High Efficiency Digger - Official Technical Overview & Datasheet

EXECUTIVE SUMMARY

The High Efficiency Digger (HED) Series is the culmination of five years of intensive research and development, engineered specifically to redefine productivity benchmarks in the construction, quarrying, and large-scale agricultural sectors. Designed to compete in the 30 to 50-ton class, this machine bridges the gap between raw digging force and intelligent fuel management. By integrating a next-generation variable displacement hydraulic system with a high-torque, low-emission powertrain, the HED delivers up to 15% greater fuel efficiency compared to its predecessors, significantly reducing total cost of ownership for fleet operators.

Built for the rigorous demands of 24/7 operations, the HED offers a robust solution for contractors seeking to maximize output while minimizing environmental impact. Its heavy-duty undercarriage and optimized boom geometry provide superior reach and breakout force, making it equally adept at deep foundation excavation and high-bench mining. The machine's advanced telematics and user-centric cabin design ensure that operators can maintain peak performance over extended shifts, solidifying its position as a versatile and indispensable asset in any heavy equipment fleet.

STRUCTURAL INTEGRITY & POWERTRAIN

The foundation of the High Efficiency Digger is its ultra-durable, robotically welded X-frame chassis, fabricated from high-strength, low-alloy (HSLA) steel with a yield strength exceeding 600 MPa. This design provides exceptional torsional rigidity and resistance to impact stress, ensuring longevity in the most abrasive environments. The boom and arm components are manufactured using a one-piece steel plate casting process, eliminating weak weld points and enhancing structural fatigue life by up to 30% compared to traditional fabrication methods.

At the heart of the HED lies a heavy-duty, water-cooled, 6-cylinder diesel engine certified to EPA Tier 4 Final and EU Stage V emission standards. This engine is paired with a proprietary electronic control module (ECM) that

optimizes power delivery based on real-time load conditions. The closed-center, load-sensing hydraulic system operates at a maximum pressure of 350 bar (5,076 psi) and utilizes a variable-flow piston pump. This combination ensures that hydraulic flow is precisely matched to the work at hand, reducing parasitic power losses and providing instantaneous response for simultaneous boom, arm, and bucket operations.

KEY FEATURES & OPERATOR COMFORT

- Intelligent Load-Sensing Hydraulics: The advanced hydraulic system features an intelligent load-sensing valve that dynamically adjusts oil flow and pressure to match operating demands. This ensures optimal performance for heavy digging while maintaining smooth, precise control for fine-grading operations, significantly reducing fuel consumption by preventing unnecessary hydraulic flow.

- ROPS/FOPS Certified Command Cab: The pressurized, sound-suppressed cab is certified to ISO 3471 (ROPS) and ISO 3449 (FOPS) standards. It features a 360-degree field of vision, a high-back air-suspension seat with heating and cooling, and an automatic climate control system that maintains optimal temperature, ensuring operator safety and minimizing fatigue during long shifts.

- Smart 8-inch Touch Control Panel: The intuitive monitor integrates machine diagnostics, real-time fuel consumption data, and a multi-camera 360-degree

surround-view system. It allows the operator to select between six different working modes (e.g., Power, Economy, Lifting) to optimize performance for specific tasks, and provides service interval alerts to streamline maintenance scheduling.

- Heavy-Duty Undercarriage & Traction: Fitted with triple-reduction final drives and deep-tread, heavy-duty track shoes, the HED provides superior traction and stability on soft underfoot conditions. The track frames are reinforced with additional plating and feature a sealed and lubricated track (SALT) system, which extends pin and bushing life by preventing abrasive wear and reducing track noise.

COMPLIANCE & SAFETY STANDARDS

The High Efficiency Digger is engineered and manufactured in compliance with the most stringent international safety and quality standards. The entire production process adheres to ISO 9001:2015 quality management protocols. Safety features include an emergency engine stop system, automatic boom and arm holding valves, and an advanced secondary brake system that meets ISO 3450 braking requirements.

Furthermore, the machine is fully compliant with CE marking regulations for the European market and meets the environmental standards of the EPA Tier 4 Final

and EU Stage V emissions regulations. The HED also incorporates an integrated fire suppression system preparation package and ground-level engine shut-off switches as standard equipment, ensuring maximum site safety.

TECHNICAL SPECIFICATIONS

The following tables provide a detailed overview of the key performance and physical characteristics of the High Efficiency Digger. These specifications represent the standard configuration and may vary slightly depending on specific attachment or track shoe options.

<table border='1' style='border-collapse: collapse; width: 100%;'><tr><th style='padding: 8px; text-align: left; background-color: #f2f2f2;'>Parameter</th><th style='padding: 8px; text-align: left; background-color: #f2f2f2;'>Specification</th></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Engine Model</td><td style='padding: 8px; border: 1px solid #ddd;'>Cummins QSB6.7 (or equivalent)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Gross Power</td><td style='padding: 8px; border: 1px solid #ddd;'>240 kW (322 hp) @ 2,000 rpm</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Operating Weight</td><td style='padding: 8px; border: 1px solid #ddd;'>42,500 kg (93,697 lbs)</td></tr><tr><td style='padding: 8px; border:

1px solid #ddd;'>Bucket Capacity (Heaped)</td><td style='padding: 8px; border: 1px solid #ddd;'>2.5 - 3.0 m³ (3.3 - 3.9 yd³)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Max Digging Reach</td><td style='padding: 8px; border: 1px solid #ddd;'>11.5 m (37' 8")</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Max Digging Depth</td><td style='padding: 8px; border: 1px solid #ddd;'>7.5 m (24' 7")</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Max Breakout Force (Arm)</td><td style='padding: 8px; border: 1px solid #ddd;'>180 kN (40,466 lbf)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Hydraulic Flow (Main Pump)</td><td style='padding: 8px; border: 1px solid #ddd;'>2 x 300 L/min (79.3 gal/min)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Hydraulic Pressure (Implement)</td><td style='padding: 8px; border: 1px solid #ddd;'>350 bar (5,076 psi)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Track Shoe Width</td><td style='padding: 8px; border: 1px solid #ddd;'>600 mm (24 in)</td></tr><tr><td style='padding: 8px; border: 1px solid #ddd;'>Fuel Tank Capacity</td><td style='padding: 8px; border: 1px solid #ddd;'>620 L (164 gal)</td></tr></table>