

Buying File: Wheel Loaders, 100-200 HP

By FRANK RACZON, Senior Editor

Hydraulic quick couplers have become more common on 100-to-200-horsepower loaders.

Improved Markets Boost Smaller Wheel Loaders

Utility-class loaders gain sales and features, but some OEMs find they're taking a bite out of skid steers

Buyers looking at wheel loaders in the versatile 100-to-200-horsepower size class will find improved markets and units loaded with features, though some manufacturers are finding the more robust market siphons some skid steer sales.

"Wheel loaders in this size class make up the highest sales volume of any wheel loader size class," says Mike Stark, Doosan's wheel loader product specialist. "When we compare 2014 sales to 2013 based on data provided by AEM, every quarter from 2014 was up from 2013. It's still too early to tell how this size class is doing in 2015, but we know historically that the end of the year is a key buying time for this size of wheel loader."

Hyundai's marketing manager, Corey Rogers, agrees on growth, but does offer a glimpse into 2015 so far. "The overall industry trend has grown over the past three years. In the first half of 2013 compared to the same period in 2014, year-over-year growth in these classes averaged around 8 percent. This year for the same period, 2015 North American industry growth in those specific net horsepower classes is around 2 percent," Rogers says.

Nick Tullo, sales manager for SDLG North America,

adds an international perspective. "This size class machine makes up 60 percent of the wheel loader market," he says. "The market has mainly increased in this size class since 2013 mostly due to construction expenditures globally, growing population centers and an expanding rental market. The slowdown in China has retracted growth throughout 2015 globally, but now North America is the focal market for most OEMs," Tullo says.

"We've seen this market class grow 15 percent annually since 2010, particularly as dealers re-fleeted during the downturn," says Eric Yeomans, product manager for GPPE Products, Volvo Construction Equipment. "The major segments exhibiting growth are dealer-owned and independent rental fleets, governmental, agriculture, commercial building, recycling and road construction."

Yeomans notes impressive growth in the recycling segment and doesn't count out a generally slumping energy market. "Recycling, and in particular, loading operations at waste transfer stations, has seen strong growth due to stricter environmental regulations. The energy segment, while currently in a down cycle, has seen good utilization of this size class loader for pipe

placement and loading, and assisting cranes in setting windmills,” he says.

Rental activity in the 100-to-200-horsepower segment seems to be stronger than ever.

“The rental segment has seen the biggest changes,” says Crain McGinnis, Komatsu’s product marketing manager for wheel loaders. “As the life cycle of a project is shortened from bidding to quoting to starting to completion, more companies find they need additional equipment quickly for new projects. Renting or leasing offers these customers the option to get out of the equipment if another job doesn’t develop before the current one is finished. Of course, we hope they’ll find more work and just purchase their loader, but customers now lease instead of purchasing older machines.”

Some OEMs feel smaller loaders are poaching sales from skid steer loaders and an exclusive sampling of *Construction Equipment* readers confirms this is occurring at least on some scale (see graph, bottom right). “The compact wheel loader market has shown remarkable growth, in part due to the transition from skid steer loaders, and additionally, the compact loader is the new utility piece on job sites and in material production,” says Sam Shelton, marketing administrator for loader specialist Kawasaki. “Compact wheel loaders are gaining market share from skid steer loaders.”

In an aggressive sales bulletin on the subject, the company mentions some reasons why, including greater tipping load, more reach for loading into trucks, more speed in load-and-carry operations, better all-around visibility, longer tire life, and a longer useful life. Kawasaki says compact loaders can last 6,000 to 8,000 hours in most applications, and that most skid steers are used for only about 5,000 hours before they are retired.

“Some contractors are replacing skid steers with small loaders,” McGinnis concurs. “As customers see more utilization and spend more time in the machine, they begin to appreciate the extra comfort of a wheel loader. Longevity and performance are key criteria; once a contractor can get enough utilization, the smaller loaders make more sense.”

Volvo’s Yeomans also cites performance and performance-driven improvements, which reinforce the fact small loaders are doing more.

“The trend that we’re seeing for Volvo loaders is that customers are getting more performance out of their machines, and in some cases, are able to downsize to a lower horsepower model and still improve their productivity—and save in total cost of ownership,” Yeomans



says. “This is the result of design enhancements that include better pumps, matched components and more efficient engines.”

