

This month's editorial focus takes a look at the lighter side of off-highway-vehicle technology.

by David Alexander

Cat goes for plan B

Caterpillar has recently upgraded its range of compact loaders. The B-Series of both multi-terrain and skid-steer machines feature new turbocharged engines, improved hydraulic forces, redesigned operator station components, and design changes that it says improve reliability and serviceability.

The Cat 247B, 257B, 267B, 277B, and 287B multi-terrain loaders that replace the original 247, 257, 267, 277, and 287 models are rubber-tracked machines that combine the technology of the Cat skid-steer loaders with a suspended track undercarriage, which transfers machine weight to the ground through 24 wheeled contact points bearing against 59 in (1500 mm) of track for an overall low ground pressure.

The 247B and 257B loaders now use the Cat 3024C T engine, which delivers 57 hp (42 kW). The Caterpillar 267B, 277B, and 287B multi-terrain loaders are powered by the new turbocharged, direct-injected, 3.3-L Cat 3044C DIT diesel engine.



The 257B loader from Caterpillar is powered by the 57-hp (42-kW) Cat 3024C T engine, and has rubber-tracks that combine the technology of the Cat skid-steer loaders with a suspended track undercarriage.

The new Caterpillar 268B skid-steer loader features the high-flow XPS hydraulic system. A variable-displacement piston pump provides hydraulic flow and pressure up to 33 gal/min (125 L/min) and 4060 psi (280 bar) when running high-flow work tools.



The engine boosts power compared to previous models by more than 18% in the 267B to 70 hp (52 kW) and by more than 5% in the 277B and 287B to 78 hp (59 kW). All of the engines are U.S. EPA Tier-2 compliant.

Both smaller B-Series models have greater hydraulic system performance than the models they replace. Standard flow is 15.6 gal/min (59 L/min) and maximum pressure is 3335 psi (230 bar). The high-flow option available on the 257B boosts flow to 26 gal/min (98 L/min) and hydraulic power increases 40% for more productive operation of hydraulically powered work tools.

The B-Series machines employ the Cat anti-stall system and pilot hydraulic joystick controls for ease of operation. The joystick design incorporates positive-action buttons to control work tool hydraulic or electrical functions. The B-Series cab offers a new door option with 25% more glass that improves sight lines to the working area. The door also incorporates a loader lock-out function that prevents loader-arm movement when the door is open. A standard convex rearview mirror gives the operator a wider view behind the machine, and the lights are now adjustable 10° up and down as well as side-to-side.

The B-Series hydraulic system is an improved design that reduces the number of potential leak points and improves reliability and cleanliness. A 5-micron spin-on filter keeps hydraulic oil clean, and a high-efficiency hydraulic oil cooler allows the machines to work in high ambient temperatures.

For servicing, the rear door opens 90° for easy access to both sides of the in-line-mounted engine. The compartment is configured for straightforward access to the oil filter and air cleaner as well as fluid level check points. The cooling fan and air-conditioning compressor are hydraulically driven to eliminate the maintenance required by belt drives. Higher alternator and battery ratings and a simplified wiring harness contribute to improved reliability. For access to hydraulic pumps, motors, and valves, the cab tilts rearward using a single tool, and a self-latching mechanism holds it in place.

The new Cat 268B skid-steer loader features the high-flow XPS circuit, a load sensing, pressure-compensating hydraulic system that delivers maximum power regardless of work tool speed or load. The equipment also features a vertical lift linkage for efficient truck loading and materials handling.



The 268B has a rated operating capacity of 2700 lb (1225 kg) and a maximum lift (pin height) of 127 in (3210 mm). The direct-injected, turbocharged, 3.3-L Cat 3044C diesel engine produces 76 hp (57 kW). A variable-displacement piston pump provides hydraulic flow and pressure up to 33 gal/min (125 L/min) and 4060 psi (280 bar) when running high-flow work tools.

The hydraulic system also provides power to drive the wheels. The 268B offers a two-speed option, which boosts maximum travel speed from 7.2 to 11 mph (11.6 to 17.8 km/h).

The new Cat B-Series skid-steer loader line features four models with vertical lift linkage in addition to the all-new 268B. The 232B, 242B, 252B, and 262B offer more power and performance as well as improved comfort, reliability, and serviceability compared to the models they replace.

