6030/6030 FS

Hydraulic Shovel

Features

With over 250 deliveries world-wide, the Cat 6030/6030 FS is our most popular and best-selling hydraulic mining shovel model. Along with the same advanced technology available on its larger Cat counterparts, the 6030/6030 FS provides the most powerful engine output in its class for added productivity and facilitates the mobility and flexibility you need from a 300 tonne machine. When optimally paired with our 777 or 785 Series mining trucks, you'll experience the operational efficiency and productivity you're looking for, supported by our unmatched Cat dealer network.

6030/6030 FS Hydraulic Shovel Specifications

General Data

Operating weight		
Face Shovel	294 tonnes	324 tons
Backhoe	296 tonnes	326 tons
Engine output SAE J1995		
2 × Cat C27 ACERT	1140 kW	1,530 hp
Standard bucket capacity		
Face Shovel (heaped 2:1)	16.5 m^3	21.6 yd^3
Backhoe (heaped 1:1)	17.0 m^3	22.2 yd^3

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 III)
- Torque control in closed-loop swing circuit
- Automatic central lubrication system
- Xenon working lights

Operating Weight

Face Shovel		
Standard track pads	1000 mm	3 ft 3 in
Operating weight	293 800 kg	647,710 lb
Ground pressure	22.0 N/cm^2	31.9 psi

- Additional track pads available on request

Backhoe		
Standard track pads	1000 mm	3 ft 3 in
Operating weight	296 000 kg	652,560 lb
Ground pressure	22.1 N/cm^2	32.1 psi

- Additional track pads available on request

Diesel Engines

Make and model	2 × Cat C27 (U.S. EPA Tier 2)	
Total rated net power – ISO 3046/1	1140 kW 1,800 min^{-1}	1,530 hp 1,800 min^{-1}
Total rated net power – SAE J1349	1140 kW 1,800 min^{-1}	1,530 hp 1,800 min^{-1}
Total rated gross power – SAE J1995	1140 kW 1,800 min^{-1}	1,530 hp 1,800 min^{-1}
Number of cylinders (each engine)	12	
Bore	137.7 mm	5.42 in
Stroke	152.4 mm	6.0 in
Displacement	27.0 L	1,648 in^3
Aspiration	Turbocharged and charge air-cooled	
Maximum altitude without deration at 15° C (59° F) – above sea-level	1750 m	5,750 ft
Alternators	2 × 150A	
Emission	U.S. E.P.A. Flex	
Fuel tank capacity	5360 L	1,416 gal

- Hydraulically driven radiator fan with electronically controlled fan speed
- Micro processed engine management
- Heavy-duty air filters
- Two-stage fuel filter, including water separator
- Additional high-capacity water separator

Electric Motor – 6030 AC/6030 AC FS

Type	Squirrel cage induction motor
Output	1000 kW
Voltage	6.3 kV ± 10% (other on request)
Rated current I_N	109A (at 6.3 kV)
Frequency	50 Hz (60 Hz on request)
Speed	1,500 min^{-1} (1,800 min^{-1} at 60 Hz)
Starting current	450% of I_N (253% of I_N optional)

- Custom-made electric motor with increased gap between rotor and stator to withstand severe mining conditions
- Power limit control by Pump Managing System

Electrical System (diesel drive)

System voltage	24V
Batteries (12V each) in series/ parallel installation	4 × 210 Ah 420 Ah – 24V
Working spotlights	8 × high brightness Xenon lights

- Battery isolation relays
- Emergency stop switches accessible from ground level and in engine module