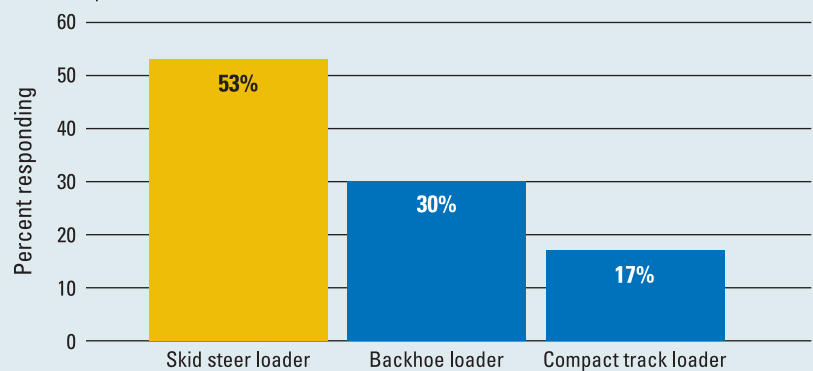
McGinnis also mentions that users want to do more with less, and because smaller machines have become more powerful with increased horsepower, tipping load and breakout force, smaller machines are more of an option than they once were.

“A machine in a lower size class typically costs less

Some OEMs are reporting that smaller wheel loaders are negatively affecting skid steer sales; one advantage wheel loaders have over skid steers is in load-and-carry operations, particularly where distances figure into the equation.

Usurping Skid Steers

(% that replaced with a wheel loader)



Source: *Construction Equipment*

Of the 38 percent of respondents to an exclusive *Construction Equipment* survey who said they’ve used a wheel loader under 200 horsepower to replace another machine type within the last two years, 53 percent replaced a skid steer loader. Backhoe loader was the second-most replaced machine, at 30 percent.

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A Terex TL120 charges a pile of gravel. Manufacturers have been bringing hydrostatic drive to smaller loaders like this one.

initially, has lower over all owning and operating costs and fits into tighter spaces [than a larger loader],” McGinnis says. “More specifically, there is a trend towards unifying the loaders below 175 horsepower. Historically, most OEMs had at least two variations on each model with different types of linkages [Z-bar versus parallel lift versus tool carrier]. Now you see a push toward one machine that can be used in all applications.”

McGinnis says Komatsu’s strategy was to improve its “PZ” linkage by increasing the breakout forces over pre-

vious models. “This created a parallel-lift machine that can also behave like a traditional Z-bar for both pallet handling and raw digging power, respectively.”

Terex, in addition to offering hydrostatic drive in its TL120, has a linkage that incorporates both Z-bar and parallel designs, giving operators the breakout power of Z-bar as well as parallel lifting capabilities. Volvo calls the double-acting linkage on its H Series 100-to-200-horsepower models a Torque Parallel, or TP, linkage, and touts its front visibility along with breakout torque and parallel movement throughout the entire lifting range.

Another trend manufacturers are seeing and acting upon is the demand for hydraulic quick couplers for faster and easier attachment use. “A greater majority of loaders are purchased with hydraulic couplers and are performing more functions on a job site, which allows customers to reduce the overall size of their fleets and reduce operating costs,” says Chris Cline, product marketing manager, utility wheel loaders, John Deere Construction & Forestry.

“The quick coupler allows the operator to change attachments from inside the cab with a push of the button, and advancements in couplers have made them lighter, stronger, and improved the operator’s ability to see the attachment as well,” McGinnis says.

“Hydraulic quick couplers are very common, especially with the tool carrier iterations, to quickly switch from a bucket to a pallet fork,” Doosan’s Stark says. “For example, on job sites where users are handling pipes, it makes it convenient to connect the pallet fork to pick up and transport pipes, then switch to a bucket to move material.”

Other features operators are showing a preference for include hydrostatic drive and increased automation. Both of these will become more prevalent in the future, as well. Manufacturers are already betting on it.

“Automation is growing in popularity across all product groups,” says Vincent Whelan, VP of Product, JCB. “When it comes to wheel loaders, we can anticipate more automation, primarily in the cab with controls, and features moving more towards automotive styling, comfort and productivity. Also specific to wheel loaders, features such as automatic weighing and last-load recall, which allows the machine to be refilled to the same capacity each time, creates efficiencies that help reduce personnel costs and maximize machine use.”

Whelan also sees versatility continuing to be a theme. “We anticipate small to mid-size loaders will increasingly be utilized as tool carriers, with traditional loaders con-

Cost of Ownership

Size class (hp)	Average price	Hourly rate*
100-109	\$79,507	\$30.06
110-119	\$83,594	\$25.90
120-134	\$105,783	\$31.58
135-149	\$126,791	\$30.02
150-174	\$136,393	\$35.33
175-199	\$157,881	\$35.44

*Hourly rate represents the monthly ownership costs divided by 176, plus operating cost. Unit prices used in this calculation: diesel fuel at \$3.46 per gallon; mechanic’s wage at \$52.33 per hour; and money costs at 2.125 percent.

Source: EquipmentWatch.com, 800.669.3282

tinuing to be used as primary material movers,” he says.

“Also, the versatility of wheel loaders allow them to be used in hazardous and dangerous conditions where they can move large amounts of material quickly. Remote control technology exists today, but is sparsely used. It will grow in popularity in handling of hazardous materials,” according to Whelan.