Two of the B-Series machines offer increased capacity and significantly more power than the previous models. The 252B has a capacity of 2500 lb (1135 kg), an increase of 11%, and 70 hp (52 kW)—an increase of 18.5%. The 262B offers capacity of 2700 lb (1225 kg), 8% more than the previous model, and net power is up more than 5% to 78 hp (58 kW).

Both the 252B and the 262B feature the new 3.3-L Cat 3044C DIT engine. The 242B employs the turbocharged Cat 3024C T engine, and the 232B uses the base 3024C engine.

In addition to engine improvements, the 242B is now available with optional high-flow hydraulics for powerful operation of work tools driven by the auxiliary hydraulic circuit. Two fixed-displacement gear pumps provide flow and pressure of 26 gal/min (98 L/min) at a maximum pressure of 3335 psi (230 bar).



The 216B, the smallest in the new line of skid-steer loaders from Caterpillar, retains the 3024C engine that produces 49 hp (37 kW), and has a rated operating capacity of 1400 lb (635 kg).

The hydraulic system also provides power to drive the wheels. The 252B and 262B each offer a two-speed option, boosting maximum travel speed to 11 mph (17.8 km/h) for both machines. Maximum travel speed for the standard 252B is 6.9 mph (11.2 km/h), and for the 262B it is 7.2 mph (11.6 km/h).

The Caterpillar 216B, 226B, 236B, 246B and 248B skid-steer loaders also feature increased engine power and breakout force as well as improvements in operator comfort and machine reliability and serviceability. For customers requiring a smaller machine to operate hydraulically powered work tools, the high-flow option is now available on the



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The Cat 3024C diesel engine is the base power unit for the new B-Series range of loaders from Caterpillar.

226B. Four of the five B-Series radial lift machines have new Cat engines, and all five have engine power increases ranging from 2% to more than 18%.

The 248B is a radial lift machine with a rated operating capacity of 2000 lb (907 kg) and net engine power of 76 hp (57 kW). The 248B joins the all-new 268B in its use of the XPS hydraulic system. The load sensing system can provide high hydraulic power whether the engine is at low or high idle.

The 246B offers a rated operating capacity of 2000 lb (907 kg) and net engine power of 78 hp (58 kW), but without high-flow hydraulics. The 236B has a rated operating capacity of 1750 lb (793 kg) and net engine power of 70 hp (52 kW)—up more than 18% from the previous model. Both loaders can deliver 22 gal/min (81 L/min) hydraulic flow and maximum pressure of 3335 psi (230 bar).

The 248B, 246B, and 236B are powered by the Cat 3044C DIT diesel engine, and each offers a two-speed option that boosts maximum travel speed from 7.6 to 11.6 mph (12.2 to 18.6 km/h) for the 236B and from 7.7 to 11.8 mph (12.5 to 19.1 km/h) for the 246B and 248B.

The 226B now employs the 3024C T engine, which boosts net power more than 5% to 57 hp (42 kW). Rated operating capacity is 1500 lb (680 kg). The high-flow option is available. The 216B, the smallest in the line, retains the 3024C engine, which produces 49 hp (37 kW). Rated operating capacity is 1400 lb (635 kg).

Bobcat's versatile mini track loader

Bobcat Co. has introduced the new MT52 mini track loader for projects that are too big for shovels and wheelbarrows, in areas too small for a full-size skid-steer loader. According to Bobcat, the MT52 is the only mini track loader on the market with a ride-on platform option that can be installed or removed within a couple of minutes. This feature offers both ride-on and walk-behind capabilities.

The direction and speed of the MT52 are controlled by one multi-function handle, instead of two independent hand levers. A single lever controls the loader's lift and tilt functions.

Operating capacity is rated at 520 lb (235 kg). Its compact size—3 x 6 ft (0.9 x 1.8 m)—enables it to go where many skid-steer loaders cannot. The MT52 also features a turf-friendly lug track that distributes the 2500-lb (1135-kg) loader over a larger area, minimizing damage to landscapes, paving stone, and other established



The Bobcat MT52 mini track loader, shown with a pallet fork, is powered by an 18.8-hp (14 kW) Kubota diesel engine.



