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2020 PRODUCT GUIDE

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NO-TILL INNOVATOR AWARDS

NEEDHAM AG TECHNOLOGIES, LLC

NEEDHAMAGTECH
With reduced commodity prices, China tariffs and weather events, which include extremes from drought, to almost 20 million prevent plant acres in spring 2019, to snow and wet weather during the Northern harvest, it has been a challenging year. Many producers will show a good profit however as a result of good yields, especially if they did a good job of marketing. The USDA recently estimated the US net farm income to be $88 billion in 2019, that’s the highest within the last 5 years. To remain competitive, many farmers are looking to cut some of their crop input and equipment expenses, especially their new machinery purchases. However, this must be done without compromising yields (remember yield is still king to dissolve input costs into). To help achieve this, many farmers are focusing on repairing their existing equipment, rather than trading. For example, I recently spoke to a producer who purchased a new 60’ John Deere 1890 air-seeder and air-cart three years ago for around $370,000. He has seeded around 24,000 acres with it and the John Deere dealer offered him $150,000 on trade against a new one with the same specifications and width, that’s over $9.00 per acre. That is expensive, but most farms big enough to purchase a 60’ wide air-seeder don’t want a used one, so the resale value is often poor. By comparison, farmers have told me that by purchasing Needham Ag parts for a John Deere drill or air-seeder, they can get their costs down to around $2.00 - $3.00 per acre, plus they are often improving its field performance and durability.

Super Seed The ProSeries Drill or Air-Seeder With Needham Ag Parts

John Deere released their new ProSeries single disc no-till opener during the summer of 2018 and it appears they duplicated some of the Needham Ag drill and air-seeder products that we have been selling for many years.

For example, the advertised highlights of the ProSeries opener include a new firming wheel, which coincidentally looks almost exactly like our Needham Ag V8 firming wheel that we released almost 10 years ago. The new ProSeries opener also features greaseless poly closing and firming wheel pivot bushings, similar in design to the Needham Ag greaseless poly bushings we released a few years ago to improve durability and eliminate having to grease these pivots. The ProSeries also has a new seed tab, coincidentally its tapered just like our Needham Ag Bonilla Seed tab that’s been available for over ten years. What is most frustrating is what they didn’t improve, such as the regularly reported freezing up issues within the depth adjust system (which is often a common problem in dry/dusty soils). Nor did they improve their cast depth adjust arm to stop it wearing in the fork area at the bottom, which is also a common problem. We have solutions to fix both of these issues, see pages 43 - 44 of this product guide for more information.

Needham Ag Helps Mold The John Deere ProSeries!

The Needham Ag V8 firming wheel is shown in the top left corner of the image above, its 10” in diameter, and has a tapered profile which measures 0.6” at the outer edge. Around ten years ago we determined this tire shape and profile was required to push seeds down into the bottom of the seed slot. We established this by creating concrete molds of the John Deere single disc opener seed slot, across different soil types and seeding depths. We then took them to a manufacturer who built us a tire design which matched the seed slot. By comparison, the new ProSeries firming wheel is shown in the top right corner of the above image, coincidentally it measures 10” in diameter, has almost the same profile and a width of around 0.6” at the outer edge. Shown in the middle is the John Deere ProSeries firming wheel tire with the Needham Ag steel wheel halves and bearing installed. Coincidentally they fit perfectly and the bolt pattern is even the same!

What is the old saying? “imitation is the best form of flattery”? 
John Deere ProSeries Still Uses Rubber Tires!

The ProSeries opener still uses rubber tires on their firming wheels and gauge wheels, we determined at least ten years ago that rubber was a short-term solution, especially in no-till conditions. While rubber tires are cheaper to manufacture, customers report they simply don’t last like the urethane tires we have been selling around the world for 10+ years. So with all of these factors, a farmer can upgrade their drill or air-seeder with higher quality, longer lasting and field proven parts from Needham Ag. Plus they can boost their field performance to levels above a new ProSeries drill or air-seeder, and most importantly, save money compared to trading for a new one.

Rebuilding Your Drill or Air-Seeder

Almost every day we talk to growers, explaining the different seeding options and the upgrades available to help their establishment, timing and bottom line.

John Deere Narrow Gauge Wheel With Rubber Tire, After One Season Of Use.

Most of our customers rebuild their own drills or air-seeders during the winter or summer months and they really appreciate our YouTube rebuilding videos. We have over 70 instructional, practical videos which can be found by searching for NeedhamAg within YouTube. We often take parts orders by phone, but we released our new online store early in 2019 and this allows customers to order 24/7. This site can be accessed by visiting needhamag.com website and navigating to the “Store” icon (located at the left of the green bar, at the top of the site).

If your looking for someone to rebuild your drill or air-seeder please let us know. We work with many good rebuilders across the Central and Northern states and we would be glad to give you their contact information. Please contact us if we can help!

Phil Needham
**2018-2019 Down Pressure Research**

During the summer of 2018, we set up two identical John Deere 1560 box drills (see image right) with all the Needham Ag modifications. We then added the Precision Planting SeederForce RBR system to one drill. This system uses sensors to determine the downforce on each of the gauge wheels, so it can be adjusted on a row by row basis according to soil type, residue conditions, wheel tracks, forward speed etc. We set both drills up for no-tilling into heavy residue with 12 x 100 lb tractor weights on the rear frame, and we added 20 bushels of wheat seed to each of the drill hoppers. On October 4th 2018, we used both drills to plant two different replicated winter wheat trials and both were no-tilled into standing cornstalks. More information on these trials can be found by clicking the QR code to the right or typing “Needham Ag Evaluating Seeder Force” into YouTube.

All plots were 15 feet wide with a 3 foot border between each treatment and all plots were seeded at an angle to the previous corn rows (as shown in the image right). All plots were intensively managed, with 140 lb/ac of split applied spring nitrogen applications and three spring fungicides. All applications were made with the previous corn rows to make sure each plot had the same amount of sprayer wheel tracks. Each individual plot was weighed (with a weigh wagon), and average yields are reported in the bar chart to the right. This data compares the stock drill, to the SeederForce RBR equipped drill at two different down pressure settings, 100 lb and 150 lb. We also researched lower down pressure values, but found it wasn't enough to maintain good ground contact within corn residue. Precision Planting conducted 5 additional SeederForce wheat research trials with row by row sensing and adjusting in 2018. The average yield response within these wheat trials was 3.9 bu/ac, so they follow our data set very closely. These yield benefits are worth between $16.50 and $24.35 per acre with the same crop input costs (assuming $5.00 per bushel wheat), but we also found a 13-23% increase in stand counts when no-tilling into corn residue, where we used the SeederForce RBR equipped drill using the settings shown above, compared to the stock drill.

To better evaluate the benefits of the SeederForce RBR system, we no-tilled over 400 acres of wheat, soybean and cover crops during the 2018 and 2019 growing seasons. We have been totally amazed at the levels of variability, both across the width of the drill (as a result of tractor wheel tracks) and across the different fields. For example we have seen differences in downforce requirements across different soil types and within different residue moisture levels throughout the day. The system even picked up differences within the residue spread pattern behind a combine and adjusted down force accordingly within the different areas.
The aerial image to the right shows a 25 acre field which was tile drained during late 2018. The tile lines had to be disked in the spring (to level them) and the remainder of the field was no tilled (and hasn't had any tillage for 21 years). We no-tilled soybean into this same field with our John Deere 1560 drill with the SeederForce RBR system discussed in the previous page. The first image below shows the amount of down force applied to each of the row units to maintain a down-force of 60 pounds on the gauge wheels. Notice how the SeederForce RBR system adjusted the down-force on a row by row basis as the drill crossed the cultivated tile lines at around 5 mph to achieve more consistent down pressure on the gauge wheels (see the lower image which shows the actual down force applied to the gauge wheels).
Company owners Phil, Holly and Benjamin Needham, standing in a 180-200 bu/ac wheat field in England. For more information on this field, click the QR code above or type “Needham Ag High Yield Wheat” into YouTube.

Contact Us!

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John Deere Air-Seeder and Box Drill Modifications

This section includes many different options to help cut soil and residue cleanly, then position seeds in the ground to a uniform depth. We also offer firming and closing wheels to press seeds into moisture and close the seed slot better than factory offerings.

Case-IH 500/500T and New Holland 2080/2085 Modifications

This section outlines our products for the Case-IH & New Holland single disc seeders, including our closing wheel options. We also offer spring spacers, narrow gauge wheels and screens for the hoppers on the Case-IH 500T and New Holland 2085.

Planter Attachments

This section comprehensively covers most of the options to help growers manage residue at planting time with floating row cleaners, in addition to different closing systems to close the seed slot consistently across a wide range of soil conditions.

Tramline Kits

Tramlines have been used successfully by many producers across the country and around the world to help increase yields and profits. This section discusses the different options available.

Stream Bars

Stream bars are the preferred method of delivering liquid N evenly and accurately to wheat, with minimal leaf injury. Research suggests that yield losses of 5-10% are possible when applying liquid N to wheat with flat fan or flood jet nozzles. Stream bars almost eliminate this leaf scorch, by applying fertilizer in streams which bounce off the leaves.

Wheat Management Publications

This section provides information on our Soft Red and Hard Red Winter Wheat guides, in addition to our Hard Red Spring Wheat guide. These publications are all designed to help producers take their wheat management to the next level.
Important Elements of John Deere Single Disc Drills & Air-Seeders.

**Spring Spacers**
Adequate down pressure on every opener is essential for consistent soil and residue cutting and depth control, especially on rolling ground. Rotating the 4x4” rockshaft backwards increases down pressure, but once the frame starts to lift additional ballast must be added. Tractor and tow-between air-carts often leave wheel tracks which are almost always lower and more compacted, so they need extra down pressure, relative to all the other openers. This is achieved using spring spacers, see page 33 for more information.

**Seed Brake**
Seed bounce is a common problem for many air-seeders and its most likely to occur within the following examples. 1. When planting lighter seeds (such as canola, or cover crops with small seeds). 2. When placing fertilizer in-row with the seed, or within mid-row bands which both require higher fan speeds. 3. When using wider seeding equipment. One (or more) of these examples increase the risk of seeds being blown out of the seed slot, and the seed brake allows most of the air to evacuate through the housing, allowing seeds to fall to the ground by gravity, just like the older box drills. See pages 35-36 for more information.

**Main Opener Pivots**
Tight pins and outer bushings are required to keep the opener running at a 7 degree angle. As these pins and bushings wear, the opener angle often decreases to 6 or even 5 degrees, which cause poor seed placement on account of the seed slot becoming too narrow, plus causing the firming and closing wheels not to track the seed slot. When total side to side play exceeds about 1/2” (measured at the back of the disc) the pins and bushings should be replaced. We have hardened pins and bushings available, see pages 41 - 42 for more information.

**Disc Blade**
The disc must be sharp to consistently cut through heavy and/or tough residue and hard soils. For best results, they should be replaced when the sharp cutting edge becomes dull or when the disc drops below 17” in diameter, whichever comes first.

We now have Forges De Niaux 200 disc blades, with a core hardness which is around 10% harder than competitive disc blades on the market. See pages 27 - 29 for more information.

**Seed Boot**
The seed boot condition and the amount of play in the mounts all have a big impact on seed placement. Once the seed boots begin to get paper thin at the bottom and wear upwards, they need replacing. If you have more than about 3/4” of total up/down travel within the seed boots (measured at the back of the seed boot), we have patented seed boot bushings which eliminate most of the up/down travel. For more information on seed boots and seed boot bushings, please see pages 23 - 25.

**Gauge Wheel Axle, Depth Arm And Spindle**
As acres accumulate on drills and air-seeders, especially when working in rocky and/or dusty conditions, the gauge wheel axle can seize inside the spindle. Another problem is the depth arm can wear around where it connects to the gauge wheel axle. We have a fix for these problems and more information is contained on pages 43 - 44.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
**Bonilla Seed Tab**

The Bonilla Seed Tab is thicker than factory and other after-market tabs, which helps hold more seeds within the seed slot. While the Bonilla Seed Tabs are most beneficial on air-seeders, they also help retain more seeds in the seed slot when fitted to box drills (especially in high residue no-till conditions). Our Bonilla Seed Tabs are built to match the shape of the seed slot when new and have often been found to last up to last up to 3 times longer than the John Deere 90 series seed tabs. See pages 9 - 10 for more information.

**Firming Wheel**

This is a very important part of any disc drill or air-seeder, especially when planting into marginal soil moisture conditions, where a firming wheel can make the difference between getting a stand or not. There are two major functions of a seed firming wheel: 1) Pressing seeds down into the bottom of the seed slot to achieve a consistent seeding depth. 2) Imprinting seeds into the bottom of the seed slot (preferably into moisture) to help obtain uniform germination and emergence. We have seen examples where a seed firming wheel was removed and poor emergence resulted, compared to adjacent rows with firming wheels which had a stand. See pages 11 - 12 for more information on our long life V8 firming wheel with the green urethane tire.

**Closing And Firming Wheel Arm Bushings**

To make sure the closing wheel runs at a consistent position alongside the seed slot (which maximizes closing action), it is essential that the closing wheel arm bushings are tight. We suggest replacing the closing wheel arm pins and bushings once the closing wheel has 1" of total side to side play, when measured at the rear of the closing wheel arm (1/2" either way). We have a hardened steel pin together with poly outer bushings, plus seals to keep the dust out. This combination doesn’t need to be greased, in fact in dusty conditions we have found they last longer without grease, because grease mixes with the dust and accelerates wear in addition to seizing problems.

You can tolerate more play within the firming wheel arm assembly as it still follows the seed slot even with a worn pin and bushings, however the pivot points tend to wear very quickly once there is approximately 1/2” of total play, measured at the back of the firming wheel arm (1/4” either way). For more information see pages 39 - 40.

**Closing And Firming Wheel Arm Springs**

As acres accumulate on the John Deere single disc openers, the firming and closing wheel arm springs wear within their ID. This causes them to reduce tension and eventually break. We have firming and closing wheel arm springs available with more side tension to help stop them vibrating out of the pegs, which happens more often when seeding at higher speeds or in more rolling fields. For more information visit page 45.

**Closing Wheels**

Factory cast closing wheels perform to a satisfactory level in most drier conventional soil conditions, but they often struggle to close the slot consistently within moist no-till conditions, especially when covered with heavy residue. We have evaluated many different wheel thicknesses and tooth profiles across a range of different soils and soil moisture conditions and have found the 1/2” thick crumbler wheel offers the best combination of seed to soil contact and slot closure across a wide range of soils and soil moistures. The 1/2” thick wheel is wide enough to stay on top of loose dry soils, compared to thinner wheels which can descended too far into the soil and throw seeds out. The rounded teeth around the wheel also significantly reduce bouncing compared to the factory closing wheels, which helps provide more consistent slot closure across the field. See pages 13 — 15 for more information.

**Gauge Wheel**

When the down pressure is adjusted correctly, the gauge wheel should remain in constant contact with the soil surface to maintain a consistent seeding depth and minimize wear on the gauge wheel axle. Ideally, the gauge wheel can be turned with firm force when the seeder is stopped in the ground, but be aware that as John Deere drills and air-seeders are pulled forward, weight is transferred from the back to the front. Narrow gauge wheels are preferred in no-till environments, especially into corn stalks because they maintain depth more consistently, especially within heavy corn residue. See pages 17 - 20 for more information.
**Key Benefits:**

- Bonilla Seed Tabs install on all 50 and 90 series seed boots (on both box drills and air seeders).
- Bonilla Seed Tabs are made of a 5/16” thick UHMW, a flexible but very hard wearing material.
- Bonilla Seed Tabs are almost twice as thick as factory seed tabs and they are also angled at 7° to follow the seed slot. This enables them to retain more seeds within the seed slot and help reduce wear over time.
- Field testing has determined the Bonilla Seed Tabs last up to 3 times longer than the John Deere 90 series white plastic seed tabs.
- Color may vary depending on product availability.
- Available for John Deere ProSeries (see page 49).

**The Problem.** Many John Deere drills and air-seeders struggle to hold seeds in the seed slot, especially when no-tilling into heavier residue. This becomes an even greater challenge when operating at higher speeds at shallower seeding depths. While these concerns are more pronounced with air-seeders, because they can also blow seeds out of the seed slot, it can also happen with no-till box drills such as the 750/1590. We have spent hundreds of hours studying and comparing different seed tab designs and more recently we have been using high-speed cameras to improve our designs. The screen captures on the following page are all taken from our “Needham Ag - Bonilla Seed Tab” Video on YouTube. We suggest you watch this video as there are many very good tips to help retain more seeds in the seed slot and improve seeding performance.

**The Solution.**

- Bonilla Seed Tabs are almost twice as thick as the 90 series seed tabs. This makes them rigid enough to hold seeds down in the seed slot where they belong, as illustrated in the image to the right.

