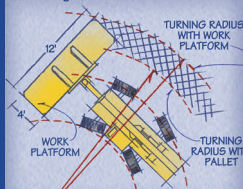


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lift...and when not



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T170 has big-rig
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attachment cuts
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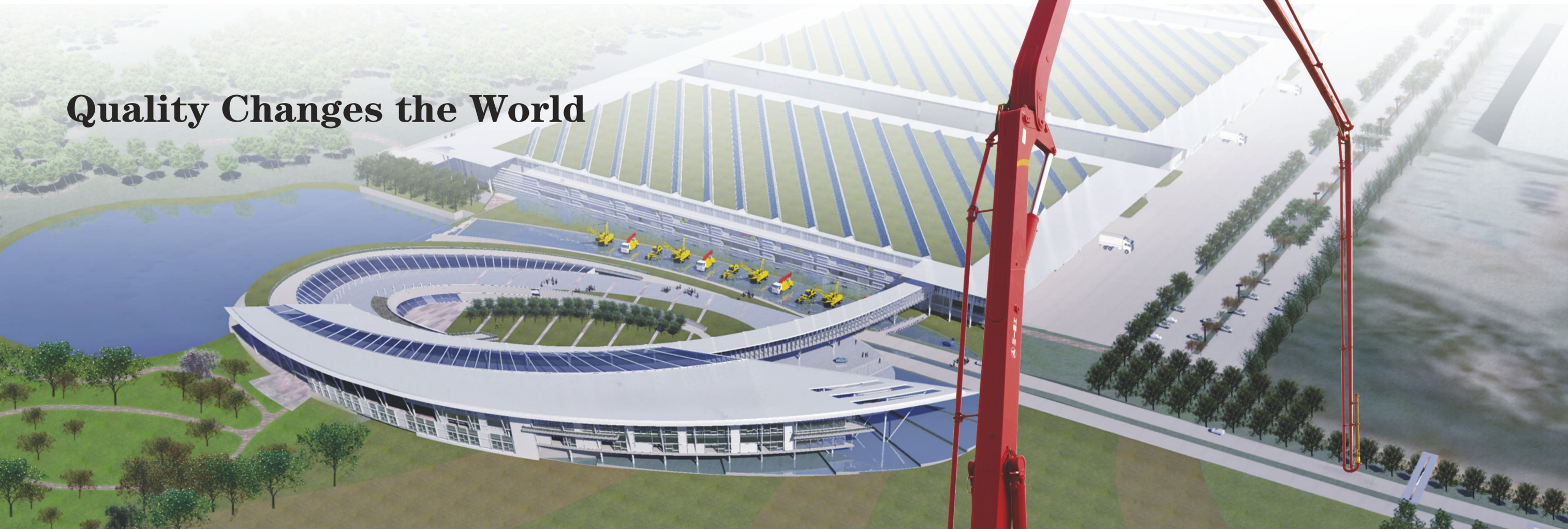


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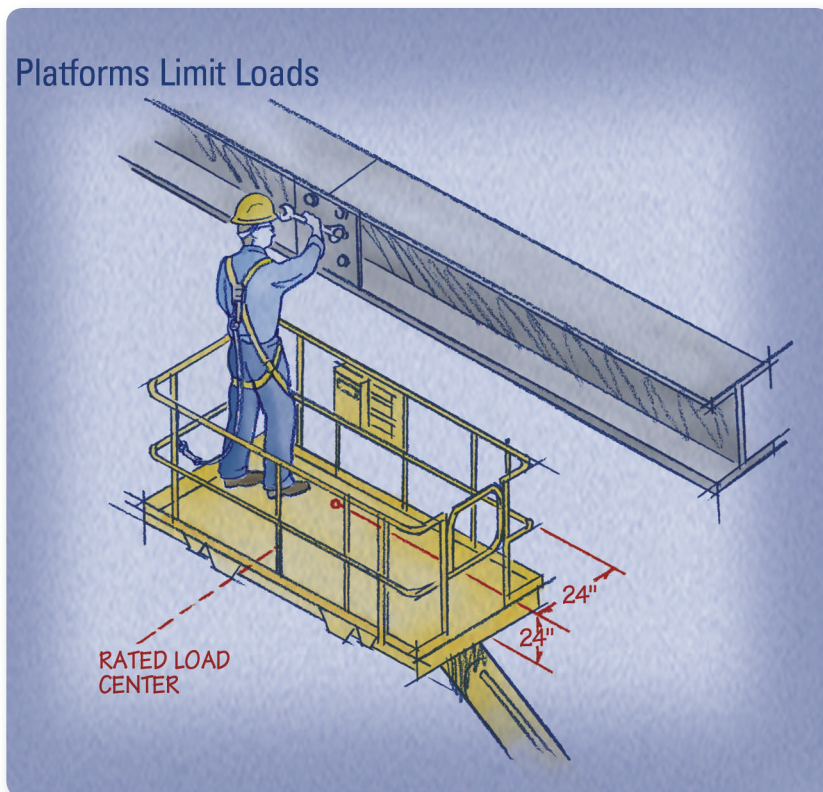
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Cover photo: George Pfoertner ©

FEATURES

Platforms Limit Loads



PRODUCTION HEROES: Telehandlers

26 Accept Telehandler Limits Before Lifting People

Work platforms mounted on telehandlers offer an option for giving workers access to elevated tasks, but using the platform safely and productively is largely a matter of remembering the many things this equipment combination cannot do. Because they're not designed with the same safety equipment as an aerial work platform, telescopic handlers should only lift people to heights under limited conditions. Perhaps the heart of the problem is that people are tempted to use a telehandler to lift people any time it helps them finish a job no matter what equipment is at hand. Executive Editor Larry Stewart explains the safety measures operators need to know.



HANDS-ON TRUCKING

30 Midrange T170: The Real Deal

What's a "premium" truck worth? A few thousand dollars above the going rate for a mass-produced vehicle? Kenworth Truck hopes that's the way prospective buyers will look at its T170, which brings big-rig attributes to the lower end of the midrange market.



BUYING FILE

34 Rolling to the Head of the Class

Tandem asphalt compactors need to operate as efficiently as possible. Leading OEMs have responded with technological advances to their machines, but even the most progressive and optimistic of product development professionals warn that factors beyond their control — the quality of mix delivered to the site, the local ground conditions and the weather — remain to frustrate even the most well-equipped contractors.

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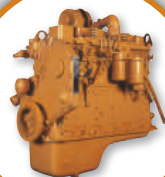
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Mentor for Tomorrow

Joshua son of Nun completed the final leg of the exodus recorded in the Bible. He took his people across the Jordan River, through the city-state of Jericho, and conquered 31 kings in securing the promised land. You could say he was a great leader.

But before Joshua took over, he spent 40-plus years as the No. 2 under Moses, arguably the greatest leader of the Bible. Even Moses had a succession plan.

We've long discussed the technician shortage in this space, but the manager of an organization's fleet must also be concerned about his own replacement. Where are tomorrow's equipment managers?

Most managers have identified someone in their organizations with talent and promise. In many cases, this individual mirrors the manager's background. In other cases, it's a top performer we can presume will want to move into a management role.

It's a manager's responsibility to groom a successor. It's a manager's responsibility to evaluate the role of equipment manager and determine the qualities and skills required to succeed. As asset-management principles, including fiscal and regulatory responsibilities, land in the equipment side of the business, managers need an even broader knowledge base.

We take for granted the technical skills and passion for equipment, but an effective equipment manager requires interpersonal skills, too. He must be able to deal with people, not just machines. He interacts with his employees, his peers, and his superiors, including corporate-level superiors in many cases.

Managers can employ three strategies to groom a successor. Training, of course, is an obvious tactic. Guided experience is another. Make sure the employee has ample opportunity to be involved in decision-making processes, for example.

The most effective strategy, though, is mentoring. Bring an individual into a one-on-one relationship that goes beyond simply passing along knowledge. A mentoring relationship provides for an even deeper transfer of traits.

Moses built a mentoring relationship with Joshua. Joshua had a passion for the promised land, but Moses molded him into a leader.



Rod Sutton, Editor in Chief

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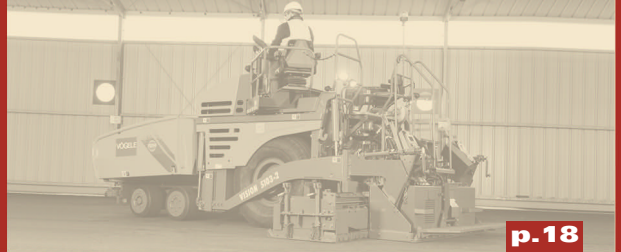
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MARKET WATCH

By KATIE WEILER, Managing Editor



p. 18

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◀ Voegle

The 11,700-pound Super 700 asphalt paver is a compact machine that reaches confined jobsites with a track gauge of 3 feet 7 inches and clearance width of 4 feet. The electrically heated AB 200 V screed paves widths from 20 inches to 10 feet 6 inches. The screed allows paving up to within 2 inches of obstacles such as walls, trees and curbs. Each wing of the 5.5-ton hopper can be raised independently, and there are three individual, reversible drives for the conveyor and each auger. The Super 700 is powered by a liquid-cooled Deutz diesel rated at 57 horsepower.

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▶ Yanmar

The CBL 40 compact backhoe loader uses a heavy-duty single-frame chassis, a Yanmar 3TNV84T diesel engine (rated at 37.2 horsepower) and a newly developed transmission. This 7,750-pound machine has a forward speed of 13.7 mph and a reverse speed of 7.8 mph. Bucket breakout force is rated at 4,850 pounds. It features a loader Quick Coupler to expedite attachment changes; mechanical parallel linkage for automatic bucket leveling; a short nose; and variable-displacement, axial-piston hydraulic pumps.

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▶ JCB

The 64,595-pound JS290 Auto and 77,162-pound JS360 Auto will fill gaps in JCB's JS Auto excavator range. Both new models feature a redesigned undercarriage, refined boom and dipper-arm layout, ground-level service access, and increased cooling capacity. In addition, the new JS520 Auto is now the largest model in the JCB range, weighing in at 114,660 pounds.

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◀ Terex Roadbuilding

Super-portable Terex E275P asphalt plant with counterflow drum mixer can produce up to 275 tons per hour and can be moved in only five loads. Fewer connections than traditional portable plants and no-crane set-up allow the E275P to be transported and completely set up over a weekend. Terex says the drum can make various mix designs, including Stone Matrix Asphalts and Superpave.

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Kobelco

The 17SR Acera zero tail swing mini-excavator has an operating weight of 3,638 pounds. Powered by a 15.2-horsepower diesel, the machine has a bucket breakout force of 2,900 pounds — 11 percent more than previously. Maximum dig depth is 7.1 feet. Kobelco's Smart Hydraulic System has three pumps that ensure maximum power for simultaneous lifting, swinging and travel operations.

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JCB

JCB's new 5.5-ton mini-excavator is available as both a reduced-tail-swing model (8055 RTS) and as a zero-tail-swing model (8055 ZTS). Weighing 11,464 pounds, the 8055's design includes factory-fitted air conditioning and a combined hammer and low-flow hydraulic circuit that works with secondary auxiliary piping. At the rear of the machine, the 8055 RTS has a 2.1-inch tail-swing, and the 8055 ZTS can rotate within the width of its tracks. The machines have maximum digging depth of 12 feet 4 inches.

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GOMACO

GOMACO's C-750 cylinder finisher, with the capability of finishing concrete up to 156 feet wide, has many of the same features as the C-450 cylinder finisher. Features include automatic advance, automatic self-widening carriage, powered widening to maintain crown position on tapered decks, and an enhanced monitoring system. An auger levels the concrete, the cylinders consolidate and finish the material, and the float pan seals and textures the surface of the slab. A 360-degree turntable on the upper carriage allows maximum skewing of the undercarriage to keep the finishing cylinders parallel to the center of the slab.

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Vermeer

With the ability to maneuver around land-clearing jobsites without the need for additional support equipment, the self-propelled HG400TX horizontal grinder can be controlled by a wireless remote control that allows the operator to control most functions from a distance up to 300 feet. A 440-horsepower Caterpillar C13 ACERT engine powers the grinder's exclusive duplex drum, which features eight hammers and 16 cutters.

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Manitou

Combining features of the MLT 634 and MLT 741 models it replaces, the new MLT 735 multi-purpose telehandler additionally offers operators the patented JSM, a new joystick mounted on the armrest that serves as an ergonomic extension of the human arm. The MLT 735 uses a 123-horsepower Perkins Tier-3 engine to generate lift capacity of 7,500 pounds, maximum lift height of 22 feet 6 inches, and forward reach of 12 feet 9 inches.

