



## Exapta—committed to your success

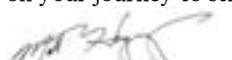
Exapta Solutions was created by farmers and agronomists to fulfill a need for better seeding technology and methods. Our products and educational efforts are brought to you by the people who live in your industry every day.

Exapta relies on the necessity-driven innovation of many farmers & researchers to find solutions for high-performance planting and production. To this day, Exapta's forte is understanding how plants grow, and how the no-till seed-installation process can be more effectively accomplished. We strive not to sell you some device, but to provide useful information to help you get the most from your seeding equipment—more acres, better emergence, higher yield, and greater profit. Once armed with knowledge, we hope you'll see the value and wisdom of our products.



My primary occupation for the past 24 years has been crop consulting for no-till. Long before I founded Exapta Solutions, I was convinced of the value of low-disturbance no-till, and the need for accomplishing seed firming and furrow closing as discrete steps.

At Exapta Solutions, we strive to be your Number One source for top-shelf no-till seeding products and information. Thus, we'd like to share our 2018 Idea Book & Catalog which we hope you'll find filled with useful thoughts, and a resource you'll eagerly consult on your journey to still greater seeding success.

  
Matt Hagny, President



Leah Lanie  
Sales & Service Manager  
leah.lanie@exapta.com



Dale Nuss  
Sales & Service  
dale.nuss@exapta.com



Ethan Begle  
Sales & Service  
ethan.begle@exapta.com



Tom Strzelecki  
Sales & Service  
tom.strzelecki@exapta.com



Cody Cole  
Sales & Service  
cody.cole@exapta.com



Derrick Aufdemberge  
Tradeshow Representative



"I appreciate everything you and the Exapta guys do for us as we try to keep moving forward in no-till while fighting machinery that is still largely being designed for conventional or minimum-till."

Dietrich Kastens, Herndon, KS.

"Thank you for the information and the service you provide!! It makes a difference!"

Clyde Strotheide, Carlyle, IL

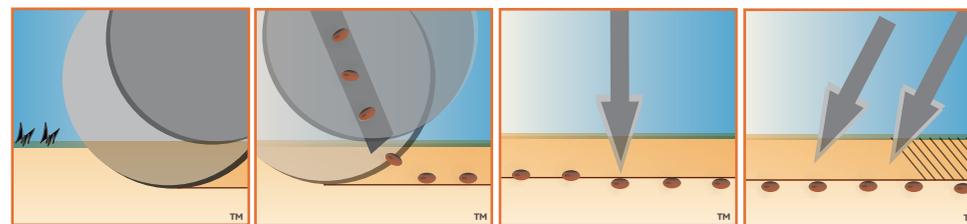


Kelly Leon  
Warehouse Manager

## Fundamentals of seed placement



Profits inside—install with care



**1** Cut residue & soil to create the furrow of the proper depth™

**2** Place the seeds consistently into the bottom of the furrow™

**3** Firm the seeds by applying the right amount of pressure exactly where it's needed™

**4** Close the furrow by chopping the sidewall, to prevent drying and allow good root exploration™

**Vigorous crops depend on you.** In addition to controlling depth and spacing, *your seeding equipment determines the uniformity of seed-to-soil contact and the condition of the soil placed over the seed.* These influence the rate of air and water exchange during germination and early growth, as well as the resistance the seedling encounters during emergence and while developing roots.

**Emergence, early growth, yield, and profit all hinge on proper seed placement—**seeds are pressed (embedded) into the moist furrow bottom at a consistent depth, and the furrow sidewalls are shattered to cover seeds uniformly with loose fractured soil. With the seed securely firmed into the surrounding soil, it draws moisture easily for germination and establishment. Mulch cover prevents drying out of the seed zone prematurely. **The Exapta No-till Planting System accomplishes these things most effectively.**

"Loose material over the seed keeps the seed zone from drying, allows oxygen exchange, and encourages warming in the area where the growing point will occur."



Dwayne Beck, PhD,  
manager, Dakota Lakes  
Research Farm

Read more by visiting [www.exapta.com/working-knowledge/no-till-seed-placement](http://www.exapta.com/working-knowledge/no-till-seed-placement)

*Perfect seed placement in no-till. Loose material over the seed is easily brushed away to reveal the seed embedded in the bottom of the furrow. The sidewalls created by the opener blades have been disrupted by the closing wheels, but the bottom of the furrow is undisturbed. Planter with 3.5mm opener blades, hardened seed-tube guards, Keetons, Mojo Wires, and Thompson closing wheels.*



## Tech tips for planters:

*The planter toolbar and row units must run level (ignore the planter tongue's angle) with the terrain. Nose-down results in too little down-pressure available on the row units, and causes the closing brackets to be tipped incorrectly (lousy closing action), as well as the seed tube not being vertical enough. If in doubt, slightly nose-up is the lesser of the evils. (More on this in our DVD, p 31.)*



**Step 1, Cut:** Avoid disturbing the path of the opener. If your planter has coulters, run them really shallow—like 6" above the soil! ☺ Fertilizer openers should run approx. 4" to the side, and no deeper than the seed openers (preferably shallower).

Row cleaners shouldn't move soil, and should only move a portion of the residue.

Opener blade flex results in a furrow of variable shape and depth, often with the lower portion becoming a pinched unusable slit (zero blade flex would create a 5/16-inch-wide furrow bottom on JD/Kinze/White planters). Blade flex can be reduced by replacing the 3mm disks with 3.5mm blades (standard on most newer planters). Note that thicker disks cannot be shimmed as tightly together as the more flexible 3mm blades. Avoid 4mm blades—too blunt too quick. Heavy-duty bearings also reduce blade flex, but the seed-tube guard being up-to-spec is crucial. See p 6.

**Step 2, Place:** Sidewalls should remain intact until the seed is placed. Indented gauge tires (Reduced Inner Diameter) allow more lifting, which may adversely affect placement and firming. Use adequate down-pressure & frame weight (don't trust the monitor—dig).

**Step 3, Firm:** A separate firming device such as a Keeton (or Flo-Rite) is crucial, even with closing wheels that do a lot of packing (see p 8 – 9). Keetons & Flo-Rites should be set to the maximum tension, if adjustable. Keetons often need to be replaced annually, since the material weakens from sunlight and moisture. Check pressure by comparing the "snap" to a new firmer. The Mojo Wire provides up to 3x more pressure on a new Keeton or Flo-Rite—an advantage in nearly all no-till conditions.

**Step 4, Close:** Furrow closing should shatter *both* sidewalls, and cover the seed

adequately and consistently: This requires 2 spoked wheels/row, since the furrow was created by openers prying the soil outward in both directions. To get maximum root development, both sidewalls must be chewed up by spoked closing wheels. Since the seed has already been firmed by the Keeton, it's desirable that the fill be loose, not packed. Thoroughly embedding the seed with a Mojo allows more aggressive crumbling of the sidewalls without pulling seeds loose.

*Failure to break sidewalls adequately severely restricts roots. Crown roots—the main root system—must grow through the sidewall. If sidewalls are overpacked, 'rootless' or tomahawk roots are the result.*



## What about coulters and strip-till?

One popular idea from the early days of no-till was to put some sort of tillage device (e.g., coulters) out in front to make the old-style (tillage-era) planter opener halfway functional again. Coulters create many problems, including pulling up mud (which clogs gauge wheels), planting weed seeds, compacting the root zone, creating air pockets, destroying too much stubble over the seed row (think soil crusting & erosion), and increasing horsepower requirements. The tillage occurs immediately ahead of the opener—so in damp soils, the results were mediocre at best.



*Raindrop impact on bare soil causes crusting. Retaining adequate mulch in the seed row prevents this.*

Then the idea was to do tillage earlier so the soils could dry—so strip-till became all the rage, despite requiring another trip across the field, owning another piece of equipment, planting even more weed seeds than coulters, creating tremendous seedbed irregularities (clods, air pockets, etc), and causing even more erosion and crusting potential. *However, both coulters & strip-till were using localized tillage merely to address the symptom, rather than the underlying problem—an opener not designed to work in no-till conditions.*



*Devastating erosion and loss of stand due to strip till.*



*This perfect stand in low-disturbance no-till resulted from attention to detail and the use of Keetons & Thompson wheels, with no rain occurring after planting until the 3-leaf stage. If high-vigor seeds are consistently well placed, no rain is required for marvelous stands—every time.*

No-till soils already are the ideal seedbed—generally having adequate moisture,\* good structure (aggregation) for natural rates of aeration and crop development, a mulch on top, etc.—*if only* our seeders were engineered to handle these conditions. To obtain the full benefits of no-till, dress your planter for success!

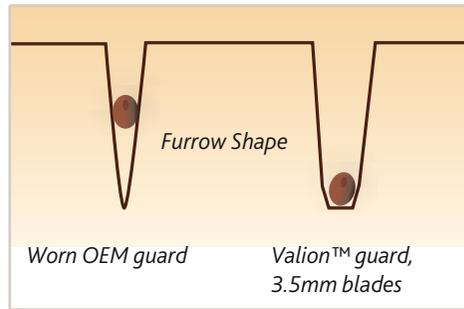
\*If excess moisture often plagues your no-till seedbeds (muddy planting conditions, poor early growth), consider changing the crop sequence, adding well-chosen cover crops, delaying corn planting by 10-20 days (use an earlier RM corn & thicker population, if need be), running pop-up fertilizer with micros, etc. Use only high-vigor seed (test it! see [www.exapta.com/seed-vigor-reap-the-rewards](http://www.exapta.com/seed-vigor-reap-the-rewards)). Pattern tiling may be needed.

