



Cat® 6060

Hydraulic Shovel

Specifications

Electrical System (diesel drive)

System voltage	24 V
Batteries in series / parallel installation	6 x 210 Ah - 12 V each 630 Ah - 24 V in total
Working spot lights	8 x high brightness Xenon lights

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

Hydraulic Oil Cooling

Oil flow of cooling pumps	4 x 488 l/min (4 x 129 US gal/min)
Diameter of fans	4 x 1 170 mm (4 x 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 aluminium coolers	
• Fan speed and flow of oil to the coolers are thermostatically controlled	
• Extremely high cooling efficiency to ensure optimum oil temperature	

Diesel Engines

Engine Features

Fuel tank capacity	13 000 l (3,435 US gal)
• Hydraulically driven radiator fan with electronically controlled fan speed	
• Microprocessed engine management	
• Automatic rev. reduction	
• Heavy-duty air filters, STRATA 1 with automatic dust evacuation	

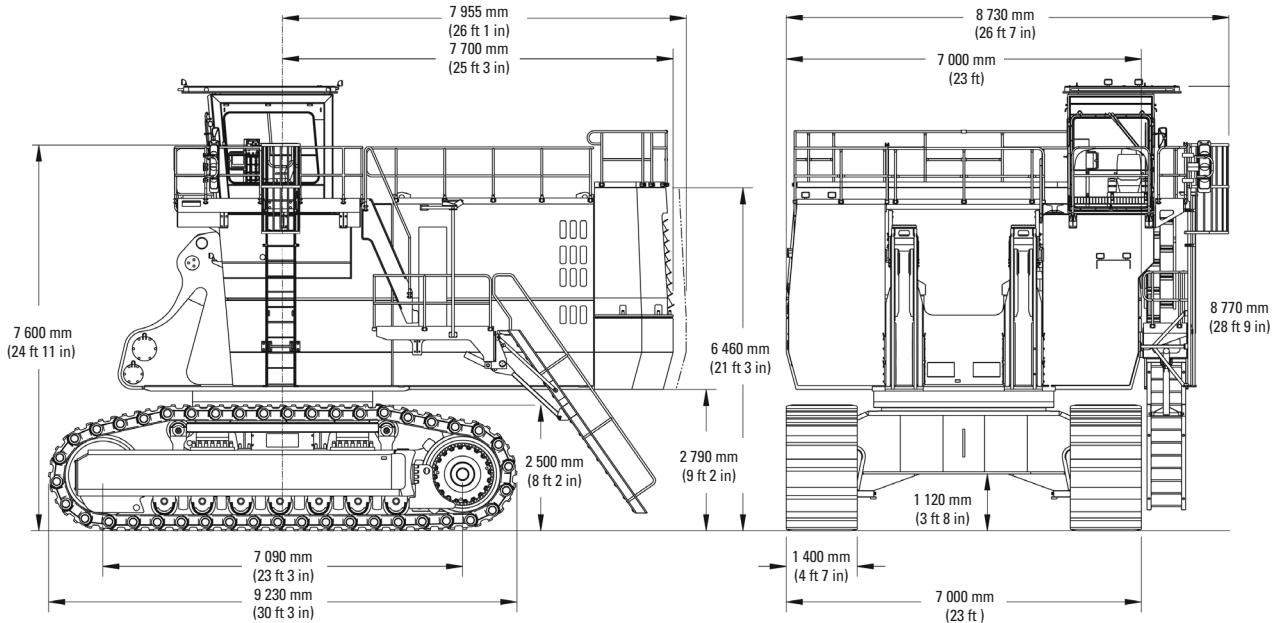
- Two-stage fuel filter incl. water separator
- Additional high-capacity water separator
- Pre-lube starting system (Cummins engines only)
- Eliminator with centrifuge for engine oil filtration (Cummins engines only)

Version 1 - Cat® 3512C Tier 2

Make and model	2 x Cat 3512C
Total rated net power ISO	3 046/1 2 240 kW (3,000 HP) 1,800 min ⁻¹
Total rated net power SAE J1349	2 240 kW (3,000 HP) 1,800 min ⁻¹
Total rated gross power SAE J1995	2 240 kW (3,000 HP) 1,800 min ⁻¹
No. of cylinders (each engine)	12
Bore	170 mm (6.69 in)
Stroke	215 mm (8.46 in)
Displacement	58.6 l (3,574 in ³)
Aspiration	Turbocharged and charge air-cooled
Max. altitude without deration at 20°C	3 000 m (9,800 ft) a.s.l.
Emission certification	US EPA CARB Tier 4i
Alternators	2 x 150 A



