6060/ 6060 FS

Hydraulic Shovel

We understand the challenges you face, the importance of reliability, and the relationship between uptime and productivity. That's why we continually strive to produce the safest, most reliable and productive hydraulic mining shovels possible. Offering the widest payload range of any manufacturer in the industry, the ability to optimally pair with our popular line of mining trucks, and the support of our world-class Cat® dealer network, we are uniquely positioned to partner with you to help achieve your productivity targets. We understand what matters to you. Our hydraulic mining shovels are built with you in mind. Because in mining, every day matters and every load counts.

The 6060/6060 FS is the most sold 600 t class hydraulic shovel in the world that customers rely on for outstanding productivity. With several upgrades, the 6060 now got heavier and more rigid in 2018. Based on the Caterpillar Continuous Product Improvement process, the Batch 3 update of 2018 introduces an all new Cat Heavy Duty undercarriage and new structural designs for frames and face shovel stick.

With its rated payload of 61 tonnes (67 tons) the 6060/6060 FS is tailor-made to 4-pass load 218-227 tonne (240-250 ton) trucks, like the Cat 793D and 793F or to 5-pass load 291 tonne (320 ton) trucks like the Cat 794 AC. Facilitating higher working speeds with its powerful engine output and efficient hydraulic system, the 6060/6060 FS allows fast cycle times and high productivity.

Operating Specifications

Operating Weight		
Face Shovel	590 tonnes	650 tons
Backhoe	589 tonnes	649 tons
Bucket Payload		
Face Shovel	61.0 tonnes	67.0 tons
Backhoe	61.0 tonnes	67.0 tons

Engine

Gross Power – SAE J1995	2236 kW	2,996 hp
Net Power – SAE J1349	2209 kW	2,960 hp

Standard Bucket Capacity

Face Shovel (heaped 2:1)	34.0 m^3	44.5 yd^3
Backhoe (heaped 1:1)	34.0 m^3	44.5 yd^3

6060/6060 FS Hydraulic Shovel Specifications

Features

- TriPower shovel attachment
- Independent oil-cooling system
- Spacious walk-through machine house
- 5-circuit hydraulic system
- On-board electronics system: Control and Monitoring Platform (CAMP)
- Board Control System (BCS)
- Operator Assist (OA)
- Torque control in closed-loop swing circuit
- Automatic central lubrication system
- LED working lights

Operating Weight

6060 FS		
Standard track pads	1400 mm	4 ft 7 in
Operating weight	590 000 kg	1,300,710 lb
Ground pressure	26.4 N/cm²	38.3 psi
6060		
Standard track pads	1400 mm	4 ft 7 in
Operating weight	589 000 kg	1,298,510 lb
Ground pressure	26.3 N/cm²	38.1 psi

Other track pads available on request.

Diesel Engines

Make and model	2 × Cat 3512C	
Rated speed	1,800 min^{-1}	1,800 rpm
Gross power – SAE J1995	2236 kW	2,996 hp
Net power – SAE J1349	2209 kW	2,960 hp
Net power – ISO 9249	2215 kW	2,968 hp
Number of cylinders (each engine)	12	
Bore	170 mm	6.69 in
Stroke	215 mm	8.46 in
Displacement	58.6 L	3,574 in³
Aspiration	Turbocharged and charge air-cooled	
Maximum altitude without deration	3500 m above sea level	11,500 ft
Alternators	2 × 150 A	
Fuel tank capacity	13 000 L	3,435 gal

- Emits equivalent to U.S. EPA Tier 2
- Hydraulically driven radiator fan with electronically controlled fan speed
- Microprocessed engine management
- Heavy-duty air filters
- Two-stage fuel filter including water separator
- Additional high-capacity water separator

Electrical System

System voltage	24V
Batteries in series/parallel installation	6 × 210 Ah – 12V each 630 Ah – 24V in total

- Battery isolation relays and switches
- Emergency stop switches accessible from ground level and in engine module
- 12 LED high-brightness working flood lights
  - 10 for working area
  - 2 for rear end
- 2 LED high-brightness access flood lights
- 16 LED service lights

Hydraulic System with Pump Managing System

Main pumps	4 × swash plate double pumps	
Maximum oil flow	4 × 1300 L/min	4 × 343 gal/min
Maximum pressure, attachment	320 bar	4,640 psi
Maximum pressure, travel	370 bar	5,365 psi
Swing pumps	4 × reversible swash plate pumps	
Maximum oil flow	4 × 352 L/min	4 × 93 gal/min
Maximum pressure, swing pumps	370 bar	5,365 psi
Total volume of hydraulic oil – approximately	9400 L	1,930 gal
Hydraulic tank capacity – approximately	7100 L	1,876 gal

