



# **CAT**<sup>®</sup> 6040

HYDRAULIC MINING SHOVEL



# THE PRODUCTIVITY YOU DEMAND. THE DURABILITY YOU EXPECT.

The Cat® 6040 Hydraulic Mining Shovel is trusted on sites around the world for proven performance, high reliability and unmatched support of the Cat dealer network. Equipped with proven and reliable C32 engines, the fully converted 6040 delivers the productivity you demand, with the durability you expect.

The 6040 offers a standard bucket capacity of 22 m³ (28.8 yd³) in both backhoe and face shovel configurations with the unique Cat TriPower™ system and delivers top efficiency when optimally paired with Cat 777 to 796 AC mining trucks.

But we're always looking for ways to make the 6040 better. Fast cycle times, high digging forces and a new non-DEF aftertreatment solution enable peak production. We've boosted uptime by making it more reliable and easier to service, with a new undercarriage and improved routing and layout of Cat Hydraulic Hose assemblies. Proven as a durable digger, it has a longer target design life and more robust structures and castings than peer competitors. And it's now available for both highly regulated and lesser regulated countries with a U.S. EPA Tier Final Final/EU Stage V engine solution that saves time and cost during maintenance.

### UP TO 4,000 TONS PER HOUR PEAK PRODUCTIVITY

- » Fast cycle times
- » High digging forces
- » Proven and powerful C32 engines with non-DEF Tier 4 final aftertreatment solution
- » Greater uptime with twin engine design

## IMPROVED RELIABILITY & SERVICEABILITY

- » Improved HD undercarriage
- » Improved routing and layout of Cat hydraulic hoses and couplings
- » Cat type 4 air filters and dust ejection system
- » Improved condition monitoring with Product Link™ Elite

### AT LEAST 60,000 HOURS TARGET DESIGN LIFE

- » Demonstrated durability of more than 100,000 SMU in the field
- » Up to 18% more operating weight than peers
- » Proven and robust structures
- » Heavy castings at attachment pivot points







### FASTER FACE SHOVEL OPERATION

The 6040's unique TriPower face shovel design has been proven to deliver safer, easier and faster face shovel operation. Generating superior mechanical leverage and control, our FS configured hydraulic mining shovels utilize a unique boom design that employs rotatable triangular rockers. This design facilitates faster lifting speeds and cycle times and increased effective lifting forces.

TriPower enables constant boom momentum and lifting speed throughout the entire lifting distance. The automatic constant bucket angle feature minimizes material spillage during boom lifting and enables operators to work more safely and efficiently. The automatic roll-back limiter ensures the bucket is always in a safe position — especially at maximum height — and reduces the risk of material spillage.

### UNIQUE TWIN ENGINE CONCEPT

The 6040's twin engine concept delivers greater uptime and increased productivity without compromising fuel consumption. With this design, the 6040 can exert maximum digging forces and continue to recuperate energy via its closed-loop swing circuit using just a single engine. The design enables you to maintain about 65% of full production or move away from high walls, blast zones or other safety hazards when in need of engine repair with single-engine operation. By comparing one engine and associated hydraulic network to the other engine, troubleshooting is expedited and simplified, therefore generating more uptime and more productivity.

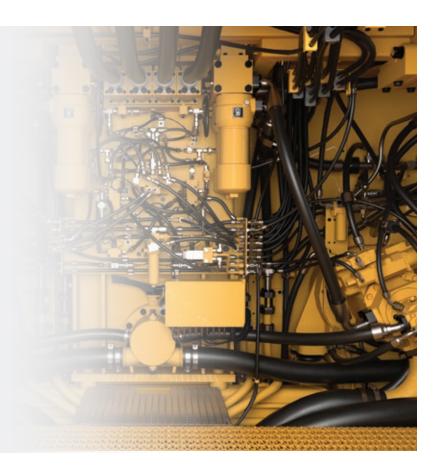
### EFFICIENT BOOM MOVEMENT

Cycle times are reduced thanks to the use of float valves rather than engaging pumps to lower the boom. This facilitates faster boom movements and allows other operating functions such as bucket curl and stick in/out to occur simultaneously.



