### WR810
**Underground Shotcreter Unit - with Robotic Arm**

#### Engine
- **Engine Model** Cat C7.1 ACERT™
- **Gross Power** - SAE J1995: 168 kW / 228 hp
- **Net Power** - SAE J1349: 158 kW / 214 hp

#### Operating Weight
- **Tare**: 14,250 kg / 31,416 lb
- **GVM**: 30,000 kg / 66,000 lb
The Cat engine delivers power, performance and durability.

**Cat C7.1 Engine.** The Cat C7.1 uses Caterpillar’s breakthrough ACERT™ Technology to meet exhaust emission reduction standards. It features efficient fuel delivery, air management and electronic control for high productivity and exceptional service life.

**Engine Design.** The four-stroke engine provides efficient fuel combustion. Precise engineering and thorough testing assure durability, reliability and power. Built-in serviceability and excellent fuel economy lower operating costs.

**ACERT™ Technology.** Caterpillar optimizes engine performance while meeting EPA Tier 3 regulations. ACERT™ Technology reduces emissions during the combustion process by using advanced technology in the air and fuel systems, in conjunction with integrated electronics. The Caterpillar engine meets emission regulations at the combustion source rather than recycling exhaust gases.

**ADEM A4 Control Module.** This module controls the fuel injector solenoids to monitor fuel injection. This system provides automatic altitude compensation, and it will not allow the engine to fire until it has oil pressure, acting as cold start protection and a form of pre-lube.

**Turbocharger.** The C7.1 engine features a waste gate turbocharger that provides high boost over a wider range, improving engine response and peak torque, as well as providing low-end performance.

**High Pressure Common Rail Fuel System.** The High Pressure Common Rail Fuel System provides precise and efficient combustion, allowing for maximum performance, improved fuel efficiency and enhanced reliability. The engine is designed for maximum uptime and reduced operating costs, with world-class support from the Cat dealer network.

**Maintenance.** The C7.1 engine reduces costs and downtime with a 500-hour oil change interval. Extended service intervals can save thousands of dollars over the life of a machine. This machine is equipped with Caterpillar high efficiency oil filters, whose design doubles efficiency without increasing the change interval. They provide clean oil to the engine, reducing wear on all lubricated surfaces.

**Commonality.** The Caterpillar C7.1 engine is used in Cat products such as the 930K and 938K Medium Wheel Loader, 324D and 325D Wheel Loader, 326D2 and 329D2 Excavators and the 525D Skidder. This engine commonality ensures the highest level of reliability and durability as well as superior parts availability worldwide.
Power Train

The integrated Cat power train delivers performance and reliability in tough conditions.

Five-Speed Transmission. The field proven Cat power shift countershaft transmission easily matches engine power to the load size and ground conditions. Electronic control makes fingertip controls possible, reducing operator fatigue and improving comfort.

Gear Application. Gear ratios are designed to maximize productivity in specific cycle segments:
- Gear 1 provides highest rimpull capability for heavy load applications
- Gears 2, 3 for normal loads and higher speed operations
- Gear 4, 5 provide excellent empty return and roading speeds

Torque Converter. The large, heavy-duty torque converter maximizes the productivity of the entire drive train. The torque converter is matched to the Cat C7.1 engine for excellent rimpull and performance.

Lock-up Clutch. The integral lockup clutch allows the machine to operate in converter drive for greater rimpull, or direct drive for high efficiency hauling and faster travel speeds. Direct drive capability allows up to 15% higher travel speeds when the lock-up clutch is engaged.

Auto Lock-up. The lock-up clutch automatically engages according to ground speed and engine speed conditions. This feature is handled electronically and allows for increased travel speeds in the same gear.

Reduced Shifting. Torque multiplication capability of the torque converter reduces the need for the operator to continually shift the transmission. This reduces operator effort and improves machine productivity.

Front Axle. The front axle features an oscillating pinion-mounted design to ensure four wheel ground contact for maximum traction and stability.

Fixed Rear Axle. The rear axle is rigidly mounted to the rear frame.

