

# Resource

## Outstanding Innovations 1994



**Company Recognition Program**

# A Vision of the Best

**N**ine years ago, *Agricultural Engineering* magazine began sponsoring the **AE 50** Company Recognition Program for Innovative Products. It is with great pleasure that the tradition is being continued in ASAE's new monthly membership magazine, *Resource: Engineering & Technology for a Sustainable World*. The products honored this year are featured on the pages of this special insert to the September issue of *Resource*.

Since the beginning of the **AE 50** program, entries have been solicited from hundreds of companies — both large and small. The program seeks to bring attention to the products intended principally for use in the production, processing, storage, packing or transportation of agricultural products. Over the years, there have been repeat winners with new innovations. Companies are always extremely pleased when notified of the award. Their products can then be presented to the public as having been among those receiving this outstanding recognition.

The entries are thoughtfully reviewed by a panel of judges for the purpose of identifying those products most likely to be of use to those who work as designers, developers, managers or other individuals who are actively involved in engineering of agricultural, food and biological systems.

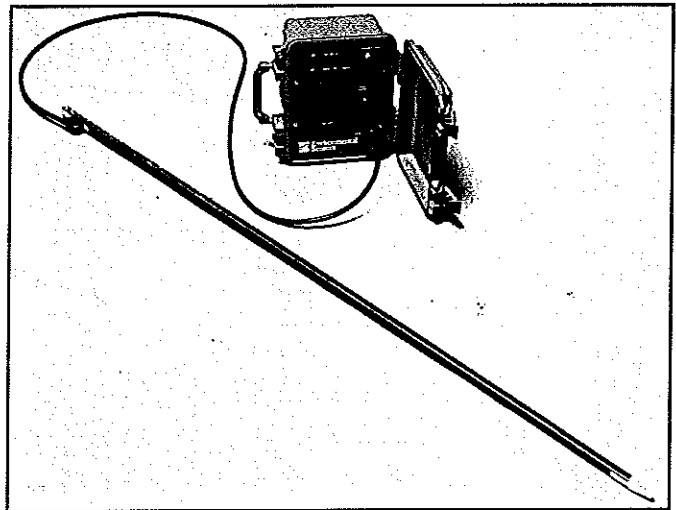
Read this section to find that product you've been looking for, or that idea for a product that you may one day enter yourself.

To the companies and their employees who were actively involved in the conceiving, designing, developing of their products, we extend a HEARTY HANDSHAKE AND A WELL DONE!



## Portable field instrument measures volumetric soil moisture content

**M**oisturePoint is Gabel Corporation's Environmental Sensors Division's new instrument to measure volumetric soil moisture content. It combines accuracy with ease of operation and application, to give agronomists and soil scientists unprecedented access to precise soil moisture data. MoisturePoint features accuracy within 3% without soil calibration, single step manual operation for instant readout or direct access to data via PC, accurate response in saline soils, moisture profiles in discrete segments with precise spatial resolution, and minimal disturbance to surrounding soil. MoisturePoint is a self-contained battery-powered unit easily carried and operated by one person. It combines time domain reflectometry (TDR) with Environmental Sensors' patent-pending technology to overcome the limitations of traditional moisture monitoring instruments. Simply insert the probe into the ground, connect the cable and push the button. Within seconds MoisturePoint displays a five-segment spatially defined moisture profile. For more complex uses, the instrument features a PC RS232 port that enables the user to directly access raw data and modify system response. An optional data logger records sequential measurements and automatically tags the data with time, date and probe serial number. **G.S. Gabel**



Corporation, Environmental Sensors Division, Victoria, British Columbia; 800-553-3818.

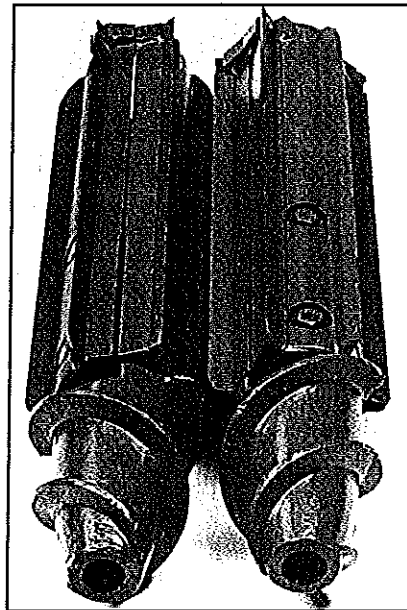
## Selective sprayer control system detects plant growth and applies chemicals

**R**oGator 664 with detectspray is a precision chemical application system. The RoGator is a high-clearance, high-performance chassis with state-of-the-art liquid herbicide applications on board. The detectspray is a selective sprayer control system that "detects" green plant growth and applies chemicals only where needed. Detectspray operates under the principle that green plants absorb and reflect incident energy in various wavebands, which contrast with soil and stubble. The RoGator has a sensor mounted ahead of each nozzle (60, 80 and 90 ft. booms). When the ratio of waveband reflectance exceeds a certain threshold value, an on-board microprocessor opens the respective nozzle. The sensor scans the field of view (which approximates the nozzle coverage pattern) at 300 cycles/sec., which results in a new assessment of ground coverage every 3.4 in. at 12 mph. This spraying system solution offers pesticide applicators significant economic and environmental benefits by reducing the amount of product used, while reducing cultivation and soil erosion. **Ag-Chem Equipment Co., Inc**, Minnetonka, Minnesota; 612-933-9006.



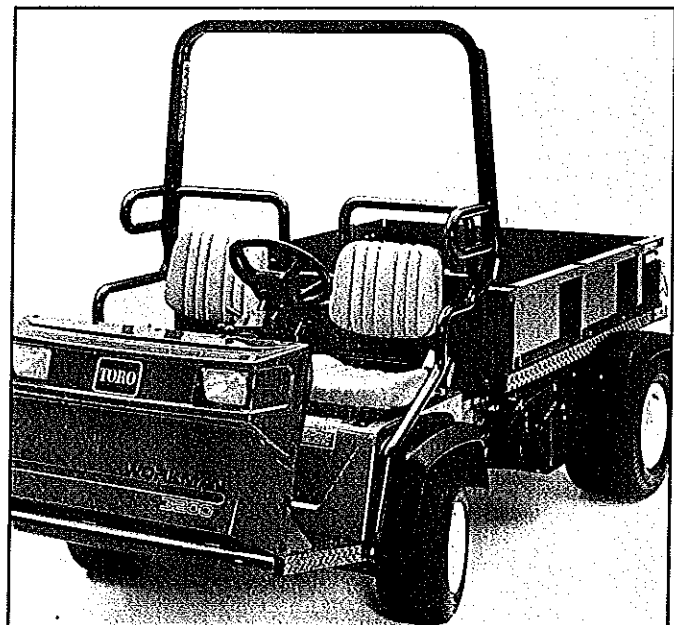
## Corn head knife stalk rolls improve harvest productivity

The John Deere **Corn Head Knife Stalk Roll** is a unique three-piece bolted design. Each roll has six knife edges offset to the opposing roll. The rolls provide higher productivity and corn stalk cutting for John Deere corn heads. The rolls can be installed on any John Deere corn head manufactured since 1969. The more aggressive stalk rolls are cast iron with hard facing, take in less trash and allow greater ground speed. Production is enhanced with less plugging and more uniform feeding in the corn head. The knife blades crimp and cut corn stalks. Improved residue flow leading to speedier residue decay is obtained with minimum tillage equipment. **John Deere Harvester Works**, East Moline, Illinois; 309-765-2072.



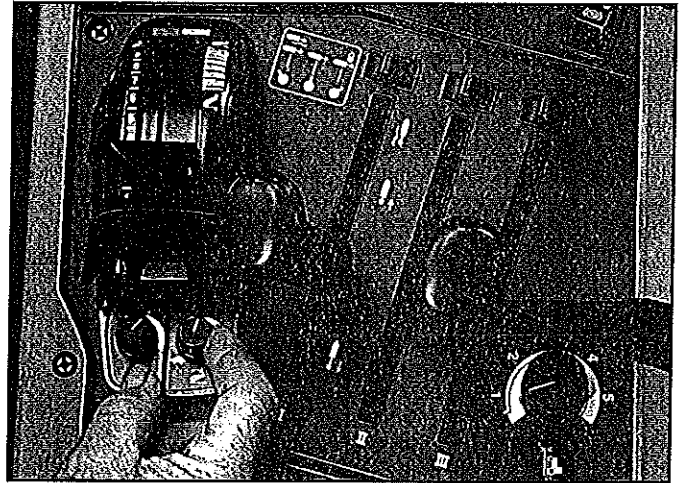
## Four-wheel work vehicle with capacity of three-wheel maneuverability

The **Workman 300 Series** combines a four-wheel configuration with 70-degree power steering to provide three-wheel maneuverability with the stability of a four-wheeled vehicle. The out front operator and extended bed design allow the load to be evenly distributed over two axles and increase the payload capacity (a full 2,600 lbs. and 25% more bulk capacity). A 540 rpm PTO is available at the rear with an optional 2- or 3-point category I tractor hitch. A variety of attachments are available to match all needs of dumping, spraying, spreading, conditioning, trimming, top dressing, washing and mowing. There is additional customer compatibility to other brand name OEM attachments with retrofit kits. The Workman 3000 Series is offered in both a 21 hp diesel or 27 hp gas engine with standard 3-speed synchromesh transmission with differential lock. **The Toro Company, Commercial Division**, Tomah, Wisconsin; 608-372-1487.



