SUNFLOWER 2017 Seeding Tools

The science of seeding

Farming is an art and a science. Skill is often passed down through generations. Technique is honed as we learn from our triumphs and failures. And then there's innovation: the ideas that take us forward– sometimes with steps, sometimes with leaps. This innovation is our science, the way we learn and improve.

Seeding is a science to us. We've tested scores of designs over hundreds of thousands of acres to find the perfect combination of accuracy, speed and endurance.

Our designs are different, and so are their results. It's a difference you'll see in your field when you seed with a Sunflower® drill.

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Grain drills

9413 » 9421 » 9435 » 9510 » 9531 » 9610


SUNFLOWE

Our conventional and all-purpose drills maintain a consistent attack angle and depth, controlling seed and soil during placement and creating an ideal environment for emergence and growth. With exclusive, patented designs, Sunflower drills deliver remarkable accuracy acre after acre. Here's how:

A Aligning the carrying system with the opener blades to maintain consistent depth and angle of opener attack. On most drill designs, the seed trench openers are not in alignment with the wheel axle, resulting in a seesawing action between the drill hitch and the seed openers. With a Sunflower, as the tractor descends a hill and lowers the hitch, the openers lift and change their angle of attack in the soil surface; the opposite occurs when the tractor ascends a hill and raises the hitch. Like a planter, the Sunflower design keeps openers in alignment with the axle so there is no change in depth as the hitch raises or lowers.

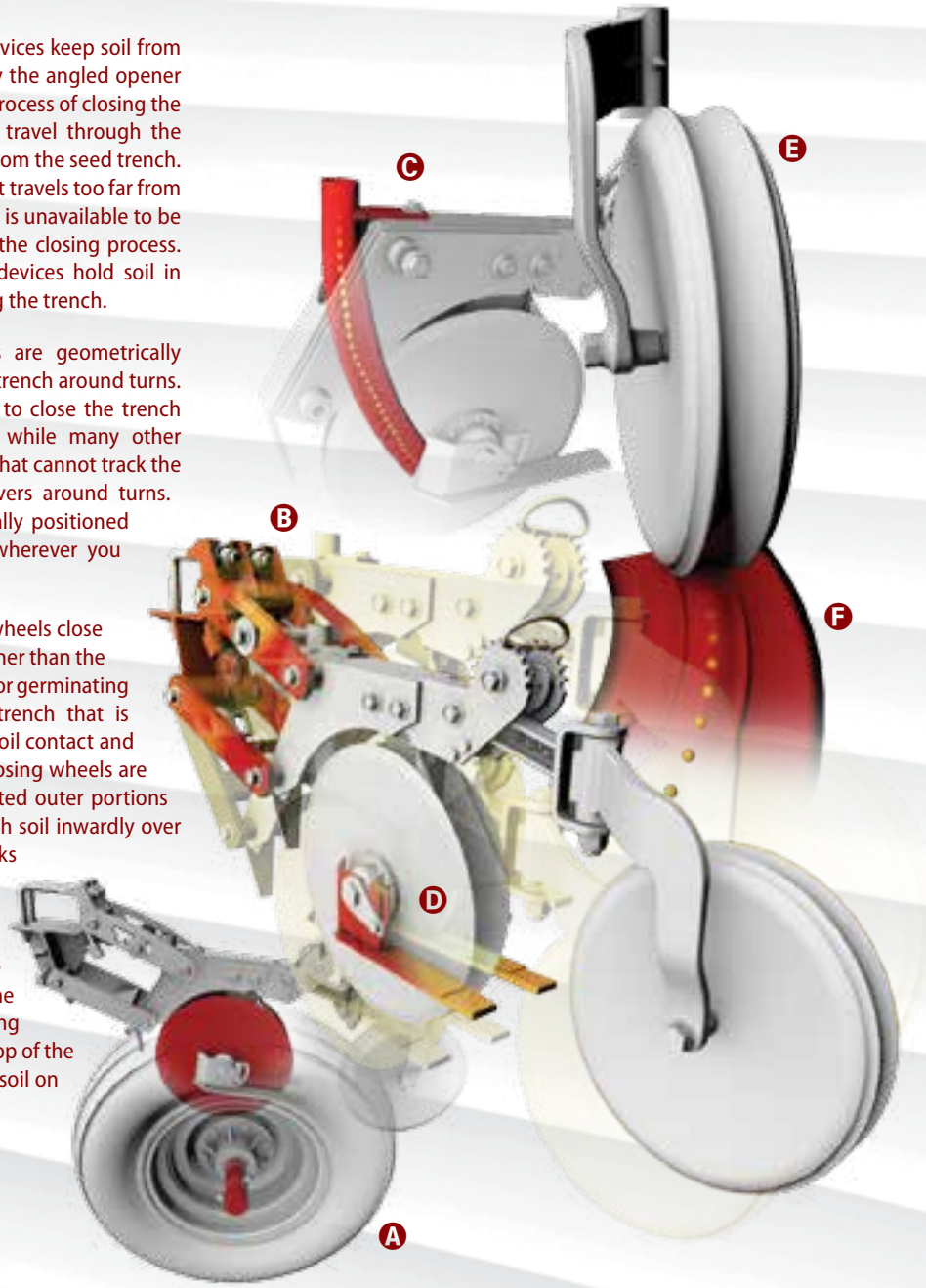
B Parallel linkage keeps attack angle and depth consistent over rolling terrain. The parallel linkage of our design keeps the seeding unit from arcing backwards as the unit meets obstructions or elevations. The parallel arms ensure that the unit travels vertically rather than changing the attack angle of the opener blades.

C Seed tube design slows and aligns seed in a narrow band of descent to maintain accurate placement; seed is deposited at the widest point in the trench, directly below the opener blade axle. In many designs, seed falls at a steep angle and enters the trench at high speed with a risk of ricochet. Our design purposely slows the seed descent to improve accuracy with reduced pitch and a narrowing of the seed tube.