Service Brake Components. Brake components are housed inside the axles, protecting them from dirt, dust and wet ground conditions. Inboard brakes allow for splash lubrication and cooling. They are virtually maintenance free, and provide reliable brake performance.

Parking Brake. The parking brake is a spring applied oil released “fail to safe” enclosed wet disc wheel end brake.

Oil Sump. Full axle-length oil sump delivers excellent lubrication and heat rejection for long component life.

Splash Lubricated. All axle components are splash lubricated.

Heat Rejection. Oil capacity provides excellent heat rejection, ensuring proper lubrication of all axle components.
Operator Station

Easy to operate controls result in less fatigue.

Comfortable Work Station. An open operators station is standard. It combines safety, comfort and ease of machine operation. The work station includes the following features:

- ROPS/FOPS
- Suspension seat
- Safety belt
- Resilient mounting
- Enclosed operator station available as an option
- Forward mount or centre mount operator station options are available

Transmission Controls. The transmission control for forward, reverse and gear range is conveniently located for the operator’s right hand. The operator can control machine functions with minimal effort, allowing greater concentration on vehicle operation and reduced operator fatigue.

Engine Protection System. An engine protection system is fitted that will shut down the engine if low engine oil pressure, low coolant level, or coolant over temperature conditions are experienced.

Additional. The cab is pre-wired for a 2-way radio (12V).

Cab Mounting. The modular ROPS/FOPS cabin is resiliently mounted on the truck/machine chassis, reducing vibration for greater comfort and a quieter ride.

Monitoring Controls. Conveniently located and easy-to-see gauges and displays make monitoring machine systems as simple as possible.

Ground Level Access. Allows convenient servicing to tanks, filters, lubrication points and compartment drains. Remote lubrication points make daily attention to hard-to-reach joints easy.

Monitoring System. Continuously provides critical machine data. A three-level warning system alerts the operator of any abnormal machine health conditions.

Steering Column. Tilts and is telescopic for comfortable operation.
**Work Tools**

**Shotcreting Boom.**
Nozzle rotation 360 Degrees  
Nozzle tilting 240 Degrees  
Boom rotation 360 Degrees  
Extension 2900 mm

**Remote Control.**
15 metre lead for remote operation.

**Pumping Capacity**
Theoretical 1-34 m³/hr  
Practical 4-25 m³/hr

**Accelerator Pump.**
Flow rate 1 - 14 L/min

**Accelerator Tanks.**
Volume 2 at 350 L

**Water Hose Reel.**

**Air Hose Reel.**
Manual hose reel with 30 metres of 1" hose.

**High Pressure Pumps.**
Hydraulically operated Rock Washing Pump.  
Water pressure 460 Bar  
Water flow 50 L/min

**Optional Machine Washdown Pump**
Water pressure 200 Bar  
Water flow 20 L/min

**Air Compressor.** Optional onboard electric Air Compressor available.

**Load Sensing Hydraulics.** A load sensing variable displacement pump and pressure compensating system continually monitor hydraulic power requirements, then provides power based on demand.

**Steering.** Fully hydraulic control. Meets the following standards: SAE J1511 OCT90, ISO 5010-1992.

**Stabilisation Jacks.** Hydraulically lowered and raised stabilisation jacks fitted with safety check valves are located front of the engine end frame for maximum stability.
Safety

Mining machines that are designed with safety as the first priority.

Product Safety. The WR810 is designed with safety as an integral part of all machine and systems design.

Centralised Machine Isolation. The single access point provides easy access to all engine machine isolation functions:
- Engine disconnect switch
- Starter isolation switch
- Jump start receptacle
- Fire system activation (if equipped)

Protective Structure. The operator station has integrated into its construction a ROPS/FOPS (Roll-Over Protective Structure), ISO 3471:2008, (Falling Object Protective Structure) ISO 3449:2005 that offers protection to the operator.