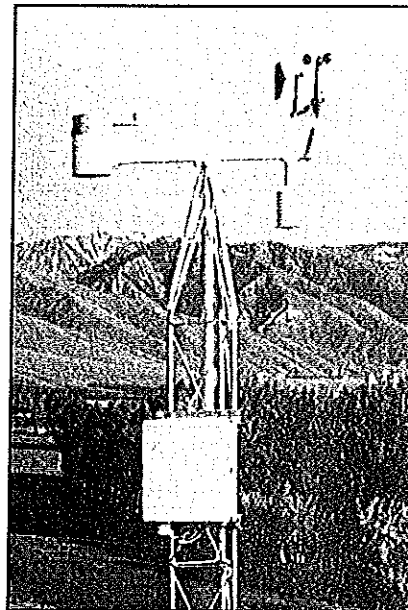
## Depth control provided for two new secondary tillage tools

**J**ohn Deere **Electro-Hydraulic Depth Control System (EHDC)** provides precise depth control for two new secondary tillage tools – the 980 Field Cultivator and the 550 Mulch Master. Both machines are used extensively for chemical incorporation and seedbed preparation which makes simple, accurate depth control a high priority among users. EHDC allows an operator to control the operating depth of his drawn-type implement with the electrohydraulic three-point hitch controls on 55, 60 and 7000 series John Deere tractors. Accuracy is unprecedented and productivity is boosted by allowing the operator to control operating depth on the go, from the tractor seat. **John Deere Des Moines Works, Des Moines, Iowa; 515-289-3163.**



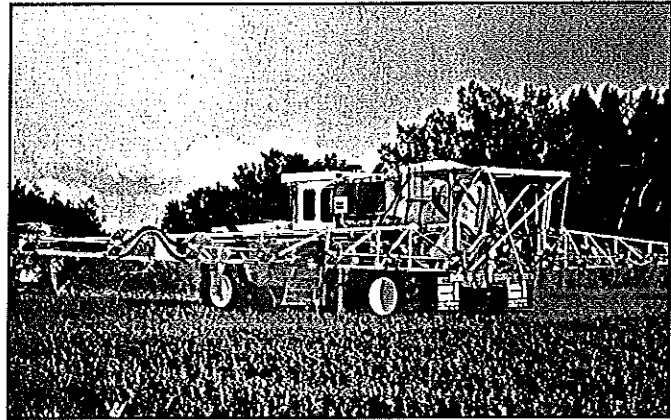
## Automated evapotranspiration monitoring system aids irrigation scheduling

**W**eather Watch 2000 is an automated system designed for commercial agriculture and irrigation scheduling applications. The station, sited adjacent to representative irrigated fields, measures meteorological conditions that affect crop water consumption and calculates evapotranspiration (ET) via a modified Penman-Monteith equation. The Weather Watch 2000 is supported by a PC-compatible software package for data retrieval and analysis. **Campbell Scientific Inc., Logan, Utah; 801-750-9520.**



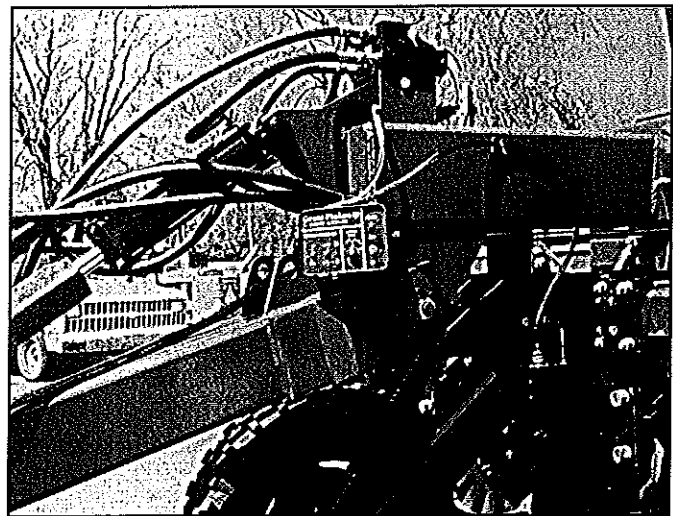
## System applies six products independent of one another to field

**A**g-Chem® Soilection® Liquid System provides the fluid fertilizer industry with a reliable system to apply up to six products independent of one another. Rate information is sent from a host operating system to a network of electronic, hydraulic and pneumatic components to provide an accurate and precise field application of desired products. To reduce the risk of misapplication due to a system failure, each product is monitored and displayed individually. This system provides the fluid fertilizer industry the machine to convert good crop information to good crop yields by placing the desired products at the optimum rate, in the specific place to maximize production while reducing the risk of contaminating the environment. **Ag-Chem Equipment Co., Inc.**, Minnetonka, Minnesota; 612-933-9006.



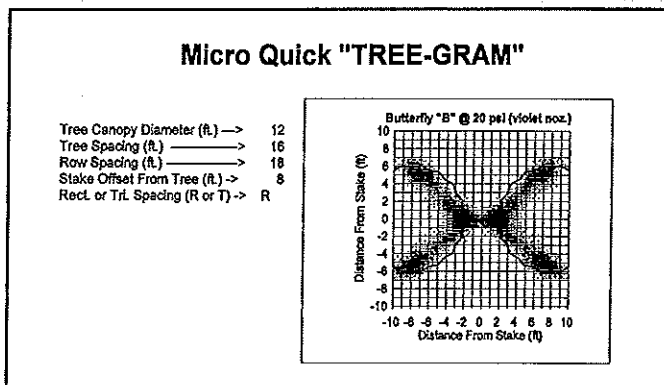
## Automatic coulters depth control system designed for no-till hitch planting

**T**he Great Plains' Coulters Command™ is designed to maintain the depth of the coulters on a no-till hitch planting system regardless of soil type or terrain allowing for more consistent zone tillage that incorporates the residue within the seedbed. This accelerates the microbial breakdown of the residue, increasing organic matter and building top soil. Wet, heavy soil is loosened, allowing it to warm up faster, increasing germination and allowing for better placement of the seed by the planting unit. The convenience of the electrohydraulics allows hands-free operation of the system during planting, but also allows the farmer to make incremental changes in the depth of the coulters from the tractor when desired, without interrupting planting. **Great Plains Manufacturing Inc., Grain Drills Division**, Assaria, Kansas; 913-667-4755.



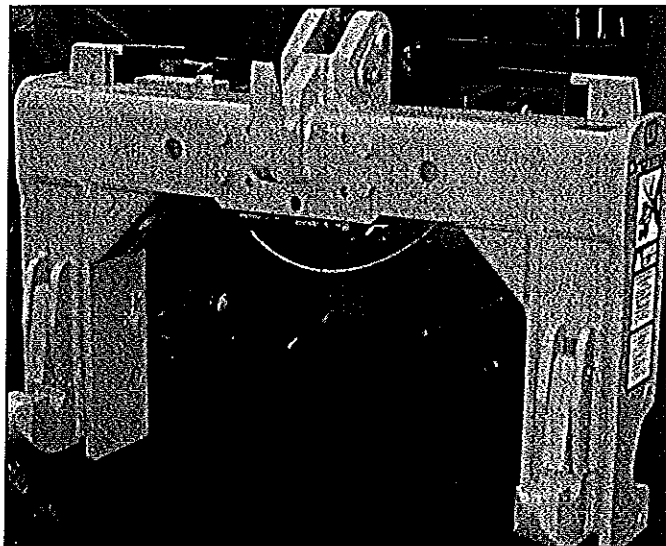
## Software aids design of micro-spray patterns in tree crops

**M**icro Quick™ TREE-GRAM™ graphically superimposes tree canopies over a micro-spray "densogram" watering pattern to produce a field representation of product performance. All Micro Quick patterns have been tested and are now available for TREE-GRAM analysis in which field parameters of tree canopy diameter, tree spacing, row spacing and micro spray stake position are easily varied with graphical results viewed instantly. Best uses of the patented Proportional Butterfly, and the new notched and rectangular patterns are featured. Previously, patterns were selected based on past experience or uninformed recommendations. The software runs on an IBM compatible computer with Windows and Quattro Pro for Windows. Currently, individual printouts of TREE-GRAMS are available by fax or by mail. Rain Bird Sales, Inc., Agri-Products Division, Glendora, California; 818-852-7340.



## Implement guidance system doubles as quick coupler

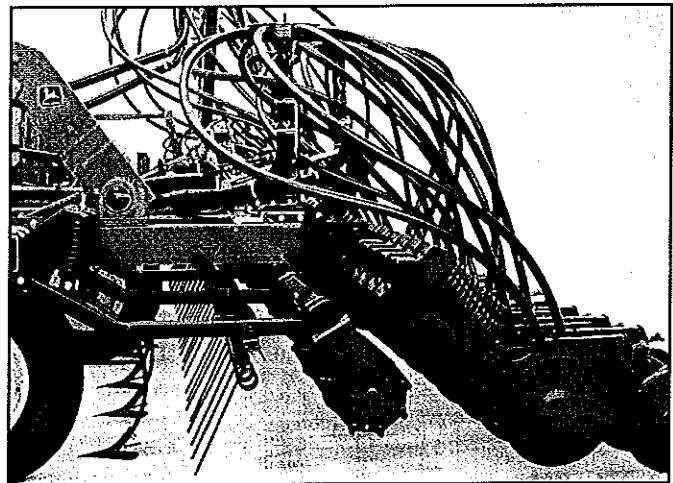
**T**he Tracer™ is an implement guidance system with the exclusive feature that is to be used as a quick coupler year-round. When there is a need for row guidance the Tracer uses a mechanical probe to sense where the row marker furrow, planting bed, or growing crop is; a programmable controller clearly displays information on an alphanumeric display and controls a proportional steering valve that "points" the hitch via a single hydraulic cylinder. When row guidance is not needed, the Tracer can be easily switched for use in even the most rugged 3-point operations by removing the probe box and controller and inserting exclusive lockout pins. This unique concept in implement guidance systems eliminates the need to mount and dismount the guidance system and provides today's farmer the first true quick coupler guidance system. Orthman Manufacturing, Inc., Lexington, Nebraska; 308-324-4654.