- Bonilla Seed Tabs are specially tapered to match the shape of the seed slot. We have spent many years observing and perfecting their design. Other competitive tabs on the market don’t match the shape of the seed slot, which results in more seeds escaping out of the seed slot.

- Bonilla Seed Tabs are longer than the other seed tabs which extends their working life. See the image below for a comparison of seed tab lengths.

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**Competitors Flimsy Tab**

5 1/4”

**Factory 90 Series Seed Tab**

5 5/8”

**Needham Ag Bonilla**

7 1/8”

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What a farmer has to say about our Bonilla Seed Tabs

“Everyone knows that seed placement is important, but to make it happen is another story. I have found that Needham Ag has the perfect tool to get the job done with the Bonilla Seed Tab. I can put the seed in the bottom of the seed notch every time.

I no-till into fields including pasture and grass. Grass will keep seeds from falling to the bottom of the seed notch, the Bonilla Seed Tab will push the seed to the bottom of the notch so that I plant 100% of my seed to the depth I have the drill set for. The Bonilla Seed Tab is made to match the exact angle of the disk opener. So what that does for me is any seed that comes out of the seed tube is always pushed and held down to the bottom of the notch with the Bonilla Seed Tab”.

John Murphy, Owensboro, Kentucky.
Bonilla Seed Tabs For 50 and 90 Series Box Drills and Air-Seeders.

(Bonilla Seed Tabs are not available for 60 series seed boots)

$4.00 each + shipping. 0.05 lb ea.

Note: John Deere 90 series extended wear seed boots require a longer bolt and locking clip (Bonilla Seed Tabs will fit on all other 50 and 90 series boots with existing factory bolt).

Stainless Steel Bolt  $0.25
U Shaped Clip  $0.50

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Key Benefits:

- The popular and proven Needham Ag V8 Firming Wheel now features a flexible green urethane tire, which significantly extends the service life beyond rubber tires. This urethane tire retains the same amount of flexibility as our previous rubber tire, which is an important feature to help shed mud, especially when seeding into the moist clay soils which are common across the Red River Valley of ND, MN and MB.
- The Needham Ag V8 tire retains the same proven tapered profile which matches the shape of the seed slot. This field proven tire profile imprints seeds into the bottom of the seed slot across a wide range of soil types and soil moisture conditions to maximize seed to soil contact and the standards of emergence, especially within no-till conditions, or when seeding in marginal moisture conditions.
- The Needham Ag V8 Firming Wheel features the PEER® SeedXtreme bearing, which lasts longer than the Koyo 5203 bearing offered by John Deere on their ProSeries firming wheel, and much longer than the light duty 203 bearings previously offered by John Deere firming wheels (and other aftermarket firming wheels). The light duty 203 bearings often fail within the first year when used in dry/dusty conditions.
- Proven performance - We have had customers tell us they have seen an improvement in crop emergence when they compared the Needham Ag V8 wheels to other firming wheels on their John Deere openers.

Flexible 10” urethane tire allows the wheel to remain down at the bottom of the seed slot, even when making slight turns (illustrated left) or when working on side slopes.

The Needham Ag V8 Firming Wheel comes standard with a special low profile head 5/8” bolt, to stop residue hanging.

The PEER® SeedXTreme Long Life Bearing Is Standard In The V8 Wheels With Urethane Tire.

Many Firming Wheels Still The Use Light Duty 203 Bearings. These Often Fail Within The First Year, Especially If Seeding Into Dry, Dusty Conditions.

The Needham Ag V8 firming wheel is the only one on the market specially designed with molds to match the shape of the seed slot. Its tapered profile collects and press seeds down into moisture, as illustrated right.

The principle of pressing seeds down into moisture is very important when seeding into marginal soil moisture conditions, because seed to soil contact can be the difference between getting a good stand and a poor stand.
Assembled V8 Firming Wheels (With Urethane Tire) for John Deere 50, 60, 90, and ProSeries, plus Case-IH SDX air-seeders.

Price (including narrow head 5/8” bolt, washer and lock nut) $45.00 + shipping.

John Deere 1 x 10” firming wheel. These were fitted to most JD drills and air-seeders until 2006.

This 1” wide wheel and tire design is too wide to fit down into the seed slot within most no-till conditions because the seed slot often measures between 5/8 and 3/4” in width (see image right).

John Deere 0.8 x 9” firming wheel. These have been fitted to all factory drills and air-seeders from 2006 until John Deere released their new ProSeries opener in 2018 (see new ProSeries firming wheel image on page 1). While the 0.8 x 9” firming wheel design was definitely an improvement over the original 1 x 10” wheel, its still too wide for most no-till soil conditions. We have found it either doesn’t press seeds down to the bottom of the seed slot because its too wide, or if additional down pressure is added to the wheel, it can tear out moist no-till sidewalls from the seed slot (see image right).

Needham Ag V8 Firming Wheels
These were introduced in 2008 and they were designed by making molds of the seed slot. We tied up the closing wheels on different drills and air-seeders to leave a clean seed slot. We sectioned off short lengths and filled them with quick-setting concrete. We then went to a US manufacturer with the concrete forms and had them make us a rubber tire which matched their profile and the Needham Ag V8 Firming Wheel was born.

More recently we switched to a US manufactured flexible urethane tire, which sheds mud better than other firming wheels we have compared. It also features the PEER® SeedXTreme bearing to extend service life.

Notice how the Needham Ag V8 wheel presses soybean seeds down to the bottom of the seed slot when no-tilling into corn stalks, this is very important for uniform emergence.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Martin 20 Point Crumbler Wheels
For Case-IH SDX and John Deere
50 Series Drills and Air-Seeders

Key Benefits:

- 20 point crumbler wheels close the seed slot significantly better than factory cast closing wheels, especially within residue covered, moist no-till conditions.
- The 50 series closing wheel upgrades come standard with a heavy duty hub and long life PEER® SeedXtreme bearing. This helps eliminate the bearing failures associated with the factory JD 50 series closing system.
- They bounce 20% less than factory cast wheels.
- 20 point crumbler wheels are made from a very wear resistant T1 (military armor grade) steel that is heat treated. This material lasts much longer than the cast materials offered by John Deere and other aftermarket suppliers. When the wheels finally wear on one side (after 20,000-30,000 acres on a 40’ air seeder for example), they can be switched around for additional life.

20 point crumbler wheels in action on a 50 series John Deere drill no-tilling soybean into corn stalks. Notice how the rounded teeth crumble the sidewall closed to obtain seed to soil contact, plus leave loose soil above the seed. This principal increases soil warming and accelerates emergence.

The Problem: Establishing a uniform stand is the foundation for high yields. Look at the image to the left and see how the factory John Deere 1” firming wheel and standard cast closing wheel combination performed when planting soybean into a higher moisture no-till field. There are at least two problems with this combination:

1. Seeds were not pushed into the base of the seed slot on account of the original 1” wide firming wheel being too wide. Pressing seeds to the bottom of the seed slot is critical to obtain uniform seed placement and uniform emergence, especially when planting in soils with marginal moisture or rapid soil drying conditions.
2. The seed slot was not effectively closed and many seeds will likely perish if dry weather immediately follows planting.

While it is difficult to close the seed slot in wet clay soils, growers have found that the Martin 20 point crumbler wheels close the seed slot significantly better than the factory cast closing wheels and other after-market closing wheel options.

Martin 20 Point Crumbler Wheels For later model 50 series John Deere drills/air-seeders (after serial number 003834), including a cast hub with the long life PEER® SeedXtreme bearing, plus longer axle (for the wider bearing), plus all the hardware to install on the 50 series John Deere closing wheel arm, as illustrated left.

$110.00 per row + shipping.

Martin 20 Point Crumber Wheels for Case-IH SDX Air-Seeders
$105.00 per row + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Martin 20 Point Crumbler Wheels For John Deere 60, 90 Series and ProSeries Drills and Air-Seeders

Key Benefits:

- 20 point crumbler wheels measure 1/2” in thickness, which provides better slot closure than factory cast wheels within most no-till and conventional soils.
- 20 point crumbler wheels are made from a very wear resistant T1 (military armor grade) steel that is heat treated. This material lasts much longer than the cast materials offered by John Deere and other aftermarket suppliers. When the wheels finally wear on one side (after 20,000-30,000 acres on a 40’ air seeder for example), they can be switched around for additional life.
- 20 point crumbler wheels often leave a narrow tilled strip above the seed slot as shown in the image above right. This helps warm the soil above the seed and accelerate emergence.
- For higher soil moisture conditions (especially clay soils) we recommend the Martin 13” spiked closing wheel (shown on page 15).

“The 20 point crumbler wheels blow the factory cast wheels out of the water!.

I bought one crumbler wheel and when I compared seed emergence and slot closure to the factory wheels, I ordered an entire set of crumber wheels.”

Tyler Stefansen, Prague, Oklahoma.

The image below shows a 60’ wide John Deere 1890 equipped with the Martin 20 Point Crumbler Wheels, in addition to the Needham Ag 18” Disc Blades, Spoked Narrow Gauge Wheels, Bonilla Seed Tabs and V8 Firming Wheels.

Martin 20 Point Crumbler Wheels For 60, 90 or ProSeries John Deere drills/air-seeders, including all mounting hardware to couple to the original 60/90 series John Deere closing wheel arm, as illustrated within the images above and left.

$85.00 per row + shipping. 18.5 lb ea

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Some areas that we work with received 15-20” of rain during the spring planting season of 2016. While we definitely don’t recommend planting in higher moisture conditions like illustrated within the image below, many producers were forced to plant as more wet weather was forecast and most growers made good crops because of the moisture. In higher moisture soil conditions, many producers find the Martin 13” spiked closing wheels performed better than any other brands tested, plus they helped eliminate sidewall compaction.

**Key Benefits**

- Martin 13” spiked closing wheels are recommended for growers who regularly no-till into higher moisture soils, especially residue covered clay soils.
- Spiked closing wheels engage the soil to close the seed slot and leave loose soil above the seed to help speed emergence.
- Martin 13” spiked closing wheels are available to fit on the 50, 60 and 90 series closing wheel arms.
- Martin 13” spiked wheels are not recommended for use in tall cover crops, such as cereal rye that’s taller than say 18-24” tall or wrapping can occur. If you plan to seed into such conditions, consider the Martin Razor wheel, shown on page 62.
- **Prices are the same for the Martin 13” spiked closing wheels as the Martin 20 Point Crumbler Wheels illustrated within the previous 2 pages for the 50 series and the 60/90/ProSeries.**

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Proven through years of research, development and rigorous testing in both lab and field, the advanced sealing technology within SEEDXTREME bearings significantly extends service life, especially in dusty conditions.

Key Benefits

- The PEER® SEEDXTREME 5203 bearing is a direct replacement for standard 5203 bearings to significantly extend their life.
- Features 6 seals at each end, compared to most competitive bearings only having 2-3 seals at each end.
- Fits most gauge wheels and closing wheels that use a 5/8” or 16 mm mounting bolt.
- Inside diameter 0.64” (16.256 mm)
- Outside diameter 1.574” (40 mm)
- Width 1.737” (44.12 mm)

PEER’s Research and Development Center utilizes mud slurry testing to thoroughly study new bearing and seal concepts. Mud slurry testing involves immersing bearings in an abrasive liquid and counting the number of hours before they fail under a consistent load. Most bearings within the agricultural environment break down because the seals deteriorate, which allows contaminants to enter the bearing and dry the lubricants, rather than bearings failing directly.

Mud slurry tests are performed to compare the life of different brands of bearings within the same environment. The bar chart above compares the life of three different brands of 5203 bearing at 500 rpm in the mud slurry tank. The one on the right is the PEER® SEEDXTREME, which lasted more than three times longer than one major 5203 bearing manufacturer and over 7 times longer than a 2nd major 5203 bearing manufacturer.

$15.00 + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
3” x 16” Narrow Gauge Wheel Tires
Urethane Tires to Replace Rubber John Deere or After-Market 3” Narrow Gauge Wheel Tires.

Key Benefits

- Almost every day we receive calls from growers who tell us their rubber gauge wheel tires failed, often within the first year (as seen in the image right). This is very common when no-tilling a lot of acres into short soybean stubble or cotton stubble.
- To significantly increase gauge wheel service life, we offer 3” wide long life urethane tires. These tires are green in color and quickly and easily install within ALL 3” John Deere narrow gauge wheel assemblies, including part numbers AA66988 and AA56719.
- These green tires replace the John Deere rubber tire part numbers A85133, A75354 and A84349. They also fit on aftermarket 3” narrow gauge wheel assemblies which come with 3” Carlisle branded rubber tires. These include the 3” narrow gauge wheel assemblies currently distributed by Shoup, Pro-Mags, Ridgeland Manufacturing and Mud-Smith. They also fit the narrow gauge wheels on the Bourgault 3710/3720 single disc drill (see image right).
- Easy to install within the wheel halves (please view the YouTube video below). They push inside the wheel halves by hand, unlike the rubber tires which often need a special press to install.

* We are so confident in our urethane tire durability, we now offer a 3 year free tire replacement warranty, against tears and significant stubble damage to the OD of the tire for a period of 3 years after date of purchase.

See our urethane narrow gauge wheel tire video on YouTube. Type “Needham Ag Urethane Narrow Gauge Wheels” or scan the UPS label to the left.

Our 3 x 16” Narrow Gauge Wheel Tires also fit on the narrow gauge wheels supplied by Bourgault, including the ones which are currently standard on their 3710 and 3720 single disc no-till drills.

3 Year Warranty On Tire*

3” Urethane Gauge Wheel Tires
$70.00 each + shipping. 6.7 lb ea.
3” x 16” Heavy Duty Spoked Narrow Gauge Wheel Assembly

**With Long Life Urethane Tire**

Contains the high quality PEER® SeedXTreme

5203 Bearing

Key Benefits

- Our heavy duty spoked narrow gauge wheel assemblies come complete with the Needham Ag long life 3” wide green urethane tire. These tires will not get damaged by short soybean stubble or cotton stubble like rubber often does and the OD of our urethane tires are warrantied for three years following the purchase date.

- Our spoked gauge wheels have a large open area to allow mud to escape, when seeding into higher moisture soils.

- Heavy duty ductile iron triple spoke center is held against the wheel halves with 9 stainless steel nuts and bolts for excellent strength and corrosion resistance.

- The center has a bearing socket for the 5203 PEER® SeedXTreme long life bearing. This design eliminates the need for a separate hub and eliminates any play between the bearing and wheel halves over time. This is especially important for growers who are planting in rocky soils, which often accelerate the wear around the bearing socket.

- Fits all John Deere single disc openers and most other drills and planters which use 16” diameter gauge wheels which are mounted with a 5/8” or 16mm bolt.

**3 Year Warranty On Tire**

The Problem: We don't encourage growers to plant whole fields that aren't fit, but we do recognize growers often want to plant fields that are +/- 95% ready to go. If you can plant the whole field and get an acceptable stand within the remaining 5%, then you are money ahead, compared to coming back to plant that small area later. The common challenge with planting wetter areas is mud plugging within the gauge wheels and causing them to drag, as illustrated right.

Watch us durability testing the spoked narrow gauge wheel assemblies with the green 3” urethane tire across rocks at 8 mph. We used full down-force and removed the disc blade to ensure the gauge wheels had maximum impact.

Search for “Needham Ag Spoked Narrow Gauge Wheels” at YouTube.com or scan the QR label to the left.

16” Spoked Narrow Gauge Wheel Assembly With 3” Wide Long-Life Urethane Tire and PEER® SeedXTreme Bearing.

$160.00 per row + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
**2 3/4 x 16” Narrow Gauge Wheels**

Includes Dense Urethane Tires For Long Life

**Key Benefits:**

- **2 3/4 x 16”** Narrow Gauge Wheels are almost half the width of a standard 4 1/2” gauge wheel, which allows improved ground following and better depth control, especially in no-till conditions such as corn stalks.
- Narrow gauge wheels are designed for no-till, but they can be used in conventional soils as long as the ground is firm and the drill or air-seeder down pressure is adjusted properly.
- Our gauge wheels feature urethane tires, a material which significantly improves service life compared to rubber (see the bar chart on the following page). We have had the black urethane in the field for 7-8 years now without a single reported OD failure and many of these tires are working in short cotton or short soybean stubble.

* We now offer a 3 year free tire replacement warranty against tears and significant stubble damage to the OD of the tire for a period of 3 years after date of purchase.

The **2 3/4 x 16”** Narrow Gauge Wheel was designed from scratch by Phil Needham. It comes assembled and features 2 x steel wheel halves which extend their life (not one plastic, one steel like some of our competition) and a long-life PEER® SeedXtreme 5203 bearing.