Hydraulic Shovel—6060



General Data

Operating Weight	
Face Shovel	562 tonnes 620 tons
Backhoe	565 tonnes 622 tons

Engine Output SAE J 1995

Cat® 3512C	2 240 kW 3,000 HP
Cummins® QSK45	2 240 kW 3,000 HP

Standard Bucket Capacity

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

Features

- *TriPower* shovel attachment
- Independent oil-cooling system
- Spacious walk-through machine house
- 5-circuit hydraulic system
- Electronic-hydraulic servo control
- Board Control System (BCS)
- Torque control in closed-loop swing circuit
- Automatic central lubrication system
- Xenon working light

Operating Weight

Shovel

Standard track pads	1 400 mm (4 ft 7 in)
Operating weight	562 300 kg (1,247,580 lb)
Ground Pressure	25.2 N/cm ² (36.4 psi)
Additional track pads available on request	

Backhoe

Standard track pads	1 400 mm (4 ft 7 in)
Operating weight	564 500 kg (1,244,500 lb)
Ground Pressure	25.3 N/cm ² (36.6 psi)
Additional track pads available on request	

Hydraulic Shovel—6060

Version 2 - Cummins® QSK45 Tier 1

Make and model	2 x Cummins QSK45
Total rated net power ISO	3 046/1 2 240 kW (3 000 HP) 1,800 min ⁻¹
Total rated net power SAE J1349	2 240 kW (3,000 HP) 1 800 min ⁻¹
Total rated gross power SAE J1995	2 240 kW (3,000 HP) 1 800 min ⁻¹
No. of cylinders (each engine)	12
Bore	159 mm (6.25 in)
Stroke	190 mm (7.48 in)
Displacement	45 l (2,746 in ³)
Aspiration	Turbocharged and aftercooled
Max. altitude without deration	4 267 m (14,000 ft) a.s.l.
Alternators	2 x 175 A

Hydraulic System with Pump Managing System

Main pumps	4 x swash plate double pumps
Max. oil flow	4 x 1 300 l/min (4 x 343 US gal/min)
Max. pressure, attachment	32 MPa = 320 bar (4,640 psi)
Max. pressure, travel	37 MPa = 370 bar (5,370 psi)
Swing pumps	4 x reversible swash plate pumps
Max. oil flow	4 x 352 l/min (4 x 93 US gal/min)
Max. pressure, swing system	32 MPa = 320 bar (4,640 psi)
Total volume of hydraulic oil	approx. 9 400 l (2,483 US gal)
Hydraulic tank capacity	approx. 7 100 l (1,876 US 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)

Undercarriage

Travel speeds (2 stage)	1st stage 2nd stage	Max. 1.4 km/h (0.87 mph) Max. 2.0 km/h (1.24 mph)
Max. tractive force	2 956 kN (301 t = 664,300 lb)	
Gradability of travel drives	Max. 52 %	
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
- Fully hydraulic, self-adjusting track tensioning system with membrane accumulator
- Automatic hydraulic retarder valve to prevent over-speed on downhill travel
- Acoustic travel alarm

Operator's Cab

Operator's eye level	approx. 7.6 m (24 ft 11 in)	
Internal dimensions cab	Length Width Height	2 200 mm (7 ft 3 in) 1 600 mm (5 ft 3 in) 2 150 mm (7 ft 1 in)

- 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
- FOPS (rock guard; approved acc. 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
- Robust instrument panel incl. large colored BCS screen with transflective technology
- Board Control System (BCS) electronic monitoring and data logging system for vital signs and service data of engines, hydraulic system and lubrication system
- Machine access via retractable boarding ladder, hydraulically operated
- Sliding emergency ladder (kick-down type) with ladder cage



Hydraulic Shovel—6060

Swing System

Swing Drives	4 compact planetary transmissions with axial piston motors
Parking Brakes	Wet multiple disc brake, spring loaded / hydraulically released
Max. 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 of swing ring, as well as grease bath for internal gearing, supplied by automatic central lubrication system

