Reverse

Brakes

Meets the following standards: SAE J1473 OCT 90 and ISO 3450-1996.

Service brake features

- air-actuated, oil-disc brakes located in each of the four wheel spindle housings
- sealed and adjustment-free
- lubricated and cooled by tandem housing oil
- 23 948 cm² (3712 in²) of total braking surface

Parking brake features

- multiple oil-disc unit
- located in the transmission on the output shaft
- manually actuated
- spring-engaged, air pressure-released
- engaged parking brake neutralizes transmission
- 1916 cm² (297 in²) of total brake surface area

Secondary brake features

- separate circuits to right and left tandems
- malfunction of one circuit still leaves machine with at least half of original braking capacity
- dual chamber air tank provides air to actuate brakes five times after engine and compressor stop
- in the event of total braking loss, the spring-actuated parking/emergency brake can be used to lock the wheels on any surface

Tires and Rims

Tires	Rims	Type
14.00-24	9" x 24"	SP
	10" x 24"	MP
17.5-25	13" x 25"	SP
	14" x 25"	MP

SP = Single-Piece Rim

MP = Multi-Piece Rim

Notes: A wide selection of bias and radial type tires are available through Caterpillar in different sizes, strength indexes and industry types.

Depending on the weight of additional equipment, the machine load may exceed certain tire capabilities. Caterpillar recommends that you carefully evaluate all conditions before selecting a tire model.

Drawbar

Solid steel bars fabricated into Y-frame design.

Dimensions

Drawbar frame	mm	in
Height	127	5
Thickness	76	3

Features

- yoke plate completely covers top of circle
- six shoes support circle
- all shoes have vertical and horizontal adjustment
- 11 replaceable nylon composite wear strips between circle and drawbar
- six replaceable nylon composite wear strips between the circle and support shoes

Circle

Single-piece, rolled ring forging.

Dimensions

Circle	mm	in
Circle diameter	1530	60.2
Blade beam thickness	30	1.2

Features

- 64 uniformly spaced, flame-cut teeth
- teeth surfaces hardened on front 240° of circle
- raised wear surfaces, top and bottom
- hydraulically driven, circle drive motor
- 360° circle rotation

Moldboard

Fabricated from wear-resistant, high-carbon steel.

Dimensions

Moldboard	mm	in
Length	3658	144
Height	610	24
Thickness	22	0.87
Arc radius	413	16.25
Throat clearance	120	4.7

Cutting edge	mm	in
Width	152	6
Thickness	16	0.63

End bit	mm	in
Width	152	6
Thickness	16	0.63

Features

- heat-treated sideshift rails
- replaceable metallic wear inserts
- cutting edge and end bit are Caterpillar through-hardened, curved DH-2 steel
- 16 mm (.63") diameter bolts
- three sideshift mounting locations for optional 4267 mm (14') moldboard

Blade Range

Full range of blade positioning.

		mm	in
Circle centershift	Right	728	28.7
	Left	695	27.4
Moldboard sideshift	Right	660	26.0
	Left	524	20.6
Maximum shoulder reach outside of tires	Right	1978	77.9
	Left	1896	74.6
Maximum lift above ground		480	18.9
Maximum depth of cut		715	28.1
Maximum blade position angle		90° Both Sides	
Blade tip range		40° Forward	
		5° Backward	

Features

- steep ditch-cutting angles possible
- 1.5:1 and 2:1 backsloping can be done without putting front tire on slope
- aggressive blade-carrying angles possible