**The Problem.** Factory installed 4 1/2” wide gauge wheels work well in conventional soils, but they don’t perform as well in no-till fields. This is because their wider profile causes them to climb up over more residue, which negatively impacts seeding depth. Many growers have seen narrow gauge wheels improve seeding depth consistency by better following the contours of the soil surface and avoiding more residue (when compared to the wider 4 1/2” wide gauge wheel).

These problems are illustrated within the diagram to the left. Notice how the standard 4 1/2” gauge wheel (1) holds the disc out of the ground by riding on the shoulder of a soil surface depression (B). The 2 3/4” narrow gauge wheel (2) by comparison, is better able to drop down into the same depression (B) to help achieve more consistent seeding depth.

Narrow gauge wheels are also very beneficial when seeding into heavy residue such as corn stalks, because the tires have less width to contact residue. The image to left illustrates how 4 1/2” gauge wheels climb over corn stalks, lifting the disc blades out of the soil. In this example, it positioned too many winter wheat seeds on the soil surface, where they probably won’t survive a hard winter.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
The image to the right compares the Needham Ag 2 3/4” narrow gauge wheel assembly to a 4 1/2” gauge wheel. We have found that the wider gauge wheels are preferred in soft, convention-al tilled fields, but within no-till fields the narrow gauge wheels are a much better option for terrain following and improved depth control in heavy residue such as corn stalks.

The second image (above right) shows a set of Needham Ag 2 3/4” narrow gauge wheel assemblies on a John Deere 1890 air-seeder, which is no-tilling into heavy corn stalks. Notice how the narrow gauge wheels avoid more of the corn stalks. This is a huge benefit when seeding crops such as winter wheat, because the depth control is much better. Wide gauge wheels would have pushed almost twice the amount of residue over, which would have resulted in poor depth control and inconsistent crop emergence.

All urethane materials are not created equal. Take for example the bar chart to the right, where our Needham 2 3/4” urethane tire was compared to a competitors urethane tire and a competitors rubber tire. The graph represents an ASTM test (D-1938). ASTM is an international standards organization which develops and publishes technical standards for a wide range of materials. In this example it’s a tire tear resistance test, which simulates the piercing conditions such as when seeding into short soybean or cotton stubble. The Needham 2 3/4” urethane tires clearly outperformed the rubber and competitive urethane tires by a big margin. This is further reinforced by growers that didn’t make it through the first season when no-tilling into short soybean stubble with competitive rubber tires. They switched to our 2 3/4” urethane tires and have now used the same tires for at least 6 years, no-tilling into similar conditions.

<table>
<thead>
<tr>
<th>Tire Tear Resistance Values (ASTM D – 1938)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tear Resistance (Pounds PlI)</td>
</tr>
<tr>
<td>Needham 2 3/4” Urethane</td>
</tr>
<tr>
<td>375</td>
</tr>
</tbody>
</table>

2 3/4 x 16” Narrow Gauge Wheels fit all John Deere single disc seeders, Case-IH SDX and Precision Disk 500 air-seeders and most corn planters which utilize a 5/8” or 16mm mounting bolt.

$105.00 each + shipping (includes 5/8” ID spacers With Each Gauge Wheel).

Replacement urethane tires for the 2 3/4” x 16” Narrow Gauge Wheels.

(they do not fit John Deere narrow gauge wheels, you need the tires on page 17.

$65.00 each + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Seed Boot Bushings For John Deere 50, 60 and 90 Series

The Problem

As acres accumulate on John Deere drills and air-seeders, the holes which mount the seed boots to the opener arm become egg shaped. Together with wear in the boot holes and bolt, this results in significant up/down travel of the seed boot. This allows the seed boot to lift, where it can spray seeds out onto the soil surface (especially in no-till fields).

The Solution:

Needham Ag Seed Boot Bushings are manufactured from a high grade, heat treated stainless steel material to provide excellent durability characteristics and long life, plus our bushing kit won’t corrode and seize in place like some of our competitors. Our kit also allows growers to move the boot to the lower hole, such as what’s often required when seeding a lot of small seeds.

How are the bushings installed?

First, using a heavy drill press, the existing holes within the seed boots need to be drilled out with a 0.635” drill bit (shown right). Next, the 5/8” bushings are inserted into the seed boot lugs and the boots are installed on the arms and the bolts are pushed through the boot. Once the nuts are torqued, the bushings clamp tightly to the arm and the boots pivot on the bushings. This is a long term fix, plus by extending the pivot points outwards, it helps eliminate play over time.

What a farmer has to say about our seed boot bushings:

"After 18 years of no-till, we realized we had issues with our John Deere 1850 air-seeder. We traced the problem down to the seed boots which had 1 1/4” of vertical play and this was causing lots of seeds on top of the ground. We installed a set of Needham Seed Boot bushings and it eliminated the play in the seed boots. We reduced our soybean population by 20,000 seeds per acre and had way better stands. Our agronomist says he is not used to these kind of stands behind an air-seeder”.

Danny Wipf. Lake Andes, South Dakota.
Seed Boot Bushing Kits for John Deere 50 series box drills and air-seeders. Comes with 2 x 50 series hardened stainless steel bushings, a 3/8” grade 9 bolt and a 3/8” grade 9 lock nut.

$15.00 per row + shipping

Seed Boot Bushing Kits for John Deere 60 series box drills and air-seeders. Comes with 2 x 60 series hardened stainless steel bushings, a 7/16” grade 9 bolt and a 7/16” grade 9 lock nut.

$15.00 per row + shipping

Seed Boot Bushing Kits for John Deere 90 series box drills and air-seeders. Comes with 2 x 90 series hardened stainless steel bushings, a 7/16” grade 9 bolt and a 7/16” grade 9 lock nut.

$15.00 per row + shipping

Carbide tipped 0.635” drill bit. These custom made drill bits feature 2 x serrated carbide cutting teeth and 3 flats to stop them spinning in the chuck and they typically drill around 8-12 x 90 series extended wear seed boots or around 50 standard wear seed boots.

A heavy drill press (or preferably a mill) is required to eliminate all vibration.

$30.00 each + shipping

Solid Carbide 0.635” drill bit. These custom made bits feature 4 cutting teeth and 3 flats to stop the bit spinning in the chuck. They typically drill around 100+ x 90 series extended wear seed boots.

A heavy drill press (or preferably a mill) is required to eliminate vibration.

$200.00 each + shipping
The Problem

Factory 60 and 90 series seed boots all mount to the opener arm directly using a 7/16” bolt. But, as acres accumulate on the drills and air-seeders, the holes in the opener arms (where the boots mount to) become egg shaped on account of the boot moving up and down. These egg shaped holes in the opener arm, in addition to holes in the boot and worn bolts are the three causes of the unwanted up/down movement of the seed boot. This travel changes the trajectory of the seed flow and often results in too many seeds deposited on top of the ground.

The Solution

Following at least 5 years of testing and development, our extended wear 90 series seed boots now incorporate our patented seed boot bushings (see the previous 2 pages). Our extended wear seed boots come pre-drilled for the bushings, so all you have to do is insert the bushings into the seed boot, align the seed boot against the disc and finally torque the nut on the grade 9 - 7/16” bolt. The seed boot then pivots towards and away from the disc on the seed boot bushings. No drilling is required with our seed boots!

Field testing has shown the Needham Ag Extended Wear Seed Boots last around 2.5 times longer than the original equipment standard wear boots in most conditions and much longer than some of the after-market standard wear seed boots. Needham Ag Seed Boots mount directly to the 60 and 90 series arms with no drilling or modifications required. If your upgrading from the 2 piece 60 series boot to the Needham Ag seed boots, you will need to purchase the steel seed tube to fit into the top. These are the same steel tubes that come with the factory 90 series seed boots and are available from John Deere dealers. If you need help with the part numbers for these steel tubes, please contact Needham Ag for a document with part numbers.

Right and Left Hand, Extended Wear Needham Ag Seed Boots for John Deere 60 and 90 series box drills and air-seeders:

$85.00 per row + shipping

Seed Boot Bushings, plus 7/16” Grade 9 nuts/bolts are required to mount our Seed Boots.

$15.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Seed Boots Are Not Created Equally!

“I put one of your Needham Ag Extended Wear 90 seed boots on the front outer right, and front outer left openers of a John Deere 1890. All the other front rows had the cheap aftermarket boots installed at the same time. After 3200 acres your Needham Ag Extended Wear boots show almost no wear and all the cheap aftermarket boots were worn completely out at the bottom and had to be replaced”

*Kevin Hull, Columbia, Missouri.*

Cheap Aftermarket 90 Series Seed Boot.

They had to be replaced after 3200 acres on a John Deere 1890 Air-Seeder.

Needham Ag extended wear 90 Series seed boot installed on the same air-seeder, at the same time as the cheap aftermarket boots shown above.

They were used on the same 3200 acres and the Needham Ag boots show almost no wear.

Our Needham Ag 3/8” Seed Boot Bolts are the same dimensions as the OEM versions, but they are made of a high quality grade 8 material, plus the threads are coated with an anti-seize material to help stop the threads rusting in place. By comparison, the OEM bolts are ungraded and they are prone to breaking off during removal, especially if the drill or air-seeder has been applying fertilizer, which often corrodes the bolt in place. The OEM bolts do not have any thread coating material to help prevent the bolts rusting in place.

Grade 8 Seed Tube Mounting Bolts.

For All 50, 60, 90 and Pro Series Seed Boots

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

Grade 8 Seed Tube Bolts For 50, 60, 90 and ProSeries Seed Boots

$1.00 each + shipping. 0.05 lb ea.
The Problem

Factory and after-market 50 series seed boots mount to the opener arm directly using a 3/8” bolt. But, as acres accumulate on the drills and air-seeders, the holes in the opener arms (where the boots mount to) become egg shaped. These egg shaped holes in the opener arm, in addition to holes in the boot and the 3/8” bolts are the three causes of unwanted up/down movement of the seed boot. This up/down travel changes the trajectory of the seed flow and often results in too many seeds deposited on top of the ground.

The Solution

Following at least 5 years of testing and development, our extended wear 50 series seed boots incorporate our patented seed boot bushings (detailed on pages 21 - 22). Our extended wear seed boots come pre-drilled for the bushings. All you have to do is insert the bushings into the seed boot, align the seed boot against the disc and finally torque the nut on the grade 9 - 3/8” bolt. The seed boot then pivots towards and away from the disc on the seed boot bushings which are pulled tight against the opener arm. Needham Ag 50 series Extended Wear Seed Boots are made from the same Chrome Alloy material that the John Deere 90 Series extended wear boots are made from and they both last around 2.5 times longer than the John Deere standard wear seed boots. So when the installation/removal time for standard wear seed boots is factored in, most growers want the extended wear seed boots.

Right and Left Hand, Extended Wear Needham Ag Seed Boots for John Deere 50 Series box drills and air-seeders:

$75.00 per row + shipping

Seed Boot Bushings, plus 3/8” Grade 9 nuts/bolts are required with our Seed Boots (see pages 21 - 22).

$15.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Heavy Duty Seed Boot Springs For John Deere 50, 60, 90 Series And ProSeries Air-Seeders And Drills.

The Problem.

- Factory seed boot springs work well when new, but over time they begin to lose their tension. If the boot is not held tight against the disc, soil and residue can enter that gap and cause disc opener plugging and reduced soil penetration.

- Factory seed boot springs corrode and fail, especially when used on drills and air-seeders that band fertilizer in the row.

- If your seed boots don’t “snap” firmly back against the disc after being pulled away, the springs should be replaced. If you have an air-seeder with wings that fold up, the springs should have enough tension to push the seed boots against the disc, even when the wings are raised.

The Solution.

- Our springs are slightly thicker and stronger, providing at least 15% more spring force, compared to the factory John Deere springs and other after-market springs we have tested.

- Our springs are zinc coated to help prevent corrosion over time. This is especially important if using dry fertilizers which contain nitrogen or potash, because the dust from these materials often corrodes the springs and accelerates failure.

Heavy Duty Needham Ag Seed Boot Springs For John Deere 50, 60, 90 and ProSeries box drills and air-seeders:

$6.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Niaux 200 Extended Wear 18” Disc Blades For All John Deere Drills and Air-Seeders.

Key Benefits

8 years of research resulted in the creation of a better disc blade. A disc with superior materials and a patented heat treating process which produces a core hardness around 10% greater than the closest competitors on the market. The result is a new disc blade called Niaux 200. This new disc provides improved life with better sharp cutting edge retention. This is especially important when seeding into hard soils covered in heavy, tough residue, while maintaining flexibility to resist breakage in rocky conditions. Made in France by Forges De Niaux, a company with 5 generations of manufacturing, using high quality materials, automated processes and sound quality control.

Needham Ag field tested the Niaux 200 disc blades alongside competitive disc blades in 2016 and 2017, on growers who plant high no-till acres per year with heavily ballasted seeding equipment. We found the Niaux 200 disc blades retained more diameter than all other competitive disc blades tested.

Long term field research shows the Niaux 200 disc blades retain around 20% more diameter on average than the competitive disc blades shown on the following page (range 10-30%), plus they keep their sharp cutting edge longer.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com

Harder 5mm (0.197”) Thick, 18” Disc Blade With Sharp Cutting Edge

Warranted for 3 years from purchase date against breakage, excluding abuse.

For more information on why the Niaux 200 disc blades are better than other brands search for “Needham Ag Disc Blades” at youtube.com or scan the QR Code left.

“We in 2016 we installed a Forges De Niaux 200 disc blade alongside John Deere factory disc blades at the same time on our 36’ John Deere 1890. We covered 3600 acres (including ground with rocks) and the John Deere discs measured 17 5/16 and the Forges De Niaux 200 disc measured 17 7/16 (1/8” greater). The biggest difference was the cutting edge, we found the Forges De Niaux 200 blade was still sharp, compared to the John Deere blades which were dull.”

Eli Robey. Robey Farms, Adairville, Kentucky.

We tested the Forges De Niaux 200 disc blades across rocks with full down-pressure at 8 mph to test their durability. Some of our testing footage is contained in our YouTube video called "Needham Ag Testing The Forges De Niaux 200 Disc Blades" You Can also scan the QR Code below.

Forges De Niaux 200 - Extended Wear Disc Blades for John Deere 50, 60, 90 and ProSeries box drills and air-seeders:

$35.00 per disc + shipping 13.0 lb ea.
Hardness Values: Three Different Brands of 18” Flat Disc Blades

Scale: Rockwell C Scale, using Wilson 5JR BB 1537 Hardness Tester.

### Outer Surface

- **John Deere** (August 2017): 48.7
- **Ingersoll Canada** (May 2017): 49.6
- **Forges De Niaux 200** (May 2017): 51.7

### Milled Center

- **John Deere** (August 2017): 50.4
- **Ingersoll Canada** (May 2017): 50.4
- **Forges De Niaux 200** (May 2017): 55.4

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Ingersoll 18” Disc Blades For All John Deere Drills and Air-Seeders.

Key Benefits:
- Significantly sharper than factory disc blades.
- Specifically engineered to cut through tough, heavy residue.
- Manufactured with time-tested Ingersoll proprietary Boron steel.
- Ingersoll blades resist chipping and cracking in rocky conditions.
- Penetration in hard, dry soil conditions is unparalleled.
- Install on John Deere 750, 752, 1560, 1590, 1690, 1850, 1860, 1890, 1890CCS, 1895, 1990 and ProSeries (They replace John Deere part numbers N283804 and N214190).
- Blades are 5mm (0.197”) in thickness and have a Rockwell C hardness of +/- 50 for maximum life and edge retention.

When should you change disc blades on a John Deere drill or air-seeder?
Cutting edge yields require a sharp disc blade. A disc which starts and remains sharp (as illustrated right) is essential to cleanly cut through heavy, tough residue, especially on hard, dry soils. To achieve these goals, we recommend that the disc blades are replaced once they reach 17” in diameter. Once they drop below this threshold, the bevel is lost and the disc gets proportionately wider, which results in poor residue cutting and inconsistent soil penetration. The only exception is when operating in rocky soils, where its possible that the blades can lose their sharp cutting edge before they reach the 17” threshold. In these examples we recommend replacing the blades once the sharp cutting edges are lost.

Always be sure to install the disc blades the correct way, as illustrated in the image to the right.

Ingersoll Disc Blades for John Deere 50, 60, 90 series and ProSeries box drills and air-seeders:
$30.00 per disc + shipping 13.1 lb ea.
**Grade 8 Disc Mounting Nuts and Bolts (Prior to ProSeries)**

- To securely mount our disc blades to the John Deere hubs, we recommend 3/8 x 1” long, grade 8 carriage bolts and we have these available in bags of 50 nuts and bolts.
- Drills and air-seeders prior to the John Deere ProSeries came with grade 5 carriage bolts, grade 5 flange lock nuts and a washer, but we recommend and sell grade 8 nuts and bolts without the washers. We have used this combination for 10+ years with great success.
- Sold in bags of 50 serrated flange lock nuts and 50 carriage bolts.
- Important - Torque these nuts to 35 ft-lb with torque wrench.