Automatic Lubrication System

Capacity of grease container 1 000 l (264 US 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

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 (oil pan) - left / right
 - Engine oil (additional tank - optional) - left / right
 - Hydraulic oil tank
 - Grease container
- Cat jump-start socket
- Indicator lights for fuel tanks left / right full and grease container full

Attachments

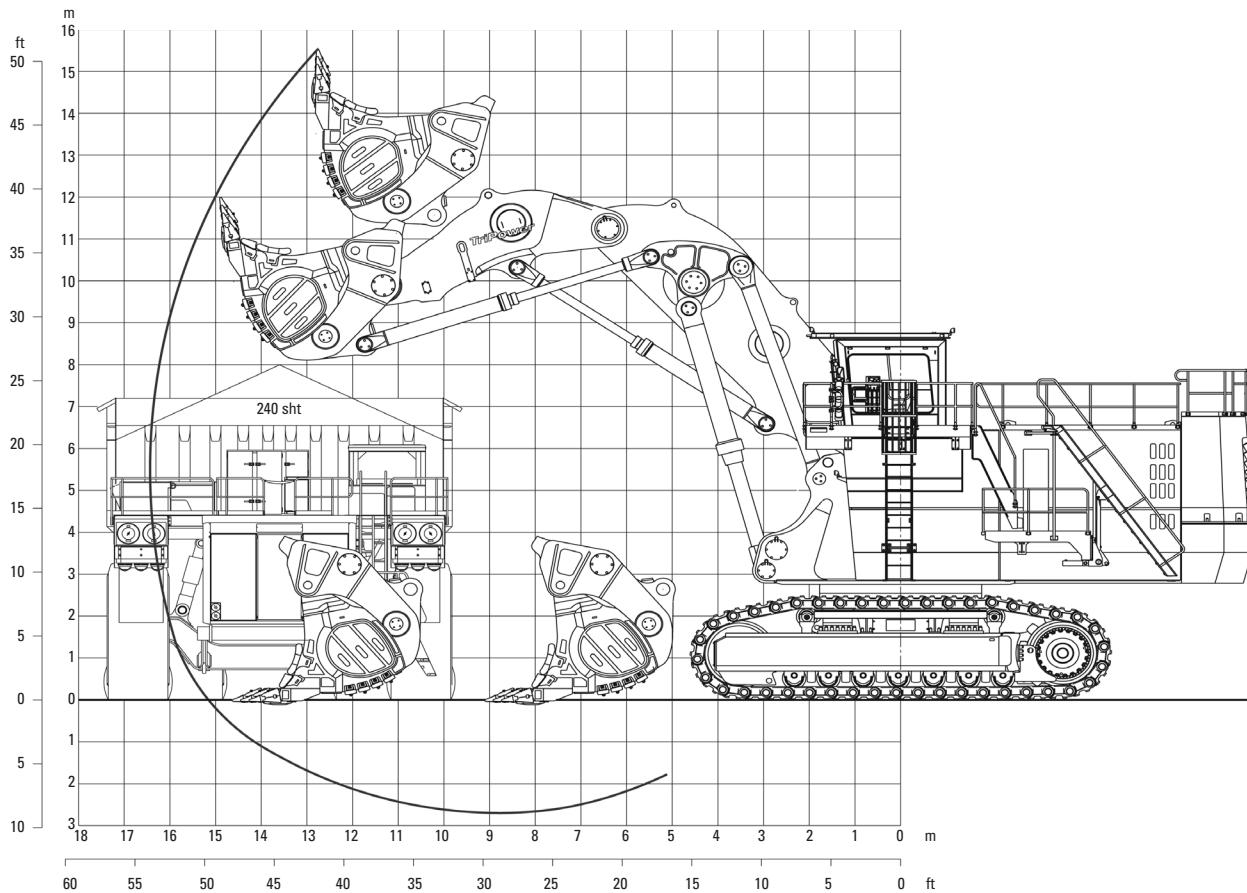
- Booms and sticks are torsion-resistant, welded box design of high-tensile steel with massive steel castings at pivot areas
- Welding procedures allow for internal counter-welding (double prep weld) wherever possible
- Booms and sticks are stress-relieved after welding
- Catwalks with rails at booms
- Inspection holes in booms (FS & BH) and stick (FS only)
- 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 universal wear package suitable for all standard applications, which consists 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