Hydraulic System with Pump Managing System

Main pumps	4 × variable swash plate pumps	
Maximum oil flow		
Diesel version	4 × 552 L/min	4 × 146 gal/min
AC version	4 × 543 L/min	4 × 143 gal/min
Maximum pressure, attachment	310 bar	4,495 psi
Maximum pressure, travel	360 bar	5,220 psi
Swing pumps	2 × reversible swash plate double pumps	
Maximum oil flow		
Diesel version	2 × 394 L/min	2 × 104 gal/min
AC version	2 × 426 L/min	2 × 113 gal/min
Maximum pressure, swing pumps	350 bar	5,080 psi
Total volume of hydraulic oil – approximately	3500 L	925 gal
Hydraulic tank capacity – approximately	2500 L	660 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 at high 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 (100 µm) for the closed swing circuit
  - Full-flow filters (10 µm) for the complete return circuit
  - Full-flow filters (10 µm) for the cooling return circuit
  - Pressure filters (40 µm and 6 µm) for servo circuit
  - Transmission oil filters (40 µm)

Hydraulic Oil Cooling

Oil flow of cooling pumps		
Diesel version	2 × 467 L/min	2 × 123 gal/min
AC version	2 × 459 L/min	2 × 121 gal/min
Diameter of fans	2 × 1220 mm	2 × 48 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
- Variable axial piston pumps supplying low-volume, high-pressure oil to fans
- Fan speed is thermostatically controlled
- Extremely high cooling efficiency to ensure optimum oil temperature

Swing System

Swing drives	2 compact planetary transmissions with axial piston motors
Parking brakes	Wet multiple-disc brake, spring-loaded/ hydraulically released
Maximum swing speed	
Diesel version	4.6 rpm
AC version	5.0 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 of swing ring as well as grease bath for internal gearing supplied by automatic, central lubrication system

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

6030/6030 FS Hydraulic Shovel Specifications

Operator's Cab

Operator's eye level – approximately	6.5 m	21 ft 4 in
Internal dimensions of cab		
Length	2200 mm	7 ft 3 in
Width	1600 mm	5 ft 3 in
Height	2150 mm	7 ft 1 in

- Pneumatically cushioned and multi-adjustable comfort seat with lumbar support, seat heating, 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
- FOPS (rock guard; approved according to DIN ISO 3449) integrated into cab structure
- All-round safety glass, armored windshield and sliding side window
- Windshield with parallel intermittent wiper/washer
- Roller blind at windshield
- Board Control System (BCS III): Electronic monitoring, data logging and diagnostic system for vital signs and service data of engines, hydraulic 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 trouble shooting 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 boarding ladder, hydraulically operated
- Emergency exit harness kit

Undercarriage

Travel speed (2 stages)		
1st stage – maximum	1.4 km/h	0.87 mph
2nd stage – maximum	2.7 km/h	1.68 mph
Maximum tractive force	1637 kN	367,880 lbf
Gradeability of travel drives – approximate	64%	
Track pads (each side)	47	
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 loaded/ 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
- Fully hydraulic self-adjusting track tensioning system with membrane accumulator
- Automatic hydraulic retarder valve to prevent over-speed on downhill travel
- Acoustic travel alarm

Automatic Lubrication System

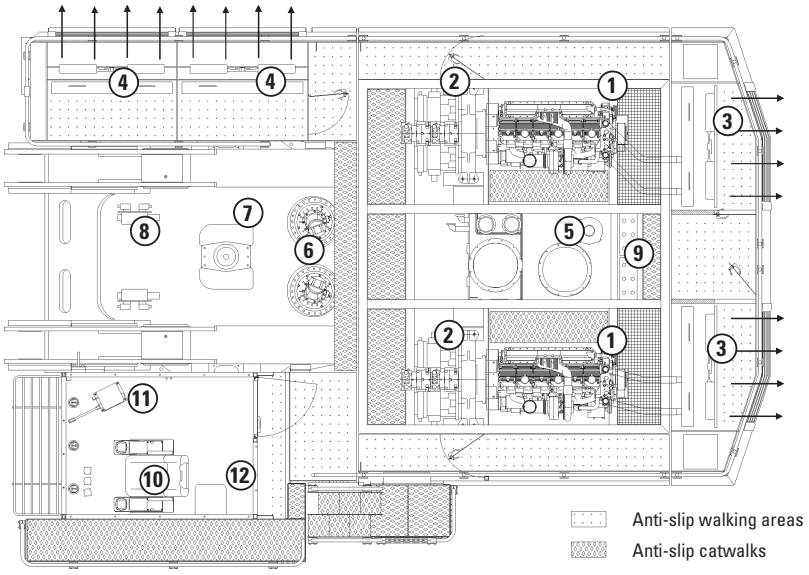
Capacity of grease container	450 L	120 gal