Additional Safety Features:
- Anti-skid deck surfaces
- 3 point access to cab and machine
- Two doors either side of machine to access operator station
- Suspension seat
- Inertia reel retractable seat belt
- Steering frame lock
- Hinged belly guards
- Ceramic coated exhaust manifold and turbine housing
- Triple insulated battery cables
- Electrical wiring run independent of all hosing
- Fuel water separators made of non-flammable material
- Firewall / heatshields
- Machine interlocks
- Centralised isolation point
- Integrated fire suppression systems (optional)

Ground Level Access. Allows convenient servicing to tanks, filters, lubrication points and compartment drains. Remote lubrication points make daily attention to hard-to-reach joints easy.

Handrails. Handrails are fitted standard in accordance with ISO 2867:2011.


Serviceability

Increased productivity through ease of service.

**Engine Enclosures.** Large, hinged engine enclosure doors make regular maintenance as easy and fast as possible. Easy access to daily service points increases the likelihood that maintenance will be done, and increases machine service life. In addition, less maintenance time means more working time and greater productivity.

**Frame Access.** Steps and grab handles are standard on the engine end and non engine end frame and cab for easy access to the service and operation areas.

**Bolt-on Guards.** Bolt-on guards offer protection to critical components, and are easily removable for servicing. Removable floor plates and side plate allow access to components under the cab.

**Air Filters.** Radial seal air filters makes them easy to change, reducing air filter maintenance times.

**Extended Oil Service Intervals.** A 500-hour oil change interval reduces downtime for service and lowers maintenance costs.

**S·O·S™ Fluid Sampling Valves.** Provides a fast, convenient way to gather uncontaminated fluid samples, which improves analysis reliability.

**Pressure Taps.** Conveniently located for easy access to hydraulic system pressure measurements.

**Spin-on Oil Filters.** Spin-on fuel and engine oil filters shorten downtime.

**Electronic Transfer Pump.** Eliminates the need to manually prime the fuel system.

**Ecology Drains.** All major fluid compartments (hydraulic tank, engine oil, radiator, axles and transmission) incorporate ecology drains to make regular maintenance easier, and protect the environment from accidental oil spills.

**Centralised Service Centre.** A centralised service center that includes fast fill and evacuation points, fluid sampling points.

**Electrical System.** The 24V electrical system delivers dependable electrical power for engine cranking, additional lighting, and engine diagnostics. Wiring circuits are color coded, numbered for easy diagnosis and repair. All circuits are protected by circuit breakers. Wiring is double insulated with sealed electrical connectors to prevent moisture and dirt access. Harnesses are covered with fire resistant material for additional protection. Battery cables are triple insulated for extra protection against abrasion.

**On-Board Diagnostic Systems.** The monitoring system continuously checks all critical machine functions and components, and helps locate faults quickly for faster repair. Extremes are recorded, including fluid temperatures, engine speed and electrical system events.

**Hitch Hoses.** The pilot hoses, pressure line and load sense lines have all been routed above the hitch, and been bulk-headed for easy hose replacement and fast service.
# Specifications

## Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Model</td>
<td>Cat C7.1 ACERT™</td>
</tr>
<tr>
<td>Net Flywheel Power</td>
<td>158 kW 214 hp</td>
</tr>
<tr>
<td>Net Power ISO9249</td>
<td>158 kW 214 hp</td>
</tr>
<tr>
<td>Net Power SAE J1349</td>
<td>158 kW 214 hp</td>
</tr>
<tr>
<td>Gross Power SAE J1995</td>
<td>168 kW 228 hp</td>
</tr>
<tr>
<td>Displacement</td>
<td>7.0131 L 428 in³</td>
</tr>
<tr>
<td>Bore</td>
<td>105 mm 4 in</td>
</tr>
<tr>
<td>Stroke</td>
<td>135 mm 5 in</td>
</tr>
<tr>
<td>Number of Cylinders</td>
<td>6</td>
</tr>
<tr>
<td>Max Torque @ Rated Speed</td>
<td>922 Nm @1400rpm</td>
</tr>
<tr>
<td>Derating Altitude</td>
<td>3000 m 9843 ft</td>
</tr>
<tr>
<td>EPA Tier 3 Certified</td>
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<tr>
<td>Alternator</td>
<td>100 amp</td>
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<tr>
<td>Electrical System</td>
<td>24V</td>
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<tr>
<td>Battery - Quantity</td>
<td>2</td>
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<tr>
<td>Battery - Volts</td>
<td>12V</td>
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<tr>
<td>Battery - Capacity</td>
<td>950CCA</td>
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<tr>
<td>Starting System Direct Electric</td>
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<tr>
<td>Fan Speed</td>
<td>1620 rpm</td>
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<tr>
<td>Fan Type</td>
<td>Blower</td>
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## Power Train