**Needham Ag Disc Mounting Hardware for 50, 60, 90 Series (Not John Deere ProSeries).**

Bag of 50 grade 8 carriage bolts and 50 grade 8 serrated flange lock nuts

**$25.00 + Shipping**

3.50 lb per bag

**Needham Ag 60 & 90 Series Firming Wheel Arm**

Heavy duty laser cut, steel firming wheel arm for the 60, 90 and ProSeries drills and air-seeders (not 50 series, that’s a different arm that is illustrated on page 31).

This arm is powder coated and measures 14 1/4” long, x 2” tall x 1/2” thick, with 2 x 5/8” holes on 11 3/4” centers. Our arm replaces John Deere part number N282115.

**Needham Firming Wheel Arm For John Deere 60, 90 Series and ProSeries.**

**$27.50 + Shipping**

4.00 lb ea.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham 50 Series Firming Wheel Arm Upgrade For John Deere 750 Drills (after serial number 3834) and all 1850 Air-Seeders.

The Problem

The factory John Deere 750 series box drills (after serial number 3834) and all 1850 air-seeders have a welded pin on the firming wheel arm as illustrated below. This pin wears over time and results in excess side to side travel on the firming wheel arm. The arm is also held in place with a roll-pin, which makes it difficult to shim with spacer washers to keep it tight.

The Solution

We have a 50 series arm upgrade kit, which includes a replaceable firming wheel arm pin and replaceable bushing (just like on the 60/90 series firming wheel arms) and this kit comes with all the hardware to install the kit on one row.

50 Series Firming Wheel Arm Upgrade - Individual Parts Price Breakout

The parts listed above are available separately and their prices are listed below.

- 50 Series Firming Wheel Arm ................................................................. $27.50 each
- Firming Wheel Arm Bushing (1” OD x 2.70”) ........................................ $12.00 each
- 1” ID Poly Bushing (replaces JD part number N219547) ......................... $5.00 each
- 1” ID Triple Lip Seal (replaces JD part number A85727) ....................... $2.50 each
- 5/8” Grade 8 Flange Lock Nut (replaces JD part number A169024) ........ $1.00 each
- 5/8” x 4 1/4” Grade 8, Special Large Diameter Flange Bolt ................... $4.00 each
- 1” ID Grade 8 Washer (0.10” Wide, Replaces JD Part Number A92849) ...... $2.00 each

Needham 50 Series Firming Wheel Arm Upgrade Kit (all parts shown above are supplied for each row)

$50.00 per row + Shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Now available from Needham Ag Technologies, LLC. is a solid black PVC seed tube. These replace John Deere part number N281015 and allow growers to upgrade older drills to the newer style, like what’s currently available on a new John Deere 1590. They quickly and easily attach to the bottom of the seed cup with the rubber retainer shown below and their smooth ID helps convey seed down to the flexible rubber seed hose. Our NA-S smooth internal rubber seed hose (shown on pages 71 - 72) is recommended for the John Deere box drills.

To attach the solid black PVC seed tubes (shown above) to the bottom of the seed cup, you will need the rubber retainer. These rubber retainers replace John Deere part number N281754. These retainers quickly and easily attach the seed tube to the seed cup and also stop seeds escaping, which was often a problem with the early design John Deere seed tubes.

Needham Ag Solid Black PVC Seed Tube

$12.00 + Shipping

0.5 lb ea.

Rubber Retainer

$2.00 + Shipping

0.1 lb ea.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Key Benefits:

- Spring Spacers are available for John Deere 50 series and 60, 90 and ProSeries single disc openers.
- Spring spacers are easily installed within the spring assembly and they increase the opener down pressure by 80-90 lb.
- Depressions caused by tractor or tow between air-cart tires cause openers to descend downwards. When the openers descend, spring pressure is actually reduced in rows where it should actually be increased, to maintain seeding depth within the denser areas of the field.

The Problem: While working with producers, Phil Needham found numerous crop emergence problems, caused by inadequate seeding depth behind heavy air-cart tires and/or heavy tractor wheel tracks. Wheel track depressions cause disc openers to extend downwards, which de-tensions the down pressure assembly and reduces down force. This results in poor residue cutting and reduced soil penetration.

The Solution: Phil Needham designed spring spacers which are easily fitted to 50 and 60/90 series single disc openers. They are installed by de-tensioning the down-pressure spring assembly, inserting the spring spacer at the top end of the spring, then re-tightening the locking nuts. Spring spacers increase the down pressure in wheel tracks to help cut through residue and compacted soil to help improve crop emergence.

The ends of each spring spacer are angled to prevent them vibrating out of the spring assembly.

Spring Spacers for 50 series John Deere openers: $25.00 each + shipping. 1.2 lb ea.

Spring Spacers for 60/90/ProSeries John Deere openers: $25.00 each + shipping. 1.1 lb ea.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Ag Seedliners For John Deere Air-Seeders

Key Benefits:
- Seedliners are exclusively available from Needham Ag Technologies, LLC.
- Seedliners are available for 50, 60 and 90 series John Deere air-seeders, up to serial number 740100 (released July 2010).
- They were designed by Phil Needham to help reduce the impact of fragile seeds (such as peas, canola, soybeans and dry edible beans) hitting the center of John Deere steel manifold covers and bouncing back down.
- Seedliners are designed to diffuse the energy of the seeds hitting the middle of the steel cover and deflect them out radially to the seed tubes.
- Manufactured from highly wear resistant material for long life, even when using fertilizer and seed combinations.

Seedliners quickly and easily install under the steel manifold cover on the main mounting bolt (as shown above). Just undo the nut, remove the steel cover, and nest the seedliner between the cover and rubber manifold. Once the nut is tightened it provides a sealed environment to keep moisture out. Color may vary from photos shown.

The Problem.

Without seedliners, fragile seeds such as canola, soybean, peas, lentils and dry edible beans are blown at the center of the steel manifold cover at speeds of 35-45 mph (as shown in the photo to the left). This impact causes the seeds to hit the steel cover, come to a dead stop, then bounce back downwards before being blown out to the seed hoses.

Seed processors do not want to drop soybeans more than 3’ when handling the seed, for risk of damaging the seed coat and reducing germination!

The Solution

Seedliners help reduce the impact of seed hitting the middle of the steel manifold cover, by diffusing the seed radially to the seed outlets, using a cone shaped diffuser.

Seedliners for John Deere 50, 60 and 90 series air-seeders: $49.00 each + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Seed Brakes

Key Benefits:

- Our Seed Brake incorporates a 1 mm thick stainless steel housing for excellent durability. It also features 2 mm holes which allow our Seed Brakes to sow small seeds (including most cover crops).
- Seed Brakes are designed for disc type air-seeders to reduce seed bounce and help prevent seeds being blown out of the seed slot.
- Growers claim they have reduced seeding rates, because more seeds are placed within the seed slot, NOT blown out as shown below right.
- They are built to accommodate the standard 1 1/4” outside diameter seed hoses, common to John Deere and Case-IH air-seeders.
- Seed Brakes feature an inner downward angled baffle, which helps reduce seed velocity and seed bunching. Research shows they improve in-row seed spacing by over 2.0 standard deviation points (visit needhamag.com and select the seed brake section for additional statistical information for this product).

The Problem. As more and more farmers use air-carts to position fertilizer blends in the row, along with the seed, significantly higher fan speeds are required to convey both products to the openers, especially with larger seeding widths and faster seeding speeds. With these increased fan speeds comes the increased risk of seed (and fertilizer) being blown out of the seed slot (as illustrated right). Coupled to the fact that many growers use fan speeds that are too high (mainly because if they ever plug the hoses, they raise fan speeds to prevent it happening again), seed bounce and seeds being blown out of the slot are therefore becoming a more common problem.

The Solution. Seed brakes are clamped vertically, above the seed tube on John Deere and Case-IH air-seeders (as illustrated left). They are curved to allow positioning under frame members, maintaining close to vertical orientation for good seed flow. They are easy to install, just cut the secondary seed hose about 2” above the steel seed tube and clamp the seed brake in position at the top and bottom with the hose clamps supplied. Seed brakes also feature a downward angled baffle which helps roll seeds around the inner radius, to help reduce the seed clumping associated with most air-seeders. This baffle should be positioned upwards, towards the top of the seed brake for best performance.

1 1/4” Seed brakes for John Deere 50, 60, 90 series and ProSeries air-seeders. They also fit Case-IH SDX and Precision Disk 500 air-seeders, plus New Holland 2080 and 2085.

$27.95 each + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Seed Brakes - Without Baffles  
(For High Rates Of Large Seeds)

Key Benefits:

- We have some customers that wish to plant crops with large seeds, such as peas, at high seed rates of 200-250 lb./ac. This becomes a challenge for our standard seed brakes with the internal baffle, as they slow the seed flow and can cause plugging (especially on 10” or wider spacing). So we now offer 1 1/4” seed brakes without the internal baffles for these growers.
- The stainless steel material and the size of the holes remain the same as the standard seed brakes with baffles.

1 1/4” Seed brakes without baffles for John Deere 50, 60, 90 series and ProSeries air-seeders and Case-IH Precision Disk 500 and SDX air-seeders:

$25.95 each + shipping.

(Two Heavy Duty Hose Clamps Supplied With Each Seed Brake)

Stainless Steel Y Brakes

Key Benefits.

- Needham Y Brakes are designed to merge two 1 1/4” hoses into a single 1 1/4” hose. They are used within tramline kits (illustrated on page 70) and also by growers that mount air-tanks (such as Gandy systems) on air-seeder toolbars. They allow small seeds (like canola or most cover crops) to be metered by Gandy systems and merge with seed and/or fertilizer flow to the seed boots or openers.
- The Needham Y Brakes incorporate 2mm holes, which allow the seeding of most crops, down to smaller seeds including ryegrass, canola and radishes. They are not recommended for seeding smaller seeds, such as alfalfa unless the holes on the lower half of the Y brake are temporarily sealed with masking tape.
- Made from 1mm thick stainless steel for long life.

Stainless Steel Y Brakes for 1 1/4” hoses, with 3 hose clamps.

$40.00 each + shipping. 0.55 lb ea.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Ag 1” ID and 2.5” ID Air-Seeder Hose

Now available from Needham Ag Technologies, LLC., clear/blue, spiral air-seeder hose made from high quality PVC/Urethane blend. This hose is available in 1” ID and 2.5” ID sizes, and in rolls 50’ long and 100’ long.

Features

- Smooth ID with low coefficient of friction to help with smooth transfer of seed and/or fertilizer, which often helps reduce fan speeds.
- Includes clear spirals to see any blockages.
- UV protection for long life when left outside.

Our Needham Ag PVC/Urethane blend hose has been compared to the John Deere factory PVC hose in a professional lab, using the ASTM G 76 – 05 Solid Particle Jet Erosion Test. This test concluded that the Needham Ag PVC/urethane blend hose lasts 32% longer than the John Deere spiral clear/black PVC hose.

![Made In The USA]

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Now available from Needham Ag Technologies, LLC., yellow, spiral, 1 1/4" hose made from high quality PVC/Urethane blend. Fits air seeders and CCS planters, see description below.

Features

- Lasts at least 32% longer than PVC hose (see lab testing on previous page).
- Smooth ID with low coefficient of friction to help with smooth transfer of seed and/or fertilizer, which often helps reduce fan speeds.
- Greater UV protection than OEM hose, for long life even when left outside in the sun.
- Fits the following John Deere air-seeders and planters, plus others with 1 1/4” ID hose.
  - **1990CCS** from the hopper to the Y diverter on a two rank model. (The 1” Hose shown on previous page is required from Y diverter to seed boot on the two rank model and only 1” hose is used on the single rank model). Replaces John Deere part number AA64213.
  - **1835** secondary hoses, replaces John Deere part number AA58206
  - **1895** secondary hoses on the SFP fertilizer openers at the front. Replaces John Deere part number AA58206.
  - **CCS corn planters** to supply seed from the bulk fill hopper to the openers. Replaces John Deere part number A94642.
- Available in 50 foot and 100 foot rolls.

### Prices

- 50 foot roll of 1 1/4” ID hose: **$145.00**
- 100 foot roll of 1 1/4” ID hose: **$280.00**

All Prices are plus shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Closing And Firming Wheel Arm Bushing Kits For John Deere Drills and Air-Seeders.

Key Benefits

- Our closing and firming wheel arm pins are made from high quality heat treated steel, with the highest hardness value (+/- 60, measured on the Rockwell C scale) of all the factory and aftermarket pins we have tested. These pins are then precision ground for maximum smoothness and minimum friction.
- Our yellow poly bushings have been tested for 3 seasons on high acre per row openers in dusty conditions. We have found their life matches or exceeds factory closing wheel and firming wheel arm bushings, without lubrication and no seizing up problems have been reported, unlike the steel bushings.
- Our yellow poly bushings don’t require greasing because they incorporate teflon, which acts as a lubricant to lower the friction around our smooth, precision ground closing and firming wheel arm pins.
- Our yellow poly bushings are much easier to install than factory and after-market steel bushings.
- We supply 2 x seals per row to keep dust and moisture out of the closing and firming pivot assembly.
- We supply a 1” ID washer to help remove the side to side play which is often present within openers with enough accumulated acres as the main opener casting wears against the closing or firming wheel arms.
- We supply a new grade 8-5/8” flange lock nut, as many existing lock nuts don’t have sufficient torque to hold the assembly tight, after the existing bolt has been torqued, re-torqued and removed.

The Problem.

Factory and aftermarket closing wheel arm and firming wheel arm pivot bushings are designed to be greased regularly to extend their life. However in dry, dusty conditions (such as the examples illustrated below), fine dust is often flung up into the closing and firming wheel arm pivots by the disc blades and gauge wheels, especially in dry, windy conditions. Abrasive dust mixes with the grease and causes the factory seals (on newer models) to erode, then dust enters the pivot assembly. This often causes them to lock up and for those of you planting into similar conditions, you understand the severity of this problem.

We learned early on that within dusty conditions (as illustrated above), its either necessary to grease the pivot points regularly (daily) to help purge the dust out, or not grease the pivots at all. The latter was further reinforced by the fact that the 60 series (and the later 50 series) openers were shipped from the factory without grease fittings on the closing and firming wheel pivot points. Without any grease, the seizing up problems discussed above disappeared, even on drills and air-seeders that operated in the most severe dry and dusty conditions. However, the service life of the pivot points was reduced without lubrication, even when using the newer John Deere oil impregnated powdered metal bushings, because fine dust enters the housing and dries out the small amount of lubricant they release. Based on many challenges, including those discussed above, we began looking for a closing and firming wheel arm pivot configuration that provided good service life, ideally without lubrication. We field tested many different combinations for at least 2 years within different operating conditions, especially across the dry, dusty conditions of the Central Plains and the dry regions South East Australia, before settling on the yellow poly outer bushings and precision ground pin.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Closing Wheel Arm Bushing Repair Kit, for John Deere 50 series (after Serial number 6000) and all 60 and 90 series openers.

Includes:
- 2 x 1” ID Poly Bushings
- 2 x 1” ID Triple Lip Seals
- 1 x Closing Wheel Arm Pin (1” OD x 3.37”)
- 1 x 5/8” Grade 8 Flange Lock Nut
- 1 x 1” ID Grade 8 Washer (0.13” Wide)

Clearing wheel arm bushing
$29.00 per row + Shipping

Firming Wheel Arm Bushing Repair Kit, for John Deere 60 and 90 series openers.

Includes:
- 2 x 1” ID Poly Bushings
- 2 x 1” ID Triple Lip Seals
- 1 x Firming Wheel Arm Pin (1” OD x 2.38”)
- 1 x 5/8” Grade 8 Flange Lock Nut
- 1 x 1” ID Grade 8 Washer (0.06” Wide)

Firming wheel arm bushing kit
$29.00 per row + Shipping

Closing and Firming Wheel Arm - Individual Parts Prices

The parts listed above are available separately and are priced individually below.

Closing Wheel Arm Pin (1” OD x 3.37” - replaces JD part number N280648) $12.00 each
Firming Wheel Arm Pin (1” OD x 2.38” - replaces JD part number N284086) $12.00 each
1” ID Poly Bushing (replaces JD part number N219547) $5.00 each
1” ID Triple Lip Seal (replaces JD part number A85727) $3.50 each
5/8” Grade 8 Flange Lock Nut (replaces JD part number A169024) $1.00 each
1” ID Grade 8 Washer (0.13” or 0.06” Wide, replaces JD part number A92849) $1.00 each
Grade 8 bolt for closing or firming wheel arm (5/8” x 5” Bolt for CWA, or 4” for FWA) $2.50 each

Prices listed above do not include shipping.