Fifteen different attachments are available for the MT52 mini loader, including the Bobcat tiller.

surfaces. The rubber-track undercarriage provides improved traction and better flotation, even in soft, wet, or muddy conditions with minimal ground disturbance.

With an 18.8-hp (14 kW), liquid-cooled **Kubota** diesel engine, the MT52 has substantial pushing and turning power. In addition, this mini loader works with 15 different attachments, including the Bobcat stump grinder and tiller attachments. Power for operating attachments comes from 12 gal/min (45 L/min) of auxiliary hydraulic flow and a 2900 psi (200 bar) hydraulic system. The Bob-Tach mounting system is standard on the MT52, making it easy to switch between attachments, many of which are common to the smallest Bobcat skid-steer loaders.

Safety features on the Bobcat MT52 mini track loader include a reverse-travel stop panel, parking brake, neutral start interlocks, a lift and tilt lockout system, and both a lift-arm bypass and a lift-arm support device.



CNH rolls out mini-excavators

New Holland Construction, a CNH company, introduced a new range of mini-excavators at the Bauma exhibition in Germany, comprising 10 models—eight short-radius (SR) models and two conventional models (EH16 and EH18). NHC's aim in introducing this new generation of mini-excavators (called "New Power") is to break the traditional view of this type of product as small-service excavators by bringing the technology and high performance of larger class machines to the smaller models.



New Holland Construction has introduced a new range of mini-excavators, all equipped with the "Auto Idling" system that automatically idles the engine when the controls are in neutral.

One of the design goals was very small size for working in absolute safety in limited spaces (on SR models the turret swings within the profile of the tracks). For operating comfort, the driver position has a suspended seat with arm rests, natural location of controls for the wrists and feet, with a simple foot-pedal control layout designed to reduce



O&K also has a new range of mini-excavators that include variable-displacement pumps for fast and simultaneous movements.

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leg strain. The long wheelbase and wide track, combined with well-balanced mass distribution, contributes to operational stability.

A balance of engine power to overall mass ensures not only high performance, but also reduced fuel consumption and quiet operation. All models are also equipped with the "Auto Idling" system that automatically drops the engine speed to idle when the controls are in neutral. From model 30 up, "Automatic Down" shift speed, for fast and safe traveling operations, is also available.

Ease of access to the main components is assured by the side-opening engine covers and layout of filter and filling points.

Also at Bauma, **O&K**, the German brand within CNH, launched a complete line-up of all-new mini-excavators. The

new range features a total of nine models, comprising two conventional- and seven short-radius models.

The two conventional mini-excavators are designated RH1.16 and RH1.18. Features include variable-displacement pumps for fast and simultaneous movements, and a spacious operator's compartment for comfort and ease of operation. Long track length on the ground provides stability and comfort when traveling. Standard extra piping is included for attachments.

The short-radius models are the RH1.20SR, RH1.22SR, RH1.25SR, RH1.30SR, RH1.35SR, RH1.40SR, and the RH1.45SR. A short swing radius gives easy and safe operation on all types of jobs. Cab or canopy versions are available. A down-shift device helps high traction-force operations.

Ditch Witch delivers

The latest addition to the Ditch Witch line of underground construction equipment is the new Ditch Witch SK300 from the **Charles Machine Works**, Inc., a versatile mini skid steer designed to perform a wide range of landscaping, utility, fencing, and construction tasks. It easily transforms from a trencher to a loader, a pallet lifter, or an auguring machine.

A track-mounted, stand-on platform skid steer, the SK300 offers a 13-hp (10-kW) **Honda** engine, 300-lb (136-kg) operating capacity (measured at 35% of tip capacity), and independent dual hydrostatic ground drives to provide a zero turning radius. The SK300 is said to gain access to sites that larger machines cannot, and with its low ground pressure, damage to existing turf is minimized. It is designed with an intuitive operator interface that allows a novice operator to quickly become proficient on the machine.

Another new mini skid steer is the bigger SK500, designed for a variety of construction applications. Loader buckets are available in two sizes, and Ditch Witch attachments extend the machine's capabilities to trenching, auguring, and forklift work. The SK500 also accommodates a wide variety of other attachments and tools.