- Pump Managing System contains:
  - Electronic load limit control
  - Flow on demand from main pumps depending on joystick position
  - Automatic regulation of main pumps to zero flow without demand
  - Automatic rpm reduction of engine speed during working breaks
  - Reduced oil flow of main pumps at high hydraulic oil temperature or engine temperature
- Pressure cut-off for main pumps
- Cooling of pump transmission gear oil
- Filters:
  - Full-flow high-pressure filters (100 µm) for the main pumps, installed directly behind each pump
  - High pressure filters (200 µm) for the closed swing circuit
  - Full-flow filters (10 µm) for the complete return circuit
  - Pressure filters (40 µm and 6 µm) for servo circuit
  - Pressure filters (40 µm) for the feed pumps of the closed swing circuit
  - Transmission oil filters (40 µm)

Hydraulic Oil Cooling

Oil flow of cooling pumps	4 × 488 L/min	4 × 129 gal/min
Diameter of fans	4 × 1170 mm	4 × 46 in

- Cooling system is fully independent of all main circuits, i.e. controlled cooling capacity is available whenever engine is running
- Gear-type cooling pumps supplying high-volume, low-pressure oil to fans and aluminum coolers
- Fan speed and flow of oil to the coolers are thermostatically controlled
- Extremely high cooling efficiency to ensure optimum oil temperature

Swing System

Swing drives	4 compact planetary transmissions with axial piston motors
Parking brakes	Wet multiple disc brake, spring loaded/ hydraulically released
Maximum swing speed	3.8 rpm
Swing ring	Triple-race roller bearing with sealed internal gearing

- Closed-loop swing circuit with torque control
- Hydraulic braking of the swing motion by counteracting control
- All raceways and the internal gearing of swing ring, supplied by automatic central lubrication system
- Dirt wipers at swing ring to prevent build-up of debris between swing ring and carbody

Retractable Service Station

Retractable service station installed underneath the engine module and easily accessible from ground.
Equipped with:
- Quick couplings for:
  - Diesel fuel
  - Engine coolant – left/right
  - Pump transmission gear oil – left/right
  - Engine oil – left/right
  - Hydraulic oil tank
  - Grease container
- Cat jump-start socket
- Indicator lights for fuel tanks left/right full and grease container full

Operator's Cab

Operator's eye level – approximately	7.6 m	24 ft 11 in
Internal dimensions cab		
Length	2200 mm	7 ft 3 in
Width	1600 mm	5 ft 3 in
Height	2150 mm	7 ft 1 in

- Under roof mounted heating ventilating and air conditioning system
- Pneumatically cushioned and multi-adjustable comfort seat with lumbar support, safety belt, head and armrests
- Switch in seat cushion to automatically neutralize the hydraulic controls when operator leaves the seat
- Joystick controls integrated in independently adjustable seat consoles
- Fold-away auxiliary seat with safety belt
- Operator Protective Guard (Top Guard approved according to ISO 10262:1998)
- All-round safety glass, armored windshield and sliding side window
- Windshield with parallel intermittent wiper/washer
- Roller blinds at all windows
- External sun shields at side and rear windows
- Board Control System (BCS III); electronic monitoring, data logging and diagnostic system for vital signs and service data of engines, hydraulic system and lubrication system, featuring:
  - Robust instrument panel including large (12 in) colored touch screen for intuitive handling
  - On-screen PDF documentation (e.g. operating instructions, technical handbook, spare parts catalog, electric circuit diagram)
  - On-screen troubleshooting assistance
  - Graphic charts of logged data
  - Fault memory with storage of related conditions
  - USB, Lan (TCP/IP) and CAN BUS interfaces for data export
- Machine access via retractable access stairway, stairway angle approximately 45°, hydraulically operated
- Sliding emergency ladder (kick-down type) with ladder cage

Automatic Lubrication System

Capacity of grease container	1000 L	264 gal

- Dual-circuit system with hydraulically driven heavy-duty pumps and electronic time relay control to adjust the pause/lube times
- Connected to the main lubrication system are:
  - raceways of the swing roller bearing
  - two greasing pinions for the internal gearing of the swing ring
  - pivot points of attachment, bucket and cylinders
  - bottom rollers of undercarriage
- System failures displayed by Board Control System
- Grease filters (200 µm) between service station and container as well as directly behind grease pump