Hydraulic Shovel—6060

TriPower Face Shovel Attachment (FS)

Working Diagram - Boom 8.0 m (26 ft 2 in) - Stick 5.1 m (16 ft 9 in)



Working Range

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

Digging Forces

Max. crowd force	2 240 kN	503,400 lb
Max. crowd force at ground level	2 100 kN	471,930 lb
Max. breakout force	1 640 kN	368,560 lb

Face Shovels

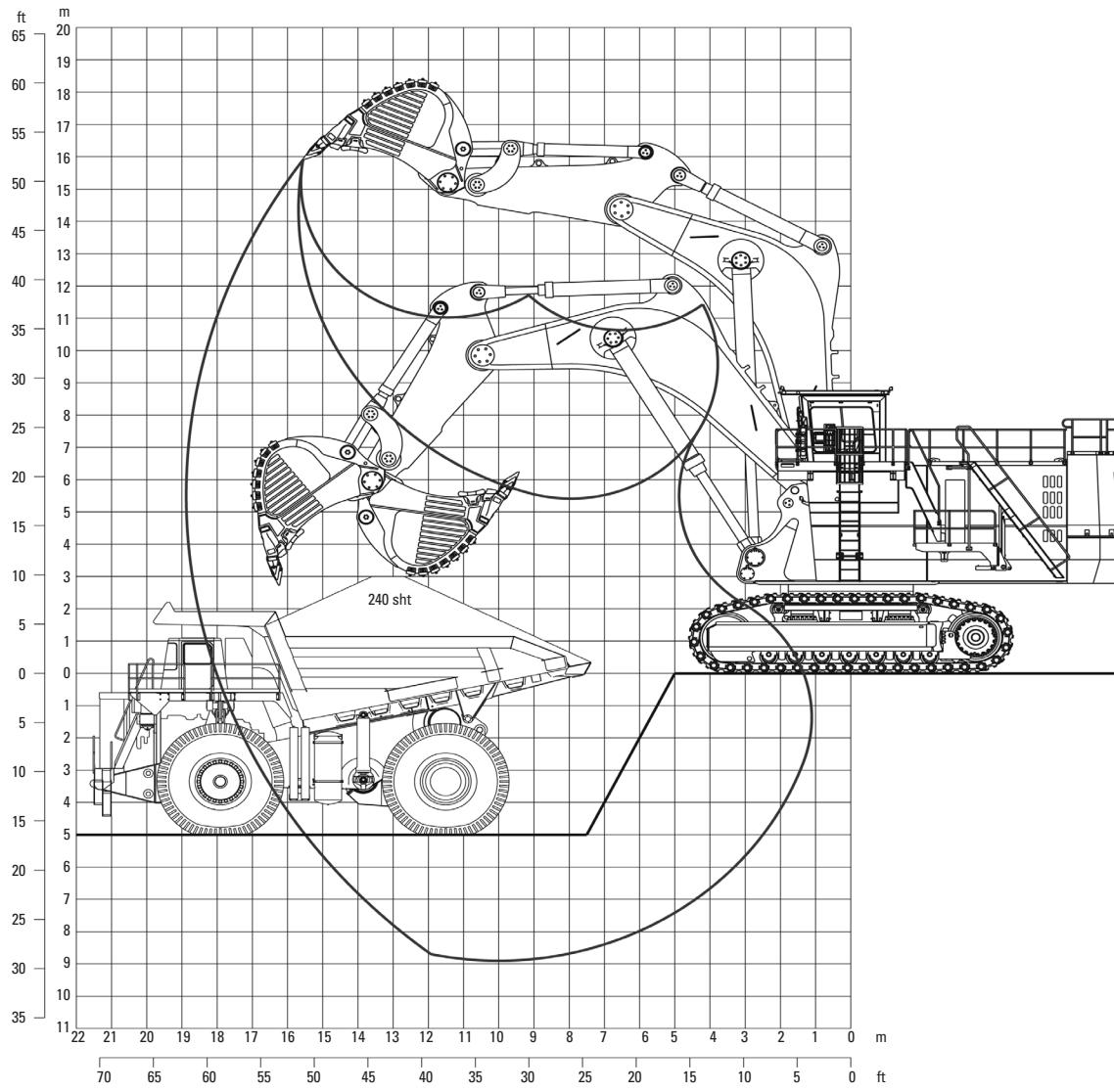
Type	Iron ore shovel	Iron ore shovel	Heavy rock shovel	Heavy rock shovel	Standard rock shovel
Tooth system	ESCO S130				
Capacity SAE / PCSA 1:1	24.5 m ³ (32.0 yd ³)	26.5 m ³ (34.7 yd ³)	32.5 m ³ (42.5 yd ³)	36.0 m ³ (47.1 yd ³)	39.5 m ³ (51.7 yd ³)
Capacity SAE / CECE 2:1	21.0 m³ (27.5 yd³)	23.0 m³ (30.1 yd³)	28.0 m³ (36.6 yd³)	31.0 m³ (40.5 yd³)	34.0 m³ (44.5 yd³)
Total width	4 800 mm (15 ft 9 in)	4 800 mm (15 ft 9 in)	4 800 mm (15 ft 9 in)	5 600 mm (18 ft 4 in)	5 600 mm (18 ft 4 in)
Inner width	4 300 mm (14 ft 1 in)	4 300 mm (14 ft 1 in)	4 300 mm (14 ft 1 in)	5 100 mm (16 ft 9 in)	5 100 mm (16 ft 9 in)
Opening width	2 600 mm (8 ft 6 in)				
No. of teeth	6	6	6	6	6
Weight incl. wear kit	44 900 kg (98,990 lb)	44 300 kg (97,660 lb)	46 200 kg (100,530 lb)	50 100 kg (110,450 lb)	50 300 kg (110,450 lb)
Max. material density (loose)	3.0 t/m ³ (5,060 lb/yd ³)	2.6 t/m ³ (4,380 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)



