



Kawasaki



WHEEL LOADERS

KAWASAKI ZV-2 INTRODUCTION • ZV-2 SPECIAL FEATURES • NEW CUMMINS ENGINE

KAWASAKI KEEPS IT SIMPLE.



Since 1962, Kawasaki has been listening to and learning from customers and dealers in the field. As a result, Kawasaki wheel loaders continue to evolve, with a constant focus on one thing — producing the most durable, most efficient, most dependable machines possible.

EASY TO OPERATE.

In a world of increasing demands, tighter deadlines, shrinking budgets and complicated contracts, better efficiency and greater productivity are a must. Innovative high-tech features on all Kawasaki wheel loaders allow the operator to adapt to the environment and the application right from the cab.

EASY TO MAINTAIN.

Diagnostic and operational modules monitor fluids and filters, and constantly provide information on everything from engine and transmission codes to location, hours, alarm sensors and machine performance data.

EASY TO DO BUSINESS WITH.

No run-arounds. No layers and layers of management. No distractions from competing product lines. Wheel loaders are our only business. Got a question? We'll get you an answer. Need a part? It's on its way. Quickly. Kawasaki offers flexible warranty programs, a state-of-the-art parts distribution system, an in-house rebuild center, and an experienced, knowledgable support staff, focused on serving you.

The independent dealers that represent and support Kawasaki loaders are experts in their markets and are dedicated to providing you with the best service available.

Together, we are committed to making your investment in a Kawasaki loader a sound business decision that will pay dividends for years to come.

KAWASAKI. ONE FOCUS. COMPLETE SOLUTIONS.



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"Step right up, break out the sunglasses, and prepare to be dazzled by our greatness!"

Listening to the hype from some manufacturers, you'd think their new Tier-IIIcompliant wheel loaders were the coolest, most awesome machines to ever make their way across a construction site or navigate a pit floor. And the more bells, whistles, and gadgets it has, well, the better it must be!

Let us assure you that is not Kawasaki's style!

But let's face it. The mandate to meet the stringent Tier-III requirements has provided a convenient way to introduce some nifty items as well as significant upgrades. However, unless the changes provide a clear improvement in productivity and a tangible reduction in maintenance costs, they're hardly deserving of the three-ring circus approach, much less your valuable time and money. Change can increase operational complexity, increase the price, and increase maintenance headaches. So without a lot of knee-deep hoopla, let's review the new Kawasaki ZV-2s. The model lineup we'll cover in this issue ranges from the 70 through the 95ZV-2.

PRODUCTIVITY IMPROVEMENTS

In deciding what improvements to include, Kawasaki asked a simple question: "What can we do to increase a wheel loader's productivity and efficiency without creating an operational or financial nightmare?"

In consultation with Kawasaki endusers and engineers, the answers were:

- Use Tier-III Cummins engines and increase peak torque for more power and better performance
- Add in-cab features that make it simpler and quicker for the operator to do whatever kind of job he/she might be called upon to perform
- Achieve higher uptime through easier basic maintenance tasks and more detailed on-board diagnostic systems

UNDER THE HOOD — MAKING A GOOD THING EVEN BETTER



We'll cover in more detail the Cummins engine advantage in the article on page 10. But in addition to having what we feel is the market's most reliable Tier-III diesel engine technology, the new Cummins engines provide greater peak torque. And it's the torque that gives our loaders better rimpull for noticeably improved performance. Ask end-users what they like about Kawasaki, the first thing they'll say is the power. They said that 25 years ago and they're still saying it now. With our new Dash 2s, we've added even more power — they are by far the highest performing machine we've ever marketed. Peak torque has increased anywhere from 9 to a whopping 14 percent. This results in a significant multiplication of power. Operators will be able to pull hills better, dig better, doze better, and do a lot of things better because of this extra torque.

Want to save on operating costs? Who doesn't! The new Cummins engines have extended oil change intervals from 250 to 500 hours, when the recommended grade of oil is used. At today's high gas prices, being able to save on petroleum-based products will definitely help your bottom line.

