

Trustworthy in Task



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NOTES

*Under our policy of continuous improvement, we reserve the right to change specifications and designs without prior notice.
The illustrations do not necessarily show the standard version of the machine.

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LEADER IN NEW ENERGY LOADERS
PIONEER IN INDUSTRY STANDARDS



INTELLIGENT



ECO-FRIENDLY



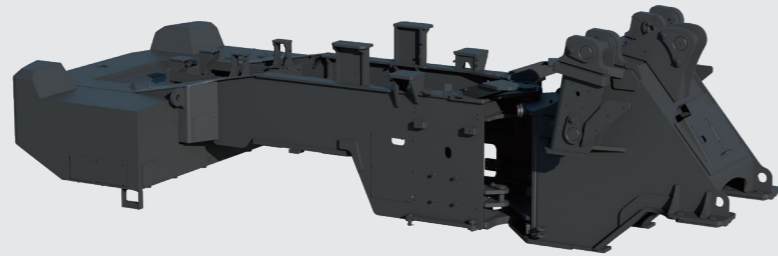
COMFORTABLE

YX680HEV

**ENSIGN HEAVY INDUSTRIES
HYBRID ELECTRIC LOADER**

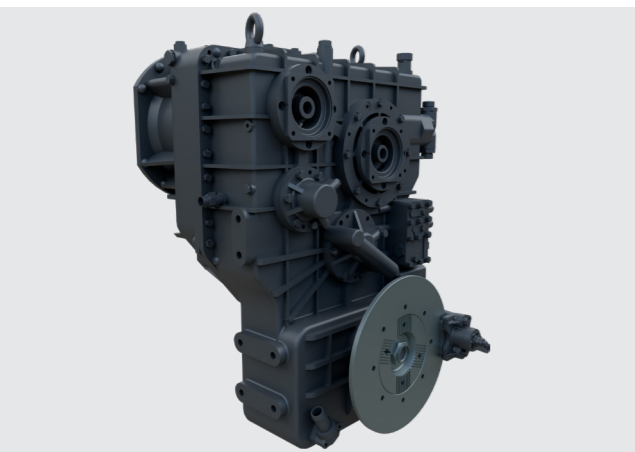
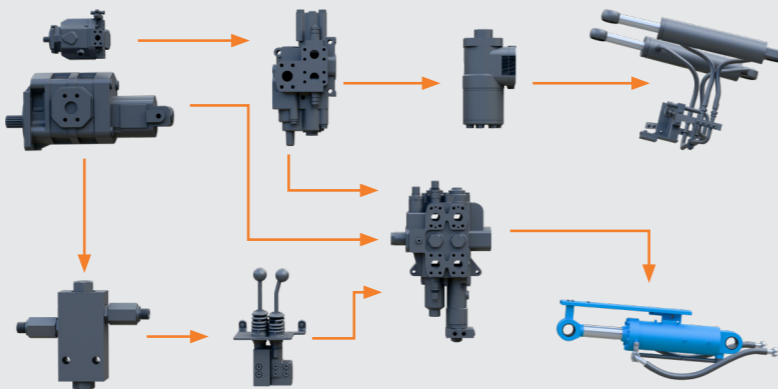
HEAVY-DUTY DESIGN

The loader incorporates a wide-opening articulated design with well-distributed load and a long wheelbase to ensure stability in heavy-duty operations. The hydraulic cylinders are reinforced and enlarged, with optimized pipeline layouts for enhanced reliability. The super heavy-duty reinforced drive axle is designed to withstand harsh and demanding work conditions.