D Patented soil-control devices keep soil from being thrown outwardly by the angled opener blades and beginning the process of closing the trench. As trench openers travel through the field, they move soil away from the seed trench. If this soil is not controlled, it travels too far from the seed trench, meaning it is unavailable to be returned to the trench for the closing process. Our patented soil-control devices hold soil in place and assist with closing the trench.

E Pivoting press wheels are geometrically designed to track the seed trench around turns. Drills include press wheels to close the trench for effective germination, while many other designs have press wheels that cannot track the trench as the drill maneuvers around turns. Our wheels are geometrically positioned to track the seed trench wherever you decide to plant.

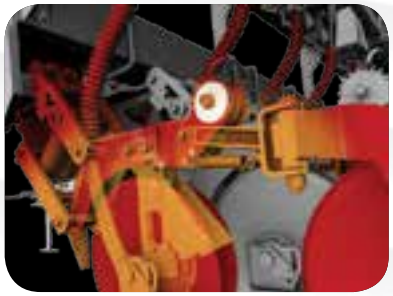
F Double-ribbed closing wheels close the trench from the side rather than the top. The best environment for germinating and emerging seed is a trench that is closed with good seed-to-soil contact and is firmly compacted. Our closing wheels are double ribbed, using elevated outer portions of the closing wheel to push soil inwardly over the trench. This system works far better at preparing a growing environment than smoother surface wheels that apply the same pressure in the center of the trench opening, creating maximum compaction on top of the seed instead of firming the soil on its sides.



Sunflower 9530 »

Features

All-Purpose "Heads Up" Opener



All-purpose openers feature wide set half-inch parallel links for better depth control and dead-on accuracy in seed placement. Two 400 lb. retention springs can generate 450+ lbs. at the pinch point of the opener blade. Down pressures can be easily adjusted from no-till to conventional seeding without tools. Fifteen-inch-diameter x 3 1/2-millimeter "Heads Up" opener blades eliminate pairing of rows, premature leading blade wear and side loading of bearings. An eight-inch stagger helps passage of residue through the seeding system when seeding in heavy-residue, no-till situations.

9300, 9400, 9500 series drills

Conventional Opener

The single-arm-mount conventional openers are mounted at an 8-inch stagger to promote residue flow through the seeding system. The single-point mount bearing is protected by UHMW bearings to prevent wear and reduce service time. The pneumatic down pressure system maintains an even down pressure on all row units and eliminates the down pressure spikes that occur with spring-activated down pressure systems. There are two easily adjusted down pressure systems on the 9600 to ensure adequate down pressure behind the tractor tires and less down pressure in less compacted areas.

9600 series drills

Seed Hoppers

The all-welded seed hoppers are constructed of heavy 16-gauge steel with 3/16-inch-thick end plates. The bolt-in hopper bottoms allow multiple row spacing using the same hopper.

9300 series (2.4 bu.), 9421 & 9600 (3.0 bu.) series, 9400 & 9500 series (3.75 bu.)

Seed Meters & Adjustments

The infinitely variable meters are very gentle on seeds and provide a continuous flow of material, unlike fluted meters that drop seed in groups. This design has a better singulation effect than dumping small groups of seed (as in fluted meter operations). Rates are easily changed with a lever adjustment system on each hopper system. A small-seeds (legume) seeding hopper can be added to all models.

Seed Meter: All models. Adjustment Lever: 9435, 9531, 9600 series

Walk Boards

9000 series drills feature an automatically locking walk board. Lift the walk board to the raised position and the lock will engage, placing the pin in the lock position.

The walk board is deep and the ladder folds over the walk board rather than under it. Attached to the ladder mount is a folding handle to assist the operator in mounting the walk board.

Walk Boards: All models. Assist Handle: 9435, 9531, 9600 series

Extra Heavy Frames

Heavy-duty 3/8 x 7 x 7-inch main frames are coupled to a 3/8 x 3 x 5-inch opener frame to create a sound foundation for all Sunflower grain drills.

9300, 9400, 9500, 9600 series drills

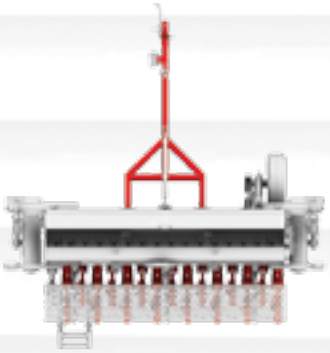
Models

9312

Working widths from 7′ 6″ to 15′ | Specifications, page 28

Ideal for pastures that require reseeding due to drought or over grazing, the Sunflower pasture drill is also effective for seeding along highways and electrical highline right-of-ways. Smaller farming operations have found this tough, compact grain drill can handle all of their conventional and no-till seeding needs. Sunflower's 9312 pull-type end-wheel design positions the all-purpose openers and the end wheels in line for uniform performance, even on rough terrain. When seeding side hills and sloped fields, the end wheels act as stabilizers to hold the openers steady and do not subject the openers to the extreme side pressures encountered by caddy-mounted units. The tough 9312 pasture drill is built with the same heavy frame and quality guidelines as the rest of Sunflower's grain drill line.

- **End-wheel design with drive wheel in front of openers**



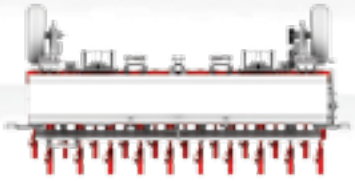
9312-10

9412

Working widths of 10′ to 12′ 6″ | Specifications, page 28

For maximum productivity, Sunflower developed the 9412 three-point-mounted all-purpose grain drill line. The 9412 is one of the only mounted true no-till grain drills on the market. It can easily be hand-adjusted from conventional seeding right through residue-laden no-till. This heavy-weight rigid seeder is offered in widths of 10 and 12 1/2 feet and adapts to either category II or III hitches. If your tractor is missing a three-point or you want to operate a drill larger than your tractor can handle, simply convert the 9412 to a pull-type by utilizing Sunflower's transport pull hitch.