# Valion™ seed tube guard

# EXTREME DURABILITY

- Prevent blade flex
- Avoid pinched furrows
- Get consistent seed depth
- Doesn't drag below blades

Valion™ seed-tube guards will eliminate seed tube wear and greatly reduce blade flex to create a consistent furrow for improved planting depth control. The Valion doesn't form the furrow by pushing soil—it doesn't drag below the blades, which would be very undesirable. Instead, the Valion keeps the lower edges of the blades at the optimum distance from each other so that the blades create a furrow of useful width, consistently, for uniform timing of emergence. Without a full-width guard, it's the amount of blade flex determining the width of the furrow, and this varies along the length of row because soil density changes every foot or two.



Valion™ Ultra on Deere XP

chrome Valion™ on Kinze 3000

“Your Valions are AMAZING. I can't understand why anyone would want to continue running the JD guards – regardless of what tillage system they're using.”



Craig Stehly, Mitchell, SD  
Exapta customer since '05  
(Valions, T-whls on 48-row DB88 and 32-row DB58 planters)

“I am very pleased with the Valion performance. I get consistent seed depth and therefore uniform emergence. I am very happy with them! We are 100% no-till and double crop or cover crop everything.”

Don Risser, Bainbridge, PA  
Exapta customer since 2013  
(Valions on 6-row JD 1750)

“We used to fight our [competitor guards with tubes welded on]. We switched to Valions and have solved a lot of problems we used to fight. Plus, the Valions don't wear as fast. No more [competitor guards] on our farm. Planting has been much more enjoyable since we switched to Valions. Love your product!!”

Eric Decker, Hitchcock, SD  
Exapta customer since 2015  
(Valions on 24-row JD 1700 XP)



## Chrome Alloy: 2x – 5x wear life of OEM



US Patent No 8,978,564

- Valion (chrome alloy)** \$25.50–35.50  
*For Deere XP, pre-XP, ME5 (except ExactEmerge), Kinze 2000 & 3000-series. See p 25 for details.*
- Rivet tool** \$89.00  
*For installing pre-XP and Kinze 2000s only*



Valions are perfect for no-till or high-wear conditions, or anyone who is simply tired of replacing guards so often. While intended to limit blade flex, standard OEM seed-tube guards can wear substantially in just a few hours of use (esp. older John Deere & Kinze). Our chrome Valions will outlast OEM guards by 2 to 4x, so that furrows are properly shaped and seeds placed at the correct depth continuously down the row, and all the way thru the planting season. And now, with our Ultras — Valions with tungsten carbide inlays — you'll have the problem solved for the life of the planter.

## Lifetime durability with premium Valion™ Ultra with tungsten carbide inlays for a permanent fix.

US Patent No 8,978,564



- Valion Ultra (tungsten carbide)** \$83.00–88.00  
*For Deere XP, pre-XP, ME5 (except ExactEmerge), and Kinze 2000s & 4900s. See p 25 for details.*

## Liquid Capability

Valions are also a slick way to apply liquids into the seed furrow (n/a on Kinze 3000 Valions). To make this setup as trouble-free as possible, and more affordable and durable than competitor systems, we offer our stainless steel liquid tube holders and heat-resistant plastic tubing.

- No drilling—installs with existing bolt holes
- Secures plastic 1/4" line for liquids
- Keeps the small plastic line out of the blades
- Prevents damage from stalks or tree limbs
- Stainless steel for low corrosion
- Thick-wall pipe
- Premium, bulletproof



“I run the Valions, heat-resistant tubing, and stainless-steel protector—putting fertilizer thru them. I used to run [competitor product: OEM guards with tubing welded on]. I didn't have any problems with plugging and they wear so much slower than [competitor guards], so I don't have to replace the entire system every season.”

Nathan Kuntz, Covington, OH • Exapta customer since '09 (16-row JD XP planter)

*Note: We prefer applying liquids via Keetons. We view Keetons (or in-furrow 'seed-lock' wheels) as crucial for consistent stand establishment in no-till, and keeping those devices clean can be more of a challenge when liquids are applied ahead of them – although this is entirely dependent on liquid rate, stickiness of the liquid, and soil properties. However, many people get along just fine year after year applying liquids ahead of Keetons.*

- Stainless tube holder XP, MaxEmerge 5 & JD 7200, see pg 25 for details** \$26.00
- Stainless tube holder For JD 7000 / Kinze 2000 & Kinze 4900** \$34.00
- Heat-resistant tubing with beveled end** \$5.21

# Lock seed in place with the Mojo Wire

“I wouldn’t plant without Mojo Wires. I’ve seen the difference.”



Tom Cannon, Blackwell, OK  
Exapta customer since '03  
(T-wheels, toe-out, Mojos, chrome Valions on 24-row Deere 1700-series)



\*Keeton is a registered trademark of Precision Planting, Inc.

“We’ve used Mojos and Thompson wheels for several years now on our JD planter. Prior to that, we’d been using Keetons with factory wheels. Our stands were mediocre at best. Adding the two, we saw an immediate improvement in stand counts. We are no-till in sandy loam soils.”

Dean Lerwick, Lyman, NE  
Exapta customer since 2011

“We love the Mojo Wire! Best corn stands we’ve ever had once adding the Wires.”

Dennis Siefker,  
Ottawa, OH  
Exapta customer since 2014 (JD 7000 planter)

In loose tilled soil, planter “press” wheels could easily pack the soil from the surface all the way down to the seed. But this method is seriously flawed for no-till’s firm (structured) soils, since enormous pressure must be applied at the surface to do any seed firming: Averaging 5 lbs of pressure at seed depth might require 50 to 150 lbs applied to a wheel at the surface, and certainly won’t be consistent at seed depth. This severely packs the sidewalls and soil over the seed, to your detriment. Why not apply a precise pressure exactly where it’s needed—at the seed’s location?

The Keeton seed firmer was a good idea, but often isn’t enough—applying only a few ounces to (at most) ~ 2 lbs of pressure. (Compare *in-furrow* ‘seed-lock’ wheels supplying 10 – 20 lbs of pressure on a similar surface area, precisely at the bottom of the furrow.) Furthermore, Keetons lose their tension fairly quickly. A new brand of sliding seed firmer, the Flo-Rites for 2014 had more pressure, but changed for 2015 onward to have no more pressure than a Keeton.

The Mojo Wire solves this by supplying up to 3x more pressure to the Keeton or Flo-Rite. Customers are frequently amazed at the magnitude of improved germination—in higher percentages of seeds emerging, and in uniformity of timing of emergence. (An independent study in Illinois in 2011—the only independent study we know of—found a 6.4% increase in corn ear counts with Mojo Wires, and yield gains are often even greater in tough conditions—from our experience, and what customers report.) Plus, increased tension on the Keeton greatly reduces mud accumulation by creating self-cleaning scrubbing against the sidewalls.

Struggling to get good emergence with your planter in no-till? —Inadequate seed firming is often the culprit. Seeds should be securely embedded into the bottom of the furrow. You might be pleasantly surprised at how well your crops emerge with the Mojo Wire—you owe it to yourself to try them.

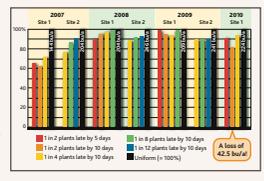


Ragged corn stand due to inadequate Keeton pressure: poor seed-to-soil contact, erratic emergence. Late-emerging plants are weeds.



Nearly perfect corn stand with Mojo Wires. All plants are the same size.

## Uniform timing of emergence trumps uniform spacing for yield effect:



“Uniform emergence is even more critical as individual plant competition for resources becomes greater, such as in droughty conditions.”

Paul Jasa, planter & no-till expert, Univ. of Neb.-Lincoln

Numerous studies prove this. Indeed, loss from non-uniform timing of emergence is about 4x greater than uneven spacing. (Full details at [www.exapta.com/working-knowledge/library-links](http://www.exapta.com/working-knowledge/library-links).) And when it comes to making sure all the seeds experience the same conditions (crucial for uniform timing of emergence), no one has emphasized this more than Exapta—everything we do is focused on improving seed placement.

“I’ve seen an 8 - 9 bu/a advantage of using the Keetons with Mojo Wires during testing for Precision Planting on my farm. The seed-to-soil contact is more consistent. I hear of guys complaining about Keetons dragging in mud and I used to have a little bit of that issue, but that’s due to not having enough pressure on the Keeton. I now do not have any issues with dragging due to the added downpressure provided by the Mojo Wires.”

Jared Nordick, Rothsay, MN  
Exapta customer since 2015



The redesigned Quick Attach Keeton and Mojo Wire solve most of the problems associated with prior designs (including the Universal). See p 26.

Mojo Wire kits for Keetons & Flo-Rites (most planters) <i>See p 26 for details on various models</i>	\$11.00–23.00
Keeton seed firmers (most planters)	\$34.00–35.00

## Why spoked closing wheels?

Planters and drills were engineered for tilled seedbeds. For instance, **smooth closing wheels overpack** the furrow in no-till, especially when soils are damp—reducing emergence and hindering root penetration of the sidewall. With the soil structure of no-till, smooth wheels **struggle to close the furrow**. Spoked closing wheels first appeared in the early '90s with more designs being added each year. An honest assessment:<sup>†</sup>

	Poor 1 2 3 4	Fair 5 6 7	Good 8 9 10
<b>Smooth OEM closing wheel</b>			
Sidewall Shatter	1		
Avoids Packing	1		
Mud/Stalk Cleaning			8
Depth-limited			10
Excess packing, poor closing			
<b>Curved-spoke closing wheel, with wide spoke tips</b>			
Sidewall Shatter		7	
Avoids Packing		3	
Mud/Stalk Cleaning		3	
Depth-limited			5
Usually good closing, but excessive packing (intermittent)			
<b>"Spike" closing wheel</b>			
Sidewall Shatter			10
Avoids Packing			10*
Mud/Stalk Cleaning			8
Depth-limited			1
No packing, but spokes may pull seeds out			
<b>Notched spoked wheel with thick spokes</b>			
Sidewall Shatter			9
Avoids Packing			6
Mud/Stalk Cleaning			6
Depth-limited			9
Can overpack			
<b>Cage-type closing wheel: horizontal feet</b>			
Sidewall Shatter			2
Avoids Packing			4
Mud/Stalk Cleaning			4
Depth-limited			10
Excessive packing; problems with standing stalks and small rocks			

<sup>†</sup> From numerous observations by 3rd-party scientists and farmers.

