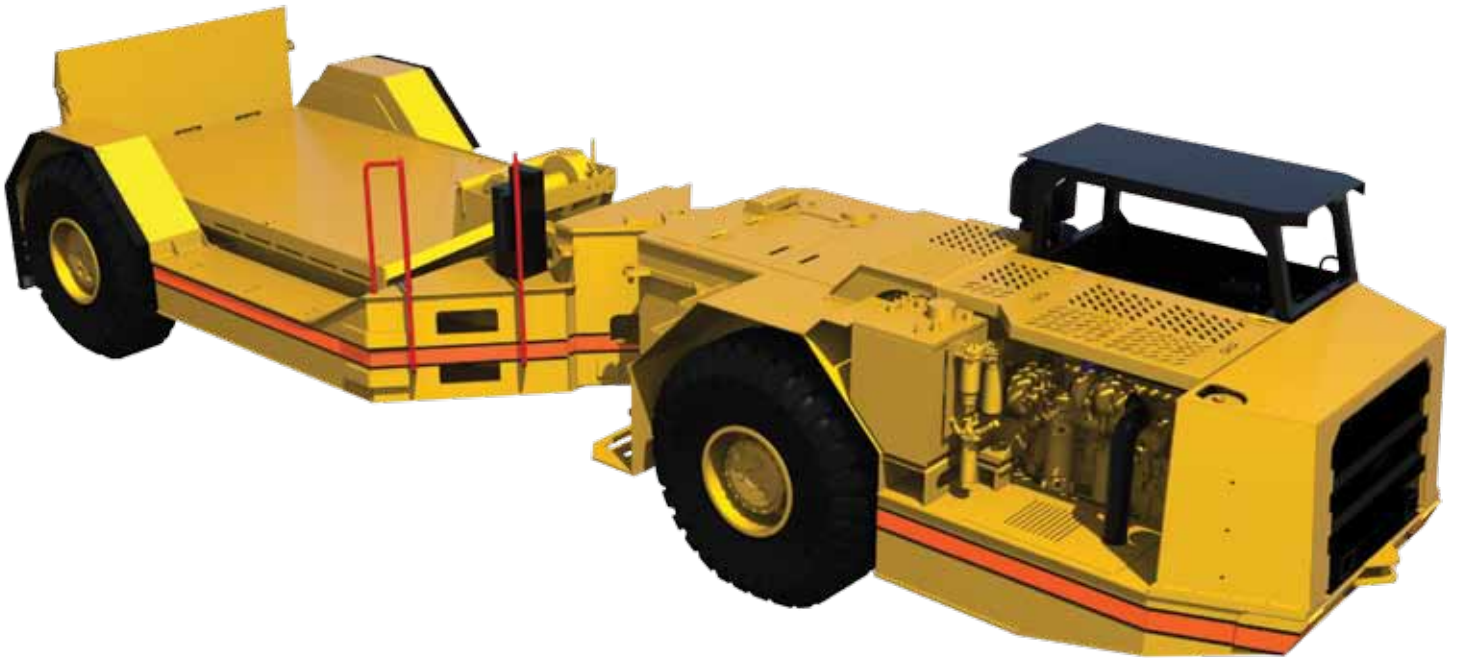


ELPHINSTONE

WR820 Underground Tilt Tray Truck



Engine

Engine Model Cat C11 ACERT™
Gross Power - SAE J1995 242 kW / 325 hp
Net Power - SAE J1349 237 kW / 317 hp

Operating Weight

Tare	23,400 kg	51,588 lbs
GVM	45,000 kg	99,208 lbs

Contents

Power Train.....	2
Operator Station	3
Work Tools	4
Safety.....	5
Serviceability.....	6
Specifications.....	7
Standard Equipment.....	9
Optional Equipment	10



Engine

The Cat engine delivers power, performance and durability.

Cat C11 Engine. The Cat C11 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.

Turbocharger. The C11 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.



Proven Fuel Injectors. The Cat C11 has a proven high-pressure, direct injection fuel system. This system electronically monitors operator demands and sensors optimize engine performance.

Maintenance. The 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.

