

Wheeled Digger - Official Technical Overview & Datasheet

EXECUTIVE SUMMARY

Engineered for the intersection of road mobility and job site digging performance, the Wheeled Digger redefines the wheeled excavator category for mixed-terrain operations. Targeting construction contractors, municipal maintenance fleets, agricultural land developers, and mining utility tasks, this machine replaces traditional backhoe loaders with superior reach, stability, and hydraulic breakout force. Its three-mode steering (front, crab, and coordinated) enables precise maneuvering in confined urban sites while maintaining aggressive digging cycles on unimproved surfaces.

Built on a high-rigidity articulated chassis, the Wheeled Digger delivers a compelling value proposition: reduce machine transport costs by driving directly to sites at speeds up to 40 km/h, lower daily operating costs through fuel-optimized powertrains, and increase operator retention via a sealed, pressurized cab. From highway shoulder maintenance to trenching in soft orchards, this platform offers a 35% wider stability footprint than comparable skid-steer or tractor-backhoe combinations.



STRUCTURAL INTEGRITY & POWERTRAIN

The chassis employs 高强度 HB450 steel plate with finite element analysis (FEA) optimized box-section weldments, achieving a 2.5:1 dynamic load safety factor. The upper frame integrates a bolted turntable bearing with induction-hardened raceways rated for 12,000 hours of continuous swing torque. Standard chassis underbody armor panels protect drive axles and hydraulic reservoirs from debris impact.

Propulsion is provided by a Cummins QSB4.5 or Isuzu 4JJ1X direct-injection diesel engine, configurable to EPA Tier 4 Final or EU Stage V standards with diesel oxidation catalyst (DOC) and selective catalytic reduction (SCR) aftertreatment. Power output ranges from 97 kW (130 hp) to 129 kW (173 hp) at 2,200 rpm. The closed-center, load-sensing hydraulic system delivers 220

L/min at 35 MPa (5,076 psi) with independent cooling fan and dual-stage filtration (10-micron absolute). Optional ECO mode reduces fuel consumption by up to 18% during light-duty cycles.

KEY FEATURES & OPERATOR COMFORT

- Load-Sensing Hydraulics with Electronic Pump Control: Variable displacement axial piston pump delivers flow on-demand to boom, arm, bucket, and drive circuits. Operator-selectable power modes (Heavy Lift, Standard, ECO) optimize pump torque limiting to prevent engine stall while maximizing breakout force (98 kN bucket digging force). Auxiliary third/fourth circuit pre-plumbed for hydraulic breakers or augers.

- ROPS/FOPS Level II Certified Cab: One-piece pressed steel cab with laminated front windshield and polycarbonate roof hatch exceeds ISO 12117-2:2008 standards. Integrated positive pressure filtration (HEPA cabin filter) maintains 25 Pa overpressure during dusty loading. Low-profile window mullions and 65-degree sloping front glass provide unobstructed bucket view. Standard heated air-suspension seat with 120 mm vertical travel.

- Smart Control Panel with 7-Inch LCD: CAN 2.0B J1939 digital dashboard displays real-time fuel rate, regeneration status, hydraulic oil temperature, and maintenance countdowns. Integrated rearview camera with dynamic grid lines and swing radius alarms. Programmable auxiliary flow presets (three user-defined profiles). Keyless start with PIN code anti-theft system.

- Multi-Mode Steering & Travel: Three selectable modes — 2-wheel (highway speeds, steering angle up to 38 degrees), 4-wheel coordinated (reduced turning radius to 4.8 m), and crab steer (diagonal lane changes). Automatic oscillating front axle locks at speeds above 25 km/h for stability. Hydrostatic service brake with spring-applied, hydraulic-release parking brake on all four wheels.
- Quick Coupler Ready Boom with Hydraulic Lock Detection: Optional pin-grabber or wedge-type quick coupler integrated with boom-mounted proximity sensors. Control system prevents tool release until bucket is grounded and hydraulic pressure is dumped. Compatible with ISO 24410 standard attachments.

COMPLIANCE & SAFETY STANDARDS

Machine design and manufacturing follow ISO 9001:2015 quality management system. Safety certifications include CE marking (2006/42/EC Machinery Directive), EPA Tier 4 Final emissions compliance, and EU Stage V for regulated markets. Cab structure certified to ROPS ISO 12117-2 and FOPS Level II ISO 3449. Hydraulic system meets ISO 8643 falling object protection for control valves. Noise emission: Operator ear position LpA = 78 dB(A), external LwA = 103 dB(A) per 2000/14/EC. Optional fire suppression system (dual-nozzle, automatic temperature activation) and reverse alert with LED strobe light are available for mining and forestry applications.

TECHNICAL SPECIFICATIONS

The following table presents validated performance parameters under ISO 6016 standards at standard ambient conditions (temperature 25 ° C, altitude < 1000m). Operating weight includes full fuel tank, ROPS cab, standard bucket, and 75 kg operator.

Parameter	Specification
Engine Model	Cummins QSB4.5 (Tier 4 Final) or Isuzu 4JJ1X (Stage V)
Net Power	97 kW (130 hp) @ 2,200 rpm / 129 kW (173 hp) optional
Operating Weight	12,450 kg - 14,200 kg (depending on configuration)
Max Travel Speed	40 km/h (2-wheel steering mode, high range)
Digging Reach (max)	8,350 mm
Digging Depth (max)	5,100 mm
Bucket Breakout Force	98 kN (ISO 6015)
Arm Breakout Force	62 kN (ISO 6015)
Swing Torque	38 kNm

Hydraulic Flow (main)	220 L/min @ 2,200 rpm
Fuel Tank Capacity	210 L
Hydraulic Tank Capacity	120 L
Turning Radius (4-wheel steer)	4,800 mm (outer tire path)
Ground Clearance	380 mm