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Speed - Fwd. 1st</td>
<td>5.5 km/h 3.4 mph</td>
</tr>
<tr>
<td>Travel Speed - Fwd. 2nd</td>
<td>8.9 km/h 5.5 mph</td>
</tr>
<tr>
<td>Travel Speed - Fwd. 3rd</td>
<td>14.4 km/h 8.9 mph</td>
</tr>
<tr>
<td>Travel Speed - Fwd. 4th</td>
<td>19.2 km/h 11.9 mph</td>
</tr>
<tr>
<td>Travel Speed - Fwd. 5th</td>
<td>30.9 km/h 19.2 mph</td>
</tr>
<tr>
<td>Travel Speed - Rev. 1st</td>
<td>5.5 km/h 3.4 mph</td>
</tr>
<tr>
<td>Travel Speed - Rev. 2nd</td>
<td>8.9 km/h 5.2 mph</td>
</tr>
<tr>
<td>Travel Speed - Rev. 3rd</td>
<td>19.2 km/h 11.9 mph</td>
</tr>
<tr>
<td>Torque Converter Type</td>
<td>Lock-up Clutch</td>
</tr>
<tr>
<td>Transmission</td>
<td>5 fwd / 3 rev countershaft powershift</td>
</tr>
<tr>
<td>Transmission Cooler Type</td>
<td>Plate</td>
</tr>
<tr>
<td>Steering, Frame Articulation</td>
<td>+/- 45 degrees</td>
</tr>
<tr>
<td>Brakes - Service Type</td>
<td>WET disc enclosed</td>
</tr>
<tr>
<td>Brakes - Parking Type</td>
<td>Spring applied wheel ends</td>
</tr>
<tr>
<td>Tyres</td>
<td>14.00 R20</td>
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</table>

## Hydraulic System

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Type</td>
<td>Closed centre variable flow</td>
</tr>
<tr>
<td>Pump type</td>
<td>Axial piston</td>
</tr>
<tr>
<td>Pump Output</td>
<td>174 L/min 46 gal/min</td>
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<tr>
<td>Relief Valve Setting</td>
<td>21,000 kPa 3045 psi</td>
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<tr>
<td>Steering valve</td>
<td>Direct link, non follow</td>
</tr>
<tr>
<td>Steering Cylinder - Bore</td>
<td>88.9 mm 3.5 in</td>
</tr>
<tr>
<td>Steering Cylinder - Stroke</td>
<td>437.5 mm 17.22 in</td>
</tr>
<tr>
<td>Steering Cylinder - Rod Dia</td>
<td>50.8 mm 2 in</td>
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</table>

## Service Refill

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Fuel Tank</td>
<td>175 L 46.2 gal</td>
</tr>
<tr>
<td>Cooling System</td>
<td>57 L 15.0 gal</td>
</tr>
<tr>
<td>Differential, Final Drive - F</td>
<td>52 L 13.7 gal</td>
</tr>
<tr>
<td>Differential, Final Drive - R</td>
<td>52 L 13.7 gal</td>
</tr>
<tr>
<td>Engine Oil</td>
<td>27 L 7.1 gal</td>
</tr>
<tr>
<td>Transmission, Torque Converter</td>
<td>54 L 14.3 gal</td>
</tr>
<tr>
<td>Hydraulic Tank</td>
<td>100 L 26.4 gal</td>
</tr>
</tbody>
</table>

These ratings apply at 1,800 rpm when tested under the specified standard conditions.

Net power advertised is the power available at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator. No Derating required up to 3,000 m (9,843 ft) altitude.