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

Attachments

- Booms and sticks are torsion-resistant, welded box design of high-tensile steel with solid 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 boom (FS and BH)
- 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 whole 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

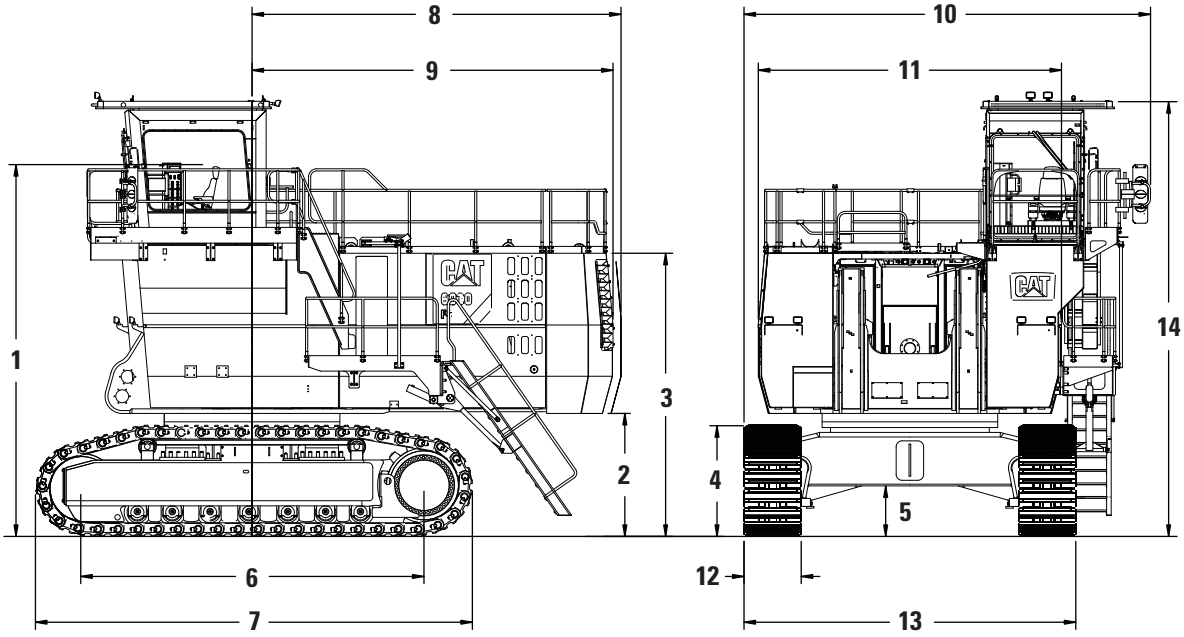
Component Accessibility on Superstructure



1 Diesel engines	**7** Rotary distributor
2 Gearboxes with hydraulic pumps	**8** Travel valves
3 Engine radiators with hydraulically driven fan	**9** Batteries
4 Oil coolers	**10** Operator's seat
5 Hydraulic tank	**11** BCS tower
6 Swing drives	**12** Auxiliary seat