\*Closing wheels that don't pack the soil above the seed (a good thing) shouldn't be used without a separate in-furrow firming device (Keeton seed firmer, Flo-Rite, or seed-lock wheel).

## How is the Thompson wheel better?

Before introducing the Thompson wheel in '02, we did a massive amount of testing to arrive at this particular combination of design features. The result: Dramatically improved performance. The thin spokes allow easy soil entry, for **excellent crumbling of the sidewall**. The thinness also **reduces mud accumulation**. The blunt spoke tip, tapering sides of the spoke, and optimal spoke spacing further enhance sidewall shattering, but with **self-limiting depth**. Plus, the Thompson wheel **avoids the pitfall of excessive weight**—when conditions are damp, too much packing over the seed can be hazardous to your crop.

Also, the Thompson wheel has **proven durability**: High-carbon steel, a truly robust bearing with a triple-lip seal, and our exclusive steel shroud for superior bearing protection—plus, our **5-year warranty on the bearing**.

"Your products help me make money. I did a trial with different spoked closing wheels and yours were by far the best wheels I've seen. I have Thompsons on my 16-row JD planter and am converting my 750 drill to them. They really make a difference in covering the seed and emergence. They break up the sidewall compaction and do a great job closing the seed trench. I appreciate you guys."



Dave Meyer, Arcanum, OH • Exapta customer since 2014  
(T-wheels, toe-out, Valions, Mojos on 16-row JD 1760 XP planter)

"I've tried rubber closing wheels, cast closing wheels, and several other brands of spoked wheels on planters, and without a doubt, the Thompson wheels are the best for all of my conditions."

Steve Edger, Greenville, OH  
Exapta customer since '07  
(T-whls, toe-out, Keetons + Mojos on 32-row planter)

"We farm clay knobs, sandy loams, and high-organic muck soils, often all on the same day. We tried a number of different closing wheels and found the Thompson wheels performed well across all those conditions. I run them toed-out about 3 degrees."

Chuck Zumbrun, Churubusco, IN  
Exapta customer since 2010  
(Mojos, T-wheels & toe-out wedges on JD 1700-series planter)



<b>Thompson wheel</b>			
Sidewall Shatter			10
Avoids Packing			10*
Mud/Stalk Cleaning			8
Depth-limited			8

US Patent No 6,907,833



**THOMPSON WHEEL™**

- Aggressive furrow closing with self-limiting depth
- Creates ideal zone for crop emergence & rooting
- Heavy-duty bearing with 5-yr guarantee
- Low mud and stalk accumulation

**Tougher than ever!**

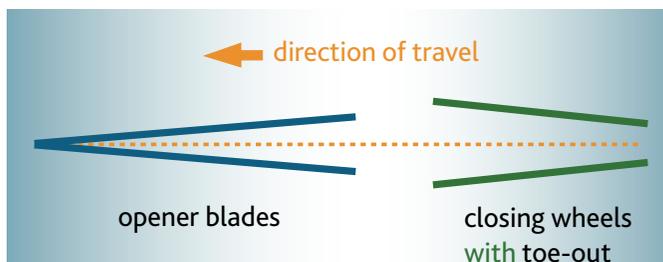


**T2z & T3z wheel (with metric or 5/8" bearing) \$117 each**

New 'z'-series is made from military-grade armor plating, for even longer wear life. Fits most JD, Kinze, AGCO White, Great Plains and Monosem planters

## Toe-out for closing wheels (planters)

'Toe-out' means the front edge of the wheel tracks a bit wider than the rear: Our wedge creates up to a 6-degree toe-out on planter closing brackets, which have zero initially (planters running 'nose-down' actually have toe-in, resulting in no closing action at all). Toe-out causes closing wheels (all types) to more actively engage and pull soil back into the furrow—the reverse of the opener blades prying soil apart to create the furrow. (Note: JD 50/60/90-series drills have toe-out built into the closing arms.) The need for toe-out is greater in high-clay, low-OM soils, or in soddy conditions. Exapta's toe-out wedges simply slip onto the bolt attaching the closing wheel on most planter models.



"I've used the Thompson wheels and toe-out wedges for about five years. I've found them to be far superior to any other closing systems I have tried. They're very versatile in the fact that they don't wrap in tall cover crops like green cereal rye, and will close in hay sod where the furrow wants to open back up. Thompson wheels also shatter the sidewall, helping to reduce sidewall compaction in less-than-perfect conditions in corn or soybean stubble. They also work well in varying soil and moisture conditions in the same field. I would recommend the Thompson wheels to anyone who wants to improve their soil by using cover crops and no-till."



Chris Broyan, Berwick, PA • Exapta customer since '09  
(T-whls & toe-out wedges on 12-row JD 1770)

"The Thompson wheels have been one of the best additions to our planter as they do a great job closing the seed slot in both extremely dry and extremely wet conditions. They're often the difference in whether I can plant or not when the weather turns wet. Previously, the inability to fully close the seed slot with the stock JD rubber closing often left me setting at the edge of the field waiting for things to dry out. And sidewall compaction is largely eliminated when using the Thompson wheels as compared to the JD rubber closing wheels."



Dietrich Kastens, Herndon, KS • Exapta customer since '08 (T-whls, toe-out, Mojo Wires on two 24-row JD 1770 planters)

"I love those Thompson wheels and wedges—they're wonderful. I have some clay soils along the river, and I've tried a bunch of different types of closing wheels, and nothing else comes close to closing the furrow. Fabulous."



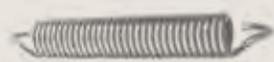
Leo Vojta Moberge, SD  
Exapta customer since '08  
(T-whls, toe-out, Keetons + Mojos on 24-row Kinze 3800 planter)



### Toe-out wedge

JD 1700 (all), White 6000 thru 9000;  
Kinze 3000 & 4000 closing brackets

\$5.50 each



### Closing bracket spring

(Replaces OEM heavy spring) Since spoked closing wheels have a much smaller footprint on the soil, a lighter spring is useful on the closing bracket. Our medium 55% spring is for tougher soils (low OM, eroded, high-clay or sod). Stouter than our old 1/3-rate spring.

\$5.75 each

## Tech tips for gauge-wheel drills:

Some drill opener designs cannot adequately perform Steps 1–4 (see page 3) because they are hangovers from the tillage era. In North America, one design that fulfills Steps 1, 2, 3, & 4 is the John Deere 50, 60 & 90-series single-disc, gauge-wheel opener. Some comments to help them function:

**Step 1, Cut:** Opener blades should be replaced when they've lost 5/8" off of original diameter (bevel is too shallow by this point). Because the boot is wider than the furrow being cut, it is very difficult to push the boot into the soil. Generally, the lower edge of the boot should be approximately at the soil surface. If attempting to continue running worn blades, move the seed boot to the upper mounting hole (return it to the middle hole when installing new blades). Replacing blades frequently cuts down on boot wear. Maintain the big pin & bushings at front of opener to prevent furrow from getting too narrow.

**Step 2, Place:** Seed boots should be inspected and maintained—the wear is not obvious from casual inspection. When the bottom outside edge of the boot is no longer straight across, performance is seriously compromised (see photo). The 60-series drills had a poorly designed seed boot and should be upgraded to the 90-series boot. Maintain leaf springs to keep the boot against the blade. Leaf springs weaken with age, and eventually break.



If boot attachment hole becomes too worn, boot drags out of position, causing more seeds to bounce out of the furrow. There are several attachment-hole repair kits on the market (avoid Pro-Stitch's—they hold the boots too rigid and cause major plugging problems). Maintain or upgrade seed bounce flaps on back of boot: These help keep seeds in the furrow bottom.



Inadequate down-pressure causes shallow furrows and more misplaced seeds. The only meaningful indicator of down-pressure is compression of the big coil spring.

The gauge wheel should be firmly on the soil surface during seeding, which holds the sidewall together while the blade exits the soil. Also, for this reason, Reduced Inner Diameter (indented) gauge tires can adversely affect seed placement.

Air drills especially may require additional frame ballast (sometimes a lot). Read more at: [www.exapta.com/working-knowledge/tech-tips-for-drills](http://www.exapta.com/working-knowledge/tech-tips-for-drills).

**Step 3, Firm:** Use a good seed-lock wheel, such as Exapta's new DuraLok™ flexible wheel. (The JD firming wheel runs on a rigid, overly wide rim.) Properly shaped firming devices will engage all the seeds and push them securely into the bottom of the furrow, without the firming device getting hung up on the sidewall. The flexible DuraLok™ self-aligns for consistently good performance.

**Step 4, Close:** Close the furrow by shattering the sidewall and pulling loose material into the furrow. Avoid packing soil above the seed.

Review Exapta's newsletters covering many topics of no-till seeding equipment and agronomy.