Based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 in Hg) dry barometer. Used 35° API gravity fuel having an LHV of 42,780 kJ/kg (18,390 BTU/lb) when used at 30° C (860 F) [ref. A fuel density of 838.9 g/L (7.001 lb/gal4)
## Specifications

**Forward mount operator station.**

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>1 Height-Top of Cabin</th>
<th>2 Height-Ground Clearance</th>
<th>3 Height-Top of Unit</th>
<th>4 Height-Top of Boom</th>
<th>5 Width-Machine Front Frame</th>
<th>6 Width-Machine Rear Frame</th>
<th>7 Length-Front Axle to Hitch</th>
<th>8 Length-Hitch to Rear Axle</th>
<th>9 Length-Front Axle to Boom</th>
<th>10 Length-Wheel Base</th>
<th>11 Length-Rear Axle to Frame</th>
<th>12 Length-Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2,280 mm</td>
<td>370 mm</td>
<td>2,530 mm</td>
<td>2,785 mm</td>
<td>2,100 mm</td>
<td>2,100 mm</td>
<td>1,725 mm</td>
<td>1,725 mm</td>
<td>3,760 mm</td>
<td>3,455 mm</td>
<td>2,440 mm</td>
<td>9,655 mm</td>
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</tbody>
</table>

## Turning Dimensions

<table>
<thead>
<tr>
<th>Turning Dimensions</th>
<th>13 Radius-Inside Clearance</th>
<th>14 Radius-Outside Clearance</th>
<th>15 Width-Drive Clearance</th>
<th>Articulation Angle</th>
<th>Gross Vehicle Mass (Estimated)</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>3,120 mm</td>
<td>5,645 mm</td>
<td>4,500 mm</td>
<td>45°</td>
<td>14,250 kg</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td></td>
<td></td>
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<td>15</td>
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</table>

**WR810 Underground Shotcreter Unit – with Robotic Arm**
Specifications

Centre mount operator station.

Dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Measurement</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Height-Top of Cabin</td>
<td>3,000 mm</td>
</tr>
<tr>
<td>2</td>
<td>Height-Ground Clearance</td>
<td>370 mm</td>
</tr>
<tr>
<td>3</td>
<td>Width-Machine Front Frame</td>
<td>2,100 mm</td>
</tr>
<tr>
<td>4</td>
<td>Width-Machine Rear Frame</td>
<td>2,100 mm</td>
</tr>
<tr>
<td>5</td>
<td>Length-Front Axle to Hitch</td>
<td>1,725 mm</td>
</tr>
<tr>
<td>6</td>
<td>Length-Hitch to Rear Axle</td>
<td>1,725 mm</td>
</tr>
<tr>
<td>7</td>
<td>Length-Front Axle to Boom</td>
<td>3,110 mm</td>
</tr>
<tr>
<td>8</td>
<td>Length-Wheel Base</td>
<td>3,455 mm</td>
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<tr>
<td>9</td>
<td>Length-Rear Axle to Frame</td>
<td>2,440 mm</td>
</tr>
<tr>
<td>10</td>
<td>Length-Overall</td>
<td>9,005 mm</td>
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</table>

Turning Dimensions

<table>
<thead>
<tr>
<th>No.</th>
<th>Measurement</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>Radius-Inside Clearance</td>
<td>4,785 mm</td>
</tr>
<tr>
<td>12</td>
<td>Radius-Outside Clearance</td>
<td>7,615 mm</td>
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<tr>
<td>13</td>
<td>Width-Drive Clearance</td>
<td>4,500 mm</td>
</tr>
<tr>
<td></td>
<td>Articulation Angle</td>
<td>45°</td>
</tr>
</tbody>
</table>

Gross Vehicle Mass (Estimated) 14,250 kg 31,416 lb
**Machine Equipment**

**Standard equipment.**

**ELECTRICAL**
- Accessory power port (12V)
- Alarm, back-up
- Alternator, 100 amp
- Anti-corrosion protection spray
- Batteries, maintenance free (2-1000 CCA)
- Battery isolation, lockable disconnect switch (2 post)
- Brake and tail lights
- Electronic monitoring system
- Diagnostic connector
- Emergency stop switch (ground level)
- Headlights with dip switch
- Horn, warning
- Rear work lights (cab mounted)
- Reversing lights
- Sealed electrical connectors
- Starting and charging system, 24V
- Starter, electric, heavy duty
- Starter isolator, lockable