But what’s right for managers, now and in the future, still depends on company and application needs.

“Make sure you explain to your dealer what your needs are and ask the dealer a lot of questions about machine features and how those features can help the bottom line of their business to make them more profitable,” Deere’s Cline says.

Stark lays out a logical order or pre-purchase considerations.

“A fleet manager should start with a thorough review of wheel loader specifications,” he says. “Some key specs are static tip load and full-turn tip load. Next, managers should size the wheel loader to the application and match the correct bucket size to the machine. Some things to consider with a smaller wheel loader include a tighter turning radius than larger wheel loaders, and the ability to

complete more cycles because the operator is able to maneuver better on a job site than a larger wheel loader,”

SDLG, in tune with its value-priced market position, says managers should understand the difference between features they really need for their operation and what may be excess. “A value-priced machine would complement their fleet in helping keep capital expenditures controlled,” Tullo says. “And although we have several machines working 24-hour shifts for several months out of the year in higher-production applications, an SDLG loader, with its new machine warranty, and namely, the price, works well in low-hour applications where a used, or even new, premium loader would otherwise work.”

Komatsu’s McGinnis says fleet managers should consider overall owning and operating costs for the machine, and not just initial purchase price. He also cautions that size matters.

“The days of just picking the machine that weighs the most or has the most horsepower are over,” he says. “Decide what job needs to be performed and talk to an equipment salesperson about what size they recommend. We find customers sometimes overestimate or underestimate the size machine they may need.” ☒



Smaller wheel loaders have become more attachment friendly, rivaling the versatility of skid steers.

Gallery of Wheel Loaders



DOOSAN

Standard Limited Slip Differential

The Doosan DL250-5 and DL250TC-5 (tool carrier) wheel loaders replace the “dash-3” (Tier 4-Interim) models with a Tier 4-compliant Doosan DL06 diesel engine. Customers can choose between a Z-bar loader linkage for the DL250-5, and a parallel lift-arm design for the DL250TC-5. Limited-slip differentials are standard for both models. An auto-shutdown system allows operators to configure the idle time before auto shutdown from 3 to 60 minutes. When enabled, the feature will shut down the wheel loader’s engine when the preset idle time is met. Also, a new fuel consumption gauge informs operators how much fuel the machine is using in real time. Two rear LED lamps provide better visibility when working at night.

Circle 801 on the reader service card



LIEBHERR

Energy-Efficient Technologies

The L 538 equipped for standard operations features a Z-bar linkage, achieves a tipping load straight of 22,485 pounds at an operating weight of 29,000 pounds and is driven by a 154-horsepower engine. The implementation of energy efficiency technologies such as the hydrostatic drive, combined with the Liebherr Power Efficiency system (LPE), optimizes the interaction between drive components, according to the company. This system is able to adjust the performance and power for every working situation, enhancing the efficiency of the wheel loader and providing additional fuel savings up to 25 percent.

Circle 802 on the reader service card

SDLG

Made for North America

SDLG’s LG948L wheel loader has a 3-cubic-yard bucket capacity and is engineered specifically for the North American market. Stability was the focus, according to the company, and the machine is designed to accommodate a long boom configuration without additional counterweights. Unit also has dry disc brakes and a power shift transmission, along with a new-machine warranty.

Circle 803 on the reader service card



VOLVO

“Torque Parallel” Linkage

The Volvo L60H, L70H, and L90H loaders are built with a Torque Parallel (TP) linkage that combines the benefits of Z-bar and parallel linkage to deliver high break-out torque and yet offer parallel movement throughout the entire lifting range, the company says. Double seals on all linkage pins retain lubricating grease, and the TP linkage geometry provides better bucket roll-back angles for stability and less spillage. Units also are equipped with a counter shaft transmission said to endure high levels of stress, and various tailored settings can be selected by the operator to match all applications from short-cycle truck loading to long-distance load and carry operations. Front axles have 100-percent differential locks.

Circle 804 on the reader service card





TEREX

Increased Power, Lower Emissions

The TL120 compact wheel loader has the Terex Smart Control operating system, a quiet cab offering a good view of the ground for the operator, and a new cooling system. The 101-horsepower Tier 4-Interim Deutz engine provides the 16,653-pound TL120 with approximately 16 percent more power and 90 percent lower exhaust emissions from its predecessor, according to the company. Similar to menu guides on smart phones, operating the Terex Smart Control is very intuitive. Within the cab a new dashboard display provides a better at-a-glance of machine operation information, while the multi-function joystick comes with an electro-proportional control circuit and a slow/fast key for precise handling.