Reliability Features. The C11 offers maximum reliability and response due to the following features:

- ✓ Improved fuel injectors and pump
- ✓ Leak-free design
- ✓ Higher cylinder pressures
- ✓ Reinforced cylinder block

Leak-Free Design. Improved joints throughout the engine reduce the chance of leaks. The oil pan seal, timing cover and block to flywheel housing incorporate a leak-free design.

Commonality. The Caterpillar C11 engine is used in Cat products such as the 966H medium wheel loader, R1700G LHD and the 730 articulated truck. 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.



Six-Speed Transmission. The field proven Cat power shift transmission easily matches engine power to the load size and ground conditions.

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 C11 engine for excellent rimpull and performance.

Lock-up Clutch. The integral lock-up 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. The axle housing is a durable ductile iron for the centre housing and leg housings.

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 forced brake 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. The outboard bearings are maintenance free.

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

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 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.

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

Gauges. Provide a constant display of vital machine functions, including engine coolant temperature, transmission oil temperature, engine oil pressure, engine speed, vehicle speed and fuel level.

Steering Column. Tilts and is telescopic for comfortable operation.



Work Tools



Tilting/Sliding Tray. The tilt tray is equipped with hydraulic extension cylinder so slide the tray and telescoping hydraulic cylinders to tilt the tray.

Hydraulic Winch. The tilt tray features an electronically controlled hydraulic winch for all winching applications. The winch has a hydraulically released brake and functions for reel-in, reel-out and free-spool. The winch is driven and controlled by the main implement hydraulic system.

Tie Down Points. The chassis has integrated into the tray and the base vehicle. Hook points integrated into the frame sit flush with the deck when not in use. Hooks have a push down activation plate to raise hook for use. Material is not retained in the anchoring system. Hook drops material below the deck.

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

Tailgate. Optional tail gate is available to reduce the overall length of the vehicle.



Safety

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



Product Safety. The WR820 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.

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

Steering. Full hydraulic control. Meets ISO 5010:2007 standard.

Braking. Full hydraulic control. Meets ISO 3450:2011 standard.

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
- Triple insulated battery cables
- Electrical wiring run independent of all hosing
- Fuel water separators, non-flammable
- Firewall / heatshields
- Handrails
- Machine interlocks
- Centralised isolation point
- Integrated fire suppression systems (optional)

Service Access. Easy access to daily service points simplifies servicing and time spent on regular maintenance procedures.

Ground Level Access. Allows convenient servicing to tanks, filters, lubrication points and compartment drains.

Interlock. If the operator fails to apply the park brake prior to exiting the cab, the interlock system will detect the absence of operator input and apply the park brake, neutralise the steering, implements and transmission.



Serviceability

Increased productivity through ease of service.

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

Bolt-on Guards. Bolt-on belly guards offer protection to critical components, are hinged and easily removable for servicing.

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

Diagnostics. Electronic control system enables quick diagnosis of engine/transmission conditions and effective maintenance and repairs. Filters and lubrication points are accessible from the ground without special tools. Remote lubrication points make daily attention to hard-to-reach joints easy.

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.

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

Centralised Service Centre that includes fast fill and evacuation points, fluid sampling points and a battery isolation point is available as an option.

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 rubbing.

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.



Specifications

Engine

Engine Model	Cat C11 ACERT™	
Gross Power SAE J1995	242 kW	325 hp
Net Power ISO9249	239 kW	321 hp
Net Power SAE J1349	237 kW	317 hp
Displacement	11.15 L	680 in ³
Bore	130 mm	5.1 in
Stroke	140 mm	5.5 in
Number of Cylinders	6	
Max Torque @ Rated Speed	1430 Nm @ 1300rpm	
Derating Altitude	3048 m	9843 ft

- These ratings apply at 1,800 rpm when tested under the specified condition for the specified standard
- 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 3,048 m (9,843 ft) altitude
- Ratings 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)]
- Net power when fan is at maximum speed is 210 kW (282 hp) per the SAE reference table

Weights Approximate

Machine Operating Weight	23560 kg	51941 lb
Machine Loaded Weight	43560 kg	96034 lb

Electrical System

Alternator	100 amp
Electrical System	24v
Battery - Quantity	2
Battery - Volts	12v
Battery - Capacity	950CCA
Starting System	Direct Electric