**OPERATOR ENVIRONMENT**

- Computerised monitoring system
  - Instrumentation, gauges:
    - Engine coolant temperature
    - Fuel level
    - Hydraulic oil temperature
    - Tachometer
    - Torque converter oil temperature
  - Instrumentation, warning indicators:
    - Brake oil pressure
    - Engine oil pressure
    - Lockup clutch
    - Parking brake application
    - Primary steering pressure
    - Secondary steering pressure (if equipped)
    - System voltage
    - Transmission filter bypass
    - Work lights
  - Instrumentation, digital data:
    - Computerised diagnostics and monitoring
    - Engine rpm
    - Gear and direction
    - Odometer
    - Service hour meter
- Dome light
- Mirrors, rear view
- Open operator station, FOPS/ROPS:
  - Seat, suspension with retractable seat belt
  - Steering wheel, tilt and telescoping

**POWER TRAIN**
- Air cleaner, 2-stage with pre-cleaner
- Brakes:
  - Parking, four wheel spring applied, enclosed disc
  - Service, four-wheel pressure applied enclosed disc
- Driveline slip-joint, lubed for life
- Engine, Cat C7.1, ACERT Technology, ATAAC
- Engine overspeed inhibitor
- Fan, blower
- Filters, fuel/engine air, primary/secondary
- Final drives, inboard planetary
- Fuel transfer pump (electric)
- Fuel tank, high capacity
- Lock-up torque converter
- Long-life coolant (-50°C protection)
- Muffler/catalytic converter
- Oscillating front axle
- Radiator
  - Steering, rotary metering pump
  - Transmission, countershaft powershift (5F/3R)
- Universal joints, lubed for life

**HYDRAULICS**
- Closed center-load sensing system
- Hydraulic oil cooler
- Line filter, full flow return
- Spin-on filters
- Variable displacement piston pump:
  - 174.1 L/min (46 gal/min)

**OTHER STANDARD EQUIPMENT**
- Articulation lock link
- Ecology drains (engine, hyd tank, axles, transmission)
- Engine enclosures, hinged
- Firewall
- Guards, hinged - under engine and transmission
- Manual pressure release radiator cap
- Mudguards
- SOS™ oil sampling ports
- Tie down points and tow-pins (front and rear)
- Tyres and tubeless rims (14.00 R20)
Machine Equipment

Optional equipment.

ELECTRICAL
Alternator, high output
Auxiliary start receptacle
Emergency stop switch:
  Cabin
  Ground level – rear
Jump start receptacle
Turn indicators

OPERATOR ENVIRONMENT
Air conditioning system - modular
Automatic brake retarder control
Brake system oil pressure gauges
Camera/monitor, reversing
Dual speed control
Enclosed air conditioned cabin (FOPS/ROPS):
  Windshield wiper washer
  Window, sliding, operator
  Heater, cabin
Manual brake retarder control

POWER TRAIN
Engine exhaust, flow-through filter
Engine exhaust, particulate filter
Engine shutdown system to idle/stop
External stainless steel braided fuel lines
Fast-fill system:
  Coolant
  Engine oil
  Fuel
  Hydraulic oil
  Transmission oil
Low transmission oil pressure monitoring
Shielded engine exhaust manifolds

HYDRAULICS
Heat-shielding on hoses
Hydraulic tank level alarm

OTHER OPTIONAL EQUIPMENT
Anti-corrosion protection spray
Centralised service centre
Fire extinguisher, hand held
Fire suppression system - foam
Fire suppression system - dry chemical
Grease lubrication system, centralised manual
Grease lubrication system, automatic
Manual brake release pump
Secondary steering
Notes
Notes
WR810
Underground Shotcreter Unit – with Robotic Arm

Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment.

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HM28435-04 9/16