- **Three-point mounted design with optional transport pull hitch**
- **Seed-metering rates on each seed box are changed by a simple screw-type adjustment**
- **Drive wheels can be slid in or out on the hex shafts for different row spacing**



9412-12

9413

Working widths of 15′ to 20′ | Specifications, page 28

The Sunflower Model 9413 grain drill (in 15- and 20-foot models) is equipped with large hoppers that hold 3 3/4 bushels of seed per foot. This big capacity and ease of operation are key factors in maintaining Sunflower drills as North American farmers' first choice. Whether it's no-till, minimum-till or conventional seeding, the Sunflower 9413 is easily adjusted to do it all. Heavy-duty construction produces built-in weight and strength to meet the most demanding no-till conditions. If conventional or minimum tillage seeding is called for, the all-purpose "Heads Up" opener down pressures can be quickly adjusted without tools.

- **Three-point-mounted design with optional transport pull hitch**
- **Seed-metering rates on each seed box are changed by a simple screw-type adjustment**
- **Large-capacity seed boxes hold 3 3/4 bushels per foot of seed**

9413-15

« Sunflower 9435

9421

Working widths from 20′ to 30′ | Specifications, page 28

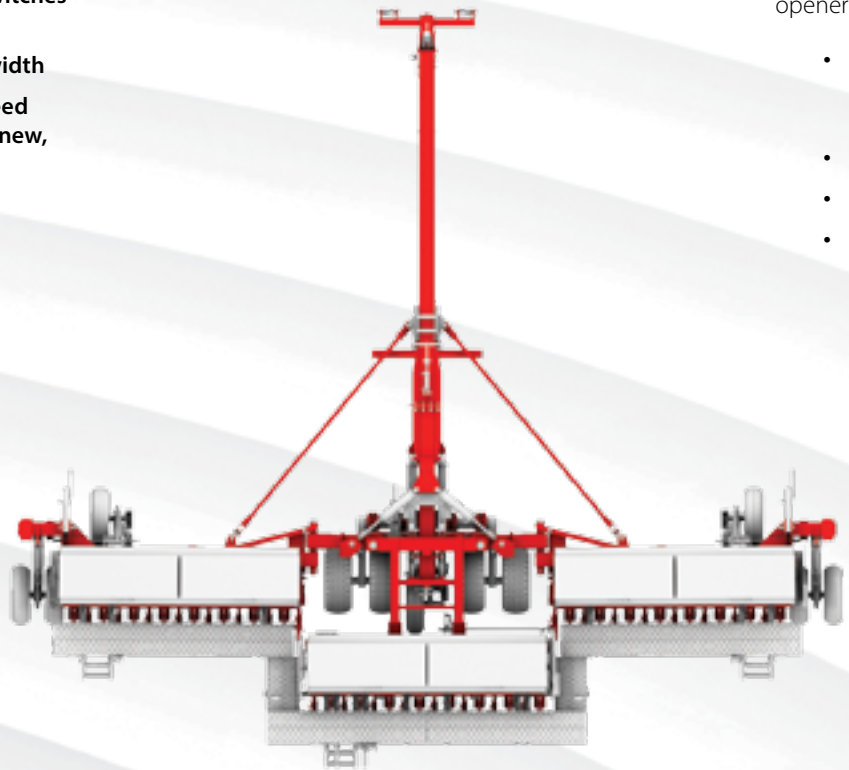
Sunflower's 9421 two-section grain drill sports a narrow transport width compared to wide, rigid, mounted designs that are difficult to move between fields. Keeping the operator in mind, Sunflower's two-section series provides valuable flexibility both during transport and in the field The "in-line" 3-bushel-per-foot grain boxes facilitate seed filling and align the openers for superior control, resulting in uniform seed placement. All Sunflower multi-purpose drills feature a full 8 inches of front to rear stagger between opener units. The Sunflower 9421 is an excellent alternative to a higher priced split-row planter.

- **Simple fold system, no electrical switches**
- **Two-section design allows center flexibility and a narrow transport width**
- **Low-profile seed boxes feature a seed capacity of 3 bushels per foot with new, wider lids**
- **Tractor draw bar mount design**

9435

Working widths of 30′ or 40′ | Specifications, page 28

Sunflower's 9435 grain drill line features a unique three-section frame design that delivers unmatched flexibility and seeding performance in all field conditions. The staggered grain box design eliminates all box contact in steep or undulating terrain and its straight-end walls ensure equal amounts of seed over all meters. Available with either 7 1/2- or 10-inch spacing, the 9435 can be tailored to your operation. With an optional 400-gallon liquid fertilizer tank, the 9435 can be your single source for conventional seeding right through no-till. Sunflower truly is "seeding quality."



9435-30

9510

Working widths of 15′ and 20′ | Specifications, page 28

Sunflower offers the best of both worlds in the new model 9510 grain drill: capacity and versatility. Equipped with a new divided hopper, the 9510 provides the operator with the ability to apply fertilizer during planting or convert the hopper to an all-seed mode for up to 75 bushels of capacity (20-foot model), which translates into less time filling and more time in the field. Simply moving a damper in the hopper converts it to a 3 3/4-bushel-per-foot all-seed drill similar to the 9413.

Choose from a choice of 7 1/2- or 10-inch row spacings. Both configurations feature the Sunflower "Heads Up" opener assembly, which ensures superior seed placement.

- **Three-point mounted design with optional transport pull hitch to convert the drill to a pull-type unit**
- **Solid steel-tube frame**
- **Versatile seed/fertilizer boxes**
- **Easy fertilizer rate adjustment**

9510-15

9531

Working widths of 30' or 40' | Specifications, page 28

Sunflower offers the best of both worlds in the new model 9531 grain drill: capacity and versatility. Equipped with a new divided hopper, the 9531 provides the operator with the ability to apply fertilizer during planting or convert the hopper to an all-seed mode for up to 150 bushels of capacity (40-foot model), which translates into less time filling and more time in the field.

Choose from two different models in 30- and 40-foot drilling widths and a choice of 7 1/2- or 10-inch row spacings. All four configurations feature the Sunflower "Heads Up" opener assembly, which ensures superior seed placement, as well as our staggered three-section, forward-fold design that promises a new level of flexibility in all field conditions.