The SK500 is powered by a 24-hp (18-kW) air-cooled Honda engine, and travels on rubber tracks powered by dual independent hydrostatic ground drives, providing a zero turning radius. Ground drive pilot control provides responsive



The Ditch Witch SK500 is powered by a 24-hp (18-kW) air-cooled Honda engine, and travels on rubber tracks powered by dual independent hydrostatic ground drives.

steering with little or no vibration transferred to the control handles. Rubber tracks limit disturbance to turf and paved surfaces and are available in either 7- or 9-in (180- or 230-mm) widths. Track length is 40 in (1 m), creating a ground pressure as low as 3.3 psi (23 kPa).

The 36-in (914-mm) wide bucket holds 3.4 ft³ (0.09 m³) of material; the 44-in wide bucket has a capacity of 4.2 ft³ (0.10 m³). Lifting capacity is 500 lb (227 kg), rated at 35% of tip capacity. Maximum dump height with standard bucket is 60.5 in (1.5 m), and dump angle is 40°. Rollback angle is 85° at full height; 25° at ground level.

The SK500 attachment hydraulic system provides power on demand as it can optimize fluid flow so the full 12 gal/min (45 L/min) at 2500 rpm is available to operate the attachment when necessary.

The SK500's Ditch Witch-made trenching attachment digs to depths of 38 in (965 mm) at a 4-in (102-mm) width. Sprockets are heat treated, the chain is reinforced at wear points, and digging teeth are heat treated with tungsten hard facing applied by a patented process.

The direct-drive hydraulic auger attachment develops 716 lb•ft (971 N•m) and digs to depths of 4 ft (1.2 m). Auger tools are available in diameters from 6 to 30 in (152 to 762 mm). Pallet forks are 36 in (914 mm) long and spread may be adjusted from 6.5 to 34 in (165 to 864 mm).



The Ditch Witch SK300 is a track-mounted, stand-on platform skid steer powered by a 13-hp (10-kW) Honda engine.

Deere lightens up

John Deere offers new solutions for hauling and transportation with the introduction of the Gator Compact Series, the Gator High-Performance Series, and the John Deere ATV utility vehicles.

The Gator Compact Series consists of the 249-cm³, 8-hp (6-kW) Gator CS and the 286-cm³, 10-hp (7.5-kW) Gator CX, both of which can turn in tight places, and at 49-in (1245-mm) wide can be transported in the bed of most pickup trucks. Along with higher engine power, the Gator CX also has a 12 V dc outlet, high-back bucket seats, and a differential lock as standard.

The Compact Series cargo box features durable, high-density polyethylene construction, and holds up to 400 lb (180 kg) with a 5-ft³ (0.14-m³) storage capacity. The tailgate can be opened or removed for easier cleaning or to carry longer items.

The CS and CX models are equipped with air-cooled, single-cylinder, four-cycle **Kawasaki** gasoline engines. A precision-engineered drivetrain delivers

the engine power while optimizing acceleration, hauling, towing, and hill-climbing capabilities. The variable-speed drive offers forward speeds up to 15 mph (24 km/h) with no shifting, and dual internal wet disk brakes ensure long life and minimal maintenance. High-flotation tires minimize ground compaction and combine with dual seat suspension to absorb bumps for a smooth, controlled ride.

Deere further extended its utility vehicle line with the introduction of the Gator High-Performance (HP) Series, which includes five new models, the Gator HPX, HPX 4x4, HPX Diesel, HPX 4x4 Diesel, and the Trail Gator HPX 4x4.

With a 1300-lb (590 kg) payload capacity, rugged front and rear suspension, and a hydroformed steel frame, Deere designed the HP Series for commercial-grade work. All models have a top ground speed of 25 mph (40 km/h) with a two-range transmission that provides low-speed pulling capabilities. High-performance,

The John Deere Compact Series starts with the Gator CS, which can be transported in the bed of a pickup truck, and is powered by an 8-hp (6-kW) single-cylinder, four-cycle Kawasaki gasoline engine.



The Gator High-Performance Series from Deere are powered by either Kawasaki gasoline engines or Yanmar diesel engines.