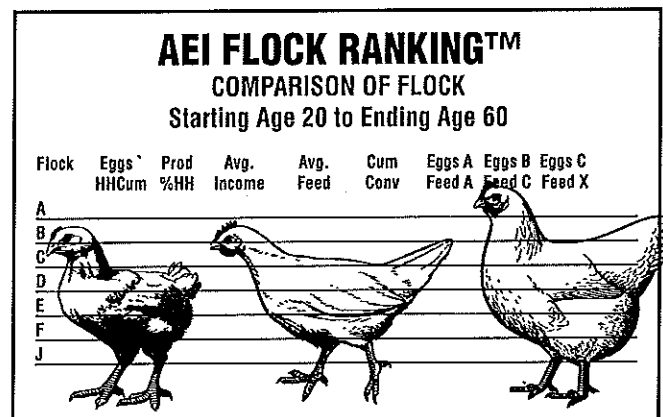
## Disk drills improve seed placement and soil contact

The John Deere 730 Air Disk Drills are designed for use with the 787 Air Seeding System and are offered in 28, 36, and 44-foot sizes. The five rank tillage frames have 24 in. underframe clearance and 9 in. C-shank spacing for excellent residue handling. Following the C-shanks are two styles of finishing tools for preparing the seed bed. The standard double-bar harrow will level the soil while the optional single-bar harrow and rolling baskets will level, break clods and firm the seed bed. The 455 Grain Drill style offset openers, designed for seeding small grains and soybeans, are offered in 6-in. or 7.5-in. row spacing. Continuous tractor hydraulic power provides constant down pressure to the openers in level or rolling fields, resulting in improved seed placement and seed-to-soil contact. Downforce on all openers is easily adjusted to an infinite number of settings with one pressure control valve. The depth gauging press wheels can easily be adjusted in 0.35 in. increments with one hand without the use of tools. A variety of press wheel sizes and shapes are available. John Deere Harvester Works, East Moline, Illinois; 309-765-2237.



## Automated software package provides information on flock profitability

Automated Environments' FLOCK PROFIT RANKING™ is an automated software program that provides egg producers with a definitive answer to the important question: "Which flock is more profitable?" It runs in conjunction with a computerized environmental control and egg counting system, and a database management program that formulates weekly optimized nutrient and least-cost feed rations. It is unique because its profitability calculations utilize the actual feed formulations for every flock unit in its 15 million bird database. It compares various performance criteria and identifies factors that contribute to actual bottom line profitability. Each week 16 possible projections, ranking egg income over feed costs, are stored for every flock. FLOCK PROFIT RANKING shows profitability differences in strains, management techniques and individual flocks at various ages. The ranking portrays valid flock to flock comparisons between farms and between strains, regardless of the farm's geographic location and climatic variations, because of the computer-controlled environments. Automated Environments, Inc., Ithaca, New York; 607-533-4214.

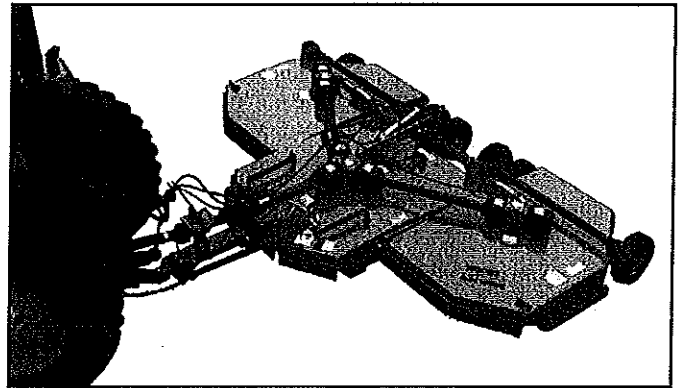


*Increase Profits through Flock Ranking*



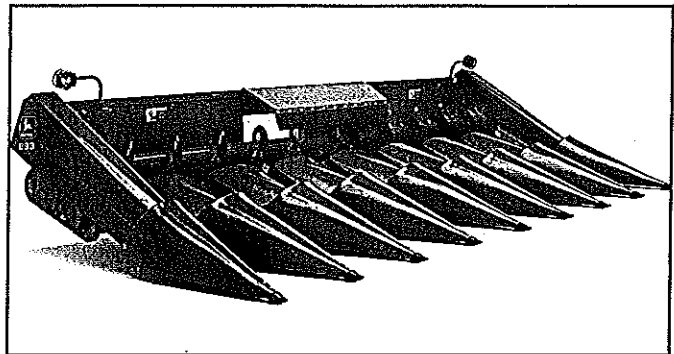
## Rotary cutter features blade speed and overlap

The Woods 3180 Batwing® is a high capacity rotary cutter and shredder for crop residue. Also used widely in general farmstead and highway right-of-way maintenance programs. The 3180 incorporates unique Intra-Drive® gearbox designs that eliminate the need for a fourth gearbox in the drive system. This enables location of the wing drive slip-clutches for easier servicing and safer operation of the wing cutting mechanism. Top of the mower decks are generally clear of deck reinforcement components. This eliminates damaging rainwater retention and encourages safer operation by reducing build-up of chaff and cut-material on top of the mower deck. Other features include a blade overlap of more than 6 in., Category 4 and 5 heavy-drive components, and high blade tip speeds for optimum cutting performance. Woods Equipment Company, Oregon, Illinois; 815-732-9270.



## Plastic crop dividers on a row crop header

John Deere's 90 Series Corn Head increases harvest efficiency with its innovative Perma-Glide points, covers and fender. The slick roto-molded polyethylene material allows crop to feed smoother and faster — especially in damp conditions, reduces "ear-bounce" that is common to ears hitting and ricocheting off of sheet steel, won't rust like sheet metal and never needs painting. Point, cover and fender are lighter and easier to handle, easily opened for service by pivoting the deck cover and tucking the point into the stirrup. Higher capacity 16 in. (406.4mm) auger is standard on all 90 Series Corn Heads. John Deere Harvester Works, East Moline, Illinois; 309-765-2070.



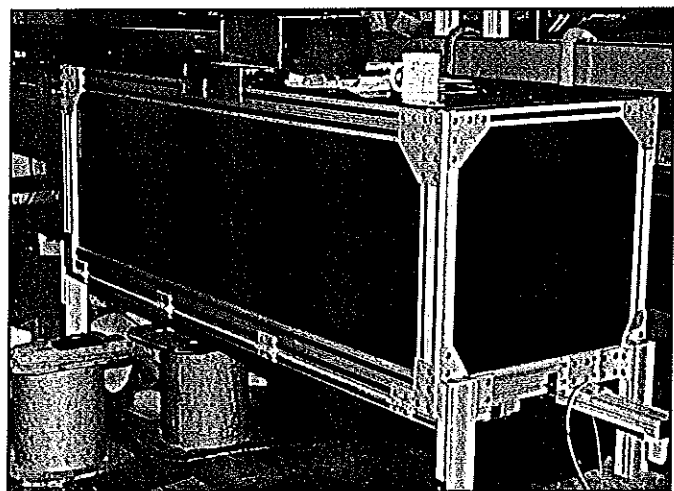
## Monitor reports 'on-the-go' information for cane harvesters

A gridry Rimik CLM3 Cane Loss Monitor gives a direct display of the loss of cane billets when harvesting sugarcane with chopper harvesters. A transducer attached to the fan casing is used to detect the impact of cane as it passes through the fan. Using the monitor, the operator can make changes to harvester operation to minimize losses. This is particularly important when harvesting green cane when losses are generally high. The monitor also displays ground speed, extractor fan rpm and base cutter rpm. Installation of the monitor on common models of chopper harvesters is straightforward. Agridry Rimik Pty. Ltd., Toowoomba, Queensland, Australia; 011-61-76-332299.



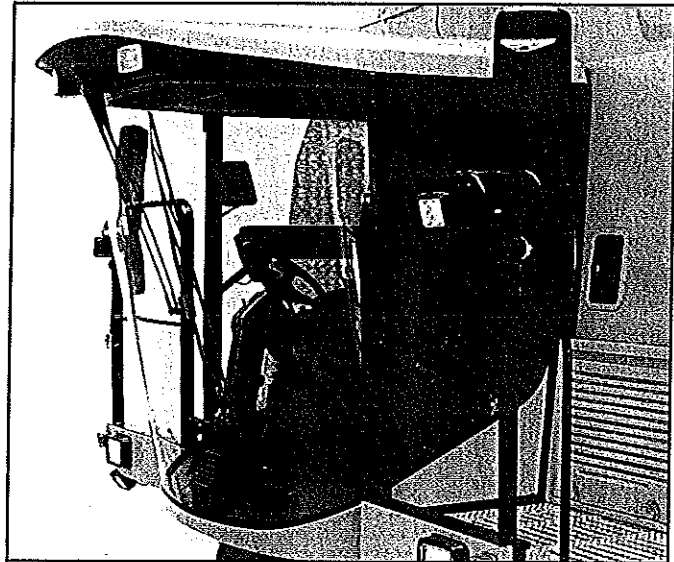
## Fluid application controller precisely monitors product flow

The Sunkist "Sunshine" Fluid Application Controller will precisely monitor product flow into a fluid application unit and efficiently and independently control application in as many as four different zones in the unit. The system consists of a viewing dock, which mounts on existing product conveying equipment upstream from the fluid applicator and an easy to use "touch-screen" command center. High-quality views of conveying product are continuously passed to the command center, where fluid volumes are determined from operator protocol and applicator pumps are then independently and instantly "tuned" to the optimum settings. Information on product flow and application fluid are immediately available for accounting use. The high-precision fluid application controller has demonstrated savings of 20-30% in wax applications accounting to tens of thousands of dollars retained revenue for packing operations and growers. Sunkist Growers, Inc., Ontario, California; 909-983-9811.