Power Train

Travel Speed - Fwd. 1st	5.3 km/h	3.3 mph
Travel Speed - Fwd. 2nd	10 km/h	6.3 mph
Travel Speed - Fwd. 3rd	15.2 km/h	9.5 mph
Travel Speed - Fwd. 4th	23.3km/h	14.6 mph
Travel Speed - Fwd. 5th	32.4 km/h	20.3 mph
Travel Speed - Fwd. 6th	38.3 km/h	23.9 mph
Travel Speed - Rev. 1st	5.9 km/h	3.7 mph
Transmission	6 fwd / 1 rev powershift	
Transmission Cooler Type	Tube and Bund	
Travel speed on 1:7 grade calculated	8.0 km/hr 5.0 mph	
Steering, Frame Articulation	+/- 45 degrees	
Brakes - Service Type	Multiple disc enclosed	
Brakes - Parking Type	Spring applied wheel ends	

Hydraulic System

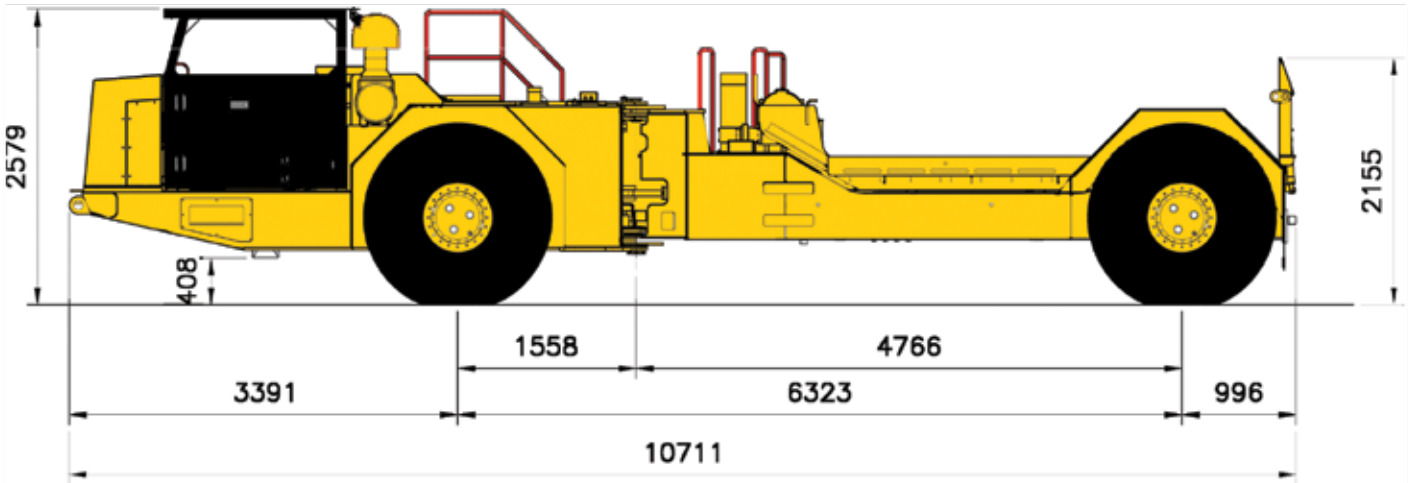
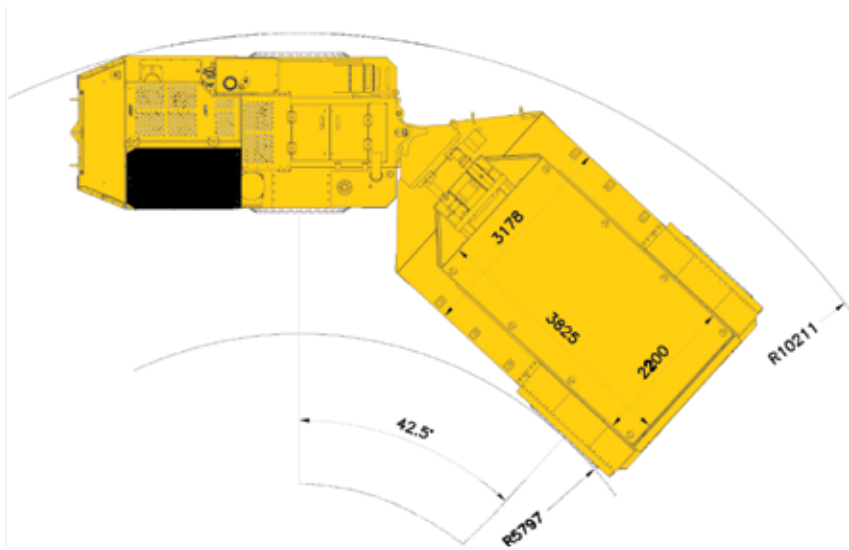
Circuit Type	Closed centre variable flow	
Pump type	Axial piston	
Pump Output	174 L/min	46 gal/min
Relief Valve Setting	21,000 kPa	3045 psi
Steering valve	Direct link, non follow	
Steering Cylinder - Bore	88.9 mm	3.5 in
Steering Cylinder - Stroke	437.5 mm	17.22 in
Steering Cylinder - Rod Dia	50.8 mm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