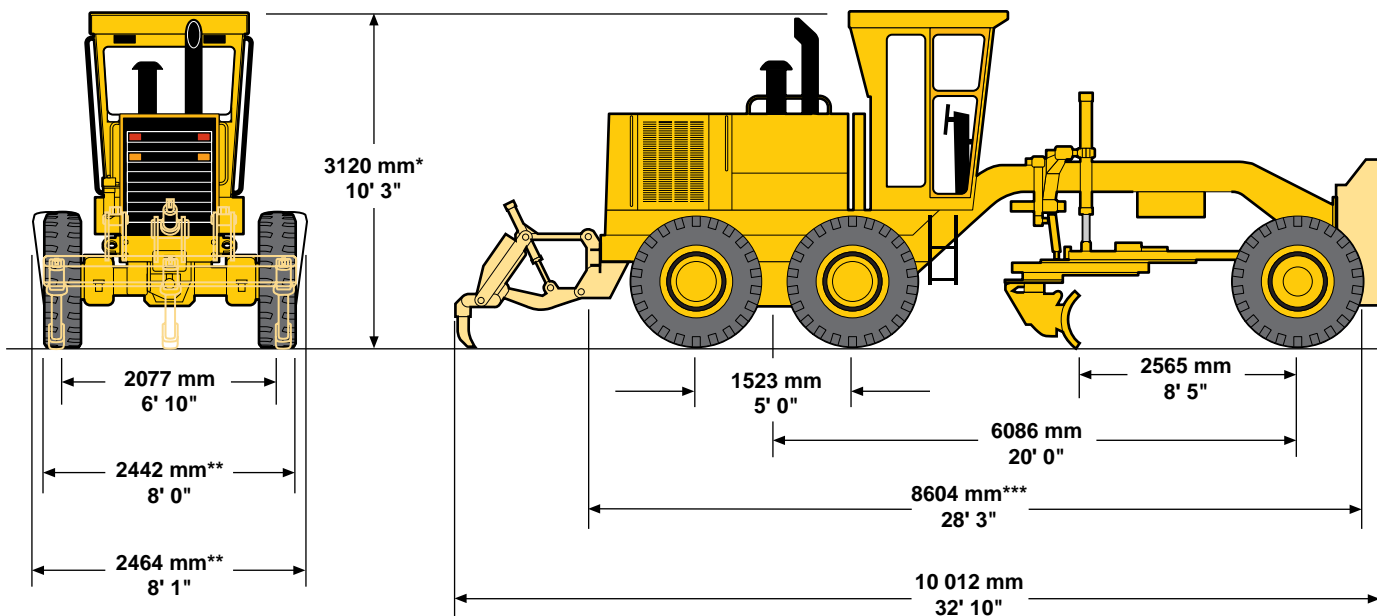
Notes:

Add 305 mm (12") for maximum right or left moldboard sideshift when using optional 4267 mm (14') blade.

With the machine in the crab position, add 940 mm (37") to maximum right or left moldboard sideshift.

Dimensions

All dimensions are approximate.



Operating weights (approximate)

on front wheels	4223 kg	9310 lb
on rear wheels	10 501 kg	23,150 lb
total machine	14 724 kg	32,460 lb

Dimensions and operating weights based on standard machine configuration with 14.00-24 10PR (G-2) tires, full fuel tank, coolant, lubricants and operator.

- * add 225 mm (8.9") for optional full height cab
- ** add 253 mm (10.0") for optional 17.5-25 tires
- *** add 201 mm (7.9") for front push plate
add 1207 mm (4') for rear-mounted ripper-scarifier

Note: Height without ROPS, exhaust, seat back, or other easily removed encumbrances 3.05 m (10'0")

Scarifiers and Ripper-Scarifier

Type	V-Type Scarifier (mid-mounted)		Ripper-Scarifier (rear-mounted)	
	mm	in	mm	in
Working width	1184 mm	46.6"	2300 mm	91"
Scarifying depth, maximum	292 mm	11.5"	411 mm	16.2"
Scarifier shank holders:				
number		11		9
spacing	116 mm	4.6"	267 mm	10.5"
Ripping depth, maximum		—	462 mm	18.2"
Ripper shank holders:				
numbers		—		5
spacing		—	533 mm	21"
Increase in machine length, beam raised		—	970 mm	38.2"
Penetration force*		—	8047 kg	17,740 lb
Pryout force		—	9281 kg	20,460 lb

*Varies with machine configuration.