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Market Watch



Terex

The Rustler R3 portable concrete batch plant now is available with a three-bin option. The plant stores three aggregates in line, and its configuration, says Terex, is built nearly to the same dimensions as the standard two-bin design, so the three-bin R3 does not sacrifice storage capacities. Winged bolt-on bin extensions for the sides, ends and center quickly fold inward and to the sides of the frame to eliminate “loose loads” when transporting. In the three-bin configuration, the plant’s hydraulically self-erecting silo is designed for set up within 30 minutes.

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Mustang

Mustang adds the 2803ZT to its line of compact excavators. This is zero tail swing, but it has a longer undercarriage, Mustang says. Side-mounted engine and rear-mounted hydraulic and fuel tanks make maintenance points accessible.

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Ditch Witch

The JT4020 Mach 1 and JT4020 All Terrain horizontal directional drills have been upgraded with welded, double rack-and-pinion thrust drive system. The upgrade, says the company, will enable the machines to withstand “rigors” of long bores and tough soil conditions.

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New Holland

New Holland B95B and B95BTC backhoe loaders have a sloped, flip-up hood for easy engine access and visibility, and a curved-boom design for additional clearance when transporting.

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John Deere

The compact 60D excavator has a height of 8 feet 5 inches, a width of 6 feet 7 inches, and a tail swing overhang of 12 inches at 90 degrees. The machine’s Tier 4 engines run at 40.5 horsepower and 2,000 rpm. Model 85D has a swing-boom, increased swing torque and draw bar pull, and a cab that houses an LCD monitor detailing key machine functions.

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Vögele

Eight-foot Vision 5100-2 and 503-2 pavers have no material-flow gates because independent conveyor and auger drives either automatically or manually adjust material flow to maintain the head of material in front of the screed. Vögele offers an optional hydraulic front apron that prevents forward spillage. As the hopper closes, the front apron rises. Niveltronic Plus automated

grade and slope control system is integrated into the tractor and screed. Pavers are powered by 170-horsepower Cummins QSB 6.7 diesel engines.

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MANUFACTURER NEWS

Doosan Backs a Winner

Kyle Busch, driver of the No. 20 Doosan Infracore Toyota for Joe Gibbs Racing, scored his third consecutive NASCAR Nationwide Series victory in April's Corona Mexico 200 at the Autodromo Hermanos Rodriguez — the legendary former-Formula 1 road course in Mexico City. Busch passed road-course specialist Scott Pruett for the lead with nine laps remaining in the 80-lap event around the eight-turn circuit. He held off a handful of pursuers including Pruett and Marcos Ambrose for his first road course victory in any



Kyle Busch wins the Corona Mexico 200. Busch and the Doosan-sponsored car No. 20 held second place in NASCAR's Nationwide Series as of the first of May.

NASCAR series.

Corona Mexico 200 marked Doosan Infracore's first foray as a primary sponsor in a NASCAR race. Doosan Infracore purchased Bobcat and Ingersoll-Rand's utility equipment group.

STATUS & FORECAST HOUSING STARTS

Housing permits, starts and sales increased in April for the first time in many months signaling that the market is stabilizing. It will be a slow recovery. No significant pickup is expected until late this year. Only 30 percent of the drop in starts from 2006 to 2008 will be recovered by the end of next year.

For more analysis, visit Economic Outlook at ConstructionEquipment.com.

(Annual rate, thousands)



Source: U.S. Department of Commerce

MANUFACTURER NEWS

Caterpillar-Branded On-Highway Truck on the Way

Come 2010, driving your Caterpillar down the highway won't be about what and who is powering your traditional brand of on-road truck. It will actually mark the make of truck itself.

As part of a strategic alliance with truck and engine manufacturer Navistar, Caterpillar will, for the first time, offer a self-branded, severe-service, on-highway truck. As jointly announced June 12, the companies have a non-binding memorandum of understanding to pursue on-highway truck business opportunities and cooperate on a variety of diesel-engine platforms.

"Concurrent with this new strategic direction, Caterpillar has independently determined that we will not supply an EPA-2010-compliant engine to truck and other on-highway original equipment manufacturers," says George Taylor, Caterpillar director, global on-highway. "Instead, in North America we will have a Caterpillar vocational construction truck that's specifically designed to complement the Caterpillar construction equipment line. Our targeted segments initially will include construction, logging, oilfields, low-boy and other vocational markets where we participate."

The Caterpillar plan heading to the 2010 truck debut, says Taylor, is to leverage Navistar truck design, development and manufacturing with Caterpillar cab design and other equipment technologies. The projection for 2010 is for a Caterpillar-branded diesel engine produced by Navistar.

"This will be a purpose-built truck, differentiated leveraging Caterpillar technologies wherever possible," says Taylor.

With its trademarked Cat Yellow, Caterpillar is the world's largest manufacturer of construction and mining equipment, recording 2007 sales and revenues of \$44.96 billion.

For Navistar, traditionally concentrated on serving the North American on-highway market with trucks and engines, the alliance offers access to a Caterpillar worldwide dealer network that boasts some 4,700 points of distribution, says Mark Stasell, vice president and general manager, Navistar Truck Group. Of the worldwide market of 1.7 million heavy-duty trucks, North America only represents 17 percent.

For Caterpillar, the agreement with Navistar will mark a departure from nearly 40 years as an independent supplier of diesel engines to various other on-truck brands.

"The writing's on the wall for independent engine suppliers," says Taylor. "We wanted to make sure that we proactively took action before we were in a corner where we had to."

Caterpillar and its dealers will continue to provide product support and service beyond 2010 for all Caterpillar engines, regardless of the brand of truck, meaning those Cat truck engines in use now and those purchased heading up to the 2010 Cat truck debut will be covered in perpetuity.

— MIKE ANDERSON

Managers Digest

For more headlines: ConstructionEquipment.com

MANUFACTURER NEWS

Deere Trains Operators Via PC

John Deere has integrated web learning, PC-based simulation, instructor-led training, and proven instructional strategies to create a total operator-training solution. Real-world tasks, safety focus, and portability ensure that operators can be trained no matter where they are. The John Deere Excavator Simulator, available through dealers, challenges trainees to set up for trenching, set a trench box, dig a level trench, pick and place pipe, load a truck



Folding accessories to a PC-based training simulator allow operators to sharpen their skills at several excavator tasks by working to a job "budget" affected by their actions.

from a bench, park at the end of the day, and load onto a trailer.

Scores are based on a jobsite budget in

which operator and owning and operating costs are tabulated. Profit per yard is calculated on the production tasks. Operators appreciate their contribution or recognize their deduction from jobsite funds based on performance. Real-time feedback allows trainees to correct mistakes and be made aware of potential hazards before they are encountered.

During assessment mode, learner performance is securely re-

corded in an integrated database. Dusty Terry, a professional operator from Knife River says, "this simulator could

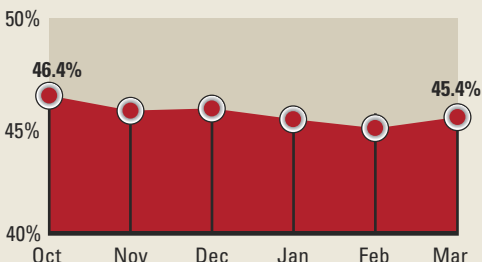
cut two weeks off training and make an operator 60 percent more trained when put on a machine."

USED EQUIPMENT

March Values Increase

The Rouse Value Index

(Avg. orderly liquidation value as % of cost)



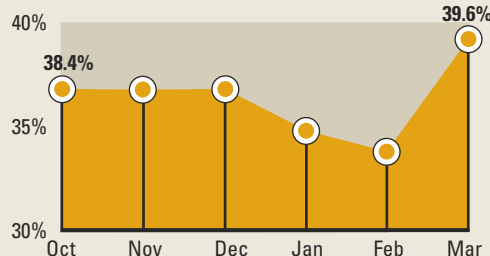
Note: Orderly liquidation value is expressed as a percentage of replacement cost (average cost paid for a new unit by large rental companies and dealers) for the average age of equipment within that category.

Includes 10 categories of equipment common to rental fleets.
Source: Rouse Asset Services

Orderly liquidation values in March recorded their first "significant" increase since June 2007, rebounding 1.1 percent from February. For the six months ending in March, values were down 2.0 percent. Categories leading the upturn were scissor lifts, telescopic-boom AWP's and skid steers.

Scissor Lifts

(Avg. orderly liquidation value as % of cost)



Scissor lift AWP values in March rose 7.4 percent above February, and average selling age was reported to be 81 months.

READERS RESPOND

Emissions Issues Not That Simple

The issues surrounding the Tier Four compliance engine emissions requirements for OEMs and enforcement by the California Air Resources Board (CARB) are certainly worth the amount of coverage you offered in your publication ("Market Tries to Turn Used Yellow into Green," April 2008).

It's very difficult to adequately cover the complex engineering and manufacturing issues woven through the story. One reason is that there is no "one-size-fits-all" solution to such regulatory challenges facing equipment manufacturers. The equipment-manufacturing industry has invested heavily and made great strides in reducing emissions associated with the operation of off-road machines, and these efforts really deserve a closer and more detailed examination. A close look at the very challenging undertaking of retrofitting to meet new and increasingly more stringent regulatory requirements requires a systems approach involving not only engines, but fuel and other considerations. Equipment and operator safety is also a manufacturing value — visibility, heat transfer, ease of maintenance are all major concerns. Members of the Association of Equipment Manufacturers remain committed to reducing emissions, improving the environment, and providing the lowest emissions-emitting machines that the customer will buy.

— Darrin Drollinger, Association of Equipment Manufacturers, VP statistics, safety and technical services

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Managers Digest

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EQUIPMENT NEWS

OEM Rubber-Track Innovations

The Spotlight on rubber tracks last month focused on traction systems available in the aftermarket, but there has been a lot of engineering going on in OEMs' proprietary track systems, too.

Bobcat's roller suspension system is available as an option on the T320 compact track loader and will be added to other Bobcat track loaders this year. For buyers who want more operator comfort, the new suspension system adds a leaf spring to each roller and raises the track idlers.

Caterpillar now offers a choice of single- or dual-level undercarriage suspensions on its

277C, 287C and 297C Multi Terrain Loaders. The 18-inch-wide rubber tracks now feature three rows of lugs, which create a larger area for the track to engage with the guides, and simplified tensioning. Modular components can be replaced individually, without requiring the track to be removed from the machine. Track replacement time is reduced significantly.

Deere says the rubber-track modules engineered with Camoplast for its new 764 High Speed Dozer can operate on 1-inch-minus crushed rock, sand, soil, snow and paved roads, with transport speeds

up to 18 mph. Track rollers are mounted on a pivoting sub-frame which allows the drive belts to conform to uneven surfaces, and the front idler wheels are mounted to pivoting frames which move rearward against the tensioning cylinder accumulator pressure when the drive belt contacts an obstruction. This system reduces the forces placed on the drive system and extends life.

All of these track-frame designs have been opened up and optimized to shed mud and debris, and make cleanup less necessary and easier to do.

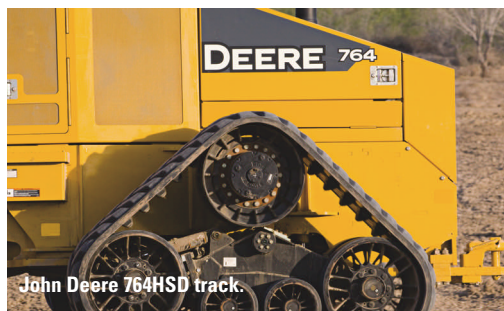
— LARRY STEWART



Caterpillar rubber-track sprocket.



Bobcat roller suspension.



John Deere 764HSD track.

MAINTENANCE MANAGEMENT

Ten Tips for Tire Maintenance

Regularly checking earthmoving tires can eliminate preventable major repairs, says Steve White, segment manager for Michelin North America's Earth-mover division. He lists 10 steps to successful tire maintenance:

- 1) Conduct a visual inspection before operating the machine. Look for signs of irregular wear in the tread or shoulder, and examine the tire for bubbles or bumps.
- 2) Don't operate the machine if tires have deep cracks, cuts or other major problems. Have a trained service person take care of the problem.
- 3) Check for correct air pressure — daily if the machine is in constant use.
- 4) Use the owner's manual to determine precise air pressure.
- 5) Never operate a machine that has flat tires, damaged or distorted rims or wheels, missing bolts or cracked studs.
- 6) Never weld or apply heat to parts

of the wheel near the tire. Always remove tires before conducting these types of procedures.

7) Store tires properly when not in use, preferably in a cool, dry place out of direct sunlight. Protect from ozone exposure. Store standing upright on the tread and avoid stacking.

8) Avoid lifting the tire through the center with a crane hook or other device. Use flat straps to lift the tire under the tread.

9) Deflate the inner and outer tires of a twin fitment before removing any rim fixture from the hub.

10) Avoid mixing tires on a machine. This could cause damage to internal components because the tires do not work together to provide the same traction and handling.