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The Deere utility ATV models all feature a progressively locking all-wheel-drive system, hydraulic disc brakes, and four-stroke Rotax engines.

all-purpose tires come standard to absorb bumps and provide a smoother ride. Other features include all-wheel hydraulic disk brakes, a 12 V dc outlet, and a standard, hand-operated rear differential lock.

The Gator HPX and HPX 4x4 are both equipped with 20-hp (15-kW), four-cycle Kawasaki gasoline engines. The Gator HPX Diesel and HPX 4x4 Diesel both have 784-cm³, 20-hp

(15-kW), four-cycle **Yanmar** diesel engines. Standard features on all models include a front bumper, 12 V dc outlet, cup holders, glove box, hourmeter (records use to ensure regular maintenance) and a convenient storage compartment.

The Trail Gator HPX 4x4 is equipped with a 617-cm³, 20-hp (15-kW), four-cycle Kawasaki gasoline engine. In addition to the standard features, the vehicle comes with high-performance, all-terrain tires, brush guard, and a fully enclosed clutch.

John Deere's ATV line includes five base models: the Buck, Buck EXT, Trail Buck 500, Trail Buck 650, and Trail Buck 650 EXT. Two additional models, the Buck EX and Trail Buck 650 EX, will come with factory-installed accessory packages that include a 2500-lb (1135-kg) **Warn** winch, a heavy-duty front push bar, heavy-duty rear bumper, front and rear rack extensions, and fully integrated brush guards.

Designed as a heavy-duty task vehicle for hauling, towing, and pulling, the Buck models feature a gear-on-gear transmission capable of delivering high torque at low speeds, 1100-lb (500-kg) towing capacity. Buck models are equipped with a 500-cm³, four-stroke **Rotax** engine, and have a top speed in excess of 45 mph (72 km/h).

The Trail Buck models offer a 500- or 650-cm³, four-stroke Rotax engine and a continuously variable transmission. Trail Buck models are equipped with four-wheel suspension, and have a top speed in excess of 50 mph (80 km/h).

The Deere utility ATV models all feature a progressively locking all-wheel-drive system, hydraulic disc brakes, and a full set of front and rear cargo racks or a rear cargo box. A full range of attachments are available.

Iguana makes no tracks

A prototype of a new off-highway vehicle is being tested by **Iguana Technology**. Potentially manned or unmanned, the Iguana is designed to have the capability to overcome obstacles like guard rails, drainage ditches, snow banks, waterways, dirt banks, or retaining walls, and the ability to climb the natural angle of repose for alluvial material or steep, wet grass and then travel fast on soft material with minimal damage.



The Iguana prototype vehicle is designed to operate in combinations of deep snow, mud, sand, swamp, and hard surfaces of ice, rock or pavement. The center blocks on the track support the vehicle on paved roads, while the cone-shaped grousers provide traction without damage over soft ground.

The idea started with a track designed for four-wheel ATVs in the late 80s and progressed to a tractor with tracks in the 90s, continuing with a concept prototype in 1996 that has been modified twice and is still being used as a test bed. A new prototype vehicle is now under development.

"The design is aimed at future combat system requirements," said David Hansen, creator and President of Iguana Technologies. "But the technologies can be applied to almost any off-road vehicle."

Ultimately, the Iguana will operate in combinations of deep snow, mud, sand, and swamp, as well as hard surfaces of ice, rock, or pavement. It will go off road, by levering over banks or guard rails, bridging across drainage ditches, swimming waterways, and climbing or descending banks adjacent to roadways. It will also "spin surf" over the water at high speed, maneuver on wet turf without damage, and keep up with traffic on the highway.

Experiment and prototype testing have established some design criteria for the Iguana. The overall ground pressure will be less than 1 psi (7 kPa), all tracks and tires will be driven, and the vehicle will be capable of scaling a vertical obstacle of 4 ft (1.2 m). Cruising speed on the road will be in excess of 55 mph (90 km/h).

The front section, for people, is supported by a high speed "T-bar" flexible track system, which is one of the keys to the vehicle's climbing ability. The rear section, supported by cone tires, is for engine, drivetrain, and cargo. The two sections are designed to float and are connected with a two-way articulating mechanism. Turning options such as rear-wheel steering or left and right brakes improve mobility on terrain strewn with trees and large rocks.