- **Three-section design allows center flexibility and a narrow transport width**
- **Seed-metering rates on each seed box are changed by a simple screw-type adjustment**
- **Low-profile seed boxes feature a capacity of 3 3/4-bushels-per-foot 60/40 seed-to-fertilizer split or convertible to all seed**
- **Drive mechanism features maintenance-free sprockets, #50 chain and spring-loaded drive wheels to ensure constant soil contact and accurate seed and fertilizer metering**
- **Three-axis two-point or draw-bar hitch**
- **Easily convertible to an all-seed box with 3 3/4-bushels-per-foot capacity**

9610

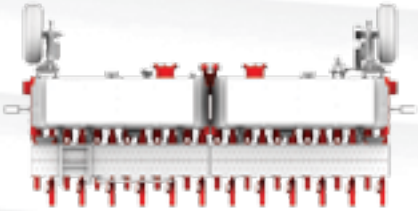
Working widths of 15' or 20' | Specifications, page 28

Designed for producers who need a conventional or minimum-tillage drill with plenty of capacity and versatility, the new Sunflower 9610 three-point grain drill offers a choice of 6, 7 1/2 and 10 inches row spacing. Productivity starts with a pair of the largest seed hoppers in the industry, which offer a capacity of 3 bushels per foot. That translates into 60 acres without refilling when using the 20-foot model at a seeding rate of one bushel of seed per acre.

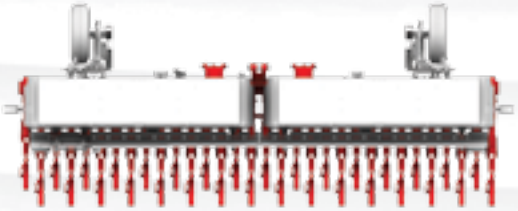
The 9610 is also versatile. Standard-equipment pneumatic down pressure on each row ensures quick response to changing soil conditions. Set up in two zones, the machine applies proper down pressure in the more compacted soil behind the tow vehicle tires and the uncompacted areas. The 9610 is also available with a legume/grass seeder and/or native grass seeding attachment (except 6-inch spacing) for even broader seeding capabilities.

The "alfalfa-reducer" inserts can be installed in the main seed box of all the hopper-style drills for greater accuracy when planting small hard seeds like alfalfa, canola and clover.

- **Seed-level sensors**
- **Dual-zone pneumatic down pressure**
- **Double-disc conventional openers**
- **UHMW in opener pivots**
- **Pivoting press wheels**
- **Easy seed-depth adjustment**
- **Lever-adjusted seed meters**
- **Floating drive (9 1/2l x 15 tire)**
- **Acre-meter**



9610-15



9610-20

Sunflower 9435 »

Air drills & carts

9700 » 9800 » 9830NT » 9900

For many years, disc drills have had a bad reputation. The common hair-pinning of residue and lowered performance in muddy conditions steered many away from the very real advantages disc drills offer. Instead, farmers relied on slower designs with difficult-to-adjust depth control that created less-than-optimal field conditions due to a process called "stepping," in which the rear rank of openers double cover the seeds deposited by the front rank of openers.

Our design delivers the best of both worlds. Our single-disc drill gives you fast, easy depth control that delivers maximum performance without the residue issues of previous designs.

9800

Working widths from 30' to 60' | Specifications, page 29

The Sunflower 9800 single-disc drill has the unique ability to seed at higher speeds without creating uneven or double-covered seed rows. Whether you run it at 6 mph or up to 12 mph; in no-till, minimum-till or conventional till; flat ground or on a slope, the Sunflower 9800 delivers high performance in a variety of conditions. Of course, specific conditions will impact the optimal drilling speed.

Hydraulic down pressure on the openers, which is adjustable on the go from the tractor cab, eliminates the need to adjust springs or individual row openers. Thanks to the 9800 single-disc drill's patented design, we've also eliminated the need for a gauge wheel running next to the disc, a process that causes side wall compaction and hair pinning and can create plugging issues in wet conditions. Our design allows the "opposing single discs" to lift and displace the soil between the two narrow 6-inch rows. The loosened soil coming off the twin discs flows back against the trailing packer tires, which re-level and firm the soil over the seed rows. This soil-displacement process eliminates sidewall compaction, hair pinning and open seed furrows and usually leaves a 6-inch blackened strip to encourage soil warming.

The science of the Sunflower single-disc air drill

The advantage of the Sunflower 9800 over other single-disc drills has to do with seed placement and seed covering. The 9800 places seed near the middle of the disc, where the seed trench is widest, which ensures more seed is accurately placed in the trench.

After seed is placed in the trench, the 9800's opener disc moves the soil to close the adjacent trench. This active filling of the trench ensures enough soil covers the newly planted seed and allows higher speeds of seeding. The design used by most competitors relies on a closing wheel alone to fill in the trench.

Sunflower 9850 & 9930 »

Features

The Sunflower 9800 is the one air drill that provides maximum productivity in any environment.

- **All openers on a single rank**
- **6 to 9-inch and 6 to 24-inch paired seed rows**
- **Easy frame leveling**
- **Walking tandems**
- **3-inch spindles**
- **36 x 16-17.5, 20 ply tires**
- **Hose and electrical docking station**

Extra Heavy Frames & Undercarriage

The 6 x 8 x 1/2-inch wall tubing at the front and rear of main frames and 1/2-inch wall tubing throughout.

All main frames and large wings use a dual walking-tandem axle design. Three-inch walk beam pivots and spindles ensure adequate strength. Small wings use single wheels with the same 3-inch spindle for commonality of parts. The main frame uses 20 ply tires to match the weight of the drill.

Lift-Assist Rear Hitch

Weight is automatically transferred to the lift-assist hitch and tractor drawbar during wing up by an accumulator system on the drill. Used on the larger drills, the lift-assist hitch allows drills from 40 to 60 feet with no reconfiguration of the main frame undercarriage.

Down Pressure Cylinders

Down pressure for each of the tool bars on the 9800 drill is loaded by hydraulic cylinders connected in a parallel circuit. Down pressure is uniform across the drill and through the entire range of motion of the tool bars, a marked improvement over springs that increase down pressure when stretched or compressed depending on configuration.