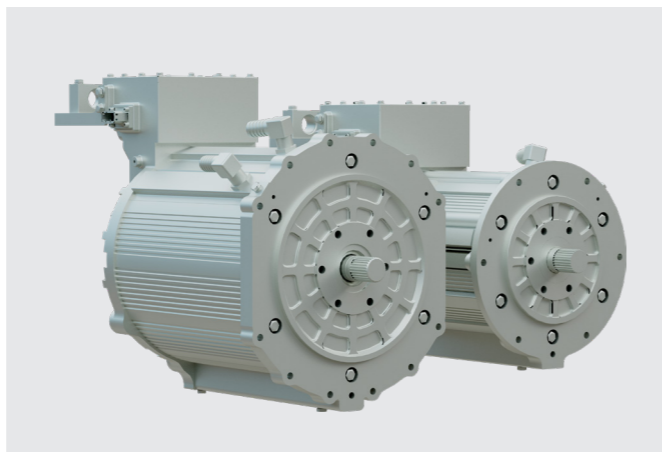
HYDRAULIC TECHNOLOGY

The loader utilizes Ensign's proprietary Fixed/Variable Displacement Hydraulic System, enabling intelligent dual-stage power distribution between the electric control and hydraulic systems. This results in reduced energy loss, enhanced micro-control precision, and significantly shortened cycle times for combined operations, boosting work speed by 17% and delivering an optimal operating experience.



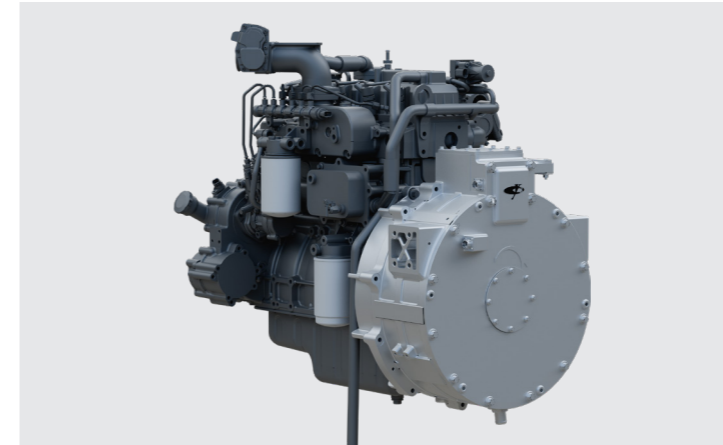
ELECTRIC CONTROL TRANSMISSION

The loader is equipped with a 9-ton class, specially tuned electric control gearshift fixed-axle automatic transmission, designed exclusively for new energy loaders. With light-load and heavy-load modes, it offers flexible operation tailored to specific working conditions, ensuring higher efficiency.



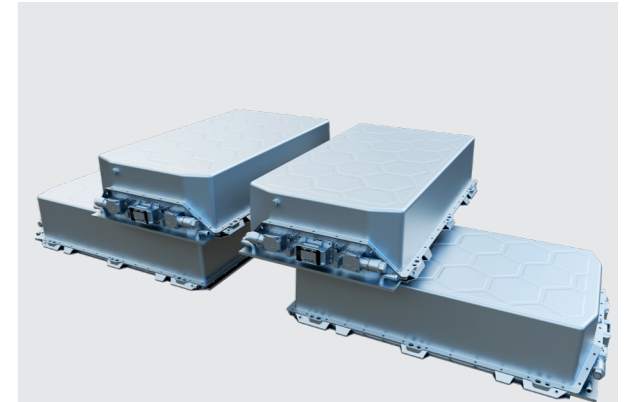
DUAL-MOTOR COMBINATION

The industry-first 8000rpm high-speed permanent magnet synchronous motor powers the vehicle. With the hydraulic and drive systems decoupled, the dual motors operate independently, offering fast response times, high low-speed torque, powerful performance, and greater efficiency.