In addition to the native fuel thriftiness of the Tier-III engines, another feature is called Idle Management System (IMS). When it senses the machine has been idling for a few minutes, it will cut the engine's rpm by several hundred to conserve fuel. And at start-up in cold weather, IMS will ramp up the rpm by a couple hundred to warm the engine more quickly, wasting less fuel to warm the engine to proper operating temperature. We also have lowered the rated RPM on some models to further save on fuel. The ELS (Efficient Loading System) conserves fuel by reducing hydraulic pump demand while digging. And the Power Mode Switch allows the operator to select the correct power level to match the job demands.

EASY TO OPERATE FROM THE COMFORT ZONE

The cab is quieter, has more leg room, and features an improved air-conditioning system. The 70ZV-2 now has air conditioning as standard. To increase productivity, a number of new features have been added (or are optionally available) that enable the operator to customize settings and make adjustments to the loader controls to best suit the working environment. For more detail on the various new features, be sure to read the article starting on page 7.

Features like the Adjustable Declutch, In-Cab Boom Kickout with dual settings, Downshift button, ELS, and the Power Mode engine switch allow the operator to make adjustments from the comfort of the cab to increase productivity and efficiency.

Options such as Limited Slip Differentials, Ride Control, F-R Directional Switch, and Single Lever Hydraulic Control give the operator additional controls to adapt the loader to whatever application or working environment they face.

The new MODM (Machine Operation Diagnostic Module) is standard. Although primarily a diagnostic tool, it does allow the operator to make adjustments to certain features such as the sensitivity of the K-Lever steering, shift points in the automatic transmission, and the sensitivity of the optional Ride Control.



Comfortable air-ride seat is standard.



EASY TO MAINTAIN

We are proud of our 45-plus-year heritage of manufacturing strong and reliable machines. Disdaining the approach of many competitors who use a lot of plastic, Kawasaki continues to use metal in critical areas. Redesigned buckets provide easy loading and excellent load retention. Bolt-on heel plates extend bucket life. Massive center pins and bearings, as well as a heavy box frame rear chassis, are extraordinarily durable for a very long life.



Outboard-mounted, sealed wet disc brakes are designed for long life and easy access. Spin-on filters, grouped grease fittings, three-piece tire rims, and sealed universal joints all provide easy field maintenance. We've extended the grease intervals on the universal joints to 12,000 hours. Engine oil intervals have been extended to 500 hours, when the recommended oil is used. Refined Auto-Lube systems are also available to ease daily maintenance.



Outboard wet-disc brakes, sealed, provide high-capacity braking and protection from contamination.

(Left) The cab provides visibility in all directions.

SPECIAL APPLICATIONS PACKAGES

For those jobs that require adaptation for special environmental or performance requirements, Kawasaki has created four special application packages. The ones listed below are basic package features — additional options are available. Visit www.kawasakiloaders.com, click on Products, then Special Applications for more information.

AGRICULTURAL

For loading grain, compost, or other light weight or fine materials. Available on the Kawasaki 65 through the 80. Engine compartment air intake screens, turbinestyle engine precleaner, rear chassis belly guard, automatic reversible cooling fan, wide fin radiator.

WASTE/REFUSE/RECYCLING

All types of refuse, recycling, and processing of solid waste materials. Available from the 65 through the 115. Articulation area guard, axle brake piping, engine compartment air intake screens, front and rear chassis belly guards, lift cylinder line guard, headlight and tail light guards, steel headlight housing, steel radiator grill, wheel seal guards, wide fin radiator.

LOGGING/WOODCHIP

Available from the 65 through the 115. Third spool hydraulics, oversized counterweights, guarding for the front windshield and other vulnerable areas, wide fin radiator, automatic reversing cooling fans.

HOT SLAG

Severe application. Available from the 90 through the 135. Special guarding, safety systems, cab air filtration system, turbine style engine pre-cleaner, high temperature hydraulic hoses, ground level remote engine shutdown, transmission override, ground level parking brake override, steel cable steps. We've increased the reliability of the hydraulic system with improved hydraulic components. Deutsch connectors are used in the electrical harnesses to seal out dirt and moisture. Filament-free LED tail lights are very long-lived and exceptionally bright.