Down Pressure Control Box

The row-unit down pressure is controlled by the operator on the go. The current down pressure is displayed at the top of the control box shown at the right. Increasing and decreasing down pressure across the drill is as simple as turning the knob below the screen. Down pressure can be set from carrying none to all of the drill weight on the toolbars.

Bulkhead

The bulkhead at the rear of the drill has the connections for the air system neatly arranged and labeled for operator convenience. Placing all of the connections above the hitch point keeps them out of harm's way.

Tool Bar Lock-Up

The operator can lock up the tool bars with a simple twist of the spring-loaded handle (lower detail circle), which is especially desirable when working on the row units or in transport. When released, the rod engages the tab of the frame (upper detail circle). The lock-up rod is robust enough to hold even if the tractor hydraulics are engaged to lower the units.

Tool Bar Connecting Point

The row units on the 9800 drill are connected with four bolts at the rear of the frame. Adding mid-row fertilizer units is as easy as unbolting the joint and installing the fertilizer assembly (shown) with longer bolts. Row units can also be easily removed for more intensive maintenance. Hooks on the tool bar and fertilizer assemblies assist.

Row Units

Each 30-inch-wide tool bar on the 9800 single-disc drill consists of two pairs of seeding discs and two packer tires. Additionally, the tool bar can be configured with optional mid-row nutrient placement disc openers (A). Each pair of seeding discs is mounted horizontally opposed on a common strut. With all of the openers in a single row, the opener spacing stays uniform in turns and when drifting on side slopes. The amount of soil coverage over each seed row is more uniform with this arrangement because there are no back rows to cover front rows. With all of the displaced soil thrown between the disc and in front of the packer tire, more loose soil is created for packing and fewer open furrows are created than with competitive single-disc designs. With the seed placed precisely at each edge of the packer tire, crusting is virtually eliminated as the seedling has an unpacked path to the surface. The 5-degree scrub on the packer tires compacts the soil and keeps the tires cleaner in sticky conditions. Optional holes in the mounts allow the operator to run the tires straight if desired. Optional mid-row placement discs (A) place desired nutrition (NH3, dry, liquid or combination) between and below the seed rows. Service or lubrication only needs to be done once per operating season, not daily as with competitors' single-disc drills, saving hours of time.

Depth-Control Collars

Depth-control collars on each frame lift cylinder give a visual confirmation that the cylinders are at the correct depth. Utilizing the same combination of collars on each cylinder ensures uniform seeding depth and warns the operator of improper operation if the cylinder does not collapse to the collars. Depth adjustment can be done in a few minutes at the lift cylinders. No changes at the seed openers are required.

Depth-Control Progression Chart

A decal on the drill frame displays the progression of the depth collars so the operator does not have to guess or get out the tape measure to make small changes in depth. Simply by finding the pattern of the stops he has in the cylinder, he can look to the next block to the left or right to find the pattern for the smallest possible depth change.

Row-Blockage Monitoring

Optional blockage sensors are installed in the final runs to warn the operator if any lines are plugged to slow down significantly. These sensors are wireless and transmit to the tractor cab on an iPad®.

Mid-Row Fertilizer Depth Cam

A cam block in the holder on the mid-row fertilizer units allows the operator to set the depth of the openers higher or lower in relation to the seeding depths. Rotating the cam to the different depth slots lets you control fertilizer depth precisely.

Packer-Wheel Lateral Adjustment

Packer wheels can be adjusted to one of three positions in the axle tube. This one-time adjustment can be made during first use to align the packer tires optimally with the seed furrow.

Manifold Kits

Single manifold kits on the 9800 drill accurately deliver seed and fertilizer to the seeding units. Dual manifold kits (shown) place fertilizer separately in the mid-row fertilizer units.

Variable-Spacing Manifold Lids

Seeding every other row or seeding row crops on 6/24 or 9/21 inch spacing can be accomplished simply by replacing the manifold lid. Unwanted rows are blocked out uniformly so that manifold accuracy is not affected. A 15-inch spacing is also available by swapping two delivery hoses on each 30-inch tool bar.

9830NT

Specifications, page 29

The all-new Sunflower 9830NT Series single-disc air drill is simply the most universal seeding tool available. The 9830NT is designed to seed into the entire range of soil conditions from no-till with heavy residue to soft, fluffy conventional till. Designed with fewer moving parts to minimize maintenance downtime and engineered with simplified seed-depth control for easy operation.

ASABE AE50 outstanding innovations AWARD 2016

AgControl®

AgControl® is the most accurate and responsive rate control system on the market. The key features of the 9830NT's AgControl system are:

- **Section control of all three sections**
  - Section control saves money on input cost by applying product only on the areas that need it. Over-application negatively effects yields by forcing plants to compete for moisture, nutrients, light and space to grow.
- **Single meter section rate control**
  - Each section of the 9830NT has the ability to maintain preset product dispersal by controlling the rate of each meter roller. The individual electric motor drives on each meter roll provides the 9830NT the ability to maintain these product presets based the individual ground speed of each section. In situations where one side of the implement travels faster than the other, such as going around a center pivot, the product rates automatically adjust at each section.
- **Variable rate control for both products (compartments)**
  - Zone control is the method of independently controlling crop inputs from multiple dispense points (sections) as per pre-prescribed prescription mapped elements by means of geo-referencing.
- **As-applied data for both products (data logging and documentation)**
- **Product variable rate control capability**
- **ISOBUS AEF certified for use with universal terminal (full compatibility with capable AEF certified tractors)**

Features

On-board Tanks

The integrated 60/40 split tank poly tank provides dual product capabilities. There is 175 bushel combined seed capacity or 105/70 bushel split for dual product. A dual product application using the 105 bushel compartment for seed, the 9830NT will continue seeding 33% longer than two major competitors' drills, offering only a mere 70 bushel total tank capacity.

A single product application at 175 bushel capacity allows the tool to operate 2.3 times longer than those competitors' drills. The tanks and lids are made of super tough polyethylene plastic for long life. The tank design features steep slopes for effective material flow and cleanout. There are product level sensors and work lights off the back.