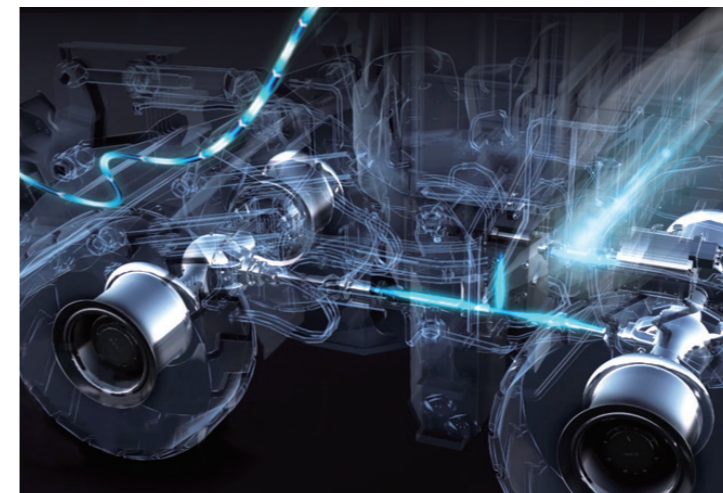
EFFICIENT RANGE EXTENDER

A high-power integrated range extender provides electric energy to the vehicle, with the engine used solely for electricity generation and not involved in driving operations. This ensures stable operation within the high-efficiency power generation zone, maximizing energy utilization. The range extender controller interacts in real-time with the vehicle controller, supplying energy according to the vehicle's needs, resulting in overall efficiency far exceeding that of conventional fuel-powered loaders.



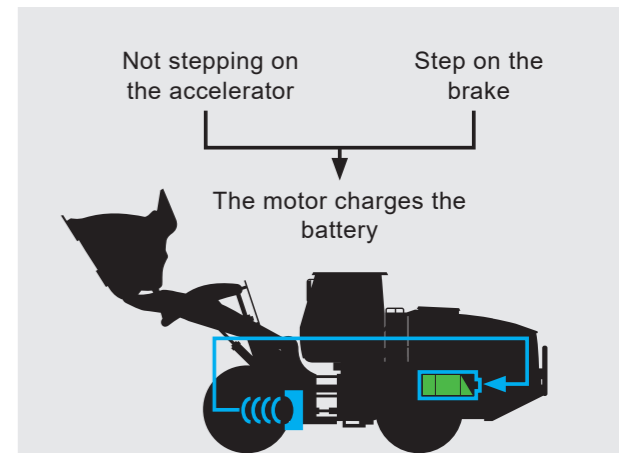
PURE ELECTRIC WORK MODE

Equipped with a 141kWh lithium iron phosphate battery pack and a reserved single-port super-fast charging interface, the loader features a pure electric operation mode. In this mode, the battery powers the vehicle, enabling near full-electric loader operation, significantly enhancing energy savings and cost-effectiveness.



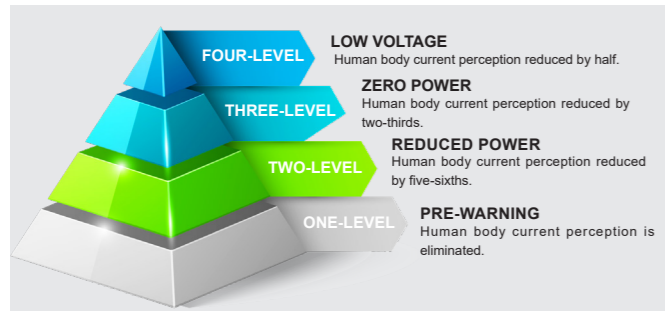
ELECTRIC DRIVE TECHNOLOGY

The loader employs advanced electric drive technology, where the motor is directly connected to the transmission, eliminating energy losses from a torque converter. Compared to hydraulic mechanical transmissions, this setup improves energy efficiency by over 30%, doubling overall energy utilization. The intelligent electric control program enables features such as seamless variable speed and power cut-off.



ENERGY REGENERATION SYSTEM

During deceleration or braking, mechanical energy is converted into electrical energy, extending the range, reducing energy consumption, and promoting environmental sustainability. Additionally, this system effectively prolongs the lifespan of friction plates.



FOUR-LEVEL **LOW VOLTAGE**
Human body current perception reduced by half.

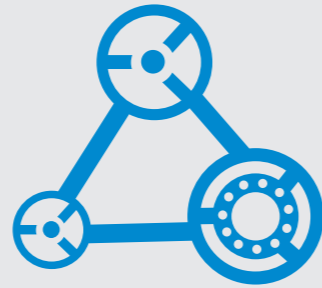
THREE-LEVEL **ZERO POWER**
Human body current perception reduced by two-thirds.