CORRECTIONS

In our gallery of asphalt pavers (Buying File, May 2008), Vogele's new models were mislabeled. They are the Vision 5100-2 and 5103-2. Also, the 8-foot models do not have self-tensioning conveyors; they have conventional manually tensioned conveyors. *Construction Equipment* regrets the errors.



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Accept Telehandler Limits Before Lifting People

Safe work with a telehandler personnel platform depends on operators compensating for the reach forklift's lack of aerial-work-platform safety features

Work platforms mounted on telehandlers offer an option for giving workers access to elevated tasks, but using the platform safely and productively is largely a matter of remembering the many things this equipment combination cannot do. Because they're not designed with the same safety equipment as an aerial work platform, telescopic handlers should only lift people to heights under limited conditions.

"Before you use a man basket on a telehandler, you have to remember that the American National Standards Institute (ANSI) B56.6 standard says to use it only if no other means of doing the work are feasible," says Gary Riley, president of Aerial Work Platform & Telehandler Training & Consulting (www.apt-training.com) in St. Louis, Mo. "If you have a job that a rough-terrain boom lift can do, then you need to get the boom in there."

Perhaps the heart of the problem is that people are tempted to use a telehandler to lift people any time it helps them finish a job no matter what equipment is at hand.

"I've seen a roofer raise a pallet of shingles with a telehandler, shut the machine off, and climb up the boom to work from the pallet," says Charlie Bowman, Star Equipment Rentals (www.starequip.com) in Des Moines, Iowa.

Attempting to prevent people falling from forks or pallets, the industry created work platforms with approved guard rails and tie-off points and load charts for use with telehandlers. These platforms must be accompanied in the field by literature that proves their compli-

ance with ANSI safety standards, and the telehandler manufacturer must approve the use of each specific work platform with its machines. (Not all manufacturers approve their telehandlers for lifting personnel, by the way. Those that do not will apply warning decals to their machines. Those warnings must be heeded regardless of whether or not the work platform in question meets safety standards.)

Inevitably, though, a work platform/telehandler combination is not the same as a rough-terrain personnel lift, and users must know and accept their limitations in order to work with them safely. The most obvious difference between the two forms of powered access, of course, is that the person in the platform doesn't have control of the machine.

The operations and safety manual for JLG's Telehandler Personnel Work Platform clearly states that an "Operator must remain in the cab and keep platform occupants in direct line of sight" any time the platform is in the air.

"Now that you're working at heights, you (the worker in the basket) must be in charge of your own destiny — you've got to be able to come down when you want to come down," says Riley. "Somebody has to be present at all times at the telehandler's controls because there are people in the basket. Safety standards don't directly say that (but it is implied)."

Before anybody goes up in the platform, the occupants and telehandler operator must establish a means of communication. Most use two-way radio, but as crane operators who use radios will tell you, being able to talk to each other doesn't necessarily mean communication

will be clear. Combining voice with hand signals can help clarify any ambiguity.

"I don't care what hand signals you use, just make sure the guy in the basket and the guy at the controls are using the same signals," says Bowman.

There are safety professionals in the industry who simply aren't willing to risk botched communication, considering the risks.

"AWPT (Aerial Work Platform Training) only supports use of telehandlers and work platforms with integrated controls on the platform," says Tony Grote, executive vice president of AWPT (www.awpt.org). AWPT is the North American subsidiary of the International Powered Access Federation (www.ipaf.org), a non-profit organization that promotes safe use of access equipment. "That way the operators themselves, in the platform, have control and they're operating in a similar fashion as an aerial lift."

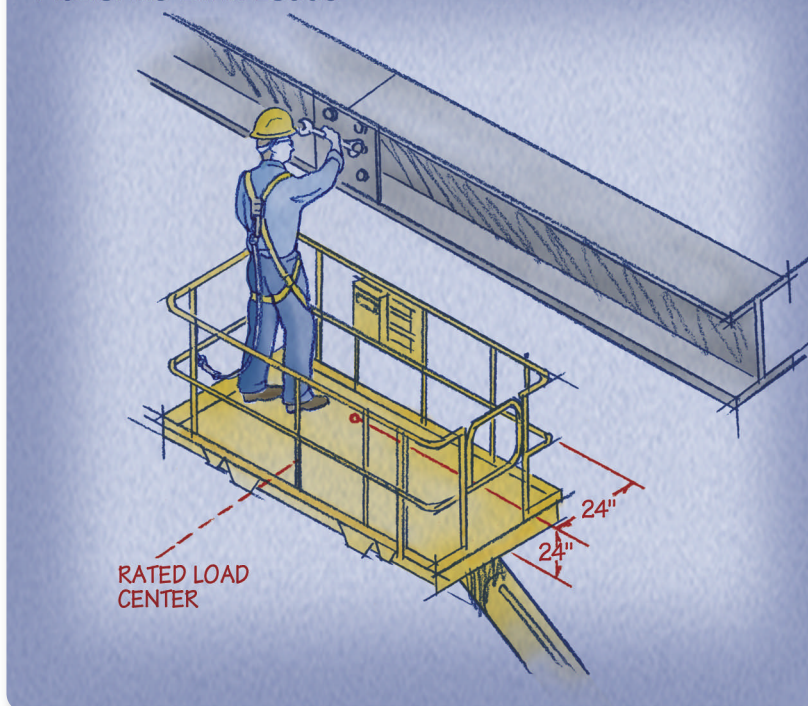
Study the load chart

One of the reasons a maker must approve each model of work platform used with its telehandlers is that each combination requires a unique load chart. Allowable loads will be significantly less with a work platform than with forks because forklift capacity is typically rated using a 48-inch homogeneous cube. The load center is on the machine center line, 24 inches in front of the carriage and 24 inches up from the forks. The load center in an occupied work platform is always moving, and virtually always above and/or beyond the 24-inch load center of a homogeneous cube.

Jeff Stachowiak, national safety director for Sunbelt Rentals (www.sunbeltrentals.com/about/Safety/), uses a simple example to point out how much the position of the load center can alter a telehandler's capacity.

"You are operating a reach forklift with a 6,000-pound load rating according to the load chart in the cab. The load you are picking up is right in front of the forklift and you will not have to extend the boom to pick and place the

Platforms Limit Loads



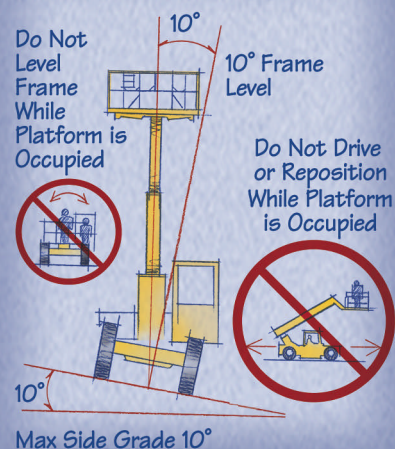
The load chart for a work platform used on a telehandler is significantly derated because forklifts are normally rated based on a 24-inch load center. Two workers with tool belts in a platform represent 500 pounds or more that does not sit quietly within 24 inches of the carriage and deck. One good-sized worker standing at one end of a platform lifting a heavy work piece could apply enough lateral force to tip a telehandler, if it is working beyond the platform's lift chart.

load. The load weighs 5,000 pounds, but the load center is at 36 inches from the back of the forks." Stachowiak asks: "Can this lift make the lift?"

"The correct answer is no. You can calculate the actual load on the forklift this way. A 6,000-pound rating times 24-inch load center equals 144,000 inch-pounds. Then 144,000 inch-pounds divided by 36-inch load center equals a 4,000-pound load limit. So this 6,000-pound forklift can only pick up 4,000 pounds if the load center is at 36 inches," Stachowiak explains. "This calculation works for all forklifts."

"Rental customers will come in and ask for the biggest machine they can get, and think they can do more than they can with it," says Star Rentals' Bowman. "A 55-foot telehandler at maximum forward extension won't lift 1,000 pounds. A 16-foot platform with a big guy and

Maneuverability Limits



Side slopes on which a telehandler can work are limited to the machine's frame-leveling or outriggers' leveling range — typically about 10 degrees. The boom should never be raised if the frame is not level. The greatest challenge to the efficiency of a telehandler/work-platform combination is that OSHA and telehandler manufacturers prohibit maneuvering the machine or leveling the frame with workers in the platform.

Production Heroes: Telehandlers

some tools in it will weigh more than 1,500 pounds.”

That’s heavier than many telehandler operators expect a work platform to be. Problems arise most frequently with some bad operating habits.

“Most operators will start a lift by angling the boom up, and then boom out,” Bowman explains. “That’s good. But when they get ready to come down, some operators will boom straight down without retracting if they can.

“The key to safety is to know how to read the load chart,” Bowman adds, “and most guys don’t read the arc. The telehandler’s capacity is going to be smaller when you get to the bottom of the arc.”

As the boom angle diminishes, if the boom is not also retracted, the load descends in an arc, moving away from the center of the telehandler as it comes down. Vertical columns on the load chart indicate the load limits at various combinations of boom angle and boom extension. Simply booming down, the load will pass from one column on the load chart to the next farther away, always moving to lighter load limits. If the load in a work platform is near the telehandler’s limit at height, it will overload the machine before it can be boomed to the ground. The telehandler will tip forward.

Finding out how much load is to be lifted is an operator’s first priority. Certified platforms are labeled with their weight. If labels are lacking, transport drivers who haul the platform to the site can often tell you how much the platform weighs to within a hundred pounds or so.

Find out how much the tools and materials to be carried in the platform weigh, and then add a reasonable factor for the weight of each equipped worker on the platform — typi-

cally 250 to 300 pounds. Then operate safely within the load-chart limits for the combination of that particular work platform and telehandler, not the telehandler with forks alone. Two workers with tool belts represent 600 pounds or more. Even working within the forklift’s rated capacity (established at 24-inch centers), if both workers move to one side of the platform to do something, the machine could topple.

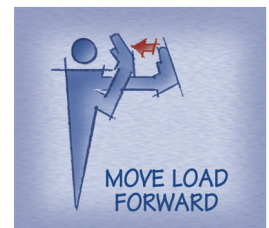
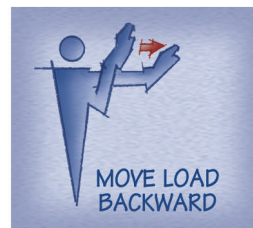
Because of its oscillating rear axle, telehandlers work from a triangular base defined by lines drawn from the ground-contact patch of the front tires to the center point of the rear axle and the front axle. This not only means a telehandler is less stable than a machine with a rectangular footprint, but it also indicates that the machine becomes less stable as raising the boom pulls the machine and load’s center of gravity to the rear.

If the boom is raised but not extended, the center of gravity moves to the rear, into the sharp point of the stability triangle. That’s why it is important to level the machine frame — either by repositioning the machine, deploying outriggers, or by using frame sway — before raising the boom.

“A telehandler doesn’t have the safety features that a man lift has,” says Bowman, referring to the tilt indicators that will lock out an aerial work platform’s boom functions rather than allow an operator to raise the basket from an inclined base. Telehandlers rely on the operator to make the right call.

Don’t use a telehandler’s frame-leveling feature after the boom is raised. The dynamic lateral force can throw the center of gravity outside the reach forklift’s triangular footprint. Manufacturers also prohibit leveling the tele-

Basic Hand Signals



Clear communication between the telehandler operator and the worker in the platform is not only essential to safe and productive telehandler/work platform work, it is required by OSHA. Many operations use two-way radios, and combining voice with hand signals clarifies and creates a back-up option to keep a job rolling.

handler frame with people in the platform.

Dynamic forces are magnified through the telehandler's structure to the work platform — even when the boom is in transport position. They're unpredictable enough that OSHA regulations prohibit driving a forklift when there are people in a fork-mounted platform. The Code of Federal Regulations, at 29CFR Subtitle B, 1926.451 says "Forklifts shall not be used to support scaffold platforms unless the entire platform is attached to the fork and the forklift is not moved horizontally while the platform is occupied."

So the telehandler/work platform combination is restricted to maneuvering only when workers are out on the ground. When people are in the platform, the machine should be limited to boom functions.

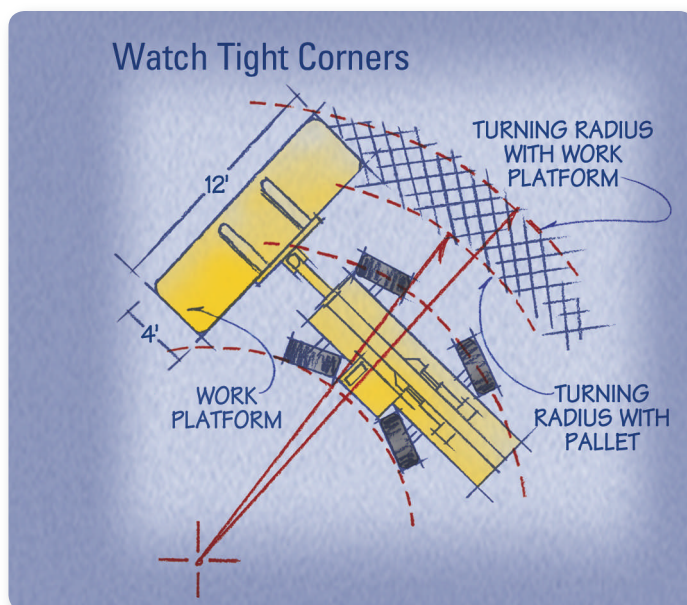
Many telehandlers have a ride-control feature much like that used in loaders. It makes moving materials around a site much more productive, but is not a confidence builder for platform workers.