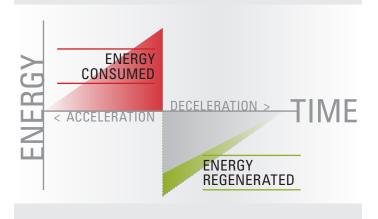
### INTELLIGENT OPERATION

The intelligent pump managing system contributes to lower costs by increasing engine efficiency. This system continuously evaluates actual engine and hydraulic operating values against set values and adjusts pump output accordingly. This results in greater productivity, less energy and fuel consumption, and reduced component wear.



### **CAPTURED ENERGY**

The Closed-loop Swing System improves energy efficiency and generates less heat. Kinetic energy captured during the swing motion is fed back to the system during deceleration, providing more power to drive the main and auxiliary pumps. This lowers the load on the engines and reduces fuel consumption.



# PROTECTING AND EXTENDING THE LIFE OF HYDRAULIC COMPONENTS

### **OPTIMIZED COOLING**

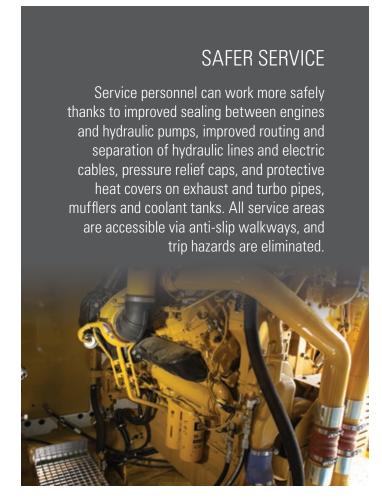
The independent oil cooling system and continuous filtration of hydraulic oil help you protect and extend the life of hydraulic components. The system functions independently of hydraulic return oil, which increases efficiency by utilizing dedicated pumps to provide cooling capacity as needed, whether the engines are idling or under load. This translates to optimum oil temperature throughout the duty cycle. Additional efficiency is gained from our thermostatically controlled radiator fan speed.

### **FOCUS ON SAFETY**

IN, ON AND AROUND THE SHOVEL The 6040 has been updated to incorporate mining safety best practices as part of its standard design. With an eye on safety during **OPERATOR** PROTECTIVE GUARD both operation and maintenance, (TOP GUARD) the design focuses on access and egress, hydraulic hose routing, TWOelectric wiring and fire prevention. CAMERA SAFETY SEAT **SYSTEM** CONTACT SWITCH (OPTIONAL) LED HIGH-**BRIGHTNESS** SAFETY GLASS IN **WORKING AND ALL WINDOWS** SERVICE LIGHTS TRIPOWER AUTOMATIC **ARMORED** ROLLBACK LIMITER WINDSHIELD GROUND-LEVEL **SERVICE** STATION SLIDE-DOWN 45-DEGREE **EMERGENCY ANGLED EXCELLENT** LADDER **STAIRWAY** VISIBILITY ANTI-SLIP **WALKWAYS** 













### **IMPROVED LIFE**

The New Cat Type 4 air filters and precleaner dust ejection system are sized to improve overall life of the air filter.

### **ROBUST AND RELIABLE STRUCTURES**

Structures are designed and fabricated to withstand the toughest digging conditions.

- + Manufactured from high-strength steel
- + Up to 18% more operating weight
- + Heavy castings at attachment pivot points
- + Booms and sticks are thermally stressrelieved to extend service life and achieve production targets.