Hydraulic Shovel—6060

Backhoe Attachment (BH)

Working Diagram - Boom 10.5 m (34 ft 5 in) - Stick 5.0 m (16 ft 5 in)



Working Range

Max. digging depth	8.9 m	29 ft 2 in
Max. digging reach	18.9 m	62 ft
Max. digging height	15.9 m	52 ft 2 in

Digging Forces

Max. crowd force	1 270 kN	285,410 lb
Max. breakout force	1 240 kN	278,670 lb

Backhoes

Type	Heavy rock bucket	Standard rock bucket
Tooth system	ESCO S110	ESCO S110
Capacity SAE 1:1	28.0 m³ (36.6 yd³)	34.0 m³ (44.5 yd³)
Capacity CECE 2:1	24.6 m ³ (32.3 yd ³)	30.3 m ³ (39.6 yd ³)
Capacity struck	21.2 m ³ (27.7 yd ³)	26.5 m ³ (34.7 yd ³)
Total width	4 440 mm (14 ft 7 in)	4 700 mm (15 ft 5 in)
Inner width	4 040 mm (13 ft 3 in)	4 300 mm (14 ft 1 in)
No. of teeth	6	6
Weight incl. universal wear kit	31 600 kg (69,670 lb)	34 400 kg (75,180 lb)
Max. material density (loose)	2.2 t/m ³ (3,710 lb/yd ³)	1.8 t/m ³ (3,030 lb/yd ³)

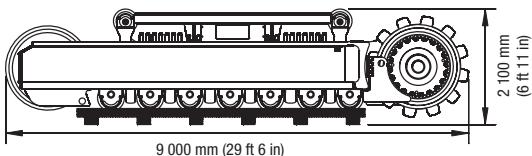


Hydraulic Shovel—6060

General Packing List

Crawler side frame (2 units)

Width 2 100 mm (6 ft 0 in) Gross weight 47 900 kg (105,600 lb)



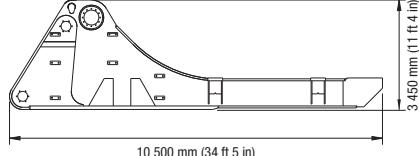
6 tracks consisting of 14 pad links; each