Productivity Comparison

- **160 acre bean field**
- **196,000 population**
- **½ mile rounds**

Model	Sunflower 9830-30NT	John Deere 1990-30	John Deere 1990-40
Pass speed (mph)	9	6	6
Capacity (bu.)	175	70	100
Fill rate (bu./min.)	12		
Fill time	17.5	7	10
Prep time to fill (min.)*	15		
Total stopage time to fill	65	88	75
Total field time (hrs.)	6.0	8.9	6.8
Productivity loss		-33%	-13%

** Any and all time from stopping the meters to starting them again that is not spent actually filling (e.g., is the operator maneuvering the seed tender, opening tanks, etc.)*
*** Turn around speeds are calculated at 4 mph. Speeds listed are working speeds.*

Dedicated Product Metering

The ISO compatible Task Controllers allow prescription seed and fertilizer application. Each seed opener has its own dedicated meter flute to provide the utmost seeding accuracy. The meter rollers are made from durable polypropylene material. The system is a Venturi meter design, eliminating the need for a pressurized tank. This greatly reduces the demand on the hydraulic fan. Each roller assembly meters its assigned product to a 10' section of the drill. Each roller is driven by a dedicated electric motor powered by the tractor's 12-volt electric system. Electric motors are most accurate and responsive.

And the 9830NT is equipped with six dedicated motors to provide sectional shut-off, seed rate turn compensation as well as the ability to provide sectional rate control as required by prescription seeding.

Meter Access

Easy access makes meter calibration a breeze. The presence of active hydraulic and electric power to the drill is required for the calibration process.

The plenum lowers hydraulically by activating the lever mounted to the inside of the tongue frame

Opener Down Pressure

The down pressure of each of the tool bars on the 9830NT drill is loaded by hydraulic cylinders connected in a parallel circuit. The down pressure is uniform across the drill and consistent through the entire range of motion of the tool bars.

This system is far superior to springs that increase down pressure when stretched or compressed depending on configuration. It is reliable even in the presence of rocks and other obstructions. The active hydraulic circuit operated via the cab mounted virtual terminal allows the operator to change the down pressure on the go.

Depth Control

The color coded depth control collars on each of the frame lift cylinders (4) give a visual confirmation that each of the cylinders is at the correct depth. Utilizing the same combination of collars on each cylinder assures seeding depth will be uniform.

Seed depth change requires only minutes and is done at the lift cylinders. No changes at the seed openers are required. Compare the simplicity of just four adjustments versus 48 individual depth adjustments as is necessary with competitive drills.

Wireless Blockage Monitoring

This "IAS Blockage" system was designed for the Sunflower single disc drill. Wireless sensors are installed in the runs to warn the operator if lines are plugged or to slow down significantly.

9700

Working widths from 40' to 60' | Specifications, page 29

Cropping practices, tillage strategy, soil type, crop residues and the level of investment available all have to be taken into consideration when selecting an air drill. Farmers want to cut input costs, help protect their soil and the environment and provide themselves with safeguards against difficult weather and market conditions.

With all the seeder options on the market, knowing what to look for and how to assess a suitable seeding system before buying is important. Seeders need to be adaptable for different crops and conditions as no two years are the same. Sowing consistency, ground penetration and effective packing will show their worth, especially when the going gets tough.

In addition, machine capacity needs to match available horsepower and field size.

The efficiency of the implement should not be overlooked, while durability and low maintenance requirements cut the costs of ownership. Seeding equipment has to work as part of an overall system, so its ability to place fertilizer may be significant, and the quality of field finish affects the efficiency of sprayers and other following machinery. Time during the seeding season is always at a premium, and ease of use is paramount to keep a machine working to the maximum, from the very first field to the last.

The 9700 Air Till Drill is a highly efficient one-pass seed and fertilizer solution that uses proven technology for versatile drilling, offering superb establishment and yield potential at optimum margins. The 9700 uses a shank opener designed to lift the soil as it works and a design that enables seeding at high forward speeds, giving exceptional work rates. The system offers a wide choice of fertilizer placement options.

The importance of ribbon seeding

Ribbon seeding places the seed in a wide band with or without fertilizer rather than in a narrow row, offering optimum use of the seedbed and allowing for higher fertilizer rates than narrow row openers. A wide sweep provides weed control in the seeding pass and allows the crop to make better use of available nutrients.

Features

Seeding for maximum yields

Ribbon-seeded bands offer the seed the space to develop a good root system and make the most of available nutrients. With a wide (5 1/2-inch) ribbon of seed and only 4 1/2 inches between rows, at band spacings of 10 and 15 inches, seedbed utilization is the highest available with a packed row. The plant response is to produce a much stronger stem, superior roots and maximum yields. The standard "edge-on" shank can be fitted with a low-disturbance shovel, and its flat edge and narrow profile at the base give a shallow angle of attack for a good soil flow. The C-shank can also be fitted, which allows the use of a wide sweep.

Drills to suit your farm and cropping

Shanks are optimally placed on the Air Till Drill for maximum residue clearance. Optional cutting coulters are available to allow operation in extreme residue conditions. Models come in 40-, 50- and 60-foot working widths to suit a wide range of farming operations and available tractor horsepower.

Effective packing in all conditions

The Air Till Drill weighs significantly more than competitors' drills, which, combined with its wide packing wheels, ensures the best chance for seed-to-soil contact and maximum germination. Packing wheels are mounted on walking beams, each separately spring mounted to the drill frame, so packing remains uniform even on stony or rutted ground.

Flexible seed and fertilizer options

Depending on the choice of seed openers, fertilizer can be placed with the seed in a 5 1/2-inch seed and fertilizer ribbon, or a portion of the fertilizer can be placed in the seed ribbons and the remainder below the seed or off to the side. This seeding system offers the most flexibility in fertilizer placement to match crop requirements and tillage regimes.