[exapta.com/newsletters](http://exapta.com/newsletters)

## Aricks Bushing Kits for JD 50/60/90 Drills

Keeping the firming & closing arm pivots working properly can be a real hassle on the JD 50/60/90 drills. Even after Deere upgraded them circa '09 to include seals, they still have a habit of packing full of dirt and not taking grease. But with the Aricks bushing kits from Australia, these pivots will run smoothly and **you'll never have to grease them again!** The Aricks seals for the firming & closing pivots have a Teflon coating on the seal contact lip and are **designed to run dry**, unlike a competitor product from USA – and these Aricks kits have an **8-year track record** to prove their durability and trouble-free nature. The bushings themselves are fiber-wound Teflon impregnated, and the steel sleeve has a hardened chrome finish, for smooth action, and proven to last at least as long as OEM (significantly longer in some conditions). These kits are hugely popular in Australia.

*Note: On 50-series, \* the firming arm has a pin welded in – this must be removed and a hole drilled in the arm at that spot (or we can sell you replacement arms), and requires a 50-series bushing kit as the sleeve length is longer than the 60/90-series.*

*\*Doesn't fit the earliest 750s.*



Aricks firming arm kit (sleeve, bushings, seals) JD 50*/60/90	\$41.00
Aricks closing arm kit (sleeve, bushings, seals) JD 50*/60/90	\$41.00
Install tool for firming & closing kits	\$15.00
Removal tool for firming & closing kits	\$15.00



The main pin & bushings at the front of the opener on the JD 50/60/90 drills (where the arm attaches to the rockshaft) is another wear item, and it's critical to maintain furrow width. If these get sloppy, the furrow gets narrower and the boot and firming wheel no longer fit, and seed placement is awful. The first time around, simply rotate the pin by 180-degrees (loosen the bolt locking it in position; put a pipe wrench on the end of the pin). If this has already been done, and they've gotten sloppy again, the next step is to replace pins & bushings. Aricks' front pin kits have been in the field for 4 yrs, and proven to last at least as long as OEM, sometimes significantly longer. However, the Aricks front pins & bushings are a **fraction of the cost of OEM**, and with **Aussie persnickiness for quality control**. Aricks front pin bushings are steel with a Teflon inner layer, and the pin has a hard chrome finish.



Removal tool for main-pin bushings

Aricks main opener pin kit (pin, bushings)	\$29.00
Removal tool for main-pin bushings	\$70.00

## Ninja seed-bounce flap for JD 50 & 90 drill boots:

### Forward-bending flap keeps more seed in the furrow

The flap on the seed boot is what keeps seeds from bouncing out of the furrow, and this is even more critical on air drills, since the air stream is also trying to escape and may carry seeds along with it. However, JD & aftermarket flap suppliers use a straight flap, made from materials that are too brittle—often snapping off in the field. **The issue with straight flaps is that it leaves a triangular gap** (see photo) for seeds to escape, and this gap gets larger when the straight flaps bend upward during use, due to riding on the sidewall.

Our Ninja flap has a **20-degree forward bend to help close this gap**, thus keeping more seeds in the furrow. The forward bend helps deflect seeds downward into the furrow bottom before dust and chunks of sidewall fall in ahead of the seed. The flexible material and tapered end **prevent the Ninja flap from riding on the sidewall**. The result is better seed placement. Ninjas also shed mud better than OEM and competitors, and **proven to outlast any other flap/tab by at least 3x** (to our knowledge, nobody's actually worn out a set).



**“The Ninja seed tabs made a huge difference to our seed placement and accuracy—before, we had a lot of seed near and on top of the soil. Also finding we don't need to run the discs as deep to achieve optimum seed depth and placement.”**

Ben Wilson, Tocumwal, NSW, Australia  
Exapta customer since 2015 (JD 1895)

**“We've now got 10,000 acres on our Ninja flaps, and they look fine yet—very little wear. They'll easily go another season, unlike the [competitor aftermarket] tabs that needed replacing every season [5,000 acres].”**



Darin Brunk & Joe Swanson, Windom, KS • Exapta customers since '99  
(Ninjas on 40-ft JD 1890)

- For 50 & 90-series drill boots
- Unique forward bend
- At least 3x wear life vs others
- Doesn't break off
- Puts more seeds in the bottom of the furrow

**“I put Ninja seed bounce flaps on my [JD] 1850 last year. Huge improvement over the stupid white plastic flaps that JD puts on them. They are really the best flap out there.”**

Jay Herron, Salem, OH,  
Exapta customer since 2015



**Ninja vs Bonilla**  
Same drill, same time, adjacent openers.

**“The Ninja seed bounce flaps put the seed at the bottom of the trench better than the other flaps available. I've ran OEM and competitor brands, but the Ninja is the best. I have been impressed to say the least.”**

Ken Gardner, Williston, ND  
Exapta customer since 2017  
(Ninjas on JD 1890)

For those of you who might've seen Phil Needham's YouTube video discussing seed flaps on the JD drills, here's us setting the record straight. [www.exapta.com/products/ninja](http://www.exapta.com/products/ninja)

Ninja™ flexible seed-bounce flap for JD 50 & 90 drill boots	\$4.63
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## Deere 50/60/90 upgrade: Ingersoll blades



"I was pleased with the blades. They didn't get the blunt edge like competitor blades tend to, which of course is great for performance. I will continue to use them."



Jordan Reimnitz, Armour, SD • Exapta customer since 2009 (Exapta blades on JD 1860 air drill)

### Sharper, Stronger, Proven Technology:

Perhaps because of the noise we made about the dullness of JD's opener blades on their 50/60/90 drills, Deere switched suppliers in late 2015, from the low-quality Osmundson to high-quality Bellota. The Ingersoll blades we sell might still have a slight advantage over Bellota's, but it's nothing like the advantage we had on Osmundson's (some aftermarket places still sell these). Ingersolls still have a big wear-life advantage over brands such as Argis, too.

Ingersoll (Canada) opener blade, JD 50/60/90 drills **\$27.73**

## DuraLok™ for JD 50/60/90 & Case SDX drills

Not too narrow, not too wide, not too rigid, not too soft, but just right.

- Narrower to fit the furrow better
- Field proven: highly wear-resistant material
- Easily replaceable bearing
- 'Tire' won't pull out of the rim
- Proven Peer brg (same as JD seed-lock wheel uses)
- Sleek, narrow hub that's proven to better shed mud, stalks, straw



Narrower to stay down in the furrow better and provide more consistent seed-to-soil contact. Flexible to self-align during slight turns or when the drill is drafting downhill. Tremendous wear life.

The sleek shape of the DuraLok™ allows it to stay clean when OEM and competitor (aftermarket) firming wheels are clogging with mud, pulling seeds out, and dragging against the gauge wheel.



DuraLok™ Not too narrow, not too wide, not too rigid, not too soft, but just right. Sleek, narrow hub stays clean.

"Get the DuraLok from Exapta. That puppy sheds mud and won't cause plugging issues like OEM when it's sticky and wet out. Those DuraLoks flat out work—an excellent product. Try one and you'll see what I mean."

Roger Nesham, Berthold, ND • Exapta customer since 2012 (DuraLoks, T-whls on 60-ft & 40-ft JD 1890s)



"I highly recommend to pull off the JD wheels and put DuraLoks on. They are thin enough to fit perfectly in the seed 'v' and have flexibility. I've never seen mud buildup on them either."

John Heermann, Haxtun, CO  
Exapta customer since 2015 (JD 1890 drill)



DuraLok seed-lock wheel **\$45.00**

## Leaf Springs for Seed Boots JD 50/60/90

- 20% more force applied to the boot
- Less breakage for longer service life
- Maintains strength

For the seed boot on JD 50, 60 & 90-series NT drills. Manufactured to Exapta's high-quality specs. Special ultra-durable paint process prevents rust. 60-series boots require spring to be trimmed.

"Exapta seed boot springs are absolutely brilliant compared to the JD springs."

Tom Robinson  
Hoyleton, South Australia



Leaf Spring for seed boot on JD 50/60/90 drills **\$5.25**

## Aricks row cleaners for JD 50/60/90 drills

- Dramatically reduced hairpinning
- Minimal soil disturbance
- More consistent seed placement
- A big help for shallow seeding or heavy mulch
- Less downtime from waiting for straw to dry
- Proven: 10-yr track record in Australia
- Extremely robust design (tough Aussie conditions)
- Easily pinned up when not needed

10-week delivery time (North America)



We're pleased to offer another top-notch product from Aricks of Australia, where ruggedness is taken to an extreme (check out our Aricks bushing kits for these drills – wonderful product). These row cleaners have a proven, 10-year track record in Australia, and we're proud to be the exclusive distributor in North America.

While sharper opener blades and waiting for the mulch to dry each morning can take you a long way in preventing hairpinning (as can our UniForce hydraulic downforce system), a row cleaner helps you out if the mulch is simply too thick to cut, or waiting for it to dry isn't practical. Also, in very cold climates, a bit of soil warming from clearing some mulch out of the row can be beneficial.

Aricks row cleaners are also a big advantage when seeding very shallow, such as alfalfa or canola, where it's difficult to make the opener blades cut the residue (18-inch blades cut best when seeding 2.5 – 3" deep). Not suitable for use in corn stalks — they must be locked up. They do handle hemp, field pea, soybean, faba bean and flax residue without much issue, as well as stripper-harvested cereals. A jacker bolt allows control of the max down-stroke. When not needed, the cleaner is easily pinned up.

"I've had them on my 1895 for 7 or 8 years, covering 40,000 – 50,000 acres. They work. I couldn't imagine not having them. They extend the number of days we can work. We can also start earlier each morning and go later in the evening... I'm impressed the condition they are in after so many acres.... No problems in soybean, canola, field pea, faba bean, or flax stubble. No problems in cereals harvested with a stripper head. But in corn stalks, we had to lock them up."



