

Low Noise Excavator - Official Technical Overview & Datasheet

EXECUTIVE SUMMARY

Engineered for urban construction, residential infrastructure, and night-time mining operations, the Low Noise Excavator redefines acoustic compliance without sacrificing breakout force. Leveraging advanced sound-dampening materials, isolated engine mounts, and low-RPM high-torque tuning, this machine achieves operational noise levels as low as 68 dB(A) — well below typical municipal limits. Its primary value proposition lies in enabling extended work hours on noise-sensitive sites, reducing regulatory friction, and lowering operator fatigue.

Target applications include high-density city construction, hospital/university campus redevelopment, underground mining, and agricultural drainage projects where environmental noise ordinances strictly apply. Available in 6 to 45 metric ton configurations, the series offers Tier 4 Final / Stage V compliance globally.



STRUCTURAL INTEGRITY & POWERTRAIN

The chassis and boom arm utilize Japanese-origin high-tensile steel (HT960 grade) with double-welded box-section design, exceeding ISO 10262 fatigue life standards by 35%. The engine is a turbocharged, electronic-controlled Isuzu 4HK1X (or Cummins QSB6.7 for select markets) featuring a two-stage sound encapsulation housing and viscous vibration dampers. The hydraulic system is a triple-pump negative flow control architecture with variable displacement axial piston pumps, achieving 92% overall hydraulic efficiency while reducing flow ripple noise by 40% compared to standard open-center systems. A dedicated fan clutch with thermostatic control further cuts fan blade noise during partial load.

KEY FEATURES & OPERATOR COMFORT

- Sound-Encapsulated Cab: Double-laminated acoustic glass + 40mm thick composite foam liners achieve 72 dB(A) interior at full load — lower than normal conversation level. ROPS/FOPS certified (ISO 3471:2022).
- Smart Auto-Idle & Eco-Mode: AI-driven load detection automatically reduces engine RPM to 1,200 during idle and optimizes pump displacement for lowest decibel at partial loads, saving 18% fuel simultaneously.
- Integrated Acoustic Underbody Shielding: Full-length fiber-reinforced plastic (FRP) skid plates absorb track travel noise and prevent stone ringing — a primary noise source in conventional excavators.
- Pressurized Cab with Active Noise Cancellation (ANC): Optional ANC system generates inverse waves to cancel low-frequency boom harmonics, reducing operator long-term fatigue risk by 50% (lab tested).

COMPLIANCE & SAFETY STANDARDS

CE Marked (2006/42/EC), EPA Tier 4 Final, EU Stage V, Japan MLIT Noise Regulation 12-2008 (58 dB(A) at 7m). Certified to ISO 6395 (external noise) and ISO 6396 (operator ear noise). Safety includes ISO 13849-1 PL d certified two-channel emergency stop, automatic swing brake, and 360° IP69K camera system. All hydraulic hoses meet SAE J517 100R2 AT standard with flame-retardant sleeves.

TECHNICAL SPECIFICATIONS

Below are the nominal parameters for the baseline Low Noise Excavator model LNe-230. Note: values may vary by configuration and regional certification.

Parameter	Specification
Engine Model	Isuzu 4HK1X (Tier 4 Final)
Operating Weight	21,500 kg (47,400 lb)
Net Power	128 kW @ 1,900 rpm
Sound Power Level (ISO 6395)	98 dB(A) LWA
Sound Pressure Level (operator)	68 dB(A) at full load
Main pump flow	2 x 220 L/min
Max breakout force (arm)	135 kN
Track shoe width	600 mm (triple semi-grouser)