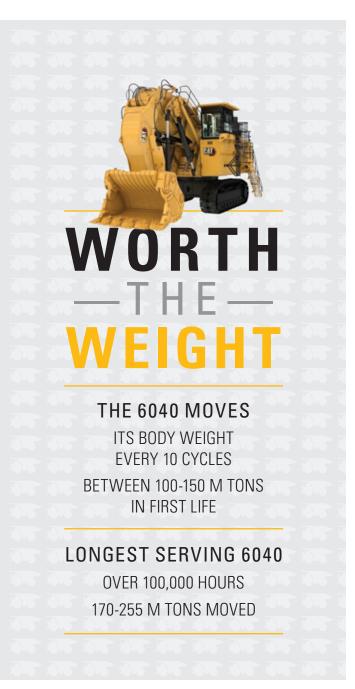


### UNDERCARRIAGE INNOVATION

Key to the latest improvements is a new undercarriage that leverages over 100 years of Cat undercarriage innovation. Cat heavy duty undercarriage for hydraulic mining shovels is purpose-built to take on the toughest mine site conditions. Built to extend undercarriage life by up to 30%, it delivers more uptime and lower operating costs. And it's backed by Cat Undercarriage Assurance and dealer-supplied Custom Track Service (CTS).

Updated heavy duty load rollers and idlers incorporate duo cone seals, steel-back bronze bearings and fixed axle technology, resulting in increased service life and elimination of overheating during travel. Updated track roller frame design and final propel gearbox improve durability and new heavy-duty rollers are retrofittable to improve reliability of shovels in the field.

A heavy-duty track chain handles high field loads, large diameter track pins increase strength, and high-interface bushings reduce pitch extension wear and increase chain life by 20% to 40%.



# Spend more time loading & less time servicing

We've streamlined maintenance on the Cat 6040 to make sure your shovel is spending more time producing than it is being maintained. Serviceability is significantly enhanced with a large service compartment and better organized hoses and other components.

Rugged Cat Hose Assemblies are integral to shovel reliability. They're built to Caterpillar standards and are designed to work together as a system for optimal safety and dependability. With the right part number and a phone call, your Cat dealer can quickly deliver the parts, then perform assembly and installation. The majority of hoses can be built locally using all Cat material.

We've also increased the exchange interval for engine oil to 500 hours, with an optional extension to 1,000 hours. Hydraulic oil exchange is 10,000 hours.

### SERVICE STATION

The service station provides easy access to functions such as coolant, hydraulic oil, slew gear box oil, grease, diesel and engine oil. The service station features a Cat battery charging connector and indicator lights for full fuel tanks. Swing and travel functions are disabled when the service station is lowered.

- + Hydraulically released service station
- + Comfortable height
- + Improved access to all functions
- + Fast fill connections





### SUPERSTRUCTURE ACCESS

Clear arrangement of components on the superstructure grants easy access and serviceability for coolant expansion tanks, air intake filters, oil tank breather, HVAC units, grease tank, exhaust, and starter and battery isolator. We've also provided easy access to the slew gearboxes, rotary distributor, high pressure swing filters and travel spool valves. Oil cooler accessibility enables easy cleaning and maintenance.

# MINING — FOR A — BETTER WORLD

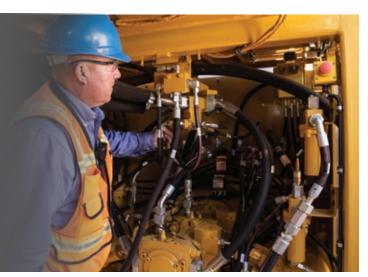


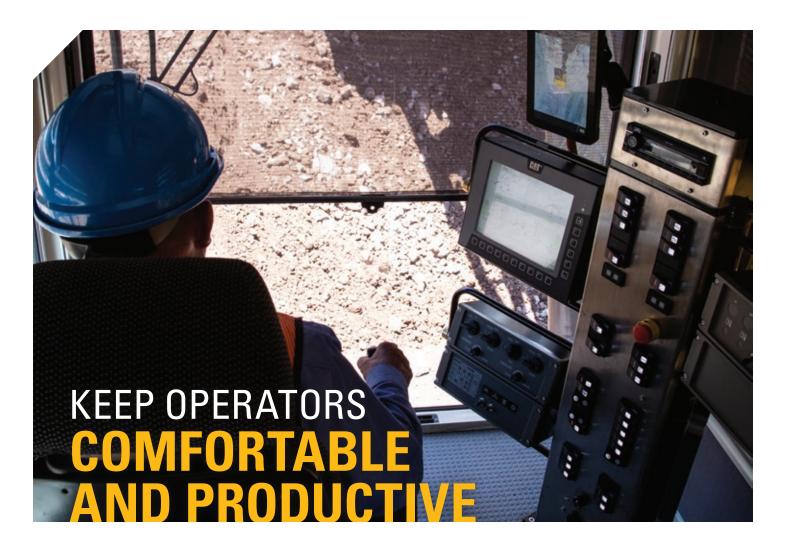
We've designed the 6040 to be more efficient and use less fuel, which reduces engine emissions and carbon footprint. The closed-loop swing circuit emits less heat and improves energy efficiency. The optional highly regulated engine reduces NOx and particulate matter.