6060/6060 FS Hydraulic Shovel Specifications

Undercarriage

Travel speeds (2 stage)		
1st stage – Maximum	1.1 km/h	0.68 mph
2nd stage – Maximum	1.6 km/h	0.99 mph
Maximum tractive force	2942 kN	661,160 lbf
Gradeability of travel drives – Maximum	43%	
Track pads (each side)	42	
Bottom rollers (each side)	7	
Support rollers (each side)	2 plus a skid plate in between	
Travel drives (each side)	1 planetary transmission with 2 two-stage axial piston motors	
Parking brakes	Wet multiple-disc brake, spring applied/ hydraulically released	

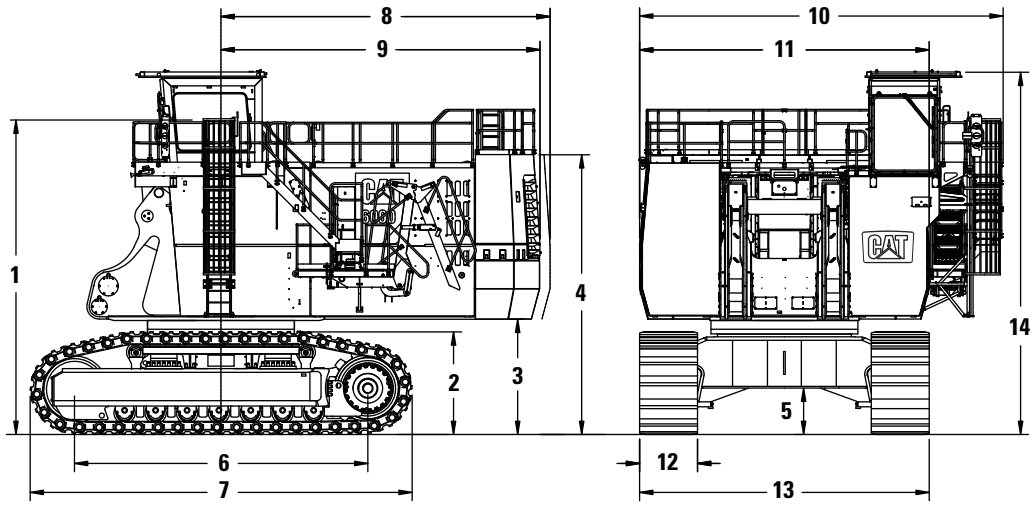
- Cast double-grouser combined pad links with bushings connected by hardened full floating pins
- All running surfaces of sprockets, idlers, rollers and pad links, as well as teeth contact areas of sprocket and pad links, are hardened
- Bottom rollers are connected to the automatic lubrication system
- Fully hydraulic, self-adjusting track tensioning system with piston accumulator
- Automatic hydraulic retarder valve to prevent over-speed on downhill travel
- Acoustic travel alarm

Attachments

- Booms and sticks are torsion-resistant, welded box design of high-tensile steel with massive steel castings at pivot areas
- Welding procedures allow for internal counter-welding (double prep weld) wherever possible
- Booms and sticks are stress-relieved after welding
- Catwalks with rails at booms
- Inspection holes in booms (FS and BH) and stick (FS)
- Guards for shovel cylinders (FS)
- Pressure-free lowering of boom (FS and BH) and stick (FS) by means of a float valve
- Shovel attachment with unique TriPower kinematics ensuring the following main features:
  - Horizontal automatic constant-angle bucket guidance
  - Vertical automatic constant-angle bucket guidance
  - Automatic roll-back limiter to prevent material spillage
  - Kinematic assistance to hydraulic forces
  - Constant boom momentum throughout the entire lift arc
  - Crowd force assistance
- All buckets (FS and BH) are equipped with a wear package consisting of:
  - Special liner material covering main wear areas inside and outside of bucket
  - Lip shrouds between teeth
  - Wing shrouds on side walls
  - Heel shrouds at bottom edges
- Special wear packages for highly abrasive materials on request

Dimensions

All dimensions are approximate.