Dimensions

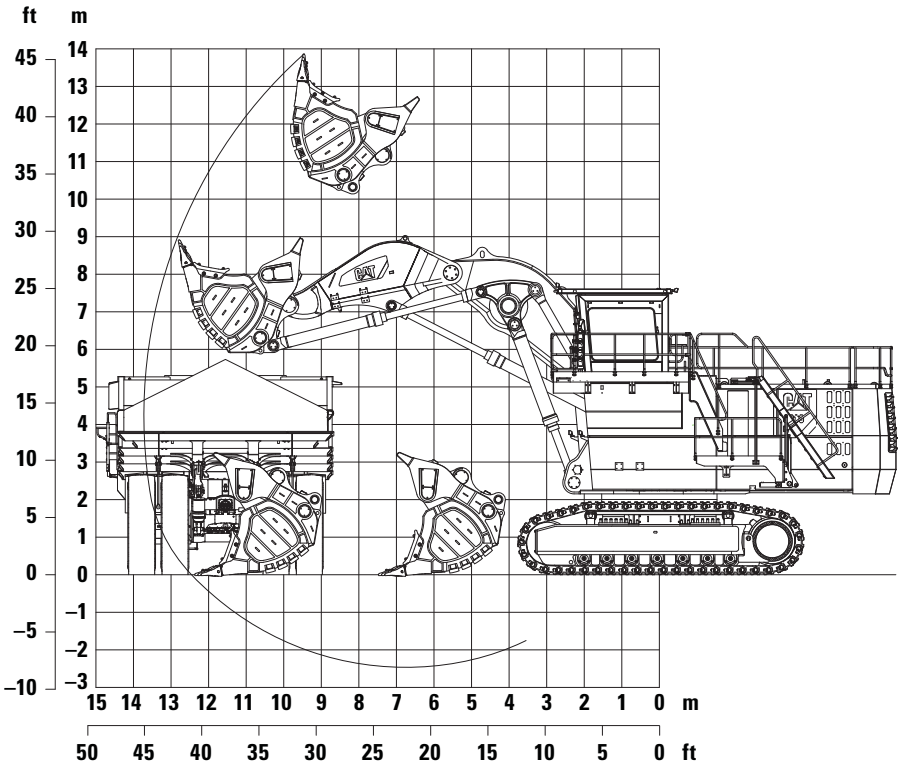
All dimensions are approximate. Dimensions and weights of AC machine differs slightly. Separate drawings, dimensions and weights can be provided upon request.



1	6500 mm	21 ft 4 in	**8**	6450 mm	21 ft 2 in
2	2150 mm	7 ft 1 in	**9**	6310 mm	20 ft 8 in
3	4950 mm	16 ft 3 in	**10**	7110 mm	25 ft 4 in
4	1940 mm	6 ft 4 in	**11**	5300 mm	17 ft 5 in
5	880 mm	2 ft 11 in	**12**	1000 mm	3 ft 3 in
6	5980 mm	19 ft 8 in	**13**	5800 mm	19 ft 0 in
7	7630 mm	25 ft 0 in	**14**	7600 mm	24 ft 11 in

Working Range – TriPower Face Shovel Attachment (FS)

All dimensions are approximate.



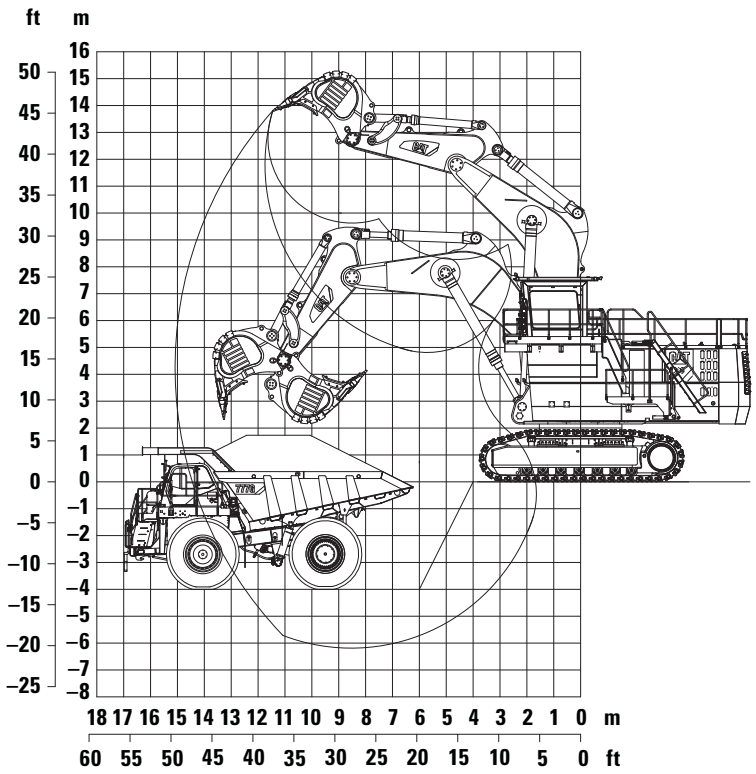
Boom	6.2 m	20 ft 4 in
Stick	**4.4 m**	**14 ft 5 in**
Digging Forces		
Maximum crowd force	1320 kN	296,640 lbf
Maximum crowd force at ground level	1210 kN	271,920 lbf
Maximum breakout force	960 kN	215,740 lbf