Hardened Closing and Firming Wheel Arm Bushing (and Seal) Installation Tool

We offer this tool to help remove the old bushings and help install the new poly bushings and seals.

Closing and Firming Wheel Arm Bushing Kit Installation Tool (Hardened Steel)
$30.00 + Shipping

One free with all orders of 24 rows (or more) of our closing or firming wheel arm bushing repair kits.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Main Opener Arm Pins and Outer Bushings For John Deere Drills and Air-Seeders.

Key Benefits

- Available for John Deere 50, 60 and 90 series openers.
- Our main opener arm pins and bushings have been field tested for over three years on drills and air-seeders planting large number of acres per row and we have found their service life matches or exceeds OEM pins and bushings.
- Our main opener arm pins are made from a very hard, heat treated material that’s precision ground for very tight tolerance and consistency.
- Each pin features a chamfer on each end to aid with its installation. This is especially helpful when trying to install the pins with the openers still mounted to the drill or air-seeder. The OEM and most aftermarket pins are almost flat on the ends and much more difficult to align during installation.
- Our main opener arm pins feature a socket to aid with their install and removal. OEM and aftermarket pins are smooth on the ends and are more difficult to drive out or install with a punch or air-hammer.
- Our hardened and heat treated outer bushings provide a very long service life and are easy to install with our install tool. The hardened install tool is made of tool steel and helps remove the old bushings and install the new ones without damage, plus helps align the second bushing with the first during installation.
- We also supply washers to help eliminate the side to side play in the opener mounting points. Both sides of the castings wear over time, so be sure to shim them as tight as possible with the washer provided.

When to Replace the main opener arm pins and bushings.

We suggest wiggling some of the openers side to side, paying particular attention to openers on the ends or within wheel tracks which generally wear the fastest. When measured at the rear of the disc blade, we suggest replacing the pins and bushings when the total side to side play reaches 1/2” (1/4” in either direction).

In most examples, the main opener arm pin and outer bushings will wear similar to what is illustrated in the image above right, so just turning the pins often doesn’t fix the play in a satisfactory manner. These very worn OEM pins and bushings produced about 1” of total side to side play (1/2” in either direction) measured at the rear of the disc blade. This much play had serious effects on seed placement, seed firming and seed slot closure because those wheels are no longer aligned with the seed slot. Growers will also see a rapid increase in the wear of the seed boot when the main opener arm pins and bushings wear significantly, because the disc runs at too small of an angle to create a seed slot wide enough for the seed boot to operate within. Therefore, we suggest replacing the main opener arm pins and bushings when you can measure 1/2” of total side to side play at the rear of the disc blades.

Some producers prefer to remove the opener from the 4x4” rock-shaft when replacing the main opener arm pins and bushings as illustrated right, plus if you have other parts to replace, its easier to do this with the openers removed. While the pins and bushings can be replaced with the openers still attached, the pins often have “wear steps” as illustrated in the image above right, making them more difficult to remove. Producers will appreciate the socket in the end of our main opener arm pins when it comes to removing them. This is because it’s difficult to use an air-hammer on the OEM and aftermarket pins with the ends being flat (and extended out above the cast housing) because its hard to hold the air hammer in place.
As the main opener arm pivots up and down millions of times, it slowly wears off both sides of the castings, especially on drills or air-seeders that do a lot of turning when seeding in odd shaped fields. We provide a new 0.16” thick washer* to help take up the side to side play to compensate for wear. Eliminating this side to side play helps increase the life of the main opener arm pin and outer bushings. The washer needs to be installed on the disc side of the opener arm assembly. * Actual thickness of washer may vary with manufacturer or batch.

Main Opener Arm Pivot Repair Kit For 50, 60, 90 and ProSeries. Includes everything needed for one row as shown above right (One main opener arm pin, two outer bushings and one thrust washer).

$54.00 per row + Shipping

Main Opener Arm Pins, Bushings and Thrust Washer - Individual Parts Price Breakout

The parts listed above are available separately and are priced individually below.

Main Opener Arm Pin (1.25” OD x 5.50” - replaces JD part number N282536) ...................... $38.00 each
Main Opener Arm Bushings (1.25” ID x 1.63” OD - replaces JD part number N283636).............. $7.40 each
Grade 8 Thrust Washer (1.3” ID x 2.5” OD x 0.16” thick - replaces JD part number N216568)... $5.00 each

Main Opener Arm Installation Tool

We offer this installation tool to help remove the old outer bushings, plus help align and install the new ones. It features a socket in the top of the tool to allow for the use of an air-hammer with a 1/2” punch. This makes removal of the old bushings and the installation of the new ones much easier.

Heavy Duty Outer Bushing Removal and Installation Tool.

$50.00 + Shipping

One install tool is provided free with all orders of 24 rows (or more) of our main opener arm pivot repair kits.
The Problem

We regularly hear from growers who plant large areas with John Deere drills or air-seeders, who tell us their gauge wheel axles have seized up and can’t be adjusted (as illustrated right). This is most common in low rainfall regions where a cloud of dust often surrounds the seeder during most of the planting season. It is especially common on drills and air-seeders that don’t have adequate down pressure or ballast (or a combination of the two). Without adequate down pressure or ballast, the gauge wheel doesn’t remain in constant contact with the soil surface. This loss of target seeding depth causes the handle to constantly rattle within the depth adjusting cover as shown in image “A” below. Not only does this reduce crop emergence as a result of shallow placed seeds or seeds on top of the ground, it also causes the gauge wheel axle to constantly pivot back and forth. The constant movement wears out the O ring as shown below in image “B”.

Once this O ring deteriorates as shown above, it lets dust into the assembly, causing it to seize up. Some clay based greases actually made this locking up problem worse, as the dust mixes with the grease to cause “cake-lock failure” where the gauge wheel arm seizes solid. When the gauge wheel arm can’t be moved with a large crescent wrench hooked to where the gauge wheel mounts, the only way to free them up is to push the gauge wheel arms out of the assembly with a heavy press as shown in image “C” above right.

Needham Gauge Wheel Axle — Key Benefits

- Heavy duty assembly replaces John Deere part numbers N282117, AA92485 and AA73951, which fit all 60, 90 and ProSeries John Deere openers.
- Dust cap is welded all around, rather than spot welded around parts of the OEM versions. This helps keep dust and moisture from entering the inside of the dust cap.
- Maintains the OEM milled area on the outside of the axle to help with lubrication along the axle.
- Includes grease zerk.
- Yellow zinc coated to minimize corrosion over time.
- Allows around 1/8” of additional adjustment of the gauge wheel towards the disc, to help keep mud out.
Needham Spindle Assembly With Triple Lip Seal — Key Benefits

- Heavy duty assembly replaces John Deere part numbers AN282118 (RH) and AN282119 (LH) on John Deere 60, 90 and ProSeries series openers.
- Each spindle comes complete with high quality triple lip seal to help keep dust out of the assembly over time.
- Hex head allows easy installation.

Needham RH and LH Spindle Assembly With Triple Lip Seal

$40.00 + Shipping

0.85 lb ea.

The Problem

As acres accumulate on John Deere drills and air-seeders the cast depth arm, John Deere Part number AN282108 (RH) and AN282109 (LH), frequently wear within the jaws as illustrated right. This wear allows the gauge wheel to move up and down and change seeding depth. It also accelerates wear within the depth adjust cover as shown on the previous page.

The Solution

Needham Ag Technologies has a high quality depth arm which is fabricated out of high quality steel. This arm is much heavier duty than the factory cast version and will last much longer.

Needham Depth Arm — Key Benefits

- Our single Depth Arm can be used on the RH and LH side, so one part replaces the John Deere part numbers (RH) AN282108 and (LH) AN282109 which install on John Deere 60, 90 and ProSeries openers.
- Heavy duty steel construction for much longer life than the John Deere cast arm
- Works with OEM gauge wheel axle and depth adjust cover.

Needham Depth Arm

$85.00 + Shipping

2.3 lb ea.

Grade 8 Nut & Bolt (for jaw)

$1.00 per row + Shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Key Benefits

We now offer high quality firming and closing wheel arm springs for all 50, 60 and 90 series drills and air-seeders.

The Problem

We often see and hear reports of the factory (and other aftermarket springs) working their way out of the pegs on the closing wheel arm, especially when the closing wheel arm bushings get worn. Our springs offer increased spring tension against the arm, to help ensure the spring remains engaged within the pegs as shown in the image to the right.

60 & 90 Series

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<th>LH</th>
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<td>CW</td>
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Firming Wheel Arm Springs

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Closing Wheel Arm Springs

50 Series

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<td>FW</td>
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On the 50 series, the same springs are used on the firming and closing wheel arms.

Our 50 series closing and firming wheel arm springs feature the same taller handle as the newer 60/90 series, to eliminate the need for the steel tube, when making adjustments.

All of our closing and firming wheel springs (itemized above) are competitively priced at

$12.00 each plus shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Disc Opener Bearings For John Deere 50, 60, 90 and ProSeries John Deere Air-Seeders And Drills.

Disc Opener Bearing for John Deere 60, 90 and Pro Series (fits 1560, 1590, 1890, 1895, 1690, 1990 and new N500 Series)

We offer individually packaged NTN bearings, these are the same brand and type currently offered by John Deere in their factory hubs (not cheap Chinese bearings available from aftermarket sources).

These bearings cannot currently be purchased through John Deere parts, they only supply a complete hub assembly with this same bearing included.

Disc Opener Hub Bearing For 60, 90 and ProSeries John Deere.

$39.95 each + shipping 1.1 lb ea.

Disc Opener Hub Bearing Rebuild Kit for John Deere 50 Series (fits 750 and 1850).

This kit contains two US made NTN disc hub bearings (cup and race). These hub repair kits replace John Deere part number AA44267.

The kit also contains two ESP hub seals, the same brand and type offered by John Deere in their hub repair kit part number AA44267.

Lastly, the kit contains two chrome plated wear rings (to extend service life beyond the OEM), one oil resistant o-ring and one cotter pin.

Disc Opener Hub Bearing Kit For 50 Series John Deere.

$27.50 each + shipping 0.75 lb ea.

US Manufactured Bearings (Not China Manufactured like OEM and most after-market suppliers)

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Hub Seals For John Deere 50, 60, 90 and ProSeries Openers

**Large Triple-Lip Hub Seal For 60, 90 and ProSeries Disc Hubs.**

- Made by ESP (same brand as OEM)
- 1 Required per row on 60 & 90 series
- Replaces John Deere Part # AN281241
- 3.67” OD
- 2.83” ID
- 0.31” Wide

**Large Seal For 60, 90 and ProSeries John Deere Disc Opener Hubs**

$6.50 each + shipping 0.10 lb ea

**Small Triple-Lip Seal For 50, 60 & 90 Series Disc Hubs**

- Made by ESP (same brand as OEM)
- 2 Required per row on 50, 60, 90 and ProSeries
- Replaces John Deere Part # B13294
- 2.36” OD
- 1.50” ID
- 0.27” Wide

**Small Seal For 50, 60, 90 and ProSeries John Deere Disc Opener Hubs**

$3.50 each + shipping 0.05 lb ea

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Wear Rings For John Deere 50, 60, 90 and ProSeries Disc Opener Hubs.

Chrome Plated Large Wear Ring For 60, 90 and ProSeries Hubs.

- 1 Required per row on 60, 90 and ProSeries
- Replaces John Deere Part # W33806
- Chrome plated to reduce corrosion and extend the life of the wear ring and hub seal
- Presses into 3.75” socket within the hub
- 3.65” ID
- 0.45” Wide
- We STRONGLY suggest changing the wear rings when you change the large hub seals, as the factory wear rings are usually pitted and corroded by the time the seal needs to be replaced.

Chrome Plated Large Wear Ring For 60, 90 and ProSeries John Deere Disc Opener Hubs

$5.00 each + shipping

0.10 lb ea

Chrome Plated Small Wear Ring For 50, 60, 90 and ProSeries Hubs

- 2 Required per row on 50 series hubs and 1 required per row on 60, 90 and ProSeries hubs.
- Chrome plated to reduce corrosion and extend the life of the wear ring and hub seal
- Replaces John Deere Part # N219000
- Presses into 2.35” socket within the hub
- 2.25” ID
- 0.375” Wide
- We STRONGLY suggest changing the wear rings when you change the small hub seals, as the factory wear rings are usually pitted and corroded by the time the seal needs to be replaced.

Chrome Plated Small Wear Ring For 50, 60, 90 and ProSeries John Deere Disc Opener Hubs

$2.50 each + shipping

0.05 lb ea

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
John Deere released their ProSeries opener during the summer of 2018. Soon after their release we had customers asking for Bonilla Seed Tabs to fit the new ProSeries seed boots (which are considerably narrower than the 50, 60 and 90 series seed boots).

We now have Bonilla Seed Tabs available for the ProSeries, which are almost twice as thick as the new tapered Pro-Series seed tabs.

The ProSeries Bonilla tabs utilize the same material and profile, but they are narrower than our standard Bonilla Seed Tabs.

Note: To mount the Bonilla Seed Tab on a ProSeries seed boot, you will need the longer bolt and clip shown to the right.

Stainless Steel Bolt $0.25
U Shaped Clip $0.50

Bonilla Seed Tabs For John Deere ProSeries
Box Drills and Air-Seeders.

$4.00 each + shipping. 0.05 lb ea.

Narrow ProSeries Seed Boots Can Plug When Planting Large Seeds

When we first saw the John Deere ProSeries opener at the Canada Farm Progress show in June 2018, we saw how narrow the seed boots were. We made the comment they could potentially plug up worse than the 90 series seed boots, especially when seeding larger seeds (see YouTube video link below). This was founded on the principle that some growers planting larger seeds like peas or chick peas, especially on 10” rows or at higher speeds (or both), were already experiencing plugging issues with the John Deere 90 series seed boots. So once they used the narrow ProSeries boots (see image to the right) their plugging problems increased significantly.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
The image to the right shows a cross section of both the John Deere 90 series and the new John Deere ProSeries seed boots. Both seed boots were cut with a chop saw the same distance up from the bottom.

This image to the right illustrates the difference in cross sectional area within both seed boots. At this location, the original John Deere 90 series extended wear seed boot had an inner channel which measured 0.81” x 1.93”, compared to the John Deere ProSeries which only measured 0.94 x 1.18”. That is a 42% decrease in cross sectional area within this part of the seed boot, which is a big problem if your planting larger seeds at higher speeds, or using wider rows (or a combination of all these).

The good news is that growers with ProSeries seed boot plugging issues can install the former John Deere 90 series seed boots, or our Needham Ag Extended Wear 90 series seed boots (shown on page 23) on a ProSeries opener. The steps required to accomplish this are detailed below.

To install a John Deere 90 series seed boot or the Needham Ag 90 series extended wear seed boot (illustrated below), the casting (shown below in red) has to be ground down on the inside, ideally using an angle grinder. The purpose of the grinding is to allow sufficient clearance between the casting and the seed boot. To install the Needham Ag seed boots, a small amount of grinding may be also be required on the side of the flag pin mounting lug, as illustrated by the green arrow in the image below. Grinding is often necessary because the ears of the boot are larger to accommodate the seed boot bushings.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
## Important Elements of The Case-IH 500/500T & New Holland 2080/2085

### Parallel Linkage

The Case-IH 500 and New Holland 2080/2085 features a parallel linkage which offers a range of just over 20” of opener operation. This is a huge benefit, especially on rolling soils, because the opener can follow the terrain much better than a radial arm design currently used. For example by John Deere on their 1890/1895. A parallel linkage also allows the closing wheel to run at a more consistent pressure, compared to the 1890/1895 which increases down pressure as the 4x4” rockshaft is rotated backwards.

If you are planning to buy one of these air-seeders, be aware they can be ordered without gauge wheels and without closing wheels, allowing you to add wheels more suitable for no-till.

### Spring Spacers

The SDX 30 and 40 (the Case-IH single disc seeder which was replaced by the Case-IH 500) had an excellent feature which allowed the down pressure to be adjusted on a row by row basis. This was particularly beneficial behind tractor and/or tow between air-cart wheel tracks, as these wheel tracks were lower and more compacted, requiring more down pressure to penetrate. To bring this feature back, we offer spring spacers which can be added to the wheel tracks. One is needed per row and more information is available on page 57.

### Seed Brake

Seed bounce is a common problem for many air-seeders, and its most likely to occur within the following examples:

1. When planting lighter seeds, such as canola, or cover crops with small seeds.
2. When placing fertilizer either with the seed in the row, or within mid-row bands because it requires higher fan speeds.
3. When using wider seeding equipment, again because they require higher fan speeds to convey product out to the wings.