"There's a lot of bounce built into that boom," says Bowman. "Even if you're just repositioning for a better angle on a lift, you need to bring the boom down, get the operator out on the ground, reposition the machine, and then try the lift again."

In the platform

Like boom-lift operators, occupants of the telehandler platform have to wear a full-body harness with a lanyard attached to an authorized lanyard anchorage point in the platform. Attach only one lanyard per anchorage point. This gear isn't fall protection, it is intended to keep workers from being catapulted out of the platform in the event of a sudden boom movement. A 4-foot or shorter lanyard is recommended to keep the person inside the guardrails.

People should not move from the platform to structures or vice versa when the boom is in the air unless it is absolutely necessary. When a transfer is necessary, it should happen through the platform gate, with the platform within 1 foot of a secure structure. OSHA requires 100-percent tie-off using two lanyards. One lanyard must be attached to the platform with the second lanyard attached to the structure. The lan-



yard connected to the platform should not be disconnected until the transfer to the structure is safe and complete.

Anyone on the platform must wear approved head gear (hardhats). Check clearances overhead, on the sides and bottom of platform when lifting or lowering. Always look in direction of movement.

"The telehandler driver has to have a certification card indicating that he is OSHA certified," says Bowman. "And the certifications are brand specific. You have to be certified for the brand machine you're using."

Pins that secure the platform to the forks should always be put in place before raising the platform. Those pins should be attached by cables or chain to the platform.

Operators working with large platforms should be aware that anything wider than eight feet will broaden the telehandler's effective swing radius through turns.

"A 16-foot platform extends the telehandler's turn radius to the left and the right because it is wider than the tires," says Bowman.

The carriage-tip function in the cab is off-limits when people are in the platform.

"The ANSI B56.6 standard says the only time you can use a forklift to lift personnel is when there is no other alternative. But there always is an alternative," says Stachowiak from Sunbelt, which does not rent telehandler platforms. "That's why they make boom lifts and scissor lifts."

Today's jumbo work platforms will extend the telehandler's effective turn radius.

Midrange T170: The Real Deal

Kenworth's Class 5 truck shows "premium" build quality, though its stout cab could use some stretching

What's a "premium" truck worth? A few thousand dollars above the going rate for a mass-produced vehicle? Kenworth Truck hopes that's the way prospective buyers will look at its T170, which brings big-rig attributes to the lower end of the midrange market. The lightest and littlest "T" uses a tough aluminum cab taken from its heavier-duty conventionals, plus other design features that enable this Class 5 product to promise longer life and higher status.

The T170 is based on the old T300 medium-duty series,

now renamed T270 and T370 for Class 6 and 7 versions, respectively. The 170 sits noticeably low to the ground, and when I first saw it at a truck show, I thought of pseudo-KWs built by enterprising guys back in the 1980s using W900 cabs and cut-down noses on 1-ton pickup chassis. But the T170 is the real deal, straight from Paccar's midrange truck factory in St. Therese, Que., near Montreal.

Most drivers would be proud to operate a Kenworth, whose name (like that of its corporate



Bright yellow paint plus power and good maneuverability will make this truck a busy bee. Origin of the aluminum cab is obvious when the T170 parks next to a big-brother T660 highway tractor.

sister and serious rival, Peterbilt) carries a mystique that is largely supported by details of design and build quality, as well as superior resale value. And to have one in this weight class — 16,001 to 19,500 pounds gross — might well be an unexpected pleasure for almost everyone.

Sit behind the wheel of a T170 and you get a “big-truck” feel that instills pride and, owners can hope, greater dedication to the job. The instrument panel looks like it’s lifted out of a “Doubaya 9” and even though it’s not, it has the same squarish style with a wood-grain finish and large, simple gauges that provide no-nonsense information. And never mind that there really aren’t that many (speedo, tach, three engine-condition indicators and fuel level) because there’s also an electronic readout with further info. The headlight switch is a push-pull type once common in cars and pickups, and it’s at the lower-left corner of the dash instead of up and to the right of the steering wheel, as the toggle and rocker switches are on many big KWs.

Close the door and you’ll probably have to open it and slam it shut, because the cab is air tight and the door has to fight an air bubble inside that often keeps it from latching securely. KW drivers soon learn to crack open the window a bit before shutting the door, and compression of the door seal over time doesn’t much change this characteristic. Most guys aren’t annoyed by it, and instead smile if they think of it because they know it indicates how stout the cab structure is and how long-lasting it will be.

Dave Effinger, general manager of Peterson Truck Center in Louisville, Ky., sells Kenworths and GMCs, and knows the difference between the makes. “GMC is a good truck, especially for the money,” he says. “But I’ve seen guys — roll-back tow-truck drivers, especially — tear up a cab in two years. You won’t do that with a Kenworth.”

Aside from its ruggedness, the cab offers good outward visibility through large, multiple windows, including one in each rear corner. The view over the short, sloped hood is good



A Cummins-built Paccar PX-6 is gutsy. The hood is short, so space for the engine must come out of the cab’s lower front.

to the front but more limited to the right side until I got used to peering over it and through the peep window in the passenger’s door. The flat glass in each mirror was remotely adjustable, so the view to the rear was good, as well. An air-ride seat with a built-in compressor (the truck has hydraulic brakes and therefore no air system) had many adjustments, and a tilt-and-telescoping steering column allows just-right wheel placement for almost anyone.

However, there’s not a lot of room inside the cab. It’s plenty tall, but rather narrow and short. It’s wide enough for one or two guys, but



Ampliroll hook-lift mechanism can drop and snatch dump, flatbed, tank and service bodies, and more. It allows one truck to do multiple jobs.

SPECIFICATIONS

Truck: 2008 Kenworth T170, conventional-cab, 19,500 lb. GVW

Engine: Paccar PX-6 (Cummins ISB), inline 6-cylinder, 6.7 liters (409 cu. in.), 260 hp @ 2,400 rpm, 600 lbs.-ft. @ 1,600 rpm, w/exhaust brake and exhaust aftertreatment

Transmission: Allison 1000 RDS 5-speed automatic w/overdrive 5th

Front axle: 8,000-lb. Dana Spicer D800F on 8,000-lb. taperleaves, w/TRW TAS40 hydraulic power steering

Rear axle: 11,500-lb. Dana Spicer S14-130 on 13,500-lb. Reyco 79KB taperleaves, 4:30 ratio

Wheelbase: 174 inches

Brakes: Hydraulic 4-wheel discs w/ABS

Fuel capacity: 50 gallons

Body: Merrell Ampliroll hook-lift, 13,000-lb. capacity

Hands-On Trucking



Big-rig-style dash and tall roof are pluses. Cab is narrow and short, and pedal placement cramps leg room, but drivers learn to live with it.

not three. Leg room is cramped because the accelerator and brake pedals are mounted farther back than in many trucks. I've got short legs but had to keep my right knee bent at 90 degrees to work the pedals. They can't be moved forward because the firewall is just behind them, and this is a function of the short nose requiring a rearward placement of the engine. An extended-cab option offered on heavy-duty T and W models would be a good idea for the midrange Ts, as it allows moving the seat farther back and away from the pedals and steering wheel. Anyway, drivers tend to disregard this type of problem as they get used to driving a truck, especially if they otherwise like it, and I did, too.

There were just two pedals because this truck had the optional Allison 1000 Rugged Duty Series 5-speed automatic that removed most of the work of driving. An M-for-manual button and Up and Down arrows allow I'm-in-charge operation, but I soon left it alone because the tranny seemed to know what it was doing. It made the most of the gutsy 260-horsepower Paccar PX-6 diesel, shifting up or down just about when I would've. It downshifted almost aggressively as I slowed for traffic lights and an exhaust brake was very powerful, all but eliminating the need for service brakes except at very low speeds. The exhaust brake rapped like a Jake, something guys and gals who enjoy driving will appreciate.

The former T300 series was optional with Caterpillar's C7 diesel, along with the Cummins B and C. But Paccar dropped the C7 in favor of a deal with Cummins to make the private-label PX-6 and 8, and they are now the only engines available in Kenworth's and Peterbilt's medium-duty models. But the midrange trucks Paccar has offered over the years never had long options lists, and buyers of medium-duty trucks of any make are accustomed to it.


Anyway, the T170's lively performance

was impressive because there were several tons of stone in the aluminum dump bed behind the cab. Only the well-settled ride hinted at the weight, but running with an empty body a little later during my visit added a bit of bounce to the driving experience. Still, the ride was smooth and not at all harsh.

That dump bed was one of numerous types available with an Ampliroll dual-pivot hook-lift body, which turns any truck into a multi-tasker. While the hydraulic hook-lift mechanism isn't cheap, it allows one truck to do the work of two, three or more. Merrel Corp., the equipment manufacturer, makes bodies, as do companies it has partnered with, according to its site (www.amplirollusa.com). The dealership had ordered another style of dump bed and a flatbed to go with the versatile package. Terry Julius, a technician who has worked at the dealership since 1972 (and thus has the same tenure as Effinger), dropped the loaded dump bed into a slot at the rear of the parking lot and pulled aboard the empty one, and I was back on the road.

Maneuvering the truck for the body switch was easy because it had a tight turning radius — something I further proved by spinning it in circles several times — and backing it was a no-worry exercise because of all the windows in the rear of the cab. It's a fun truck to drive, and it has all indications of being a long-lived one, too.

But how costly is it to buy? "That depends on how much the factory wants to sell them," said Effinger. "Sometimes it can offer some aggressive incentives that make the Kenworth's price about the same as a GMC's." Otherwise, set up for the same application, the KW might cost \$2,000 to \$3,000 more, but "you tend to have more option content with a Kenworth. Buyers tend to order more equipment than they would with another truck."

The T170 is reasonably priced because it's built from the start as a Class 5 truck, with appropriately sized frame parts, for instance, that take cost out of it, Effinger further explained. Yet it has ruggedness and arguably greater quality that other trucks don't. So the KW mystique is more obtainable than one might expect, even if his expectations are high. 

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Paul Young - Project Superintendent - Clark Companies



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Buying File: Asphalt Rollers

By MIKE ANDERSON, Senior Editor

Rolling to **The Head of the Class**

By employing some smarts, large asphalt compactors don't necessarily have to drag behind the pack in cost efficiencies

In the nearly four years since Buying File last profiled double-drum vibratory asphalt compactors, the list price for the largest models has on average gone up 19.5 percent. If only that was all.

Factor in the cost of fuel, service and financing, and the average hourly rate to put 11.3-metric-ton-plus tandem asphalt rollers into action has jumped 30.7 percent, closing in on the \$90 mark, reports EquipmentWatch.com. And even that high number's probably more and more by the day just a pleasant memory, considering the direction fuel costs are headed.

The bottom line is

that tandem asphalt compactors need to operate as efficiently as possible. Leading OEMs have responded with technological advances to their machines, but even the most progressive and optimistic of product development professionals warn that factors beyond their control — the quality of mix delivered to the site, the local ground conditions and the weather — remain to frustrate even the most well-equipped contractors.

Already with roller models established with frequency and amplitude variations, ever-ambitious equipment manufacturers are continuing to “do what they can.”

For optimum project efficiency, compaction speed must match paving speed, according to industry white papers prepared by Dale Starry, Volvo's director, strategic technologies. At the same time, vibratory compactor drums must make be-



In addition to avoiding the damaging effects of over-compaction, Bomag's intelligent compaction systems prevent the operator from wasting time in areas no longer needing attention. The asphalt roller itself monitors the vibrational energy, or stiffness, as displayed on the Asphalt Manager monitor, shown inset.





With a drum width of 84 inches, the DD138HF is a high-frequency, high-amplitude, tandem vibratory asphalt compactor that, at 14.9 tons, is sized at the top of the Volvo product line. The five-position swivel console optimizes operator performance by placing controls within easy reach.

tween 10 and 14 drum impacts for each 12 inches of travel. In other words, the race is on.

Machine intelligence

Previously established in Europe, Bomag's intelligent compaction systems became part of the Bomag Americas asphalt compaction nomenclature with the 2005 introduction of the BW190AD-4 AM model. Plans are ongoing for AM — Asphalt Manager — to be offered on the newly introduced 66-inch BW 266AD-4 and 78-inch BW278AD-4 models, but that will be some time down the road.

