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FOCUS

INTRODUCING THE 95Z7

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Kawasaki

ONE FOCUS. COMPLETE SOLUTIONS.

A POWERFUL NEW PLAYER

The new Kawasaki 95Z7 model redefines what a 21st Century production loader can and should be. It also continues the productive Kawasaki ruggedness that has become the hallmark of the seven-yard class, and introduces the intuitive, productive, and efficient movements available only from sophisticated electronics. Add the Isuzu 6WG1 Tier 4 Interim (IT4) engine — world-renowned for outstanding fuel efficiency and long life — and you get one outstanding, powerful new player to this important production class.

HOW'S THE 95Z7 DIFFERENT?

- ✓ A new standard bucket design enhances bucket-fill ease.
- ✓ The Isuzu engine is extremely fuel efficient and known for its common-sense approach to meet Tier 4 certification.
- ✓ Excavator-style, open-center, load-sensing hydraulics not found in most competitive loaders enhance the operator's ability to efficiently get fuller loads more quickly.
- ✓ The patented IntelliDig feature automatically meters hydraulic power to the cylinders powering the bucket-digging force and the wheel's rimpull force, allowing ideal splitting of power for the fastest, most efficient bucket fill.
- ✓ Another feature in the IntelliTech Operating System, called SimulLoad, automatically meters hydraulic power to the lift and tilt cylinders so both actions can happen simultaneously, while the loader is digging.
- ✓ A third feature, called QuickCycle, increases hydraulic speed while keeping the transmission from upshifting.
- ✓ Two final computer controls provide aids to productivity and fuel efficiency: an override against excessive throttle acceleration, and a shockless declutch for smooth braking on either level or sloped operations.

So, for this important production class where loaders are used all day, every day, the new 95Z7 provides a more accurate and powerful feeling to the operator, and a more productive job of loading trucks or charging screens or hoppers with less fuel burned than most of the competition.

The new Kawasaki Z7 series of wheel loaders makes use of the best engineering prowess of Kawasaki Heavy Industries, parent company to Kawasaki Construction Machinery. KHI is one of the world's largest industrial manufacturers in the world. Additionally, KCM has partnered with other companies like Isuzu to make this series of wheel loaders the most innovatively productive and fuel efficient as possible.

ISUZU ENGINES

By moving to Isuzu, KCM can now offer the most technologically advanced engine in the industry.

The Isuzu 6W Series has developed legendary status for reliability and innovative technology. The Series is quieter and more efficient. Its cooled EGR and highly optimized performance calibrations are a part of Isuzu's Clean Air Solutions (ICAS). Isuzu suggests 500-hour service intervals. Kawasaki covers the engine, providing a two-year/2,000-hour warranty.

The 95Z7 comes with Auto-Idle Shutdown, as do all Z7 machines. This increases fuel economy, and can decrease regeneration frequency.

HYDRAULIC IMPROVEMENTS

Kawasaki has moved from a gear-driven hydraulic pump to a more fuel-efficient and flexible piston pump. This allows increased flexibility for the engine RPMs to match the hydraulic-force needs of the moment.

The Kawasaki torque convertor now has mechanical lock-up at high speeds for direct-drive efficiency, increased speed, and improved fuel economy.

The 95Z7 has an industry-exclusive open-center, load-sensing hydraulic system — similar to those proven on hydraulic excavators. Compared to the closed systems found on competitive wheel loaders, Kawasaki's open-center system provides the operator real feel at the control lever. Along with the hydraulic pilot-control system also found on the 95Z7, these two systems provide the operator with an advantage of "feeling" the effort so he can better adjust his actions for a more productive cycle.

And all Z7 models feature automotive-style, pulse-width modulation shifting, which provides ultra-smooth shifting up and down as the loader moves through the enter/dig/back/travel/dump cycle.