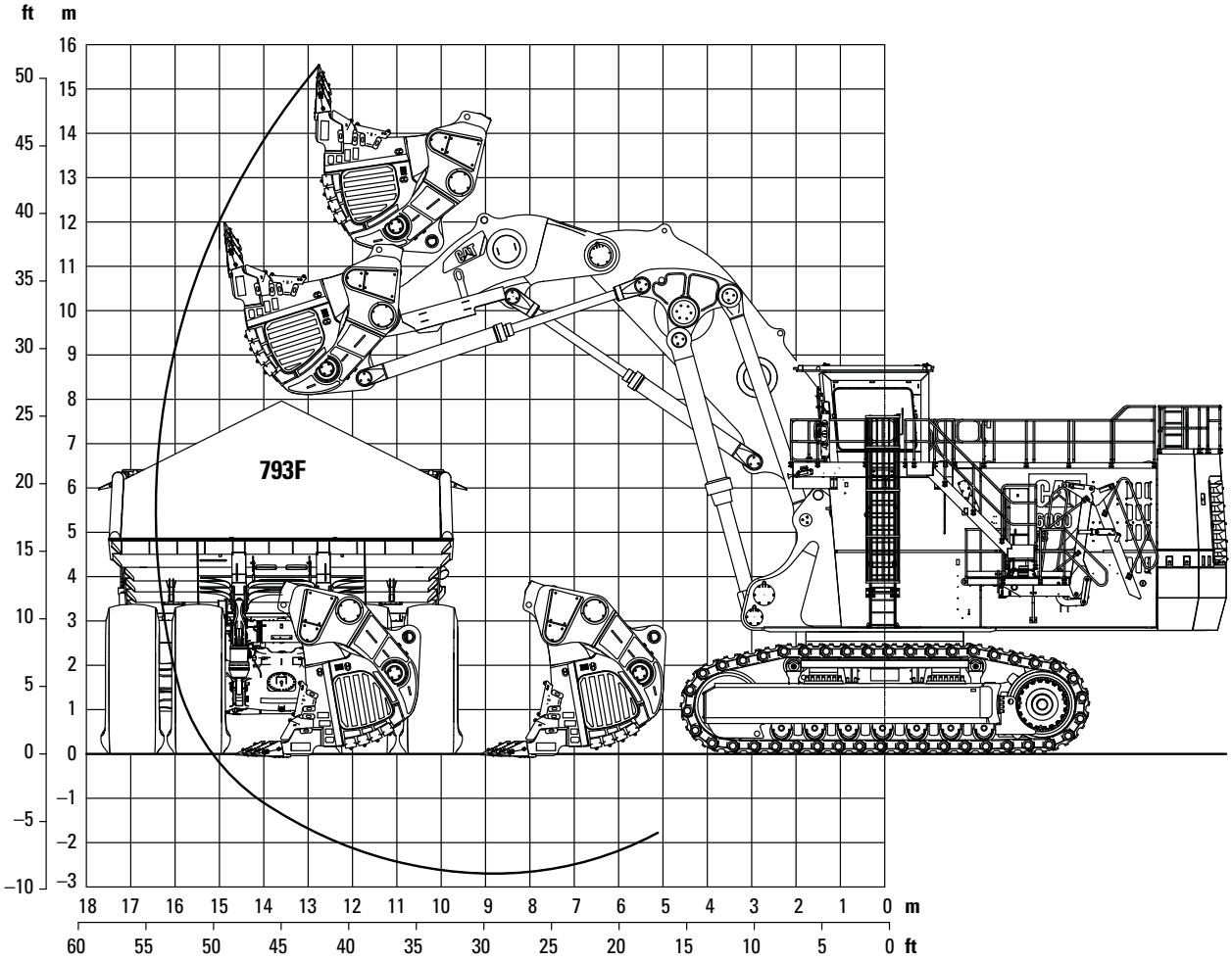
6060/6060 FS Basic Unit

1	7600 mm	24 ft 11 in	**8**	7955 mm	26 ft 1 in
2	2500 mm	8 ft 2 in	**9**	7700 mm	25 ft 3 in
3	2790 mm	9 ft 2 in	**10**	8730 mm	26 ft 7 in
4	6460 mm	21 ft 3 in	**11**	7000 mm	23 ft 0 in
5	1120 mm	3 ft 8 in	**12**	1400 mm	4 ft 7 in
6	7090 mm	23 ft 3 in	**13**	7000 mm	23 ft 0 in
7	9230 mm	30 ft 3 in	**14**	8790 mm	28 ft 10 in

6060/6060 FS Hydraulic Shovel Specifications

Working Range – TriPower Face Shovel Attachment (FS)

All dimensions are approximate.