Robert Stevenson, Kenton, Manitoba • Exapta customer since '07 (Aricks row cleaners & T-whls on both seed ranks of 43-ft JD 1895 [10"])

Financing Available 6.5% APR, 24 months. Offer good thru 3/31/2018.

Aricks row cleaner for JD 50/60/90 drills **\$485.00**  
Note: Box drills require installation of a bar ahead of each rockshaft (call us for price and shipping cost; or prints available to build your own). 50-series requires different model.

## Thompson closing for gauge-wheel drills

Thompson closing wheels are an excellent upgrade for JD 50, 60, and 90-series drills, and bolt easily onto the original closing arms. The OEM cast closing wheels on the Deere drills have a ridiculous tendency to hop because of their weight and smoothness, and the angle of the arm's pivoting, and really hammer the soil when they land after being airborne. Even when running smoothly with low spring pressure, heavy cast closing wheels tend to seriously over-pack the soil, reducing emergence and early growth. Thompson wheels completely avoid the problem, since they weigh far less than JD and certain aftermarket wheels, and actively pull themselves into the soil.

"I used my drill for beans for the first time this year, due to a major planter breakdown. I love what the Thompson wheels were doing on that drill. And my emergence was sometimes higher than 85%, which is pretty good for beans."

Tom Cannon, Blackwell, OK  
Exapta customer since '03 (JD 1890)



"No problems at all with wrapping of cover crops."

Steve Groff, Holtwood, PA  
Exapta customer since '05 (T-wheels on 1590 drill)



"I'm no-tilling with a JD 1890 in clay-loam soil. I tend to drive a little fast, 6 - 9 mph. The OEM closing wheels were in the air probably 50% of the time. The [competitor spoked wheels] are also heavy and tend also to bounce. I've got along best with the Thompsons. I ran all three side-by-side last year [2012], and now have all Thompson wheels on my drill."



Larry Brunner, Kingsville, MO  
Exapta customer since 2012 (JD 1890 drill)

Another drill with a true gauge wheel is the new Case Precision 500 / New Holland P-2080. Once you overcome their lack of seed firming by adding a Keeton + Mojo (see p 28), the next order of business is improving the closing action — which is rather pitiful in long-term no-till with their smooth packer wheel. Exapta's closing bracket is the ideal upgrade in allowing our Thompson T3z to be ran at a 7-degree toe-out, along with lighter spring pressure. Avoid stand failures! Do firming & closing as separate steps, and do them well. (T-whls are also a good option for Case SDX drills that have seed-lock wheels installed.)



"Overall, your products did a great job. I'm satisfied that I installed Exapta's complete row upgrade [Keetons, Mojos, T-whls]. We probably had the best stands I've seen in a while."

Jason Stoffer, Abilene, KS, • Exapta customer since 2015 (Exapta's complete firming and closing upgrade on Case P-500 air drill)



- Thompson wheel T4z** **\$78.00**  
*(with stub shaft, for JD 60 & 90-series drills)*  
*'z' = Tougher than ever, made from military-grade armor plate*
- Thompson wheel T2z & T3z** **\$117.00**  
*(with 5/8" or metric bearings, for JD 50-series, Case SDX & Case Precision 500 drills)*
- Case P-500/NH 2080 closing upgrade** **\$65.00**  
*For more info, see p 29*

Better than Ever!

## SeedVU Air Drill Venting Unit

Is plugging your air drill's primary lines a constant worry?  
Problems with seed bouncing or blowing out of the furrow?  
A simple solution—installs in just a couple minutes for the entire drill (fits into distribution heads).



SeedVU® gives you the peace of mind of running your fan where it should be, and not worrying about seed blowing out of the furrow, all while monitoring for primary-line blockages.

The SeedVU® takes unwanted, excess primary-line air pressure and separates it from the seed and fertilizer stream, right where you need it to: the distribution head. This allows seed and fertilizer to travel to the openers by gravity, or assisted by an adjustable volume of air. It's up to you!



"I love the SeedVUs. If you've ever plugged a primary, it takes 2 hours to clean it out. That's a lot of downtime, and costs us money. With the SeedVUs, I can crank the fan speed up and never worry about plugging a primary, and actually do a better job of seed placement by dumping most of the air with the SeedVU."



Tom Cannon, Blackwell, OK  
Exapta customer since '03 (SeedVUs on JD 1890)



### SeedVU for air drills

**\$240.00 – 275.00**

*fits late-model JD (plastic heads/"pods"); Case-IH / New-Holland Flexi-coil EZ Flow heads; Seed Hawk; Salford; Seed Master & other drills updated to Smalldre heads. See p 29 for details.*

## Smalldre riser pipes & conversion heads

Smalldre riser pipes have an enlarged elbow to properly disperse product going up to the distribution head (ordinary mandrel bends cause ricochet and overload one side of the head). Dimples also help this. Tremendous durability. Smalldre are the wizards of air flow. Reap the rewards of a uniform amount of product going to each opener.

For best results, also get rid of inferior distribution heads, such as the Deere steel-lid heads. See p 29 for Smalldre & SeedVU products: Exapta is proud to be the exclusive distributor for their ag products in North America.



"I didn't think the [Smalldre distribution] head was going to be anything special, but they ended all of our plugging problems and we backed the fan speed off another 200 RPM. Never had a secondary hose come off, either. We got the [Smalldre] stainless risers from you, and they're an undervalued product. Great product, and I will buy again [for my other air drill]. Thanks!"

Jamie Kouba, Regent, ND, Exapta customer since 2016 (Smalldre manifolds & riser pipes on 60-ft SeedMaster air drill)

Smalldre riser pipe	2.5-inch	<b>\$95.00</b>
Smalldre conversion head	12 outlets	<b>\$230.00</b>
	6 outlets	<b>\$173.00</b>

# Exapta's UniForce™

Get your JD 50/60/90-series drill to work the way it should.

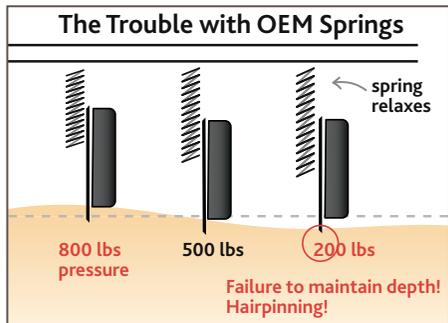
- Uniform pressure on all openers
- Reduce/eliminate hairpinning
- Get consistent depth!
- Better use of frame weight
- Less sidewall compaction
- Greater up/down travel on openers
- 3-year warranty on cylinders  
*(some restrictions apply)*

The biggest downfall of the JD 50/60/90 drills & 2510H is how down-force is applied — the rockshaft twists to compress a big coil spring on each opener. Because the spring is nearly parallel to the arm, the opener has almost no down-stroke — i.e., the spring is in the optimum position (applying the correct amount of down-force) for only about 1/4" of its range. Had the spring been oriented differently, the problem wouldn't be nearly so bad.

So, you must have fields that are laser level for these openers to work correctly. Even 1/2" depressions give them fits. The spring starts to relax as the opener goes into these miniscule depressions, and you lose down-force — the opener loses depth, and starts hairpinning. To compensate, everyone cranks the pressure way up — so that the majority of openers have far too much pressure, just to keep those passing thru mild depressions working halfway decent. You end up with excessive sidewall compaction on most of the rows, while some aren't even holding depth. Not to mention it takes a bunch of extra ballast on the frame.



US Patents Pending



UniForce cylinders are made from top-quality materials and have extra packing rings for a very long life.

"UniForce worked beautiful! It eliminates all the bounce and keeps the openers in the ground. I am very glad I installed UniForce."

Karl Davis, Winfield, IA  
Exapta customer since 2017  
(JD 1990 CCS 40-ft 15" spacing)

"In marginally dry conditions, it's a big advantage. The row units hold depth better—it's impressive to look back there and see the row units not bouncing [like they would with OEM springs]."

Scott Arthaud, Keyes, OK  
Exapta customer since '07  
(UniForce, T-whls on 60-ft JD 1890)

"UniForce really made an improvement on my drill. We now are able to keep the openers in the ground consistently. That was the biggest downfall with the JD drill, but with UniForce we solve that issue. In fact, in the same field we were using both the planter and the drill to plant beans, and the beans planted by the drill were two inches taller than the beans planted by the planter. I can see there being a huge market for UniForce on drills."

Ron Small, Monroe City, IN • Exapta customer since 2007  
(JD 1990 CCS drill, 35-ft, 15" spacing)

# UniForce™

Hydraulic Downpressure

Our UniForce hydraulic system fixes Deere's design debacle. Now, you can get uniform pressure on every single opener throughout its full stroke. The result is much better cutting, less hairpinning, holding blade depth much more accurately, less premature sidewall blowout (from gauge wheel not being firmly on the soil surface), and far less sidewall compaction. Another problem with springs is that they bounce: Hydraulics don't have this problem.



UniForce uses single-action cylinders along with the OEM rockshaft, which is still used to raise and lower the openers. Both can run on a single tractor remote, or they can be kept entirely separate.

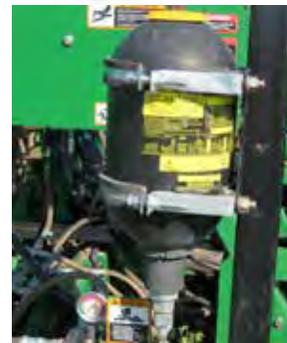
Large 3/4" header hoses\* allow oil to move quickly from one end of the drill to the other, and between the front & back ranks. This keeps pressure almost perfectly constant even while going over steep terraces or through swales at high speed. Special brackets support the header hose on most air drill sections. Large 1/2" drop hoses let oil move in & out of cylinders very rapidly. But don't be fooled by the size of the hoses: The flow requirements are relatively low—for 48 rows, the UniForce takes only 4 - 8 GPM (for comparison, the air cart fan needs 25 - 30 GPM). (\*Box drills use 1/2" header hoses.)