HYDRAULIC CYCLE TIME

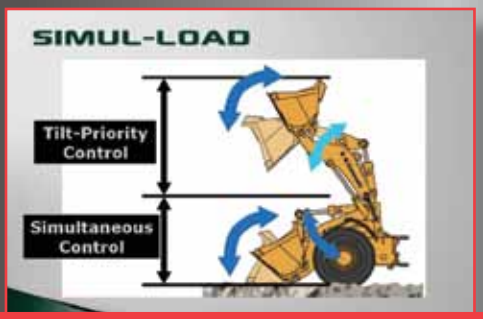
(measured in accordance with SAE J732C)

Lifting Time (at full load)	6.5 sec.
Lowering Time (empty)	4.5 sec.
Bucket Dumping Time	1.2 sec.
TOTAL	***12.2 sec.***

COMPETITIVE SPECS

	KCM 95Z7	Cat 980K	Deere 844K	Volvo L220G	Komatsu WA500-7
Engine	Isuzu 16L	Cat 13L	Deere 13.5L	Volvo 13 L	Komatsu 15L
Horsepower	389/388	406/369	N/A	367/366	357/353
Operating Weight	75,790	68,862	70,629	71,165	76,611
GP Bucket Cap.	7.3	7.0	7.25	7.3	7.3
Breakout Force	53,730	53,548	47,860	51,301	55,115
FT Tipping Load	47,990	45,148	44,136	47,973	54,190
Dump Clearance	10' 9.8"	10' 8"	10' 11"	10' 5.5"	10' 10"
Reach	4' 9.3"	5' 1"	4' 11"	4' 6.3"	4' 11"

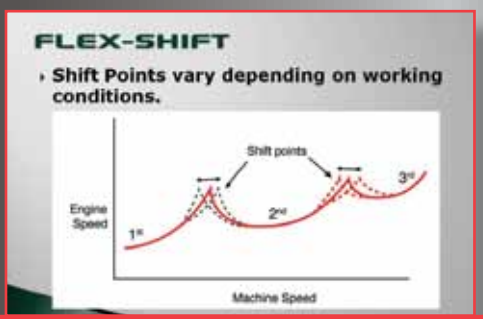
The patented IntelliDig system provides optimal digging effort by automatically balancing the wheel rimpull force and the bucket hydraulic breakout force.



The advanced SimulLoad system automatically maximizes the two functions of bucket tilt and arm lift hydraulic efforts while the loader is moving out of the pile.

In Normal Mode, the computerized system controls operator over-acceleration so just the right amount of fuel is delivered to the engine for efficient engine RPMs and fuel consumption.

Kawasaki's QuickCycle system increases engine RPM for maximum hydraulic force while blocking inappropriate shifting from second to third.



The FlexShift computerized system receives input from multiple sensors to decide the most appropriate time to shift up or down, depending on the working conditions.

OPERATOR COMFORT

The totally redesigned Z7 cab features a panoramic view of the front and sides, and a Kawasaki-exclusive, wide-stance Z-linkage placement for viewing loads between the two cylinders. There is a standard remote camera that displays what's behind the loader whenever reverse is selected — with the image shown in the middle of the newly redesigned LCD instrument panel.

A redesigned, ergonomically correct air-suspension seat is fully adjustable, with the side console also adjustable to fit operator preference. A heated seat is also available.

The cab features increased pressurization and tight insulating molding for a quieter, more dust-free environment. Thermostatically controlled AC temperatures keep the operator functioning at his best.

For more information about the new 95Z7, visit your local Kawasaki dealer or go online to www.kawasakiloaders.com/95Z7.

A comfortable operator is a productive operator. In the Kawasaki Z7s the operator comfort is outstanding. Quiet, convenient, clean, and designed for optimum operator comfort, safety, and productivity.

INCORPORATING NEW TECHNOLOGY

1920s-30s era humorist Will Rogers once said, “Even if you are on the right track, you will get run over if you just sit there.” Today’s contractors can certainly relate, as they grapple with the rapidly quickening pace of business — ranging from new regulations and equipment to dealing with the volatility of a global marketplace.

Take Keadle Lumber Enterprises, for example. This Georgia-based company started in 1947. Founded by Homer Keadle when he acquired half-interest in his uncle’s portable sawmill, the company evolved from sawmilling on the go, to a prominent lumber producer complete with a stationary pine sawmill, hardwood sawmill, a pallet mill, and a wood-treatment facility.

When Homer’s son Steve became majority owner and president in 1997, he knew significant changes were needed in order to move the company into the 21st Century. He also didn’t want to compromise the company’s core principles of operation: provide prompt service and quality products, provide a safe and consistent working environment, be good stewards of all timber and land, and conduct all business and relationships with honesty and integrity.