We also continue to research alternative energy sources such as biofuels and liquefied natural gas and power options like electrification to find new ways to reduce emissions. In addition, we preserve raw materials, conserve energy and reduce emissions through the Cat Reman program, which returns end-of-life components to like-new condition.

### MAINTENANCE-FREE EMISSIONS REDUCTION SYSTEM

The 6040 is powered by the durable and reliable C32 Engine — now available for both highly regulated (HRC) or lesser regulated countries (LRC). Certified to meet U.S. EPA Tier 4 Final/EU Stage V emissions standards, the non-SCR solution is maintenance-free and does not require DEF. The LRC solution meets China Nonroad Stage III emission standards (equivalent to U.S. EPA Tier 2) as well as China Smoke Category III limits.





We understand that the most important factor in your hydraulic shovel's effectiveness is the performance of its operator. To help make their workday as productive as possible, we've incorporated productivity, safety and comfort features into the 6040 operator's cab.

# DESIGNED FOR COMFORT

Operators sit in a pneumatically cushioned, multi-adjustable, heated seat with easy access to intuitive, informative onboard electronics. The cab provides excellent visibility and also features an auxiliary trainer seat with retractable seat belt. Ambient temperature is maintained with an optional dual HVAC system.

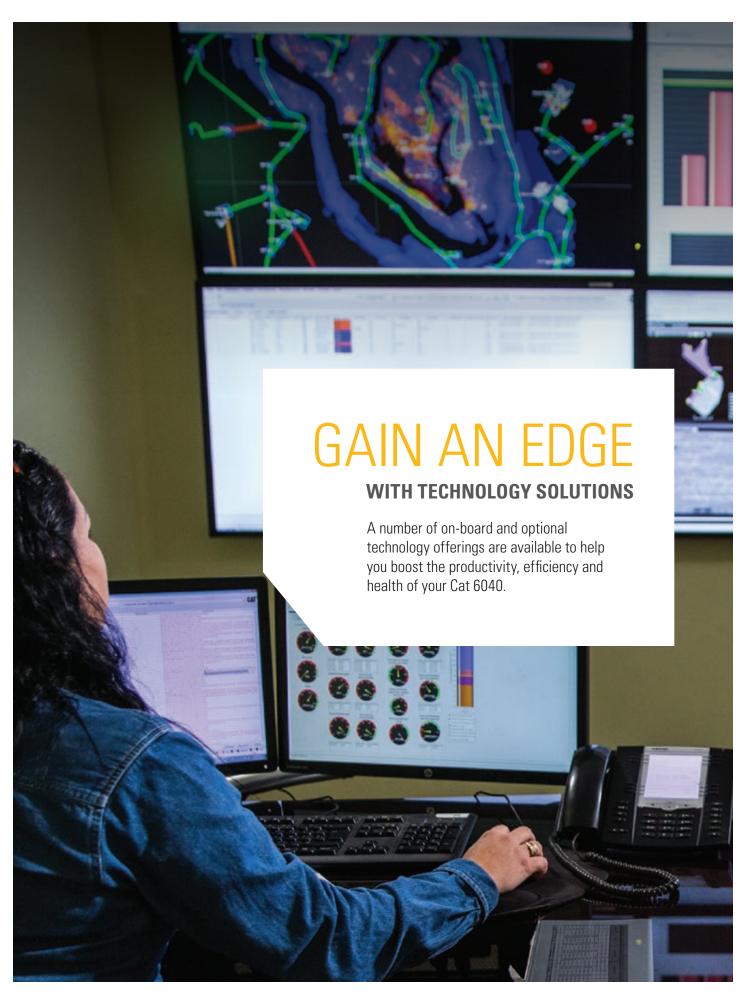
# DESIGNED FOR PRODUCTIVITY

The Electronic-Hydraulic Servo Control relays actuating signals from the joysticks, delivering fast and precise machine reactions that facilitate a reduction in operator fatigue. No hydraulic lines are present in the cab or the cab module, ensuring a clean arrangement with less noise emission. A large, color touchscreen puts vital machine and diagnostic data at the operator's fingertips for convenient troubleshooting and service assistance.