"In hard, dry bean stubble, [the UniForce] stuck [the wheat seeds] in there better. The stands were more consistent in wheel tracks and drier areas. Overall, slightly more uniform stands, and more uniform emergence. After seeing the results on our 1895 last fall [2016], I felt strongly enough about it to outfit our 60-ft 1890 with UniForce." (if you know Mike at all, he is super careful about his spending)



Mike Arnoldy, Kennebec, SD • Exapta customer since '01  
(UniForce on 43-ft JD 1895 & 60-ft JD 1890)

Choose 0% financing for 24 months, or 6.5% cash rebate.	<b>UniForce hydraulic down-pressure system</b>	<b>\$300/row (60/90s), or \$325/row (50-series), plus</b>
	<b>base price: box drills pulled individually</b>	<b>\$1,925</b>
	<b>all single-rank (15") CCS drills</b>	<b>\$3,220</b>
	<b>other air drills or 2 box drills pulled together</b>	<b>\$5,880</b>



For those who farm in terraces, especially when using only a single rank of openers, Exapta offers an optional 2.5-gallon accumulator for the UniForce system (JD 50/60/90 & 2510H). When running 2 box drills together on a hitch in terraces, we have smaller 1-gallon accumulators (one for each drill). When hitting terraces square-on, even the largest-capacity tractors can't supply enough oil flow to keep the pressure perfectly constant, but our accumulator helps minimize fluctuations.

<b>Optional Accumulator, 2.5 gallon</b>	<b>\$2,490.00</b>
<b>Optional Accumulators, pair of 1-gallon</b>	<b>\$1,720.00</b>
<i>Includes brackets, hoses, fittings</i>	

## Hydraulic oil overheating from air drill?

Even if it's not overheating to the extent of shutting down the tractor, high temps break down hydraulic oil faster, and shorten the life of pumps, seals, etc. — you really want it to stay below 185 F. Here are some ways to keep hydraulic oil cool.

First, re-route the fan return for certain cart makes/models (see p 23).

If you're running a late-model JD tractor that has Power Beyond pulling a JD air drill, Deere will often update the drill to make use of the Power Beyond so that less oil is flowing to the meter rolls and rockshaft circuit. However, this may not completely solve the problem of oil getting overly warm.

For other brands of tractors, if there's an extra SCV available, you can tee 2 remotes together for the rockshaft circuit. One remote is set to supply max flow for 5 seconds when raising and lowering, but otherwise is shut down. The second remote supplies a constant low flow of oil to keep pressure on the rockshaft while drilling.

Install an oil cooler. There are plenty of farmer-built hydraulic oil coolers out there (in Australia, everyone runs them). But you can go one step further: instead of merely venting that heat into the atmosphere, you can use it to warm & dry the air going thru the air delivery system — this has the advantage of reducing moisture in the lines, and helping to eliminate gunk buildup from fertilizer dust and seed treatments.

For a robust "heat exchanger" that's designed specifically for this, check out our Smallaire unit. With a flexible duct that connects to the fan intake, it fits most air cart models, and allows the unit to be mounted anywhere on the drill (higher up prevents it from sucking in as much dust and chaff; an add-on snorkel is available for even loftier intake). Don't let yourself be sidelined in the heat!



*Exapta's Smallaire Heat Exchanger is designed by air movement specialists and has a proven track-record in Australia. When cleanout is needed, there's easy access with the hinged cover. The Smallaire unit has a huge radiator (24 x 28", and extra thick), and a plenum to utilize the full extent of the radiator area, so you get maximum cooling of oil and maximum warming of air in the system — great for tough conditions. Photo is an older style of mounting directly onto fan housing.*



*Smallaire Heat Exchanger mounted on a SeedHawk using flexible ductwork. Usually, the heat exchanger is mounted in a convenient spot on frame tubing using U-bolts.*

*"All in all, the Heat Exchanger did its job. It was noticeably warmer, drier air running through the system. Last year, some farmers had to stop seeding at times in the hot conditions due to hydraulic oil overheating, whereas I was able to keep going, even with an older tractor."*

Greg Morrical, Beverly, KS • Exapta customer since '07 (Exapta Smallaire Heat Exchanger on JD 1910 air cart)

**Smallaire Heat Exchanger**  
**Optional Snorkel**

**\$2,300.00**  
**\$475.00**

## Re-route fan return on JD 1900 & 1910 carts

These carts generate lots of unnecessary heat from the fan circuit because the JD setup is silly: *JD returns the fan hydraulics thru an SCV remote, which generates a ridiculous amount of heat (almost as much as the rockshaft circuit!). Nearly all the heat generated by the fan circuit can be eliminated by instead returning it into a high-volume low-pressure return, a.k.a. "motor return port"* (this cuts backpressure from 300 psi to 50 psi, which is also better for the fan motor). The following document spells out in great detail where it's located for various tractor models: <http://www.greatplainsmfg.com/manuals/pdf/CDMR101209.pdf> — scroll down a few pages. Some late-model 4WD articulated tractors aren't covered, but the return is usually under the rear of the cab.

Nearly all Aussie air cart manufacturers use this method of returning the fan oil thru a motor return port, as do most other air drill OEMs in North America. Farmers who have done this conversion to a JD 1910 cart say it works great. Exapta's hydraulic expert believes the JD setup was originally designed for convenience of connecting to the tractor as not all tractors have this extra port,\* although he concurs that their setup doesn't make sense for the majority of situations. So, for the cost of a couple of hydraulic fittings, you can reduce the heat buildup on your JD air drill by 30 – 35%. \*Work-arounds include dumping into the reservoir with a check valve supplying a minimal amount of resistance (zero backpressure causes the computer to think a hose is blown and shuts down the circuit).

If your hydraulic oil still isn't cool enough (aiming to be well under 185 F), our Smallaire Heat Exchanger will knock the temp down by another 30 F. Oil coolers and heat exchangers are still very popular with owners of all the other air cart brands that are set up correctly on the fan return. Our Smallaire Heat Exchanger provides other benefits beyond merely cooling the oil — it greatly reduces gunk buildup (from moisture, fertilizer dust, and seed treatments) inside the drill's air lines by warming the air. Flexi-coil has offered a similar setup for many years, and air drill owners who've installed them report far less gunk buildup in their air system compared to without the setup.

**For more on this topic and others, read Exapta's newsletters.**

[exapta.com/newsletters](http://exapta.com/newsletters)

## Options for Hydraulic Down-Force



*Motorized control valve for in-cab adjustment of any hydraulic system including JD OEM.*

*Want to change pressure on-the-go? For example, lightening the pressure in soft areas on each pass, or cranking it up in hard areas. Our in-cab manual control switch works great for the OEM rockshaft downforce on JD 50/60/90 drills & 2510H applicators, as well as Exapta's UniForce down-pressure system (see pp 20 – 21). The switch activates a motorized control valve that simply screws into the valve block in place of the knob.*

**In-cab adjustment for hydraulic systems: UniForce JD box drills & 3-section\* air drills (w/o UniForce)**

**\$650.00**  
**\$690.00**

*\*Not available for John Deere 5-section air drills (includes motorized control valve, wiring harnesses, switch box)*

## Intelligent Ag Wireless Blockage & Flow Monitor

Be proactive — catch drill problems while they're happening! If you've ever been sickened to find out your drill wasn't seeding or fertilizing for part of each swath across a field, or the entire season, you know firsthand why monitoring product flow is so important.

On air drills, the OEM pin-style or optic sensors only tell you if something is flowing past, not whether it's full flow or not. Using *acoustics*, Intelligent Ag's sensor system tells you the rate each primary is getting (as a % of full-flow), so you know right away if either fertilizer or seed stop flowing, or are flowing intermittently, or at a partial rate (except when one product rate is tiny compared to the other product rate). **No more skips!**

The system works on box drills too, many of which have no flow sensors at all.

The sensors are quite durable, many of which are still going after 180,000 acres.



**1.** As the seed leaves the manifold, it passes through the acoustic sensor.



**2.** The seed impacts a stainless steel membrane, creating a small pulse of sound that travels out through an auditory tube. These pulses are collected by the electronic control unit (ECU), which relays information wirelessly to the cab.



**3.** Information arrives via WiFi and gets displayed on an Apple iPad. Red = blocked secondary. Orange = primary has flow above or below parameters you set.



### 0% Financing for 12 months available

(1/3 down, 1/3 in 6 months, final 1/3 at 12 months)



**Intelligent Ag monitoring system**

for 48-rows, 6 primaries, TBH cart \$7,354.00  
\*TBT cart, add \$45.  
(iPad not included)

Any number of rows up to 156 is possible, and 20 primaries.  
Box drills: Call for info.

## Shop for Exapta products online



**Valion (chrome alloy) for Kinze 3000-series** \$25.50  
#V.300. Easy to install, great wear-life.  
User-friendly hex-head bolts included (no more allen-heads!)  
For more info on Valions, see pp 6-7.



**Valion Ultra (tungsten carbide) for Kinze 4900** \$83.00  
#V.400



**Valion (chrome alloy) for Deere XP, ME5** \$30.50  
#V.450. (Not compatible with ExactEmerge's brush-belt tube) Twist-on style.  
For more info on Valions, see pp 6-7.



**Valion Ultra (tungsten carbide) for Deere XP, ME5** \$83.00  
#V.500. (Not compatible with ExactEmerge's brush-belt tube) Twist-on style.  
For more info on Valions, see pp 6-7.