TWO-LEVEL **REDUCED POWER**
Human body current perception reduced by five-sixths.

ONE-LEVEL **PRE-WARNING**
Human body current perception is eliminated.

FOUR-LEVEL SAFETY ALARM SYSTEM

The high-voltage system is equipped with a leakage protection function. When abnormal current fluctuations are detected, the electronic control system responds immediately and automatically takes safety measures. The high-voltage components have a protection degree of IP67, offering excellent dust and water resistance to ensure reliable operation even in harsh environments.

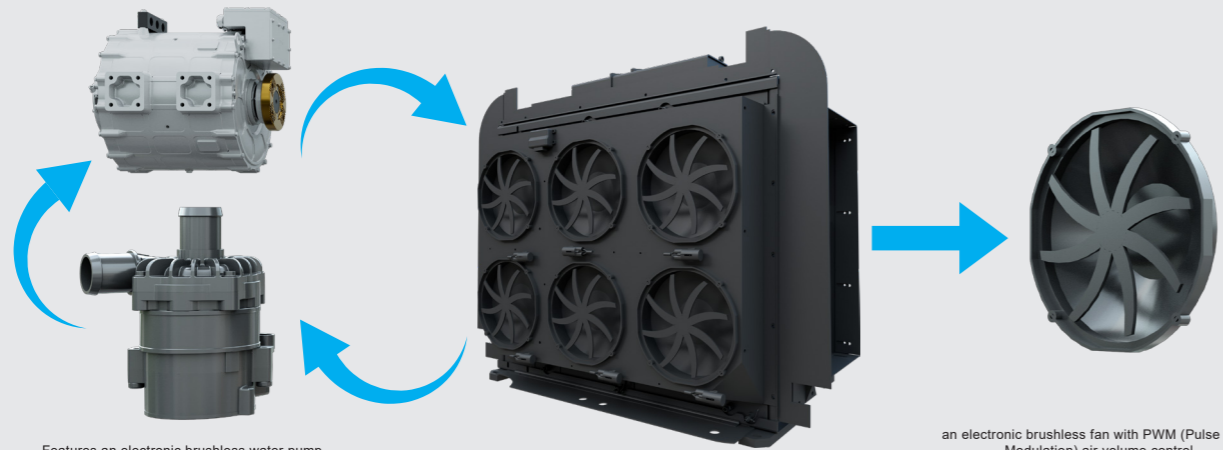
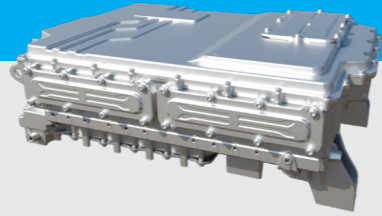


INTELLIGENT MONITORING

The intelligent monitoring system continuously evaluates the operating mode. If the operating mode deviates from the optimal fuel efficiency range, it provides a smart reminder. If the vehicle remains outside the efficient fuel consumption zone for an extended period, the system will proactively intervene to control the speed, helping users optimize operating habits and reduce vehicle operating costs.

ELECTRIC CONTROL SYSTEM

The independently developed VCU (Vehicle Control Unit) program is highly compatible with various working conditions, ensuring the vehicle's performance meets the demands of challenging environments. The integrated multi-functional VCU and the layered arrangement of high and low voltage wiring harnesses reduce the failure rate and make maintenance more convenient.



Features an electronic brushless water pump

an electronic brushless fan with PWM (Pulse Width Modulation) air volume control.

INTELLIGENT TEMPERATURE CONTROL SYSTEM

Equipped with a single-layer cooling structure for reduced air resistance and easier maintenance, the system uses a suction cooling method to prevent blockages. The integrated cooling for the generator, motor, VCU, engine, intercooler, and hydraulic radiator is managed by a distributed electronic fan system with zoned control and intelligent temperature regulation, providing efficient cooling as needed.