So, boldly facing the changing times and new economic realities of a global marketplace, Keadle Lumber invested in a new high-tech computerized pine sawmill, abandoned hardwood and pallet production, and sold their wood-treatment facility to another company that provides contract services to Keadle as needed. The combination of new equipment and streamlining products and processes has resulted in, at least, a fifty-percent increase in production.

Their focus today is strictly Southern Yellow Pine lumber, which can be utilized in many different ways — two-inch dimension lumber, 5/4 decking, small timbers, one-inch boards, wood chips, shavings, bark, and sawdust. Thanks to the precision of the new mill, its

The 90Z7 loader helps keep the lumber operation running smoothly — unloading logs and feeding the mill.

Keadle's mill processes over 50 truck-loads of logs a day. After the logs are cut, they are taken over to the kiln for drying.

A computerized sorting system automatically shunts product to the appropriate slot. Four straps hold a pack in place. The system can output 11 or 12 packs an hour.

After drying, the product is then taken to the planer mill where they are given their final finish — like what one would find on lumber at a retail lumber yard or home-improvement center.

Jeff Duncan, Cowin Equipment Sales representative, with Clay Watkins, Parts and Service Supervisor, Keadle Lumber.

(Below) Timber or raw material is supplied by individual land owners and wood suppliers within an 80-mile radius of the mill.

thinner saws, and repurposing the sawdust as fuel for their boilers, they now have zero waste from their mill — a significant achievement.

TIER 4 INTERIM

Another new technology Keadle is using is Tier 4 Interim equipment. So far they have two pieces — a skidder their logging crew uses, and a Kawasaki 90Z7 wheel loader equipped with Wicker logging forks.

"We've bought a number of Kawasaki loaders in the past," explains Clay Watkins, Parts and Service Supervisor. "So when it came time to get another, we had originally considered buying used. But with the depreciation/tax break about to expire and Kawasaki was offering special financing, we decided to go new. Cowin Equipment, our local Kawasaki dealer, was very good about explaining the Tier 4 Interim differences, plus we were looking forward to getting something more fuel efficient. I was afraid that perhaps we bought too small of a machine with the 90, but it keeps the mill going just fine.

"Cowin has been good to us. Their parts guys are really good. We tore up a cylinder on one of our other Kawasakis, and they took one off of their rental unit and installed it for us until a new one came one. Service is of great concern to us, and Cowin takes care of us. We trust them."

As Keadle ventures down the Tier 4 Interim path, they've learned there are some things they can't do the same way anymore — like fuel and lubricants. "We had some problems with fuel contamination with our skidder," says Clay. "So we've learned the necessity of keeping the nozzle clean, the fuel filtered, and the need for above-ground tanks. So we're good to go for the wheel loader.

"We're also learning about zinc-free lube. That's a new one on us. We've had to make a list of all the various lubes and oils for all the equipment here at the lumber yard. It turns out every gear box, every piece of equipment has their own oil. Back in the old days, you just had two oils to worry about. Now we keep up with all this and just add it to the list.

"Another thing that has changed is when maintenance is performed. It used to be monthly. You had a list of what should be done every month, including fluids

"TO STAND STILL IS TO GO BACKWARD."
— Keadle Lumber corporate motto

Most of the company's lumber goes to the construction and housing industry, but is also used by remanufacturers in the production of many varied products.

changes. Not now. Maintenance by the hour is something we've had to get used to. And we're far more careful on what our employees can and can't do on the premises. We keep the area very clean, there's no smoking on the premises, and welders have to take extra precautions to make sure no stray spark starts a fire."

BENEFITS OF NEW TECH

With production up over 50 percent, it's obvious the new mill has been a plus. Besides being more efficient and less wasteful, it can also be programmed as needed to create whatever wood cuts are the most profitable.

"We have the capability of changing the size of wood we run by computer based on market demand. 'Random Lengths' magazine comes out twice a week and provides the average price of lumber for the East and West Coasts. So that's what we base our price on, since we can't sell our lumber for more than the market dictates."