Width 1 400 mm (4 ft 7 in) Gross weight (each) 11 500 kg (25,350 lb)



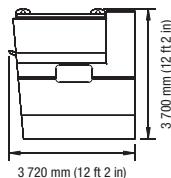
Superstructure center frame

Width 3 600 mm (11 ft 10 in) Gross weight 63 400 kg (139,770 lb)



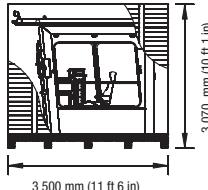
Cab pedestal module

Width 2 700 mm (8 ft 10 in) Gross weight 7 500 kg (16,530 lb)



Crate with cabin and FOPS

Width 2 610 mm (8 ft 7 in) Gross weight 3 500 kg (7,720 lb)



Crates

Content	Length	Width	Height	Gross Weight
Two radiators with fan	3 000 mm (9 ft 10 in)	1 950 mm (6 ft 7 in)	1 670 mm (5 ft 6 in)	2 460 kg (5,420 lb)
Four swing gear	1 350 mm (4 ft 5 in)	1 350 mm (4 ft 5 in)	1 900 mm (6 ft 3 in)	5 340 kg (11,770 lb)
Swing ring cover	2 200 mm (7 ft 3 in)	1 300 mm (4 ft 3 in)	1 030 mm (3 ft 5 in)	390 kg (860 lb)
Bolts, tools, accessories, etc.	3 300 mm (10 ft 10 in)	1 600 mm (5 ft 3 in)	1 260 mm (4 ft 2 in)	3 500 kg (7,720 lb)
Catwalks and other parts	4 960 mm (16 ft 3 in)	1 900 mm (6 ft 3 in)	1 770 mm (5 ft 10 in)	3 400 kg (7,500 lb)
Grease container with pump	1 700 mm (5 ft 7 in)	1 300 mm (4 ft 3 in)	2 100 mm (6 ft 11 in)	1 050 kg (2,310 lb)
Air filters, mufflers	3 600 mm (11 ft 10 in)	1 750 mm (5 ft 9 in)	1 780 mm (5 ft 10 in)	1 620 kg (3,570 lb)
Retractable ladder (on pallet)	5 570 mm (18 ft 3 in)	1 100 mm (3 ft 7 in)	1 660 mm (5 ft 5 in)	740 kg (2,510 lb)
Emergency ladder (on pallet)	5 100 mm (16 ft 9 in)	900 mm (2 ft 11 in)	2 090 mm (6 ft 10 in)	500 kg (1,100 lb)
Barrels (hydraulic oil)	2 500 mm (8 ft 2 in)	1 300 mm (4 ft 3 in)	1 270 mm (4 ft 2 in)	1 900 kg (4,190 lb)
Barrels (engine oil; antifreeze; grease)	2 500 mm (8 ft 2 in)	1 300 mm (4 ft 3 in)	1 270 mm (4 ft 2 in)	1 700 kg (3,750 lb)

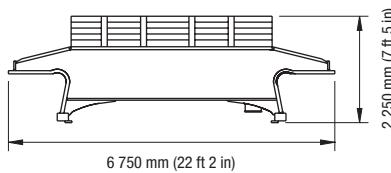
Above values are approximate. Details may vary depending on scope of supply and destination.

Exact data subject to selected machine configuration and final packing list.

Undercarriage center frame with swing roller bearing

Width 3 800 mm (12 ft 6 in)

Gross weight 42 300 kg (93,250 lb)



Engine module with diesel engines

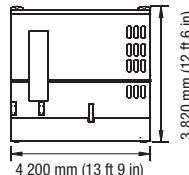
Width 7 000 mm (23 ft)

Gross weight 3512C

Gross weight QSK45

55 000 kg (121,250 lb)

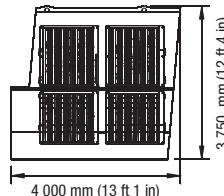
54 600 kg (120,370 lb)



Oil cooler module

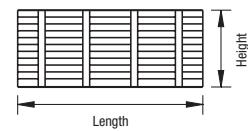
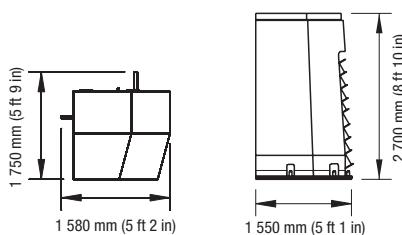
Width 2 000 mm (6 ft 7 in)