**Valion (chrome alloy) for pre-XP and Kinze 2000s** \$35.50  
#V.150. 'Bolt-on,' for JD 7000, 7200, & heavy-duty welded shank on 1700s ('03 & '04). For more info on Valions, see pp 6-7.  
Also available with oversize bolt, rivet & bushings for shank holes that've been drilled out: #V.153.



**Valion Ultra (tungsten carbide), pre-XP & Kinze 2000s** \$88.00  
#V.200. 'Bolt-on,' for JD 7000, 7200, & heavy-duty welded shank on 1700s ('03 & '04). For more info on Valions, see pp 6-7.  
Also available with oversize bolt, rivet & bushings for shank holes that've been drilled out: #V.203.



**Rivet tool** \$89.00  
With wide die (bit), makes crimping the rivet easier on Valion "bolt-on" installs.



**L.454 stainless tube holder** \$26.00  
For use in applying liquids in-furrow thru Valions on XP & Max-Emerge 5 shanks (except Brush Belt tubes)

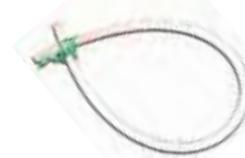


**L.433 stainless tube holder** \$26.00  
JD 7200 & 'Pro' shanks ('03 & '04).

**L.133 stainless tube holder** \$34.00

For JD 7000 & Kinze 2000. (Not for Kinze 3000-series)

**L.144 stainless tube holder for Kinze 4900** \$34.00



**Heat-resistant tubing w/ beveled end** \$3.85  
For use with Valions, 21", 1/4" OD. Beveled end for easier insertion through Valion. Special high-temp semi-rigid plastic.  
Also available in 28" length for \$5.21. 28" puts connector above shank; 21" is alongside. (see photos on main Valion web page)



**Mur-lok Quick Connect, auto-lock** \$1.95  
#L.2200. Union connector for 1/4" OD tubing, push ring to release

## Shop for Exapta products online



**Keeton, Quick Attach:** Tail \$20.00, Bracket \$15.00  
*The best choice for most planters including JD 7000 thru XP, JD MaxEmerge 5 (except w/ JD BrushBelt tube), Kinze 2000s & 3000s (non-EdgeVac prior to 2013). White 9000 uses slightly different bracket, same style. QA brackets are much sturdier and easier to install than Universals. Single liquid tube goes all the way through tail. [We highly recommend Quick Attach over the Universals.](#)*



**Keeton, dual-tube w/ Universal bracket** \$34.00  
*#KTN115011 The Universal Bracket fits Deere 7000s thru MaxEmerge 5 (except ExactEmerge), Kinze 2000s, White 6000s – 9000s, & some Kinze 3000s (non-EdgeVac prior to 2013). (Kinze EdgeVac & all 2013 & newer models need Scraper-Mount bracket instead—see below). Brackets now pre-cut by Exapta for full Mojo compatibility & fast install. Also available with Dry tails. [For most situations, we recommend Quick Attach.](#)*



**Keeton, QA Scraper-Mount** Tail \$20.00, Bracket \$15.00  
*Quick Attach, but uses the scraper mounting holes (not compatible w/ rotary scrapers, nor Air Design). The only model that fits Kinze 4900. Also for Kinze 3000-series with oversize seed tubes (2013 & newer; EdgeVacs prior to 2013). We recommend the standard QA (wrap-around) whenever possible, because the scraper-mount positions the tail ~1.5" farther rearward and doesn't perform as well (more dirt falls in ahead of it). New design (no hole-drilling required).*



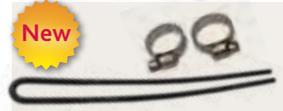
**Keeton, dual-tube replacement tail** \$29.00  
*#KTN115013 Replacement tail only, for Universal bracket, or Universal Scraper-Mount bracket. Two liquid application tubes. 'Dry' tails also available (same price).*



**Liquid tube holster** \$4.50  
*#L.501 For external routing of liquid tube on Keeton Universal & Universal Scraper-Mount brackets. See our instruction sheet at [www.exapta.com/instructions](http://www.exapta.com/instructions). Recommended with K.211 Mojos.*



**Mojo Wire kit, Liquid, for "Quick Attach" Keeton** \$20.00  
*K.311 Use this kit when applying liquids via the Ktn.*



**Mojo Wire kit, Dry, for "Quick Attach" Keeton.** \$11.00  
*K.312 Doesn't use liquid feature of Ktn.*



**Mojo Wire kit, Dry Keeton tails for Universal wrap-around & Universal Scraper-Mount (planters) #K.212** \$11.00  
*Streamlined for better residue flow.*



**Mojo Wire kit, Liquid Keeton tails for Universal wrap-around & Universal Scraper-Mount #K.211** \$20.00  
*Fits dual-tube tails \*Do not use on Low-Profile tails.\**



**Mojo Wire kit, fits planter Flo-Rite for Universal & Universal Scraper-Mount Brackets (WaveVision-ready) #K.215** \$11.00

## Shop for Exapta products online

For these items *and more*, visit [www.exapta.com](http://www.exapta.com)



**T2z & T3z wheel (metric or 5/8" sleeve/shroud)** \$117.00  
*Fits most JD, Kinze, AGCO White, and Great Plains planters. Also fits JD 50-series drills; Case SDX (with seed-lock wheels); and Case Precision 500 drill using special bracket & torsion spring from Exapta—see p 29. Includes snap-ring & bearing (installed), steel shroud, dustcap, bearing sleeve. For more info on T-wheels, see pp 11 and 18. Five-year warranty on bearings. New 'z'-series = military-grade armor plating.*



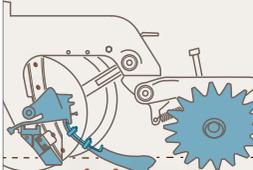
**Toe-out wedge for closing wheels** \$5.50 ea  
*For JD 1700 (all), White 6000 thru 9000, Kinze 3000 & 4000 closing brackets. For more info on toe-out, see p 12.*



**Closing bracket spring** \$5.75 ea  
*(Replaces OEM heavy spring) Since spoked closing wheels have a much smaller footprint on the soil, a lighter spring is useful on the closing bracket. Our medium spring (#M.4466) is for tougher soils (low OM, eroded, high-clay or sod). Stouter than our old 1/3-rate spring, M4433.*



**Complete closing upgrade for planters** \$250.75  
*Fits most JD, Kinze, AGCO White, and Great Plains planters. Includes 2 Thompson wheels (T2z or T3z: metric or 5/8" sleeve/shroud) 2 wedges, and a medium closing spring.*



**Complete row-unit upgrade, planters** \$321.25 – \$415.91  
*Exact price depends on planter model and options selected. Includes Valion, Keeton, Mojo, and the Complete T-wheel closing upgrade (see above).*



**Replacement hub/star** \$87.50  
*#M.4501z. For T2 or T3 owners, this hub/star (with bearing and snap-ring installed) is a replacement for worn-out wheels. Doesn't include shroud, sleeve, or dustcap.*



**Closing bracket & T-handle** \$54.16  
*# PLT120730, # PLT120740. Updates JD 7000, 7200 to bolt-on closing wheel configuration. Spring not included. Also available in black.*



**Gauge-wheel bearing** \$8.75  
*# M.4887. KYY double-row ball bearing: fits gauge wheels on many planters (JD '92 & newer, Kinze '93 & newer, White 6000-9000), gauge wheels on drills (JD 50/60/90 & Case P-500), and closing arm on JD 60 & 90-series drills.*

## Shop for Exapta products online



New

**Aricks firming arm kit** \$41.00

(sleeve, bushings, seals) JD 50\*/60/90

\*50-series requires arm modification. Doesn't fit earliest 750s.

**Aricks closing arm kit** \$41.00

(sleeve, bushings, seals) JD 50\*/60/90

\* Doesn't fit earliest 750s. See p 14 for install and removal tools.

**Aricks main opener pin kit** \$29.00

(pin, bushings) fits all 50/60/90. See p 14 for bushing removal tool.



New

**In-cab adjustment of hydraulic down-pressure for UniForce (on any JD 50/60/90 drill)** \$650.00

**JD box drills & 3-section\* air drills (w/o UniForce)** \$690.00

For Deere drills (OEM downforce, except John Deere 5-section air drills), 2510H (OEM downforce), or UniForce. Includes wiring and switch.



Lower Price

**Ingersoll-Canada opener blade, JD 50/60/90 drills** \$27.73

J.5069. Exapta brings you only the very highest quality.

Same dimensions as OEM. See p 16 for more information.



**Leaf Spring for seed boot on JD 50/60/90 drills** \$5.25

# M.4714. Manufactured to Exapta's high-quality specs for longer service life (less breakage, maintains strength) and 20% more force applied to the boot. Special ultra-durable paint process prevents rust. Plus a splotch of blue for visibility. Replaces N284055 & N280485.



**Ninja™ flexible seed-bounce flap, JD 50 & 90 drill boots** \$4.63

#M.4708. Unique forward bend to put more seeds in the bottom of the furrow. Incredible wear life; doesn't break off like OEM and aftermarket flaps. Fits Standard and Extended Wear boots. At least 3 x wear life vs others. See p 15 for details.



Lower Price

**DuraLok™ seed-lock wheel** \$45.00

Fits JD 50/60/90 drills and Case's SDX. Narrow, sleek hub to shed mud better than OEM & aftermarket firming wheels w/ wide brgs/hubs. DuraLok™ is much like the SDX firming wheel, but narrower, less than half the price, and with a replaceable bearing! Wheel dimensions are 0.45" x 9" — the narrowest on the market because that's what fits the furrow the best. See p 16 for details.