Asphalt Manager automatically controls the output energy of the special front drum in order to prevent over- or under-compaction of the asphalt mat. The roller makes the adjustment through a process called vectoring, which involves changing the angle of the energy delivered from the drum to ensure force is directed to the material only as needed.

"Asphalt Manager is a terrific tool for giving the operator and the contractor feedback

on the job he's doing," says Bill Stalzer, Bomag Americas product manager, asphalt. "Not only does it map and display the temperature and stiffness of the mat, but it also adjusts to that stiffness automatically. With the feedback and the adjustment, we close the loop to give the operator and the contractor a better tool to do a better job."

It goes back to putting equipment to work in the most efficient manner.

"You're going to save on the number of passes and the quality of the passes, and that can translate to anywhere from, at the low end, a 10-percent to as much as a 40-percent advantage," says Stalzer. "If you had to make three passes instead of five, you're way ahead. You're keeping up with a paver that can keep moving forward, and you're doing a quality job, which I think is both more important and harder to

The Cost of Ownership

Size	List Price	*Hourly Rate
Less than 1.8 metric tons	\$25,188	\$12.96
1.8 - 2.9 metric tons	\$42,126	\$22.45
3.0 - 4.9 metric tons	\$56,557	\$29.51
5.0 - 7.9 metric tons	\$121,866	\$57.93
8.0 - 11.2 metric tons	\$148,198	\$71.57
11.3 metric tons and up	\$195,513	\$88.86

* Hourly rate represents the monthly ownership costs divided by 176, plus operating cost. Adjusted operating unit prices used in the calculation are diesel fuel at \$3.96 per gallon, gasoline at \$3.38 per gallon, mechanic's wage at \$44.79 per hour, and money costs at 4.75 percent. Source: EquipmentWatch.com, phone 800/669-3282

Buying File: Asphalt Rollers



The largest Hamm double-drum vibratory asphalt roller, the 84-inch HD 130 is now also available in an Oscillation model. This offers top-of-the-product-line asphalt compaction capabilities from Hamm in both conventional vertical and non-aggressive horizontal force.

put a value on. Five years from now, it's still there, instead of starting to unravel or having any potholes starting to form. We in this industry need quality asphalt pavements to spread the dollars that are being stretched and stretched and stretched today. That quality is tantamount to productivity and speed, and maybe even smoothness, because we don't want to do it again in five or 10 years; we want to get it right.

"With Asphalt Manager, you've given the operator a tool to get it right. He's checking the temperature constantly, he's checking the stiffness constantly, and he's adjusting to that stiffness, so that he's not over-compacting, which ends up causing some problems. In the meantime, he's saving time and money. He's doing it better and faster."

Smart approach

Now part of the Volvo Construction Equipment product line, the former Ingersoll Rand tandem asphalt compactor line established "Smart" technology in the early part of the decade to simultaneously meet a contractor's desire for productivity and an agency's expectations of paving density and smoothness.

Not limited today to the Volvo brand, or necessarily to larger-drum-width rollers, automatic vibration control ensures drum vibration only occurs at appropriate times. A similar approach, but in a newer application, is found in

Volvo's patented control of the water spray system, under which water spray starts and stops automatically on Volvo's higher-end, fully featured models. Additionally, the rate of water flow can be varied electronically to match the rolling speed of the compactor to reduce excess spray that causes premature surface cooling and surface crusting.

Additionally, Volvo's HFA models will, by altering oil flow through the hydraulic pumps, automatically adjust vibration frequency to the optimum level in each of the eight amplitude settings available, as compared to operating with a fixed vibration frequency. The HFAs built-in control system extends to automatically lag vibration on the trailing drum, so that both drums begin to vibrate at or near the same point on the surface.

Caterpillar offers versatile vibratory systems with its larger asphalt compactors. A five-amplitude system leverages a single frequency to provide high or low impacts for working on thick or thin lifts. Versa Vibe models offer four amplitudes and two frequencies to provide high amplitude/low frequency for tough Superpave mix designs or high frequency/low amplitude to match higher paving speeds and thinner lifts without over-compacting.


Among the tandem vibratory asphalt compactors rolled out at Conexpo-Con/Agg 2008 is an extension to Hamm's Oscillation product offering, which uses horizontal rather than vertical force to compact.

At an operating weight approaching 30,000 pounds, the 84-inch-wide HD O130V is the largest model in North America to incorporate "non-aggressive" Oscillation technology, under which the drum never leaves the mat, and both the surface and operator avoid pounding. The movement changes its direction of effect during one turn, generating an oscillating or rocking movement of the drum.

Another Las Vegas debut this year, Bomag's new 78-inch-wide BW278AD-4 offers innovative features as standard, says Stalzer. These include constant mat temperature monitoring displayed prominently on the operator station's dash in real time, "and as accurate as hand-held units — they match up perfectly." The intuitive instrument cluster also provides feedback of amplitude, frequency and impact spacing.

“Eco-Mode is a feature that allows the engine to only use the power that is being requested at the time,” says Stalzer. “As you idle down the road, the engine is idling also, instead of running at full blast ready to turn the vibrators on. And now when you ask for the vi-

brators, instead of having to turn the engine back up first, it automatically sequences the engine up as it is sequencing the vibrators up.

“We see certainly 20-percent fuel savings with this. That’s just part of roller manufacturers “doing what they can,” says Stalzer. 

Double-Drum Asphalt-Compactor Specifications (10 metric tons & up)

Model	Operating Weight (lb.)	Drum Width	Vibration Frequency (hz)	Centrifugal Force (lb.)	Engine Model	Gross Power (hp)
Hamm HD 110 VHV	22,652	66.1"	42 - 63	22,800 - 27,225	Deutz TCD 2012 L04 2V	136
Hamm HD 110 HV	22,652	66.1"	42 - 53	25,650 - 27,675	Deutz TCD 2012 L04 2V	136
Caterpillar CB-534D Versa Vibe	22,836	67"	42 - 63.33	17,227 - 22,234	Caterpillar 3054C	130
Caterpillar CB-534D	22,836	67"	42	7,922 - 25,208	Caterpillar 3054C	130
Dynapac CC424 HF	23,150	68"	51 - 67	20,925 - 31,950	Cummins QSB4.5-T3	125
Dynapac CC422V HF	23,150	66"	50 - 67	20,780 - 30,290	Cummins 4BTAA3.9-C	125
Dynapac CC422V	23,150	66"	51	16,220 - 32,510	Cummins 4BTAA3.9-C	125
Sakai SW800	23,670	67"	42 - 67	10,580 - 27,120	Isuzu DD-4BG1T	109
Hypac C766D	24,000	66"	57 - 67	30,300 - 32,800	Cummins QSB4.5	130
Bomag BW266AD-4	24,000	66"	57 - 67	30,300 - 32,800	Cummins QSB4.5	130
Caterpillar CB-534D XW	24,860	79"	42	7,922 - 25,208	Caterpillar 3054C	130
Caterpillar CB-534D XW Versa Vibe	24,860	79"	42 - 63.33	17,227 - 22,234	Caterpillar 3054C	130
Dynapac CC524 HF	25,580	77"	51 - 67	22,725 - 35,325	Cummins QSB4.5-T3	152
Bomag BW278AD-4	25,800	78"	57 - 67	33,650 - 37,100	Cummins QSB4.5	130
Hypac C778D	25,800	78"	57 - 67	33,650 - 37,100	Cummins QSB4.5	130
Bomag BW190AD-4 HF	26,015	78.74"	48 - 60	28,800 - 40,950	Deutz BF4M2012C	131
Hamm HD O120V	26,422	78"	42 - 50	31,275 - 41,850	Deutz TCD 2012 L04 2V	136
Hamm HD 120 HV	26,488	78"	42 - 53	35,100 - 41,850	Deutz TCD 2012 L04 2V	136
Dynapac CC522V	26,570	77"	51	15,920 - 31,410	Cummins 4BTAA3.9-C	125
Dynapac CC522V HF	26,570	77"	50 - 67	21,330 - 30,490	Cummins 4BTAA3.9-C	125
Dynapac CC432V	26,790	66"	51	15,300 - 29,225	Cummins 4BTAA3.9-C	195
Bomag BW190AD-4 AM	26,896	78.74"	40 - 50	35,550 - 55,575	Deutz BF4M2012C	131
Volvo DD118HF	27,670	78.7"	55 - 67	22,980 - 42,680	Cummins QSB4.5	148
Volvo DD118HFA	27,670	78.7"	50 - 70	33,090 - 42,070	Cummins QSB4.5	148
Volvo DD112HF	27,670	78.7"	50 - 70	33,090 - 42,070	Cummins QSB4.5	148
Dynapac CC624 HF	27,780	84"	51 - 67	24,300 - 38,025	Cummins QSB4.5-T3	152
Caterpillar CB-564D	27,782	84"	42 - 63.33	7,922 - 22,234	Caterpillar 3054C	130
Dynapac CC622V HF	28,110	84"	50 - 67	21,950 - 31,050	Cummins 4BTAA3.9-C	125
Caterpillar CB-634D	28,160	84"	44	13,039 - 35,745	Caterpillar 3116 T	145
Bomag BW284	28,425	84"	59.7 - 66.7	34,665 - 41,235	Cummins QSB5.9-C	188
Hypac C784	28,425	84"	57 - 67	34,665 - 41,235	Cummins QSB4.5	160
Sakai SW850	28,510	79"	42 - 67	13,010 - 33,290	Deutz BF4M2012C	125
Hamm HD O130V	29,277	84.3"	42 - 50	31,275 - 43,650	Deutz TCD 2012 L04 2V	136
Sakai SW900	29,630	84"	42 - 67	15,210 - 38,800	Isuzu BB-6BG1T	166
Hamm HD 130 HV	29,883	84.3"	42 - 53	35,100 - 43,650	Deutz TCD 2012 L04 2V	136
Volvo DD138HF	30,325	84"	53.3	21,840 - 42,260	Cummins QSB6.7	173
Volvo DD138HFA	30,325	84"	45 - 66.7	36,680 - 41,720	Cummins QSB6.7	173
Volvo DD132HF	30,325	84"	45 - 66.7	36,680 - 41,720	Cummins QSB4.5	148
Dynapac CC722	36,985	84"	48	22,950 - 48,375	Cummins QSB6.7	228

Source: Spec-Check Xpanded Specs (as of May / 08)

Gallery of Asphalt Rollers

DYNAPAC

Rollers Leave No Marks Behind

"Soft" starting and stopping prevent Dynapac's new-generation articulated tandem roller models from bowing or cracking the asphalt layers, allowing even inexperienced operators to start and stop without leaving marks. The three new models have operating masses ranging from 10.5 to 12.6 metric tons, with their weights split evenly between the front and rear drum modules. The position of the Cummins engine on the rear module, with all service points located on one side of the machine and accessed by large, easy-to-open hoods, contributes to fast machine servicing. Service information is displayed directly on the driver's LCD monitor.

Number of models: 14

New models: CC424HF, CC524HF, CC624HF

Product-line features: As a supplement to the central water tank, the use of optional additional front and rear tanks on the Dynapac new-generation tandem rollers is able to provide a total water capacity of up to 370 gallons, enabling a full day's operation without refills.

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HAMM

Oscillation Technology Stretches Out

In the past 18 months, the Hamm Compaction Division of Wirtgen America has rolled out a new compact line of double-drum asphalt rollers designated VV for "Vibration Front, Vibration Rear," which allows vibration in both, either or neither drum. At this year's Conexpo-Con/Agg show, Hamm rolled out the 84-inch HD 0130V, the largest asphalt compactor in North America to incorporate the exclusive Hamm Oscillation technology. Non-aggressive Oscillation technology compacts hot mix with a gentle rocking motion, not vertical pounding.

Number of models: 17

New models: HD 8 VV, HD 10 VV, HD 10 C VV, HD 12 VV, HD 13 VV, HD 14 VV, HD 0130V

Product-line features: Operators of Hamm's HD-Series asphalt rollers benefit from a 180-degree swiveling, rotating operator's seat; dual, seat-mounted, 5-in-1 control levers; and a tiltable operator's station. For efficient compaction, the machines have a 31-inch curb clearance and can be offset hydraulically 3.9 inches to either side at the articulation joint.

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BOMAG AMERICAS

New Look to Larger Models

A redesign of Bomag's 66- and 78-inch-wide tandem-drum asphalt rollers was on display at Conexpo-Con/Agg 2008 in the form of the BW266AD-4 and BW278AD-4 models. A new cockpit features a sliding/swivel seat that makes it easy for the operator to adjust positions without having to switch seats, while providing a clear view of the roller drum edges. When the seat position is reversed, the joystick controls reverse automatically for natural right/left, forward/back control. An intuitive instrument cluster provides responsive, easy-to-read feedback of machine vitals and mat conditions. Other machine enhancements include the ECO-mode engine control system, higher-capacity water tanks, ground-level maintenance access, and an improved work-light package.