Keadle Lumber employs 85 to 90 people, including a five-man logging crew. Timber or raw material is supplied by individual land owners and wood suppliers within an 80-mile radius of the mill. Wood-treating companies, retail lumber yards, industrial remanufacturers, and wholesalers all purchase Keadle products. Over 80-million board feet are produced each year.

"In the old days, we didn't run by production, we ran by hours," says Clay. "You really didn't know what you had unless you went out there and counted. With the new mill, I can run out there and show you on the board how much board foot we have on hand. We used to shut down Friday at 1 in the afternoon and do maintenance so things were ready to roll on Monday. Now, we work ten-hour days so all of Friday can be for maintenance. But if we don't meet our quota by Friday night, we'll come in on Saturday morning and get it done, leaving the rest of Saturday for maintenance. We have to keep our kilns running steady. We can't run too much or the wood will not dry properly, and we can't run too little because our costs per board foot goes up."

"To Stand Still is to Go Backward." Keadle Lumber embodies their motto, as they look for new products and machinery in order to remain competitive in today's global economy.

Keadle Lumber Enterprises, Inc., Thomaston, Georgia, is serviced by Cowin Equipment, Atlanta, Georgia.

TIER 4 INTERIM ENGINE

THE MYSTERY OF DPF REGENERATION

Tier 4 Interim engine technology may have the reputation of being finicky, even demanding. But in reality, it is quite straightforward when it comes to operation and maintenance. FOCUS magazine is looking at two aspects. The first, as detailed in the Third Issue, 2012, reviewed the need to filter and keep clean the Ultra Low Sulfur Diesel (ULSD), and also briefly discussed engine additives. In this issue, FOCUS will cover how a diesel particulate filter (DPF) works, and the need to keep an eye on the control panel so you know when it is time to get it serviced.

WHAT'S A DPF DO?

A DPF is often paired with a catalytic converter especially designed for diesel engines called a DOC (diesel oxidation catalyst). Their jobs are very different.

DOCs control carbon monoxide, hydro-carbons, smell, and the soluble organic fraction of particulate matter (PM). They have no moving parts and simply chemically oxidize the exhaust to harmless gases. Most engine manufacturers also use the DOC to chemically oxidize the fuel that is added to the exhaust through post injection during regeneration.

DPFs are used in most diesel engines designed and produced in the United States or Japan. Some manufacturers are using DEF (diesel exhaust fluid) to meet iT4a. The DPF approach reduces the PM to ash during regeneration. The DEF approach oxidizes nitrogen oxide (NOx) with the use of ammonia and a Selective Reduction Catalyst (SCR). The DEF approach requires continual refilling of a DEF tank. It appears most manufacturers will utilize both approaches to meet the Tier 4F regulations slated for 2015.

This article covers only the DPF approach as used in Kawasaki wheel-loader models.

While the main job of the DPF is to filter out, or remove PM/soot from the exhaust stream, it too chemically oxidizes passing exhaust to harmless gases.

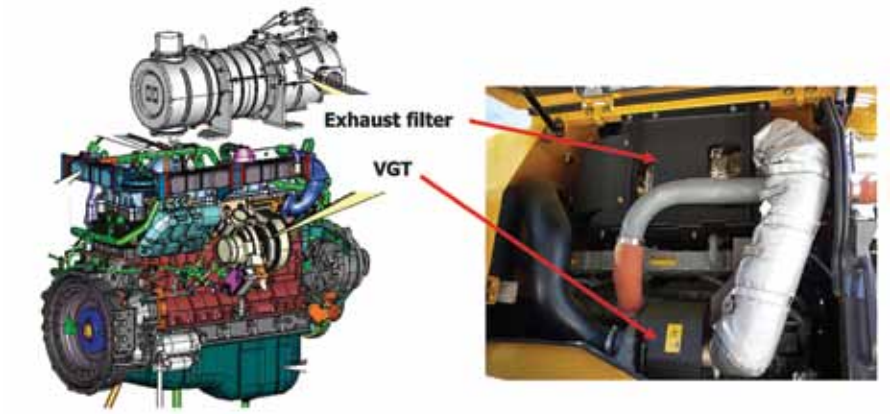
Wall-flow DPFs are what most owners and operators of Tier 4 Interim construction equipment will encounter, including Kawasaki IT4 owners. They use high-tech materials like ceramics, silicon carbide, and metals to trap PM. DPFs are highly efficient, capturing from 85 to 99 percent of the exhaust's PM.