A combination of these examples further increase the risk of seeds being blown out of the seed slot. The seed brake allows most of the air to evacuate through the housing, allowing seeds to fall to the ground by gravity. More information on seed brakes is contained on the following page.

### Disc Blade

The disc must be sharp to consistently cut through heavy, tough residue and hard soils.

For best results, they should be replaced when the sharp cutting edge becomes dull or when the disc wears below 17” in diameter, whichever comes first. See page 55 for more information on our Forges De Niaux disc blades for the Case-IH 500 and New Holland 2080/2085, which lasts longer than the OEM blades.

### Narrow Gauge Wheel

When the down pressure is adjusted correctly, the gauge wheel should remain in constant contact with the soil surface. Ideally, the gauge wheel can be turned with firm force when the seeder is stopped in the ground, but be aware that as and New Holland air-seeders are pulled forward, some weight is transferred from the rear of the frame to the front. Narrow gauge wheels are preferred in no-till conditions because they maintain depth more consistently, especially within heavy residue. Narrow gauge wheels also leave more residue standing which helps conserve moisture in dry climates. For more information, see pages 58.

### Closing Wheels

The factory closing wheels perform well in conventional soils with loose soil on top, but they really struggle to close the slot within higher moisture no-till conditions, especially when seeding deeper (when the width of the seed slot becomes wider). We have 2 different closing wheel options available, the Poly 20 Point Wheel and the 2 x 13 closing wheel. When used with our Angle-Changer, they will close the seed slot much better than the factory closing system, plus they use far less closing wheel down-pressure, which transfers more down-force to the disc for cutting soil and residue. See pages 52 - 54 for more information on these options.

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For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Improving The Case-IH 500/500T And New Holland 2080/2085 Closing Systems

The factory 4 x 12 closing wheels are designed for tilled soils and they work fairly well within those conditions. However, once they are used in no-till conditions, especially into moist clay soils as illustrated right, they struggle to close the seed slot consistently. Even at the maximum down pressure setting, they often leave the seed slot wide open as seen in this example. We have also found closing the seed slot with the factory 4 x 12 wheels becomes much more difficult as the seeding depth is increased. This is because the seed slot becomes progressively wider as the seeding depth is set deeper, making it harder to close. Part of the reason the factory 4 x 12 closing wheels often perform so poorly within these conditions is their excessive width, they simply need to be much narrower. The factory closing wheels also run too straight (compared to the direction of travel). As a result of the factory 4 x 12 closing wheels running too straight, they require excessive amounts of down-pressure to try and smash the seed slot closed from the top, which often over-packs moist soils. This over-packing slows emergence and reduces the number of plants per acre which emerge. The maximum down pressure setting on the closing wheel arm takes around 80-90 pounds away from the disc, and in many no-till fields with hard soils or heavy residue, the down-force available to cut the soil and residue is already limiting. Lastly, the factory 4 x 12 closing wheels don’t clean very well in higher moisture soils, as illustrated within the image above right. In this example the Case 500 was seeding cover crops into corn stalks and all the Needham Ag gauge wheels and Needham Ag 2 x 13 closing wheels with Angle-Changers (discussed on the following page) remained almost clean, compared to the 4 x 12 factory closing wheels which accumulated mud.

The 2 x 13 closing wheels with Angle-Changer are best suited for drier no-till soils or medium moisture no-till soil conditions. If you plan on seeding into moist soils more of the time, we recommend the poly 20 Point Wheels with Angle-Changer as illustrated right. Lastly, new Case-IH 500/500T or New Holland 2080/2085 air-seeders can all be ordered without closing wheels or gauge wheels, this lets you choose the best closing wheels for your conditions.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
As discussed on the previous page, the factory 4 x 12 closing wheels are too wide and run at too straight of an angle to close the seed slot consistently, especially within moist no-till soils. To address these issues, we designed the Needham Ag Angle-Changer, which is basically an adjustable coupler which attaches to the factory closing wheel arm. Its simple design allows growers to adjust the closing wheel angle based on their field conditions. We have found that most soils require around a 7 degree closing wheel angle, which is coincidentally the angle that the disc uses to open the seed slot. Coupled to the Angle-Changer, we offer two different closing wheels which are specifically designed for no-till conditions, the 2 x 13 closing wheel and the Needham Ag 20 Point Poly closing wheel, which are both discussed on the following page.

The Needham Ag Angle-Changer installs around the tube of the closing wheel arm as illustrated above. Within the Angle-Changer is an axle, which threads into the closing wheel arm, and out into the closing wheel.

The Angle-Changer changes the angle of the closing wheel as its rotated one direction or the other. Once growers find the angle that performs best in their soils and moisture conditions, they lock them in place with the lock nut and set-screw, and no more adjustments are required. Based on our field experience, we know about where the Angle-Changers need to be set for most regions and these are explained within the instructions.

**Less Closing Wheel Pressure**

During field testing over the last 7-8 years with many different closing wheels, we have found the factory 4 x 12 closing wheels require huge spring pressure to crush the seed slot closed. When we increase the closing wheel angle with the Needham Ag Angle-Changer and add closing wheels which are more suitable for no-till soils, we have found that far less down pressure is required to close the seed slot. This is important because it transfers more weight to the disc opener to help cutting of tough residue and hard soil.
**2 x Closing Wheel Options**

Based on our field testing over three years across most regions of the US and Canada, we have found two different closing wheels that perform better than the factory 4 x 12 wheels, when used in combination with our Angle-Changer. These closing wheels include the Needham Ag 2 x 13 Wheel and the Needham Ag Poly 20 Point Crumbler Wheel (both shown below).

### Needham Ag 2 x 13 Wheels

The Needham Ag 2 x 13 Wheels with Angle Changer is a very versatile closing wheel option, that will close the seed slot better than the factory wheel across a wide range of different soils.

It’s best positioned when seeding into conventional soils, minimum till or no-till conditions with some loose soil on top of the ground. The 2 x 13 wheel features a high quality 5203 bearing for long service life.

### Needham Ag Poly 20 Point Crumbler Wheels

The Needham Ag Poly 20 Point Crumbler Wheels, with Angle-Changer are more aggressive than the factory closing wheels and the Needham Ag 2 x 13 wheels. They perform best in residue covered no-till conditions, including damp clay soils, because they reach down through the residue better to close the seed slot. The poly wheels also have a small amount of flexibility which really helps shedding mud in higher moisture soils. The Needham Ag Poly 20 Point Wheels come standard with a heavy duty hub and the PEER® SeedXTreme Bearing.

If your planning to use our 2 x 13 wheel or Poly 20 point crumbler wheels in loose soils, we recommend the light duty closing wheel arm springs. This is because the factory spring provides too much down pressure, even when the spring is set to the lowest position (with the spring touching the tube).

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**Light Duty Spring**

- **Angle Changer** (One per row required with the 2 x 13 Wheel & Poly 20 Point Crumbler Wheel)
  - $65.00 each + shipping
  - $65.00 each + shipping

- **Needham Ag 2 x 13 Wheel**
  - $60.00 each + shipping

- **Poly 20 Point Crumbler Wheel With Hub**
  - $120.00 each + shipping

- **Lighter Duty Spring** (right and left available)
  - $15.00 each + shipping

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For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
18” Forges De Niaux Disc Blades
For Case-IH 500/500T & New Holland 2080/2085

Key Benefits:

- Made in France by Forges De Niaux, a company with 5 generations of manufacturing, using high quality materials, automated processes and sound quality control.
- The Forges De Niaux 18” discs are now available to fit the Case-IH 500/500T and the New Holland 2080/2085 air-seeders.
- The Forges De Niaux discs have been proven to last around 20% longer than Ingersoll or Earth Metal disc blades, plus retain their edge longer to help cut through heavy residue and hard soils (or both).
- Blades measure 18” in diameter, 5mm (0.197”) in thickness and have a core hardness of Rockwell 55 for maximum strength and durability (see pages 27 - 28 for more information on the Forges De Niaux discs and comparisons between different brands.
- Be sure to install the new disc blades with the straight (non beveled) side towards the gauge wheel. Poor soil penetration and residue cutting will result if they are installed backwards.

When to Replace Discs:

We recommend replacing the disc blades when the diameter reaches 17” or when the cutting edge becomes dull (whichever occurs first). Running the Case IH 500/500T or New Holland 2080/2085 blades less than around 17” has often resulted in poor cutting performance, in addition to plugging of the scraper/boot, especially in tough residue conditions.

If you are going to be seeding into hard soils, or no-till conditions with heavy residue (especially both as shown above), you will need two things for maximum seeding performance.

1) Sharp disc blades, 17” or greater in diameter. Our Forges De Niaux 200 discs are sharp and stay sharper than all other brands we have tested.
2) Sufficient ballast to the center section and wings. These weights are ideally positioned at the rear of the frame, because when the seeder is pulled forward, some of the ballast is transferred to the front rank of openers.

Watch our extreme disc blade testing by clicking the QR code to the right, or visit YouTube and enter “Needham Ag Testing The Forges De Niaux 200 Disc Blades”

See Pages 27 - 28 For More Information

18” Forges De Niaux Disc blades for Case-IH 500 and New Holland 2080/2085.

$35.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Seed Brakes For Case-IH 500/500T & New Holland 2080/2085

The 1 1/4” seed brakes install easily on the Case-IH 500/500T and New Holland 2080/2085 air-seeders. The seed hose is removed from the top of the seed tube on the opener by releasing the hose clamp. The seed brake is then attached to the top of the seed tube with a hose clamp (supplied), then the seed hose is pushed 1 1/2” into the top of the seed brake and held in position with a 2nd hose clamp (supplied). The seed brake is curved as illustrated right, this allows the seed hoses to be routed around frame members. More detailed information on the seed brakes is contained on pages 35 - 36, and if you need new air-seeder hose, please see pages 37 - 38.

1 1/4” Seed Brake For Case-IH 500 and New Holland 2080/2085, with hose clamps.

$27.95 each + shipping

Disc Opener Hub Bearing For Case-IH 500/500T, and New Holland 2080/2085

Some of the early Case IH 500/500T and New Holland 2080/2085 air-seeders are starting to have bearing failures in their disc opener hubs. We have high quality replacement sealed bearings, direct from FAG, the same manufacturer which supplies the disc hub bearings to Case-IH and New Holland.

These bearings replace Case-IH part # 84154272.

Measurements, OD 2.64”, ID 1.33”, Width 1.46”

FAG Disc Opener Bearing For Case-IH 500 and New Holland 2080/2085.

$32.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Spring Spacers For Case-IH 500/500T & New Holland 2080/2085

The Problem

The older Case-IH SDX 30 & 40 Air-Seeders had a very good feature which was unfortunately not continued on the 500/500T or 2080/2085 series. This feature was the ability to adjust down-pressure individually on each opener. This was accomplished by simply pulling a pin and selecting one of the 3 hole positions (as illustrated right). This feature was most beneficial when trying to seed the same depth into tractor or air-cart wheel tracks. This is much more difficult than it seems, because wheel tracks are often lower and the soil is more compacted. Therefore, the openers in these tracks require more down-pressure than all the other openers on the same frame section. Depending on the tire configuration and row spacing, around 8-12 openers were often set in the maximum down pressure setting while all the others across the seeder were set in the medium position.

Many growers using the 500/500T and 2080/2085 have reported that they have struggled to achieve acceptable soil penetration and consistent seeding depth behind tractor and air-cart tracks, especially in softer soils with bigger tire depressions. Just like the SDX, these openers need extra down pressure.

The Solution

Spring spacers are 1/2" thick and install easily between the spring and the cast housing as shown in the image below right. The spring spacers match the profile of the housing and the spring, providing an additional 80-100 lb. of down pressure per row.

Installation is achieved by supporting the opener with a floor jack, then unscrewing the bolt which holds the spring assembly together. Once the bolt is removed, the spring spacer can be inserted between the housing and the spring. Once installed, tighten the locking bolt back up.

One spring spacer is required per row, behind tractor and tow-between air cart tires.

Spring Spacers For Case-IH 500/500T and New Holland 2080/2085

$25.00 each plus shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Narrow Gauge Wheels For Case-IH 500/500T & New Holland 2080/2085

All our narrow gauge wheel options are illustrated in greater detail on pages 17 - 20. The 2 3/4” narrow gauge wheel assembly is the most popular one for the Case IH 500/500T and New Holland 2080/2085. These narrow gauge wheels are specially designed for heavy residue no-till conditions, especially when planting into corn residue, as shown above. The narrower tires avoid almost half of the standing residue, (compared to 4 1/2” standard tires) and they help control seeding depth more accurately. The Case-IH 500/500T and New Holland 2080/2085 can all be ordered new without gauge wheels and without closing wheels, so if you plan to no-till, both of these products will help improve seeding depth consistency and slot closure.

Our highly durable gauge wheels come assembled with two steel wheel halves, heavy duty urethane tire and long life PEER® SeedXTreme bearing. We offer a warranty against tears and significant stubble damage to the OD of the tire for a period of 3 years after date of purchase.

2 3/4” Narrow Gauge Wheel Assembly With Urethane Tire

$105.00 each + shipping

We now have a screen for the hopper of the Case-IH 500T and New Holland 2085. Without a screen, some growers reported small pieces of paper, rocks and other foreign material can get into the metering rollers and break the teeth off. The foreign material can also block seed tubes or seed boots, causing skips.

To help eliminate this problem, our heavy duty expanded metal screen inserts into the hopper of all the 500T and 2085 series air-seeders. The screen allows the lid to close and latch using existing rubber latches.

Please note that when using this screen with crops such as treated soybean (which flow slower), you may not be able to fill the hopper at a capacity greater than around 20 bushels per minute, to give the seed time to pass through the screen.

Screen For Case-IH 500T and New Holland 2085

$495.00 each + shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Important Elements Of Most Corn Planters

**Row Cleaners**

A well designed and adjusted row cleaner should be heavy enough to part residue and lightly till the seed zone without trenching. Aluminum side treader wheels control tooth engagement depth in addition to providing traction to keep the wheels turning in tough conditions.

The row cleaners pictured below can be seen parting residue in addition to lightly tilling the seed zone and leveling a set of tractor or combine wheel tracks. For more information on row cleaners, please see pages 61 - 62.

**RID Tires**

RID tires (illustrated on page 68) are designed to fit most no-till planter gauge wheels and their purpose is two fold:

1) RID tires allow the sidewalls of the seed slot to flex upwards. Without RID tires, the soil is compressed up against the standard gauge wheel tires, causing sidewall compaction which can reduce root growth.

2) RID tires leave a band of uncompressed soil on either side of the seed slot which significantly helps improve closing action of most closing systems.

**Closing Wheels**

There are many different closing wheels available on the market and most work great in dry, tilled ground. However, few perform as expected, especially in moist no-till conditions. We offer three different closing wheel options to help growers plant within tough conditions and these include:

1) A single Martin 15” spading wheel alongside a standard 12” smooth wheel (illustrated on page 65).

2) A pair of Martin 13” wheels (illustrated above and on page 65)

3) A pair of Needham Ag Poly 20 point wheels (see pages 63 - 64).

**Keeton Seed Firmers**

Seed firmers are an important addition to a planter, especially when running spiked or spoked closing wheels. In true no-till conditions we recommend 3 - 4 pounds of pressure on the Keeton tail; in tilled soils we recommend 1-2 pounds.

Mojo wires from Exapta increase the down-pressure of older Keeton Seed Firmers and allow you to get another year or two out of them.

**Drag Chains**

The drag chain is a simple addition to a planter to improve the uniformity of the surface of the seed slot. They also help provide uniform soil warming and even crop emergence. The drag chain is designed to pull a hand full of soil behind the closing system as illustrated above to level the seed zone and fill in any openings in the seed slot. Its important to close the seed slot consistently, especially when planting corn to prevent seeds leafing out underground. For more information on drag chains, please turn to page 67.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Key Benefits:

- Compact enough to fit within the WA-1360 row floating row cleaner.
- The Martin UMO-100 is mounted close to the double-disc openers to ensure consistent separation and minimize fertilizer injury, especially during turns or when working on side slopes.
- Places liquid fertilizer 1, 2 or 3” to the side of the center of the row, with 3 vertical settings which consist of $\frac{3}{4}$” above seed depth, at seed depth and $\frac{3}{4}$” below seed depth.
- 14” diameter heavy duty 5 mm thick disc blade.
- Double tapered bearing hub.
- Fits most planters without a no-till coulter.

The Martin UMO-100 fertilizer opener places fertilizer cleanly below the soil surface in a band to maximize uptake and minimize volatility losses.