# DESIGNED FOR CONTROL

Outside the cab, productivity is enhanced through the 6040's hydraulic system. Operators experience greater control with five circuit hydraulics that allow for two cylinder motions, two travel motions, and swing to be controlled simultaneously.





### CAT MINESTAR™ SOLUTIONS

While they are not integrated at the factory, the capability sets of Cat MineStar™ Solutions are available as a retrofit. A comprehensive suite of technology products for the mining industry, MineStar offerings include:

- + Fleet, which provides real-time machine tracking, assignment and productivity management, providing a comprehensive overview of all your asset operations from anywhere in the world.
- + Terrain, which enables guidance technology and high-precision management of loading operators to increase machine efficiency. Efficiency is also improved through real-time feedback.
- Detect, which helps increase operator awareness, enhancing safety at your operation. It includes a range of capabilities designed to assist the operator, including blind spot and proximity detection of fixed and mobile equipment.
- + Health, which delivers critical eventbased machine condition and operating data for your entire fleet. It includes comprehensive equipment health and asset monitoring capabilities, with a wide range of diagnostic, analytic and reporting tools.



#### SHOVEL TECHNOLOGY SOLUTIONS

A number of specific shovel technology solutions are available on the Cat 6040.

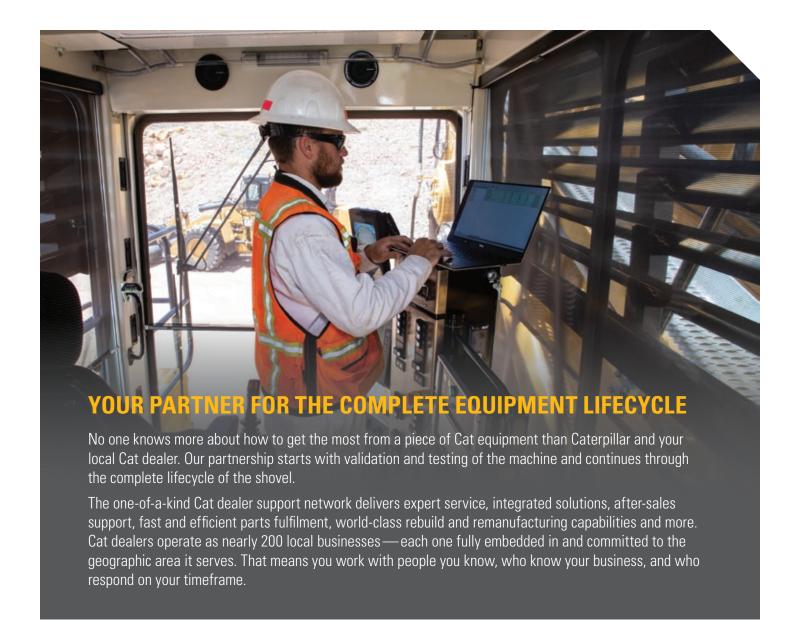
The Monitoring and Diagnostic System enhances diagnostic capabilities and provides detailed troubleshooting functions.

The Board Control System uses sensors throughout the machine to monitor operating data, record faults, and notify the operator audibly and visually. This promotes the earliest possible detection of faults and allows for timely maintenance planning and assistance for speedy repair.