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Sunflower 9700 »

9900

Available capacity from 225 bu. to 525 bu. | Specifications, page 29

The Sunflower 9900 Air Car is the perfect complement to the 9800 Single Disc Air Drill. Fact is, the combination not only creates the industry's most accurate seeding machine, but also provides the versatility to efficiently meet the needs of virtually any farming practice. Choose the single-axle with duals Model 9930 for a total capacity of 525 bushels in three tanks — 175 in the front, 225 in the center and 125 in the rear tank. The 9930 can also be set up for tow-between or tow-behind configurations.

Two versions of the two-axle Model 9920 are available, for exceptional tow-behind performance. The 9920-335 has a 200-bushel tank in the front and a 135-bushel tank in the rear, while the 9920-280 has a 168-bushel tank in the front and a 112-bushel tank in the rear. All three models feature stainless steel commodity tanks for even more versatility and value on your investment.

Features

Commodity Tanks

The stainless steel Air Seeder tanks are set up in three configurations. The 525 bushel 9930 has a 175 bushel tank in front, a 225 bushel tank in the center and a 125 bushel tank in the rear. The 9920-335 has a 200 bushel tank in the rear and a 135 bushel tank in the front. The 9920-280 has a 168 bushel tank in the rear and a 112 bushel tank in the front. The model 9930 can be set up as tow-between or tow-behind configuration. The 9920 models are tow-behind. The 9930 is single axle only with duals, and the 9920 models are two axle set ups with single wheels. The axles on the 9920 models can be spaced at 120 inches for row crop applications or staggered with the rear axle at 150 inches for reducing compaction. Poly cup flighting in the augers assures gentle handling or fragile seeds. Lug tires concentrate the load on the lug area so that there will be un-compacted soil for the seeds to emerge.

Hitches

Front and rear hitches on the 9930 allow any size implement to be trailed in the tow between configuration. Hydraulic hoses and ISO monitor harnesses are supplied to pass through to the towed implement. In the tow-behind configuration, the rear hitch is still supplied for pulling NH3 or liquid tanks. A bulkhead is supplied at the rear of the tank to keep all hydraulic hoses orderly and out of harm's way.

Load and Unload Auger

The auger is double-hinged for exceptional balance, allowing one person to easily load and unload. Unloading and loading are quickly performed with an 8-inch auger on the 9920-280 and a 10-inch auger on the 9930 and 9920-335. A two-position latch pin allows the auger to be deployed just enough for filling or to be deployed fully for unloading. A rotary valve on the auger allows for variable speed of the flighting in either direction.

Operator Safety

All air cart access has operator safety in mind, with grab handles at every climbing point and tread plate platforms for secure footing in all elevated positions. Side rails have double horizontal bars to protect the operator in standing or kneeling positions. The railings are secured in the raised position when operating the air system. The railings may be lowered for storage if required.

Maximum access to compartments on the Sunflower 9930 is afforded by catwalks on three sides of the lids. Raised divots in the catwalk provide extra grip for walking or standing.

Sunflower 9920 »

Compartments and Lids

Stainless steel construction of the tanks create the perfect environment for long life, corrosion-free performance. Nothing that can corrode is used in the manufacture or assembly of the tank and meter. Angled steps shed product so tank cleanout between varieties is as simple as possible. A "dog house" directly over the meter provides uniform, bridge free product flow.

The compartment lids on the air system compartments are designed so that when closed they will be sealed. With the lid open, the air pressurizing line and access ladder can be seen. The compartments are always under a positive pressure during operation to ensure accurate product flow to the meter system. The ladder offers easy access to the lower portions of the compartments for service and cleaning.

ISO Monitor System

Sunflower ISO monitor systems are fully ISO compliant. All of the Air Seeder Cart functions including fan speed, tank levels, acres, ground speed, meter RPM and variable rate are reported and performed reliably.

When combined with any Sunflower seeding tool, optional run blockage, NH3 control and automatic on/off work functions combine with the tank Air Seeder Cart monitor for complete monitoring and control.

Virtual Terminal (optional)

The 1000 color virtual terminal is the perfect complement for the ISO Air Cart monitor. With easy to understand screens and simple operator interface, seed with confidence knowing you have full knowledge of the operation of your seeding system.

Note: Monitor in photo has optional camera attached. Acquire this option through your AGCO dealer.

Air Delivery System

The high efficiency air system design utilizes 6-inch diameter fans that are powered by a fixed displacement piston pump. Large hydraulic lines decrease flow restrictions for less heat buildup under higher fan speeds. All models are standard with one fan and the model 5250 has optional two.

Ground Drive System

On air carts equipped with ground drives, a magnetic clutch allows the drive to be disengaged. The magnetic clutch uses electrical power to hold it engaged. The clutch is turned on and off when the magnetic work switches on the drill and relays the status to the ECU on the air cart, which in turn signals the clutch. The clutch may also be controlled manually by pressing the Master Work Switch on the virtual terminal in the cab.

Variable Rate Drive

Air systems equipped with the variable rate option use electric over-hydraulic (EOH) technology to control the meter speed independently of ground speed. This gives the operator the benefit of a faster calibration procedure and on-the-go rate changing capability as well as the potential to apply product to a prescription map using GPS. The variable rate control valve diverts 5 GPM of hydraulic fluid flow from the fan circuit to power the variable rate drive motors. An electro-proportional flow-control valve controls the speed of each motor, allowing the meters to turn at speeds completely independent of each other. The 9530 is variable rate only.

Meter Drive

Direct drive hydraulic motors on the meters give precise metering control with instant response to rate changes on the go. Whether operator directed or if operating from a map, it is simply the most reliable, accurate and responsive of any offerings in the industry. The motors also power the meters for calibration. Calibrating is as simple as collecting a sample from the meter, weighing it and reporting the weight to the virtual terminal.

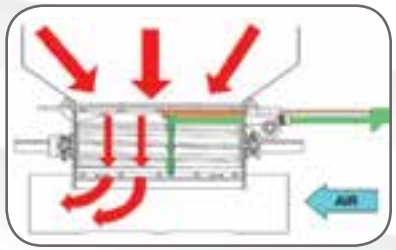
Meter Roll Options (4)

Two of the meter rollers are constructed of stainless steel and two are machined and powder coated for lifetime performance.