Number of models: 14 under Bomag brand; 5 under Hypac brand

New models: BW266AD-4 (Hypac C766D); BW278AD-4 (Hypac C778D)

Product-line features: Plans are in the works to offer the Asphalt Manager system on the new BW266AD-4 and BW278AD-4 models. Established on the 78.7-inch BW190AD-4 AM model, Asphalt Manager automatically controls the output energy of a special front drum in order to prevent over- or under-compaction of the mat. The roller makes the adjustment through a process called vectoring.

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CATERPILLAR

Utility Models Offer Versatility, Too



The focus of upgrades to the Caterpillar double-drum vibratory asphalt compactor product line has been on utility models, with eight models representing five sizes rolled out in the past 12 months alone. The utility compactors' hydraulic propel lever provides a two-way regulating curve that gradually increases speed in the first half of the stroke for precise control in tight quarters, and then rap-

idly increases in the second half of the stroke for high-speed maneuverability. Jobsite versatility is enhanced by dual-frequency vibratory systems.

Number of models: 13

New models: CB14, CB14XW, CB14 Full Flush, CB22, CB24, CB32, CB34, CB34 XW

Product-line features: Caterpillar large asphalt compactors offer versatile vibratory systems able to exceed the density requirements of various mix designs and paving conditions in fewer passes. The versa-vibe vibratory system offers four amplitudes and two frequencies; the five-amplitude vibratory system features five different amplitude settings and a single frequency.

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CASE

Single-Lever Joystick Controls Compactors



With a Tier-3 update on all models in 2007, Case offers three double-drum vibratory asphalt compactors ranging in drum width from 39.4 to 51.2 inches. Hydrostatic drive to both drums provides Case's DV201, DV202 and DV204 models with superior traction while delivering compaction performance. Recessed drive motors provide curb clearance and unobstructed operator sightlines to the edge of the drums, which are tapered for a smooth transition on lifts.

Number of models: 3

Product-line features: Working in an uncomplicated operator environment, Case double-drum asphalt roller operators have single-lever joystick control of vibration, forward and reverse, and machine speed. For easy maintenance, one-piece lift hoods supply complete access to the engine compartment.

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VOLVO

New, Smaller Models Update Full Line

The newest additions to Volvo's double-drum vibratory asphalt compactor product line, the DD22 and DD24 light- and medium-duty models were rolled out at this year's Conexpo-Con/Agg show. With drum widths of 39 and 47 inches, respectively, the two 2.5-ton rollers both feature front and rear drums that protrude beyond the frame, making it easier to compact around obstructions. To provide a quality mat, the propulsion system features hydrostatic drive to both drums in series. An optional anti-slip control provides enhanced traction by use of a flow divider.

Number of models: 17

New models: DD22, DD24

Product-line features: With a product line topping out with three 84-inch-drum-width models, Volvo offers double-drum compactors in both high-frequency (HF) and high-frequency, high-amplitude (HFA) configurations. Eight amplitudes allow operators to adjust to the right setting for required density without worrying about fracturing aggregate particles. On HFA models, each amplitude setting automatically adjusts to the highest frequency allowable.

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Gallery of Asphalt Rollers

WACKER NEUSON

Water Tank Smaller, but Lasts Longer

Introduced in early 2007, Wacker Neuson's three newest double-drum compact ride-on asphalt rollers feature a redesigned frame and operator's platform providing both the visibility and maneuverability to compact right to the edge of the mat. With a water pump timer adjustable to eight positions, a new pressurized water system allows the operator to better control water flow. The system's efficiency allows Wacker Neuson to reduce the tank size while increasing running time per tank of water.

Number of models: 6 compacts, including 1 walk-behind

New models: RD 12-90, RD 12-90A, RD 16-90

Product-line features: With a drum width of 35.4 inches, the hydrostatically driven RD 12-90 is available in two variances — powered by a 20.5-horsepower Wacker Neuson engine or an 18-horsepower Honda engine, the latter model designated with an A.

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STONE

Pro Features Rolled into Compact Package

The WolfPac asphalt compactor line offered by Stone Construction Equipment tops out at the WP6100 — a 47-inch-wide, double-drum-drive, double-drum-vibration unit that incorporates professional features requested in a road roller, yet is still suited for confined-area compaction of base, binder and finish coats. The operator can activate the vibration to the specific drum or drum combination via an electro-hydraulic circuit combined with a custom-designed manifold.

Number of models: 6, including 1 walk-behind

Product-line features: The 40-inch WP4100 and both the gas and diesel versions of the 35-inch WP3100 are available with optional foldable ROPS. When folded to a height of 73 inches, the machines can be backed into structures such as garages for optimum paving coverage.

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MULTIQUIP

Asphalt Compactors 'AR' Numerous

With AR-Series tandem and combination vibratory compactors ranging in operating weight from 1.5 to 4 tons, Multiquip compact asphalt rollers feature as standard maintenance-free articulation joints with permanently-sealed bearings, along with dual frequency and amplitude, offset drums, and pressurized water systems with dual filtration. The diesel models, topped out at a drum width of 51 inches, are powered by Yanmar engines.

Number of models: 17, including 11 ride-ons under Multiquip's Rammax brand, three additional established ride-ons, and three walk-behinds under Multiquip's Mikasa brand

Product-line features: Easing transportation and facilitating low-clearance compaction applications, folding ROPS are standard on AR-Series asphalt rollers. So, too, are noise attenuation, sliding seats, and 100-percent side clearance through full flush drums.

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Gallery of Asphalt Rollers

SAKAI

Product Line Rolls Ahead with Upgrades



In addition to the 58-inch-wide combination oscillating-vibratory roller shown here, Sakai rolled out at this year's Conexpo-Con/Agg show in Las Vegas a pair of large, high-frequency, higher-force vibratory asphalt compactors designed to achieve density faster, regardless of mix design. The updated SW880 and SW990, with 79- and 84-inch drum widths, respectively, both turn

their higher forces into better compaction when running dynamically and provide more powerful static finish passes. A 30-inch curb clearance allows these machines to avoid guardrails.

Number of models: 11

New models: SW320, SW330, SW652, SW652ND, SW880, SW990

Product-line features: With all double-drum asphalt rollers offered by Sakai America updated or new in the past 18 months, drum energy of 4,000 vibrations per minute or higher is combined with dual-drum hydrostatic drive and counter-rotating drum eccentrics. All vibration controls are located at the operator's station.

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LEEBOY

Roller Available with Towable Option

The split-front-drum design of LeeBoy's lone double-drum vibratory asphalt compactor is designed to eliminate the tearing of the mat during turns. At a compaction width of 44 inches, Model 400 has a static weight of 2.5 tons and a maximum centrifugal force of 4,000 pounds with a vibration frequency of 2,600 vibrations per minute. A stainless-steel water tank has been replaced by a plastic tank as part of an 80-gallon spray system.

Number of models: 1

Product-line features: A towable option, designated as the Model 400T, features hydraulically operated tires on each side of the roller and an adjustable towing tongue with safety chains. The LeeBoy 400T roller may be towed at speeds up to 45 miles per hour.

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JCB

New Models Serve Rental Market

With its six-base-model Vibromax double-drum vibratory asphalt compactor line, JCB currently offers compact and utility machines ranging up to the VMT500, which checks in at an operating weight of 9,645 pounds and drum width of 55.1 inches. Specifically aimed to serve the rental market with high-capacity fuel and water tanks, the VMT160 and VMT260 were most recently rolled out at the smaller end of the product line. Electrically controlled, hydrostatic direct drive on both drums of these models enables operators to maximize performance in any application by selecting double, single front, or single rear vibration. The product line is expected to add the even-more-compact VMT100 in 2009.

Number of models: 6

New models: VMT160, VMT260

Product-line features: JCB's Automatic Vibration Control system is standard on the new VMT160 and VMT260 models. Available on two variances of the VMT160, Total Side Clearance enables the operator to compact flush against a wall.

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Dig Deep for Safety

Systemic cultural weaknesses lie at the root of construction accidents. Organizations must find them and correct them.



Mike Vorster

David H. Burrows Professor of Construction Engineering and Management at Virginia Tech. See Construction Equipment.com for full archives of "Equipment Executive."

Proactive leadership insists on planning and executing safe operations and develops an organizational culture that places safety above all else

Too many accidents plague our industry. We read about them and grieve for those who lost their lives or were injured, but we frequently write it off to the mistaken belief that "someone made a mistake" or "someone had bad luck." We seldom look deep and act in a systematic way. If a report indicates that the accident was caused by bad rigging, we check our rigging and think that we have done all that is needed.

It is not enough. Accidents are symptoms of problems deep in an organization and arise because we permit them to occur. A sling does not wear the first time it is incorrectly used. It wears over time. We see the red flags but frequently take no action.

There have been great improvements in construction safety over the past 15 to 20 years, and equipment managers have played an important part in the process. Everyone is actively engaged in safety training, but most of the effort is reactive and focuses on regulations, awareness and protection. We make sure that we know how to conform and comply; that we know the difference between an unsafe act and an unsafe condition; and that we use hats, gloves, glasses and handrails. Yet, accidents continue to occur. Cranes overturn when we know how to use load charts. Slips and falls occur despite the fact that all our operators know how to get on or get off machines safely. We must do more.

Reactive training in regulation, awareness and protection is important and cannot be undervalued. It must, however, be complemented by proactive leadership that insists on planning and executing safe operations and develops an organizational culture that places safety above all else.

It all starts with knowing and understanding the nature of the work that we do. In his book "Normal Accidents," Charles Perrow contends that we live and work with high-

risk systems that fail because they are complex and because their various components are tightly coupled. Erecting a crane is certainly a complex operation and the required sequence of steps is closely coupled: Failure in one easily cascades to precipitate a total collapse. The question therefore arises: Can we make the work safer by reducing complexity and reducing the coupling between the required steps?

Perrow gives some guidance. We can simplify or eliminate high-risk operations even if it costs more time and money. We can decouple operations by allowing more space, time and flexibility between steps and by ensuring that there is a fail-safe mode built into each step of the process. We can design machines to be fueled from the ground, which simplifies fueling and eliminates the slips and falls that occur when service technicians climb onto machines. We can inflate tires behind an appropriate screen to protect our technicians from hazards.

Perrow's theory is depressing and almost fatalistic. Although we can reduce complexity and coupling, practical or economic limits often stop us from reaching our goal.

Some organizations, however, have superior safety records. They perform complex and tightly coupled operations with few, if any, failures. Civil aviation is a good example. In his book "Limits of Safety," Scott Sagan proposes that an exceptional safety record is due to organizational culture. He defines the characteristics of "High Reliability Organizations," with four factors that are necessary to ensure superior safety.

"The first and most obvious requirement for high-reliability organizations is that extreme reliability and safety must be held as a priority objective by the leaders and heads of the organization," Sagan says. We know this to be true, but it merits the credibility of the

research Segan presents.

Leadership priority and commitment ensures three things. First, it sets the example and establishes expectations. If leaders do it, then everyone else can be expected to do the same. Second, it ensures that resources are available to support the safety effort. No one can deny that investments are necessary to ensure safe operations, and no one can deny that it makes good business sense. Leaders must define, measure and promote the business case for safety. Third, leadership priority and commitment are needed to develop the clear and well thought out processes and procedures required to perform safe work. Performing a job-hazard analysis and focusing on safety in an operations pre-plan are often second to the natural focus on time, cost and quality. Leadership and management commitment will ensure that safety comes first.

Sagan also addresses the fact that “human beings are not perfectly rational machines” and that it is extremely difficult to build “reliable systems from unreliable parts.” We constantly struggle with problems caused by human error. High-reliability theorists propose that the solution lies in redundancy. Checks and balances ensure that safety-critical activities are performed, monitored and checked by different people so that discrepancies are noticed by “someone” before they cause problems. A shortage of personnel, a push to complete work quickly or on a tight budget frequently cause us to place too much reliance on too few people doing too much work. Under these conditions, failure is almost inevitable. Our work plans and our organization must include the redundancies and checks needed to ensure safety despite our own shortcomings.

The third area that Sagan identifies fits well with the way in which construction companies are organized: High-reliability organizations require a strong organizational culture that supports decentralization of authority and continuous training. Field mechanics work independently away from immediate oversight and supervision. Safe work therefore depends on the degree to which they personally believe it is important, on the decisions they take on their own in the field, and on the training they have received. Management can insist on safe, well-planned, simple fail-safe operations, but they cannot oversee and inspect every operation at every location. High-reliability organizations develop an intense personal


Successful Safety Attitudes

Normal Accident Theory	High Reliability Theory
Accidents are inevitable in complex closely coupled systems.	Accidents can be prevented through good organization design and management.
Safety is one of a number of competing objectives.	Safety is the priority organizational objective.
Redundancy often increases complexity and encourages risk taking.	Redundancy enhances safety. Checks and balances produce reliable systems out of unreliable parts.
Centralization is needed to manage complex, tightly coupled systems.	Culture, decentralized decision making and training cause the right personal action in the field.
Denial of responsibility, faulty reporting, and reconstruction of history cripples learning.	Organizations learn from their mistakes by identifying the cause, addressing the facts and sharing lessons.