- + Large 12" touch screen
- + Live sensor monitoring
- + Visual & acoustic fault warnings
- + Machine settings can be made without additional hardware or software

Our commitment to your success doesn't end when your Cat 6040 begins loading overburden or ore. We immediately start looking for ways to make your shovel work more efficiently, safely and productively. From addressing performance issues, to training operators and technicians, to calibrating onboard technologies — our support of your shovel productivity is ongoing.





Caterpillar and Cat dealer personnel will partner with you on site to improve the performance not only of your shovels but of your overall loading and hauling operation. With this fully converted machine, you'll have increased access to parts and service, as well as technicians who are focused on helping you optimize repairs to keep machines productive. And we help with training to ensure your operators have the skills and knowledge they need to work as efficiently and productively as possible.

We also work alongside you to ensure you achieve maximum value throughout the life of your equipment. Together with our Cat dealer network, we customize service offerings to provide a maintenance solution that fits your operation—whether you want to perform the majority of service yourself, or you're looking for an onsite partner to manage your maintenance organization. We're also consultants who can help you make smart decisions about buying, operating, maintaining, repairing, rebuilding and replacing equipment.







### **BUCKETS**

Cat Hydraulic Mining Shovel buckets are designed to maximize durability and productivity. We have the right bucket size ideally matched to your shovel and your application.

### FACE SHOVEL OPTIONS

Heavy Rock	Heavy Rock	Heavy Rock	Standard Rock
15.0 m <sup>3</sup>	18.0 m <sup>3</sup>	20.0 m <sup>3</sup>	22.0 m <sup>3</sup>
19.6 yd <sup>3</sup>	23.5 yd³	26.2 yd³	28.8 yd³

Capacity Heaped 2:1 (ISO 7546)

### **BACKHOE BUCKET OPTIONS**

Heavy Rock	Heavy Rock	Standard Rock	Standard Rock	Light Duty
18.0 m <sup>3</sup>	20.0 m <sup>3</sup>	20.0 m <sup>3</sup>	22.0 m <sup>3</sup>	24.0 m <sup>3</sup>
23.5 yd <sup>3</sup>	26.2 yd <sup>3</sup>	26.2 yd <sup>3</sup>	28.8 yd³	31.4 yd <sup>3</sup>

Capacity Heaped 1:1 (ISO 7451)

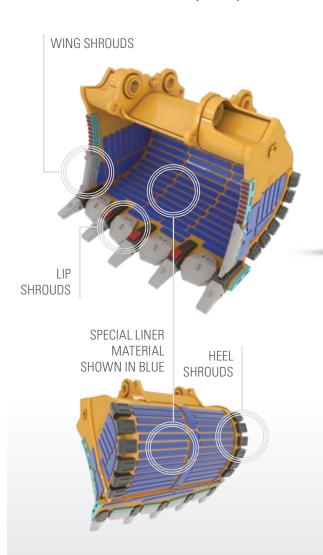
### **GET SYSTEM**

### WEAR PACKAGE

All buckets are equipped with a wear package that keeps you productive while protecting your investment. The wear package consists of:

- + Special liner material covering main wear areas inside and outside of bucket
- + Shrouds to protect the specific areas from impact and abrasion
  - Lip shroud between teeth
  - Wing shrouds on outer corners of the side walls
  - Heel shrouds at bottom edges

Special wear packages for highly abrasive materials are available upon request





### **EXPANDED OFFERINGS**

### WITH SPECIALTY SOLUTIONS

- + Frontless shovel arrangements
- + Upper-only arrangements for fixed installations
- + Undercarriage and track arrangements

### **TECHNICAL SPECIFICATIONS**

See cat.com/6040 for complete specifications.

DIESEL ENGINES – LESSER REGULATED				
Make and model		2x Cat C32		
Rated speed	1,800 min-1	1,800 rpm		
Gross power – SAE J1995:2014	1554 kW	2,084 hp		
Net power – SAE J1349:2011	1432 kW	1,921 hp		
Net power – ISO 9249:2007	1538 kW	2,062 hp		
(Meets China Nonroad Stage III emissions standards, equivalent to U.S. EPA Tier 2, as well as China Smoke Category III limits.)				