The DPF becomes restricted as it filters PM out of the passing exhaust gases during operation. Hence the need for "regeneration" of the filter.

AUTO REGENERATION

There are two kinds of automatic regeneration — passive and active. Neither requires any activity on the part of the equipment operator. The computer and sensors make the call and initiate the appropriate response. The frequency of regeneration is determined by the amount of PM buildup, which results in an increase in exhaust backpressure.

If your wheel loader is actively working most of the time it is in operation, the high exhaust temperature produced by the engine will reduce most of the PM to ash before it accumulates. This is called passive regeneration.



The DPF/Exhaust Filter is a rugged component that filters particulate emissions from the exhaust very efficiently. It replaces the muffler. The DPF is very effective in trapping particulate emissions. Passive and Active Regeneration keeps the DPF element cleaned without any action required by the operator.

During active regeneration, the machine's computer jumps in and initiates a process that includes the injection of diesel fuel into the engine cylinders during expansion after the power stroke. This process is called post injection. The DOC oxidizes this fuel, which pumps up the heat significantly. This heat reduces the PM in the DPF to ash. The time required for this active regeneration takes 15 to 20 minutes to complete.

In most circumstances, the passive and/or active regeneration of the system keeps the DPF working at peak performance.

MANUAL REGENERATION

If for some reason the engine temperature simply has not been hot enough to allow either the passive or active regeneration, manual regeneration is required. And this does require operator participation.

A light comes on in the instrument panel asking the operator initiate manual regeneration. The operator must stop the machine and activate the regeneration process. The engine RPMs are raised, the machine hydraulics are automatically loaded, and diesel fuel is post injected into engine cylinders during expansion after the power stroke and reacts with the DOC to clean the DPF, just as in the active regeneration process. This takes up to 45 minutes.

This type of manual regeneration effort would not be required in most cases if the wheel loader is actively operated so the correct operating temperature is maintained. Low engine and machine loading and/or lots of idle time are about the only way manual regeneration is required.

If the operator refuses to actively operate the machine in a manner that keeps it running at the correct operating temperature, and refuses to heed the warning light on the instrument panel and the eventual audible alarm asking manual regeneration be initiated, at some point the engine will go into a "limp-home mode" where RPMs and power are greatly reduced to the point that production with the machine will not be possible.

There is a final regeneration process — Forced or Service Regeneration. To execute this procedure, a technician from your dealership must hook up to the machine with KCMA's Maintenance Pro Dr. In some cases the DPF will need to be removed and cleaned or replaced. This, of course takes time — easily a day or more of down time, depending on the procedure.

It's important to note that even with correct engine-temperature operation and automatic regenerations, removal of the DPF for cleaning will eventually be required in order to remove the ash accumulated from regenerations.

HOW LONG WILL THE DPF LAST?

The EPA has stipulated to DPF manufacturers that the filter must last at least 3,000 hours between forced cleanouts for engines 75-173 horsepower, and 4,500 hours for engines 174-750 horsepower. How many of these forced-cleanout service intervals can be made to the same filter is currently unknown because of the newness of the program.

Also, DPFs and DOCs can clog or fail prematurely. For example, using the high sulfur diesel fuel or non CJ-4 engine oil will create havoc by generating more PM, chemically deteriorating the DOC and plugging the DPF. The metallic ash additives found in non CJ-4 engine oil will adhere to the cells within the DPF and cannot be removed. Permanent damage will result.

Tech article provided by Equipment World, MECA.org, and Kawasaki Wheel Loaders.

Z7 INTRODUCING A NEW E.P.I.C. GENERATION

Kawasaki

Kawasaki pioneered the Z-Link design to provide unmatched utility, high breakout force and efficiency in its loaders. The Z7 generation implements brand-new patented technology, industry exclusive innovation, and input from owners and operators all over the world. We've engineered the Z7 series from the ground up!

> 15 Models > .78–13.5 cu.yd. > 45 HP–720 HP

- EFFICIENT
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