Operator Station

FOPS Standards:

- FOPS Canopy (Falling Object Protective Structure meets AS22934.3)
- Optional fully enclosed cabin with air conditioning

Specifications



Dimensions

Tramming Length	10711 mm	421.69 in
Tramming Width	3420 mm	134.65 in
Tramming Height	2579 mm	101.54 in
Wheel Base	5358 mm	210.94 in
Axle Centre to Hitch (F)	1558 mm	61.3 in
Axle Centre to Hitch (R)	4766 mm	187.63 in
Ground Clearance	408 mm	16.06 in
Outer Turning Radius	10211 mm	402.00 in
Inner Turning Radius	5797 mm	228.23 in
Tyres	18.00R25	

Service Refill

Fuel Tank	361 L	94 gal
Cooling System	67 L	18 gal
Differential, Final Drive - F	55 L	14.5 gal
Differential, Final Drive - R	55 L	14.5 gal
Engine Oil	41 L	11 gal
Transmission, Torque Converter	36 L	9.5 gal
Hydraulic Tank	151 L	49 gal

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
- Caterpillar electronic monitoring system (CEMS)
- Diagnostic connector
- Emergency stop switch (ground level)
- Headlights with dip switch
- Horn, warning
- Rear work lights (cab mounted)
- Reversing lights
- Starting and charging system, 24V
- Starter, electric, heavy duty

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
- Manual brake retarder control
- 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, lubricated for life
- Engine, Cat C11, ACERT Technology, ATAAC
- Engine overspeed inhibitor
- Fan, sucker
- Filters, fuel/engine air, primary/secondary
- Final drives, inboard planetary
- Fuel transfer pump (mechanical)
- Fuel tank, high capacity
- Lock-up torque converter
- Long-life coolant (-50oC protection)
- Muffler/catalytic converter
- Oscillating front axle
- Radiator
- Steering, rotary metering pump
- Transmission, power-shift (6F/1R) with auto-shift function
- Universal joints, lubricated for life

HYDRAULICS

- Closed centre - load sensing system
- Line filter, full flow return
- Hydraulic oil cooler

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
- Semi centralised manual lubrication system
- SOSSM oil sampling ports
- Tie down points and tow-pins (front and rear)
- Tires and tubeless rims (18.00R25)

Machine Equipment

Optional equipment.