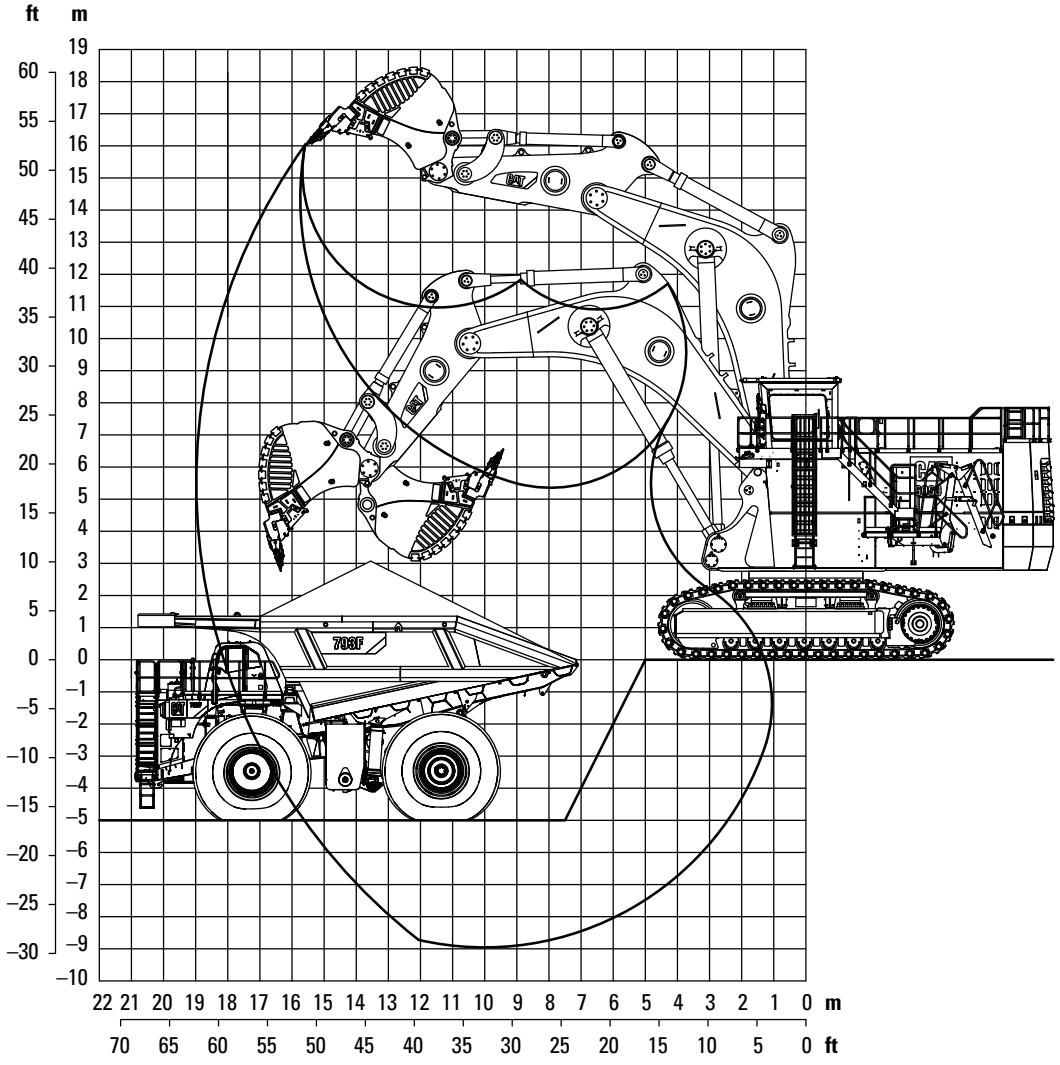
Boom	8.0 m	26 ft 2 in
Stick	**5.1 m**	**16 ft 9 in**
Digging Forces (ISO)		
Maximum crowd force	2255 kN	506,770 lbf
Maximum crowd force at ground level	2118 kN	475,980 lbf
Maximum breakout force	1776 kN	399,120 lbf

Working Range		
Maximum digging height	15.5 m	50 ft 10 in
Maximum digging reach	16.4 m	53 ft 10 in
Maximum digging depth	2.7 m	8 ft 10 in
Maximum dumping height	11.6 m	38 ft 1 in
Crowd distance on level	5.5 m	18 ft 1 in