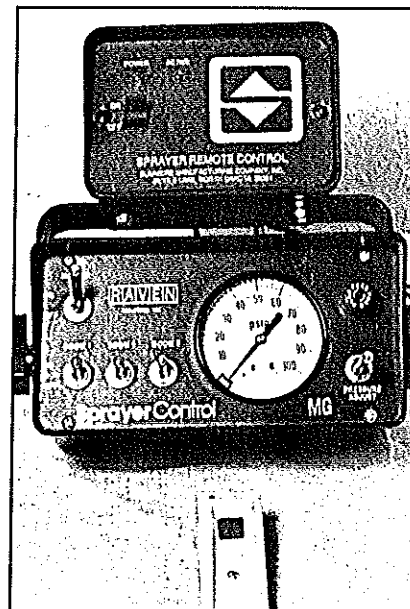
## Combine cab delivers maximum comfort and ultimate operator control

The New Holland Belgium N.V. Discovery Cab, introduced on the new TX Combine generation, is designed to deliver maximum comfort and ultimate operator control. Large and roomy, the cab provides 210 degrees of visibility and noise levels below 76 dBA. A curved glass construction, deep tinted to eliminate glare and excessive heat, avoids reflection when working at night. The infoview monitor gives constant feedback to the operator on the complete harvesting process. A self-diagnostic system is built into the monitor and error messages are displayed in levels of importance. A service mode alerts the operator when servicing is required. Remote controls engage all main combine functions and the multicontrol lever combines all header functions. The whole instrumentation has been laid out ergonomically so that all buttons are easy to reach and see. New Holland Belgium N.V., Zedelgem, Belgium; 011-50 25 31 75.



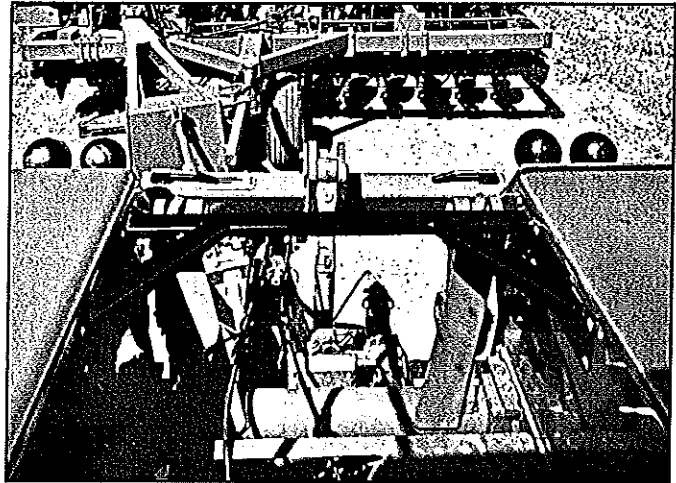
## Sprayer remote control allows on/off regulation within 100 feet of control system

Summers Sprayer Remote Control allows starting and stopping of most sprayer systems from anywhere within 100 feet of the sprayer control. This allows the operator to calibrate and test spray patterns without making several trips in and out of the tractor or truck. Time and chemicals can also be saved when checking for plugged tips. The operator can momentarily start the sprayer system to locate plugged tip(s) and recheck that the plugged tip(s) has been cleared. Summers Mfg. Co., Inc., Devils Lake, North Dakota; 701-662-5391.



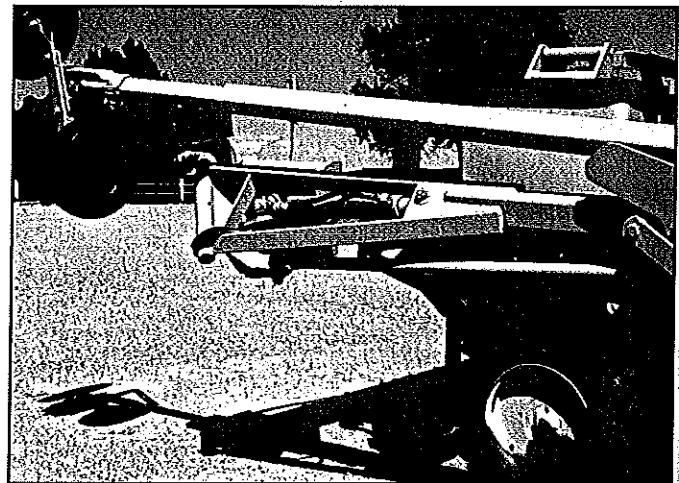
## Hydraulic hitch provides wider working width

The 750 Hydraulic Hitch hooks two 15-foot 750 drills in tandem for a full 30 feet of working width. The process of converting from transport to field position is achieved by first manually releasing two latches on the hitch. Then, by activating an electrical switch in the cab, the operator controls a hydraulic motor that steers the drill into position as the operator is driving forward. By backing up a short distance, the drills are positioned into a field configuration, where the hitch automatically latches and the operator is ready to plant. The whole process takes less than three minutes. The optional weight transfer hitch will transfer up to 2,200 lbs. of weight to the tract drawbar by adjusting a hydraulic pressure control valve. The additional weight to the rear of the tractor improves traction when pulling 30 feet of No-Till drill. John Deere Harvester Works, East Moline, Illinois; 309-765-2234.



## Rear-fold row marker designed for maximum compactness

Orthman 1300 Series Rear-Fold Row Markers are designed for maximum compactness. They are ideal for applications where overall toolbar height may be a problem. The low profile keeps them from getting entangled with low tree limbs and is an added safety feature around farm yards with low electrical power lines. The folding mechanism pulls the disc straight off the ground for a straight mark right to the end. This is important when using guidance systems that follow the mark. If the marker hits a stationary object, it's protected by a tension bolt that breaks away to allow the arm to fold back without damage. With an increasing awareness for farm safety and wider row crop farm equipment, this marker fits a pressing requirement for farm equipment that's compact during operation and transport. Orthman Manufacturing, Inc., Lexington, Nebraska; 308-324-4654.



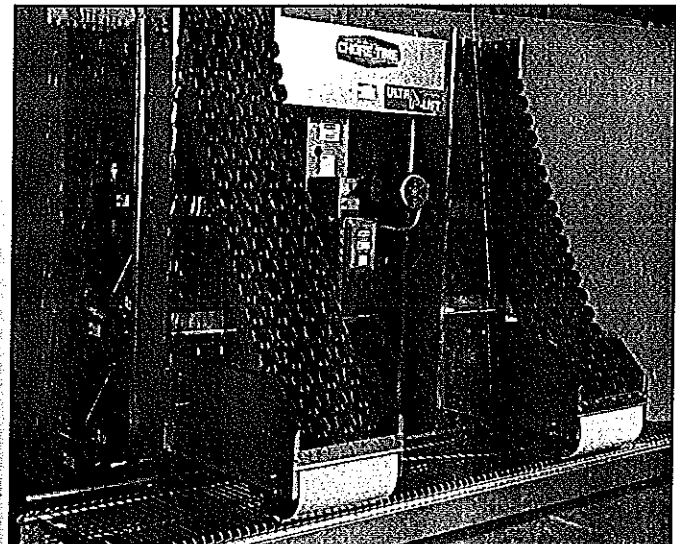
## Fairway mowers designed for balanced cutting, solid contact to ground

John Deere 3215 and 3235 Fairway Turf Mowers are vehicles equipped with five 22-inch wide reel mowers designed to provide excellent cut quality on various types of cool, transitional and warm season fairway grasses. A patent-pending mounting design moves the attaching point to the rear of the cutting unit. This helps ensure that as the cutting unit rolls over the turf there's balanced force over the front and rear rollers, which keeps the cutting unit level and in more solid contact with the ground. Two ground-hugging 22-inch cutting unit options ensure a high-quality cut on any type of grass or terrain. Hydraulic down pressure is built into every traction unit to help the cutting units better penetrate the turf. **John Deere Lawn & Grounds Care Engineering, Horicon, Wisconsin; 414-485-5527.**