ELECTRICAL

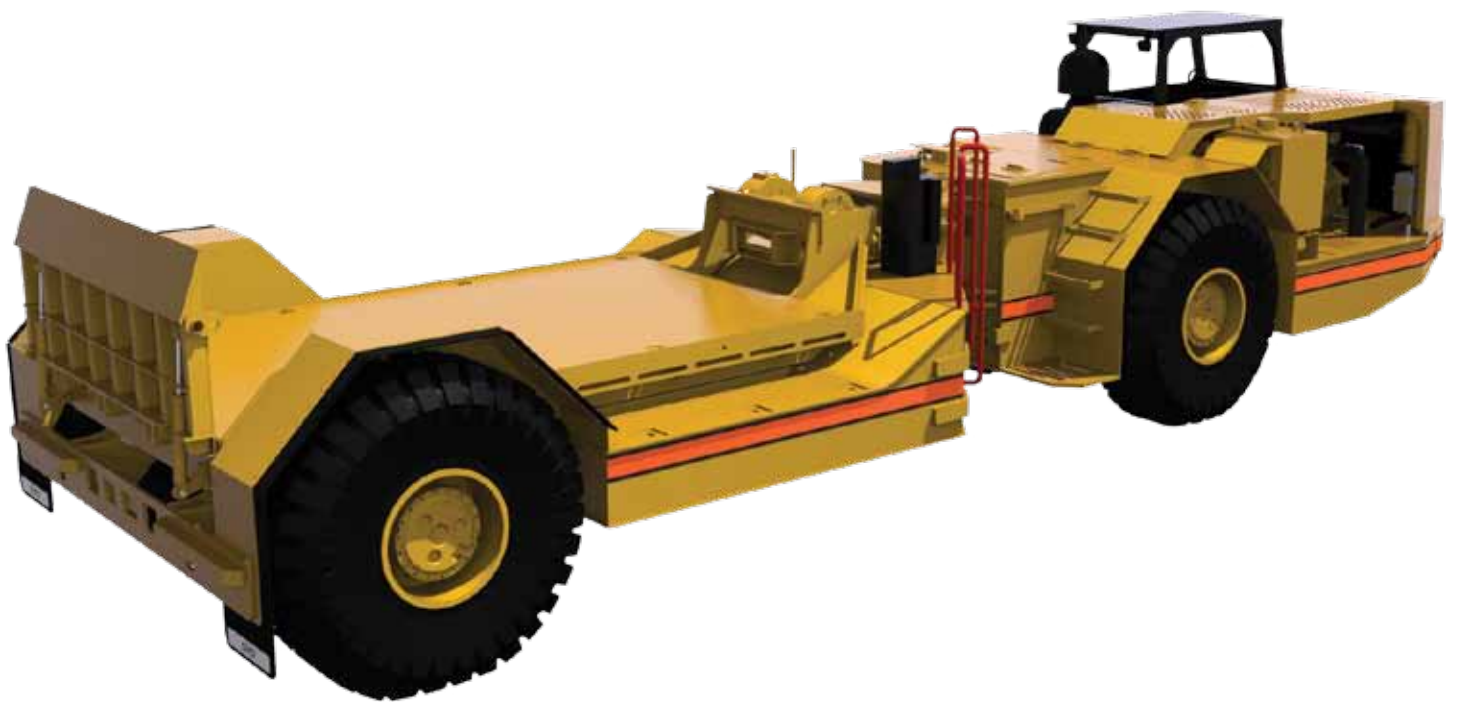
- Alternator, high output
- External stainless steel braided fuel lines
- Grease lubrication system, centralised manual
- Grease lubrication system, automatic
- Ground level disconnect switch (4 post)
- Ground level shutdown switch
- Heat-shielding on hoses
- HID lighting
- Jump start receptacle
- Low transmission oil pressure system
- Rear view mirrors
- Turn indicators

OPERATOR ENVIRONMENT

- Automatic brake retarder control
- Automatic grease lubrication system
- Auxiliary start receptacle
- Brake system oil pressure gauges
- Camera/monitor, Reversing
- Centralised service centre
- Dual speed control
- Enclosed air conditioned cabin:
 - Windshield wiper washer
 - Window, sliding, operator
 - Heater, cabin
- Engine air pre-cleaner
- Engine exhaust, flow-through filter
- Engine exhaust, particulate filter
- Engine shutdown system to idle/stop
- Fast-fill system:
 - Coolant
 - Engine oil
 - Fuel
 - Hydraulic oil
 - Transmission oil
- Fire extinguisher, hand held
- Fire suppression system
- Firewall
- Hydraulic tank level alarm
- Low transmission oil pressure monitoring
- Manual brake retarder control
- Secondary steering
- Shielded engine exhaust manifolds

WR820

Underground Tilt Tray Truck



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Made in Australia for export.

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