Face Shovels					
Type	**Heavy Rock Shovel**	**Heavy Rock Shovel**	**Heavy Rock Shovel**	**Heavy Rock Shovel**	**Standard Rock Shovel**
G.E.T. system	CL1-W950	CL1-W950	CL1-W950	CL1-W950	CL1-W950
Capacity heaped 2:1 (ISO 7546)	23.0 m³ (30.1 yd³)	26.0 m³ (34.0 yd³)	28.0 m³ (36.6 yd³)	31.0 m³ (40.5 yd³)	34.0 m³ (44.5 yd³)
Total width	4766 mm (15 ft 8 in)	4766 mm (15 ft 8 in)	4766 mm (15 ft 8 in)	5630 mm (18 ft 4 in)	5630 mm (18 ft 4 in)
Inner width	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)	5100 mm (16 ft 9 in)	5100 mm (16 ft 9 in)
Opening width	2600 mm (8 ft 6 in)	2600 mm (8 ft 6 in)	2600 mm (8 ft 6 in)	2600 mm (8 ft 6 in)	2600 mm (8 ft 6 in)
Number of teeth	6	6	6	6	6
Weight including standard wear package	43 700 kg (96,340 lb)	44 200 kg (97,440 lb)	45 500 kg (100,310 lb)	49 600 kg (109,350 lb)	50 200 kg (110,670 lb)
Maximum material density (loose)	2.6 t/m³ (4,380 lb/yd³)	2.4 t/m³ (4,050 lb/yd³)	2.2 t/m³ (3,710 lb/yd³)	2.0 t/m³ (3,370 lb/yd³)	1.8 t/m³ (3,030 lb/yd³)

Working Range – Backhoe Attachment (BH)

All dimensions are approximate.



Boom	10.5 m	34 ft 5 in
Stick	**5.0 m**	**16 ft 5 in**
Digging Forces (ISO)		
Maximum tearout force	1276 kN	286,760 lbf
Maximum breakout force	1233 kN	277,090 lbf

Working Range		
Maximum digging height	16.0 m	52 ft 2 in
Maximum digging reach	19.0 m	62 ft 0 in
Maximum digging depth	8.9 m	29 ft 2 in

Backhoes					
Type	Heavy Rock Bucket	Heavy Rock Bucket	Heavy Rock Bucket	Standard Rock Bucket	Light Duty Bucket
G.E.T. system	CL1-W950	CL1-W900	CL1-W900	CL1-W900	CL1-W900
Capacity heaped 1:1 (ISO 7451)	25.0 m³ (32.7 yd³)	28.0 m³ (36.6 yd³)	31.0 m³ (40.5 yd³)	34.0 m³ (44.5 yd³)	36.0 m³ (47.1 yd³)
Total width	4765 mm (15 ft 8 in)	4765 mm (15 ft 8 in)	4765 mm (15 ft 8 in)	4765 mm (15 ft 8 in)	4765 mm (15 ft 8 in)
Inner width	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)	4300 mm (14 ft 1 in)
Number of teeth	6	6	6	6	6
Weight including standard wear package	33 100 kg (72,970 lb)	32 500 kg (71,650 lb)	33 600 kg (74,070 lb)	34 300 kg (75,620 lb)	34 600 kg (76,280 lb)
Maximum material density (loose)	2.4 t/m³ (4,050 lb/yd³)	2.2 t/m³ (3,710 lb/yd³)	2.0 t/m³ (3,370 lb/yd³)	1.8 t/m³ (3,030 lb/yd³)	1.65 t/m³ (2,780 lb/yd³)

6060/6060 FS Hydraulic Shovel

Optional Equipment

Optional equipment may vary. Consult your Cat dealer for details.

GENERAL

- Custom paint

SUPERSTRUCTURE

- Hydraulic service crane on superstructure with auxiliary engine
- Oil change interval extension for engine oil up to 500 hours
- Two round containers for two standard 200 L (53 gal) barrels (instead of 1000 L [264 gal] grease container)
- Various cold-weather options

CAB

- Dual (redundancy) heating ventilating and air conditioning system
- Cab heating
- Camera monitoring system

UNDERCARRIAGE

- Track pad width 1600 mm (5 ft 3 in) or 1800 mm (5 ft 11 in)
- Cover plate under carbody (belly plate)

Additional optional equipment available on request.

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at **www.cat.com**

AEHQ6526-05 (09-2018)
Replaces AEHQ6526-04