When it comes to troubleshooting, a central controller tracks a wide variety of key operational data. Access to this information is through the MODM LCD display located in the cab and through the optional K-Link II system which sends data via satellite to send reports to your cell, fax, or e-mail. Even though information from the Cummins' ECM module is sent to the central controller, Cummins provides separate diagnostic tools to help technicians recover more detailed engine data.

WHY BUY KAWASAKI?

We keep it simple.

Unlike other construction equipment companies that divide their attention among many different product lines, Kawasaki focuses only on wheel loaders. Since 1962, we have been listening to our customers and our dealers. And we've been learning from them, incorporating their suggestions into our designs. As a result, our wheel loaders will continue to evolve with a constant focus on one thing — producing the most durable, most efficient, and most dependable machines possible.



Kawasaki wheel loaders have massive center pins and bearings





IMPROVE PRODUCTIVITY, EFFICIENCY, AND FUEL ECONOMY

Kawasaki has always had the performance advantage when it comes to wheel loader power. With the Dash 2s, we're introducing new ways to customize that awesome performance, as well as bringing back signature favorites. Some are standard. Others are optional. All are designed to increase the operator's control of the machine.

In-Cab Boom Kickout, with dual settings, new, standard. Boom kickout points are very useful. Now, operators can set two kickout points without breaking a sweat because it is done inside from the comfort of the cab. Just move the lift arm to the preferred high point and press a button. Then move it to the preferred lower position and press another button. That's it! Operators who repetitively load to the same height and float down to a preset lower level will appreciate the way this feature will speed up cycle times. **Downshift Button,** standard. The easily accessible downshift button is located on the boom lever. Whenever the operator needs to downshift from second to first to get that extra push power to dig into material, he can do so by a simple button push — without having to take the hand off the wheel to use the twist-grip shift lever. This speeds cycle times and reduces operator fatigue.

Adjustable Declutch, new, standard. There are two declutch switches — one to activate to adjust the engagement point.



In-Cab Adjustable Boom Kickout (center switch) can be set by the operator to attain proper dump height and returnto-dig height. The switch on the left is for declutch adjustment, the switch on the right turns on the optional Ride Control.



Control panel switches (top to bottom): Four-way Flasher, Power Mode, Fuel Efficient Mode, ELS, and Declutch Activation.

Typically, the declutch engages before braking, but when operating on an uphill slope, that can lead to machine rollback. With adjustable declutch, operators can select engagement either before or after braking begins — whatever works best for the worksite.

Efficient Loading System (ELS), new,

standard (optional on 70ZV-2). During digging, the operator can increase rimpull and digging power by turning on the ELS switch located on the instrument control panel. ELS reduces hydraulic horsepower demand when digging. That power is then transferred to the wheels. Not only does this increase rimpull during digging, it decreases fuel use.

Power Mode switch, new, standard. Using the two-position switch located on the instrument panel, the operator selects between "Power" or "Fuel Efficient" engine modes. "Power" provides added power for extreme applications. "Fuel Efficient" offers better fuel economy for standard applications.

Single Lever Hydraulic Control, optional. Do your operators prefer one lever instead of the standard two? You can outfit your Kawasaki wheel loader whichever way makes your operators more efficient.

MODM (Machine Operation Diagnostic

Module), new, standard. Although the on-board MODM is primarily used for maintenance, there are handy adjustments an operator can make such as K-Lever steering sensitivity, Ride Control sensitivity, and transmission shift points. MODM also taps into the machine controller on an ongoing basis to monitor all systems to sound faults and alarms. And it records relevant data and failure codes for future analysis. No special software or equipment is required to access MODM.

Ride Control, enhanced, optional. If your wheel loader must travel some distance carrying a full bucket of material and you don't want to lose the contents before arriving at your destination, Ride Control is for you. It turns on and off automatically, based on speed. Newly enhanced for better operational performance, Ride Control's improved valving eliminates initial bucket drop when it activates. It also results in a smoother ride. Sensitivity can be adjusted using MODM.