Gross weight 10 100 kg (22,270 lb)



Counterweight

	Width	Gross weight
Lower part	7 000 mm (23 ft)	36 000 kg (79,370 lb)
Upper Part	7 000 mm (23 ft)	18 400 kg (40,560 lb)

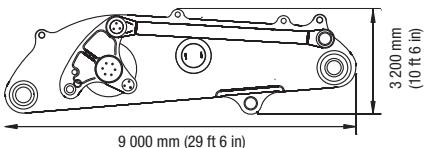


Hydraulic Shovel—6060

TriPower Shovel Attachment

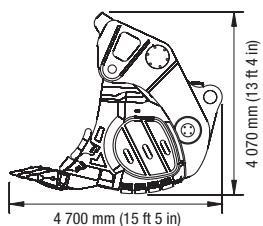
Boom with TriPower linkages and rods

Width 3 050 mm (10 ft) Gross weight 40 000 kg (88,180 lb)



Face shovel incl. pin for stick

Capacity (2:1)	Width	Gross Weight
34.0m ³ (44.5 yd ³)	5 700 mm (18 ft 8 in)	51 600 kg (113,760 lb)



2 Bundles with 1 boom cylinder each

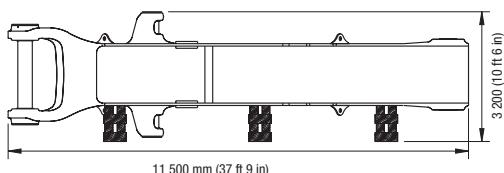
Width 500 mm (1 ft 8 in) Gross weight 4 140 kg (9,130 lb)



Backhoe Attachment

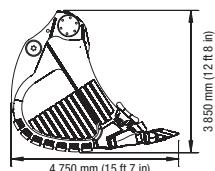
Monoboom with main valve block

Width 5 000 mm (16 ft 5 in) Gross weight 42 800 kg (94,360 lb)



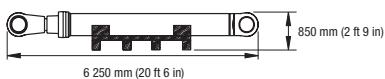
Backhoe bucket incl. pins for stick and linkage

Capacity (2:1)	Width	Gross Weight
34m ³ (44.5 yd ³)	4 750 mm (15 ft 7 in)	36 000 kg (79,370 lb)



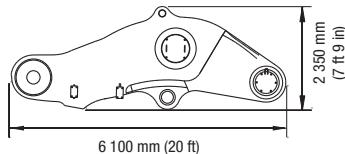
2 pallets with 1 boom cylinder each

Width 800 mm (2 ft 7 in) Gross weight 6 700 kg (14,770 lb)



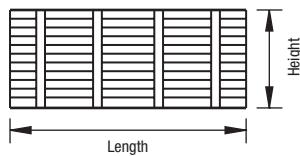
Stick

Width 2 300 mm (7 ft 7 in) Gross weight 16 300 kg (35,930 lb)



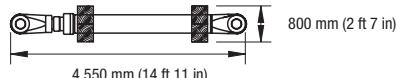
Crates with value block, catwalks, railings and other parts

Length	Width	Height	Gross weight
4 000 mm (13 ft 1 in)	2 250 mm (7 ft 5 in)	1 950 mm (6 ft 5 in)	6 000 kg (13,230 lb)
4 270 mm (14 ft)	1 900 mm (6 ft 3 in)	1 700 mm (5 ft 7 in)	3 260 kg (7,190 lb)



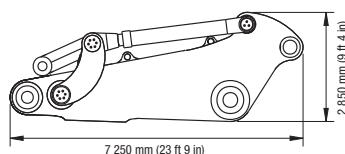
2 Bundles with 2 stick cylinders and 2 bucket cylinders ea.