DIESEL ENGINES – HIGHLY REGULATED			
Make and model		2x Cat C32	
Rated speed	1,800 min-1	1,800 rpm	
Gross power – SAE J1995:2014	1550 kW	2,079 hp	
Net power – SAE J1349:2011	1428 kW	1,915 hp	
Net power – ISO 9249:2007	1530 kW	2,052 hp	
(Meets U.S. EPA Tier 4 Final and EU Stage V emission standards.)			

ELECTRICAL SYSTEM	
System Voltage	24 V
Batteries in series / Parallel Installation	6 x 210 Ah – 12 V each 630 Ah – 24 V

OPERATING WEIGHTS				
Face Shovel (FS)	404 600 kg	891,980 lb		
Backhoe (BH)	407 300 kg	897,930 lb		
* Operating weights include: hase machine, front attachment.				

standard track pads, standard rock bucket, 100% fuel and lubricants.

SERVICE REFILL CAPACITIES			
Fuel Tank Capacity	7940 L	2,098 gal	
Hydraulic Tank	3626 L	958 gal	
Hydraulic System (including tank)	5800 L	1,532 gal	
Engine Oil	2 x 120 L	2 x 31.7 gal	
Engine Coolant	2 x 155 L	2 x 41 gal	
Grease container	710 L	188 gal	

HYDRAULICS				
Maximum Flow to Main Pumps	4 x 742 L/min 4 x	196 gal/min		
Maximum Pressure – Attachment	300 bar	4,351 psi		
Maximum Pressure – Travel	350 bar	5,076 psi		
Maximum Flow to Swing Pumps	4 x 321 L/min 4	x 85 gal/min		
Maximum Pressure – Swing	350 bar	5,076 psi		

	SWING SYSTEM
Swing Speed	4.7 rpm
Swing Circuit	Closed-loop with Torque Control

UNDERCARRIAGE		
Maximum Travel Speed – 1st stage	1.5 km/h	0.93 mph
Maximum Travel Speed – 2nd stage	2.5 km/h	1.55 mph
Maximum Tractive force	1967 kN	442,199 lbf

OPERATOR ENVIRONMENT	IT	
Operator's Eye Level	6.8 m	22 ft 4 in
Spectator Sound Power Level (L <sub>WA</sub> ) ISO 6395:2008		120 dB(A)
Operator Sound Pressure Level (L <sub>PA</sub> ) ISO 6396:2008		75 dB(A)
Operator Protective Guard ISO 10262:1998 Level II		Top Guard

DIMENSIONS		
Height overall	8160 mm	27 ft 2 in
Height of tracks	2250 mm	7 ft 5 in
Clearance under counterweight	2615 mm	8 ft 7 in
Tail swing radius	7000 mm	23 ft 0 in
Width overall (@ 1200 mm [3'11"] standard pads)	8050 mm	26 ft 5 in
Crawler length	8090 mm	26 ft 7 in
Track gauge	5395 mm	17 ft 8 in

WORKING RANGES AND FORCES				
FACE SHOVEL				
Boom	7.3 m	23 ft 11 in		
Stick	4.6 m	15 ft 1 in		
Standard Rock Bucket Heaped 2:1 (ISO 7546)	22 m³	28.8 yd³		
G.E.T. System with six (6) teeth	CL-1			
Max Crowd Force (ISO)	1791 kN	402,633 lbf		
Max Breakout Force	1201 kN	269,996 lbf		
Max Digging Height	14.9 m	48 ft 11 in		
Max Digging Reach	15.7 m	51 ft 6 in		
ВАСКНОЕ				
Boom	9.5 m	31 ft 2 in		
Stick	4.6 m	15 ft 1 in		
Standard Rock Bucket Heaped 2:1 (ISO 7546)	22.0 m <sup>3</sup>	28.8 yd³		
G.E.T. System with six (6) teeth	C95			
Max Tearout Force (ISO)	1018 kN	228,856 lbf		
Max Breakout Force	1123 kN	252,460 lbf		
Max Digging Depth	7.0 m	23 ft 0 in		
Max Digging Reach	17.7 m	58 ft 1 in		

### **STANDARD & OPTIONAL EQUIPMENT**

Standard and optional equipment may vary. Consult your Cat dealer for details.