Boom	6.2 m	20 ft 4 in
Stick	**4.4 m**	**14 ft 5 in**
Working Range		
Maximum digging height	13.9 m	45 ft 7 in
Maximum digging reach	13.7 m	44 ft 11 in
Maximum digging depth	2.5 m	8 ft 2 in
Maximum dumping height	10.7 m	35 ft 1 in
Crowd distance on level	4.9 m	16 ft 1 in

Face Shovels					
Type	**Iron Ore Shovel**	**Iron Ore Shovel**	**Heavy Rock Shovel**	**Heavy Rock Shovel**	**Standard Rock Shovel**
Capacity heaped 1:1	11.6 m^3 (15.2 yd^3)	13.9 m^3 (18.2 yd^3)	15.4 m^3 (20.1 yd^3)	17.0 m^3 (22.2 yd^3)	19.0 m^3 (24.9 yd^3)
Capacity heaped 2:1	**10.0 m^3 (13.1 yd^3)**	**12.0 m^3 (15.7 yd^3)**	**13.5 m^3 (17.7 yd^3)**	**15.0 m^3 (19.6 yd^3)**	**16.5 m^3 (21.6 yd^3)**
Total width	3620 mm (11 ft 11 in)	3900 mm (12 ft 10 in)	3900 mm (12 ft 10 in)	3900 mm (12 ft 10 in)	3900 mm (12 ft 10 in)
Inner width	3220 mm (10 ft 7 in)	3500 mm (11 ft 6 in)	3500 mm (11 ft 6 in)	3500 mm (11 ft 6 in)	3500 mm (11 ft 6 in)
Opening width	1680 mm (5 ft 6 in)	1790 mm (5 ft 10 in)	1790 mm (5 ft 10 in)	1790 mm (5 ft 10 in)	1790 mm (5 ft 10 in)
Number of teeth	5	6	6	6	6
Weight including wear kit	23 400 kg (51,590 lb)	26 700 kg (58,860 lb)	27 300 kg (60,190 lb)	27 500 kg (60,630 lb)	27 900 kg (61,510 lb)
Maximum material density (loose)	3.2 t/m^3 (5,390 lb/yd^3)	2.6 t/m^3 (4,210 lb/yd^3)	2.2 t/m^3 (3,710 lb/yd^3)	2.0 t/m^3 (3,370 lb/yd^3)	1.8 t/m^3 (3,030 lb/yd^3)

Working Range – Backhoe Attachment (BH)

All dimensions are approximate.