## Collector handles each egg gently, eliminating costly checks and cracks

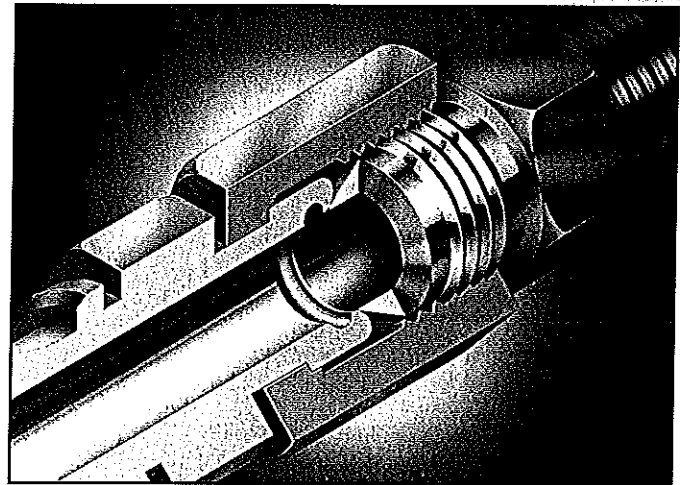
The Chore-Time Ultra-Lift™ Egg Collector will move eggs from layer cages at different heights and locations and deliver them onto a cross conveyor for transport to a central packing operation. Its many unique features enable the collector to separate eggs from each other and handles each egg gently, eliminating costly checks and cracks in the egg shell. Other features eliminate places for dirt and feathers to catch and gather. By allowing debris and manure to fall out of the machine, eggs are kept cleaner and maintenance time is reduced. The versatile collector can be adapted to fit many different cage configurations and dimensions. Its unique discharge unit allows for various egg removal heights, even including points below its own supporting surface. This versatility makes it easily adaptable to both new installations and retrofits. **Chore-Time Equipment, Milford, Indiana; 219-658-4101.**





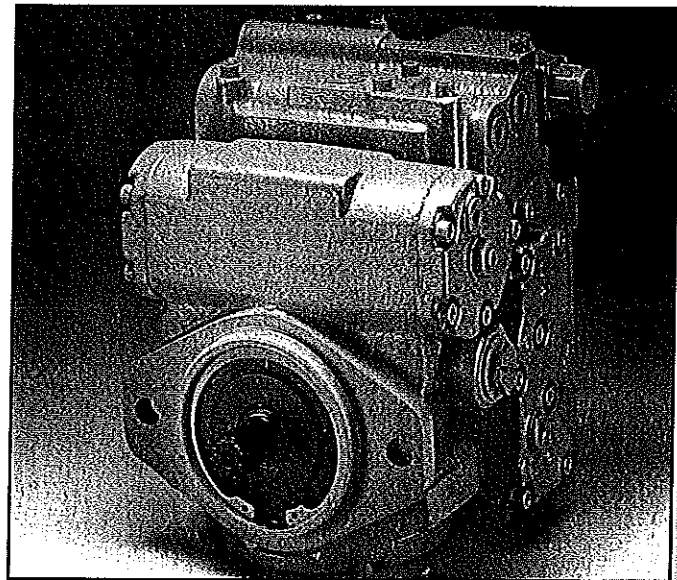
## Hydraulic hose coupling eliminates high pressure leaks

**G**ates MegaSeal™ is a Hydraulic Hose Coupling that eliminates fluid leaks commonly found on high-pressure hoses attached to hydrostatic transmissions and high-capacity cylinders. It is a female coupling component that easily mates with standard JIC fittings, the widely used SAE hydraulic connector. Moreover, MegaSeal exceeds the SAE test requirements of Flat-Face O-ring fittings, considered the industry standard for leak proof couplings. But, MegaSeal does not have the cost, installation and equipment re-engineering problems of Flat-Face fittings. It is ideally suited for extreme vibration, temperature, impulse and pressure applications found on most agricultural equipment. The Gates Rubber Company, Denver, Colorado; 303-744-5520.



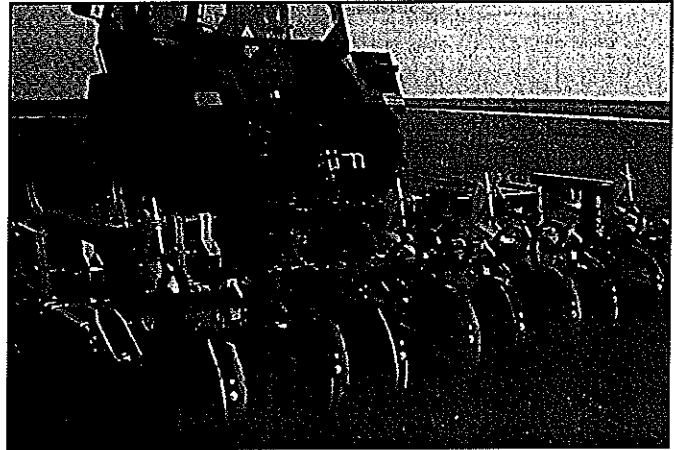
## Variable displacement pump uses axial piston/slipper concept

**T**he Sauer-Sundstrand 28cc Series 42 Variable Pump is a family of new servo-controlled axial piston pumps for medium-power closed-circuit applications in agriculture, construction and road-building markets. The 28cc per revolution is the first size introduced. The extensive use of the QFD process throughout its development has resulted in a value-added design with improvements in vehicle performance and productivity while reducing overall installed system costs. The pump can be controlled through manual servo, electric or hydraulic input signals, with a wide variety of control options available to fit specific customer needs. The 28cc Series 42 pump is extremely short in length to fit into small vehicle spaces, and has full through-power for driving auxiliary pumps without the need for additional support brackets. It offers improved sound quality and noise levels, and is ruggedly designed for increased reliability. Sauer-Sundstrand Company, Ames, Iowa; 515-239-6330.



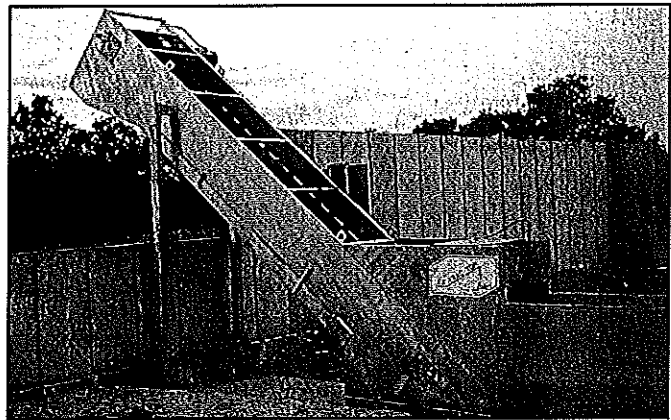
## Reservoir tillage system holds water where it falls

**W**ATER CHECK™ is an anti-erosion/water retention reservoir tillage tool. It forms a constant pattern of reservoirs over the entire field, thousands per acre. It creates a field texture like a waffle to hold rain, irrigation and spring snow melt. Moisture applied to the field is evenly distributed over the surface to give greater, more consistent crop yields while eliminating too-wet low ground and too-dry high ground. Agrichemicals stay on the field to help crops instead of running off into waterways. The machine attaches to field cultivators, disks, chisel plows, potato planter/cultivators and row crop cultivators. Simple, lightweight, yet strong, design makes it easy to use with any equipment in all field operations. Utilizes tractor hydraulics for efficient, trouble-free power. **Town & Country Research and Development, Inc., Water Check™ Division, Marion, North Dakota; 701-778-7511.**



## Manure solids separator addresses waste problems of confined animal facilities

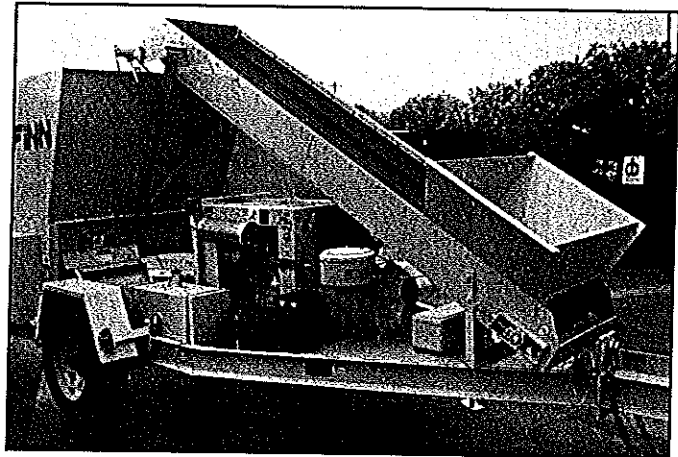
**T**he Agpro 3600 Extractor manure solids separator addresses several problems related to agricultural waste management from confined animal facilities. A unique feature of this device places the slurry reception chamber in the gravity drainage stream, eliminating the need for reception pits, agitators and chopper pumps. The use of modern materials such as water lubricated teflon bearings ensures long useful life. The device helps animal operations meet the increasing regulatory demands for agricultural pollution control. This new Agpro separator is not borrowed from other industry. It has been designed to meet this specific on-farm problem. The net results take composite slurries of manure, water, straw and waste feed, dividing it into two easily managed components of solids and filtered liquids. **Agpro, Inc., Paris, Texas; 903-785-5531.**





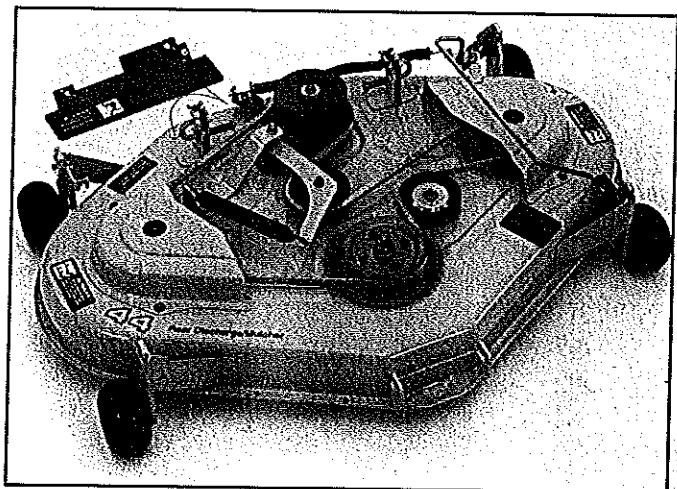
## Portable pneumatic conveyor designed for bulk materials

The FINN AEM (Alternative Environmental Materials) 2000 Spreader is a self-powered, portable pneumatic conveyor specifically designed to convey wood mulches, sawdust, compost and other bulk materials containing a high concentration of long fibers. Powered by a 36-hp Kubota V1702 diesel engine, the AEM 2000 can generate 500 cfm of air flow at a maximum of 10 psi to move up to 25 cubic yards of bulk material per hour through a 150-ft. long, 4-in. diameter hose. The AEM 2000, built on its own 6,000-lb. highway rated trailer with full DOT lighting, can be pulled to any job site and loaded directly from the tow vehicle utilizing the front belt elevator, or will accept bulk materials directly into a 1.5 cubic yard hopper from a bucket loader. Finn Corporation, Fairfield, Ohio; 513-874-2818.