These attitudes of safety were developed from Scott D. Sagan's book, "The Limits of Safety."

safety culture and decentralize decisions confident that their culture will ensure appropriate action. They condone no exceptions.

The last area Sagan identifies as contributing to high degrees of safety is organizational learning. Successful companies learn from their mistakes and adjust their procedures over time. They develop new processes to accommodate change, maintain processes that work, and eliminate those that have not been successful. It is not easy to learn from the mistakes that lead to accidents. Causes are often unclear, events are frequently reconstructed in a way that supports preconceived ideas, and there seems to be more of a need to apportion blame than find cause. Effective learning avoids these pitfalls, addresses the facts no matter how uncomfortable, and shares experiences across the organization as a whole. Lessons learned are implemented aggressively, and the organization moves forward with more strength and more knowledge.

Safety is a prerequisite for good management. It is not negotiable, and there can be no compromise when it comes to conducting our operations in the safest way possible. We deal with complex, tightly coupled systems; accidents will occur if we do not commit to a high-reliability mindset. If we understand this, and if we understand that our organization, culture and leadership lie at the root cause of each and every accident, then everyone will go home safe every day. 

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Western Star Offers Lower-Cost Dump Truck

The three-axle 6900XD can haul the same loads as 35- to 40-ton articulated and rigid dump trucks, but it uses about 35 percent less fuel

Western Star Trucks has designed a 40-ton dump truck that it says is a lower-cost alternative to traditional haul trucks. The extra-heavy-duty vehicle is based on a 6900XD with a commercial-style cab, and an off-road chassis with a standardized power train and an integrated dump box that cost less to buy, operate and maintain.

Aimed at quarry and dirt-haul operations with well-maintained haul roads, the three-axle 6900XD 40-ton dump can haul the same loads as 35- to 40-ton articulated and rigid dump trucks but uses about 35 percent less fuel. Fuel consumption of 7.13 gallons per hour has been recorded on hauls of more than 12 miles, the company said. The truck's top speed is 43 mph.

The vehicle costs "considerably less" than a traditional haul truck because it is an uprated on/off-highway truck instead of a downsized "yellow iron" machine normally used in this payload range, a Western Star spokesman said. The 6900XD's engine, transmission, axles, wheels and tires are long-lasting and efficient, but replacement parts are less costly and easier to obtain. For example, its high-pressure 14R25 earthmoving tires are priced about 40 percent less than larger specialty tires needed by haul trucks.

The 6900XD's 14-liter 475-horsepower Detroit Diesel Series 60 runs through a 6-speed Allison 4500 RDS automatic transmission. The Axletech tandem rear axles have planetary-gear reduction and are combined with a high-articulating Chalmers 800 mechanical suspension for a capacity of 110,000 pounds. A 28,000-pound non-driving front axle needs no drop boxes and transfer case, and its flat-leaf springs are simple and easy to maintain. Brakes are a simple and low-cost dry drum design that are effective but easier and cheaper to maintain than the wet discs used by haul trucks. A Jacobs Engine Brake is standard.

New 6900XD 40-ton dump combines a cab, hood and other parts from on-road trucks with extra-heavy-duty chassis components for duties on well-maintained haul roads.

The severe-duty galvanized steel cab is air suspended and comes with a multi-adjustable air-ride seat, tilt-telescoping steering column, premium insulation, roomy dimensions, and other features to make the driver comfortable and productive. Complete gauges and waterproof marine-grade rocker switches are included. An exterior sun visor limits glare through the large two-piece windshield; the two-piece design limits the cost of replacing broken glass.

The dump box is made by J&J Truck Bodies & Trailers expressly for this truck model. J&J constructs it of Hardox 400 and 450 steel, with 5/16-inch sides and a 5/8-inch floor and 5/8-inch liner strips. Capacity is 24 cubic yards struck and 30 yards heaped; rated payload is 77,100 pounds, for a total laden vehicle weight of 138,000 pounds. The hoist mechanism includes a four-stage hydraulic cylinder that can tip the body in 25 seconds at 1,000 rpm and lower it in 18 seconds at the same engine speed.

A heated dump body is one of the features of an optional cold weather package, which also includes a block heater and ether starting system, -60F coolant, and a heated fuel-water separator. Other options range from an automatic chassis greasing system to carbon filters for the cab's heating and air conditioning system.

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Being Accurate No Longer Means Being Slow

New Topcon system incorporates dozer speed into machine control

Speed, or rather lack thereof, has been the understood tradeoff of technology-assisted accuracy for dozers. Not anymore, says Topcon Positioning Systems.

The Livermore, Calif.-based company's new 3D-MC² machine-control system can increase the smooth grading speed of dozers by 200 percent or more, "tearing down the last barrier" of grading jobsite productivity, says Ray O'Connor, president and chief executive officer.

Global Positioning System (GPS) technology alone provides elevation information and, in the process of calculating that information and sending it to a controller to drive the hydraulics, there exists "latency," explains Murray Lodge, Topcon director of construction sales. As such, GPS by itself remains more of a rough grading tool when the machine is traveling fast; if the need is for finish grading, then slow is the only way to go. Well, it was the only way, says Lodge.

The 3D-MC² machine-control system adds new sensor technology — a combination of inertial sensors and gyros — that calculates and updates such information as blade tilt, machine position in every direction, and instant change in direction, at a rate 10 times quicker.

"It anticipates almost what's happening with that machine, versus always being reactive," says Lodge, noting the reactive traits of a dozer that have traditionally demanded slower speeds to recover from any blade miscues. Overcut with the blade, he explains, and the tracks will drop down into the cut and in turn the blade will drop down further, thus simply compounding the initial problem.

"It's a high positive feedback geometry on a dozer compared to, for instance, a motor grader. The motor grader moves along, and you've got two tires up front, four in the back, and the blade's in the middle. Even if you make a cut, you've got those tires dropping independently, and you're only seeing part of that feedback from the cutting edge than

you would on a dozer."

With the ability to start out smoothly at high speed, the 3D-MC² system builds upon the GPS 3D advantages already utilized by the dozer operator, says Lodge.

"Today, it's all about productivity, getting your work done faster and more efficiently. It's get in, get the job done, and get out," he says. "With the 3D control box in front of him, he also knows where the material is and where it has to go. By moving the material in the correct location to begin with, he is balancing that material in fewer passes. He's getting it closer

to grade, so that when he's coming back to do his finishing, the material is much more consistent and that allows him to grade even quicker. It's a combination of moving the material in the right place the first time, and then, when it's balanced, using 3D-MC² to even further advantage by being able to grade that much faster."

Along with the tighter tolerances and deadlines of today's earthmoving business environment, there is an advantage to 3D-MC² as it pertains to the turnover of operators also, says Lodge.

"With a lot of the older guys who have run dozers for years and years, they anticipate what's going to happen. The newer guys don't," he says. "By putting a system on the machine that takes a lot of that acquired skill set out of it, you can take average operators and make them much better blade-hands, instead of having to find some guy who's had years and years and years of experience."

Topcon has an established slogan: It's time. Its newest machine-control product would seem to fit the bill. "Topcon was the first company offering contractors the option of going stakeless at every phase of the job with 3D GPS machine control systems," says O'Connor. "It now is the first company to combine the best science and engineering has to offer to break through the last barrier of construction productivity — speed."

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With the new 3D-MC² machine-control system, grading is possible with a dozer operating in second gear and, as shown here, even third gear.

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Highway-Class Heft in a Commercial Asphalt Paver

Carlson's CP-90 will compete in Carlson-dominated market with a unique EZ Mat electric screed

Screed manufacturer, Carlson, will enter the commercial-asphalt-paver business before the end of 2008 with the CP-90, expected to be about an 18,800-pound machine that borrows highway-class material-handling and undercarriage components from Roadtec's big pavers. Carlson's sister company in the Astec family lacks a commercial paver, and the corporation must have noted the market's appetite for more robust equipment to pave parking lots and streets.

"We want to offer a commercial machine that's completely rebuildable," says Tom Trivers, Carlson's marketing manager. "So we adapted the conveyor chains, slats and augers out of a 10-foot Roadtec paver for this application."

Conveyor floor plates made of 3/8-inch Hardox steel and a 12-inch-diameter auger with replaceable segments make the material-handling system easier to renew.

A new, electrically heated screed was developed for exclusive use on the company's first paver. The tractor will carry a 16-kilowatt generator set for power. The new EZ Mat Screed's standard paving width is 8 feet, but the unit can pave widths from 4 to 15 feet.

A Cat C3 diesel delivers 84 horsepower at 2,500 rpm to a two-speed hydrostatic drive and Carlson-designed rubber tracks.



Carlson's first complete asphalt paver will be an 18,800 pounder with material-handling components borrowed from 10-foot Roadtec machines.

Carlson is the industry's only aftermarket screed manufacturer. Its sales have been dominated by screeds, although the company does also sell a trench roller and windrow pickup machine. Trivers says about 78 percent of the 8-foot asphalt pavers sold today have Carlson screeds on them, and 40 to 50 percent of the 10-foot pavers use Carlson screeds. The company's managers at Astec must be confident that demand for heavy-duty commercial pavers is growing at such a rate that Carlson's traditional customers at this end of the asphalt-paver market — makers of commercial-class pavers — won't mind competing with a Carlson-branded paver.

A major expansion of Carlson's Tacoma, Wash., production plant is underway to make room for the assembly line that will produce as many as 200 of the model CP-90 pavers late this year.

Suggested retail price for the CP-90 is expected to be in the \$150,000 range.

"We want to give the commercial-class customer a machine that's built to highway-class standards," says Trivers.

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Competitive Paver Specifications

Manufacturer/ Model	Operating Weight (lb.)	Basic Screed Width		Hopper Capacity (tons)	Engine Power (hp)	Transport Width
		Min.	Max.			
LeeBoy 8510	17,200	8' 0"	15' 0"	7.5	85	8' 6"
Carlson CP-90	18,800	8' 0"	15' 0"	na	84	8' 6"
Blaw-Knox						
Volvo PF161 Tire	20,350	8' 0"	19' 0"	9.8	107	8' 3"
Bomag BF6615	20,500	8' 0"	15' 0"	9	99	8' 6"

Source: SpecCheck.com

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Sidegrader Can Cut Sidewalk Prep Costs in Half

Slope-sensing attachment on a mini-excavator can finish-grade 1,800 feet of sidewalk per day

With a Sidegrader attachment on a mini-excavator, the contractor can rough-grade lots to within a few tenths and use Sidegrader to tighten up the rough pass in front of a small roller (about 3,500 pounds). Then Sidegrader does the finish pass, which is also compacted. The concrete contractor then sets forms directly on the completed grade.

Traditional methods for getting ready to pour sidewalk — over-excavating, setting forms, backfilling, plate compacting — normally yield 800 to 1,000 feet of completed grade per day. The contractor who designed and builds Sidegraders says his attachment averages 1,800 to 2,000 feet per day. In many cases, it is possible for the attachment to complete a satisfactory grade in native material.

“We have been using the Sidegrader for about four years (grading more than 4 million linear feet), and the attachment regularly averages 1,800 feet per day,” says Bill Culliton, of Sidewalk Grading Systems (SGS) in Eatonville, Wash.

After initial installation, Sidegrader can be removed from the excavator in 30 minutes. It can be re-installed in about the same amount of time.

The product attaches at a hinged connection point to one corner of the backfill blade on a mini-excavator. The hinge allows the attachment to be folded in front of the backfill blade for a narrow transport width. A strut reaches from the far end of the heavy-duty grading blade (about the size you’d expect to see behind a 90-horsepower farm tractor) to a bracket welded to the rear of the track frame.

A heavy-duty caster rides on the curb to provide a constant reference for the grade. As the excavator moves along the road, a Topcon System Five Slope Sensor transmits slope information to the control box managing the proportional valve. The hydraulic cylinder in the circuit adjusts the blade to the proper slope.

Driveway slopes are preset into the grade computer so the operator can punch a button and the control automatically adjusts the slope and depth for the driveway grade.



Hinged anchor at the corner of the backfill blade is supported by a strut spanning from the end of the blade to the rear of the track frame. Caster wheels follow the curb for reference.

Culliton’s application experience is limited to Komatsu’s PC50 MR-2, an 11,000-pound machine, with steel tracks.

“Steel tracks with road liners are much more suited to the Sidegrader application than rubber tracks for two reasons,” says Culliton. “1) With the road liner added to the steel track, there is much more stability because of the additional width; and 2) Wear — the road liners in our application will last much longer than rubber tracks. Ninety-nine percent of our tracking is on asphalt roadways.”

Culliton says SGS buys excavators with long booms on them to speed the grading process. They use the excavator bucket to loosen hard material, remove rocks, and push out or pull in material in front of the blade as needed.