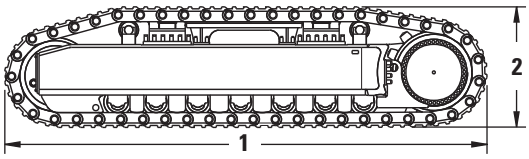
Boom	8.5 m	27 ft 11 in
Stick	**4.0 m**	**13 ft 9 in**
Digging Forces		
Maximum crowd force	880 kN	197,760 lbf
Maximum breakout force	870 kN	195,520 lbf

Boom	8.5 m	27 ft 11 in
Stick	**4.0 m**	**13 ft 9 in**
Working Range		
Maximum digging depth	6.2 m	20 ft 4 in
Maximum digging reach	15.1 m	49 ft 6 in
Maximum digging height	13.8 m	45 ft 3 in

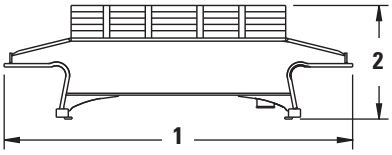
Backhoes			
Type	**Iron Ore Bucket**	**Heavy Rock Bucket**	**Standard Rock Bucket**
Capacity heaped 1:1	**12.0 m³ (15.7 yd³)**	**15.0 m³ (19.6 yd³)**	**17.0 m³ (22.2 yd³)**
Capacity heaped 2:1	10.9 m³ (14.3 yd³)	13.4 m³ (17.5 yd³)	15.1 m³ (19.8 yd³)
Capacity struck	9.6 m³ (12.6 yd³)	11.8 m³ (15.4 yd³)	13.2 m³ (17.3 yd³)
Total width	3450 mm (12 ft 2 in)	3880 mm (12 ft 9 in)	4360 mm (14 ft 4 in)
Inner width	3000 mm (9 ft 10 in)	3430 mm (11 ft 3 in)	3930 mm (12 ft 11 in)
Number of teeth	5	5	6
Weight including universal wear kit	15 900 kg (35,050 lb)	16 900 kg (37,260 lb)	18 800 kg (41,450 lb)
Maximum material density (loose)	2.6 t/m³ (4,380 lb/yd³)	2.0 t/m³ (3,370 lb/yd³)	1.8 t/m³ (3,030 lb/yd³)

General Packing List

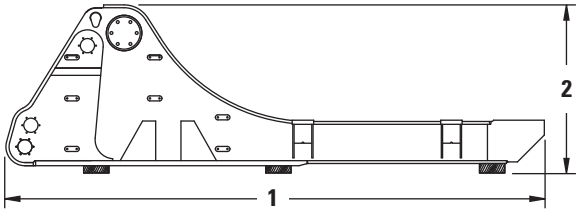
Crawler side frame with track pads (2 units, each)		
	Gross weight	38 000 kg (83,770 lb)
1	Length	7700 mm (25 ft 3 in)
	Width	1850 mm (6 ft 1 in)
2	Height	1950 mm (6 ft 5 in)



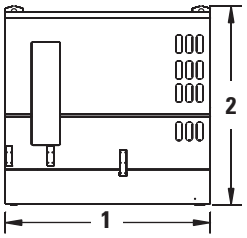
Undercarriage center frame with swing roller bearing		
	Gross weight	25 000 kg (55,120 lb)
1	Length	5550 mm (18 ft 3 in)
	Width	3400 mm (11 ft 2 in)
2	Height	1850 mm (6 ft 1 in)



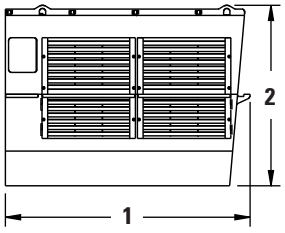
Superstructure center frame		
	Gross weight	34 750 kg (76,610 lb)
1	Length	8520 mm (27 ft 11 in)
	Width	3120 mm (10 ft 3 in)
2	Height	2660 mm (8 ft 9 in)



Engine module with diesel engines		
	Gross weight C27	25 800 kg (56,880 lb)
1	Length	3700 mm (12 ft 2 in)
	Width	5300 mm (17 ft 5 in)
2	Height	3100 mm (10 ft 2 in)



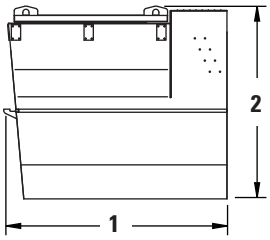
Oil cooler module		
	Gross weight	4900 kg (10,800 lb)
1	Length	3900 mm (12 ft 10 in)
	Width	1550 mm (5 ft 1 in)
2	Height	2900 mm (9 ft 6 in)



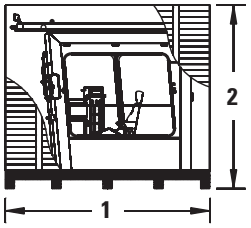
Above values are approximate. Details may vary depending on scope of supply and destination. Exact data subject to selected machine configuration and final packing list.