Width 1 200 mm (3 ft 11 in) Gross weight 5 200 kg (11,460 lb)



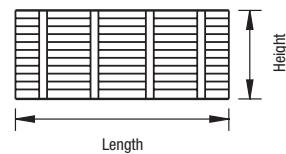
Stick with linkage and bucket cylinder

Width 2 359 mm (7 ft 9 in) Gross weight 28 800 kg (65,490 lb)



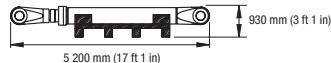
Crates with value block, catwalks, railings and other parts

Length	Width	Height	Gross weight
4 900 mm (16 ft 1 in)	2 400 mm (7 ft 10 in)	2 130 mm (7 ft)	5 900 kg (13,010 lb)
4 270 mm (14 ft)	1 900 mm (6 ft 3 in)	1 700 mm (5 ft 7 in)	3 100 kg (6,830 lb)



2 pallets with 1 stick cylinder each

Width 800 mm (2 ft 7 in) Gross weight 4 200 kg (9,260 lb)



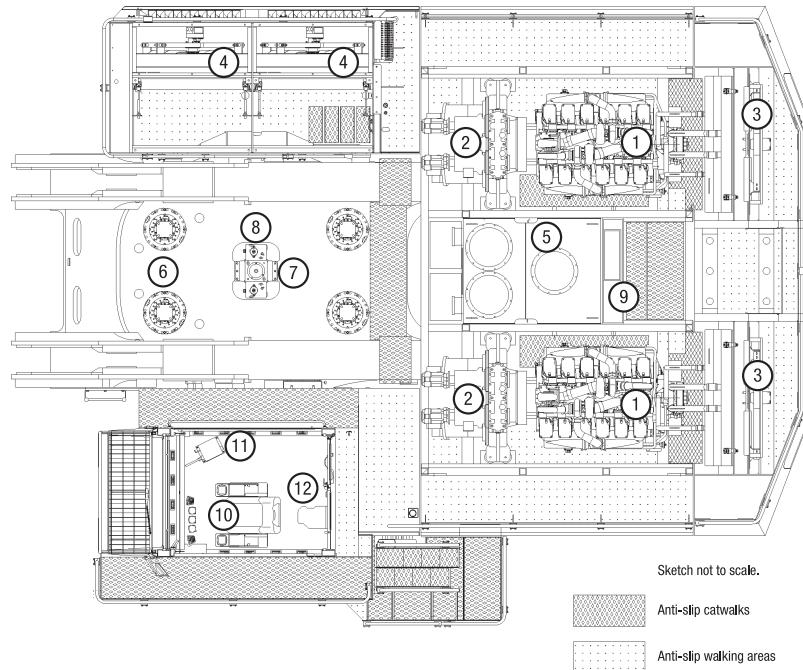
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Hydraulic Shovel—6060

Component Accessibility on Superstructure

1. Diesel Engines	4. Oil coolers	7. Rotary distributor	10. Operator's seat
2. Gearboxes with hydraulic pumps	5. Hydraulic tank	8. Travel valves	11. BCS tower
3. Engine radiators with hydraulically driven fan	6. Swing drives	9. Switch cabinet and battery box	12. Auxilliary seat



Optional Equipment

General

- Export crating
- Finishing as per end user's corporate colors
- Customizing of logos as per customer's specification

Superstructure

- Hydraulic service crane on superstructure with auxilliary engine
- Mesabi radiators instead of standard radiators
- Oil change interval extension for engine oil up to 1.000 hrs (Cummins engines only)
- Folding access stairway, stairway angle approx. 45°
- Round container with a standard 200 l grease barrel (instead of 1 000 l grease container)
- Lubricated pinion for greasing of internal gearing of swing ring
- Various cold-weather packages

Additional optional equipment available on request

Cab

- Various heating and air-conditioning systems
- Roller blinds at all windows
- Rear windscreen wiper
- Additional instrumentation

Undercarriage

- Track pad width 1 600 mm (5 ft 3 in) or 1 800 mm (5 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

ZEPPELIN

ZEPPELIN – GANZ IN IHRER NÄHE

ZEPPELIN IN IHRER NÄHE

Mit unseren rund 40 Niederlassungen in Deutschland und Österreich sind wir immer in der Nähe Ihres Standortes oder Ihrer Baustelle. Der Zeppelin Service steht Ihnen rund um die Uhr zur Verfügung. Wir liefern 98 % aller Ersatzteile innerhalb von 24 Stunden.



ZEPPELIN DIGITAL



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