Power for the latest prototype comes from a 200-hp (149-kW) V8 diesel engine borrowed from a **Hummer H1**, delivered through a four-speed automatic transmission with hi/lo transfers and four-wheel-drive from a **Chevrolet** pickup truck.

The rear-placed engine provides two benefits. First, pulling the engine pod results in more torque on the track drive wheels to create a downward load on the grousers thereby increasing traction. Second, the weight of the engine pod in the rear when climbing on an angle results in forcing the tracks uphill. A lightly loaded front section with tracks and a heavier rear section on wheels is the best configuration for moving over soft material as well as obstacle and climbing mobility.

The track attitude adjustment controls the angle of the tracks with respect to the engine pod. Placing the front of the tracks on a vertical obstacle by retracting a hydraulic cylinder

and then extending the cylinder causes the vehicle to rise. Moving forward causes the center of gravity to be on the obstacle. Neutralizing the cylinder and continuing to move forward causes the vehicle to surmount the obstacle. The Iguana vehicle can load itself on trucks or flat cars, and lever over snow, dirt banks, logs, and rocks. For cross country travel, the hydraulic cylinder can be in float position to allow the vehicle to undulate with the terrain, or in fixed position to bridge across ditches and gaps.

Spin surfing has been verified using a snowmobile fitted with Iguana tracks, which crossed a lake at approximately 35 mph (55 km/h, despite not being able to float on water). The new Iguana prototype floats, and implementing spin surfing is the current challenge. The low ground pressure and minimal damage to soft ground despite giving good traction have been verified, as has stability on paved roads.

Dixie Chopper ups the power

With a fuel-efficient **Yanmar** horizontal shaft, turbocharged 50-hp (37-kW) diesel engine, the XXWD5000-72 riding mower is now the most powerful machine in the **Dixie Chopper** lineup. The liquid-cooled, 1.5-L engine provides maximum power at 3200 rpm. It also has mounted replaceable Yanmar oil filters, electric start, a gear-driven oil pump for full pressure lubrication, and a **Donaldson** high-performance air cleaner with a turbo pre-clean feature that filters out 98% of the dirt particles before they reach the filter element.

The mower has a 72-in (1830-mm) wide cutting deck mounted to a six-rail tubular-steel frame, with two solid rails and a front axle for added strength and stability. The working speed range is 0 to 13 mph (0 to 21 km/h) in both forward and reverse. Coverage is estimated at 7.8 acres/h.

Convenience features include foot-operated deck height adjustment, two hand-operated steering

control levers, and hand-operated mower deck engagement. The drive system features two **Hydro-Gear** BDP-21L pumps, two **White Hydraulics** HB series 24-in³ hydraulic motors with case flush loop and 40-micron hydraulic filters. Dynamic braking is achieved through steering levers, and a parking brake gives positive lock-up of drive wheels when applied.



The XXWD5000-72 riding mower is the most powerful machine in the Dixie Chopper range, powered by a Yanmar turbocharged 50-hp (37-kW) diesel engine.

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New look for IHIMER

IHIMER, a joint venture between the **IMER Group of Poggibonsi** (Siena) and **IHI Construction Machinery Ltd.**, part of the Japanese Ishikawaiima-Harima Heavy Industries (**IHI**), launched the 30NX-2 mini-excavator at the Bauma exhibition in Germany.

Reduced rear dimensions and a greater lifting capacity are the distinguishing characteristics of the whole NX series of mini-excavators, which features significantly better operating specifications compared with the old generation of machines. The entire series is composed of zero tail swing machines.

The cabins of all NX mini-excavators are designed to provide a safe structure, offering a protected driving environment with a ROPS (rollover protective structure) system—both the

compact machine, developed to meet the growing need of the construction market to gain access to old town centers and narrow spaces that cannot be reached with conventional excavators. It has an operating mass of 2980 kg (6570 lb).

The power required to develop the digging performance of the 30NX-2 comes from an 18-kW (24-hp), 1.5-L **Yanmar** low-emissions diesel engine, and by a variable-displacement pump. The digging force at the bucket tooth is 26.5 kN (6000 lb), and the standard 0.09-m³ (0.12-yd³) bucket has a digging depth of 2900 mm (114 in).