The high capacity roller has eight ½ inch deep bars and is used for most applications. The medium capacity roller has twelve ¼ inch deep bars and is used on smaller machines or for consistently lower seeding or fertilizing rates. The low volume and canola rollers are machined rollers and have a pattern of shallow depressions for very low seeding rates. Since they are not used with fertilizer, they do not need to be stainless steel. The canola roller is shown on the right.

Linear Seed Flow

Accuracy is the key and that is why Sunflower utilizes unique spiral fluted metering cylinders that gently roll product into the airstream in a constant flow. This is in contrast to uneven dumping of straight-fluted metering wheels. Made from stainless steel for long life, Sunflower metering cylinders handle a variety of seeds from canola and wheat to large beans as well as fertilizer with an easy change of meter cylinders. The variable throat on the meter is easily set to maximize meter performance to accommodate large changes to the amount discharged.



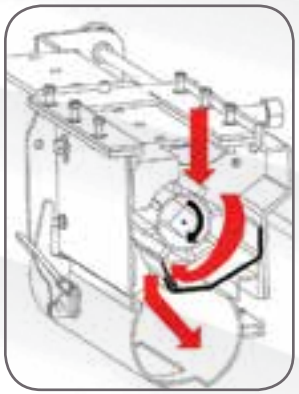
9930 Dual Shoot

Each meter on the 9930 Sunflower Air Cart can deliver product to either airstream on units equipped with the dual air stream option.

To control the flow, a blocking plate is simply inserted to deflect the product into the desired air stream. When changing product needs require machine reconfiguring, a few minutes is all that it takes to reroute the meters. The 9920 Series does not have the double shoot feature.

Gentle Handling of Seed

Seed is gently paddled across the rubber flap in the meter tray into the airstream. There are no stripper bars or tight tolerance areas to pinch seed. Half-inch deep scrolls on the metering cylinder further protect large seeds by nesting them in a deep chamber.



Sunflower 9920 »

Specifications

Grain drills

Model	Working width ft. (m)	Transport width ft. (m)	Total hopper capacity bu. (L)	Weight lbs. (kg) w/ 7.5" row spacing	Power requirements
9300					
9312-7	7.5 (2.3)	10.75 (3.28)	18 (634)	3,859 (1,750)	5 to 10 hp/ft at seeding depth
9312-10	10 (3)	13.25 (4.04)	24 (846)	4,840 (2,195)	
9312-15	15 (4.6)	18.3 (5.59)	36 (1,269)	7,222 (3,276)	
9400					
9412-10	10 (3)	11.5 (3.51)	24 (774)	3,876 (1,758)	5 to 10 hp/ft at seeding depth
9412-12.5	12.5 (3.8)	15 (4.57)	37 (321)	5,110 (2,318)	
9413-15	15 (4.6)	18.1 (5.52)	45 (1,586)	6,219 (2,821)	
9413-20	20 (6.1)	23 (7.0)	60 (2,114)	8,063 (3,657)	
9421-20	20 (6.1)	13.92 (4.25)	60 (2,114)	11,300 (6,011.6)	
9421-25	25 (7.6)		75 (2,642.5)	13,450 (7,155.4)	
9421-30	30 (9.14)		90 (3,171)	15,610 (8,304.5)	
9435-30	30 (9.14)	13.42 (4.09)	112.50 (3,947)	19,917 (3,947)	
9435-40	40 (12.2)		150 (5,286)	24,536 (11,130)	
9500					
9510-15	15.0 (4.6)	18.1 (5.52)	56.2 (1,980)	6,630 (3,007)	5 to 10 hp/ft at seeding depth
9510-20	20.0 (6.1)	23 (7.0)	75 (2,642)	8,652 (3,925)	
9531-30	30 (9.14)	13.42 (4.09)	112.50 (3,947)	18,408 (8,350)	
9531-40	40 (12.2)		150 (5,286)	24,220 (10,987)	
9600					
9610-15	15 (4.6)	17.1 (5.2)	45 (1,586)	5,268 (2,389)	5 to 10 hp/ft at seeding depth
9610-20	20 (6.1)	21.3 (6.5)	60 (2,114)	6,741 (3,058)	

** All specifications listed are manufacturer's estimates and subject to change without notice*

Air drills

Model	Capacity bu. (L)	Working width ft. (m)	Transport width ft. (m)	Transport height ft. (m)	Weight lbs. (kg)	Power requirements hp†
9800						
9830-30NT	Front Hopper 105 (3,700) Rear Hopper 70 (2,500	30 (9.1)	11.5 (3.5)	13.13 (4.0)	24,400 (11,091)	225-325
9830-30	N/A	30 (9.1)	14.3 (4.3)	14-15.5 (4.42 -4.72)	24,500 (11,113)*	180-275
9830-40		40 (12.2)	18.11 (5.8)	16-17.83 (5.13 -5.44)	31,000 (14,060)*	260-350
9830-50		50 (15.2)	21.6 (6.6)	13.5-15.33 (4.11 -4.67)	45,000 (20,400)*	320-425
9830-60		60 (18.3)		16.0-17.83 (5.13 -5.44)	54,000 (24,490)*	380-500
9700						
9730-40	N/A	40 (12.2)	21 (6.4)	17 (5.2)	29,500 (13,381)**	360-450
9750-50		50 (15.2)		15.5 (4.7)	33,800 (15,331)**	
9750-60		60 (18.3)		17 (5.2)	36,500 (16,556)**	400-550

** Weight with banders ** Weight without ground openers and disc levelers † Will vary based on air cart, openers, soil type and terrain*

Air carts

Model	Capacity bu. (L)	Working width ft. (m)	Working height ft. (m)	Weight empty est. lbs. (kg)
9900				
9920-280	280 (9,866)	11.42 (3.48)	12.67 (3.86)	8,500 (3,856)
9920-335	335 (11,805)		13.33 (4.06)	8,750 (3,946)
9930-380	380 (13,387)		15 (4.8)	13,000 (5,897)
9930-525	525 (18,500)	16.50 (4.95)	17 (5.18)	15,750 (7,144)

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