The Martin UMO-100 fertilizer opener is most beneficial when planting corn, especially within continuous corn or no-till environments. Once the residue has been consistently cleared with a row cleaner, the Martin UMO-100 fertilizer opener can position liquid nitrogen alongside the row to provide supplemental nitrogen, or a blend of liquid nitrogen and a product such as 10-34-0.

Placing such nutrients in a consistent band alongside the row increases nitrogen recovery and helps increase early plant health, which frequently results in higher yields compared to surface applied dry or liquid, or pre-applied anhydrous ammonia applications.

Martin UMO-100 Fertilizer Opener

For Kinze, 7000-1700 series John Deere and White 6000 and 8000 series planters.

$415.00 per row + shipping.

Mounting brackets to fit within row cleaners, or for stand-alone fertilizer opener (no row cleaner) are required. Please contact us with your planter details so we can get you a quote on a mounting bracket.
Martin WA 1360 Floating Row Cleaners

Key Benefits:

- Floating row cleaners follow the contours of the soil surface, clearing residue consistently to provide a cleaned strip.
- Cleaned strips warm uniformly, helping to create uniform emergence.
- Farm Journal research has found that floating row cleaners significantly increase corn yields, when compared to fixed design row cleaners.
- Can be equipped (strongly recommended) with aluminum side treader wheels, which limit the tooth engagement of the row cleaner wheels.
- Mounting brackets available for most planter brands and configurations.
- Can be raised up when going from no-till to conventional seedbeds.

Floating vs. Fixed Row Cleaners?

Farm Journal Field Agronomist Ken Ferrie stated in a February 2007 Farm Journal "For the third year, running row cleaners so they can float over the terrain improved yields compared to the same row cleaners pinned into a static position. In 2006, floating row cleaners added 10 bu. to 13 bu. to yield in no-till fields. After closely watching these row cleaners run and monitoring yields for the last three years, I’m convinced that it’s best to let row cleaners [with depth bands] float and hug the ground in no-till fields”.

Martin WA 1360 Floating Row Cleaners (complete with aluminum side treader wheels, scrapers and mounting brackets).

For Kinze and 7000-1700 series John Deere

$549.00 per row + shipping.

Row cleaners are available for other brands, please contact us for more information and pricing.

Specific information will be required when ordering, for example: is a no-till coulter installed?

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
We have lots of growers successfully planting double crop soybeans after 100+ bu/ac average field wheat yields. Planting into these high residue volumes, especially right after wheat harvest may require a couple of row cleaner modifications to help achieve the best soybean stands.

1) **Wheel Weights.**

A pair of wheel weights add a total of 8 lb. of weight to the front of the row cleaner, to keep the wheels engaged in heavy residue and to maintain traction with the aluminum side treader wheels. These weights are made to nest inside the aluminum side treader wheel as illustrated in the image to the right.

![Martin Wheel Weights For Floating Row Cleaners](image)

*Made In The USA*

**Martin Wheel Weights For Floating Row Cleaners**

(complete with longer mounting bolts)

For 3 or 4 bolt row cleaner wheels (please specify)

$42.00 per row + shipping.

2) **Martin Razor Wheels.**

The new Martin Razor Wheels cut through tough crop residue and cover crops with ease.

Heavy crop residue and cover crops can turn any planter into a tangled mess. That’s why it makes sense to add Martin-Till Razor Wheels in these conditions.

Whether you go with a tandem offset or dual intersecting configuration, these rugged, razor-sharp wheels slice and dice the toughest residue and cover crops to keep you rolling at top speed, day in and day out.

Right and left wheels are available, and like all Martin products, the new Razor Wheels come with an ironclad one-year warranty.

![Martin Razor Wheels](image)

$60.00 per wheel + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Ag Poly 20 Point Wheels For John Deere, Kinze and MF/White Planters

Key Benefits:

- The Needham Ag Poly 20 Point Crumbler Wheels close the seed slot across a wide range of soil conditions and soil moistures, without requiring a lot of closing wheel down force.

- They perform best in minimum tillage, conventional tillage, and low to medium moisture no-till fields. They also have been tested in tall cover crops, including tall cereal rye without wrapping.

- In higher moisture no-till conditions the Needham Ag Poly 20 Point Crumbler Wheels can be easily swapped out for Martin spiked closing wheels, as they both use the same bolt pattern. This was a common request by many growers who plant different crops into different conditions. We have not ever found a closing system that works across all soil conditions, for example the range from higher moisture soils to worked dry soils, so having wheels that can be quickly and easily changed is a big benefit.

- The Needham Ag Poly 20 Point Crumbler Wheels are the same diameter and width as the steel 20 Point Crumbler Wheels sold by Needham Ag for many years, the advantage of the poly material is the weight reduction, compared to steel wheels, as a pair of steel 20 Point Crumbler Wheels are too heavy for most planting conditions, especially within higher moisture soils.

- Needham Ag Poly 20 Point Crumbler Wheels are made from high quality UHMW poly which offers excellent abrasion resistance and long life. We have tested the Poly 20 Point Crumbler Wheels for 3 years, on 40’ air-seeders which plant 6000 - 7000 acres annually. After 3 years there was no difference in wear between the steel and the Poly. The wheels also feature a small amount of flexibility, which helps shed mud and helps stop rocks wedging between the wheels.

- The Needham Ag Poly 20 Point Crumbler Wheels are sold with heavy duty hub and hardware, ready to install on the planters listed on the following page.

- The hubs come standard with the Peer SeedXTreme bearing for long service life (see page 16). These bearings are held in place with a snap ring.
Needham Ag Poly 20 Point Crumbler Wheels (pair) with hubs and hardware - For newer John Deere 1700 series, all Kinze and all MF/White planters which use a 5/8” bolt to mount the closing wheels.

$195.00 + shipping per pair

Needham Ag Poly 20 Point Crumbler Wheels for John Deere 7000, 7100, 7200, 7300 and early Kinze planters (with closing wheels held in place with roll pins). Comes with new axle and all hardware.

$220.00 + shipping per pair

Closing systems for planter types or models not discussed above may be available, please call for more information.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Martin Closing Systems For John Deere, Kinze and MF/White Planters

Key Benefits:

- Martin spiked closing wheels press the seed slot closed at seed depth. This principal leaves loose soil above the seed, which has been found to accelerate emergence, especially in cool soils.
- Martin spiked closing wheels work very well in higher moisture soils, which cannot be adequately closed using a conventional pair of rubber tires.
- Most of the sidewall compaction created with the disc openers and gauge wheels (mainly within wet soils) is segmented with a spiked closing system.
- Martin spiked closing wheels are shipped with a heavy duty HU44-B2 hub and 5/8” bolt to mount them to the closing wheel assembly. This hub utilizes the Peer SeedXTreme bearing for long service life.
- The Martin drag chain is recommended to pull behind the closing system. The drag chain levels the seed zone and helps with uniform soil warming and consistent crop emergence.

Pictured above is a pair of 13” spiked closing wheels and drag chain, the ideal combination to effectively close the slot in higher moisture conditions. The closing wheel arm assembly needs to operate as level as possible (an optional drop-down kit is available to lower the closing wheels by 1” and maintain a level arm).

The images to the left illustrate two different closing systems on the same planter within the same pass. Notice how the pair of factory smooth rubber tires are not closing the seed slot. Down pressure was increased following the photo being taken, but closing effect was not significantly improved. The increased down force resulted in more sidewall compaction on either side of the seed slot, which we expected would slow emergence.

The right photo illustrates a 15” spiked closing wheel alongside a single 12” factory closing wheel. This combination provides adequate slot closing, together with depth control from the smooth closing wheel positioned on the opposite side of the closing wheel arm.

Notice how the no-till coulter threw out soil on either side of the seed slot in both images. Be aware that in many soils, a no-till coulter can hurt more than it helps.

Martin 13” spiked closing wheels (pair) for bolt on style hubs on John Deere, Kinze and MF/White: $259.00 + shipping.

Martin 15” spiked closing wheel (single) for bolt on style hubs on John Deere, Kinze, and MF/White: $140.00 + shipping.

Closing systems for planter types or models not discussed above may be available, please call for more information.
SCW899 Closing System For Case-IH Planters

Key Benefits:

- A pair of 9” spiked wheels replace the pair of factory closing discs to improve closing action, especially on higher moisture no-till soils.
- The combination of offset double disc openers, RID gauge wheels, SCW899 closing wheels and the rear rubber tire works as well (or better) than any planter opener on the market.
- The closing wheels come assembled, complete with hubs and bearings ready to bolt on.
- Available for Case-IH 800, 900, 1200 and 1250 planters.

Pair (one row) of SCW899 closing wheels for Case-IH planter $136.00 + shipping.

The pair of SCW899 guarantee a closed seed trench in most conditions and the following factory smooth wheel gently tamps the surface to help provide seed to soil contact and rapid emergence.

Moist soil is moved toward the seed at seeding depth even in wet, hard or sod conditions. In wet conditions, the soil is prevented from forming a continuous ribbon by the lifting action of the teeth as they rotate up out of the soil.

Other benefits include:

- Seed trench is closed, even in high moisture conditions
- Seeding depth does not have to be raised to insure emergence
- Soil above the seed is loose allowing quicker emergence in a compaction free environment
- Sidewall compaction is almost eliminated

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Martin Twisted Link Drag Chains For John Deere and Kinze Planters.

Key Benefits:

- Heavy square link chain helps eliminate twisting.
- Drag chains easily mount to all John Deere Max Emerge units, using the 5/8" mounting bolt.
- Fits Kinze and MF/White closing wheel arms with 5/8" mounting bolts.
- Older style Kinze and John Deere closing wheel arms with roll-pin wheel mounts may need holes drilling in the closing wheel arm for installation.
- Comes with all mounting hardware.
- Zinc coated chain helps minimize corrosion over time.

Following behind Spading Closing Wheels, the Martin Twisted Link Drag Chain attachment helps to level the seed zone by pulling a handful of soil along. This technique drops loose soil into any areas not completely closed, helping eliminate corn leafing out underground.

Martin Twisted Link Drag Chains help even out the rate of drying and insures the soil does not dry past seed depth. This is a low cost, low maintenance way to help increase uniform emergence in the drier parts of the field and is a must when using the spading closing wheels in minimum till. By the way, some of our customers still feel the need for some shallow tillage in the spring and the spading closing wheels and Martin Twisted Link Drag Chain combination do an excellent job in that situation.

Pictured above is the Martin Twisted Link Drag Chain assembly behind a pair of 13” spiked closing wheels. Notice how the closing wheels create enough loose soil to allow the Martin Twisted Link Drag Chain Assembly to pull a handful of soil along, and drop soil into any areas of the seed slot not properly closed.

The closing wheel arm pictured above is fitted with the optional Martin Drop-Down kit. This kit lowers the attachment point of the two 5/8" bolts (which mount the HU44-B2 hubs to the arm). Leveling the closing wheel arm assembly is very important to ensure optimum closing system performance.

Martin Twisted Link Drag Chain Assembly for John Deere or Kinze

$39.00 each + shipping.
Martin Reduced Inner Diameter Gauge Wheel Tires For Planters.

Key Benefits.

- Reduced Inner Diameter Gauge Wheel Tires are an important addition to a no-till planting system, especially when the soils are high moisture.
- The benefits of reduced inner diameter gauge wheel tires can be seen in the images to the right where both a standard gauge wheel tire and a reduced inner diameter tire are both installed on the same row unit. Notice how the standard tire (left) compressed the sidewall, increasing the risk of sidewall compaction and reduced yields. The reduced inner diameter gauge wheel tire (right) allows the sidewall to slightly flex upwards, reducing soil compression next to the seed slot, reducing the risk of sidewall compaction.
- Another significant benefit of the reduced inner diameter gauge wheel tires is their ability to leave the soil either side of the seed slot looser, this helps improve the closing action of both factory and Martin-Till closing systems.
- RID-01 will not fit John Deere XP series row units unless you purchase a new John Deere wheel half (part number A56621).

Many different reduced inner diameter gauge wheel tires are available on the market. Our research has found the most effective tire is one which includes a softer, more flexible compound. Softer compounds enable tires to better shed wet soil, plus they offer greater terrain following ability by absorbing more shock and vibration. Our tire is the one illustrated at the top of the two tires (with a weight of 7.4lb). Other tires on the market have a harder and less flexible compound and they can be best identified by their increased weight.

Sidewall compaction is still a yield limiting factor for many corn fields, especially those planted in high moisture conditions.

Martin 16” x 4 1/2” reduced inner diameter gauge wheel tires, to fit MF/White, Kinze or John Deere gauge wheels (up to, but not including 1700 series).

$28.00 each + shipping.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Needham Ag Row Cleaner Wheels For Yetter Row Cleaners

Key Benefits.

- **Thicker Material.** The Needham Ag 14 finger wheels measure $\frac{3}{16}$" in thickness (compared to the $\frac{1}{4}$" thickness of the OEM 16 finger wheels).
- **Long Life and Excellent Durability.** While our wheels are the same diameter as OEM wheels, they will extend service life significantly. Our wheels are made from heat treated, T-1 material (military armor grade steel) which almost eliminates the finger breaking and bending problems reported by some Yetter row cleaner owners, plus they are priced very competitively.
- **Move Less Soil.** Our 14 finger wheels have been found to move less soil than the OEM 16 finger version and especially less soil compared to the shark tooth wheels. This is very important when working in rolling terrain to prevent trenching and erosion down the slopes.
- **Built by Martin.** The 14 finger wheels are manufactured to Needham Ag Technologies, LLC. Specifications, by Martin Industries.
- **Easy Installation.** The 14 finger wheels allow simple installation on all Yetter hubs with dust-cap mounted grease fittings.

Row Cleaner Wheels To Install On Yetter Row Cleaners.

$50.00 each + shipping.

Spoked Narrow Gauge Wheel Assemblies

Key Benefits.

- If you have experienced wet soil conditions which caused your gauge wheels to plug, you will appreciate a spoked gauge wheel assembly.
- Our spoked gauge wheel assemblies come standard with a 3” urethane tire for long life (we offer a 3 year warranty on the OD of our tires).
- Our 3 x 16” Spoked Narrow Gauge Wheel Assemblies will fit all planters which use a 5/8” or 16mm bolt to mount the gauge wheels to the planter. This includes all 1700 Series and newer John Deere, 2000, 3000 and 4900 series Kinze, plus most newer Case IH, Horsch and Vaderstad row units.
- Heavy duty ductile iron spoked center with a large surface area to let wet soil escape.
- Our gauge wheel assemblies come standard with PEER® SeedXtreme bearings for long service life.
- For more information, please visit page 18.

Spoked Narrow Gauge Wheel Assembly With 3” Urethane Tire

$160.00 each + shipping.
Tramline Kits

Key Benefits:

- Tramlines are a method of applying inputs with high levels of accuracy.
- They avoid driving over a seeded crop.
- Seed is diverted to one (or both sides) of the tramline. This doubles the plant population either side of the wheel-tracks (assuming you purchase 2 motors per tramline), which allows you to drive through the growing crop with a minimal yield loss.
- Tramlines are especially beneficial in tall crops later in the season, because they allow sprayers to make applications with minimal crop damage.
- Tramline kits are available for most air-seeders/box drill and sprayer combinations.

When tramlining, seed is placed in the row (or rows) alongside the tramline tracks by using electric tramline motor assemblies (pictured above). Tramline assemblies are installed within the seed tubes and are available for both box drills and air-seeders.

A 90’ sprayer applying liquid nitrogen to a field of wheat seeded with a 45’ drill. The seed was diverted to the rows either side of the tramlines to allow the sprayer to run through the field with minimal crop injury or yield loss.

Placement of the tramlines across the field is managed by the control box (pictured above). A proximity switch on the drill/air-seeder is used to advance the tramline sequence to coincide with the width of the sprayer. The control box tells the operator when the drill/air seeder is tramlining and alerts the operator of any problems.

Amity Tramline kits for even multiple drill/sprayer width combinations (such as a 30’ drill and 60’ boom or 30’ drill and 90’ boom)

$2500.00 + shipping

Amity Tramline kits for non-even multiple drill/sprayer width combinations (such as a 24’ drill and a 60’ boom, or a 30’ drill and a 75’ boom)

$3600.00 + shipping

Please call or email us for a more detailed information package on tramlines.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
The Problem.

Most seed tubes on the market drop seeds evenly if the tubes remain almost vertical in operation. However, as you drive up or down slopes, especially when seeding lighter seeds such as radish or grass seeds, seeds often hang in the corrugations of the seed tubes. Often these seeds fall out in clumps when the seed tube straightens back out or when enough vibration shakes the seeds loose, resulting in inconsistent seed placement down the rows.

Some drills (as illustrated right) don’t start out with vertical seed tubes, even when new, so this presents greater problems.