The 30NX-2 has many improvements over the 30NX: greater stability, higher rotation speed, increased digging force, increased traction force, wider bucket and higher capacity,

increased lengths of the arms, reduced clearances between pins and bushes, and a work lamp positioned under the arm to protect it from accidental breakage. The hydraulic system is set at higher operating pressure for fast, multiple operations.

The 30NX-2 has been restyled with new covers with rounded styling made of more resilient, lighter materials. The adoption of tougher, thicker material for the loaded components, and the reduction of play in the pivot and the arms, means less wear, improved quality, and lower maintenance requirements.

The 30NX-2 is also fitted with an automatic lock system: when the left-hand control lever console is raised for entrance to the cab, all the control levers are inactive until the console is lowered again and locked in the work position. All of the lids and covers allow easy access to carry out routine maintenance operations quickly.

For the 30NX-2, as for the other machines of the NX range, a variety of arms and tools are available. The accessories available comprise quick mechanical coupling, additional work lamps, an antitheft device, various sizes of buckets, hydraulic hammer, iron tracks, lifting kit, protective roof, and additional ballast.



The 30NX-2 mini-excavator from IHIMER is powered by an 18-kW (24-hp), 1.5-L Yanmar low-emissions diesel engine.

cabin and the roof comply with safety standards currently in force. Special attention is given to the operator's comfort, with a user-friendly layout of the controls and a seat with spring suspension, adjustable depending on the operator's weight.

The newest addition to the NX series is the IHI 30NX-2 mini-excavator, an evolution of the 30NX. Like the 30NX, it features zero tail swing rotation, with a 775-mm (30.5-in) rear rotation radius. The 30NX-2 is a



No stall feature from Komatsu

Komatsu America Corp. has upgraded its SK818-5 and SK820-5 skid-steer loaders to feature Tier-2 compliant engines that lower emissions below future regulations, Komatsu's patented automatic power control (APC), and HydraMind hydraulics. A standard, two-speed, shift-on-the-go transmission gives a working speed of 6.5 mph (10.5 km/h) and a travel speed of 10 mph (16 km/h).

Available throughout Komatsu's entire skid-steer product line, APC allows the operator to work at full power during any phase of the job—from digging to loading and carrying—without concern about engine stall-out. Both the SK818-5 and SK820-5 come standard with Komatsu's HydraMind and closed-load sensing system (CLSS) hydraulics that ensure precise control and allow simultaneous machine functions (loader-arm, bucket maneuvering, etc.) without sacrificing speed, engine power, or performance.



The Komatsu SK820-5 has a standard, two-speed, shift-on-the-go transmission that provides a working speed of 6.5 mph (10.5 km/h).



The CK1122-5 is a prototype of a new crawler-type skid-steer loader from Komatsu, with good traction and stability but lower ground pressure than similar wheeled loaders.

The new machines are the first two Komatsu skid steers to feature a vertical-lift loader arm, designed to keep the load steady throughout the lifting cycle for truck loading and handling palletized materials. The SK818-5 and SK820-5 feature rated operating loads of 1750 and 1900 lb (800 and 860 kg), and tipping loads of 3500 and 3800 lb (1590 and 1725 kg), respectively. The machines feature equal breakout forces, varied by bucket lip design: 4200 lb (18.7 kN) with a short lip bucket and 3530 lb (15.7 kN) with a long lip design. Maximum hydraulic lift capacity for both machines is 4800 lb (2175 kg).

The SK818-5 and SK820-5 feature an auxiliary hydraulic circuit with a maximum flow of 16 gal/min (61 L/min), with the option of a "Super Flow" auxiliary hydraulic circuit that has a maximum flow of 26 gal/min (98 L/min).

All instrumentation is located on the operator restraint bar for easy viewing, and all controls and switches are within easy

reach of the operator. Komatsu's proportional pressure control joystick levers are easy to use while still providing easy and accurate control of the machine. Operators have the choice of three control patterns, ranging from traditional hand and foot controls to two variations of the increasingly popular "all hand" controls. All three control patterns are fully hydraulic, adjustment free, and maintenance free.