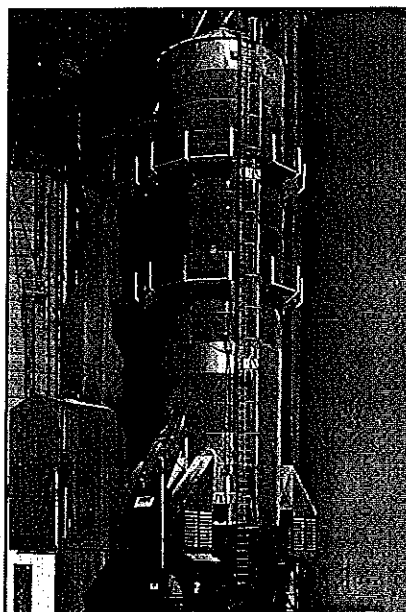
## Safety, discharging, mulching, improved cutting combined into versatile rotary mower

John Deere's Piranha 44-inch Rear Discharge Mower is designed with emphasis on safety, mulching and cut quality. The mower offers "trim on both sides" capability with built-in mulching capability as standard equipment, plus excellent cut quality compared to other rear discharge mowers. In the mulching mode, each spindle uses two blades for finer cutting. The three-spindle mower deck easily attaches and is removed from all LX and GT series lawn tractors. Conversion from mulching back to rear discharge mowing is easily accomplished by removing a plastic molded baffle which nests over the standard rear discharge molded panel. The upper blade is then removed leaving just the lower blade on each spindle to complete the changeover. Safety, discharging, mulching, improved cut quality and mulching performance are combined into one versatile rotary mower. John Deere Horicon Works, Horicon, Wisconsin; 414-485-5170.



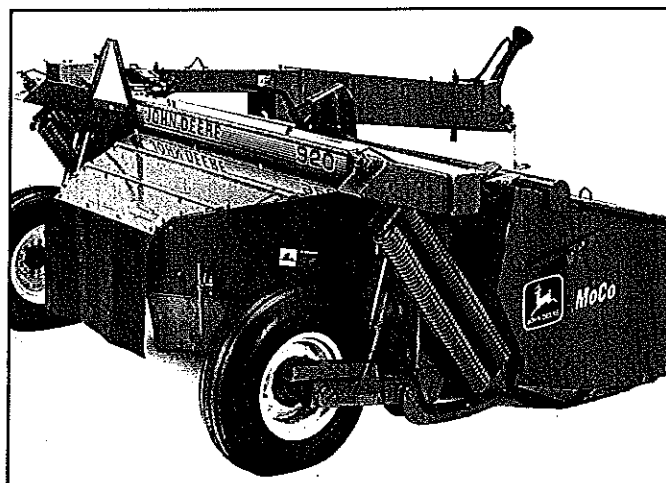
## Grain dryer gives large drying capacity with maximum fuel efficiency

The "ST" Superb Tower Energy Miser Dryer was designed to give the commercial grain industry large drying capacity with maximum fuel efficiency. It is a new generation of commercial dryers that incorporates new ideas that improve drying efficiency and grain quality. ST Superb Tower Dryers mass flow the grain without sweep augers or gear boxes. Each dryer provides maximum versatility with a choice of three drying modes. Pressure heat/suction cooling, pressure heat/pressure cooling and pressure full heat are all included as standard equipment on all models. The tower is constructed with a variable-width grain column that optimizes the use of heat and air at critical stages of the drying. A special tempering zone tempers the grain before it moves into the cooling area in the lower section of the dryer. A full-flame wall burner operates with more square footage of flame surface, ensuring maximum fuel efficiency. The suction cooling drying mode provides up to 30% savings in fuel. Many crops can be dried, ranging from commercial grains such as corn, milo, soybeans, wheat, barley and oats to sensitive crops such as food grade corn, white corn, rice, edible beans and sunflowers. **Beard Industries Inc.**, Frankfort, Indiana; 317-654-8517.



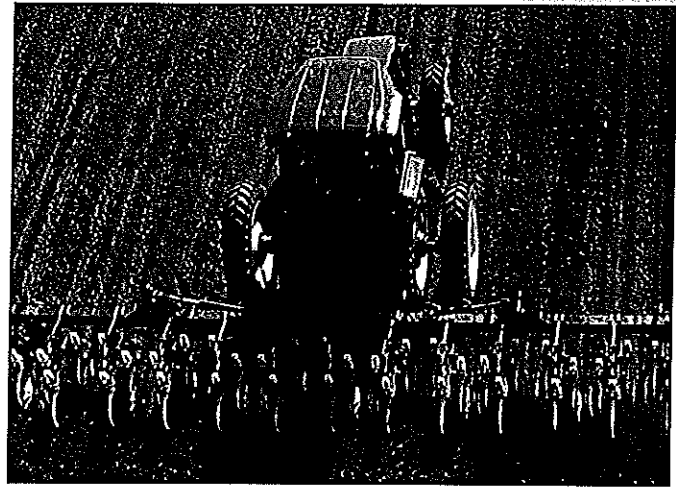
## Mower conditioners productive, maneuverable, and convenient to service

John Deere 820, 920 and 930 Mower Conditioners are designed to provide high productivity, excellent maneuverability and convenient serviceability. The 820 is a sickle machine that features a 9-ft. 9-in. cutterbar with new longer two-tine guards, urethane conditioning rolls and a unique swing-away toothbar for easy cutterbar access. The 920 and 930 models are rotary cut machines that offer urethane-roll or impeller conditioning and a new modular John Deere rotary cutterbar. The 920 and 930 width of cut is 9 ft. 9 in. and 11 ft. 6 in., respectively. Common in the family of machines is an innovative three-point suspension that delivers ground-hugging cutting and simplifies guard-angle adjustments. Other adjustments such as float, roll pressure, gage shoe height and windrow width are simplified and made readily accessible to optimize performance in different crop and field conditions. The machines also feature a unique angled tongue that allows a wide cut width and a manageable transport width. In addition, the tongue includes a Power-Cushion that works like a shock absorber to protect the driveline. **John Deere Ottumwa Works**, Ottumwa, Iowa; 515-683-2343.



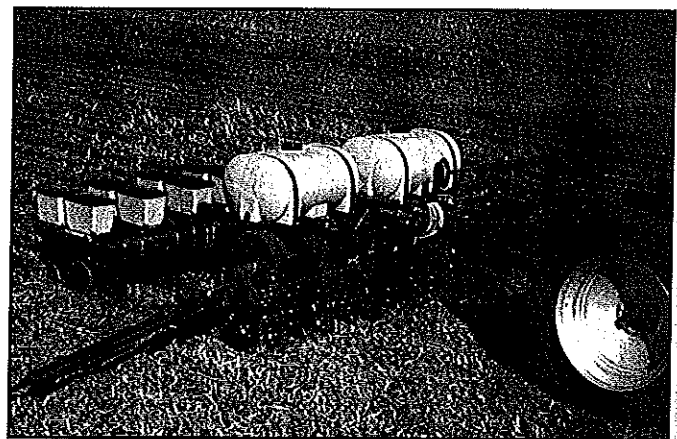
## Tractor axle offers tighter turning

The Ford New Holland SuperSteer™ FWD Axle lets GENESIS™ tractors turn sharper than any other two-wheel drive or front wheel assist tractors in their class. The axle steers about a point two feet behind its center. This moves the inside wheel out, away from the frame, providing more room for the wheel to steer. At the same time, the outside wheel moves forward, in front of the tractor. (The front weights are carried on the axle for maximum tire clearance.) Simultaneous axle and wheel steering combine to provide greater turn angularity (up to 65 degrees). This results in a turnaround diameter as small as 15 feet — without brakes — with any size tire. Wide track settings maximize maneuverability. Narrow settings increase the comparative SuperSteer advantage. **Ford New Holland, Inc.,** New Holland, Pennsylvania; 717-355-1302.



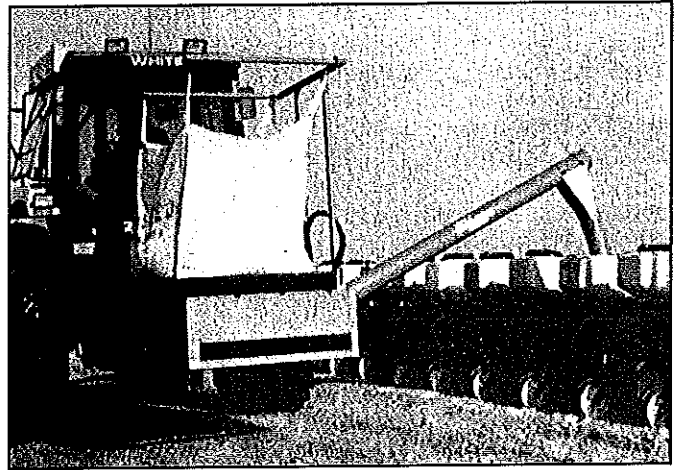
## System plants virtually any grain crop under no-till conditions

Great Plains' All Seeds Planting System combines a no-till coultter hitch with a 3-point drill and a 3-point planter to plant virtually any grain crop under no-till conditions. The system allows the farmer to plant in high crop residue while providing some zone tillage to enhance seed placement and residue management. The system also provides a means of banding liquid fertilizer below and to the side of planter rows, or placing fertilizer in drill rows. Great Plains' unique Center Pivot design provides excellent coultter and opener tracking for zone tillage and fertilizer placement as well as excellent coultter depth control. The system comes in either 15 ft. 6-row or 20 ft. 8-row sizes. A single set of no-till markers for the hitch eliminates the need for a separate set of markers for every planting tool. The system also provides a cost-effective means for farmers to utilize conservation farming practices that require no-till planting for a variety of grain crops. **Great Plains Manufacturing Inc., Grain Drills Division,** Assaria, Kansas; 913-667-4755.