Circle 805 on the reader service card



KAWASAKI

Hydrostatic Transmission

The Kawasaki 67Z can be equipped with a 3.1-cubic-yard general-purpose bucket for material densities between 2,800 and 3,000 pounds/cubic yard. For loose materials between 2,600 and 2,800 pounds/cubic yard, the 67Z has a 3.5-cubic-yard material-handling bucket. A wide range of couplers and attachments are also available. The unit is powered by a Tier 4-Interim Isuzu 4HK1 diesel engine, rated at 152 net horsepower, and the hydrostatic transmission consists of two electrically controlled variable-displacement axial piston-type hydraulic motors in conjunction with a summation gearbox. A variable-displacement piston pump drives the motors. Axles are equipped with limited slip differentials.

Circle 806 on the reader service card

JCB

No DPF or Exhaust Aftertreatment

The JCB 427 is powered by a 158-horsepower Cummins QSB 6.7-liter engine that does not require a DPF or exhaust aftertreatment. The unit also features a lower-speed cooling fan, low idle speed, an optional engine shutdown mode and selectable engine modes (power and economy). These selectable engine modes allow the 427 to be matched to its application, with the economy mode providing increased efficiency for lighter tasks by limiting the engine speed to 1,800 rpm. A ZF four-speed automatic power shift transmission comes standard with a new five-speed power shift box also available. A lock-up torque converter on the five-speed transmission activates in gears 2-5.

Circle 807 on the reader service card



JOHN DEERE

Utility-class Loaders Go T4-F

The 444K, 524K, and 544K utility-class wheel loaders have been updated to Tier 4-Final with the implementation of John Deere PowerTech diesel engines. The engines deliver 124 horsepower, 141 horsepower, and 163 horsepower to the 444K, 524K, and 544K, respectively. A PowerShift torque-converter transmission employs Smart-Shift technology to continuously evaluate speed and load conditions. The 544K's new standard five-speed transmission with lockup torque converter in gears 2-5 offers increased acceleration; speeds cycles; and optimizes power and fuel efficiency during transport, roading, and ramp climbing, Deere says. An enhanced multifunction monitor displays diagnostic and maintenance information.

Circle 808 on the reader service card



Gallery of Wheel Loaders



KOMATSU

SmartLoader Logic, Lockup Torque Converter

The WA380-8 wheel loader has a 6.69-liter, 191-horsepower Komatsu SAA6D107E-3, variable-geometry turbocharged and aftercooled Tier 4-Final-certified engine that uses up to six percent less fuel than its Tier 4-Interim predecessor. SmartLoader Logic software combines with a lockup torque converter, which activates in second, third and fourth gears. Together, the system provides optimal engine torque for improved acceleration, hill climbing, a higher top speed, and fuel savings, Komatsu says. The engine uses an advanced electronic control system to manage the airflow rate, fuel injection, combustion parameters, and aftertreatment functions to optimize performance, reduce emissions, and provide diagnostic capability.

Circle 809 on the reader service card



CATERPILLAR

Increased Power, Higher Tip Loads

The M-Series small wheel loaders (926M, 930M, 938M) have increased engine power and higher tip loads for improved performance, Caterpillar says. A Cat C7.1 ACERT engine powers the three units, and uses a “fit-for-life” DPF and SCR. Regeneration of the DPF occurs passively at a low temperature. The step-less, four-range, electronically controlled, intelligent hydrostatic drive system has been further enhanced to include operator-selected power train modes including a conventional Hystat mode with aggressive engine braking, refined Torque Converter mode allowing the machine to free wheel down hills and around grades, and an Ice mode setting tuned to maximize control in slippery underfoot conditions.

Circle 810 on the reader service card

CASE

Tool Carrier or Extended-reach Linkages

Case Construction Equipment’s 621F and 721F wheel loaders now meet Tier 4-Final emissions standards with an SCR solution and DEF. The company says the system improves fuel efficiency (up to 20 percent greater than previous solutions), and lowers exhaust temperatures and fuel consumption. It also requires no DPF regeneration or maintenance. The 621F and 721F feature a 6.7-liter engine that produces 162 and 179 net rated horsepower, respectively. Both machines are also available with XT (tool carrier) or XR (extended reach) linkage and in specialty configurations. A standard engine shutdown feature on each model allows the operator to limit engine idle time.

Circle 811 on the reader service card



HYUNDAI

Ten Percent Larger Cabs

Hyundai HL900 Series wheel loader models, including the HL940 and HL935, feature a number of improvements, Hyundai says, including 5 percent greater productivity than the previous 9A series loaders and 10 percent lower fuel consumption than the previous series. An Eco Pedal automatically detects foot pressure and adjusts power modes according to job demand. Electro-hydraulic fingertip control provides additional precision and reduces operator fatigue. The color-changing Eco Gauge provides the operator with a visual reference of fuel efficiency, total fuel consumption, and average fuel data. Cabs are 10 percent larger than previous models.

Circle 812 on the reader service card