**Keeton for grain drills** \$27.50 - 35.50

Modern 2-piece design with replaceable tail. Various bracket models to fit most Sunflower, Great Plains, Crustbuster, Tye, Marliss, and other drills. Also fits Case Precision 500 using special Exapta bracket (see below). Also fits GP twin-row planters. Mojos highly recommended—use our milled version of tail.



**Mojo Wire for drill Keeton** \$13.00

# K.608. Fits 2-piece drill Keetons that have milled tops by Exapta. For Case P-500/NH 2080, other drills, GP twin-row planters.



**Steel bracket, Keeton on Case P-500/NH 2080 drill** \$10.75

#C.101L/R. (each)

## Shop for Exapta products online

For these items *and more*, visit [www.exapta.com](http://www.exapta.com).



Better than Ever!

**Thompson wheel T4z** \$78.00

With stub shaft, for JD 60 & 90-series drills. New 'z'-series is made from military-grade armor plating, for even longer wear life than our previous x-series. For more info, see p 18.



**Thompson wheel T2z & T3z** \$117.00

(with 5/8" or metric bearings, for JD 50-series, Case SDX & Case Precision 500 drills)



**Bracket kit for T-wheels, Case P-500/NH 2080 drill** \$65.00

#C.201L/R. Bracket to hold Thompson wheels at correct position & angle (creates 7° toe-out) to replace packer wheel. For use only in conjunction with Keetons (see p 28), since the T-wheel does no packing. Also included is a lighter torsion spring for the closing arm. Easy installation. *The only closing option for these drills that allows full-length liquid Keetons to be used.*



New

**Aricks row cleaner for JD 50/60/90 drills** \$485.00

Note: Box drills require installation of a bar ahead of each rockshaft (call us for price and shipping cost; or prints available to build your own)

Note: 10-week delivery time (North America)



**SeedVU for late-model Deere air drills** \$275.00

Venting unit, fits into top of JD distributor head (divider/"pod"/manifold) in place of OEM plastic twist-on lid. (Doesn't fit older JD head with metal lid, long J-bolt, and wing nut – but those old heads should be upgraded anyway; you'll find a lot more convenient access & less plugging by getting rid of the J-bolt, and less seed damage & smoother product flow). Not recommended for 50' & 60' 1890s. See p 19 for details.



**SeedVU, Case-IH / NH Flexi-coil ('EZ Flow' head)** \$250.00

Diffuser / venting unit, fits all New Holland / Flexi-coil air drills built in the past 15+ years in North America, and most modern CIH air drills. See p 19 for details.



**SeedVU, for Smalldre distribution head** \$240.00

2015 & newer SeedMaster drills; older Amity drills; and other drills converted to Smalldre heads (see below). See p 19 for more information.



**SeedVU, for Seed Hawk, Salford drills (Raycol head)** \$250.00

Also available for late-model Amity/AGCO Sunflower drills \$260.00



**Smalldre conversion head** 12 outlets \$230.00  
6 outlets \$173.00

Other outlet numbers available, from 3 to 16—see website or call for pricing. Upgrade to use SeedVU on other drills (older Deeres with steel heads/pods, etc.) Zinc-plated. Powder-coat paint. Top-shelf product. Smalldre is an Aussie company, and these folks know their air flow.



**Smalldre riser pipe** 2.5-inch \$95.00

Also available in stainless steel, \$110.00. Other sizes available. If you need taller pipes to improve gravity flow thru the secondaries, or just looking to replace rusted-out pipes or older pipes that lack dimples & enlarged elbows to distribute seed & fertilizer more uniformly as it goes up into head.

## We're here to help

Confused yet? Not sure where to start? Feeling intimidated? Relax, we can help. From thousands of hours spent methodically adjusting and examining seed placement, Exapta has created the **No-till Seed Explained™ DVD** (see p 31) to help you along each step of the way. And our 2017 **Seeding School DVD** is available for additional learning.

We encourage you to **keep in mind Steps 1–4** (p 3) for the most effective no-till stand establishment. We encourage a systems approach, not all that different from the drivetrain on a truck or tractor. Which piece can be neglected? None. If you only replace the tires on the truck, but don't take care of the engine, you will have a lot of issues. **Exapta products complement each other, giving you the advantage of the System.** One part may not give you all the results you are hoping for. While the components of a truck or tractor were engineered to work together across a range of conditions, your seeding equipment was designed for *tilled* seedbeds. Which is why there is a need for modifications.

More questions? Instructions for all of our products can be found on our website. Or give us a call! Our knowledgeable crew serves up only straight answers, and **can walk you through which items to tackle first**—even if it's not our product. Our mission is to make sure you have the equipment and know-how for ultimate success in no-till seeding on your farm. For further reading, **check out our free newsletters at [exapta.com/newsletters](http://exapta.com/newsletters)**. Our website is now optimized for smartphones and tablets, plus major overhauls to make online shopping much easier.



"Great products that are field-tested, and knowledgeable support."

Steve Groff,  
Cedar Meadow Farm,  
Holtwood, PA  
Exapta customer since '05



"I was the only one able to plant this year because of your theories: Remove the coulter, use the Valion—with a wider seed trench and using the Keeton plus Mojo Wire for seed firming. Everyone else using coulters created a huge mud mess."

Scott Lambert, Trempealeau, WI  
Exapta customer since 2013

"We installed Valions, Mojos, and Thompson wheels last year and our stands were substantially better. In the past, we were having a hard time getting the stands and yields that we wanted, but now we are doing better than we ever have. **The DVD was also money well spent.** It helped us a lot to understand the importance of getting the planter and drill set up correctly. You guys provide great products & service."

James Snellen, Hodgenville, KY  
Exapta customer since 2014

## No-till Seeding Explained™ DVD

2014 edition includes 5 years worth of updates!

- Discussion of what the components & attachments should be doing (or not)
- Any fertilizer with the drill or planter? Where, why, how, and the trade-offs
- 'Preparing' the seedbed at harvest of previous crop
- Carefully chosen photos, diagrams, & video clips
- (Revised/expanded) printed troubleshooting guide for in-field use
- No sales pitches, purely educational



"Thank you for creating this wonderful DVD. It's the best \$65 I've ever spent in farming. I've never seen anything like it, certainly not in Australia, and not from the U.S. either."

—Fraser Pogue, Ardmona, Victoria, Australia

The 2014 Edition surpasses the '09 Edition in clarifying the original message, as well as exploring more recent technology and how it may fit your operation.

Narrated by the calm, reassuring voice of Ken Root, from a carefully honed script by Matt Hagny, this DVD is aimed at nurturing your understanding of the seed-installation process. We have tried in the utmost to be truthful and objective, and to deliver highly useful insights and tips. We sincerely want no-tillers to succeed, whether they buy any hardware from Exapta or not. (Our products are mentioned very briefly among a wider discussion of aftermarket suppliers & products.) Detailed narrative & visuals to guide you through everything from off-season overhauls of your planter & drill, to exact step-by-step adjustments in the field. Actual footage of Matt Hagny excavating seeds in furrows (both planters & drills); discussion of what good seed placement looks like, and why. Troubleshooting. Maintenance tips. Aftermarket upgrades. Seed vigor. Root growth. How uniform timing of emergence far outweighs uniform spacing for yield influence. For highly effective no-till seeding, this DVD has it covered.



### 2017 No-till Seeding School DVD

\$85.00

For those who missed out on the school, here's the full 3.5-hour DVD. New video footage added to 2016 version. Learn simple, easy adjustments that often provide enormous improvement. An array of adjustments & attachments on planters & drills shown in action. Inspection of corn stands planted a couple weeks prior with the same configurations. Clear explanation of the interactions amongst the components of planters & drills. Suggested: Watch/review our No-till Seeding Explained DVD first.

### No-till Seeding Explained™ DVD 2014 Edition

\$65.00

While we cover no-till seeding in the broadest possible terms, specific recommendations given will apply primarily to the JD/Kinze/White planter design, and to the Deere 50/60/90-series single-disc gauge-wheel drills. Case SDX & Case Precision 500 / NH 2080 gauge-wheel drills are also discussed. (Once you see the explanation of the discrete actions required for proper no-till seed placement, you'll understand why we focus on certain models as being the top choices for no-till seeding in North America. Even if you do not yet own these seeder models, you will benefit from understanding no-till seeding better as explained in this comprehensive DVD.) Includes printed 10-step guide.

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## 'Quick Attach' Keetons + Mojo Wires for good firming, every time.



Solves most of the clunkiness of previous designs, including Universal!

Independent study shows 6.4% increase in corn ear counts with Mojo Wires, and yield gains are often even greater in tough conditions.

See pp 8 – 9.

## Valion seed tube guards

Tungsten carbide inserts for a permanent fix!



See pp 6 – 7 for details.



US Patents Pending

## UniForce hydraulic down-pressure system

See pp 20 - 21.

Exapta is selective about the products we offer.

We don't aim to be a complete supply house for everything under the sun.

We choose to solve significant problems that no one else is addressing adequately.

## The Thompson Closing Wheel



The spoked closing wheel market gets more flavors every year, and we test them at our Seeding Schools. Nothing performs better all-around than our T-wheels. See pp 10 – 11, 18 for details.

US Patent No 6,907,833

## DuraLok™ seed-lock wheel



See p 16.

- Narrower to fit the furrow better
- Highly wear-resistant material
- Easily replaceable bearing
- Sleek, narrow hub that's proven to better shed mud, stalks, straw
- 'Tire' won't pull out of the rim

Call today: 785-820-8000 (Mon-Fri 8AM-5PM CST)

Order online: [exapta.com](http://exapta.com)

Questions? Give us a shout. We serve up only straight answers.