Sidegrader’s \$55,000 price tag can be shocking. But the price includes the Topcon grade-control system with a slope sensor, the control handle, quick-disconnect hydraulic connectors, unlimited training from SGS, extensions for grading sidewalks beyond a planter strip or boulevard, Smart Grade Stick with digital level, hand tools and a carrying bag.

“It is unusual for us to earn less than \$2,500 per day in profit when using Sidegrader,” says Culliton. “So working 22 days pretty much pays for the Sidegrader.”

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Earthmoving Report

By WALT MOORE, Senior Editor

Yanmar Further Refines Good Loader Design

Compared with their predecessor models, these two new compact wheel loaders are stronger, faster, more compact and run with cleaner stacks

Construction Equipment's in-the-dirt introduction to Yanmar's compact machines occurred a couple years ago when we borrowed a new CBL40 compact backhoe loader from the company for a Hands-On-Earthmoving evaluation (July 2006 issue). The professional operator who evaluated the machine for us, a training instructor for Local 150 (International Union of Operating Engineers) was, overall, quite impressed with the machine's power, hydraulic refinement, easy maneuverability and overall sturdy design. Although we haven't had the opportunity to evaluate Yanmar's new V3-6 and V4-6 compact wheel loaders in the same hands-on fashion, we'd guess that these new tractors reflect many of the same qualities as their backhoe-loader counterparts.

According to Yanmar, the major areas of design refinement for the two new models center on "ease of operation, versatility and durable on-site performance." In addition, the new models also feature reduced overall height, a design element,

these new engines, which are rated at 30.3 and 40.4 horsepower, respectively, are certified to meet Tier-4-Intermediate emissions standards.

Both of these new articulated, four-wheel-drive loaders use an automatic hydrostatic drive system that incorporates an oscillating axle at the rear and provides a maximum travel speed of 11.8 mph. Brakes are the fully enclosed, multiple-wet-disc type. Says Yanmar, forward/reverse movement is initiated by a column-mounted shift lever that incorporates a safety lock to prevent inadvertent travel.

At the heart of these new loaders are a reinforced frame and thicker loader arms, which result in increased lift capacity. The two units have rated operating loads of 1,962 and 2,579 pounds, respectively, and their full-turn tipping loads are 3,924 and 5,158 pounds, respectively. An auxiliary hydraulic system is rated at 3,000 psi operating pressure and 10.7 gpm (V3-6) and 14.8 gpm (V4-6).

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Basic Specifications	V3-6	V4-6
Horsepower	30.3	40.4
Engine Displacement (cu. in.)	100.2	133.6
Standard Bucket (cu. yd.)	0.52	0.65
Rated Operating Load (lb.)	1,962	2,579
Breakout Force (lb.)	5,400	6,085
Dump Clearance	7' 0"	7' 11"
Turning Radius	11' 9"	12' 9"

A heavier mainframe and thicker loader arms allow the new Yanmar V4-6 and V3-6 compact loaders to lift heavier loads.

says Yanmar, which not only lowers the center of gravity of the machines for enhanced stability, but also allows easier transport in enclosed carriers.

The two new loaders weigh in at 6,750 and 7,651 pounds (in their base, canopy configuration) and both feature a water-cooled, diesel TNV-Series Yanmar engine. The V3-6 uses Yanmar's three-cylinder 3TNV-BNKAH, and the V4-6 uses the four-cylinder 4TNV-BNKAH. According to Yanmar,



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Market Watch Lite

By KATIE WEILER, Managing Editor

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▶ John Deere

The R75 Worksite Pro rock bucket utilizes fully gusseted tine tips on both sides for added durability, and tines are interconnected for increased strength. At nearly 75 inches wide, the R75 for skid steers and compact track loaders fills a gap between the smaller R66 and larger R84 rock buckets.

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▶ ALLU

The latest pipe grappler can hold pipes from 12 to 55 inches and is compatible with base machines from 44,000 to 54,000 pounds. Changeable clamps allow the unit to work with bigger or smaller pipes. The grappler has adjustable grappling force, manually adjustable height support, polyurethane wear parts in its clamps, and height supports. It also has 360-degree hydraulic rotation with optional manual turning.

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▶ Waste Crete

The EnviroWash-F2 closed-loop concrete washout solution is designed for use at larger sites where there is a need to place concrete daily and/or several hundred yards at one time. Like the original F1, the F2 is a semi-permanent, one-hopper unit that may be hard-wired or generator-powered. Unlike the F1, the F2 has an attached forced weir tank and retractable, locking roof. The makers say the F2 hopper unit was able to handle in trials 1,800 to 2,500 yards of concrete before it had to be dumped. The concrete wastewater filtering and removal system prevents nearly 90 percent of rainwater and groundwater contamination from concrete washout.

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Skyjack

Skyjack SJ 61T and SJ 66T telescoping boom lifts have been added to the line. They have the company's axle-based four-wheel-drive system, featuring a "Detroit Locker" type rear differential and limited-slip front differential. Lifts include an intuitive direction-sensing drive and steer-control system, the company says, and a 45-degree steering angle.

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◀ Water Cannon

The Gator Skid features first-pull starting, automatic decompression, an aircraft aluminum frame, and an engine that automatically shuts down when the oil level is low. Options include water tanks ranging from 50 to 200 gallons, tank feed kit, tank drain kit, tank auto fill shut off kit and painted or stainless-steel hose reel kits.

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Market Watch Lite

HCSS

HeavyJob field-management software now has a safety capability that enables users to plan and track safety goals by employee. Types of safety training, including individual subjects, can be set up. Each class of employee can then be set with goals specific to class.

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ALLU

Oil Quick, ALLU's quick coupler, can be used with most excavators, wheel loaders, and other machines with base weights from 10,000 to 140,000 pounds. With Oil Quick, an operator can automatically change the attachment and hoses without ever leaving the cabin, the company says. The system has six different hydraulic lines, suitable for most complicated attachments.

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Terex

WS line of hydraulic transverse cutting units are designed for excavators and backhoe loaders to use in trenching, demolition, tree removal and more. Models WS15, WS30, WS45N, WS60N, WS90N, WS120N and WS150N feature heavy-duty spur gears and bearings. Hydraulic drive motors range from 24 to 190 horsepower with hydraulic flow ranging from 8 to 158 gpm. Three standard cutting heads are available.

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Nye

The XCP2 heavy-duty concrete pulverizer series is designed to outperform conventional hydraulic units in both primary and secondary crushing operations. Replaceable AR500 crushing jaws are welded in, not pinned, so they cannot fall out and jam the crusher. Other XCP2 features include hardened alloy pins and bushings, thicker, and an optional patented ripper shank. Nye pulverizers require no extra hydraulics.

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John Deere

The HH100 Hydraulic Hammer is John Deere's first Worksite Pro breaker exclusively designed for backhoe loaders. The HH100 delivers 1,200 foot-pounds of impact energy; and its long-stroke piston and low-pressure, nitrogen-charged design minimizes recoil. The slim, compact design gives operators a clear view of what they're breaking. The piston and main valve are the HH100's only moving parts.

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Knaack

Weather Guard Hi-Side truck boxes are designed for extra security and durability. Three-point latching system secures each side of the box. Picture-frame body design features an extra large opening, and doors can be adjusted from 90 to 180 degrees for unrestricted access. They are available in 16 aluminum models and 11 steel models ranging from 5.6 to 21.4 cubic feet.

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Chevron Delo

Chevron Delo brand 400 LE SAE 10W-30 multigrade diesel oil is formulated for engines running on ultra low sulfur diesel and meets the API CJ-4 engine oil spec. It is fully backwards compatible with previous API categories, the company says. The oil exceeds the performance standards of API CI-4 PLUS, according to Chevron, specifically in areas of wear control for valve-train, bearings, rings and liners; oxidation control; soot dispersancy; piston deposit control; and oil consumption control.

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Doosan Infracore Portable Power

The Ingersoll Rand BXR-60H weighs 158 pounds and provides 3,417 pounds of centrifugal force. Its plate size of 19x14 inches gives the machine a maximum compaction depth of 13 inches. The larger BXR-200H weighs 518 pounds and offers 7,053 pounds of centrifugal force; it compacts to a depth of 18 inches.

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Atlas Copco

The QAS 30 Generator uses a "Zincor-steel-coated" canopy designed for extreme weather. It is mounted on skids for ease of transportation; and it has a standard, sealed, "spillage-free" frame. A comprehensive instrument panel displays key operating functions without opening the canopy. Analog gauges provide at-a-glance monitoring and are protected by a transparent cover.



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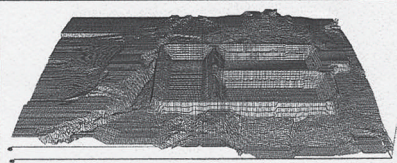


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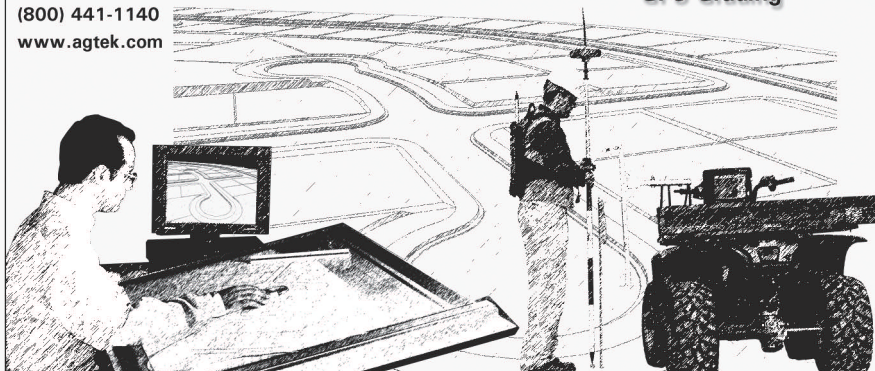
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The Bobcat Compact Loader Celebrates 50 Years

Small loader built to satisfy the needs of a turkey farmer started the compact construction machine revolution

It all started in the small town of Gwinner, N.D., where E.G. Melroe founded the Melroe Manufacturing Co. in 1947. For several years, the firm made small farm implements, including a grain-harvesting attachment and a spring-tooth harrow. In 1958, Lester Melroe (one of the founder's four sons), who by then was running the company, saw great potential in a new machine he was invited to see. It was a lightweight wheel loader specifically designed to clean manure from local turkey barns, and it was built by brothers Cyril and Louis Keller in their Minnesota machine shop. The machine had replaced uncooperative workers who often quit when it came time to clean out the barns by hand with pitchforks. Although the machine needed several modifications for outside work, the Melroe brothers subsequently purchased the manufacturing rights and employed the Keller brothers to build more machines.

The original Keller Loader was a three-wheeled machine powered by a 6-horsepower rope-start engine. Its main advantage was superior mobility made possible by its front-wheel drive and a caster wheel at the rear. In 1958, after a number of improvements, Melroe introduced its first loader, known as the "Melroe Self-Propelled Loader model M60." It was quickly succeeded by an improved version, the M200, with a more robust lift-arm assembly and an updated two-cylinder, air-cooled gasoline engine developing 12.9 horsepower.

In 1960, the three-wheel design was dropped in favor of a four-wheel-drive loader, the M400, which employed the skid-steer principle. Retaining the same engine as the former model, the M400 weighed 2,000 pounds. Although rubber-tired skid-steer machines had already been utilized on larger wheel dozers (LeTourneau), and one or two small but unsuccessful prototype loaders had been built, the Melroe M400 is considered the forerunner of today's skid-steer loader, and first of a new class of compact equipment.

In 1962, Melroe launched the M440 with operating weight upped to 3,285 pounds, and a larger gasoline engine of 15.5 horsepower. It was a more durable machine resulting from experience in the field and represented a total redesign of the M400. 1962 was also the year that Melroe adopted the name

Model M200 was the first Melroe compact loader built to the designs of the Keller Brothers.



"Bobcat" for its loaders.

Over the years, further changes and refinements brought improvements and increased safety to Bobcat loaders. As far back as 1970, Melroe introduced its exclusive "Bob-Tach" quick-coupler attachment system, enabling the loader to be transformed quickly and effortlessly into a multi-job machine. Now skid steers operate with post hole augers, trenchers, graders, hammers, vibratory compactors, pallet forks and brooms. Rubber tracks have even been added to this versatile machine for some applications. In 2001, Bobcat was the first in the industry to market an all-wheel-steer plus skid-steer capability to a loader. Today's skid steer loaders are highly sophisticated, boasting joystick controls, hydrostatic drive and supreme comfort for the operator.

In 1969, the Melroe family sold their company to Clark Equipment of Buchanan, Mich. Ownership then passed into the hands of Ingersoll-Rand in 1995. In 2007, Doosan Infracore International, a U.S.-based subsidiary of Doosan Infracore, purchased Bobcat. Throughout these changes, the Bobcat product never lost its name or direction.

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