F-R Directional Switch, new, optional.



This switch is located right next to the hydraulic control levers saving cycle time and increasing safety. Rather than removing the left hand from the steering wheel to push the transmission lever, a simple stretch of the right hand to tap the F-R Directional Switch will allow the operator to change between forward and reverse with minimal effort.

Limited Slip Differentials, new, optional. Limited Slip is a traction-enhancing device. Typical differentials reduce wheel spinning in about 50 percent of typical wheel loader applications. Torque-proportioning differentials bump that to about 60 percent. Limited Slip significantly increases that to 80-plus percent by working inside the differential to slow the spinning wheel while transferring more power to the wheel that still has traction.



Limited Slip Differentials provide extra traction for applications requiring extreme traction control.

HID (High Intensity Discharge) Lights,

new, optional. This is a special lighting package of four exterior lights that mount high on the cab — two in front and two in the rear. They are extremely bright and have an exceptionally long service life (typically thousands of hours) because they are filament-less. This package will make working at night or in dark interiors easier, safer, and more productive.

Lock-up Clutch, new, optional, 95ZV & 115ZV only. Geared toward load and carry or long hill-climbing operations, this option provides a direct-drive lockup in the top two gears. This increases fuel efficiency, smoothes shifting, improves overall hill climbing capability, results in faster acceleration, and speeds cycle times.

K-Link II, enhanced, optional. Unlike all of the above features that an operator can use to customize settings and adjust loader controls to work more efficiently for specific job site needs, K-Link II is a management tool. By tapping into the wheel loader's computer controller, it can monitor hours, system alarm sensors, engine fault codes, a variety of machine and engine performance data, transmission fault codes, and operating status. Geo-fence break alerts are also possible. All data is transmitted via satellite to send reports to your cell, fax, or e-mail. Certain reports are customizable.

Exhaustive as the above list may appear, there are even more features and options available. So be sure to visit your local Kawasaki dealer or go on-line and visit www.kawasakiloaders.com.

KAWASAKI — Easy to operate, Easy to maintain, Easy to do business with.



UNDERSTANDING TIER III ENISSIONS TECHNOLOGY

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EMISSIONS HISTORY

The first EPA diesel emission regulations in the United States went into effect for offhighway applications in 1996. They were called Tier I. Tier-II standards were phased in from 2001 through 2004, and Tier-III standards began to take effect in 2005. Each subsequent Tier level reduces key emissions that cause pollution and health risks.

The Tier III emission standards for engines in the 174 – 751 hp bands are currently set through 2011 and Tier IV Interim. At that time, key pollutants will have been reduced to 98 percent below the unregulated levels. To get to this highly stringent level of reduction requires significant technological effort.

To achieve Tier I, technology was aimed at achieving more complete combustion of the fuel to reduce emissions. For Tier II, engine manufacturers reduced emissions through better fuel injection systems, better air induction technology, and improved piston design. All manufacturers used some form of these technologies to meet the early levels of emission standards. However, when Tier-III standards were required, methods changed.

COOLED EGR TECHNOLOGY

In 2002, many engine manufacturers utilized a technology called "cooled EGR" for use in

on-highway vehicles. Cooled EGR takes a measured quantity of exhaust gas, passes it through a cooler, and then mixes this cooled exhaust gas with the incoming air charge to the cylinder. The EGR system reduces the amount of oxygen concentration in the combustion chamber effectively reducing the flame temperatures which in turn reduces the Nitrogen Oxide, or NOx, produced in the combustion event. Cooled EGR requires a control valve, cooling capacity, and controls to operate. In on-highway applications ram air is available, abundant, and helps to cool an engine with the additional heat rejection requirements of cooled EGR. This lack of ram air becomes

problematic on off-highway applications like loaders. Without ram air, larger fans and radiators are required, and with them come parasitic power loss. Low sulfur fuel and proper oils released for on-highway applications are recommended for EGR engines. If high sulfur fuel is used, sulfates can form which can cause accelerated internal wear of the C-EGR subsystem.