## Seed carton unloaders offer economical handling of bulk seed containers

**S**udenga Box Unloader and Box/Bag Unloader provide a simple method to handle bulk seed from the container into the planter. The seed flows from the container into a hydraulically driven Bristle Auger that carries it up to the discharge. A clear discharge tube allows the operator to monitor the filling of each planter box from the tractor seat. The Unloader is carried on a common 3-point mount forklift that allows the operator to raise and lower the unloader as the spout is moved from planter box to planter box. **Sudenga Industries, George, Iowa; 712-475-3301.**



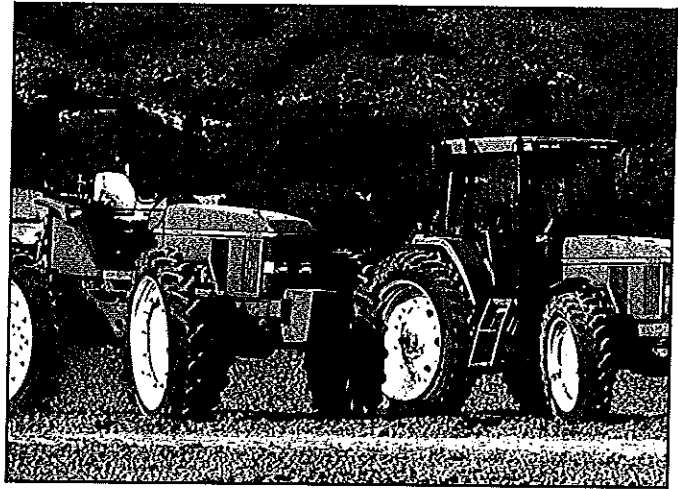
## Belted row crop tractor helps ensure visibility

**T**he Challenger 35 and 45 are row crop capable tractors ranging or competing in the 150 to 250 PTO hp size class. State-of-the-art styling helps to ensure visibility where the operator needs it. Incorporated are features such as serviceability and balance in an integrated appearance with low compaction and great tractive efficiency. A large rear drive aids ground and crop clearance. These tractors are ideal for no-till applications, along with the capabilities to adjust the gauge and track width for row crops. **Caterpillar Agriculture Machinery Unit, Aurora, Illinois; 708-859-5513.**



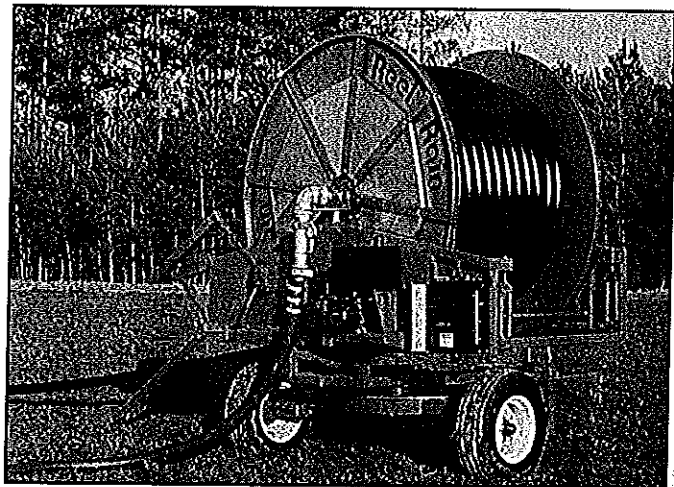
## Tractor platform to satisfy customer needs for lightweight six-cylinder tractors

John Deere has developed a new tractor platform, of which four new tractor models — **7200/7400 Agricultural Tractors** — have been introduced for worldwide markets. The tractor platform was developed to satisfy the diverse worldwide customer needs for a lightweight six-cylinder tractor; and to offer a significant number of options, in up to 80 basic tractor configurations, that the market desires. A Hi-Crop tractor option, which incorporates a rear drop axle housing, provides the customer with best available crop clearance and can be ordered with any combination of other tractor options (Cab versus Open Station, 2WD or MFWD, Snycro Plus or Power Quad™ transmissions). A rear hitch capacity of 8,390 lbs., along with a new size axle shaft to allow the use of dual tires out to 120 in. treads, allow these tractors to replace higher horsepower models currently used. **John Deere Product Engineering Center, Waterloo, Iowa; 319-292-8508.**



## Irrigation unit applies wastewater and slurry onto pasture and farmland

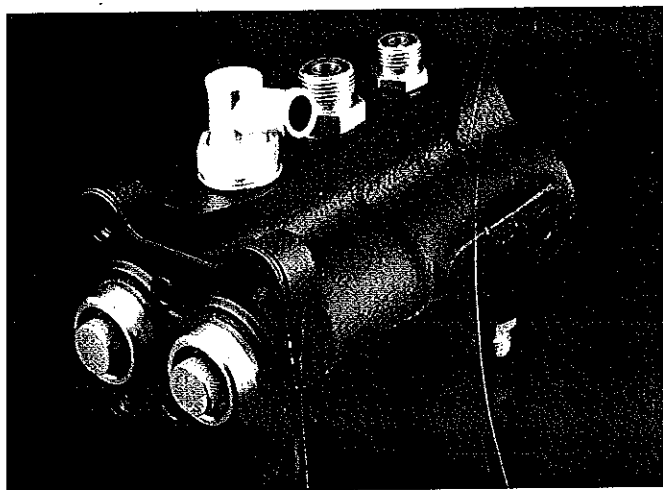
The **AMADAS NR 1030 "Reel Rain" irrigation unit** is designed to meet all of the irrigation needs of the farmer who needs to dispose of slurry and wastewater in a cost-effective fashion as well as to irrigate crops during certain periods of the year. With 965 feet of 3.01 I.D. hose, this machine will irrigate up to 5.8 acres/pull. This allows for the disposal of up to 18,600 gallons of slurry per hour depending on the soil conditions and application rate. With a speed range of 0.75 to 12.5 FPM, it offers the widest range available in this size machine. Standard features include a galvanized guncart, galvanized inlet and discharge fittings, a double-sealed zero leakage inlet swivel, a custom stainless steel/polyethylene drum bearing, and a special 6-speed gearbox with integral input shaft, output shaft PTO stub shaft, brake and mis-wind disengage. **AMADAS Industries, Suffolk, Virginia; 804-539-0231.**





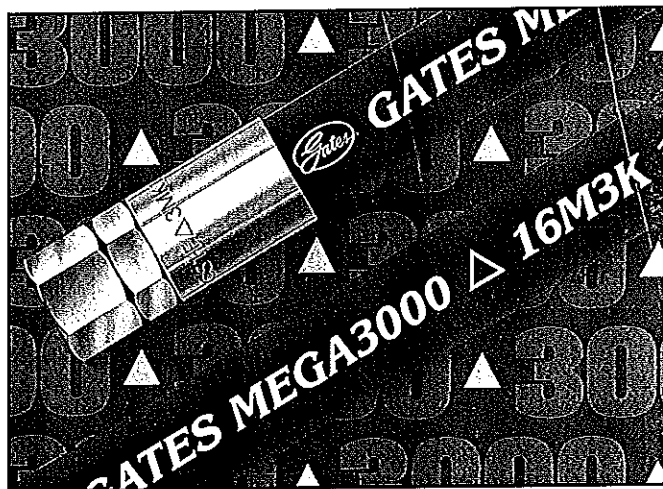
## Two-stage hydraulic power brake valve designed for off-highway vehicles

The Deere & Company/Vickers Inc. **Two-Stage Hydraulic Power Brake Valve** is designed to serve brake applications on off-highway vehicles and is compatible with either pressure-flow (load sensing) or pressure-compensated closed-center hydraulic systems. The valve provides independent braking for left and right axles for steering assist and has an equalizer function to assure equal axle pressures during simultaneous braking. A dual stage master cylinder arrangement provides back-up manual braking in the event the engine stops or there is a hydraulic system failure, thus eliminating the need for a hydraulic accumulator. Load sensing hydraulic systems can be greatly simplified since the additional valve required for keeping the accumulator charged and associated low pressure warning indicators are eliminated. **John Deere Product Engineering Center, Waterloo, Iowa; 319-292-8523; Vickers Inc., Searcy, Arkansas; 501-279-2336.**