The Solution

We have been able to source a better design of rubber seed tube to help improve seed flow, especially when seeding smaller seeds or when seeding on rolling ground (or both). These seed tubes are made from natural rubber and provide excellent flexibility. They also incorporate internal folds above each corrugation, so as the seed tube stretches out, the folds direct the seeds away from the corrugations and help eliminate any seeds being held in the seed tube.

These seed tubes also incorporate a small amount of peroxide into their formulation, this has been found to be a safe and effective way of deterring rodents from damaging the seed tubes.

When installing these seed tubes, be sure to install them the correct way up.

We have found these seed tubes fit most drills available on the market and the chart to the right illustrates which ones install on specific brands and models. Seed tube dimensions are provided for brands or models not included.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
<table>
<thead>
<tr>
<th>Tube Part Number: NA-S</th>
<th>Dimensions: 8-20” Operating Range, with 1 1/4” ID Coupler at both ends</th>
<th>Installs On: John Deere Single Disc No-Till Drills. - Including 750, 1560 and 1590 John Deere Double Disc Drills - Including 8200, 8250, 8300, 8350, 8500 and 450 (please check the hose dimensions above, as some 8000 series drills are slightly different and require the NA-M hose below).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seed Tube NA-S $11.00, plus shipping 0.3 lb ea.</td>
<td>Seed Tube NA-S $11.00, plus shipping 0.3 lb ea.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tube Part Number: NA-M</th>
<th>Dimensions: 12-26” Operating Range, with 1 1/4” ID Coupler at both ends</th>
<th>Installs On: Great Plains - All late model double disc drills (early models had a seed tube with a long non corrugated area at one end). No-till drills with parallel linkage require the seed tube NA-L shown below. Sunflower - 9300, 9400, 9500 and 9600 Series. Landoll - 5210, 5211, 5530 and 5531 Tye - All double disc drills UFT - Conventional and 5000 Series No-Till Drills Best - All No-Till Drills. Frontier - BD 1307 John Deere Double Disc Drills - Including 515 and 520</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seed Tube NA-M $12.00, plus shipping 0.5 lb ea.</td>
<td>Seed Tube NA-M $12.00, plus shipping 0.5 lb ea.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tube Part Number: NA-L</th>
<th>Dimensions: 15-36” Operating Range, with 1 1/4” ID Coupler at both ends</th>
<th>Installs On: Great Plains - All No-Till drills with parallel linkage (including the 10 series) and all HD Series openers, including 2N-2410, 2N-3010, 3S-4010, 3S-3000HD, 3S-4000HD. Consistent with all seed tubes on drills which are stored for extended periods with openers in the lowered position, release the bottom of the seed tube or lower the drill to avoid hose stretch. Haybuster - 77, 77C, 107, 107C, 147 and 1575 John Deere Double Disc Drills - Including 455 John Deere Single Disc Drill Fertilizer Box - Including 1590</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Seed Tube NA-L $13.00, plus shipping 0.75 lb ea.</td>
<td>Seed Tube NA-L $13.00, plus shipping 0.75 lb ea.</td>
</tr>
</tbody>
</table>

Please compare your current drill seed tube length with our specifications below, to ensure they match. Some require hose clamps to secure them to seed cup.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Well Sown = Half Grown!

Throughout his extensive career in soil management and crop production, Phil Needham has never forgotten the phrase “well sown = half grown” he heard as a child from his grandfather, who was a 4th generation farmer. His phrase conveys the importance of placing good quality seeds into the soil at a uniform depth and spacing, to obtain uniform crop emergence. This helps create high yield potential from the start, to access light, moisture and nutrients. This uniform emergence also helps the crop grow through the season at consistent growth stages across the field, which helps with timing of crop inputs such as nitrogen and foliar fungicides, plus it helps achieve a consistent number of heads per square yard at harvest.

This phrase has helped Phil’s career of helping growers increase their wheat and other crop yields, using no-till to help them boost profits.

One of the biggest contributions to wheat yields and profits within North America came from the uniform delivery of liquid nitrogen using stream bars. Prior to this, growers often used spinning disc spreaders to try and spread light products like urea. Without frequent pattern testing streaked fields and lower yields often resulted, especially on windy days or when working on rolling ground (or both). Switching to liquid N applied with sprayers eliminated the streaks (shown below), even on slopes or windy days because they delivered a consistent rate across the boom, especially when auto-steer and tramlines were utilized. Swath control has added to these advantages by minimizing any overlap in odd shaped fields.

Streaks and lower yields often result from spinning disc spreaders, especially when using light and dusty products like urea.

Taking field wheat yields above 100 bu/ac requires sound N management and timing, based on the needs of the crop. Uniform application of nutrients across the field is very important also.
The replicated trial data above represents the second application of liquid N (68 lb/ac of actual N) which was applied at jointing (Feekes growth stage 6) using the different methods outlined. We consistently see higher yields and lower levels of leaf injury with stream bar applied N compared to streamer nozzles and especially spray nozzles. If no rain falls within 7-10 days after the application with often see a yield benefit to adding Agrotain (or similar products) to the liquid nitrogen to reduce volatility. We also saw a yield response from adding 7 lb/ac of sulphur (in the ATS form) and N rates were adjusted to ensure all plots receive the same.

The trial data (left) represents the same second application of liquid N around the jointing stage (similar to the above bar chart) but this data is an average of four years of replicated trials conducted by Wheat-Tech, a crop management and research company based in Kentucky.

Both of these bar charts illustrate the importance of uniform delivery of liquid N, without damaging the leaves during the second spring application. There are still growers out there that mix a herbicide with the nitrogen, this is a practice that we strongly discourage.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
3, 5 or 7 Hole Fertilizer Nozzles.

Most new sprayers are equipped with swath control and auto-steer systems, making them an efficient and high capacity platform to apply liquid nitrogen to wheat and other crops. The challenge is not the sprayer itself, instead it’s the nozzles used to deliver the liquid fertilizer to growing crops. While 3, 5 or 7 hole fertilizer nozzles are often an improvement over flat fan nozzles (see data on previous page), because they don’t cause as much leaf burn, the 3, 5 or 7 hole nozzles often don’t deliver the liquid nitrogen as evenly as a flat fan nozzle. The weaknesses of the 3, 5 or 7 hole nozzles often become visible when operating at higher forward speeds or when applying liquid nitrogen on windy days (or both). Within these conditions the streams are broken up, which results in more leaf injury and yield loss. 3, 5, or 7 hole nozzles often result in parallel streaks as illustrated in the images right, especially when operating on rolling ground when the booms can’t be held at a consistent height above the crop.

These streaks result in different standards of plant health, varying head emergence dates (this is very important when applying foliar fungicides for scab at flowering) and different head sizes. A good example is provided right, the head on the left came from a yellow streak and the head on the right came from a green streak. Look at the difference in heads and flag leaf length and color.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Uniform Application Of Liquid Nitrogen With Stream Bars

This 2nd spring application of nitrogen is being applied to wheat with a Miller Nitro. This application and the one ahead of it, were made with Chafer stream bars. Field uniformity is the core of high yields, so applying liquid nitrogen with Chafer Stream bars will help deliver the product evenly and accurately with little to no leaf injury.

Benefits of Chafer Stream Bars

Reduced Crop Injury compared to spray nozzles, or 3/5/7 hole nozzles.

Stream Bars deliver large droplets of nitrogen vertically down into the crop, which roll off the leaves, down onto the soil surface. This technique results in little to no crop injury and reduced tie-up of N on residue (especially when comparing N broadcasted with spray nozzles to N applied with stream bars).

Unaffected By Boom Height

Unlike 3, 5 or 7 hole fertilizer nozzles, Stream Bars create vertical streams. This means that the application pattern is consistent regardless of boom height. Maintaining a consistent boom height is a challenge in most fields, especially rolling fields. Stream bars can be operated at any height, especially closer to the ground on windy days to help minimize stream disruption and leaf injury.

For more information on how Stream Bars deliver liquid fertilizer more uniformly than other methods, search for “Post Applying Liquid Nitrogen To Wheat” at youtube.com or scan the QR code to the right.

"I applied 32% liquid nitrogen with sugar using flat fan nozzles, and it burned the crop badly. When I switched to Chafer Stream Bars there was zero burn on my wheat, barley and rye, even in the corners". Jim Arnaud, Monett, MO.

“I applied 32% liquid nitrogen with sugar using flat fan nozzles, and it burned the crop badly. When I switched to Chafer Stream Bars there was zero burn on my wheat, barley and rye, even in the corners”. Jim Arnaud, Monett, MO.

Its hard to beat these standards of liquid nitrogen uniformity!

New Needham Ag Boom-Skis now available.

Our new spring loaded boom skis mount to the boom to help protect stream bars and other nozzles, especially when working on rolling ground or terraces. Its universal mount fits most booms, but please be aware they don’t fit on all brands, so please contact us for more information and pricing.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Standard Stream Bars

Key Benefits:

- Highly accurate.
- Minimal impact of boom height or wind speed.
- Allows producers to deliver liquid nitrogen uniformly to wheat with virtually no leaf scorch.
- Available for 20” or 15” nozzle spacing.
- Now available for Spraying Systems/Teejet, Hardi and Wilger/Case-IH AIM (with a Wilger adapter).
- Designed to deliver a wide range of application rates, from 5 gallons to over 50 gallons per acre (using specific orifices, which offer rate ranges).
- Reduced N losses. Large droplets bounce off leaves and residue to drop down to the soil surface, reducing tie-up of N and boosting N availability.

Large droplets produced by Stream Bars reduce tie-up of nitrogen, especially in high residue no-till systems, plus they are not height dependent like 3/5/7 hole nozzles.

Stream bars being used in 10-15 mph winds.

Stream Bars for 15” Nozzle Spacing

$18.00 each + shipping
(including one metering orifice)

Stream Bars for 20” Nozzle Spacing

$14.00 each + shipping
(including one adapter and one metering orifice)

Please provide the following information when ordering:

- Approximate application rate (15-20 gallons per acre for example)
- Approximate application speed (7-10 mph for example).
- Nozzle type: Spraying Systems/Teejet or Hardi for example.

Stream bars allow late season N applications with minimal leaf injury. This later application of 10 gallons of 28% N exhibited minimal scorch.

Made In The USA

15” and 20” Stream bars deliver a uniform pattern across a range of different operating pressures.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Multi-Rate Stream Bars

Key Benefits:

- Multi-Rate Stream Bars have a sliding bar which allows operators to quickly change output without removing or disassembling the stream bar.
- No metering orifices need to be purchased, saving money and risk of losing them, or getting them mixed up.
- Allows producers to deliver liquid nitrogen uniformly to wheat with virtually no leaf scorch.
- Available for 20” or 15” nozzle spacing.
- Available for Spraying Systems/Teejet, Hardi and Wilger/Case-IH AIM (with a Wilger adapter).
- Stronger than the standard bars.

Customers stated how much they liked the performance of our original stream bars, but they did not like having to change metering orifices each time they significantly changed product rates or forward speeds. In an intensive wheat management system, it’s common to split apply nitrogen, when the application rates vary from around 10 gallons all the way up to 30 gallons or more. Multi-Rate stream bars help allow these rate adjustments by incorporating a sliding rate adjuster. This slide allows the application rate per acre to be quickly changed without having to remove or disassemble the stream bars. A chart is provided with all stream bars, just select the right orifice and enter the gallons required per acre into your rate controller to begin streaming.

What a farmer has to say about our Stream Bars:

“I bought a set of streamer bars from you this spring for topdressing wheat, they are best investment for the spray rig yet”.

Chuck Downey, St. Francis, KS.

Multi-Rate Stream bars for 15” Nozzle Spacing
$21.00 each + shipping
0.2 lb ea.

Multi-Rate Stream bars for 20” Nozzle Spacing
$21.00 each + shipping
0.25 lb ea.

Wilger adapters are $2.00 each + shipping

Stream bars deliver streams of fertilizer, vertically down into the crop canopy as shown above. Vertical delivery ensures uniform delivery of liquid fertilizer regardless of boom height, which is especially important on rolling ground where the boom can’t be held close to the ground.

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Well Sown = Half Grown

This professionally published hard red winter wheat (HRWW) guide includes 140 pages, which contain 374 color photographs, tables and graphs.

This publication includes information on seeding technology, seeding rates, seed treatments, planting dates, tiller management, soil testing and nutrient management strategies. It also has sections on herbicides and fungicides, plus a good section on spray nozzle selection. The publication also contains an important section on spreading residue out of the back of the combine, to help with no-tilling wheat into heavy residue.

This guide is written by Phil Needham and is designed to walk a producer, dealer or agronomist, step by step through the management practices required to help create the potential for higher HRWW yields and profits from the very start.

While this production guide focuses on HRWW production across TX, OK, KS and NE, most of the management practices discussed will help producers within other HRWW production areas of the USA.

For more information on this guide, visit www.needhamag.com

Hard Red Winter Wheat Guide
$50.00 Plus Shipping

For more information or to order, call (270) 785 0999, or visit our online store at needhamag.com
Managing Your Way To Higher Profits.

This professionally published soft red winter wheat guide contains **120 glossy color pages** and 330 color photographs, tables and graphs. It includes most of the crop management technologies required to help soft red winter wheat producers across the eastern US and south east Canada take their wheat management to the next level.

This guide was written by Phil Needham and published in 2012 and it walks producers, dealers and agronomists step by step through the growing season. The guide offers a balance of replicated research and field experience across the SRWW production region to help build a sound foundation to create higher yield potential and greater profits from the very start.

The guide begins with residue management of the previous crop, seed selection, and fall fertilizer recommendations. It continues with seeding technologies, no-till and conventional tillage systems. The guide outlines how to conduct stand counts and the ranges we are looking for within specific planting date ranges.

Spring management strategies are discussed next with nitrogen application systems, rates and timings, all the way through to fungicides, insecticides, herbicides and growth regulators. This guide also features a comprehensive section which discusses most wheat diseases and viruses.

This guide is written for the SRWW region of the eastern US and eastern Canada.

For more information on this guide, visit www.needhamag.com
Our Hard Red Spring Wheat management guide is our most comprehensive and most professionally produced publication to date, with over 200 color pages and over 300 photos, graphs and tables.

This Hard Red Spring Wheat Guide is written by Phil Needham to help growers, dealers and agronomists across the Northern Plains and Western Canadian Provinces identify some of the weak links within their production systems. Once these weak links are isolated, as many as possible need to be eliminated to increase yields, grain quality and profits.

The Hard Red Spring Wheat Guide contains major sections, which include managing residue with the combine at harvest, which is a weak link for many producers. It also has a section on most types of seeding equipment in addition to different fertilizer placement strategies. The guide also discusses important topics such as seed quality, seed rates, seed treatments and the importance of uniformity of seed treatment applications.

The publication also covers the important topics of soil fertility, stand counts, uniformity of plant emergence, canopy management and post-applied nitrogen strategies and how they relate to soil moisture levels. There are also major sections on disease identification, disease control, and nozzle selection to help protect the yield potential.
Needham Ag Technologies, LLC. Warranty

Needham Ag Technologies, LLC., warranties products to be free from defects in materials and workmanship for one calendar year from date of sale to the original purchaser. The only exception is our urethane narrow gauge wheel tires which have a three year warranty on the OD of the tire only (not the lip, as incorrect installation can wear the lip off quickly).

Needham Ag Technologies, LLC., has the option to either repair or replace any parts that were determined to be defective due to defects in materials or workmanship.

Needham Ag Technologies, LLC., will not replace row units or other equipment parts that may be damaged during use.

Needham Ag Technologies, LLC. Returns Policy

Needham Ag Technologies, LLC., will accept returns from the original purchaser within 90 days of purchase date. This applies to all Needham Ag products, as long as they are new condition (clean and not used). A 15% restocking fee will apply to all returned parts and a credit will be issued to the customer within 30 days of receipt of the parts (either by check, or credit to a credit card). Needham Ag Technologies, LLC., will not pay for the return shipping costs of any parts (unless the wrong parts were shipped by mistake), nor will Needham Ag Technologies, LLC., issue a credit for the original shipping expenses of the parts to the customer.

For exchanges, you will need to return the product to Needham Ag Technologies, LLC., before the exchanged product is shipped.

To accelerate exchanges: We can ship replacement parts if the customer pays for them ahead of shipping. Once the returned product is received, Needham Ag Technologies, LLC., will issue a refund (either by check, or credit to a credit card).

Procedure To Return Parts

You must have proper authorization from Needham Ag Technologies, LLC., prior to returning parts. Please call the office at (270) 785 0999, or email us at phil@needhamag.com to tell us why you want to return the parts.

Return Address.

Needham Ag Technologies, LLC.

4911 State Route 81 North

Calhoun, KY 42327