General Packing List

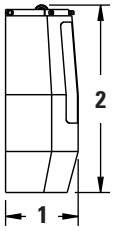
Cab pedestal module	
Gross weight	4830 kg (10,650 lb)
1 Length	3640 mm (11 ft 11 in)
Width	2000 mm (6 ft 7 in)
2 Height	3150 mm (10 ft 4 in)



Crate with cabin and FOPS	
Gross weight	3960 kg (8,730 lb)
1 Length	3500 mm (11 ft 6 in)
Width	2610 mm (8 ft 7 in)
2 Height	2870 mm (9 ft 5 in)

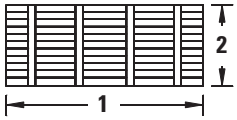


Counterweight including radiators	
Gross weight	33 500 kg (73,850 lb)
1 Length	1200 mm (3 ft 11 in)
Width	5300 mm (17 ft 5 in)
2 Height	3000 mm (9 ft 10 in)



Crates

Content	**1 Length**	**Width**	**2 Height**	**Gross Weight**
2 Swing gears	1800 mm (4 ft 2 in)	1100 mm (5 ft 11 in)	2000 mm (6 ft 7 in)	2780 kg (6,130 lb)
Grease container with pump	1380 mm (4 ft 6 in)	1070 mm (3 ft 6 in)	2060 mm (6 ft 9 in)	840 kg (1,850 lb)
Barrels (hydraulic oil; grease; antifreeze)	2500 mm (8 ft 2 in)	1300 mm (4 ft 3 in)	1270 mm (4 ft 8 in)	1640 kg (3,620 lb)
Swing ring cover	2140 mm (7 ft 0 in)	2030 mm (6 ft 8 in)	1280 mm (4 ft 2 in)	600 kg (820 lb)
Retractable ladder	4400 mm (14 ft 5 in)	1100 mm (3 ft 7 in)	2000 mm (6 ft 7 in)	620 kg (1,370 lb)
Bolts	3400 mm (11 ft 2 in)	1250 mm (4 ft 1 in)	1370 mm (4 ft 6 in)	1920 kg (4,230 lb)



Above values are approximate. Details may vary depending on scope of supply and destination. Exact data subject to selected machine configuration and final packing list.

Optional Equipment

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

GENERAL
- Export crating
- Finishing as per end user's corporate colors

SUPERSTRUCTURE
- Mechanical service crane on superstructure
- Hydraulic service crane on superstructure with auxiliary engine
- Folding access stairway, stairway angle approximately 45°
- Round container with a standard 200 L (53 gal) grease barrel (instead of 450 L (119 gal) grease container)
- Lubricated pinion for greasing of internal gearing of swing ring
- Various cold-weather packages

CAB
- Various heating and air-conditioning systems
- Roller blinds at all windows
- Outside-mounted sun shields

UNDERCARRIAGE
- Track pad width 800 mm (2 ft 7 in) or 1200 mm (3 ft 11 in)
- Automatic lubrication of rollers by central lube system
- Cover plate under carbody (belly plate)

ATTACHMENT
- Guards for shovel cylinders of FS attachment
- Xenon lighting on boom
- Special wear packages

Additional optional equipment available on request.

6030/6030 FS Hydraulic Shovel

Materials and specifications are subject to change without notice.

Featured machines in photos may include additional equipment.

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

Product ID: 6030/6030 FS

AEHQ7074-01
Replaces AEHQ7074

July 2013