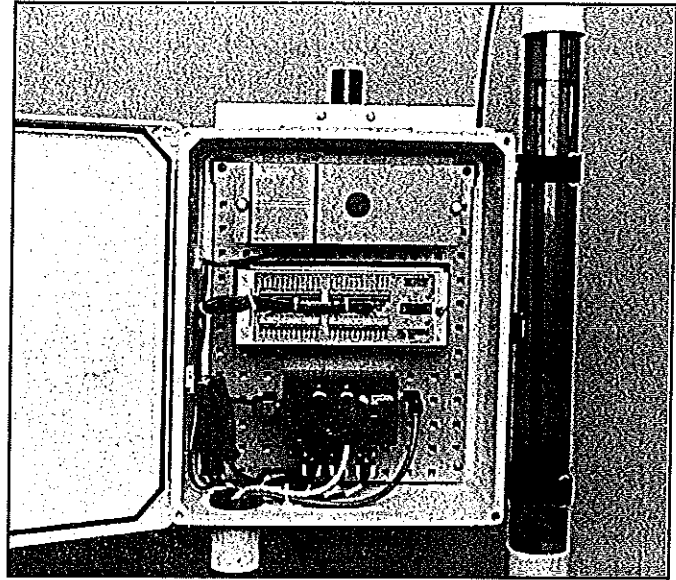
## Hydraulic hose simplifies selection and inventory control

**Gates Mega 3000™ Hydraulic Hose** is a medium-pressure hydraulic hose with special construction features that give it a rating of 3,000 psi in all sizes, plus increased flexibility. The hose's singular pressure rating means that six sizes can replace 11 sizes of SAE 100R1, 100R2 and 100R9 hose. This simplifies the selection process and inventory control for design engineers, distributors and users. The special construction of Mega 3000 also provides it with a smaller OD and half the bend radius of its SAE counterparts. This increased flexibility results in reduced abrasion problems, easier installations, and up to 47% less hose being required for routing. **The Gates Rubber Company, Denver, Colorado; 303-744-5520.**



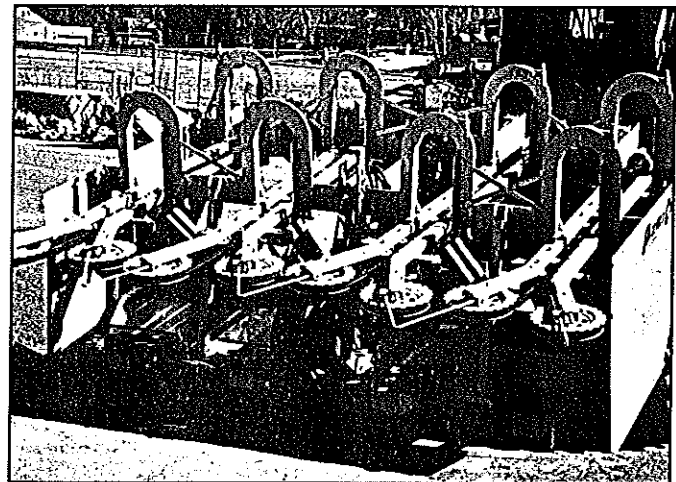
## Self-calibrating system measures water level

The **DB1 Double Bubbler** is a self-calibrating system that measures water level (or other liquids), such as stage measurements in channels and stilling wells. It detects level by measuring the pressure required to force nitrogen bubbles from a pair of submerged tubes. The orifices of the tubes are separated by a fixed vertical distance. The pressure line that is measured is determined by the datalogger, which opens and closes valves on the manifold assembly. A single pressure transducer measures each of the tubes, as well as the atmospheric pressure. This technique compensates for temperature effects and long-term drift in the transducer, producing a more accurate measurement. **Campbell Scientific, Inc.**, Logan, Utah; 801-750-9520.



## Corn puller head delivers 'hand-picked' quality

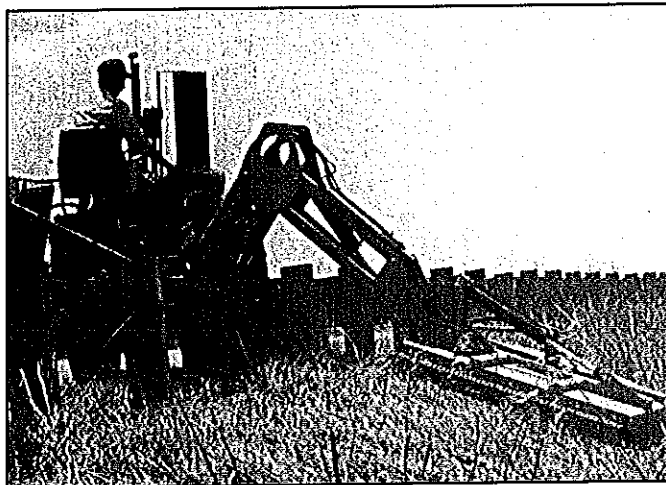
**Pixall® Corn Puller™** will pick fresh market sweetcorn of "hand-picked" quality. The unique method of "pulling" corn provides a colorful, damage-free product. The Corn Puller incorporates a pressure compensated hydraulic flotation system for continuous ground contour sensing and constant picking height. It picks sweetcorn leaving the outer green flag leaves intact, a longer shank and no bruises on the butt end of the cob. Polyurethane idler belt guides also provide lower cost and less weight. **Pixall Limited Partnership**, Clear Lake, Wisconsin; 715-263-2112.





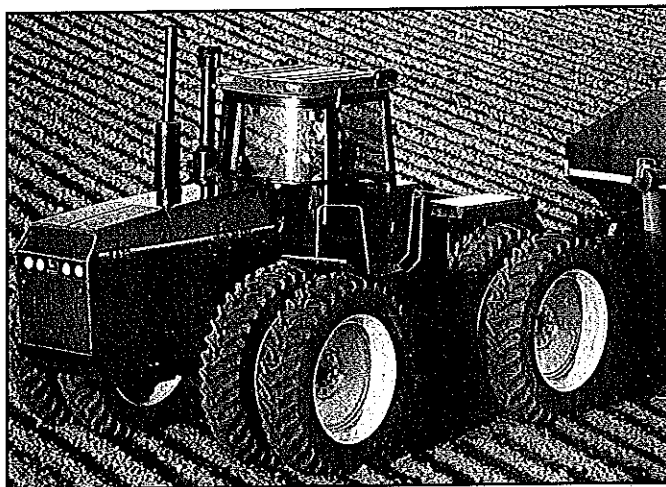
## Parallel arm rotary cutter provides horizontal or vertical deck positioning

The Land Pride Division, Great Plains Mfg. Inc., RCP2560 Parallel Arm Rotary Cutter is intended for cutting operations along ditch/banks, ponds and road sides, fence rows, and other hard-to-reach places. It uses a hydraulic pump and motor to power two, free-spinning blades with a 5-ft. cutting diameter. The complete unit can be mounted to any category II or III 3-point tractor hitch with a tractor weight of 7,000 lbs. or greater. The cutter deck can be rotated through an arc of 180 degrees. Maximum horizontal cutting reach is 186 degrees (measured from the centerline of the tractor). The parallel arm feature is unique because it provides for horizontal or vertical deck positioning without changing the deck angle. Conversely, the deck angle can also be changed without affecting horizontal or vertical position. Great Plains Manufacturing Inc., Land Pride Division, Assaria, Kansas; 913-667-4755.



## Tractors updated to meet customer needs and maximum value

John Deere 4WD Tractors have been updated to the 70 Series. The models expand the usage of electronic engine control, enhance the engine power curves for increased productivity, provide improved operator comfort, use R134a refrigerant, enhance conveniences available to the operator, provide added improvements for serviceability, and revise the options available for the customer so that the product of maximum value for needs can be purchased. John Deere Product Engineering Center, Waterloo, Iowa; 319-292-8103.



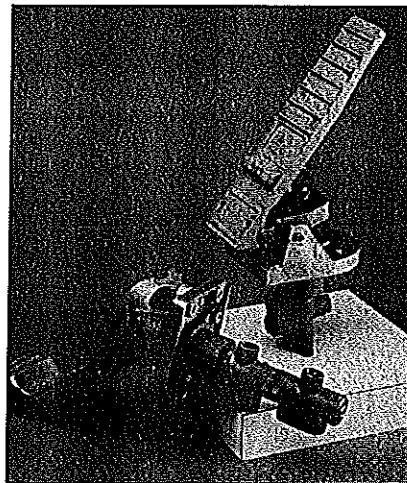
## New technology in tractor series

The Case IH 7200 Series MAGNUM row crop tractor consists of five models ranging from 130 to 215 PTO hp. The 7200 Series with over 200 improvements, evolved from the revolutionary 7100 Series MAGNUM tractors originally introduced in 1987. Available in two wheel drive or mechanical front drive (7250 is available with MFD only), the 7200 Series sets the agricultural standard for operator comfort and convenience while providing the durability and performance needed in today's economy. Over 80 additional factory installed and more than 60 dealer installed options are available to tailor the 7200 Series MAGNUM to a worldwide marketplace and individual customer requirements. **Case Corporation**, Racine, Wisconsin; 414-636-7854.



## High-flow, smooth-modulation valve will allow full power brakes on a greater range of vehicles

Carlisle 1100 Series Hydraulic Control Valve, designed for mobile and industrial control systems, may be used in open-center, closed-center and load-sensing hydraulic systems. The valve is applied in full-power hydraulic brake systems. It modulates hydraulic volume and pressure to vehicle brakes. As the foot pedal is depressed, the valve opens and allows a metered amount of oil to flow into the brake, raising its pressure and applying the brake. The valve's spool design provides for smooth modulation at all output pressures and dampened spools ensure stable noise control. Design features also include external adjustment for precise pressure settings, and rugged construction with a simple integral cast iron body and die cast aluminum pedal and pedal base. **Motion Control Industries, Inc.**, a wholly owned subsidiary of Carlisle Companies, Inc., Bloomington, Indiana; 812-334-8793.





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