At Bauma in Germany, Komatsu introduced the CK1122-5, a prototype of a new crawler-type skid-steer loader, to meet customer needs for a specialized loader with greater traction and stability, a higher tipping load, and lower ground pressure. This new machine complements Komatsu's existing line-up of skid-steer loaders.

The new CK1122-5 has greater traction force and stability than an equivalent wheeled loader, because tracks have a larger surface area in contact with the ground than wheels do, giving greater contact rigidity, and increasing the tipping load. The tracks also reduce the machine's tendency to bounce, improving both dynamic stability and operator comfort. The CK1122-5 has the ability to work on slopes and in mud and sand, and because the machine's mass is distributed over a greater surface area, the ground pressure is lower, making it ideal for work on soft soil where damage is a concern.

The new loader has Komatsu's hydraulic CLSS, and a Super Flow hydraulics system. Ergonomic controls, generous cab space, adjustable seat, and low operating noise provide a comfortable work environment, while Komatsu's tilting cab, engine hood, and footboard make maintenance easy.

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In the trenches with Vermeer

The **Vermeer** hydrostatic RT450 riding trencher/plow features a center-mounted backhoe operator seat, automotive-style steering, a servo-controlled ground-drive system, an uncluttered operator platform, and an easily accessible fiberglass hood. If the operator leaves the seat with the attachment or ground drive engaged, the operator presence system automatically shuts down the trencher.

The RT450 is powered by a 50-hp (37-kW) **Deutz** F3L2011 engine, and offers an improved axle shaft, a 46-in (1160-mm) wheel base, and new radial-piston hydraulic motors on all trencher attachments. Capable of trenching depths to 60 in (1520 mm), the machine can trench widths from 5 to 12 in (130 to 300 mm). Designed for good maneuverability in confined work areas, it has the shortest turning radius in its class, according to Vermeer.

The operator station, oriented to the right, has all tractor and attachment controls located within easy reach. A fiberglass hood improves visibility and is easily removable allowing quick and convenient servicing of the engine.

The RT450 features the Vermeer-exclusive forward/reverse ground-drive foot pedal with patented creep override that frees the operator's hands to control its many versatile attachments. Attachment options include a low and high headshaft center-mounted trencher, six-way backfill blade, hydraulic sliding offset trencher, vibratory plow, and a backhoe.

The Vermeer hydrostatic RT650 gives operators the maneuverability of a riding trencher combined with more



The Vermeer RT450 hydrostatic riding trencher/plow is powered by a 50-hp (37-kW) Deutz F3L2011 engine.



The Vermeer RT650 trencher/plow features automotive-style steering, a servo-controlled ground-drive system, and standard planetary axles.

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cutting power to penetrate tough surfaces. For added comfort, the operator's station rotates 90°, allowing the operator to select five different positions. The attachment controls rotate with the operator keeping them within easy reach at all times. The RT650 also features automotive-style steering, a servo-controlled ground-drive system, and standard planetary axles.

A 76-hp (57-kW) F4L2011 Deutz engine provides the power, on a 58-in (1470-mm) wheel base, and radial-piston hydraulic motors on all trencher attachments. Capable of trenching depths to 60 in (1520 mm), the RT650 can trench widths up to 16 in (410 mm). For enhanced safety, if the operator attempts to leave the seat with the attachment or ground drive engaged, an Operator Presence System automatically shuts down the machine.

Like the RT450, all attachment controls on the RT650 trencher's operator station are located within easy reach on the right side of the tractor, and the RT650 also has Vermeer's exclusive forward/reverse ground-drive foot pedal.

The RT650's attachment options include a center-mounted trencher, hydraulic sliding offset trencher, vibratory plow, and backhoe. A joystick control featuring a float position for a four- or six-way backfill blade allows for smooth backdragging and finish work. Standard backhoe remote controls permit the operator to precisely reposition the machine without leaving the backhoe operator's station.

A 20-gal (76-L) hydraulic fluid tank increases oil dwell time, which allows for more efficient oil cooling and longer component life. The RT650's tight turning radius with steerable rear axle provides good maneuverability in confined work areas.