CAT POWER TRAIN	STANDARD	OPTIONAL
2 x Cat C32 Engines	STANDAND	OFTIONAL
Aftertreatment System (HRC only)	•	
» Diesel Oxidation Catalyst (DOC)     » NOx Reduction System (NRS)     » Non-DEF solution		
Hydraulically driven radiator fan	•	
Electronically controlled fan speed	•	
Two-stage fuel filter with series filtration	•	
Automatic engine idle shut down	•	
HYDRAULICS	STANDARD	OPTIONAL
Pump management system  » Electronic load limit control  » Flow on demand  » Automatic zero flow regulation  » Automatic engine RPM reduction	•	
Pressure cut-off for main pumps	•	
Cat Hydraulic Hose assemblies	•	
Closed loop swing circuit	•	
Boom float valves	•	
ELECTRICAL SYSTEM	STANDARD	OPTIONAL
6 maintenance-free batteries	•	
14 LED high-brightness working flood lights	•	
11 LED service lights	•	
Fully hydraulic self-adjusting track tensioning	•	
UNDERCARRIAGE & STRUCTURES	STANDARD	OPTIONAL
HD tracks	•	
» 1200 mm (3 ft 11 in) wide HD track pads	•	
» 1600 mm (5 ft 3 in) wide HD track pads		•
Undercarriage guard (belly plate)		•
HD Fixed axle rollers	•	
HD Fixed axle idlers	•	
Automatic hydraulic retarder valve	•	
Acoustic travel alarm (forward & reverse)	•	
FRONT ATTACHMENT	STANDARD	OPTIONAL
TriPower™ Kinematics (Face Shovel only)		•
Guards for shovel cylinders at FS stick	•	
Backhoe attachment		•
Frontless base machine		•
Wear package and shrouds	•	
Special wear packages		•

ODERATOR FAMILIDOMACAIT	CTANDADD	ODTIONAL
OPERATOR ENVIRONMENT	STANDARD	OPTIONAL
Single HVAC system	•	
Dual HVAC system		•
Heated, pneumatically cushioned and multi-adjustable comfort seat	•	
Independently adjustable seat consoles with intergrated joysticks	•	
FM/AM radio with USB and AUX input	•	
Fold away auxiliary seat	•	
Sliding side window	•	
Roller blinds at all windows	•	
External sun shields	•	
Camera Monitoring System 2.0		•
Cat Board Control System with 305 mm (12 in) color touchscreen	•	
Inclinometer	•	
CAT TECHNOLOGY	STANDARD	OPTIONAL
Product Link Elite™ (Satellite)		•
Product Link Elite™ (Cellular)		•
Cat Minestar™ Solutions ready		•
COLD WEATHER	STANDARD	OPTIONAL
Cold Weather Package (400V; 50Hz)	STANDAND	OFTIONAL
-		
Cold Weather Package (208V; 60 Hz)		_
SERVICE & MAINTENANCE	STANDARD	OPTIONAL
Retractable service station	•	
S.O.S. <sup>SM</sup> sampling ports	•	
Engine oil exchange interval: 500 hours	•	
Engine oil exchange interval: 1,000 hours		•
Hydraulic oil change interval: 10,000 hours	•	
Cat Type 4 air filters with dust ejection system	•	
SAFETY & SECURITY	STANDARD	OPTIONAL
Emergency egress ladder	•	
All-around safety glass	•	
Armored windshield	•	
Operator Protective Guard (Top Guard)	•	
Safety seat contact switch	•	
5 Emergency Stop Switches	•	
MISCELLANEOUS	STANDARD	OPTIONAL
ISO or ANSI decals	•	



# HYDRAULIC MINING SHOVEL

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

Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

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PEDJ0802-01 Build Number: 03B