NEW DESIGN

The loader adopts a family-style body with a streamlined design. It features a new generation micro-pressurized luxury cab with 20% more space. The curved front windshield increases cabin depth, creating a panoramic driving view. The rounded rear engine hood design, combined with a rear-view camera, enhances operational safety.



ENHANCED EXPERIENCE

The standard adjustable steering column, combined with a dual slide rail air suspension seat with automatic inflation and deflation functions, meets the needs of different drivers, ensuring a comfortable ride with reduced fatigue.



IMPROVED CONTROLS

The standard thumb-operated dual lever control offers precise operation and excellent micro-control. Paired with the "left-hand gear shift lever + F-N-R button" shift mode, it enables seamless manual-automatic shifting, making complex tasks easier and more efficient, while ensuring a more comfortable and productive operation.



SMART MANAGER

Equipped with a new generation large-screen management system, the loader provides real-time health monitoring of machine data. The integrated fault alarm system displays fault information intelligently. The machine's operating status can also be viewed directly via a mobile app.

The YX680HEV Hybrid Electric Loader, with a rated load capacity of 7,800 kg, features an ultra-long wheelbase of 3,550 mm and is equipped with large 26.5-25 tires. This model is positioned as a premium, heavy-duty machine designed for high efficiency, energy savings, smart operation, and comfort. It is well-suited for a wide range of applications, such as handling sand, gravel, and coal, and is particularly ideal for heavy-duty conditions in ports and mines.



- The YX680HEV adopts a fuel-to-electric energy conversion route, significantly enhancing energy efficiency, reducing emissions, and promoting greener, more environmentally friendly operations.
- It is equipped with a Stage IV integrated high-efficiency range extender that meets emission standards without the need for urea, further lowering operational costs.
- Compared to conventional loaders of the same capacity, this hybrid technology delivers outstanding fuel efficiency, with an overall fuel savings rate of $\geq 35\%$.
- The range extender allows for electricity generation, completely eliminating concerns about range anxiety and the limitations of charging infrastructure.
- The loader features an advanced electric drive system with a dual-motor architecture, providing robust power, quick response, and high operational efficiency.
- This hybrid model is versatile enough to handle a wide range of conditions, including earthwork, municipal projects, sand, gravel, coal, and even specialized environments like high altitudes and tunnels, making it applicable in a broader range of scenarios.

TECHNICAL PARAMETERS

Bucket Capacity(m ³)	4.0-7.0(5.2)	Dump Angle(°)	45
Rated Load(kg)	7800	Dump Height(mm)	3440
Overall Operating Weight(kg)	24750	Dump Distance(mm)	1440
Max. Breakout Force(kN)	200	Min.ground Clearance(mm)	500
Gradeability(°)	28	Wheel Base(mm)	3550
Min. Turning Radius(outer side of the bucket)(mm)	7600	Wheel Tread(mm)	2350
Min. Turning Radius(outer side of the tire)(mm)	6720	Max.lift Height(mm)	6605
Width(outer side of the tire)(mm)	3025	Steering Angle(°)	38
Total Cycle Time(s)	≤ 11.5	Overall Dimension L*W*H(mm)	9650*3300*3550

BRAKE SYSTEM

Service brake type	Air-over-oil caliper disc
Parking brake(emergency brake)	Electric control caliper disc

ENGINE

Model	YCA05K175-T480
Rated Power(kW)	129
Rated Speed(r/min)	2200

Drive System

Transmission Type	Electric control fixed shaft
Gears	2 Forward,1 Reverse
Main Drive Type	Spirival bevel gear, first reduction
Hub Reduction Type	Planetary, first reduction

HYDRAULIC SYSTEM

Steering System	Flow amplification
Working Device Hydraulic System	Fixed and variable dual pump merging

ELECTRIC CONTROL SYSTEM

Power Battery Type	Lithium Iron Phosphate
Power Battery Capacity(kW-h)	141
Rated voltage of power battery(V)	614
Peak Power of Walking Motor(kW)	220
Peak Torque of Walking Motor(N·m)	1100
Peak Power of Hydraulic Motor(kW)	170
Peak Torque of Hydraulic Motor(N·m)	320