Deere, Volvo, and Komatsu (in larger machines) selected cooled EGR for offhighway applications in spite of the higher complexity of the engine and need for premium fuels and oils. While it achieves the basic goal of compliance, it does so at the cost of maintaining a more complex engine.



The High Pressure Common Rail fuel system found on Cummins QSB4.5, QSB6.7, QSC, and QSL engines provides great performance and contributes to significantly reduced noise levels as well as emissions performance.

ACERT TECHNOLOGY

Caterpillar made a radical decision several years ago to develop a new technology called ACERT. ACERT utilizes the Miller Cycle to achieve lower emissions. Ralph Miller invented this in the 1940s, and several engine manufacturers used it in low-speed engines in ships and power generating plants. It has been studied for use in onhighway and off-highway applications for several years, but Cat is the first to adopt it in a production engine.

The basic focus of ACERT is the valves. In a normal diesel engine, the intake valve closes as the piston rises. This causes compression, which generates heat that ignites the fuel/air mixture. With ACERT, the intake valve is held open by an electro-hydraulic actuator just prior to closing, and high pressure air is forced into the cylinder as the piston rises. There is an actuator for every cylinder. This added complexity makes tune-ups and valve adjustments much more difficult and costly. In addition to the actuators, there are many more controls and a lot more things that can go wrong with the ACERT design. As a result, overhaul costs and general repairs and maintenance costs on the ACERT engine may be higher.

CUMMINS IN-CYLINDER SOLUTION

Cummins took a different tack. Although they have used EGR for on-highway applications, one of Cummins' main goals is to minimize the impact of the emissions changes on the OEM and ultimately the end user. So for off-highway engines, Cummins chose an in-cylinder combustion solution. As a further performance enhancement, a common rail fuel system is incorporated on many of the engine platforms. This reduces emissions to Tier-III levels without the use of complex external hardware. Cummins engines also reach these reductions on the wide range of sulfur content found in offhighway fuels around the globe.

THE KAWASAKI Advantage with cummins

What does that mean for the end user of Kawasaki loaders? It means that he is running the simplest, least complicated, and most durable Tier-III engine on the market. He is running a proven engine platform built on the history of its Tier-II predecessor. All other engine manufacturers are using technology that they did not use for Tier II, so their engine history is more limited. When it comes time for tune-ups and overhauls, the Cummins engines should provide a lower operating cost due to the simpler design.

So, operating cost and reliability are the real bottom line when it comes to Tier-III choices. Do you select radical new concepts like ACERT? On-highway technology like cooled EGR? Or proven platforms with minimal changes like Cummins? The choice is clear. Cummins provides the best option in Tier-III engines for off-highway applications.

KAWASAKI KEEPS IT SIMPLE.



In a world of increasing demands, tighter deadlines, shrinking budgets and complicated contracts, the choice in wheel loaders is simple: Kawasaki.

A FULL-LINE OF RUGGED, Reliable, efficient machines.

- 13 models
- 96 HP 720 HP
- 1.8 cu. yd. 13 cu. yd.

EASY TO OPERATE.

Increased efficiency and productivity come from innovative high-tech features that allow the operator to customize and adapt to the environment and the application...from the comfort of the redesigned cab.

- Adjustable Declutch
- ELS—Efficient Loading System
- Idle Management System
- Variable Boom Kickout
- Power Mode Switch
- Ride Control

EASY TO MAINTAIN.

Even basic servicing is easier than ever, with extended greasing and oil change intervals. Not to mention:

- MODM (Machine Operation Diagnostic Module) provides essential operations and diagnostic information in an easy-to-read LED display.
- K-LINK II monitors and transmits digitally the location, hours, system alarm sensors, engine and machine performance data.
- KLEW provides fast and easy access to a total oil analysis and early warning program.

EASY TO DO BUSINESS WITH.

No run-arounds. No layers and layers of management. No distractions from competing product lines. Wheel loaders are our only business. Got a question? We'll get you an answer. Need a part? It's on its way. Quickly.

- Creative Solutions, Fast Response.
- Focused Resources, Experienced Specialists.
- Flexible Warranty Programs

• Rebuild Center

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